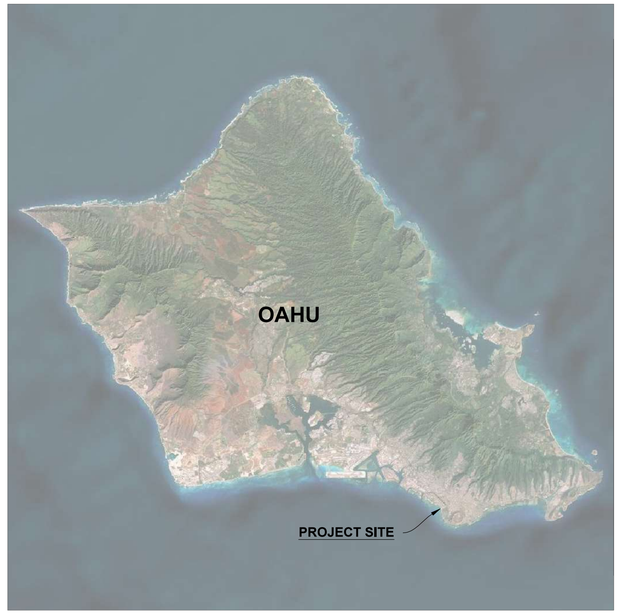


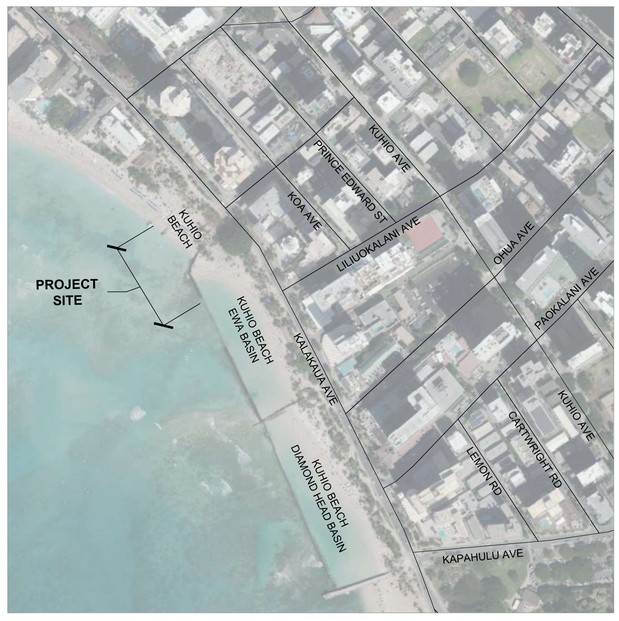
ISLAND OF OAHU
SCALE: NTS

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
ENGINEERING DIVISION

FOR
OFFICE OF CONSERVATION AND COASTAL LANDS
JOB NO. E00CO30A

KUHIO BEACH RESTORATION
GROIN CONSTRUCTION, SMALL SCALE BEACH NOURISHMENT, AND GROIN REPAIRS

HONOLULU, OAHU, HAWAII
TAX MAP KEYS (TMKs):
(1) 2-6-001:008, (1) 2-6-001:004, AND SEAWARD



LOCATION MAP
SCALE: NTS

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SCOPE OF WORK

THE WORK CONSISTS OF DEMOLITION OF THE EXISTING ELCOROCK® SANDBAG GROIN AND CONSTRUCTION OF A ROCK RUBBLE MOUND GROIN, PLACEMENT OF SAND ON KUHIO BEACH, AND REPAIRS OF KUHIO BEACH EWA GROIN (ADDITIVE ITEM).

APPROVED: DATE: 04/21/2026

S Michael Cain
MICHAEL CAIN
ADMINISTRATOR
OFFICE OF CONSERVATION AND COASTAL LANDS
DEPARTMENT OF LAND AND NATURAL RESOURCES

APPROVED: DATE: 04/21/2026

.
DINA U. LAU
ACTING CHIEF ENGINEER
ENGINEERING DIVISION
DEPARTMENT OF LAND AND NATURAL RESOURCES

DRAWING NO.
T-001

JOB NO. E00CO30A , KUHIO BEACH RESTORATION

GENERAL NOTES

1. THE PROJECT OBJECTIVE CONSISTS OF THE FOLLOWING:
   - DEMOLITION OF THE EXISTING ELCOROCK® SANDBAG GROIN,
   - CONSTRUCTION OF A ROCK RUBBLE MOUND GROIN AND CIP CONCRETE CREST CAP,
   - RECOVERY FROM KUHIO BEACH EWA BASIN AND PLACEMENT ON KUHIO BEACH OF 1,000 CY ± 100 CY OF SAND ON KUHIO BEACH,
   - AND (ADDITIVE ITEM) REPAIR KUHIO BEACH EWA GROIN, INCLUDING RESETTING AND RESTACKING EXISTING STONE, PLACING NEW STONE, AND DEMOLISHING THE EXISTING CONCRETE CREST CAP AND CONSTRUCTING A NEW CIP CONCRETE CREST CAP.
2. THE PROJECT OWNER IS THE STATE OF HAWAII, DEPARTMENT OF LAND AND NATURAL RESOURCES (ENGINEER). THE ENGINEERING CONSULTANT IS SEA ENGINEERING, INC (CONSULTANT).
3. COORDINATES ARE BASED ON NAD83, HAWAII STATE PLANE, ZONE 3 (US SURVEY FEET).
4. ELEVATIONS ARE REFERRED TO MEAN SEA LEVEL (MSL). AZIMUTHS ARE MEASURED CLOCKWISE AND REFERRED TO TRUE SOUTH.
5. THE CONTRACTOR SHALL USE THE VERTICAL AND HORIZONTAL CONTROLS SPECIFIED AT MONUMENTS SHOWN ON DRAWING C–102.
6. ALL DISTANCES, DIMENSIONS, ELEVATIONS, AND COORDINATES ARE IN FEET, UNLESS NOTED OTHERWISE.
7. THE CONTRACTOR SHALL VERIFY AND CHECK ALL DIMENSIONS AND DETAILS SHOWN ON THE DRAWINGS PRIOR TO THE START OF CONSTRUCTION. ANY DISCREPANCY SHALL BE IMMEDIATELY BROUGHT TO THE ATTENTION OF THE ENGINEER FOR DIRECTION.
8. WORK INCIDENTAL TO THE CONTRACT AND NECESSARY TO COMPLETE THE PROJECT, ALTHOUGH NOT SPECIFICALLY REFERRED TO ON THE CONTRACT DOCUMENTS, SHALL BE FURNISHED AND PERFORMED BY THE CONTRACTOR.
9. THE CONTRACTOR SHALL MAKE ARRANGEMENTS FOR UTILITIES SUCH AS ELECTRICITY, WATER, ETC. REQUIRED FOR HIS OPERATIONS AND ALL COSTS SHALL BE BORNE BY THE CONTRACTOR.
10. CONTRACTOR SHALL NOT PERFORM ANY CONSTRUCTION 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 COSTS INCURRED FOR ANY REMEDIAL ACTION SHALL BE PAYABLE BY THE CONTRACTOR.
11. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE CLEARING AND REMOVAL OF ALL SAND AND DEBRIS GENERATED BY HIS CONSTRUCTION WORK AND DEPOSITED AND ACCUMULATED ON ROADWAYS AND OTHER AREAS.
12. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING THE PROJECT AREA IN A CLEAN AND ORDERLY MANNER, AND FOR CLEARING AND REMOVAL OF ALL DEBRIS GENERATED BY HIS CONSTRUCTION WORK.
13. ALL EXISTING UTILITIES, ROADWAYS, WALKWAYS, WALLS, AND BUILDINGS, WHETHER OR NOT SHOWN ON THE DRAWINGS, SHALL BE PROTECTED FROM DAMAGE AT ALL TIMES DURING CONSTRUCTION. ANY DAMAGE TO THEM SHALL BE REPAIRED BY THE CONTRACTOR AT HIS EXPENSE.
14. THE CONTRACTOR SHALL NOTIFY ALL AGENCIES TO VERIFY THE ACTUAL LOCATION OF ALL UTILITIES IN THE PROJECT AREA PRIOR TO EXCAVATION. THE CONTRACTOR SHALL NOTIFY THE ONE CALL CENTER AT (866) 423–7287 OR 811 AT LEAST FIVE (5) WORKING DAYS PRIOR TO THE START OF EXCAVATION. PERSONAL INJURY RESULTING FROM CONTACT WITH EXISTING UTILITIES SHALL BE THE CONTRACTOR'S RESPONSIBILITY.
15. ALL PROJECT WORK, INCLUDING DEMOLITION, STOCKPILING, AND GRADING, SHALL BE PERFORMED IN CONFORMANCE WITH APPLICABLE FEDERAL AND LOCAL LAWS AND REGULATIONS REGARDING WATER QUALITY AND WATER POLLUTION CONTROL. THE CONTRACTOR/OWNER/DEVELOPER SHALL BE RESPONSIBLE FOR CONFORMANCE WITH THE APPLICABLE PROVISIONS OF CHAPTER 54, WATER QUALITY STANDARDS, AND CHAPTER 55, WATER POLLUTION CONTROL, OF TITLE 11, HAWAII ADMINISTRATIVE RULES OF THE STATE DEPARTMENT OF HEALTH. BEST MANAGEMENT PRACTICES SHALL BE EMPLOYED AT ALL TIMES DURING CONSTRUCTION.
16. 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.
17. THE CONTRACTOR, AT HIS OWN EXPENSE SHALL KEEP THE PROJECT AND ITS SURROUNDING AREAS FREE FROM RUBBISH, DUST, NOISE, EROSION, ETC. THE WORK SHALL BE DONE IN CONFORMANCE WITH THE AIR AND WATER POLLUTION CONTROL STANDARDS AND REGULATIONS OF THE STATE DEPARTMENT OF HEALTH.
18. ALL CONSTRUCTION WORK SHALL IMPLEMENT MEASURES TO ENSURE THAT THE DISCHARGE OF POLLUTANT FROM THE CONSTRUCTION SITE WILL BE REDUCED TO THE MAXIMUM EXTENT PRACTICABLE AND WILL NOT CAUSE OR CONTRIBUTE TO AN EXCEEDANCE OF WATER QUALITY STANDARDS.
19. NO BLASTING SHALL BE ALLOWED ON THIS PROJECT.
20. THE JOB SITE MUST BE LEFT IN A SAFE, SECURE CONDITION AT THE END OF EACH CONSTRUCTION WORK DAY. CLEAN UP AND REMOVE FROM THE JOB SITE ALL RUBBISH AND MAINTAIN THE PREMISES IN A CLEAN ORDERLY CONDITION AT ALL TIMES.
21. ALL EXISTING TREES, SHRUBS, AND SURROUNDING VEGETATION SHALL BE PRESERVED AND PROTECTED AS FAR AS PRACTICAL. REMOVAL OF ANY TREES SHALL REQUIRE APPROVAL BY THE ENGINEER. ANY DAMAGED VEGETATION SHALL BE REPLACED BY THE CONTRACTOR AT HIS EXPENSE.
22. DLNR WILL DELEGATE THE CONTRACTOR AS THE AUTHORIZED REPRESENTATIVE TO SUBMIT ALL NECESSARY DOCUMENTS AND REPORTS AS REQUIRED BY DOH AND US ARMY CORPS OF ENGINEERS DIRECTLY TO THEIR OFFICES AT NO COSTS TO THE STATE.
23. THE CONTRACTOR SHALL MAINTAIN THE STREETS, SIDEWALKS, AND OTHER PUBLIC RIGHTS OF WAY IN A CLEAN, SAFE, AND USABLE CONDITION. ALL SPILLS OF SAND, ROCK, OR CONSTRUCTION DEBRIS SHALL BE REMOVED IMMEDIATELY. ALL AREAS ADJACENT TO DESIGNATED WORK AREAS SHALL BE MAINTAINED IN A CLEAN, SAFE, AND USABLE CONDITION.
24. THE CONTRACTOR SHALL ASSUME SOLE AND COMPLETE RESPONSIBILITY FOR JOB SITE CONDITIONS DURING THE COURSE OF CONSTRUCTION OF THIS PROJECT, INCLUDING FOR PUBLIC SAFETY IN THE VICINITY OF WORK AREAS. THIS REQUIREMENT SHALL APPLY CONTINUOUSLY AND NOT BE LIMITED TO NORMAL WORK HOURS. ALL WORK AREAS SHALL HAVE SUITABLE SAFETY FENCING AND WARNING SIGNAGE TO INSURE PUBLIC SAFETY. CONTRACTOR SHALL ALSO PROVIDE, INSTALL, AND MAINTAIN ALL NECESSARY SIGNS, LIGHTS, FLARES, BARRICADES, MARKERS, CONES, AND OTHER PROTECTIVE FACILITIES AND SHALL TAKE NECESSARY PRECAUTIONS FOR THE PROTECTION, CONVENIENCE, AND SAFETY OF THE PUBLIC.
25. WHERE PEDESTRIAN WALKWAYS EXIST, THEY SHALL BE MAINTAINED IN PASSABLE CONDITION OR OTHER FACILITIES FOR PEDESTRIANS SHALL BE PROVIDED. TEMPORARY PASSAGEWAYS SHALL BE ACCESSIBLE PER 2010 ADA STANDARDS FOR ACCESSIBLE DESIGN CHAPTER 2, SECTIONS 201.3 AND 206.1.
26. THE PUBLIC BEACH AREA SHALL REMAIN OPEN TO THE MAXIMUM EXTENT POSSIBLE DURING THE CONSTRUCTION PERIOD. PROVIDE AND MAINTAIN SAFE PEDESTRIAN ACCESS TO THE BEACH AREA THROUGHOUT THE CONSTRUCTION PERIOD.
27. UPON COMPLETION OF CONSTRUCTION THE ENTIRE JOB SITE SHALL BE CLEANED OF ALL CONSTRUCTION–RELATED RUBBISH AND DEBRIS.
28. SHOULD HISTORIC REMAINS SUCH AS ARTIFACTS, BURIALS, CONCENTRATIONS OF SHELL OR CHARCOAL BE ENCOUNTERED DURING CONSTRUCTION ACTIVITIES, WORK SHALL CEASE IMMEDIATELY IN THE IMMEDIATE VICINITY OF THE FIND. THE CONTRACTOR SHALL IMMEDIATELY CONTACT THE STATE HISTORIC PRESERVATION DIVISION (808–692–8015), WHICH WILL ASSESS THE SIGNIFICANCE OF THE FIND AND RECOMMEND APPROPRIATE MITIGATION MEASURES, IF NECESSARY.

