

STATE OF HAWAII  
DEPARTMENT OF HAWAIIAN HOME LANDS

# NANAKULI FLOOD CONTROL CHANNEL OUTLET EMERGENCY TEMPORARY REPAIRS

NANAKULI, OAHU, HAWAII

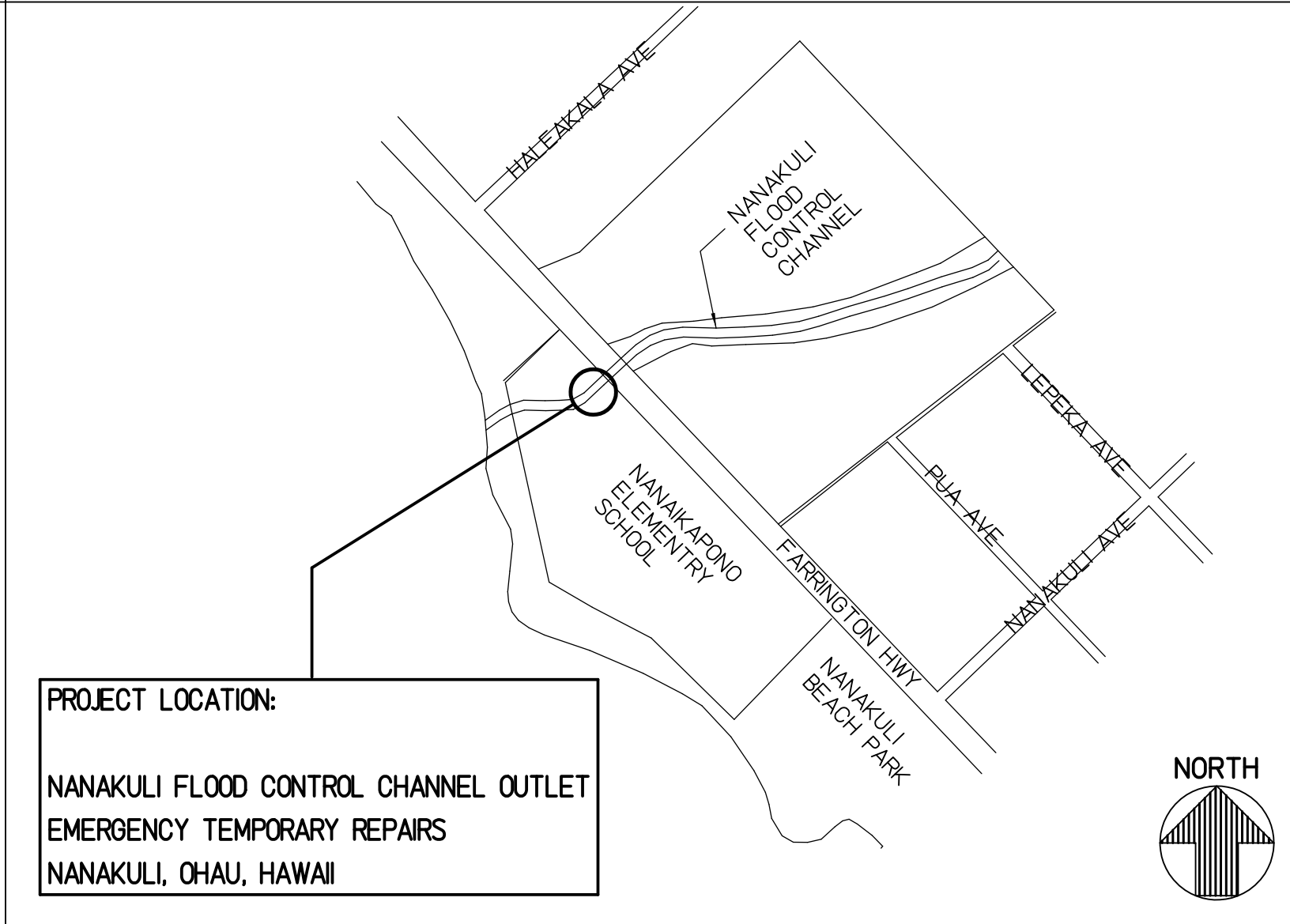
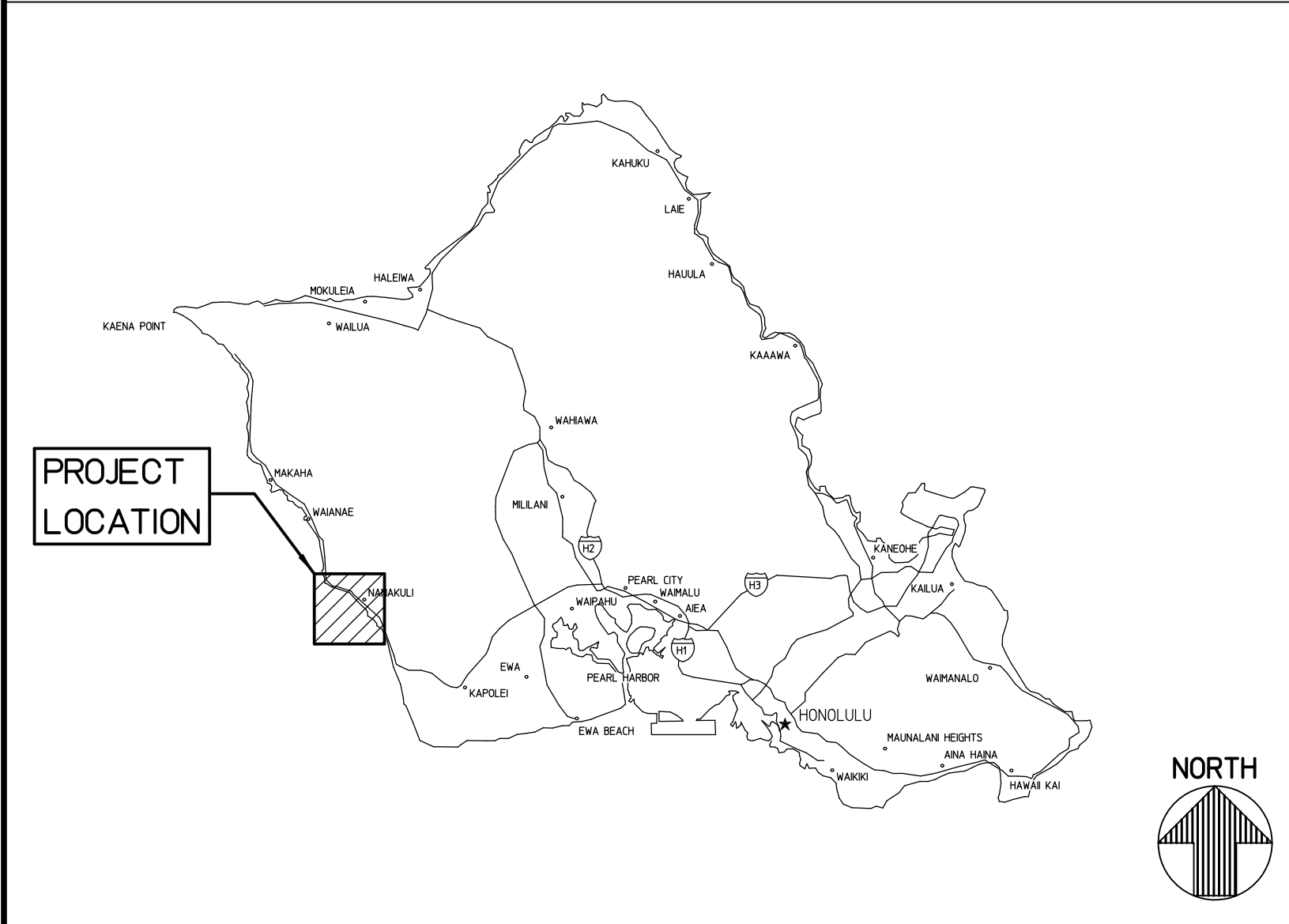
T.M.K.: (1) 8-9-001:004, (1) 8-9-001:002

