

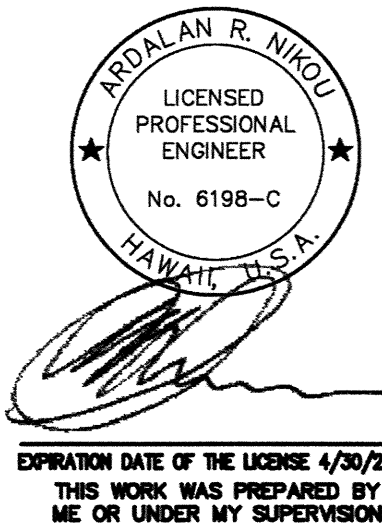
General Notes:

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- The scope of work for this project includes rehabilitation of corrugated metal and concrete culverts and debris removal; embankment slope improvements, and applying Best Management Practices.
- The Contractor shall perform all applicable construction work in accordance with the "Department of Transportation, Highways Division, Standard Plans", as amended and "Hawaii Standard Specifications for Road and Bridge Construction, 2005", as amended for the State of Hawaii.
- The Contractor shall verify the location of all existing utilities, whether shown on the plans or not, and shall be responsible for the repair or replacement of the same in the event of damages due to his/her construction practices, at no cost to the State.
- All dimensions and details shown on the drawings shall be checked and verified prior to the start of construction by the Contractor, and any discrepancies shall be immediately brought to the attention of the Engineer for clarifications.
- The Contractor shall provide, install, and maintain all necessary signs, lights, flares, barricades, markers, cones and other protective facilities and shall take all necessary precautions for the protection and for the convenience and safety of public traffic. All such protective facilities and precautions to be taken shall conform with the "Administrative Rules of Hawaii Governing the Use of Traffic Control Devices at Work Sites on or Adjacent to Public Streets and Highways" adopted by the Director of Transportation, and the current U.S. Federal Highway Administration "Manual on Uniform Traffic Control Devices for Streets and Highway, Part VI Traffic Controls for Street and Highway Construction and Maintenance. A traffic control plan is incorporated into the construction plans and must be approved by the Division prior to the issuance of the permit. In the event that the Contractor requires alternate lane closures, the Contractor is responsible for preparing traffic control plans and submitting said plans to the Engineer for approval before beginning work at the location.
- The Contractor is reminded of the requirements of Subsection 105.16 – Subcontracts, which requires him to perform work not less than 30 percent of the total contract cost less deductible items. Non-compliance with the Subsection may be grounds for rejection for bid.
- The Contractor shall field verify all culvert locations and provide a work plan for each location for approval by the Engineer. The Contractor shall allow the Engineer two (2) weeks after receipt of the submittal to review and approve the documents prior to the start of any work.
- Longitudinal drainage along the highway shall be protected and maintained throughout the construction.
- The Contractor shall be required to attend weekly meetings with the State and other Contractors to discuss construction coordination issues. All costs associated with the coordination meetings shall be considered incidental to the various contract items, and will not be paid for separately.
- The Contractor at his own expense, shall keep the project area and surrounding area from dust nuisance. The work shall be in conformance with the Air Pollution Control Standards and Regulations of the State Department of Health.

- The Contractor shall indemnify the State and their representatives and solely be responsible for the protection of adjacent properties, utilities, and existing structures from damage due to construction. Repairing any damage shall be at the Contractor's own expense, to the satisfaction of the Engineer.
- Pursuant to Section 6E, HRS, in the event any artifacts or human remains are uncovered during the construction operations, the Contractor shall immediately suspend work and notify the Honolulu Police Department, The State Department of Land and Natural Resources-Historic Preservation Division (692-8015).
- Removal and disposal of any debris shall be considered incidental to their respective bid items. The Contractor shall clean and remove any accumulation of aggregate and debris along the roadside within 10 feet of the edge of pavement. This work shall be considered incidental to the various contract items and will not be paid for separately.
- All saw cutting work shall be considered incidental to the various contract items.
- Trimming and dressing of shoulder shall consist of clearing, grubbing, grading, reshaping and compacting the unpaved shoulders with suitable material as shown on the plans and/or as directed by the Engineer. Suitable materials shall include top soil and grass. All disturbed soil areas shall be restored to pre-existing condition by the Contractor. This work shall be considered incidental to various contract items.
- Earth swales shall be graded to drain. This work shall be considered incidental to various contract items.
- Adjustments of pavement striping, etc., shall not be measured for payment but shall be considered incidental to various items of work in the proposal.
- After completion of surfacing, the Contractor and the Engineer will test for, and determine ponding areas (i.e. low spots within the surfaced area). It shall be the responsibility of the Contractor to correct and resurface and/or repair all such ponding areas.
- Blasting will not be allowed on this project.
- Contractor shall be responsible for providing adequate temporary shoring and bracing of the existing structures at all time during demolition and erection. Phasing of work is permitted to prevent section failure during excavation. Contractor shall take all precautions to avoid damage to existing structure.
- Except during actual working hours, all signs which do not pertain to the construction activity, such as "MEN WORKING" and "FLAGMEN AHEAD" shall be covered or promptly removed. However, all signs necessary for the safety of the public shall be maintained.
- The Contractor shall make his own arrangements for, and pay for all temporary utilities required for his work.

- The Contractor shall procure and pay for all licenses and permits and shall give all notices necessary and incidental to the due and lawful prosecution of the work.
- The Contractor shall remove and dispose all silt and debris deposited in drainage facilities, roadways and other areas resulting from his work. The cost incurred for any necessary remedial action ordered by the Engineer shall be paid for by the Contractor.
- Should the Contractor choose not to follow the approved BMP plans contained herein, the Contractor shall prepare and submit a site specific BMP plan for each location for review and approval.



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Public Health, Safety and Convenience Notes:

1. The Contractor shall observe and comply with all Federal, State and local laws required for the protection of public health and safety and environmental quality.
2. The Contractor, at his own expense, shall keep the project and it's surrounding areas free from dust nuisance. The work shall be in conformance with the Air Pollution Standards of the State Department of Health. The State may require supplementary measures and necessary.
3. The Contractor shall submit a Noise Pollution Control Plan when applying for a construction permit.

Grading Notes:

1. All grading and stockpiling work shall be in accordance with State of Hawaii 2005 Standard Specifications for Road and Bridge Construction.
2. No contractor shall perform any grading operation so as to cause falling rocks, soil or debris in any form to fall, slide or flow onto adjoining properties, streets or natural watercourses. Should such violations occur, the Contractor may be cited and the Contractor shall immediately make all remedial actions necessary.
3. The Contractor, at the Contractor's own expense, shall keep the project area and surrounding area free from dust nuisance. The work shall be in conformance with the air pollution control standards contained in the Hawaii Administrative Rules, Title 11, Chapter 60.1, "Air Pollution Control".
4. Surface waters shall not damage the cut face of an excavation or the sloped surfaces of a fill. Furthermore, sediment-laden runoff shall not leave the site.
5. All slopes and exposed areas shall be sodded, planted or hydro-mulched, as soon as final grades have been established. Planting shall not be delayed until all grading has been completed. Grading to final grade shall be continuous, and any area within which work has been interrupted or delayed shall be planted. Plant species shall be submitted to the Engineer for approval prior to ordering, purchasing and installation.
6. Fills on slopes steeper than 5:1 shall be keyed.
7. No grading work shall be done on Saturdays, Sundays and holidays at any time without prior notice and acceptance by the Engineer, provided such grading work is also in conformance with the community noise control standards contained in the Hawaii Administrative Rules, Title 11, Chapter 46, "Community Noise Control".
8. The limits of the area to be graded shall be flagged before the commencement of the grading work.
9. All grading operations shall be performed in conformance with the applicable provisions of the water quality and water pollution control standards contained in Hawaii Administrative Rules, Title 11, Chapter 54, "Water Quality Standards", and Title 11, Chapter 55, "Water Pollution Control" and if applicable, the NPDES permit for the project.