GENERAL ARMOR STONE NOTES:

1. ALL STONE SHALL HAVE A MINIMUM SPECIFIC GRAVITY OF 2.5, AND BE WELL GRADED WITHIN THE ALLOWABLE SIZE RANGES.
2. STONE SHALL BE DENSE, DURABLE, FREE OF CRACKS OR DEFECTS, AND OF A SUITABLE QUALITY TO INSURE PERMANANCE IN THE STRUCTURE. ALL STONE SHALL BE WASHED AND FREE OF SILT, SEDIMENT, EARTHEN MATERIAL, AND ANY CONTAMINANTS.
3. ARMOR STONE SHALL BE PLACED WITHIN THE LINES, GRADES, AND THICKNESSES SHOWN ON THE PLANS.
4. ARMOR STONE SHALL BE INDIVIDUALLY KEYED AND FITTED IN THE STRUCTURE SUCH THAT EACH STONE SHALL CONTACT AND FIRMLY ABUT SURROUNDING ARMOR STONE AND UNDERLAYER STONE.
5. ALL EXCESS STONE SHALL BE REMOVED AND DISPOSED OF FOLLOWING COMPLETION OF CONSTRUCTION.
6. CONCRETE CREST CAP SHALL BE CAST–IN–PLACE. FLEXIBLE FORMWORK SHALL BE USED TO FORM THE CONCRETE CAP SUCH THAT IT CLOSELY ABUTS THE SURROUNDING ARMOR STONE. THE FORMWORK SHALL BE CAPABLE OF CONTAINING CONCRETE DURING PLACEMENT AND PREVENTING LEAKS OF CONCRETE. CREST OF UNDERLAYER STONE UNDER CREST CAP MAY BE CHINKED WITH SMALL STONE AND GRAVEL TO RETAIN CONCRETE. ALL TOP CONCRETE SURFACES SHALL RECEIVE A HEAVY BROOM FINISH 1/16–1/8" DEPTH PERPENDICULAR TO EDGE OF CONCRETE, SEE SPEC 03320. CONCRETE CREST CAP SHALL HAVE A 3" RADIUS ROUNDED CORNERS ON BOTH TOP EDGES. CONCRETE CONTROL JOINTS ARE SHOWN ON PLANS.

NEW GROIN CONSTRUCTION NOTES:

1. REMOVE EXISTING SHORELINE MATERIAL AND DEBRIS (ROCKS, RUBBLE, SANDBAGS, SAND, ETC.) AS NECESSARY TO CONSTRUCT THE GROIN TO THE LINES AND GRADES AS SHOWN ON THE DRAWINGS. BEACH SAND SHALL BE STOCKPILED ON THE BEACH CREST ABOVE THE +6 FOOT ELEVATION WITHIN THE WORKSITE STAGING AREA, AND PLACED ADJACENT TO THE NEW GROIN FOLLOWING COMPLETION OF CONSTRUCTION. ALL CONCRETE DEBRIS AND MANMADE MATERIAL SHALL BE DISPOSED OF AT AN APPROVED OFF–SITE DISPOSAL AREA.
2. NEW GROIN ARMOR STONE SHALL CONSIST OF 2,100 TO 3,400 LB STONE. ARMOR STONE SHALL BE UTILIZED WITHIN THE ALLOWABLE SIZE RANGE AS NECESSARY TO MEET THE LINES AND GRADES OF THE GROIN AS SHOWN ON THE PLANS. A MINIMUM OF 50% OF THE ARMOR STONE BY VOLUME SHALL BE GREATER THAN 2,700 LBS.
3. UNDERLAYER STONE SHALL CONSIST OF 210 TO 340 LB STONE.
4. SAND GENERATED FROM SANDBAG GROIN DEMOLITION AND NEW GROIN CONSTRUCTION SHALL BE STOCKPILED ON SITE. DISPOSAL OF SAND OFF SITE IS NOT PERMITTED.
5. ALL SAND OBTAINED FROM DEMOLITION AND EXCAVATION SHALL BE PLACED ON THE ACTIVE BEACH PRIOR TO ANY SAND RECOVERY FROM KUHIO BEACH EWA BASIN.
6. CONCRETE CREST CAP CONTROL JOINTS TO BE SPACED AS SHOWN.
7. THE GENERAL CONSTRUCTION METHODOLOGY AND SEQUENCE SHALL BE AS FOLLOWS:
   A. IMPLEMENT BEST MANAGEMENT PRACTICES PER G–102, C–103, AND SPECIFICATIONS.
   B. REMOVE EXISTING ELCOROCK® SANDBAGS. SAND FROM THE BAGS SHALL BE PLACED AND SPREAD ABOVE MHHW ON THE DRY BEACH IN BETWEEN THE NEW GROIN AND THE EXISTING EWA GROIN.
   C. EXCAVATE SAND AS NECESSARY FOR GROIN CONSTRUCTION. STRUCTURE TOE DEPTH IS TO BE PLACED ON HARD BOTTOM OR –3.0 FT MSL, WHICHEVER COMES FIRST. GEOTEXTILE FABRIC IS TO BE PLACED IF HARD BOTTOM IS NOT REACHED.
   D. PLACE UNDERLAYER STONE FROM THE ROOT OF THE GROIN TOWARDS THE HEAD FOLLOWING ALIGNMENT SHOWN ON C–201 AND C–202.
   E. STARTING FROM THE TERMINUS OF THE STRUCTURE AND MOVING TOWARDS THE ROOT PLACE ARMOR STONES, SET UP FLEXIBLE FORMWORK, AND CAST IN PLACE CONCRETE IN 10 FOOT SECTIONS. CONCRETE CREST CAP SHALL HAVE A HEAVY BROOM FINISH 1/16–1/8" DEPTH PERPENDICULAR TO EDGE OF CONCRETE AND HAVE 3" RADIUS SMOOTH CORNERS ON BOTH TOP EDGES.

SAND PLACEMENT NOTES:

1. 1,000 CY ± 100 CY OF SAND SHALL BE RECOVERED FROM KUHIO BEACH EWA BASIN AND PLACED ON KUHIO BEACH PER THE PLANS SHOWN ON C–203. SAND WILL BE COLLECTED FROM THE KUHIO BEACH EWA BASIN DRY BEACH AREA FROM THE CREST LANDWARDS TOWARD THE BACKSHORE STRUCTURES (WALLS, STEPS, ETC.). DO NOT REMOVE SAND FROM BELOW +5 FT MSL.
2. SAND EXCAVATED FROM THE NEW GROIN CONSTRUCTION AND SAND RELEASED FROM THE DEMOLITION OF THE SANDBAG GROIN SHALL NOT COUNT TOWARDS THE 1,000 CY ± 100 CY OF SAND COLLECTED FROM KUHIO BEACH EWA BASIN.
3. DEMOLITION OF ELCOROCK® SANDBAG GROIN WILL RESULT IN THE RELEASE OF PREVIOUSLY APPROVED INLAND SAND. SAND FROM THE BAGS IS TO BE PLACED ONTO KUHIO BEACH. THE CONTRACTOR IS RESPONSIBLE FOR SANDBAG MATERIAL DISPOSAL.
4. PLACE SAND IN MAXIMUM 25 FOOT LONG INCREMENTS. BEACH PROFILES SHALL BE SURVEYED IMMEDIATELY PRIOR TO AND FOLLOWING SAND PLACEMENT TO VERIFY THE QUANTITY OF IN–PLACE SAND.
5. SAND SHALL BE PLACED AFTER THE CONSTRUCTION OF THE NEW GROIN AND REPAIRS OF THE EWA GROIN (ADDITIVE ITEM). SAND SHALL BE PLACED TO THE DESIGN BEACH SLOPE OF 1V:6H AS SHOWN ON C–204.
6. EQUIPMENT USED TO MOVE AND DISTRIBUTE THE SAND TO THE DESIGN BEACH PROFILES SHALL BE THE SMALLEST PRACTICABLE EQUIPMENT IN ORDER TO MINIMIZE NOISE AND INCONVENIENCE TO ADJACENT PROPERTIES.
7. NO EQUIPMENT SHALL OPERATE IN THE WATER OR BELOW THE MHHW ELEVATION (+1.08 FT MSL).
8. SAND MAY BE PLACED UP TO THE EDGES OF THE NEW/EXISTING HARD FEATURES (NEW GROIN AND EWA GROIN).

EWA GROIN REPAIR NOTES (ADDITIVE ITEM):

1. REMOVE EXISTING SHORELINE MATERIAL AND DEBRIS (ROCKS, RUBBLE, SANDBAGS, SAND, ETC.) AS NECESSARY TO REPAIR THE GROIN AS SHOWN ON C–205 AND C–206. CONCRETE DEBRIS AND MANMADE MATERIAL SHALL BE DISPOSED OF AT AN APPROVED OFF–SITE DISPOSAL AREA.
2. REPLACEMENT ARMOR STONE FOR TYPE 1, TYPE 2, AND TYPE 3 REPAIRS SHALL CONSIST OF STONES WEIGHING BETWEEN 1,000 TO 3,400 LBS. ARMOR STONE SHALL BE UTILIZED WITHIN THE ALLOWABLE SIZE RANGE AS NECESSARY TO MEET THE GROIN REPAIRS AS SHOWN ON THE PLANS. ARMOR STONE MAY BE SOURCED FROM ON–SITE OR SUPPLIED BY CONTRACTOR PROVIDED IT FALLS WITHIN THE WEIGHT RANGE SPECIFIED BY THE ENGINEER AND CONFORMS TO SPECIFICATIONS 02486.
5. FILL VOIDS WITH A SINGLE STONE. STONE SIZE SHALL BE CAREFULLY SELECTED TO FIT IN EACH RESPECTIVE VOID.
6. REMOVE AND REPLACE EXISTING CONCRETE CREST CAP WITH NEW CIP CONCRETE CREST CAP. MATCH ELEVATIONS AND SLOPE SHOWN ON PLAN.
7. TOE STONES SHALL WEIGH 3,000 LBS MINIMUM.
8. THE GROIN CORE VARIES IN CONSTRUCTION AND SIZE (INCLUDING FORMED CONCRETE AND CONCRETE BAGS). THE DEPTH AND EXTENT OF THE CORE ARE UNKNOWN. LIMITS OF REMOVAL AND EXPOSURE SHALL BE AS DIRECTED BY THE ENGINEER.

REVISION NO.	SYM.	DESCRIPTION	SHT./OF	DATE	APPROVED

GIANNICOLA TUMINO
LICENSED PROFESSIONAL ENGINEER
No. 20696–C
HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION

SIGNATURE 04/30/2028 EXPIRATION DATE OF LICENSE

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
ENGINEERING DIVISION

KUHIO BEACH RESTORATION - GROIN CONSTRUCTION, SMALL SCALE BEACH NOURISHMENT, AND GROIN REPAIRS

GENERAL NOTES - 1

DESIGNED:	GT	SUBMITTED:	APRIL 20, 2026
DRAWN:	RH	DATE:	APRIL 20, 2026
CHECKED:	DS	SCALE:	N/A
APPROVED:	Dina Lau E-signed 2026-04-21 02:43PM HST dina.u.lau@hawaii.gov State of Hawaii Chief Engineer	DRAWING NO.	G-101
CHIEF ENGINEER			

JOB NO. E00CO30A , KUHIO BEACH RESTORATION

EWA GROIN REPAIR NOTES (ADDITIVE ITEM) CONTINUED:

9. REMOVE ALL DAMAGED CONCRETE FROM THE EXISTING CREST CAP UNTIL THE CORE IS EXPOSED, OR AS DIRECTED BY THE ENGINEER. CREST CAP REPAIRS SHALL CONSIST OF CIP CONCRETE WITH A HEAVY BROOM FINISH (1/16" TO 1/8" DEPTH), APPLIED PERPENDICULAR TO THE EDGE OF THE CONCRETE. REFER TO SPECIFICATION 03320. CONCRETE CREST CAP SHALL HAVE A 3" RADIUS ROUNDED CORNERS ON BOTH TOP EDGES.

10. ALL REPAIRS TO THE EWA GROIN SHALL MATCH THE GRADE SPECIFIED ON SECTIONS.

11. FOR TYPE 2 AND 3 REPAIRS, MINIMIZE DISTURBANCE OF THE EXISTING STONES TO THE EXTENT NECESSARY TO KEY IN THE NEW REPAIR STONES.

RAIN RESPONSE PLAN:

1. THE FOLLOWING WILL BE PERFORMED WHEN HEAVY RAINS, TROPICAL STORM OR HURRICANE IS IMMINENT OR IS FORECASTED IN THE NEXT 48 HOURS.

