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7	TYPICAL SECTION & DETAILS
8–13	GUARDRAIL DETAILS
14–15	ROADWAY PLAN & PROFILE
16	PAVEMENT MARKING PLAN
17	TRAFFIC NOTES
18	GALVANIZED SQUARE TUBE SIGN POST MOUNTING
19–21	TRAFFIC CONTROL PLAN
22–24	ROADWAY CROSS SECTIONS

STATE OF HAWAII

DEPARTMENT OF TRANSPORTATION

HIGHWAYS DIVISION

HONOLULU, HAWAII

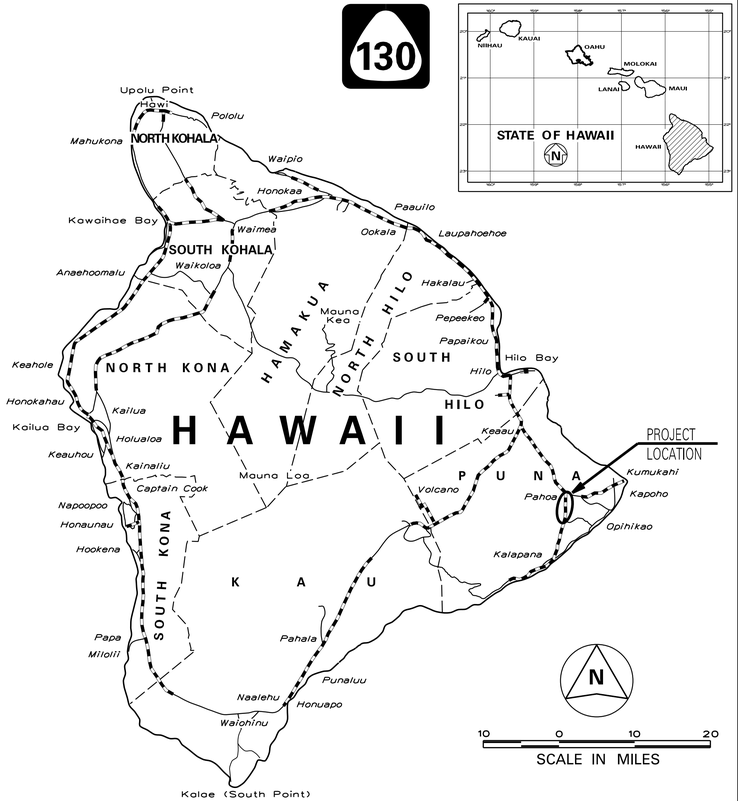
PLANS FOR

PAHOA–KALAPANA ROAD
2018 KILAUEA ERUPTION
PERMANENT REPAIRS
FEDERAL AID PROJECT NO. ER–21(005)

DISTRICT OF PUNA

ISLAND OF HAWAII

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	ER–21(005)	2021	1	24

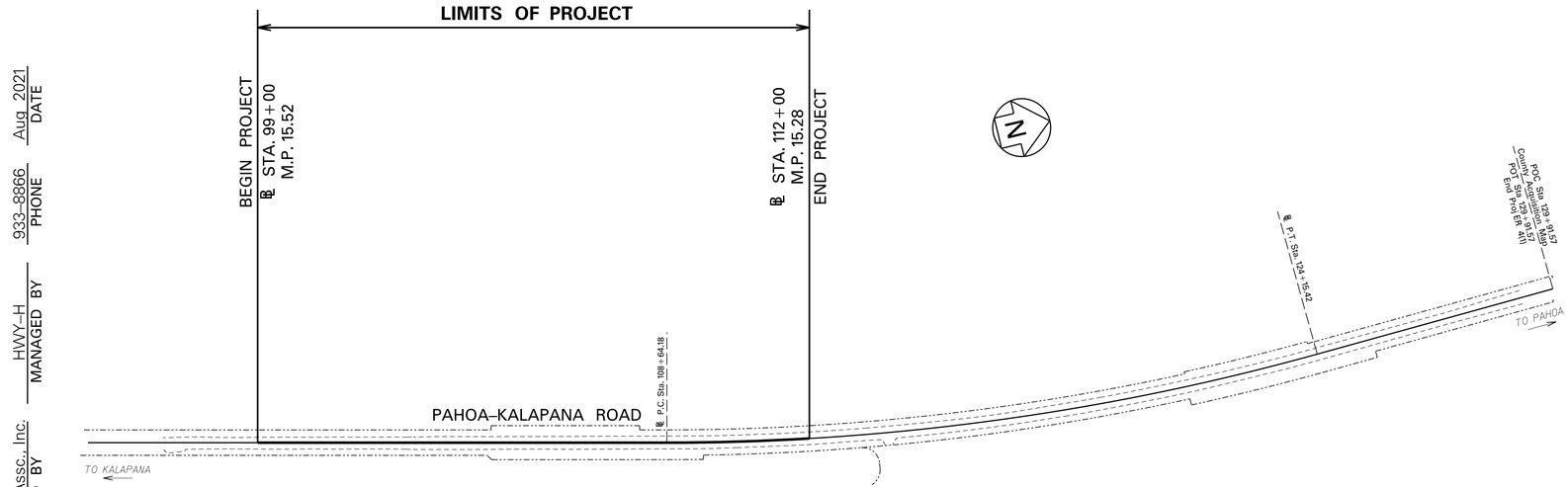


FEDERAL AID PROJECTS PREVIOUSLY CONSTRUCTED OR UNDER CONSTRUCTION

MILE POST 15.28 TO MILE POST 15.52

DESIGN DESIGNATION

ADT (2020)	5,900
ADT (2040)	8,200
DHV (2040)	700
K	8.5
D	65/35
T	5.0%
T_{24}	4.0%
V	55 MPH



1 0 1 2 3

SCALE IN HUNDRED FEET

LAYOUT PLAN

GROSS LENGTH OF PROJECT. . . . . 0.25 MILES

NET LENGTH OF PROJECT. . . . . 0.25 MILES

DEPARTMENT OF TRANSPORTATION STATE OF HAWAII	
APPROVED:	
DIR. OF TRANSPORTATION	Sep 9, 2021 DATE

Okahara and Assc., Inc. DESIGNED BY

HWY-H MANAGED BY

933-8866 PHONE

Aug 2021 DATE

STANDARD PLANS SUMMARY

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	ER-21(005)	2021	2	24

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 ●)

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

BRUCE K MEYERS
Licensed Professional Engineer
No.8336-C
HAWAII, U.S.A.

This work was prepared by me or under my supervision.

Expiration Date of License 4/22

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

STANDARD PLANS SUMMARY

PAHOA-KALAPANA ROAD
2018 KILAUEA ERUPTION PERMANENT REPAIRS
Federal Aid Project No. ER-21(005)

Scale: N/A Date: August 2021

SHEET No. 1 OF 1 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	ER-21(005)	2021	3	24

GENERAL NOTES

1. The scope of work for this project includes paving roadway and shoulders; installing guardrails and end treatments, and pavement markings.

2. The Contractor is reminded of the requirements of Subsection 105.16 - Subcontracts.

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

4. 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.

5. The existence and location of 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 encountering of other obstacles during the course of work is possible. The Contractor shall be held liable for any damages incurred to the existing facilities and/or improvements as a result of his operations.

6. The exact locations and limits or areas to be excavated, reconstructed and cold planed shall be determined in the field by Engineer.

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

8. The Contractor shall remove and dispose of all existing raised pavement markers, thermoplastic line markings, traffic tapes, and epoxy adhesives prior to the overlaying of Asphalt Concrete. This work shall be considered incidental to Item 401.0500- PMA Pavement, Mix No. IV and will not be paid for separately.

9. Smooth riding connections shall be constructed at all limits of project, including the beginning and end of project, connecting approaches, side streets, and driveways as shown on the plans and/or as directed by the Engineer. This work shall be considered incidental to asphalt concrete and will not be paid for separately.

10. Trimming and 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 Engineer.

11. 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 bulk of work or the various contract items and will not be paid for separately.

12. Removal and disposal of existing asphalt concrete pavement and any debris shall be considered incidental to their respective bid items.

13. All saw cutting work shall be considered incidental to Item 415.0100 - Cold Planing.

14. The Contractor shall provide and maintain for access to and from all existing driveways, and side streets and cross streets at all times. This work shall be considered incidental to the various contract items and will not be paid for separately.

15. No material and/or equipment shall be stockpiled or otherwise stored within the highway right-of-way except at locations designed in writing and approved by the Engineer. If use of location is approved by the engineer, the Contractor shall obtain a permit to use the property within the highway right-of-way from the Hawaii District Office at telephone no. 933-8866.

16. All existing right-of-way, centerline, as-built, construction, and NGS (horizontal and vertical published by the NGS) 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 or relocated monument. The DOT Standard Plans & Specifications, with the exception of NGS published monuments which should have a NGS approved "Brass Disk" marker, shall be referenced for the monument type and materials. HWY-DC must be contacted prior to any construction activity should NGS published monuments be found within the construction limits.

17. Any NGS published benchmarks that are disturbed or 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 HWY-DC and 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 HWY-DC and NGS. All monument work shall be considered incidental to this project.

18. For Project Benchmark, See Sheet 14.

19. All existing drainage facilities shall be functional at all times during construction.

LEGEND

- Grading
- Repaving
- Shoulder Paving
- Stockpile
- e — Existing Electrical Line
- E — New Electrical Line
- ○ jp — Existing Joint Pole
- ○ pp — Existing Power Pole
- ○ emh — Existing Electric Manhole
- ◍ EMH — Adjusted Elec. MH Frame/Cover
- ● EMH — New Electric Manhole
- t — Existing Telephone Line
- T — New Telephone Line
- ○ tp — Existing Telephone Pole
- ○ tmh — Existing Telephone Manhole
- ◍ TMH — Adjusted Tele. MH Frame/Cover
- ● TMH — New Telephone Manhole
- sc — Existing Signal Corps Line
- SC — New Signal Corps Line
- tv — Existing TV Cable
- TV — New TV Cable
- s.i.c. — Existing Sandwich Isles Communication Line
- w — 12 — Existing 12" Water Line
- W — 12 — New 12" Water Line
- ○ wmh — Existing Water Manhole
- ◍ WMH — Adjusted Water MH Frame/Cover
- ● WMH — New Water Manhole
- ○ av — Existing Water Air Valve
- ◍ AV — Adjusted Water Air Valve
- ● AV — New Water Air Valve
- ○ wv — Existing Water Valve Box
- ◍ WV — Adjusted Water Valve Box
- ● WV — New Water Valve Box
- ▭ wm — Existing Water Meter
- ◪ WM — Adjusted Water Meter
- ▬ WM — New Water Meter
- fh — Existing Fire Hydrant
- FH — New Fire Hydrant
- s — 12 — Existing Sewer Line
- S — 12 — New 12" Sewer Line
- ○ smh — Existing Sewer Manhole
- ◍ SMH — Adjusted Sewer MH Frame/Cover
- ● SMH — New Sewer Manhole
- g — 6 — Existing 6" Gas Line
- G — 6 — New 6" Gas Line
- ○ gv — Existing Gas Valve Box
- ◍ GV — Adjusted Gas Valve Box
- ● GV — New Gas Valve Box
- ○ gmh — Existing Gas Manhole
- ◍ GMH — Adjusted Gas MH Frame/Cover
- ● GMH — New Gas Manhole
- ◎ mon. — Existing Monument
- ◍ MON. — Adjusted Monument
- ◎ MON. — New Monument
- d — 24 — Existing 24" Drain Line
- 24" RCP — New 24 " RCP Drain Line
- ○ dmh — Existing Storm Drain Manhole
- ◍ SDMH — Adjusted Storm Drain MH Frame/Cover
- ● SDMH — New Storm Drain Manhole
- ⊟ gdi — Existing Grated Drop Inlet
- cb — Existing Catch Basin
- sign — Existing Traffic Sign
- ○ hl — Existing Highway Lighting Standard
- ▭ hlpb — Existing Highway Lighting Pullbox
- ○ tsp — Existing Traffic Signal Pole
- ● TSP — New Traffic Signal Pole
- ▭ tspb — Existing Traffic Signal Pullbox
- ◪ TSPB — Adjusted Traffic Signal Pullbox
- ▬ TSPB — New Traffic Signal Pullbox
- Existing Metal Guardrail
- New Metal Guardrail
- X — X Existing Metal Fence
- Right-of-Way
- Flow Direction

ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
	DRAWN BY N	
NOTE BOOK dtx	TRACED BY N	
	DESIGNED BY N	
No. X.dgn	QUANTITIES BY	
	CHECKED BY	

BRUCE K MEYERS
Licensed Professional Engineer
No. 8336-C
HAWAII, U.S.A.

This work was prepared by me or under my supervision.

Expiration Date of License 4/22

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

GENERAL NOTES AND LEGEND

PAHOA-KALAPANA ROAD
2018 KILAUEA ERUPTION PERMANENT REPAIRS
Federal Aid Project No. ER-21(005)

Scale: N/A Date: August 2021

SHEET No. 1 OF 1 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	ER-21(005)	2021	4	24

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 Soil Erosion Standards and Guidelines" 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.

BRUCE K MEYERS
Licensed Professional Engineer
No.8336-C
HAWAII, U.S.A.

This work was prepared by me or under my supervision.

Expiration Date of License 4/22

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

WATER POLLUTION & EROSION CONTROL NOTES

PAHOA-KALAPANA ROAD
2018 KILAUEA ERUPTION PERMANENT REPAIRS
Federal Aid Project No. ER-21(005)

Scale: N/A Date: August 2021

SHEET No. 1 OF 3 SHEETS

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

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	ER-21(005)	2021	5	24

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

BRUCE K MEYERS
Licensed Professional Engineer
No. 8336-C
HAWAII, U.S.A.

This work was prepared by me or under my supervision.

Expiration Date of License 4/22

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

WATER POLLUTION & EROSION CONTROL NOTES

PAHOA-KALAPANA ROAD
2018 KILAUEA ERUPTION PERMANENT REPAIRS
Federal Aid Project No. ER-21(005)

Scale: N/A Date: August 2021

SHEET No. 2 OF 3 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	ER-21(005)	2021	6	24

WATER POLLUTION AND EROSION CONTROL NOTES (Cont.):

E. PERMIT REQUIREMENTS:

1. The calculated land disturbance area for this project based on the construction plans is 0.29 acres not including Contractor Staging and Storage areas. If the total of the disturbed area and the Contractor Staging and Storage area is one acre or greater, the Contractor shall obtain the NPDES Construction Activities Permit using HDOT's latest SWPPP template. See Hawaii Administrative Rules Chapter 11-55, Appendix C for the definition of land disturbance. The Contractor shall be responsible for obtaining the required NPDES Construction Activities Permit and complying with the requirements of HAR 11-55 including, but not limited to:

a. Deadlines for initiating and completing initial stabilization
b. Increased inspection frequency and installation of rain gage if applicable
c. Deadlines to initiate and complete repairs to BMPs
d. Reporting requirements and corrective action reports

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

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-2).

2. Contain on-site runoff using Perimeter Sediment Controls
a. SC-1 Silt Fence
b. SC-5 Vegetated Filter Strips and Buffers
c. SC-8 Compost Filter Berm
d. SC-13 Sandbag Barrier
e. SC-14 Brush or Rock Filter

3. Control offsite runoff from entering construction area
a. EC-8 Run-On Diversion
b. SC-6 Earth Dike
c. SC-7 Temporary Drains and Swales

4. Incorporate applicable Site Management BMP
a. SM-1 Employee Training
b. SM-2 Material Delivery and Storage
c. SM-3 Material Use
d. SM-4 Protection of Stockpiles
e. SM-6 Solid Waste Management
f. SM-7 Sanitary/Septic Waste Management
g. SM-9 Hazardous Waste Management
h. SM-10 Spill Prevention and Control
i. SM-11 Vehicle and Equipment Cleaning
j. SM-12 Vehicle and Equipment Maintenance
k. SM-13 Vehicle and Equipment Refueling
l. SM-14 Scheduling
m. SM-15 Location of Potential Sources of Sediment
n. SM-16 Preservation of Existing Vegetation
o. SM-18 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 (EC-2) 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-5) 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 dtka Kdgn
SURVEY PLOTTED BY DATE X
DRAWN BY X
TRACED BY
DESIGNED BY X
QUANTITIES BY
CHECKED BY

BRUCE K MEYERS
Licensed Professional Engineer
No. 8336-C
HAWAII, U.S.A.

This work was prepared by me or under my supervision.

