

**STATE OF HAWAI‘I  
DEPARTMENT OF LAND AND NATURAL RESOURCES  
OFFICE OF CONSERVATION AND COASTAL LANDS  
Honolulu, Hawai‘i**

May 10, 2024

180-Day Exp. Date: May 11, 2024

**Board of Land and  
Natural Resources  
State of Hawai‘i  
Honolulu, Hawai‘i**

**REGARDING:** Conservation District Use Application (CDUA) HA-3945  
Pohoiki Boat Ramp Excavation, Dredging and Placement of Volcanic  
Debris

**APPLICANT:** Department of Land and Natural Resources Division of Boating and  
Ocean Recreation

**LANDOWNER:** State of Hawai‘i

**LOCATION:** Pohoiki, Puna, Hawai‘i

**Tax Map Keys:** Makai of (3) 1-3-008:014 & 097 [Dredging]  
(3) 1-3-008:097 & 1-4-093:048 [Placement of Dredged Material]

**SUBZONE:** Resource

**AREA:** Approximately (≈) 17.54 acres

**EXHIBITS**

- A** Pohoiki Bay 2018 and 2022
- B** Subzone Map
- C** Location Map
- D** Coastal Hazards Map
- E** Project Elements
- F** Excavation and Dredging Plans
- G** Comparison of Alternatives

**SUMMARY/BACKGROUND (Exhibit A)**

This Conservation District Use Application is intended to restore navigational ocean access at the Department of Land and Natural Resources Division of Boating and Ocean Recreation’s undamaged Pohoiki Boat Ramp facility located at Pohoiki Bay. The closest operable boat ramp facility is at Wailoa Boat Harbor in Hilo that is ≈ 40-miles away.

**Item K-1**

In 2018, lava from Kīlauea Volcano flowed into the ocean about a mile northeast of Pohoiki Bay and advanced over land about 230-feet southeast of the Pohoiki Boat Ramp. The concrete boat ramp and adjacent breakwater were spared from lava inundation and damage. However, as lava flowed into the ocean and cooled, the material fragmented, shattered, and became rocks and sand rolling in the surf that was transported by waves and currents to Pohoiki Bay. The volcanic material accumulated at Pohoiki Bay and effectively blocked navigational ocean access.

### **DESCRIPTION OF AREA (Exhibits B & C)**

The existing Pohoiki Boat Ramp facility is located at Pohoiki Bay on the southeast coastline of Hawai'i Island, adjacent to and makai of the County's Isaac Hale Beach Park located at Puna, Hawai'i, Tax Map Key: (3) 1-3-008:014. The fastlands, where dredged material will be placed; and submerged lands, the area of the proposed dredging, lie within the Resource subzone of the Conservation District.

Access to the project site is via Pohoiki Road. The Pohoiki Boat Ramp facility is owned and maintained by DLNR-DOBOR whereas the U.S. Army Corps of Engineers (USACE) is responsible for maintaining the 90-foot-long breakwater structure adjacent to the boat ramp. The existing boat ramp is a single lane concrete ramp  $\approx$  18-feet wide. The USACE constructed the original ramp in 1963 and in 1979, the USACE constructed the 90-foot breakwater structure. In 2008, DOBOR essentially replaced the entire boat ramp facility. A new concrete ramp was constructed along with a new loading dock and pedestrian walkway. Other improvements included a new concrete approach ramp, asphalt paving, and a new rock rip rap revetment to protect the adjacent shoreline.

The newly created rocky beach area is fairly level and slopes down near the existing boat ramp facility and at the coastline. The existing ground surface elevations at the fairly level area range from about +10 to +15 feet mean sea level (msl). According to the CDUA,  $\approx$  11.6-acres of volcanic material blocks navigational access from the Pohoiki Boat Ramp facility to the Pacific Ocean.

### Environmental setting

The area immediately surrounding the boat ramp facility is unvegetated to sparsely vegetated. Pioneer fern species and nut grass are growing on the new 'a'a lava flow. Native trees in the project area include hala and milo. The most abundant tree in the project area is kamani, a Polynesian introduced species.

One native migratory shorebird species – the Pacific Golden-Plover, the kolea and 11 alien species of birds were recorded during the survey. Federally protected species that are known to occur, or could reasonably be expected to occur in or transit through the project area include the Hawaiian hoary bat- 'ōpe'ape'a; the Hawaiian petrel- 'ua'u; the Newell's shearwater-'a'o; and the Band-rumped storm-petrel-'akē'akē. The Hawaiian hoary bat was not observed during the survey but may transit through the project vicinity on a seasonal basis. No seabirds or their nests were detected during the survey. Seabirds may transit through the project vicinity in small numbers between April and the middle of December.

The Puna coastline is almost entirely rocky sea cliffs, with deep water close to shore and relatively high nearshore ground elevations. The coast is directly exposed to the persistent and prevailing trade winds. Tropical storms and hurricane passing south of the island generate large waves that can batter the coast. There are no shallow water embayments (a recess along a coastline) or significant headlands (such as bluffs) to provide natural wave protection.

From the Atlas of Coastal Hazards in the Hawaiian Zone: The only beach in this portion of coast is found at Isaac Hale Park inside Pohoiki Bay. Here warm water seeps into Pohoiki Bay through the bay floor. The coast receives between 75 and 100 inches of rain annually and has few streams. High waves persistently attack the coastal cliffs making access to the water relatively dangerous. No significant reef development exists on this geologically young coastline. The Overall Hazard Assessment (OHA) for this vicinity is moderate to high (5). Here the tsunami hazard is reduced to moderately high from a ranking of high along the rest of the coast. Stream flooding is moderately low throughout this relatively arid region. The high wave hazard is moderately high along the entire coast while the storm and sea-level hazards are high north of Lililoa and reduced to moderately high to the south where the coast is steeper. Erosion along the rocky Puala'a coast is ranked uniformly moderately low. This area lies in lava flow hazard zone 2 (zone 1 is the highest severity of hazard out of 9 zones). The seismicity and volcanic hazard are high due to this region's proximity to the active Kilauea Volcano. **(Exhibit D)**

### **PROPOSED USE (Exhibits E & F)**

The proposed project consists of drag line dredging to create a wide channel; and on-land excavation with mechanical equipment for truck hauling to nearby locations. Drag line dredging consists of a crane with a bucket that is set up on land and operated and controlled via a "dragline". The crane swings out over the area to be dredged and via the dragline, pulls the bucket up with dredged material. The dredged material will be placed landward, beyond the reach of tidal activity.

The dredged area is proposed to be an  $\approx$  325-ft long wide channel with an initial bottom width of 15-ft near the boat ramp that widens to approximately 160-ft at the ocean entry. The west bank of the channel would have a 4H:1V slope while the east bank would start with a 2H:1V slope as it curves around the breakwater structure whereafter it would transition into a 4H:1V slope. The channel bottom would match the existing ocean floor varying in elevation from approximately -5 feet MLLW at the boat ramp to approximately -13 feet MLLW at the mouth of the channel.

Approximately 31,000-yds<sup>3</sup> of volcanic debris is expected to be excavated and will be distributed across approximately 11 acres to level areas of the surrounding debris, neighboring properties, and the lava land mass and accretion land to the east. Proposed dredging and excavation activities would occur in areas that were previously disturbed. Dredged material that is expected to consist of loose sand, cobbles, and boulders would be placed in areas that are at least 50-feet away for the ocean.

Dredged material may be sited on Tax Map Keys: (3) 1-3-008:097 and 1-4-093:048. Most of the dredged volcanic material will be placed upon the jagged areas of newly formed lava land to the east of the boat ramp and beyond the reach of tidal activity. Dredged material found to be suitable as fill material may be directed towards a beneficial use that is not known at this time. Dredged material will be used to eliminate identified hazards or nuisances such as ponds in the backshore area.

Heavy equipment utilized for the project will avoid traveling and working on or near the USACE's existing breakwater structure, which is intact but partially covered by accumulated volcanic material. The breakwater structure has a crest elevation of +12 feet Mean Lower Low Water (MLLW). Volcanic material has accumulated to a volume such that the material covers a portion of the breakwater structure. Settled sand and cobbles on the breakwater may be manually removed with the use of hand tools to ensure that the breakwater structure is not damaged.

A 50-foot buffer would be maintained along the ocean side of the backfill area to ensure excavated material does not erode into the ocean. Temporary paths constructed from the backfill would also be implemented to facilitate access to the flattened areas. The path would range from 100 to 340 feet in length and have a slope no greater than 10 percent. DOBOR will acquire easements with affected landowners to utilize an unimproved driveway for temporary construction site access as part of the project if necessary.

According to the Final environmental assessment, the project is expected to:

- Restore navigational access by removing accumulated volcanic material from Pohoiki Bay through excavation and dredging;
- Support the resumption of ocean rescue services, commercial uses, sustainability and recreation;
- Return Pohoiki Bay to a shape and depth that resembles pre-eruption conditions; and
- Strategically place excavated and dredged volcanic material in areas of new or new beach.

### Mitigation

A National Pollutant Discharge Elimination System (NPDES) Permit for discharges of pollutants, including storm water runoff is required for the disturbance of one acre or more. Construction activities at the project site will comply with applicable federal, state and county erosion control rules and regulations.

Erosion control measures (e.g., the use of berms, cut-off ditches and silt fences) and Best Management Practices (BMPs) will mitigate stormwater runoff from entering State waters. Any silt fences erected during construction will be continuously inspected and repaired to prevent silt runoff from construction.

Ambient air quality will be temporarily affected by construction-related vehicles, equipment and activities that would generate fugitive dust and emissions. The construction contractor will be responsible for the implementation of erosion and dust

control measures as necessary for compliance with Air Pollution Control standards stated in HAR §11-60.1-33, "Fugitive dust."

The noise regulations pursuant to HAR §11-46, "Community Noise Control" establish maximum permissible sound levels for construction activities occurring within "acoustical" zoning districts. The regulations require a permit or excessive noise (e.g., noise that exceeds allowable levels stated in the administrative rules for more than 10 percent of the time within any 20-minute period). It shall be the contractor's responsibility to obtain the permit and comply with any attached conditions.

The applicant has identified several mitigative measures, conditions and practices within the Environmental Assessment related to the project to ensure that the proposal will have minimal effects on the natural and cultural resources of the land.

### Alternatives Considered

#### **Alternative Sites**

All of the alternative locations are exposed to seismic and volcanic hazards due to the physical setting of the eastern coastline of Hawai'i. No new boat launch areas along the Puna coastline have been established to replace the Pohoiki boat Ramp facility.

Alternative sites explored were:

- Kapoho bay, that was inundated with lava;
- Ka'akepa or Malama Flats, development would require extensive grading, channel excavation inland, utility extensions, area is exposed to wave energy may make operations difficult;
- Undeveloped areas that would require intensive alterations; or
- Transformation of Punalu'u Wharf a historic property next to a Heiau.

None of these sites were found to be suitable for consideration.

#### **Channel restoration**

- Narrow Channel: Channel  $\approx$ 415 linear feet from the existing boat ramp to the ocean with a bottom width of 16-ft with side slopes at 4H:1V(4-ft horizontal for every 1-ft vertical) to match the existing sand elevation. The channel bottom would match the existing ocean floor, varying in elevation from approximately -5 depth at the boat ramp to  $\approx$  -11-ft at the mouth of the channel.
- Wide Channel: Channel  $\approx$ 325 linear feet with a bottom width of 15-ft near the boat ramp and open to  $\approx$ 160-ft at the mouth to allow for easier entry from the ocean. The west bank slope would be 4H:1V while the east bank would start with a 2H/1V slope that would transition into a 4H:1V slope. The channel bottom would match the existing ocean floor varying in elevation from  $\approx$  -5 feet depth at the boat ramp to  $\approx$  -11-ft in depth at the mouth of the channel.

- Channel and Jetties (Groins): Excavation between the jetties would provide access to the ramp on the former shoreline. The channel limits would have a depth of 6 feet and a width of 50 feet at the ramp, opening up to 100 feet at the seaward end. Debris would remain along the shoreline landward of the channel, with an 8H:1V beach face. The east and west jetties would be 210 feet and 310 feet in length, respectively, and reinforced with Core-Loc armor and stone before being topped with a concrete crest cap. The construction of two jetties vastly changes the intensity of the project, and consequently, may disqualify the project from coverage under the USACE Nationwide Permit (NWP). An individual permit would need to be applied for, which is likely to extend the overall project schedule and increase project costs.

### **No action**

No action does not achieve the stated objective of restoring navigational access. The no action alternative implies that the accumulated volcanic material in Pohoiki Bay would remain and navigational access to the Pacific Ocean would not be restored; therefore, the existing undamaged Pohoiki Boat Ramp facility would remain landlocked and inoperable.

**Exhibit G** provides a table of comparison alternatives.

### **SUMMARY OF COMMENTS**

The Office of Conservation and Coastal Lands referred this application to the following agencies for review and comment: the Department of the Army; the State-Department of Land and Natural Resources Divisions of: Aquatic Resources, Conservation and Resource Enforcement, Engineering, Forestry & Wildlife, and the Hawaii District Land Office; the Office of Hawaiian Affairs; the Aha Moku Council; the County of Hawaii - Department of Planning and the Department of Parks & Recreation; and Malama O Puna. In addition, the CDUA was also sent to the Pāhoia Public Library to make this information readily available to those who may wish to review it.

Comments were received by the following and summarized by Staff:

#### State Department of Land and Natural Resources

##### *Engineering Division*

The rules and regulations of the National Flood Insurance Program (NFIP), Title 44 of the Code of Federal Regulations (44CFR), are in effect when development falls within a special flood hazard area (high-risk areas). State projects are required to comply with 44CFR regulations as stipulated in section 60.12. be advised that 44CFR, chapter 1, subchapter B, part 60 reflects the minimum standards as set forth by the NFIP. Local community flood ordinances may stipulate higher standards that can be more restrictive and would take precedence over the minimum NFIP standards.

The owner of the project property and/or their representative is responsible to research the Flood Hazard Zone designation for the project. Flood Hazard Zones are designated

on FEMA's Flood Insurance Rate Maps (FIRM). The official FIRMs can be accessed through FEMA's Map Service Center ([msc.fema.gov](http://msc.fema.gov)). Our Flood Hazard Assessment Tool (FHAT) ([fhat.hawaii.gov](http://fhat.hawaii.gov)) could also be used to research flood hazard information. Regarding local flood ordinances, contact the county NFIP coordinating agency: County of Hawaii, Department of Public Works (808) 961-8327.

*Applicant's response*

We acknowledge that local community flood ordinances may stipulate higher standards that can be more restrictive and would take precedence over the minimum NFIP standards.

County of Hawai'i Planning Department

Pursuant to Hawaii County Planning Commission Rule 9-4(e)(2)(R) "Development" does not include the following: Plan, design, construct, operate, and maintain lands or facilities under the jurisdiction of the Division of Boating and Ocean Recreation of the State Department of Land and Natural Resources. Therefore, the proposed project is exempt from Special Management Area (SMA) permitting requirements.

Additionally, pursuant to Planning Department Rule 11-7(a) the following structures or activities may be permitted within the shoreline setback provided written clearance is secured from the Planning department:

- (6) Structures which were completed by or activities which commenced prior to June 22, 1970, and
- (9) Work being done consists of maintenance, repair, reconstruction and minor additions to or alterations of legal, publicly owned boating, maritime, or water sports recreational facilities, which result in little or no interference with natural shoreline processes.

Additionally, the project area may be maintained without further review in accordance with Rule 11-7(b): Structures or activities that qualify under Section 11-7(a) through (10) may be routinely maintained.

Therefore, the proposed project is considered an exempt action in the Shoreline Setback area (SSA) and as such no shoreline setback variance is required.

Based on the above, the proposed project will not require an SMA permit or SSV for the proposed project. We recommend adhering to best management practices (BMPs) and ensure that access in this area remains open as safety permits.

*Applicant's response*

We acknowledge the project is exempt from SMA permitting requirements and is considered an exempt action in the Shoreline Setback Area. We acknowledge the recommendations about adhering to best management practices and allowing open access to the area as safety permits.

## ANALYSIS

After reviewing the application, the Department finds that:

1. The proposed use is an identified land use in the Resource subzone of the Conservation District, pursuant to the Hawai'i Administrative Rules (HAR), §13-5-22 P-6 PUBLIC PURPOSE USES (D-1) Not for profit land uses undertaken in support of a public service by an agency of the county, state, or federal government, or by an independent non-governmental entity, except that an independent non-governmental regulated public utility may be considered to be engaged in a public purpose use. Examples of public purpose uses may include but are not limited to public roads, marinas, harbors, airports, trails, water systems and other utilities, energy generation from renewable sources, communication systems, flood or erosion control projects, recreational facilities, community centers, and other public purpose uses, intended to benefit the public in accordance with public policy and the purpose of the conservation district; and HAR §13-5-24 R-5 MARINE CONSTRUCTION (D-1) Dredging, filling, or construction on submerged lands, including construction of harbors, piers, marinas, and artificial reefs. Please be advised, however, that this finding does not constitute approval of the proposal;
2. Pursuant to §13-5-40 of the HAR, a Public Hearing will not be required;
3. In conformance with Hawaii Revised Statutes (HRS) Chapter 343, as amended, and HAR Chapter 11-200.1, the Final Environmental Assessment has been reviewed and accepted by the Department. Notice was published in the July 23, 2023, issue of the Environmental Notice; and
4. Per Rule 9. SMA for Hawai'i County, the project is not defined as "development" and therefore does not require a Special Management Area permit.

Notice of CDUA HA-3948 was published in the November 23, 2023, issue of the Environmental Notice.

According to the Final environmental assessment, a community meeting was held on August 18, 2022, at the Pāhoa Community Center. There were over 120 participants with fishermen, residents, and government officials. The main sentiment expressed at the meeting was that the boat ramp needs to reopen as soon as possible.

## CONSERVATION CRITERIA

The following discussion evaluates the merits of the proposed land use by applying the criteria established in HAR §13-5-30:

- 1) *The proposed use is consistent with the purpose of the Conservation District.*  
The objective of the Conservation District is to conserve, protect and preserve the important natural resources of the State through appropriate management and use to promote their long-term sustainability and the public health, safety and welfare.



The proposed dredging will reestablish the connection to the ocean from Pohoiki Bay. With the boat ramp, the reconnection will provide and facilitate services to improve the economy, subsistence, recreation, and emergency rescue services to the Puna community.

Best Management Practices will be observed during work to conserve, protect and preserve the natural resources of the area.

- 2) *The proposed land use is consistent with the objectives of the Subzone of the land on which the use will occur.*

The objective of the Resource Subzone is to ensure with proper management, the sustainable use of the natural resources of those areas. The proposed use is an identified land use in the Resource subzone of the Conservation District, pursuant to the Hawaii Administrative Rules (HAR) §13-5-22, P-6 PUBLIC PURPOSE USES, not for profit land uses undertaken in support of a public service by an agency of the county, state, or federal government.

As such, it is subject to the regulatory process established in HRS Chapter 183C and detailed further in HAR Chapter 13-5. This process provides for the application of appropriate management tools to protect the relevant resources, including objective analysis and thoughtful decision-making by the Department and Board of Land and Natural Resources.

- 3) *The proposed land use complies with the provisions and guidelines contained in Chapter 205A, HRS entitled "Coastal Zone Management", where applicable.*

Staff believes the proposal will comply with the provisions and guidelines of Chapter 205A, HRS. As this is a restoration project, the proposed use does not conflict and is consistent with CZM objectives and policies to protect such resources and activities such as recreational use, scenic and open space, coastal ecosystems, and beach protection. SHPD has determined there will be no historic properties affected. The restoration of the ocean entry way will facilitate commercial uses such as fishing and recreation.

- 4) *The proposed land use will not cause substantial adverse impact to existing natural resources within the surrounding area, community, or region.*

Staff believes the proposed land use will not cause substantial adverse impacts to existing natural resources within the surrounding area, community, or region. Best Management Practices will be observed during construction.

- 5) *The proposed land use, including buildings, structures, and facilities, shall be compatible with the locality and surrounding areas, appropriate to the physical conditions and capabilities of the specific parcel or parcels.*

As the launch area is part of the Division of Boating and Ocean Recreation facilities, the proposed land use is compatible with the locality and surrounding area and is appropriate to the physical conditions and capabilities of the currently partially submerged site. The proposal does not change the existing use of the area as a boat launch.

- 6) *The existing physical and environmental aspects of the land, such as natural beauty and open space characteristics, will be preserved or improved upon, whichever is applicable.*

The beauty of the area and open space characteristics will not be affected upon completion of the project. No structures are proposed, and the project is to restore the area to provide ocean access once again.

- 7) *Subdivision of land will not be utilized to increase the intensity of land uses in the Conservation District.*

No subdivision of land is proposed.

- 8) *The proposed land use will not be materially detrimental to the public health, safety and welfare.*

BMPs and other mitigation measures shall be implemented during construction and operation of the facility to minimize impacts to the surrounding environment including the use of silt and dust fencing, berms, storm water and industrial BMPs and other practices as required by Federal, State and County regulations.

#### **CULTURAL IMPACT ANALYSIS**

The Final Environmental Assessment include a Cultural Impact Assessment (CIA), an Archaeological Literature Review and Field Inspection Report. By correspondence dated March 6, 2024, the State Historic Preservation Division concurred with DOBOR's HRS 6E project effect determination of "No historic properties affected," for the project. SHPD agrees that the action will not affect any significant historic properties. The correspondence noted numerous archaeological studies have been conducted in the vicinity of Pohoiki Bay and that historic properties have been documented near, but none within the project area.

No cultural artifacts or burial remains were uncovered or discovered nor have any been observed during periods of investigation of the site. Traditional or culturally significant resources are not expected in the project site area. The project will be conditioned that if cultural finds are discovered, all work will cease and SHPD will be notified.

During the processing of this application, no comments were received from native Hawaiian practitioners, the Office of Hawaiian Affairs, or the Aha Moku Council. To the extent to which traditional and customary native Hawaiian rights are exercised, the proposed action does not appear to affect traditional Hawaiian rights; it is believed that no action is necessary to protect these rights.

#### **DISCUSSION**

Pohoiki Bay has experienced land alteration and disturbance from natural geologic processes. The proposed action would return the Pohoiki Boat Ramp facility to productive use for emergency rescue services, commercial, recreational, and food subsistence activities. The placement of recently accreted dredged material in the backshore area will eliminate areas of trapped water that don't appear to be sanitary swim areas and upon recently created land.

According to the Final Environmental Assessment, a community meeting was held on August 18, 2022, at the Pāhoia Community Center. There were over 120 participants with fishermen, residents, and government officials. The main sentiment expressed at the meeting was that the boat ramp needs to reopen as soon as possible.

Land uses in the Conservation District shall follow federal, state and Hawai'i county laws. Standard Best Management Practices will be observed. Within the Environmental Assessment, the applicant has identified several mitigative measures, conditions and practices to ensure that the proposal will have minimal effects on the natural and cultural resources of the land. As such these proposed measures, conditions and practices are incorporated into the permit.

Staff believes that the project will have negligible adverse environmental or ecological effects provided that best management practices and mitigation measures as described in the application and environmental assessment, and as required by rule or laws, are fully implemented.

### **RECOMMENDATION**

Based on the preceding analysis, Staff recommends that the Board of Land and Natural Resources APPROVE Conservation District Use Application (CDUA) HA-3945 for the dredging and placement of volcanic debris by the Department of Land and Natural Resource's Division of Boating and Ocean Recreation located at Pohoiki, Puna, Hawai'i makai of Tax Map Keys: (3) 1-3-008:014 & 097 [Dredging] and upon Tax Map Keys: (3) 1-3-008:097 & 1-4-093:048 [Placement of Dredged Material] subject to the following conditions:

1. The permittee shall comply with all applicable statutes, ordinances, rules, and regulations of the federal, state, and county governments, and applicable parts of this chapter;
2. The permittee shall comply with all applicable department of health administrative rules;
3. Before proceeding with any work authorized by the department or the board, the permittee shall submit four copies of the construction plans and specifications to the chairperson or an authorized representative for approval for consistency with the conditions of the permit and the declarations set forth in the permit application. Three of the copies will be returned to the permittee. Plan approval by the chairperson does not constitute approval required from other agencies;
4. Unless otherwise authorized, any work or construction to be done on the land shall be initiated within one year of the approval of such use, in accordance with approved construction plans, and shall be completed within three years of the approval of such use. The permittee shall notify the department in writing when construction activity is initiated and when it is completed;
5. All representations relative to mitigation set forth in the accepted environmental assessment for the proposed use are incorporated as conditions of the permit;

6. The permittee understands and agrees that the permit does not convey any vested right(s) or exclusive privilege;
7. In issuing the permit, the department and board have relied on the information and data that the permittee has provided in connection with the permit application. If, subsequent to the issuance of the permit such information and data prove to be false, incomplete, or inaccurate, this permit may be modified, suspended, or revoked, in whole or in part, and the department may, in addition, institute appropriate legal proceedings;
8. Where any interference, nuisance, or harm may be caused, or hazard established by the use, the permittee shall be required to take measures to minimize or eliminate the interference, nuisance, harm, or hazard;
9. Obstruction of public roads, trails, lateral shoreline access, and pathways shall be avoided or minimized. If obstruction is unavoidable, the permittee shall provide alternative roads, trails, lateral beach access, or pathways acceptable to the department;
10. During construction, appropriate mitigation measures shall be implemented to minimize impacts to resources, utilities, and public facilities;
11. The permittee acknowledges that the approved work shall not hamper, impede, or otherwise limit the exercise of traditional, customary, or religious practices of native Hawaiians in the immediate area, to the extent the practices are provided for by the Constitution of the State of Hawaii, and by Hawaii statutory and case law;
12. Should historic remains such as artifacts, burials or concentration of charcoal be encountered during construction activities, work shall cease immediately in the vicinity of the find, and the find shall be protected from further damage. The Historic Preservation Division shall be contacted (692-8015), which will assess the significance of the find and recommend an appropriate mitigation measure, if necessary;
13. The use shall not adversely affect a federally listed threatened or endangered species or a species proposed for such designation, or destroy or adversely modify its designated critical habitat;
14. The activity/use shall not substantially disrupt the movement of those species of aquatic life indigenous to the area, including those species, which normally migrate through the area;
15. When the Chairperson is notified by the applicant(s) or the public that the project deviates from the scope of the use, or are adversely affecting fish or wildlife resources or their harvest, the Chairperson will direct the applicant(s) to undertake corrective measures to address the condition affecting these resources. The applicant(s) must suspend or modify the activity to the extent necessary to mitigate or eliminate the adverse effect;
16. When the Chairperson is notified by the U.S. Fish and Wildlife Service, the National Marine Fisheries Service or the State Department of Land and Natural Resources

- that the use is adversely affecting fish or wildlife resources, the Chairperson will direct the applicant(s) to undertake corrective measures to address the condition affecting those resources. The applicant(s) must suspend or modify the activity to the extent necessary to mitigate or eliminate the adverse effect;
17. Where any interference, nuisance, or harm may be caused, or hazard established by the authorized activities/uses, the applicant(s) shall be required to take measures to minimize or eliminate the interference, nuisance, harm or hazard;
  18. No contamination of the marine or coastal environment (trash or debris) shall result from project-related authorized activities/uses;
  19. In the event there is a petroleum spill on the sand, the operator shall promptly remove the contaminated sand from the beach;
  20. The applicant(s) shall take measures to ensure that the public is adequately informed of the project activities/work once it is initiated and the need to avoid the project area during the operation;
  21. The applicant(s) shall implement standard Best Management Practices (BMPs), including the ability to contain and clean up fuel; fluid or oil spills immediately for activities/uses . Equipment must not be refueled in the shoreline area. If visible petroleum, persistent turbidity or other unusual substances are observed in the water as a result of the proposed operation, all work must cease immediately to ascertain the source of the substance.
  22. The Office of Conservation and Coastal Lands shall be notified (587-0377) in advance of the anticipated construction dates and shall be notified immediately if any changes to the scope of work are anticipated;
  23. Other terms and conditions as may be prescribed by the Chairperson; and
  24. Failure to comply with any of these conditions shall render this Conservation District Use Permit null and void under HAR Chapter 13-5, as determined by the chairperson or board.

Respectfully submitted,



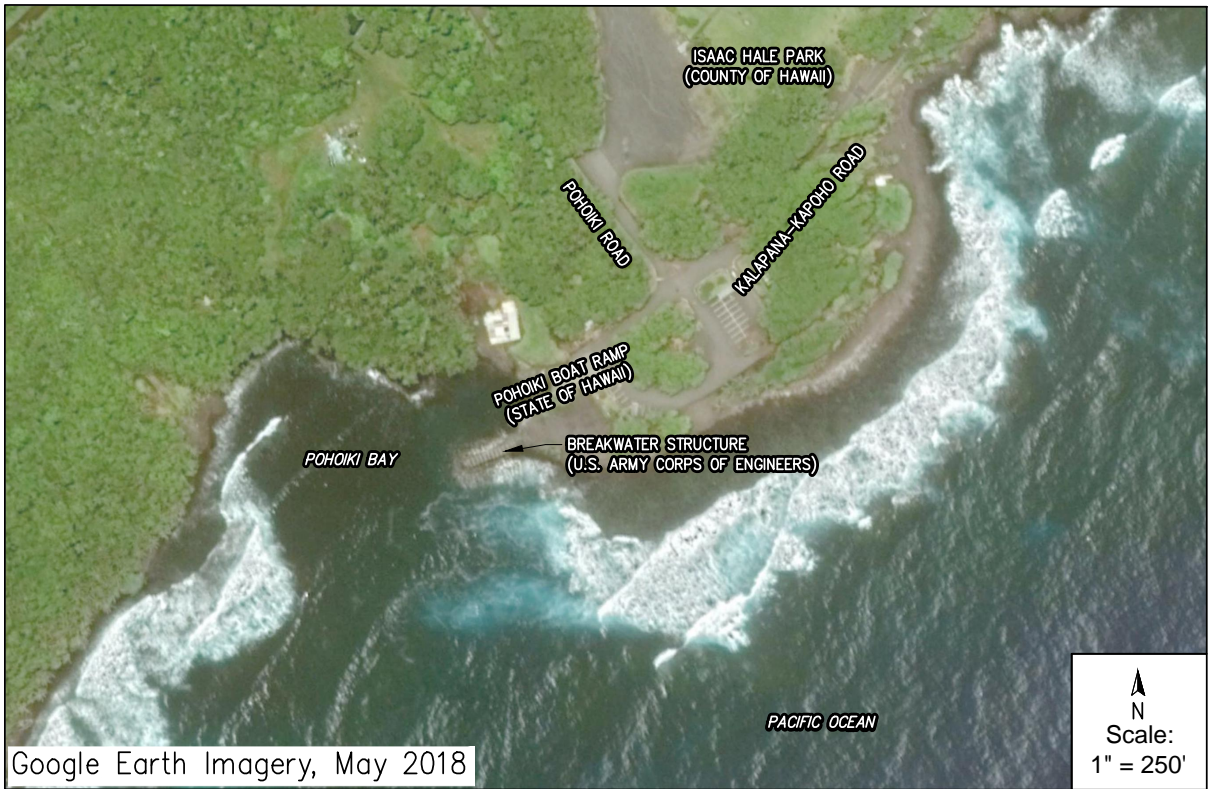
K. Tiger Mills, Staff Planner  
Office of Conservation and Coastal Lands



