FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83B-01-09	2023	1	231

STATE OF HAWAII

DEPARTMENT OF TRANSPORTATION

HIGHWAYS DIVISION

HONOLULU, HAWAII

PLANS FOR

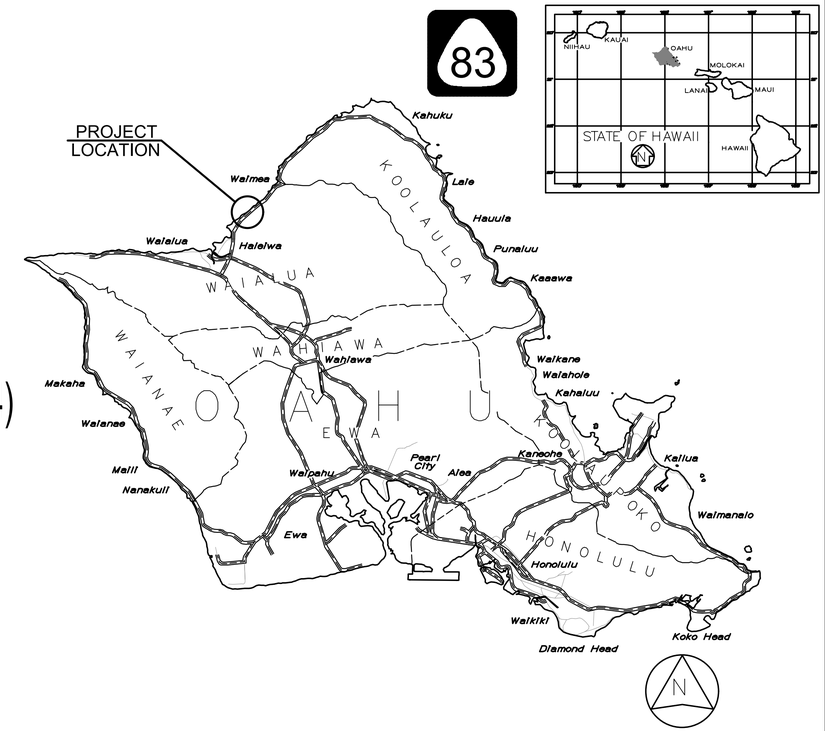
KAMEHAMEHA HIGHWAY DRAINAGE AND SAFETY IMPROVEMENTS

VICINITY OF LANIAKEA BEACH (MP 3.06 TO MP 3.54)

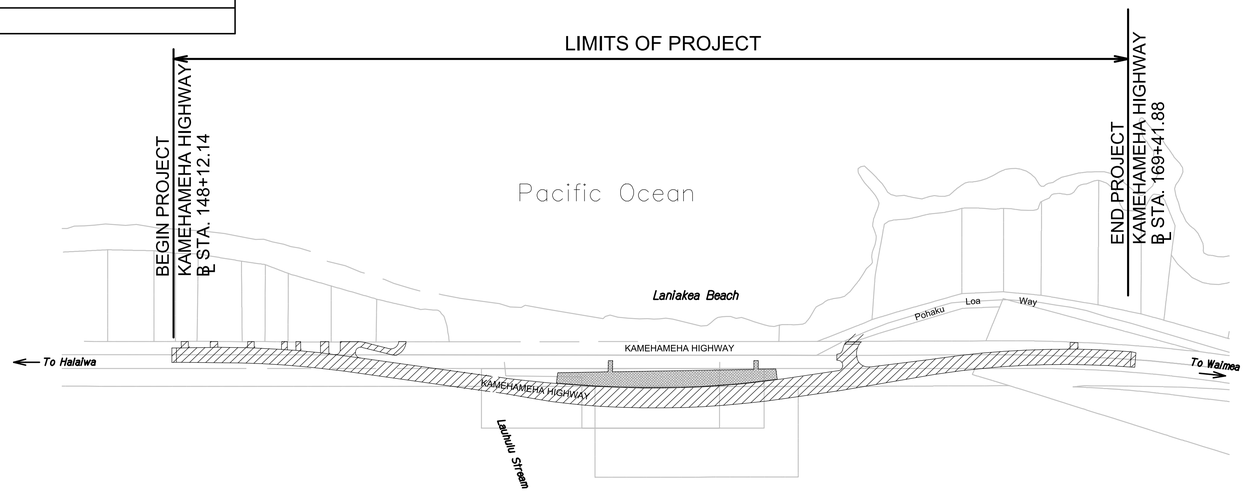
PROJECT NO. 83B-01-09

DISTRICT OF WAIALUA

ISLAND OF OAHU



INDEX TO DRAWINGS	
SHEET NO.	DESCRIPTION
1	TITLE SHEET
2	STANDARD PLAN SUMMARY
3-5	GENERAL NOTES, LEGEND AND ABBREVIATIONS
6-11	UTILITY NOTES
12-15	WATER POLLUTION AND EROSION CONTROL NOTES AND DETAILS
16	EROSION AND SEDIMENT CONTROL PLAN
17-22	BORING LOCATION PLAN, LEGEND, AND BORING LOGS
23	DEMOLITION PLAN
24	TEMPORARY FENCING PLAN
25-28	TYPICAL SECTIONS
29	SURVEY CONTROL PLAN
30-33	ALIGNMENT PLANS
34-35	ROADWAY PLAN AND PROFILE
36	SUPERELEVATION DIAGRAM
37-40	ROADWAY CONSTRUCTION PLANS
41	ELEVATION WINGWALL NO. 1, 2, 3 & 4
42	PLAN AND PROFILE FH LATERAL A,B & C
43	PLAN AND PROFILE TEMPORARY 12" WATERLINE
44-49	GRADING NOTES, GRADING AND DRAINAGE PLANS AND PROFILES
50	DUMPED RIPRAP PLAN AND DETAILS
51-55	MISCELLANEOUS DETAILS
56-58	MISCELLANEOUS DETAILS
59-62	SPOT ELEVATION PLANS
63-65	GUARDRAIL DETAILS
66	PAVEMENT MARKINGS NOTES AND LEGEND
67-73	SIGNING AND PAVEMENT MARKINGS PLANS & DETAILS
74	CONSTRUCTION PHASING PLAN
73-88	TRAFFIC CONTROL NOTES AND PLANS
89-111	ELECTRICAL PLANS
112-191	STRUCTURAL PLANS
192-201	LANDSCAPING PLANS
202-231	CROSS SECTIONS



KAMEHAMEHA HIGHWAY
LOCATION PLAN - SITE

Scale: NTS

N

WSP USA — DESIGNED BY

HWY-DD — MANAGED BY

692-7578 — PHONE

DEC 2022 — DATE

SURVEY PLOTTED BY
DRAWN BY
TRACED BY
DESIGNED BY
QUANTITIES BY
CHECKED BY
DATE

ORIGINAL PLAN

NOTE BOOK
No.

DEPARTMENT OF TRANSPORTATION
STATE OF HAWAII

APPROVED:

Jun 14, 2023

DIR. OF TRANSPORTATION — DATE

STANDARD PLANS SUMMARY

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83B-01-09	2023	2	231

STANDARD PLAN NO.	TITLE	DATE
B-01 ●	NOTES & MISCELLANEOUS DETAILS	05/31/07
B-03 ·	BACKFILL DETAILS AT EARTH RETAINING STRUCTURES	05/31/07
B-12 ·	PRESTRESSED CONCRETE PILES & COMPRESSION SPLICE	05/31/07
	CAN DETAILS	
B-12A ·	PRESTRESSED CONCRETE PILES, PILE & COMPRESSION	05/31/07
	SPLICE CAN DETAILS & NOTES	
B-12B ·	PILE INTERACTION DIAGRAM	05/31/07
B-13 ·	PRESTRESSED CONCRETE PILE BUILD-UP DETAILS	05/31/07

D-01 ●	CATTLE GATE	05/31/07
D-02 ●	CHAIN LINK FENCE WITH TOPRAIL	05/31/07
D-03 ●	CHAIN LINK FENCE WITHOUT TOPRAIL	05/31/07
D-04 ·	WIRE FENCE WITH METAL POSTS	05/31/07
D-05 ·	TYPICAL DETAILS OF CURBS AND/OR GUTTERS	05/31/07
D-06 ·	TYPICAL DETAIL OF REINFORCED CONCRETE DROP DRIVEWAY	05/31/07
D-07 ●	CENTERLINE AND REFERENCE SURVEY MONUMENTS	05/31/07
D-08 ·	STREET SURVEY MONUMENT	05/31/07
D-15 ·	CONCRETE SIDEWALK	05/31/07
D-16 ·	P.C.C. BUS PAD	05/31/07
D-17 ·	P.C.C. BUS PAD	05/31/07
D-18 ·	P.C.C. PAVEMENT LAYOUT	05/31/07
D-19 ·	P.C.C. PAVEMENT W/ PERMEABLE BASE JOINT DETAILS	05/31/07
D-20 ·	P.C.C. PAVEMENT W/ PERMEABLE BASE JOINT DETAILS	05/31/07
D-21 ·	P.C.C. LONGITUDINAL JOINT DETAILS	05/31/07
D-22 ·	P.C.C. CONNECTION TO CURBS AND GUTTERS	05/31/07
D-23 ·	JOINTS	05/31/07

L-01 ●	TREE PLANTING	08/16/06
L-02 ●	TREE PLANTING	08/16/06
L-03 ●	TREE TRANSPLANTING	08/16/06
L-04 ●	PALM PLANTING	08/16/06
L-05 ●	SHRUB PLANTING	08/16/06
L-06 ●	LANDSCAPE DETAILS	08/16/06
L-07 ●	LANDSCAPE DETAILS	08/16/06
L-08 ●	LANDSCAPE DETAILS	08/16/06
L-09 ●	LANDSCAPE DETAILS	08/16/06
L-10 ●	LANDSCAPE DETAILS	08/16/06
L-11 ●	PLANTING NOTES	08/16/06
L-12 ·	IRRIGATION DETAILS	08/16/06
L-13 ·	IRRIGATION DETAILS	08/16/06
L-14 ·	IRRIGATION DETAILS	08/16/06
L-15 ·	IRRIGATION DETAILS	08/16/06
L-16 ·	IRRIGATION DETAILS	08/16/06
L-17 ·	IRRIGATION DETAILS	08/16/06
L-18 ·	IRRIGATION DETAILS	08/16/06
L-19 ·	IRRIGATION DETAILS	08/16/06
L-20 ·	IRRIGATION DETAILS	08/16/06
L-21 ·	IRRIGATION DETAILS	08/16/06
L-22 ·	IRRIGATION DETAILS	08/16/06
L-23 ·	IRRIGATION DETAILS	08/16/06
L-24 ·	IRRIGATION NOTES	08/16/06

STANDARD PLAN NO.	TITLE	DATE
H-01A ·	TYPE A CATCH BASIN	05/31/07
H-01B ·	TYPE B CATCH BASIN	05/31/07
H-01C ·	TYPE C CATCH BASIN	05/31/07
H-01D ·	TYPE D CATCH BASIN	05/31/07
H-01E ·	CATCH BASIN SECTIONS	05/31/07
H-02A ·	TYPE A1 CATCH BASIN	05/31/07
H-02B ·	TYPE B2 CATCH BASIN	05/31/07
H-02C ·	TYPE C1 CATCH BASIN	05/31/07
H-02D ·	TYPE D1 CATCH BASIN	05/31/07
H-02E ·	CATCH BASIN SECTION	05/31/07
H-03 ●	TYPE A,B, AND C STORM DRAIN MANHOLE	05/31/07
H-04 ·	TYPE D STORM DRAIN MANHOLE	05/31/07
H-05 ·	TYPICAL REINFORCING DETAILS FOR DRAINAGE STRUCTURES	05/31/07
H-06 ·	TYPICAL REINFORCING DETAILS FOR DRAINAGE STRUCTURES	05/31/07
H-07 ●	CATCH BASIN AND MANHOLE CASTINGS	05/31/07
H-08 ·	TYPE 1A-9 AND 1A-9P GRATED DROP INLET	05/31/07
H-09 ·	TYPE 2A-9 AND 2A-9P GRATED DROP INLET	05/31/07
H-10 ·	TYPE A-9 OR A-9P STEEL FRAMES	05/31/07
H-11 ·	TYPE A-9 AND A-9P STEEL GRATES	05/31/07
H-12 ·	TYPE 61614P AND 1211214P GRATED DROP INLET	05/31/07
H-13 ●	TYPE 61616P AND 1211216P GRATED DROP INLET	05/31/07
H-14 ·	TYPE 61214P GRATED DROP INLET	05/31/07
H-15 ·	TYPE 1211214, 1211214P, 1211216, 1211216P STEEL	05/31/07
	FRAME AND GRATES	
H-16 ●	TYPE 61614, 61614P, 61616, 61616P STEEL FRAME	05/31/07
	AND GRATES	
H-17 ·	TYPE 61214 STEEL FRAMES AND GRATES	05/31/07
H-18 ·	TYPE 61214P STEEL GRATES	05/31/07
H-19 ·	TYPE 61614B STEEL FRAME AND GRATES	05/31/07
H-20 ·	CEMENT RUBBLE MASONRY STRUCTURES	05/31/07
H-21 ·	CONCRETE AND CEMENT RUBBLE MASONRY STRUCTURES	05/31/07
H-22 ·	INLET/OUTLET STRUCTURE	05/31/07
H-23 ·	INLET/OUTLET STRUCTURE	05/31/07
H-24 ·	FLARED END SECTION FOR CULVERTS	05/31/07
H-25 ·	FLARED END SECTION FOR CULVERTS	05/31/07
H-26 ·	CONCRETE SPILLWAY INLET	05/31/07
H-27 ·	CAP COUPLING DETAILS STANDARD JOINT	05/31/07
H-28 ·	REINFORCED CONCRETE COLLAR & JACKET	05/31/07
H-29 ·	UNDERDRAIN CLEANOUT STEEL FRAME AND COVER	05/31/07
H-30 ·	UNDERDRAIN CONNECTION TO DRAINAGE STRUCTURE	05/31/07

TE-01 ●	SIGN HEIGHT AND LOCATION	07/11/08
TE-1A ●	SIGN INSTALLATION	07/11/08
TE-02A ●	GALVANIZED FLANGED CHANNEL SIGN POST MOUNTING	05/31/07
TE-02B ●	GALVANIZED FLANGED CHANNEL SIGN POST MOUNTING	05/31/07
TE-02C ●	GALVANIZED FLANGED CHANNEL SIGN POST MOUNTING	05/31/07
TE-03A ·	GALVANIZED SQUARE TUBE SIGN POST MOUNTING	05/31/07
TE-03B ·	GALVANIZED SQUARE TUBE SIGN POST MOUNTING	05/31/07
TE-04 ●	REGULATORY SIGNS	07/11/08
TE-05 ●	WARNING SIGNS	07/11/08
TE-06 ●	MISCELLANEOUS SIGNS	07/11/08
TE-07 ·	CONSTRUCTION SIGNS	07/11/08
TE-08 ·	MISCELLANEOUS INTERSECTION SIGNS	07/11/08

STANDARD PLAN NO.	TITLE	DATE
TE-09 ·	BIKE ROUTE SIGN & SUPPLEMENTARY PLATES	07/11/08
TE-10 ·	INTERSTATE ROUTE MARKER	07/11/08
TE-11 ·	STATE ROUTE MARKER AND AUXILIARY MARKERS	07/11/08
TE-12 ·	STATE ROUTE MARKER AND BORDER DETAIL FOR	07/11/08
·	GUIDE SIGNS	
TE-12A ·	ROUTE SIGN ASSEMBLIES	07/11/08
TE-13 ·	STREET NAME SIGN ON MAST ARM	07/11/08
TE-14 ●	MISCELLANEOUS REFLECTOR MARKERS	07/11/08
TE-15 ●	OBJECT MARKERS	07/11/08
TE-16 ·	MILE POSTS	07/11/08
TE-17A ·	CANTILEVER OVERHEAD SIGN ELEVATION & DETAILS	05/31/07
TE-17B ·	CANTILEVER SIGN FRAME DETAIL AND SECTION	05/31/07
TE-17C ·	CANTILEVER SIGN FRAME DETAIL	05/31/07
TE-17D ·	CANTILEVER SIGN FRAME SECTION	05/31/07
TE-17E ·	CANTILEVER SIGN FRAME DETAILS	05/31/07
TE-18A ·	TWO POST OVERHEAD SIGN FRAME ELEVATIONS	05/31/07
TE-18B ·	TWO POST SIGN FRAMING PLAN SECTION	05/31/07
TE-18C ·	TWO POST SIGN FRAMING SECTIONS AND DETAILS	05/31/07
TE-18D ·	TWO POST SIGN FRAME DETAILS	05/31/07
TE-18E ·	TWO POST SIGN FRAME DETAILS	05/31/07
TE-19A ·	OVERHEAD SIGN FRAMING SCHEDULE	05/31/07
TE-19B ·	SIGN POST DRILLED SHAFT FOUNDATION	05/31/07
TE-19C ·	SPREAD FOOTING	05/31/07
TE-19D ·	SIGN FRAME FOUNDATION SCHEDULE	05/31/07
TE-19D.1 ·	SIGN FRAME FOUNDATION SCHEDULE	05/31/07
TE-19D.2 ·	SIGN FRAME FOUNDATION SCHEDULE	05/31/07
TE-19D.3 ·	SIGN FRAME FOUNDATION SCHEDULE	05/31/07
TE-19D.4 ·	SIGN FRAME FOUNDATION SCHEDULE	05/31/07
TE-19D.5 ·	SIGN FRAME FOUNDATION SCHEDULE	05/31/07
TE-19E ·	ANCHORAGE DETAILS	05/31/07
TE-19F ·	ANCHORAGE DETAILS	05/31/07
TE-19G ·	MISCELLANEOUS SIGN FRAME DETAILS	05/31/07
TE-19H ·	LUMINAIRE WALKWAY SUPPORT	05/31/07
TE-19J ·	FIXED MESSAGE LUMINAIRE SUPPORT	05/31/07
TE-19K ·	MISCELLANEOUS SIGN DETAILS	05/31/07
TE-19L ·	MISCELLANEOUS SIGN DETAILS	05/31/07
TE-19M ·	MISCELLANEOUS SIGN FRAME DETAILS	05/31/07
TE-20 ·	SUPPORTS FOR GROUND MOUNTED GUIDE SIGN	05/31/07
TE-20A ·	SUPPORTS FOR GROUND MOUNTED GUIDE SIGN	05/31/07
TE-20B ·	SUPPORTS FOR GROUND MOUNTED GUIDE SIGN	05/31/07
TE-20C ·	SUPPORTS FOR GROUND MOUNTED GUIDE SIGN	05/31/07
TE-21A ●	SIGN BREAKAWAY MOUNTS	05/31/07
TE-21B ●	SIGN BREAKAWAY MOUNTS	05/31/07
TE-22 ·	LAMINATED ALUMINUM SIGN PANELS (OVERHEAD)	05/31/07
TE-23 ·	LAMINATED ALUMINUM SIGN PANELS (GROUND MOUNTED)	07/11/08
TE-24 ·	SOLID ALUMINUM EXTRUDED SIGN PANEL AND	05/31/07
	ACCESSORY DETAILS	
TE-25 ·	GUIDE SIGNS LUMINAIRE MOUNTINGS	05/31/07
TE-26 ●	RAISED PAVEMENT MARKERS AND STRIPING	07/11/08
TE-27 ●	RAISED PAVEMENT MARKERS AND STRIPING	07/11/08
TE-28 ·	ENTRANCE AND EXIT PAVEMENT MARKINGS	07/11/08
TE-28A ●	MISCELLANEOUS PAVEMENT MARKINGS	07/11/08
TE-29 ●	PAVEMENT ARROWS AND SYMBOLS	07/11/08
TE-30 ●	PAVEMENT ALPHABETS, NUMBERS & SYMBOLS	07/11/08
TE-31 ●	PAVEMENT ALPHABETS, NUMBERS & SYMBOLS	07/11/08

STANDARD PLAN NO.	TITLE	DATE
TE-32 ·	TYPE I & II TRAFFIC SIGNAL SYSTEM MISC. DETAILS	05/31/07
TE-33 ·	TYPE II TRAFFIC SIGNAL SYSTEM	08/16/06
TE-33A.1 ·	TYPE II TRAFFIC SIGNAL STANDARD	05/31/07
TE-33A.2 ·	TYPE II TRAFFIC SIGNAL STANDARD	05/31/07
TE-34 ·	LOOP DETECTOR DETAILS	07/11/08
TE-35 ·	LOOP DETECTORS & DUCT DETAILS	07/11/08
TE-36 ·	TRAFFIC SIGNAL DETAILS	07/11/08
TE-37 ·	PULLBOX & COVER DETAILS	07/11/08
TE-37A ·	TYPE "A" TRAFFIC PULLBOX	05/31/07
TE-37B ·	TYPE "A" TRAFFIC PULLBOX REINFORCING	05/31/07
TE-37C ·	TYPE "B" TRAFFIC PULLBOX	05/31/07
TE-37D ·	TYPE "B" TRAFFIC PULLBOX REINFORCING	05/31/07
TE-37E ·	TYPE "B" TRAFFIC PULLBOX FOUNDATION	05/31/07
TE-37F ·	TYPE "C" TRAFFIC PULLBOX	05/31/07
TE-37G ·	TYPE "C" TRAFFIC PULLBOX REINFORCING	05/31/07
TE-37H ·	TYPE "C" TRAFFIC PULLBOX FOUNDATION	05/31/07
TE-37J ·	TRAFFIC PULLBOX COVER AND DETAILS	05/31/07
TE-38 ·	TYPE III TRAFFIC SIGNAL STANDARD	05/31/07
TE-38A.1 ·	TYPE III TRAFFIC SIGNAL STANDARD	05/31/07
TE-38A.2 ·	TYPE III TRAFFIC SIGNAL STANDARD	05/31/07
TE-39 ●	METAL GUARDRAIL CONNECTION TO CONCRETE BARRIER	07/11/08
TE-40 ·	CONCRETE BARRIER TRANSITION	05/31/07
TE-40A ·	CONCRETE BARRIER TRANSITION SECTIONS	05/31/07
TE-41 ·	GUARDRAIL TYPE 4 (RIGID BARRIER)	05/31/07
TE-42 ●	PORTABLE CONCRETE BARRIER	05/31/07
TE-43 ●	PORTABLE CONCRETE BARRIER	05/31/07
TE-44 ·	GUARDRAIL TYPE 4 MISCELLANEOUS DETAILS	07/11/08
TE-45 ·	BARRICADES	07/11/08
TE-46 ●	DELINEATION & PAVEMENT MARKINGS AT NARROW BRIDGES	07/11/08
TE-47 ●	HIGHWAY LIGHT STANDARD	05/31/07

NOTE:
STANDARD PLANS APPLICABLE TO THIS PROJECT ARE INDICATED BY A " "● NEXT TO THE STANDARD PLAN NO.
(FOR EXAMPLE: D-07 ●)

DEXTER S. EJI
LICENSED PROFESSIONAL ENGINEER
No. 4739-C
HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.

SIGNATURE 04/30/24 EXPIRATION DATE OF THE LICENSE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

STANDARD PLAN SUMMARY

KAMEHAMEHA HIGHWAY DRAINAGE AND SAFETY IMPROVEMENTS
Vicinity of Laniakea Beach (MP 3.06 to MP 3.54)
Project No. 83B-01-09

Scale: None Date: December 2022

SHEET No. SPS-1 OF 1 SHEETS

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

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83B-01-09	2023	3	231

GENERAL NOTES:

1. The project is the realignment of the existing Kamehameha Highway inland from the existing highway. The project includes the construction of AC pavement; removing existing pavement, two span bridge, wingwalls, dump riprap, temporary waterline relocation, concrete approach slab, concrete cutoff wall, guardrails, installation and relocation of fencing, drainage system, street lighting, landscaping geotextiles signs and pavement markings, adjusting and relocating utilities, cold planing, erosion control; and traffic control.

2. The Contractor is reminded of the requirements of Subsection 105.16 - Subcontracts, which requires the Contractor to perform work amounting to not less than 30 percent of the total contract cost less deductible items. Non-compliance with this Subsection may be grounds for rejection of bid.

3. The Contractor's attention is directed to the following Sections of the Special Provisions: Subsection 104.09 - Maintenance of Traffic; Subsection 104.11 - Utilities and Services; Subsection 107.06 - Contractor Duty Regarding Public Convenience; and Section 645 - Work Zone Traffic Control.

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 tone for the exact locations and depths of all underground utilities, either shown on or omitted from the plans, in areas where work, such as the placement of sign posts, installation of guardrail, traffic signal, widening, etc. may affect these properties. Toning shall be considered incidental to the various contract items and will not be paid for seperately. The Contractor shall be held liable for any damages incurred to the existing facilities and/or improvements 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.

5. 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.

6. 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 relocations, as necessary. All costs associated with temporary relocations shall be borne by the Contractor.

7. The Contractor shall indemnify and be solely responsible for the protection of adjacent properties, utilities and existing structures from damages due to construction. Repairing any damage shall be at the Contractor's own expense, to the satisfaction of the Engineer.

8. Prior to resurfacing operations, the Contractor shall be responsible for locating, preserving and marking all utility and highway facilities that will require adjustments to the new finished pavement grade. Additionally, the Contractor shall submit to the Engineer a list of all items, including water, drainage, sewer, electrical, telephone, and cable utilities to be adjusted to the new finished grade.

9. The Contractor shall submit maintenance plans and schedules, including road or lane closures, lane switches, and the placement of temporary traffic control devices to the Engineer for acceptance prior to Construction.

10. The Contractor shall notify the Engineer in writing, two (2) weeks prior to starting construction operations.

11. The exact locations and limits of areas to be reconstructed and cold planed shall be determined in the field by the Engineer.

12. The Contractor shall notify the following for any work affecting bus operations, routes, or stops no less than 30 days prior to the start date. Point of contact information (Notification is required to all phone numbers and emails):

    DTS-TMD
    (808) 768-8396
    thebusstop@honolulu.gov & handivan@honolulu.gov

    Oahu Transit Services-Bus Operations
    (808) 768-9520 & (808) 768-9534
    John.donovan@thebus.org, Sean-bennett.paio@thebus.org & Field-ops-mgr@thebus.org

    Oahu Transit Services - Paratransit Operations
    (808) 456-5021
    Tracie.coelho@thebus.org

13. The Contractor shall obtain all necessary permits prior to start of work at his own cost.

14. At the end of each day's work, the Contractor shall remove all equipment and other obstructions to permit free and safe passage of public traffic.

15. The Contractor shall remove and dispose of all existing raised pavement markers and traffic tapes prior to the overlaying of Asphalt Concrete. This work shall be considered incidental to Polymer Modified Asphalt Pavement and will not be paid for separately.

16. The existing drainage system shall be kept functional at all times during construction. The Contractor shall furnish materials, equipment, labor, tools and incidentals necessary to maintain flow. This work shall be considered incidental to various contract items.

17. Smooth riding connections shall be constructed at all limits of resurfacing including the beginning and end of project, connecting approaches, side streets, walkways and driveways as shown on the plans and/or as directed by the Engineer. This work shall be considered incidental to various contract items.

18. The Contractor shall clean and remove any accumulation of aggregates along the roadside within 10 feet of the edge of pavement. This work shall be considered incidental to various contract items.

19. Tack coat shall be incidental to various Asphalt Concrete Pavement items.

20. Dressing of shoulder shall consist of clearing, grubbing, grading, reshaping and compacting the unpaved shoulders with suitable material as shown on the plans and/or as directed by the Engineer. This work shall be considered incidental to the various contract items.

21. Removal and disposal of existing guardrail, end terminals, asphalt concrete pavement, and any debris shall be considered incidental to their respective bid items.

22. All saw cutting work including vacuuming of slurry shall be considered incidental to various contract items and will not be paid for separately.

23. The Contractor shall provide for vehicular and pedestrian access to and from all existing side streets and driveways at all times.

24. 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.

25. The Contractor shall be held liable for any damages incurred to the existing landscaping as a result of his operations.

26. Contractor shall dispose or deliver any removed material at no cost to the State.

27. The Contractor shall provide and maintain for access to and from all existing driveways, sidewalks, ADA access routes complying with 2010 ADAAG Section 206.1, side streets, and cross streets at all times. This work shall be considered incidental to various contract items and will not be paid for separately.

28. The Contractor is to take special measures to reduce dust from cold planing operations including but not limited to use of water misters on cold planing equipment and vacuum sweepers. Use of power brooms to sweep road is not allowed if a dust nuisance is created.

29. The vertical riding surface drop-off between adjacent surfaces shall not exceed 3-inches. This shall include differences in height between adjacent pavement surfaces, cold planed surfaces, bridge decks and new concrete slabs. If a vertical riding surface drop-off exists at the end of each day's work, the Contractor shall provide temporary transition tapers with maximum slopes of 48:1 for travel in the longitudinal direction and 6:1 for transverse movements.

30. The Contractor shall not perform any construction work during periods of heavy rainfall.

31. The Contractor shall use the Traffic Control setup included in the 2005 Hawaii Standard Specifications for Road and Bridge Construction Section 645, and/or develop a site specific Traffic Control Plan where warranted.

32. If, during construction, any previously unidentified archeological sites or remains (such as artifacts, shell , bone, or charcoal deposits, human burials, rock or coral alignments, pavings or walls) are encountered, the Contractor shall stop work and contact SHPD immediately. Work in the immediate area must stop until SHPD asses the impact and makes further recommendations for mitigative activity.

ORIGINAL PLAN
NOTE BOOK
No. DATE

SURVEY PLOTTED BY
DRAWN BY
TRACED BY
DESIGNED BY
QUANTITIES BY
CHECKED BY

DEXTER S. EJU
LICENSED PROFESSIONAL ENGINEER
No. 4739-C
HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.

SIGNATURE 04/30/24 EXPIRATION DATE OF THE LICENSE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

GENERAL NOTES

KAMEHAMEHA HIGHWAY DRAINAGE AND SAFETY IMPROVEMENTS
Vicinity of Laniakea Beach (MP 3.06 to MP 3.54)
Project No. 83B-01-09

Scale: None Date: December 2022

SHEET No. N-01 OF 13 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83B-01-09	2023	4	231

NOTES FOR PROTECTION OF ENDANGERED SPECIES:

1. HAWAIIAN SEABIRDS
   No night time construction will be permitted during the seabird fledging period (September 15th through December 15th). The Contractor's attention is directed to Special Provision Section 107.18 - Avoidance and Minimization Measures for Endangered Species.

   All outdoor lights shall be fully shielded and only visible from below the bulb height. Outdoor lights shall only be used when necessary and shall be turned off when activity is not occurring in the lighted area.

2. HAWAIIAN HOARY BAT ('Ope'ape'a)
   No disturbing, clearing, grubbing, or trimming of woody plants greater than 15' tall shall be allowed during the Hawaiian Hoary Bat birthing and pup-rearing season (June 1st through September 15th).

   The Contractor shall not use barbed wire fencing.

3. HAWAIIAN WATERBIRDS
   In areas where waterbirds are known to be present, post and implement reduced speed limits and inform project personnel about the presence of endangered species on-site.

   In areas where vegetated streambanks would be disturbed, waterbird nest searches shall be conducted by a qualified biologist before any work is conducted, within 3 days of project initiation and after any subsequent delay of work of 3 or more days (during which the birds may attempt to nest).

   If a nest or active brood is found:
   - Contact the Service (808) 861-8525 within 48 hours for further guidance.
   - Establish and maintain a 100-foot buffer around all active nests and/or broods until the chicks/ducklings have fledged. Do not conduct potentially disruptive activities or habitat alteration within this buffer.

4. A biological monitor that is familiar with the species' biology shall be present on the project site during all construction or earth moving activities until the chicks/ducklings fledge to ensure that Hawaiian waterbirds and nests are not adversely impacted.

5. Turbidity and siltation from project-related work should be minimized and contained within the project area by silt containment devices and curtailing work during flooding or adverse tidal and weather conditions. BMPs should be maintained for the life of the construction period until turbidity and siltation within the project area is stabilized. All project construction-related debris and sediment containment devices should be removed and disposed of at an approved site.

6. No project construction-related materials or equipment (dredges, vessels, backhoes, silt curtains, etc.) shall be placed in an aquatic environment. Project related activities should not result in any debris disposal, non-native species introductions, or attraction of non-native pests to the affected or adjacent aquatic or terrestrial habitats.

NOTES FOR PROTECTION OF ENDANGERED SPECIES (CON'T):

7. Project construction-related materials (fill, revetment rock, pipe, etc.) should not be stockpiled in, or in close proximity to, aquatic habitats and should be protected from erosion (e.g., with filter fabric, etc.), to prevent materials from being carried into waters by wind, rain, or high surf.

8. Fueling of project-related vehicles and equipment should take place away from the aquatic environment and a contingency plan to control petroleum products accidentally spilled during the project should be developed. The plan should be retained on site with the person responsible for compliance with the plan. Absorbent pads and containment booms should be stored on-site to facilitate the clean-up of accidental petroleum releases.

9. All deliberately exposed soil or under-layer materials used in the project near water should be protected from erosion and stabilized as soon as possible with geotextile, filter fabric or native or non-invasive vegetation matting, hydro-seeding, etc.

10. Artificial light from exterior fixtures on the zoning lot, including but not limited to floodlights, uplights, or spot lights used for decorative or aesthetic purposes, is prohibited if the light directly illuminates or is directed to project across property boundaries toward the shoreline and ocean waters, except as otherwise permitted pursuant to HRS Section 205A-71(b). All outdoor lighting shall be fully shielded during and after construction to avoid artificial light impacts on seabirds, hoary bats, and sea turtles, particularly during the seabird fledgling season from September 15 through December 15.

11. All project activities must cease if a Hawaiian monk seal or green sea turtle is present within 150 ft of the work area, or as recommended by State of Federal regulations. Project activities may only recommence after the animal voluntarily leaves the area. If a monk seal and/or pup pair is present, a 300 ft buffer must be observed. Any Project-related debris that may impose an entaglement threat to monk seals and turtles must be removed from the work area at the end of wach day and at the conclusion of the Project.-related activites.

PUBLIC HEALTH, SAFETY, AND CONVENIENCE NOTES:

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. The Contractor's attention is directed to Chapter 448, Public Health Regulations, Department of Health, State of Hawaii, "Community Noise Control for Oahu" in which maximum allowable noise levels have been set. If the construction activities for this project will exceed the allowable noise levels, the Contractor will be required to obtain a permit from the Director of the Department of Health. The Contractor shall obtain a copy of Chapter 448 and become familiar with the noise level restrictions and the procedures for obtaining a Permit for construction activities.

4. The Contractor is to comply with the directions of the State of Hawaii Occupation Safety and Health Law (DOSH).

MONUMENT GENERAL NOTES

1. All existing right-of-way, centerline, as-built, construction, and NGS (horizontal and vertical in the NGS database) monuments located within the State of Hawaii right of way, must be preserved and displayed on the plans. All monuments shall be preserved during all design and construction phases. If monuments are disturbed or destroyed, the Cadastral Engineering Section (HWY-DC) shall be notified prior to groundbreaking. Reconciliation to the Right-of-Way Baseline and/or a boundary study and determination may be required prior to re-installation of the disturbed or destroyed monuments. HWY-DC shall be contacted for guidelines and procedures. As to construction, a State of Hawaii Licensed Surveyor shall perform the location and staking of the reset monument. The DOT Standard Plans & Specifications, with the exception of NGS monuments which shall have a NGS approved "brass disk" marker, shall be referenced for the monument type and materials.

2. Any NGS vertical monuments that are deemed necessary for relocation due to construction shall follow the NGS benchmark reset procedures written by Curtis Smith dated September 2010 or newer. All work must be done by an electronic digital level that is acceptable by NGS for second-order class one or higher work. The surveyor must use two one-piece invar barcode rods with current certifications with struts with 15 lbs turning plate or turtles; and/or turning pin with driving cap and temperature readings. Contact NGS prior to any work to ensure all equipment meets reset specifications. A State of Hawaii Licensed Surveyor shall perform the relocation. All work must be submitted both in electronic and hard copy formats to NGS and HWY-DC.

3. All monument work shall be considered incidental to this project.

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

DEXTER S. EJI
LICENSED PROFESSIONAL ENGINEER
No. 4739-C
HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.

SIGNATURE 04/30/24 EXPIRATION DATE OF THE LICENSE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

GENERAL NOTES

KAMEHAMEHA HIGHWAY DRAINAGE AND SAFETY IMPROVEMENTS
Vicinity of Laniakea Beach (MP 3.06 to MP 3.54)
Project No. 83B-01-09

Scale: Date: December 2022

SHEET No. N-02 OF 13 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83B-01-09	2023	5	231

LEGEND:

EXISTING

BFP	SMH
CATV BOX	SEWER VALVE
C.O.	8" SEWER LINE (S 8)
DI	SIGNAL CORPS LINE (SC)
D.S.	S.L.
DSP	SLB
24" DRAIN LINE (D 24)	SPR
ELECTRIC/TV LINE (E/TV)	STREET MONUMENT
ELEC. BOX (ELEC.)	TEL BOX
ELEC MH	TEL. MH
ELEC. BOX	TELEPHONE LINE (TEL.)
ELEC TRANSFORMER	TREE
E.O.	TSL
F.A. BOX	TSLB
FH	U.P/S.L.
2" GAS LINE (GAS 2)	U.P./CONDUIT
G.P.	UTILITY BOX
G.W.	U.S. POSTAL M.B.
H.B.	6" WATERLINE (W 6)
ICV	WM
ICV BOX	WMH
L.P.	WV
MB	
MH	
OVERHEAD LINE (O/H)	
PBX	
PSL	
RISER	
SCMH	
SDMH	

ABBREVIATIONS:

AC	Asphalt Concrete
APPROX.	Approximate
℄	Baseline
BC	Bottom Curb
BFP	Back Flow Preventer
BOT.	Bottom
BW	Bottom Wall
℄	Centerline
C	Chord
CATV	Cable Television
C.B.	Catch Basin
C.L.	Chain Link
CMU	Concrete Masonry Unit
C.O.	Clean Out
COL.	Column
COMM.	Communication
CONC.	Concrete
CRM	Concrete Rubble Masonry
D	Diameter or Drain
DI	Drain Inlet
D.S.	Down Spout
DSP	Dry Stand Pipe
DWY	Driveway
E/D42	Existing 42" Drain Pipe
E/ELEC.	Electric
ELEV/EL.	Elevation
EMH	Electric Manhole
E.O.	Electric Outlet
EP	Edge of Pavement
F.A.	Fire Alarm
FH	Fire Hydrant
G	Gas
GND.	Ground
G.P.	Guard Post/Guy Pole/Gate Post
GV	Gas Valve
G.W.	Guy Wire
H	Height
H.B.	Hose Bib
HMA	Hot Mix Asphalt
ICV	Irrigation Control Valve
INV.	Invert
JPCP	Jointed Pre-cast Concrete Pavement
L.P.	Lamp Pole / Light Pole
MB	Mail Box
MH	Manhole
NTS	Not to Scale
O/H	Overhead
PBX	Penal Box
PCC	Portland Cement Concrete
P/L	Property Line
PMA	Polymer Modified Asphalt
PSL	Pedestrian Signal Light
REF	Reflector
RPM	Raised Pavement Marker
R/W	Right of Way
S	Sewer or Spread
SC	Signal Corps
SCMH	Signal Corps Manhole
SDMH	Storm Drain Manhole
S.E.	Super Elevation
S.L.	Street Light
SLB	Street Light Box
SMH	Sewer Manhole
ST. NAME	Street Name
STA.	Station
TC	Top Curb
TDC	Top Drop Curb
T/TEL.	Telephone/Tangent
TMH	Telephone Manhole
TP	Top Pipe
TS	Top Stem
TSL	Traffic Signal Light
TSLB	Traffic Signal Light Box
TV	Top Valve
TW	Top Wall
U.P.	Utility Pole
U.P./S.L.	Utility Pole w/Street Light
W	Water
WM	Water Meter
WMH	Water Manhole
WV	Water Valve Box
X-WALK	Cross Walk

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LEGEND AND ABBREVIATIONS

KAMEHAMEHA HIGHWAY DRAINAGE AND SAFETY IMPROVEMENTS
Vicinity of Laniakea Beach (MP 3.06 to MP 3.54)
Project No. 83B-01-09

Scale: None Date: December 2022

SHEET No. N-03 OF 13 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83B-01-09	2023	6	231

HAWAIIAN TELCOM NOTES:

1. 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.

2. The Contractor shall obtain an excavation permit and toning request from Hawaiian Telcom's Excavation Permit Section, located at 1177 Bishop Street, two weeks prior to the start of construction. Hours of business are 8:00 a.m. to 11:00 a.m. and 12:00 noon to 3:00 p.m. Monday through Friday, except holidays.

3. Prior to the excavation of the ductline, the Contractor shall request Hawaiian Telcom to locate existing ductline wherever required. For underground cable locating and marking, five (5) working days advance notice is required. Three (3) working days advance notice is required for any inspection by a designated representative.

4. The locations of existing utilities are approximate only. The Contractor shall exercise extreme caution and shall maintain proper clearances whenever construction crosses or is in close proximity of Hawaiian Telcom facilities. The Contractor shall verify their locations and shall be liable for any damages to Hawaiian Telcom facilities. Any damages shall be reported immediately to Hawaiian Telcom's Repair Section at #611 (24 hours) or to the Excavation Permit Section at 546-7746 (normal working hours, Monday through Friday, except holidays). As a result of his operations, adjustments to the new ductline alignment, if required, shall be made to provide the required clearances.

5. The Contractor shall take necessary precaution not to damage existing cables or ducts. A Hawaiian Telcom inspector or designated representative is required to be at any job site whenever there will be a breakage into or entry into any structure that contain Hawaiian Telcom facilities. Temporary cable and duct supports shall be provided wherever necessary.

6. The Contractor shall notify Hawaiian Telcom's inspector or designated representative a minimum of 72 hours prior to excavation, bracing, or backfilling of Hawaiian Telcom's structures or facilities.

7. All applicable construction work shall be done in accordance with the "Hawaiian Telcom Standard Specifications for Placing Telephone Systems" dated January 2007. All subsequent amendments and additions, and all other pertinent standards for telephone construction. Contractor shall familiarize his personnel by obtaining applicable specifications.

8. When excavation is adjacent to or beneath Hawaiian Telcom's existing structures or facilities, the Contractor shall:

   a) Sheet and/or brace the excavation to prevent slides, cave-ins, or settlements to ensure no movement to Hawaiian Telcom's structures or facilities.

   b) Protect existing structures and/or facilities with beams, struts, or underpinning while excavating beneath them to ensure no movement to Hawaiian Telcom's structures or facilities.

9. The Contractor shall brace all poles or light standards near the new ductline, manhole, or handhole during his operations.

10. The Contractor shall saw-cut A.C. pavement and concrete gutter wherever new manholes, handholes, or ductlines are to be placed and shall restore to existing condition or better.

11. The Contractor shall repair sidewalks in accordance with these contract documents and State Standard Plan D-15.

12. The underground pipes, cables, or ductlines known to exist by the Engineer from his search of records are indicated on the plans. The Contractor shall verify the locations and depths of the facilities and exercise proper care in excavating in the area. Wherever connections of new utilities to existing utilities are shown on the plans, the Contractor shall expose the existing lines at the proposed connections to verify their locations and depths prior to excavation for the new lines.

13. Wherever connections to existing utilities are shown on the plans, the Contractor shall expose the existing lines prior to excavation of the main trenches to verify their locations and depths.

14. The Contractor, at his own expense, shall keep the project and surrounding area free from dust nuisance. The cost for supplementary measures, which will be required by the City and County, shall be borne by the Contractor.

15. The Contractor shall pump all manholes dry during final inspection.

16. The Contractor shall notify Hawaiian Telcom inspector 24 hours prior to the pouring of concrete or backfilling.

17. When connecting to manhole walls, all existing reinforcing bars shall be left intact. Ducts shall be adjusted in the field in order to clear reinforcing.

18. The Contractor shall be responsible for laying out all required lines and grades and shall preserve all benchmarks and working points necessary to lay out the work correctly. The new ductline shall be adjusted by the Contractor to suit the existing conditions and the details as described in the plans.

19. Minimum concrete strength shall be:
    For ductline 2500 psi at 28 days
    For manhole 3000 psi at 28 days or as specified in design notes

20. Bends in the duct alignment, due to changes in grade shall have a minimum radius of 25 feet. All 90 degree C-bends at a pole or at the building floor slab penetration shall have a bend radius of ten times the diameter of the duct or greater.

21. After ductline has been completed, a mandrel with a square front not less than 12" long and having a diameter of ¼" less than the inside diameter of the duct, shall be pulled through each duct after which a brush with stiff bristles shall be pulled through to make certain that no particles of earth, sand, or gravel have been left inside. Ducts shall be completely dry and clean.

22. All ducts and conduits shall have an 1800# polyester mule-tape (NEPTCO, WP1800P, Hawaiian Telcom Material Code No. 571154) installed throughout its entire length. All ducts shall be capped to prevent entry of foreign material during construction and at the completion of installation.

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HAWAIIAN TELCOM NOTES

KAMEHAMEHA HIGHWAY DRAINAGE AND SAFETY IMPROVEMENTS
Vicinity of Laniakea Beach (MP 3.06 to MP 3.54)
Project No. 83B-01-09

Scale: None Date: December 2022

SHEET No. N-04 OF 13 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83B-01-09	2023	7	231

SPECTRUM NOTES:

1. The locations of existing utilities are approximate only. The Contractor shall verify their locations and shall be responsible for any damages to these utilities as a result of his operations. Adjustments to the new ductline alignment, if required, shall be made to provide the required clearances.
2. The underground pipes, cables, or ductlines known to exist by the Engineer from his search of records are indicated on the plans. The Contractor shall verify the locations and depths of the facilities and execise proper care in excavating in the areas. Wherever connections of new utilities to existing utilites are shown on the plans, the Contractor shall expose the existing lines at the proposed connections to verify their locations and depths prior to excavation for the new lines.
3. Prior to the excavation of the ductline, the Contractor shall request that Spectrum to locate existing ductline wherever required.
4. 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 Spectrum Inspector or his representative.
5. The Contractor shall notify the Spectrum Inspector 48 hours prior to the start of work on CATV infrastructure, pouring of concrete or backfilling. Spectrum's Inspector, Moki Place, can be reached at 808 625-8378.
6. Wherever connections to existing utilities are shown on the plans, the Contractor shall expose the existing lines prior to excavation of the main trenches to verify their locations and depths.
7. The location of CATV facilities shown on plans are from existing records with varying degrees or accuracy as to its actual fixed location. The Contractor shall use extreme caution when working in close proximity of CATV facilities.
8. The Contractor shall obtain excavation permit clearance from Spectrum's Engineering Section located at 200 Akamainui St., Mililani Tech Park.
9. For any field assistance or verification of CATV facilities, the Contractor shall call the Technical Operatons Center at 808 625-8378.
10. Any work required to relocate CATV facilities shall be done by Spectrum and the Contractor shall be responsible for all coordination requirements and associated costs.
11. Any damage to Spectrum's facilities shall be reported to Spectrum's repair dispatch department at 808 625-8437 or 808 625-8666.
12. All existing improvements that are disturbed during the construction phase shall be restored to its original or better condition.
13. The Contractor shall take all necessary precaution not to damage the existing cables in the pullbox. All damages to existing cables shall be repaired by Spectrum and paid for by the Contractor.
14. Coordinate all penetration of telephone pullboxes with Hawaiian Telcom Inspector.
15. Smooth finish inside wall of existing pullboxes and handholes to its original condition or better. All entrances into the pullbox shall be grouted around conduits.
16. For 3" conduits or larger, the Contractor shall install Neptco WP1800 MULETAPE or approved equal in all ductlines. Leave MULETAPE in place for future use as a pull or fish line, unless otherwise noted. Reference Verizon Material Code No. 571154. All ducts shall be capped to prevent entry of foreign material during construction and at completion of installation. Endbells are required for conduits 2" and larger.
17. For conduits less than 3", the Contractor shall place poly cord through out project, and secure in manholes, handholes, and pullboxes.
18. Penetration into pullboxes if necessary to be from factory installed opening or from bricks position. Penetration from pullbox walls is not acceptable. All conduits shall enter through the end of the pullbox at 90 degrees.
19. A minimum of (2) precast sections must be used on all 2x4 or 2x6 pullboxes.
20. Two minimum layers of bricks to be used shall always be at least one layer lower than the lowest duct entering the pullbox. At no time however, shall there be less then two layers of bricks on each installation.
21. At no time shall cement mortar, wood, or any other material be used between precast sections. Leveling or raising of boxes to grade must be done at brickwork section using cement mortar. The permanent installation of wooded wedges to accomplish this purpose will not be accepted.
22. Concrete precast base may be used as an alternative to bricks.
23. Trenching to be by hand digging near and across existing utility lines.
24. Minimum clearance between street light stand and fire hydrants shall be three feet.
25. Underground utilities shown hereon is for information only. No guarantee is made on the accuracy or completeness of said installation.
26. For underground cable location and marking, five working days advance notice is required. Three working days advance notice is required for any inspection by a designated representative. Contractor shall take necessary precaution not to damage any existing cables or ducts. Spectrum's Inspector or designated reprsentative is required to be at any job site whenever there will be a breakage into or entry into any structure that contain Spectrum's facilities.
27. Concrete strength shall be 3000 psi in 28 days.
28. Bends in the duct alignment, due to changes in grade shall have a minimum radius of 20-feet. All 90-degree C-bends at a pole or at the building floor slab penetration, shall have a bend radius of ten times the diameter of the duct or greater.
29. After ductline has been completed, a mandrel with a square front not less than 12-inch long and having a diameter of 1/4-inch less than the inside diameter of duct, shall be pulled through each duct after which a brush with stiff bristles shall be pulled through to make certain that no particles of earth, sand, or gravel have been left inside. Ducts shall be completely dry and clean.
30. All construction must be inspected and approved by Spectrum prior to the installation of any of its facilities and the energizing of its system.
31. Contractor and/or customer shall provide Spectrum with sufficient installation time in their occupancy time table.
32. Install 4-mil thick orange color warning tape 3-inch wide, entire length of trench when placing CATV conduits. Tape should read "CAUTION BURIED CABLE LINE BELOW". Manufactured by Harris Industries, Inc., catalog number UT-43 or equivalent tape. Tape to be installed 12-inches below grade.

ADJUSTMENT TO EXISTING UTILITIES NOTE:

1. Adjust all utility valve box frame & covers, water meter boxes, manhole frames & covers, street monument covers, etc., to new finish grade. Coordinate with private companies and City agencies for work on each respective utility.

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SPECTRUM NOTES

KAMEHAMEHA HIGHWAY DRAINAGE AND SAFETY IMPROVEMENTS
Vicinity of Laniakea Beach (MP 3.06 to MP 3.54)
Project No. 83B-01-09

Scale: None Date: December 2022

SHEET No. N-05 OF 13 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83B-01-09	2023	8	231

HAWAIIAN ELECTRIC COMPANY NOTES (Rev 12/04/19):

1. Location of Hawaiian Electric Facilities:

The location of Hawaiian Electric'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 Hawaiian Electric'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 Clearance:

The Contractor shall obtain an excavation clearance from Hawaiian Electric's Planning and Design Section of the Customer Installations Division (543-5654) located at 820 Ward Avenue, 4th floor, a minimum of ten (10) working days prior to starting construction.

4. Caution!!! Electrical Hazard!!!

Existing Hawaiian Electric overhead and underground lines are energized and will remain energized during construction unless prior special arrangements have been made with Hawaiian Electric. Only Hawaiian Electric 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 Hawaiian Electric facilities, which can result in electrocution.

5. Overhead lines:

State law (OSHA) requires that a worker and the longest object he or she may contact cannot come closer than a specified minimum radial clearance when working close to or under any overhead lines. It is the Contractor's responsibility to be informed of and comply with the law.

At any time should the Contractor anticipate that his work will result in the need to encroach within the minimum required clearance as stated in the law, the Contractor shall notify Hawaiian Electric at least four (3) months prior to the planned encroachment so that, if feasible, the necessary protections (e.g. relocate or de-energize Hawaiian Electric lines) can be investigated. Hawaiian Electric may also be able to blanket its distribution (12kV and below) lines to provide a visual aid in preventing accidental contact. Hawaiian Electric's cost of safeguarding or identifying its lines will be charged to the Contractor.

Contact Hawaiian Electric's Customer Installations Division at 543-7070 for assistance in identifying and safeguarding overhead power lines.

6. Pole Bracing:

Contractor shall not excavatewithin 10 feet from Hawaiian Electric's utility poles or any anchor system supporting the utility pole. If Contractor must excavate closer than 10 feet from a utility pole or its anchor system, Contractor will be responsible for protecting, supporting, securing and taking all precautions to prevent damage to or leaning of existing poles. Before commencing such excavation, Contractor must submit its bracing calculations and drawings, prepared and stamped by a Licensed Structural Engineer, to Hawaiian Electric's Customer Installations Division (543-7070) for review. Hawaiian Electric requires a minimum of ten (10) working days to conduct the review of Contractor's submittal. Contractor shall be responsible for the design, installation, and removal of the temporary pole bracing system, as well as all costs incurred by Hawaiian Electric to review Contractor's drawings and to repair or straighten poles impacted by Contractor's activities, including response and restoration costs incurred by Hawaiian Electric arising out of or related to outages caused by Contractor's failure to meet the foregoing requirements. Hawaiian Electric's review and approval of any Contractor submittals including its work procedure shall not relieve Contractor from any liability resulting from Contractor's excavation near or around Hawaiian Electric's utility poles.

7. Underground Lines:

The Contractor shall exercise extreme caution whenever construction crosses or is in close proximity of underground lines. Hawaiian Electric's existing electrical cables are energized and will remain energized during construction. Only Hawaiian Electric personnel are to break into existing Hawaiian Electric facilities, handle these cables, and erect temporary guards to protect these cables from damage. The cost of Hawaiian Electric's assistance in providing proper support and protection of its underground lines will be charged to the Contractor. For assistance/coordination in providing proper support and protection of these lines, the Contractor shall call Hawaiian Electric's Customer Installations Division at 543-7070 a minimum of ten (10) working days in advance.

Special precautions are required when excavating near Hawaiian Electric's 138kV or 46kV underground lines (See Hawaiian Electric Instructions to Consultants/Contractors on "Excavation near Hawaiian Electric's underground 138kV and/or 46kV lines" for detailed requirements).

For verification of underground lines, the Contractor shall call the Hawaii One Call Center at 866-423-7287 minimum of five (5) working days in advance.

8. Underground Fuel Pipelines:

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

9. Excavations:

When trench excavation is adjacent to or beneath Hawaiian Electric's existing structures or facilities, the Contractor is responsible for:

a. Arranging for Hawaiian Electric Standby Personnel to observe work at Contractor's cost.

b. Sheeting, bracing, or otherwise supporting the excavation and stabilizing the existing ground to render it safe and secure and to prevent possible slides, cave-ins, and settlements.

c. Properly supporting existing structures or facilities with beams, struts, under-pinnings, or other necessary methods to fully protect it from damage.

d. Backfilling with proper backfill material including special thermal backfill where existing (refer to Engineering Division for thermal backfill specifications).

10 Relocation of HECO Facilities:

Any work required to relocate or modify Hawaiian Electric facilities shall be done by Hawaiian Electric, or by the Contractor under Hawaiian Electric's supervision. The Contractor shall be responsible for all coordination, and shall provide necessary support for Hawaiian Electric's work, which may include, but not be limited to, staking of pole/anchor locations, identifying right of way and property lines, 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 Hawaiian Electric's facilities not shown on the plans may be cause for lengthy delays. The Contractor acknowledges that Hawaiian Electric 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 Hawaiian Electric'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, Hawaiian Electric should be notified immediately upon discovery or identification of such conflict.

12. Damage to Hawaiian Electric Facilities:

The Contractor shall be responsible for the protection of all Hawaiian Electric surface and subsurface utilities and shall be responsible for any damages to Hawaiian Electric's facilities as a result of his operations. The Contractor shall immediately report such damages or any hazardous conditions related to Hawaiian Electric's lines to Hawaiian Electric's Trouble Dispatcher at 548-7961. Repair work shall be done by Hawaiian Electric or by the Contractor under Hawaiian Electric's supervision. Costs for damages to Hawaiian Electric's facilities shall be borne by the Contractor.

In case of damage or suspected damage to Hawaiian Electric's fuel pipeline, the Contractor shall immediately notify Hawaiian Electric's Security Command Center at 543-7685 (a 24-hour number) so Hawaiian Electric 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. Hawaiian Electric Stand-by Personnel:

The Contractor may request Hawaiian Electric to provide an inspector to stand-by during construction near Hawaiian Electric's facilities. The cost of such inspection will be charged to the Contractor.

The Contractor shall call Hawaiian Electric's Customer Installations Division at 543-7070 a minimum of three (3) months in advance to arrange for Hawaiian Electric Stand-by Personnel.

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DEXTER S. EJI
LICENSED PROFESSIONAL ENGINEER
No. 4739-C
HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.

SIGNATURE 04/30/24 EXPIRATION DATE OF THE LICENSE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

HAWAIIAN ELECTRIC NOTES

KAMEHAMEHA HIGHWAY DRAINAGE AND SAFETY IMPROVEMENTS
Vicinity of Laniakea Beach (MP 3.06 to MP 3.54)
Project No. 83B-01-09

Scale: None Date: December 2022

SHEET No. N-06 OF 13 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83B-01-09	2023	9	231

HAWAIIAN ELECTRIC COMPANY NOTES (Cont.):

14. Clearances:

The following clearances shall be maintained between Hawaiian Electric's ductline and all adjacent structures (charted and uncharted) in the trench:

GUIDELINES FOR MINIMUM HORIZONTAL (PARALLEL) CLEARANCES BETWEEN HAWAIIAN ELECTRIC AND OTHER UNDERGROUND UTILITIES

Underground Utility	Hawaiian Electric Direct Buried Cable	Hawaiian Electric Direct Buried in Conduit (no concrete encasement)	Hawaiian Electric 3" (Min.) Concrete Encasement	Applicable Notes:
HECO DB Conduits	12"	3"	0"	
HECO 3" Encasement	0"	0"	0"	
Telephone/CATV DB	12"	12"	6"	
Telephone/CATV DB Ducts	12"	12"	6"	
Telephone/CATV 3" Encasement	0"	0"	0"	5
Traffic Signal	12"	12"	12"	
Water DB (BWS Owned)	36"	36"	36"	1, 4
Customer Owned Water Service Laterals	12"	12"	12"	
Water (Concrete Jacketed) (BWS Owned)	36"	36"	36"	1, 4
Gas DB	12"	12"	12"	1
Gas (Concrete Jacketed)	12"	12"	12"	1
Sewer DB	36"	36"	36"	1, 2
Sewer (Concrete Jacketed)	36"	36"	36"	1, 2
Drain	12"	12"	12"	1
Fuel Pipelines				3

Notes:

1. Where space is available, parallel clearance to other utilities, or foreign structures other than communication or traffic signal shall be 36".

2. If 36" clearance cannot be met:
   - If clearance is less than 12", jacket sewer line with reinforced concrete (per Hawaiian Electric's std. 30-1030) for a distance of 5' plus pipe diameter.
   - If clearance is between 12" and 36", jacket sewer line with plain concrete.

3. All Fuel Pipeline crossings shall be reviewed and approved by the company that owns and maintains it.

4. 5 feet clear to water mains 16" and larger.

5. For situations with 0" minimum separation, a 6" separation is recommended.

6. Clearances measured from outer edges or diameters of utilities. Whenever concrete jackets are involved, clearances shall be total clear distance between the concrete jacket and utility concerned.

GUIDELINES FOR MINIMUM VERTICAL (CROSSING) CLEARANCES HAWAIIAN ELECTRIC AND OTHER UNDERGROUND DUCTLINES

Underground Utility	Hawaiian Electric Direct Buried Cable	Hawaiian Electric Direct Buried in Conduit (no concrete encasement)	Hawaiian Electric 3" (Min.) Concrete Encasement	Applicable Notes:
Hawaiian Electric DB Conduits	6"	3"	0"	
Hawaiian Electric 3" Encasement	0"	0"	0"	
Telephone/CATV DB	12"	12"	6"	
Telephone/CATV DB Ducts	12"	12"	6"	
Telephone/CATV 3" Encasement	0"	0"	0"	3
Traffic Signal	12"	12"	6"	
Water DB (BWS Owned)	12"	12"	12"	5
Customer Owned Water Service Laterals	6"	6"	6"	
Water (Concrete Jacketed) (BWS Owned)	12"	12"	12"	5
Gas DB	12"	12"	12"	
Gas (Concrete Jacketed)	12"	12"	12"	
Sewer DB	24"	24"	24"	1
Sewer (Concrete Jacketed)	24"	24"	24"	1
Drain	12"	12"	6"	
Fuel Pipelines				2

Notes:

1. If clearance cannot be met:
   - If clearance is less than 12", jacket sewer line with reinforced concrete (per Hawaiian Electric's std. 30-1030) for a distance of 5' plus pipe diameter.
   - If clearance is between 12" and 24", jacket sewer line with plain concrete.

2. All Fuel Pipeline crossings shall be reviewed and approved by the company that owns and maintains it.

3. For situations with 0" minimum separation, a 6" separation is recommended.

4. Clearances measured from outer edges or diameters of utilities. Whenever concrete jackets are involved, clearances shall be total clear distance between the concrete jacket and utility concerned.

5. 36" clearance is required for trenchless installation work.

The Contractor shall notify the construction manager & Hawaiian Electric of any heat sources (power cable duct bank, steamline, etc.) encountered that are not properly identified on the drawing.

15. Indemnity:

The Contractor shall indemnify, defend and hold harmless Hawaiian Electric 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 tortious 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 Hawaiian Electric.

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HAWAIIAN ELECTRIC NOTES

KAMEHAMEHA HIGHWAY DRAINAGE AND SAFETY IMPROVEMENTS
Vicinity of Laniakea Beach (MP 3.06 to MP 3.54)
Project No. 83B-01-09

Scale: None Date: December 2022

SHEET No. N-07 OF 13 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83B-01-09	2023	10	231

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", DATED 2002, THE "WATER SYSTEM EXTERNAL CORROSION CONTROL STANDARDS", VOLUME 3, DATED 2021, 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.

3. The Contractor shall notify Board of Water Supply Capital Projects Division, Construction Section in writing or call (808) 748-5730, and submit six (6) sets of 24"x36" approved construction drawings, one week prior to commencing construction activities.

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 his construction methods.

7. Prior to any excavating, the Contractor shall verify in the field the location of existing water mains and appurtenances.

8. The Contractor shall verify all existing service lateral locations whether shown or not shown on plans prior to commencing with any of the work and shall not assume that where no services are shown, none exist.

9. The Contractor shall adjust all manhole frames/valve boxes/meter boxes within the resurfaced area. The Contractor shall be responsible for "referencing" these manholes/valve boxes/meter boxes to facilitate the adjustments.

10. All waterline construction requiring shutdown connection shall be scheduled for normal working hours at six (6) hours maximum downtime.

11. At the electrical/cable/signal ductline water crossings, adjust all electrical/cable/signal ductline elevations to maintain 12" vertical clear separation from all waterlines at no cost to the Board of Water Supply.

12. Maintain 3'-0" minimum horizontal clear separation between all waterlines and nearest electrical/cable/signal ductlines paralleling the water system at no cost to the Board of Water Supply.

13. All fire hydrants to be adjusted and/or relcated shall be replaced with new fire hydrants, unless otherwisedirected by the Board of Water Supply.

WATER NOTES, CON'T:

14. Maintain 3'-0" minimum horizontal clear separation between electrical/cable/signal appurtenances, (including any modular units) and the nearest waterline or water appurtenance. Contractor shall field verify for any conflicts at each electrical/cable/signal appurtenance location. Where conflicts occur, the contractor shall coordinate with the project engineer to revise the electrical/cable/signal appurtenance to provide the required clearances at no cost to the BWS.

15. 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 the Water Systems Standards. 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 biphenyls (PCB).

16. All ductile iron pipe including sections requiring reinforced concrete jacketing, shall be Ductile Iron Class 53, and bonded dielectric coated as per the Board of Water Supply 2002 Water System Standards as amended.

17. The Contractor shall install electronic markers to all mains and test the electronic markers prior to installations to verify proper operation. BWS personnel shall verify the number and locations of placed electronic markers before final paving of the project.

18. No deviation to the Board of Water Supply 2002 Water System Standards shall be allowed without the Manager and Chief Engineer's approval.

19. Any adjustments to the existing water system required during construction, to meet the requirements of the BWS Standards, whether shown on the plans or not, shall be done by the Contractor at no cost to the Board of Water Supply.

20. When a utility (gas, sewer, electrical duct line, fiber optic, drainage, etc.) crosses below a Board of Water Supply water main, the designer of record and their construction engineer shall be responsible for determining the adequate water main structural support and submit the construction method and shop drawing, stamped by a licensed engineer and reviewed by the designer of record, to the Board of Water Supply for approval. All work shall be at no cost to the Board of Water Supply.

22. All ductile iron fittings and metallic valves shall have factory applied coating and wrapped with petroleum wax tape.

23. Soil resistivity for the site has a corrosion rating of Corrosion Category A (Moderately to Severely Corrosive) and Corrosion Category B (Negligibly to Mildly Corrosive) as reported by Geolabs. All required electrical isolation procedures and corrosion control requirements shall apply.

WATER NOTES, CON'T:

24. Water Pipeline Chlorination and Testing Procedures

A. The following chlorination and water sample collection procedure shall apply to all water pipeline projects (all work to be coordinated through Board of Water Supply Inspector):

1. Chlorination of Water Systems

a. The Contractor shall provide a 4-week advance notice, in writing, to the Officer-In-Charge for proposed flushing, filling and bacterial testing of the new pipeline.

b. The Contractor shall hire a State of Hawaii - Department of Health certified laboratory to provide water sampling services and to deliver water samples to the Micro Lab for analysis. Water samples for bacterial testing shall be delivered no later than 2:30 p.m. on the day the samples are taken to the Board of Water Supply Microlab located at 630 S. Beretania St., Honolulu, HI 96843. The Micro Lab shall perform analysis and provide their results to the Officer-In-Charge by 4:30 p.m. on the following day (in some cases, final results notification may take up to 48 hours).

c. Water mains shall be disinfected in accordance with the Board of Water Supply System Standards (2002), as amended, Section 302.29.

Step 1 - Preliminary Flushing (Prior to Chlorination): The mains shall be flushed with maximum available pressure and velocity. Adequacy of turnovers shall be determined by the absence of particles. Turbidity shall be less than 1.0 NTU before chlorination. During all flushing operations, the Manager's authorized representative shall determine the rate of water use.

Step 2 - Chlorination: The Contractor shall submit to the Manager, for approval, a sketch showing locations of sampling points and a plan or schedule delineating the method or steps the Contractor proposes to use to accomplish the work. The following methods for chlorination shall be used:

a. 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.

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APPROVED:

MANAGER & CHIEF ENIGINEER, BWS — DATE
(For Work Affecting BWS Facilities in City/State Right-of-Way and BWS Easement only

DEXTER S. EJI
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UTILITY NOTES

KAMEHAMEHA HIGHWAY DRAINAGE AND SAFETY IMPROVEMENTS
Vicinity of Laniakea Beach (MP 3.06 to MP 3.54)
Project No. 83B-01-09

Scale: None Date: December 2022

SHEET No. N-08 OF 13 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83B-01-09	2023	11	231

WATER NOTES, CON'T:

Step 2: Flush main with fresh water until all chlorine has been flushed out as evidenced by the N, N-diethyl-p-phenylenediamine (DPD) 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.

b. The main is deemed acceptable and certified when:

(i) the three consecutive water samples, collected 24 hours apart under Steps 1 and 2, show no TC (Total Coliform bacteria), no E. coli, less than CFU/ml (Colony Forming Units per ml) of HPC (Heterotrophic Plate Count bacteria) or less than 202 HPC using the MPN (Most Probable Number) method and Turbidity <1.0 NTU, and

(ii) the sample of water held in the main for one hour, collected under Step 4, also shows no TC, no E. coli, less than 200 CFU of HPC using the MPN method and Turbidity <1.0 NTU.

c. Chlorination, flushing, sampling and testing will be extended should unsatisfactory results be encountered. Any sample that shows positive TC, E. coli, HPC > 200 CFU/ml, HPC >202 MPN or Turbidity >1.0 NTU is unsatisfactory.

d. 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 TC and/or E. coli and/or increasing total bacterial results from one sample to the next.

e. Water samples that show the presence of atypical results, debris, high turbidity or results inconsistent with existing water are subject to reconfirmation. The Manager reserves the right to request and test additional water samples in the interest of safeguarding public health and safety at no additional cost to the Department.

f. Liquid chlorine, chlorine based liquid disinfectants or calcium hypochlorite that has been tested and certified as meeting the specifications of ANSI/NSF Standard 60, Drinking Water Treatment Chemicals - Health Effects, shall be used for chlorination of the water mains.

d. Prior to chlorination, the water mains shall be thoroughly flushed.

e. The interior surfaces of the water mains shall be exposed to the chlorinating solution by completely filling the mains to remove air pockets, for a minimum of 24-hours and the free chlorine residual shall not be less than 10ppm after such time.

WATER NOTES, CON'T:

f. Should the calcium hypochlorite be used, no solid and/or undissolved portion of the compound shall be introduced into any section of the water mains to be chlorinated.

g. At the end of the 24-hour disinfection period, representative samples shall be taken and analyzed to ensure a free chlorine residual of at least 10 ppm.

h. Should the free chlorine residual results indicate adequate chlorination, the water mains shall be thoroughly flushed and filled with water from the existing system and again tested for free chlorine residual. The flushing shall be considered adequate if the free chlorine residual test results indicate that the water in the water mains has a comparable chlorine residual as the water in the existing system.

i. The Contractor shall be responsible for the proper disposal of chlorinated water to safeguard public health and the environment in accordance with applicable State of Hawaii Department of Health requirements. A neutralizing chemical shall be applied to the water to be disposed to thoroughly neutralize the chlorine residual remaining in the water in accordance with Board of Water Supply Water System Standards (2002), as amended.

j. The Contractor shall be responsible for obtaining a National Pollutant Discharge Elimination System (NPDES) Permit from the Department of Health, Clean Water Branch prior to the start of construction, for the disposal of water used for hydro testing and chlorination, as required by the contract documents.

k. Following the acceptable flushing of the water mains, three (3) consecutive days of acceptable samples, taken at least 24-hours apart, from representative points shall be taken and subjected to microbiological tests. For water lines, at least one set of samples shall be collected from every 1,200 feet of new water main. Positive or invalid test results will not be acceptable, and the process will be repeated.

l. All measures for chlorine residual shall be analyzed using E.P.A. approved methods for drinking water.

m. All microbiological tests shall be performed by a laboratory approved by the Department of Health, State of Hawaii and the Water Quality Division of the Board of Water Supply.

n. The Contractor shall be responsible for all costs associated with all of the foregoing.

o. Cleaning and Swabbing procedures shall be in accordance with Board of Water Supply Water System Standards (2002), as amended.

p. All materials in direct contact with the potable water shall have National Sanitation Foundations (NSF) approvals. The Contractor shall submit these approvals to the Board of Water Supply for information only prior to its application.

APPROVED:

MANAGER & CHIEF ENGINEER, BWS
(For Work Affecting BWS Facilities in City/State Right-of-Way and BWS Easement only

DATE

WATER NOTES, CON'T:

25. All water mains and appurtenances shall be subject to hydrostatic test pressure of 150 psi and by the contractor in accordance with Division 300 - Construction, Section 302.28, PIPE PRESSURE TEST of the "WATER SYSTEM STANDARDS", DATED 2002. During the 30-minute pressure test, the pressure shall not drop more than 10 psi.

26. 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)

27. Prior to installation, 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 Systems Standards, dated 2002.

28. 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.

29. Contractor shall cut and plug all existing unused laterals at the main whether or not shown on the plans. 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.

30. The Contractor/Developer shall obtain a NPDES permit prior to chlorination and/or dewatering. A copy of the permit shall be submitted to the Board of Water Supply, Capital Projects Division, Construction Section.

31. 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 with "CAUTION WATER LINE BURIED BELOW".

32. Cleaning shall be by the use of pigs introduced into the pipeline and run completely through al installed pipelines and all branches line for fire hydrants. "Pigging" of service laterals is not required. Bare Foam "pigs" shall be used to swab piping clean as each length of pipeline is installed. The type, density, size, diameter and length of the pig shall be submitted for review and approval by the Manager prior to pigging work. "Pig" shall be used per manufacturer's specifications. 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. Manual sweeping , hand cleaning or swabbing may be allowed in lieu of "pigging" as approved by the Board of Water Manager.

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Vicinity of Laniakea Beach (MP 3.06 to MP 3.54)
Project No. 83B-01-09

Scale: None Date: December 2022

SHEET No. N-09 OF 13 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83B-01-09	2023	12	228

WATER POLLUTION AND EROSION CONTROL NOTES:

A. GENERAL:

1. See Special Provisions Section 209 - Water Pollution and Erosion Control. Section 209 describes but is not limited to: submittal requirements; scheduling of a water pollution and erosion control conference with the Engineer; construction requirements; method of measurement; and basis of payment. In addition, Appendix A lists potential pollutant sources and corresponding BMPs used to mitigate the pollutants.

2. Follow the guidelines in the current HDOT Construction Best Management Practices Field Manual in developing, installing and maintaining the Best Management Practices (BMP) for the project. For any conflicting requirements between the Manual and applicable bid documents, the applicable bid documents will govern. Should a requirement not be clearly described within the applicable bid documents, the Contractor shall notify the Engineer immediately for interpretation. For the purposes of clarification under Note A.2, "applicable bid documents" include the construction plans, standard specifications, Special Provisions, Permits, and the Storm Water Pollution Prevention Plan (SWPPP) when applicable.

3. Follow the guidelines in the Honolulu's City & County "Rules Relating to Water Quality" along with applicable Soil Erosion Guidelines for projects on Maui, Molokai, Kauai, and Hawaii.

4. The Engineer may assess liquidated damages of up to $27,500 for non-compliance of each BMP requirement and each requirement stated in Section 209 and special provisions, for every day of non-compliance. There is no maximum limit on the amount assessed per day.

5. The Engineer will deduct the cost from the progress payment for all citations received by the Department for non-compliance, or the Contractor shall reimburse the State for the full amount of the outstanding cost incurred by the State.

6. If necessary, install a rain gage prior to any field work including the installation of any site-specific best management practices. The rain gage shall have a tolerance of at least 0.05 inches of rainfall. Install the rain gage on the project site in an area that will not deter rainfall from entering the gage opening. Do not install in a location where rain water may splash into rain gage. The rain gage installation shall be stable and plumbed. Do not begin field work until the rain gage is installed and site-specific best management practices are in-place.

7. Submit Site-Specific BMP Plan to the Engineer along with a completed Site-Specific BMP Review Checklist within 30 calendar days of contract execution. The Site-Specific BMP Review Checklist may be obtained from http://www.stormwaterhawaii.com.

B. WASTE DISPOSAL:

1. Waste Materials
Collect and store all waste materials in a securely lidded metal dumpster or roll off container with cover to keep rain out or loss of waste during windy conditions. The dumpster shall meet all local and State solid waste management regulations. Deposit all trash and construction debris from the site in the dumpster. Empty the dumpster weekly or when the container is two-thirds full, whichever is sooner. Do not bury construction waste materials onsite. The Contractor's supervisory personnel shall be instructed regarding the correct procedure for waste disposal. Post notices stating these practices in the office trailer, on a weatherproof bulletin board, or other accessible location acceptable to the Engineer. The Contractor shall be responsible for seeing that these procedures are followed. Submit the Solid Waste Disclosure Form for Construction Sites to the Engineer within 30 calendar days of contract execution. Provide a copy of all the disposal receipts from the facility permitted by the Department of Health to receive solid waste to the Engineer monthly. This should also include documentation from any intermediary facility where solid waste is handled or processed.

2. Hazardous Waste
Dispose all hazardous waste materials in the manner specified by local or State regulations and by the manufacturer. The Contractor's site personnel shall be instructed in these practices and shall be responsible for seeing that these practices are followed.

3. Sanitary Waste
Collect all sanitary waste from the portable units a minimum of once per week, or as required. Position sanitary facilities where they are secure and will not be tipped over or knocked down.

C. EROSION AND SEDIMENT CONTROL INSPECTION AND MAINTENANCE PRACTICES:

1. For projects with an NPDES Permit for Construction Activities, inspect at the following intervals. For construction areas discharging to nutrient or sediment impaired waters, inspect all control measures at least once each week and within 24 hours of any rainfall event of 0.25 inches or greater within a 24 hour period. For construction areas discharging to waters not impaired for nutrient or sediments, inspect all control measures weekly. Inspections are only required during the project's normal working hours. The discharge point water classification may be found in the SWPPP.

2. For projects without an NPDES Permit for Construction Activities, inspect all control measures weekly.

3. Maintain all erosion and sediment control measures in good working order. If repair is necessary, initiate repair immediately and complete by the close of the next work day if the problem does not require significant repair or replacement, or if the problem can be corrected through routine maintenance. When installation of a new erosion or sediment control or a significant repair is needed, install the new or modified control or complete the repair no later than 7 calendar days from the time of discovery. "Immediately" means the Contractor shall take all reasonable measures to minimize or prevent discharge of pollutants until a permanent solution is installed and made operational. If a problem is identified at a time in the day in which it is too late to initiate repair, initiation of repair shall begin on the following work day.

4. Remove built-up sediment from silt fence when it has reached one-third the height of the fence. Remove sediment from other perimeter sediment control devices when it has reached one-half the height of the device.

5. Inspect silt screen or fence for depth of sediment, tears, to verify that the fabric is securely attached to the fence posts or concrete slab and to verify that the fence posts are firmly in the ground. Inspect and verify the bottom of the silt screen is buried a minimum of 6 inches below the existing ground.

6. Inspect temporary and permanent seeding and planting for bare spots, washouts and healthy growth.

7. Complete and submit to the Engineer a maintenance inspection report within 24 hours after each inspection.

8. Provide a stabilized construction entrance at all points of exit onto paved roads to reduce vehicle tracking of sediments. Include stabilized construction entrance in the Water Pollution, Dust, and Erosion Control submittals. Minimum length should be 50 feet. Minimum width should be 30 feet. Minimum depth should be 12 inches or as recommended by the soils engineer and underlain with geo-textile fabric. If minimum dimensions cannot be met, provide other stabilization techniques that remove sediment prior to exit. Clean the paved street adjacent to the site entrance daily or as required to remove any excess mud, cold-planed materials, dirt or rock tracked from the site. Do not hose down the street without containing or vacuuming wash water. Cover dump trucks hauling material from the construction site with a tarpaulin. Remove sediment tracked onto the street, sidewalk, or other paved area by the end of the day in which the track-out occurs.

9. Include designated Concrete Washout Area(s) in the Water Pollution, Dust, and Erosion Control submittals.

10. Submit the name of a specific individual designated responsible for inspections, maintenance and repair activities and filling out the inspection and maintenance report.

11. Personnel selected for the inspection and maintenance responsibilities shall receive training from the Contractor. They shall be trained in all the inspection and maintenance practices necessary for keeping the erosion and sediment controls used onsite in good working order.

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

DEXTER S. EJI
LICENSED PROFESSIONAL ENGINEER
No. 4739-C
HAWAII, U.S.A.

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SIGNATURE 04/30/24 EXPIRATION DATE OF THE LICENSE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

WATER POLLUTION AND EROSION CONTROL NOTES

KAMEHAMEHA HIGHWAY DRAINAGE AND SAFETY IMPROVEMENTS
Vicinity of Laniakea Beach (MP 3.06 to MP 3.54)
Project No. 83B-01-09

Scale: None Date: December 2022

SHEET No. N-10 OF 13 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83B-01-09	2023	13	231

WATER POLLUTION AND EROSION CONTROL NOTES (Cont.):

12. Contain, remove, and dispose slurry generated from saw cutting of pavement in accordance with approved BMP practices. Do not allow discharge into the drainage system or State waters.

13. For projects with an NPDES Permit for Construction Activities, immediately initiate stabilizing exposed soil areas upon completion of earth-disturbing activities for areas where earth-disturbing activities have permanently or temporarily ceased. Earth-disturbing activities have permanently ceased when clearing and excavation within any area of the construction site that will not include permanent structures has been completed. Earth-disturbing activities have temporarily ceased when clearing, grading, and excavation within any area of the site that will not include permanent structures will not resume (i.e., the land will be idle) for a period of 14 or more calendar days, but such activities will resume in the future. For construction areas discharging into waters not impaired for nutrients or sediments, complete initial stabilization within 14 calendar days after the temporary or permanent cessation of earth-disturbing activities. For construction areas discharging into nutrient or sediment impaired waters, complete initial stabilization within 7 calendar days after the temporary or permanent cessation of earth-disturbing activities. Classification of water at the discharge point may be found in the SWPPP.

14. For projects without an NPDES Permit for Construction Activities, complete initial stabilization within 14 calendar days after the temporary or permanent cessation of earth-disturbing activities.

D. GOOD HOUSEKEEPING BEST MANAGEMENT PRACTICES:

1. Materials Pollution Prevention Plan
   a. Applicable materials or substances listed below are expected to be present onsite during construction. Other materials and substances not listed below shall be added to the inventory.

Concrete	Cleaning Solvents
Detergents	Wood
Paints (enamel and latex)	Masonry Block
Metal Studs	Herbicides and Pesticides
Tar	Curing Compounds
Fertilizers	Adhesives
Petroleum Based Products	

   b. Use Material Management Practices to reduce the risk of spills or other accidental exposure of materials and substances to storm water runoff. Make an effort to store only enough product as is required to do the job.
   c. Store all materials stored onsite in a neat, orderly manner in their appropriate containers and if possible under a roof or other enclosure.
   d. Keep products in their original containers with the original manufacturer's label.
   e. Do not mix substances with one another unless recommended by the manufacturer.
   f. Whenever possible, use a product up completely before disposing of the container.
   g. Follow manufacturer's recommendations for proper use and disposal.
   h. Conduct a daily inspection to ensure proper use and disposal of materials onsite.

2. Hazardous Material Pollution Prevention Plan
   a. Keep products in original containers unless they are not resealable.
   b. Retain original labels and Safety Data Sheets (SDS), formerly Material Safety Data Sheets (MSDS).
   c. Dispose of surplus products according to manufacturers' instructions and local and State regulations.

3. Onsite and Offsite Product Specific Plan
   The following product specific practices shall be followed onsite:
   a. Petroleum Based Products:
      Monitor all onsite vehicles for leaks and perform regular preventive maintenance to reduce the chance of leakage. Store petroleum products in tightly sealed containers which are clearly labeled. Apply asphalt substances used onsite according to the manufacturer's recommendation.

   b. Fertilizers:
      Apply fertilizers used only in the minimum amounts recommended by the manufacturer and federal, state, and local requirements. Avoid applying just before a heavy rain event. Apply at the appropriate time of year for the location, and preferably timed to coincide as closely as possible to the period of maximum vegetation uptake and growth. Once applied, work fertilizer into the soil to limit exposure to storm water. Do not apply to storm conveyance channels with flowing water. Storage shall be in a covered shed or in an area where fertilizer will not come into contact with precipitation or stormwater. Transfer the contents of any partially used bags of fertilizer to a sealable plastic bin to avoid spills.

   c. Paints:
      Seal and store all containers when not required for use. Do not discharge excess paint to the drainage system, sanitary sewer system, or State waters. Dispose properly according to manufacturers' instructions and State and local regulations.

   d. Concrete Trucks:
      Washout or discharge concrete truck drum wash water only at a designated site as far as practicable from storm drain inlets or State waters. Do not discharge water in the drainage system or State waters. Disposal by percolation is prohibited. Clean disposal site as required or as requested by the Engineer.

4. Spill Control Plan
   a. Post a spill prevention plan to include measures to prevent and clean up each spill.
   b. The Contractor shall be the spill prevention and cleanup coordinator. Designate at least three site personnel who shall receive spill prevention and cleanup training. These individuals shall each become responsible for a particular phase of prevention and cleanup. Post the names of responsible spill personnel in the material storage area on a weatherproof bulletin board or other accessible location acceptable to the Engineer and in the office trailer onsite.
   c. Clearly post manufacturers' recommended methods for spill cleanup. Make site personnel aware of the procedures and the location of the information and cleanup supplies.
   d. Keep ample materials and equipment necessary for spill cleanup in the material storage area onsite.
   e. Clean up all spills immediately after discovery.
   f. Keep the spill area well ventilated. Personnel shall wear appropriate protective clothing to prevent injury from contact with a hazardous substance.
   g. Report spills of toxic hazardous material to the appropriate State or local government agency, regardless of the size. Where a leak, spill, or other release containing a hazardous substance or oil in an amount equal to or in excess of a reportable quantity established under either 40 CFR Part 110, 40 CFR Part 117, or 40 CFR Part 302 occurs during a 24-hour period, the Contractor shall notify the Engineer as soon as the Contractor has knowledge of the discharge. The Engineer will notify the National Response Center (NRC) at (800) 424-8802, the Clean Water Branch during regular business hours at 586-4309, and the Hawaii State Hospital Operator at 247-2191 and the Clean Water Branch (DOH-CWB) via email at cleanwaterbranch@doh.hawaii.gov during non-business hours immediately. The Contractor shall also provide to the Engineer, within 7 calendar days of knowledge of the release, a description of the release, the circumstances leading to the release, and the date of the release. The Engineer will provide this information to the DOH-CWB. The Engineer will provide information to the NRC if requested.

ORIGINAL PLAN | NOTE BOOK | No.

SURVEY PLOTTED BY | DRAWN BY | TRACED BY | DESIGNED BY | QUANTITIES BY | CHECKED BY | DATE

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SIGNATURE 04/30/24 EXPIRATION DATE OF THE LICENSE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

WATER POLLUTION AND EROSION CONTROL NOTES

KAMEHAMEHA HIGHWAY DRAINAGE AND SAFETY IMPROVEMENTS
Vicinity of Laniakea Beach (MP 3.06 to MP 3.54)
Project No. 83B-01-09

Scale: None Date: December 2022

SHEET No. N-11 OF 13 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83B-01-09	2023	14	231

WATER POLLUTION AND EROSION CONTROL NOTES (Cont.):

E. PERMIT REQUIREMENTS:

1. A National Pollutant Discharge Elimination System (NPDES) Permit for Construction Activities of one acre or more of disturbed area is required for this project. If the Contractor requires extra land disturbance, including staging and storage areas, that is not covered by the NPDES Permit obtained by the County, the Contractor shall be responsible for obtaining the required NPDES Construction Activities Permit to cover this additional disturbed area. See Hawaii Administrative Rules Chapter 11-55, Appendix C for definition of land disturbance. The Contractor's attention is directed to the applicable NPDES Permit documents on the bid package compact disc.

2. Comply with all applicable State and Federal Permit conditions. Permits may include, but not limited to the following:

   a. NPDES Permit for Construction Activities

   b. NPDES Permit for Construction Dewatering

   c. Water Quality Certification

   d. d. Stream Channel Alteration Permit

   e. e. Section 404 Army Corps of Engineer Permit

F. SITE-SPECIFIC BMP REQUIREMENTS:
Each BMP below is referenced to the corresponding section of the current HDOT Construction Best Management Practices Field Manual and appropriate Supplemental Sheets. The Manual may be obtained from the HDOT Statewide Stormwater Management Program Website at http://www.stormwaterhawaii.com/resources/contractors-and-consultants under Construction Best Management Practices Field Manual. Supplemental BMP sheets are located at http://www.stormwaterhawaii.com/resources/contractors-and-consultants/storm-water-pollution-prevention-plan-swppp under Concrete Curing and Irrigation Water.

The requirements for Water Pollution, Dust, and Erosion Control submittals are included in Section 209 of the Hawaii Standard Specifications for Road and Bridge Construction dated 2005 and applicable Special Provisions. A list of pollutant sources and corresponding BMP used to mitigate the pollutants are included in Section 209 of the Special Provisions under Appendix A.

Follow the requirements below:

1. Protect all Drainage Inlets receiving runoff from disturbed areas (SC-1).

2. Contain on-site runoff using Perimeter Sediment Controls
   a. SC-7 Silt Fence or Filter Fabric Fence
   b. SC-2 Vegetated Filter Strips and Buffers
   c. SC-6 Compost Filter Berm/Sock
   d. SC-8 Sandbag Barrier
   e. SC-9 Brush or Rock Filter

3. Control offsite runoff from entering construction area
   a. EC-3 Run-On Diversion
   b. EC-5 Earth Dike, Swales, and Ditches

4. Incorporate applicable Site Management BMP
   a. SM-1 Employee Training
   b. SM-2 Material Delivery and Storage
   c. SM-3 Stockpile Management
   d. SM-6 Solid Waste Management
   e. SM-7 Sanitary/Septic Waste Management
   f. SM-9 Hazardous Waste Management
   g. SM-10 Spill Prevention and Control
   h. SM-11 Vehicle and Equipment Cleaning
   i. SM-12 Vehicle and Equipment Maintenance
   j. SM-13 Vehicle and Equipment Refueling
   k. SM-14 Scheduling
   l. SM-15 Location of Potential Sources of Sediment
   m. SM-16 Staging Area
   n. SM-17 Preservation of Existing Vegetation
   o. SM-19 Dust Control

5. Contain pollutants within the Construction Staging/Storage Area BMP with applicable Perimeter Sediment Controls and Site Management BMP. Include a Stabilized Construction Entrance/Exit (SC-11) for all areas which exit onto a paved street. Restrict vehicle access to these points.

6. Manage Concrete Waste including installing a Concrete Washout Area (SM-4) and properly disposing of Concrete Curing Water (California Stormwater BMP Handbook NS-12 Concrete Curing).

7. Remove saw cut slurry and hydrodemolition water from the site by vacuuming. Provide storm drain protection and/or perimeter sediment controls during saw cutting and hydrodemolition work.

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

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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

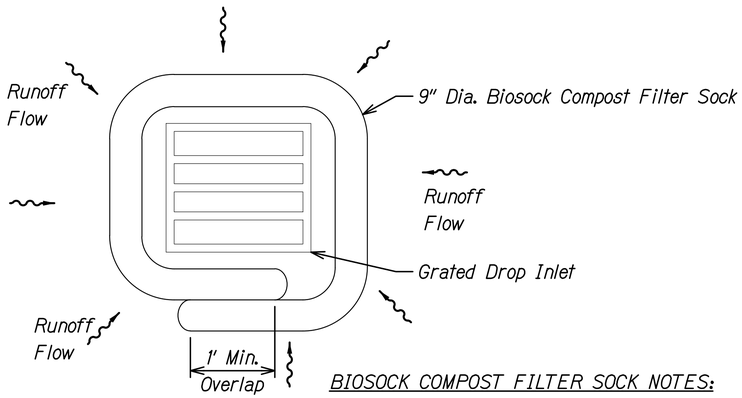
WATER POLLUTION AND EROSION CONTROL NOTES

KAMEHAMEHA HIGHWAY DRAINAGE AND SAFETY IMPROVEMENTS
Vicinity of Laniakea Beach (MP 3.06 to MP 3.54)
Project No. 83B-01-09

Scale: None Date: December 2022

SHEET No. N-12 OF 13 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83B-01-09	2023	15	231



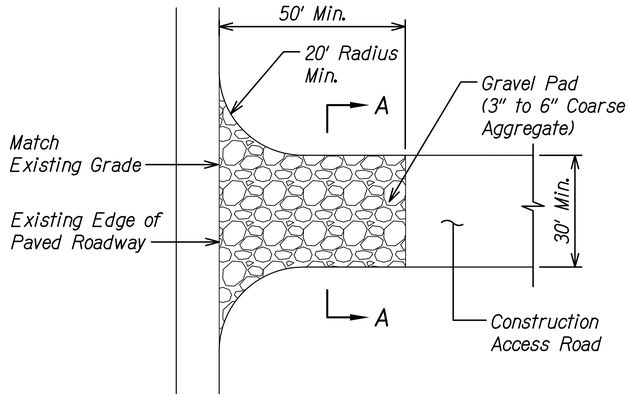
PLAN

BIOSOCK COMPOST FILTER SOCK NOTES:

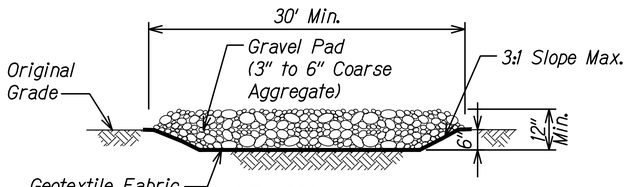
1. Remove accumulated sediment when depth reaches 1/3 the barrier height.
2. Biosock Material and compost shall be removed at the completion of construction (or a phase of construction) and shall be disposed of properly.

BIOSOCK COMPOST FILTER SOCK DRAIN INLET PROTECTION DETAIL

Not to Scale



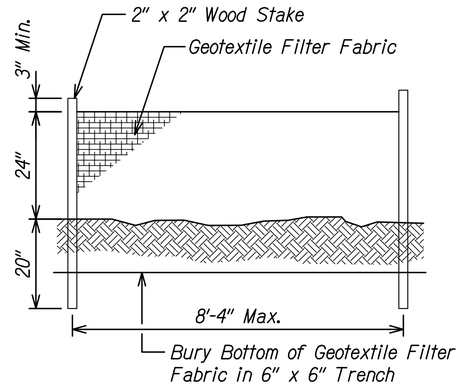
PLAN

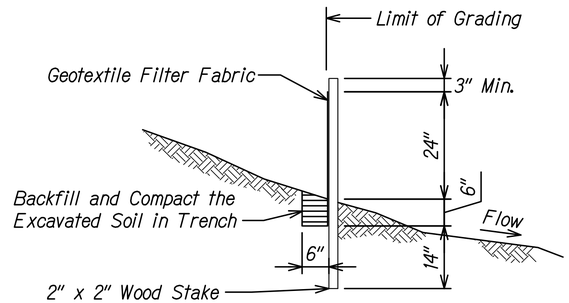


SECTION A-A

TEMPORARY STABILIZED CONSTRUCTION ENTRANCE

Not to Scale



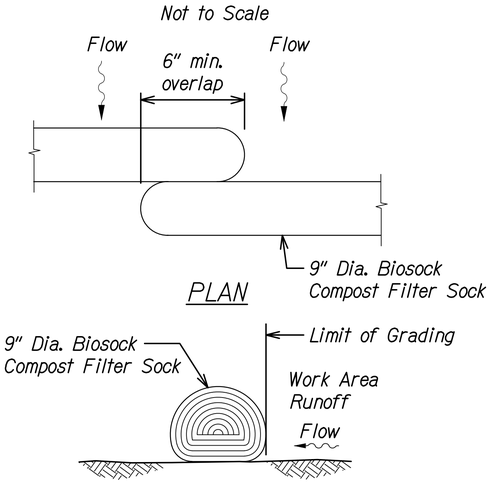


SILT FENCE DETAIL

Not to Scale

SILT FENCE NOTES:

1. The filter fabric shall be a minimum of 36 inches wide.
2. If silt fence is obtained from manufacturer as a package (i.e. fabric attached to post) the manufacturer's installation instructions shall be adhered to.



PLAN

SECTION

BIOSOCK COMPOST FILTER SOCK PERIMETER CONTROL DETAIL

Not to Scale

DATE		REVISION

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

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EROSION CONTROL DETAILS

KAMEHAMEHA HIGHWAY DRAINAGE AND SAFETY IMPROVEMENTS
Vicinity of Laniakea Beach (MP 3.06 to MP 3.54)
Project No. 83B-01-09

Scale: None Date: December 2022

SHEET No. N-13 OF 13 SHEETS

ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
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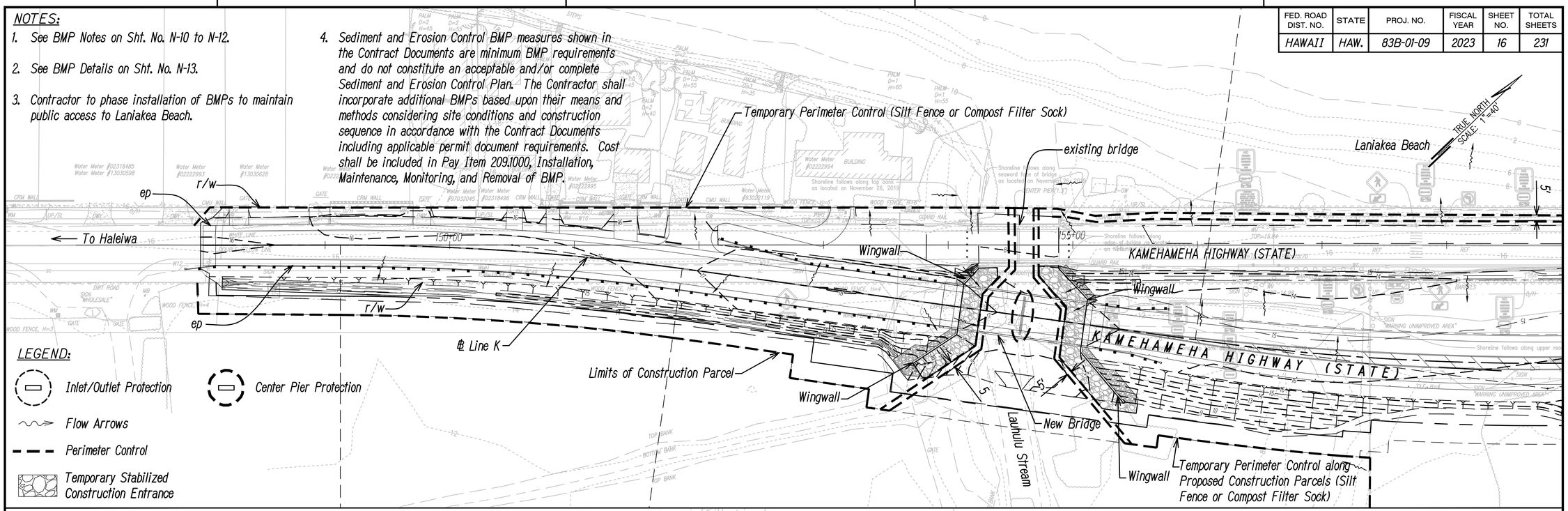
FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83B-01-09	2023	16	231

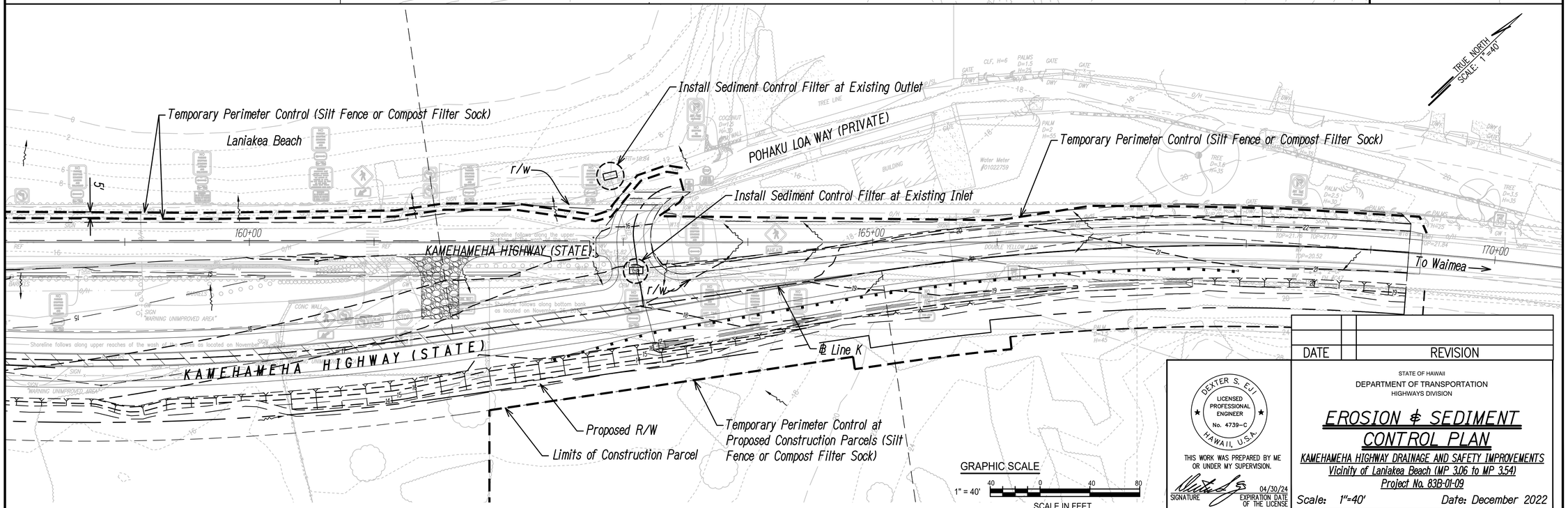
NOTES:

1. See BMP Notes on Sht. No. N-10 to N-12.
2. See BMP Details on Sht. No. N-13.
3. Contractor to phase installation of BMPs to maintain public access to Laniakea Beach.
4. Sediment and Erosion Control BMP measures shown in the Contract Documents are minimum BMP requirements and do not constitute an acceptable and/or complete Sediment and Erosion Control Plan. The Contractor shall incorporate additional BMPs based upon their means and methods considering site conditions and construction sequence in accordance with the Contract Documents including applicable permit document requirements. Cost shall be included in Pay Item 209.1000, Installation, Maintenance, Monitoring, and Removal of BMP.

LEGEND:

- Inlet/Outlet Protection
- Center Pier Protection
- Flow Arrows
- Perimeter Control
- Temporary Stabilized Construction Entrance





GRAPHIC SCALE
1" = 40'
40 0 40 80
SCALE IN FEET

DATE		REVISION

DEXTER S. EJI
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No. 4739-C
HAWAII, U.S.A.

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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

EROSION & SEDIMENT CONTROL PLAN

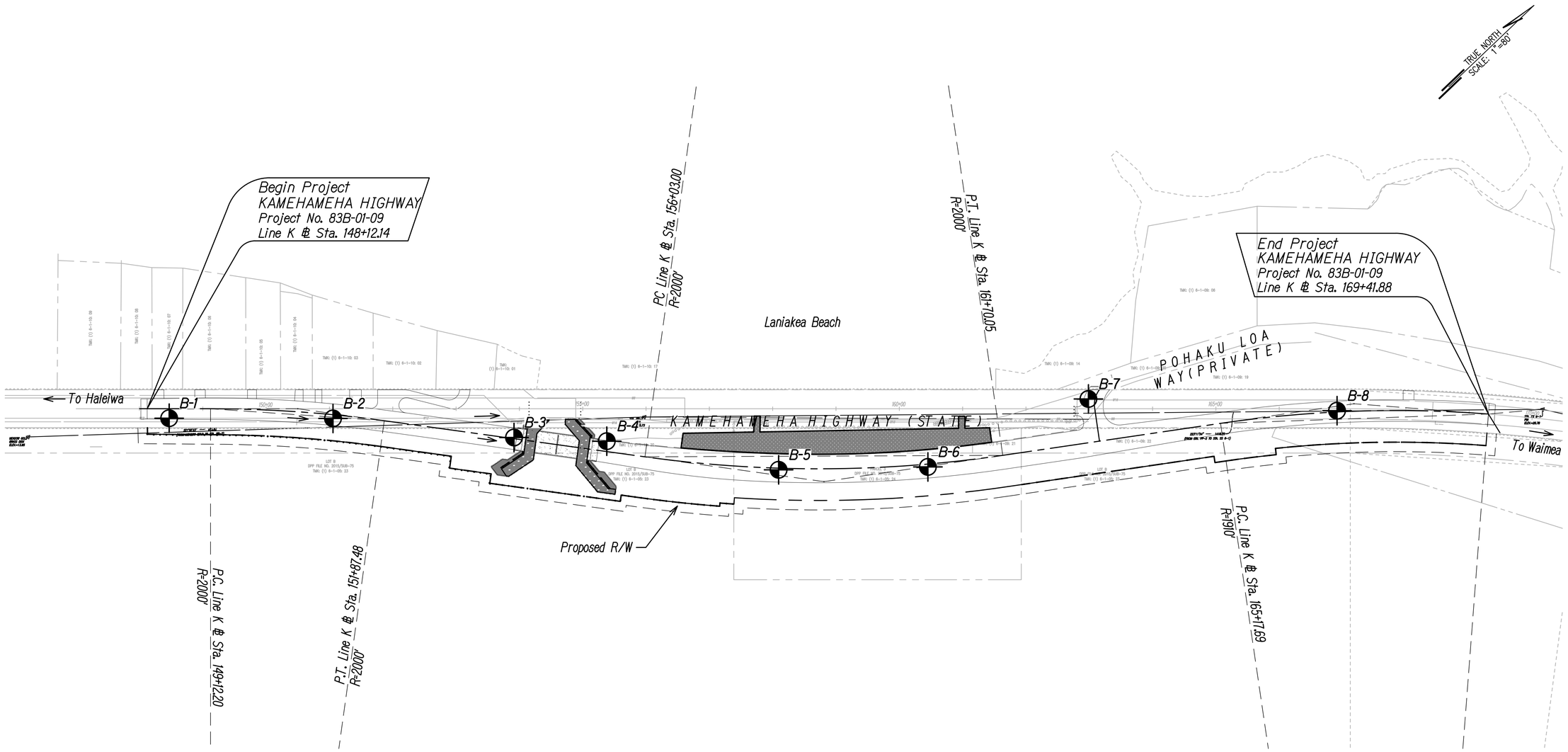
KAMEHAMEHA HIGHWAY DRAINAGE AND SAFETY IMPROVEMENTS
Vicinity of Laniakea Beach (MP 3.06 to MP 3.54)
Project No. 83B-01-09

Scale: 1"=40' Date: December 2022

SHEET No. ESC-1 OF 1 SHEETS

ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
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FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83B-01-09	2023	17	228



ORIGINAL PLAN
NOTE BOOK
No.

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DATE

LEGEND:

Approximate Boring Location

GRAPHIC SCALE
1" = 80'
80 0 80 160
SCALE IN FEET

GERALD Y. SEKI
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No. 5635-C
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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

BORING LOCATION PLAN

KAMEHAMEHA HIGHWAY DRAINAGE AND SAFETY IMPROVEMENTS
Vicinity of Laniakea Beach (MP 3.06 to MP 3.54)
Project No. 83B-01-09

Scale: 1"=80' Date: December 2022

SHEET No. B-01 OF 6 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83B-01-09	2023	18	228

GEOLABS, INC.
Geotechnical Engineering

Soil Log Legend

UNIFIED SOIL CLASSIFICATION SYSTEM (USCS)

MAJOR DIVISIONS			USCS	TYPICAL DESCRIPTIONS
COARSE-GRAINED SOILS (MORE THAN 50% OF MATERIAL RETAINED ON NO. 200 SIEVE)	GRAVELS (MORE THAN 50% OF COARSE FRACTION RETAINED ON NO. 4 SIEVE)	CLEAN GRAVELS (LESS THAN 5% FINES)	GW	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
			GP	POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
		GRAVELS WITH FINES (MORE THAN 12% FINES)	GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
			GC	CLAYEY GRAVELS, GRAVEL-SAND-CLAY MIXTURES
	SANDS (50% OR MORE OF COARSE FRACTION PASSING THROUGH NO. 4 SIEVE)	CLEAN SANDS (LESS THAN 5% FINES)	SW	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
			SP	POORLY-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
		SANDS WITH FINES (MORE THAN 12% FINES)	SM	SILTY SANDS, SAND-SILT MIXTURES
			SC	CLAYEY SANDS, SAND-CLAY MIXTURES
FINE-GRAINED SOILS (50% OR MORE OF MATERIAL PASSING THROUGH NO. 200 SIEVE)	SILTS AND CLAYS (LIQUID LIMIT LESS THAN 50)		ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
			CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
			OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
	SILTS AND CLAYS (LIQUID LIMIT 50 OR MORE)		MH	INORGANIC SILT, MICACEOUS OR DIATOMACEOUS FINE SAND OR SILTY SOILS
			CH	INORGANIC CLAYS OF HIGH PLASTICITY
			OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS			PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS

NOTE: DUAL SYMBOLS ARE USED TO INDICATE BORDERLINE SOIL CLASSIFICATIONS

LEGEND

- (2-INCH) O.D. STANDARD PENETRATION TEST
- (3-INCH) O.D. MODIFIED CALIFORNIA SAMPLE
- SHELBY TUBE SAMPLE
- GRAB SAMPLE
- CORE SAMPLE
- WATER LEVEL OBSERVED IN BORING AT TIME OF DRILLING
- WATER LEVEL OBSERVED IN BORING AFTER DRILLING
- WATER LEVEL OBSERVED IN BORING OVERNIGHT

- LL LIQUID LIMIT (NP=NON-PLASTIC)
- PI PLASTICITY INDEX (NP=NON-PLASTIC)
- TV TORVANE SHEAR (tsf)
- UC UNCONFINED COMPRESSION OR UNIAXIAL COMPRESSIVE STRENGTH
- TXUU UNCONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION (ksf)

LOG LEGEND FOR SOIL 7611-100(A).GPJ GEOLABS.GDT 12/21/21

GEOLABS, INC.
Geotechnical Engineering

Soil Classification Log Key
(with deviations from ASTM D2488)

GEOLABS, INC. CLASSIFICATION*

GRANULAR SOIL (- #200 <50%)	COHESIVE SOIL (- #200 ≥ 50%)
• PRIMARY constituents are composed of the largest percent of the soil mass. Primary constituents are capitalized and bold (i.e., GRAVEL, SAND)	• PRIMARY constituents are based on plasticity. Primary constituents are capitalized and bold (i.e., CLAY, SILT)
• SECONDARY constituents are composed of a percentage less than the primary constituent. If the soil mass consists of 12 percent or more fines content, a cohesive constituent is used (SILTY or CLAYEY); otherwise, a granular constituent is used (GRAVELLY or SANDY) provided that the secondary constituent consists of 20 percent or more of the soil mass. Secondary constituents are capitalized and bold (i.e., SANDY GRAVEL, CLAYEY SAND) and precede the primary constituent.	• SECONDARY constituents are composed of a percentage less than the primary constituent, but more than 20 percent of the soil mass. Secondary constituents are capitalized and bold (i.e., SANDY CLAY, SILTY CLAY, CLAYEY SILT) and precede the primary constituent.
• accessory descriptions compose of the following: with some: >12% with a little: 5 - 12% with traces of: <5% accessory descriptions are lower cased and follow the Primary and Secondary Constituents (i.e., SILTY GRAVEL with a little sand)	• accessory descriptions compose of the following: with some: >12% with a little: 5 - 12% with traces of: <5% accessory descriptions are lower cased and follow the Primary and Secondary Constituents (i.e., SILTY CLAY with some sand)
EXAMPLE: Soil Containing 60% Gravel, 25% Sand, 15% Fines. Described as: SILTY GRAVEL with some sand	

RELATIVE DENSITY / CONSISTENCY

Granular Soils			Cohesive Soils			
N-Value (Blows/Foot)		Relative Density	N-Value (Blows/Foot)		PP Readings (tsf)	Consistency
SPT	MCS		SPT	MCS		
0 - 4	0 - 7	Very Loose	0 - 2	0 - 4		Very Soft
4 - 10	7 - 18	Loose	2 - 4	4 - 7	< 0.5	Soft
10 - 30	18 - 55	Medium Dense	4 - 8	7 - 15	0.5 - 1.0	Medium Stiff
30 - 50	55 - 91	Dense	8 - 15	15 - 27	1.0 - 2.0	Stiff
> 50	> 91	Very Dense	15 - 30	27 - 55	2.0 - 4.0	Very Stiff
			> 30	> 55	> 4.0	Hard

MOISTURE CONTENT DEFINITIONS

Dry: Absence of moisture, dry to the touch

Moist: Damp but no visible water

Wet: Visible free water

ABBREVIATIONS

WOH: Weight of Hammer

WOR: Weight of Drill Rods

SPT: Standard Penetration Test Split-Spoon Sampler

MCS: Modified California Sampler

PP: Pocket Penetrometer

GRAIN SIZE DEFINITION

Description	Sieve Number and / or Size
Boulders	> 12 inches (305-mm)
Cobbles	3 to 12 inches (75-mm to 305-mm)
Gravel	3-inch to #4 (75-mm to 4.75-mm)
Coarse Gravel	3-inch to 3/4-inch (75-mm to 19-mm)
Fine Gravel	3/4-inch to #4 (19-mm to 4.75-mm)
Sand	#4 to #200 (4.75-mm to 0.075-mm)
Coarse Sand	#4 to #10 (4.75-mm to 2-mm)
Medium Sand	#10 to #40 (2-mm to 0.425-mm)
Fine Sand	#40 to #200 (0.425-mm to 0.075-mm)

**Soil descriptions are based on ASTM D2488-09a, Visual-Manual Procedure, with the above modifications by Geolabs, Inc. to the Unified Soil Classification System (USCS).*

SOIL CLASS LOG KEY 7611-100(A).GPJ GEOLABS.GDT 12/21/21

GERALD Y. SEKI
LICENSED PROFESSIONAL ENGINEER
No. 5635-C
HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.

SIGNATURE 04/2024 EXPIRATION DATE OF THE LICENSE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

BORING LOG LEGENDS

KAMEHAMEHA HIGHWAY DRAINAGE AND SAFETY IMPROVEMENTS
Vicinity of Laniakea Beach (MP 3.06 to MP 3.54)
Project No. 83B-01-09

Scale: None Date: December 2022

SHEET No. B-02 OF 6 SHEETS

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

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83B-01-09	2023	19	228

GEOLABS, INC.

Geotechnical Engineering

Rock Log Legend

ROCK DESCRIPTIONS

	BASALT		CONGLOMERATE
	BOULDERS		LIMESTONE
	BRECCIA		SANDSTONE
	CLINKER		SILTSTONE
	COBBLES		TUFF
	CORAL		VOID/CAVITY

ROCK DESCRIPTION SYSTEM

ROCK FRACTURE CHARACTERISTICS

The following terms describe general fracture spacing of a rock:

Massive:	Greater than 24 inches apart
Slightly Fractured:	12 to 24 inches apart
Moderately Fractured:	6 to 12 inches apart
Closely Fractured:	3 to 6 inches apart
Severely Fractured:	Less than 3 inches apart

DEGREE OF WEATHERING

The following terms describe the chemical weathering of a rock:

Unweathered:	Rock shows no sign of discoloration or loss of strength.
Slightly Weathered:	Slight discoloration inwards from open fractures.
Moderately Weathered:	Discoloration throughout and noticeably weakened though not able to break by hand.
Highly Weathered:	Most minerals decomposed with some corestones present in residual soil mass. Can be broken by hand.
Extremely Weathered:	Saprolite. Mineral residue completely decomposed to soil but fabric and structure preserved.

HARDNESS

The following terms describe the resistance of a rock to indentation or scratching:

Very Hard:	Specimen breaks with difficulty after several "pinging" hammer blows. Example: Dense, fine grain volcanic rock
Hard:	Specimen breaks with some difficulty after several hammer blows. Example: Vesicular, vugular, coarse-grained rock
Medium Hard:	Specimen can be broked by one hammer blow. Cannot be scraped by knife. SPT may penetrate by ~25 blows per inch with bounce. Example: Porous rock such as clinker, cinder, and coral reef
Soft:	Can be indented by one hammer blow. Can be scraped or peeled by knife. SPT can penetrate by ~100 blows per foot. Example: Weathered rock, chalk-like coral reef
Very Soft:	Crumbles under hammer blow. Can be peeled and carved by knife. Can be indented by finger pressure. Example: Saprolite

LOG LEGEND FOR ROCK 7611-00(A).GPJ GEOLABS.GDT 12/21/21

GEOTECHNICAL NOTES:

1. *A geotechnical engineering report entitled "Geotechnical Engineering Exploration, Kamehameha Highway Drainage and Safety Improvements, Vicinity of MP 3.06 to 3.54, Waialua, Oahu, Hawaii" dated November 30, 2022 has been prepared by Geolabs, Inc. A copy of the report is on file at the office of the Engineer for review by the Contractor.*

2. *For boring locations, see Sheet B-01.*

3. *The information presented in the logs of borings depict the subsurface conditions encountered at that specified location and at the time of the field exploration only. Variations of subsoil conditions from those depicted in the logs of borings may occur between and beyond the borings.*

4. *The penetration resistance shown on the logs of borings indicate the number of blows required for the specific sampler type used. The blow counts may need to be factored to obtain the Standard Penetration Test (SPT) blow counts.*

5. *The data given is for general information only. Bidders shall examine the site and the boring data and draw their own conclusions therefrom as to the character of materials to be encountered. The Engineer will not assume responsibility for variations of subsoil quality or conditions other than at the boring locations shown and at the time the borings were taken.*

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

GERALD Y. SEKI
LICENSED PROFESSIONAL ENGINEER
No. 5635-C
HAWAII, U.S.A.

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SIGNATURE — EXPIRATION DATE OF THE LICENSE: 04/2024

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

ROCK LOG LEGEND & NOTES

KAMEHAMEHA HIGHWAY DRAINAGE AND SAFETY IMPROVEMENTS
Vicinity of Laniakea Beach (MP 3.06 to MP 3.54)
Project No. 83B-01-09

Scale: None — Date: December 2022

SHEET No. B-03 OF 6 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83B-01-09	2023	20	228

GEOLABS, INC.
Geotechnical Engineering

KAMEHAMEHA HIGHWAY DRAINAGE AND SAFETY IMPROVEMENTS
VICINITY OF MP 3.06 TO MP 3.54
WAIALUA, OAHU, HAWAII

Log of Boring 1

Approximate Ground Surface Elevation (feet): 16 *

Other Tests	Moisture Content (%)	Dry Unit Weight (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample	Graphic	USCS	Description
							0				8-inch ASPHALTIC CONCRETE
	13	95			40					SM	Brown with some gray SILTY SAND with a little gravel (basaltic), medium dense, moist (fill)
	14				9					SM	
										SM	Light tan with traces of brown SILTY SAND (CORALLINE) with some gravel, medium dense, moist (fill)
Sieve - #200 = 1.5%	6	89			11		5			SP	
											Brownish tan fine SILTY SAND, medium dense, moist (recent alluvium)
											Tan poorly graded SAND (CORALLINE) with traces of silt and gravel, loose, moist (beach deposit)
	5	93			8		10				
											Boring terminated at 11.5 feet
							15				* Elevations estimated from Roadway Plan and Profile dated May 2022 transmitted by WSP USA.
							20				

Date Started:	June 13, 2022	Water Level: ▼	Not Encountered
Date Completed:	June 13, 2022		
Logged By:	S. Latronic	Drill Rig:	CME-55D
Total Depth:	11.5 feet	Drilling Method:	6" Hollow-Stem Auger
Work Order:	7651-00(A)	Driving Energy:	140 lb. wt., 30 in. drop

BORING LOG DOT 1AVE.GDT 7651-00(A).GPJ GEOLABS.GDT 8/4/22

GEOLABS, INC.
Geotechnical Engineering

KAMEHAMEHA HIGHWAY DRAINAGE AND SAFETY IMPROVEMENTS
VICINITY OF MP 3.06 TO MP 3.54
WAIALUA, OAHU, HAWAII

Log of Boring 2

Approximate Ground Surface Elevation (feet): 14 *

Other Tests	Moisture Content (%)	Dry Unit Weight (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample	Graphic	USCS	Description
							0				7-inch ASPHALTIC CONCRETE
	12	91			25					GW	Light tan SANDY GRAVEL (CORALLINE) with a little silt, dense, moist (fill)
	7				16					SM	
										SP	Brownish tan fine to medium SILTY SAND, medium dense, moist (recent alluvium)
	5	96			30		5				Tan poorly graded SAND (CORALLINE), medium dense, moist (beach deposit)
	6	99			26		10				
											Boring terminated at 11.5 feet
							15				
							20				

Date Started:	June 13, 2022	Water Level: ▼	Not Encountered
Date Completed:	June 13, 2022		
Logged By:	S. Latronic	Drill Rig:	CME-55D
Total Depth:	11.5 feet	Drilling Method:	6" Hollow-Stem Auger
Work Order:	7651-00(A)	Driving Energy:	140 lb. wt., 30 in. drop

BORING LOG DOT 2AVE.GDT 7651-00(A).GPJ GEOLABS.GDT 8/4/22

GEOLABS, INC.
Geotechnical Engineering

KAMEHAMEHA HIGHWAY DRAINAGE AND SAFETY IMPROVEMENTS
VICINITY OF MP 3.06 TO MP 3.54
WAIALUA, OAHU, HAWAII

Log of Boring 3

Approximate Ground Surface Elevation (feet): 13 *

Other Tests	Moisture Content (%)	Dry Unit Weight (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample	Graphic	USCS	Description
	2				8		0			SM	Brown fine SILTY SAND, medium dense, dry to moist (recent alluvium)
										SP-SM	Light tan poorly graded fine SAND (CORALLINE) with a little silt, loose, dry to moist (beach deposit)
Direct Shear	23	114	0		9		5				grades coarser locally
	27		28		12		10				grades to medium dense, wet
	28	89	100		40		15				grades with fine gravel
											Gray subrounded BOULDERS (BASALTIC), very dense (recent alluvium)
LL=53 PI=29	43		61		7		20			CH	Brown SILTY CLAY with some sand (basaltic) and a little gravel, medium stiff (recent alluvium)
	47	71	99	16	50/4"		25				grades with cobbles (basaltic) locally
UC= 12820 psi			100	47			30				Gray with traces of brown vugular BASALT, moderately to closely fractured, slightly weathered, hard to very hard (a'a basalt)
			57	20			35				
			38				40			GW	Gray with some brown subangular SANDY GRAVEL (BASALTIC) with some cobbles, dense (clinker)
							45			GM	Brown with some gray SILTY GRAVEL (BASALTIC) with some sand, dense to very dense (clinker)
Sieve - #200 = 13.9%	24				52						
UC= 8500 psi			57				50				grades with cobbles (basaltic) locally
			63	50			55				Gray vugular BASALT, moderately fractured, slightly weathered, hard to very hard (a'a basalt)
			100	28			60			SM	Reddish brown with some gray SILTY SAND (BASALTIC) with some gravel, slightly cemented, dense (clinker)
			100	15			65				Gray dense BASALT, moderately to closely fractured, unweathered to slightly weathered, very hard (a'a basalt)
			100	72			70				
							75				Boring terminated at 71.5 feet

Date Started:	June 7, 2022	Water Level: ▽	12.4 ft. 06/08/2022 1250 HRS
Date Completed:	June 8, 2022	▼	12.3 ft. 06/08/2022 1805 HRS
Logged By:	S. Latronic	Drill Rig:	CME-55D
Total Depth:	71.5 feet	Drilling Method:	4" Solid-Stem Auger & PQ Coring
Work Order:	7651-00(A)	Driving Energy:	140 lb. wt., 30 in. drop

BORING LOG DOT 3AVE.GDT 7651-00(A).GPJ GEOLABS.GDT 8/4/22

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

GERALD Y. SEKI
LICENSED PROFESSIONAL ENGINEER
No. 5635-C
HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.

Gerald Y. Seki 04/2024
SIGNATURE EXPIRATION DATE OF THE LICENSE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

BORING LOG - 1

KAMEHAMEHA HIGHWAY DRAINAGE AND SAFETY IMPROVEMENTS
Vicinity of Laniakea Beach (MP 3.06 to MP 3.54)
Project No. 83B-01-09

Scale: None Date: December 2022

SHEET No. B-04 OF 6 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83B-01-09	2023	21	228

GEOLABS, INC.
Geotechnical Engineering

KAMEHAMEHA HIGHWAY DRAINAGE AND SAFETY IMPROVEMENTS
VICINITY OF MP 3.06 TO MP 3.54
WAIALUA, OAHU, HAWAII

Log of Boring 4

Approximate Mudline Elevation (feet): 12

Other Tests	Moisture Content (%)	Dry Unit Weight (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	USCS	Description
	7		57		25/2"			SM	Brownish tan with some gray SILTY SAND (CORALLINE) with a little cobbles (basaltic), medium dense, moist (fill)
Direct Shear TXUU Su=2.4 ksf Sieve - #200 = 6.8%	20	105	0		29		5	SP-SM	Gray BOULDERS (BASALTIC), very dense, dry (fill)
	21		44		12		10		Tan poorly graded SAND (CORALLINE) with a little silt and traces of gravel, medium dense, moist to wet (beach deposit)
	36		28		34		15		grades with brown sandy silt pockets locally
LL=60 PI=28 TXUU Su=2.4 ksf UC= 10460 psi	60	66	98	62	20	2.0	20	CH	Gray with traces of brown subrounded GRAVELLY COBBLES (BASALTIC), dense (recent alluvium)
			65				25	MH	Reddish brown with some gray SILTY CLAY with some gravel (basaltic), hard (recent alluvium)
			57				30	MH	Brown with grayish brown mottling CLAYEY SILT with a little gravel (basaltic), very stiff (recent alluvium)
	31		22		20		35	SM	Brown with reddish brown mottling CLAYEY SILT with some sand and a little gravel (basaltic), stiff (recent alluvium)
	21	114	9		48/6" +50/4"		40	GW-GM	Gray vugular BASALT, slightly fractured, slightly weathered, hard (a'a basalt)
UC= 24070 psi	21		100	71	50/5"		45	SM	Brown and gray SILTY SAND (BASALTIC) with some gravel, medium dense (clinker)
UC= 13280 psi			100	73			50		Brownish gray vugular BASALT, severely fractured, moderately weathered, medium hard (a'a basalt)
			100	60			55		Brown and gray SANDY GRAVEL (BASALTIC) with a little cobbles and traces of silt, medium dense (clinker)
UC= 25730 psi			100	75			60		Brown with some gray SILTY SAND (BASALTIC) with some gravel and a little cobbles, very dense (clinker)
							65		Reddish brown with some gray cemented BASALT, moderately fractured, moderately weathered, hard (welded clinker)
							70		Gray dense BASALT, moderately fractured, slightly weathered, very hard (a'a basalt)
							75		Boring terminated at 66 feet

Date Started:	June 9, 2022	Water Level:	12.4 ft. 06/09/2022 1030 HRS 9.9 ft. 06/09/2022 1535 HRS
Date Completed:	June 9, 2022		
Logged By:	S. Latronic	Drill Rig:	CME-55D
Total Depth:	66 feet	Drilling Method:	4" Solid-Stem Auger & PQ Coring
Work Order:	7651-00(A)	Driving Energy:	140 lb. wt., 30 in. drop

BORING_LOG_DOT.DWT 7651-00A1.GPJ GEOLABS.GDT 4/4/22

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Geotechnical Engineering

KAMEHAMEHA HIGHWAY DRAINAGE AND SAFETY IMPROVEMENTS
VICINITY OF MP 3.06 TO MP 3.54
WAIALUA, OAHU, HAWAII

Log of Boring 5

Approximate Ground Surface Elevation (feet): 14 *

Other Tests	Moisture Content (%)	Dry Unit Weight (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	USCS	Description
	1	84			17			SM	Brownish tan SILTY SAND, medium dense, moist (recent alluvium)
	3				11			SP	Light tan with some white poorly graded fine to medium SAND (CORALLINE), loose to medium dense, dry to moist (beach deposit)
	6	82			12		5		
	33	78			4		10	CH	Brown to reddish brown SILTY CLAY, soft to medium stiff, moist (recent alluvium)
							15		Brownish gray GRAVELLY COBBLES (BASALTIC) with some clayey silt, medium dense, wet (recent alluvium)
							20		Boring terminated at 12 feet

Date Started:	June 15, 2022	Water Level:	11.8 ft. 06/15/2022 0905 HRS
Date Completed:	June 15, 2022		
Logged By:	S. Latronic	Drill Rig:	CME-55D
Total Depth:	12 feet	Drilling Method:	6" Hollow-Stem Auger
Work Order:	7651-00(A)	Driving Energy:	140 lb. wt., 30 in. drop

BORING_LOG_DOT.DWT 7651-00A1.GPJ GEOLABS.GDT 4/4/22

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KAMEHAMEHA HIGHWAY DRAINAGE AND SAFETY IMPROVEMENTS
VICINITY OF MP 3.06 TO MP 3.54
WAIALUA, OAHU, HAWAII

Log of Boring 6

Approximate Ground Surface Elevation (feet): 14 *

Other Tests	Moisture Content (%)	Dry Unit Weight (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	USCS	Description
LL=59 PI=29	24	76			32	4.0		SM	Brown SILTY SAND with traces of clay, medium dense, moist (recent alluvium)
	22				45			CH	Brown SILTY CLAY with a little cobbles (basaltic), very stiff to hard, moist (recent alluvium)
	18				23/6" +25/1"		5		grades with boulders (basaltic)
									Boring terminated at 6.1 feet
							10		
							15		
							20		

Date Started:	June 15, 2022	Water Level:	Not Encountered
Date Completed:	June 15, 2022		
Logged By:	S. Latronic	Drill Rig:	CME-55D
Total Depth:	6.1 feet	Drilling Method:	6" Hollow-Stem Auger
Work Order:	7651-00(A)	Driving Energy:	140 lb. wt., 30 in. drop

BORING_LOG_DOT.DWT 7651-00A2.GPJ GEOLABS.GDT 4/4/22

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

GERALD Y. SEKI
LICENSED PROFESSIONAL ENGINEER
No. 5635-C
HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.

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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

BORING LOGS - 2

KAMEHAMEHA HIGHWAY DRAINAGE AND SAFETY IMPROVEMENTS
Vicinity of Laniakea Beach (MP 3.06 to MP 3.54)
Project No. 83B-01-09

Scale: None Date: December 2022

SHEET No. B-05 OF 6 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83B-01-09	2023	22	228

GEOLABS, INC.
Geotechnical Engineering

KAMEHAMEHA HIGHWAY DRAINAGE AND SAFETY IMPROVEMENTS
VICINITY OF MP 3.06 TO MP 3.54
WAIALUA, OAHU, HAWAII

Log of Boring 7

Approximate Ground Surface Elevation (feet): 16 *

Other Tests	Moisture Content (%)	Dry Unit Weight (pcf)	Core Recovery (%	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample Graphic	USCS	Description
							0			8-inch ASPHALTIC CONCRETE
	13				16				GW SM	Brownish gray SANDY GRAVEL (BASALTIC) with some cobbles, very dense, moist (fill)
									CH	Brown fine to medium SILTY SAND with some cobbles (basaltic), medium dense, moist (fill)
	6				25/1"		5			Reddish brown with some gray SILTY CLAY with a little gravel (basaltic), very stiff, moist (recent alluvium)
										Gray BOULDER (BASALTIC), very dense, dry (recent alluvium)
							10			Boring terminated at 5.1 feet
							15			
							20			

Date Started:	June 14, 2022	Water Level: ▼	Not Encountered
Date Completed:	June 14, 2022		
Logged By:	S. Latronic	Drill Rig:	CME-55D
Total Depth:	5.1 feet	Drilling Method:	4" Solid-Stem Auger
Work Order:	7651-00(A)	Driving Energy:	140 lb. wt., 30 in. drop

BORING LOG DOT HALE.GDT 7651-00(A).GPJ GEOLABS.GDT 6/4/22

GEOLABS, INC.
Geotechnical Engineering

KAMEHAMEHA HIGHWAY DRAINAGE AND SAFETY IMPROVEMENTS
VICINITY OF MP 3.06 TO MP 3.54
WAIALUA, OAHU, HAWAII

Log of Boring 8

Approximate Ground Surface Elevation (feet): 19 *

Other Tests	Moisture Content (%)	Dry Unit Weight (pcf)	Core Recovery (%	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample Graphic	USCS	Description
							0			7-inch ASPHALTIC CONCRETE
	15	88			25/3"				GM	Gray with some brown SILTY GRAVEL (BASALTIC) with some cobbles and a little sand, very dense, moist (fill)
			80							Gray BOULDERS (BASALTIC), very dense, dry (recent alluvium)
	38				17		5		CH	Reddish brown SILTY CLAY, very stiff, moist (recent alluvium)
			63						SM	Brown with some gray SILTY SAND (BASALTIC) with some rounded gravel, medium dense, moist (recent alluvium)
	43				21		10		ML	Brown with gray mottling CLAYEY SILT with traces of decomposed gravel, very stiff, moist (recent alluvium)
										Boring terminated at 13 feet
							15			
							20			

Date Started:	June 14, 2022	Water Level: ▼	Not Encountered
Date Completed:	June 14, 2022		
Logged By:	S. Latronic	Drill Rig:	CME-55D
Total Depth:	13 feet	Drilling Method:	4" Solid-Stem Auger & PQ Coring
Work Order:	7651-00(A)	Driving Energy:	140 lb. wt., 30 in. drop

BORING LOG DOT HALE.GDT 7651-00(A).GPJ GEOLABS.GDT 6/4/22

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

GERALD Y. SEKI
LICENSED PROFESSIONAL ENGINEER
No. 5635-C
HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.

SIGNATURE — EXPIRATION DATE OF THE LICENSE: 04/2024

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

BORING LOGS - 3

KAMEHAMEHA HIGHWAY DRAINAGE AND SAFETY IMPROVEMENTS
Vicinity of Laniakea Beach (MP 3.06 to MP 3.54)
Project No. 83B-01-09

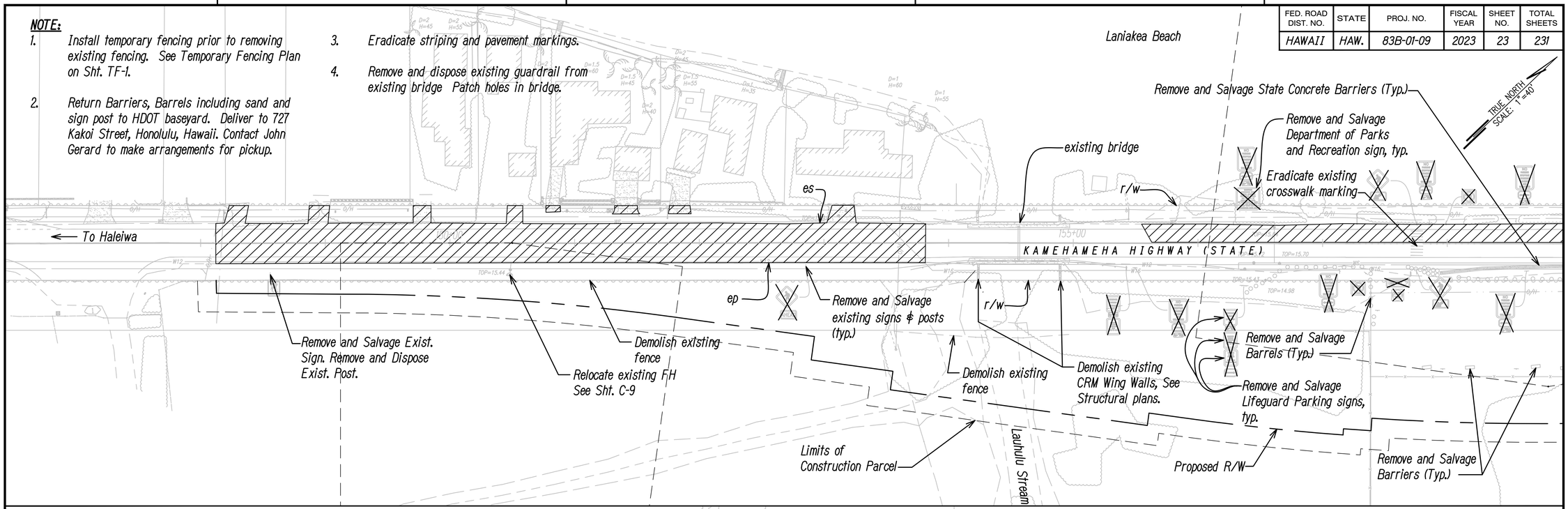
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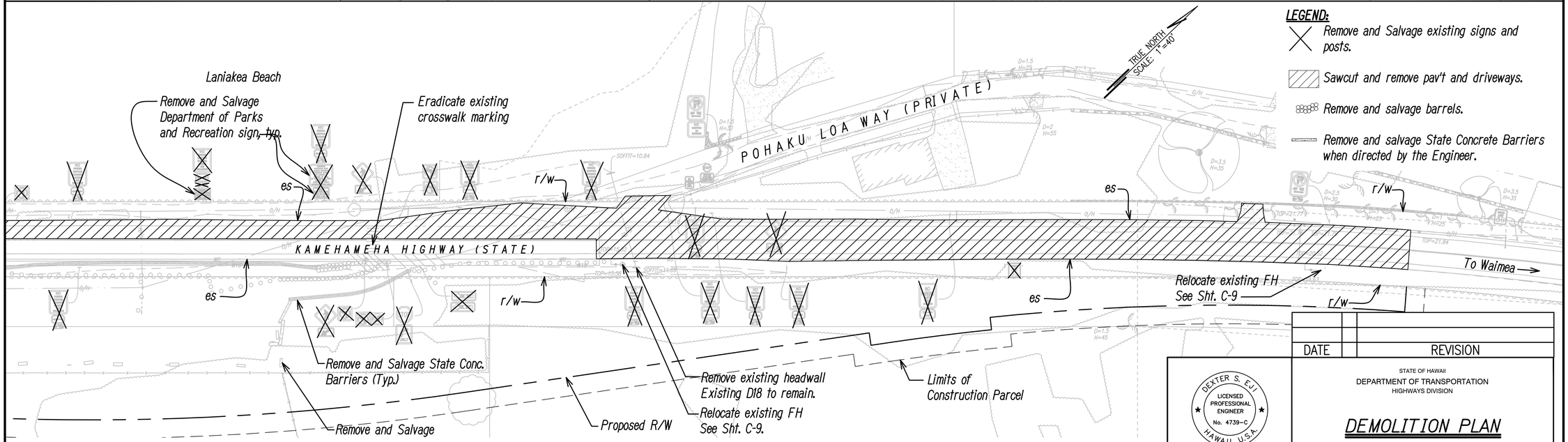
SHEET No. B-06 OF 6 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83B-01-09	2023	23	231

NOTE:

1. Install temporary fencing prior to removing existing fencing. See Temporary Fencing Plan on Sht. TF-1.
2. Return Barriers, Barrels including sand and sign post to HDOT baseyard. Deliver to 727 Kakoi Street, Honolulu, Hawaii. Contact John Gerard to make arrangements for pickup.
3. Eradicate striping and pavement markings.
4. Remove and dispose existing guardrail from existing bridge Patch holes in bridge.





LEGEND:

- Remove and Salvage existing signs and posts.
- Sawcut and remove pav't and driveways.
- Remove and salvage barrels.
- Remove and salvage State Concrete Barriers when directed by the Engineer.

GRAPHIC SCALE

1" = 40' 40 0 40 80

SCALE IN FEET

DATE		REVISION

DEXTER S. EJI
LICENSED PROFESSIONAL ENGINEER
No. 4739-C
HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.

SIGNATURE 04/30/24 EXPIRATION DATE OF THE LICENSE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

DEMOLITION PLAN

KAMEHAMEHA HIGHWAY DRAINAGE AND SAFETY IMPROVEMENTS
Vicinity of Laniakea Beach (MP 3.06 to MP 3.54)
Project No. 83B-01-09

Scale: 1"=40' Date: December 2022

SHEET No. DM-1 OF 1 SHEETS

ORIGINAL PLAN
NOTE BOOK
No.

SURVEY PLOTTED BY
DRAWN BY
TRACED BY
DESIGNED BY
QUANTITIES BY
CHECKED BY
DATE

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83B-01-09	2023	24	231

Kamehameha Highway ℄ Sta. 147+97.5, o/s 30' Rt.
Begin temporary construction fence. Install 48" High Hinged Joint Fence with Geotextile Fabric.

← To Haleiwa

150+00

es

ep

r/w

155+00

KAMEHAMEHA HIGHWAY (STATE)

TRUE NORTH
SCALE: 1"=40'

℄ Line K

Kamehameha Highway ℄ Sta. 147+97.5, o/s 56' Rt.

48" High Tensile Hinged Joint Fencing with Geotextile Fabric See Detail on Sht. C-20.

Line K ℄ Sta. 149+12.24, o/s 56' Rt.

Line K ℄ Sta. 151+87.48, o/s 56' Rt.

Line K ℄ Sta. 152+85, o/s 56' Rt.

Line K ℄ Sta. 152+85, o/s 75' Rt.

48" High Tensile Hinged Joint Fencing with Geotextile Fabric

Proposed R/W

Lauhulu Stream

Line K ℄ Sta. 153+50, o/s 75' Rt.

Line K ℄ Sta. 153+50, o/s 90' Rt.

Line K ℄ Sta. 154+54, o/s 90' Rt. Install Temporary Cattle Gate. See Standard Plan D-01

Line K ℄ Sta. 155+84, o/s 80' Rt.

Line K ℄ Sta. 155+84, o/s 90' Rt.

Line K ℄ Sta. 157+49.33, o/s 80' Rt. End Hinge Joint Fence. Connect to Existing CLF.

exist chain link fencing

KAMEHAMEHA HIGHWAY (STATE)

160+00

165+00

es

r/w

℄ Line K

R=1845'

To Waimea

Proposed R/W

48" Chain Link Fencing w/ Geotextile Fabric

Line K ℄ Sta. 160+38, o/s 65' Rt. Begin 48" CLF. Connect to existing CLF.

Line K ℄ Sta. 164+85, o/s 75' Rt.

Line K ℄ Sta. 164+85, o/s 65' Rt.

Line K ℄ Sta. 166+15.5, o/s 75' Rt.

Line K ℄ Sta. 166+15.50, o/s 65' Rt.

Line K ℄ Sta. 169+46, o/s 65' Rt. End 48" CLF

TRUE NORTH
SCALE: 1"=40'

exist chain link fencing

GRAPHIC SCALE
1" = 40'
40 0 40 80
SCALE IN FEET

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

DATE		REVISION

DEXTER S. EJI
LICENSED PROFESSIONAL ENGINEER
No. 4739-C
HAWAII, U.S.A.

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SIGNATURE 04/30/24 EXPIRATION DATE OF THE LICENSE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

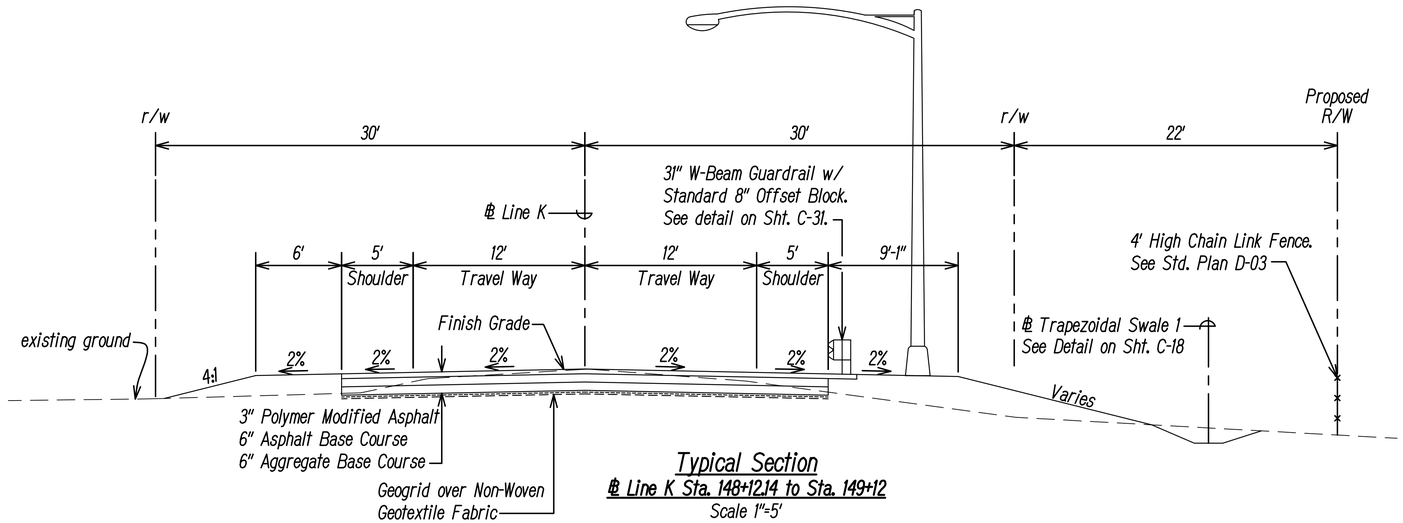
TEMPORARY FENCING PLAN

KAMEHAMEHA HIGHWAY DRAINAGE AND SAFETY IMPROVEMENTS
Vicinity of Laniakea Beach (MP 3.06 to MP 3.54)
Project No. 83B-01-09

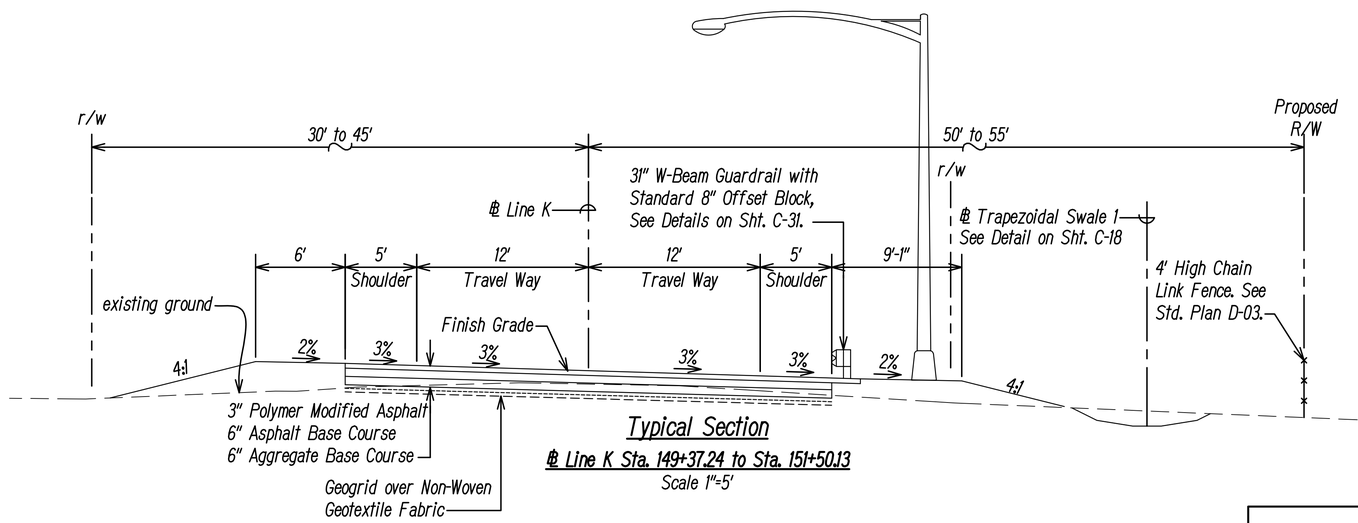
Scale: 1"=40' Date: December 2022

SHEET No. TF-1 OF 1 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83B-01-09	2023	25	231



Typical Section
℄ Line K Sta. 148+12.14 to Sta. 149+12
Scale 1"=5'



Typical Section
℄ Line K Sta. 149+37.24 to Sta. 151+50.13
Scale 1"=5'

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

GRAPHIC SCALE
1" = 5'
5 0 5 10
SCALE IN FEET

DATE		REVISION

DEXTER S. EJI
LICENSED PROFESSIONAL ENGINEER
No. 4739-C
HAWAII, U.S.A.

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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

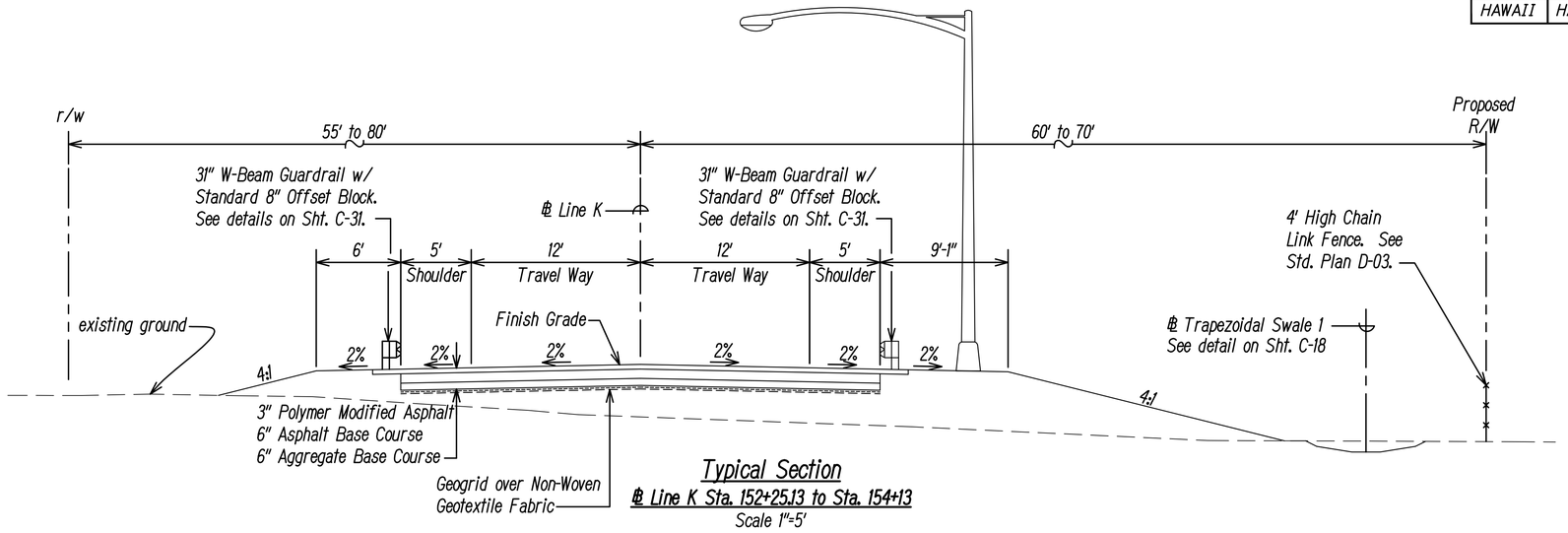
TYPICAL SECTIONS

KAMEHAMEHA HIGHWAY DRAINAGE AND SAFETY IMPROVEMENTS
Vicinity of Laniakea Beach (MP 3.06 to MP 3.54)
Project No. 83B-01-09

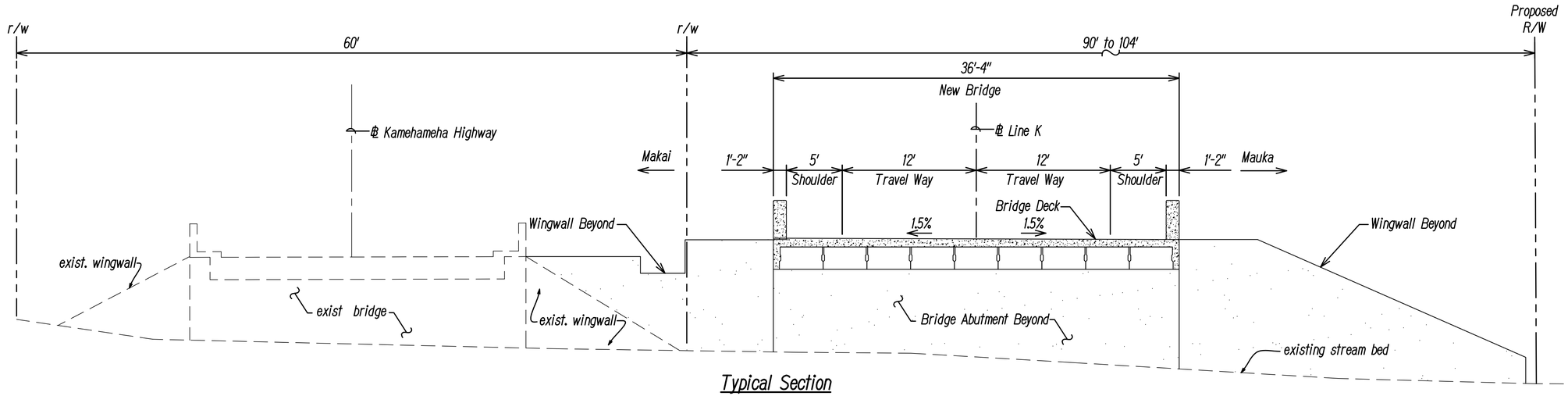
Scale: 1"=5' Date: December 2022

SHEET No. TS-01 OF 4 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83B-01-09	2023	26	231



Typical Section
℄ Line K Sta. 152+25.13 to Sta. 154+13
Scale 1"=5'



Typical Section
℄ Line K Sta. 154+10.50 to Sta. 155+15.50
Scale: 1"=5'

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

GRAPHIC SCALE
1" = 5'
5 0 5 10
SCALE IN FEET

DATE		REVISION

DEXTER S. EJI
LICENSED PROFESSIONAL ENGINEER
No. 4739-C
HAWAII, U.S.A.