2. TEMPORARY SUSPENSION OF ACTIVE CLEARING, GRADING, GRUBBING AND TRENCHING.

3. INSPECT ALL PERIMETER CONTROLS AND INLET PROTECTION DEVICES, AND MAINTAIN AS NEEDED. REINSTALL ANY PERIMETER CONTROLS THAT WERE REMOVED DUE TO ACTIVE WORK IN THE AREA. IF A SEVERE STORM IS EXPECTED, REMOVE INLET PROTECTION DEVICE TO PREVENT FLOODING ON SURROUNDING STREETS.

4. COVER OR RELOCATE MATERIAL STOCKPILES AND LIQUID MATERIAL CONTAINERS TO AVOID CONTACT WITH RAINWATER.

5. 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.

6. RE–INSPECT AFTER THE APPROACHING HEAVY RAINS, TROPICAL STORM OR HURRICANE AND REPLACE OR MAINTAIN BMPS AS NEEDED.

GOOD HOUSEKEEPING BMPS:

1. STREET SWEEPING AND VACUUMING.
ALL POLLUTANTS DISCHARGED FROM CONSTRUCTION SITE TO OFF–SITE AREAS MUST BE SWEPT OR VACUUMED EACH DAY BEFORE LEAVING THE JOB SITE.

2. MATERIALS DELIVERY, STORAGE AND USE MANAGEMENT
PREVENT, REDUCE, OR ELIMINATE THE DISCHARGE OF POLLUTANTS FROM MATERIAL DELIVERY, STORAGE, AND USE TO THE STORM WATER SYSTEM OR WATERCOURSES BY MINIMIZING THE STORAGE OF HAZARDOUS MATERIALS ONSITE, STORING MATERIALS IN A DESIGNATED AREA, INSTALLING SECONDARY CONTAINMENT. CONSTRUCTION MATERIALS, WASTE, TOXIC AND HAZARDOUS SUBSTANCES, STOCKPILES AND OTHER SOURCES OF POLLUTION SHALL NOT BE STORED IN BUFFER AREAS, NEAR AREAS OF CONCENTRATED FLOW, OR AREAS ABUTTING THE MS4, RECEIVING WATERS, OR DRAINAGE IMPROVEMENTS THAT DISCHARGE OFF–SITE. PRIMARY AND SECONDARY CONTAINMENT CONTROLS AND COVERS SHALL BE IMPLEMENTED TO THE MEP.

3. SPILL PREVENTION AND CONTROL
CREATE AND IMPLEMENT SPILL PREVENTION AND RESPONSE PLANS TO ELIMINATE AND MINIMIZE THE DISCHARGE OF POLLUTANTS TO THE MS4 AND RECEIVING WATERS FROM LEAKS AND SPILLS BY REDUCING THE CHANCE FOR SPILLS, ABSORBING, CONTAINING, AND CLEANING UP SPILLS AND PROPERLY DISPOSING OF SPILL MATERIALS. AT MINIMUM, ALL PROJECTS SHALL CLEANUP ALL LEAKS AND SPILLS IMMEDIATELY.

4. 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 FACILITY 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.

5. NONHAZARDOUS MATERIALS
IN THE EVENT THAT NONHAZARDOUS MATERIALS ARE DISCHARGED TO THE MS4, THE PROPERTY OWNER OR ESCP COORDINATOR SHALL NOTIFY THE CITY DEPARTMENT OF FACILITY 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.

6. VEHICLE AND EQUIPMENT CLEANING.
ELIMINATE AND MINIMIZE THE DISCHARGE OF POLLUTANTS TO STORM WATER FROM VEHICLE AND EQUIPMENT CLEANING OPERATIONS BY USING OFF–SITE FACILITIES WHEN FEASIBLE, WASHING IN DESIGNATED, CONTAINED AREAS ONLY, AND ELIMINATING DISCHARGES TO THE STORM DRAIN SYSTEM BY EVAPORATING AND/ OR TREATING WASH WATER, AS APPROPRIATE OR INFILTRATING WASH WATER FOR EXTERIOR CLEANING ACTIVITIES THAT USE WATER ONLY.

7. VEHICLE AND EQUIPMENT FUELING
PREVENT FUEL SPILLS AND LEAKS BY USING OFF–SITE FACILITIES, FUELING ONLY IN DESIGNATED AREAS, ENCLOSING OR COVERING STORED FUEL, AND IMPLEMENTING SPILL CONTROLS SUCH AS SECONDARY CONTAINMENT AND ACTIVE MEASURES USING SPILL RESPONSE KITS.

8. VEHICLE AND EQUIPMENT MAINTENANCE.
ELIMINATE AND MINIMIZE THE DISCHARGE OF POLLUTANTS TO STORM WATER FROM VEHICLE AND EQUIPMENT OPERATIONS BY USING OFF–SITE MAINTENANCE FACILITIES WHEN FEASIBLE, PERFORMING WORK IN DESIGNATED AREAS ONLY, USING SPILL PADS UNDER VEHICLES AND EQUIPMENT, CHECKING FOR LEAKS AND SPILLS, AND CONTAINING AND CLEANING UP SPILLS IMMEDIATELY.

9. 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.

10. SANITARY/SEPTIC WASTE MANAGEMENT
TEMPORARY AND 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 STORED NEAR THE MS4 OR RECEIVING WATERS.

11. 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 FENCE 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 14, ARTICLE 15. STOCKPILES MUST BE COVERED WITH PLASTIC SHEETING OR A COMPARABLE MATERIAL IF THEY WILL NOT BE ACTIVELY USED WITHIN 7 DAYS.

12. LIQUID WASTE MANAGEMENT
LIQUID WASTE SHALL BE CONTAINED IN A CONTROLLED AREA SUCH AS A HOLDING PIT, SEDIMENT BASIN, ROLL–OFF BIN, OR PORTABLE TANK OF SUFFICIENT VOLUME AND TO CONTAIN THE LIQUID WASTES GENERATED. CONTAINMENT AREAS OR DEVICES MUST BE IMPERMEABLE AND LEAK FREE AND SHOULD NOT BE LOCATED WHERE ACCIDENTAL RELEASE OF THE CONTAINED LIQUID CAN DISCHARGE TO WATER BODIES, CHANNELS, OR STORM DRAINS.

13. 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 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.

14. CONTAMINATED SOIL MANAGEMENT
AT A MINIMUM CONTAIN CONTAMINATED MATERIAL SOIL BY SURROUNDING WITH IMPERMEABLE LINED BERMS OR COVER EXPOSED CONTAMINATED MATERIAL WITH PLASTIC SHEETING. CONTAMINATED SOIL SHOULD BE DISPOSED OF PROPERLY IN ACCORDANCE WITH ALL APPLICABLE REGULATIONS.

15. DUST CONTROL
DUST FROM A PROJECT SITE SHALL NOT BE TRANSPORTED OR DISCHARGED TO OFF–SITE AREAS. THE WORK MUST BE IN CONFORMANCE WITH AIR POLLUTION CONTROL STANDARDS CONTAINED IN THE HAWAII ADMINISTRATIVE RULES: TITLE 11 CHAPTER 60.1 "AIR POLLUTION CONTROL." ALL ESCPS SHALL PROVIDE FOR THE CONTROL OF DUST BY ONE OR MORE OF THE FOLLOWING: MULCHING TO A DEPTH OF NO LESS THAN 1 INCH. SPRINKLING EXPOSED SOILS WITH WATER TO MAINTAIN MOISTNESS AT A DEPTH OF 2–3 INCHES DURING WORKING HOURS AND NOT TO GENERATE ANY RUNOFF. VERTICAL DUST BARRIERS NO LESS THAN 6 FEET IN HEIGHT, CONSTRUCTED OF MATERIALS CAPABLE OF EFFECTIVELY PREVENTING THE SPREAD OF DUST PARTICLES.

16. BMP AND SITE MAINTENANCE.
ALL ESCP BMPS SHALL BE MAINTAINED THROUGHOUT THE DURATION OF THE PROJECT. ADDITIONAL BMPS SHALL BE IMPLEMENTED AS NECESSARY TO ADDRESS EROSION AND SEDIMENT CONTROL AT THE PROJECT SITE.

LIST OF ABBREVIATIONS:

°	DEGREE
', FT	FEET, MINUTE
"	INCH, SECOND
APPROX.	APPROXIMATELY
ASTM	AMERICAN SOCIETY FOR TESTING AND MATERIALS
AVE	AVENUE
BL	BASELINE
CL	CENTERLINE
CP	CONTROL POINT
CIP	CAST–IN–PLACE
CY	CUBIC YARDS
DET	DETAILS
E.,	EXISTEXISTING
E	EASTING
EG	EXISTING GROUND
E.G.	FOR EXAMPLE
ELEV.	ELEVATION
EP	END POINT
ESCP	EROSION AND SEDIMENT CONTROL PLAN
ETC.	ETCETERA
H	HORIZONTAL
INC.	INCORPORATED
L	LENGTH
LB	POUND
LMSL	LOCAL MEAN SEA LEVEL
MAG	MAGNETIC
MHHW	MEAN HIGHER HIGH WATER
MS4	MUNICIPAL SEPARATE STORM SEWER SYSTEM
MSL	MEAN SEA LEVEL
MIN	MINIMUM
N	NORTHING
NAD	NORTH AMERICAN DATUM
E.	NUMBER
N/A	NOT APPLICABLE
APPROX	APPROXIMATE
NTS	NOT TO SCALE
PC	POINT OF CURVATURE
PI	POINT OF INTERSECTION
PT	POINT OF TANGENCY
R, RAD.	RADIUS
STA.	STATION
SHT(S)	SHEET(S)
TMK	TAX MAP KEY
TYP	TYPICAL
US	UNITED STATES
V	VERTICAL

JOB NO. E00CO30A . KUHIO BEACH RESTORATION

REVISION NO.	SYM.	DESCRIPTION	SHT./OF	DATE	APPROVED

GIANNICOLA TUMINO
LICENSED PROFESSIONAL ENGINEER
No. 20696–C
HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION

SIGNATURE 04/30/2028 EXPIRATION DATE OF LICENSE

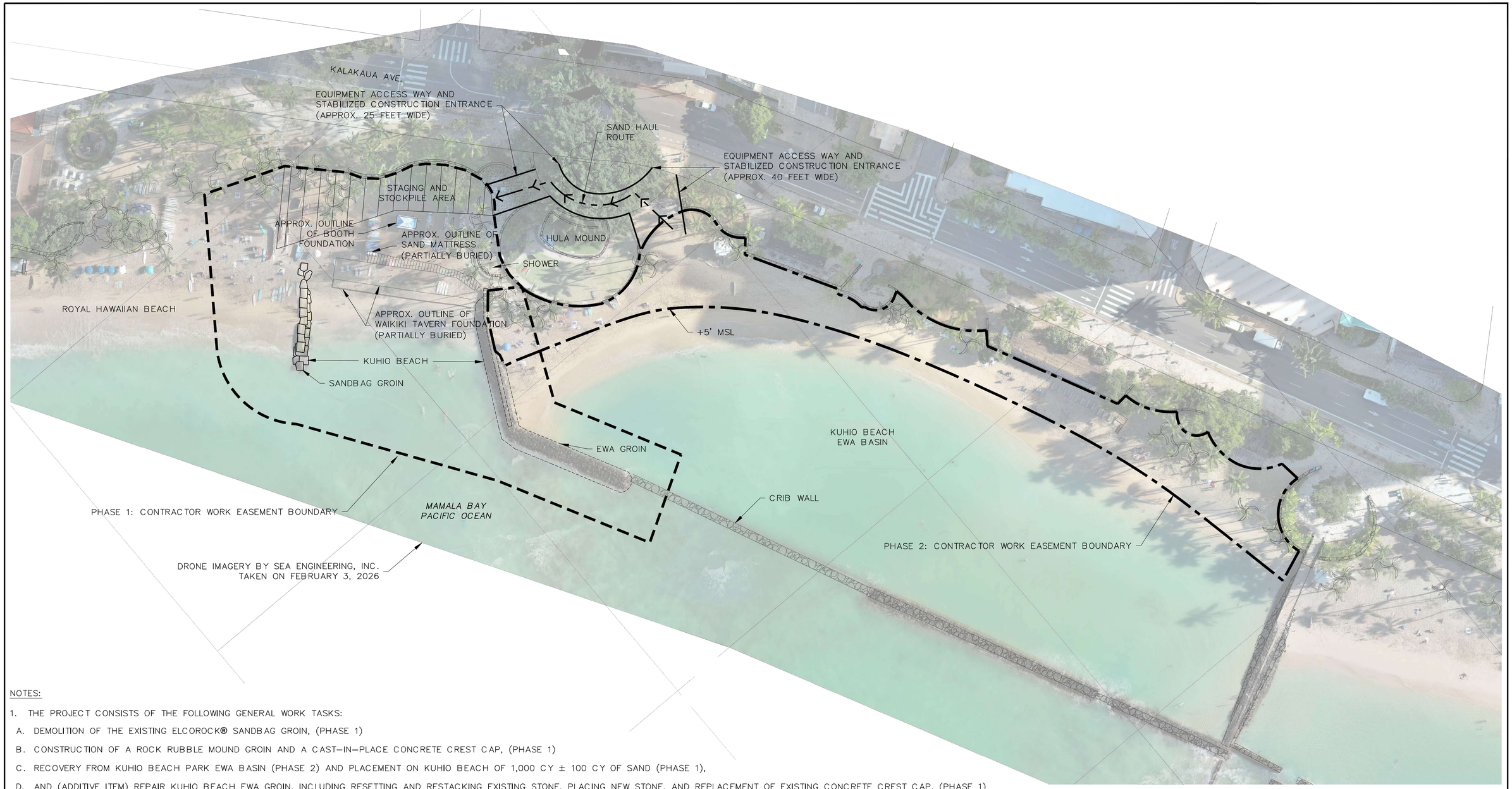
STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
ENGINEERING DIVISION