Grading Notes (cont):

10. The measures to control erosion and other pollutants shall be in place before any earth-moving phase of the grading is initiated.
11. Temporary erosion controls shall not be removed before permanent erosion controls are in-place and established.
12. Temporary erosion control procedures shall be submitted for approval prior to application for permit.
13. If the grading work involves contaminated soil, then all grading work shall be done in conformance with applicable State and Federal requirements.
14. The Contractor shall obtain a grading permit from the Civil Engineering Branch, Department of Planning and Permitting at 768-8219, at least two (2) weeks prior to commencement of any clearing and grubbing work.

State Historic Preservation Division Requirements Notes:

1. Should historic sites such as walls, platforms, pavements, and mounds, or remains such as artifacts, burials, concentration of charcoal or shells be encountered during construction work, work shall cease in the immediate vicinity of the find and the find shall be protected from further damage. The Contractor shall immediately contact the State Historic Preservation Division at 692-8015, which will assess the significance of the find and recommend an appropriate mitigation measure, if necessary.

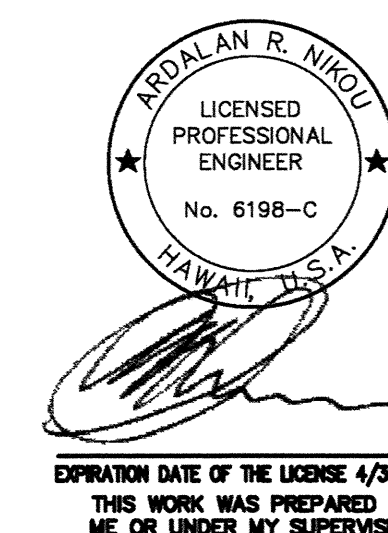
Stockpiling Notes:

1. All stockpiling work shall be done in accordance with Chapter 14, Article 13, 14, 15 and 16, as related to stockpiling, erosion and sediment control of the revised Ordinances of Honolulu, 1990, As Amended.
2. Contractor shall not perform any stockpiling operation so as to cause falling rocks, soil or debris in any form to fall, slide or flow into adjoining properties, streets or natural watercourses. Should such violations occur, the Contractor shall immediately make all remedial actions necessary.
3. No stockpiling work shall be done on Saturdays, Sundays and Holidays at any time without prior notice to the Director, Department of Transportation, provided such stockpiling work is also in conformance with Hawaii Administrative Rules, Title 11, Chapter 46, "Community Noise Control".
4. The limits of the area to be stockpiled shall be flagged before the commencement of the stockpiling work.
5. All stockpiling operations shall be performed in conformance with the applicable provisions of the Water Quality and Water Pollution Control Standards contained in the Hawaii Administrative Rules, Title 11, Chapter 54, "Water Quality Standards" and Title 11, Chapter 55, "Water Pollution Control" and if applicable, the NPDES Permit for the project.
6. Temporary erosion control procedures shall be submitted for approval prior to application for stockpiling permit.
7. If the stockpiling work involves contaminated soil and/or hazardous materials, then all stockpiling work shall be done in conformance with applicable state and federal requirements. Contact the Solid and Hazardous Waste Branch of the State Department of Health for more information (586-4226).

Stockpiling Notes (cont):

8. Adequate provisions shall be made to prevent surface waters from damaging the cut face of an excavation or the sloped surfaces of a fill. Furthermore, adequate provisions shall be made to prevent sediment-laden runoff from leaving the site.
9. Where applicable and feasible the measures to control erosion and other pollutants shall be in place before any stockpiling work is initiated. Temporary erosion controls shall not be removed before permanent erosion controls are in-place and established.
10. Non-compliance to any of the above requirements shall mean immediate suspension of all work and remedial work should commence immediately. All costs incurred shall be billed to the permittee. Furthermore, violators shall be subjected to administrative, civil and/or criminal penalties.

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Water Pollution and Erosion Control Notes:

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A. GENERAL:

1. See Special Provision Section 209 - Water Pollution 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. In addition, Appendix A lists potential pollutant sources and corresponding BMPs used to mitigate the pollutants.
2. Follow the guidelines in the current HDOT Construction Best Management Practices Field Manual in developing, installing and maintaining the Best Management Practices (BMP) for the project. For any conflicting requirements between the Manual and applicable bid documents, the applicable bid documents will govern. Should a requirement not be clearly described within the applicable bid documents, the Contractor shall notify the Engineer immediately for interpretation. For the purposes of clarification under Note A.2, "applicable bid documents" include the construction plans, standard specifications, Special Provisions, Permits, and the Storm Water Pollution Prevention Plan (SWPPP) when applicable.
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 and special provisions, 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. If necessary, 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. Install the rain gage on the project site in an area that will not deter rainfall from entering the gage opening. Do not install in a location where rain water may splash into rain gage. 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.
7. Submit Site-Specific BMP Plan to the Engineer along with a completed Site-Specific BMP Review Checklist within 30 calendar days of contract execution. The Site-Specific BMP Review Checklist may be obtained from <http://www.stormwaterhawaii.com>.

B. WASTE DISPOSAL:

1. Waste Materials  
Collect and store all waste materials in a securely lidded metal dumpster or roll off container with cover to keep rain out or loss of waste during windy conditions. 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 weekly or when the container is two-thirds full, whichever is sooner. 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, on a weatherproof bulletin board, or other accessible location acceptable to the Engineer. The Contractor shall be

responsible for seeing that these procedures are followed. Submit the Solid Waste Disclosure Form for Construction Sites to the Engineer within 30 calendar days of contract execution. Provide a copy of all the disposal receipts from the facility permitted by the Department of Health to receive solid waste to the Engineer monthly. This should also include documentation from any intermediary facility where solid waste is handled or processed.

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

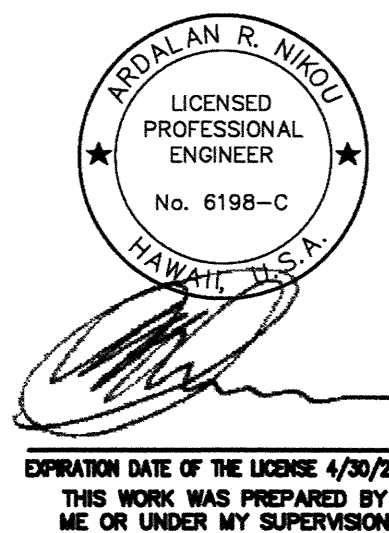
Collect all sanitary waste from the portable units a minimum of once per week, or as required. Position sanitary facilities where they are secure and will not be tipped over or knocked down.

C. EROSION AND SEDIMENT CONTROL INSPECTION AND MAINTENANCE PRACTICES:

1. For projects with an NPDES Permit for Construction Activities, inspect at the following intervals. For construction areas discharging to nutrient or sediment impaired waters, inspect all control measures at least once each week and within 24 hours of any rainfall event of 0.25 inches or greater within a 24 hour period. For construction areas discharging to waters not impaired for nutrient or sediments, inspect all control measures weekly. Inspections are only required during the project's normal working hours. The discharge point water classification may be found in the SWPPP.
2. For projects without an NPDES Permit for Construction Activities, inspect all control measures weekly.
3. Maintain all erosion and sediment control measures in good working order. If repair is necessary, initiate repair immediately and complete by the close of the next work day if the problem does not require significant repair or replacement, or if the problem can be corrected through routine maintenance. When installation of a new erosion or sediment control or a significant repair is needed, install the new or modified control or complete the repair no later than 7 calendar days from the time of discovery. "Immediately" means the Contractor shall take all reasonable measures to minimize or prevent discharge of pollutants until a permanent solution is installed and made operational. If a problem is identified at a time in the day in which it is too late to initiate repair, initiation of repair shall begin on the following work day.
4. Remove built-up sediment from silt fence when it has reached one-third the height of the fence. Remove sediment from other perimeter sediment control devices when it has reached one-half the height of the device.
5. 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.
6. Inspect temporary and permanent seeding and planting for bare spots, washouts and healthy growth.
7. Complete and submit to the Engineer a maintenance inspection report

within 24 hours after each inspection.