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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

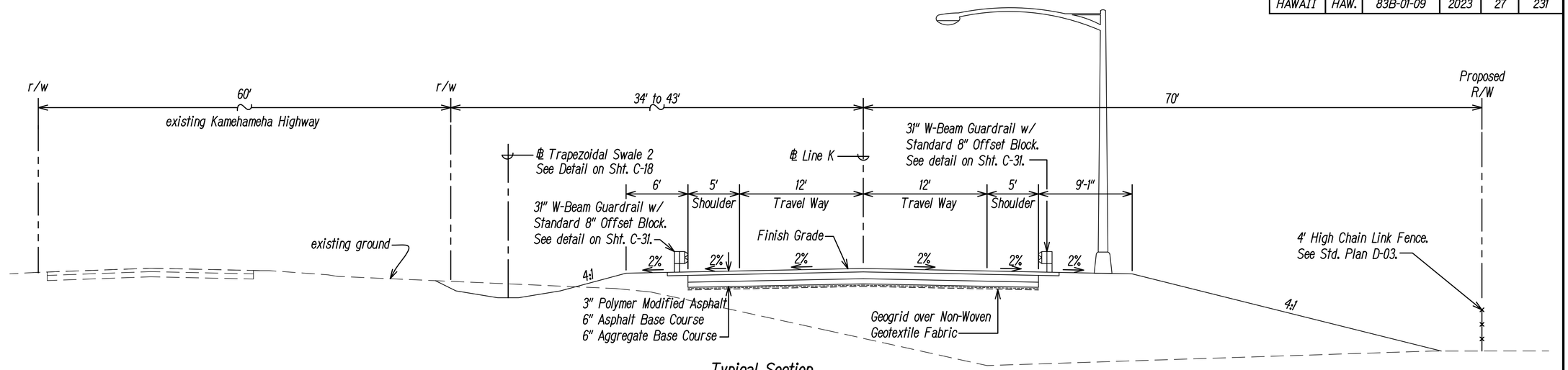
TYPICAL SECTIONS

KAMEHAMEHA HIGHWAY DRAINAGE AND SAFETY IMPROVEMENTS
Vicinity of Laniakea Beach (MP 3.06 to MP 3.54)
Project No. 83B-01-09

Scale: 1"=5' Date: December 2022

SHEET No. TS-02 OF 4 SHEETS

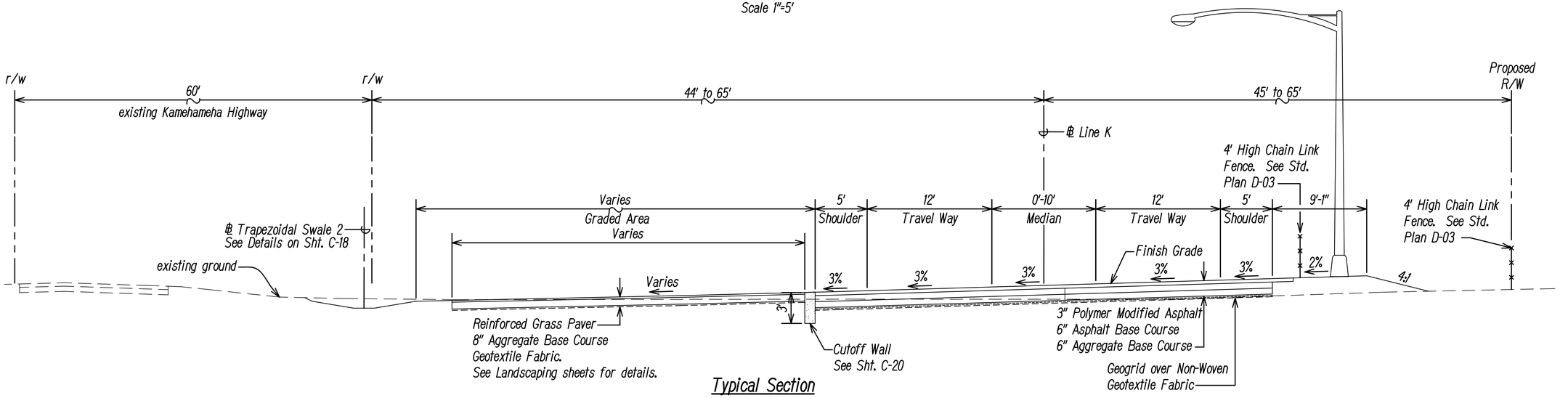
FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83B-01-09	2023	27	231



Typical Section

℄ Line K Sta. 155+13.00 to Sta. 155+40.75

Scale 1"=5'



Typical Section

℄ Line K Sta. 156+03 to Sta. 161+45.05

Scale 1"=5'

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

GRAPHIC SCALE

1" = 5' — 5 0 5 10 — SCALE IN FEET

DATE		REVISION

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

DEXTER S. EJI
LICENSED PROFESSIONAL ENGINEER
No. 4739-C
HAWAII, U.S.A.

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SIGNATURE — 04/30/24 EXPIRATION DATE OF THE LICENSE

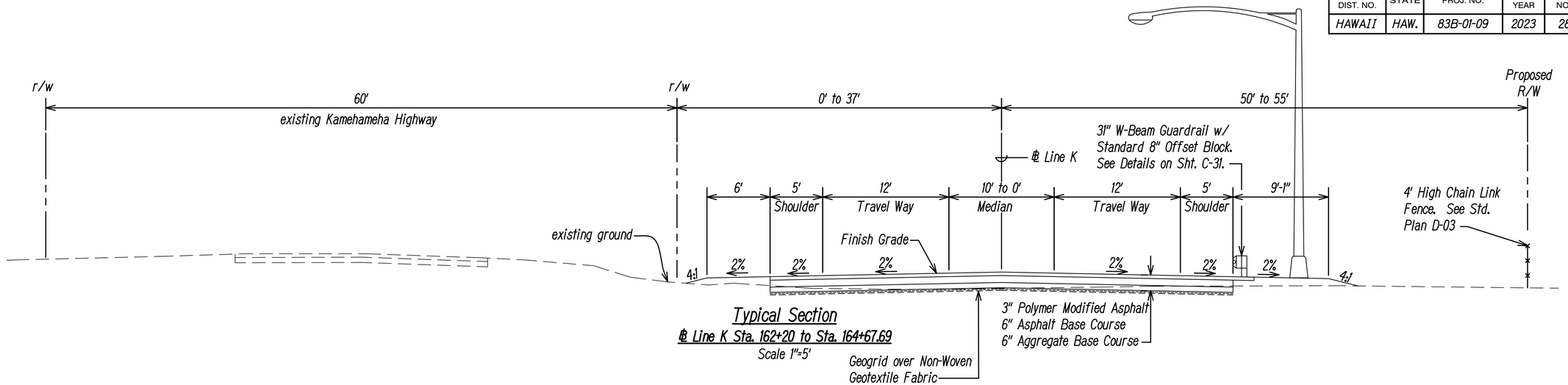
TYPICAL SECTIONS

KAMEHAMEHA HIGHWAY DRAINAGE AND SAFETY IMPROVEMENTS
Vicinity of Laniakea Beach (MP 3.06 to MP 3.54)
Project No. 83B-01-09

Scale: 1"=5' Date: December 2022

SHEET No. TS-03 OF 4 SHEETS

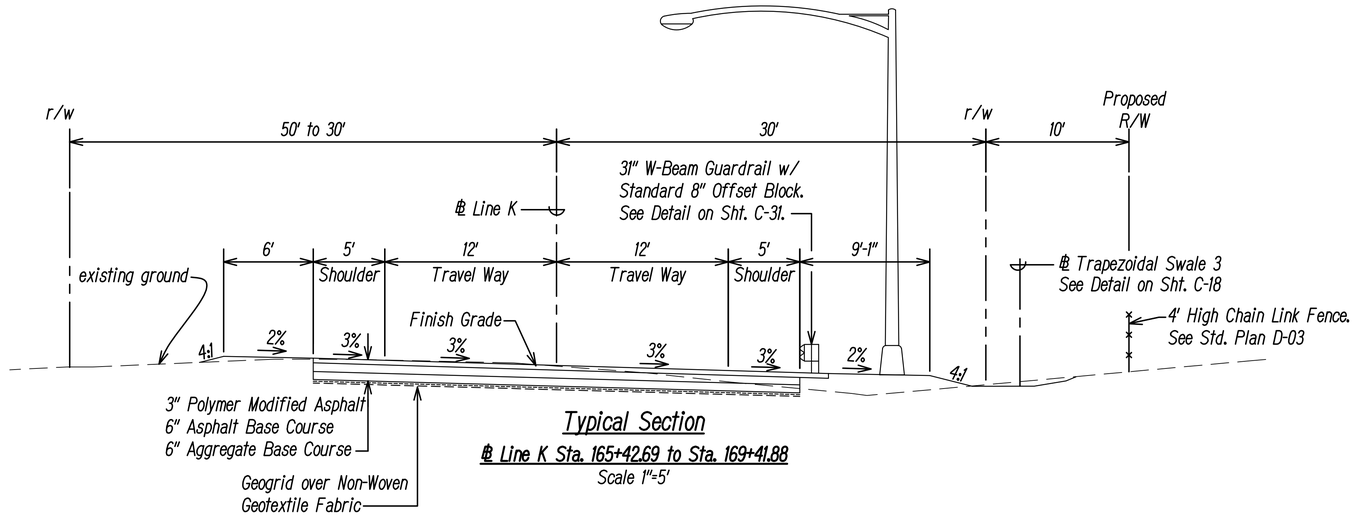
FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83B-01-09	2023	28	231



Typical Section

℄ Line K Sta. 162+20 to Sta. 164+67.69

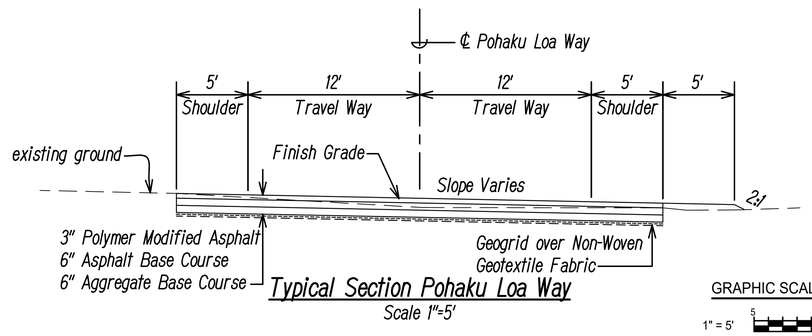
Scale 1"=5'



Typical Section

℄ Line K Sta. 165+42.69 to Sta. 169+41.88

Scale 1"=5'



Typical Section Pohaku Loa Way

Scale 1"=5'

GRAPHIC SCALE

1" = 5'

5 0 5 10

SCALE IN FEET

DATE		REVISION

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

TYPICAL SECTIONS

KAMEHAMEHA HIGHWAY DRAINAGE AND SAFETY IMPROVEMENTS
Vicinity of Laniakea Beach (MP 3.06 to MP 3.54)
Project No. 83B-01-09

Scale: 1"=5' Date: December 2022

DEXTER S. EJI
LICENSED PROFESSIONAL ENGINEER
No. 4739-C
HAWAII, U.S.A.

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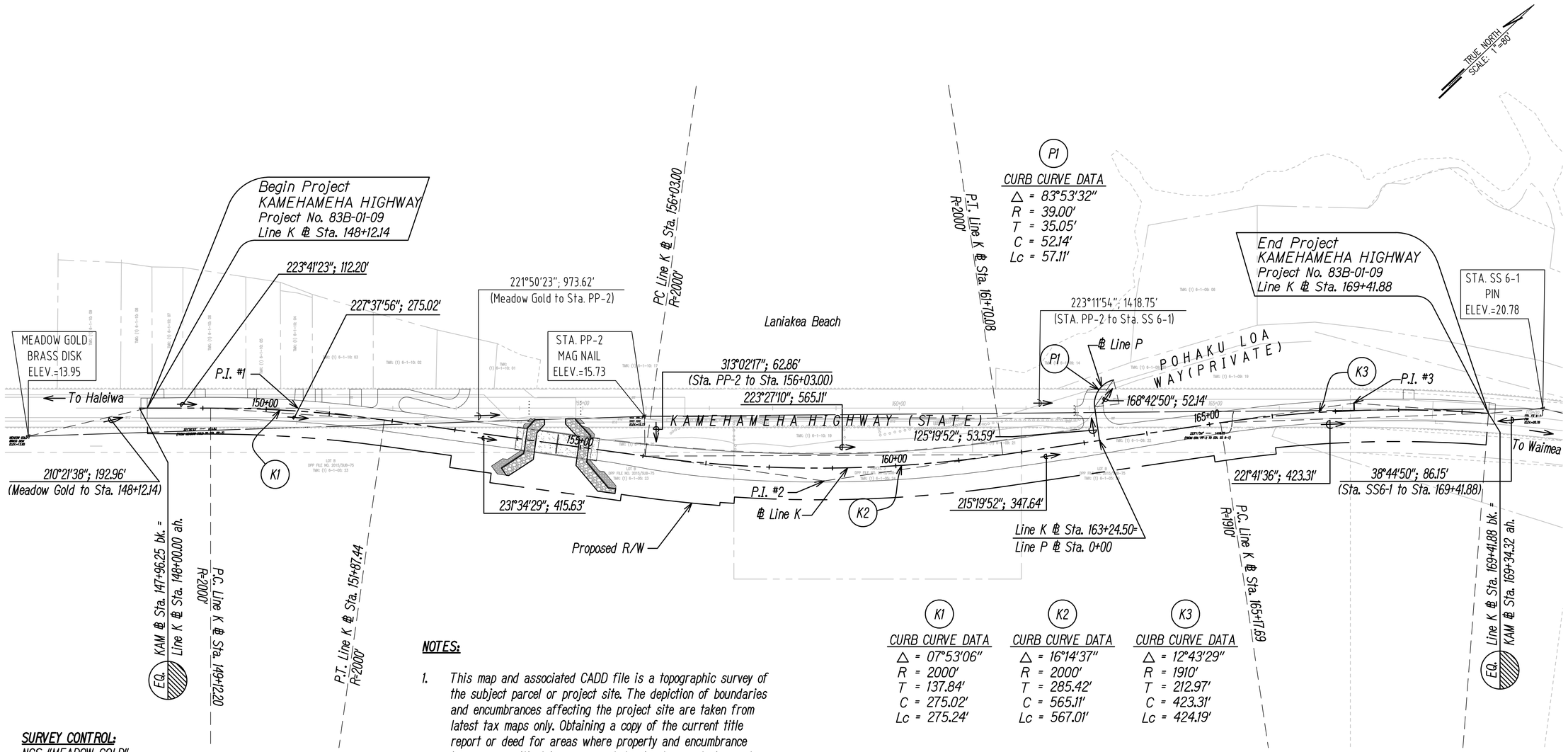
SIGNATURE 04/30/24 EXPIRATION DATE OF THE LICENSE

SURVEY PLOTTED BY
DRAWN BY
TRACED BY
DESIGNED BY
QUANTITIES BY
CHECKED BY
DATE

ORIGINAL PLAN
NOTE BOOK
No.

SHEET No. TS-04 OF 4 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83B-01-09	2023	29	231



K1
CURB CURVE DATA
△ = 07°53'06"
R = 2000'
T = 137.84'
C = 275.02'
Lc = 275.24'

K2
CURB CURVE DATA
△ = 16°14'37"
R = 2000'
T = 285.42'
C = 565.11'
Lc = 567.01'

K3
CURB CURVE DATA
△ = 12°43'29"
R = 1910'
T = 212.97'
C = 423.31'
Lc = 424.19'

SURVEY CONTROL:
NGS "MEADOW GOLD"
BRASS DISK
ELEV=13.95 FT., MSL
(PID: TU0526)

Located at southeast of the center of Kamehameha Hwy cemented in a drill hole in the northwest corner of a bridge.

Azimuths and Coordinates are referred to Hawaii State Plane. NAD 83, Zone 3, U.S. Feet

Boundary from Government Survey Triangulation Station
NAD 83 to "Waimea" = (-)0° 01' 21.8".

NOTES:

1. This map and associated CADD file is a topographic survey of the subject parcel or project site. The depiction of boundaries and encumbrances affecting the project site are taken from latest tax maps only. Obtaining a copy of the current title report or deed for areas where property and encumbrance issues are critical is recommended prior to any design and construction work.
2. Underground utility lines and/or structures, if shown, are provided based on information from plans/maps prepared by others, and need to be reviewed by public utility agencies or associated facilities.
3. Unless otherwise noted, all locations of underground utility lines and/or structures are approximate. no guarantee is made on the accuracy of completeness of the information shown. The user(s) of this topographic survey map shall verify the information, as needed, during design and construction.

GRAPHIC SCALE
1" = 80'
80 0 80 160
SCALE IN FEET

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

DATE		REVISION

DEXTER S. EJI
LICENSED PROFESSIONAL ENGINEER
No. 4739-C
HAWAII, U.S.A.
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SIGNATURE
04/30/24
EXPIRATION DATE OF THE LICENSE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

SURVEY CONTROL PLAN

KAMEHAMEHA HIGHWAY DRAINAGE AND SAFETY IMPROVEMENTS
Vicinity of Laniakea Beach (MP 3.06 to MP 3.54)
Project No. 83B-01-09

Scale: 1"=80' Date: December 2022

SHEET No. SC-01 OF 1 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83B-01-09	2023	30	231

Begin Project
KAMEHAMEHA HIGHWAY
Project No. 83B-01-09
℄ Line K Sta. 148+12.14

Line K Sta. 148+12.14 o/s 25.65 lt.
Line K Sta. 148+23.20 o/s 15.80 lt.
Line K Sta. 148+23.01 o/s 30.00 lt.
Line K Sta. 148+38.53 o/s 30.00 lt.
Line K Sta. 148+38.71 o/s 16.01 lt.
Line K Sta. 148+87.40 o/s 16.67 lt.
Line K Sta. 148+87.22 o/s 30.00 lt.
Line K Sta. 149+03.92 o/s 30.00 lt.
Line K Sta. 149+04.09 o/s 17.00 lt.
Line K Sta. 149+10.09 o/s 17.00 lt.
Line K Sta. 149+69.69 o/s 30.8± lt.
Line K Sta. 149+83.71 o/s 31.3± lt.
Line K Sta. 149+84.21 o/s 17.00 lt.
Line K Sta. 150+43.95 o/s 17.00 lt.
Line K Sta. 150+43.96 o/s 34.42 lt.
Line K Sta. 150+56.01 o/s 35.26± lt.
Line K Sta. 150+57.29 o/s 17.00 lt.
Line K Sta. 150+76.25 o/s 17.00 lt.
Line K Sta. 150+85.06 o/s 37.6± lt.
Line K Sta. 151+30.44 o/s 17.00 lt.
Line K Sta. 151+45.81 o/s 43.93 lt.
Line K Sta. 151+48.97 o/s 17.00 lt.
Line K Sta. 151+63.38 o/s 17.00 lt.
Line K Sta. 151+70.74 o/s 47.08 lt.
Line K Sta. 152+09.79 o/s 52.49 lt.
Line K Sta. 152+19.05 o/s 17.00 lt.
Line K Sta. 152+22.17 o/s 52.67 lt.
Line K Sta. 152+20.36 o/s 40.92 lt.
Line K Sta. 52+79.88 o/s 46.31 lt.
Line K Sta. 150+74.65 o/s 36.72 lt.
Line K Sta. 150+86.83 o/s 17.00 lt.
Line K Sta. 151+27.77 o/s 41.85 lt.
Line K Sta. 148+12.14 o/s 16.27 lt.

E1
r/w
ES
E2
148+00
150+00
223°41'23" → 112.20'
227°37'56" → 275.02'
231°34'29" → 415.63'
17'
15'
R=17'
R=10'
R=12'
R=50'
12'
TRUE NORTH
SCALE: 1"=20'
To Haleiwa
To Waimea
℄ Kamehameha Highway
Provide Smooth riding Connection, See detail on Sht. C-20.
KAMEHAMEHA HIGHWAY (STATE)
℄ Line K
M.L. ℄ Line K STA. 152+90
Proposed R/W
Limits of Construction Parcel
10' wide Pavement Transition to Existing.
P.C. Line K Sta. 149+12.20 R=2000.00'.
P.T. Line K Sta. 151+87.44 R=2000.00'
Shoreline f as located
LOT B
DPP FILE NO. 2015/SUB-75
TMK: (1) 6-1-05: 23

E1
ES CURVE DATA
△ = 06°28'59"
R = 2016.78'
T = 114.22'
C = 228.08'
Lc = 228.20'

E2
ES CURVE DATA
△ = 07°52'56"
R = 1983'
T = 13662'
C = 272.59'
Lc = 272.80'

GRAPHIC SCALE
1" = 20'
20 0 20 40
SCALE IN FEET

DATE		REVISION

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

ALIGNMENT PLAN

KAMEHAMEHA HIGHWAY DRAINAGE AND SAFETY IMPROVEMENTS
Vicinity of Laniakea Beach (MP 3.06 to MP 3.54)
Project No. 83B-01-09

Scale: 1"=20' Date: December 2022

DEXTER S. EJI
LICENSED PROFESSIONAL ENGINEER
No. 4739-C
HAWAII, U.S.A.

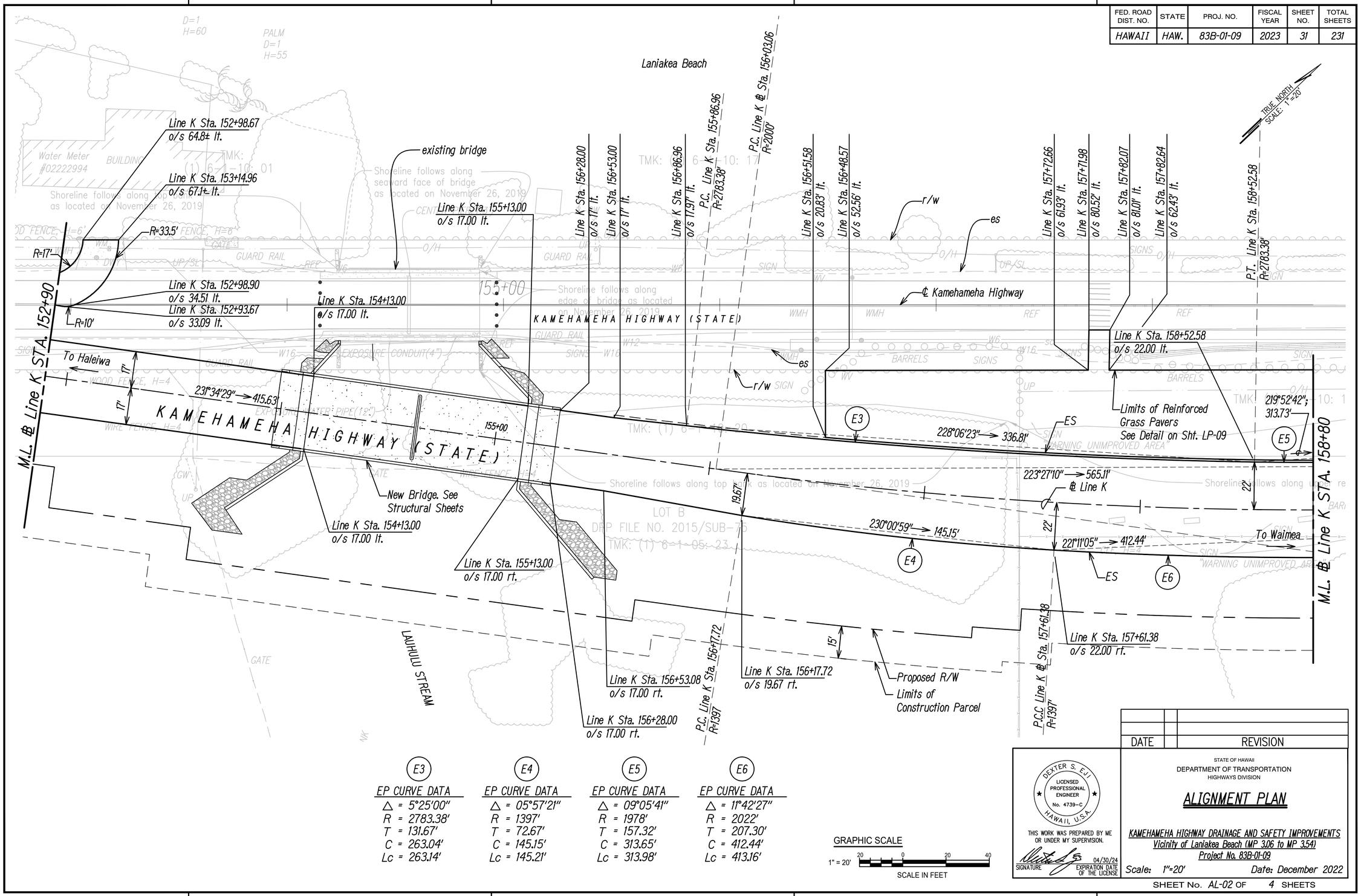
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SIGNATURE 04/30/24 EXPIRATION DATE OF THE LICENSE

SHEET No. AL-01 OF 4 SHEETS

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

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83B-01-09	2023	31	231



E3
EP CURVE DATA
△ = 5°25'00"
R = 2783.38'
T = 131.67'
C = 263.04'
Lc = 263.14'

E4
EP CURVE DATA
△ = 05°57'21"
R = 1397'
T = 72.67'
C = 145.15'
Lc = 145.21'

E5
EP CURVE DATA
△ = 09°05'41"
R = 1978'
T = 157.32'
C = 313.65'
Lc = 313.98'

E6
EP CURVE DATA
△ = 11°42'27"
R = 2022'
T = 207.30'
C = 412.44'
Lc = 413.16'

GRAPHIC SCALE
1" = 20'
20 0 20 40
SCALE IN FEET

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

DATE	REVISION

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

ALIGNMENT PLAN

KAMEHAMEHA HIGHWAY DRAINAGE AND SAFETY IMPROVEMENTS
Vicinity of Laniakea Beach (MP 3.06 to MP 3.54)
Project No. 83B-01-09

Scale: 1"=20' Date: December 2022

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LICENSED PROFESSIONAL ENGINEER
No. 4739-C
HAWAII, U.S.A.

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SHEET No. AL-02 OF 4 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83B-01-09	2023	32	231

Laniakea Beach

5' wide pavement transition to existing. Provide smooth riding connection. See detail on Sht. C-20.

TRUE NORTH SCALE: 1" = 20'

POHAKU LOA WAY (PRIVATE)

KAMEHAMEHA HIGHWAY (STATE)

℄ Kamehameha Highway

℄ Line K

℄ Line P

M.L. ℄ Line K STA. 158+80

M.L. ℄ Line K STA. 164+60

Line K Sta. 161+05.70 o/s 52.53 lt.
Line K Sta. 161+07.95 o/s 70.35 lt.
Line K Sta. 161+18.18 o/s 69.18 lt.
Line K Sta. 161+15.88 o/s 51.38 lt.
Line K Sta. 161+80.30 o/s 42.94 lt.
P.T. Line K Sta. 161+70.08 R=2000'
Line K Sta. 161+95.17 o/s 23.00 lt.

Line K Sta. 163+07.50 o/s 62.92 lt.
Line K Sta. 162+97.36 o/s 58.71 lt.
Line K Sta. 162+94.71 o/s 59.10 lt.
Line K Sta. 162+95.47 o/s 44.84 lt.
Line K Sta. 162+92.67 o/s 45.25 lt.
Line K Sta. 163+03.97 o/s 33.98 lt.
Line K Sta. 163+03.69 o/s 31.02 lt.
Line K Sta. 162+93.49 o/s 22.00 lt.
Line K Sta. 161+70.05 o/s 22.00 lt.

Line K Sta. 163+18.74 o/s 82.86 lt.
Line K Sta. 163+52.20 o/s 77.95 lt.
Line K Sta. 163+37.83 o/s 48.04 lt.
Line K Sta. 163+37.86 o/s 45.11 lt.
Line K Sta. 163+62.26 o/s 20.35 lt.

R=10' R=50' R=37.5' R=25' R=10' R=10'

5'

22' 22'

15'

r/w es

Limit of Reinforced Grass Paver. See Detail on Sht. LP-09

ES E5 E6

219°52'42" → 313.65'
223°27'10" → 565.11'
221°11'05" → 412.44'

To Haleiwa

To Waimea

215°19'52" → 347.64'

Line K Sta. 162+92.89 o/s 22.00 rt.

Line K Sta. 161+70.05 o/s 22.00 rt.

P.T. Line K Sta. 161+70.05, R=2022'

Proposed R/W

Limits of Construction Parcel

TMK: (1) 6-1-09: 14
TMK: (1) 6-1-09: 22
TMK: (1) 6-1-10: 19
TMK: (1) 6-1-05: 24
TMK: (1) 6-1-05: 23
DPP FILE NO. 2015/SUB-75
LOT B
PARCEL 2
CONC WALL
CRM WALL
TREE LINE
COCONUT D=1.5 H=30
GATE
BARRELS
SIGNS
UP/SL
O/H
W6 W16
REF
GW
WV
SIGN
"WARNING UNIMPROVED AREA"

E5

CURB CURVE DATA
△ = 09°05'41"
R = 1978'
T = 157.32'
C = 313.65'
Lc = 313.98'

E6

CURB CURVE DATA
△ = 11°42'27"
R = 2022'
T = 207.30'
C = 412.44'
Lc = 413.16'

GRAPHIC SCALE
1" = 20'
20 0 20 40
SCALE IN FEET

DATE		REVISION

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

ALIGNMENT PLAN

KAMEHAMEHA HIGHWAY DRAINAGE AND SAFETY IMPROVEMENTS
Vicinity of Laniakea Beach (MP 3.06 to MP 3.54)
Project No. 83B-01-09

Scale: 1"=20' Date: December 2022

DEXTER S. EJI
LICENSED PROFESSIONAL ENGINEER
No. 4739-C
HAWAII, U.S.A.

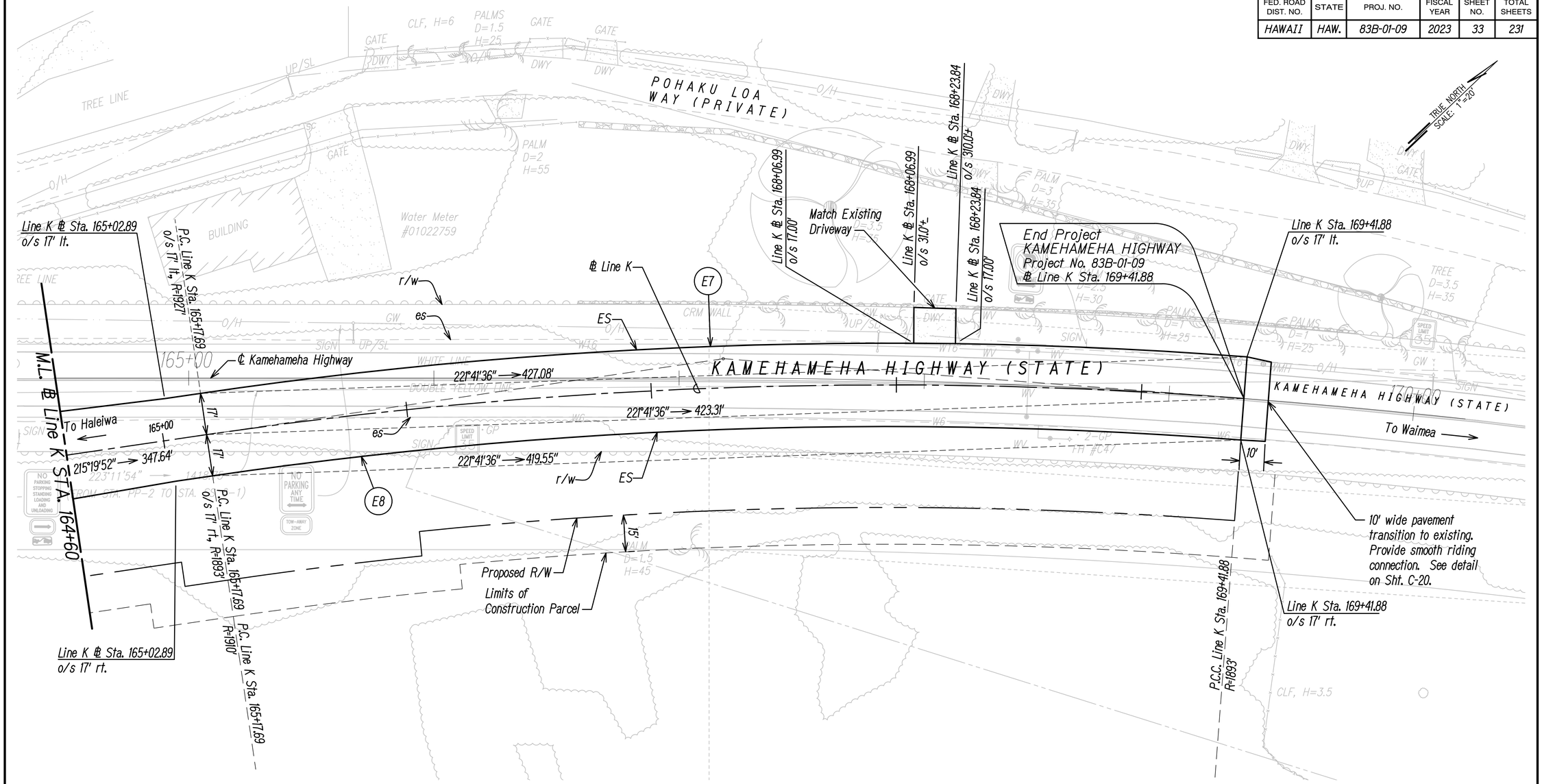
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SHEET No. AL-03 OF 4 SHEETS

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

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83B-01-09	2023	33	231



E7 CURB CURVE DATA
- △ = 09°11'02"
- R = 1927'
- T = 154.77'
- C = 308.54'
- Lc = 308.87'

E8 CURB CURVE DATA
- △ = 12°43'29"
- R = 1893'
- T = 211.07'
- C = 419.55'
- Lc = 420.41'

GRAPHIC SCALE
1" = 20'
20 0 20 40
SCALE IN FEET

DATE		REVISION

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

DEXTER S. EJI
LICENSED PROFESSIONAL ENGINEER
No. 4739-C
HAWAII, U.S.A.

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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

ALIGNMENT PLAN

KAMEHAMEHA HIGHWAY DRAINAGE AND SAFETY IMPROVEMENTS
Vicinity of Laniakea Beach (MP 3.06 to MP 3.54)
Project No. 83B-01-09

Scale: 1"=20' Date: December 2022

SHEET No. AL-04 OF 4 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83B-01-09	2023	34	231

Begin Project
KAMEHAMEHA HIGHWAY
Project No. 83B-01-09
℄ Line K Sta. 148+12.14

Laniakea Beach

P.C. Line K Sta. 156+03.06
R=2000'

existing bridge

TRUE NORTH
SCALE: 1"=40'

To Haleiwa

es

EP

150+00

r/w

℄ Kamehameha Highway

KAMEHAMEHA HIGHWAY (STATE)

Guardrail

155+00

ES

ep

EP

r/w

P.C. Line K Sta. 149+12.20
R=2000'

Proposed R/W

P.T. Line K Sta. 151+87.44

Lauhulu Stream

New Bridge
See Structural
Sheets

To Waimea

℄ Line K

M.L. ℄ Line K STA. 158+50

PLAN - KAMEHAMEHA HIGHWAY
Scale: 1"=40'

℄ Line K Sta. 148+12.14
16.13±

s=-0.21%

exist grade along ℄

140' V.C.

BVC ℄ Line K Sta. 150+30
15.65

PVI ℄ Line K Sta. 151+00
15.50

s=1.63%

EVC ℄ Line K Sta. 151+70
16.64

BVC ℄ Line K Sta. 152+20
17.46

160' V.C.

PVI ℄ Line K Sta. 153+00
18.77

s=(-)1.30%

EVC ℄ Line K Sta. 153+80
17.73

VPI ℄ Line K Sta. 154+13
17.30

New Bridge

s=(-)1.00%

VPI ℄ Line K Sta. 155+13
16.30

s=(-)0.94%

BVC ℄ Line K Sta. 155+50
15.95

200' V.C.

PVI ℄ Line K Sta. 156+50
15.01

WSE100: 17.64'

s=0.44%

℄ Line K Sta. 156+86.30
LOW
15.31

EVC ℄ Line K Sta. 157+50
15.45

M.L. ℄ Line K STA. 158+50

Dumped
Riprap

Finish Grade

Lauhulu Stream

30 20 10 0 (-)10

148+00 149+00 150+00 151+00 152+00 153+00 154+00 155+00 156+00 158+00

PROFILE - KAMEHAMEHA HIGHWAY
Horiz. Scale: 1"=40'
Vert. Scale: 1"=8'

GRAPHIC SCALE
HORIZ. 1" = 40'
40 0 40 80
SCALE IN FEET

GRAPHIC SCALE
VERT. 1" = 8'
8 4 0 8 16
SCALE IN FEET

DATE		REVISION

ORIGINAL PLAN
NOTE BOOK
No.

SURVEY PLOTTED BY
DRAWN BY
TRACED BY
DESIGNED BY
QUANTITIES BY
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DATE

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HIGHWAYS DIVISION

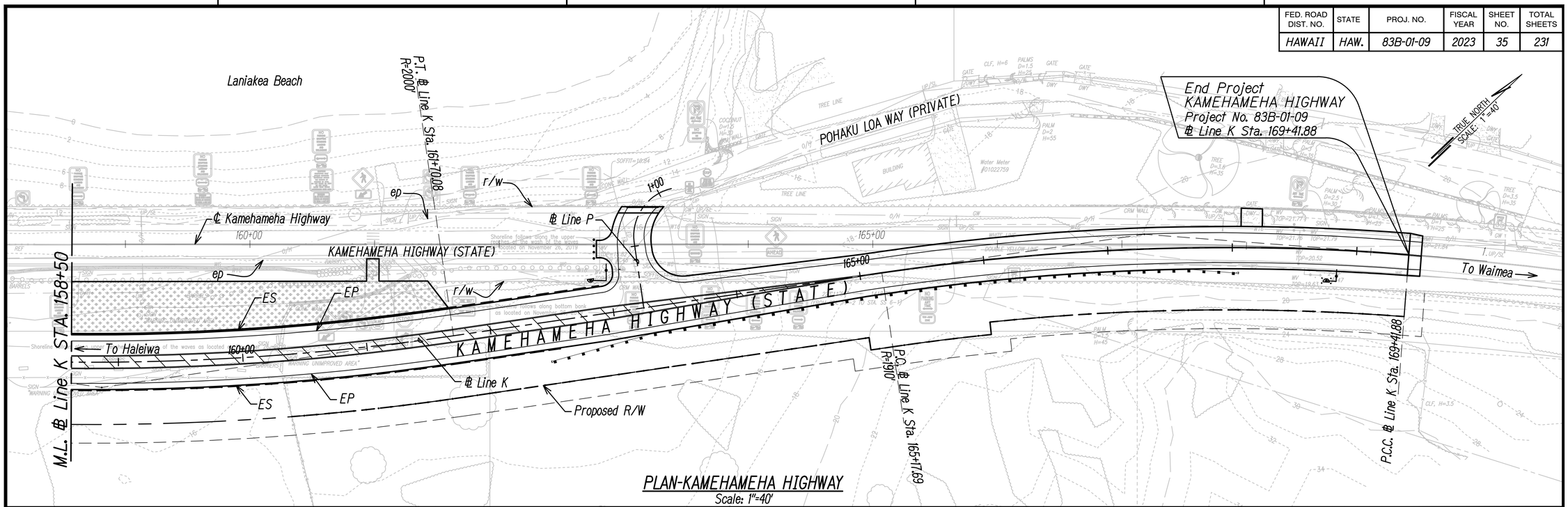
ROADWAY PLAN & PROFILE

KAMEHAMEHA HIGHWAY DRAINAGE AND SAFETY IMPROVEMENTS
Vicinity of Laniakea Beach (MP 3.06 to MP 3.54)
Project No. 83B-01-09

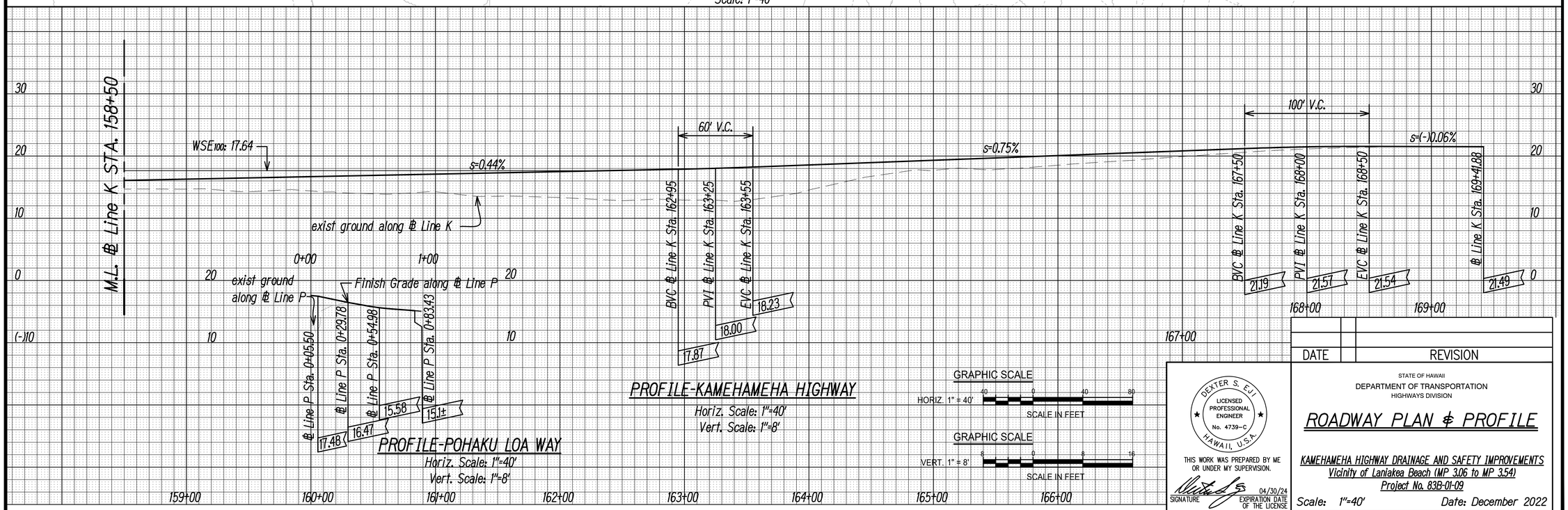
Scale: 1"=40' Date: December 2022

SHEET No. C-1 OF 32 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83B-01-09	2023	35	231



PLAN-KAMEHAMEHA HIGHWAY
Scale: 1"=40'



PROFILE-POHAKU LOA WAY
Horiz. Scale: 1"=40'
Vert. Scale: 1"=8'

PROFILE-KAMEHAMEHA HIGHWAY
Horiz. Scale: 1"=40'
Vert. Scale: 1"=8'

GRAPHIC SCALE
HORIZ. 1" = 40' — 40 0 40 80 — SCALE IN FEET

GRAPHIC SCALE
VERT. 1" = 8' — 8 0 8 16 — SCALE IN FEET

DATE		REVISION

SURVEY PLOTTED BY
DRAWN BY
TRACED BY
DESIGNED BY
QUANTITIES BY
CHECKED BY
DATE

ORIGINAL PLAN
NOTE BOOK
No.

DEXTER S. EJI
LICENSED PROFESSIONAL ENGINEER
No. 4739-C
HAWAII, U.S.A.

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DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

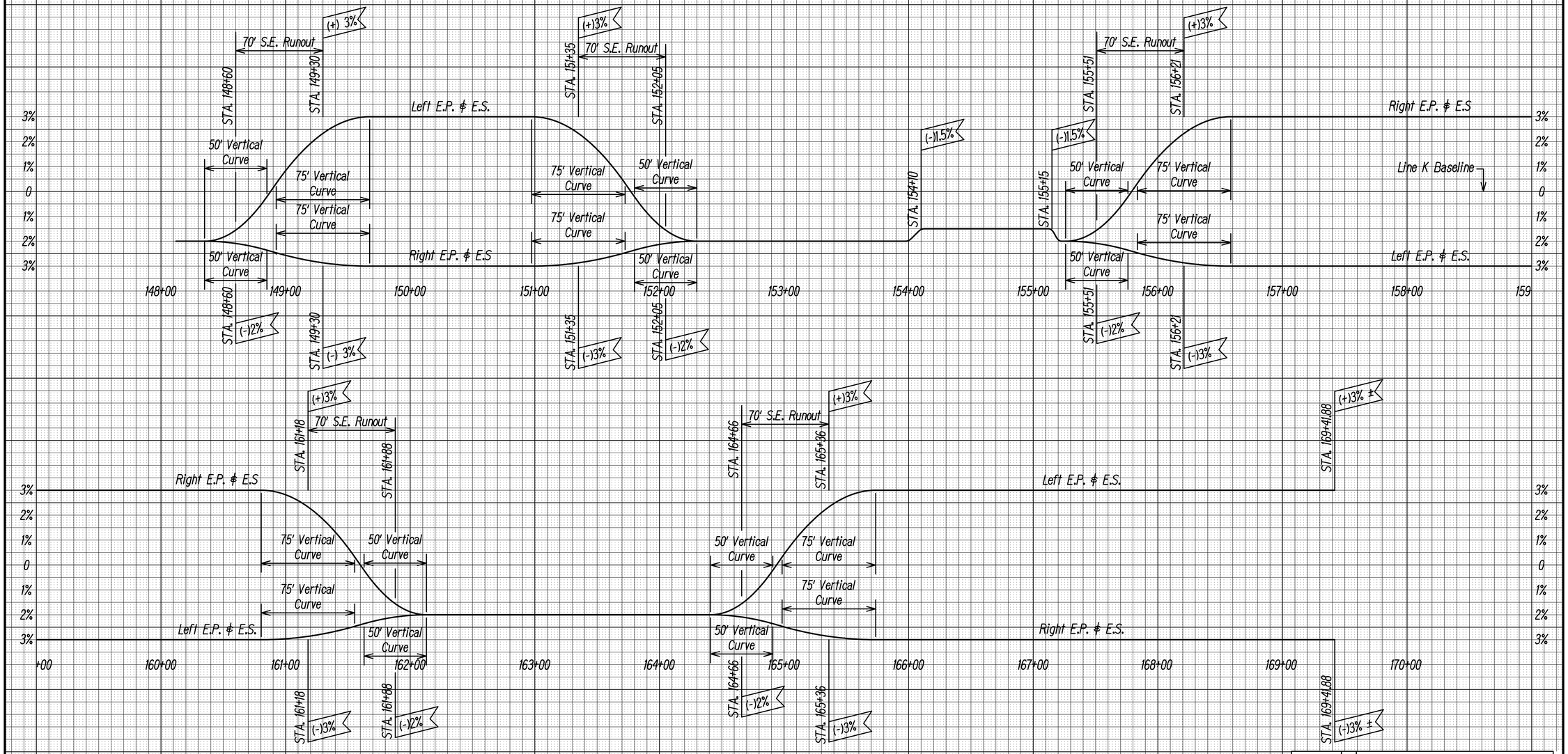
ROADWAY PLAN & PROFILE

KAMEHAMEHA HIGHWAY DRAINAGE AND SAFETY IMPROVEMENTS
Vicinity of Laniakea Beach (MP 3.06 to MP 3.54)
Project No. 83B-01-09

Scale: 1"=40' Date: December 2022

SHEET No. C-2 OF 32 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83B-01-09	2023	36	231



GRAPHIC SCALE

HORIZ. 1" = 40'

40 0 40 80

SCALE IN FEET

GRAPHIC SCALE

VERT. 1" = 2%

2% 0 2% 4%

SCALE IN FEET

DATE		REVISION

DEXTER S. EJI
LICENSED PROFESSIONAL ENGINEER
No. 4739-C
HAWAII, U.S.A.

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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

SUPERELEVATION DIAGRAM

KAMEHAMEHA HIGHWAY DRAINAGE AND SAFETY IMPROVEMENTS
Vicinity of Laniakea Beach (MP 3.06 to MP 3.54)
Project No. 83B-01-09

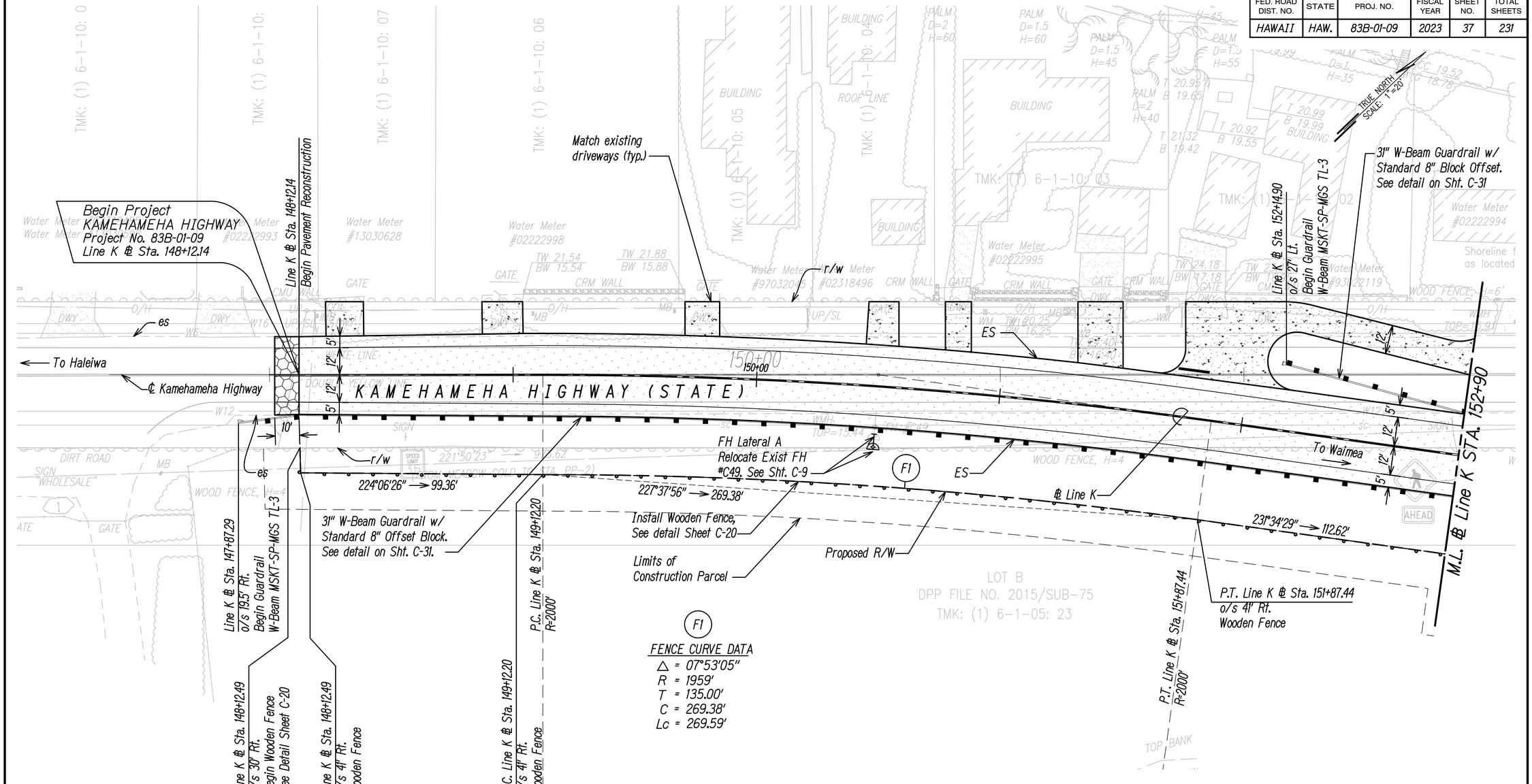
Scale: As Shown Date: December 2022

SHEET No. C-3 OF 32 SHEETS

ORIGINAL PLAN
NOTE BOOK
No.

SURVEY PLOTTED BY
DRAWN BY
TRACED BY
DESIGNED BY
QUANTITIES BY
CHECKED BY
DATE

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83B-01-09	2023	37	231



F1

FENCE CURVE DATA
△ = 07°53'05"
R = 1959'
T = 135.00'
C = 269.38'
Lc = 269.59'

Legend:

- Concrete Driveway (Std. Plan D-06.)
- Asphalt Pavement
- Pavement Transition See detail on Sht. C-20.
- 31" W-Beam Guardrail w/ Standard 8" Offset Block. See Detail on Sht. C-31

Approved:

Manager and Chief Engineer, BWS — Date
(For Work Affecting BWS Facilitiese in City/State R/W and BWS Easements Only)

GRAPHIC SCALE
1" = 20'
20 0 20 40
SCALE IN FEET

DATE		REVISION

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

ROADWAY CONSTRUCTION PLAN

KAMEHAMEHA HIGHWAY DRAINAGE AND SAFETY IMPROVEMENTS
Vicinity of Laniakea Beach (MP 3.06 to MP 3.54)
Project No. 83B-01-09

Scale: 1"=20' Date: December 2022

SHEET No. C-4 OF 32 SHEETS

DEXTER S. EJI
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ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
	DRAWN BY	
NOTE BOOK	TRACED BY	
	DESIGNED BY	
No.	QUANTITIES BY	
	CHECKED BY	

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83B-01-09	2023	38	231

Laniakea Beach

TRUE NORTH
SCALE: 1" = 20'

Match existing driveway

Shoreline follows along top bank as located on November 26, 2019

Water Meter #02222994

BUILDING

TMK: (1) 6-1-10: 01

31" W-Beam Guardrail w/ Standard 8" Offset Block. See Detail on Sht. C-31. GRP, See Sht C-17.

Kam Hwy ℄ Sta. 154+15 Install Bollards (4 each). See detail on Sht. C-20.

5' Typ.

Install Folding Bollards (2 each) See Detail on Sht. C-20

Kam Hwy ℄ Sta. 154+97 Install Bollards (4 each). See detail on Sht. C-20.

5' Typ.

Shoreline follows along seaward face of bridge as located on November 26, 2019

Shoreline follows along edge of bridge as located on November 26, 2019

Line K ℄ Sta. 155+52.41 O/S 17 Lt. Begin Cut-Of Wall

Line K ℄ Sta. 156+03.06 R=2000'

r/w

℄ Kamehameha Highway

Match Exist. Pavement

Limits of Reinforced Grass Paver. For Details See Sht. LP-09.

K A M E H A M E H A H I G H W A Y (S T A T E)

26' Thrie Beam

25'

℄ Line K Sta. 155+77.24 O/S 20 Lt. End Guardrail W-Beam MSKT-SP TL-3

31" W-Beam Guardrail w/ Standard 8" Offset Block. See Detail on Sht. C-31.

Cut-Off Wall. See Detail on C-20

r/w

M.L. ℄ Line K STA. 152+90

To Haleiwa

155+00

31" W-Beam Guardrail w/ Standard 8" Offset Block. See Detail on Sht. C-31.

321°34'33"; 19.00'

GRP, See Sht C-17.

231°34'33" → 66.14'

321°34'33"; 19.00'

Dumped Riprap, See Sht C-17.

Install High Tensile Hinge Joint Fence, See detail on Sht. C-20

Install 4' High Chain Link Fence See State Standard Plan Sht. D-02, Typ.

℄ Line K

ES

Connect to existing Chain Link Fence

To Waimea

M.L. ℄ Line K STA. 158+80

26' Thrie Beam

Bridge See Structural Plan

℄ Line K Sta. 154+10.50 to Sta. 155+15.50

231°34'33" → 208.07'

25'

26' Thrie Beam See Structural Plans, Typ.

141°34'33"; 10.00'

231°34'33"; 28.79'

F2

229°48'08" → 127.81'

227°43'27"; 21.97'

138°48'44"; 10.00'

F3

Proposed R/W

Limits of Construction Parcel

LAUHULU STREAM

Line K ℄ Sta. 153+00.00 O/S 4' Rt. Wooden Fence

Line K ℄ Sta. 153+00.00 O/S 60' Rt. Wooden Fence

Line K ℄ Sta. 153+66.00 O/S 60' Rt. Wooden Fence

Line K ℄ Sta. 153+66 O/S 75' Rt. End Wooden Fence Begin High Tensile Hinge Joint Fence

Line K ℄ Sta. 155+74.21 O/S 75' Rt. Chain Link Fence

℄ Line K Sta. 155+77.11 O/S 21 Rt. End Guardrail W-Beam MSKT-SP TL-3

Line K ℄ Sta. 155+74.21 O/S 65' Rt. Chain Link Fence

P.C. Line K ℄ Sta. 156+03 O/S 65' Rt. Chain Link Fence

Line K ℄ Sta. 157+26.81 O/S 60' Rt. Chain Link Fence

P.t. Line K ℄ Sta. 157+26.81 O/S 65' Rt. Chain Link Fence

Line K ℄ Sta. 157+48.08 O/S 60' Rt. Connect to Existing Chain Link Fence

Line K ℄ Sta. 158+25.00 O/S 32.16' Rt. Begin Guardrail W-Beam MSKT-SP TL-3

31" W-Beam Guardrail w/ Standard 8" Offset Block. See Detail on Sht. C-28.

Legend:

- Asphalt Pavement
- Dumped Riprap
- GRP
- Grass Pavers. See detail LP-09
- 31" W-Beam Guardrail w/ Standard 8" Offset Block. See Detail on Sht. C-31

F2
FENCE CURVE DATA
△ = 03°32'49"
R = 2065'
T = 63.94'
C = 127.81'
Lc = 127.83'

F3
FENCE CURVE DATA
△ = 0°36'34"
R = 2060'
T = 10.95'
C = 21.97'
Lc = 21.97'

GRAPHIC SCALE
1" = 20'
20 0 20 40
SCALE IN FEET

DATE	REVISION

DEXTER S. EJI
LICENSED PROFESSIONAL ENGINEER
No. 4739-C
HAWAII, U.S.A.

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SIGNATURE 04/30/24 EXPIRATION DATE OF THE LICENSE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

ROADWAY CONSTRUCTION PLAN

KAMEHAMEHA HIGHWAY DRAINAGE AND SAFETY IMPROVEMENTS
Vicinity of Laniakea Beach (MP 3.06 to MP 3.54)
Project No. 83B-01-09

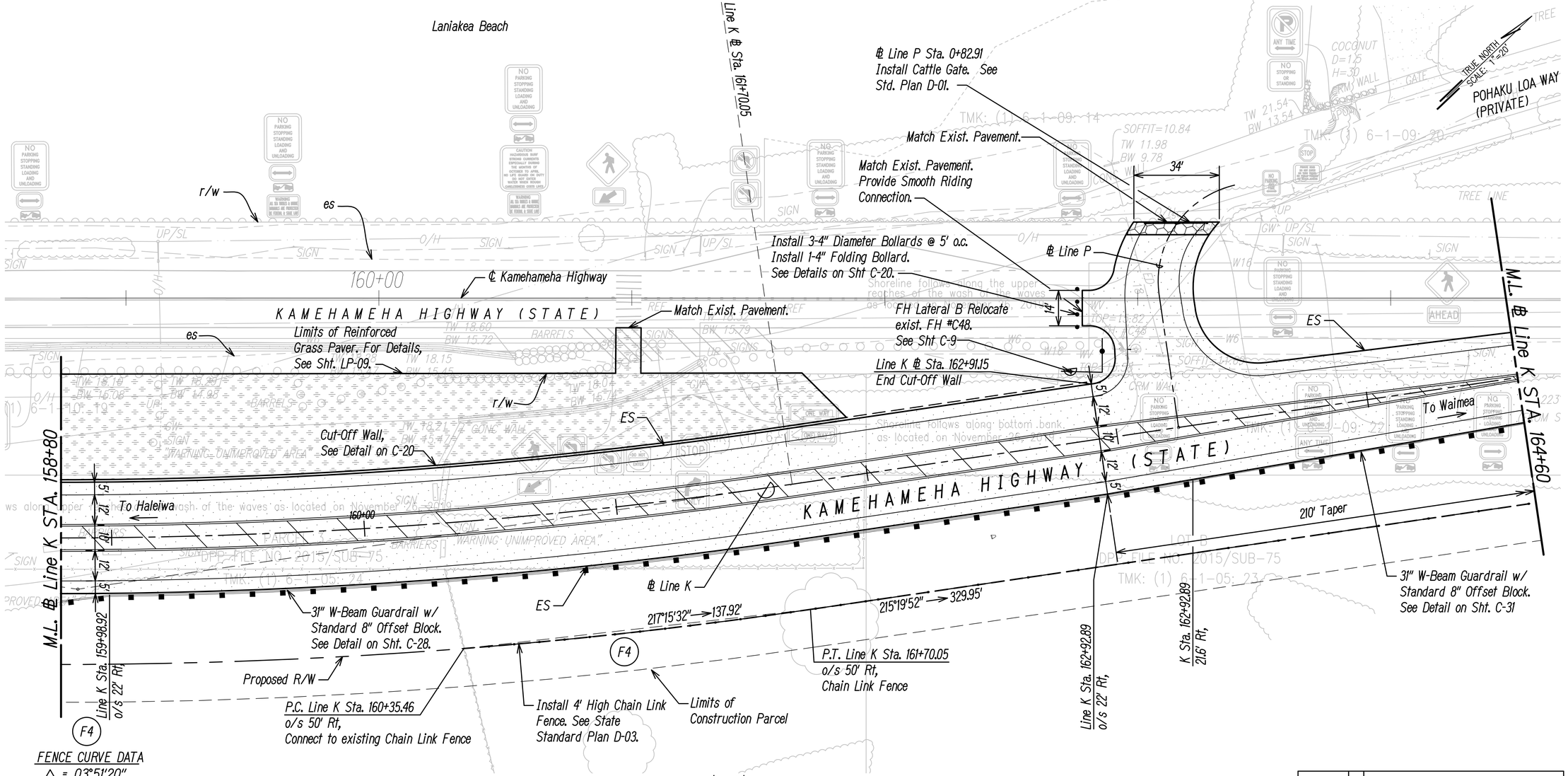
Scale: 1"=20' Date: December 2022

SHEET No. C-5 OF 32 SHEETS

ORIGINAL PLAN
NOTE BOOK
No.

SURVEY PLOTTED BY
DRAWN BY
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DESIGNED BY
QUANTITIES BY
CHECKED BY
DATE

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83B-01-09	2023	39	231



FENCE CURVE DATA
△ = 03°51'20"
R = 2050'
T = 69.02'
C = 137.92'
Lc = 137.95'

Legend:
- Asphalt Pavement
- Grass Pavers. See Detail on Sht. LP-09
- Pavement Transition See detail on Sht. C-20.
- 31" W-Beam Guardrail w/ Standard 8" Offset Block. See Detail on Sht. C-31

Approved:

Manager and Chief Engineer, BWS — Date
(For Work Affecting BWS Facilitiese in City/State R/W and BWS Easements Only)

GRAPHIC SCALE
1" = 20'
20 0 20 40
SCALE IN FEET

ORIGINAL PLAN
NOTE BOOK
No.
SURVEY PLOTTED BY
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CHECKED BY
DATE

DATE	REVISION

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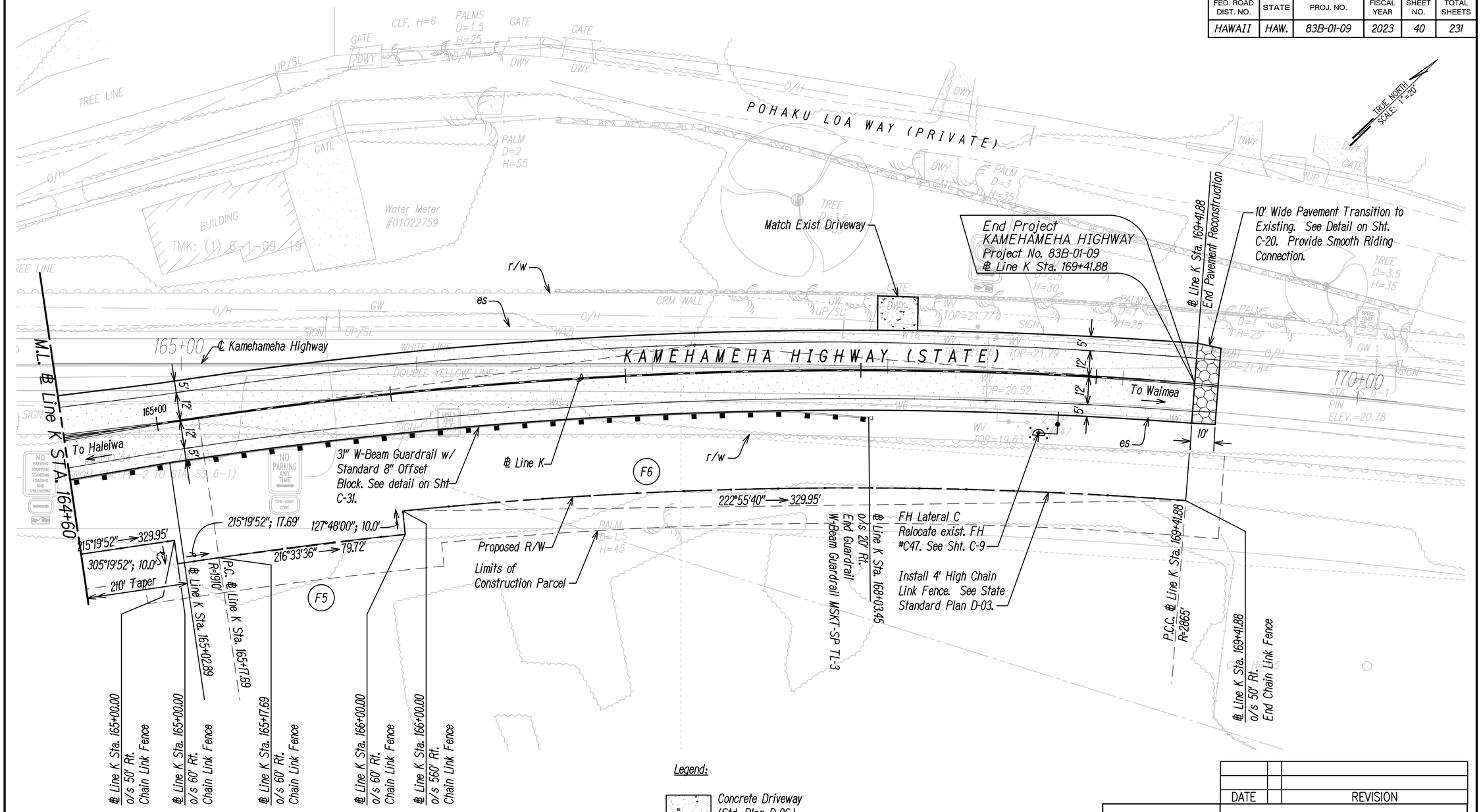
ROADWAY CONSTRUCTION PLAN

KAMEHAMEHA HIGHWAY DRAINAGE AND SAFETY IMPROVEMENTS
Vicinity of Laniakea Beach (MP 3.06 to MP 3.54)
Project No. 83B-01-09

Scale: 1"=20' Date: December 2022

SHEET No. C-6 OF 32 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83B-01-09	2023	40	231



F5

FENCE CURVE DATA

△ = 02°28'09"
R = 1850'
T = 39.86'
C = 79.72'
Lc = 79.72'

F6

FENCE CURVE DATA

△ = 10°15'20"
R = 1860'
T = 166.91'
C = 332.48'
Lc = 332.93'

Approved:

Manager and Chief Engineer, BWS Date
(For Work Affecting BWS Facilitiese in City/State R/W and BWS Easements Only)

Legend:

- Concrete Driveway (Std. Plan D-06.)
- Asphalt Pavement
- Pavement Transition See detail on Sht. C-20.
- 31" W-Beam Guardrail w/ Standard 8" Offset Block. See Detail on Sht. C-31

GRAPHIC SCALE
1" = 20'
20 0 20 40
SCALE IN FEET

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

DATE		REVISION

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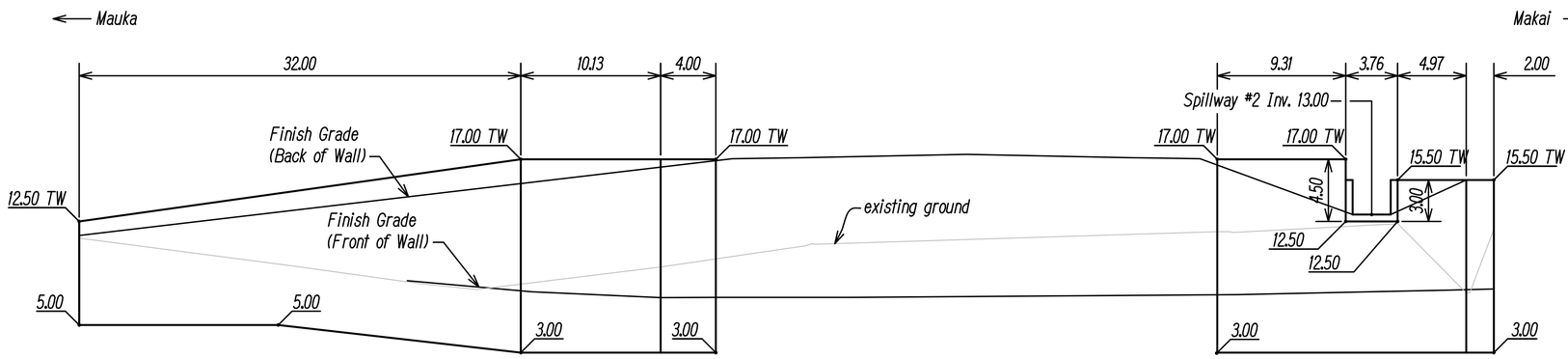
ROADWAY CONSTRUCTION PLAN

KAMEHAMEHA HIGHWAY DRAINAGE AND SAFETY IMPROVEMENTS
Vicinity of Laniakea Beach (MP 3.06 to MP 3.54)
Project No. 83B-01-09

Scale: 1"=20' Date: December 2022

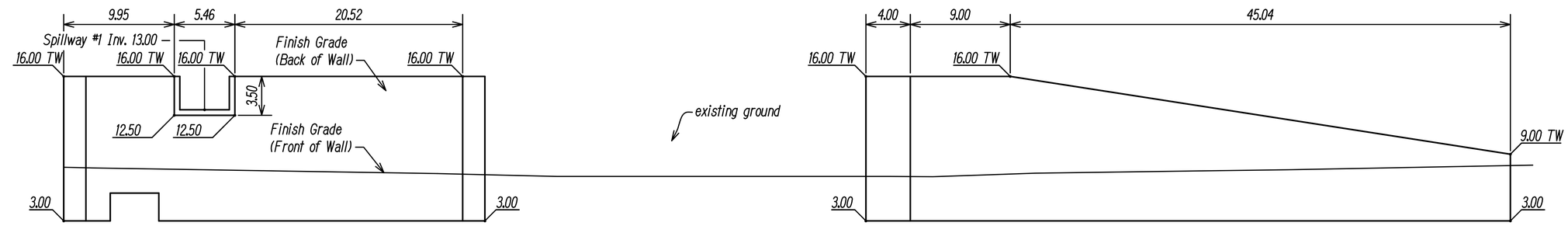
SHEET No. C-7 OF 32 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83B-01-09	2023	41	231



Wingwall No. 2 Elevation
Scale: 1"=5'-0"

Wingwall No. 1 Elevation
Scale: 1"=5'-0"



Wingwall No. 3 Elevation
Scale: 1"=5'-0"

Wingwall No. 4 Elevation
Scale: 1"=5'-0"

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

DATE		REVISION

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DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

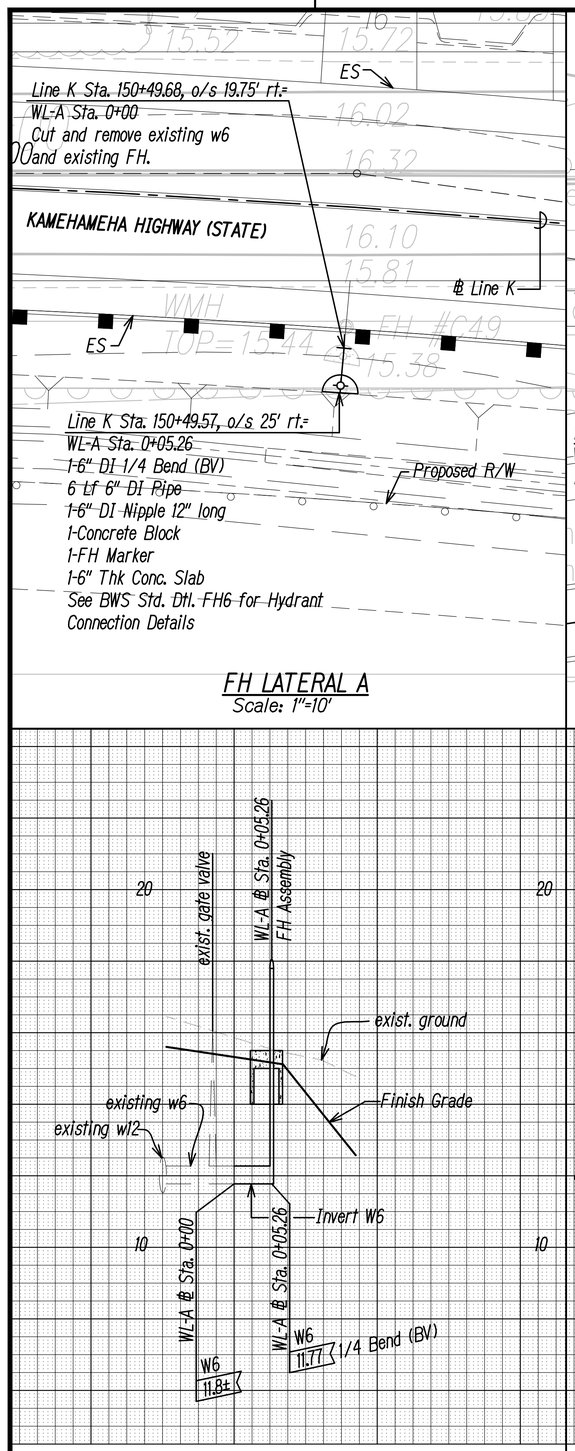
ELEVATONS
WINGWALL NO. 1, 2, 3, & 4

KAMEHAMEHA HIGHWAY DRAINAGE AND SAFETY IMPROVEMENTS
Vicinity of Laniakea Beach (MP 3.06 to MP 3.54)
Project No. 83B-01-09

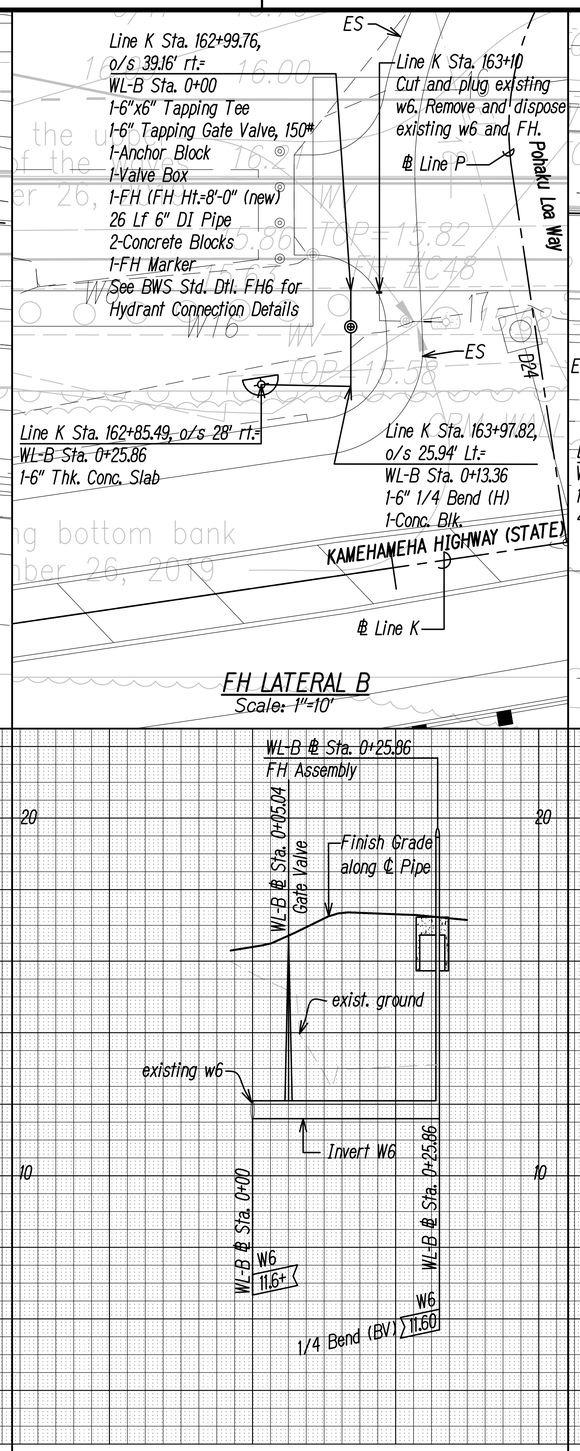
Scale: 1"=5' Date: December 2022

SHEET No. C-8 OF 32 SHEETS

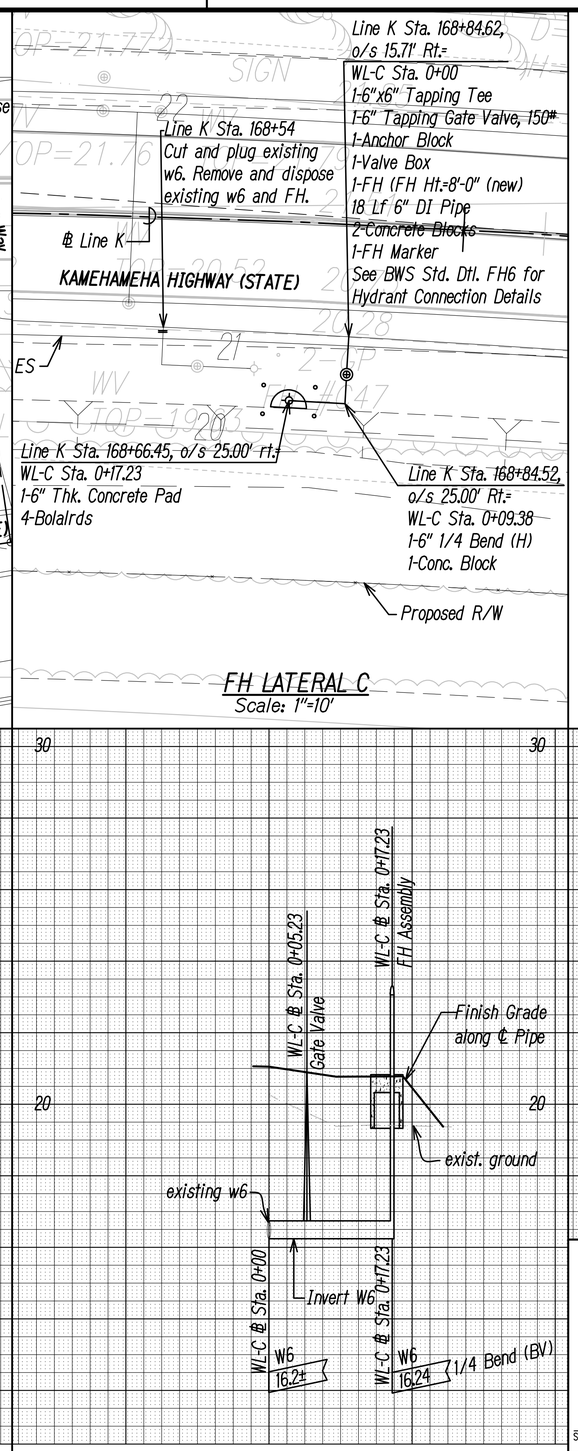
FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83B-01-09	2023	42	231



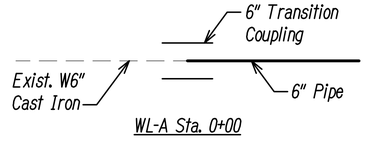
FH LATERAL A
Scale: 1"=10'



FH LATERAL B
Scale: 1"=10'



FH LATERAL C
Scale: 1"=10'



WL-A Sta. 0+00

Temporary for Testing:
2-6" Cap Tapped for 2 1/2" IPT
2-2 1/2" Cleanout
2-Concrete Blocks

Approved:

Manager and Chief Engineer, BWS — Date
(For Work Affecting BWS Facilities in City/State R/W
and BWS Easements Only)

GRAPHIC SCALE

HORIZ. 1" = 10'
10 0 10 20
SCALE IN FEET

VERT. 1" = 2'
2 0 2 4
SCALE IN FEET

DATE		REVISION

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

DEXTER S. EJI
LICENSED PROFESSIONAL ENGINEER
No. 4739-C
HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.

SIGNATURE — 04/30/24 EXPIRATION DATE OF THE LICENSE

PLAN AND PROFILE
FH LATERAL A, B, & C

KAMEHAMEHA HIGHWAY DRAINAGE AND SAFETY IMPROVEMENTS
Vicinity of Laniakea Beach (MP 3.06 to MP 3.54)
Project No. 83B-01-09

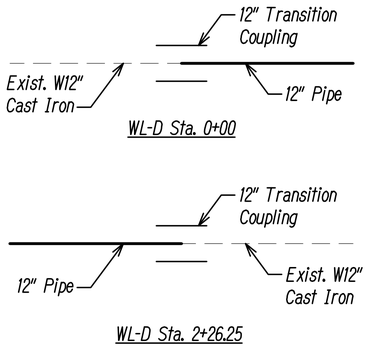
Scale: 1"=10' Date: December 2022

SHEET No. C-9 OF 32 SHEETS

ORIGINAL PLAN
NOTE BOOK
No.

SURVEY PLOTTED BY
DRAWN BY
TRACED BY
DESIGNED BY
QUANTITIES BY
CHECKED BY
DATE

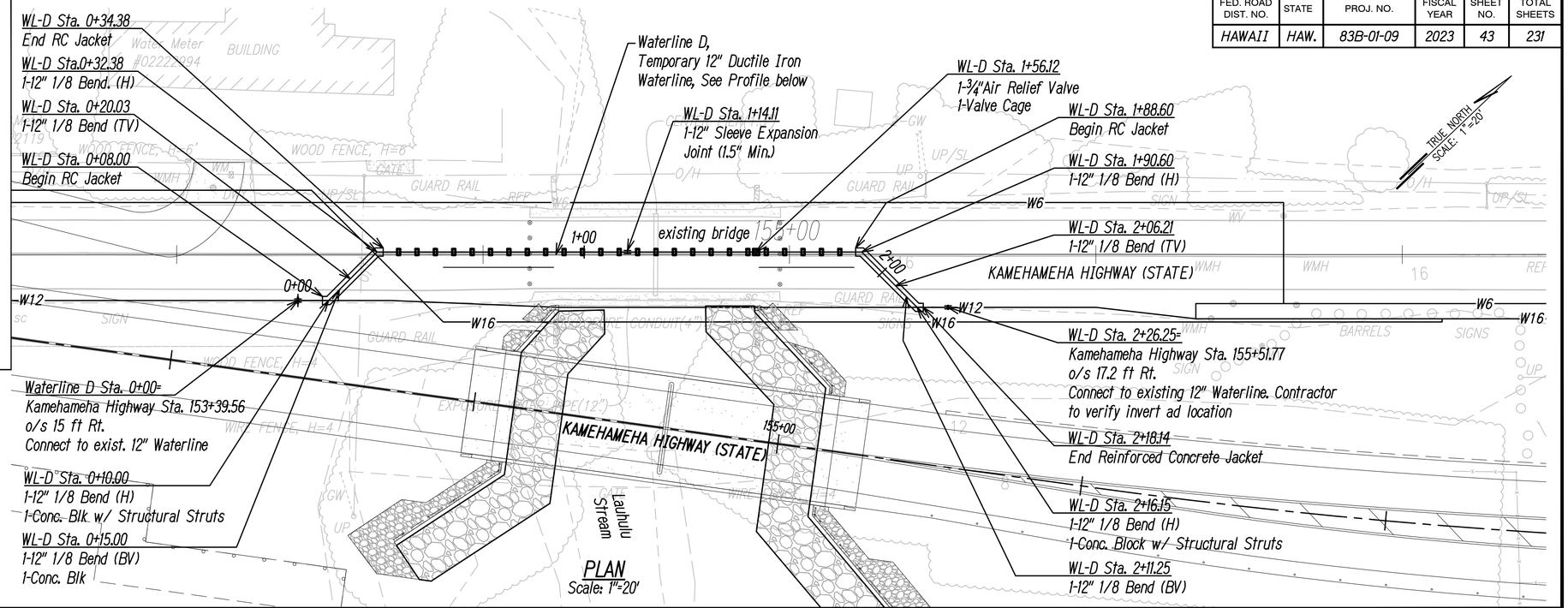
FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83B-01-09	2023	43	231



SCHEMATIC CONNECTION
Scale: NTS

Materials for Connection:
1-12" Sleeves, 2' Long
2-10' LF of 12" Pipe
2-12" Transition Couplings, 2' Long

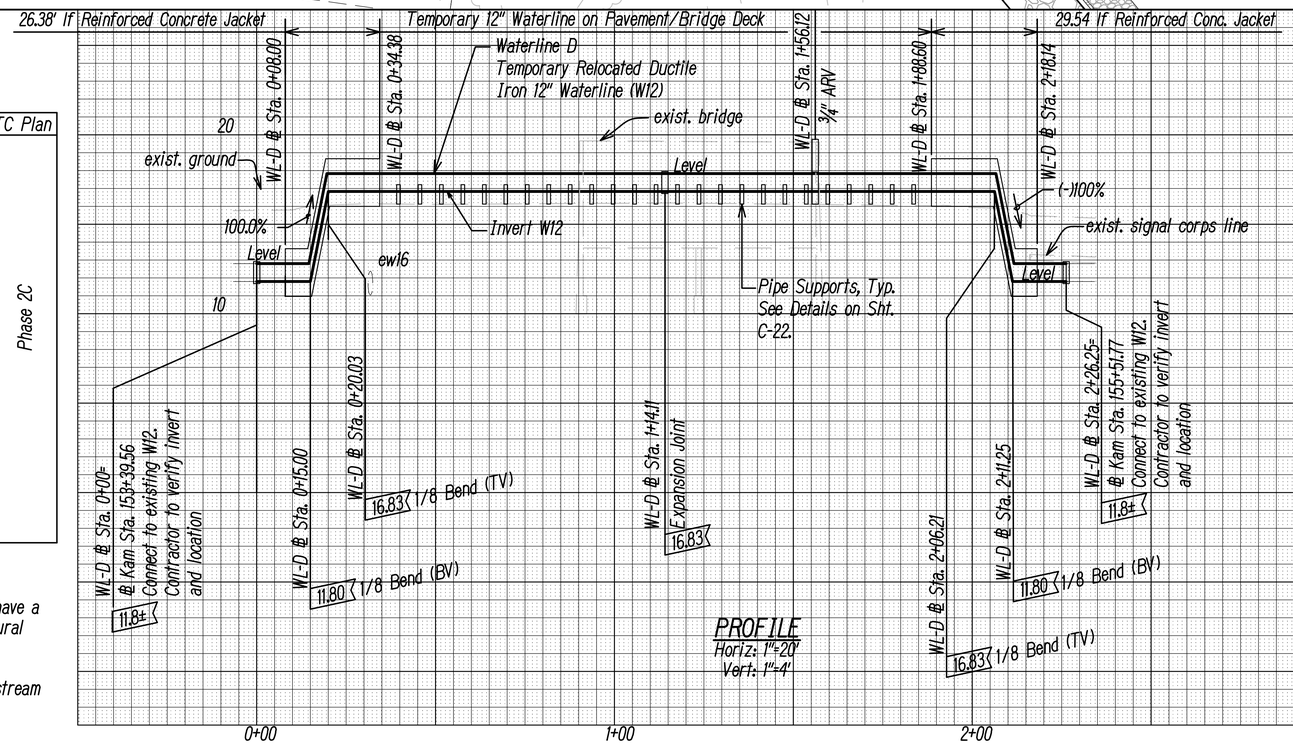
Temporary for Testing:
2-12" Cap Tapped for 4" IPT
2-4" Cleanout
2-Concrete Block



PLAN
Scale: 1"=20'

	Temporary 12" Waterline D	TC Plan
1.	Construct temporary 12-inch Waterline D	Phase 2C
	except for tie ins to exist. 12W	
2.	Turn Off Exist. W12 at valves for	
	construction.	
3.	Connect temporary 12-inch Waterline D	
	to exist. W12	
4.	Turn on exist. valves	
5.	Remove existing wingwall.	
6.	Construct new Wingwalls	
7.	Replace fill behind new wingwalls	
8.	Turn off temp. 12-inch Waterline D at	
	Valves for connection	
9.	Connect exist. W12 to exist W12 on	
	bridge	
10.	Turn on exist valves	
11.	Remove temporary 12-inch Waterline D, Reinforced Concrete Jacket, Pipe Support, Air Relief Valve and enclosure.	

Note:
Should the existing 16" WL be found to not have a concrete encasement as shown on the structural drawings, Contractor shall concrete encase existing 16" WL between points exposed for wingwall construction on either side of the stream with jacket ending at the nearest bell joint outside of the exposed section.



PROFILE
Horiz: 1"=20'
Vert: 1"=4'

GRAPHIC SCALE
HORIZ. 1" = 20'
SCALE IN FEET
VERT. 1" = 4'
SCALE IN FEET

Approved:

Manager and Chief Engineer, BWS *Date*
(For Work Affecting BWS Facilitiese in City/State R/W and BWS Easements Only)

DATE		REVISION

DEXTER S. EJI
LICENSED PROFESSIONAL ENGINEER
No. 4739-C
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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

PLAN AND PROFILE
TEMPORARY 12" WATERLINE

KAMEHAMEHA HIGHWAY DRAINAGE AND SAFETY IMPROVEMENTS
Vicinity of Laniakea Beach (MP 3.06 to MP 3.54)
Project No. 83B-01-09

Scale: As Shown Date: December 2022

SHEET No. C-10 OF 32 SHEETS

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

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83B-01-09	2023	44	231

GRADING NOTES

1. All grading work shall be done in accordance with Chapter 14, Articles 13, 14, 15 and 16, as related to Grading, Soil Erosion and Sediment Control, of the Revised Ordinances of Honolulu, 1990, as Amended.

2. No Contractor shall perform any grading operation so as to cause falling rocks, soil or debris in any form to fall, slide or flow onto adjoining properties, streets or natural watercourses. Should such violations occur, the costs incurred for any remedial action shall be payable by the Contractor.

3. The Contractor, at his own expense, shall keep the project area and surrounding area free from dust nuisance. The work shall be in conformance with the Air Pollution Control Standards contained in The Hawaii Administrative Rules, Title 11, Chapter 60.1, "Air Pollution Control".

4. The underground pipes, cables or ductlines known to exist by the Engineer from his search of records are indicated on the plans. The Contractor shall verify the locations and depths of the facilities and exercise proper care in excavating in the area. Wherever connections of new utilities are shown on the plans, the Contractor shall expose the existing lines at the proposed connections to verify their locations and depths prior to excavation for the new lines.

5. Adequate provisions shall be made to prevent surface waters from damaging the cut face of an excavation or the sloped surfaces of a fill. Furthermore, adequate provisions shall be made to prevent sediment-laden runoff from leaving the site.

6. All slopes and exposed areas shall be sodded or planted as soon as final grades have been established. Planting shall not be delayed until all grading work has been completed. Grading to final grade shall be continuous, and any area within which work has been interrupted or delayed shall be planted.

7. Fills on slopes steeper than 5:1 shall be keyed.

8. The Engineer shall be informed of the location of the borrow/disposal site for the project when the application for a grading permit is made. The borrow/disposal site must also fulfill the requirements of the grading ordinance.

9. No grading work shall be done on Saturdays, Sundays and holidays at any time without prior notice to the District Engineer, provided such grading work is also in conformance with The Community Noise Control Standard Contained in The Hawaii Administrative Rules, Title 11 Chapter 46, "Community Noise Control".

10. The limits of the area to be graded shall be flagged before the commencement of the grading work.

11. All grading operations shall be performed in conformance with the applicable provisions of the water pollution control and water quality standards contained in Hawaii Administrative Rules, Title 11 Chapter 55, "Water Pollution Control" and Title 11 Chapter 54, "Water Quality Standards" and if applicable, the NPDES permit for the project.

12. Where applicable and feasible the measures to control erosion and other pollutants shall be in place before any earth moving phase of the grading is initiated.

13. Temporary erosion controls shall not be removed before permanent erosion controls are in-place and established.

14. Temporary erosion control procedures shall be submitted for approval prior to application for grading permit.

15. If the grading work involves contaminated soil, then all grading work shall be done in conformance with applicable State and Federal requirements.

16. Non-compliance to any of the above requirements shall mean immediate suspension of all work, and remedial work shall commence immediately. All remedial work shall be billed to the Contractor. All remedial work shall be at no cost to the State. Furthermore, violators shall be subjected to administrative, civil and/or criminal penalties.

17. Prior to placement of any fill, the existing ground shall be scarified to a depth of six inches and compacted to a minimum of 90 percent compaction as determined by AASHTO T-180.

18. After clearing and grubbing, additional roots and other vegetation found in the upper 6 to 8 inches shall be removed.

19. Construction observation and field density testing shall be performed by the State. Where test and/or observations indicate that the density of uniformity of any portion of the fill is inadequate, that portion shall be removed and reworked until the required density or uniformity has been satisfactorily obtained.

DRAINAGE NOTES

1. Existing drainage systems shall remain 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 the various contract items.

2. The Contractor shall verify the locations of all existing culverts and utilities in the field. Any existing culverts and utilities damaged during construction shall be repaired or replaced by the Contractor at their own expense.

3. Only non-pneumatic type of drill as approved by the Engineer will be permitted for drilling holes in concrete. Where indicated on the plans, the approximate diameter of drilled holes for installation of dowels shall be ¾" and voids after installing dowels shall be filled with epoxy grout.

4. Demolishing, removing and disposing portions of existing drainage structures shall not be paid for separately, but shall be considered incidental to the various Grate Drop Inlets.

5. For details of Manhole Rungs, See Standard Plan H-07.

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

DATE		REVISION

DEXTER S. EJI
LICENSED PROFESSIONAL ENGINEER
No. 4739-C
HAWAII, U.S.A.

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SIGNATURE 04/30/24 EXPIRATION DATE OF THE LICENSE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

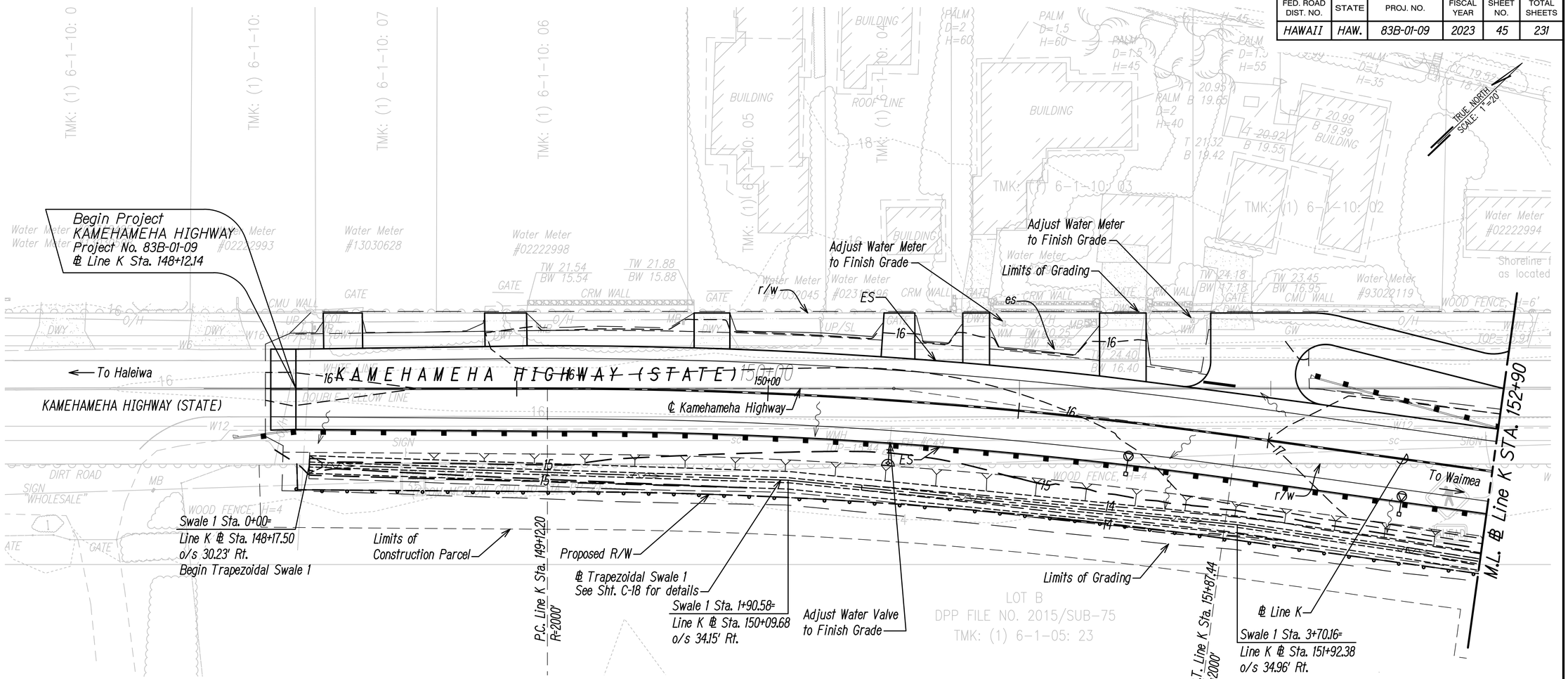
GRADING NOTES

KAMEHAMEHA HIGHWAY DRAINAGE AND SAFETY IMPROVEMENTS
Vicinity of Laniakea Beach (MP 3.06 to MP 3.54)
Project No. 83B-01-09

Scale: None Date: December 2022

SHEET No. C-11 OF 32 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83B-01-09	2023	45	231



Legend

- Existing Contours
- Finish Contours
- Limits of Grading
- Guardrail
- Flow Arrow
- St. Lt.
- FH

GRAPHIC SCALE

1" = 20'

20 0 20 40

SCALE IN FEET

DATE		REVISION

DEXTER S. EJI
LICENSED PROFESSIONAL ENGINEER
No. 4739-C
HAWAII, U.S.A.

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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

GRADING AND DRAINAGE PLAN

KAMEHAMEHA HIGHWAY DRAINAGE AND SAFETY IMPROVEMENTS
Vicinity of Laniakea Beach (MP 3.06 to MP 3.54)
Project No. 83B-01-09

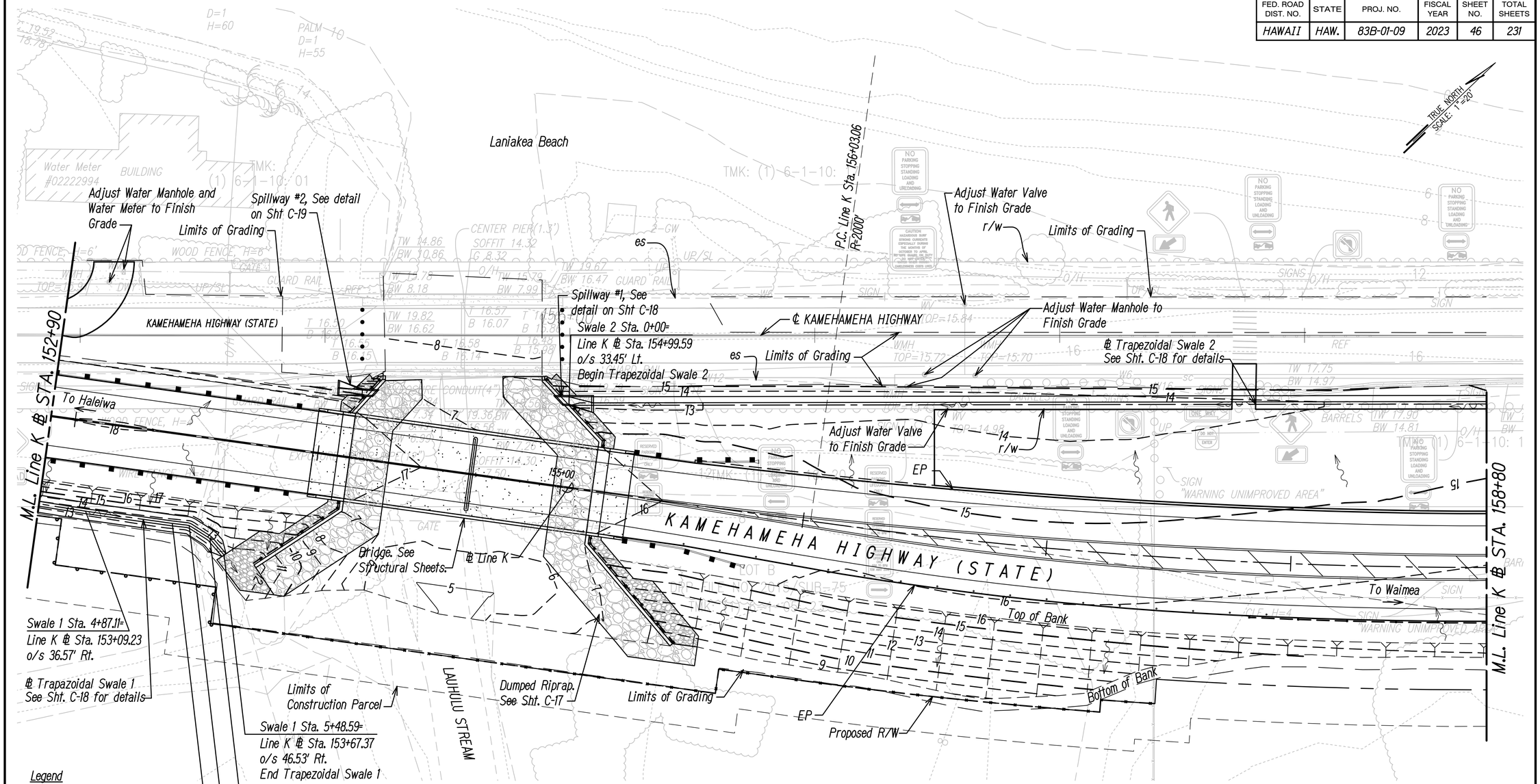
Scale: 1"=20' Date: December 2022

SHEET No. C-12 OF 32 SHEETS

ORIGINAL PLAN | NOTE BOOK | No.

SURVEY PLOTTED BY | DRAWN BY | TRACED BY | DESIGNED BY | QUANTITIES BY | CHECKED BY | DATE

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83B-01-09	2023	46	231



Legend

- Existing Contours
- Finish Contours
- Limits of Grading
- Guardrail
- Flow Arrow
- St. Lt.
- FH

GRAPHIC SCALE

1" = 20' 20 0 20 40

SCALE IN FEET

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

DATE	REVISION

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

GRADING AND DRAINAGE PLAN

KAMEHAMEHA HIGHWAY DRAINAGE AND SAFETY IMPROVEMENTS
Vicinity of Laniakea Beach (MP 3.06 to MP 3.54)
Project No. 83B-01-09

DEXTER S. EJI
LICENSED PROFESSIONAL ENGINEER
No. 4739-C
HAWAII, U.S.A.

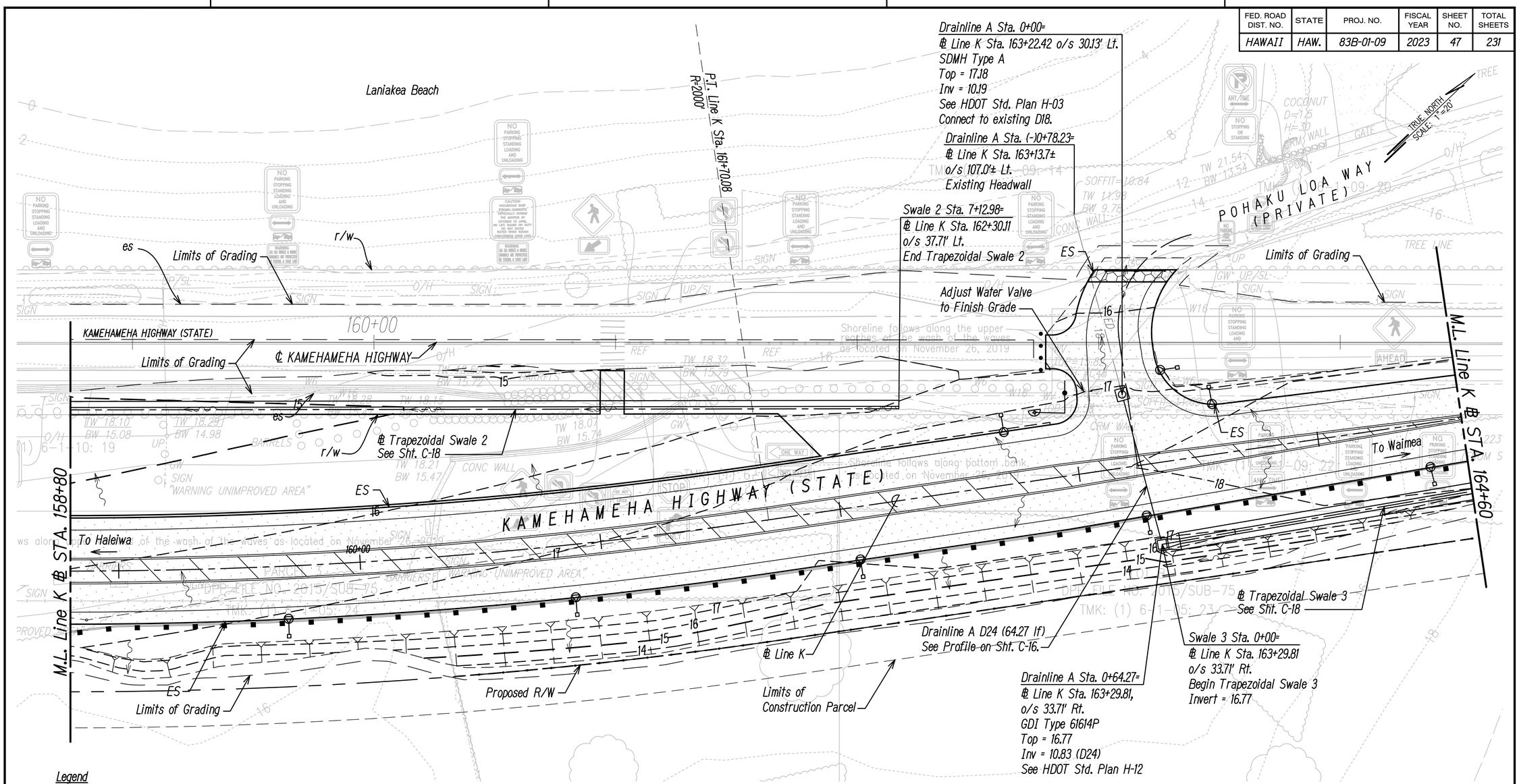
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Scale: 1"=20' Date: December 2022

SHEET No. C-13 OF 32 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83B-01-09	2023	47	231



Legend

- Existing Contours
- Finish Contours
- Limits of Grading
- Guardrail
- Flow Arrow
- St. Lt.
- FH

GRAPHIC SCALE

1" = 20' (20 0 20 40)

SCALE IN FEET

DATE		REVISION

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

GRADING AND DRAINAGE PLAN

KAMEHAMEHA HIGHWAY DRAINAGE AND SAFETY IMPROVEMENTS
Vicinity of Laniakea Beach (MP 3.06 to MP 3.54)
Project No. 83B-01-09

Scale: 1"=20' Date: December 2022

DEXTER S. EJI
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No. 4739-C
HAWAII, U.S.A.

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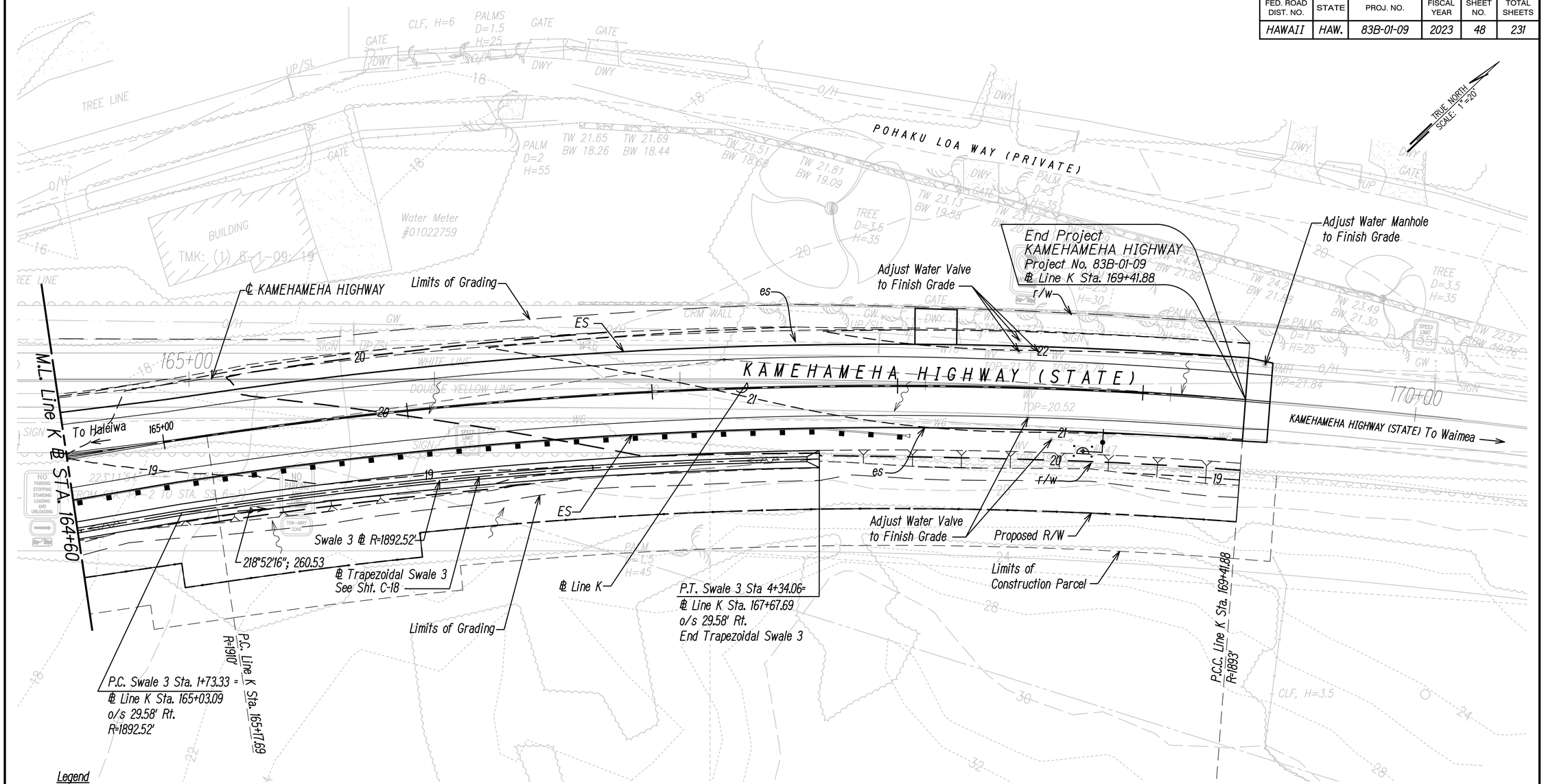
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DATE

ORIGINAL PLAN
NOTE BOOK
No.

SHEET No. C-14 OF 32 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83B-01-09	2023	48	231



Legend

- Existing Contours
- Finish Contours
- Limits of Grading
- Guardrail
- Flow Arrow
- St. Lt.
- FH

GRAPHIC SCALE

1" = 20' 20 0 20 40

SCALE IN FEET

DATE		REVISION

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

GRADING AND DRAINAGE PLAN

KAMEHAMEHA HIGHWAY DRAINAGE AND SAFETY IMPROVEMENTS
Vicinity of Laniakea Beach (MP 3.06 to MP 3.54)
Project No. 83B-01-09

Scale: 1"=20' Date: December 2022

DEXTER S. EJI
LICENSED PROFESSIONAL ENGINEER
No. 4739-C
HAWAII, U.S.A.

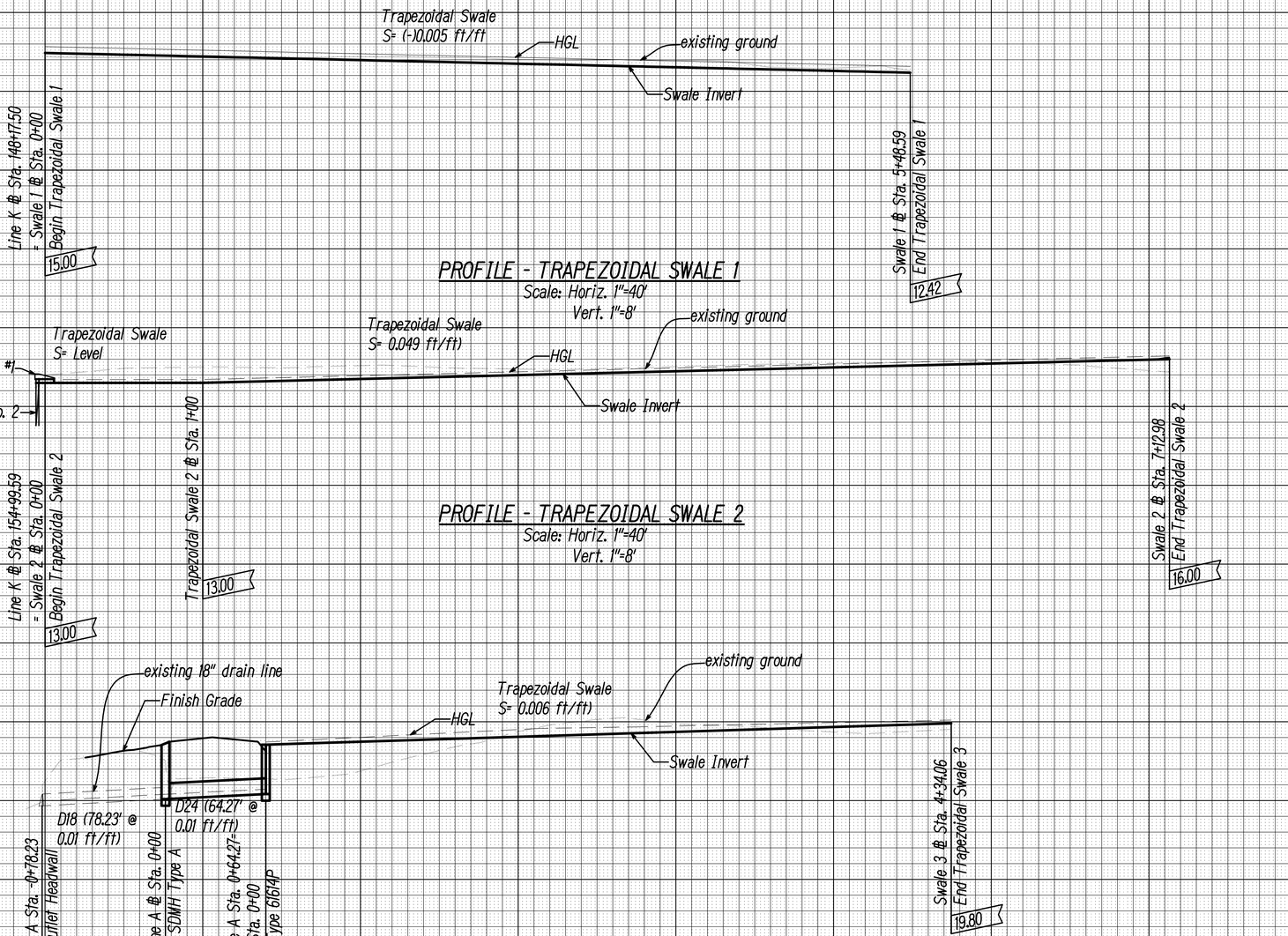
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SHEET No. C-15 OF 32 SHEETS

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

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83B-01-09	2023	49	231



GRAPHIC SCALE

Vert. 1" = 8' — 8 4 0 8 16 — SCALE IN FEET

Horiz 1" = 40' — 40 0 40 80 — SCALE IN FEET

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

DATE	REVISION

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

DRAINAGE PROFILES

KAMEHAMEHA HIGHWAY DRAINAGE AND SAFETY IMPROVEMENTS
Vicinity of Laniakea Beach (MP 3.06 to MP 3.54)
Project No. 83B-01-09

DEXTER S. EJI
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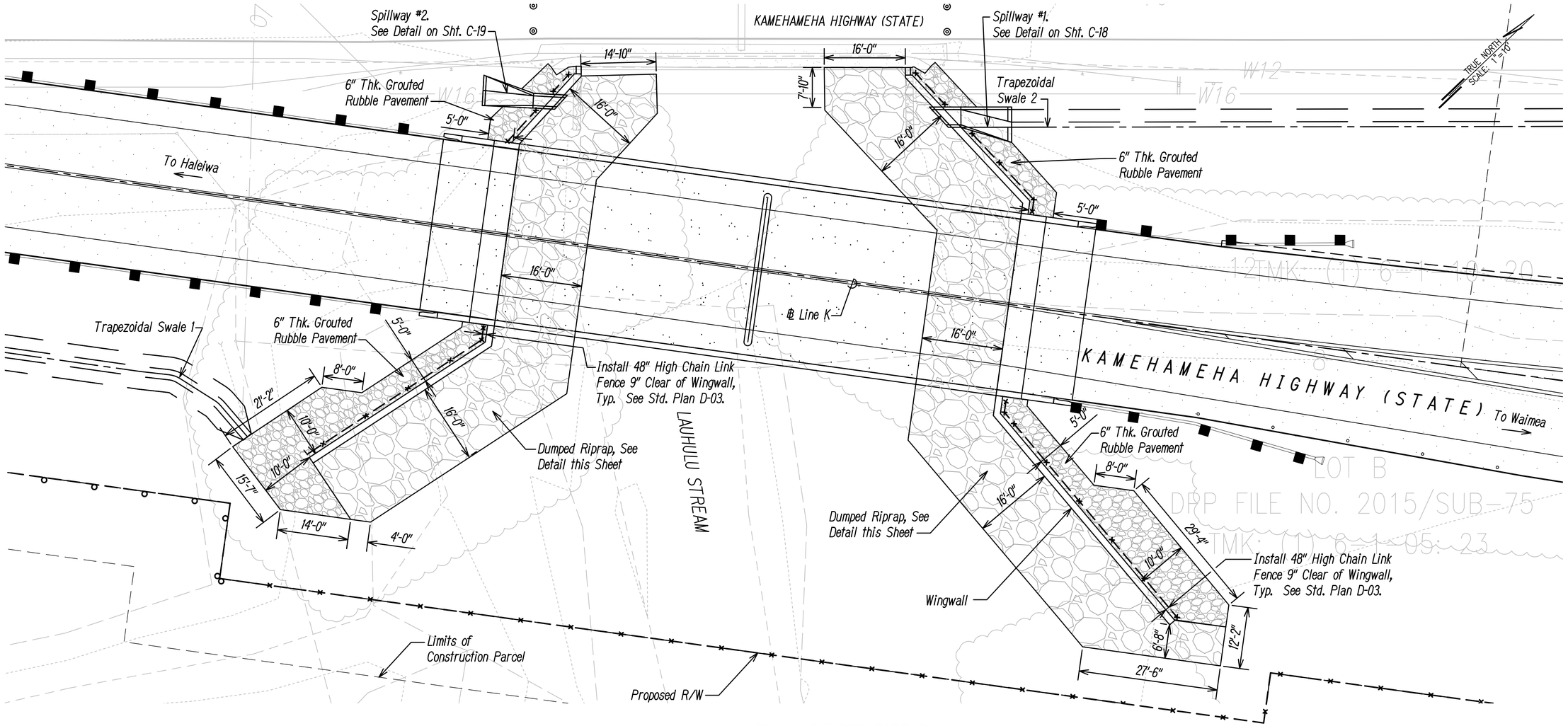
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Scale: 1"=40' Date: December 2022

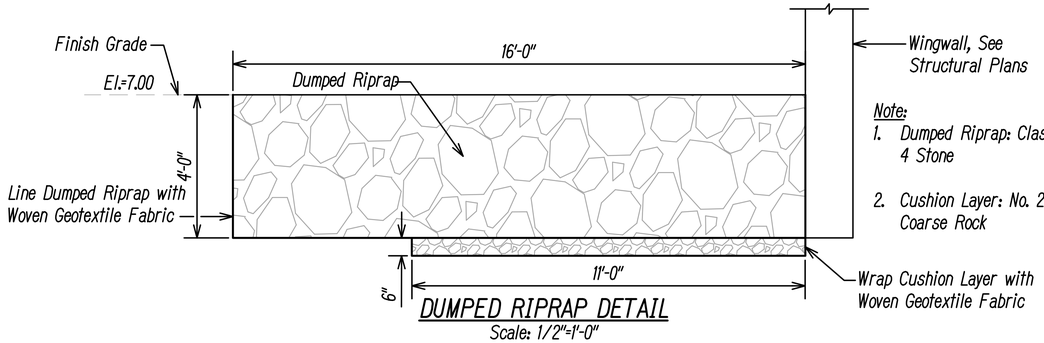
SHEET No. C-16 OF 32 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83B-01-09	2023	50	231



PLAN - DUMPED RIPRAP

Scale: 1"=10'



Note:
1. Dumped Riprap: Class 4 Stone
2. Cushion Layer: No. 2 Coarse Rock

DUMPED RIPRAP DETAIL

Scale: 1/2"=1'-0"

GRAPHIC SCALE

1" = 10'

10 0 10 20

SCALE IN FEET

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

DATE	REVISION

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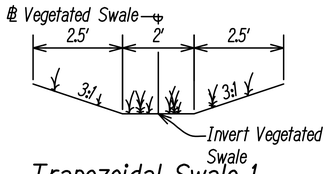
PLAN - DUMPED RIPRAP

KAMEHAMEHA HIGHWAY DRAINAGE AND SAFETY IMPROVEMENTS
Vicinity of Laniakea Beach (MP 3.06 to MP 3.54)
Project No. 83B-01-09

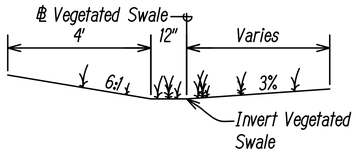
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SHEET No. C-17 OF 32 SHEETS

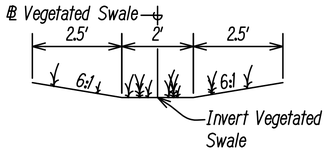
FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83B-01-09	2023	51	231



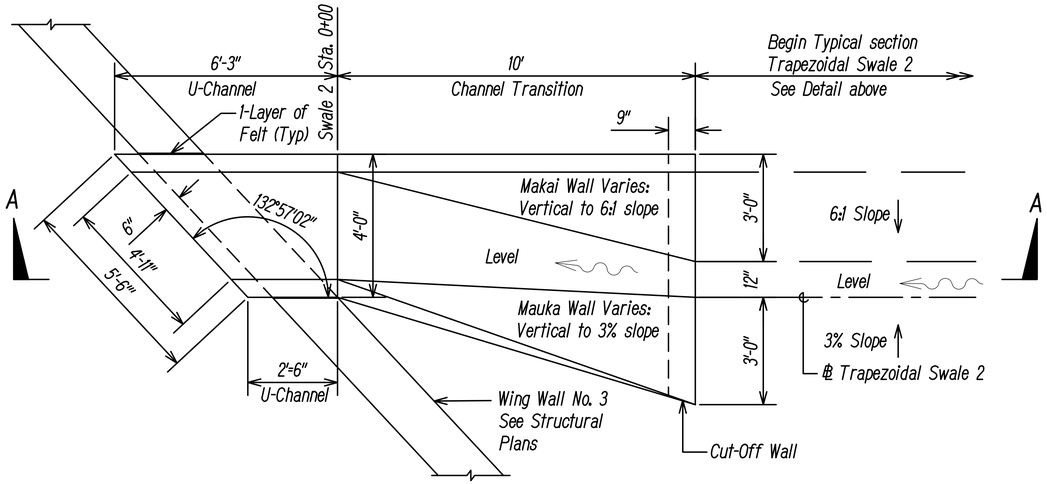
Trapezoidal Swale 1
Not to Scale



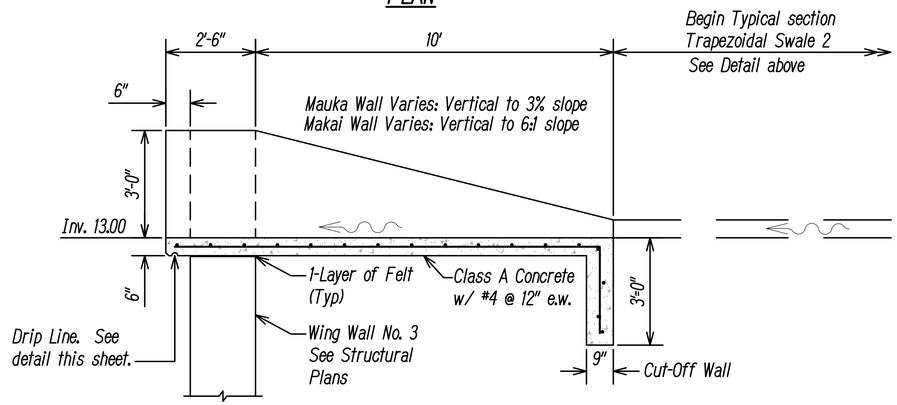
Trapezoidal Swale 2
Not to Scale



Trapezoidal Swale 3
Not to Scale

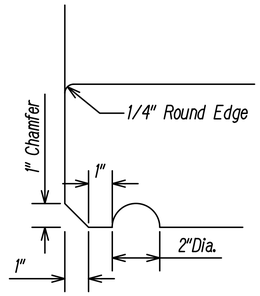


PLAN

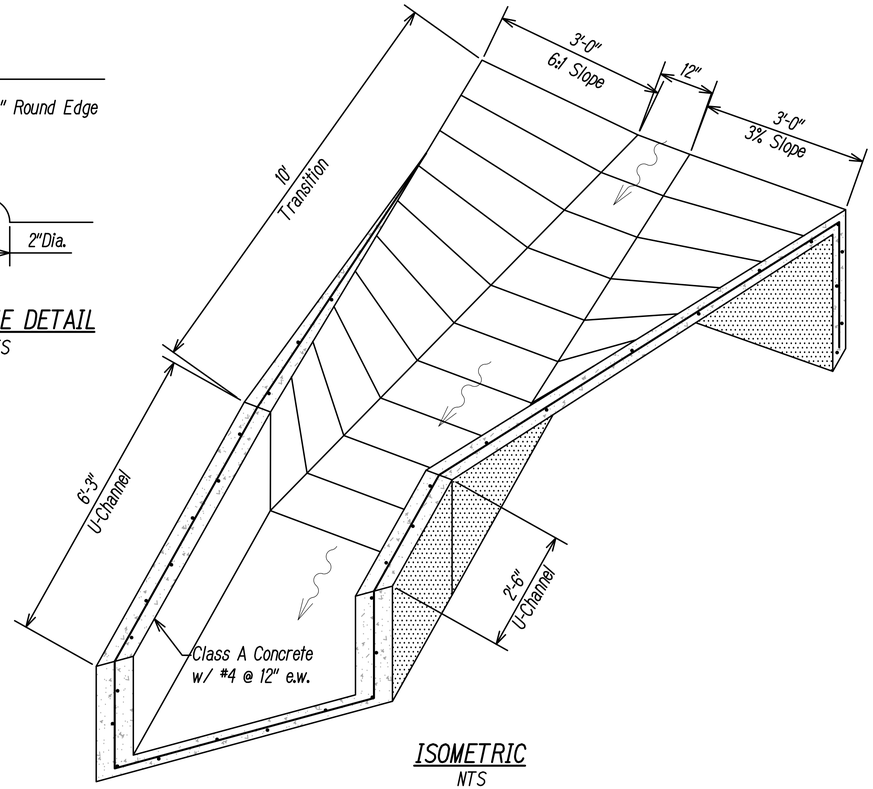


SECTION A-A

SPILLWAY #1
Scale : 1/2"=1'-0"



DRIP LINE DETAIL
NTS



ISOMETRIC
NTS

DATE		REVISION

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

DEXTER S. EJI
LICENSED PROFESSIONAL ENGINEER
No. 4739-C
HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.

SIGNATURE 04/30/24 EXPIRATION DATE OF THE LICENSE

MISCELLANEOUS DETAILS

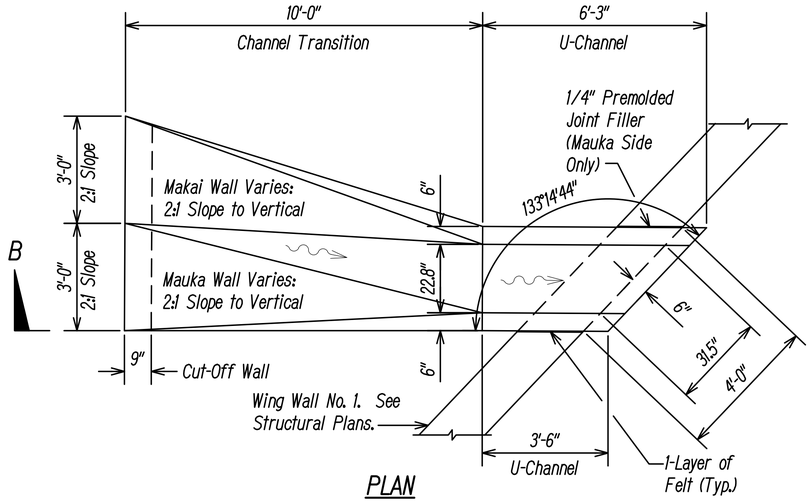
KAMEHAMEHA HIGHWAY DRAINAGE AND SAFETY IMPROVEMENTS
Vicinity of Laniakea Beach (MP 3.06 to MP 3.54)
Project No. 83B-01-09

Scale: 1"=20' Date: December 2022

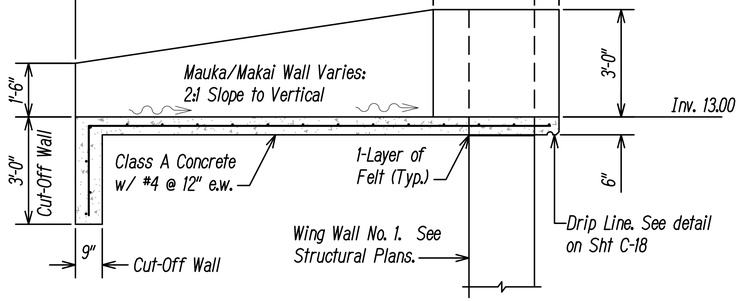
SHEET No. C-18 OF 32 SHEETS

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

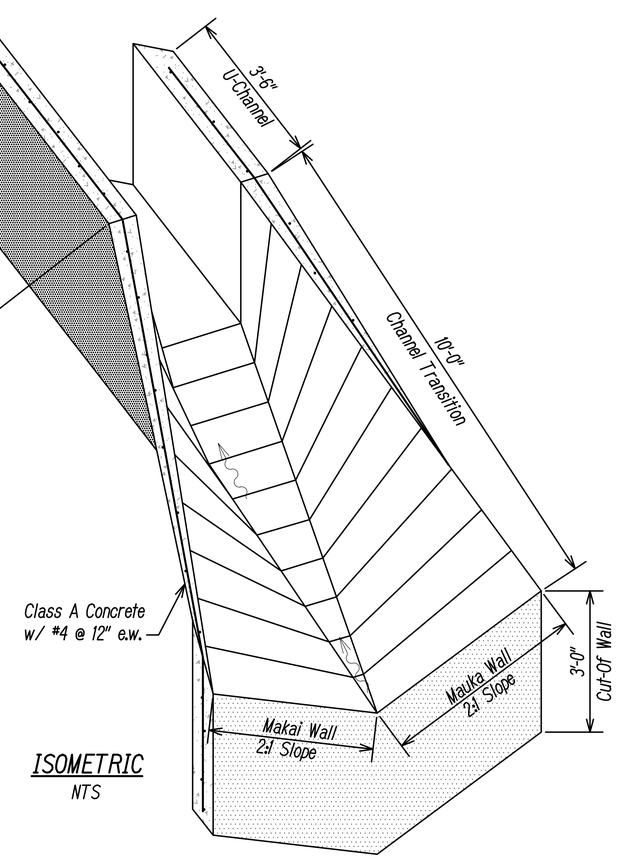
FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83B-01-09	2023	52	231



PLAN



SECTION B-B



ISOMETRIC
NTS

SPILLWAY #2
Scale: 1/2"=1'-0"

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

DATE		REVISION

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

DEXTER S. EJI
LICENSED PROFESSIONAL ENGINEER
No. 4739-C
HAWAII, U.S.A.

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SIGNATURE 04/30/24 EXPIRATION DATE OF THE LICENSE

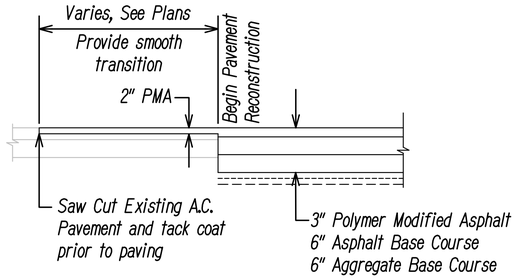
MISCELLANEOUS DETAILS

KAMEHAMEHA HIGHWAY DRAINAGE AND SAFETY IMPROVEMENTS
Vicinity of Laniakea Beach (MP 3.06 to MP 3.54)
Project No. 83B-01-09

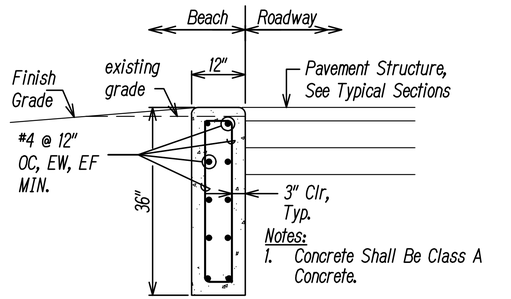
Scale: 1"=20' Date: December 2022

SHEET No. C-19 OF 32 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83B-01-09	2023	53	231

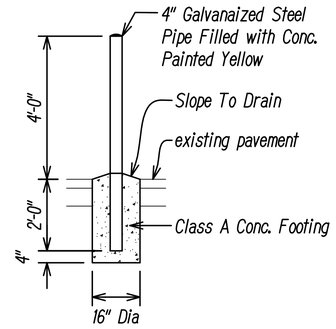


PAVEMENT TRANSITION DETAIL
Not to Scale

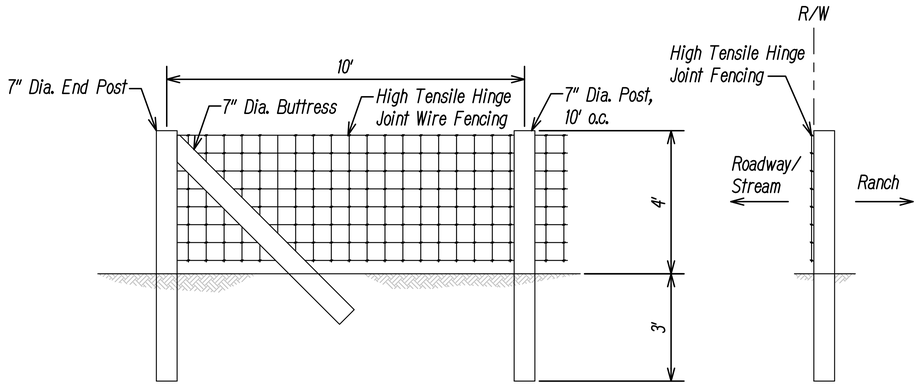


Notes:
1. Concrete Shall Be Class A Concrete.
2. All Exposed Corners shall Be Chamfered 3/4" x 3/4".

CUT-OFF WALL DETAIL
Scale 3/16"=1'-0"

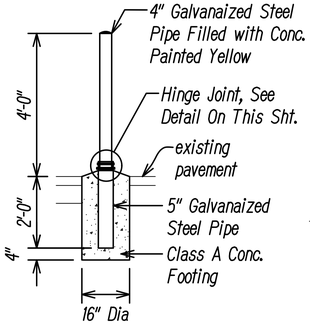


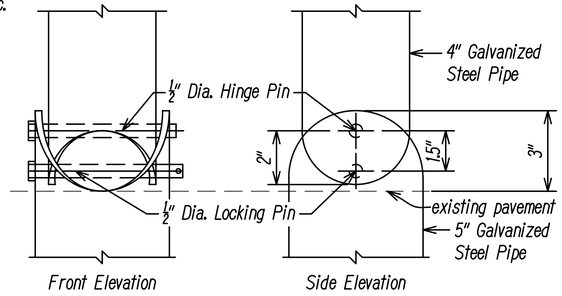
BOLLARD DETAIL
SCALE: 1/2"=1'-0"



ELEVATION SECTION

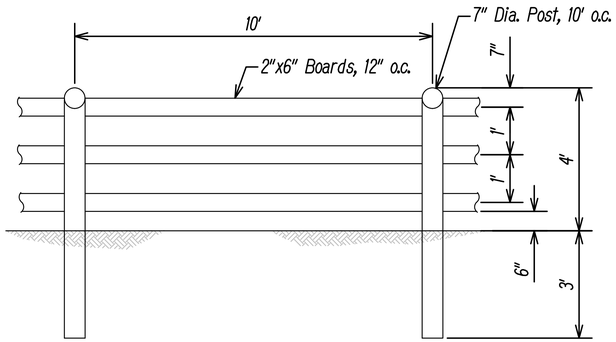
HIGH TENSILE HINGE JOINT FENCE DETAIL
Scale: 1"=2'



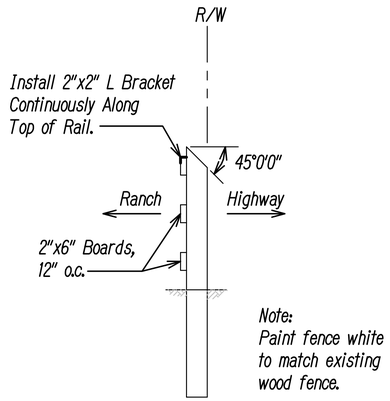


HINGE JOINT DETAIL

FOLDING BOLLARD DETAIL
SCALE: 1/2"=1'-0"

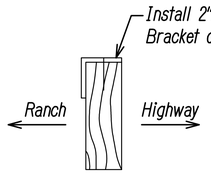


ELEVATION



Note:
Paint fence white to match existing wood fence.

SECTION



PLANK DETAIL

WOODEN FENCE DETAIL
Scale: 1"=2'

DATE		REVISION

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

MISCELLANEOUS DETAILS

KAMEHAMEHA HIGHWAY DRAINAGE AND SAFETY IMPROVEMENTS
Vicinity of Laniakea Beach (MP 3.06 to MP 3.54)
Project No. 83B-01-09

Scale: As Shown Date: December 2022

DEXTER S. EJU LICENSED PROFESSIONAL ENGINEER No. 4739-C HAWAII, U.S.A.

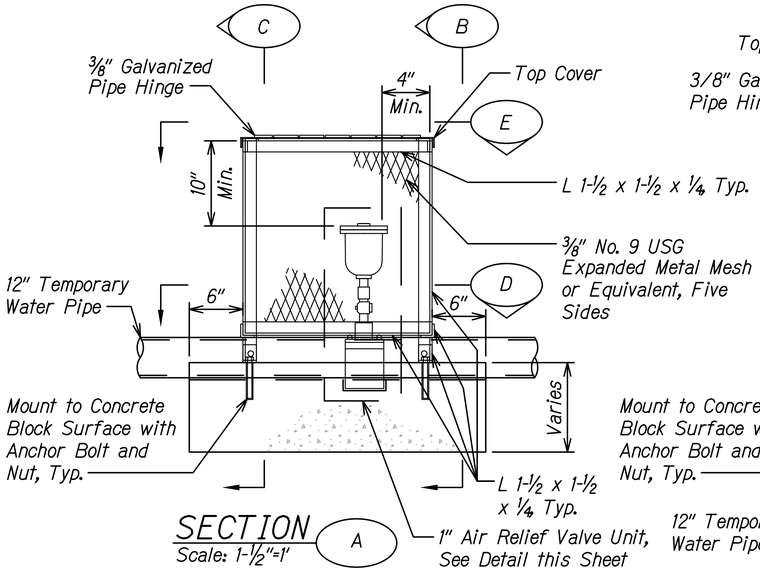
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.

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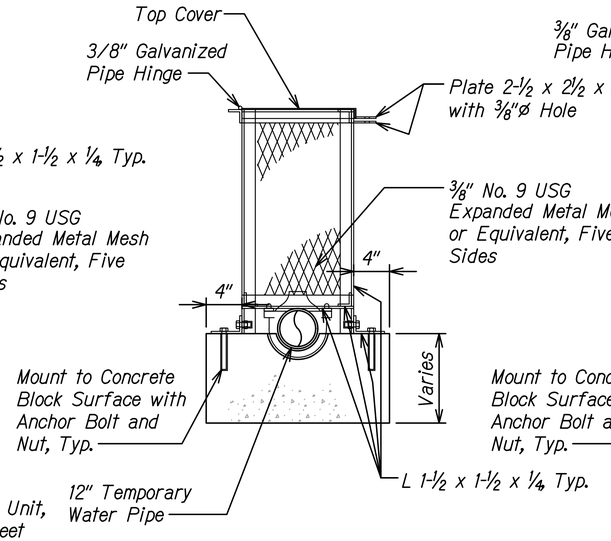
SHEET No. C-20 OF 32 SHEETS

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

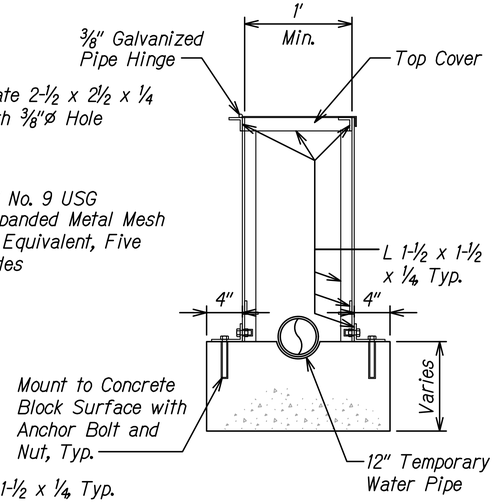
FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83B-01-09	2023	54	231



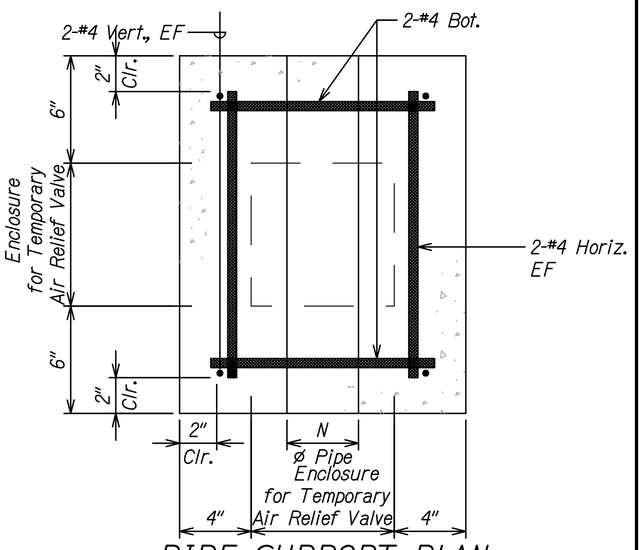
SECTION A
Scale: 1-1/2"=1'



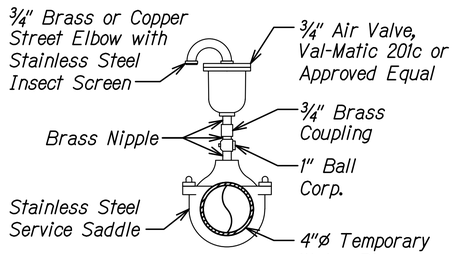
SECTION B
Scale: 1-1/2"=1'



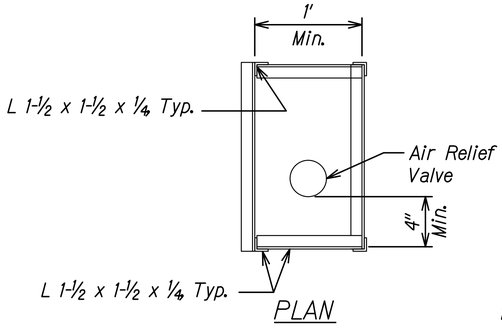
SECTION C
Scale: 1-1/2"=1'



PIPE SUPPORT PLAN
Not to Scale

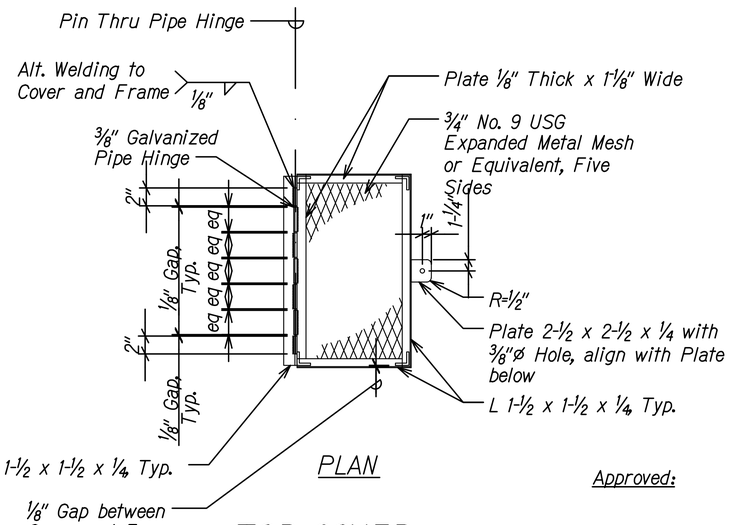


3/4" AIR RELIEF VALVE UNIT DETAIL
Not to Scale



PLAN

TOP FRAME
Scale: 1-1/2"=1' D

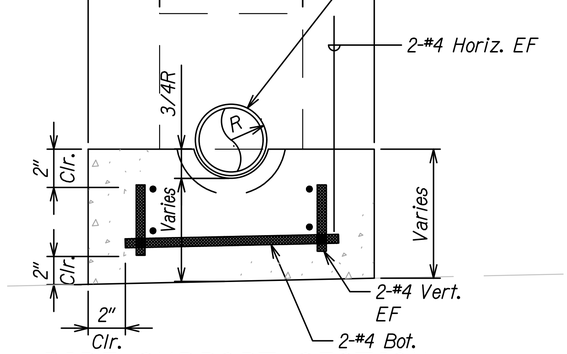


PLAN

TOP COVER
Scale: 1-1/2"=1' E

NOTES:

1. All angle connections shall be 3/16" fillet welds unless noted otherwise.
2. Expanded metal mesh shall be welded to inside edges of angles then hot-dip galvanize entire enclosure.
3. Pin thru pipe hinge shall be inserted and welded to exterior 2" pipes after hot-dip galvanizing arv enclosure and cover. Apply zinc-rich paint to welded area.



PIPE SUPPORT SECTION
Not to Scale

Approved:

Manager and Chief Engineer, BWS Date
(For Work Affecting BWS Facilitiese in City/State R/W and BWS Easements Only)

DATE	REVISION

DEXTER S. EJI
LICENSED PROFESSIONAL ENGINEER
No. 4739-C
HAWAII, U.S.A.

