FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	HWY-0-04-09M	2009	3	65

GENERAL NOTES:

1. The scope of work for this project includes slope surface preparation; installation of articulated concrete block mat; clearing of vegetation; recontouring by grading and shaving of slopes; installation of Anchored Geogrid System; planting; hydro-mulch; maintaining of vegetation during plant establishment period; erosion control BMP's and providing traffic control.
2. The Contractor's attention is directed to the following Specification Sections of the Standard Specifications: Subsection 107.06 - Contractor Duty Regarding Public Convenience; Subsection 104.11 - Utilities and Services; and Section 645 - Work Zone Traffic Control.
3. At the end of each day's work, the Contractor shall remove all equipment and other obstruction to permit free and safe passage of public traffic.
4. The existence and location of underground utilities, manholes, 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 be held liable for any damages incurred to the existing facilities and/or improvements as a result of his operations.
5. The Contractor shall verify the presence of existing aerial and underground utilities which may conflict with construction activities and shall coordinate with the utility company for temporary relocation, as necessary. All costs associated with temporary relocations shall be borne by the Contractor.
6. The Contractor shall provide for vehicle and pedestrian access to and from all existing side streets at all times.
7. Existing drainage system shall be kept 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.
8. Existing concrete structures, such as manholes, culverts, channels, etc., which are designated to be removed or are in conflict with proposed construction shall be removed to a depth of not less than 3 feet below finish grade in roadway and not less than 1.5 feet below finish grade in other areas.
9. Existing pavement within 6 inches of the finish grade in areas to be grassed shall be removed. All other existing pavement which will not be overlaid with new A.C. pavement shall be rooted, plowed, pulverized, or scarified to a minimum depth of 6 inches.
10. Existing facilities and/or pavement to remain which has been damaged by the Contractor shall be restored to its original condition at no cost to the State.
11. All regraded areas and all grassed areas damaged by construction activities shall be planted in accordance with Specifications Section 619 - Planting. Contractor shall restore to its original condition at no cost to the State.
12. When excavating in close proximity to walls, fences, and other improvements, the Contractor shall protect, support, secure, and take all precautions to prevent damaging these facilities and improvements.
13. The Contractor shall verify the locations and elevations of all existing utility lines and notify respective owners before commencing any excavation work.
14. No material or equipment shall be stockpiled or otherwise stored within highway right-of-way except at locations designated in writing and approved by the Engineer.
15. Contractor shall dispose of any removed material at no cost to the State.
16. The Contractor shall be held liable for any damages incurred to the existing landscaping as a result of his operations.
17. After the project is completed, the Contractor shall restore grades and groundcover within the project limits to a condition equal or better than existing condition prior to construction.
18. All existing utilities, whether or not shown on the plans, shall be protected at all times by the Contractor during construction unless specified on the plans to be abandoned. The Contractor shall be held liable for any damages incurred to the existing utilities as a result of his operations. All damaged portions shall be replaced in accordance with the standards and specifications of the affected utility company at no cost to the State.
19. All work specified in the contract but not listed separately in the proposal schedule shall be considered incidental to other various contract items and shall not be paid for separately.

ABBREVIATIONS:

Abut.	Abutment
AC, ac	Asphalt Concrete
ACBM	Articulated Concrete Block Mat
AGS	Anchored Geogrid System
℄	Baseline
Bot.	Bottom
CL	Chain Link
Conc.	Concrete
Elev	Elevation
es	Existing Edge of Shoulder
etw	Existing Edge of Travel Way
EA.	Each
EB	Eastbound
ftg.	Footing
G.W.	Guy Wire
M.L.	Matchline
ST. MON.	Street Monument
NTS	Not to Scale
o.c.	On Center
O/H	Overhead
PC	Point of Curvature
PCC	Point of Compound Curve (for Alignment)
PDEA	Percussion Driven Earth Anchor
PI	Point on Intersection
POC	Point on Curvature
POT	Point on Tangent
PT	Point of Tangency
R	Radius
R/W	Right-of-Way
SFM	Sewer Force Main
sl	Street Light
SLB	Street Light Box
STA	Station along ℄
t	Telephone
TCP	Traffic Control Plan
TRM	Turf Reinforcement Mat
UG	Underground
U.P.	Utility Pole
w	Water

LEGEND:

Existing

- Chain Link Fence
- 200 — Contour
- Denotes No Access Permitted, Right-of-Way
- d30 — Drain Pipe
- Grated Drop Inlet
- Guardrail, Type 3
- Slope
- Street Light
- Trees
- sl — Utility
- × — PDEA, 5' Long
- ⊗ — PDEA, 10' Long

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NOTE BOOK	
No.	