Expiration Date of License 4/22

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

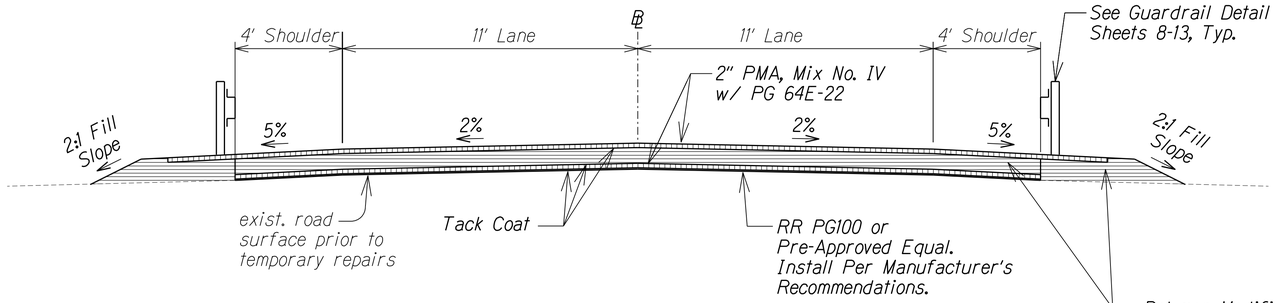
WATER POLLUTION & EROSION CONTROL NOTES

PAHOA-KALAPANA ROAD
2018 KILAUEA ERUPTION PERMANENT REPAIRS
Federal Aid Project No. ER-21(005)

Scale: N/A Date: August 2021

SHEET No. 3 OF 3 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	ER-21(005)	2021	7	24

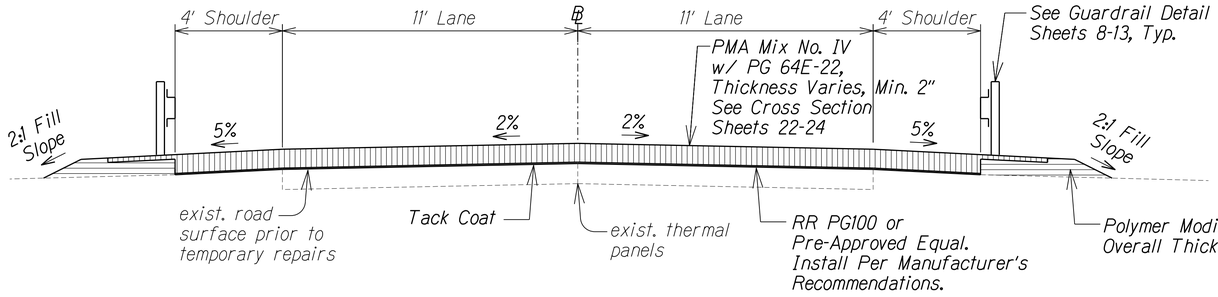


PMA, Mix No. IV w/ PG 64E-22

Polymer Modified ACB w/ PG 64E-22

TYPICAL SECTION - FULL DEPTH

Not to Scale



TYPICAL SECTION - PMA MIX NO. IV THICKNESS FROM 2" TO 6"

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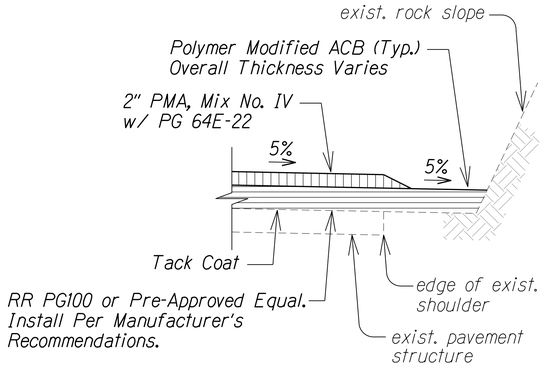

TYPICAL SECTION - PAVEMENT STRUCTURE IN ROCK CUT CONDITIONS

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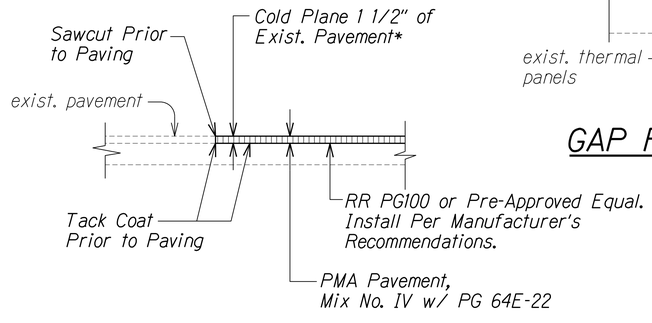
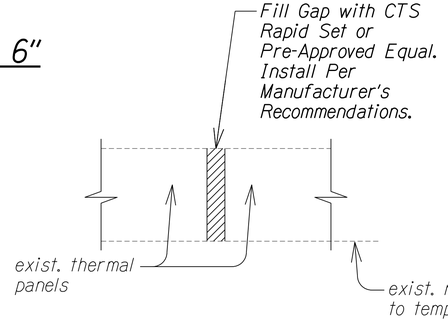


*See road profile for length of cold plane.

CONNECTION TO EXISTING A.C. PAVEMENT DETAIL

Not to Scale



GAP FILLER DETAIL

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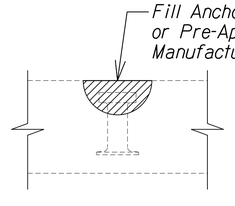
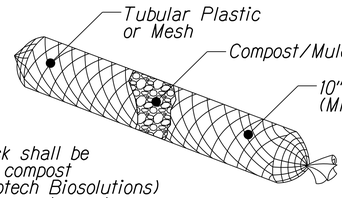


ANCHOR HOLE FILL-IN DETAIL

Not to Scale

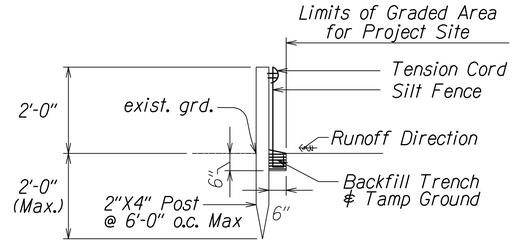


NOTES:

1. Filter sock shall be "Biosock" compost (by Envirotech Biosolutions) or pre-approved equal. Install per manufacturer's recommendations.
2. Filter sock shall not contain biosolids and shall be consistent with EPA guielines.
3. Staking, where required, shall be installed per manufacturer's recommendations.
4. Minimum overlap shall be 2' on the horizontal plane.

FILTER SOCK DETAIL

Not to Scale



(For Overland Flow Condition)

SILT FENCE DETAIL

Not to Scale

ORIGINAL PLAN

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

NOTE BOOK
No.

BRUCE K MEYERS
Licensed Professional Engineer
No.8336-C
HAWAII, U.S.A.

This work was prepared by me or under my supervision.

Expiration Date of License 4/22

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

TYPICAL SECTION & DETAILS

PAHOA-KALAPANA ROAD
2018 KILAUEA ERUPTION PERMANENT REPAIRS
Federal Aid Project No. ER-21(005)

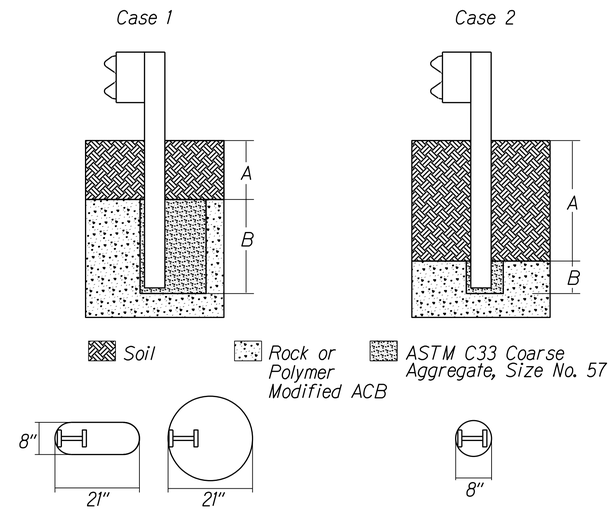
Scale: NTS Date: August 2021

SHEET No. 1 OF 1 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	ER-21(005)	2021	8	24

NOTES (STRONG POST W-BEAM IN ROCK OR IN POLYMER MODIFIED ACB):

1. Backfill of drilled holes shall be with compressible material, ASTM C33 Coarse Aggregate, Size No. 57.
2. Elongated 21-inch long hole can be accomplished by drilling three 8-inch diameter holes at 6 1/2-inches on center.



Plan View Steel Posts
Either hole configuration acceptable

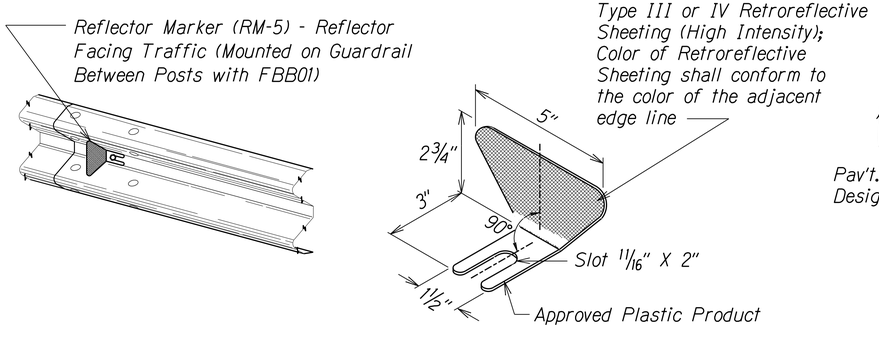
(A) ranging from 0 to 18-inches, the depth of required drilling (B) is equal to 24-inches.

Overlying Soil Depths of 0 to 18-inches

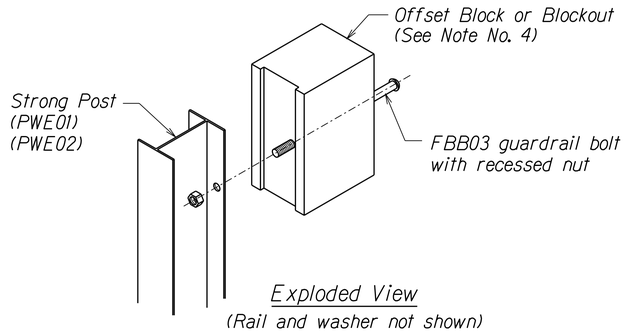
(A) ranging from 18-inches to the embedment depth of the post, depth of required drilling (B) is equal to either 12-inches or the desired embedment depth minus the depth of soil whichever is less.

Overlying Soil Depths of 18 to 42-inches

STRONG POST W-BEAM GUARDRAIL IN ROCK

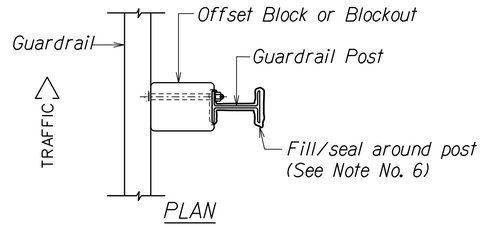


REFLECTOR MARKER (RM-5) DETAIL AND TYPICAL INSTALLATION

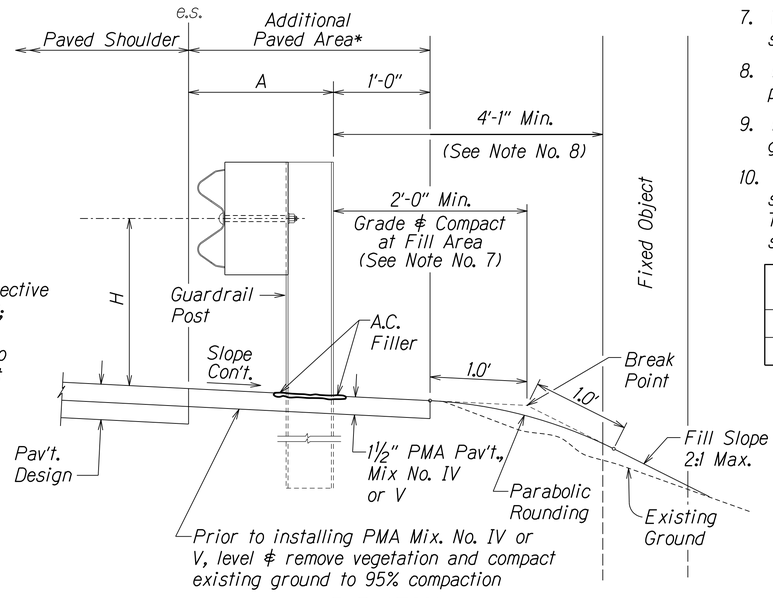


Exploded View
(Rail and washer not shown)

STEEL POST AND BLOCK DETAIL



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 Polymer-Modified Hot Mix Asphalt (PMA) 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.

GUARDRAIL TYPE	DIMENSION	
	H	A
MGS w/ Standard 8" Offset Block	2'-1"	1'-6"
MGS w/ No Blockout	2'-⅞"	9¼"

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

BRUCE K MEYERS
Licensed Professional Engineer
No. 8336-C
HAWAII, U.S.A.

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Expiration Date of License 4/22

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

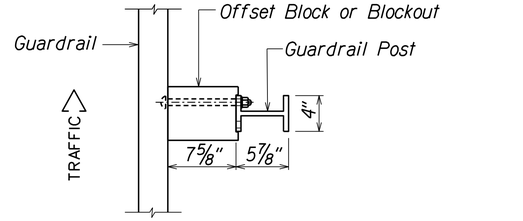
GUARDRAIL DETAILS & NOTES

PAHOA-KALAPANA ROAD
2018 KILAUEA ERUPTION PERMANENT REPAIRS
Federal Aid Project No. ER-21(005)

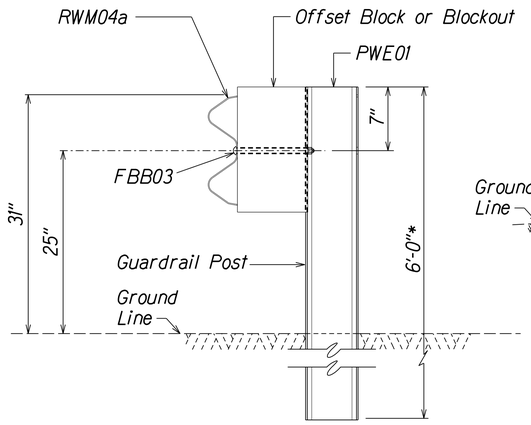
Scale: NTS Date: August 2021

SHEET No. 1 OF 6 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	ER-21(005)	2021	9	24



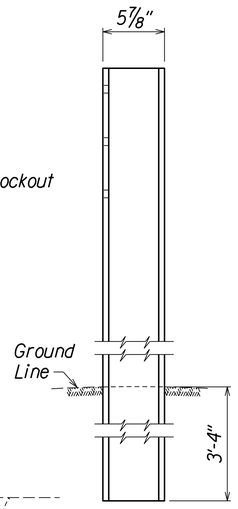
PLAN



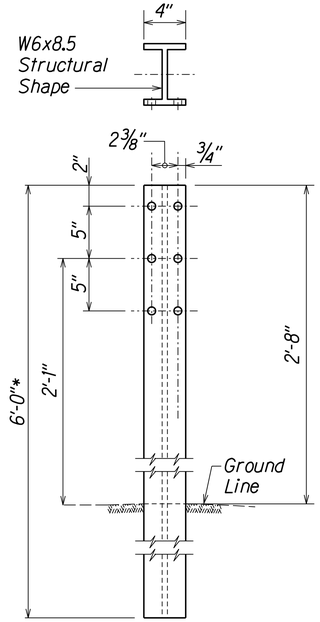
SECTION A-A

*9'-0" Posts in Embankment

NOTE:
All Holes are 3/4" Dia.

