

GENERAL NOTES

DESIGN SPECIFICATIONS :

1. AASHTO Standard Specifications for Highway Bridges (16th Edition), with subsequent Interim Specification 1996.
2. AASHTO Standard Specifications for Seismic Design of Highway Bridges, Seismic Performance Category B, acceleration coefficient of 0.17

ALLOWABLE DESIGN STRESSES :

1. Reinforced concrete: $f_c = 0.40 f'_c$
2. Reinforced steel: $f_s = 20,000$ psi for Grade 40, 24,000 psi for Grade 60

MATERIALS :

1. Reinforced concrete: $f'_c = 4000$ psi
2. Reinforced steel: ASTM A 615, Grade 40 or Grade 60.
3. Admixture in concrete: See Special Provisions
4. All expansion and premolded joint filler shall be incidental to concrete and will not be paid for separately.

GENERAL :

1. The scope of work consists of constructing a mechanically stabilized Earth wall, replacing highway lighting, relocation of GTE, HECO, Oceanic Cable and BWS utilities, highway light, drainage system, boulder riprap slope protection, reconstruction of two lane highway and appurtenances, and installation rock screen barrier.
2. See Hawaii Standard Specifications for Road, Bridge and Public Works Construction, 1994 together with Special Provisions prepared for this project.
3. The Contractor shall verify all dimensions in the field before commencing with work.
4. The Contractor, at his own expense, shall keep the project area free from dust nuisance. The work shall be in conformance with the air pollution control standards and regulations of the State of Hawaii Department of Health.
5. The Contractor shall be solely responsible for the protection of adjacent property, utilities and existing and new structures from damage due to construction. Repairing any damage shall be at no cost to the State, according to the contract. He shall conduct his work in such a manner as to insure the safety of all concerned and to protect existing structures. Except as noted otherwise, all dimensions are measured plumb.
7. All footings shall bear on firm undisturbed natural soils or properly compacted structural fill.
8. Excavation for all footings and footing keys shall be accomplished by maintaining as near a vertical cut as possible. In the event of over-excavation, the space between the footing or footing key and ground shall be filled with a minimum of Class D concrete at no cost to the State, according to the contract.
9. At the time concrete is placed, reinforcing shall be free from mud, oil, laitance or other coatings adversely affecting bond capacity.
10. For Concrete finish, see Special Provisions. Unless noted otherwise, chamfer all exposed concrete edges three-quarters (3/4) of an inch.
11. Weepholes, 4 inches in diameter, shall be placed not more than 10 feet or center along the retaining walls. A 12 inch minimum thick filter gravel drain shall be placed along the entire length of wall connecting the weepholes. Anchor firmly 6" square galvanized steel wire 1/4" mesh hardware cloth (min. wire diameter 0.026") to backface ground drain hole. Weepholes and galvanized wire mesh shall be incidental to concrete in retaining walls.
12. Reinforcement, dowels and other embedded items shall be positively secured before pouring.
13. For steel reinforcing, stagger all splices where possible. Spliced reinforcing shall conform to Hawaii Standard Specifications for Road, Bridges and Public Works Construction, 1994, Specification 602.006 (B).
14. Steel reinforcing shall be supported, bent and placed as per ACI Detailing Manual, 1994.
15. Unless noted otherwise, minimum reinforcement cover shall satisfy AASHTO Standard Specifications for Highway Bridges (16th Edition).
16. Contract items will be paid for in units indicated in the Estimated Quantities.

17. All items noted incidental will not be paid for separately.

18. Unless otherwise noted, all anchor bolts shall be high strength bolts conforming to the requirement of ASTM A 623, Type 1.

19. For the installation of anchor bolts for highway lighting standards and expressway signs, the Contractor shall provide rigid templates to maintain the proper locations and protection of such anchor bolts at all times during the period of construction. Exact methods shall be approved by the Engineer.

20. Flashing compound, asphalt roll roofing paper and premolded joint filler shall be incidental to Concrete in manhole Walls and will not be paid for separately.

21. The Contractor's attention is directed to the following Sections of the Special Provisions: Subsection 107.13 - Public Convenience and Safety; Subsection 107.21 - Contractor's Responsibility For Utility Property And Services.