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SIGNATURE 04/30/24 EXPIRATION DATE OF THE LICENSE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

TEMPORARY AIR RELIEF VALVE ENCLOSURE DETAILS

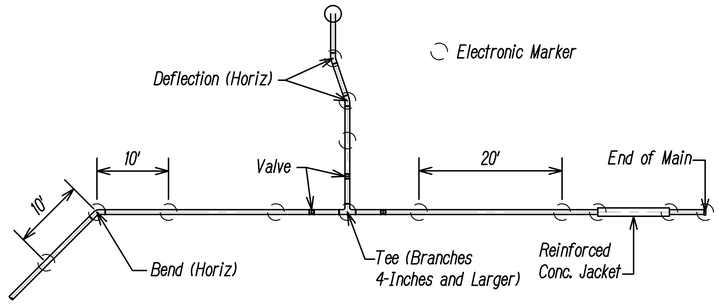
KAMEHAMEHA HIGHWAY DRAINAGE AND SAFETY IMPROVEMENTS
Vicinity of Laniakea Beach (MP 3.06 to MP 3.54)
Project No. 83B-01-09

Scale: As Shown Date: December 2022

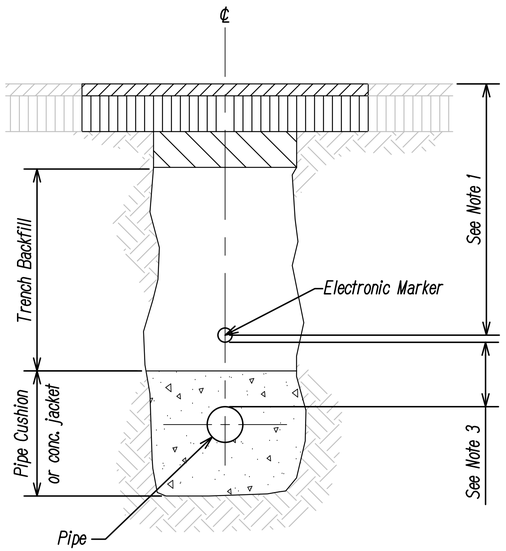
SHEET No. C-21 OF 32 SHEETS

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

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83B-01-09	2023	55	231



PLAN VIEW



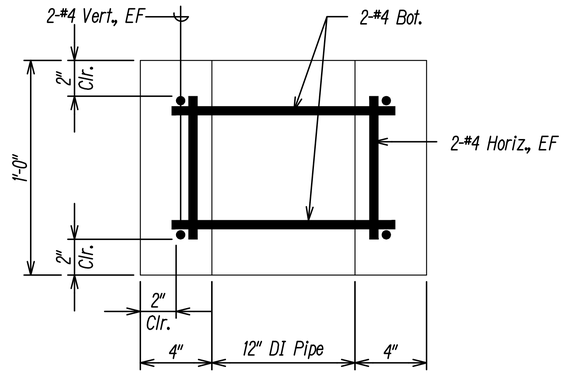
SECTION VIEW

TYPICAL ELECTRONIC MARKER INSTALLATION

Not to Scale

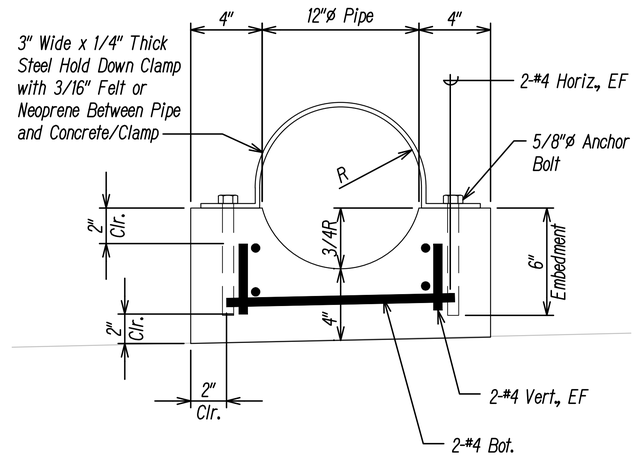
Note:

1. Install electronic marker over centerline of pipe at a minimum depth of 2 feet and a maximum depth of 3 feet from finish grade.
2. Install trench backfill and pipe cushion material in accordance to the plans and specifications.
3. Install electronic marker at a minimum clearance of 6-inches above the pipe or concrete jacket.



PIPE SUPPORT PLAN

Scale: 3" = 1'-0"



PIPE SUPPORT SECTION

Scale: 3" = 1'-0"

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

Approved:

Manager and Chief Engineer, BWS — Date
(For Work Affecting BWS Facilitiese in City/State R/W and BWS Easements Only)

DATE	REVISION

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

DEXTER S. EJI
LICENSED PROFESSIONAL ENGINEER
No. 4739-C
HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.

SIGNATURE 04/30/24 EXPIRATION DATE OF THE LICENSE

PIPE SUPPORT DETAIL

KAMEHAMEHA HIGHWAY DRAINAGE AND SAFETY IMPROVEMENTS
Vicinity of Laniakea Beach (MP 3.06 to MP 3.54)
Project No. 83B-01-09

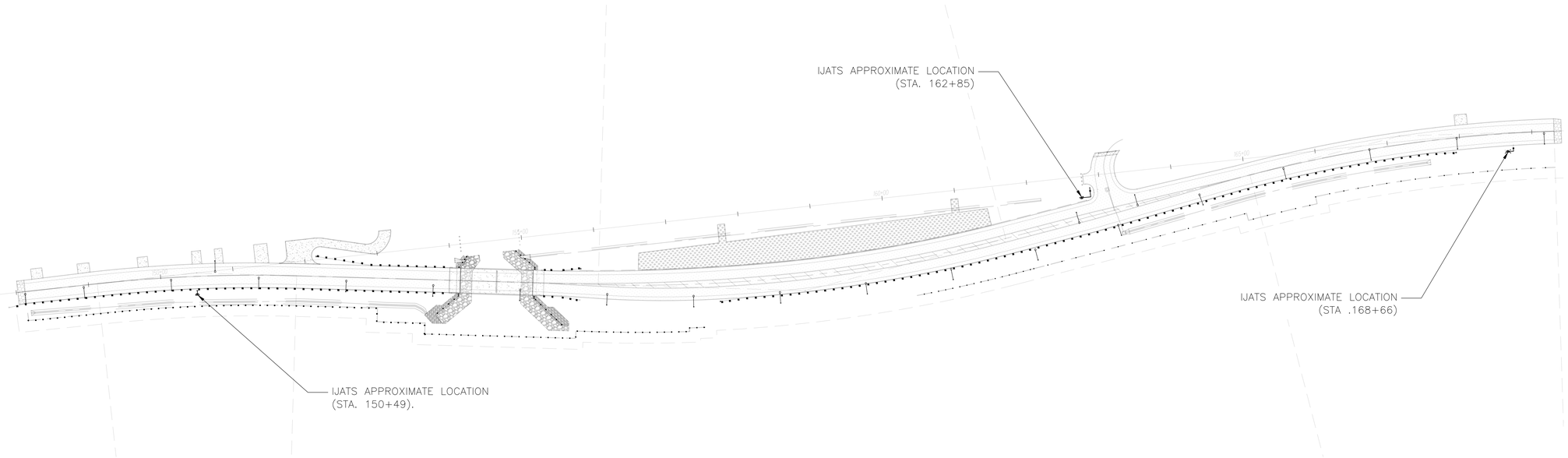
Scale: As Shown Date: December 2022

SHEET No. C-22 OF 32 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83B-01-09	2023	56	231

NOTES:

1. ALL TEST STATIONS TO BE LOCATED BEHIND NEAREST CURB AND WITHIN 5 FT OF FIRE HYDRANT WHEN AVAILABLE.
2. ALL TEST STATIONS TO BE LOCATED IN AREAS NOT SUBJECT TO VEHICULAR TRAFFIC, SUCH AS SIDEWALKS.
3. IJTS STATIONING TAKEN FROM INSULATING JOINT.
4. FPTS STATIONING TAKEN FROM FOREIGN PIPELINE CROSSING.
5. ATS STATIONING TAKEN FROM FIRE HYDRANT STATIONING. PLACE TEST STATION BEHIND CURB WITHIN 3 FEET OF FIRE HYDRANT.
6. ELECTRICALLY ISOLATE ALL METALLIC LATERAL PIPING (INCLUDING ARVs) FROM PROJECT PIPELINES. IF METALLIC LATERAL PIPING IS NOT PROPERLY ISOLATED FROM THE PROJECT PIPELINES, THEN THE CATHODIC PROTECTION SYSTEM COULD BE PREMATURELY DEPLETED.
7. THE CATHODIC PROTECTION SYSTEM DESIGN IS DEPENDENT ON THE DIP HAVING A BONDED DIELECTRIC COATING PER THE BWS WATER SYSTEM EXTERNAL CORROSION CONTROL STANDARDS VOLUME 3, DATED 2021. IF THE DIP DOES NOT HAVE A BONDED DIELECTRIC COATING, THEN THE CATHODIC PROTECTION SYSTEM COULD BE PREMATURELY DEPLETED.



TEST STATION LOCATION PLAN VIEW

SCALE: 5/32" = 1'-0"

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

APPROVED:

MANAGER AND CHIEF ENGINEERING, BWS DATE
(FOR WORK AFFECTING BWS FACILITIES IN CITY/STATE RIGHT OF WAY AND BWS EASMENT ONLY)

V&A
1000 Broadway, Suite 320
Oakland, CA 94607
Tel. (510) 903-6600, Fax (510) 903-6601
Project No. 23-0049

GLENN H WILLSON
LICENSED PROFESSIONAL ENGINEER
No. 11304-C
HAWAII, U.S.A.

DATE		REVISION

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

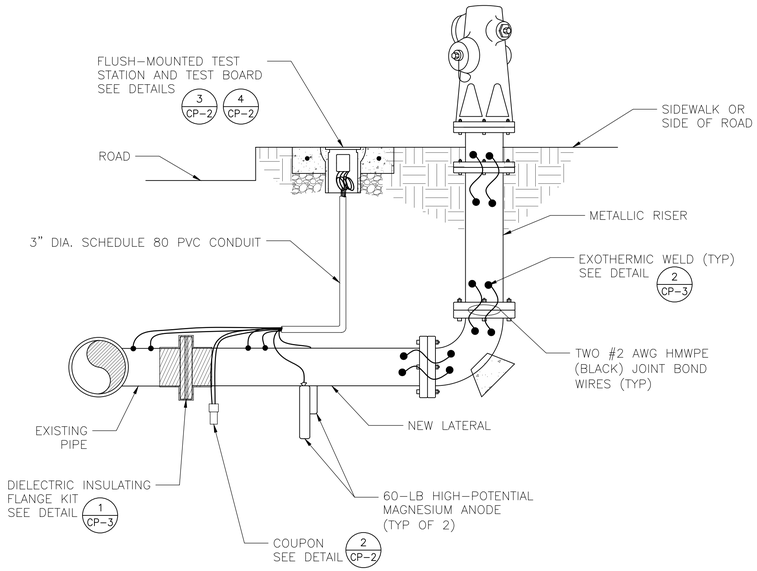
CATHODIC PROTECTION SITE PLAN
CP-1

KAMEHAMEHA HIGHWAY DRAINAGE AND SAFETY IMPROVEMENTS
Vicinity of Laniakea Beach (MP 3.06 to MP 3.54)
Project No. 83B-01-09

Scale:As Shown Date: May 2023

SHEET No. C-23 OF 32 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83B-01-09	2023	57	231

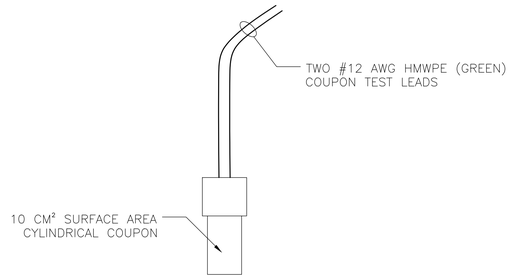


ISOLATED FIRE HYDRANT
SCALE: NTS

1
CP–2

NOTES:

1. NUMBER OF FLANGES MAY VARY. BOND TWO #2 AWG HMWPE (BLACK) JOINT BOND WIRES ACROSS ALL FLANGES.
2. ISOLATE EXISTING PIPE FROM NEW FIRE HYDRANT LATERAL WITH DIELECTRIC INSULATING FLANGE KIT.
3. COAT THE EXTERIOR OF THE INSULATING FLANGE WITH PETROLATUM WAX TAPE FOR A MINIMUM OF 3 FEET BEYOND THE GASKET WITH A MINIMUM OF 6 INCHES OF OVERLAP WITH THE FACTORY–APPLIED COATING ON THE PIPELINE.
4. PLACE TEST STATION WITHIN 5' OF FIRE HYDRANT.
5. TOP OF ANODE SHALL BE ALIGNED WITH THE BOTTOM OF THE PROJECT PIPELINE AND SPACED 5' FROM THE PIPELINE.
6. COUPON SHALL BE INSTALLED 4" TO 12" FROM PROJECT PIPELINE.

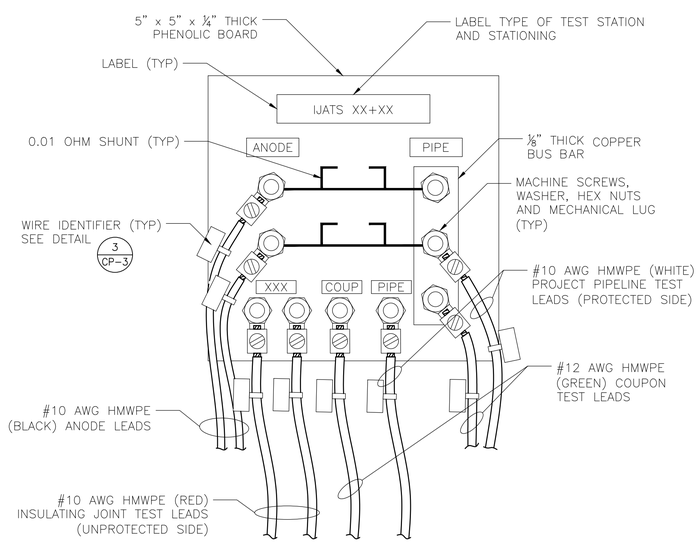


COUPON DETAIL
SCALE: NTS

2
CP–2

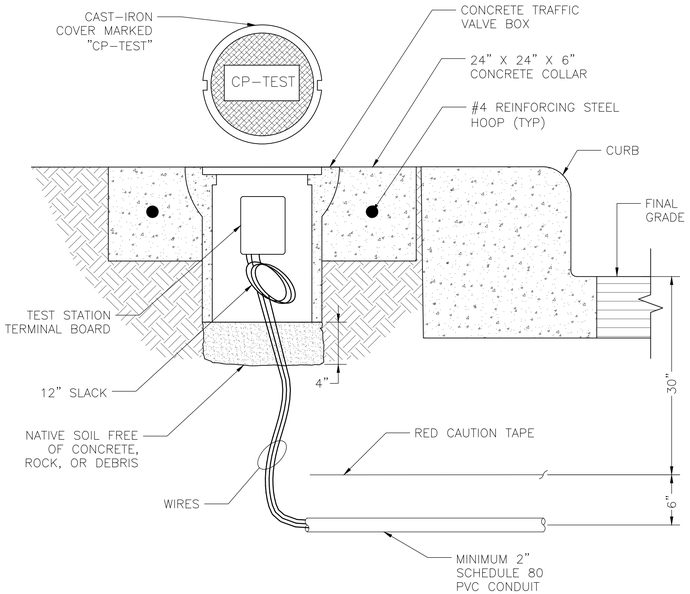
NOTE:

COUPON MATERIAL SHALL BE THE SAME AS THE PIPELINE.



INSULATING JOINT ANODE TEST STATION (IJATS) TERMINAL BOARD DETAIL
SCALE: NTS

3
CP–2



FLUSH–MOUNTED TEST STATION DETAIL
SCALE: NTS

4
CP–2

APPROVED:

MANAGER AND CHIEF ENGINEERING, BWS — DATE
(FOR WORK AFFECTING BWS FACILITIES IN CITY/STATE RIGHT OF WAY AND BWS EASMENT ONLY)

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

DATE		REVISION

V&A
1000 Broadway, Suite 320
Oakland, CA 94607
Tel. (510) 903-6600, Fax (510) 903-6601
Project No. 23-0049

GLENN H WILLSON
LICENSED PROFESSIONAL ENGINEER
No. 11304-C
HAWAII, USA

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

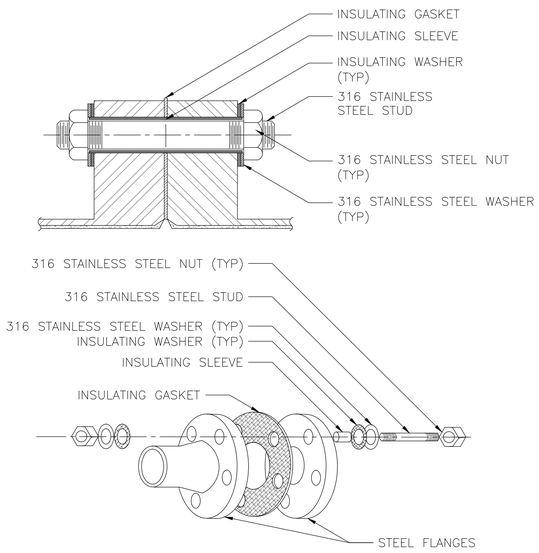
CATHODIC PROTECTION DETAILS (1 OF 2)
CP-2

KAMEHAMEHA HIGHWAY DRAINAGE AND SAFETY IMPROVEMENTS
Vicinity of Laniakea Beach (MP 3.06 to MP 3.54)
Project No. 83B-01-09

Scale: As Shown — Date: May 2023

SHEET No. C-24 OF 32 SHEETS

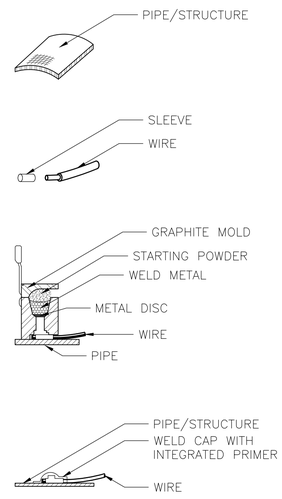
FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83B-01-09	2023	58	231



NOTE:

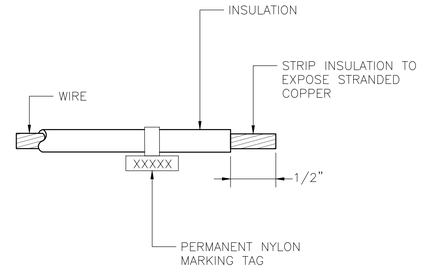
PETROLATUM WAX TAPE NOT SHOWN

DIELECTRIC INSULATING FLANGE KIT DETAIL WITH SECTION VIEW (1 / CP-3)
SCALE: NTS



1. ALL WELDS SHALL BE 6" APART AT MINIMUM.
2. GRIND PIPE/STRUCTURE TO BARE METAL AND CLEAN SURFACE. GROUND AREA SHALL BE LARGE ENOUGH FOR EXOTHERMIC WELD AND SMALL ENOUGH TO BE COMPLETELY COVERED BY WELD CAP.
3. STRIP INSULATION FROM WIRE AND ATTACH SLEEVE.
4. HOLD MOLD FIRMLY WITH OPENING AWAY FROM OPERATOR. IGNITE WITH FLINT GUN. REMOVE SLAG FROM CONNECTION WITH CHIPPING HAMMER. TEST WELD WITH 22 OZ HAMMER.
5. COVER CONNECTION WITH WELD CAP WITH INTEGRATED PRIMER. REPAIR ALL DAMAGE TO COATING AND LINING IN ACCORDANCE WITH COATING AND LINING MANUFACTURER'S RECOMMENDATIONS.

EXOTHERMIC WELD DETAIL FOR DUCTILE IRON PIPE (2 / CP-3)
SCALE: NTS



WIRE IDENTIFIER SCHEDULE	
STRUCTURE	LABEL
12" WATER	12" W
6" WATER	6" W
GALVANIC ANODE	ANODE
COUPON	COUP

WIRE IDENTIFIER DETAIL (3 / CP-3)
SCALE: NTS

APPROVED:

MANAGER AND CHIEF ENGINEERING, BWS — DATE
(FOR WORK AFFECTING BWS FACILITIES IN CITY/STATE RIGHT OF WAY AND BWS EASMENT ONLY)

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

V&A
1000 Broadway, Suite 320
Oakland, CA 94607
Tel. (510) 903-6600, Fax (510) 903-6601
Project No. 23-0049

GLENN H WILLSON LICENSED PROFESSIONAL ENGINEER No. 11304-C HAWAII, U.S.A.

DATE		REVISION

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

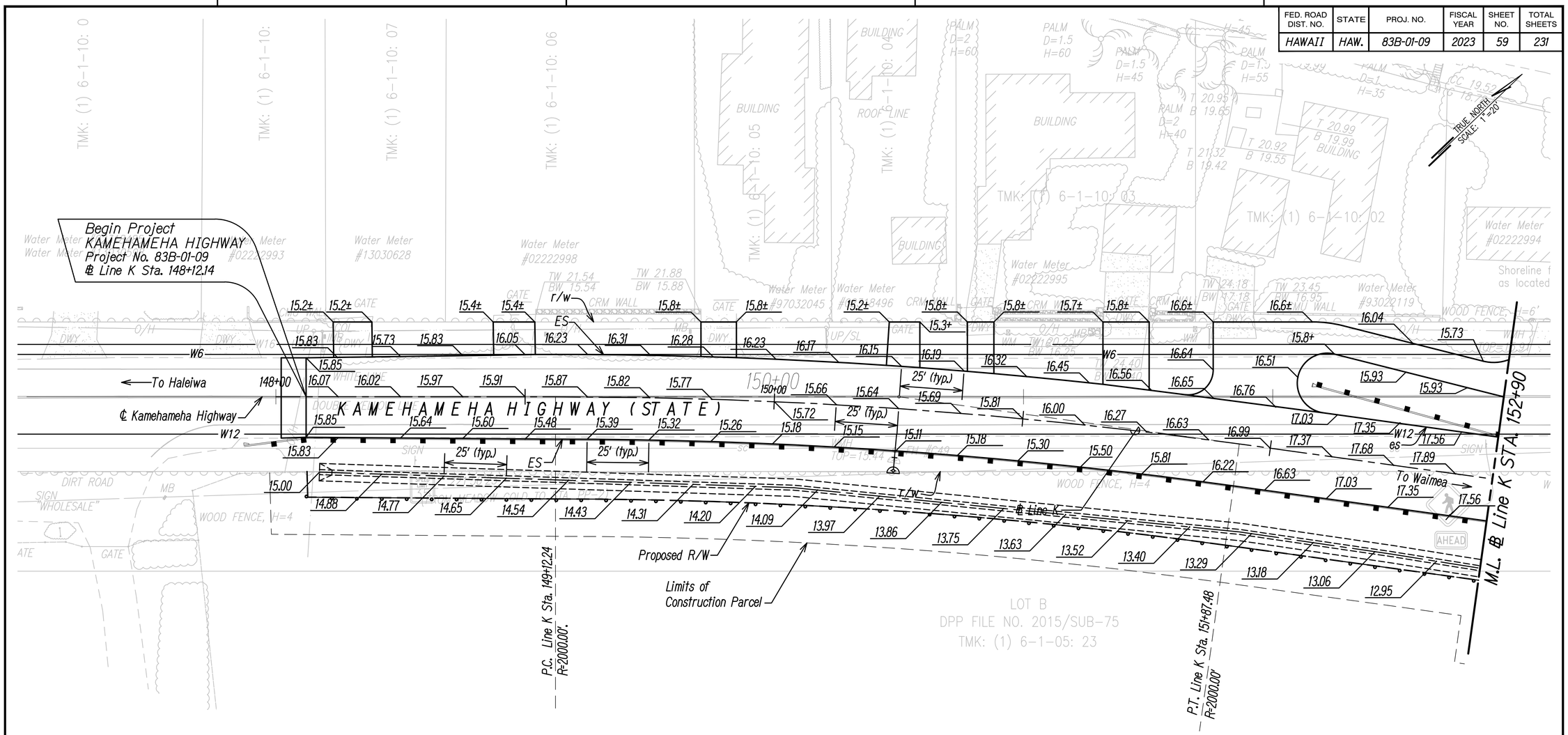
CATHODIC PROTECTION DETAILS (2 OF 2)
CP-3

KAMEHAMEHA HIGHWAY DRAINAGE AND SAFETY IMPROVEMENTS
Vicinity of Laniakea Beach (MP 3.06 to MP 3.54)
Project No. 83B-01-09

Scale: As Shown — Date: May 2023

SHEET No. C-25 OF 32 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83B-01-09	2023	59	231



DATE		REVISION

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

SPOT ELEVATION PLAN

KAMEHAMEHA HIGHWAY DRAINAGE AND SAFETY IMPROVEMENTS
Vicinity of Laniakea Beach (MP 3.06 to MP 3.54)
Project No. 83B-01-09

Scale: 1"=20' Date: December 2022

GRAPHIC SCALE
1" = 20'
20 0 20 40
SCALE IN FEET

DEXTER S. EJI
LICENSED PROFESSIONAL ENGINEER
No. 4739-C
HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.

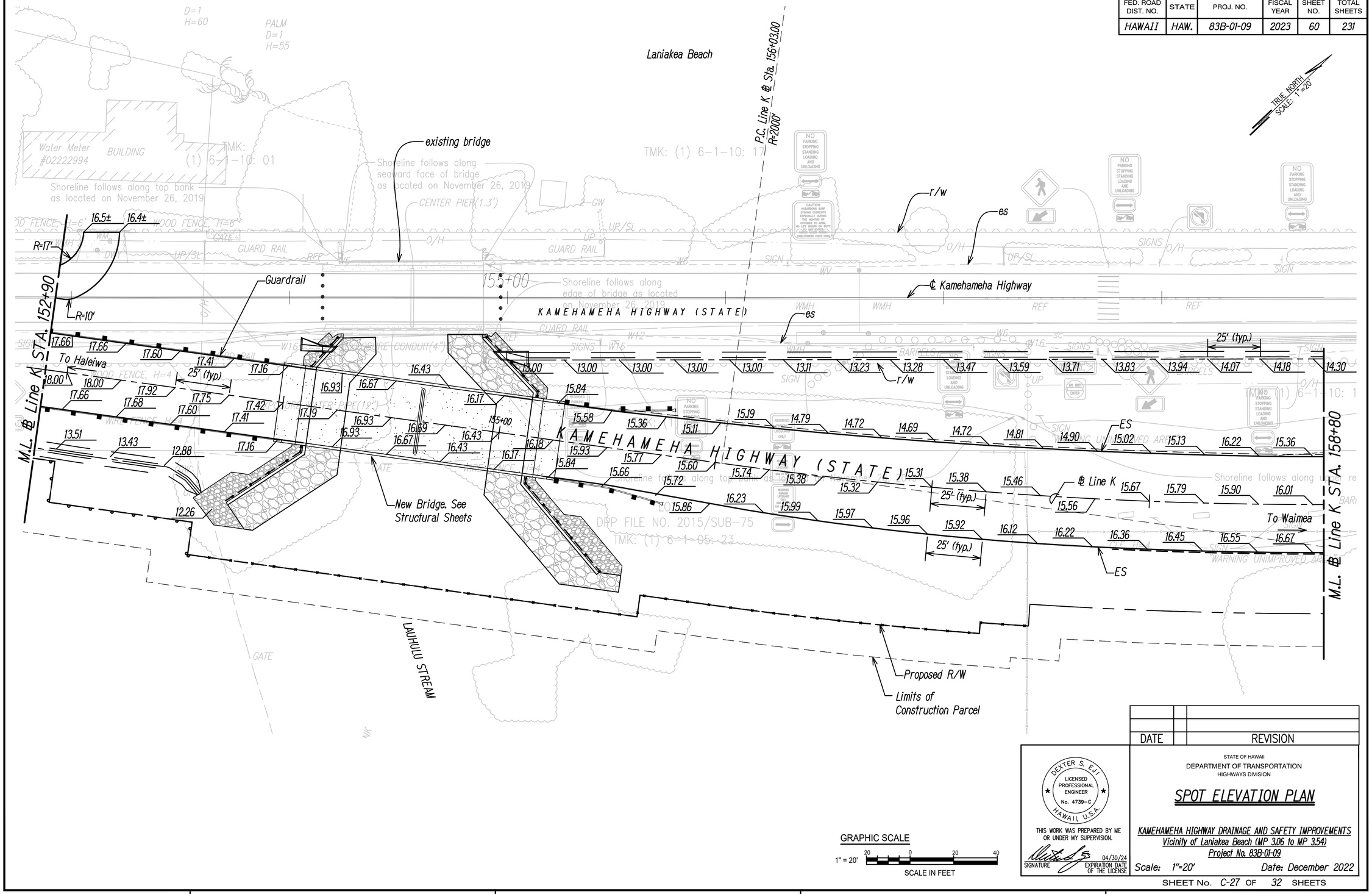
SIGNATURE 04/30/24 EXPIRATION DATE OF THE LICENSE

SHEET No. C-26 OF 32 SHEETS

ORIGINAL PLAN
NOTE BOOK
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FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83B-01-09	2023	60	231



DATE		REVISION

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

SPOT ELEVATION PLAN

KAMEHAMEHA HIGHWAY DRAINAGE AND SAFETY IMPROVEMENTS
Vicinity of Laniakea Beach (MP 3.06 to MP 3.54)
Project No. 83B-01-09

Scale: 1"=20' Date: December 2022

DEXTER S. EJI
LICENSED PROFESSIONAL ENGINEER
No. 4739-C
HAWAII, U.S.A.

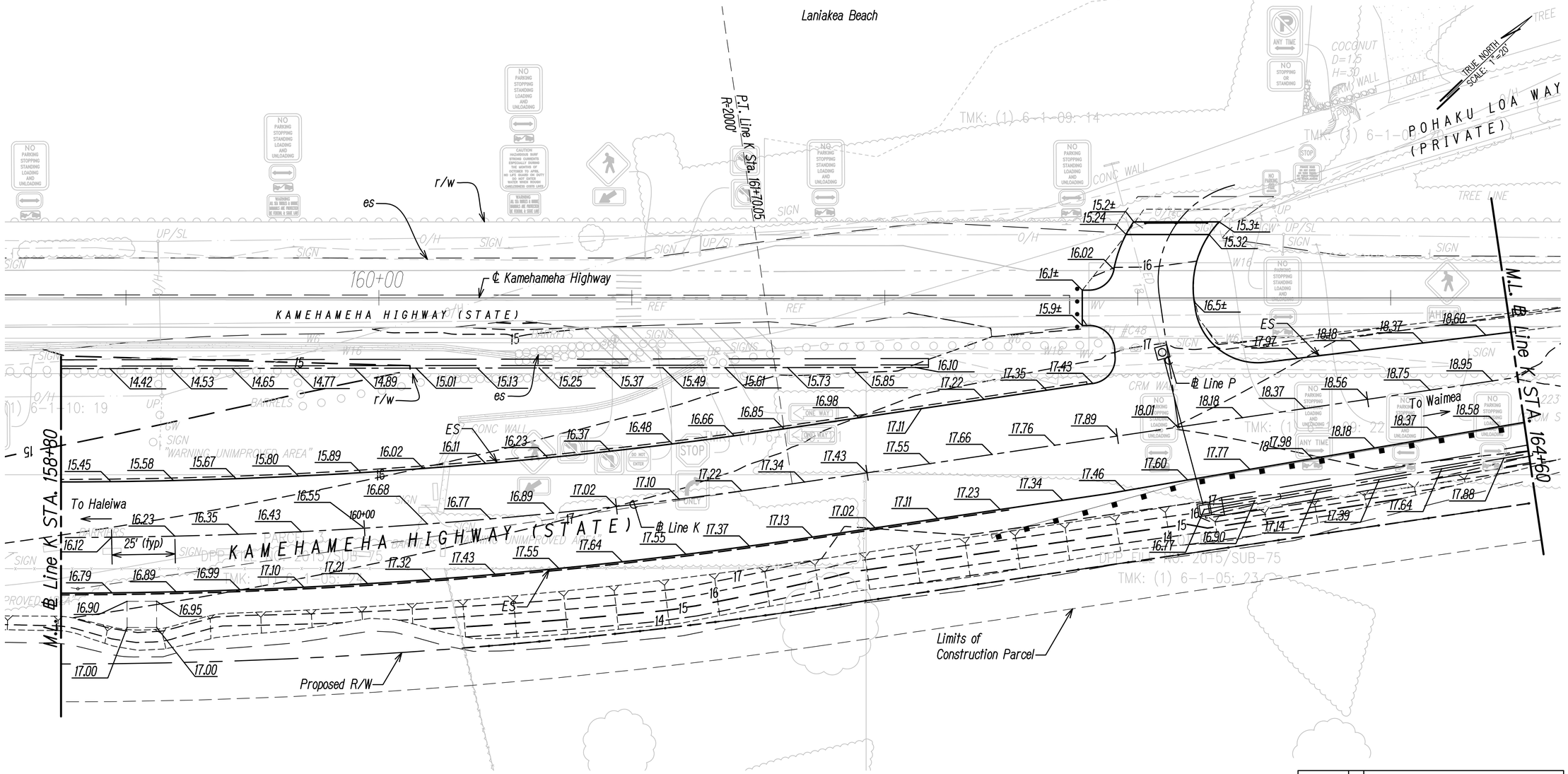
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.

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ORIGINAL PLAN
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SHEET No. C-27 OF 32 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83B-01-09	2023	61	231



GRAPHIC SCALE

1" = 20'

20 0 20 40

SCALE IN FEET

DATE		REVISION

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

SPOT ELEVATION PLAN

KAMEHAMEHA HIGHWAY DRAINAGE AND SAFETY IMPROVEMENTS
Vicinity of Laniakea Beach (MP 3.06 to MP 3.54)
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Scale: 1"=20' Date: December 2022

DEXTER S. EJI
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No. 4739-C
HAWAII, U.S.A.

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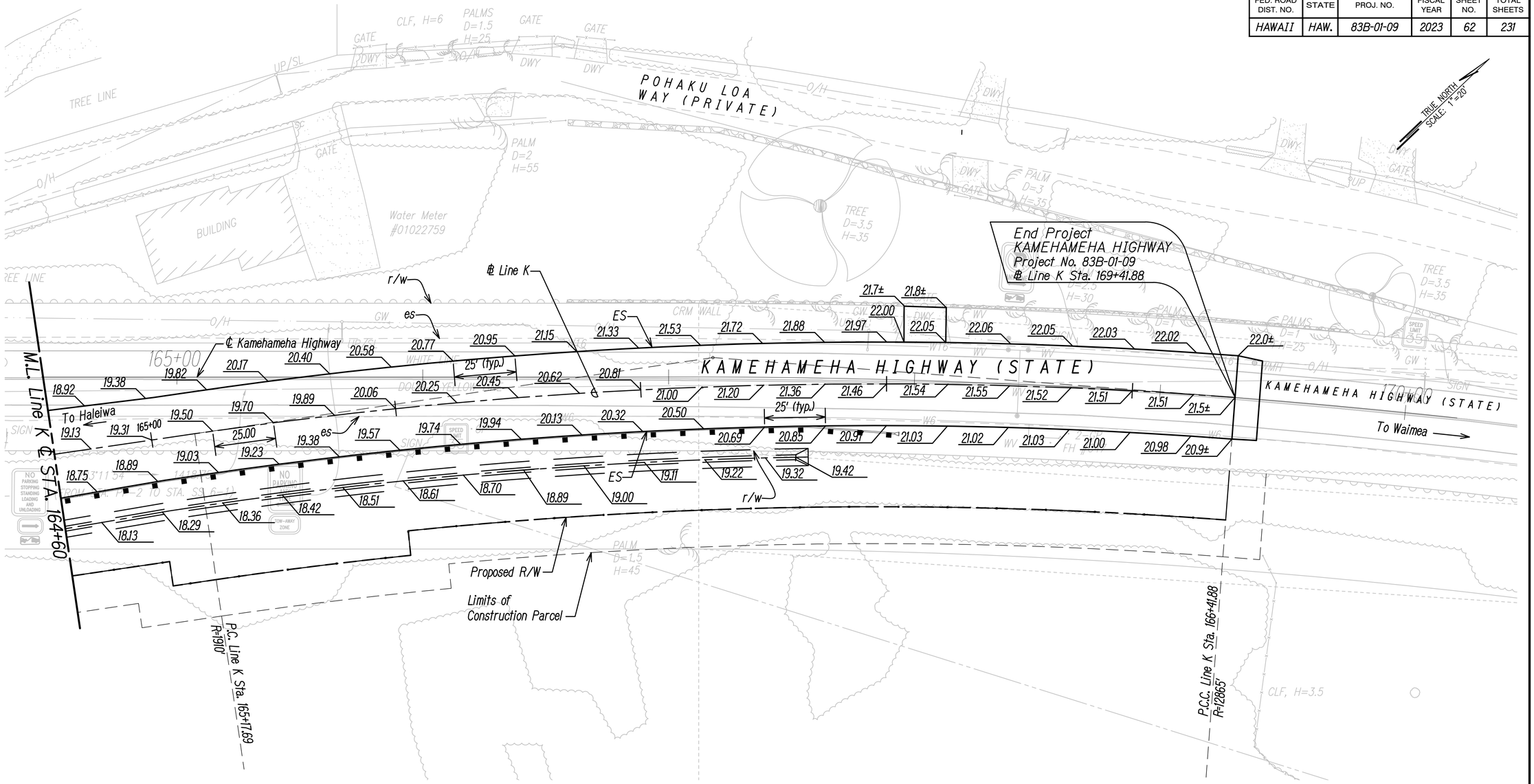
SIGNATURE 04/30/24 EXPIRATION DATE OF THE LICENSE

SHEET No. C-28 OF 32 SHEETS

ORIGINAL PLAN
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FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83B-01-09	2023	62	231



DATE		REVISION

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DATE

GRAPHIC SCALE
1" = 20'
20 0 20 40
SCALE IN FEET

DEXTER S. EJI
LICENSED PROFESSIONAL ENGINEER
No. 4739-C
HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.

SIGNATURE
04/30/24
EXPIRATION DATE OF THE LICENSE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

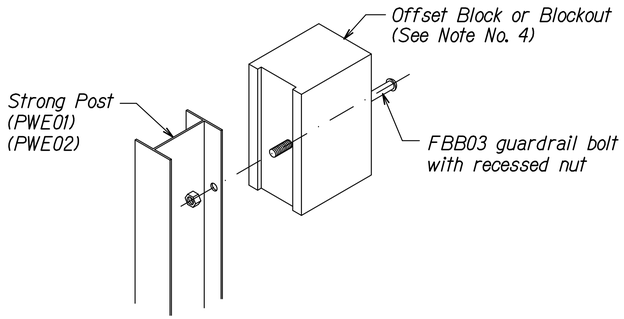
SPOT ELEVATION PLAN

KAMEHAMEHA HIGHWAY DRAINAGE AND SAFETY IMPROVEMENTS
Vicinity of Laniakea Beach (MP 3.06 to MP 3.54)
Project No. 83B-01-09

Scale: 1"=20' Date: December 2022

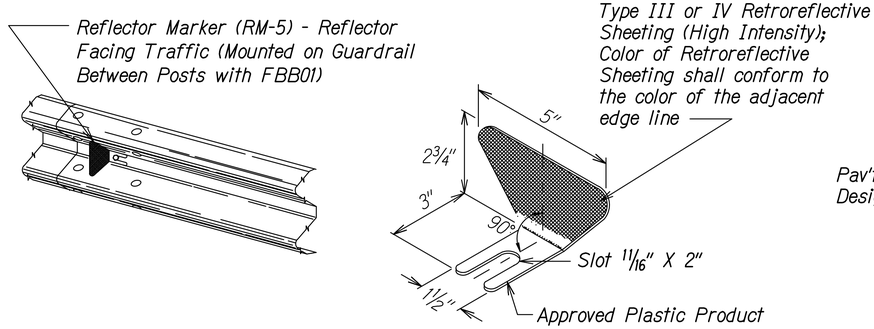
SHEET No. C-29 OF 32 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83B-01-09	2023	63	231



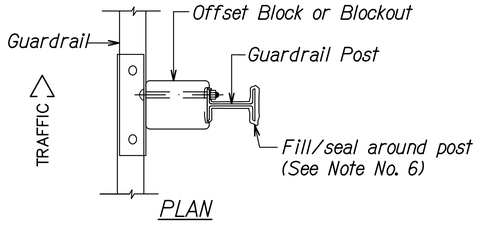
Exploded View
(Rail and washer not shown)

STEEL POST AND BLOCK DETAIL

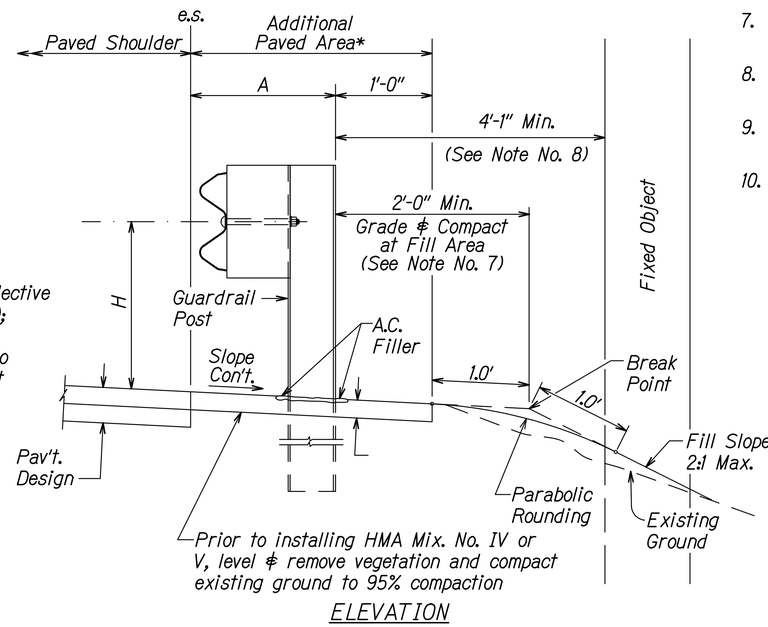


REFLECTOR MARKER (RM-5) DETAIL AND TYPICAL INSTALLATION

GUARDRAIL TYPE	DIMENSION	
	H	A
MGS w/ Standard 8" Offset Block	2'-1"	1'-6"
MGS w/ No Blockout	2'-7/8"	9¼"



PLAN



ELEVATION

TYPICAL GUARDRAIL INSTALLATION

GENERAL NOTES

1. All hardware, posts and fasteners shall be hot-dip zinc coated galvanized after fabrication. No punching, drilling or cutting will be permitted after galvanizing.
2. Where conditions require, special post lengths in increments of 6 inches may be specified by the Engineer.
3. All fasteners, posts, and rail elements (i.e. FBB03, PWE01, RWM04b, etc.) shall conform to the latest edition and amendments of "A Guide to Standardized Highway Barrier Rail Hardware", a report prepared and approved by the AASHTO-AGC-ARTBA Joint Cooperative Committee, Subcommittee On New Highway Materials, Task Force 13 Report. Dimensions of fastners, posts and rail elements have been converted from metric units into their present form.
4. The Blockout or Offset Block shall be approved by the State.
5. All new guardrail systems (system consists of total length of guardrail including both end treatments) shall include the Additional Paved Area.
6. After the guardrail posts are installed in the paved area, the Contractor shall fill/seal around each guardrail post and all cracks in the paved area caused during the guardrail post installation. If required by the inspector/engineer, the Contractor shall tamper the paved area around the guardrail post prior to filling/sealing. All costs associated with this work shall not be paid for separately, but shall be considered incidental to the various guardrail items.
7. When standards for the fill slope area cannot be met, a site specific, engineer approved design may be used.
8. Minimum working width (clear distance) between back of MGS post to any fixed object is 4'-1" (49").
9. New Hot Mix Asphalt (HMA) pavement at guardrails shall extend 6 feet longitudinally beyond terminal ends.
10. Reflector Markers (RM-5) mounted on guardrails shall be spaced every 25 feet. RM-5's shall not be installed on Terminal Sections. Furnishing and installing of each RM-5 shall be considered incidental to the guardrail system.

ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

GUARDRAIL DETAILS & NOTES

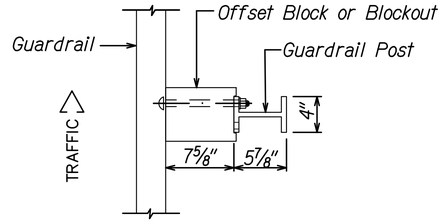
KAMEHAMEHA HIGHWAY DRAINAGE AND SAFETY IMPROVEMENTS
Vicinity of Laniakea Beach (MP 3.06 to MP 3.54)
Project No. 83B-01-09

Scale: NTS Date: December 2022

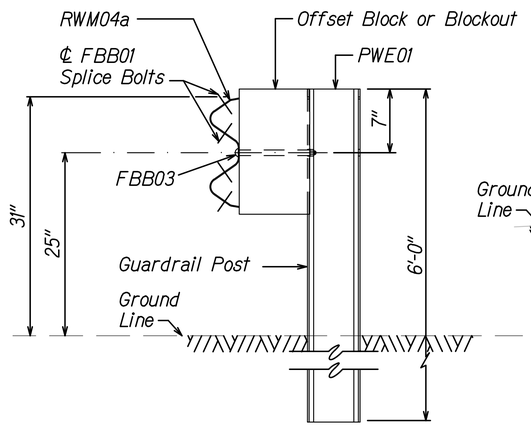
SHEET No. C-30 OF 32 SHEETS

05/03/18 D:\us72\Eric\1\Standards\Traffic Guardrail Standards\archive\mt_te50revd.dgn

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83B-01-09	2023	64	231

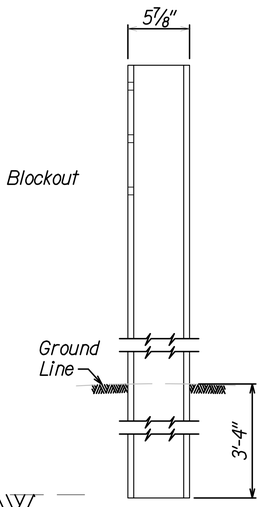


PLAN

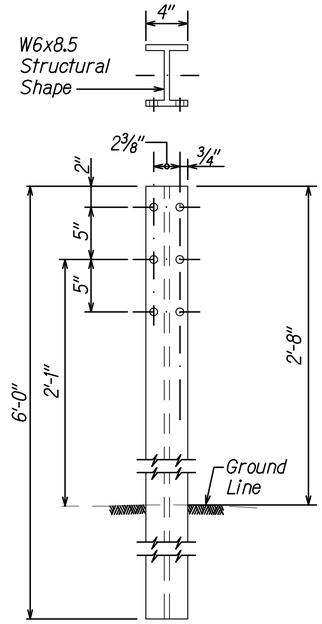


SECTION A-A

NOTE:
All Holes are
¾" Dia.

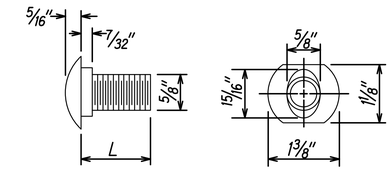


SIDE

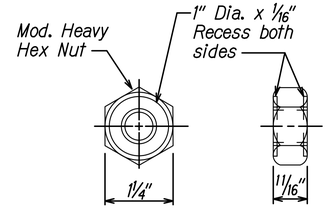


FRONT

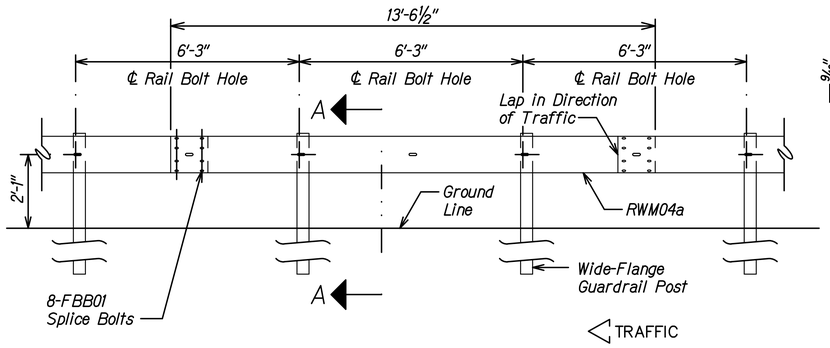
WIDE-FLANGED GUARDRAIL POST (PWE01)



DESIGNATOR	L
FBB01	1⅜"
FBB02	2"
FBB03	10"



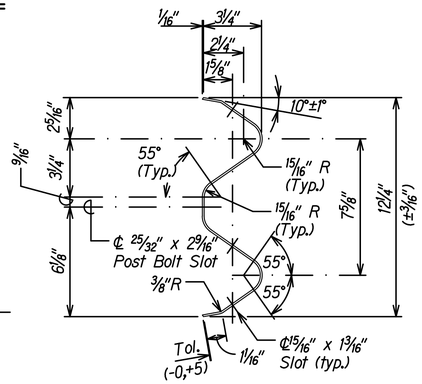
GUARDRAIL BOLTS AND RECESSED NUT

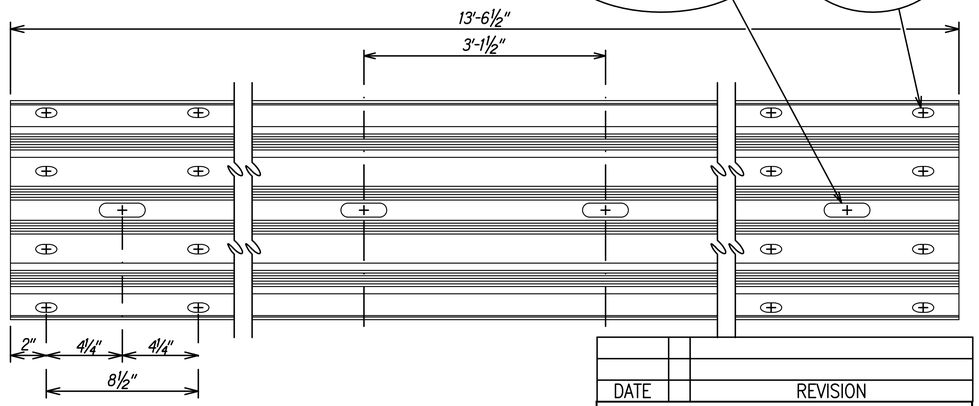


ELEVATION

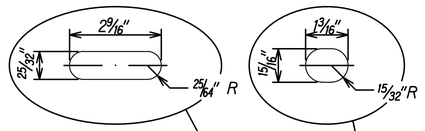
MIDWEST GUARDRAIL SYSTEM WITH STANDARD 8" OFFSET BLOCK (SGR47)

DESIGNATOR	BASE METAL THICKNESS
RWM04a	12 Gauge





4 SPACE W-BEAM GUARDRAIL (RWM04a)



DATE		REVISION

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

31" W-BEAM GUARDRAIL WITH STANDARD 8" OFFSET BLOCK

KAMEHAMEHA HIGHWAY DRAINAGE AND SAFETY IMPROVEMENTS
Vicinity of Laniakea Beach (MP 3.06 to MP 3.54)
Project No. 83B-01-09

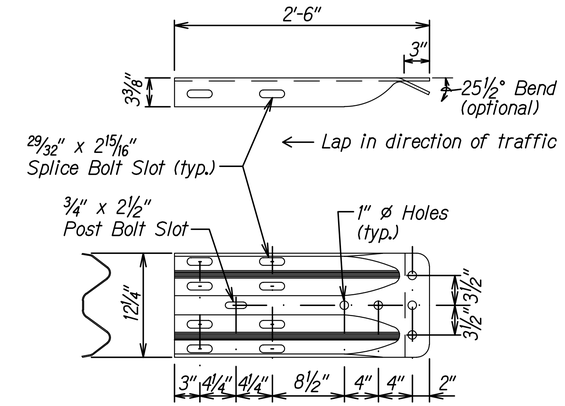
Scale: NTS Date: December 2022

SHEET No. C-31 OF 32 SHEETS

ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
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NOTE BOOK	TRACED BY	
	DESIGNED BY	
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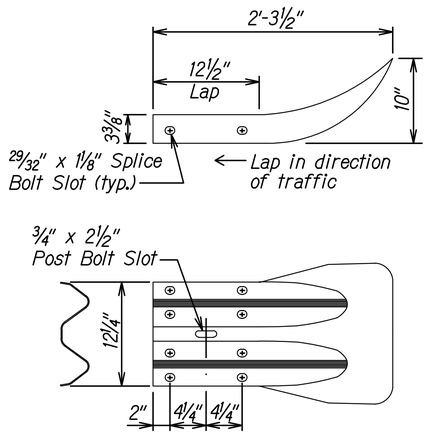
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FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83B-01-09	2023	65	231



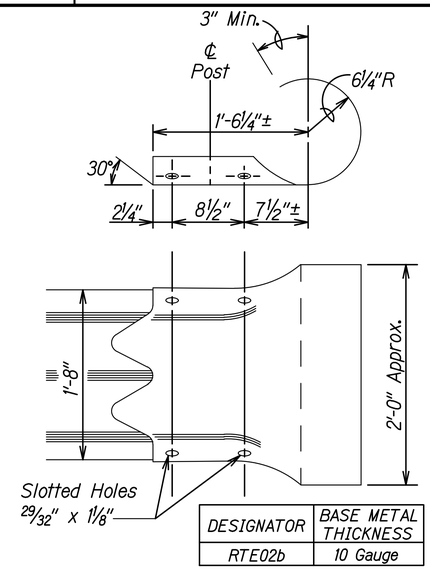
DESIGNATOR	BASE METAL THICKNESS
RWE02b	10 Gauge

W-BEAM TERMINAL CONNECTOR (RWE02b)



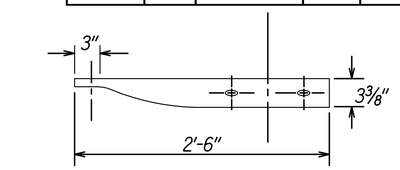
DESIGNATOR	BASE METAL THICKNESS
RWE01a	12 Gauge

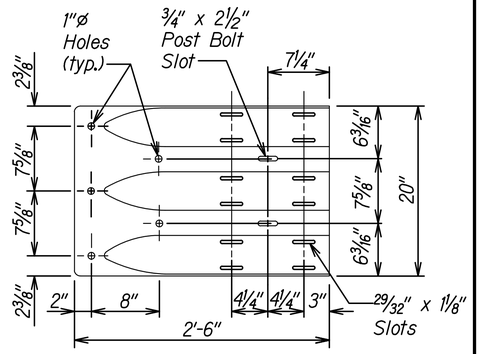
W-BEAM END SECTION (FLARED RWE01a)



DESIGNATOR	BASE METAL THICKNESS
RTE02b	10 Gauge

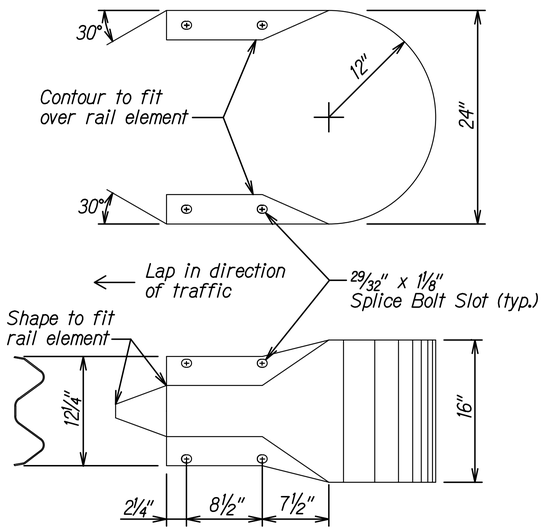
THRIE-BEAM SECTION (ROUNDED) (RTE02b)





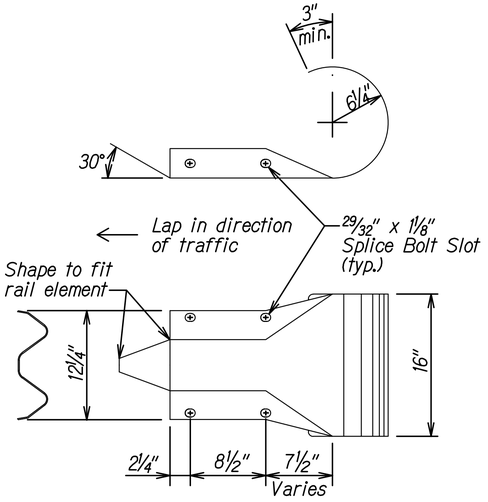
DESIGNATOR	BASE METAL THICKNESS
RTE01b	10 Gauge

THRIE-BEAM TERMINAL CONNECTOR (RTE01b)



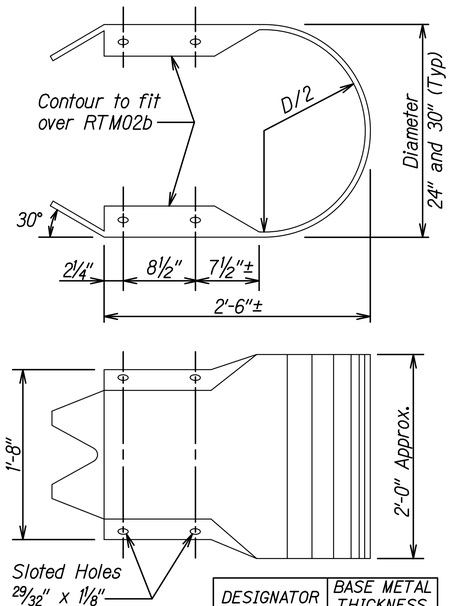
DESIGNATOR	BASE METAL THICKNESS
RWE06a	12 Gauge

W-BEAM END SECTION (BUFFER RWE06a)



DESIGNATOR	BASE METAL THICKNESS
RWE03a	12 Gauge

W-BEAM END SECTION (ROUNDED RWE03a)



DESIGNATOR	BASE METAL THICKNESS
RTE03b & RTE04b	10 Gauge

THRIE-BEAM END SECTION (BUFFER RTE03b or RTE04b)

DATE		REVISION

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

GUARDRAIL TERMINAL CONNECTORS AND END SECTIONS

KAMEHAMEHA HIGHWAY DRAINAGE AND SAFETY IMPROVEMENTS
Vicinity of Laniakea Beach (MP 3.06 to MP 3.54)
Project No. 83B-01-09

Scale: NTS Date: December 2022

SHEET No. C-32 OF 32 SHEETS

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	QUANTITIES BY	
	CHECKED BY	

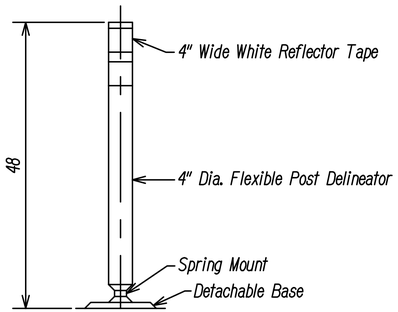
12/14/20

Dan's Excel standards/Traffic Guardrail Standards archived.dgn

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83B-01-09	2023	66	231

NOTES

1. Layout of pavement markings and striping shall be done by the Contractor and approved by the Engineer prior to any installation work.
2. Existing pavement markings not incorporated in the final traffic pattern shall be removed as directed by the Engineer. The costs shall be incidental to the various pavement marking items.
3. Final locations of all signs shall be approved by the Engineer prior to any installation work.
4. Existing signs not shown on these plans shall remain as posted unless otherwise directed by the Engineer. Removal and disposal of existing signs and/or posts as designated on these plans shall be incidental to the various signing items.
5. All pavement striping shall be as noted on the legend or plans.
6. All preformed pavement marking tapes over existing pavement shall be applied with an approved primer as recommended by the tape's manufacturer and as approved by the Engineer. The primer shall be allowed to dry to the tacky stage prior to tape application.
7. The Contractor shall erect advanced construction warning signs at the beginning and at the end of the project site. Construction warning signs shall be placed as indicated on the plans or as directed by the Engineer. The signs shall be kept in place for the duration of the project and shall be maintained by the Contractor. These signs shall be placed in addition to the required traffic control signs called for in Section 645 - Work Zone Traffic Control. The advanced construction warning signs shall be new and become the property of the State. The Contractor shall remove, clean and deliver the signs and posts as directed by the Engineer of the project.
8. Existing signs that are to be replaced shall not be removed until new signs are installed as replacements, or the messages are no longer necessary.
9. Backing for all new regulatory and warning signs shall not be spliced.
10. All sign panels shall conform to Section 630, 631 and 632 of Special Provisions, DOT standard plans, and the latest editions and amendments of the following FHWA publications:
    a. "Manual on Uniform Traffic Control Devices for Streets and Highways" (MUTCD)
11. Removal of existing signs, delineators and posts, as directed by the Engineer or as shown on the plans, shall be considered incidental to the various signing items.
12. Removed signs and posts shall be delivered to a State Highways baseyard as directed by the Engineer.
13. Contractor shall replace all Reflector Markers shown on the plans.
14. Final locations of all Stop Lines shall be approved by the Engineer prior to installation.



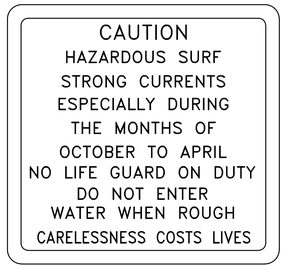
FLEXIBLE POST DELINEATOR DETAIL
N.T.S.

LEGEND

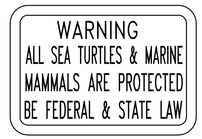
- 4" Double Solid Yellow Stripes with Type D Raised Pavement Markers @ 20'-0" o.c. (Tape, Type I or Thermoplastic Extrusion)
- 4" Double Solid Yellow Stripes with Type H Raised Pavement Markers @ 20'-0" o.c. (Tape, Type I or Thermoplastic Extrusion)
- 6" White Edge Stripe with Type C Raised Pavement Markers @ 40'-0" o.c. (Tape, Type II or Thermoplastic Extrusion)
- 12" Transverse Median Marking (Tape, Type II or Thermoplastic Extrusion)
- 12" Stop Bar
- New Sign
- New Flexible Post Delineator



Life Guard Parking Sign



Hazardous Surf Sign



Sea Turtle Warning Sign

Note:
Remove and Salvage existing Life Guard Parking Sign, Hazardous Surf Sign and Sea Turtle Warning sign. Re-install as shown on Signing and Pavement Markings Plan.

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

DATE		REVISION

DEXTER S. EJI
LICENSED PROFESSIONAL ENGINEER
No. 4739-C
HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.

SIGNATURE 04/30/24 EXPIRATION DATE OF THE LICENSE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

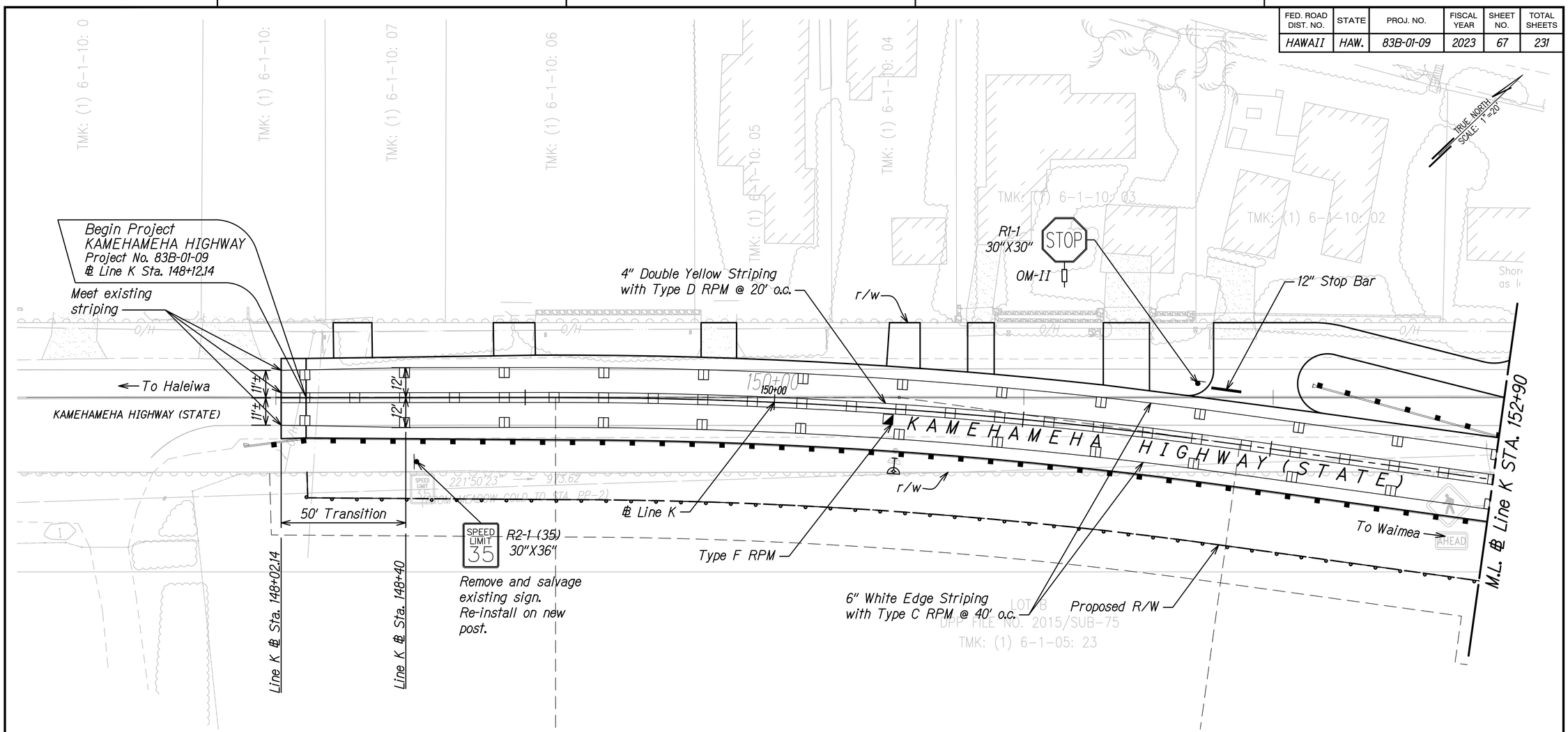
SIGNING AND PAVEMENT MARKINGS NOTES AND LEGEND

KAMEHAMEHA HIGHWAY DRAINAGE AND SAFETY IMPROVEMENTS
Vicinity of Laniakea Beach (MP 3.06 to MP 3.54)
Project No. 83B-01-09

Scale: None Date: December 2022

SHEET No. SS-01 OF 8 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83B-01-09	2023	67	231



ORIGINAL PLAN
NOTE BOOK
No.

SURVEY PLOTTED BY
DRAWN BY
TRACED BY
DESIGNED BY
QUANTITIES BY
CHECKED BY
DATE

GRAPHIC SCALE
1" = 20'
20 0 20 40
SCALE IN FEET

DATE		REVISION

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

DEXTER S. EJI
LICENSED PROFESSIONAL ENGINEER
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HAWAII, U.S.A.

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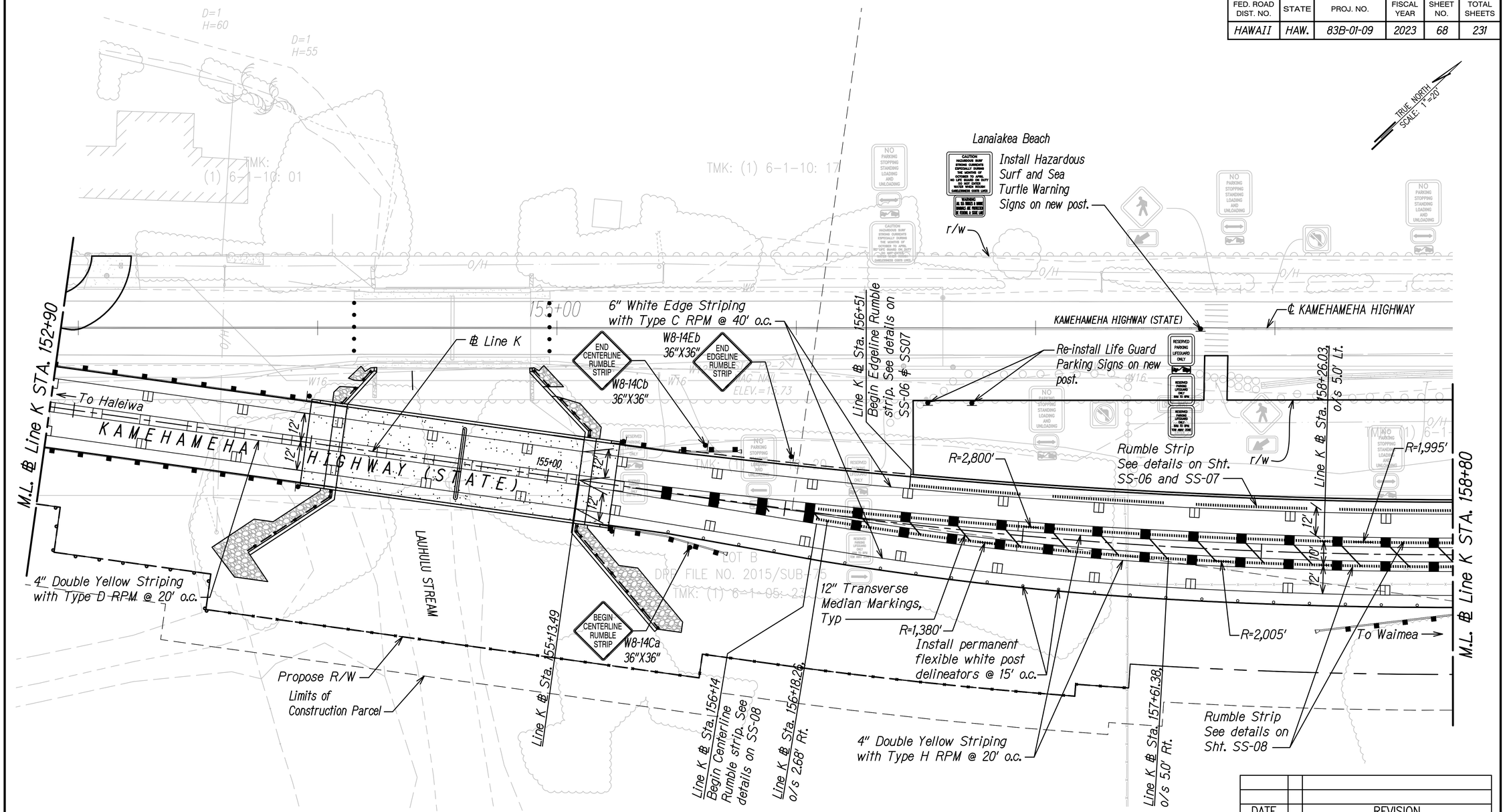
SIGNING AND PAVEMENT MARKINGS PLAN

KAMEHAMEHA HIGHWAY DRAINAGE AND SAFETY IMPROVEMENTS
Vicinity of Laniakea Beach (MP 3.06 to MP 3.54)
Project No. 83B-01-09

Scale: 1"=20' Date: December 2022

SHEET No. SS-02 OF 8 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83B-01-09	2023	68	231



GRAPHIC SCALE

1" = 20' 20 0 20 40

SCALE IN FEET

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

DATE		REVISION

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No. 4739-C
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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

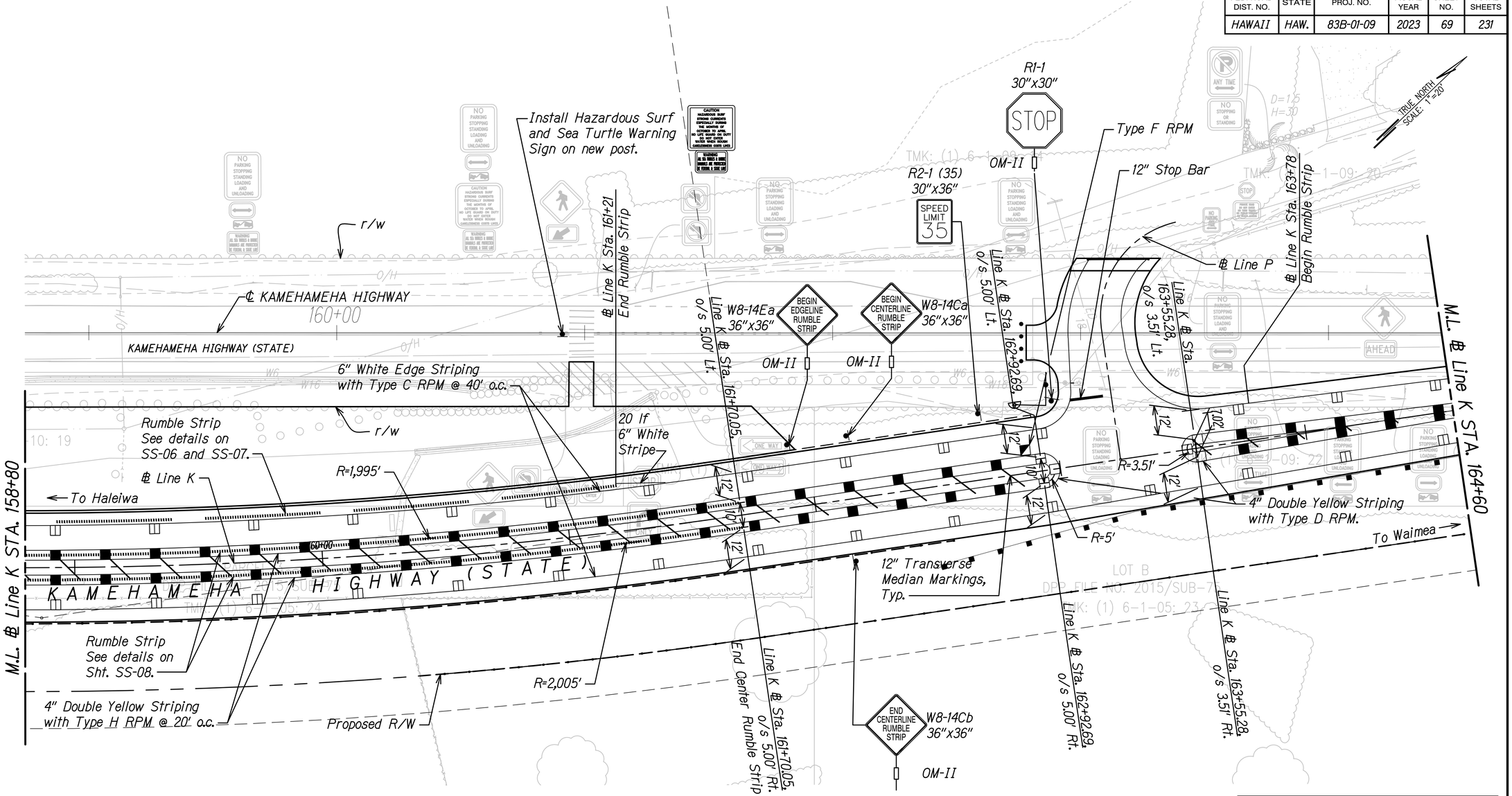
SIGNING AND PAVEMENT MARKINGS PLAN

KAMEHAMEHA HIGHWAY DRAINAGE AND SAFETY IMPROVEMENTS
Vicinity of Laniakea Beach (MP 3.06 to MP 3.54)
Project No. 83B-01-09

Scale: 1"=20' Date: December 2022

SHEET No. SS-03 OF 8 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83B-01-09	2023	69	231



DATE		REVISION

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

SIGNING AND PAVEMENT MARKINGS PLAN

KAMEHAMEHA HIGHWAY DRAINAGE AND SAFETY IMPROVEMENTS
Vicinity of Laniakea Beach (MP 3.06 to MP 3.54)
Project No. 83B-01-09

Scale: 1"=20' Date: December 2022

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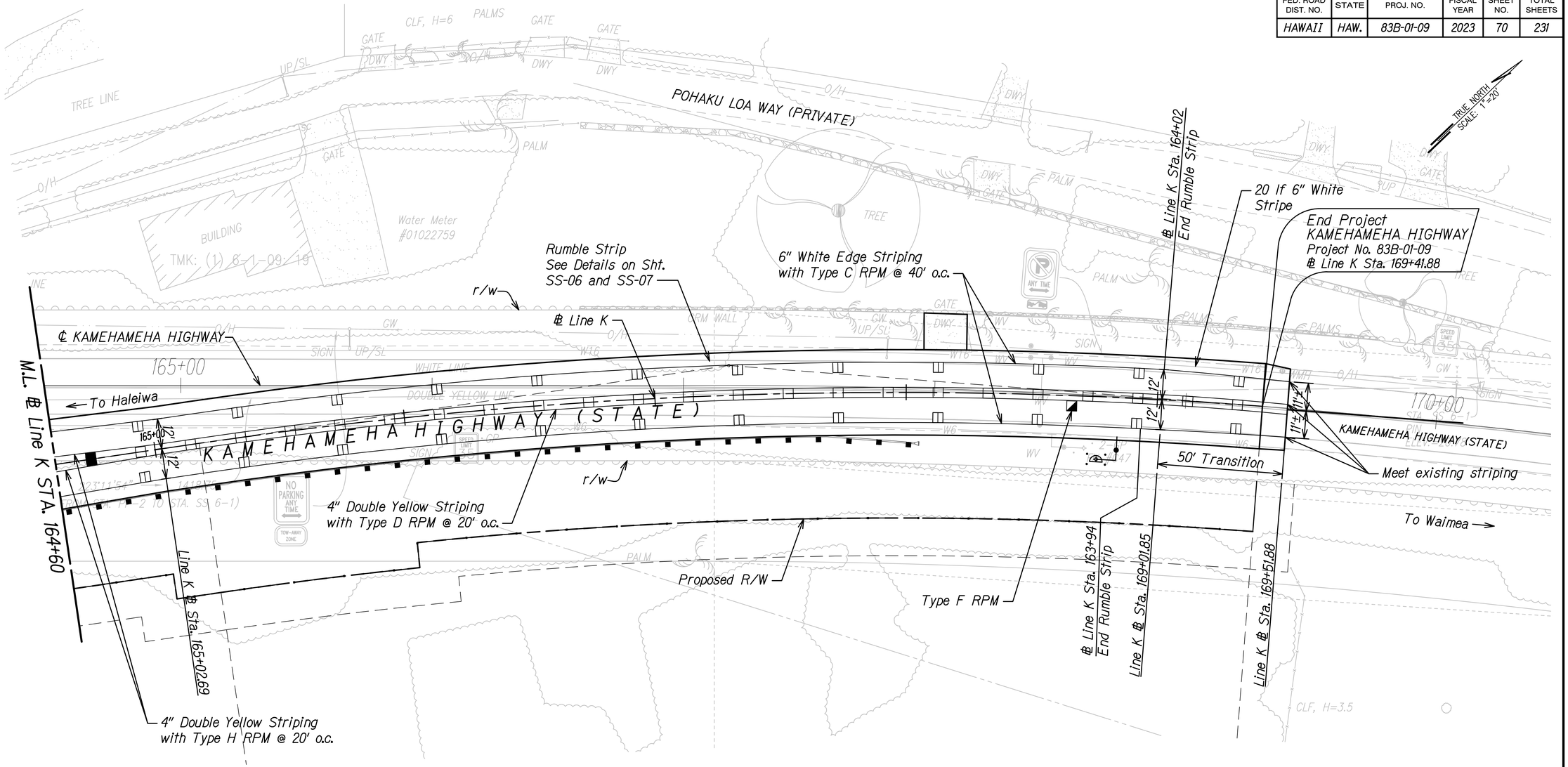
GRAPHIC SCALE
1" = 20'
20 0 20 40
SCALE IN FEET

SHEET No. SS-04 OF 8 SHEETS

ORIGINAL PLAN
NOTE BOOK No.

SURVEY PLOTTED BY
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CHECKED BY
DATE

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83B-01-09	2023	70	231



GRAPHIC SCALE

1" = 20' 20 0 20 40

SCALE IN FEET

DATE		REVISION

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

SIGNING AND PAVEMENT MARKINGS PLAN

KAMEHAMEHA HIGHWAY DRAINAGE AND SAFETY IMPROVEMENTS
Vicinity of Laniakea Beach (MP 3.06 to MP 3.54)
Project No. 83B-01-09

Scale: 1"=20' Date: December 2022

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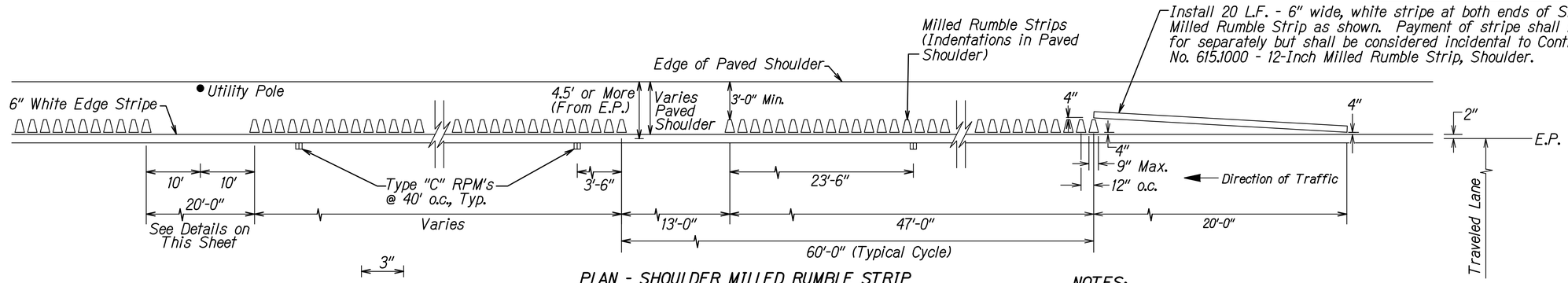
SIGNATURE 04/30/24 EXPIRATION DATE OF THE LICENSE

SHEET No. SS-05 OF 8 SHEETS

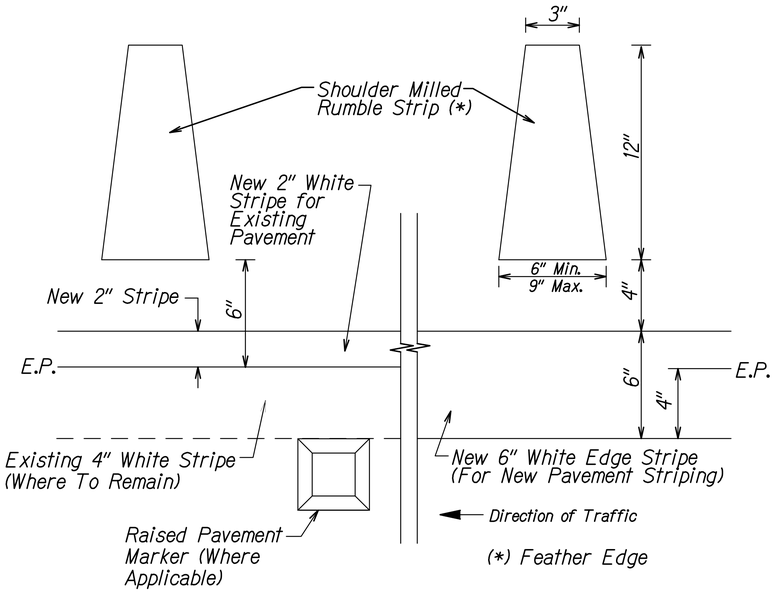
ORIGINAL PLAN
NOTE BOOK
No.

SURVEY PLOTTED BY
DRAWN BY
TRACED BY
DESIGNED BY
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CHECKED BY
DATE

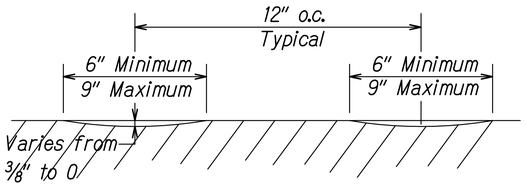
FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83B-01-09	2023	71	231



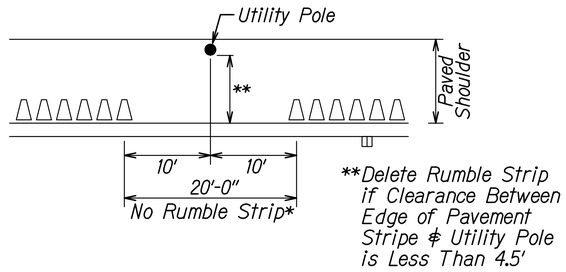
PLAN - SHOULDER MILLED RUMBLE STRIP
Not to Scale



DETAIL - SHOULDER MILLED RUMBLE STRIP
Not to Scale

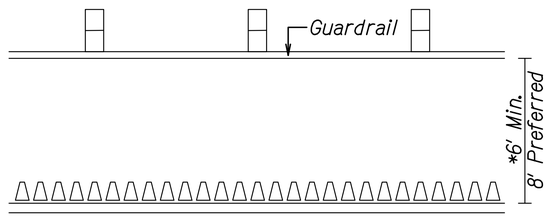


CROSS SECTION - SHOULDER MILLED RUMBLE STRIP
Not to Scale



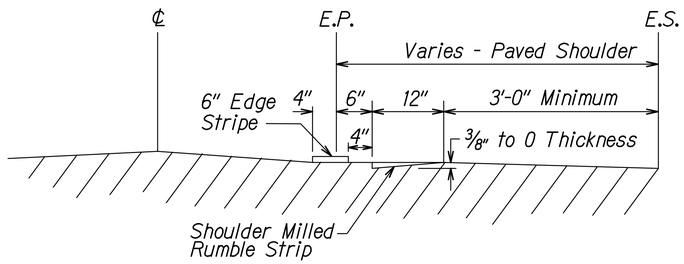
**Delete Rumble Strip if Clearance Between Edge of Pavement Stripe & Utility Pole is Less Than 4.5'

DETAIL - CONDITION WHERE UTILITY POLE EXISTS
Not to Scale



DETAIL - CONDITION WHERE GUARDRAIL EXISTS
Not to Scale

*If shoulder width is less than 6', do not install shoulder rumble strip where guardrail exists.



LONGITUDINAL SECTION - SHOULDER MILLED RUMBLE STRIP
Not to Scale

NOTES:

1. Shoulder milled rumble strips may be installed for paved shoulder width of 4.5' or more from edge of pavement (E.P.).
2. The method of constructing the shoulder milled rumble strip shall be submitted to the Engineer for acceptance prior to the actual work.
3. Dimensions shown are approximate. Adjust rumble strip spacing to coordinate with pavement marking prior to installation.
4. Raised pavement markers shall be installed on level surface between the rumble strips. Do not install raised pavement markers inside the milled area.
5. The construction of the shoulder milled rumble strip and 13-foot gaps shall be paid for under Item No. 615.1000 - 12-Inch Milled Rumble Strip, Shoulder.
6. The milling apparatus, 20 L.F. - 6" white stripe, and removal of existing pavement markings will not be paid for separately and shall be considered incidental to Item 615.1000 - 12-Inch Milled Rumble Strip, Shoulder.
7. Rumble strips shall be installed along all shoulders, except at right turn deceleration and acceleration lanes, as noted on the plans.
8. Do not place Type "C" Raised Pavement markers within 2 ft. of the 13 ft. Rumble Strip opening.
9. Do not install edgeline rumble strips on bridge decks.
10. Where at-grade bridges are present, rumble strips shall end/begin 20 L.F. beyond the existing bridge deck joints/concrete approach slab.
11. Shoulder Rumble Strips are to be installed after the edge of pavement stripe and before the installation of the Type "C" raised pavement markers.
12. Hot spray thermoplastic shall be used for solid line markings within the shoulder milled rumble strip area.

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

DATE	REVISION

DEXTER S. EJI
LICENSED PROFESSIONAL ENGINEER
No. 4739-C
HAWAII, U.S.A.

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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

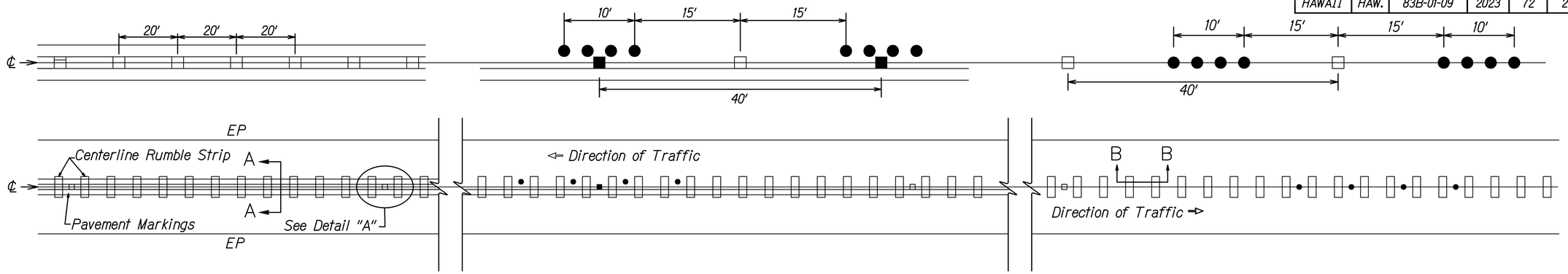
SHOULDER MILLED RUMBLE STRIP DETAIL FOR SHOULDER 4.5' OR MORE

KAMEHAMEHA HIGHWAY DRAINAGE AND SAFETY IMPROVEMENTS
Vicinity of Laniakea Beach (MP 3.06 to MP 3.54)
Project No. 83B-01-09

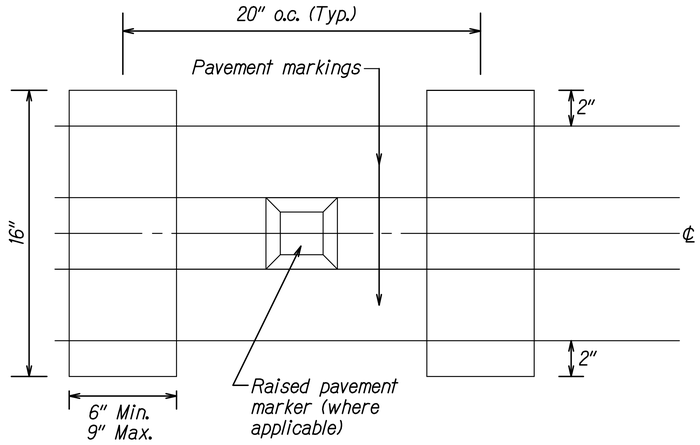
Scale: As Shown Date: December 2022

SHEET No. SS-06 OF 8 SHEETS

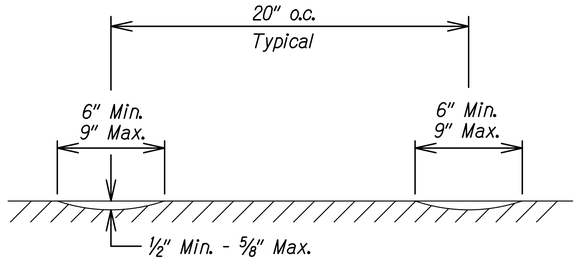
FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83B-01-09	2023	72	231



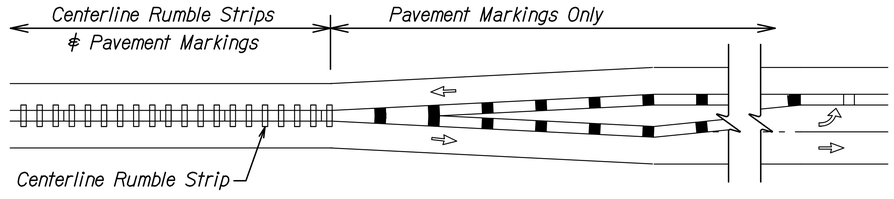
PLAN - CENTERLINE MILLED RUMBLE STRIP
Not to Scale



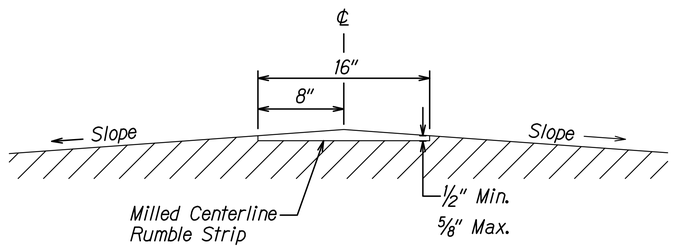
DETAIL "A"
Not to Scale



SECTION B-B - CENTERLINE MILLED RUMBLE STRIP
Not to Scale



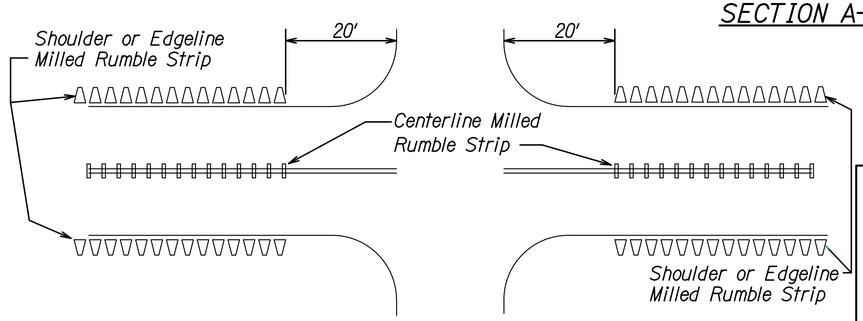
CENTERLINE MILLED RUMBLE STRIP INSTALLATION LIMIT
Not to Scale



SECTION A-A - CENTERLINE MILLED RUMBLE STRIP
Not to Scale

NOTES:

1. The method of constructing the centerline milled rumble strip shall be submitted to the Engineer for acceptance prior to the actual work.
2. Dimensions shown are approximate. Adjust rumble strip spacing to coordinate with pavement markings prior to installation.
3. Raised pavement markers shall be installed on level surface between the rumble strips. Do not install raised pavement markers inside the milled area.
4. The construction of the centerline milled rumble strip shall be paid for under Item No. 615.2000 - 16-inch Milled Rumble Strip, Centerline.
5. The milling apparatus and removal of existing pavement markings will not be paid for separately and shall be considered incidental to Item 615.2000 - 16-Inch Milled Rumble Strip, Centerline.
6. Do not install centerline rumble strips on bridge decks.
7. Where at-grade bridges are present, rumble strips shall end/begin 20 L.F. beyond the existing bridge deck joints/concrete approach slab.
8. Hot spray thermoplastic shall be used for solid line markings within the milled centerline rumble strip area.



MILLED RUMBLE STRIP INSTALLATION LIMITS
Not to Scale

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

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DEXTER S. EJI
LICENSED PROFESSIONAL ENGINEER
No. 4739-C
HAWAII, U.S.A.

SIGNATURE 04/30/24 EXPIRATION DATE OF THE LICENSE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

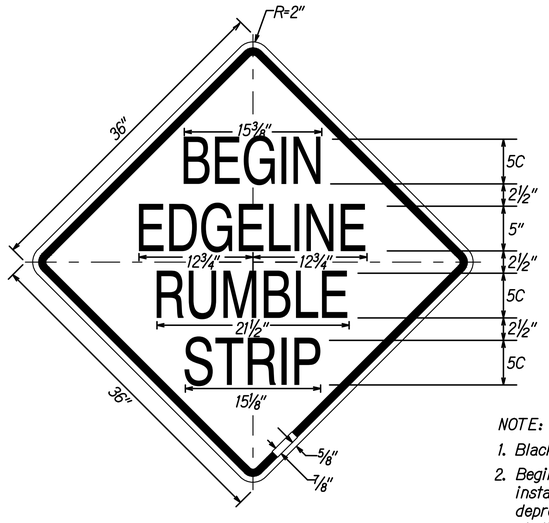
CENTERLINE MILLED RUMBLE STRIP DETAIL

KAMEHAMEHA HIGHWAY DRAINAGE AND SAFETY IMPROVEMENTS
Vicinity of Laniakea Beach (MP 3.06 to MP 3.54)
Project No. 83B-01-09

Scale: As Shown Date: December 2022

SHEET No. SS-07 OF 8 SHEETS

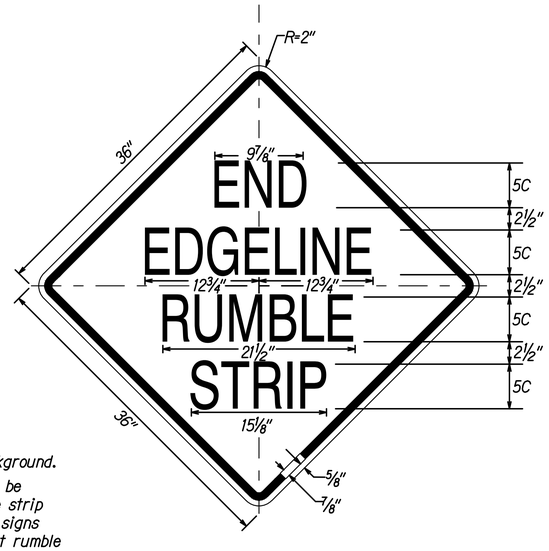
FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83B-01-09	2023	73	231



W8-14Ea

NOTE:

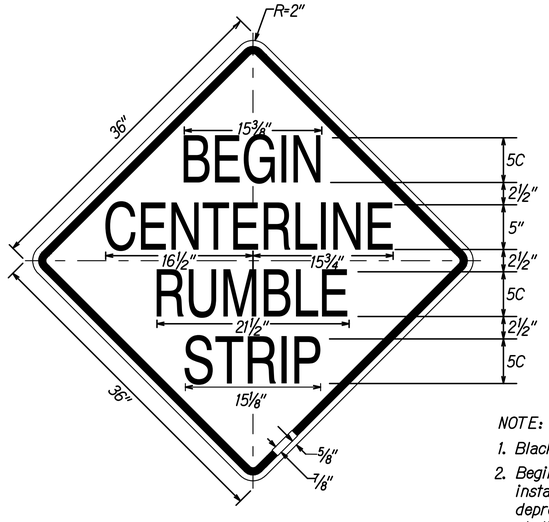
1. Black legend on reflectorized yellow background.
2. Begin Edgeline Rumble Strip signs shall be installed 50 feet before the first rumble strip depression. End Edgeline Rumble Strip signs shall be installed 50 feet beyond the last rumble strip depression.



W8-14Eb

SIGN NOTES:

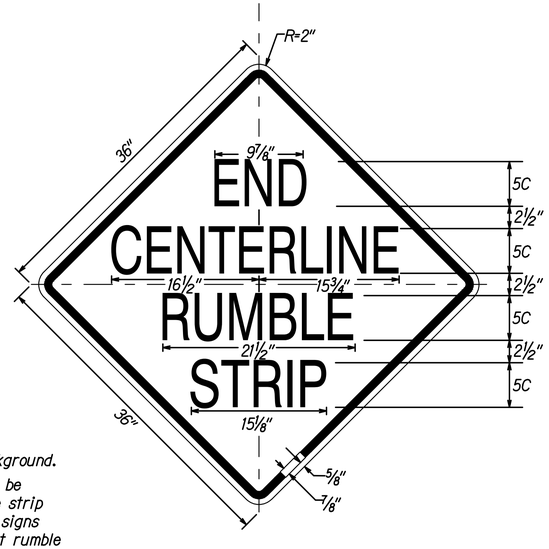
1. All signs shall conform to Section 631 of the Special Provisions and the latest editions and amendments of the following FHWA publications:
   a. "Manual on Uniform Traffic Control Devices for Streets and Highways" (MUTCD)
   b. "Standard Highway Signs"
   c. "Standard Alphabets for Highway Signs"
2. Borders, messages, arrows, symbols and shield shall conform to details as shown on the plans and as specified in the MUTCD.
3. Sign messages shall be as indicated on the plan, or as directed by the Engineer.
4. Backing for all new Regulatory and Warning Signs shall not be spliced.
5. Final locations of all signs shall be accepted by the Engineer prior to any installation work.
6. Existing signs that are to be replaced, shall not be removed until new signs are installed as replacements, or the messages are no longer necessary.
7. Existing signs not shown on these plans shall remain as posted unless otherwise directed by the Engineer. Removal and disposal of existing signs and/or posts as designated on these plans shall be incidental to the various signing items.
8. All signs shall be installed on square tube posts, unless otherwise noted.
9. Each sign post shall have a Type II OM. Installation of Type II OM shall be considered incidental to sign items.
10. Contractor shall mark the back of all signs using labels and equipment provided by the State. Payment to be incidental to various contract items.



W8-14Ca

NOTE:

1. Black legend on reflectorized yellow background.
2. Begin Edgeline Rumble Strip signs shall be installed 50 feet before the first rumble strip depression. End Edgeline Rumble Strip signs shall be installed 50 feet beyond the last rumble strip depression.



W8-14Cb

DATE		REVISION

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

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HAWAII, U.S.A.

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SIGNATURE 04/30/24 EXPIRATION DATE OF THE LICENSE

RUMBLE STRIP SIGN DETAILS AND NOTES

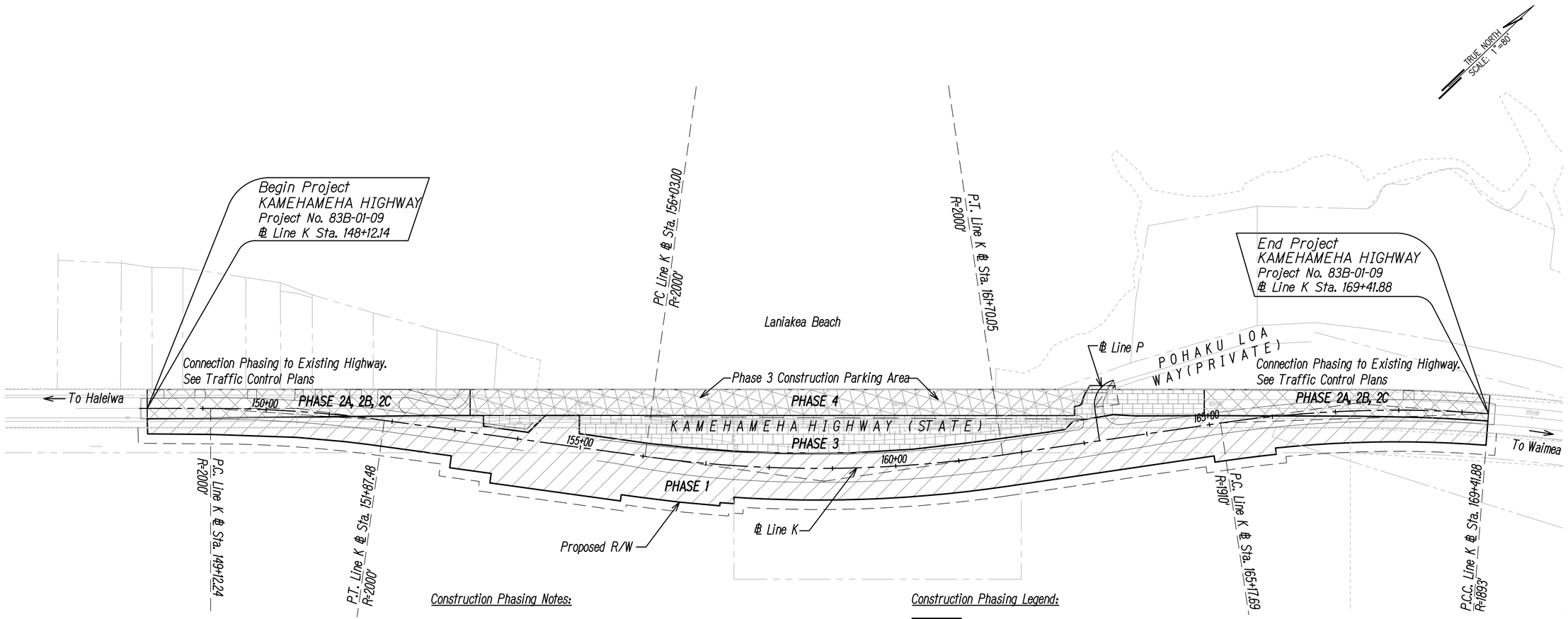
KAMEHAMEHA HIGHWAY DRAINAGE AND SAFETY IMPROVEMENTS
Vicinity of Laniakea Beach (MP 3.06 to MP 3.54)
Project No. 83B-01-09

Scale: As Shown Date: December 2022

SHEET No. SS-08 OF 8 SHEETS

ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
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FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83B-01-09	2023	74	231



Construction Phasing Notes:

1. *Phase 1 - Construct Bridge, Roadway Grading, Drainage Mauka of the existing R/W.*
2. *Phase 2A - Widen Makai side of existing Kamehameha Highway with temporary ac pavement at both ends. Shift traffic while work is being done to connect Waimea bound lane to new highway.*
3. *Phase 2B - Move Waimea bound traffic to new highway and work on Haleiwa Bound lane connections to new highway.*
4. *Phase 2C - Shift all traffic to the new highway and remove temporary pavement, connect driveways to new highway.*
5. *Phase 3 - Construct drainage and landscape between the existing highway and the new highway and Pohaku Loa Way connection. Use the existing highway as parking for public use during Phase 3 work.*
6. *Phase 4 - Remove AC pavement on portions of existing highway and install landscaping.*

Construction Phasing Legend:

- *Phase 1*
- *Phase 2A, Phase 2B, Phase 2C*
- *Phase 3*
- *Phase 4*

GRAPHIC SCALE
1" = 80'
80 0 80 160
SCALE IN FEET

DATE		REVISION

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

DEXTER S. EJI
LICENSED PROFESSIONAL ENGINEER
No. 4739-C
HAWAII, U.S.A.

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SUGGESTED CONSTRUCTION PHASING PLAN

KAMEHAMEHA HIGHWAY DRAINAGE AND SAFETY IMPROVEMENTS
Vicinity of Laniakea Beach (MP 3.06 to MP 3.54)
Project No. 83B-01-09

Scale: 1"=80' Date: December 2022

SHEET No. CP-01 OF 1 SHEETS

ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
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FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83B-01-09	2023	75	231

GENERAL NOTES FOR TRAFFIC CONTROL PLAN

1. Only Traffic Control Plans for major construction activities are shown. The Contractor shall develop his own Traffic Control Plans in accordance with Section 645 of the Special Provisions for activities to complete work not covered by the Traffic Control Plans. The Contractor shall submit the Traffic Control Plans to the Engineer for acceptance. Payment for development and implementation of the Traffic Control Plans shall be included in pay item 645.1000 - Traffic Control.
2. All lane closures and traffic pattern changes (detours) not shown on the plan shall be submitted to the Engineer for acceptance in accordance with Specifications Section 645 - Work Zone Traffic Control. For restrictions on lane closures, detours, construction work during peak hours, and other requirements regarding maintaining vehicular and pedestrian traffic, see Subsection 107.03 - Working Hours; Night Work and Section 645 - Work Zone Traffic Control.
3. The Contractor shall make minor adjustments at intersections, driveways, bridges, structures, etc. to fit field conditions.
4. Cones or delineators shall be extended to a point where they are visible to approaching traffic.
5. Traffic control devices shall be installed such that the sign or device farthest from the work area shall be placed first. The others shall then be placed progressively toward the work area.
6. Flaggers and/or police officers shall be in sight of each other or in direct communications at all times.
7. Sign spacings (L), taper lengths (T), and spacings of cones or delineators shall be as shown in Table 645-1 - For Traffic Control Plan of Section 645 in the Specifications, unless otherwise noted on HDOT's Traffic Control Plans.
8. All traffic lanes shall be a minimum of 10 feet wide.
9. All signs shall be promptly removed or covered whenever the message is not applicable or not in use.
10. The backs of all signs for traffic control shall be appropriately covered to preclude the display of inapplicable sign messages (i.e., when signs have messages on both faces).
11. Replace permanent pavement markings and traffic signs that are missing, damaged, or have been removed upon completion of each day's work. Payment for replacing permanent pavement markings and signs shall be considered incidental to the various contract items.
12. At the end of each day's work or as soon as the work is completed, the Contractor shall remove all traffic control devices no longer needed to permit free and safe passage of public traffic. Removal shall be in the reverse order of installation.
13. The locations of pavement markings, signs, and delineators used in the Traffic Control shall be as shown on the plans, Contractor's accepted Traffic Control Plans, and/or as determined in the field by the Engineer.
14. Damage to signs, pavement markers, and delineators caused by the public or Contractor's negligence shall be repaired or replaced by the Contractor at no cost to the State.
15. Signs for night work shall be retroreflective and shall be mounted with a Type B high intensity flasher. The flasher will be paid under Pay Item No. 645.1000-Traffic Control.
16. The Contractor shall provide all sign supports, barrier mounting brackets, and/or posts for construction warning signs.
17. The Contractor shall provide and maintain two (2) portable message boards to provide advanced warning of the lane closures. The message boards' location to be determined by the Engineer for each construction phase. Message boards shall display closure dates and times and shall be operational 24 hours a day for three (3) days prior to the first lane closure. Signs shall remain for the duration of the project. The Contractor shall provide appropriate traffic control devices (barricades, cones, etc.) to protect the message boards. Installation, maintenance, and removal of message boards shall be paid under Pay Item No. 645.1000 - Traffic Control.
18. The Contractor shall furnish, install, maintain, and remove all traffic control devices shown on the traffic control plans. Payment for all work shown, including furnishing all police officers shown on the traffic control plans, shall be under Pay Item No. 645.1000 - Traffic Control.
19. The Contractor shall sequence the work to allow access to the driveways and side streets. The Contractor shall provide all traffic control devices, including police officers, necessary to maintain driveway and side street access. In the case where a landowner has mulitple vehicle access points that are internally connected, one access point may be temporarily shut down with two week notice to the landowner/lessee. The Contractor shall submit the Traffic Control Plans to the Engineer for acceptance. Payment for development and implementation of the Traffic Control Plans shall be included in pay item 645.1000 - Traffic Control.

Legend:

- Work Area
- Traffic Cones
- Sign
- Direction of Traffic
- Flashing Arrow Signal
- Police Officer and Vehicle with Visible Blue Light
- Flagman

ORIGINAL PLAN | NOTE BOOK | No.

SURVEY PLOTTED BY | DRAWN BY | TRACED BY | DESIGNED BY | QUANTITIES BY | CHECKED BY | DATE

DATE		REVISION

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

DEXTER S. EJI
LICENSED PROFESSIONAL ENGINEER
No. 4739-C
HAWAII, U.S.A.

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SIGNATURE 04/30/24 EXPIRATION DATE OF THE LICENSE

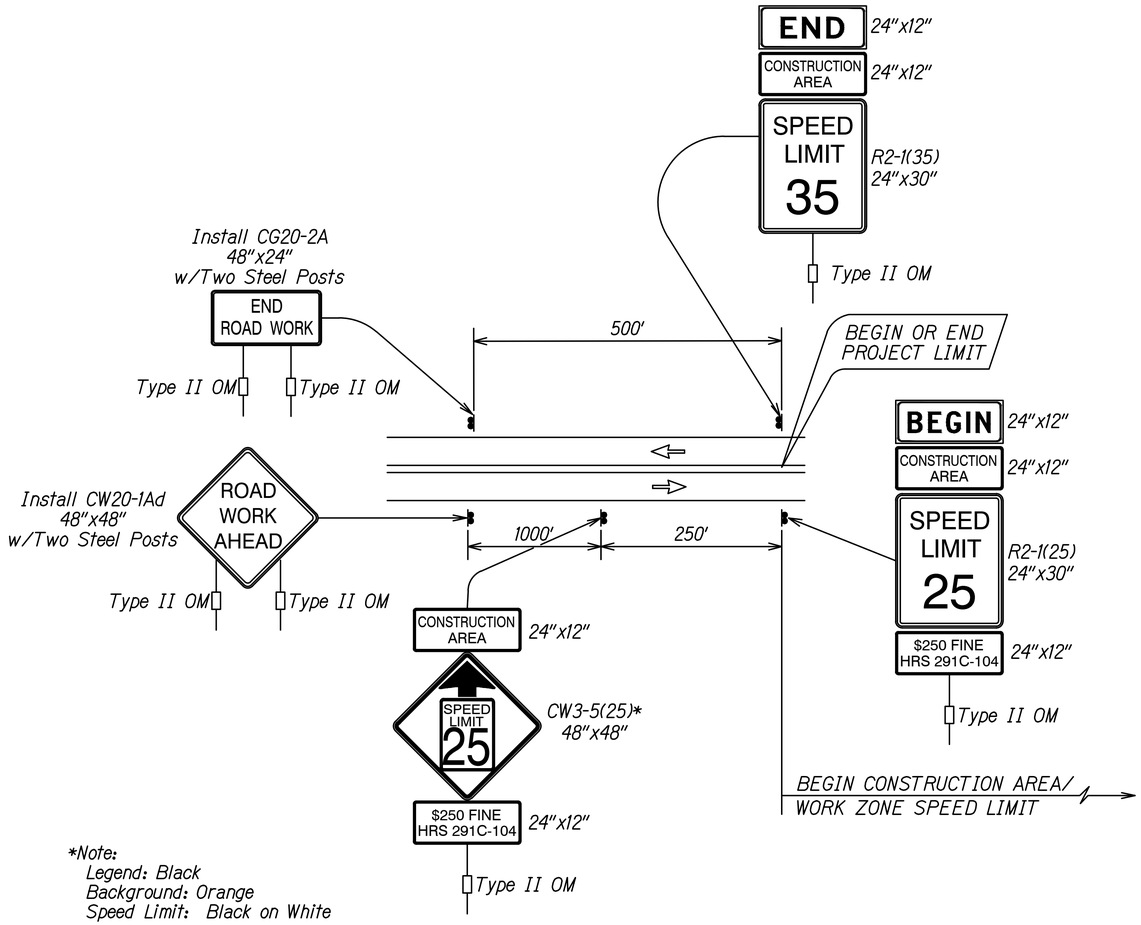
TRAFFIC CONTROL NOTES

KAMEHAMEHA HIGHWAY DRAINAGE AND SAFETY IMPROVEMENTS
Vicinity of Laniakea Beach (MP 3.06 to MP 3.54)
Project No. 83B-01-09

Scale: None Date: December 2022

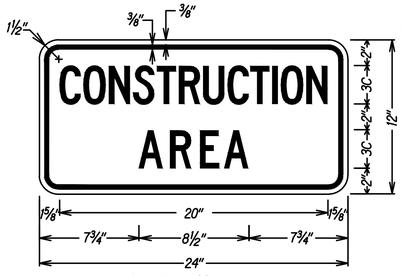
SHEET No. TCP-01 OF 14 SHEETS

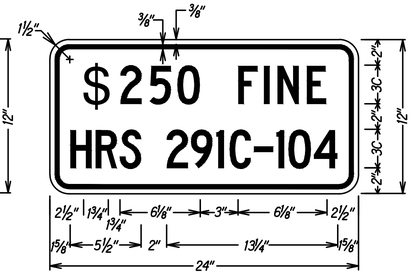
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HAWAII	HAW.	83B-01-09	2023	76	231

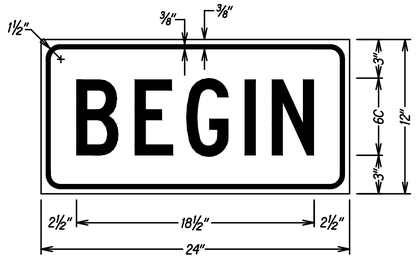


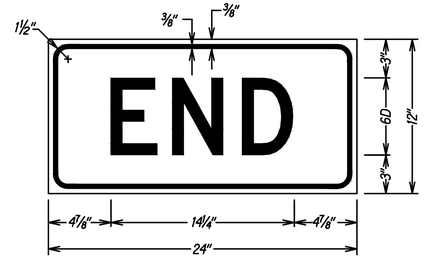
*Note:
Legend: Black
Background: Orange
Speed Limit: Black on White

TYPICAL DETAIL FOR CONSTRUCTION SIGNS ON TWO LANE OR MULTILANE UNDIVIDED LOW SPEED HIGHWAY









Work Zone Notes:

1. This Work Zone Sign Plan is intended for use on long-term stationary work zones/construction phases (3 days or more). All work zones or construction phases less than 3 days duration will use Traffic Control Plans shown in Section 645 of the Special Provisions.
2. All existing regulatory speed limit signs with posts within the work zone/project limits shall be removed and replaced with work zone speed limit sign assemblies (R2-1(25) and R2-5b(25) with "CONSTRUCTION AREA" and "$250 FINE HRS 291C-104" Supplemental Signs).
3. Construction sign assemblies shall be installed on both the approaching and trailing ends of each work zone as shown on this plan.
4. Each construction warning sign shall have a minimum of two (2) Type II OM. Each work zone speed limit assembly shall have a minimum of one (1) Type II OM. Installation of each Type II OM shall be considered incidental to Item No. 645.1000 - Traffic Control.
5. Upon the completion of all physical work or as directed by the Engineer, all construction signs and work zone speed limit assemblies shall be removed. All speed limit signs and posts that were existing at the start of the project within the work zone/project imits shall be restored back to their original locations and configurations.
6. Placement of construction signs shall not obstruct the path of pedestrians and bicyclists.
7. The removal and restoration of existing regulatory speed limit signs shall be considered incidental to Item No. 645.1000 - Traffic Control.
8. The installation, maintenance and removal of work zone speed limit signs shall be paid for under Item No. 645.1000 - Traffic Control.
9. The work zone speed limit signs shall be new and become the property of the Contractor.
10. The Contractor shall adjust the locations of work zone signs to correspond with the beginning and end of work zone limits for each phase. Relocation of work zone signs shall be considered incidental to Item No. 645.1000 - Traffic Control.
11. For sign location and speed limits, see Traffic Control Plan.

ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
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	QUANTITIES BY	
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DATE	REVISION

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

LOW SPEED UNDIVIDED HIGHWAY WORK ZONE SIGNING PLAN, NOTES & DETAILS

KAMEHAMEHA HIGHWAY DRAINAGE AND SAFETY IMPROVEMENTS
Vicinity of Laniakea Beach (MP 3.06 to MP 3.54)
Project No. 83B-01-09

DEXTER S. EJI
LICENSED PROFESSIONAL ENGINEER
No. 4739-C
HAWAII, U.S.A.

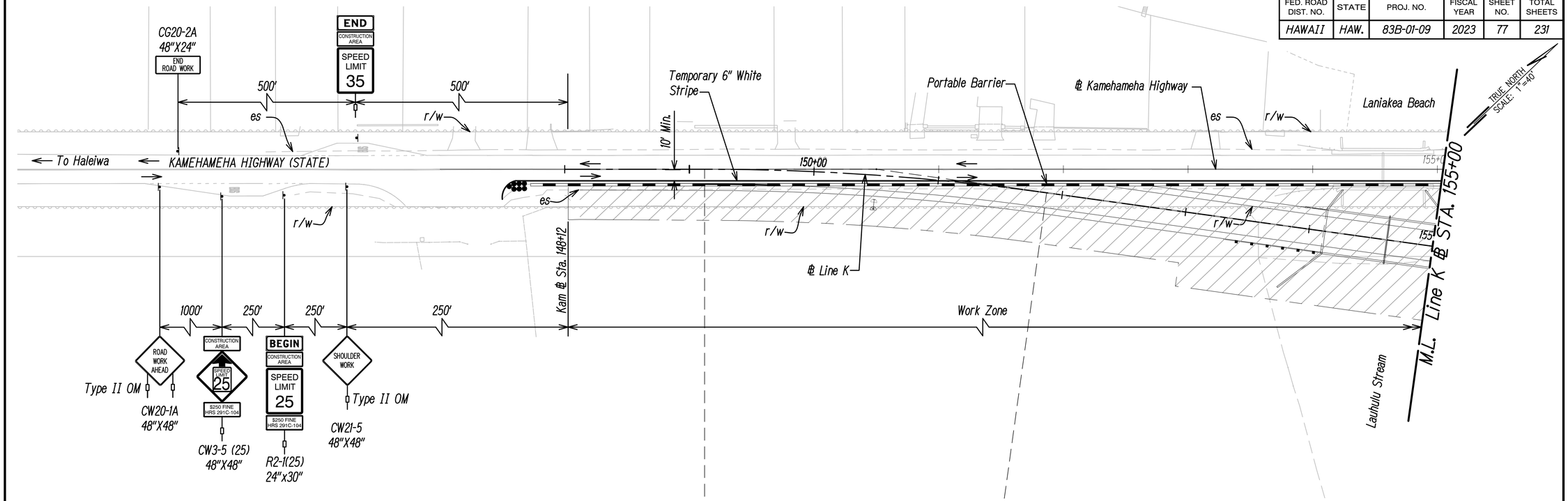
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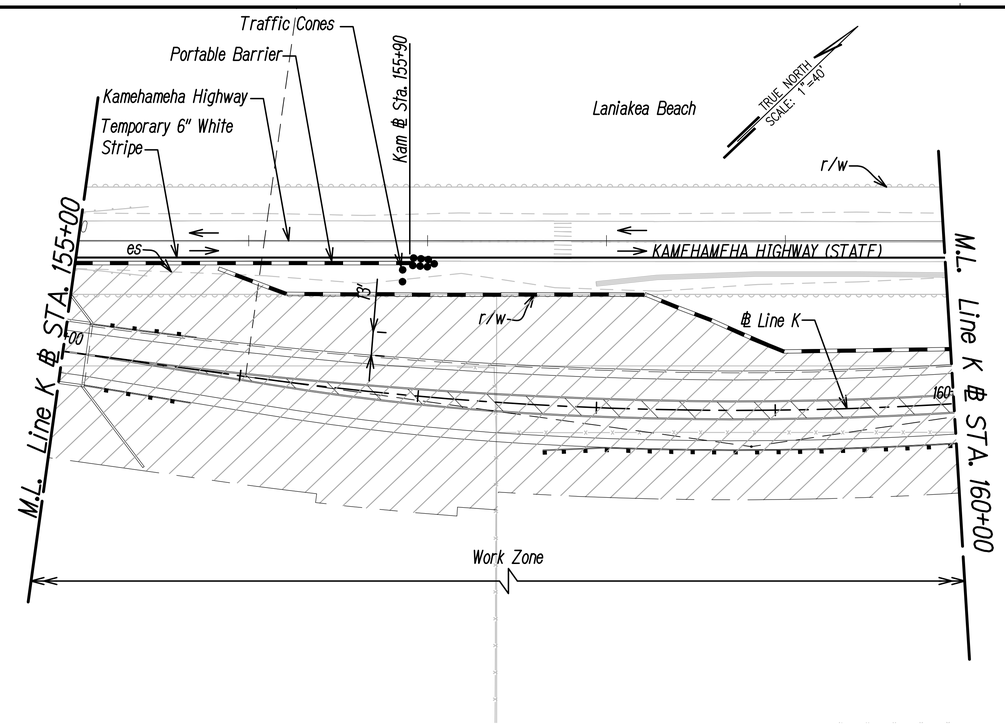
SIGNATURE 04/30/24 EXPIRATION DATE OF THE LICENSE

Scale: None Date: December 2022

SHEET No. TCP-02 OF 14 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83B-01-09	2023	77	231





LEGEND

- Work Zone
- Temporary AC Pavement
- Direction of Travel
- Cones or Delineators
- Portable Barrier
- Barrier End Treatment
- Flashing Arrow Sign Board
- Sign
- Type III Barricade

GRAPHIC SCALE

1" = 40'

40 0 40 80

SCALE IN FEET

Note:

1. Contractor to coordinate access to private properties as needed to construct driveways.
2. Contractor to provide beach access parking during construction.

DATE	REVISION

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

TRAFFIC CONTROL PLAN PHASE 1

KAMEHAMEHA HIGHWAY DRAINAGE AND SAFETY IMPROVEMENTS
Vicinity of Laniakea Beach (MP 3.06 to MP 3.54)
Project No. 83B-01-09

Scale: 1"=40 Date: December 2022

DEXTER S. EJI
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No. 4739-C
HAWAII, U.S.A.

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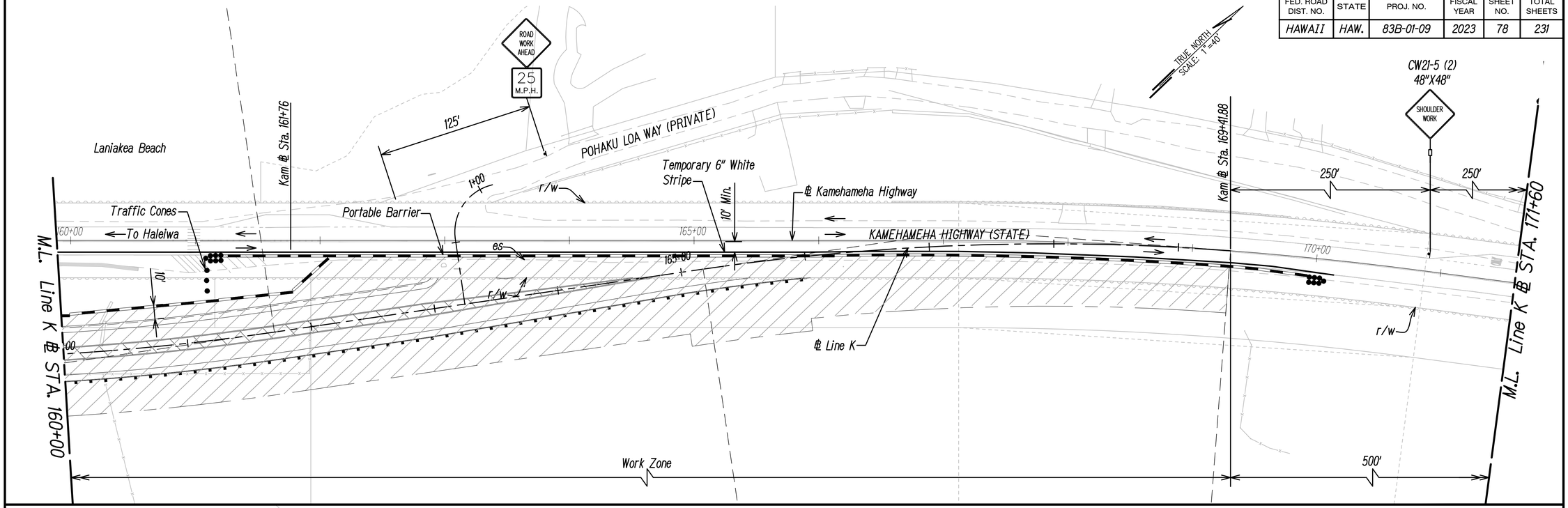
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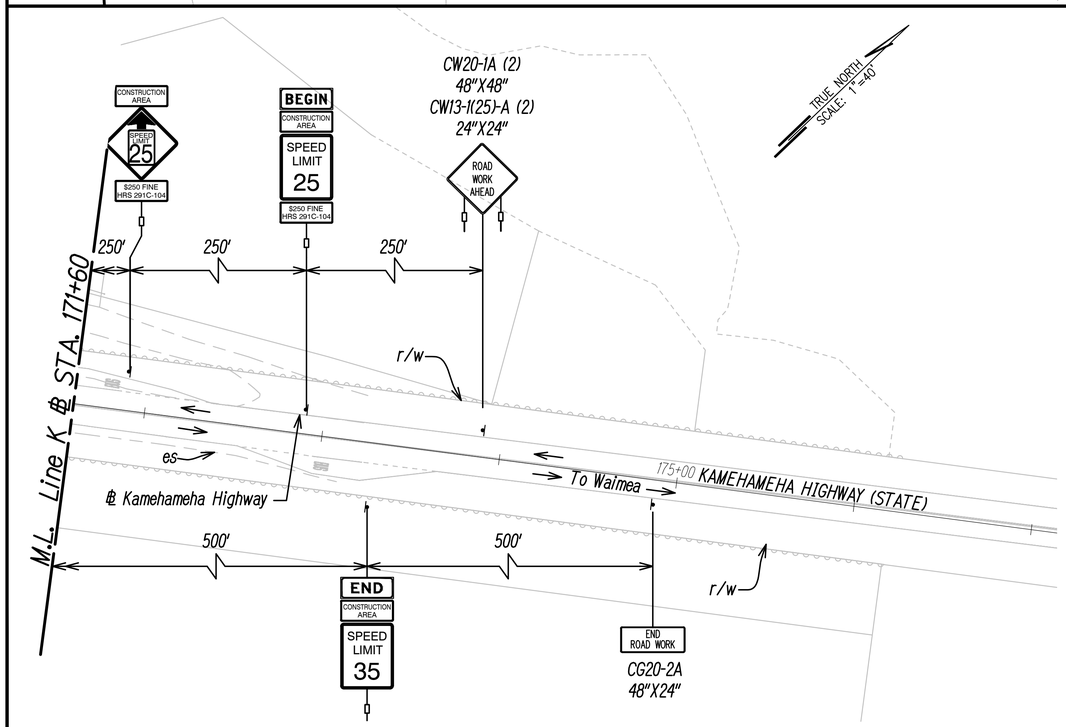
SHEET No. TCP-03 OF 14 SHEETS

ORIGINAL PLAN | NOTE BOOK | No.

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DRAWN BY
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DATE

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83B-01-09	2023	78	231





LEGEND

- Work Zone
- Temporary AC Pavement
- Direction of Travel
- Cones or Delineators
- Portable Barrier
- Barrier End Treatment
- Flashing Arrow Sign Board
- Sign
- Type III Barricade

GRAPHIC SCALE

1" = 40' (40 0 40 80)

SCALE IN FEET

Note:

1. Contractor to coordinate access to private properties as needed to construct driveways.
2. Contractor to provide beach access parking during construction.

ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

TRAFFIC CONTROL PLAN PHASE 1

KAMEHAMEHA HIGHWAY DRAINAGE AND SAFETY IMPROVEMENTS
Vicinity of Laniakea Beach (MP 3.06 to MP 3.54)
Project No. 83B-01-09

Scale: 1"=40' Date: December 2022

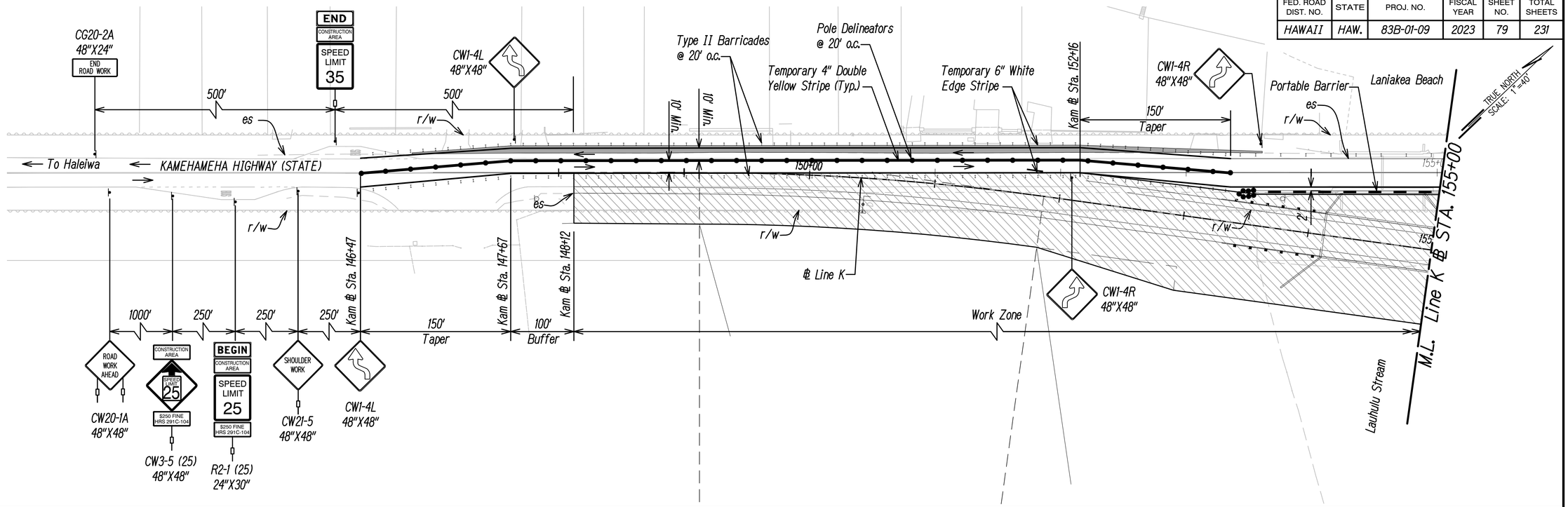
DEXTER S. EJI
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HAWAII, U.S.A.

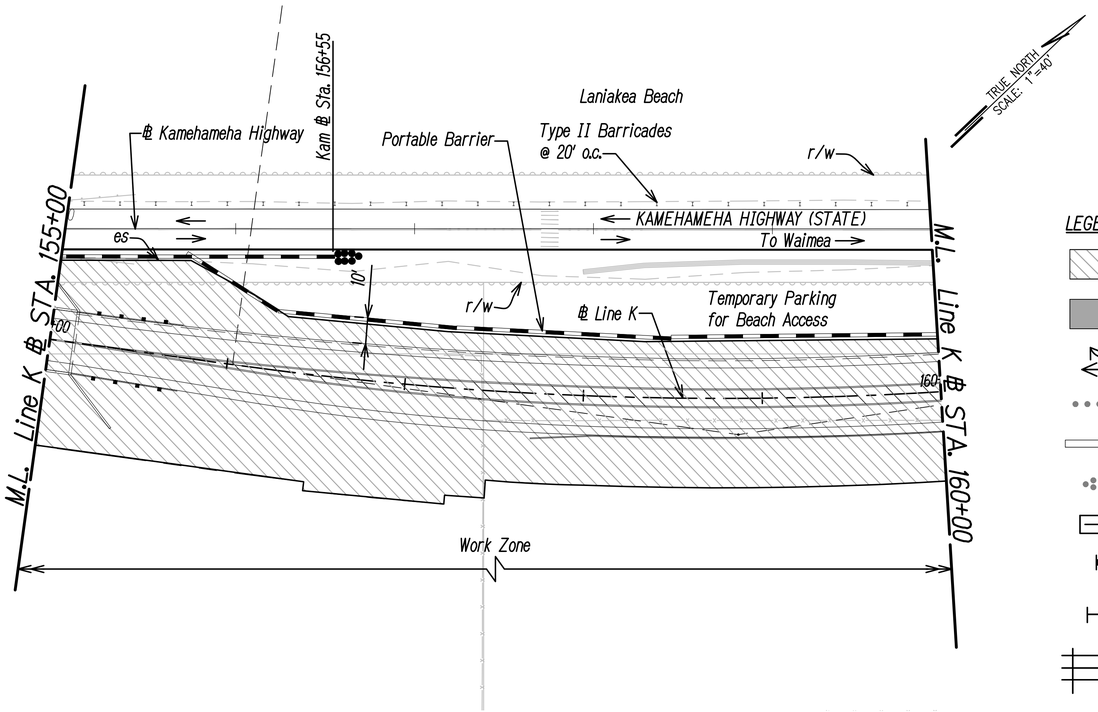
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SHEET No. TCP-04 OF 14 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83B-01-09	2023	79	231





LEGEND

- Work Zone
- Temporary AC Pavement
- Direction of Travel
- Cones or Delineators
- Portable Barrier
- Barrier End Treatment
- Flashing Arrow Sign Board
- Sign
- Type II Barricade
- Type III Barricade

Note:

1. Contractor to coordinate access to private properties as needed to construct driveways.
2. Contractor to provide beach access parking during construction.

GRAPHIC SCALE

1" = 40' — 40 0 40 80 — SCALE IN FEET

ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
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No.	QUANTITIES BY	
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DATE	REVISION

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

DEXTER S. EJI
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HAWAII, U.S.A.

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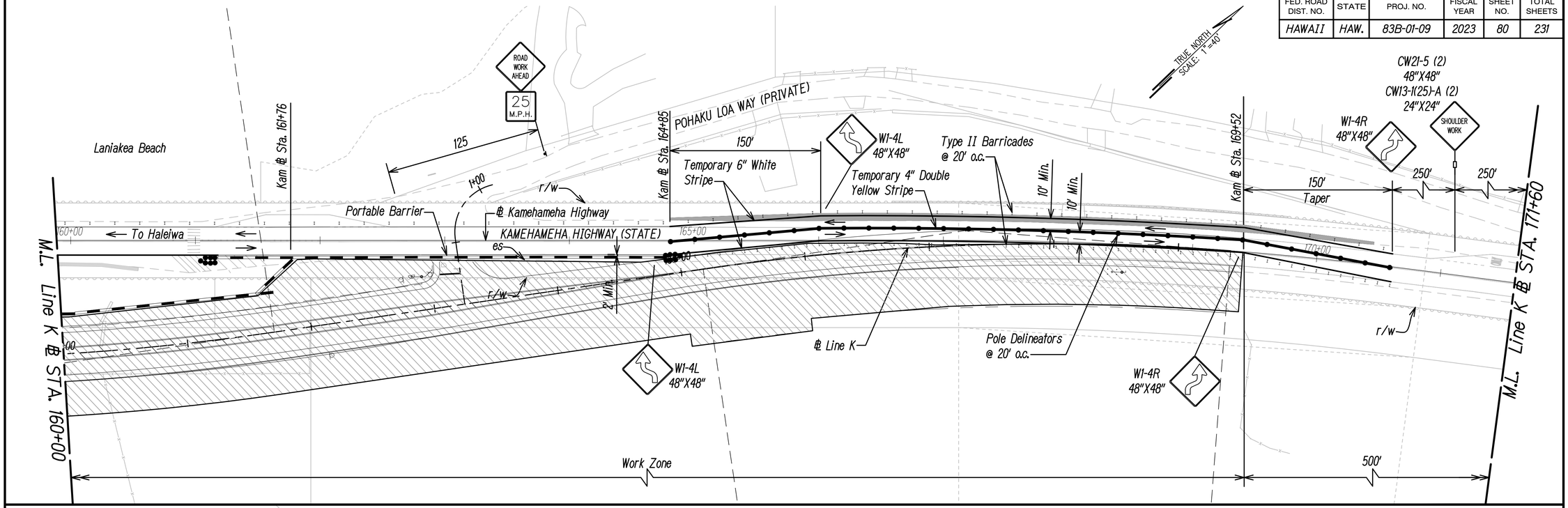
TRAFFIC CONTROL PLAN PHASE 2A

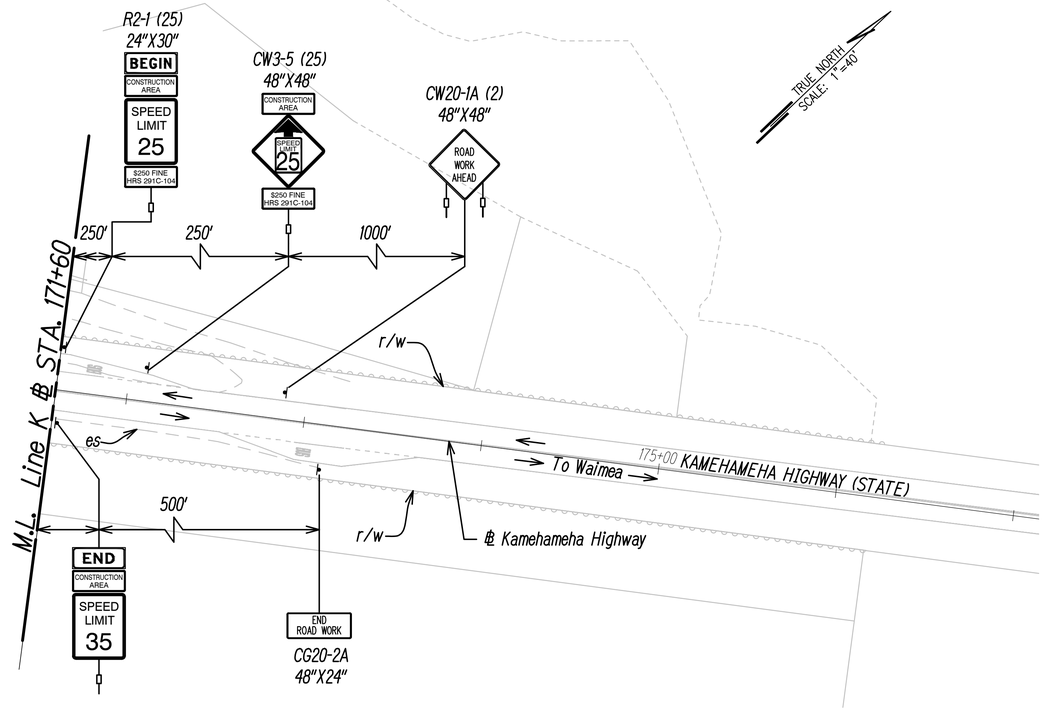
KAMEHAMEHA HIGHWAY DRAINAGE AND SAFETY IMPROVEMENTS
Vicinity of Laniakea Beach (MP 3.06 to MP 3.54)
Project No. 83B-01-09

Scale: 1"=40 Date: December 2022

SHEET No. TCP-05 OF 14 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83B-01-09	2023	80	231





LEGEND

- Work Zone
- Temporary AC Pavement
- Direction of Travel
- Cones or Delineators
- Portable Barrier
- Barrier End Treatment
- Flashing Arrow Sign Board
- Sign
- Type III Barricade

GRAPHIC SCALE

1" = 40' — 40 0 40 80 — SCALE IN FEET

Note:

1. Contractor to coordinate access to private properties as needed to construct driveways.
2. Contractor to provide beach access parking during construction.

ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
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NOTE BOOK	TRACED BY	
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DATE	REVISION

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

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HAWAII, U.S.A.

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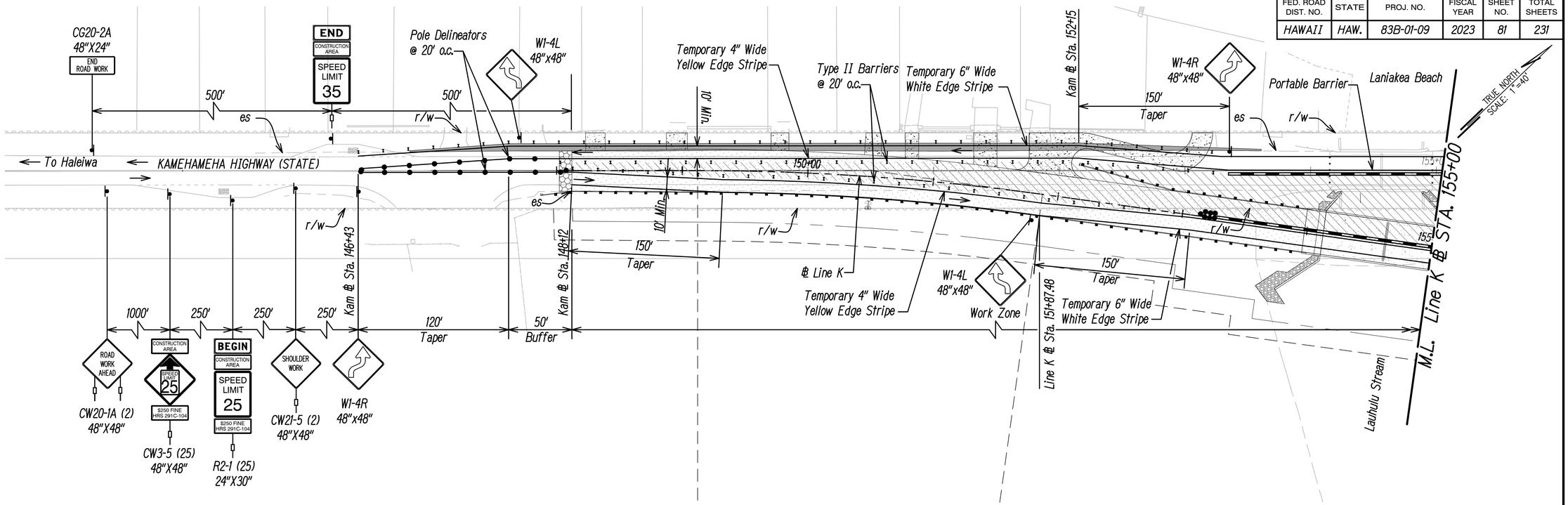
TRAFFIC CONTROL PLAN PHASE 2A

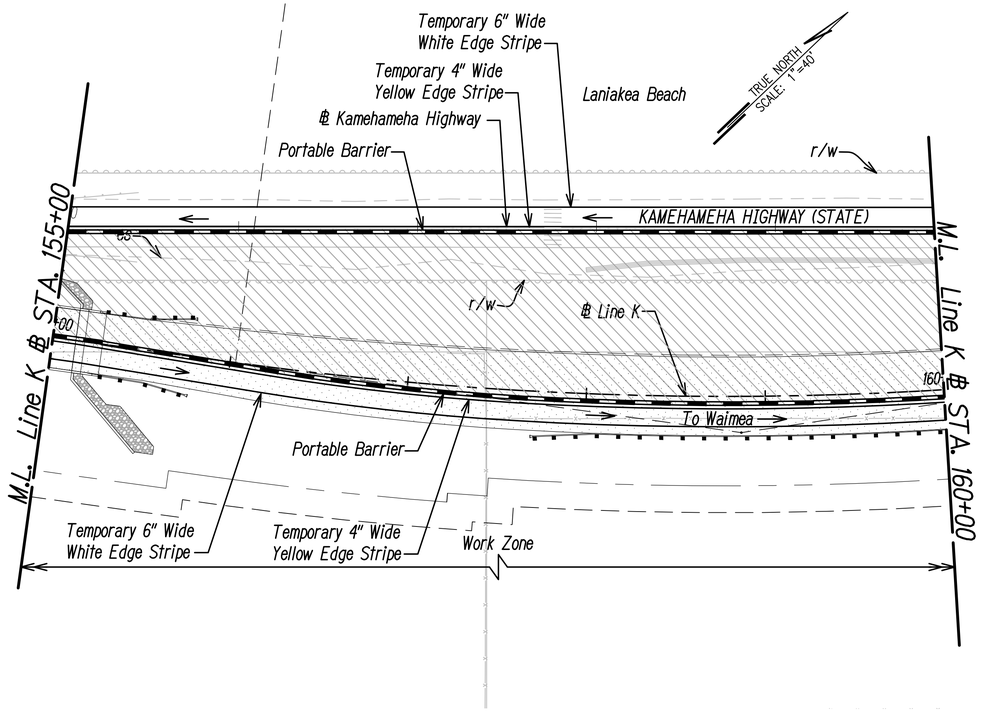
KAMEHAMEHA HIGHWAY DRAINAGE AND SAFETY IMPROVEMENTS
Vicinity of Laniakea Beach (MP 3.06 to MP 3.54)
Project No. 83B-01-09

Scale: 1"=40' Date: December 2022

SHEET No. TCP-06 OF 14 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83B-01-09	2023	81	231





LEGEND

- Work Zone
- Temporary AC Pavement
- Direction of Travel
- Cones or Delineators
- Portable Barrier
- Barrier End Treatment
- Flashing Arrow Sign Board
- Sign
- Type II Barricade
- Type III Barricade

GRAPHIC SCALE

1" = 40' — 40 0 40 80 — SCALE IN FEET

Note:
Contractor to coordinate access to private properties as needed to construct driveways.

DATE	REVISION

DEXTER S. EJI
LICENSED PROFESSIONAL ENGINEER
No. 4739-C
HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.

SIGNATURE — 04/30/24 EXPIRATION DATE OF THE LICENSE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

TRAFFIC CONTROL PLAN PHASE 2B

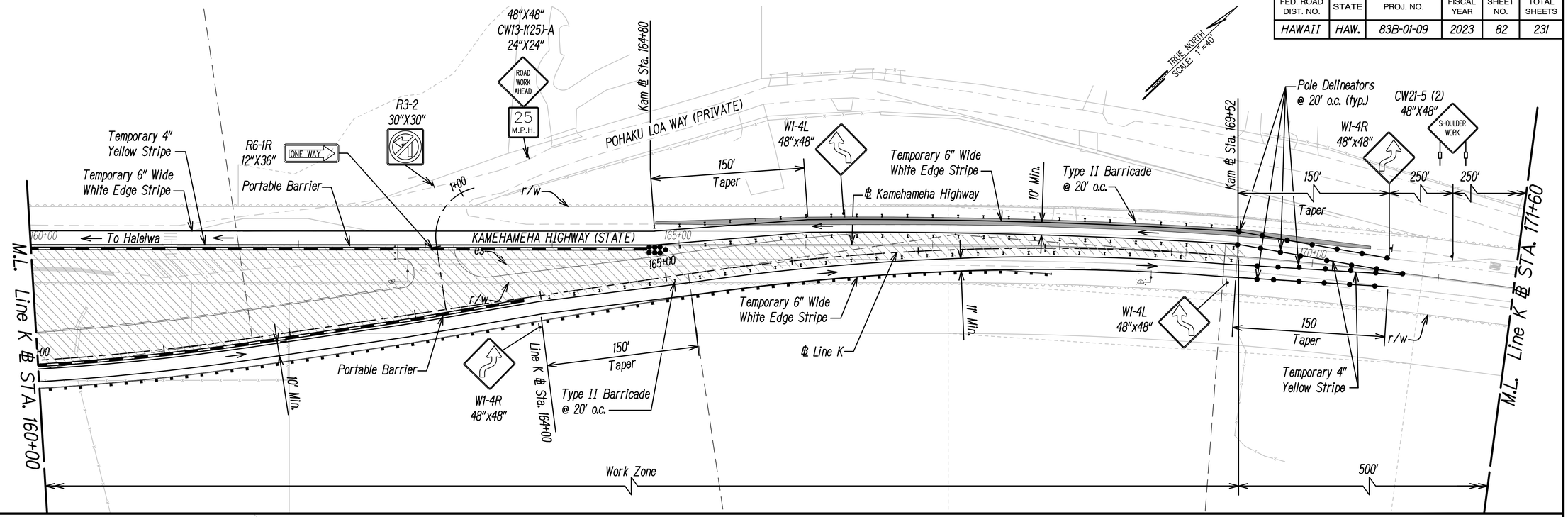
KAMEHAMEHA HIGHWAY DRAINAGE AND SAFETY IMPROVEMENTS
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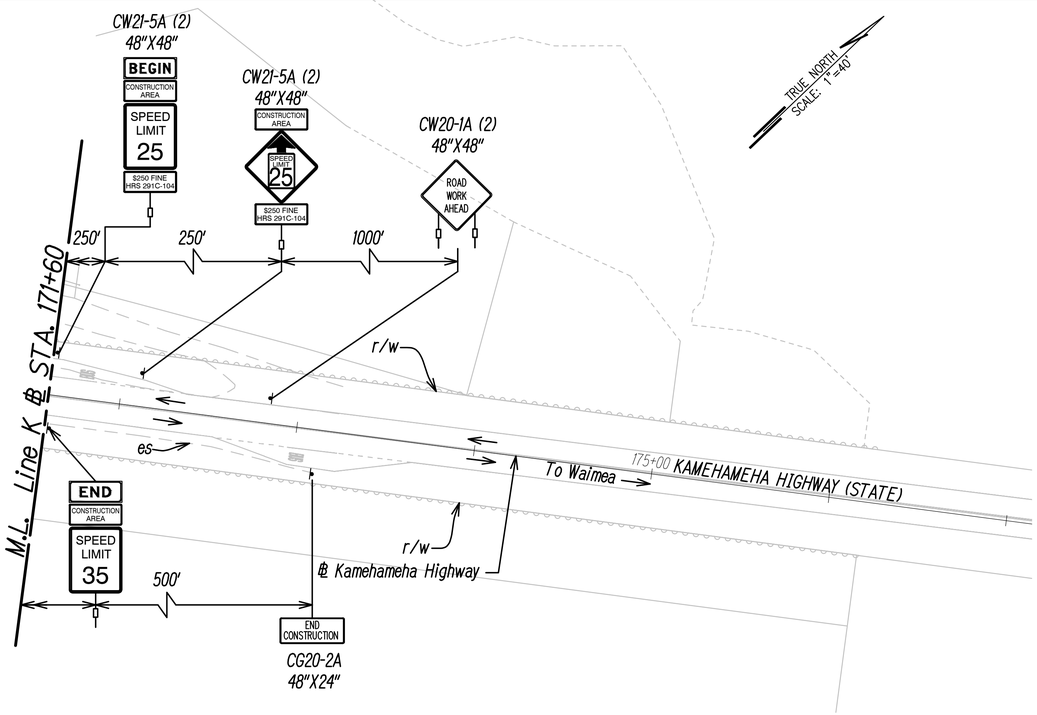
Scale: 1"=40 Date: December 2022

SHEET No. TCP-07 OF 14 SHEETS

ORIGINAL PLAN | NOTE BOOK | No.
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FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83B-01-09	2023	82	231





LEGEND

- Work Zone
- Temporary AC Pavement
- Direction of Travel
- Cones or Delineators
- Portable Barrier
- Barrier End Treatment
- Flashing Arrow Sign Board
- Sign
- Type II Barricade
- Type III Barricade

GRAPHIC SCALE
1" = 40'
40 0 40 80
SCALE IN FEET

Note:
Contractor to coordinate access to private properties as needed to construct driveways.

