

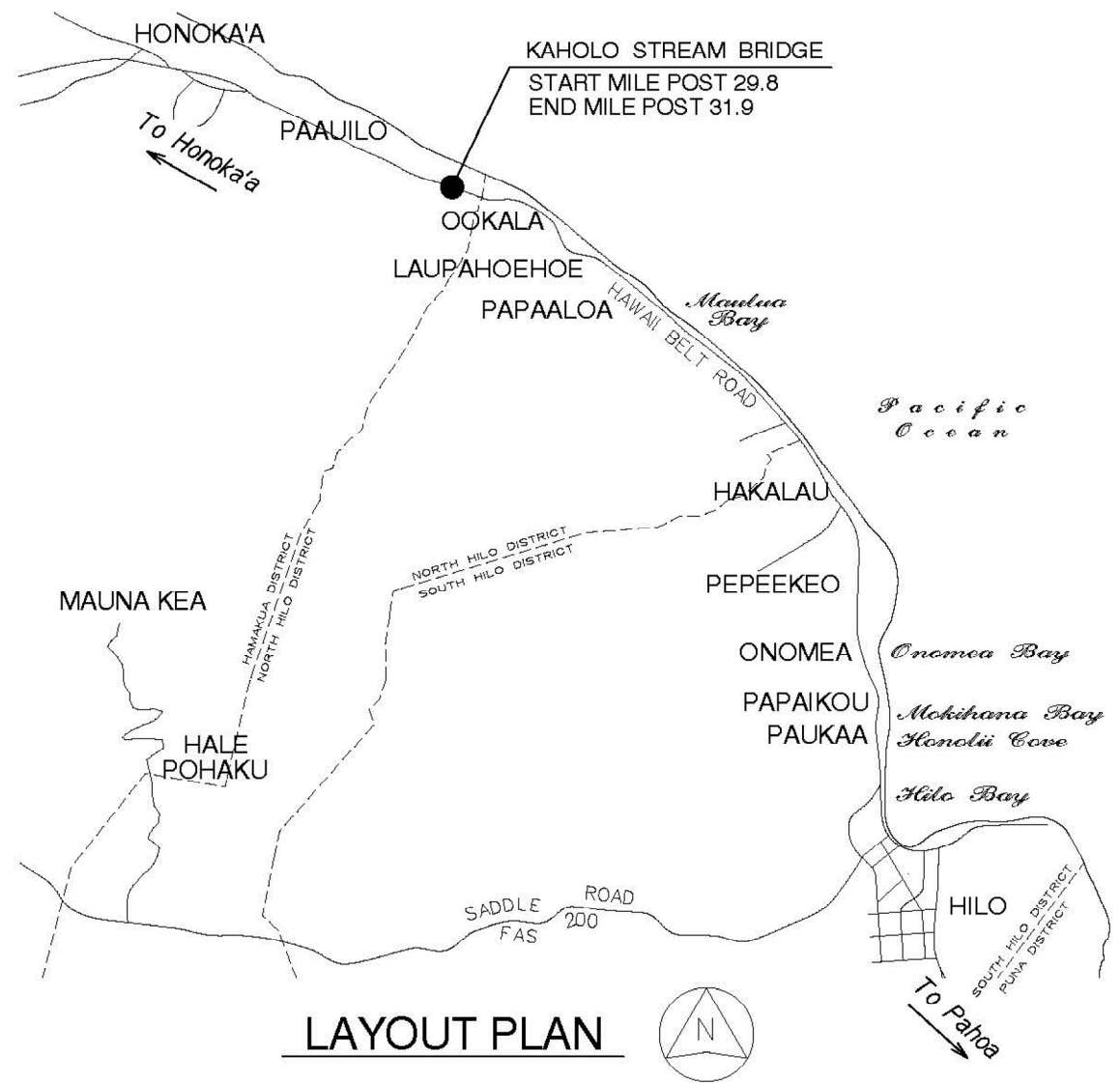
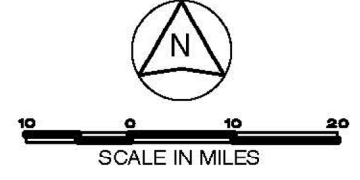
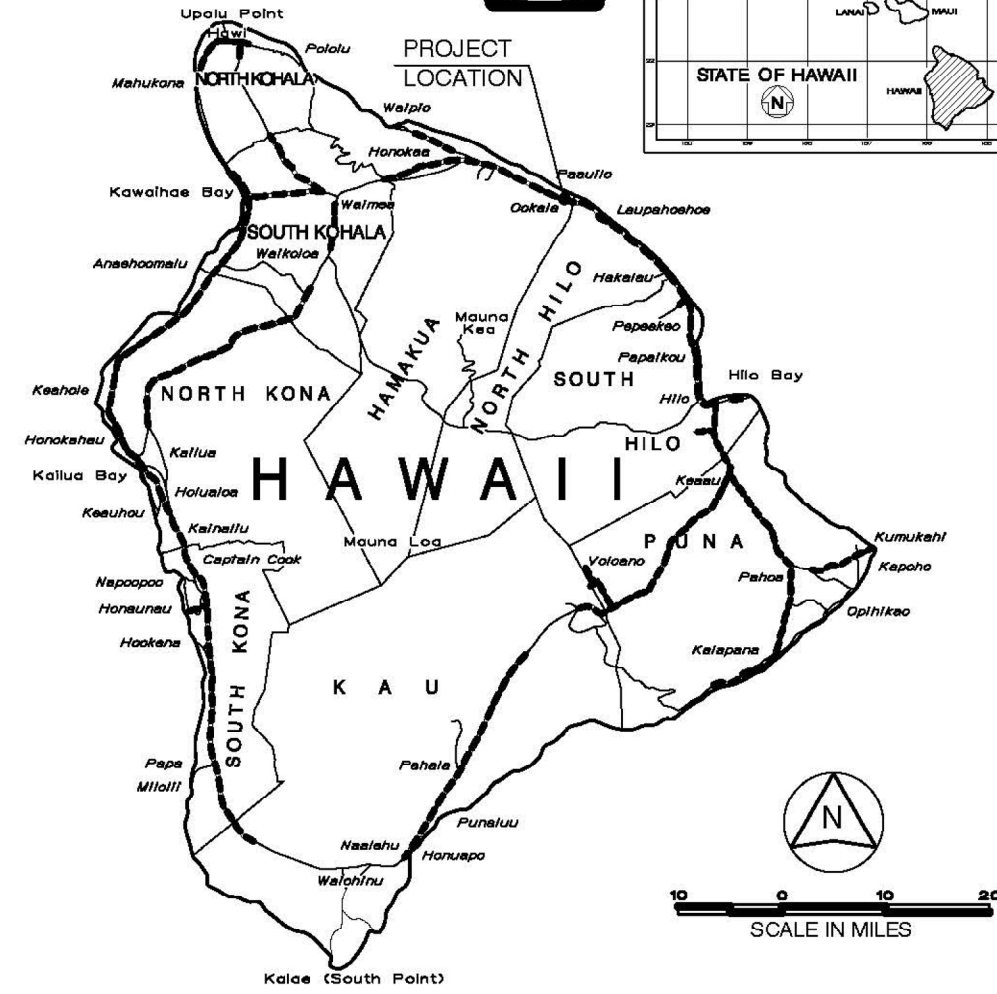
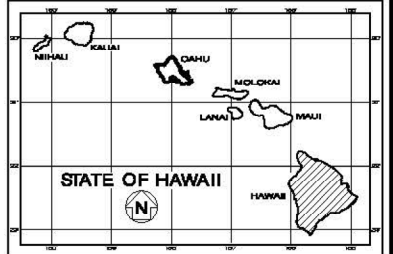
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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
HONOLULU, HAWAII

**PLANS FOR
HAWAII BELT ROAD**

SEISMIC RETROFIT OF KAHOLO STREAM BRIDGE
FEDERAL-AID PROJECT NO. BR-019-2(072)

FED. ROAD DIST. NO.	STATE	FED. AID. PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	BR-019-2(072)	2024	1	85



LAYOUT PLAN

MILE POST 29.8 TO MILE POST 31.9

	Hawaii Belt Road Moanalulu Bridge to Pakalana St. Route 19 (MP 25.66 to 42.71)
2024 ADT	8,800
2034 ADT	10,500
2044 ADT	12,300
2034 DHV	890
2044 DHV	1,050
Des K	8.5
Des D	60/40
Des T	5.0
T24	6.0

DEPARTMENT OF TRANSPORTATION
STATE OF HAWAII

APPROVED: Jul 29, 2024
DIR. OF TRANSPORTATION DATE

DRAWING NAME: Z:\00_DWG\019-031-1BR-KAHOLO SEISMIC RETROFIT\01 CAD\07-16-24_100PC\KBE-T001_TL\SH1.DWG PLOT TIME: 07-15-24, 7:39 PM
DESIGNED BY: KSF, INC. MANAGED BY: HWY-DS (808) 692-7546 DATE: JUL. 2024
PHONE:

STANDARD PLANS SUMMARY

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	BR-019-2(072)	2024	2	85

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 CAN DETAILS	05/31/07
B-12A	PRESTRESSED CONCRETE PILES, PILE & COMPRESSION SPLICE CAN DETAILS & NOTES	05/31/07
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 B1 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 SECTIONS	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 FRAME AND GRATES	05/31/07
H-16	TYPE 61614, 61614P, 61616, 61616P STEEL FRAME AND GRATES	05/31/07
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

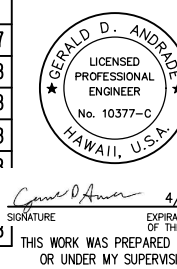
STANDARD PLAN NO.	TITLE	DATE
TE-09	BIKE ROUTE SIGN & SUPPLEMENTARY PLATES	07/11/08
TE-10	INTERSTATE ROUTE MARKER	07/11/08
TE-11	STATE ROUTE MARKER AND AUXILIARY MARKERS	07/11/08
TE-12	STATE ROUTE MARKER AND BORDER DETAIL FOR GUIDE SIGNS	07/11/08
TE-12A	ROUTE SIGN ASSEMBLIES	07/11/08
TE-13	STREET NAME 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 ACCESSORY DETAILS	05/31/07
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

STANDARD PLAN NO.	TITLE	DATE
TE-31	PAVEMENT ALPHABETS, NUMBERS & SYMBOLS	07/11/08
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 ●)

DESIGNED BY	
CHECKED BY	
IN CHARGE BY	
DATE	

DRAWING NAME: T: 30801030.000-KAHOLOSTREAM BRIDGE (CADD) SHEETS STANDARD SUMMARY PLOT TIME: 07-16-24, 1:37 PM



STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

STANDARD PLAN SUMMARY

HAWAII BELT ROAD
Seismic Retrofit of Kaholo Stream Bridge
Fed. Aid Proj. No. BR-019-2(072)

Scale: None Date: Jul. 2024

SHEET No. T-2 OF 2 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	BR-019-2(072)	2024	3	85

GENERAL NOTES:

- The project is the construction of seismic retrofit improvements for Kaholo Stream Bridge at Mile Post 30.9 of Hawaii Belt Road. The project includes the removal of existing vegetation, guardrails, and trees; construction of temporary access roads; construction of structural improvements including bearing pads, soil nails and micropiles; installation of guardrail; pavement markings and signs; erosion control; and traffic control.
- Subsection 105.16(A) - Subcontract Requirements requires the Contractor to perform work amounting to not less than 30 percent of the total contract cost less deductible items.
- The Contractor's attention is directed to the following Sections of the Standard Specifications and the Special Provisions: Subsection 104.09 - Maintenance of Traffic; Subsection 105.09 - Coordination Between the Contractors; Subsection 107.06 - Contractor Duty Regarding Public Convenience; Subsection 107.12 - Protection of Persons and Property; and Section 645 - Work Zone Traffic Control.
- The Contractor's attention is directed to the terms and conditions of all Right of Entry Agreements associated with construction parcels C1 through C3, including requirements for insurance coverage, submissions of notifications, status reports and site maintenance/restoration requirements as required by property owners. The cost for compliance with the requirements of any Right of Entry Agreements shall be considered incidental to the various contract items.
- 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.
- The existence and location of underground utilities, manholes, monuments and structures as shown on the plans are from the latest available data but the accuracy is not guaranteed. The encountering of other obstacles during the course of work is possible. The Contractor shall be held liable for any damages incurred to the existing facilities and/or improvements as a result of his operations.
- All existing utilities, whether or not shown on the plans, shall be protected at all times by the Contractor during construction unless specified on the plans to be abandoned. All existing utility/light poles, overhead utilities and guy poles/wires shall remain in place and operational. The Contractor shall be held liable for any damages incurred to the existing utilities as a result of his operations. All damaged portions shall be replaced in accordance with the standards and specifications of the affected utility company at no cost to the State. No delays or extensions of contract time will be allowed as a result of these required repairs.
- The Contractor shall notify the Engineer in writing, two (2) weeks prior to starting paving operations.
- The Contractor shall indemnify and be solely responsible for the protection of adjacent properties, utilities, and existing structures from damages due to construction. Repairing any damage shall be at the Contractor's own expense, to the satisfaction of the Engineer.
- The existing drainage system shall be kept functional at all times during construction. Furnish materials, equipment, labor, tools and incidentals necessary to maintain flow. This work shall be considered incidental to the various contract items.

GENERAL NOTES, CONT:

- Smooth riding connections shall be constructed at all limits of the project, including the beginning and end of project, connecting approaches, side streets, walkways, and driveways as shown on the plans and/or as ordered by the Engineer.
- All saw cutting work including vacuuming of slurry seal shall be considered incidental to the various contract items.
- Maintain existing pedestrian walkways in a safe and passable condition, or provide other walkway facilities for pedestrians to maintain access. Passages between walkways at intersections shall likewise be provided at all times.
- Driveways shall be kept open unless owners of the abutting lots using these right of ways are otherwise provided for satisfactorily.
- No material or equipment shall be stockpiled or otherwise stored within highway right-of-way except at locations shown on the plans or designated in writing and approved by the Engineer.
- Contact Hawaiian Telcom Outside Plant Engineering Section, a minimum of 72 hours in advance, prior to start of excavation, to locate existing Hawaiian Telcom facilities.
- When trench excavation is adjacent to existing structures or facilities, the Contractor is responsible for properly sheeting and bracing the excavation and stabilizing the existing ground to render it safe and secure from possible slides, cave-ins, and settlement. Provide beams, struts, or underpinning as necessary. This work shall be considered incidental to various contract items.
- Work required to complete the project but not itemized specifically in the proposal shall be considered incidental to the various contract items and shall not be paid for separately.

All azimuths and coordinates are referred to NAD83 Hawaii State Plane.
- All graded areas and all grassed areas damaged by construction activities shall be planted in accordance with Specifications Section 641 - Hydro-Mulch Seeding. This work shall be considered incidental to the various contract items.
- The Contractor shall comply with the directives of the State of Hawaii Occupational Safety and Health Law (DOSH). Any citation (fine) received by the State for noncompliance by the Contractor shall be deducted from the progress payment.
- For verifying the location of underground ductlines and for assistance in providing proper support and protection of underground ductlines, the Contractor is to contact Hawaiian Electric Co. Underground Division at 969-0311 a minimum of 72 hours in advance.
- The Contractor shall exercise extreme caution when the excavation and construction crosses or is in close proximity of underground telephone and signal cable facilities and shall maintain adequate clearance for his equipment while working close to and/or under overhead facilities. Any damages to the existing underground facilities shall be repaired and paid for by the Contractor.

GENERAL NOTES, CONT:

- Should field conditions and construction procedures require that utility poles be braced, the Contractor shall contact Hawaiian Telcom Outside Plant Engineering Section for pole bracing instructions a minimum of 72 hours in advance of actual required bracing.
- The Contractor shall survey and stake out the State Highway right-of-way and install all appurtenances associated with the project within the State right-of-way or construction parcels as shown in the plans.
- The term "Engineer for the Utility Companies" shall also mean his delegated Representative and/or the Utilities Inspectors of Record.

The Contractor shall stake out all facilities for verification by the utility involved and/or affected.
- When excavating near utility poles, the Contractor shall protect, support, secure and take all other precautions to prevent damage to or leaning of these poles. The Contractor is responsible for all costs associated to repair and/or straighten pole.

PUBLIC HEALTH, SAFETY, AND CONVENIENCE NOTES:

- The Contractor shall observe and comply with all Federal, State, and Local laws required for the protection of public health and safety and environmental quality.
- The Contractor, at his own expense, shall keep the project and its surrounding areas free from dust nuisance. The work shall be in conformance with the air pollution standards and regulations of the State Department of Health. The City may require supplementary measures as necessary.
- The Contractor's attention is directed to Hawaii Administrative Rules, Title 11, Chapter 46, Public Health Regulations, Department of Health, State of Hawaii, "Community Noise Control" in which maximum allowable noise levels have been set. If the construction activities for this project will exceed the allowable noise levels, a permit from the Director of the Department of Health is required. The Contractor shall obtain a copy of Chapter 46 and become familiar with the noise level restrictions and the procedures for compliance with the permit for construction activities. A copy of the permit will be provided by the Engineer.
- The Contractor is to comply with the directions of the State of Hawaii Occupation Safety and Health Law (DOSH).

DESIGNED BY	DATE
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IN CHARGE BY	
DATE	

DRAWING NAME: T:\3081030100-KAHOLOSTREAMBRIDGE\CADD\SHEETS\GENERALNOTES.DWG PLOT TIME: 07-16-24, 1:34 PM



STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

GENERAL NOTES

HAWAII BELT ROAD
Seismic Retrofit of Kaholo Stream Bridge
Fed. Aid Proj. No. BR-019-2(072)

Scale: None Date: Jul. 2024

SHEET No. G-1 OF 2 SHEETS

NOTES FOR PROTECTION OF ENDANGERED SPECIES:

1. HAWAIIAN SEABIRDS

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

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

2. HAWAIIAN HOARY BAT ('Ope'ape'a)

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

The Contractor shall not use barbed wire fencing.

3. HAWAIIAN WATERBIRDS

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

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

If a nest or active brood is found:

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

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

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

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

NOTES FOR PROTECTION OF ENDANGERED SPECIES (CONT):

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

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

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

ABBREVIATIONS:

AC	Asphalt Concrete	M.L.	Matchline
Approx.	Approximate	MB	Meter Box
ARV	Air Release Valve	Min.	Minimum
Aux.	Auxiliary	Mod.	Modified
⊕	Baseline	MW	Monitoring Well
BFP	Back Flow Preventer	N	North
BMP	Best Management Practices	NTS	Not to Scale
Bot.	Bottom	No.	Number
BC	Bottom Curb	O/H	Overhead Electrical
BW	Bottom Wall	o/s	Offset
Ⓞ	Centerline	PBX	Panel Box/Pull Box
CLF	Chain Link Fence	PC/P.C.	Point of Curvature
C/Ch	Chord	PCC	Point of Compound Curvature
Clr	Clearance	PCCP	Portland Cement Concrete Pavement
Conc	Concrete	PI	Point of Intersection of Tangents
CRM	Concrete Rubble Masonry	PRC	Point of Reverse Curve
CY	Cubic Yard	PT/P.T.	Point of Tangency
D	Drain Line	Pav't/Pvmt	Pavement
DI	Drain Inlet	R	Radius
Dia.	Diameter	RPM	Raised Pavement Marker
E/Elec	Electrical	Ref.	Reflector
ES	Edge of Shoulder	Rd	Road
EP	Edge of Pavement	Rt.	Right
Elev	Elevation	R/W	Right-of-Way
Emb	Embankment	S	Sewer
Exc	Excavation	SMH	Sewer Manhole
Exist.	Existing	S.E.	Superelevation
FH	Fire Hydrant	SF	Square Feet
FM	Force Main	Sht	Sheet
GDI	Grated Drop Inlet	SDMH	Storm Drain Manhole
G	Ground	St	Street
GRP	Grouted Rubble Paving	SL	Street Light
GP	Guard Post	Sta.	Station
GW	Guy Wire	Std	Standard
HECo	Hawaiian Electric Company	T	Tangent
H	Height	Tel	Telephone
HWY	Highway	TC	Top Curb
HMA	Hot Mix Asphalt	TW	Top Wall
Inv.	Invert	Typ.	Typical
Kah	Kahekili Highway	U/G	Under Ground
Kam	Kamehameha Highway	UP	Utility Pole
L/Lc	Length of Curve	Var	Varies
LF	Linear Feet	W	Water
Lt	Left	WMH	Water Manhole
		WV	Water Valve

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STATE OF HAWAII
 DEPARTMENT OF TRANSPORTATION
 HIGHWAYS DIVISION

GENERAL NOTES AND ABBREVIATIONS

HAWAII BELT ROAD
Seismic Retrofit of Kaholo Stream Bridge
Fed. Aid Proj. No. BR-019-2(072)

Scale: None Date: Jul. 2024

WATER POLLUTION AND EROSION CONTROL NOTES:

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	BR-019-2(072)	2024	5	85

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 21 calendar days of date of award. 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 21 calendar days of date of award. 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.

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DRAWING NAME: T:\30801030\00-KAHOLOSTREAM\BRIDGE\LOAD SHEETS\WATER POLLUTION CONTROL NOTES 01 12-23-21.DWG PLOT TIME: 07-16-24, 1:44 PM



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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

WATER POLLUTION & EROSION CONTROL NOTES

HAWAII BELT ROAD
Seismic Retrofit of Kaholo Stream Bridge
Fed. Aid Proj. No. BR-019-2(072)

Scale: None Date: Jul. 2024

SHEET No. EC-1 OF 4 SHEETS

WATER POLLUTION AND EROSION CONTROL NOTES (Cont.):

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	BR-019-2(072)	2024	6	85

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.

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DRAWING NAME: T: 30801030.00-KAHOLOSTREAMBRIDGE (ADD) SHEETS WATER POLLUTION CONTROL NOTES 02 12-23-21.DWG PLOT TIME: 07-16-24, 1:44 PM



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STATE OF HAWAII
 DEPARTMENT OF TRANSPORTATION
 HIGHWAYS DIVISION

WATER POLLUTION & EROSION CONTROL NOTES

HAWAII BELT ROAD
Seismic Retrofit of Kaholo Stream Bridge
Fed. Aid Proj. No. BR-019-2(072)

Scale: None Date: Jul. 2024

SHEET No. EC-2 OF 4 SHEETS

WATER POLLUTION AND EROSION CONTROL NOTES (Cont.):

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	BR-019-2(072)	2024	7	85

E. PERMIT REQUIREMENTS:

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

F. SITE-SPECIFIC BMP REQUIREMENTS:

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

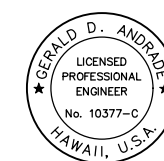
The requirements for Water Pollution, Dust, and Erosion Control submittals are included in Section 209 of the Hawaii Standard Specifications for Road and Bridge Construction dated 2005 and applicable Special Provisions. A list of pollutant sources and corresponding BMP used to mitigate the pollutants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

Follow the requirements below:

1. Protect all Drainage Inlets receiving runoff from disturbed areas (SC-1).
2. Contain on-site runoff using Perimeter Sediment Controls
 - a. SC-7 Silt Fence or Filter Fabric Fence
 - b. SC-2 Vegetated Filter Strips and Buffers
 - c. SC-6 Compost Filter Berm/Sock
 - d. SC-8 Sandbag Barrier
 - e. SC-9 Brush or Rock Filter
3. Control offsite runoff from entering construction area
 - a. EC-3 Run-On Diversion
 - b. EC-5 Earth Dike, Swales, and Ditches
4. Incorporate applicable Site Management BMP
 - a. SM-1 Construction BMP Training
 - b. SM-2 Material Storage and Handling
 - c. SM-3 Stockpile Management
 - d. SM-6 Solid Waste Management
 - e. SM-7 Sanitary Waste Management
 - f. SM-9 Hazardous Materials and Waste Management
 - g. SM-10 Spill Prevention and Control
 - h. SM-11 Vehicle and Equipment Cleaning
 - i. SM-12 Vehicle and Equipment Maintenance
 - j. SM-13 Vehicle and Equipment Refueling
 - k. SM-14 Scheduling
 - l. SM-15 Location of Potential Sources of Sediment
 - m. SM-16 Staging Area
 - n. SM-17 Preservation of Existing Vegetation
 - o. SM-19 Dust Control
5. Contain pollutants within the Construction Staging/Storage Area BMP with applicable Perimeter Sediment Controls and Site Management BMP. Include a Stabilized Construction Entrance/Exit (SC-11) for all areas which exit onto a paved street. Restrict vehicle access to these points.
6. Manage Concrete Waste including installing a Concrete Washout Area (SM-4) and properly disposing of Concrete Curing Water (California Stormwater BMP Handbook NS-12 Concrete Curing).
7. Remove saw cut slurry and hydrodemolition water from the site by vacuuming. Provide storm drain protection and/or perimeter sediment controls during saw cutting and hydrodemolition work.

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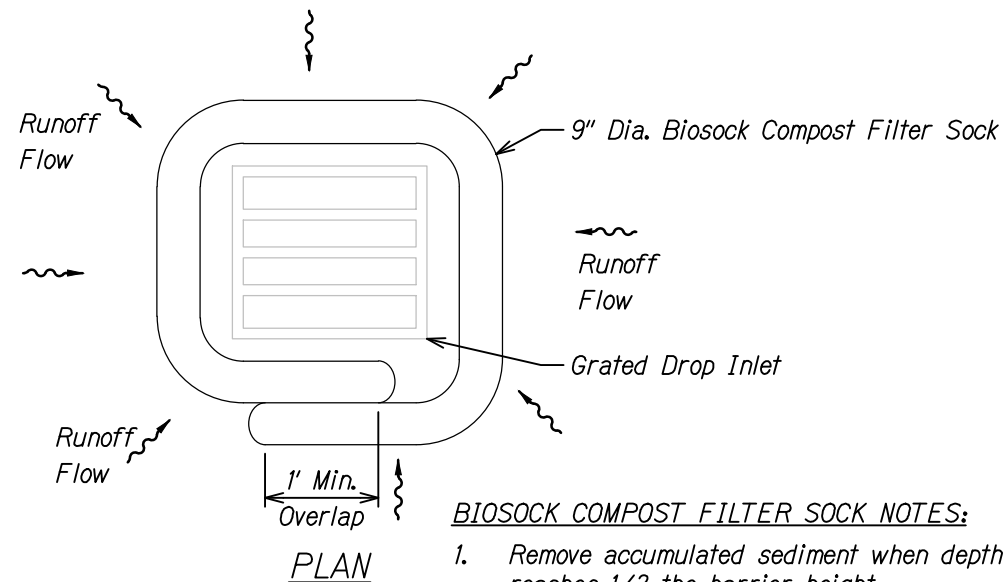
WATER POLLUTION & EROSION CONTROL NOTES

HAWAII BELT ROAD
Seismic Retrofit of Kaholo Stream Bridge
Fed. Aid Proj. No. BR-019-2(072)

Scale: None Date: Jul. 2024

SHEET No. EC-3 OF 4 SHEETS

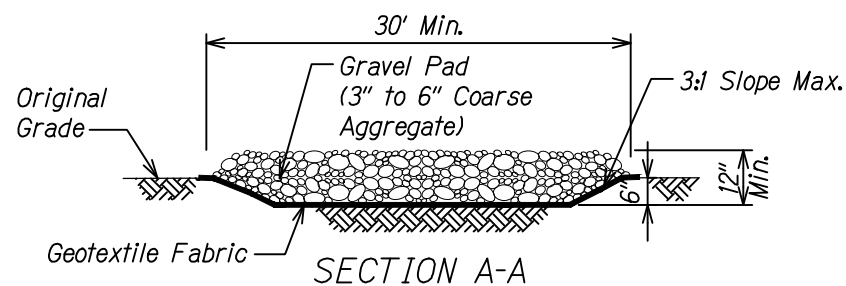
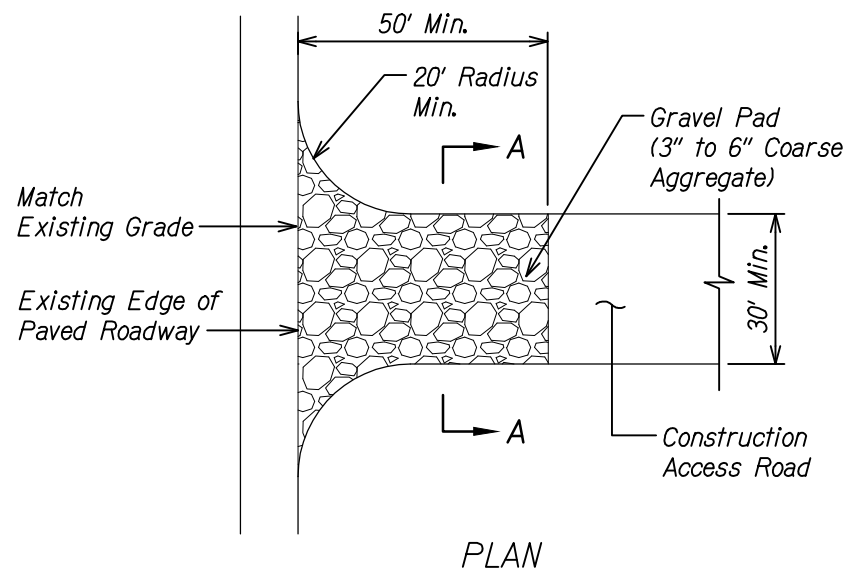
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	BR-019-2(072)	2024	8	85



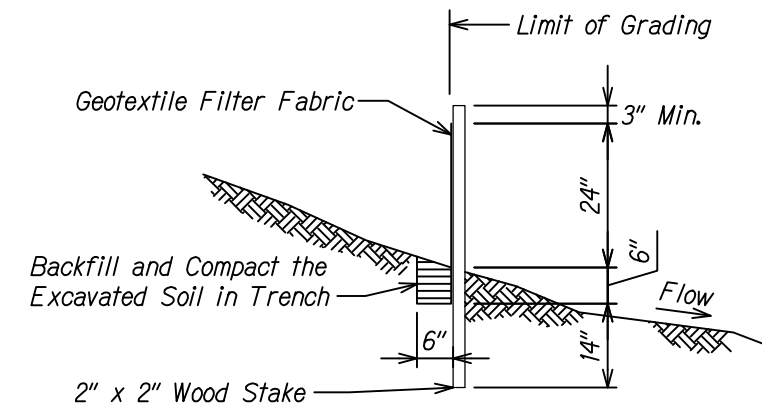
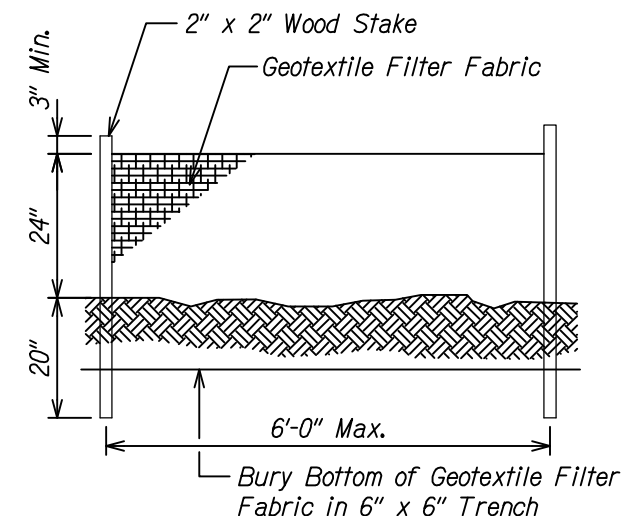
BIO SOCK COMPOST FILTER SOCK NOTES:

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

BIO SOCK COMPOST FILTER SOCK DRAIN INLET PROTECTION DETAIL
Not to Scale



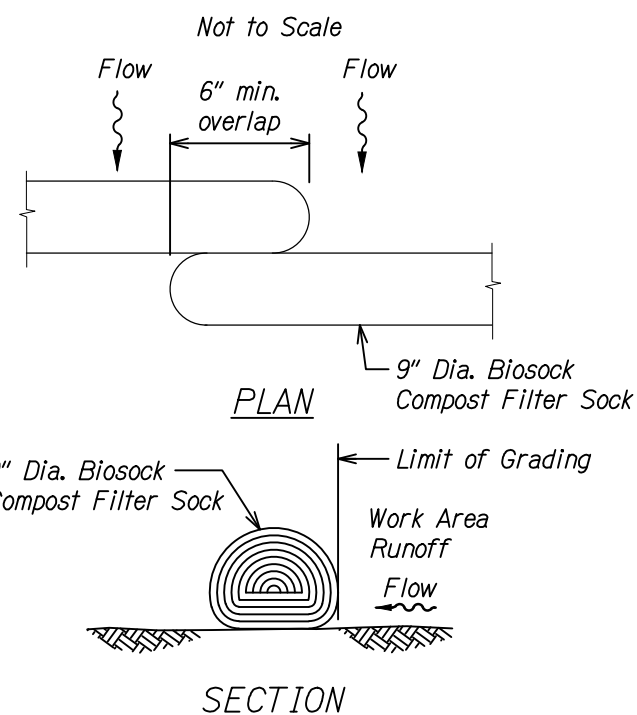
TEMPORARY STABILIZED CONSTRUCTION ENTRANCE
Not to Scale



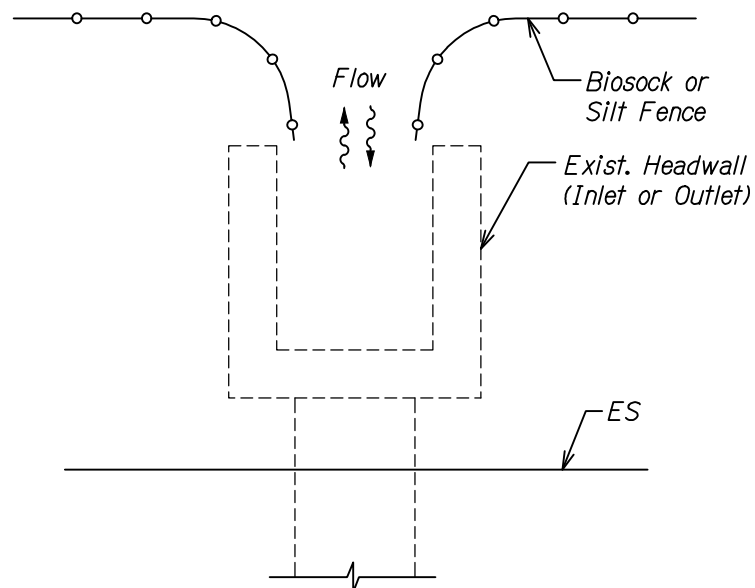
SILT FENCE DETAIL
Not to Scale

SILT FENCE NOTES:

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



BIO SOCK COMPOST FILTER SOCK PERIMETER CONTROL DETAIL
Not to Scale



HEADWALL INLET PROTECTION DETAIL
Not to Scale

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HIGHWAYS DIVISION

EROSION CONTROL DETAILS

HAWAII BELT ROAD
Seismic Retrofit of Kaholo Stream Bridge
Fed. Aid Proj. No. BR-019-2(072)

Scale: NTS Date: Jul. 2024

SHEET No. EC-4 OF 4 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	BR-019-2(072)	2024	9	85

⊞ CURVE DATA (H01)

Δ = 90°43'28.92"
 $\Delta/2$ = 45°21'44.46"
 R = 32.5'
 T = 32.91'
 Ch = 46.25'
 Lc = 51.46'

⊞ CURVE DATA (H02)

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 R = 15'
 T = 15.04'
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 Lc = 23.6'

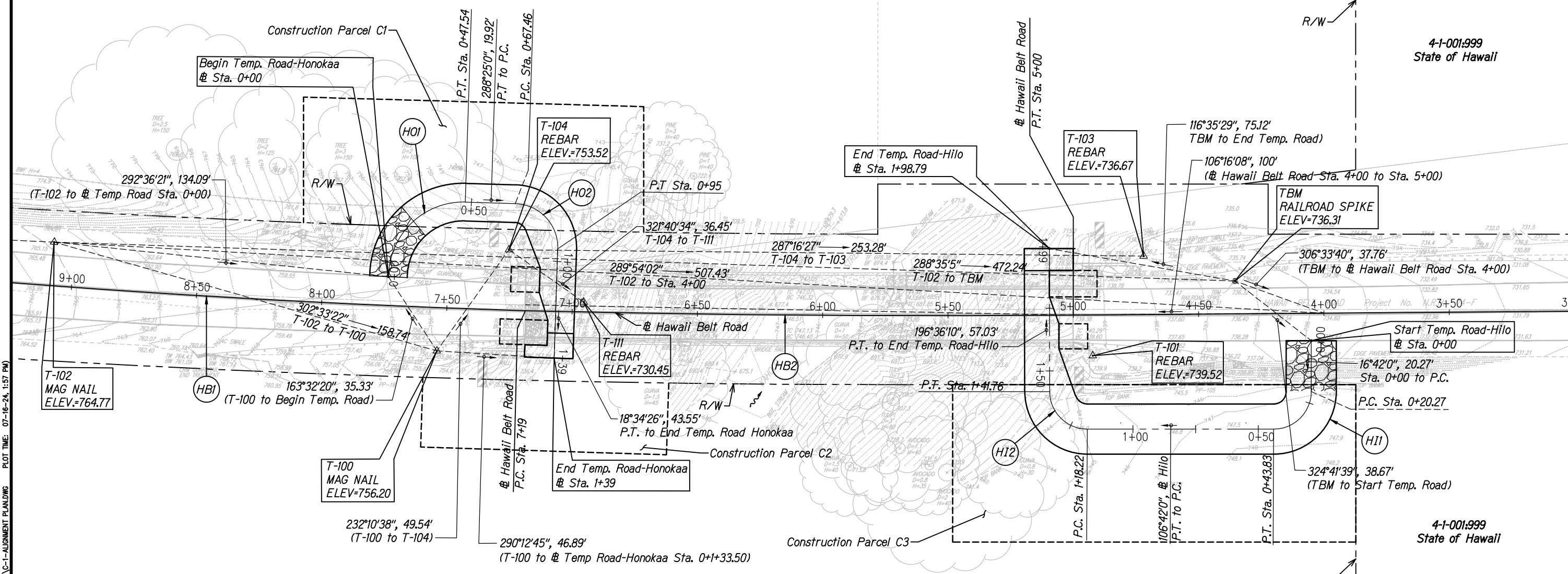
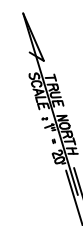
4-1-002:011
 Bishop Estate

⊞ CURVE DATA (H11)

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 $\Delta/2$ = 45°0'0"
 R = 15'
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 Ch = 21.21'
 Lc = 23.56'

⊞ CURVE DATA (H12)

Δ = 89°54'10.08"
 $\Delta/2$ = 45°0'0"
 R = 15'
 T = 14.97'
 Ch = 21.2'
 Lc = 23.54'



⊞ CURVE DATA (HB1)

Δ = 03°29'8.16"
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 R = 4497.20'
 T = 136.84'
 Ch = 273.54'
 Lc = 273.59'

⊞ CURVE DATA (HB2)

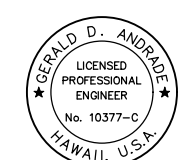
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 R = 7175.00'
 T = 109.32'
 Ch = 218.61'
 Lc = 218.62'

4-1-002:004
 State of Hawaii



DESIGNED BY	DATE
DRAWN BY	
CHECKED BY	
APPROVED BY	
PROJECT NO.	
SHEET NO.	