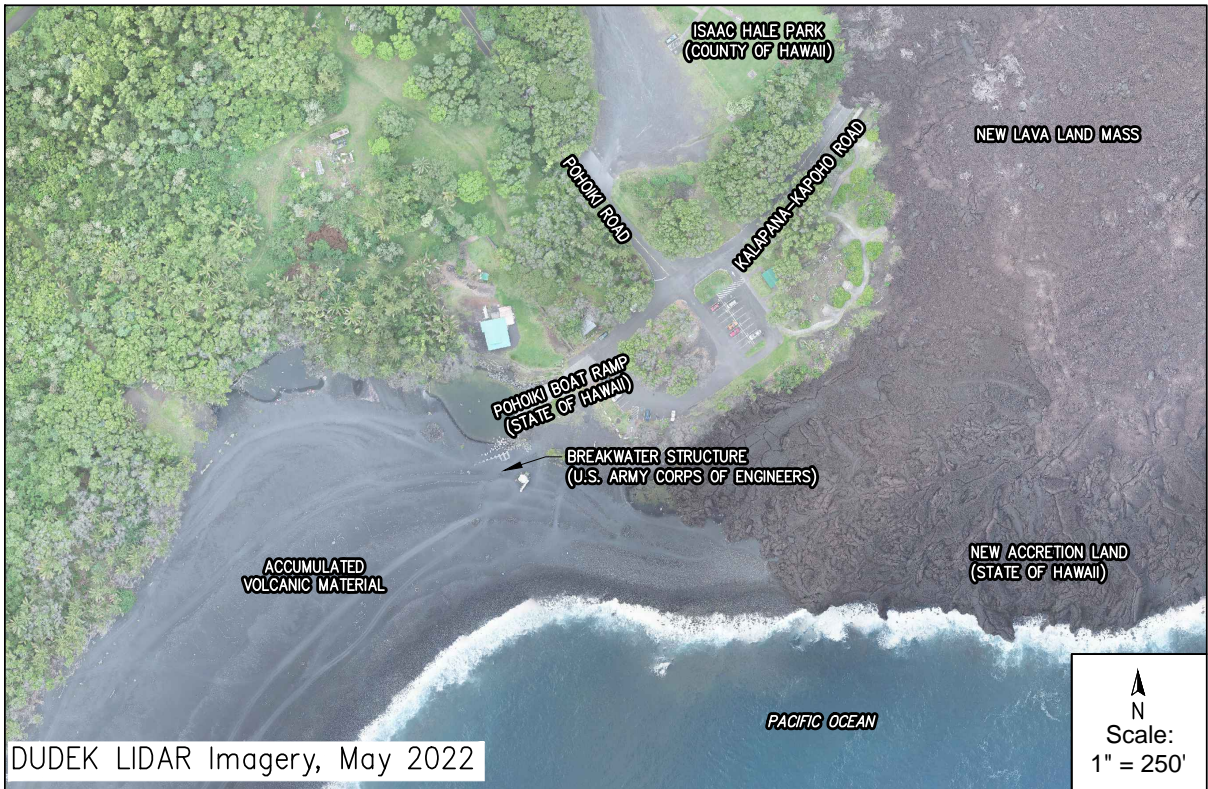
---

Dawn N.S. Chang., Chairperson  
Board of Land and Natural Resources

MC



Google Earth Imagery, May 2018



DUDEK LIDAR Imagery, May 2022

FIGURE 1  
PRE AND POST ERUPTION CONDITIONS

POHOIKI BOAT RAMP  
DREDGING OF VOLCANIC DEBRIS

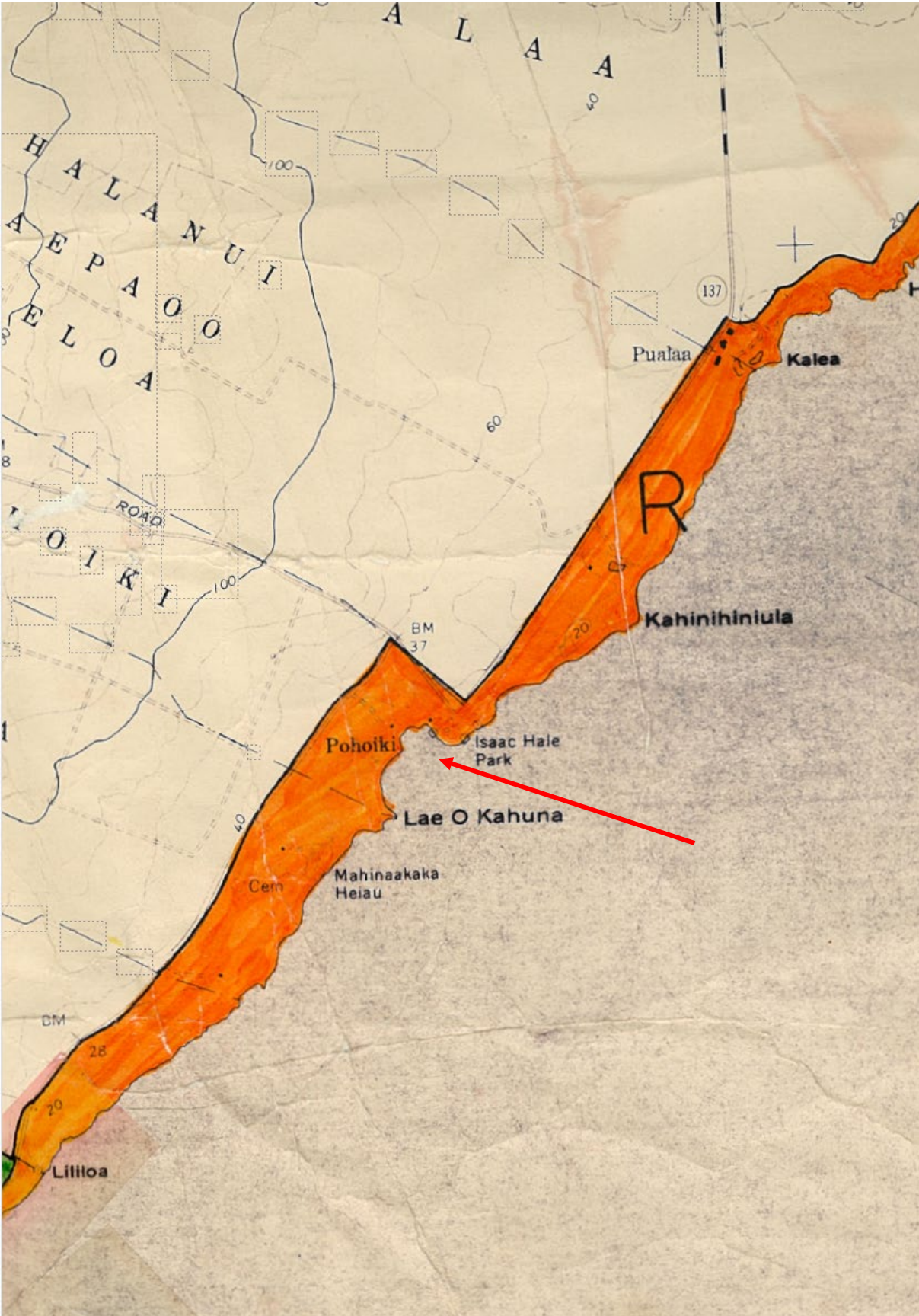


Exhibit B Subzone Map

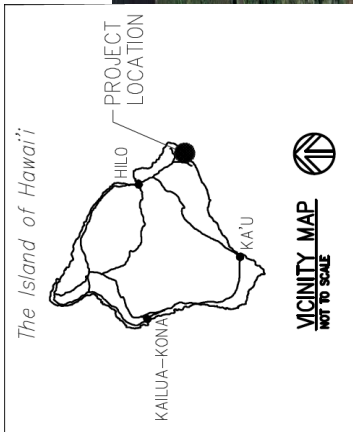
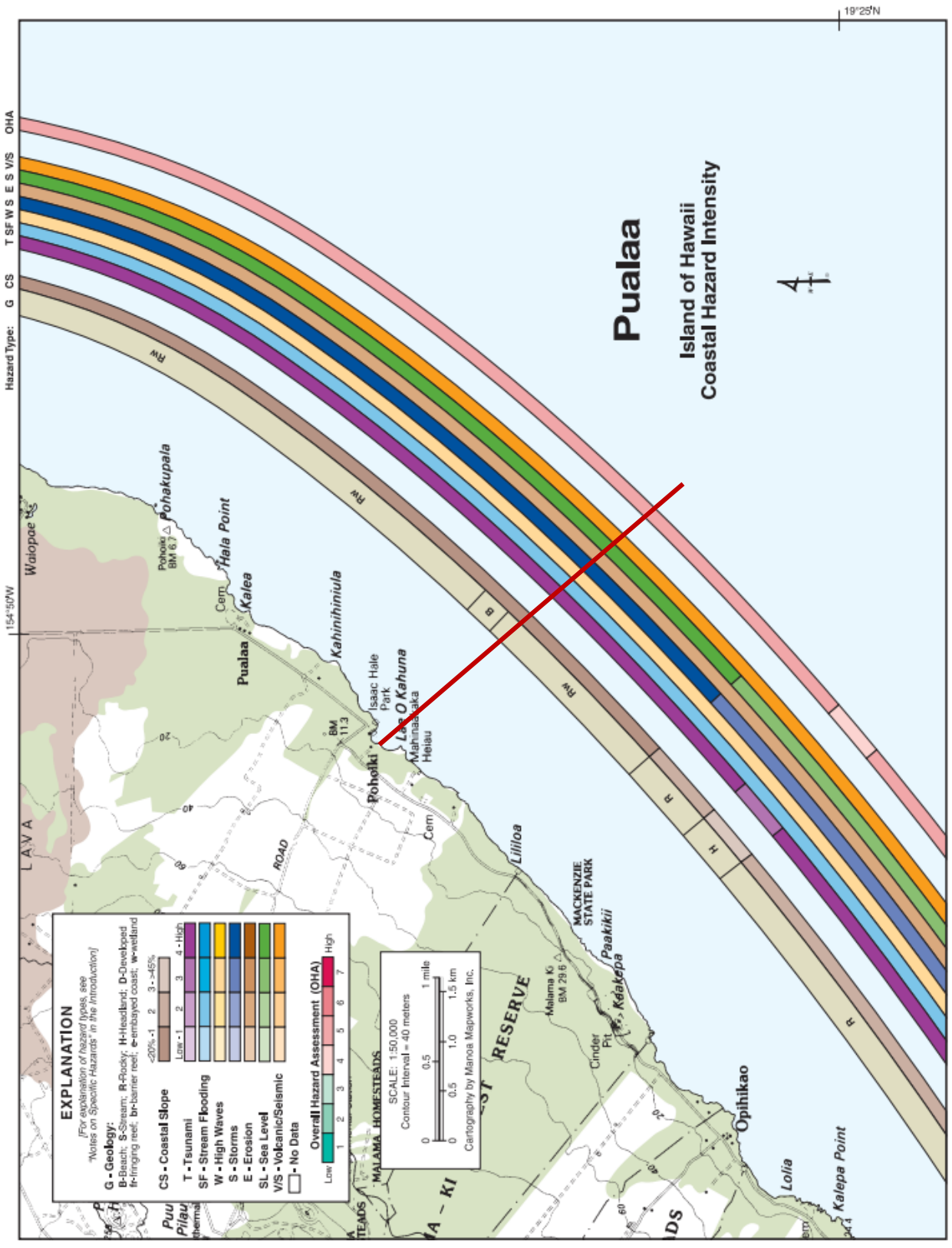


Exhibit C Overview of Project Area





<http://geopubs.wr.usgs.gov/i-map/i2761/hawaii.html> Atlas of Natural Hazards in the Hawaiian Coastal Zone

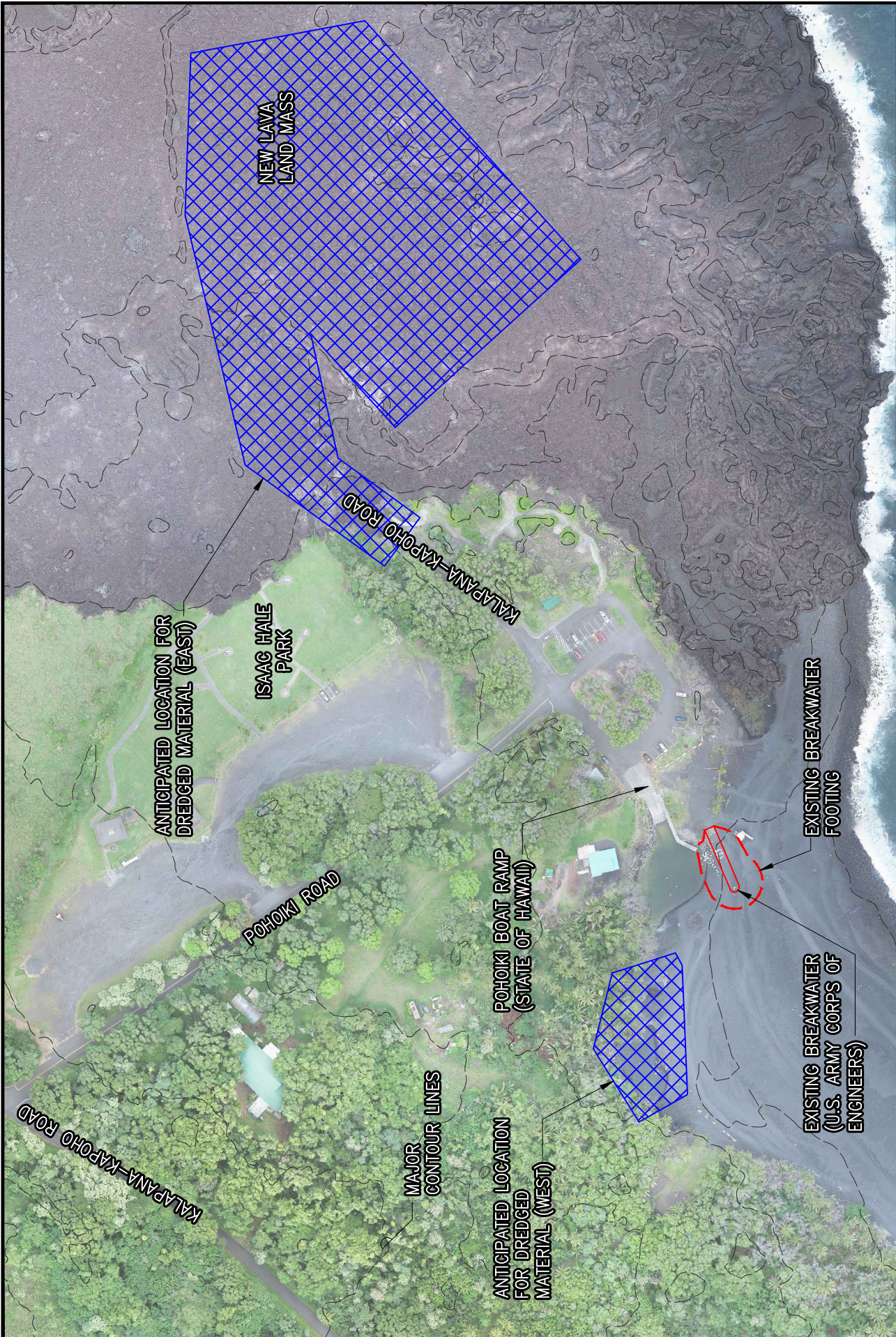


FIGURE 2  
 MATERIAL PLACEMENT LOCATIONS  
 POHOIKI BOAT RAMP  
 DREDGING OF VOLCANIC DEBRIS

DUDEK LIDAR Imagery, May 2022

THE LIMTIACO CONSULTING GROUP  
 CIVIL ENGINEERING AND ENVIRONMENTAL CONSULTANTS



**FIGURE 3**  
**PLAN VIEW**

**A**  
 N  
 Scale:  
 Not to  
 Scale

**POHOIKI BOAT RAMP**  
 (STATE OF HAWAII)

**BREAKWATER STRUCTURE**  
 (U.S. ARMY CORPS OF ENGINEERS)

**TOP OF PROPOSED BANK**

**PACIFIC OCEAN**

**32'±**

**30'±**

**MAJOR CONTOUR LINES**

**TYPICAL SECTION A-A**  
 SEE FIGURE 4

**TYPICAL SECTION B-B**  
 SEE FIGURE 4

**BOTTOM OF PROPOSED DREDGE**

**THE LIMTIACO CONSULTING GROUP**  
 CIVIL ENGINEERING AND ENVIRONMENTAL CONSULTANTS

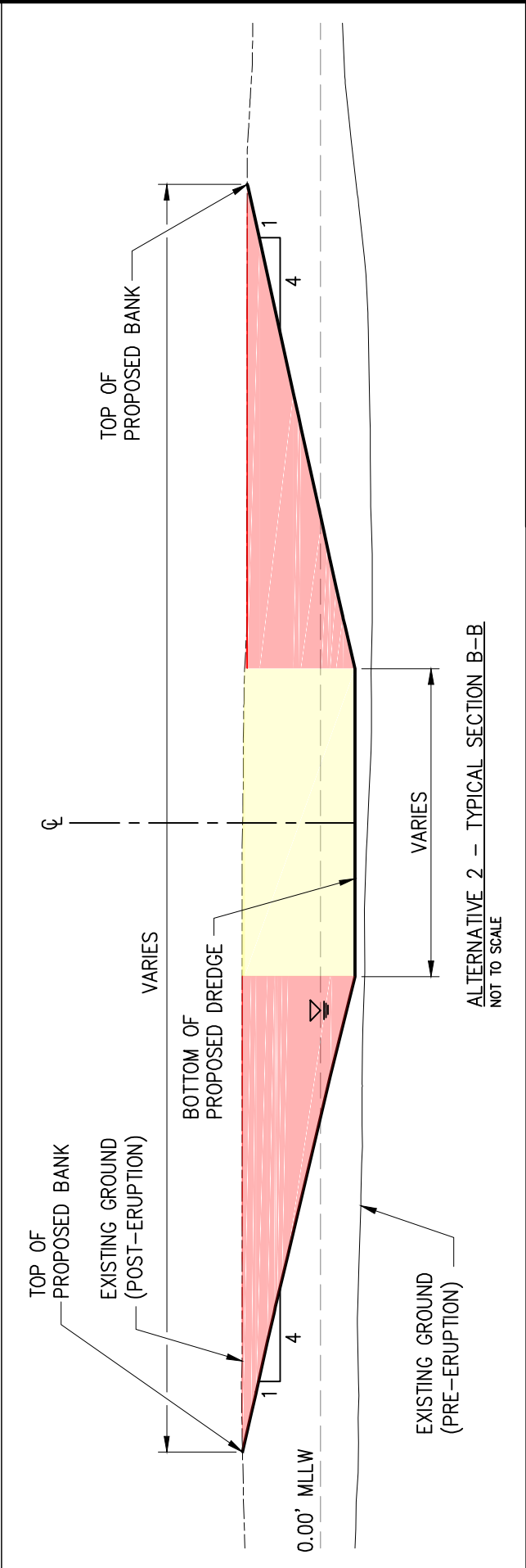
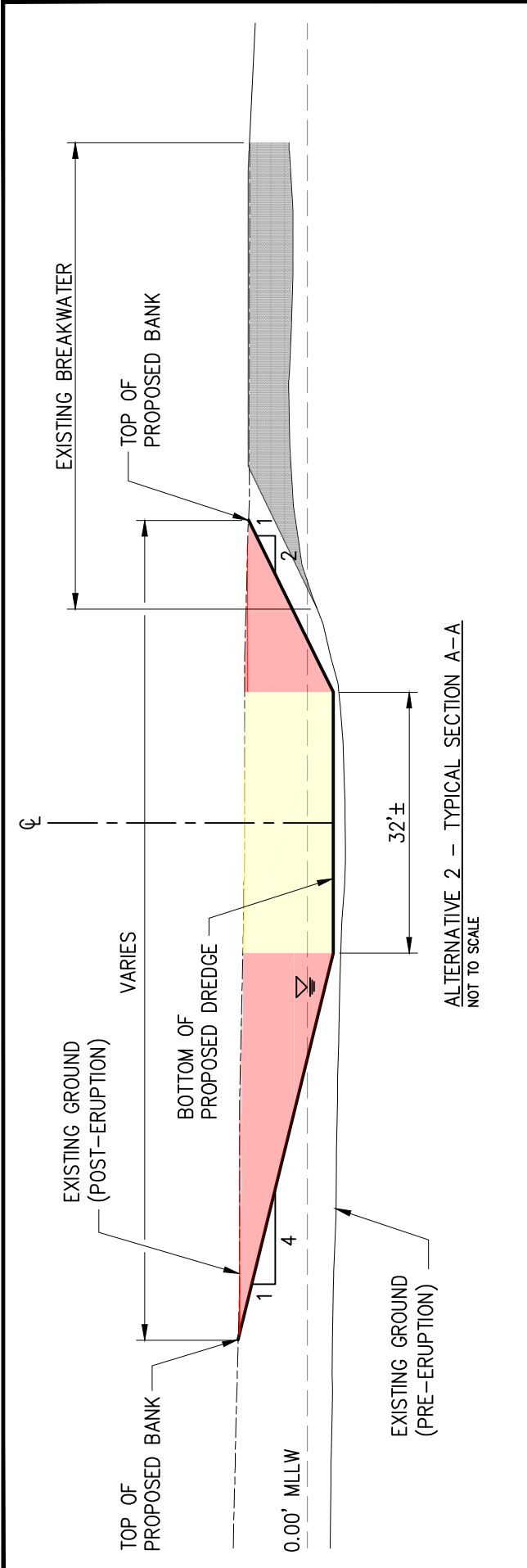


FIGURE 4  
TYPICAL SECTIONS  
POHOIKI BOAT RAMP  
DREDGING OF VOLCANIC DEBRIS

THE LIMTIACO CONSULTING GROUP  
CIVIL ENGINEERING AND ENVIRONMENTAL CONSULTANTS



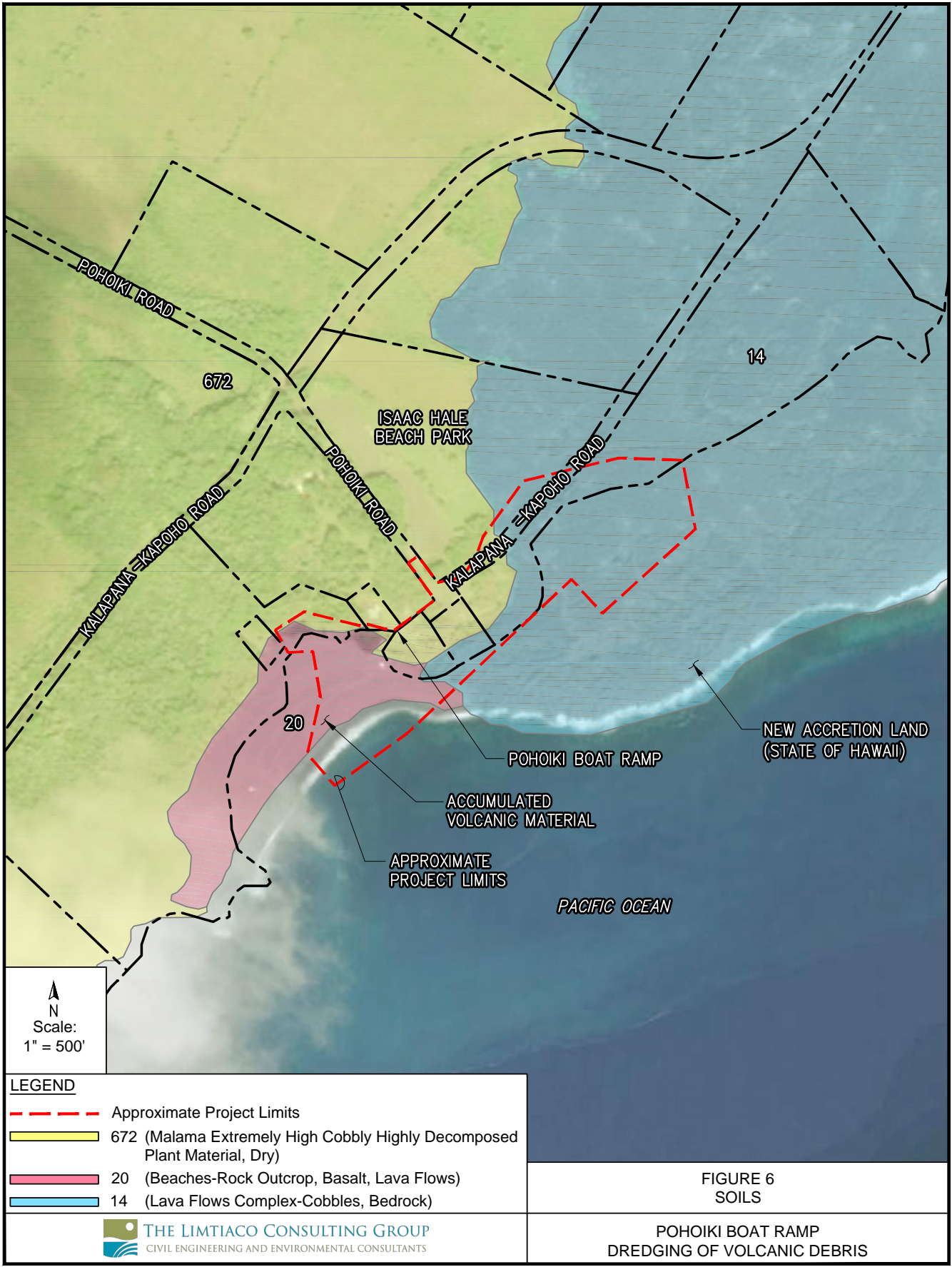




Photo 1 – Landlocked Pohoiki Boat Ramp. March 2022



Photo 2 – New Accretion Land to the East, March 2022

FIGURE 2  
SITE PHOTOS SET 1



Photo 3 – Pohoiki Bay Shoreline. March 2022



Photo 4 – Surface Debris with Hawaii Driver's License for Comparison, March 2022

FIGURE 3  
SITE PHOTOS SET 2

POHOIKI BOAT RAMP  
DREDGING OF VOLCANIC DEBRIS



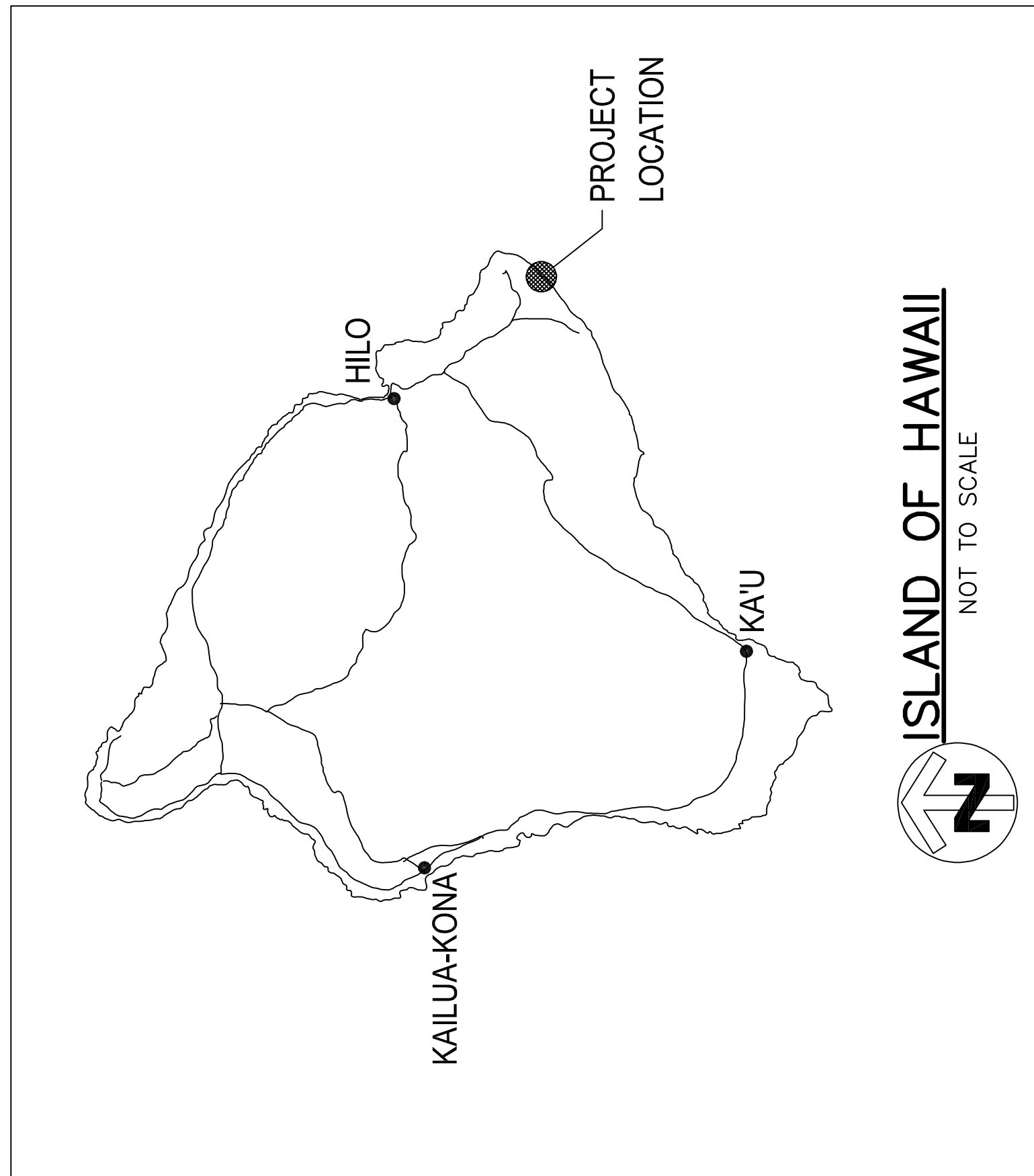
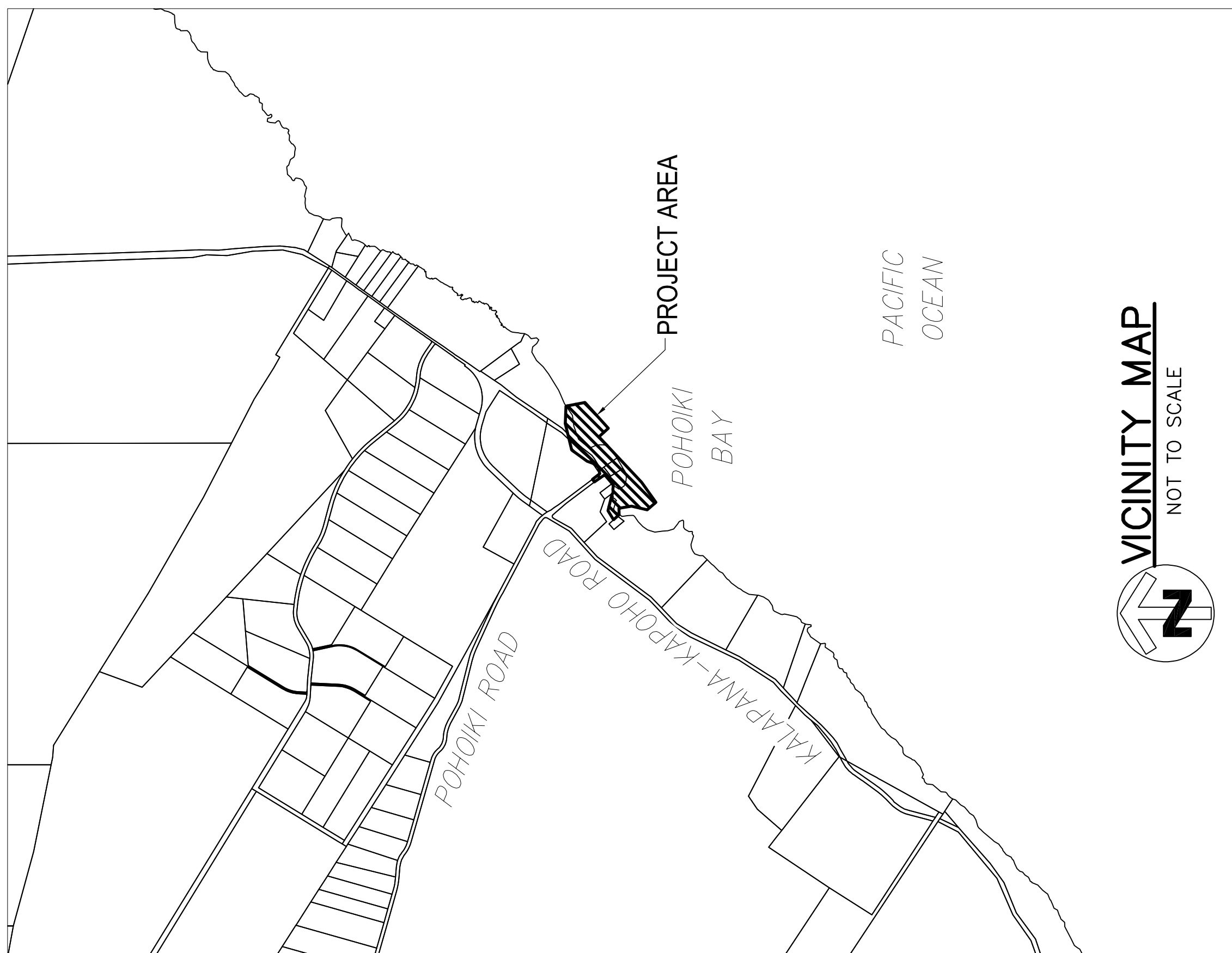
STATE OF HAWAII  
DEPARTMENT OF LAND AND NATURAL RESOURCES  
DIVISION OF BOATING AND OCEAN RECREATION

JOB NO. B00CH80A

# POHOIKI BOAT RAMP EXCAVATION AND DREDGING OF VOLCANIC DEBRIS

PUNA, HAWAII ISLAND, HAWAII

TMK: (3) 1-3-008:097, (3) 1-3-008:013, (3) 1-3-008:033,  
(3) 1-3-008:034, (3) 1-3-008:086, (3) 1-3-008:014,  
(3) 1-3-008:021, (3) 1-3-008:016, (3) 1-4-093:048,



### INDEX

APPROVED:

DRAWING NO. SHEET NO.