DATE	REVISION

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

TRAFFIC CONTROL PLAN PHASE 2B

KAMEHAMEHA HIGHWAY DRAINAGE AND SAFETY IMPROVEMENTS
Vicinity of Laniakea Beach (MP 3.06 to MP 3.54)
Project No. 83B-01-09

Scale: 1"=40" Date: December 2022

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No. 4739-C
HAWAII, U.S.A.

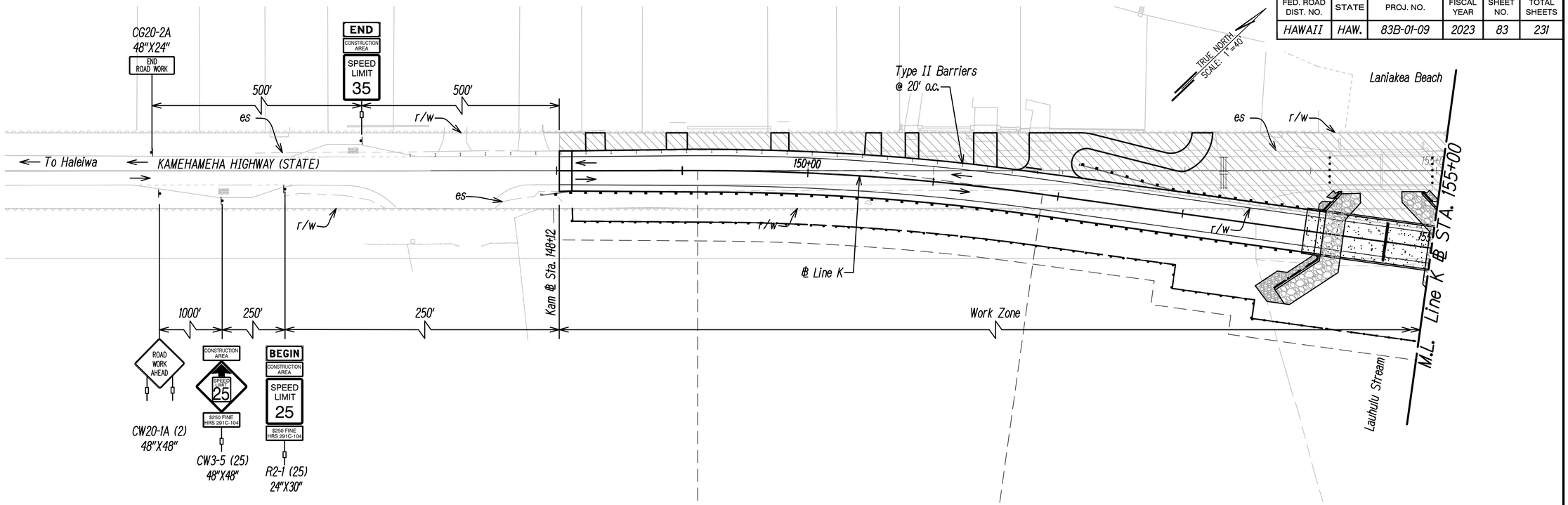
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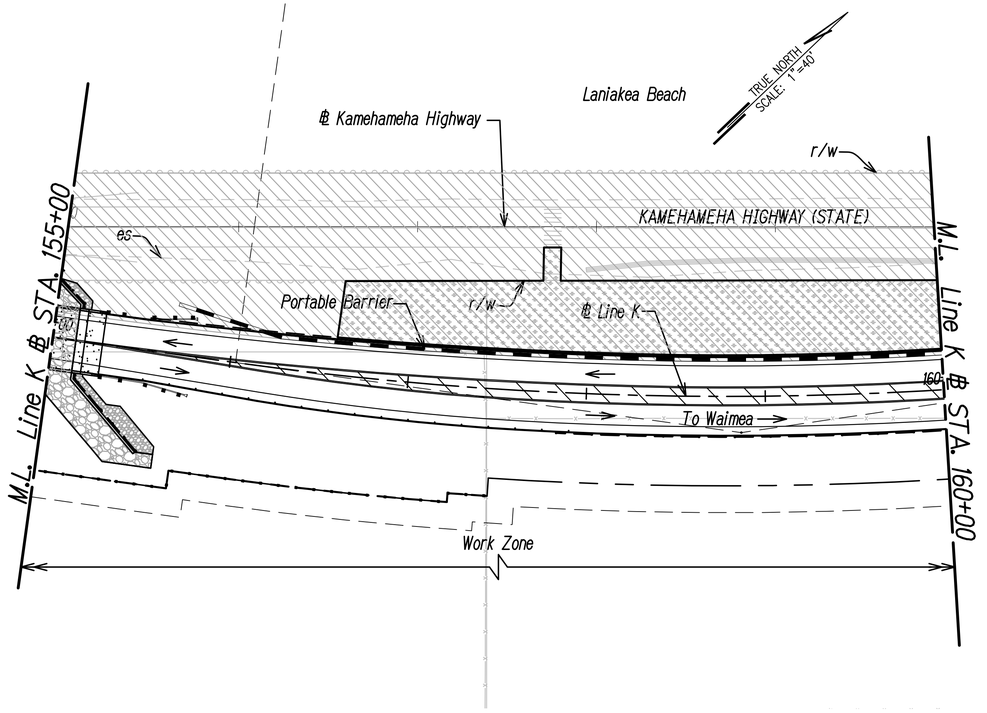
SIGNATURE 04/30/24 EXPIRATION DATE OF THE LICENSE

SHEET No. TCP-08 OF 14 SHEETS

ORIGINAL PLAN
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CHECKED BY
DATE
NOTE BOOK
No.

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83B-01-09	2023	83	231





LEGEND

- Work Zone
- Temporary AC Pavement
- Direction of Travel
- Cones or Delineators
- Portable Barrier
- Barrier End Treatment
- Flashing Arrow Sign Board
- Sign
- Type II Barricade
- Type III Barricade

GRAPHIC SCALE

1" = 40' (40 0 40 80)

SCALE IN FEET

Note:
Contractor to coordinate access to private properties as needed to construct driveways.

DATE	REVISION

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

TRAFFIC CONTROL PLAN PHASE 2C

KAMEHAMEHA HIGHWAY DRAINAGE AND SAFETY IMPROVEMENTS
Vicinity of Laniakea Beach (MP 3.06 to MP 3.54)
Project No. 83B-01-09

Scale: 1"=40 Date: December 2022

DEXTER S. EJI
LICENSED PROFESSIONAL ENGINEER
No. 4739-C
HAWAII, U.S.A.

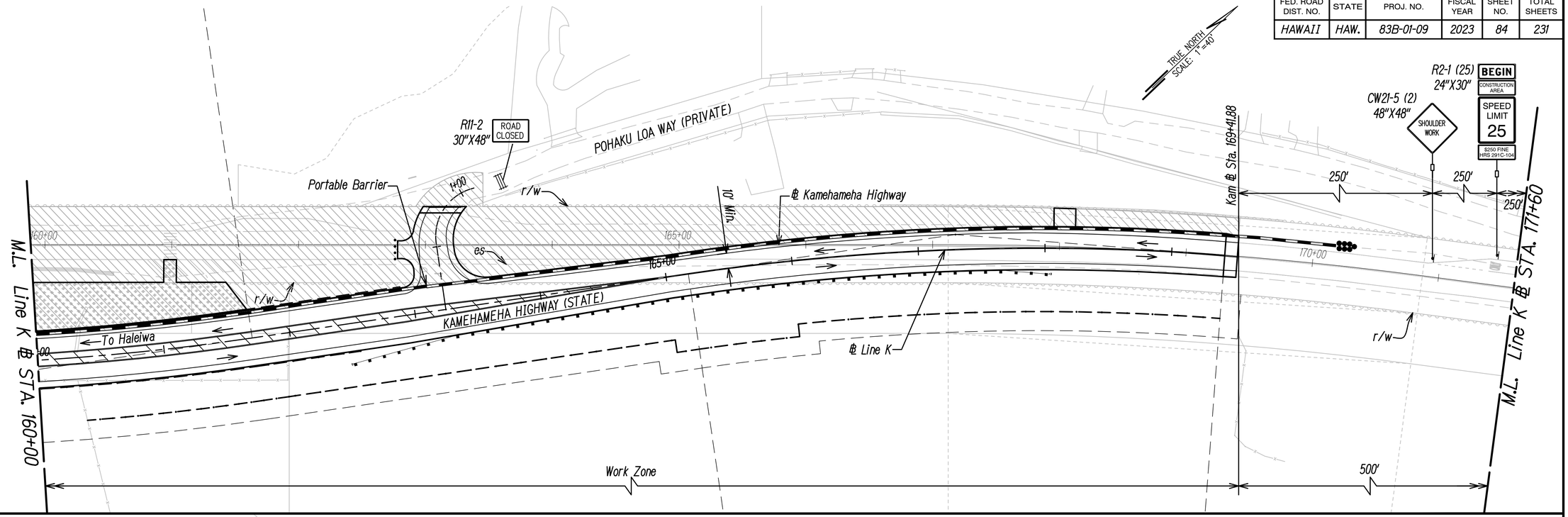
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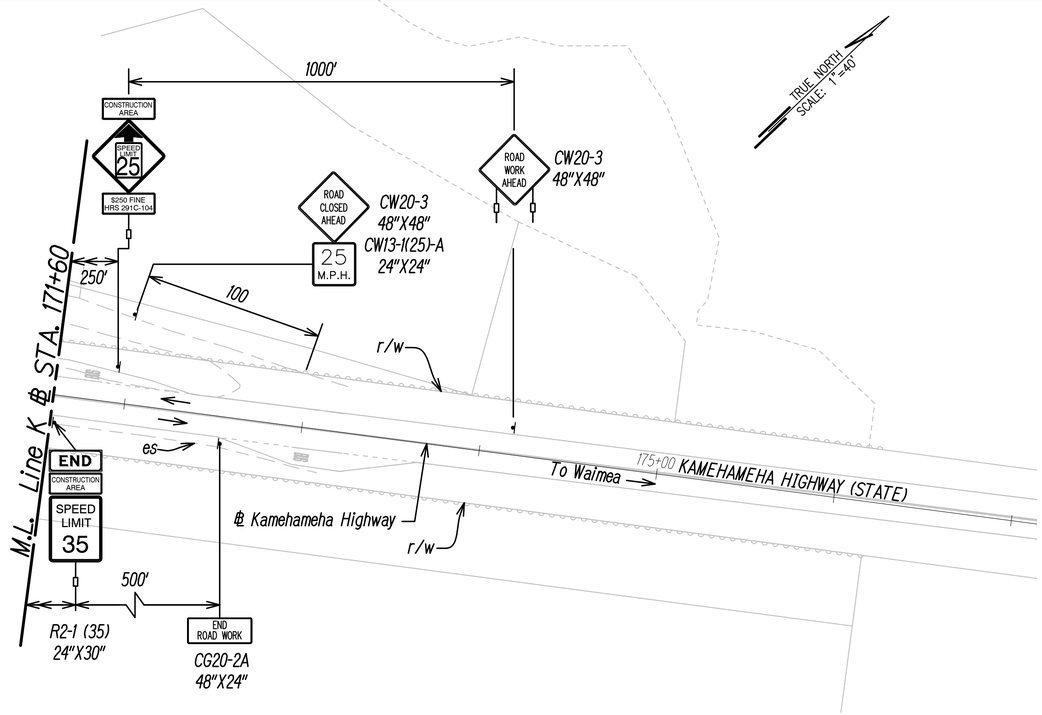
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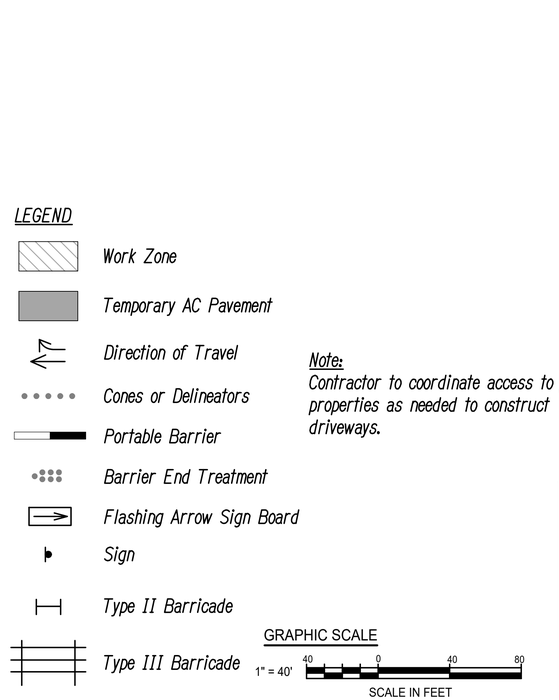
SHEET No. TCP-09 OF 14 SHEETS

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FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83B-01-09	2023	84	231







LEGEND

- Work Zone
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GRAPHIC SCALE
1" = 40'
40 0 40 80
SCALE IN FEET

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STATE OF HAWAII
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HIGHWAYS DIVISION

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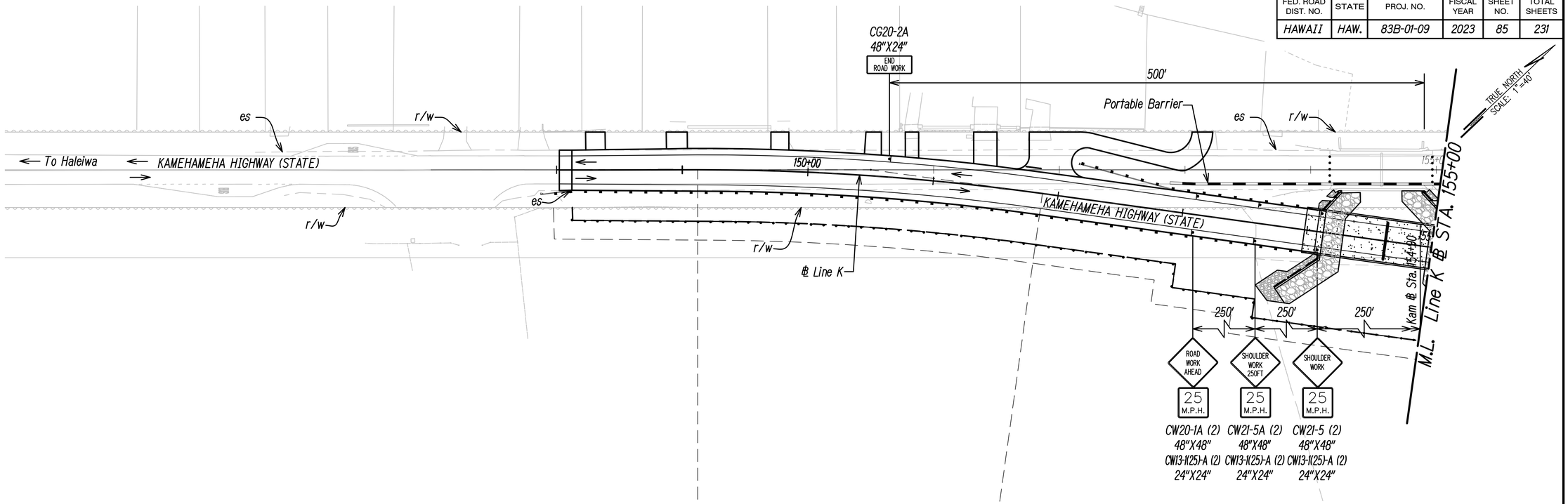
TRAFFIC CONTROL PLAN PHASE 2C

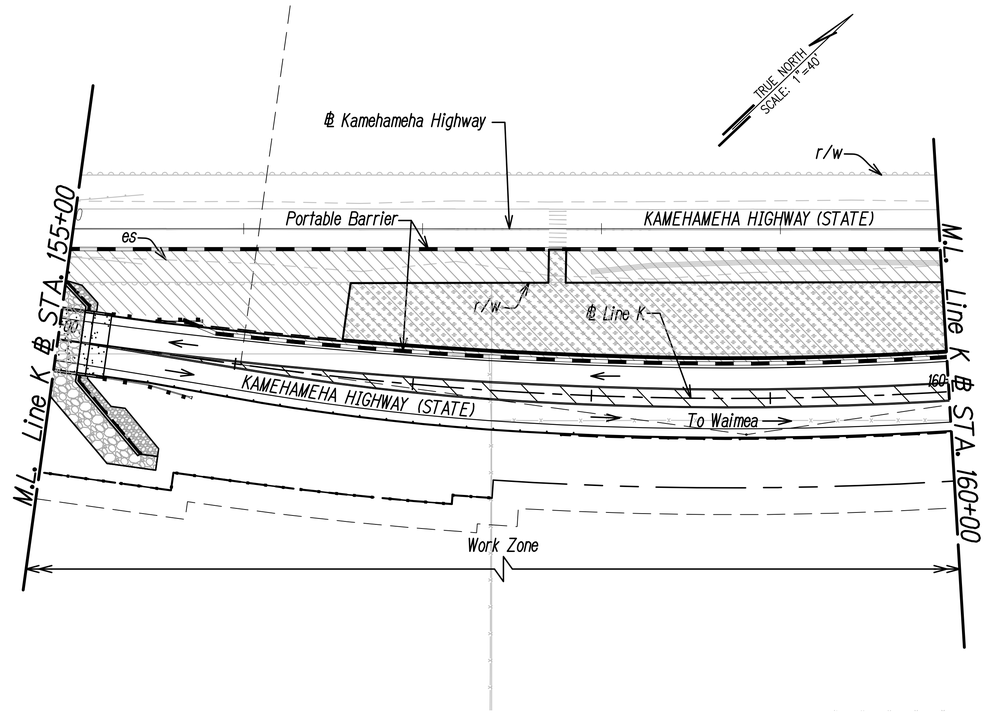
KAMEHAMEHA HIGHWAY DRAINAGE AND SAFETY IMPROVEMENTS
Vicinity of Laniakea Beach (MP 3.06 to MP 3.54)
Project No. 83B-01-09

Scale: 1"=40 Date: December 2022

SHEET No. TCP-10 OF 14 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83B-01-09	2023	85	231





LEGEND

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GRAPHIC SCALE
1" = 40'
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SCALE IN FEET

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DATE	REVISION

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

TRAFFIC CONTROL PLAN PHASE 3

KAMEHAMEHA HIGHWAY DRAINAGE AND SAFETY IMPROVEMENTS
Vicinity of Laniakea Beach (MP 3.06 to MP 3.54)
Project No. 83B-01-09

Scale: 1"=40 Date: December 2022

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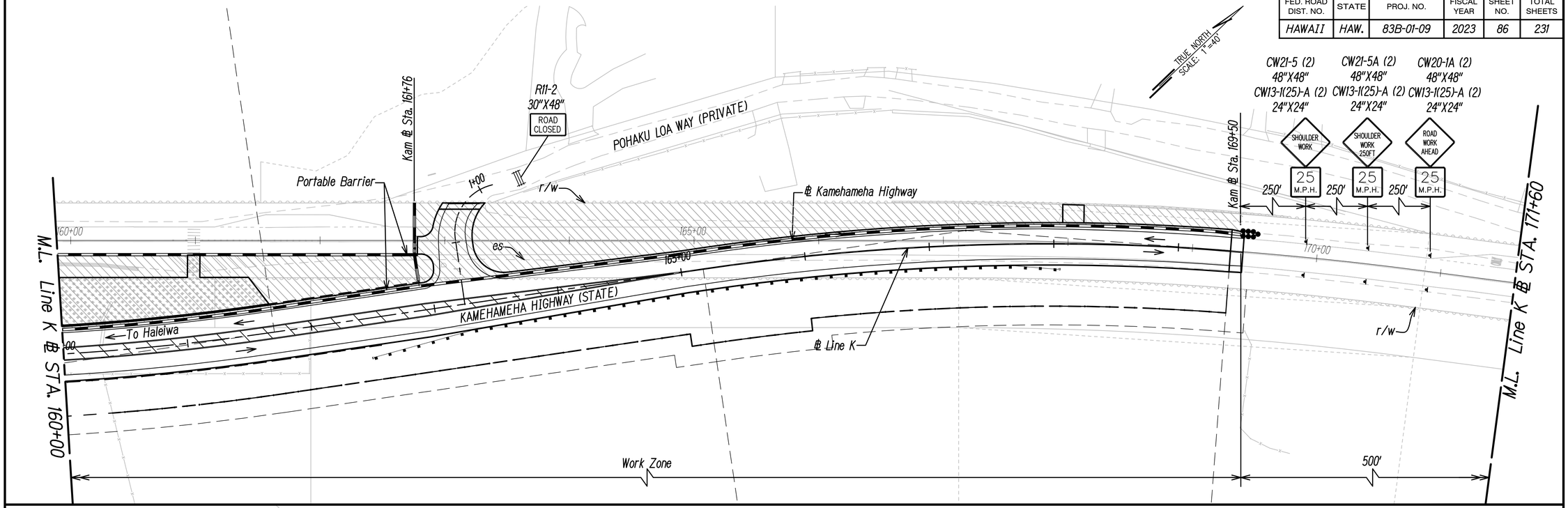
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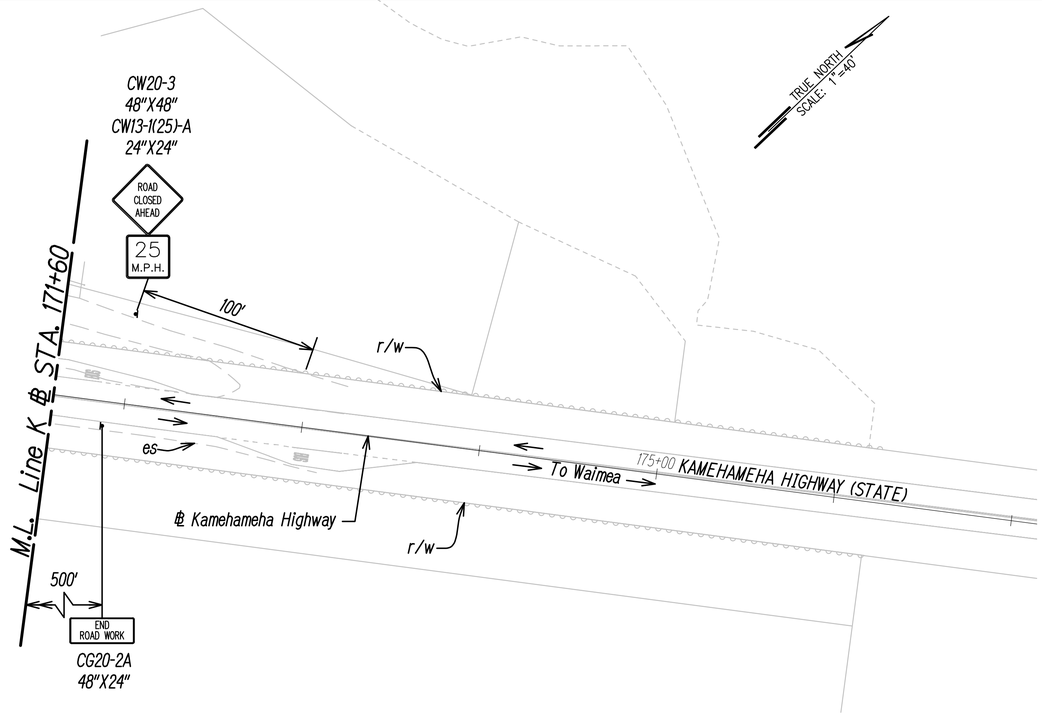
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SHEET No. TCP-11 OF 14 SHEETS

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HAWAII	HAW.	83B-01-09	2023	86	231





LEGEND

- Work Zone
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DATE	REVISION

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STATE OF HAWAII
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HIGHWAYS DIVISION

TRAFFIC CONTROL PLAN PHASE 3

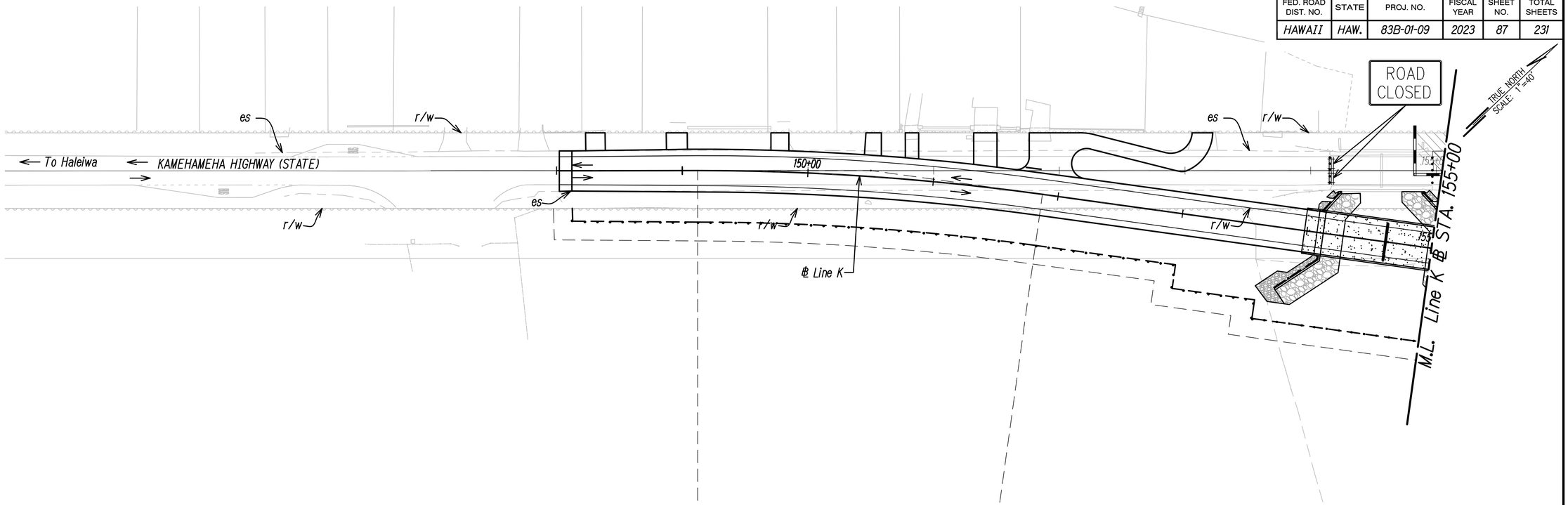
KAMEHAMEHA HIGHWAY DRAINAGE AND SAFETY IMPROVEMENTS
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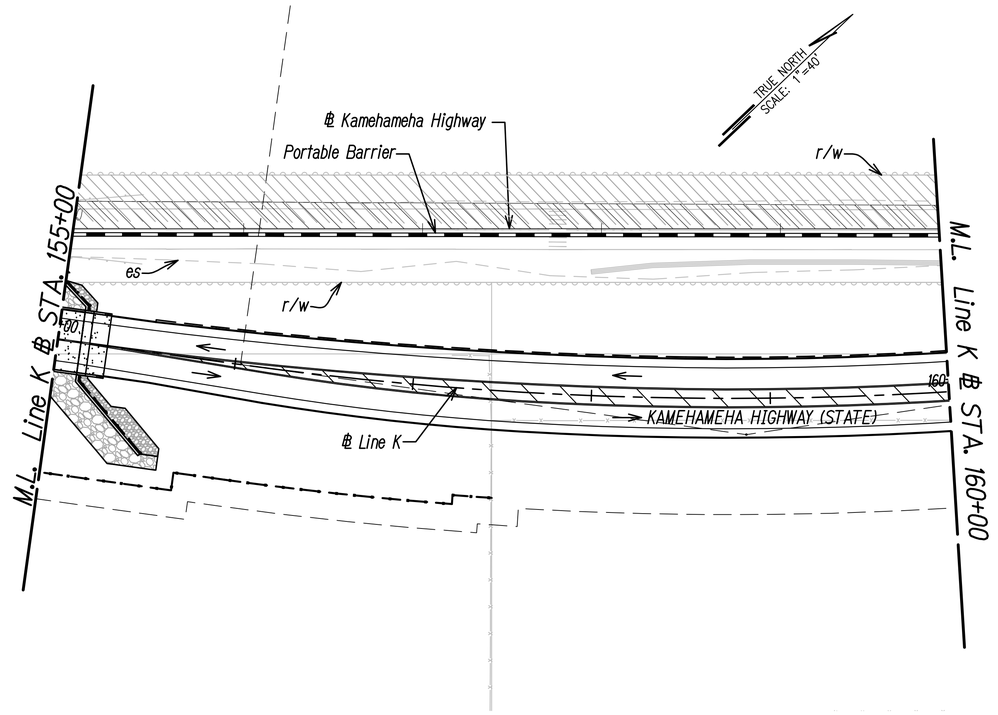
Scale: 1"=40 Date: December 2022

SHEET No. TCP-12 OF 14 SHEETS

ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
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FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83B-01-09	2023	87	231





LEGEND

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GRAPHIC SCALE

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SCALE IN FEET

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DATE	REVISION

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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

TRAFFIC CONTROL PLAN PHASE 4

KAMEHAMEHA HIGHWAY DRAINAGE AND SAFETY IMPROVEMENTS
Vicinity of Laniakea Beach (MP 3.06 to MP 3.54)
Project No. 83B-01-09

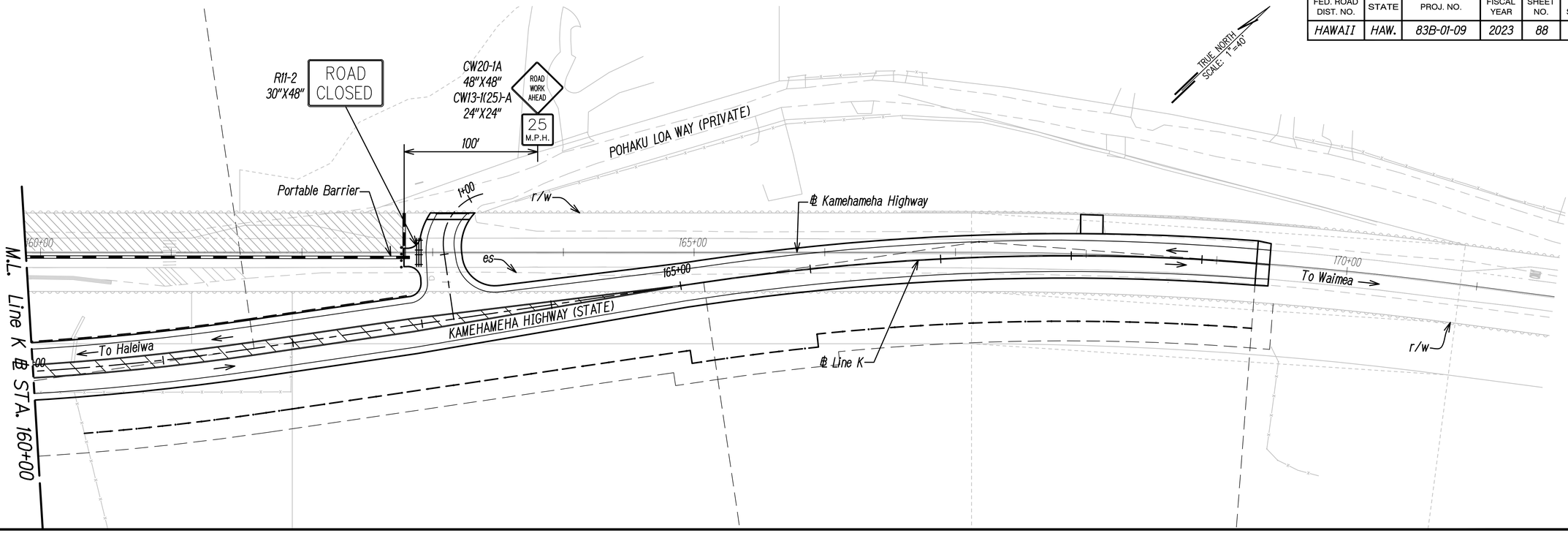
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SHEET No. TCP-13 OF 14 SHEETS

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FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83B-01-09	2023	88	231



LEGEND

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SCALE IN FEET

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DATE		REVISION

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

TRAFFIC CONTROL PLAN PHASE 4

KAMEHAMEHA HIGHWAY DRAINAGE AND SAFETY IMPROVEMENTS
Vicinity of Laniakea Beach (MP 3.06 to MP 3.54)
Project No. 83B-01-09

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SHEET No. TCP-14 OF 14 SHEETS

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FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83B-01-09	2023	86	228

22005

GENERAL NOTES

1. All Work Shall be Constructed in Accordance the Following Construction Standards and specifications:
   Construction Standards of Department of Transportation, State of Hawaii, 2005.

   Current Standards Specifications for Road and Bridge Construction, State of Hawaii.

2 It is Not the Intent of These Plans and Specifications to Indicate That All Existing Utilities are Shown on the Plans. The Information on the Existing Utilities are Based on Available Plans. The Locations are Approximate only and the Contractor Shall Verify the Location and Depth of the Facilities and Exercise Proper Care in Excavating in This Area. All Existing Utilities Whether or Not Shown on the Plans Shall be Protected at All Times by the Contractor. The Contractor Shall be Responsible for Any Damages to the Facilities Whether Shown or Not Shown on Plans. Any Repair Work Shall be Provided at No Additional Cost to This Project.

3. Exercise Proper Care When Excavating in Areas Existing Underground Facilities. Damages to the Existing Facilities Shall be Immediately Reported to the Respective Utility Companies, City or State Agency. The Repair Work Shall be Provided at No Additional Cost to the Project.

4. All Saw Cutting Work Shall be Considered Incidental to the Various Contract Items.

5. For Typical Construction Details Not Shown on Plans, Refer to Applicable Standard Details of Construction and Maintenance Services, Department of Transportation, State of Hawaii.

6. Extra Care Shall be Taken While Excavating for the Light Pole Foundation, Pullboxes and Ductlines. Contractor Shall Tone for Location of Utility Lines Prior to Excavation.

7. Furnish and Install a Minimum Two Each TORX T-27 Tamper-Proof Screws per Pullbox Cover Section In Accordance State DOT Highways Requirements.

8. Coordinate With Johnson Controls for Connection of Each GE ELWC Light Node to the DOT's Node Network. Pay for All Changes Assessed by Johnson Controls for Services Provided. Prior to Mounting Each Node, Record Node Serial Number and Associated Pole Number and Turnover Information to HDOT.

9. Coordinate With HECo for the Disconnect of Existing Street Lights on HECo Poles. Notify HECo No Less Than 6 Weeks Prior to Date of Disconnect.

10. Existing Street Lights Being Removed Shall be Turned Over to the HDOT Warehouse at State of Hawaii, DOT Hwys, 727 Kakoi St, Honolulu, Hi. Notify and Coordinate with Mr. John Gerard at 808-258-1907 No Less Than 2 Weeks Prior to Date of Delivery to HDOT Warehouse.

ELECTRICAL SYMBOLS LIST

- Existing Wood Utility Pole
- Roadway Light Standard With Breakaway Transformer Base Foundation. 87W LED, 15' Truss Arm. See Detail A / E0.1 | E5.3
- Roadway Light Standard with Breakaway Transformer Base Foundation. 50W LED, 8' Truss Arm. See Detail A / E0.1 | E5.3
- Existing Wood Utility Pole and Roadway Light
- Pullbox/Handhole
- Key Note Indicator

BC	Bare Copper
GRS	Galvanized Rigid Steel
LED	Light Emitting Diode
SS	Stainless Steel
UON	Unless Otherwise Noted
WP	Weatherproof

- Underground Ductline
- Conduit & Wiring Concealed within Concrete Structure
- Exposed Conduit (PVC Coated GRS) & Wiring
- Ductline, Stub-out as Indicated on Plan
- OH/P/S/T/V/G — Overhead UtilitY Lines
  - Guy
  - CATV
  - Telephone
  - Secondary Electric
  - Primary Electric
  - OH - Overhead (New)
  - eOH - Overhead (Existing)

1A		
XXXXXX	HA26	IV
L97	480V	

Indicates Light Pole Identification Tag, See Detail B / E0.1 | E5.3

PULLBOX, HANDHOLE SCHEDULE

(4) 2' x 4' HECo Pullbox. Provide 10" Wide Re-inforced Concrete Collar Ring Around the Perimeter of the Pullbox in Accordance With HECo Standards

(100) State Highways Street Light Pullbox, Type A, See State DOT Standard Plan TE-37 and General Note 7. Provide Re-inforced Concrete Collar Ring Around the Perimeter of Pullbox. See D / E0.1 | E5.1

DUCT DESIGNATION

2 L 4 A

- A — Duct Section "A" See Duct Section Details
- 4 — Conduit Size
- L — System "L" Lighting (Pathway)
  - "S" Secondary Electric (Normal)
  - "SP" Spare
- 2 — Number of Ducts

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ORIGINAL PLAN
NOTE BOOK
No.

DATE		REVISION

RUSSELL K. MORI
LICENSED PROFESSIONAL ENGINEER
No. 9013-E
HAWAII, USA

MK ENGINEERS, LTD.
LICENSE EXPIRATION DATE: 4/30/24
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.

4/18/23

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

ELECTRICAL SYMBOLS AND NOTES

KAMEHAMEHA HIGHWAY DRAINAGE AND SAFETY IMPROVEMENTS
Vicinity of Laniakea Beach (MP 3.06 to MP 3.54)
Project No. 83B-01-09

Scale: As Noted Date: December 2022

SHEET No. E0.1 OF 23 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83B-01-09	2023	87	228

22005

HAWAIIAN ELECTRIC COMPANY NOTES:

1. *Location of Hawaiian Electric Facilities*

   The Location of Hawaiian Electric'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 Hawaiian Electric'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 Clearance*

   The Contractor Shall Obtain an Excavation Clearance from Hawaiian Electric's Planning and Design Section of the Customer Installations Division (543-5654) Located at 820 Ward Avenue, 4th Floor, a Minimum of Ten (10) Working Days Prior to Starting Construction.

4. *Caution!!! Electrical Hazard!!!*

   Existing Hawaiian Electric Overhead and Underground Lines are Energized and will Remain Energized During Construction Unless Prior Special Arrangements have been Made with Hawaiian Electric. Only Hawaiian Electric 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 Hawaiian Electric Facilities, Which Can Result in Electrocution.

5. *Overhead Lines*

   State Law (OSHA) Requires that a Worker and the Longest Object He or She May Contact Cannot Come Closer than a Specified Minimum Radial Clearance when Working Close to or Under any Overhead Lines. It is the Contractor's Responsibility to be Informed of and Comply with the Law.

   At any Time Should the Contractor Anticipate that His Work will Result in the Need to Encroach within the Minimum Required Clearance as Stated in the Law, the Contractor Shall Notify Hawaiian Electric at Least Three (3) Months Prior to the Planned Encroachment so that, if Feasible, the Necessary Protections (e.g. Relocate or De-Energize Hawaiian Electric Lines) Can be Investigated. Hawaiian Electric may also be Able to Blanket its Distribution (12KV and Below) Lines to Provide a Visual Aid in Preventing Accidental Contact. Hawaiian Electric's Cost of Safeguarding or Identifying its Lines will be Charged to the Contractor.

   Contact Hawaiian Electric's Customer Installations Division at 543-7070 for Assistance in Identifying and Safeguarding Overhead Power Lines.

6. *Pole Bracing*

   Contractor Shall Not Excavate within 10 Feet of Hawaiian Electric's Utility Poles or Any Anchor System Supporting the Utility Pole. If Contractor Must Excavate an Area More than 12 Inches Deep by 12 Inches Wide, and Closer than 10 Feet From a Utility Pole or its Anchor System, Contractor will be Responsible for Protecting, Supporting, Securing and Taking All Precautions to Prevent Damage to or Leaning of Existing Poles. Before Commencing Such Excavation, Contractor must Notify Hawaiian Electric Which May Lead to Implementing Pole Bracing Requirements. Hawaiian Electric Requires a Minimum of Ten (10) Working Days to Conduct the Review of Contractor's Submittal. Contractor Shall Submit its Bracing Calculations and Drawings, Prepared and Stamped by a Licensed Structural Engineer, to Hawaiian Electric's Customer Installations Division (543-7070) for Review. Contractor Shall be Responsible for the Design, Installation, And Removal Of The Temporary Pole Bracing System, as Well as All Costs Incurred by Hawaiian Electric to Review Contractor's Drawings and to Repair or Straighten Poles Impacted by Contractor's Activities, Including Response and Restoration Costs Incurred by Hawaiian Electric Arising Out of or Related to Outages Caused by Contractor's Failure to Meet the Foregoing Requirements. Hawaiian Electric's Receipt of Pole Bracing Calculation or Drawing Submittals of Any Contractor, Including Work Procedure, Shall Not Relieve Contractor from Any Liability Resulting from Contractor's Excavation Near or Around Hawaiian Electric's Utility Poles.

7. *Underground Lines*

   The Contractor Shall Exercise Extreme Caution Whenever Construction Crosses or is in Close Proximity of Underground Lines. Hawaiian Electric's Existing Electrical Cables are Energized and will Remain Energized During Construction. Only Hawaiian Electric Personnel are to Break into Existing Hawaiian Electric Facilities, Handle these Cables, and Erect Temporary Guards to Protect these Cables from Damage. The Cost of Hawaiian Electric's Assistance in Providing Proper Support and Protection of its Underground Lines will be Charged to the Contractor. For Assistance/Coordination in Providing Proper Support and Protection of these Lines, the Contractor Shall Call Hawaiian Electric's Customer Installations Division at 543-7070 a Minimum of Ten (10) Working Days in Advance.

   Special Precautions are Required when Excavating Near Hawaiian Electric's 138KV or 46KV Underground Lines (See Hawaiian Electric Instructions to Consultants/Contractors on "Excavation Near Hawaiian Electric's Underground 138KV and/or 46KV Lines" For Detailed Requirements).

   For Verification of Underground Lines, the Contractor Shall Call the Hawaii One Call Center at 866-423-7287 Minimum of Five (5) Working Days in Advance.

8. *Underground Fuel Pipelines*

   The Contractor Shall Exercise Extreme Caution Whenever Construction Crosses or is in Close Proximity of Hawaiian Electric's Underground Fuel Oil Pipelines. Special Precautions are Required when Excavating Near Hawaiian Electric's Underground Fuel Oil Pipelines (See Hawaiian Electric's Specific Fuel Pipeline "Guidelines" to Consultants/Contractors on Excavation Near Hawaiian Electric's Underground Fuel Pipelines For Detailed Requirements).

9. *Excavations*

   When Trench Excavation is Adjacent to or Beneath Hawaiian Electric's Existing Structures or Facilities, the Contractor is Responsible for:

   a) Arranging For Hawaiian Electric Standby Personnel to Observe Work at Contractor's Cost.
   b) Sheeting, Bracing, or Otherwise Supporting the Excavation and Stabilizing the Existing Ground to Render it Safe and Secure and to Prevent Possible Slides, Cave-Ins, and Settlements.
   c) Properly Supporting Existing Structures or Facilities with Beams, Struts, Under-Pinnings, or Other Necessary Methods to Fully Protect it From Damage.
   d) Backfilling with Proper Backfill Material Including Special Thermal Backfill Where Existing (Refer to Engineering Division for Thermal Backfill Specifications).

10. *Relocation of Hawaiian Electric Facilities*

    Any Work Required to Relocate or Modify Hawaiian Electric Facilities Shall be Done by Hawaiian Electric, or by the Contractor Under Hawaiian Electric's Supervision. The Contractor Shall be Responsible for All Coordination, and Shall Provide Necessary Support for Hawaiian Electric's Work, Which May Include, but Not be Limited to, Staking of Pole/Anchor Locations, Identifying Right of Way and Property Lines, 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.

DATE		REVISION

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ORIGINAL PLAN
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MK ENGINEERS, LTD.
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4/18/23

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

HECo NOTES - A

KAMEHAMEHA HIGHWAY DRAINAGE AND SAFETY IMPROVEMENTS
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Scale: As Noted Date: December 2022

SHEET No. E0.2 OF 23 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83B-01-09	2023	88	228

22005

HAWAIIAN ELECTRIC COMPANY NOTES (CONT'D):

11. Conflicts

Any Redesign or Relocation of Hawaiian Electric's Facilities Not Shown on the Plans May be Cause for Lengthy Delays. The Contractor Acknowledges that Hawaiian Electric 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 Hawaiian Electric'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, Hawaiian Electric Should be Notified Immediately Upon Discovery or Identification of Such Conflict.

12. Damage to Hawaiian Electric Facilities

The Contractor Shall be Responsible for the Protection of All Hawaiian Electric Surface and Subsurface Utilities and Shall be Responsible for Any Damages to Hawaiian Electric's Facilities as a Result of His Operations. The Contractor Shall Immediately Report Such Damages or Any Hazardous Conditions Related to Hawaiian Electric's Lines to Hawaiian Electric's Trouble Dispatcher at 548-7961. Repair Work Shall be Done by Hawaiian Electric or by the Contractor Under Hawaiian Electric's Supervision. Costs for Damages to Hawaiian Electric's Facilities Shall be Borne by the Contractor.

In Case of Damage or Suspected Damage to Hawaiian Electric's Fuel Pipeline, the Contractor Shall Immediately Notify Hawaiian Electric's Security Command Center at 543-7685 (a 24-Hour Number) so Hawaiian Electric 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. Hawaiian Electric Stand-By Personnel

The Contractor May Request Hawaiian Electric to Provide an Inspector to Stand-By During Construction Near Hawaiian Electric's Facilities. The Cost of Such Inspection will be Charged to the Contractor.

The Contractor Shall Call Hawaiian Electric's Customer Installations Division at 543-7070 a Minimum Of Three (3) Months in Advance to Arrange for Hawaiian Electric Stand-By Personnel.

14. Clearances

The Following Clearances Shall be Maintained Between Hawaiian Electric's Ductline and All Adjacent Structures (Charted and Uncharted) in the Trench:

Guidelines For Minimum Horizontal (Parallel) Clearances Between Hawaiian Electric and Other Underground Utilities

Underground Utility	Hawaiian Electric Direct Buried Cable	Hawaiian Electric Direct Buried In Conduit (no Concrete Encasement)	Hawaiian Electric 3" (Minimum) Concrete Encasement	Applicable Notes:
Hawaiian Electric DB Conduits	12"	3"	0"	
Hawaiian Electric 3" Encasement	0"	0"	0"	
Telephone/CATV DB	12"	12"	6"	
Telephone/CATV DB Ducts	12"	12"	6"	
Telephone/CATV 3" Encasement	0"	0"	0"	5
Traffic Signal	12"	12"	12"	
Water DB (BWS Owned)	36"	36"	36"	1, 4
Customer Owned Water Service Laterals	12"	12"	12"	
Water (concrete Jacketed) (BWS Owned)	36"	36"	36"	1, 4
Gas DB	12"	12"	12"	1
Gas (Concrete Jacketed)	12"	12"	12"	1
Sewer DB	36"	36"	36"	1, 2
Sewer (Concrete Jacketed)	36"	36"	36"	1, 2
Drain	12"	12"	12"	1
Fuel Pipelines				3

Notes:

1. Where Space is Available, Parallel Clearance to Other Utilities, or Foreign Structures other than Communication or Traffic Signal Shall be 36".

2. If 36" Clearance Cannot be Met:
   - If Clearance is Less than 12", Jacket Sewer Line with Reinforced Concrete (Per Hawaiian Electric's Std 30-1030) for a Distance of 5'-0" Plus Pipe Diameter.
   - If Clearance is Between 12" and 36", Jacket Sewer Line with Plain Concrete.

3. All Fuel Pipeline Crossings Shall be Reviewed and Approved by the Company that Owns and Maintains it.

4. 5 Feet Clear to Water Mains 16" and Larger.

5. For Situations with 0" Minimum Separation, a 6" Separation is Recommended.

6. Clearances Measured from Outer Edges or Diameters of Utilities. Whenever Concrete Jackets are Involved, Clearances Shall be Total Clear Distance Between the Concrete Jacket and Utility Concerned.

Guidelines For Minimum Vertical (Crossing) Clearances Hawaiian Electric and Other Underground Utilities

Underground Utility	Hawaiian Electric Direct Buried Cable	Hawaiian Electric Direct Buried In Conduit (No Concrete Encasement)	Hawaiian Electric 3" (Minimum) Concrete Encasement	Applicable Notes:
Hawaiian Electric DB Conduits	6"	3"	0"	
Hawaiian Electric 3" Encasement	0"	0"	0"	
Telephone/CATV DB	12"	12"	6"	
Telephone/CATV DB Ducts	12"	12"	6"	
Telephone/CATV 3" Encasement	0"	0"	0"	3
Traffic Signal	12"	12"	6"	
Water DB (BWS Owned)	12"	12"	12"	5
Customer Owned Water Service Laterals	6"	6"	6"	
Water (concrete Jacketed) (BWS Owned)	12"	12"	12"	5
Gas DB	12"	12"	12"	
Gas (Concrete Jacketed)	12"	12"	12"	
Sewer DB	24"	24"	24"	1
Sewer (Concrete Jacketed)	24"	24"	24"	1
Drain	12"	12"	6"	
Fuel Pipelines				2

Notes:

1. If Clearance Cannot be Met:
   - If Clearance is Less than 12", Jacket Sewer Line with Reinforced Concrete (Per Hawaiian Electric's Std 30-1030) for a Distance of 5'-0" Plus Pipe Diameter.
   - If Clearance is Between 12" and 24", Jacket Sewer Line with Plain Concrete.

2. All Fuel Pipeline Crossings Shall be Reviewed and Approved by The Company that Owns and Maintains it.

3. For Situations with 0" Minimum Separation, a 6" Separation is Recommended.

4. Clearances Measured from Outer Edges or Diameters of Utilities. Whenever Concrete Jackets are Involved, Clearances Shall be Total Clear Distance Between the Concrete Jacket and Utility Concerned.

5. 36" Clearance is Required for Trenchless Installation Work.

DATE		REVISION

RUSSELL K. MORI
LICENSED PROFESSIONAL ENGINEER
No. 9013-E
HAWAII, U.S.A.
MK ENGINEERS, LTD.
LICENSE EXPIRATION DATE: 4/30/24
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.
4/13/23

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

HECo NOTES - B

KAMEHAMEHA HIGHWAY DRAINAGE AND SAFETY IMPROVEMENTS
Vicinity of Laniakea Beach (MP 3.06 to MP 3.54)
Project No. 83B-01-09

Scale: As Noted Date: December 2022

SHEET No. E0.3 OF 23 SHEETS

DATE
SURVEY PLOTTED BY
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ORIGINAL PLAN
NOTE BOOK
No.

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83B-01-09	2023	89	228

22005

HAWAIIAN ELECTRIC COMPANY NOTES (CONT'D):

The Contractor Shall Notify the Construction Manager ₰ Hawaiian Electric of Any Heat Sources (Power Cable Duct Bank, Steamline, etc.) Encountered that are Not Properly Identified on the Drawing.

15. Idemnity

The Contractor Shall Indemnify, Defend and Hold Harmless Hawaiian Electric 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 Tortious 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 Hawaiian Electric.

Additional Notes When Work Involves Construction of Hawaiian Electric Facilities

16. Schedule

Contractor Shall Furnish His Construction Schedule Six (6) Months Prior to Starting Work on Hawaiian Electric Facilities. Contractor Shall Give Hawaiian Electric, in Writing, Three (3) Months Notice to Proceed with Hawaiian Electric's Portion of Work.

17. Authority

All Construction, Restoration Work, and Inspection Shall be Subject to Whichever Governmental Agency has Authority Over the Work.

18. Specifications

Construction of Hawaiian Electric's Underground Facilities Shall be Constructed in Accordance with the Latest Revisions of Hawaiian Electric Specifications CS7001, CS7003, CS7202, CS9301, and CS9401 and Applicable Hawaiian Electric Standards.

19. Construction

Contractor Shall Furnish All Labor, Materials, Equipment, and Services to Properly Perform and Fully Complete All Work Shown on the Contract, Drawings, and Specifications. All Materials Shall be New and Manufactured in the United States of America. All Manhole, Handhole, and Ductline Installations Shall be Inspected and Approved by Hawaiian Electric Prior to Excavation and Prior to Placing Concrete. Contractor Shall Notify Hawaii Electric's Inspection Group at 543-2567 at Least Five (5) Working Days Prior to Installing Facilities or Placing Concrete.

Contractor to Coordinate Work to Break into Hawaiian Electric's Existing Electrical Facilities with Hawaiian Electric's Inspection Group at 543-2567 at Least Ten (10) Working Days in Advance.

20. Stakeout

The Contractor Shall Arrange for Toneouts of All Underground Facilities and Shall Stakeout All Proposed Hawaiian Electric Facilities Within the Project Area so as to Not Conflict with Any Utility (Existing or Proposed) and Any Proposed Construction or Improvement Work for Verification by Hawaiian Electric Before Proceeding with Hawaiian Electric Work.

21. Ductlines

All Ductline Installations Shall be PVC Schedule 40 Encased in Concrete, Unless Otherwise Noted. All Completed Ductlines Shall be Mandrel Tested by the Contractor in the Presence of Hawaiian Electric's Inspector Using Hawaiian Electric's Standard Practice. The Contractor Shall Install 1800# Tensile Strength Muletape Pull Line in All Completed Ductlines After Mandrel Testing is Complete.

22. Joint Pole Removal

The Last Joint Pole Occupant off the Poles Shall Remove the Poles.

23. As-Built Plans

The Contractor Shall Provide Hawaiian Electric with a Set of Electronic and Hard Copy Plans of Each Sheet Showing the Offsets, Stationing, and Vertical Elevation of the Duct Line(s) Constructed.

DATE		REVISION

RUSSELL K. MORI
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4/18/23

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

HECo NOTES - C

KAMEHAMEHA HIGHWAY DRAINAGE AND SAFETY IMPROVEMENTS
Vicinity of Laniakea Beach (MP 3.06 to MP 3.54)
Project No. 83B-01-09

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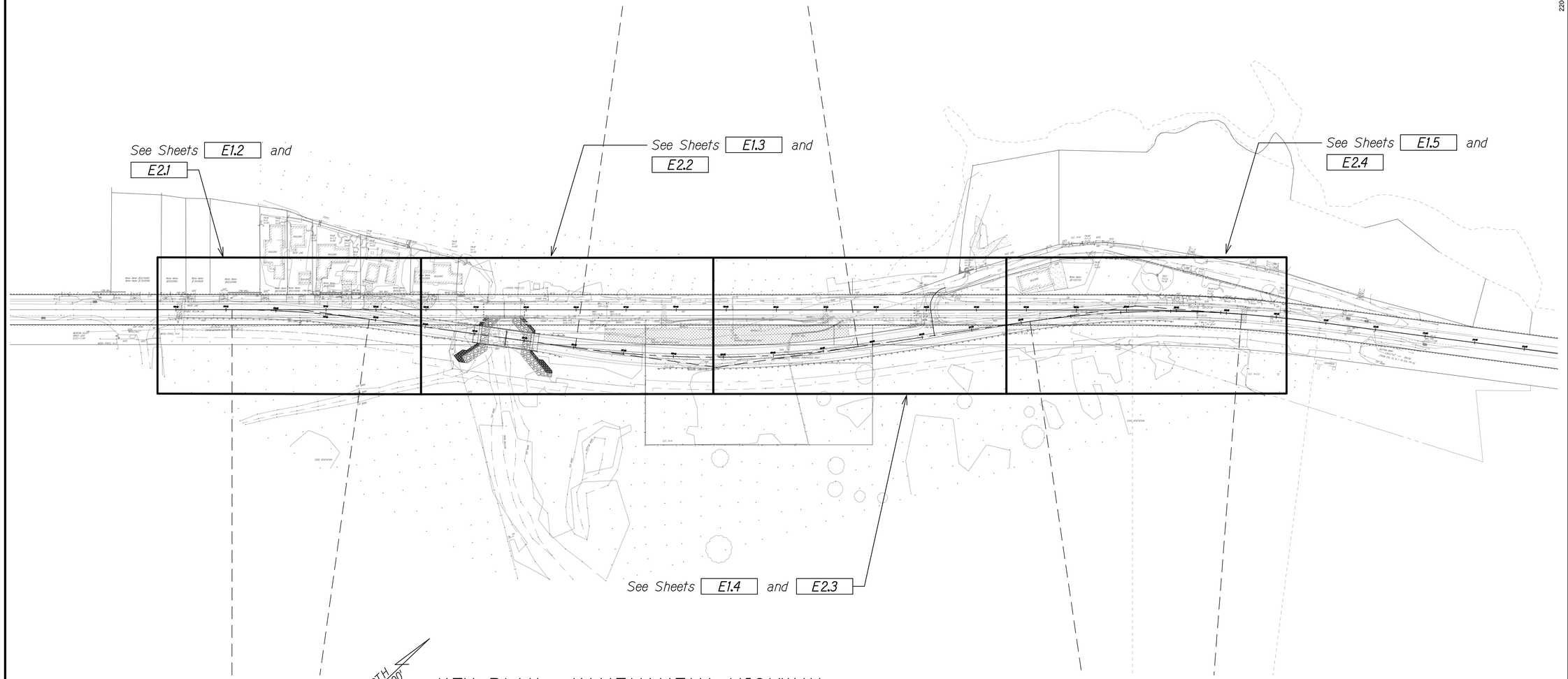
SHEET No. E0.4 OF 23 SHEETS

DATE
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ORIGINAL PLAN
NOTE BOOK
No.

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83B-01-09	2023	90	228

22005



TRUE NORTH
SCALE : 1" = 100'

KEY PLAN - KAMEHAMEHA HIGHWAY

SCALE: 1" = 100'-0"

GRAPHIC SCALE:

0' 100' 200' 300'

1" = 100'-0"

DATE		REVISION

RUSSELL K. MORI
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No. 9013-E
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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

KEY PLAN

KAMEHAMEHA HIGHWAY DRAINAGE AND SAFETY IMPROVEMENTS
Vicinity of Laniakea Beach (MP 3.06 to MP 3.54)
Project No. 83B-01-09

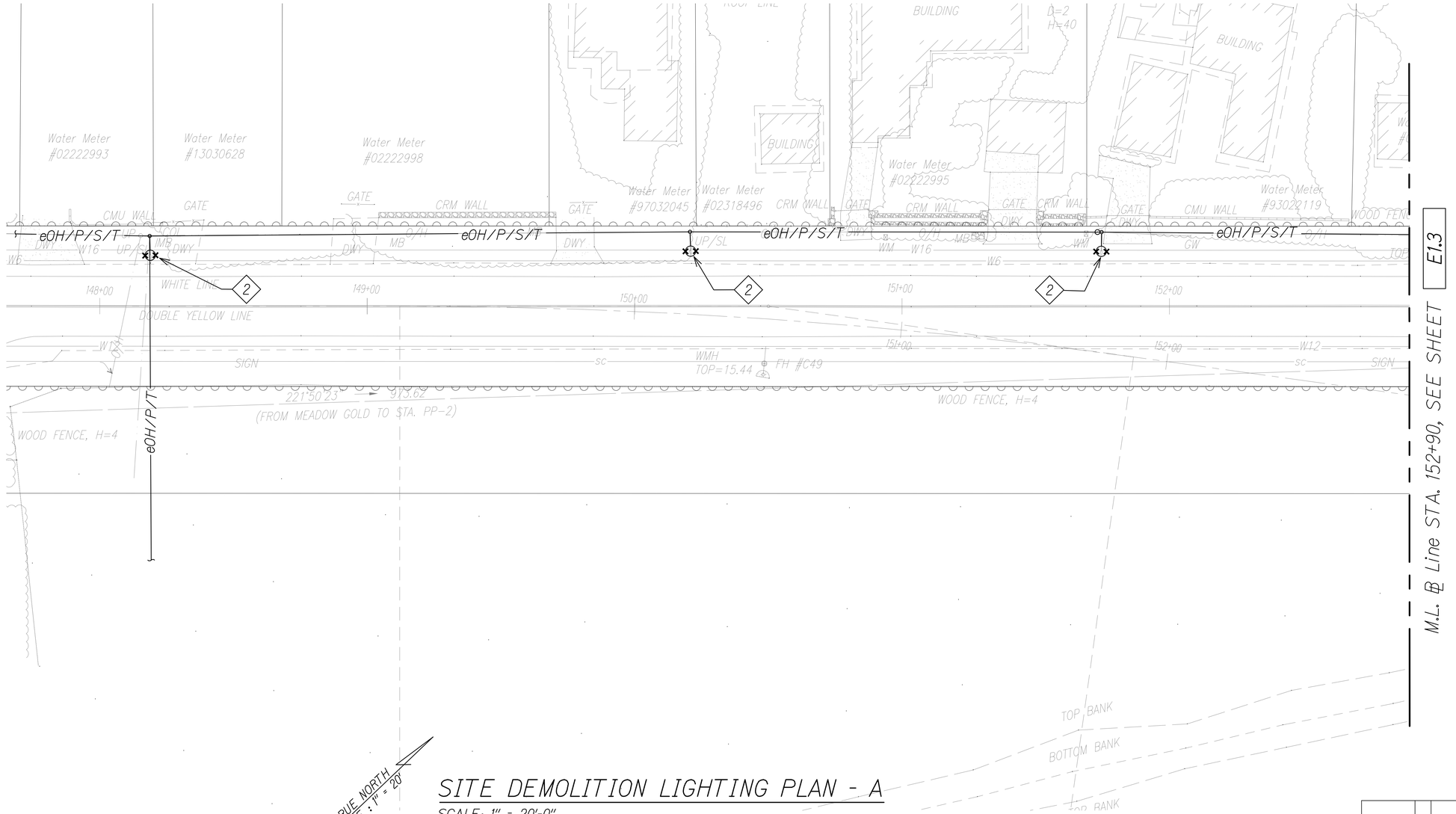
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SHEET No. E1.1 OF 23 SHEETS

ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
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FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83B-01-09	2023	91	228

22005



TRUE NORTH
SCALE : 1" = 20'

SITE DEMOLITION LIGHTING PLAN - A

SCALE: 1" = 20'-0"

NOTES:

1. ——— Light Lines Denote Existing Condition

   -x-x-x- "X" Denotes Removal Work

2. Disconnect and Remove Roadway Light and Bracket Arm From Existing Wood Pole. Coordinate De-energization of Roadway Light with HECo. Do Not Disconnect and Remove Roadway Light Until New Roadway Lighting System Has Been Constructed and the New Roadway is Fully Operational.

GRAPHIC SCALE:

0' 20' 40' 60'

1" = 20'-0"

ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

SITE DEMOLITION LIGHTING PLAN - A

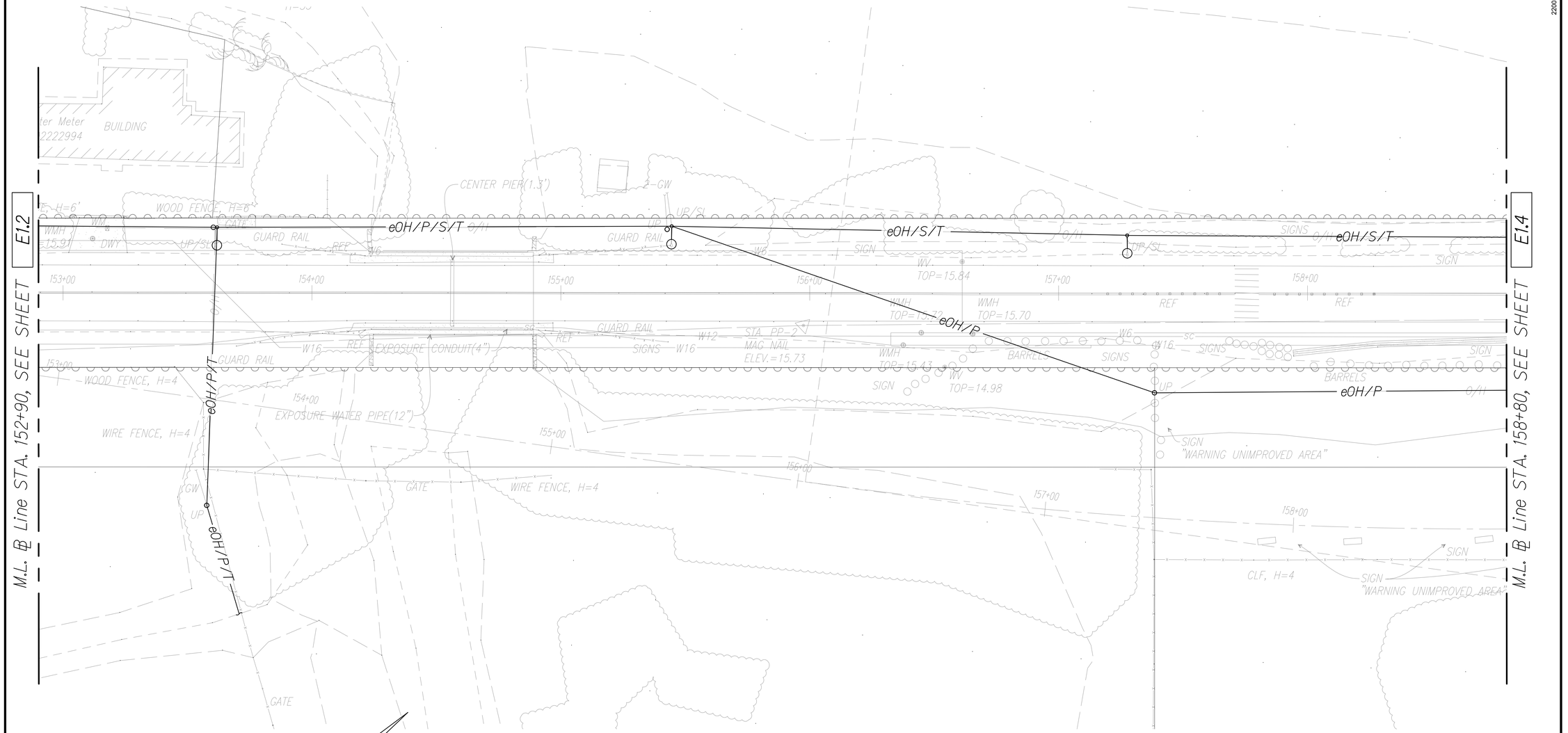
KAMEHAMEHA HIGHWAY DRAINAGE AND SAFETY IMPROVEMENTS
Vicinity of Laniakea Beach (MP 3.06 to MP 3.54)
Project No. 83B-01-09

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SHEET No. E1.2 OF 23 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83B-01-09	2023	92	228

22005



TRUE NORTH
SCALE: 1" = 20'

SITE DEMOLITION LIGHTING PLAN - B

SCALE: 1" = 20'-0"

NOTES:

1. ——— Light Lines Denote Existing Condition
   -x-x-x- "X" Denotes Removal Work

GRAPHIC SCALE:

0' 20' 40' 60'

1" = 20'-0"

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ORIGINAL PLAN
NOTE BOOK
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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

SITE DEMOLITION LIGHTING PLAN - B

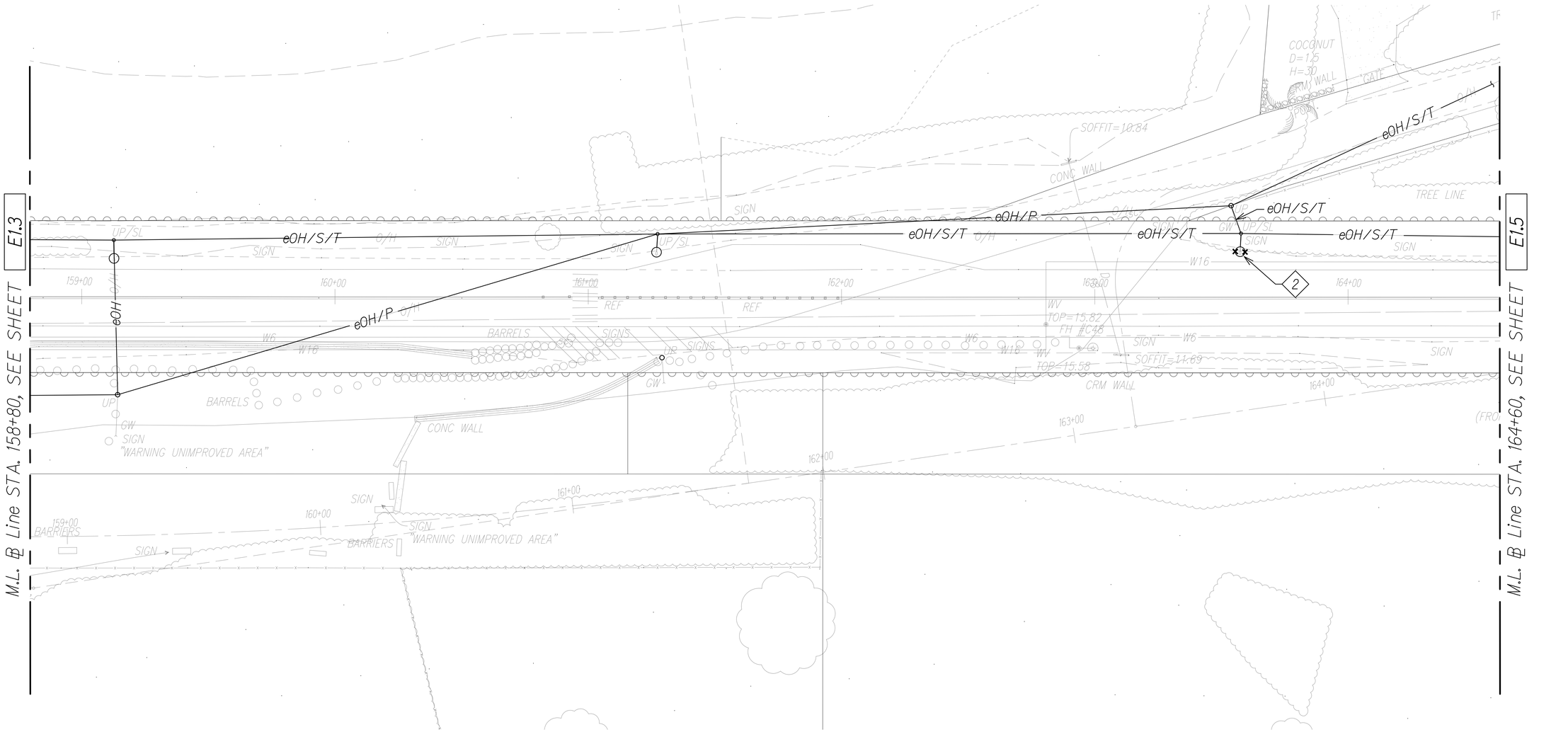
KAMEHAMEHA HIGHWAY DRAINAGE AND SAFETY IMPROVEMENTS
Vicinity of Laniakea Beach (MP 3.06 to MP 3.54)
Project No. 83B-01-09

Scale: As Noted Date: December 2022

SHEET No. E1.3 OF 23 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83B-01-09	2023	93	228

22005



TRUE NORTH
SCALE : 1" = 20'

SITE DEMOLITION LIGHTING PLAN - C

SCALE: 1" = 20'-0"

NOTES:

1. ———— Light Lines Denote Existing Condition
   —×—×—×— "X" Denotes Removal Work

(2) Disconnect and Remove Roadway Light and Bracket Arm From Existing Wood Pole. Coordinate De-energization of Roadway Light with HECo. Do Not Disconnect and Remove Roadway Light Until New Roadway Lighting System Has Been Constructed and the New Roadway is Fully Operational.

GRAPHIC SCALE:

0' 20' 40' 60'

1" = 20'-0"

DATE		REVISION

RUSSELL K. MORI
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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

SITE DEMOLITION LIGHTING PLAN - C

KAMEHAMEHA HIGHWAY DRAINAGE AND SAFETY IMPROVEMENTS
Vicinity of Laniakea Beach (MP 3.06 to MP 3.54)
Project No. 83B-01-09

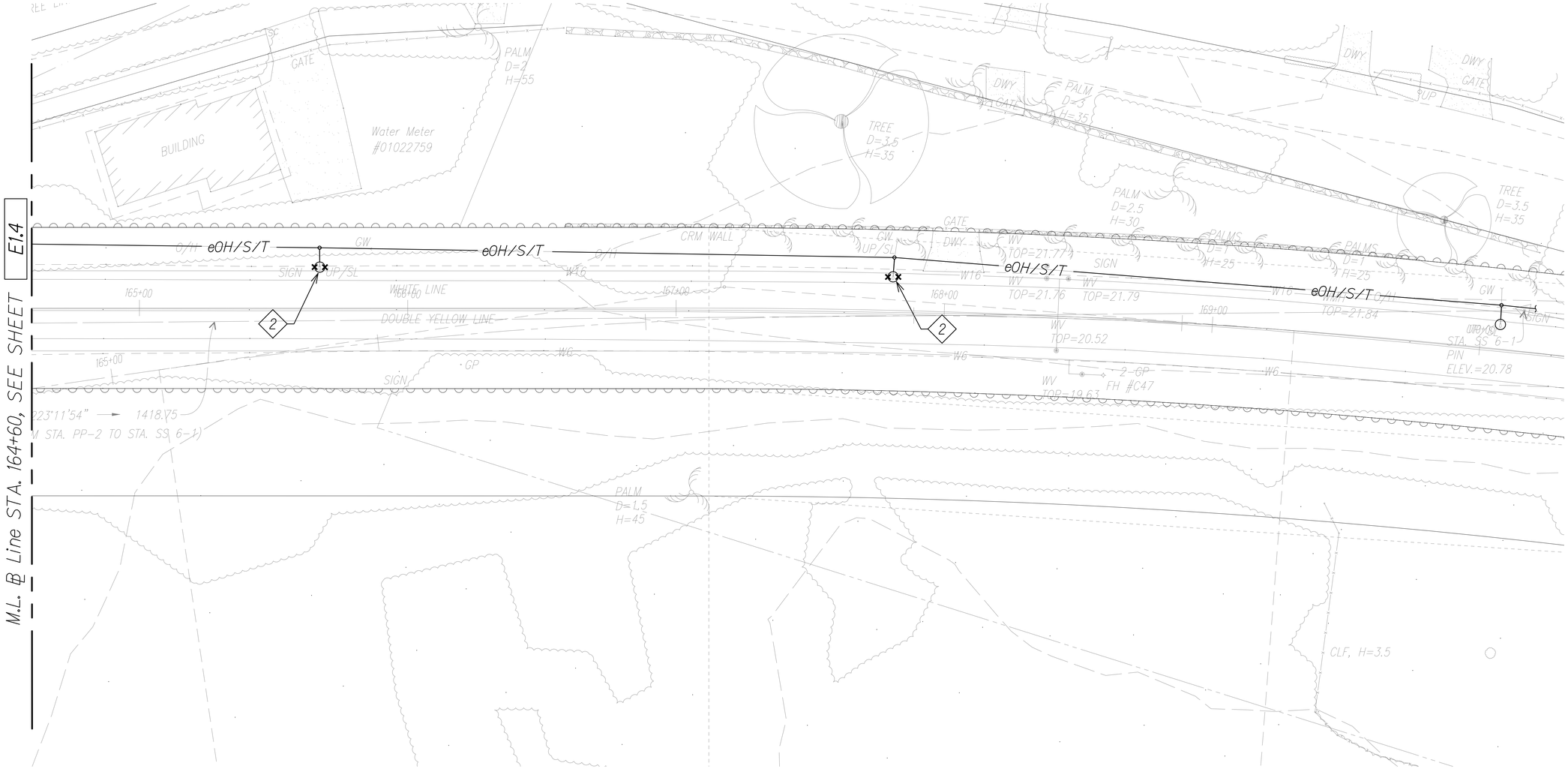
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SHEET No. E1.4 OF 23 SHEETS

ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
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FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83B-01-09	2023	94	228

22005



SITE DEMOLITION LIGHTING PLAN - D

SCALE: 1" = 20'-0"

TRUE NORTH
SCALE : 1" = 20'

NOTES:

1. ——— Light Lines Denote Existing Condition

   —×—×—×— "X" Denotes Removal Work

2. Disconnect and Remove Roadway Light and Bracket Arm From Existing Wood Pole. Coordinate De-energization of Roadway Light with HECo. Do Not Disconnect and Remove Roadway Light Until New Roadway Lighting System Has Been Constructed and the New Roadway is Fully Operational.

GRAPHIC SCALE:

0' 20' 40' 60'

1" = 20'-0"

ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
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RUSSELL K. MORI
LICENSED PROFESSIONAL ENGINEER
No. 9013-E
HAWAII, U.S.A.
MK ENGINEERS, LTD.
LICENSE EXPIRATION DATE: 4/30/24
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.
4/18/23

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

SITE DEMOLITION LIGHTING PLAN - D

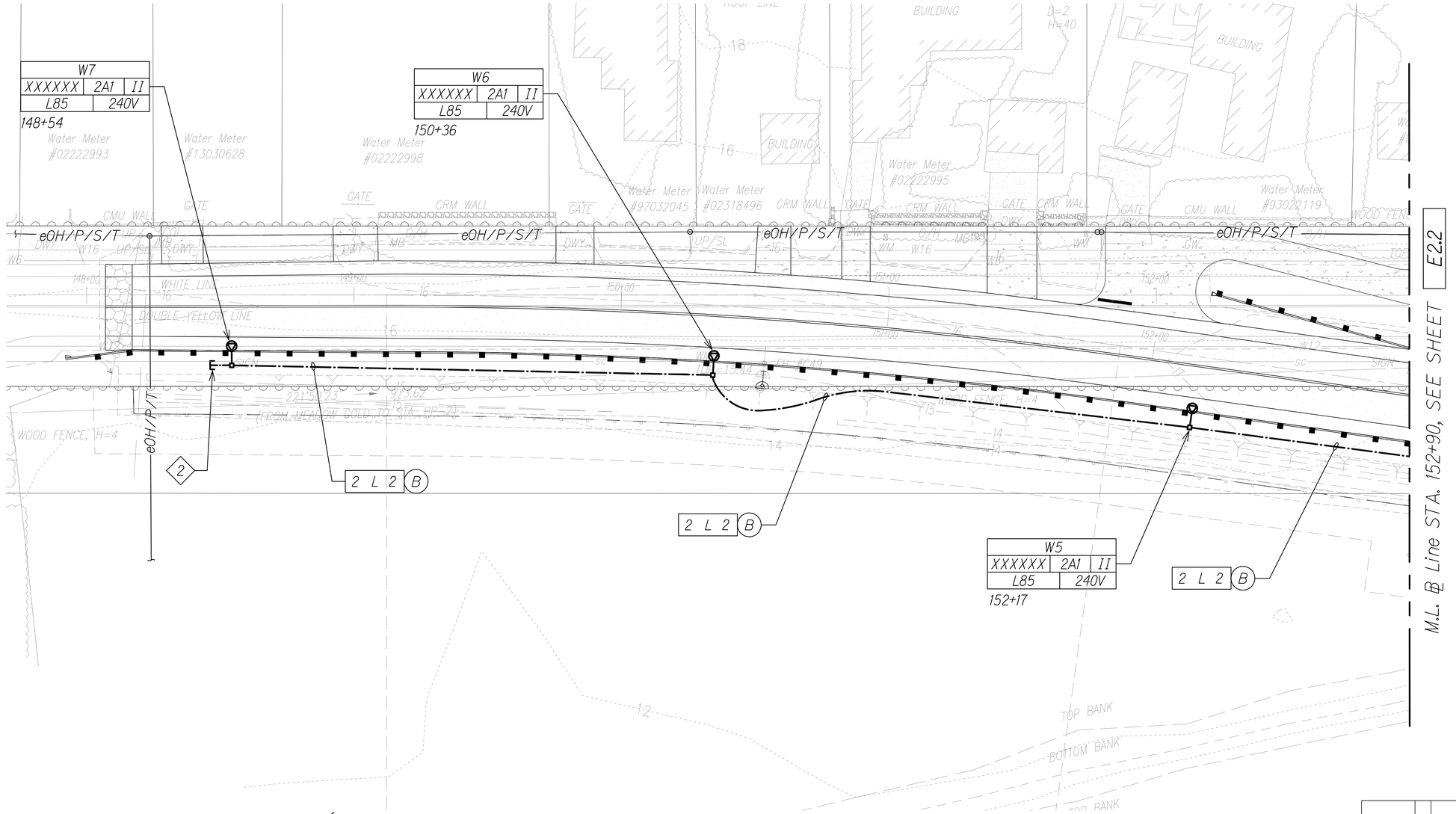
KAMEHAMEHA HIGHWAY DRAINAGE AND SAFETY IMPROVEMENTS
Vicinity of Laniakea Beach (MP 3.06 to MP 3.54)
Project No. 83B-01-09

Scale: As Noted Date: December 2022

SHEET No. E1.5 OF 23 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83B-01-09	2023	95	228

22005



TRUE NORTH
SCALE : 1" = 20'

SITE LIGHTING PLAN - A

SCALE: 1" = 20'-0"

NOTES:

1. ——— Light Lines Denote Existing Condition
   ——— Bold Lines Denote New Work
2. 2 - 2" Stub-Out and Cap for Future Electrical Work, See Detail C E2.1 | E5.1 .

GRAPHIC SCALE:

0' 20' 40' 60'

1" = 20'-0"

DATE		REVISION

ORIGINAL PLAN
NOTE BOOK
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RUSSELL K. MORI
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No. 9013-E
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MK ENGINEERS, LTD.
LICENSE EXPIRATION DATE: 4/30/24
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.

4/18/23

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

SITE LIGHTING PLAN - A

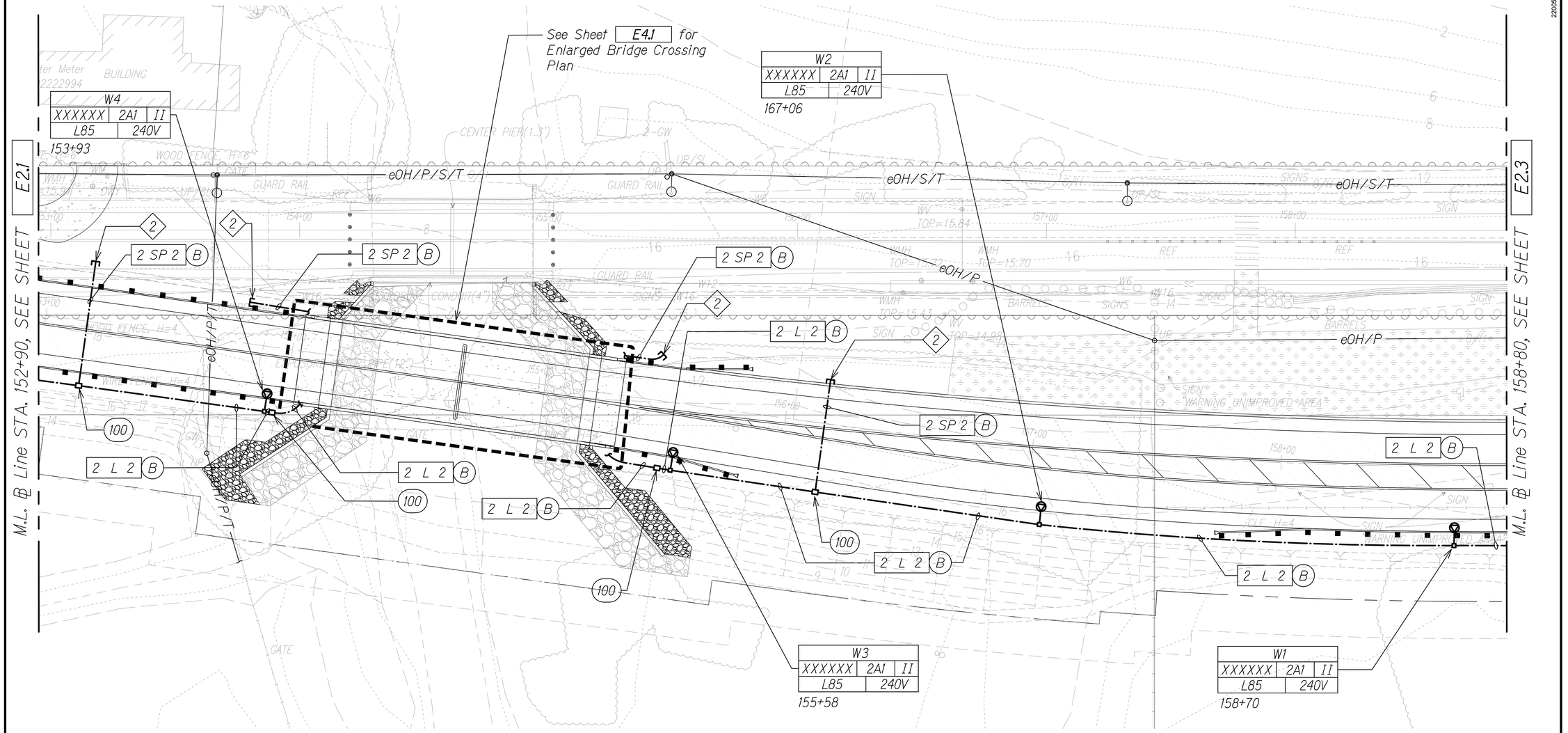
KAMEHAMEHA HIGHWAY DRAINAGE AND SAFETY IMPROVEMENTS
Vicinity of Laniakea Beach (MP 3.06 to MP 3.54)
Project No. 83B-01-09

Scale: As Noted Date: December 2022

SHEET No. E2.1 OF 23 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83B-01-09	2023	96	228

22005



TRUE NORTH
SCALE : 1" = 20'

SITE LIGHTING PLAN - B

SCALE: 1" = 20'-0"

NOTES:

1. ——— Light Lines Denote Existing Condition
   ——— Bold Lines Denote New Work
2. ◇2 — 2 - 2" Stub-Out and Cap for Future Electrical Work, See Detail C (E2.2 | E5.1).

GRAPHIC SCALE:

0' 20' 40' 60'

1" = 20'-0"

SURVEY PLOTTED BY
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ORIGINAL PLAN
NOTE BOOK
No.

DATE	REVISION

RUSSELL K. MORI
LICENSED PROFESSIONAL ENGINEER
No. 9013-E
HAWAII, USA

MK ENGINEERS, LTD.
LICENSE EXPIRATION DATE: 4/30/24
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.

4/18/23

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

SITE LIGHTING PLAN - B

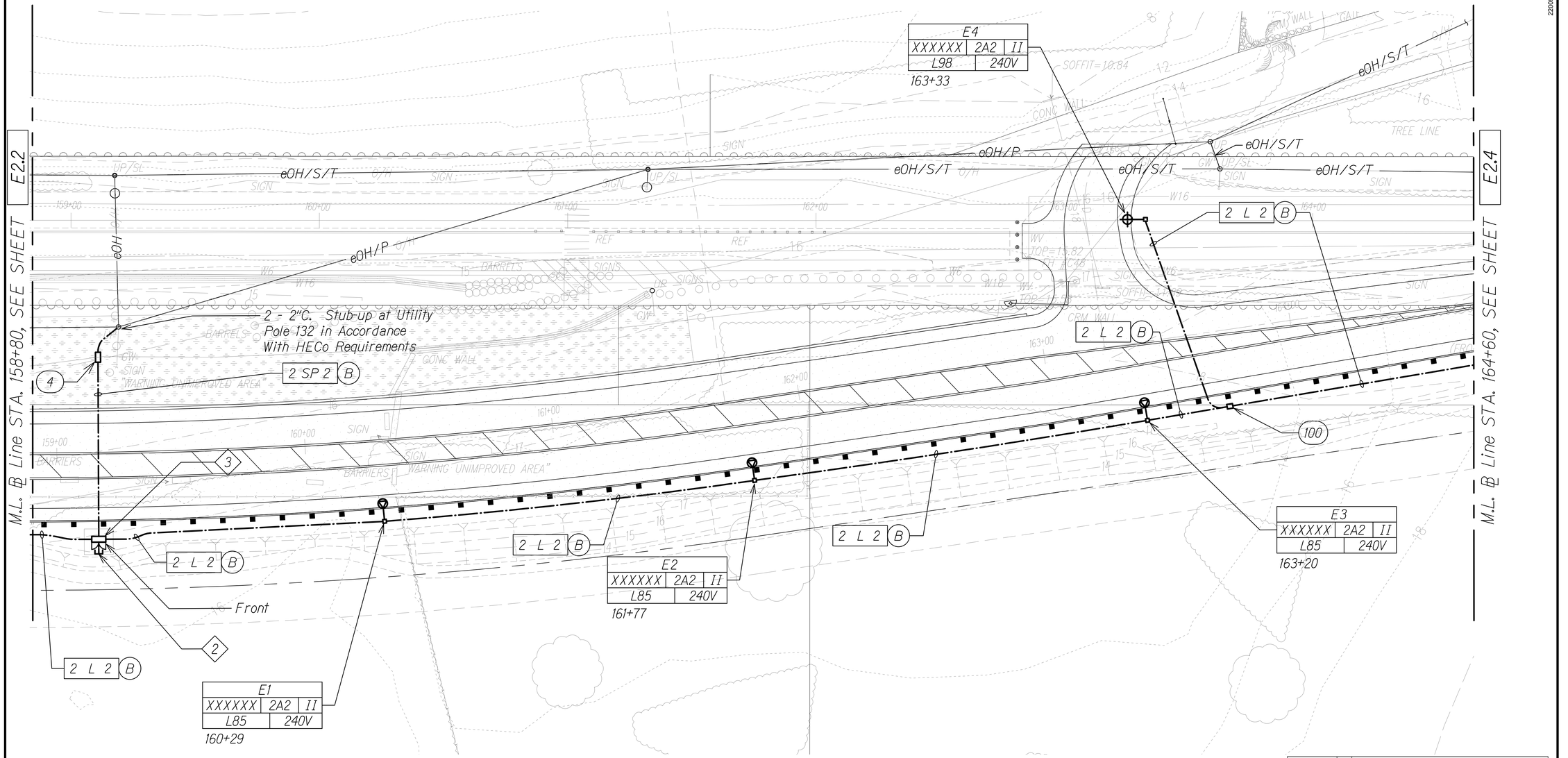
KAMEHAMEHA HIGHWAY DRAINAGE AND SAFETY IMPROVEMENTS
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SHEET No. E2.2 OF 23 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83B-01-09	2023	97	228

22005



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CHECKED BY
DATE

ORIGINAL PLAN
NOTE BOOK
No.

TRUE NORTH
SCALE : 1" = 20'

SITE LIGHTING PLAN - C

SCALE: 1" = 20'-0"

NOTES:

1. ——— Light Lines Denote Existing Condition
   ——— Bold Lines Denote New Work
2. 2" Stub-Out and Cap for Future Electrical Work, See Detail C (E2.3 | E5.1).
3. Highway Lighting Power Enclosure "KHL1", See Detail A (E2.3 | E5.5).

GRAPHIC SCALE:

0' 20' 40' 60'

1" = 20'-0"

DATE		REVISION

RUSSELL K. MORI
LICENSED PROFESSIONAL ENGINEER
No. 9013-E
HAWAII, USA

MK ENGINEERS, LTD.
LICENSE EXPIRATION DATE: 4/30/24
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.

4/19/23

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

SITE LIGHTING PLAN - C

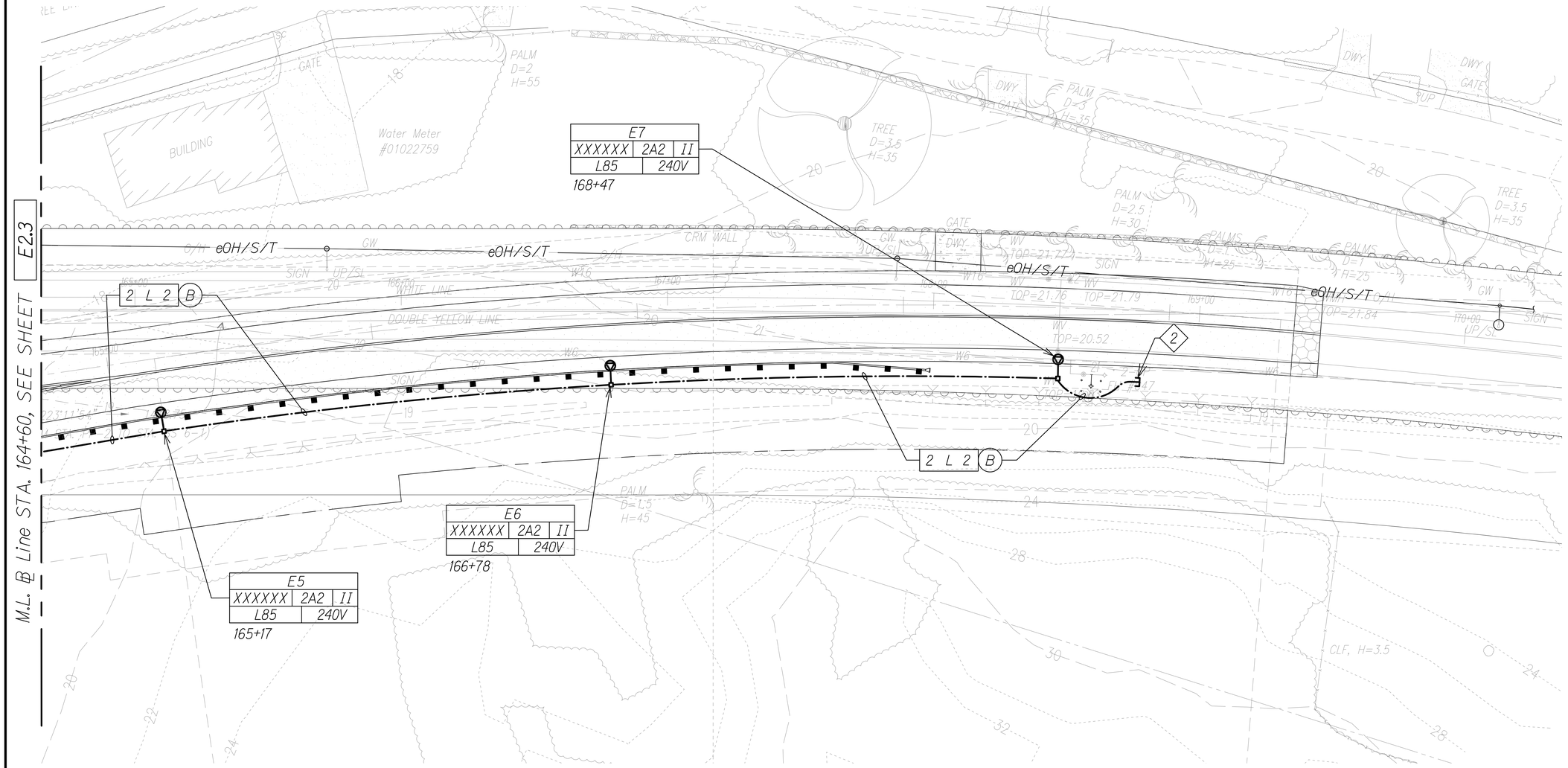
KAMEHAMEHA HIGHWAY DRAINAGE AND SAFETY IMPROVEMENTS
Vicinity of Laniakea Beach (MP 3.06 to MP 3.54)
Project No. 83B-01-09

Scale: As Noted Date: December 2022

SHEET No. E2.3 OF 23 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83B-01-09	2023	98	228

22005



TRUE NORTH
SCALE : 1" = 20'

SITE LIGHTING PLAN - D

SCALE: 1" = 20'-0"

NOTES:

1. ——— Light Lines Denote Existing Condition
   ——— Bold Lines Denote New Work
2. 2 - 2" Stub-Out and Cap for Future Electrical Work, See Detail C (E2.4 | E5.1).

GRAPHIC SCALE:

0' 20' 40' 60'

1" = 20'-0"

DATE		REVISION

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

SITE LIGHTING PLAN - D

KAMEHAMEHA HIGHWAY DRAINAGE AND SAFETY IMPROVEMENTS
Vicinity of Laniakea Beach (MP 3.06 to MP 3.54)
Project No. 83B-01-09

Scale: As Noted Date: December 2022

SHEET No. E2.4 OF 23 SHEETS

RUSSELL K. MORI
LICENSED PROFESSIONAL ENGINEER
No. 9013-E
HAWAII, USA

MK ENGINEERS, LTD.
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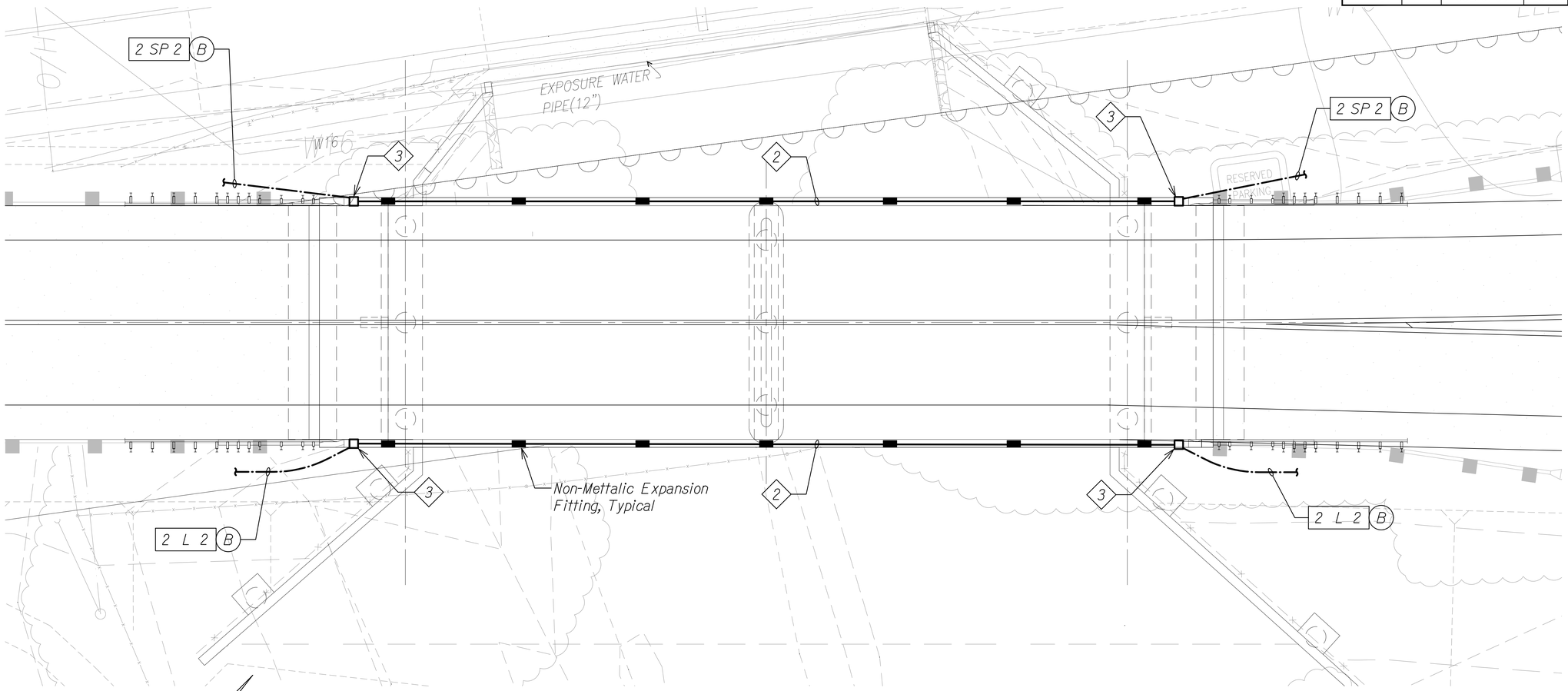
4/18/23

ORIGINAL PLAN
NOTE BOOK
No.

SURVEY PLOTTED BY
DRAWN BY
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FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83B-01-09	2023	99	228

22005



TRUE NORTH
SCALE : 1/8" = 1'

ENLARGED BRIDGE CROSSING PLAN

SCALE: 1/8" = 1'-0"

NOTES:

1. ———— Light Lines Denote Existing Condition
   ———— Bold Lines Denote New Work

2. 2 x 2" PVC 40 Embedded In Bridge Rails. Provide Non-Metallic Expansion Fittings When Crossing Bridge Deflection Joints. See Structural Drawings for Details. Coordinate Embedment and Installation of Conduit and Expansion Fittings With Contracting Officer. See A (E4.1 | E5.6) for Bridge Expansion Fitting Detail at Bridge Rail.

3. 2 x 2" PVC 40 Emerging From Underground Duct Into Bridge End Post. Provide Non-Metallic Expansion Deflection Fittings Between Underground Duct and Bridge. See Structural Drawings for Details. Coordinate Embedment and Installation of Conduit and Expansion Deflection Fittings With Contracting Officer. See B (E4.1 | E5.6) for Bridge Expansion Deflection Fitting Detail at Bridge End Post.

GRAPHIC SCALE:

0' 4' 8' 16' 24'

1/8" = 1'-0"

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STATE OF HAWAII
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HIGHWAYS DIVISION

ENLARGED BRIDGE CROSSING PLAN

KAMEHAMEHA HIGHWAY DRAINAGE AND SAFETY IMPROVEMENTS
Vicinity of Laniakea Beach (MP 3.06 to MP 3.54)
Project No. 83B-01-09

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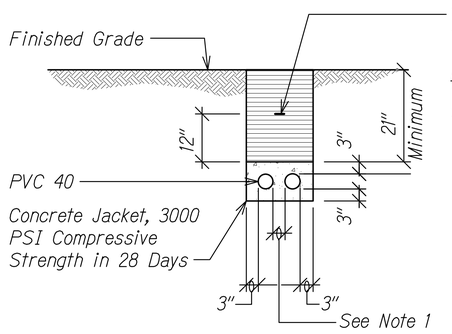
SHEET No. E4.1 OF 23 SHEETS

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ORIGINAL PLAN
NOTE BOOK
No.

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83B-01-09	2023	100	228

22005



Traceable Warning Tape, See Standard Plan TE-36, General Note #2 for Warning Tape Requirements.

Backfill:

Type "A": Non-contaminated Native Soil Material Which Does Not Contain More than 50% Gravel, and Also, Does Not Contain Hard Lumps of Earth 3 Inches in Greatest Dimension, Rocks Larger than 3 Inches in Largest Dimension, Highly Plastic Clay, Poorly-graded Sand and Gravel (Classified as SP and GP Using the Unified Soil Classification System), Organics, Debris, or Other Unsuitable or Deleterious Materials.

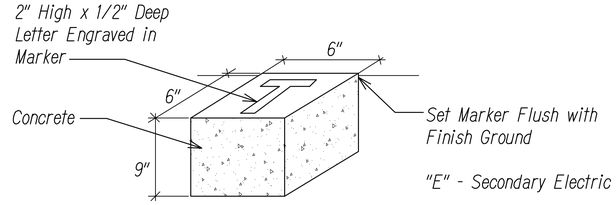
A TYPICAL DUCT SECTION (CONCRETE ENCASED) FOR UNPAVED AREAS

E5.1 | E5.1

Not To Scale

NOTES:

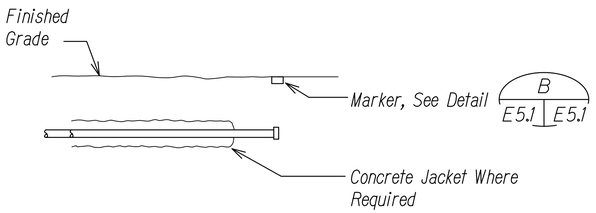
1. Provide 2" Separation between Ducts of Same System and 3" between Ducts of Different Systems.
2. Where Trench Encounters Grass or Landscaping, Provide 4" Top Soil After Trench is Backfilled, and Restore Landscaping to Match Existing Adjacent Area.
3. See Duct Section Details for Conduit Arrangement.



B CONCRETE MARKER DETAIL

E5.1 | E5.1

Not To Scale

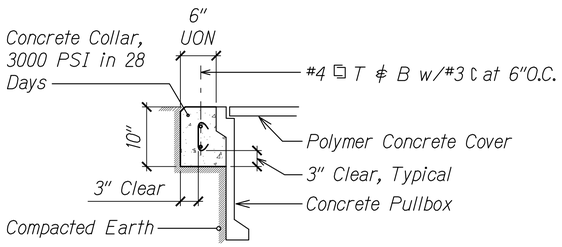


C CONCRETE STUB OUT DETAIL

E2.1 | E5.1

Not To Scale

E2.2, E2.3, E2.4
E5.1, E6.1



D CONCRETE COLLAR RING

E0.1 | E5.1

Not To Scale

E5.1



SECTION Ⓐ SECTION Ⓑ

DUCT SECTION DETAILS

Not To Scale

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HIGHWAYS DIVISION

TYPICAL DUCT SECTION DETAILS (UNPAVED AREAS)

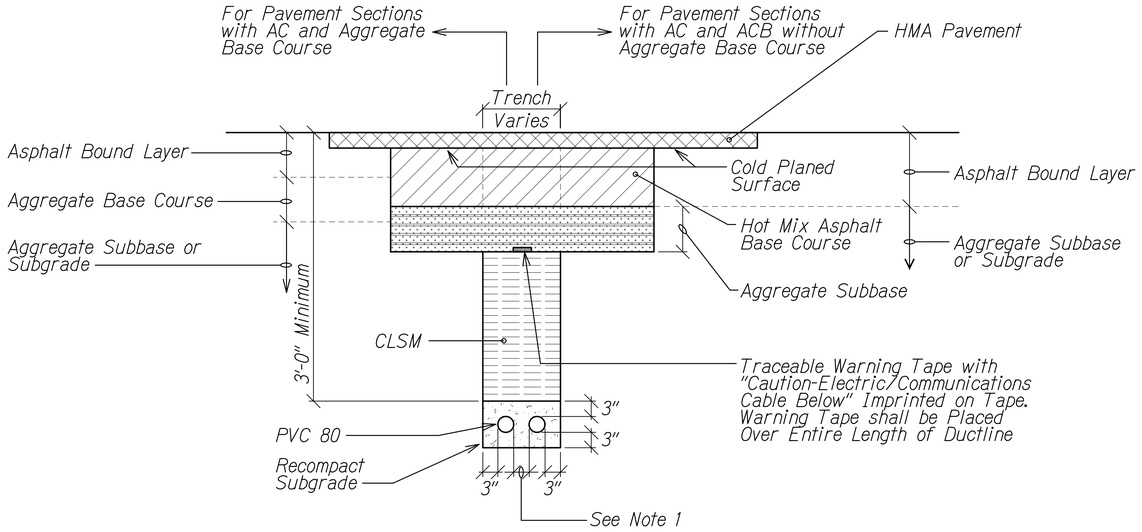
KAMEHAMEHA HIGHWAY DRAINAGE AND SAFETY IMPROVEMENTS
Vicinity of Laniakea Beach (MP 3.06 to MP 3.54)
Project No. 83B-01-09

Scale: As Noted Date: December 2022

SHEET No. E5.1 OF 23 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83B-01-09	2023	101	228

22005



A E5.2 | E5.2 TYPICAL DUCT SECTION DETAIL (PAVED AREAS)

Not To Scale

NOTES:

1. Provide 2" Separation Between Ducts of Same System and 3" Between Ducts of Different Systems.

2. When Ground Water is Encountered in Trenches, Backfill with Gravel Conforming to ASTM C-33, Size 67 Material Until One Foot Above the Water Level. Encapsulate the Size 67 Material with a Permeable Separator that Lines the Bottom and Sides of the Trench and Overlaps at the Top of the Material for the Width of the Trench. Complete Backfilling the Trench per Detail.

ORIGINAL PLAN
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HIGHWAYS DIVISION

TYPICAL DUCT SECTION DETAILS (PAVED AREAS)

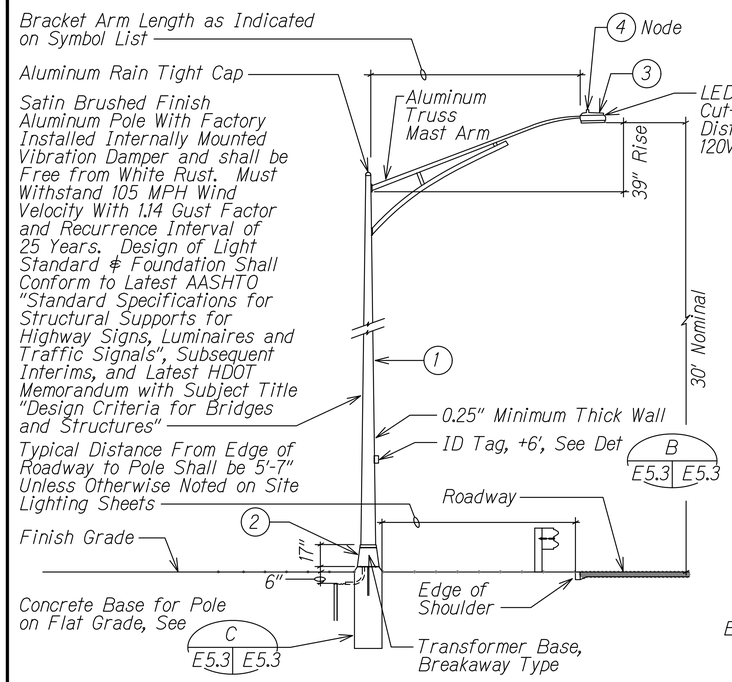
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Vicinity of Laniakea Beach (MP 3.06 to MP 3.54)
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SHEET No. E5.2 OF 23 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83B-01-09	2023	102	228

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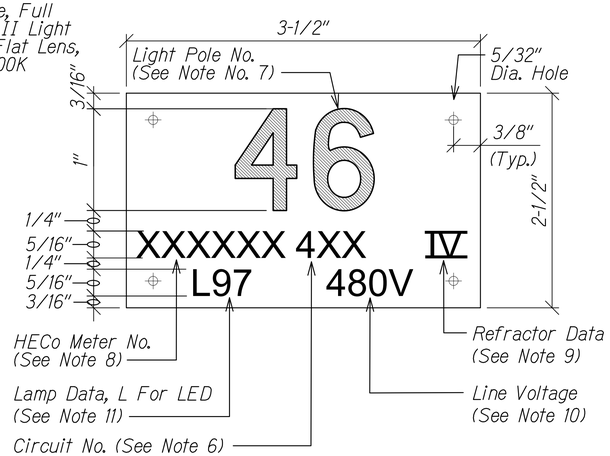


A E0.1 E5.3 E5.3 — ROADWAY LIGHT STANDARD DETAIL

Not To Scale

MATERIAL LIST

ITEM	DESCRIPTION	MANUFACTURER
1	Light Pole, Aluminum	
2	Transformer Base (Aluminum) (Breakaway Type)	
3	Luminaire, 50W LED 87W LED	GE ERLI-0-07-B5-30-A-GRAY-L-T-Y GE ERLI-0-11-B5-30-A-GRAY-L-T-Y
4	Node	GE ELWC-1-A-8-U-B-X-X-XX-AD - 93116089 - LG3, Cellular Node

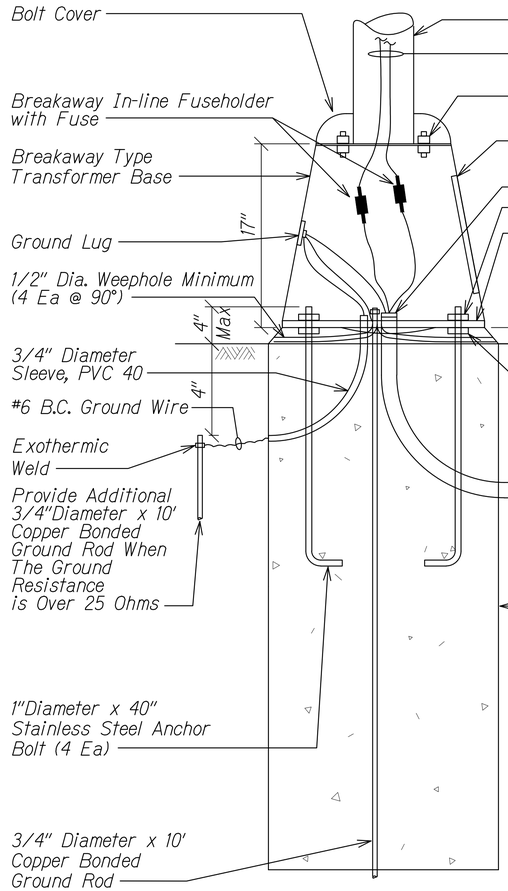


B E0.1 E5.3 E5.3 — LIGHT POLE TAG DETAIL

Not To Scale

NOTES:

1. Use 3 Ply Laminated Flexible Plastic Black-White-Black Thickness Black Cap Sheet-0.010", White Base Sheet-0.052", Black Base Sheet-0.010".
2. Light Pole Number Size Shall Be 1" High and Engraved 1/8" Wide, White in Color (Number as Required).
3. Nomenclature Size Shall be 5/16" High and Engraved 1/32" Wide, White in Color (HECo Meter Number Panel Board and Circuit Number, Line Voltage, Lamp Data and Refractor Data as Required).
4. Attach to Aluminum and Steel Post with No. 8 Stainless Steel, 1/2" Long Drive Screws in 1/8" Drill Hole. Attach to Wood Poles with 4D Aluminum Nail.
5. Numbers are Inscribed by Cutting Through "Black Cap Sheet" to Expose "White Letters."
6. Nomenclature Required for Systems with Two or More Circuits (Letter Indicates Panel Board, Number Indicates Circuit).
7. Light Numbers Shall be Obtained From the Site Plans. Use an Alphabet Suffix to Designate Lights Mounted on the Same Pole (e.g. 123A & 123B).
8. Obtain HECo Meter No. at Electrical Equipment Enclosure "KHLI".
9. Refractor Data Shall be Obtained From the Site Plans.
10. Line Voltage Data Shall be Obtained From the Site Plans.
11. Lamp Data Shall be Obtained From the Site Plans.



C E5.3 E5.3 — TYPICAL TRANSFORMER BASE DETAIL

Not To Scale

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RUSSELL K. MORI
LICENSED PROFESSIONAL ENGINEER
No. 9013-E
HAWAII, U.S.A.

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HIGHWAYS DIVISION

ROADWAY LIGHT STANDARD DETAILS

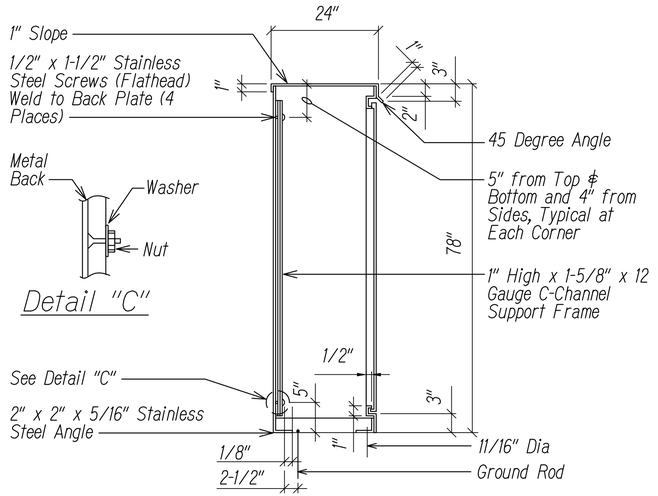
KAMEHAMEHA HIGHWAY DRAINAGE AND SAFETY IMPROVEMENTS
Vicinity of Laniakea Beach (MP 3.06 to MP 3.54)
Project No. 83B-01-09

Scale: As Noted Date: December 2022

SHEET No. E5.3 OF 23 SHEETS

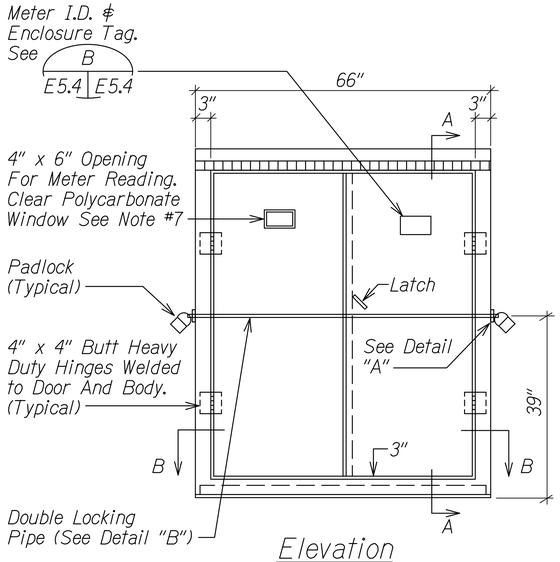
FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83B-01-09	2023	103	228

22005

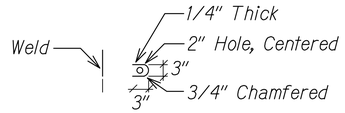


Section "A"

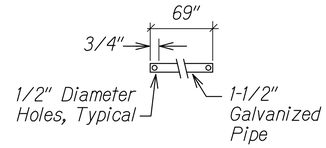
Detail "C"



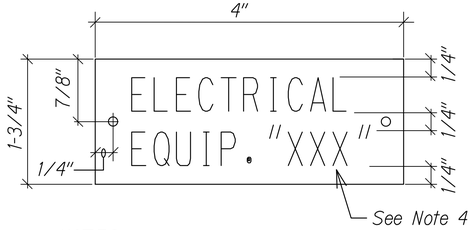
Elevation



Detail "A"
(Side View)



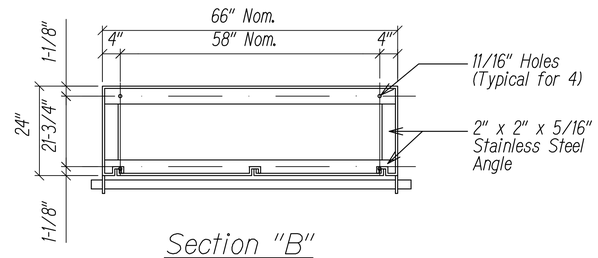
Detail "B"



NOTES:

1. Use 2 Ply Plastic - Black, White.
2. Letter Size Shall be 1/2" High and Engraved 1/16" Wide, White in Color.
3. Attach to Equipment Enclosure with No. 7 Stainless Steel Drive Screws.
4. Label as Designated on Plan.

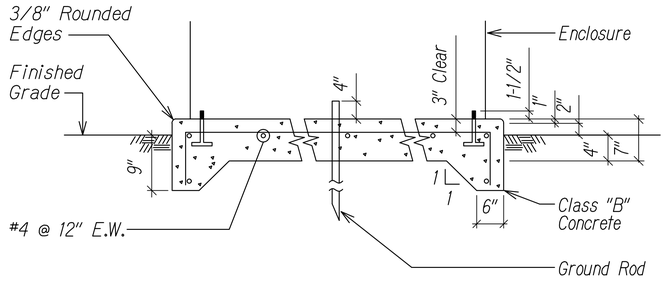
B E5.4 | E54 METER EQUIPMENT ID TAG DETAIL
Not To Scale



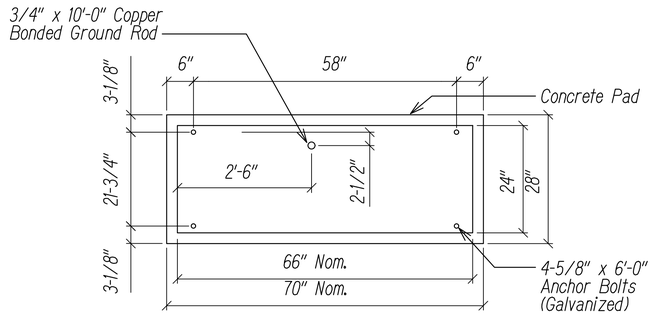
Section "B"
(Stainless Steel Angle Frame)

NOTES:

1. Cabinet to be Primed with One Coat Shop Primer.
2. Made From 12 Gauge 316 Stainless Steel.
3. Provide Acrylic Enamel Forrest Green Finish
4. Enclosure Shall be NEMA 3R with Neoprene Gasketing.
5. Padlocks:
   1-HECo Furnished
   1-Contractor Furnished, Brass Corbin Sesame Combination.
6. Shop Fabrication Drawings Shall be Submitted for Approval.
7. Location of Opening For Meter Reader to Correspond with Location of Meter.
8. Dimensions Shown are Nominal, Adjust to Suit Dimensions of Equipment Mounted Inside the Cabinet.
9. See A E5.4 | E5.5 for Equipment Details.



Elevational View at Concrete Pad



Plan View at Concrete Pad

A E5.4 | E5.4 ELECTRICAL EQUIPMENT ENCLOSURE "KHL1" DETAILS
Not To Scale

DATE		REVISION

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

ELECTRICAL EQUIPMENT ENCLOSURE "KHL1" DETAILS

KAMEHAMEHA HIGHWAY DRAINAGE AND SAFETY IMPROVEMENTS
Vicinity of Laniakea Beach (MP 3.06 to MP 3.54)
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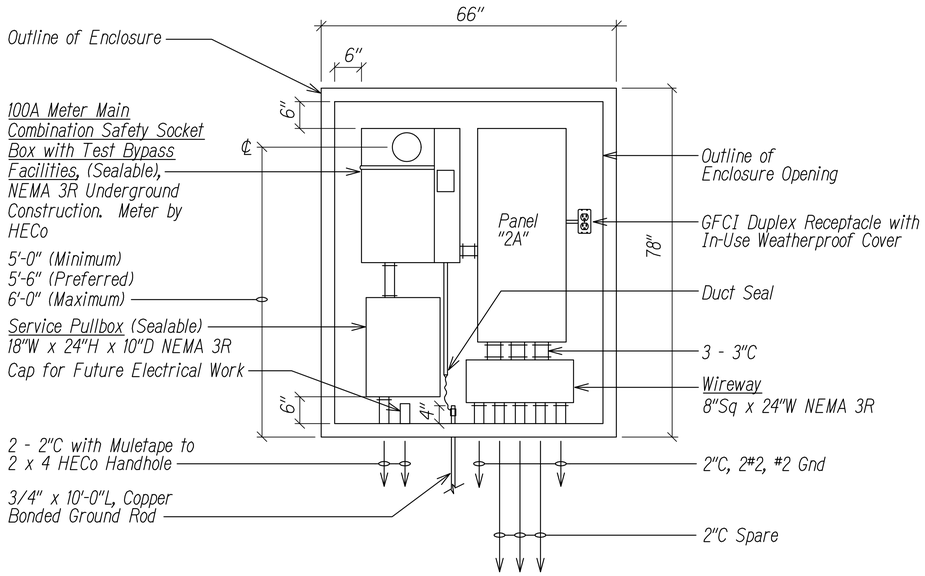
RUSSELL K. MORI
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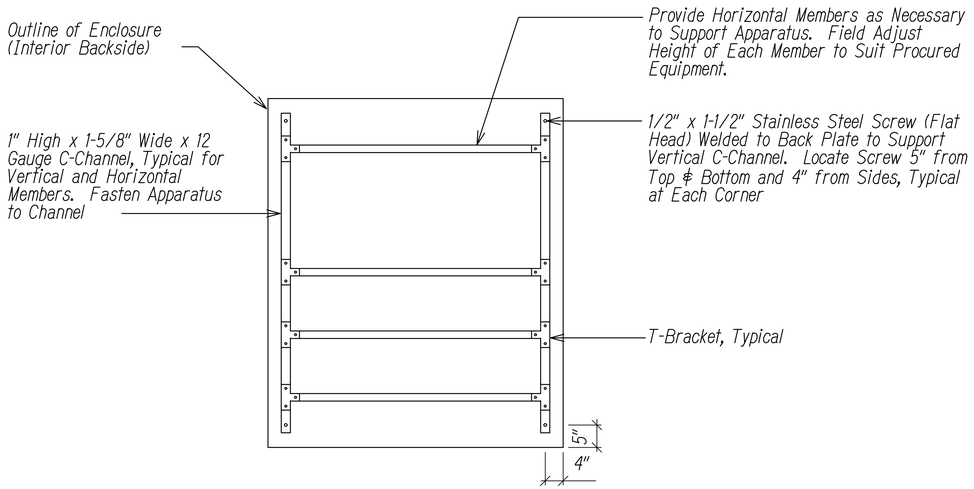
SHEET No. E5.4 OF 23 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83B-01-09	2023	104	228

22005



Elevation



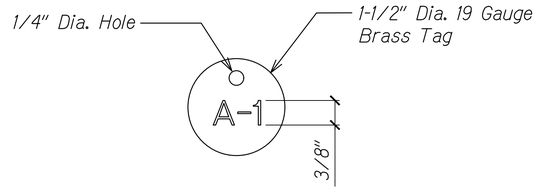
Support Frame Elevation

A
E5.4 | E5.5

ELECTRICAL EQUIPMENT ENCLOSURE "KHL1" DETAILS

Not To Scale

E5.5



STREET LIGHT CIRCUIT CABLE I.D. TAG DETAIL

B
E5.5 | E5.5

Not to Scale

NOTES:

1. Number Size Shall be 3/8" High and Punched on Brass Tag.
2. Attach to Circuit Cables with Nylon Weather Resistant Locking Cable Ties, 3/16" Wide.
3. Provide Cable I.D. Tag for Each Feeder Within Pullboxes and Transformer Bases.

DATE		REVISION

RUSSELL K. MORI
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ELECTRICAL EQUIPMENT "KHL1" DETAILS

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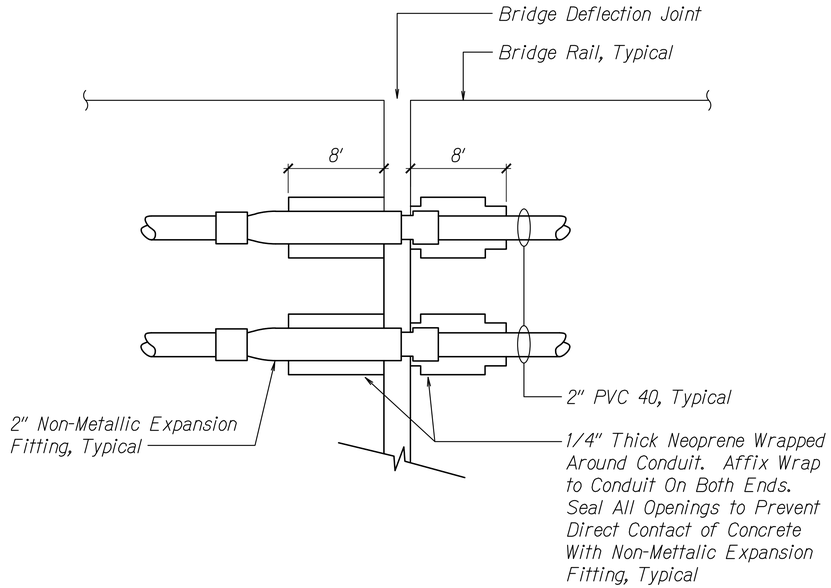
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SHEET No. E5.5 OF 23 SHEETS

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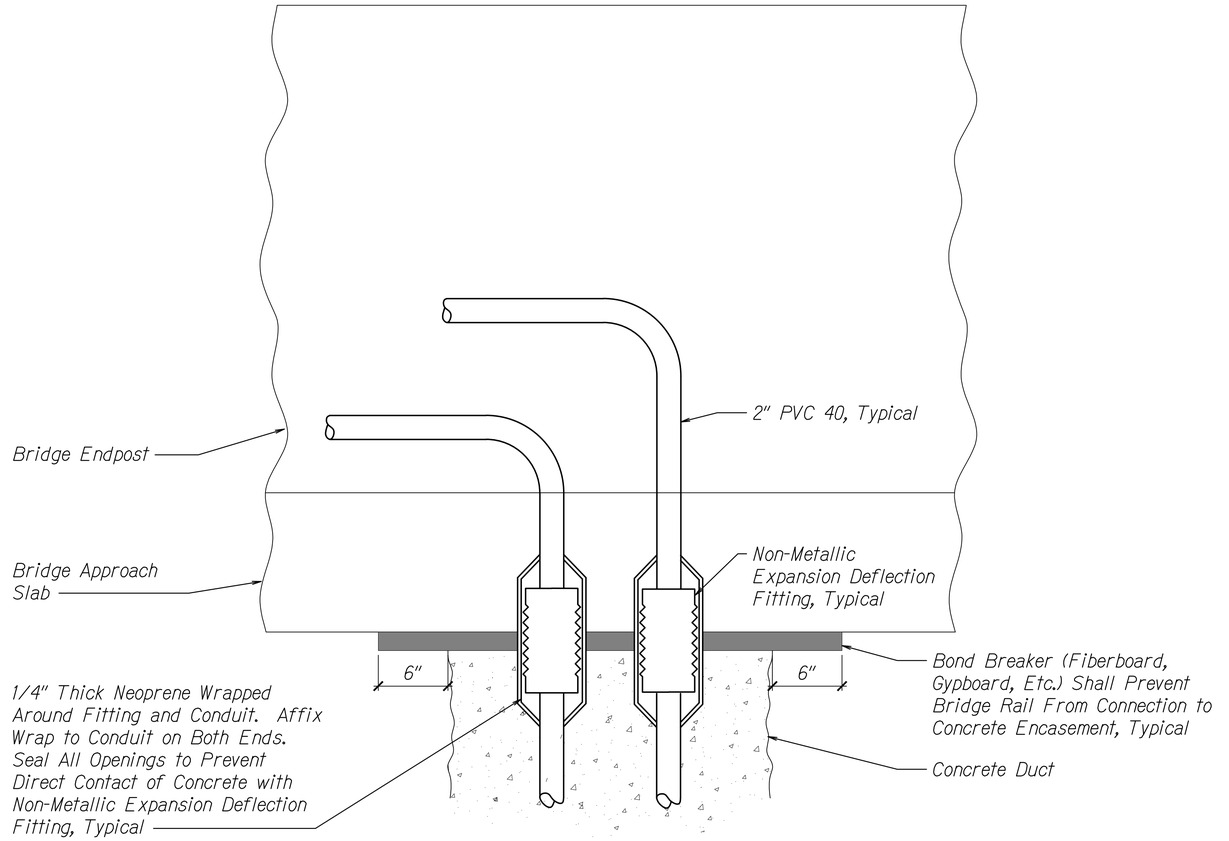
22005



CONDUIT EXPANSION FITTING DETAIL AT BRIDGE RAIL

A — E4.1 | E5.6

Not To Scale



CONDUIT EXPANSION DEFLECTION FITTING DETAIL AT BRIDGE END POST

B — E4.1 | E5.6

Not To Scale

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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

EXPANSION & EXPANSION DEFLECTION DETAILS

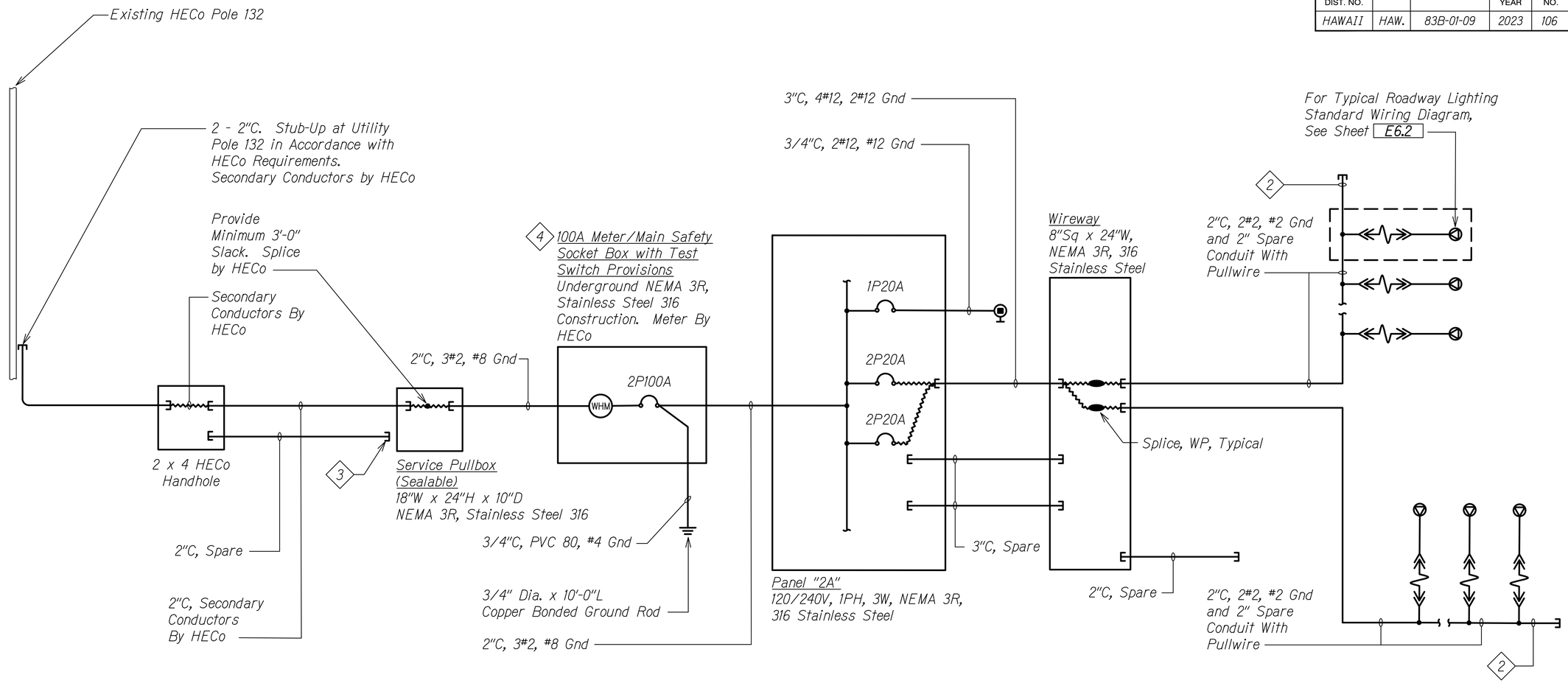
KAMEHAMEHA HIGHWAY DRAINAGE AND SAFETY IMPROVEMENTS
Vicinity of Laniakea Beach (MP 3.06 to MP 3.54)
Project No. 83B-01-09

Scale: As Noted Date: December 2022

SHEET No. E5.6 OF 23 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83B-01-09	2023	106	228

22005



ROADWAY LIGHTING PARTIAL ONE-LINE DIAGRAM

Not To Scale

NOTES:

1. ——— Light Lines Denote Existing Condition
   ——— Bold Lines Denote New Work

2. Provide 2-2" Spare Conduit with Pullwire, Stub-out and Cap for Future Electrical Work, See Detail C (E6.1 | E5.1).

3. Cap for Future Electrical Work.

4. Provide and Install Meter Socket Cover (Plastic) and Bands for Blank Meter Socket. Label and Identify Meter Socket Cover With Name and Contact Information for HECo to Return Meter Socket Cover and Bands Following HECo Meter Installation.

ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
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	DESIGNED BY	
	QUANTITIES BY	
	CHECKED BY	

DATE		REVISION

RUSSELL K. MORI
LICENSED PROFESSIONAL ENGINEER
No. 9013-E
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DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

ROADWAY LIGHTING PARTIAL ONE-LINE DIAGRAM

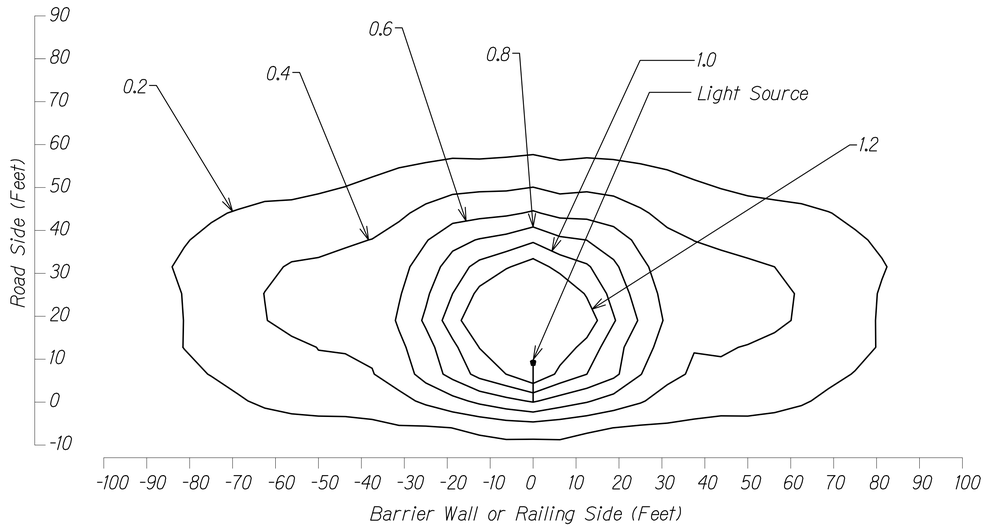
KAMEHAMEHA HIGHWAY DRAINAGE AND SAFETY IMPROVEMENTS
Vicinity of Laniakea Beach (MP 3.06 to MP 3.54)
Project No. 83B-01-09

Scale: As Noted Date: December 2022

SHEET No. E6.1 OF 23 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83B-01-09	2023	107	228

22005



50W LED LUMINAIRE - ISO FOOT-CANDLE CURVE

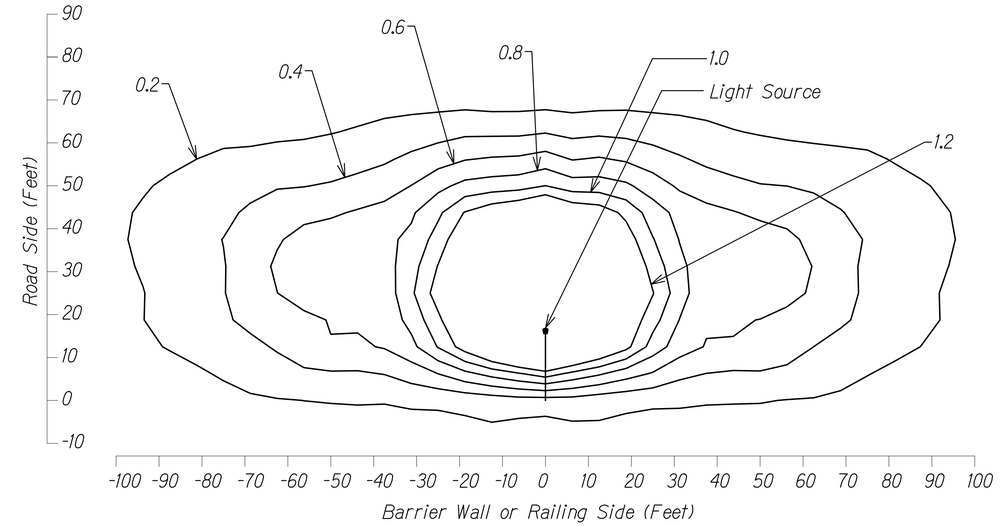
A
E6.2 | E6.2

PHOTOMETRIC DATA

Not To Scale

NOTES:

1. Distance Shown in Feet. Values Shown are Initial Foot-Candle and are Based on the Luminaire Mounted 30'-0" Above Grade.



87W LED LUMINAIRE - ISO FOOT-CANDLE CURVE

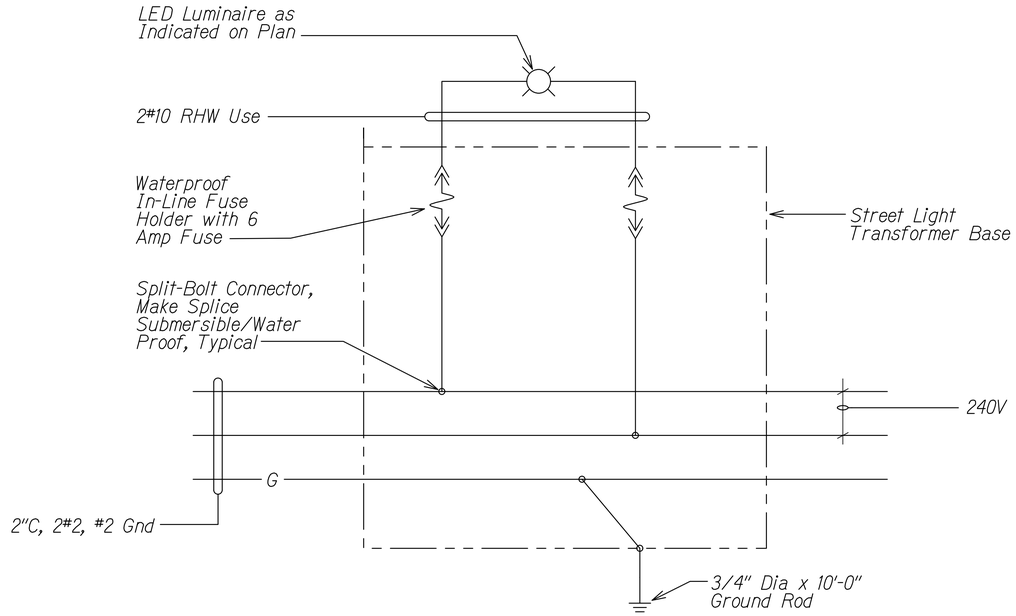
B
E6.2 | E6.2

PHOTOMETRIC DATA

Not To Scale

NOTES:

1. Distance Shown in Feet. Values Shown are Initial Foot-Candle and are Based on the Luminaire Mounted 30'-0" Above Grade.



TYPICAL ROADWAY LIGHT STANDARD WIRING DIAGRAM

C
E6.2 | E6.2

Not TO Scale

DATE		REVISION

RUSSELL K. MORI
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STATE OF HAWAII
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TYPICAL ROADWAY LIGHT STANDARD WIRING DIAGRAM

KAMEHAMEHA HIGHWAY DRAINAGE AND SAFETY IMPROVEMENTS
Vicinity of Laniakea Beach (MP 3.06 to MP 3.54)
Project No. 83B-01-09

Scale: As Noted Date: December 2022

SHEET No. E6.2 OF 23 SHEETS

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FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83B-01-09	2023	108	228

22005

PANEL "2A"

VOLTAGE: 120/240V, 1 PH, 3W
BUS: COPPER
BUS RATING: 125A
AIC: 65,000

MAIN BKR: LUGS ONLY
TYPE: BOLT-ON
MOUNT: SURFACE
ENCLOSURE: NEMA 3R

EQUIPMENT GROUND BUS: YES
ISOLATED GROUND BUS: NO
FEED THRU LUGS: NO
U.L. LISTED AS SERVICE ENTRANCE EQUIPMENT: NO

KVA A	KVA B		DESCRIPTION: L-LIGHTS R-RECEPTACLE, S-SPARE PFB-PROV FOR FUTURE CB	CKT BKR	CKT NO	CKT NO	CKT BKR	DESCRIPTION: L-LIGHTS R-RECEPTACLE, S-SPARE PFB-PROV FOR FUTURE CB	KVA A	KVA B	
0.3			L - ROADWAY LIGHTS WEST BOUND	2P20A	1	2	2P20A	L - ROADWAY LIGHTS EAST BOUND	0.3		
	0.3		PART OF 1	--	3	4	--	PART OF 2		0.3	
0.2			R - ENCLOSURE "KHL1"	1P20A	5	6	2P20A	S	1.0		
	1.0		S	1P20A	7	8	--	PART OF 6		1.0	
--			PFB	1P	9	10	1P	PFB	--		
	--		PFB	1P	11	12	1P	PFB		--	
--			PFB	1P	13	14	1P	PFB	--		
	--		PFB	1P	15	16	1P	PFB		--	
--			PFB	1P	17	18	1P	PFB	--		
	--		PFB	1P	19	20	1P	PFB		--	
--			PFB	1P	21	22	1P	PFB	--		
	--		PFB	1P	23	24	1P	PFB		--	
0.5	1.3		SUBTOTALS						1.3	1.3	

NOTES:

4.4 TOTAL KVA
1 DEMAND FACTOR
4.4 DEMAND KVA
18 DEMAND AMPS 240 volts

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DESIGNED BY
QUANTITIES BY
CHECKED BY
DATE

ORIGINAL PLAN
NOTE BOOK
No.

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STATE OF HAWAII
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HIGHWAYS DIVISION

ELECTRICAL PANEL SCHEDULE

KAMEHAMEHA HIGHWAY DRAINAGE AND SAFETY IMPROVEMENTS
Vicinity of Laniakea Beach (MP 3.06 to MP 3.54)
Project No. 83B-01-09

Scale: As Noted Date: December 2022

SHEET No. E7.1 OF 23 SHEETS

INDEX TO STRUCTURAL DRAWINGS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83B-01-09	2023	112	231

SHEET NO.	DESCRIPTION
S0.1	INDEX TO STRUCTURAL DRAWINGS
S0.2	STRUCTURAL GENERAL NOTES
S0.3	STRUCTURAL GENERAL NOTES
S0.4	STRUCTURAL GENERAL NOTES
S0.5	SYMBOLS AND ABBREVIATIONS
S1.1	LAYOUT PLAN
S1.2	MAUKA ELEVATION
S1.3	MAKAI ELEVATION
S1.4	LONGITUDINAL SECTION
S1.5	NORMAL DECK SECTION
S1.6	FOUNDATION PLAN
S1.7	DECK FRAMING PLAN
S1.8	FINISH GRADE PLAN
S1.9	EXCAVATION AND BACKFILL PAY LIMITS
S1.10	CLSM BACKFILL PLAN
S1.11	TYPICAL DETAILS
S2.1	DEMOLITION PLAN
S2.2	DEMOLITION ELEVATION AND SECTION
S2.3	DEMOLITION ELEVATION, SECTION, AND DETAIL
S3.1	TOPPING REINFORCING PLAN
S3.2	PARTIAL DECK SECTION
S4.1	PRECAST PLANK PP-1 ELEVATION AND CAMBER DIAGRAM
S4.2	PRECAST PLANK PP-1 SECTIONS
S4.3	PRECAST PLANK PP-2 ELEVATION AND CAMBER DIAGRAM
S4.4	PRECAST PLANK PP-2 SECTIONS
S4.5	PRECAST PLANK NOTES AND DETAIL
S5.1	ABUTMENT NO. 1 PLAN
S5.2	ABUTMENT NO. 1 ELEVATION
S5.3	ABUTMENT NO. 2 PLAN
S5.4	ABUTMENT NO. 2 ELEVATION
S5.5	ABUTMENT SECTIONS

SHEET NO.	DESCRIPTION
S5.6	ABUTMENT SECTIONS
S5.7	ABUTMENT SECTIONS
S5.8	ABUTMENT SECTIONS
S5.9	ABUTMENT SECTION
S5.10	ABUTMENT BACKFILL SECTION
S6.1	PIER ELEVATION
S6.2	PIER PLANS
S6.3	PIER SECTIONS
S6.4	PIER SECTION AND DETAIL
S6.5	PIER SECTIONS
S6.6	PIER SECTIONS
S6.7	PIER SECTION
S7.1	WINGWALL NO. 1 ELEVATION
S7.2	WINGWALL NO. 1 SECTIONS
S7.3	WINGWALL NO. 1 SECTIONS
S7.4	WINGWALL NO. 2 ELEVATION
S7.5	WINGWALL NO. 2 SECTION
S7.6	WINGWALL NO. 2 SECTIONS
S7.7	WINGWALL NO. 3 ELEVATION
S7.8	WINGWALL NO. 3 SECTIONS
S7.9	WINGWALL NO. 3 SECTIONS
S7.10	WINGWALL NO. 3 SECTIONS
S7.11	WINGWALL NO. 3 SECTIONS
S7.12	WINGWALL NO. 4 ELEVATION
S7.13	WINGWALL NO. 4 SECTION
S7.14	WINGWALL NO. 4 SECTIONS
S7.15	WINGWALL BACKFILL SECTIONS
S7.16	WINGWALL BACKFILL SECTIONS
S8.1	DRILLED SHAFT SCHEDULE
S8.2	PRODUCTION DRILLED SHAFT TYPE 3B
S8.3	LOAD TEST SHAFT
S8.4	DRILLED SHAFT DETAILS
S8.5	PRODUCTION DRILLED SHAFT TYPE 3W

SHEET NO.	DESCRIPTION
S9.1	BRIDGE RAILING ELEVATION
S9.2	BRIDGE RAILING ELEVATION , SECTIONS AND DETAIL
S9.3	BRIDGE RAILING SECTION AND DETAIL
S10.1	APPROACH SLAB AND SLEEPER SLAB SECTION
S10.2	END POST SECTIONS AMD DETAILS
S10.3	END POST PLAN AND ELEVATION
S10.4	END POST SECTIONS
S10.5	METAL GUARDRAIL TYPE 3 THRIE BEAM AND APPURTENANCES DETAILS
S10.6	METAL GUARDRAIL TYPE 3 THRIE BEAM SECTIONS AND DETAILS
S10.7	METAL GUARDRAIL TYPE 3 THRIE BEAM SECTIONS AND DETAILS
S11.1	WALL EXTENSION ELEVATION AND SECTIONS
S12.1	CONSTRUCTION SEQUENCE
S12.2	CONSTRUCTION SEQUENCE
S12.3	CONSTRUCTION SEQUENCE
S12.4	CONSTRUCTION SEQUENCE
S12.5	CONSTRUCTION SEQUENCE

ORIGINAL PLAN
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DESIGNED BY " "
QUANTITIES BY " "
CHECKED BY " "

DRAWING NAME: Z:\OD ONGOING\OD JF PROJECTS\22-015.1 KAM HWY LANIAKEA\01 CAD\05-23-23 RVSD SHTNO\KHP-S0001 INDEX.DWG PLOT TIME: 05-22-23, 4:11 PM)

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NO. 9444-S
HAWAII, U.S.A.

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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

INDEX TO STRUCTURAL DRAWINGS

KAMEHAMEHA HIGHWAY DRAINAGE AND SAFETY IMPROVEMENTS
Vicinity of Laniakea Beach (MP 3.06 to MP 3.54)
Project No. 83B-01-09

Scale: None Date: December 2022

SHEET No. S0.1 OF 5 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83B-01-09	2023	113	231

STRUCTURAL GENERAL NOTES:

1. General Specifications:

   A. Hawaii Department of Transportation (HDOT) 2005 "Standard Specifications for Road and Bridge Construction", together with Special Provisions prepared for this project.

2. Design Specifications:

   A. American Association of State Highway and Transportation Officials (AASHTO) 2020 "LRFD Bridge Design Specifications", 9th Edition as amended by HDOT document dated August 8, 2014 with subject title "Design Criteria for Bridges and Structures".

   B. HDOT Document dated August 8, 2014 with subject title "Design Criteria for Bridges and Structures" and HDOT memorandum dated January 8, 2018 with subject title "Changes to Design Criteria for Bridges and Structures".

   C. AASHTO 2015 "LRFD Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals", 1st Edition including all subsequent interim revisions and editions as amended by the HDOT document dated August 8, 2014 with subject title "Design Criteria for Bridge and Structures".

3. Design Loads:

   A. Dead Load: A weight of 25 psf for future wearing surface from curb to curb has been provided for in the design.

   B. Utility Load: An allowance of 150 plf on each side of the bridge for utility loads has been provided for in the design.