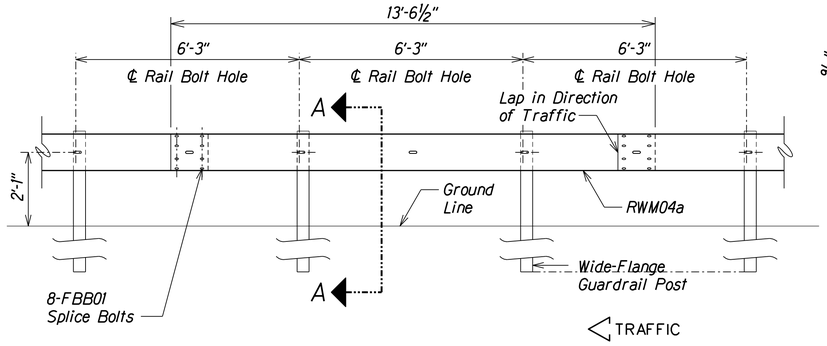


SIDE



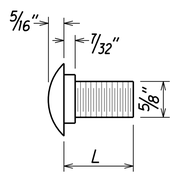
FRONT

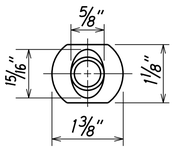
WIDE-FLANGED GUARDRAIL POST (PWE01)



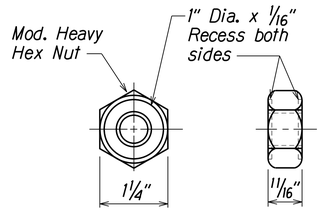
ELEVATION

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



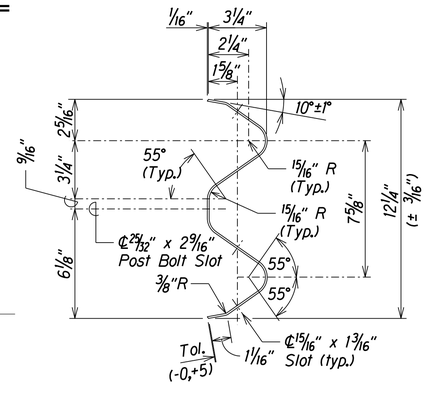


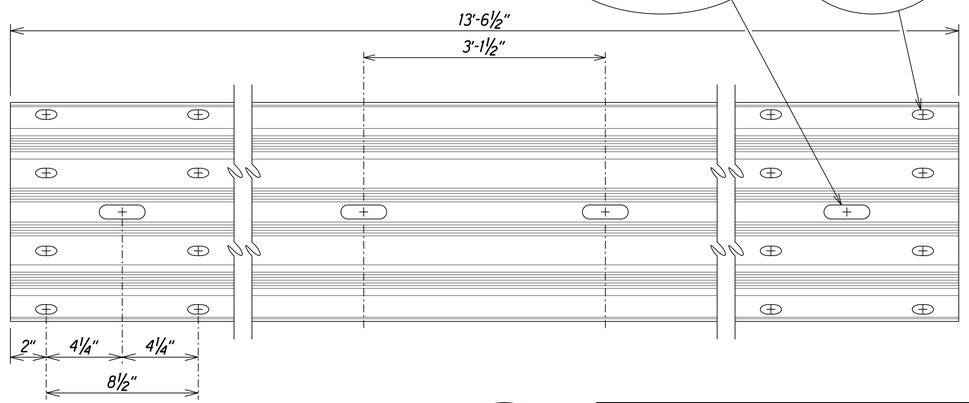
DESIGNATOR	L
FBB01	1 3/8"
FBB02	2"
FBB03	10"

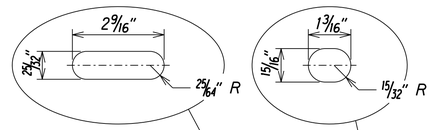


GUARDRAIL BOLTS AND RECESSED NUT

DESIGNATOR	BASE METAL THICKNESS
RWM04a	12 Gauge







4 SPACE W-BEAM GUARDRAIL (RWM04a)

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

BRUCE K MEYERS
Licensed Professional Engineer
No. 8336-C
HAWAII, U.S.A.

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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

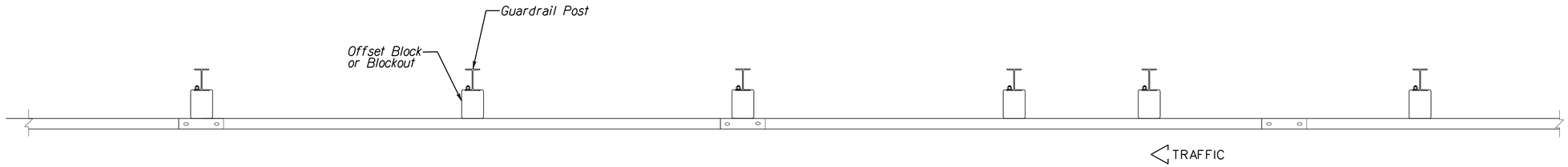
31" W-BEAM GUARDRAIL WITH STANDARD 8" OFFSET BLOCK

PAHOA-KALAPANA ROAD
2018 KILAUEA ERUPTION PERMANENT REPAIRS
Federal Aid Project No. ER-21(005)

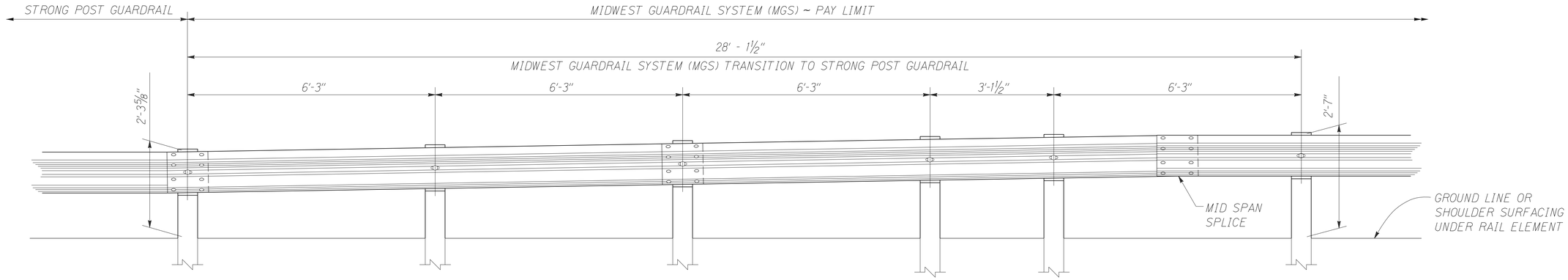
Scale: NTS Date: August 2021

SHEET No. 2 OF 6 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	ER-21(005)	2021	10	24



PLAN



ELEVATION

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

BRUCE K MEYERS
Licensed Professional Engineer
No.8336-C
HAWAII, U.S.A.

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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

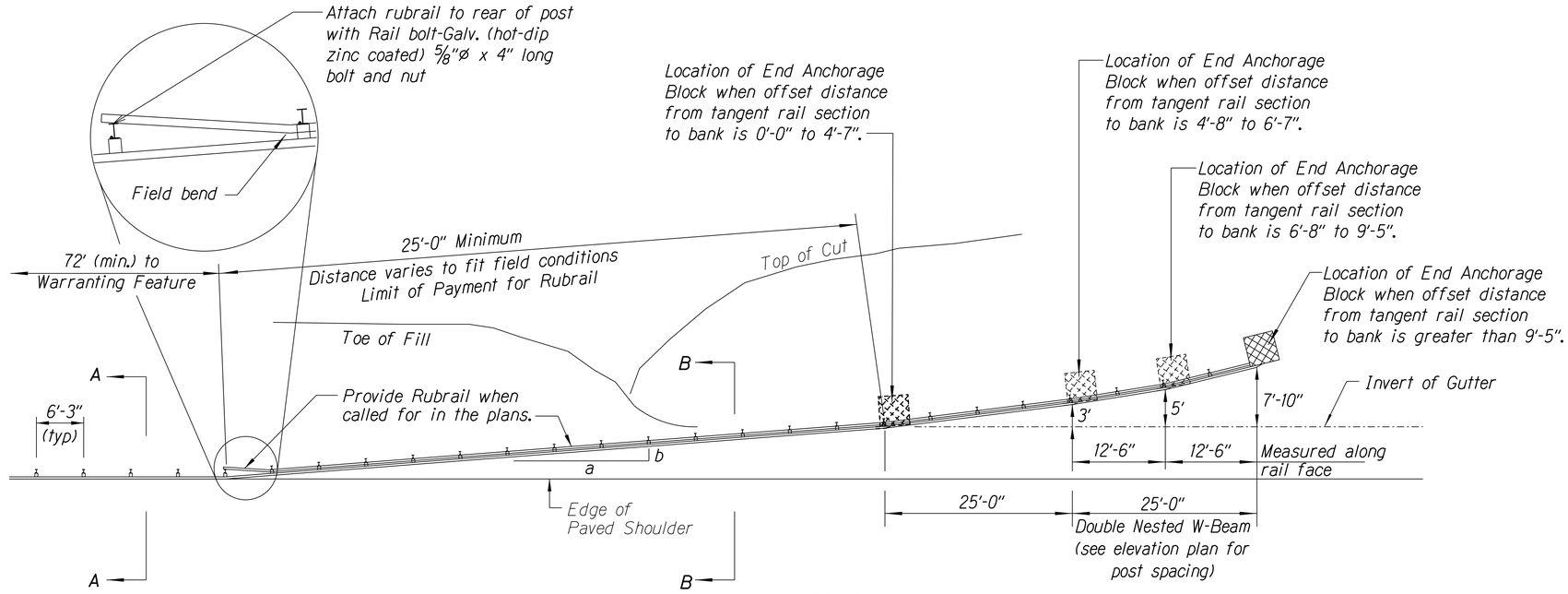
MGS TRANSITION TO STRONG POST GUARDRAIL

PAHOA-KALAPANA ROAD
2018 KILAUEA ERUPTION PERMANENT REPAIRS
Federal Aid Project No. ER-21(005)

Scale: NTS Date: August 2021

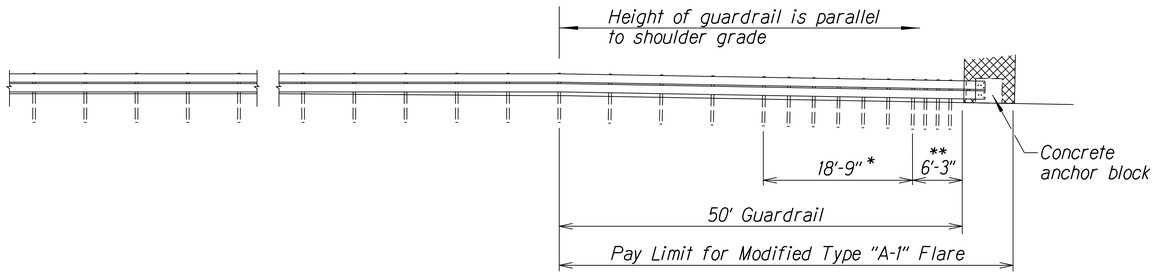
SHEET No. 3 OF 6 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	ER-21(005)	2021	11	24



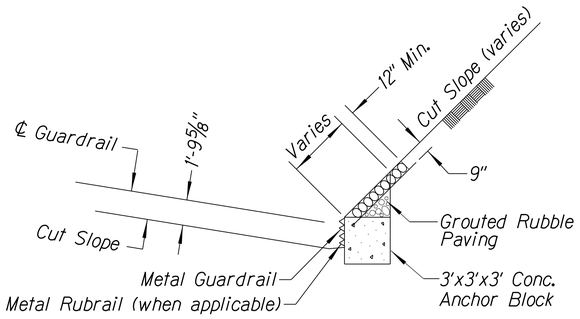
PLAN

Design speed mph	a:b
68	15:1
62	13:1
56	12:1
50	11:1
43	10:1
37	9:1
31	7:1

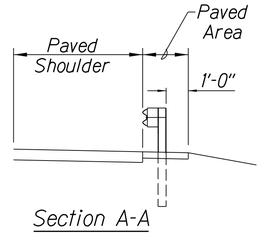


* Posts at 3'-1½" o.c.
** Posts at 1'-6¾" o.c.

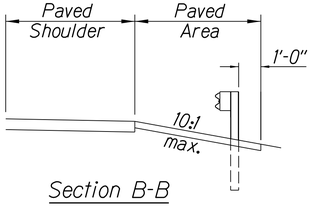
ELEVATION (Profile Along Rail)



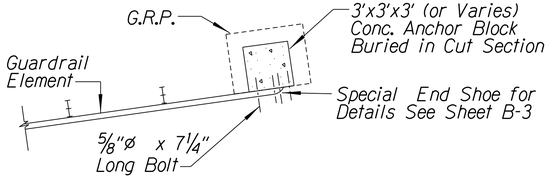
ANCHOR BLOCK IN CUT SECTION



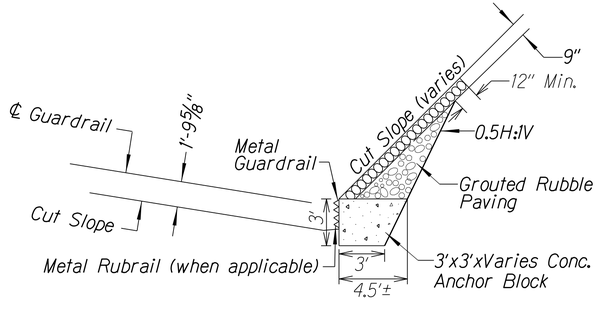
Section A-A



Section B-B



PLAN - ANCHOR BLOCK IN CUT SECTION



ANCHOR BLOCK IN CUT SECTION WITH SLOPE STABILITY CONCERNS

General Notes

1. All posts are 6'-0" in length within the 50'-0" pay limit for the Modified Type "A-1" Flare without rubrail.
2. Whenever swales or a change in grade is encountered within the 50'-0" pay limit for the Modified Type "A-1" Flare, a rubrail shall be installed and all posts shall have a minimum embedment of 4'-0". Post lengths shall be adjusted to provide the minimum embedment.
3. All fasteners, posts, blocks and rail elements 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-AGCARTBA Joint Cooperative Committee and HDOT's Statewide Guideline for Permanent Highway Safety Hardware.
4. Limit of payment for Modified Type "A-1" Flare shall be 50'-0" from End Shoe including Rubrail (when applicable), Anchor Block and GRP work.
5. Excavation, Anchor Block and GRP work shall be considered incidental to the Modified Type "A-1" Flare.

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

BRUCE K. MEYERS
Licensed Professional Engineer
No. 8336-C
HAWAII, U.S.A.

This work was prepared by me or under my supervision.

Expiration Date of License 4/22

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

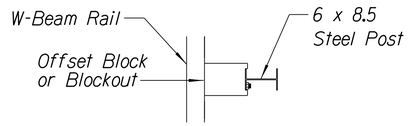
MODIFIED TYPE "A-1" FLARE

PAHOA-KALAPANA ROAD
2018 KILAUEA ERUPTION PERMANENT REPAIRS
Federal Aid Project No. ER-21(005)

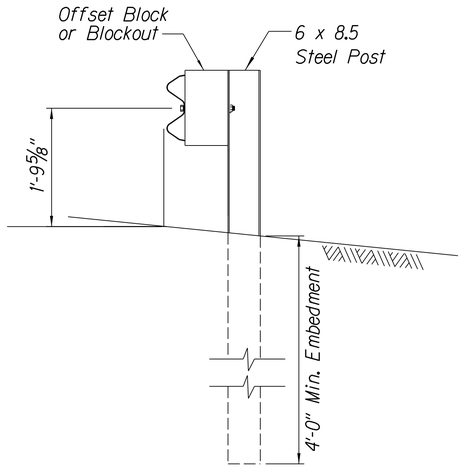
Scale: NTS Date: August 2021

SHEET No. 4 OF 6 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	ER-21(005)	2021	12	24

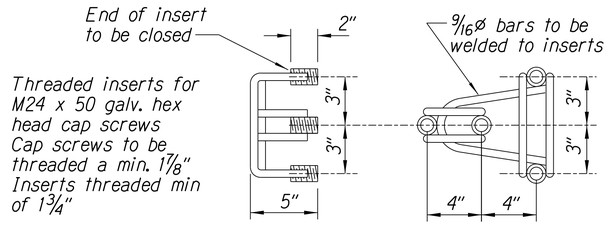


Plan

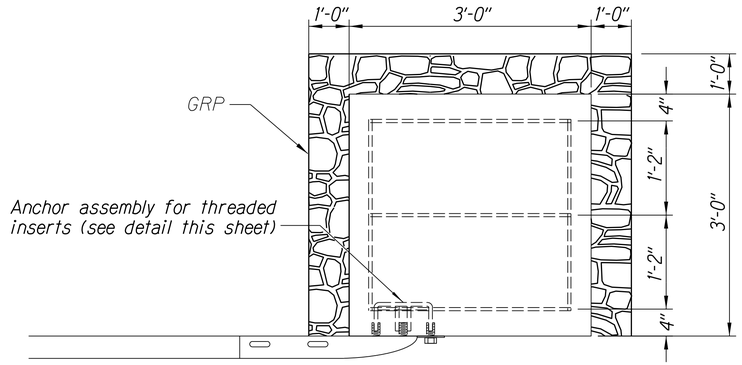


Elevation

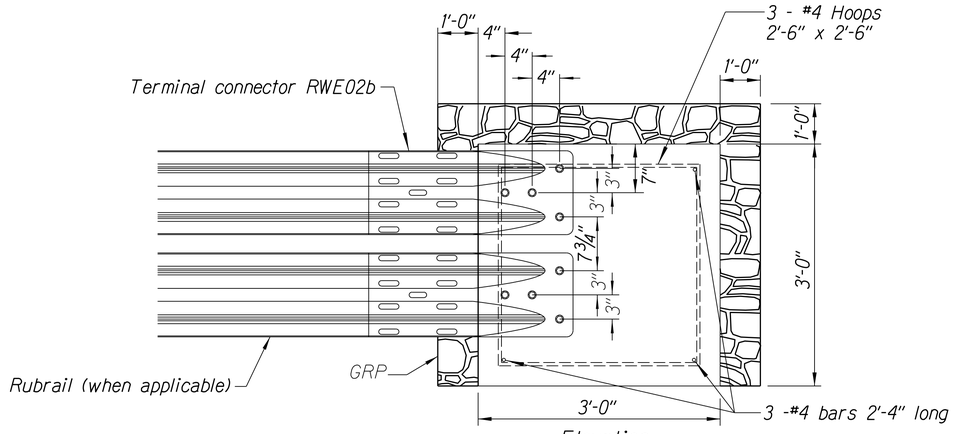
STRONG POST W-BEAM GUARDRAIL



ANCHOR ASSEMBLY
CONCRETE BLOCK ANCHOR



Plan



Elevation

CONCRETE BLOCK ANCHOR
(3' X 3' X 3')

BACKSLOPE ANCHOR TERMINAL END ANCHORAGE DETAILS
MODIFIED TYPE "A-1" FLARE

Note:

All fasteners, posts, blocks and rail elements 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-AGCARTBA Joint Cooperative Committee and HDOT's Statewide Guideline for Permanent Highway Safety Hardware.