KUHIO BEACH RESTORATION - GROIN CONSTRUCTION, SMALL SCALE BEACH NOURISHMENT, AND GROIN REPAIRS

GENERAL NOTES - 2

DESIGNED:	GT	SUBMITTED:	APRIL 20, 2026
DRAWN:	RH	DATE:	APRIL 20, 2026
CHECKED:	DS	SCALE:	N/A
APPROVED:	Dina Lau E-signed 2026-04-21 02:43PM HST dina.u.lau@hawaii.gov State of Hawaii Civil Engineer	DRAWING NO.	G-102
CHIEF ENGINEER			

PLOT DATE: 4/20/2026



NOTES:

1. THE PROJECT CONSISTS OF THE FOLLOWING GENERAL WORK TASKS:
   A. DEMOLITION OF THE EXISTING ELCOROCK® SANDBAG GROIN, (PHASE 1)
   B. CONSTRUCTION OF A ROCK RUBBLE MOUND GROIN AND A CAST-IN-PLACE CONCRETE CREST CAP, (PHASE 1)
   C. RECOVERY FROM KUHIO BEACH PARK EWA BASIN (PHASE 2) AND PLACEMENT ON KUHIO BEACH OF 1,000 CY ± 100 CY OF SAND (PHASE 1),
   D. AND (ADDITIVE ITEM) REPAIR KUHIO BEACH EWA GROIN, INCLUDING RESETTING AND RESTACKING EXISTING STONE, PLACING NEW STONE, AND REPLACEMENT OF EXISTING CONCRETE CREST CAP. (PHASE 1)

2. PHASE 1 CONTRACTOR WORK EASEMENT BOUNDARY: THE SEAWARD EDGE IS APPROXIMATELY 30 FEET AWAY FROM THE NEW GROIN TOE AND THE EWA GROIN. THE LANDWARD EDGE FOLLOWS EXISTING HARD BACKSHORE FEATURES (WALLS, CONCRETE WALKWAYS, ETC).

3. PHASE 2 CONTRACTOR WORK EASEMENT BOUNDARY: THE SEAWARD EDGE FOLLOWS THE +5 FT MSL ELEVATION CONTOUR ALONG THE DRY BEACH. THE LANDWARD EDGE FOLLOWS EXISTING HARD BACKSHORE FEATURES (WALLS, STAIRS, SHOWERS, ETC).

4. THE FOLLOWING BMPS ARE TO BE FOLLOWED:
   A. ALL EQUIPMENT AND VEHICLE TIRES ENTERING AND LEAVING THE PROJECT SITE SHALL BE FREE OF SAND, SEDIMENT, AND DEBRIS TO PREVENT TRACKING ONTO ADJACENT ROADWAYS AND WITHIN THE PROJECT AREA.
   B. NO EQUIPMENT TRACKS SHALL OPERATE WITHIN, CONTACT, OR ENTER THE WATER, OR WORK BELOW THE MEAN HIGHER HIGH WATER (MHHW) ELEVATION (+1.08 FEET MSL). EQUIPMENT ATTACHMENTS (E.G., EXCAVATOR BUCKETS) MAY OPERATE BELOW THE MHHW ELEVATION AS REQUIRED.
   C. ALL EQUIPMENT SHALL BE STORED AT THE END OF EACH WORKDAY WITHIN THE CONTRACTOR'S WORK EASEMENT BOUNDARY AND ABOVE +5' MSL.
   D. THE CONTRACTOR SHALL PROTECT THE SIDEWALK AND ALL BACKSHORE FEATURES (E.G., PLANTER WALLS, SHOWER AREAS) FROM DAMAGE DURING CONSTRUCTION ACTIVITIES.

40 0 40 80
SCALE IN FEET

N

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ENGINEERING DIVISION

KUHIO BEACH RESTORATION - GROIN CONSTRUCTION, SMALL SCALE BEACH NOURISHMENT, AND GROIN REPAIRS

OVERALL PROJECT FEATURES

DESIGNED:	GT	SUBMITTED:	APRIL 20, 2026
DRAWN:	RH	DATE:	APRIL 20, 2026
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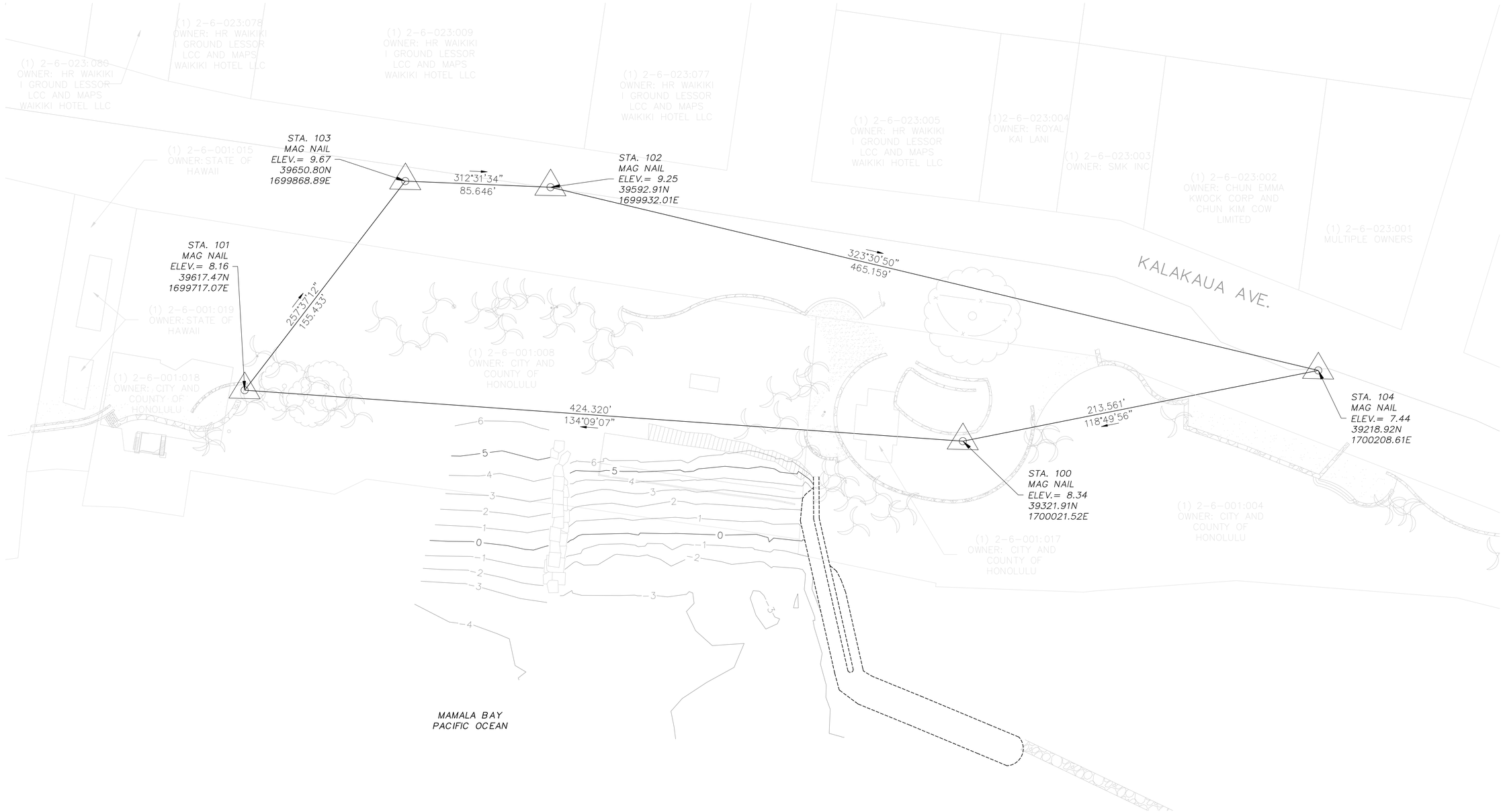
APPROVED:	Dina Lau E-signed 2026-04-21 02:43PM HST dina.u.lau@hawaii.gov State of Hawaii Civil Engineer	DRAWING NO.	C-101
CHIEF ENGINEER			

JOB NO. E00CO30A, KUHIO BEACH RESTORATION

PLOT DATE: 4/20/2026



NOTES:

1. TOPOGRAPHIC SURVEYS OF KUHIO BEACH AND ROYAL HAWAIIAN BEACH WERE CONDUCTED ON FEBRUARY 3, 2026 BY CONTROL POINT SURVEYING AND ON FEBRUARY 5, 2026 BY SEA ENGINEERING, INC.
2. BACKSHORE FEATURES AND STRUCTURES ARE APPROXIMATE AND WERE COMPILED FROM PREVIOUS PROJECT SURVEYS.
3. COORDINATES ARE REFERRED TO NAD 83, HAWAII STATE PLANE ZONE 3, FEET.
4. DISTANCES AND ELEVATIONS ARE MEASURED IN FEET.
5. ELEVATIONS ARE REFERRED TO MEAN SEA LEVEL (MSL).
6. AZIMUTHS ARE MEASURED CLOCKWISE FROM TRUE SOUTH.

30 0 30 60
SCALE IN FEET

N

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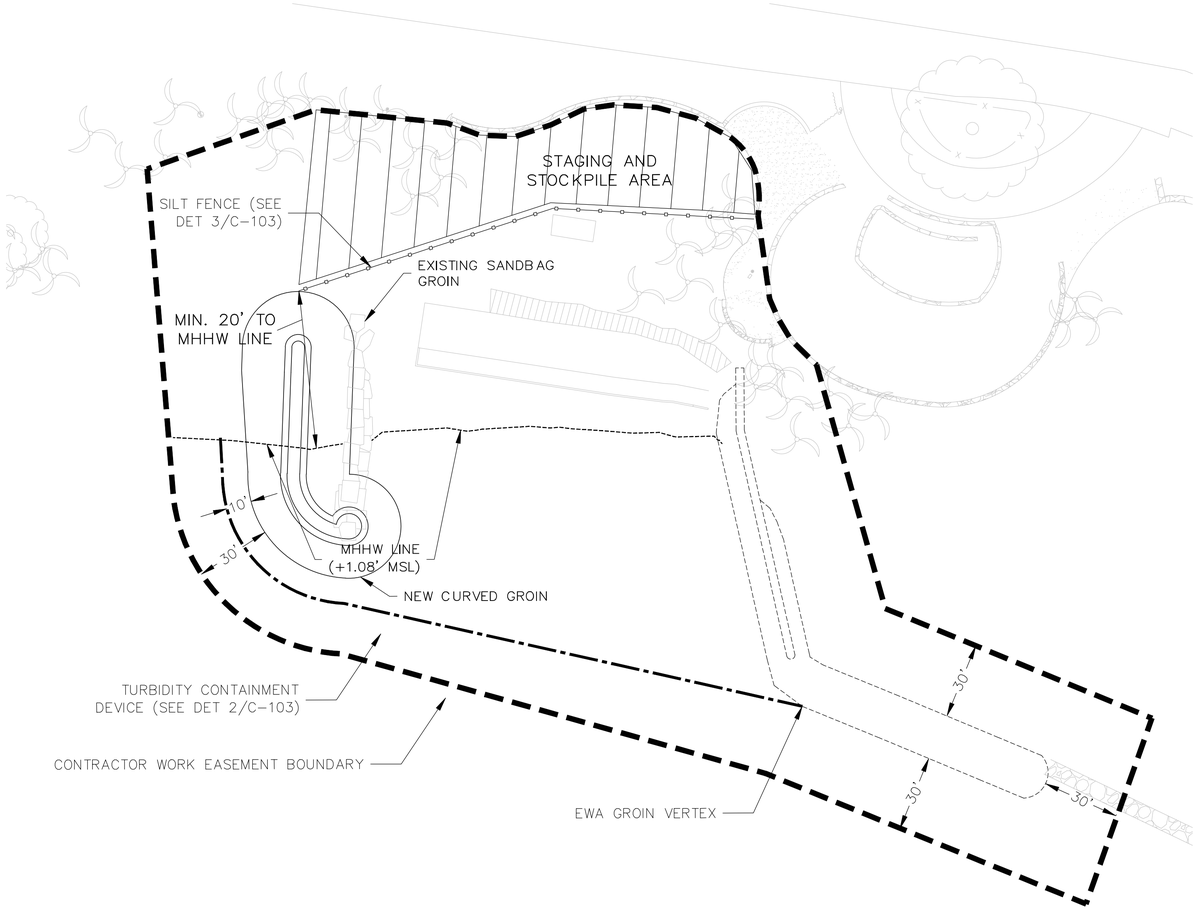
ENGINEERING DIVISION

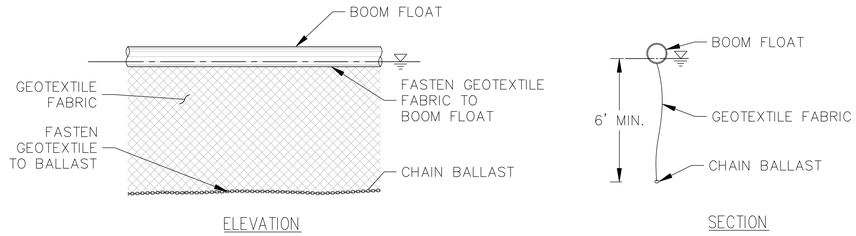
KUHIO BEACH RESTORATION - GROIN CONSTRUCTION, SMALL SCALE BEACH NOURISHMENT, AND GROIN REPAIRS