   C. Railing Test Level: TL-3

   D. Live Load: AASHTO HL-93 Vehicular Live Loading

   E. Seismic Loads:

PGA = 0.160 g	F_{PGA} = 1.48	As = 0.236 g
Ss = 0.363 g	Fa = 1.51	S_{DS} = 0.547 g
S_1 = 0.099 g	Fv = 2.40	S_{D1} = 0.238 g
Site Class = D	Seismic Zone = 2	

   F. Combined Scour Elevations:

Abutment No. 1:	200-Year Scour Elev. = -2.00 500-Year Scour Elev. = -2.00
Pier:	200-Year Scour Elev. = -2.00 500-Year Scour Elev. = -2.00
Abutment No. 2:	200-Year Scour Elev. = -2.00 500-Year Scour Elev. = -2.00

4. Concrete:

   A. All concrete strengths shall be as noted below:

Item No.	Structural Parts	Compressive Strength, f'c (28 Days)	Maximum Water/ Cementitious (W/C)	Maximum Cementitious Material Content (lbs./cy)	Included Admixtures (See Notes Below in This Section)
(1)	Drilled Shafts	4,500 psi	0.45	720	D
(2)	Drilled Shaft Cap Beam, Abutment Walls and Corbels, Pier Wall, and Pier Cap Beam	6,000 psi*	0.40	670	C, E, F
(3)	Keywalls and Drilled Shaft Caps	6,000 psi*	0.40	670	C, F
(4)	Wingwalls and Wall Extensions	6,000 psi*	0.40	670	C, E, F
(5)	Precast Planks	8,000 psi	0.35	740	C, E, G
(6)	Concrete Topping, Edge Beams, End Beams, Pier Diaphragm, Approach Slabs and Sleeper Slabs	(SBD, See Section 601)			
(7)	Bridge Railings and End Posts	6,000 psi*	0.40	670	C, E, F
(8)	Except as noted otherwise, all others	5,000 psi	0.45	670	C

   * 56-day compressive strengths shall be a minimum of 6,000 psi. No extra cylinders need to be tested if 28-day compressive strengths are greater than 6,000 psi.

   B. The use of calcium chloride in any concrete is prohibited.

   C. A calcium nitrite based corrosion inhibiting admixture shall be included. Admixture shall contain at least 30% calcium nitrite active ingredient by mass and shall meet the requirements of ASTM C1582. The dosage requirements shall be 5 gallons per cubic yard of concrete. Corrosion inhibiting admixture shall be included when calculating the w/c ratio.

   D. Amine carboxylate corrosion inhibiting water-based admixture such as Cortec MCI 2005 NS or approved equal shall be added at a dosage of 24 ounces per cubic yard of concrete.

   E. Shrinkage reducing admixture such as Masterlife SRA 35 or approved equal shall be added at a dosage of 128 ounces per cubic yard of concrete or as recommended by the Manufacturer.

4. Concrete (Cont.):

   F. Alkali resistant structural glass fiber such as CEMFIL, ANTI-CRAK HP67/36 or approved equal shall be added to the concrete mix. The dosage rate shall be 15 lbs. per cubic yard of concrete for CEMFIL or the equivalent amount of approved equal to achieve similar properties as the glass dosage. The fiber shall be added to the concrete as recommended by the manufacturer during the mixing process.

   G. A dry, densified silica fume admixture shall be included in the concrete mix. Admixture shall meet the requirements of ASTM C1240. The dosage requirements shall be 6% by weight of total cementitious material.

   H. Contractor is not limited to only adding admixtures listed on these notes. Other admixtures may be added upon approval of the Engineer.

   I. If formwork is removed/stripped exposing concrete within 7-days of placement then concrete shall be cured. All exposed concrete shall be cured using Sinak Lithium Cure 1000 or approved equal at a coverage rate of no less than 400 sq. ft. per gallon.

   J. Cure concrete as specified in the Contract documents. Remove curing that may affect areas requiring future bonding unless a curing agent such as Sinak Lithium Cure or approved equal that does not affect bond is used.

   K. The Contractor has the option to design the concrete for all items to be pumpable and flowable. All concrete shall be designed for minimum segregation and separation.

   L. All concrete shall include at least one of the three methods stated in Section 601 of the Special Provisions, or approved equal, to reduce the embodied carbon footprint in concrete.

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RUSS S. MIYAHARA LICENSED PROFESSIONAL ENGINEER NO. 9444-S HAWAII, U.S.A.

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STRUCTURAL GENERAL NOTES

KAMEHAMEHA HIGHWAY DRAINAGE AND SAFETY IMPROVEMENTS
Vicinity of Laniakea Beach (MP 3.06 to MP 3.54)
Project No. 83B-01-09

Scale: None Date: December 2022

SHEET No. S0.2 OF 5 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83B-01-09	2023	114	231

STRUCTURAL GENERAL NOTES:

5. Materials:

A. Non-shrink grout shall be a pre-mix product consisting of non-staining, non-metallic aggregate cement, water reducing and plasticizing agents capable of developing a minimum compressive strength of 4,000 psi in 3 days and 7,000 psi in 28 days. The non-shrink grout shall contain at least 10 grams of migrating amine carboxylate corrosion inhibiting admixture per 0.4 to 0.5 cubic feet of non-shrink grout.

B. Premolded joint filler shall comply with ASTM D1751 with a minimum compressive strength of 100 psi at 50% deformation, unless otherwise specified on the contract documents.

C. Epoxy resin adhesive for drilled dowels shall conform to ASTM C881 as appropriate for application such as HILTI-RE 500-V3 or approved equal. All manufacturer's installation instructions, including hole cleaning, shall be followed.

D. Polymer modified repair mortar shall be a factory blended cementitious patching material (containing no gypsum) combined with a polymer type admixture, water and a penetrating corrosion inhibitor. It shall conform to the following minimum material properties.

(1) 7-day compressive strength - 4,000 psi

(2) 28-day compressive strength - 5,000 psi

(3) 28-day splitting tensile strength - 750 psi

(4) 28-day flexural strength - 1,500 psi

E. Concrete sealer shall be equal to or exceed the performance of a 28-day water cured quality concrete per ASTM C39 and ASTM C1202. Concrete sealer shall not leave a film or coating on the concrete surface and shall not interfere with bonding of any future materials to the concrete surface.

F. Concrete sealer shall be applied to all exposed concrete surfaces including back faces of abutment walls and wingwalls, drilled shaft caps, drilled shaft cap beam, keywalls, wall extensions, and pier wall prior to backfilling.

6. Reinforcement:

A. All reinforcing steel shall be ASTM A1035 Type CS Grade 100 unless otherwise noted.

B. Reinforcing steel shall be ASTM A615, Grade 60 where noted on the plans.

C. Reinforcing steel shall be ASTM A706, Type W, Grade 60 where welded connections are required.

D. Epoxy-coated reinforcing steel shall be ASTM A775 where noted on the plans

6. Reinforcement (Cont.):

E. Reinforcing bars shall be placed and installed in accordance with the CRSI Manual of Standard Practice and CRSI Placing Reinforcing Bars, unless otherwise noted.

F. The covering measured from the surface of the concrete to the face of any reinforcing bars shall be as follows, except as otherwise shown:

(1) Top of concrete topping, top of approach slab, top of sleeper slab, top of end beams, top of pier diaphragm = 2 3/4"

(2) Railings, end posts, wingwalls, keywalls, drilled shaft caps, drilled shaft cap beams, abutment walls, pier wall, and pier cap beam = 2 1/2", unless otherwise noted.

(3) Concrete cast against and permanently exposed to earth = 3"

(4) Drilled shafts = 4"

(5) Precast Planks = 1 1/2", unless otherwise noted.

(6) All others unless otherwise noted = 2"

G. Minimum lap splice length for steel reinforcing shall be 40 bar diameters or 2'-0", whichever is greater, for #8 bars or smaller. Minimum lap splice length for #9 bars or larger shall be 50 bar diameters. Increase lap length by multiplying the minimum lap splice length by 1.3 for bars having more than 12" of fresh concrete below bars. Increase lap length by 1.25 for ASTM A1035 reinforcing. Lap splices for bundled bars shall consist of individual bar splices within a bundle that do not overlap. Entire bundles shall not be lap spliced.

H. Unless otherwise noted, reinforcing splices shall be staggered. Minimum distance between staggered lap splice shall be equal to the length required for the lap splice. Number of bars spliced at sections normal to axis of member shall not exceed 50 percent of the total main reinforcing in the member.

I. Minimum clear spacing between parallel bars shall be 1 1/2 times the diameter of bars (for non bundled bars). In no case shall the clear distance between the bars be less than 1 1/2 times the maximum size of the coarse aggregate or 1 1/2".

J. All dimensions relating to reinforcing bars are to centers of bars unless otherwise noted.

K. Reinforcing bars shall be securely tied at all intersections and lap splices except where the spacing of intersections is less than 1-foot in each direction, in which case alternate intersections shall be tied.

L. Strands for prestressing shall be Grade 270, seven wire low relaxation type conforming to ASTM A416.

M. Dissimilar metals shall be separated at contact points using teflon tape.

6. Reinforcement (Cont.):

N. Threaded couplers shall be made from ASTM A1035 steel and be capable of developing both 125% of the reinforcing steel yield strength and 100% of the ultimate strength, such as Barsplice 100KSI Barsplicer Flanged Coupler or approved equal. Optional flanges for threaded couplers must be made of plastic.

7. Glass Fiber Reinforced Polymer Bar (ASTM D7957):

A. Glass Fiber Reinforced Polymer (GFRP) rebar shall conform to ASTM D7957.

B. Concrete cover for the GFRP bars shall be 1 1/2" unless otherwise noted.

C. Minimum lap splice lengths for the GFRP bars shall be 42 bar diameter unless otherwise noted.

D. All GFRP bars shall be securely tied in place. Tie wire shall be alloy 302 or 304 stainless steel or non-metallic.

E. The GFRP bars may be cut in the field with a masonry or diamond blade.

F. All work including materials and bends shall follow manufacturer's recommendations.

8. Construction Notes:

A. Structural General Notes apply to the structural plans unless otherwise noted.

B. The Contractor shall be responsible for obtaining As-Builts of the existing structures. As-Built plans are available for review from the Highways Design Branch located at the State Department of Transportation, Highways Division, Kakuhihewa Building, Room 809, 601 Kamokila Boulevard, Kapolei, HI 96707. The Contractor shall verify all dimensions and site conditions and shall report any discrepancies in writing to the Engineer before commencing work or ordering materials.

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LICENSED PROFESSIONAL ENGINEER
RUSS S. MIYAHARA
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STRUCTURAL GENERAL NOTES

KAMEHAMEHA HIGHWAY DRAINAGE AND SAFETY IMPROVEMENTS
Vicinity of Laniakea Beach (MP 3.06 to MP 3.54)
Project No. 83B-01-09

Scale: None Date: December 2022

SHEET No. S0.3 OF 5 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83B-01-09	2023	115	231

STRUCTURAL GENERAL NOTES:

8. Construction Notes (Cont.):

C. The contract documents are complementary. Any requirement occurring in one document is as binding as though occurring in all. A stricter requirement prevails over any less strict requirements. The stricter requirement will be the requirement that provides the greater product life, durability, strength, and function.

D. The Contractor shall verify all site conditions and not rely upon these plans for existing elevations and azimuths, stream channel location, roads, roadway gutters, curbs and sidewalks, etc. Conditions may differ from those shown.

E. The Contractor shall verify the location of all utility lines and notify the respective owners before commencing with excavation, and any temporary piling or sheeting.

F. The Contractor shall be solely responsible for the protection of adjacent properties, utilities and existing and new structures from damage due to construction. Repairing any damage shall be at the Contractor's own expense, to the satisfaction of the Engineer.

G. Except as otherwise noted, all vertical dimensions are measured plumb.

H. Construction joints may be relocated or additional ones added subject to the approval of the Engineer.

I. Unless otherwise noted, all exposed concrete edges shall be chamfered 3/4"x3/4"

J. The Contractor shall submit working drawings and calculations for the proposed bracing/shoring details needed to protect the existing structures when subjected to loading from equipment, drilled shaft rigs, cranes, vehicles and fresh concrete, etc. All drawings and calculations shall be stamped by a State of Hawaii licensed Structural Engineer and a licensed Civil Engineer specializing in geotechnical engineering. The above work, including working drawings and calculations, shall be incidental to any structure excavation. The drawings and calculations shall be found acceptable by the Engineer before any construction work is to proceed.

K. No construction work, including falsework, shall be performed in any portion of the existing channel unless otherwise permitted by the Engineer.

L. Construction joints between separate pours shall not be feather edged, unless otherwise noted. All joints shall be made square and vertical for the entire thickness of the new pour prior to pouring, except as directed by the Engineer.

M. Construction joints shall be cleaned and roughened to 1/4" amplitude.

8. Construction Notes (Cont.):

N. The Contractor shall provide a template including details showing exact location of rebar so that no interference will occur between vertical drilled shaft reinforcement and horizontal reinforcement in the drilled shaft cap beam and abutment walls.

O. CLSM backfill behind abutments and wingwalls shall be placed in lifts not exceeding 2'-0".

P. During the pour of the concrete topping, the concrete portion of the concrete topping within 1/4 of the span length on each side of the pier shall remain plastic until the concrete topping pour is completed in the spans on each side of the pier. The Contractor shall submit the concrete topping pour sequence and the schedule for review and acceptance by the Engineer.

Q. All holes for post-installed adhesive anchors and reinforcing dowel bars shall be hammer drilled using a hollow bit connected to a vacuum system in accordance with current evaluation service report from ICC-ES.

R. All individuals performing anchor and dowel work shall hold a current ACI/CRSI installer certification.

S. Drilling procedures, equipment, material and certifications shall be submitted to the Engineer for approval.

T. Drilled holes in existing concrete for anchors and dowels shall not be left unfilled for more than 8 hours. Adhesive material in drilled holes shall fully cure prior to pouring concrete around dowels.

U. Location of drilled holes shown in plans are approximate. Prior to placing holes in concrete, the Contractor shall locate all reinforcing steel and adjust the location of the holes to clear all reinforcing bars. Final hole locations are subject to the approval of the Engineer.

V. All holes drilled into concrete that go unused shall be completely filled with a polymer-modified cementitious repair mortar containing a corrosion inhibitor.

W. The Contractor is responsible for determining the limits and providing all necessary earthwork shoring to facilitate the staged construction requirements of the bridge. Shoring design shall take into account grade differences due to the excavation operations. The Contractor shall submit working drawings and calculations for the shoring design. The drawings and calculations shall be stamped by a State of Hawaii licensed Structural Engineer and a licensed Civil Engineer specializing in geotechnical engineering. The drawings and calculations shall be found acceptable by the Engineer before any construction work is to proceed.

X. Temporary lateral bracing shall be provided for all wingwalls after casting. Bracing shall remain in place until backfilling operations behind and in front of walls are completed.

9. Foundation Notes:

A. The foundation design is based upon recommendations contained in the geotechnical engineering report prepared by Geolabs, Inc. with the subject title "Geotechnical Engineering Exploration, Kamehameha Highway Drainage and Safety Improvements, Vicinity of MP 3.06 to MP 3.54, Waialua, Oahu, Hawaii" dated November 30, 2022. The report shall be considered as a part of the construction documents and its recommendations shall be implemented unless otherwise directed by the Engineer. The Contractor may obtain a copy of the report at the State of Hawaii, Department of Transportation, Highways Division, upon written request to the Engineer.

B. Design Soil Parameters

(1) Static lateral earth pressure (above groundwater)

(a) Active condition, level backfill

= 37 pcf

(b) At-rest condition, level backfill

= 55 pcf

(2) Dynamic lateral earth pressure

(a) Active condition, level backfill

= 4.2H* psf (rectangular distribution)

(b) At-rest condition

= 15.7H* psf (rectangular distribtution)

* Where H = Height of Wall in Feet

10. Load Rating:

A. The governing load rating results are as follows:

		Rating Factor	Live Load Distribution Factor	Load Effect	Controlling Member
Design	HL-93 (Inv)	1.40	0.667	Neg. M.	Ext. Plank
	HL-93 (Opr)	1.82	0.667	Neg. M.	Ext. Plank

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STRUCTURAL GENERAL NOTES

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Scale: None Date: December 2022

SHEET No. S0.4 OF 5 SHEETS

SYMBOLS AND ABBREVIATIONS

∧	And
@	At
Ø	Diameter
≥	Greater Than or Equal to
≤	Less Than or Equal to
#	Number
AB	Anchor Bolt
Abut.	Abutment
Abbr.	Abbreviation
AC	Asphaltic Concrete
Add.	Additional
Alt.	Alternate
Approx.	Approximate
Az.	Azimuth
Bal.	Balance
℄	Baseline
Bet.	Between
BF	Both Faces
BFE	Bottom of Footing Elevation
Bk.	Back
Blt.	Bolt
Bm.	Beam
BOF	Bottom of Footing
Bot., Bott., B	Bottom
Br.	Bridge
Brg., Brgs.	Bearing, Bearings
BVC	Beginning of Vertical Curve
BW	Both Ways
Cant.	Cantilever
CBW	Concrete Barrier Wall
cc	Center to Center
CF	Cubic Feet
CFCW	Continuous Flashing Compound Waterproofing
CG	Center of Gravity
CIP	Cast Iron Pipe, Cast in Place
CJ	Construction Joint
℄	Center line
Cl.	Class
Clr.	Clearance
CLSM	Controlled Low Strength Material
CMU	Concrete Masonry Unit
Cntl. Jt.	Control Joint
CO	Clean Out
Col.	Column
Conc.	Concrete
Conn.	Connection
Const.	Construction
Cont.	Continuous
CSL	Crosshole Sonic Logging
CRM	Cement Rubble Masonry
CY, Cu. Yd.	Cubic Yard
Dbl.	Double
Demol.	Demolition
Det.	Detail
DI	Drain Inlet, Ductile Iron
Dia.	Diameter
Diaph.	Diaphragm
Dim.	Dimension
Dist.	Distance
Dn.	Down
DO	Ditto
DS	Drilled Shaft
Dwg., Dwgs.	Drawing, Drawings
Dwls.	Dowels
e	Existing
E	East
EA, Ea., ea.	Each
EF	Each Face
EFH	Each Face Horizontal
EFV	Each Face Vertical
EJ	Expansion Joint
El., Elev.	Elevation
Elec.	Electrical
Emb.	Embankment
EMH	Electrical Manhole
EPE	Existing Edge of Pavement
EPS	Expanded Polystyrene
Eq.	Equal
ES	Edge of Shoulder
Est.	Estimated
EVC	End of Vertical Curve
EW	Each Way
Exc.	Excavation
Excl.	Excluding
Exist., Ex.	Existing
Exp., (E)	Expansion
Ext.	Exterior
(F)	Fixed
FA	Force account
FB	Flat Bar
FC	Compression Stresses
f'c	Specified Compressive Strength of Concrete at 28 days
f'ci	Specified Compressive Strength of Concrete at Time of Initial Prestress
FF	Far Face, Front Face
Fig.	Figure
Fin. Gr.	Finish Grade
FRP	Fiberglass Reinforced Polymer
FT	Tensile Stresses
Ft.	Feet, Foot
Ftg.	Footing
G, Gir.	Girder
Ga.	Gage, Gauge
Galv.	Galvanized
GDI	Grated Drain Inlet
GFRP	Glass Fiber Reinforced Polymer Rebar
Gr.	Grade
Grd.	Ground
GRP	Grouted Rubble Pavement
(H)	Hinge
HDPE	High Density Polyethylene
HDOT	State of Hawaii Department of Transportation
HECO	Hawaiian Electric Company
Horiz., H	Horizontal
Ht.	Height
HS	High strength
IB	Inbound
ID	Inside Diameter
IF	Inside Face
In.	Inch
Int.	Interior
Inv.	Invert
Jt.	Joint
K	Kips
KF	Kip Foot
KLF	Kips Per Linear Foot
KSF	Kips Per Square Foot
KSI, ksi	Kips Per Square Inch
L	Length
lb., lbs., LBS.	Pound, Pounds
LF, Lin. Ft.	Linear Feet/Foot
Longit.	Longitudinal
LS	Lump Sum
Ltg. Std.	Lighting Standard
M	Modified
Max.	Maximum
Mech.	Mechanical
MH	Manhole
Min.	Minimum
Misc.	Miscellaneous
MPH	Miles Per Hour
MSL	Mean Sea Level
N	North
NF	Near Face
NIC	Not in Contract
No.	Number
NTS	Not to Scale
OB	Outbound
oc, o.c.	On Center
OD	Outside Diameter
OG	Outside Girder, Outbound Girder
Opn'g	Opening
O/S	Offset
OHWM	Ordinary High Water Mark
PB	Pull Box
PL	Plate
PCCP	Portland Cement Concrete Pavement
PC	Point of Curvature
PCF	Pounds per Cubic Foot
P(e)	Effective Prestress Force After All Losses
Perf.	Perforated
PI	Point of Intersection of Tangents
PIVC	Point of Intersection of Vertical Curve
PLF, plf	Pounds per Linear Foot
PPM	Parts Per Million
PRC	Point of Reverse Curvature
PVC	Polyvinyl Chloride
Prestr.	Prestressed
P/S	Prestressed Strands
PSF, psf	Pounds per Square Foot
PSI, psi	Pounds per Square Inch
PT	Point of Tangency
Pt., Pts.	Point, Points
R, Rad.	Radius
Rebar	Reinforcing Bar
Ref.	Reference
Reinf.	Reinforced, Reinforcing, Reinforcement
Req'd.	Required
Ret.	Retaining
RF	Rear Face
ROW	Right of Way
Rdwy.	Roadway
S	South
SBD	Special Bridge Deck Mix
SE	Super Elevation
Sect.	Section
SF, sq. ft.	Square Feet
Sht.	Sheet
Sim.	Similar
Sl.	Slope
Spcs., Spg.	Spaces, Spacing
Spec.	Specification
Sprd.	Spread
SRW	Segmental Retaining Wall
SS	Stainless Steel
Std.	Standard
Sta.	Station
Stiff.	Stiffener
Stirr.	Stirrup
Stl.	Steel
Str.	Straight, Stream
Struct.	Structure
SY	Square Yard
Symm.	Symmetrical
T	Top
T∧B	Top and Bottom
Tan.	Tangent
TCE	Top of Column (and Bent Cap Soffit) Elevation
Temp.	Temporary
Term.	Terminal
TFE	Top of Footing Elevation
Thk.	Thick
TOD	Top of Deck
TOP	Top of Pier
Tot.	Total
Transv.	Transverse
TS	Structural Tubing
TSS	Tendon For Girder in Simply Supported Condition
Typ.	Typical
Undergrd.	Underground
UNO	Unless Noted Otherwise
Var.	Varies
VC	Vertical Curve
VESLMC	Very Early Strength Latex Modified Concrete
Vert., V	Vertical
W	West
w/	With
W/C	Water/Cementitious
WP	Work Point, Working Point
WS	Water Surface
WW	Wingwall
WWF	Welded Wire Fabric
Yr.	Year

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83B-01-09	2023	116	231

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HIGHWAYS DIVISION

SYMBOLS AND ABBREVIATIONS

KAMEHAMEHA HIGHWAY DRAINAGE AND SAFETY IMPROVEMENTS
Vicinity of Laniakea Beach (MP 3.06 to MP 3.54)
Project No. 83B-01-09

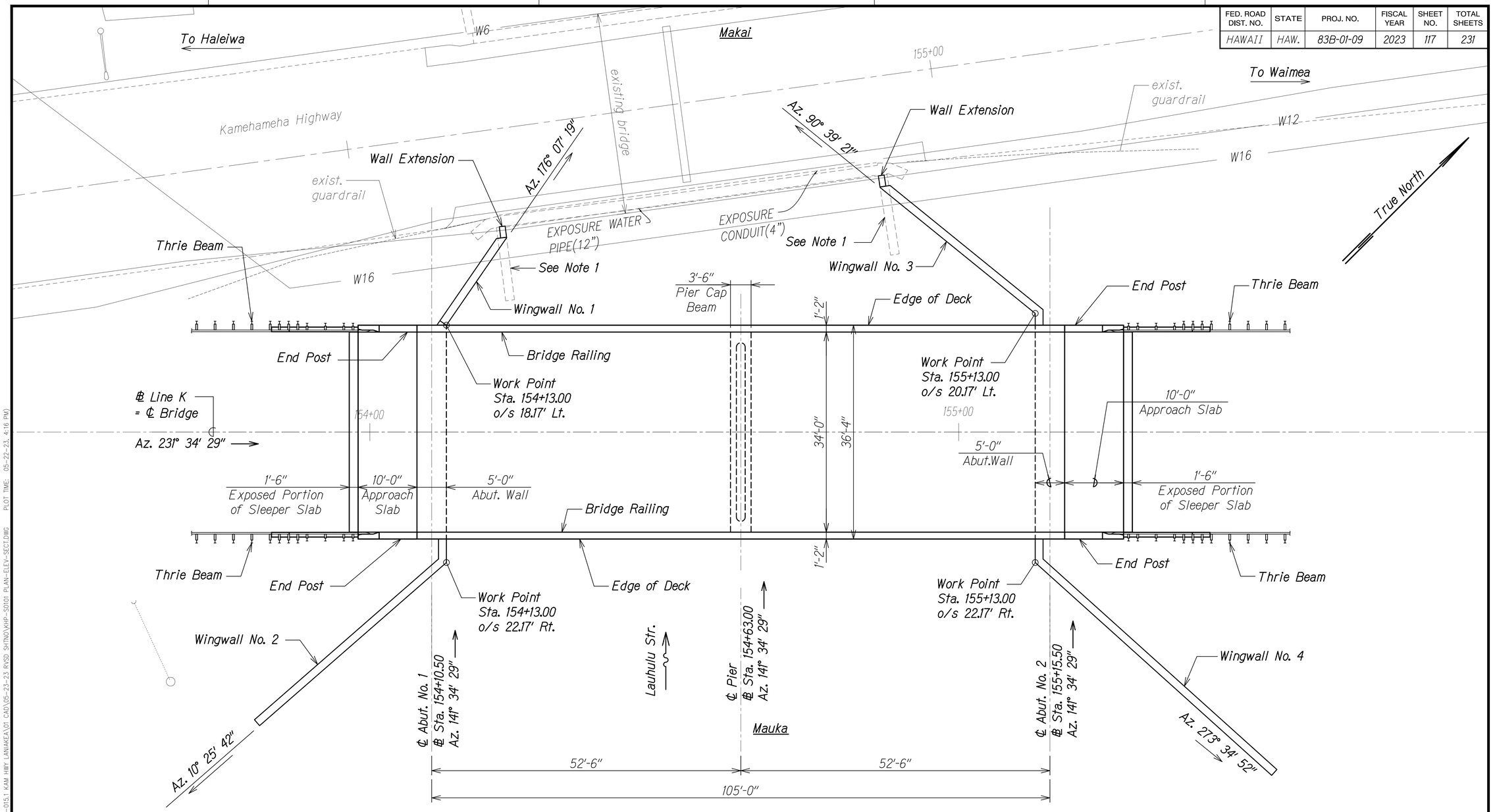
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SHEET No. S0.5 OF 5 SHEETS

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HAWAII	HAW.	83B-01-09	2023	117	231



NOTES:

1. Existing CRM walls to be removed. See Shts. S2.1 to S2.3
2. For new wingwalls, see Shts. S7.1 to S7.16.

LAYOUT PLAN
Scale: 1/8" = 1'-0"

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LAYOUT PLAN

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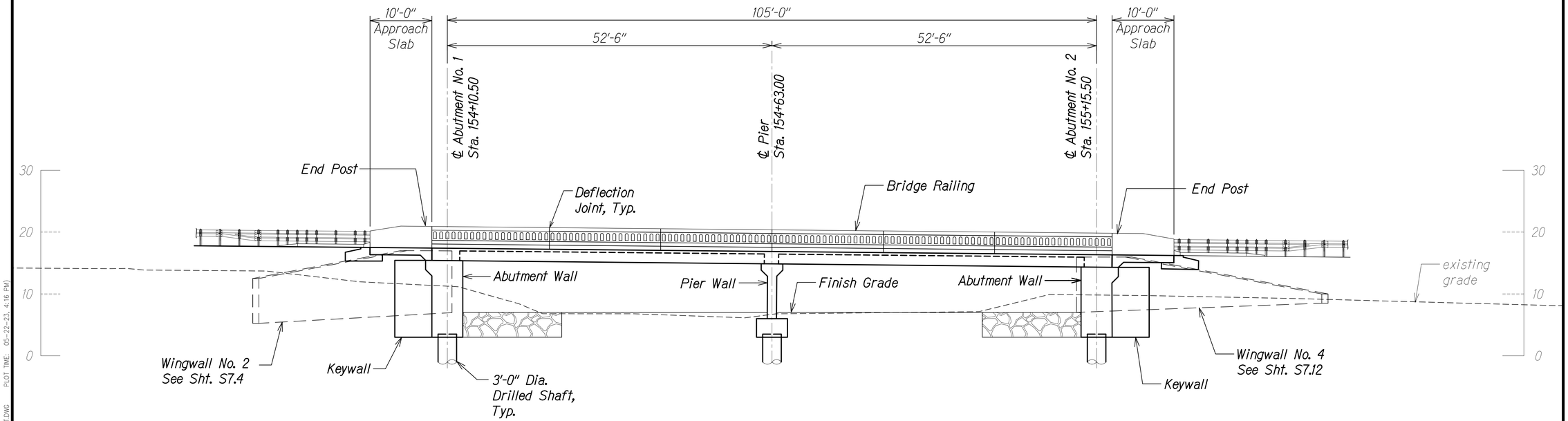
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SHEET No. S1.1 OF 11 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83B-01-09	2023	118	231

To Haleiwa

To Waimea



MAUKA ELEVATION

Scale: 1/8" = 1'-0"

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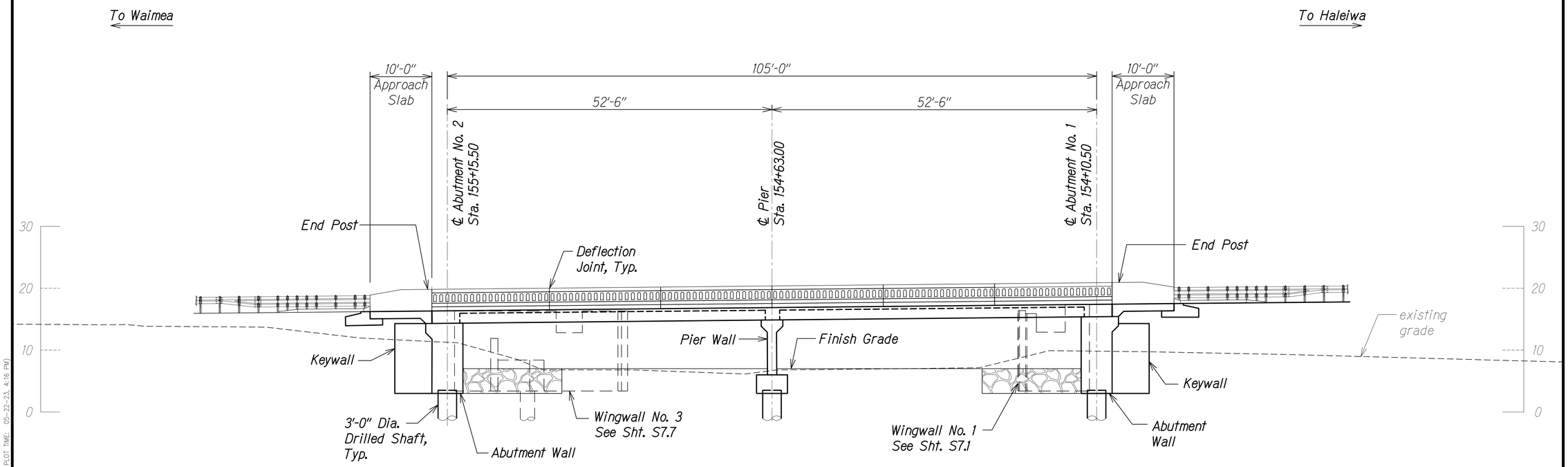
MAUKA ELEVATION

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Vicinity of Laniakea Beach (MP 3.06 to MP 3.54)
Project No. 83B-01-09

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SHEET No. S1.2 OF 11 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83B-01-09	2023	119	231



MAKAI ELEVATION
Scale: 1/8" = 1'-0"

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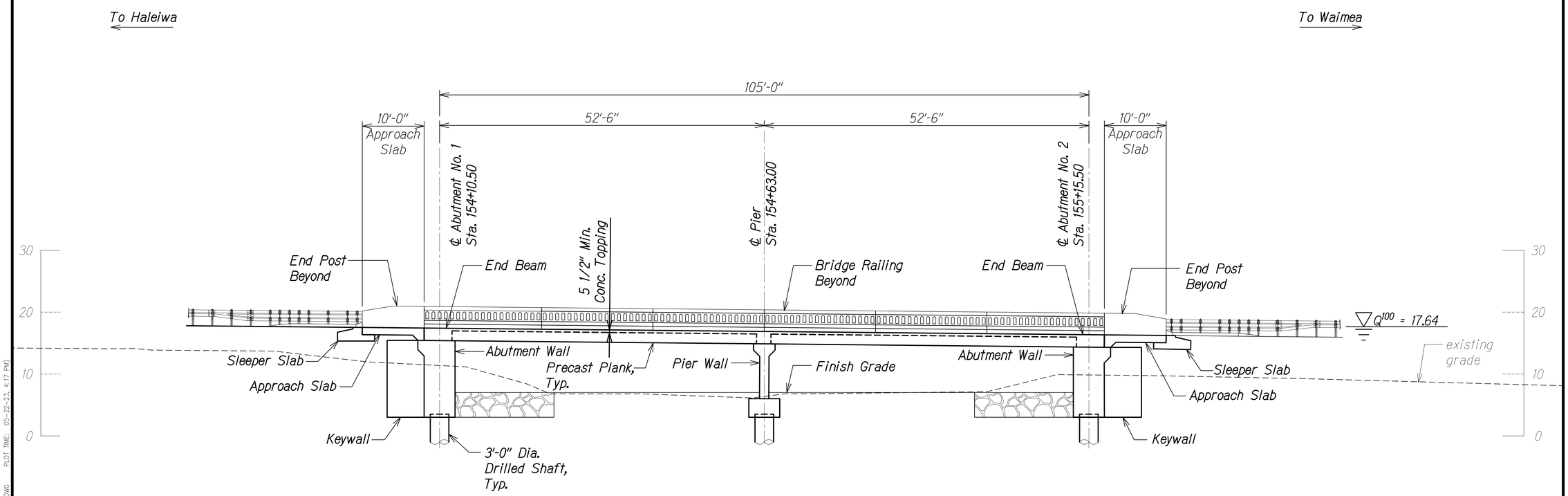
MAKAI ELEVATION

KAMEHAMEHA HIGHWAY DRAINAGE AND SAFETY IMPROVEMENTS
Vicinity of Laniakea Beach (MP 3.06 to MP 3.54)
Project No. 83B-01-09

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SHEET No. S1.3 OF 11 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
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LONGITUDINAL SECTION
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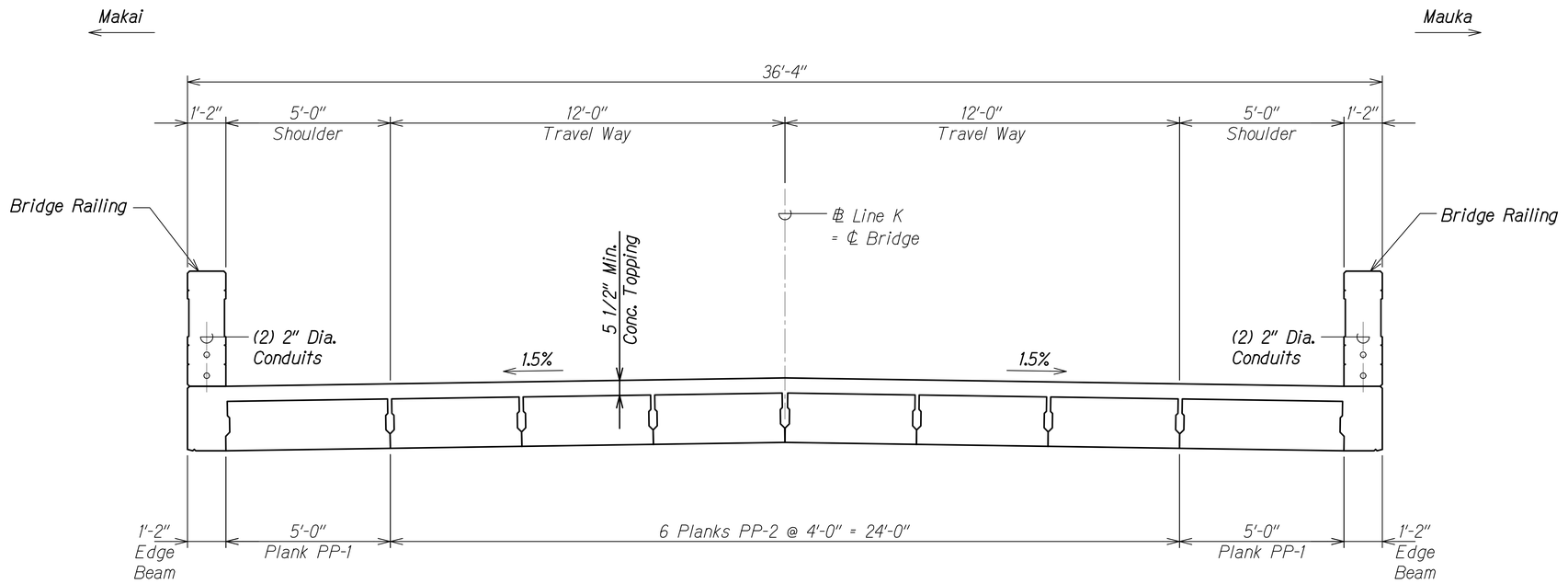
LONGITUDINAL SECTION

KAMEHAMEHA HIGHWAY DRAINAGE AND SAFETY IMPROVEMENTS
Vicinity of Laniakea Beach (MP 3.06 to MP 3.54)
Project No. 83B-01-09

Scale: As Noted — Date: December 2022

SHEET No. S1.4 OF 11 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
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NORMAL DECK SECTION

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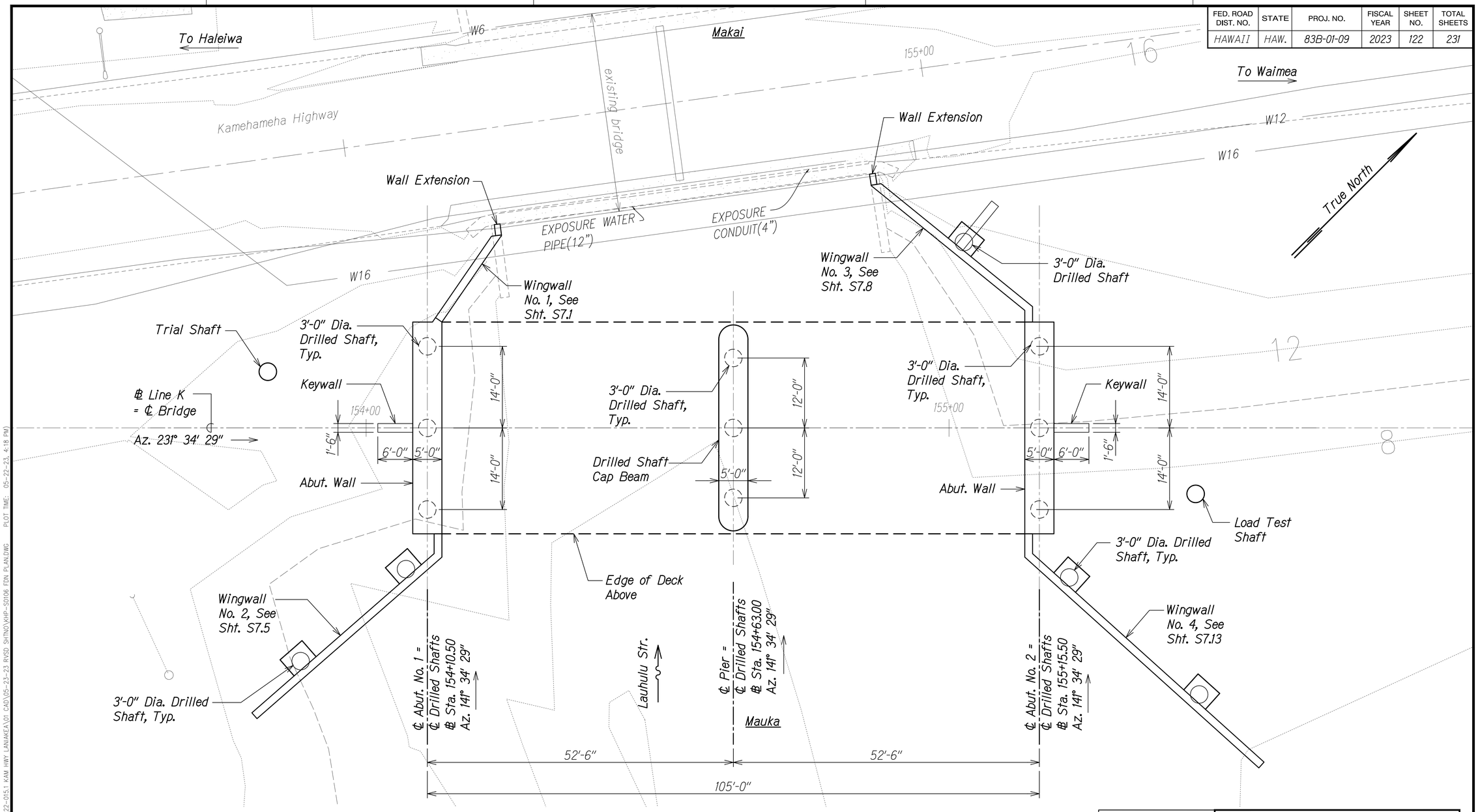
NORMAL DECK SECTION

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SHEET No. S1.5 OF 11 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83B-01-09	2023	122	231



NOTES:

1. Locations for trial shaft and load test shaft are approximate. For additional requirements, see Special Provisions 511.
2. For location of drilled shafts at wingwalls, see sheet reference for wingwalls on this sheet.

FOUNDATION PLAN
Scale: 1/8" = 1'-0"

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

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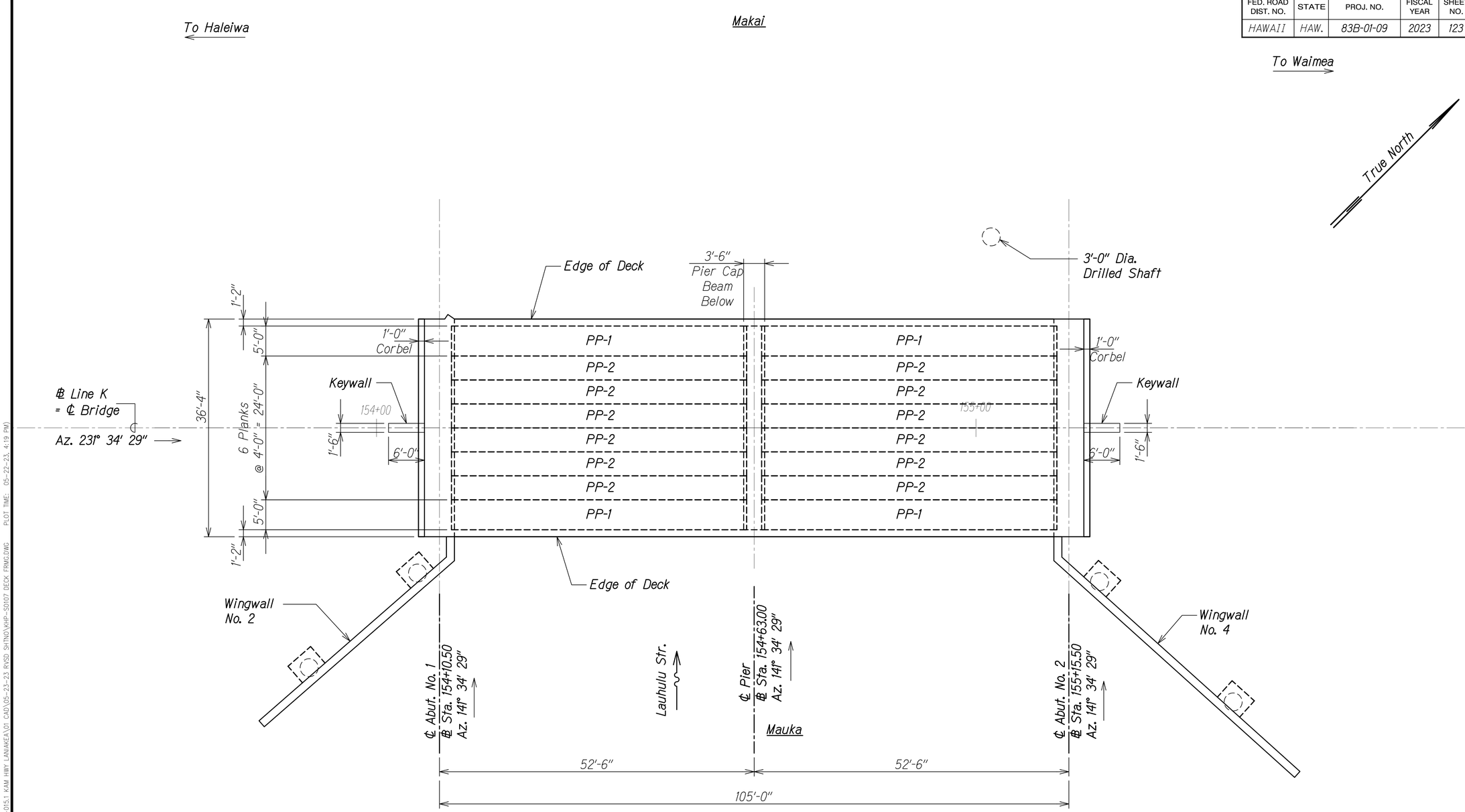
FOUNDATION PLAN

KAMEHAMEHA HIGHWAY DRAINAGE AND SAFETY IMPROVEMENTS
Vicinity of Laniakea Beach (MP 3.06 to MP 3.54)
Project No. 83B-01-09

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SHEET No. S1.6 OF 11 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83B-01-09	2023	123	231



DECK FRAMING PLAN

Scale: 1/8" = 1'-0"

ORIGINAL PLAN

SURVEY PLOTTED BY ____ DATE
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TRACED BY ____
DESIGNED BY ____
QUANTITIES BY ____
CHECKED BY ____

NOTE BOOK
No. ____

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SIGNATURE EXPIRATION DATE OF THE LICENSE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

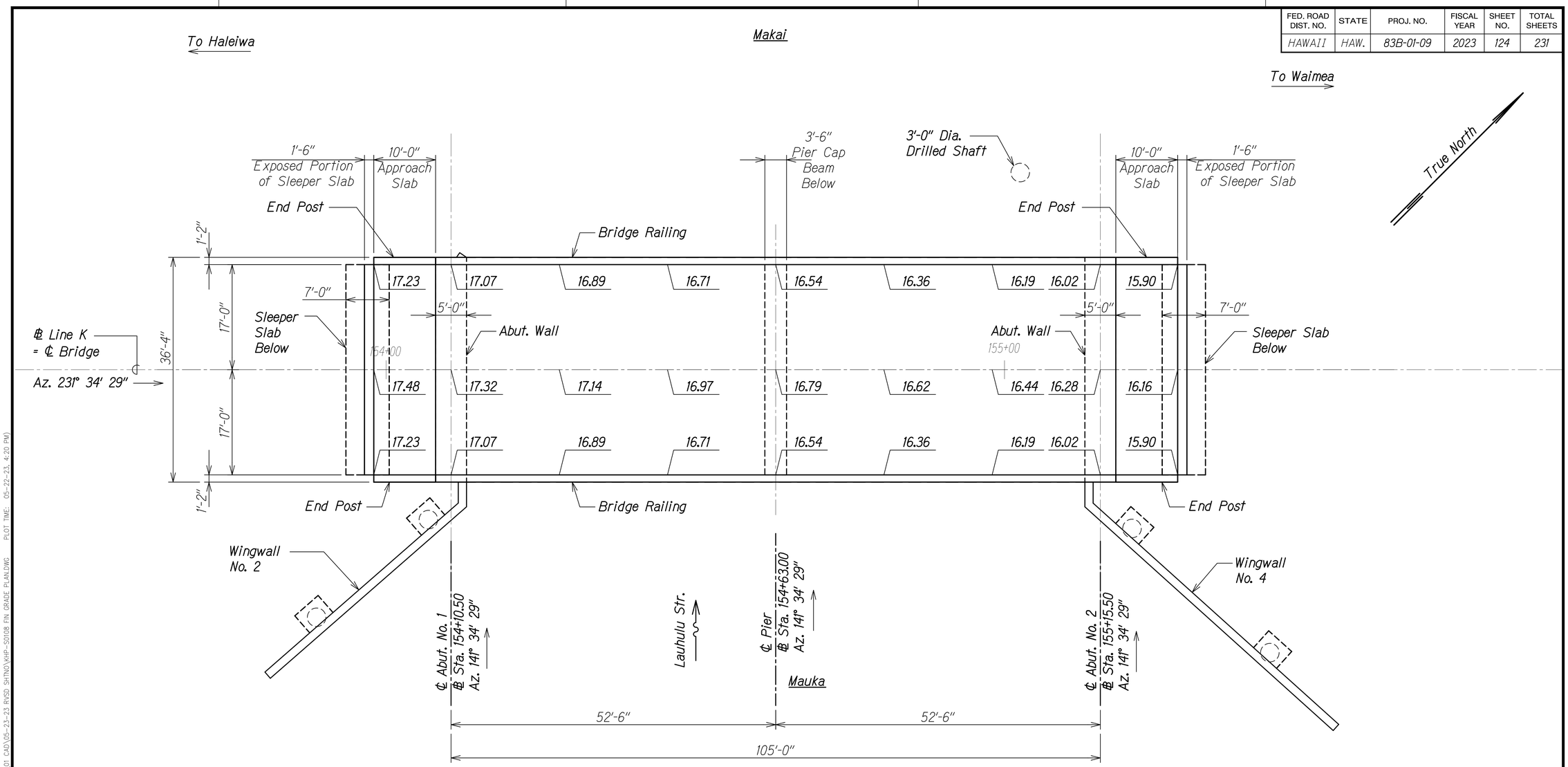
DECK FRAMING PLAN

KAMEHAMEHA HIGHWAY DRAINAGE AND SAFETY IMPROVEMENTS
Vicinity of Laniakea Beach (MP 3.06 to MP 3.54)
Project No. 83B-01-09

Scale: As Noted Date: December 2022

SHEET No. S1.7 OF 11 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83B-01-09	2023	124	231



NOTES:

1. Finish Grades are given at the top of the concrete topping and approach slab along the face of the bridge railing and ℄ bridge as shown.
2. On the bridge, finish grades are given at each ℄ abutment, ℄ pier, and at third points along the span.
3. Off the bridge, finish grades are given at the end of the approach slab closest to the sleeper slab.

FINISH GRADE PLAN

Scale: 1/8" = 1'-0"

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

DRAWING NAME: Z:\00 ONGOING\00 JF PROJECTS\22-015.1 KAM HWY LANIAKEA\01 CAD\05-23-23 RVSD SHTNO\KHP-S0108 FIN GRADE PLAN.DWG PLOT TIME: 05-22-23, 4:20 PM)

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DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

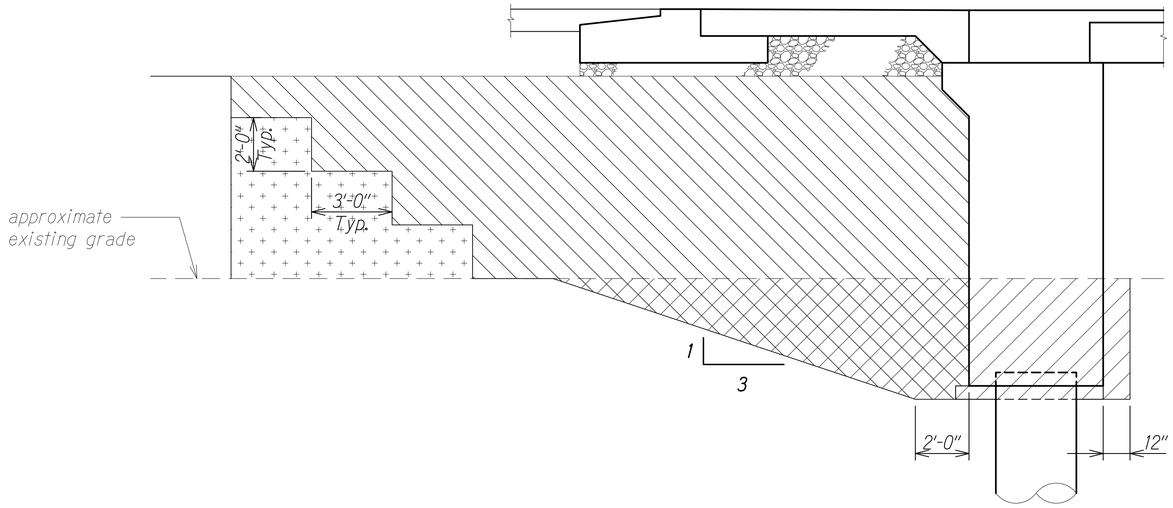
FINISH GRADE PLAN

KAMEHAMEHA HIGHWAY DRAINAGE AND SAFETY IMPROVEMENTS
Vicinity of Laniakea Beach (MP 3.06 to MP 3.54)
Project No. 83B-01-09

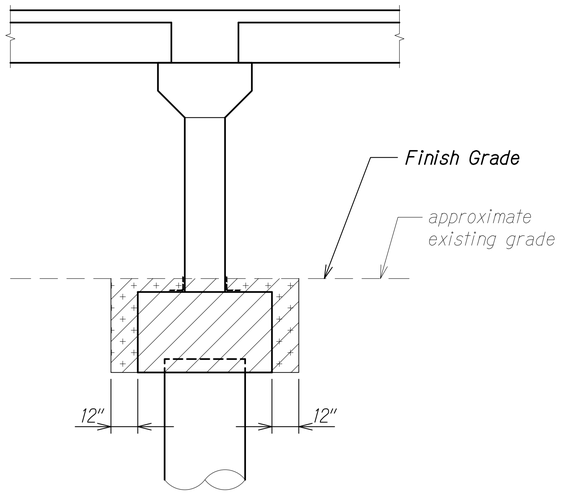
Scale: As Noted Date: December 2022

SHEET No. S1.8 OF 11 SHEETS

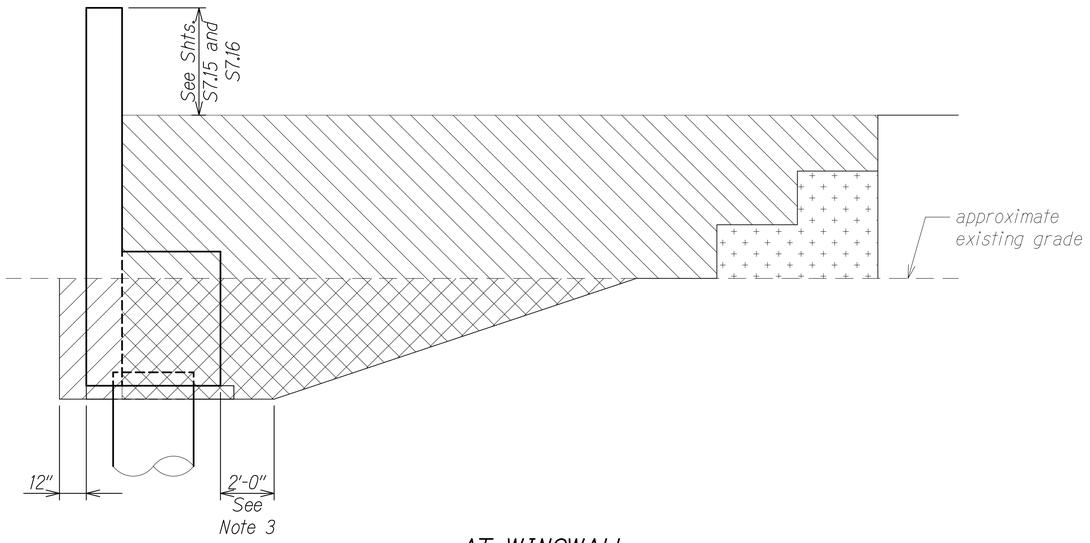
FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83B-01-09	2023	125	231



AT ABUTMENT



AT PIER



AT WINGWALL

STRUCTURE EXCAVATION AND BACKFILL PAY LIMITS SECTIONS

Scale: 3/8" = 1'-0"

LEGEND:

- Structure Excavation
- CLSM Backfill
- Structure Backfill
- Aggregate Subbase Course

NOTES:

1. Excavated beach sand shall be used for the structure backfill at the pier.
2. All horizontal dimensions are measured perpendicular to the face.
3. 2'-0" dimension at Wingwall No. 1 is located at the back face of the wingwall, see A S1.9 S7.15 .

ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
	DRAWN BY	
NOTE BOOK	TRACED BY	
	DESIGNED BY	
No.	QUANTITIES BY	
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NO. 9444-S
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EXCAVATION AND BACKFILL PAY LIMITS

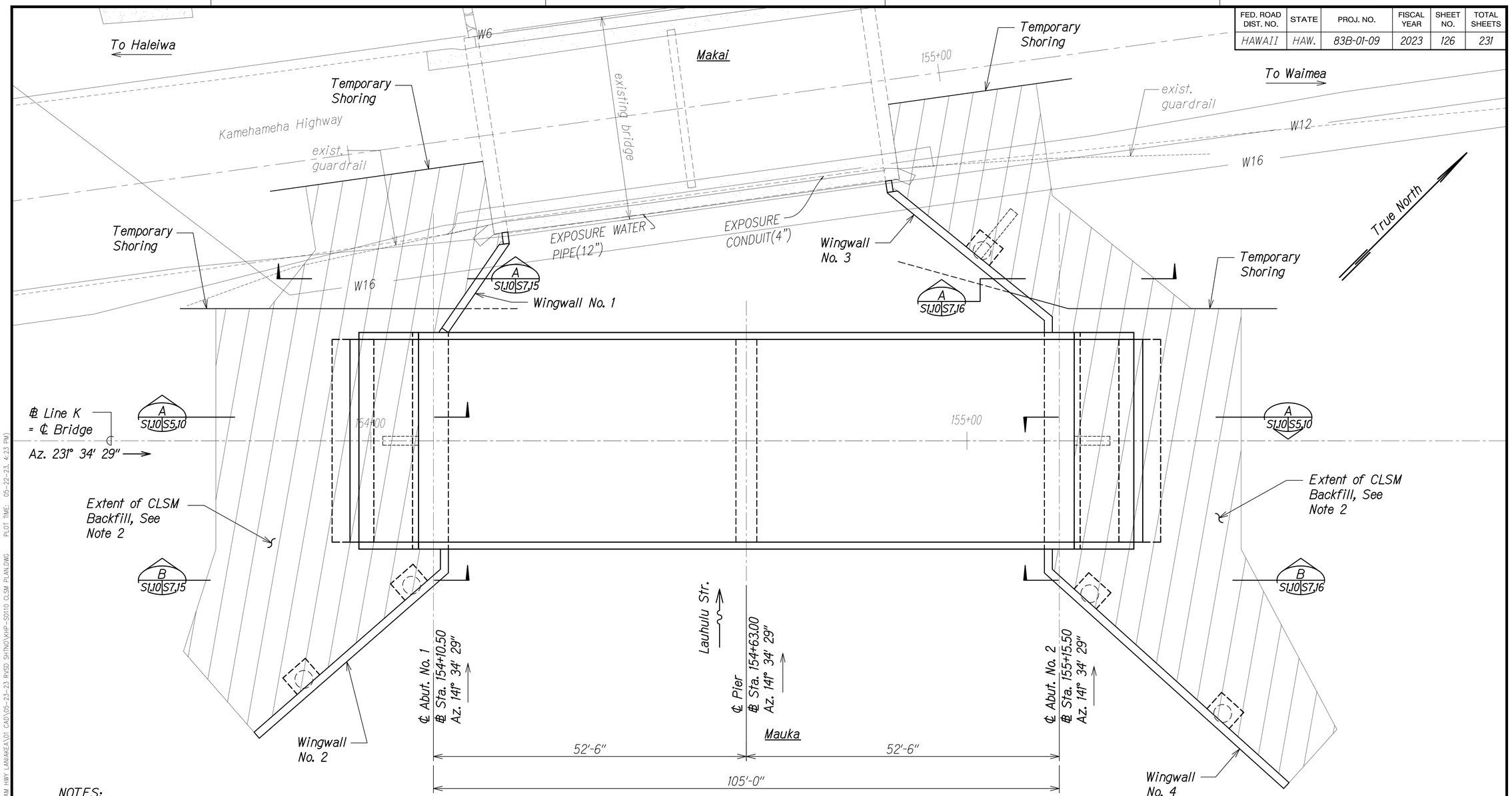
KAMEHAMEHA HIGHWAY DRAINAGE AND SAFETY IMPROVEMENTS
Vicinity of Laniakea Beach (MP 3.06 to MP 3.54)
Project No. 83B-01-09

Scale: As Noted Date: December 2022

SHEET No. S1.9 OF 11 SHEETS

DRAWING NAME: Z:\00 ONGOING\00 JF PROJECTS\22-015.1 KAM HWY LANIAKEA\01 CAD\05-23-23 RVSD SHTNO\KHP-S0109 PAY LIMITS.DWG PLOT TIME: 05-23-23, 10:41 AM)

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83B-01-09	2023	126	231



NOTES:

1. For Construction Sequence and extent of temporary shoring, see Shts. S12.1 to S12.5.
2. Extent of CLSM backfill shown is approximate and shall be estimated based on backfill sections provided on Shts. S5.10, S7.15 and S7.16.

CLSM BACKFILL PLAN

Scale: 1/8" = 1'-0"

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

DRAWING NAME: Z:\00 ONGOING\00 of PROJECTS\22-015.1 KAM HWY LANIAKEA\01 CAD\05-23-23 RVSD SHTNO\KHP-S0110 CLSM PLAN.DWG PLOT TIME: 05-22-23, 4:23 PM)

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HIGHWAYS DIVISION

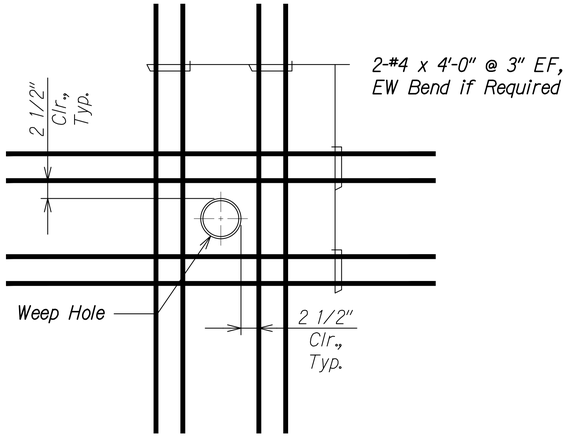
CLSM BACKFILL PLAN

KAMEHAMEHA HIGHWAY DRAINAGE AND SAFETY IMPROVEMENTS
Vicinity of Laniakea Beach (MP 3.06 to MP 3.54)
Project No. 83B-01-09

Scale: As Noted Date: December 2022

SHEET No. S1.10 OF 11 SHEETS

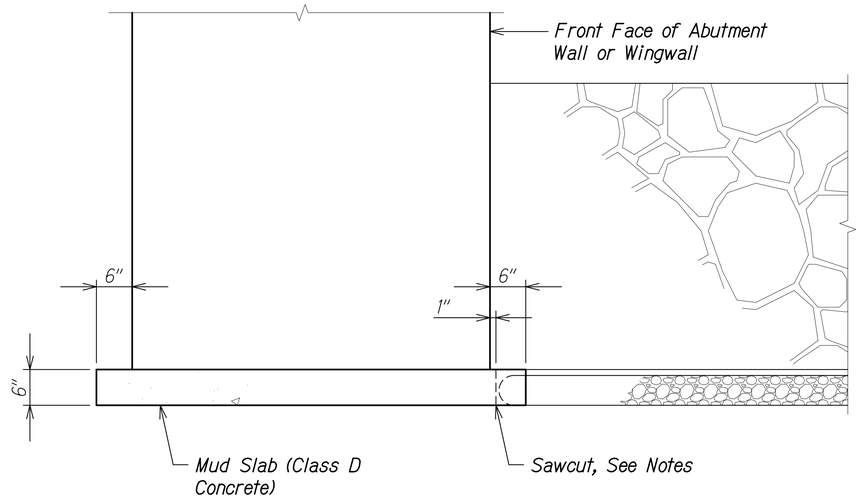
FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83B-01-09	2023	127	231



ADDED REINF. AT WEEP HOLE

Scale: 1 1/2" = 1'-0"

1 S1.11 | S1.11



MUD SLAB

Scale: 1" = 1'-0"

2 S1.11 | S1.11

NOTES:

1. Extend mud slab 6" beyond front face of abutment wall or wingwall.
2. Mud slab may be used to support formwork for abutment wall, wingwalls, and drilled shaft cap.
3. Sawcut mud slab prior to placing dumped riprap and cushion layer.

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

DRAWING NAME: Z:\00 ONGOING\00 JF PROJECTS\22-015.1 KAM HWY LANIAKEA\01 CAD\05-23-23 RVSD SHTNO\KHP-S0111 TYP DET.DWG PLOT TIME: 05-22-23, 4:23 PM)

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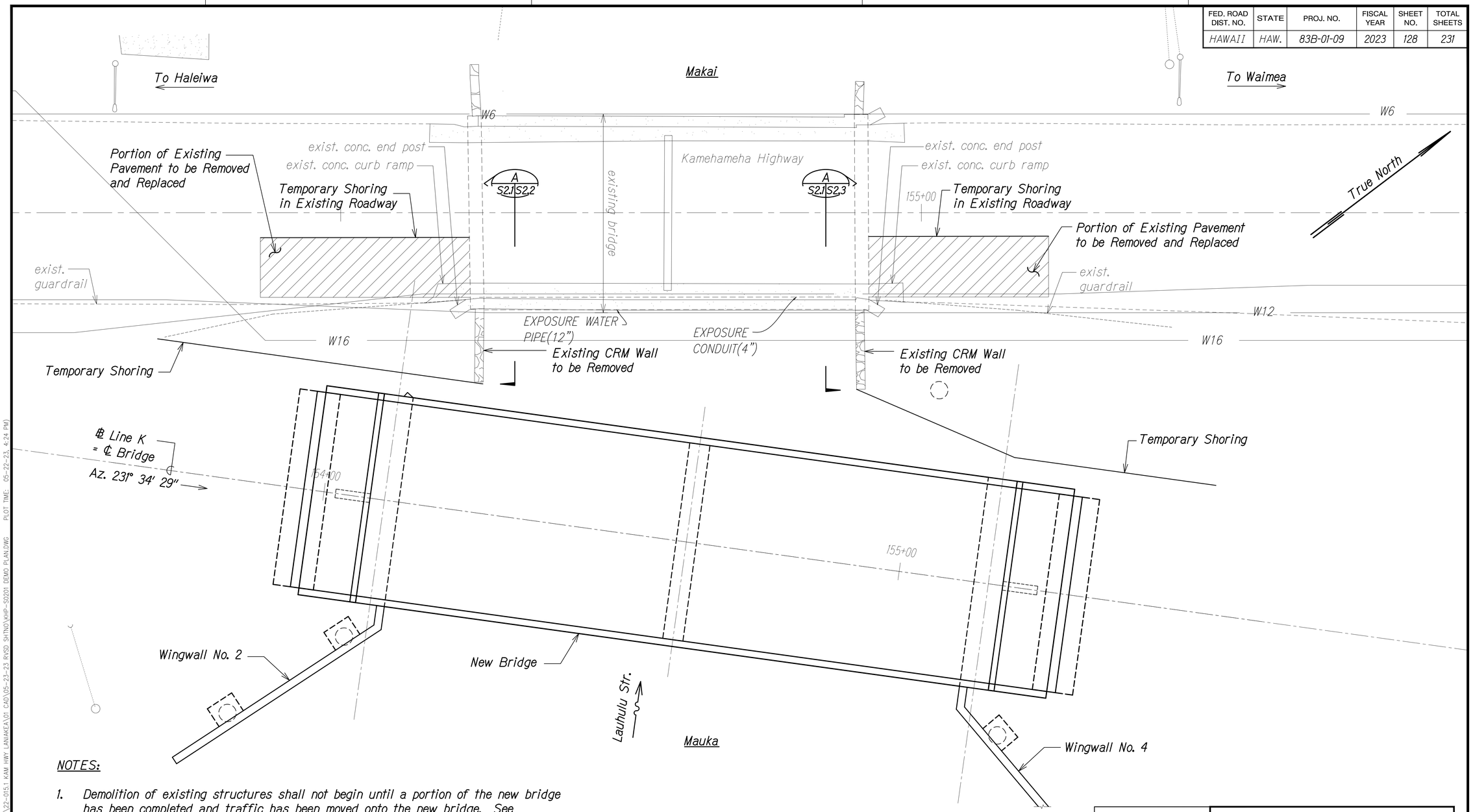
TYPICAL DETAILS

KAMEHAMEHA HIGHWAY DRAINAGE AND SAFETY IMPROVEMENTS
Vicinity of Laniakea Beach (MP 3.06 to MP 3.54)
Project No. 83B-01-09

Scale: As Noted Date: December 2022

SHEET No. S1.11 OF 11 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83B-01-09	2023	128	231



NOTES:

1. Demolition of existing structures shall not begin until a portion of the new bridge has been completed and traffic has been moved onto the new bridge. See Construction Sequence Shts. S12.1 to S12.5.

2. Temporary shoring shown is schematic. The construction of Wingwall No. 1 and Wingwall No. 3 will require the removal of the existing mauka CRM walls and releasing the existing backfill as shown on Stage 14 on Shts. S12.4 and S12.5.

3. The Contractor shall provide support for exposed utilities and replace any curb ramps, pavement, guardrails, and end posts that may be damaged during excavation at no cost to the State.

DEMOLITION PLAN

Scale: 1/8" = 1'-0"

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

DRAWING NAME: Z:\00 ONGOING\00 JF PROJECTS\22-015.1 KAM HWY LANIAKEA\01 CAD\05-23-23 RVSD SHTNO\KHIP-S0201 DEMO PLAN.DWG PLOT TIME: 05-22-23, 4:24 PM)

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STATE OF HAWAII
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HIGHWAYS DIVISION

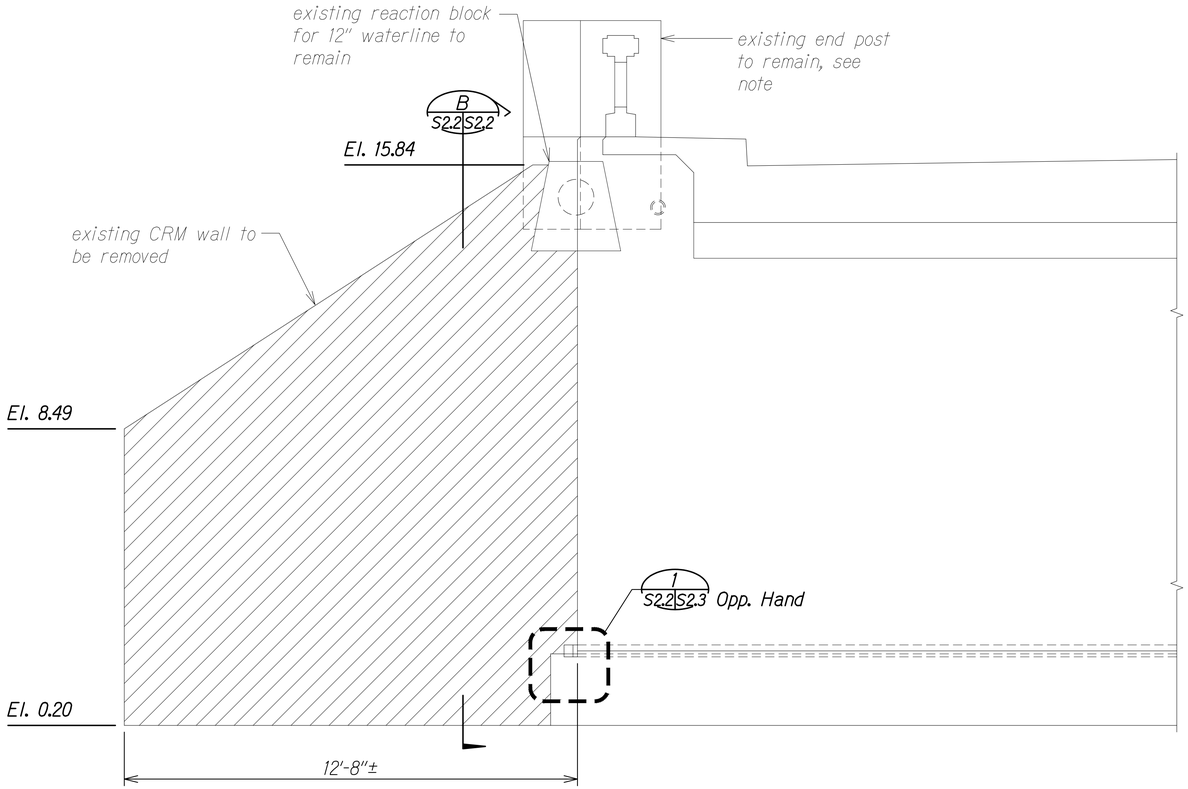
DEMOLITION PLAN

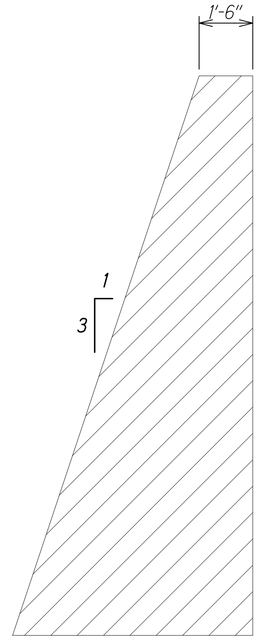
KAMEHAMEHA HIGHWAY DRAINAGE AND SAFETY IMPROVEMENTS
Vicinity of Laniakea Beach (MP 3.06 to MP 3.54)
Project No. 83B-01-09

Scale: As Noted Date: December 2022

SHEET No. S2.1 OF 3 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83B-01-09	2023	129	231





HALEIWA DEMOLITION ELEVATION

Scale: 1/2" = 1'-0"

A S2.1 S2.2

SECTION

Scale: 1/2" = 1'-0"

B S2.2 S2.2

NOTE:

The Contractor shall take caution when excavating under the existing end post. The end post may not be properly supported by the abutment and any damage to the existing end post shall be avoided.

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

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DEMOLITION ELEVATION AND SECTION

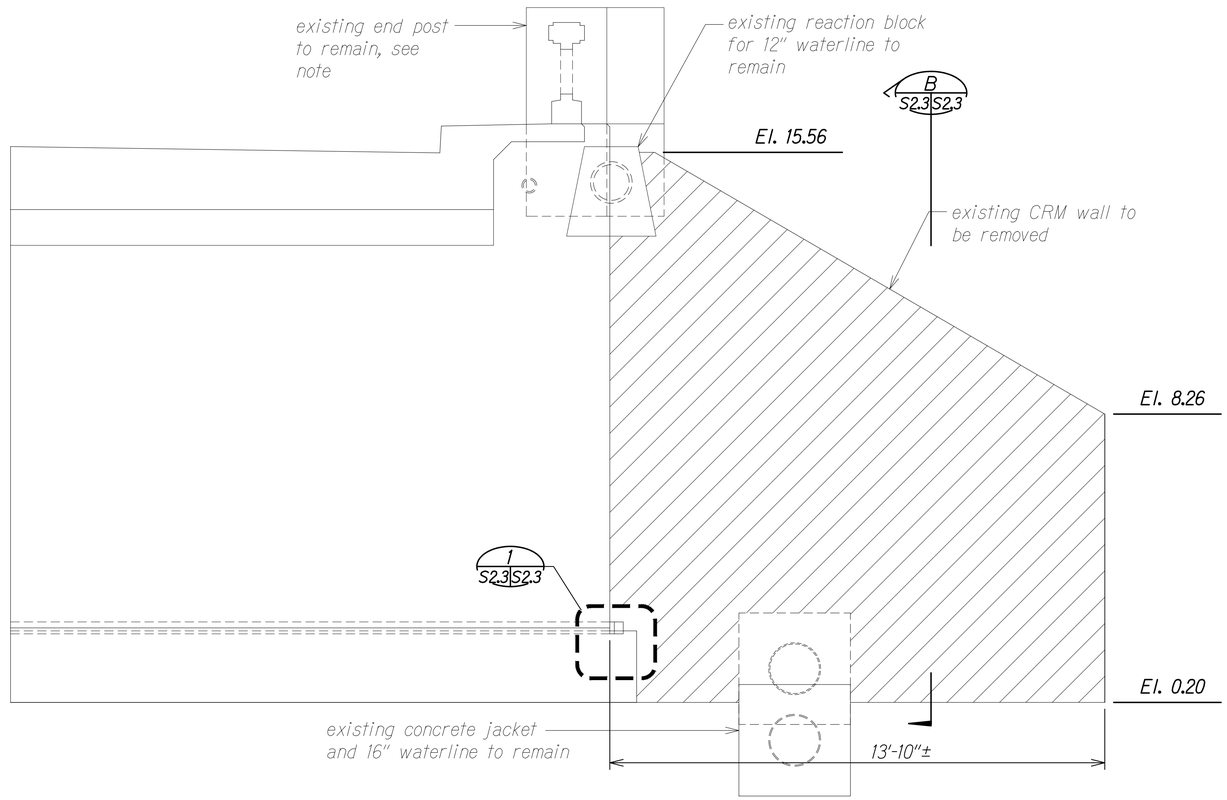
KAMEHAMEHA HIGHWAY DRAINAGE AND SAFETY IMPROVEMENTS
Vicinity of Laniakea Beach (MP 3.06 to MP 3.54)
Project No. 83B-01-09

Scale: As Noted Date: December 2022

SHEET No. S2.2 OF 3 SHEETS

DRAWING NAME: Z:\00 ONGOING\00 JF PROJECTS\22-015.1 KAM HWY LANIAKEA\01 CAD\05-23-23 RVSD SHTNG\KHP-S0202 DEMO SECT.DWG PLOT TIME: 05-22-23, 4:26 PM)

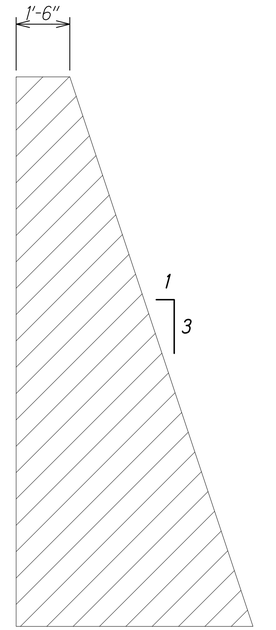
FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83B-01-09	2023	130	231



WAIMEA DEMOLITION ELEVATION

Scale: 1/2" = 1'-0"

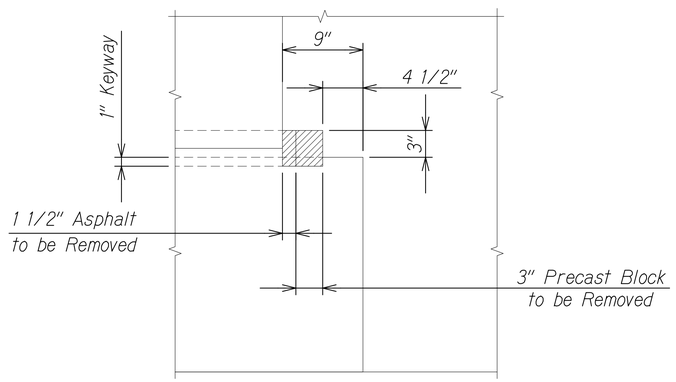
A S2.1 S2.3



SECTION

Scale: 1/2" = 1'-0"

B S2.3 S2.3



DETAIL

Scale: 1 1/2" = 1'-0"

1 S2.2 S2.3

S2.3

NOTE:

The Contractor shall take caution when excavating under the existing end post. The end post may not be properly supported by the abutment and any damage to the existing end post shall be avoided.

ORIGINAL PLAN | SURVEY PLOTTED BY | DRAWN BY | TRACED BY | DESIGNED BY | QUANTITIES BY | CHECKED BY | DATE

NOTE BOOK | No.

DRAWING NAME: Z:\00 ONGOING\00 JF PROJECTS\22-015.1 KAM HWY LANIAKEA\01 CAD\05-23-23 RVSD SHTNO\KHP-S0202 DEMO SECT.DWG PLOT TIME: 05-22-23, 4:27 PM)

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DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

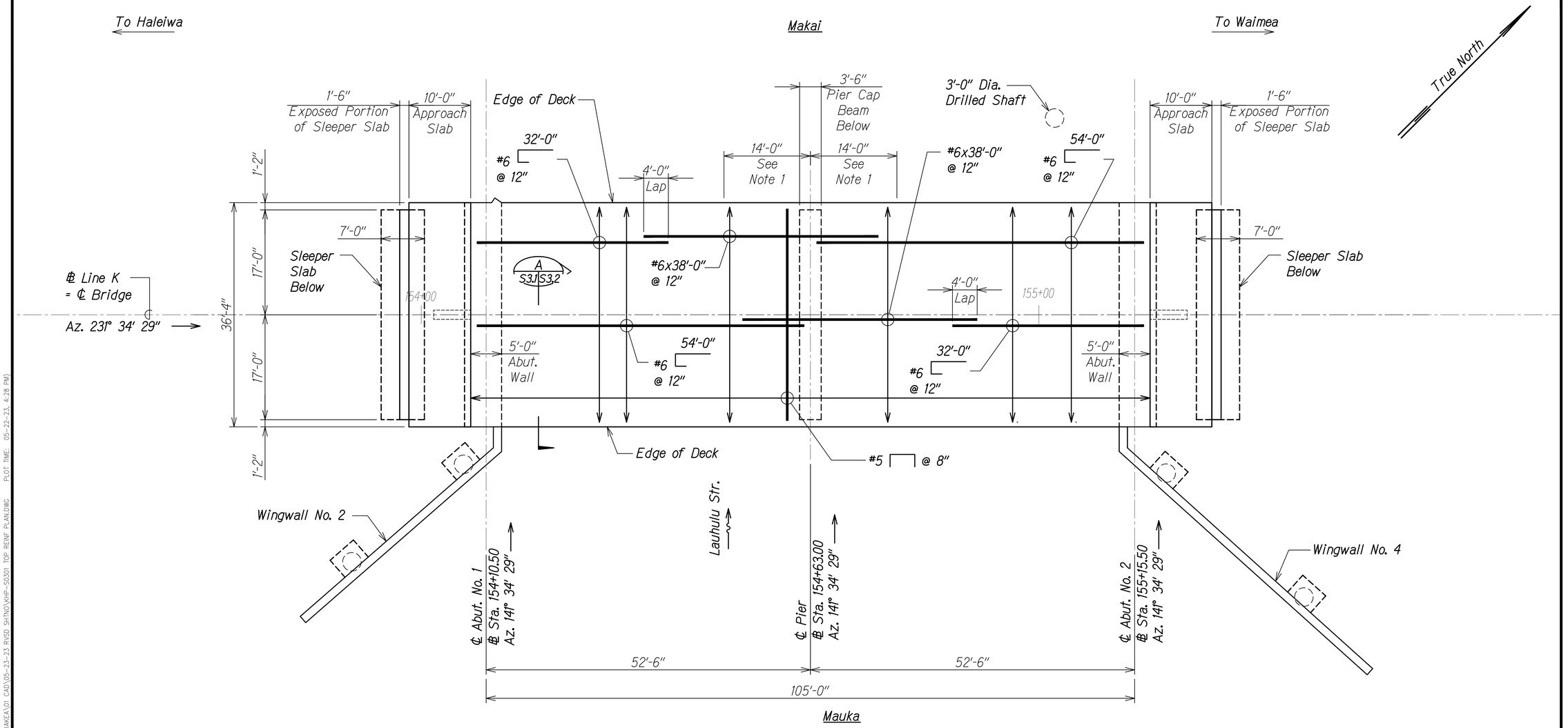
DEMOLITION ELEVATION, SECTION, AND DETAIL

KAMEHAMEHA HIGHWAY DRAINAGE AND SAFETY IMPROVEMENTS
Vicinity of Laniakea Beach (MP 3.06 to MP 3.54)
Project No. 83B-01-09

Scale: As Noted Date: December 2022

SHEET No. S2.3 OF 3 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83B-01-09	2023	131	231



NOTES:

1. For concrete topping pour requirements, see Structural General Note 8.P.

2. Average spacing between longitudinal bars shall be 6".

TOPPING REINFORCING PLAN

Scale: 1/8" = 1'-0"

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NO. 9444-S
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TOPPING REINFORCING PLAN

KAMEHAMEHA HIGHWAY DRAINAGE AND SAFETY IMPROVEMENTS
Vicinity of Laniakea Beach (MP 3.06 to MP 3.54)
Project No. 83B-01-09

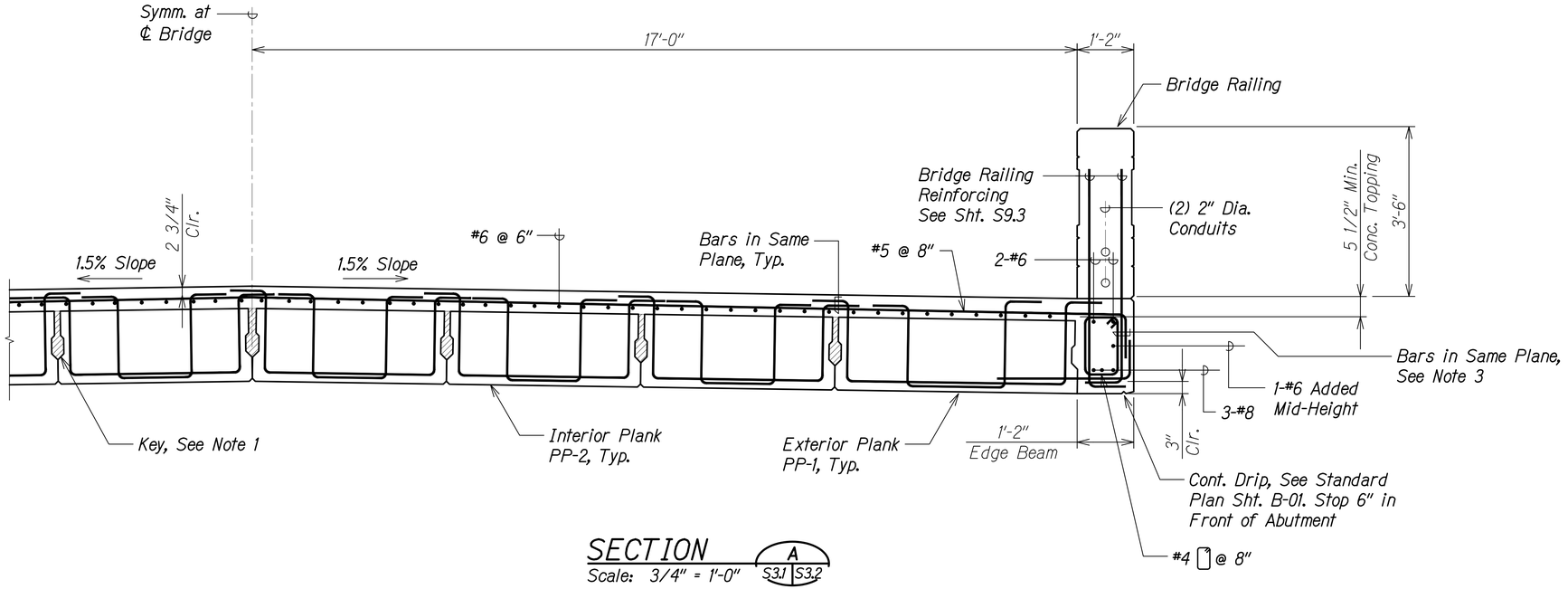
Scale: As Noted — Date: December 2022

SHEET No. S3.1 OF 2 SHEETS

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

DRAWING NAME: Z:\OO ONGOING\OO JF PROJECTS\22-015.1 KAM HWY LANIAKEA\01 CAD\05-23-23 RVSD SHTNG\KHP-S0301 TOP REINF PLAN.DWG PLOT TIME: 05-22-23, 4:28 PM)

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83B-01-09	2023	132	231



SECTION (A — S3.1 | S3.2)
Scale: 3/4" = 1'-0"

NOTES:

1. Fill key with non-shrink grout before pouring concrete topping. See (1 — S4.5 | S4.5).
2. For plank reinforcing, See Shts. S4.1 to S4.5.
3. Horizontal clearance of reinforcing at the exterior face of the beam is governed by the bridge railing, See Sht. S9.3.

ORIGINAL PLAN
NOTE BOOK
No.

SURVEY PLOTTED BY
DRAWN BY
TRACED BY
DESIGNED BY
QUANTITIES BY
CHECKED BY
DATE

DRAWING NAME: Z:\OD ONGOING\OD JF PROJECTS\22-015.1 KAM HWY LANIAKEA\01 CAD\05-23-23 RVSD SHTNO\KHP-S0302 TOP SECT.DWG PLOT TIME: 05-23-23, 8:08 AM)

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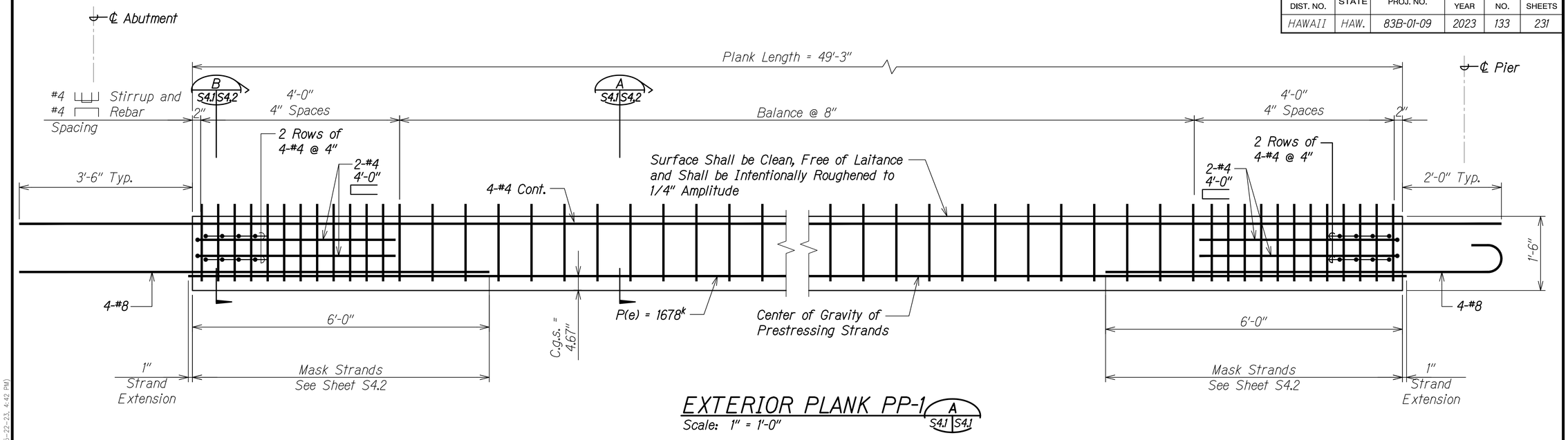
PARTIAL DECK SECTION

KAMEHAMEHA HIGHWAY DRAINAGE AND SAFETY IMPROVEMENTS
Vicinity of Laniakea Beach (MP 3.06 to MP 3.54)
Project No. 83B-01-09

Scale: As Noted Date: December 2022

SHEET No. S3.2 OF 2 SHEETS

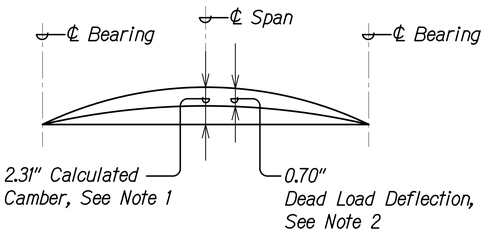
FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83B-01-09	2023	133	231



EXTERIOR PLANK PP-1

A S4.1 S4.1

Scale: 1" = 1'-0"



CAMBER AND DEFLECTION NOTES:

1. The initial camber (1.28") includes the effect of the initial prestress force and the weight of the plank after removal from the bed. The calculated camber value at 60 days is the initial camber multiplied by creep factor to approximate the effect of camber growth and concrete creep. Positive values shown for calculated camber indicate a net upward deflection. Maximum camber immediately prior to erection of plank shall not exceed the calculated camber by more than 0.50 inch. Plank with cambers exceeding the maximum camber will not be accepted.

2. Dead load deflection is due to weight of the concrete topping and edge beam.

3. All cambers and deflections are in inches.

PLANK CAMBER AND TOPPING DEFLECTION DIAGRAM

1 S4.1 S4.1

Not to Scale

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

DRAWING NAME: Z:\00 ONGOING\00 JF PROJECTS\22-015.1 KAM HWY LANIAKEA\01 CAD\05-23-23 RVSD SHTNO\KHP-S0401 TO S0405 PLNK ELEV SECT.DWG PLOT TIME: 05-22-23, 4:42 PM)

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SIGNATURE 4-30-24 EXPIRATION DATE OF THE LICENSE

STATE OF HAWAII
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HIGHWAYS DIVISION

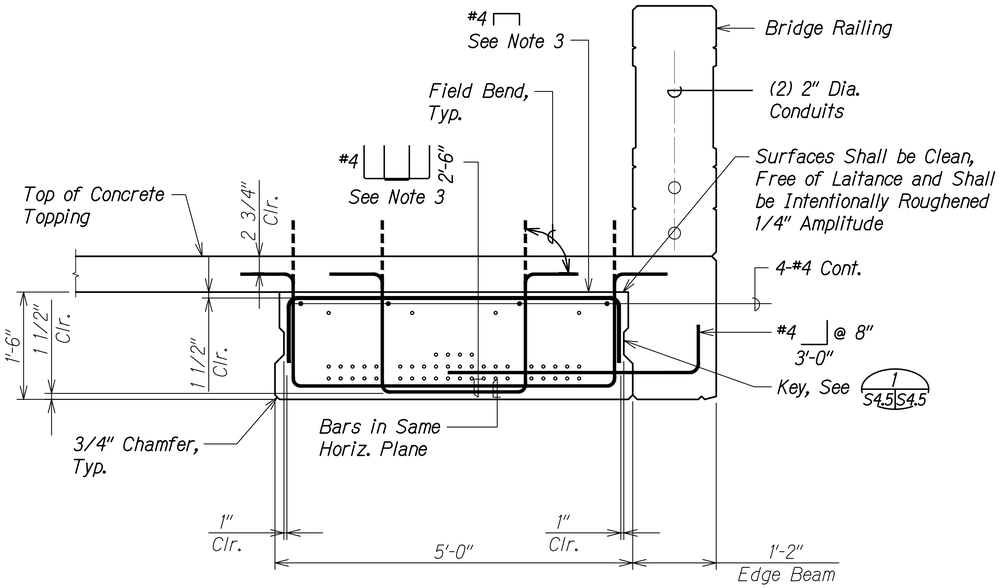
PRECAST PLANK PP-1 ELEVATION AND CAMBER DIAGRAM

KAMEHAMEHA HIGHWAY DRAINAGE AND SAFETY IMPROVEMENTS
Vicinity of Laniakea Beach (MP 3.06 to MP 3.54)
Project No. 83B-01-09

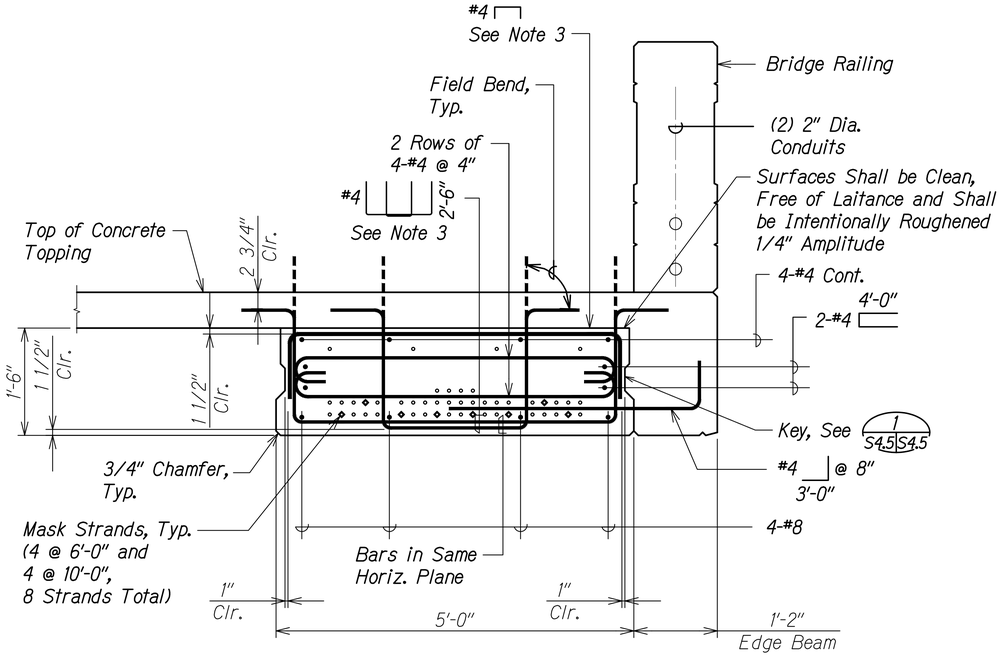
Scale: As Noted Date: December 2022

SHEET No. S4.1 OF 5 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83B-01-09	2023	134	231



TYPICAL SECTION A
Scale: 1" = 1'-0"



SECTION AT ENDS B
Scale: 1" = 1'-0"

NOTES:

1. For bridge railing reinforcing not shown, see Sht. S9.3.
2. For concrete topping reinforcing and edge beam reinforcing not shown, see Shts. S3.1 to S3.2.
3. For spacing, see Sht. S4.1.

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

DRAWING NAME: Z:\OO ONGOING\OO JF PROJECTS\22-015.1 KAM HWY LANIAKEA\01 CAD\05-23-23 RVSD SHTNO\KHP-S0401 TO S0405 PLNK ELEV SECT.DWG PLOT TIME: 05-22-23, 4:42 PM)

RUSS S. MIYAHARA
LICENSED PROFESSIONAL ENGINEER
NO. 9444-S
HAWAII, U.S.A.

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SIGNATURE — EXPIRATION DATE OF THE LICENSE: 4-30-24

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

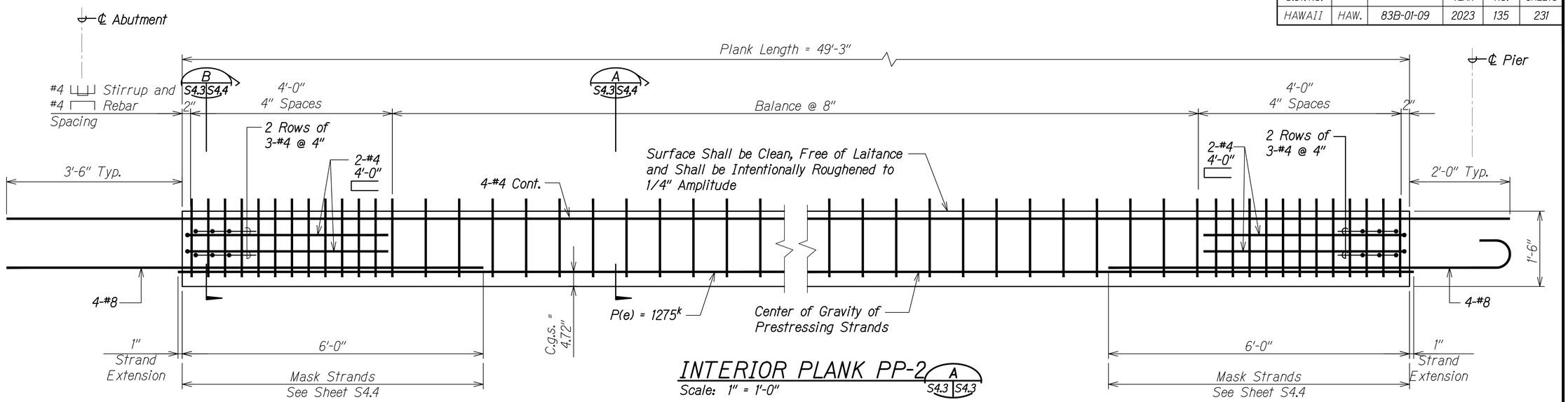
PRECAST PLANK PP-1 SECTIONS

KAMEHAMEHA HIGHWAY DRAINAGE AND SAFETY IMPROVEMENTS
Vicinity of Laniakea Beach (MP 3.06 to MP 3.54)
Project No. 83B-01-09

Scale: As Noted — Date: December 2022

SHEET No. S4.2 OF 5 SHEETS

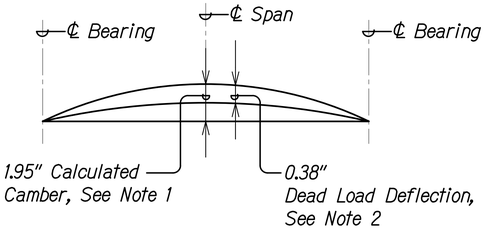
FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83B-01-09	2023	135	231



INTERIOR PLANK PP-2

A S4.3 S4.3

Scale: 1" = 1'-0"



CAMBER AND DEFLECTION NOTES:

1. The initial camber (1.08") includes the effect of the initial prestress force and the weight of the plank after removal from the bed. The calculated camber value at 60 days is the initial camber multiplied by creep factor to approximate the effect of camber growth and concrete creep. Positive values shown for calculated camber indicate a net upward deflection. Maximum camber immediately prior to erection of plank shall not exceed the calculated camber by more than 0.50 inch. Plank with cambers exceeding the maximum camber will not be accepted.

2. Dead load deflection is due to weight of the concrete topping.

3. All cambers and deflections are in inches.

PLANK CAMBER AND TOPPING DEFLECTION DIAGRAM

1 S4.3 S4.3

Not to Scale

ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
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	DESIGNED BY	
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DRAWING NAME: Z:\00 ONGOING\00 JF PROJECTS\22-015.1 KAM HWY LANIAKEA\01 CAD\05-23-23 RVSD SHTNO\KHP-S0401 TO S0405 PLNK ELEV SECT.DWG PLOT TIME: 05-22-23, 4:43 PM)

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HIGHWAYS DIVISION

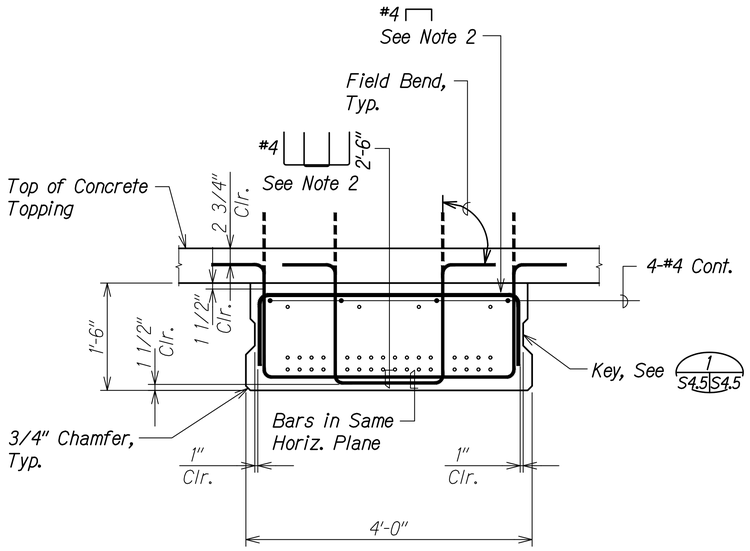
PRECAST PLANK PP-2 ELEVATION AND CAMBER DIAGRAM

KAMEHAMEHA HIGHWAY DRAINAGE AND SAFETY IMPROVEMENTS
Vicinity of Laniakea Beach (MP 3.06 to MP 3.54)
Project No. 83B-01-09

Scale: As Noted Date: December 2022

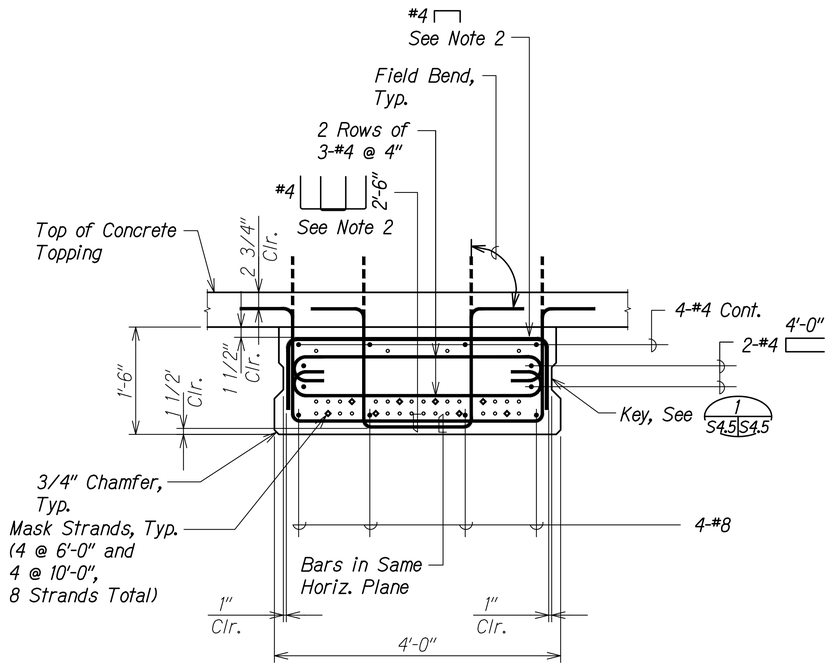
SHEET No. S4.3 OF 5 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83B-01-09	2023	136	231



TYPICAL SECTION A S4.3 S4.4

Scale: 1" = 1'-0"



SECTION AT ENDS B S4.3 S4.4

Scale: 1" = 1'-0"

NOTES:

1. For concrete topping reinforcing not shown, see Shts. S3.1 to S3.2.
2. For spacing, see Sht. S4.3.

ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
	DRAWN BY	
NOTE BOOK	TRACED BY	
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PRECAST PLANK PP-2 SECTIONS

KAMEHAMEHA HIGHWAY DRAINAGE AND SAFETY IMPROVEMENTS
Vicinity of Laniakea Beach (MP 3.06 to MP 3.54)
Project No. 83B-01-09

Scale: As Noted Date: December 2022

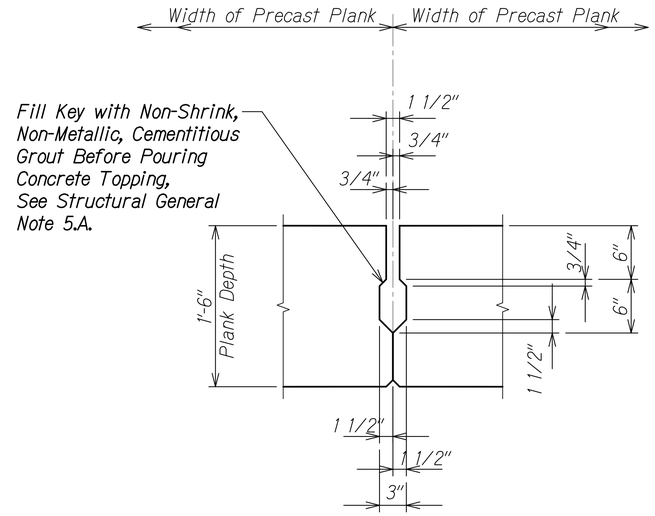
SHEET No. S4.4 OF 5 SHEETS

DRAWING NAME: Z:\00 ONGOING\00 JF PROJECTS\22-015.1 KAM HWY LANIAKEA\01 CAD\05-23-23 RVSD SHTNO\KHP-S0401 TO S0405 PLNK ELEV SECT.DWG PLOT TIME: 05-22-23, 4:43 PM)

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83B-01-09	2023	137	231

PRECAST PLANK NOTES:

1. Prestressed concrete 28 day compressive strength f'c = 8,000 psi. Prestressed concrete compressive strength at time of release fci = 5,000 psi.
2. Pretensioned strands shall be 7-wire 0.6-inch diameter ASTM A416 Grade 270 low-relaxation strands.
3. Non-prestressed reinforcing steel shall be ASTM A1035 Type CS Grade 100 deformed bar.
4. Strand pattern and strand masking pattern shall be symmetrical about the longitudinal ℄ of the plank.
5. Strand release sequence shall not induce any lateral deflection of the plank.
6. Contractor shall submit shop drawings indicating proposed strand pattern, strand masking pattern, releasing sequence, reinforcing details & hold down device details to the Engineer prior to fabrication.
7. During curing, care shall be taken to avoid any lateral deflection of the plank due to improper orientation. Steam curing may be used to accelerate strength gain.
8. Lifting devices shall be placed as close as possible to the centerline of bearings of the plank. Details and locations of lifting devices shall be submitted to the Engineer for approval. Such approval does not relieve the Contractor of his responsibilities if plank is damaged due to failure of the lifting device.



KEY DETAIL 1 S4.5 S4.5
Scale: 1 1/2" = 1'-0"

ORIGINAL PLAN
NOTE BOOK
No.

SURVEY PLOTTED BY ____ DATE
DRAWN BY ____
TRACED BY ____
DESIGNED BY ____
QUANTITIES BY ____
CHECKED BY ____

DRAWING NAME: Z:\00 ONGOING\00 JF PROJECTS\22-015.1 KAM HWY LANIAKEA\01 CAD\05-23 RVSD SHTNO\KHP-S0401 TO S0405 PLNK ELEV SECT.DWG PLOT TIME: 05-22-23, 4:44 PM)

RUSS S. MIYAHARA
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NO. 9444-S
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HIGHWAYS DIVISION

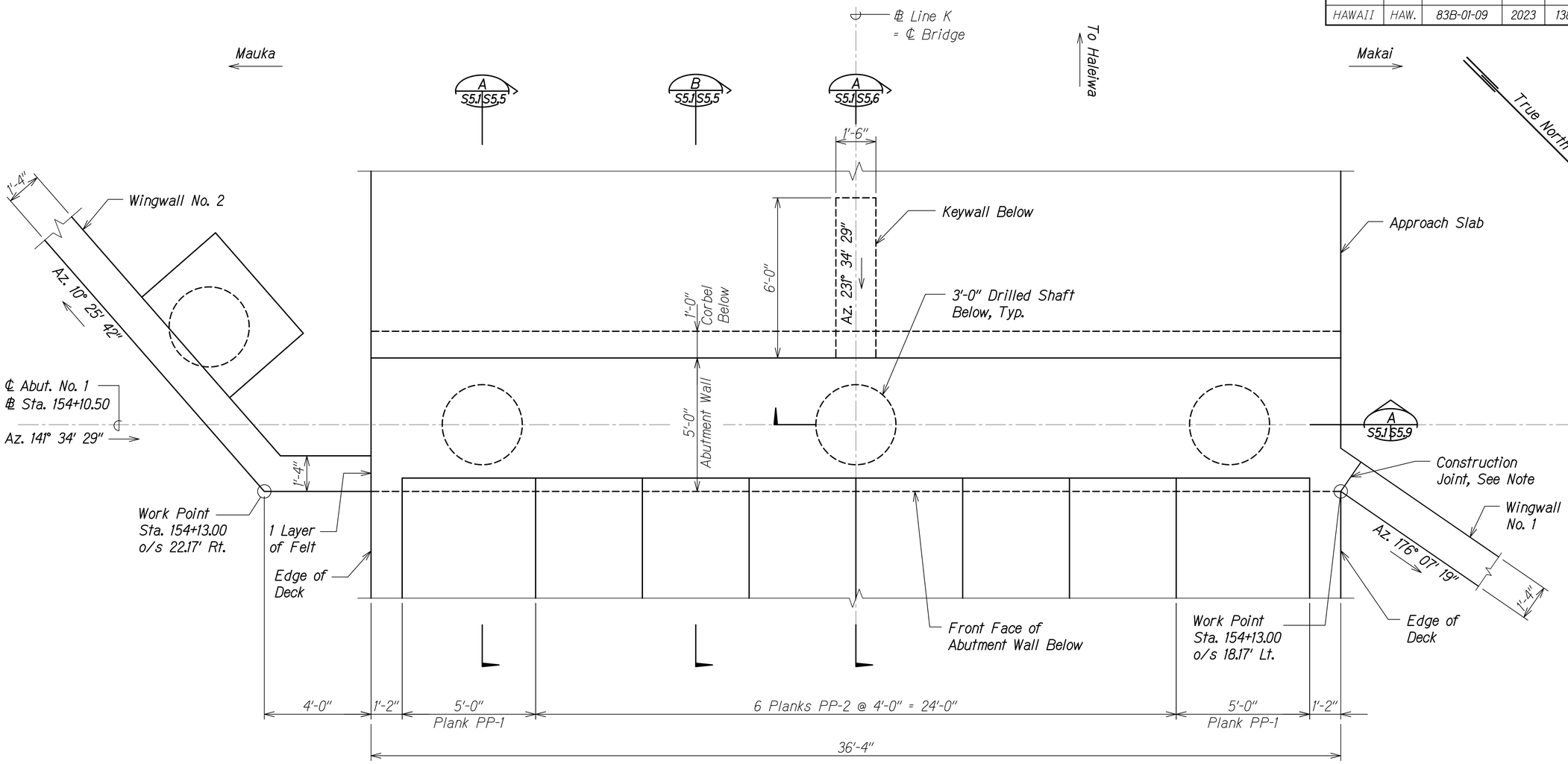
PRECAST PLANK NOTES AND DETAIL

KAMEHAMEHA HIGHWAY DRAINAGE AND SAFETY IMPROVEMENTS
Vicinity of Laniakea Beach (MP 3.06 to MP 3.54)
Project No. 83B-01-09

Scale: As Noted Date: December 2022

SHEET No. S4.5 OF 5 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83B-01-09	2023	138	231



ABUTMENT NO. 1 PLAN

Scale: 1/2" = 1'-0"

NOTE:

Construction joint at Wingwall No. 1 shall be made square with wingwall.

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

DRAWING NAME: Z:\00 ONGOING\00 JF PROJECTS\22-015.1 KAM HWY LANIAKEA\01 CAD\05-23-23 RVSD SHTNO\KHP-S0501 ABUT1 PLAN ELEV.DWG PLOT TIME: 05-22-23, 4:45 PM

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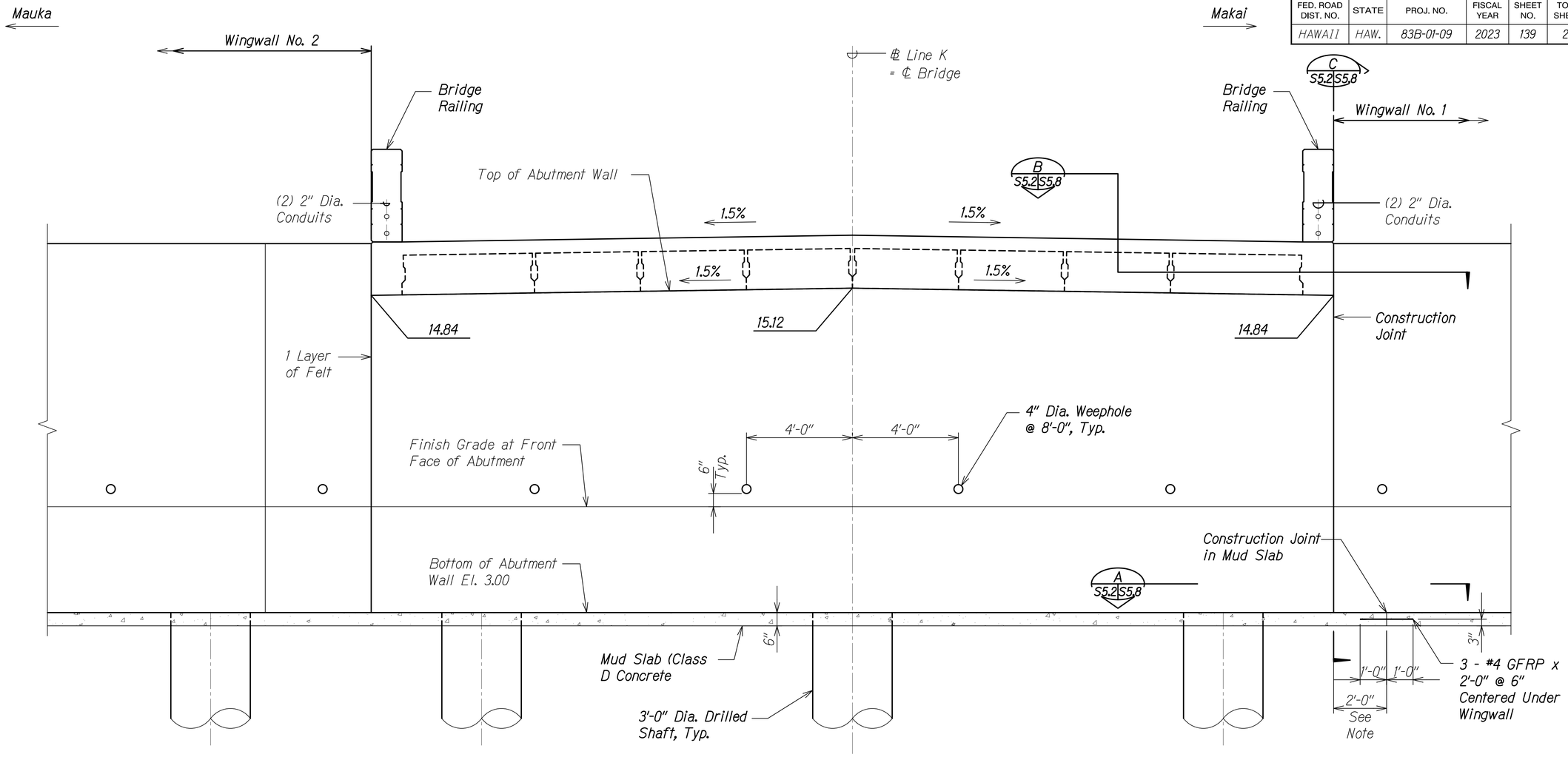
ABUTMENT NO. 1 PLAN

KAMEHAMEHA HIGHWAY DRAINAGE AND SAFETY IMPROVEMENTS
Vicinity of Laniakea Beach (MP 3.06 to MP 3.54)
Project No. 83B-01-09

Scale: As Noted Date: December 2022

SHEET No. S5.1 OF 10 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83B-01-09	2023	139	231



NOTE:

For Stage 03A on Sht. S12.1, the mud slab under Abutment No. 1 shall be extended 2'-0" under future Wingwall No. 1.

ABUTMENT NO. 1 ELEVATION

Scale: 1/2" = 1'-0"

ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
	DRAWN BY	
NOTE BOOK	TRACED BY	
No.	DESIGNED BY	
	QUANTITIES BY	
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ABUTMENT NO. 1 ELEVATION

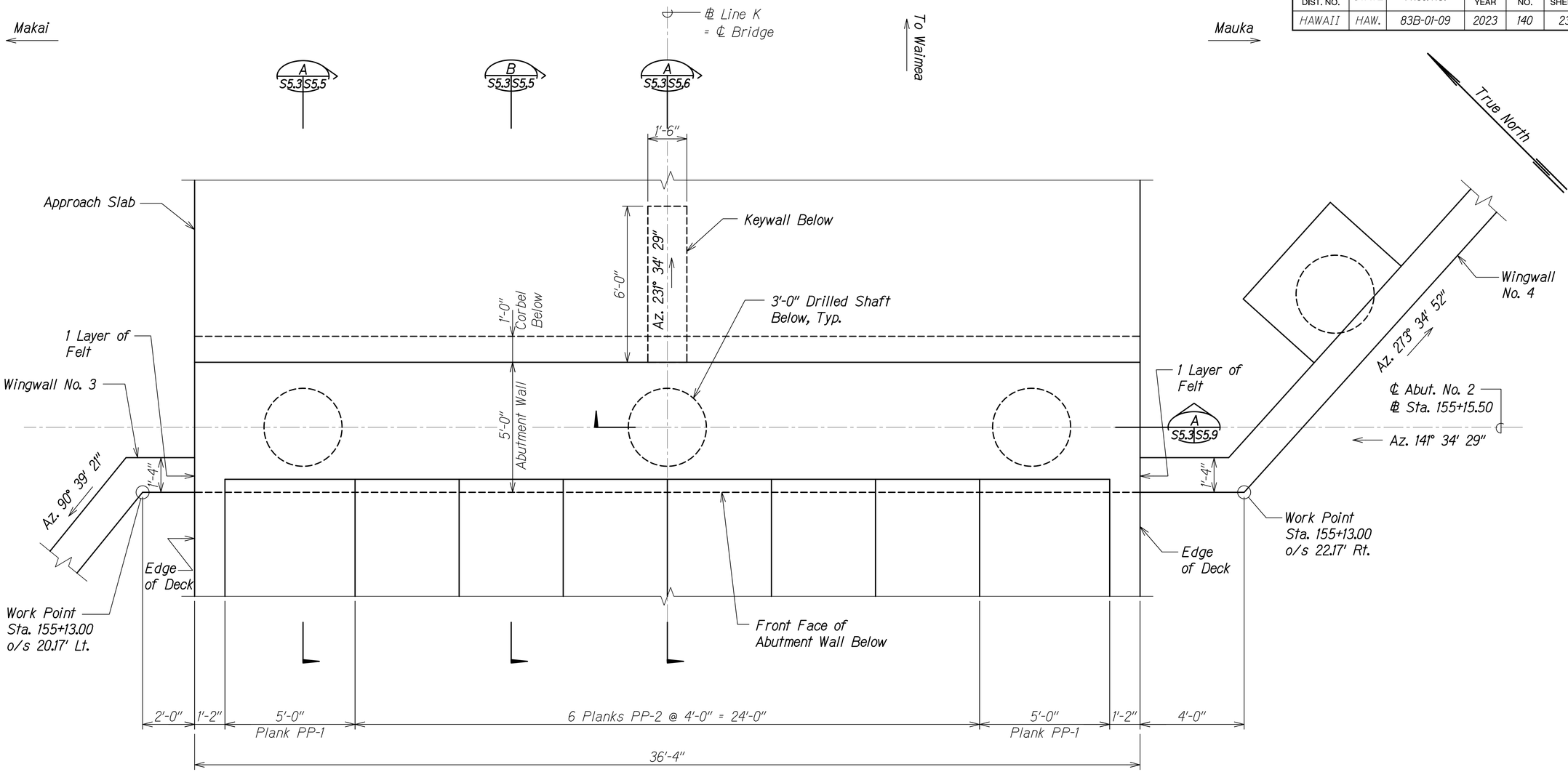
KAMEHAMEHA HIGHWAY DRAINAGE AND SAFETY IMPROVEMENTS
Vicinity of Laniakea Beach (MP 3.06 to MP 3.54)
Project No. 83B-01-09

Scale: As Noted — Date: December 2022

SHEET No. S5.2 OF 10 SHEETS

DRAWING NAME: Z:\00 ONGOING\00 JF PROJECTS\22-015.1 KAM HWY LANIAKEA\01 CAD\05-23-23 RVSD SHTNO\KHP-S0501 ABUT1 PLAN ELEV.DWG PLOT TIME: 05-22-23, 4:45 PM)

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83B-01-09	2023	140	231



ABUTMENT NO. 2 PLAN

Scale: 1/2" = 1'-0"

To Haleiwa

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

DRAWING NAME: Z:\00 ONGOING\00 JF PROJECTS\22-015.1 KAM HWY LANIAKEA\01 CAD\05-23-23 RVSD SHTNO\KHP-S0503 ABUT2 PLAN ELEV.DWG PLOT TIME: 05-22-23, 4:46 PM)

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NO. 9444-S
HAWAII, U.S.A.

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HIGHWAYS DIVISION

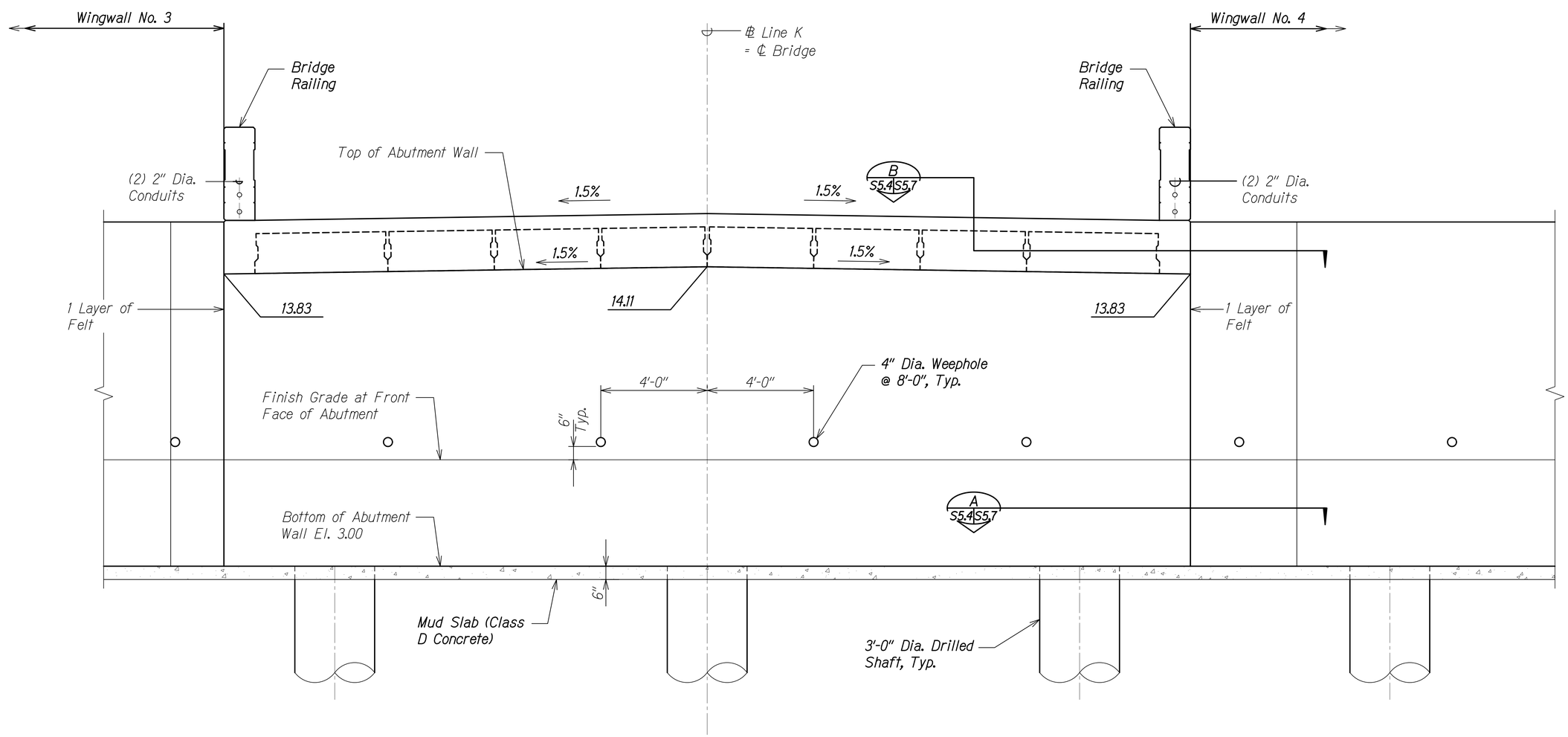
ABUTMENT NO. 2 PLAN

KAMEHAMEHA HIGHWAY DRAINAGE AND SAFETY IMPROVEMENTS
Vicinity of Laniakea Beach (MP 3.06 to MP 3.54)
Project No. 83B-01-09

Scale: As Noted Date: December 2022

SHEET No. S5.3 OF 10 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83B-01-09	2023	141	231



ABUTMENT NO. 2 ELEVATION

Scale: 1/2" = 1'-0"

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

DRAWING NAME: Z:\00 ONGOING\00 JF PROJECTS\22-015.1 KAM HWY LANIAKEA\01 CAD\05-23-23 RVSD SHTNO\KHP-S0503 ABUT2 PLAN ELEV.DWG PLOT TIME: 05-22-23, 4:47 PM)

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NO. 9444-S
HAWAII, U.S.A.

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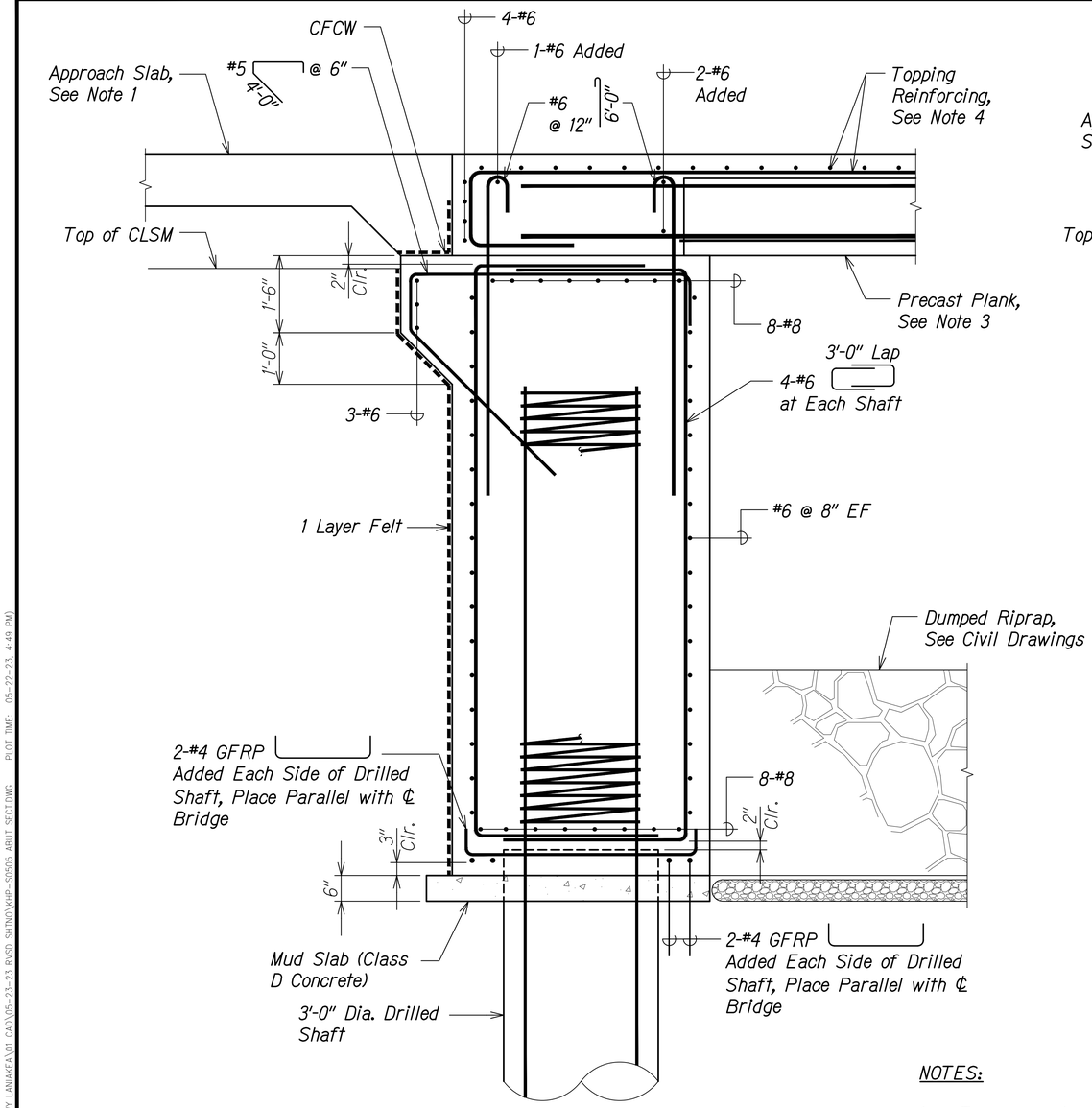
ABUTMENT NO. 2 ELEVATION

KAMEHAMEHA HIGHWAY DRAINAGE AND SAFETY IMPROVEMENTS
Vicinity of Laniakea Beach (MP 3.06 to MP 3.54)
Project No. 83B-01-09

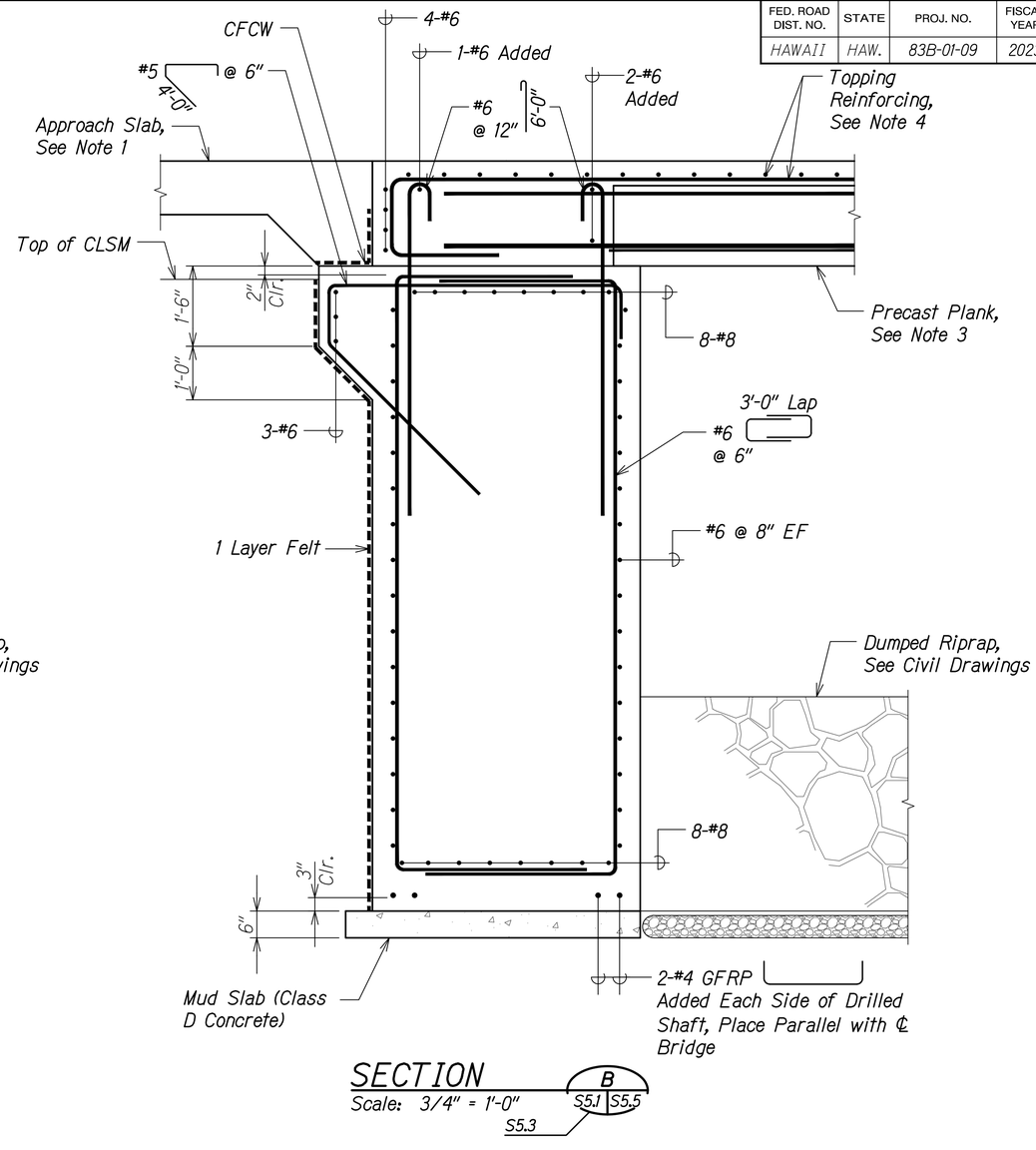
Scale: As Noted Date: December 2022

SHEET No. S5.4 OF 10 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83B-01-09	2023	142	231



SECTION A
Scale: 3/4" = 1'-0"
S5.1 | S5.5
S5.3



SECTION B
Scale: 3/4" = 1'-0"
S5.1 | S5.5
S5.3

NOTES:

1. For approach slab reinforcing, see Sht. S10.1.
2. For additional reinforcing in corbel not shown, see Sht. S10.1.
3. For precast plank reinforcing and rebar extensions, see Shts. S4.1 to S4.5.
4. For concrete topping reinforcing, see Shts. S3.1 to S3.2.
5. For drilled shaft reinforcing, see Shts. S8.1 to S8.5.

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

DRAWING NAME: Z:\00 ONGOING\00 JF PROJECTS\22-015.1 KAM HWY LANIAKEA\01 CAD\05-23-23 RVSD SHTNO\KHP-S0505 ABUT SECT.DWG PLOT TIME: 05-22-23, 4:49 PM)

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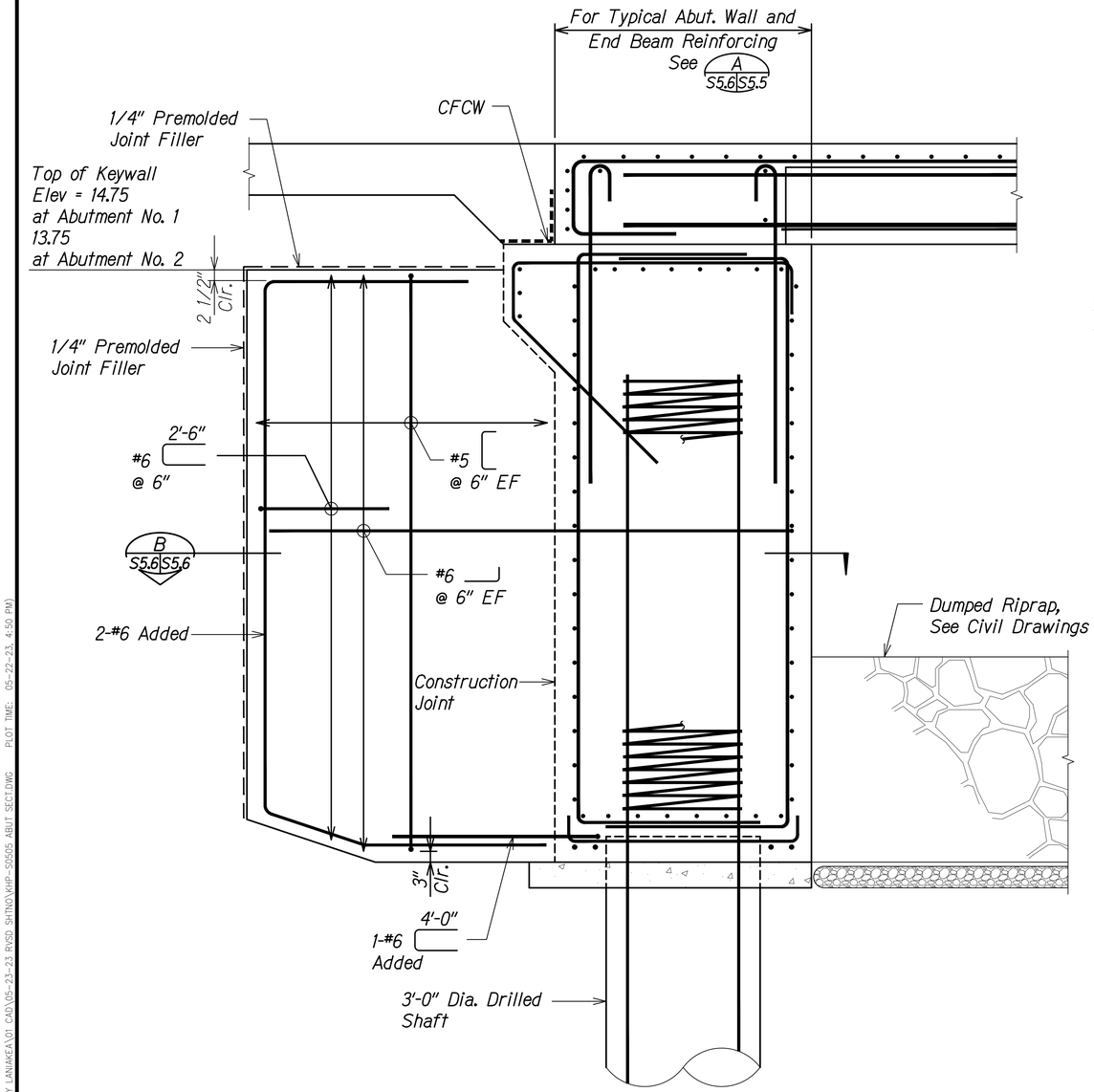
ABUTMENT SECTIONS

KAMEHAMEHA HIGHWAY DRAINAGE AND SAFETY IMPROVEMENTS
Vicinity of Laniakea Beach (MP 3.06 to MP 3.54)
Project No. 83B-01-09

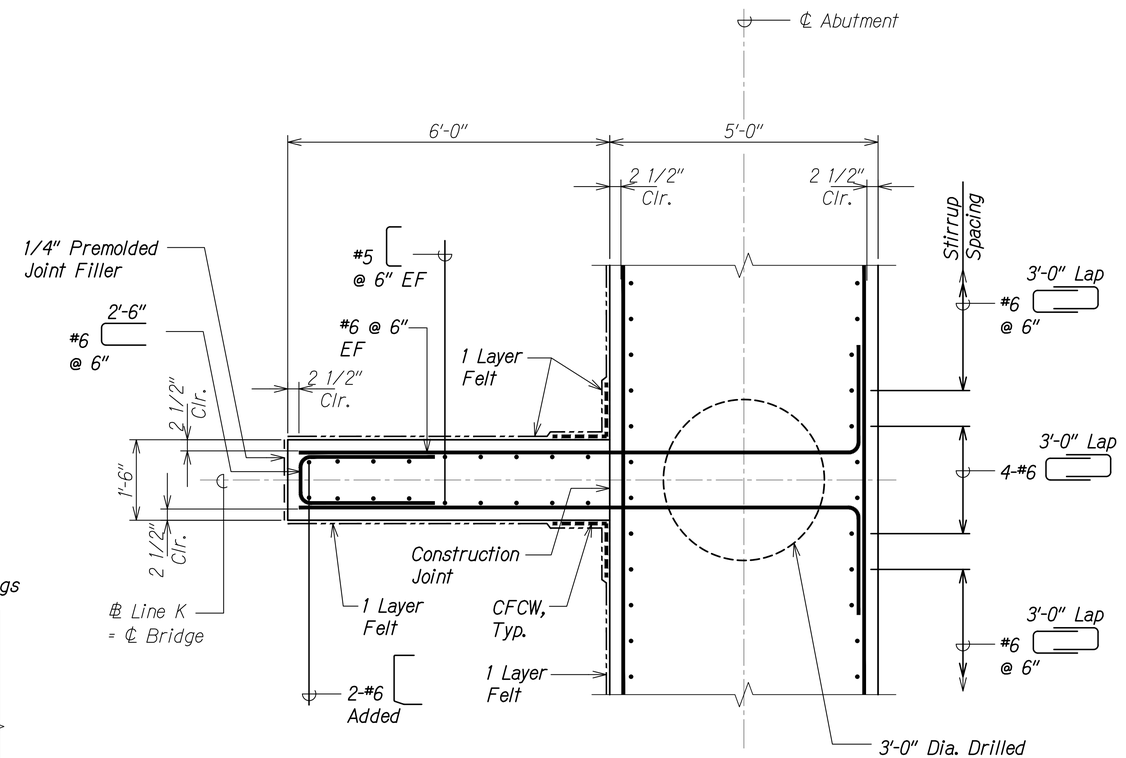
Scale: As Noted Date: December 2022

SHEET No. S5.5 OF 10 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83B-01-09	2023	143	231



SECTION
Scale: 3/4" = 1'-0"
A S5.1 S5.6 S5.3



SECTION
Scale: 3/4" = 1'-0"
B S5.6 S5.6

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

DRAWING NAME: Z:\DO ONGOING\DO JF PROJECTS\22-015.1 KAM HWY LANIAKEA\01 CAD\05-23-23 RVSD SHTNO\VKHP-S0505 ABUT SECT.DWG PLOT TIME: 05-22-23, 4:50 PM)

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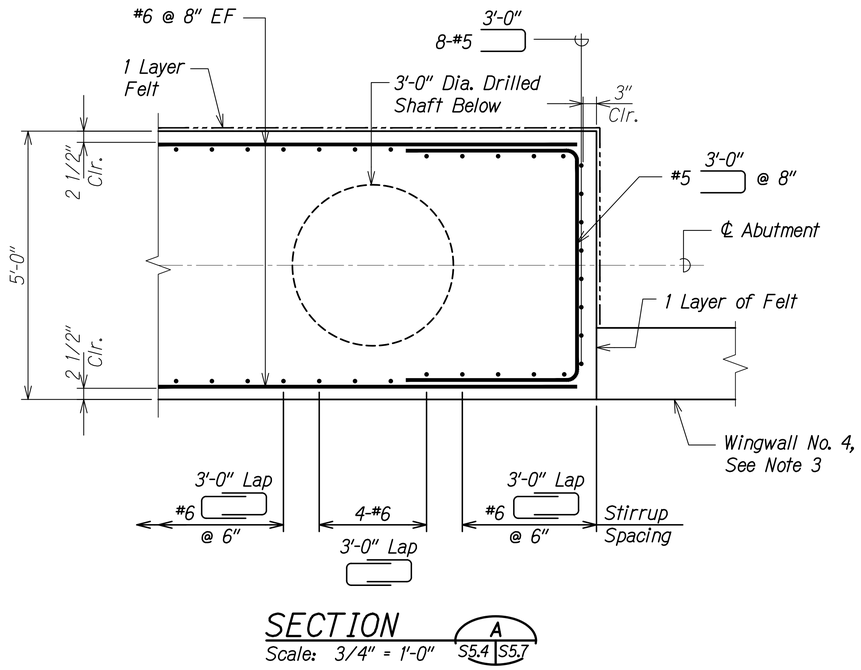
ABUTMENT SECTIONS

KAMEHAMEHA HIGHWAY DRAINAGE AND SAFETY IMPROVEMENTS
Vicinity of Laniakea Beach (MP 3.06 to MP 3.54)
Project No. 83B-01-09

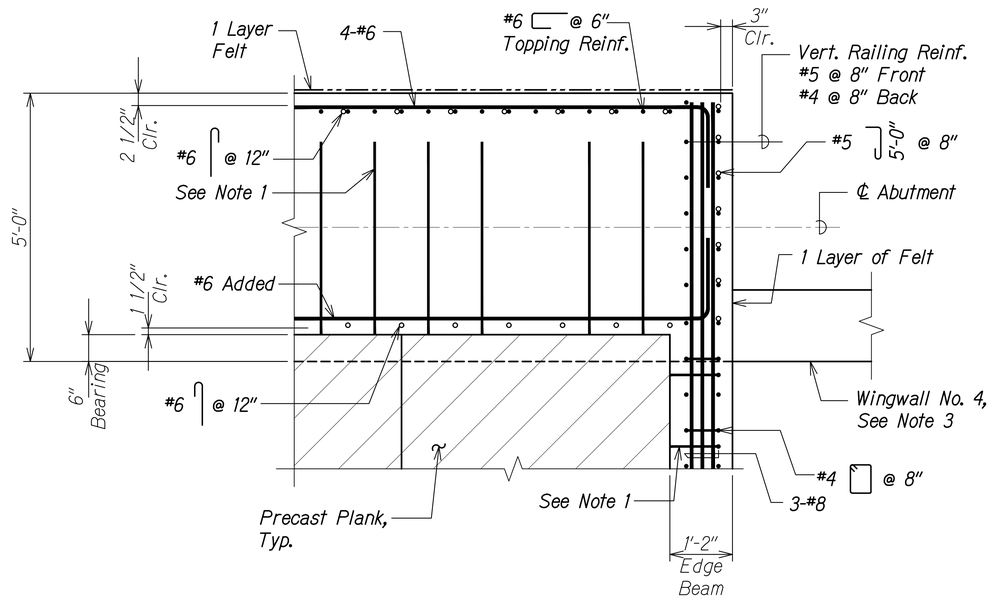
Scale: As Noted Date: December 2022

SHEET No. S5.6 OF 10 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83B-01-09	2023	144	231



SECTION A
Scale: 3/4" = 1'-0" S5.4 | S5.7



SECTION B
Scale: 3/4" = 1'-0" S5.4 | S5.7

NOTES:

1. For precast plank reinforcing and rebar extensions, see Shts. S4.1 to S4.5.
2. For wingwall sections and reinforcing, see Shts. S7.1 to S7.16.
3. Condition at Wingwall No. 2 and Wingwall No. 3 similar, opposite hand.