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

BRUCE K MEYERS
Licensed Professional Engineer
No.8336-C
HAWAII, U.S.A.

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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

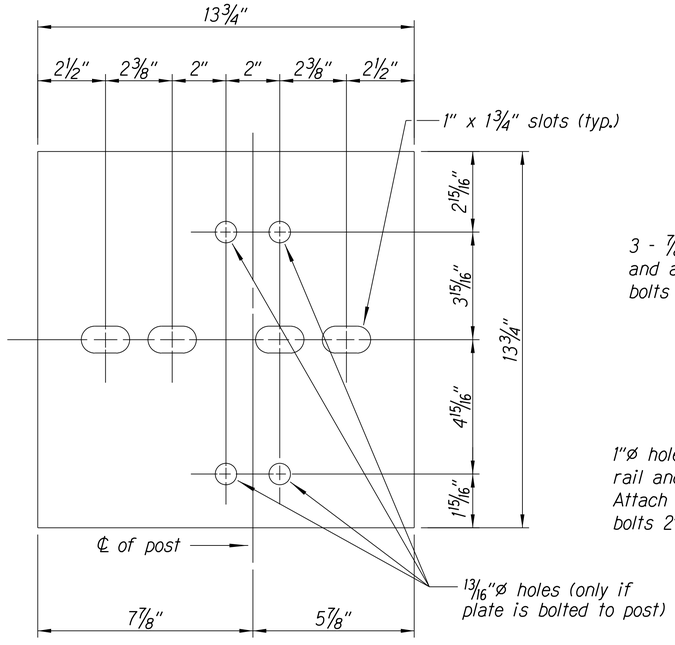
MODIFIED TYPE "A-1" FLARE

PAHOA-KALAPANA ROAD
2018 KILAUEA ERUPTION PERMANENT REPAIRS
Federal Aid Project No. ER-21(005)

Scale: NTS Date: August 2021

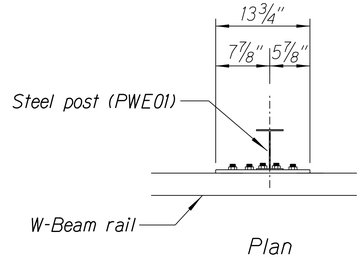
SHEET No. 5 OF 6 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	ER-21(005)	2021	13	24

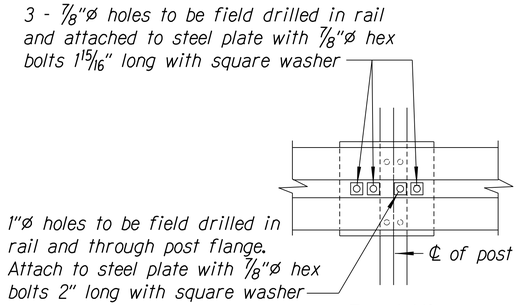


Steel Plate - ½"

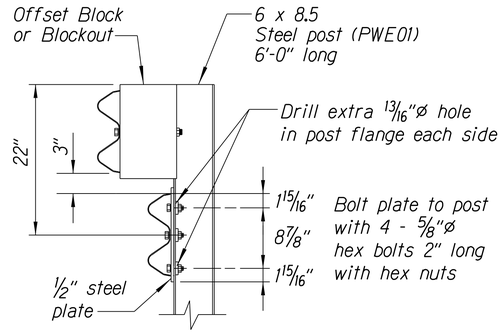
(Hot-dip Zinc Coated Galvanized- Welded or Bolted to Post)



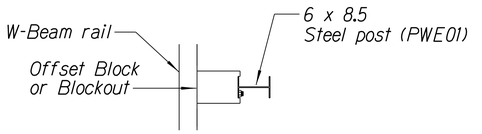
Plan



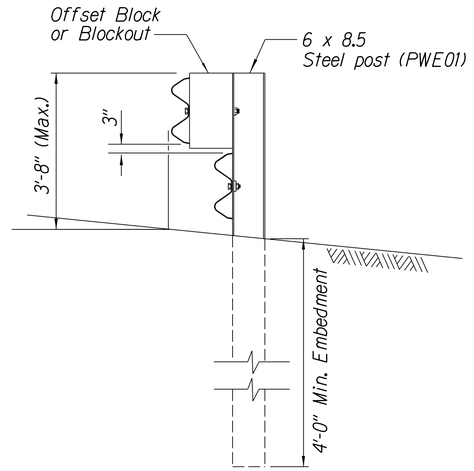
Front View



Elevation



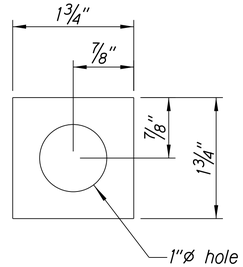
Plan



Elevation

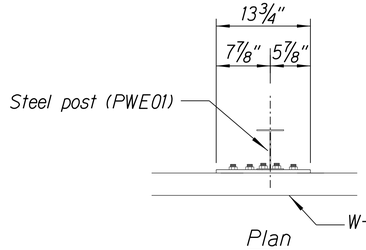
RUBRAIL ANCHOR DETAILS

STEEL POST GUARDRAIL WITH RUBRAIL

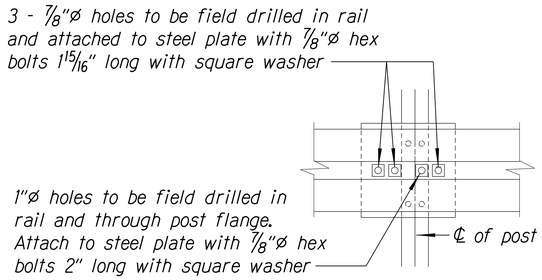


Square Washer

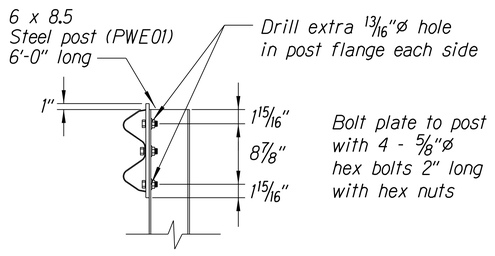
(3⁄16" Thick - Hot-dip Zinc Coated Galvanized)



Plan



Front View



Elevation

POST ANCHOR DETAILS

Note:

All fasteners, posts, blocks and rail elements 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-AGCARTBA Joint Cooperative Committee.

RUBRAIL DETAIL FOR MODIFIED TYPE "A-1" FLARE (WHEN CALLED FOR IN PLANS)

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

BRUCE K MEYERS
Licensed Professional Engineer
No. 8336-C
HAWAII, U.S.A.

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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

MODIFIED TYPE "A-1" FLARE RUBRAIL DETAILS

PAHOA-KALAPANA ROAD
2018 KILAUEA ERUPTION PERMANENT REPAIRS
Federal Aid Project No. ER-21(005)

Scale: NTS Date: August 2021

SHEET No. 6 OF 6 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	ER-21(005)	2021	14	24

BEGIN PROJECT
Federal Aid Project No. ER-21(005)
℄ Sta. 99+00

PROJECT BENCHMARK
(□ CUT ON CORNER CONC.)
ELEV: = 1037.10

℄ Sta. 97+43 O/S 28' Lt. & ℄ Sta. 97+10 O/S 17' Rt.
Install Silt Fence or Filter Sock
See Detail Sheet 7

℄ Sta. 103+45 to ℄ Sta. 110+50 O/S 16.5' Lt.
Install New Guardrail with MGS to Strong Post Transition and Modified Type "A-1" Flare End Treatment,
See Detail Sheets 8-13

TRUE NORTH
SCALE : 1" = 40'

℄ Sta. 104+50 to ℄ Sta. 111+00 Lt. & Rt.
Install Silt Fence or Filter Sock
See Detail Sheet 7

r/w
ep
es
196°39'26.71"
442.47' (Tie)
℄ Highway 130
197°54'55.10"
857.44' (Tie)
top
toe
100+00
105+00
197°55'15" → 964.18' (Sta. 99+00 to P.C. Sta. 108+64.18)
21°6'0.25"
541.13' (Tie)
Pahoa-Kalapana Road
M.L. ℄ STA. 108+00
To Kalapana
To Pahoa
exist. conc. thermal panels

℄ Sta. 99+00 Lt. & Rt.
Begin Roadway and Shoulder Paving, Cold Plane Exist. Pavement
℄ Sta. 99+00 to ℄ Sta. 99+50
See Detail Sheet 7

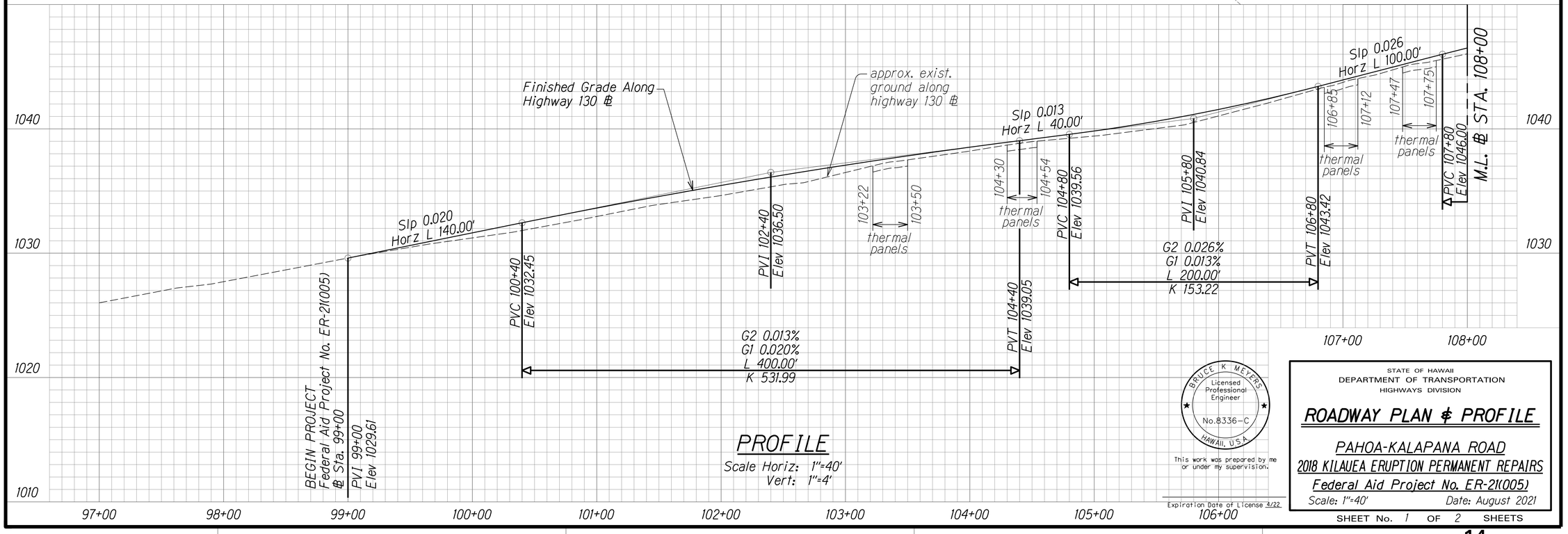
Note:
Elevations are referenced to Department of Transportation Cadastral benchmark SOH-76YY (Brass Disk), elevation of 967.45 (L.M.S.L.)

℄ Sta. 103+45 to ℄ Sta. 109+85 O/S 16.5' Rt.
Install New Guardrail with MGS to Strong Post Transition and Modified Type "A-1" Flare End Treatment,
See Detail Sheets 8-13

BDRYFD 1/2 Pipe
N: 7193.20
E: 16498.15
ELEV.= 1037.45

Note:
Sediment and Erosion Control BMP measures shown in the Contract Documents are minimum BMPs 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 209.0100, Installation, Maintenance, Monitoring, and Removal of BMP.

PLAN
Scale: 1"=40'



PROFILE
Scale Horiz: 1"=40'
Vert: 1"=4'

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

BRUCE K. MEYERS
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HAWAII, U.S.A.

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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

ROADWAY PLAN & PROFILE

PAHOA-KALAPANA ROAD
2018 KILAUEA ERUPTION PERMANENT REPAIRS
Federal Aid Project No. ER-21(005)

Scale: 1"=40' Date: August 2021

SHEET No. 1 OF 2 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	ER-21(005)	2021	15	24

℄ Sta. 103+45 to ℄ Sta. 110+50 O/S 16.5' Lt.
Install New Guardrail with MGS to Strong Post Transition and Modified Type "A-1" Flare End Treatment, See Detail Sheets 8-13

℄ Sta. 104+50 to ℄ Sta. 111+00 Lt. & Rt.
Install Silt Fence or Filter Sock See Detail Sheet 7

END PROJECT
Federal Aid Project No. ER-21(005)
℄ Sta. 112+00

℄ CURVE DATA
△ = 3°21'30"
R = 5,729.58
T = 167.96'
C = 335.77'
Lc = 335.82'

196°14'30"
335.77'
(P.C. Sta. 108+64.18 to Sta. 112+00)

197°54'55.10"
857.44' (Tie)

285°55'15" ← PC Sta 108+64.18 → R=5,729.58'

M.L. ℄ STA. 108+00

toe
top
toe
top
toe
top

110+00

To Kalapana

exist. conc. thermal panels

℄ Sta. 103+45 to ℄ Sta. 109+85 O/S 16.5' Rt.
Install New Guardrail with MGS to Strong Post Transition and Modified Type "A-1" Flare End Treatment, See Detail Sheets 8-13

BDRYFD 1/2 Pipe
N: 7913.41
E: 16720.47
ELEV.= 1056.42

℄ Sta. 112+00 Lt. & Rt.
End Roadway and Shoulder Paving, Cold Plane Exist. Pavement
℄ Sta. 111+50 to ℄ Sta. 112+00
See Detail Sheet 7

119°00'5.72"
30.34' (Tie)

TRUE NORTH
SCALE : 1" = 40'

℄ Highway 130

115+00

Pahoa-Kalapana Road

STOP

To Pahoa

es
ep
r/w

PLAN
Scale: 1"=40'

Note:
Sediment and Erosion Control BMP measures shown in the Contract Documents are minimum BMPs 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 209.0100, Installation, Maintenance, Monitoring, and Removal of BMP.

1060
1050
1040
1030

Finished Grade Along Highway 130 ℄

approx. exist. ground along highway 130 ℄

Slp 0.016
Horz L 220.00'

M.L. ℄ STA. 108+00

PVI 108+80
Elev 1048.58

109+17
109+44
thermal panels

PVT 109+80
Elev 1050.20

G2 0.016%
G1 0.026%
L 200.00'
K 208.11

END PROJECT
Federal Aid Project No. ER-21(005)
℄ Sta. 112+00

PVI 112+00
Elev 1053.76

PROFILE
Scale Horiz: 1"=40'
Vert: 1"=4'

108+00 109+00 110+00 111+00 112+00 113+00 114+00 115+00 116+00 117+00 118+00 119+00

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

BRUCE K. MEYERS
Licensed Professional Engineer
No. 8336-C
HAWAII, U.S.A.