JAIME M. SAAVEDRA
LICENSED PROFESSIONAL ENGINEER
No. 7309-C
HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR, UNDER MY SUPERVISION.

SIGNATURE 04/30/10 EXPIRATION DATE OF THE LICENSE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

GENERAL NOTES, LEGEND AND ABBREVIATIONS

SLOPE MAINTENANCE FOR EROSION CONTROL AT VARIOUS SITES ON OAHU, PHASE 3

Project No. HWY-0-04-09M

Scale: None Date: April 2009

SHEET No. N-1 OF 8 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	HWY-0-04-09M	2009	4	65

HECO NOTES: (01/03/05)

1. *Location of HECO Facilities*
   The location of HECO's overhead and underground facilities shown on the plans are from existing records with varying degrees of accuracy and are not guaranteed as shown. The Contractor shall verify in the field the locations of the facilities and shall exercise proper care in excavating and working in the area. Wherever connections of new utilities to existing utilities and utility crossings are shown, the Contractor shall expose the existing lines at the proposed connections and crossings to verify the depths prior to excavation for the new lines. The Contractor shall be responsible for any damages to HECO's facilities whether shown or not shown on the plans.

2. *Compliance with Hawaii Occupational Safety and Health Laws*
   The Contractor shall comply with the State of Hawaii's Occupational Safety and Health laws and regulations, including without limitation, those related to working on or near exposed or energized electrical lines and equipment.

3. *Excavation Permit*
   The Contractor shall obtain an excavation permit from HECO's Technical Division (543-5654) located at 820 Ward Avenue, 4th Floor, two weeks prior to starting construction. Please refer to our request number at that time.

4. *Caution!!! Electrical Hazard!!!*
   Existing HECO overhead and underground lines are energized and will remain energized during construction unless prior special arrangements have been made with HECO. Only HECO personnel are to handle these energized lines and erect temporary guards to protect these lines from damage. The Contractor shall work cautiously at all times to avoid accidents and damage to existing HECO facilities, which can result in electrocution.

5. *Overhead Lines*
   State law (OSHA 1910.269 (k)(2B)) requires that a worker and the longest object he or she may contact cannot come closer than a minimum radial clearance of 10 feet when working close to or under any overhead lines rated 50kV and below. For each additional 10kV above 50kV, an additional 4 inch shall be added to the 10-foot clearance requirement. The preceding information on line clearance requirements is provided as a convenience and it is the Contractor's responsibility to be informed of and comply with any revisions or amendments to the law.

   Should the Contractor anticipate that his work will result in the need to encroach within the minimum required clearance at any time, the Contractor shall notify HECO at least four (4) weeks prior to the planned encroachment so that, if feasible, the necessary protections (e.g. relocate or de-energize HECO lines) can be put in place. HECO may also be able to blanket its distribution (12kV and below) lines to provide a visual aid in preventing accidental contact. HECO's cost of safeguarding or identifying its lines will be charged to the Contractor.

   Contact HECO's Customer Installations Department at 543-7846 for assistance in identifying and safeguarding overhead power lines.

6. *Pole Bracing*
   A minimum clearance of 10 feet must be maintained when excavating around utility poles and/or their anchor system to prevent weakening or pole support failure. Should work require excavating within 10 feet of a pole and/or its anchor system, the Contractor shall protect, support, secure, and take all other precautions to prevent damage to or leaning of these poles. The Contractor is responsible for all associated costs to brace, repair, or straighten poles. All means of structural support for the pole proposed by the Contractor shall first be reviewed by HECO before implementation. For pole bracing instructions, the Contractor shall call the HECO Construction and Maintenance Dept., Customer & System Superintendent at 543-4223 a minimum of two (2) weeks in advance.