IFB-26-HHL-010

I:\Project Data - 2020\Projects\20-076 DHHL PS-20-LDD-012 T01 Rehabilitation of School Seawall\Drawings\Structural\Me\0\RS001-TITLE SHEET

GENERAL NOTES	PARCEL DATA	PREPARED FOR	INDEX TO DRAWINGS															
<ol style="list-style-type: none"> <li>THE INFORMATION CONTAINED HEREIN IS BASED UPON LIMITED FIELD INVESTIGATIONS AND AVAILABLE RECORD DRAWINGS.</li> <li>DRAWINGS ARE INTENDED TO PROVIDE A GRAPHIC ILLUSTRATION OF DESIGN CONCEPT ONLY AND DEPICT THE GENERAL PLACEMENT OF CERTAIN COMPONENTS IN RELATION TO EACH OTHER.</li> <li>FOR CLARITY, DETAIL DRAWINGS DO NOT SHOW ALL COMPONENTS OR ILLUSTRATE ALL FIELD CONDITIONS THAT MAY BE PRESENT.</li> <li>CONTRACTOR SHALL TAKE MEASUREMENTS AND FIELD-VERIFY ALL CONDITIONS AND DIMENSIONS PRIOR TO CONSTRUCTION AND/OR FABRICATION.</li> <li>ALL CONSTRUCTION SHALL CONFORM TO THE FOLLOWING BUILDING CODES: 2012 IBC</li> </ol>	<p>PARCEL NUMBER: 890010040000</p> <p>TOTAL LAND AREA (ACRES): 18.052</p> <p>PROPERTY CLASS: RESIDENTIAL</p> <p>ZONING DESIGNATION: R-5, P-2</p> <p>FEMA FLOOD DESIGNATION: ZONE AE</p>	<p>DEPARTMENT OF HAWAIIAN HOME LANDS, STATE OF HAWAII</p> <p>LAND DEVELOPMENT DIVISION 91-5420 KAPOLEI PARKWAY KAPOLEI, HAWAII 96707</p> <p>CONTACT:  WILLIAM J. AILA JR. CHAIRMAN, HAWAIIAN HOMES COMMISSION</p>	<table border="1"> <thead> <tr> <th>COUNT</th> <th>SHEET NO.</th> <th>SHEET DESCRIPTION</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>RS001</td> <td>TITLE SHEET</td> </tr> <tr> <td>2</td> <td>RS101</td> <td>SHORING AND SHOTCRETING PLAN</td> </tr> <tr> <td>3</td> <td>RS201</td> <td>DETAILS</td> </tr> <tr> <td>4</td> <td>RS202</td> <td>BMP ON SHOTCRETE CONSTRUCTION</td> </tr> </tbody> </table>	COUNT	SHEET NO.	SHEET DESCRIPTION	1	RS001	TITLE SHEET	2	RS101	SHORING AND SHOTCRETING PLAN	3	RS201	DETAILS	4	RS202	BMP ON SHOTCRETE CONSTRUCTION
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2	RS101	SHORING AND SHOTCRETING PLAN																
3	RS201	DETAILS																
4	RS202	BMP ON SHOTCRETE CONSTRUCTION																

ISLAND MAP	LOCATION MAP	PREPARED BY
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HAWAII ENGINEERING GROUP, INC.

1088 BISHOP STREET, SUITE 2506  
HONOLULU, HAWAII 96813

REVISION NO.	DATE	REVISIONS	BY

DESIGNED BY: TTP  
DRAWN BY: AK  
CHECKED BY: AD  
DATE: 10/17/2022

DEPARTMENT OF HAWAIIAN HOME LANDS

**NANAKULI FLOOD CONTROL CHANNEL OUTLET  
EMERGENCY TEMPORARY REPAIRS  
NANAKULI, OAHU, HAWAII  
T.M.K.: (1) 8-9-001:004, (1) 8-9-001:002**

