

A. SOIL PREPARATION 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 at all times during the contractor's activities.
3. Prior to drilling the soil/rock anchors for the anchored wire mesh, the slope face shall be cleared of vegetation.
4. The slope face to receive the anchored wire mesh shall be hand scaled to remove loose and/or excess materials to expose a firm substrate on the slope face to the Engineer's satisfaction.
5. The tops of all slopes shall be rounded to the Engineer's satisfaction.
6. The Contractor shall exercise extra care in the hand scaling work and shall avoid over-steepening the slope face that may cause instability of the slope face. If the Contractor encounters unstable slope conditions that may constitute a potential landslide during the slope preparation work, notify the Engineer immediately. The Contractor shall verify the existing slope conditions and incorporate these potential landslide or unstable conditions into the price of their bid.
7. Debris or other materials that hang up on the slope during the slope preparation operations shall be removed and completed to the satisfaction of the Engineer.
8. The contractor shall maintain equipment on-site at all times to remove debris from the highway to allow the passage of emergency vehicles in the event that emergency vehicles require passage through the project area along the highway during the lane closure times. The slope preparation activities shall be temporarily suspended to allow the passage of the emergency vehicles through the project area along the highway.

B. ANCHORED WIRE MESH CONSTRUCTION SEQUENCE:

1. Clear slope face of vegetation and loose materials.
2. Stake out grouted soil and/or rock anchors in general accordance with the project spacing requirements taking into account the low spots.
3. Excavate the dell for pre-tensioning of the anchored wire mesh before drilling the grouted soil and/or rock anchors.
4. Install the grouted soil and/or rock anchors (final anchor heads shall not project above the terrain line or predominant slope line).
5. Plant hydromulch seeding on the slope.
6. Lay and anchor erosion control matting on the slope (in accordance with manufacturer's recommendations).
7. Lay the steel wire mesh panels on the slope.
8. Join the steel wire mesh panels together with compression claws.
9. Fit the boundary wire ropes around the perimeter of the anchored wire mesh system, and fasten the wire mesh to the boundary ropes with compression claws.
10. Install the spike plates and pre-tension the anchors with torque wrench in order to tension the anchored wire mesh to the grouted soil and/or rock anchors to at least 6.7 kips.

C. ANCHORED WIRE MESH SYSTEM MATERIALS:

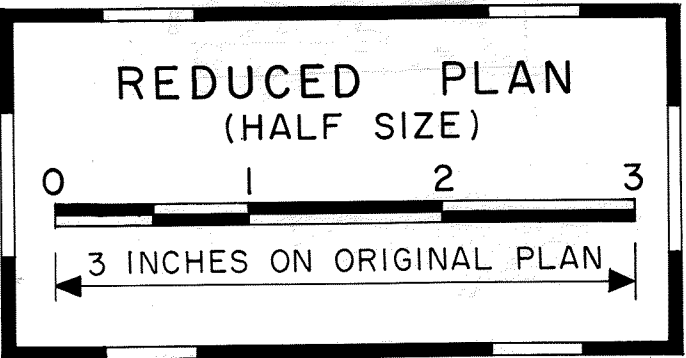
1. All hardware for the anchored wire mesh system shall be powder coated with a black pigment, and boundary wire rope shall be powder coated or PVC coated (black in color).
2. Boundary wire rope and grouted soil and/or rock anchors (including the steel reinforcing bar for the grouted anchor, wire rope, heavy duty wire rope thimbles, wire rope clips such as cable clamps, steel plates, heavy hex nuts, washers, etc.) shall be hot dipped galvanized. All exposed hardware shall be powder coated black.
3. Heavy-duty wire rope thimble shall not be in contact with the threads of the steel reinforcing bar.
4. The contractor shall follow the wire rope manufacturer's recommendation for the installation sequence and procedures.
5. The grouted soil and/or rock anchors shall have a design pullout capacity (design load), as shown on the following table. The Contractor shall test a minimum number of the grouted soil and/or rock anchors (as shown on the following table) for pullout in accordance with the specifications in the presence of the Engineer. The test anchors shall be selected by the Engineer.
6. The steel wire mesh for the anchored wire mesh system shall be manufactured from 0.157-inch (4 mm) diameter high-tensile steel wire. The high-tensile steel wire shall have a minimum tensile strength of 256,000 psi.
7. The grouted soil and/or rock anchor shall consist of hollow threaded bar with outside and inside diameters of 1.5 and 0.75 inches, respectively, and minimum yield load capacity of 90 kips. The non-shrink grout shall be non-shrink, non-metallic, non-gaseous and shall have a minimum unconfined compressive strength of 4,000 psi or greater.

SOIL AND/OR ROCK ANCHOR SCHEDULE

TYPE OF SOIL NAIL	NAIL LENGTH (FEET)	NO. OF NAIL	HOLE DIAMETER	REBAR SIZE	DESIGN LOAD (KIPS)	NUMBER OF ANCHOR TEST
A	10	49	4"	1.5"	6	5
B	15	129	4"	1.5"	12	25
C	20	113	4"	1.5"	22	25
D	25	105	4"	1.5"	28	25
E	6	95	4"	1.5"	N/A	N/A

ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
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CLAYTON S. MINURA

LICENSED PROFESSIONAL ENGINEER

No. 4178-C

HAWAII, U.S.A.

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STATE OF HAWAII

DEPARTMENT OF TRANSPORTATION

HIGHWAYS DIVISION

ANCHORED WIRE MESH SYSTEM NOTES

SOIL AND/OR ROCK ANCHOR SCHEDULE

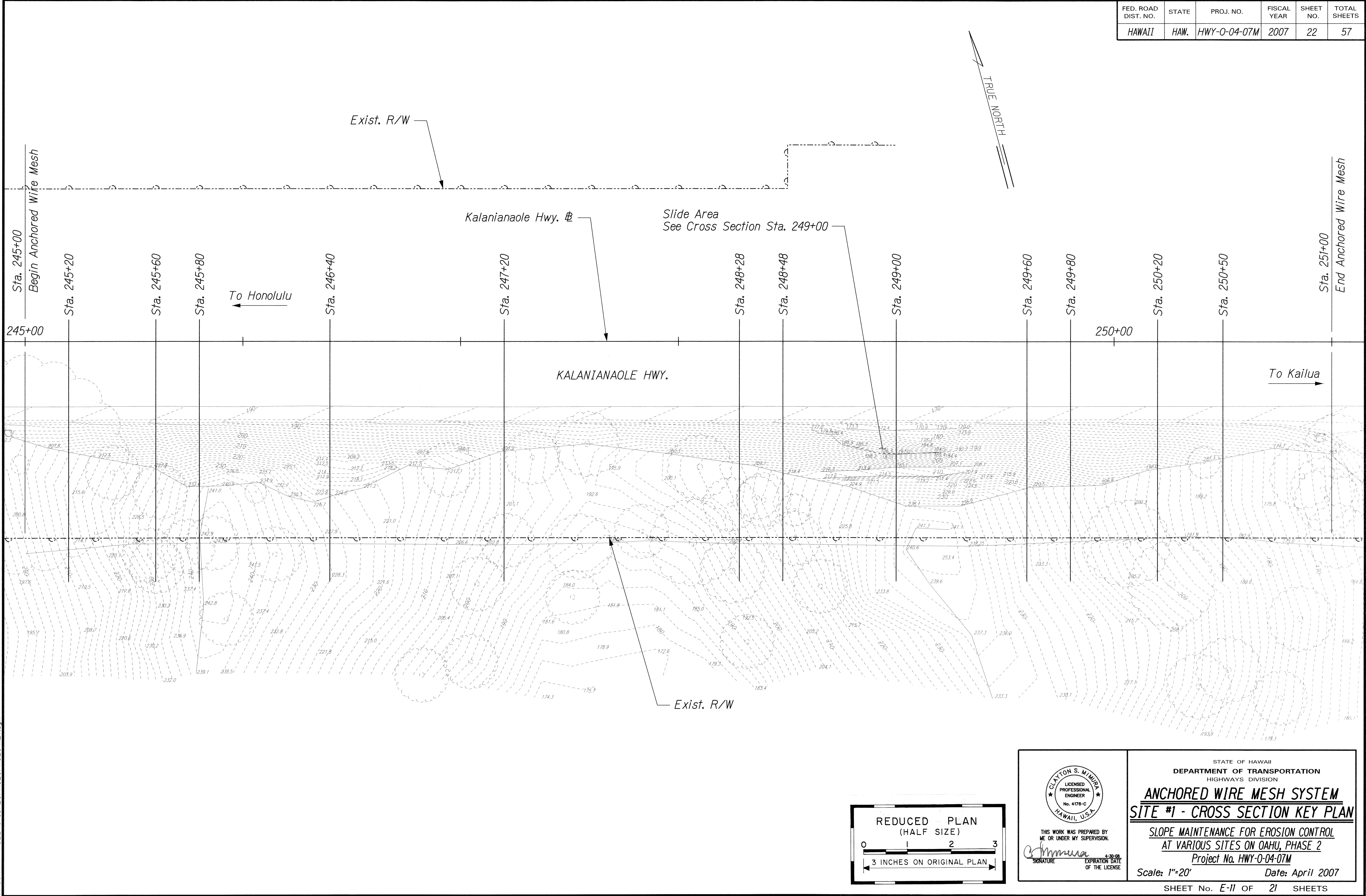
SLOPE MAINTENANCE FOR EROSION CONTROL

AT VARIOUS SITES ON OAHU, PHASE 2

Project No. HWY-0-04-07M

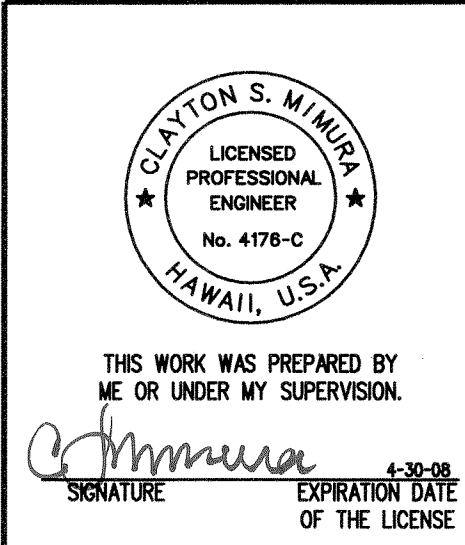
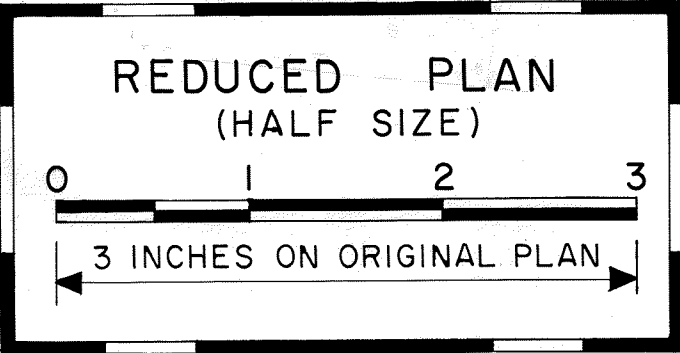
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FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	HWY-0-04-07M	2007	22	57



ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
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DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