DESCRIPTION

DESCRIPTION	DRAWING NO.	SHEET NO.	DATE
TITLE SHEET	T01	1	
NOTES	T02	2	
EROSION AND SEDIMENT CONTROL NOTES AND DETAILS	T03	3	
EROSION AND SEDIMENT CONTROL PLAN 1	C01	4	
EROSION AND SEDIMENT CONTROL PLAN 2	C02	5	
GENERAL SITE PLAN	C03	6	
SITE PLAN 1	C04	7	
SITE PLAN 2	C05	8	
GRADING PLAN 1	C06	9	
GRADING PLAN 2	C07	10	
PROFILE VIEWS	C08	11	
SECTION VIEWS 1	C09	12	
SECTION VIEWS 2	C10	13	
SECTION VIEWS 3	C11	14	
SECTION VIEWS 4	C12	15	
SECTION VIEWS 5	C13	16	
SECTION VIEWS 6	C14	17	
DETAILS	C15	18	

EDWARD R. UNDERWOOD  
ADMINISTRATOR  
DIVISION OF BOATING AND OCEAN RECREATION  
DEPARTMENT OF LAND AND NATURAL RESOURCES

### CONSTRUCTION NOTES

- EXISTING TOPOGRAPHIC SURVEY WAS CONDUCTED ON MAY 2, 2022 BY DUDEK & ASSOCIATES. THIS TOPOGRAPHIC SURVEY WAS BASED ON THE BEST AVAILABLE INFORMATION AND ACCURACY MUST BE VERIFIED PRIOR TO STARTING CONSTRUCTION.
- 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.
- AT ALL TIMES DURING PERFORMANCE OF THIS CONTRACT, ASSUME SOLE AND COMPLETE RESPONSIBILITY FOR THE SITE SAFETY CONDITIONS FOR ALL PERSONS AND PROPERTY.
- HARD BOULDERS AND MEDIUM HARD TO HARD BASALT ROCK MAY BE ENCOUNTERED NEAR OR AT THE SITE. APPROPRIATE EQUIPMENT FOR EXCAVATING THE MEDIUM HARD TO HARD BASALT SHALL BE REQUIRED.
- NO BLASTING SHALL BE ALLOWED.
- IN THE EVENT HISTORIC REMAINS, SUCH AS ARTIFACTS, BURIALS, CONCENTRATIONS OF SHELL OR CHARCOAL, BE ENCOUNTERED DURING CONSTRUCTION ACTIVITIES, WORK SHALL IMMEDIATELY CEASE IN THE IMMEDIATE VICINITY OF THE ENCOUNTER. IMMEDIATELY NOTIFY THE STATE HISTORIC PRESERVATION DIVISION AT (808) 692-8015, WHO WILL ASSESS THE ENCOUNTER AND RECOMMEND THE APPROPRIATE MITIGATION MEASURES.
- CONSTRUCT TEMPORARY BARRICADES DURING CONSTRUCTION, FOR SAFETY AND THE PROTECTION OF LIFE AND PROPERTY.
- THE ISAAC HALE BEACH PARK SHALL REMAIN OPEN DURING THE CONSTRUCTION PERIOD. PROVIDE TEMPORARY BARRICADES AND WARNING SIGNS TO SAFETY AND PROTECT THE PUBLIC DURING THE CONSTRUCTION PERIOD. PROVIDE AND MAINTAIN FOR SAFE PEDESTRIAN ACCESS AND VEHICLE ACCESS TO THE FACILITY THROUGHOUT THE CONSTRUCTION PERIOD, AS REQUIRED.
- PROVIDE AND MAINTAIN ALL NECESSARY SIGNS, LIGHTS, FLARES, BARRICADES, MARKERS, CONES AND OTHER PROTECTIVE FACILITIES AND TAKE NECESSARY PRECAUTIONS FOR THE PROTECTION CONVENIENCE AND SAFETY OF THE PUBLIC.
- EXISTING PEDESTRIAN WALKWAYS SHALL BE MAINTAINED IN A PASSABLE CONDITION OR PROVIDE FOR ALTERNATE/TEMPORARY ACCESSIBLE PEDESTRIAN ACCESS ROUTES AND FACILITIES PER THE 2010 ADA STANDARDS FOR ACCESSIBLE DESIGN CHAPTER 2 AND ADAAG 201.3 AND ADAAG 206.1.
- NO PERFORMANCE OF ANY CONSTRUCTION ACTIVITIES THAT CAUSES FALLING ROCKS, SOIL OR DEBRIS IN ANY FORM TO FALL, SLIDE OR FLOW ONTO ADJOINING PROPERTIES, STREETS OR NATURAL WATER COURSES. ALL COSTS INCURRED FOR VIOLATIONS PAID AND SUBSEQUENT REMEDIAL ACTION UNDERTAKEN AT NO ADDITIONAL COST TO THE STATE.
- COORDINATE CONSTRUCTION ACTIVITIES WITH ANY AND ALL ADJACENT OR RELATED CONSTRUCTION ACTIVITIES ON ANOTHER CONSTRUCTION SITE. AVOID DELAY OR HINDERANCE IN THE PERFORMANCE OF THEIR RESPECTIVE CONTRACTS.
- COORDINATE WITH ALL AGENCIES AND UTILITY COMPANIES TO VERIFY THE ACTUAL LOCATION OF ALL SITE UTILITIES IN THE PROJECT AREA PRIOR TO EXCAVATING.
- NOTIFY AND COORDINATE ALL SITE WORK WITH "THE ONE CALL CENTER" AT (866) 423-7287 AT LEAST 5 WORKING DAYS PRIOR TO THE START OF EXCAVATION OR TRENCHING.
- MAKE ARRANGEMENTS FOR TEMPORARY CONSTRUCTION SITE UTILITIES SUCH AS ELECTRICITY, WATER, ETC. AT NO ADDITIONAL COST TO THE STATE.
- ALL EXISTING UTILITIES, SHOWN ON THE PLANS OR ENCOUNTERED, SHALL BE PROTECTED AT ALL TIMES DURING CONSTRUCTION AND ANY DAMAGED UTILITIES, AS RESULT OF CONTRACTOR OPERATIONS, SHALL BE IMMEDIATELY REPAIRED AT NO ADDITIONAL COST TO THE STATE.
- CONFORM 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.
- PLAN, CONSTRUCT AND UTILIZE ALL BEST MANAGEMENT PRACTICES (BMP) AS REQUIRED TO COMPLY WITH THE LAWS, STANDARDS, RULES, AND/OR POLICIES OF THE COUNTY, STATE, OR FEDERAL REGULATORY AGENCIES.
- OBTAIN AND PAY FOR ALL REQUIRED PERMITS FROM THE APPROPRIATE GOVERNMENT AGENCIES.
- RESTORE ALL AREAS DISTURBED AS A RESULT OF ALL CONSTRUCTION ACTIVITIES, TO EQUAL OR BETTER CONDITION(S), INCLUDING BUT NOT LIMITED TO VEGETATION, PAVEMENTS, EMBANKMENTS, CURBS, SIGNS, LANDSCAPING, STRUCTURES, UTILITIES, WALKWAYS, FENCES, ETC. UNLESS SPECIFICALLY OTHERWISE NOTED OTHERWISE.
- IF ONE (1) OR MORE ACRE OF LAND IS DISTURBED, DO NOT START ANY GROUND DISTURBANCE UNTIL A NPDES PERMIT IS OBTAINED FROM THE DEPARTMENT OF HEALTH, STATE OF HAWAII, AND HAS SATISFIED ALL APPLICABLE REQUIREMENTS OF THE NPDES PERMIT PROGRAM. FOR WORK ON COUNTY PROPERTY, PROVIDE A WRITTEN COPY OF THE NPDES PERMIT TO THE APPROPRIATE COUNTY OR GOVERNMENTAL AGENCY PER THEIR REQUIREMENTS.
- PROVIDE ALL INCIDENTAL AND NECESSARY MATERIALS AND WORK TO COMPLETE THE PROJECT.
- THE JOB SITE SHALL BE LEFT IN A SAFE AND SECURE CONDITION AT THE END OF EACH CONSTRUCTION WORKDAY. CLEAN UP AND REMOVE ALL RUBBISH - MAINTAIN THE WORK AREA AND PREMISES IN A CLEAN ORDERLY CONDITION AT ALL TIMES.
- UPON COMPLETION OF CONSTRUCTION, THE ENTIRE JOB SITE SHALL BE CLEANED OF ALL RUBBISH AND DEBRIS.

### GRADING NOTES

- ALL GRADING WORK SHALL BE IN ACCORDANCE WITH CHAPTER 10 - "EROSION AND SEDIMENTATION CONTROL" OF THE HAWAII COUNTY CODE AND AS SHOWN ON THE APPROVED PLAN.
- THE CONTRACTOR SHALL REMOVE ALL SILT AND DEBRIS DEPOSITED IN DRAINAGE FACILITIES, ROADWAYS AND OTHER AREAS RESULTING FROM HIS WORK. THE COSTS INCURRED FOR ANY NECESSARY REMEDIAL ACTION BY THE DPW SHALL BE PAYABLE BY THE CONTRACTOR.
- THE CONTRACTOR, AT HIS OWN EXPENSE, SHALL KEEP THE PROJECT AND SURROUNDING AREAS FREE FROM DUST NUISANCES. THE WORK SHALL BE IN CONFORMANCE WITH THE AIR POLLUTION CONTROL RULES OF THE STATE DEPARTMENT OF HEALTH, HAR 11-60.1, FUGITIVE DUST.
- ALL GRADING OPERATIONS SHALL BE PERFORMED IN CONFORMANCE WITH THE APPLICABLE PROVISIONS OF THE HAWAII ADMINISTRATIVE RULES, TITLE 11, CHAPTER 55, WATER POLLUTION CONTROL AND CHAPTER 54, WATER QUALITY STANDARDS, AND TO THE EROSION AND SEDIMENTATION CONTROL STANDARDS AND GUIDELINES OF THE DEPARTMENT OF PUBLIC WORKS, COUNTY OF HAWAII.
- THE CONTRACTOR SHALL INFORM THE CONTRACTING OFFICER OF THE LOCATION OF THE DISPOSAL AND/OR BORROW SITE(S) REQUIRED FOR THIS PROJECT WHEN AN APPLICATION FOR A GRADING PERMIT IS MADE. THE DISPOSAL AND/OR BORROW SITE(S) MUST ALSO FULFILL THE REQUIREMENTS OF THE GRADING ORDINANCE.
- NO GRADING WORK SHALL BE DONE ON SATURDAY, SUNDAY AND HOLIDAYS ANYTIME WITHOUT PRIOR APPROVAL FROM THE CONTRACTING OFFICER. 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".

### PUBLIC HEALTH SAFETY AND CONVENIENCE NOTES

- 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 AND ITS SURROUNDING AREAS FREE FROM DUST NUISANCE. THE WORK SHALL BE IN CONFORMANCE WITH THE AIR POLLUTION STANDARDS AND REGULATIONS OF THE STATE DEPARTMENT OF HEALTH. THE CITY MAY REQUIRE SUPPLEMENTARY MEASURES IF REQUIRED AT NO ADDITIONAL COST TO THE CITY.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE CLEANING AND REMOVAL OF ALL SILT AND DEBRIS GENERATED BY HIS WORK AND DEPOSITED AND ACCUMULATED WITHIN DOWNSTEAM WATERWAYS, DITCHES AND DRAIN PIPES AND PUBLIC AND PRIVATE ROADWAYS. THE CONTRACTOR AGREES TO REIMBURSE THE CITY AND COUNTY OF HONOLULU FOR ALL COSTS EXPENDED IN PERFORMANCE OF ABOVE WORK IF REQUIRED FOR PUBLIC HEALTH AND SAFETY OR MADE NECESSARY BY NON-PERFORMANCE BY THE CONTRACTOR.
- THE CONTRACTOR SHALL NOT PERFORM ANY CONSTRUCTION OPERATION SO AS TO CAUSE FALLING ROCKS, SOIL OR DEBRIS IN ANY FORM TO FALL, SLIDE OR FLOW INTO EXISTING CITY DRAINAGE SYSTEMS, OR 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.
- 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'S ATTENTION IS DIRECTED TO CHAPTER 46, PUBLIC HEALTH REGULATIONS, DEPARTMENT OF HEALTH, STATE OF HAWAII, "COMMUNITY NOISE CONTROL," IN WHICH MAXIMUM PERMISSIBLE NOISE LEVELS HAVE BEEN SET. IF THE CONSTRUCTION WORK REQUIRES A PERMIT FROM THE DIRECTOR OF HEALTH, THE CONTRACTOR SHALL OBTAIN A COPY OF CHAPTER 46 AND BECOME FAMILIAR WITH THE NOISE LEVEL RESTRICTIONS AND THE PROCEDURES FOR OBTAINING A PERMIT FOR THE CONSTRUCTION ACTIVITIES. APPLICATION AND INFORMATION ON VARIANCES ARE AVAILABLE FROM THE ENVIRONMENTAL PROTECTION AND HEALTH SERVICES DIVISION, 99-945 HALAWA VALLEY STREET, HONOLULU, HI 96701 OR BY TELEPHONE (586-4400).

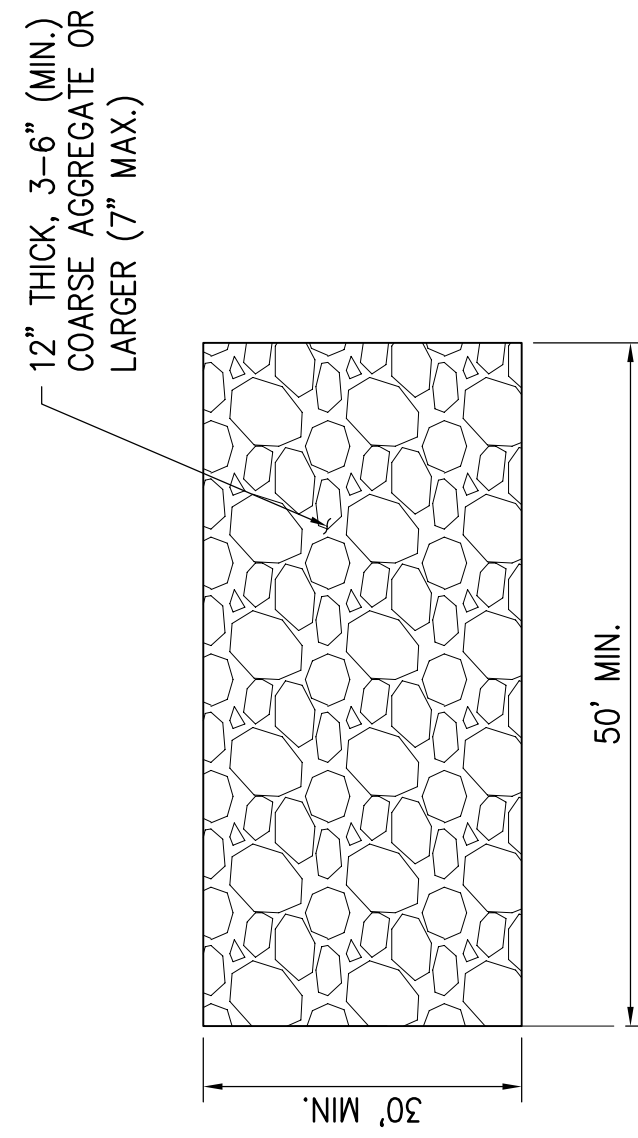
### ARCHAEOLOGICAL NOTES

- PURSUANT TO CHAPTER 6E, HRS, IN THE EVENT ANY ARTIFACTS OR HUMAN REMAINS ARE UNCOVERED DURING CONSTRUCTION OPERATIONS, THE CONTRACTOR SHALL IMMEDIATELY SUSPEND WORK AND NOTIFY THE HAWAII POLICE DEPARTMENT AND THE STATE DEPARTMENT OF LAND AND NATURAL RESOURCES, HISTORIC PRESERVATION DIVISION (692-8015).

REVISION NO.	SYM.	DESCRIPTION	SHT./OF	DATE	APPROVED
		STATE OF HAWAII DEPARTMENT OF LAND AND NATURAL RESOURCES DIVISION OF BOATING AND OCEAN RECREATION			
		POHOIKI BOAT RAMP DREDGING AND EXCAVATION OF VOLCANIC DEBRIS			
<b>NOTES</b>					
STATE OF HAWAII DEPARTMENT OF LAND AND NATURAL RESOURCES DIVISION OF BOATING AND OCEAN RECREATION					
POHOIKI BOAT RAMP DREDGING AND EXCAVATION OF VOLCANIC DEBRIS					
<b>NOTES</b>					
STATE OF HAWAII DEPARTMENT OF LAND AND NATURAL RESOURCES DIVISION OF BOATING AND OCEAN RECREATION					
POHOIKI BOAT RAMP DREDGING AND EXCAVATION OF VOLCANIC DEBRIS					
<b>NOTES</b>					
STATE OF HAWAII DEPARTMENT OF LAND AND NATURAL RESOURCES DIVISION OF BOATING AND OCEAN RECREATION					
POHOIKI BOAT RAMP DREDGING AND EXCAVATION OF VOLCANIC DEBRIS					
<b>NOTES</b>					
STATE OF HAWAII DEPARTMENT OF LAND AND NATURAL RESOURCES DIVISION OF BOATING AND OCEAN RECREATION					
POHOIKI BOAT RAMP DREDGING AND EXCAVATION OF VOLCANIC DEBRIS					
<b>NOTES</b>					
STATE OF HAWAII DEPARTMENT OF LAND AND NATURAL RESOURCES DIVISION OF BOATING AND OCEAN RECREATION					
POHOIKI BOAT RAMP DREDGING AND EXCAVATION OF VOLCANIC DEBRIS					
<b>NOTES</b>					
STATE OF HAWAII DEPARTMENT OF LAND AND NATURAL RESOURCES DIVISION OF BOATING AND OCEAN RECREATION					
POHOIKI BOAT RAMP DREDGING AND EXCAVATION OF VOLCANIC DEBRIS					
<b>NOTES</b>					
STATE OF HAWAII DEPARTMENT OF LAND AND NATURAL RESOURCES DIVISION OF BOATING AND OCEAN RECREATION					
POHOIKI BOAT RAMP DREDGING AND EXCAVATION OF VOLCANIC DEBRIS					
<b>NOTES</b>					
STATE OF HAWAII DEPARTMENT OF LAND AND NATURAL RESOURCES DIVISION OF BOATING AND OCEAN RECREATION					
POHOIKI BOAT RAMP DREDGING AND EXCAVATION OF VOLCANIC DEBRIS					
<b>NOTES</b>					
STATE OF HAWAII DEPARTMENT OF LAND AND NATURAL RESOURCES DIVISION OF BOATING AND OCEAN RECREATION					
POHOIKI BOAT RAMP DREDGING AND EXCAVATION OF VOLCANIC DEBRIS					
<b>NOTES</b>					
STATE OF HAWAII DEPARTMENT OF LAND AND NATURAL RESOURCES DIVISION OF BOATING AND OCEAN RECREATION					
POHOIKI BOAT RAMP DREDGING AND EXCAVATION OF VOLCANIC DEBRIS					
<b>NOTES</b>					
STATE OF HAWAII DEPARTMENT OF LAND AND NATURAL RESOURCES DIVISION OF BOATING AND OCEAN RECREATION					
POHOIKI BOAT RAMP DREDGING AND EXCAVATION OF VOLCANIC DEBRIS					
<b>NOTES</b>					
STATE OF HAWAII DEPARTMENT OF LAND AND NATURAL RESOURCES DIVISION OF BOATING AND OCEAN RECREATION					
POHOIKI BOAT RAMP DREDGING AND EXCAVATION OF VOLCANIC DEBRIS					
<b>NOTES</b>					
STATE OF HAWAII DEPARTMENT OF LAND AND NATURAL RESOURCES DIVISION OF BOATING AND OCEAN RECREATION					
POHOIKI BOAT RAMP DREDGING AND EXCAVATION OF VOLCANIC DEBRIS					
<b>NOTES</b>					
STATE OF HAWAII DEPARTMENT OF LAND AND NATURAL RESOURCES DIVISION OF BOATING AND OCEAN RECREATION					
POHOIKI BOAT RAMP DREDGING AND EXCAVATION OF VOLCANIC DEBRIS					
<b>NOTES</b>					
STATE OF HAWAII DEPARTMENT OF LAND AND NATURAL RESOURCES DIVISION OF BOATING AND OCEAN RECREATION					
POHOIKI BOAT RAMP DREDGING AND EXCAVATION OF VOLCANIC DEBRIS					
<b>NOTES</b>					
STATE OF HAWAII DEPARTMENT OF LAND AND NATURAL RESOURCES DIVISION OF BOATING AND OCEAN RECREATION					
POHOIKI BOAT RAMP DREDGING AND EXCAVATION OF VOLCANIC DEBRIS					
<b>NOTES</b>					
STATE OF HAWAII DEPARTMENT OF LAND AND NATURAL RESOURCES DIVISION OF BOATING AND OCEAN RECREATION					
POHOIKI BOAT RAMP DREDGING AND EXCAVATION OF VOLCANIC DEBRIS					
<b>NOTES</b>					
STATE OF HAWAII DEPARTMENT OF LAND AND NATURAL RESOURCES DIVISION OF BOATING AND OCEAN RECREATION					
POHOIKI BOAT RAMP DREDGING AND EXCAVATION OF VOLCANIC DEBRIS					
<b>NOTES</b>					
STATE OF HAWAII DEPARTMENT OF LAND AND NATURAL RESOURCES DIVISION OF BOATING AND OCEAN RECREATION					
POHOIKI BOAT RAMP DREDGING AND EXCAVATION OF VOLCANIC DEBRIS					
<b>NOTES</b>					
STATE OF HAWAII DEPARTMENT OF LAND AND NATURAL RESOURCES DIVISION OF BOATING AND OCEAN RECREATION					
POHOIKI BOAT RAMP DREDGING AND EXCAVATION OF VOLCANIC DEBRIS					
<b>NOTES</b>					
STATE OF HAWAII DEPARTMENT OF LAND AND NATURAL RESOURCES DIVISION OF BOATING AND OCEAN RECREATION					
POHOIKI BOAT RAMP DREDGING AND EXCAVATION OF VOLCANIC DEBRIS					
<b>NOTES</b>					
STATE OF HAWAII DEPARTMENT OF LAND AND NATURAL RESOURCES DIVISION OF BOATING AND OCEAN RECREATION					
POHOIKI BOAT RAMP DREDGING AND EXCAVATION OF VOLCANIC DEBRIS					
<b>NOTES</b>					
STATE OF HAWAII DEPARTMENT OF LAND AND NATURAL RESOURCES DIVISION OF BOATING AND OCEAN RECREATION					
POHOIKI BOAT RAMP DREDGING AND EXCAVATION OF VOLCANIC DEBRIS					
<b>NOTES</b>					
STATE OF HAWAII DEPARTMENT OF LAND AND NATURAL RESOURCES DIVISION OF BOATING AND OCEAN RECREATION					
POHOIKI BOAT RAMP DREDGING AND EXCAVATION OF VOLCANIC DEBRIS					
<b>NOTES</b>					
STATE OF HAWAII DEPARTMENT OF LAND AND NATURAL RESOURCES DIVISION OF BOATING AND OCEAN RECREATION					
POHOIKI BOAT RAMP DREDGING AND EXCAVATION OF VOLCANIC DEBRIS					
<b>NOTES</b>					
STATE OF HAWAII DEPARTMENT OF LAND AND NATURAL RESOURCES DIVISION OF BOATING AND OCEAN RECREATION					
POHOIKI BOAT RAMP DREDGING AND EXCAVATION OF VOLCANIC DEBRIS					
<b>NOTES</b>					
STATE OF HAWAII DEPARTMENT OF LAND AND NATURAL RESOURCES DIVISION OF BOATING AND OCEAN RECREATION					
POHOIKI BOAT RAMP DREDGING AND EXCAVATION OF VOLCANIC DEBRIS					
<b>NOTES</b>					
STATE OF HAWAII DEPARTMENT OF LAND AND NATURAL RESOURCES DIVISION OF BOATING AND OCEAN RECREATION					
POHOIKI BOAT RAMP DREDGING AND EXCAVATION OF VOLCANIC DEBRIS					
<b>NOTES</b>					
STATE OF HAWAII DEPARTMENT OF LAND AND NATURAL RESOURCES DIVISION OF BOATING AND OCEAN RECREATION					
POHOIKI BOAT RAMP DREDGING AND EXCAVATION OF VOLCANIC DEBRIS					
<b>NOTES</b>					
STATE OF HAWAII DEPARTMENT OF LAND AND NATURAL RESOURCES DIVISION OF BOATING AND OCEAN RECREATION					
POHOIKI BOAT RAMP DREDGING AND EXCAVATION OF VOLCANIC DEBRIS					
<b>NOTES</b>					
STATE OF HAWAII DEPARTMENT OF LAND AND NATURAL RESOURCES DIVISION OF BOATING AND OCEAN RECREATION					
POHOIKI BOAT RAMP DREDGING AND EXCAVATION OF VOLCANIC DEBRIS					
<b>NOTES</b>					
STATE OF HAWAII DEPARTMENT OF LAND AND NATURAL RESOURCES DIVISION OF BOATING AND OCEAN RECREATION					
POHOIKI BOAT RAMP DREDGING AND EXCAVATION OF VOLCANIC DEBRIS					
<b>NOTES</b>					
STATE OF HAWAII DEPARTMENT OF LAND AND NATURAL RESOURCES DIVISION OF BOATING AND OCEAN RECREATION					
POHOIKI BOAT RAMP DREDGING AND EXCAVATION OF VOLCANIC DEBRIS					
<b>NOTES</b>					
STATE OF HAWAII DEPARTMENT OF LAND AND NATURAL RESOURCES DIVISION OF BOATING AND OCEAN RECREATION					
POHOIKI BOAT RAMP DREDGING AND EXCAVATION OF VOLCANIC DEBRIS					
<b>NOTES</b>					
STATE OF HAWAII DEPARTMENT OF LAND AND NATURAL RESOURCES DIVISION OF BOATING AND OCEAN RECREATION					
POHOIKI BOAT RAMP DREDGING AND EXCAVATION OF VOLCANIC DEBRIS					
<b>NOTES</b>					
STATE OF HAWAII DEPARTMENT OF LAND AND NATURAL RESOURCES DIVISION OF BOATING AND OCEAN RECREATION					
POHOIKI BOAT RAMP DREDGING AND EXCAVATION OF VOLCANIC DEBRIS					
<b>NOTES</b>					
STATE OF HAWAII DEPARTMENT OF LAND AND NATURAL RESOURCES DIVISION OF BOATING AND OCEAN RECREATION					
POHOIKI BOAT RAMP DREDGING AND EXCAVATION OF VOLCANIC DEBRIS					
<b>NOTES</b>					
STATE OF HAWAII DEPARTMENT OF LAND AND NATURAL RESOURCES DIVISION OF BOATING AND OCEAN RECREATION					
POHOIKI BOAT RAMP DREDGING AND EXCAVATION OF VOLCANIC DEBRIS					
<b>NOTES</b>					
STATE OF HAWAII DEPARTMENT OF LAND AND NATURAL RESOURCES DIVISION OF BOATING AND OCEAN RECREATION					
POHOIKI BOAT RAMP DREDGING AND EXCAVATION OF VOLCANIC DEBRIS					
<b>NOTES</b>					
STATE OF HAWAII DEPARTMENT OF LAND AND NATURAL RESOURCES DIVISION OF BOATING AND OCEAN RECREATION					
POHOIKI BOAT RAMP DREDGING AND EXCAVATION OF VOLCANIC DEBRIS					
<b>NOTES</b>					
STATE OF HAWAII DEPARTMENT OF LAND AND NATURAL RESOURCES DIVISION OF BOATING AND OCEAN RECREATION					
POHOIKI BOAT RAMP DREDGING AND EXCAVATION OF VOLCANIC DEBRIS					
<b>NOTES</b>					
STATE OF HAWAII DEPARTMENT OF LAND AND NATURAL RESOURCES DIVISION OF BOATING AND OCEAN RECREATION					
POHOIKI BOAT RAMP DREDGING AND EXCAVATION OF VOLCANIC DEBRIS					
<b>NOTES</b>					
STATE OF HAWAII DEPARTMENT OF LAND AND NATURAL RESOURCES DIVISION OF BOATING AND OCEAN RECREATION					
POHOIKI BOAT RAMP DREDGING AND EXCAVATION OF VOLCANIC DEBRIS					
<b>NOTES</b>					
STATE OF HAWAII DEPARTMENT OF LAND AND NATURAL RESOURCES DIVISION OF BOATING AND OCEAN RECREATION					
POHOIKI BOAT RAMP DREDGING AND EXCAVATION OF VOLCANIC DEBRIS					
<b>NOTES</b>					
STATE OF HAWAII DEPARTMENT OF LAND AND NATURAL RESOURCES DIVISION OF BOATING AND OCEAN RECREATION					
POHOIKI BOAT RAMP DREDGING AND EXCAVATION OF VOLCANIC DEBRIS					
<b>NOTES</b>					
STATE OF HAWAII DEPARTMENT OF LAND AND NATURAL RESOURCES DIVISION OF BOATING AND OCEAN RECREATION					
POHOIKI BOAT RAMP DREDGING AND EXCAVATION OF VOLCANIC DEBRIS					
<b>NOTES</b>					
STATE OF HAWAII DEPARTMENT OF LAND AND NATURAL RESOURCES DIVISION OF BOATING AND OCEAN RECREATION					
POHOIKI BOAT RAMP DREDGING AND EXCAVATION OF VOLCANIC DEBRIS					
<b>NOTES</b>					
STATE OF HAWAII DEPARTMENT OF LAND AND NATURAL RESOURCES DIVISION OF BOATING AND OCEAN RECREATION					
POHOIKI BOAT RAMP DREDGING AND EXCAVATION OF VOLCANIC DEBRIS					
<b>NOTES</b>					
STATE OF HAWAII DEPARTMENT OF LAND AND NATURAL RESOURCES DIVISION OF BOATING AND OCEAN RECREATION					
POHOIKI BOAT RAMP DREDGING AND EXCAVATION OF VOLCANIC DEBRIS					
<b>NOTES</b>					
STATE OF HAWAII DEPARTMENT OF LAND AND NATURAL RESOURCES DIVISION OF BOATING AND OCEAN RECREATION					
POHOIKI BOAT RAMP DREDGING AND EXCAVATION OF VOLCANIC DEBRIS					
<b>NOTES</b>					
STATE OF HAWAII DEPARTMENT OF LAND AND NATURAL RESOURCES DIVISION OF BOATING AND OCEAN RECREATION					
POHOIKI BOAT RAMP DREDGING AND EXCAVATION OF VOLCANIC DEBRIS					
<b>NOTES</b>					
STATE OF HAWAII DEPARTMENT OF LAND AND NATURAL RESOURCES DIVISION OF BOATING AND OCEAN RECREATION					
POHOIKI BOAT RAMP DREDGING AND EXCAVATION OF VOLCANIC DEBRIS					
<b>NOTES</b>					
STATE OF HAWAII DEPARTMENT OF LAND AND NATURAL RESOURCES DIVISION OF BOATING AND OCEAN RECREATION					
POHOIKI BOAT RAMP DREDGING AND EXCAVATION OF VOLCANIC DEBRIS					
<b>NOTES</b>					
STATE OF HAWAII DEPARTMENT OF LAND AND NATURAL RESOURCES DIVISION OF BOATING AND OCEAN RECREATION					
POHOIKI BOAT RAMP DREDGING AND EXCAVATION OF VOLCANIC DEBRIS					
<b>NOTES</b>					
STATE OF HAWAII DEPARTMENT OF LAND AND NATURAL RESOURCES DIVISION OF BOATING AND OCEAN RECREATION					
POHOIKI BOAT RAMP DREDGING AND EXCAVATION OF VOLCANIC DEBRIS					
<b>NOTES</b>					
STATE OF HAWAII DEPARTMENT OF LAND AND NATURAL RESOURCES DIVISION OF BOATING AND OCEAN RECREATION					
POHOIKI BOAT RAMP DREDGING AND EXCAVATION OF VOLCANIC DEBRIS					
<b>NOTES</b>					
STATE OF HAWAII DEPARTMENT OF LAND AND NATURAL RESOURCES DIVISION OF BOATING AND OCEAN RECREATION					
POHOIKI BOAT RAMP DREDGING AND EXCAVATION OF VOLCANIC DEBRIS					
<b>NOTES</b>					
STATE OF HAWAII DEPARTMENT OF LAND AND NATURAL RESOURCES DIVISION OF BOATING AND OCEAN RECREATION					
POHOIKI BOAT RAMP DREDGING AND EXCAVATION OF VOLCANIC DEBRIS					
<b>NOTES</b>					
STATE OF HAWAII DEPARTMENT OF LAND AND NATURAL RESOURCES DIVISION OF BOATING AND OCEAN RECREATION					
POHOIKI BOAT RAMP DREDGING AND EXCAVATION OF VOLCANIC DEBRIS					
<b>NOTES</b>					
STATE OF HAWAII DEPARTMENT OF LAND AND NATURAL RESOURCES DIVISION OF BOATING AND OCEAN RECREATION					
POHOIKI BOAT RAMP DREDGING AND EXCAVATION OF VOLCANIC DEBRIS					
<b>NOTES</b>					
STATE OF HAWAII DEPARTMENT OF LAND AND NATURAL RESOURCES DIVISION OF BOATING AND OCEAN RECREATION					
POHOIKI BOAT RAMP DREDGING AND EXCAVATION OF VOLCANIC DEBRIS					
<b>NOTES</b>					
STATE OF HAWAII DEPARTMENT OF LAND AND NATURAL RESOURCES DIVISION OF BOATING AND OCEAN RECREATION					
POHOIKI BOAT RAMP DREDGING AND EXCAVATION OF VOLCANIC DEBRIS					
<b>NOTES</b>					
STATE OF HAWAII DEPARTMENT OF LAND AND NATURAL RESOURCES DIVISION OF BOATING AND OCEAN RECREATION					
POHOIKI BOAT RAMP DREDGING AND EXCAVATION OF VOLCANIC DEBRIS					
<b>NOTES</b>					
STATE OF HAWAII DEPARTMENT OF LAND AND NATURAL RESOURCES DIVISION OF BOATING AND OCEAN RECREATION					
POHOIKI BOAT RAMP DREDGING AND EXCAVATION OF VOLCANIC DEBRIS					
<b>NOTES</b>					
STATE OF HAWAII DEPARTMENT OF LAND AND NATURAL RESOURCES DIVISION OF BOATING AND OCEAN RECREATION					
POHOIKI BOAT RAMP DREDGING AND EXCAVATION OF VOLCANIC DEBRIS					
<b>NOTES</b>					
STATE OF HAWAII DEPARTMENT OF LAND AND NATURAL RESOURCES DIVISION OF BOATING AND OCEAN RECREATION					
POHOIKI BOAT RAMP DREDGING AND EXCAVATION OF VOLCANIC DEBRIS					
<b>NOTES</b>					
STATE OF HAWAII DEPARTMENT OF LAND AND NATURAL RESOURCES DIVISION OF BOATING AND OCEAN RECREATION					
POHOIKI BOAT RAMP DREDGING AND EXCAVATION OF VOLCANIC DEBRIS					
<b>NOTES</b>					
STATE OF HAWAII DEPARTMENT OF LAND AND NATURAL RESOURCES DIVISION OF BOATING AND OCEAN RECREATION					
POHOIKI BOAT RAMP DREDGING AND EXCAVATION OF VOLCANIC DEBRIS					
<b>NOTES</b>					
STATE OF HAWAII DEPARTMENT OF LAND AND NATURAL RESOURCES DIVISION OF BOATING AND OCEAN RECREATION					
POHOIKI BOAT RAMP DREDGING AND EXCAVATION OF VOLCANIC DEBRIS					
<b>NOTES</b>					
STATE OF HAWAII DEPARTMENT OF LAND AND NATURAL RESOURCES DIVISION OF BOATING AND OCEAN RECREATION					
POHOIKI BOAT RAMP DREDGING AND EXCAVATION OF VOLCANIC DEBRIS					
<b>NOTES</b>					
STATE OF HAWAII DEPARTMENT OF LAND AND NATURAL RESOURCES DIVISION OF BOATING AND OCEAN RECREATION					
POHOIKI BOAT RAMP DREDGING AND EXCAVATION OF VOLCANIC DEBRIS					
<b>NOTES</b>					
STATE OF HAWAII DEPARTMENT OF LAND AND NATURAL RESOURCES DIVISION OF BOATING AND OCEAN RECREATION					
POHOIKI BOAT RAMP DREDGING AND EXCAVATION OF VOLCANIC DEBRIS					
<b>NOTES</b>					
STATE OF HAWAII DEPARTMENT OF LAND AND NATURAL RESOURCES DIVISION OF BOATING AND OCEAN RECREATION					
POHOIKI BOAT RAMP DREDGING AND EXCAVATION OF VOLCANIC DEBRIS					
<b>NOTES</b>					
STATE OF HAWAII DEPARTMENT OF LAND AND NATURAL RESOURCES DIVISION OF BOATING AND OCEAN RECREATION					
POHOIKI BOAT RAMP DREDGING AND EXCAVATION OF VOLCANIC DEBRIS					
<b>NOTES</b>					
STATE OF HAWAII DEPARTMENT OF LAND AND NATURAL RESOURCES DIVISION OF BOATING AND OCEAN RECREATION					
POHOIKI BOAT RAMP DREDGING AND EXCAVATION OF VOLCANIC DEBRIS					
<b>NOTES</b>					
STATE OF HAWAII DEPARTMENT OF LAND AND NATURAL RESOURCES DIVISION OF BOATING AND OCEAN RECREATION					
POHOIKI BOAT RAMP DREDGING AND EXCAVATION OF VOLCANIC DEBRIS					
<b>NOTES</b>					
STATE OF HAWAII DEPARTMENT OF LAND AND NATURAL RESOURCES DIVISION OF BOATING AND OCEAN RECREATION					
POHOIKI BOAT RAMP DREDGING AND EXCAVATION OF VOLCANIC DEBRIS					
<b>NOTES</b>					