EXISTING CONDITIONS AND SURVEY CONTROL NETWORK

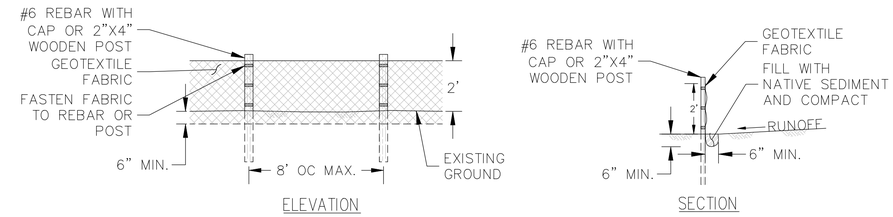
DESIGNED:	GT	SUBMITTED:	APRIL 20, 2026
DRAWN:	RH	DATE:	APRIL 20, 2026
CHECKED:	DS	SCALE:	1"=30'
APPROVED:	Dina Lau E-signed 2026-04-21 02:43PM HST dina.u.lau@hawaii.gov State of Hawaii Civil Engineer	DRAWING NO.	C-102
CHIEF ENGINEER			



1 C-103 WATER QUALITY PROTECTION PLAN
SCALE: 1"=30'



2 C-103 TURBIDITY CONTAINMENT DEVICE DETAIL
SCALE: NTS



3 C-103 SILT FENCE DETAIL
SCALE: NTS

BEST MANAGEMENT PRACTICES:

TURBIDITY CONTAINMENT

1. TURBIDITY CONTAINMENT DEVICES AND ON-LAND SILT FENCES SHALL BE OF SUFFICIENT DESIGN, STRENGTH, AND SUITABILITY FOR THEIR INTENDED APPLICATION IN THE OCEAN ENVIRONMENT.
2. TURBIDITY CONTAINMENT DEVICES SHALL BE INSPECTED DAILY, AND IMMEDIATELY REPAIRED OR REPLACED AS NECESSARY TO ENSURE THEIR EFFECTIVENESS.
3. A TURBIDITY CONTAINMENT DEVICE SHALL BE DEPLOYED COMPLETELY AROUND THE AREA OF ACTIVE GROIN CONSTRUCTION AND WILL REMAIN IN PLACE DURING SAND PLACEMENT ON THE BEACH.
4. TURBIDITY CONTAINMENT DEVICES SHALL GENERALLY BE COMPOSED OF A WATER SURFACE FLOTATION BOOM WITH A MIN. FREEBOARD OF 4 INCHES, A CURTAIN HANGING VERTICALLY TO THE SEAFLOOR, BALLAST WEIGHT AT THE CURTAIN BOTTOM, AND SUFFICIENT ANCHORS TO MAINTAIN THE CURTAIN IN PLACE.
5. THE TURBIDITY CONTAINMENT DEVICE CURTAIN MATERIAL SHALL BE MONOFILAMENT WOVEN POLYPROPYLENE WITH THE FOLLOWING MINIMUM PHYSICAL REQUIREMENTS:

PROPERTY	VALUE	TEST METHOD
GRAB STRENGTH	200 LBS	ASTM D 4632
PUNCTURE	90 LBS	ASTM D 4833
TRAPEZOID TEAR	90 LBS	ASTM D 4533

PERVIOUS GEOTEXTILE CURTAIN MATERIAL SHALL HAVE A MAXIMUM APPARENT OPENING SIZE (AOS) AND PERCENT OPEN AREA (POA) CAPABLE OF RETAINING FINE SUSPENDED SEDIMENTS 0.004 MM OR LARGER IN DIAMETER.

6. A DESCRIPTION OF THE TURBIDITY CONTAINMENT DEVICE(S), THEIR MATERIALS AND DESIGN, AND THE PROPOSED DEPLOYMENT METHODOLOGY SHALL BE INCLUDED IN THE ENVIRONMENTAL PROTECTION PLAN AND APPROVED BY THE ENGINEER PRIOR TO THEIR USE.

NEW GROIN CONSTRUCTION AND EWA GROIN REPAIR AREA (IN-WATER)

1. A TURBIDITY CONTAINMENT DEVICE SHALL BE DEPLOYED TO COMPLETELY SURROUND THE AREA OF ACTIVE IN-WATER CONSTRUCTION.
2. USE STAKES AS NECESSARY TO KEEP TURBIDITY CONTAINMENT DEVICE VERTICAL AND FUNCTIONAL ON THE BEACH FACE UNTIL LANDWARD OF THE WATERLINE.
3. SHOULD WEATHER OR SEA CONDITIONS PROHIBIT PROPER PLACEMENT AND FUNCTION OF THE TURBIDITY CONTAINMENT DEVICE, CONSTRUCTION SHALL CEASE UNTIL CONDITIONS PERMIT PROPER DEPLOYMENT.

WORKSITE AND EQUIPMENT/MATERIALS STAGING AREAS (ON LAND)

1. A SILT FENCE SHALL BE INSTALLED AND MAINTAINED AROUND THE WORKSITE AND EQUIPMENT/MATERIALS STAGING AREAS.
2. SILT FENCE FILTER FABRIC SHALL BE MIRAFI SILT FENCE, AMOCO SILT STOP, OR APPROVED EQUAL.
3. CONSTRUCTION ENTRANCES SHALL BE STABILIZED WHEREVER TRAFFIC WILL BE ENTERING OR LEAVING THE CONSTRUCTION SITE. IF THE ENTRANCE IS NOT PROPERLY PREVENTING SEDIMENT FROM BEING TRACKED ONTO PAVEMENT, THEN ALTERNATIVE MEASURES TO KEEP THE STREETS FREE OF SEDIMENT SHALL BE USED.
4. ANY SEDIMENT THAT IS TRACKED ONTO PAVEMENT SHALL BE REMOVED BY SHOVELING OR STREET SWEEPING. THE SEDIMENT COLLECTED BY SWEEPING SHALL BE REMOVED OR STABILIZED ON SITE.

REVISION NO.	SYM.	DESCRIPTION	SHT./OF	DATE	APPROVED

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STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
ENGINEERING DIVISION

KUHIO BEACH RESTORATION - GROIN CONSTRUCTION, SMALL SCALE BEACH NOURISHMENT, AND GROIN REPAIRS

WATER QUALITY PROTECTION PLAN

DESIGNED:	GT	SUBMITTED:	APRIL 20, 2026
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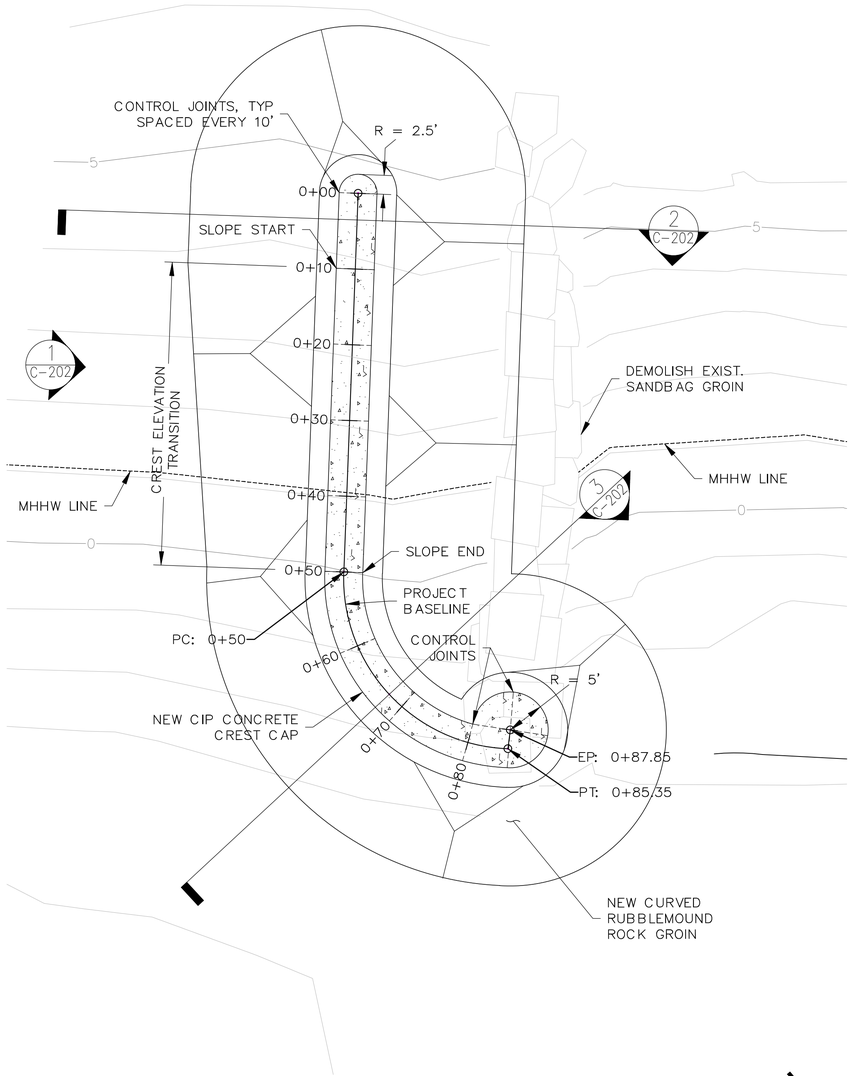
CHIEF ENGINEER			

JOB NO. E00CO30A, KUHIO BEACH RESTORATION

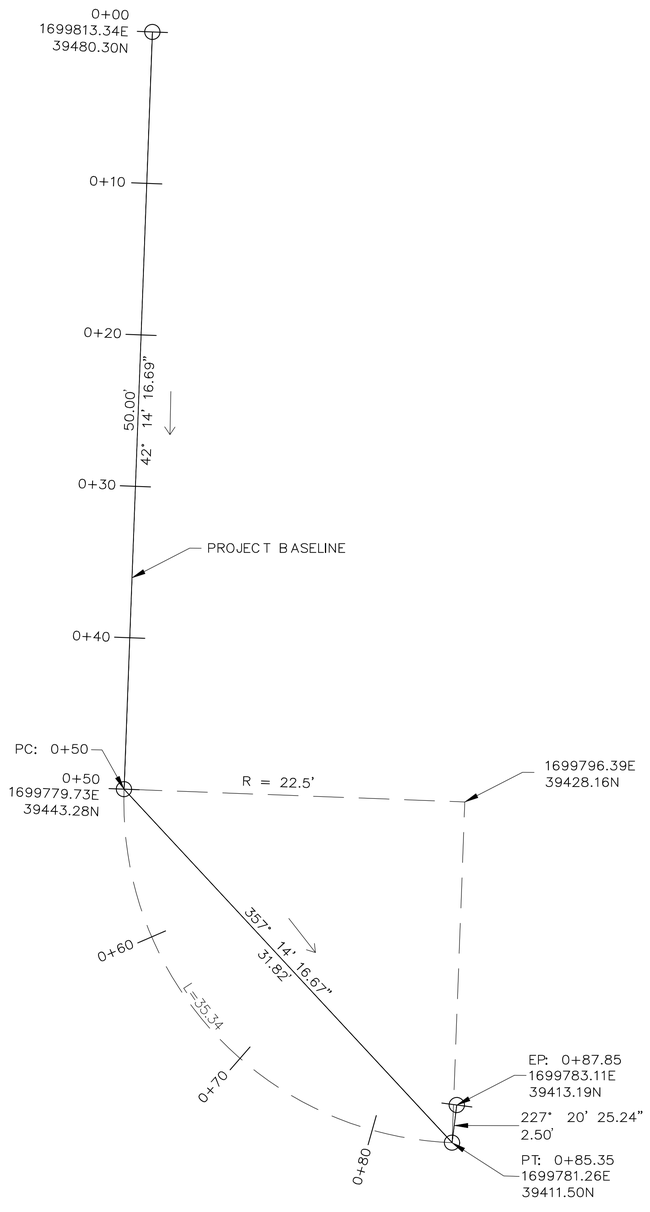
PLOT DATE: 4/20/2026

JOB NO. E00CO30A SHEET NO. 6 OF 12 SHEETS



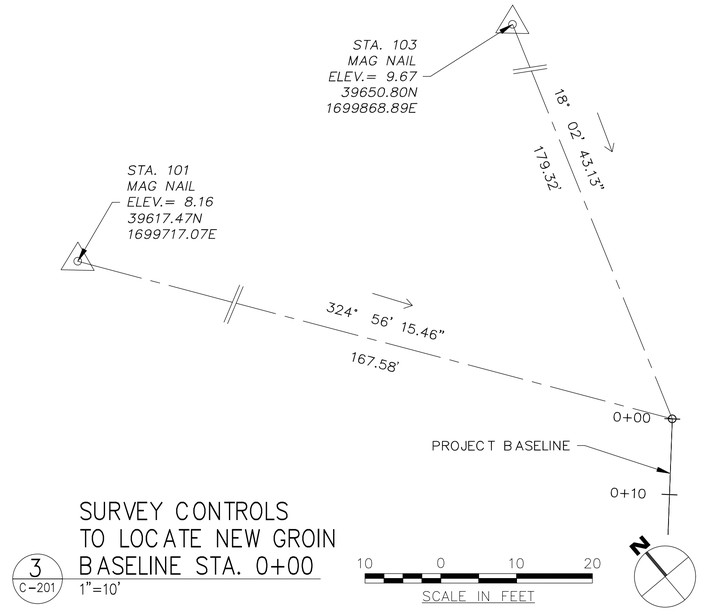
1 C-201 NEW GROIN PLAN
SCALE: 1"=10'