22. The existence and location of underground utilities and temporary utilities, monuments and structures as shown on the plans are from the latest available data but the accuracy is not guaranteed. The encountering of other obstacles during the course of work is possible. The Contractor shall tone for the exact locations and depths of all underground facilities, either shown on or omitted from the plans, in areas where work may affect these properties. Toning shall be considered incidental to the various contract items and will not be paid for separately. The Contractor shall be held liable for any damages incurred to the existing facilities and/or improvements as a result of his operations.

23. Existing drainage system will be functional at all times during construction. The Contractor is to furnish materials, equipment, labor, tools and incidentals necessary to maintain flow. This work shall be considered incidental to various contract items, and will not be paid for separately.

24. Relocation of GTE Hawaiian Telephone Company Incorporated, Hawaiian Electric Co. Ltd., Oceanic Cable, Board of Water Supply lines and removal of poles to be done under Utility Agreement No. 1439.

WATER NOTES

1. Unless otherwise specified, all materials and construction of water system facilities and appurtenances shall be in accordance with the City and County of Honolulu Board of Water Supply's "Water System Standards" Volume 1, dated 1985, the "Approved Material List and Standard Details for Water System Construction", Volume 2, dated 1985, the "Water System External Corrosion Control Standards", Volume 3, dated 1991, and all subsequent amendments and additions.
2. The Contractor shall be responsible for the protection of water line during construction. The Contractor shall be especially careful when excavating behind waterline, tees, and bends, wherever there is a possibility of water line movement due to the removal of the supporting earth beyond the existing reaction blocks. The Contractor shall take whatever measures necessary to protect the water line, such as constructing special reaction blocks (with BWS approval) and/or modifying his construction method.
3. The Contractor shall notify BWS Planning and Engineering Division, Construction Section, one week prior to commencing work on the water system.
4. All plans approved by the Board of Water Supply are based solely on the adequacy of the water supply. All other features of the water system, such as lines, grades, fittings, drainage, etc., and other features of improvements shall not be the responsibility of the Board of Water Supply.
5. Any adjustments to the existing water system required during construction to meet requirements of the Board of Water Supply's Standards, whether shown on the plans or not, shall be done by the Contractor at no cost to the Board. Maintain 3'-0" minimum cover for new water line from new finish grade.
6. Maintain 3'-0" minimum horizontal clear separation between waterline system and nearest electrical/signal ductlines paralleling the water system at no cost to the Board of Water Supply.
7. Maintain 3'-0" minimum horizontal clear separation between street light/traffic signal standards (including any modular units) and the nearest water system. Contractor shall field verify for any conflicts at each street light/traffic signal standard location. Where conflicts occur, the Contractor shall coordinate with the Project Engineer to revise the street light/traffic signal standard to provide the required clearances at no cost to the BWS.
8. At the electrical/signal ductline water crossing, adjust all electrical/signal ductline elevations to maintain 6" vertical clear separation from water line at no cost to the Board of Water Supply.
9. New relocated 16" diameter water main within the rock drop zone area will be constructed prior to installation of temporary overhead utility poles. Contractor shall coordinate construction of Board of Water Supply main with HECO, HTOC and Oceanic Cable for their temporary work in the rock drop zone area.

LANDSCAPE NOTES

1. Crossing for rock drop zone area shall consist of 4" top soil, hydromulch seeding and temporary straw/coconut erosion control blanket.
2. Seeding application rate:
50 Pounds, American Buffelgrass, T4464 (Cenchrus ciliare)
50 Pounds, Annual Ryegrass seeds (Lolium multiflorum)
50 Pounds, Unhulled Bermuda grass (Cynodon dactylon), Optional
3. The seed bed under the temporary erosion control blanket shall be properly amended prior to installation of the temporary blanket.
4. The temporary erosion control blanket will provide immediate protection of the soil and seeds during the growing period. This blanket will hold the seeds and soil in place on the rock drop zone area for a nine (9) month period. It will be machine-produced mat consisting of 70% agricultural straw and 30% coconut fiber. The blanket shall be of consistent thickness with the straw and coconut fiber evenly distributed over the entire area of the mat. The blanket shall be covered on the top side with UV stabilized polypropylene netting having an approximate 5/8 inch X 5/8 inch mesh, and on the bottom with a polypropylene netting with an approximate 1/2 inch X 1/2 inch mesh. The blanket shall be sewn together with cotton thread. Straw/Coconut fiber erosion control blanket shall be SC150 as manufactured by North American Green, or equivalent. Straw/Coconut fiber erosion control blanket shall have the following properties:

Material Content

Straw	70% (.35 lb/y2) (.19 kg/m2)
Coconut Fiber	30% (.15 lb/y2) (.08 kg/m2)
Netting	Top side heavyweight UV Stabilized (3 lb/1,000 sq ft approx. wt)
Thread	Cotton

Physical Specifications (Roll)

Width	8.5 feet (2m)
Length	83.5 feet (25.4m)
Weight	30 lbs \pm 10% (13.6 kg)
Area	60 sq yds (50m2)

5. For method of application refer to Hawaii Standard Specification for Road Bridge and Public Works Construction, 1994.

EARTHWORK NOTES

Quantities shown are for permit purposes only and shall not be used for bidding purposes. Contractor shall be responsible to complete the grading work to the grades and dimensions shown on the plans.

EARTHWORK QUANTITIES

Area to be Graded = 1.65 Acres
Excavation = 3,339 C.Y.
Embankment = 3,267 C.Y.
Embankment quantity inclusive of MSEW backfill material

LEGEND

—e—	Existing Electrical Line
—E—	New Electrical Line
○pp	Existing Power Pole
○emh	Existing Electrical Manhole
—at&t—	Existing GTE Line
—aband. at&t—	Abandoned GTE Line
○at&tmh	Existing GTE Manhole
—aband. at&tmh—	Abandoned GTE Manhole
—t—	Existing Telephone Line
—T—	New Telephone Line
○tp	Existing Telephone Pole
○tmh	Existing Telephone Manhole
○gp	Existing Guy Pole
□tpb	Existing Telephone Pullbox
—tv—	Existing TV Cable
—TV—	New TV Cable
—W—16—	Existing 16" Water Line
○wv	Existing Water Valve Box
○mon	Existing Monument
—d—18—	Existing 18" Drain Line
□gdi	Existing Grated Drop Inlet
—p—	Existing Traffic Sign
E.P.	New Edge of Pavement
E.S.	New Edge of Shoulder
R/W	Right-of-Way
H.D.P.E.	High Density Polyethylene

ABBREVIATIONS

BFE	Bottom Footing Elevation
Bot	Bottom
BOF	Bottom of Footing
CL	Centerline
Conc	Concrete
Cont	Continuous
EF	Earth Face
EI	Elevation
Exist	Existing
Exp	Expansion
Fin	Finish
Flash'g	Flashing
Jt	Joint
OC	On Center
Reinf	Reinforcing
Ret	Retaining
SS	Stainless Steel
Sta	Station
Std	Standard
T & B	Top and Bottom
TOC	Top of Curbing
TOW	Top of Wall
Typ	Typical
Vert	Vertical
W/	With

For existing items labeled on Plan, see Legend.

ROADWAY CONSTRUCTION PHASING AND TRAFFIC PLAN

Phase I - Station 131+00 (Begin New Road Alignment) to Station 141+65 shall be completed before work is to commence on Phase II.

Contractor shall prepare and submit a construction phasing and traffic plan to the Engineer for approval prior to starting work from on Phases II and III, Station 141+65 to Station 144+49.44.

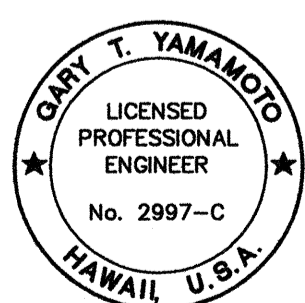
Phase II - Construction work from Station 141+65 to Station 144+49.44 (End of Road Alignment) shall be performed with a minimum of one lane open to traffic at all times. Minimum one-lane traffic will be routed to the newly constructed road under Phase I by use of flag persons for bi-directional control. The existing temporary road (Menehune Road) will be permanently closed during Phase II construction work. The makai half of the new roadway will be constructed. The temporary road widening of the existing Kamehameha Highway in the vicinity may be necessary to route traffic on the mauka side of the existing highway.