**BEST MANAGEMENT PRACTICES (BMPs):**

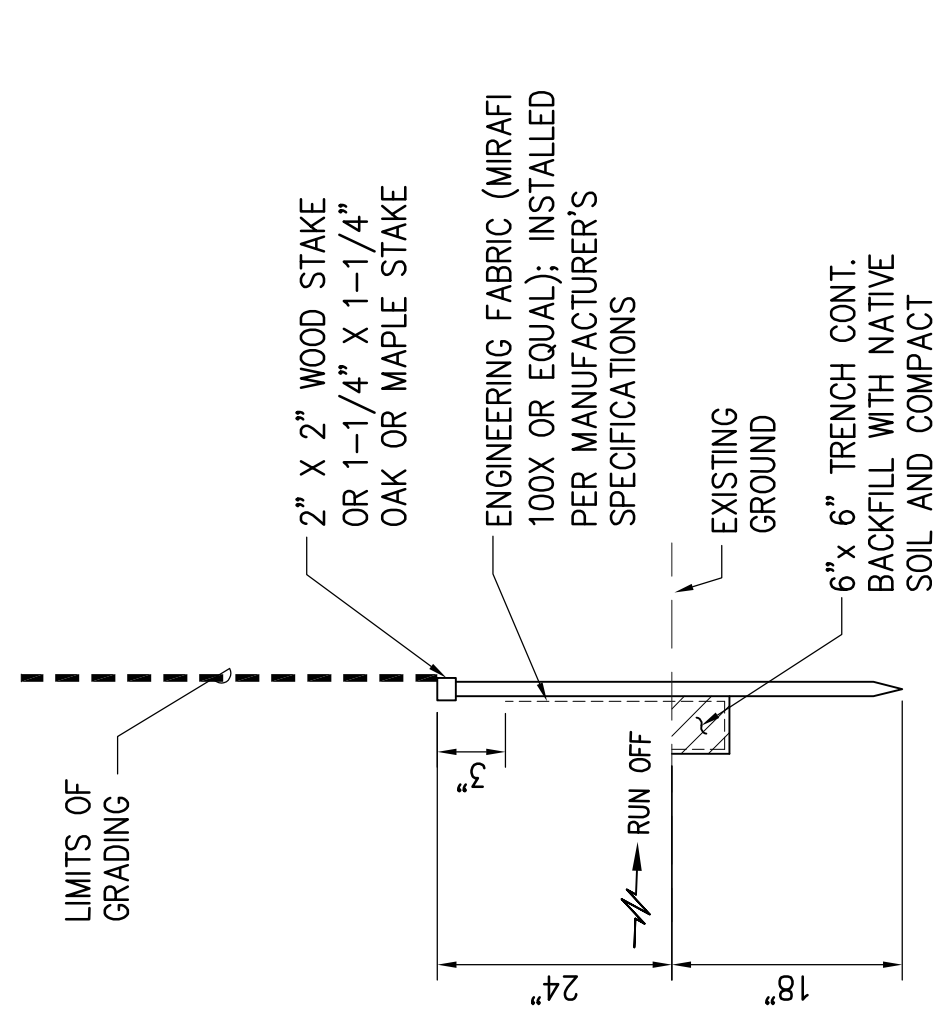
1. THE CONTRACTOR, AT THEIR OWN EXPENSE, SHALL KEEP THE PROJECT AREAS AND SURROUNDING AREAS FREE FROM DUST NUISANCE. THE WORK SHALL BE DONE IN CONFORMANCE WITH AIR POLLUTION CONTROL STANDARDS CONTAINED IN HAWAII ADMINISTRATIVE RULES: CHAPTER 11-60, "AIR POLLUTION CONTROL".
2. MEASURES TO CONTROL EROSION AND OTHER POLLUTANTS SHALL BE IN PLACE BEFORE ANY CONSTRUCTION IS INITIATED. THESE MEASURES SHALL BE PROPERLY CONSTRUCTED AND MAINTAINED THROUGHOUT THE CONSTRUCTION PERIOD.
3. CONTRACTOR SHALL OBSERVE AND COMPLY WITH THE STATE DEPARTMENT OF HEALTH REGULATIONS REGARDING STORMWATER DISCHARGE.
4. ALL EROSION CONTROL MEASURES SHALL BE CHECKED AND REPAIRED AS NECESSARY, FOR EXAMPLE, WEEKLY IN DRY PERIODS AND WITHIN TWENTY-FOUR HOURS AFTER ANY RAINFALL OF 0.5 INCHES OR GREATER WITHIN A 24-HOUR PERIOD. DURING AN EVENT OF ABOVE NORMAL RAINFALL, THE CONTRACTOR SHALL REMOVE THE SEDIMENT AND DRAIN INLET FILTER AND REPLACE AFTER THE EVENT HAS PASSED. THE CONTRACTOR SHALL MAINTAIN RECORDS OF ALL CHECKS AND REPAIRS AND A COPY SHALL BE AVAILABLE IN THE FIELD OFFICE.
5. GOOD HOUSEKEEPING SHALL BE UTILIZED TO ENSURE PROTECTION OF ROADWAYS FROM MUD, DIRT, AND DEBRIS.
6. THE CONTRACTOR SHALL PROVIDE EROSION CONTROL MEASURES FOR THEIR CONSTRUCTION, STAGING, AND STORAGE AREAS AND SHALL INSPECT AND MONITOR THEIR CONSTRUCTION, STAGING, AND STORAGE AREAS TO ENSURE THAT NON-STORM WATER DISCHARGES ARE EMITTED. IF SUCH SOURCES ARE IDENTIFIED THE CONTRACTOR SHALL PROVIDE IMMEDIATE MITIGATIVE MEASURES.
7. NO SEDIMENT LADEN RUNOFF SHALL LEAVE THE SITE.
8. THE FINAL LIFT OF EACH DAYS WORK SHALL BE COMPACTED TO PREVENT EROSION OF FILL MATERIALS.
9. THE CONTRACTOR SHALL DISPOSE OF VEGETATION, EQUIPMENT, WASTE MATERIALS AND HYDRAULIC OILS OFF-SITE.
10. AT THE END OF CONSTRUCTION, THE EXISTING DRAIN SYSTEM SURROUNDING THE PROJECT SITE SHALL BE INSPECTED AND ANY ACCUMULATED SEDIMENT AND DEBRIS FOUND SHALL BE REMOVED. FLUSHING INTO THE DRAINAGE SYSTEM IS PROHIBITED.



**1 CONSTRUCTION ENTRANCE DETAIL**

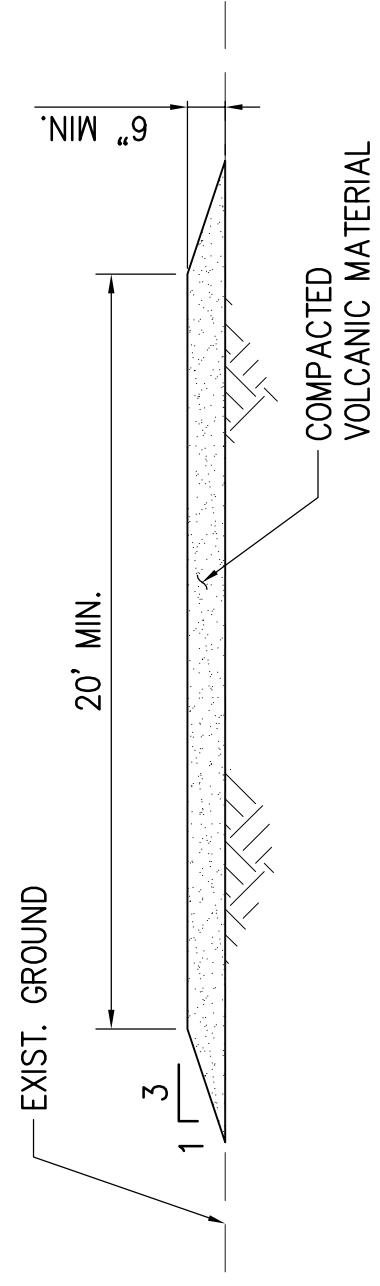
103 NOT TO SCALE

GEOTEXTILE REQUIREMENTS	
PHYSICAL PROPERTY	REQUIREMENTS
GRAB TENSILE STRENGTH	220 LB (ASTM D1682)
ELONGATION FAILURE	60% (ASTM D1682)
MULLEN BURST STRENGTH	430 LB (ASTM D3768)
PUNCTURE STRENGTH	125 LB (ASTM D751, MODIFIED)
EQUIVALENT OPENING	SIZE 40-80 (U.S. STD. SIEVE, CW-02215)



**NOTES:**

1. REMOVE ACCUMULATED SEDIMENT WHEN DEPTH REACHES 1/3 THE BARRIER HEIGHT.
2. AT COMPLETION OF PROJECT, FILTER SOCKS MATERIAL INCLUDING THE COMPOST SHALL BE REMOVED FROM SITE & DISPOSED OF PROPERLY.
3. FILTER SOCK SHALL MEET THE REQUIREMENTS OF THE STATE CONSTRUCTION BMP FIELD MANUAL, SC-6 COMPOST FILTER BERM.
4. COMPOST SHALL NOT CONTAIN BIOSOLIDS AND SHOULD BE CONSISTENT WITH EPA GUIDELINES.
5. CONTRACTOR IS NOT REQUIRED TO STAKE COMPOST FILTER SOCKS BUT SHALL ENSURE FILTER SOCKS REMAIN IN PLACE TO PROVIDE ADEQUATE PROTECTION.

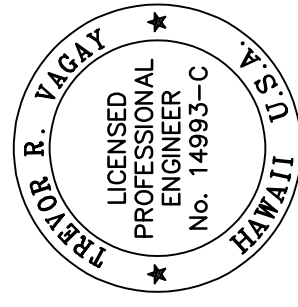


NOTE:  
COMPACTED VOLCANIC MATERIAL SHALL BE PLACED ON NON-PAVED AREAS ONLY.

**4 TEMPORARY CONSTRUCTION HAUL ROAD**

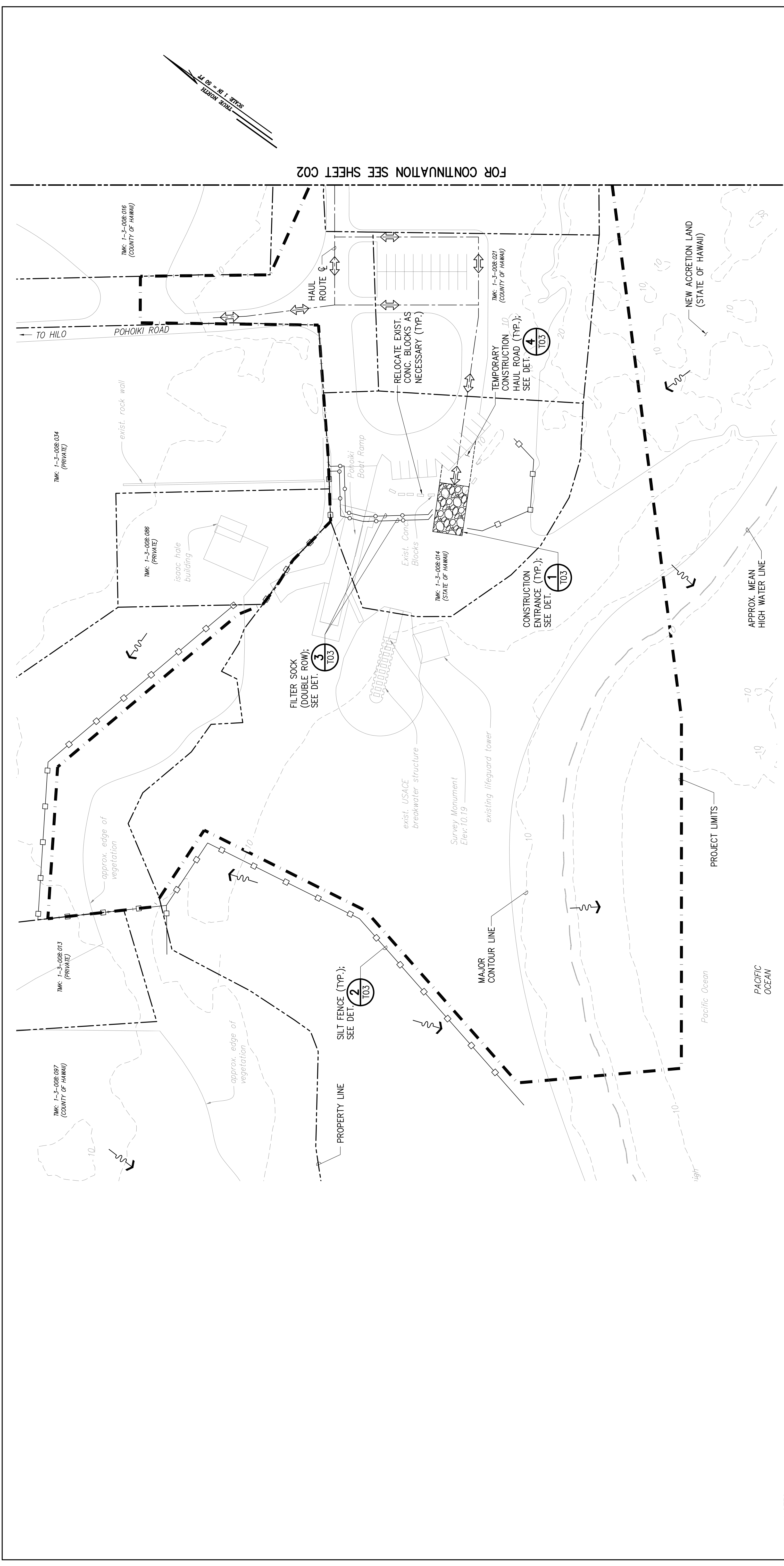
103 NOT TO SCALE

REVISION NO.	SYM.	DESCRIPTION	SHT./OF	DATE	APPROVED
STATE OF HAWAII DEPARTMENT OF LAND AND NATURAL RESOURCES DIVISION OF BOATING AND OCEAN RECREATION					
POHOIKI BOAT RAMP DREDGING AND EXCAVATION OF VOLCANIC DEBRIS					
EROSION AND SEDIMENT CONTROL NOTES AND DETAILS					
DESIGNED: TV DRAWN: IE CHECKED: KK APPROVED:					
SUBMITTED: JULY 2023 DATE: JULY 2023 SCALE: NOT TO SCALE					
DRAWING NO. <b>T03</b>					
Signature _____ Date _____ CHIEF ENGINEER _____					

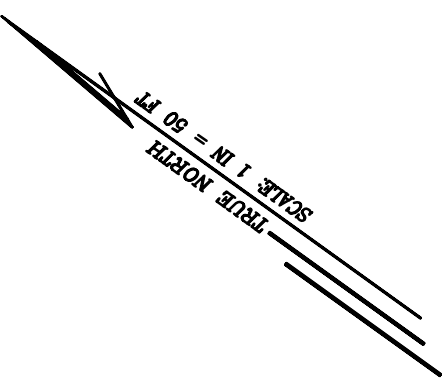


04/30/2024  
EXP. DATE

THIS WORK WAS PREPARED BY ME OR UNDER MY CLOSE PERSONAL SUPERVISION AND THE PROJECT WILL BE UNDER MY OBSERVATION.



FOR CONTINUATION SEE SHEET C02

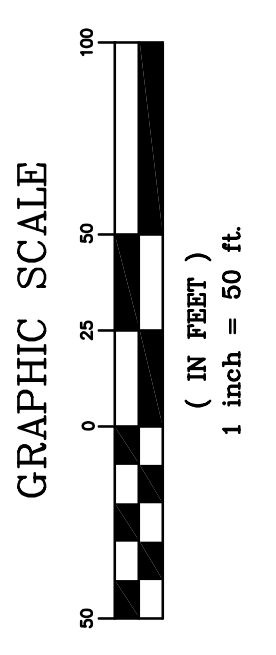


**NOTES:**  
 1. ELEVATIONS SHOWN USE THE LOCAL MEAN LOWER LOW WATER (MLLW) ELEVATION AS THEIR DATUM.

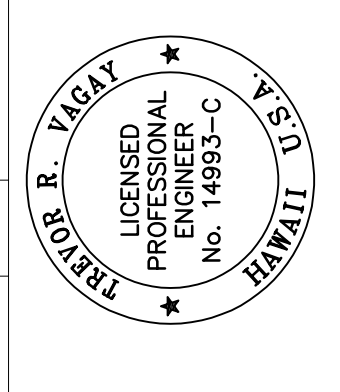
**EROSION AND SEDIMENT CONTROL PLAN 1**  
 SCALE: 1"=50'

**LEGEND:**

---	PROPERTY LINE
- - - -	TEMPORARY CONSTRUCTION HAUL ROAD LIMITS
- · - ·	PROJECT LIMITS
—○—	TEMP. FILTER SOCK
—□—	SILT FENCE
—w—	DIRECTION OF SURFACE RUNOFF
- - 10 - -	EXIST. MAJOR CONTOUR LINE
- - - -	HAUL ROUTE CENTERLINE
- - - -	CONSTRUCTION ENTRANCE

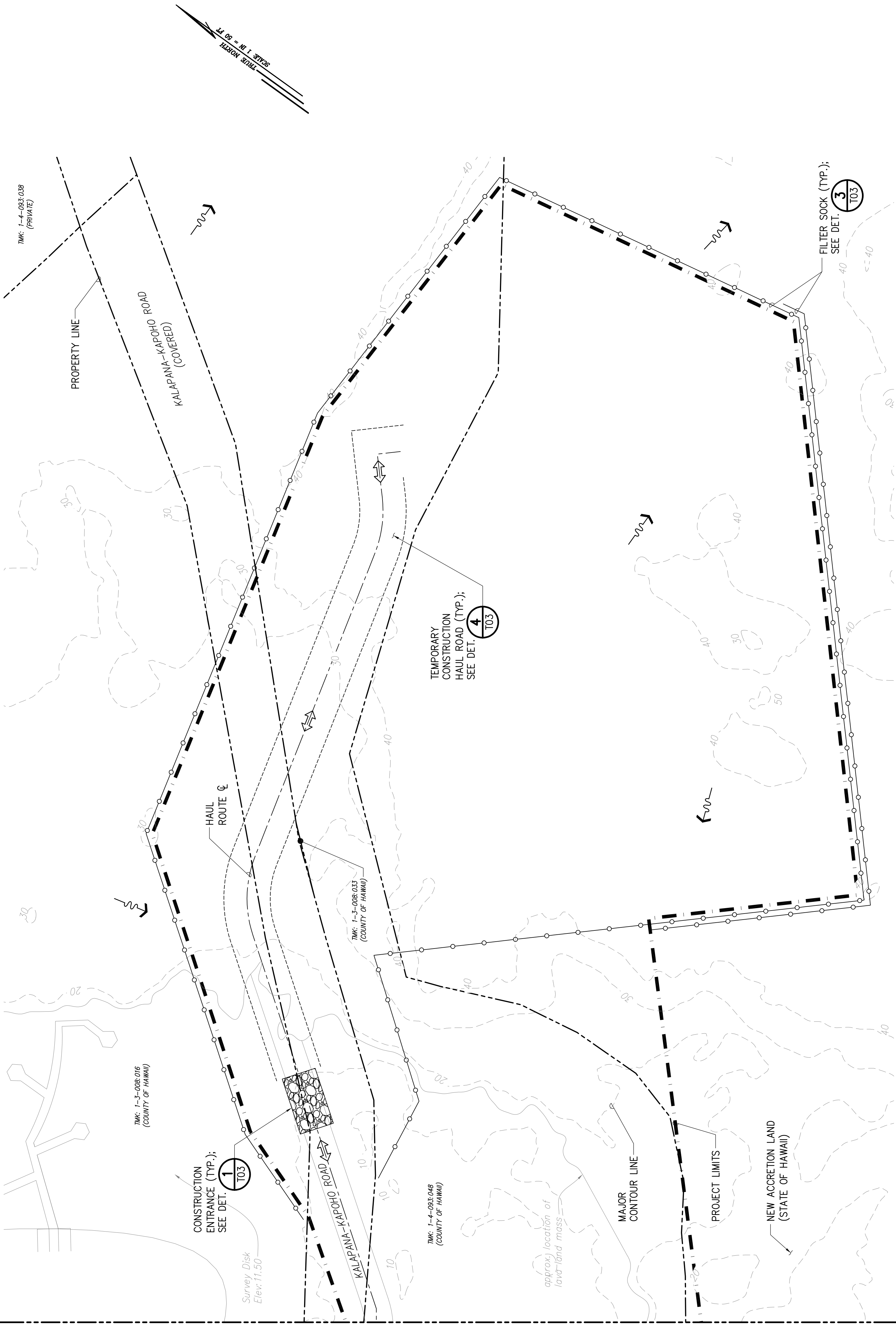


REVISION NO.	SYM.	DESCRIPTION	SHT. OF	DATE	APPROVED
STATE OF HAWAII DEPARTMENT OF LAND AND NATURAL RESOURCES DIVISION OF BOATING AND OCEAN RECREATION					
POHOIKI BOAT RAMP DREDGING AND EXCAVATION OF VOLCANIC DEBRIS					
EROSION AND SEDIMENT CONTROL PLAN 1					
DESIGNED: TV			SUBMITTED: JULY 2023		
DRAWN: IE			DATE: JULY 2023		
CHECKED: KK			SCALE: 1"=50'		
APPROVED:			DRAWING NO.		
Signature _____			DATE _____		
Date _____			CHIEF ENGINEER		
			<b>C01</b>		



EXP. DATE  
 04/30/2024

THIS WORK WAS PREPARED BY ME OR UNDER MY CLOSE PERSONAL SUPERVISION AND I AM AWARE THAT ANY VIOLATION OF THIS PROJECT WILL BE UNDER MY OBSERVATION.

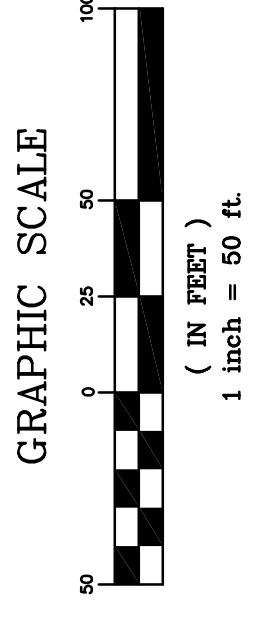


FOR CONTINUATION SEE SHEET C01

NOTES:  
 1. ELEVATIONS SHOWN USE THE LOCAL MEAN LOWER LOW WATER (MLLW) ELEVATION AS THEIR DATUM.

LEGEND	DESCRIPTION
---	PROPERTY LINE
---	TEMPORARY CONSTRUCTION HAUL ROAD LIMITS
---	PROJECT LIMITS
---	MEAN HIGH WATER LINE
---	EXIST. MAJOR CONTOUR LINE
---	HAUL ROUTE CENTERLINE
---	TEMP. FILTER SOCK
---	SILT FENCE
---	DIRECTION OF SURFACE RUNOFF
---	CONSTRUCTION ENTRANCE

**EROSION AND SEDIMENT CONTROL PLAN 2**  
 SCALE: 1"=50'



REVISION NO.	SYM.	DESCRIPTION	SHT. OF	DATE	APPROVED

STATE OF HAWAII	
DEPARTMENT OF LAND AND NATURAL RESOURCES	
DIVISION OF BOATING AND OCEAN RECREATION	
POHOIKI BOAT RAMP	
DREDGING AND EXCAVATION	
OF VOLCANIC DEBRIS	
EROSION AND SEDIMENT CONTROL PLAN 2	

DESIGNED: TV	SUBMITTED: JULY 2023
DRAWN: IE	DATE: JULY 2023
CHECKED: KK	SCALE: 1"=50'
APPROVED:	DRAWING NO. <b>C02</b>

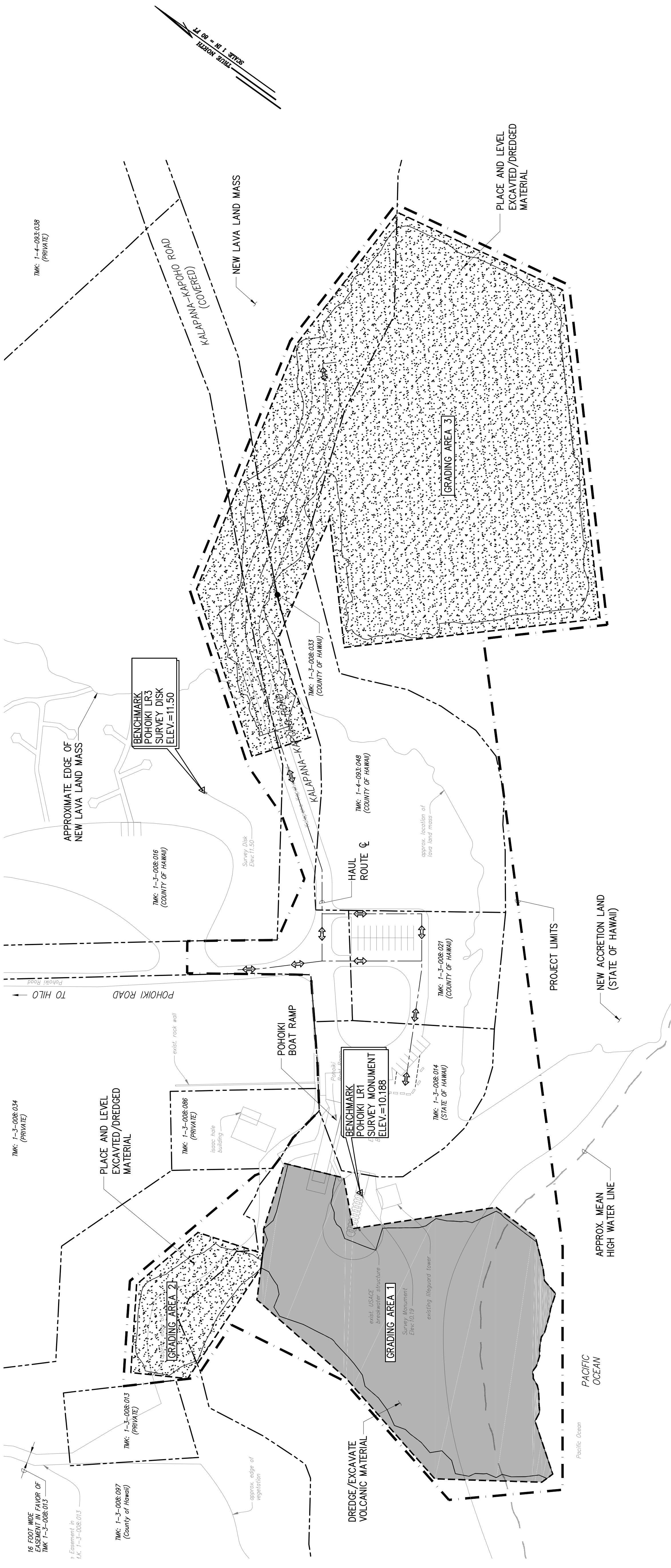
Signature	Date
_____	_____
CHIEF ENGINEER	

04/30/2024  
 EXP. DATE

THIS WORK WAS PREPARED BY ME OR UNDER MY CLOSE PERSONAL SUPERVISION AND I AM A LICENSED PROFESSIONAL ENGINEER. PROJECT WILL BE UNDER MY OBSERVATION.