This work was prepared by me or under my supervision.

Expiration Date of License 4/22

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

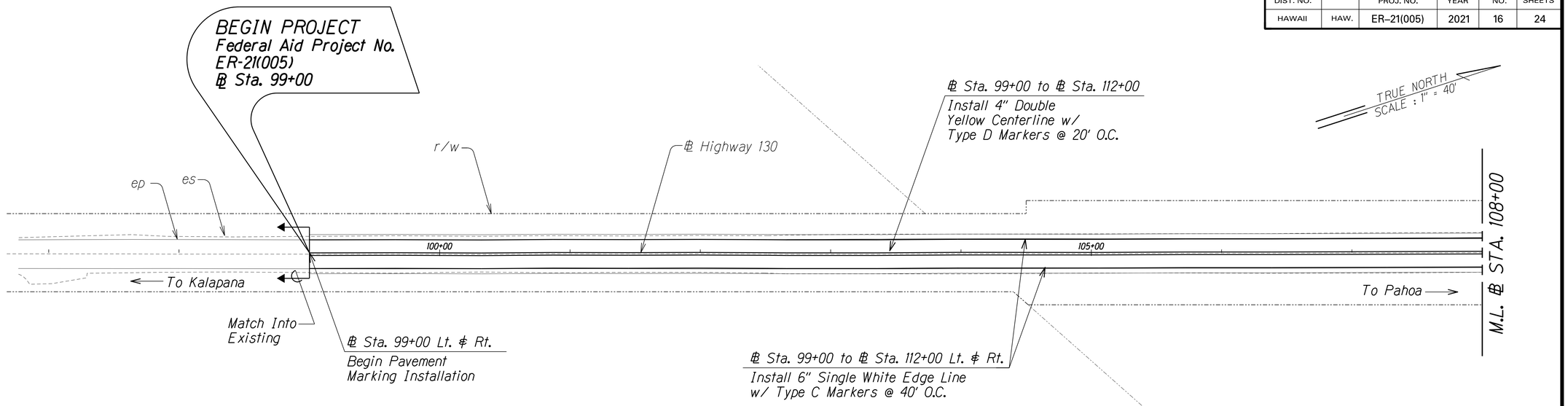
ROADWAY PLAN & PROFILE

PAHOA-KALAPANA ROAD
2018 KILAUEA ERUPTION PERMANENT REPAIRS
Federal Aid Project No. ER-21(005)

Scale: 1"=40' Date: August 2021

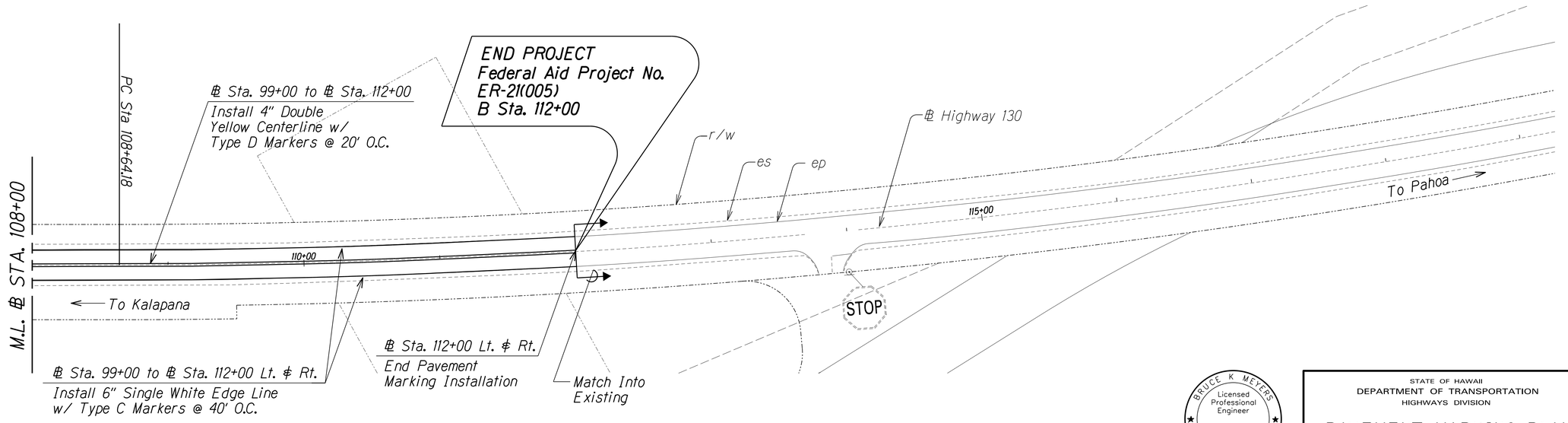
SHEET No. 2 OF 2 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	ER-21(005)	2021	16	24



STRIPING PLAN

Scale: 1"=40'



STRIPING PLAN

Scale: 1"=40'

ORIGINAL PLAN
NOTE BOOK
No.

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

BRUCE K MEYERS
Licensed Professional Engineer
No.8336-C
HAWAII, U.S.A.

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STATE OF HAWAII
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PAVEMENT MARKING PLAN

PAHOA-KALAPANA ROAD
2018 KILAUEA ERUPTION PERMANENT REPAIRS
Federal Aid Project No. ER-21(005)

Scale: 1"=40' Date: August 2021

SHEET No. 1 OF 1 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	ER-21(005)	2021	17	24

STANDARD TRAFFIC NOTES

1. The permittee shall make minor adjustments at intersections, driveways, bridges, structures, etc., to fit field conditions.
2. All traffic control devices including cones, barricades, etc. shall comply with the latest MUTCD and MASH requirements.
3. Concrete barriers, cones, barricades or delineators shall be extended to a point where they are visible to approaching traffic.
4. 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.
5. Regulatory and warning signs within the construction zone that are in conflict with the traffic control plans shall be removed or fully covered. All signs shall be restored upon completion of the work.
6. Flaggers and/or police officers shall be in sight of each other or in direct communication at all times.
7. When required by the Engineer or MUTCD, the Contractor shall install a flashing arrow signal.
8. All temporary work zone traffic lanes shall be a minimum of 10 feet wide.
9. All construction warning signs, not on portable stands, shall be promptly removed or fully covered whenever the message is not applicable or not in use. Sign covers shall not allow signs to be seen when headlights illuminate them.
10. The backs of all signs used 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. 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. Signs on portable stands shall not remain in the shoulder if not in use. They shall be removed from the roadway. Covering the signs on portable stands and leaving them in place shall not be done. Removal shall be in the reverse order of installation.
12. Permanent pavement markings and traffic signs shall be replaced and accepted before substantial completition is granted.
13. Install steady burn amber lamps on portable concrete barriers at 20 feet on center. Installing, maintaining, as well as changing batteries of the portable mounted steady burn amber lamps shall be considered incidental to the various contract items.
14. All construction signs and temporary striping shall be removed before substantial completion is granted, unless noted as a permanent item.

TRAFFIC CONTROL PLAN NOTES

1. The construction traffic control plans are intended to provide the Contractor with a general traffic control plan for the phasing of the roadway work. It is not intended to be used to sequence every aspect of the work. The Contractor shall be responsible to sequence the work as required to provide access to abutting properties and intersecting streets and modify the traffic control plans accordingly, and shall submit detailed traffic control plans as indicated below. The Engineer reserves the right to direct the Contractor to revise its traffic control plans should it, in the sole opinion of the Engineer, provide unsatisfactory performance, e.g. complaints from the public, safety problems. This shall be at no additional cost or increase in contract time.
2. Prior to start of any construction activities on the site, the Contractor shall prepare, submit for review, and obtain approval of detailed traffic control plans that comply with latest MUTCD requirements and show at a minimum:
   A. The phases of construction within the project, and which areas will be constructed under each phase.
   B. Lanes (original, temporary detours, or final) that will be open to traffic flow during construction hours, along with all traffic control devices, police, etc. to be used to control traffic.
3. The traffic control plans shall conform to the following limitations:
   A. The Contractor shall sequence the work to minimize disruption of access to the abutting properties. The Contractor shall notify the abutting property owners and users in advance of scheduled work requiring temporary inconveniences and disruption of access and shall provide temporary facilities and access at no additional cost to the state.
   B. Contractor shall use police officers for flagging operations when available.
   C. Contractor shall apply for all road closure permits and comply with all public notification requirements per County and State regulations and/or laws.
   D. Contractor shall always during construction maintain ADA compliant pedestrian access on at least one side of the highway. Pedestrian access must be protected from construction work by FHWA accepted MASH compliant Longitudinal Channelizing Devices supplemented with retroreflective material or delineation for improved nighttime visibility. Guidance literature can be found at https://ops.fhwa.dot.gov/publications/fhwahop17028/fhwahop17028.pdf Temporary crosswalks shall be provided where pedestrian access switches from one side of the street to the other, and/or at intersections.
4. Phasing, traffic control devices, police officers, etc. necessary to comply with the above shall be considered incidental to various items in the contract, and shall not be paid for separately.
5. Approval by the Engineer of the Contractor's traffic control plans shall not relieve the Contractor of any liability or of his responsibilities to complete all work in a safe manner and in accordance with all applicable regulations, laws and guidelines.
6. The Contractor shall be responsible for the extent of the traffic control plan implemented at all times.
7. The Contractor shall be responsible for temporary power costs for all temporary traffic signals and street lighting.
8. The Contractor shall be responsible for installing, maintaining, and removing all necessary traffic signs and pavement markings required to accommodate traffic control. Removal shall be completed before substantial completion will be granted.

ORIGINAL PLAN
NOTE BOOK
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DESIGNED BY
QUANTITIES BY
CHECKED BY
DATE
No.

BRUCE K MEYERS
Licensed Professional Engineer
No.8336-C
HAWAII, U.S.A.

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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

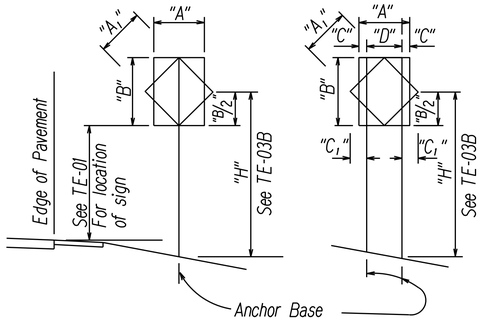
TRAFFIC NOTES

PAHOA-KALAPANA ROAD
2018 KILAUEA ERUPTION PERMANENT REPAIRS
Federal Aid Project No. ER-21(005)

Scale: N/A Date: August 2021

SHEET No. 1 OF 1 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	ER-21(005)	2021	18	24



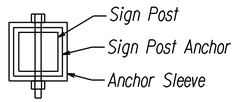
1 - POST
"A" or "A_1" less than 36"

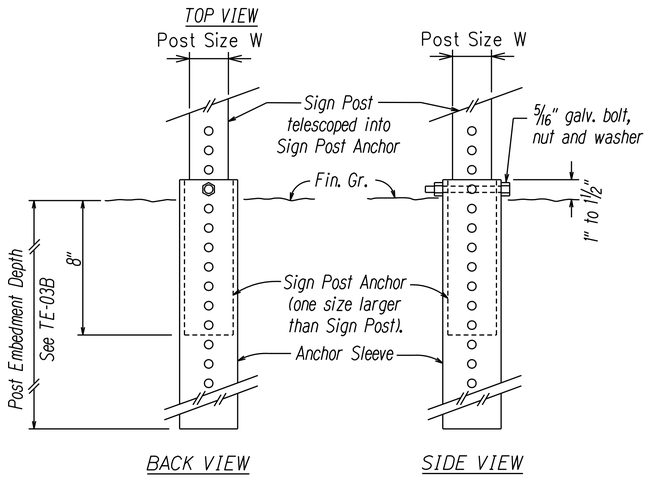
2 - POST
"A" or "A_1" less than 60"

"A" or "A_1"	"C"	"C_1"
Less than 36"	6"	-
Greater than 36" and less than 48"	9"	19"
Greater than 48"	12"	24"

NOTE: Frame stiffeners are required when D is greater than 24" See General Notes.

TYPICAL INSTALLATION





SIGN POST INSTALLATION

ANCHOR BASE DETAIL

GENERAL NOTES

1. Design Specifications:
   (A) Design shall conform w/ the latest AASHTO Standard Specifications for the Structural Supports for Highway Signs, Luminaires & Traffic Signals and its interim supplements and modifications by the Highways Division, Department of Transportation State of Hawaii.
   (B) Latest HDOT Memorandum with subject title "Design Criteria for Bridges and Structures."
2. Loads:
   (A) Basic Wind Speed: 105 mph.
   (B) Recurrence Interval of 10 years.
3. Materials:
   (A) Post shall conform to the Standard Specifications.
   (B) All connection bolts shall be AASHTO M164 bolts and anchor bolts shall be AASHTO M314-105 bolt.
   (C) Lap splice nuts and bolts shall be M180, with an ultimate tensile strength of 180 ksi, min.
   (D) Aluminum members and surfaces in contact with structural steel shall be isolated with neoprene material as approved by the Engineer.
4. General:
   (A) See General Notes on B-01, TE-01, and TE-03B for additional information.
   (B) All posts shall be 12 gage unless otherwise specified or shown on the plans.
   (C) Square tube posts shall be perforated with 7/16"ø holes, 1" o.c., 4 sides, along entire length of post.
   (D) All accessories, fittings and stiffener details (as required) shall be submitted to the Engineer for approval 20 days prior to installation.
   (E) Alternate designs in accordance with the plans and specifications shall use the Service Load Design Method and shall be stamped by a registered structural engineer of the State of Hawaii and submitted to the Engineer for approval.
   (F) All sign support posts shall be outside of the clear zone or shielded by an appropriate traffic barrier system. The traffic barrier system shall be submitted to the Engineer for his approval.
   (G) The Contractor shall use templates while installing the anchor bolts. Anchor bolts shall be vertical.
   (H) Excavation and backfill shall be considered incidental to the cost of the sign foundation.

ORIGINAL PLAN
NOTE BOOK
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BRUCE K MEYERS
Licensed Professional Engineer
No.8336-C
HAWAII, U.S.A.