**TITLE SHEET**

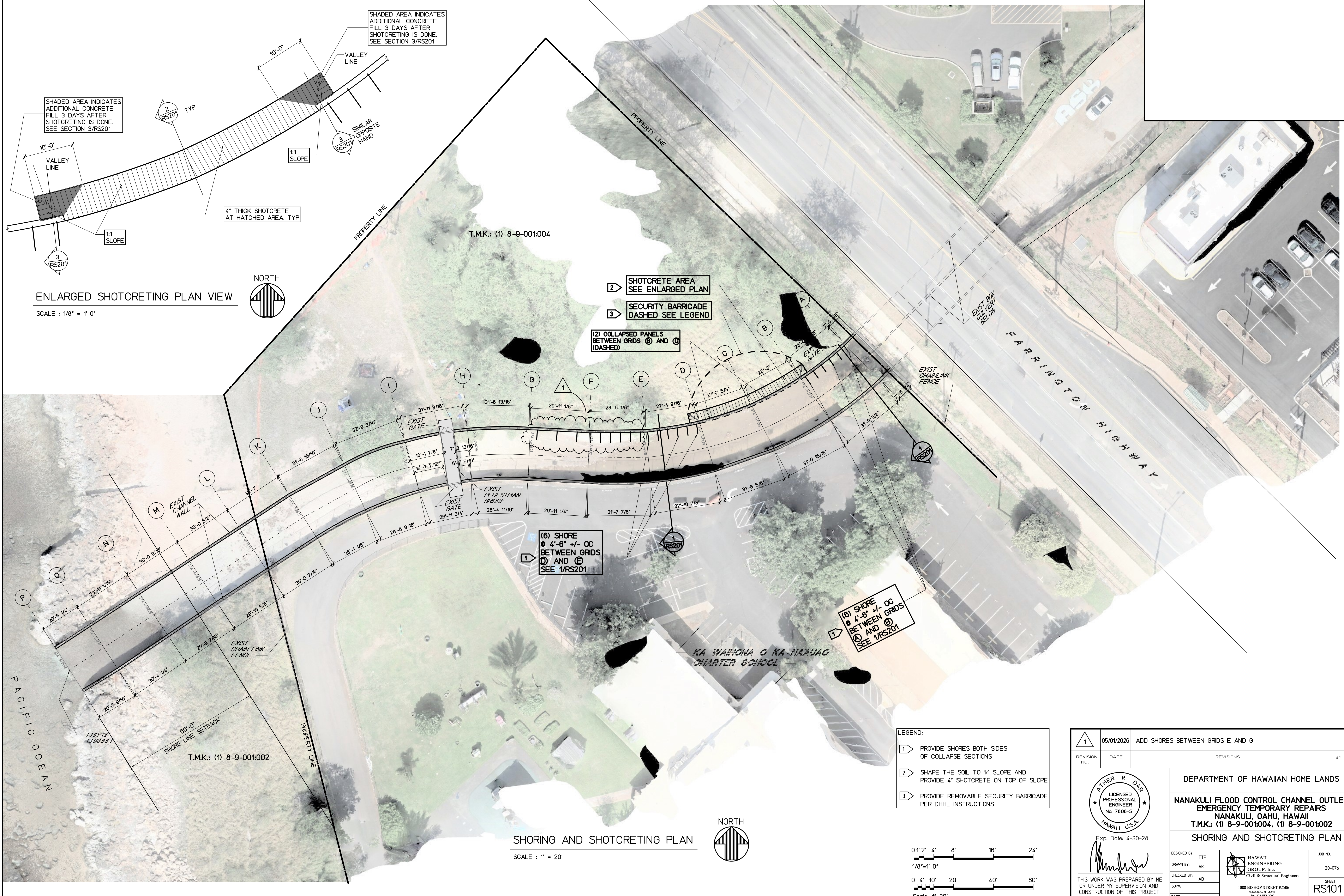
JOB NO.  
20-076

SHEET  
**RS001**

1 OF 4 SHEETS

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION AND CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION

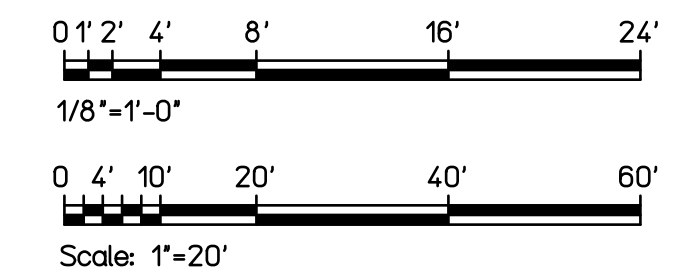
J:\Project Data - 2020\Projects\20-076 DHHL PS-20-LDD-012 T01 Rehabilitation of School Seawall\Drawings\Structural\Me\0\RS101-SHORING AND SHOTCRETING PLAN Plot date: 4-May-2026

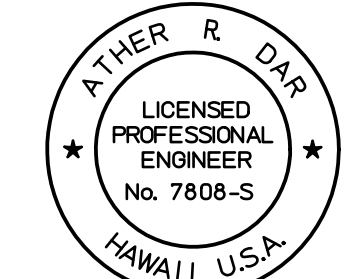


**ENLARGED SHOTCRETING PLAN VIEW**  
SCALE : 1/8" = 1'-0"

**SHORING AND SHOTCRETING PLAN**  
SCALE : 1" = 20'

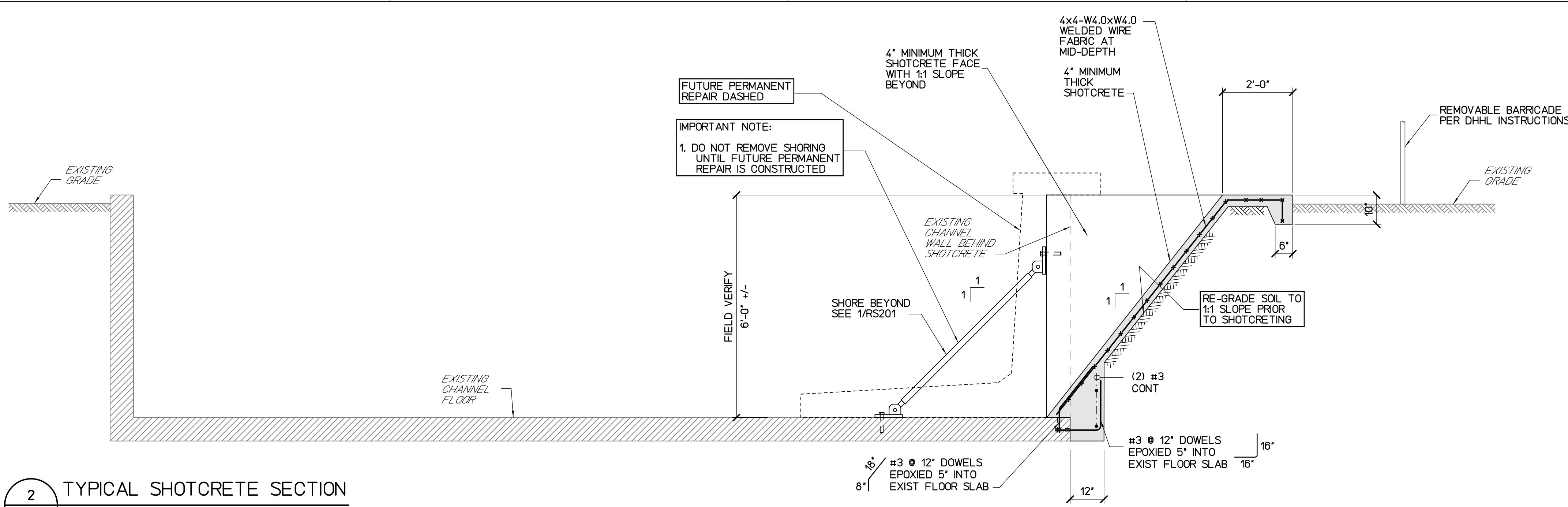
- LEGEND:
- 1 PROVIDE SHORES BOTH SIDES OF COLLAPSE SECTIONS
  - 2 SHAPE THE SOIL TO 1:1 SLOPE AND PROVIDE 4" SHOTCRETE ON TOP OF SLOPE
  - 3 PROVIDE REMOVABLE SECURITY BARRICADE PER DHHL INSTRUCTIONS