8. Provide a stabilized construction entrance at all points of exit onto paved roads 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. If minimum dimensions cannot be met, provide other stabilization techniques that remove sediment prior to exit. 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. Do not hose down the street without containing or vacuuming wash water. Cover dump trucks hauling material from the construction site with a tarpaulin. Remove sediment tracked onto the street, sidewalk, or other paved area by the end of the day in which the track-out occurs.
9. Include designated Concrete Washout Area(s) in the Water Pollution, Dust, and Erosion Control submittals.
10. Submit the name of a specific individual designated responsible for inspections, maintenance and repair activities and filling out the inspection and maintenance report.
11. 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.
12. Contain, remove, and dispose slurry generated from saw cutting of pavement in accordance with approved BMP practices. Do not allow discharge into the drainage system or State waters.



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C. EROSION AND SEDIMENT CONTROL INSPECTION AND MAINTENANCE PRACTICES (CONT):

13. For projects with an NPDES Permit for Construction Activities, immediately initiate stabilizing exposed soil areas upon completion of earth-disturbing activities for areas where earth-disturbing activities have permanently or temporarily ceased. Earth-disturbing activities have permanently ceased when clearing and excavation within any area of the construction site that will not include permanent structures has been completed. Earth-disturbing activities have temporarily ceased when clearing, grading, and excavation within any area of the site that will not include permanent structures will not resume (i.e., the land will be idle) for a period of 14 or more calendar days, but such activities will resume in the future. For construction areas discharging into waters not impaired for nutrients sediments, complete initial stabilization within 14 calendar days after the temporary or permanent cessation of earth-disturbing activities. For construction areas discharging into nutrient or sediment impaired waters, complete initial stabilization within 7 calendar days after the temporary or permanent cessation of earth-disturbing activities. Classification of water at the discharge point may be found in the SWPPP.

14. For projects without an NPDES Permit for Construction Activities, complete initial stabilization within 14 calendar days after the temporary or permanent cessation of earth-disturbing activities.

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	Cleaning Solvents
Detergents	Wood
Paints (enamel and latex)	Masonry Block
Metal Studs	Tar
Herbicides and Pesticides	Curing Compounds
Fertilizers	Adhesives
Petroleum Based Products	

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 Safety Data Sheets (SDS) formerly Material Safety Data Sheets (MSDS).

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

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 and federal, state, and local requirements. Avoid applying just before a heavy rain event. Apply at the appropriate time of year for the location, and preferably timed to coincide as closely as possible to the period of maximum vegetation uptake and growth. Once applied, work fertilizer into the soil to limit exposure to storm water. Do not apply to storm conveyance channels with flowing water. Storage shall be in a covered shed or in an area where fertilizer will not come into contact with precipitation or stormwater. 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 drainage system, sanitary sewer system, or State waters. Dispose properly according to manufacturers' instructions and State and local regulations.

d. Concrete Trucks:

Washout or discharge concrete truck drum wash water only at a designated site as far as practicable from storm drain inlets or State waters. Do not discharge water in the drainage system or State waters. Disposal by percolation is prohibited. Clean disposal site as required or as requested by the Engineer.

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 on a weatherproof bulletin board or other accessible location acceptable to the Engineer 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.

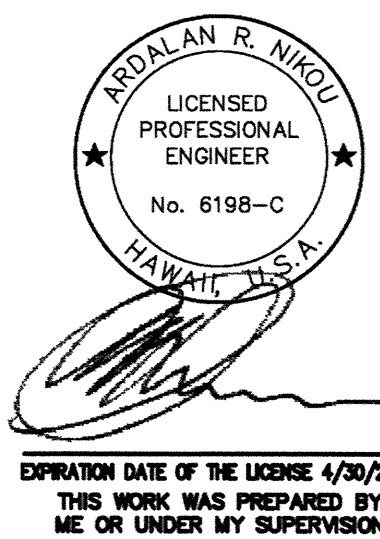
d. Keep ample materials and equipment necessary for spill cleanup in the material storage area onsite.

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 appropriate State or local government agency, regardless of the size. Where a leak, spill, or other release containing a hazardous substance or oil in an amount equal to or in excess of a reportable quantity established under either 40 CFR Part 110, 40 CFR Part 117, or 40 CFR Part 302 occurs during a 24-hour period, the Contractor shall notify the Engineer as soon as the Contractor has knowledge of the discharge. The Engineer will notify the National Response Center (NRC) at (800) 424-8802, the Clean Water Branch during regular business hours at 586-4309, and the Hawaii State Hospital Operator at 247-2191 and the Clean Water Branch (DOH-CWB) via email at [cleanwaterbranch@doh.hawaii.gov](mailto:cleanwaterbranch@doh.hawaii.gov) during non-business hours immediately. The Contractor shall also provide to the Engineer, within 7 calendar days of knowledge of the release, a description of the release, the circumstances leading to the release, and the date of the release. The Engineer will provide this information to the DOH-CWB. The Engineer will provide information to the NRC if requested.

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E. PERMIT REQUIREMENTS:

1. A National Pollutant Discharge Elimination System (NPDES) Permit for Construction Activities of one acre or more of disturbed area is required for this project. If the Contractor requires extra land disturbance, including staging and storage areas, that is not covered by the NPDES Permit obtained by the State, the Contractor shall be responsible for obtaining the required NPDES Construction Activities Permit to cover this additional disturbed area. See Hawaii Administrative Rules Chapter 11-55, Appendix C for definition of land disturbance. The Contractor's attention is directed to the applicable NPDES Permit documents on the bid package compact disc.
2. 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
  - b. Provide Storm Water Pollution Prevention Plan
  - c. Grading Permit
  - d. Street Usage Permit

F. SITE-SPECIFIC BMP REQUIREMENTS

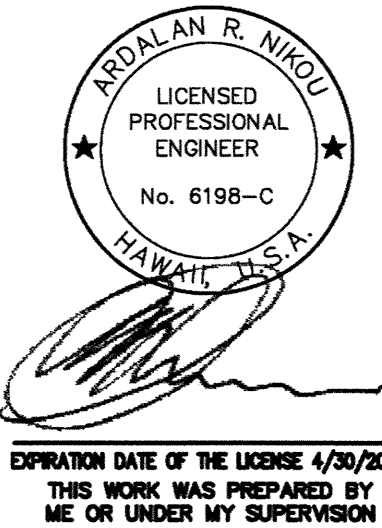
Each BMP below is referenced to the corresponding section of the current HDOT Construction Best Management Practices Field Manual and appropriate Supplemental Sheets. The Manual may be obtained from the HDOT Statewide Stormwater Management Program Website at <http://www.stormwaterhawaii.com/resources> under Construction Best Management Practices Field Manual. Supplemental BMP sheets are located at [http://stormwaterhawaii.com/contractors/contractors\\_BMPmanual.aspx](http://stormwaterhawaii.com/contractors/contractors_BMPmanual.aspx) under Concrete Curing and Irrigation Water.

The requirements for Water Pollution, Dust, and Erosion Control submittals are included in Section 209 of the Hawaii Standard Specifications for Road and Bridge Construction dated 2005 and applicable Special Provisions. A list of pollutant sources and corresponding BMP used to mitigate the pollutants are included in Section 209 of the Special Provisions under Appendix A.