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HIGHWAYS DIVISION

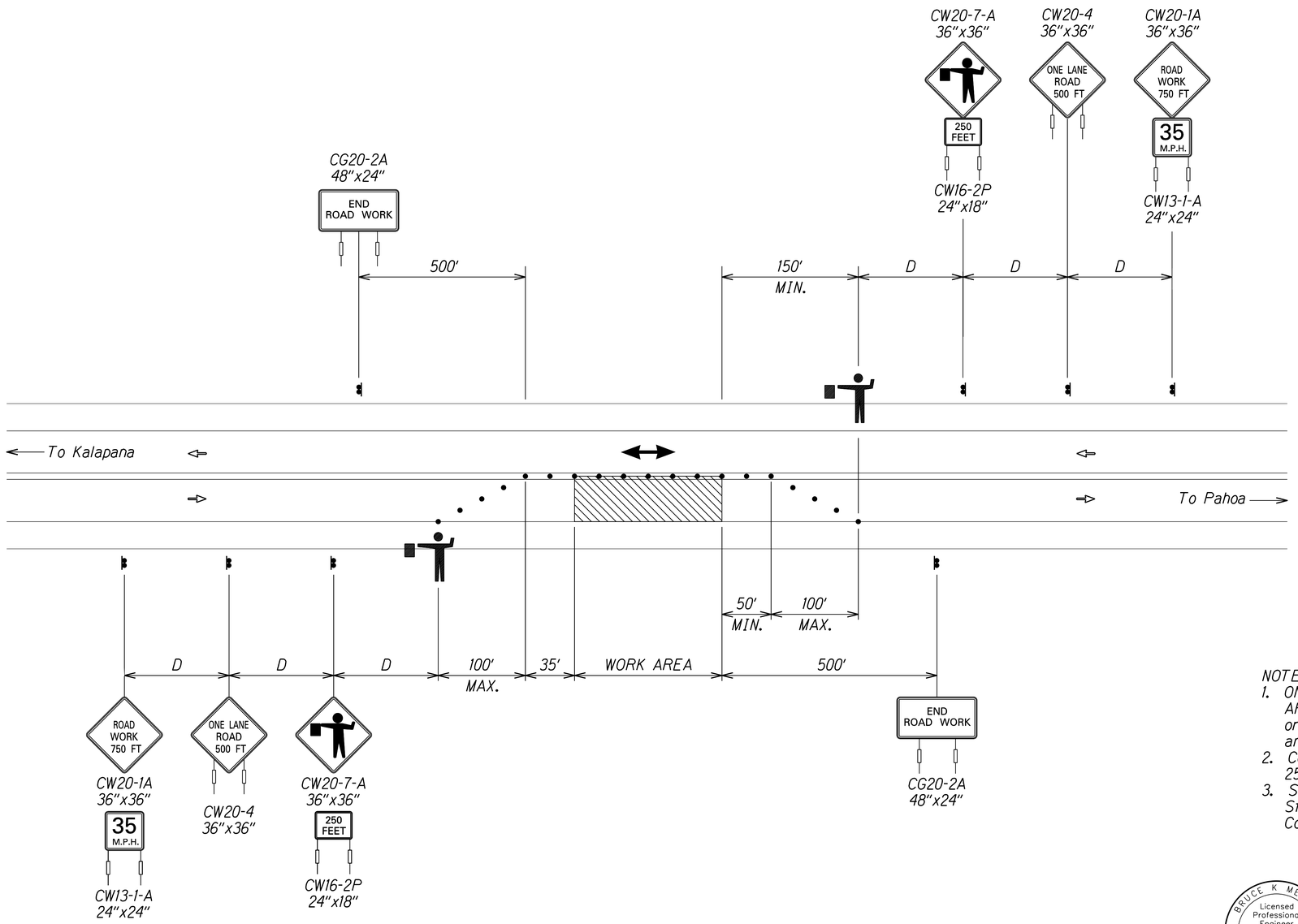
GALVANIZED SQUARE TUBE SIGN POST MOUNTING

PAHOA-KALAPANA ROAD
2018 KILAUEA ERUPTION PERMANENT REPAIRS
Federal Aid Project No. ER-21(005)

Scale: NTS Date: August 2021

SHEET No. 1 OF 1 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	ER-21(005)	2021	19	24



TWO-LANE HIGHWAY - ONE LANE CLOSED

Not to Scale

LEGEND

- Work Area
- Police Officer/Flagger
- Vehicle Traffic Flow
- Cone/Delineator
- Sign
- Type II Object Marker

NOTE:

1. ONE LANE ROAD (CW20-4) and FLAGGER AHEAD (CW20-7) signs shall be removed or covered when no work is being performed and lane is not closed.
2. Cones or delineators shall be installed at 25' o.c. max. on tapers.
3. Sign spacing (D) per Table 645-1, Hawaii Standard Specifications for Road and Bridge Construction, 2005.

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

BRUCE K MEYERS
Licensed Professional Engineer
No.8336-C
HAWAII, U.S.A.

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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

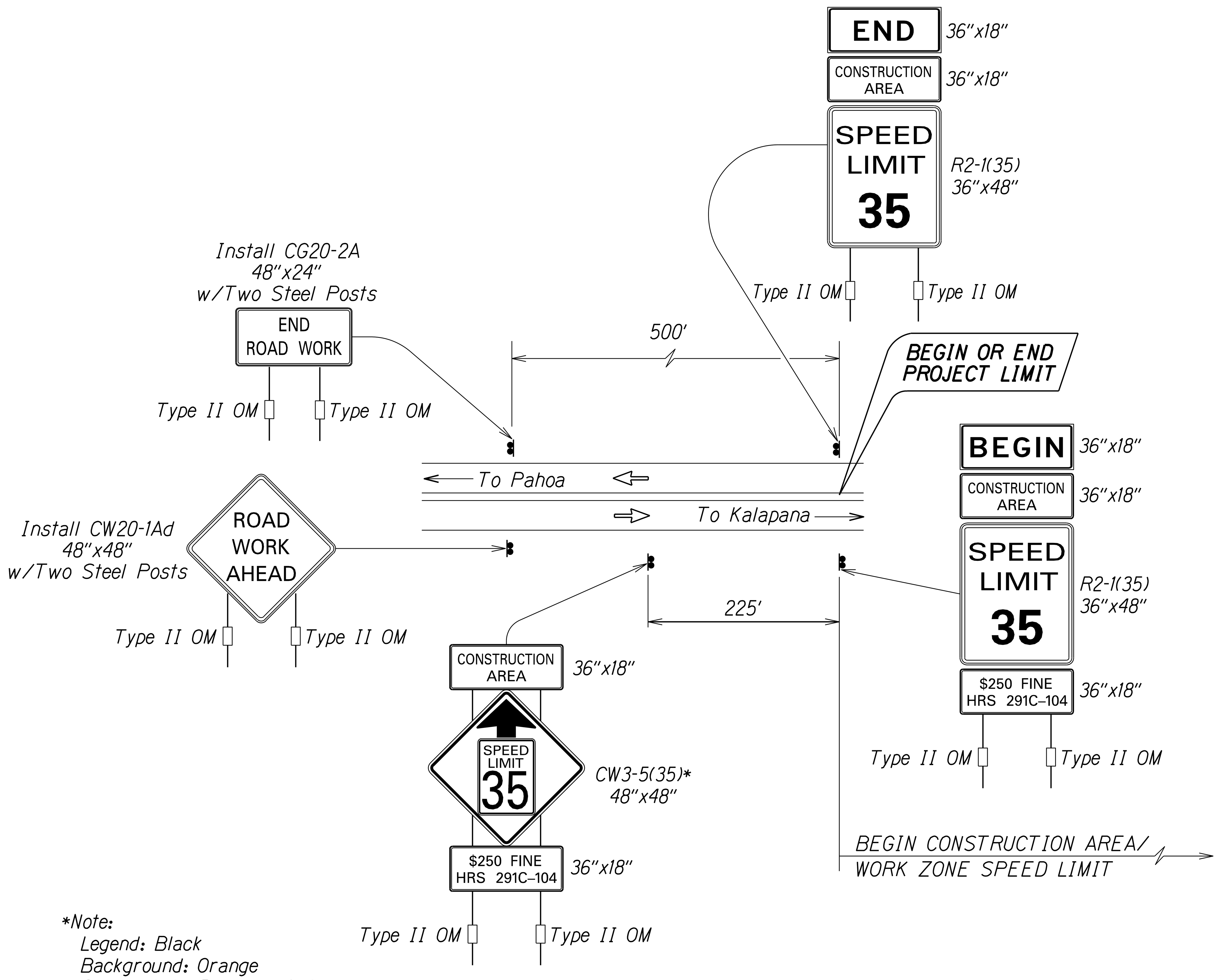
TRAFFIC CONTROL PLAN

PAHOA-KALAPANA ROAD
2018 KILAUEA ERUPTION PERMANENT REPAIRS
Federal Aid Project No. ER-21(005)

Scale: NTS Date: August 2021

SHEET No. 1 OF 1 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	ER-21(005)	2021	20	24

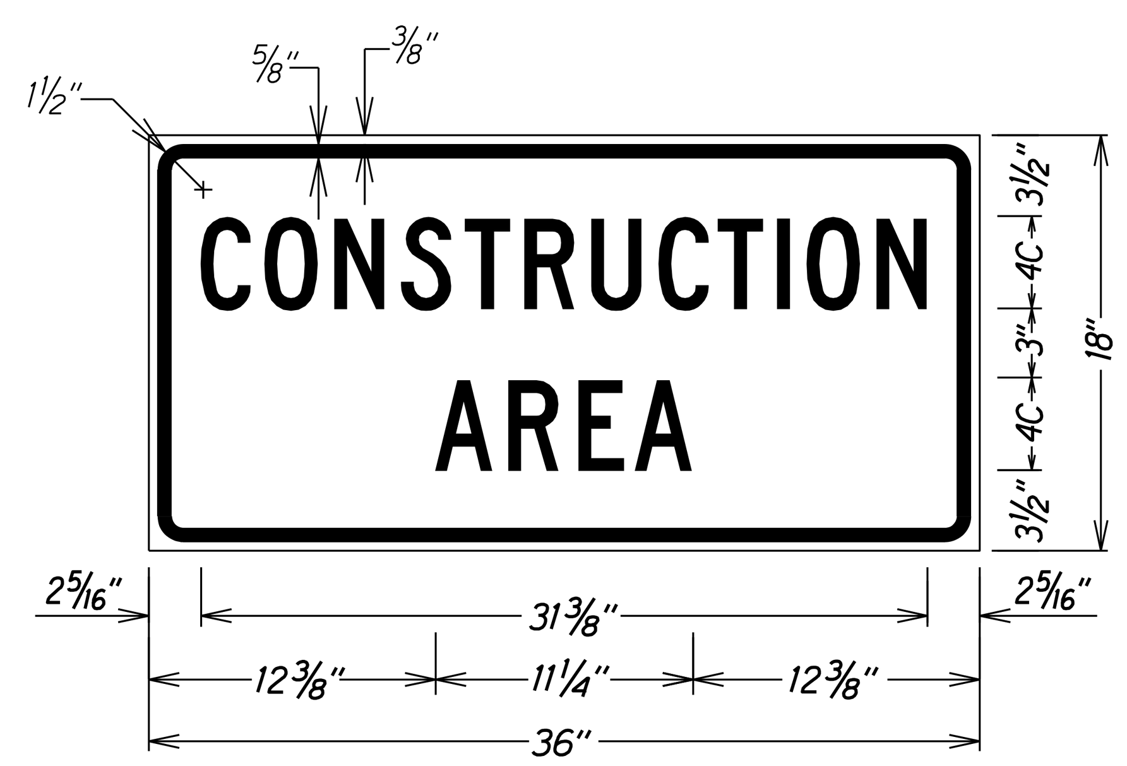


*Note:
Legend: Black
Background: Orange
Speed Limit: Black on White

TYPICAL DETAIL FOR CONSTRUCTION SIGNS ON TWO LANE OR MULTILANE UNDIVIDED HIGH SPEED HIGHWAY KALAPANA BOUND DIRECTION

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(35) and CW3-5(35) 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 and work zone speed limit assembly shall have a minimum of two (2) Type II OM. Installation of each Type II OM shall be considered incidental to Item No. 645.0200-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 with new posts along with the installation, maintenance and removal of work zone speed limit sign assemblies shall be considered incidental to Item No. 645.0200-Traffic Control.
8. Coordinate with traffic control layout on sheet 19.



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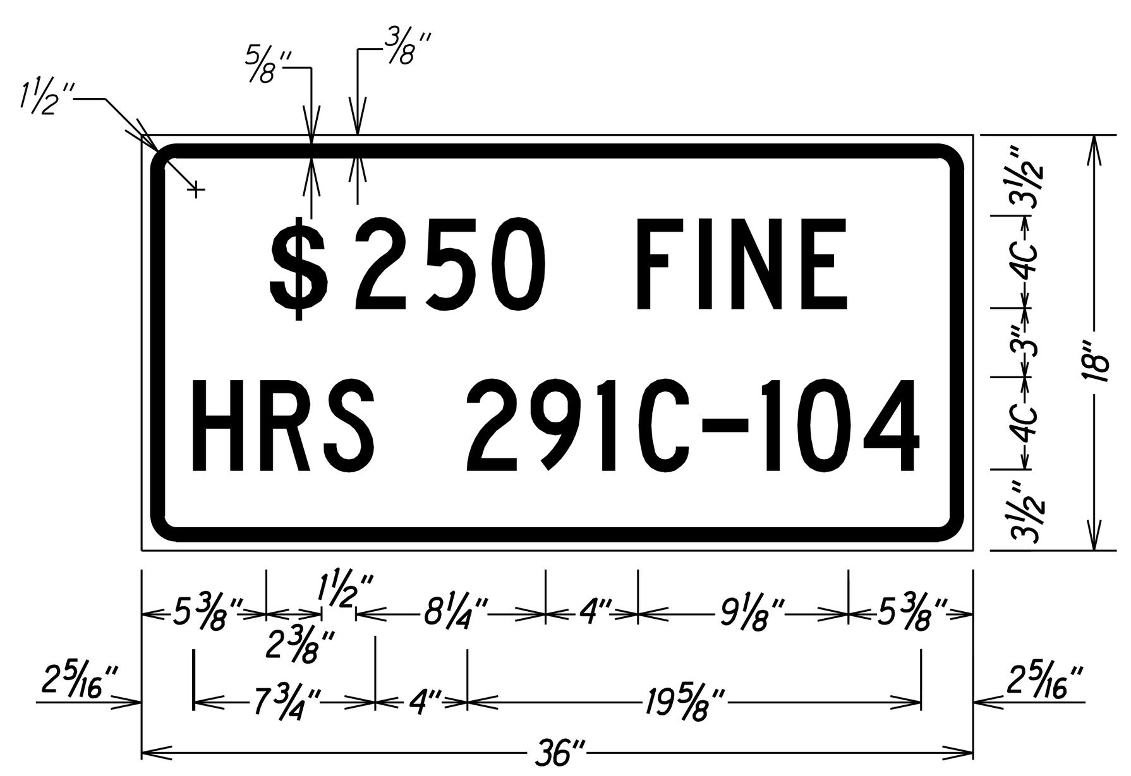

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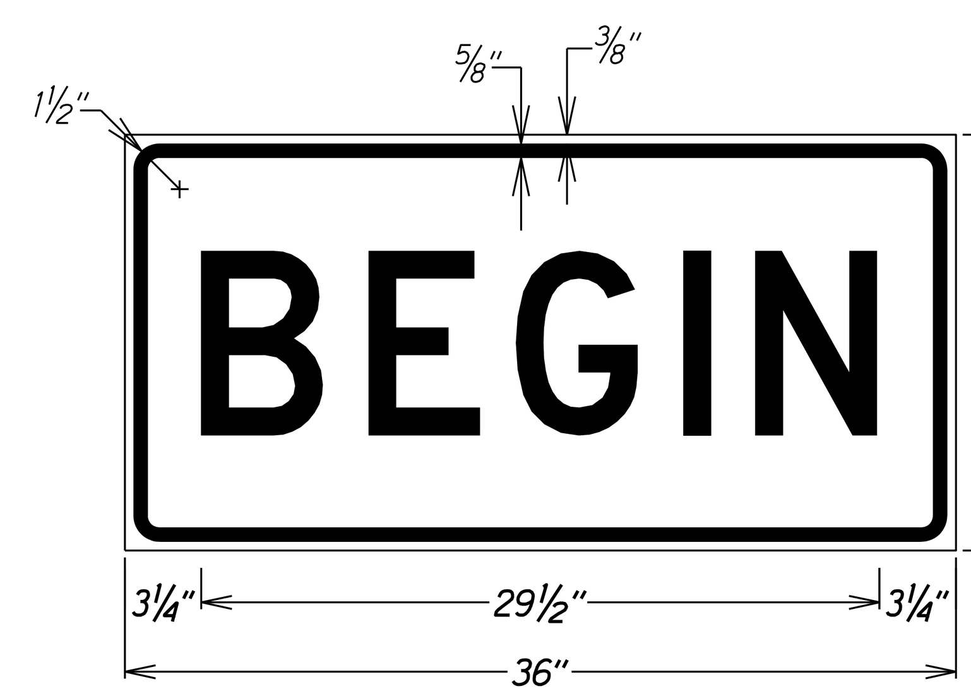
BACKGROUND: WHITE



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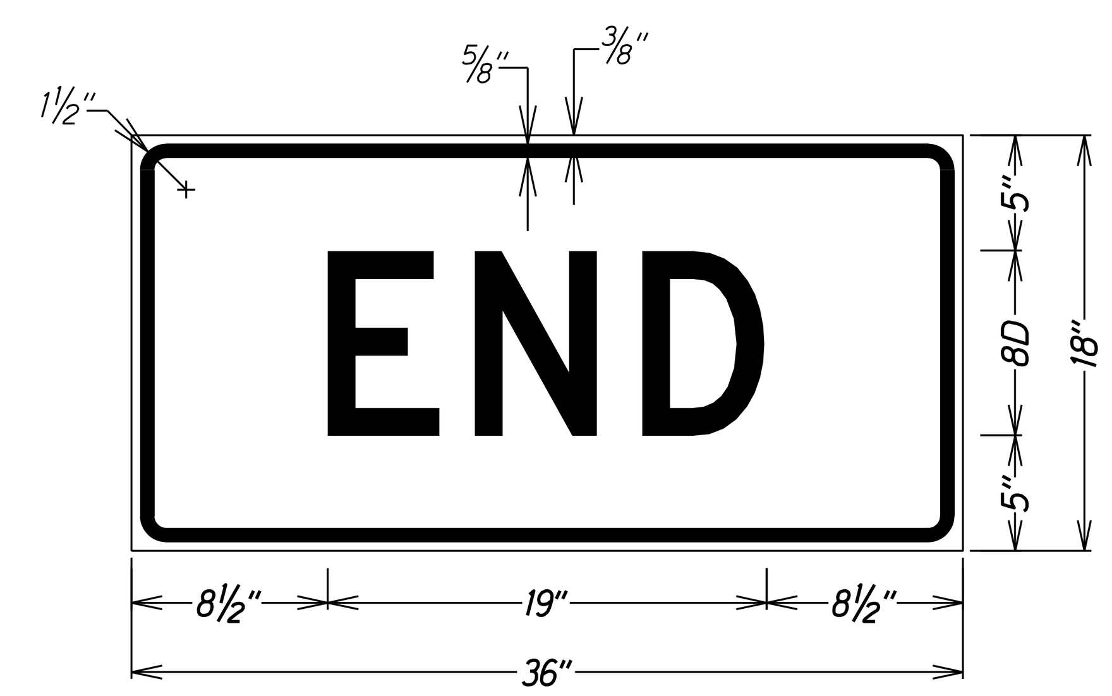

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BRUCE K MEYERS
Licensed Professional Engineer
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HAWAII, U.S.A.