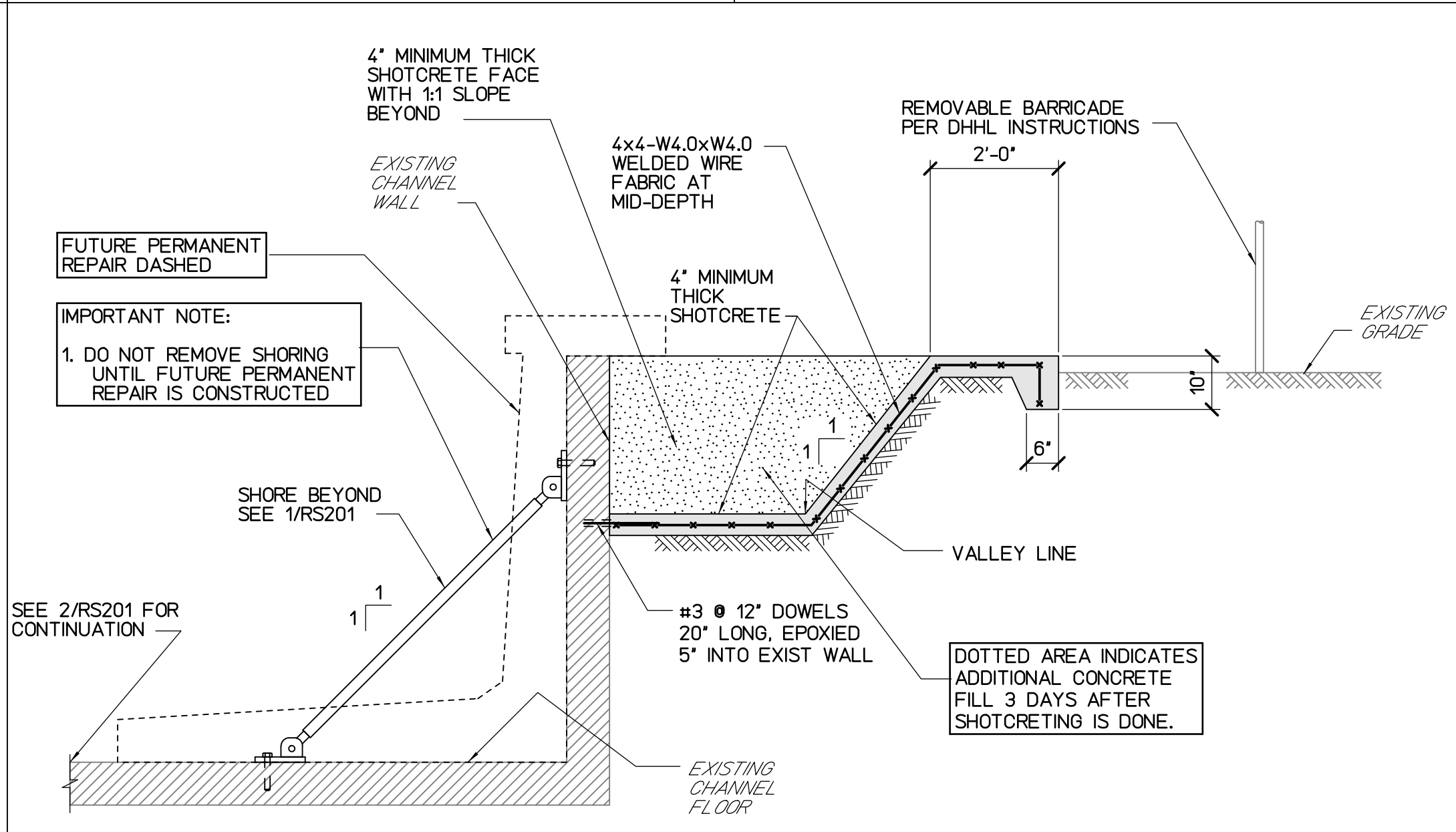
1	05/01/2026	ADD SHORES BETWEEN GRIDS E AND G	
REVISION NO.	DATE	REVISIONS	BY
			
DEPARTMENT OF HAWAIIAN HOME LANDS <b>NANAKULI FLOOD CONTROL CHANNEL OUTLET          EMERGENCY TEMPORARY REPAIRS</b> NANAKULI, OAHU, HAWAII T.M.K.: (1) 8-9-001:004, (1) 8-9-001:002 <b>SHORING AND SHOTCRETING PLAN</b>			
DESIGNED BY: TTP	HAWAII ENGINEERING GROUP, Inc.		JOB NO. 20-076
DRAWN BY: AK	Civil & Structural Engineers		
CHECKED BY: AD	1088 BISHOP STREET #2106 HONOLULU, HI 96813 TEL: 808-539-2092		SHEET <b>RS101</b>
SUPV:	DATE: 10/17/2022		2 OF 4 SHTS

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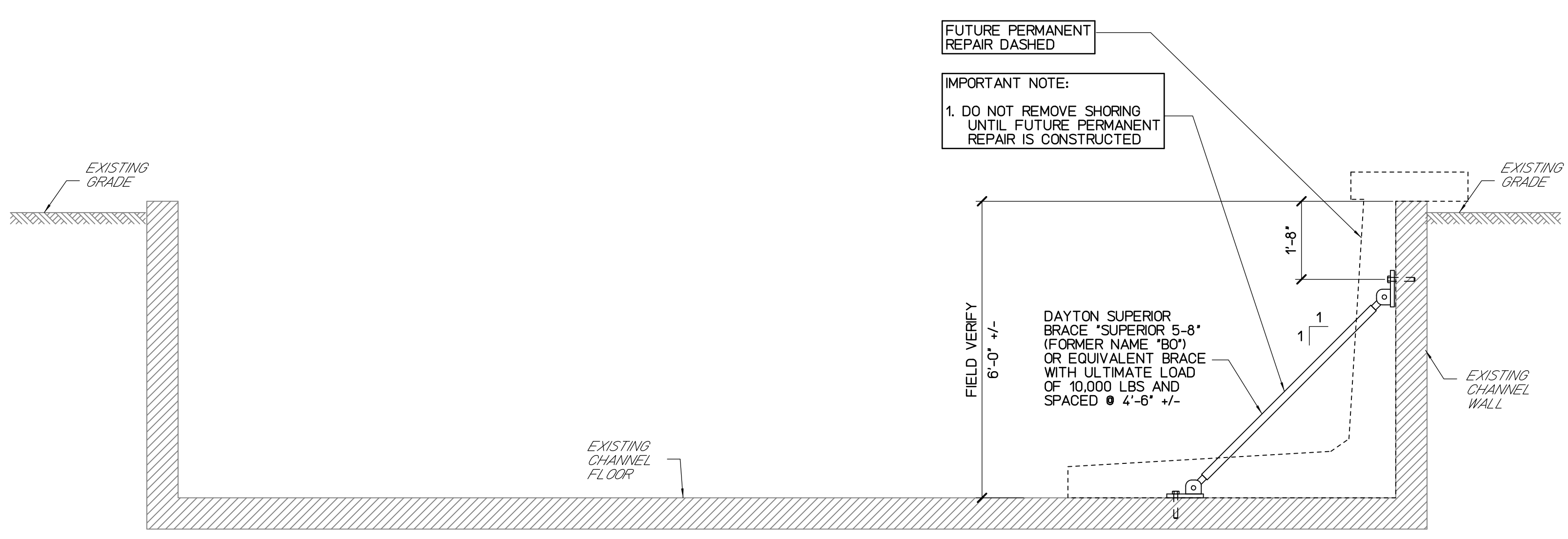
J:\Project Data - 2020 Projects\20-076 DHHL PS-20-LDD-012 T01 Rehabilitation of School Seawall\Drawings\Structural\Me\0\RS201-DETAILS  
 Plot date: 4-May-2026