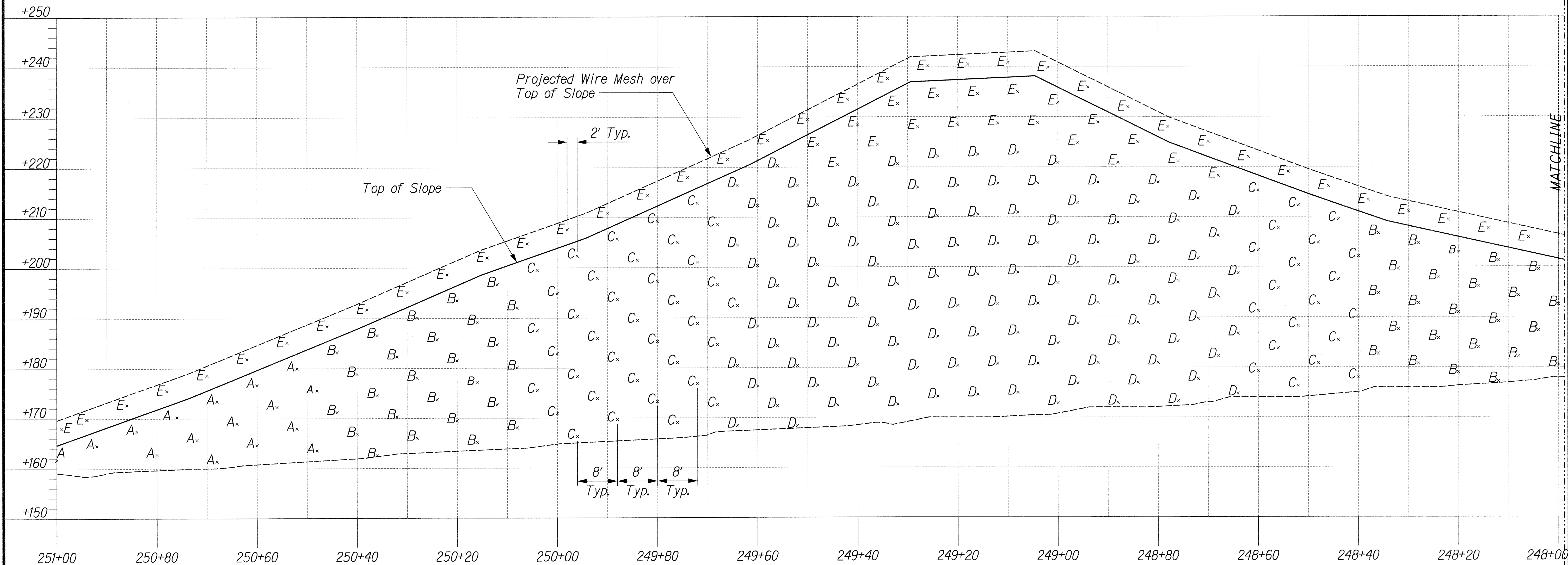
ANCHORED WIRE MESH SYSTEM
SITE #1 - CROSS SECTION KEY PLAN

SLOPE MAINTENANCE FOR EROSION CONTROL
AT VARIOUS SITES ON OAHU, PHASE 2
Project No. HWY-0-04-07M

Scale: 1"=20' Date: April 2007

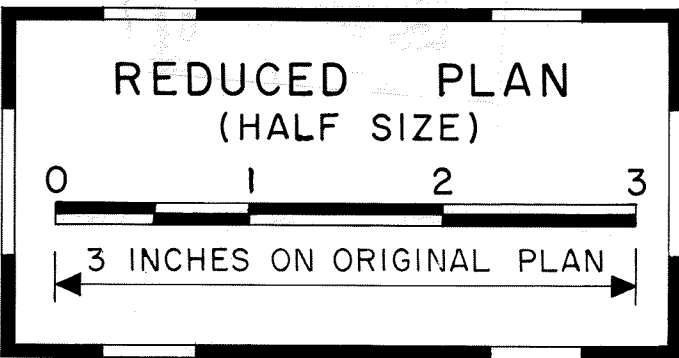
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FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	HWY-0-04-07M	2007	23	57



LEGEND:

B_x Anchor Type and Anchor Location
 See Soil and/or Rock Anchor Schedule
 on Sheet E-10.



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 LICENSED PROFESSIONAL ENGINEER
 No. 4178-C
 HAWAII, U.S.A.

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STATE OF HAWAII
 DEPARTMENT OF TRANSPORTATION
 HIGHWAYS DIVISION

ANCHORED WIRE MESH SYSTEM

PROFILE - 1

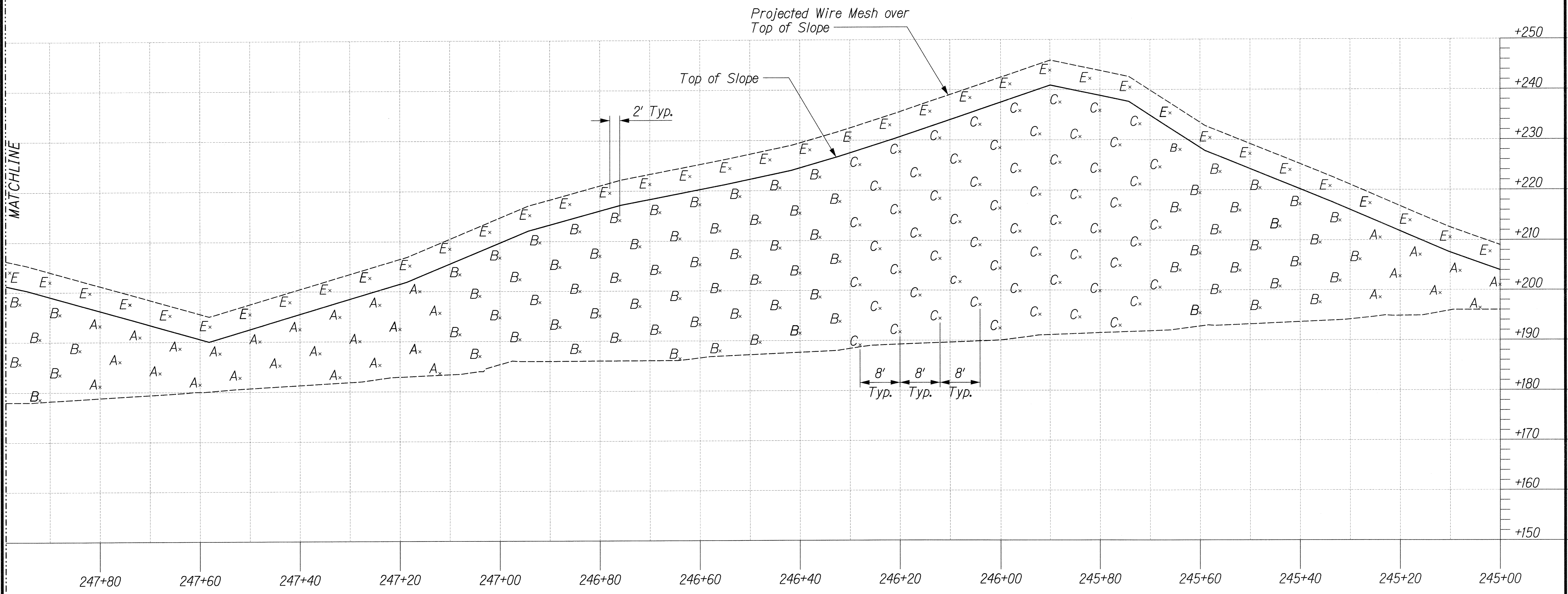
SLOPE MAINTENANCE FOR EROSION CONTROL
 AT VARIOUS SITES ON OAHU, PHASE 2

Project No. HWY-0-04-07M

Scale: 1"=10' Date: April 2007

SHEET No. E-12 OF 21 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	HWY-0-04-07M	2007	24	57



LEGEND:
B_x Anchor Type and Anchor Location
 See Soil and/or Rock Anchor Schedule
 on Sheet E-10



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LICENSED PROFESSIONAL ENGINEER

No. 4178-C

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STATE OF HAWAII

DEPARTMENT OF TRANSPORTATION

HIGHWAYS DIVISION

ANCHORED WIRE MESH SYSTEM

PROFILE - 2

SLOPE MAINTENANCE FOR EROSION CONTROL

AT VARIOUS SITES ON OAHU, PHASE 2

Project No. HWY-0-04-07M

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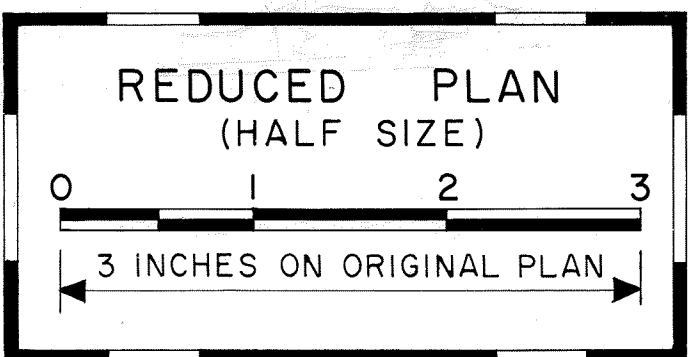
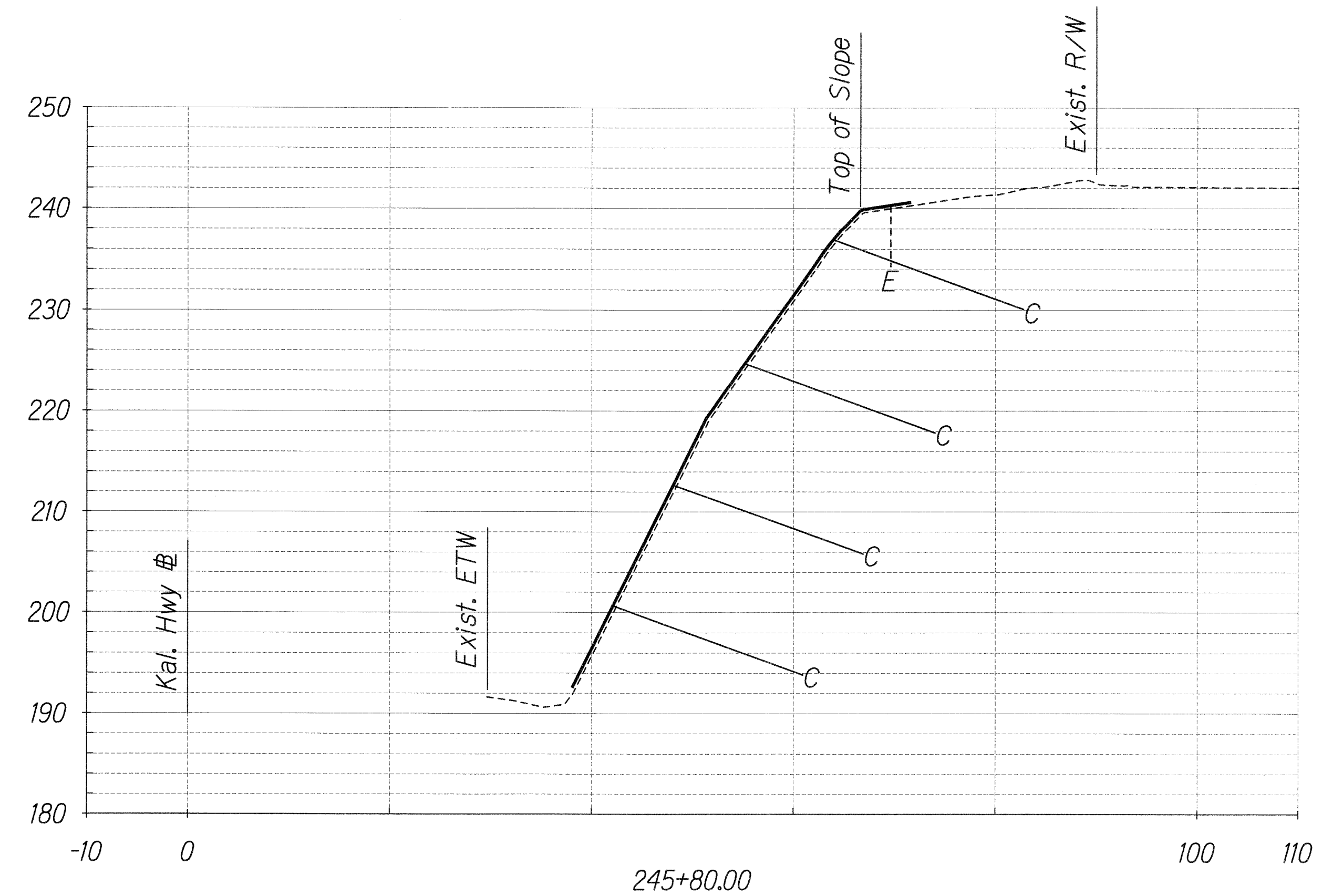
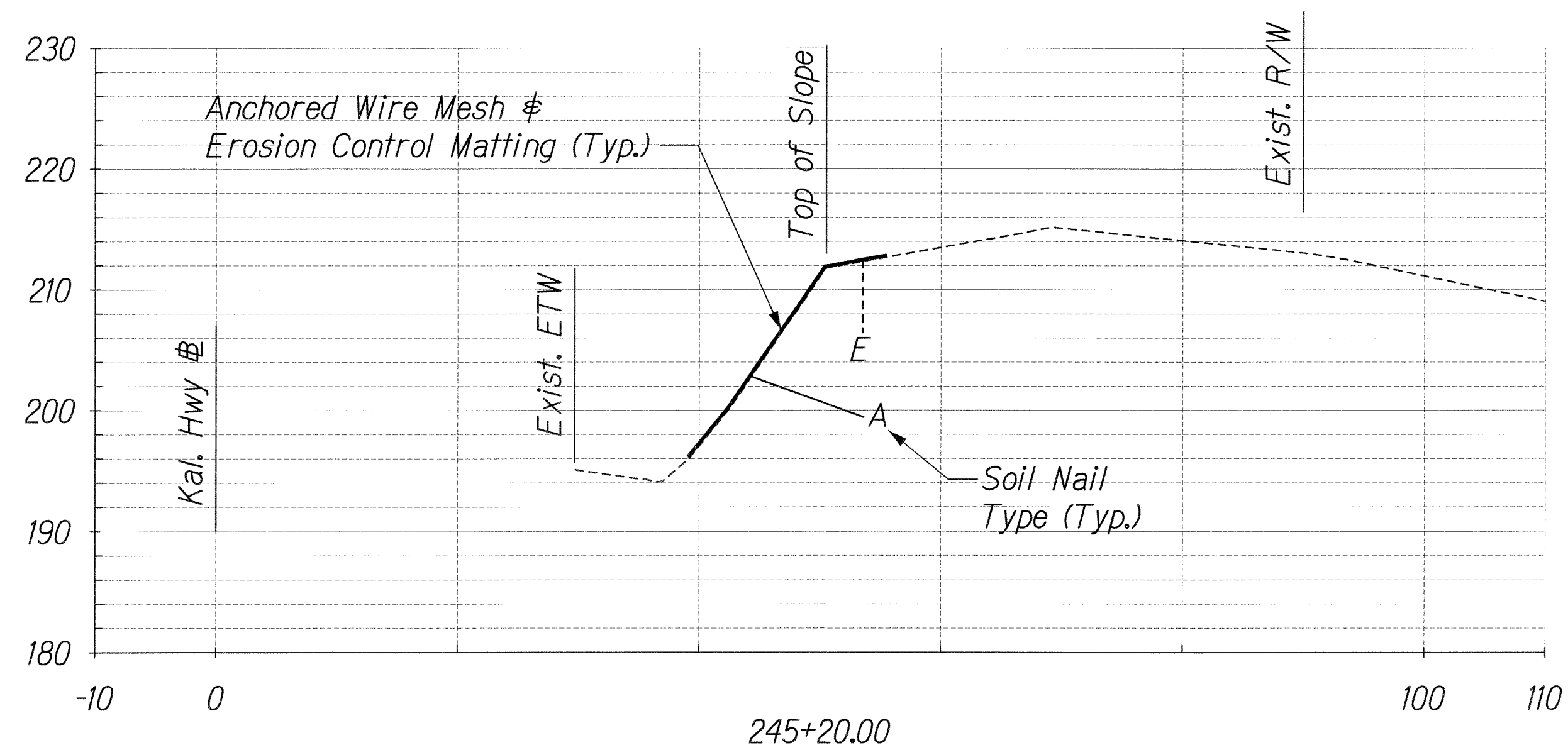
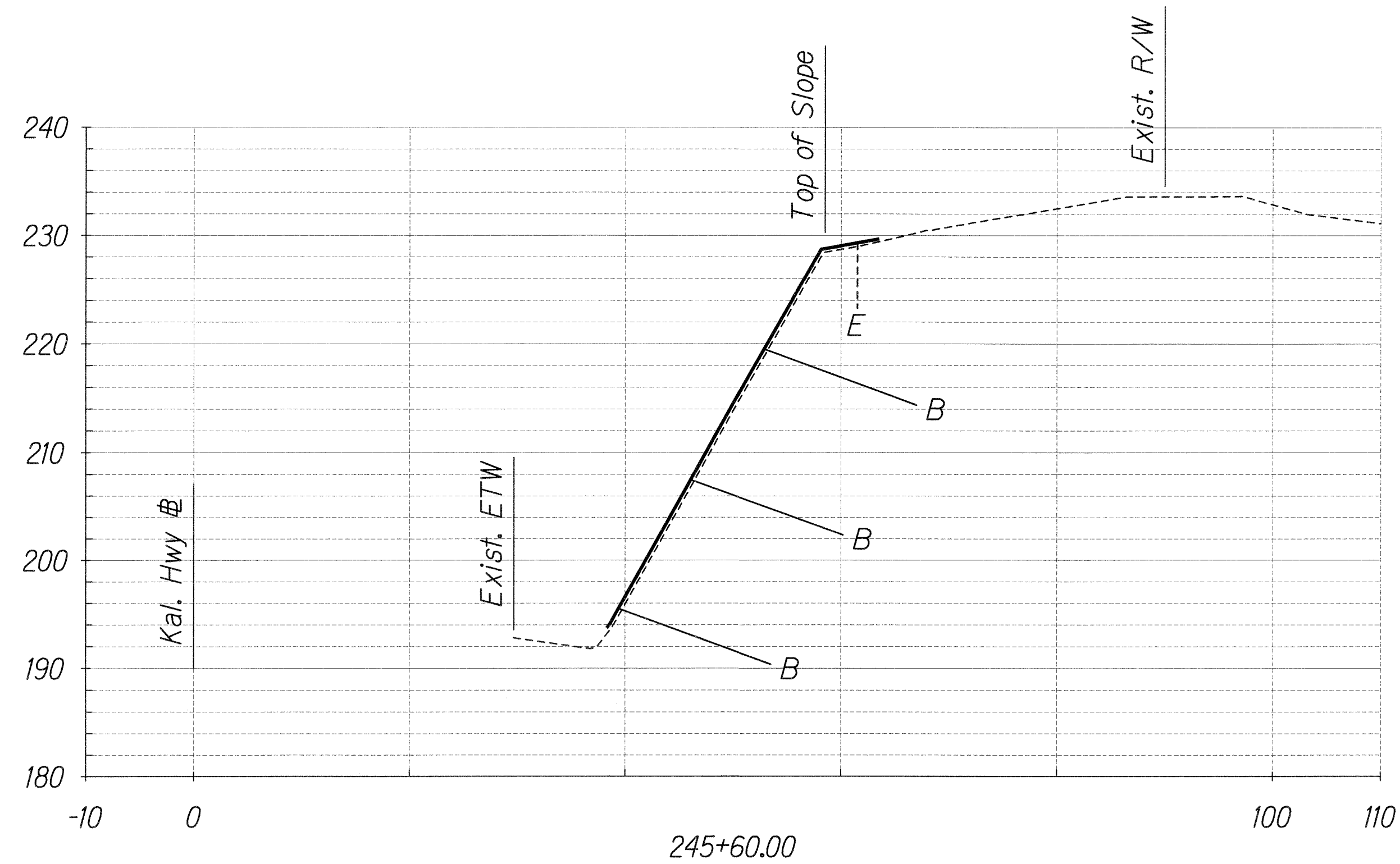
Date: April 2007