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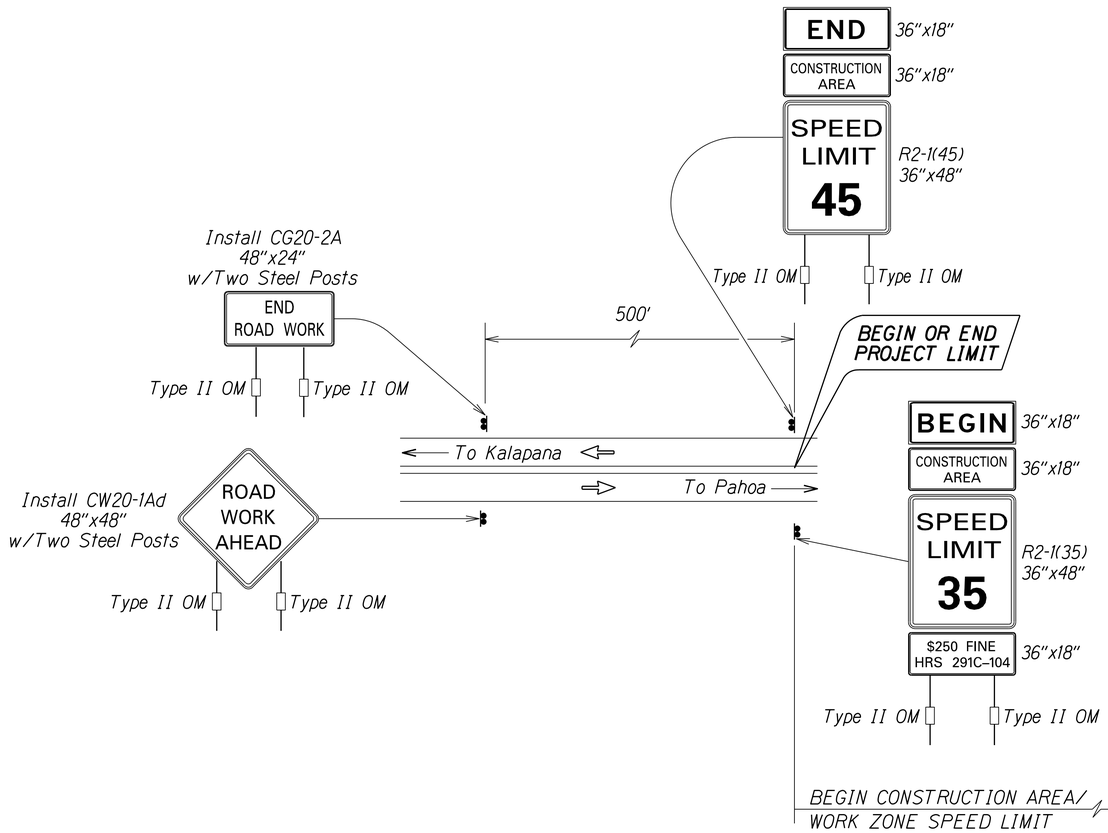
KALAPANA BOUND UNDIVIDED HIGHWAY
WORK ZONE SIGNING PLAN, NOTES & DETAILS
PAHOA-KALAPANA ROAD
2018 KILAUEA ERUPTION PERMANENT REPAIRS
Federal Aid Project No. ER-21(005)

Scale: NTS   Date: August 2021

SHEET No. 1 OF 2 SHEETS

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

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	ER-21(005)	2021	21	24



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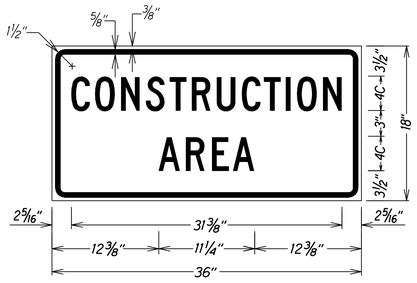
TYPICAL DETAIL FOR CONSTRUCTION SIGNS
ON TWO LANE OR MULTILANE UNDIVIDED HIGH SPEED HIGHWAY
PAHOA BOUND DIRECTION



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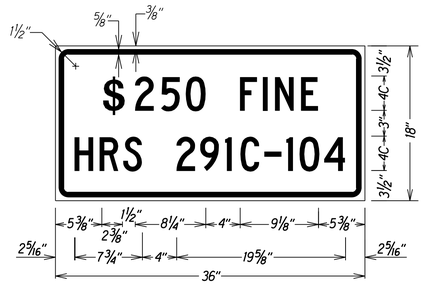

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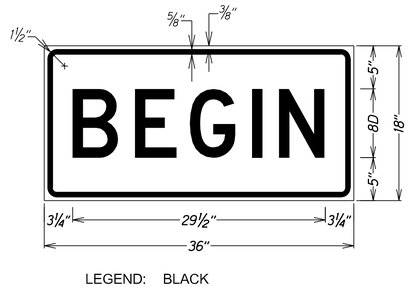

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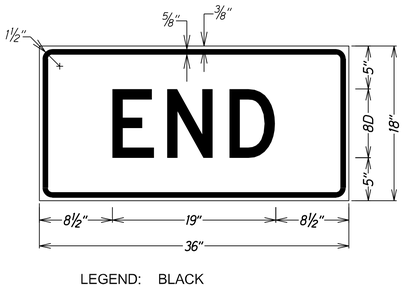

LEGEND: BLACK
BACKGROUND: ORANGE

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

BRUCE K MEYERS
Licensed Professional Engineer
No. 8336-C
HAWAII, U.S.A.

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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
PAHOA BOUND UNDIVIDED HIGHWAY
WORK ZONE SIGNING PLAN, NOTES & DETAILS
PAHOA-KALAPANA ROAD
2018 KILAUEA ERUPTION PERMANENT REPAIRS
Federal Aid Project No. ER-21(005)
Scale: NTS Date: August 2021

SHEET No. 2 OF 2 SHEETS

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(35) and CW3-5(35) 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 and work zone speed limit assembly shall have a minimum of two (2) Type II OM. Installation of each Type II OM shall be considered incidental to Item No. 645.0200-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.
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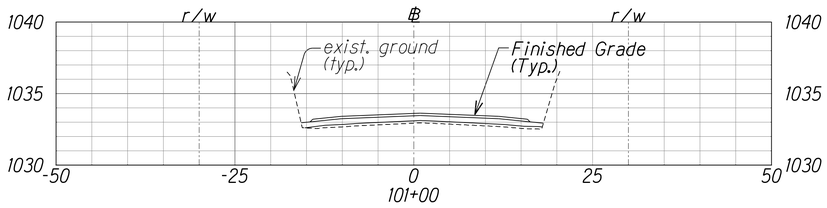
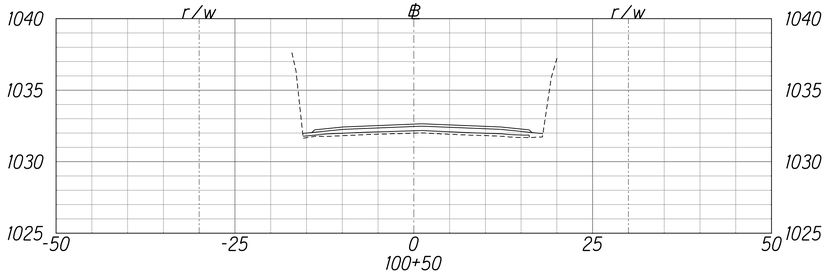
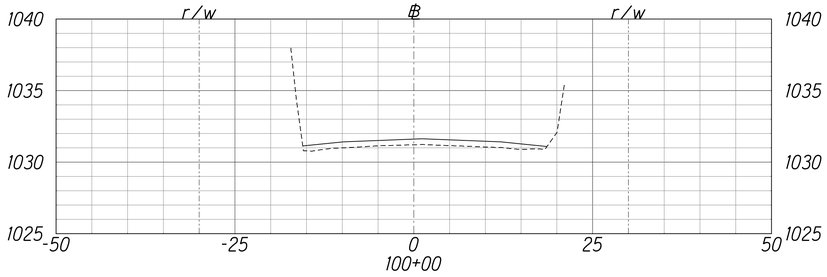
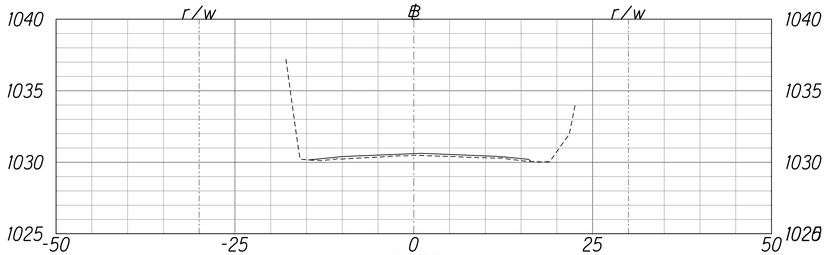
8. Coordinate with traffic control layout on sheet 19.

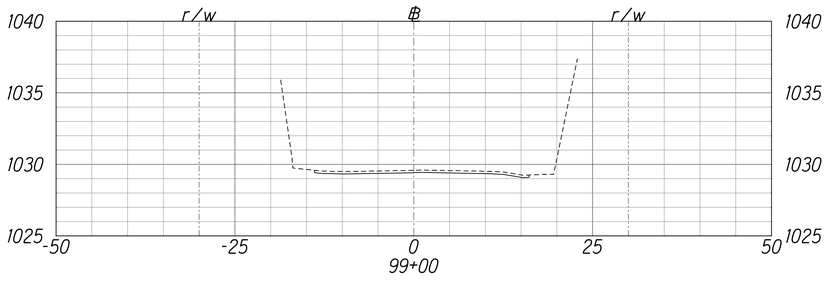
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	ER-21(005)	2021	22	24

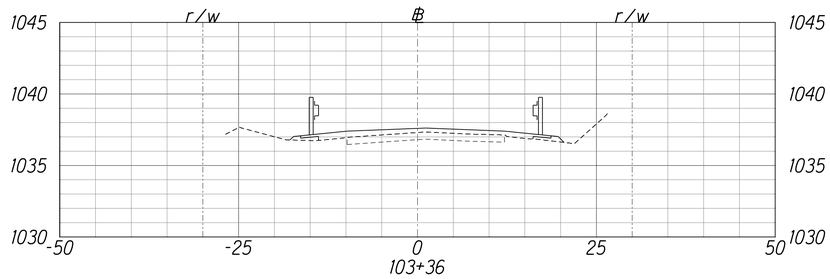


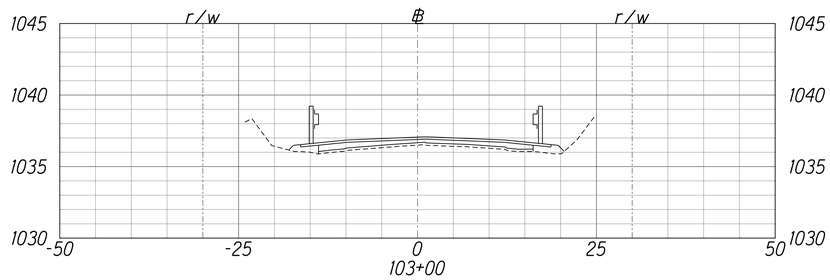


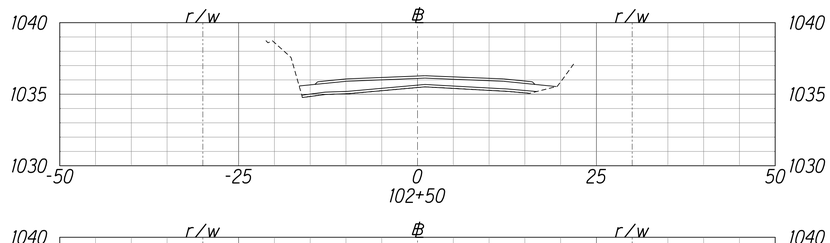


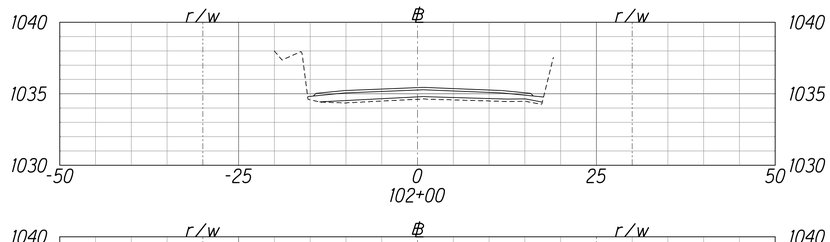


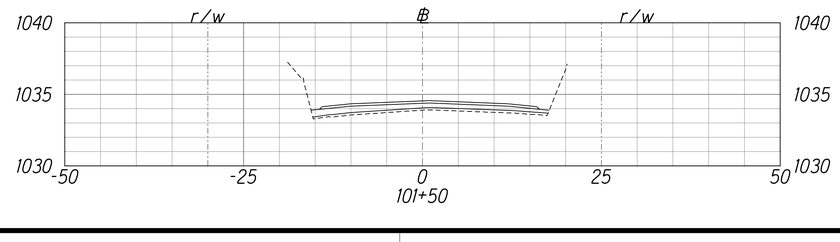












Graphic Scales

10′ 5′ 0 10′ 20′

Horiz: 1"=10′

5′ 0 5′ 10′

Vert: 1"=5′

BRUCE K MEYERS
Licensed Professional Engineer
No.8336-C
HAWAII, U.S.A.