10 0 10 20
SCALE IN FEET



2 C-201 NEW GROIN BASELINE CONTROLS
SCALE: 1"=5'

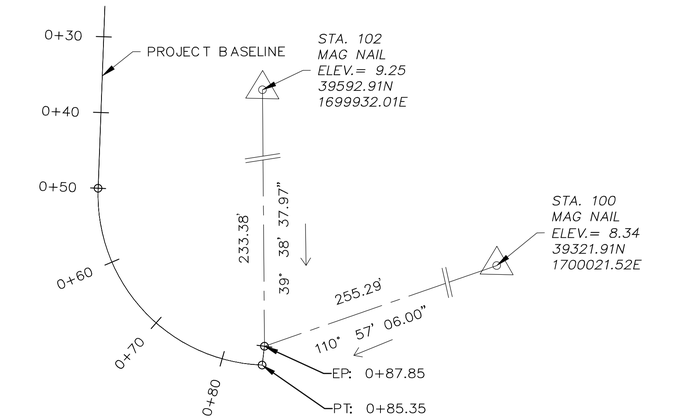
5 0 5 10
SCALE IN FEET



SURVEY CONTROLS
TO LOCATE NEW GROIN
BASELINE STA. 0+00

3 C-201 1"=10'

10 0 10 20
SCALE IN FEET



SURVEY CONTROLS
TO LOCATE NEW GROIN
BASELINE STA. 0+87.85

4 C-201 1"=10'

10 0 10 20
SCALE IN FEET

NOTES

1. SAND GENERATED FROM SANDBAG GROIN DEMOLITION AND NEW GROIN CONSTRUCTION SHALL BE STOCKPILED ON SITE. DISPOSAL OF SAND OFF SITE IS NOT PERMITTED.
2. ALL SAND OBTAINED FROM DEMOLITION AND EXCAVATION SHALL BE PLACED ON THE ACTIVE BEACH PRIOR TO ANY SAND RECOVERY FROM KUHIO BEACH EWA BASIN.
3. CONCRETE CREST CAP CONTROL JOINTS TO BE PLACED AS SHOWN.
4. SEE NOTES ON C-202.

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KUHIO BEACH RESTORATION - GROIN CONSTRUCTION, SMALL SCALE BEACH NOURISHMENT, AND GROIN REPAIRS

NEW GROIN AND BASELINE CONTROLS

DESIGNED:	GT	SUBMITTED:	APRIL 20, 2026
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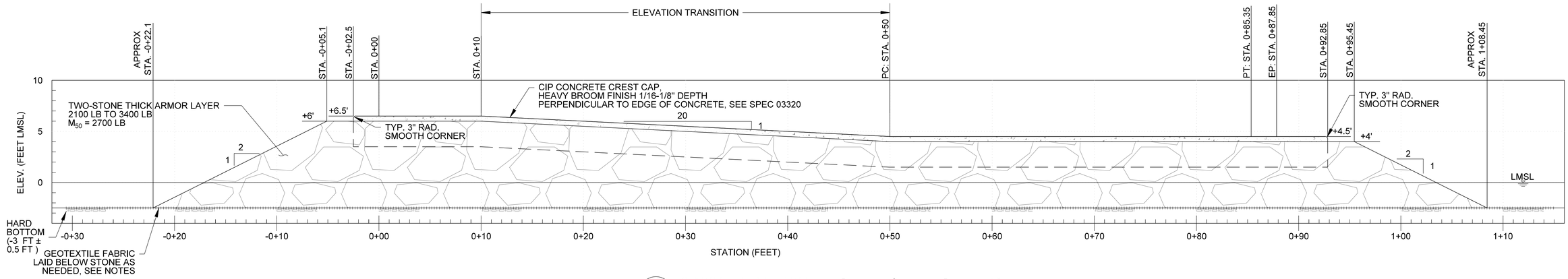
CHIEF ENGINEER			

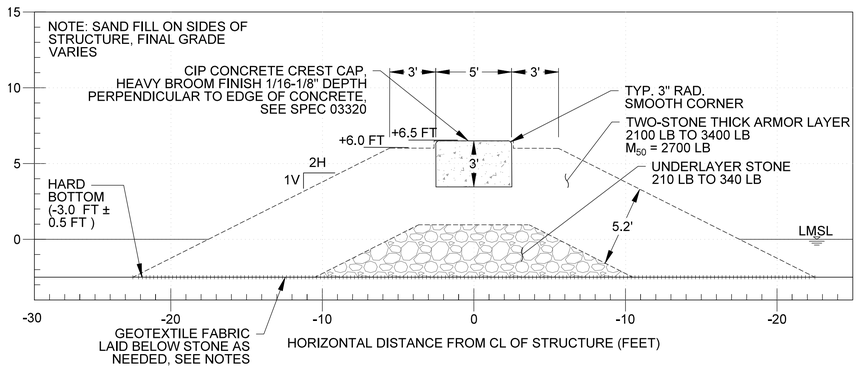
JOB NO. E00C030A, KUHIO BEACH RESTORATION

PLOT DATE: 4/20/2026



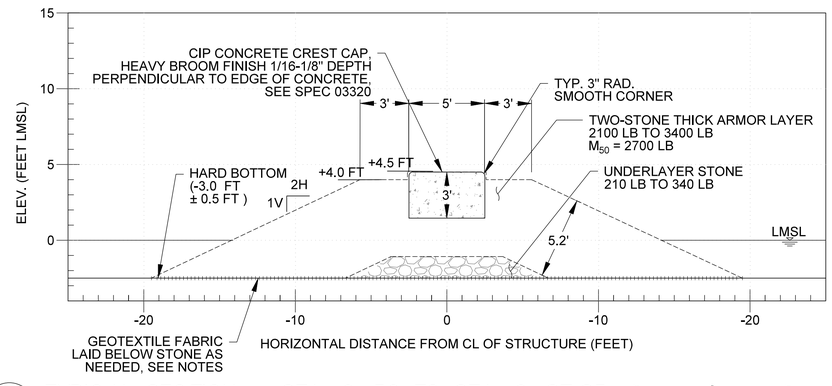
1 C-202 GROIN ELEVATION
SCALE: 1"=5'

5 0 5 10
SCALE IN FEET



2 C-202 TYPICAL SECTION – STA. 0+00 TO STA. 0+10
SCALE: 1"=5'

5 0 5 10
SCALE IN FEET



3 C-202 TYPICAL SECTION – STA. 0+50 TO STA. 0+87.85
SCALE: 1"=5'

5 0 5 10
SCALE IN FEET

NOTES

1. REMOVE EXISTING SHORELINE MATERIAL AND DEBRIS (ROCKS, RUBBLE, SANDBAGS, SAND, ETC.) AS NECESSARY TO CONSTRUCT THE GROIN TO THE LINES AND GRADES AS SHOWN ON THE DRAWINGS. BEACH SAND SHALL BE STOCKPILED ON THE BEACH CREST ABOVE THE +6 FOOT ELEVATION WITHIN THE WORKSITE STAGING AREA, AND PLACED ADJACENT TO THE NEW GROIN FOLLOWING COMPLETION OF CONSTRUCTION. ALL CONCRETE DEBRIS AND MANMADE MATERIAL SHALL BE DISPOSED OF AT AN APPROVED OFF-SITE DISPOSAL AREA.

2. NEW GROIN ARMOR STONE SHALL CONSIST OF 2,100 TO 3,400 LB STONE. ARMOR STONE SHALL BE UTILIZED WITHIN THE ALLOWABLE SIZE RANGE AS NECESSARY TO MEET THE LINES AND GRADES OF THE GROIN AS SHOWN ON THE PLANS. A MINIMUM OF 50% OF THE ARMOR STONE BY VOLUME SHALL BE GREATER THAN 2700 LBS.

3. UNDERLAYER STONE SHALL CONSIST OF 210 TO 340 LB STONE.

4. THE GENERAL CONSTRUCTION METHODOLOGY AND SEQUENCE SHALL BE AS FOLLOWS:

   A. IMPLEMENT BEST MANAGEMENT PRACTICES PER G-102, C-103, AND SPECIFICATIONS.

   B. REMOVE EXISTING ELCOROCK® SANDBAGS. SAND FROM THE BAGS SHALL BE PLACED AND SPREAD ABOVE MHHW ON THE DRY BEACH IN BETWEEN THE NEW GROIN AND THE EXISTING EWA GROIN.

   C. EXCAVATE SAND AS NECESSARY FOR GROIN CONSTRUCTION. STUCTURE TOE DEPTH IS TO BE PLACED ON HARD BOTTOM OR -3.0 FT MSL, WHICHEVER COMES FIRST. GEOTEXTILE FABRIC IS TO BE PLACED IF HARD BOTTOM IS NOT REACHED.

   D. PLACE UNDERLAYER STONE FROM THE ROOT OF THE GROIN TOWARDS THE HEAD FOLLOWING ALIGNMENT SHOWN ON C-201 AND C-202.

   E. STARTING FROM THE TERMINUS OF THE STRUCTURE AND MOVING TOWARDS THE ROOT PLACE ARMOR STONES, SET UP FLEXIBLE FORMWORK, AND CAST IN PLACE CONCRETE IN 10 FOOT SECTIONS. CONCRETE CREST CAP SHALL HAVE A HEAVY BROOM FINISH 1/16-1/8" DEPTH PERPENDICULAR TO EDGE OF CONCRETE AND HAVE 3" RADIUS SMOOTH CORNERS ON BOTH TOP EDGES.

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KUHIO BEACH RESTORATION - GROIN CONSTRUCTION, SMALL SCALE BEACH NOURISHMENT, AND GROIN REPAIRS

NEW GROIN SECTIONS

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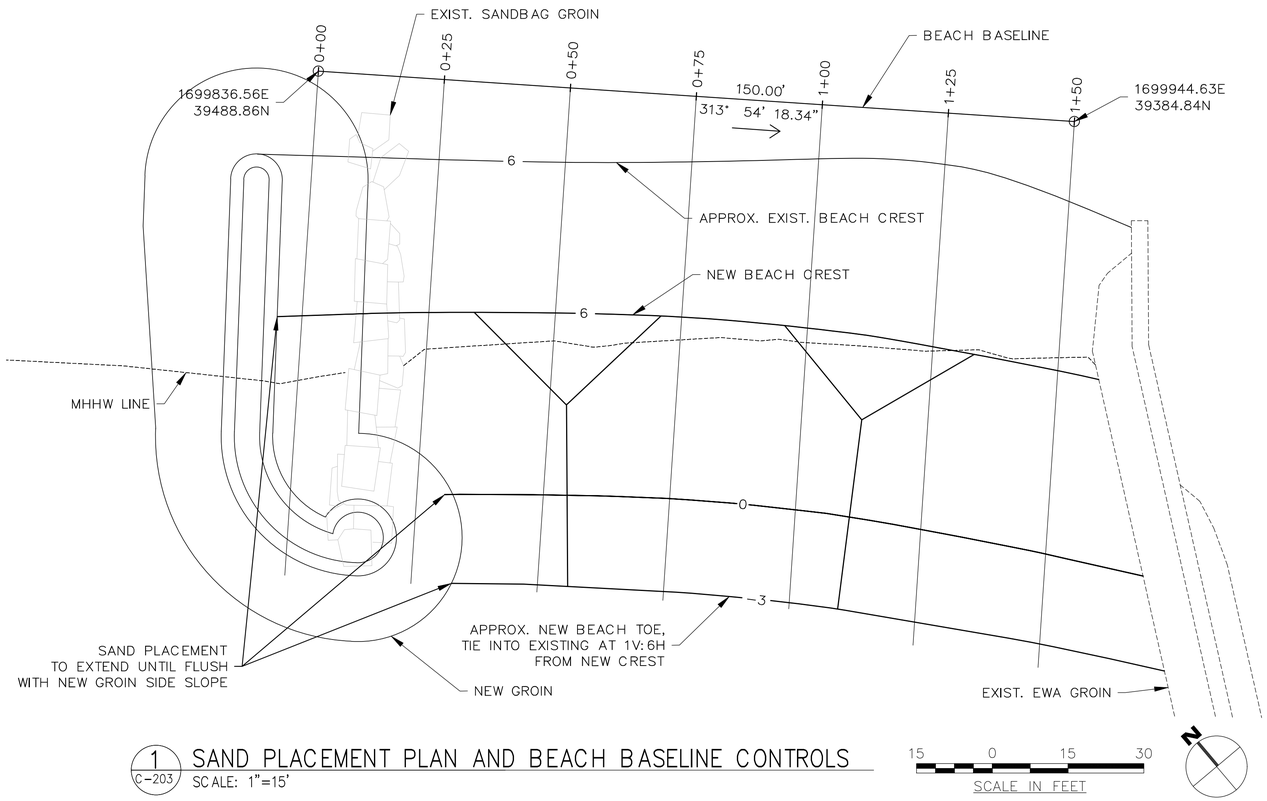
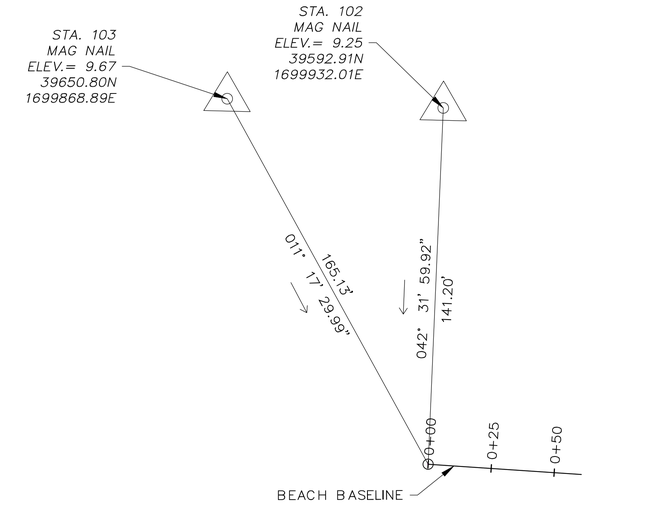
CHIEF ENGINEER			