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

DRAWING NAME: Z:\00 ONGOING\00 JF PROJECTS\22-015.1 KAM HWY LANIAKEA\01 CAD\05-23-23 RVSD SHTNO\KHP-S0507 ABUT SECT.DWG PLOT TIME: 05-22-23, 4:52 PM)

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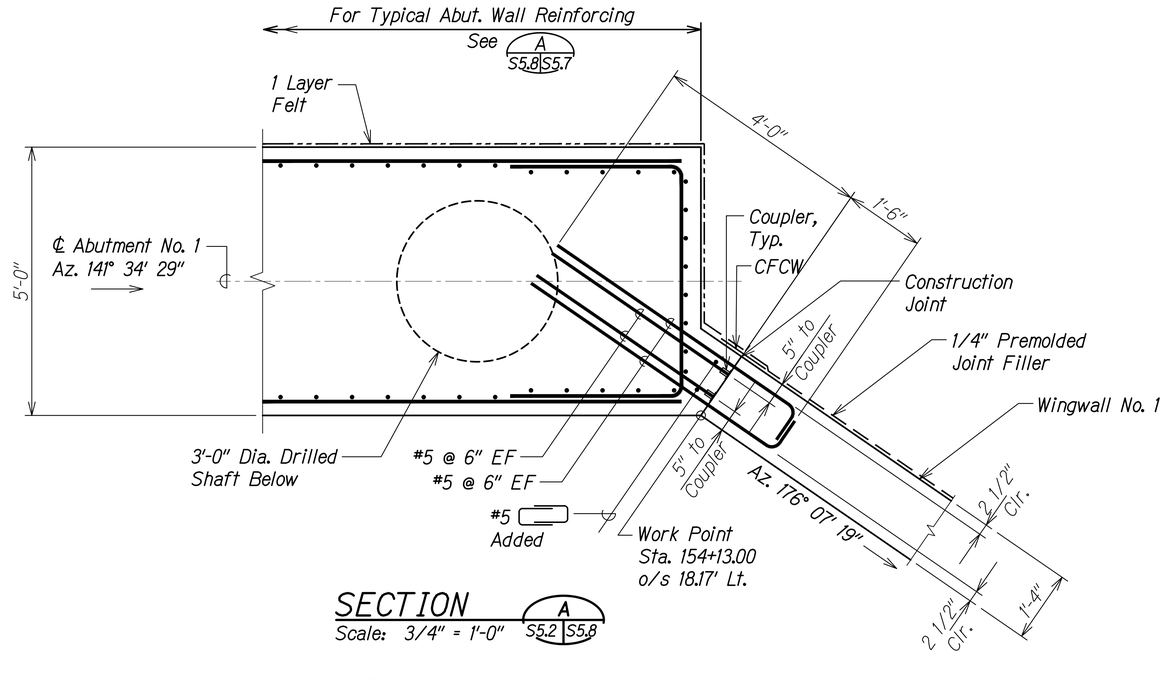
ABUTMENT SECTIONS

KAMEHAMEHA HIGHWAY DRAINAGE AND SAFETY IMPROVEMENTS
Vicinity of Laniakea Beach (MP 3.06 to MP 3.54)
Project No. 83B-01-09

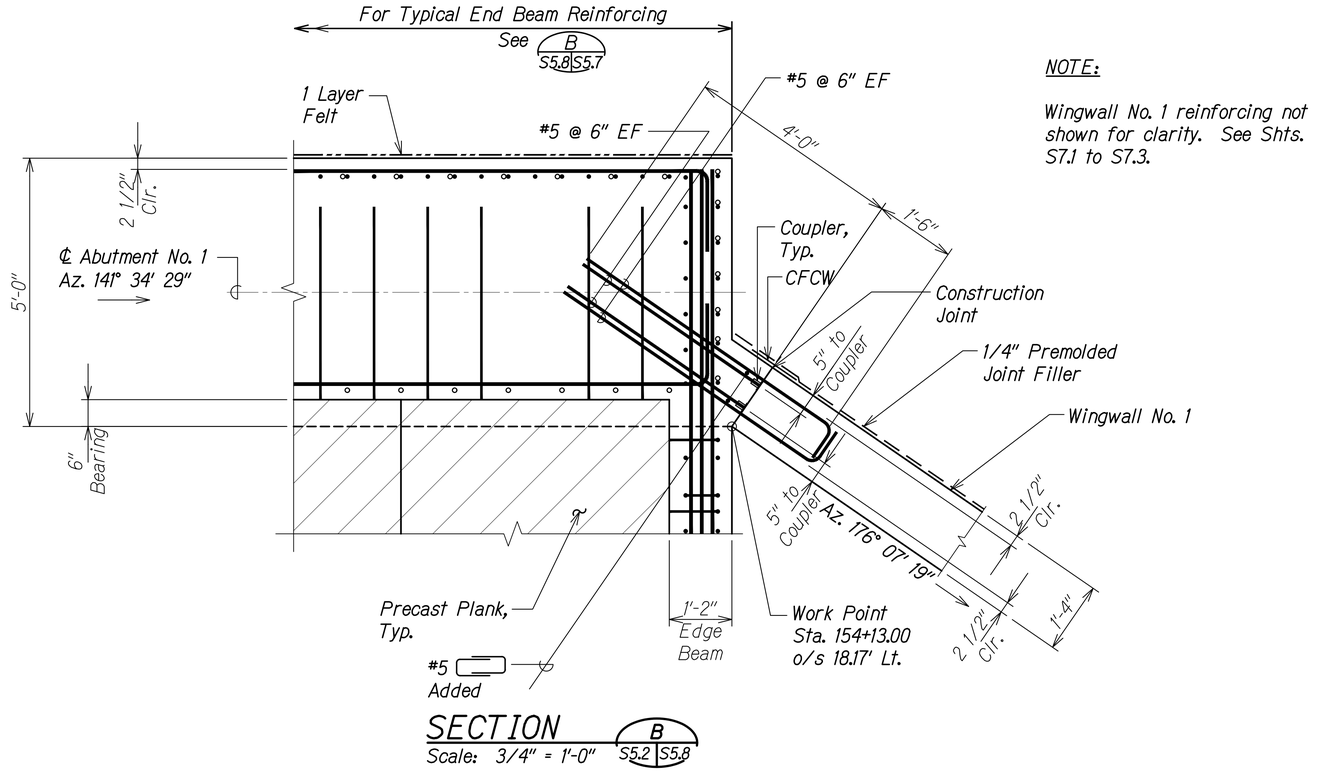
Scale: As Noted Date: December 2022

SHEET No. S5.7 OF 10 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83B-01-09	2023	145	231



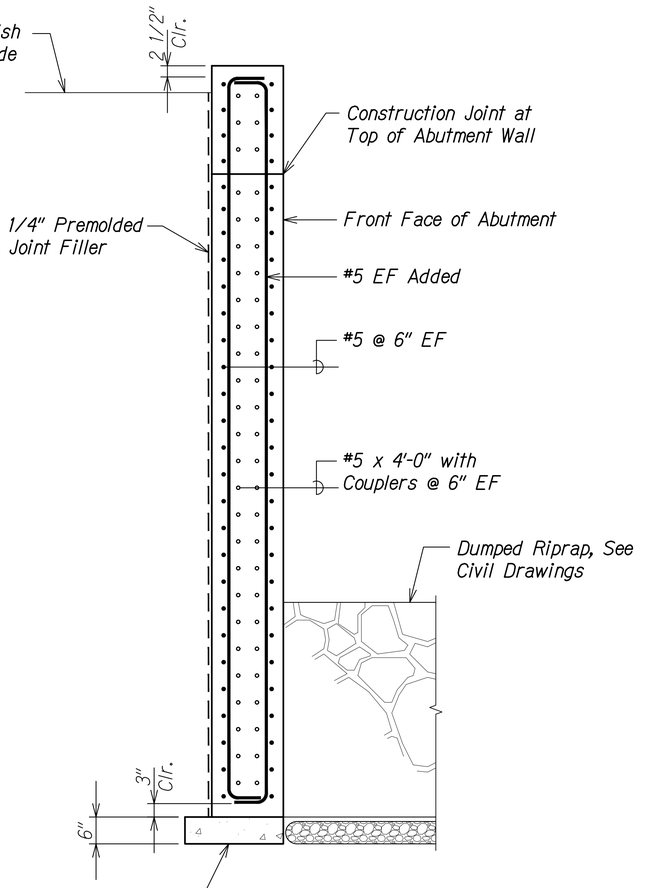
SECTION A
Scale: 3/4" = 1'-0" S5.2 S5.8



SECTION B
Scale: 3/4" = 1'-0" S5.2 S5.8

NOTE:

Wingwall No. 1 reinforcing not shown for clarity. See Shts. S7.1 to S7.3.



SECTION C
Scale: 3/4" = 1'-0" S5.2 S5.8

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

DRAWING NAME: Z:\OO ONGOING\00 JF PROJECTS\22-015.1 KAM HWY LANIAKEA\01 CAD\05-23-23 RVSD SHTNG\KHP-S0507 ABUT SECT.DWG PLOT TIME: 05-22-23, 4:53 PM)

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LICENSED PROFESSIONAL ENGINEER
NO. 9444-S
HAWAII, U.S.A.

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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

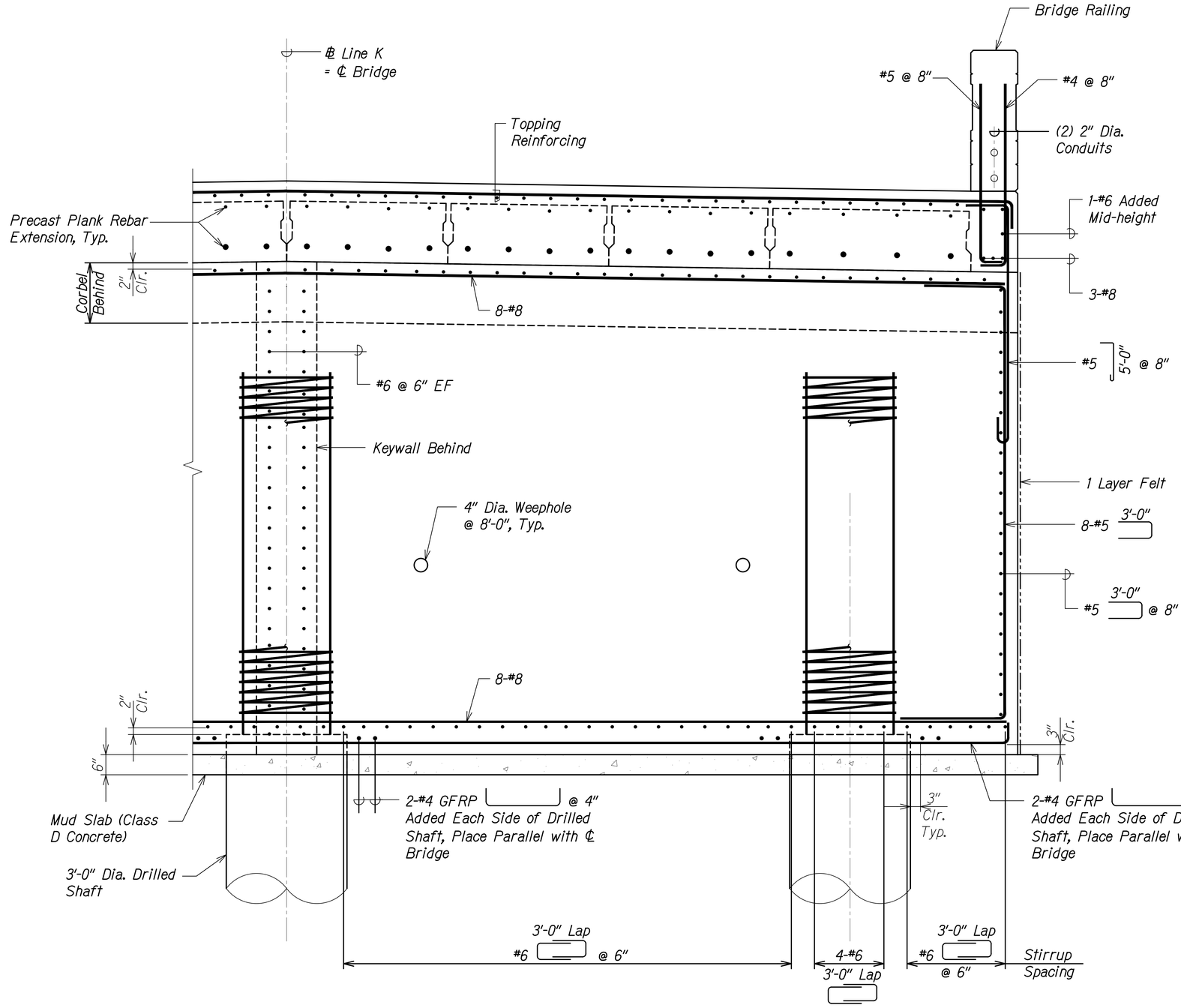
ABUTMENT SECTIONS

KAMEHAMEHA HIGHWAY DRAINAGE AND SAFETY IMPROVEMENTS
Vicinity of Laniakea Beach (MP 3.06 to MP 3.54)
Project No. 83B-01-09

Scale: As Noted Date: December 2022

SHEET No. S5.8 OF 10 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83B-01-09	2023	146	231



SECTION
Scale: 3/4″ = 1′-0″
A S5.1 S5.9 S5.3

NOTES:

1. For bridge railing reinforcing, see Sht. S9.3.
2. For concrete topping reinforcing, see Shts. S3.1 to S3.2.
3. For precast plank reinforcing and rebar extensions, see Shts. S4.1 to S4.5.
4. For drilled shaft reinforcing, see Shts. S8.1 to S8.5.

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

DRAWING NAME: Z:\OD ONGOING\OD JF PROJECTS\22-015.1 KAM HWY LANIAKEA\01 CAD\05-23-23 RVSD SHTNO\KHP-S0509 ABUT SECT.DWG PLOT TIME: 05-22-23, 4:54 PM)

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HIGHWAYS DIVISION

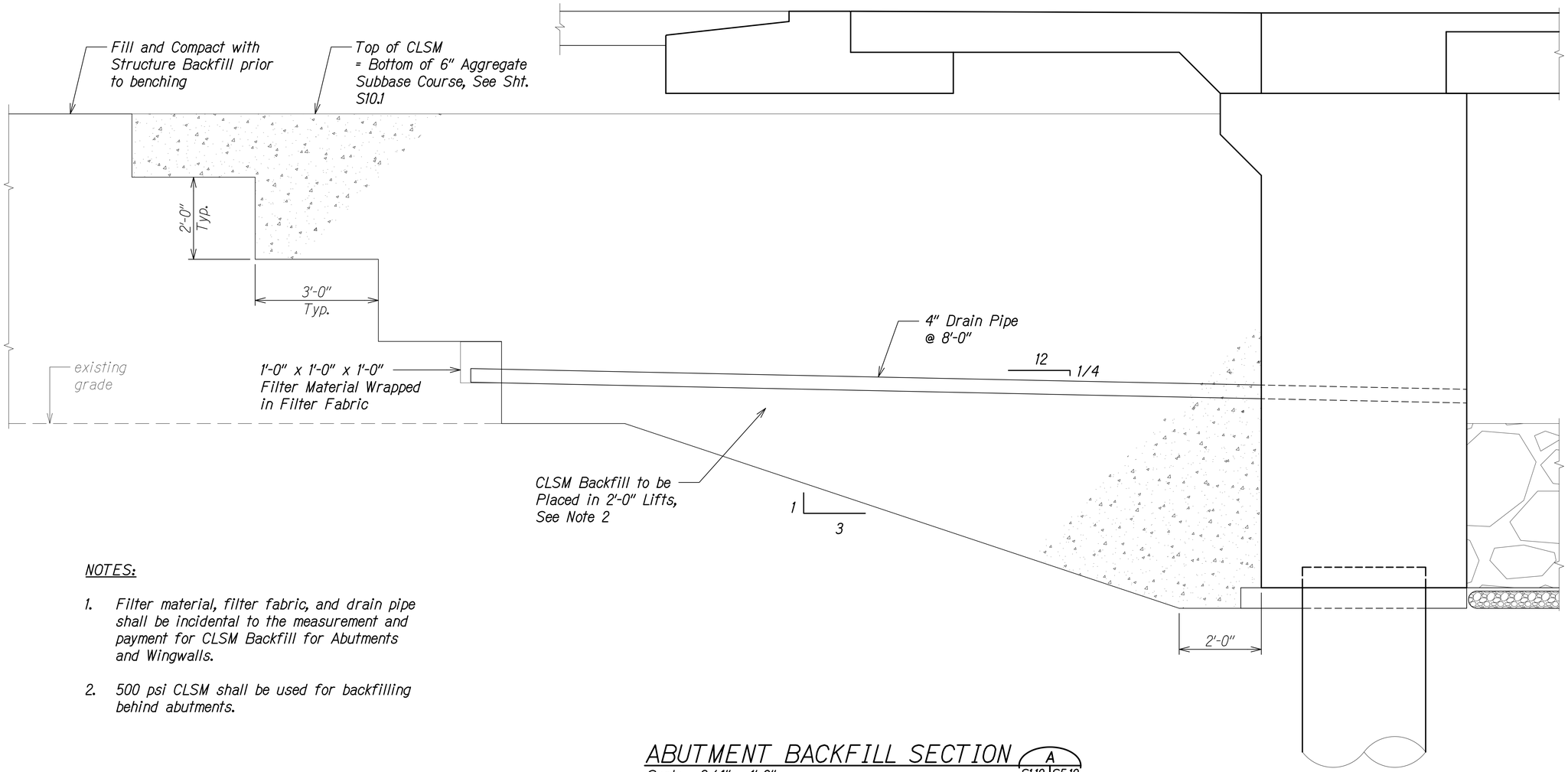
ABUTMENT SECTION

KAMEHAMEHA HIGHWAY DRAINAGE AND SAFETY IMPROVEMENTS
Vicinity of Laniakea Beach (MP 3.06 to MP 3.54)
Project No. 83B-01-09

Scale: As Noted Date: December 2022

SHEET No. S5.9 OF 10 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83B-01-09	2023	147	231



NOTES:

1. Filter material, filter fabric, and drain pipe shall be incidental to the measurement and payment for CLSM Backfill for Abutments and Wingwalls.

2. 500 psi CLSM shall be used for backfilling behind abutments.

ABUTMENT BACKFILL SECTION

Scale: 3/4" = 1'-0"

A
S1.10 | S5.10

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

DRAWING NAME: Z:\00 ONGOING\00 JF PROJECTS\22-015.1 KAM HWY LANIAKEA\01 CAD\05-23-23 RVSD SHTNO\KHP-S0510 ABUT BACKFILL.DWG PLOT TIME: 05-22-23, 4:55 PM)

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NO. 9444-S
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HIGHWAYS DIVISION

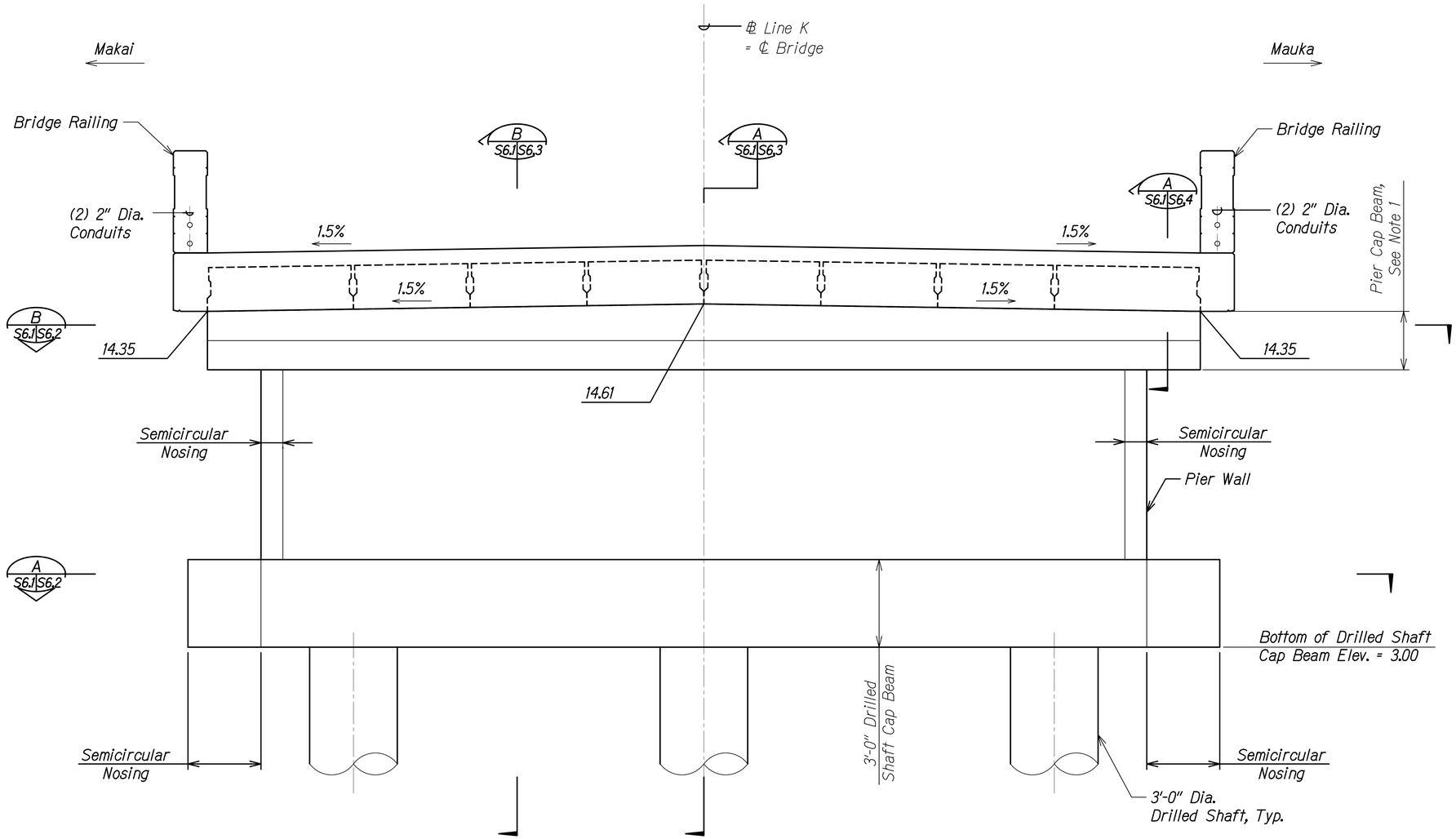
ABUTMENT BACKFILL SECTION

KAMEHAMEHA HIGHWAY DRAINAGE AND SAFETY IMPROVEMENTS
Vicinity of Laniakea Beach (MP 3.06 to MP 3.54)
Project No. 83B-01-09

Scale: As Noted Date: December 2022

SHEET No. S5.10 OF 10 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83B-01-09	2023	148	231



NOTES:

1. Height of pier cap beam varies. Height of pier cap beam is 2'-0" at ends.
2. Pier cap beam shelf elevations are located at ℄ Pier.
3. For top of deck finish grades, see Sht. S1.8.

PIER ELEVATION

Scale: 1/2" = 1'-0"

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HIGHWAYS DIVISION

PIER ELEVATION

KAMEHAMEHA HIGHWAY DRAINAGE AND SAFETY IMPROVEMENTS
Vicinity of Laniakea Beach (MP 3.06 to MP 3.54)
Project No. 83B-01-09

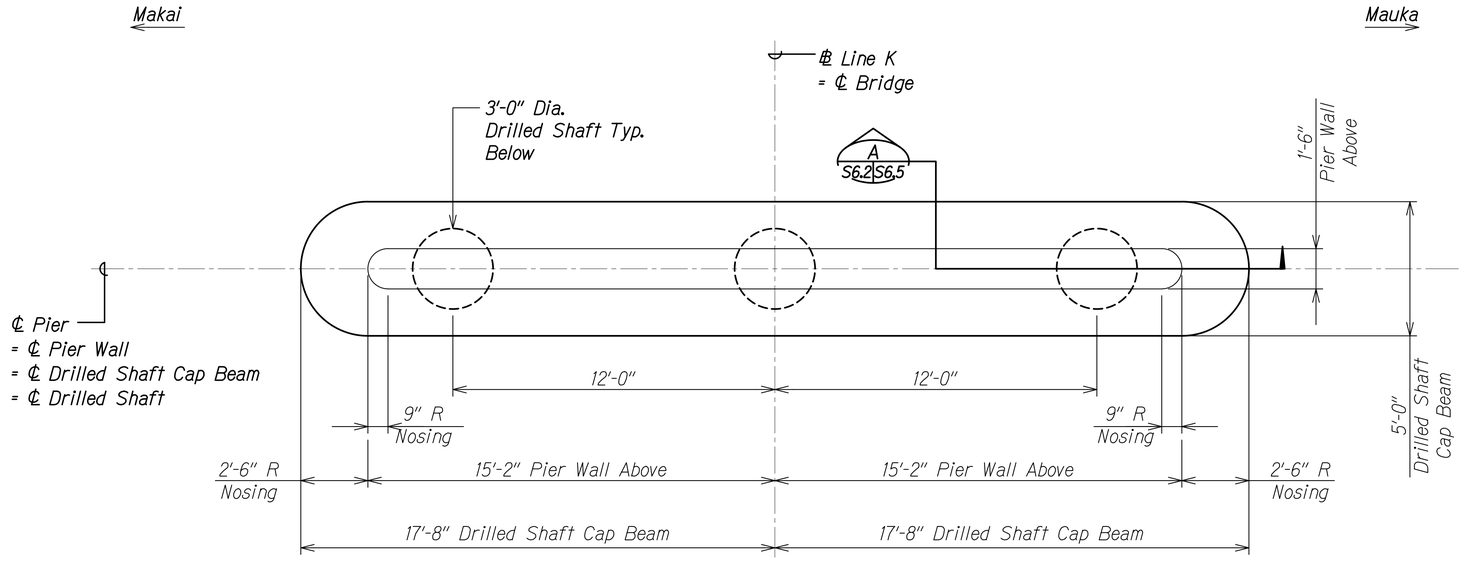
Scale: As Noted — Date: December 2022

SHEET No. S6.1 OF 7 SHEETS

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

DRAWING NAME: Z:\00 ONGOING\00 JF PROJECTS\22-015.1 KAM HWY LANIAKEA\01 CAD\05-23-23 RVSD SHTNO\KHP-S0601 PIER ELEV.DWG PLOT TIME: 05-22-23, 4:55 PM)

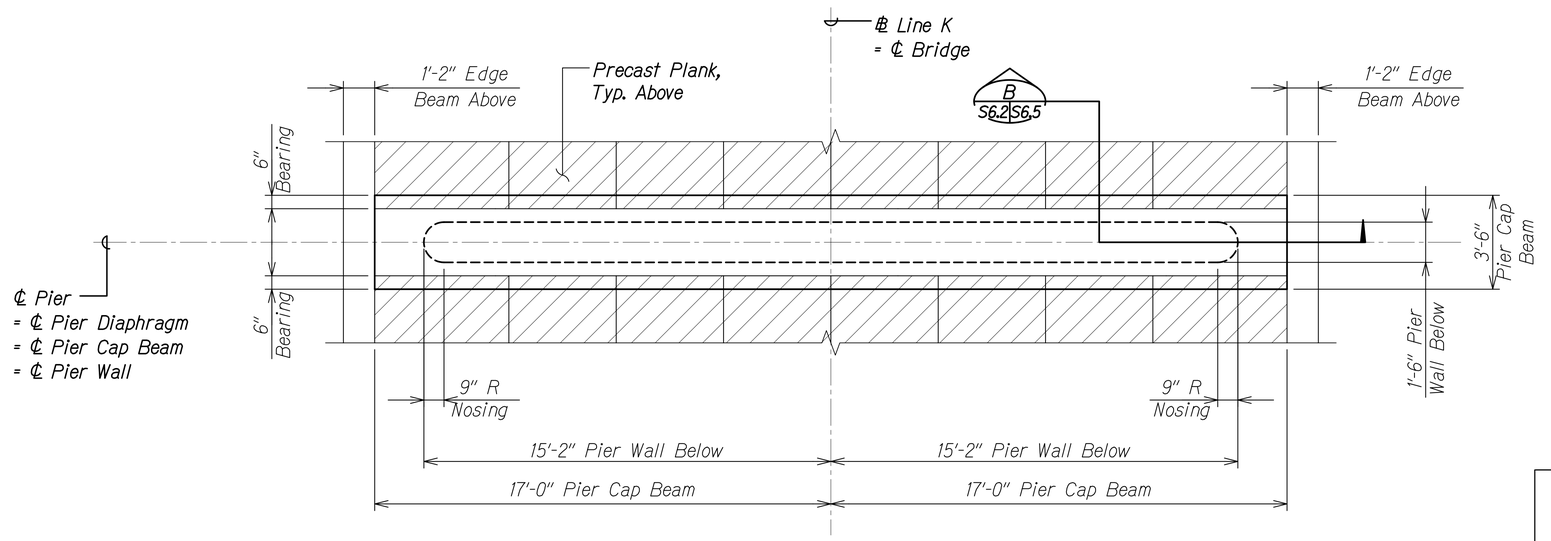
FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83B-01-09	2023	149	231



PIER FOUNDATION PLAN

Scale: 3/8" = 1'-0"

A S6.1 S6.2



PIER CAP BEAM PLAN

Scale: 3/8" = 1'-0"

B S6.1 S6.2

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

DRAWING NAME: Z:\00 ONGOING\00 JF PROJECTS\22-015.1 KAM HWY LANIAKEA\01 CAD\05-23-23 RVSD SHTNO\KHP-S0602 PIER PLAN.DWG PLOT TIME: 05-22-23, 4:56 PM)

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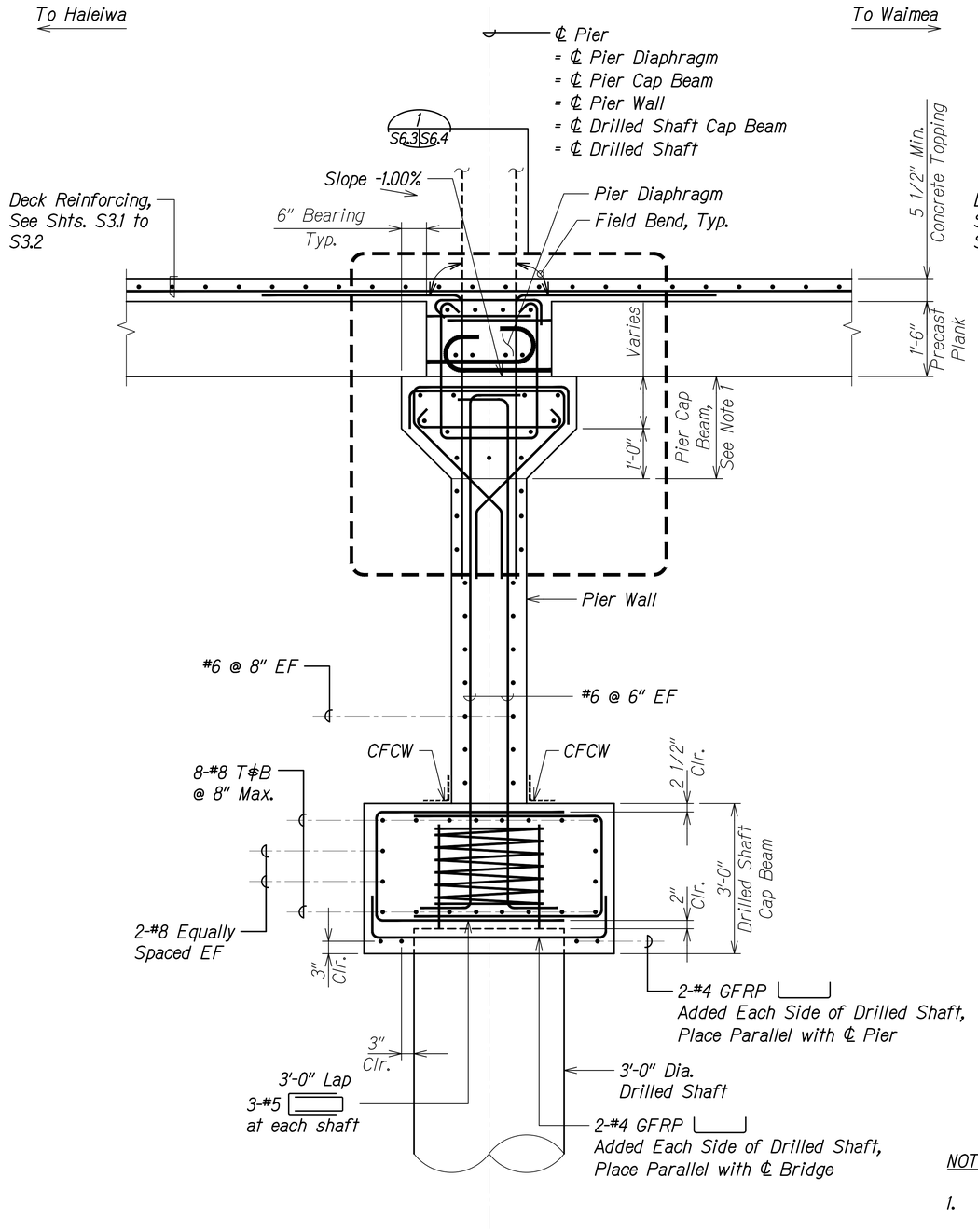
PIER PLANS

KAMEHAMEHA HIGHWAY DRAINAGE AND SAFETY IMPROVEMENTS
Vicinity of Laniakea Beach (MP 3.06 to MP 3.54)
Project No. 83B-01-09

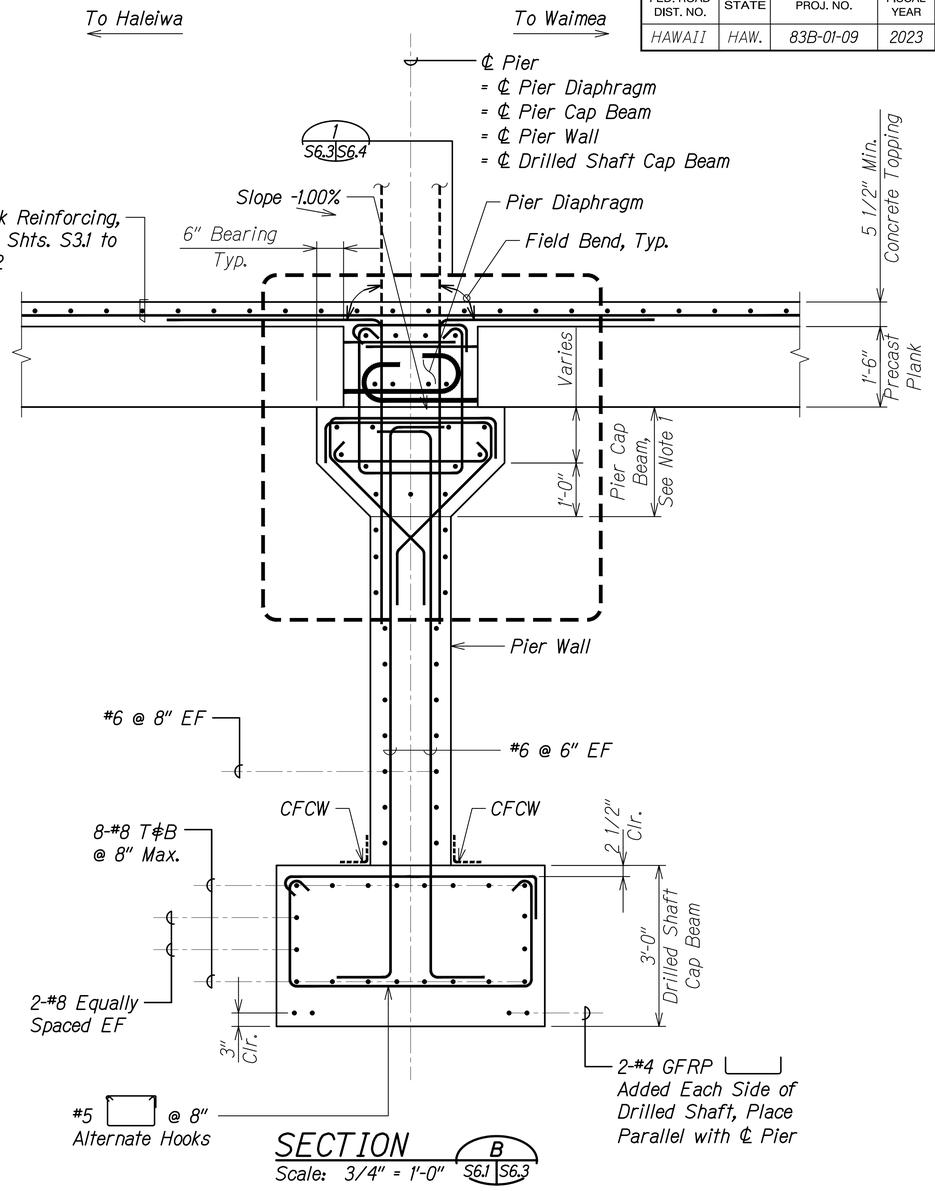
Scale: As Noted Date: December 2022

SHEET No. S6.2 OF 7 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83B-01-09	2023	150	231



SECTION A
Scale: 3/4" = 1'-0" S6.1 S6.3



SECTION B
Scale: 3/4" = 1'-0" S6.1 S6.3

NOTES:

1. Height of pier cap beam varies. Height of pier cap beam is 2'-0" at ends.
2. For drilled shaft reinforcing, see Sht. S8.2.

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

DRAWING NAME: Z:\OO ONGOING\OO JF PROJECTS\22-015.1 KAM HWY LANIAKEA\01 CAD\05-23-23 RVSD SHTNO\KHP-S0603 PIER SECT.DWG PLOT TIME: 05-23-23, 8:26 AM)

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HIGHWAYS DIVISION

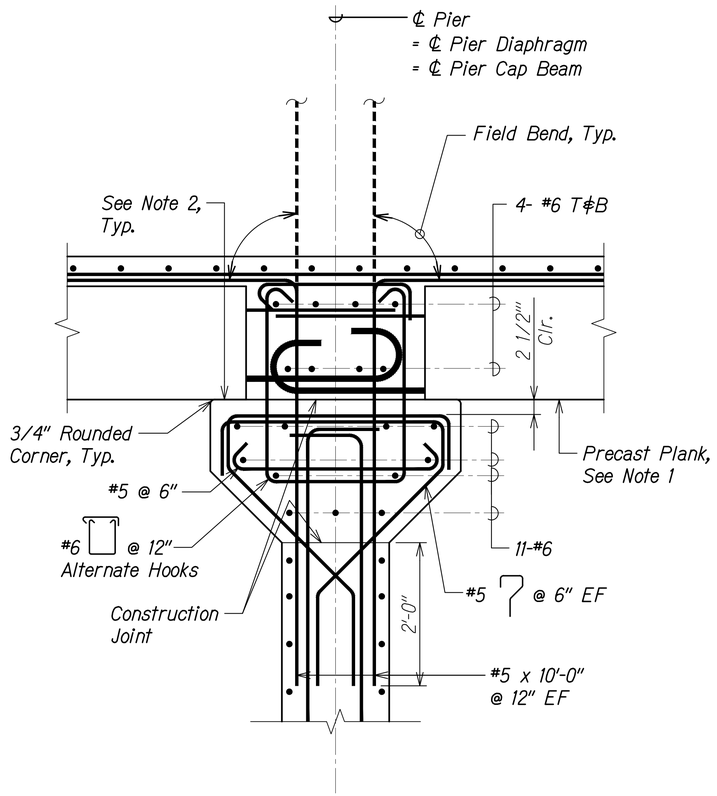
PIER SECTIONS

KAMEHAMEHA HIGHWAY DRAINAGE AND SAFETY IMPROVEMENTS
Vicinity of Laniakea Beach (MP 3.06 to MP 3.54)
Project No. 83B-01-09

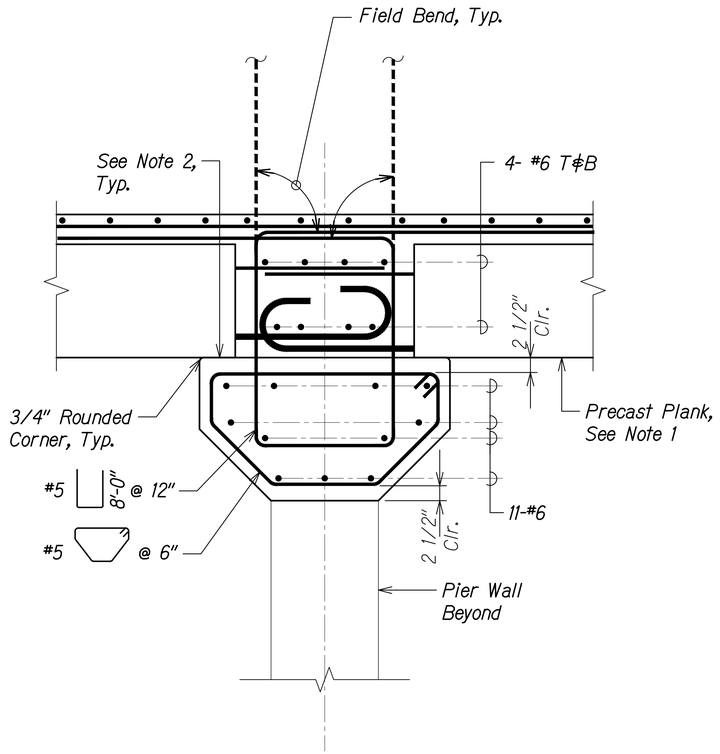
Scale: As Noted Date: December 2022

SHEET No. S6.3 OF 7 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83B-01-09	2023	151	231



REINFORCING DETAIL 1
Scale: 1" = 1'-0" S6.3 | S6.4



SECTION A
Scale: 1" = 1'-0" S6.1 | S6.4

NOTES:

1. For rebar extensions at ends of precast planks, see Shts. S4.1 to S4.5.
2. Slush leveling grout between precast plank soffit and top of pier cap beam immediately prior to placement of precast plank.

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

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PIER SECTION AND DETAIL

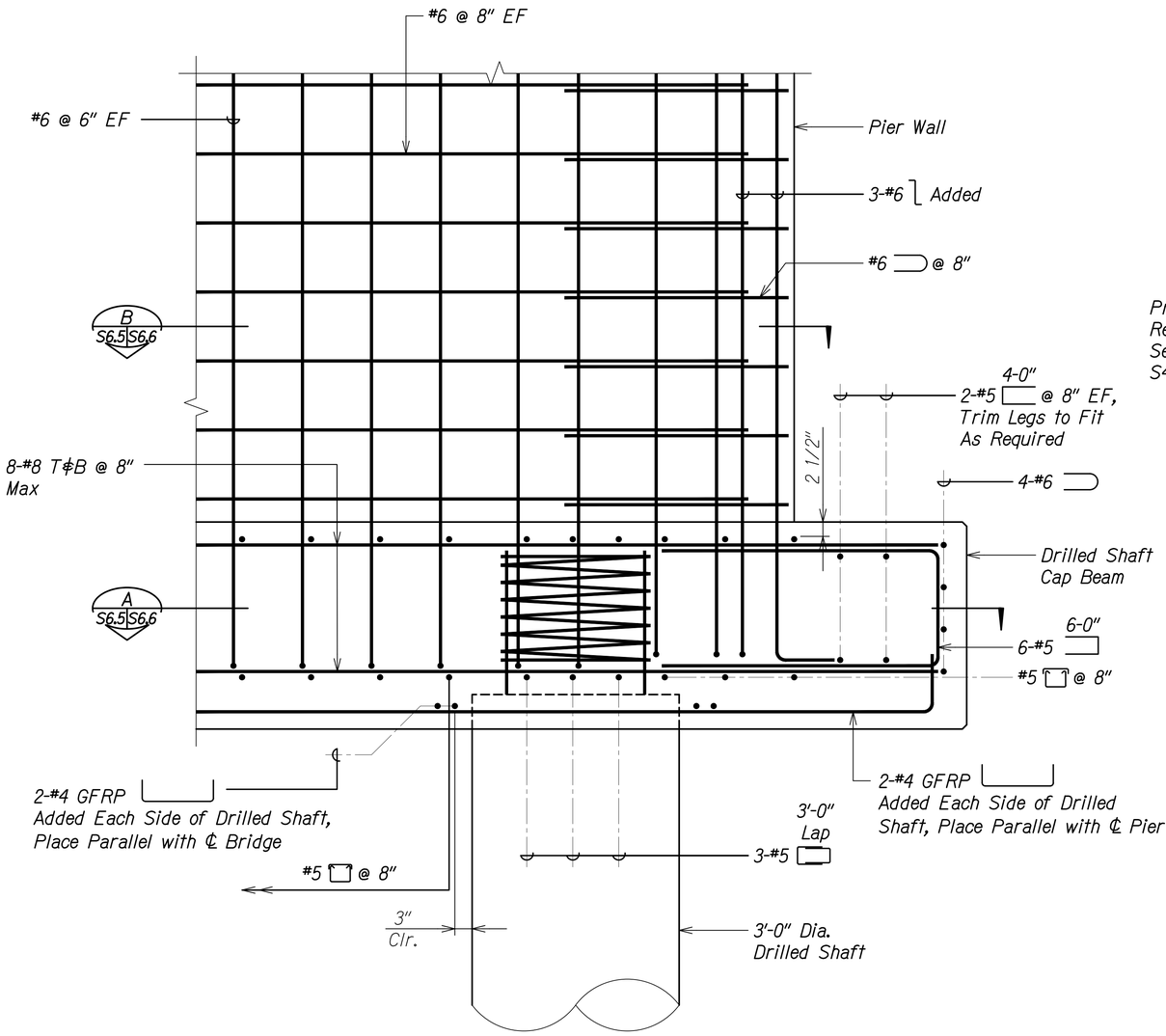
KAMEHAMEHA HIGHWAY DRAINAGE AND SAFETY IMPROVEMENTS
Vicinity of Laniakea Beach (MP 3.06 to MP 3.54)
Project No. 83B-01-09

Scale: As Noted Date: December 2022

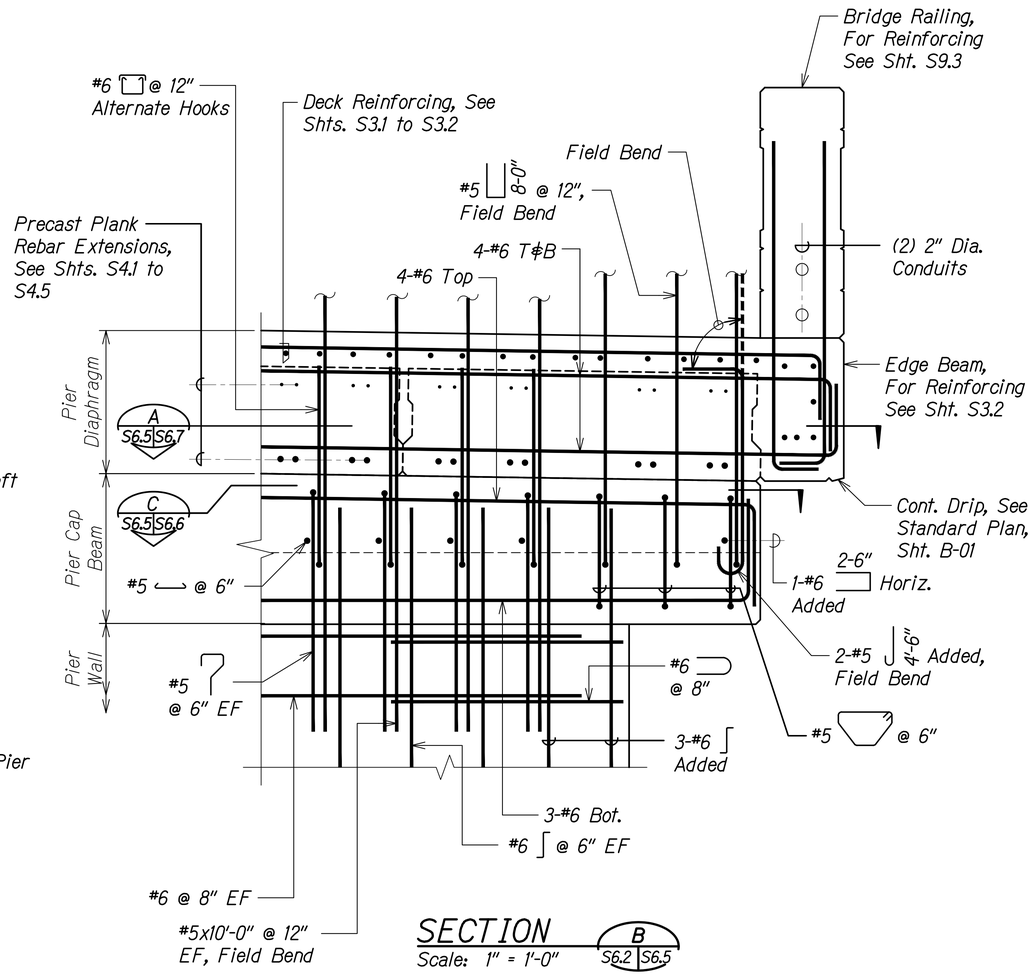
SHEET No. S6.4 OF 7 SHEETS

DRAWING NAME: Z:\OD ONGOING\OD JF PROJECTS\22-015 KAM HWY LANIKEA\01 CAD\05-23-23 RVSD SHTNO\HP-S0604 PIER SECT.DWG PLOT TIME: 05-22-23, 4:57 PM)

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83B-01-09	2023	152	231



SECTION A
Scale: 1" = 1'-0" S6.2|S6.5



SECTION B
Scale: 1" = 1'-0" S6.2|S6.5

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

DRAWING NAME: Z:\OO ONGOING\OO JF PROJECTS\22-015\1 KAM HWY LANIAKEA\01 CAD\05-23-23 RVSD SHTNO\KHP-S0604 PIER SECT.DWG PLOT TIME: 05-22-23, 4:58 PM)

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HIGHWAYS DIVISION

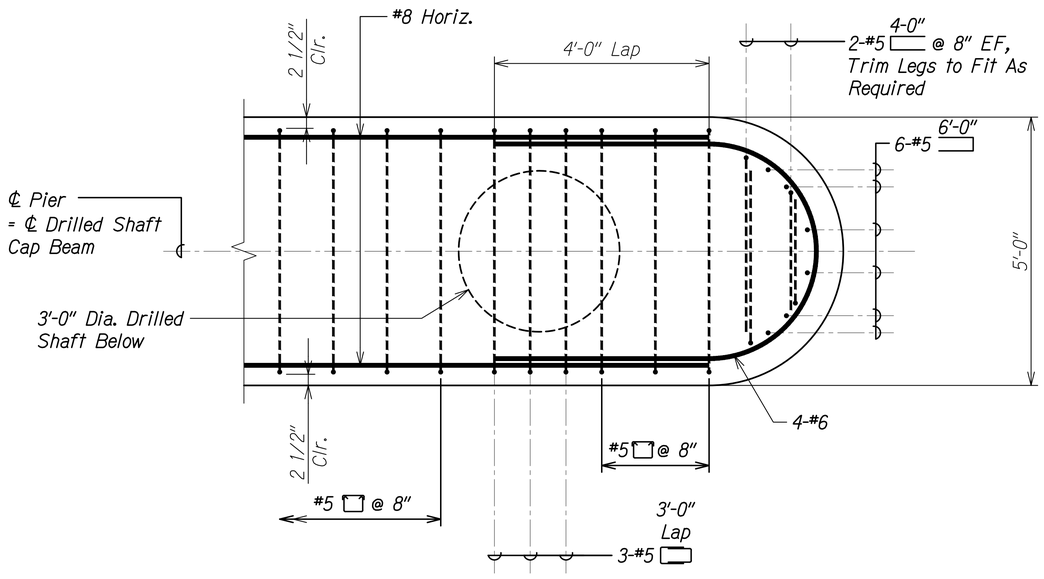
PIER SECTIONS

KAMEHAMEHA HIGHWAY DRAINAGE AND SAFETY IMPROVEMENTS
Vicinity of Laniakea Beach (MP 3.06 to MP 3.54)
Project No. 83B-01-09

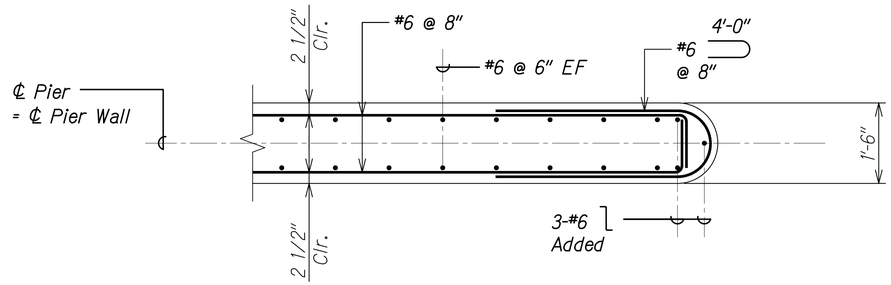
Scale: As Noted Date: December 2022

SHEET No. S6.5 OF 7 SHEETS

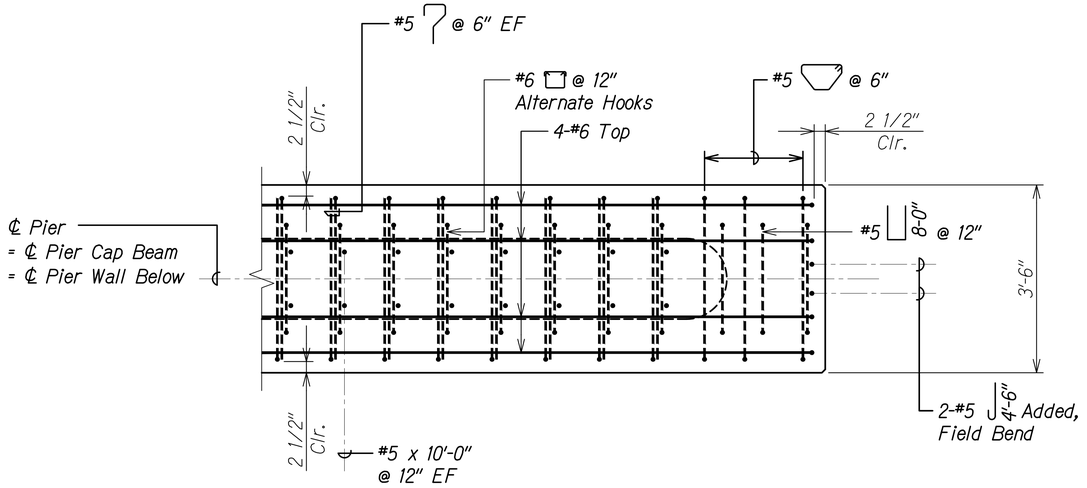
FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83B-01-09	2023	153	231



SECTION A
Scale: 3/4" = 1'-0" S6.5 S6.6



SECTION B
Scale: 3/4" = 1'-0" S6.5 S6.6



SECTION C
Scale: 3/4" = 1'-0" S6.5 S6.5

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

DRAWING NAME: Z:\00 ONGOING\00 JF PROJECTS\22-015.1 KAM HWY LANIAKEA\01 CAD\05-23-23 RVSD SHTNO\KHP-S0604 PIER SECT.DWG PLOT TIME: 05-22-23, 4:58 PM)

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DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

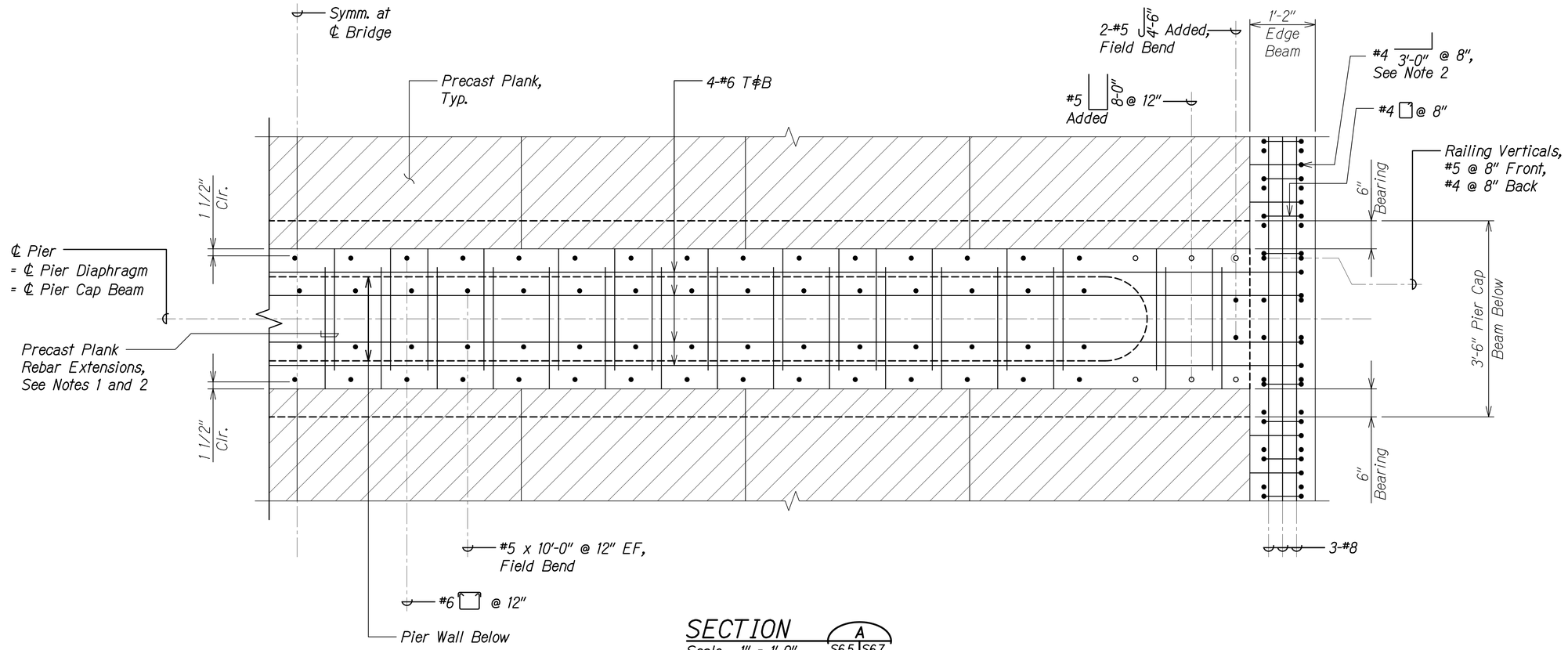
PIER SECTIONS

KAMEHAMEHA HIGHWAY DRAINAGE AND SAFETY IMPROVEMENTS
Vicinity of Laniakea Beach (MP 3.06 to MP 3.54)
Project No. 83B-01-09

Scale: As Noted Date: December 2022

SHEET No. S6.6 OF 7 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83B-01-09	2023	154	231



SECTION A
Scale: 1" = 1'-0"
S6.5 S6.7

NOTES:

1. Rebar extensions in precast planks shall be staggered in the pier diaphragm. Planks in opposite spans shall be coordinated to avoid conflicts
2. For precast planks reinforcing, see Shts. S4.1 to S4.5.
3. Vertical rebars in the pier wall and pier cap beam shall be coordinated with the rebar extensions in the precast plank.

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

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LICENSED PROFESSIONAL ENGINEER
NO. 9444-S
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HIGHWAYS DIVISION

PIER SECTION

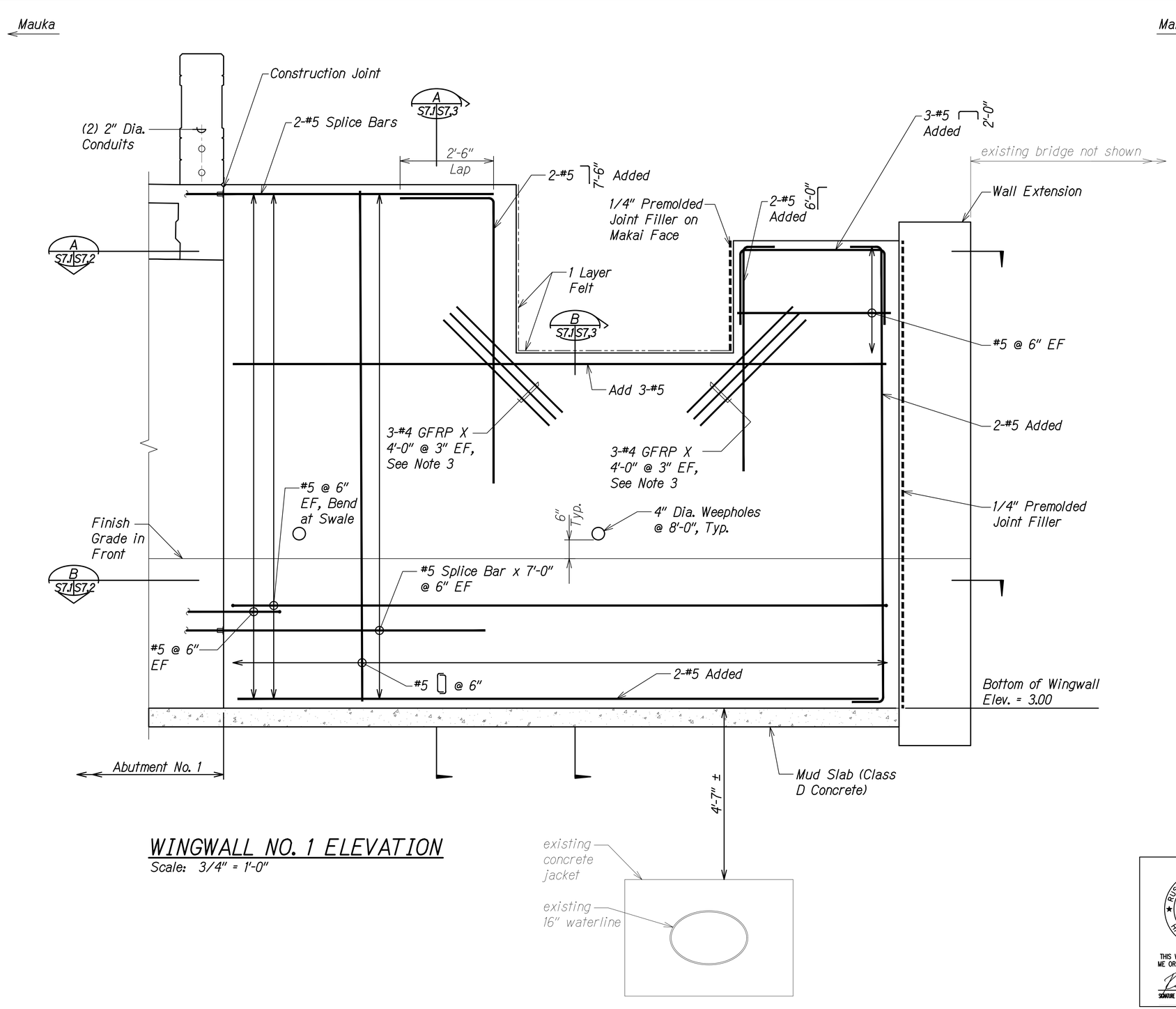
KAMEHAMEHA HIGHWAY DRAINAGE AND SAFETY IMPROVEMENTS
Vicinity of Lanikea Beach (MP 3.06 to MP 3.54)
Project No. 83B-01-09

Scale: As Noted Date: December 2022

SHEET No. S6.7 OF 7 SHEETS

DRAWING NAME: Z:\00 ONGOING\00 JF PROJECTS\22-015.1 KAM HWY LANIAKEA\01 CAD\05-23-23 RVSD SHTNO\HSP-S0604 PIER SECT.DWG PLOT TIME: 05-22-23, 4:59 PM)

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83B-01-09	2023	155	231



WINGWALL NO. 1 ELEVATION

Scale: 3/4" = 1'-0"

NOTES:

1. For wall extension sections, see Sht. S11.1.
2. Swale not shown, see Civil drawings.
3. First #4 GFRP bar shall be place diagonally 2" clear from corner of notch. GFRP bars shall be placed outside of horizontal reinforcing closest to the face of the wingwall.
4. For reinforcing in abutment at the construction joint see Sht. S5.8.

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

DRAWING NAME: Z:\00 ONGOING\00 JF PROJECTS\22-015.1 KAM HWY LANIAKEA\01 CAD\05-23-23 RVSD SHTNO\KHP-S0701 WW1.DWG PLOT TIME: 05-22-23, 5:00 PM)

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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

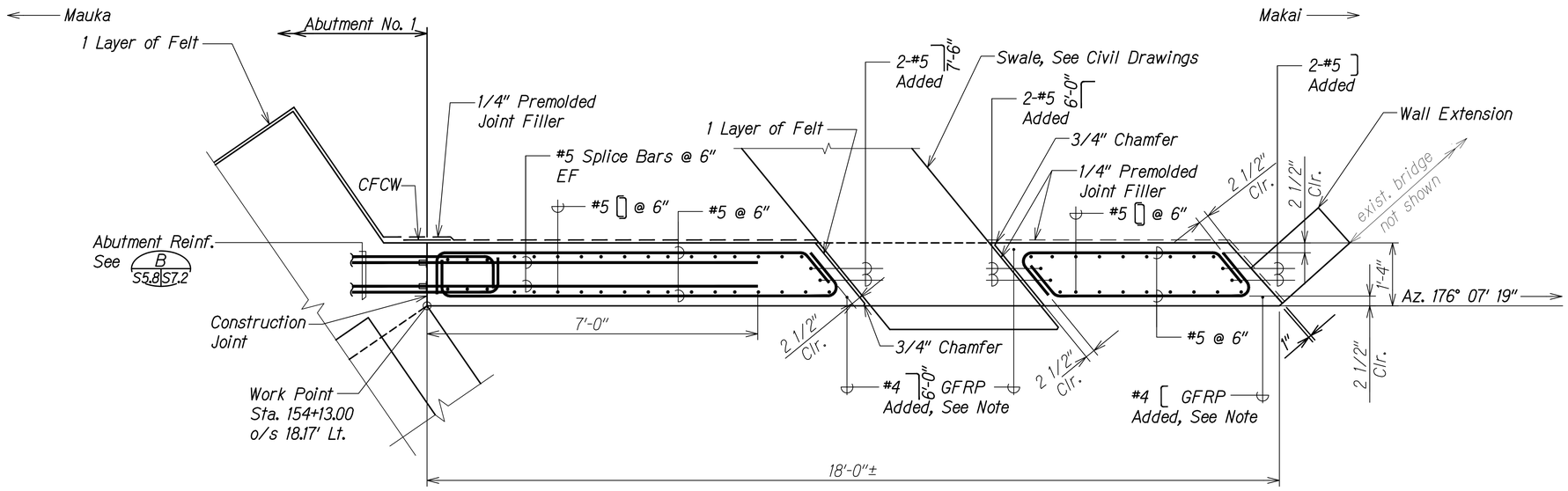
WINGWALL NO. 1 ELEVATION

KAMEHAMEHA HIGHWAY DRAINAGE AND SAFETY IMPROVEMENTS
Vicinity of Laniakea Beach (MP 3.06 to MP 3.54)
Project No. 83B-01-09

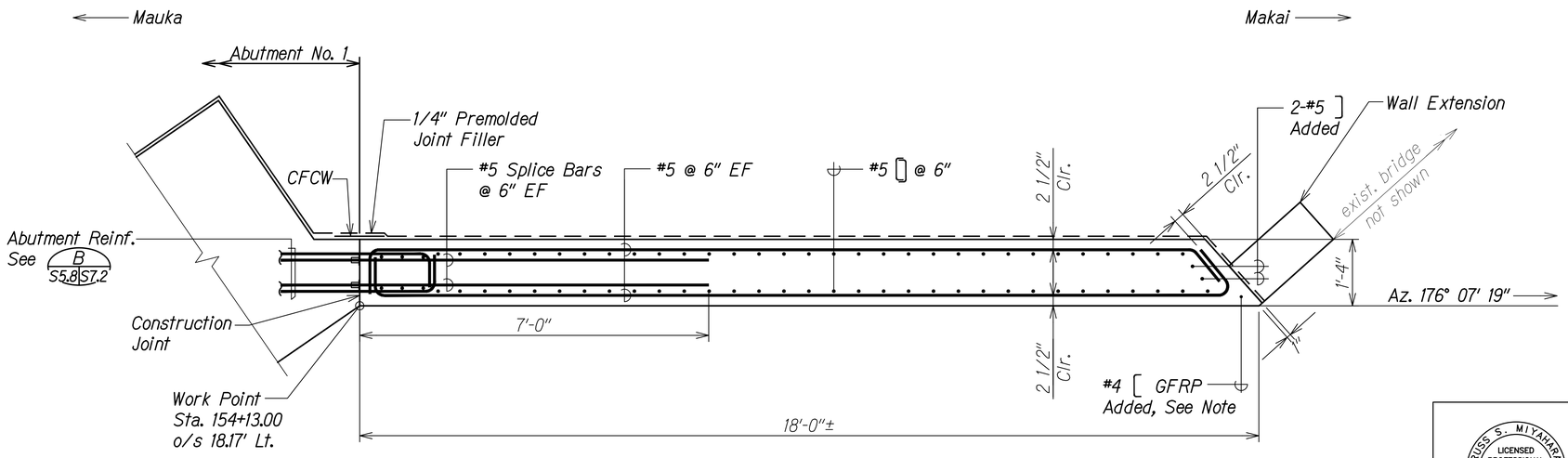
Scale: As Noted Date: December 2022

SHEET No. S7.1 OF 16 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83B-01-09	2023	156	231



SECTION A
Scale: 3/4" = 1'-0"
S7.1 S7.2



SECTION B
Scale: 3/4" = 1'-0"
S7.1 S7.2

NOTE:

#4 GFRP added to acute corners around swale and near wall extension shall be placed with a 1" clear cover.

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

DRAWING NAME: Z:\00 ONGOING\00 JF PROJECTS\22-015.1 KAM HWY LANIAKEA\01 CAD\05-23-23 RVSD SHTNO\KHP-S0701 WW1.DWG PLOT TIME: 05-22-23, 5:01 PM)

RUSS S. MIYAHARA LICENSED PROFESSIONAL ENGINEER NO. 9444-S HAWAII, U.S.A.

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SIGNATURE 4-30-24 EXPIRATION DATE OF THE LICENSE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

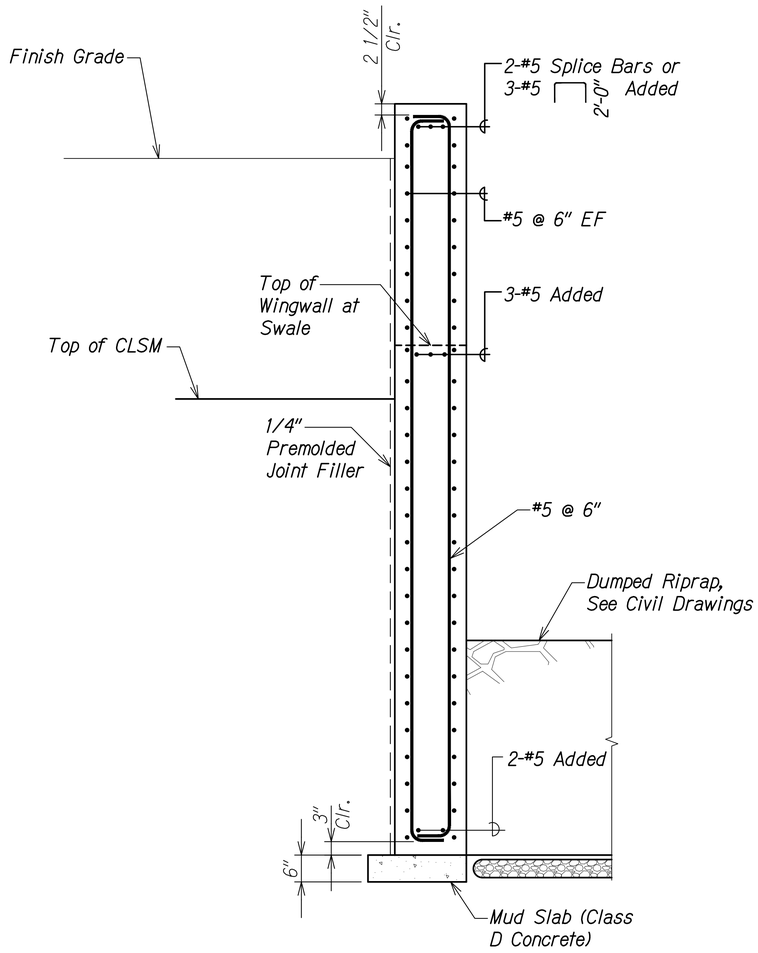
WINGWALL NO. 1 SECTIONS

KAMEHAMEHA HIGHWAY DRAINAGE AND SAFETY IMPROVEMENTS
Vicinity of Laniakea Beach (MP 3.06 to MP 3.54)
Project No. 83B-01-09

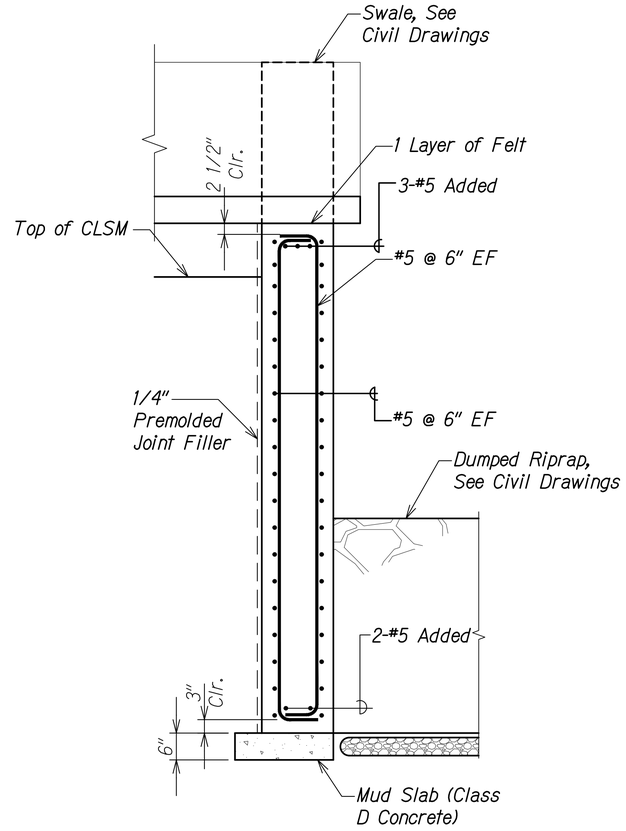
Scale: As Noted Date: December 2022

SHEET No. S7.2 OF 16 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83B-01-09	2023	157	231



SECTION A
Scale: 3/4" = 1'-0"
S7.1 | S7.3



SECTION B
Scale: 3/4" = 1'-0"
S7.1 | S7.3

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

DRAWING NAME: Z:\00 ONGOING\00 JF PROJECTS\22-015.1 KAM HWY LANIAKEA\01 CAD\05-23-23 RVSD SHTNO\KHP-S0701 WW1.DWG PLOT TIME: 05-22-23, 5:01 PM)

LICENSED PROFESSIONAL ENGINEER
RUSS S. MIYAHARA
NO. 9444-S
HAWAII, U.S.A.

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SIGNATURE 4-30-24 EXPIRATION DATE OF THE LICENSE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

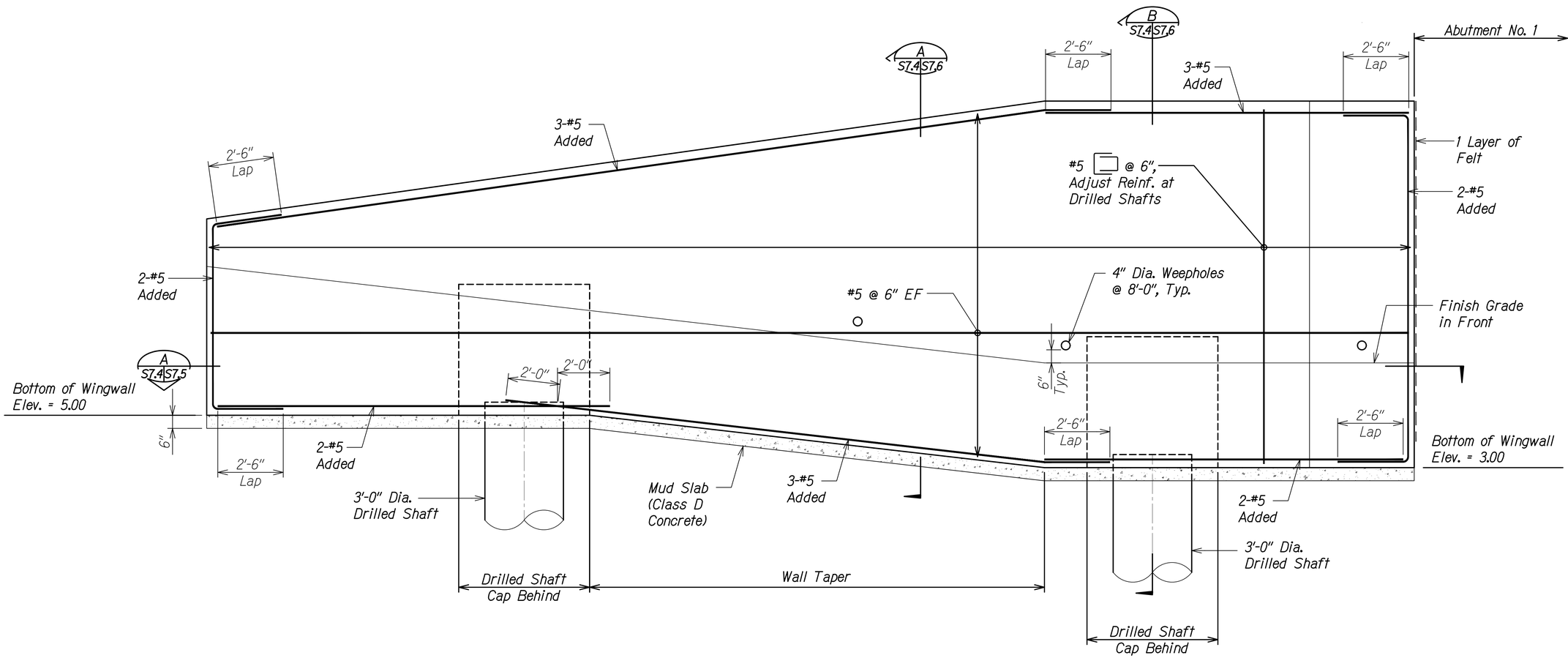
WINGWALL NO. 1 SECTIONS

KAMEHAMEHA HIGHWAY DRAINAGE AND SAFETY IMPROVEMENTS
Vicinity of Laniakea Beach (MP 3.06 to MP 3.54)
Project No. 83B-01-09

Scale: As Noted Date: December 2022

SHEET No. S7.3 OF 16 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83B-01-09	2023	158	231



WINGWALL NO. 2 ELEVATION

Scale: 1/2" = 1'-0"

NOTE:

For limits of wall taper on plan, see Sht. S7.5.

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

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LICENSED PROFESSIONAL ENGINEER
NO. 9444-S
HAWAII, U.S.A.

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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

WINGWALL NO. 2 ELEVATION

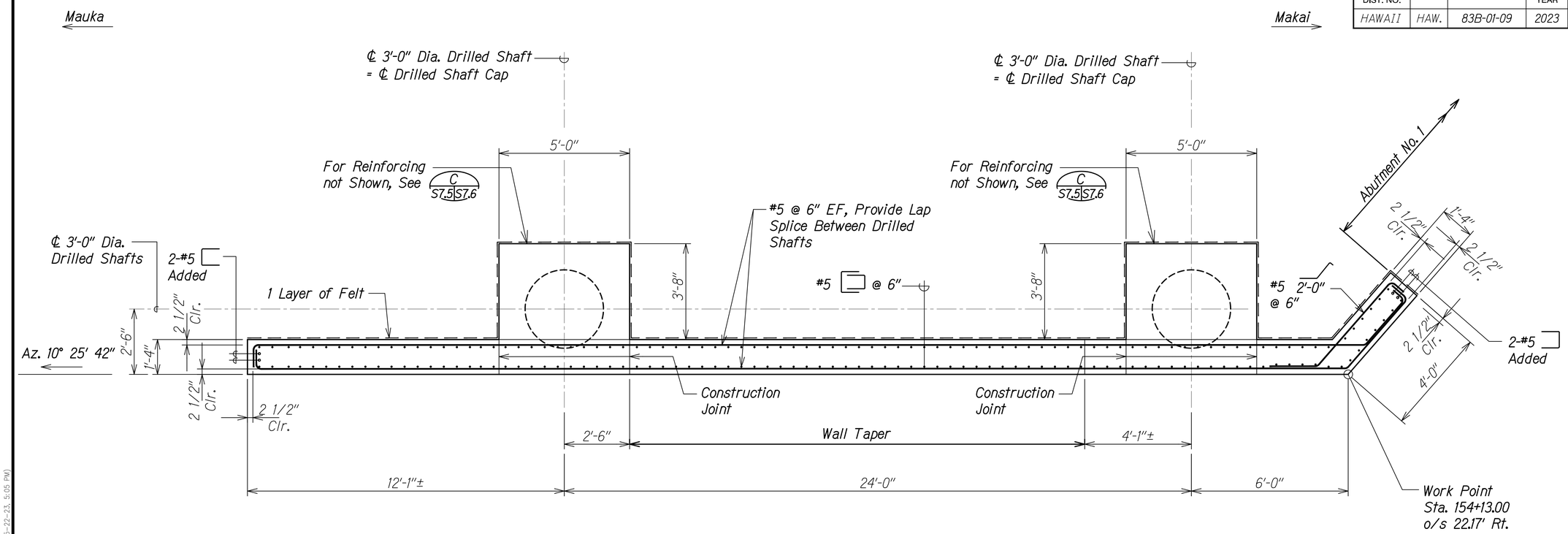
KAMEHAMEHA HIGHWAY DRAINAGE AND SAFETY IMPROVEMENTS
Vicinity of Laniakea Beach (MP 3.06 to MP 3.54)
Project No. 83B-01-09

Scale: As Noted Date: December 2022

SHEET No. S7.4 OF 16 SHEETS

DRAWING NAME: Z:\00 ONGOING\00 JF PROJECTS\22-015.1 KAM HWY LANIAKEA\01 CAD\05-23-23 RVSD SHTNO\KHP-S0704 WW2.DWG PLOT TIME: 05-22-23, 5:02 PM)

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83B-01-09	2023	159	231



SECTION A
Scale: 1/2" = 1'-0"

S7.4 | S7.5

ORIGINAL PLAN
NOTE BOOK
No.

SURVEY PLOTTED BY ____ DATE
DRAWN BY "
TRACED BY "
DESIGNED BY "
QUANTITIES BY "
CHECKED BY "

DRAWING NAME: Z:\00 ONGOING\00 JF PROJECTS\22-015.1 KAM HWY LANIAKEA\01 CAD\05-23-23 RVSD SHTNO\KHP-S0704 WW2.DWG PLOT TIME: 05-22-23, 5:05 PM

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NO. 9444-S
HAWAII, U.S.A.

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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

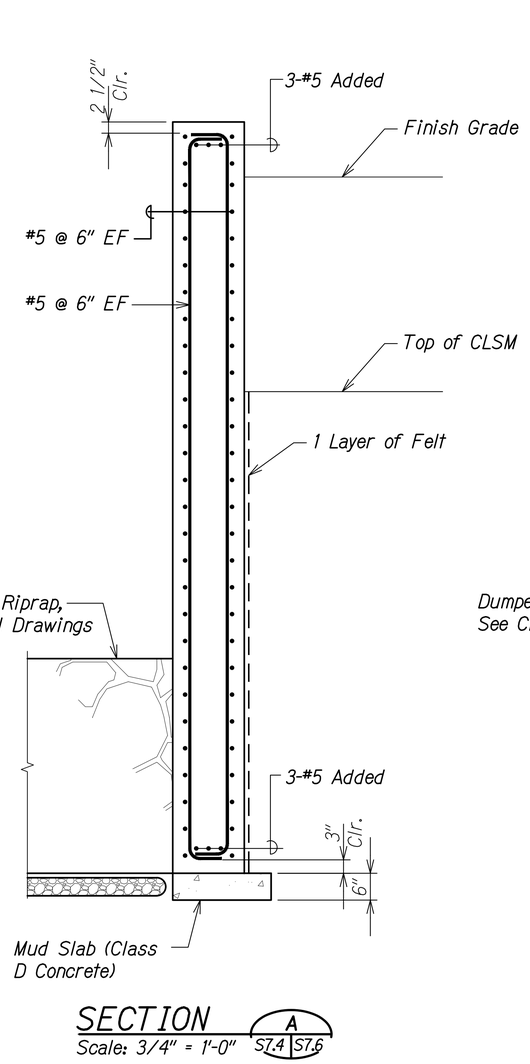
WINGWALL NO. 2 SECTION

KAMEHAMEHA HIGHWAY DRAINAGE AND SAFETY IMPROVEMENTS
Vicinity of Laniakea Beach (MP 3.06 to MP 3.54)
Project No. 83B-01-09

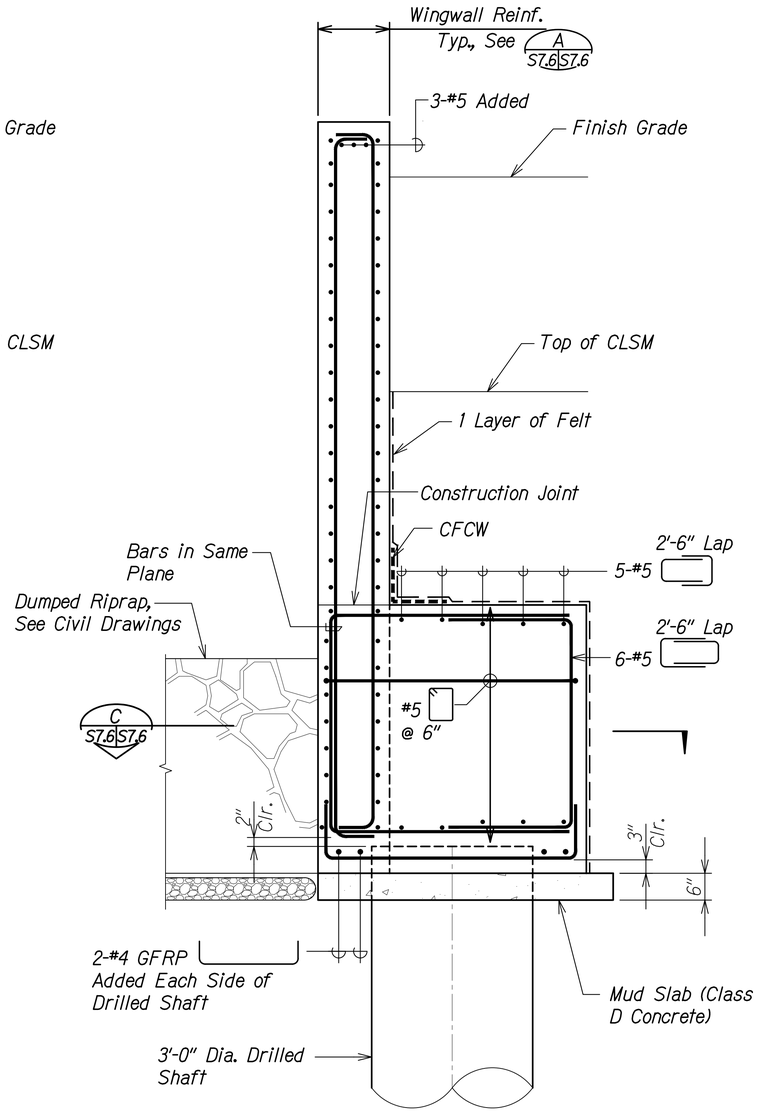
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SHEET No. S7.5 OF 16 SHEETS

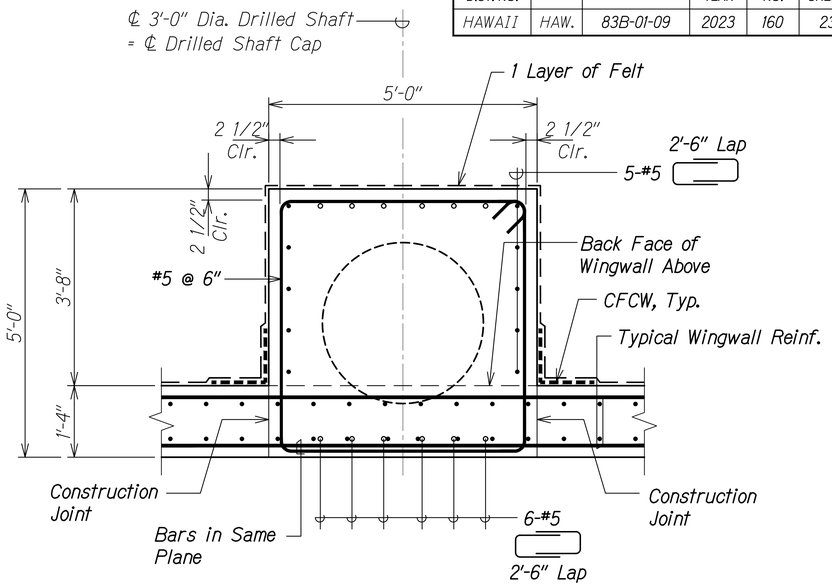
FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83B-01-09	2023	160	231



SECTION A
Scale: 3/4" = 1'-0" S7.4 | S7.6



SECTION B
Scale: 3/4" = 1'-0" S7.4 | S7.6



SECTION C
Scale: 3/4" = 1'-0" S7.6 | S7.6

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

DRAWING NAME: Z:\00 ONGOING\00 JF PROJECTS\22-015.1 KAM HWY LANIAKEA\01 CAD\05-23-23 RVSD SHTNO\KHP-S0704 WW2.DWG PLOT TIME: 05-22-23, 5:05 PM)

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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

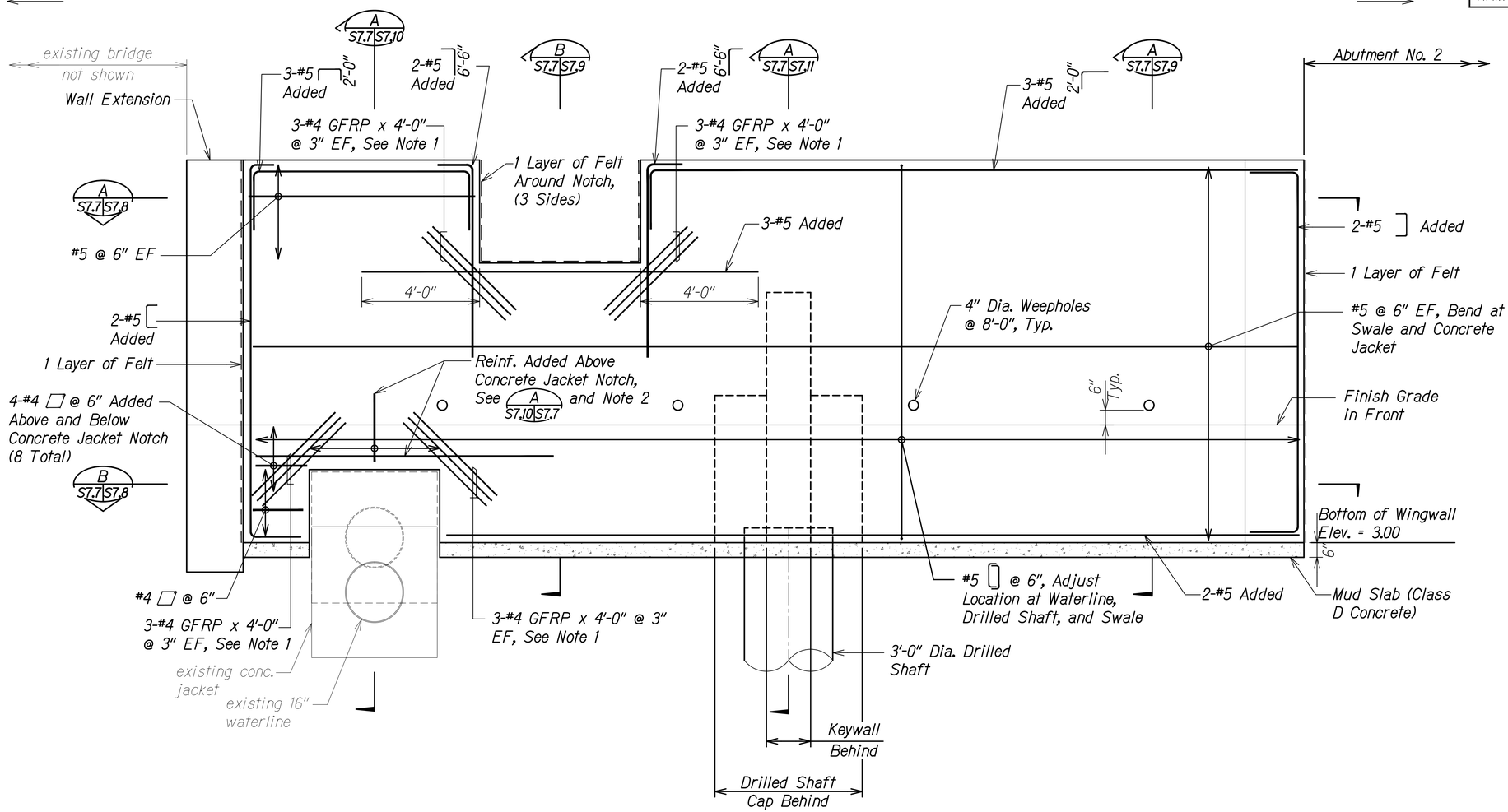
WINGWALL NO. 2 SECTIONS

KAMEHAMEHA HIGHWAY DRAINAGE AND SAFETY IMPROVEMENTS
Vicinity of Laniakea Beach (MP 3.06 to MP 3.54)
Project No. 83B-01-09

Scale: As Noted Date: December 2022

SHEET No. S7.6 OF 16 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83B-01-09	2023	161	231



WINGWALL NO. 3 ELEVATION

Scale: 1/2" = 1'-0"

NOTES:

1. First #4 GFRP bar shall be placed diagonally 2" clear from corner of notch. GFRP bars shall be placed outside of horizontal reinforcing closest to face of wingwall.

2. Top of concrete jacket shall be field verified. Added reinforcing shall be field bent as required. Soffit of wingwall above the concrete jacket will not be level.

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

DRAWING NAME: Z:\00 ONGOING\00 JF PROJECTS\22-015.1 KAM HWY LANIAKEA\01 CAD\05-23-23 RVSD SHTNO\KHP-S0707 WW3.DWG PLOT TIME: 05-22-23, 5:06 PM)

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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

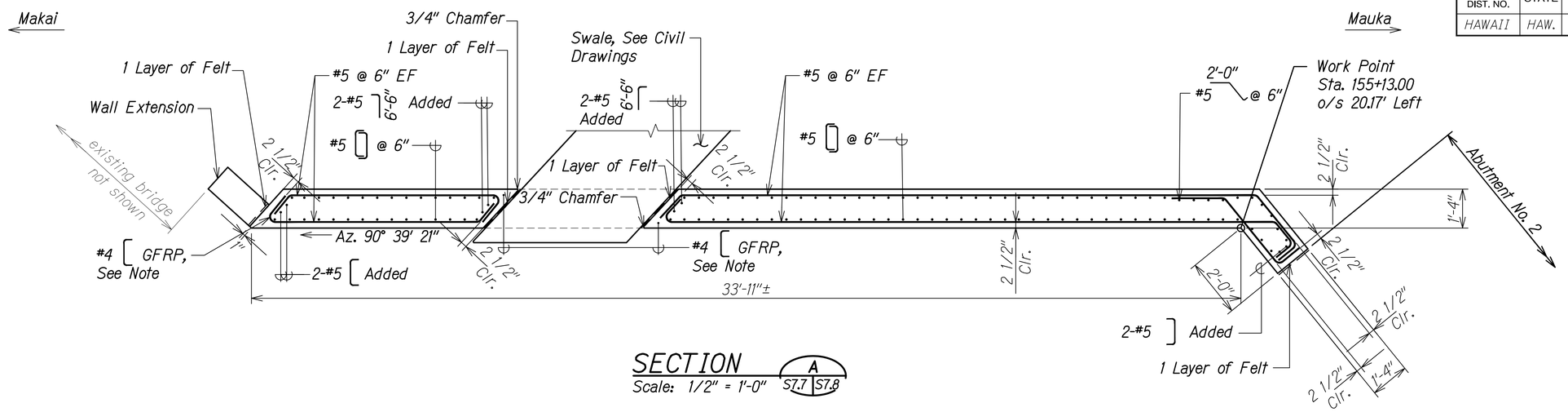
WINGWALL NO. 3 ELEVATION

KAMEHAMEHA HIGHWAY DRAINAGE AND SAFETY IMPROVEMENTS
Vicinity of Laniakea Beach (MP 3.06 to MP 3.54)
Project No. 83B-01-09

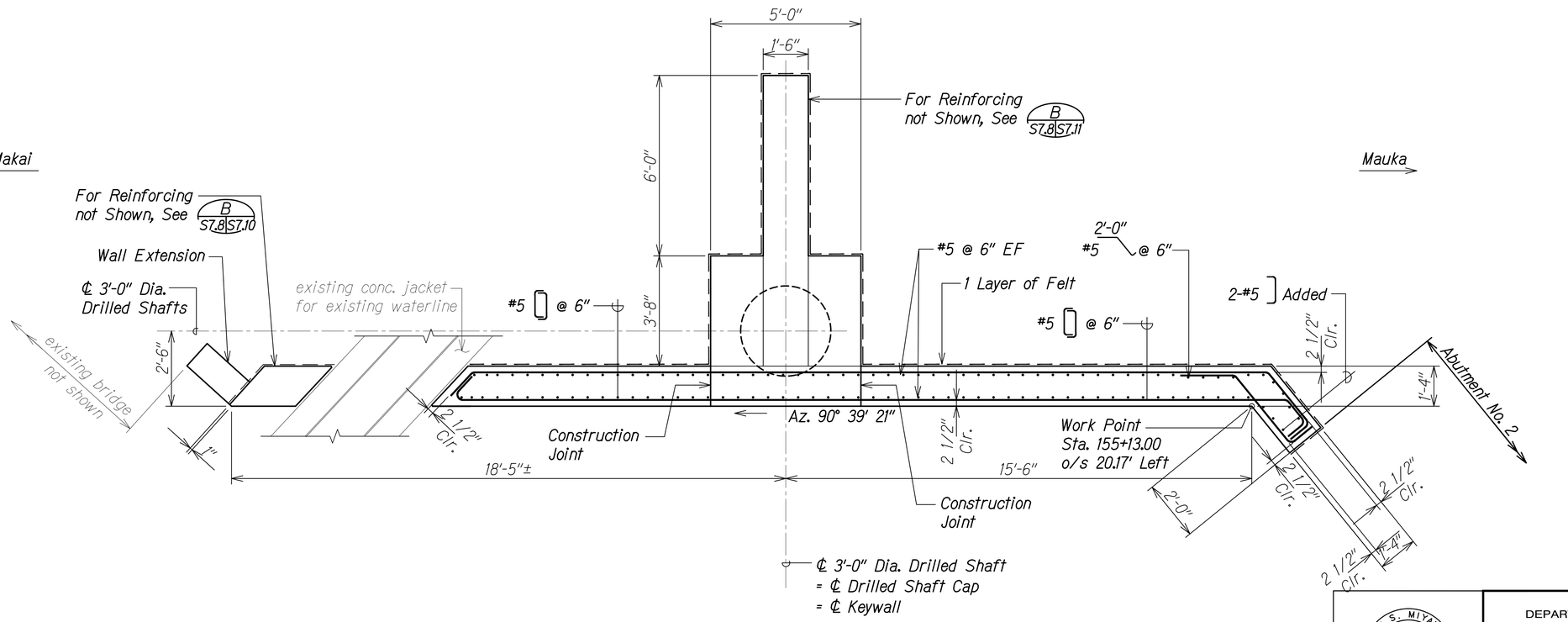
Scale: As Noted Date: December 2022

SHEET No. S7.7 OF 16 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83B-01-09	2023	162	231



SECTION A
Scale: 1/2" = 1'-0"
S7.7 | S7.8



SECTION B
Scale: 1/2" = 1'-0"
S7.7 | S7.8

NOTE:

#4 GFRP added at acute corners around swale and near wall extension shall be placed with 1" clear cover.

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

DRAWING NAME: Z:\OD ONGOING\OD JF PROJECTS\22-015.1 KAM HWY LANIAKEA\01 CAD\05-23-23 RVSD SHTNO\VKHP-S0707 WW3.DWG PLOT TIME: 05-22-23, 5:06 PM)

RUSS S. MIYAHARA
LICENSED PROFESSIONAL ENGINEER
NO. 9444-S
HAWAII, U.S.A.

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4-30-24
SIGNATURE EXPIRATION DATE OF THE LICENSE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

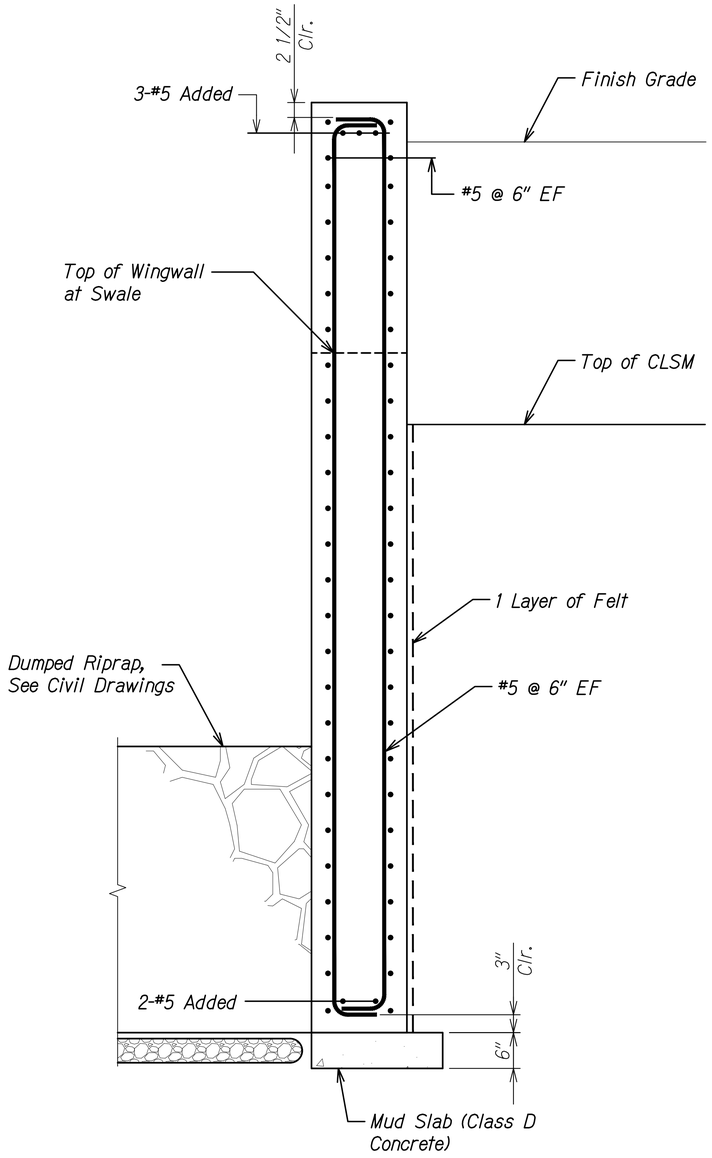
WINGWALL NO. 3 SECTIONS

KAMEHAMEHA HIGHWAY DRAINAGE AND SAFETY IMPROVEMENTS
Vicinity of Laniakea Beach (MP 3.06 to MP 3.54)
Project No. 83B-01-09

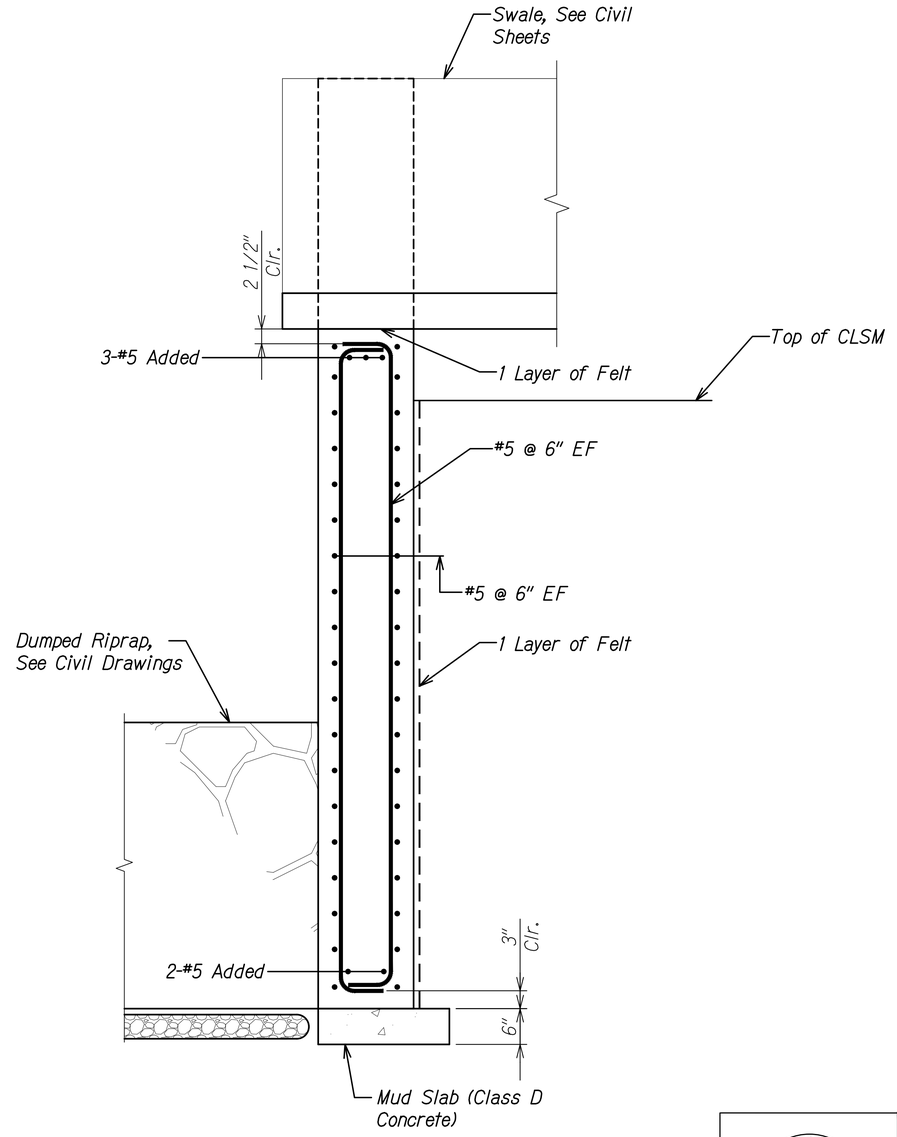
Scale: As Noted Date: December 2022

SHEET No. S7.8 OF 16 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83B-01-09	2023	163	231



SECTION A
Scale: 1" = 1'-0"
S7.7 S7.9



SECTION B
Scale: 1" = 1'-0"
S7.7 S7.9

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

DRAWING NAME: Z:\DD ONGONG\DD JF PROJECTS\22-015.1 KAM HWY LANIAKEA\01 CAD\05-23-23 RVSD SHTNO\HP-S0707 WA3.DWG PLOT TIME: 05-22-23, 5:07 PM)

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SIGNATURE
4-30-24
EXPIRATION DATE OF THE LICENSE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

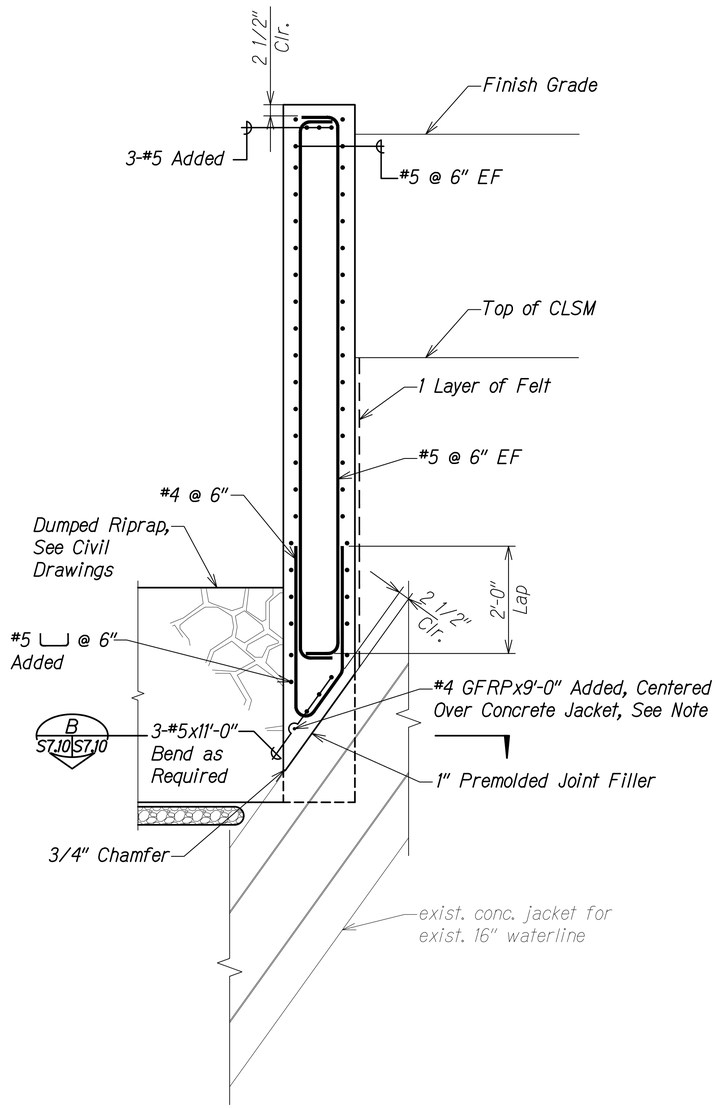
WINGWALL NO. 3 SECTIONS

KAMEHAMEHA HIGHWAY DRAINAGE AND SAFETY IMPROVEMENTS
Vicinity of Laniakea Beach (MP 3.06 to MP 3.54)
Project No. 83B-01-09

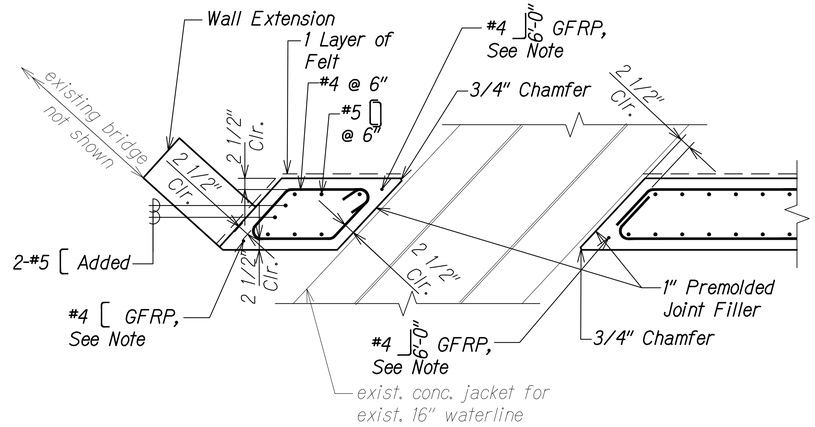
Scale: As Noted
Date: December 2022

SHEET No. S7.9 OF 16 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83B-01-09	2023	164	231



SECTION A
Scale: 3/4" = 1'-0" S7.7 S7.10



SECTION B
Scale: 3/4" = 1'-0" S7.10 S7.10

NOTE:

#4 GFRP added reinforcing at acute corners around concrete jacket and near wall extension shall be placed with 1" clear cover.

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

RUSS S. MIYAHARA LICENSED PROFESSIONAL ENGINEER NO. 9444-S HAWAII, U.S.A.

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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

WINGWALL NO. 3 SECTIONS

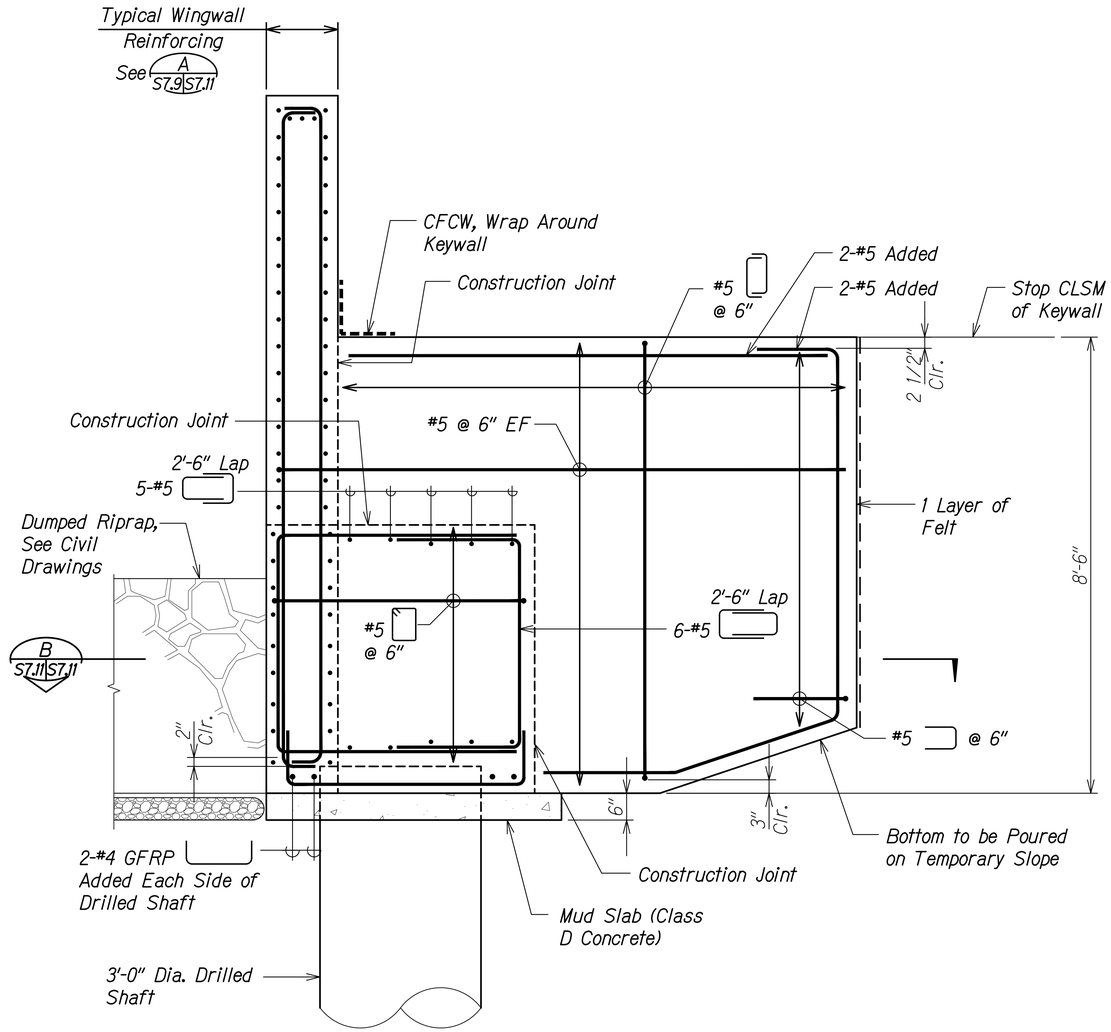
KAMEHAMEHA HIGHWAY DRAINAGE AND SAFETY IMPROVEMENTS
Vicinity of Laniakea Beach (MP 3.06 to MP 3.54)
Project No. 83B-01-09

Scale: As Noted Date: December 2022

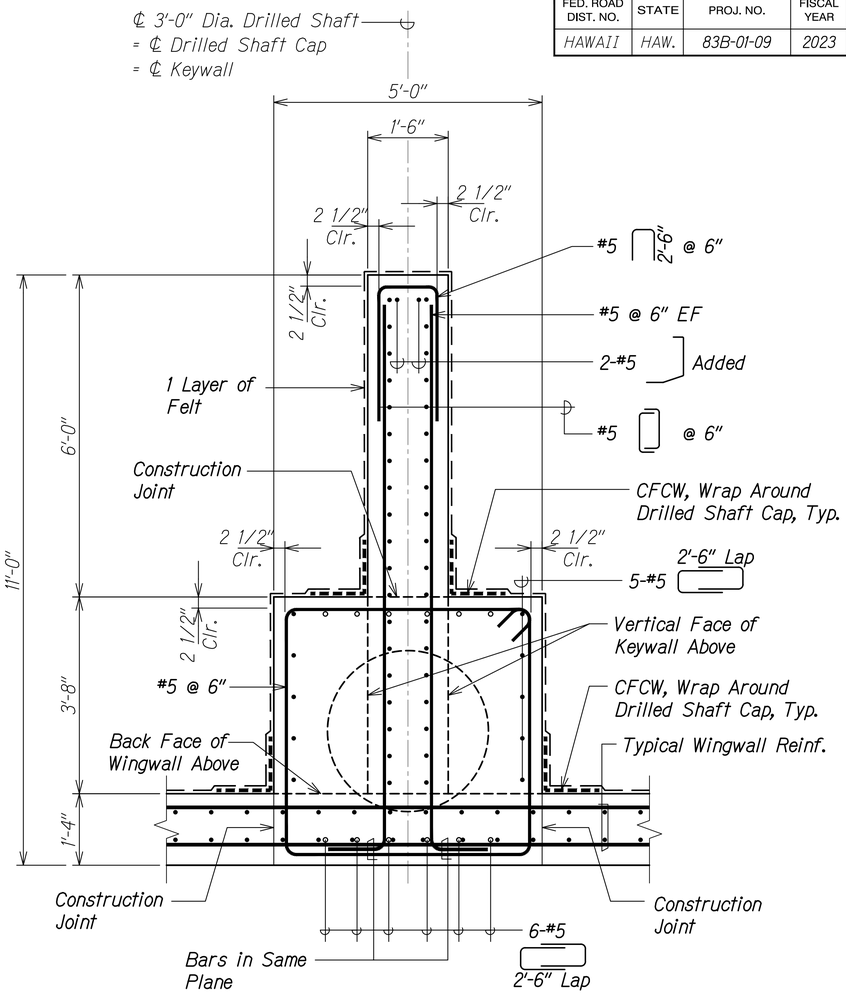
SHEET No. S7.10 OF 16 SHEETS

DRAWING NAME: Z:\00 ONGOING\00 JF PROJECTS\22-015.1 KAM HWY LANIAKEA\01 CAD\05-23-23 RVSD SHTNO\KHP-S0707 WW3.DWG PLOT TIME: 05-22-23, 5:07 PM)

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83B-01-09	2023	165	231



SECTION
Scale: 3/4" = 1'-0" A S7.7 S7.11



SECTION
Scale: 3/4" = 1'-0" B S7.11 S7.11

RUSS S. MIYAHARA
LICENSED PROFESSIONAL ENGINEER
NO. 9444-S
HAWAII, U.S.A.

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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

WINGWALL NO. 3 SECTIONS

KAMEHAMEHA HIGHWAY DRAINAGE AND SAFETY IMPROVEMENTS
Vicinity of Laniakea Beach (MP 3.06 to MP 3.54)
Project No. 83B-01-09

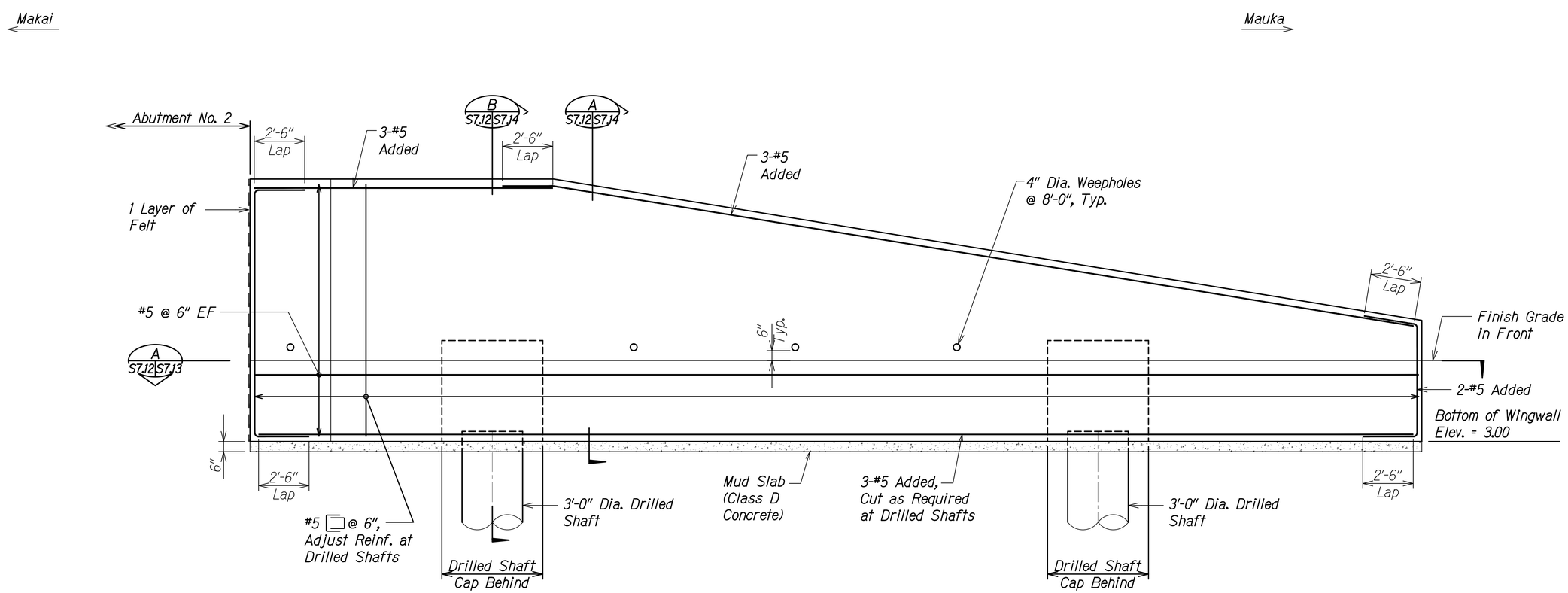
Scale: As Noted Date: December 2022

SHEET No. S7.11 OF 16 SHEETS

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

DRAWING NAME: Z:\OO ONGOING\OO_JF PROJECTS\22-015.1 KAM HWY LANIAKEA\01 CAD\05-23-23 RVSD SHTNO\KHP-S0707 WW3.DWG PLOT TIME: 05-22-23, 5:08 PM)

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83B-01-09	2023	166	231



WINGWALL NO. 4 ELEVATION

Scale: 3/8" = 1'-0"

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

DRAWING NAME: Z:\00 ONGOING\00 JF PROJECTS\22-015.1 KAM HWY LANIAKEA\01 CAD\05-23-23 RVSD SHTNO\KHP-S0712 WW4.DWG PLOT TIME: 05-22-23, 5:09 PM)

RUSS S. MIYAHARA
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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

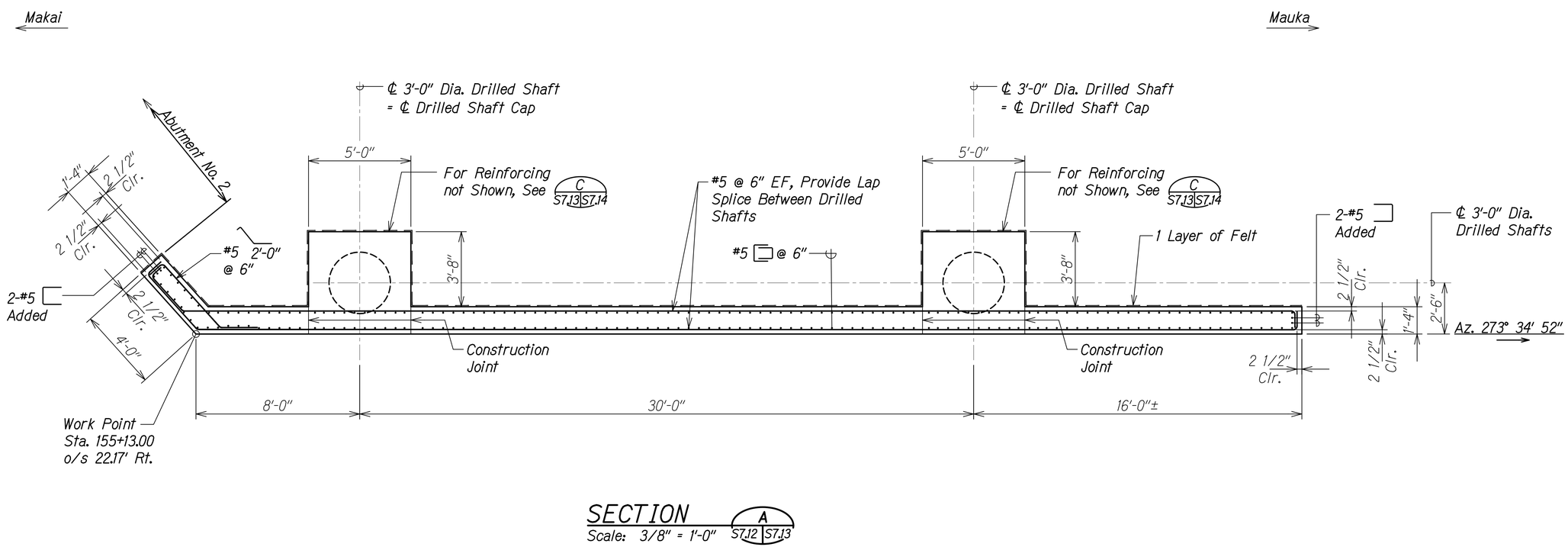
WINGWALL NO. 4 ELEVATION

KAMEHAMEHA HIGHWAY DRAINAGE AND SAFETY IMPROVEMENTS
Vicinity of Laniakea Beach (MP 3.06 to MP 3.54)
Project No. 83B-01-09

Scale: As Noted Date: December 2022

SHEET No. S7.12 OF 16 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83B-01-09	2023	167	231



SECTION A
Scale: 3/8" = 1'-0"

S7.12 | S7.13

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

DRAWING NAME: Z:\DO ONGOING\00 JF PROJECTS\22-015.1 KAM HWY LANIAKEA\01 CAD\05-23-23 RVSD SHTNO\KHP-S0712 WW4.DWG PLOT TIME: 05-22-23, 5:09 PM)

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LICENSED PROFESSIONAL ENGINEER
NO. 9444-S
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SIGNATURE 4-30-24 EXPIRATION DATE OF THE LICENSE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

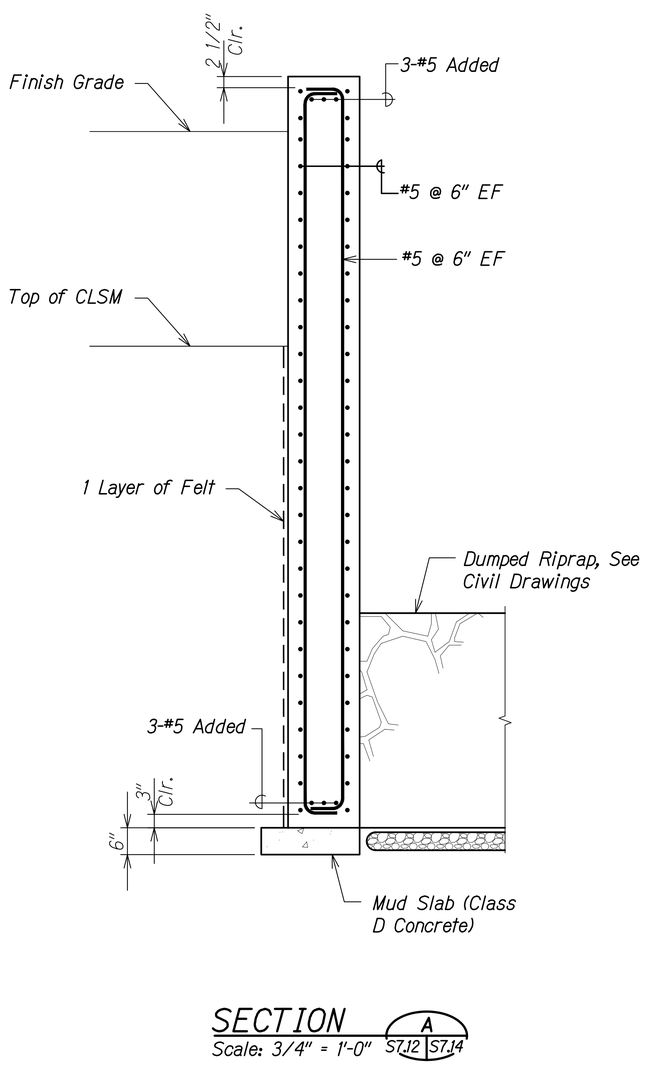
WINGWALL NO. 4 SECTION

KAMEHAMEHA HIGHWAY DRAINAGE AND SAFETY IMPROVEMENTS
Vicinity of Laniakea Beach (MP 3.06 to MP 3.54)
Project No. 83B-01-09

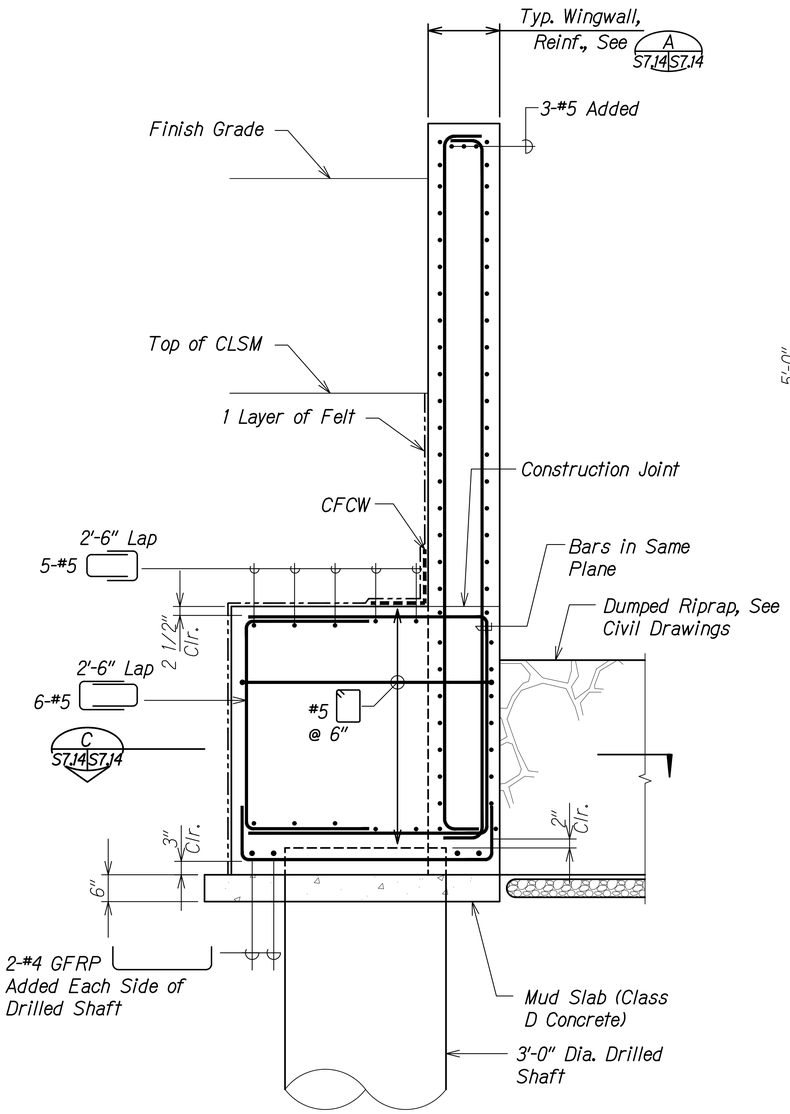
Scale: As Noted Date: December 2022

SHEET No. S7.13 OF 16 SHEETS

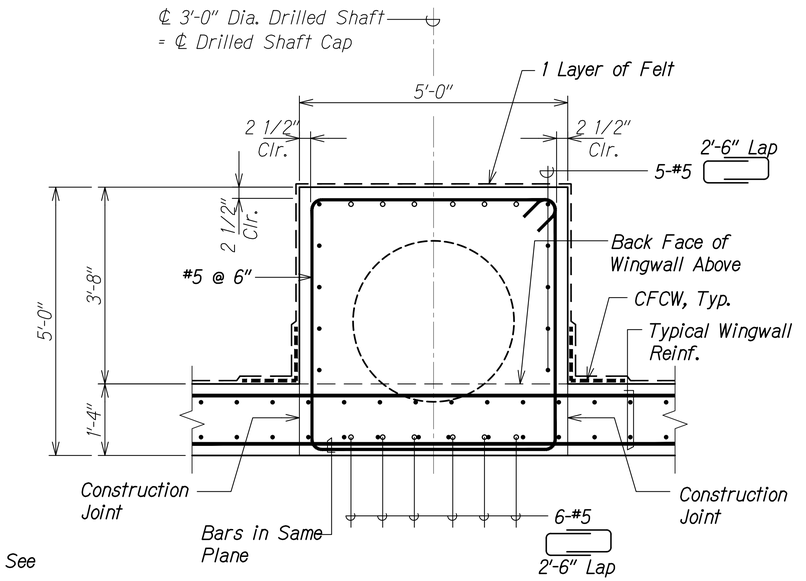
FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83B-01-09	2023	168	231



SECTION A
Scale: 3/4" = 1'-0" S7.12 | S7.14



SECTION B
Scale: 3/4" = 1'-0" S7.12 | S7.14



SECTION C
Scale: 3/4" = 1'-0" S7.14 | S7.14

ORIGINAL PLAN
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DRAWING NAME: Z:\00 ONGOING\00 JF PROJECTS\22-015.1 KAM HWY LANIAKEA\01 CAD\05-23-23 RVSD SHTNO\KHP-S0712 WW4.DWG PLOT TIME: 05-22-23, 5:10 PM)

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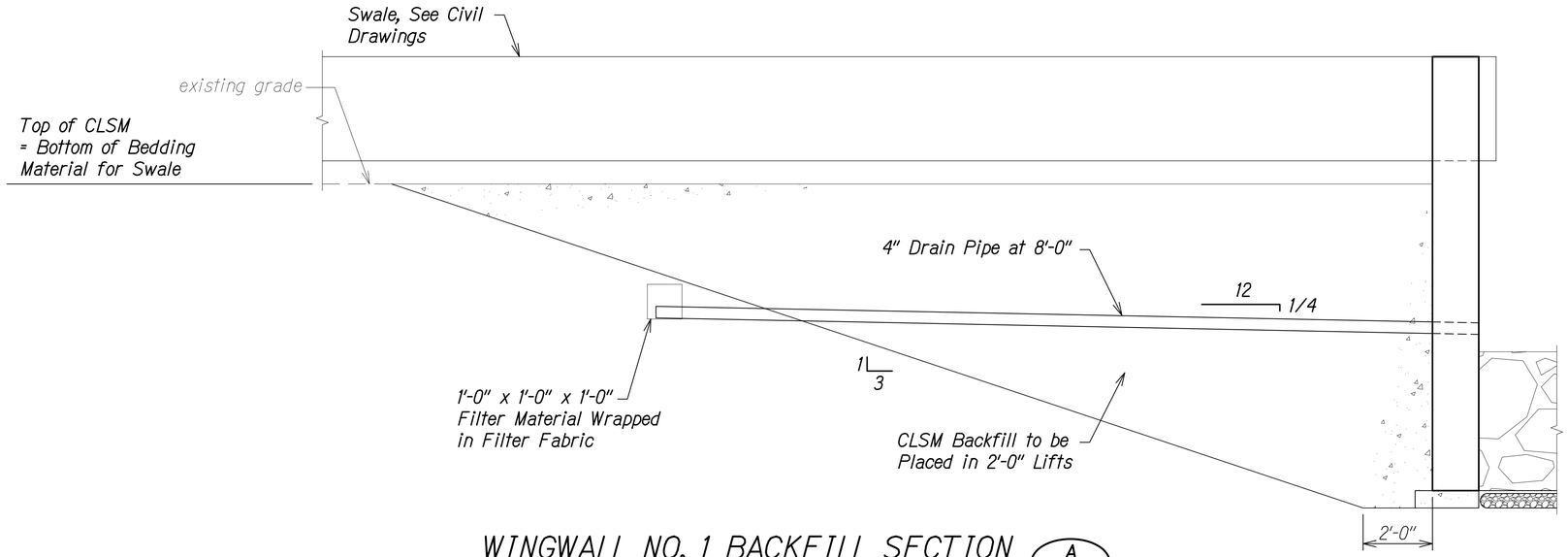
WINGWALL NO. 4 SECTIONS

KAMEHAMEHA HIGHWAY DRAINAGE AND SAFETY IMPROVEMENTS
Vicinity of Laniakea Beach (MP 3.06 to MP 3.54)
Project No. 83B-01-09

Scale: As Noted Date: December 2022

SHEET No. S7.14 OF 16 SHEETS

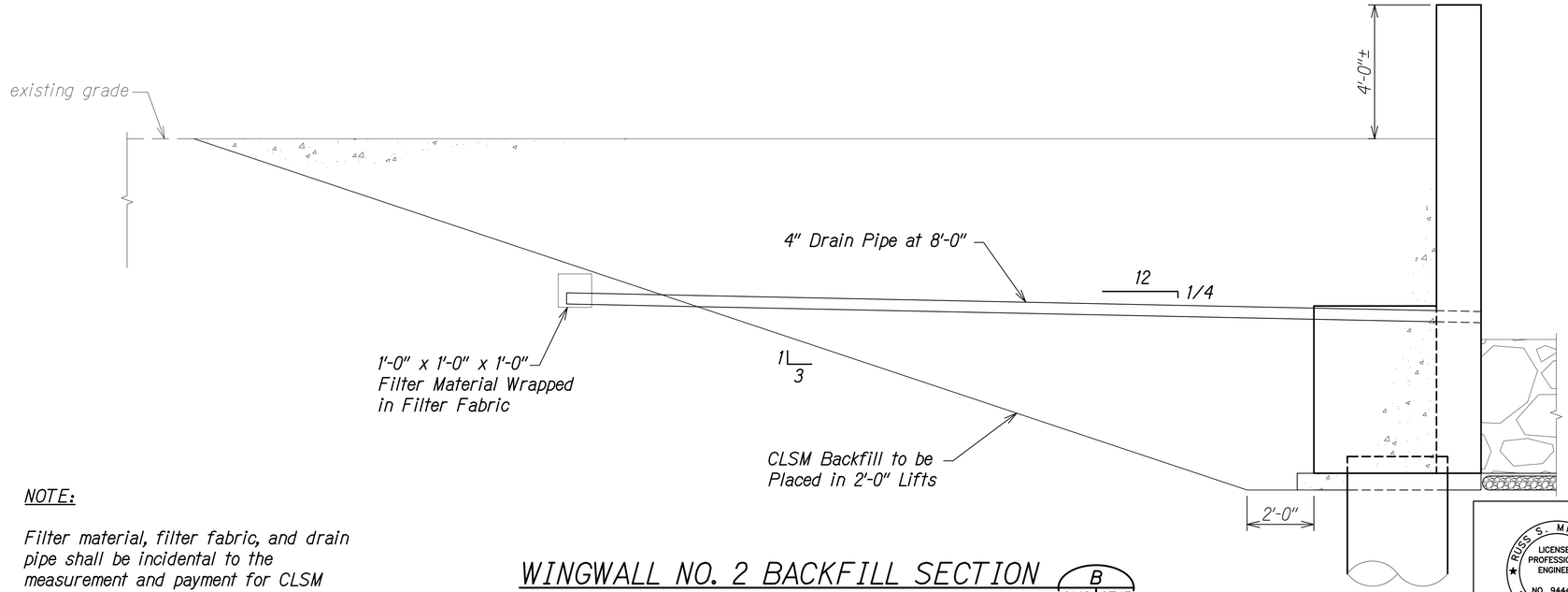
FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83B-01-09	2023	169	231



WINGWALL NO. 1 BACKFILL SECTION

Scale: 1/2" = 1'-0"

A S1.10 S7.15



WINGWALL NO. 2 BACKFILL SECTION

Scale: 1/2" = 1'-0"

B S1.10 S7.15

NOTE:

Filter material, filter fabric, and drain pipe shall be incidental to the measurement and payment for CLSM Backfill for Abutments and Wingwalls.

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DRAWING NAME: Z:\OD ONGOING\OD JF PROJECTS\22-015.1 KAM HWY LANIAKEA\01 CAD\05-23-23 RVSD SHTNO\KHP-SD715 WW BACKFILL.DWG PLOT TIME: 05-22-23, 5:10 PM)

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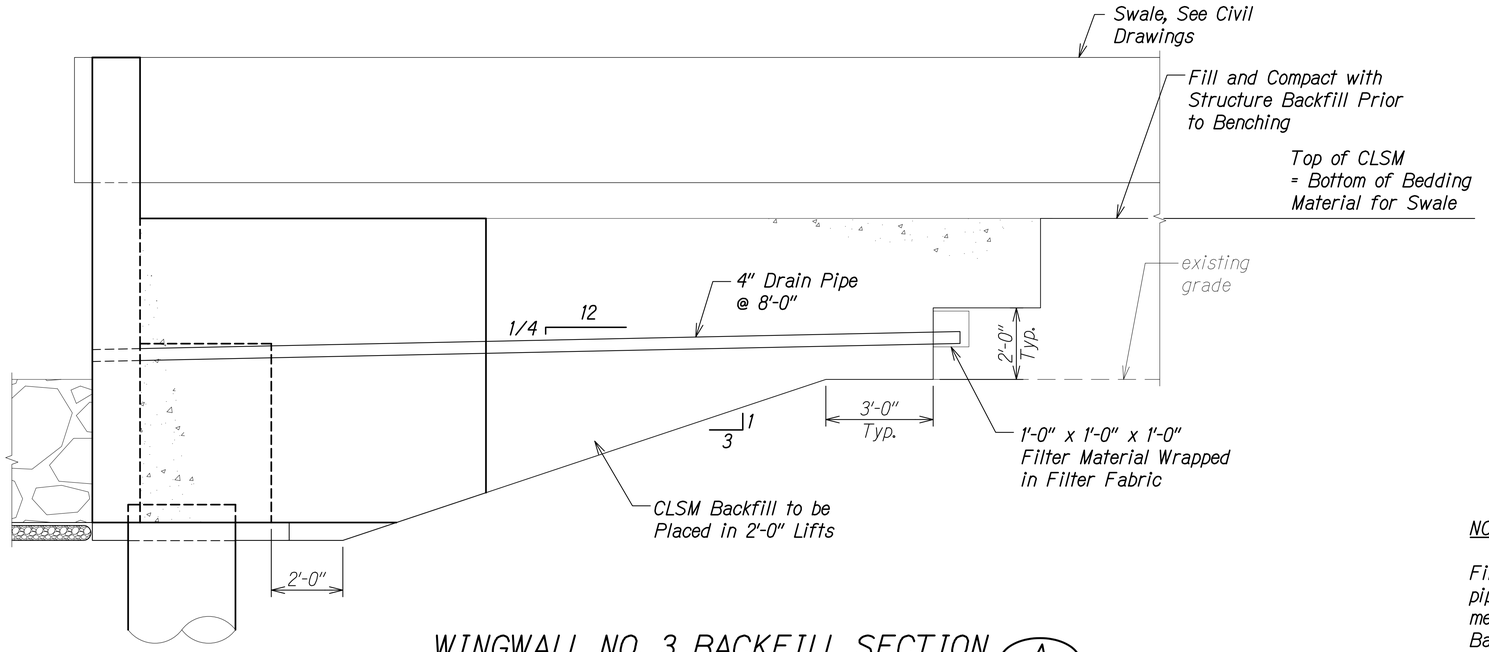
WINGWALL BACKFILL SECTIONS

KAMEHAMEHA HIGHWAY DRAINAGE AND SAFETY IMPROVEMENTS
Vicinity of Laniakea Beach (MP 3.06 to MP 3.54)
Project No. 83B-01-09

Scale: As Noted Date: December 2022

SHEET No. S7.15 OF 16 SHEETS

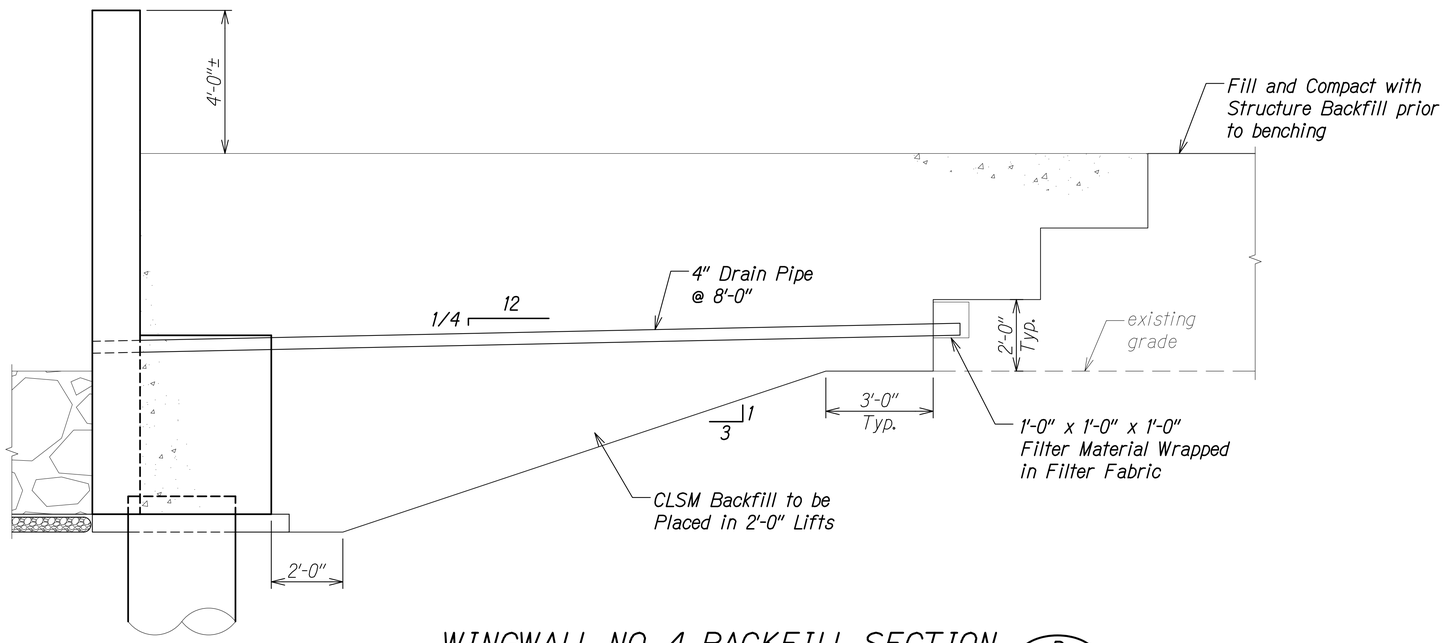
FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83B-01-09	2023	170	231



WINGWALL NO. 3 BACKFILL SECTION

Scale: 1/2" = 1'-0"

A S1.10 S7.16



WINGWALL NO. 4 BACKFILL SECTION

Scale: 1/2" = 1'-0"

B S1.10 S7.16

NOTE:

Filter material, filter fabric, and drain pipe shall be incidental to the measurement and payment for CLSM Backfill for Abutments and Wingwalls.

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WINGWALL BACKFILL SECTIONS

KAMEHAMEHA HIGHWAY DRAINAGE AND SAFETY IMPROVEMENTS
Vicinity of Laniakea Beach (MP 3.06 to MP 3.54)
Project No. 83B-01-09

Scale: As Noted Date: December 2022

SHEET No. S7.16 OF 16 SHEETS

DRAWING NAME: Z:\00 ONGOING\00 JF PROJECTS\22-015.1 KAM HWY LANIAKEA\01 CAD\05-23-23 RVSD SHTNO\KHP-S0715 WW BACKFILL.DWG PLOT TIME: 05-22-23, 5:11 PM)

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83B-01-09	2023	171	231

DRILLED SHAFT SCHEDULE

Drilled Shaft	Abut No. 1	Pier	Abut No. 2	Wingwall No. 2	Wingwall No. 3	Wingwall No. 4	Trial Shaft
Drilled Shaft Type	3B	3B	3B	3W	3W	3W	3B
Drilled Shaft Tip Elevation	- 49.00	- 51.00	- 45.00	- 29.00	- 29.00	- 29.00	- 47.00
Drilled Shaft Pay Length "L"	52'-6"	54'-6"	48'-6"	32'-6"	32'-6"	32'-6"	60'-6"
Strength Limit State Compression Demand (kips)	620	685	600	135	192	135	-
Strength Limit State Compression Capacity (kips)	692	761	676	447	270	270	-
Extreme Event Limit State Compression Demand (kips)	635	585	550	128	154	128	-
Extreme Event Limit State Compression Capacity (kips)	1384	1522	1352	893	541	541	-

NOTES:

1. For 3'-0" dia. production and trial drilled shafts, see Shts. S8.2, S8.4, and S8.5.
2. For Foundation Plan see Sht. S1.6.
3. All excavation and drilling operations for foundations shall be monitored by the Engineer.
4. Drilling of adjacent shafts within three drilled shaft diameters shall not commence until the shaft concrete has cured a minimum of 24 hours.
5. Drilled shaft tip elevations are estimated. The actual length of the shaft and drilled shaft tip elevation will be determined by the Engineer.
6. Bottom of drilled shaft cap beam and drilled shaft tip elevations shall be verified by the Engineer prior to placing reinforcement and concrete. Concrete shall be placed within 24 hours after drilling, but shall not be placed without prior approval of the Engineer.

ORIGINAL PLAN
NOTE BOOK
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DATE

DRAWING NAME: Z:\00 ONGOING\00 JF PROJECTS\22-015.1 KAM HWY LANIAKEA\01 CAD\05-23-23 RVSD SHTNO\KHP-S0801-S0804 SHAFT.DWG PLOT TIME: 05-22-23, 5:14 PM)

LICENSED PROFESSIONAL ENGINEER
RUSS S. MIYAHARA
NO. 9444-S
HAWAII, U.S.A.