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

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

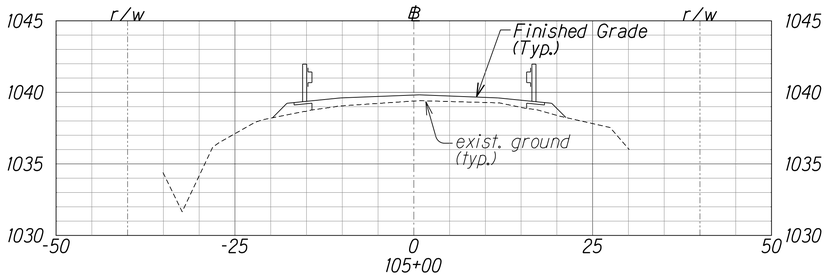
CROSS SECTIONS

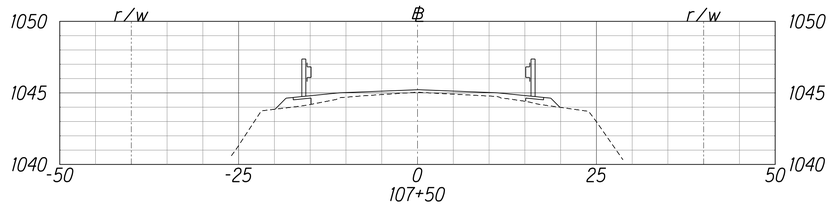
PAHOA-KALAPANA ROAD
2018 KILAUEA ERUPTION PERMANENT REPAIRS
Federal Aid Project No. ER-21(005)

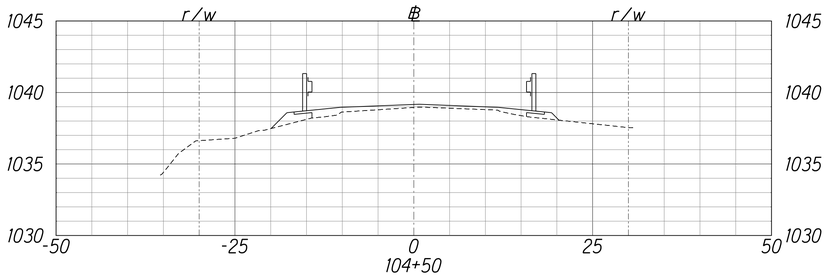
Scale: As Noted Date: August 2021

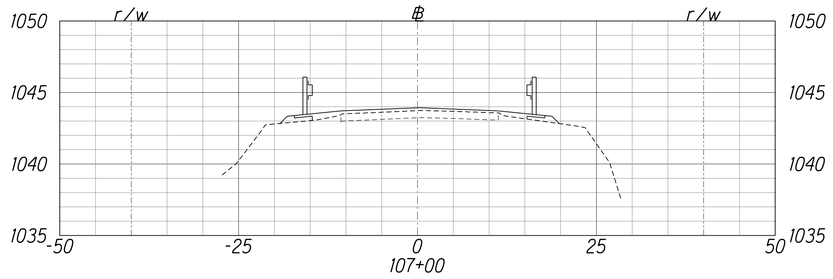
SHEET No. 1 OF 3 SHEETS

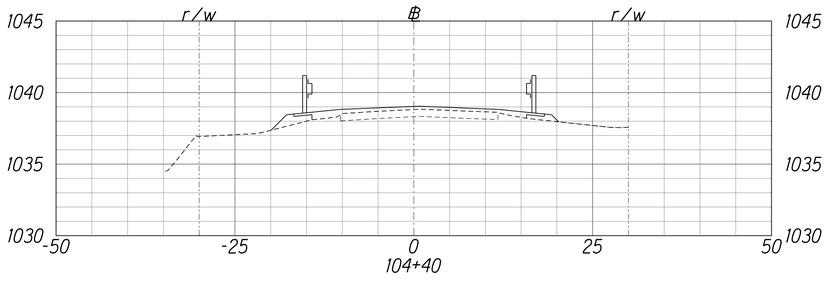
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	ER-21(005)	2021	23	24

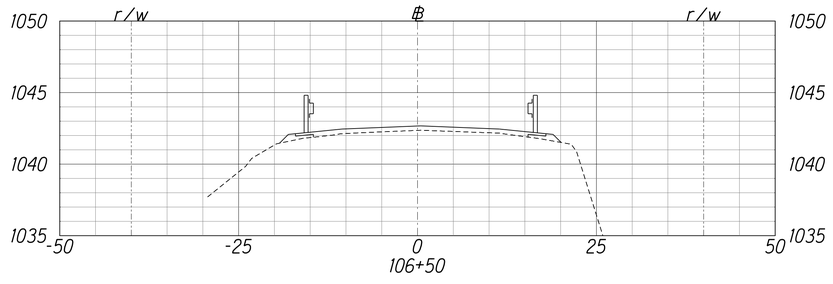


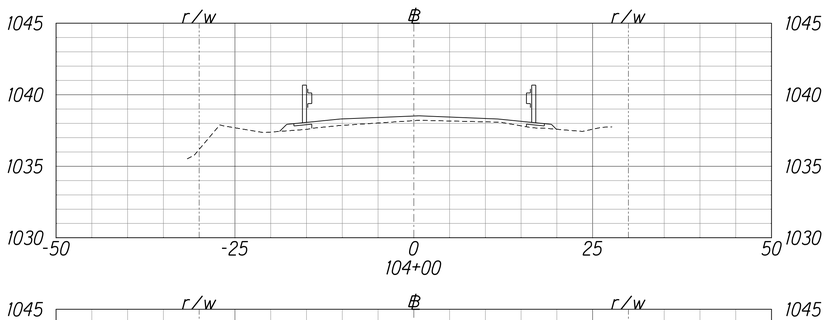


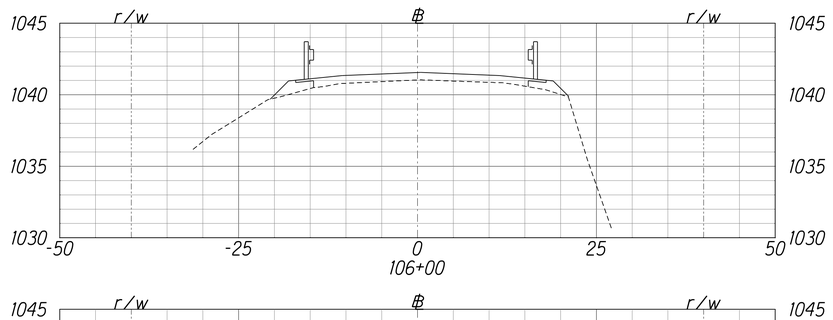


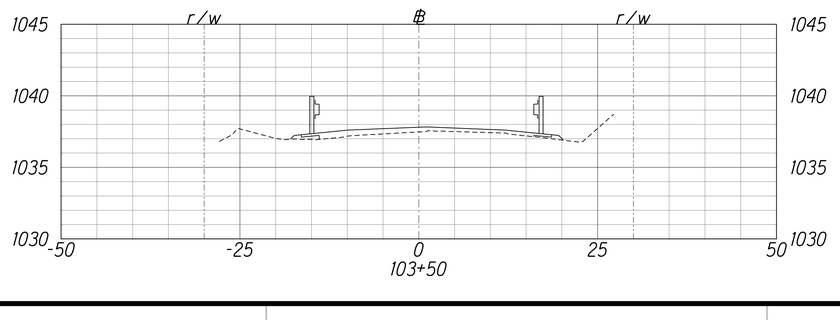


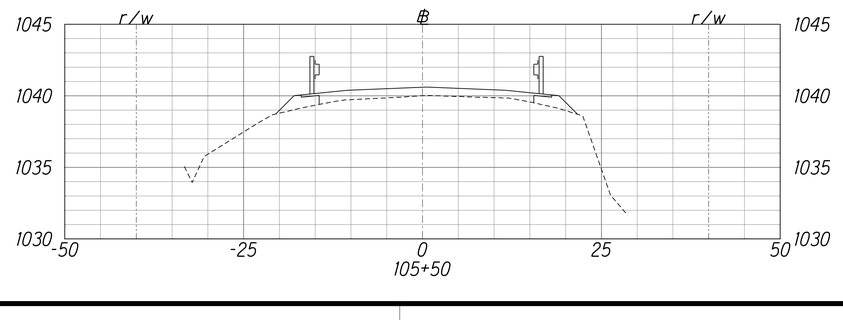












Graphic Scales

10' 5' 0 10' 20'

Horiz: 1"=10'

5' 0 5' 10'

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BRUCE K MEYERS
Licensed Professional Engineer
No.8336-C
HAWAII, U.S.A.

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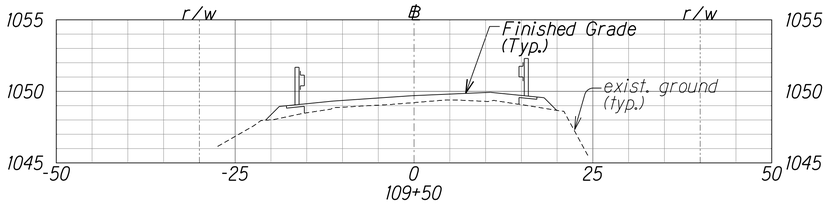
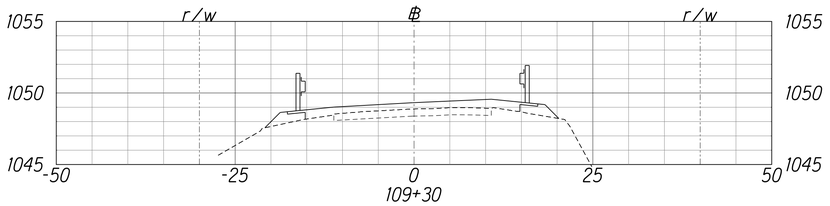
PAHOA-KALAPANA ROAD
2018 KILAUEA ERUPTION PERMANENT REPAIRS
Federal Aid Project No. ER-21(005)

Scale: As Noted Date: August 2021

SHEET No. 2 OF 3 SHEETS



109+50



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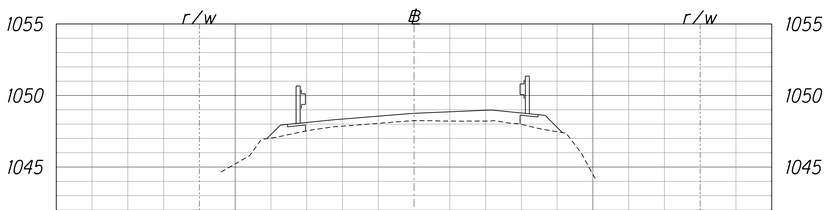

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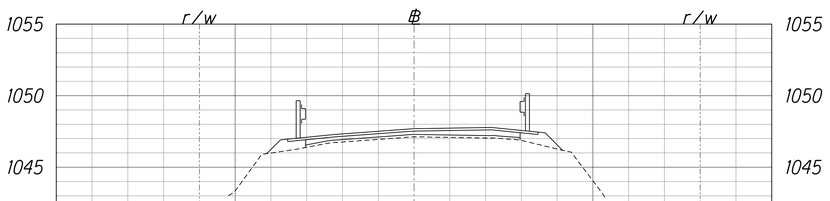

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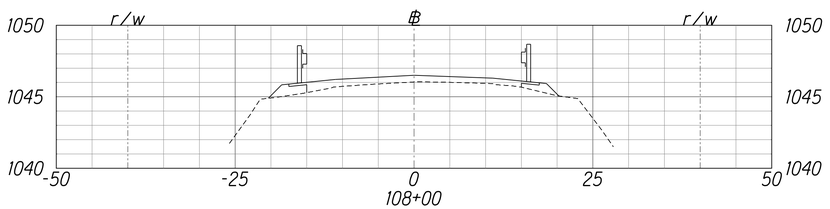

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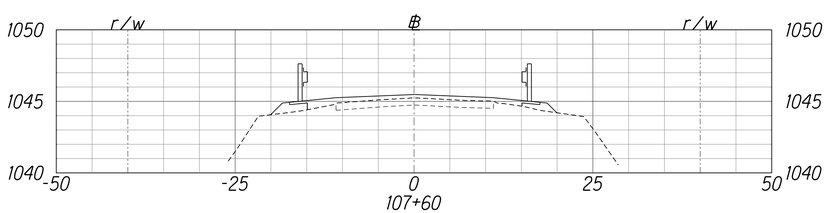

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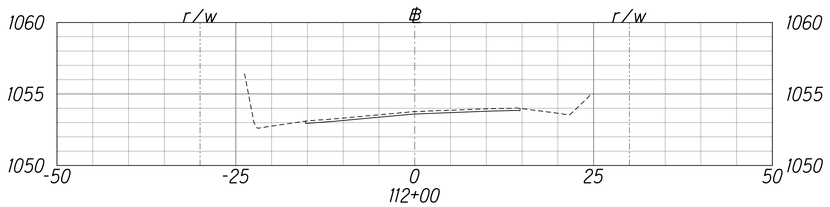

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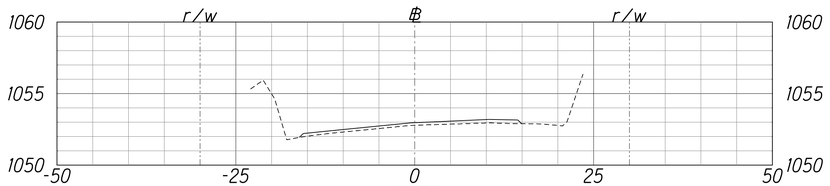
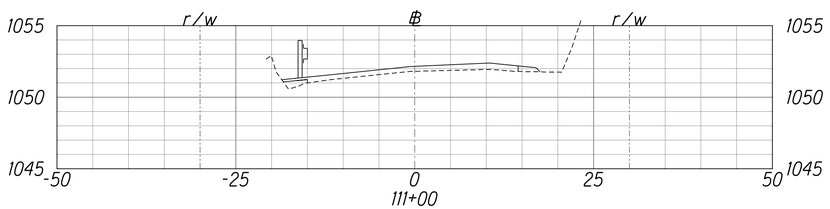


111+50



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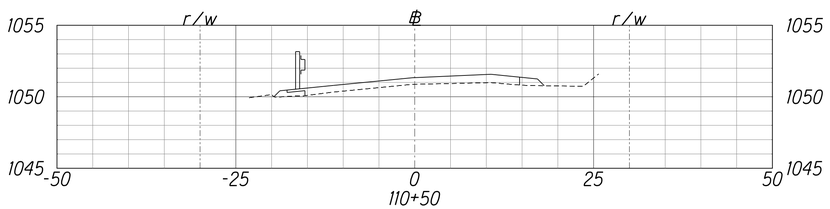

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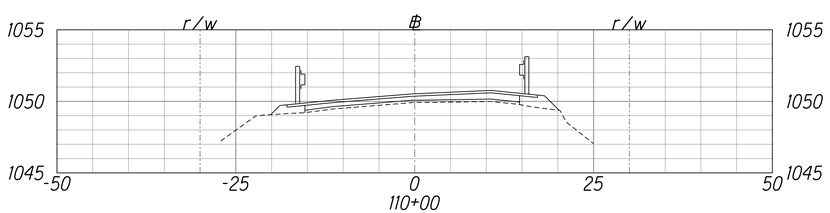

110+00

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	ER-21(005)	2021	24	24

Sta.	Cl Eg	Cl Fg	11' Lt. Fg	11' Rt. Fg	11' Lt. Eg	11' Rt. Eg
99+00	1029.61	1029.61	1029.39	1029.39	1029.22	1029.22
99+50	1030.48	1030.62	1030.40	1030.40	1030.22	1030.29
100+00	1031.33	1031.63	1031.41	1031.41	1030.99	1031.02
100+50	1032.01	1032.65	1032.43	1032.43	1031.82	1031.78
101+00	1032.95	1033.63	1033.41	1033.41	1032.67	1032.70
101+50	1033.92	1034.56	1034.34	1034.34	1033.56	1033.70
102+00	1034.64	1035.45	1035.23	1035.23	1034.36	1034.48
102+50	1035.51	1036.29	1036.07	1036.07	1035.03	1035.21
103+00	1036.49	1037.08	1036.86	1036.86	1036.13	1036.21
103+36	1037.34	1037.62	1037.40	1037.40	1036.97	1037.13
103+50	1037.53	1037.83	1037.61	1037.61	1037.19	1037.40
104+00	1038.20	1038.53	1038.31	1038.31	1037.86	1038.08
104+40	1038.84	1039.05	1038.83	1038.83	1038.46	1038.62
104+50	1038.97	1039.18	1038.96	1038.96	1038.63	1038.77
105+00	1039.42	1039.83	1039.61	1039.61	1039.05	1039.26
105+50	1040.03	1040.61	1040.39	1040.39	1039.72	1039.85
106+00	1041.04	1041.56	1041.34	1041.34	1040.78	1040.84
106+50	1042.37	1042.67	1042.45	1042.45	1042.12	1042.16
107+00	1043.74	1043.93	1043.71	1043.71	1043.50	1043.56
107+50	1045.04	1045.22	1045.00	1045.00	1044.66	1044.75
107+60	1045.24	1045.48	1045.26	1045.26	1044.88	1045.01
108+00	1046.03	1046.5	1046.28	1046.30	1045.76	1045.92
108+50	1047.12	1048.58	1048.36	1048.67	1047.80	1047.94
109+00	1048.25	1048.75	1048.53	1048.99	1048.04	1048.23
109+30	1048.88	1049.33	1049.11	1049.57	1048.62	1048.96
109+50	1049.20	1049.69	1049.47	1049.93	1049.01	1049.32
110+00	1049.91	1050.52	1050.30	1050.76	1049.69	1049.99
110+50	1050.87	1051.34	1051.12	1051.58	1050.66	1051.00
111+00	1051.82	1052.14	1051.92	1052.38	1051.58	1051.95
111+50	1052.78	1052.95	1052.73	1053.19	1052.56	1052.94
112+00	1053.76	1053.76	1053.54	1054.00	1053.37	1053.83

Graphic Scales

10' 5' 0 10' 20'

Horiz: 1"=10'

5' 0 5' 10'

Vert: 1"=5'

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PAHOA-KALAPANA ROAD
2018 KILAUEA ERUPTION PERMANENT REPAIRS
Federal Aid Project No. ER-21(005)

Scale: As Noted Date: August 2021

SHEET No. 3 OF 3 SHEETS

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