**2** TYPICAL SHOTCRETE SECTION  
 RS201 SCALE : 1/2" = 1'-0"



**3** SHOTCRETE SECTION AT VALLEY  
 RS201 SCALE : 1/2" = 1'-0"



**1** STEEL BRACE DETAIL  
 RS201 SCALE : 1/2" = 1'-0"

**STRUCTURAL NOTES**

- GENERAL:
1. THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND CONDITIONS PRIOR TO THE START OF THE JOB AND NOTIFY ALL DISCREPANCIES TO THE ARCHITECT
  2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL SHORING. THE CONTRACTOR SHALL PROVIDE TEMPORARY ERECTION BRACING AND SHORING FOR ALL STRUCTURAL MEMBERS AS REQUIRED FOR STRUCTURAL STABILITY OF THE STRUCTURE DURING ALL PHASES OF CONSTRUCTION. THE CONTRACTOR SHALL ALSO BE RESPONSIBLE FOR MEANS AND METHODS OF CONSTRUCTION INCLUDING BUT NOT LIMITED TO SAFETY MEASURES TO PROTECT THE STRUCTURE, WORKMEN OR OTHER PERSONS DURING CONSTRUCTION.
  3. THE CONTRACTOR SHALL PROTECT AND SHIELD FROM DAMAGE ALL AREAS ADJACENT TO AND SURROUNDING THE CONSTRUCTION WORK. EXISTING CONDITIONS OR AREAS DAMAGED OR DISTURBED BY THE CONTRACTOR'S OPERATIONS SHALL BE RESTORED TO THEIR ORIGINAL CONDITION.

- CONCRETE AND REINFORCING STEEL:
1. UNLESS NOTED OTHERWISE THE 28-DAY COMPRESSIVE STRENGTH OF CONCRETE SHALL BE MIN. 3,000 PSI AND AGGREGATE SIZE SHALL BE 3/4" OR LESS.
  2. ALL REINFORCING STEEL FOR NORMAL USE (NOT TO BE WELDED) SHALL BE HIGH STRENGTH DEFORMED BARS CONFORMING TO ASTM A 615, GRADE 60.
  3. BENDS NOT DIMENSIONED SHALL BE STANDARD HOOKS.
  4. WELDED WIRE FABRIC LAP SHALL BE 12 INCHES MINIMUM.
  5. EPOXY SHALL BE SIMPSON SET-XP FOR REBAR GROUTING



REVISION NO.	DATE	REVISIONS	BY

**ATHER R. DAB**  
 LICENSED PROFESSIONAL ENGINEER  
 No. 7808-S  
 HAWAII, U.S.A.  
 Exp. Date: 4-30-28

DEPARTMENT OF HAWAIIAN HOME LANDS

**NANAKULI FLOOD CONTROL CHANNEL OUTLET EMERGENCY TEMPORARY REPAIRS**

NANAKULI, OAHU, HAWAII

T.M.K.: (1) 8-9-001:004, (1) 8-9-001:002

**BRACING PLANS AND DETAILS**

JOB NO. 20-076

SHEET **RS201**

3 OF 4 SHEETS

DESIGNED BY: TTP	<p>HAWAII ENGINEERING GROUP, Inc. Civil &amp; Structural Engineers</p> <p>1088 BISHOP STREET #2506 HONOLULU, HI 96813 Tel: 808-539-2092</p>	JOB NO. 20-076
DRAWN BY: AK		SHEET <b>RS201</b>
CHECKED BY: AD		3 OF 4 SHEETS
SUPV: DATE: 10/17/2022		

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BEST MANAGEMENT PRACTICE (BMP) NOTES

GOOD HOUSEKEEPING BMPs:

- BMP AND SITE MAINTENANCE**
  - REGULARLY INSPECT AND MAINTAIN BMPs TO ENSURE CONTINUED PERFORMANCE.
- CONCRETE WASTE MANAGEMENT**
  - PREVENT OR REDUCE THE DISCHARGE OF POLLUTANTS TO STORM WATER FROM CONCRETE WASTE BY CONDUCTING WASHOUT OFFSITE OR PERFORMING ONSITE WASHOUT IN A DESIGNATED AREA CONSTRUCTED AND MAINTAINED IN SUFFICIENT QUANTITY AND SIZE TO CONTAIN ALL LIQUID AND CONCRETE WASTE GENERATED BY WASHOUT OPERATIONS.
  - PLASTIC LINING MATERIAL SHOULD BE A MINIMUM OF 10-MILLIMETER POLYETHYLENE SHEETING AND SHOULD BE FREE OF HOLES, TEARS, OR OTHER DEFECTS THAT COMPROMISE THE IMPERMEABILITY OF THE MATERIAL.
  - CONTAINMENT AREAS OR DEVICES SHOULD NOT BE LOCATED WHERE ACCIDENTAL RELEASE OF THE CONTAINED LIQUID CAN DISCHARGE TO WATER BODIES, CHANNELS, OR STORM DRAINS.
  - WASHOUT FACILITIES MUST BE CLEANED, OR NEW FACILITIES MUST BE CONSTRUCTED AND READY FOR USE ONCE THE WASHOUT IS 75 PERCENT FULL.
  - ONCE CONCRETE WASTES ARE WASHED INTO THE DESIGNATED AREA AND ALLOWED TO HARDEN, THE CONCRETE SHOULD BE BROKEN UP, REMOVED, AND DISPOSED OF AS SOLID WASTES.
- STOCKPILE MANAGEMENT**
  - STOCKPILES SHALL NOT BE LOCATED IN DRAINAGE WAYS, WITHIN 50 FEET FROM AREAS OF CONCENTRATED FLOWS, AND ARE NOT ALLOWED IN THE CITY RIGHT-OF-WAY. SEDIMENT BARRIERS OR SILT FENCES SHALL BE USED AROUND THE BASE OF ALL STOCKPILES. STOCKPILES SHALL NOT EXCEED 15 FEET IN HEIGHT. STOCKPILES GREATER THAN 15 FEET IN HEIGHT SHALL REQUIRE 8-FOOT WIDE BENCHING IN ACCORDANCE WITH ROH CHAPTER 18A, ARTICLE 3. STOCKPILES MUST BE COVERED WITH PLASTIC SHEETING OR A COMPARABLE MATERIAL IF THEY WILL NOT BE ACTIVELY USED WITHIN 7 DAYS.
- VEHICLE TRACKING CONTROL**
  - RESTRICT VEHICLE TRAFFIC TO PROPERLY DESIGNATED AREAS AND REMOVE SEDIMENT FROM VEHICLE TIRES PRIOR TO EXITING THE PROJECT SITE. ALL SEDIMENTS THAT ARE TRACKED OR DISCHARGED OFF-SITE MUST BE SWEEPED OR VACUUMED AT THE END OF EACH DAY.
- MATERIALS DELIVERY, STORAGE AND USE MANAGEMENT**
  - MINIMIZE THE STORAGE OF POTENTIAL POLLUTANTS ONSITE. STORE MATERIALS IN A DESIGNATED AREA, AND INSTALL SECONDARY CONTAINMENT. DO NOT STORE MATERIALS IN BUFFER AREAS, NEAR AREAS OF CONCENTRATED FLOW, OR AREAS ABUTTING THE CITY STORM DRAINAGE SYSTEM, RECEIVING WATERS, OR DRAINAGE IMPROVEMENTS THAT DISCHARGE OFF-SITE.
- SPILL PREVENTION AND CONTROL**
  - KEEP AMPLE SUPPLY OF CLEANUP MATERIAL ON SITE. CLEAN UP SPILLS IMMEDIATELY, USING DRY CLEAN-UP METHODS WHERE POSSIBLE, AND DISPOSE OF USED MATERIALS PROPERLY.
- SOLID WASTE MANAGEMENT**
  - PREVENT OR REDUCE DISCHARGE OF POLLUTANTS TO THE LAND, GROUNDWATER, AND IN STORM WATER FROM SOLID WASTE OR CONSTRUCTION AND DEMOLITION WASTE BY PROVIDING DESIGNATED WASTE COLLECTION AREAS, COLLECT SITE TRASH DAILY, AND ENSURING THAT CONSTRUCTION WASTE IS COLLECTED, REMOVED, AND DISPOSED OF ONLY AT AUTHORIZED DISPOSAL AREAS.
- PORTABLE TOILETS (SANITARY/SEPTIC WASTE MANAGEMENT)**
  - TEMPORARY AD PORTABLE SANITARY AND SEPTIC WASTE SYSTEMS SHALL BE MOUNTED OR STAKED IN, WELL-MAINTAINED AND SCHEDULED FOR REGULAR WASTE DISPOSAL AND SERVICING. SOURCES OF SANITARY AND/OR SEPTIC WASTE SHALL NOT BE STORE NEAR THE MS4 OR RECEIVING WATERS.
- VEHICLE AND EQUIPMENT CLEANING, FUELING, AND MAINTENANCE**
  - PREVENT POLLUTANTS IN STORM WATER FROM VEHICLE AND EQUIPMENT CLEANING, FUELING AND MAINTENANCE BY USING OFF-SITE FACILITIES WHEN FEASIBLE, PERFORMING WORK IN DESIGNATED AREA ONLY, USING SPILL PADS UNDER VEHICLES AND EQUIPMENT, CHECKING FOR LEAKS AND SPILLS, AND CONTAINING AND CLEANING UP SPILLS IMMEDIATELY.
- HAZARDOUS MATERIALS**
  - PREVENT OR REDUCE THE DISCHARGE OF POLLUTANTS TO STORM WATER FROM HAZARDOUS WASTE THROUGH PROPER MATERIAL USE AND WASTE DISPOSAL. IN THE EVENT THAT HAZARDOUS MATERIALS ARE DISCHARGED TO THE MS4, THE PROPERTY OWNER OR ESCP COORDINATOR SHALL IMMEDIATELY NOTIFY THE DEPARTMENT OF FACILITIES MAINTENANCE, HONOLULU FIRE DEPARTMENT, AND HONOLULU POLICE DEPARTMENT OF THE DISCHARGE BY TELEPHONE. A WRITTEN REPORT DESCRIBING THE POLLUTANTS THAT WERE DISCHARGED, THE REASONS FOR THE DISCHARGE, AND THE MEASURES THAT HAVE BEEN TAKEN OR WILL BE TAKEN TO PREVENT A REOCCURRENCE OF THE DISCHARGE SHALL BE SUBMITTED TO THE DIRECTOR NO LESS THAN 3 DAYS AFTER NOTIFICATION BY PHONE.
- NON-HAZARDOUS MATERIALS**
  - IN THE EVENT THAT NON HAZARDOUS MATERIALS ARE DISCHARGED TO THE MS4, THE PROPERTY OWNER OR ESCP COORDINATOR SHALL NOTIFY THE CITY DEPARTMENT OF FACILITIES MAINTENANCE BY TELEPHONE NO LATER THAN THE NEXT BUSINESS DAY. A WRITTEN REPORT DESCRIBING THE POLLUTANTS THAT WERE DISCHARGED, THE REASONS FOR THE DISCHARGE, AND THE MEASURES THAT HAVE BEEN TAKEN OR WILL BE TAKEN TO PREVENT A REOCCURRENCE OF THE DISCHARGE SHALL BE SUBMITTED TO THE DIRECTOR NO LESS THAN 3 DAYS AFTER NOTIFICATION BY PHONE.

OMITTED BMPs:

- A COMPREHENSIVE LIST OF BMPs BASED ON THE DPP RULES RELATING TO WATER QUALITY AND GUIDANCE DOCUMENTS MENTIONED ABOVE, WHERE REVIEWED TO COMPLETE THIS ESCP. THE FOLLOWING BMPs WERE DETERMINED TO BE NOT APPLICABLE BECAUSE THEY WOULD NOT EFFECTIVELY MANAGE EROSION PREVENTION AND SEDIMENT CONTROL BASED ON THE SPECIFIC SITE CONDITIONS. AS CONSTRUCTION PROGRESSES, REVISIONS MAY BE NECESSARY AND WILL BE PROVIDED TO DPP INSPECTORS.

OMITTED BMPs	RATIONALE
DEWATERING OPERATIONS	THERE WILL BE NO DEWATERING ON SITE.
LIQUID WASTE MANAGEMENT	THERE WILL BE NO LIQUID WASTE OR NON-STORM WATER ON SITE
SLOPE MANAGEMENT AND PROTECTION	WORK WILL BE ACTIVELY PERFORMED ON THE SLOPE
CONTAMINATED SOIL MANAGEMENT	THERE ARE NO CONTAMINATED SOILS ANTICIPATED ON SITE.
VEHICLE AND EQUIPMENT CLEANING, FUELING AND MAINTENANCE	THERE WILL BE NO ON-SITE CLEANING, FUELING OR MAINTENANCE OF ANY CONSTRUCTION VEHICLES OR EQUIPMENT.
DUST CONTROL	THERE WILL BE NO GENERATED DUST TRANSPORTED FROM THE SITE

