# ATTACHMENT A-8

**Erosion Control Drawings**
(*Item C.8 of Form C*)

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| FED. ROAD DIST. NO. | STATE | FED. AID PROJ. NO. | FISCAL YEAR | SHEET NO. | TOTAL SHEETS |
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# WATER POLLUTION AND EROSION CONTROL NOTES

A. GENERAL:

1. See Section 209 - Temporary Water Pollution, Dust, and Erosion Control. Section 209 describes but is not limited to: submittal requirements; scheduling of a water pollution and erosion control conference with the Engineer; construction requirements; method of measurement; and basis of payment.

2. Effective October 1, 2008, follow the guidelines in the "Construction Best Management Practices Field Manual", dated January 2008 in developing, installing and maintaining the Best Management Practices (BMP) for the project.

3. Follow the guidelines in the Honolulu's City & County "Rules Relating to Soil Erosion Standards and Guidelines" along with applicable Soil Erosion Guidelines for projects on Maui, Molokai, Kauai, and Hawaii.

4. The Engineer may assess liquidated damages of up to $27,500 for non-compliance of each BMP requirement and each requirement stated in Section 209, for every day of non-compliance. There is no maximum limit on the amount assessed per day.

5. The Engineer will deduct the cost from the progress payment for all citations received by the Department for non-compliance, or the Contractor shall reimburse the State for the full amount of the outstanding cost incurred by the State.

6. For projects that require an NPDES Permit from the Department of Health, install a rain gage prior to any field work including the installation of any site-specific best management practices. The rain gage shall have a tolerance of at least 0.05 inches of rainfall, and have an opening of at least one-inch in diameter. Install the rain gage on the project site in an area that will not deter rainfall from entering the gage opening. The rain gage installation shall be stable and plumbed. Do not begin field work until the rain gage is installed and site-specific best management practices are in-place.

B. WASTE DISPOSAL:

1. Waste Materials
Collect and store all waste materials in a securely lidded metal dumpster. The dumpster shall meet all local and State solid waste management regulations. Deposit all trash and construction debris from the site in the dumpster. Empty the dumpster a minimum of twice per week or as often as is deemed necessary. Do not bury construction waste materials onsite. The Contractor's supervisory personnel shall be instructed regarding the correct procedure for waste disposal. Post notices stating these practices in the office trailer and the Contractor shall be responsible for seeing that these procedures are followed.

2. Hazardous Waste
Dispose all hazardous waste materials in the manner specified by local or State regulations and by the manufacturer. The Contractor's site personnel shall be instructed in these practices and shall be responsible for seeing that these practices are followed.

3. Sanitary Waste
Collect all sanitary waste from the portable units a minimum of once per week, or as required.

C. EROSION AND SEDIMENT CONTROL INSPECTION AND MAINTENANCE PRACTICES:

1. Inspect all control measures at least once each week and within 24 hours of any rainfall event of 0.5 inches or greater within a 24 hour period.

2. Maintain all measures in good working order. If repair is necessary, it shall be initiated within 24 hours after the inspection.

3. Remove built-up sediment from silt fence or fiber roll when it has reached one-third the height of the fence or the full height of the fiber roll.

4. Inspect silt screen or fence for depth of sediment, tears, to verify that the fabric is securely attached to the fence posts or concrete slab and to verify that the fence posts are firmly in the ground. Inspect and verify the bottom of the silt screen is buried a minimum of 6 inches below the existing ground.

5. Inspect temporary and permanent seeding and planting for bare spots, washouts and healthy growth.

6. Make a maintenance inspection report promptly after each inspection. Submit a copy to the Engineer no later than one week from the date of the inspection.

7. For H-3 and Likelike Interchange, provide a stabilized construction entrance to reduce vehicle tracking of sediments. Include stabilized construction entrance in the Water Pollution, Dust, and Erosion Control submittals. Minimum length should be 50 feet. Minimum width should be 30 feet. Minimum depth should be 12 inches or as recommended by the soils engineer and underlain with geo-textile fabric. Clean the paved street adjacent to the site entrance daily or as required to remove any excess mud, cold planed materials, dirt or rock tracked from the site. Cover dump trucks hauling material from the construction site with a tarpaulin.

8. Include designated Concrete Washout Area(s) in the Water Pollution, Dust, and Erosion Control submittals.

9. Submit the name of a specific individual designated responsible for inspections, maintenance and repair activities and filling out the inspection and maintenance report.

10. Personnel selected for the inspection and maintenance responsibilities shall receive training from the Contractor. They shall be trained in all the inspection and maintenance practices necessary for keeping the erosion and sediment controls used onsite in good working order.

11. Contain, remove, and dispose slurry generated from saw cutting of pavement in accordance with approved BMP practices. Payment for confinement, removal, and disposal of slurry shall be considered incidental to the various contract items.

D. GOOD HOUSEKEEPING BEST MANAGEMENT PRACTICES:

1. Materials Pollution Prevention Plan

a. Applicable materials or substances listed below are expected to be present onsite during construction. Other materials and substances not listed below shall be added to the inventory.

| | |
|---|---|
| Concrete | Fertilizers |
| Detergents | Petroleum Based Products |
| Paints (enamel and latex) | Cleaning Solvents |
| Masonry Block | Wood |
| Tar | |

b. Use Material Management Practices to reduce the risk of spills or other accidental exposure of materials and substances to storm water runoff. Make an effort to store only enough product as is required to do the job.

c. Store all materials stored onsite in a neat, orderly manner in their appropriate containers and if possible under a roof or other enclosure.

d. Keep products in their original containers with the original manufacturer's label.

e. Do not mix substances with one another unless recommended by the manufacturer.

f. Whenever possible, use a product up completely before disposing of the container.

g. Follow manufacturer's recommendations for proper use and disposal.

h. Conduct a daily inspection to ensure proper use and disposal of materials onsite.

2. Hazardous Material Pollution Prevention Plan

a. Keep products in original containers unless they are not resealable.

b. Retain original labels and material safety data sheets (MSDS).

c. Dispose of surplus products according to manufacturers' instructions and local and State regulations.

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EXP. DATE

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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

**WATER POLLUTION AND EROSION CONTROL NOTES**

KANEOHE WATERSHED STORM WATER BEST MANAGEMENT PRACTICES ON OAHU
Federal Aid Project No. STP-0300(135)

Scale: None Date: March 2013

SHEET No. N-06 OF 10 SHEETS

| FED. ROAD DIST. NO. | STATE | FED. AID PROJ. NO. | FISCAL YEAR | SHEET NO. | TOTAL SHEETS |
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| HAWAII | HAW. | STP-0300(135) | 2013 | 11 | 67 |

## WATER POLLUTION AND EROSION CONTROL NOTES (CON'T.)

D. GOOD HOUSEKEEPING BEST MANAGEMENT PRACTICES (CON'T.):

3. Onsite and Offsite Product Specific Plan

The following product specific practices shall be followed onsite:

a. Petroleum Based Products:
Monitor all onsite vehicles for leaks and perform regular preventive maintenance to reduce the chance of leakage. Store petroleum products in tightly sealed containers which are clearly labeled. Apply asphalt substances used onsite according to the manufacturer's recommendation.

b. Fertilizers:
Apply fertilizers used only in the minimum amounts recommended by the manufacturer. Once applied, work fertilizer into the soil to limit exposure to storm water. Storage shall be in a covered shed. Transfer the contents of any partially used bags of fertilizer to a sealable plastic bin to avoid spills.

c. Paints:
Seal and store all containers when not required for use. Do not discharge excess paint to the highway drainage system. Dispose properly according to manufacturer's instructions or State and local regulations.

d. Concrete Trucks:
Wash out or discharge concrete truck drum wash water only at designated site. Do not discharge water in the highway drainage system or waters of the United States. Contact Drinking Water Branch, Department of Health at 586-4258 to receive permission to designate a disposal site. Clean disposal site as required or as requested by the Owner's representative.

4. Spill Control Plan

a. Post a spill prevention plan to include measures to prevent and clean up each spill.

b. The Contractor shall be the spill prevention and cleanup coordinator. Designate at least three site personnel who shall receive spill prevention and cleanup training. These individuals shall each become responsible for a particular phase of prevention and cleanup. Post the names of responsible spill personnel in the material storage area and in the office trailer onsite.

c. Clearly post manufacturers' recommended methods for spill cleanup. Make site personnel aware of the procedures and the location of the information and cleanup supplies.

d. Keep materials and equipment necessary for spill cleanup in the material storage area onsite.

e. Clean up all spills immediately after discovery.

f. Keep the spill area well ventilated. Personnel shall wear appropriate protective clothing to prevent injury from contact with a hazardous substance.

g. Report spills of toxic hazardous material to the Project Engineer regardless of size and notify appropriate State or local government agencies when any release of hazardous substances, pollutants, or contaminants in quantities equal or exceed their reportable quantities.

E. PERMIT REQUIREMENTS:

1. If a National Pollutant Discharge Elimination System (NPDES) Permit is required for Construction Activities of one acre or more, submit to the Engineer six sets of the Water Pollution and Erosion Control Submittals as detailed in Subsection 209.03 of the specifications. The Contractor's attention is directed to the applicable NPDES Permit documents on the bid package compact disc.

2. If an NPDES Permit or Construction Dewatering is required, the Contractor shall be responsible to obtain the Permit from the Department of Health, Clean Water Branch.

3. Comply with all applicable State and Federal Permit conditions. Permits may include but are not limited to the following:

a. NPDES Permit for Construction Activities

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STATE OF HAWAII
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HIGHWAYS DIVISION

# WATER POLLUTION AND EROSION CONTROL NOTES

KANEOHE WATERSHED STORM WATER BEST MANAGEMENT PRACTICES ON OAHU
Federal Aid Project No. STP-0300(135)

Scale: None Date: March 2013

SHEET No. N-07 OF 10 SHEETS

| FED. ROAD DIST. NO. | STATE | FED. AID PROJ. NO. | FISCAL YEAR | SHEET NO. | TOTAL SHEETS |
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# EROSION CONTROL/BEST MANAGEMENT PRACTICES NOTES

1. The Contractor, at his own expense, shall keep the project areas and surrounding areas free from dust nuisance. The work shall be done in conformance with air pollution control standards contained in Hawaii Administrative Rules: Chapter 11-60, "Air Pollution Control".

2. Measures to control erosion and other pollutants shall be in place before any grading work is initiated. These measures shall be properly constructed and maintained throughout the construction period of each site.

3. Construction shall be sequenced to avoid disturbance at all project sites at one time and minimize exposure time of the cleared surface area.

4. The Contractor shall observe and comply with the State Department of Health regulations regarding storm water discharge.

5. All erosion control measures shall be checked and repaired as necessary, for example, weekly in dry periods and within twenty-four hours after any rainfall of 0.5 inches or greater within a 24-hour period. During prolonged rainfall, daily checking is necessary. During an event of above normal rainfall, the Contractor shall remove the sediment and drain inlet filter and reinstall them after the event has passed. The Contractor shall maintain records of all checks and repairs.

6. Inlet protection shall be implemented at all storm drain inlets and catch basins as indicated to prevent any sediment laden runoff from leaving the site. Inlet protection devices shall be removed during periods of above normal rainfall and replaced after the event has passed. For inlet protection details, see Sheet N-09.

7. The Contractor shall install fiber rolls as shown on plans.

8. Good housekeeping shall be utilized to ensure protection of roadways from mud, dirt, and debris.

9. The Contractor shall provide erosion control measures for their construction, staging, and storage areas and shall inspect and monitor his construction, staging, and storage areas to ensure that no non-storm water discharges are emitted. If such sources are identified the Contractor shall provide immediate mitigative measures.

10. No sediment laden runoff shall leave the site.

11. Water trucks shall be utilized to minimize the amount of airborne dust.

12. Contractor shall ensure the proper working order and conduct regular maintenance of all construction equipment. All construction equipment shall be serviced offsite and no oil or fuel shall be stored on the site.

13. The Contractor shall dispose of vegetation and equipment and hydraulic oils off-site.

14. At the end of the grading operation, existing catch basins and drain inlets surrounding the project site shall be inspected and any accumulated sediment and debris found shall be removed. Flushing into the catch basins or drain inlets is prohibited.

15. Grass shall be established on disturbed areas which are at final grade or will not be worked on for longer than 14 days. Alternatives to grass include 2" minimum straw mulch cover, erosion blankets with anchors, 6-mil plastic sheets, chemical soil stabilizer, sediment traps or ponds, or interceptor dikes/swales.

16. The Contractor shall designate a specific individual to be responsible for erosion and sediment controls on each project site.

17. Clearing and grubbing shall be held to the minimum necessary for grading and equipment operation.

18. Construction shall be staged and phased for large projects. Areas of one phase shall be stabilized before another phase is initiated. Stabilization shall be accomplished by temporarily or permanently protecting the disturbed soil surface from rainfall impacts and runoff.

19. Temporary soil stabilization with appropriate vegetation shall be applied on areas that will remain unfinished for more than 30 calendar days.

20. Storm water flowing toward the construction area shall be diverted by using appropriate control measures, as practical.

21. Water must be discharged in a manner that the discharge shall not cause or contribute to a violation of the basic water quality criteria as specified in the Hawaii Administrative Rules, Section 11-54-04.

22. All grading work shall be done in conformance with Chapter 14, Articles 13, 14, 15 and 16, as related to grading, soil erosion and sediment control, of the Revised Ordinances of Honolulu, 1990, as amended and applicable provisions of Chapter 54, Water Quality Standards and Chapter 55, Water Pollution Control, Title II, Administrative Rules of the State Department of Health.

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

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HIGHWAYS DIVISION

## WATER POLLUTION AND EROSION CONTROL NOTES

KANEOHE WATERSHED STORM WATER BEST MANAGEMENT PRACTICES ON OAHU
Federal Aid Project No. STP-0300(135)

Scale: None Date: March 2013

SHEET No. N-08 OF 10 SHEETS

| FED. ROAD DIST. NO. | STATE | FED. AID PROJ. NO. | FISCAL YEAR | SHEET NO. | TOTAL SHEETS |
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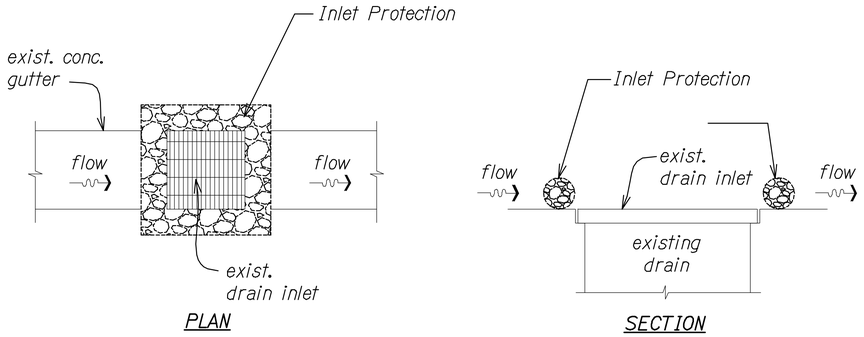


Note:
Temporary inlet protection shall meet the requirements of the State Construction BMP Field Manual, SC-2 Storm Drain Inlet Protection.

## DRAIN INLET PROTECTION
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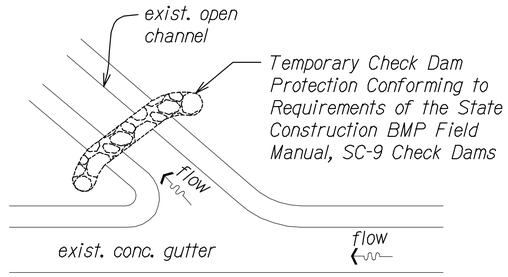


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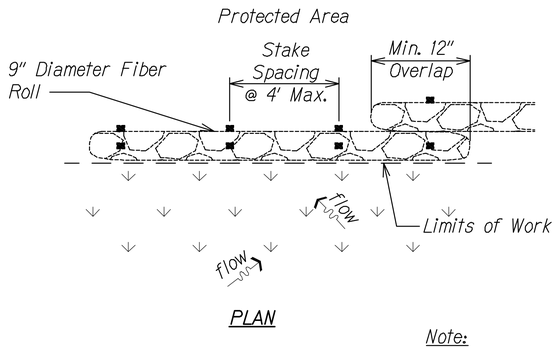


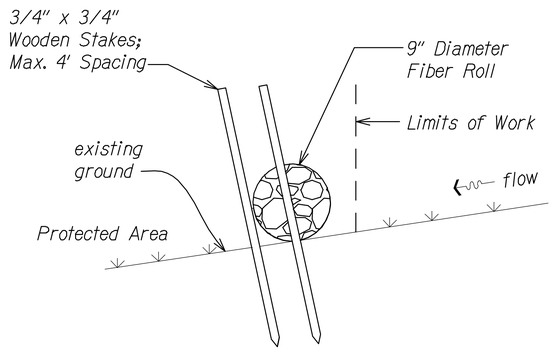


Note:
Fiber roll shall meet the requirements of the State Construction BMP Field Manual, SC-8 Compost Fiber Berm.

## FIBER ROLL DETAIL
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# WATER POLLUTION AND EROSION CONTROL DETAILS

KANEOHE WATERSHED STORM WATER BEST MANAGEMENT PRACTICES ON OAHU
Federal Aid Project No. STP-0300(135)

Scale: Not to Scale Date: March 2013

SHEET No. N-09 OF 10 SHEETS

| FED. ROAD DIST. NO. | STATE | FED. AID PROJ. NO. | FISCAL YEAR | SHEET NO. | TOTAL SHEETS |
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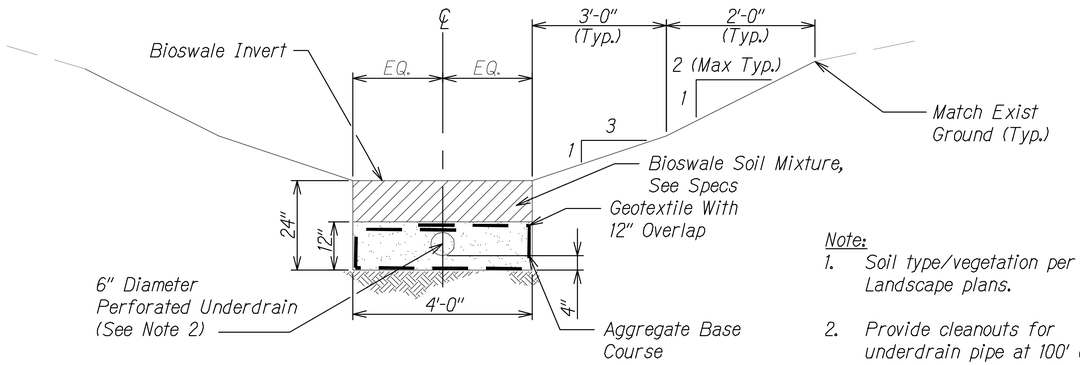


Note:
1. Soil type/vegetation per Landscape plans.
2. Provide cleanouts for underdrain pipe at 100' o.c. (max.).

## TYP. BIOSWALE DETAIL

1 EC-14 EC-01

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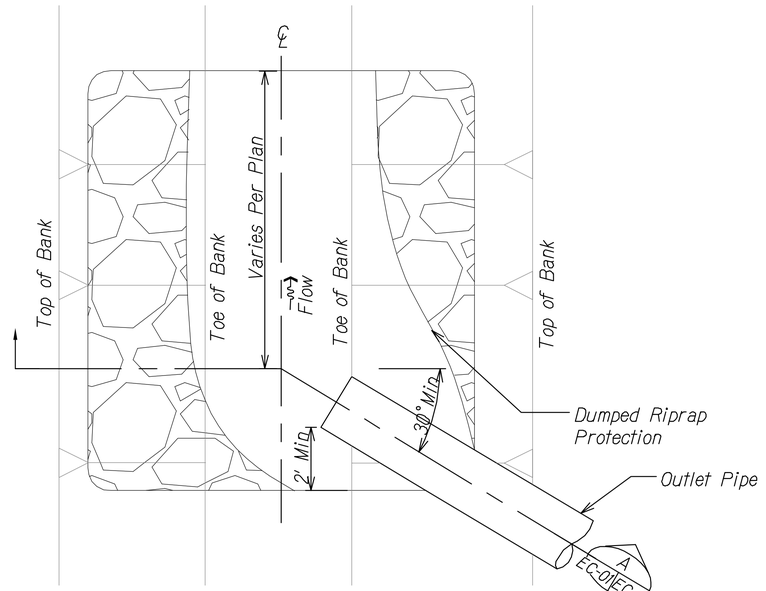


## TYP. PIPE/CULVERT OUTLET PROTECTION

2 EC-01 EC-01

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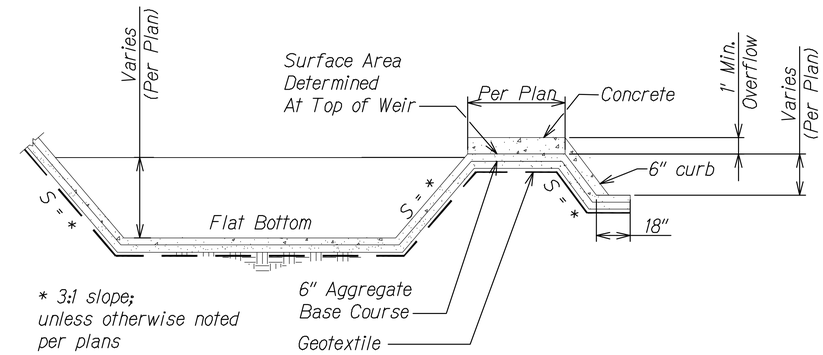


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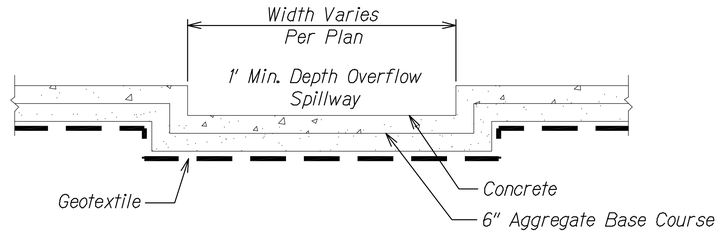


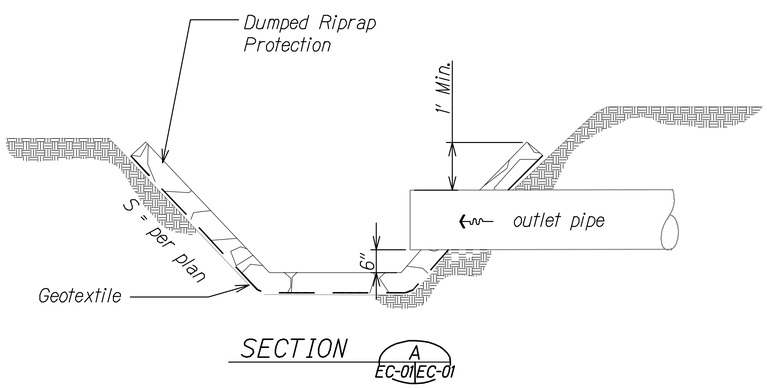

SPILLWAY

## TYP. CONC. SETTLING BASIN AND SPILLWAY DETAIL

3 EC-01 EC-01

Scale: Not to Scale

Notes:
1. Settling basin may be formed by berm or by partial or complete excavation.
2. Sediment shall be removed from the settling basin when it reaches 1 foot in depth.
3. Any damage to the settling basin embankments or slopes shall be repaired.
4. For structural details, see Sheet EC-10.




SECTION A EC-01 EC-01

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# TYPICAL DETAILS

## BIOSWALE, SETTLING BASIN & OUTLET PROTECTION

KANEOHE WATERSHED STORM WATER BEST MANAGEMENT PRACTICES ON OAHU
Federal Aid Project No. STP-0300(135)

Scale: Not to Scale Date: March 2013

SHEET No. EC-01 OF 30 SHEETS

| FED. ROAD DIST. NO. | STATE | FED. AID PROJ. NO. | FISCAL YEAR | SHEET NO. | TOTAL SHEETS |
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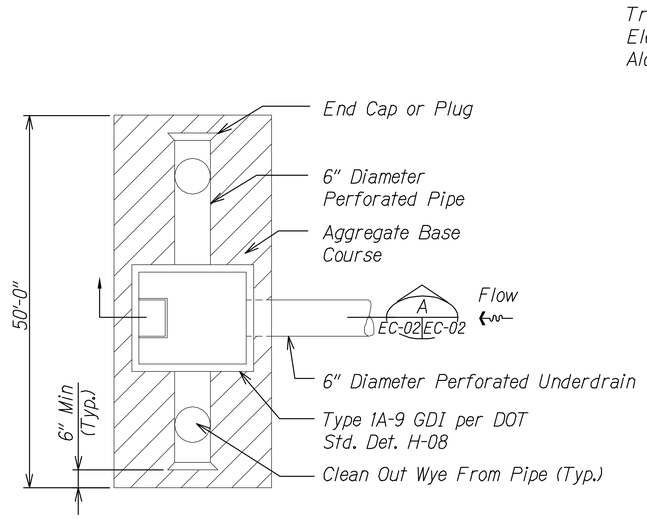


TYP. FLOW DISPERSAL TRENCH 1 EC-02 EC-02

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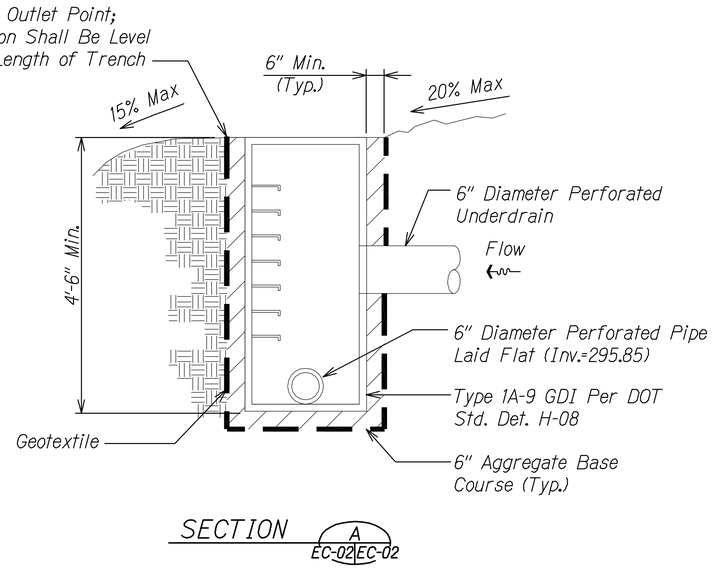


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Notes:

1. This trench shall be constructed to prevent point discharge and erosion.
2. Trench bottom and outlet point shall be level. Align to follow contours of site.