7. *Underground Lines*
   The Contractor shall exercise extreme caution whenever construction crosses or is in close proximity of underground lines. HECO's existing electrical cables are energized and will remain energized during construction. Only HECO personnel are to break into existing HECO facilities, handle these cables, and erect temporary guards to protect these cables from damage. The cost of HECO's assistance in providing proper support and protection of its underground lines will be charged to the Contractor. Special precautions are required when excavating near HECO's 138kV underground lines (See HECO Instructions to Consultants/Contractors on "Excavation near HECO's Underground 138kV Lines" for detailed requirements).

   For verification of underground lines, the Contractor shall call HECO's underground division at 543-7049 a minimum of 72 hours in advance.

   For assistance in providing proper support and protection of these lines, the Contractor shall call HECO's Construction & Maintenance Dept., Customer & System Superintendent, at 543-4223, a minimum of two (2) weeks in advance.

8. *Underground Fuel Pipelines*
   The Contractor shall exercise extreme caution whenever construction crosses or is in close proximity of HECO's underground fuel oil pipelines. Special precautions are required when excavating near HECO's underground fuel oil pipelines (See HECO Instructions to Consultants/Contractors on "Excavation near HECO's Underground Fuel Pipelines" for detailed requirements).

9. *Excavations*
   When trench excavation is adjacent to or beneath HECO's existing structures or facilities, the Contractor is responsible for:
   a) Sheeting and bracing the excavation and stabilizing the existing ground to render it safe and secure and to prevent possible slides, cave-ins, and settlements.
   b) Properly supporting existing structures or facilities with beams, struts, or under-pinnings to fully protect it from damage.
   c) Backfilling with proper backfill material including special thermal backfill where existing (refer to Engineering Department for thermal backfill specifications).

10. *Relocation of HECO Facilities*
    Any work required to relocate or modify HECO facilities shall be done by HECO, or by the Contractor under HECO's supervision. The Contractor shall be responsible for all coordination, and shall provide necessary support for HECO's work, which may include, but not be limited to, excavation and backfill, permits and traffic control, barricading, and restoration of pavement, sidewalks, and other facilities.

    All costs associated with any relocation or modification (either temporary or permanent) for the convenience of the Contractor, or to enable the Contractor to perform his work in a safe and expeditious manner in fulfilling his contract obligations shall be borne by the Contractor.

11. *Conflicts*
    Any redesign or relocation of HECO's facilities not shown on the plans may be cause for lengthy delays. The Contractor acknowledges that HECO is not responsible for any delay or damage that may arise as a result of any conflicts discovered or identified with respect to the location or construction of HECO's electrical facilities in the field, regardless of whether the Contractor has met the requested minimum advance notices. In order to minimize any delay or impact arising from such conflicts, HECO should be notified immediately upon discovery or identification of such conflict.

12. *Damage to HECO facilities*
    The Contractor shall be responsible for the protection of all HECO surface and subsurface utilities and shall be responsible for any damages to HECO's facilities as a result of his operations. The Contractor shall immediately report such damages to HECO's trouble dispatcher at 548-7961. Repair work shall be done by HECO or by the Contractor under HECO's supervision. Costs for damages to HECO's facilities shall be borne by the Contractor.

    In case of damage or suspected damage to HECO's fuel pipeline, the Contractor shall immediately notify HECO's Honolulu Power Plant shift supervisor at 533-2102 (A 24 hour number) so HECO personnel can secure the damaged section and report any oil spills to the proper authorities. All costs associated with the damage, repair, and oil spill cleanup shall be borne by the Contractor.

13. *HECO Stand-By Personnel*
    The Contractor may request HECO to provide an inspector to stand-by during construction near HECO's facilities. The cost of such inspection will be charged to the Contractor.

    The Contractor shall call the HECO Construction and Maintenance Dept., Customer & System Superintendent at 543-4223 a minimum of 5 working days in advance to arrange for HECO stand-by personnel.