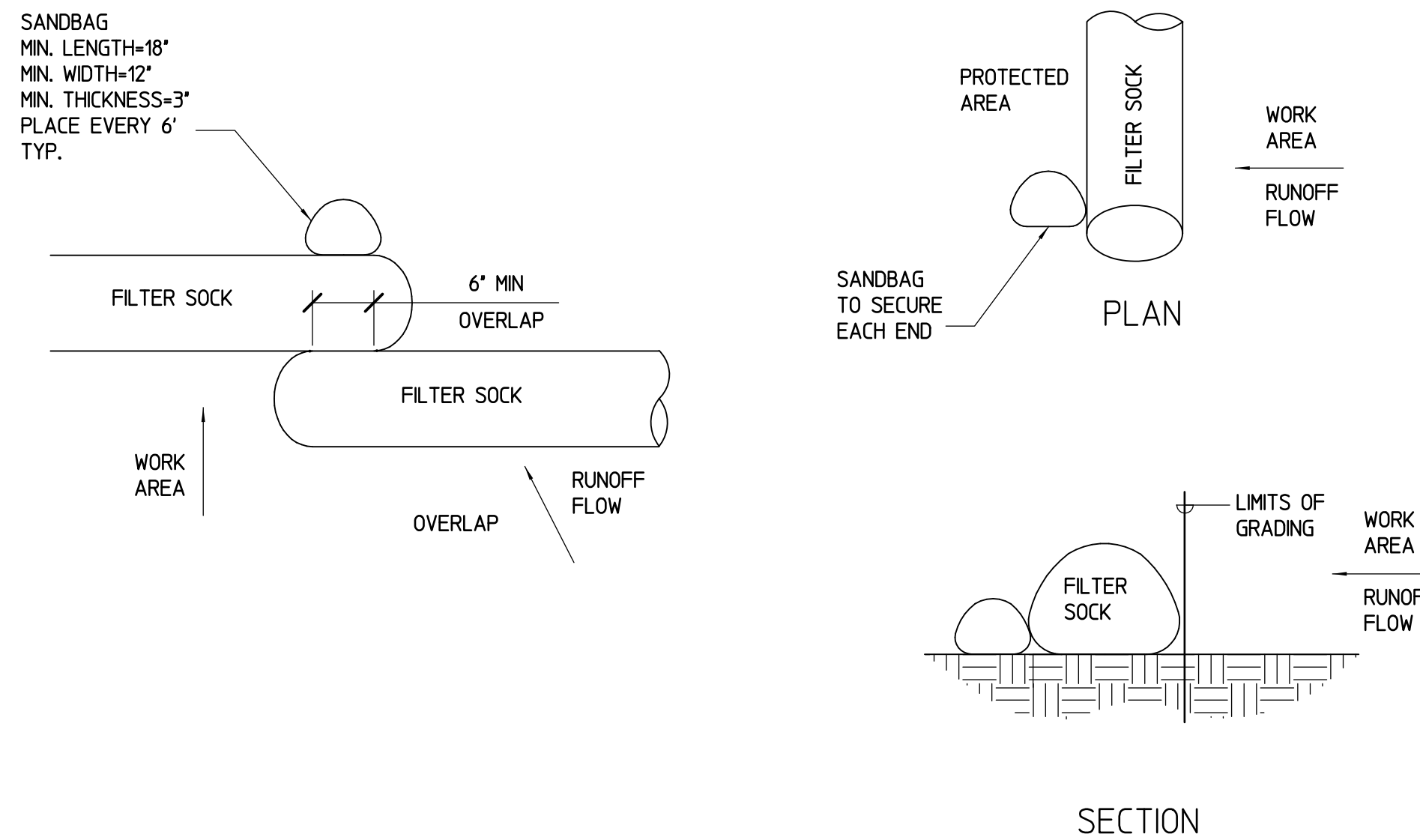
PUBLIC HEALTH, SAFETY AND CONVENIENCE NOTES:

- THE CONTRACTOR SHALL OBSERVE AND COMPLY WITH ALL FEDERAL, STATE AND LOCAL LAWS REQUIRED FOR THE PROTECTION OF PUBLIC HEALTH, SAFETY AND ENVIRONMENTAL QUALITY.
- THE CONTRACTOR, AT HIS OWN EXPENSE, SHALL KEEP THE PROJECT AREA AND ITS SURROUNDING AREAS FREE FROM DUST NUISANCE. THE WORK SHALL BE IN CONFORMANCE WITH THE AIR POLLUTION CONTROL STANDARDS AND REGULATIONS OF THE STATE DEPARTMENT OF HEALTH.
- NO CONTRACTOR SHALL PERFORM ANY CONSTRUCTION OPERATIONS SO AS TO CAUSE FALLING ROCK, SOIL OR DEBRIS IN ANY FORM TO FALL, SLIDE OR FLOW ONTO ADJOINING PROPERTIES, STREETS OR NATURAL WATERCOURSES. SHOULD SUCH VIOLATIONS OCCUR, THE CONTRACTOR IMMEDIATELY MAKE ALL REMEDIAL ACTIONS NECESSARY.
- 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, CONVENIENCE AND SAFETY OF THE PUBLIC. THE CONTRACTOR SHALL APPLY FOR A CONSTRUCTION PERMIT WITH A NOISE POLLUTION CONTROL PLAN.

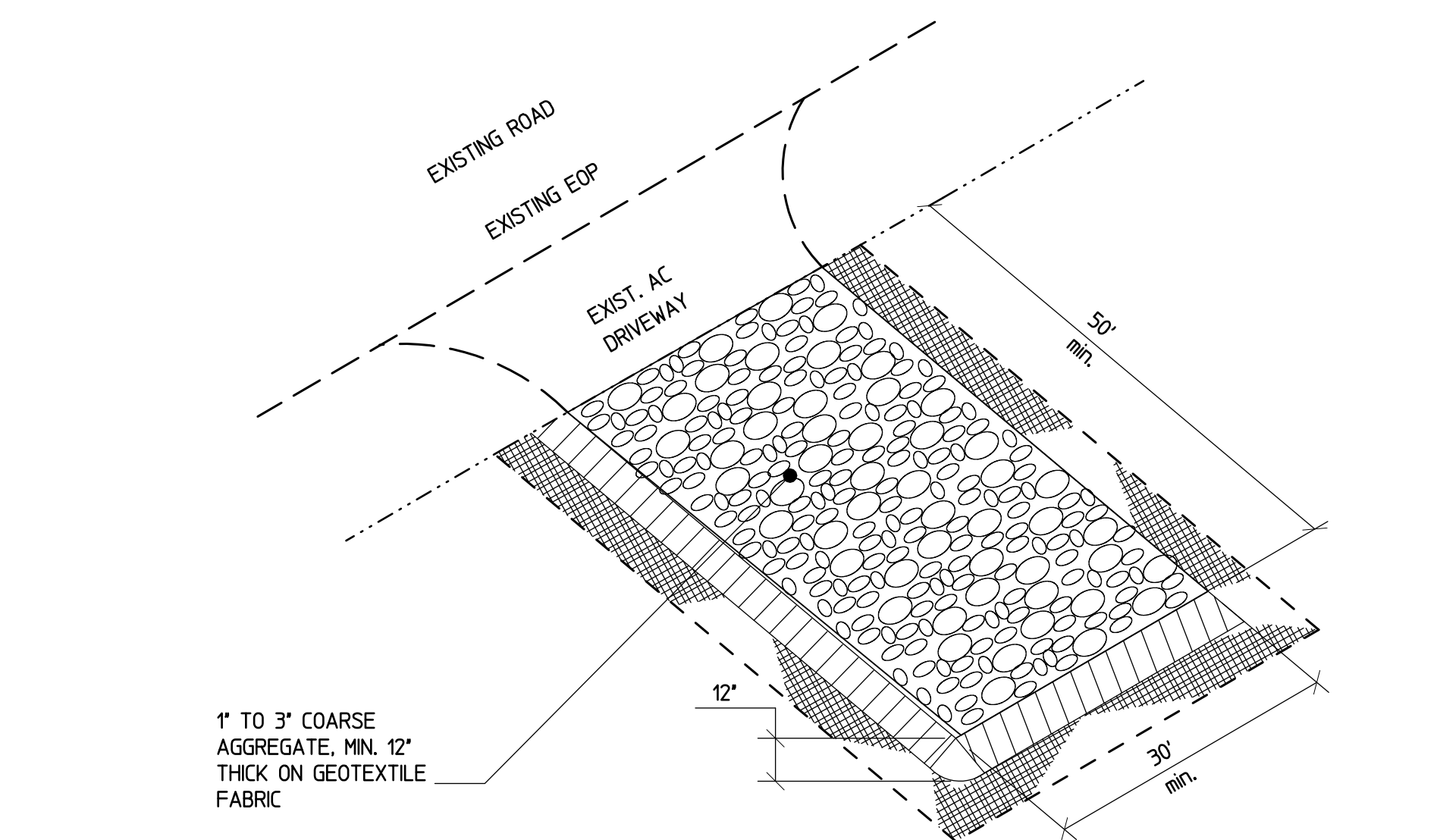
RAIN RESPONSE PLAN:

THE FOLLOWING WILL BE PERFORMED WHEN SEVERE RAIN IS IMMINENT OR IS FORECASTED IN THE NEXT 48 HOURS:

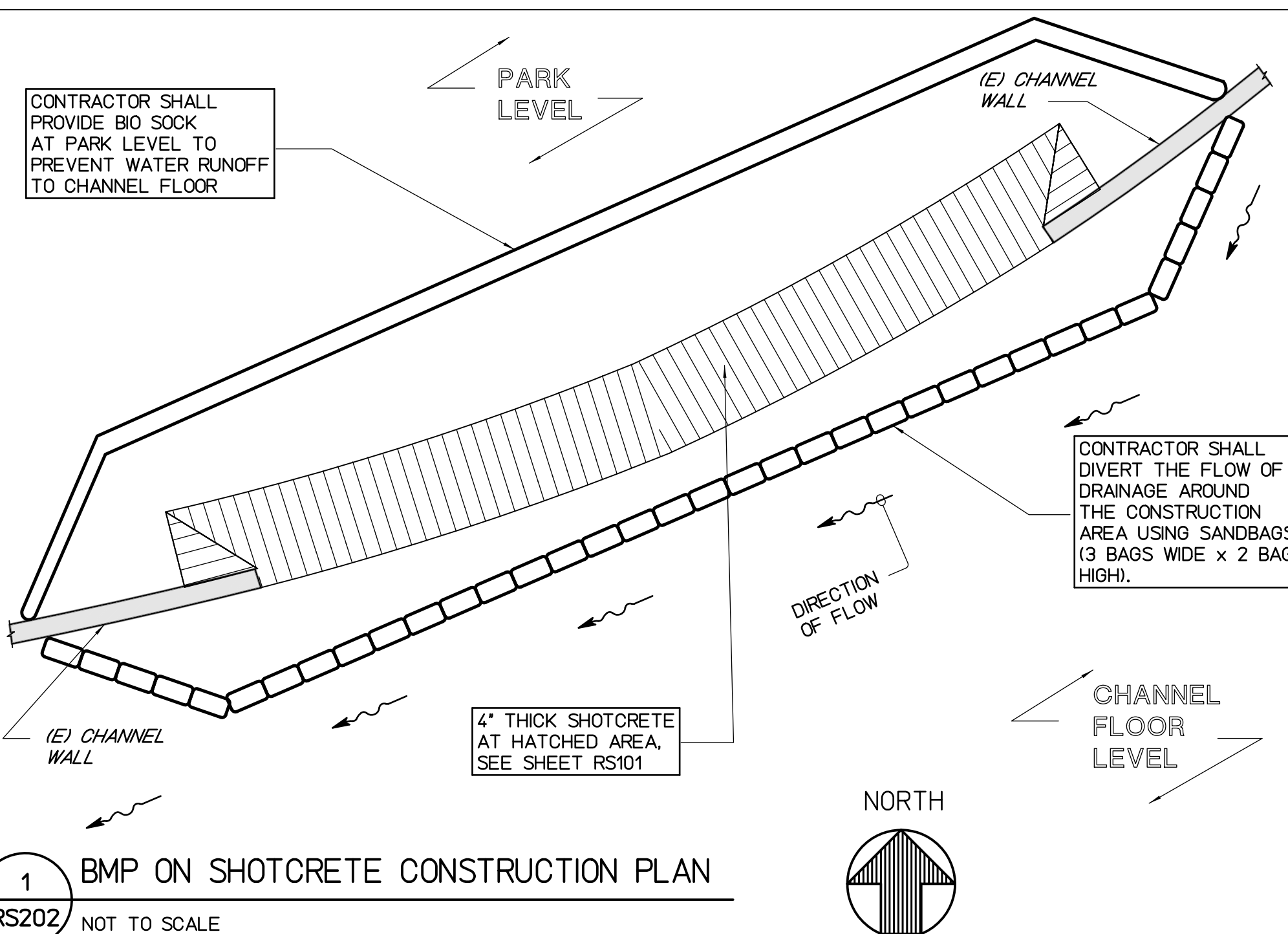
- TEMPORARILY SUSPEND LAND DISTURBING ACTIVITIES INCLUDING CLEARING, GRUBBING, GRADING AND TRENCHING.
- INSPECT ALL BMPs AND MAINTAIN AS NEEDED.
- REINSTALL BMPs THAT WERE REMOVED DUE TO ACTIVE WORK IN THE AREA.
- COVER OR RELOCATE MATERIAL STOCKPILES AND LIQUID MATERIAL CONTAINERS TO AVOID CONTACT WITH RAINWATER.
- PLACE SPILL PANS OR OIL-ONLY SPILL PADS UNDER CONSTRUCTION VEHICLES TO PREVENT RUNOFF FROM CONTACTING ANY SPILLED PETROLEUM PRODUCTS. PROPERLY DISPOSE OF ANY ACCUMULATED OILY WATER AFTER THE RAIN EVENT.
- RE-INSPECT PROJECT SITE AFTER THE RAIN EVENT AND REPLACE OR MAINTAIN BMPs AS NEEDED.



3 FILTER SOCK DETAIL  
RS202 NOT TO SCALE



2 STABILIZED CONSTRUCTION ENTRANCE (LOCATION TO BE DETERMINED BY DHHL)  
RS202 NOT TO SCALE



1 BMP ON SHOTCRETE CONSTRUCTION PLAN  
RS202 NOT TO SCALE

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DEPARTMENT OF HAWAIIAN HOME LANDS <b>NANAKULI FLOOD CONTROL CHANNEL OUTLET                  EMERGENCY TEMPORARY REPAIRS                  NANAKULI, OAHU, HAWAII                  T.M.K.: (1) 8-9-001:004, (1) 8-9-001:002</b>			
<b>BMP ON SHOTCRETE CONSTRUCTION</b>			
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DRAWN BY:	AK	Civil & Structural Engineers	20-076
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SUPV:		1088 BISHOP STREET #2106 HONOLULU, HI 96813 Tel: 808-539-2092	RS202
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