Phase III- Construction work from Stations 141+65 to Station 144+49.44, mauka half, will be constructed during Phase III. The completed makai half will be opened for one-lane bi-directional traffic with flag persons. A minimum one-lane of traffic will be open at all times.

Note: Flag persons shall be on duty entire time one-lane bi-directional traffic is required.

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

EARTH TECH
700 Bishop Street, Suite 900
Honolulu, HI 96813



THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.

4-7-00	ADDENDUM 2
DATE	REVISION

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

NOTES

KAMEHAMEHA HIGHWAY
WAIMEA BAY
EMERGENCY ROCKFALL REMEDIATION

FEDERAL-AID PROJECT NO. STP-083-1(45)

Scale: As Shown Date: April 2000

SHEET No. 3 OF 39 SHEETS

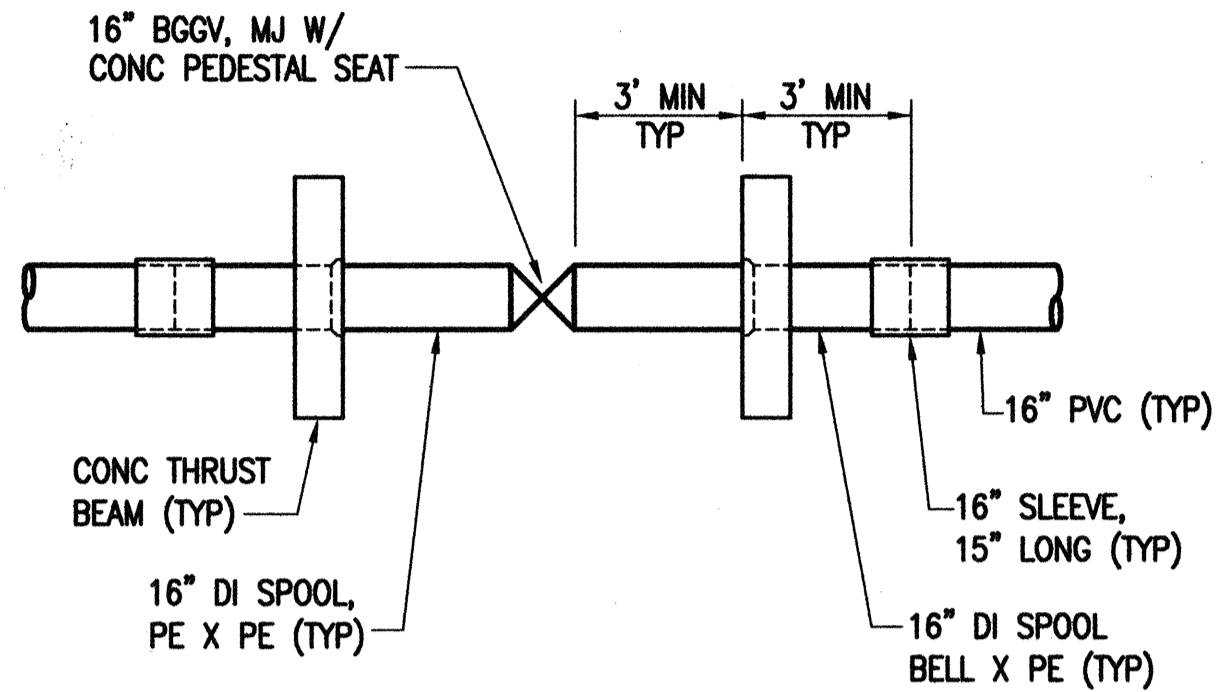
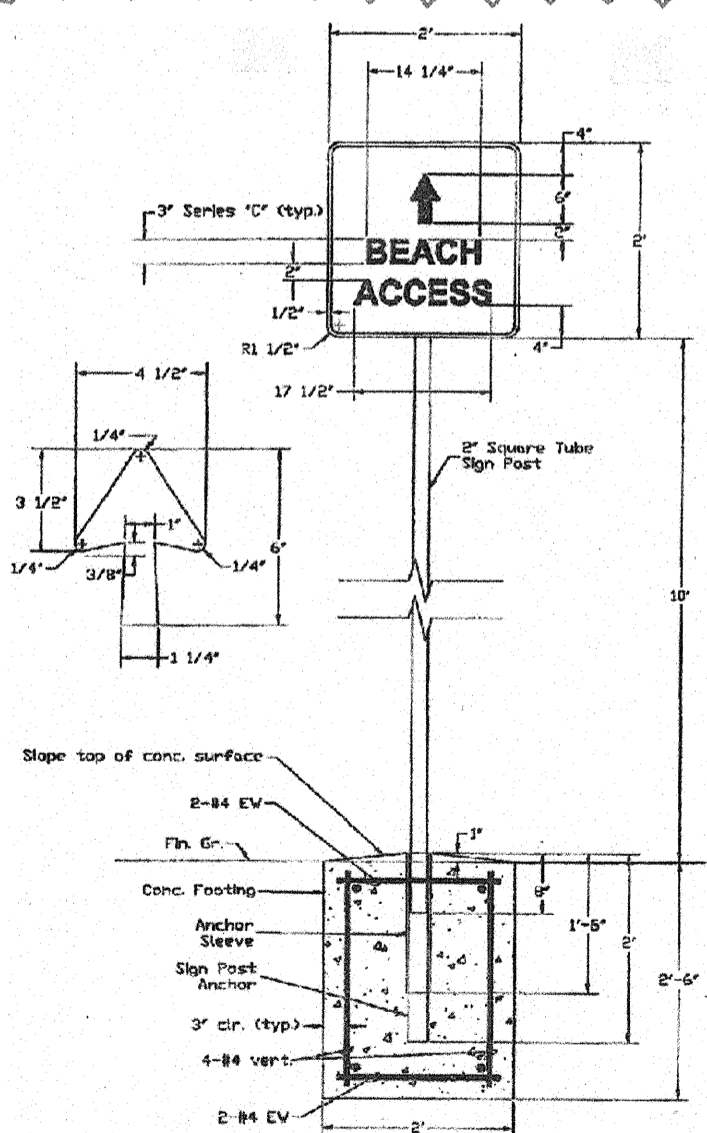
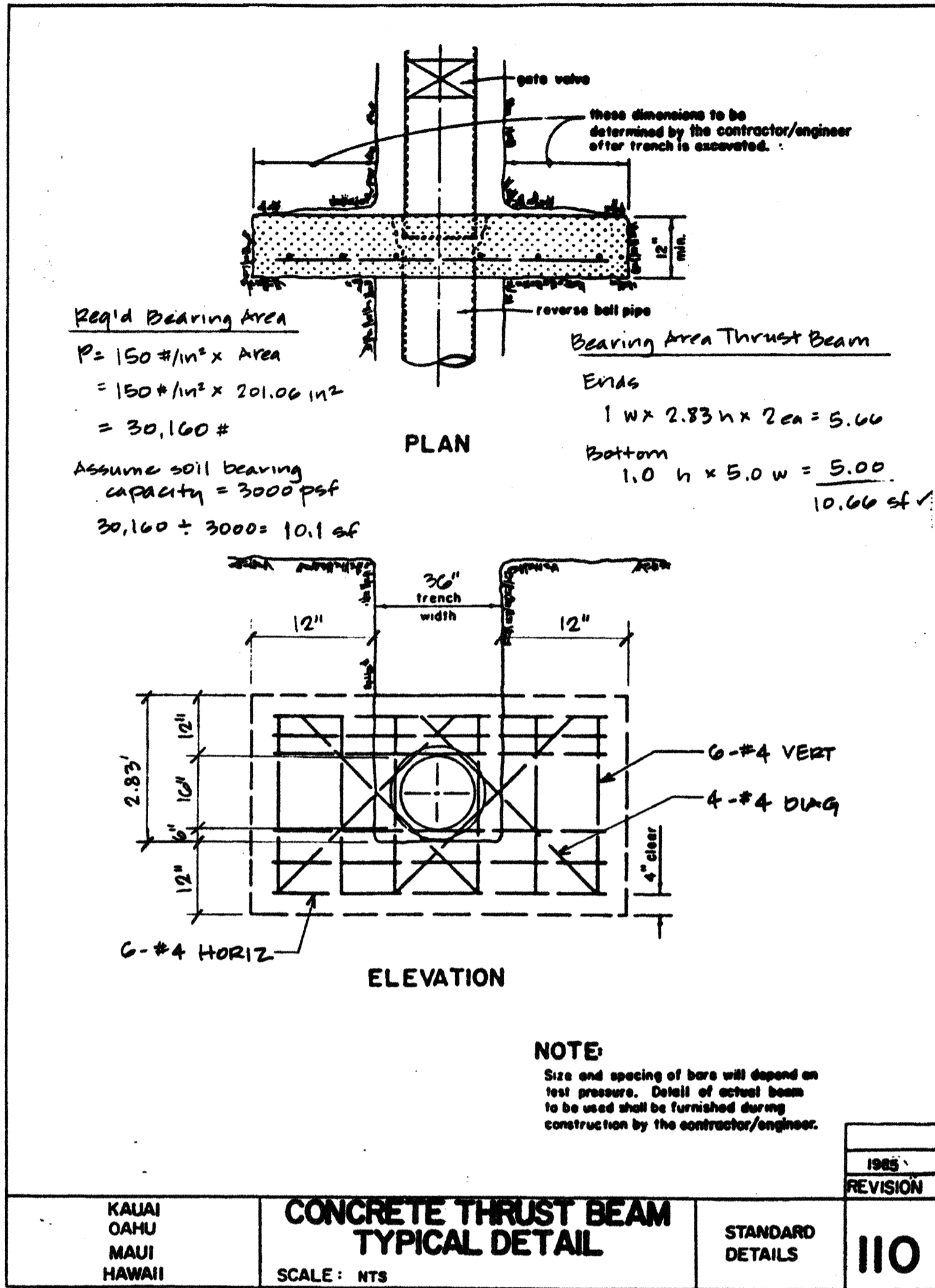
"AS-BUILT"