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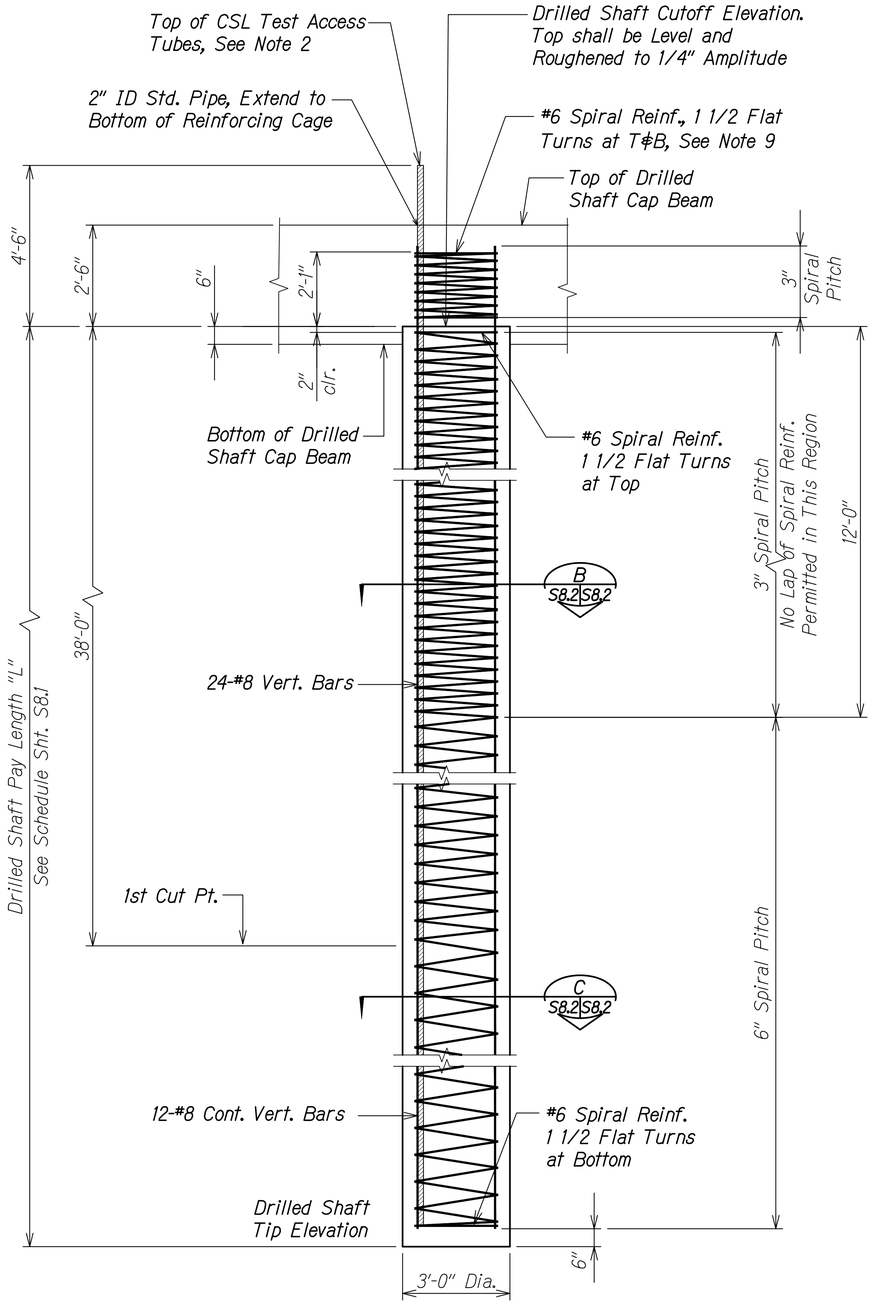
DRILLED SHAFT SCHEDULE

KAMEHAMEHA HIGHWAY DRAINAGE AND SAFETY IMPROVEMENTS
Vicinity of Laniakea Beach (MP 3.06 to MP 3.54)
Project No. 83B-01-09

Scale: As Noted Date: December 2022

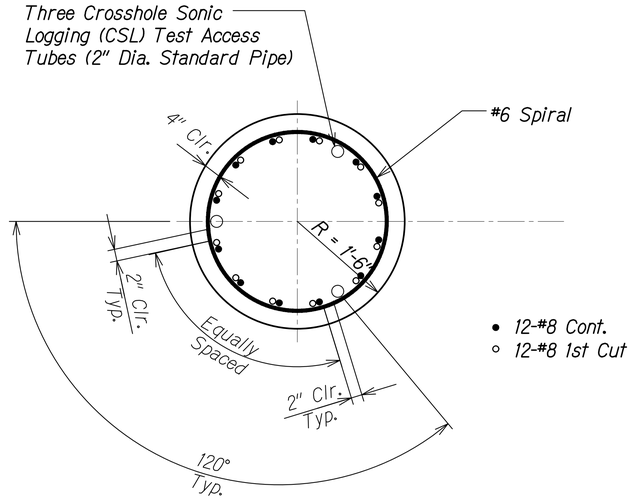
SHEET No. S8.1 OF 5 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83B-01-09	2023	172	231



PRODUCTION DRILLED SHAFT TYPE 3B ELEVATION

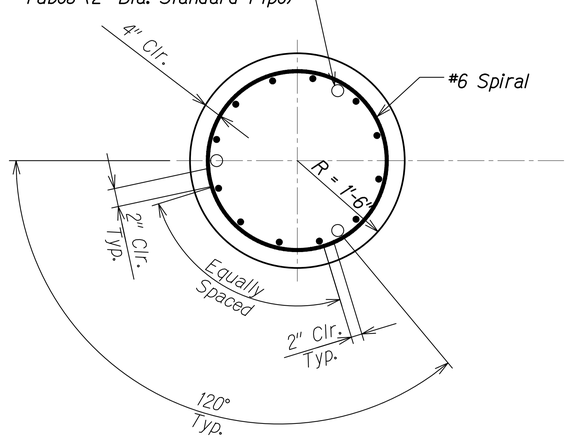
Scale: 1/2" = 1'-0" A S8.2 S8.2



12 Bundles of 2-#8 Vert. Bars (24-#8 Total)

SECTION B

Scale: 1" = 1'-0" B S8.2 S8.2



12-#8 Cont. Vert. Bars

SECTION C

Scale: 1" = 1'-0" C S8.2 S8.2

NOTES:

1. Crosshole Sonic Logging (CSL) testing shall be performed on every drilled shaft. Shafts indicating irregular CSL readings may be subjected to additional testing.
2. After CSL testing, a portion of the CSL test access tubes shall be removed in the drilled shaft cap beam to one inch above the drilled shaft cutoff elevation. Tubes shall be completely filled with non-shrink, non-metallic, cementitious grout of equal strength as drilled shaft prior to pouring the drilled shaft cap beam. See Structural General Notes for material requirements.
3. Lap splice length for #8 vert. bar shall be 4'-0". No lap splices of vert. bars are allowed in the upper 38'-0" of the drilled shaft.
4. Lapped splices shall have a minimum of 2'-0" vertically between splice points.
5. Staggered splice points for longitudinal reinforcing shall not be more than 50% of the total at any section normal to the axis of the shaft.
6. Lap splice length for #6 spirals shall be 3'-6" min. with a 135° bend at each end.
7. Each end of the spiral shall have 1 1/2 extra turns with a 135° hook around a vertical reinforcing bar.
8. Concrete or other non-corrosive spacing devices shall be used to maintain the reinforcement cage in position within the shaft.
9. #6 Spiral reinforcing in drilled shaft cap beam may be installed prior to drilled shaft cap beam pour.
10. Vertical shaft reinforcing shall be arranged with a template to avoid interference with horizontal reinforcing in the drilled shaft cap beam, see 2 S8.2 S8.4.
11. Spiral reinforcing steel shall be ASTM A1035 Type CS Grade 100. Vertical reinforcing steel shall be ASTM A615 Grade 60.
12. Condition at pier shown. For condition at abutments, see 1 S8.2 S8.4.
13. Temporary casing shall be used for all drilled shafts including the trial shaft and load test shaft. The Contractor shall provide procedures to use a temporary casing in the Drilled Shaft Installation Plan.

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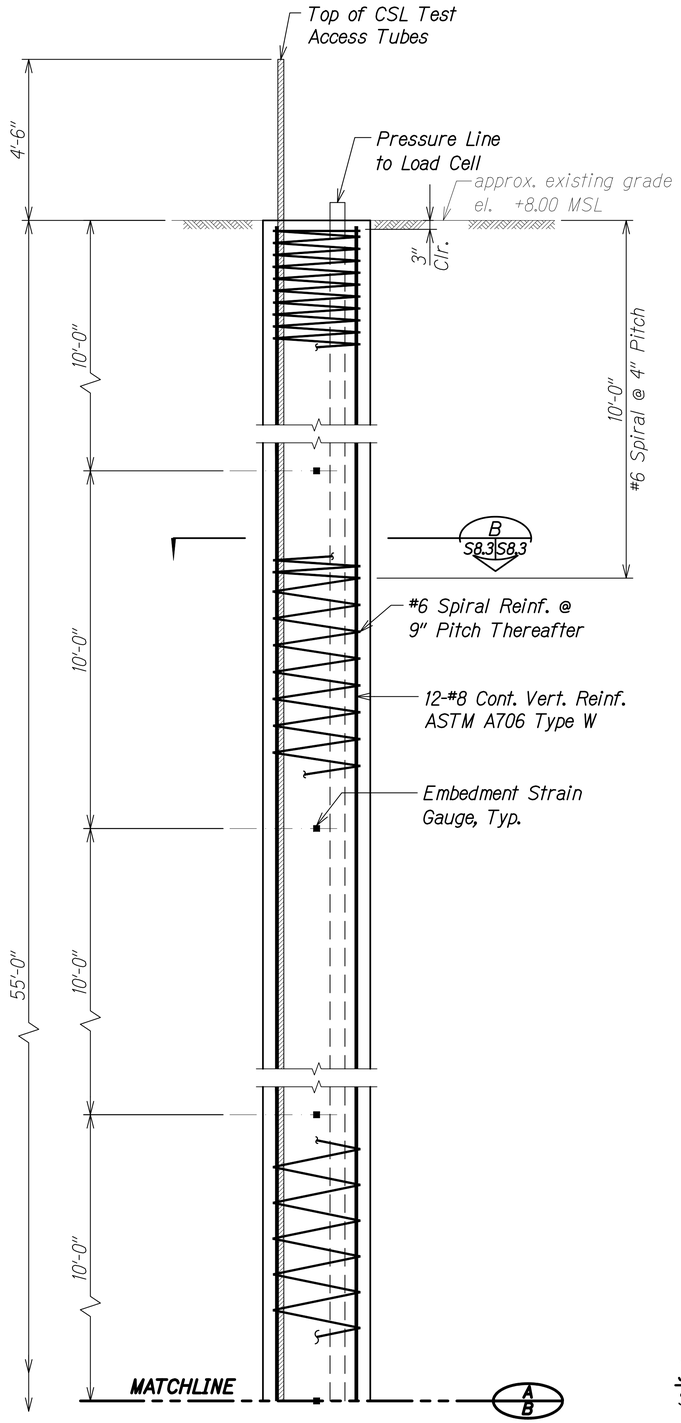
PRODUCTION DRILLED SHAFT TYPE 3B

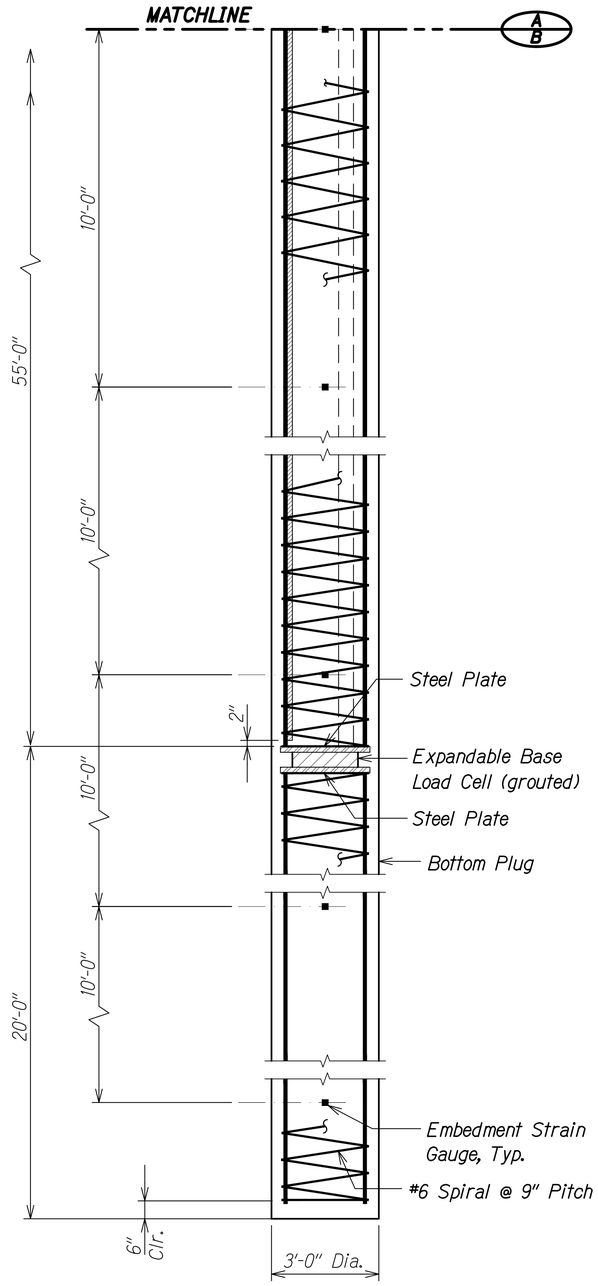
KAMEHAMEHA HIGHWAY DRAINAGE AND SAFETY IMPROVEMENTS
Vicinity of Laniakea Beach (MP 3.06 to MP 3.54)
Project No. 83B-01-09

Scale: As Noted Date: December 2022

SHEET No. S8.2 OF 5 SHEETS

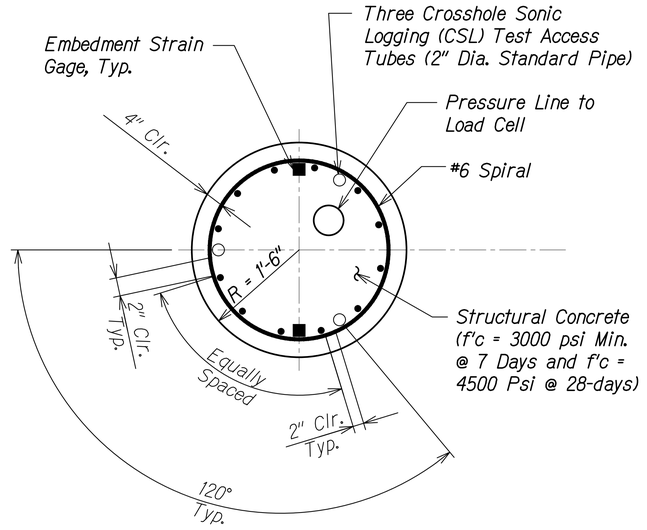
FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83B-01-09	2023	173	231





3'-0" DIA. LOAD TEST SHAFT ELEVATION (A S8.3 S8.3)

Scale: 1/2" = 1'-0"



12-#8 Cont. Vert. Bars
ASTM A706 Type W

SECTION (B S8.3 S8.3)

Scale: 1" = 1'-0"

NOTES:

1. Spiral reinforcing steel may be ASTM A615 Grade 60.
2. Temporary casing shall be used for all drilled shafts including the trial shaft and load test shaft. The Contractor shall provide procedures to use a temporary casing in the Drilled Shaft Installation Plan.

ORIGINAL PLAN	DATE
NOTE BOOK	SURVEY PLOTTED BY
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DRAWING NAME: Z:\00 ONGOING\00 JF PROJECTS\22-015.1 KAM HWY LANIAKEA\01 CAD\05-23-23 RVSD SHTNO\KHP-S0801-S0804 SHAFT.DWG PLOT TIME: 05-22-23, 5:15 PM

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NO. 9444-S
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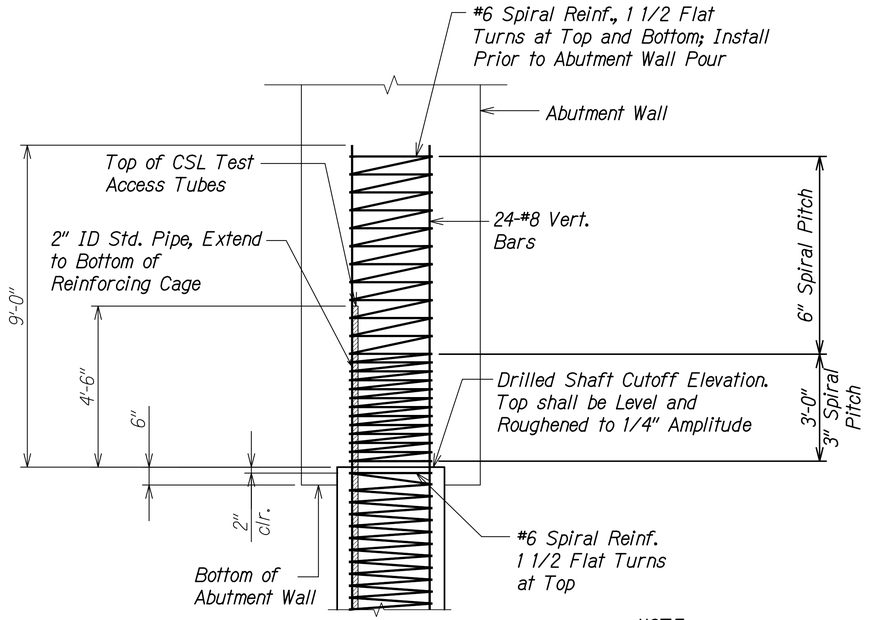
LOAD TEST SHAFT

KAMEHAMEHA HIGHWAY DRAINAGE AND SAFETY IMPROVEMENTS
Vicinity of Laniakea Beach (MP 3.06 to MP 3.54)
Project No. 83B-01-09

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SHEET No. S8.3 OF 5 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83B-01-09	2023	174	231



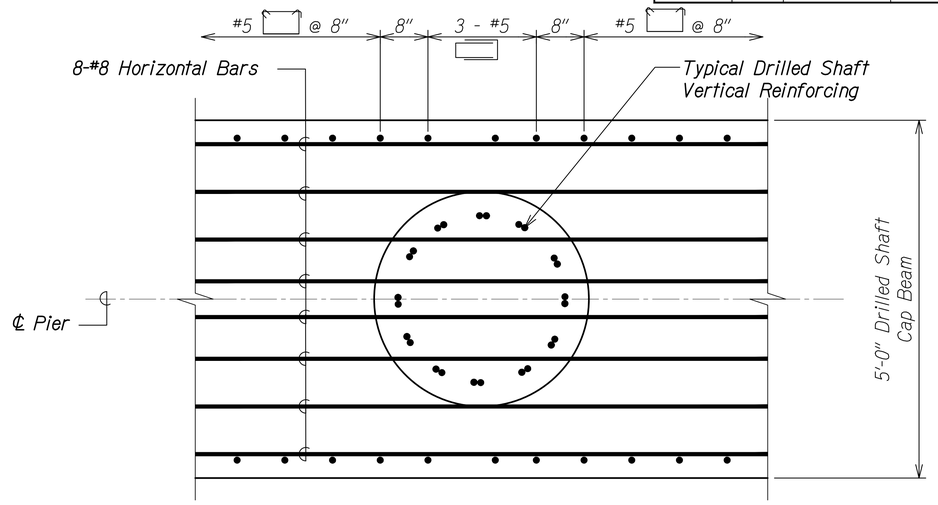
NOTE:

Condition at abutments for Production Drilled Shaft Type 3B shown at top of shaft. For complete shaft details, see Sht. S8.2.

PRODUCTION DRILLED SHAFT TYPE 3B AT ABUTMENT DETAIL

Scale: 1/2" = 1'-0"

1 S8.2 | S8.4



DETAIL

Scale: 1" = 1'-0"

2 S8.2 | S8.4

NOTE:

This detail is schematically drawn for the pier condition. Abutment condition is similar.

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DRILLED SHAFT DETAILS

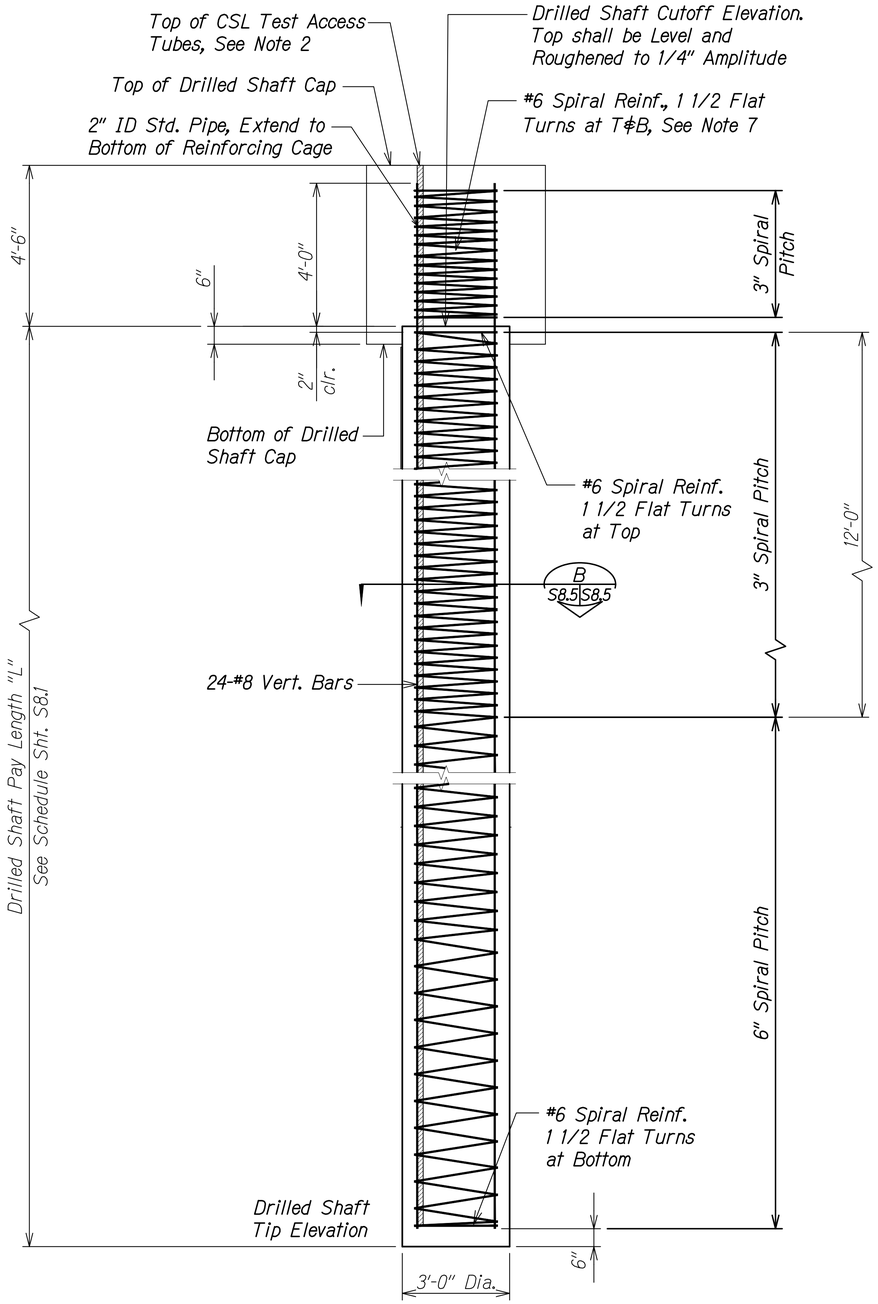
KAMEHAMEHA HIGHWAY DRAINAGE AND SAFETY IMPROVEMENTS
Vicinity of Laniakea Beach (MP 3.06 to MP 3.54)
Project No. 83B-01-09

Scale: As Noted Date: December 2022

SHEET No. S8.4 OF 5 SHEETS

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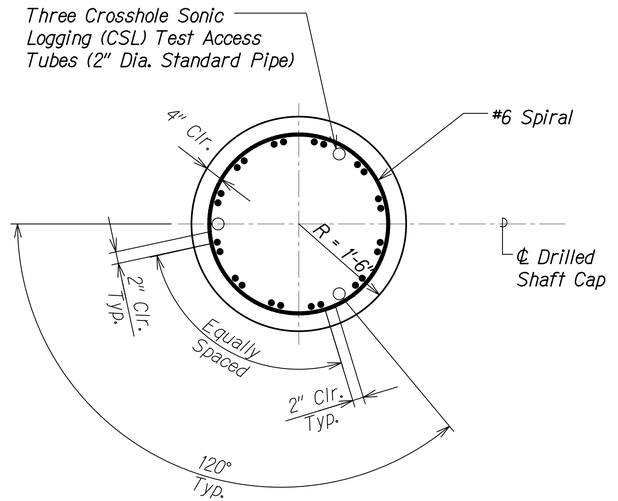
FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83B-01-09	2023	175	231



PRODUCTION DRILLED SHAFT TYPE 3W ELEVATION

Scale: 1/2" = 1'-0"

A S8.5 S8.5



12 Bundles of 2-#8 Vert. Bars (24-#8 Total)

SECTION B

Scale: 1" = 1'-0"

B S8.5 S8.5

NOTES:

1. Crosshole Sonic Logging (CSL) testing shall be performed on every drilled shaft. Shafts indicating irregular CSL readings may be subjected to additional testing.
2. After CSL testing, a portion of the CSL test access tubes shall be removed in the drilled shaft cap beam to one inch above the drilled shaft cutoff elevation. Tubes shall be completely filled with non-shrink, non-metallic, cementitious grout of equal strength as drilled shaft prior to pouring the drilled shaft cap. See Structural General Notes for material requirements.
3. Lap splice for vertical reinforcing is not permitted.
4. Lap splice length for #6 spirals shall be 3'-6" min. with a 135° bend at each end.
5. Each end of the spiral shall have 1 1/2 extra turns with a 135° hook around a vertical reinforcing bar.
6. Concrete or other non-corrosive spacing devices shall be used to maintain the reinforcement cage in position within the shaft.
7. #6 Spiral reinforcing in drilled shaft cap may be installed prior to drilled shaft cap pour.
8. Spiral reinforcing steel shall be ASTM A1035 Type CS Grade 100. Vertical reinforcing steel shall be ASTM A615 Grade 60.
9. Temporary casing shall be used for all drilled shafts including the trial shaft and load test shaft. The Contractor shall provide procedures to use a temporary casing in the Drilled Shaft Installation Plan.

ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
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DRAWING NAME: Z:\DO ONGOING\DO JF PROJECTS\22-015.1 KAM HWY LANIAKEA\01 CAD\05-23-23 RVSD SHTNO\KHP-S0805 WW SHAFT.DWG PLOT TIME: 05-22-23, 5:16 PM)

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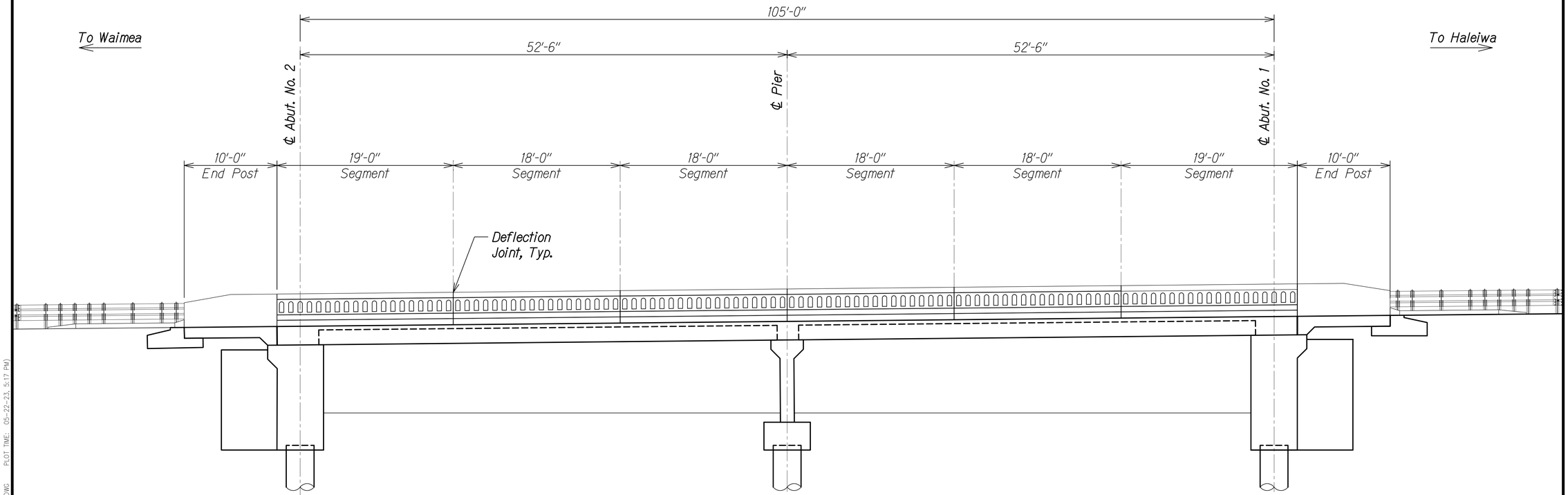
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

PRODUCTION DRILLED SHAFT TYPE 3W

KAMEHAMEHA HIGHWAY DRAINAGE AND SAFETY IMPROVEMENTS
Vicinity of Laniakea Beach (MP 3.06 to MP 3.54)
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FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83B-01-09	2023	176	231



NOTE:

Makai elevation is shown.
Mauka elevation is similar.

RAILING ELEVATION

Scale: 3/16" = 1'-0"

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	DESIGNED BY	
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	CHECKED BY	

DRAWING NAME: Z:\00 ONGOING\00 JF PROJECTS\22-015.1 KAM HWY LANIAKEA\01 CAD\05-23-23 RVSD SHTNO\KHP-S0901 RAILG ELEV.DWG PLOT TIME: 05-22-23, 5:17 PM)

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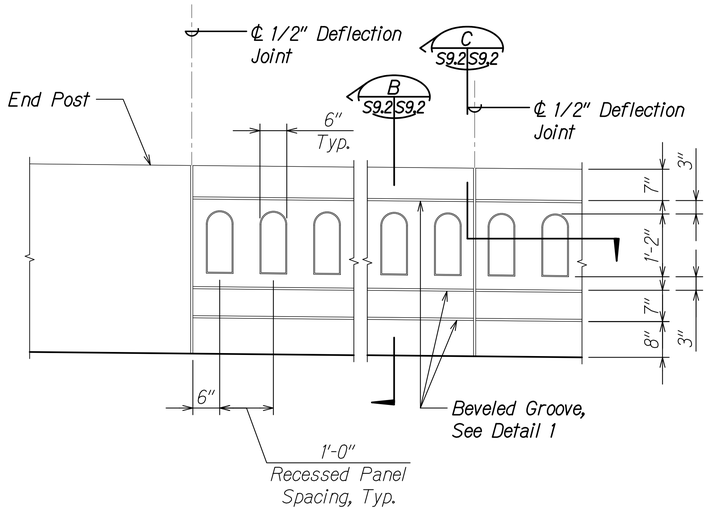
BRIDGE RAILING ELEVATION

KAMEHAMEHA HIGHWAY DRAINAGE AND SAFETY IMPROVEMENTS
Vicinity of Laniakea Beach (MP 3.06 to MP 3.54)
Project No. 83B-01-09

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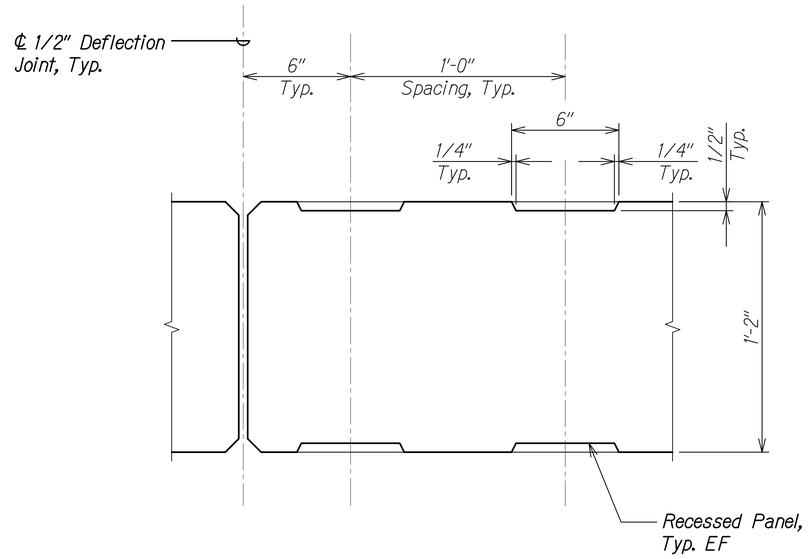
SHEET No. S9.1 OF 3 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83B-01-09	2023	177	231



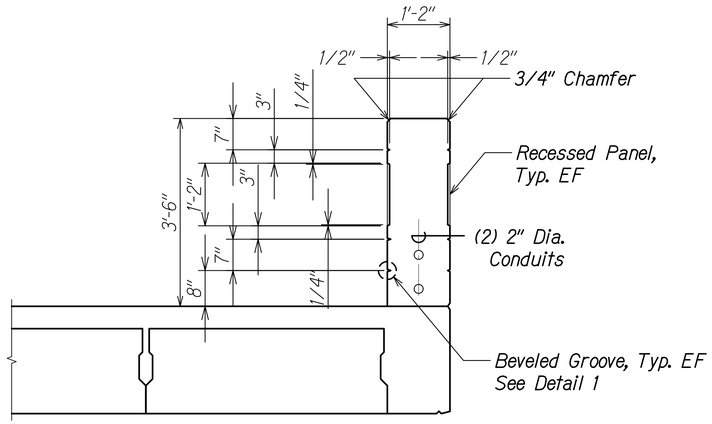
PARTIAL BRIDGE RAILING ELEVATION (A S9.2 S9.2)

Scale: 3/4" = 1'-0"



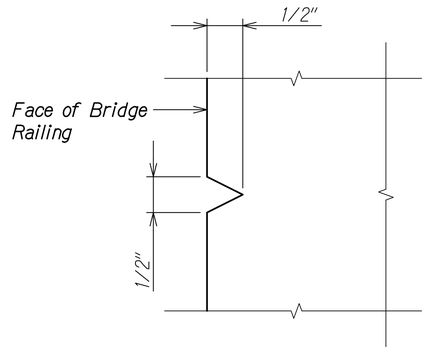
SECTION (C S9.2 S9.2)

Scale: 3" = 1'-0"



BRIDGE RAILING SECTION (B S9.2 S9.2)

Scale: 3/4" = 1'-0"



BEVELED GROOVE DETAIL (1 S9.2 S9.2)

Scale: 1" = 1"

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

DRAWING NAME: Z:\00 ONGOING\00 JF PROJECTS\22-015.1 KAM HWY LANIAKEA\01 CAD\05-23-23 RVSD SHTNO\KHP-S0902 RAILG SECT.DWG PLOT TIME: 05-22-23, 5:17 PM)

LICENSED PROFESSIONAL ENGINEER
RUSS S. MIYAHARA
NO. 9444-S
HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.

SIGNATURE 4-30-24 EXPIRATION DATE OF THE LICENSE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

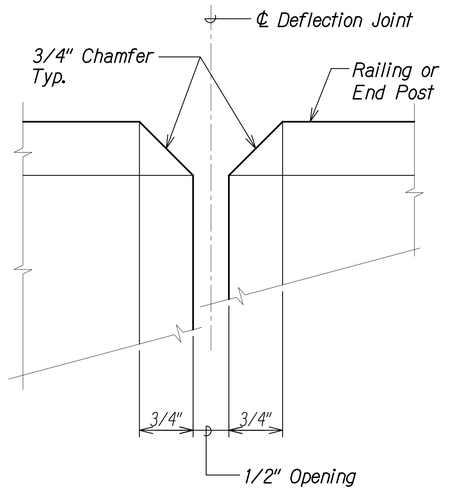
BRIDGE RAILING ELEVATION, SECTIONS, AND DETAIL

KAMEHAMEHA HIGHWAY DRAINAGE AND SAFETY IMPROVEMENTS
Vicinity of Laniakea Beach (MP 3.06 to MP 3.54)
Project No. 83B-01-09

Scale: As Noted Date: December 2022

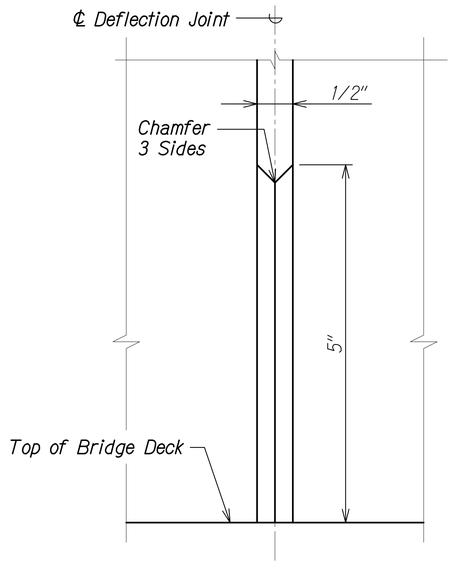
SHEET No. S9.2 OF 3 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83B-01-09	2023	178	231



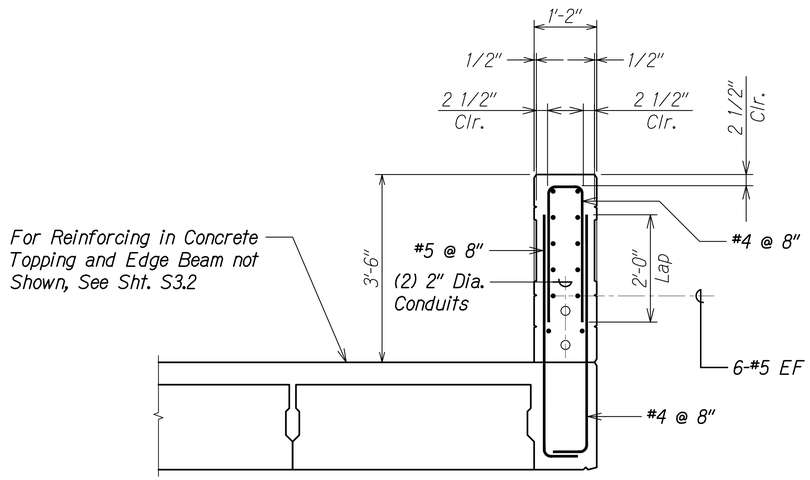
DEFLECTION JOINT DETAIL 1 (S9.3 | S9.3)

Scale: 1" = 1"



DEFLECTION JOINT DETAIL 2 (S9.3 | S9.3)

Scale: 1" = 1"



SECTION A (S9.3 | S9.3)

Scale: 3/4" = 1'-0"

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

DRAWING NAME: Z:\00 ONGOING\00 JF PROJECTS\22-015.1 KAM HWY LANIAKEA\01 CAD\05-23-23 RVSD SHTNO\KHP-S0903 RAILG DET.DWG PLOT TIME: 05-22-23, 5:18 PM)

RUSS S. MIYAHARA
LICENSED PROFESSIONAL ENGINEER
NO. 9444-S
HAWAII, U.S.A.

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SIGNATURE 4-30-24 EXPIRATION DATE OF THE LICENSE

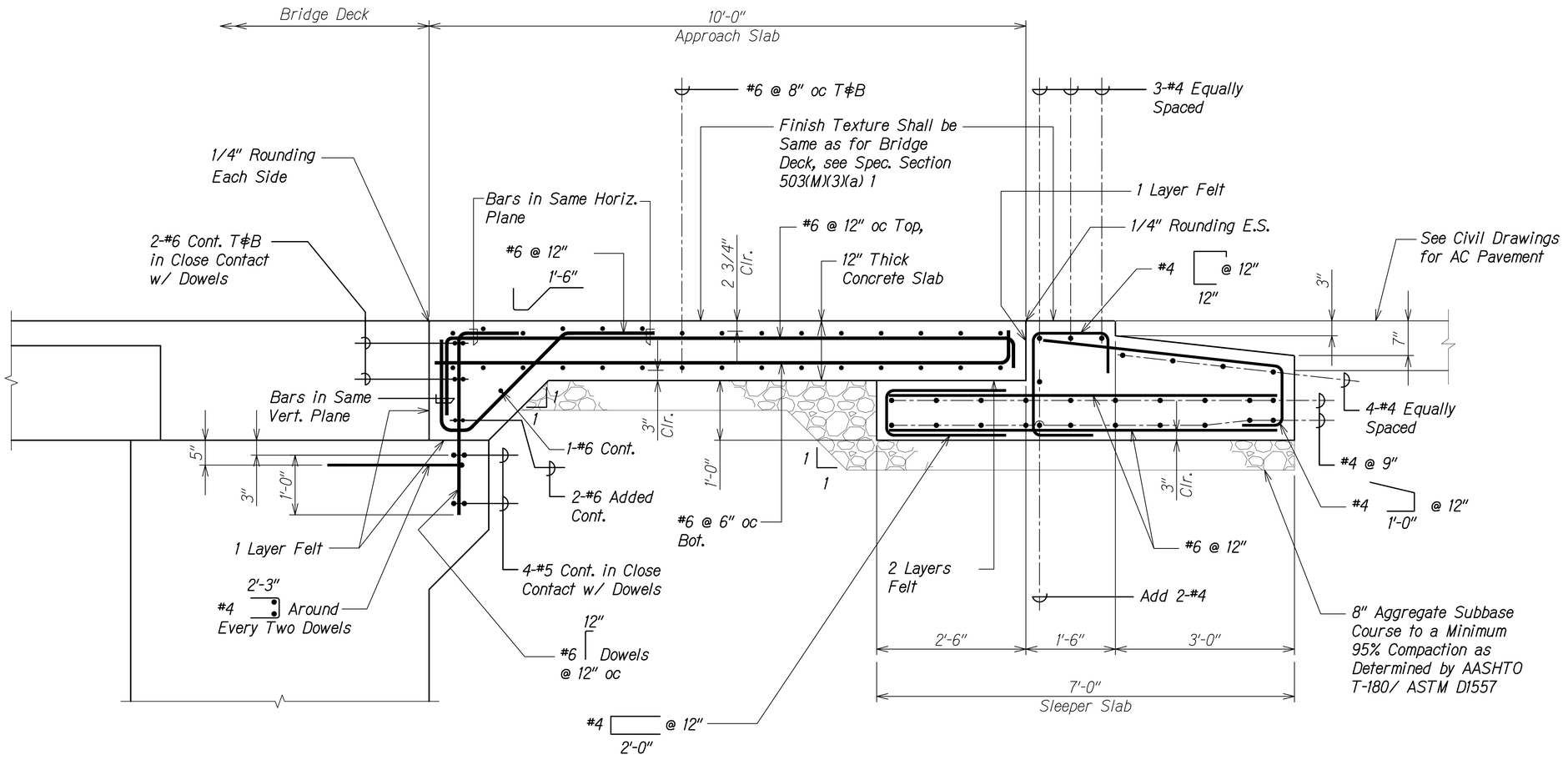
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

BRIDGE RAILING SECTION AND DETAILS

KAMEHAMEHA HIGHWAY DRAINAGE AND SAFETY IMPROVEMENTS
Vicinity of Laniakea Beach (MP 3.06 to MP 3.54)
Project No. 83B-01-09

Scale: As Noted Date: December 2022

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83B-01-09	2023	179	231



APPROACH SLAB AND SLEEPER SLAB SECTION

Scale: 1" = 1'-0"

A S10.1 | S10.1

NOTES:

1. Approach slab and sleeper slab finish texture shall be the same as the bridge deck finish texture.
2. Aggregate subbase course shall be incidental to the measurement and payment for concrete for approach slabs and sleeper slabs.

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

DRAWING NAME: Z:\00 ONGOING\00 JF PROJECTS\22-015.1 KAM HWY LANIAKEA\01 CAD\05-23-23 RVSD SHTNO\KHP-S1001 APPROACH.DWG PLOT TIME: 05-22-23, 5:18 PM)

RUSS S. MIYAHARA LICENSED PROFESSIONAL ENGINEER NO. 9444-S HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.

SIGNATURE 4-30-24 EXPIRATION DATE OF THE LICENSE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

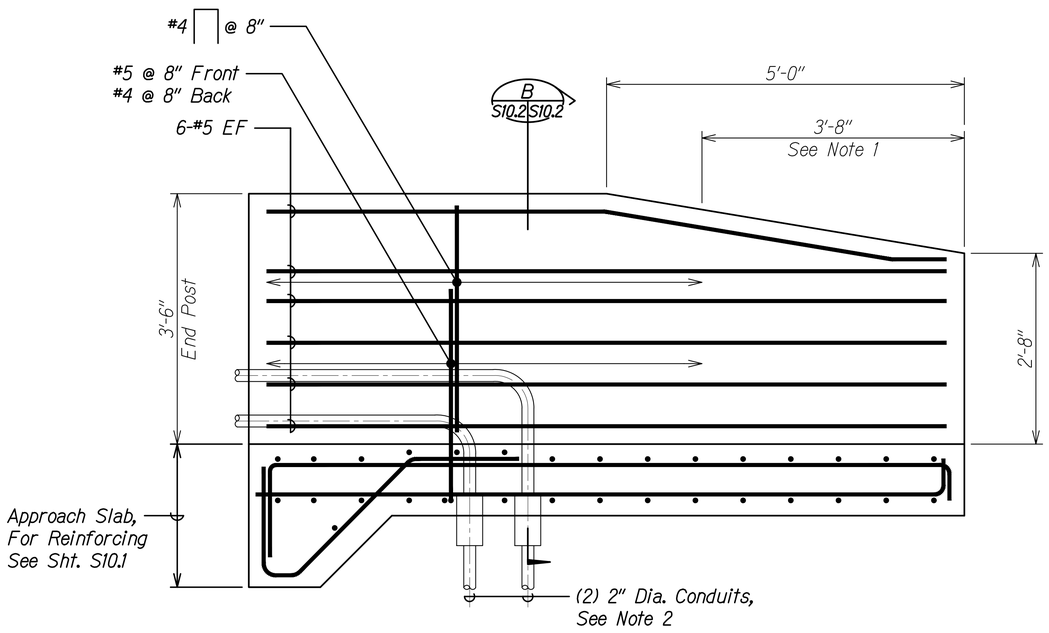
APPROACH SLAB AND SLEEPER SLAB SECTION

KAMEHAMEHA HIGHWAY DRAINAGE AND SAFETY IMPROVEMENTS
Vicinity of Laniakea Beach (MP 3.06 to MP 3.54)
Project No. 83B-01-09

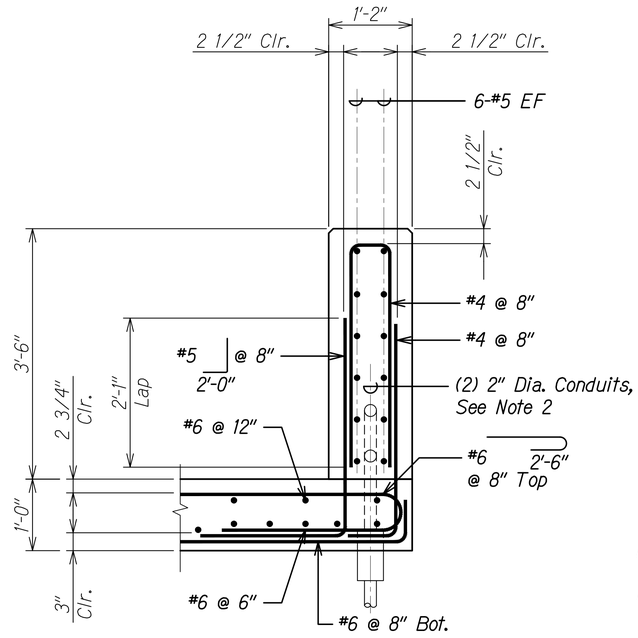
Scale: As Noted Date: December 2022

SHEET No. S10.1 OF 7 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83B-01-09	2023	180	231



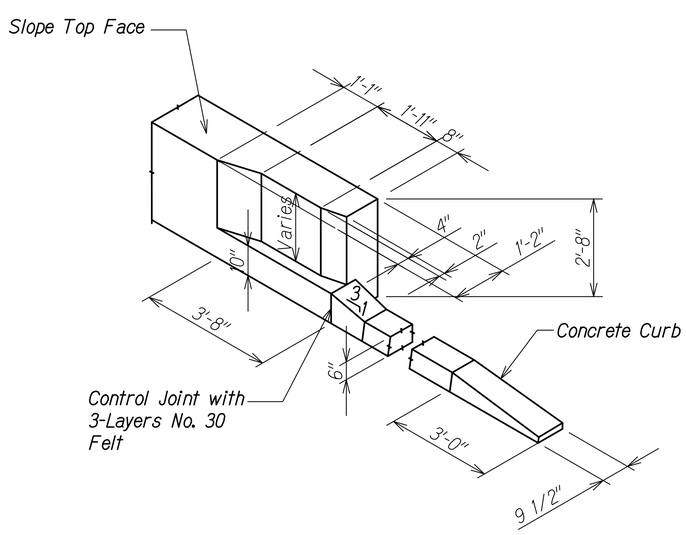
SECTION A
Scale: 1" = 1'-0" S10.2 | S10.2



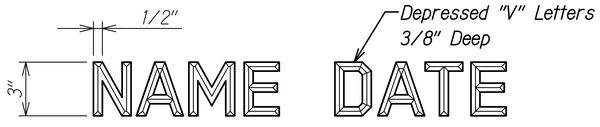
SECTION B
Scale: 1" = 1'-0" S10.2 | S10.2

NOTES:

1. Reinforcing for 3'-8" portion of end post not shown. See Shts. S10.3 to S10.4.
2. For conduit penetration detail under approach slab, see Electrical drawings. Adjust reinforcing as required.



END POST DETAIL
No Scale
1 S10.2 | S10.2



Name of Bridge Date of Year Built

NOTES:

1. Exact details and spacing of letter and figures and location shall be as directed by the Engineer. Gothic letters and figures approximating the dimensions shown will be acceptable if approved by the Engineer.
2. Name & date shall be place on the trailing (exit) end post on each side of bridge.
3. Unless otherwise directed by the Engineer, The name of the bridge shall be "LAUHULU STREAM BRIDGE". The year shall be the year at completion.

TYPICAL DETAIL OF LETTERS AND FIGURES

BRIDGE IDENTIFICATION DETAIL
Scale: 3" = 1'-0"
2 S10.2 | S10.2

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

DRAWING NAME: Z:\GO ONGOING\GO0 JF PROJECTS\22-015.1 KAM HWY LANIAKEA\01 CAD\05-23-23 RVSD SHTNO\KHP-S1002 END POST SECT.DWG PLOT TIME: 05-22-23, 5:19 PM)

RUSS S. MIYAHARA
LICENSED PROFESSIONAL ENGINEER
NO. 9444-S
HAWAII, U.S.A.
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.
SIGNATURE 4-30-24 EXPIRATION DATE OF THE LICENSE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

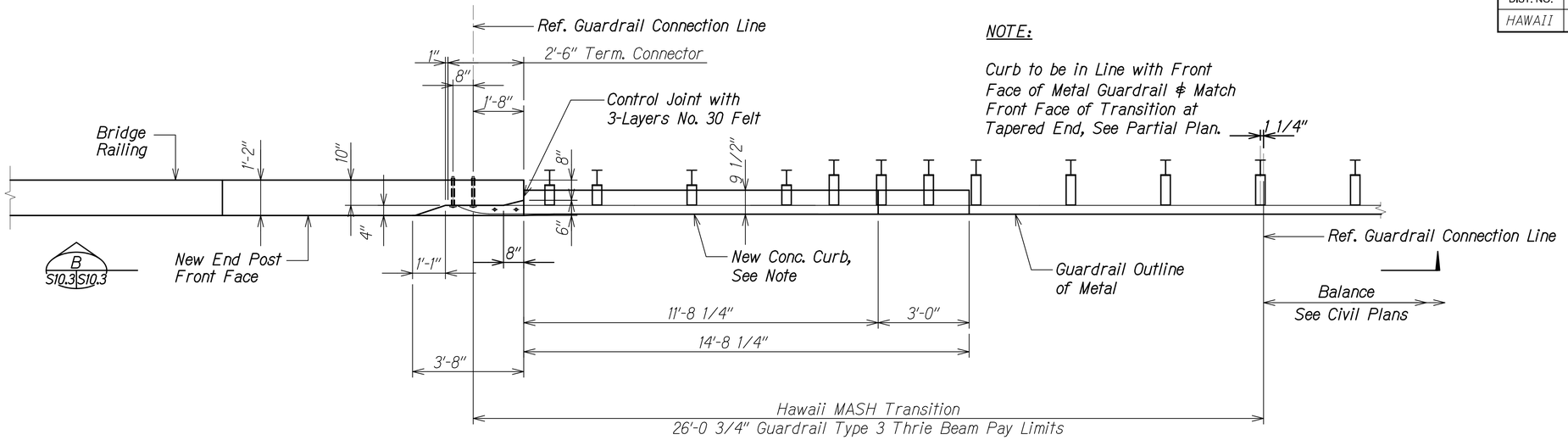
END POST SECTIONS AND DETAILS

KAMEHAMEHA HIGHWAY DRAINAGE AND SAFETY IMPROVEMENTS
Vicinity of Laniakea Beach (MP 3.06 to MP 3.54)
Project No. 83B-01-09

Scale: As Noted Date: December 2022

SHEET No. S10.2 OF 7 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83B-01-09	2023	181	231

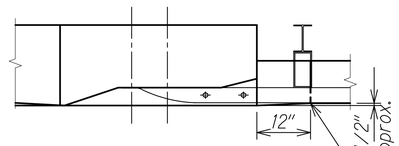


NOTE:

Curb to be in Line with Front Face of Metal Guardrail & Match Front Face of Transition at Tapered End, See Partial Plan.

END POST AND THRIE BEAM PLAN

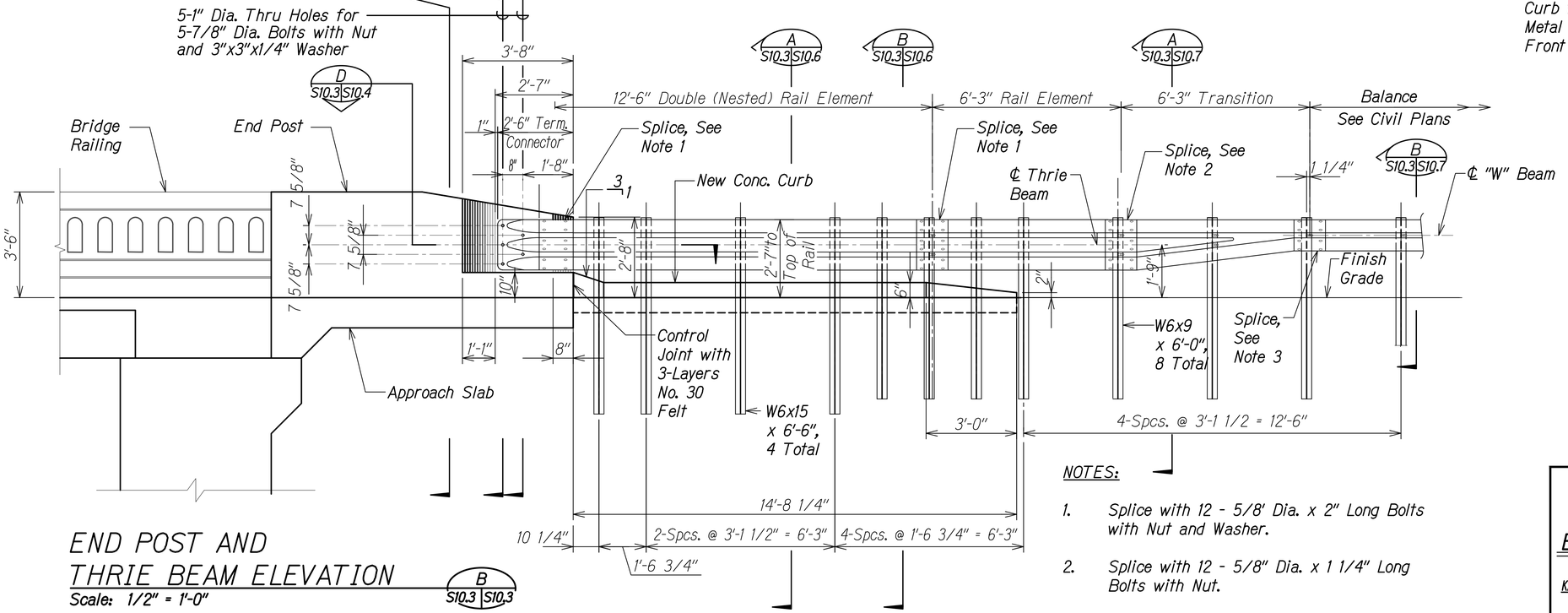
Scale: 1/2" = 1'-0"



Curb to be in Line with Front Face of Metal Guardrail and Transitioned to Match Front Face of Concrete Transition

PARTIAL PLAN

Scale: 3/4" = 1'-0"



END POST AND THRIE BEAM ELEVATION

Scale: 1/2" = 1'-0"

B S10.3 S10.3

NOTES:

1. Splice with 12 - 5/8' Dia. x 2" Long Bolts with Nut and Washer.
2. Splice with 12 - 5/8" Dia. x 1 1/4" Long Bolts with Nut.
3. Splice with 8 - 5/8" Dia. x 1 1/4" Long Bolts with Nut.

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

DRAWING NAME: Z:\00 ONGOING\00 JF PROJECTS\22-015.1 KAM HWY LANIAKEA\01 CAD\05-23-23 RVSD SHTNO\KHP-S1003 END POST PLAN ELEV.DWG PLOT TIME: 05-22-23, 5:19 PM)

RUSS S. MIYAHARA LICENSED PROFESSIONAL ENGINEER NO. 9444-S HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.

4-30-24
SIGNATURE DATE OF EXPIRATION OF THE LICENSE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

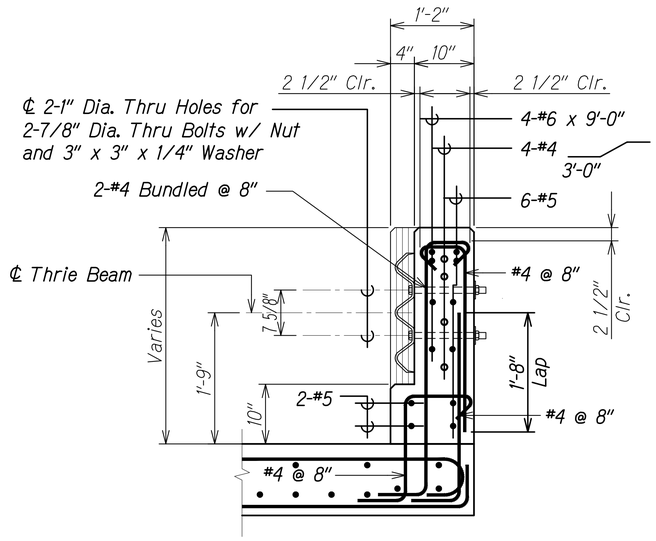
END POST PLAN AND ELEVATION

KAMEHAMEHA HIGHWAY DRAINAGE AND SAFETY IMPROVEMENTS
Vicinity of Laniakea Beach (MP 3.06 to MP 3.54)
Project No. 83B-01-09

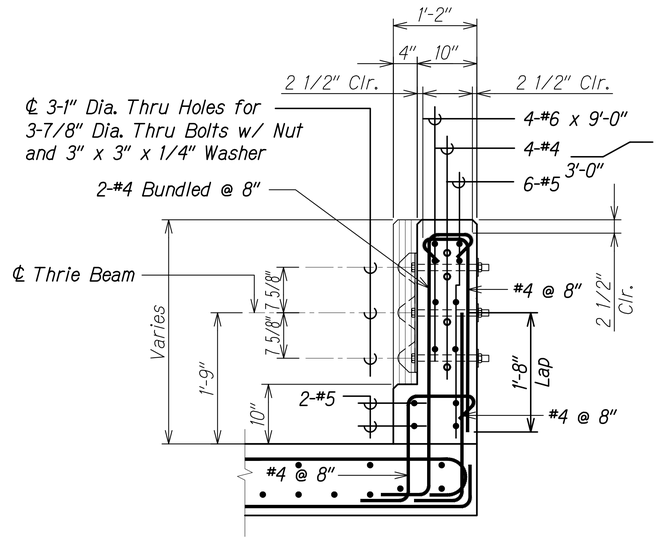
Scale: As Noted Date: December 2022

SHEET No. S10.3 OF 7 SHEETS

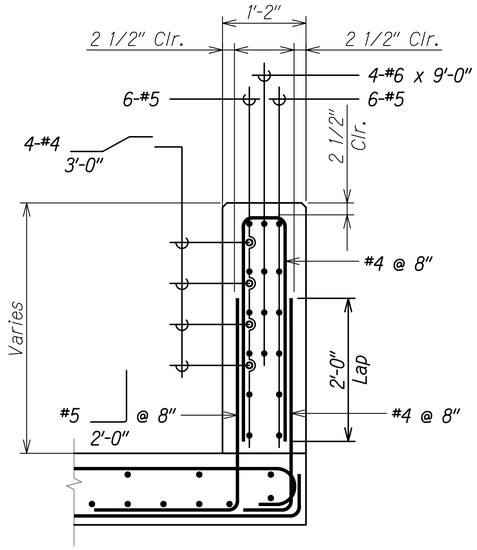
FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83B-01-09	2023	182	231



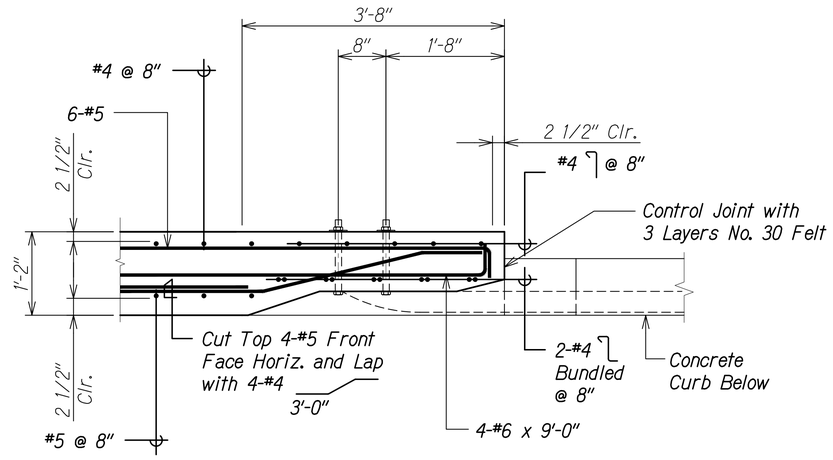
SECTION A
Scale: 1" = 1'-0" S10.3 S10.4



SECTION B
Scale: 1" = 1'-0" S10.3 S10.4



SECTION C
Scale: 1" = 1'-0" S10.3 S10.4



SECTION D
Scale: 1" = 1'-0" S10.3 S10.4

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

DRAWING NAME: Z:\00 ONGOING\00 JF PROJECTS\22-015.1 KAM HWY LANIAKEA\01 CAD\05-23-23 RVSD SHTNO\KHP-S1004 END POST SECT.DWG PLOT TIME: 05-22-23, 5:20 PM)

RUSS S. MIYAHARA
LICENSED PROFESSIONAL ENGINEER
NO. 9444-S
HAWAII, U.S.A.

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4-30-24
SIGNATURE EXPIRATION DATE OF THE LICENSE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

END POST SECTIONS

KAMEHAMEHA HIGHWAY DRAINAGE AND SAFETY IMPROVEMENTS
Vicinity of Laniakea Beach (MP 3.06 to MP 3.54)
Project No. 83B-01-09

Scale: As Noted Date: December 2022

SHEET No. S10.4 OF 7 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83B-01-09	2023	183	231

NOTES:

A. The work necessary to connect guardrail to the concrete end post shall include all labor, materials, tools, equipment and incidentals necessary to complete the work and will not be paid for separately.

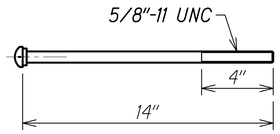
B. Lap terminal connector and rail elements in the direction of traffic to prevent snagging.

C. Bolts shall have sufficient length when installed to ensure that the nut is at least flush but should not project more than 1/4". The Contractor will not be allowed to cut, grind or otherwise alter the bolt to meet this requirement unless it is done during the fabrication of the bolt prior to galvanizing.

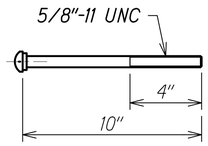
D. The first 26'-0 3/4" of guardrail adjoining the "Terminal Connector" shall be placed tangent to the concrete transition front face or parallel to the roadway, unless conditions at the site renders it impossible to do so. Flare point to be determined in field.

E. Head of all bolts shall be placed on the traffic side of the rail.

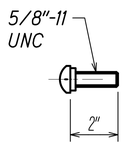
F. All W6x9 and W6x15 guardrail posts shall be clearly stamped during fabrication "W6x9" or "W6x15", respectively, on each post.



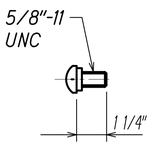
5/8"-11 UNC, 14" Long Guardrail Bolt



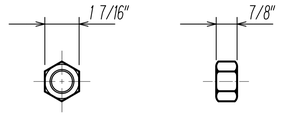
5/8"-11 UNC, 10" Long Guardrail Bolt



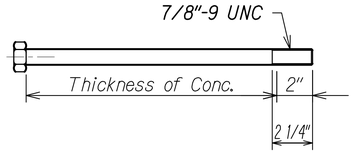
5/8"-11 UNC, 2" Long Guardrail Bolt



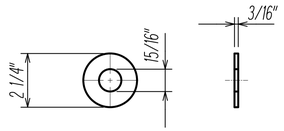
5/8"-11 UNC, 1 1/4" Long Guardrail Bolt



7/8"-9 UNC Heavy Hex Nut



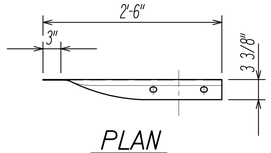
7/8"-9 UNC
Heavy Hex Head Bolt



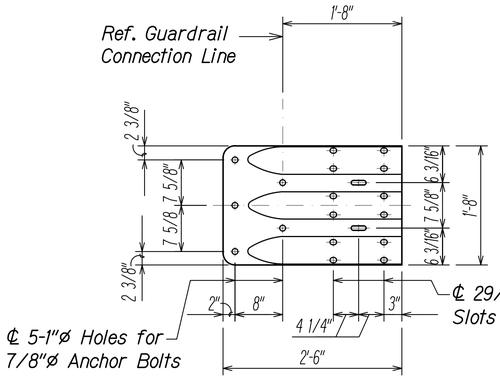
5/8" Dia.
Plain USS Washer



5/8-11 UNC Heavy Hex Nut



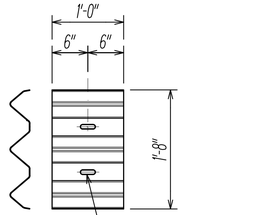
PLAN



ELEVATION

TERMINAL CONNECTOR

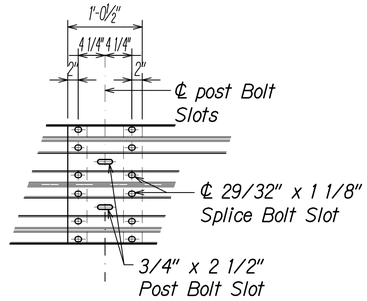
Scale: 1" = 1'-0"



(Use at posts where splices do not occur)

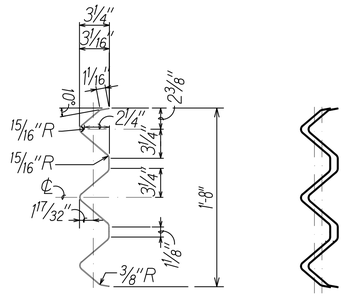
BACKUP PLATE

Scale: 1" = 1'-0"



RAIL SPLICE

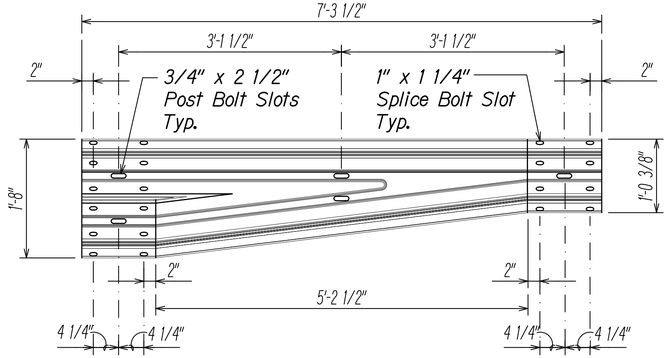
Scale: 1" = 1'-0"



SINGLE DOUBLE

SECTION THRU RAIL ELEMENT

Scale: 1 1/2" = 1'-0"



TRANSITION SECTION

Scale: 1" = 1'-0"

ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
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DRAWING NAME: Z:\00 ONGOING\00 JF PROJECTS\22-015.1 KAM HWY LANIAKEA\01 CAD\05-23-23 RVSD SHTNO\KHP-S1005 GRAIL DTLS.DWG PLOT TIME: 05-22-23, 5:21 PM)

RUSS S. MIYAHARA LICENSED PROFESSIONAL ENGINEER NO. 9444-S HAWAII, U.S.A.

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STATE OF HAWAII
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HIGHWAYS DIVISION

METAL GUARDRAIL TYPE 3 THRIE BEAM AND APPURTENANCES DETAILS

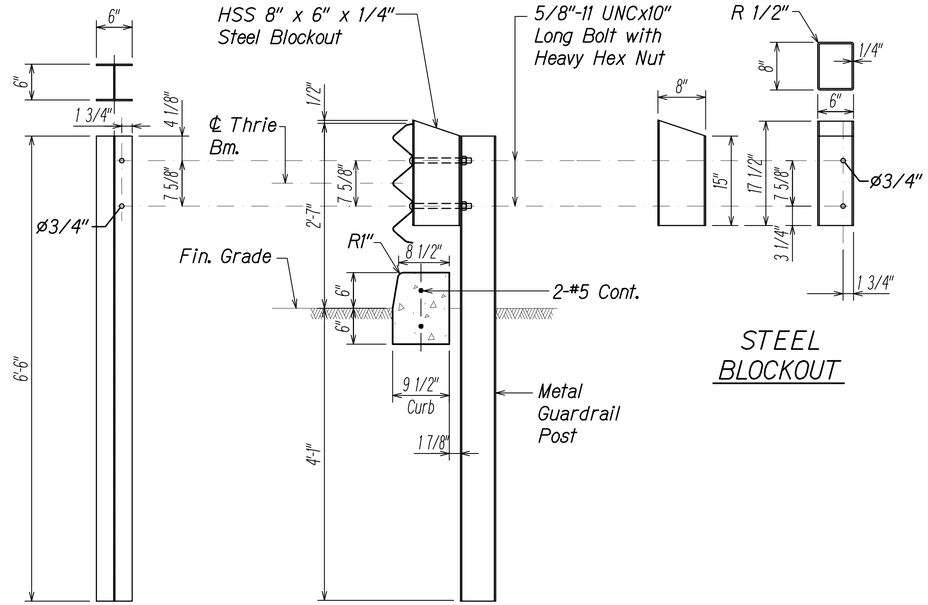
KAMEHAMEHA HIGHWAY DRAINAGE AND SAFETY IMPROVEMENTS
Vicinity of Laniakea Beach (MP 3.06 to MP 3.54)
Project No. 83B-01-09

Scale: As Noted Date: December 2022

SHEET No. S10.5 OF 7 SHEETS

METAL GUARDRAIL TYPE 3 THRIE BEAM AND APPURTENANCES DETAILS

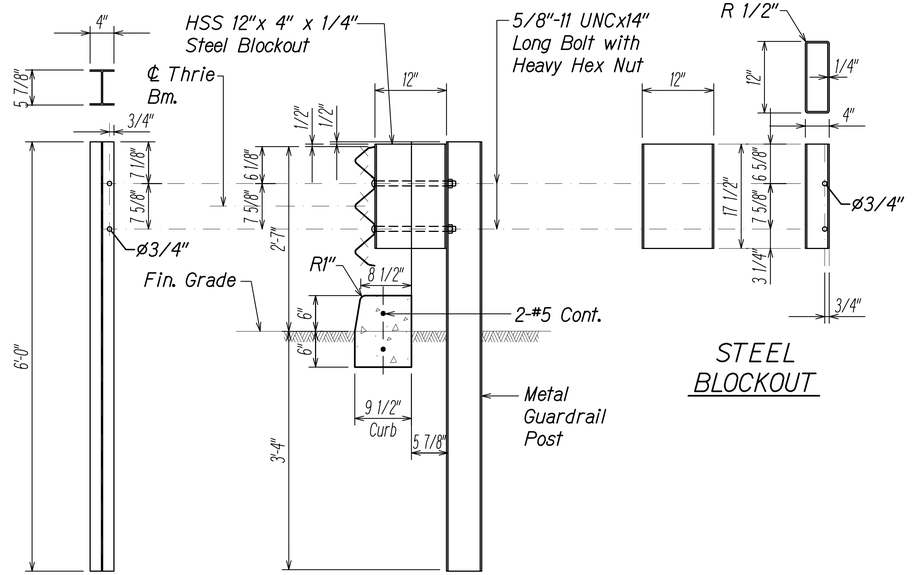
FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83B-01-09	2023	184	231



W6x15 POST

STEEL BLOCKOUT

SECTION A
Scale: 1" = 1'-0"
S10.3 | S10.6



W6x9 POST

STEEL BLOCKOUT

SECTION B
Scale: 1" = 1'-0"
S10.3 | S10.6

ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
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DRAWING NAME: Z:\00 ONGOING\00 JF PROJECTS\22-015.1 KAM HWY LANIAKEA\01 CAD\05-23 RVSD SHTNO\KHP-S1005 GRAIL DTLS.DWG PLOT TIME: 05-22-23, 5:21 PM)

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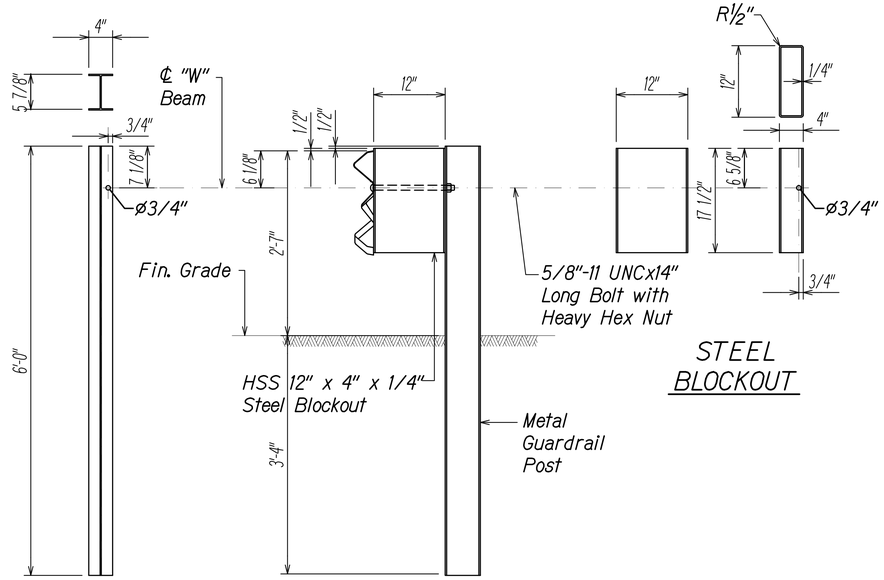
METAL GUARDRAIL TYPE 3 THRIE BEAM SECTIONS AND DETAILS

KAMEHAMEHA HIGHWAY DRAINAGE AND SAFETY IMPROVEMENTS
Vicinity of Laniakea Beach (MP 3.06 to MP 3.54)
Project No. 83B-01-09

Scale: As Noted Date: December 2022

SHEET No. S10.6 OF 7 SHEETS

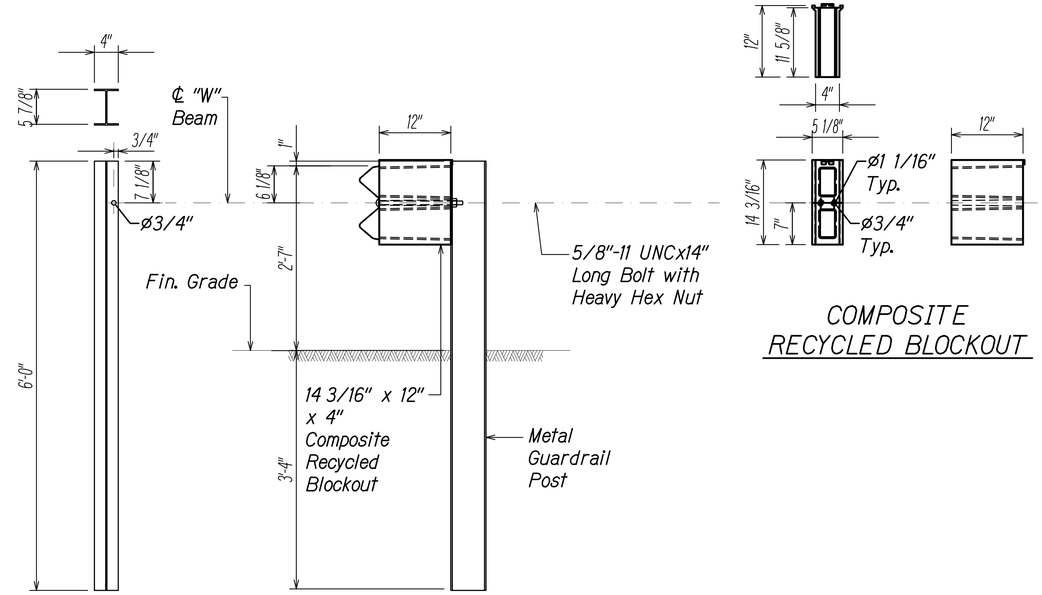
FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83B-01-09	2023	185	231



W6x9 POST

STEEL BLOCKOUT

SECTION A
Scale: 1" = 1'-0"
S10.3 | S10.7



W6x9 POST

COMPOSITE RECYCLED BLOCKOUT

SECTION B
Scale: 1" = 1'-0"
S10.3 | S10.7

ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
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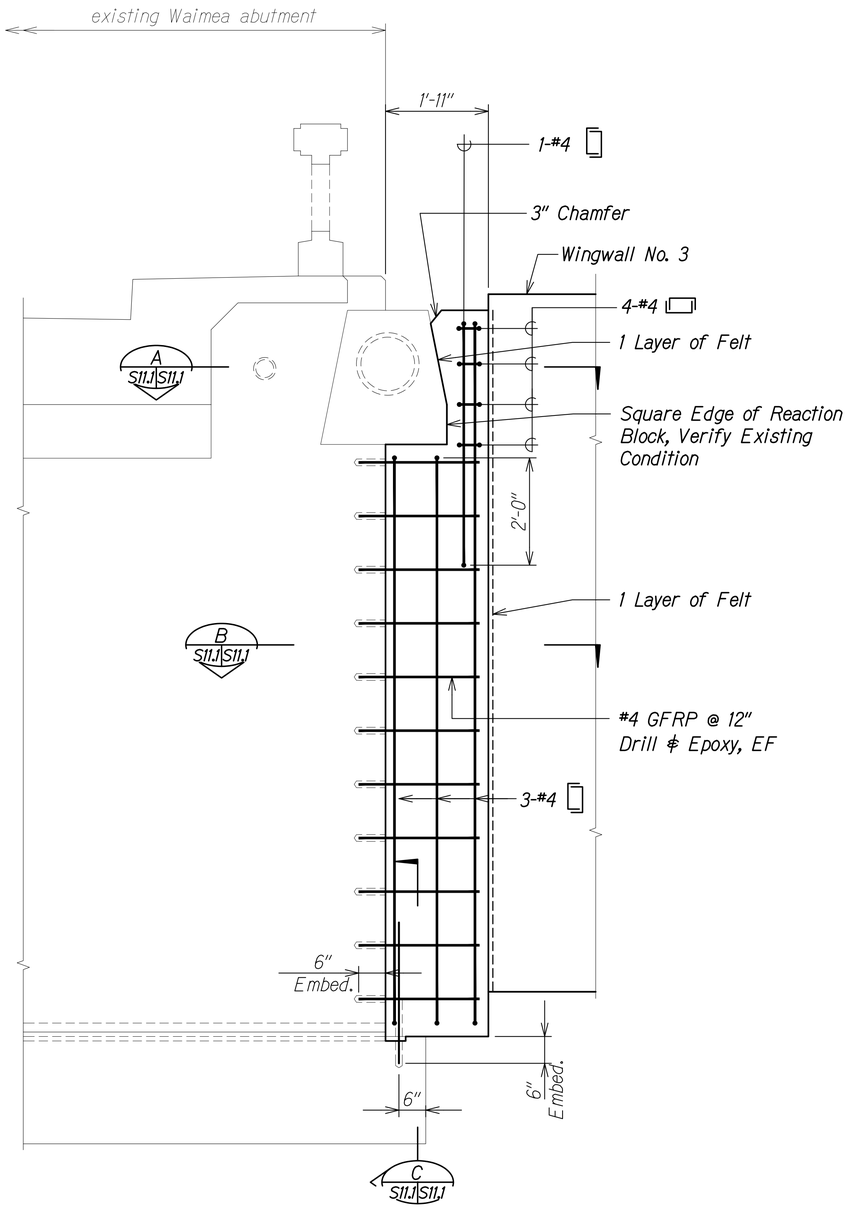
METAL GUARDRAIL TYPE 3 THRIE BEAM SECTIONS AND DETAILS

KAMEHAMEHA HIGHWAY DRAINAGE AND SAFETY IMPROVEMENTS
Vicinity of Laniakea Beach (MP 3.06 to MP 3.54)
Project No. 83B-01-09

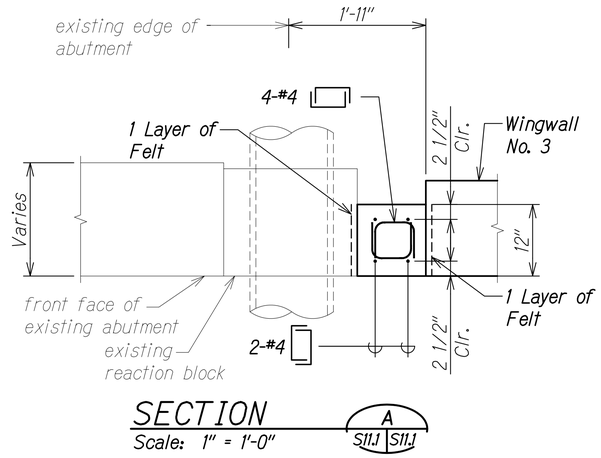
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SHEET No. S10.7 OF 7 SHEETS

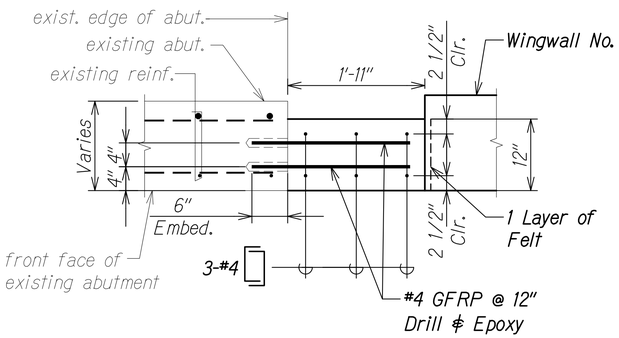
FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83B-01-09	2023	186	231



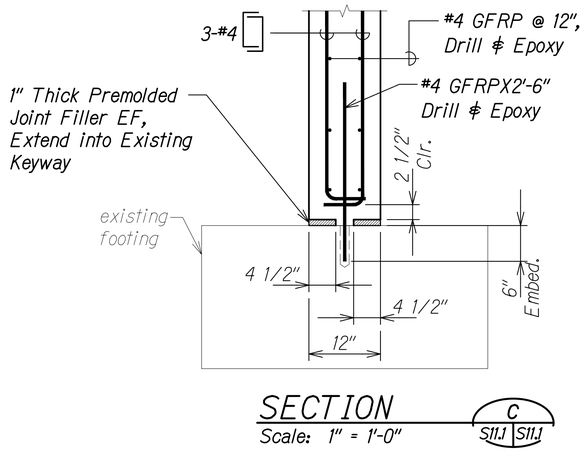
ELEVATION
Scale: 3/4" = 1'-0"



SECTION
Scale: 1" = 1'-0"
A S11.1 S11.1



SECTION
Scale: 1" = 1'-0"
B S11.1 S11.1



SECTION
Scale: 1" = 1'-0"
C S11.1 S11.1

NOTES:

1. Existing Waimea abutment shown. Wall extension for existing Haleiwa abutment similar.
2. Existing concrete to be drilled and epoxied shall be cleaned and roughened to 1/4" amplitude prior to pouring wall extension.

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STATE OF HAWAII
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WALL EXTENSION ELEVATION AND SECTIONS

KAMEHAMEHA HIGHWAY DRAINAGE AND SAFETY IMPROVEMENTS
Vicinity of Laniakea Beach (MP 3.06 to MP 3.54)
Project No. 83B-01-09

Scale: As Noted Date: December 2022

SHEET No. S11.1 OF 1 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83B-01-09	2023	187	231

CONSTRUCTION SEQUENCE:

01 Construct trial shaft and load test shaft.

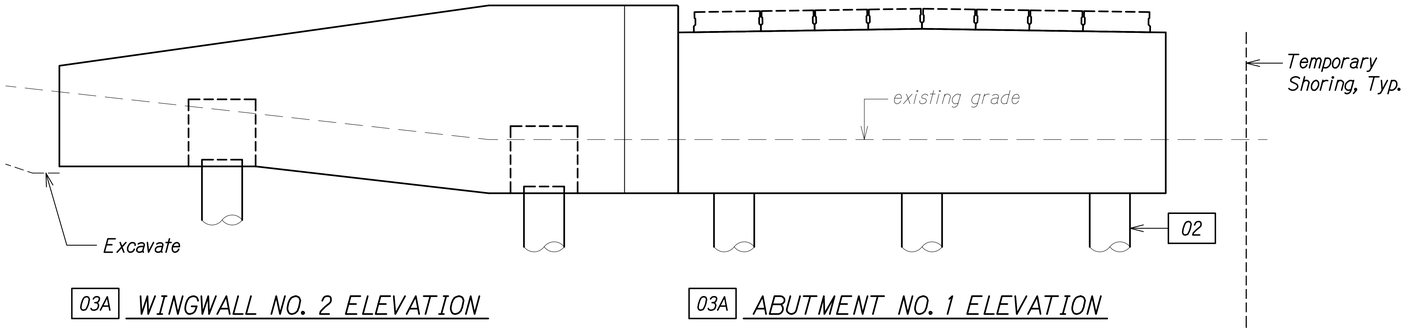
02 Construct drilled shafts for abutments, pier, and wingwalls.

03 Construct abutments, mauka wingwalls, and pier to above existing grade. The construction of mauka wingwalls shall be concurrent with the adjacent abutments. The construction of the abutments and pier shall not occur simultaneously unless approved by the Engineer.

03A Construct Abutment No. 1 and Wingwall No. 2
Install temporary shoring on makai end of abutment and butt against existing CRM wall. Excavate to 6" below abutment wall, wingwall, and drilled shaft caps and provide BMPs as required. Pour 6" mud slab under abutment wall, wingwall, and drilled shaft caps. Cast abutment wall and drilled shaft caps a minimum of 7 days after the final drilled shaft has been poured and after the concrete in the drilled shaft has attained a compressive strength of 4,000 psi. Cast wingwall and keywall a minimum of 8 days after casting drilled shaft caps and abutment wall and after the concrete in the drilled shaft caps and abutment wall has attained a compressive strength of 5,000 psi. Backfill behind the abutment wall and wingwall with CLSM. Sawcut mud slab and install dumped riprap in front of the abutment wall and wingwall. Remove BMPs.

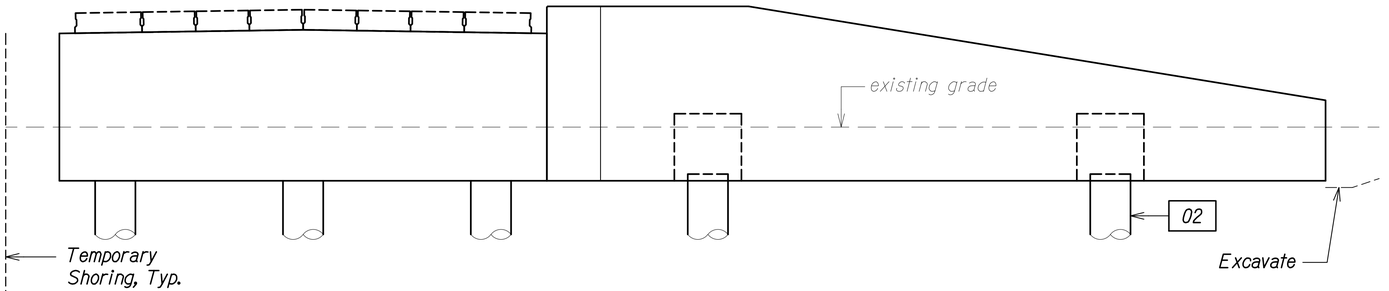
03B Construct Pier
Excavate to bottom of drilled shaft cap beam and provide BMPs as required. Cast drilled shaft cap beam a minimum of 7 days after the final drilled shaft has been poured and after the concrete in the drilled shaft has attained a compressive strength of 4,000 psi. Cast pier wall after the concrete in the drilled shaft cap beam has aged a minimum of 15 days and attained a compressive strength of 5,000 psi. Backfill around pier to existing grade. Remove BMPs. Casting of pier cap beam may be performed at this time or concurrently with the abutment construction. Cast pier cap beam after the concrete in the pier wall has aged a minimum of 15 days and attained a compressive strength of 5,000 psi.

03C Construct Abutment No. 2 and Wingwall No. 4 (similar to 03A)



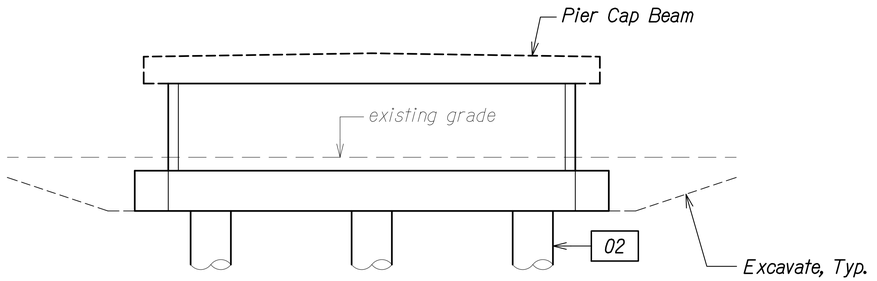
03A WINGWALL NO. 2 ELEVATION

03A ABUTMENT NO. 1 ELEVATION



03C ABUTMENT NO. 2 ELEVATION

03C WINGWALL NO. 4 ELEVATION



03B PIER ELEVATION

NOTES:

1. For construction phasing plan, see Civil Sheet CP-01.
2. Order of construction sequence shall not be changed unless otherwise approved by the Engineer.
3. Each stage shall be completely finished before proceeding to the next stage unless otherwise noted. The Engineer will be the sole judge of whether the stage is complete and may direct the Contractor to stop work on a stage to complete work on the preceeding stage.
4. The Contractor shall submit vehicular details for approval prior to their use.
5. See Structural General Notes 8.J and 8.W.

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

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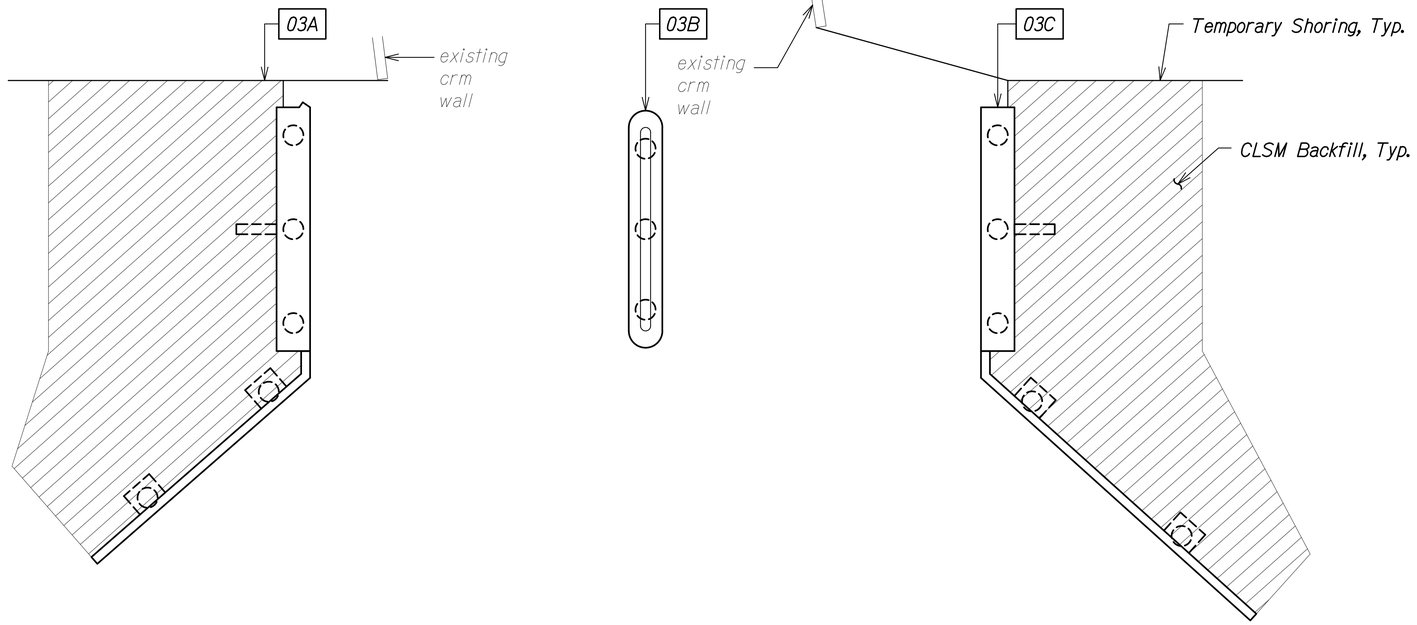
CONSTRUCTION SEQUENCE

KAMEHAMEHA HIGHWAY DRAINAGE AND SAFETY IMPROVEMENTS
Vicinity of Laniakea Beach (MP 3.06 to MP 3.54)
Project No. 83B-01-09

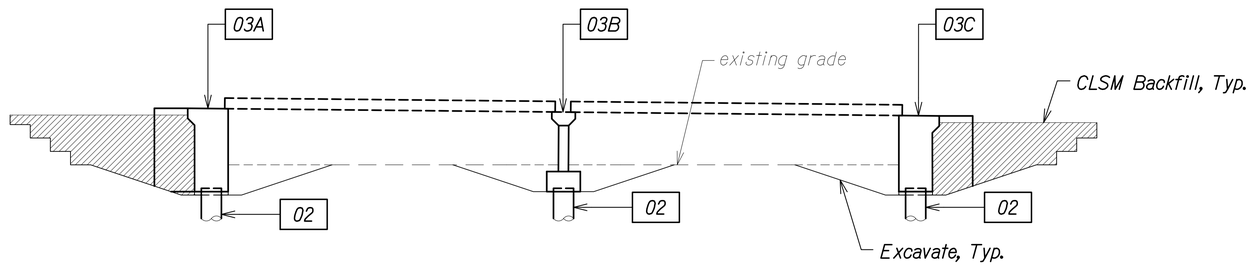
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SHEET No. S12.1 OF 5 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83B-01-09	2023	188	231



LAYOUT PLAN



LONGITUDINAL SECTION

ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
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CONSTRUCTION SEQUENCE

KAMEHAMEHA HIGHWAY DRAINAGE AND SAFETY IMPROVEMENTS
Vicinity of Laniakea Beach (MP 3.06 to MP 3.54)
Project No. 83B-01-09

Scale: None Date: December 2022

SHEET No. S12.2 OF 5 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83B-01-09	2023	189	231

CONSTRUCTION SEQUENCE:

04 Erect planks. Concrete for the abutment wall and pier cap beam shall have aged a minimum of 15 days and attained a compressive strength of 5,000 psi before erecting planks. Casting of planks may be done concurrently with stages 01 to 03.

05 Pour concrete topping, edge beams, pier diaphragm, and end beams.

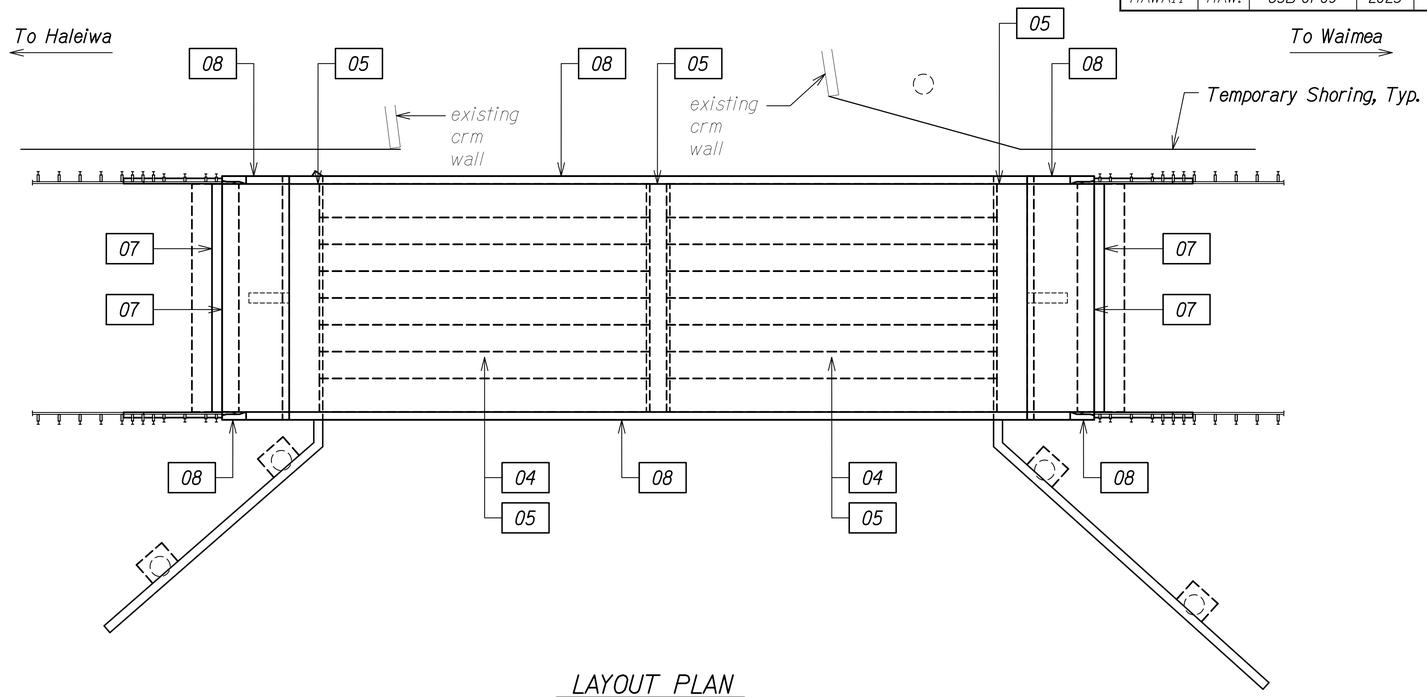
06 Backfill to bottom of approach slab and sleeper slab.

07 Cast sleeper slab. Cast approach slab a minimum of 7 days after casting sleeper slab and after the concrete in the sleeper slab has attained a compressive strength of 4,000 psi.

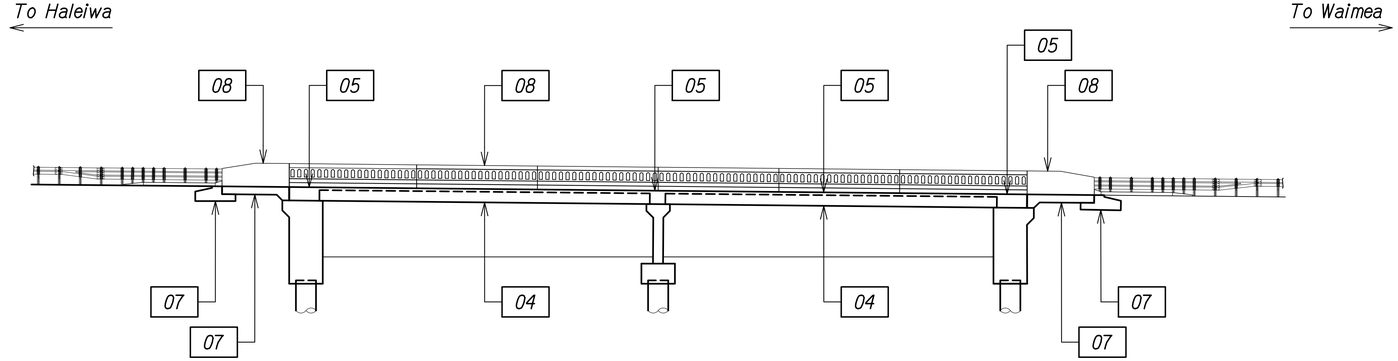
08 Cast bridge railings and end posts a minimum of 7 days after casting the approach slab and after the concrete in the approach slab has attained a compressive strength of 4,000 psi.

09 Blanket grind and mechanically groove bridge deck, approach slab, and sleeper slab a minimum of 14 days after casting approach slab and after the concrete in the approach slab has attained a compressive strength of 4,000 psi. Concrete sealer shall be applied to top of bridge deck, approach slab, and sleeper slab after blanket grinding and mechanically grooving.

10 Complete civil roadway sections and open the new road to traffic.



LAYOUT PLAN



LONGITUDINAL SECTION

NOTES:

1. For construction phasing plan, see Civil Sheet CP-01.
2. Order of construction sequence shall not be changed unless otherwise approved by the Engineer.
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4. The Contractor shall submit vehicular details for approval prior to their use.
5. See Structural General Notes 8.J and 8.W.

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

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DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

CONSTRUCTION SEQUENCE

KAMEHAMEHA HIGHWAY DRAINAGE AND SAFETY IMPROVEMENTS
Vicinity of Laniakea Beach (MP 3.06 to MP 3.54)
Project No. 83B-01-09

Scale: None Date: December 2022

SHEET No. S12.3 OF 5 SHEETS

DRAWING NAME: Z:\00 ONGOING\00 JF PROJECTS\22-015.1 KAM HWY LANIAKEA\01 CAD\05-23-23 RVSD SHTNO\KHP-S1201 CONST SEQ.DWG PLOT TIME: 05-22-23, 5:23 PM)

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83B-01-09	2023	190	231

CONSTRUCTION SEQUENCE:

11 Install temporary shoring in the old existing roadway.

12 Bypass existing 12" waterline. Connect bypass away from work area and run bypass pipe on top of the old existing bridge.

13 Remove temporary shoring installed during stage 03A and 03C.

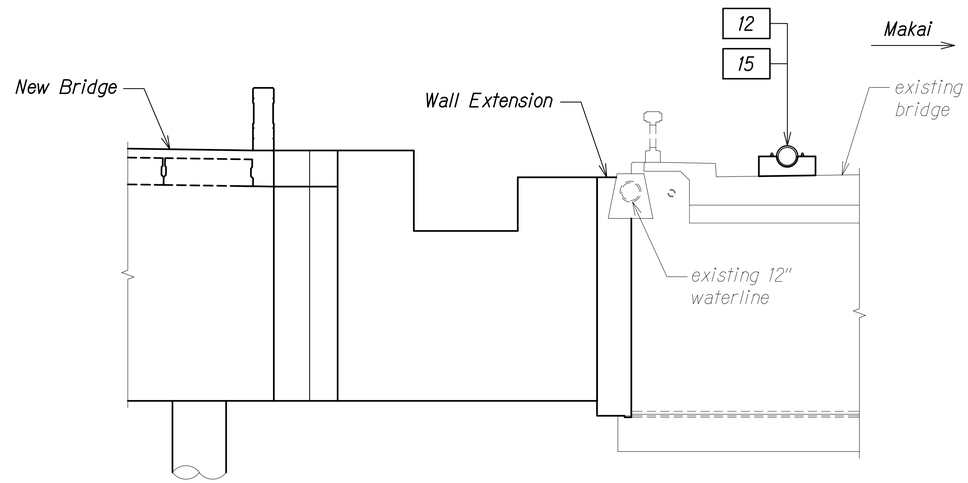
14 Construct Wingwall No. 1 and Wingwall No. 3. Both wingwalls shall not be constructed concurrently.

14A Construct Wingwall No. 1
Excavate to 6" below wingwall. See Shts. S2.1 and S2.2 for items to be removed. Excavation shall be performed with caution to protect existing utilities and salvage existing guardrails and end post. The Contractor shall provide temporary supports for existing utilites as required. See Civil drawings for additional BMPs in the stream. Remove existing CRM wall. Cast wall extension. Pour 6" mud slab under wingwall. Cast wingwall. Backfill behind wingwall with CLSM. Sawcut mud slab and install dumped riprap in front of wingwall.

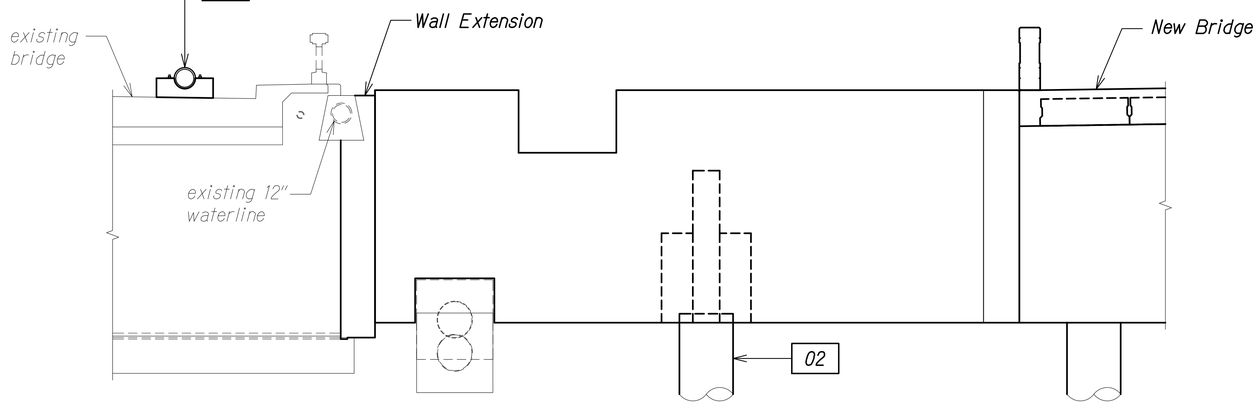
14B Construct Wingwall No. 3
Excavate to 6" below wingwall. See Shts. S2.1 and S2.3 for items to be removed. Excavation shall be performed with caution to protect existing utilities and salvage existing guardrails and end post. The Contractor shall provide temporary supports for existing utilites as required. See Civil drawings for additional BMPs in the stream. Remove existing CRM wall. Cast wall extension. Pour 6" mud slab under wingwall and drilled shaft cap. Cast drilled shaft cap. Cast wingwall a minimum of 8 days after casting drilled shaft cap and after the concrete in the drilled shaft cap has attained a compressive strength of 5,000 psi. Cast keywall a minimum of 8 days after casting wingwall and after the concrete in the wingwall has attained a compressive strength of 5,000 psi. Backfill behind wingwall with CLSM. Sawcut mud slab and install dumped riprap in front of wingwall.

15 Remove bypass for existing 12-inch waterline and restore 12-inch waterline to its original condition. Finish grading between the existing old roadway and new roadway. Install swales. Remove temporary shoring installed during stage 11.

16 Pave new AC on old existing roadway and restore to pre-construction condition. End posts, guardrails, and curb ramps shall be restored to pre-construction condition.



14A WINGWALL NO. 1 ELEVATION



14B WINGWALL NO. 3 ELEVATION

NOTES:

1. For construction phasing plan, see Civil Sheet CP-01.
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CONSTRUCTION SEQUENCE

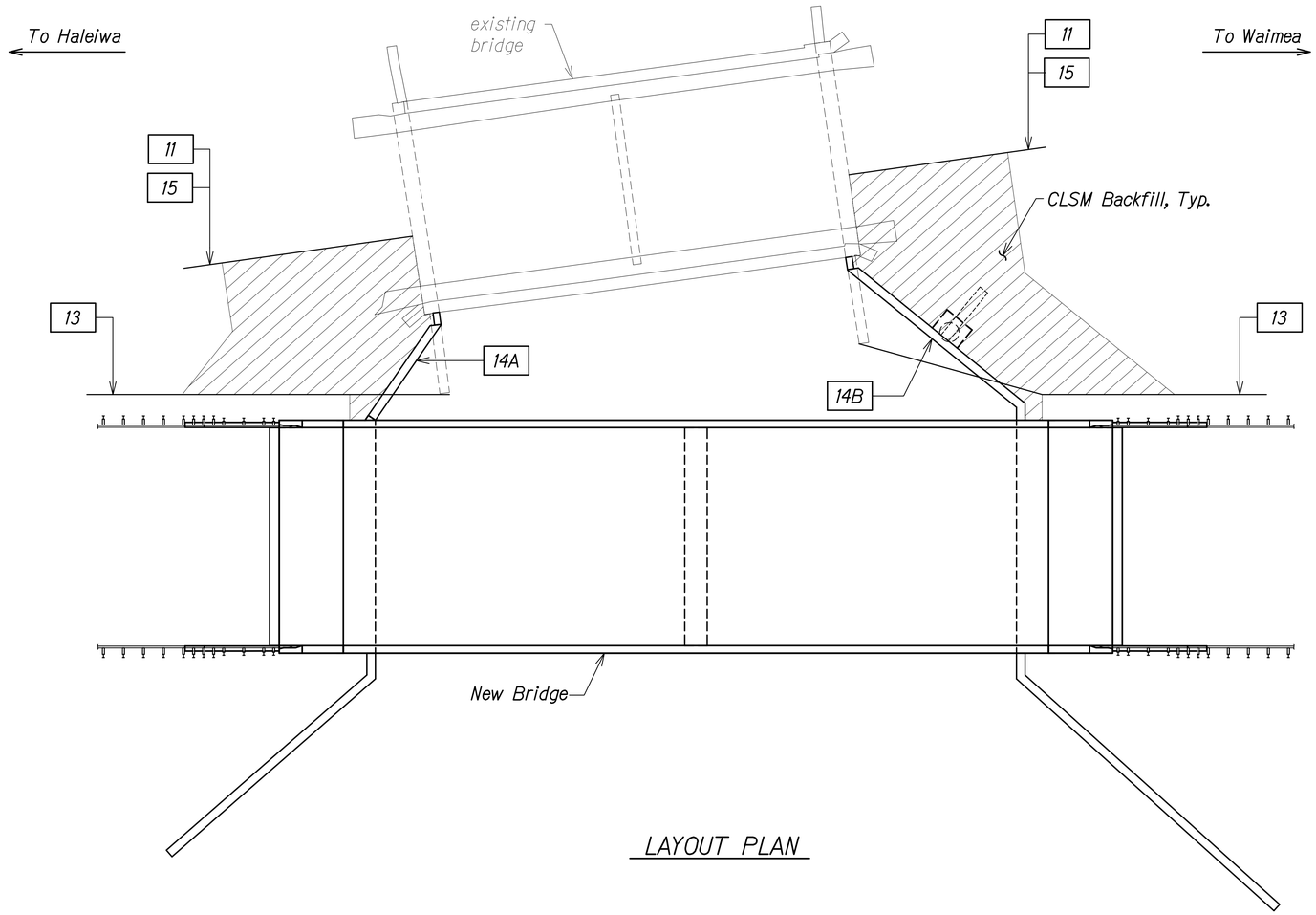
KAMEHAMEHA HIGHWAY DRAINAGE AND SAFETY IMPROVEMENTS
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Scale: None Date: December 2022

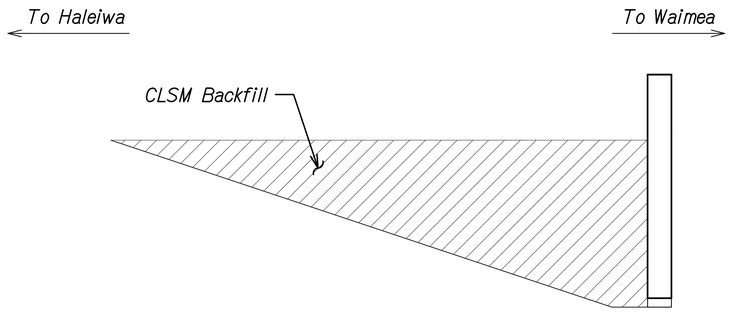
SHEET No. S12.4 OF 5 SHEETS

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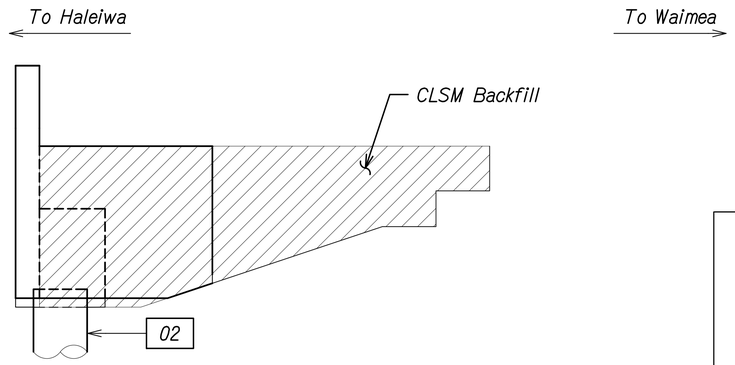
FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83B-01-09	2023	191	231



LAYOUT PLAN



14A WINGWALL NO. 1 SECTION



14B WINGWALL NO. 3 SECTION

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

DRAWING NAME: Z:\OD ONGOING\OD JF PROJECTS\22-015.1 KAM HWY LANIAKEA\01 CAD\05-23-23 RVSD SHTNO\KHP-S1201 CONST SEQ.DWG PLOT TIME: 05-22-23, 5:24 PM)

RUSS S. MIYAHARA
LICENSED PROFESSIONAL ENGINEER
NO. 9444-S
HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.

SIGNATURE 4-30-24 EXPIRATION DATE OF THE LICENSE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

CONSTRUCTION SEQUENCE

KAMEHAMEHA HIGHWAY DRAINAGE AND SAFETY IMPROVEMENTS
Vicinity of Laniakea Beach (MP 3.06 to MP 3.54)
Project No. 83B-01-09

Scale: None Date: December 2022

SHEET No. S12.5 OF 5 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83B-01-09	2023	192	231

PLANT NOTES:

1. Contractor shall field verify all plant quantities and dimensions prior to installation. Contractor shall determine quantities of plant materials to be provided. In all cases, Contractor shall install plant material on all areas affected by construction.

2. Contractor shall be responsible for locating and protecting existing utilities.

3. Prior to excavating for tree, shrub, or ground cover planting pits, all tree and shrub planting locations shall be staked out by Contractor for acceptance by Engineer. Do not plant until ground has been prepared and site is neat, orderly, and the Engineer accepts site for planting.

4. Notify Engineer of any discrepancies in plant locations.

5. Notify Engineer 30 days prior to planting operations for acceptance of all plant material at place of growth. All plant material not accepted by the Engineer will be subject to rejection.

6. The Engineer will inspect plants at the place of growth and after delivery to the project.

7. Plants shall meet size indicated. Plants shall be straight and uniformly shaped, unless unique or special characteristics are specified, and shall be undamaged, sound, healthy, vigorous and free of disease and insect infestation. Plants not conforming to these requirements on delivery to the project and at the end of the plant establishment period will be rejected.

8. Contractor shall be solely responsible for the complete removal and damages resulting from planting any plant species listed on the Hawaii Department of Agriculture 'Noxious Weed Rules' as defined in the statute, Hawaii Administrative Rules 4:68:1 or the 'Federal Noxious Weed List' as defined in Title 7 of the Code of Federal Regulations (CFR), parts 360 and 361.

9. All tree work must adhere to American National Standard Institute (or ANSI) - a300 Tree Care Standards and ANSI-z133 safety standards for tree work. Work shall be contracted to arborists that has been certified in good standings as an ISA certified arborist for at least 10 continuous years to assure that tree work is performed properly and trees are not damaged by practices such as topping, flush cuts, over-thinning, or climbing with spikes. Contractor shall submit a copy of the ISA arborist certification of good standing of 10 years to the Engineer minimum 7 days prior to tree pruning. The cost for arborist services shall be considered incidental to Specification Section 619 - Planting.

10. For the duration of construction within the drip line of trees to remain there must be: no changes, alterations or disturbance to the grade by adding fill, excavating or scraping except as noted on plans; no storage of construction material or equipment; no stockpiling of any construction material or any excavated material no disposal of any liquids (E.G. Concrete slurry, gas, oil, paint); no vehicular traffic, equipment or excessive pedestrian traffic, no attachment of any wires, ropes, lights, or any other such attachment other than those of protective nature to any tree to be preserved; and no cleaning of equipment or material under the canopy of any tree or group of trees to remain. For slopes flatter than 3H:1V, till top six-inches of soil to evenly incorporate fertilizer and amendments. For slopes steeper than 3H:1V, no tilling is required.

11. Representative samples of soil from project site shall be submitted to Crop Nutrient Solutions Inc., the University of Hawaii Agricultural Extension Service or laboratory acceptable to the Engineer for analysis of required soil amendments. Test results and fertilization schedule shall be presented to the Engineer for review and acceptance before placing planting soil or amending existing soil. Uniformly distribute fertilizer and amendments over planting areas as recommended by the soil analysis report. Contractor shall prepare separate soil samples and analysis results for each site. Refer to Specification Section 618 - Soil Preparation.

12. Guy wires, flagging, stakes, windbreakers, etc. shall be maintained and replaced if necessary by the Contractor until the shrub is able to stand by itself. The Contractor shall remove and dispose of these items at the end of plant establishment period.

13. Any planting that obstructs sight distance, signs or traffic lights shall be relocated or removed as determined by the Engineer.

14. Provide water for all plant material for the duration of the project, including plant establishment period. Water trees, shrubs, ground cover and all grassed areas. Water for planting shall not cause erosion damage to the slopes. The Contractor shall be responsible for repairing any damage cause by the watering of plants. The Contractor shall gradually decrease the amount of water being provided to the plant material 8 weeks prior to final acceptance of plantings.

15. Temporary irrigation shall be provided and installed by the Contractor for the duration of the project. Refer to Specification Sections 619.03(Q), 619.03(R), 641.03(B) and 641.03(C). Temporary irrigation system shall be considered incidental to Specification Sections 619 - Planting and 641 - Hydro-Mulch Seeding.

16. Contractor shall be responsible for weeding throughout the 9-month plant establishment period. Refer to Specifications Section 619 - Planting.

17. Tree roots greater than 2 inches in diameter shall not be disturbed. Cutting of tree roots larger than 2 inches in diameter must be approved by an ISA Certified Arborist with a minimum of 10 years of continuous licensure and experience. Contractor shall submit arborist's qualifications and a tree root assessment report to the Engineer for approval prior to cutting tree roots. Root pruning shall be done in conformance with ANSI a300 (Part 8) latest edition. Root pruning shall take place under the supervision of the approved arborist at all times.

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

MARC K. SHIMATSU
LICENSED PROFESSIONAL LANDSCAPE ARCHITECT
No. 13602
HAWAII, U.S.A.

4/30/24
EXP. DATE

This work was prepared by me or under my supervision.

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

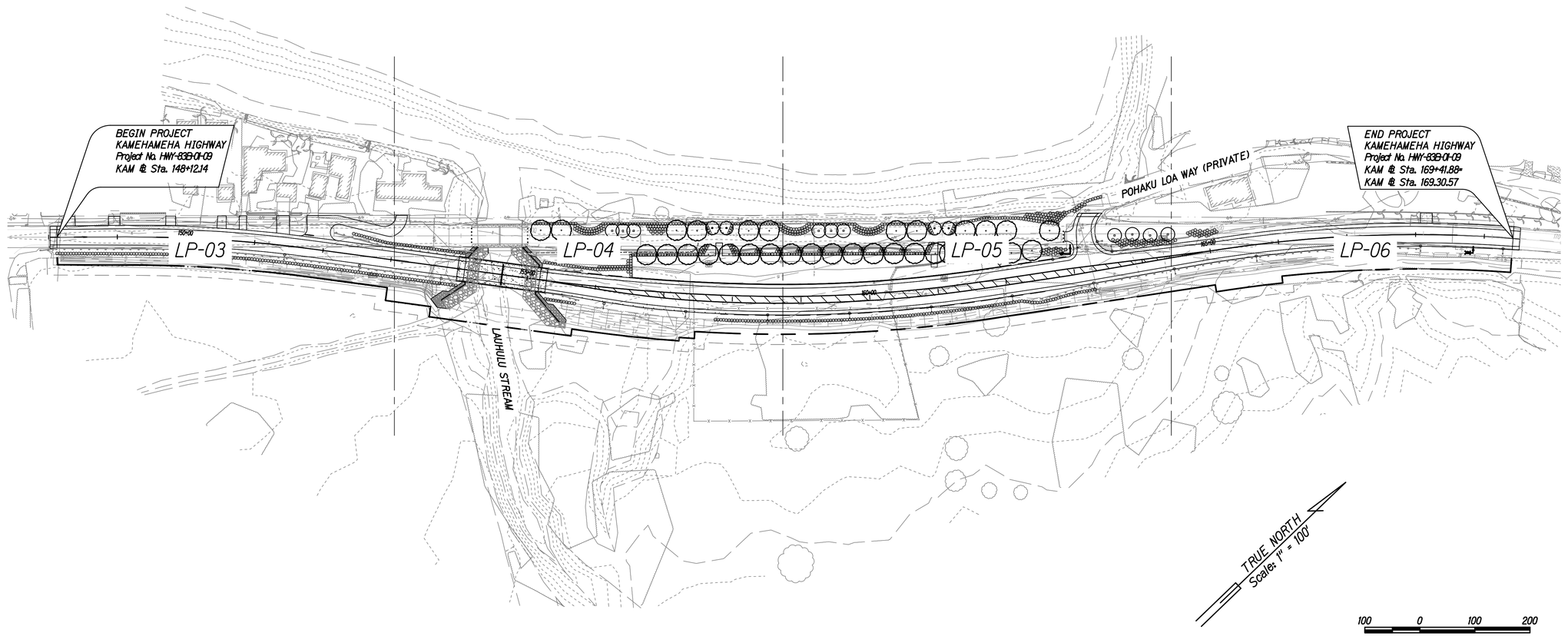
LANDSCAPE NOTES

KAMEHAMEHA HIGHWAY DRAINAGE AND SAFETY IMPROVEMENTS
Vicinity of Laniakea Beach (MP 3.06 to MP 3.54)
Project No. 83B-01-09

Scale: None Date: Jan 2023

SHEET No. LP-01 OF 10 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83B-01-09	2023	193	231



TRUE NORTH
Scale: 1" = 100'

100 0 100 200

GRAPHIC SCALE: 1" = 100'-0"

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

MARC K. SHIMATSU
LICENSED PROFESSIONAL LANDSCAPE ARCHITECT
No. 13602
HAWAII, U.S.A.

4/30/24
EXP. DATE

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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

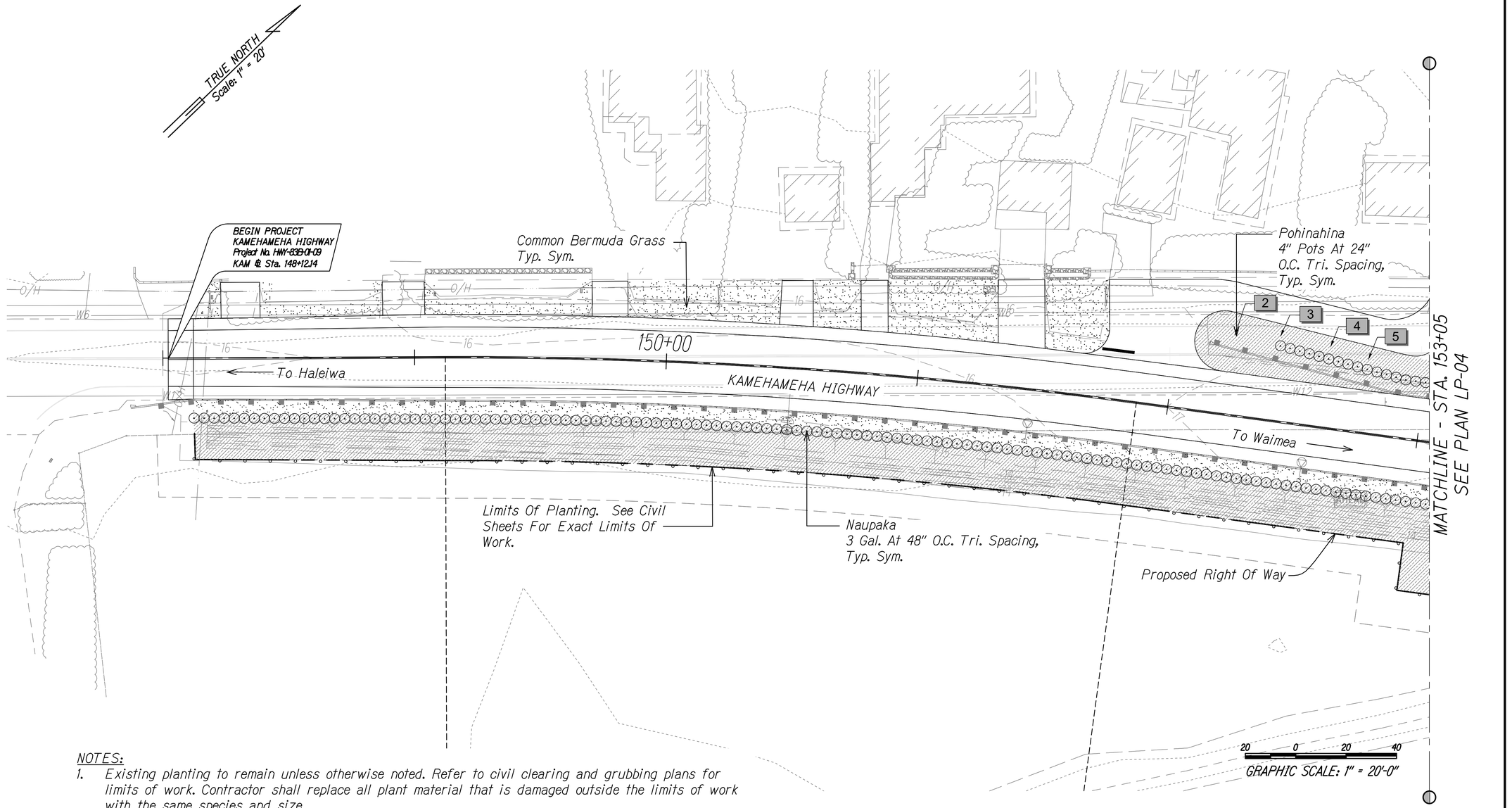
OVERALL LANDSCAPE PLANTING PLAN

KAMEHAMEHA HIGHWAY DRAINAGE AND SAFETY IMPROVEMENTS
Vicinity of Laniakea Beach (MP 3.06 to MP 3.54)
Project No. 83B-01-09

Scale: 1" = 100'-0" Date: Jan 2023

SHEET No. LP-02 OF 10 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83B-01-09	2023	194	231



NOTES:

1. Existing planting to remain unless otherwise noted. Refer to civil clearing and grubbing plans for limits of work. Contractor shall replace all plant material that is damaged outside the limits of work with the same species and size.
2. Install root barriers for all trees within 10-feet of paving or underground utilities.
3. Provide an automatic temporary irrigation system for all new planting areas.
4. Plant and material quantities are provided for convenience only. Contractor is responsible for verifying all quantities and dimensions.
5. Install a 4" layer of imported topsoil over all new planting areas.
6. Install a 2" layer of wood chip mulch below all shrub and ground cover areas.
7. Contractor is responsible for mowing, weeding, pruning, watering, fertilizing, and removal of trash from project area throughout the 3-month planting period and 9-month plant establishment period. Contractor shall remove weeds from all planting areas on a weekly basis and shall inform the contracting officer weekly to confirm weeding work has been completed.

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

MARC K. SHIMATSU
LICENSED PROFESSIONAL LANDSCAPE ARCHITECT
No. 13602
HAWAII, U.S.A.

4/30/24
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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

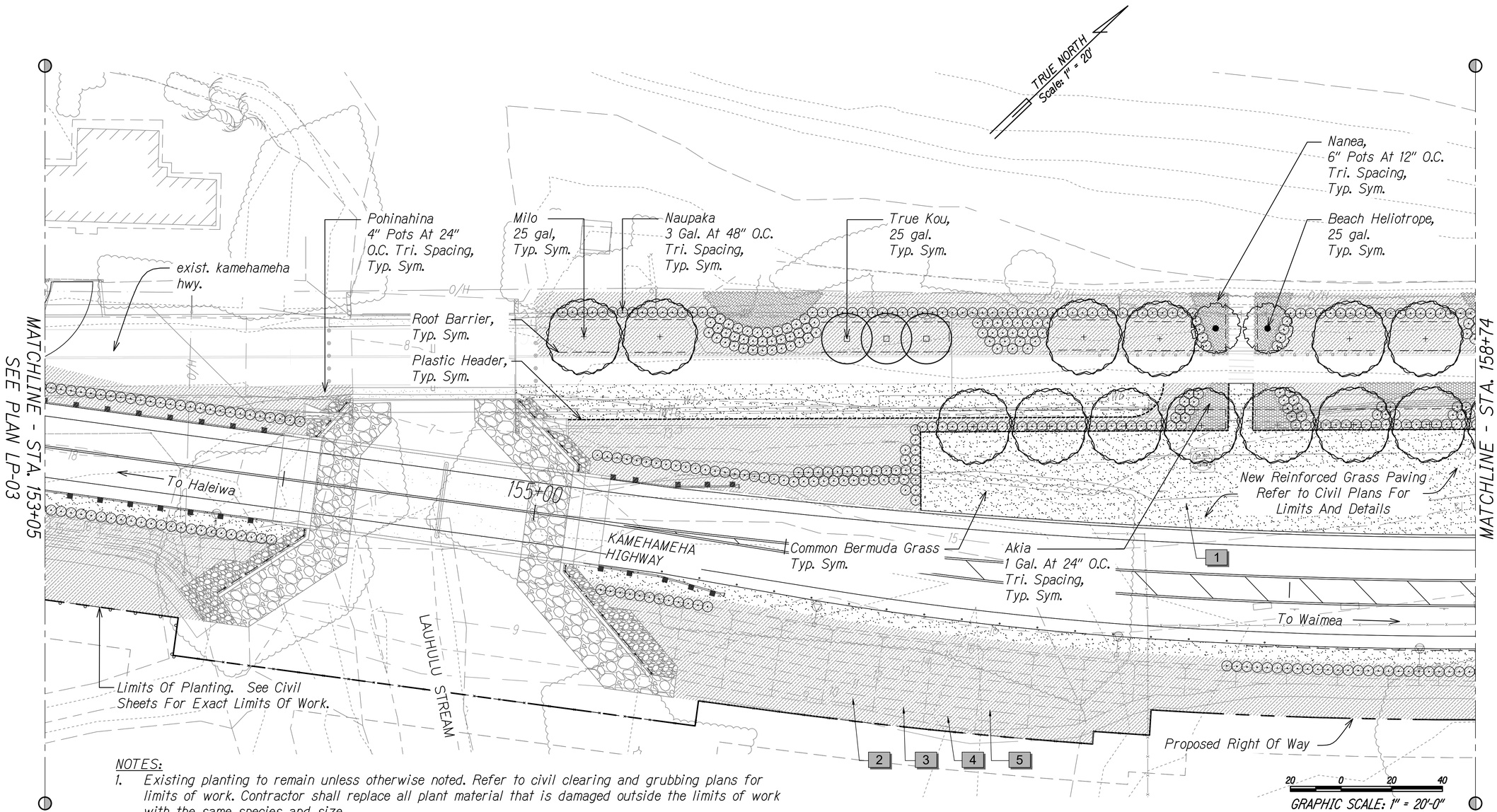
LANDSCAPE PLANTING PLAN

KAMEHAMEHA HIGHWAY DRAINAGE AND SAFETY IMPROVEMENTS
Vicinity of Laniakea Beach (MP 3.06 to MP 3.54)
Project No. 83B-01-09

Scale: 1" = 20'-0" Date: Jan 2023

SHEET No. LP-03 OF 10 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83B-01-09	2023	195	231



NOTES:

1. Existing planting to remain unless otherwise noted. Refer to civil clearing and grubbing plans for limits of work. Contractor shall replace all plant material that is damaged outside the limits of work with the same species and size.
2. Install root barriers for all trees within 10-feet of paving or underground utilities.
3. Provide an automatic temporary irrigation system for all new planting areas.
4. Plant and material quantities are provided for convenience only. Contractor is responsible for verifying all quantities and dimensions.
5. Install a 4" layer of imported topsoil over all new planting areas.
6. Install a 2" layer of wood chip mulch below all shrub and ground cover areas.
7. Contractor is responsible for mowing, weeding, pruning, watering, fertilizing, and removal of trash from project area throughout the 3-month planting period and 9-month plant establishment period. Contractor shall remove weeds from all planting areas on a weekly basis and shall inform the contracting officer weekly to confirm weeding work has been completed.

ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
NOTE BOOK	DRAWN BY	
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	QUANTITIES BY	
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MARC K. SHIMATSU
LICENSED PROFESSIONAL LANDSCAPE ARCHITECT
No. 13602
HAWAII, U.S.A.

4/30/24
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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

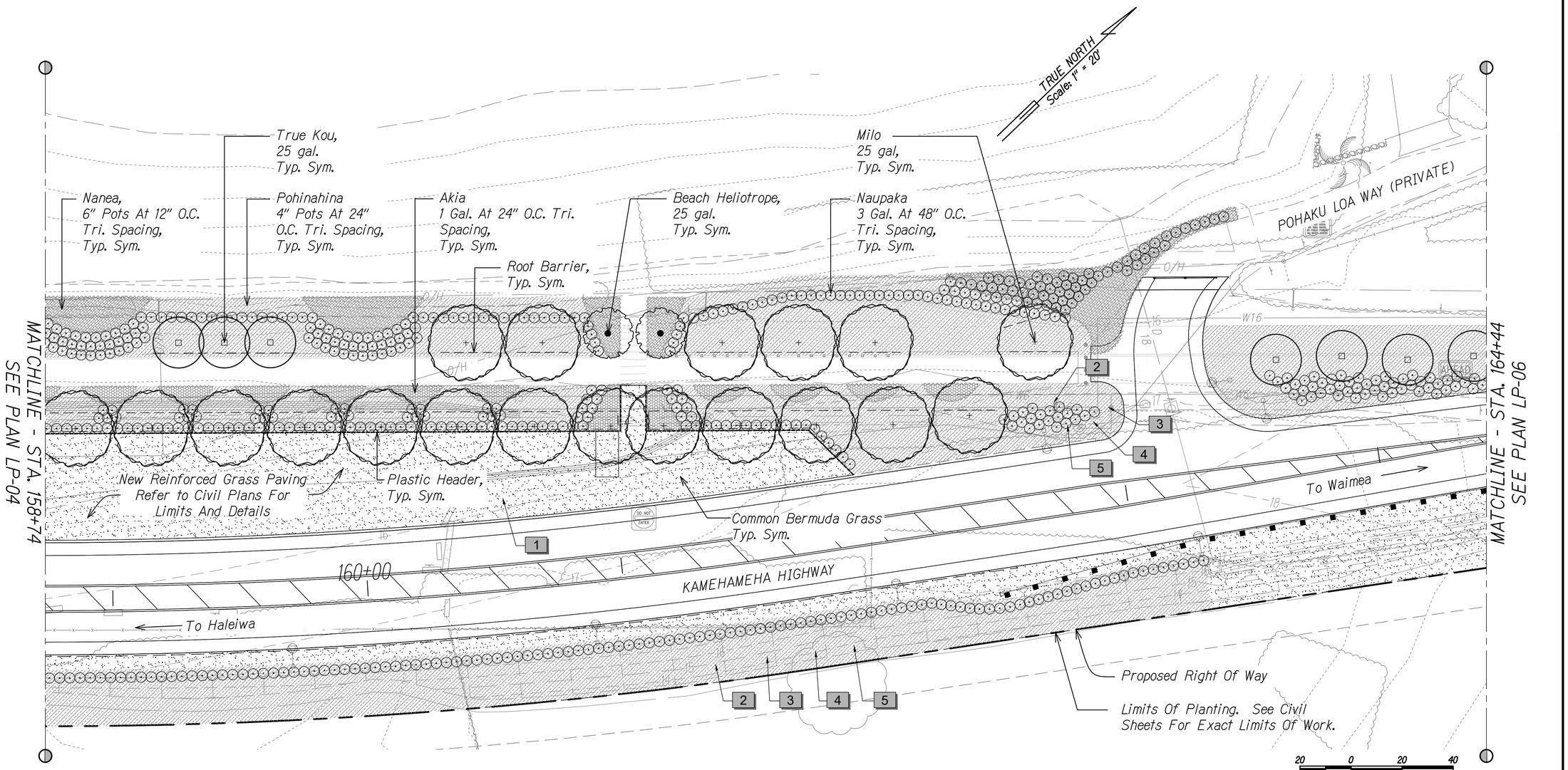
LANDSCAPE PLANTING PLAN

KAMEHAMEHA HIGHWAY DRAINAGE AND SAFETY IMPROVEMENTS
Vicinity of Laniakea Beach (MP 3.06 to MP 3.54)
Project No. 83B-01-09

Scale: 1" = 20'-0" Date: Jan 2023

SHEET No LP-04 OF 10 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83B-01-09	2023	196	231



NOTES:

1. Existing planting to remain unless otherwise noted. Refer to civil clearing and grubbing plans for limits of work. Contractor shall replace all plant material that is damaged outside the limits of work with the same species and size.
2. Install root barriers for all trees within 10-feet of paving or underground utilities.
3. Provide an automatic temporary irrigation system for all new planting areas.
4. Plant and material quantities are provided for convenience only. Contractor is responsible for verifying all quantities and dimensions.
5. Install a 4" layer of imported topsoil over all new planting areas.
6. Install a 2" layer of wood chip mulch below all shrub and ground cover areas.
7. Contractor is responsible for mowing, weeding, pruning, watering, fertilizing, and removal of trash from project area throughout the 3-month planting period and 9-month plant establishment period. Contractor shall remove weeds from all planting areas on a weekly basis and shall inform the contracting officer weekly to confirm weeding work has been completed.

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

MARC K. SHIMATSU
LICENSED PROFESSIONAL LANDSCAPE ARCHITECT
No. 1360Z
HAWAII, U.S.A.

4/30/24
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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

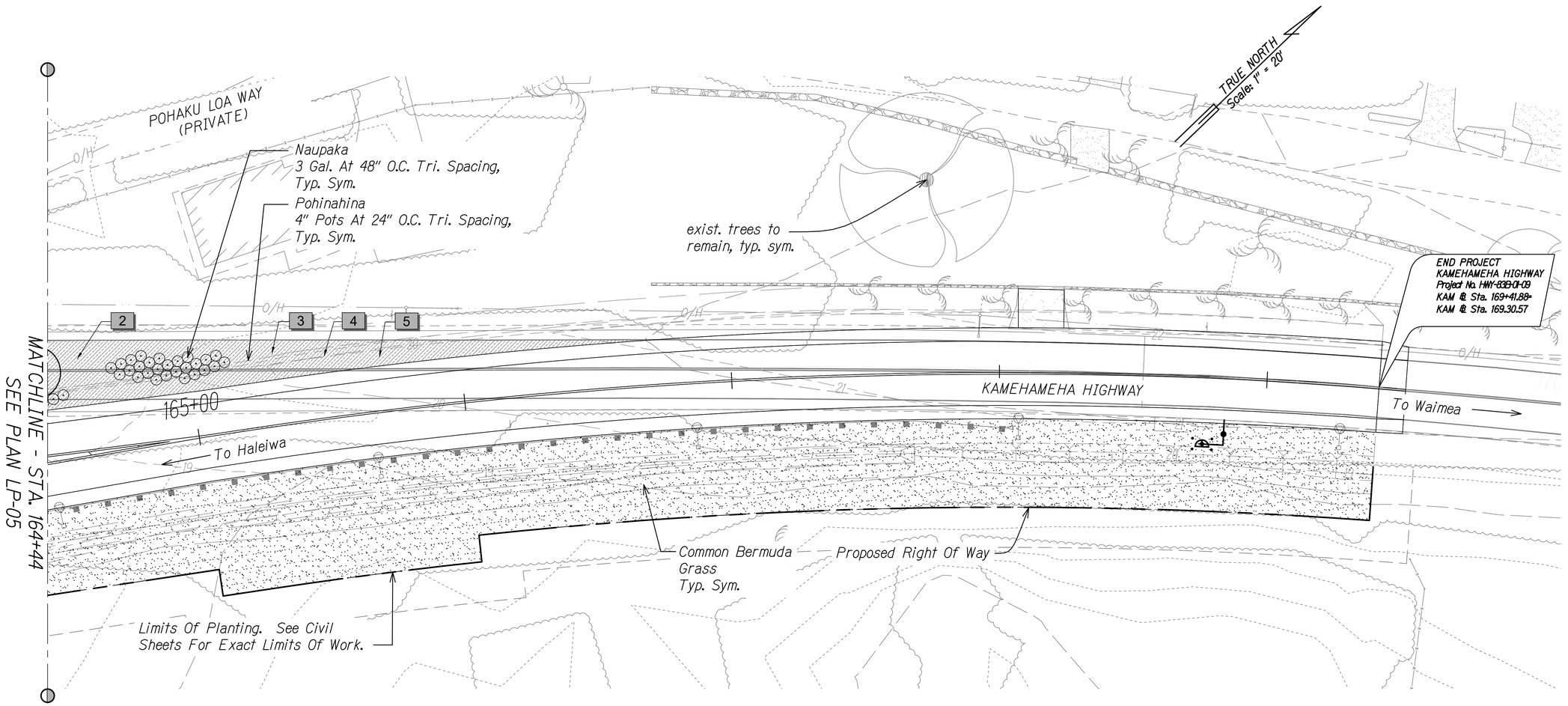
LANDSCAPE PLANTING PLAN

KAMEHAMEHA HIGHWAY DRAINAGE AND SAFETY IMPROVEMENTS
Vicinity of Laniakea Beach (MP 3.06 to MP 3.54)
Project No. 83B-01-09

Scale: 1" = 20'-0" Date: Jan 2023

SHEET No. LP-05 OF 10 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83B-01-09	2023	197	231



NOTES:

1. Existing planting to remain unless otherwise noted. Refer to civil clearing and grubbing plans for limits of work. Contractor shall replace all plant material that is damaged outside the limits of work with the same species and size.
2. Install root barriers for all trees within 10-feet of paving or underground utilities.
3. Provide an automatic temporary irrigation system for all new planting areas.
4. Plant and material quantities are provided for convenience only. Contractor is responsible for verifying all quantities and dimensions.
5. Install a 4" layer of imported topsoil over all new planting areas.
6. Install a 2" layer of wood chip mulch below all shrub and ground cover areas.
7. Contractor is responsible for mowing, weeding, pruning, watering, fertilizing, and removal of trash from project area throughout the 3-month planting period and 9-month plant establishment period. Contractor shall remove weeds from all planting areas on a weekly basis and shall inform the contracting officer weekly to confirm weeding work has been completed.

20 0 20 40

GRAPHIC SCALE: 1" = 20'-0"

ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
NOTE BOOK	DRAWN BY	
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MARC K. SHIMATSU
LICENSED PROFESSIONAL LANDSCAPE ARCHITECT
No. 13602
HAWAII, U.S.A.

4/30/24
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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

LANDSCAPE PLANTING PLAN

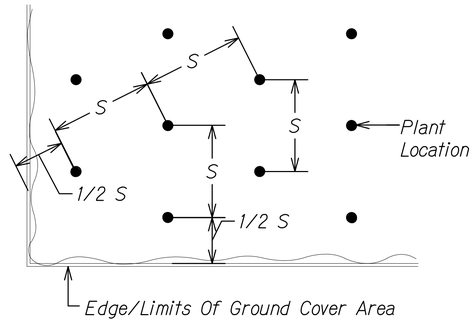
KAMEHAMEHA HIGHWAY DRAINAGE AND SAFETY IMPROVEMENTS
Vicinity of Laniakea Beach (MP 3.06 to MP 3.54)
Project No. 83B-01-09

Scale: 1" = 20'-0" Date: Jan 2023

SHEET NO LP-06 OF 10 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83B-01-09	2023	198	231

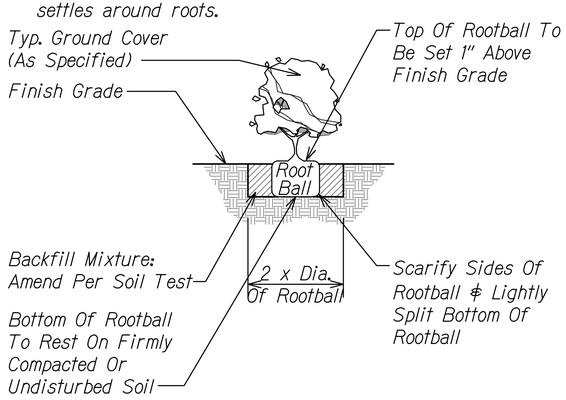
Note:
1. S = Spacing, (refer to plant list for spacing)
2. Use spacing layout for shrubs, ground covers, and annuals



TRIANGULAR SPACING — 1 LP-07

Scale: Not to Scale

Notes:
1. Ground covers shall be plumb. If ground cover is leaning at the end of the plant establishment period, it shall be replaced at the contractor's expense.
2. Immediately after planting, water heavily to ensure soil settles around roots.



GROUND COVER PLANTING — 3 LP-07

Scale: Not to Scale

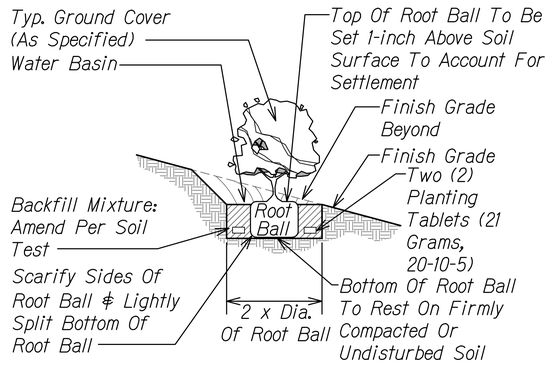
Hydro-Mulch:
Mulch Shall Be Specifically Processed Fiber Containing No Growth Or Germination Inhibiting Factors. It Shall Be Such That After Addition And Agitation In The Hydraulic Equipment With Seeds, Fertilizer, Water, Geobinders, And Other Additives Not Detrimental To Plant Growth, The Fibers Will Form A Homogeneous Slurry When Hydraulically Sprayed On The Soil. The Fibers Shall Form A Blotter-like Ground Cover Which Readily Absorbs Water And Allows Infiltration. Complete Coverage Of The Surface Shall Be Attained.



HYDRO-MULCHING DETAIL — 2 LP-07

Scale: Not to Scale

Notes:
1. Ground covers shall be plumb. If ground cover Is leaning at the end of the plant establishment period, it shall be replaced at the contractor's expense.
2. Immediately after planting, water heavily to ensure soil settles around roots.



GROUND COVER PLANTING ON SLOPE — 4 LP-07

Scale: Not to Scale

ORIGINAL PLAN
NOTE BOOK
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MARC K. SHIMATSU
LICENSED PROFESSIONAL LANDSCAPE ARCHITECT
No. 13602
HAWAII, U.S.A.
4/30/24
EXP. DATE
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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

PLANTING DETAILS - 1

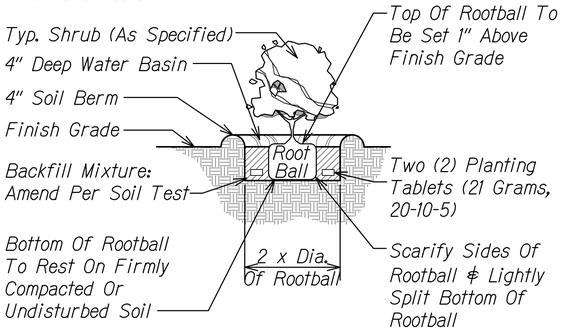
KAMEHAMEHA HIGHWAY DRAINAGE AND SAFETY IMPROVEMENTS
Vicinity of Laniakea Beach (MP 3.06 to MP 3.54)
Project No. 83B-01-09

Scale: Not To Scale — Date: Jan 2023

SHEET No. LP-07 OF 10 SHEETS

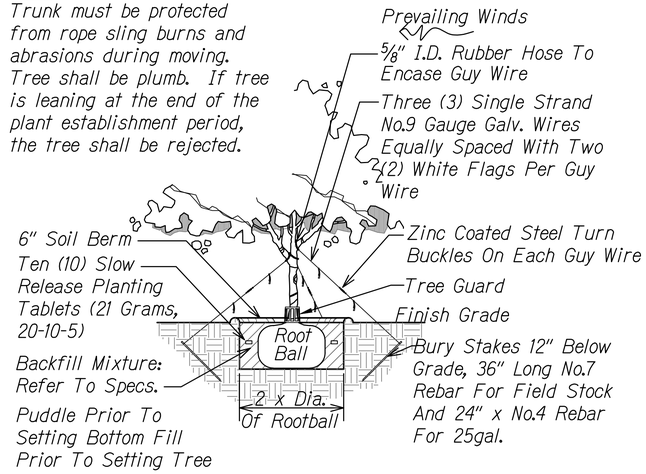
FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83B-01-09	2023	199	231

Notes:
1. Single stem shrubs shall be plumb. If shrub is leaning at the end of the plant establishment period, it shall be replaced at the contractor's expense.
2. Immediately after planting, water heavily to ensure soil settles around roots.



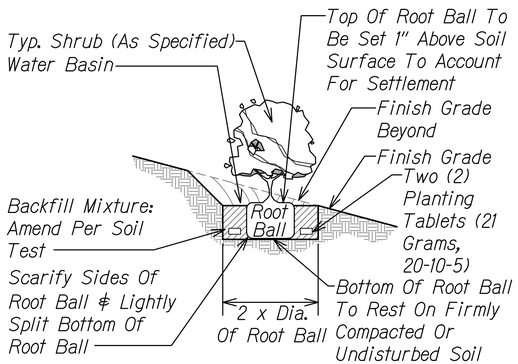
SHRUB PLANTING (1 / LP-08 | LP-08)
Scale: Not to Scale

Note:
Trunk must be protected from rope sling burns and abrasions during moving. Tree shall be plumb. If tree is leaning at the end of the plant establishment period, the tree shall be rejected.

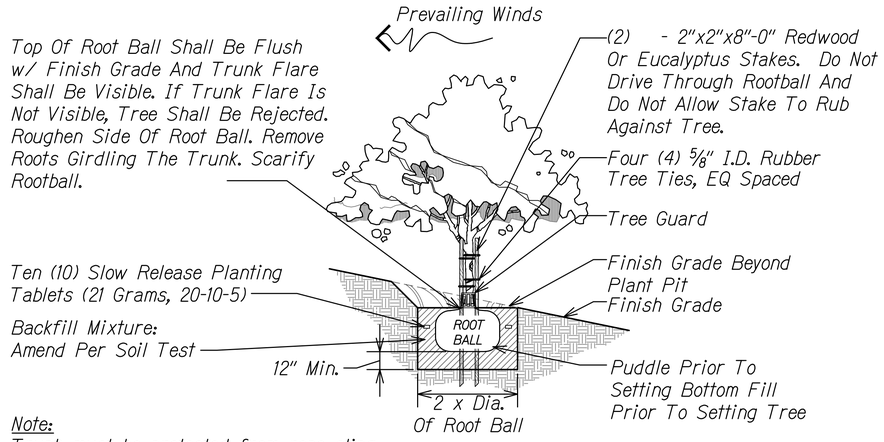


TREE PLANTING AND GUYING (3 / LP-08 | LP-08)
Scale: Not to Scale

Notes:
1. Single stem shrubs shall be plumb. If shrub Is leaning at the end of the plant establishment period, it shall be replaced at the contractor's expense.
2. Immediately after planting, water heavily to ensure soil settles around roots.



SHRUB PLANTING ON SLOPE (2 / LP-08 | LP-08)
Scale: Not to Scale



Note:
Trunk must be protected from rope sling burns and abrasions during moving. tree shall be plumb. If tree is leaning at the end of the plant establishment period, the tree shall be replaced at the Contractor's expense.