SHEET No. E-13 OF 21 SHEETS

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FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	HWY-0-04-07M	2007	26	57



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LICENSED PROFESSIONAL ENGINEER
No. 4176-C
HAWAII, U.S.A.

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OF THE LICENSE

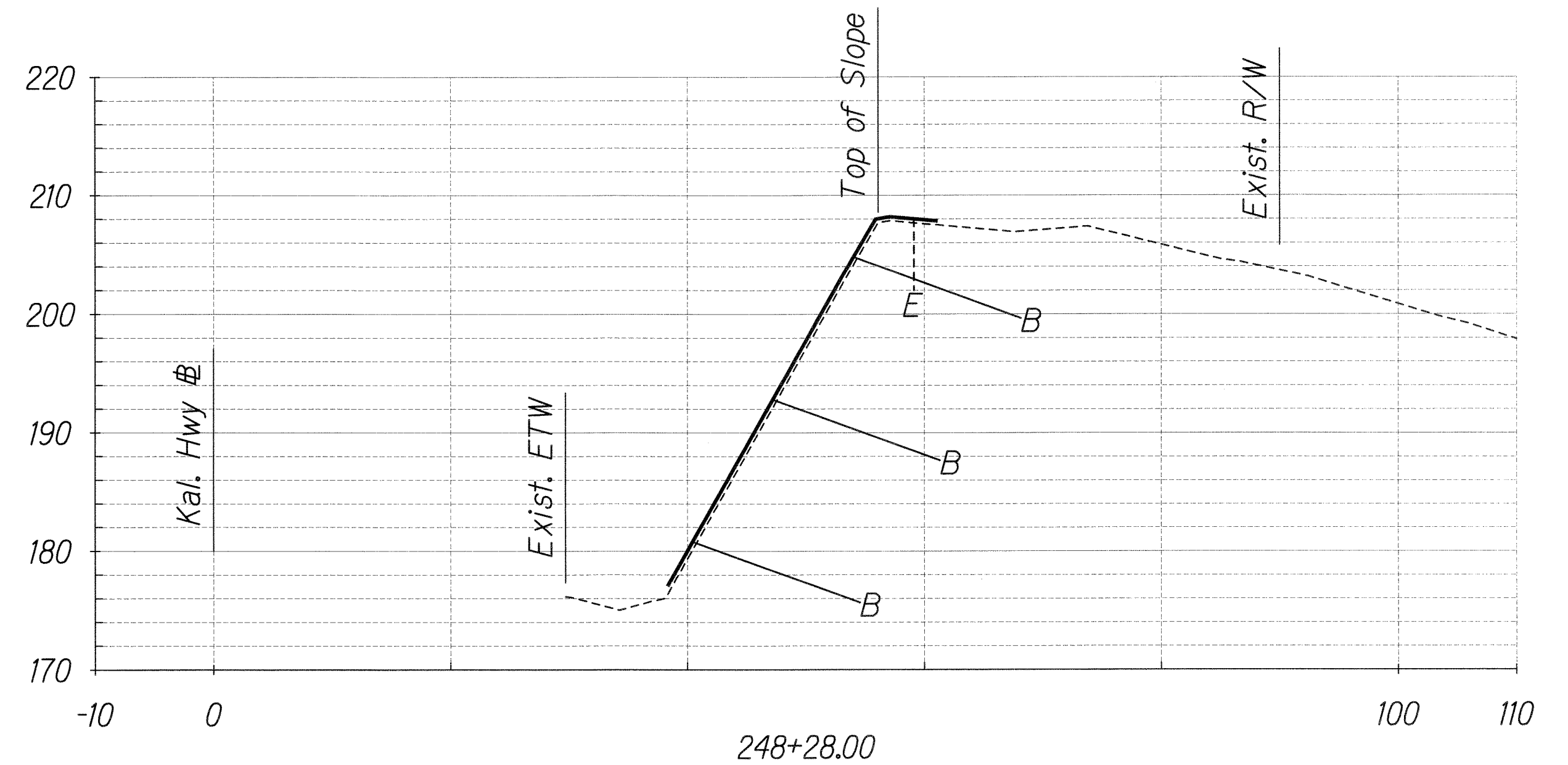
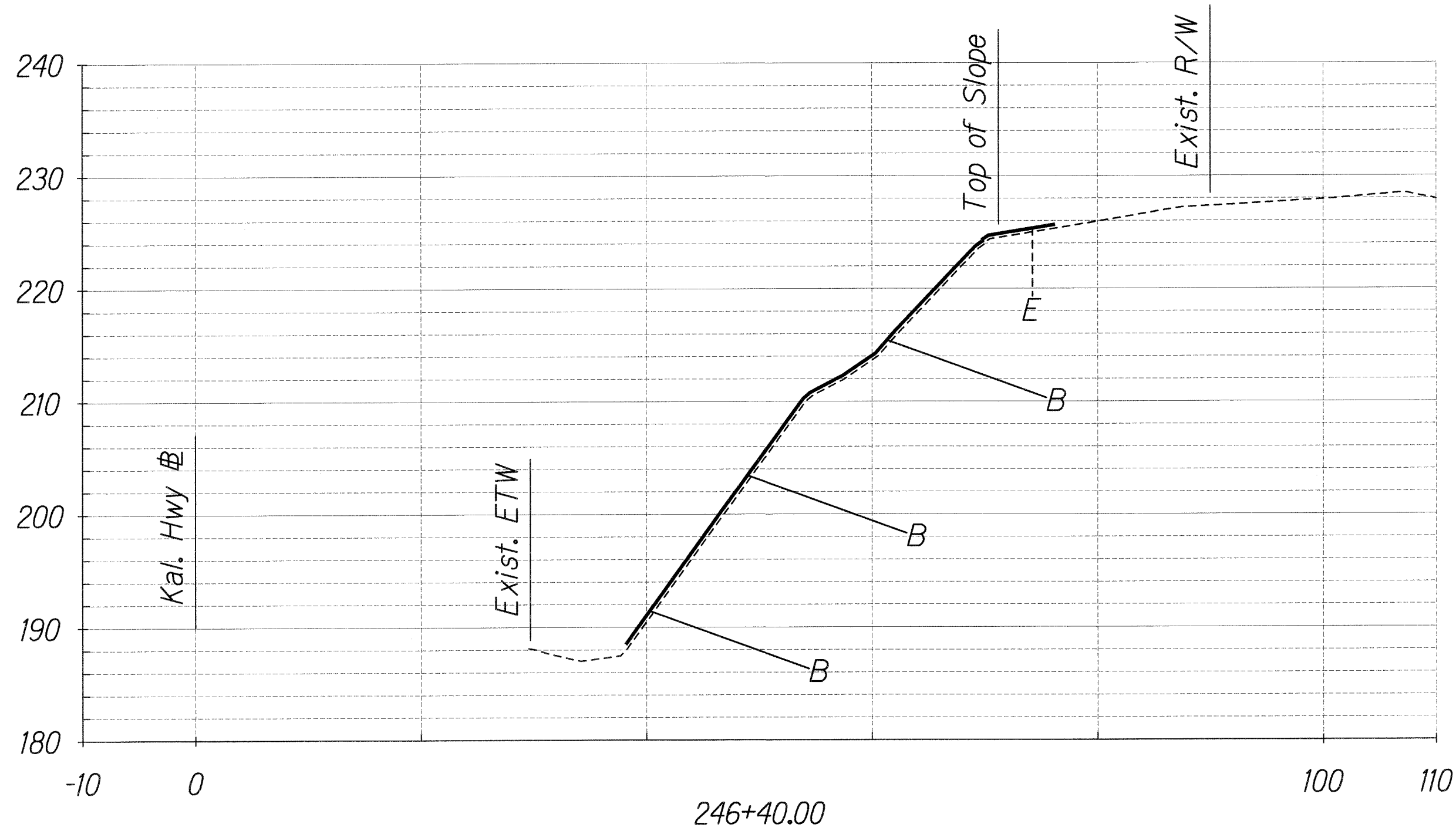
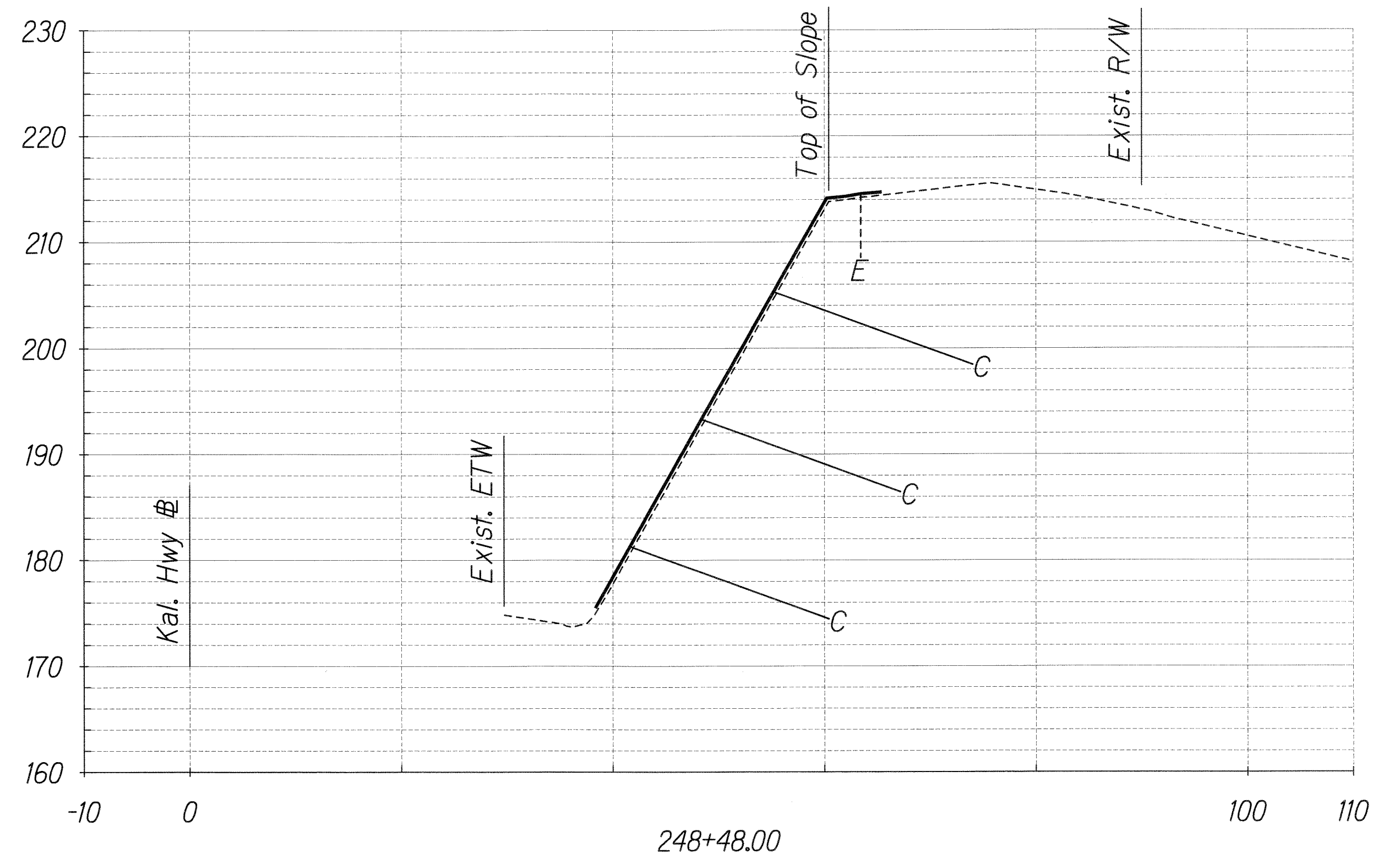
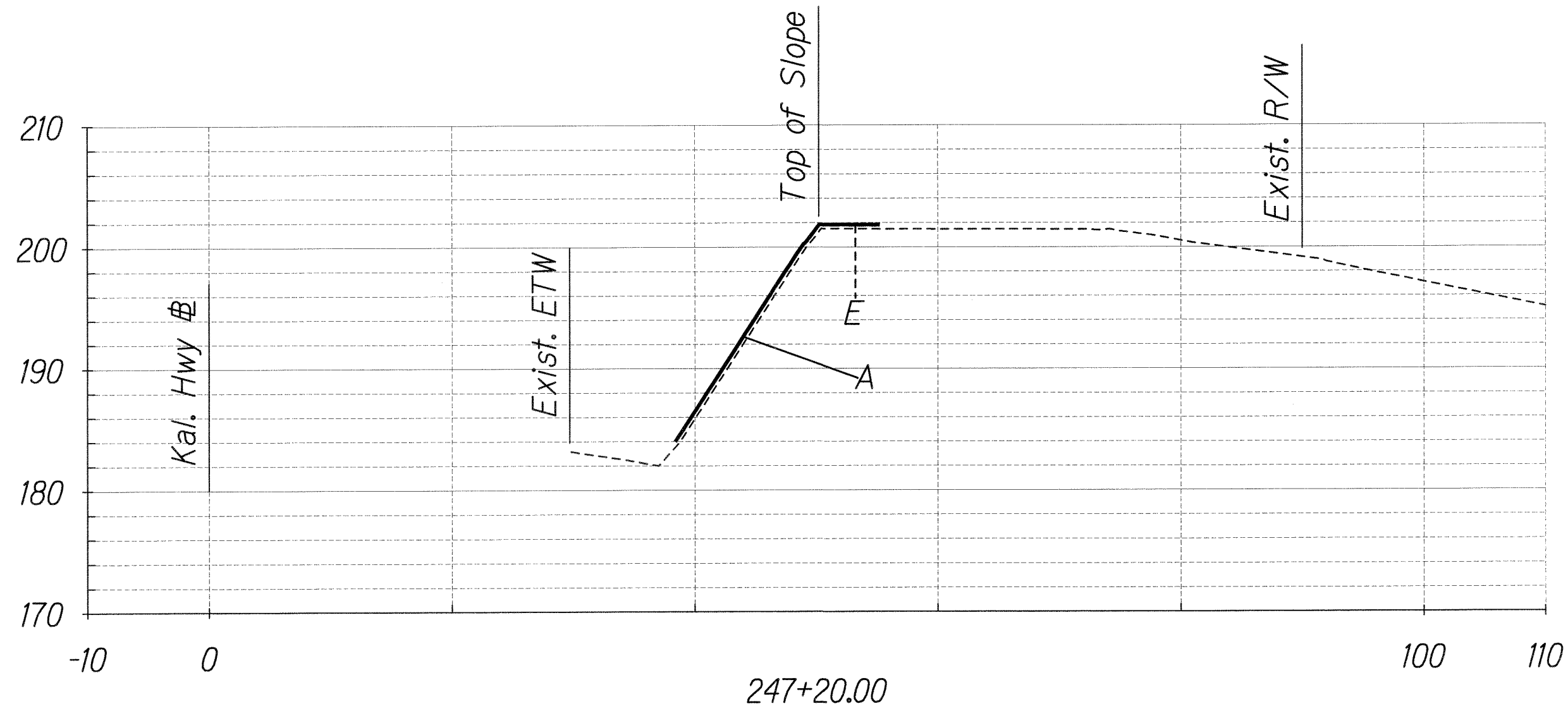
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

ANCHORED WIRE MESH SYSTEM
SITE #1 - CROSS SECTION 1

SLOPE MAINTENANCE FOR EROSION CONTROL
AT VARIOUS SITES ON OAHU, PHASE 2
Project No. HWY-0-04-07M

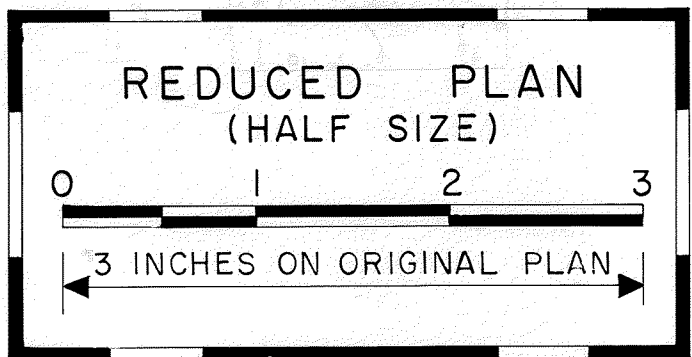
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FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	HWY-0-04-07M	2007	27	57



ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
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	CHECKED BY	

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HAWAII, U.S.A.