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JAIME M. SAAVEDRA — LICENSED PROFESSIONAL ENGINEER — No. 7309-C — HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.

SIGNATURE — 04/30/10 EXPIRATION DATE OF THE LICENSE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

UTILITY NOTES

SLOPE MAINTENANCE FOR EROSION CONTROL AT VARIOUS SITES ON OAHU, PHASE 3
Project No. HWY-0-04-09M

Scale: None Date: April 2009

SHEET No. N-2 OF 8 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	HWY-0-04-09M	2009	5	65

HECO NOTES: (01/03/05)

14. Clearances
The following clearances shall be maintained between HECO's ductline and all adjacent structures (charted and uncharted) in the trench:

STRUCTURE TYPE	MINIMUM CLEARANCE (INCHES)
Water Lines, Parallel	36(A)
Water Lines, Crossing	12(B)
Sewer Lines, Parallel	36(C)
Sewer Lines, Crossing	24(D)
Drain Lines, Parallel	12
Drain Lines, Crossing	6(E)
Electrical and Gas Lines, Parallel	12
Electrical and Gas Lines, Crossing	12
Telephone Lines, Parallel	6(E)
Telephone Lines, Crossing	6(E)
Chevron Oil Lines, Parallel	36
Chevron Oil Lines, Crossing	48 Below Oil Line (F)

A. The minimum horizontal clearances to water lines parallel to electrical ductlines should be increased to 60 inches if the water line is greater than or equal to 16 inches in diameter.
B. The minimum vertical clearances to water lines crossing electrical ductlines can be reduced to 6 inches if the electrical ductline structure is concrete encased and is below the water line and the water line is less than 16 inches in diameter.
C. A minimum horizontal clearance of 36 inches is required between new handholes and existing sewer laterals.
D. The minimum vertical clearances to sewer pipes crossing electrical ductlines can be reduced to 12 inches if the sewer pipe is jacketed in concrete.
E. The minimum clearances shall be increased to 12 inches if the electrical ductline is direct buried.
F. The minimum vertical clearances to oil lines crossing electrical ductlines can be reduced to 24 inches below oil lines if the crossings are encased in 6 inches of concrete.
G. The Contractor shall notify the construction manager & HECO of any heat sources (power cable duct bank, steamline, etc.) encountered that are not properly identified on the drawing.

The following clearance shall be maintained between HECO's fuel oil pipelines and all adjacent structures: 24 inches, parallel or crossing. The minimum clearance can be reduced to 12 inches (parallel and below only) if the structure is jacketed in concrete.

15. Indemnity
The Contractor shall indemnify, defend and hold harmless HECO from and against all losses, damages, claims, and actions, including but not limited to reasonable attorney's fees and costs based upon or arising out of damage to property or injuries to persons, or other tortuous acts caused or contributed to by Contractor or anyone acting under its direction or control or on its behalf; provided Contractor's indemnity shall not be applicable to any liability based upon the sole negligence of HECO.

ORIGINAL PLAN
NOTE BOOK _____ PG. _____
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TRACED BY _____
DESIGNED BY _____
QUANTITIES BY _____
CHECKED BY _____

MECHANICAL/ELECTRICAL DESIGN AND ENGINEERING DIVISION NOTES:

1. The Contractor shall notify the Joint Pole Committee two (2) weeks in advance of any relocation of utility pole(s) that may be necessary.
2. The Contractor shall notify the Mechanical/Electrical Design and Engineering Division, Department of Design and Construction, three (3) working days prior to commencing work on the street lighting system (Phone: 768-8431).
3. The street lighting system shall be kept operational during construction. Any relocation required shall be approved by the Mechanical/Electrical Design and Engineering Division, Department of Design and Construction and paid for by the Contractor.
4. The Contractor shall be responsible for any damages to existing street lighting, traffic signal, and fiber optic facilities, including the traffic signal interconnect system, and any and all damages to these facilities shall be repaired by the Contractor at his cost in accordance with the requirements of the City and County of Honolulu.