F. SITE SPECIFIC BMP REQUIREMENTS (CONT):

- Follow the requirements below:
1. Protect all Drainage Inlets receiving runoff from disturbed areas (SC-2).
2. Contain on-site runoff using Perimeter Sediment Controls
- a. SC-1 Silt Fence
  - b. SC-5 Vegetated Filter Strips & Buffers
  - c. SC-8 Compost Filter Berm
  - d. SC-13 Sandbag Barrier
  - e. SC-14 Brush or Rock Filter
3. Control offsite runoff from entering construction area
- a. EC-8 Run-On Diversion
  - b. SC-6 Earth Dike
  - c. SC-7 Temporary Drains and Swales
4. Incorporate applicable Site Management BMP
- a. SM-1 Employee Training
  - b. SM-2 Material Delivery and Storage
  - c. SM-3 Material Use
  - d. SM-4 Protection of Stockpiles
  - e. SM-6 Solid Waste Management
  - f. SM-7 Sanitary/Septic Waste Management
  - g. SM-9 Hazardous Waste Management
  - h. SM-10 Spill Prevention and Control
  - i. SM-11 Vehicle and Equipment Cleaning
  - j. SM-12 Vehicle and Equipment Maintenance
  - k. SM-13 Vehicle and Equipment Refueling
  - l. SM-14 Scheduling
  - m. SM-15 Location of Potential Sources of Sediment
  - n. SM-16 Preservation of Existing Vegetation
  - o. SM-18 Dust Control
5. Contain pollutants within the Construction Staging/Storage Area BMP with applicable Perimeter Sediment Controls and Site Management BMP. Include a Stabilized Construction Entrance/Exit (EC-2) for all areas which exit onto a paved street. Restrict vehicle access to these points.
6. Manage Concrete Waste including installing a Concrete Washout Area (SM-5) and properly disposing of Concrete Curing Water (California Stormwater BMP Handbook NS-12 Concrete Curing).
7. Remove saw cut slurry and hydrodemolition water from the site by vacuuming. Provide storm drain protection and/or perimeter sediment controls during saw cutting and hydrodemolition work.

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LOCATIONS ON OAHU, PHASE 1

Project No. HWY-0-06-14

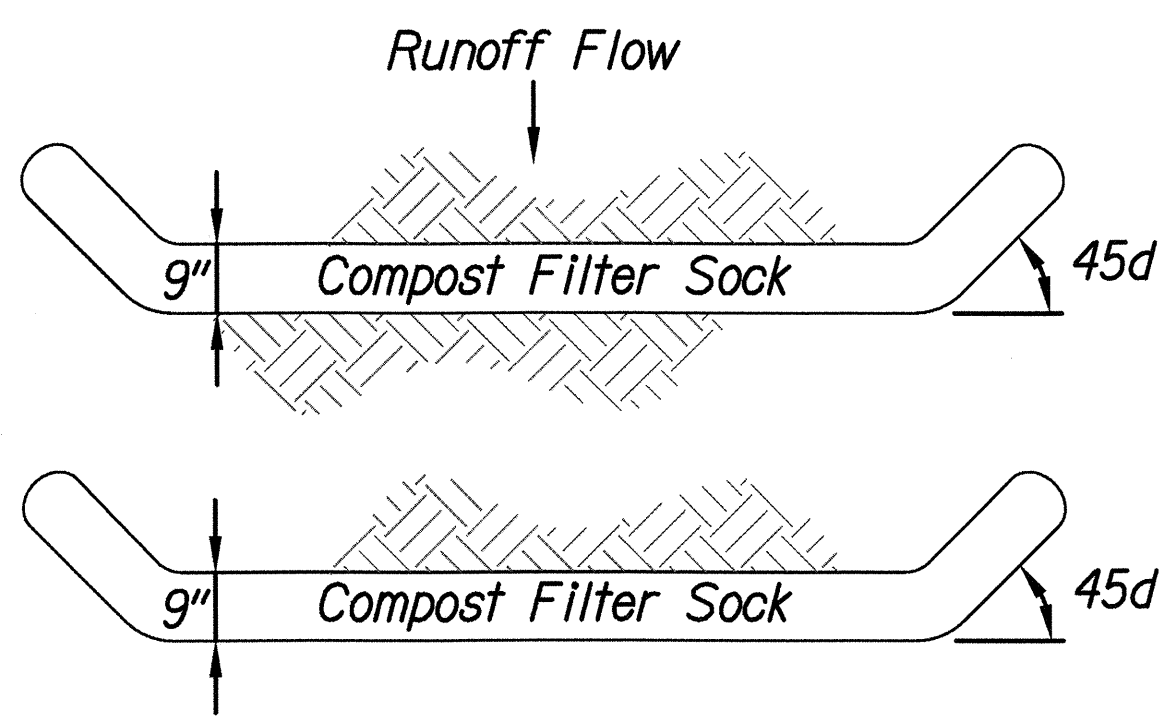
Scale: As Shown      Date: March 2016

SHEET No. C1.5 OF 62 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	HWY-0-06-14	2016	8	62

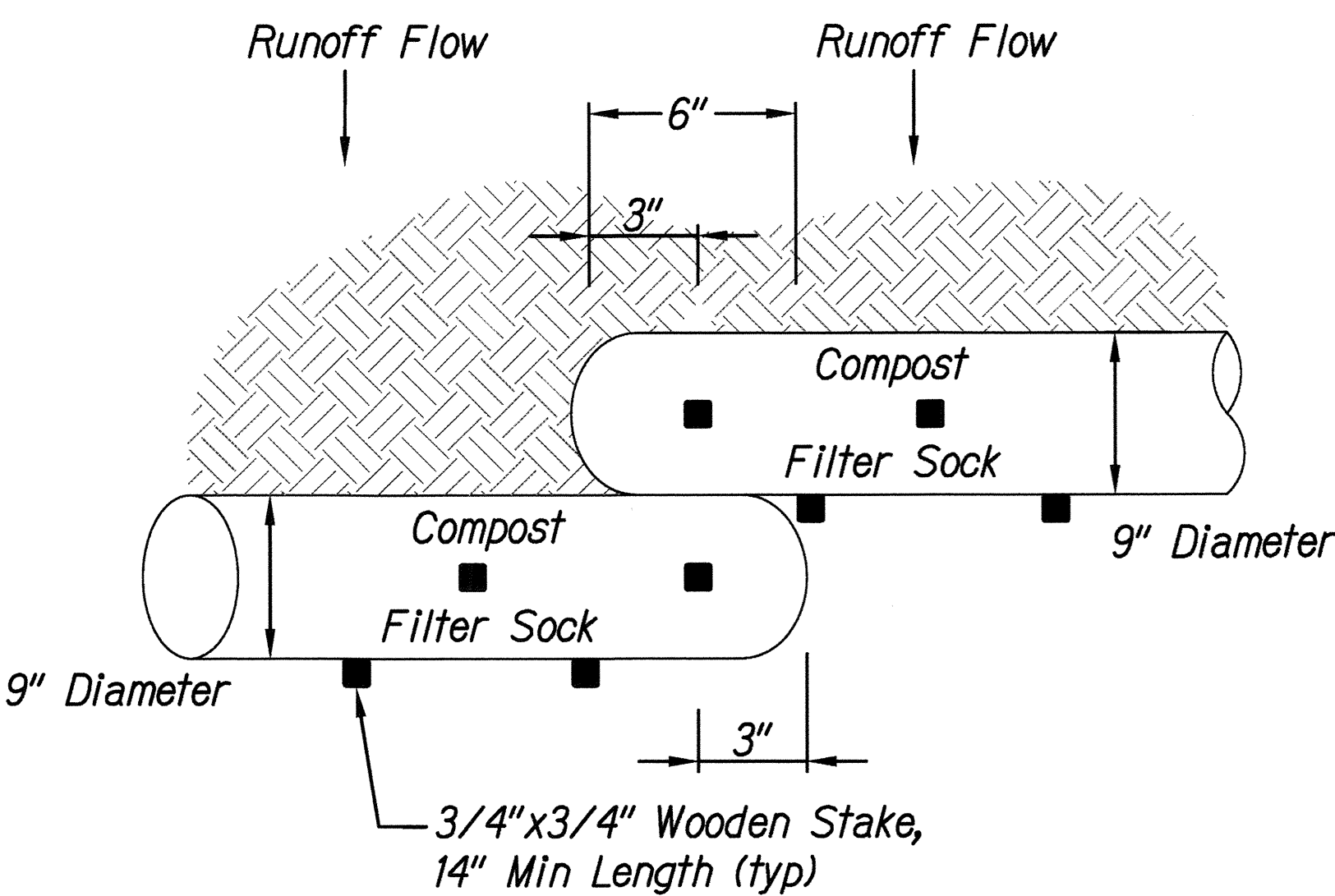
Erosion Control/BMP Notes:

- Measures to control erosion and other pollutants shall be in place before any construction work is initiated. These measures shall be properly constructed and maintained throughout the construction period.
- All control measures shall be checked and repaired as necessary.
- Temporary erosion/sediment control shall be provided using compost filter socks (Biosock™ or equivalent) and installed per manufacturer's recommendations.
- Good housekeeping shall be utilized to ensure protection of roadways from mud, dirt, and debris.
- The Contractor shall ensure that existing roadways used to access the project are cleaned of all debris, trash, dirt, mud, etc., throughout the work day.
- The Contractor shall ensure that all tires of construction vehicles are cleaned off so that dirt or debris is not tracked off the construction site. Washing off tires with water will not be acceptable unless the runoff is contained and does not enter the storm drain system or onto the State's Row or City and County of Honolulu, properties.
- All disturbed areas shall be restored with hydroseed and fully established upon completion of the project at no additional cost to the State.