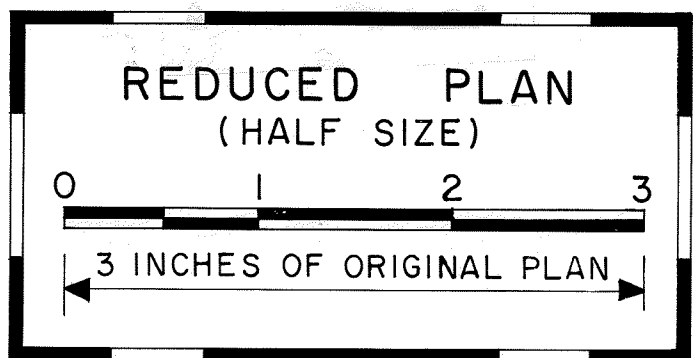
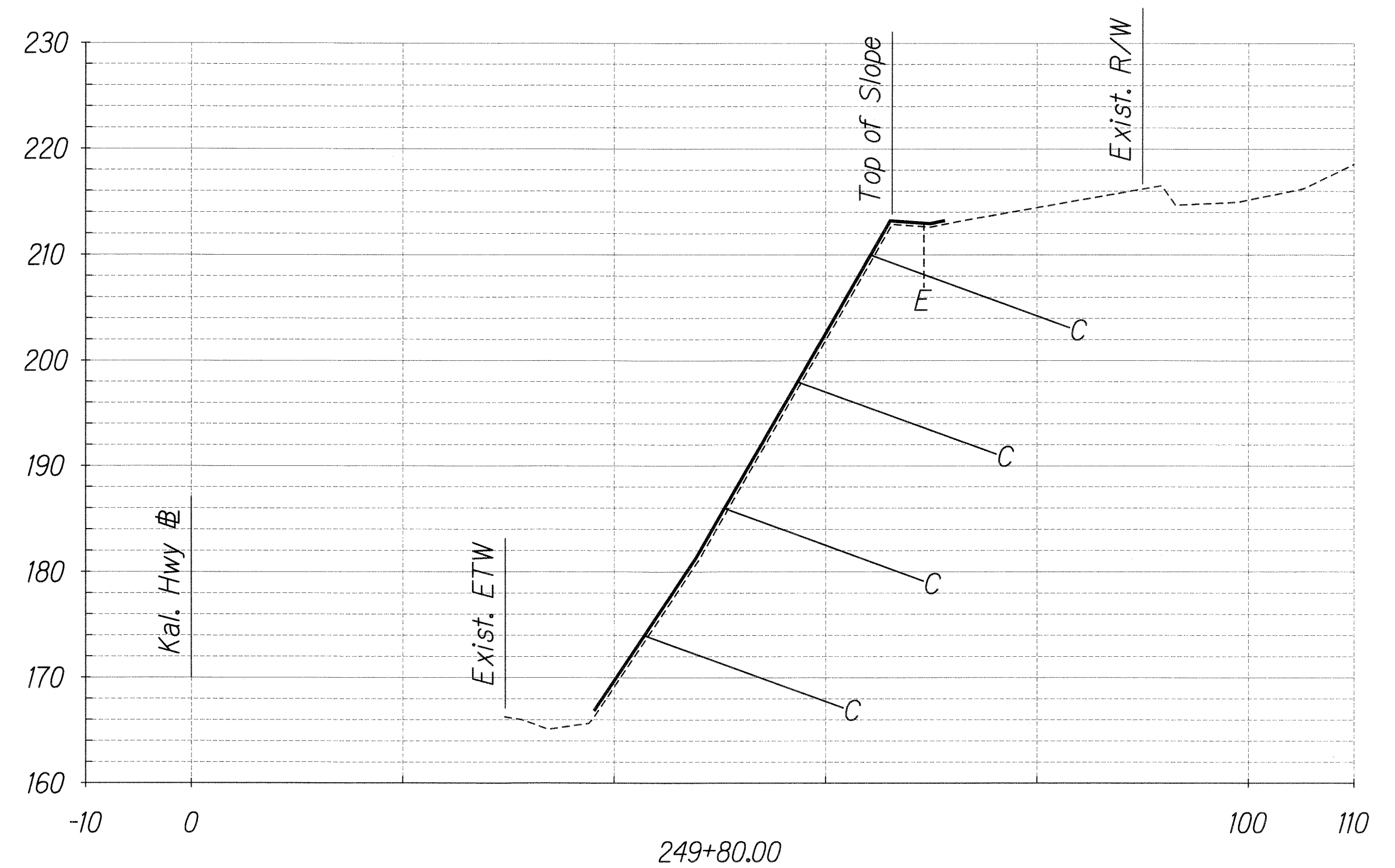
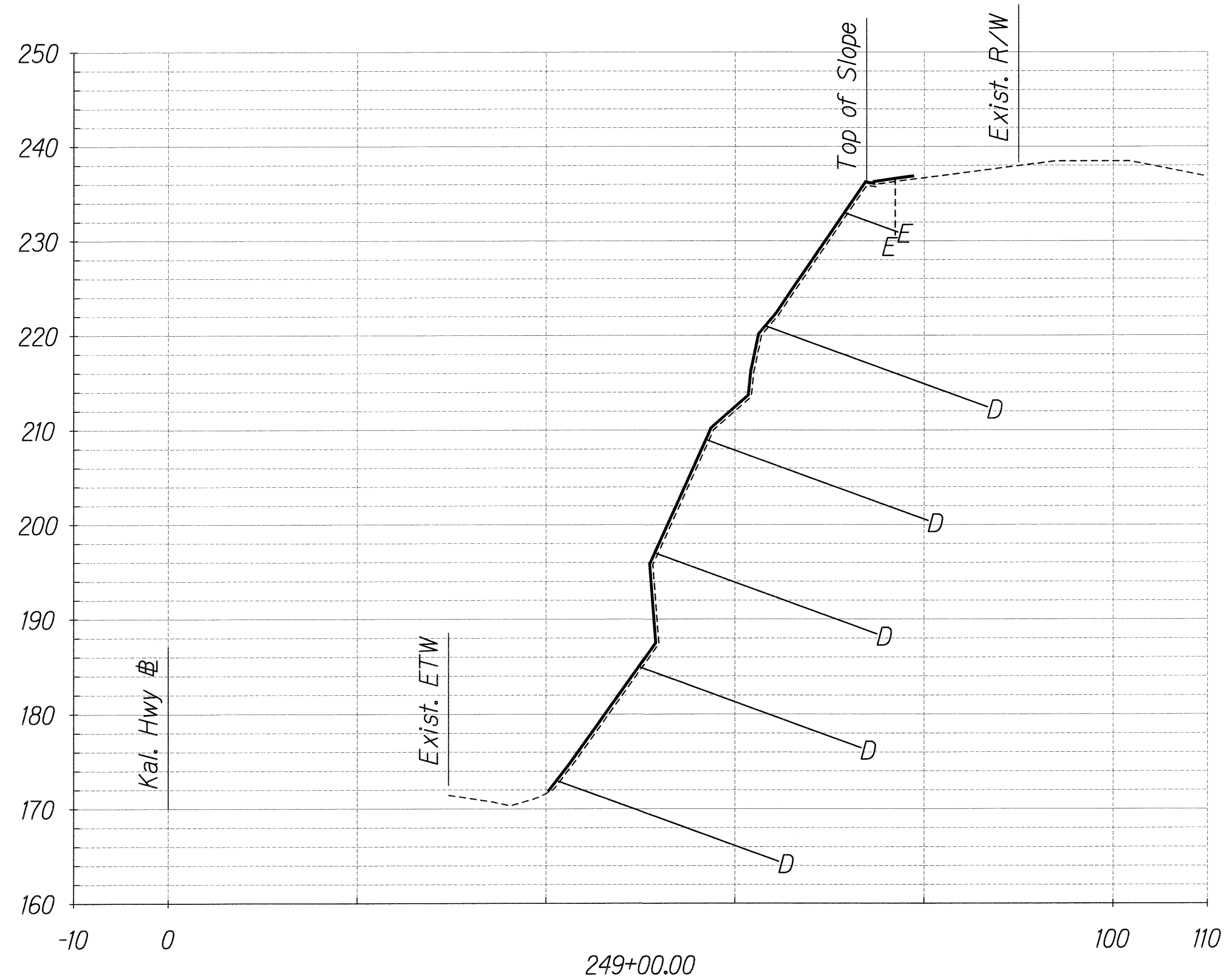
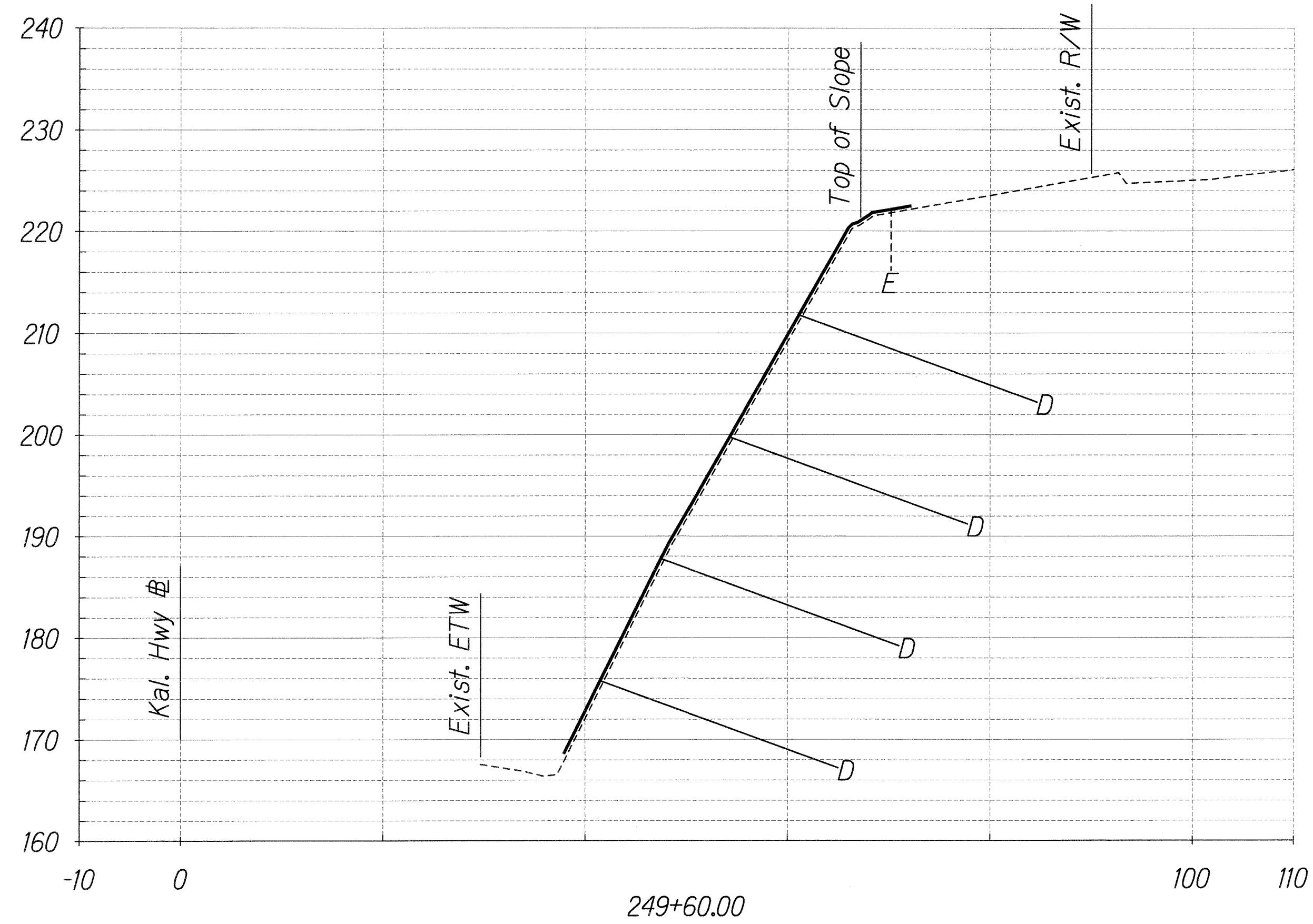
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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

ANCHORED WIRE MESH SYSTEM
SITE #1 - CROSS SECTION 2
SLOPE MAINTENANCE FOR EROSION CONTROL
AT VARIOUS SITES ON OAHU, PHASE 2
Project No. HWY-0-04-07M
Scale: 1"=10' Date: April 2007

SHEET No. E-16 OF 21 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	HWY-0-04-07M	2007	28	57