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# TYPICAL DETAILS
# FLOW DISPERSAL TRENCH

KANEOHE WATERSHED STORM WATER BEST MANAGEMENT PRACTICES ON OAHU
Federal Aid Project No. STP-0300(135)

Scale: Not to Scale Date: March 2013

SHEET No. EC-02 OF 30 SHEETS

| FED. ROAD DIST. NO. | STATE | FED. AID PROJ. NO. | FISCAL YEAR | SHEET NO. | TOTAL SHEETS |
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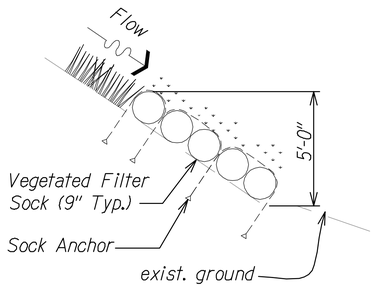


Notes:
1. Filtration media to meet specifications.
2. Slope on top of vegetated filter sock to be hydro-seeded per Landscape plans and specifications.
3. Sock anchors to be installed per det. 2 EC-03 EC-03
4. Where it is not feasible to go around obstacles, the Contractor shall secure the vegetated filter sock as close to the obstacle as possible to prevent runoff flow between the vegetated filter sock and the obstacle. See det. 3 EC-03 EC-03
5. Where feasible, the Contractor shall place the vegetated filter sock around obstacles. See det. 4 EC-03 EC-03

## TYP. VEGETATED WALL DETAIL
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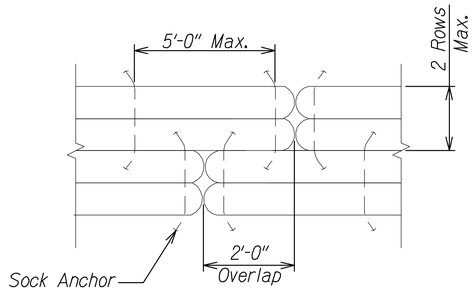
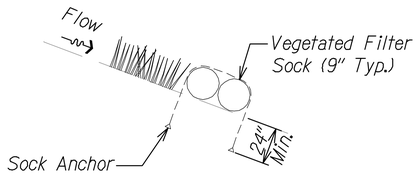
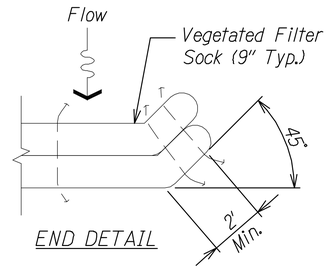



PLAN




ELEVATION




END DETAIL

## SOCK ANCHOR DETAIL
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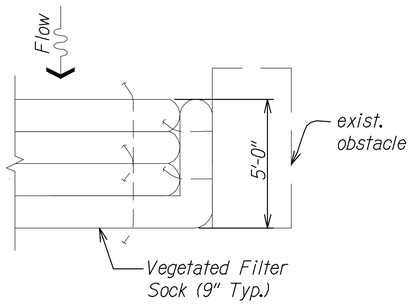
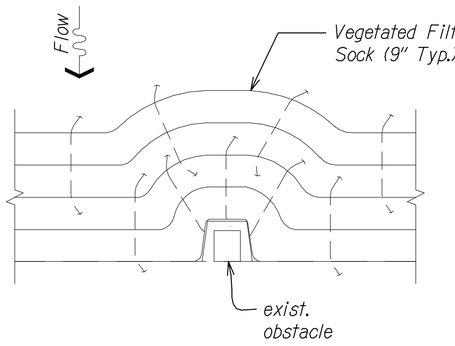



## VEGETATED WALL AT OBSTACLE
Scale: Not to Scale — 3 EC-03 EC-03




## VEGETATED WALL AROUND OBSTACLE
Scale: Not to Scale — 4 EC-03 EC-03

| ORIGINAL PLAN | SURVEY PLOTTED BY | DATE |
|---|---|---|
| NOTE BOOK | DRAWN BY | |
| No. | TRACED BY | |
| | DESIGNED BY | |
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FLOW DISPERSAL DETAILING 3/19/2013 10:30:41 AM

LICENSED PROFESSIONAL ENGINEER
JASON H. LAU
NO. 9360-C
HAWAII USA
4/30/14
EXP. DATE

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DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

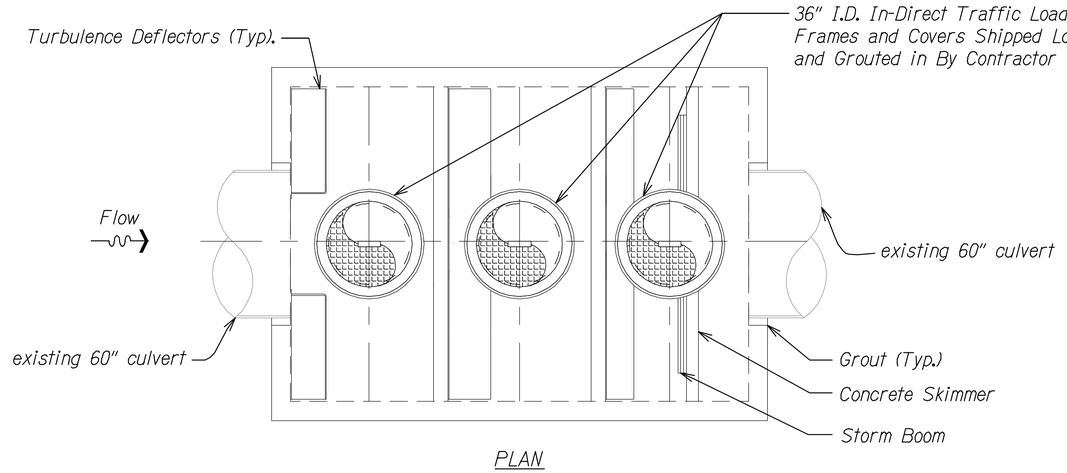
# TYPICAL DETAILS VEGETATED WALL

KANEOHE WATERSHED STORM WATER BEST MANAGEMENT PRACTICES ON OAHU
Federal Aid Project No. STP-0300(135)

Scale: Not to Scale — Date: March 2013

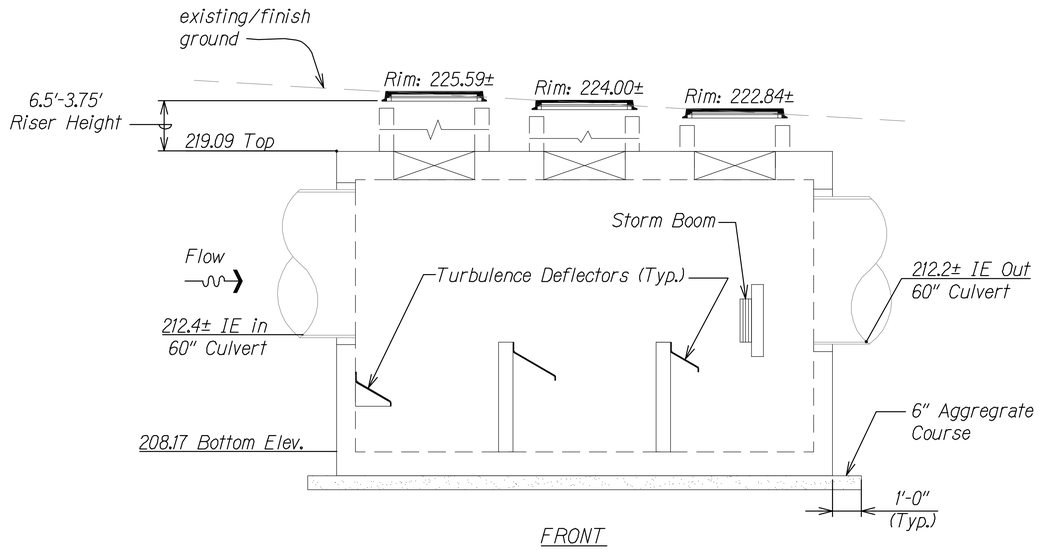
SHEET No. EC-03 OF 30 SHEETS

| FED. ROAD DIST. NO. | STATE | FED. AID PROJ. NO. | FISCAL YEAR | SHEET NO. | TOTAL SHEETS |
|---|---|---|---|---|---|
| HAWAII | HAW. | STP-0300(135) | 2013 | 18 | 67 |

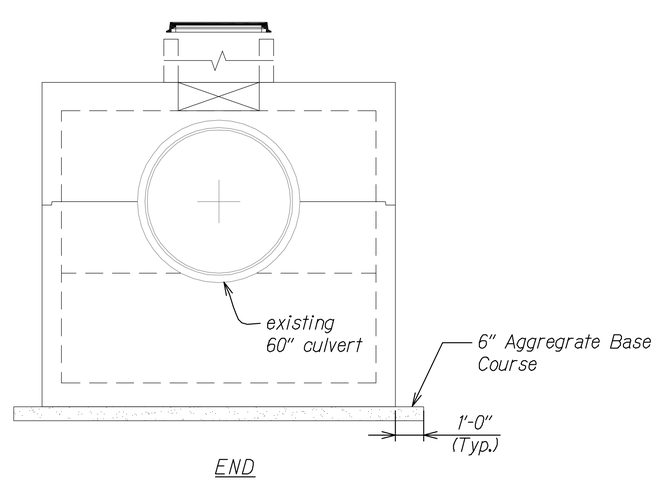



PLAN

| STORM WATER TREATMENT SYSTEM (TYPE 1) FLOW REQUIREMENTS | |
|---|---|
| Q50 (cfs) | 59.10 |
| WQFR (cfs) | 4.22 |




FRONT




END

Notes:

1. Concrete 28 day compressive strength fc=5,000 psi.
2. Reinforcing: ASTM A-615, Grade 60.
3. Joint sealant: BUTYL rubber SS-S-00210.
4. Inflow and outflow pipes shall be flush with the inside surface of the structure.

STORM WATER TREATMENT SYSTEM (TYPE 1) - BAFFLE BOX DETAIL

Scale: Not to Scale

1 EC-04 EC-04

ORIGINAL PLAN | SURVEY PLOTTED BY | DRAWN BY | TRACED BY | DESIGNED BY | QUANTITIES BY | CHECKED BY | DATE
NOTE BOOK | No.

BAFFLE BOX DETAILING 3/19/2013 10:02:7 AM

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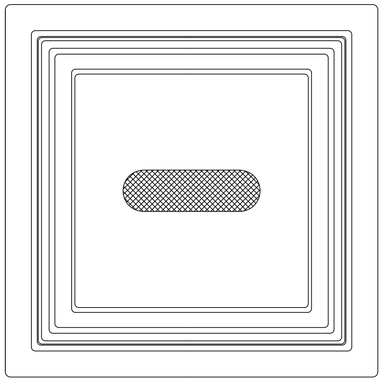
HIGHWAYS DIVISION

**TYPICAL DETAILS**
**STORM WATER TREATMENT SYSTEM**
KANEOHE WATERSHED STORM WATER BEST MANAGEMENT PRACTICES ON OAHU
Federal Aid Project No. STP-0300(135)

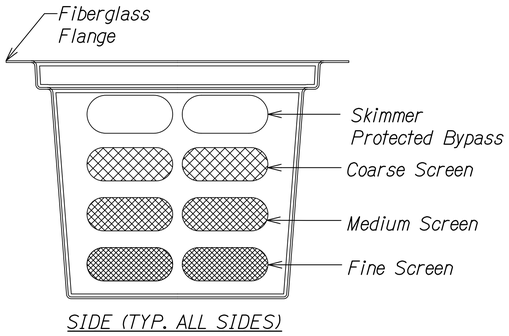
Scale: Not to Scale Date: March 2013

SHEET No. EC-04 OF 30 SHEETS

| FED. ROAD DIST. NO. | STATE | FED. AID PROJ. NO. | FISCAL YEAR | SHEET NO. | TOTAL SHEETS |
|---|---|---|---|---|---|
| HAWAII | HAW. | STP-0300(135) | 2013 | 19 | 67 |



TOP

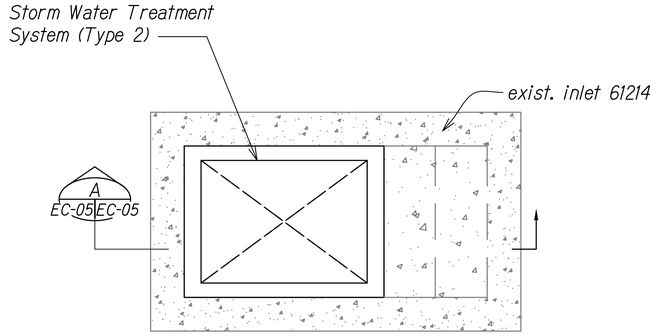



SIDE (TYP. ALL SIDES)

## STORM WATER TREATMENT SYSTEM (TYPE 2) - FILTER BASKET DETAIL

1 EC-05 EC-05

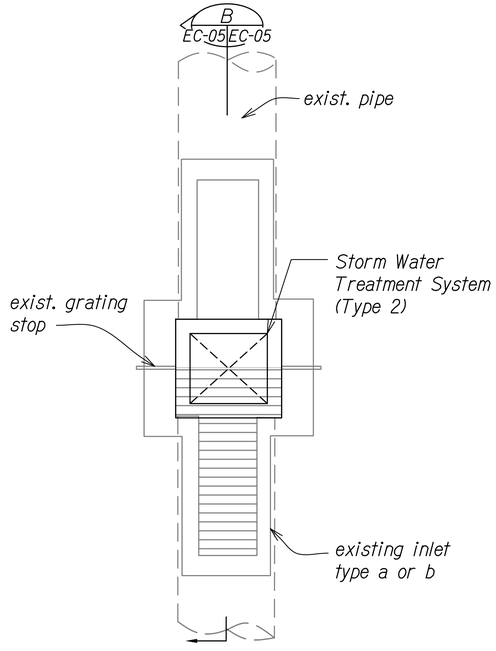
Scale: Not to Scale

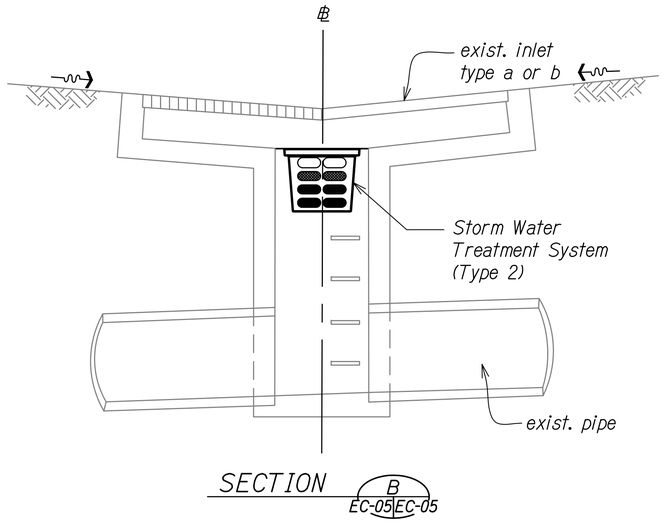



## STORM WATER TREATMENT SYSTEM - EXIST. INLET TYPE 61214

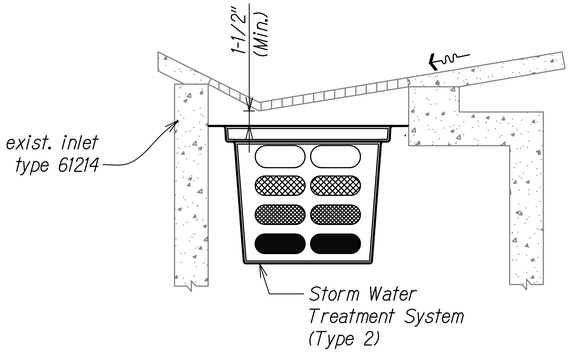
2 EC-05 EC-05

Scale: Not to Scale




SECTION B EC-05 EC-05




SECTION A EC-05 EC-05

## STORM WATER TREATMENT SYSTEM - EXIST. INLET TYPES A OR B

3 EC-05 EC-05

Scale: Not to Scale

Note:
Install Storm Water Treatment System per manufacturer's recommendations.

| ORIGINAL PLAN | SURVEY PLOTTED BY | DATE |
|---|---|---|
| | DRAWN BY | |
| NOTE BOOK | TRACED BY | |
| | DESIGNED BY | |
| NO. | QUANTITIES BY | |
| | CHECKED BY | |

6158.19\27.DRAWINGS\EC-05.dgn 3/5/2013 3:39:23 PM

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4/30/14
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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

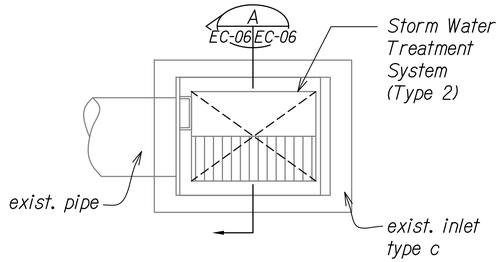
# TYPICAL DETAILS
## STORM WATER TREATMENT SYSTEM

KANEOHE WATERSHED STORM WATER BEST MANAGEMENT PRACTICES ON OAHU
Federal Aid Project No. STP-0300(135)

Scale: Not to Scale Date: March 2013

SHEET No. EC-05 OF 30 SHEETS

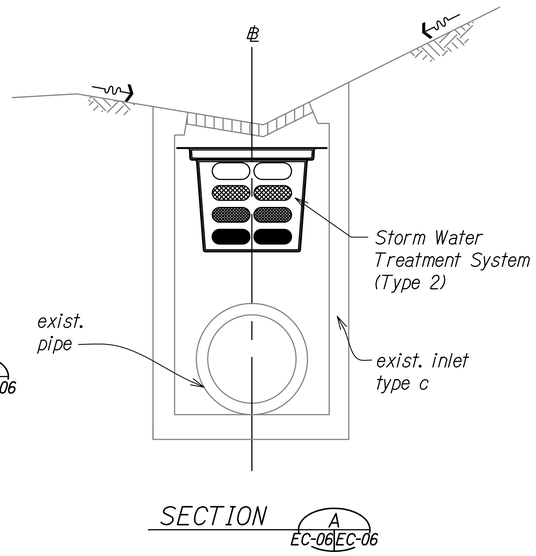
| FED. ROAD DIST. NO. | STATE | FED. AID PROJ. NO. | FISCAL YEAR | SHEET NO. | TOTAL SHEETS |
|---|---|---|---|---|---|
| HAWAII | HAW. | STP-0300(135) | 2013 | 20 | 67 |



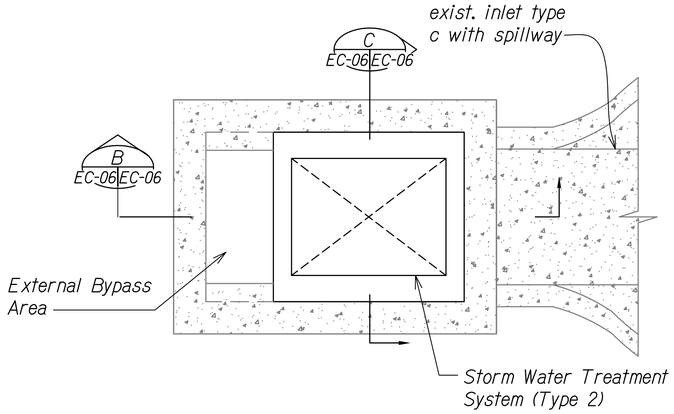

STORM WATER TREATMENT SYSTEM - EXIST. INLET TYPE C

Scale: Not to Scale

1 EC-06 EC-06



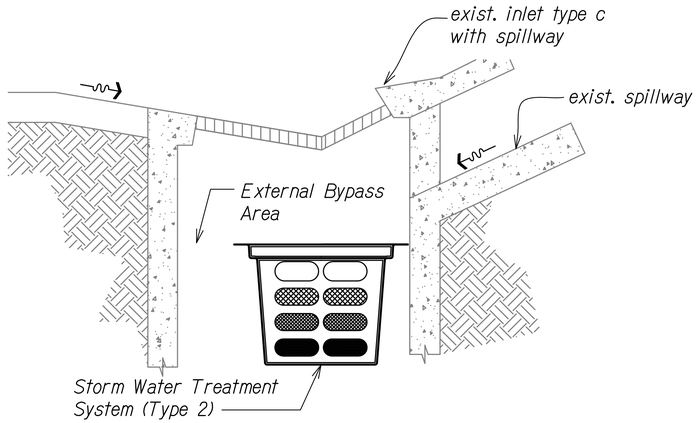

SECTION A EC-06 EC-06



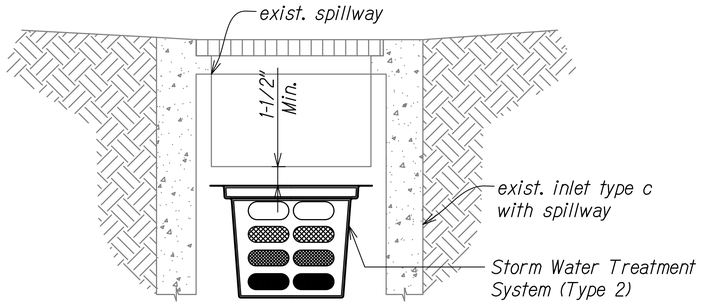

STORM WATER TREATMENT SYSTEM - EXIST. INLET TYPE C W/ SPILLWAY

Scale: Not to Scale

2 EC-06 EC-06




SECTION B EC-06 EC-06




SECTION C EC-06 EC-06

Note:
Install Storm Water Treatment System per manufacturer's recommendations.

| ORIGINAL PLAN | SURVEY PLOTTED BY | DATE |
|---|---|---|
| NOTE BOOK | DRAWN BY | |
| No. | TRACED BY | |
| | DESIGNED BY | |
| | QUANTITIES BY | |
| | CHECKED BY | |

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4/30/14
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HIGHWAYS DIVISION

# TYPICAL DETAILS
## STORM WATER TREATMENT SYSTEM
KANEOHE WATERSHED STORM WATER BEST MANAGEMENT PRACTICES ON OAHU
Federal Aid Project No. STP-0300(135)

Scale: Not to Scale Date: March 2013

SHEET No. EC-06 OF 30 SHEETS

| FED. ROAD DIST. NO. | STATE | FED. AID PROJ. NO. | FISCAL YEAR | SHEET NO. | TOTAL SHEETS |
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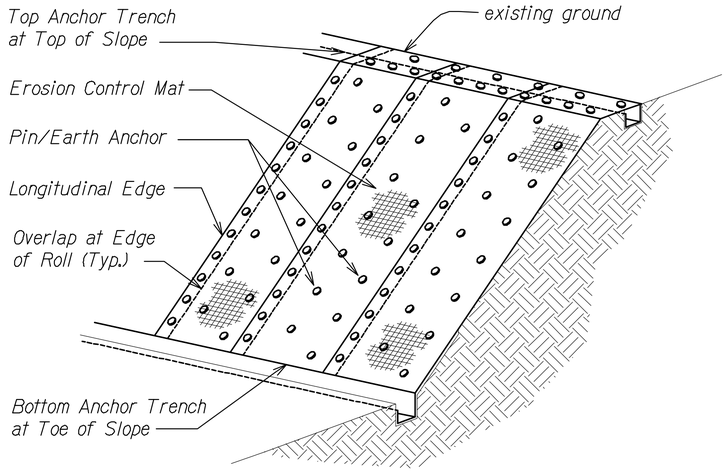
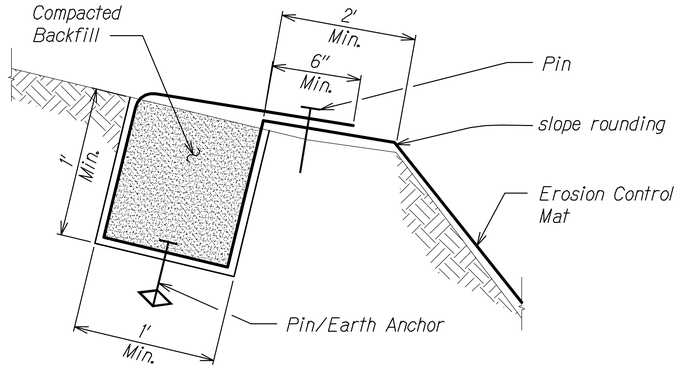
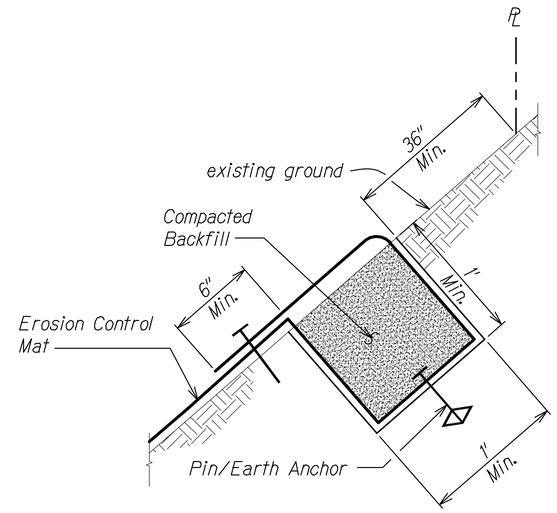