DRAWING NAME: T: 30801030.000-KAHOLOSTREAMBRIDGE (CADD) SHEETS C-1-ALIGNMENT PLANNING PLOT TIME: 07-16-24, 1:57 PM



Signature: *Gerald D. Andrade*
 4/30/26
 EXPIRATION DATE OF THE LICENSE
 THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION

STATE OF HAWAII
 DEPARTMENT OF TRANSPORTATION
 HIGHWAYS DIVISION

ALIGNMENT PLAN

HAWAII BELT ROAD
 Seismic Retrofit of Kaholo Stream Bridge
 Fed. Aid Proj. No. BR-019-2(072)

Scale: 1"=20' Date: Jul. 2024

SHEET No. C-1 OF 13 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	BR-019-2(072)	2024	10	85

4-1-002:011
Bishop Estate

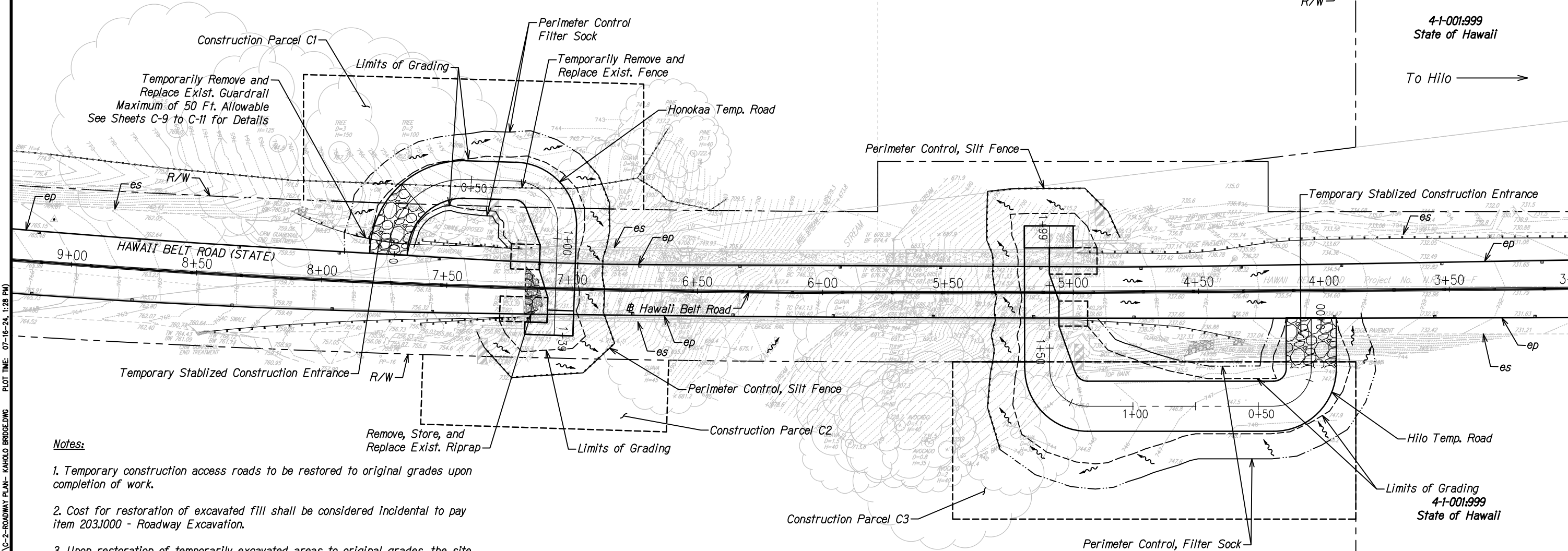


← To Honokaa

R/W

4-1-001:999
State of Hawaii

→ To Hilo



Notes:

1. Temporary construction access roads to be restored to original grades upon completion of work.
2. Cost for restoration of excavated fill shall be considered incidental to pay item 203.1000 - Roadway Excavation.
3. Upon restoration of temporarily excavated areas to original grades, the site shall be stabilized with hydro seeding.
4. 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.
5. Removal and storage of existing riprap shall be considered incidental to item 611.1000. Measurement and payment for removal and storage of existing riprap will not be done separately.

4-1-002:004
State of Hawaii



Signature: *Gerald D. Andrade*
4/30/26
EXPIRATION DATE OF THE LICENSE
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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

ROADWAY PLAN
KAHOLO BRIDGE
HAWAII BELT ROAD
Seismic Retrofit of Kaholo Stream Bridge
Fed. Aid Proj. No. BR-019-2(072)

Scale: 1"=20' Date: Jul. 2024

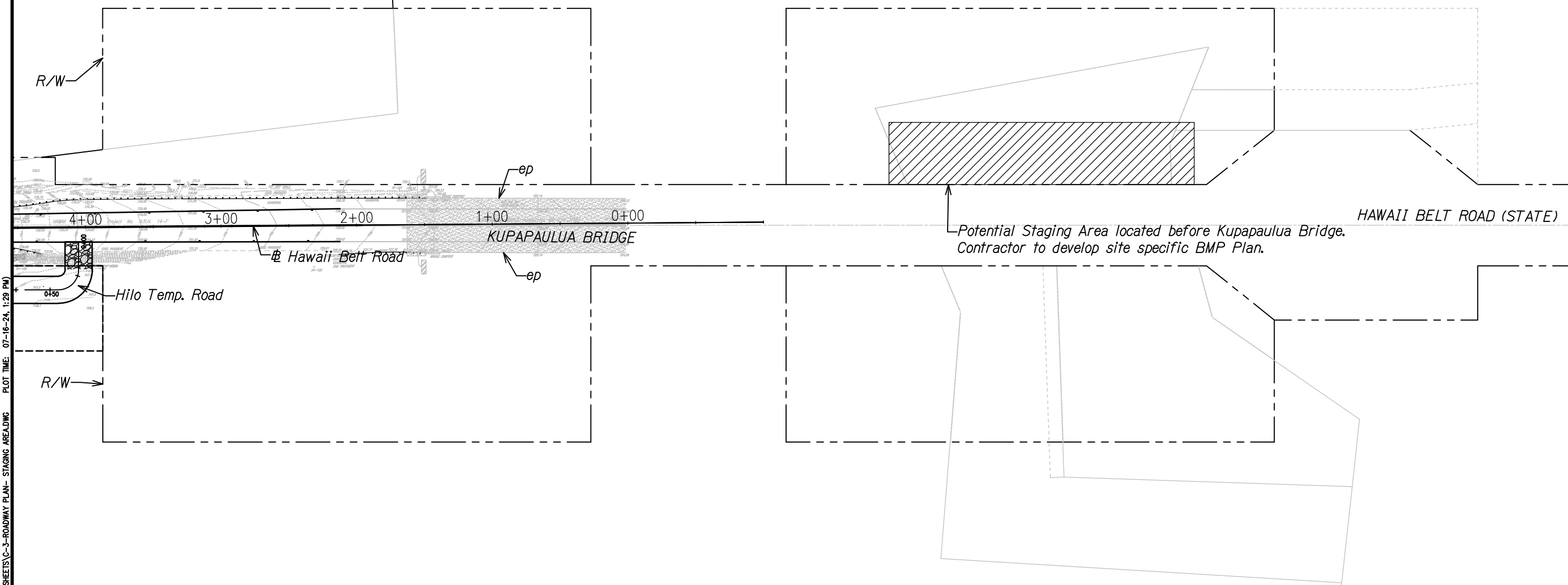
SHEET No. C-2 OF 13 SHEETS

DESIGNED BY	DATE
CHECKED BY	
APPROVED BY	
PROJECT NO.	
DATE	

DRAWING NAME: T:\30801030.00-KAHOLOSTREAMBRIDGE\CADD\SHEETS\C-2-ROADWAY PLAN-KAHOLO BRIDGE.DWG PLOT TIME: 07-16-24, 1:28 PM

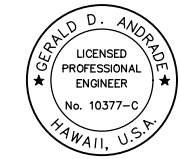
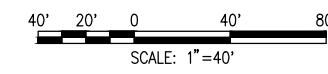
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	BR-019-2(072)	2024	11	85

TRUE NORTH
SCALE: 1"=40'



DRAWING NAME: T:\30801030.000-KAHOLOSTREAMBRIDGE\CADD\SHEETS\C-3-ROADWAY PLAN-STAGING AREA.DWG PLOT TIME: 07-18-24, 1:29 PM

DESIGNED BY	DATE
DRAWN BY	
CHECKED BY	
IN CHARGE BY	
APPROVED BY	
DATE	



Signature: *Gerald D. Andrade* 4/30/26
 EXPIRATION DATE OF THE LICENSE
 THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION

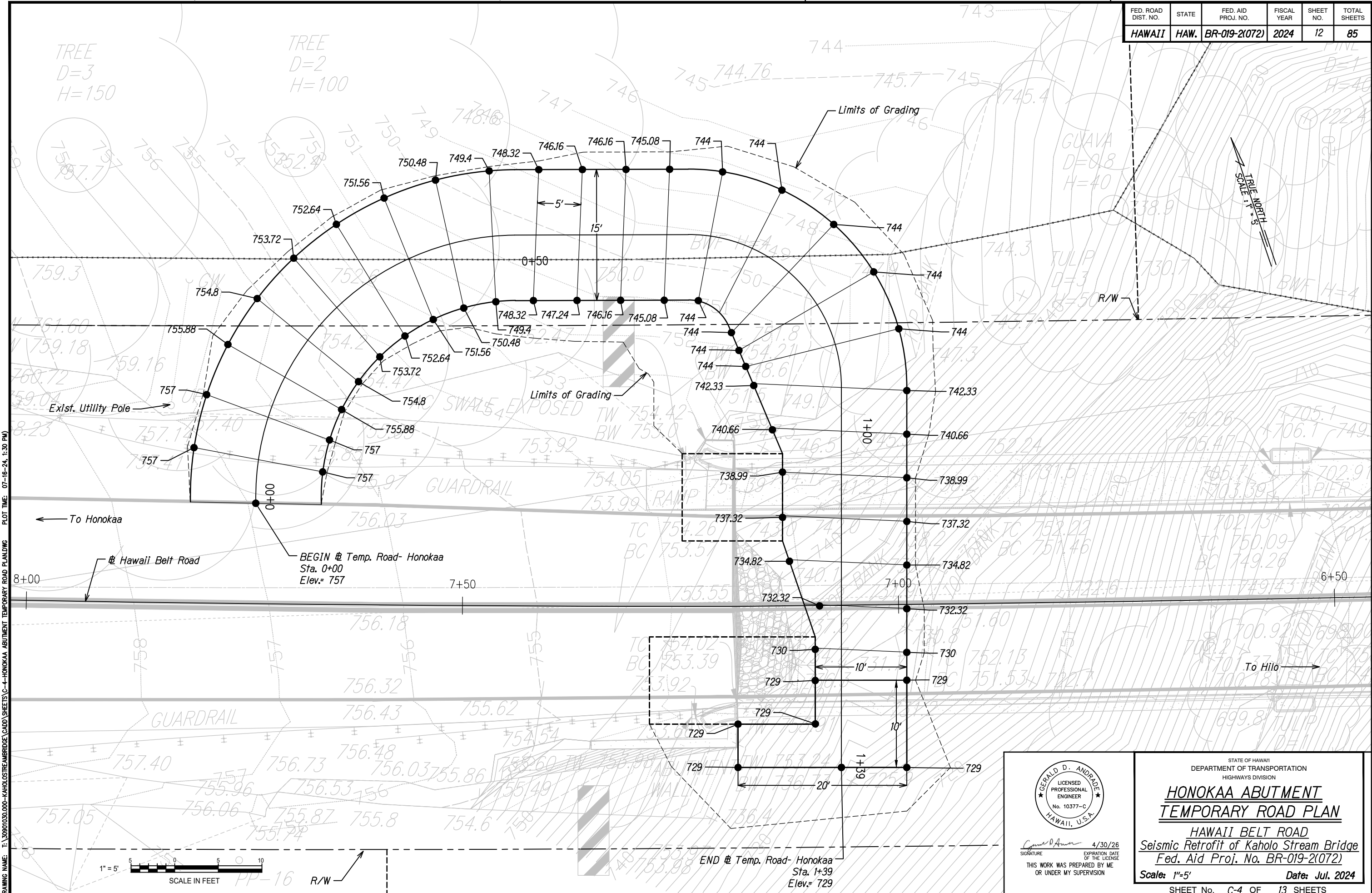
STATE OF HAWAII
 DEPARTMENT OF TRANSPORTATION
 HIGHWAYS DIVISION

**ROADWAY PLAN
 STAGING AREA**
 HAWAII BELT ROAD
 Seismic Retrofit of Kaholo Stream Bridge
 Fed. Aid Proj. No. BR-019-2(072)

Scale: 1"=40' Date: Jul. 2024

SHEET No. C-3 OF 13 SHEETS


FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	BR-019-2(072)	2024	12	85



DESIGNED BY	DATE
DRAWN BY	
CHECKED BY	
APPROVED BY	
PROJECT NO.	
DATE	

DRAWING NAME: T: 30801030.00-KAHOLOA STREAM BRIDGE (CADD) SHEETS C-4-HONOKAA ABUTMENT TEMPORARY ROAD PLAN DWG PLOT TIME: 07-16-24, 1:30 PM

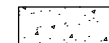



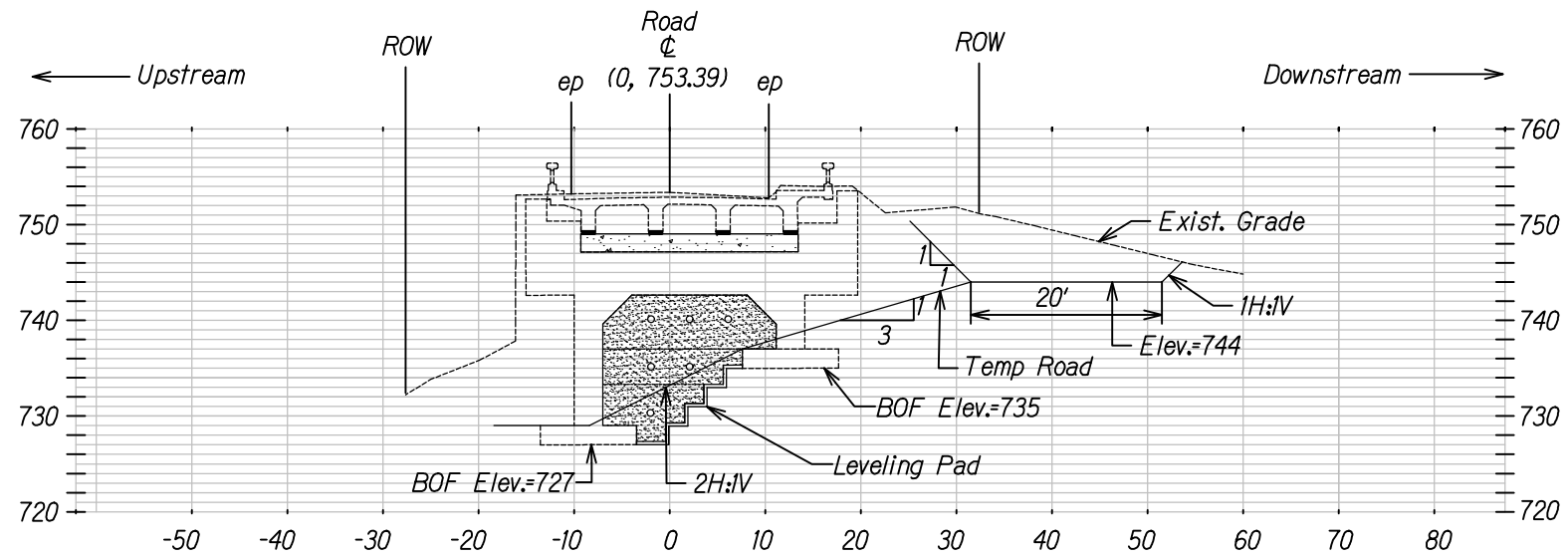

 SIGNATURE: *Gerald D. Andrade* 4/30/26
 EXPIRATION DATE OF THE LICENSE
 THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION

STATE OF HAWAII
 DEPARTMENT OF TRANSPORTATION
 HIGHWAYS DIVISION
**HONOKAA ABUTMENT
 TEMPORARY ROAD PLAN**
 HAWAII BELT ROAD
 Seismic Retrofit of Kaholo Stream Bridge
 Fed. Aid Proj. No. BR-019-2(072)
 Scale: 1"=5' Date: Jul. 2024
 SHEET No. C-4 OF 13 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	BR-019-2(072)	2024	13	85

Legend:

-  Raised Concrete Shelf
-  Shotcrete Facing

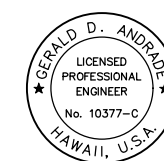


**Honokaa Abutment Temp. Road
Typical Section**

Scale: 1"=10'

DESIGNED BY	DATE
DRAWN BY	
CHECKED BY	
IN CHARGE BY	
APPROVED BY	
DATE	

DRAWING NAME: T:\30801030.00-KAHOLOSTREAMBRIDGE\CADD\SHEETS\C-5-HONOKAA ABUTMENT TEMPORARY ROAD- TYPICAL SECTION.DWG PLOT TIME: 07-16-24, 1:30 PM



SIGNATURE: *Gerald D. Andrade* 4/30/26
EXPIRATION DATE OF THE LICENSE
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

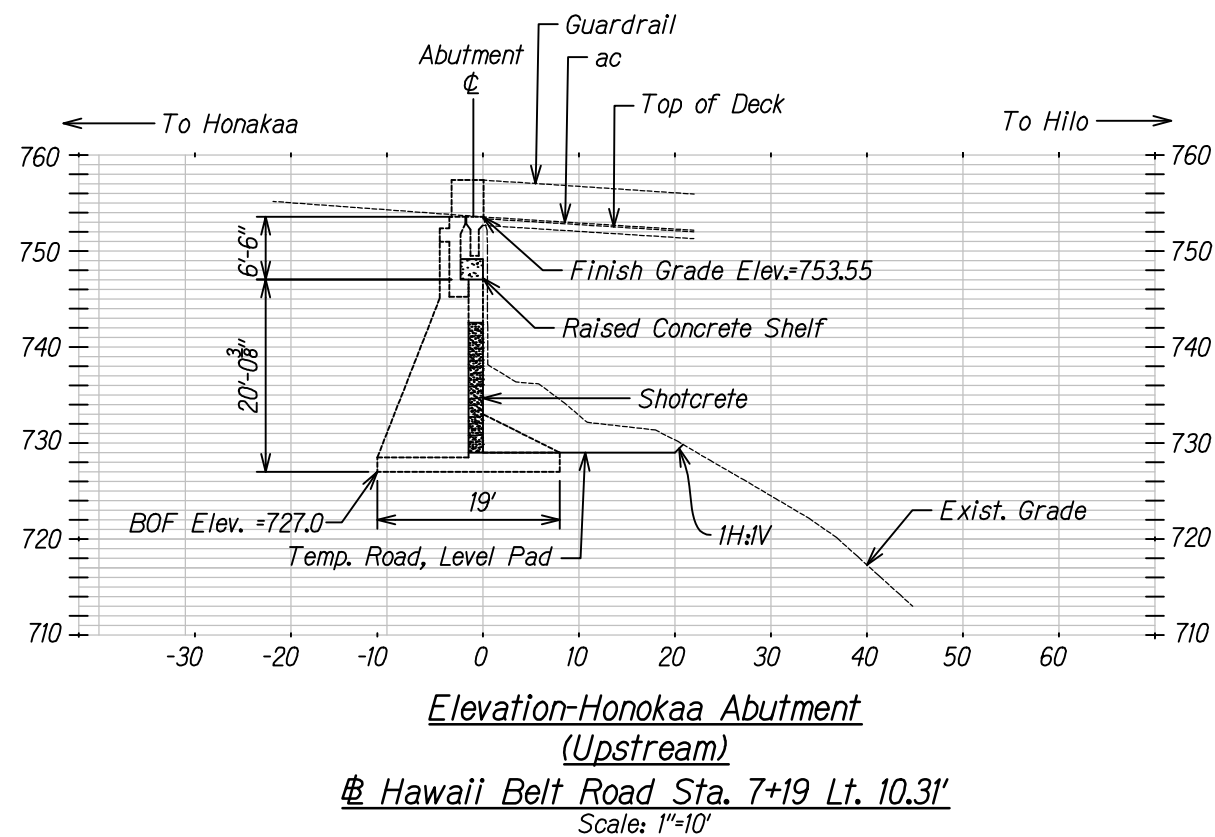
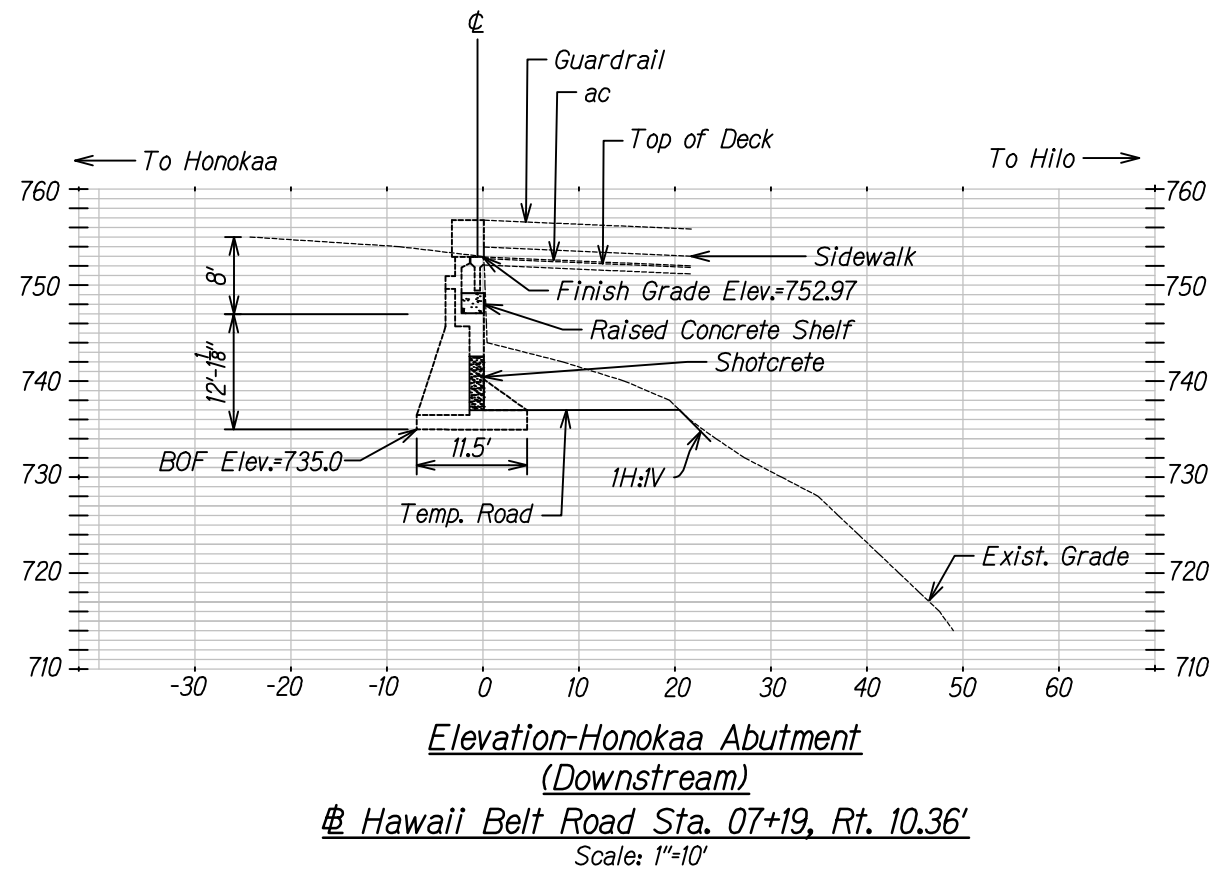
HONOKAA ABUTMENT
TEMP ROAD. TYP. SECTION

HAWAII BELT ROAD
Seismic Retrofit of Kaholo Stream Bridge
Fed. Aid Proj. No. BR-019-2(072)

Scale: 1"=10' Date: Jul. 2024

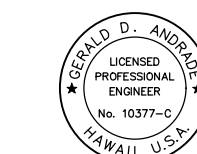
SHEET No. C-5 OF 13 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	BR-019-2(072)	2024	14	85



DESIGNED BY	DATE
DRAWN BY	
CHECKED BY	
IN CHARGE BY	
APPROVED BY	
DATE	

DRAWING NAME: T:\30801030.000-KAHOLOSTREAMBRIDGE\CADD\SHEETS\C-6-HONOKAA ABUTMENT TEMPORARY ROAD- ELEVATIONS.DWG PLOT TIME: 07-16-24, 1:30 PM



Signature: *Gerald D. Andrade* 4/30/26
 EXPIRATION DATE OF THE LICENSE
 THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION

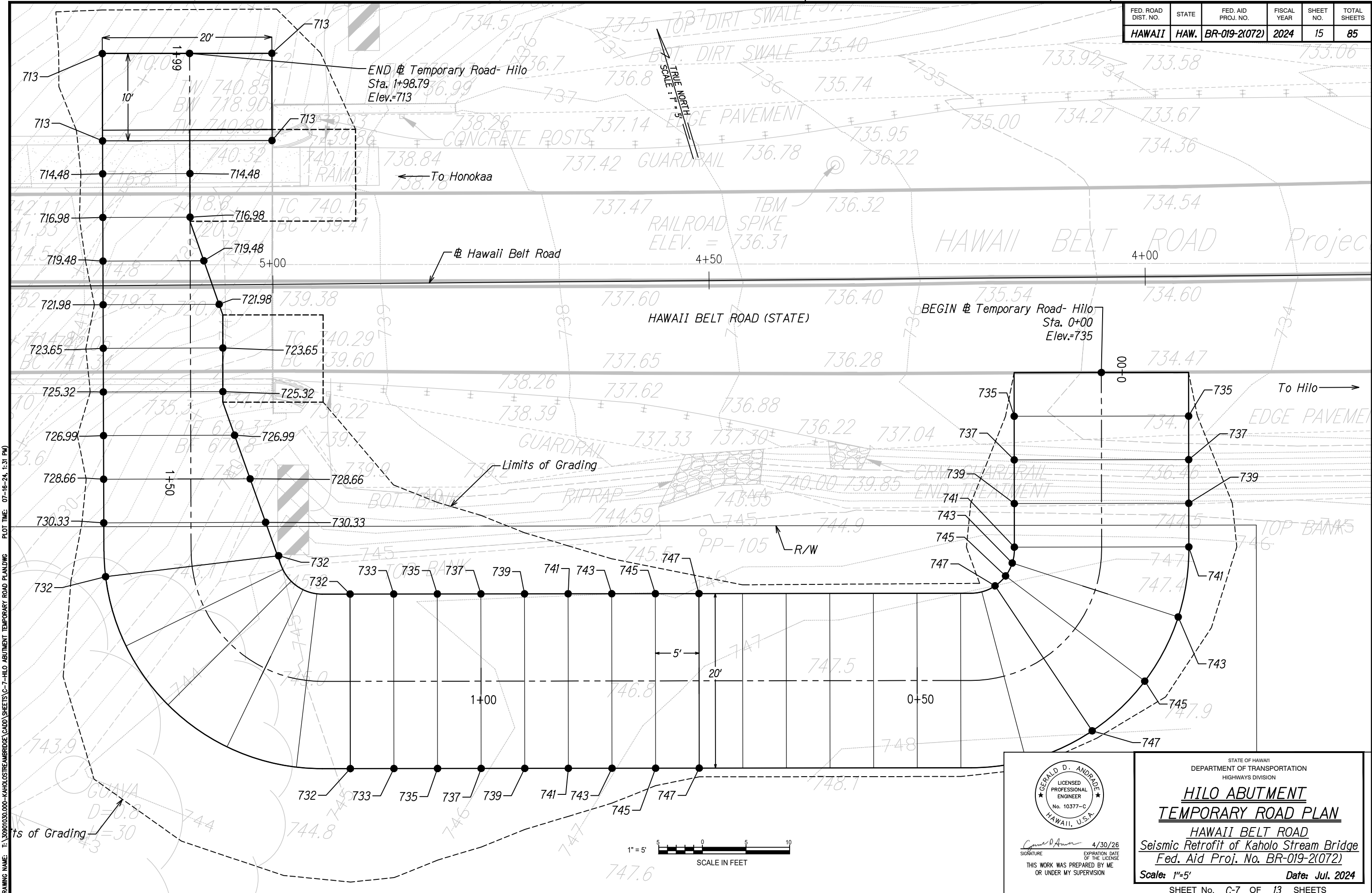
STATE OF HAWAII
 DEPARTMENT OF TRANSPORTATION
 HIGHWAYS DIVISION

HONOKAA ABUTMENT
ELEVATIONS
 HAWAII BELT ROAD
 Seismic Retrofit of Kaholo Stream Bridge
 Fed. Aid Proj. No. BR-019-2(072)

Scale: 1"=10' Date: Jul. 2024

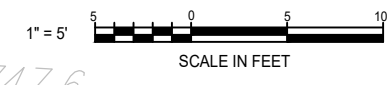
SHEET No. C-6 OF 13 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	BR-019-2(072)	2024	15	85



DRAWING NAME: T: 30801030.00-KAHOLOSTREAM BRIDGE (CADD) SHEETS C-7-HILO ABUTMENT TEMPORARY ROAD PLAN.DWG
 PLOT TIME: 07-16-24, 1:31 PM

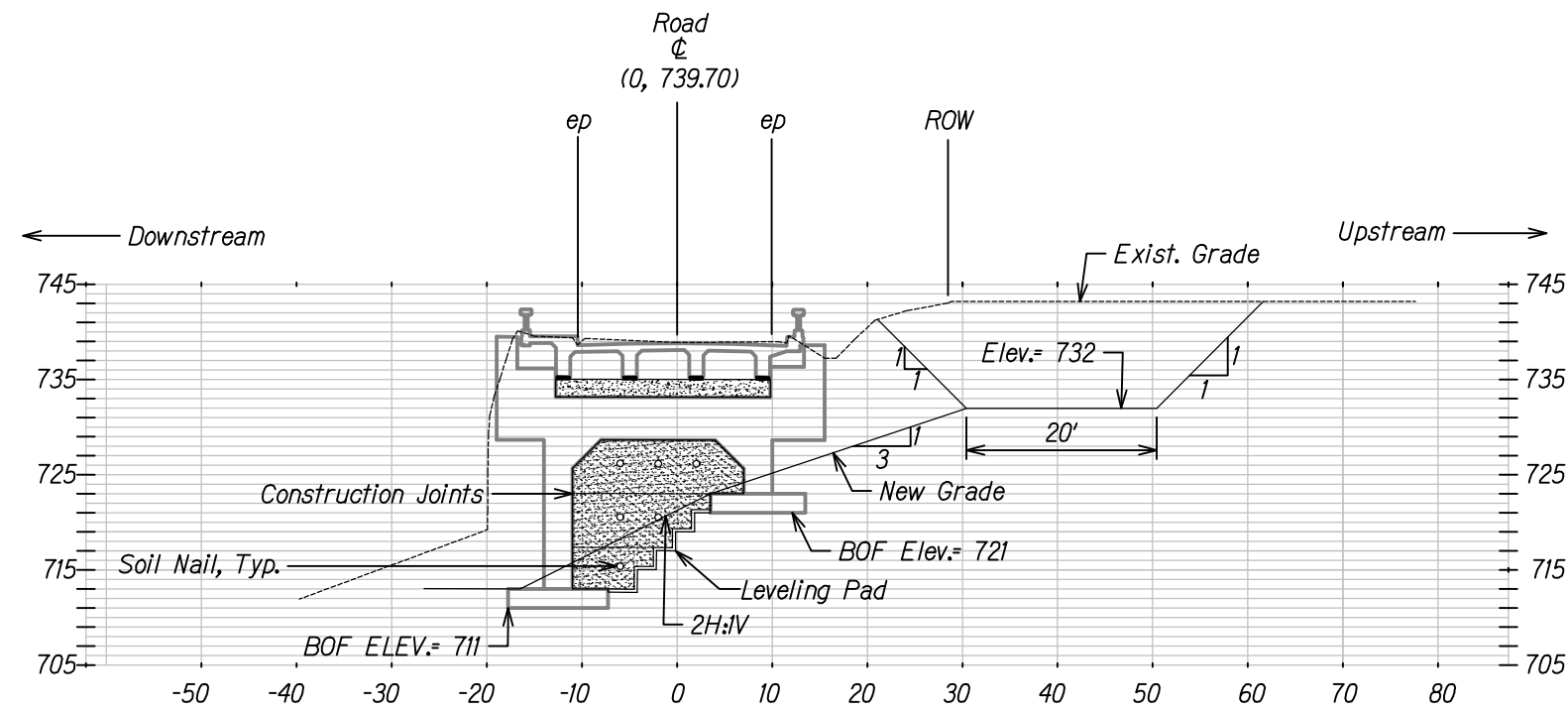
DESIGNED BY	DATE
CHECKED BY	
APPROVED BY	
NO. _____	





GERALD D. ANDRADE
 LICENSED PROFESSIONAL ENGINEER
 No. 10377-C
 HAWAII, U.S.A.
 Signature: *Gerald D. Andrade* 4/30/26
 THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION

STATE OF HAWAII
 DEPARTMENT OF TRANSPORTATION
 HIGHWAYS DIVISION
**HILO ABUTMENT
 TEMPORARY ROAD PLAN**
 HAWAII BELT ROAD
 Seismic Retrofit of Kaholo Stream Bridge
 Fed. Aid Proj. No. BR-019-2(072)
 Scale: 1"=5' Date: Jul. 2024
 SHEET No. C-7 OF 13 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	BR-019-2(072)	2024	16	85




Hilo Abutment Temp. Road
Typical Section
 Scale: 1"=10'

- Legend:**
-  Raised Concrete Shelf
 -  Shotcrete Facing

DESIGNED BY	DATE
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CHECKED BY	
IN CHARGE BY	
APPROVED BY	
DATE	

DRAWING NAME: T:\30801030.000-KAHOLOSTREAMBRIDGE\CADD\SHEETS\C-8-HILO ABUTMENT TEMPORARY ROAD-TYPICAL SECTION.DWG PLOT TIME: 07-18-24, 1:31 PM


 SIGNATURE: *Gerald D. Andrade* 4/30/26
 EXPIRATION DATE OF THE LICENSE
 THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION

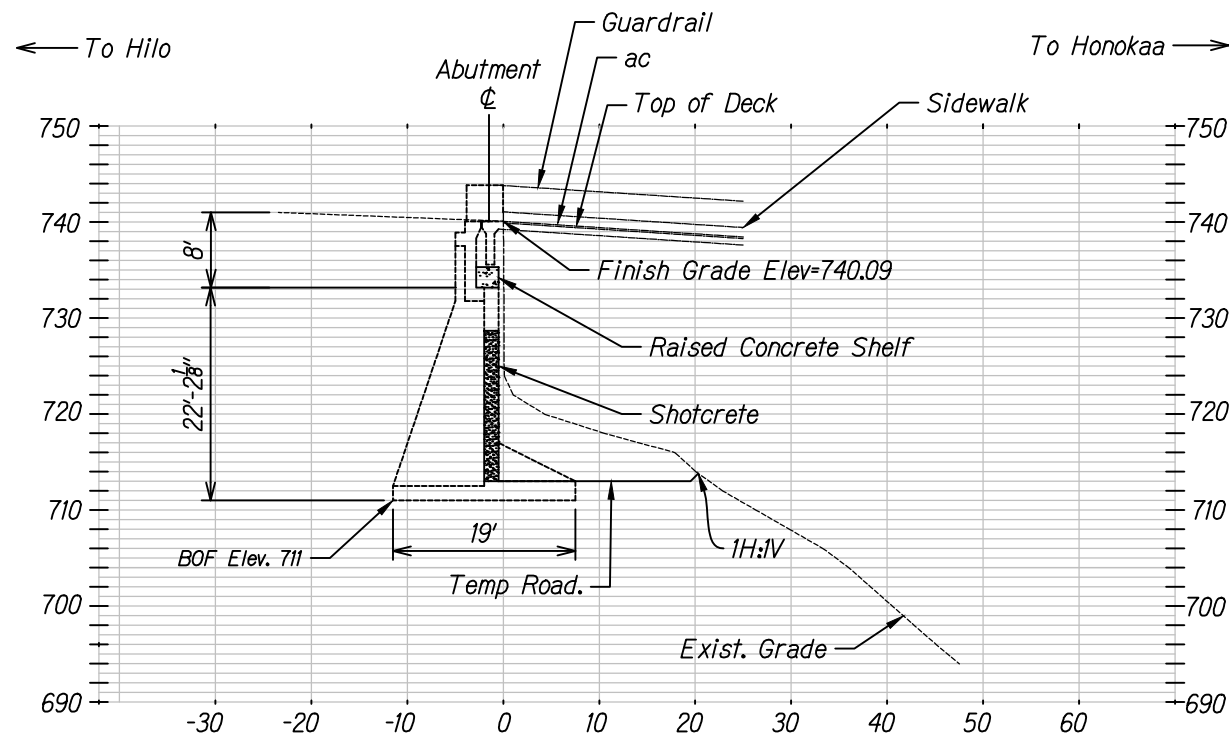
STATE OF HAWAII
 DEPARTMENT OF TRANSPORTATION
 HIGHWAYS DIVISION

HILO ABUTMENT TEMP. ROAD
TYPICAL SECTION
 HAWAII BELT ROAD
 Seismic Retrofit of Kaholo Stream Bridge
 Fed. Aid Proj. No. BR-019-2(072)

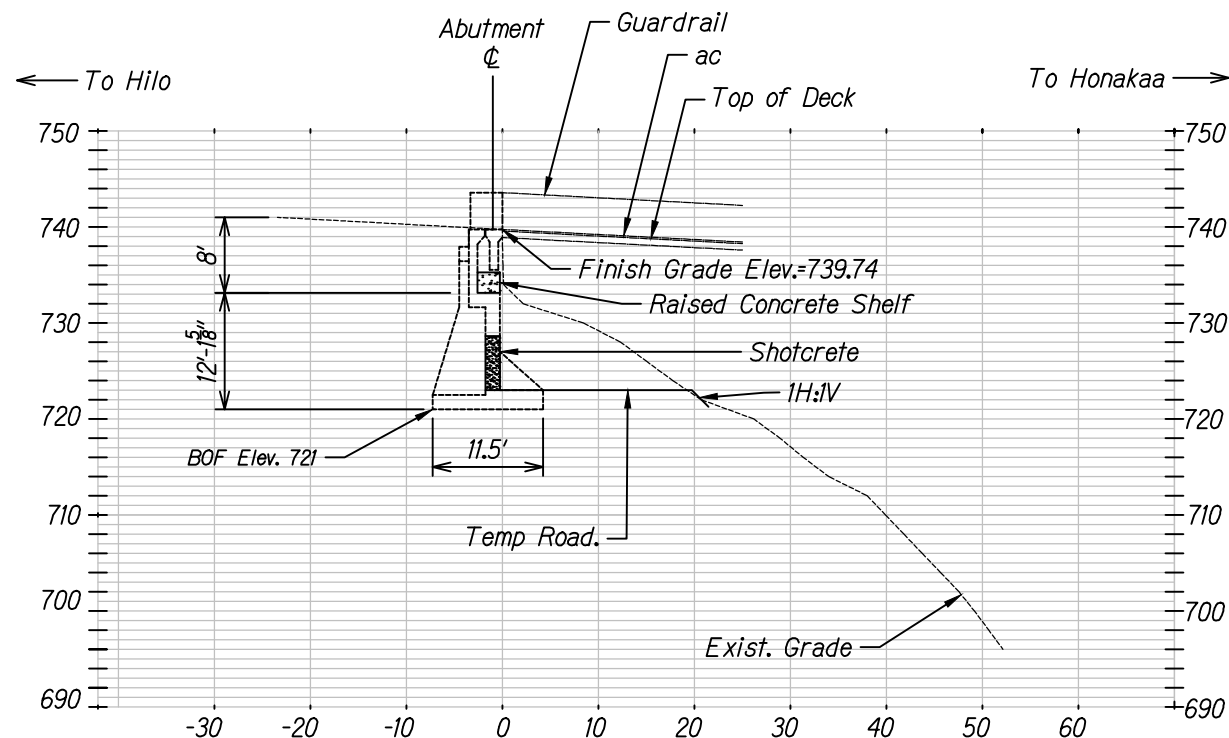
Scale: 1"=10' Date: Jul. 2024

SHEET No. C-8 OF 13 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	BR-019-2(072)	2024	17	85




**Elevation-Hilo Abutment
(Downstream)**
 @ Hawaii Belt Road Sta. 5+00, Rt. 10.42'
 Scale: 1"=10'



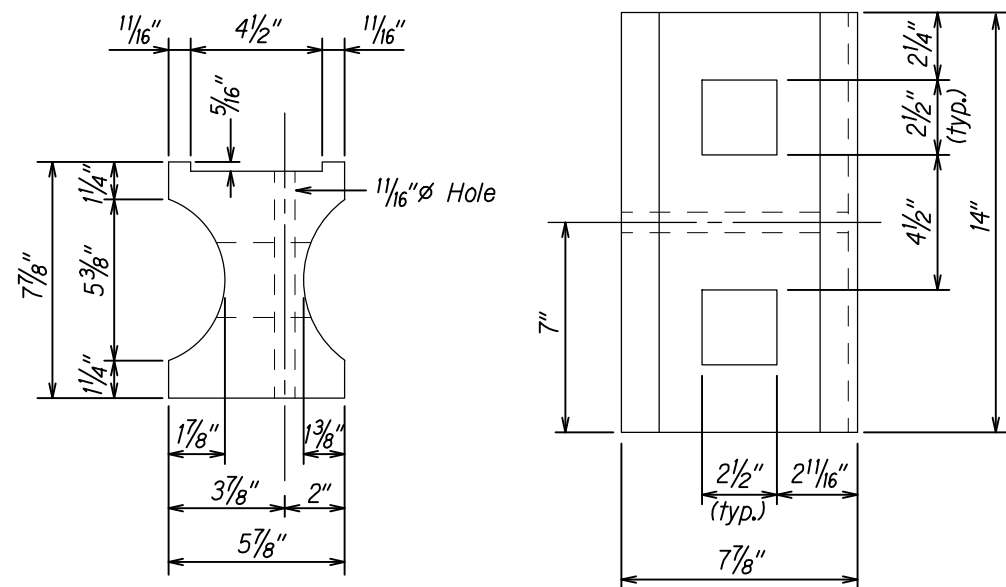
**Elevation-Hilo Abutment
(Upstream)**
 @ Hawaii Belt Road Sta. 5+00, Lt. 9.95'
 Scale: 1"=10'