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LICENSED PROFESSIONAL ENGINEER
No. 4176-C
HAWAII, U.S.A.

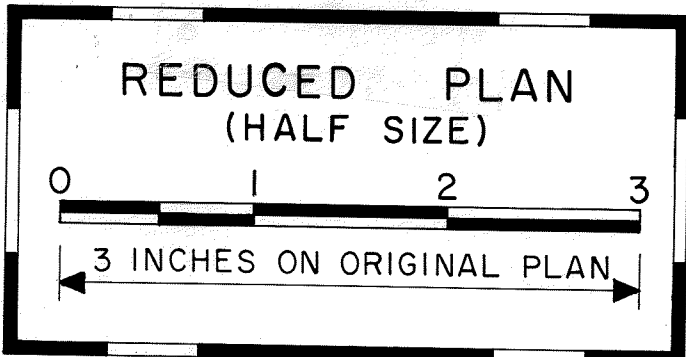
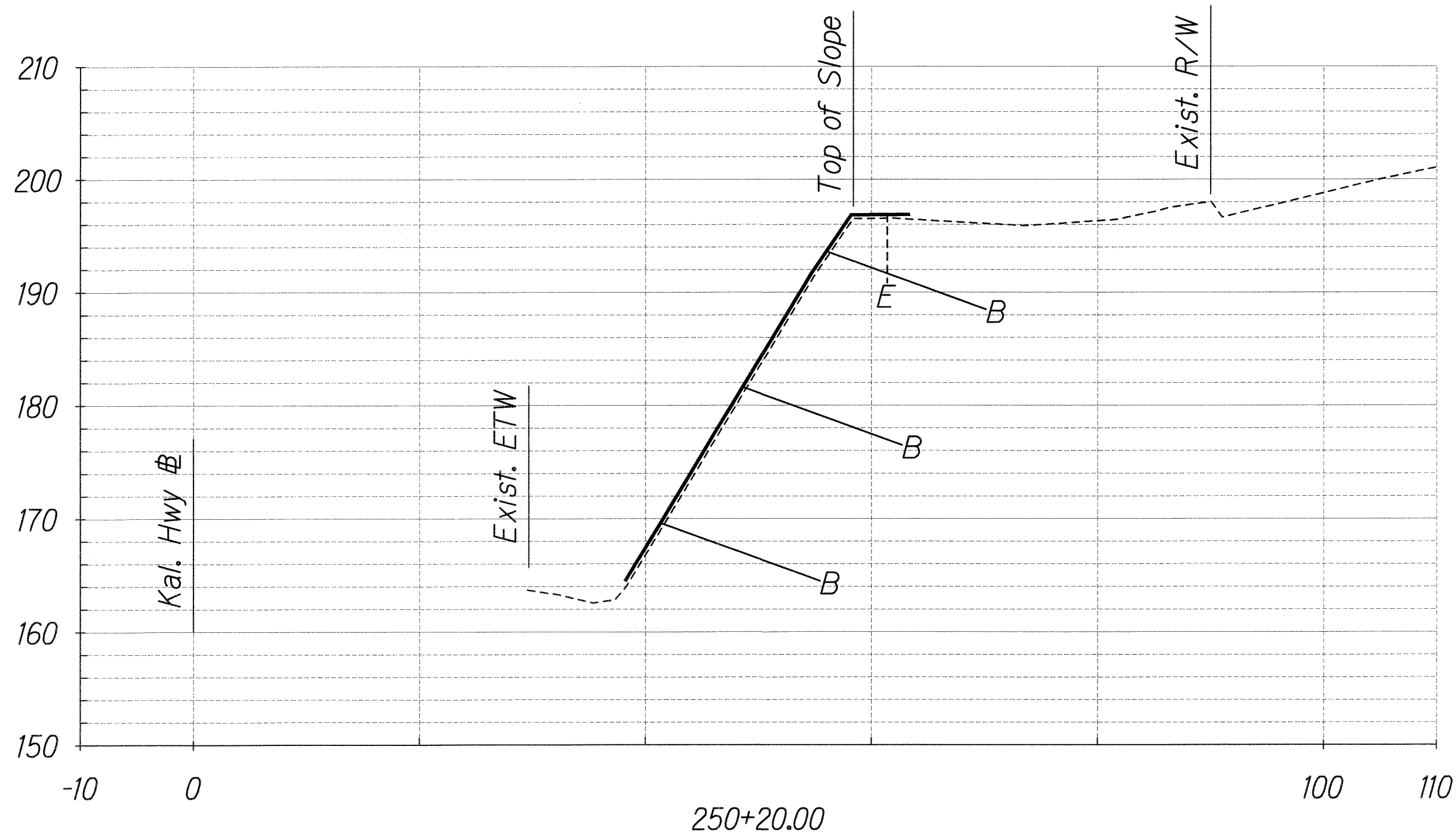
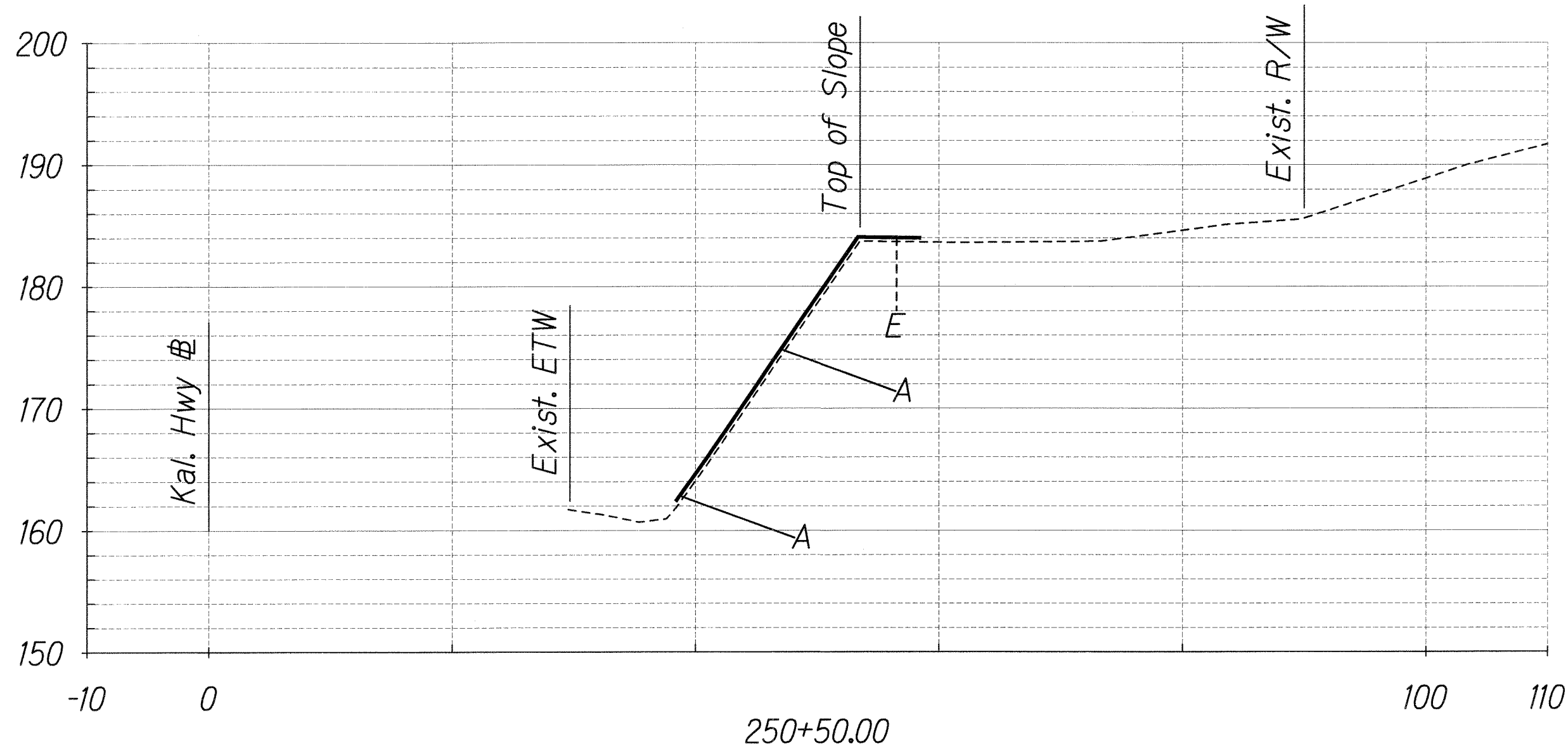
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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
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ANCHORED WIRE MESH SYSTEM
SITE #1 - CROSS SECTION 3
SLOPE MAINTENANCE FOR EROSION CONTROL
AT VARIOUS SITES ON OAHU, PHASE 2
Project No. HWY-0-04-07M