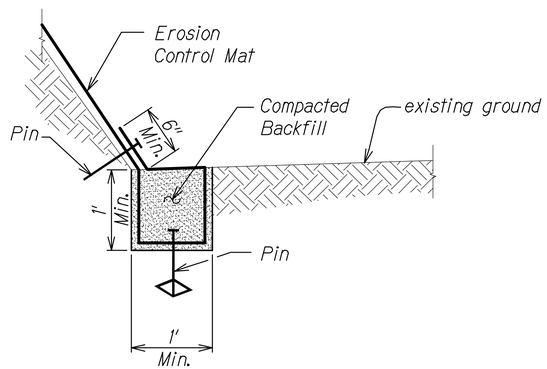

OVERVIEW OF EROSION CONTROL MATTING SYSTEM
Scale: Not to Scale
1 EC-03 EC-03



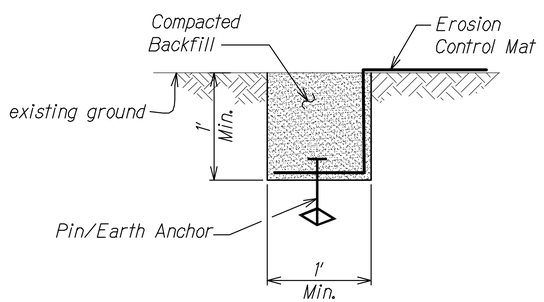

TOP ANCHOR TRENCH AT TOP OF SLOPE DETAIL
Scale: Not to Scale
2 EC-03 EC-03




TOP ANCHOR TRENCH AT MID-SLOPE DETAIL
Scale: Not to Scale
3 EC-03 EC-03




BOTTOM ANCHOR TRENCH DETAIL
Scale: Not to Scale
4 EC-03 EC-03




LONGITUDINAL EDGE TRENCH DETAIL
Scale: Not to Scale
5 EC-03 EC-03

ORIGINAL PLAN
NOTE BOOK
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EC-42 EROSION CONTROL MATTING DETAILS.DGN 3/19/2013 10:56:32 AM

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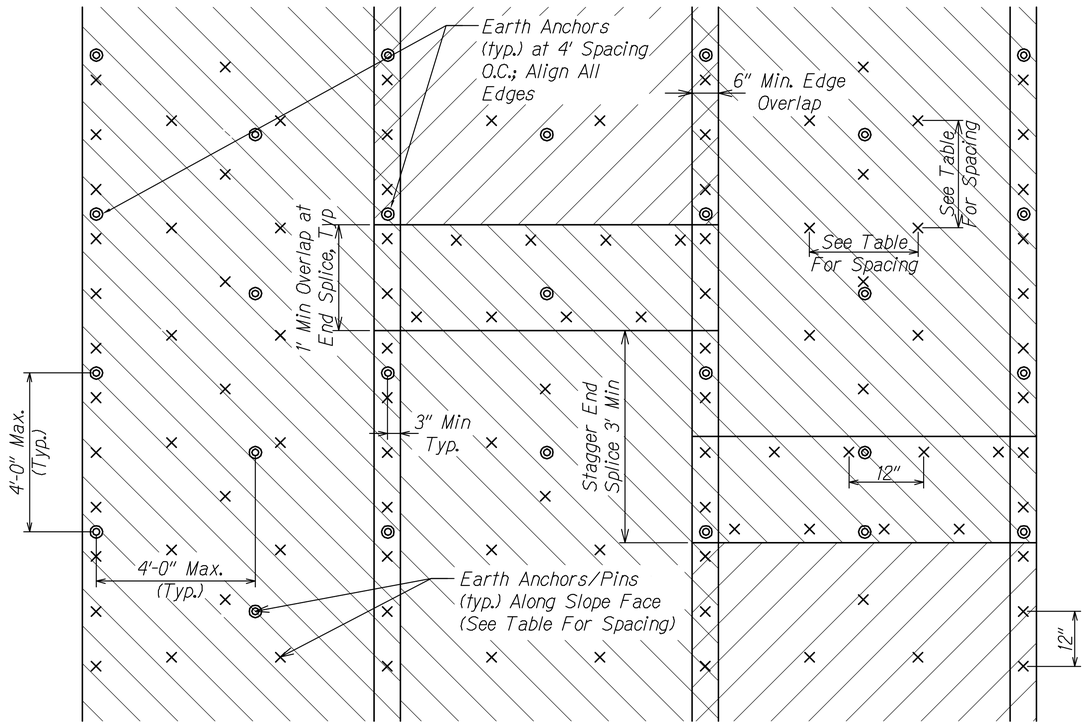
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

# TYPICAL DETAILS
# EROSION CONTROL MATTING

KANEOHE WATERSHED STORM WATER BEST MANAGEMENT PRACTICES ON OAHU
Federal Aid Project No. STP-0300(135)
Scale: Not to Scale Date: March 2013

SHEET No. EC-07 OF 30 SHEETS

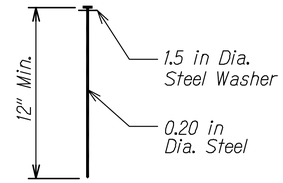
| FED. ROAD DIST. NO. | STATE | FED. AID PROJ. NO. | FISCAL YEAR | SHEET NO. | TOTAL SHEETS |
|---|---|---|---|---|---|
| HAWAII | HAW. | STP-0300(135) | 2013 | 22 | 67 |



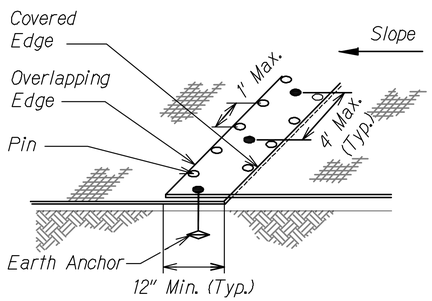

TYPICAL EROSION CONTROL MAT AND EARTH ANCHOR/PIN LAYOUT (1 EC-08|EC-08)
Scale: Not to Scale

| Pin/Earth Anchor Spacing | | |
|---|---|---|
| Fastener Type | Along Slope Face | Top, Bottom & Edge Trenches |
| Pin | 1.5' | 1' |
| Earth Anchor | 4' | 4' |

Notes:
1. Secure all erosion control mat edges with pins and earth anchors at the spacing indicated.
2. For slopes 3H:1V or flatter, no ECM required.
3. Earth anchors in trenches shall extend a minimum depth of 3' from the slope face.
4. The upper 4 rows of earth anchors shall extend a minimum depth of 10' from the slope face.
5. The remaining earth anchors shall be installed per row to alternating depths of 4' and 6' respectively.




PIN DETAIL (2 EC-08|EC-08)
Scale: Not to Scale




OVERLAP END DETAIL (3 EC-08|EC-08)
Scale: Not to Scale

ORIGINAL PLAN | SURVEY PLOTTED BY | DRAWN BY | TRACED BY | DESIGNED BY | QUANTITIES BY | CHECKED BY | DATE
NOTE BOOK | No.

EC-49 EROSION CONTROL MATTING DETAILS.DGN 3/19/2013 10:39:05 AM

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DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

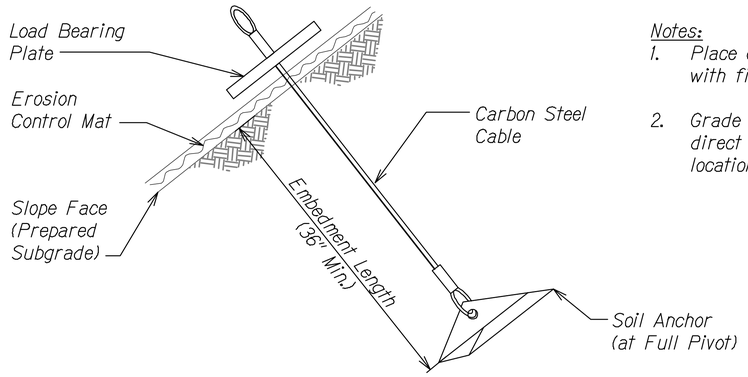
# TYPICAL DETAILS
# EROSION CONTROL MATTING

KANEOHE WATERSHED STORM WATER BEST MANAGEMENT PRACTICES ON OAHU
Federal Aid Project No. STP-0300(135)

Scale: Not to Scale Date: March 2013

SHEET No. EC-08 OF 30 SHEETS

| FED. ROAD DIST. NO. | STATE | FED. AID PROJ. NO. | FISCAL YEAR | SHEET NO. | TOTAL SHEETS |
|---|---|---|---|---|---|
| HAWAII | HAW. | STP-0300(135) | 2013 | 23 | 67 |

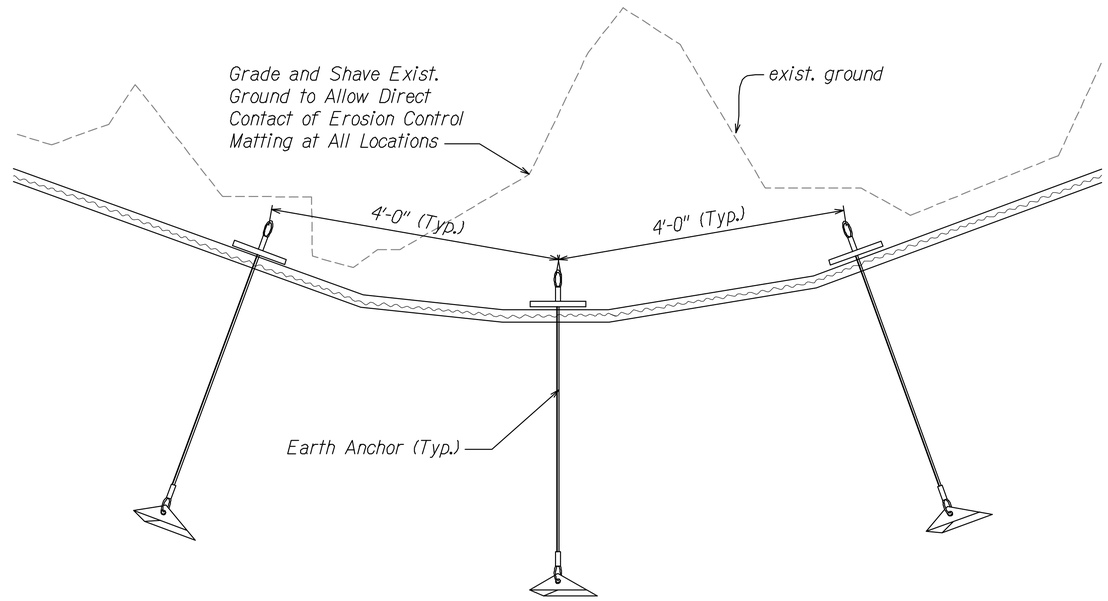



TYPICAL EARTH ANCHOR DETAIL 1 EC-09 EC-09

Scale: Not to Scale

Notes:

1. Place erosion control mat in direct contact with finish grade.
2. Grade and shave existing ground to allow direct contact of erosion control mat at all locations.




TYPICAL LONGITUDINAL VIEW OF RILLS AND GULLIES 2 EC-09 EC-09

Scale: Not to Scale

SURVEY PLOTTED BY_____ DATE_____
DRAWN BY_____
TRACED BY_____
DESIGNED BY_____
QUANTITIES BY_____
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ORIGINAL PLAN

NOTE BOOK

No._____

EC-XXX EARTHANCHOR DETAILS.DWG 3/5/2013 8:50:05 AM

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EXP. DATE

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DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

# TYPICAL DETAILS
# EARTH ANCHOR

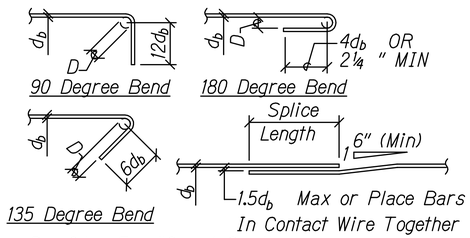
KANEOHE WATERSHED STORM WATER BEST MANAGEMENT PRACTICES ON OAHU
Federal Aid Project No. STP-0300(135)

Scale: Not to Scale Date: March 2013

SHEET No. EC-09 OF 30 SHEETS

| FED. ROAD DIST. NO. | STATE | FED. AID PROJ. NO. | FISCAL YEAR | SHEET NO. | TOTAL SHEETS |
|---|---|---|---|---|---|
| HAWAII | HAW. | STP-0300(135) | 2013 | 24 | 67 |

| Minimum Splice & Embedment Lengths | | | | | |
|---|---|---|---|---|---|
| Bar Size | Lap Splice | | Embedment | | |
| | Bot Bar Or Wall Bar | Top Bar | Straight Bot Bar Or Wall Bar | Top Bar | w/ Std Hook |
| #3, #4 | 29" | 38" | 22" | 29" | 11" |
| #5 | 36" | 47" | 28" | 36" | 14" |
| #6 | 43" | 56" | 33" | 43" | 17" |
| #7 | 63" | 82" | 48" | 63" | 20" |
| #8 | 72" | 94" | 55" | 72" | 22" |
| #9 | 81" | 106" | 62" | 81" | 25" |
| #10 | 91" | 119" | 70" | 91" | 28" |
| #11 | 101" | 132" | 78" | 101" | 31" |




$D = 6d_b$ For #8 and Smaller

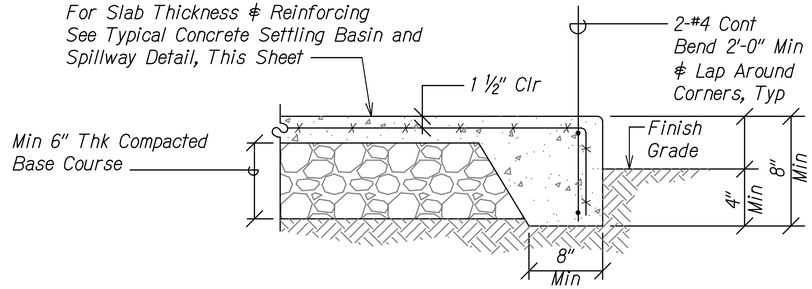
$D = 8d_b$ For #9 To #11

1. Lengths Are For Concrete Beams & Columns With Rebar Spaced 1 Bar Diameter Min O.C. And Concrete Walls with Rebars Spaced 2 Bar Diameters Min O.C. Increase Bar Length 50% For Bars Spaced Closer Than Minimums Specified.
2. "Top Bars" Are Horizontal Bars With 12" Or More Of Concrete Cast Below.

## TYPICAL REBAR SPLICE & EMBEDMENT LENGTH SCHEDULE

1 EC-10/EC-10

Scale: Not To Scale

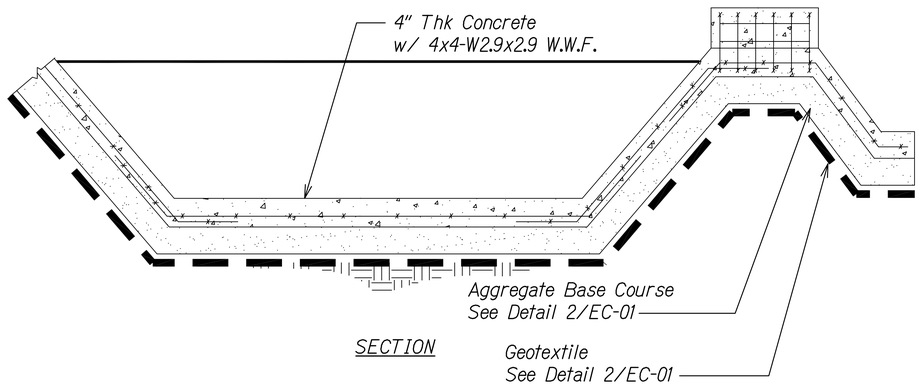



Notes: Welded wire fabric reinforcement shall be chaired to maintain proper concrete clear cover throughout the slab.

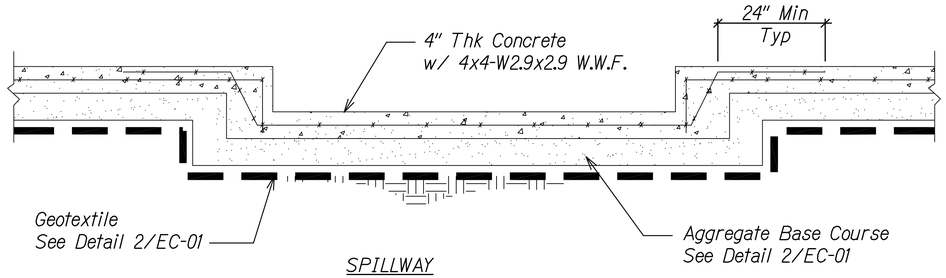
## TYPICAL SLAB-ON-GRADE DETAIL AT THICKENED SLAB EDGE

2 EC-10/EC-10

Scale: Not To Scale




SECTION




SPILLWAY

Notes:
1. For balance of information, See Detail 3 on Sheet EC-01.
2. Contractor shall provide thickened slab edges. See Typical Slab-On-Grade Detail At Thickened Slab Edge, this sheet.

## TYPICAL CONC SETTLING BASIN AND SPILLWAY REINFORCING DETAIL

3 EC-10/EC-10

Scale: Not To Scale

X:\BDP_KANEOHE.DWG 10/29/2012 3:36:04 PM

RON E. IWAMOTO
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No. 8871-S
HAWAII, U.S.A.

4/30/14
EXP. DATE

Ron E. Iwamoto

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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

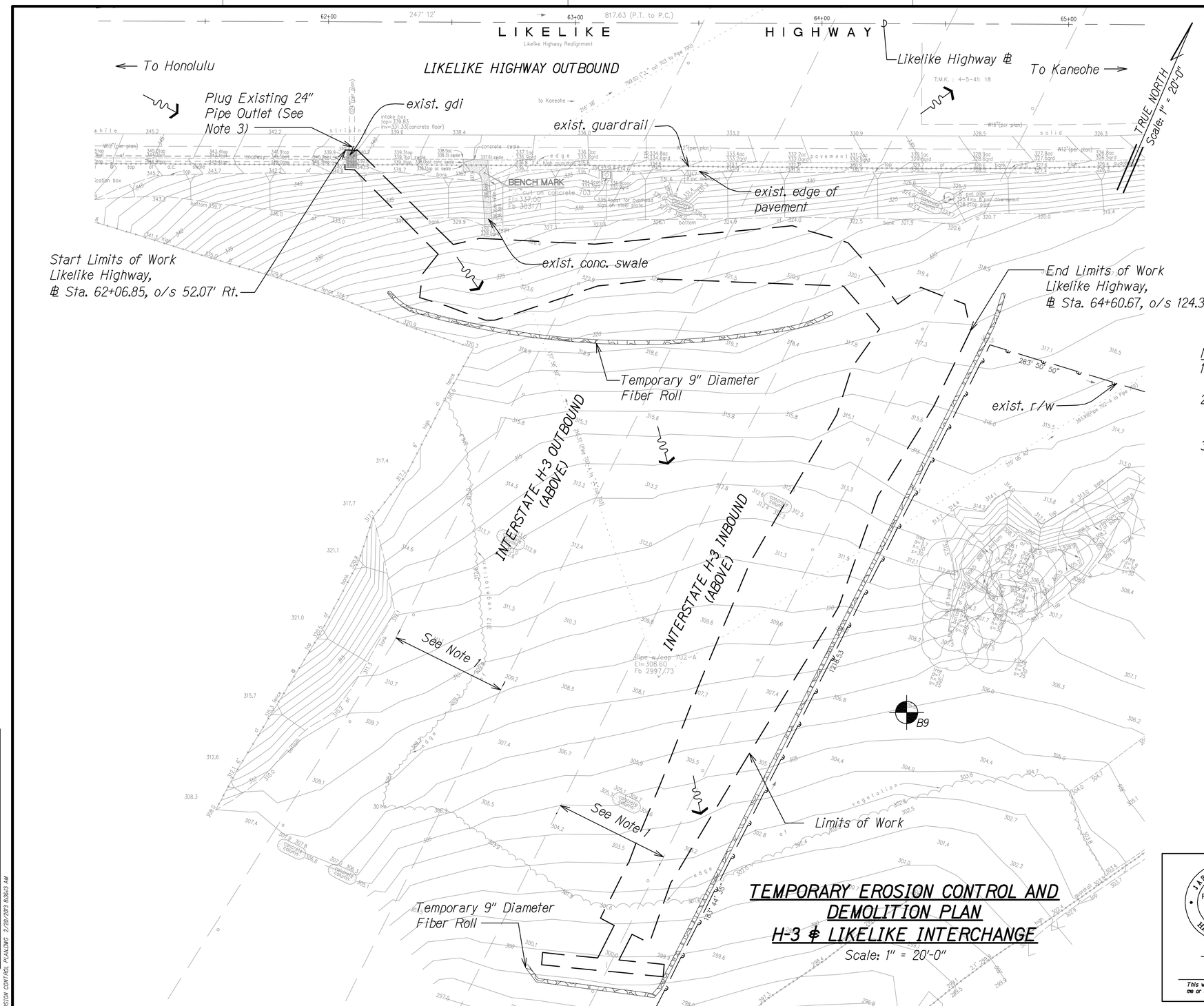
# TYPICAL STRUCTURAL DETAILS

KANEOHE WATERSHED STORM WATER BEST MANAGEMENT PRACTICES ON OAHU
Federal-Aid Project No. STP-0300(135)

Scale: None Date: March 2013

SHEET No. EC-10 OF 26 SHEETS

| FED. ROAD DIST. NO. | STATE | FED. AID PROJ. NO. | FISCAL YEAR | SHEET NO. | TOTAL SHEETS |
|---|---|---|---|---|---|
| HAWAII | HAW. | STP-0300(135) | 2013 | 27 | 67 |




LEGEND

— 100 — Existing Contour

— — — Limits of WOrk

B9 Approx. Location of Boring, See Sheet B-01

Notes:

1. Approximate limits of H-3 deck above.
2. See Landscaping Drawings for tree protection and removal.
3. Plug existing 24" pipe after new system is operational.

## TEMPORARY EROSION CONTROL AND DEMOLITION PLAN H-3 & LIKELIKE INTERCHANGE

Scale: 1" = 20'-0"

ORIGINAL PLAN | SURVEY PLOTTED BY | DRAWN BY | TRACED BY | DESIGNED BY | QUANTITIES BY | CHECKED BY | DATE
NOTE BOOK | No.