TRAFFIC SIGNALS & TECHNOLOGY DIVISION:

1. The Contractor shall notify the Traffic Signals & Technology Division, Department of Transportation Services, three (3) working days prior to commencing work on the traffic signal system (phone: 768-8388).
2. The traffic signal system shall be kept operational during construction. Any relocation required shall be approved by the Traffic Signals & Technology Division, Department of Transportation Services, and paid for by the Contractor.
3. The Contractor shall be responsible for any damages to the existing traffic signal facilities, including the traffic signal interconnect system. Any and all damages to these facilities shall be repaired by the Contractor at his cost in accordance with the requirements of the City and County of Honolulu.
4. The Contractor shall be responsible for any damages to the existing traffic signal fiber optic cable system. Any and all damages to these facilities shall be repaired by the Contractor at his cost in accordance with the requirements of the City and County of Honolulu.

DTS NOTE:

The Contractor shall notify Oahu Transit Services, Inc. (OTS), Ed Sniffen (848-4571) or Lowell Tom (848-4578), two weeks prior to construction, informing them of location, scope of work, proposed closure of any street or traffic lanes, and the need to relocate any bus stop.

PUBLIC HEALTH, SAFETY, AND CONVENIENCE:

1. The Contractor shall observe and comply with all federal, state and local laws required for the protection of public health and safety and environmental quality.
2. The Contractor at his own expense, shall keep the project and 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 as necessary.
3. 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.

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SIGNATURE _____ 04/30/10 EXPIRATION DATE OF THE LICENSE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

UTILITY NOTES

SLOPE MAINTENANCE FOR EROSION CONTROL AT VARIOUS SITES ON OAHU, PHASE 3
Project No. HWY-0-04-09M
Scale: None **Date: April 2009**

SHEET No. N-3 OF 8 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	HWY-0-04-09M	2009	6	65

BOARD OF WATER SUPPLY NOTES:

1. Unless otherwise specified, all materials and construction of water system facilities and appurtenances shall be in accordance with the STANDARD SPECIFICATIONS FOR ROAD, BRIDGE AND PUBLIC WORKS CONSTRUCTION, dated 2005, as amended, of the Hawaii Highways Division, Department of Transportation, and the City and County of Honolulu Board of Water Supply's "WATER SYSTEM STANDARDS", DATED 2002, THE "WATER SYSTEM EXTERNAL CORROSION CONTROL STANDARDS", VOLUME 3, DATED 1991, and all subsequent amendments and additions.
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.
3. The Contractor shall notify BWS Maintenance Unit - Engineering, Construction Section in writing and submit five (5) sets of approved construction plans one week prior to commencing work on the water system.
4. 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 pay for all damages to existing utilities. The Contractor shall not assume that where no utilities are shown, that none exist.
5. Re-approval shall be required if this project is not under construction within a period of two years.
6. The Contractor shall be responsible for the protection of all water lines during construction. The Contractor shall be especially careful when excavating behind water lines, 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 measure necessary to protect the water lines, such as constructing special reaction blocks (with BWS approval) and/or modifying their construction methods.
7. Prior to any excavating, the Contractor shall verify in the field the location of existing water mains and appurtenances.
8. The project shall pay the applicable water system facilities and/or one-time service charge and for the meter which will be furnished by BWS and installed by the Contractor when the lateral is installed.
9. Contractor shall cut and plug all existing unused laterals at the main whether or not shown on the plans. Meter and valve boxes to be or already abandoned shall be demolished or removed and properly disposed of. The damaged area shall be repaired to an equal or better condition than the immediate area. All work shall be done at the expense of the Contractor.
10. Board of Water Supply approval of these plans does not constitute a water commitment. Availability of water will be determined when building permit is presented to the Department. Water commitment will depend upon the status of the water system at that time. Should water service be made available, the water commitment will be effective when the project receives an approved building permit from the Building Department. All water commitments will be canceled in the event the building permit is canceled.
11. The project shall be subject to the Board of Water Supply's Cross-Connection Control requirements prior to issuance of the Building Permit.
12. The installation, chlorination and testing of the water main facilities after the meter shall not be the responsibility of the Board of Water Supply.
13. Install 4 mil thick, non-metallic, blue colored, 6 inches wide warning tape over centerline of the pipe and below the base course along the entire length of trench. Tape should be marked "CAUTION WATER LINE BURIED BELOW".
14. The Contractor shall furnish and install polyethylene wrap, 3 feet minimum at all taps (for DI pipe and copper lateral combination only) and plastic pipe (PE tubing) 3 feet long after meters for all service lateral connections.