DESIGNED BY	DATE
DRAWN BY	
CHECKED BY	
IN CHARGE BY	
APPROVED BY	
NO. _____	

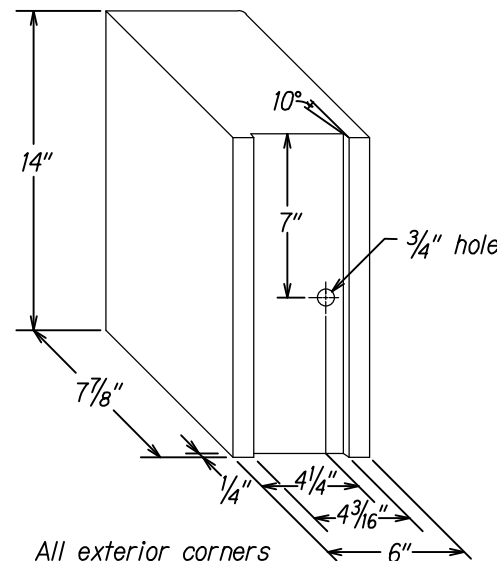
DRAWING NAME: T:\30801030.000-KAHOLOSTREAMBRIDGE\CADD\SHEETS\C-9-HILO ABUTMENT TEMPORARY ROAD- ELEVATIONS.DWG PLOT TIME: 07-16-24, 1:32 PM


 SIGNATURE: *Gerald D. Andrade* 4/30/26
 EXPIRATION DATE OF THE LICENSE
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STATE OF HAWAII
 DEPARTMENT OF TRANSPORTATION
 HIGHWAYS DIVISION
**HILO ABUTMENT
 ELEVATIONS**
 HAWAII BELT ROAD
 Seismic Retrofit of Kaholo Stream Bridge
 Fed. Aid Proj. No. BR-019-2(072)
 Scale: 1"=10' Date: Jul. 2024
 SHEET No. C-9 OF 13 SHEETS



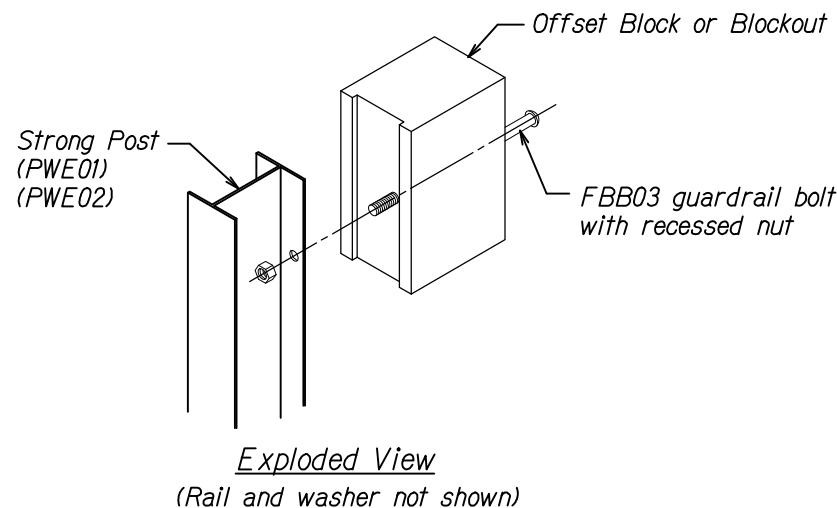
RECYCLED PLASTIC BLOCKOUT (TYPE I)



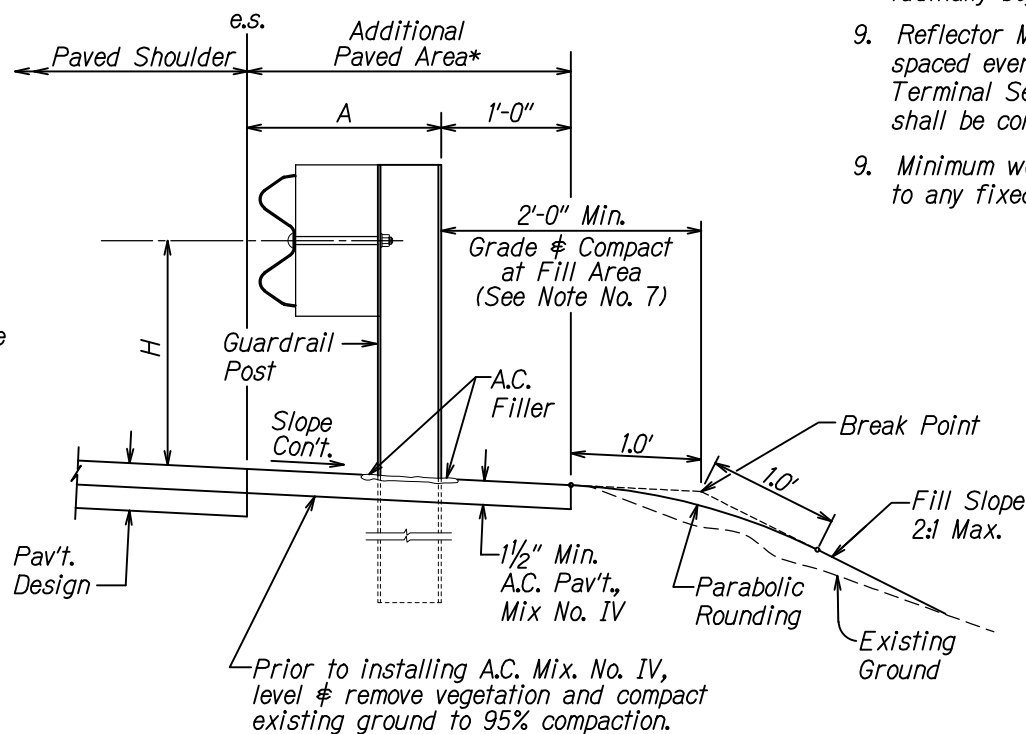
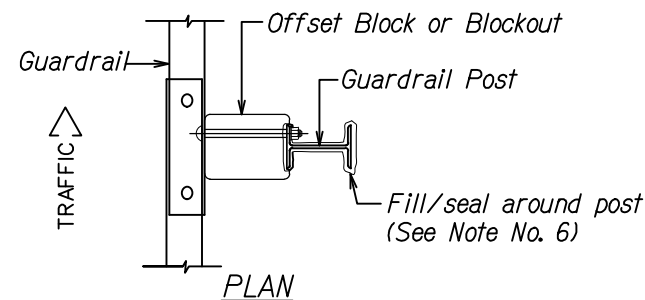
RECYCLED POLYETHYLENE OFFSET BLOCK (TYPE II)

GENERAL NOTES

- All hardware, posts and fasteners shall be hot-dip zinc coated galvanized after fabrication. No punching, drilling or cutting will be permitted after galvanizing.
- Where conditions require, special post lengths in increments of 6 inches may be specified.
- All fasteners, posts, and rail elements (i.e. FBB03, PWE01, RWM02b, 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.
- The Recycled Plastic Block or Offset Block shall be approved by the State.
- All new guardrail systems (system consists of total length of guardrail including both end treatments) shall include the Additional Paved Area.
- 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.
- When standards for the fill slope area cannot be met, a site specific, engineer approved design may be used.
- New A.C. pavement at guardrails shall extend 6 feet longitudinally beyond terminal ends.
- 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 adjacent guardrail system.
- Minimum working width (clear distance) between back of MGS post to any fixed object is 4'-1" (49").

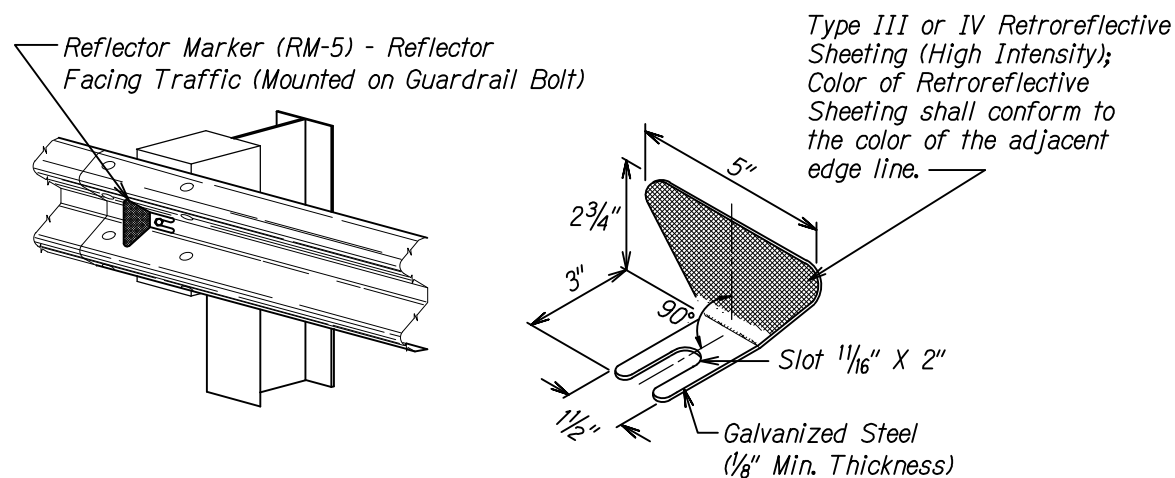


STEEL POST AND BLOCK DETAIL

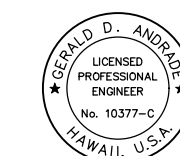


TYPICAL GUARDRAIL INSTALLATION

GUARDRAIL TYPE	DIMENSION	
	H	A
Strong Post W-Beam	1'-9 5/8"	1'-6"
Strong Post Rubrail (W-Beam)	2'-0"	1'-6"
Strong Post Thrie-Beam	1'-9 5/8"	1'-6"
Strong Post Modified Thrie-Beam	2'-0"	2'-0"



REFLECTOR MARKER (RM-5) DETAIL AND TYPICAL INSTALLATION



Signature: *Gerald D. Andrade* 4/30/26
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STATE OF HAWAII
 DEPARTMENT OF TRANSPORTATION
 HIGHWAYS DIVISION

GUARDRAIL DETAILS & NOTES

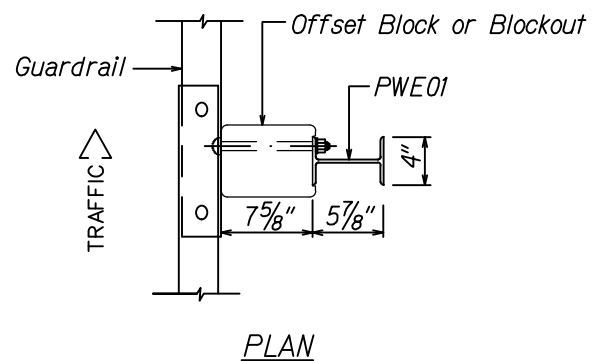
HAWAII BELT ROAD
 Seismic Retrofit of Kaholo Stream Bridge
 Fed. Aid Proj. No. BR-019-2(072)

Scale: NTS Date: Jul. 2024

SHEET No. C-10 OF 13 SHEETS

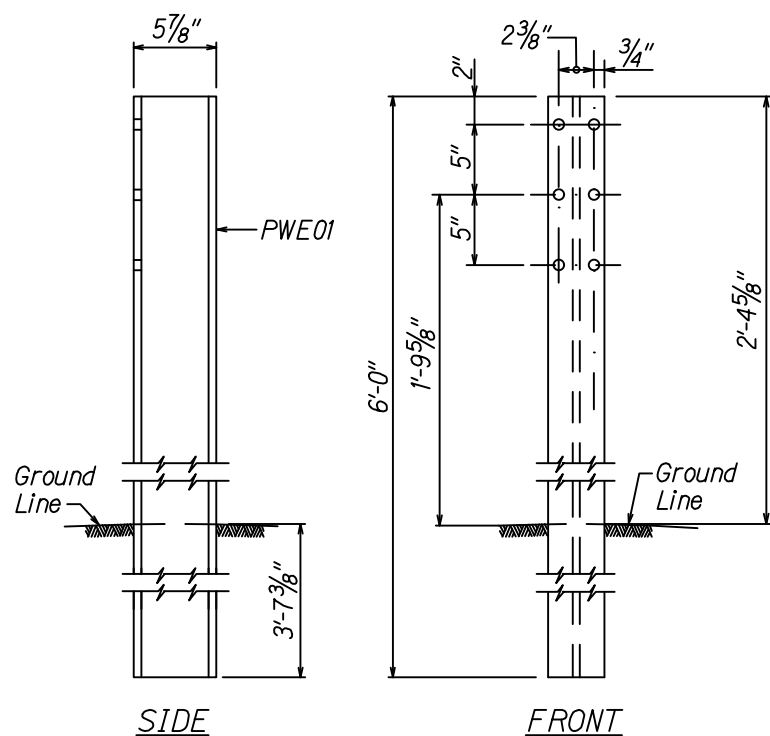
DRAWING NAME: T:\30801030.000-KAHOLOSTREAMBRIDGE\CADD\SHEETS\C-10-TESOREV_BF-1.DWG PLOT TIME: 07-18-24, 1:32 PM

DESIGNED BY	DATE
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CHECKED BY	
APPROVED BY	
NO. BOOK	
NO.	

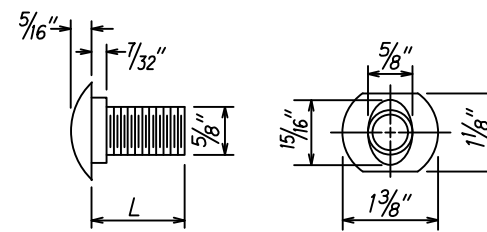


NOTE:
All Holes are 3/4" Dia.

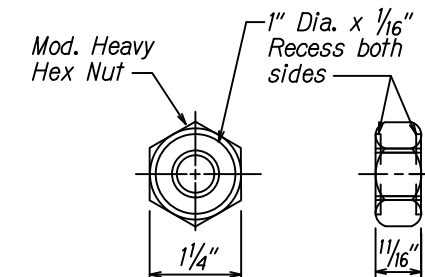
W6x8.5
Structural
Shape



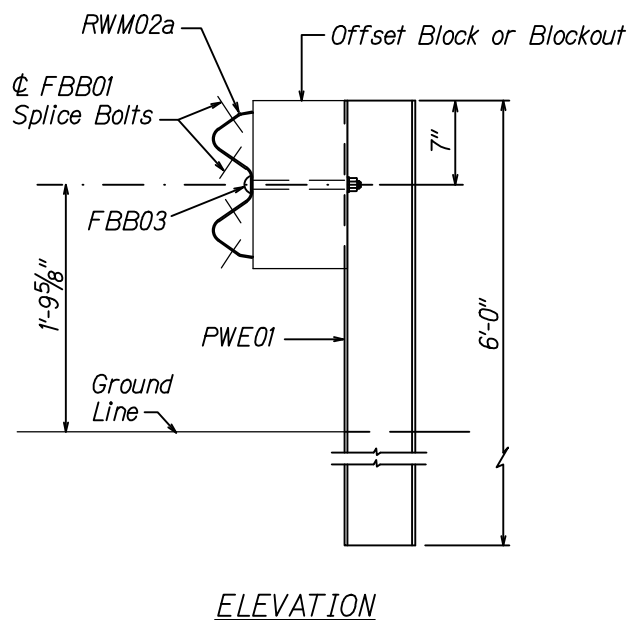
W-BEAM STRONG POST (PWE01)



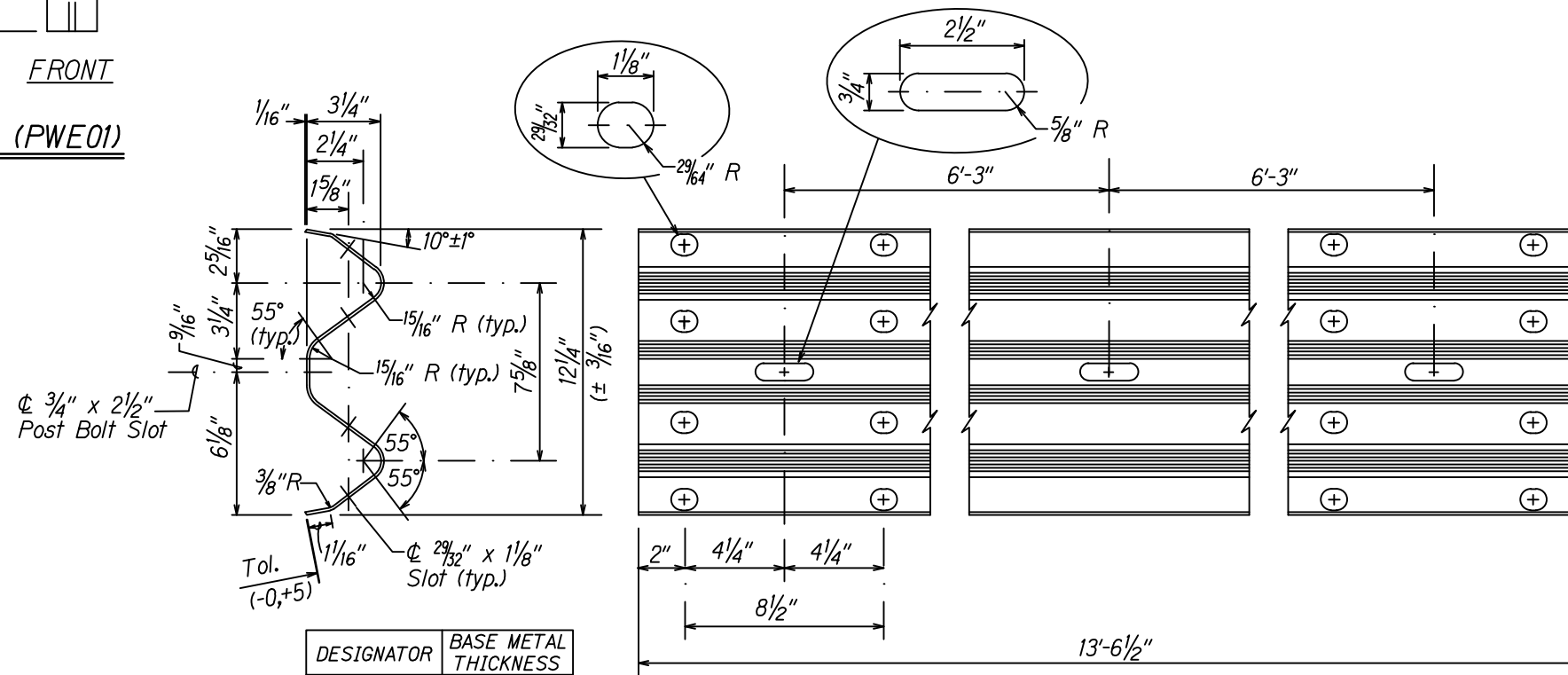
DESIGNATOR	L
FBB01	1 3/8"
FBB02	2"
FBB03	10"



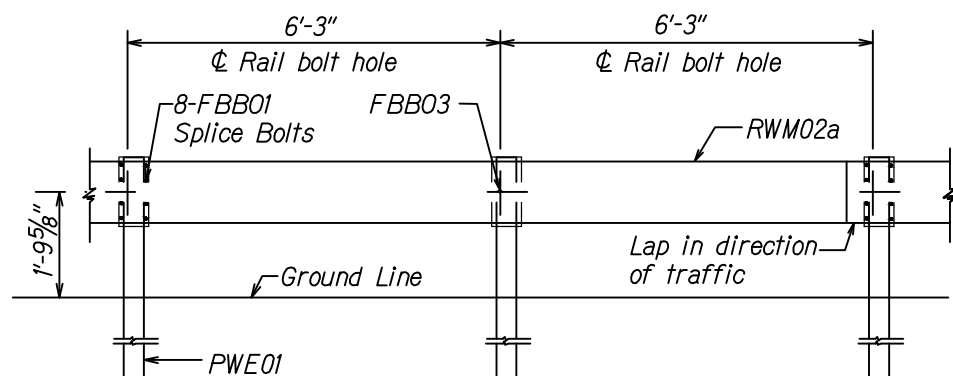
GUARDRAIL BOLTS AND RECESSED NUT



STRONG POST W-BEAM GUARDRAIL (SGR04a)



2 SPACE W-BEAM GUARDRAIL (RWM02a)



STRONG POST W-BEAM GUARDRAIL WITH RECYCLED OFFSET BLOCK OR PLASTIC BLOCKOUT



Signature: *Gerald D. Andrade* 4/30/26
EXPIRATION DATE OF THE LICENSE
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

STRONG POST W-BEAM GUARDRAIL

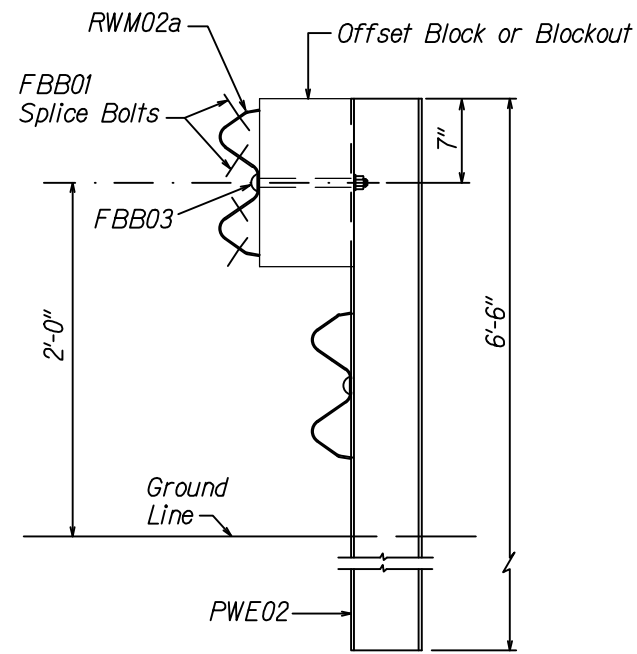
HAWAII BELT ROAD
Seismic Retrofit of Kaholo Stream Bridge
Fed. Aid Proj. No. BR-019-2(072)

Scale: NTS Date: Jul. 2024

SHEET No. C-11 OF 13 SHEETS

DRAWING NAME: T:\30801030.00-KAHOLOSTREAMBRIDGE\CADD\SHEETS\C11-WBEAMSP_B2-2.DWG PLOT TIME: 07-16-24, 1:33 PM

DESIGNED BY	DATE
CHECKED BY	
APPROVED BY	
DATE	

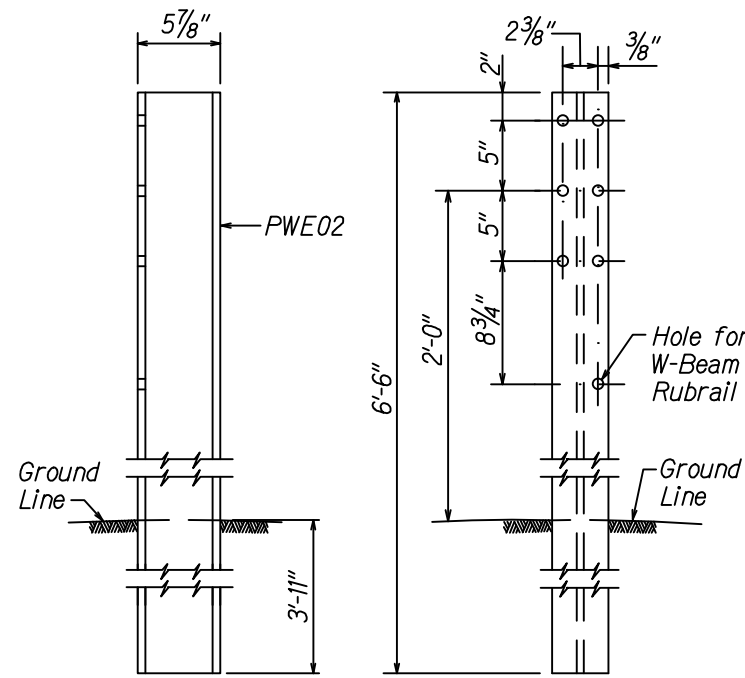


ELEVATION

STRONG POST RUBRAIL (W-BEAM) GUARDRAIL

NOTE: All Holes are 3/4" Dia.

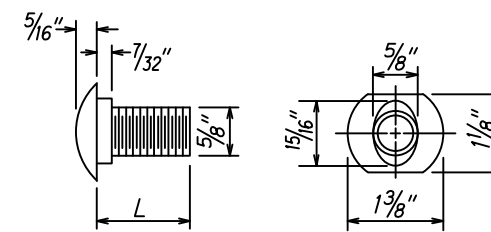
W6x8.5 Structural Shape



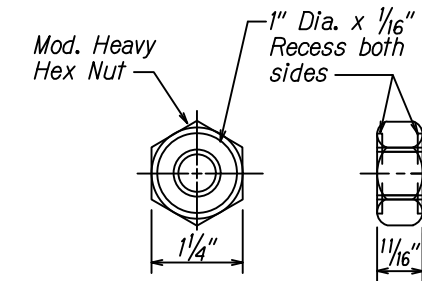
SIDE

FRONT

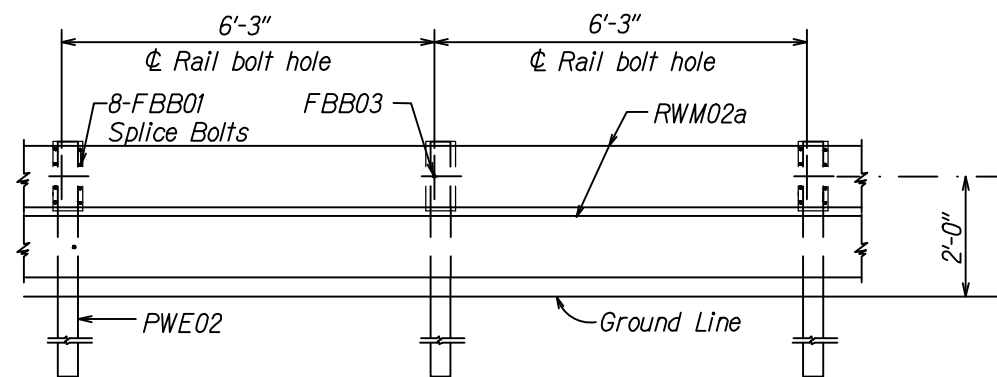
W-BEAM STRONG POST (PWE02)



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

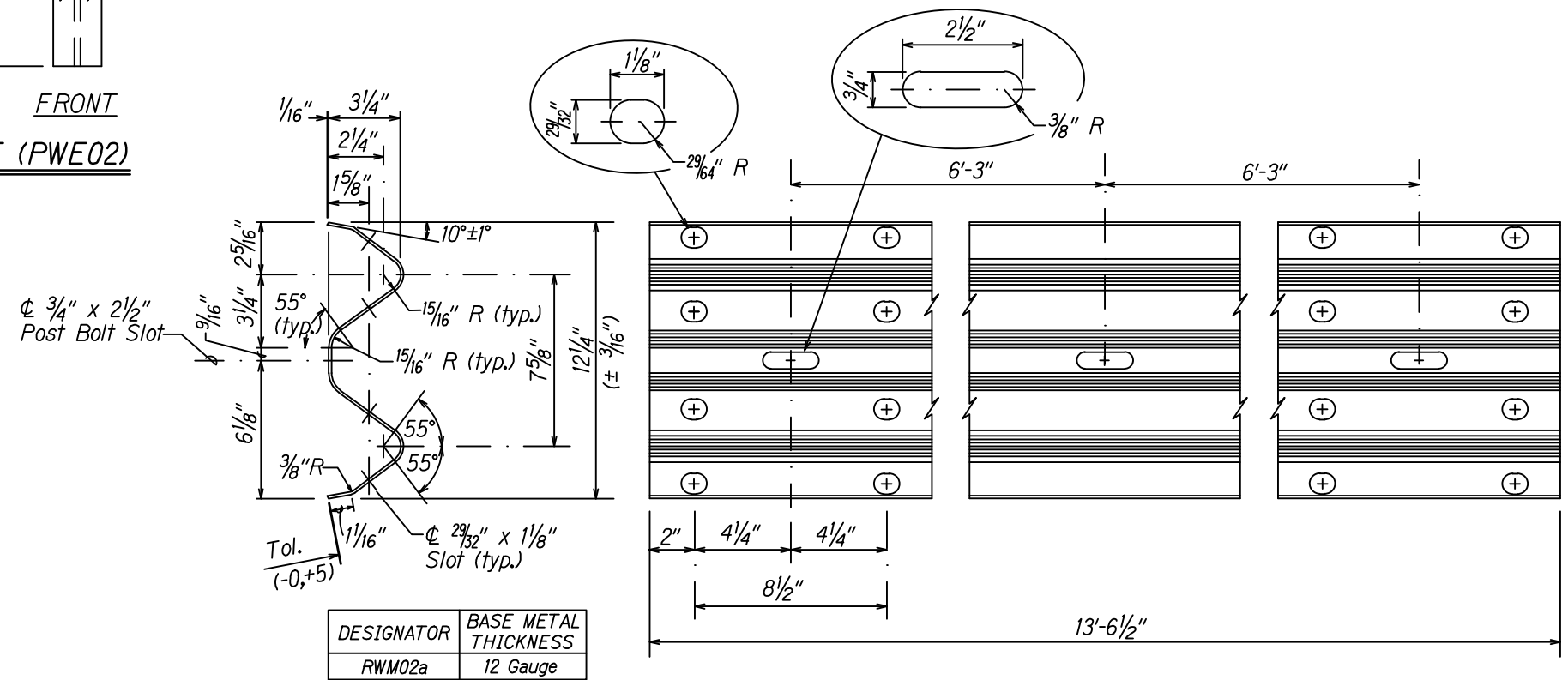


GUARDRAIL BOLTS AND RECESSED NUT

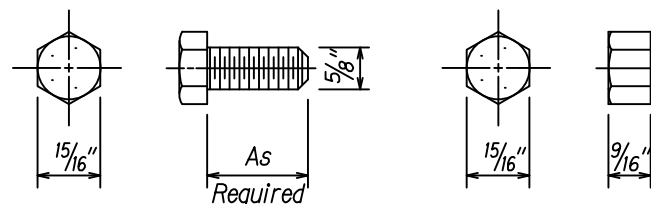


ELEVATION

STRONG POST RUBRAIL (W-BEAM) GUARDRAIL WITH RECYCLED OFFSET BLOCK OR PLASTIC BLOCKOUT



2 SPACE W-BEAM GUARDRAIL (RWM02a)



HEX BOLT & NUT (FBX16a)

DESIGNED BY	DATE
DRAWN BY	
CHECKED BY	
IN CHARGE BY	
APPROVED BY	
DATE	

DRAWING NAME: T:\30801030.00-KAHOLOSTREAMBRIDGE\CADD\SHEETS\C-12-RUBRAIL_B4-3.DWG PLOT TIME: 07-16-24, 1:33 PM



Signature: Gerald D. Andrade
 EXPIRATION DATE OF THE LICENSE: 4/30/26
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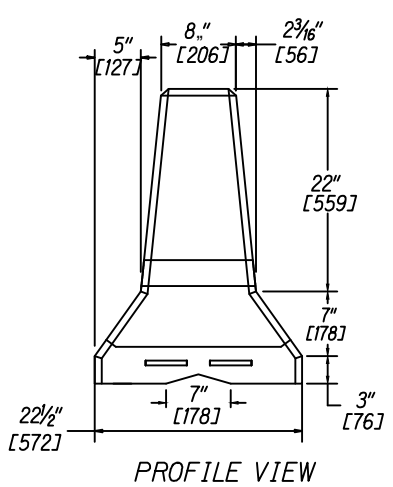
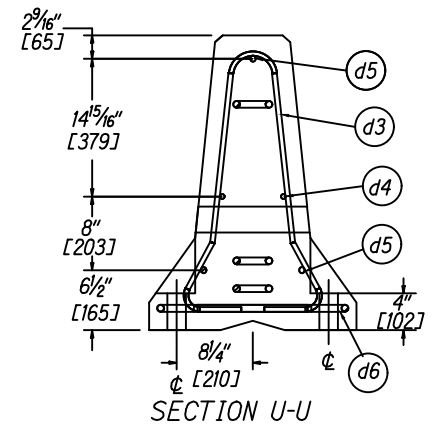
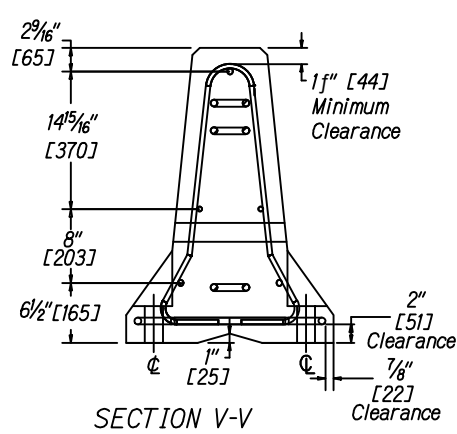
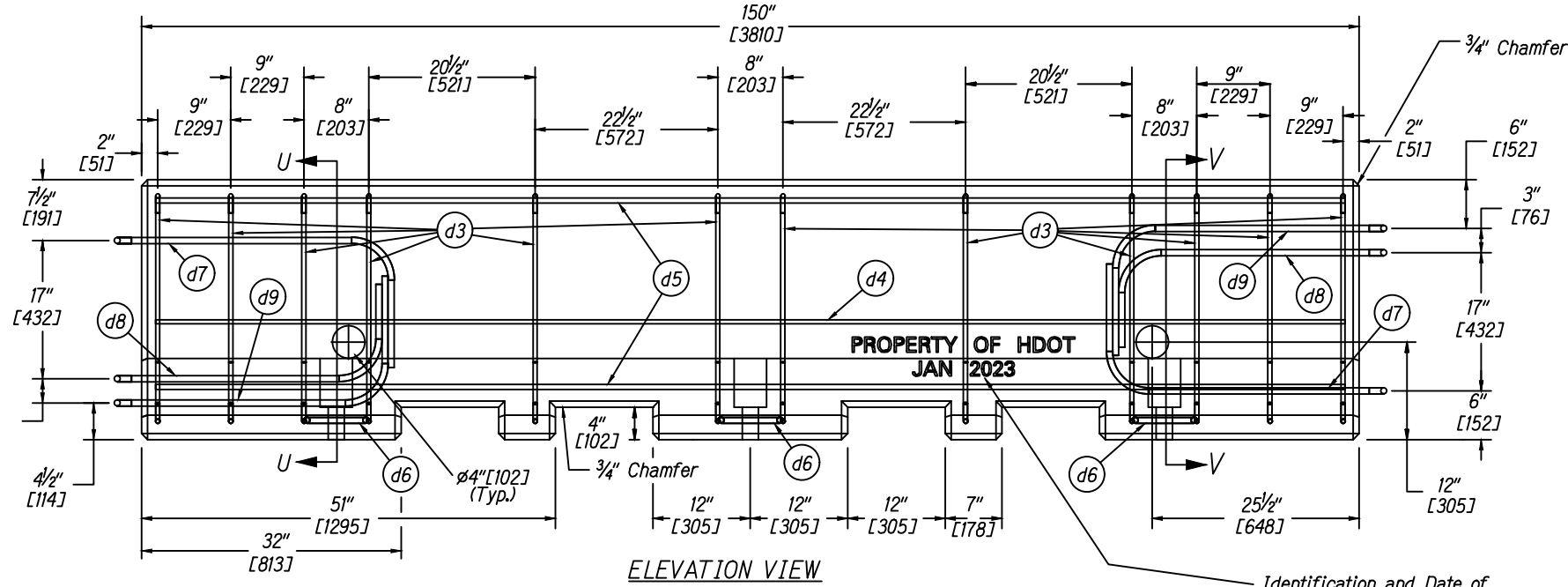
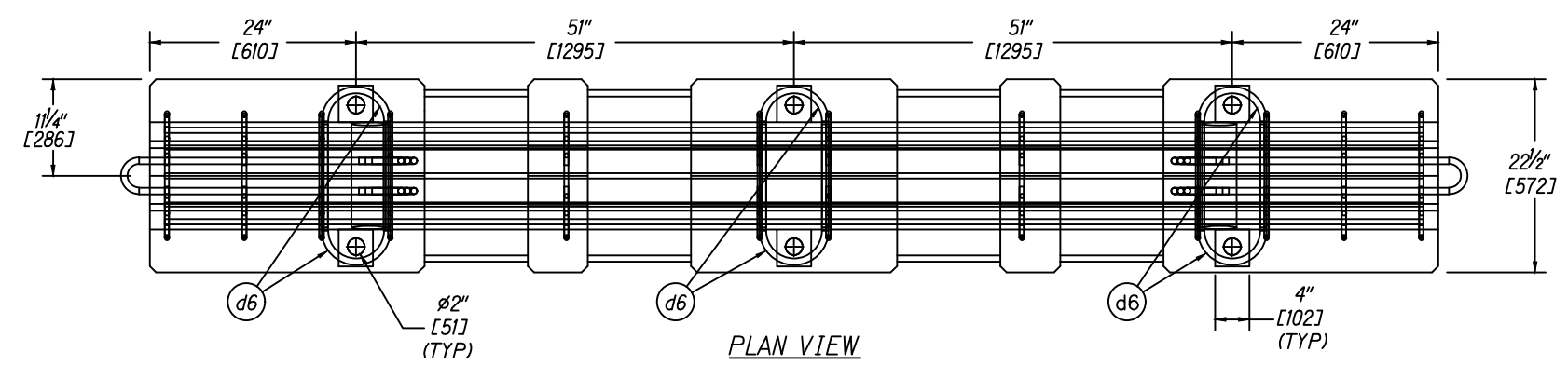
STATE OF HAWAII
 DEPARTMENT OF TRANSPORTATION
 HIGHWAYS DIVISION

STRONG POST RUBRAIL (W-BEAM) GUARDRAIL

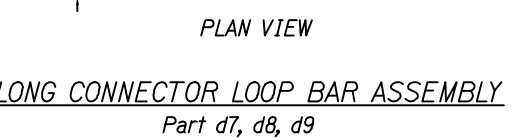
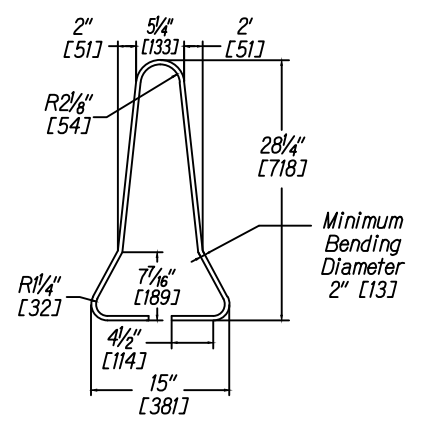
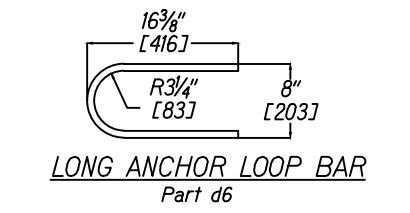
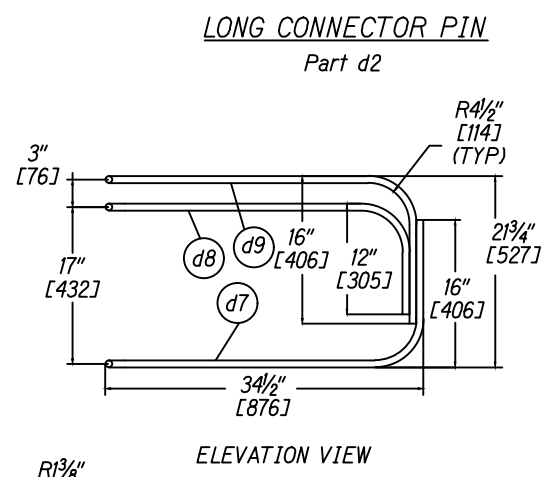
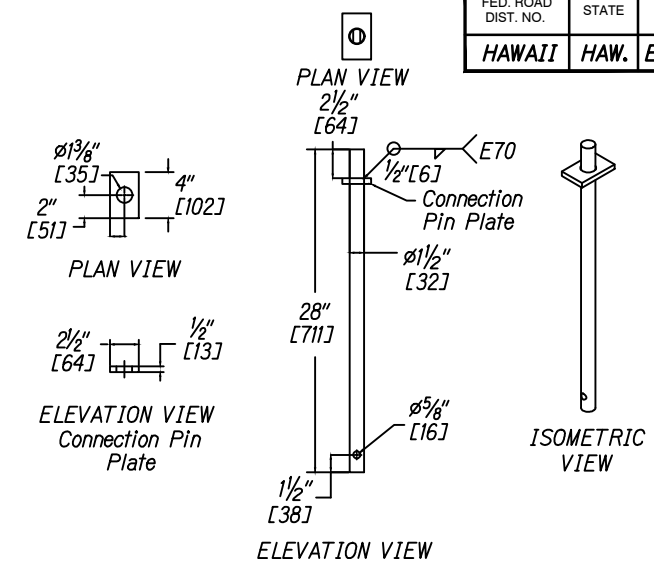
HAWAII BELT ROAD
 Seismic Retrofit of Kaholo Stream Bridge
 Fed. Aid Proj. No. BR-019-2(072)

Scale: NTS Date: Jul. 2024

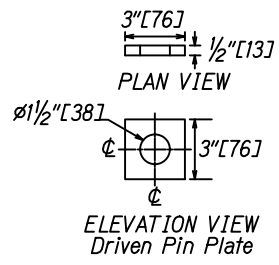
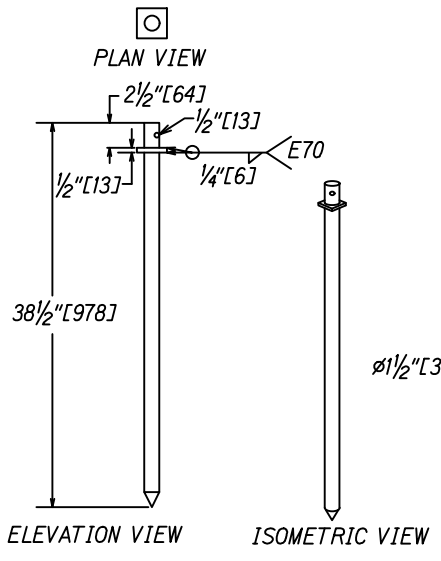
SHEET No. C-12 OF 13 SHEETS



Identification and Date of Design. Label both sides of Panel. (See Note No. 6 on Sheet No. 2 of 2)



- NOTES:
- Concrete has minimum 28-day compressive strength of 5000 psi (34.5 MPa)
 - The steel shall be zinc-coated (galvanized) as specified below:
 - Zinc-coated (galvanized) steel bars shall meet the requirements of ASTM A123, (coating grade 100, minimum coating - 2.30 oz. per square foot)
 - The bars shall be fabricated prior to galvanizing.
 - The procedures of ASTM A143 shall be observed as applicable.
 - All zinc coating damage due to fabrication or handling shall be repaired with a zinc dust (zinc-rich) formulation in accordance with ASTM A780.