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TEMP. EC AND DEMO PLAN
H-3 & LIKELIKE INTERCHANGE
KANEOHE WATERSHED STORM WATER BEST MANAGEMENT PRACTICES ON OAHU
Federal Aid Project No. STP-0300(135)
Scale: 1" = 20'-0" Date: March 2013

SHEET No. EC-13 OF 30 SHEETS

| FED. ROAD DIST. NO. | STATE | FED. AID PROJ. NO. | FISCAL YEAR | SHEET NO. | TOTAL SHEETS |
|---|---|---|---|---|---|
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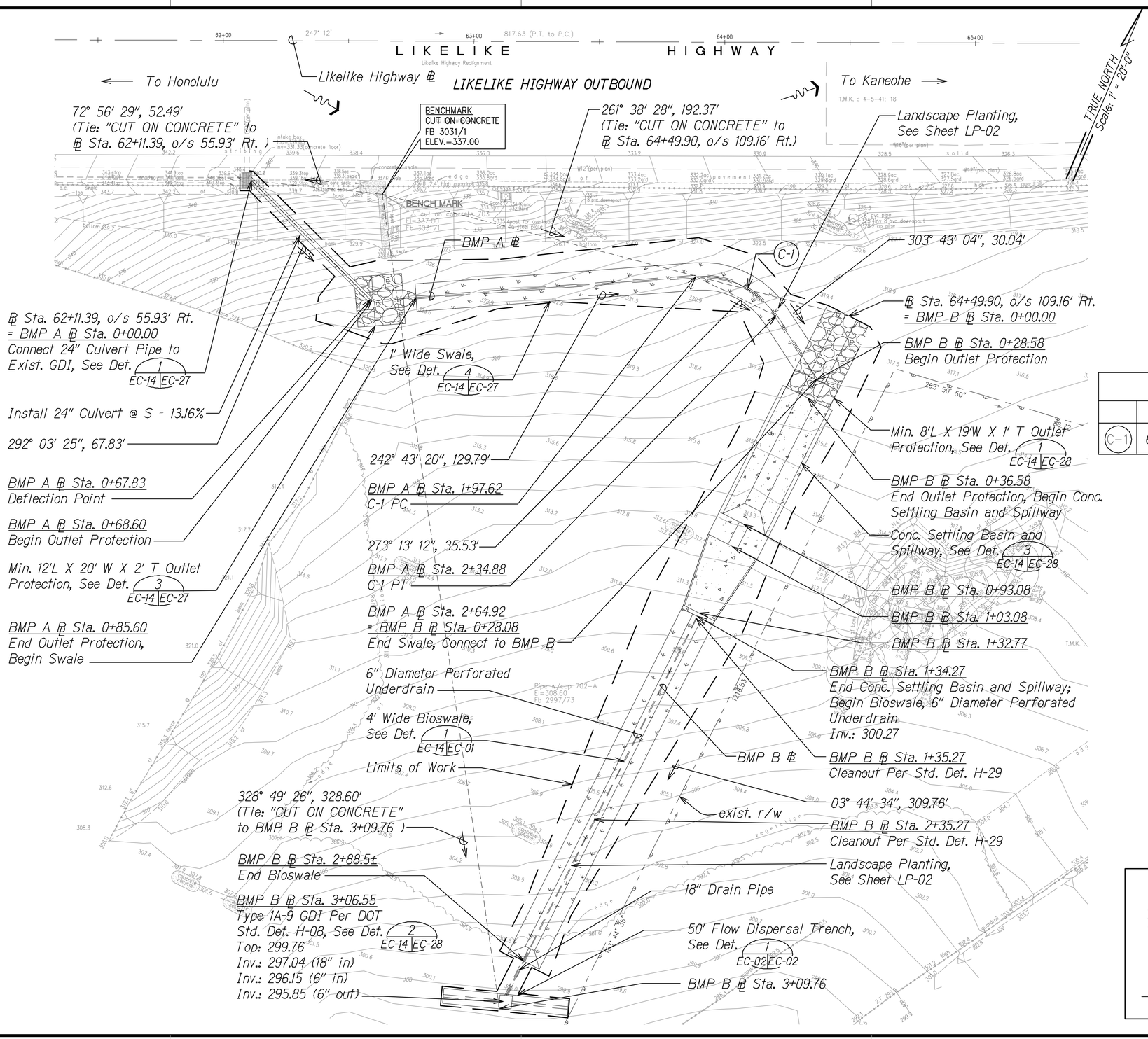


LEGEND

- Existing Contour
- Limits of Work
- Swale/Bioswale
- Outlet Protection

| CURVE DATA TABLE | | | | | | |
|---|---|---|---|---|---|---|
| | △ | △/2 | R | T | Ch | $L_C$ |
| C-1 | 60°59'44" | 30°29'52" | 35.00' | 20.61' | 35.53' | 37.26' |

## PERMANENT BMP (DRAINAGE) PLAN H-3 AND LIKELIKE INTERCHANGE

Scale: 1" = 20'-0"

| ORIGINAL PLAN | SURVEY PLOTTED BY | DATE |
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# PERMANENT BMP (DRAINAGE) PLAN H-3 & LIKELIKE INTERCHANGE

KANEOHE WATERSHED STORM WATER BEST MANAGEMENT PRACTICES ON OAHU
Federal Aid Project No. STP-0300(135)

Scale: 1" = 20'-0" Date: March 2013

SHEET No. EC-14 OF 30 SHEETS

| FED. ROAD DIST. NO. | STATE | FED. AID PROJ. NO. | FISCAL YEAR | SHEET NO. | TOTAL SHEETS |
|---|---|---|---|---|---|
| HAWAII | HAW. | STP-0300(135) | 2013 | 29 | 67 |


LEGEND

- Existing Contour
- 100 Finish Contour
- Limits of Work
- Swale/Bioswale
- Outlet Protection

Notes:

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

## PERMANENT BMP (GRADING) PLAN H-3 AND LIKELIKE INTERCHANGE

Scale: 1" = 20'-0"

ORIGINAL PLAN
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**PERMANENT BMP (GRADING) PLAN H-3 & LIKELIKE INTERCHANGE**

KANEOHE WATERSHED STORM WATER BEST MANAGEMENT PRACTICES ON OAHU
Federal Aid Project No. STP-0300(135)

Scale: 1" = 20'-0" Date: March 2013

SHEET No. EC-15 OF 30 SHEETS

| FED. ROAD DIST. NO. | STATE | FED. AID PROJ. NO. | FISCAL YEAR | SHEET NO. | TOTAL SHEETS |
|---|---|---|---|---|---|
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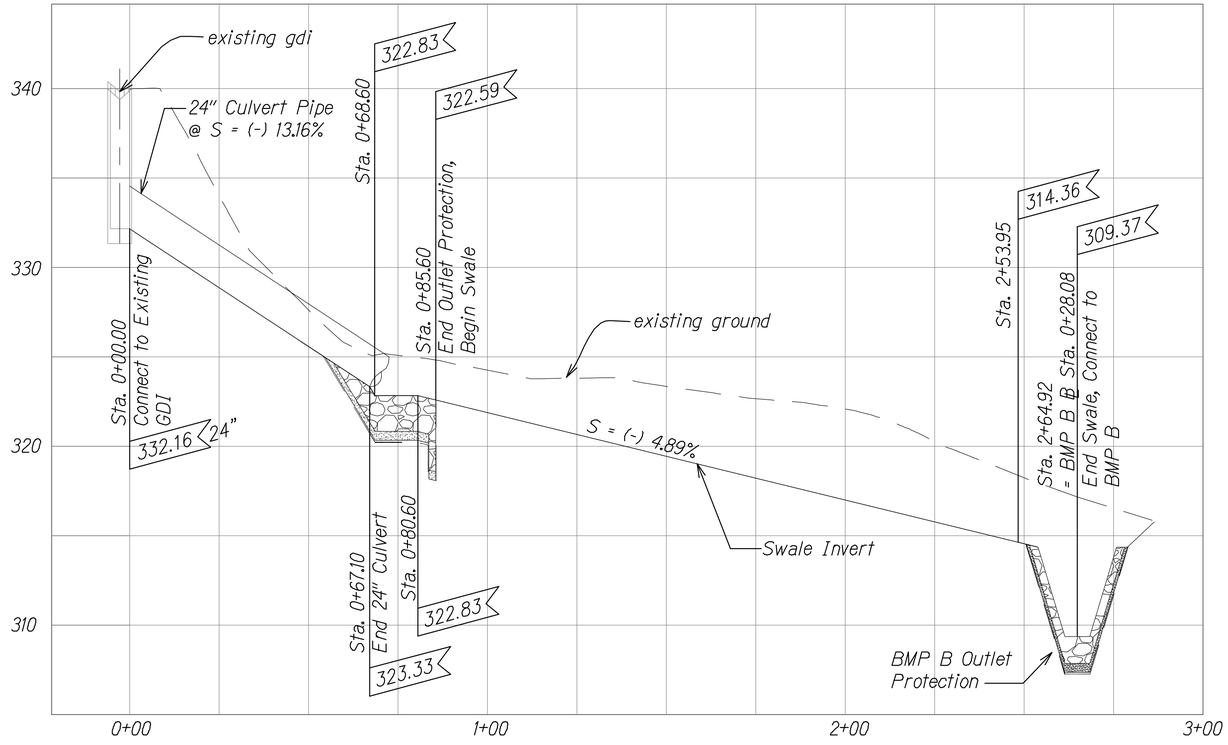


## BMP A PROFILE

Scale: Horiz. 1" = 20'-0"
Vert. 1" = 4'-0"

ORIGINAL PLAN
NOTE BOOK
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SURVEY PLOTTED BY DATE
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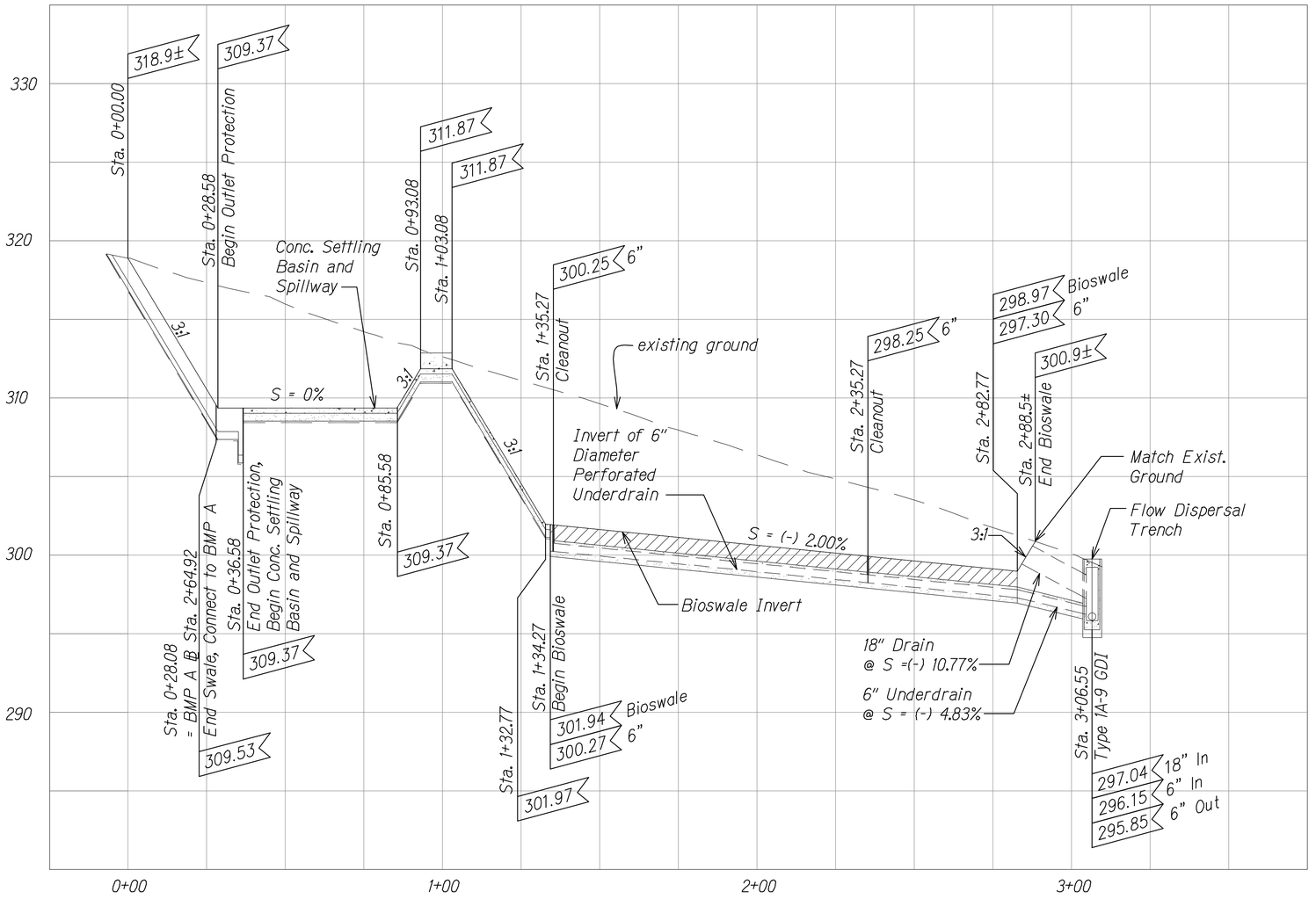
# BMP A PROFILE
# H-3 & LIKELIKE INTERCHANGE
## KANEOHE WATERSHED STORM WATER BEST MANAGEMENT PRACTICES ON OAHU
## Federal Aid Project No. STP-0300(135)

Scale: As Shown Date: March 2013

SHEET No. EC-16 OF 30 SHEETS

| FED. ROAD DIST. NO. | STATE | FED. AID PROJ. NO. | FISCAL YEAR | SHEET NO. | TOTAL SHEETS |
|---|---|---|---|---|---|
| HAWAII | HAW. | STP-0300(135) | 2013 | 31 | 67 |




## BMP B PROFILE

Scale: Horiz. 1" = 20'-0"
Vert. 1" = 4'-0"

ORIGINAL PLAN
NOTE BOOK
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DRAWN BY
TRACED BY
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QUANTITIES BY
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**BMP B PROFILE**
**H-3 ℄ LIKELIKE INTERCHANGE**
KANEOHE WATERSHED STORM WATER BEST MANAGEMENT PRACTICES ON OAHU
Federal Aid Project No. STP-0300(135)

Scale: As Shown Date: March 2013

SHEET No. EC-17 OF 30 SHEETS

| FED. ROAD DIST. NO. | STATE | FED. AID PROJ. NO. | FISCAL YEAR | SHEET NO. | TOTAL SHEETS |
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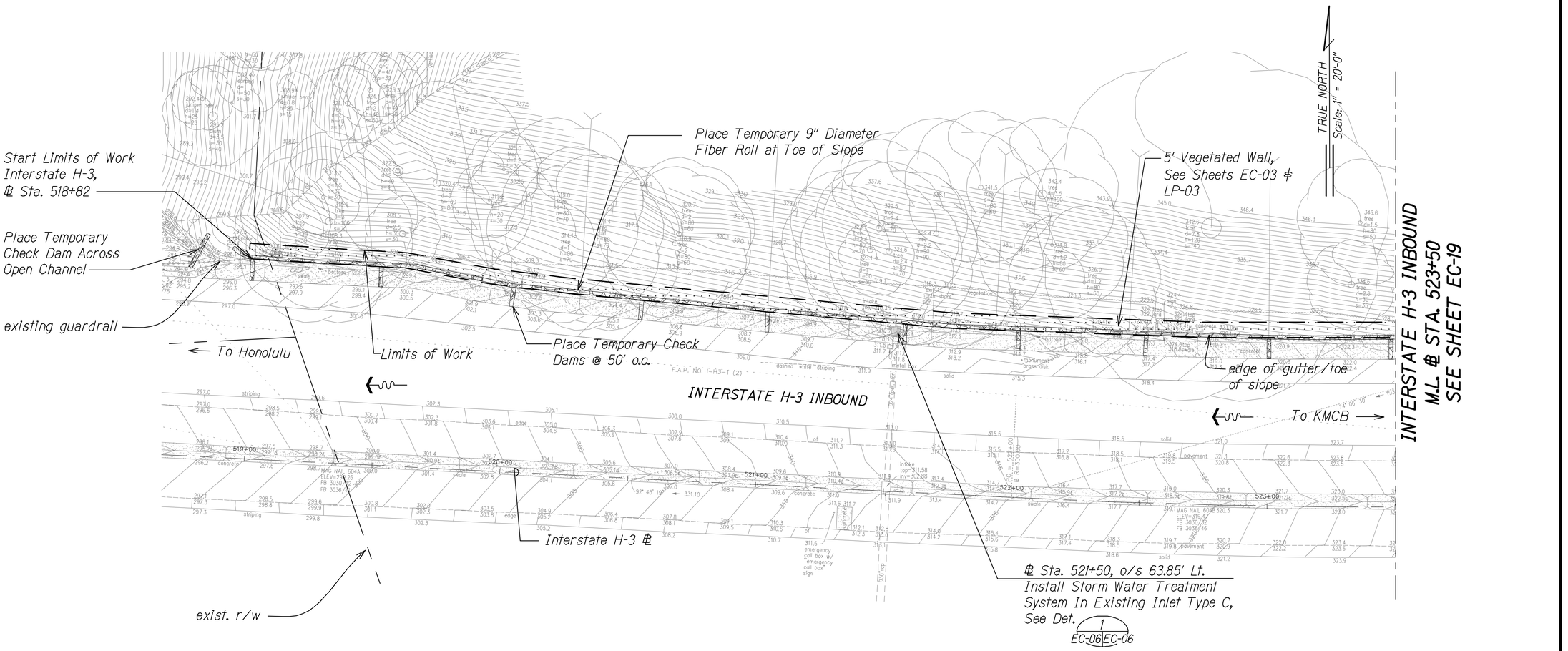


## TEMPORARY EROSION CONTROL AND PERMANENT BMP PLAN
## PID 207

Scale: 1" = 20'-0"

*Notes:*

1. *For Storm Water Treatment System details, see Sheets EC-05 to EC-06.*
2. *The Contractor shall provide inlet protection prior to installation of storm water treatment system.*
3. *See Landscaping Drawings for tree protection and removal.*

| Storm Water Treatment System (Type 2) Flow Requirements | | | |
|---|---|---|---|
| Station, Offset | Inlet Type | Q50 (cfs) | WQFR (cfs) |
| 521+50, 63.85' Lt. | C | 8.64 | 0.45 |

ORIGINAL PLAN | SURVEY PLOTTED BY | DRAWN BY | TRACED BY | DESIGNED BY | QUANTITIES BY | CHECKED BY | DATE
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**TEMP. EC AND PERMANENT BMP PLAN PID 207**

KANEOHE WATERSHED STORM WATER BEST MANAGEMENT PRACTICES ON OAHU
Federal Aid Project No. STP-0300(135)

Scale: 1" = 20'-0" Date: March 2013

SHEET No. EC-18 OF 30 SHEETS

| FED. ROAD DIST. NO. | STATE | FED. AID PROJ. NO. | FISCAL YEAR | SHEET NO. | TOTAL SHEETS |
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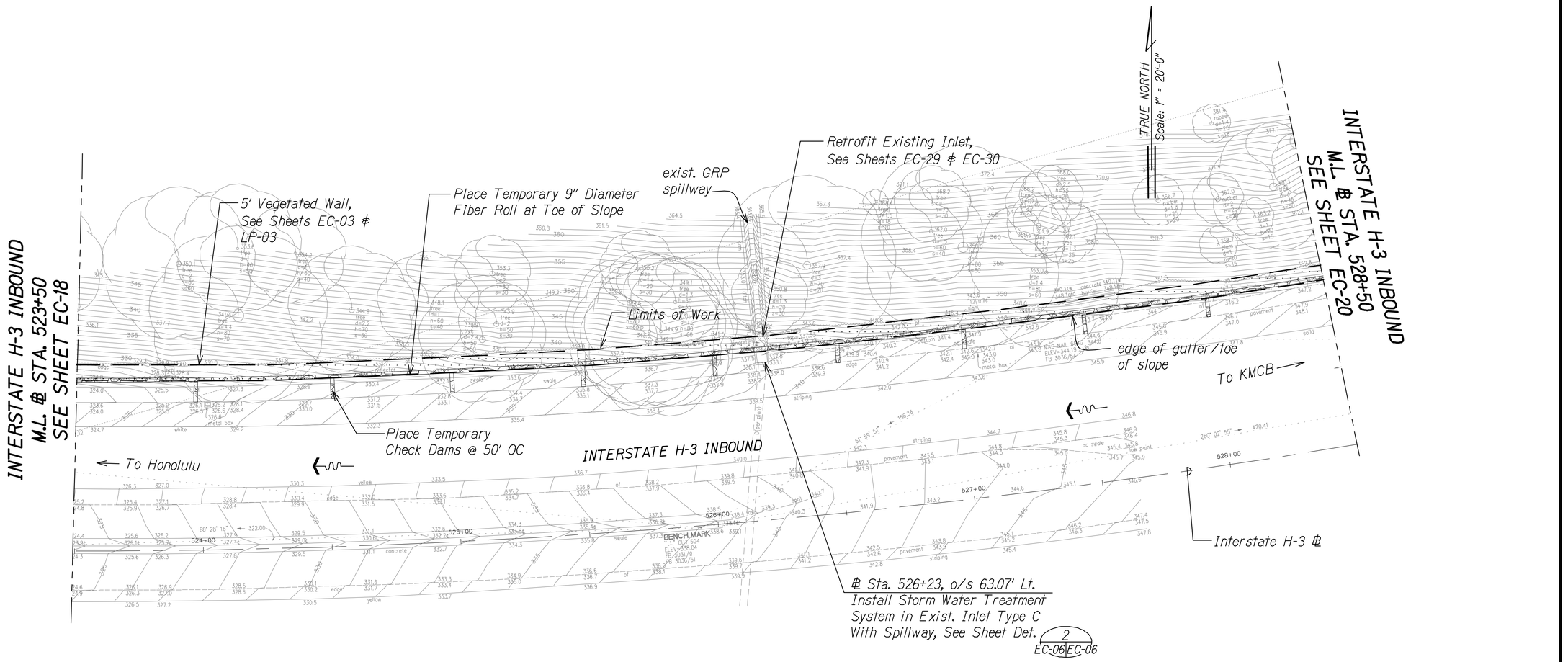


## TEMPORARY EROSION CONTROL AND PERMANENT BMP PLAN
## PID 207

Scale: 1" = 20'-0"

Notes:

1. For Storm Water Treatment System details, see Sheets EC-05 to EC-06.
2. The Contractor shall provide temporary inlet protection prior to installation of storm water treatment system.
3. See Landscaping Drawings for tree protection and removal.

| Storm Water Treatment System (Type 2) Flow Requirements | | | |
|---|---|---|---|
| Station, Offset | Inlet Type | Q50 (cfs) | WQFR (cfs) |
| 526+23, 63.07' Lt. | C with Spillway | 12.90 | 0.66 |

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**TEMP. EC AND PERMANENT BMP PLAN PID 207**

KANEOHE WATERSHED STORM WATER BEST MANAGEMENT PRACTICES ON OAHU
Federal Aid Project No. STP-0300(135)

Scale: 1" = 20'-0" Date: March 2013

SHEET No. EC-19 OF 30 SHEETS

| FED. ROAD DIST. NO. | STATE | FED. AID PROJ. NO. | FISCAL YEAR | SHEET NO. | TOTAL SHEETS |
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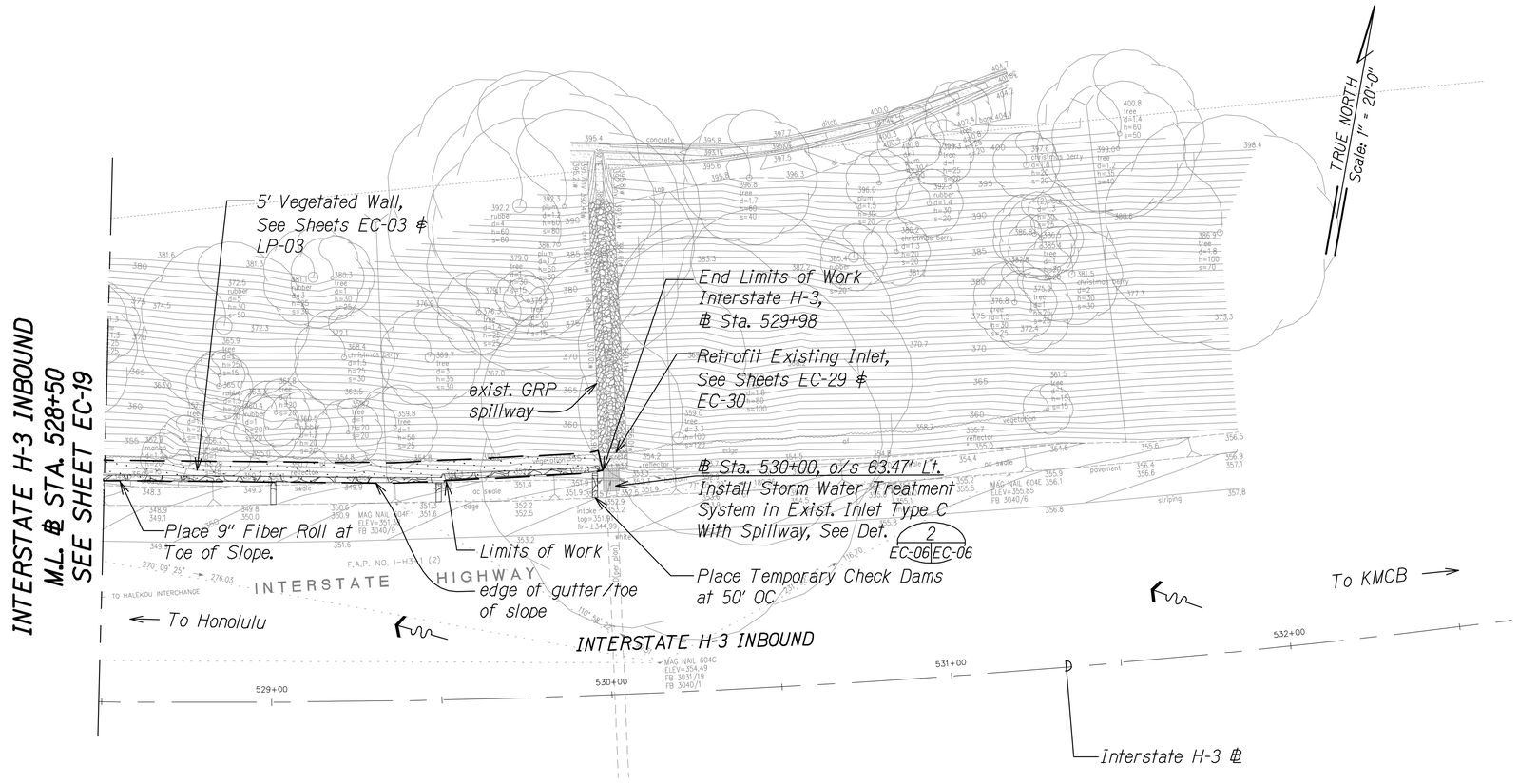


## TEMPORARY EROSION CONTROL AND PERMANENT BMP PLAN PID 207

Scale: 1" = 20'-0"