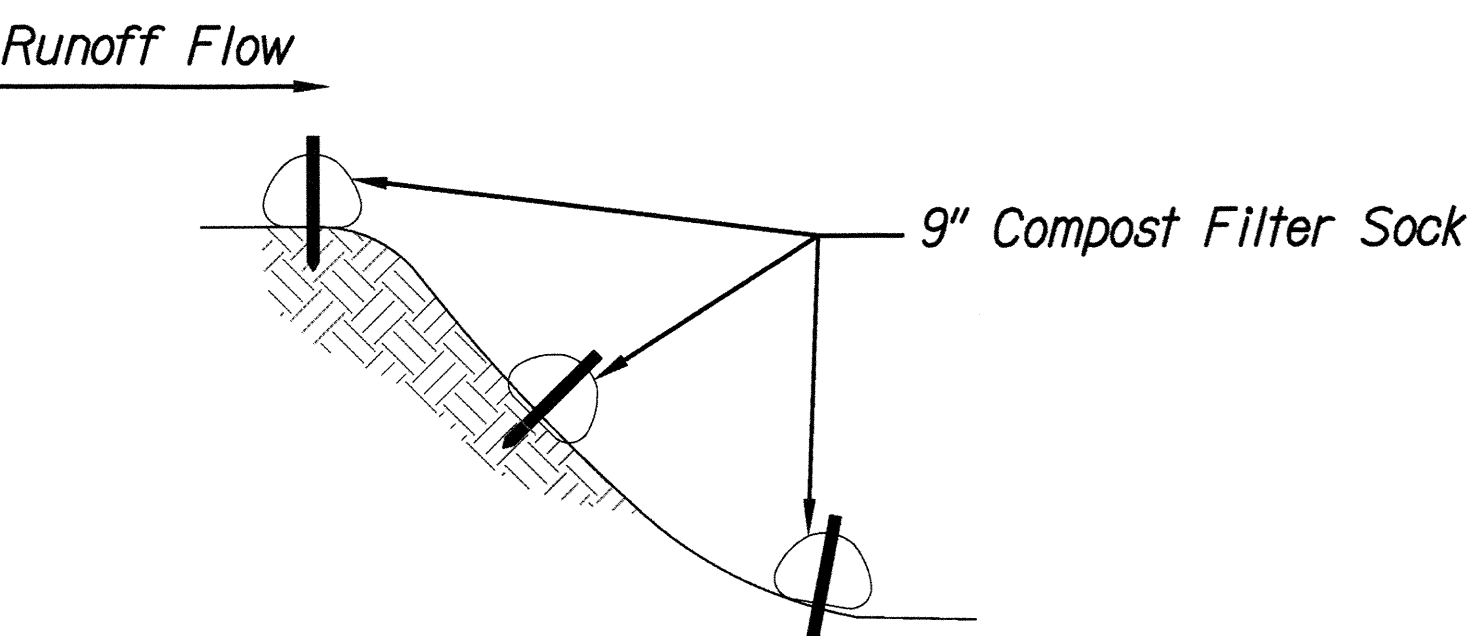


PLAN (SLOPE INTERRUPTION)

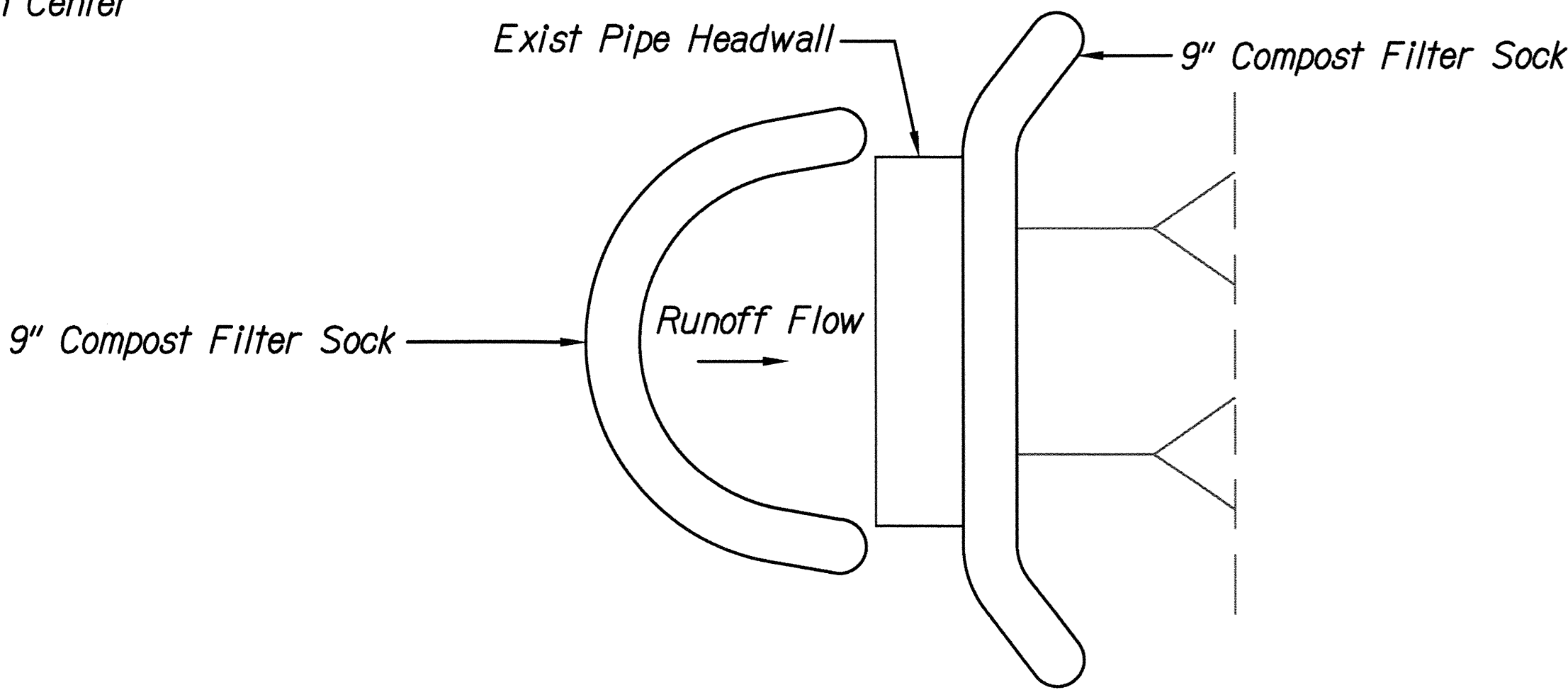
Slope Gradient	Wooden Stake Spacing
<4:1	Not Required
4:1 to 3:1	10' on Center
>3:1 to 2:1	5' to 10' on Center
>2:1	5' on Center