Signature: Gerald D. Andrade
 Date: 4/30/26
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ITEM NO.	QTY.	DESCRIPTION	MATERIAL SPECIFICATION	HARDWARE GUIDE
d1	11*	Portable Concrete Barrier	min f'c=5000 psi [34.5 MPa]	SWC09
d2	10*	1 1/4" [32] Dia., 28" [711] Long Connector Pin	ASTM A36	FMW02
d3	132	1/2" [13] Dia., 72" [1829] Long Form Bar	ASTM A615 Grade 60	-
d4	22	1/2" [13] Dia., 146" [3708] Long Longitudinal Bar	ASTM A615 Grade 60	-
d5	33	5/8" [16] Dia., 146" [3708] Long Longitudinal Bar	ASTM A615 Grade 60	-
d6	66	3/4" [19] Dia., 36" [914] Long Anchor Loop Bar	ASTM A615 Grade 60, Galvanized	-
d7	22	3/4" [19] Dia., 102" [2591] Long Connection Loop Bar	ASTM A709 Grade 70 or A706 Grade 60, Galvanized	-
d8	22	3/4" [19] Dia., 9" [231] Long Connection Loop Bar	ASTM A709 Grade 70 or A706 Grade 60, Galvanized	-
d9	22	3/4" [19] Dia., 10" [2565] Long Connection Loop Bar	ASTM A709 Grade 70 or A706 Grade 60, Galvanized	-

*Note: See Note 7 on Sheet 2 of 2

STATE OF HAWAII
 DEPARTMENT OF TRANSPORTATION
 HIGHWAYS DIVISION

F-SHAPE PORTABLE CONCRETE BARRIER
 HAWAII BELT ROAD
 Seismic Retrofit of Kaholo Stream Bridge
 Fed. Aid Proj. No. BR-019-2(072)

Scale: NTS Date: Jul. 2024

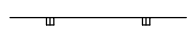
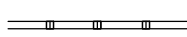
SHEET NO. C-13 OF 13 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	BR-019-2(072)	2024	22	85

GENERAL NOTES:

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

PAVEMENT MARKING AND SIGNING LEGEND:

-  8" White Edge Stripe with Type C Raised Pavement Markers at 40' o.c.
-  4" Double Yellow Stripe with Type D Raised Pavement Markers at 20' o.c.

SIGNING NOTES:

- Sign details shall conform to the latest editions and amendments of the following FHWA publications: "Manual on Uniform Traffic Control Devices for Streets and Highways", "Standard Highway Signs" and "Standard Alphabets for Highway Signs".
- For Miscellaneous Sign Details, see Standard Plan TE-01 to TE-07, TE-14, & TE-15.
- Existing Signs to be removed shall be disposed of by the Contractor. Removal of signs shall also include the removal of post and foundation to a minimum height of 1-foot below the ground.
- The Contractor shall backfill all holes, depressions and pits left by the removal of the existing signs with embankment material and grass all areas exposed.
- Trim existing vegetation for installation of the sign and to provide a clear view of the sign.

PAVEMENT MARKING NOTES:

- All pavement striping, legends and symbols shall be retroreflective thermoplastic compound pavement markings.
- Location of pavement markers is shown schematically. For exact location of markers in relation to stripe, see Standard Plan TE-26.
- The Contractor shall remove all RM-2 Markers along the roadside and within the pavement area which conflict with the proposed construction.

ABBREVIATIONS:

- OM Object Marker
 RM Reflector Markers
 RPM Raised Pavement Markers

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DRAWING NAME: T:\30801030.000-KAHOLOSTREAMBRIDGE\CADD\SHEETS\SS-1 NOTES.DWG PLOT TIME: 07-16-24, 1:35 PM



Signature: *Gerald D. Andrade* 4/30/26
 EXPIRATION DATE OF THE LICENSE
 THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION

STATE OF HAWAII
 DEPARTMENT OF TRANSPORTATION
 HIGHWAYS DIVISION

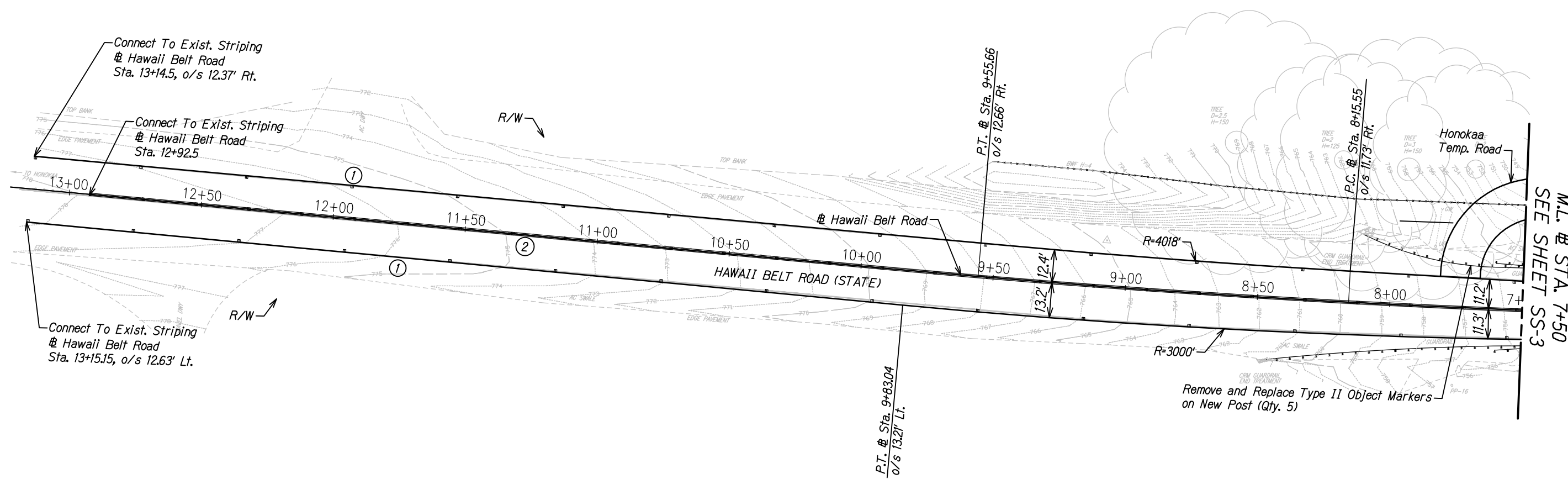
SIGNING AND STRIPING
NOTES

HAWAII BELT ROAD
Seismic Retrofit of Kaholo Stream Bridge
Fed. Aid Proj. No. BR-019-2(072)

Scale: None Date: Jul. 2024

SHEET No. SS-1 OF 3 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	BR-019-2(072)	2024	23	85




M.L. @ STA. 7+50
SEE SHEET SS-3

DRAWING NAME: T:\30801030.00-KAHOLOSTREAMBRIDGE\CADD\SHEETS\SS-2-STRIPING PLAN-1.DWG PLOT TIME: 07-18-24, 1:38 PM

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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

SIGNING AND STRIPING
PLAN - 1
HAWAII BELT ROAD
Seismic Retrofit of Kaholo Stream Bridge
Fed. Aid Proj. No. BR-019-2(072)

Scale: 1"=20' Date: Jul. 2024

SHEET No. SS-2 OF 3 SHEETS







GENERAL NOTES FOR TRAFFIC CONTROL PLAN
(STATE R/W):

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	BR-019-2(072)	2024	25	85

1. Only Traffic Control Plans for major construction activities are shown. The Contractor shall develop his own Traffic Control Plans in accordance with Section 645 of the Special Provisions for activities to complete work not covered by the Traffic Control Plans. The Contractor shall submit the Traffic Control Plans to the Engineer for acceptance. Payment for development and implementation of the Traffic Control Plans shall be included in the various traffic control pay items.
2. All lane closures and traffic pattern changes (detours) not shown on the plan shall be submitted to the Engineer for acceptance in accordance with Specifications Section 645 - Work Zone Traffic Control. For restrictions on lane closures, detours, construction work during peak hours, and other requirements regarding maintaining vehicular and pedestrian traffic, see Subsection 107.03 - Working Hours; Night Work and Section 645-Work Zone Traffic Control.
3. The Contractor shall make minor adjustments at intersections, driveways, bridges, structures, etc. to fit field conditions.
4. Cones or delineators shall be extended to a point where they are visible to approaching traffic.
5. Traffic control devices shall be installed such that the sign or device farthest from the work area shall be placed first. The others shall then be placed progressively toward the work area.
6. Flaggers and/or police officers shall be in sight of each other or in direct communications at all times. Flaggers and/or police officers working at night shall be illuminated as required by the MUTCD.
7. Sign spacings (L), taper lengths (T), and spacings of cones or delineators shall be as shown in Table 1 of Section 645 in the Specifications, unless otherwise noted on HDOT's Traffic Control Plans.
8. All traffic lanes shall be minimum of 10 feet wide.
9. All signs shall be promptly removed or covered whenever the message is not applicable or not in use.
10. The backs of all signs for traffic control shall be appropriately covered to preclude the display of inapplicable sign messages (i.e., when signs have messages on both faces).
11. At the end of each day's work or as soon as the work is completed, the Contractor shall remove all traffic control devices no longer needed to permit free and safe passage of public traffic. Removal shall be in the reverse order of installation.
12. Replace permanent pavement markings and traffic signs upon completion of each phase of work. Temporary pavement markings and traffic signs shall be used in the interim.
13. The locations of pavement markings, signs, and delineators used in the Traffic Control shall be as shown on the plans, Contractor's approved Traffic Control Plans, and/or as determined in the field by the Engineer.
14. Damage to signs, pavement markers, and delineators caused by the Contractor's negligence shall be repaired or replaced by the Contractor as directed by the Engineer at no cost to the State.
15. Signs for night work shall be retroreflective and shall be mounted with a Type B high intensity flasher. The sign and flasher will be paid under the various traffic control pay items.

16. The Contractor shall provide all sign supports, barrier mounting brackets, and/or posts for construction warning signs.
17. Steel plates for covering trenches shall have a skid resistant surface. The skid resistant surface shall be maintained throughout its use. Steel plates shall be installed in such a manner as to minimize movement from its intended location and minimize noise when traffic crosses over it (i.e., steel plates shall not generate any noise impact). Steel plates will not be allowed in the travelway for posted speeds in excess of 35 mph.
18. Work zone limits shown for each traffic control phase encompass all work items to be completed in that particular phase. The length of the work zone may be reduced to accommodate the Contractor's actual work zone for that time period, provided it has been accepted by the Engineer, and all tangents, tapers, and buffer lengths are maintained.
19. The Contractor shall furnish, install, maintain, and remove all traffic control devices shown on the traffic control plans.
20. Contractor shall protect all areas below when working on sign structures above, including public streets, service roads, parking lots, private properties, and pedestrian walkways.
21. Contractor shall provide MASH TL-3 compliant positive protection barriers and Terminal Impact Attenuators for locations and durations that existing concrete barriers or metal guardrails are removed.
22. Type II barricades shall have Type B steady burn amber warning lights.

Legend:

-  Work Area
-  Single Post Traffic Sign
-  Double Post Traffic Sign
-  Flagger
-  Police Officer and Police Vehicle with Visible Blue Light
-  Type III Barricade

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Signature: *Gerald D. Andrade* 4/30/26
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HIGHWAYS DIVISION

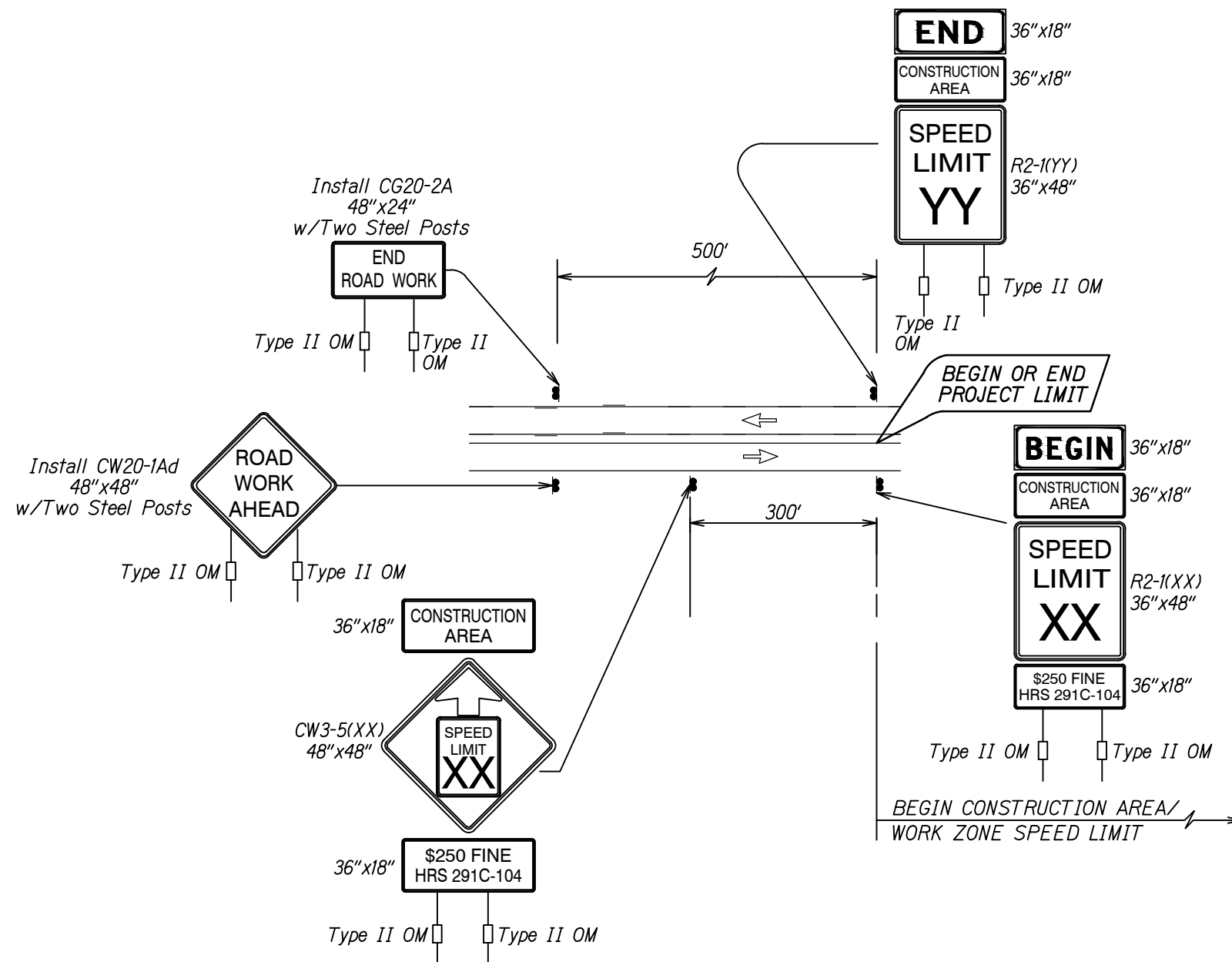
TRAFFIC CONTROL NOTES

HAWAII BELT ROAD
Seismic Retrofit of Kaholo Stream Bridge
Fed. Aid Proj. No. BR-019-2(072)

Scale: None Date: Jul. 2024

SHEET No. TC-1 OF 14 SHEETS

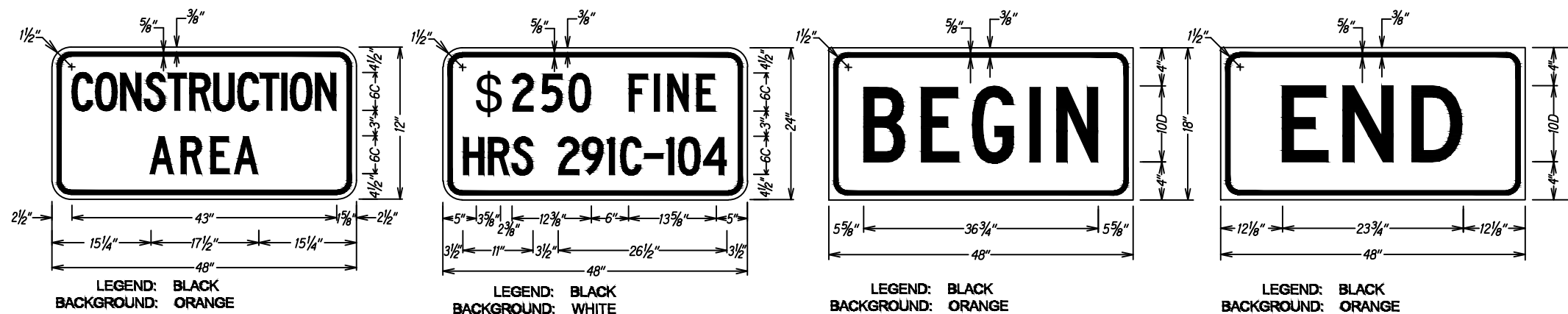
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HAWAII	HAW.	BR-019-2(072)	2024	26	85



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

Work Zone Notes:

1. This Work Zone Sign Plan is intended for use on long-term stationary work zones/ construction phases (3 Days or more). All work zones or construction phases less than 3 days duration will use Traffic Control Plans shown in Section 645 of the Special Provisions.
2. All existing regulatory speed limit signs within the work zone/project limits shall be covered and work zone speed limit sign assemblies (R2-1(35) and CW3-5(35) with "CONSTRUCTION AREA" and "\$250 FINE HRS 291C-104" Supplemental Signs) shall be displayed during lane closure hours.
3. Upon the removal of the lane closure, all work zone speed limit signs shall be covered and existing speed limit signs within the work zone/project limits shall be restored.
4. Construction signs shall be installed on both the approaching and trailing ends of each work zone.
5. Each construction sign shall have a minimum of two (2) Type II OM. Installation of each Type II OM shall be considered incidental to the various traffic control pay items.
6. All work zone speed sign assembly shall be mounted on three (3) 4.00 lbs./ft. galvanized flanged channel sign posts with a sign clearance height of five (5) feet. Sign stiffeners as specified by Standard Plan Sheet TE-02 shall be installed as needed or as directed by the Engineer.
7. The daily covering and uncovering of existing regulatory speed limit signs along with the installation, maintenance, removal and daily covering and uncovering of work zone speed limit sign assemblies shall be considered incidental to the various traffic control pay items.
8. For speed limit reduction sign placement see sheets TC-3 thru TC-11.



GERALD D. ANDRADE
LICENSED PROFESSIONAL ENGINEER
No. 10377-C
HAWAII, U.S.A.
4/30/26
EXPIRATION DATE OF THE LICENSE
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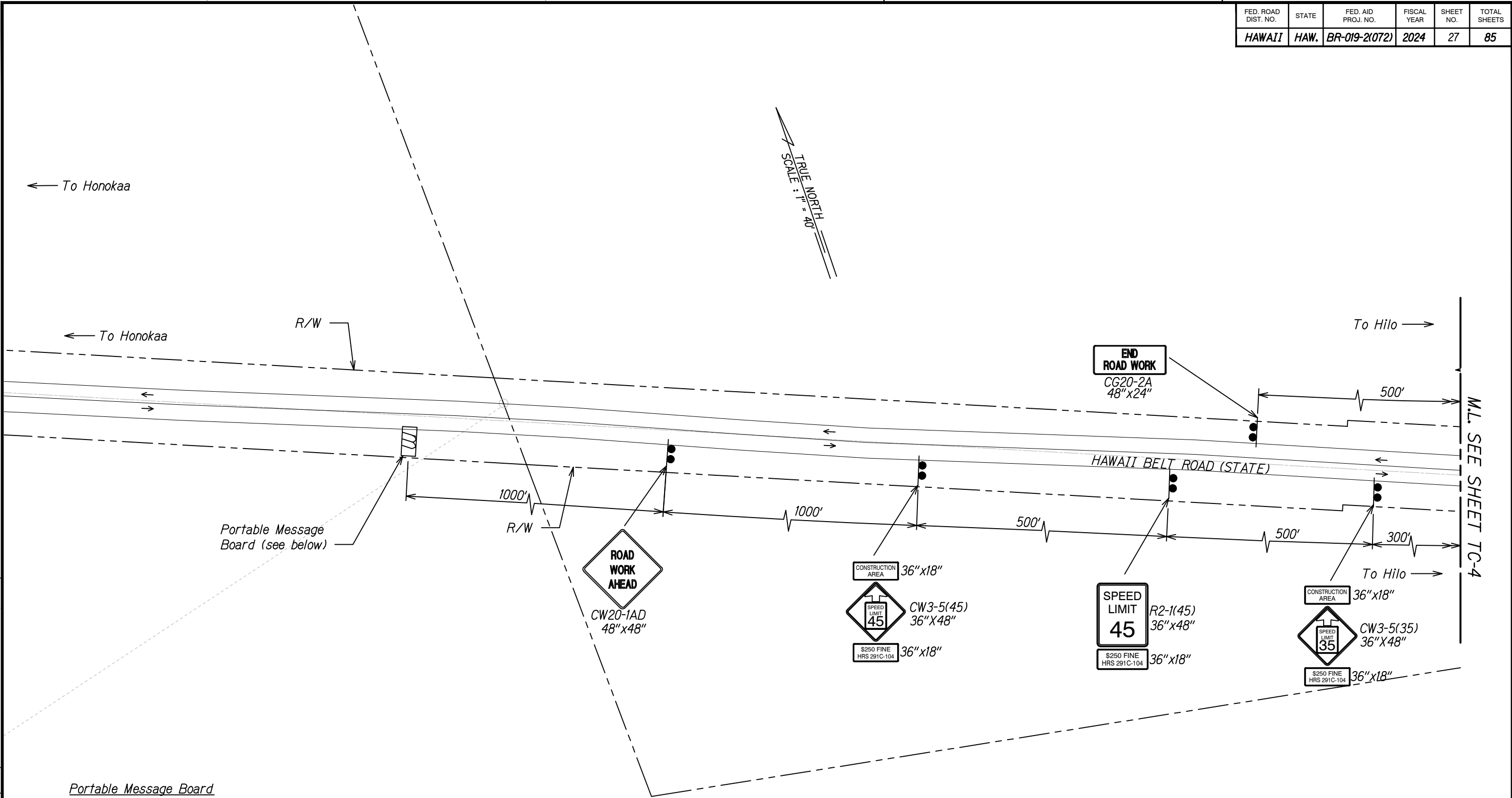
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DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
**UNDIVIDED HIGHWAY WORK ZONE
SIGNING PLAN, NOTES AND DETAILS**
HAWAII BELT ROAD
Seismic Retrofit of Kaholo Stream Bridge
Fed. Aid Proj. No. BR-019-2(072)
Scale: None Date: Jul. 2024
SHEET No. TC-2 OF 14 SHEETS

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HAWAII	HAW.	BR-019-2(072)	2024	27	85

TRUE NORTH
SCALE: 1" = 40'



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Portable Message Board

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Signature: *Gerald D. Andrade*
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STATE OF HAWAII
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HIGHWAYS DIVISION

HONOKAA ABUTMENT
TRAFFIC CONTROL PLAN - 1
HAWAII BELT ROAD
Seismic Retrofit of Kaholo Stream Bridge
Fed. Aid Proj. No. BR-019-2(072)

Scale: 1"=40' Date: Jul. 2024

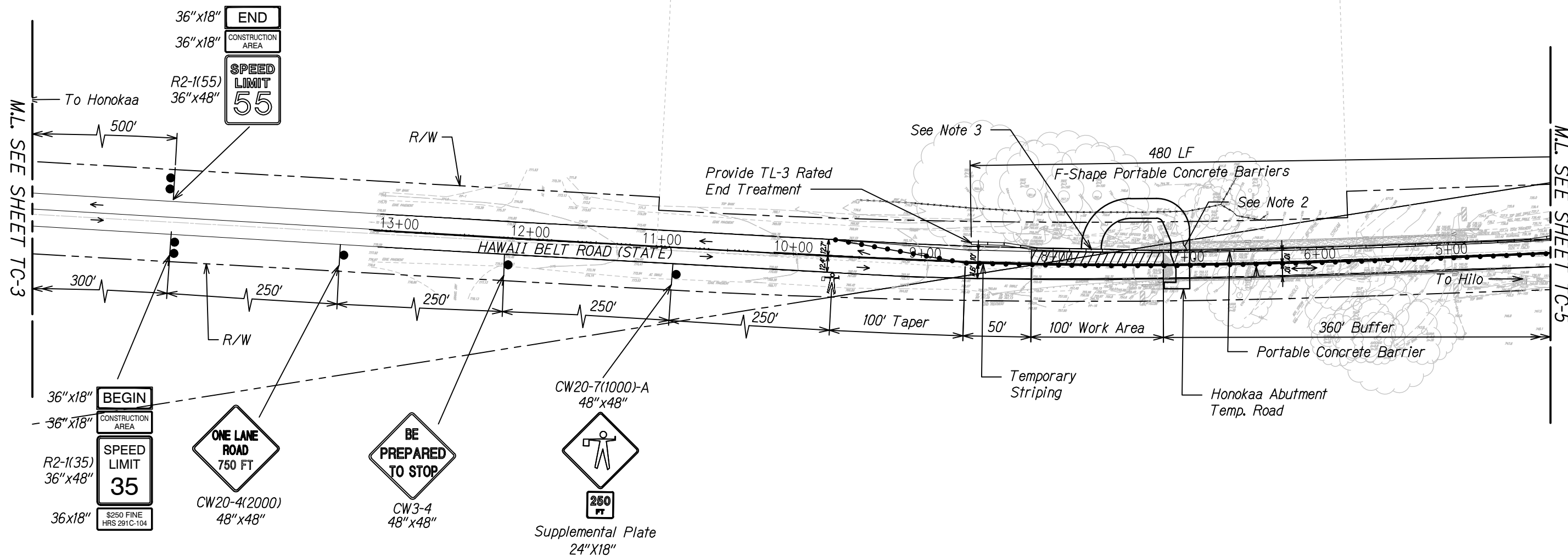
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FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	BR-019-2(072)	2024	28	85

Notes:

- Contractor shall submit a Traffic Control Plan for installation of Portable Concrete Barriers for review and acceptance prior to start of construction. Portable Concrete Barrier ends shall be protected with TL-3 Rated End Treatment, as approved by the Engineer.
- Pedestrian access through work zone along north side of the bridge shall be maintained at all times. Provide sufficient shoulder width behind portable concrete barriers for cyclists/pedestrians.
- During working hours, portable concrete barriers that are moved to provide access to the temporary access road must be stored within the access road area. Opening in Portable Concrete Barriers for access must be closed during Non-Working Hours. This cost shall be considered incidental to 651.0300 Install, Maintain, Relocate, and Remove F-Shape-Portable Concrete Barrier.

TRUE NORTH
SCALE: 1" = 40'



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GERALD D. ANDRADE
LICENSED PROFESSIONAL ENGINEER
No. 10377-C
HAWAII, U.S.A.
Signature: *Gerald D. Andrade* 4/30/26
EXPIRATION DATE OF THE LICENSE
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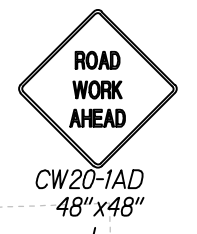
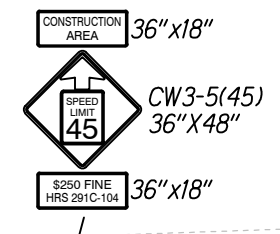
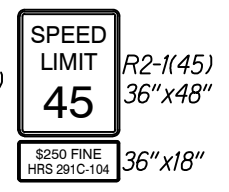
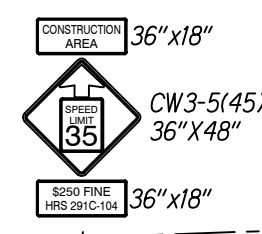
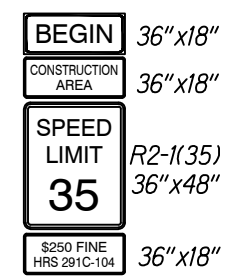
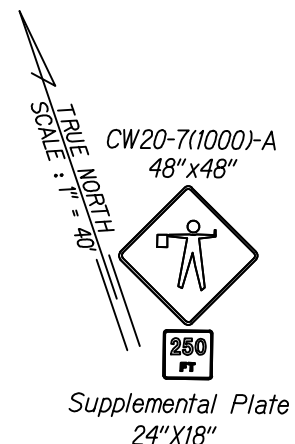
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

HONOKAA ABUTMENT
TRAFFIC CONTROL PLAN - 2
HAWAII BELT ROAD
Seismic Retrofit of Kaholo Stream Bridge
Fed. Aid Proj. No. BR-019-2(072)

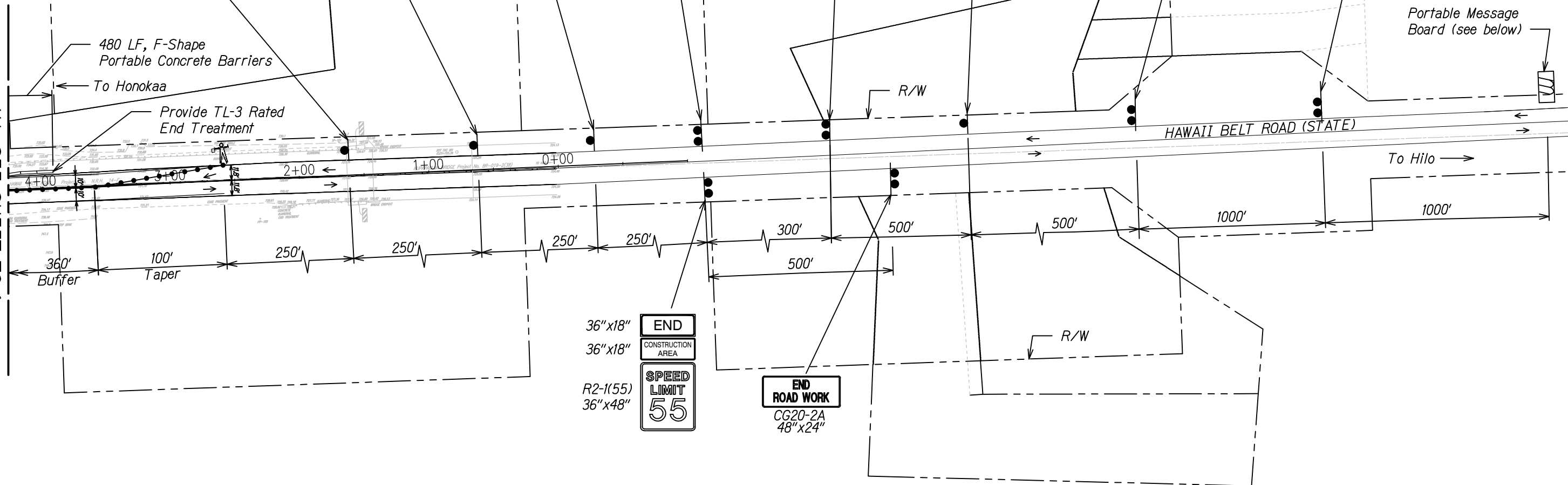
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HAWAII	HAW.	BR-019-2(072)	2024	29	85



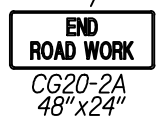
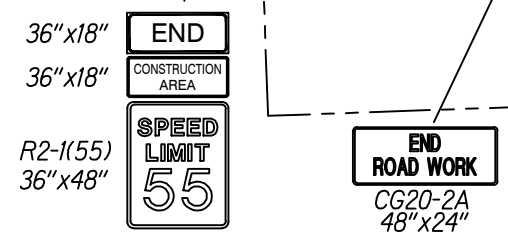
M.L. SEE SHEET TC-4



Portable Message Board

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GERALD D. ANDRADE
LICENSED PROFESSIONAL ENGINEER
No. 10377-C
HAWAII, U.S.A.

Signature: *Gerald D. Andrade* 4/30/26
EXPIRATION DATE OF THE LICENSE

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HIGHWAYS DIVISION

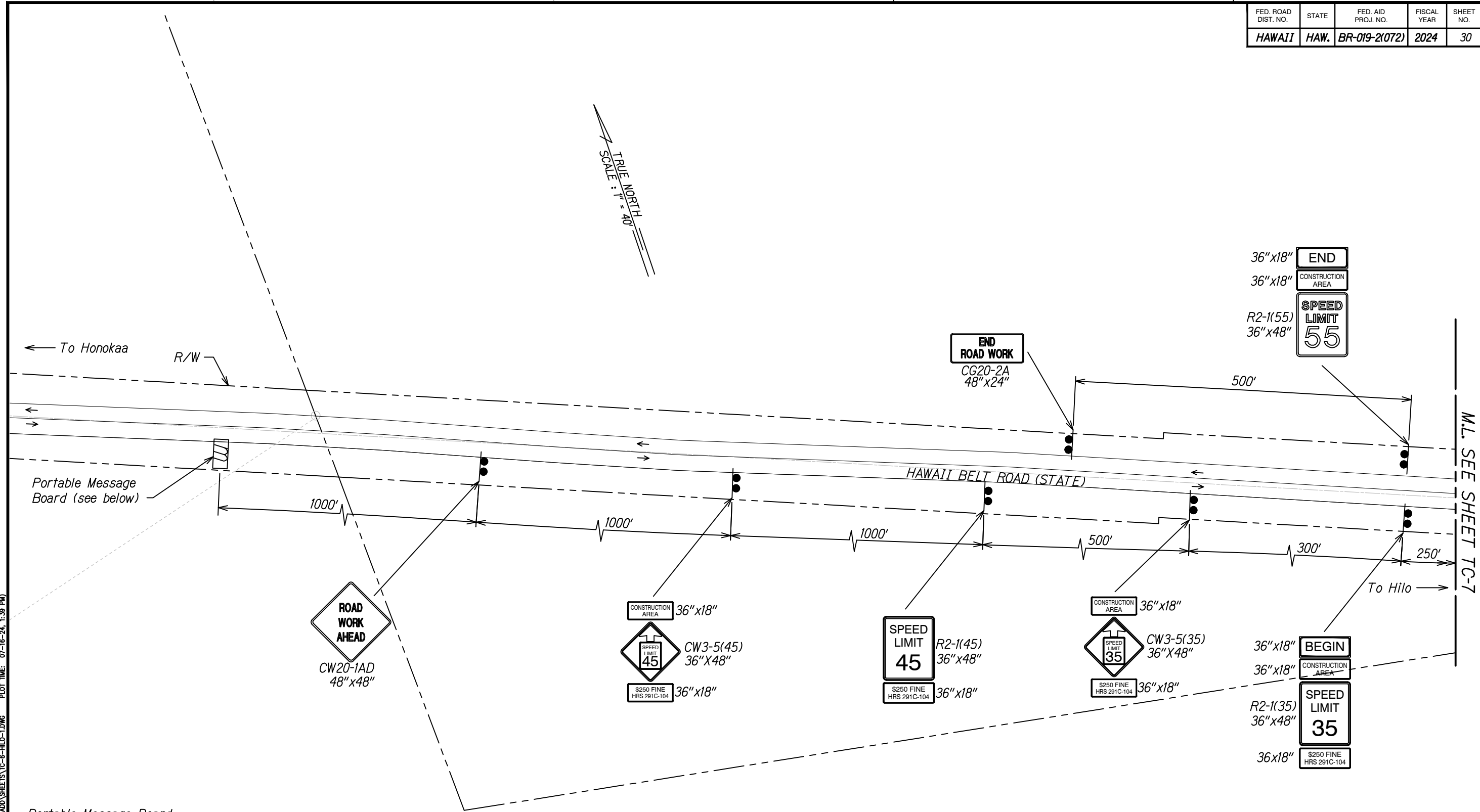
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TRAFFIC CONTROL PLAN - 3
HAWAII BELT ROAD
Seismic Retrofit of Kaholo Stream Bridge
Fed. Aid Proj. No. BR-019-2(072)

Scale: 1"=40' Date: Jul. 2024

SHEET No. TC-5 OF 14 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	BR-019-2(072)	2024	30	85

TRUE NORTH
SCALE: 1" = 40'



DESIGNED BY	DATE
DRAWN BY	
CHECKED BY	
IN CHARGE BY	
APPROVED BY	
DATE	

DRAWING NAME: T:\30801030.000-KAHOLOSTREAMBRIDGE\CADD\SHEETS\TC-6-HILO-1.DWG PLOT TIME: 07-16-24, 1:39 PM

Portable Message Board

ROAD
WORK
MM/DD - MM/DD

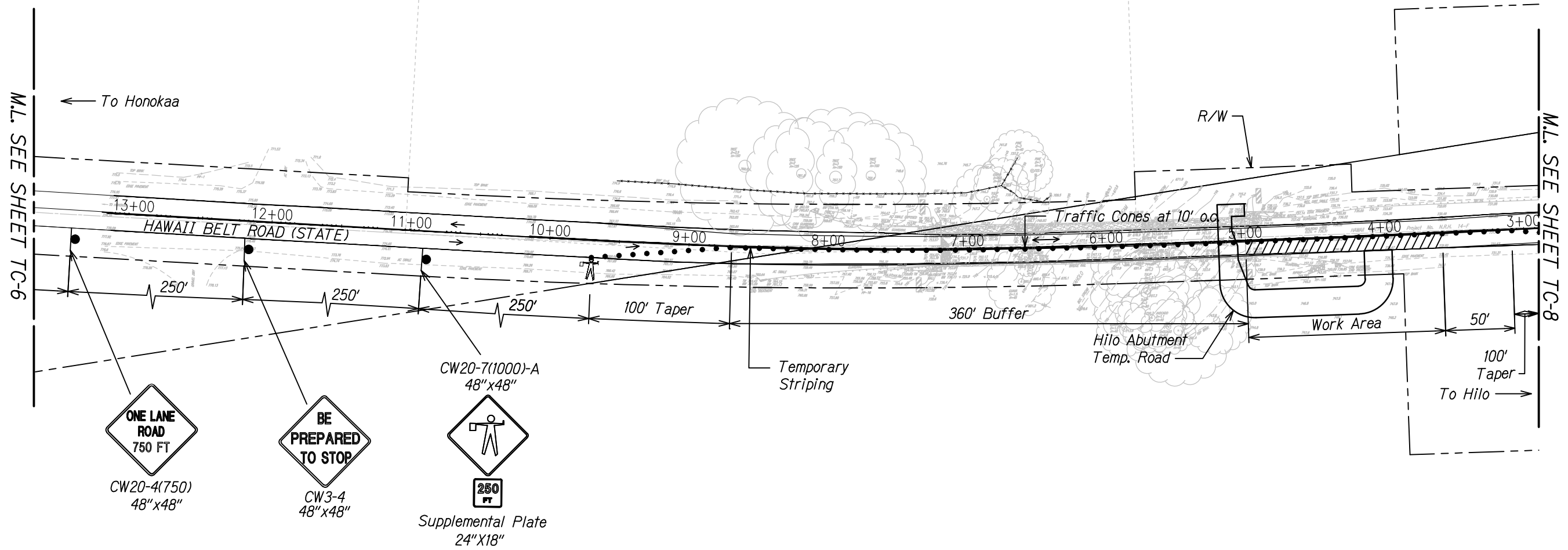
YY AM
TO
ZZ PM

GERALD D. ANDRADE
LICENSED PROFESSIONAL ENGINEER
No. 10377-C
HAWAII, U.S.A.
4/30/26
SIGNATURE
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
HILO ABUTMENT
TRAFFIC CONTROL PLAN - 1
HAWAII BELT ROAD
Seismic Retrofit of Kaholo Stream Bridge
Fed. Aid Proj. No. BR-019-2(072)
Scale: 1"=40' Date: Jul. 2024
SHEET No. TC-6 OF 14 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	BR-019-2(072)	2024	31	85

TRUE NORTH
SCALE: 1" = 40'



ONE LANE ROAD
750 FT
CW20-4(750)
48" x 48"

BE PREPARED TO STOP
CW3-4
48" x 48"

CW20-7(1000)-A
48" x 48"
250 FT
Supplemental Plate
24" x 18"

DESIGNED BY	DATE
DRAWN BY	
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IN CHARGE BY	
APPROVED BY	
DATE	

DRAWING NAME: T:\30801030.000-KAHOLOSTREAMBRIDGE\CADD\SHEETS\TC-7-HILO-2.DWG PLOT TIME: 07-16-24, 1:40 PM

GERALD D. ANDRADE
LICENSED PROFESSIONAL ENGINEER
No. 10377-C
HAWAII, U.S.A.
Signature: *Gerald D. Andrade* 4/30/26
EXPIRATION DATE OF THE LICENSE
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION

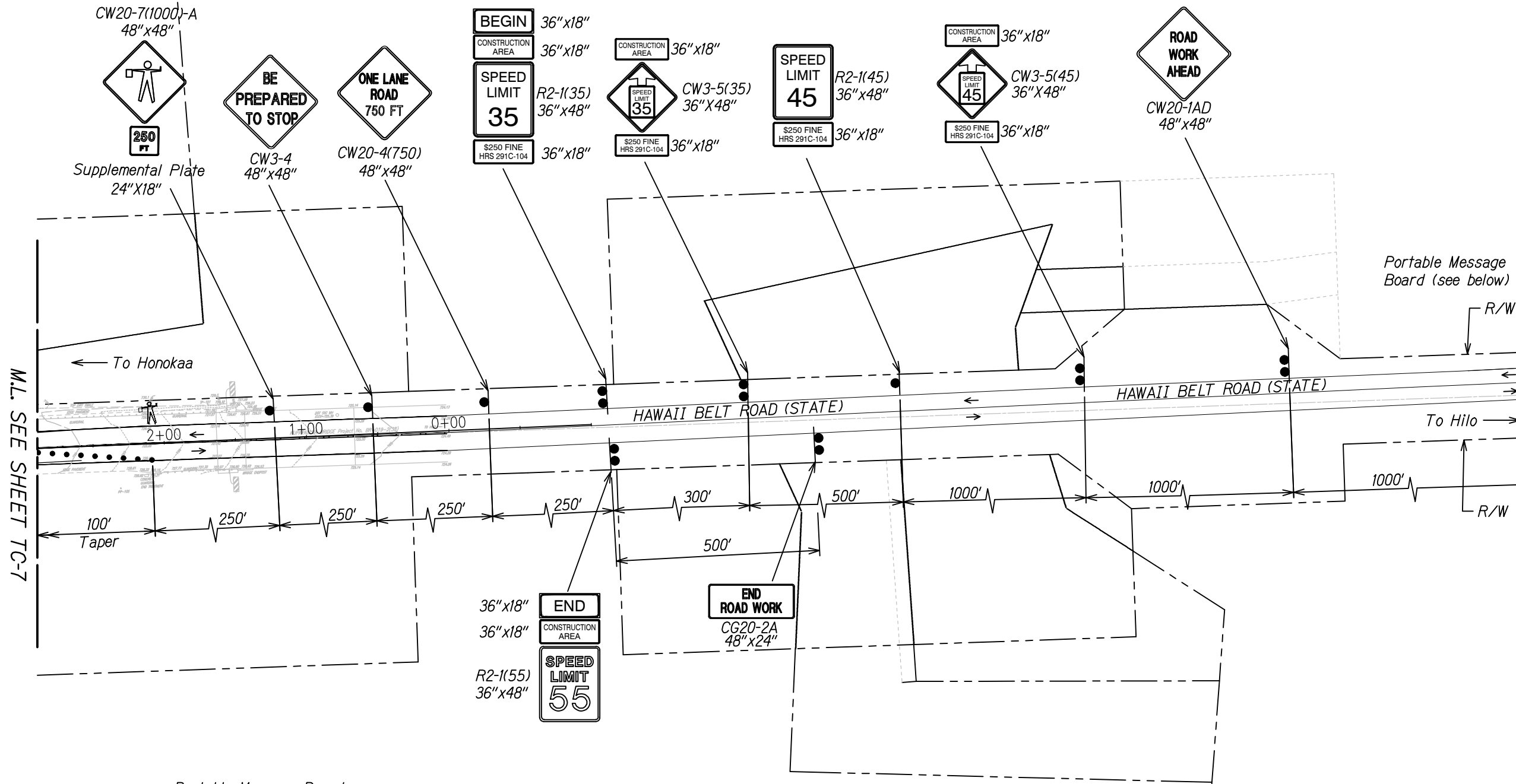
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

**HILO ABUTMENT
TRAFFIC CONTROL PLAN - 2**
HAWAII BELT ROAD
Seismic Retrofit of Kaholo Stream Bridge
Fed. Aid Proj. No. BR-019-2(072)

Scale: 1"=40' Date: Jul. 2024

SHEET No. TC-7 OF 14 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	BR-019-2(072)	2024	32	85



M.L. SEE SHEET TC-7

Portable Message Board

R O A D
W O R K
MM/DD - MM/DD

Y Y A M
T O
Z Z P M

DESIGNED BY	DATE
DRAWN BY	
CHECKED BY	
IN CHARGE BY	
APPROVED BY	
NO. OF SHEETS	
SHEET NO.	