Notes:

1. For Storm Water Treatment System details, see Sheets EC-05 to EC-06.
2. The Contractor shall provide temporary inlet protection prior to installation of storm water treatment system.
3. See Landscaping Drawings for tree protection and removal.

| Storm Water Treatment System (Type 2) Flow Requirements | | | |
|---|---|---|---|
| Station, Offset | Inlet Type | Q50 (cfs) | WQFR (cfs) |
| 530+00, 63.47' Lt. | C with Spillway | 20.37 | 1.16 |

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**TEMP. EC AND PERMANENT BMP PLAN PID 207**

KANEOHE WATERSHED STORM WATER BEST MANAGEMENT PRACTICES ON OAHU
Federal Aid Project No. STP-0300(135)
Scale: 1" = 20'-0" Date: March 2013

SHEET No. EC-20 OF 30 SHEETS

| FED. ROAD DIST. NO. | STATE | FED. AID PROJ. NO. | FISCAL YEAR | SHEET NO. | TOTAL SHEETS |
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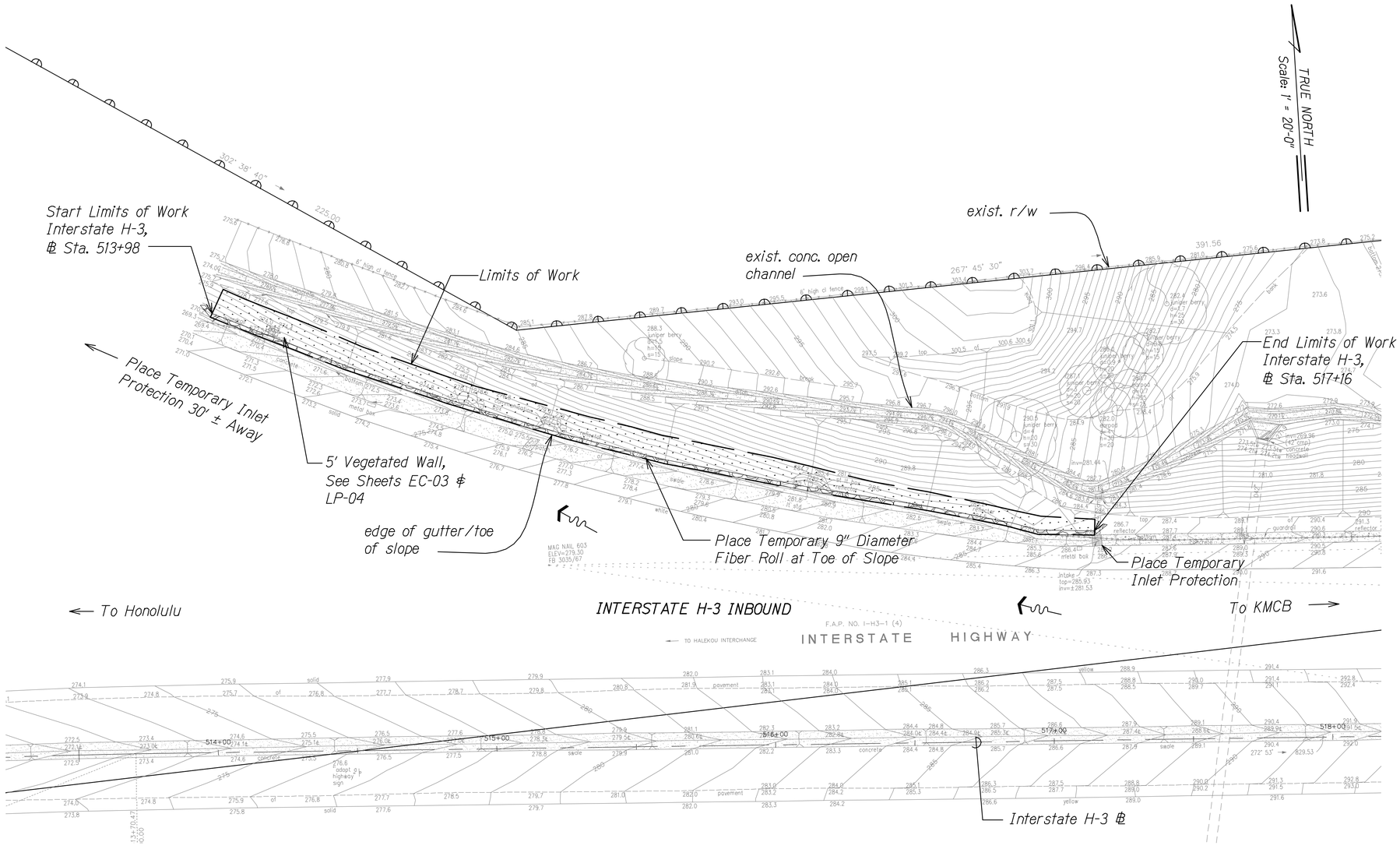


Notes:

1. See Landscaping Drawings for tree protection and removal.

## TEMPORARY EROSION CONTROL AND PERMANENT BMP PLAN PID 208

Scale: 1" = 20'-0"

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**TEMP. EC AND PERMANENT BMP PLAN PID 208**

KANEOHE WATERSHED STORM WATER BEST MANAGEMENT PRACTICES ON OAHU
Federal Aid Project No. STP-0300(135)

Scale: 1" = 20'-0" Date: March 2013

SHEET No. EC-21 OF 30 SHEETS

| FED. ROAD DIST. NO. | STATE | FED. AID PROJ. NO. | FISCAL YEAR | SHEET NO. | TOTAL SHEETS |
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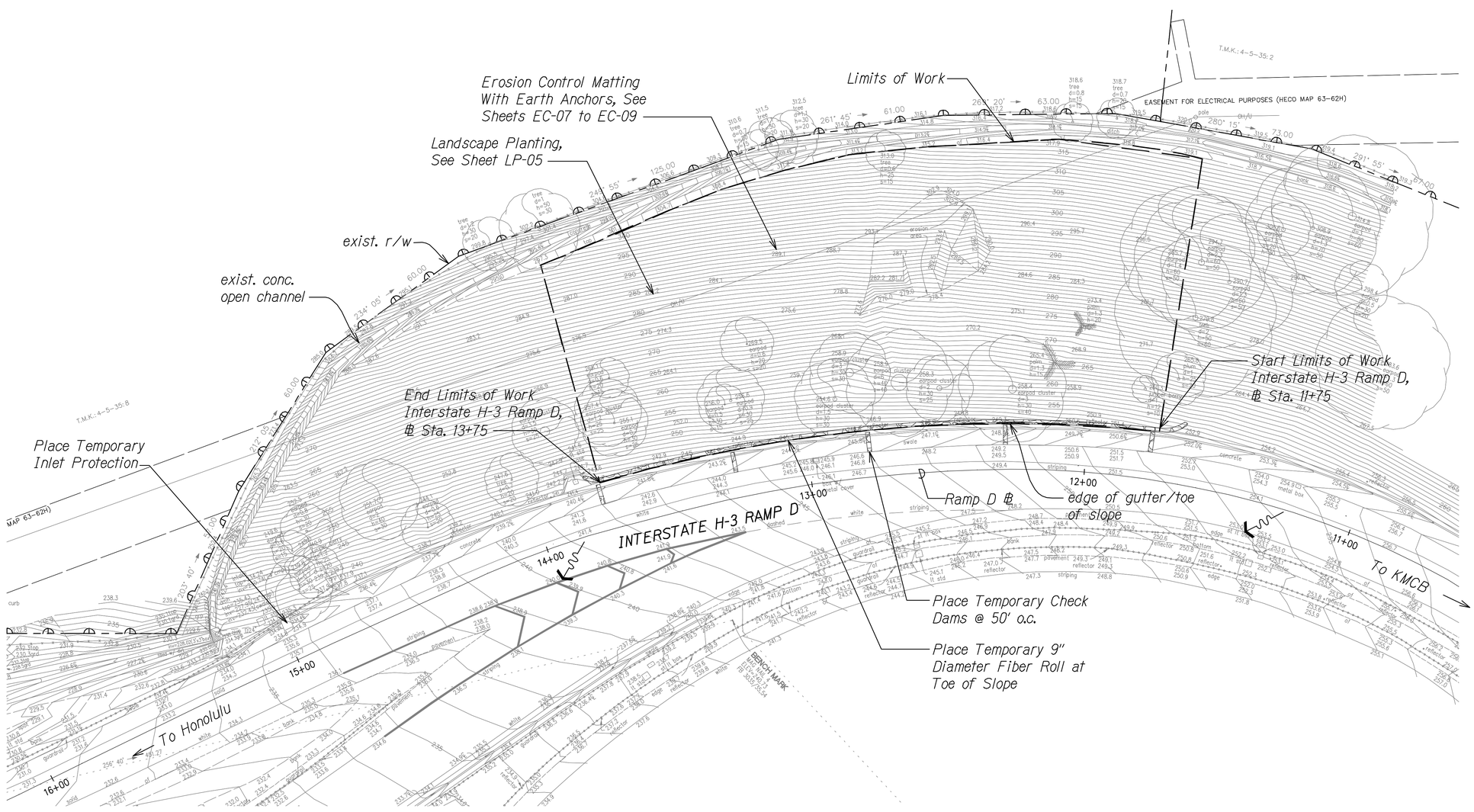


## TEMPORARY EROSION CONTROL AND PERMANENT BMP PLAN
## PID 209

Scale: 1" = 20'-0"

Notes:

1. For erosion mat details, see Sheets EC-07 to EC-09.
2. See Landscaping Drawings for tree protection and removal.

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**TEMP. EC AND PERMANENT BMP PLAN PID 209**

KANEOHE WATERSHED STORM WATER BEST MANAGEMENT PRACTICES ON OAHU
Federal Aid Project No. STP-0300(135)

Scale: 1" = 20'-0" Date: March 2013

SHEET No. EC-22 OF 30 SHEETS

| FED. ROAD DIST. NO. | STATE | FED. AID PROJ. NO. | FISCAL YEAR | SHEET NO. | TOTAL SHEETS |
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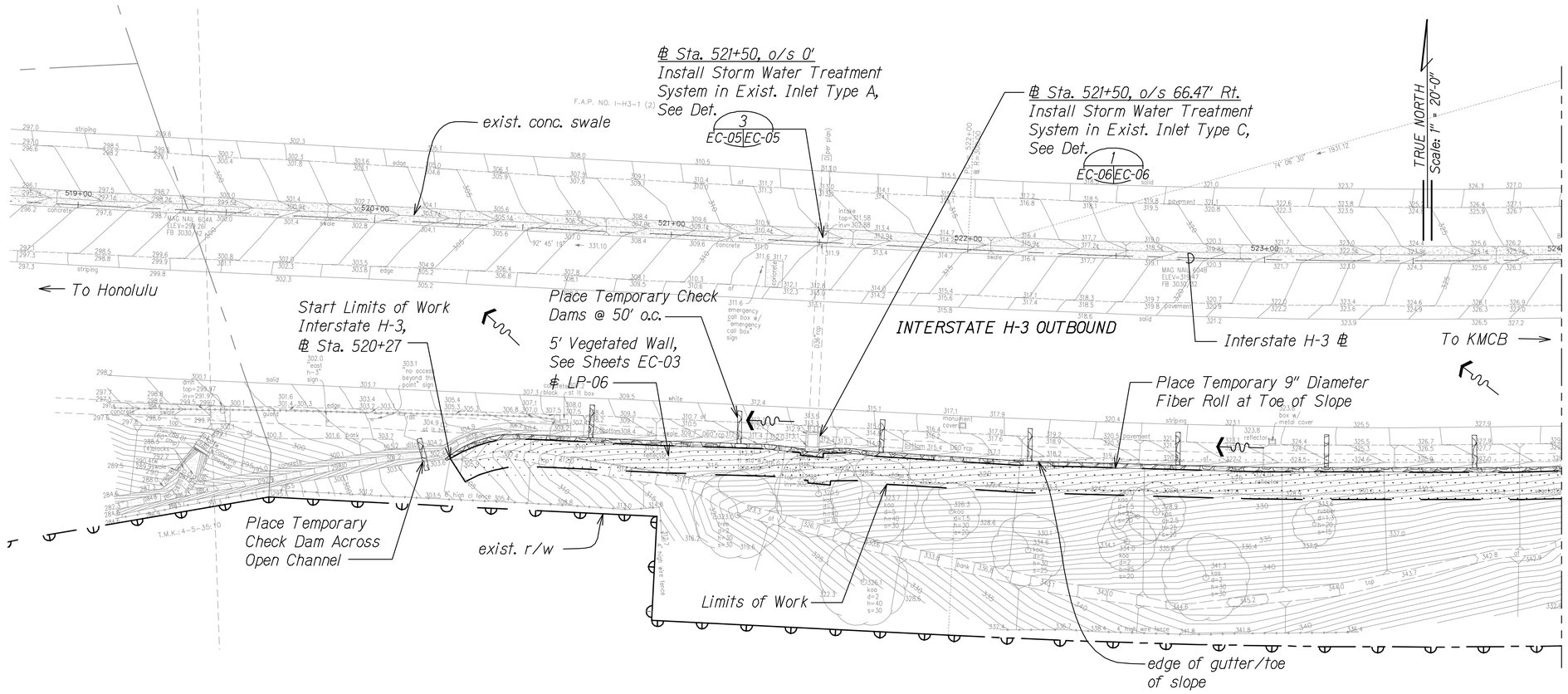


## TEMPORARY EROSION CONTROL AND PERMANENT BMP PLAN PID 210

Scale: 1" = 20'-0"

| Storm Water Treatment System (Type 2) Flow Requirements | | | |
|---|---|---|---|
| Station, Offset | Inlet Type | Q50 (cfs) | WQFR (cfs) |
| 521+50, 0' | A | 14.14 | 0.67 |
| 521+50, 66.47' Rt. | C | 3.95 | 0.23 |

Notes:

1. For Storm Water Treatment System details, see Sheets EC-05 ℄ EC-06.
2. The Contractor shall provide temporary inlet protection prior to installation of Storm Water Treatment System.
3. See Landscaping Drawings for tree protection and removal.

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**TEMP. EC AND PERMANENT BMP PLAN PID 210**

KANEOHE WATERSHED STORM WATER BEST MANAGEMENT PRACTICES ON OAHU
Federal Aid Project No. STP-0300(135)

Scale: 1" = 20'-0" Date: March 2013

SHEET No. EC-23 OF 30 SHEETS

| FED. ROAD DIST. NO. | STATE | FED. AID PROJ. NO. | FISCAL YEAR | SHEET NO. | TOTAL SHEETS |
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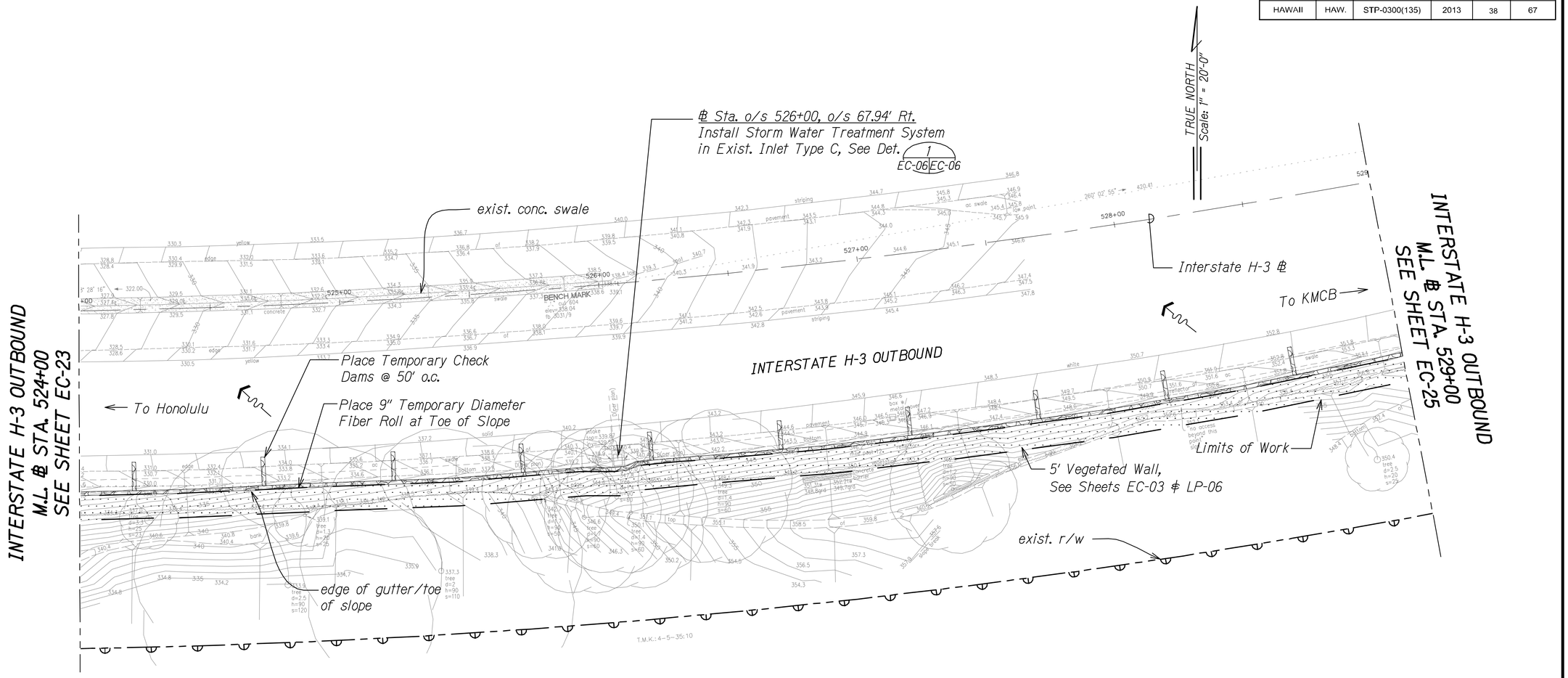


## TEMPORARY EROSION CONTROL AND PERMANENT BMP PLAN PID 210

Scale: 1" = 20'-0"

| Storm Water Treatment System (Type 2) Flow Requirements | | | |
|---|---|---|---|
| Station, Offset | Inlet Type | Q50 (cfs) | WQFR (cfs) |
| 526+00, 67.94' Rt. | C | 2.31 | 0.13 |

Notes:

1. For Storm Water Treatment System details, see Sheets EC-05 ℄ EC-06.
2. The Contractor shall provide temporary inlet protection prior to installation of Storm Water Treatment System.
3. See Landscaping Drawings for tree protection and removal.

ORIGINAL PLAN | NOTE BOOK | No. | DATE
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**TEMP. EC AND PERMANENT BMP PLAN PID 210**

KANEOHE WATERSHED STORM WATER BEST MANAGEMENT PRACTICES ON OAHU
Federal Aid Project No. STP-0300(135)

Scale: 1" = 20'-0" Date: March 2013

SHEET No. EC-24 OF 30 SHEETS

| FED. ROAD DIST. NO. | STATE | FED. AID PROJ. NO. | FISCAL YEAR | SHEET NO. | TOTAL SHEETS |
|---|---|---|---|---|---|
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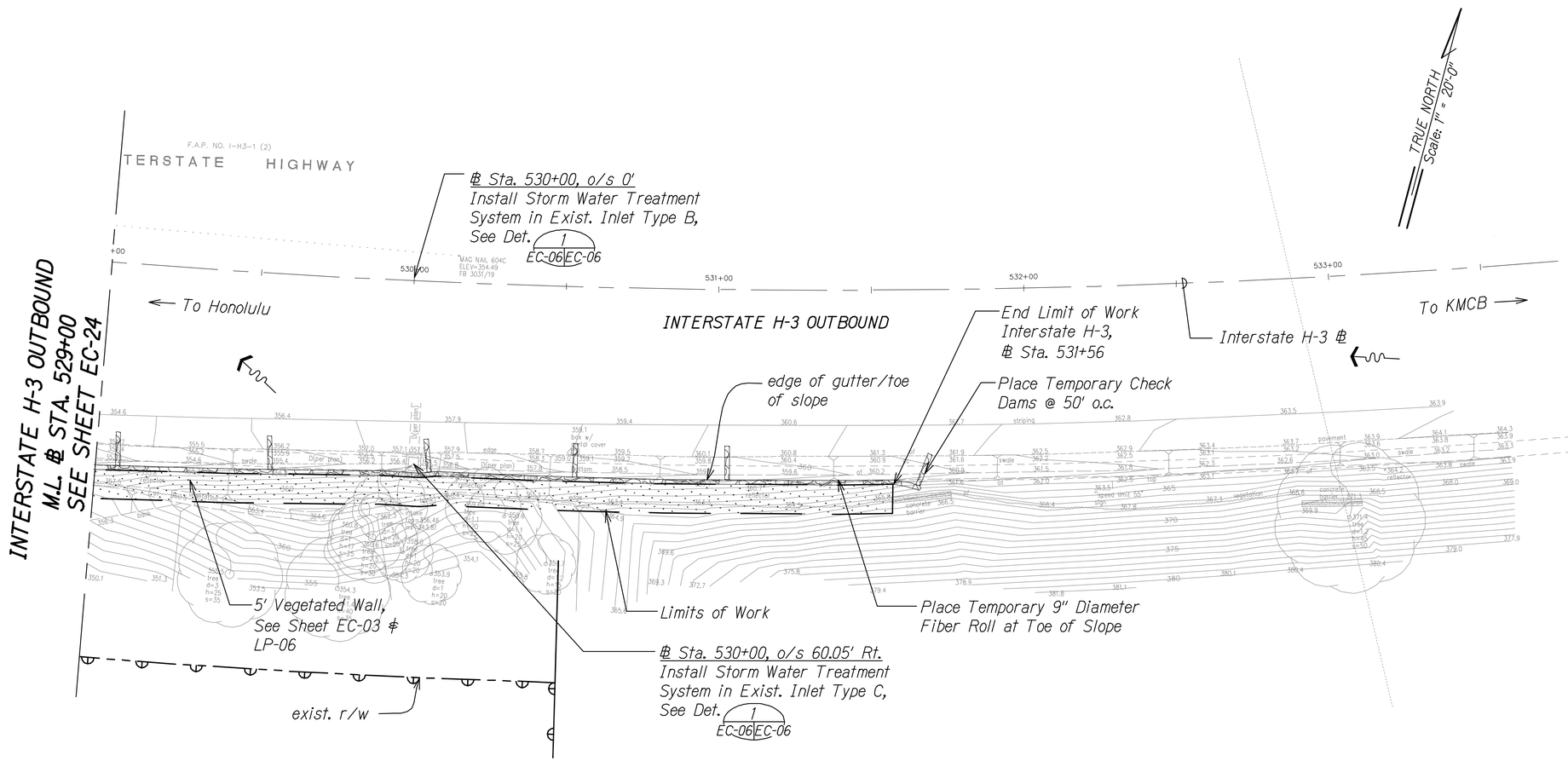


## TEMPORARY EROSION CONTROL AND PERMANENT BMP PLAN PID 210

Scale: 1" = 20'-0"

Notes:

1. For Storm Water Treatment System details, see Sheets EC-05 & EC-06.
2. The Contractor shall provide temporary inlet protection prior to installation of Storm Water Treatment System.
3. See Landscaping Drawings for tree protection and removal.

| Storm Water Treatment System (Type 2) Flow Requirements | | | |
|---|---|---|---|
| Station, Offset | Inlet Type | Q50 (cfs) | WQFR (cfs) |
| 530+00, 0' | B | 3.40 | 0.16 |
| 530+00, 60.05' Rt. | C | 7.76 | 0.40 |

ORIGINAL PLAN | NOTE BOOK | No. | SURVEY PLOTTED BY | DRAWN BY | TRACED BY | DESIGNED BY | QUANTITIES BY | CHECKED BY | DATE

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**TEMP. EC AND PERMANENT BMP PLAN PID 210**

KANEOHE WATERSHED STORM WATER BEST MANAGEMENT PRACTICES ON OAHU
Federal Aid Project No. STP-0300(135)

Scale: 1" = 20'-0" Date: March 2013

SHEET No. EC-25 OF 30 SHEETS

| FED. ROAD DIST. NO. | STATE | FED. AID PROJ. NO. | FISCAL YEAR | SHEET NO. | TOTAL SHEETS |
|---|---|---|---|---|---|
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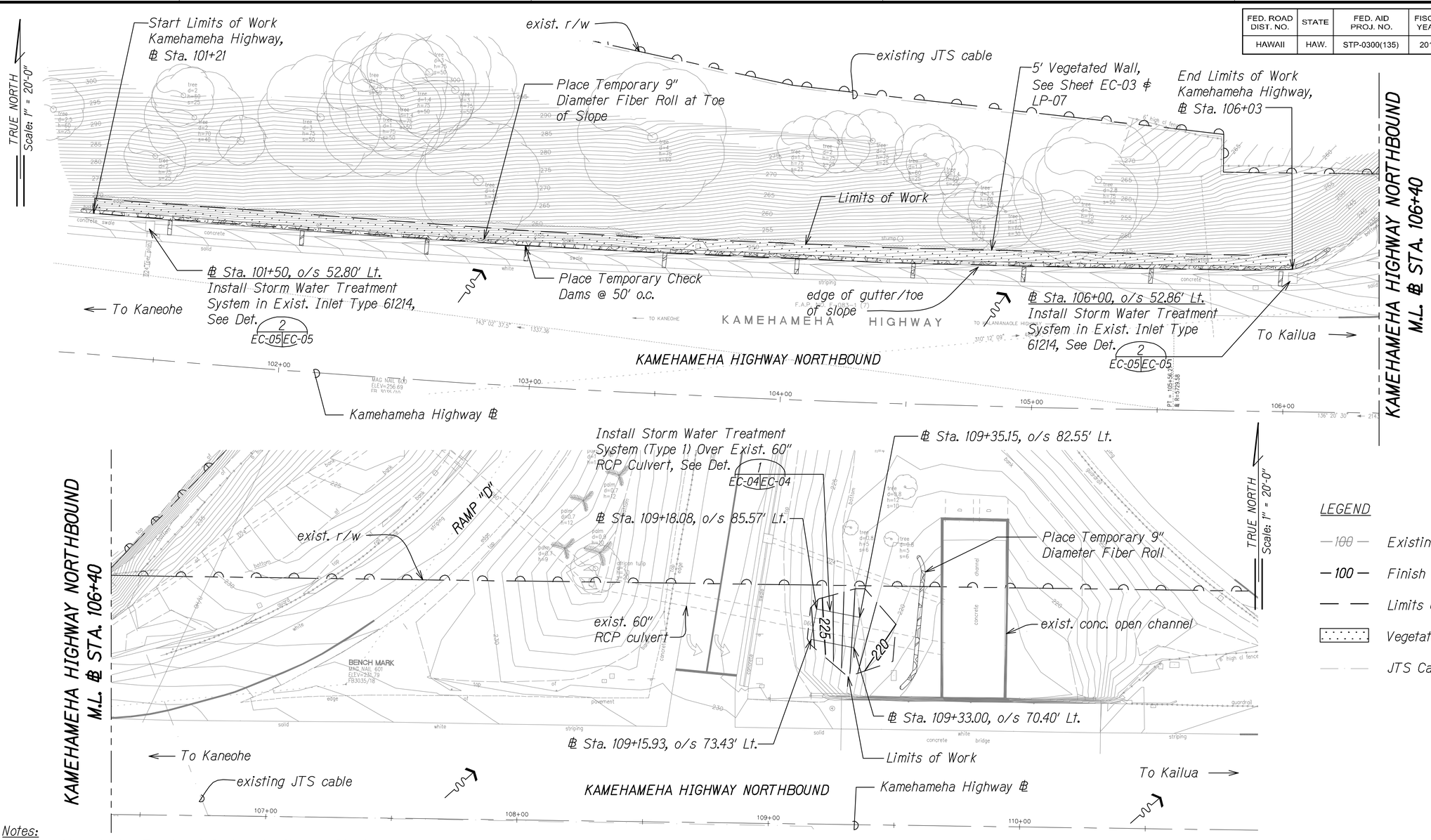


Notes:

1. For Storm Water Treatment System details, see Sheets EC-04 to EC-06.
2. See Landscaping Drawings for tree protection and removal.
3. The Contractor shall provide inlet protection prior to installation of the Storm Water Treatment System.
4. Location of Department of Army, Joint Trunking System (JTS) cable is approximate. Contractor shall tone the system prior to construction.