TREE PLANTING ON SLOPE (4 / LP-08 | LP-08)
Scale: Not to Scale

ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
NOTE BOOK	DRAWN BY	
No.	TRACED BY	
	DESIGNED BY	
	QUANTITIES BY	
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MARC K. SHIMATSU
LICENSED PROFESSIONAL LANDSCAPE ARCHITECT
No. 13602
HAWAII, U.S.A.
4/30/24
EXP. DATE
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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

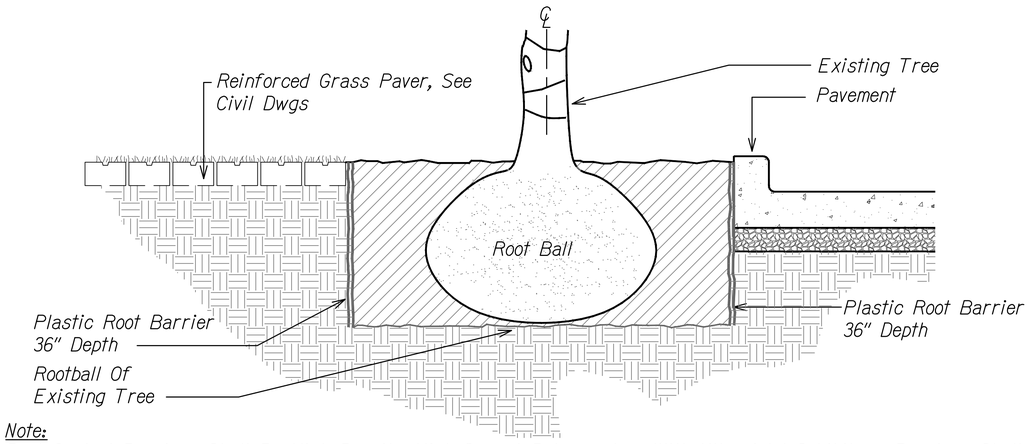
PLANTING DETAILS - 2

KAMEHAMEHA HIGHWAY DRAINAGE AND SAFETY IMPROVEMENTS
Vicinity of Laniakea Beach (MP 3.06 to MP 3.54)
Project No. 83B-01-09

Scale: Not To Scale Date: Jan 2023

SHEET No. LP-08 OF 10 SHEETS

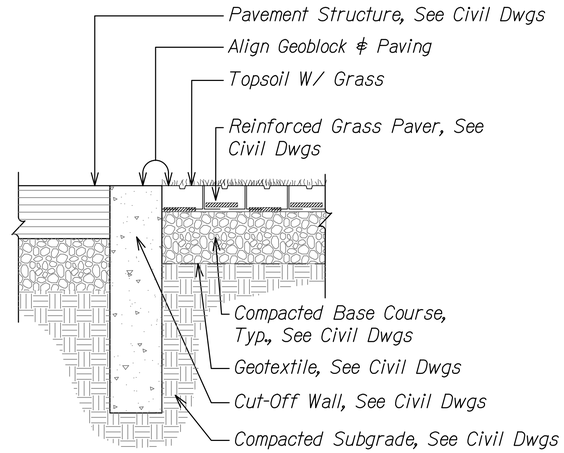
FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83B-01-09	2023	200	231



Note:
Root Control Barriers Shall Be High Density, High Impact Polypropylene With Ultraviolet Inhibitor. Barriers Shall Have Minimum Thickness Of 0.06 Inch, Raised Vertical Ribs, And Locking Strips Made Of Same Material. Bio-chemical Root Control Barriers Are Allowable As Alternative If Acceptable To Engineer.

ROOT CONTROL BARRIER DETAIL 1 LP-09|LP-09

Scale: Not to Scale



REINFORCED GRASS PAVER 2 LP-09|LP-09

Scale: Not to Scale

ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
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MARC K. SHIMATSU
LICENSED PROFESSIONAL LANDSCAPE ARCHITECT
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HAWAII, U.S.A.

4/30/24
EXP. DATE

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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

PLANTING DETAILS - 3

KAMEHAMEHA HIGHWAY DRAINAGE AND SAFETY IMPROVEMENTS
Vicinity of Laniakea Beach (MP 3.06 to MP 3.54)
Project No. 83B-01-09

Scale: Not To Scale Date: Jan 2023

SHEET No. LP-09 OF 10 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83B-01-09	2023	201	231

PLANT SCHEDULE

Trees	Qty	Botanical Name	Common Name	Cont	Cal	Size	SPD	Remarks
	10	Cordia subcordata	True Kou	25 gal	1.5" - 2" cal.	6'-8' clear trunk height	4'-6'	
	4	Heliotropium foertherianum	Beach Heliotrope	25 gal	1.5" - 2" cal.	6'-8' clear trunk height	4'-6'	
	32	Thespesia populnea	Milo	25 gal	1.5" - 2" cal.	6'-8' clear trunk height	4'-6'	

Shrubs	Qty	Botanical Name	Common Name	Cont	Spacing	Remarks
	1,050	Scaevola taccada	Beach Naupaka	1 gal	30" o.c.	Bushy, 24" height min, with ground cover and 2" layer wood mulch below, typ.

Shrub Areas	Qty	Botanical name	Common name	Cont	Spacing	
	532	Wikstroemia uva-ursi	Akia	1 gal	24" o.c.	2" Layer wood mulch below, typ.

Ground Covers	Qty	Botanical Name	Common name	Cont	Spacing	Remarks
	55,900 sf	Cynodon dactylon	Bermuda Grass	Hydroseed		
	3,850 sf	Vigna marina	Nanea	6" pots	12" o.c.	2" Layer wood mulch below, typp.
	71,050 sf	Vitex rotundifolia	Pohinahina	4" pots	24" o.c.	2" Layer wood mulch below, typ.

REFERENCE NOTES SCHEDULE

Symbol	Description	Qty
2	4" Layer Imported Topsoil	1,545 cy
3	2" Layer Soil Amendments	124,900 sf
4	2" Layer Imported Compost	124,900 sf
5	2" Layer Wood Mulch Below All Shrubs And Groundcovers	525 cy
	Root Barrier	1,400 lf

DATE
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NOTE BOOK
No.

MARC K. SHIMATSU
LICENSED PROFESSIONAL LANDSCAPE ARCHITECT
No. 13602
HAWAII, U.S.A.

4/30/24
EXP. DATE

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DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

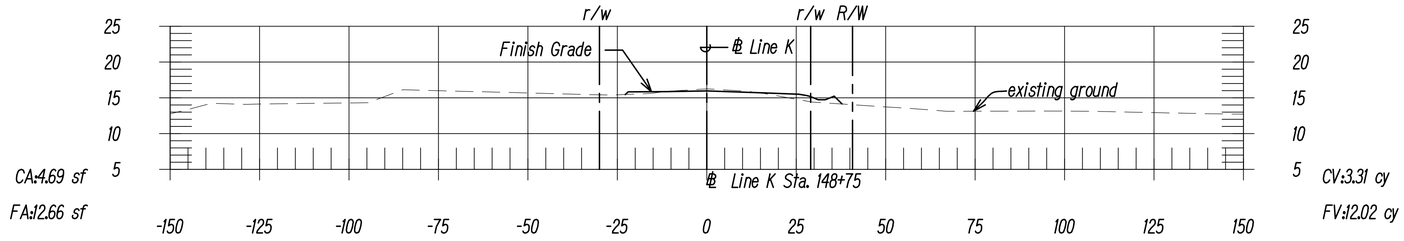
PLANT SCHEDULE

KAMEHAMEHA HIGHWAY DRAINAGE AND SAFETY IMPROVEMENTS
Vicinity of Laniakea Beach (MP 3.06 to MP 3.54)
Project No. 83B-01-09

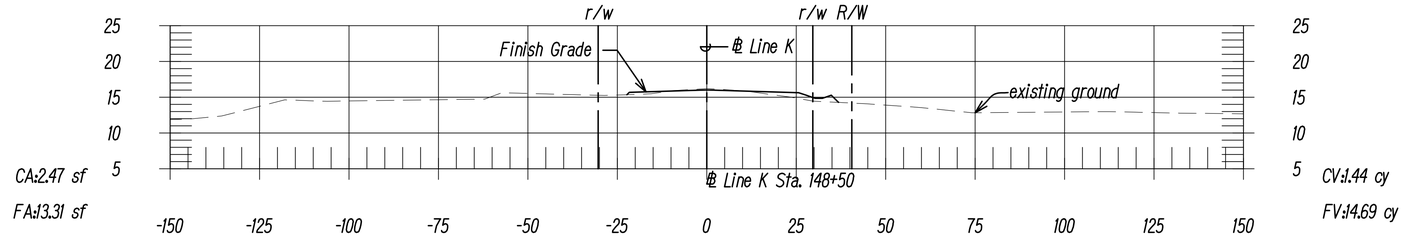
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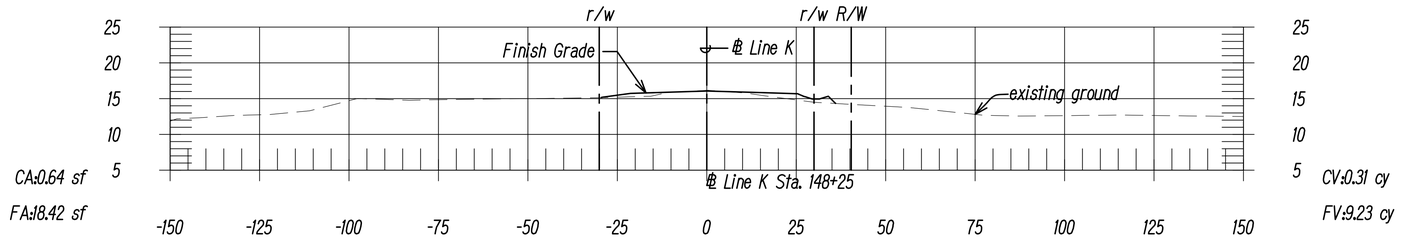
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HAWAII	HAW.	83B-01-09	2023	202	231



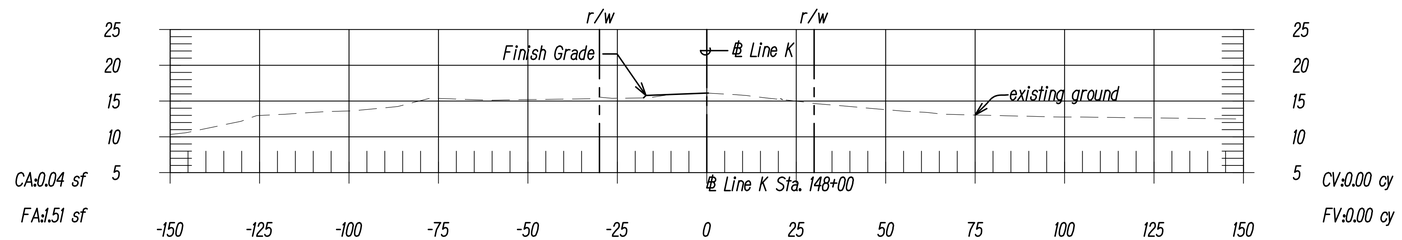
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FV:0.00 cy

GRAPHIC SCALE
1" = 20'
20 0 20 40
SCALE IN FEET

DATE		REVISION

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

CROSS SECTIONS

KAMEHAMEHA HIGHWAY DRAINAGE AND SAFETY IMPROVEMENTS
Vicinity of Laniakea Beach (MP 3.06 to MP 3.54)
Project No. 83B-01-09

Scale: 1"=20' Date: December 2022

DEXTER S. EJI
LICENSED PROFESSIONAL ENGINEER
No. 4739-C
HAWAII, U.S.A.

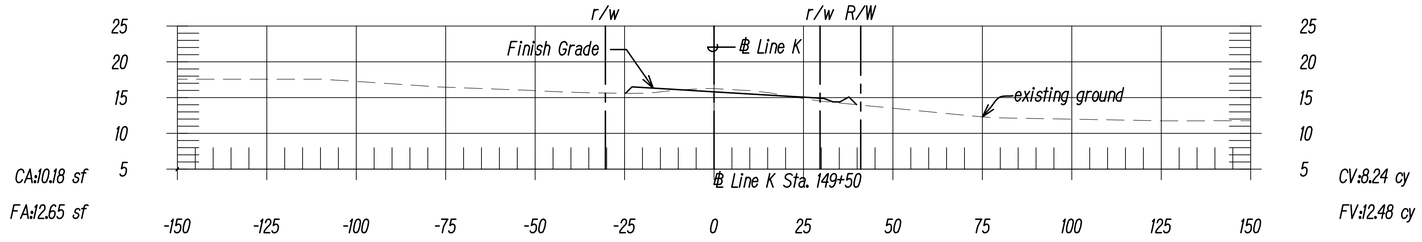
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SIGNATURE 04/30/24 EXPIRATION DATE OF THE LICENSE

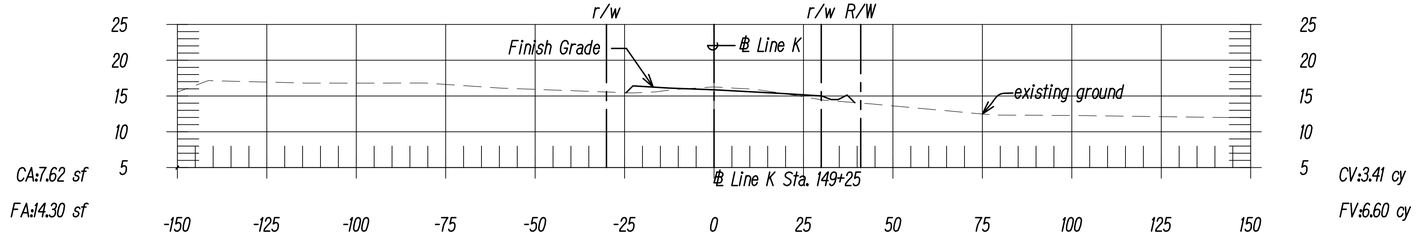
SHEET No. XS-01 OF 30 SHEETS

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

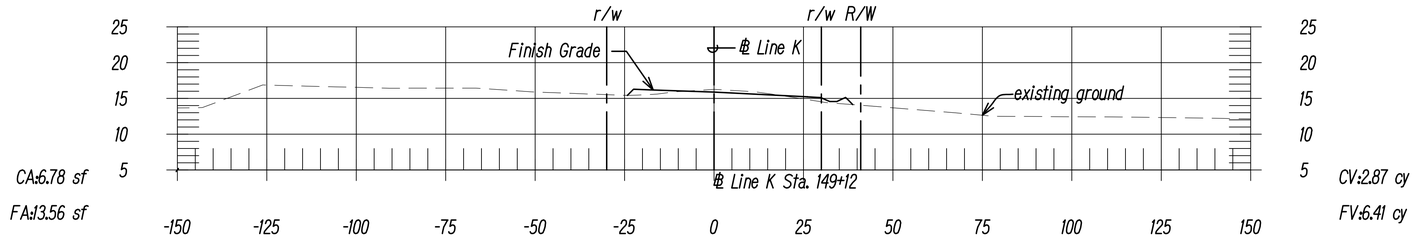
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HAWAII	HAW.	83B-01-09	2023	203	231



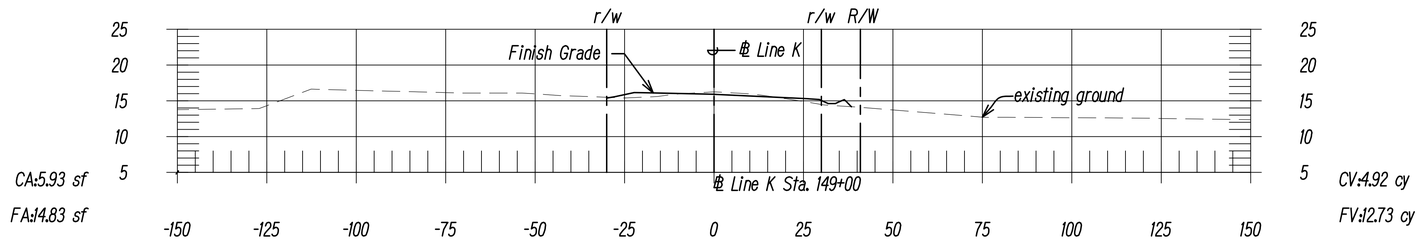
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CV:3.41 cy
FV:6.60 cy



CA:6.78 sf
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CV:2.87 cy
FV:6.41 cy



CA:5.93 sf
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CV:4.92 cy
FV:12.73 cy

ORIGINAL PLAN
NOTE BOOK
No.

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GRAPHIC SCALE
1" = 20'
20 0 20 40
SCALE IN FEET

DATE		REVISION

DEXTER S. EJI
LICENSED PROFESSIONAL ENGINEER
No. 4739-C
HAWAII, U.S.A.

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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

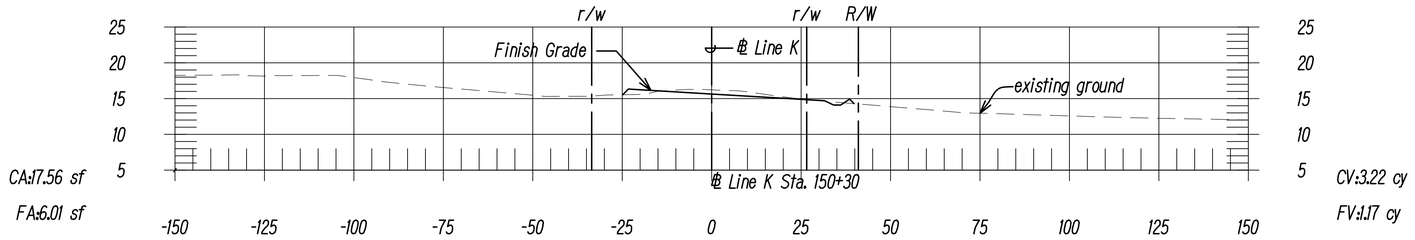
CROSS SECTIONS

KAMEHAMEHA HIGHWAY DRAINAGE AND SAFETY IMPROVEMENTS
Vicinity of Laniakea Beach (MP 3.06 to MP 3.54)
Project No. 83B-01-09

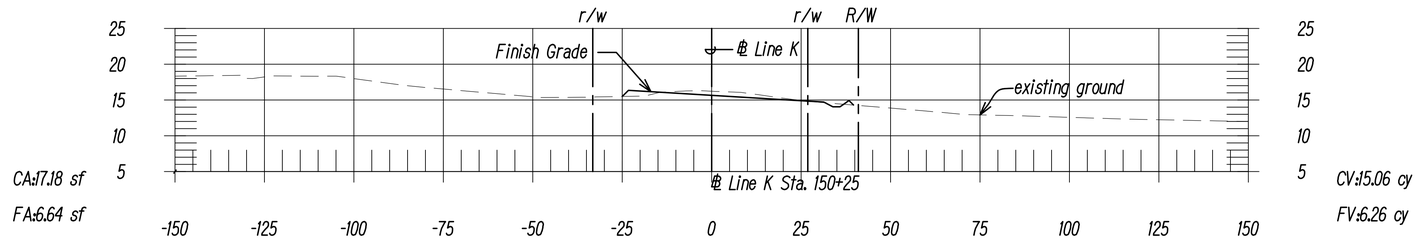
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Date: December 2022

SHEET No. XS-02 OF 30 SHEETS

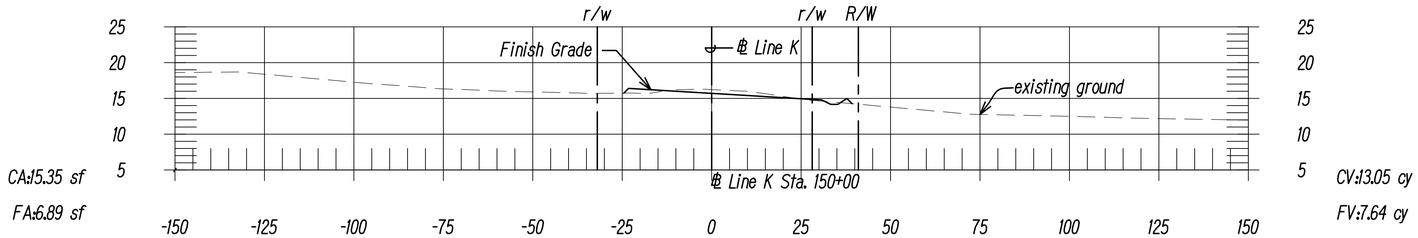
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HAWAII	HAW.	83B-01-09	2023	204	231



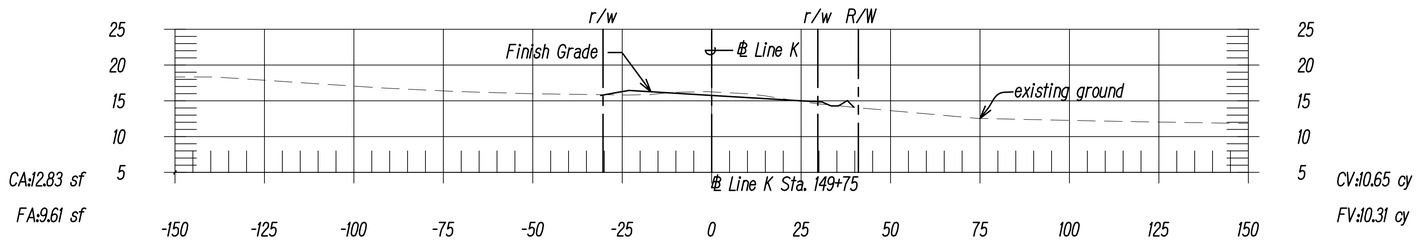
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CA:15.35 sf
FA:6.89 sf
CV:13.05 cy
FV:7.64 cy



CA:12.83 sf
FA:9.61 sf
CV:10.65 cy
FV:10.31 cy

GRAPHIC SCALE

1" = 20'

20 0 20 40

SCALE IN FEET

DATE		REVISION

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

CROSS SECTIONS

KAMEHAMEHA HIGHWAY DRAINAGE AND SAFETY IMPROVEMENTS
Vicinity of Laniakea Beach (MP 3.06 to MP 3.54)
Project No. 83B-01-09

Scale: 1"=20' Date: December 2022

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LICENSED PROFESSIONAL ENGINEER
No. 4739-C
HAWAII, U.S.A.

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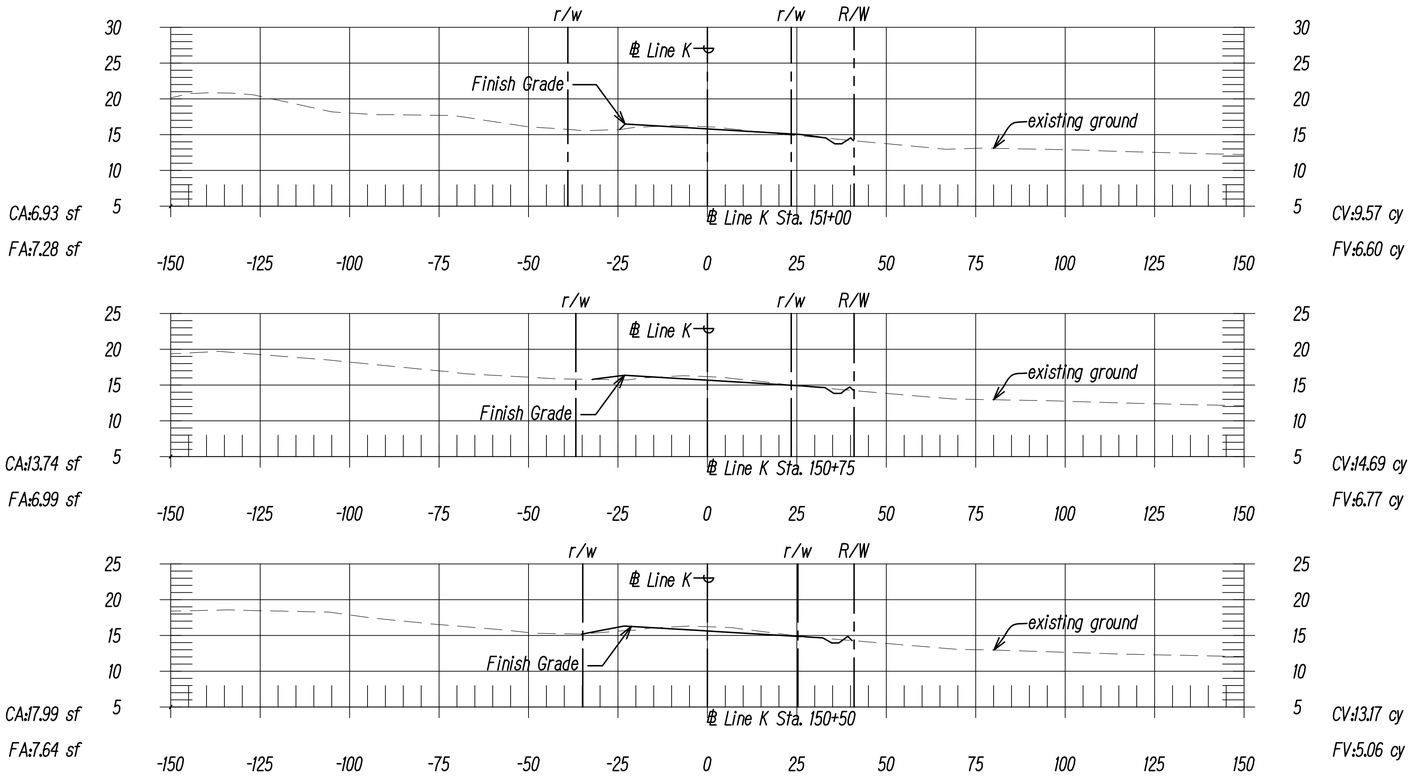
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SHEET No. XS-03 OF 30 SHEETS

ORIGINAL PLAN
NOTE BOOK
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QUANTITIES BY
CHECKED BY
DATE

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83B-01-09	2023	5	231



GRAPHIC SCALE

1" = 20'

20 0 20 40

SCALE IN FEET

ORIGINAL PLAN

NOTE BOOK No.

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DRAWN BY
TRACED BY
DESIGNED BY
QUANTITIES BY
CHECKED BY
DATE

DATE	REVISION

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

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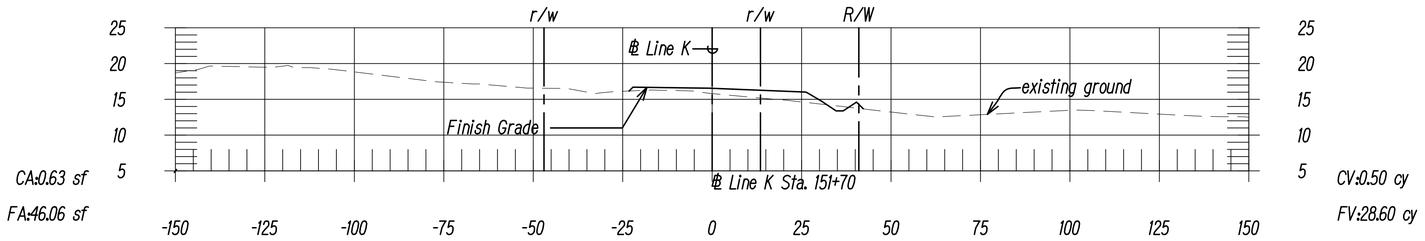
CROSS SECTIONS

KAMEHAMEHA HIGHWAY DRAINAGE AND SAFETY IMPROVEMENTS
Vicinity of Laniakea Beach (MP 3.06 to MP 3.54)
Project No. 83B-01-09

Scale: 1"=20' Date: December 2022

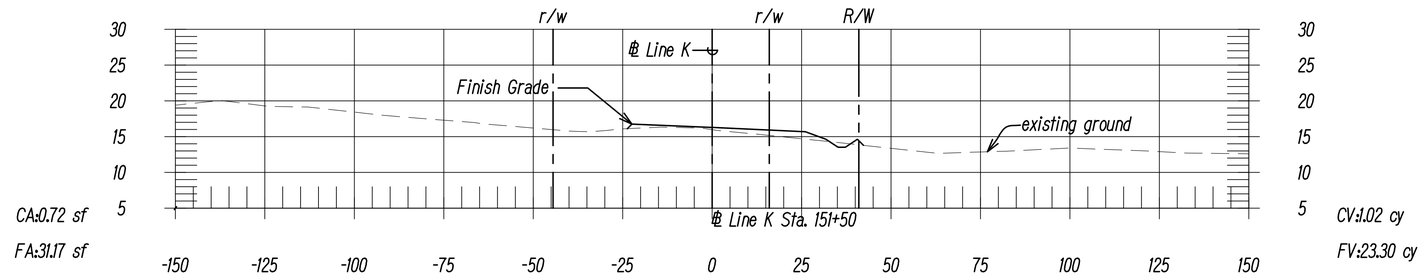
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FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
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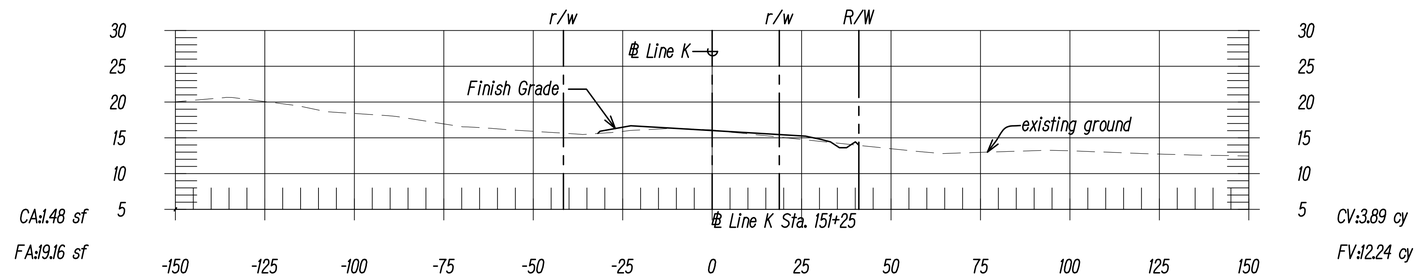
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CV:1.02 cy
FV:23.30 cy



CA:1.48 sf
FA:19.16 sf

CV:3.89 cy
FV:12.24 cy

ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
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NOTE BOOK	TRACED BY	
	DESIGNED BY	
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	CHECKED BY	

GRAPHIC SCALE

1" = 20'

20 0 20 40

SCALE IN FEET

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No. 4739-C
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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
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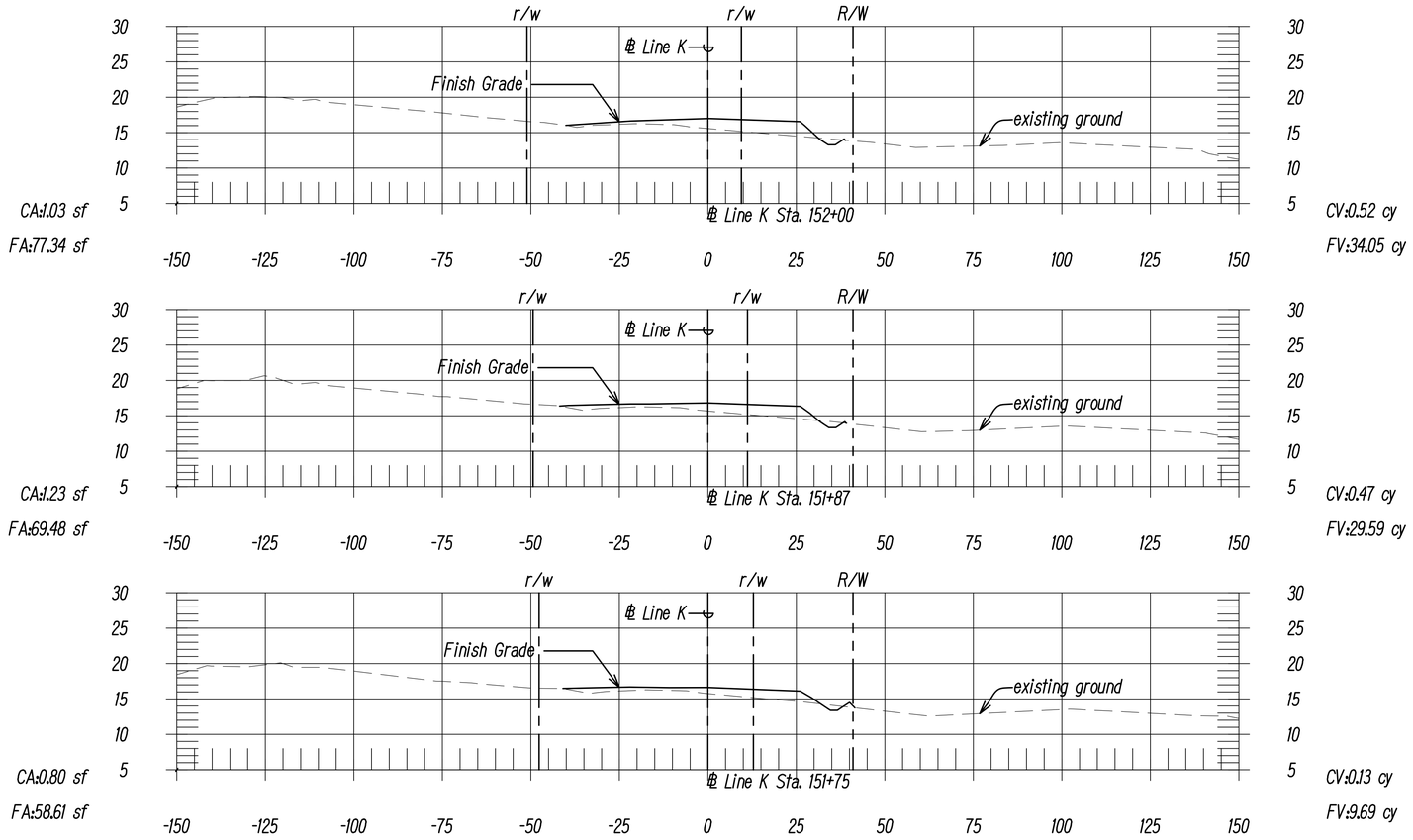
CROSS SECTIONS

KAMEHAMEHA HIGHWAY DRAINAGE AND SAFETY IMPROVEMENTS
Vicinity of Laniakea Beach (MP 3.06 to MP 3.54)
Project No. 83B-01-09

Scale: 1"=20' Date: December 2022

SHEET No. XS-05 OF 30 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83B-01-09	2023	207	231



GRAPHIC SCALE

1" = 20'

20 0 20 40

SCALE IN FEET

ORIGINAL PLAN

NOTE BOOK No.

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DESIGNED BY
QUANTITIES BY
CHECKED BY
DATE

DATE	REVISION

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

CROSS SECTIONS

KAMEHAMEHA HIGHWAY DRAINAGE AND SAFETY IMPROVEMENTS
Vicinity of Laniakea Beach (MP 3.06 to MP 3.54)
Project No. 83B-01-09

Scale: 1"=20' Date: December 2022

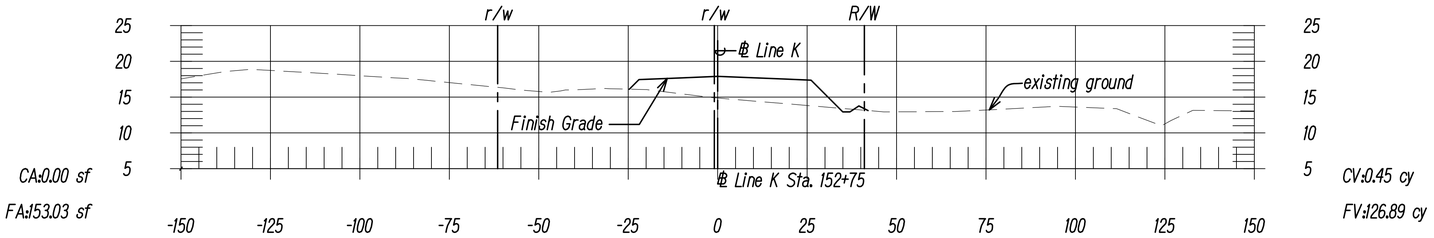
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No. 4739-C
HAWAII, U.S.A.

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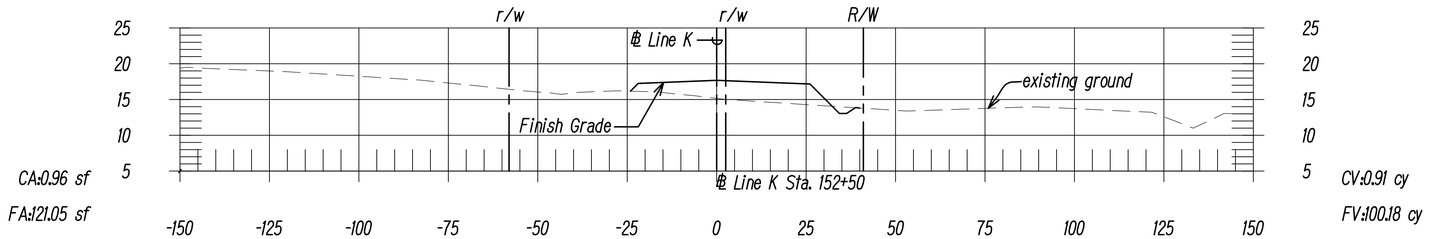
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SHEET No. XS-06 OF 30 SHEETS

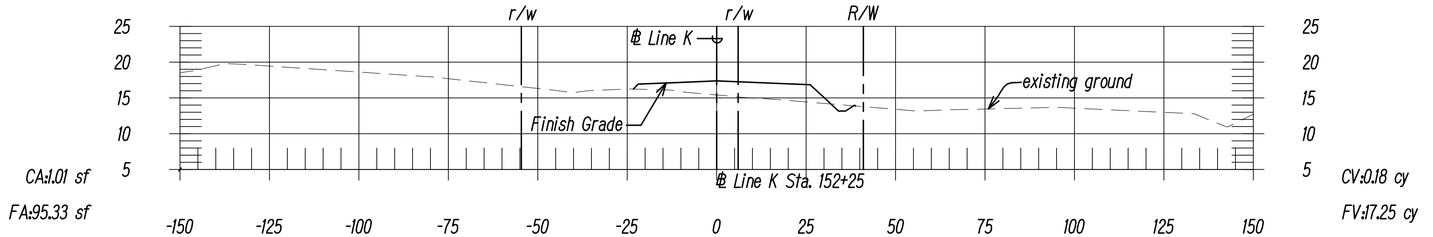
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HAWAII	HAW.	83B-01-09	2023	208	231



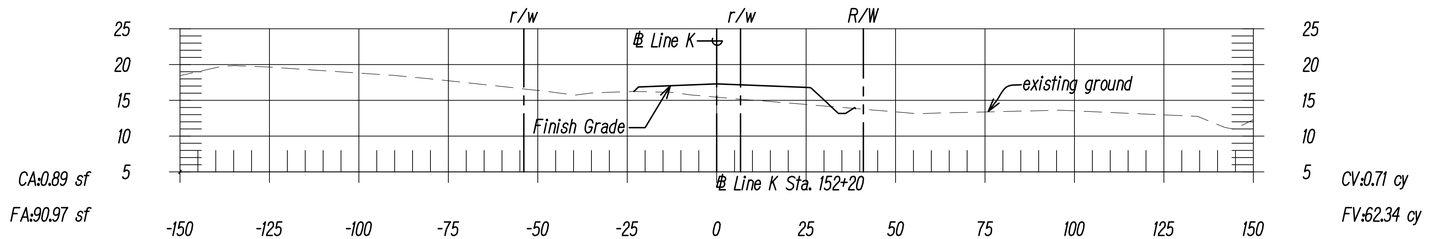
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FV:100.18 cy



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FV:17.25 cy



CA:0.89 sf
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FV:62.34 cy

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

GRAPHIC SCALE

1" = 20'

20 0 20 40

SCALE IN FEET

DATE		REVISION

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

DEXTER S. EJI
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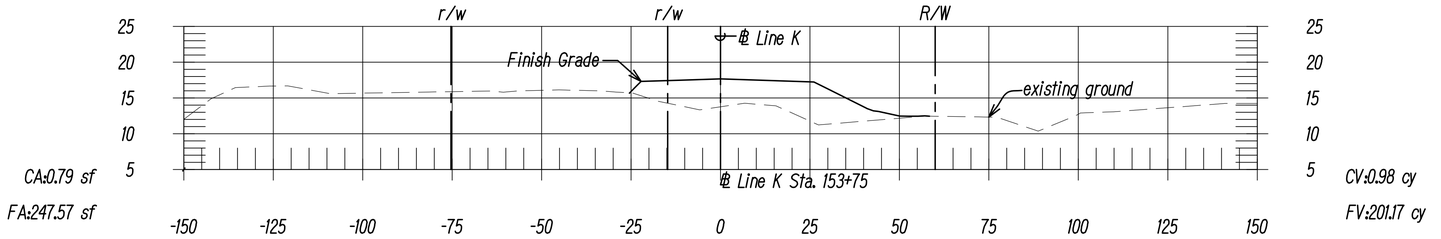
CROSS SECTIONS

KAMEHAMEHA HIGHWAY DRAINAGE AND SAFETY IMPROVEMENTS
Vicinity of Laniakea Beach (MP 3.06 to MP 3.54)
Project No. 83B-01-09

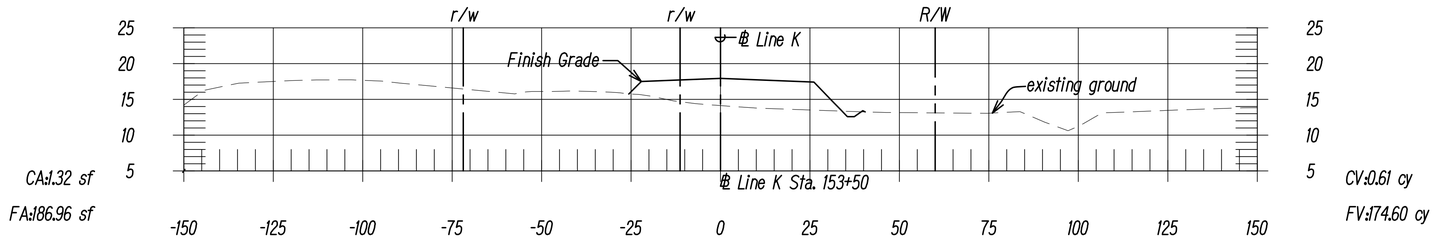
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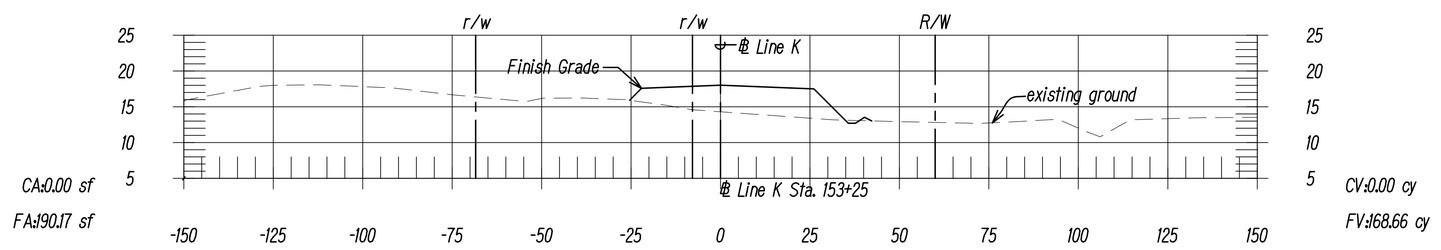
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HAWAII	HAW.	83B-01-09	2023	209	231



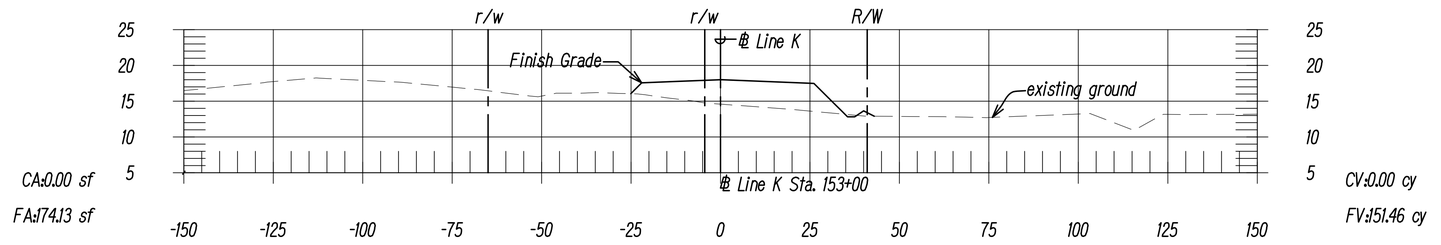
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FV:168.66 cy



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CV:0.00 cy
FV:151.46 cy

ORIGINAL PLAN
NOTE BOOK
No.

SURVEY PLOTTED BY
DRAWN BY
TRACED BY
DESIGNED BY
QUANTITIES BY
CHECKED BY
DATE

GRAPHIC SCALE
1" = 20'
20 0 20 40
SCALE IN FEET

DATE		REVISION

DEXTER S. EJI
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No. 4739-C
HAWAII, U.S.A.

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HIGHWAYS DIVISION

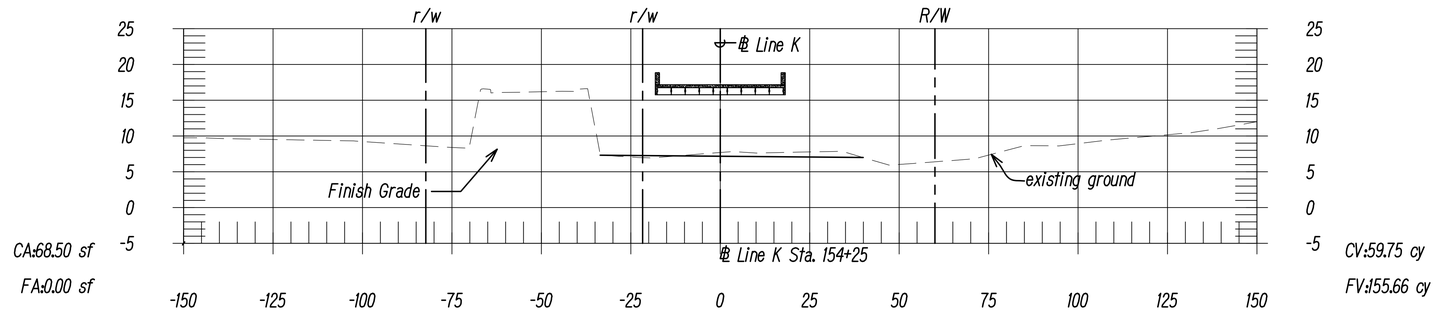
CROSS SECTIONS

KAMEHAMEHA HIGHWAY DRAINAGE AND SAFETY IMPROVEMENTS
Vicinity of Laniakea Beach (MP 3.06 to MP 3.54)
Project No. 83B-01-09

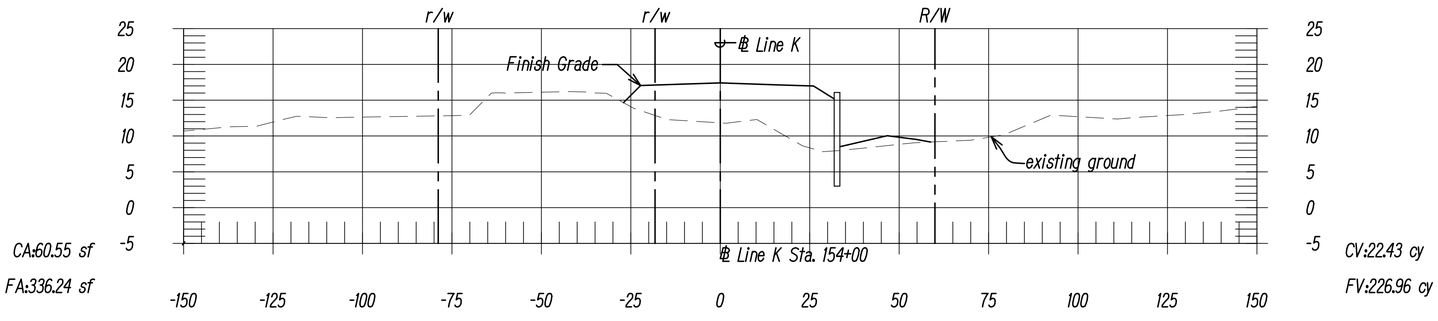
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SHEET No. XS-08 OF 30 SHEETS

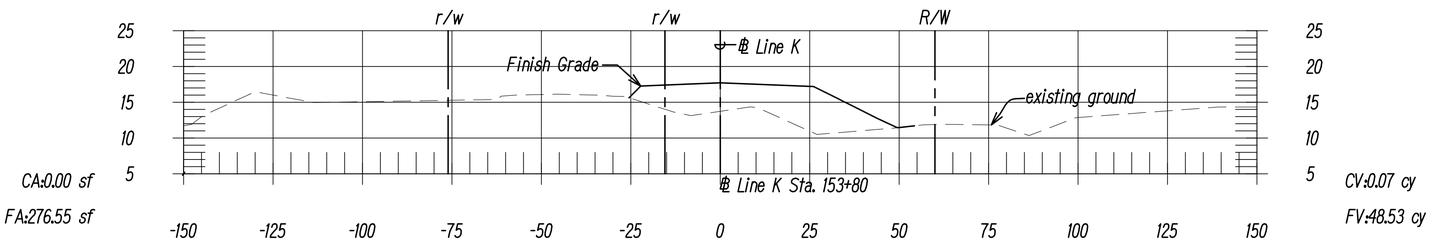
FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83B-01-09	2023	210	231



CA:68.50 sf
FA:0.00 sf
CV:59.75 cy
FV:155.66 cy



CA:60.55 sf
FA:336.24 sf
CV:22.43 cy
FV:226.96 cy



CA:0.00 sf
FA:276.55 sf
CV:0.07 cy
FV:48.53 cy

SURVEY PLOTTED BY
DRAWN BY
TRACED BY
DESIGNED BY
QUANTITIES BY
CHECKED BY
DATE

ORIGINAL PLAN
NOTE BOOK
No.

GRAPHIC SCALE
1" = 20'
20 0 20 40
SCALE IN FEET

DATE		REVISION

DEXTER S. EJI
LICENSED PROFESSIONAL ENGINEER
No. 4739-C
HAWAII, U.S.A.

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SIGNATURE 04/30/24 EXPIRATION DATE OF THE LICENSE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

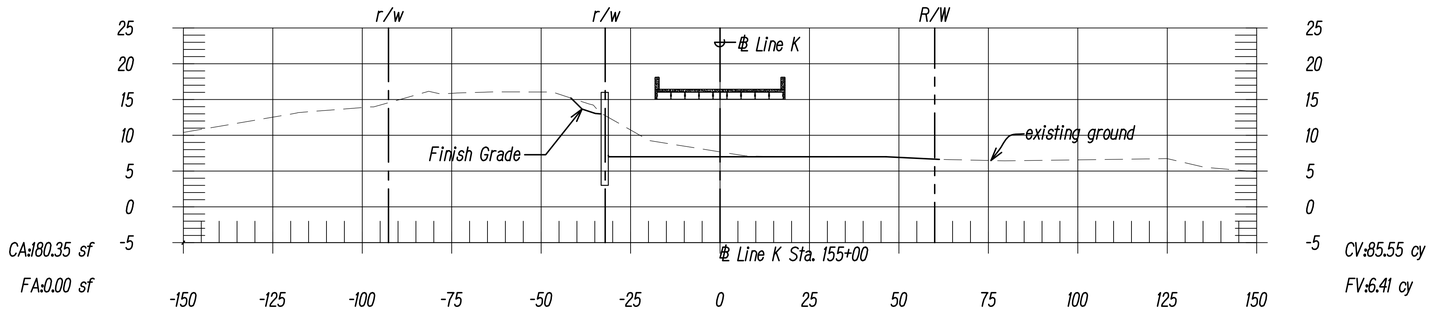
CROSS SECTIONS

KAMEHAMEHA HIGHWAY DRAINAGE AND SAFETY IMPROVEMENTS
Vicinity of Laniakea Beach (MP 3.06 to MP 3.54)
Project No. 83B-01-09

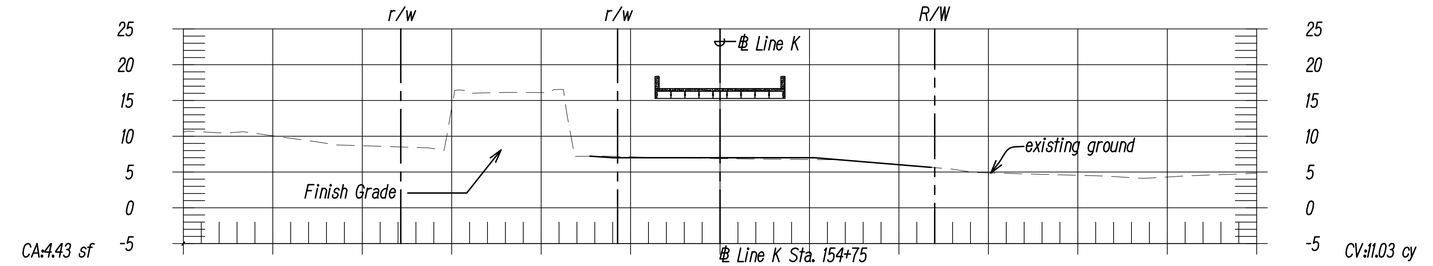
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SHEET No. XS-09 OF 30 SHEETS

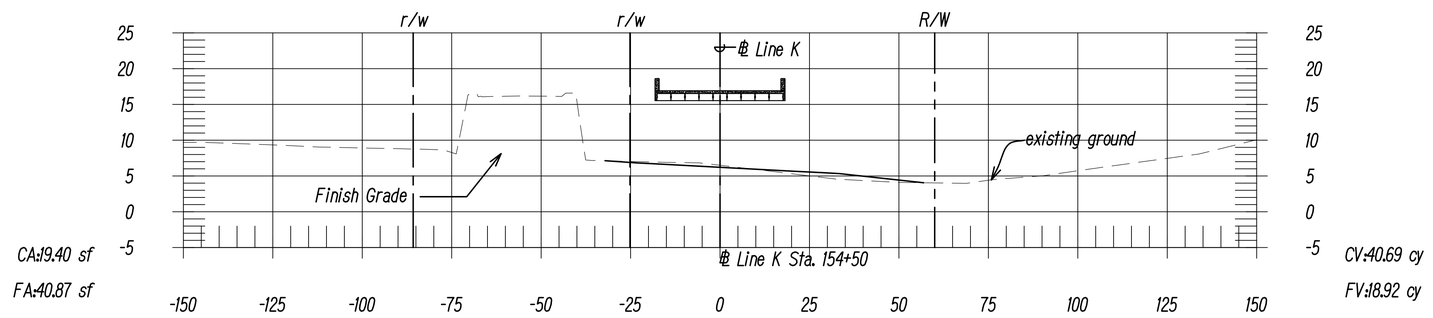
FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83B-01-09	2023	211	231



CA:180.35 sf
FA:0.00 sf
CV:85.55 cy
FV:6.41 cy



CA:4.43 sf
FA:13.86 sf
CV:11.03 cy
FV:25.34 cy



CA:19.40 sf
FA:40.87 sf
CV:40.69 cy
FV:18.92 cy

ORIGINAL PLAN
NOTE BOOK
No.

SURVEY PLOTTED BY
DRAWN BY
TRACED BY
DESIGNED BY
QUANTITIES BY
CHECKED BY
DATE

GRAPHIC SCALE
1" = 20'
20 0 20 40
SCALE IN FEET

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04/30/24
EXPIRATION DATE OF THE LICENSE

DATE		REVISION

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

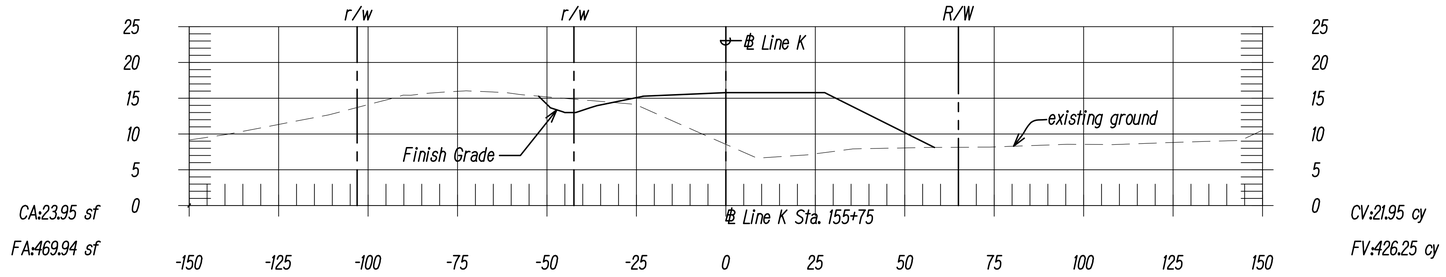
CROSS SECTIONS

KAMEHAMEHA HIGHWAY DRAINAGE AND SAFETY IMPROVEMENTS
Vicinity of Laniakea Beach (MP 3.06 to MP 3.54)
Project No. 83B-01-09

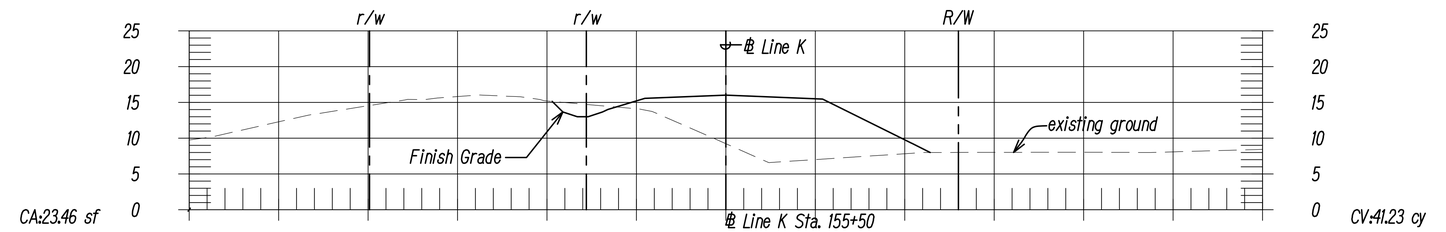
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Date: December 2022

SHEET No. XS-10 OF 30 SHEETS

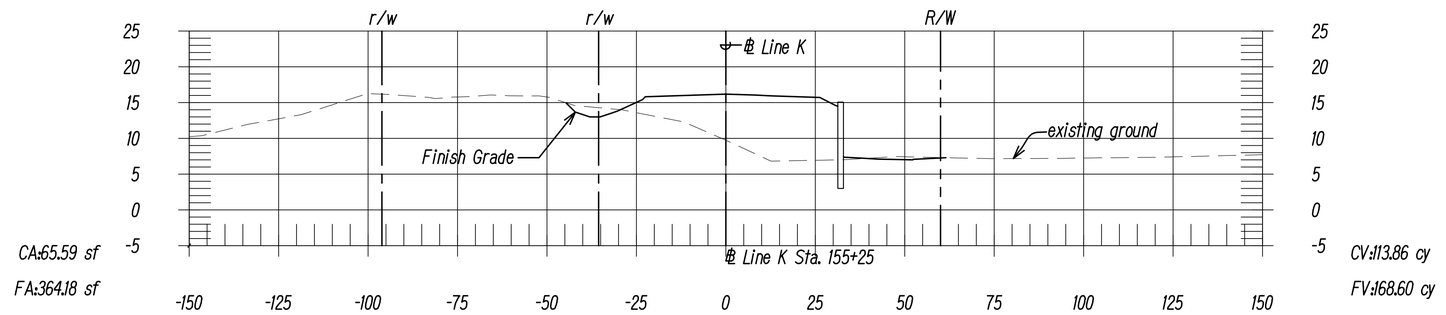
FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83B-01-09	2023	212	231



CA:23.95 sf
FA:469.94 sf
CV:21.95 cy
FV:426.25 cy



CA:23.46 sf
FA:450.76 sf
CV:41.23 cy
FV:377.28 cy



CA:65.59 sf
FA:364.18 sf
CV:113.86 cy
FV:168.60 cy

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

GRAPHIC SCALE

1" = 20'

20 0 20 40

SCALE IN FEET

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EXPIRATION DATE OF THE LICENSE

DATE	REVISION

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

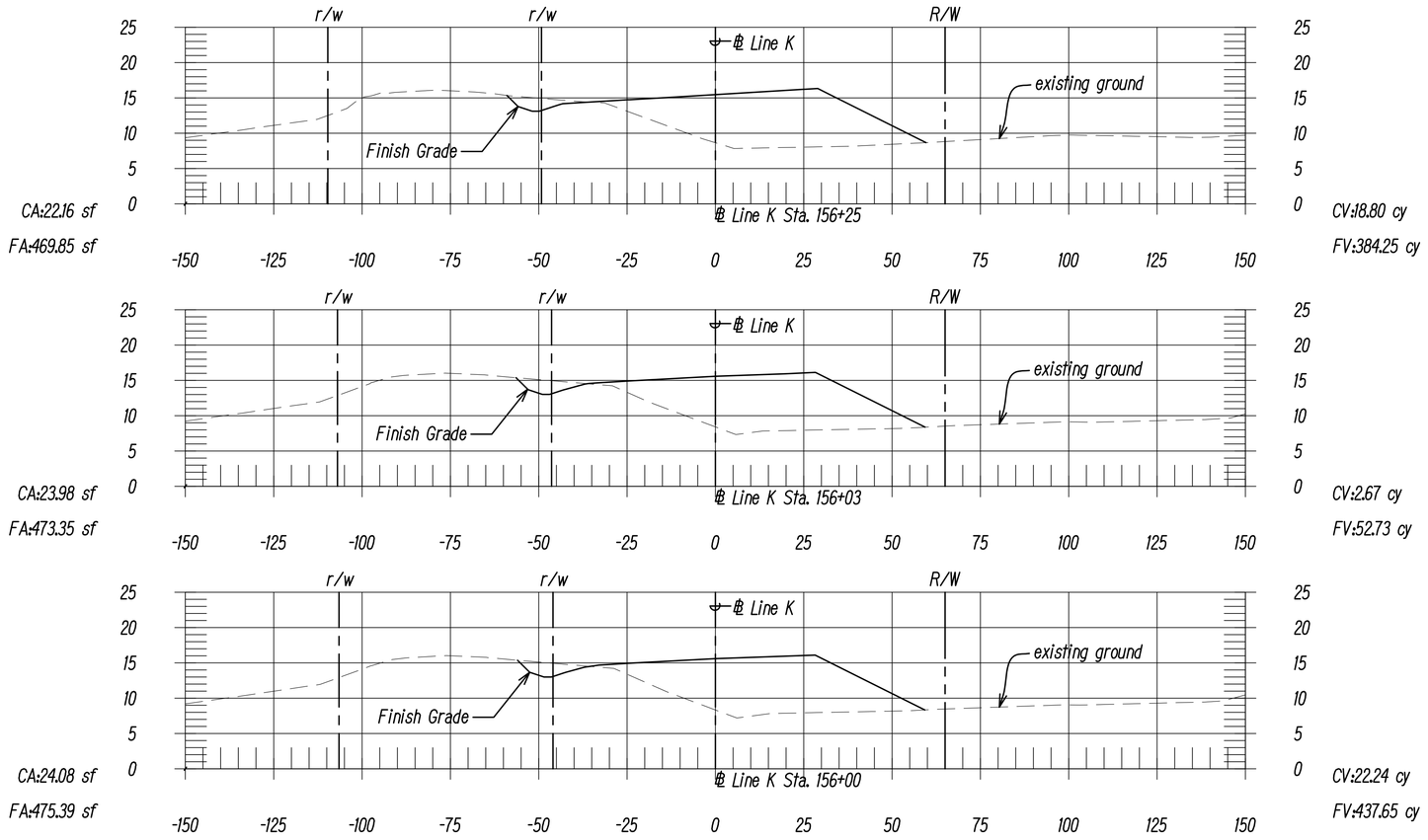
CROSS SECTIONS

KAMEHAMEHA HIGHWAY DRAINAGE AND SAFETY IMPROVEMENTS
Vicinity of Laniakea Beach (MP 3.06 to MP 3.54)
Project No. 83B-01-09

Scale: 1"=20' Date: December 2022

SHEET No. XS-11 OF 30 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83B-01-09	2023	213	231



GRAPHIC SCALE

1" = 20'

20 0 20 40

SCALE IN FEET

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

DATE		REVISION

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

CROSS SECTIONS

KAMEHAMEHA HIGHWAY DRAINAGE AND SAFETY IMPROVEMENTS
Vicinity of Laniakea Beach (MP 3.06 to MP 3.54)
Project No. 83B-01-09

Scale: 1"=20' Date: December 2022

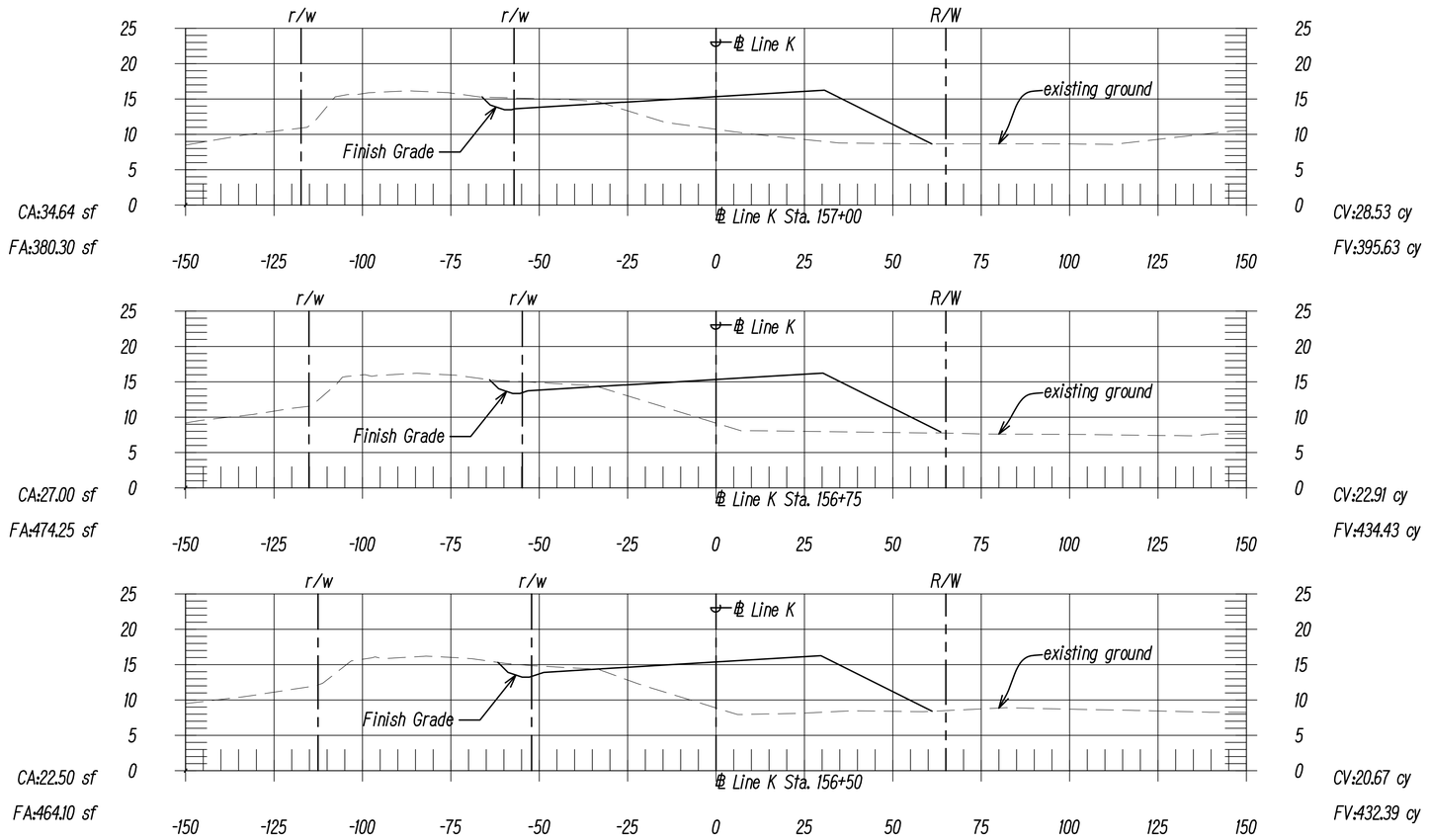
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SHEET No. XS-12 OF 30 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83B-01-09	2023	214	231



GRAPHIC SCALE

1" = 20'

20 0 20 40

SCALE IN FEET

ORIGINAL PLAN
NOTE BOOK
No.

SURVEY PLOTTED BY
DRAWN BY
TRACED BY
DESIGNED BY
QUANTITIES BY
CHECKED BY
DATE

DATE		REVISION

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

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No. 4739-C
HAWAII, U.S.A.

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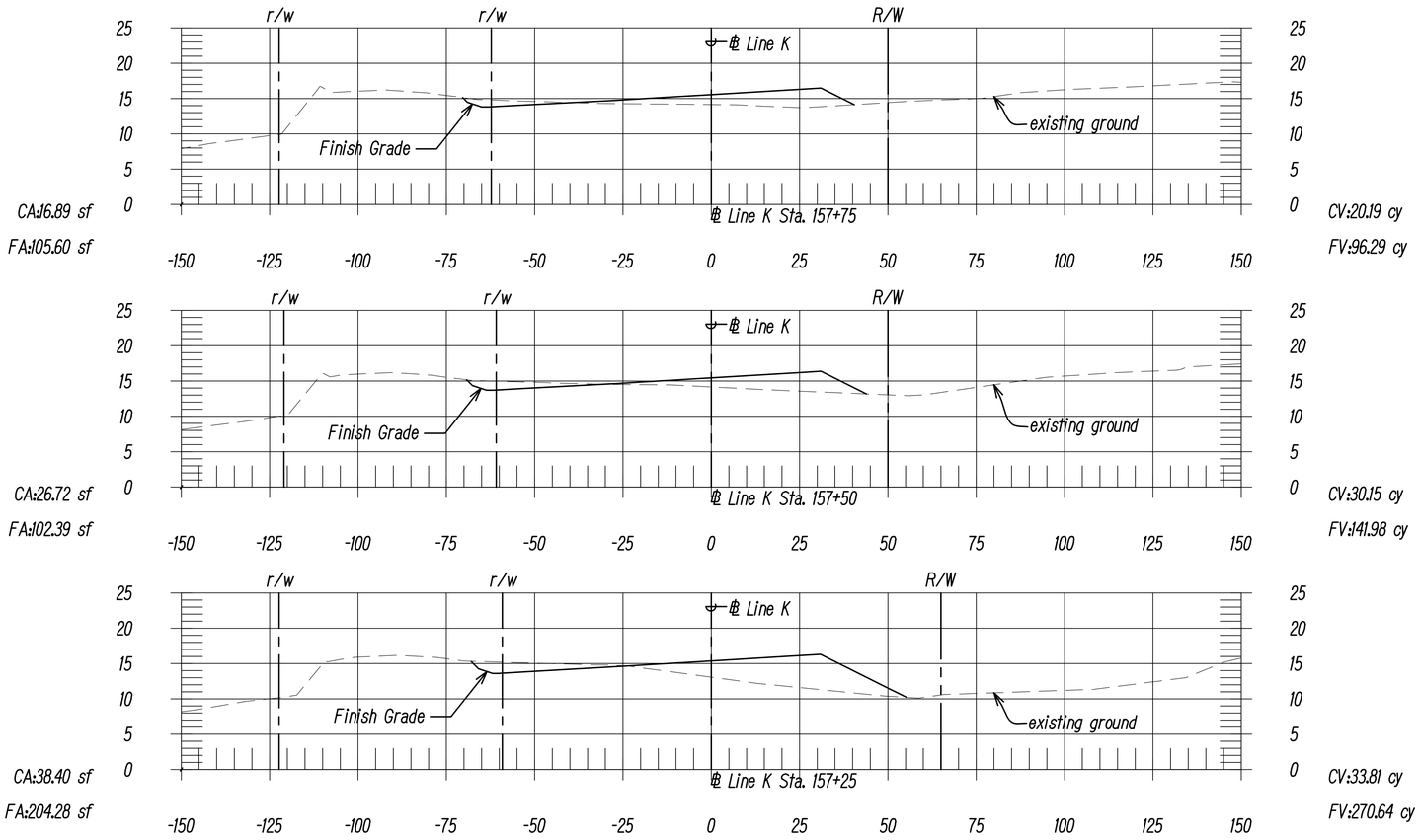
CROSS SECTIONS

KAMEHAMEHA HIGHWAY DRAINAGE AND SAFETY IMPROVEMENTS
Vicinity of Laniakea Beach (MP 3.06 to MP 3.54)
Project No. 83B-01-09

Scale: 1"=20' Date: December 2022

SHEET No. XS-13 OF 30 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83B-01-09	2023	215	231



SURVEY PLOTTED BY
DRAWN BY
TRACED BY
DESIGNED BY
QUANTITIES BY
CHECKED BY
DATE

ORIGINAL PLAN
NOTE BOOK
No.

GRAPHIC SCALE
1" = 20'
20 0 20 40
SCALE IN FEET

DATE		REVISION

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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

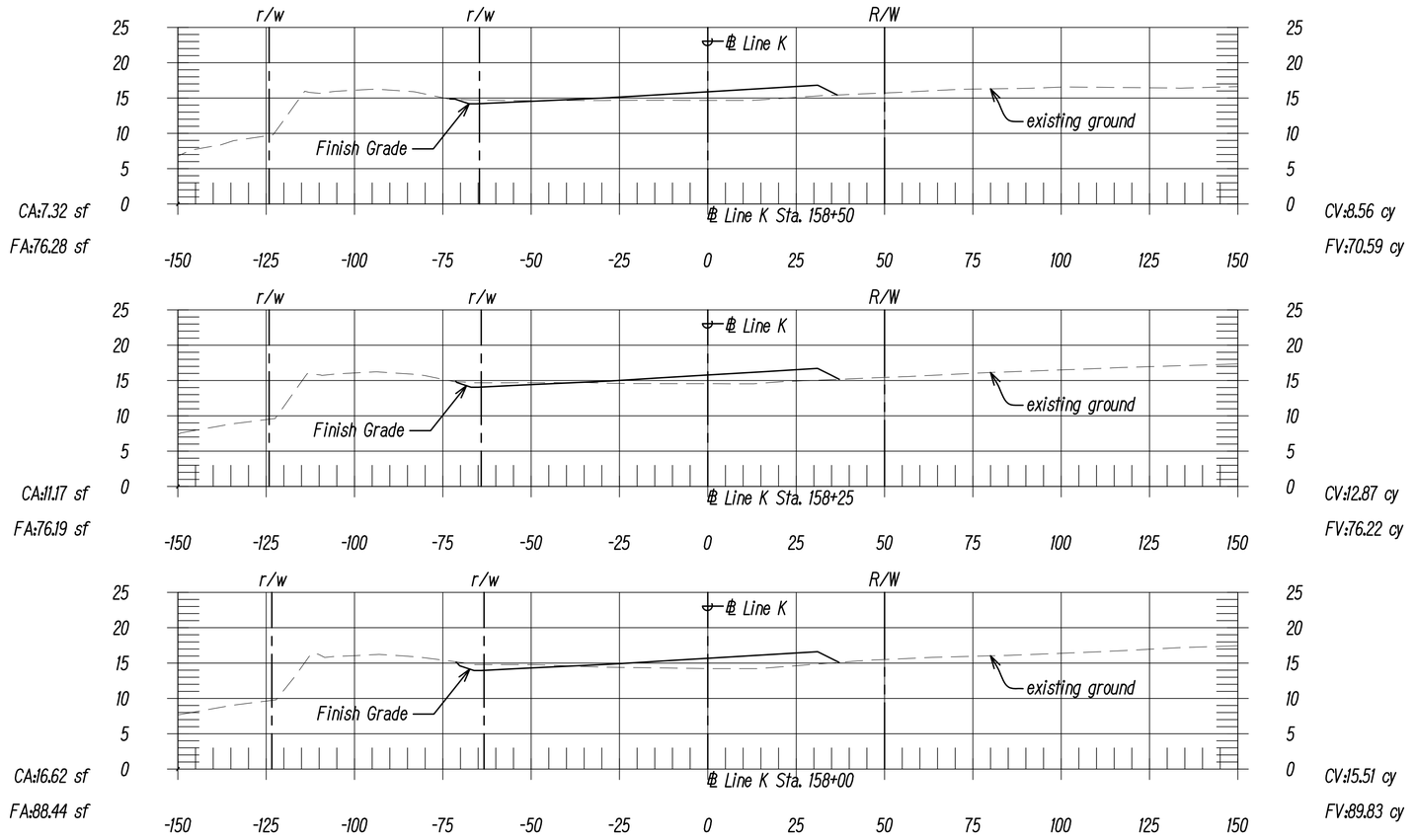
CROSS SECTIONS

KAMEHAMEHA HIGHWAY DRAINAGE AND SAFETY IMPROVEMENTS
Vicinity of Laniakea Beach (MP 3.06 to MP 3.54)
Project No. 83B-01-09

Scale: 1"=20' Date: December 2022

SHEET No. XS-14 OF 30 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83B-01-09	2023	216	231



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

GRAPHIC SCALE

1" = 20' 20 0 20 40

SCALE IN FEET

DATE		REVISION

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

CROSS SECTIONS

KAMEHAMEHA HIGHWAY DRAINAGE AND SAFETY IMPROVEMENTS
Vicinity of Laniakea Beach (MP 3.06 to MP 3.54)
Project No. 83B-01-09

Scale: 1"=20' Date: December 2022

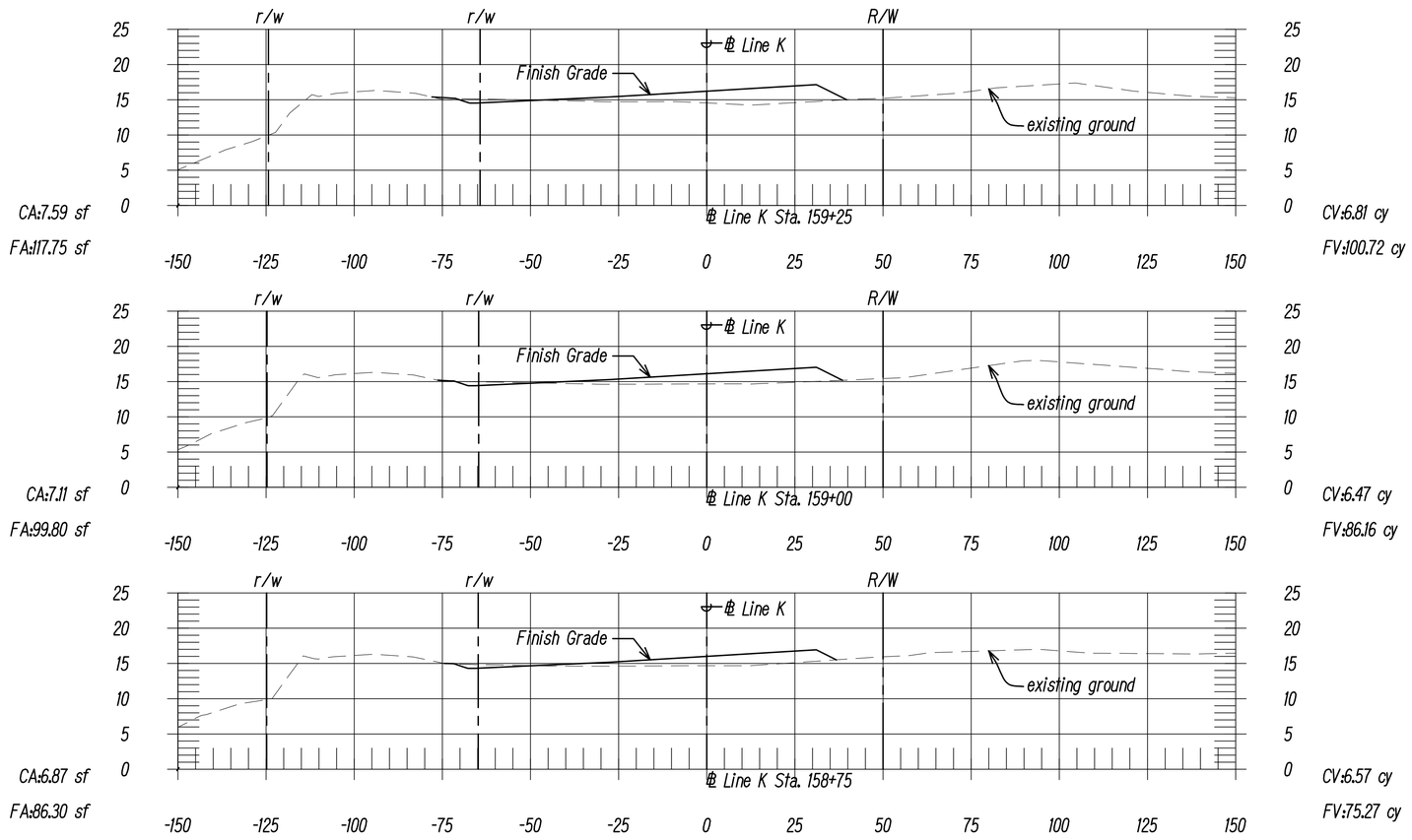
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HAWAII, U.S.A.

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SHEET No. XS-15 OF 30 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83B-01-09	2023	217	231



SURVEY PLOTTED BY
DRAWN BY
TRACED BY
DESIGNED BY
QUANTITIES BY
CHECKED BY
DATE

ORIGINAL PLAN
NOTE BOOK
No.

GRAPHIC SCALE
1" = 20'
20 0 20 40
SCALE IN FEET

DATE		REVISION

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STATE OF HAWAII
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HIGHWAYS DIVISION

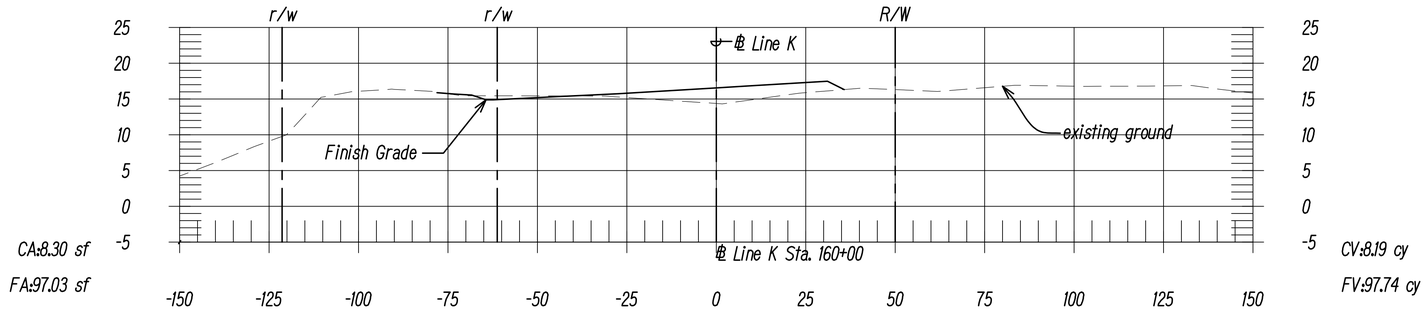
CROSS SECTIONS

KAMEHAMEHA HIGHWAY DRAINAGE AND SAFETY IMPROVEMENTS
Vicinity of Laniakea Beach (MP 3.06 to MP 3.54)
Project No. 83B-01-09

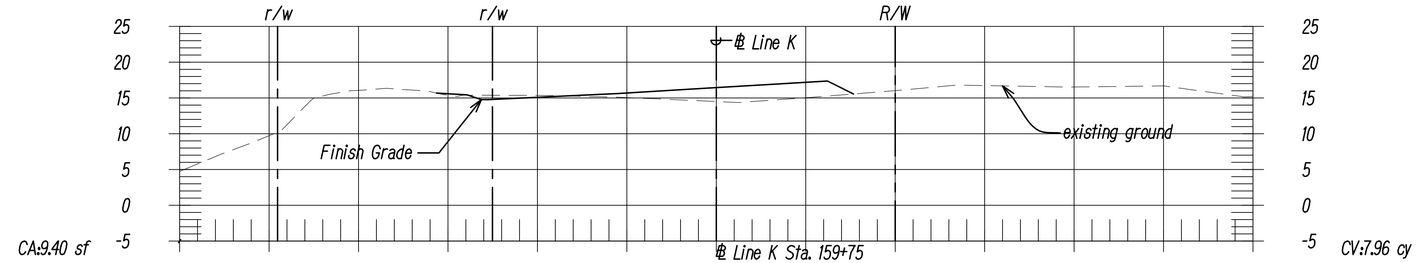
Scale: 1"=20' Date: December 2022

SHEET No. XS-16 OF 30 SHEETS

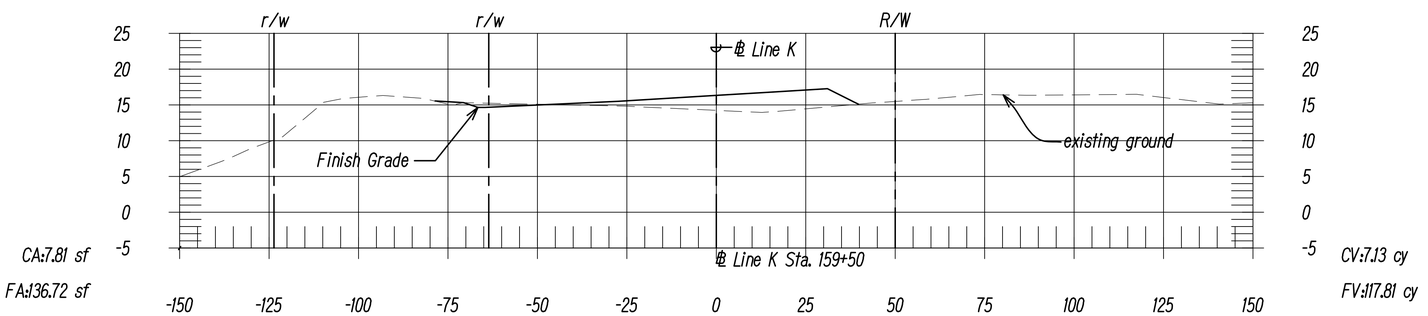
FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83B-01-09	2023	218	231



CA:8.30 sf
FA:97.03 sf
CV:8.19 cy
FV:97.74 cy



CA:9.40 sf
FA:114.08 sf
CV:7.96 cy
FV:116.11 cy



CA:7.81 sf
FA:136.72 sf
CV:7.13 cy
FV:117.81 cy

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

GRAPHIC SCALE

1" = 20' 20 0 20 40

SCALE IN FEET

DATE		REVISION

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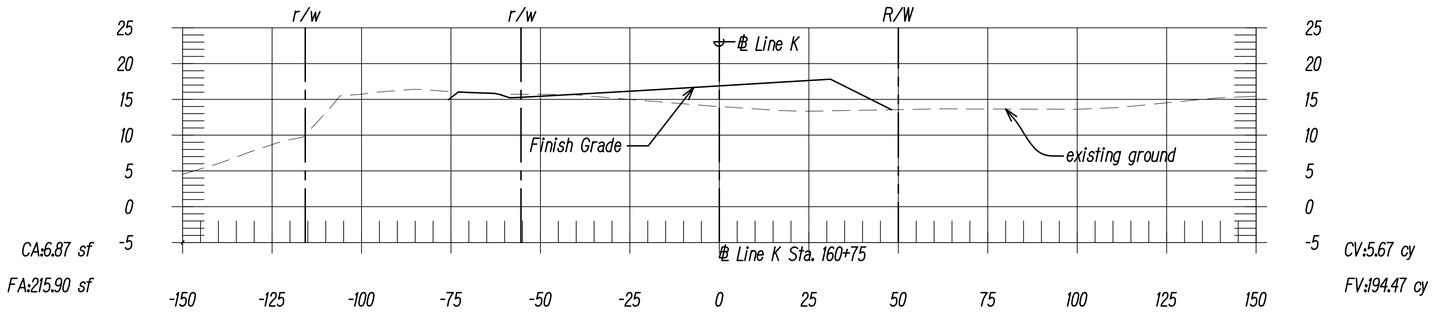
CROSS SECTIONS

KAMEHAMEHA HIGHWAY DRAINAGE AND SAFETY IMPROVEMENTS
Vicinity of Laniakea Beach (MP 3.06 to MP 3.54)
Project No. 83B-01-09

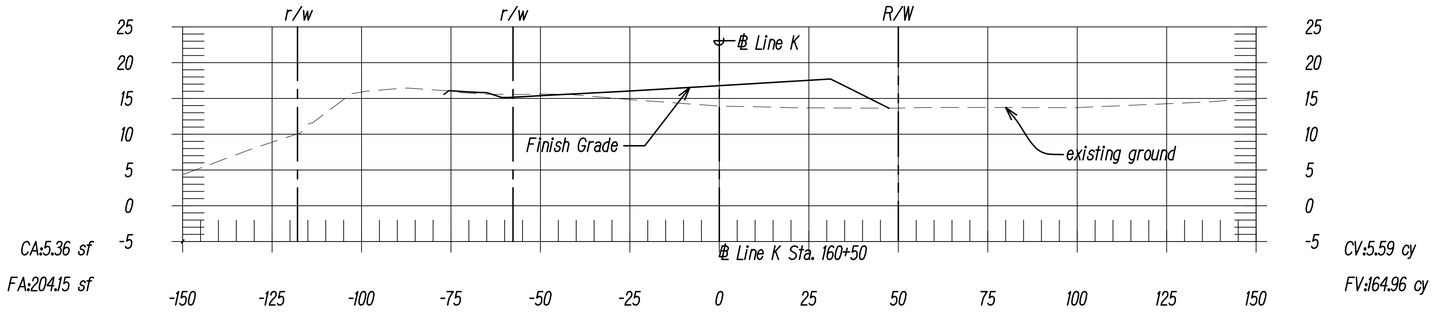
Scale: 1"=20' Date: December 2022

SHEET No. XS-17 OF 30 SHEETS

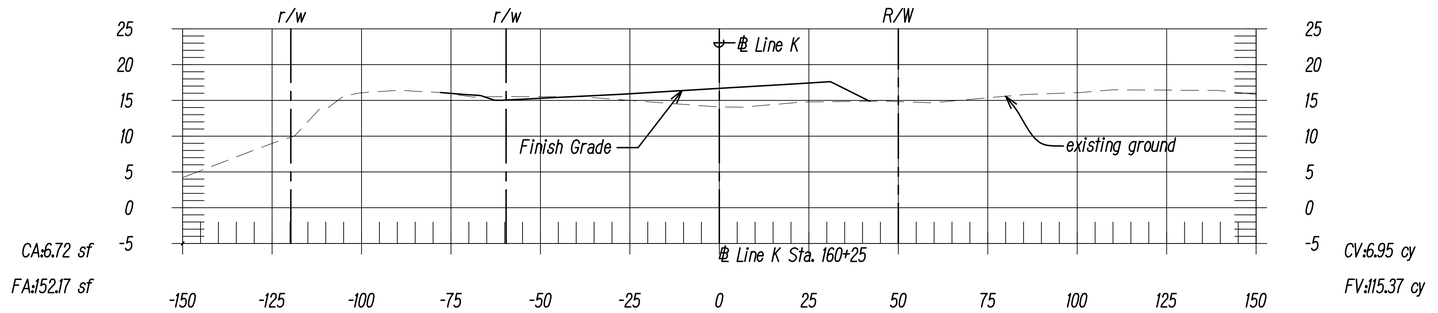
FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83B-01-09	2023	219	231



CA:6.87 sf
FA:215.90 sf
CV:5.67 cy
FV:194.47 cy



CA:5.36 sf
FA:204.15 sf
CV:5.59 cy
FV:164.96 cy



CA:6.72 sf
FA:152.17 sf
CV:6.95 cy
FV:115.37 cy

ORIGINAL PLAN
NOTE BOOK
No.

SURVEY PLOTTED BY
DRAWN BY
TRACED BY
DESIGNED BY
QUANTITIES BY
CHECKED BY
DATE

GRAPHIC SCALE
1" = 20'
20 0 20 40
SCALE IN FEET

DATE		REVISION

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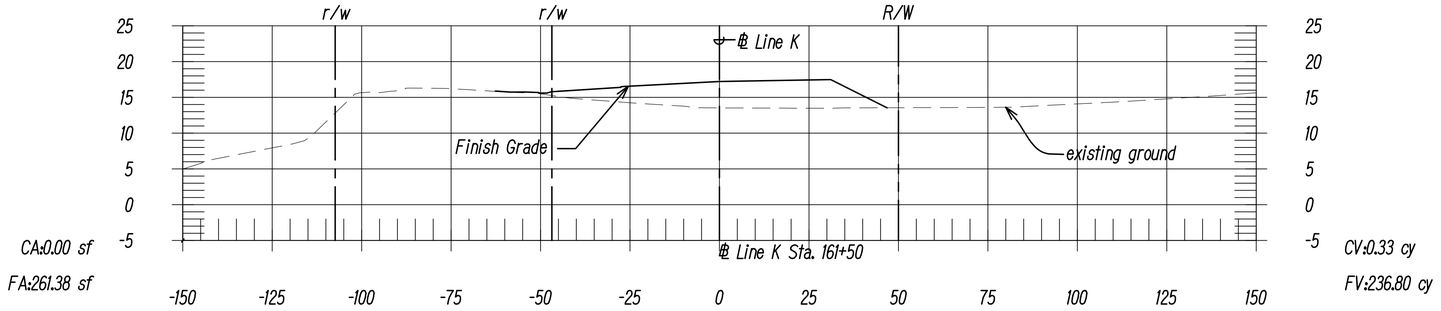
CROSS SECTIONS

KAMEHAMEHA HIGHWAY DRAINAGE AND SAFETY IMPROVEMENTS
Vicinity of Laniakea Beach (MP 3.06 to MP 3.54)
Project No. 83B-01-09

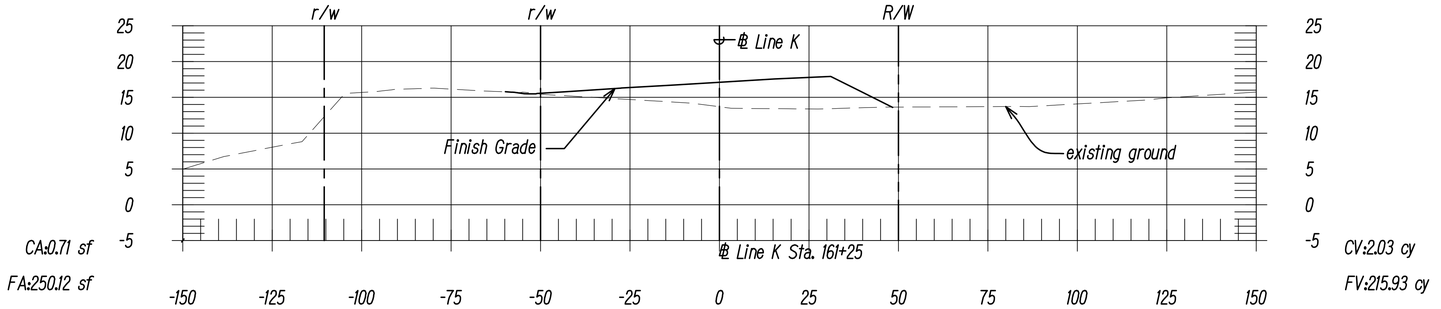
Scale: 1"=20'
Date: December 2022

SHEET No. XS-18 OF 30 SHEETS

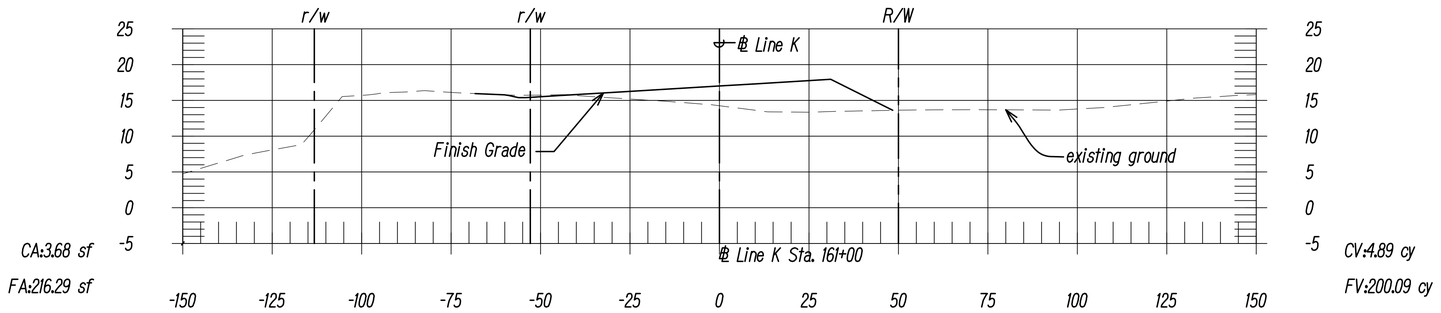
FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83B-01-09	2023	220	231



CA:0.00 sf
FA:261.38 sf
CV:0.33 cy
FV:236.80 cy



CA:0.71 sf
FA:250.12 sf
CV:2.03 cy
FV:215.93 cy



CA:3.68 sf
FA:216.29 sf
CV:4.89 cy
FV:200.09 cy

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

GRAPHIC SCALE

1" = 20'

20 0 20 40

SCALE IN FEET

DATE		REVISION

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

CROSS SECTIONS

KAMEHAMEHA HIGHWAY DRAINAGE AND SAFETY IMPROVEMENTS
Vicinity of Laniakea Beach (MP 3.06 to MP 3.54)
Project No. 83B-01-09

Scale: 1"=20' Date: December 2022

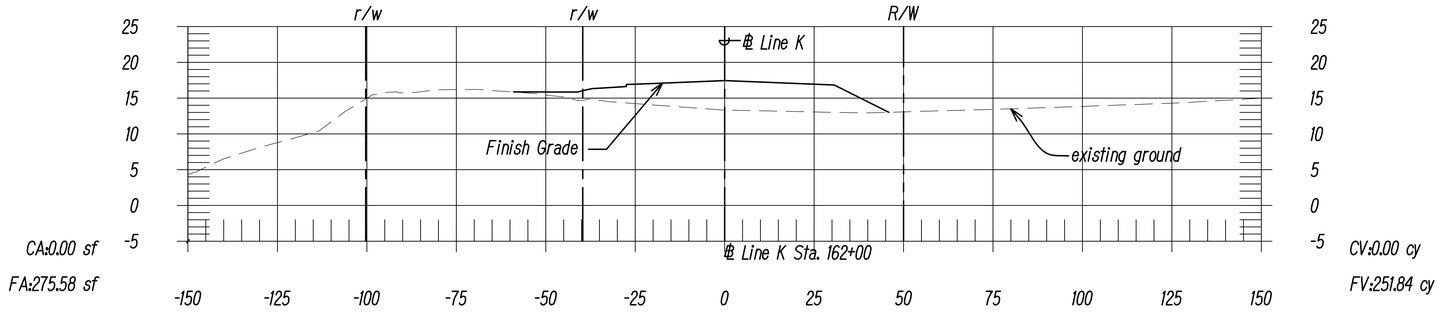
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HAWAII, U.S.A.

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SHEET No. XS-19 OF 30 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83B-01-09	2023	221	231

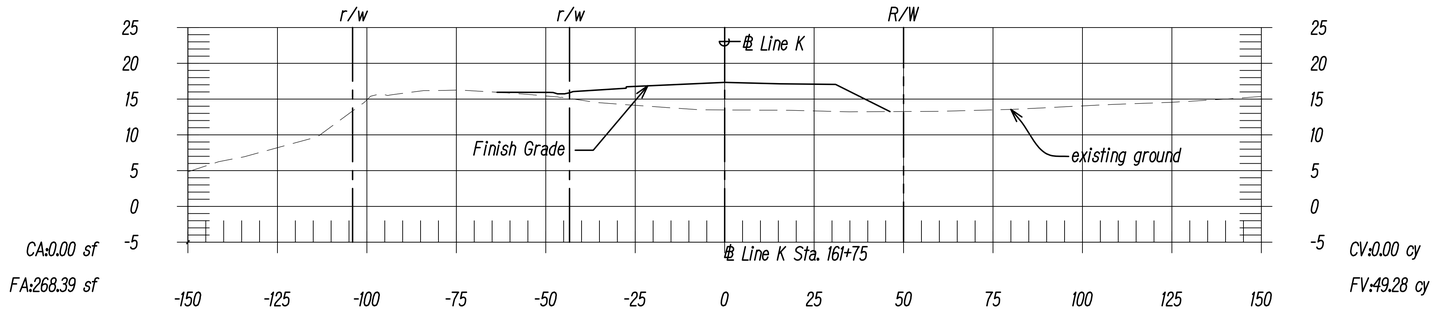


CA:0.00 sf

FA:275.58 sf

CV:0.00 cy

FV:251.84 cy

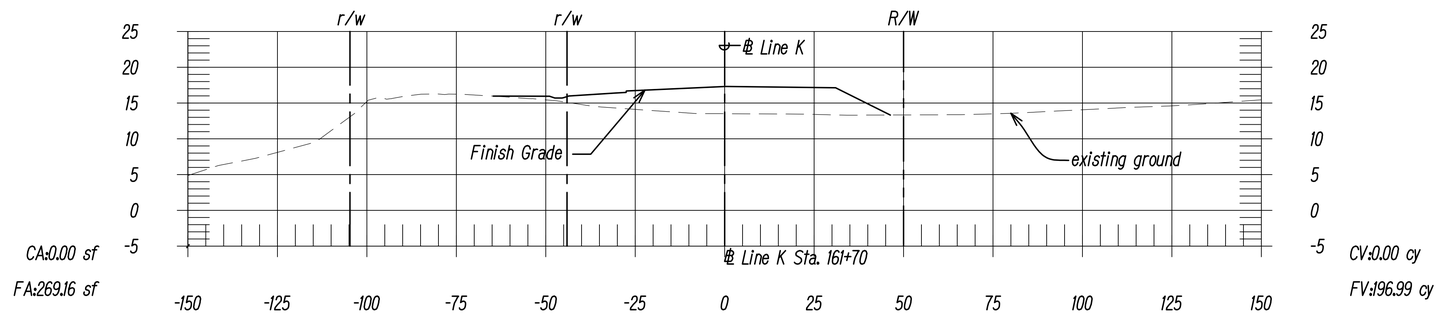


CA:0.00 sf

FA:268.39 sf

CV:0.00 cy

FV:49.28 cy



CA:0.00 sf

FA:269.16 sf

CV:0.00 cy

FV:196.99 cy

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

GRAPHIC SCALE

1" = 20'

20 0 20 40

SCALE IN FEET

DATE		REVISION

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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

CROSS SECTIONS

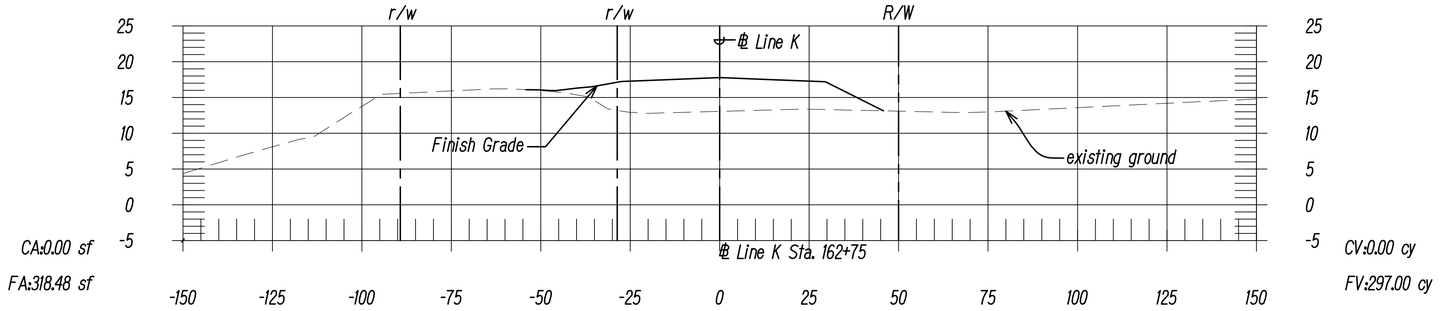
KAMEHAMEHA HIGHWAY DRAINAGE AND SAFETY IMPROVEMENTS
Vicinity of Laniakea Beach (MP 3.06 to MP 3.54)
Project No. 83B-01-09

Scale: 1"=20'

Date: December 2022

SHEET No. XS-20 OF 30 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83B-01-09	2023	222	231

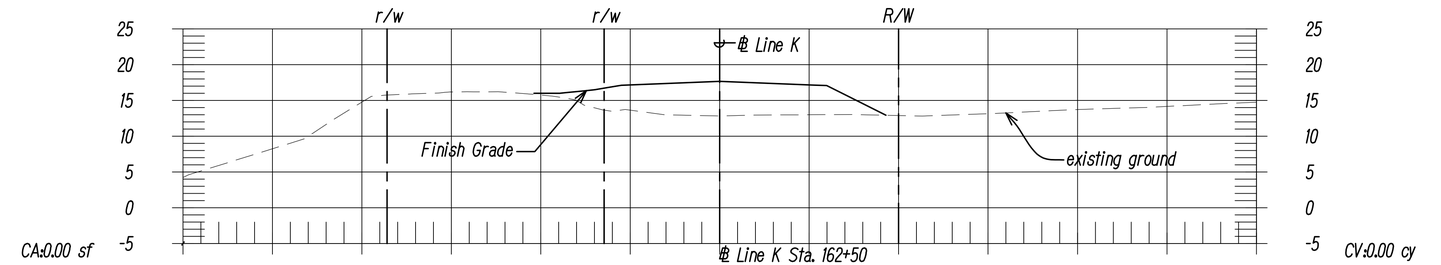


CA:0.00 sf

FA:318.48 sf

CV:0.00 cy

FV:297.00 cy

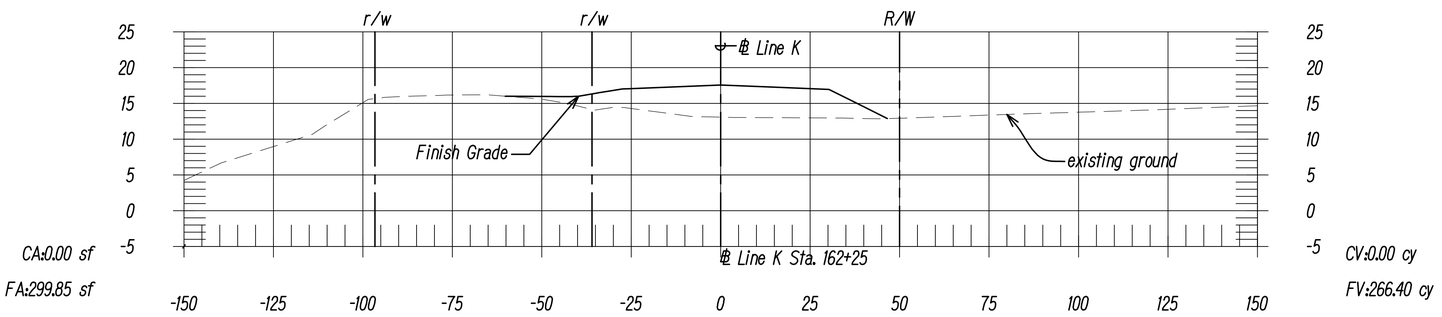


CA:0.00 sf

FA:323.03 sf

CV:0.00 cy

FV:288.37 cy



CA:0.00 sf

FA:299.85 sf

CV:0.00 cy

FV:266.40 cy

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

GRAPHIC SCALE

1" = 20'

20 0 20 40

SCALE IN FEET

DATE		REVISION

DEXTER S. EJI
LICENSED PROFESSIONAL ENGINEER
No. 4739-C
HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.

SIGNATURE 04/30/24 EXPIRATION DATE OF THE LICENSE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

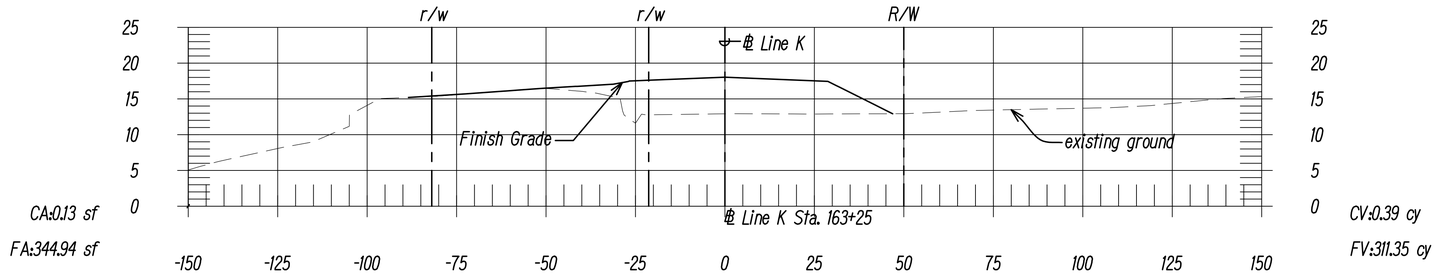
CROSS SECTIONS

KAMEHAMEHA HIGHWAY DRAINAGE AND SAFETY IMPROVEMENTS
Vicinity of Laniakea Beach (MP 3.06 to MP 3.54)
Project No. 83B-01-09

Scale: 1"=20' Date: December 2022

SHEET No. XS-21 OF 30 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83B-01-09	2023	223	231

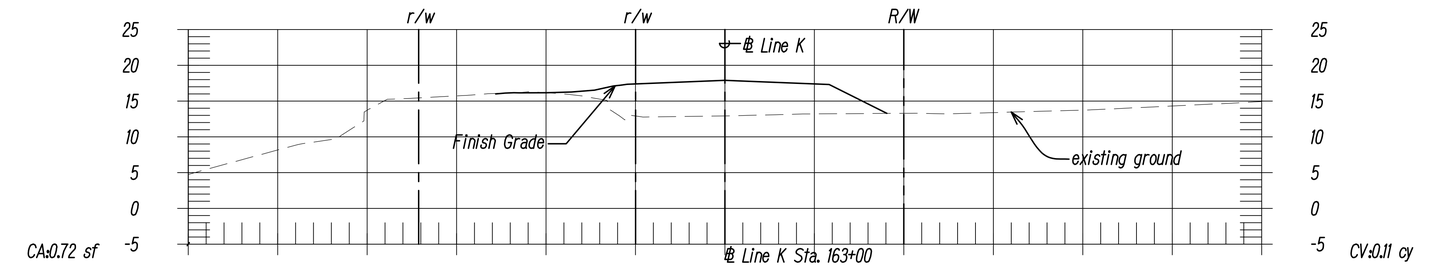


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CV:0.39 cy

FV:311.35 cy

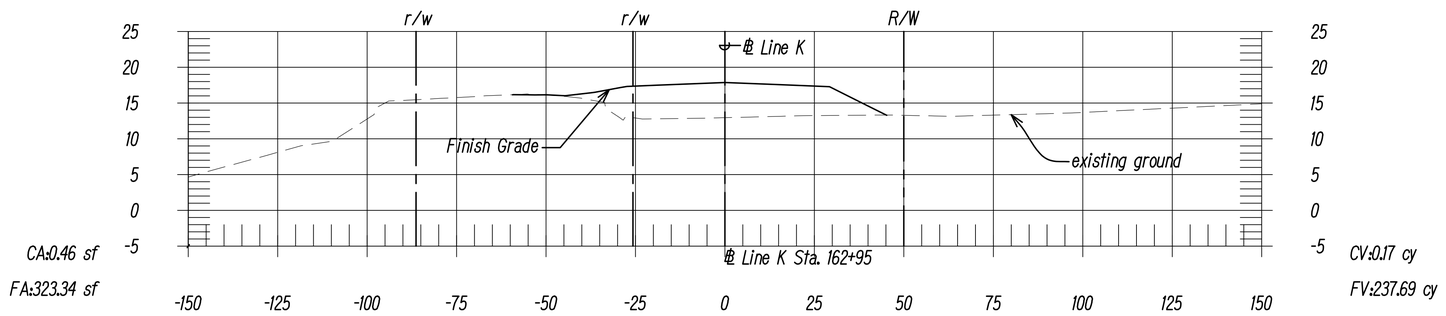


CA:0.72 sf

FA:327.58 sf

CV:0.11 cy

FV:60.29 cy



CA:0.46 sf

FA:323.34 sf

CV:0.17 cy

FV:237.69 cy

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

GRAPHIC SCALE

1" = 20'

20 0 20 40

SCALE IN FEET

DATE		REVISION

STATE OF HAWAII

DEPARTMENT OF TRANSPORTATION

HIGHWAYS DIVISION

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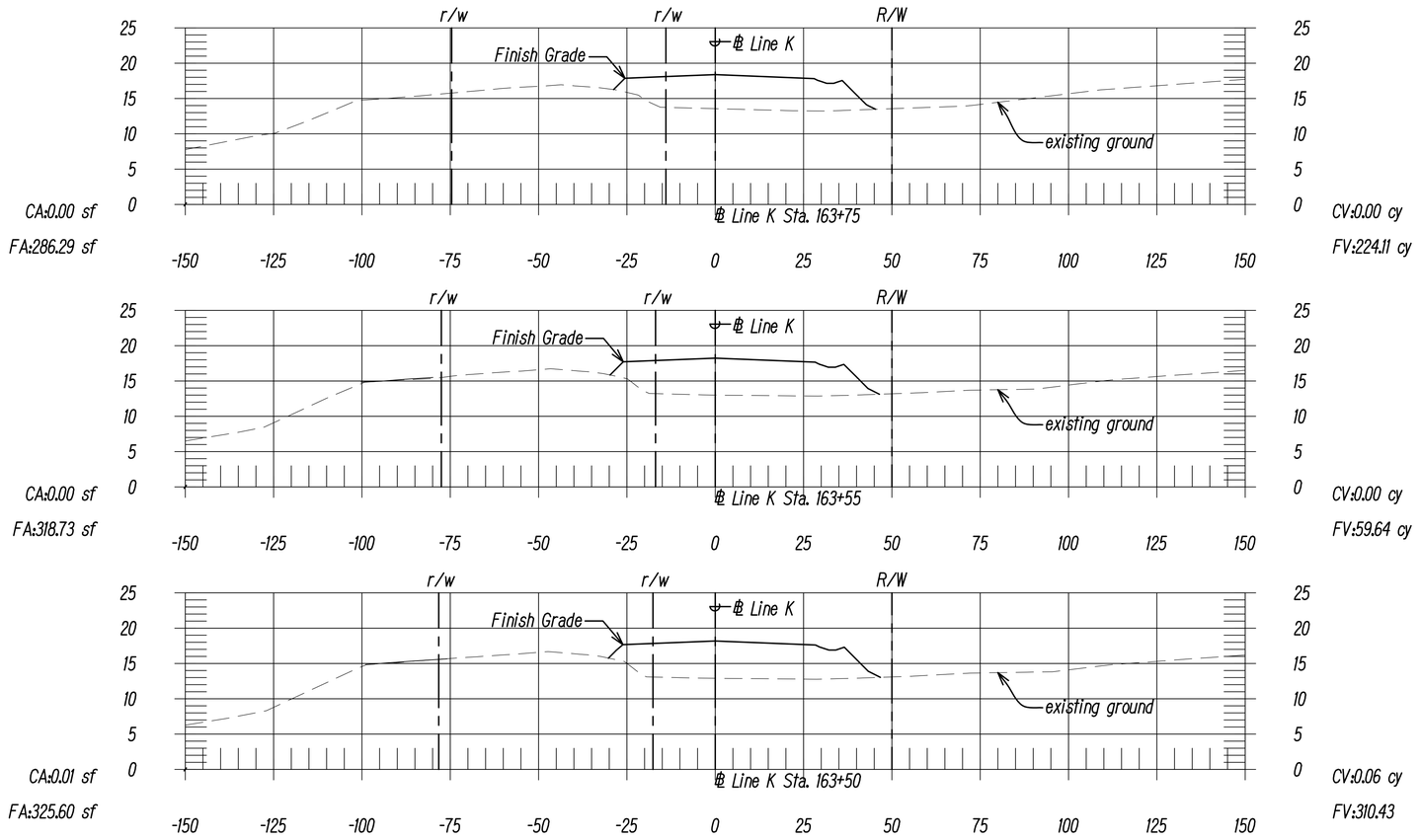
KAMEHAMEHA HIGHWAY DRAINAGE AND SAFETY IMPROVEMENTS
Vicinity of Laniakea Beach (MP 3.06 to MP 3.54)
Project No. 83B-01-09

Scale: 1"=20'

Date: December 2022

SHEET No. XS-22 OF 30 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83B-01-09	2023	224	231



GRAPHIC SCALE

1" = 20'

20 0 20 40

SCALE IN FEET

SURVEY PLOTTED BY
DRAWN BY
TRACED BY
DESIGNED BY
QUANTITIES BY
CHECKED BY
DATE

ORIGINAL PLAN

NOTE BOOK

No.

DATE		REVISION

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HIGHWAYS DIVISION

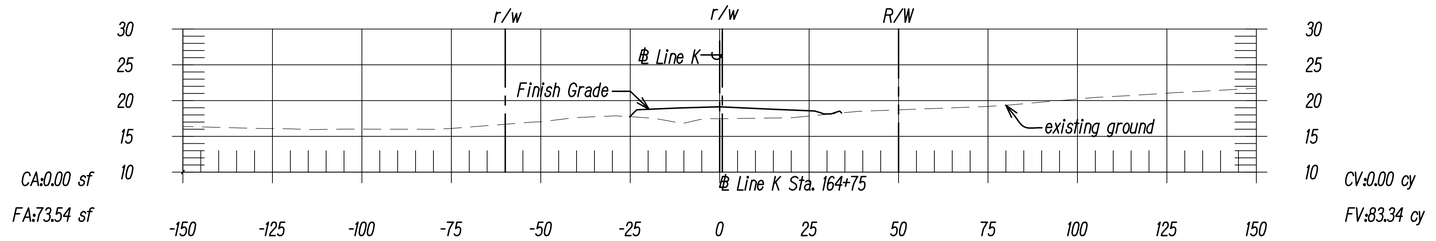
CROSS SECTIONS

KAMEHAMEHA HIGHWAY DRAINAGE AND SAFETY IMPROVEMENTS
Vicinity of Laniakea Beach (MP 3.06 to MP 3.54)
Project No. 83B-01-09

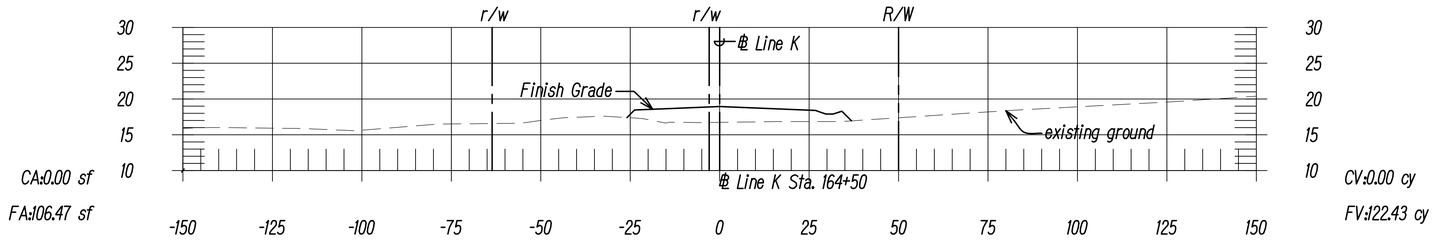
Scale: 1"=20' Date: December 2022

SHEET No. XS-23 OF 30 SHEETS

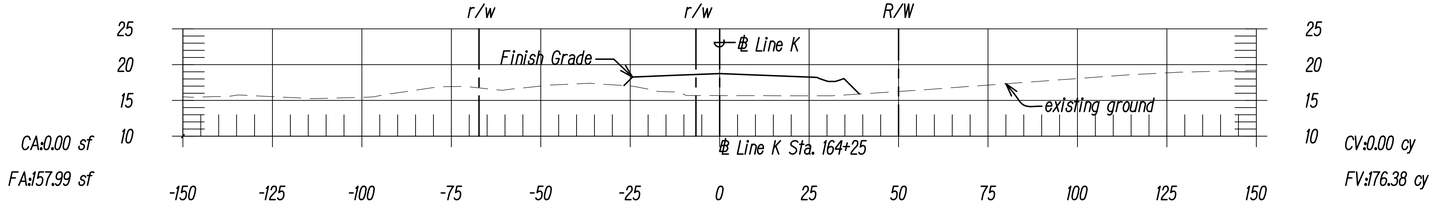
FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83B-01-09	2023	225	231



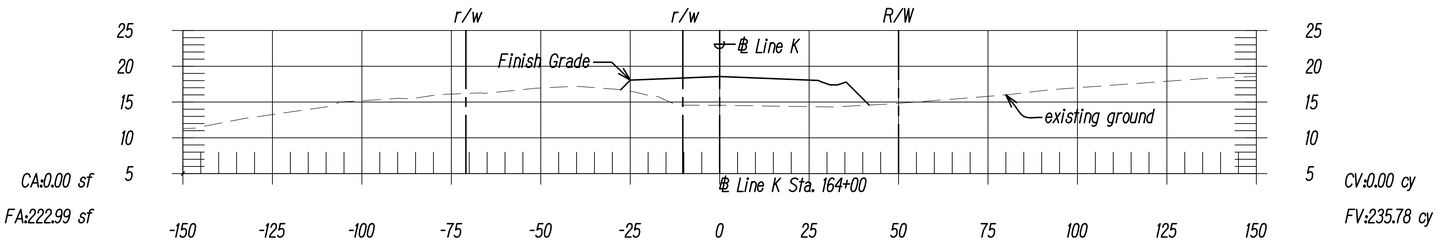
CA:0.00 sf
FA:73.54 sf
CV:0.00 cy
FV:83.34 cy



CA:0.00 sf
FA:106.47 sf
CV:0.00 cy
FV:122.43 cy



CA:0.00 sf
FA:157.99 sf
CV:0.00 cy
FV:176.38 cy



CA:0.00 sf
FA:222.99 sf
CV:0.00 cy
FV:235.78 cy

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

GRAPHIC SCALE

1" = 20'

20 0 20 40

SCALE IN FEET

DATE		REVISION

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HIGHWAYS DIVISION

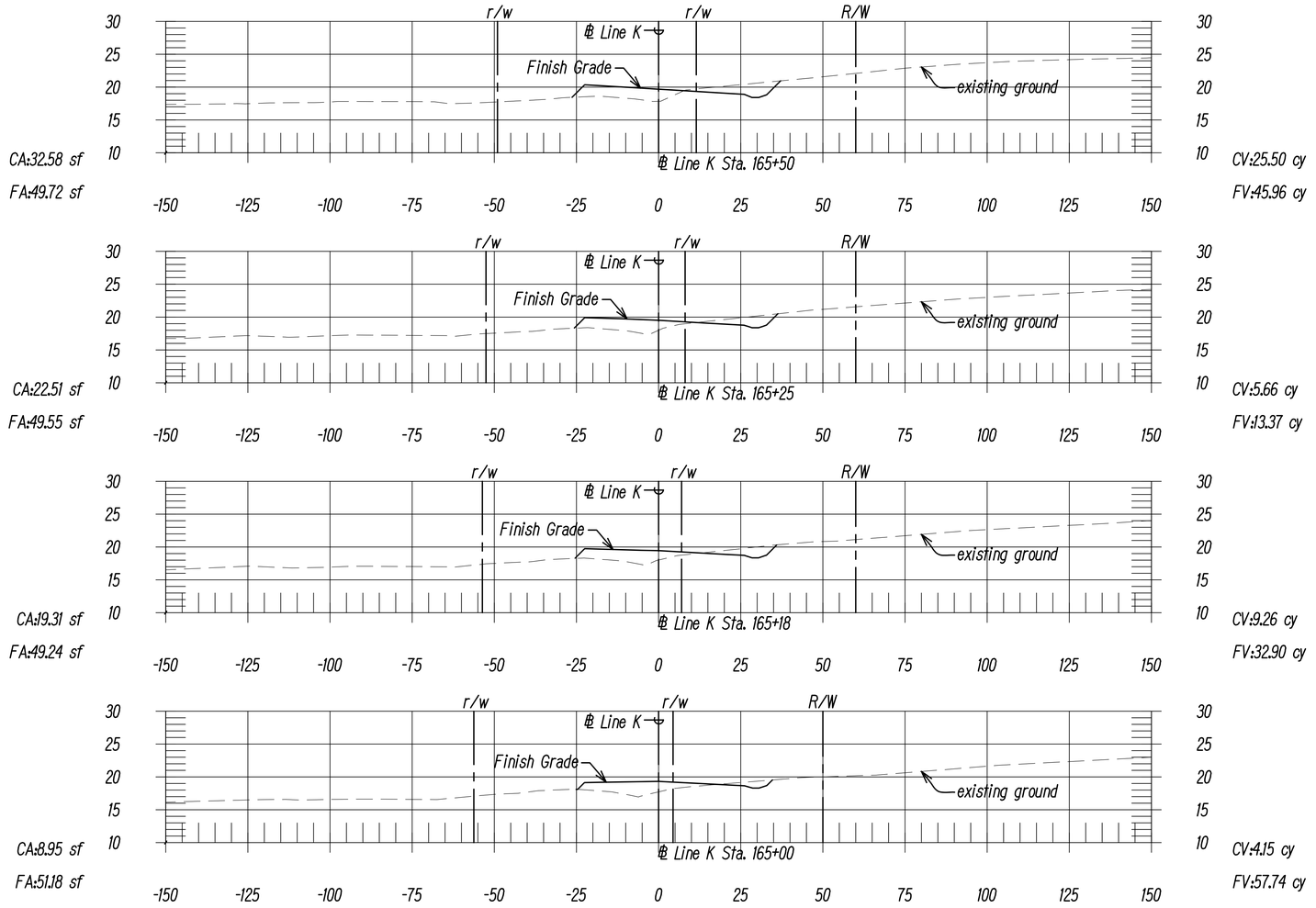
CROSS SECTIONS

KAMEHAMEHA HIGHWAY DRAINAGE AND SAFETY IMPROVEMENTS
Vicinity of Laniakea Beach (MP 3.06 to MP 3.54)
Project No. 83B-01-09

Scale: 1"=20' Date: December 2022

SHEET No. XS-24 OF 30 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83B-01-09	2023	226	231



GRAPHIC SCALE

1" = 20'

20 0 20 40

SCALE IN FEET

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

DATE		REVISION

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

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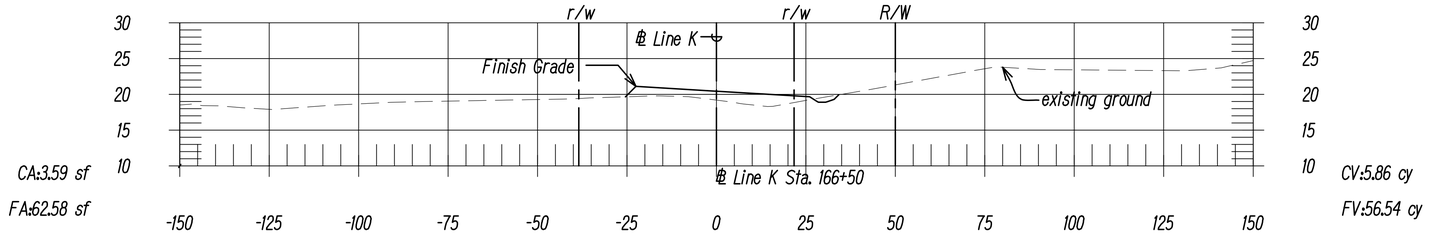
CROSS SECTIONS

KAMEHAMEHA HIGHWAY DRAINAGE AND SAFETY IMPROVEMENTS
Vicinity of Laniakea Beach (MP 3.06 to MP 3.54)
Project No. 83B-01-09

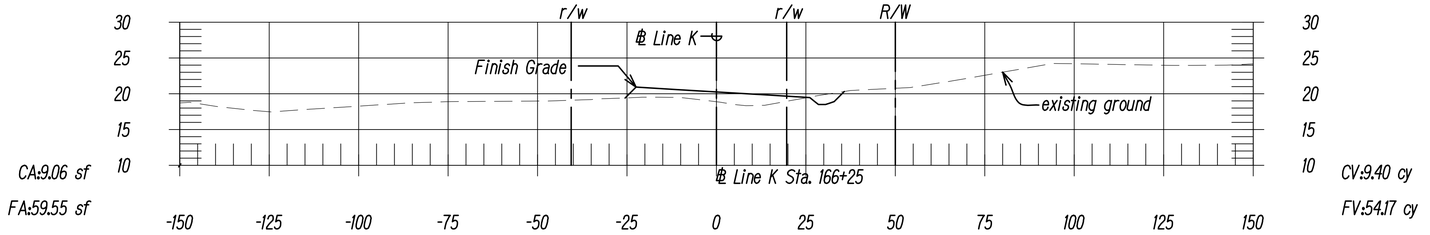
Scale: 1"=20' Date: December 2022

SHEET No. XS-25 OF 30 SHEETS

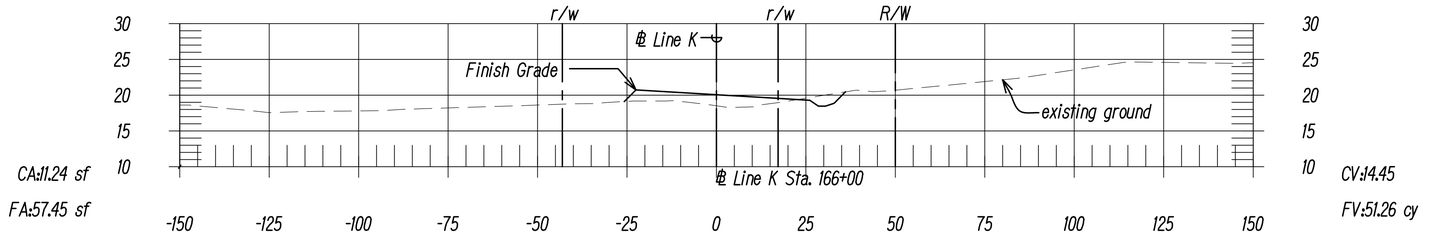
FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83B-01-09	2023	227	231



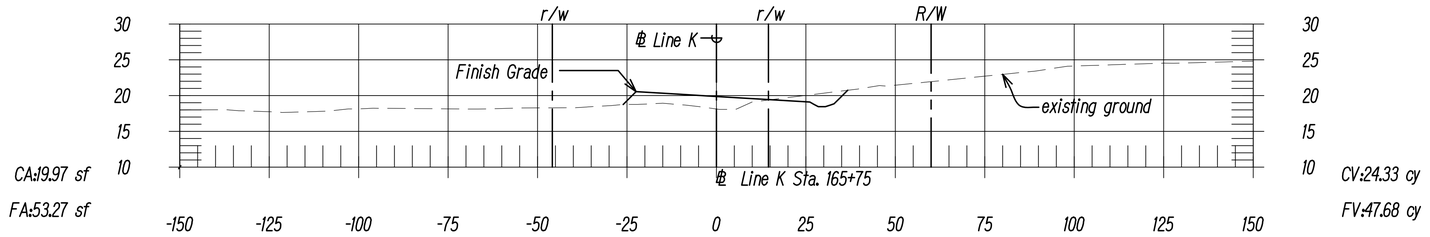
CA:3.59 sf
FA:62.58 sf
CV:5.86 cy
FV:56.54 cy



CA:9.06 sf
FA:59.55 sf
CV:9.40 cy
FV:54.17 cy



CA:11.24 sf
FA:57.45 sf
CV:14.45
FV:51.26 cy



CA:19.97 sf
FA:53.27 sf
CV:24.33 cy
FV:47.68 cy

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

GRAPHIC SCALE

1" = 20'

20 0 20 40

SCALE IN FEET

DATE		REVISION

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

DEXTER S. EJI
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No. 4739-C
HAWAII, U.S.A.

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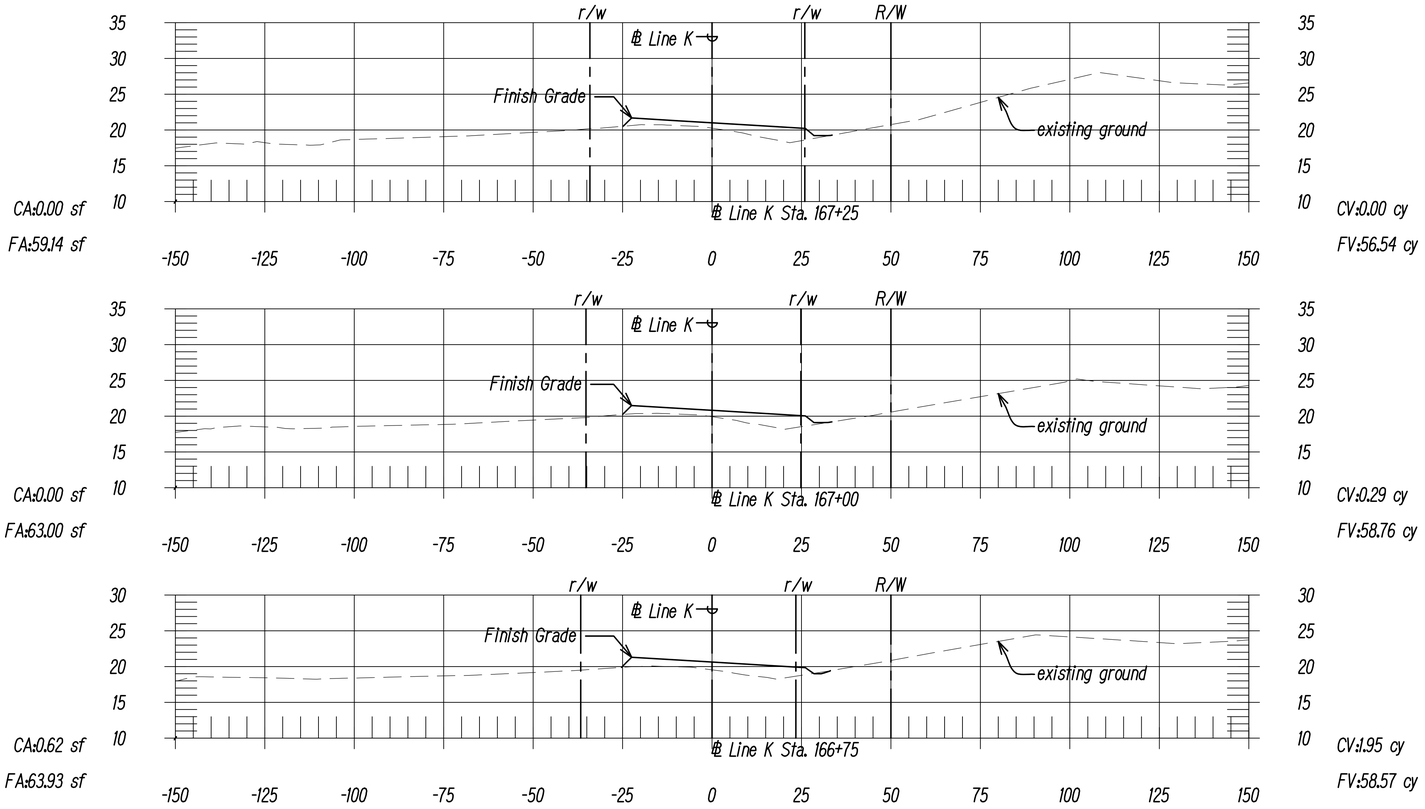
CROSS SECTIONS

KAMEHAMEHA HIGHWAY DRAINAGE AND SAFETY IMPROVEMENTS
Vicinity of Laniakea Beach (MP 3.06 to MP 3.54)
Project No. 83B-01-09

Scale: 1"=20' Date: December 2022

SHEET No. XS-26 OF 30 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83B-01-09	2023	228	231



GRAPHIC SCALE

1" = 20'

20 0 20 40

SCALE IN FEET

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

DATE		REVISION

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

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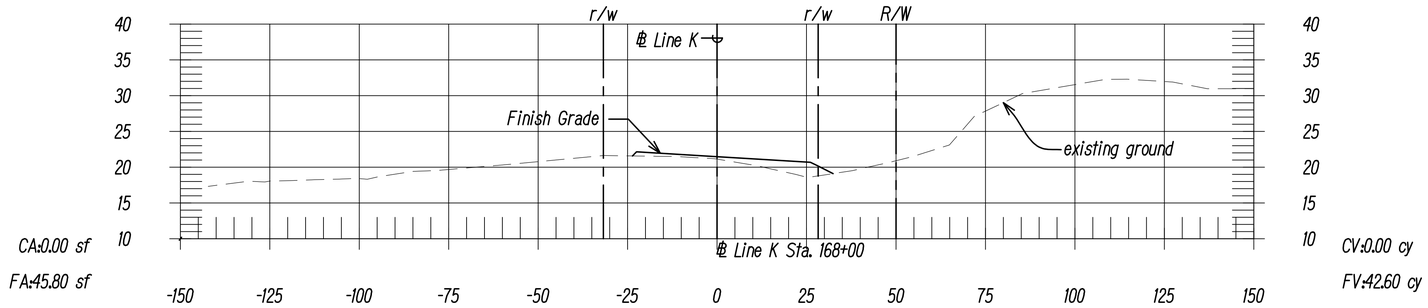
CROSS SECTIONS

KAMEHAMEHA HIGHWAY DRAINAGE AND SAFETY IMPROVEMENTS
Vicinity of Laniakea Beach (MP 3.06 to MP 3.54)
Project No. 83B-01-09

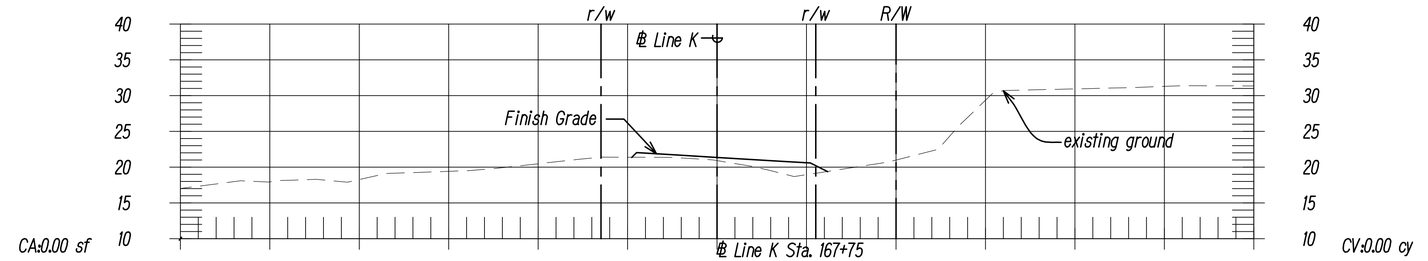
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SHEET No. XS-27 OF 30 SHEETS

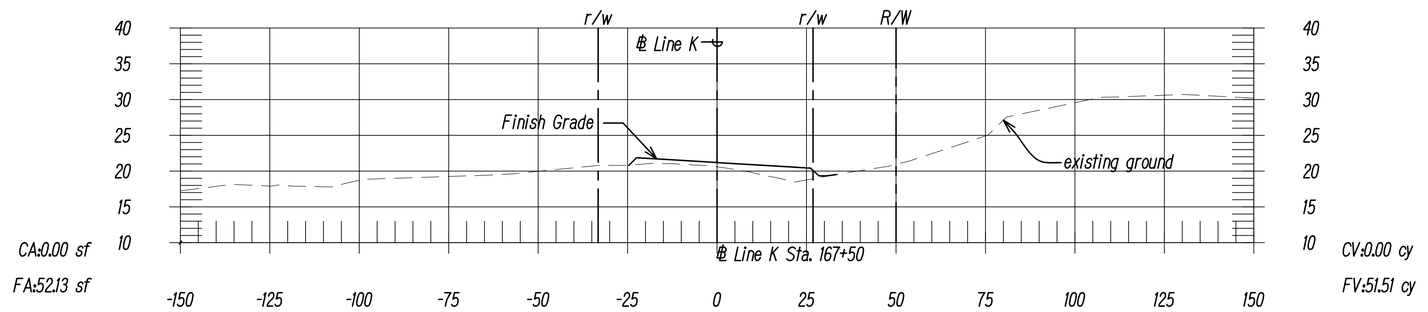
FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83B-01-09	2023	229	231



CA:0.00 sf
FA:45.80 sf
CV:0.00 cy
FV:42.60 cy



CA:0.00 sf
FA:46.21 sf
CV:0.00 cy
FV:45.52 cy



CA:0.00 sf
FA:52.13 sf
CV:0.00 cy
FV:51.51 cy

ORIGINAL PLAN
NOTE BOOK
No.

SURVEY PLOTTED BY
DRAWN BY
TRACED BY
DESIGNED BY
QUANTITIES BY
CHECKED BY
DATE

GRAPHIC SCALE
1" = 20'
20 0 20 40
SCALE IN FEET

DATE		REVISION

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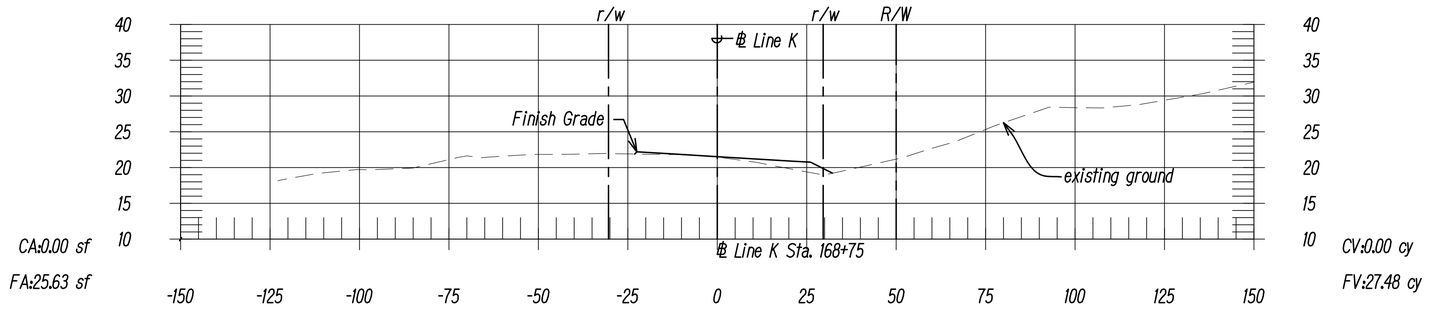
CROSS SECTIONS

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Vicinity of Laniakea Beach (MP 3.06 to MP 3.54)
Project No. 83B-01-09

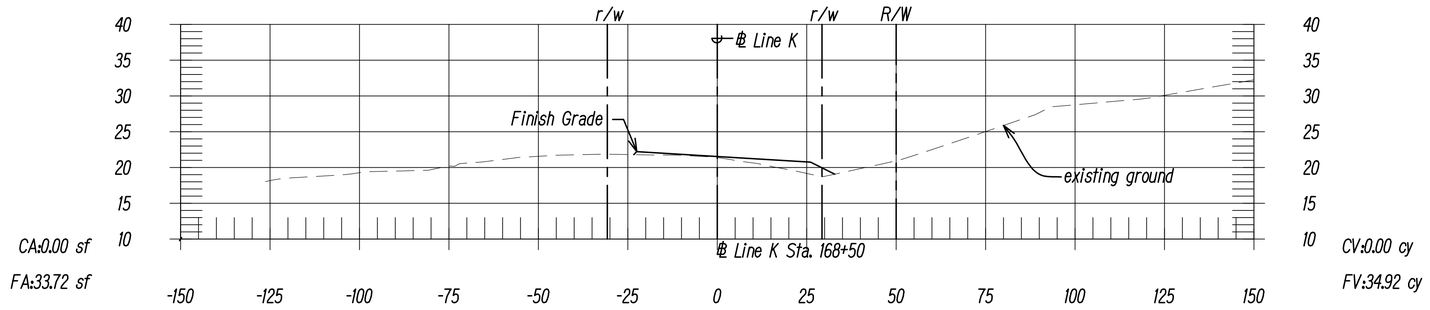
Scale: 1"=20' Date: December 2022

SHEET No. XS-28 OF 30 SHEETS

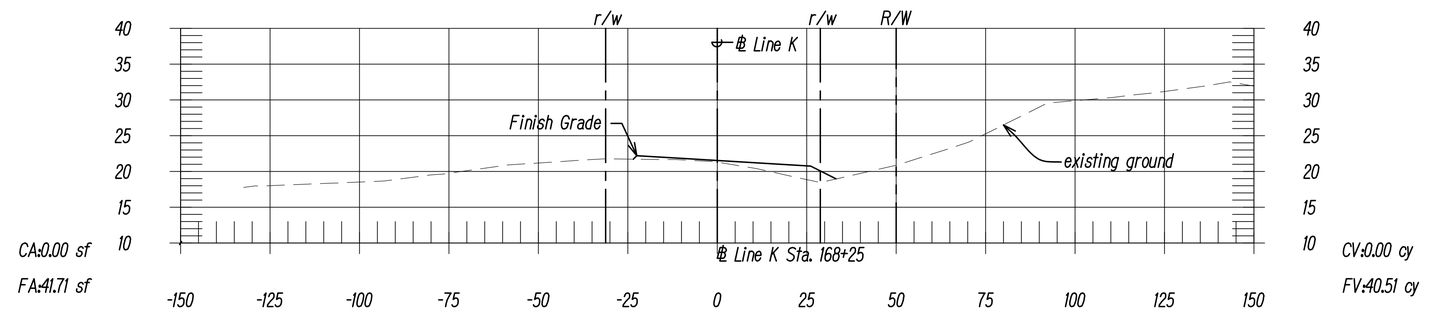
FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83B-01-09	2023	230	231



CA:0.00 sf
FA:25.63 sf
CV:0.00 cy
FV:27.48 cy



CA:0.00 sf
FA:33.72 sf
CV:0.00 cy
FV:34.92 cy



CA:0.00 sf
FA:41.71 sf
CV:0.00 cy
FV:40.51 cy

ORIGINAL PLAN
NOTE BOOK
No.

SURVEY PLOTTED BY
DRAWN BY
TRACED BY
DESIGNED BY
QUANTITIES BY
CHECKED BY
DATE

GRAPHIC SCALE
1" = 20'
20 0 20 40
SCALE IN FEET

DATE		REVISION

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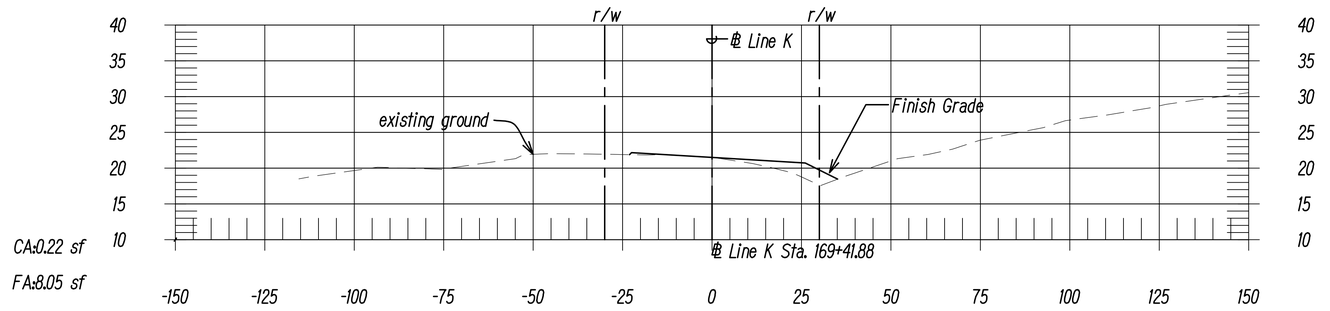
CROSS SECTIONS

KAMEHAMEHA HIGHWAY DRAINAGE AND SAFETY IMPROVEMENTS
Vicinity of Laniakea Beach (MP 3.06 to MP 3.54)
Project No. 83B-01-09

Scale: 1"=20'
Date: December 2022

SHEET No. XS-29 OF 30 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83B-01-09	2023	231	231



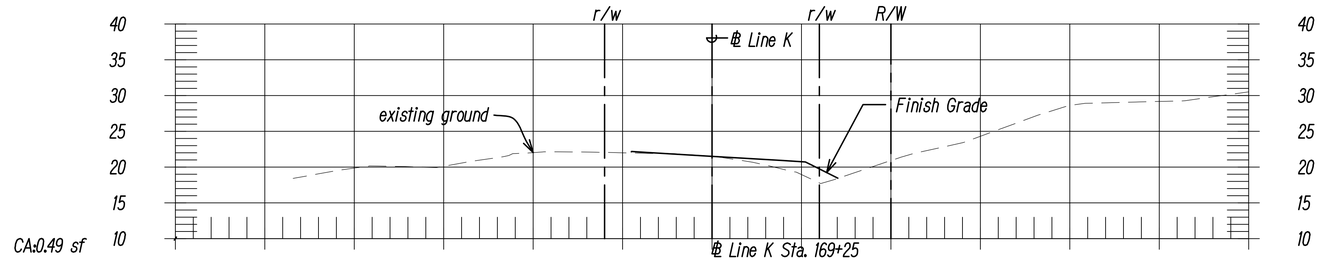
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FA:8.05 sf

CV:0.22 cy

FV:13.02 cy

Excavatiion: 981.18 CY
Embankment: 11418.34 CY

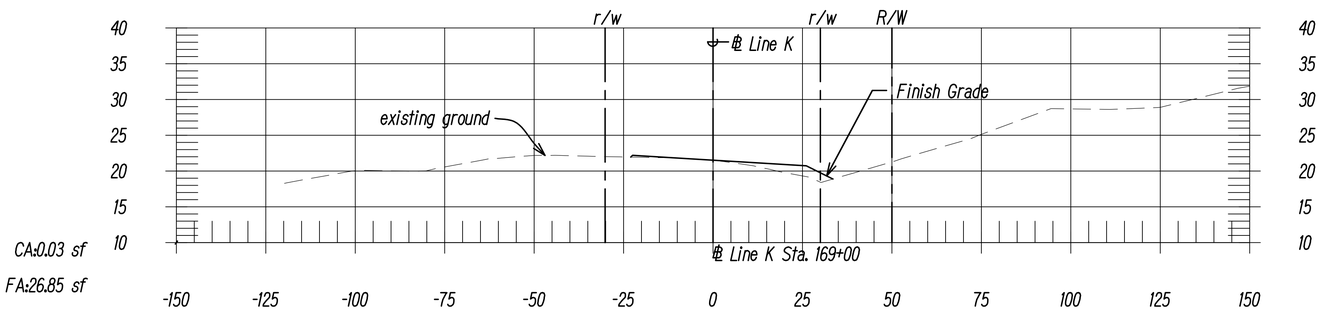


CA:0.49 sf

FA:33.62 sf

CV:0.24 cy

FV:27.99 cy



CA:0.03 sf

FA:26.85 sf

CV:0.01 cy

FV:24.29 cy

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

GRAPHIC SCALE

1" = 20'

20 0 20 40

SCALE IN FEET

DATE		REVISION

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

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CROSS SECTIONS

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Vicinity of Laniakea Beach (MP 3.06 to MP 3.54)
Project No. 83B-01-09

Scale: 1"=20'

Date: December 2022

SHEET No. XS-30 OF 30 SHEETS