DRAWING NAME: T:\30801030.000-KAHOLOSTREAMBRIDGE\CADD\SHEETS\TC-8-HILO-3.DWG PLOT TIME: 07-16-24, 1:41 PM



Signature: *Gerald D. Andrade* 4/30/26
EXPIRATION DATE OF THE LICENSE
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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

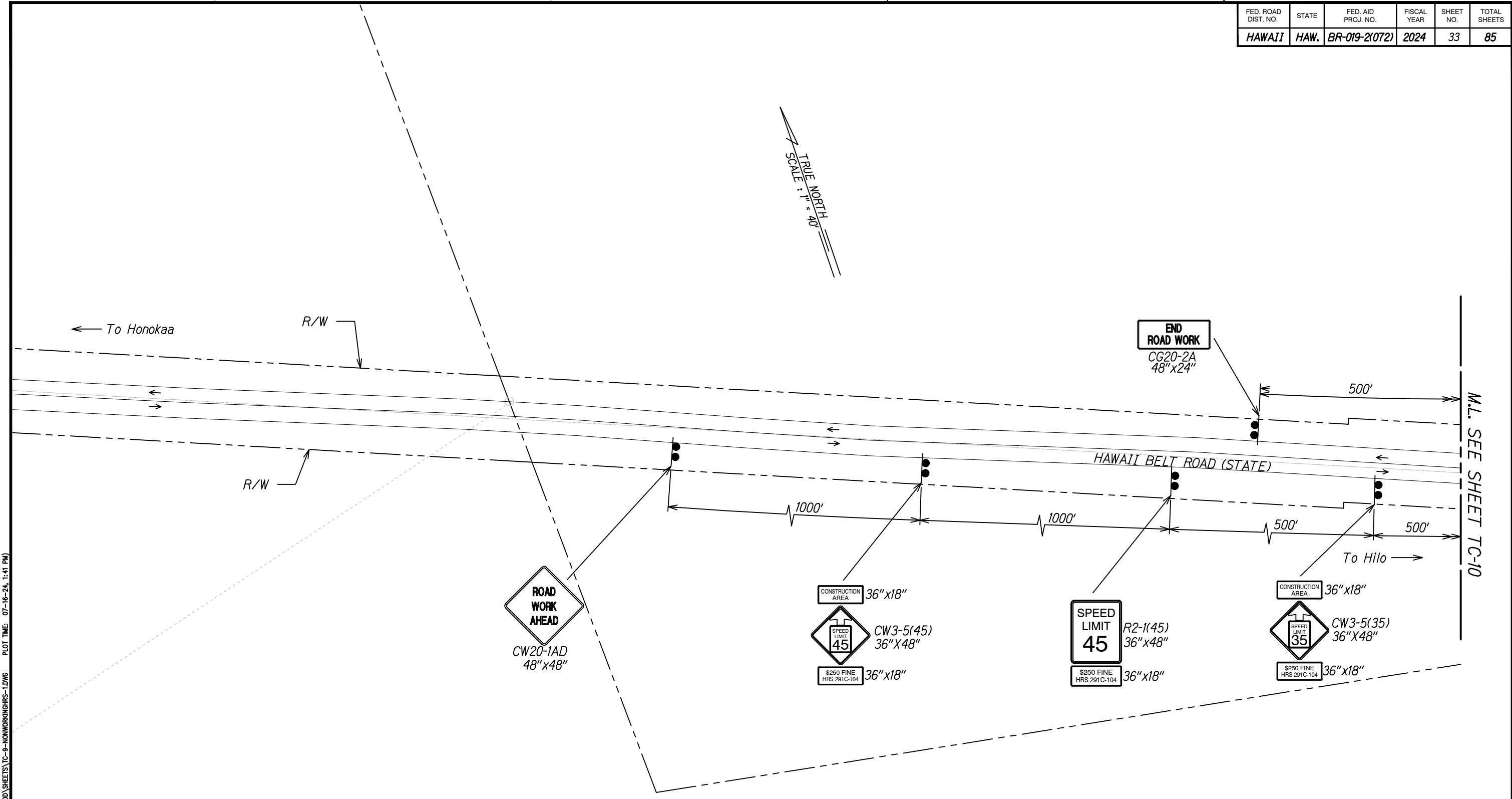
HILO ABUTMENT
TRAFFIC CONTROL PLAN - 3
HAWAII BELT ROAD
Seismic Retrofit of Kaholo Stream Bridge
Fed. Aid Proj. No. BR-019-2(072)

Scale: 1"=40' Date: Jul. 2024

SHEET No. TC-8 OF 14 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	BR-019-2(072)	2024	33	85

TRUE NORTH
SCALE: 1" = 40'



DESIGNED BY	DATE
DRAWN BY	
CHECKED BY	
IN CHARGE BY	
APPROVED BY	
DATE	

DRAWING NAME: T:\30801030.000-KAHOLOSTREAMBRIDGE\CADD\SHEETS\TC-9-NONWORKINGHRS-LDWG PLOT TIME: 07-16-24, 1:41 PM

GERALD D. ANDRADE
LICENSED PROFESSIONAL ENGINEER
No. 10377-C
HAWAII, U.S.A.
4/30/26
EXPIRATION DATE OF THE LICENSE
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

**NON-WORKING HOURS
TRAFFIC CONTROL PLAN - 1**
HAWAII BELT ROAD
Seismic Retrofit of Kaholo Stream Bridge
Fed. Aid Proj. No. BR-019-2(072)

Scale: 1"=40' Date: Jul. 2024

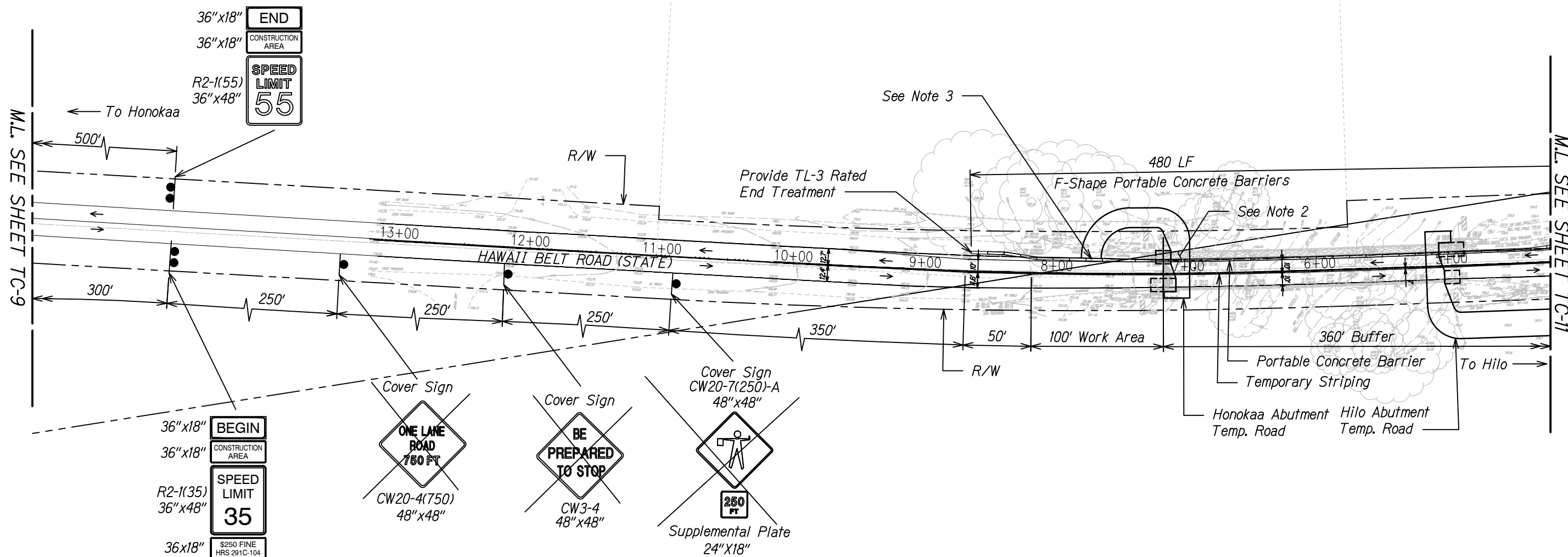
SHEET No. TC-9 OF 14 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	BR-019-2(072)	2024	34	85

Notes:

- Contractor shall submit a Traffic Control Plan for installation of Portable Concrete Barriers for review and acceptance prior to start of construction. Portable Concrete Barrier ends shall be protected with TL-3 Rated End Treatment, as approved by the Engineer.
- Pedestrian access through work zone along north side of the bridge shall be maintained at all times. Provide sufficient shoulder width behind portable concrete barriers for cyclists/pedestrians.
- During working hours, portable concrete barriers that are moved to provide access to the temporary access road must be stored within the access road area. Opening in Portable Concrete Barriers for access must be closed during Non-Working Hours. This cost shall be considered incidental to 651.0300 Install, Maintain, Relocate, and Remove F-Shape-Portable Concrete Barrier.

TRUE NORTH
SCALE: 1" = 40'



DESIGNED BY	DATE
DRAWN BY	
CHECKED BY	
IN CHARGE BY	
APPROVED BY	
DATE	

DRAWING NAME: T:\30801030.000-KAHOLOSTREAMBRIDGE\CADD\SHEETS\TC-10-NONWORKINGHRS-2.DWG PLOT TIME: 07-19-24, 4:28 PM

GERALD D. ANDRADE
LICENSED PROFESSIONAL ENGINEER
No. 10377-C
HAWAII, U.S.A.
Signature: *Gerald D. Andrade* 4/30/26
EXPIRATION DATE OF THE LICENSE
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

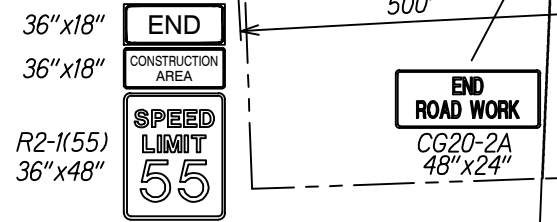
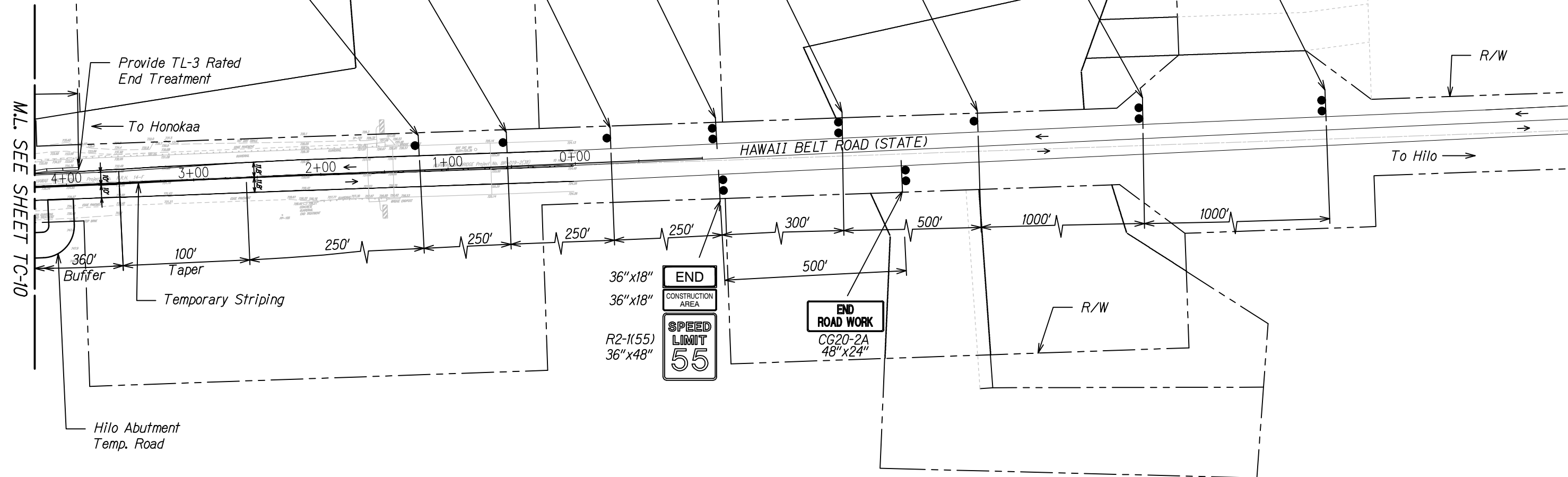
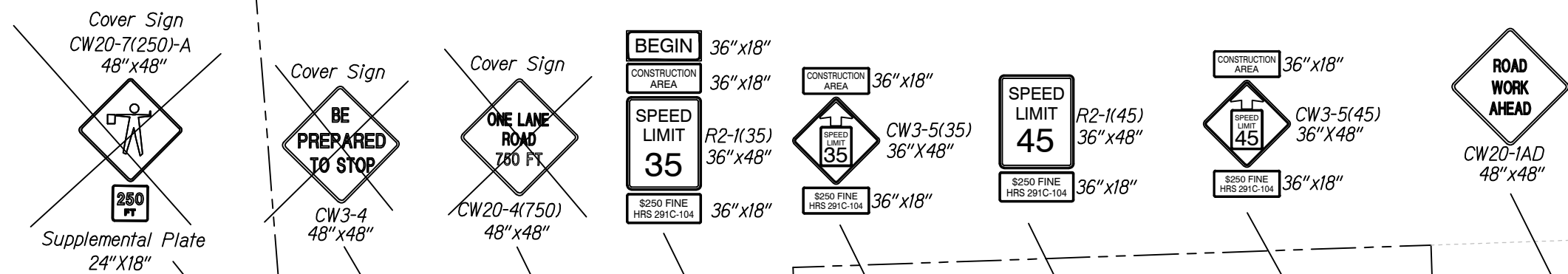
NON-WORKING HOURS
TRAFFIC CONTROL PLAN - 2
HAWAII BELT ROAD
Seismic Retrofit of Kaholo Stream Bridge
Fed. Aid Proj. No. BR-019-2(072)

Scale: 1"=40' Date: Jul. 2024

SHEET No. TC-10 OF 14 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	BR-019-2(072)	2024	35	85

TRUE NORTH
SCALE: 1" = 40'



DESIGNED BY	DATE
DRAWN BY	
CHECKED BY	
IN CHARGE BY	
APPROVED BY	
DATE	

DRAWING NAME: T:\30801030.000-KAHOLOSTREAMBRIDGE\CADD\SHEETS\TC-11-NONWORKINGHRS-3.DWG PLOT TIME: 07-16-24, 1:43 PM



Signature: *Gerald D. Andrade* 4/30/26
EXPIRATION DATE OF THE LICENSE
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

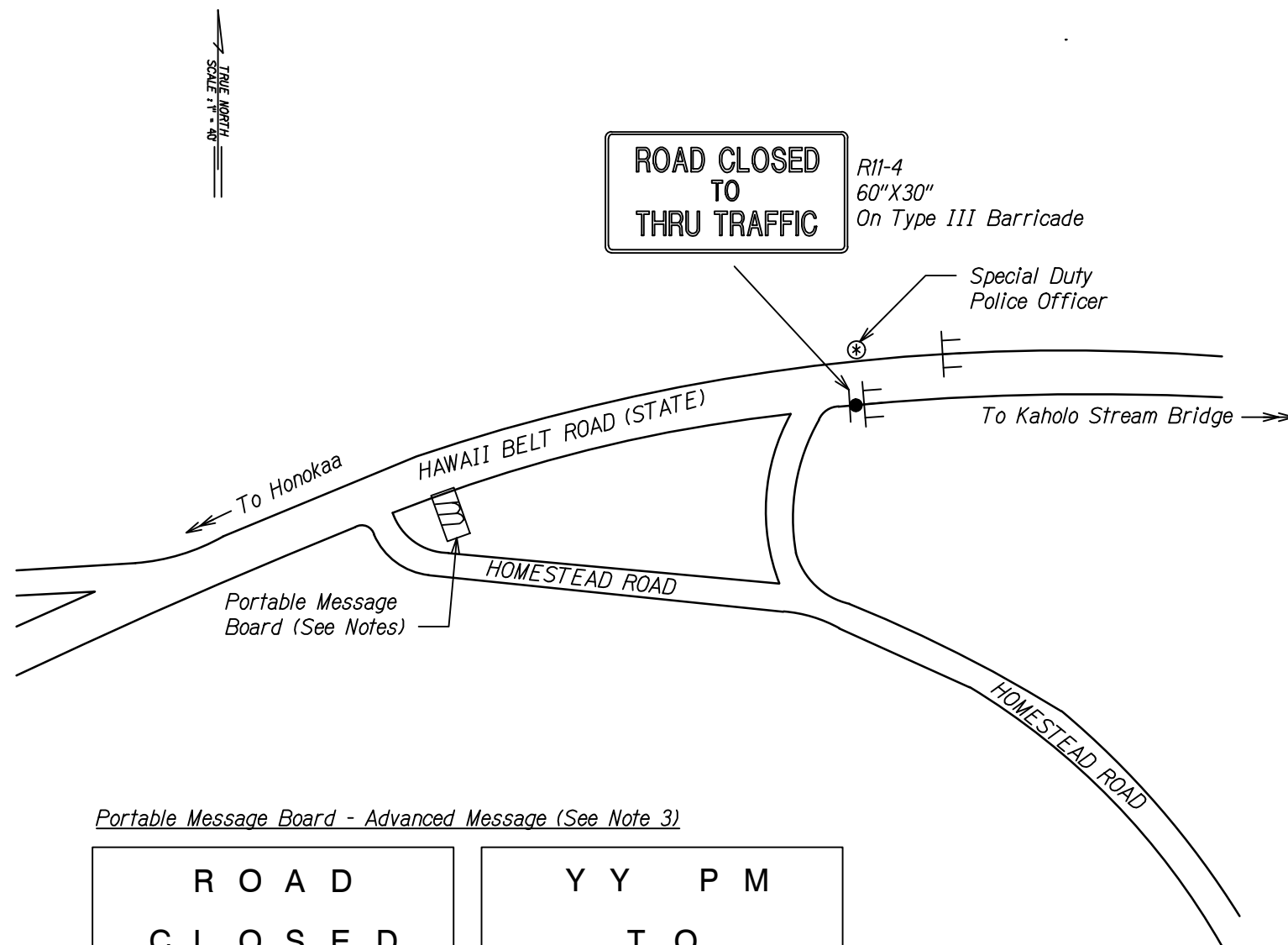
**NON-WORKING HOURS
TRAFFIC CONTROL PLAN - 3**

HAWAII BELT ROAD
Seismic Retrofit of Kaholo Stream Bridge
Fed. Aid Proj. No. BR-019-2(072)

Scale: 1"=40' Date: Jul. 2024

SHEET No. TC-11 OF 14 SHEETS

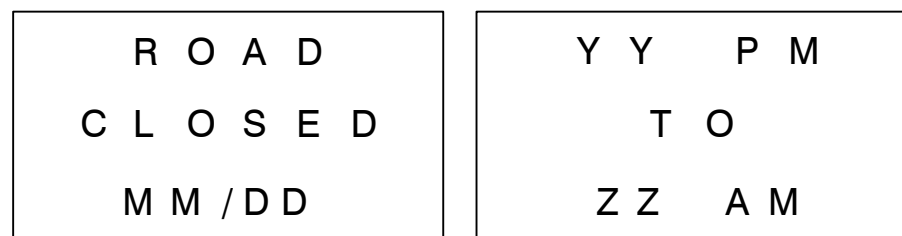
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	BR-019-2(072)	2024	36	85



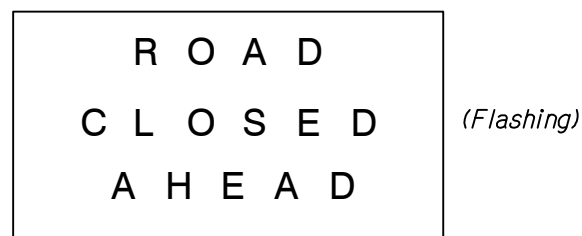
Notes:

1. Full closure shall be allowable only at night for bridge jacking operations only and shall be limited to the hours of 12:00AM to 3:00AM. A Noise Variance Permit will be obtained by the State to cover bridge jacking operations.
2. A minimum of 30 days prior to scheduling full road closure, the Contractor shall coordinate with County/State Emergency Management Services to develop a plan to address passage of emergency vehicles through the work zone during closure.
3. A minimum of 14 days prior to full closure, the Contractor shall notify the public via newspaper advertisement of the schedule of the closure to the satisfaction of the Engineer. The cost of public notification shall be considered incidental to Traffic Control.
4. Contractor shall install portable message board warning motorists of night closure a minimum of two weeks in advance. The cost of the portable message board shall be considered incidental to Traffic Control.

Portable Message Board - Advanced Message (See Note 3)



Portable Message Board - During Night Closure



DESIGNED BY	DATE
DRAWN BY	
CHECKED BY	
IN CHARGE BY	
NO. _____	

DRAWING NAME: T:\30801030.000-KAHOLOSTREAMBRIDGE\CADD\SHEETS\TC-12 - FULL CLOSURE-1.DWG PLOT TIME: 07-22-24, 9:46 AM



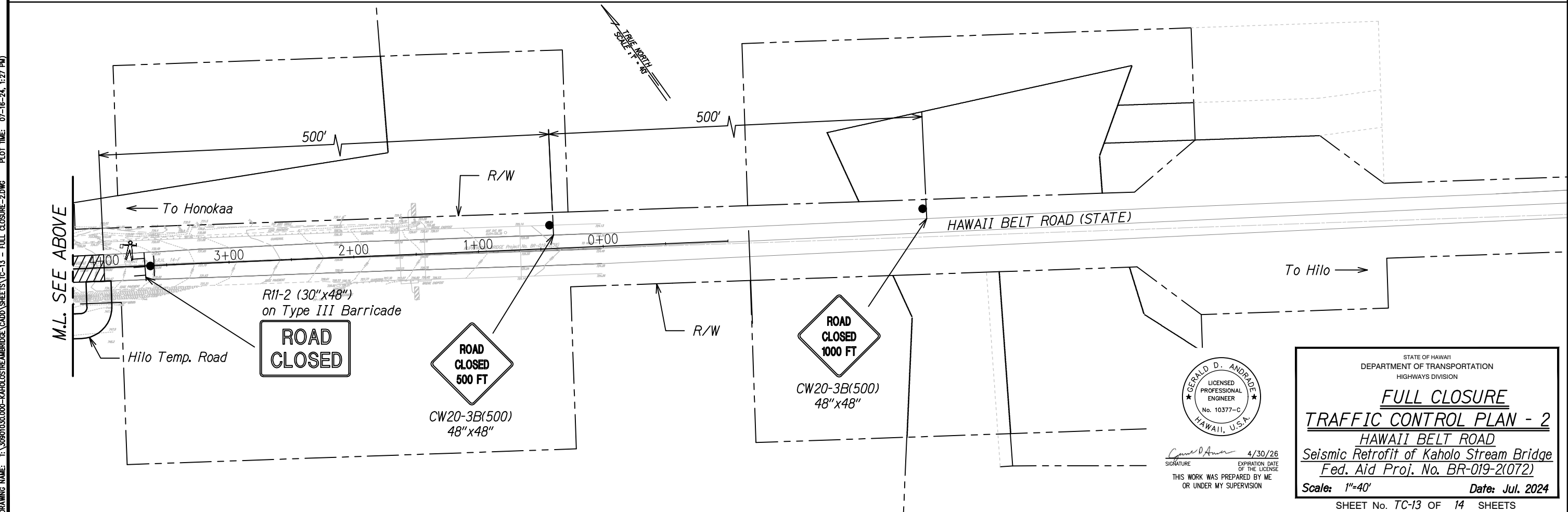
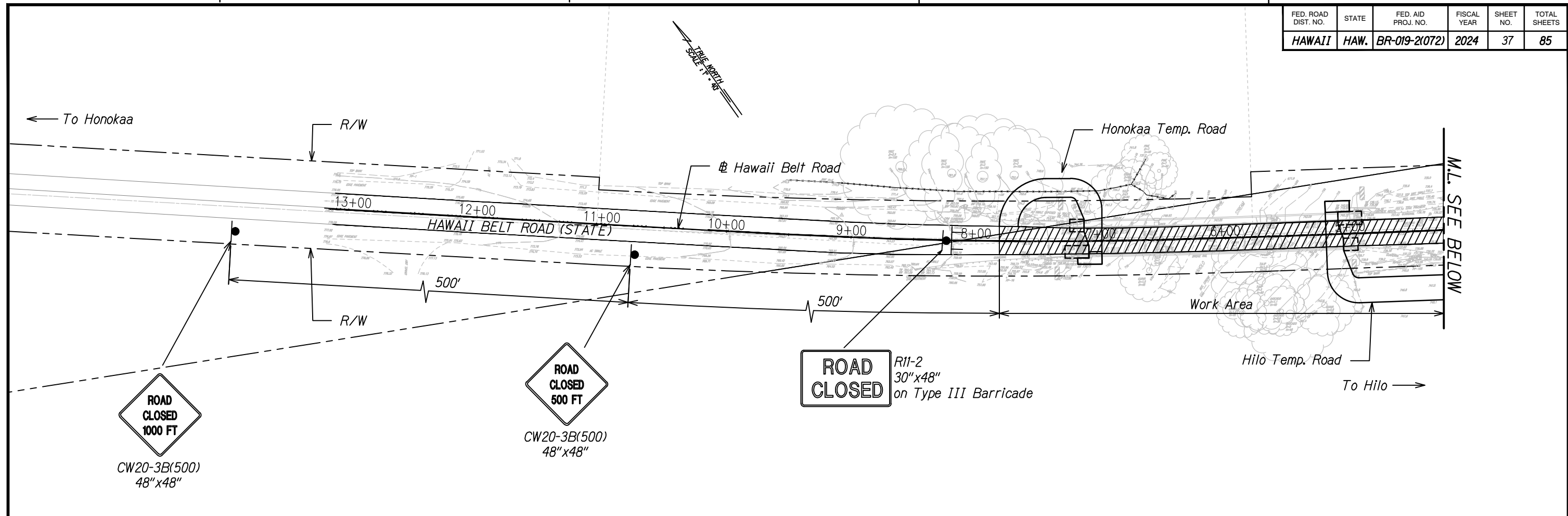
Signature: *Gerald D. Andrade* 4/30/26
 EXPIRATION DATE OF THE LICENSE
 THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION

STATE OF HAWAII
 DEPARTMENT OF TRANSPORTATION
 HIGHWAYS DIVISION

FULL CLOSURE
TRAFFIC CONTROL PLAN - 1
HAWAII BELT ROAD
Seismic Retrofit of Kaholo Stream Bridge
Fed. Aid Proj. No. BR-019-2(072)


Scale: NTS Date: Jul. 2024

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	BR-019-2(072)	2024	37	85



DESIGNED BY	DATE
DRAWN BY	
CHECKED BY	
IN CHARGE BY	
APPROVED BY	
NO. _____	

DRAWING NAME: T:\30801030.000-KAHOLOSTREAMBRIDGE\CADD\SHEETS\TC-13 - FULL CLOSURE-2.DWG PLOT TIME: 07-16-24, 1:27 PM


 SIGNATURE: *Gerald D. Andrade* 4/30/26
 EXPIRATION DATE OF THE LICENSE
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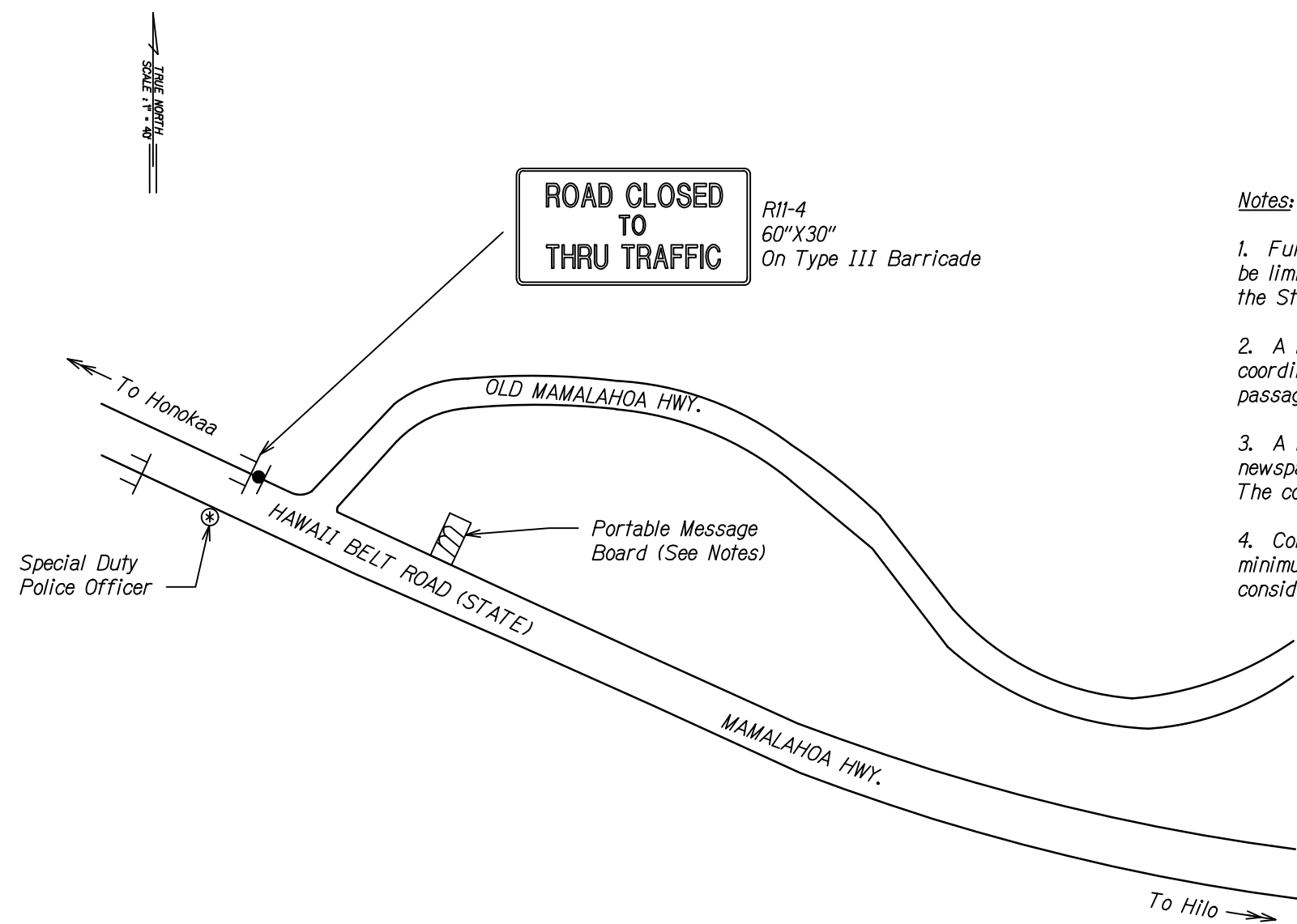
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

FULL CLOSURE
TRAFFIC CONTROL PLAN - 2
HAWAII BELT ROAD
Seismic Retrofit of Kaholo Stream Bridge
Fed. Aid Proj. No. BR-019-2(072)

Scale: 1"=40' Date: Jul. 2024

SHEET No. TC-13 OF 14 SHEETS

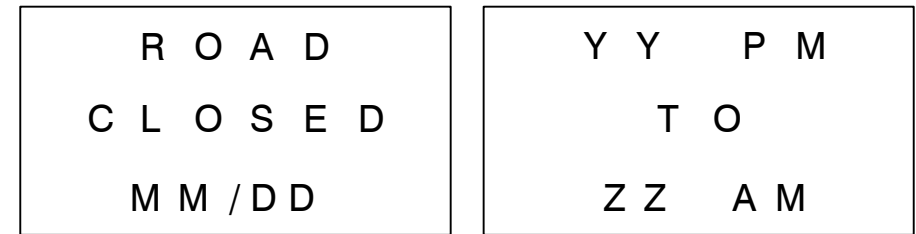
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	BR-019-2(072)	2024	38	85



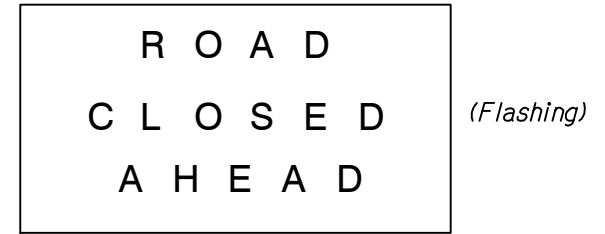
Notes:

1. Full closure shall be allowable only at night for bridge jacking operations only and shall be limited to the hours of 12:00AM to 3:00AM. A Noise Variance Permit will be obtained by the State to cover bridge jacking operations.
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Portable Message Board - Advanced Message (See Note 3)



Portable Message Board - During Night Closure



Signature: *Gerald D. Andrade* 4/30/26
 EXPIRATION DATE OF THE LICENSE
 THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION

STATE OF HAWAII
 DEPARTMENT OF TRANSPORTATION
 HIGHWAYS DIVISION

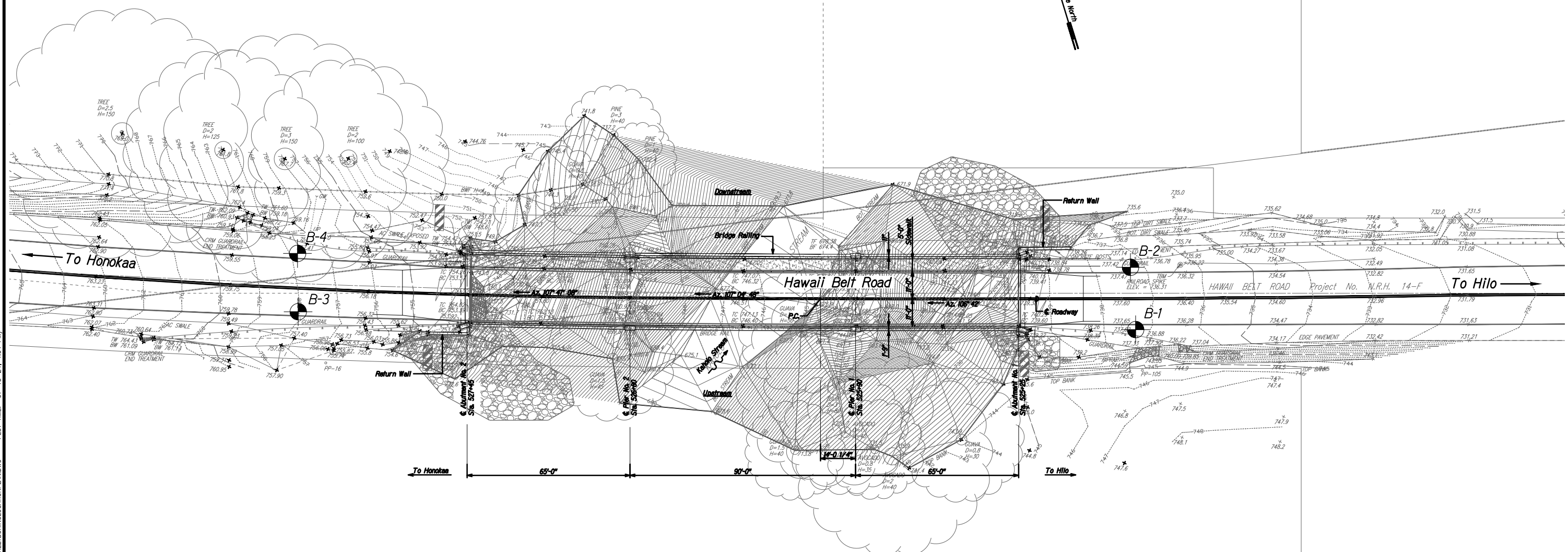
FULL CLOSURE
TRAFFIC CONTROL PLAN - 3
HAWAII BELT ROAD
Seismic Retrofit of Kaholo Stream Bridge
Fed. Aid Proj. No. BR-019-2(072)

Scale: NTS Date: Jul. 2024

DESIGNED BY	DATE
DRAWN BY	
CHECKED BY	
IN CHARGE BY	
REVISIONS	
NO. 1	
NO. 2	
NO. 3	

DRAWING NAME: T:\30801030.000-KAHOLOSTREAMBRIDGE\CADD\SHEETS\TC-14 - FULL CLOSURE-3.DWG PLOT TIME: 07-22-24, 9:50 AM

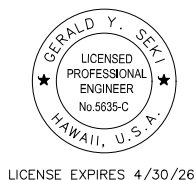
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	BR-019-2(072)	2024	39	85