ADD.3

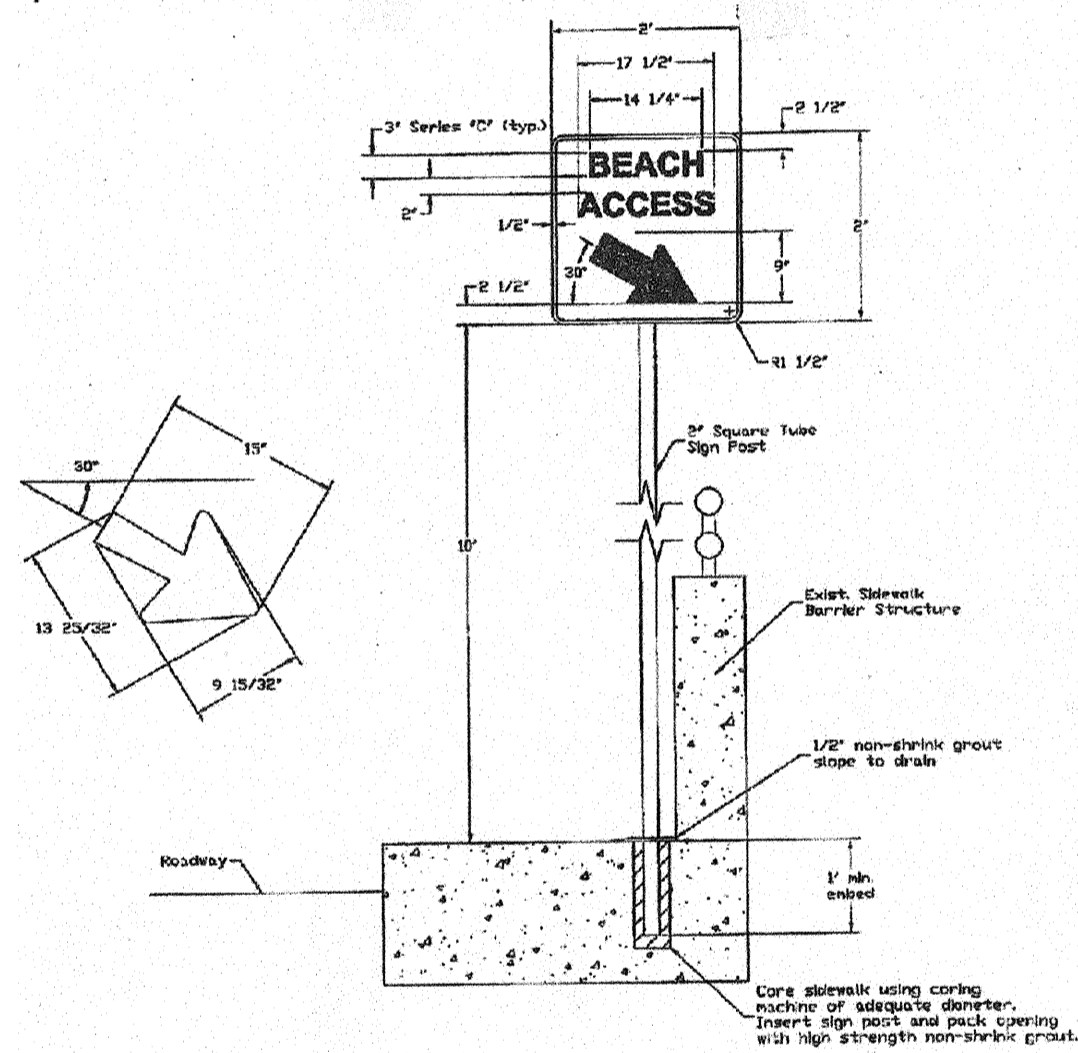
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
OAHU	HAW.	STP-083-1(45)	2000	C.O.ADD 35-1	39

WATER NOTES (continued)