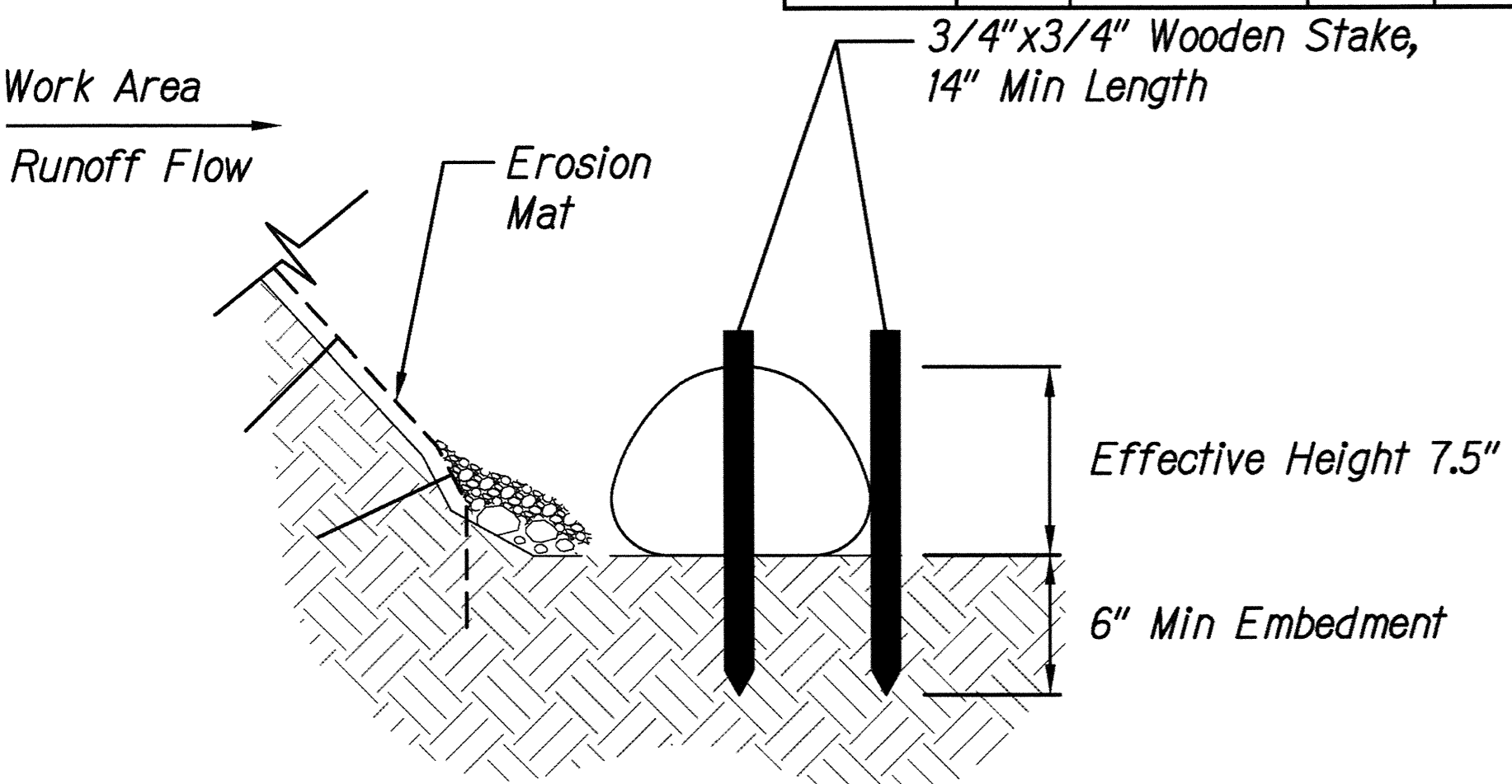
OVERLAPPING (ANCHORING)



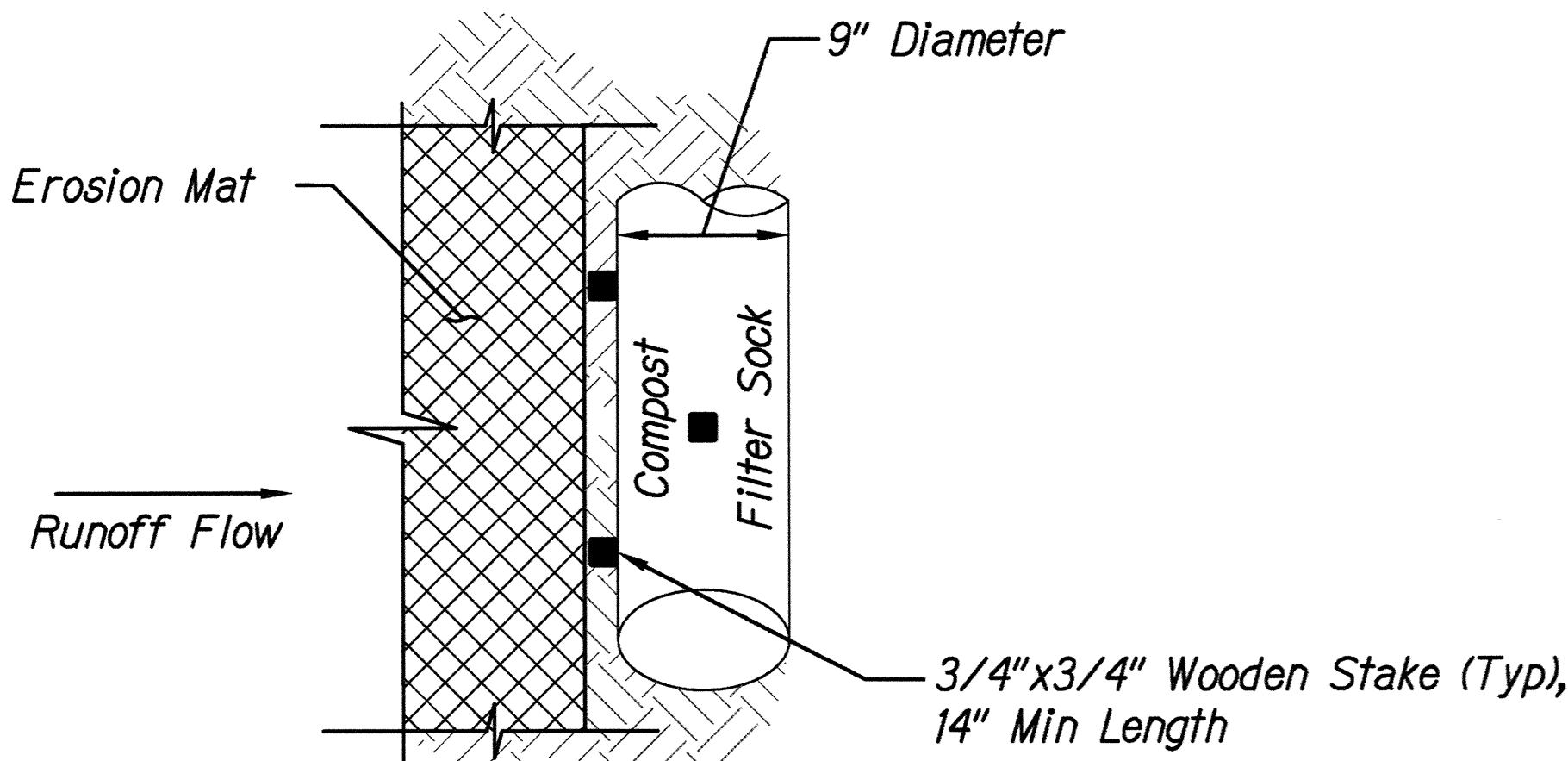
SECTION (SLOPE INTERRUPTION)



PLAN (INLET/OUTLET PROTECTION)



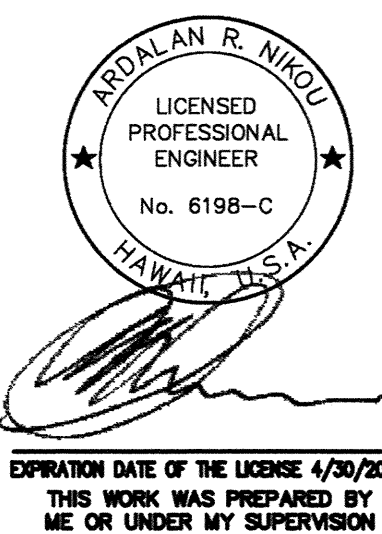
SECTION (ANCHORING)



PLAN (ANCHORING)

Compost Filter Sock Notes:

- Details provided as a minimum requirement. Contractor also to adhere to manufacturer's installation instructions.
- Compost shall not contain biosolids and should be consistent with EPA guidelines.



STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
HIGHWAYS DIVISION

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

ARDALAN R. NIKOU  
LICENSED PROFESSIONAL ENGINEER  
No. 6198-C  
HAWAII, U.S.A.

EXPIRATION DATE OF THE LICENSE 4/30/2018  
THIS WORK WAS PREPARED BY  
ME OR UNDER MY SUPERVISION

SHEET No. C1.6 OF 62 SHEETS



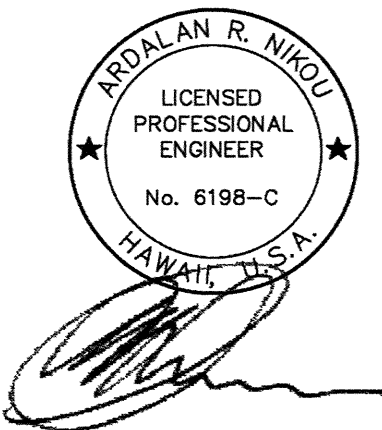
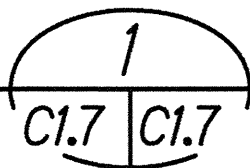
General Notes For Traffic Control Plan

1. The Permittee shall make minor adjustments at intersections, driveways, bridges, structures, etc., to fit field conditions.
2. Cones or delineators shall be extended to a point where they are visible to approaching traffic.
3. Traffic control devices shall be installed such that the sign or device farthest from the work area is placed first. The others shall then be placed progressively toward the work area.
4. Regulatory and warning signs within the construction zone that are in conflict with the traffic control plans shall be removed or covered.
5. Flaggers and/or police officers shall be in sight of each other or in direct communication at all times.
6. When required by the Issuing office, the Permittee shall install a flashing arrow signal as shown on the traffic control plans.
7. All traffic lanes shall be a minimum of 10-feet wide.
8. All construction warning signs shall be promptly removed or covered whenever the message is not applicable or not in use.
9. The backs of all signs used for traffic control shall be appropriately covered to preclude the display of inapplicable sign messages (i.e., when signs have messages on both faces).
10. Lane closure shall be limited only to the extent of accomplishing each day's work. As soon as each day's work is completed, the Permittee shall remove all traffic control devices no longer needed to permit free and safe passage of public traffic. Removal shall be in the reverse order of installation. Existing faded or obliterated pavement markings that are necessary for safe traffic flow in the construction area shall be replaced with temporary or permanent markings before opening the roadway to public traffic each day.
11. Permanent pavement markings and traffic signs shall be replaced upon completion of each phase of work.
12. Cones and delineators shall be spaced at a maximum distance of 20-feet apart. A minimum of six (6) channelizing devices shall be used for each taper length.
13. Driveways shall be kept open unless the owners of the property using the right-of-way are otherwise provided for satisfactorily. Further, the Permittee shall control traffic going in and out of driveways.
14. Buffer and taper areas on approach to any work area shall be kept clear of vehicles and equipment.
15. A high-level warning device (flag tree) shall be installed on approach to all work areas.
16. "No Parking" signs shall be posted within any work area and for the buffer and taper areas approaching the work area.
17. Traffic control plans are approved for work on any State highway area only between the hours of 8:30 am and 3:00 pm, Monday through Friday.

TABLE 1 FOR TRAFFIC CONTROL PLAN							
POSTED SPEED LIMIT (M.P.H.)	SIGN SPACING (L) (FEET)	TAPER LENGTH (T) (FEET)		LONGITUDINAL BUFFER SPACE (B) (FEET)	SPACING OF CONES OR DELINEATORS (FEET)		
		W = 12' OR LESS *	W = GREATER THAN 12' *		TAPER	TANGENT	WORK AREA
20	250	200	W X 17	35	20	20	10
25	250	200	W X 17	55	25	25	10
30	250	250	W X 20	85	30	30	10
35	250	250	W X 20	120	35	35	10
40	500	350	W X 30	170	40	40	10
45	500	550	W X 45	220	45	45	10
50	1000	600	W X 50	280	50	50	10
55	1000	700	W X 55	335	55	55	10

\* W = WIDTH OF LANE OR OFFSET

TRAFFIC NOTES  
Not to Scale



EXPIRATION DATE OF THE LICENSE 4/30/2016  
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STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
HIGHWAYS DIVISION

TRAFFIC NOTES

CULVERT REMEDIATION AT VARIOUS  
LOCATIONS ON OAHU, PHASE 1  
Project No. HWY-0-06-14

Scale: As Shown      Date: March 2016

SHEET No. CI.7 OF 62 SHEETS

STRUCTURAL NOTES:

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	HWY-0-06-14	2016	10	62

1. General:

- A. Workmanship and materials shall conform to the AASHTO LRFD Bridge Design Specification, 5th Edition, 2010 including its subsequent interim specifications, AASHTO A Policy on Geometric Design of Highway and Streets 2004 and subsequent revisions, AASHTO Roadside Design Guide, AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaries and Traffic Signals, 5th Edition 2009 and subsequent revisions, Hawaii Department of Transportation, Highways Division, Design Branch, Design Criteria for Bridges and Structures, dated October 20, 2010, Manual on Uniform Traffic Control Devices 2004 and the Hawaii Standard Specifications for Bridge and Road Construction, 2005 as modified by the State of Hawaii Department of Transportation.
- B. The Contractor shall take field measurements and verify field conditions and shall compare such field measurements and conditions with the drawings before commencing the work. Report in writing to the Engineer all inconsistencies or omissions.
- C. The Contractor shall be responsible for methods of construction, workmanship and job safety. The Contractor shall provide temporary shoring and bracing as required for stability of structural members and systems.
- D. Details noted as typical on structural drawings shall apply in all conditions unless specifically shown or noted otherwise.
- E. The Contractor shall be responsible for coordinating the work of all trades.
- F. The Contractor shall be responsible for protection of the adjacent properties, retaining walls, structures, streets, and utilities during the construction period. Any damage or deteriorated property shall be restored to the same or better condition at no cost to the State.

2. Foundation:

- A. Contractor shall provide for design and installation of all cribbing, sheeting, and shoring necessary for personnel safety and to preserve excavations and earth banks, and adjacent structures and property for damage.
- B. Unless noted otherwise, backfill shall be Type A structure backfill in accordance to Section 703.20, the 2005 State of Hawaii Standard Specifications. Backfill shall be placed in uniform lifts of no more than 8 inches in loose thickness and uniformly compacted to at least 95 percent relative compaction.

3. Concrete:

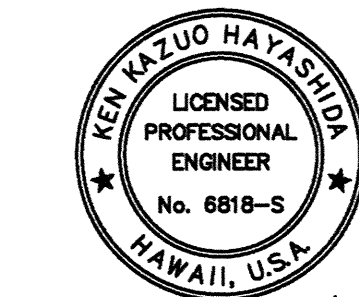
- A. Concrete shall be normal weight concrete and shall have minimum 28-day compressive strength the following:
- a. Fill for culvert invert void ----- 1,500 psi
- b. Concrete drainage swale ----- 4,000 psi
- c. Apron overlay ----- 4,000 psi
- d. Slipliner and seal ----- 4,000 psi
- e. Spall repair ----- Polymer modified, see notes SI.2
- B. All inserts, anchor bolts, plates, etc. embedded in concrete shall be hot-dip galvanized unless otherwise noted.
- C. Conduits, pipes, and sleeves passing through a wall not conforming to typical details shall be located and submitted to the Engineer for approval.
- D. Concrete delivery tickets shall record all free water in the mix: at batching by plant, for consistency by driver, and any additional request by Contractor if permitted by mix design.
- E. Reinforcing bars, anchor bolts, inserts and other items to be cast in the concrete shall be secured in position prior to placement of concrete.