DESIGNED BY	DATE
DRAWN BY	
CHECKED BY	
APPROVED BY	
DATE	

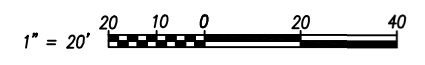
DRAWING NAME: A:\DRAWING\DRAWING\WORKING\8063-10_KAHOLO_BRIDGE_8063-10SHEETBORINGLOCATIONPLAN.DWG PLOT TIME: 07-15-24, 4:04 PM

LEGEND:
 Approximate Boring Location



LICENSE EXPIRES 4/30/26
 THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION

Gerald Y. Seki



STATE OF HAWAII
 DEPARTMENT OF TRANSPORTATION
 HIGHWAYS DIVISION

BORING LOCATION PLAN

HAWAII BELT ROAD
Seismic Retrofit of Kaholo Stream Bridge
Fed. Aid Proj. No. BR-019-2(072)

Scale: As Noted Date: Jul. 2024

SHEET No. B-1 OF 9 SHEETS




GEOLABS, INC.
Geotechnical Engineering

Soil Log Legend

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

NOTE: DUAL SYMBOLS ARE USED TO INDICATE BORDERLINE SOIL CLASSIFICATIONS
LEGEND

- | | | | |
|--|--|------|---|
| | (2-INCH) O.D. STANDARD PENETRATION TEST | LL | LIQUID LIMIT (NP=NON-PLASTIC) |
| | (3-INCH) O.D. MODIFIED CALIFORNIA SAMPLE | PI | PLASTICITY INDEX (NP=NON-PLASTIC) |
| | SHELBY TUBE SAMPLE | TV | TORVANE SHEAR (tsf) |
| | GRAB SAMPLE | UC | UNCONFINED COMPRESSION OR UNIAXIAL COMPRESSION STRENGTH |
| | CORE SAMPLE | TXUU | UNCONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION (ksf) |
| | WATER LEVEL OBSERVED IN BORING AT TIME OF DRILLING | | |
| | WATER LEVEL OBSERVED IN BORING AFTER DRILLING | | |
| | WATER LEVEL OBSERVED IN BORING OVERNIGHT | | |



GEOLABS, INC.
Geotechnical Engineering

Soil Classification Log Key

(with deviations from ASTM D2488)

GEOLABS, INC. CLASSIFICATION*	
GRANULAR SOIL (- #200 <50%)	COHESIVE SOIL (- #200 ≥50%)
<ul style="list-style-type: none"> PRIMARY constituents are composed of the largest percent of the soil mass. Primary constituents are capitalized and bold (i.e., GRAVEL, SAND) SECONDARY constituents are composed of a percentage less than the primary constituent. If the soil mass consists of 12 percent or more fines content, a cohesive constituent is used (SILTY or CLAYEY); otherwise, a granular constituent is used (GRAVELLY or SANDY) provided that the secondary constituent consists of 20 percent or more of the soil mass. Secondary constituents are capitalized and bold (i.e., SANDY GRAVEL, CLAYEY SAND) and precede the primary constituent. accessory descriptions compose of the following: with some: >12% with a little: 5 - 12% with traces of: <5% accessory descriptions are lower cased and follow the Primary and Secondary Constituents (i.e., SILTY GRAVEL with a little sand) 	<ul style="list-style-type: none"> PRIMARY constituents are based on plasticity. Primary constituents are capitalized and bold (i.e., CLAY, SILT) SECONDARY constituents are composed of a percentage less than the primary constituent, but more than 20 percent of the soil mass. Secondary constituents are capitalized and bold (i.e., SANDY CLAY, SILTY CLAY, CLAYEY SILT) and precede the primary constituent. accessory descriptions compose of the following: with some: >12% with a little: 5 - 12% with traces of: <5% accessory descriptions are lower cased and follow the Primary and Secondary Constituents (i.e., SILTY CLAY with some sand)
EXAMPLE: Soil Containing 60% Gravel, 25% Sand, 15% Fines. Described as: SILTY GRAVEL with some sand	

RELATIVE DENSITY / CONSISTENCY					
Granular Soils			Cohesive Soils		
N-Value (Blows/Foot)		Relative Density	N-Value (Blows/Foot)		Consistency
SPT	MCS		SPT	MCS	
0 - 4	0 - 7	Very Loose	0 - 2	0 - 4	Very Soft
4 - 10	7 - 18	Loose	2 - 4	4 - 7	Soft
10 - 30	18 - 55	Medium Dense	4 - 8	7 - 15	Medium Stiff
30 - 50	55 - 91	Dense	8 - 15	15 - 27	Stiff
> 50	> 91	Very Dense	15 - 30	27 - 55	Very Stiff
			> 30	> 55	Hard

- MOISTURE CONTENT DEFINITIONS**
- Dry: Absence of moisture, dry to the touch
 - Moist: Damp but no visible water
 - Wet: Visible free water

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

- ABBREVIATIONS**
- WOH: Weight of Hammer
 - WOR: Weight of Drill Rods
 - SPT: Standard Penetration Test Split-Spoon Sampler
 - MCS: Modified California Sampler
 - PP: Pocket Penetrometer

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

DESIGNED BY	DATE
DRAWN BY	
CHECKED BY	
IN CHARGE	
QUANTITIES BY	
CHECKED BY	

DRAWING NAME: A:\DRAWING\DRAWING\WORKING\8063-10_KAHOLO_BRIDGE_8063-10SHEETBORINGLOGS.DWG PLOT TIME: 07-15-24, 4:06 PM

LOG LEGEND FOR SOIL_8063-10.GPJ GEOLABS.GDT 10/11/21

SOIL CLASS LOG KEY_8063-10.GPJ GEOLABS.GDT 10/11/21



LICENSE EXPIRES 4/30/26

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION

Gerald Y. Seki

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

BORING LOG LEGENDS













HAWAII BELT ROAD
Seismic Retrofit of Kaholo Stream Bridge
Fed. Aid Proj. No. BR-019-2(072)

Scale: As Noted Date: Jul. 2024

SHEET No. B-2 OF 9 SHEETS

	GEOLABS, INC. Geotechnical Engineering	Rock Log Legend
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ROCK DESCRIPTIONS

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

ROCK DESCRIPTION SYSTEM

ROCK FRACTURE CHARACTERISTICS

The following terms describe general fracture spacing of a rock:

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

DEGREE OF WEATHERING

The following terms describe the chemical weathering of a rock:

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

HARDNESS

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

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

GEOTECHNICAL NOTES:

1. A geotechnical engineering report entitled "Geotechnical Engineering Exploration, Seismic Retrofit of Kaholo Bridge, Hawaii Belt Road, Project No. BR-019-2(072), District of Hamakua, Island of Hawaii" dated December 13, 2023 has been prepared by Geolabs, Inc. A copy of the report is on file at the office of the Engineer for review by the Contractor.
2. For boring locations, see Sheet B-1.
3. The information presented in the logs of borings depict the subsurface conditions encountered at that specified location and at the time of the field exploration only. Variations of subsoil conditions from those depicted in the logs of borings may occur between and beyond the borings.
4. The penetration resistance shown on the logs of borings indicate the number of blows required for the specific sampler type used. The blow counts may need to be factored to obtain the Standard Penetration Test (SPT) blow counts.
5. The data given is for general information only. Bidders shall examine the site and the boring data and draw their own conclusions therefrom as to the character of materials to be encountered. The Engineer will not assume responsibility for variations of subsoil quality or conditions other than at the boring locations shown and at the time the borings were taken.



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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

ROCK LOG LEGEND & NOTES

HAWAII BELT ROAD
Seismic Retrofit of Kaholo Stream Bridge
Fed. Aid Proj. No. BR-019-2(072)

Scale: As Noted Date: Jul. 2024

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DRAWING NAME: A:\DRAWING\DRAWING\WORKING\B063-10_KAHOLO_BRIDGE_B063-10SHEETBORINGLOGS.DWG PLOT TIME: 07-15-24, 4:06 PM

LOG LEGEND FOR ROCK: B063-00LGPJ.GEOLABS.GDT 10/11/21

GEOLABS, INC. Geotechnical Engineering		SEISMIC RETROFIT OF KAHOLO BRIDGE HAWAII BELT ROAD, PROJECT NO. BR-019-2(072) DISTRICT OF HAMAKUA, ISLAND OF HAWAII					Log of Boring 1			
Other Tests	Moisture Content (%)	Dry Unit Weight (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample Graphic	USCS	Approximate Ground Surface Elevation (feet): 737 *
										Description
										8-inch ASPHALTIC CONCRETE
									GM	Gray with some brown SILTY GRAVEL (BASALTIC), medium dense, moist (fill)
									ML	Orangish brown with gray mottling CLAYEY SILT with some sand (basaltic) and a little decomposed gravel, stiff to very stiff, moist (saprolite)
LL=43 PI=10	52				14		5			grades with cobble sized basalt corestones locally
					85		3.5			
TXUU Su=1.7 ksf	54	68			41		10			grades to medium stiff and very moist locally
					17		0.8			
Direct Shear	65	62					15			
					51		20		GM	Gray and brown SILTY GRAVEL (BASALTIC) with some sand, medium dense, moist (weathered basalt)
Sieve #200 = 31.2%	32	77								
					29					
	44				23		25			
					33	0			ML	Brown with gray mottling CLAYEY SILT with some sand (basaltic) and traces of gravel, very stiff, moist (saprolite)
	39				15/6" +25/3"		30			Brownish gray to gray vesicular BASALT, severely fractured, moderately to highly weathered, soft to medium hard (pahoehoe basalt)
					47	0				
							35		ML	

GEOLABS, INC. Geotechnical Engineering		SEISMIC RETROFIT OF KAHOLO BRIDGE HAWAII BELT ROAD, PROJECT NO. BR-019-2(072) DISTRICT OF HAMAKUA, ISLAND OF HAWAII					Log of Boring 1			
Other Tests	Moisture Content (%)	Dry Unit Weight (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample Graphic	USCS	(Continued from previous plate)
										Description
	35				42				ML	Brown with gray mottling CLAYEY SILT with some sand (basaltic) and traces of gravel, hard, moist (saprolite)
					14					
UC= 660 psi	30				25/2"		40			Brownish gray to gray vesicular BASALT, closely fractured, moderately to highly weathered, medium hard (pahoehoe basalt)
					72	10				
					55	13	45			Brownish gray to gray vesicular BASALT, closely fractured, moderately to highly weathered, medium hard (pahoehoe basalt)
					57	0	50			grades to hard locally
										grades with small voids
					35	0	55		GW	Brownish gray subangular SANDY GRAVEL (BASALTIC) with a little silt and cobbles, medium dense, moist (clinker)
					92	10	60			Gray vesicular BASALT, closely to severely fractured, slightly weathered, hard (a'a basalt)
										Brownish gray to gray vesicular BASALT, moderately to closely fractured, slightly to moderately weathered, medium hard to hard (pahoehoe basalt)
UC= 4300 psi					100	50	65			grades with highly weathered soft zones locally
					100	60	70			

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DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

BORING LOGS - 1

HAWAII BELT ROAD
Seismic Retrofit of Kaholo Stream Bridge
Fed. Aid Proj. No. BR-019-2(072)

Scale: As Noted Date: Jul. 2024

SHEET No. B-4 OF 9 SHEETS

GEOLABS, INC. Geotechnical Engineering		SEISMIC RETROFIT OF KAHOLO BRIDGE HAWAII BELT ROAD, PROJECT NO. BR-019-2(072) DISTRICT OF HAMAKUA, ISLAND OF HAWAII				Log of Boring 1				
Other Tests	Moisture Content (%)	Dry Unit Weight (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample Graphic	USCS	(Continued from previous plate) Description
			83	25			75			grades to very hard
			93	52			80			Boring terminated at 80.5 feet
* Elevations estimated from Topographic Survey Map provided by KSF, Inc. on September 30, 2021.										
							85			
							90			
							95			
							100			
							105			
Date Started: May 13, 2021		Date Completed: May 14, 2021		Water Level: ∇ Not Encountered						
Logged By: S. Latronic		Drill Rig: MOBILE B-53.1		Drilling Method: 4" Solid-Stem Auger & HQ Coring						
Total Depth: 80.5 feet		Driving Energy: 140 lb. wt., 30 in. drop								
Work Order: 8063-00										

GEOLABS, INC. Geotechnical Engineering		SEISMIC RETROFIT OF KAHOLO BRIDGE HAWAII BELT ROAD, PROJECT NO. BR-019-2(072) DISTRICT OF HAMAKUA, ISLAND OF HAWAII				Log of Boring 2				
Other Tests	Moisture Content (%)	Dry Unit Weight (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample Graphic	USCS	Approximate Ground Surface Elevation (feet): 737 * Description
	18	100			24				GP	9-inch ASPHALTIC CONCRETE
									GP	Brownish gray GRAVEL (BASALTIC) with some sand, medium dense, moist (fill)
	43				8					Dark gray GRAVELLY SAND with some silt, medium dense to loose, moist (fill)
									MH	Brown CLAYEY SILT with some sand, medium stiff, wet (residual soil)
TXUU Su=1.3 ksf	55	66			11		5			
	66				6		10			grades with white mottling
Direct Shear	71	60			13	0	15			
										grades with some gravel, hard
	18				31	0	25			
	21				45	0	30			Gray with orangish mottling vesicular BASALT, severely fractured, highly to moderately weathered, medium hard to hard (basalt formation)
						0	30/1"			
							35			
Date Started: May 4, 2021		Date Completed: May 6, 2021		Water Level: ∇ Not Encountered						
Logged By: D. Gremminger		Drill Rig: MOBILE B-53.1		Drilling Method: 4" Solid-Stem Auger & HQ Coring						
Total Depth: 102.5 feet		Driving Energy: 140 lb. wt., 30 in. drop								
Work Order: 8063-00										

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BORING LOGS - 2

HAWAII BELT ROAD
Seismic Retrofit of Kaholo Stream Bridge
Fed. Aid Proj. No. BR-019-2(072)

Scale: As Noted Date: Jul. 2024

SHEET No. B-5 OF 9 SHEETS

GEOLABS, INC. Geotechnical Engineering		SEISMIC RETROFIT OF KAHOLO BRIDGE HAWAII BELT ROAD, PROJECT NO. BR-019-2(072) DISTRICT OF HAMAKUA, ISLAND OF HAWAII				Log of Boring 3					
Other Tests	Moisture Content (%)	Dry Unit Weight (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample Graphic	USCS	Approximate Ground Surface Elevation (feet): 758 *	
										Description	
										8-inch ASPHALTIC CONCRETE	
	46				57				GM	Gray and brown SILTY GRAVEL (BASALTIC), medium dense, moist (fill)	
									MH	Dark brown CLAYEY SILT with a little gravel (basaltic), hard, moist (fill)	
	37	74			41	2.0	5		MH	Orangish brown with gray mottling CLAYEY SILT with some sand (basaltic) and a little decomposed gravel, very stiff, moist (saprolite)	
LL=77 PI=27 TXUU Su=2.1 ksf Sieve #200 = 9.0% TXUU Su=2.2 ksf	29	80			35	3.0	10			grades with gravel	
Direct Shear Sieve #200 = 93.9%	67	56			13	0.8	15			grades to medium stiff and very moist locally	
	68	57	43		31	2.5	20			grades with a little sand, very stiff	
LL=60 PI=12	83				20		25			grades to reddish brown locally	
	43		0		7		30			grades to medium stiff	
Date Started: May 12, 2021		Date Completed: May 13, 2021		Water Level: ∇ Not Encountered		Drill Rig: MOBILE B-53.1		Total Depth: 91 feet		Work Order: 8063-00	
Logged By: S. Latronic		Drilling Method: 4" Solid-Stem Auger & HQ Coring		Driving Energy: 140 lb. wt., 30 in. drop							

GEOLABS, INC. Geotechnical Engineering		SEISMIC RETROFIT OF KAHOLO BRIDGE HAWAII BELT ROAD, PROJECT NO. BR-019-2(072) DISTRICT OF HAMAKUA, ISLAND OF HAWAII				Log of Boring 3					
Other Tests	Moisture Content (%)	Dry Unit Weight (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample Graphic	USCS	(Continued from previous plate)	
										Description	
	64				23				MH	grades to very stiff	
			14								
	40				52		40			grades to brownish gray, hard	
			42	0							
	72				16		45		ML	Gray vugular BASALT, closely to severely fractured, slightly to moderately weathered, medium hard to hard (a'a basalt)	
										Brownish gray CLAYEY SILT with some sand (basaltic), very stiff, moist (saprolite)	
UC= 600 psi			72	28			50			Gray vesicular BASALT, moderately fractured, slightly to moderately weathered, medium hard to hard (pahoehoe basalt)	
			92	12						Brownish gray vesicular BASALT, closely to severely fractured, highly weathered, soft (pahoehoe basalt)	
			93	37			55			Gray vugular BASALT, closely fractured, slightly to moderately weathered, medium hard to hard (a'a basalt)	
									ML	Brownish gray SANDY SILT with some decomposed gravel, stiff, moist (saprolite)	
UC= 3040 psi			88	35			60			Brownish gray vesicular BASALT, moderately fractured, slightly to moderately weathered, medium hard to hard (pahoehoe basalt)	
			57	23			65			grades with severely fractured, highly weathered soft zones locally	
							70				
Date Started: May 12, 2021		Date Completed: May 13, 2021		Water Level: ∇ Not Encountered		Drill Rig: MOBILE B-53.1		Total Depth: 91 feet		Work Order: 8063-00	
Logged By: S. Latronic		Drilling Method: 4" Solid-Stem Auger & HQ Coring		Driving Energy: 140 lb. wt., 30 in. drop							

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INVESTIGATED BY	
QUANTIFIED BY	
REVISIONS	

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DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

BORING LOGS - 4

HAWAII BELT ROAD
Seismic Retrofit of Kaholo Stream Bridge
Fed. Aid Proj. No. BR-019-2(072)

Scale: As Noted Date: Jul. 2024

GEOLABS, INC. Geotechnical Engineering		SEISMIC RETROFIT OF KAHOLO BRIDGE HAWAII BELT ROAD, PROJECT NO. BR-019-2(072) DISTRICT OF HAMAKUA, ISLAND OF HAWAII					Log of Boring 4			
Other Tests	Moisture Content (%)	Dry Unit Weight (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample Graphic	USCS	Description
	15	57	7	50/2"			35		GM	grades to highly weathered basalt
							40		GM	Brownish gray vesicular BASALT, severely fractured, moderately to highly weathered, soft to medium hard (pahoehoe basalt)
							40		GM	Gray dense BASALT, moderately fractured, slightly to moderately weathered, hard to very hard (a'a basalt)
		52	13				45		GM	Brownish gray SILTY GRAVEL (BASALTIC), medium dense, moist (clinker)
							45		GM	Grayish brown vesicular BASALT, severely fractured, moderately to highly weathered, soft to medium hard (pahoehoe basalt)
	29	76	33	50/2"			50		GM	Brownish gray vugular BASALT, closely fractured, slightly to moderately weathered, medium hard to hard (a'a basalt)
							55		ML	Reddish brown with gray mottling SANDY SILT with a little gravel (basaltic), stiff, moist (saprolite)
							60		GM	Gray vugular BASALT, moderately fractured, slightly weathered, hard (a'a basalt)
		95	20				65		GM	Brownish gray vesicular BASALT, moderately fractured, slightly to moderately weathered, medium hard to hard (pahoehoe basalt)
							70			grades to dense
		95	58							VOID
		57	35							
UC= 420 psi										
UC= 2230 psi										

GEOLABS, INC. Geotechnical Engineering		SEISMIC RETROFIT OF KAHOLO BRIDGE HAWAII BELT ROAD, PROJECT NO. BR-019-2(072) DISTRICT OF HAMAKUA, ISLAND OF HAWAII					Log of Boring 4			
Other Tests	Moisture Content (%)	Dry Unit Weight (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample Graphic	USCS	Description
							75		SM	Gray vugular BASALT, moderately fractured, slightly weathered, hard (a'a basalt)
		63	0				75		SM	Brown with some gray SILTY SAND (BASALTIC) with some gravel, medium dense, moist (saprolite)
							80			Boring terminated at 76 feet
							85			
							90			
							95			
							100			
							105			

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DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

BORING LOGS - 6

HAWAII BELT ROAD
Seismic Retrofit of Kaholo Stream Bridge
Fed. Aid Proj. No. BR-019-2(072)

Scale: As Noted Date: Jul. 2024

SHEET No. B-9 OF 9 SHEETS

STRUCTURAL GENERAL NOTES:

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	BR-019-2(072)	2024	49	85

1. General Specifications:

A. Hawaii Department of Transportation (HDOT), Standard Specifications for Road and Bridge, Construction, 2005, together with Special Provisions prepared for this project.

2. Design Specifications:

- A. American Association of State Highway and Transportation Officials (AASHTO) 2020 LRFD Bridge Design Specifications, Ninth Edition as amended by Hawaii Department of Transportation (HDOT) document dated August 8, 2014 with subject title "Design Criteria for Bridges and Structures."
- B. HDOT Document dated August 8, 2014 with subject title "Design Criteria for Bridges and Structures" and HDOT memorandum dated January 8, 2018 with subject title "Changes to Design Criteria for Bridges and Structures".
- C. "Seismic Retrofit Guidelines for Bridges in California, California Department of Transportation (Caltrans) Memo 20-4", June 2016.
- D. AASHTO Guide Design Specifications for Bridge Temporary Works, 2nd Edition (2017).
- E. AASHTO Guide Specifications for Design of Bonded FRP Systems For Repair and Strengthening of Concrete Bridge Elements, 2nd Edition (March 2023).

3. Design Loads:

A. Seismic Loads:

PGA = 0.456 g	F _{PGA} = 1.00	A _s = 0.456 g
S _s = 0.904 g	F _a = 1.04	S _{DS} = 0.939 g
S ₁ = 0.352 g	F _v = 1.45	S _{DI} = 0.509 g
Site Class = C	Seismic Zone = 4	

4. Concrete:

A. All concrete strengths shall be as noted below:

Item No.	Structural Parts	Compressive Strength, f'c (28 Days)	Maximum Water/Cementitious (W/C)	Maximum Cementitious Material Content (lbs/cyd)	Included Admixtures (See Notes in this Section)
(1)	Micropile Cap	6,000 psi	0.40	670	C, D, E
(2)	Retaining Wall and Thickened Footing	5,000 psi	0.45	670	C, D, E
(3)	Raised Conc. Shelf and Leveling Pad	5,000 psi	0.45	670	C, D, E
(4)	Seat Extender/ Creep Block	5,000 psi	0.45	670	C, E
(5)	Concrete Downturn	6,000 psi	0.40	670	C, E
(6)	All Others, Except as Noted Otherwise	5,000 psi	0.45	670	C

4. Concrete (Continued):

- B. The use of calcium chloride in any concrete is prohibited.
- C. Amine carboxylate corrosion inhibiting water-based admixture such as Cortec MCI 2005 NS or approved equal shall be added at a dosage of 24 ounces per cubic yard.
- D. Shrinkage reducing admixture such as Masterlife SRA 35 or approved equal shall be added at a dosage of 128 ounces per cubic yard or as recommended by the Manufacturer.
- E. Alkali resistant structural glass fiber such as CEMFIL, ANTI-CRAK HP67/36 or approved equal shall be added to the concrete mix. The dosage rate shall be 15 lbs per cubic yard for CEMFIL or the equivalent amount of approved equal to achieve similar properties as the glass dosage. The fiber shall be added to the concrete as recommended by the Manufacturer during the mixing process.
- F. Contractor is not limited to only adding admixtures listed on these notes. Other admixtures may be added upon approval of the Engineer.
- G. All concrete exposed within 7 days of placement shall be cured using Sinak Lithium Cure 1000 or approved equal at a coverage rate of no less than 400 sq. ft. per gallon.
- H. Cure concrete as specified in the Contract documents. Remove curing that may affect bonding from all areas requiring future bonding unless a curing agent such as Sinak Lithium Cure 1000 or accepted equal that does not affect bond and provide equal or better curing is used.
- I. The Contractor has the option to design the concrete for all items to be pumpable and flowable. All concrete shall be designed for minimum segregation and separation.

5. Shotcrete:

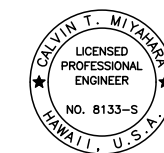
- A. Shotcrete for soil nail wall shall have a minimum compressive strength at 28 days of 5,000 psi and have a maximum 0.45 water to cementitious material ratio and contain 24 oz. per cubic yard of migrating amine carboxylate corrosion inhibiting water-based admixture, Cortec MCI 2005 NS or approved equivalent. A shrinkage reducing admixture, such as Eclipse or Master Life SRA 35 or approved equivalent shall be added at a dosage of 128 oz. per cubic yard. Shotcrete shall contain 7.5 lbs of Strux 90/40 Synthetic Structural Fiber per cubic yard or approved equal.
- B. Temperature of shotcrete shall not exceed 90° F at the point of placement.
- C. Shotcrete shall be cured using Sinak Lithium Cure 1000 or approved equivalent at a coverage rate of 100 sq. ft. per gallon.

6. Materials:

- A. Non-shrink grout shall be a pre-mixed product consisting of non-staining, non-metallic aggregate cement, water reducing and plasticizing agents capable of developing a minimum compressive strength of 4,000 psi in 3 days and 7,000 psi in 28 days. The non-shrink grout shall contain at least 10 grams of migrating amine carboxylate corrosion inhibiting admixture per 0.4 to 0.5 cubic feet of non-shrink grout.
- B. Anchoring adhesive for all post-installed threaded anchors and reinforcing bars shall conform to ASTM C 881 and carry a current ICC-ES Evaluation Service Report such as HILTI HIT-RE 500 V3 or approved equal. All cored and hammer-drilled holes shall be cleaned in accordance with adhesive Manufacturer's Printed Installation Instructions (MPII).
- C. The fiber reinforced polymer (FRP) composite system shall consist of a uni-directional high-strength carbon fiber fabric bonded to the existing concrete substrate using a structural epoxy via the wet-layup method. The FRP shall meet the following minimum test value material properties:
 - (1) Composite Gross Laminate Properties of one layer
 - (a) Ultimate Tensile Strength - 143,000 psi - ASTM D3039
 - (b) Tensile Modulus - 13.9 x 10⁶ psi - ASTM D3039
 - (c) Elongation at Break - 1.0% - ASTM D3039
 - (d) Nominal Laminate Thickness - 0.04 in. - ASTM D1777
 - (2) Fiber Anchors
 - (a) Ultimate Tensile Strength - 100,000 psi - ASTM D7205
 - (b) Tensile Modulus - 11.9 x 10⁶ psi - ASTM D7205
 - (c) Ultimate Elongation - 0.8% - ASTM D7205
 - (d) Density - 0.025 lb/in³ (Weight per Inch Length)

DATE	_____
DESIGNED BY	_____
CHECKED BY	_____
QUANTITIES BY	_____
NO.	_____

DRAWING NAME: Z:\00 ONGOING\19-031-HBR KAHALO SEISMIC RETROFIT\01 CAD\07-16-24-100PCT\KBR-S0002 GENNOTES.DWG PLOT TIME: 07-16-24, 11:46 AM



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STRUCTURAL GENERAL NOTES

HAWAII BELT ROAD
Seismic Retrofit of Kahalo Stream Bridge
Fed. Aid Proj. No. BR-019-2(072)

Scale: None Date: Jul. 2024

SHEET No. S0.2 OF 5 SHEETS

STRUCTURAL GENERAL NOTES:

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	BR-019-2(072)	2024	50	85

7. Reinforcement:

- A. Reinforcing steel shall be ASTM A706 Grade 60 unless otherwise noted
- B. Reinforcing bars shall be placed and installed in accordance with the CRSI Manual of Standard Practice and CRSI Placing Reinforcing Bars, unless otherwise noted.
- C. The covering measured from the surface of the concrete to the face of any reinforcing bars shall be as follows, except as otherwise shown:
 - (1) Concrete cast against and permanently exposed to earth = 3"
 - (2) All others unless otherwise noted = 2"
- D. Minimum lap splice length for steel reinforcing shall be 40 bar diameters or 2'-0", whichever is greater, unless otherwise noted. Increase lap length by multiplying the minimum lap splice length by 1.3 for bars having more than 12" of fresh concrete below bars.
- E. Unless otherwise noted, reinforcing splices shall be staggered. Minimum distance between staggered lap splice shall be equal to the length required for the lap splice. Number of bars spliced at sections normal to axis of member shall not exceed 50 percent of the total main reinforcing in the member.
- F. Minimum clear spacing between parallel bars shall be 1 1/2 times the diameter of bars (for non bundled bars). In no case shall the clear distance between the bars be less than 1 1/2 times the maximum size of the coarse aggregate or 1 1/2".
- G. All dimensions relating to reinforcing bars are to centers of bars unless otherwise noted.
- H. Reinforcing bars shall be securely tied at all intersections and lap splices except where the spacing of intersections is less than 1 foot in each direction, in which case alternate intersections shall be tied.
- I. Dissimilar metals shall be separated at contact points using teflon tape.

8. Glass Fiber Reinforced Polymer Bar (ASTM D7957):

- A. Glass Fiber Reinforced Polymer (GFRP) rebar shall have a minimum ultimate tensile strength of 110 ksi for #4 bars. #5 bars shall have a minimum ultimate tensile strength of 105 ksi.
- B. The modulus of elasticity of the GFRP bar shall be a minimum of 6,500,000 psi.
- C. Concrete cover for the GFRP bars shall be 1" unless otherwise noted.
- D. Minimum lap splice lengths for the GFRP bars shall be 42 bar diameter unless otherwise noted.
- E. All GFRP bars shall be securely tied in place. Tie wire shall be alloy 302 or 304 stainless steel or non-metallic.
- F. The GFRP bars may be cut in the field with a masonry or diamond blade.
- G. All work including materials and bends shall follow Manufacturer's recommendations.

9. General Construction Notes:

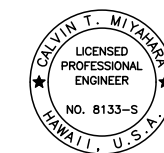
- A. The Contractor shall verify all site dimensions and conditions and not rely upon these plans for existing elevations and azimuths, stream channel location, roads, roadway gutters, curbs and sidewalks, etc. Conditions may differ from those shown. Discrepancies shall be reported, in writing, to the Engineer before commencing work or ordering materials.
- B. The Contractor shall verify the location of all utility lines and notify the respective owners before commencing with excavation, and any temporary piling or sheeting.
- C. The Contractor shall be solely responsible for the protection of adjacent properties, utilities and existing and new structures from damage due to construction. Repairing any damage shall be at the Contractor's own expense, to the satisfaction of the Engineer.
- D. Except as otherwise noted, all vertical dimensions are measured plumb.
- E. Construction joints may be relocated or additional ones added subject to the approval of the Engineer.
- F. Unless otherwise noted, all exposed concrete edges shall be chamfered 3/4"x3/4".

9. General Construction Notes (Cont.):

- G. The Contractor shall submit working drawings and calculations for the proposed bracing/shoring details needed to protect the existing structures when subjected to loading from equipment, drilled shaft rigs, cranes, vehicles and fresh concrete, etc. The drawings and calculations shall be stamped by a licensed Structural Engineer and a licensed Civil Engineer specializing in geotechnical engineering in the State of Hawaii. The above work, including working drawings and calculations, shall be incidental to structure excavation. The drawings and calculations shall be found acceptable by the Engineer before any construction work is to proceed.
- H. The Contractor shall submit working drawings and calculations for the proposed access roads. Bracing/shoring details needed to protect the existing structures when subjected to loading from equipment, drill rigs, cranes, vehicles and fresh concrete, etc. shall be submitted to the Engineer for approval. The drawings and calculations shall be stamped by a licensed Structural Engineer and a licensed Civil Engineer specializing in geotechnical engineering in the State of Hawaii. The above work, including working drawings and calculations, shall be incidental to structure excavation. The drawings and calculations shall be found acceptable by the Engineer before any construction work is to proceed.
- I. No construction work, including falsework, shall be performed in any portion of the existing channel unless otherwise permitted by the Engineer.

ORIGINAL PLAN	DATE
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DRAWING NAME: Z:\00 ONGOING\19-031-HBR KAHALO SEISMIC RETROFIT\01 CAD\07-16-24_100PCT\KBR-S0002 GENNOTES.DWG PLOT TIME: 07-16-24, 11:47 AM



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 Calvin Miyazaki
 4-30-26
 SIGNATURE EXPIRATION DATE OF THE LICENSE

STATE OF HAWAII
 DEPARTMENT OF TRANSPORTATION
 HIGHWAYS DIVISION

STRUCTURAL GENERAL NOTES

HAWAII BELT ROAD
Seismic Retrofit of Kahalo Stream Bridge
Fed. Aid Proj. No. BR-019-2(072)

Scale: None Date: Jul. 2024

SHEET No. 50.3 OF 5 SHEETS

STRUCTURAL GENERAL NOTES:

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	BR-019-2(072)	2024	51	85

9. General Construction Notes (Cont.):

- J. Location of drilled holes shown in plans are approximate. Prior to placing holes in concrete, the Contractor shall locate all reinforcing steel and adjust the location of the holes to clear all reinforcing bars. Final hole locations are subject to the approval of the Engineer.
- K. The Contractor shall verify the location and size of all existing reinforcing bars using an appropriate ground penetrating rebar scanner prior to drilling holes in concrete members.
- L. Drilled holes in existing concrete for reinforcing steel dowels shall not be left unfilled for more than 8 hours. Epoxy in drilled holes shall be able to develop the full strength of the dowels prior to pouring concrete around reinforcing steel dowels.
- M. To prevent displacement, all elastomeric bearing pads shall be secured to locations shown on the plans with adhesives that follows the Manufacturer's recommendation and shall be approved by the Engineer.
- N. The Foundation Design is based upon recommendations contained in the Geotechnical Engineering Exploration report entitled "Geotechnical Engineering Exploration, Seismic Retrofit of Kaholo Bridge, Hawaii Belt Road, dated December 13, 2023. The report shall be considered as a part of the construction documents and its recommendations shall be implemented unless otherwise directed by the Engineer. The Contractor may obtain a copy of the report at the State of Hawaii, Department of Transportation, Highways Division, upon written request to the Engineer.
- O. Plans of the existing bridge are available for review from the Highways Design Branch located at the State Department of Transportation, Highways Division, Kakuhihewa Building, Room 609, 601 Kamokila Boulevard, Kapolei, HI 96707.
- P. Unless noted otherwise, all construction joints between concrete pours and surfaces of existing concrete shall be roughened to 1/4" amplitude, cleaned, and saturated surface dry (SSD).
- Q. H. All holes drilled in existing concrete for temporary works shall have inserts and hardware removed at the end of construction and be patched with a repair mortar, such as Sikatop 123 Plus, or approved equal.

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DRAWING NAME: Z:\00 ONGOING\19-031-HBR KAHOLO SEISMIC RETROFIT\01 CAD\07-16-24_100PCT\KBR-S0002 GENNOTES.DWG PLOT TIME: 07-15-24, 7:13 PM



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STATE OF HAWAII
 DEPARTMENT OF TRANSPORTATION
 HIGHWAYS DIVISION

STRUCTURAL GENERAL NOTES

HAWAII BELT ROAD
Seismic Retrofit of Kaholo Stream Bridge
Fed. Aid Proj. No. BR-019-2(072)

Scale: None Date: Jul. 2024

SHEET No. S04 OF 5 SHEETS

SYMBOLS AND ABBREVIATIONS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	BR-019-2(072)	2024	52	85