JOB NO. E00CO30A. KUHIO BEACH RESTORATION



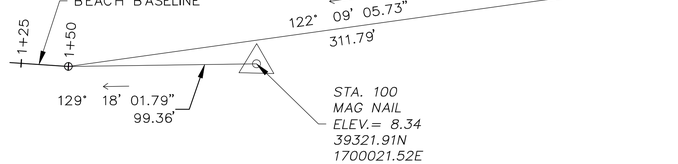
1 C-203 SAND PLACEMENT PLAN AND BEACH BASELINE CONTROLS
SCALE: 1"=15'

15 0 15 30
SCALE IN FEET



2 C-203 SURVEY CONTROLS TO LOCATE BEACH BASELINE STA. 0+00
1"=30'

30 0 30 60
SCALE IN FEET



3 C-203 SURVEY CONTROLS TO LOCATE BEACH BASELINE STA. 1+50
1"=40'

40 0 40 80
SCALE IN FEET

NOTES

1. 1,000 CY ± 100 CY OF SAND SHALL BE RECOVERED FROM KUHIO BEACH EWA BASIN AND PLACED ON KUHIO BEACH PER THE PLANS. SAND WILL BE COLLECTED FROM THE KUHIO BEACH EWA BASIN DRY BEACH AREA FROM THE CREST LANDWARDS TOWARD THE BACKSHORE STRUCTURES (WALLS, STEPS, ETC.). DO NOT REMOVE SAND FROM BELOW +5 FT MSL.
2. SAND EXCAVATED FROM THE NEW GROIN CONSTRUCTION AND SAND RELEASED FROM THE DEMOLITION OF THE SANDBAG GROIN SHALL NOT COUNT TOWARDS THE 1,000 CY OF SAND COLLECTED FROM KUHIO BEACH EWA BASIN.
3. DEMOLITION OF ELCOROCK® SANDBAG GROIN WILL RESULT IN THE RELEASE OF PREVIOUSLY APPROVED INLAND SAND. SAND FROM THE BAGS IS TO BE PLACED ONTO KUHIO BEACH. THE CONTRACTOR IS RESPONSIBLE FOR SANDBAG MATERIAL DISPOSAL.
4. PLACE SAND IN MAXIMUM 25 FT LONG INCREMENTS. BEACH PROFILES SHALL BE SURVEYED IMMEDIATELY PRIOR TO AND FOLLOWING SAND PLACEMENT TO VERIFY THE QUANTITY OF IN-PLACE SAND.
5. SAND SHALL BE PLACED AFTER THE CONSTRUCTION OF THE NEW GROIN AND REPAIRS OF THE EWA GROIN (ADDITIVE ITEM). SAND SHALL BE PLACED TO THE DESIGN BEACH SLOPE OF 1V:6H AS SHOWN ON C-204.
6. EQUIPMENT USED TO MOVE AND DISTRIBUTE THE SAND TO THE DESIGN BEACH PROFILES SHALL BE THE SMALLEST PRACTICABLE EQUIPMENT IN ORDER TO MINIMIZE NOISE AND INCONVENIENCE TO ADJACENT PROPERTIES.
7. NO EQUIPMENT SHALL OPERATE IN THE WATER OR BELOW THE MHHW ELEVATION (+1.08 FT MSL).
8. SAND MAY BE PLACED UP TO THE EDGES OF THE NEW/EXISTING HARD FEATURES (NEW GROIN AND EWA GROIN).

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GIANNICOLA TUMINO
LICENSED PROFESSIONAL ENGINEER
No. 20696-C
HAWAII, U.S.A.

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SIGNATURE 04/30/2028 EXPIRATION DATE OF LICENSE

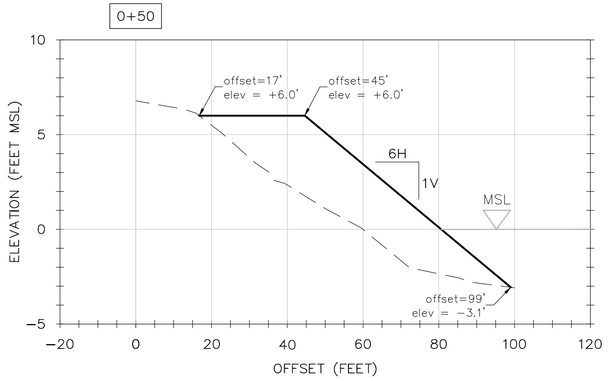
STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
ENGINEERING DIVISION

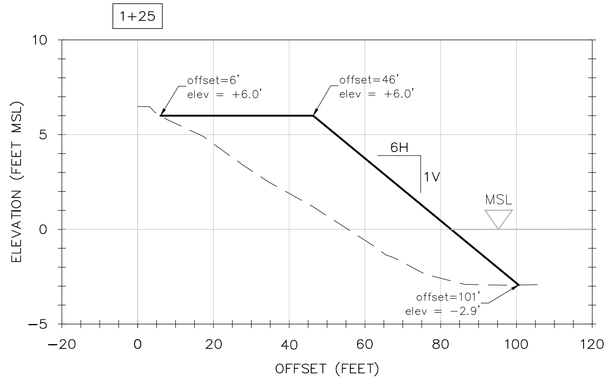
KUHIO BEACH RESTORATION - GROIN CONSTRUCTION, SMALL SCALE BEACH NOURISHMENT, AND GROIN REPAIRS

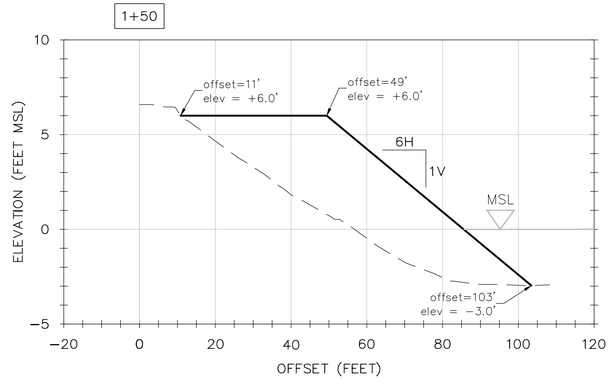
SAND PLACEMENT PLAN AND BEACH BASELINE CONTROLS

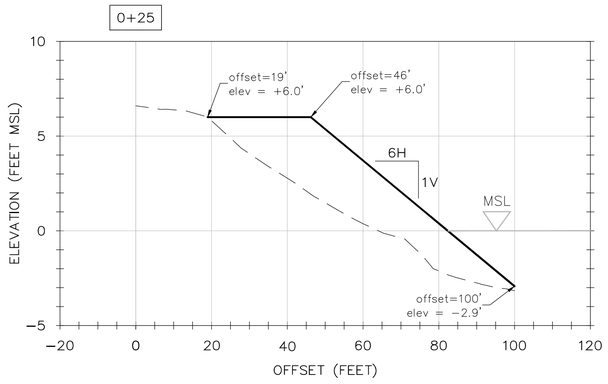
DESIGNED:	GT	SUBMITTED:	APRIL 20, 2026
DRAWN:	RH	DATE:	APRIL 20, 2026
CHECKED:	DS	SCALE:	VARIES
APPROVED:	Dina Lau E-signed 2026-04-21 02:43PM HST dina.u.lau@hawaii.gov State of Hawaii Civil Engineer	DRAWING NO.	C-203
CHIEF ENGINEER			

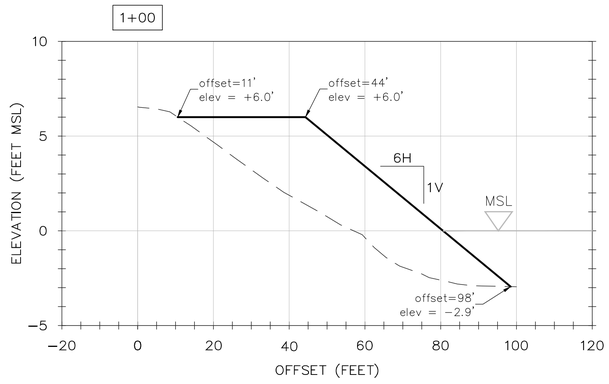
JOB NO. E00CO30A, KUHIO BEACH RESTORATION

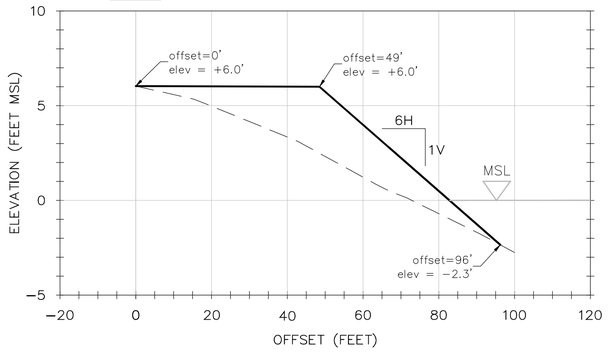


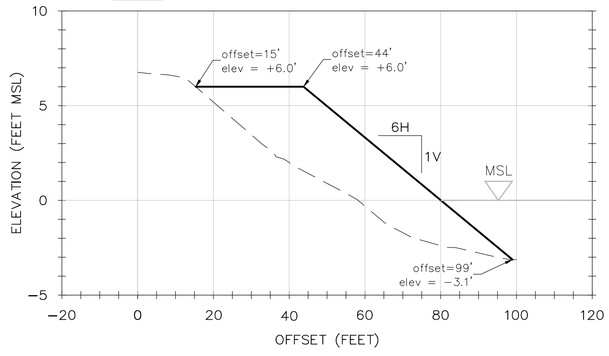












LEGEND

— — — EXISTING GRADE (FEBRUARY 2026)

——— TARGET DESIGN BEACH PROFILE

4 0 4 8

VERTICAL SCALE: 1" = 4'

20 0 20 40

HORIZONTAL SCALE: 1' = 20'

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KUHIO BEACH RESTORATION - GROIN CONSTRUCTION, SMALL SCALE BEACH NOURISHMENT, AND GROIN REPAIRS

SAND PLACEMENT PROFILES

DESIGNED:	GT	SUBMITTED:	APRIL 20, 2026
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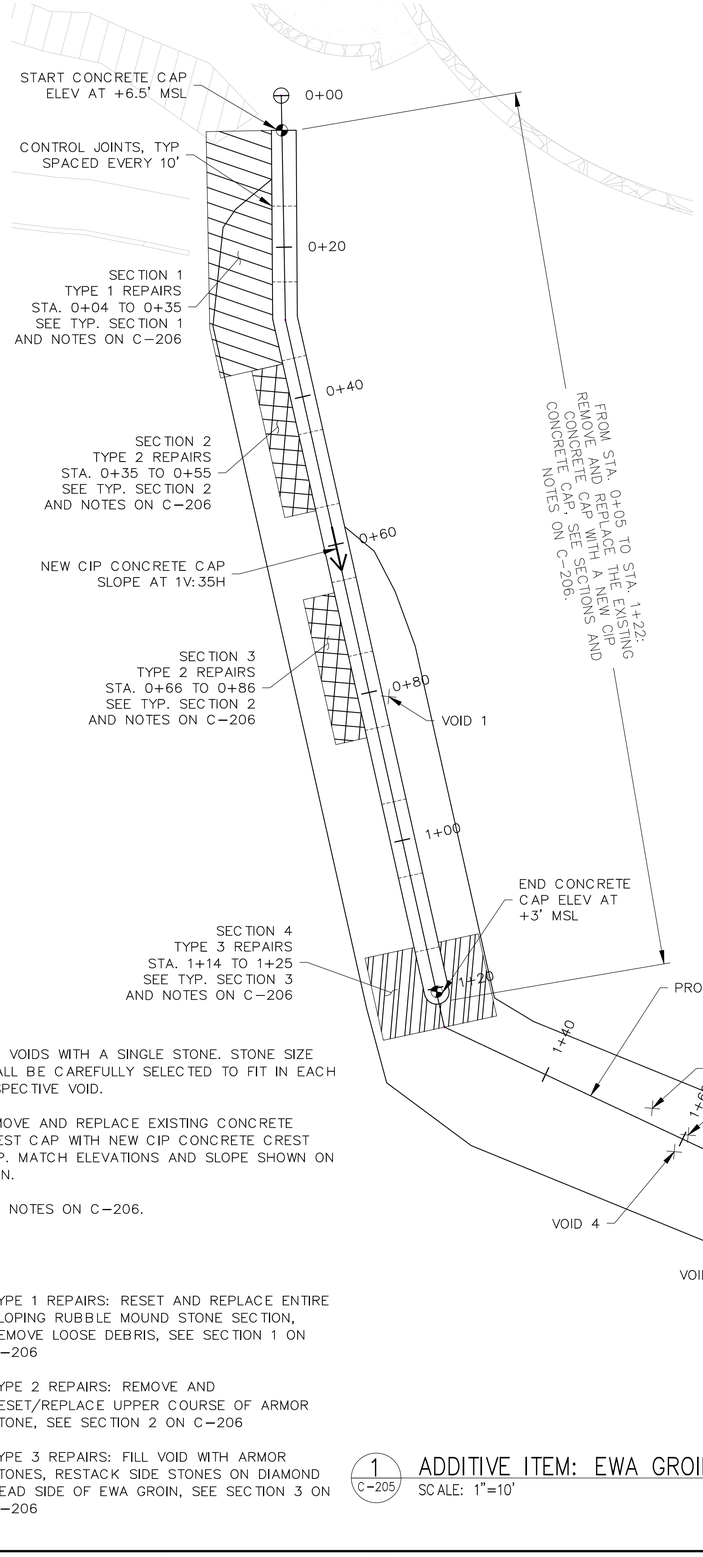
APPROVED: Dina Lau
E-signed 2026-04-21 02:43PM HST
dina.u.lau@hawaii.gov
State of Hawaii
Civil Engineer
CHIEF ENGINEER

DRAWING NO. C-204

JOB NO. E00CO30A, KUHIO BEACH RESTORATION

PLOT DATE: 4/20/2026



NOTES

1. FILL VOIDS WITH A SINGLE STONE. STONE SIZE SHALL BE CAREFULLY SELECTED TO FIT IN EACH RESPECTIVE VOID.
2. REMOVE AND REPLACE EXISTING CONCRETE CREST CAP WITH NEW CIP CONCRETE CREST CAP. MATCH ELEVATIONS AND SLOPE SHOWN ON PLAN.
3. SEE NOTES ON C-206.