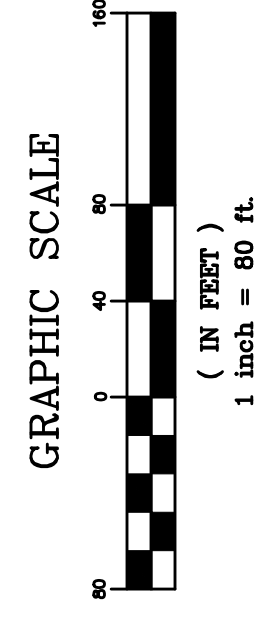
**FRED R. YAGNY**  
 LICENSED PROFESSIONAL ENGINEER  
 No. 14993-C  
 HAWAII



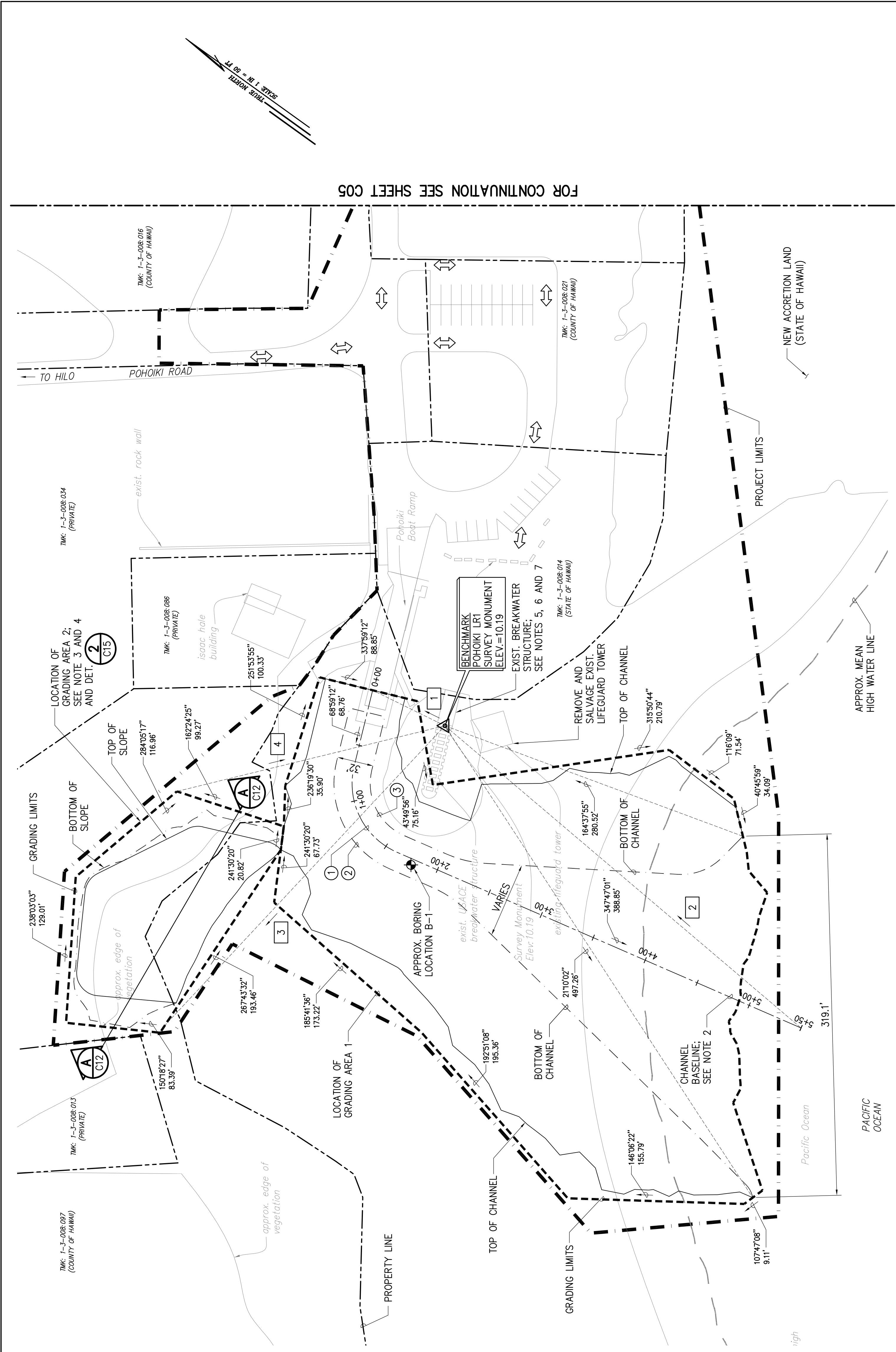
**GENERAL SITE PLAN**  
SCALE: 1"=80'

**NOTE:**  
1. ELEVATIONS SHOWN USE THE LOCAL MEAN LOWER LOW WATER (MLLW) ELEVATION AS THEIR DATUM.

- LEGEND**
- DREDGING/EXCAVATION AREA
  - FILL AREA
  - PROJECT LIMITS
  - GRADING LIMITS
  - MEAN HIGH WATER LINE
  - TEMPORARY CONSTRUCTION HAUL ROAD LIMITS
  - HAUL ROUTE CENTERLINE



REVISION NO.	SYM.	DESCRIPTION	SHT. OF	DATE	APPROVED
STATE OF HAWAII DEPARTMENT OF LAND AND NATURAL RESOURCES DIVISION OF BOATING AND OCEAN RECREATION <b>POHOIKI BOAT RAMP            DREDGING AND EXCAVATION            OF VOLCANIC DEBRIS</b> <b>GENERAL SITE PLAN</b>					
DESIGNED: TV			SUBMITTED: JULY 2023		
DRAWN: IE			DATE: JULY 2023		
CHECKED: KK			SCALE: 1"=80'		
APPROVED:			DRAWING NO. <b>C03</b>		
Signature _____			DATE _____		
Exp. DATE: 04/30/2024			CHIEF ENGINEER		



FOR CONTINUATION SEE SHEET C05

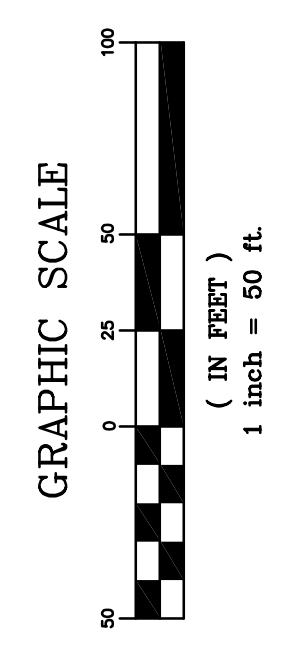
CURVE DATA						
Δ	Δ/2	R	T	C	L	
1	80°12'12"	40'06'06"	66'	55.58'	85.03'	92.39'
2	80°12'18"	40'06'09"	82'	69.05'	105.64'	114.78'
3	80°12'12"	40'06'06"	50'	42.12'	64.41'	70.00'

COORDINATE CONTROL		
NO.	AZIMUTH	DESCRIPTION
1	170°23'43"	BENCHMARK LR1 TO CHANNEL BASELINE STA. 0+00
2	184°36'10"	CHANNEL BASELINE STA. 5+50 TO BENCHMARK LR1
3	97°21'03"	BENCHMARK LR1 TO EDGE OF GRADING AREA 2
4	310°30'56"	EDGE OF GRADING AREA 2 TO BENCHMARK LR1

- NOTES:**
- ELEVATIONS SHOWN USE THE LOCAL MEAN LOWER LOW WATER (MLLW) ELEVATION, AS THEIR DATUM.
  - SEE SHEET C08 FOR CHANNEL PROFILE VIEW AND SHEETS C09 TO C11 FOR CHANNEL-BASELINE SECTION VIEWS.
  - SEE SHEET C12 FOR GRADING AREA 2 BASELINE SITE SECTION.
  - EXCAVATED/DREDGED VOLCANIC MATERIAL SHALL BE PLACED IN GRADING AREAS 2 AND 3. CONTRACTOR IS TO COORDINATE WITH ENGINEER IN FINAL PLACEMENT OF FILL.
  - ANY DAMAGE TO THE EXIST. BREAKWATER STRUCTURE SHALL BE REPAIRED TO THE SATISFACTION OF THE U.S. ARMY CORPS OF ENGINEERS AT NO ADDITIONAL COST TO THE STATE.
  - SETTLED SAND AND COBBLES ON AND/OR THE BREAKWATER STRUCTURE SHALL BE MANUALLY REMOVED WITH THE USE OF HAND TOOLS.
  - HEAVY EQUIPMENT UTILIZED FOR THE PROJECT SHALL BE PROHIBITED FROM TRAVELING OVER AND NEAR THE EXISTING BREAKWATER FOOTPRINT. SEE DET. 1 C15

- LEGEND:**
- PROPERTY LINE
  - PROJECT LIMITS
  - GRADING LIMITS
  - MEAN HIGH WATER LINE
  - BOTTOM OF SLOPE/CHANNEL
  - TOP OF SLOPE

**SITE PLAN 1**  
SCALE: 1"=50'



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

STATE OF HAWAII  
DEPARTMENT OF LAND AND NATURAL RESOURCES  
DIVISION OF BOATING AND OCEAN RECREATION

POHOIKI BOAT RAMP  
DREDGING AND EXCAVATION  
OF VOLCANIC DEBRIS

SITE PLAN 1

DESIGNED: TV  
DRAWN: IE  
CHECKED: KK  
APPROVED:

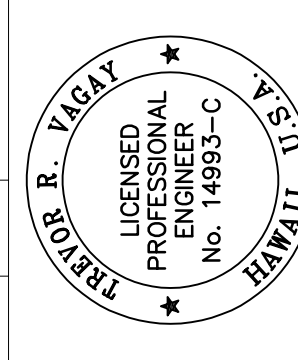
04/30/2024  
EXP. DATE

THIS WORK WAS PREPARED BY ME OR UNDER MY CLOSE PERSONAL SUPERVISION AND THE PROJECT WILL BE UNDER MY OBSERVATION.

Signature: \_\_\_\_\_ Date: \_\_\_\_\_  
Date: \_\_\_\_\_

CHIEF ENGINEER: \_\_\_\_\_ DATE: \_\_\_\_\_

DRAWING NO. **C04**



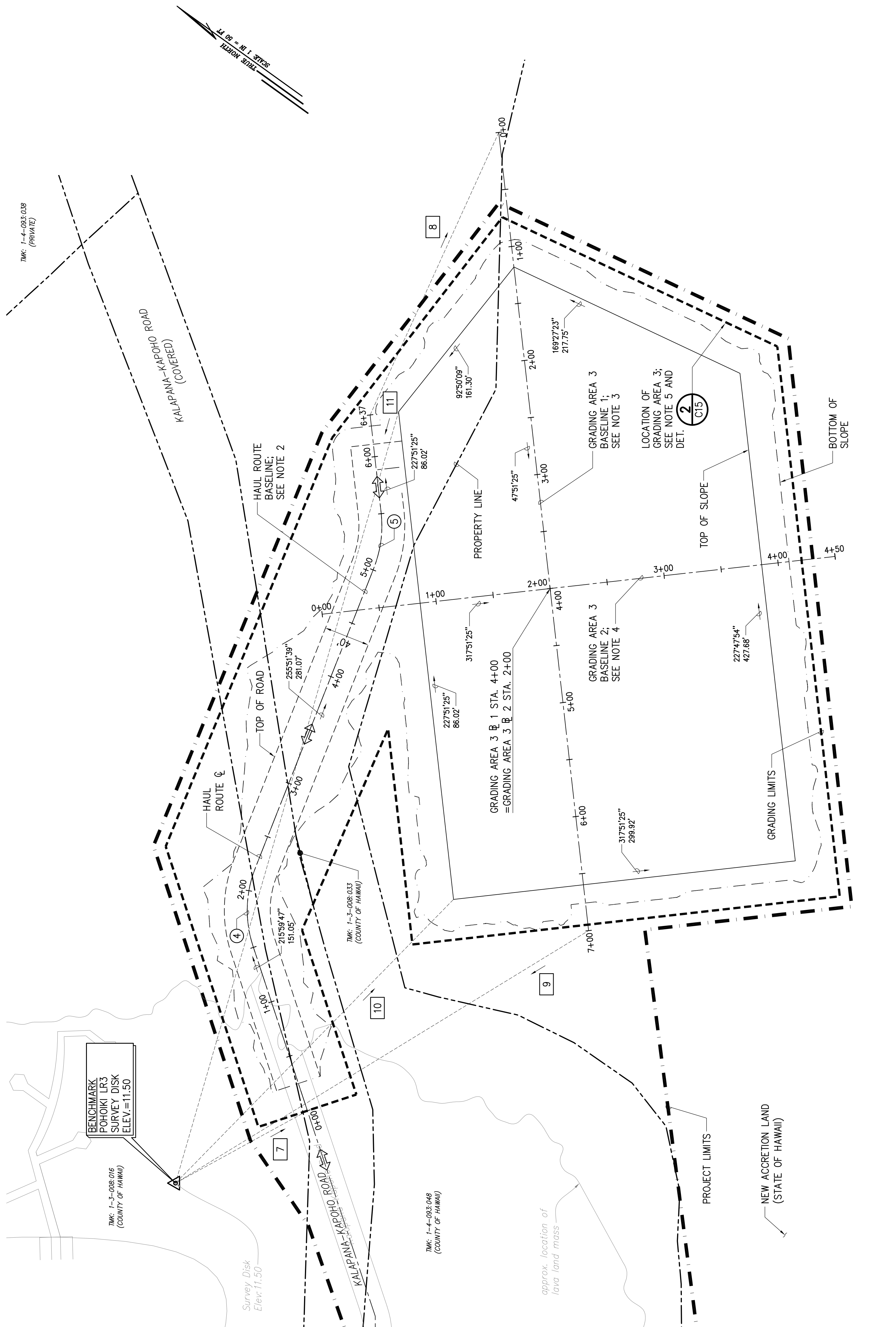
CURVE DATA						
Δ	Δ/2	R	T	C	L	
4	39°51'52"	19°55'56"	100'	36.26'	68.18'	69.58'
5	28°00'14"	14°00'07"	100'	24.94'	48.39'	48.88'

COORDINATE CONTROL		
NO.	AZIMUTH	DESCRIPTION
7	295°32'02"	BENCHMARK LR3 TO HAUL ROUTE BASELINE STA. 0+00
8	258°46'25"	HAUL ROUTE BASELINE STA. 6+37 TO GRADING AREA 3 BASELINE 1 STA. 0+00
9	112°51'19"	GRADING AREA 3 BASELINE 1 STA. 7+00 TO BENCHMARK LR3
10	278°42'32"	BENCHMARK LR3 TO EDGE OF GRADING AREA 3
11	70°25'10"	EDGE OF GRADING AREA 3 TO BENCHMARK LR3

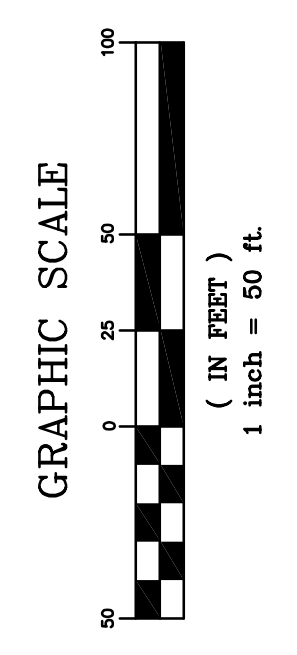
- NOTES:
- ELEVATIONS SHOWN USE THE LOCAL MEAN LOWER LOW WATER (MLLW) ELEVATION AS THEIR DATUM.
  - SEE SHEET C08 FOR HAUL ROUTE PROFILE VIEW AND SHEET C12 FOR HAUL ROUTE SECTION VIEWS.
  - SEE SHEET C13 FOR GRADING AREA 3 BASELINE 1 SECTION VIEWS.
  - SEE SHEET C14 FOR GRADING AREA 3 BASELINE 2 SECTION VIEWS.
  - EXCAVATED/DREDGED VOLCANIC MATERIAL SHALL BE PLACED IN GRADING AREAS 2 AND 3. CONTRACTOR IS TO COORDINATE WITH ENGINEER IN FINAL PLACEMENT OF FILL.

- LEGEND:
- PROPERTY LINE
  - PROJECT LIMITS
  - GRADING LIMITS
  - MEAN HIGH WATER LINE
  - HAUL ROUTE CENTERLINE
  - BOTTOM OF SLOPE
  - TOP OF SLOPE

FOR CONTINUATION SEE SHEET C04

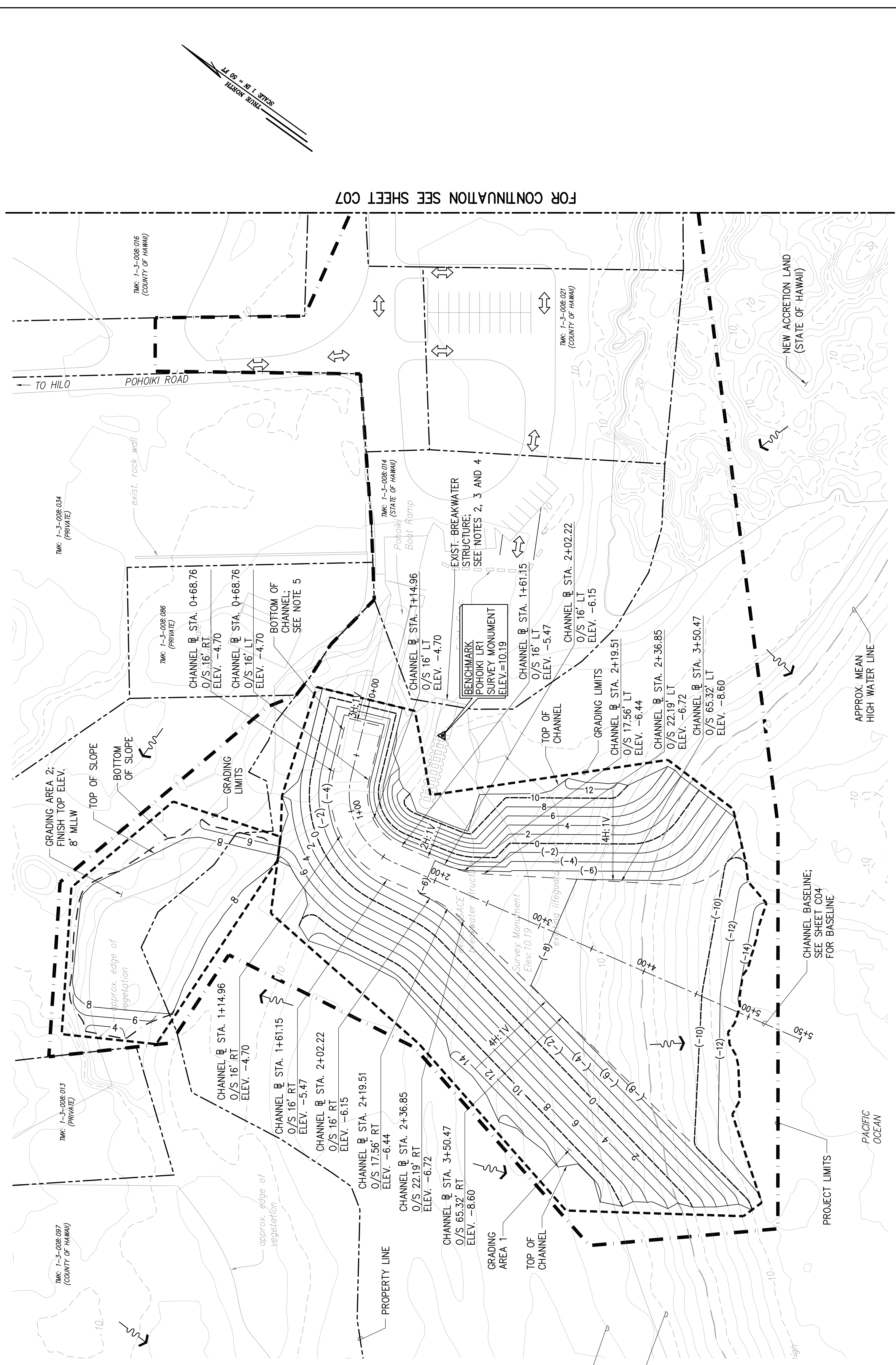


**SITE PLAN 2**  
SCALE: 1"=50'



REVISION NO.	SYM.	DESCRIPTION	SHT. OF	DATE	APPROVED
STATE OF HAWAII DEPARTMENT OF LAND AND NATURAL RESOURCES DIVISION OF BOATING AND OCEAN RECREATION					
POHOIKI BOAT RAMP DREDGING AND EXCAVATION OF VOLCANIC DEBRIS					
SITE PLAN 2					
DESIGNED: TV DRAWN: IE CHECKED: KK APPROVED:					
SUBMITTED: JULY 2023 DATE: JULY 2023 SCALE: 1"=50'					
EXP. DATE 04/30/2024					
THIS WORK WAS PREPARED BY ME OR UNDER MY CLOSE PERSONAL SUPERVISION AND PROJECT WILL BE UNDER MY OBSERVATION					
Signature: _____ Date: _____					
CHIEF ENGINEER					
DRAWING NO. <b>C05</b>					

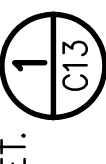




FOR CONTINUATION SEE SHEET C07

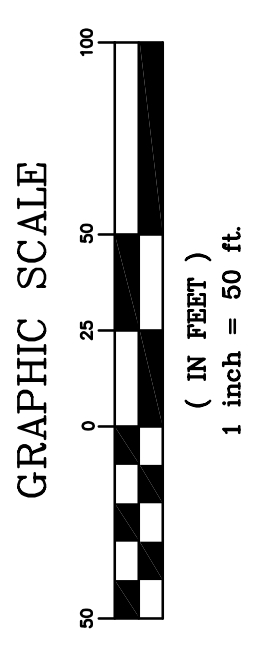
GRADING QUANTITY SUMMARY	
EXCAVATION	42,000 C.Y.
EMBANKMENT	42,000 C.Y.

- NOTES:**
- ELEVATIONS SHOWN USE THE LOCAL MEAN LOWER LOW WATER (MLLW) ELEVATION AS THEIR DATUM.
  - ANY DAMAGE TO THE EXIST. BREAKWATER STRUCTURE SHALL BE REPAIRED TO THE SATISFACTION OF THE U.S. ARMY CORPS OF ENGINEERS AT THE CONTRACTOR'S EXPENSE.
  - SETTLED SAND AND COBBLES ON AND/OR OVER THE BREAKWATER STRUCTURE MAY BE MANUALLY REMOVED WITH THE USE OF HAND TOOLS. HEAVY EQUIPMENT UTILIZED FOR THE PROJECT SHALL BE PROHIBITED FROM TRAVELING OVER AND NEAR THE EXISTING BREAKWATER FOOTPRINT. SEE DET.
  - THE CONTRACTOR SHALL ONLY EXCAVATE ACCUMULATED VOLCANIC DEBRIS: PRE ERUPTION MATERIAL SHALL REMAIN UNDISTURBED IF ENCOUNTERED DURING CONSTRUCTION.

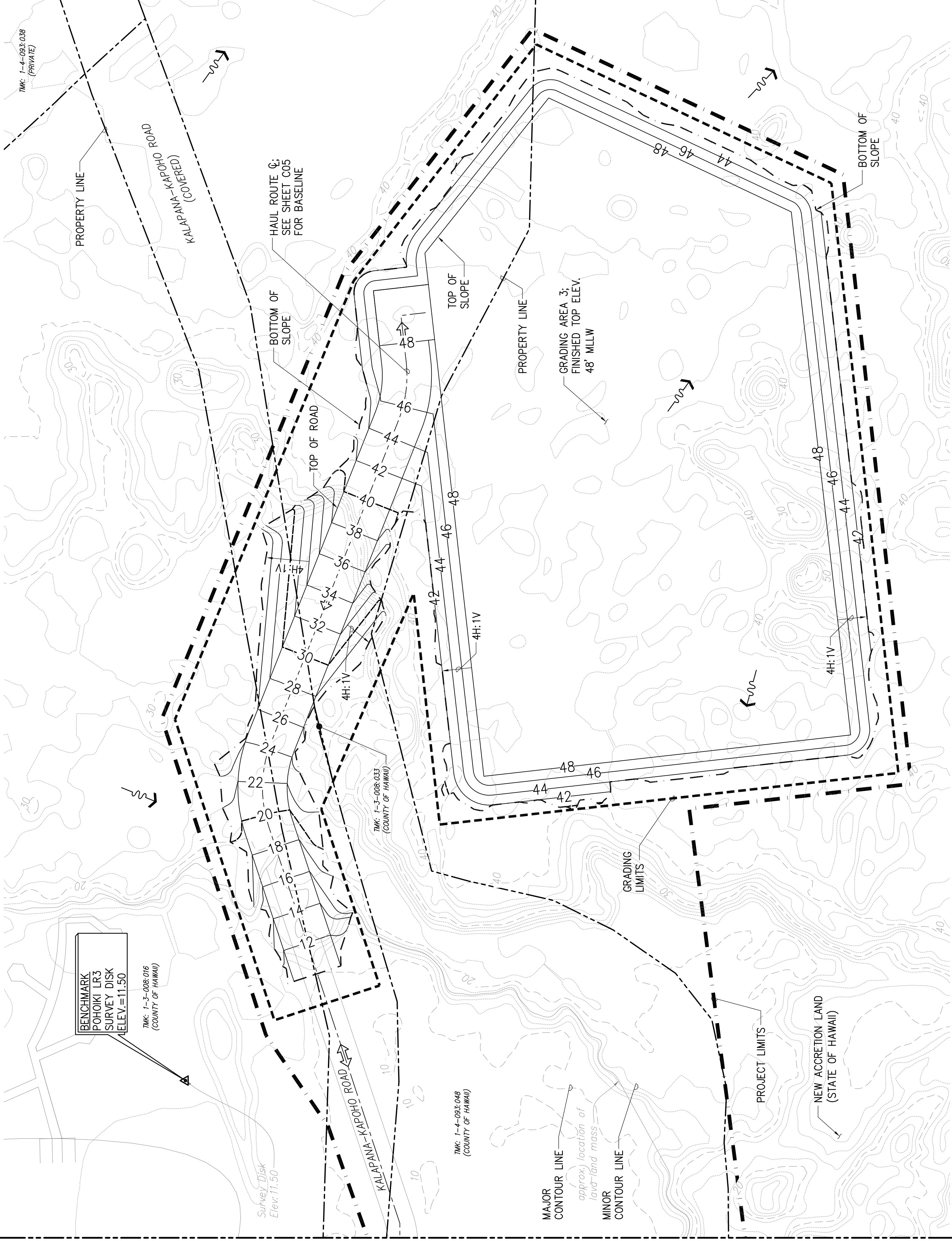


**GRADING PLAN 1**  
SCALE: 1" = 50'

- LEGEND:**
- EXIST. MINOR CONTOUR LINE
  - NEW MAJOR CONTOUR LINE
  - 10 --- PROJECT LIMITS
  - 8 --- GRADING LIMITS
  - HAUL ROUTE CENTERLINE
  - 10 --- EXIST. MAJOR CONTOUR LINE
  - DIRECTION OF SURFACE RUNOFF
  - BOTTOM OF SLOPE
  - TOP OF SLOPE



REVISION NO.	SYM.	DESCRIPTION	SHT./OF	DATE	APPROVED
STATE OF HAWAII DEPARTMENT OF LAND AND NATURAL RESOURCES DIVISION OF BOATING AND OCEAN RECREATION <b>POHOIKI BOAT RAMP            DREDGING AND EXCAVATION            OF VOLCANIC DEBRIS</b> GRADING PLAN 1					
EXP. DATE: 04/30/2024 DESIGNED: TV DRAWN: IE CHECKED: KK APPROVED:					
THIS WORK WAS PREPARED BY ME OR UNDER MY CLOSE PERSONAL SUPERVISION AND THE PROJECT WILL BE UNDER MY OBSERVATION.					
SUBMITTED: JULY 2023 DATE: JULY 2023 SCALE: 1"=50' DRAWING NO. <b>C06</b>					
Signature: _____ Date: _____ CHIEF ENGINEER					

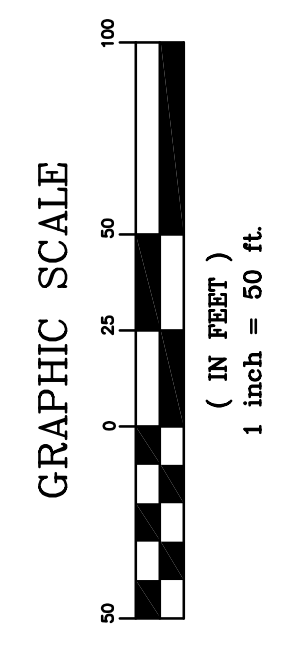


FOR CONTINUATION SEE SHEET C06

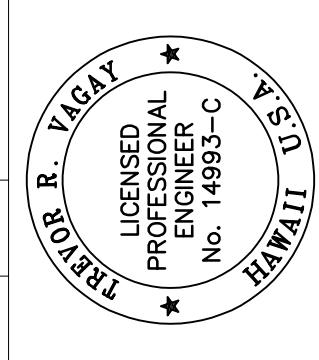
NOTES:  
 1. ELEVATIONS SHOWN USE THE LOCAL MEAN LOWER LOW WATER (MLLW) ELEVATION AS THEIR DATUM.

LEGEND	DESCRIPTION
---	EXIST. MINOR CONTOUR LINE
---	NEW MAJOR CONTOUR LINE
---	NEW MINOR CONTOUR LINE
---	DIRECTION OF SURFACE RUNOFF
---	BOTTOM OF SLOPE
---	TOP OF SLOPE
---	PROPERTY LINE
---	PROJECT LIMITS
---	GRADING LIMITS
---	HAUL ROUTE CENTERLINE
---	EXIST. MAJOR CONTOUR LINE

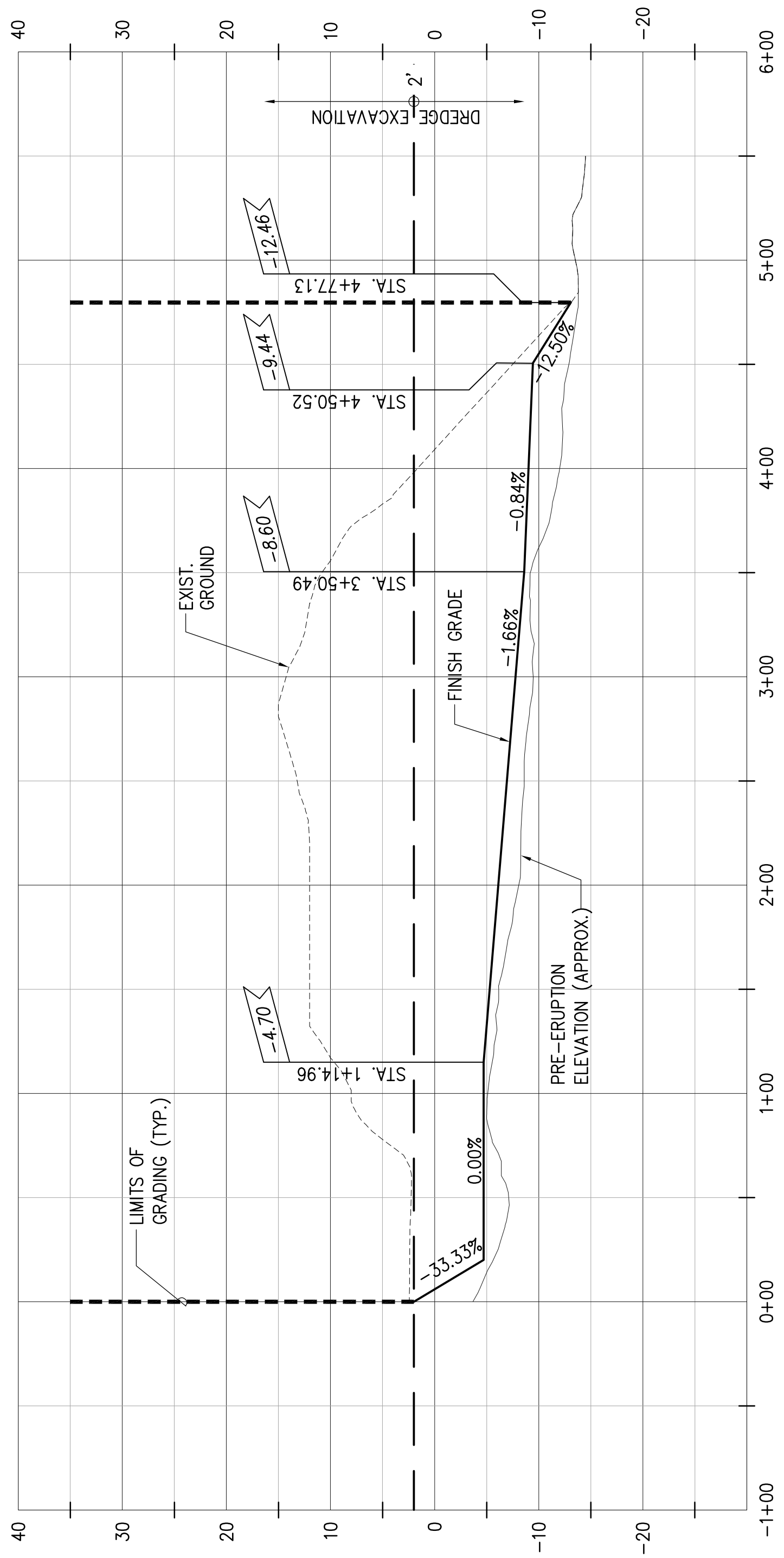
**GRADING PLAN 2**  
 SCALE: 1"=50'



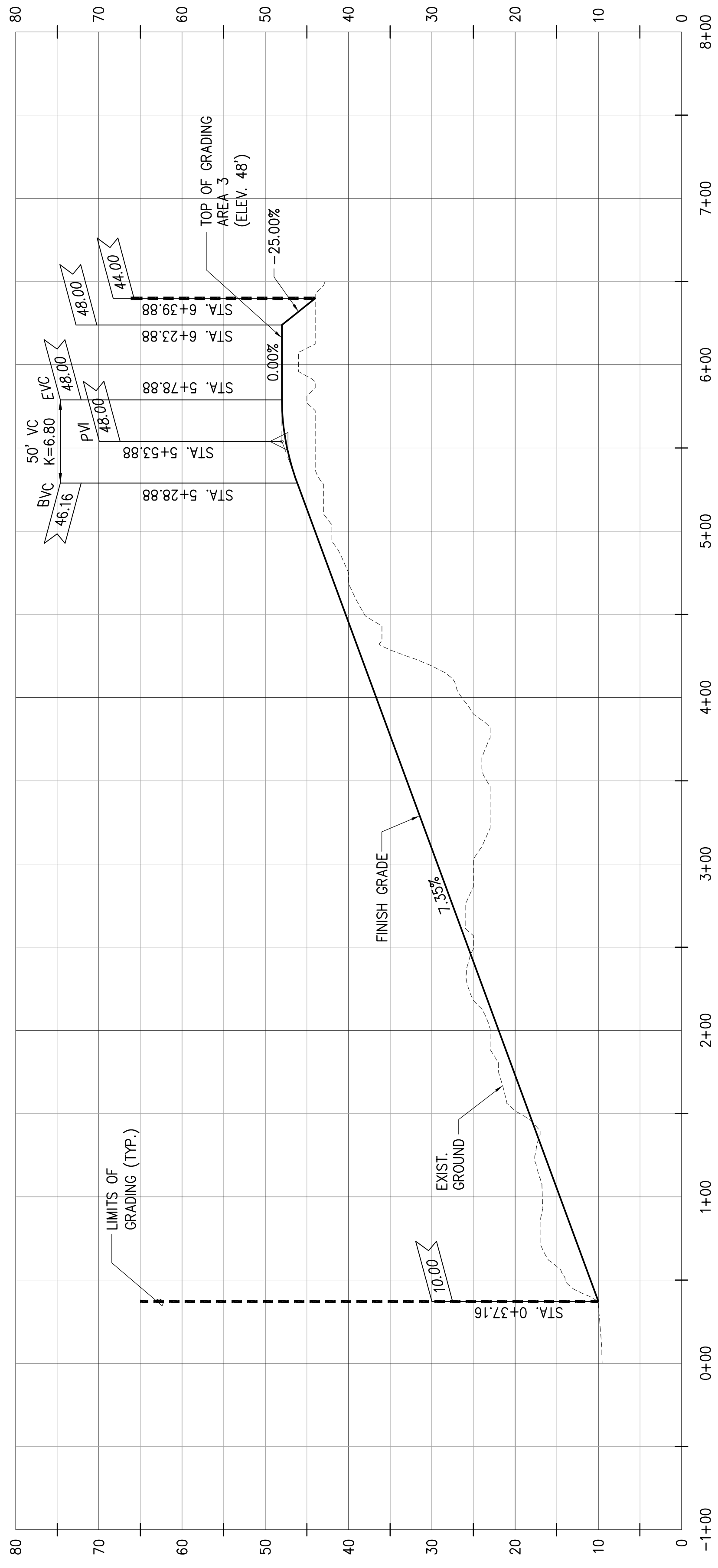
REVISION NO.	SYM.	DESCRIPTION	SHT. OF	DATE	APPROVED
STATE OF HAWAII DEPARTMENT OF LAND AND NATURAL RESOURCES DIVISION OF BOATING AND OCEAN RECREATION					
POHOIKI BOAT RAMP DREDGING AND EXCAVATION OF VOLCANIC DEBRIS					
GRADING PLAN 2					
DESIGNED: TV					
DRAWN: IE					
CHECKED: KK					
APPROVED:					
EXP. DATE: 04/30/2024					
SUBMITTED: JULY 2023					
DATE: JULY 2023					
SCALE: 1"=50'					
DRAWING NO. <b>C07</b>					
Signature: _____ Date: _____					
CHIEF ENGINEER					



THIS WORK WAS PREPARED BY ME OR UNDER MY CLOSE PERSONAL SUPERVISION AND I AM AWARE OF THE CONTENTS AND I CERTIFY THAT THE PROJECT WILL BE UNDER MY OBSERVATION.