<p>φ</p> <p>@</p> <p>∅</p> <p>≥</p> <p>≤</p> <p>#</p> <p>AB</p> <p>Abut.</p> <p>Abbr.</p> <p>AC</p> <p>Add.</p> <p>Alt.</p> <p>Approx.</p> <p>Az.</p> <p>Bal.</p> <p>⊖</p> <p>Bet.</p> <p>BF</p> <p>BFE</p> <p>Bk.</p> <p>Blt.</p> <p>Bm.</p> <p>BOF</p> <p>Bot., Bott., B</p> <p>Br.</p> <p>Brg., Brgs.</p> <p>BVC</p> <p>BW</p> <p>Cant.</p> <p>CBW</p> <p>cc</p> <p>CF</p> <p>CFCW</p> <p>CFRP</p> <p>CG</p> <p>CIP</p> <p>CJ</p> <p>Ⓞ</p> <p>Cl.</p> <p>Clr.</p> <p>CLSM</p> <p>CMU</p> <p>Cntl. Jt.</p> <p>CO</p> <p>Col.</p> <p>Conc.</p> <p>Conn.</p> <p>Const.</p> <p>Cont.</p> <p>CSL</p> <p>CRM</p> <p>CY, Cu. Yd.</p>	<p>And</p> <p>At</p> <p>Diameter</p> <p>Greater Than or Equal to</p> <p>Less Than or Equal to</p> <p>Number</p> <p>Anchor Bolt</p> <p>Abutment</p> <p>Abbreviation</p> <p>Asphaltic Concrete</p> <p>Additional</p> <p>Alternate</p> <p>Approximate</p> <p>Azimuth</p> <p>Balance</p> <p>Baseline</p> <p>Between</p> <p>Both Faces</p> <p>Bottom of Footing Elevation</p> <p>Back</p> <p>Bolt</p> <p>Beam</p> <p>Bottom of Footing</p> <p>Bottom</p> <p>Bridge</p> <p>Bearing, Bearings</p> <p>Beginning of Vertical Curve</p> <p>Both Ways</p> <p>Cantilever</p> <p>Concrete Barrier Wall</p> <p>Center to Center</p> <p>Cubic Feet</p> <p>Continuous Flashing Compound Waterproofing</p> <p>Carbon Fiber Reinforced Polymer</p> <p>Center of Gravity</p> <p>Cast Iron Pipe, Cast in Place</p> <p>Construction Joint</p> <p>Center line</p> <p>Class</p> <p>Clearance</p> <p>Controlled Low Strength Material</p> <p>Concrete Masonry Unit</p> <p>Control Joint</p> <p>Clean Out</p> <p>Column</p> <p>Concrete</p> <p>Connection</p> <p>Construction</p> <p>Continuous</p> <p>Crosshole Sonic Logging</p> <p>Cement Rubble Masonry</p> <p>Cubic Yard</p>	<p>Dbl.</p> <p>Demol.</p> <p>Det.</p> <p>DI</p> <p>Dia.</p> <p>Diaph.</p> <p>Dim.</p> <p>Dist.</p> <p>Dn.</p> <p>DO</p> <p>DS</p> <p>Dwg., Dwgs.</p> <p>Dwls.</p> <p>e</p> <p>E</p> <p>EA, Ea., ea.</p> <p>EF</p> <p>EFH</p> <p>EFV</p> <p>EJ</p> <p>EI., Elev.</p> <p>Elec.</p> <p>Emb.</p> <p>EMH</p> <p>EPE</p> <p>EPS</p> <p>Eq.</p> <p>ES</p> <p>Est.</p> <p>EVC</p> <p>EW</p> <p>Exc.</p> <p>Excl.</p> <p>Exist., Ex.</p> <p>Exp., (E)</p> <p>Ext.</p> <p>(F)</p> <p>FA</p> <p>FB</p> <p>FC</p> <p>f'c</p> <p>f'ci</p> <p>FF</p> <p>Fig.</p> <p>Fin. Gr.</p> <p>FRP</p> <p>FT</p> <p>Ft.</p> <p>Ftg.</p> <p>G, Gir.</p> <p>Ga.</p> <p>Galv.</p> <p>GDI</p>	<p>Double</p> <p>Demolition</p> <p>Detail</p> <p>Drain Inlet, Ductile Iron</p> <p>Diameter</p> <p>Diaphragm</p> <p>Dimension</p> <p>Distance</p> <p>Down</p> <p>Ditto</p> <p>Drilled Shaft</p> <p>Drawing, Drawings</p> <p>Dowels</p> <p>Existing</p> <p>East</p> <p>Each</p> <p>Each Face</p> <p>Each Face Horizontal</p> <p>Each Face Vertical</p> <p>Expansion Joint</p> <p>Elevation</p> <p>Electrical</p> <p>Embankment</p> <p>Electrical Manhole</p> <p>Existing Edge of Pavement</p> <p>Expanded Polystyrene</p> <p>Equal</p> <p>Edge of Shoulder</p> <p>Estimated</p> <p>End of Vertical Curve</p> <p>Each Way</p> <p>Excavation</p> <p>Excluding</p> <p>Existing</p> <p>Expansion</p> <p>Exterior</p> <p>Fixed</p> <p>Force account</p> <p>Flat Bar</p> <p>Compression Stresses</p> <p>Specified Compressive Strength of Concrete at 28 days</p> <p>Specified Compressive Strength of Concrete at Time of Initial Prestress</p> <p>Far Face, Front Face</p> <p>Figure</p> <p>Finish Grade</p> <p>Fiberglass Reinforced Polymer</p> <p>Tensile Stresses</p> <p>Feet, Foot</p> <p>Footing</p> <p>Girder</p> <p>Gage, Gauge</p> <p>Galvanized</p> <p>Grated Drain Inlet</p>	<p>GFRP</p> <p>Gr.</p> <p>Grd.</p> <p>GRP</p> <p>(H)</p> <p>HDPE</p> <p>HDOT</p> <p>HECO</p> <p>Horiz., H</p> <p>Ht.</p> <p>HS</p> <p>IB</p> <p>ID</p> <p>IF</p> <p>In.</p> <p>Int.</p> <p>Inv.</p> <p>Jt.</p> <p>K</p> <p>KF</p> <p>KLF</p> <p>KSF</p> <p>KSI, ksi</p> <p>L</p> <p>lb., lbs., LBS.</p> <p>LF, Lin. Ft.</p> <p>Longit.</p> <p>LS</p> <p>Ltg. Std.</p> <p>M</p> <p>Max.</p> <p>Mech.</p> <p>MH</p> <p>Min.</p> <p>Misc.</p> <p>MPH</p> <p>MSL</p> <p>N</p> <p>NF</p> <p>NIC</p> <p>No.</p> <p>NTS</p> <p>OB</p> <p>oc, o.c.</p> <p>OD</p> <p>OG</p>	<p>Glass Fiber Reinforced Polymer Rebar</p> <p>Grade</p> <p>Ground</p> <p>Grouted Rubble Pavement</p> <p>Hinge</p> <p>High Density Polyethylene</p> <p>State of Hawaii Department of Transportation</p> <p>Hawaiian Electric Company</p> <p>Horizontal</p> <p>Height</p> <p>High strength</p> <p>Inbound</p> <p>Inside Diameter</p> <p>Inside Face</p> <p>Inch</p> <p>Interior</p> <p>Invert</p> <p>Joint</p> <p>Kips</p> <p>Kip Foot</p> <p>Kips Per Linear Foot</p> <p>Kips Per Square Foot</p> <p>Kips Per Square Inch</p> <p>Length</p> <p>Pound, Pounds</p> <p>Linear Feet/Foot</p> <p>Longitudinal</p> <p>Lump Sum</p> <p>Lighting Standard</p> <p>Modified</p> <p>Maximum</p> <p>Mechanical</p> <p>Manhole</p> <p>Minimum</p> <p>Miscellaneous</p> <p>Miles Per Hour</p> <p>Mean Sea Level</p> <p>North</p> <p>Near Face</p> <p>Not in Contract</p> <p>Number</p> <p>Not to Scale</p> <p>Outbound</p> <p>On Center</p> <p>Outside Diameter</p> <p>Outside Girder, Outbound Girder</p>	<p>Opn'g</p> <p>O/S</p> <p>OHWM</p> <p>PB</p> <p>PL</p> <p>PCCP</p> <p>PC</p> <p>PCF</p> <p>P(e)</p> <p>Perf.</p> <p>PI</p> <p>P/IVC</p> <p>PLF, plf</p> <p>PPM</p> <p>PRC</p> <p>PVC</p> <p>Prestr.</p> <p>P/S</p> <p>PSF, psf</p> <p>PSI, psi</p> <p>PT</p> <p>Pt., Pts.</p> <p>R, Rad.</p> <p>Rebar</p> <p>Ref.</p> <p>Reinf.</p> <p>Req'd.</p> <p>Ret.</p> <p>RF</p> <p>ROW</p> <p>Rdwy.</p> <p>S</p> <p>SBD</p> <p>SE</p> <p>Sect.</p> <p>SF, sq. ft.</p> <p>Sht.</p> <p>Sim.</p> <p>Sl.</p> <p>Spcs., Spg.</p> <p>Spec.</p> <p>Sprd.</p> <p>SRW</p> <p>SS</p> <p>Std.</p> <p>Sta.</p> <p>Stiff.</p> <p>Stirr.</p> <p>Stl.</p>	<p>Opening</p> <p>Offset</p> <p>Ordinary High Water Mark</p> <p>Pull Box</p> <p>Plate</p> <p>Portland Cement Concrete Pavement</p> <p>Point of Curvature</p> <p>Pounds per Cubic Foot</p> <p>Effective Prestress Force After All Losses</p> <p>Perforated</p> <p>Point of Intersection of Tangents</p> <p>Point of Intersection of Vertical Curve</p> <p>Pounds per Linear Foot</p> <p>Parts Per Million</p> <p>Point of Reverse Curvature</p> <p>Polyvinyl Chloride</p> <p>Prestressed</p> <p>Prestressed Strands</p> <p>Pounds per Square Foot</p> <p>Pounds per Square Inch</p> <p>Point of Tangency</p> <p>Point, Points</p> <p>Radius</p> <p>Reinforcing Bar</p> <p>Reference</p> <p>Reinforced, Reinforcing, Reinforcement</p> <p>Required</p> <p>Retaining</p> <p>Rear Face</p> <p>Right of Way</p> <p>Roadway</p> <p>South</p> <p>Special Bridge Deck Mix</p> <p>Super Elevation</p> <p>Section</p> <p>Square Feet</p> <p>Sheet</p> <p>Similar</p> <p>Slope</p> <p>Spaces, Spacing</p> <p>Specification</p> <p>Spread</p> <p>Segmental Retaining Wall</p> <p>Stainless Steel</p> <p>Standard</p> <p>Station</p> <p>Stiffener</p> <p>Stirrup</p> <p>Steel</p>	<p>Str.</p> <p>Struct.</p> <p>SY</p> <p>Symm.</p> <p>T</p> <p>T#B</p> <p>Tan.</p> <p>TCE</p> <p>Temp.</p> <p>Term.</p> <p>TFE</p> <p>Thk.</p> <p>TOD</p> <p>TOP</p> <p>Tot.</p> <p>Transv.</p> <p>TS</p> <p>TSS</p> <p>Typ.</p> <p>Undergrd.</p> <p>Var.</p> <p>VC</p> <p>VESLMC</p> <p>Vert., V</p> <p>W</p> <p>w/</p> <p>W/C</p> <p>WP</p> <p>WS</p> <p>WW</p> <p>WWF</p> <p>Yr.</p>	<p>Straight</p> <p>Structure</p> <p>Square Yard</p> <p>Symmetrical</p> <p>Top</p> <p>Top and Bottom</p> <p>Tangent</p> <p>Top of Column (and Bent Cap Soffit) Elevation</p> <p>Temporary</p> <p>Terminal</p> <p>Top of Footing Elevation</p> <p>Thick</p> <p>Top of Deck</p> <p>Top of Pier</p> <p>Total</p> <p>Transverse</p> <p>Structural Tubing</p> <p>Tendon For Girder in Simply Supported Condition</p> <p>Typical</p> <p>Underground</p> <p>Varies</p> <p>Vertical Curve</p> <p>Very Early Strength Latex Modified Concrete</p> <p>Vertical</p> <p>West</p> <p>With</p> <p>Water/Cementitious</p> <p>Work Point, Working Point</p> <p>Water Surface</p> <p>Wingwall</p> <p>Welded Wire Fabric</p> <p>Year</p>
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DRAWING NAME: Z:\00 ONGOING\19-031-HBR KAHALO SEISMIC RETROFIT\01 CAD\07-16-24-100PCT\KBR-S0005 SYMB-ABBRV.DWG PLOT TIME: 07-15-24, 7:14 PM



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HIGHWAYS DIVISION

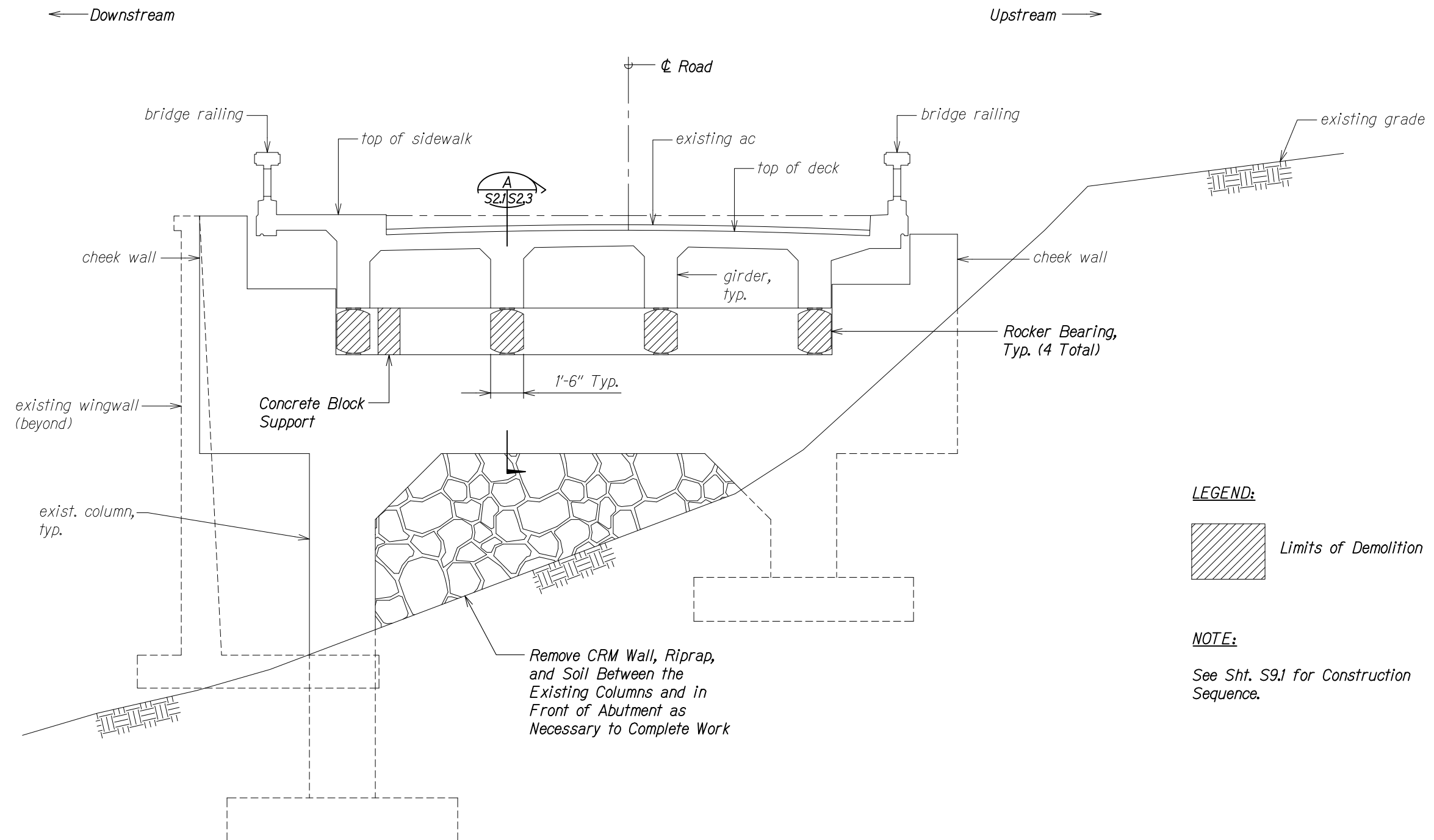
SYMBOLS AND ABBREVIATIONS

HAWAII BELT ROAD
Seismic Retrofit of Kahalo Stream Bridge
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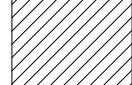
Scale: None Date: Jul. 2024

SHEET No. S05 OF 5 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	BR-019-2(072)	2024	55	85



LEGEND:

 Limits of Demolition

NOTE:

See Sht. S9.1 for Construction Sequence.



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HILO ABUTMENT DEMOLITION ELEVATION
 Scale: 3/8" = 1'-0" A
 S21 | S21

ORIGINAL PLAN	DATE
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DRAWING NAME: Z:\00 ONGOING\19-031-HBR KAHALO SEISMIC RETROFIT\01 CAD\07-16-24_100PCT\KBR-S201 ABUT DEMO.DWG PLOT TIME: 07-15-24, 7:21 PM

STATE OF HAWAII
 DEPARTMENT OF TRANSPORTATION
 HIGHWAYS DIVISION

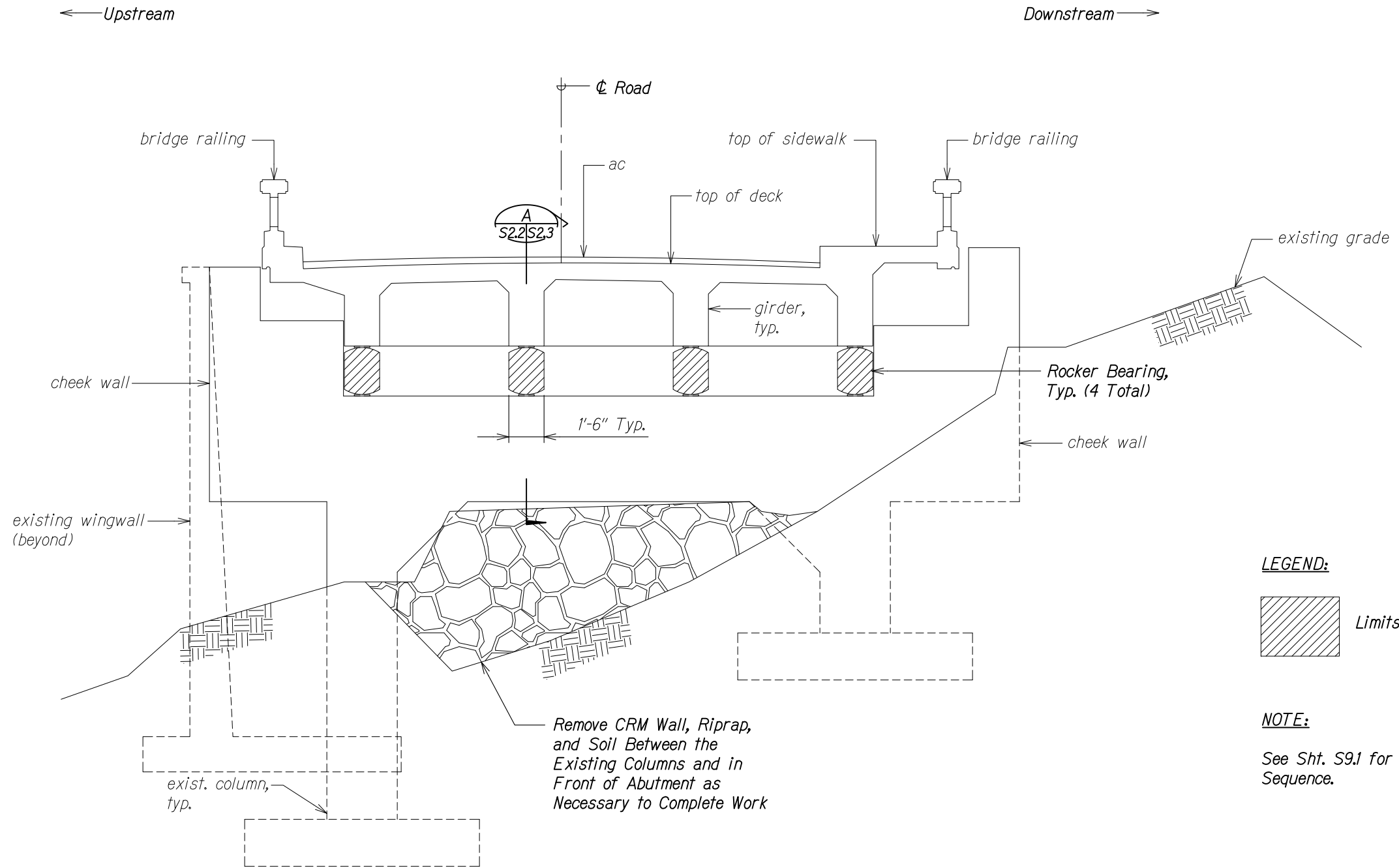
**HILO ABUTMENT
 DEMOLITION ELEVATION**

HAWAII BELT ROAD
 Seismic Retrofit of Kahalo Stream Bridge
 Fed. Aid Proj. No. BR-019-2(072)

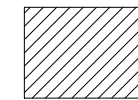
Scale: As Noted Date: Jul. 2024

SHEET No. S21 OF 3 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	BR-019-2(072)	2024	56	85



LEGEND:

 Limits of Demolition

NOTE:

See Sht. S9.1 for Construction Sequence.



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HONOKAA ABUTMENT DEMOLITION ELEVATION

Scale: 3/8" = 1'-0"



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DRAWING NAME: Z:\00 ONGOING\19-031-HBR KAHALO SEISMIC RETROFIT\01 CAD\07-16-24_100PCT\KBR-S201 ABUT DEMO.DWG PLOT TIME: 07-15-24, 7:21 PM

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

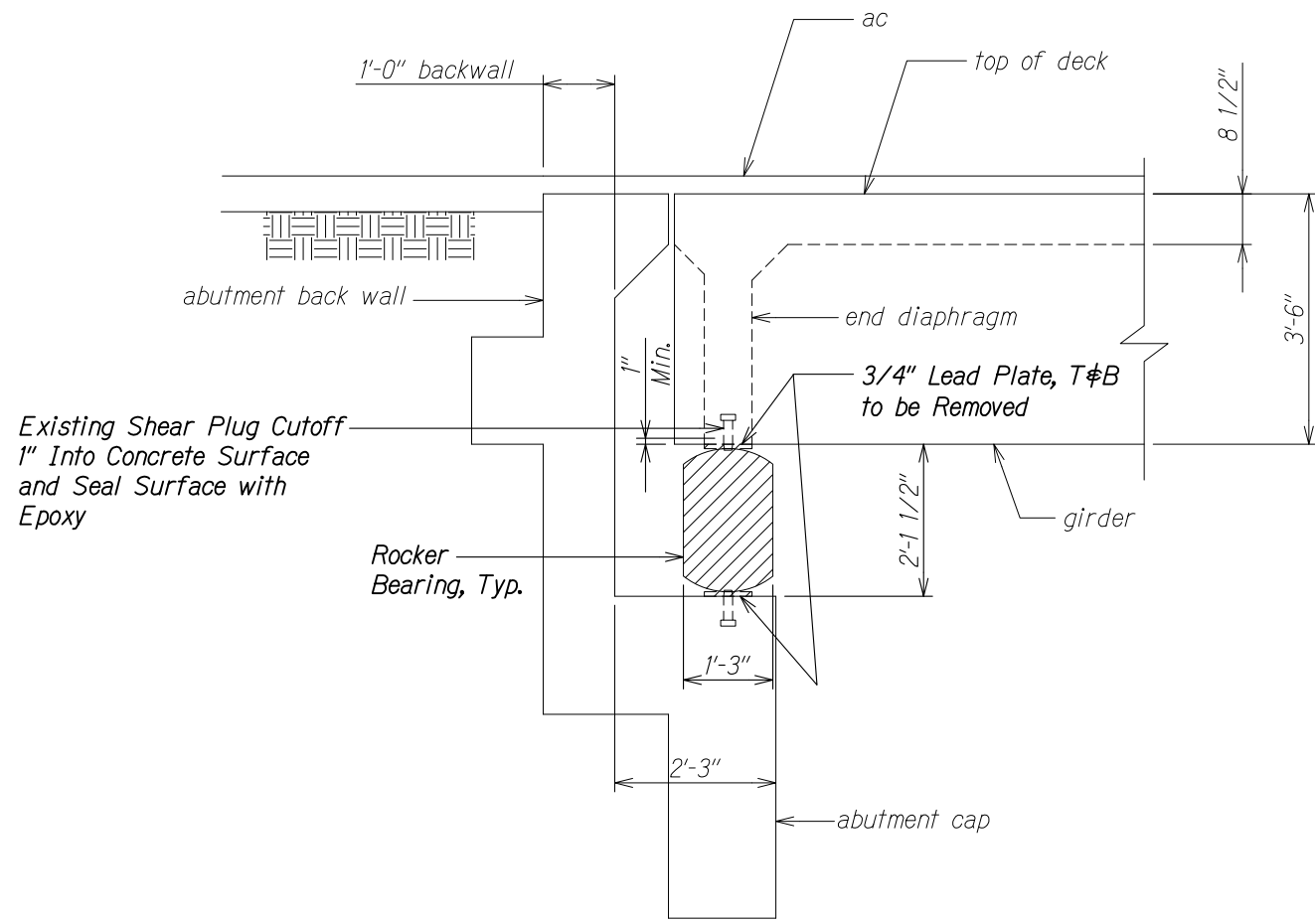
**HONOKAA ABUTMENT
DEMOLITION ELEVATION**

HAWAII BELT ROAD
Seismic Retrofit of Kaholo Stream Bridge
Fed. Aid Proj. No. BR-019-2(072)

Scale: As Noted Date: Jul. 2024

SHEET No. S2.2 OF 3 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	BR-019-2(072)	2024	57	85



LEGEND:

 Limits of Demolition

NOTE:

See Sht. S9.1 for Construction Sequence.

SECTION
Scale: 3/4" = 1'-0"
A
S2.1 | S2.3
S2.2

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No.	

DRAWING NAME: Z:\00 ONGOING\19-031-HBR KAHALO SEISMIC RETROFIT\01 CAD\07-16-24_100PCT\KBR-S201 ABUT DEMO.DWG PLOT TIME: 07-15-24, 7:21 PM)



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SIGNATURE EXPIRATION DATE OF THE LICENSE: 4-30-26

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

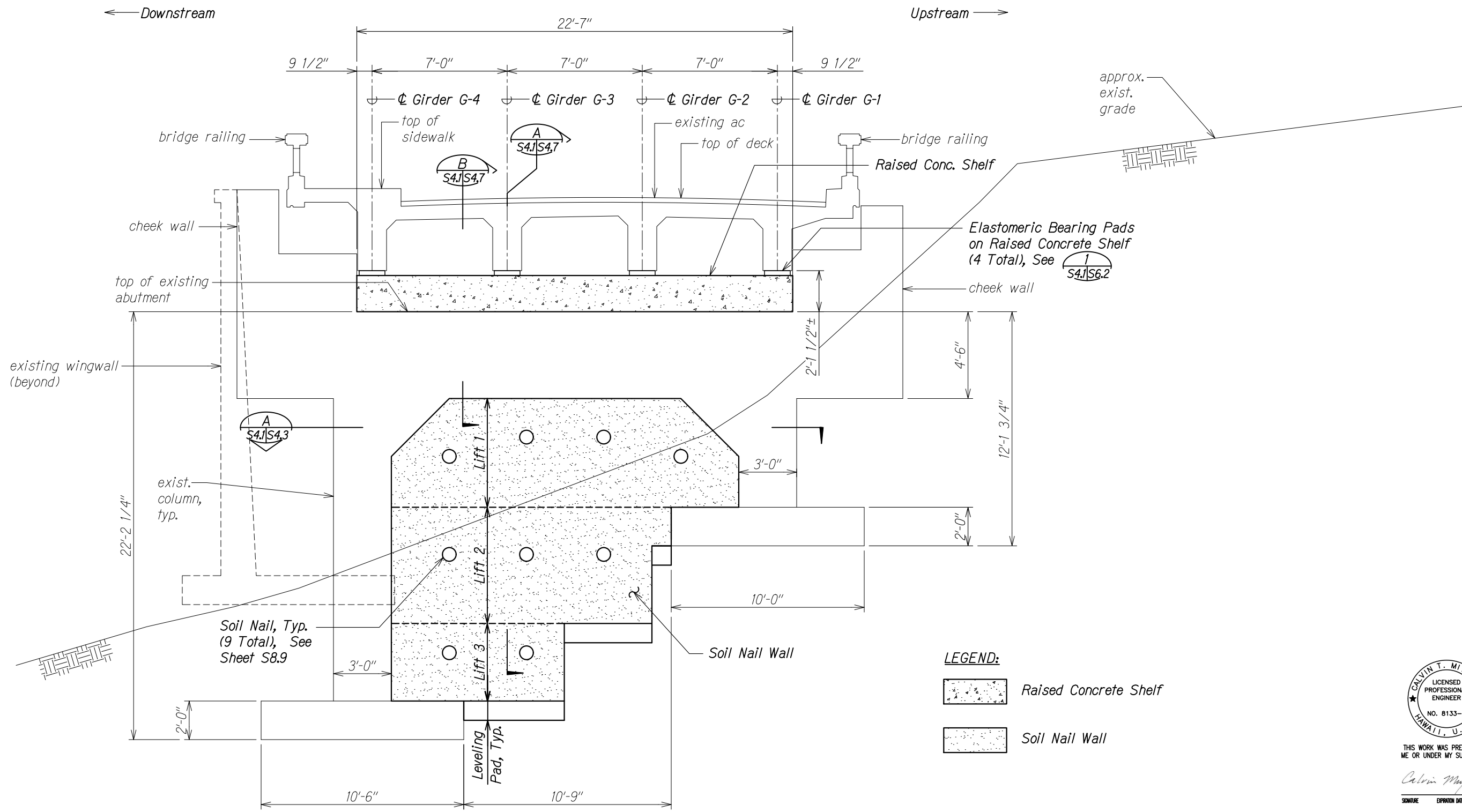
DEMOLITION SECTION

HAWAII BELT ROAD
Seismic Retrofit of Kahalo Stream Bridge
Fed. Aid Proj. No. BR-019-2(072)

Scale: As Noted Date: Jul. 2024

SHEET No. S2.3 OF 3 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	BR-019-2(072)	2024	59	85



HILO ABUTMENT SECTION AT ϕ BEARING A
S4J S4J
Scale: 3/8" = 1'-0"

LEGEND:

Raised Concrete Shelf

Soil Nail Wall



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HIGHWAYS DIVISION

HILO ABUTMENT SECTION

HAWAII BELT ROAD
Seismic Retrofit of Kaholo Stream Bridge
Fed. Aid Proj. No. BR-019-2(072)

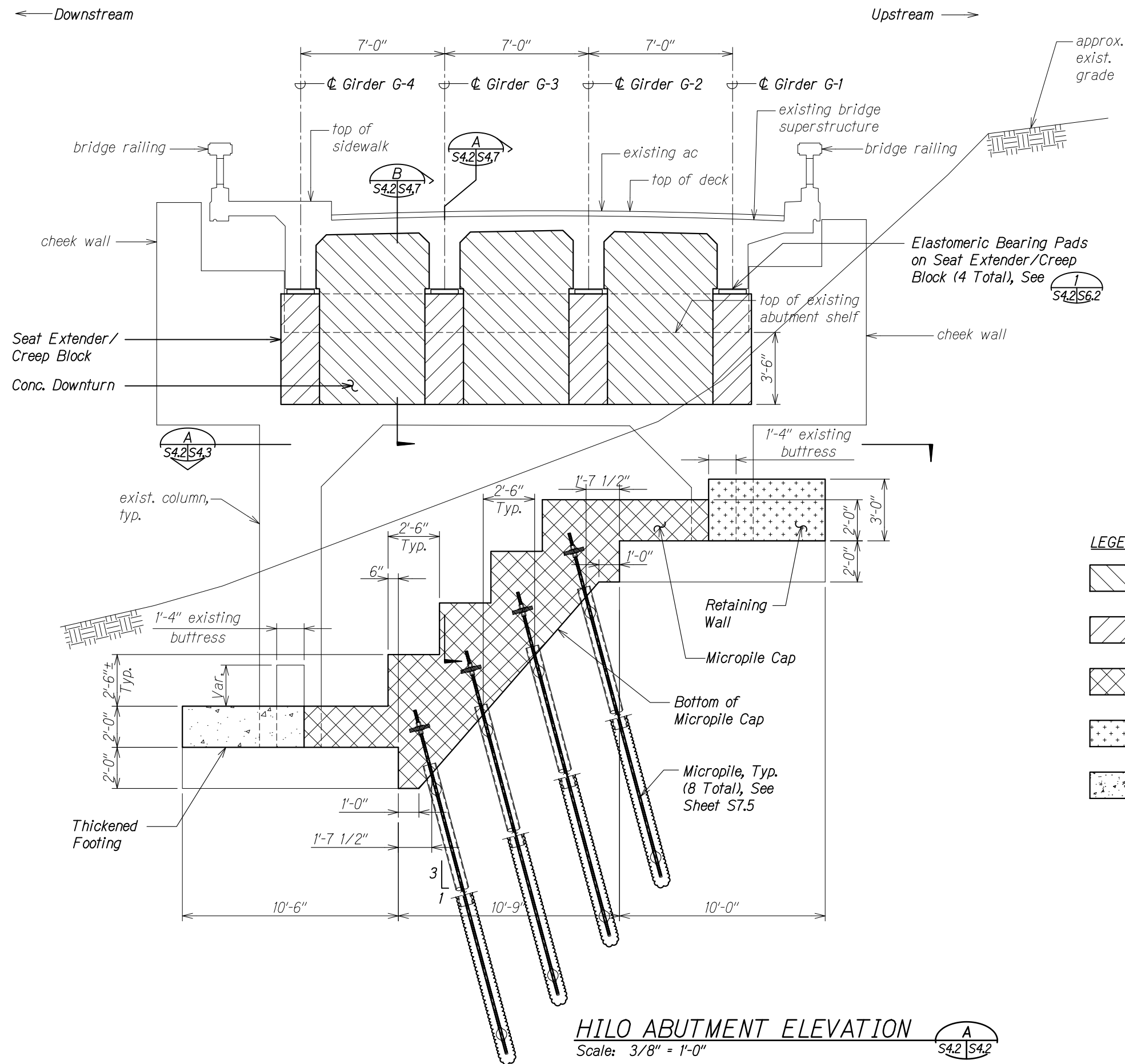
Scale: As Noted Date: Jul. 2024

SHEET No. S4J OF 7 SHEETS

ORIGINAL PLAN	DATE
NO. _____	_____
DESIGNED BY	DATE
QUANTITIES BY	_____
CHECKED BY	_____

DRAWING NAME: Z:\00 ONGOING\19-031-HBR KAHOLO SEISMIC RETROFIT\01 CAD\07-16-24-100PCT\KBR-S401-S407 ABUT ELEV-SECT.DWG PLOT TIME: 07-16-24, 11:53 AM

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	BR-019-2(072)	2024	60	85



- LEGEND:**
- Concrete Downturn
 - Seat Extender/Creep Block
 - Micropile Cap
 - Retaining Wall over Existing Abutment Footing
 - Thickened Footing



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ORIGINAL PLAN	DATE
NO. _____	_____
DESIGNED BY	DATE
QUANTITIES BY	_____
CHECKED BY	_____

DRAWING NAME: Z:\00 ONGOING\19-031-HBR KAHALO SEISMIC RETROFIT\01 CAD\07-16-24_100PCT\KBR-S401-S407 ABUT ELEV-SECT.DWG PLOT TIME: 07-15-24, 6:39 PM

HILO ABUTMENT ELEVATION A
 Scale: 3/8" = 1'-0" S4.2 | S4.2

STATE OF HAWAII
 DEPARTMENT OF TRANSPORTATION
 HIGHWAYS DIVISION

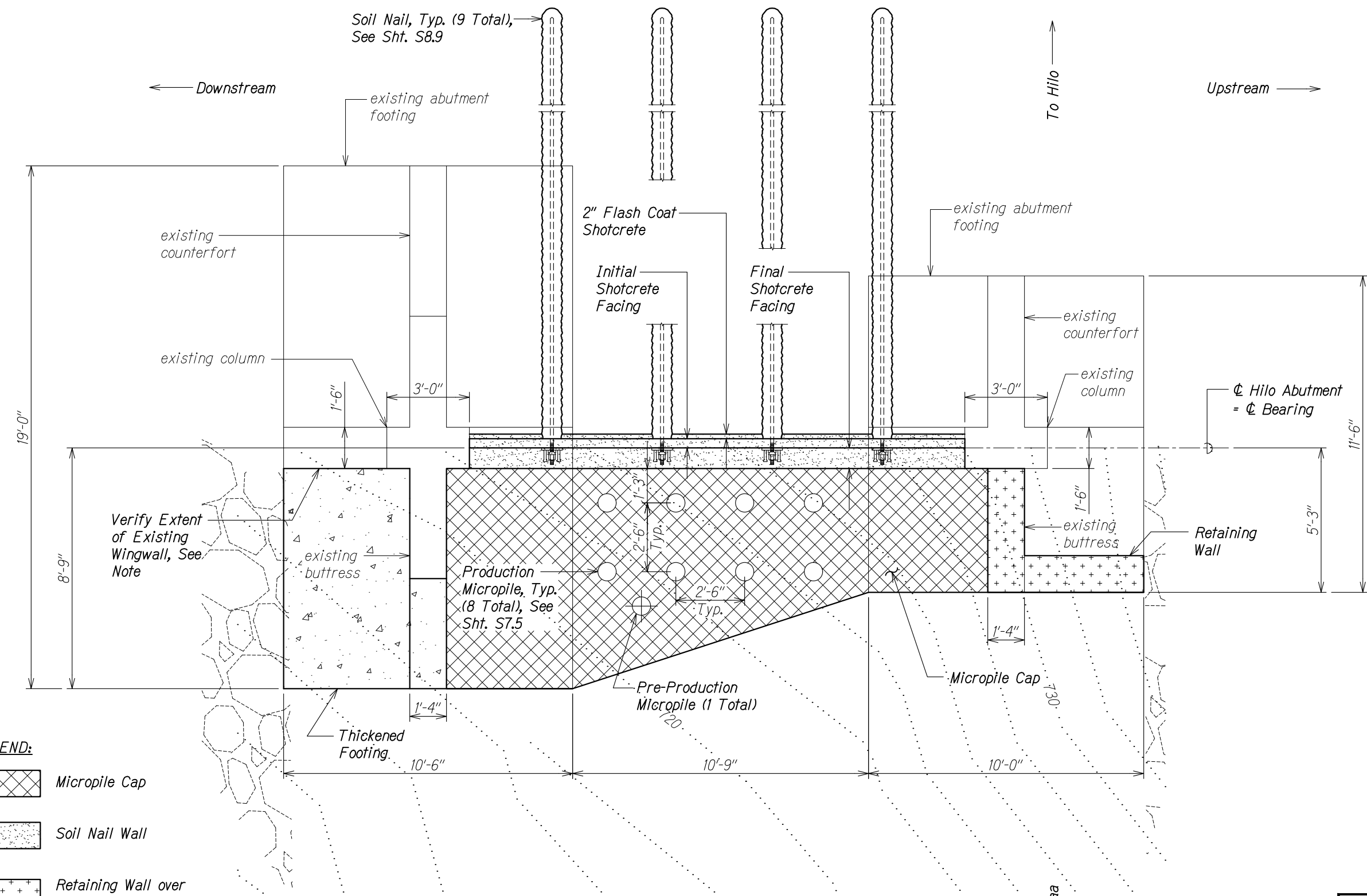
HILO ABUTMENT ELEVATION

HAWAII BELT ROAD
 Seismic Retrofit of Kahalo Stream Bridge
 Fed. Aid Proj. No. BR-019-2(072)


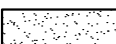
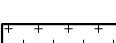
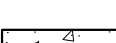


Scale: As Noted Date: Jul. 2024

SHEET No. S4.2 OF 7 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	BR-019-2(072)	2024	61	85

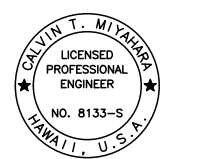


LEGEND:

-  Micropile Cap
-  Soil Nail Wall
-  Retaining Wall over Existing Abutment Footing
-  Thickened Footing
-  Production Micropile
-  Pre-Production Micropile

NOTE:
Excavation in front of existing wingwall shall be kept to near vertical as possible. Thickened footing shall be poured neat against the cut.

SECTION A
Scale: 1/2" = 1'-0"
S4.1 | S4.3
S4.2



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DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

HILO ABUTMENT SECTION

HAWAII BELT ROAD
Seismic Retrofit of Kaholo Stream Bridge
Fed. Aid Proj. No. BR-019-2(072)

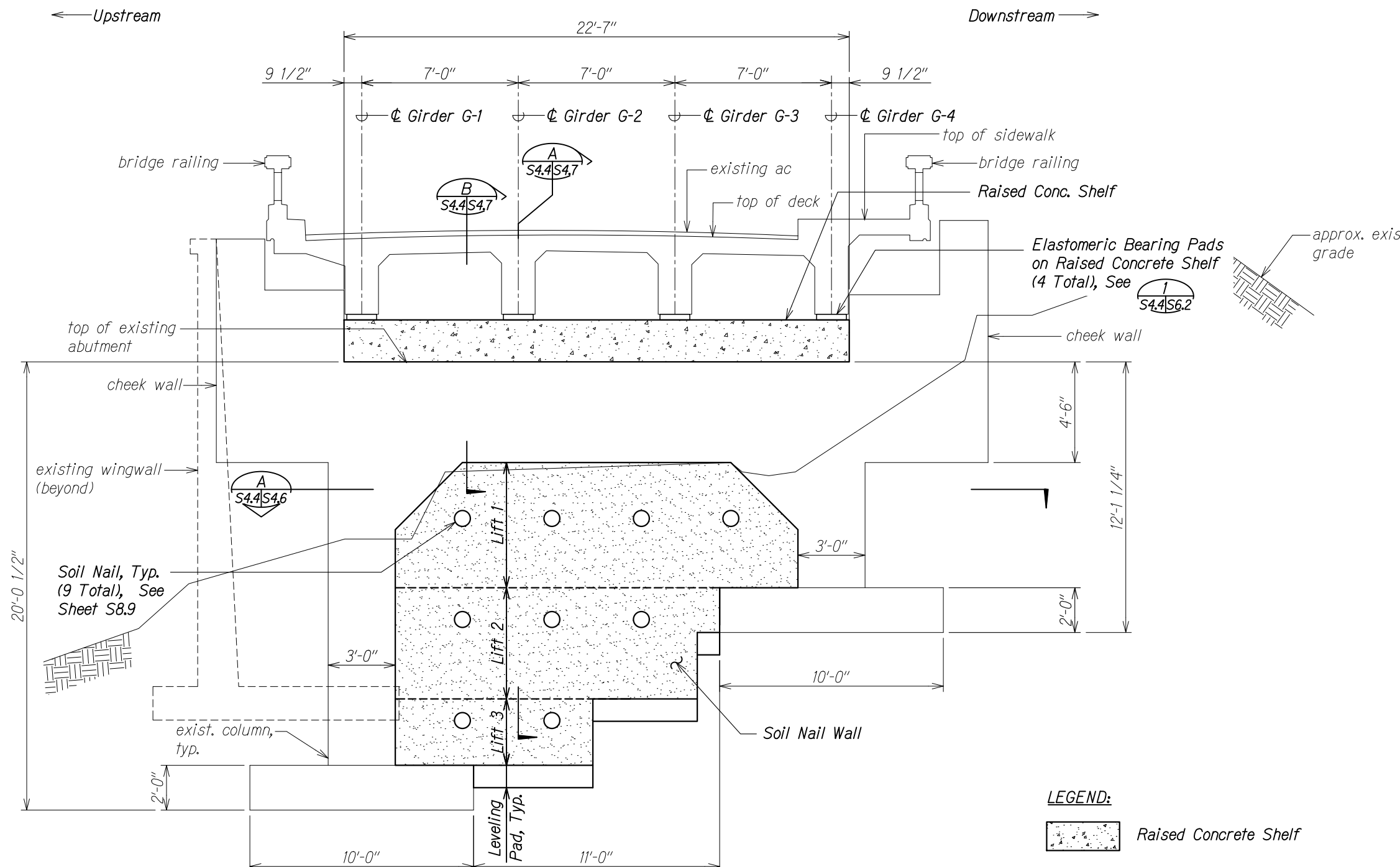
Scale: As Noted Date: Jul. 2024

SHEET No. S4.3 OF 7 SHEETS

DESIGNED BY	DATE
CHECKED BY	
DATE	
DESIGNED BY	
CHECKED BY	
DATE	
DESIGNED BY	
CHECKED BY	
DATE	

DRAWING NAME: Z:\00 ONGOING\19-031-HBR KAHOLO SEISMIC RETROFIT\01 CAD\07-16-24_100PCT\KBR-S401-S407 ABUT ELEV-SECTION.DWG PLOT TIME: 07-16-24, 11:57 AM

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	BR-019-2(072)	2024	62	85



- LEGEND:**
- Raised Concrete Shelf
 - Soil Nail Wall



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HONOKAA ABUTMENT SECTION AT ϕ BEARING A
S4.4 S4.4
 Scale: 3/8" = 1'-0"

STATE OF HAWAII
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 HIGHWAYS DIVISION

HONOKAA ABUTMENT SECTION

HAWAII BELT ROAD
 Seismic Retrofit of Kaholo Stream Bridge
 Fed. Aid Proj. No. BR-019-2(072)