HAWAIIAN TELCOM NOTES:

1. All applicable construction work shall be done in accordance with the Hawaiian Telcom "Standard Specifications for Placing Underground Telecommunications System", dated March 1999, and all subsequent amendments and additions.
2. The Contractor shall procure and pay for all licenses and permits and shall give all notices necessary and incident to the due and lawful prosecution of the work.
3. The locations of existing utilities are approximate only. The Contractor shall verify their locations and exercise proper care in excavating in the area. The Contractor shall be responsible for any damages to these utilities as a result of their operations.
4. The location of telephone facilities are approximate only. Arrange to have telephone facilities toned prior to commencing excavation activities in the vicinity of underground telephone facilities. Excavation permit and toning request information can be obtained at the Excavation Desk on the 3rd flr. at 3239 Ualena Street.
5. The Contractor shall take necessary precaution not to damage existing cables or ducts. Any work involving existing cables or ducts shall be done in the presence of the Hawaiian Telecom inspector or their representative.

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UTILITY NOTES

SLOPE MAINTENANCE FOR EROSION CONTROL AT VARIOUS SITES ON OAHU, PHASE 3
Project No. HWY-0-04-09M

Scale: None Date: April 2009

SHEET No. N-4 OF 8 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	HWY-0-04-09M	2009	7	65

SITE 1 AND SITE 2 CONSTRUCTION NOTES:

1. The Contractor shall be responsible for protecting the highway and all appurtenances from damage resulting from the Contractor's activities. The Contractor shall be solely responsible for repairing any damage resulting from the clearing and/or other construction activities.
2. The Contractor shall protect the traffic on the highway from any rockfall hazards or hazards from excavated materials.
3. Preparation of Slopes:
   a. Clear all surface objects including rocks, clods, vegetative or other obstructions within limits of work areas indicated on plans.
   b. Recontour rills and gullies. Hand scale existing slope face to remove loose and/or excess materials to expose a firm subgrade on the slope face to the satisfaction of the Engineer. The Contractor shall exercise extra care in the hand scaling work and shall avoid oversteepening the slope face subgrade.
   c. Grade and shave slope areas to recontour rills and gullies so that installed Turf Reinforcement Mat (TRM) will have direct contact with the soil at all locations. Final graded and shaved slopes shall to the maximum extent practicable be of similar inclination as the natural slopes before grading and shall not be made steeper than the pre-graded slopes.
   d. If the Contractor at any time during his hand scaling, grading or shaving operations encounters unstable slope conditions that may constitute a potential landslide during slope preparation work, notify the Engineer immediately. The Contractor shall make a field visit to verify existing slope conditions, as specified in Specifications Subsection 102.05, and incorporate potential landslide or unstable conditions into the price of his bid.
4. Seeding and Placement of TRM, Geogrid and PDEA on Slopes:
   a. Place fertilizer, water and seed according to manufacturer's recommendations. For seed and fertilizer construction requirements see Specifications Sections 619 and 641.
   b. Contractor shall submit brochures and certifications for TRM stating that the quality of the material meets the intended use on the project. Install TRM with staples or stake pins at a minimum spacing of 3½ staples or pins per square yard or according to manufacturer's recommendations, whichever requirement is more stringent. Staples or pins shall be a minimum of 6" in length to ensure that TRM stays in direct contact at all locations with firm subgrade. For TRM requirements see Specifications Section 665.
   c. Install Geogrid with Percussion Driven Earth Anchor (PDEA) on top of TRM. For Geogrid and PDEA requirements see Specifications Sections 663 and 672. See Sheets EC-3, EC-4, EC-5, EC-6, EC-9 and EC-10 for spacing and lengths of PDEA.
5. Site 1 Preparation of Bench and Planting:
   a. Clear all surface objects including rocks, clods, vegetative or other obstructions within bench limits indicated on plans.
   b. Reestablish bench as acceptable to Engineer. See Sheet EC-11 for Site 1 bench details.
   c. Incorporate soil amendments into soil. See Specifications Section 617 and 619.
   d. Place fertilizer and seed according to manufacturer's recommendations, and water. For seed and fertilizer see Specifications Section 619.
   e. Install TRM with staples or stake pins according to manufacturer's recommendations.
   f. Plant Vetiver Grass and water. For planting requirements see Specifications Sections 619 and 641. See Sheets LP-1 thru LP-6 for details.