CHANNEL BASELINE PROFILE VIEW  
 SCALE: HORIZONTAL 1"=50'  
 VERTICAL 1"=10'



HAUL ROAD BASELINE PROFILE VIEW  
 SCALE: HORIZONTAL 1"=50'  
 VERTICAL 1"=10'

REVISION NO.	SYM.	DESCRIPTION	SHT. OF	DATE	APPROVED

STATE OF HAWAII	
DEPARTMENT OF LAND AND NATURAL RESOURCES	
DIVISION OF BOATING AND OCEAN RECREATION	
POHOIKI BOAT RAMP	
DREDGING AND EXCAVATION	
OF VOLCANIC DEBRIS	
CHANNEL AND HAUL ROAD	
PROFILES	

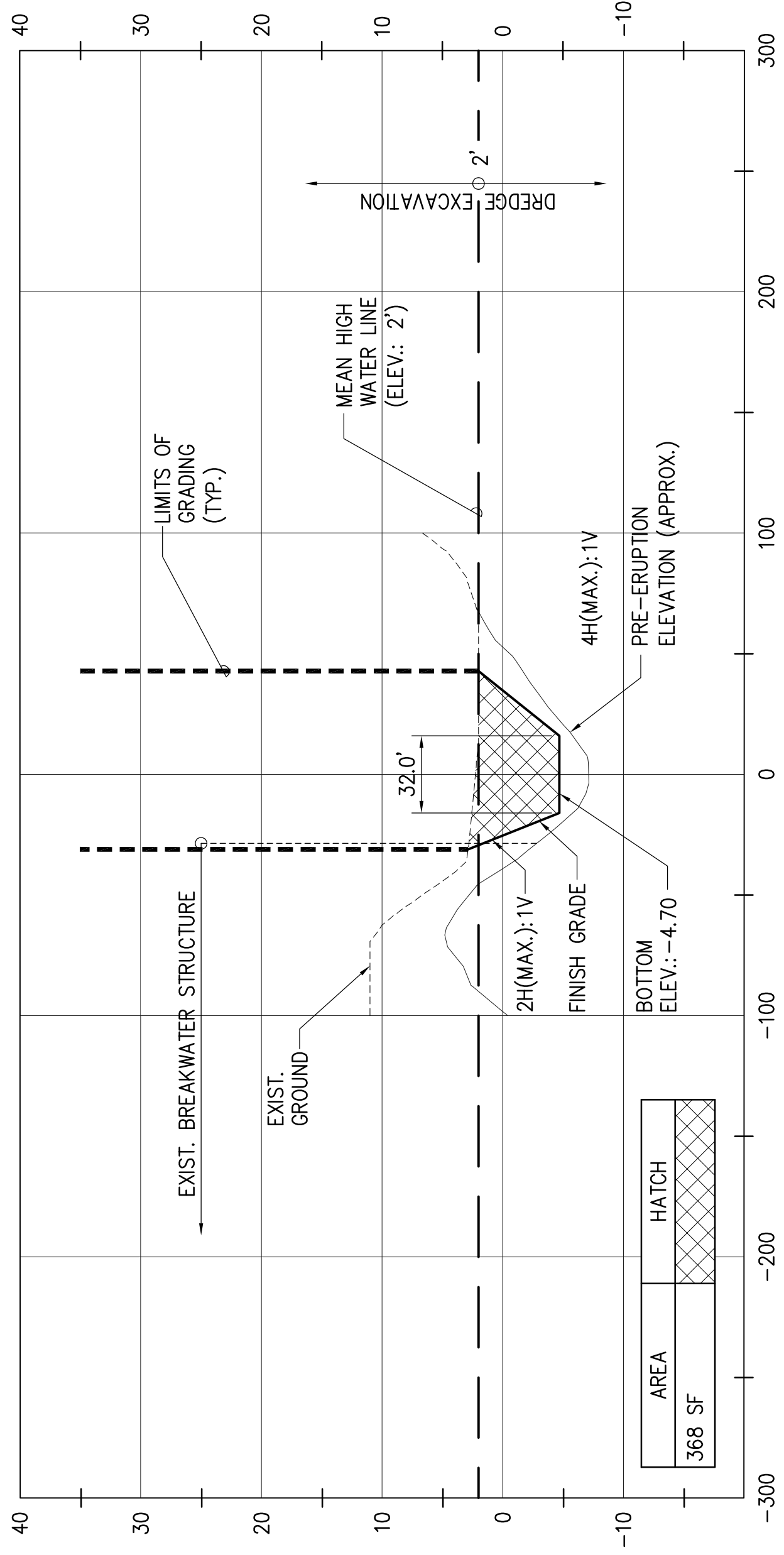
DESIGNED: TV	SUBMITTED: JULY 2023
DRAWN: IE	DATE: JULY 2023
CHECKED: KK	SCALE: AS NOTED
APPROVED:	DRAWING NO. <b>C08</b>
Signature _____	DATE _____
_____	_____
CHIEF ENGINEER	DATE

04/30/2024  
 EXP. DATE

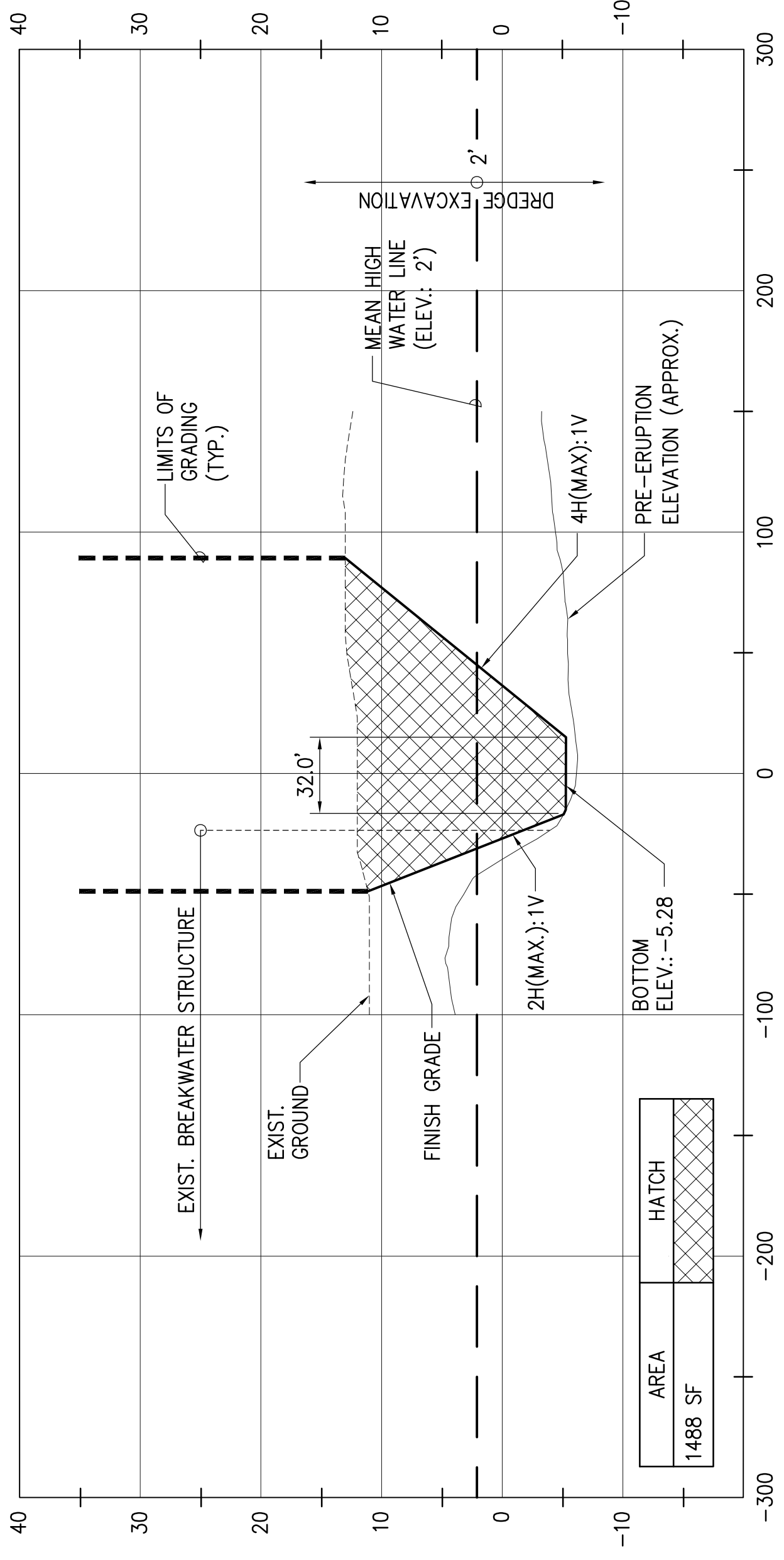
THIS WORK WAS PREPARED BY ME OR UNDER MY CLOSE PERSONAL SUPERVISION AND I AM A LICENSED PROFESSIONAL ENGINEER IN THE STATE OF HAWAII. MY PROJECT WILL BE UNDER MY OBSERVATION.

**FERRIS R. YAGNY**  
 LICENSED PROFESSIONAL ENGINEER  
 No. 14993-C  
 HAWAII



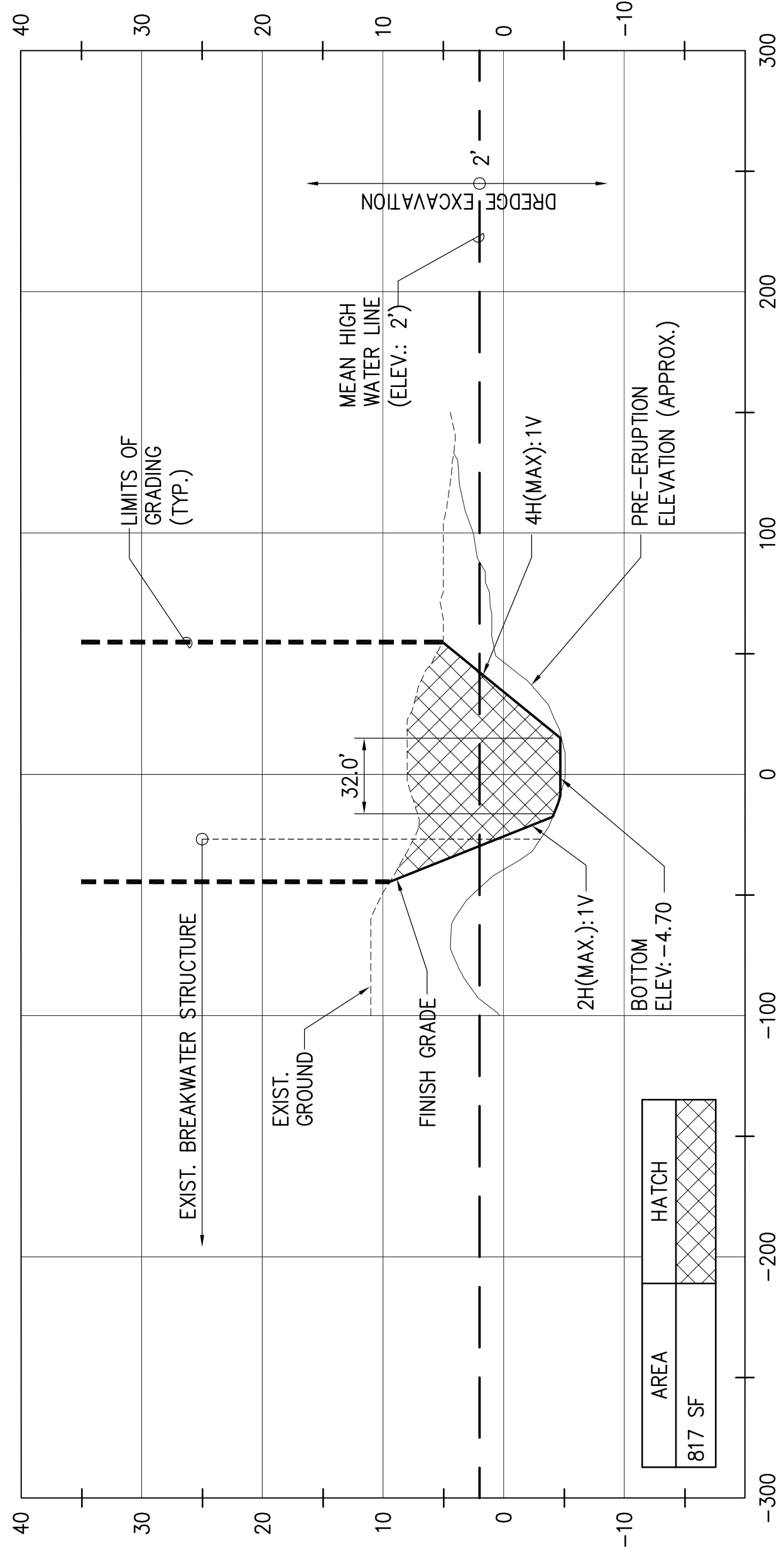
**CHANNEL BASELINE SECTION VIEW - STA. 0+50**

SCALE: HORIZ. 1"=50'  
VERT. 1"=10'



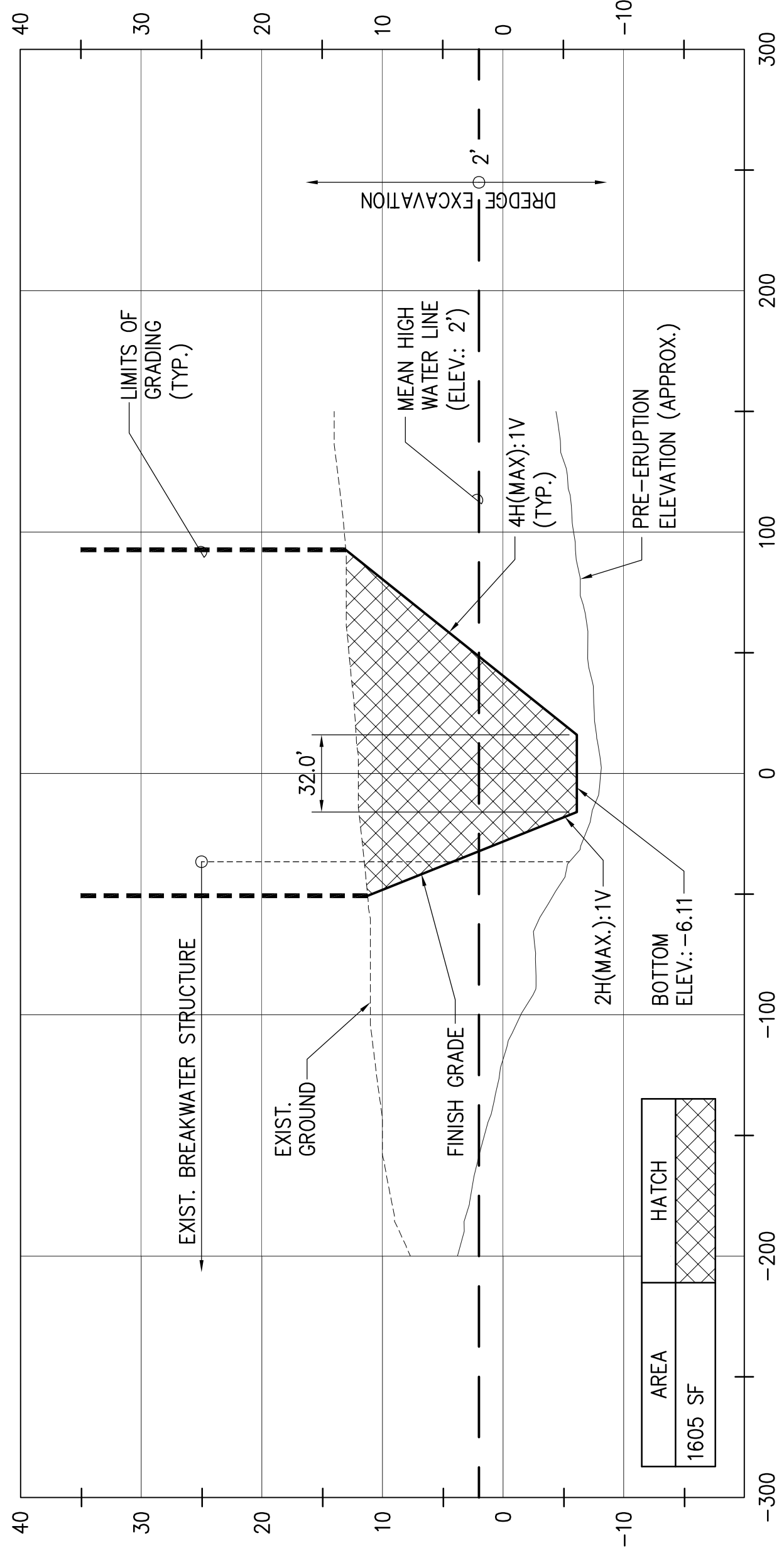
**CHANNEL BASELINE SECTION VIEW - STA. 1+50**

SCALE: HORIZ. 1"=50'  
VERT. 1"=10'



**CHANNEL BASELINE SECTION VIEW - STA. 1+00**

SCALE: HORIZ. 1"=50'  
VERT. 1"=10'



**CHANNEL BASELINE SECTION VIEW - STA. 2+00**

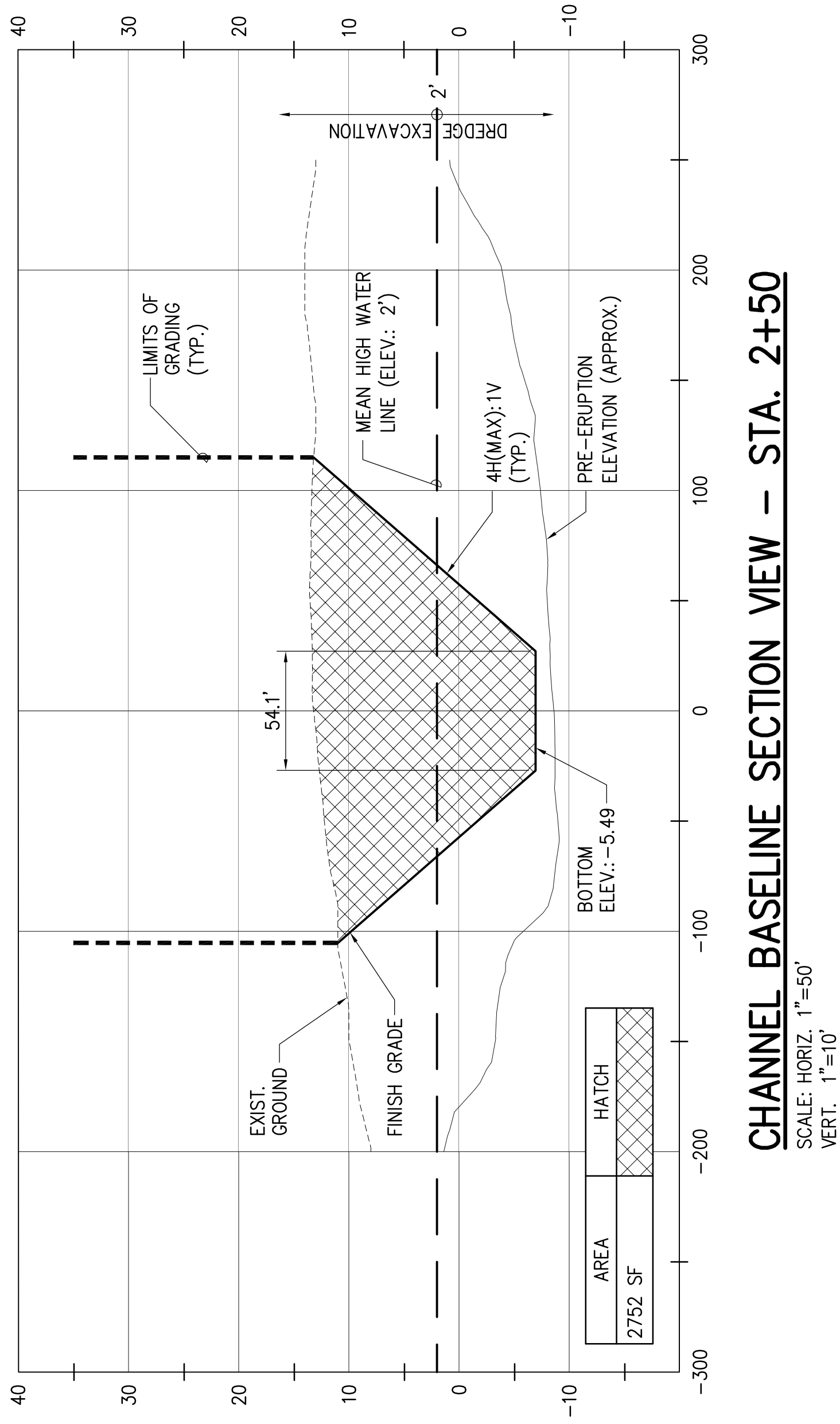
SCALE: HORIZ. 1"=50'  
VERT. 1"=10'

NOTE:  
1. ELEVATIONS SHOWN USE THE LOCAL MEAN LOWER LOW WATER (MLLW) ELEVATION AS THEIR DATUM.

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

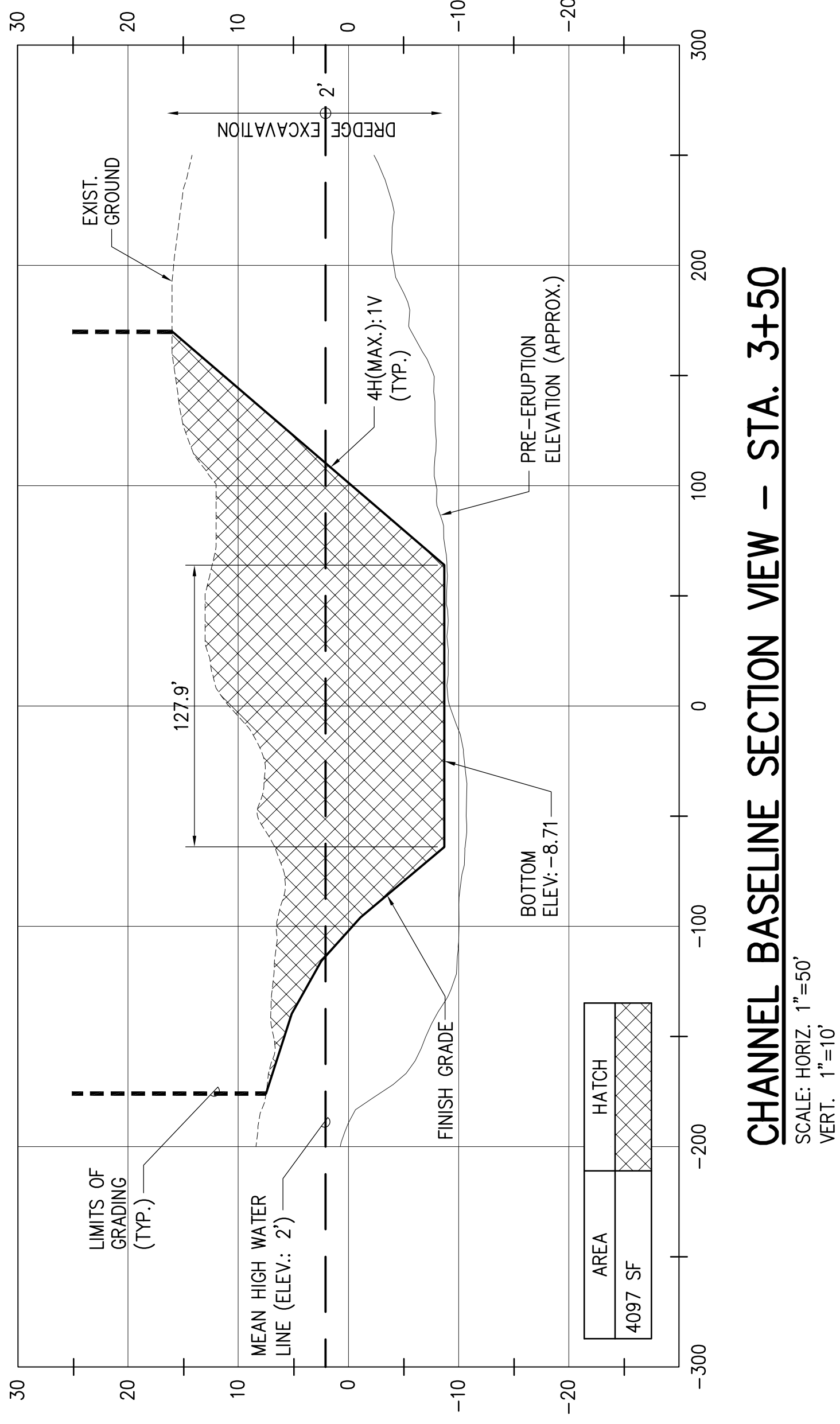
  

		STATE OF HAWAII DEPARTMENT OF LAND AND NATURAL RESOURCES DIVISION OF BOATING AND OCEAN RECREATION
EXP. DATE 04/30/2024		POHOIKI BOAT RAMP DREDGING AND EXCAVATION OF VOLCANIC DEBRIS
SECTION VIEWS 1		
DESIGNED: TV	SUBMITTED: JULY 2023	
DRAWN: IE	DATE: JULY 2023	
CHECKED: KK	SCALE: AS NOTED	
APPROVED:		DRAWING NO. <b>C09</b>
Signature	Date	DATE



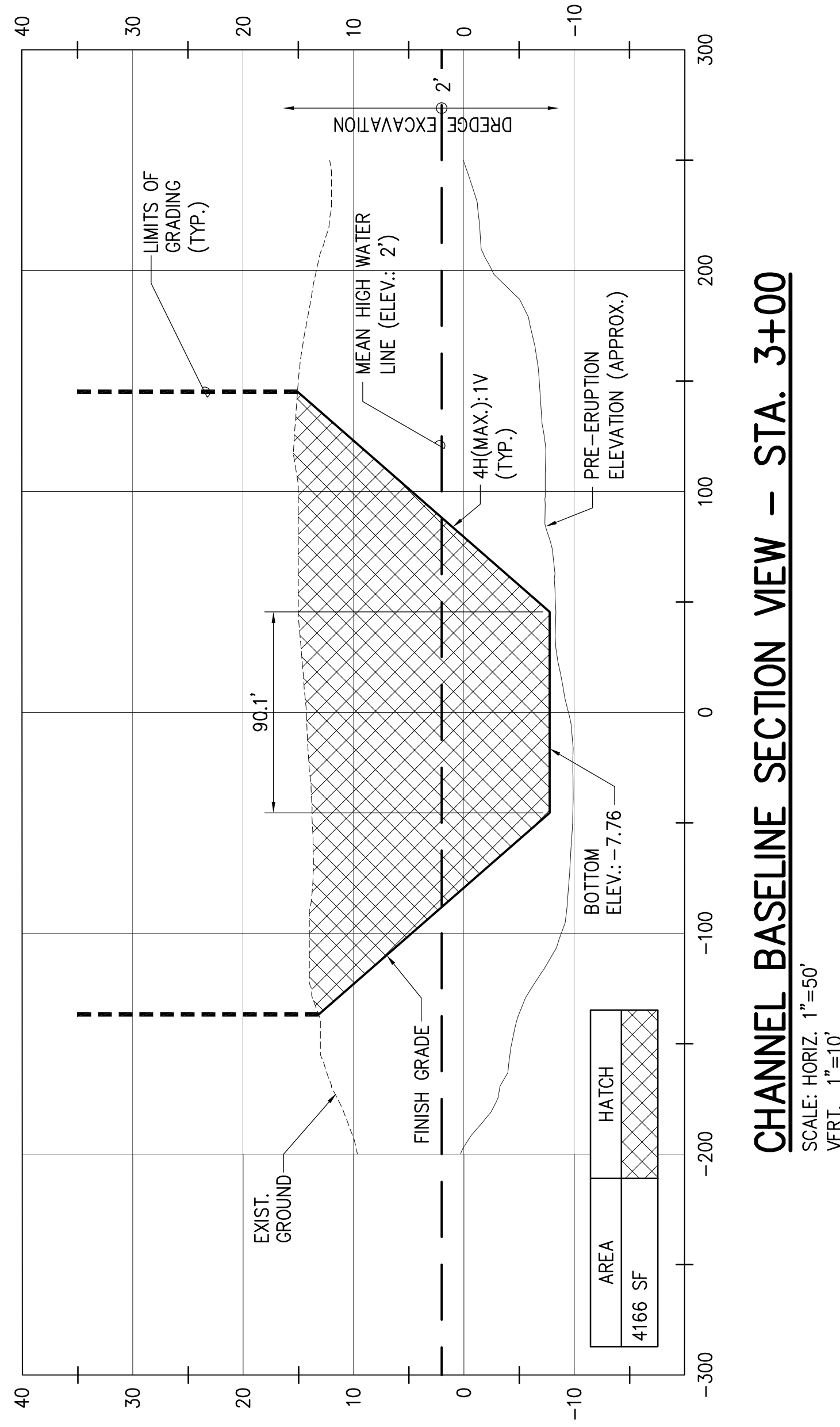
**CHANNEL BASELINE SECTION VIEW - STA. 2+50**

SCALE: HORIZ. 1"=50'  
VERT. 1"=10'



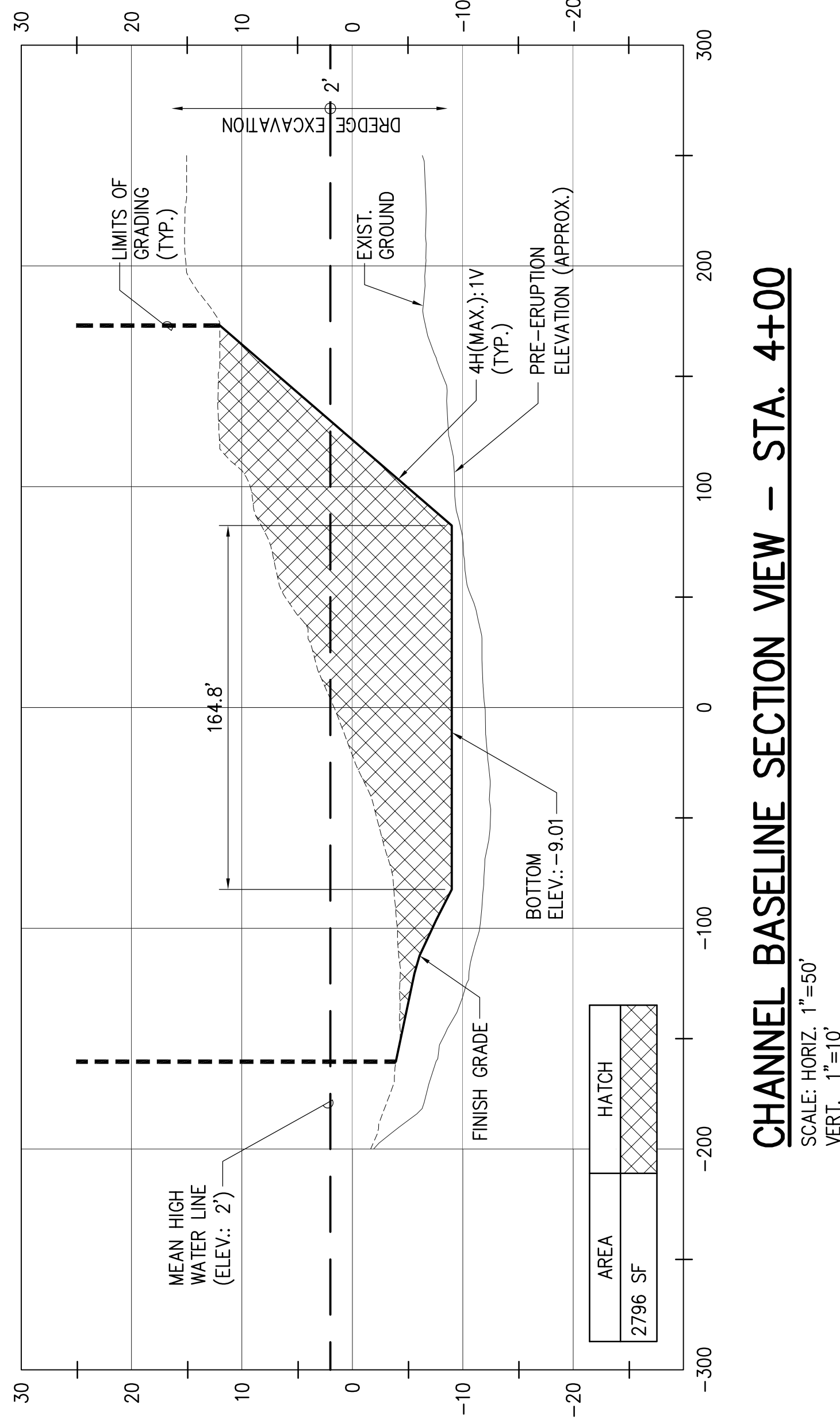
**CHANNEL BASELINE SECTION VIEW - STA. 3+50**