Scale: 1"=10' Date: April 2007

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	HWY-0-04-07M	2007	29	57



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No. 4176-C
HAWAII, U.S.A.

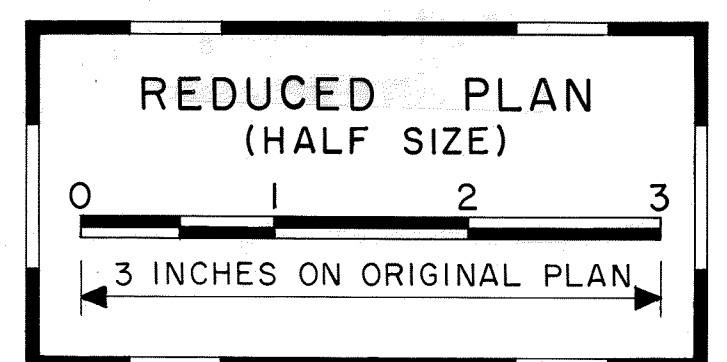
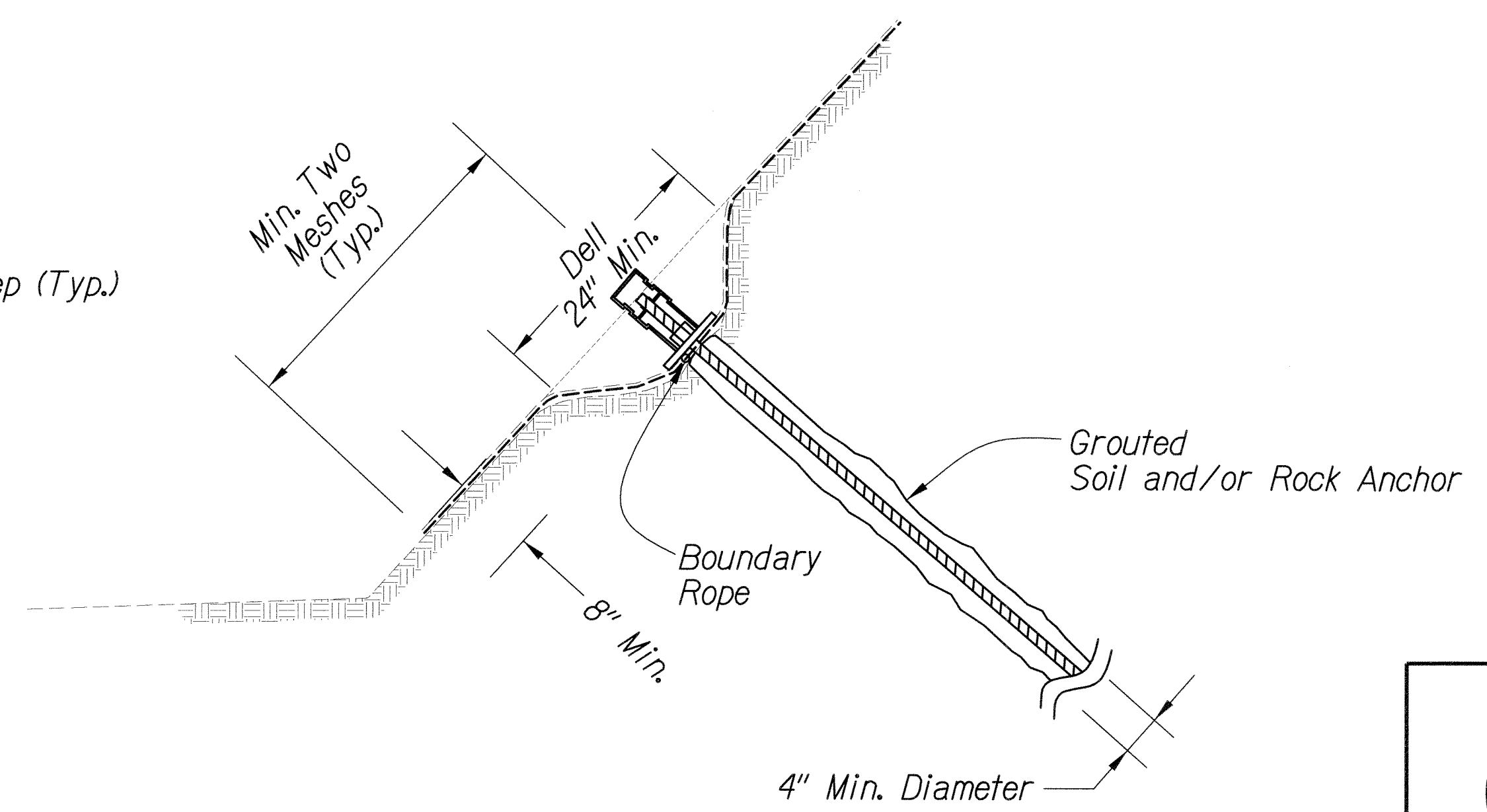
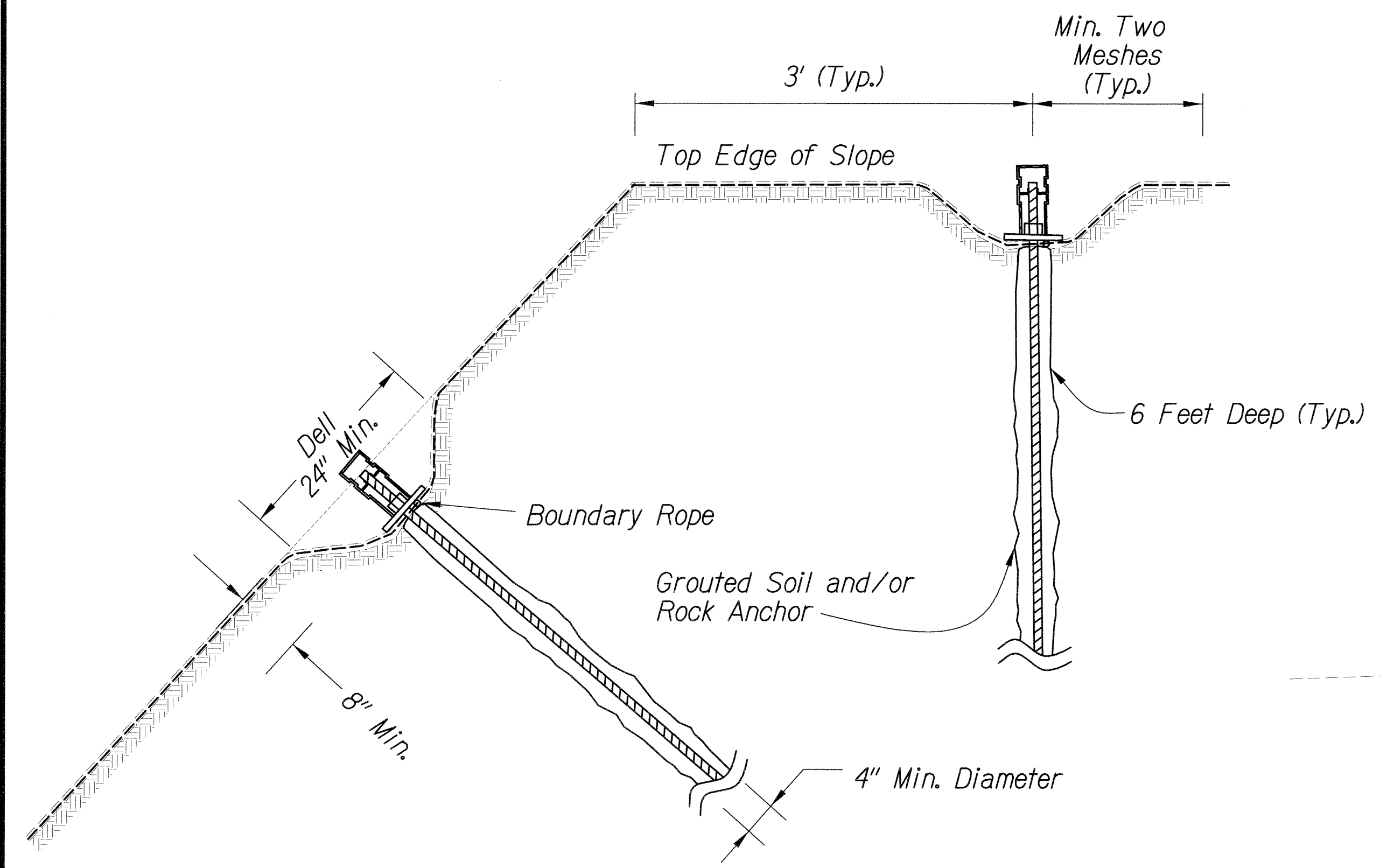
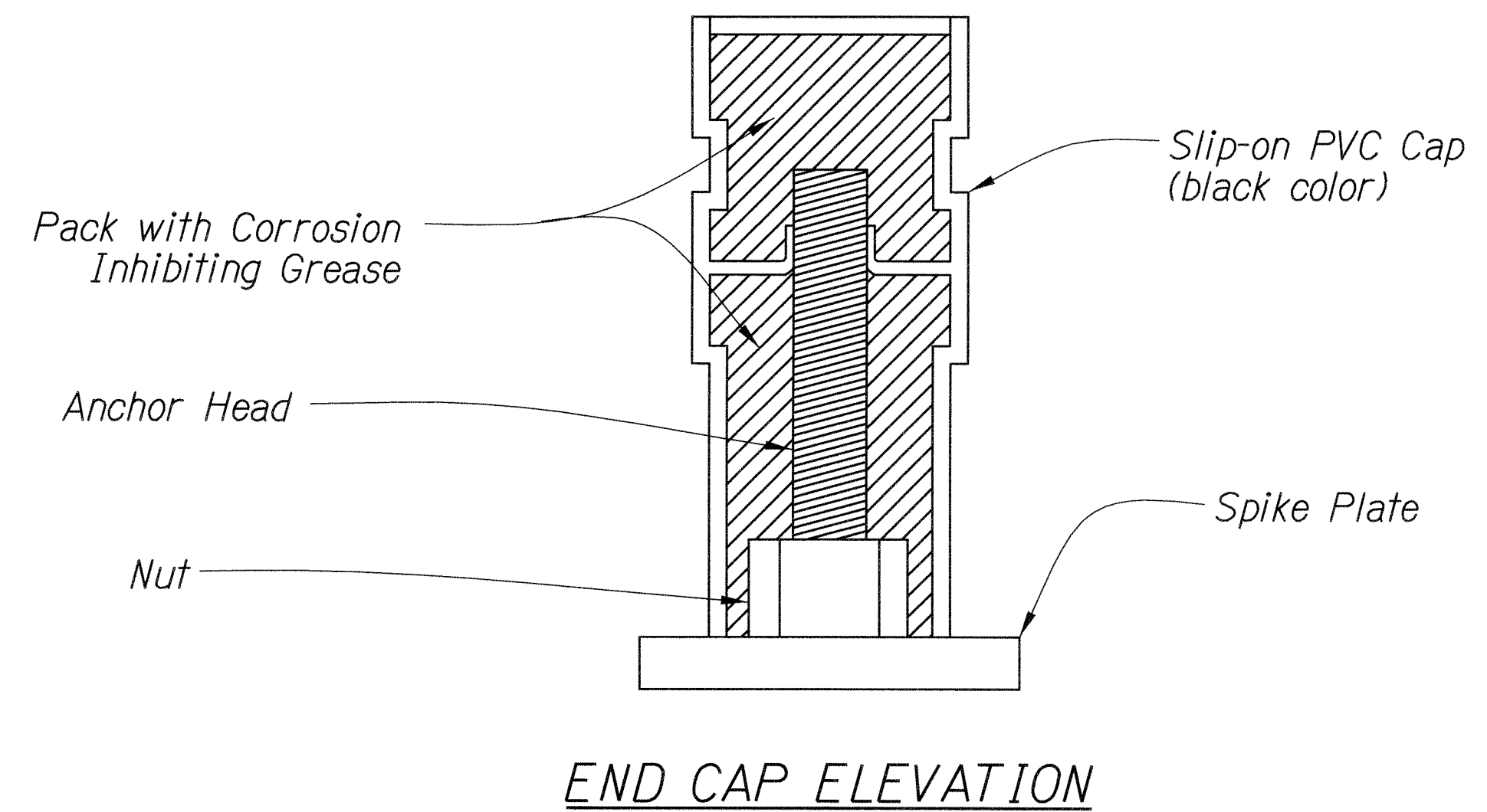
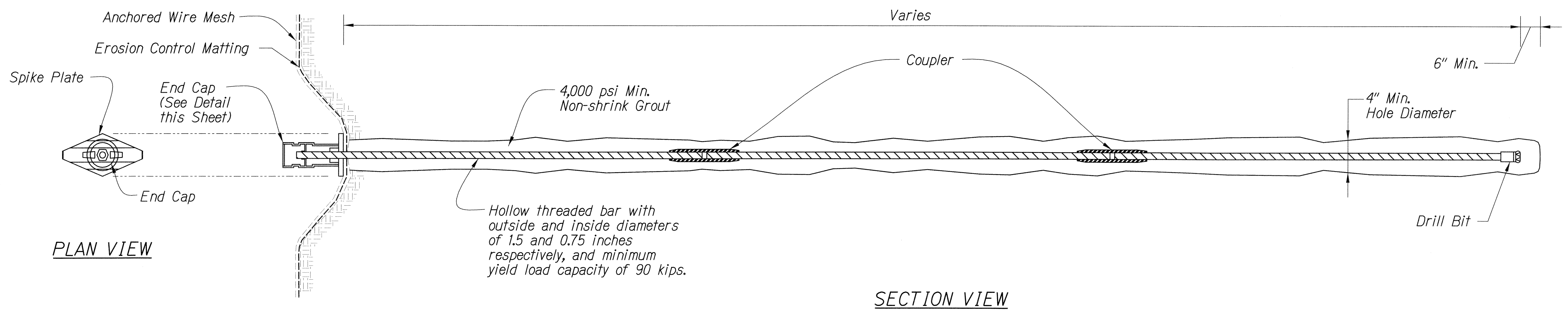
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ANCHORED WIRE MESH SYSTEM
SITE #1 - CROSS SECTION 4
SLOPE MAINTENANCE FOR EROSION CONTROL
AT VARIOUS SITES ON OAHU, PHASE 2
Project No. HWY-0-04-07M