PDEA INSTALLATION NOTES:

1. Install individual PDEA within 6 inches of location shown on Site 1 Plan Sheets EC-3 through EC-6, and Site 2 Plan Sheets EC-9 and EC-10. Tolerance of 6 inches within the Plan locations shown shall be measured between top of PDEAs along the slope face.
2. Contractor shall prepare and submit 6 copies of Sites 1 and 2 proposed layouts of PDEAs on 1"=10' scale drawings after Contractor has recontoured the slopes by his grading and shaving operations. After acceptance by the Engineer of proposed layout plans the Contractor shall immediately commence installation of TRM and geogrid with PDEAs.
3. Contractor shall furnish and install a minimum number of 5-foot-long PDEA and 10-foot-long PDEA shown on the Sites 1 and 2 Estimated Quantities tables on Plan Sheets EC-2 and EC-8.
4. If actual quantities of PDEA exceed the required quantities shown on Plan Sheets EC-2 and EC-8, the Contractor shall furnish and install up to a maximum of one hundred twenty (120) 5-foot-long PDEA and thirty (30) 10-foot-long PDEA at no increase in contract price or contract time.
5. Contractor shall proof load test one PDEA in the presence of the Engineer for every ten (10) PDEAs installed at the locations selected by the Engineer, unless otherwise accepted by the Engineer. PDEA proof load test shall be to 1250 pounds for 5-foot-long PDEAs and 2500 pounds for 10-foot-long PDEAs.
6. All PDEAs shall be load locked at 1000 pounds for 5-foot-long PDEAs and 2000 pounds for 10-foot-long PDEAs. After load locking and load testing of PDEAs have been accepted by the Engineer, the Contractor shall trim cables to a maximum 1" in length.
7. The Engineer will not pay for proof load tests and will consider proof load tests as included in the contract price.

SITE 3 THRU SITE 7 CONSTRUCTION NOTES:

1. The Contractor shall be responsible for protecting the highway and all appurtenances from damage resulting from the Contractor's activities. The Contractor shall be solely responsible for repairing any damage resulting from the clearing and/or other construction activities.
2. The Contractor shall protect the traffic on the highway from any hazards from excavated materials.
3. Preparation of Slopes:
   a. Clear all surface objects including rocks, clods, vegetative of other obstructions within the limit of work areas indicated on the plans to a minimum depth of 4 inches.
   b. Grade slope areas to remove any rills and gullies. Backfill eroded areas to restore intended existing grades if necessary.
   c. Apply Geotextile to the prepared surface prior to installation of Articulated Concrete Block Mat.
4. The Contractor shall grout all voids within the Articulated Concrete Block Mat larger than 2 inches wide.

ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
NOTE BOOK	DRAWN BY	
N.	TRACED BY	
	DESIGNED BY	
	QUANTITIES BY	
	CHECKED BY	

JAIME M. SAAVEDRA
LICENSED PROFESSIONAL ENGINEER
No. 7309-C
HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.

SIGNATURE — 04/30/10 EXPIRATION DATE OF THE LICENSE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

CONSTRUCTION NOTES

SLOPE MAINTENANCE FOR EROSION CONTROL AT VARIOUS SITES ON OAHU, PHASE 3
Project No. HWY-0-04-09M

Scale: Date: April 2009

SHEET No. N-5 OF 8 SHEETS