SCALE: HORIZ. 1"=50'  
VERT. 1"=10'



**CHANNEL BASELINE SECTION VIEW - STA. 3+00**

SCALE: HORIZ. 1"=50'  
VERT. 1"=10'

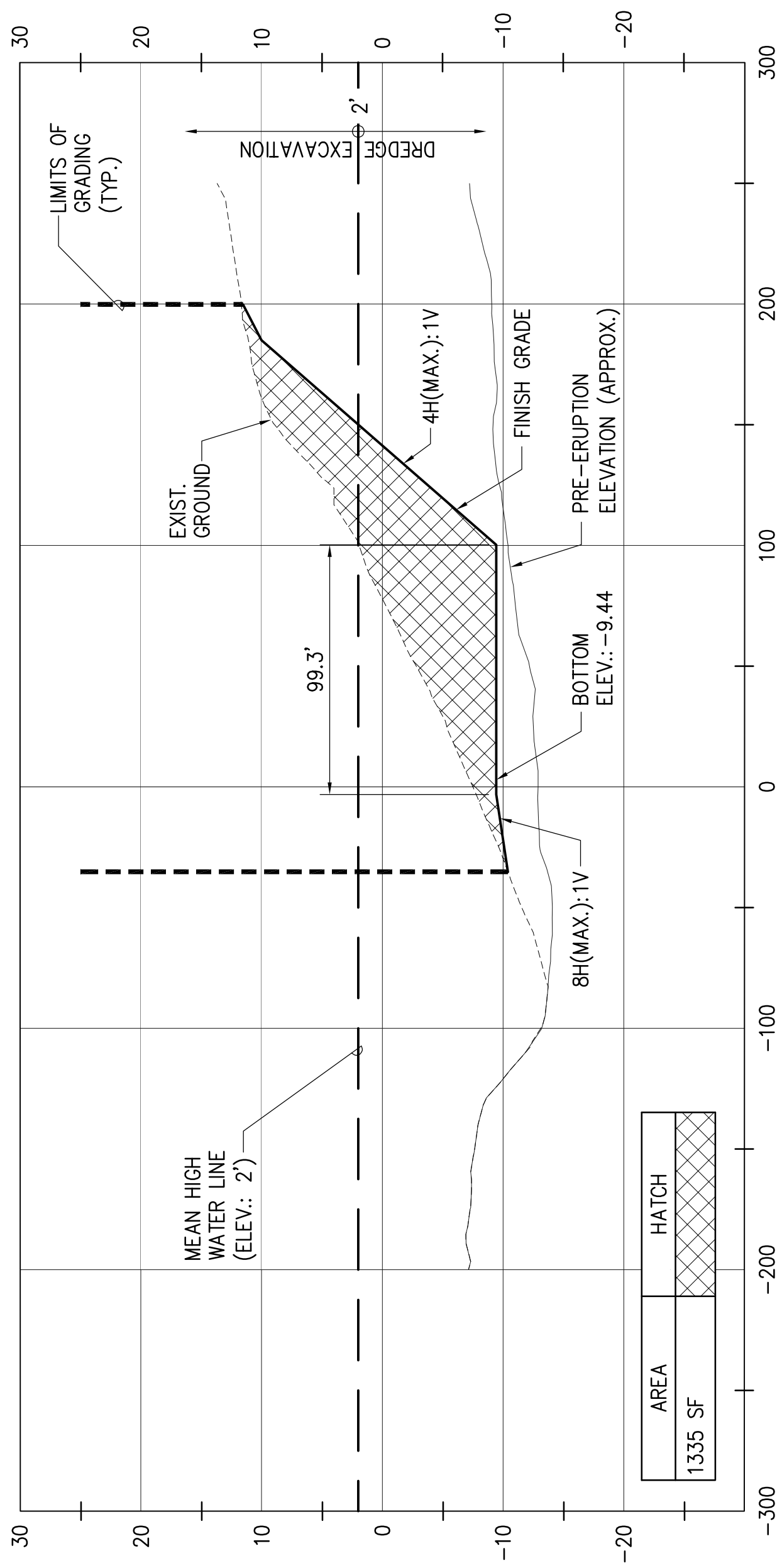


**CHANNEL BASELINE SECTION VIEW - STA. 4+00**

SCALE: HORIZ. 1"=50'  
VERT. 1"=10'

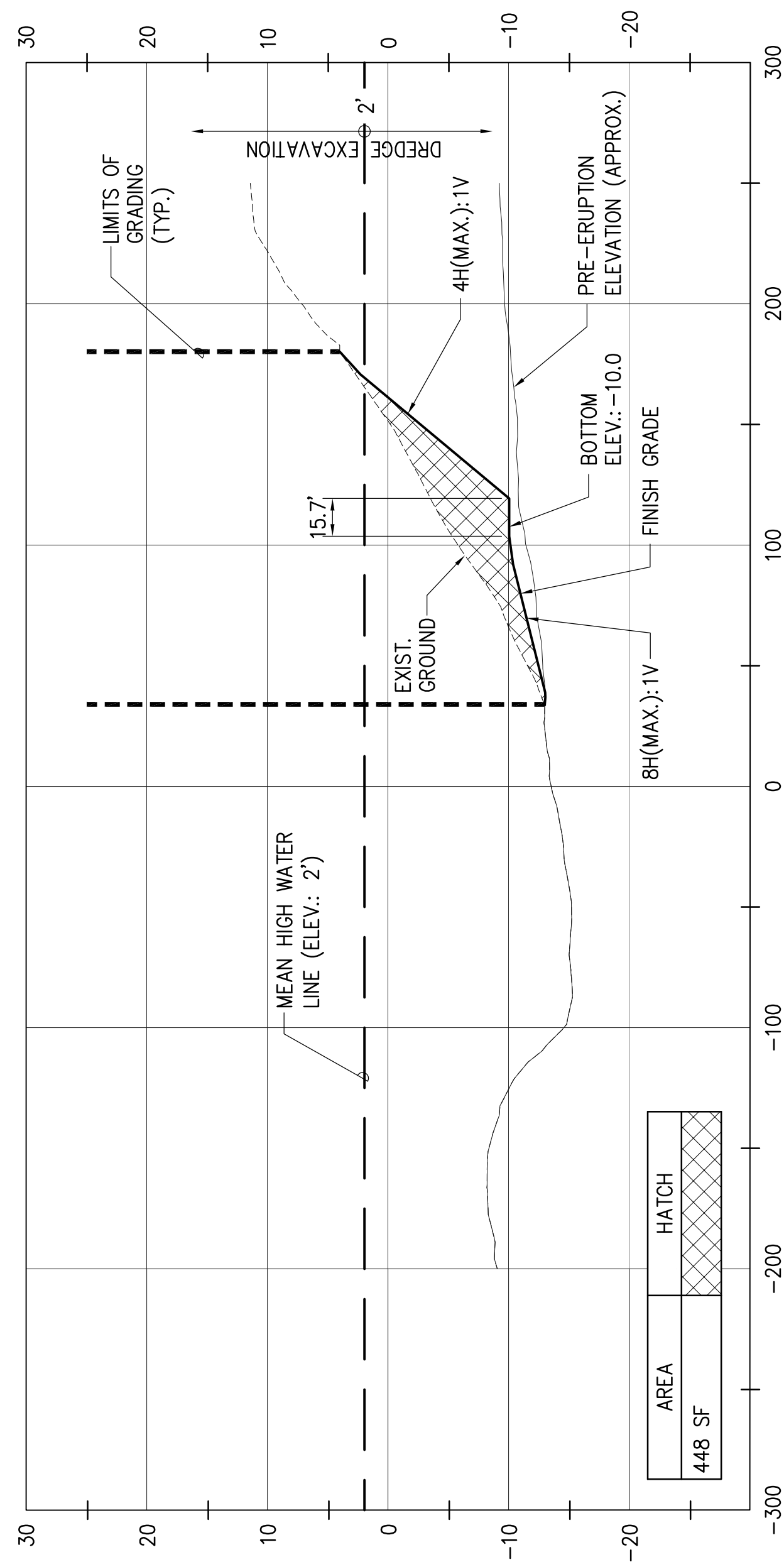
NOTE:  
1. ELEVATIONS SHOWN USE THE LOCAL MEAN LOWER LOW WATER (MLLW) ELEVATION AS THEIR DATUM.

REVISION NO.	SYM.	DESCRIPTION	SHT./OF	DATE	APPROVED
STATE OF HAWAII DEPARTMENT OF LAND AND NATURAL RESOURCES DIVISION OF BOATING AND OCEAN RECREATION <b>POHOIKI BOAT RAMP            DREDGING AND EXCAVATION            OF VOLCANIC DEBRIS</b> SECTION VIEWS 2					
EXP. DATE: 04/30/2024 DESIGNED: TV DRAWN: IE CHECKED: KK APPROVED:					
SUBMITTED: JULY 2023 DATE: JULY 2023 SCALE: AS NOTED DRAWING NO. <b>C10</b>					
THIS WORK WAS PREPARED BY ME OR UNDER MY CLOSE PERSONAL SUPERVISION AND I AM A duly Licensed Professional Engineer. PROJECT WILL BE UNDER MY OBSERVATION.					
Signature: _____ Date: _____ CHIEF ENGINEER					



**CHANNEL BASELINE SECTION VIEW - STA. 4+50**

SCALE: HORIZ. 1"=50'  
VERT. 1"=10'

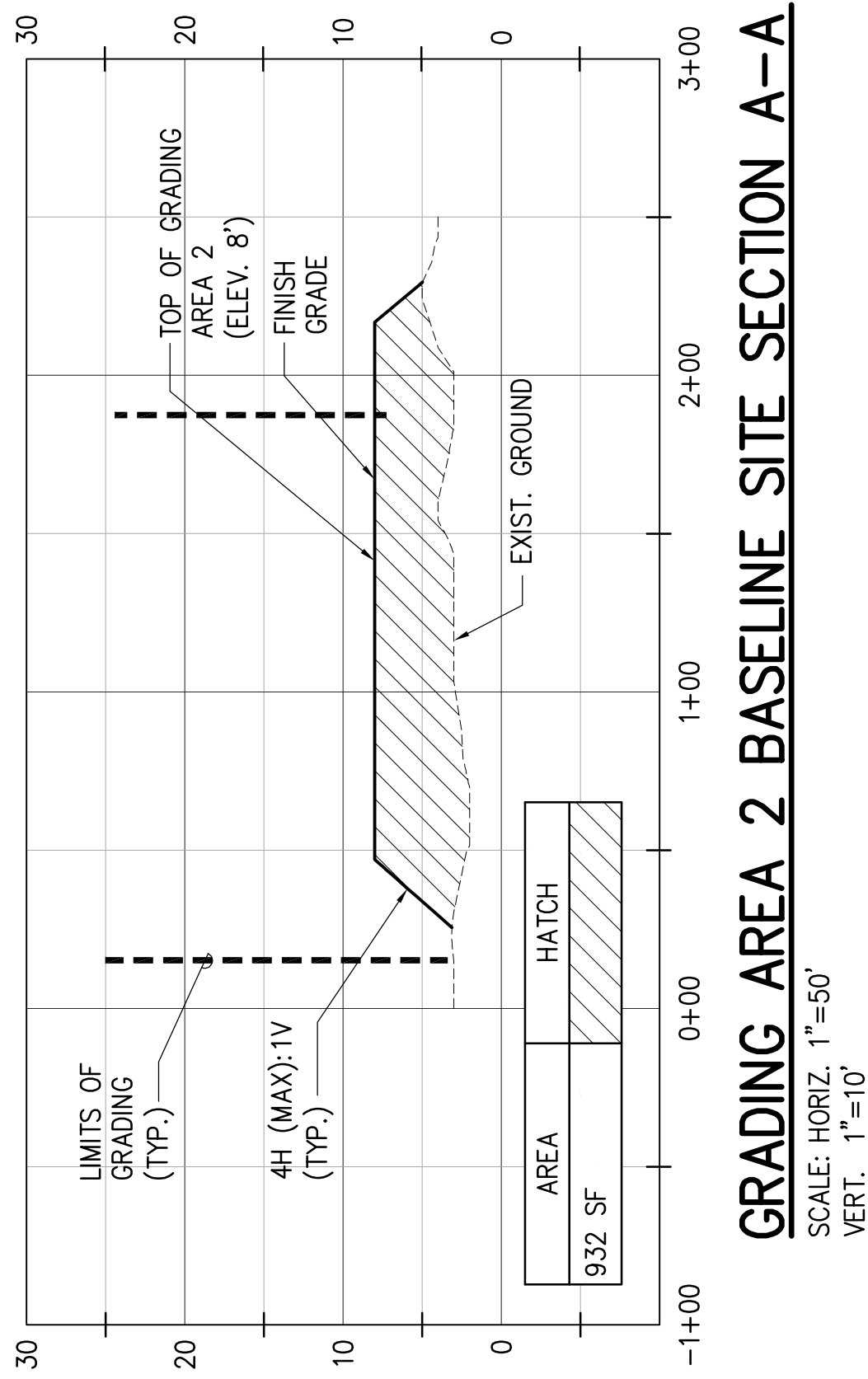


**CHANNEL BASELINE SECTION VIEW - STA. 5+00**

SCALE: HORIZ. 1"=50'  
VERT. 1"=10'

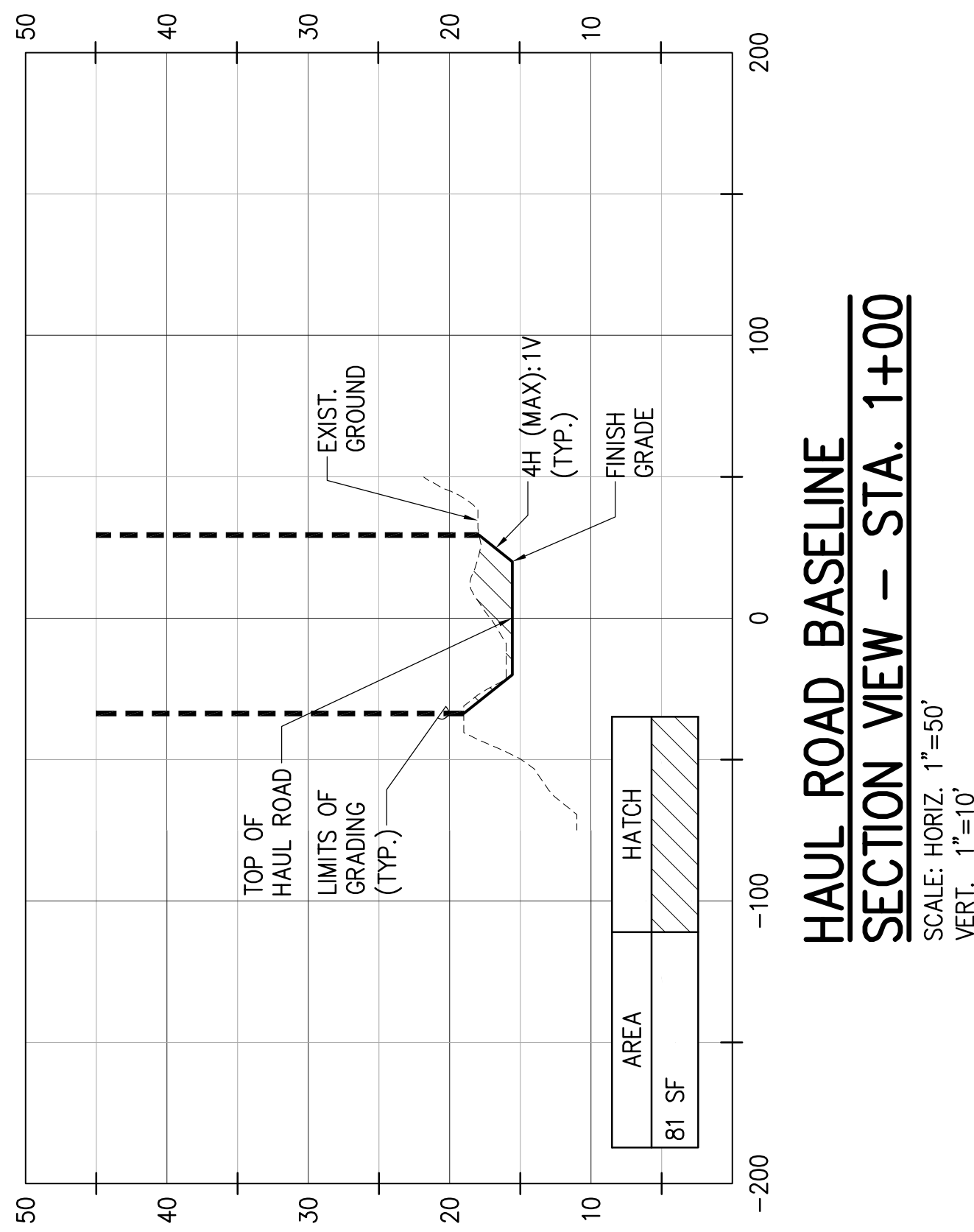
NOTE:  
1. ELEVATIONS SHOWN USE THE LOCAL MEAN LOWER LOW WATER (MLLW) ELEVATION AS THEIR DATUM.

REVISION NO.	SYM.	DESCRIPTION	SHT. OF	DATE	APPROVED
STATE OF HAWAII DEPARTMENT OF LAND AND NATURAL RESOURCES DIVISION OF BOATING AND OCEAN RECREATION <b>POHOIKI BOAT RAMP            DREDGING AND EXCAVATION            OF VOLCANIC DEBRIS</b> SECTIONS VIEWS 3					
DESIGNED: TV DRAWN: IE CHECKED: KK APPROVED:					
SUBMITTED: JULY 2023 DATE: JULY 2023 SCALE: AS NOTED					
EXP. DATE: 04/30/2024 <small>THIS WORK WAS PREPARED BY ME OR UNDER MY CLOSE PERSONAL SUPERVISION AND THE PROJECT WILL BE UNDER MY OBSERVATION.</small>					
Signature _____					DATE _____
CHIEF ENGINEER _____					DRAWING NO. <b>C11</b>



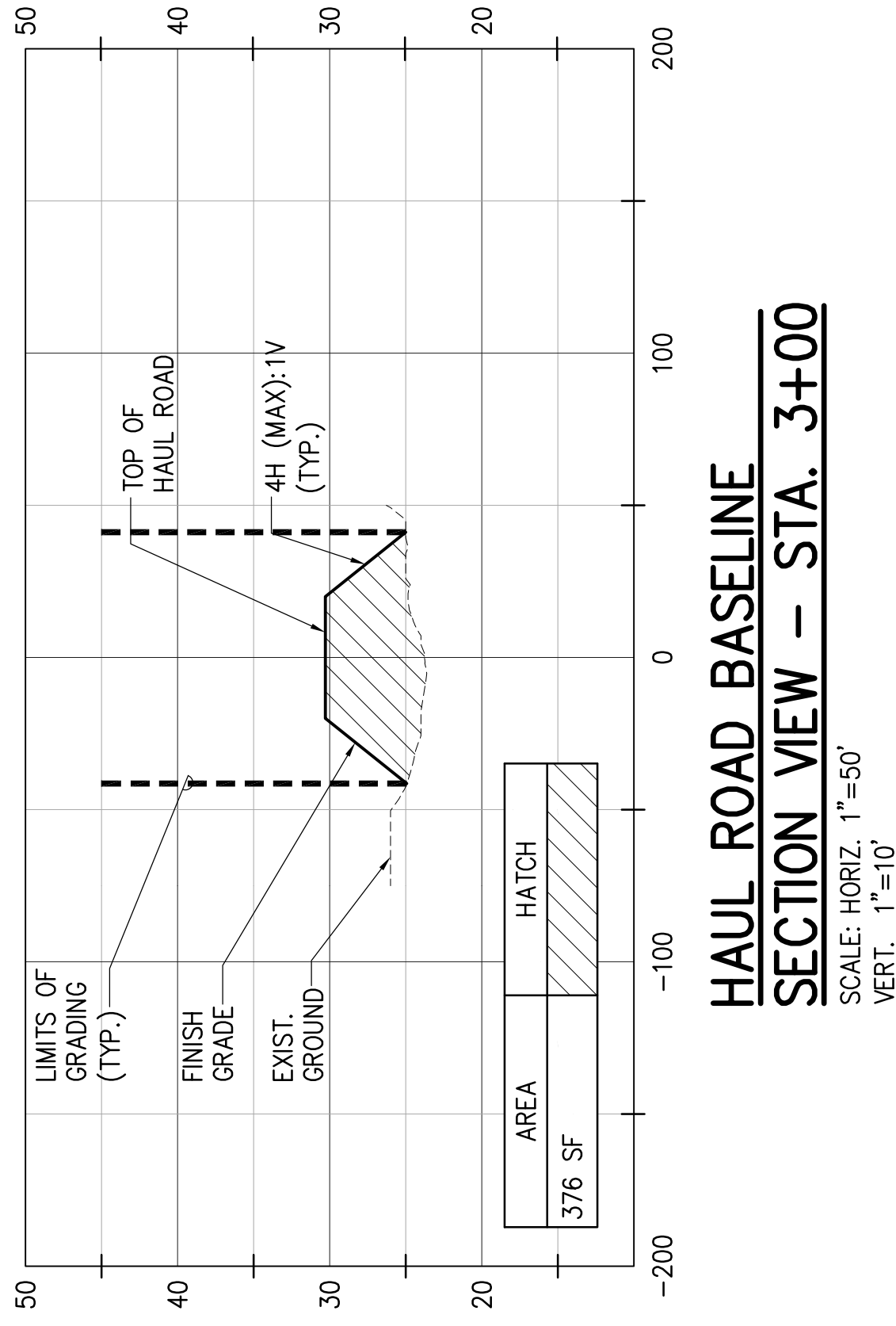
**GRADING AREA 2 BASELINE SITE SECTION A-A**

SCALE: HORIZ. 1"=50'  
VERT. 1"=10'



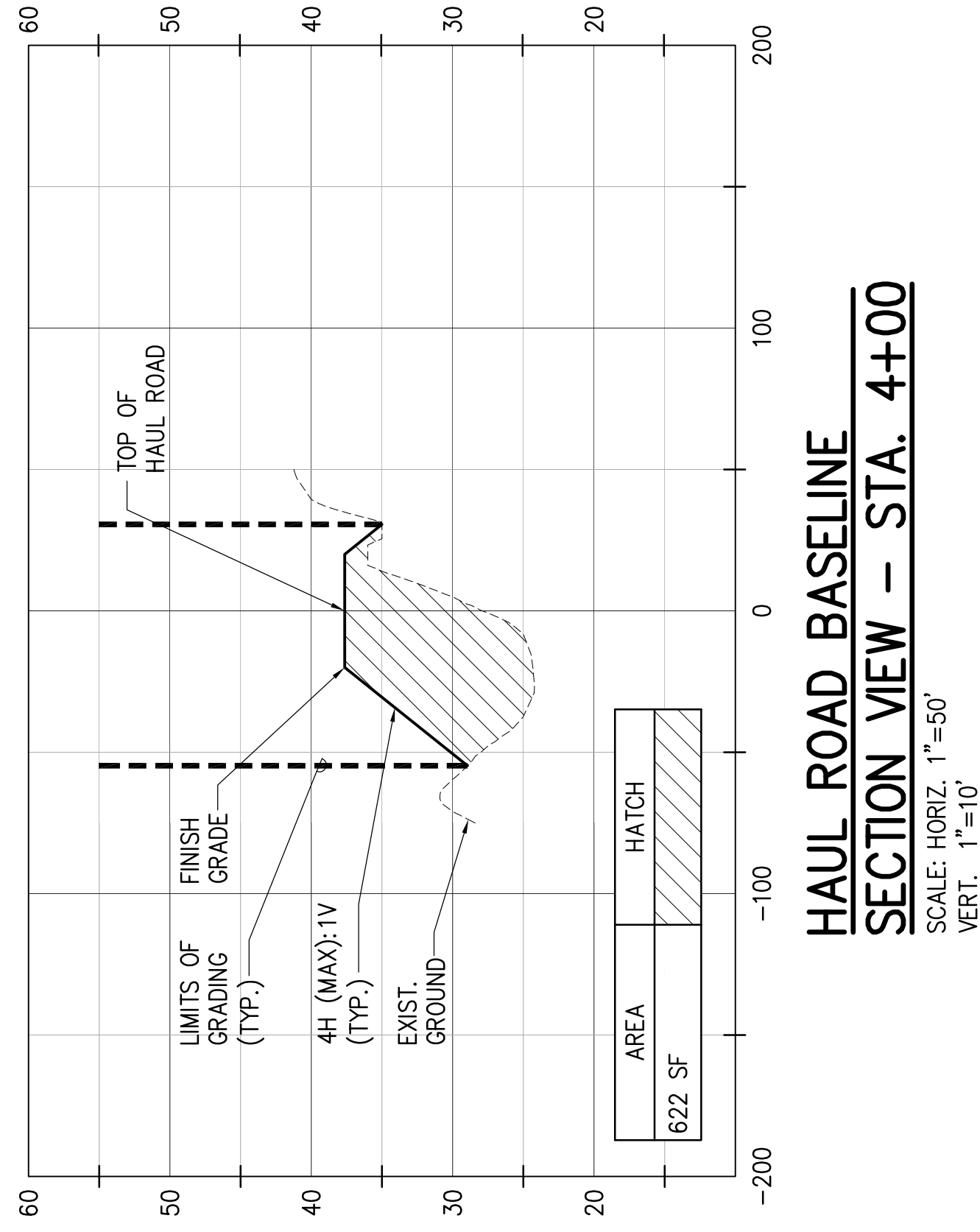
**HAUL ROAD BASELINE SECTION VIEW - STA. 1+00**

SCALE: HORIZ. 1"=50'  
VERT. 1"=10'



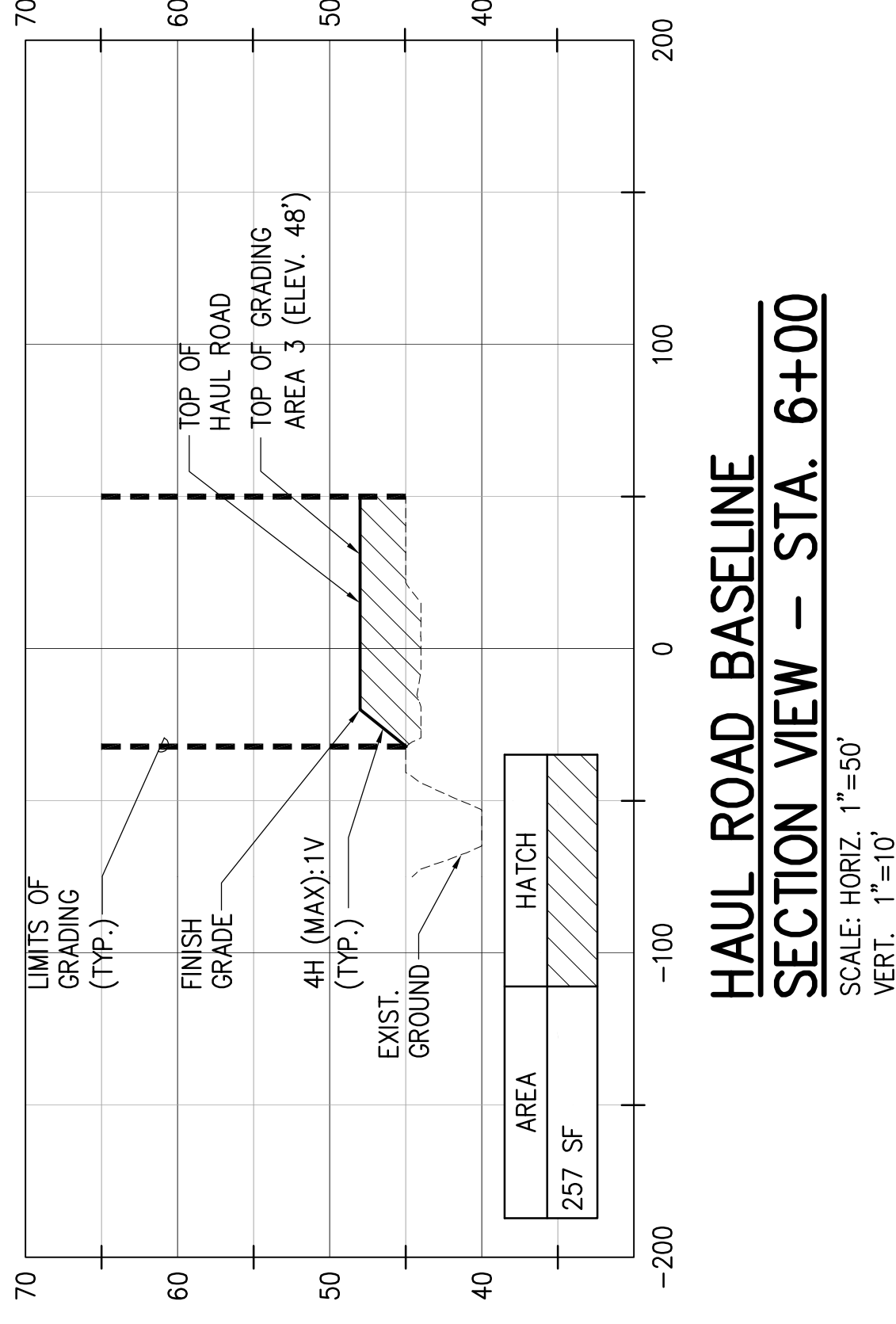
**HAUL ROAD BASELINE SECTION VIEW - STA. 3+00**

SCALE: HORIZ. 1"=50'  
VERT. 1"=10'



**HAUL ROAD BASELINE SECTION VIEW - STA. 4+00**

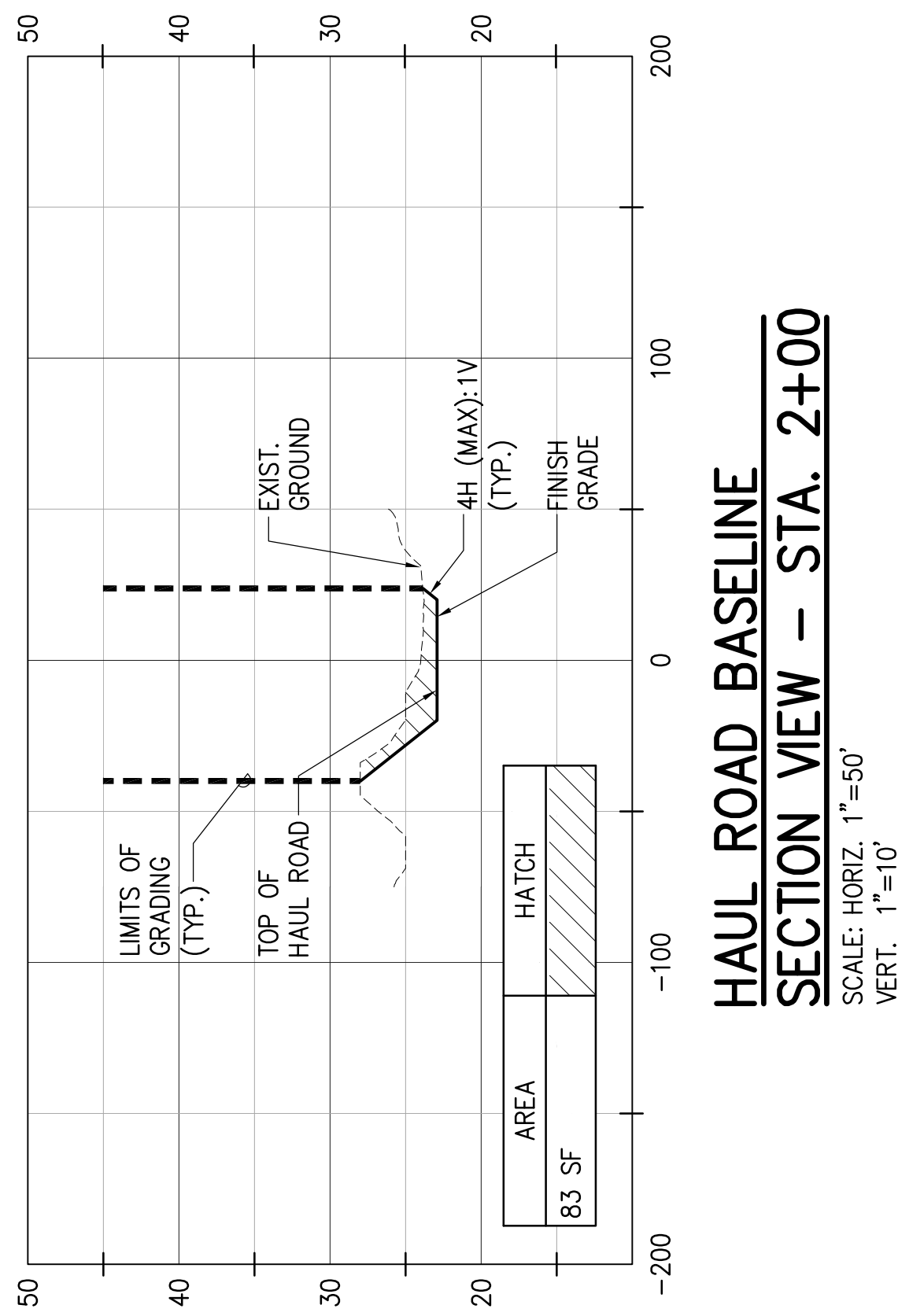
SCALE: HORIZ. 1"=50'  
VERT. 1"=10'



**HAUL ROAD BASELINE SECTION VIEW - STA. 6+00**

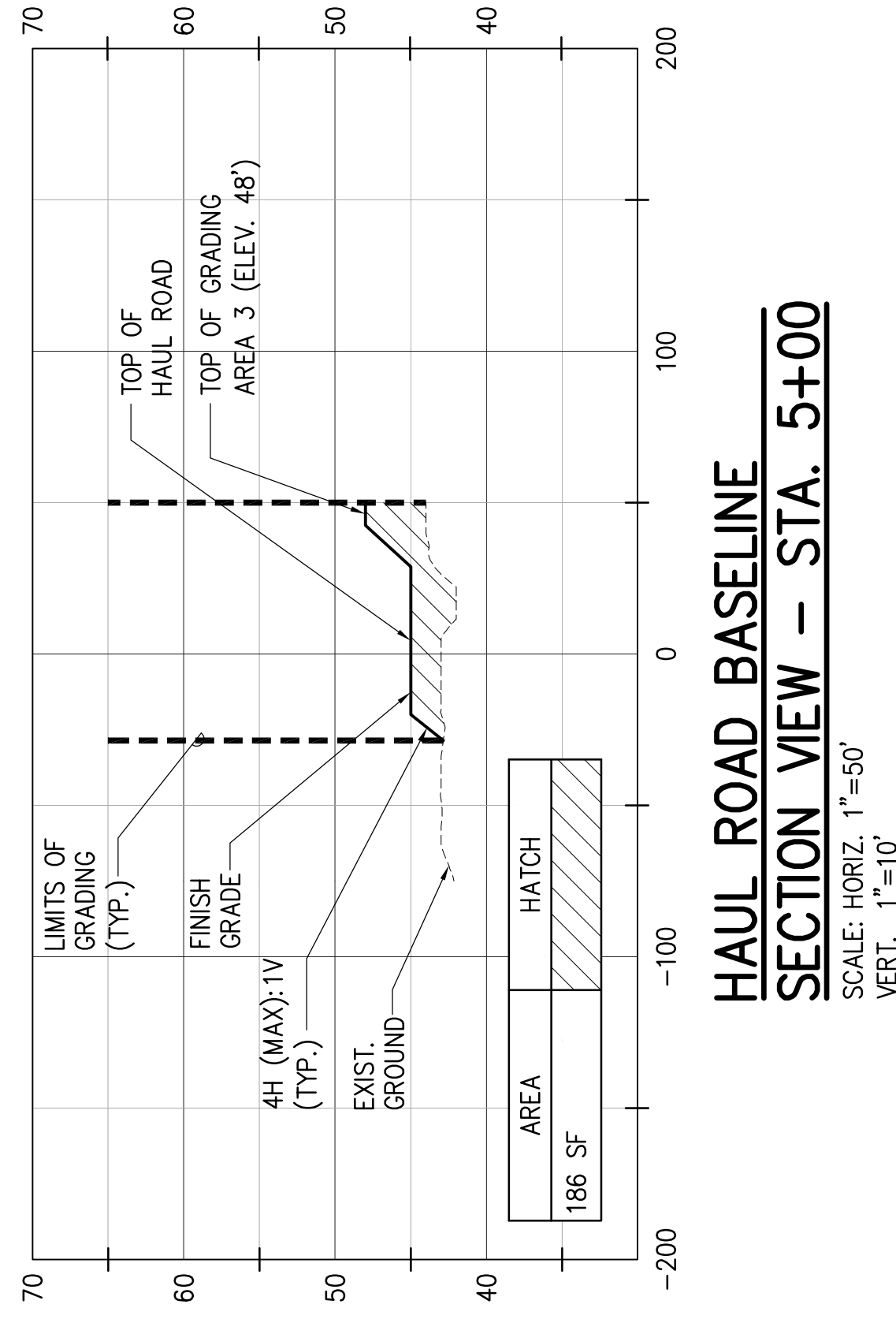
SCALE: HORIZ. 1"=50'  
VERT. 1"=10'

NOTE:  
1. ELEVATIONS SHOWN USE THE LOCAL MEAN LOWER LOW WATER (MLLW) ELEVATION AS THEIR DATUM.