Scale: 1"=10' Date: April 2007

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	HWY-0-04-07M	2007	31	57



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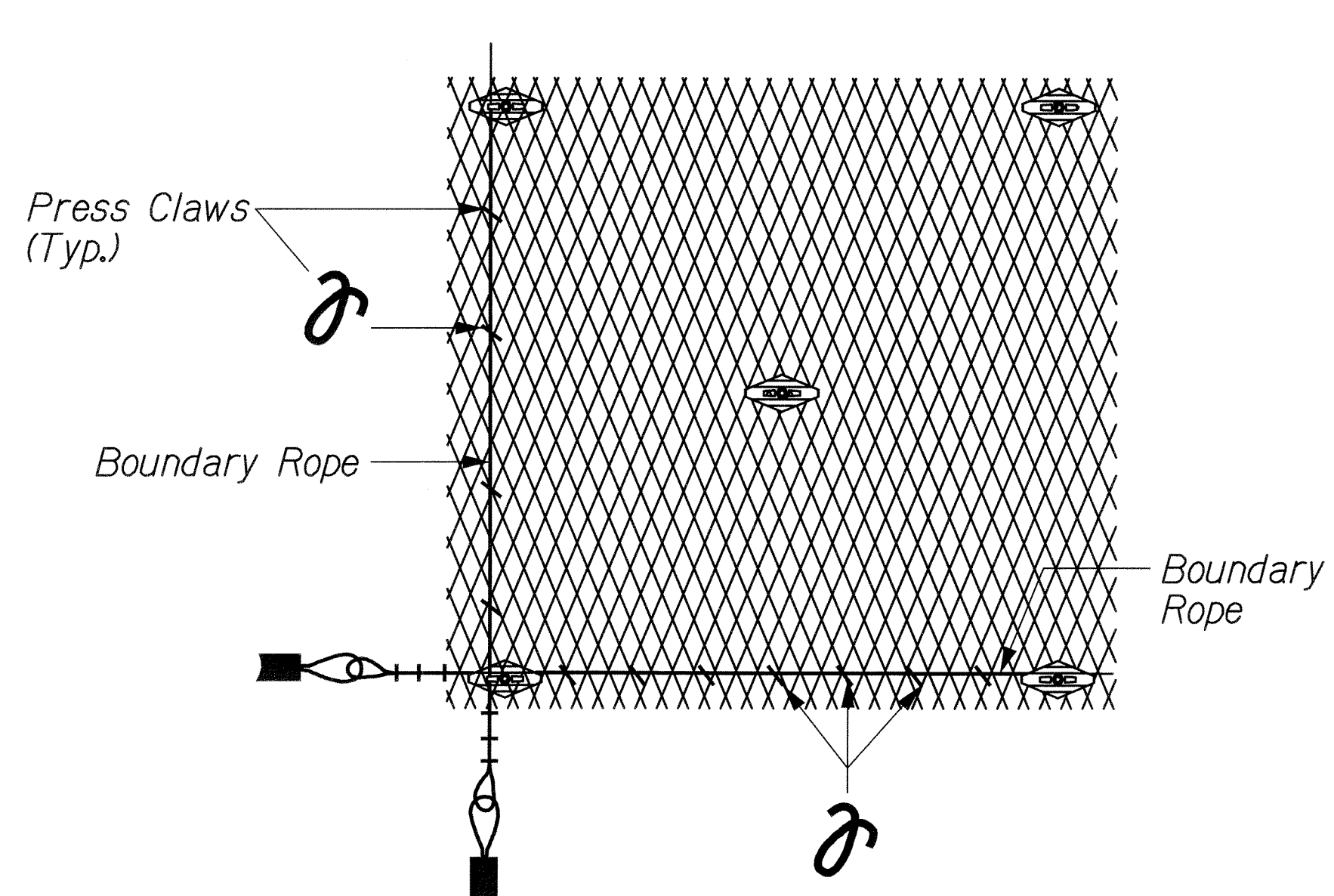
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

**ANCHORED WIRE MESH SYSTEM
GROUTED SOIL/ROCK ANCHOR DETAILS**

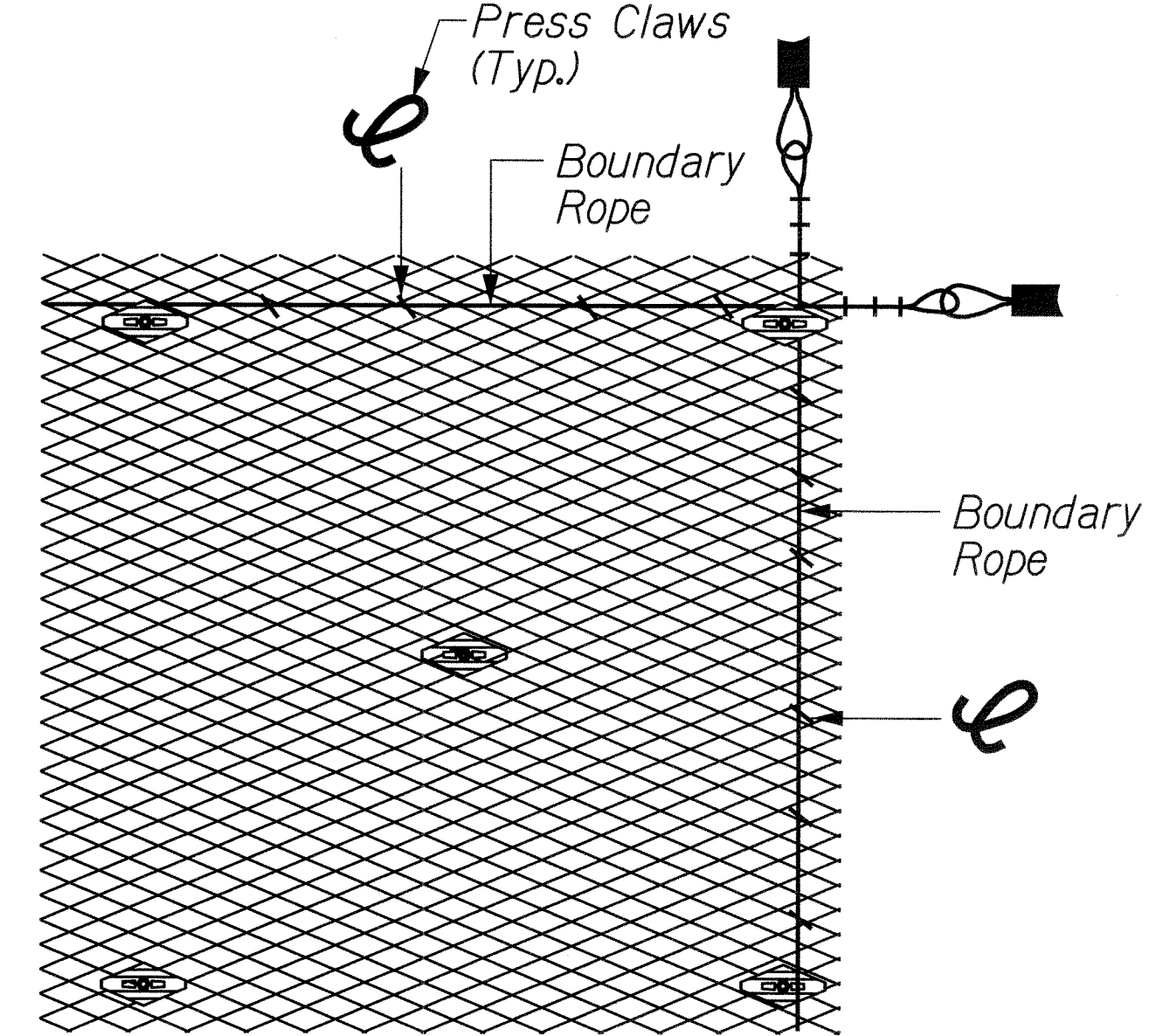
SLOPE MAINTENANCE FOR EROSION CONTROL
AT VARIOUS SITES ON OAHU, PHASE 2
Project No. HWY-0-04-07M