4. Reinforcing Steel:

- A. Reinforcing steel shall be deformed bars conforming to ASTM A615, Grade 60.
- B. Welded reinforcing steel shall be low-alloy deformed bars conforming to ASTM A706.
- C. Welded wire fabric shall conform to ASTM A185, galvanized.
- D. Clear concrete cover for reinforcing bar shall be 3", unless otherwise noted.
- E. Reinforcing steel shall be spliced where indicated on plans. Provide lap splice length per typical details and schedule, unless otherwise noted.
- F. Welded wire fabric shall be lapped 8 inches or one full mesh plus 2 inches, whichever is greater.
- G. Mechanical splice connectors shall develop in tension 125 percent of the specified minimum yield strength of reinforcing bars.
- H. Bar bends and hook shall be "standard hooks" in accordance with AASHTO 5.10.2.3
- I. Minimum reinforcement bend diameters shall comply with AASHTO 5.10.2.3

5. High Density Polyethylene Pipe (HDPE) Slipliner:

- A. Should HDPE be used as slipliner material, it should meet the following notes and other related construction documents.
- B. The pipe shall be manufactured from a high density polyethylene material which meets or exceeds the minimum cell classification 345464C when classified in accordance with ASTM D3350.
- C. The polyethylene raw material shall contain a minimum of 2%, well dispersed finely divided carbon black for UV stabilization. Additives which can be conclusively proven not to be detrimental to the pipe may also be used provided that the pipe produced meets or exceeds all of the requirements of this specification.
- D. The pipe shall contain no recycled compound except that generated in the manufacturers' own plant from resin of the same specification and from the same raw material supplier.
- E. The pipe material shall be resistant to corrosion from Hydrogen Sulfide and pH values between 2 and 13.
- F. The pipe shall be homogenous throughout and free from visible cracks, holes, foreign inclusions or other injurious defects. The pipe shall be as uniform as commercially practical in color, opacity, density and other physical properties.
- G. The liner outside diameter should allow for sufficient clearance to accommodate the slip-lining process and to allow for inconsistencies, deflections, and all other obstructions within the existing culvert.



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STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HIGHWAYS DIVISION	
<b>STRUCTURAL NOTES</b>	
CULVERT REMEDIATION AT VARIOUS LOCATIONS ON OAHU, PHASE 1	
Project No. HWY-0-06-14	
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STRUCTURAL NOTES (CONT'):

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	HWY-0-06-14	2016	11	62

7. Fiberglass Reinforced Polymer (FRP) Pipe Slipliner:

- A. Should FRP pipe be used as slipliner material, it should meet the following notes and other related construction documents.
- B. The pipe shall be manufactured from glass fibers with quality commercial grade E-glass filaments with binder and sizing compatible with impregnating resins.
- C. Pipes shall be manufactured and tested in accordance with ASTM D3262.
- D. The polyethylene raw material shall contain a minimum of 2%, well dispersed finely divided carbon black for UV stabilization. Additives which can be conclusively proven not to be detrimental to the pipe may also be used provided that the pipe produced meets or exceeds all of the requirements of the specification.
- E. The pipe shall contain no recycled compound except that generated in the manufacturers' own plant from resin of the same specification and from the same raw material supplier.
- F. Unless otherwise specified, the pipe shall be field connected with low-profile, fiberglass bell-spigot joints or flush fiberglass bell-spigot joints, when the fit requires. Either joint shall utilize elastomeric sealing gaskets as the sole means to maintain joint water tightness and shall meet the performance requirements of ASTM D4161.
- G. Stiffness: Minimum pipe stiffness when tested in accordance with ASTM D2412 shall be 36 psi.

8. Slipliner Installation Notes:

- A. Prior to installing the liner pipe, the existing culvert shall be cleaned of all silt and debris.
- B. In order to insure the flow of grout around the full circumference of the liner pipe the contractor shall determine if it is necessary to install rails (wood) to guide the liner pipe during its' insertion. The installation plan shall be reviewed by the engineer.
- C. Different jacking or pulling techniques can be used to insert the liner pipe. The jacking or pulling force must be uniformly distributed to avoid damaging the pipe. Refer to manufacturer's recommendations regarding installation.
- D. The annular space between the existing culvert and the liner pipe shall be filled with grout. The function of the grout is; to support the liner pipe from hydrostatic pressure; to prevent point loading and eventual over-deflection of the liner pipe; or to fill voids in the original culvert's bedding and avoid road settlement. Precautions should be taken not to overload the liner pipe with grouting pressure.
- E. Grout shall have a minimum 28 day compressive strength of 100 psi. The grout shall be mixed using cement and contain no sand or aggregate. The density of the grout should not exceed 65 pcf. Install formwork for grout to provide space for concrete end seal. Remove all formwork before pouring seals.
- F. The contractor shall prepare and submit to the owner a detailed grouting plan which contains as a minimum, a detailed description of the equipment and operational procedures to accomplish the annular grouting operation, including grout design, grout mix type, grout samples, and test data. The density of the grout shall be measured throughout the placement procedure. Samples, to determine the 28 day compressive strength, shall be taken at the beginning, middle and end of the grouting procedure.
- G. Precautions shall be taken to prevent flotation of the liner pipe. Weirs may be placed in the liner pipe to restrict flow and allow the liner pipe to remain partially full to offset flotation by the grout.

9. Spall Repair:

Surface Preparation Notes for Spall Repairs:

- A. Deteriorated concrete shall be removed down to sound substrate, or to the specified depth as noted in the spall repair details whichever is greater. Sawcut all edges a minimum of 1/2" deep, no feathering of patching material is allowed. Avoid cutting any reinforcing steel when sawcutting. The exposed concrete shall be roughened to a 1/8" amplitude and shall be cleaned and free of laitance, dust and other bond inhibiting materials.
- B. All reinforcing steel damaged due to the contractor's operations shall be repaired by the contractor at his/her expense and to the satisfaction of the engineer.
- C. Any exposed reinforcing steel, whether fully exposed or only partially exposed, shall be exposed all around, creating a minimum 3/4" annular space around rebar.

Bonding Agent:

- A. Apply bonding agent if recommended by the patching mortar manufacturer and in accordance with the following
- B. After the concrete surfaces have been prepared and cleaned, and immediately before placing the concrete patching, a coat of bonding agent shall be applied. The surface shall receive a thorough and even coating, and excess bonding agent shall not be permitted to collect in pockets surface depressions. The rate of progress in applying area applied with the bonding agent shall be limited so that it does not become dry before it is covered with the concrete patching. Should the surface of the bonding agent dry, the dried bonding agent shall be completely removed and fresh bonding agent applied. Removal shall be by abrasion sandblasting or by another procedure approved by the engineer. The removal of bonding agent shall be at the expense of the contractor.
- C. The bonding agent if required, shall be designed to provide corrosion protection to the reinforcing steel and shall act as a bonding agent for the fresh patching mortar. Follow manufacturer's specifications for recommended time between application of bonding agent and patching mortar and coat thickness.

Polymer Modified Patching Mortar:

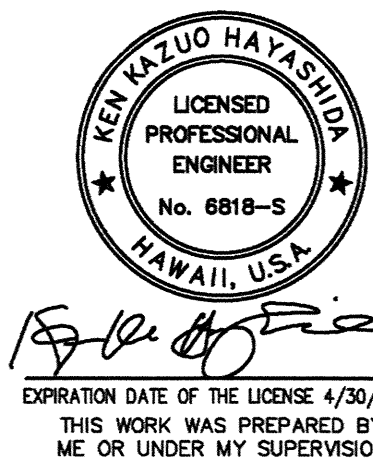
- A. Patching mortar shall be a polymer modified mortar, with high abrasion resistance and shall be suitable for horizontal, vertical and overhead surfaces. The minimum bond strength provided by the patching mortar shall be 2,000 psi after 28 days (ASTM C-882). The compressive strength shall be 5,000 psi after 28 days (ASTM C-109). Refer to manufacturer's specifications for preparation and application guidance.

Curing:

As per ACI recommendations for Portland cement concrete, curing is required. Follow the manufacturer's recommendation for curing material and procedure.

Multiple Lifts:

Follow the manufacturer's limitations for maximum thickness for application of patching mortar lift. If the required thickness of a repair is greater than the single application limit, multiple lifts are required. Large, unconfined or overhead repairs may also require multiple lifts. If successive lifts are to be applied, roughen the surface of the previous lift according to manufacturer's recommendations and apply subsequent lifts within the time period, both as recommended by the manufacturer.



STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HIGHWAYS DIVISION	
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