- 2
- All plans approved by the Board of Water Supply are based solely on the adequacy of the water supply. All other features of the water system, such as lines, grades, fittings, drainage, etc., and other features of improvements shall not be the responsibility of the Board of Water Supply.
 - Test pressure shall be 150 psi.
 - The contractor shall chlorinate the entire inside surface of each pipe and fitting with disinfection solution of 5 ounces of sodium hypochlorite mixed with 10 gallons of water. (For connection only)
 - The existence and location of underground utilities and structures as shown on the plans are from the latest available data but is not guaranteed as to the accuracy or the encountering of other obstacles during the course of the work. The Contractor shall be responsible and shall pay for all damages to existing utilities. The Contractor shall not assume that where no utilities are shown, that none exist.
 - Prior to installations, the Contractor shall submit for approval by Board of Water Supply, the manufacturer's certification that all cast iron (gray or ductile) fittings for the project conform in all respects to the Water System Standards, dated 1985.
 - Polygon shape for mechanical joint glands as described in AWWA Standard C111 shall be "straight-sided" or an approved equal on a job to job basis.
 - Re-approval shall be required if this project is not under construction within a period of two years.
 - Pipe cushion shall be of high resistivity material. The contractor shall submit a soil certification that high resistant cushion material has a resistivity greater than 5,000 OHM-CM. Remainder of the backfill material shall be as specified in Volume 1 of the Water System Standard. Pipe cushion and backfill material shall contain no hazardous substances above regulatory action levels including but not limited to lead, asbestos, mercury, chromium, cadmium, zinc, strontium, and polychlorinated biphenyl's (PCB). (1)
 - All fittings shall be Class 350 ductile iron. All ductile iron pipe, fittings and valves shall be wrapped with two layers of 8 mil. polyethylene wrap.
 - Cleaning shall be by the use of "pigs" introduced into the pipeline and run completely through all installed pipelines and all branch lines for fire hydrants. "Pigging" of service laterals is not required. Bare foam "pigs" shall be used to swab piping clean as each length of the pipeline is installed. Each "pig" shall consist of a cylindrical piece of polyurethane foam with a density of 3-7 pounds per cubic foot and a vinyl-coated nose. Outside diameter of the "pig" shall be equal to 1-1/4 to 1-1/2 times the inside diameter of the pipe being installed. The length of the "pig" shall be 1-1/2 to 2 times its diameter. Prior to use, the "pig" shall be submerged in a chlorine solution of 1 oz. of 5% chlorine bleach in 5 gallons of water. "Pigging" of the pipeline shall be considered incidental to the installation of the new pipeline. (3)
 - The Contractor shall follow the following revised chlorination and water sampling procedures:
 - The following chlorination and water sample collection procedure shall apply to all water pipeline projects:
 - Step 1: Chlorinate main by filling with water and introducing chlorine in sufficient quantity to obtain a minimum chlorine concentration of 50 parts per million. Leave chlorinated water in main overnight.