Scale: Not to Scale Date: April 2007

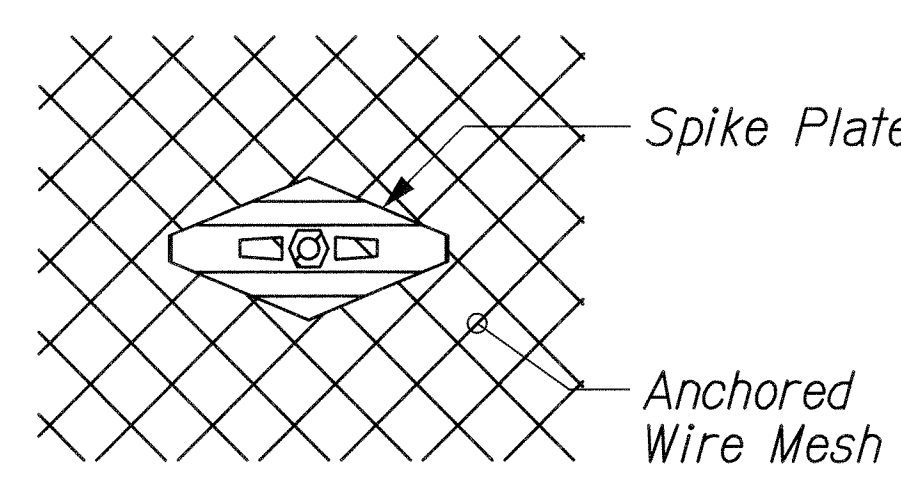
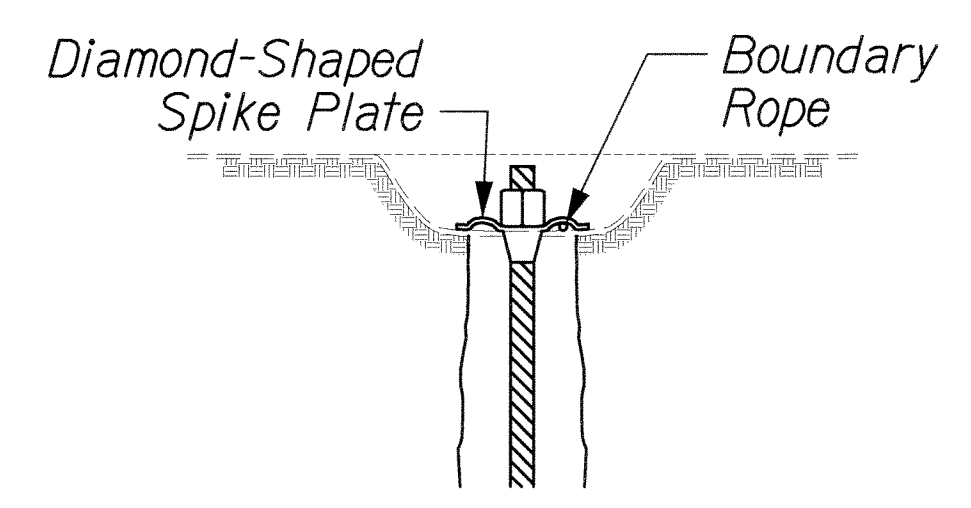
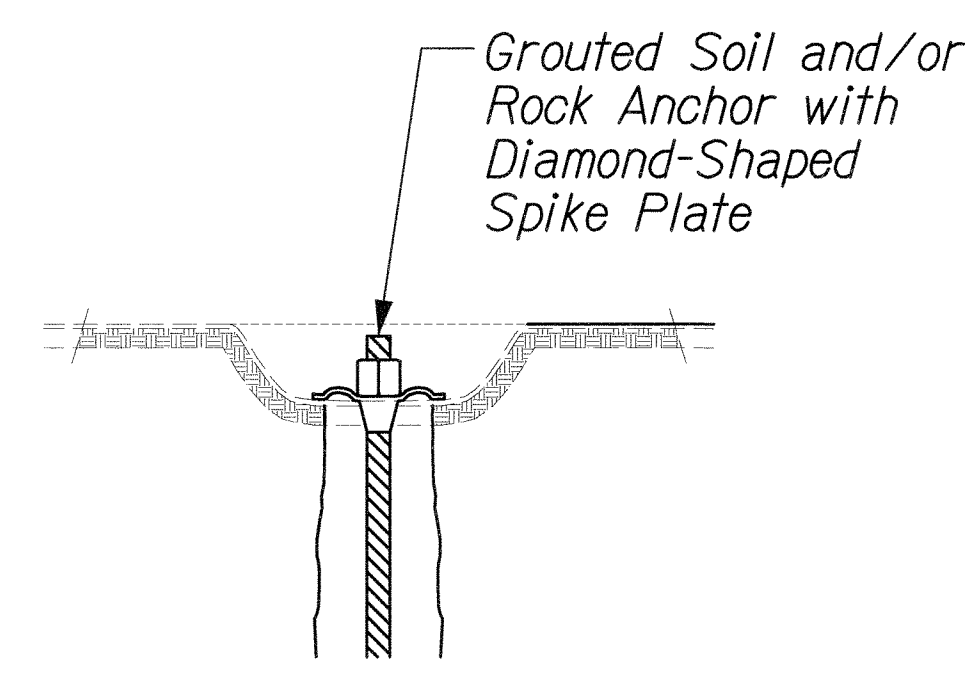
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HAWAII	HAW.	HWY-0-04-07M	2007	32	57



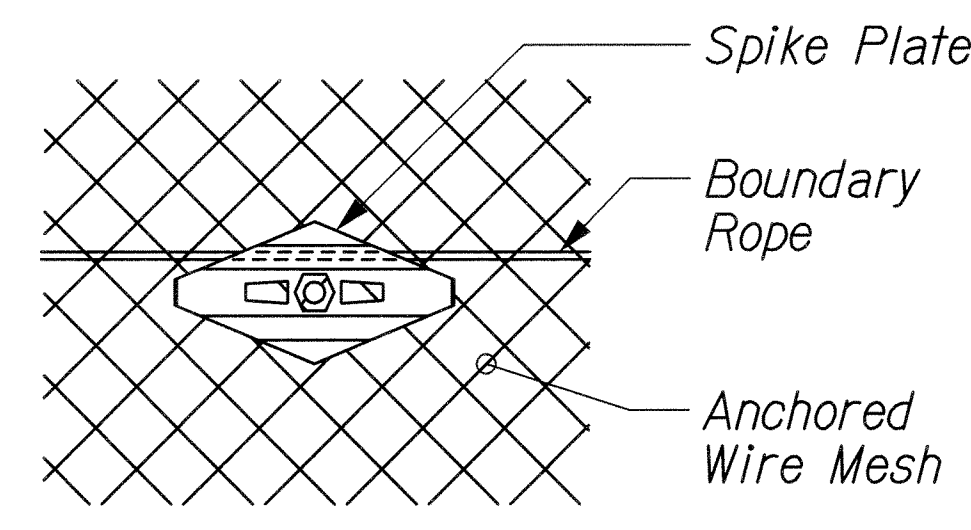
BOUNDARY ROPE AT THE BOTTOM AND SIDE OF ANCHORED WIRE MESH SYSTEM



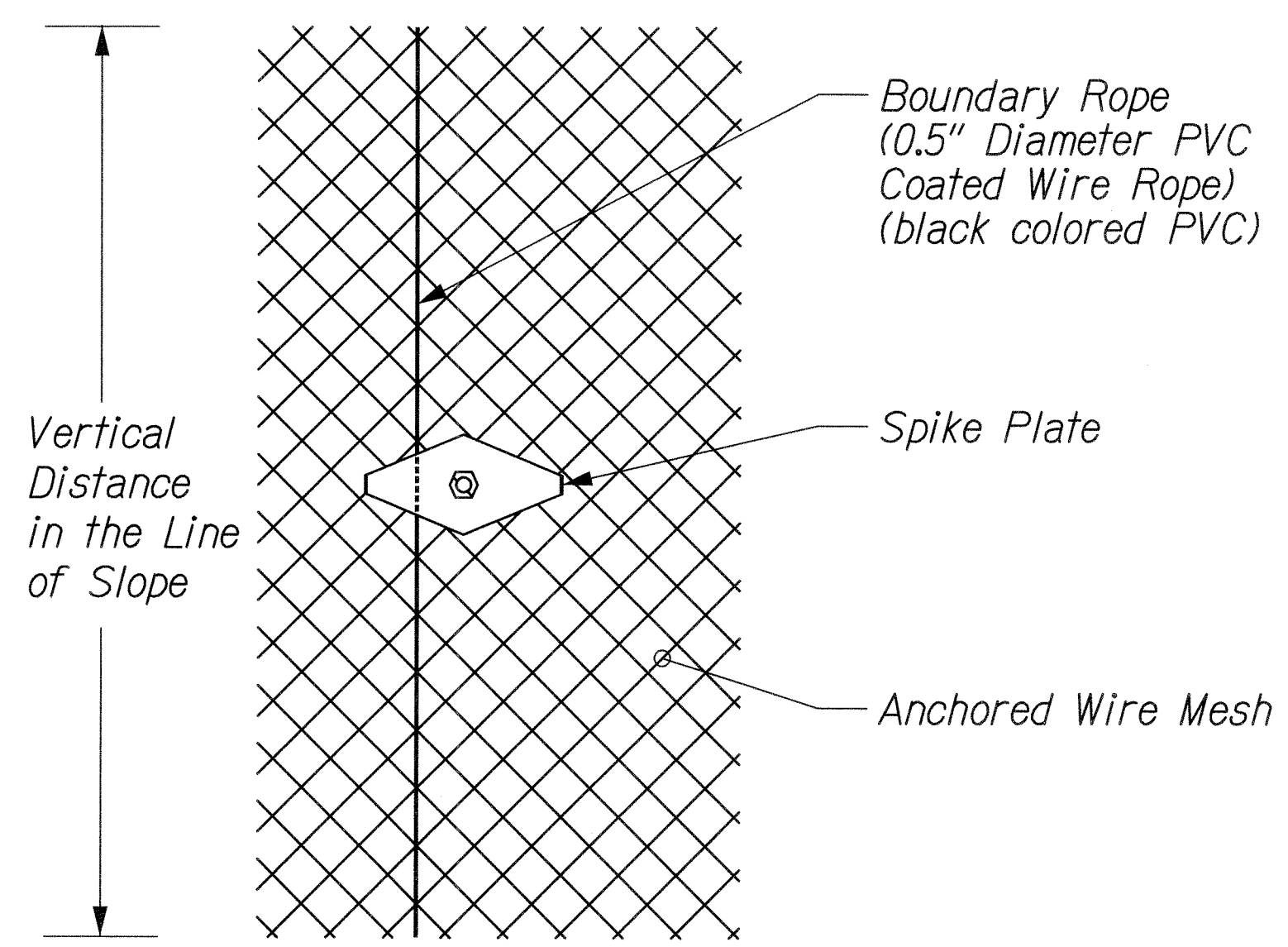
BOUNDARY ROPE AT THE TOP AND SIDE OF ANCHORED WIRE MESH SYSTEM



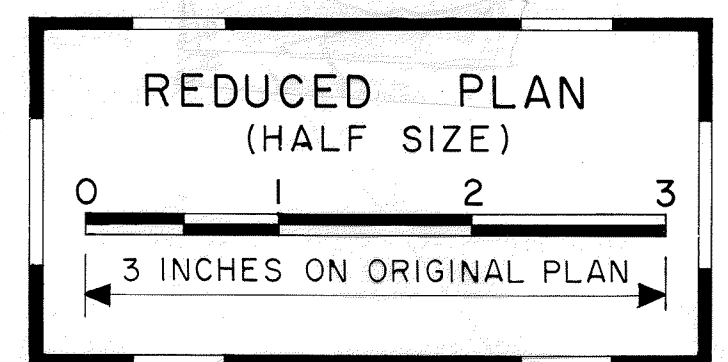
GROUTED SOIL AND/OR ROCK ANCHOR AND SPIKE PLATE



GROUTED SOIL AND/OR ROCK ANCHOR AND SPIKE PLATE WITH HORIZONTAL BOUNDARY ROPE



GROUTED SOIL AND/OR ROCK ANCHOR AND SPIKE PLATE WITH VERTICAL BOUNDARY ROPE



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DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

**ANCHORED WIRE MESH SYSTEM
BOUNDARY ROPE DETAILS**

SLOPE MAINTENANCE FOR EROSION CONTROL
AT VARIOUS SITES ON OAHU, PHASE 2
Project No. HWY-0-04-07M

Scale: Not to Scale Date: April 2007

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