## TEMPORARY EROSION CONTROL AND PERMANENT BMP PLAN PID 1008

Scale: 1" = 20'-0"

| Storm Water Treatment System (Type 2) Flow Requirements | | | |
|---|---|---|---|
| Station, Offset | Inlet Type | Q50 (cfs) | WQFR (cfs) |
| 101+50, 52.80' Lt. | 61214 | 2.65 | 0.15 |
| 106+00, 52.86' Lt. | 61214 | 3.33 | 0.24 |

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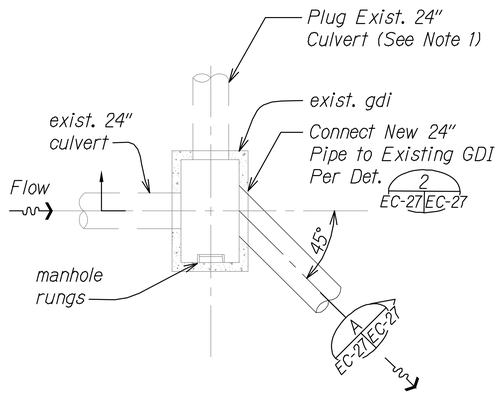
# TEMP. EC AND PERMANENT BMP PLAN PID 1008

KANEOHE WATERSHED STORM WATER BEST MANAGEMENT PRACTICES ON OAHU
Federal Aid Project No. STP-0300(135)
Scale: 1" = 20'-0" Date: March 2013

SHEET No. EC-26 OF 30 SHEETS

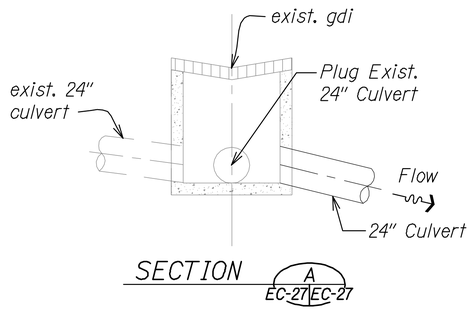
| FED. ROAD DIST. NO. | STATE | FED. AID PROJ. NO. | FISCAL YEAR | SHEET NO. | TOTAL SHEETS |
|---|---|---|---|---|---|
| HAWAII | HAW. | STP-0300(135) | 2013 | 41 | 67 |



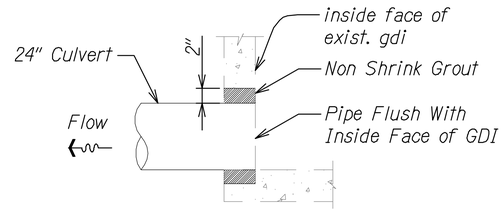

Note:
1. Plug existing 24" pipe after new system is operational.

## GDI CONNECTION DETAIL 1 EC-14 EC-27

Scale: Not to Scale




## SECTION A EC-27 EC-27




## PIPE PENETRATION DETAIL 2 EC-27 EC-27

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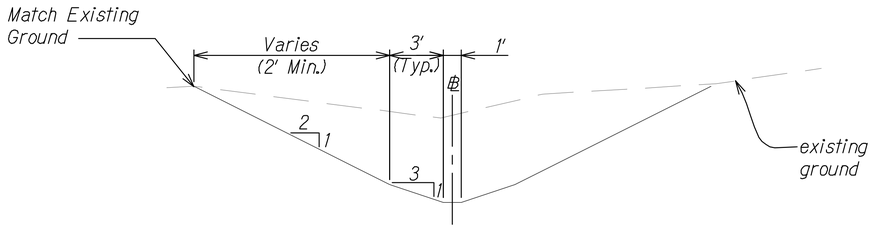


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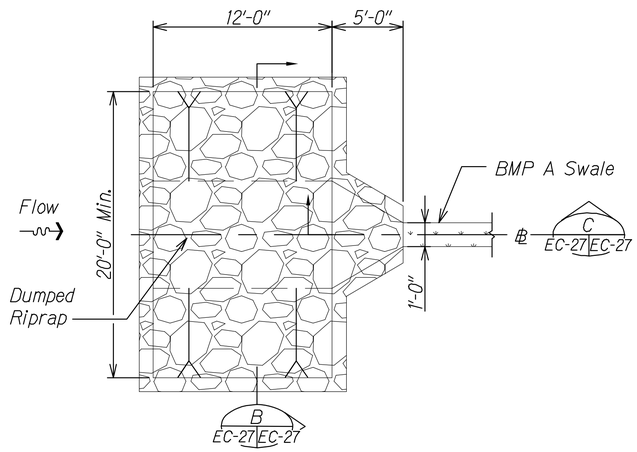


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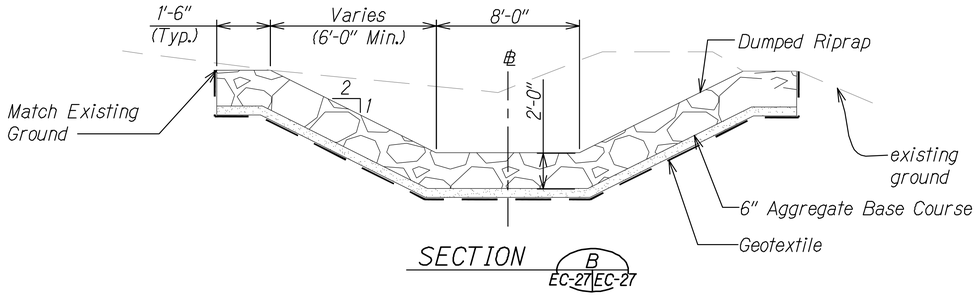


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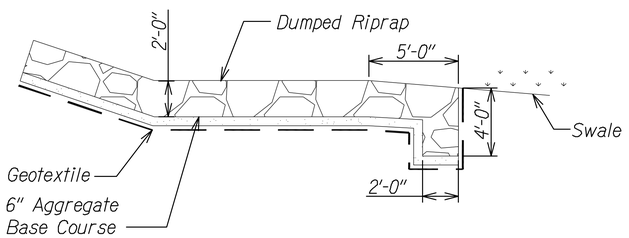


## SECTION C EC-27 EC-27


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4/30/14
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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

# BMP A DETAILS
# H-3 & LIKELIKE INTERCHANGE

KANEOHE WATERSHED STORM WATER BEST MANAGEMENT PRACTICES ON OAHU
Federal Aid Project No. STP-0300(135)

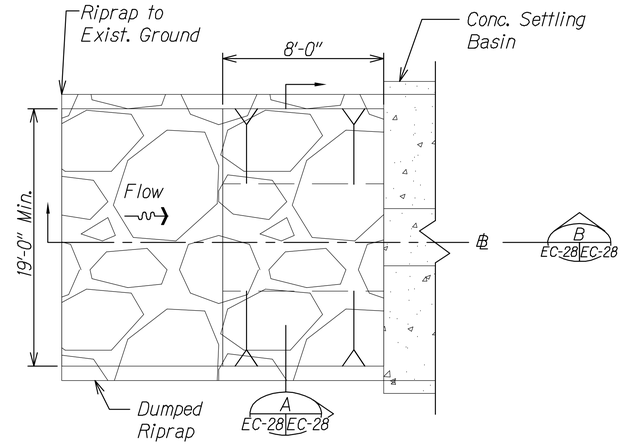
Scale: Not to Scale Date: March 2013

SHEET No. EC-27 OF 30 SHEETS

| ORIGINAL PLAN | SURVEY PLOTTED BY | DATE |
|---|---|---|
| NOTE BOOK | DRAWN BY | |
| No. | TRACED BY | |
| | DESIGNED BY | |
| | QUANTITIES BY | |
| | CHECKED BY | |

H3 DETAILS.DWG 3/19/2013 12:05:31 PM

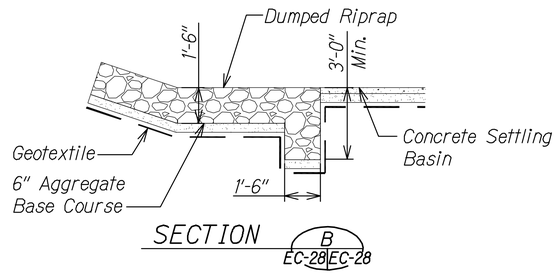
| FED. ROAD DIST. NO. | STATE | FED. AID PROJ. NO. | FISCAL YEAR | SHEET NO. | TOTAL SHEETS |
|---|---|---|---|---|---|
| HAWAII | HAW. | STP-0300(135) | 2013 | 42 | 67 |




## BMP B OUTLET PROTECTION

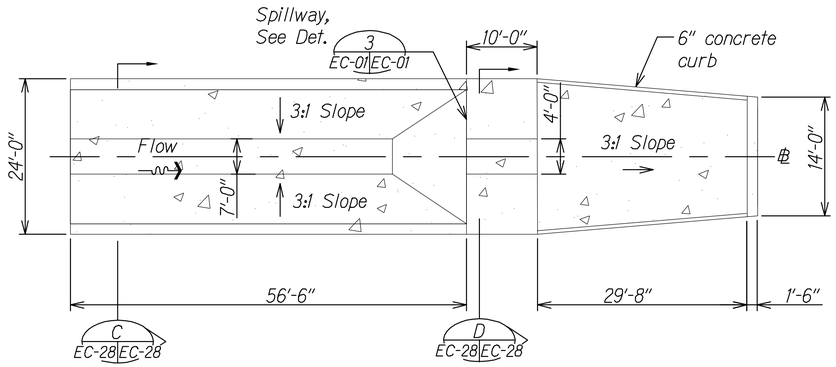
1 EC-14 EC-28

Scale: Not to Scale




## SECTION B

EC-28 EC-28




## CONC. SETTLING BASIN AND SPILLWAY DETAIL

3 EC-14 EC-28

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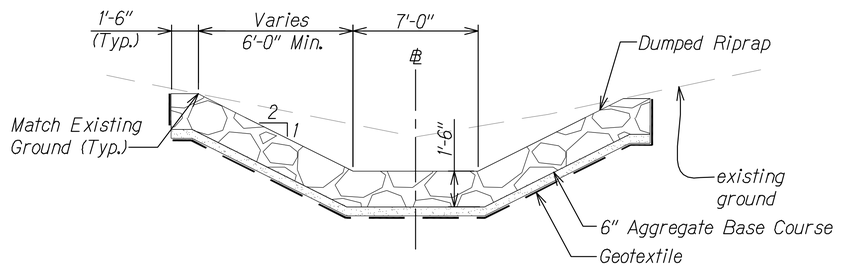
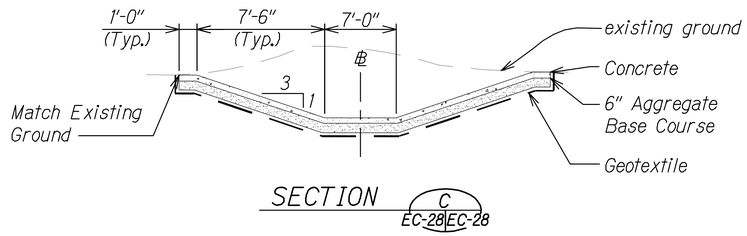



## SECTION A

EC-28 EC-28

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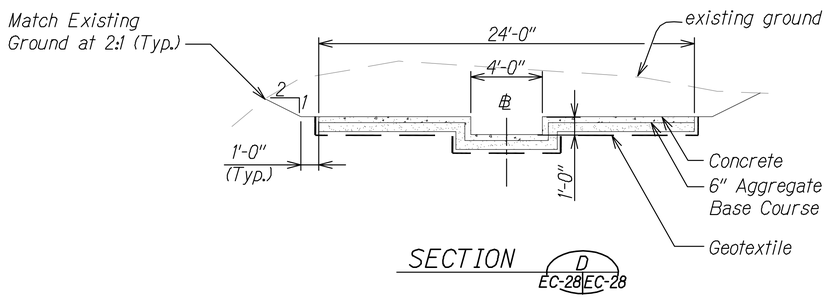
EC-28 EC-28

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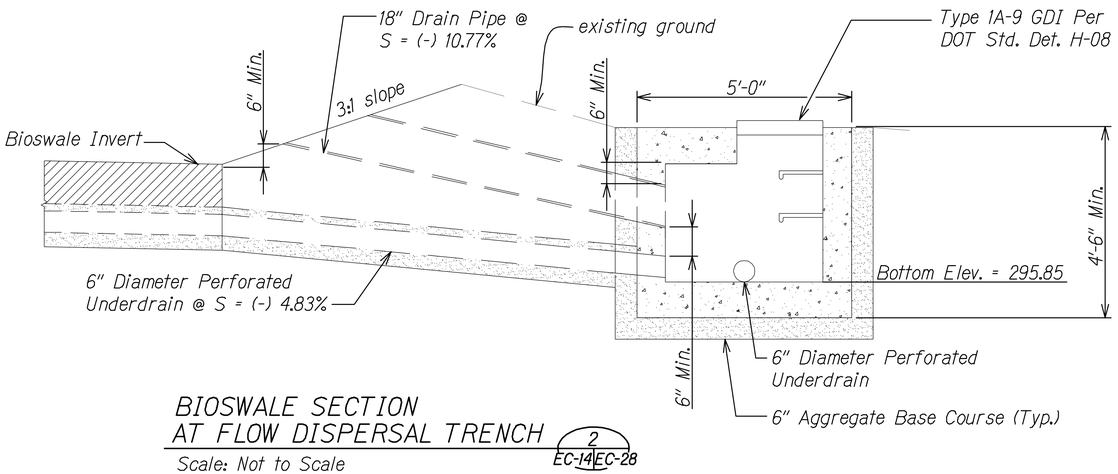
EC-28 EC-28




## BIOSWALE SECTION AT FLOW DISPERSAL TRENCH

2 EC-14 EC-28

Scale: Not to Scale

ORIGINAL PLAN | SURVEY PLOTTED BY: | DRAWN BY: | TRACED BY: | DESIGNED BY: | QUANTITIES BY: | CHECKED BY: | DATE:
NOTE BOOK | No.

H3 DETAILS.DWG 3/19/2013 10:56:51 PM

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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

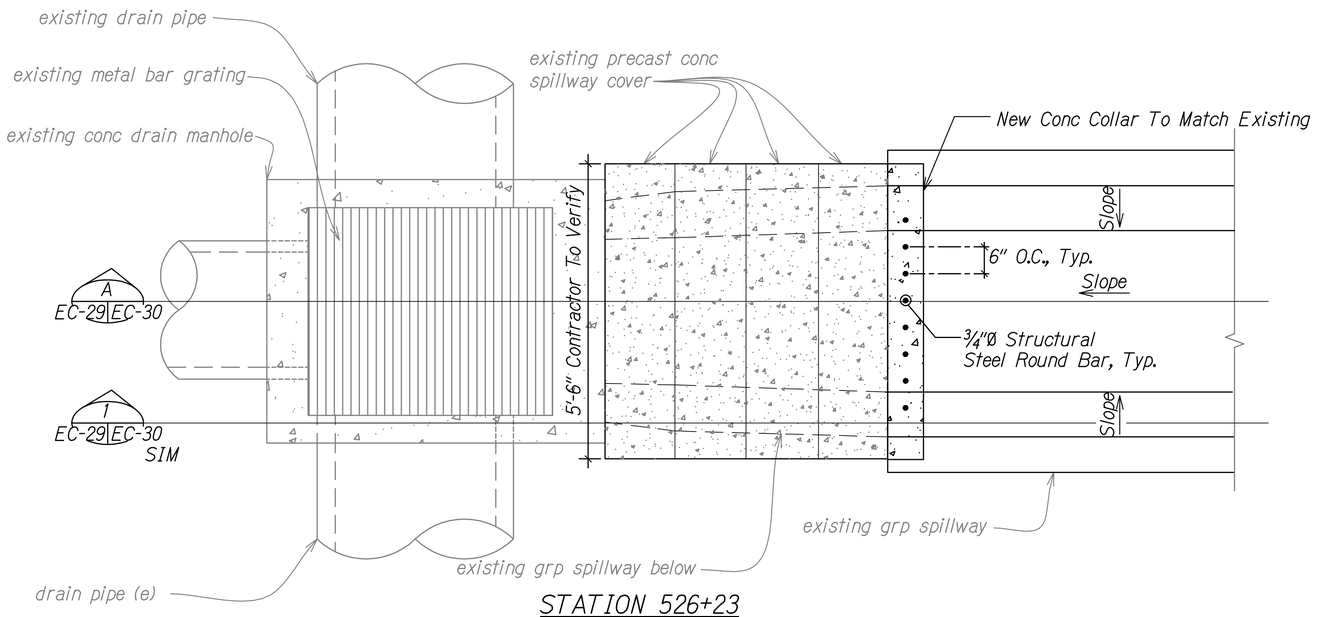
# BMP B DETAILS
# H-3 & LIKELIKE INTERCHANGE

KANEOHE WATERSHED STORM WATER BEST MANAGEMENT PRACTICES ON OAHU
Federal Aid Project No. STP-0300(135)

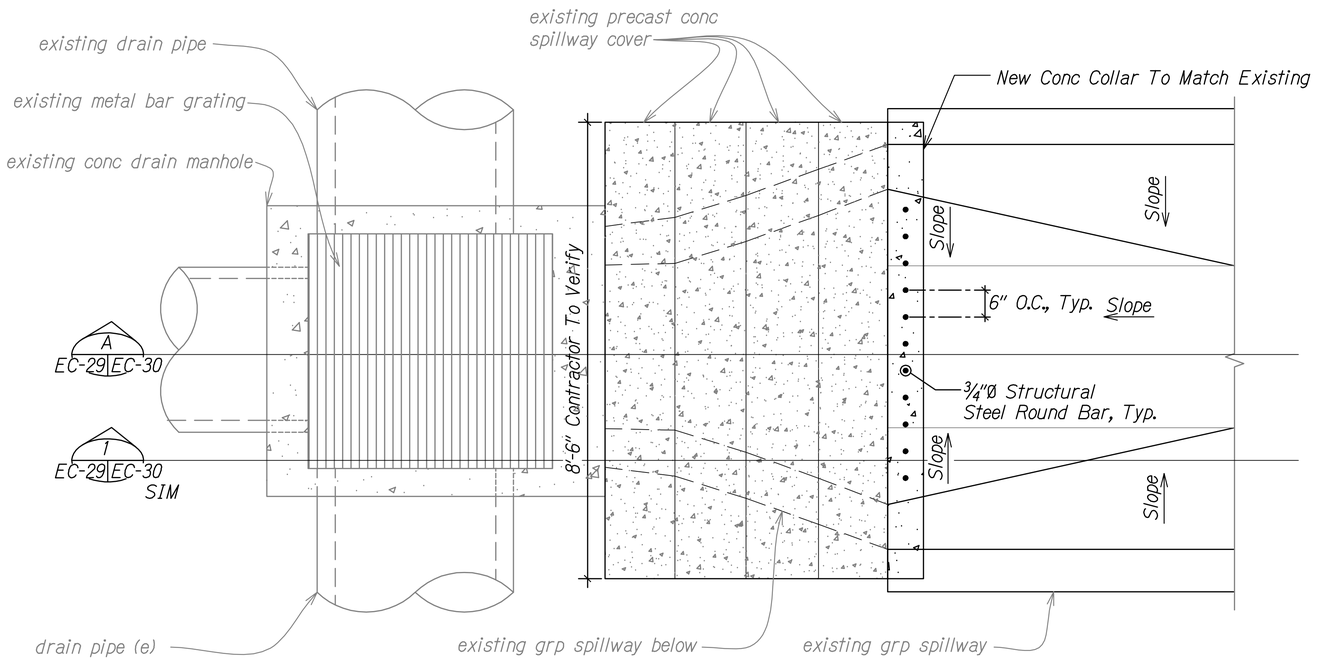
Scale: Not to Scale Date: March 2013

SHEET No. EC-28 OF 30 SHEETS

| FED. ROAD DIST. NO. | STATE | FED. AID PROJ. NO. | FISCAL YEAR | SHEET NO. | TOTAL SHEETS |
|---|---|---|---|---|---|
| HAWAII | HAW. | STP-0300(135) | 2013 | 43 | 67 |




STATION 526+23




STATION 530+00

TRASH RACK PLANS

Scale: ¾"=1'-0"

X:\BDP_KANEOHE.DWG 10/29/2012 3:56:54 PM

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Ron E. Iwamoto

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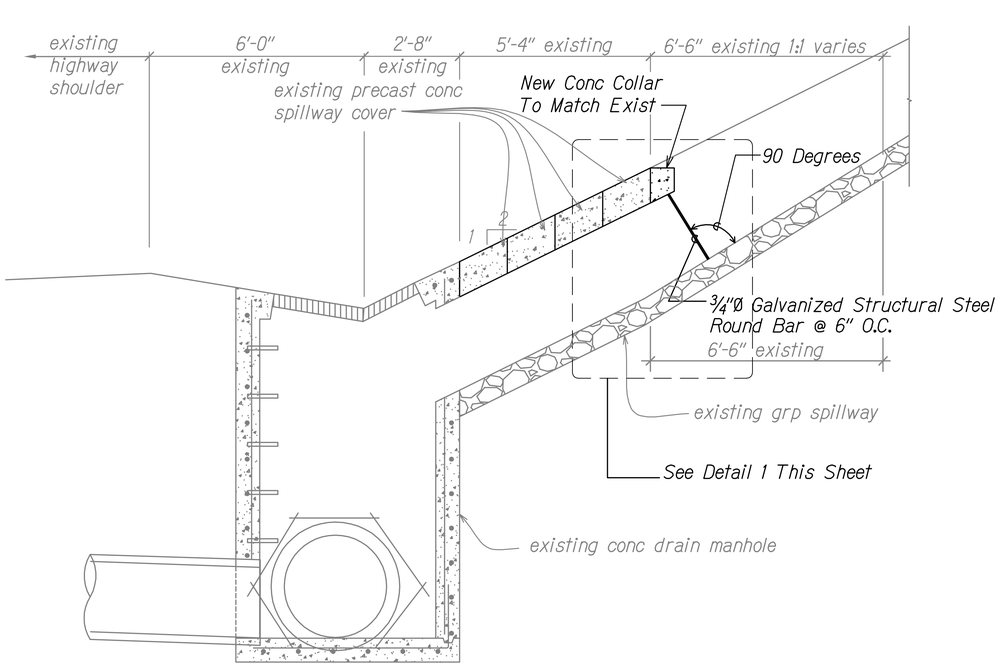
# TRASH RACK PLANS - PID 207

KANEOHE WATERSHED STORM WATER BEST MANAGEMENT PRACTICES ON OAHU
Federal-Aid Project No. STP-0300(135)

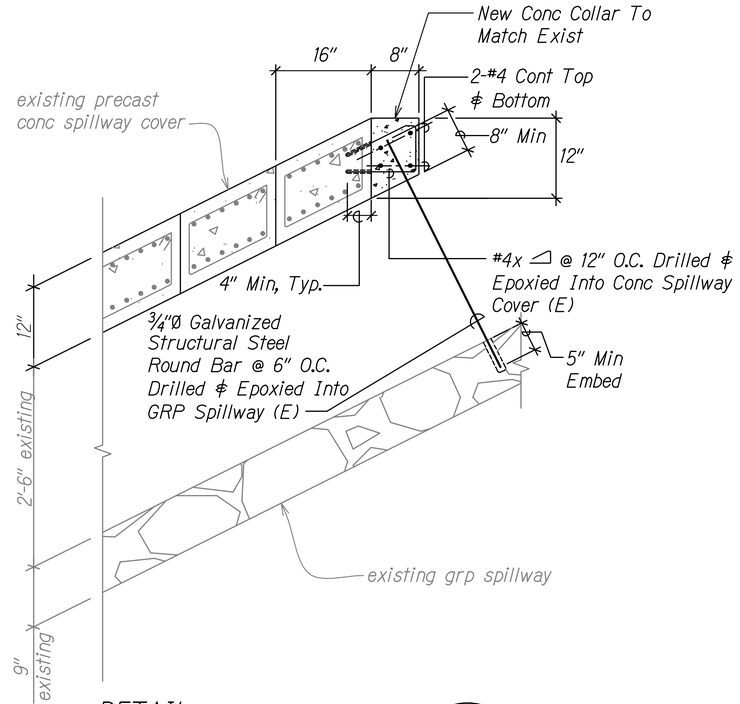
Scale: As Shown Date: March 2013

SHEET No. EC-29 OF 30 SHEETS

| FED. ROAD DIST. NO. | STATE | FED. AID PROJ. NO. | FISCAL YEAR | SHEET NO. | TOTAL SHEETS |
|---|---|---|---|---|---|
| HAWAII | HAW. | STP-0300(135) | 2013 | 44 | 67 |




SECTION
Scale: ½" = 1'-0"
A
EC-29|EC-30




DETAIL
Scale: 1" = 1'-0"
1
EC-30|EC-30

X:\BDP_KANEOHE.DWG 10/29/2012 3:36:54 PM

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DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

# TRASH RACK SECTION & DETAIL - PID 207

KANEOHE WATERSHED STORM WATER BEST MANAGEMENT PRACTICES ON OAHU
Federal-Aid Project No. STP-0300(135)

Scale: As Shown
Date: March 2013

SHEET No. EC-30 OF 30 SHEETS

| FED. ROAD DIST. NO. | STATE | FED. AID PROJ. NO. | FISCAL YEAR | SHEET NO. | TOTAL SHEETS |
|---|---|---|---|---|---|
| HAWAII | HAW. | STP-0300(135) | 2013 | 46 | 67 |

## PLANT NOTES:

1. Contractor shall field verify all plant quantities and dimensions prior to installation. Contractor shall determine quantities of plant materials to be provided. In all cases, Contractor shall install plant material on all areas affected by construction.