 - Step 2: Flush main with fresh water until all chlorine has been flushed out as evidenced by the ortho-tolidine test, then collect a water sample while continuing to flush the main.
 - Step 3: Repeat steps 1 and 2. After collecting the second water sample, stop flushing and allow the water to stand in the main overnight.
 - Step 4: Thoroughly flush the main with fresh water until all water that had been standing in the main overnight has been flushed out. Stop flushing and let the water stand in the main for one hour. Collect a water sample.
 - The main is deemed acceptable and certified when (1) two consecutive water samples, collected 24 hours apart under Steps 1 and 2, show no total and fecal coliform and less than 200 colony forming units (CFU) of total bacteria and (2) the sample of water held in the main for one hour, collected under Step 4, also shows no total and fecal coliform and less than 200 CFU of total bacteria.
 - Chlorination, flushing, sampling and testing will be extended should unsatisfactory results be encountered. Any sample that shows positive coliform presence or total bacteria greater than 200 CFU is unsatisfactory.
 - Steps 1 and 2 may be repeated before collecting the one hour hold sample specified in Step 4. Repeating Steps 1 and 2 is recommended in the event samples show the presence of coliforms and/or increasing total bacterial results from one sample to the next.
 - Water sample that show the presence of a typical colonies, debris or results inconsistent with existing water are subject to reconfirmation. BWS reserves the right to request and test additional water samples in the interest of safeguarding public health and safety.
 - All waterline construction requiring shutdown connection shall be scheduled for normal working hours at six (6) hours maximum downtime.
 - Polyvinyl chloride (PVC) pipes shall be Class 150*. All ductile iron valves and metallic fittings shall be wrapped with two layers of 8 mil polyethylene wrap. No bending of polyvinyl chloride pipes shall be permitted. The installation of PVC pipe, according to the plans and specifications as bid on by the Contractor, may require additional design work, additional fittings and special couplings shall be considered incidental to the unit price bid in the proposal for PVC pipe. Any additional design work shall be the responsibility of the Contractor. Copper toning wire shall be installed along the entire length of the pipeline and all non-metallic laterals. (For corrosion rating of 2 to 5 only.)
 - All Polyvinyl Chloride (PVC) pipe deflections shall be accomplished only by the use of special PVC deflection couplings. Deflection around curves shall be accomplished only by the use of PVC deflection couplings.
 - All sections of the water main requiring reinforced concrete jacketing shall be ductile iron pipe Class 52 with ductile iron fittings.
 - All Class 150 PVC pipes with diameters of 16" to 24" shall be in compliance with AWWA C-905 and shall have a diameter to thickness ratio (DR) of 18.



16" BGGV & THRUST BEAM SCHEMATIC
NOT TO SCALE



EARTH TECH
700 Bishop Street, Suite 900
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THIS WORK WAS PREPARED BY
ME OR UNDER MY SUPERVISION.

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

NOTES

KAMEHAMEHA HIGHWAY
WAIMEA BAY
EMERGENCY ROCKFALL REMEDIATION
FEDERAL-AID PROJECT NO. STP-083-1(45)
Scale: As Shown Date: April 2000
SHEET No. 3A OF 39 SHEETS

"AS-BUILT"

C.O.ADD.3S-1