LEGEND

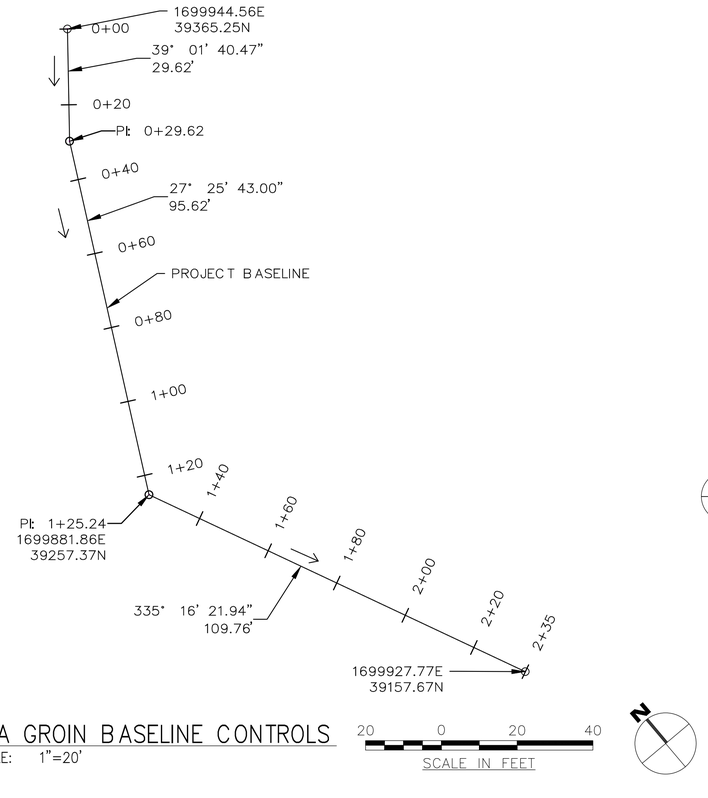
TYPE 1 REPAIRS: RESET AND REPLACE ENTIRE SLOPING RUBBLE MOUND STONE SECTION, REMOVE LOOSE DEBRIS, SEE SECTION 1 ON C-206

TYPE 2 REPAIRS: REMOVE AND RESET/REPLACE UPPER COURSE OF ARMOR STONE, SEE SECTION 2 ON C-206

TYPE 3 REPAIRS: FILL VOID WITH ARMOR STONES, RESTACK SIDE STONES ON DIAMOND HEAD SIDE OF EWA GROIN, SEE SECTION 3 ON C-206

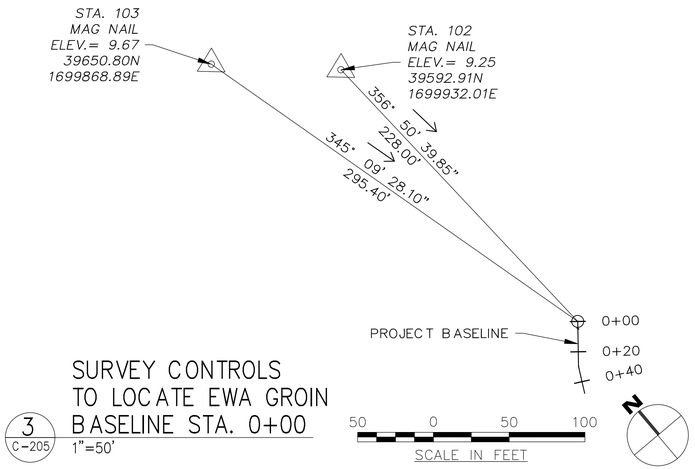
1 / C-205 ADDITIVE ITEM: EWA GROIN REPAIR PLAN
SCALE: 1"=10'

10 0 10 20
SCALE IN FEET



2 / C-205 EWA GROIN BASELINE CONTROLS
SCALE: 1"=20'

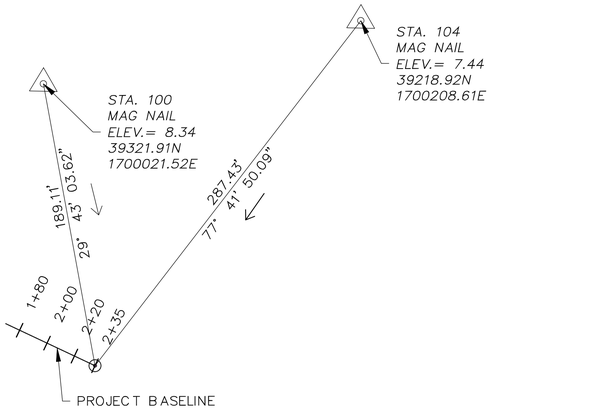
20 0 20 40
SCALE IN FEET



SURVEY CONTROLS
TO LOCATE EWA GROIN
BASELINE STA. 0+00

3 / C-205
1"=50'

50 0 50 100
SCALE IN FEET



SURVEY CONTROLS
TO LOCATE EWA GROIN
BASELINE STA. 2+35

4 / C-205
1"=50'

50 0 50 100
SCALE IN FEET

EWA GROIN VOID SIZES

VOID NUMBER	STATIONING	LENGTH (FT)	WIDTH (FT)	DEPTH (FT)
1	0+81	2.0	1.0	1.0
2	1+55	2.3	1.7	2.3
3	1+60	1.9	1.7	3.6
4	1+60	2.8	1.1	2.5
5	1+77	1.7	1.1	2.0
6	1+83	1.3	1.1	1.8
7	1+83	3.3	1.5	1.8
8	2+00	4.3	2.0	2.4
9	1+96	2.2	1.1	2.7
10	2+18	2.1	2.0	2.6
11	2+20	2.1	1.3	2.2
12	2+28	2.3	1.7	1.8

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KUHIO BEACH RESTORATION - GROIN CONSTRUCTION, SMALL SCALE BEACH NOURISHMENT, AND GROIN REPAIRS

ADDITIVE ITEM: EWA GROIN REPAIR PLAN AND BASELINE CONTROLS

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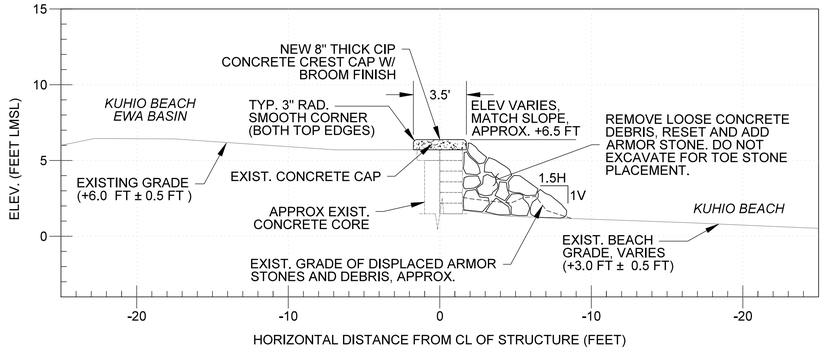
CHIEF ENGINEER			

JOB NO. E00CO30A, KUHIO BEACH RESTORATION

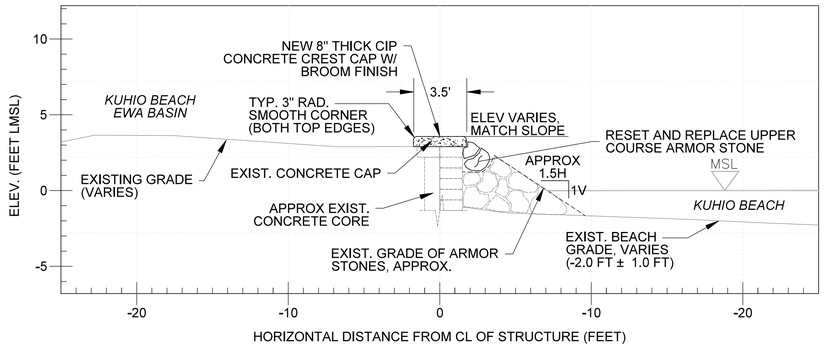
PLOT DATE: 4/20/2026

JOB NO. E00CO30A SHEET NO. 11 OF 12 SHEETS



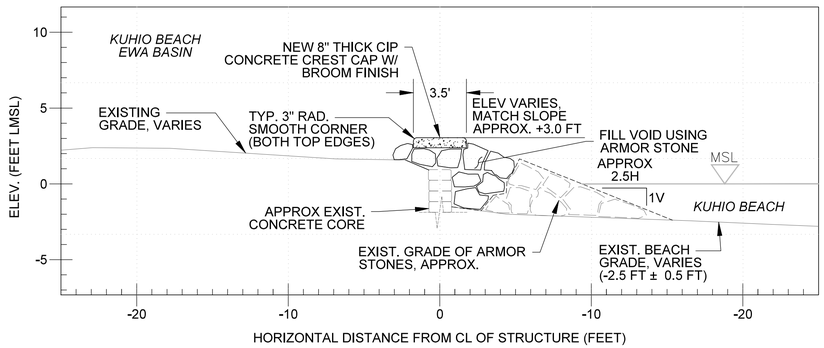
1 C-206 TYPE 1 REPAIR SECTION
SCALE: 1"=5'

5 0 5 10
SCALE IN FEET



2 C-206 TYPE 2 REPAIR SECTION
SCALE: 1"=5'

5 0 5 10
SCALE IN FEET



3 C-206 TYPE 3 REPAIR SECTION
SCALE: 1"=5'

5 0 5 10
SCALE IN FEET

NOTES:

1. REPLACEMENT ARMOR STONE FOR TYPE 1, TYPE 2, AND TYPE 3 REPAIRS SHALL CONSIST OF STONES WEIGHING BETWEEN 1,000 TO 3,400 LBS. ARMOR STONE SHALL BE UTILIZED WITHIN THE ALLOWABLE SIZE RANGE AS NECESSARY TO MEET THE GROIN REPAIRS AS SHOWN ON THE PLANS. ARMOR STONE MAY BE SOURCED FROM ON-SITE OR SUPPLIED BY CONTRACTOR PROVIDED IT FALLS WITHIN THE WEIGHT RANGE SPECIFIED BY THE ENGINEER AND CONFORMS TO SPECIFICATIONS 02486.
2. TOE STONES SHALL WEIGH 3,000 LBS MINIMUM.
3. THE GROIN CORE VARIES IN CONSTRUCTION AND SIZE (INCLUDING FORMED CONCRETE AND CONCRETE BAGS). THE DEPTH AND EXTENT OF THE CORE ARE UNKNOWN. LIMITS OF REMOVAL AND EXPOSURE SHALL BE AS DIRECTED BY THE ENGINEER.
4. REMOVE ALL DAMAGED CONCRETE FROM THE EXISTING CREST CAP UNTIL THE CORE IS EXPOSED, OR AS DIRECTED BY THE ENGINEER. CREST CAP REPAIRS SHALL CONSIST OF CIP CONCRETE WITH A HEAVY BROOM FINISH (1/16" TO 1/8" DEPTH), APPLIED PERPENDICULAR TO THE EDGE OF THE CONCRETE. REFER TO SPECIFICATION 03320. CONCRETE CREST CAP SHALL HAVE A 3" RADIUS ROUNDED CORNERS ON BOTH TOP EDGES.
5. ALL REPAIRS TO THE EWA GROIN SHALL MATCH THE GRADE SPECIFIED ON SECTIONS.
6. FOR TYPE 2 AND 3 REPAIRS, MINIMIZE DISTURBANCE OF THE EXISTING STONES TO THE EXTENT NECESSARY TO KEY IN THE NEW REPAIR STONES.

JOB NO. E00CO30A , KUHIO BEACH RESTORATION

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ADDITIVE ITEM: EWA GROIN REPAIR
TYPICAL SECTIONS

DESIGNED:	GT	SUBMITTED:	APRIL 20, 2026
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CHIEF ENGINEER			

PLOT DATE: 4/20/2026

JOB NO. E00CO30A SHEET NO. 12 OF 12 SHEETS