2. Contractor shall be responsible for locating and protecting existing utilities.

3. Prior to excavating tree or shrub holes, all planting locations shall be staked out by Contractor for acceptance by Engineer. Do not plant until ground has been prepared and site is neat, orderly, and the Engineer accepts site for planting.

4. Notify Engineer of any discrepancies in plant locations.

5. Notify Engineer 30 days prior to planting operations for acceptance of all plant material at place of growth. All plant material not accepted by the Engineer will be subject to rejection.

6. The Engineer will inspect plants at the place of growth and after the delivery to the project.

7. Plants shall meet size indicated. Plants shall be straight and uniformly shaped, unless unique or special characteristics are specified, and shall be undamaged, sound, healthy, vigorous and free of disease and insect infestation. Plants not conforming to these requirements on delivery to the project and at the end of the plant establishment period will be rejected.

8. Contractor shall be solely responsible for the complete removal and damages resulting from planting any plant species listed on the Hawaii Department of Agriculture 'Noxious Weed Rules' as defined in the statute, Hawaii Administrative Rules 4:68:1 or the 'Federal Noxious Weed List' as defined in Title 7 of the Code of Federal Regulations (CFR), parts 360 and 361.

9. All tree work must adhere to American National Standard Institute (or ANSI) - a300 Tree Care Standards and ANSI-z133 safety standards for tree work. Work shall be contracted to arborists that has been certified in good standings as an ISA certified arborist for at least 5 years to assure that tree work is performed properly and trees are not damaged by practices such as topping, flush cuts, over-thinning, or climbing with spikes. Contractor shall submit a copy of the ISA arborist certification of good standing of 5 years to the Engineer minimum 7 days prior to tree pruning.

10. For the duration of construction within the drip line of trees to remain there must be: no changes, alterations or disturbance to the grade by adding fill, excavating or scraping except as noted on plans; no storage of construction material or equipment; no stockpiling of any construction material or any excavated material no disposal of any liquids (E.G. Concrete slurry, gas, oil, paint); no vehicular traffic, equipment or excessive pedestrian traffic, no attachment of any wires, ropes, lights, or any other such attachment other than those of protective nature to any tree to be preserved; and no cleaning of equipment or material under the canopy of any tree or group of trees to remain.

11. Representative samples of soil from project site shall be submitted to the University of Hawaii Agricultural Extension Service or laboratory acceptable to the Engineer for analysis of required soil amendments. Test results and fertilization schedule shall be presented to the Engineer for review and acceptance before placing planting soil or amending existing soil. Uniformly distribute fertilizer and amendments over planting areas as recommended by the soil analysis report. For slopes flatter than 3H:1V, till top six-inches of soil to evenly incorporate fertilizer and amendments. For slopes steeper than 3H:1V, no tilling is required.

12. Guy wires, flagging, stakes, windbreakers, etc. shall be maintained and replaced if necessary by the Contractor until the tree/shrub is able to stand by itself. The Contractor shall remove and dispose of these items at the end of plant establishment period.

13. Any planting that obstructs sight distance, signs or traffic lights shall be relocated or removed as determined by the Engineer.

14. Provide water for all plant material for the duration of the project, including plant establishment period. Water trees, shrubs, ground cover and all grassed areas. Water for planting shall not cause erosion damage to the slopes. The Contractor shall be responsible for repairing any damage cause by the watering of plants. The Contractor shall gradually decrease the amount of water being provided to the plant material 8 weeks prior to final acceptance of plantings.

15. Temporary irrigation shall be provided and installed by the Contractor for the duration of the project. Refer to Specifications Section 641.03(E). Temporary irrigation system shall be considered incidental to Specification Section 641 - Hydro-Mulch Seeding.

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

LP-01 LANDSCAPE NOTES.DWG 3/4/2013 10:07:00 AM

RUSSELL Y.J. CHUNG
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No. 6076
HAWAII, U.S.A.
4/30/14
EXP. DATE

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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

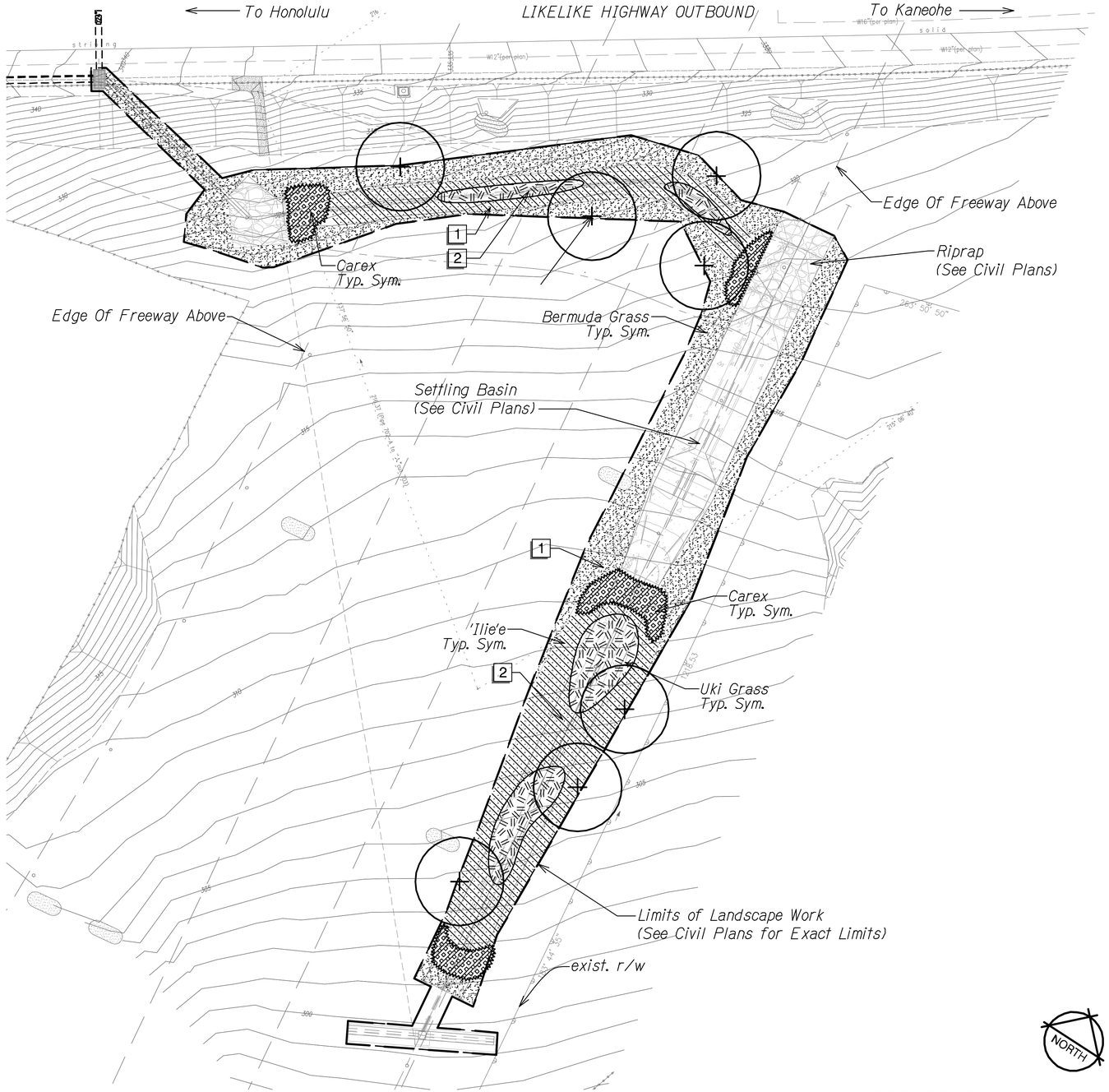
# LANDSCAPE NOTES

KANEOHE WATERSHED STORM WATER BEST MANAGEMENT PRACTICES ON OAHU
Federal-Aid Project No. STP-0300(135)

Scale: None Date: March 2013

SHEET No. LP-01 OF 10 SHEETS

| FED. ROAD DIST. NO. | STATE | FED. AID PROJ. NO. | FISCAL YEAR | SHEET NO. | TOTAL SHEETS |
|---|---|---|---|---|---|
| HAWAII | HAW. | STP-0300(135) | 2013 | 47 | 67 |




## PLANT SCHEDULE H-3 & LIKELIKE INTERCHANGE

| TREES | BOTANICAL NAME | COMMON NAME |
|---|---|---|
| + | *Aleurites moluccana* | *Kukui* |

| GROUND COVERS | BOTANICAL NAME | COMMON NAME |
|---|---|---|
| | *Carex wahuensis* | *Carex* |
| | *Cladium jamaicense* | *Uki Grass* |
| | *Plumbago zeylanica* | *'Ilie'e* |

| HYDROSEED | BOTANICAL NAME | COMMON NAME |
|---|---|---|
| | *Cynodon dactylon* | *Bermuda Grass* |

## REFERENCE NOTES SCHEDULE H-3 & LIKELIKE INTERCHANGE

| SYMBOL | DESCRIPTION |
|---|---|
| 1 | *Soil Preparation: Provide And Incorporate 2" Layer Soil Amendments To Existing Soil (Flatter Than 3H:1V, See Civil Plans For Grades). Incorporate Additional Amendments As Recommended By Soil Analysis.* |
| 2 | *Provide And Install Bioswale Soil Mixture In Bioswale; Wrap With Geotextile Fabric. See Civil Plans For Bioswale Limits And Depth Of Bioswale Soil Mixture.* |

NORTH

0 20 40 60 feet

SCALE: 1" = 20'

## LANDSCAPE PLAN
## H-3 & LIKELIKE INTERCHANGE
Scale: 1" = 20'-0"

ORIGINAL PLAN
NOTE BOOK ____ No. ____
SURVEY PLOTTED BY: ____ DATE: ____
DRAWN BY: ____
TRACED BY: ____
DESIGNED BY: ____
QUANTITIES BY: ____
CHECKED BY: ____

LP-02_H3_LIKELIKE.DWG 3/14/2013 2:26:29 PM

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4/30/14
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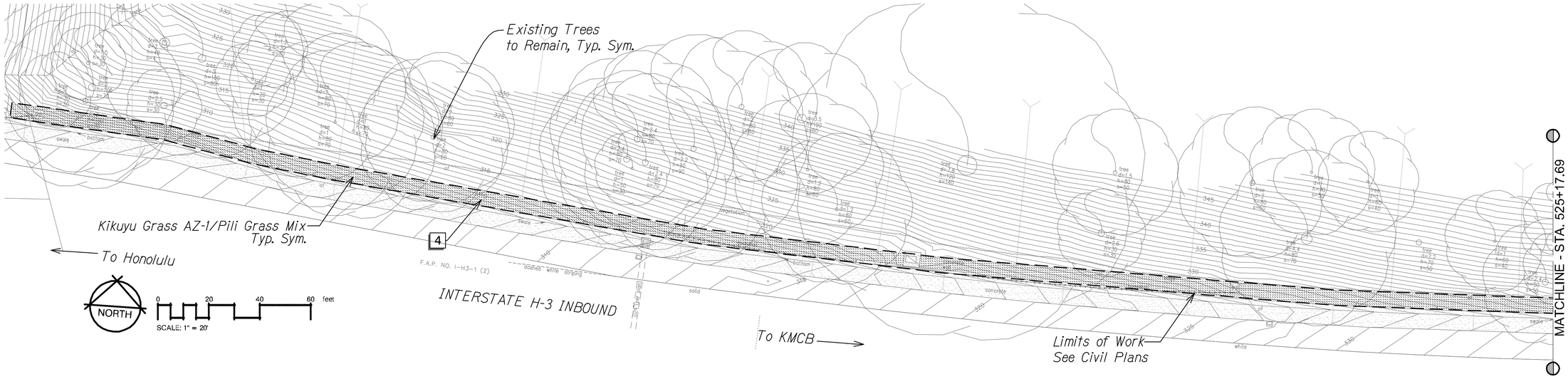
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

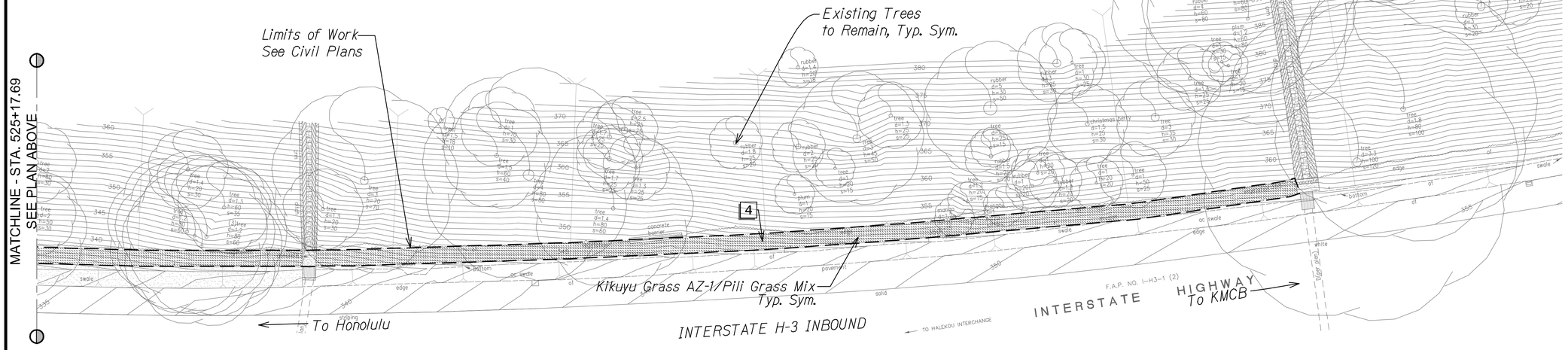
## LANDSCAPE PLAN
## H-3 & LIKELIKE INTERCHANGE

KANEOHE WATERSHED STORM WATER BEST MANAGEMENT PRACTICES ON OAHU
Federal-Aid Project No. STP-0300(135)
Scale: 1" = 20'-0" Date: March 2013

SHEET No. LP-02 OF 10 SHEETS

| FED. ROAD DIST. NO. | STATE | FED. AID PROJ. NO. | FISCAL YEAR | SHEET NO. | TOTAL SHEETS |
|---|---|---|---|---|---|
| HAWAII | HAW. | STP-0300(135) | 2013 | 48 | 67 |




## PLANT SCHEDULE PID 207

| HYDROSEED | BOTANICAL NAME | COMMON NAME |
|---|---|---|
| | *Pennisetum clandestinum* | Kikuyu Grass AZ-1 |
| | *Heteropogon contortus* | Pili Grass |

## REFERENCE NOTES SCHEDULE PID 207

| SYMBOL | DESCRIPTION |
|---|---|
| 4 | Vegetated Wall (See Civil Plans) |

NORTH 0 20 40 60 feet
SCALE: 1" = 20'

## LANDSCAPE PLANTING PLAN PID 207

Scale: 1" = 20'-0"

ORIGINAL PLAN | SURVEY PLOTTED BY: | DRAWN BY: | TRACED BY: | DESIGNED BY: | QUANTITIES BY: | CHECKED BY: | DATE:
NOTE BOOK | NO.

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4/30/14
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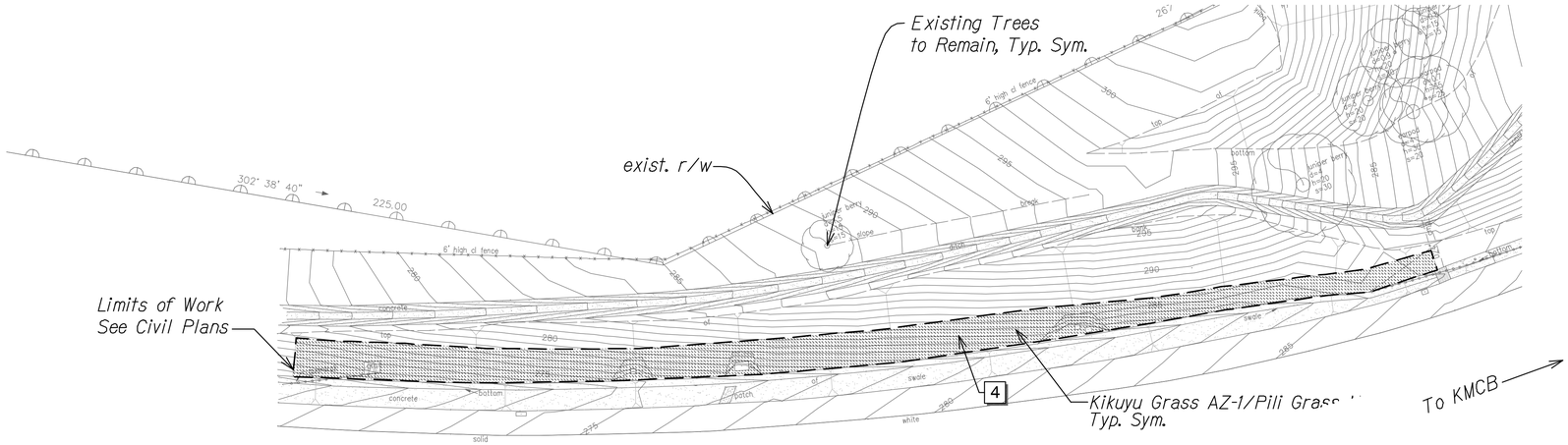
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

# LANDSCAPE PLANTING PLAN PID 207

KANEOHE WATERSHED STORM WATER BEST MANAGEMENT PRACTICES ON OAHU
Federal-Aid Project No. STP-0300(135)
Scale: 1" = 20'-0" Date: March 2013

SHEET No. LP-03 OF 10 SHEETS

| FED. ROAD DIST. NO. | STATE | FED. AID PROJ. NO. | FISCAL YEAR | SHEET NO. | TOTAL SHEETS |
|---|---|---|---|---|---|
| HAWAII | HAW. | STP-0300(135) | 2013 | 49 | 67 |




## PLANT SCHEDULE PID 208

| HYDROSEED | BOTANICAL NAME | COMMON NAME |
|---|---|---|
| | *Pennisetum clandestinum* | *Kikuyu Grass AZ-1* |
| | *Heteropogon contortus* | *Pili Grass* |

## REFERENCE NOTES SCHEDULE PID 208

| SYMBOL | DESCRIPTION |
|---|---|
| 4 | *Vegetated Wall (See Civil Plans).* |

NORTH

0 20 40 60 feet

SCALE: 1" = 20'

## LANDSCAPE PLANTING PLAN PID 208

Scale: 1" = 20'-0"

ORIGINAL PLAN
NOTE BOOK ____ No. ____
SURVEY PLOTTED BY ____ DATE
DRAWN BY ____
TRACED BY ____
DESIGNED BY ____
QUANTITIES BY ____
CHECKED BY ____

LP-04_PID_208.DWG 1/21/2013 8:54:52 AM

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4/30/14
EXP. DATE

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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

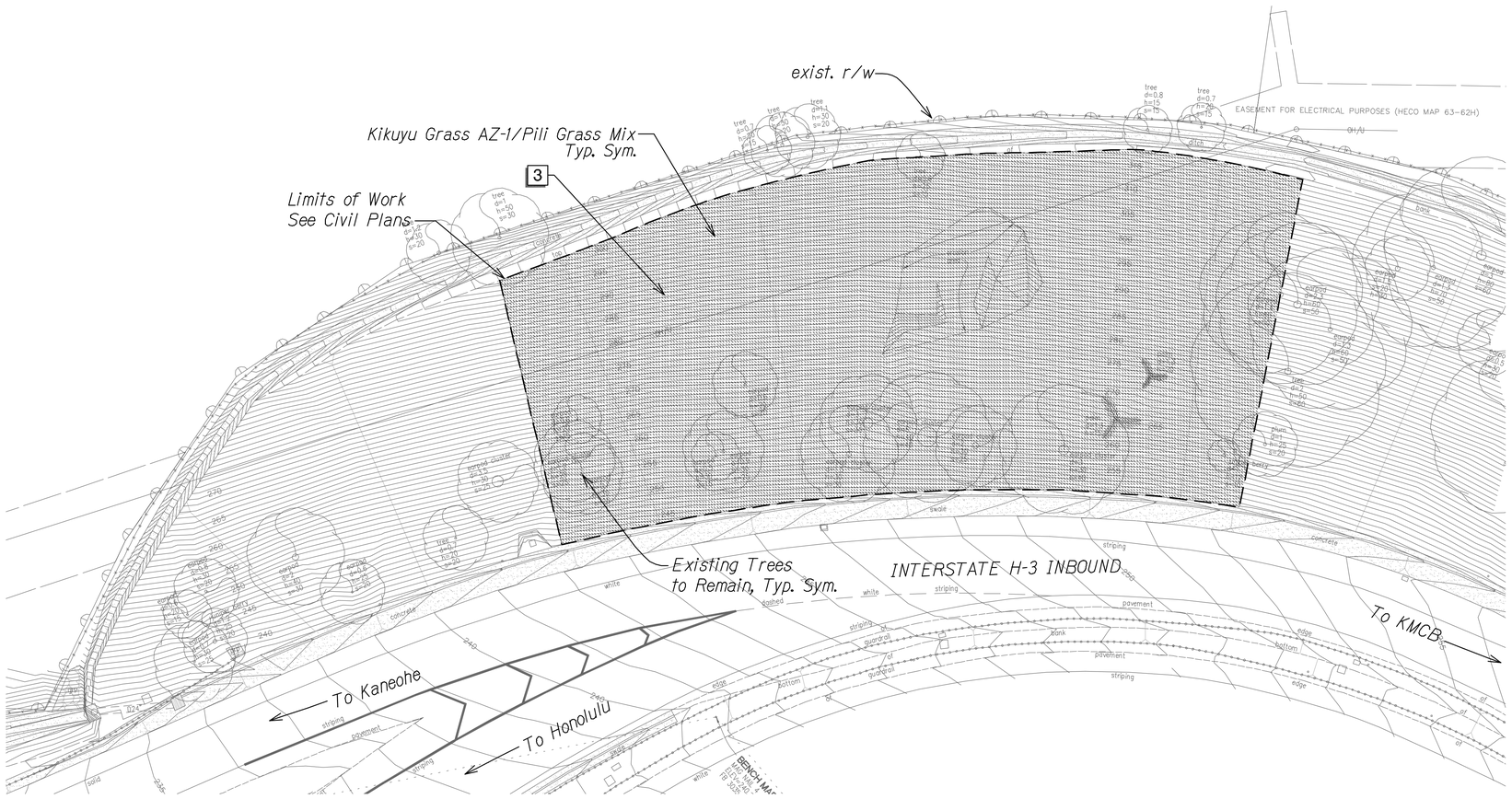
# LANDSCAPE PLANTING PLAN PID 208

KANEOHE WATERSHED STORM WATER BEST MANAGEMENT PRACTICES ON OAHU
Federal-Aid Project No. STP-0300(135)

Scale: 1" = 20'-0" Date: March 2013

SHEET No. LP-04 OF 10 SHEETS

| FED. ROAD DIST. NO. | STATE | FED. AID PROJ. NO. | FISCAL YEAR | SHEET NO. | TOTAL SHEETS |
|---|---|---|---|---|---|
| HAWAII | HAW. | STP-0300(135) | 2013 | 50 | 67 |




## PLANT SCHEDULE PID 209

| HYDROSEED | BOTANICAL NAME | COMMON NAME |
|---|---|---|
| | *Pennisetum clandestinum* | Kikuyu Grass AZ-1 |
| | *Heteropogon contortus* | Pili Grass |

## REFERENCE NOTES SCHEDULE PID 209

| SYMBOL | DESCRIPTION |
|---|---|
| 3 | Install Erosion Control Matting Per Manufacturer's Instructions And Recommendations. See Erosion Control Plans For Details And Exact Limits. |

NORTH

0 20 40 60 feet

SCALE: 1" = 20'

**LANDSCAPE PLANTING PLAN PID 209**

Scale: 1" = 20'-0"

ORIGINAL PLAN | SURVEY PLOTTED BY | DRAWN BY | TRACED BY | DESIGNED BY | QUANTITIES BY | CHECKED BY | DATE
NOTE BOOK | No.