**HAUL ROAD BASELINE SECTION VIEW - STA. 2+00**

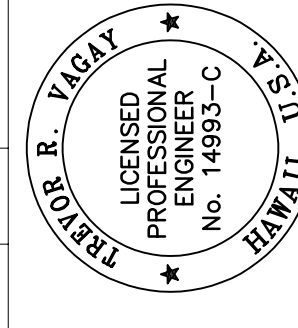
SCALE: HORIZ. 1"=50'  
VERT. 1"=10'



**HAUL ROAD BASELINE SECTION VIEW - STA. 5+00**

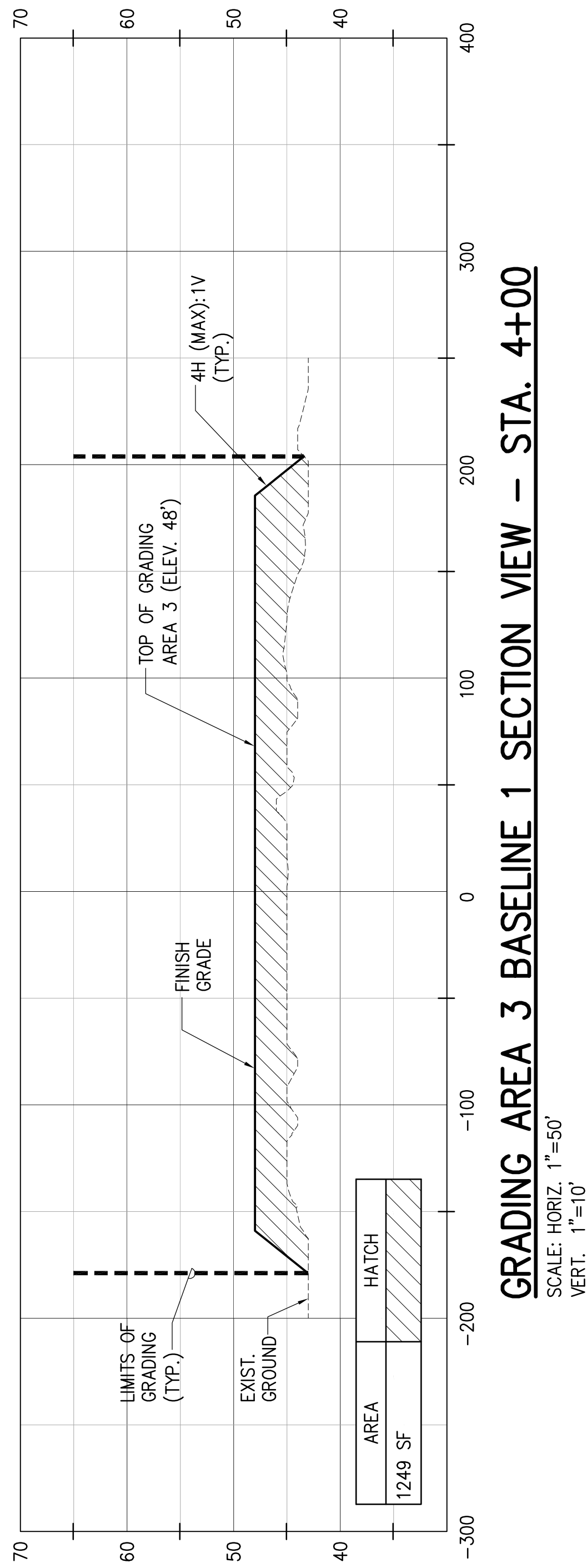
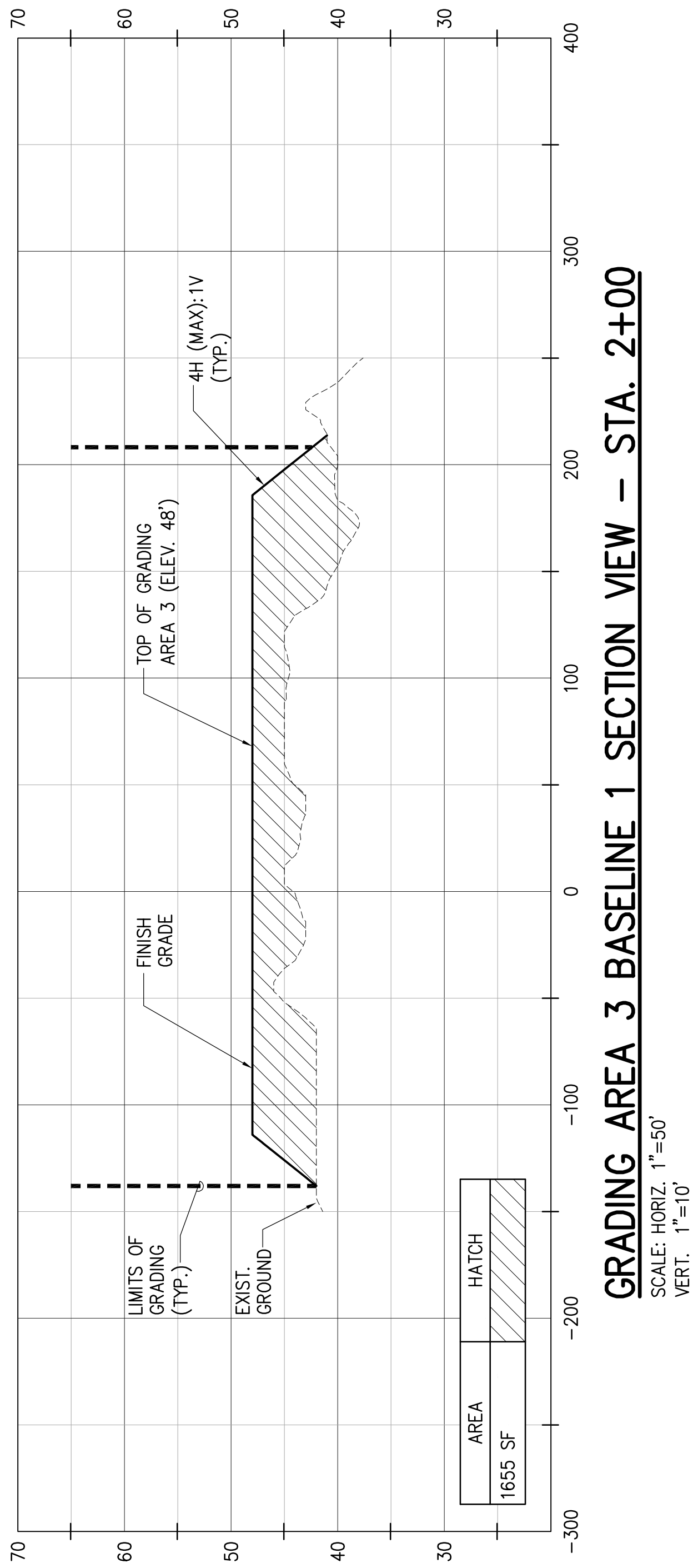
SCALE: HORIZ. 1"=50'  
VERT. 1"=10'

REVISION NO.	SYM.	DESCRIPTION	SHT. OF	DATE	APPROVED
STATE OF HAWAII DEPARTMENT OF LAND AND NATURAL RESOURCES DIVISION OF BOATING AND OCEAN RECREATION					
POHOIKI BOAT RAMP DREDGING AND EXCAVATION OF VOLCANIC DEBRIS					
SECTION VIEWS 4					
DESIGNED: TV			SUBMITTED: JULY 2023		
DRAWN: IE			DATE: JULY 2023		
CHECKED: KK			SCALE: AS NOTED		
APPROVED:			DRAWING NO.		
CHIEF ENGINEER			DATE		
Signature			Date		



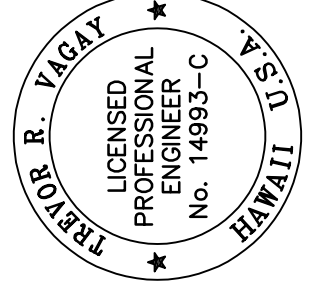
04/30/2024  
EXP. DATE

THIS WORK WAS PREPARED BY ME OR UNDER MY CLOSE PERSONAL SUPERVISION AND I AM A duly Licensed Professional Engineer. THE PROJECT WILL BE UNDER MY OBSERVATION.



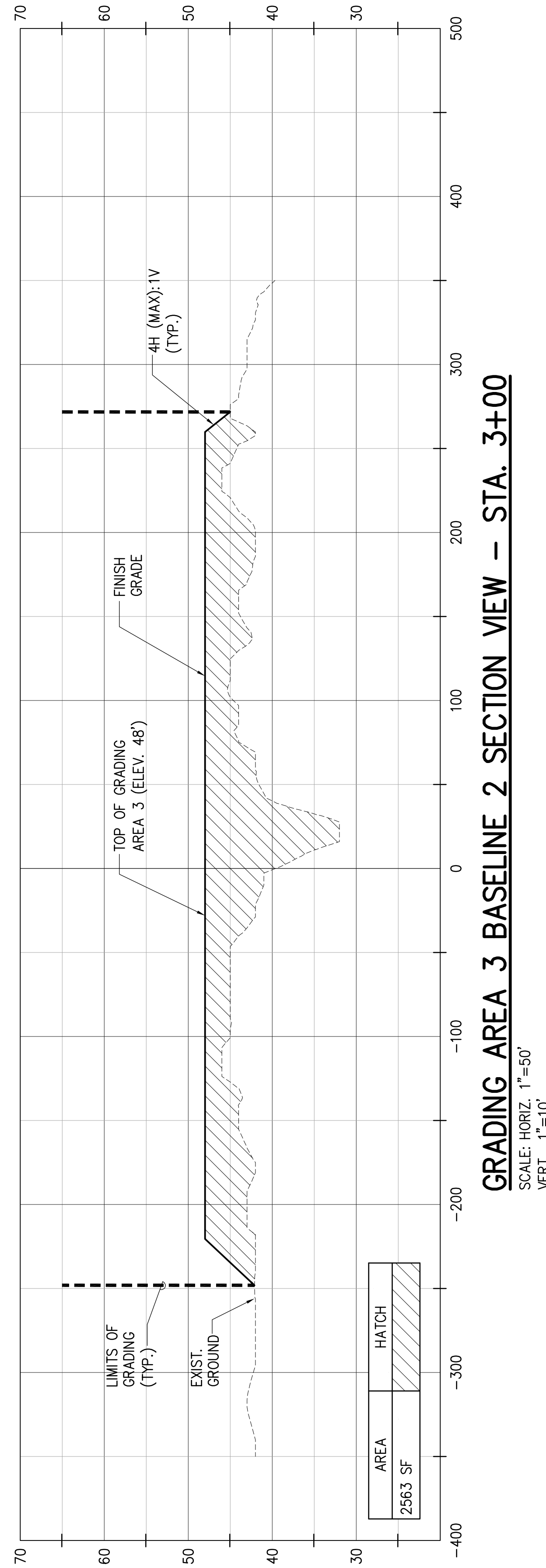
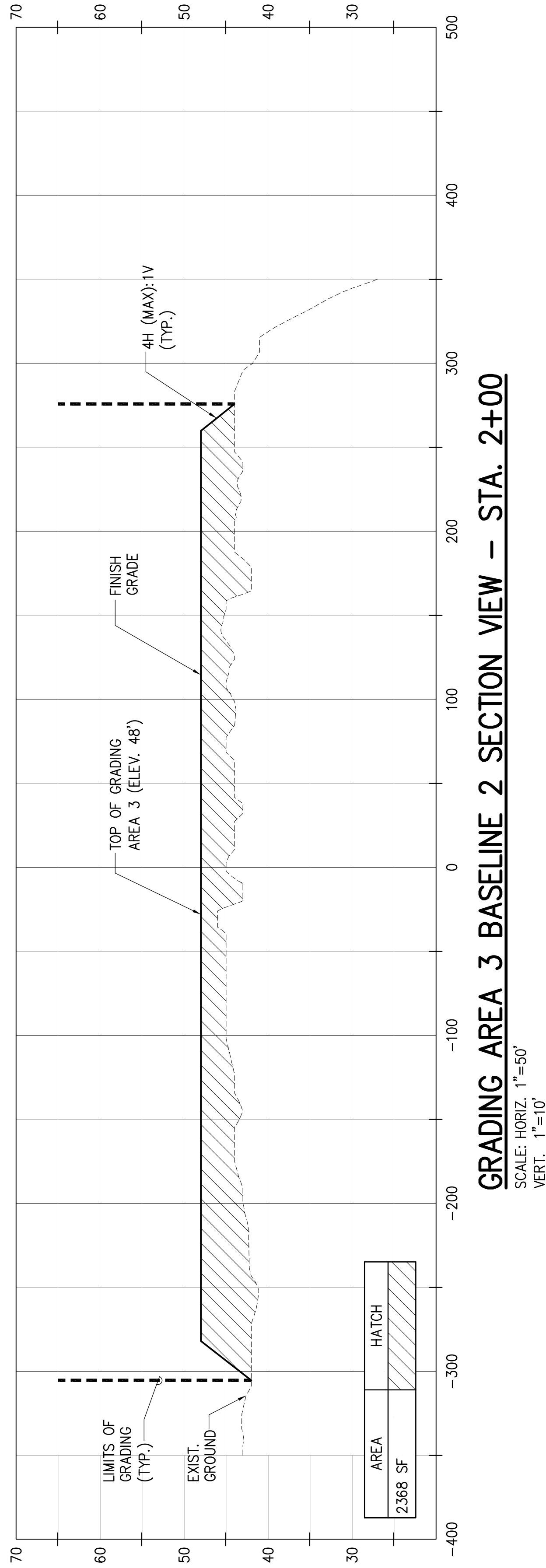
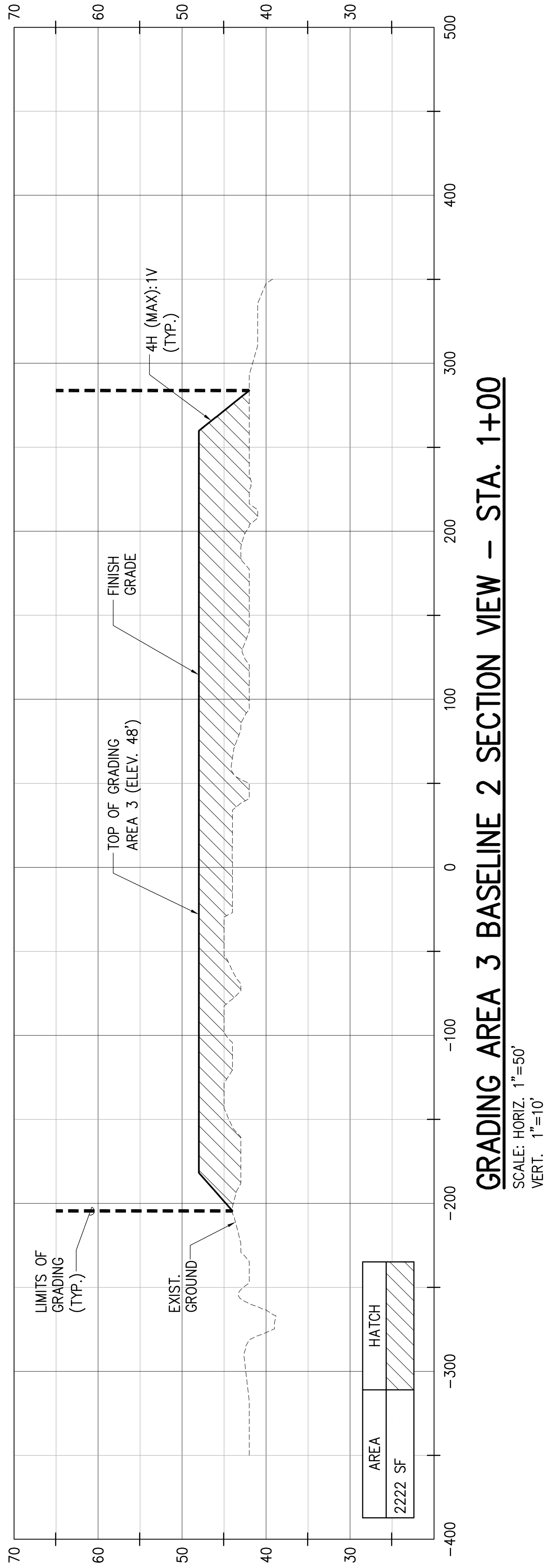
NOTE:  
 1. ELEVATIONS SHOWN USE THE LOCAL MEAN LOW WATER (MLLW) ELEVATION AS THEIR DATUM.

REVISION NO.	SYM.	DESCRIPTION	SHT. OF	DATE	APPROVED
		STATE OF HAWAII DEPARTMENT OF LAND AND NATURAL RESOURCES DIVISION OF BOATING AND OCEAN RECREATION POHOIKI BOAT RAMP DREDGING AND EXCAVATION OF VOLCANIC DEBRIS SECTION VIEWS 5			
		DESIGNED: TV		SUBMITTED: JULY 2023	
		DRAWN: IE		DATE: JULY 2023	
		CHECKED: KK		SCALE: AS NOTED	
		APPROVED:			DRAWING NO. <b>C13</b>
		Signature		Date	CHIEF ENGINEER



THIS WORK WAS PREPARED BY ME OR UNDER MY CLOSE PERSONAL SUPERVISION AND I AM AWARE THAT MY PROFESSIONAL REPUTATION AND THAT OF MY FIRM WILL BE UNDER MY OBSERVATION AND CONTROL.





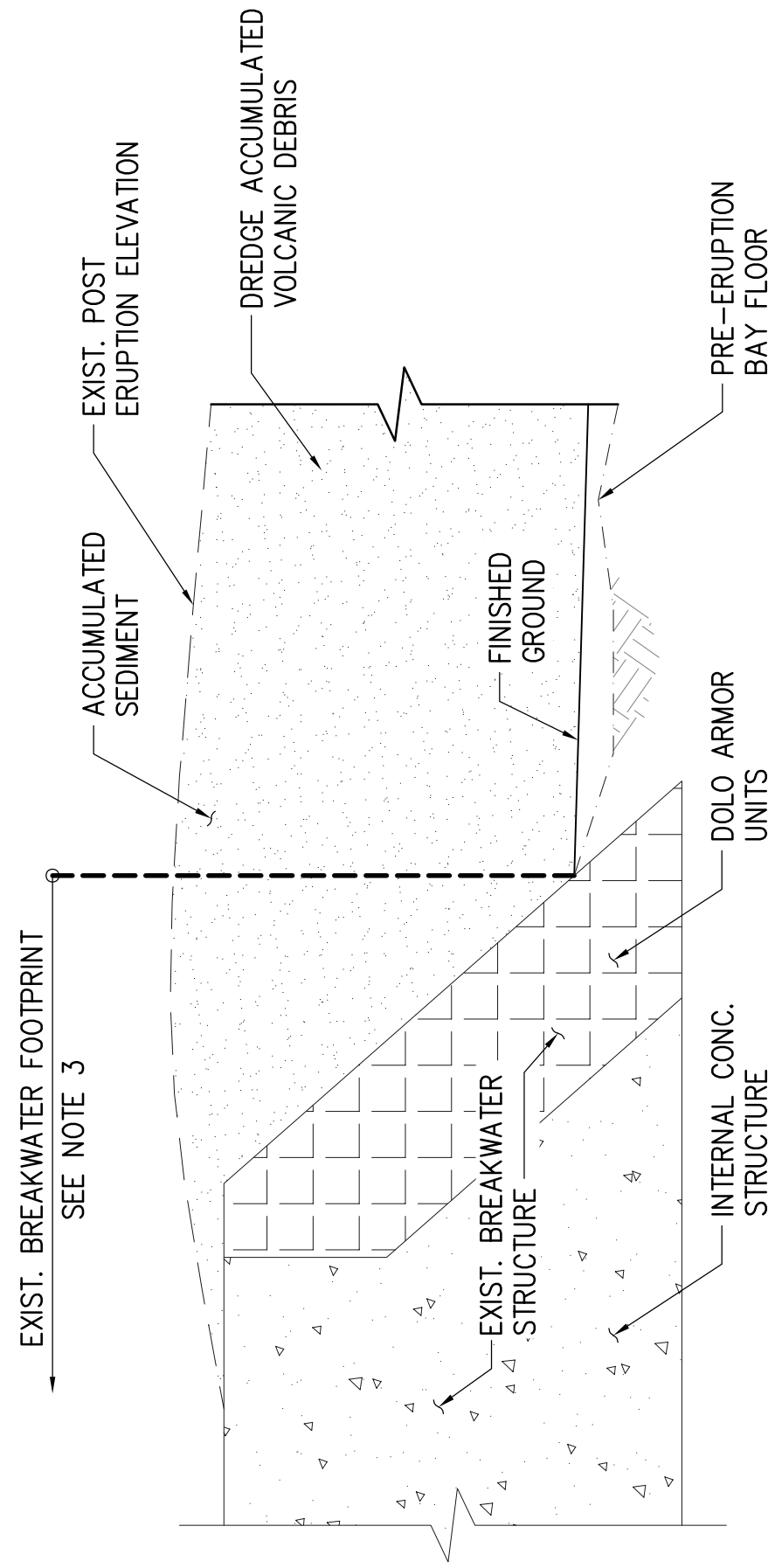
NOTE:  
 1. ELEVATIONS SHOWN: USE THE LOCAL MEAN LOWER LOW WATER (MLLW) ELEVATION AS THEIR DATUM.

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

		STATE OF HAWAII DEPARTMENT OF LAND AND NATURAL RESOURCES DIVISION OF BOATING AND OCEAN RECREATION
EXP. DATE 04/30/2024		POHOIKI BOAT RAMP DREDGING AND EXCAVATION OF VOLCANIC DEBRIS
SECTION VIEWS 6		
DESIGNED: TV	SUBMITTED: JULY 2023	
DRAWN: IE	DATE: JULY 2023	
CHECKED: KK	SCALE: AS NOTED	
APPROVED:		DRAWING NO. <b>C14</b>
Signature _____	Date _____	CHIEF ENGINEER

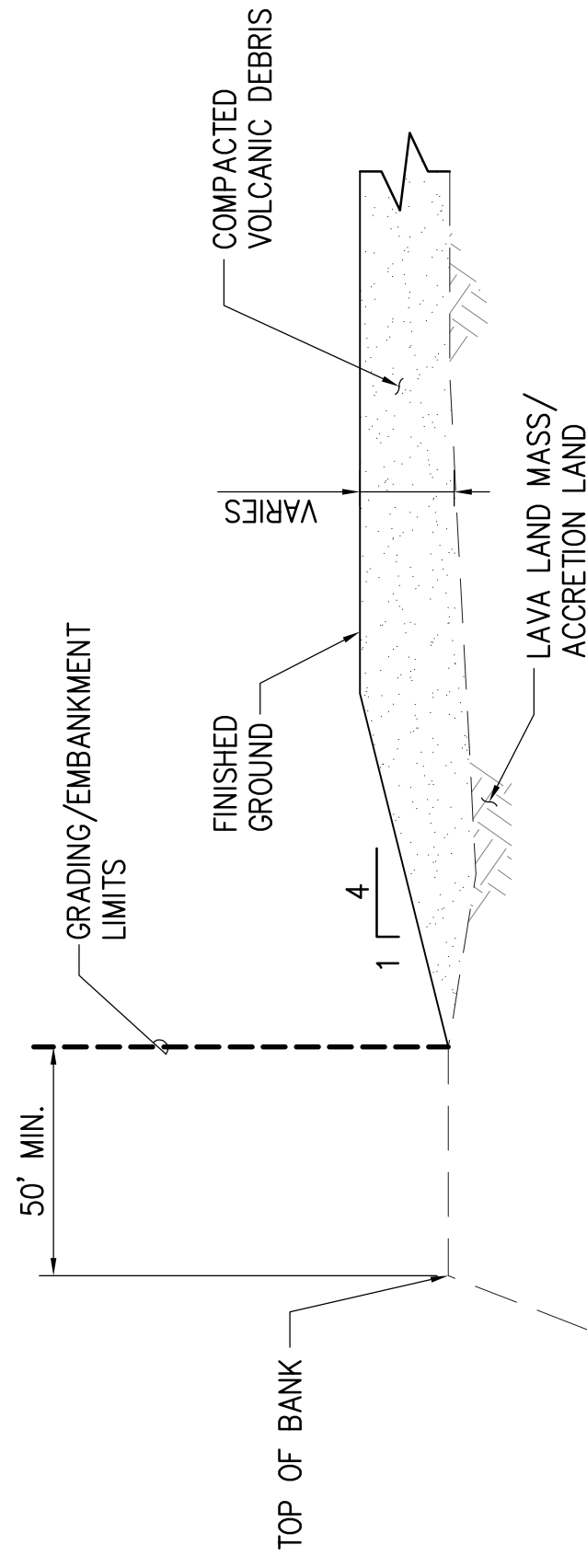
THIS WORK WAS PREPARED BY ME OR UNDER MY CLOSE PERSONAL SUPERVISION AND PROJECT WILL BE UNDER MY OBSERVATION.



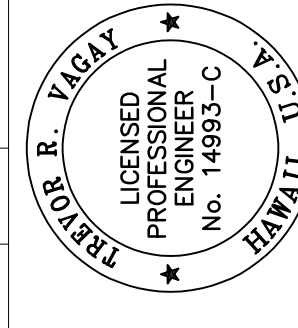
**NOTES:**

1. THE CONTRACTOR SHALL ENSURE EXISTING BREAKWATER STRUCTURE IS PROTECTED FROM DAMAGE DURING CONSTRUCTION.
2. HEAVY EQUIPMENT UTILIZED FOR THE PROJECT SHALL BE PROHIBITED FROM TRAVELING OVER AND NEAR THE EXISTING BREAKWATER FOOTPRINT.
3. SETTLED SAND AND COBBLES ON AND/OR OVER THE BREAKWATER STRUCTURE MAY BE MANUALLY REMOVED WITH THE USE OF HAND TOOLS.
4. ANY DAMAGE TO THE EXISTING BREAKWATER STRUCTURE SHALL BE REPAIRED TO THE SATISFACTION OF U.S. ARMY CORPS OF ENGINEERS AT THE CONTRACTOR'S EXPENSE.

**1** TYPICAL BREAKWATER DREDGE SECTION  
C15 NOT TO SCALE



**2** TYPICAL FILL AREA SECTION  
C15 NOT TO SCALE



04/30/2024  
EXP. DATE

THIS WORK WAS PREPARED BY ME OR UNDER MY CLOSE PERSONAL SUPERVISION AND THE PROJECT WILL BE UNDER MY OBSERVATION

Signature \_\_\_\_\_ Date \_\_\_\_\_

CHIEF ENGINEER \_\_\_\_\_ DATE \_\_\_\_\_

DRAWING NO. **C15**

REVISION NO.	SYM.	DESCRIPTION	SHT./OF	DATE	APPROVED
		STATE OF HAWAII DEPARTMENT OF LAND AND NATURAL RESOURCES DIVISION OF BOATING AND OCEAN RECREATION  POHOIKI BOAT RAMP DREDGING AND EXCAVATION OF VOLCANIC DEBRIS			
<b>DETAILS</b>					
DESIGNED: TV      SUBMITTED: JULY 2023					
DRAWN: IE      DATE: JULY 2023					
CHECKED: KK      SCALE: AS NOTED					
APPROVED: _____					
CHIEF ENGINEER _____ DATE _____					

#### 4.5. Comparison of Alternatives

A summarized comparison of alternatives presented in this section does not include alternative locations that provide no apparent environmental advantages. There is expressed opposition from community members to locations beyond Pohoiki Bay. No action is also not included since it does not achieve the stated objective of restoring navigational access. Appendix G contains the pre-design report and documents the considerations that contributed to the development of the proposed action to restore the pre-eruption shape and depth of Pohoiki Bay to the extent possible.

<b>Alternative</b>	<b>Advantages</b>	<b>Disadvantages</b>
Narrow Channel	<ul style="list-style-type: none"> <li>a. Lowest construction cost</li> <li>b. Shortest construction schedule</li> <li>c. Smallest dredged volume</li> </ul>	<ul style="list-style-type: none"> <li>a. Wave energy a threat to channel failure</li> <li>b. May be filled with new material in the shortest period of time</li> <li>c. Narrowest channel width</li> <li>d. Narrowest channel opening</li> </ul>
Wide Channel	<ul style="list-style-type: none"> <li>a. Next lowest construction cost</li> <li>b. Next shortest construction schedule</li> <li>c. Widest channel width</li> <li>d. Widest channel opening</li> </ul>	<ul style="list-style-type: none"> <li>a. Wave energy a threat to channel failure</li> <li>b. May be filled with new material</li> <li>c. Medium dredged volume</li> </ul>
Channel and Jetties	<ul style="list-style-type: none"> <li>a. Best alternative for keeping the boat ramp open for the longest period of time</li> </ul>	<ul style="list-style-type: none"> <li>a. Highest project cost (by far)</li> <li>b. Longest project schedule; will require additional permitting</li> <li>c. Largest dredged volume</li> <li>d. Most construction impacts</li> </ul>
Restore pre-eruption shape and depth (preferred alternative)	<ul style="list-style-type: none"> <li>a. Does not require slope stabilization</li> <li>b. Next best alternative for keeping the boat ramp open</li> <li>c. Most closely restores the bay back to pre-eruption conditions</li> </ul>	<ul style="list-style-type: none"> <li>a. High construction cost</li> <li>b. Long construction schedule</li> <li>c. May be filled with new material</li> <li>d. Largest dredged volume</li> </ul>

Note: Alternative locations are opposed by the community and are not compared; no action is not compared since it does not achieve the stated objective of restoring navigational access.