LP-05_PID_209.DWG 1/9/2013 9:57:25 AM

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4/30/14
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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

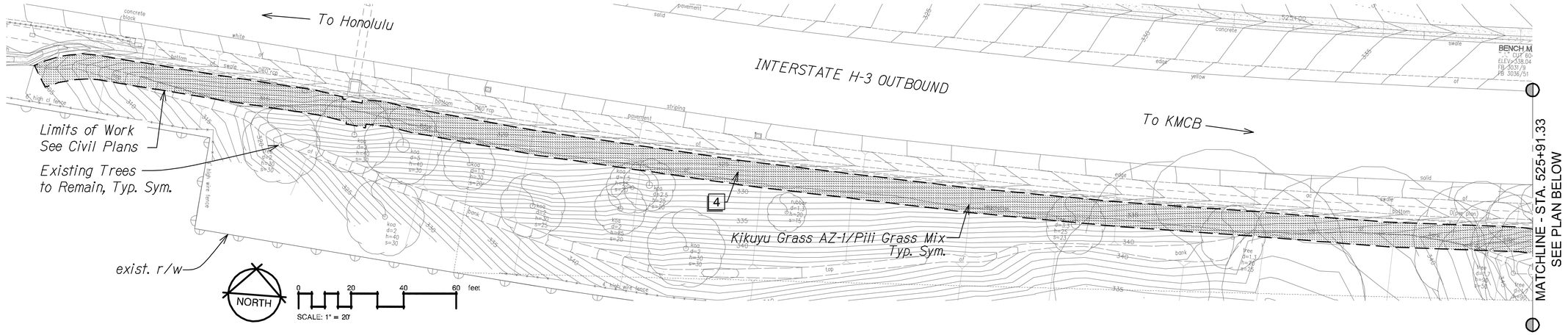
# LANDSCAPE PLANTING PLAN PID 209

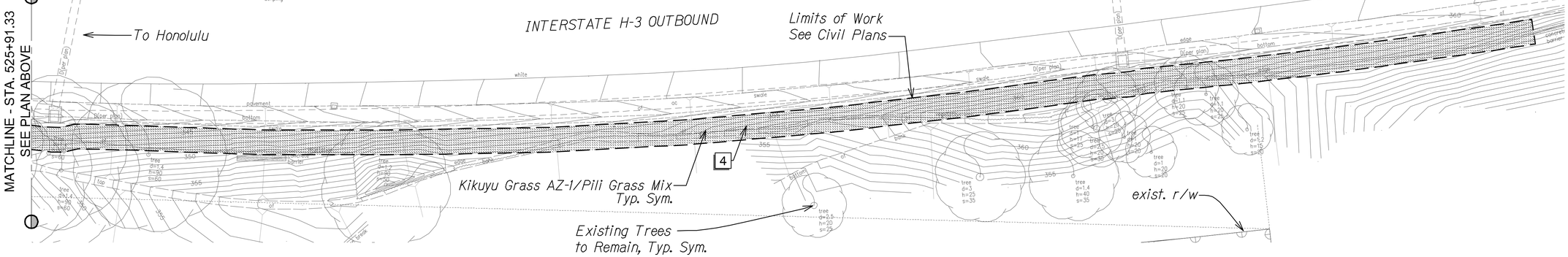
KANEOHE WATERSHED STORM WATER BEST MANAGEMENT PRACTICES ON OAHU
Federal-Aid Project No. STP-0300(135)

Scale: 1" = 20'-0" Date: March 2013

SHEET No. LP-05 OF 10 SHEETS

| FED. ROAD DIST. NO. | STATE | FED. AID PROJ. NO. | FISCAL YEAR | SHEET NO. | TOTAL SHEETS |
|---|---|---|---|---|---|
| HAWAII | HAW. | STP-0300(135) | 2013 | 51 | 67 |




## PLANT SCHEDULE PID 210

| HYDROSEED | BOTANICAL NAME | COMMON NAME |
|---|---|---|
| | *Pennisetum clandestinum* | Kikuyu Grass AZ-1 |
| | *Heteropogon contortus* | Pili Grass |

## REFERENCE NOTES SCHEDULE PID 210

| SYMBOL | DESCRIPTION |
|---|---|
| 4 | Vegetated Wall (See Civil Plans) |

NORTH 0 20 40 60 feet
SCALE: 1" = 20'

**LANDSCAPE PLANTING PLAN PID 210**
Scale: 1" = 20'-0"

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

LP-06_PID_210.DWG 1/21/2013 9:20:27 AM

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4/30/14
EXP. DATE

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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

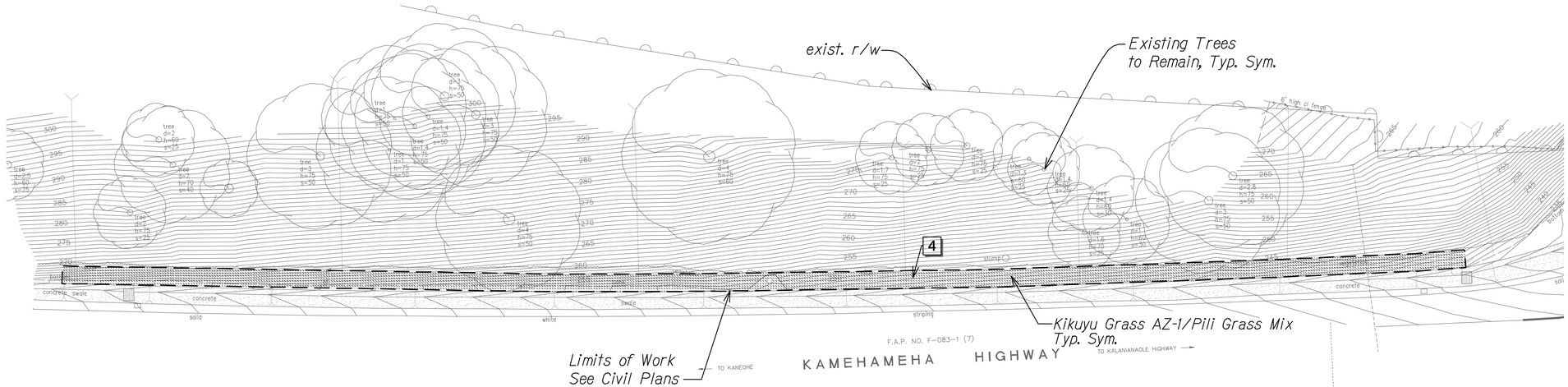
# LANDSCAPE PLANTING PLAN PID 210

KANEOHE WATERSHED STORM WATER BEST MANAGEMENT PRACTICES ON OAHU
Federal-Aid Project No. STP-0300(135)

Scale: 1" = 20'-0" Date: March 2013

SHEET No. LP-06 OF 10 SHEETS

| FED. ROAD DIST. NO. | STATE | FED. AID PROJ. NO. | FISCAL YEAR | SHEET NO. | TOTAL SHEETS |
|---|---|---|---|---|---|
| HAWAII | HAW. | STP-0300(135) | 2013 | 52 | 67 |




← To Kaneohe

KAMEHAMEHA HIGHWAY NORTHBOUND

To Kalanianaole Highway →

## PLANT SCHEDULE PID 1008

| HYDROSEED | BOTANICAL NAME | COMMON NAME |
|---|---|---|
| | *Pennisetum clandestinum* | Kikuyu Grass AZ-1 |
| | *Heteropogon contortus* | Pili Grass |

## REFERENCE NOTES SCHEDULE PID 1008

| SYMBOL | DESCRIPTION |
|---|---|
| 4 | Vegetated Wall (See Civil Plans) |

NORTH

0 20 40 60 feet

SCALE: 1" = 20'

## LANDSCAPE PLANTING PLAN PID 1008

Scale: 1" = 20'-0"

ORIGINAL PLAN | SURVEY PLOTTED BY | DRAWN BY | TRACED BY | DESIGNED BY | QUANTITIES BY | CHECKED BY | DATE

NOTE BOOK | No.

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DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

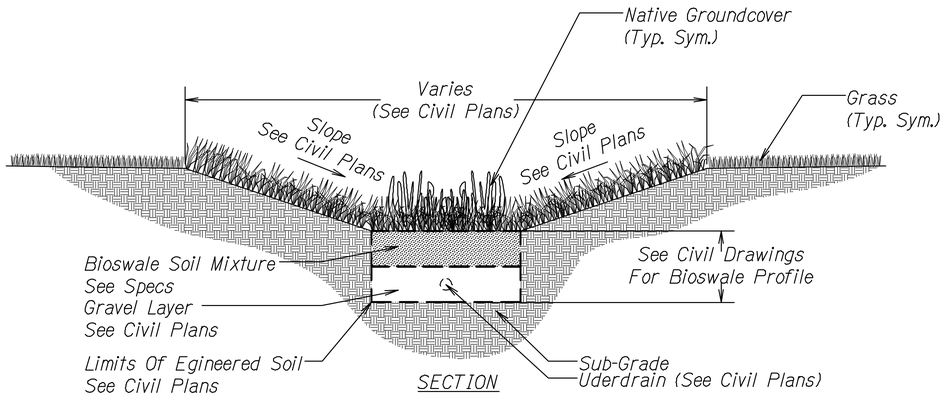
# LANDSCAPE PLANTING PLAN PID 1008

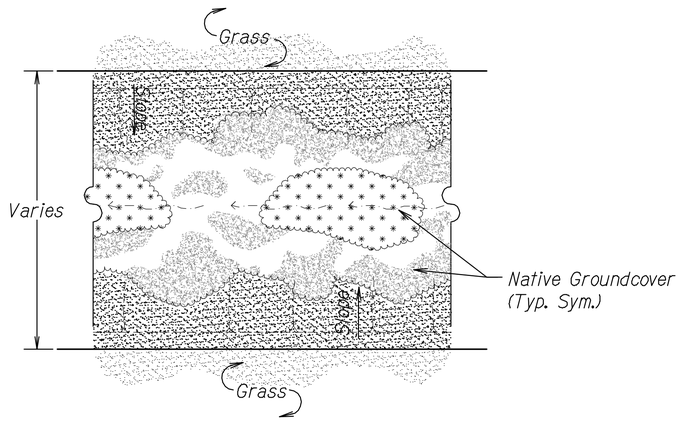
KANEOHE WATERSHED STORM WATER BEST MANAGEMENT PRACTICES ON OAHU
Federal-Aid Project No. STP-0300(135)

Scale: 1" = 20'-0" Date: March 2013

SHEET No. LP-07 OF 10 SHEETS

| FED. ROAD DIST. NO. | STATE | FED. AID PROJ. NO. | FISCAL YEAR | SHEET NO. | TOTAL SHEETS |
|---|---|---|---|---|---|
| HAWAII | HAW. | STP-0300(135) | 2013 | 53 | 67 |




1 BIO SWALE PLANTING DETAIL

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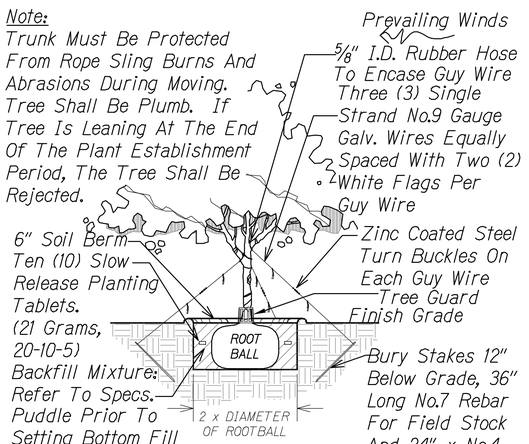
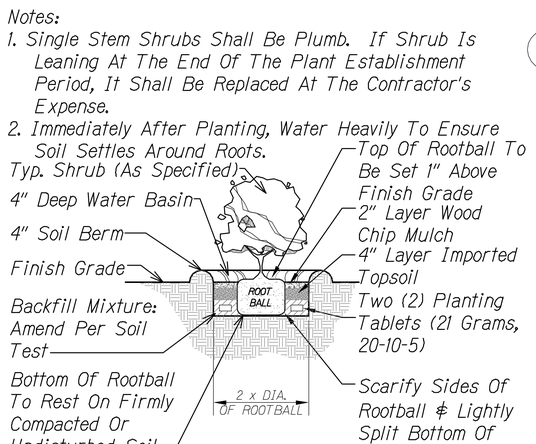



2 TREE PLANTING AND GUYING

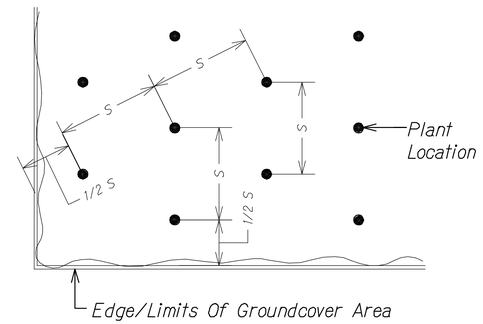
NOT TO SCALE 329343,46-03




3 SHRUB PLANTING

NOT TO SCALE 329333,16-07

Note:
1. S = Spacing, (Refer To Plant List For Spacing)
2. Use Spacing Layout For Shrubs, Groundcovers, And Annuals




4 TRIANGULAR SPACING

NOT TO SCALE 329313-01

Hydro Seed/ Hydro Sprig:
Shall Be Specifically Processed Fiber Containing No Growth Or Germination Inhibiting Factors. It Shall Be Such That After Addition And Agitation In The Hydraulic Equipment With Seeds/Sprigs, Fertilizer, Water And, Other Additives Not Detrimental To Plant Growth, The Fibers Will Form A Homogeneous Slurry. When Hydraulically Sprayed On The Soil Or Vegetated Wall, The Fibers Shall Form A Blotter-Like Ground Cover Which Readily Absorbs Water And Allows Infiltration. Complete Coverage Of The Surface Shall Be Attained.


5 HYDRO-SEED/SPRIG DETAIL

NOT TO SCALE 329313-04

| ORIGINAL PLAN | SURVEY PLOTTED BY | DATE |
|---|---|---|
| NOTE BOOK | DRAWN BY | |
| No. | TRACED BY | |
| | DESIGNED BY | |
| | QUANTITIES BY | |
| | CHECKED BY | |

LP-08_DETAILS.DWG 1/15/2013 10:22:3 AM

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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

# LANDSCAPE DETAILS

KANEOHE WATERSHED STORM WATER BEST MANAGEMENT PRACTICES ON OAHU
Federal-Aid Project No. STP-0300(135)

Scale: As Shown Date: March 2013

SHEET No. LP-08 OF 10 SHEETS

| FED. ROAD DIST. NO. | STATE | FED. AID PROJ. NO. | FISCAL YEAR | SHEET NO. | TOTAL SHEETS |
|---|---|---|---|---|---|
| HAWAII | HAW. | STP-0300(135) | 2013 | 54 | 67 |

*TREE PROTECTION ZONE:*

1. *All Trees Identified On The Plans To Be Protected. All Trees 24" Caliper Or Greater (As Measured At 4½ Feet Height) Shall Be Protected. If Trees Other Than Those Designated For Removal Are Damaged Beyond Survival Condition As Determined By The Engineer, The Contractor Shall Remove Such Trees And Replace With A Tree Of The Same Species And Size And Maintain For The Duration Of The Construction Or 12 Months Whichever Is Greater At No Cost To The State.*

2. *The Recommended Tree Protection Zone Should Be Located At The Outer Drip Line Of The Canopy Of The Tree. However, The Minimum Protection Zone Around A Tree Should Be At Least 20 Feet From The External Surface Of The Tree's Trunk. For All Palms, The Minimum Protection Zone Should Be At Least 10 Feet.*

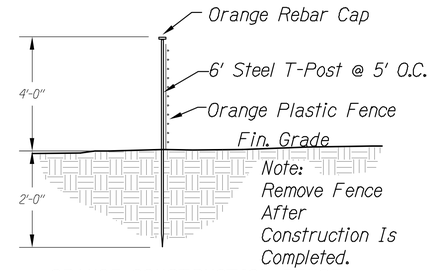
3. *All Underground Utilities And Irrigation Lines Should BE Routed Outside Of The Tree Protection Zone. If Utilities Must Traverse The Tree Protection Zone, They Shall Be Tunneled Or Bored At A Depth Of 4 Feet Or Greater Within The Tree Protection Zone.*

4. *All Protected Trees Shall Be Listed On The Demolition, Landscape, Grading And Utilities Plans. If There Is A Discrepancy With All Plans, Contractor Shall Contact Engineer Immediately.*

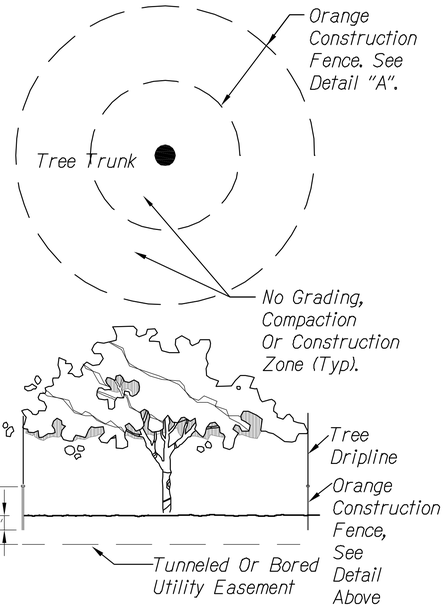
5. *Protective Fences Shall Be Erected Around Trees Identified On Plan Or Trees With A Trunk Diameter Greater Than 24 Inches (As Measured At A Height Of 4 ½ Feet.) Protective Fence Shall Be 4 Feet High Orange Plastic Mesh Or Approved Equivalent Supported On Steel T-Post A Minimum Of 6 Feet Long. Protective Fence Shall Surround Tree At A Minimum Of 10 Feet From Tree Trunk With Steel T-Post At A Minimum Of 5 Feet On Center. Fence Shall Be Installed Prior To Any Demolition Work And Shall Remain In Place Until Site Work Is Completed. Signs Shall Be Posted On All Four Sides To Read "TREE PROTECTION ZONE [TPZ] - NO GRADE CHANGE, STORAGE OR EQUIPMENT PERMITTED WITHIN TPZ."*

6. *For The Duration OF Construction Within The Drip Line Of The Trees To Remain There Must Be:*
   - *No Changes, Alteration Or Disturbance To The Grade By Adding Fill, Excavating Or Scraping Except As Noted On Plans;*
   - *No Storage On Construction Materials Or Equipment;*
   - *No Stockpiling Of Any Construction Materials Or Excavated Materials;*
   - *No Disposal Of Any Liquids (e.g. Concrete Slurry, Gas, Oil, Paint);*
   - *No Vehicular Traffic, Equipment Or Excessive Pedestrian Traffic;*
   - *No Attachment Of Any Wires, Ropes, Lights Or Any Other Such Attachment Other Than Those Of A Protective Nature To Any Tree To Be Preserved; And*
   - *No Cleaning Of Equipment Or Material Under The Canopy Of Any Tree Or Group Of Trees To Be Preserved*

7. *Auger Tunneling, Not Trenching, Shall Be Used Where Possible For Utility Placement Within The Drip Line Of The Tree. If Trenching Is Necessary It Shall Be Hand Dug Within The Drip Line Of The Tree.*




ORANGE CONSTRUCTION FENCE
NOT TO SCALE




1 TREE PROTECTION
NOT TO SCALE

329343.63-03

ORIGINAL PLAN
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HIGHWAYS DIVISION

# LANDSCAPE DETAILS

KANEOHE WATERSHED STORM WATER BEST MANAGEMENT PRACTICES ON OAHU
Federal-Aid Project No. STP-0300(135)

Scale: As Shown Date: March 2013

SHEET No. LP-09 OF 10 SHEETS

| FED. ROAD DIST. NO. | STATE | FED. AID PROJ. NO. | FISCAL YEAR | SHEET NO. | TOTAL SHEETS |
|---|---|---|---|---|---|
| HAWAII | HAW. | STP-0300(135) | 2013 | 55 | 67 |

## PLANT SCHEDULE H-3 & LIKELIKE INTERCHANGE

| TREES | BOTANICAL NAME | COMMON NAME | CONT | CAL | SIZE |
|---|---|---|---|---|---|
| + | Aleurites moluccana | Kukui | 15 Gal | 1" CAL | 4'-6' |

| GROUND COVERS | BOTANICAL NAME | COMMON NAME | CONT | SIZE |
|---|---|---|---|---|
| | Carex wahuensis | Carex | 6" Pots @ 12" OC | 10"-12" |
| | Cladium jamaicense | Uki Grass | 6" Pots @ 12" OC | 10"-12" |
| | Plumbago zeylanica | 'Ilie'e | 1 Gal. @ 12" OC | 10"-12" |

| HYDROSEED | BOTANICAL NAME | COMMON NAME | CONT | REMARKS |
|---|---|---|---|---|
| | Cynodon dactylon | Bermuda Grass | Seed | See Spec For Grass Seeding Rates |

## PLANT SCHEDULE PID 207

| HYDROSEED | BOTANICAL NAME | COMMON NAME | CONT | REMARKS |
|---|---|---|---|---|
| | Pennisetum clandestinum | Kikuyu Grass AZ-1 | Seed | Apply Hydroseed Over Vegetated Wall |
| | Heteropogon contortus | Pili Grass | Seed | See Spec For Grass Seeding Rates |

## PLANT SCHEDULE PID 208

| HYDROSEED | BOTANICAL NAME | COMMON NAME | CONT | REMARKS |
|---|---|---|---|---|
| | Pennisetum clandestinum | Kikuyu Grass AZ-1 | Seed | Apply Hydroseed Over Vegetated Wall |
| | Heteropogon contortus | Pili Grass | Seed | See Spec For Grass Seeding Rates |

## PLANT SCHEDULE PID 209

| HYDROSEED | BOTANICAL NAME | COMMON NAME | CONT | REMARKS |
|---|---|---|---|---|
| | Pennisetum clandestinum | Kikuyu Grass AZ-1 | Seed | See Spec For Grass Seeding Rates |
| | Heteropogon contortus | Pili Grass | Seed | |

## PLANT SCHEDULE PID 210

| HYDROSEED | BOTANICAL NAME | COMMON NAME | CONT | REMARKS |
|---|---|---|---|---|
| | Pennisetum clandestinum | Kikuyu Grass AZ-1 | Seed | Apply Hydroseed Over Vegetated Wall |
| | Heteropogon contortus | Pili Grass | Seed | See Spec For Grass Seeding Rates |

## PLANT SCHEDULE PID 1008

| HYDROSEED | BOTANICAL NAME | COMMON NAME | CONT | REMARKS |
|---|---|---|---|---|
| | Pennisetum clandestinum | Kikuyu Grass AZ-1 | Seed | Apply Hydroseed Over Vegetated Wall |
| | Heteropogon contortus | Pili Grass | Seed | See Spec For Grass Seeding Rates |

ORIGINAL PLAN
NOTE BOOK
SURVEY PLOTTED BY
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TRACED BY
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QUANTITIES BY
CHECKED BY
DATE

LP-10_PLANT_LIST.DWG 3/4/2013 9:29:59 PM

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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

# LANDSCAPE PLANT LIST

KANEOHE WATERSHED STORM WATER BEST MANAGEMENT PRACTICES ON OAHU
Federal-Aid Project No. STP-0300(135)

Scale: None Date: March 2013

SHEET No. LP-10 OF 10 SHEETS