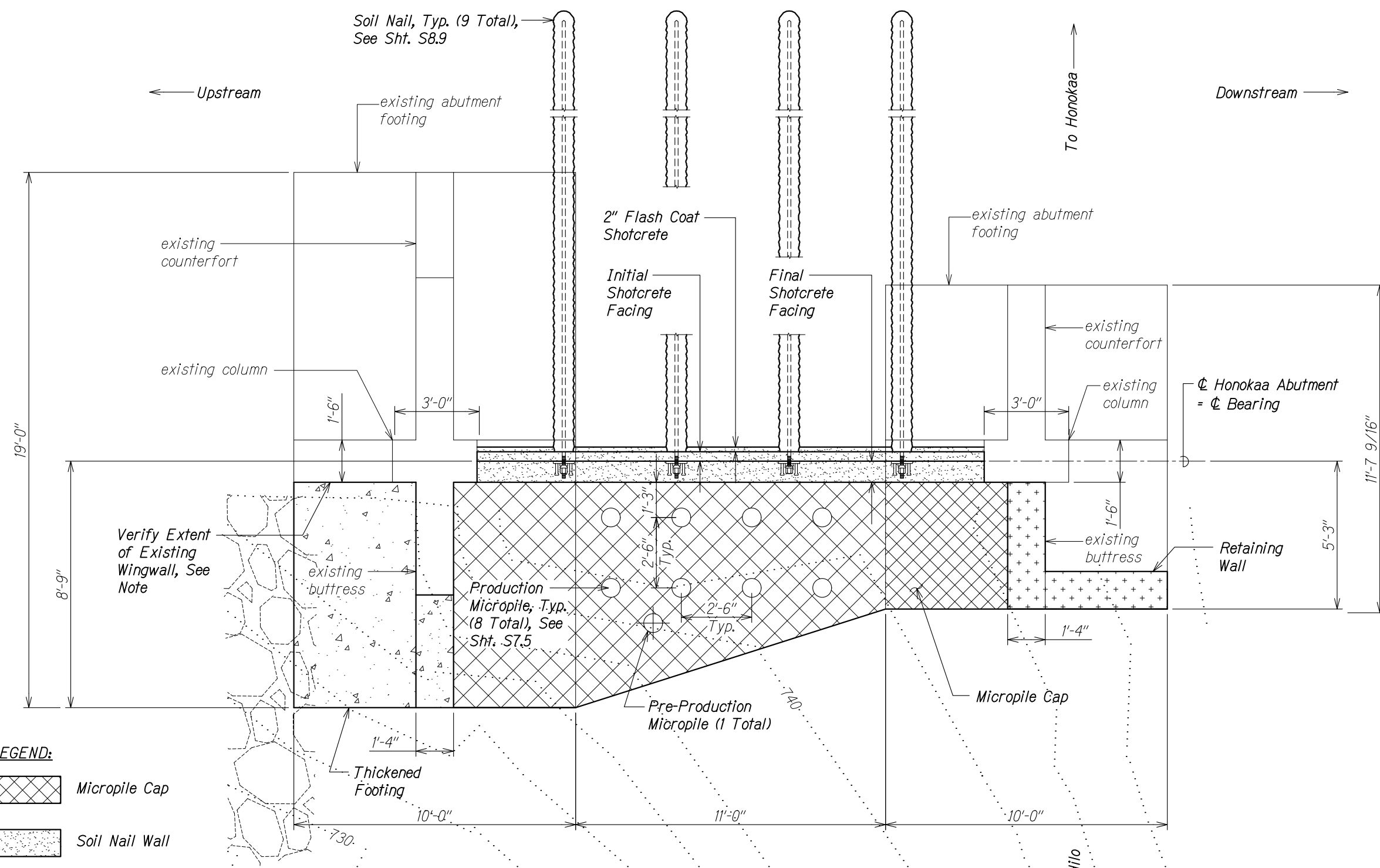
Scale: As Noted Date: Jul. 2024

SHEET No. S4.4 OF 7 SHEETS

ORIGINAL PLAN	DATE
NO. _____	_____
DESIGNED BY	DATE
CHECKED BY	_____
QUANTITIES BY	_____
TRACED BY	_____
DESIGNED BY	_____
DATE	_____

DRAWING NAME: Z:\00 ONGOING\19-031-HBR KAHOLO SEISMIC RETROFIT\01 CAD\07-16-24 100PCT\KBR-S401-S407 ABUT ELEV-SECTION.DWG PLOT TIME: 07-16-24, 12:01 PM

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	BR-019-2(072)	2024	64	85



- LEGEND:**
- Micropile Cap
 - Soil Nail Wall
 - Retaining Wall over Existing Abutment Footing
 - Thickened Footing
 - Production Micropile
 - Pre-Production Micropile

SECTION
 Scale: 1/2" = 1'-0"
 A
 S4.4 S4.6
 S4.5



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STATE OF HAWAII
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HONOKAA ABUTMENT SECTION

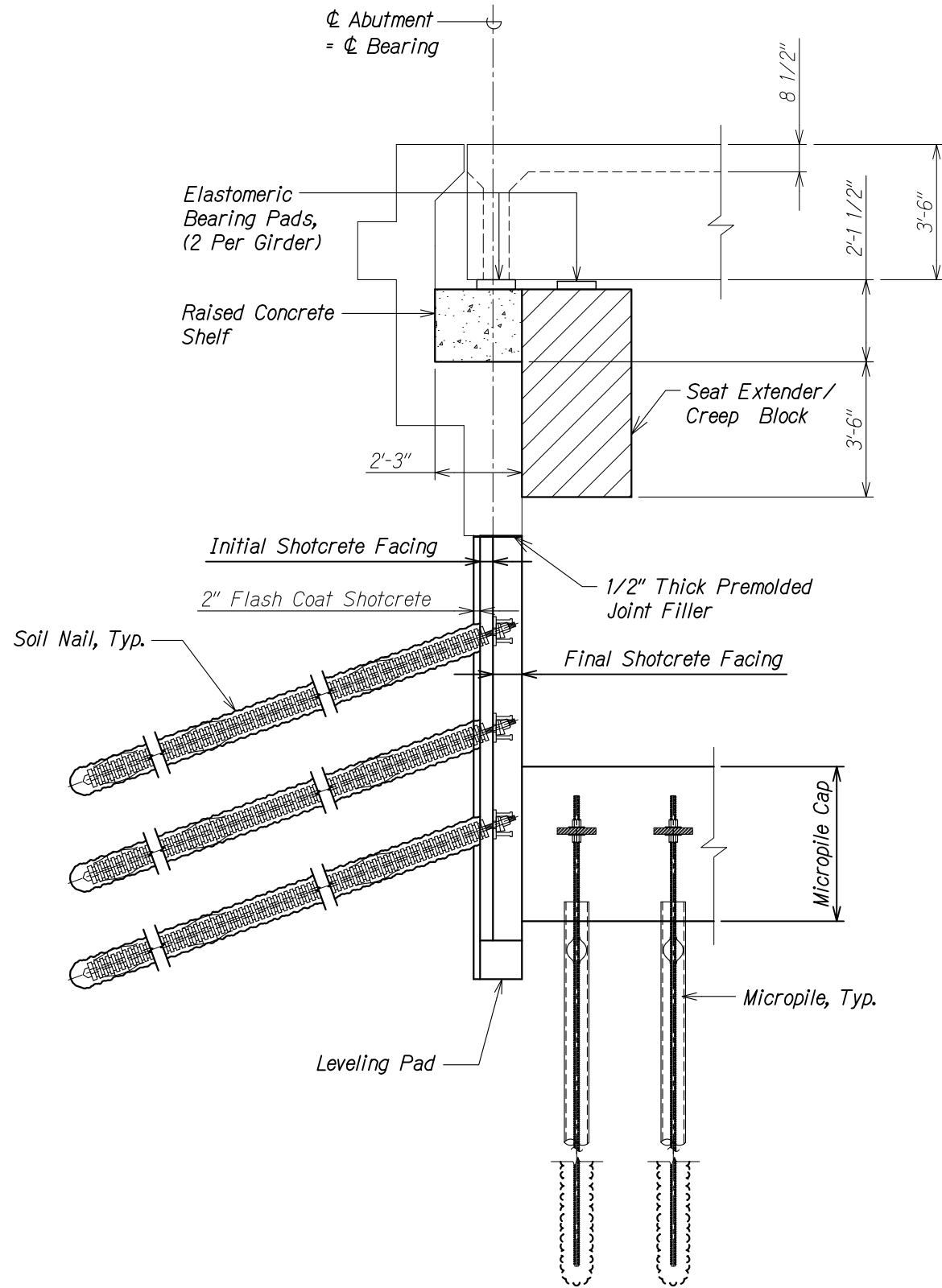
HAWAII BELT ROAD
 Seismic Retrofit of Kaholo Stream Bridge
 Fed. Aid Proj. No. BR-019-2(072)

Scale: As Noted Date: Jul. 2024
 SHEET No. S4.6 OF 7 SHEETS

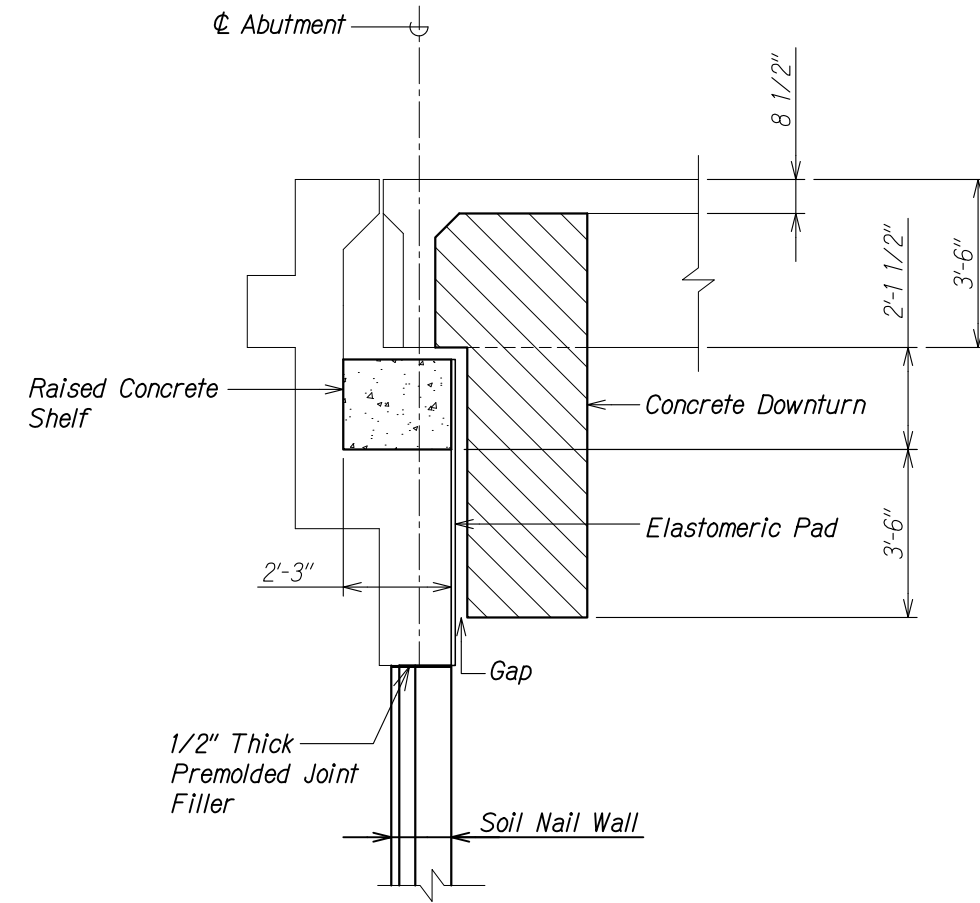
DESIGNED BY	DATE
TRACED BY	
DESIGNED BY	
QUANTITIES BY	
CHECKED BY	
ORIGINAL PLAN	
NOTE BOOK	
No.	

DRAWING NAME: Z:\00 ONGOING\19-031-HBR KAHOLO SEISMIC RETROFIT\01 CAD\07-16-24_100PCT\KBR-S401-S407 ABUT ELEV-SECTION.DWG PLOT TIME: 07-16-24, 12:09 PM

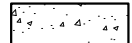
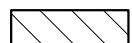
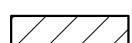
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	BR-019-2(072)	2024	65	85

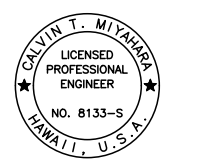


SECTION A
Scale: 1/2" = 1'-0"
S4.1 | S4.7
S4.2, S4.4, S4.5, S7.3



SECTION B
Scale: 1/2" = 1'-0"
S4.1 | S4.7
S4.2, S4.4, S4.5, S7.3

- LEGEND:**
-  Raised Concrete Shelf
 -  Concrete Downturn
 -  Seat Extender/Creep Block



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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

ABUTMENT SECTIONS

HAWAII BELT ROAD
Seismic Retrofit of Kaholo Stream Bridge
Fed. Aid Proj. No. BR-019-2(072)

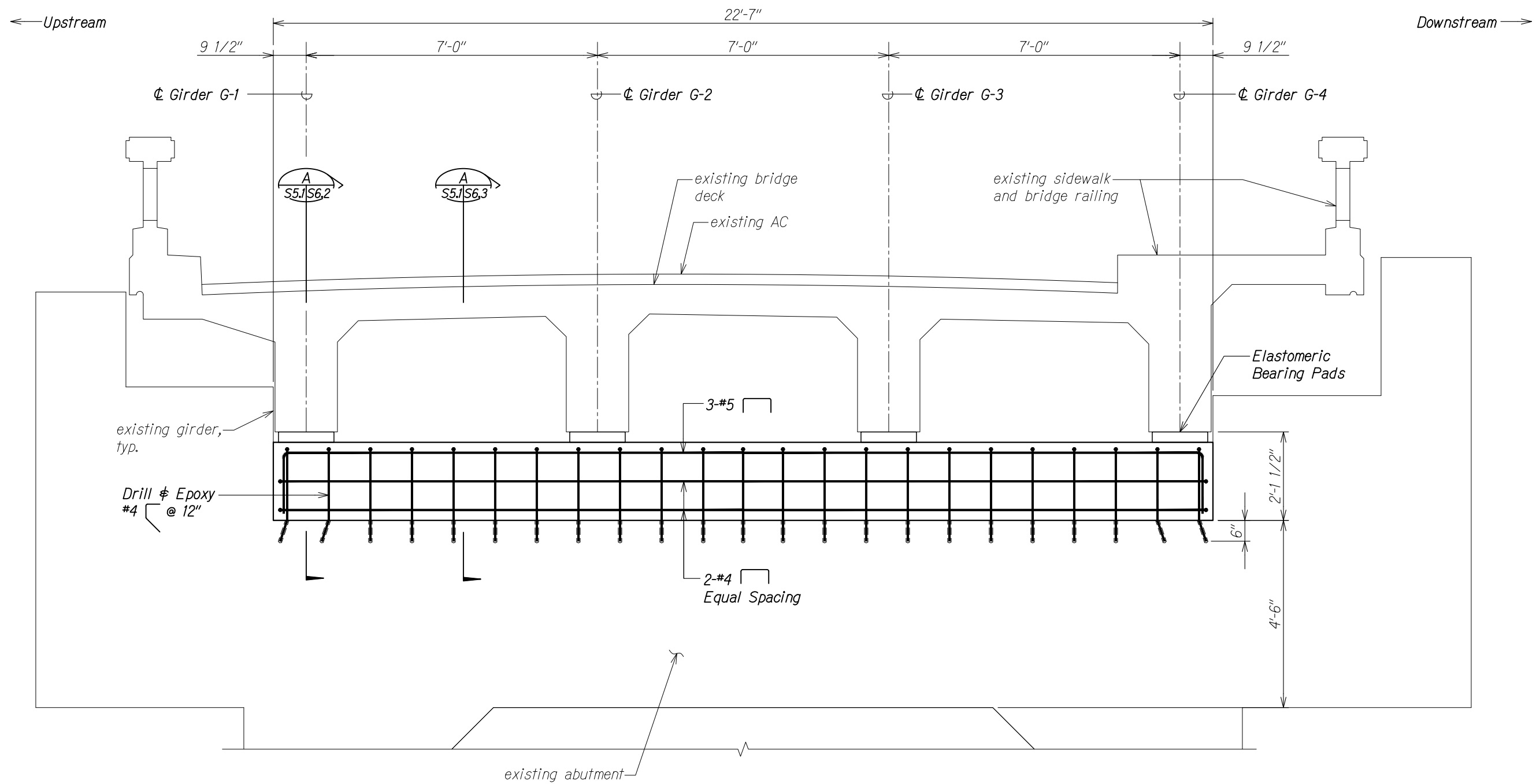
Scale: As Noted Date: Jul. 2024

SHEET No. S4.7 OF 7 SHEETS

ORIGINAL PLAN	DATE
NO. _____	_____
DESIGNED BY	DATE
QUANTITIES BY	_____
CHECKED BY	_____

DRAWING NAME: Z:\00 ONGOING\19-031-HBR KAHOLO SEISMIC RETROFIT\01 CAD\07-16-24_100PCT\KBR-S401-S407 ABUT ELEV-SECTION.DWG PLOT TIME: 07-15-24, 6:44 PM

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	BR-019-2(072)	2024	66	85



NOTE:
Bearing pad shall sit on a flat level surface.

ABUTMENT SECTION AT ϕ BEARING A
Scale: 3/4" = 1'-0" S5.1 | S5.1



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ABUTMENT SECTION

HAWAII BELT ROAD
Seismic Retrofit of Kaholo Stream Bridge
Fed. Aid Proj. No. BR-019-2(072)

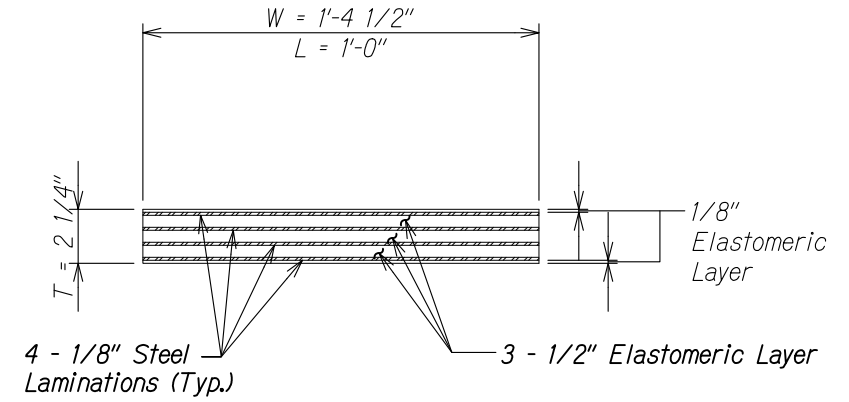
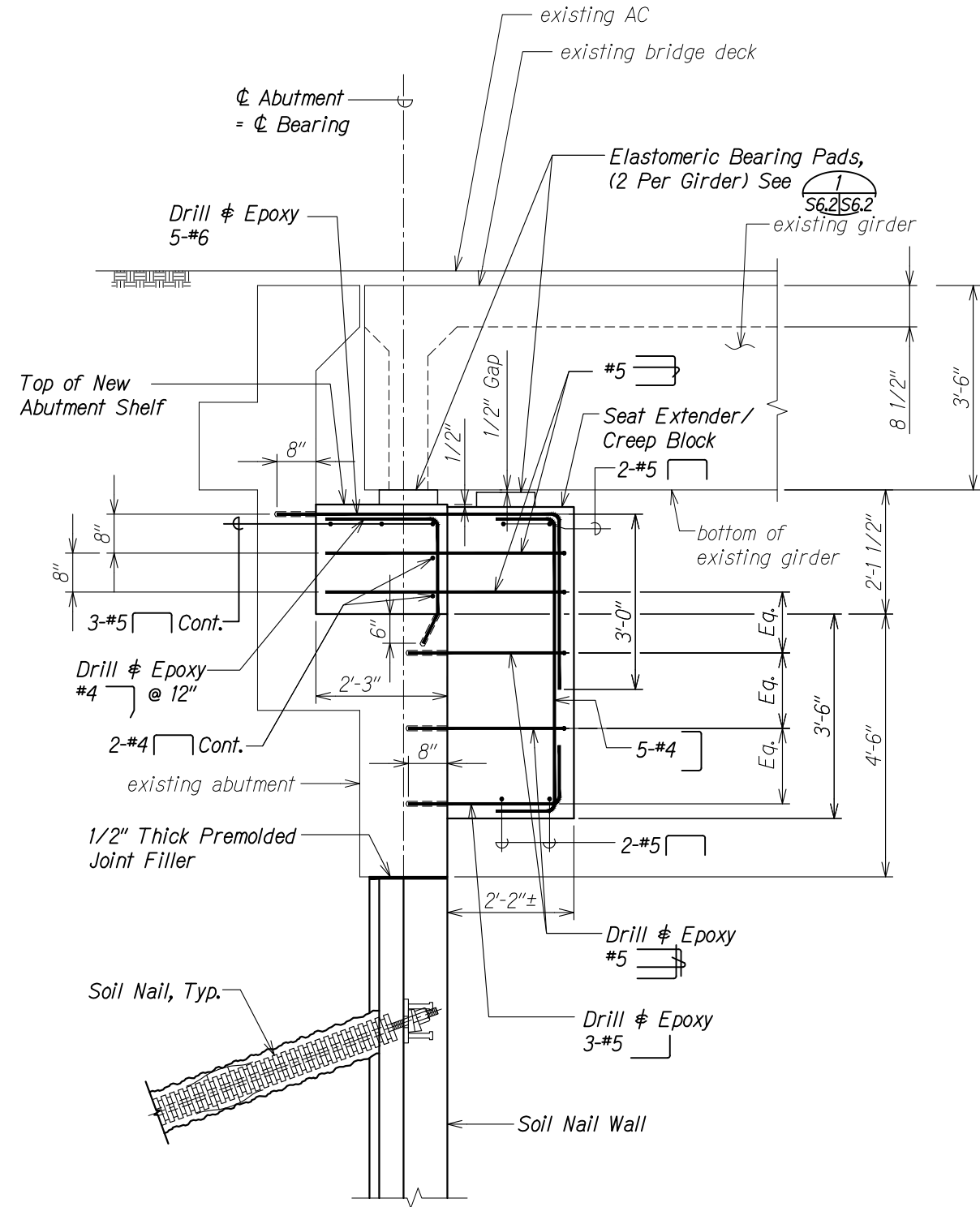
Scale: As Noted Date: Jul. 2024

SHEET No. S5.1 OF 1 SHEETS

ORIGINAL PLAN	DATE
NO. _____	_____
DESIGNED BY	DATE
DESIGNED BY	_____
QUANTITIES BY	DATE
CHECKED BY	_____

DRAWING NAME: Z:\00 ONGOING\19-031-HBR KAHOLO SEISMIC RETROFIT\01 CAD\07-16-24_100PCT\KBR-SS01 ABUT CREEP BLK.DWG PLOT TIME: 07-15-24, 8:46 PM

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	BR-019-2(072)	2024	68	85



ELASTOMERIC BEARING PAD
 Scale: 3" = 1'-0"
 S4.2, S4.4, S4.5, S6.2

SECTION A
 Scale: 3/4" = 1'-0"
 S5.1 S6.2



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STATE OF HAWAII
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 HIGHWAYS DIVISION

ABUTMENT SECTION

HAWAII BELT ROAD
 Seismic Retrofit of Kaholo Stream Bridge
 Fed. Aid Proj. No. BR-019-2(072)

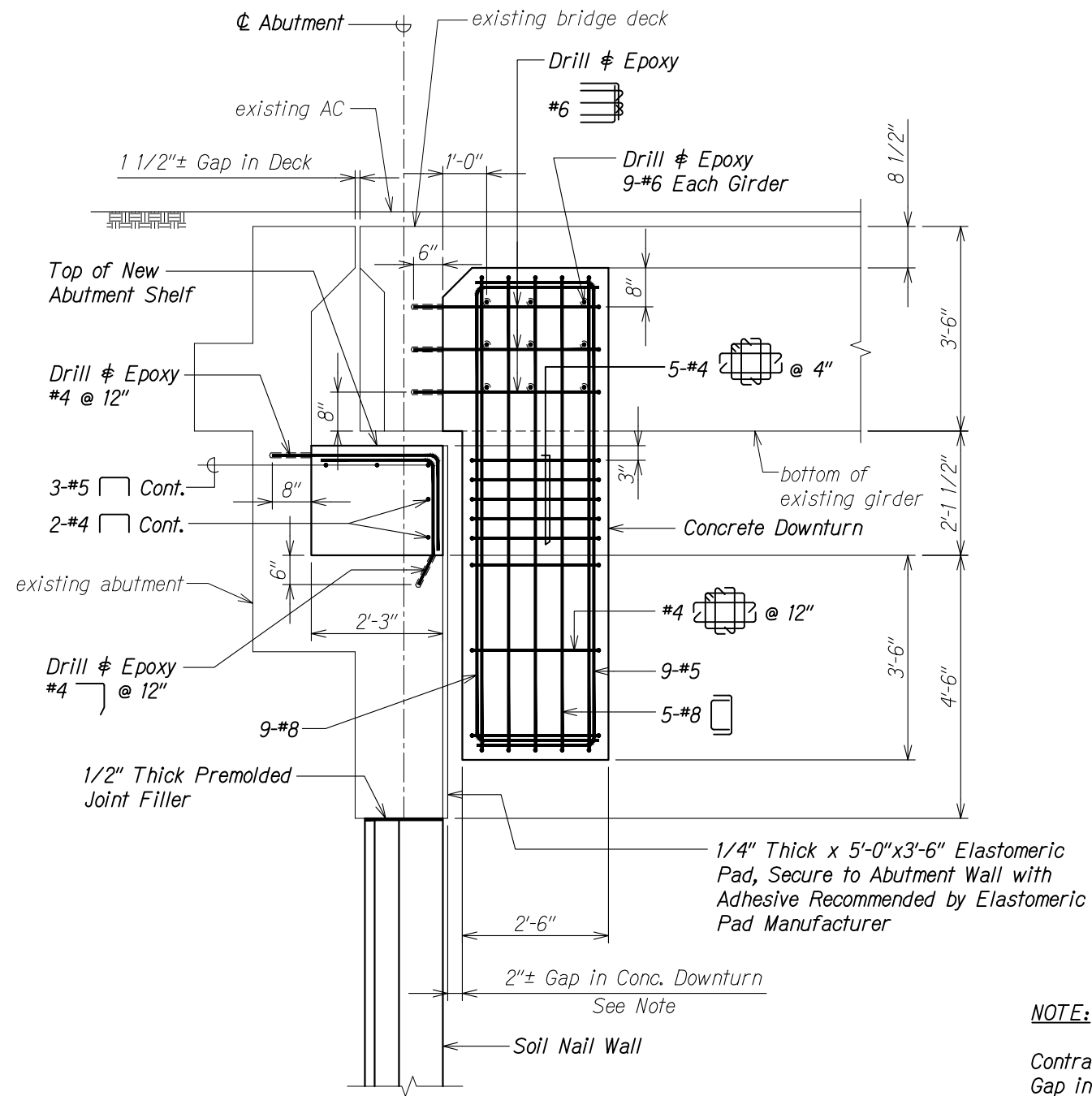
Scale: As Noted Date: Jul. 2024

SHEET No. S6.2 OF 3 SHEETS

ORIGINAL PLAN	DATE
REVISION	
DESIGNED BY	
CHECKED BY	
NO. _____	

DRAWING NAME: Z:\00 ONGOING\19-031-HBR KAHOLO SEISMIC RETROFIT\01 CAD\07-16-24_100PCT\KBR-S601 - S603 ABUT CREEP BUILDING PLOT TIME: 07-16-24, 12:11 PM

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	BR-019-2(072)	2024	69	85



NOTE:

Contractor shall measure gap in deck. Gap in concrete downturn shall be 1/2" larger than gap in deck.

SECTION A
Scale: 3/4" = 1'-0"
S5.1 | S6.3
S6.1



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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

ABUTMENT SECTION

HAWAII BELT ROAD
Seismic Retrofit of Kaholo Stream Bridge
Fed. Aid Proj. No. BR-019-2(072)

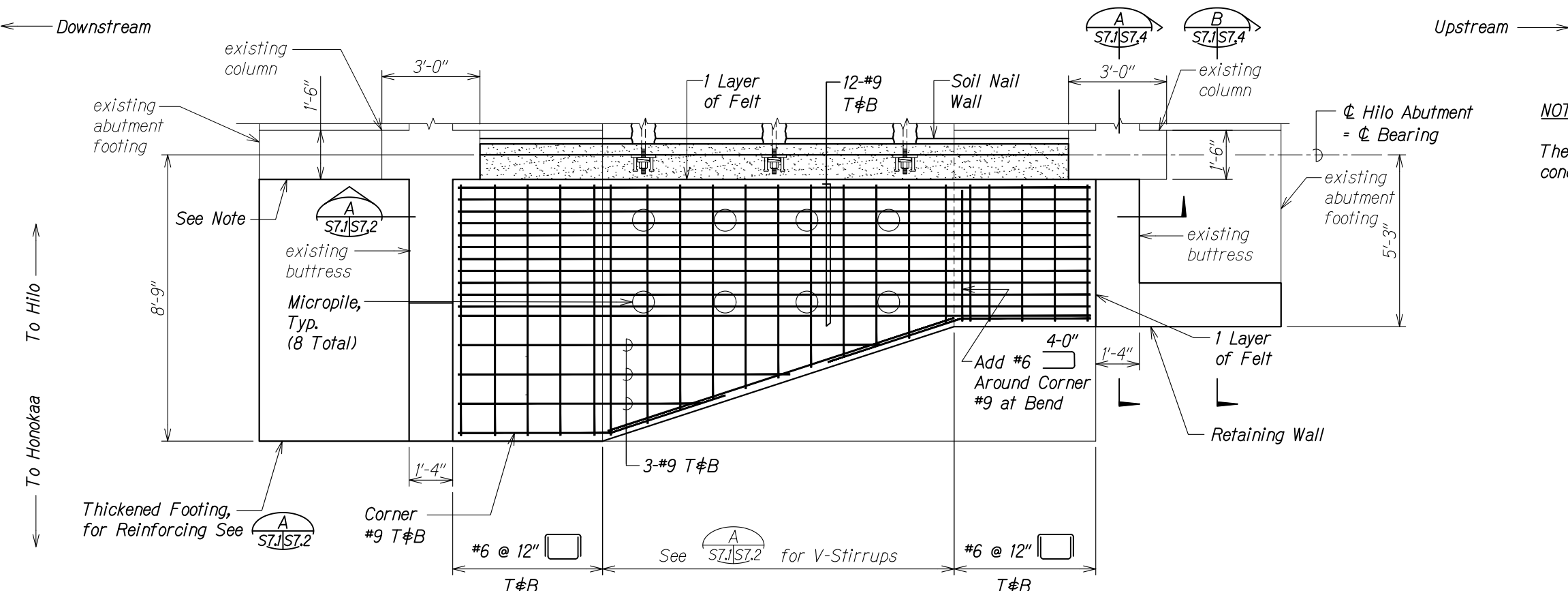
Scale: As Noted Date: Jul. 2024

SHEET No. S6.3 OF 3 SHEETS

ORIGINAL PLAN	DATE
DESIGNED BY	
TRACED BY	
DESIGNED BY	
QUANTITIES BY	
CHECKED BY	
No.	

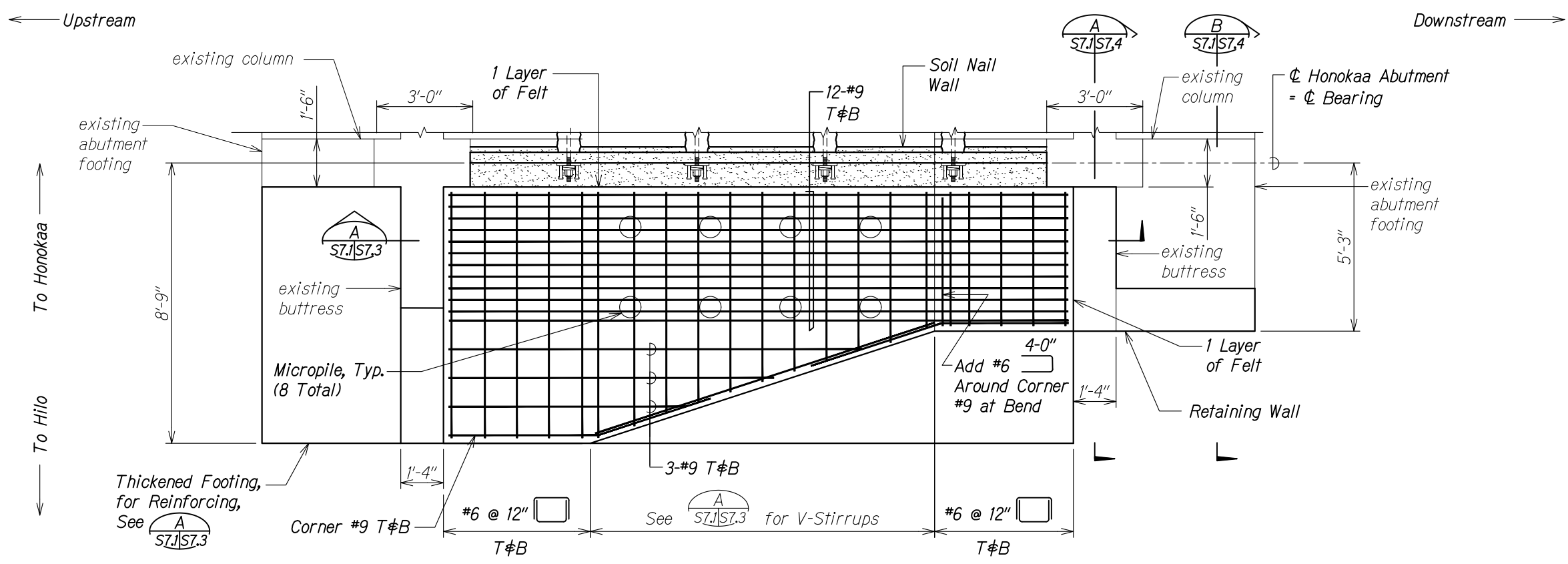
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FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	BR-019-2(072)	2024	70	85



NOTE:
The Contractor shall verify existing conditions. See sheet S4.3.

HILO ABUTMENT MICROPILE FOUNDATION PLAN
Scale: 1/2" = 1'-0"
A S7.J/S7.1



HONOKAA ABUTMENT MICROPILE FOUNDATION PLAN
Scale: 1/2" = 1'-0"
B S7.J/S7.1



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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

ABUTMENT PLANS

HAWAII BELT ROAD
Seismic Retrofit of Kaholo Stream Bridge
Fed. Aid Proj. No. BR-019-2(072)

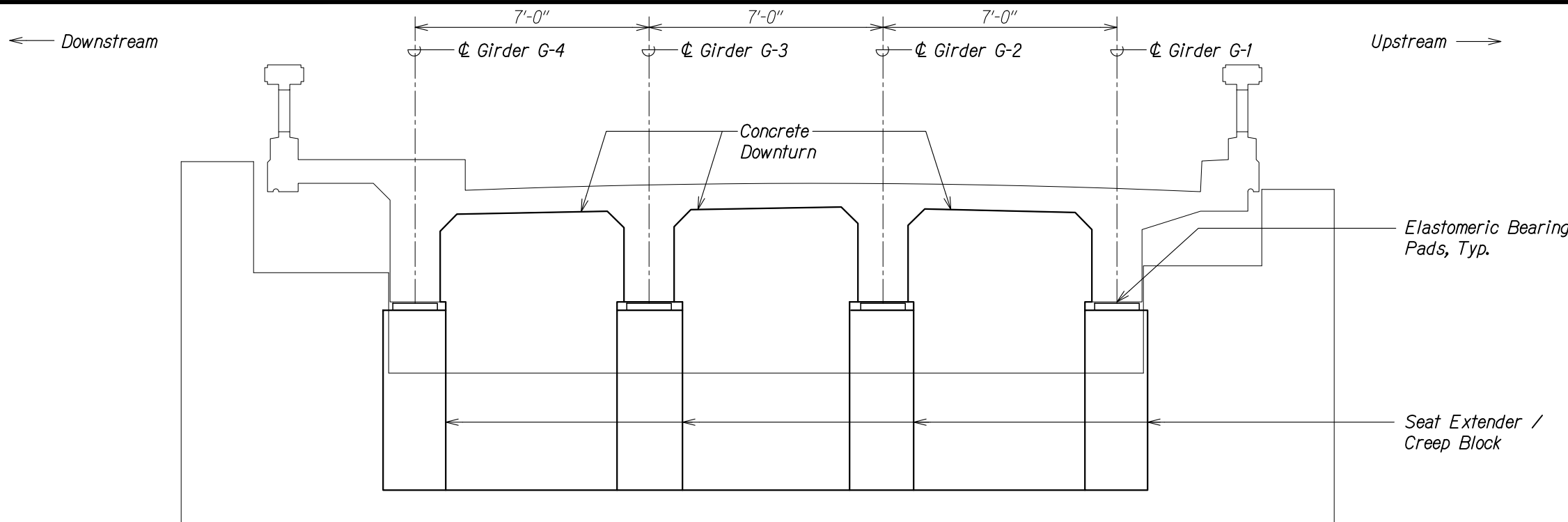
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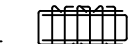
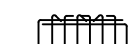
SHEET No. S7.1 OF 5 SHEETS

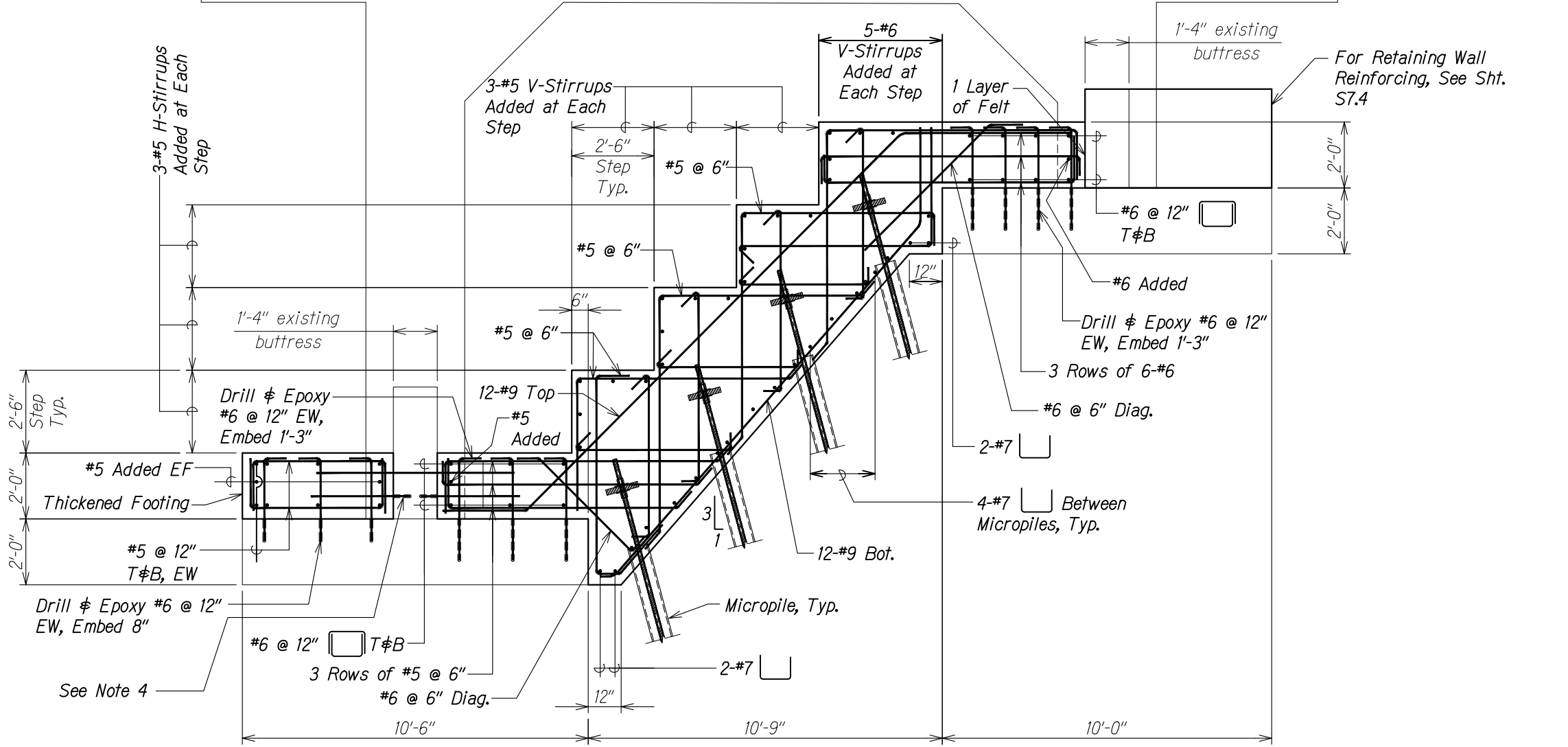
ORIGINAL PLAN	DATE
REVISION	
DESIGNED BY	
QUANTITIES BY	
CHECKED BY	

DRAWING NAME: Z:\00 ONGOING\19-031-HBR KAHOLO SEISMIC RETROFIT\01 CAD\07-16-24-100PCT\KBR-S701 ABUT REIN.DWG PLOT TIME: 07-16-24, 12:15 PM

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	BR-019-2(072)	2024	71	85



- NOTES:**
- H-Stirrups =  8-Legs min. Stirrups shall be equally spaced within the step placed level. The legs shall span parallel to ϕ Abutment.
 - V-Stirrups =  8-Legs min. Stirrups shall be equally spaced within the step and placed vertically.
 - All hooks and bends for H-Stirrups and V-Stirrups shall be anchored by a bar. Added single-leg stirrups shall be placed within 1'-6" of a micropile relative to plan view and be equally spaced over these micropiles.
 - Thickened footing shall be poured concurrently with micropile cap. Where existing buttress occurs, drill and epoxy #5x3'-0" @ 12" T ϕ B, EF, embed 6". Otherwise, run #5x6'-0"@12" T ϕ B, centered over buttress.



HILO SECTION A
Scale: 1/2" = 1'-0" S7.1 | S7.2



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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

HILO ABUTMENT SECTION

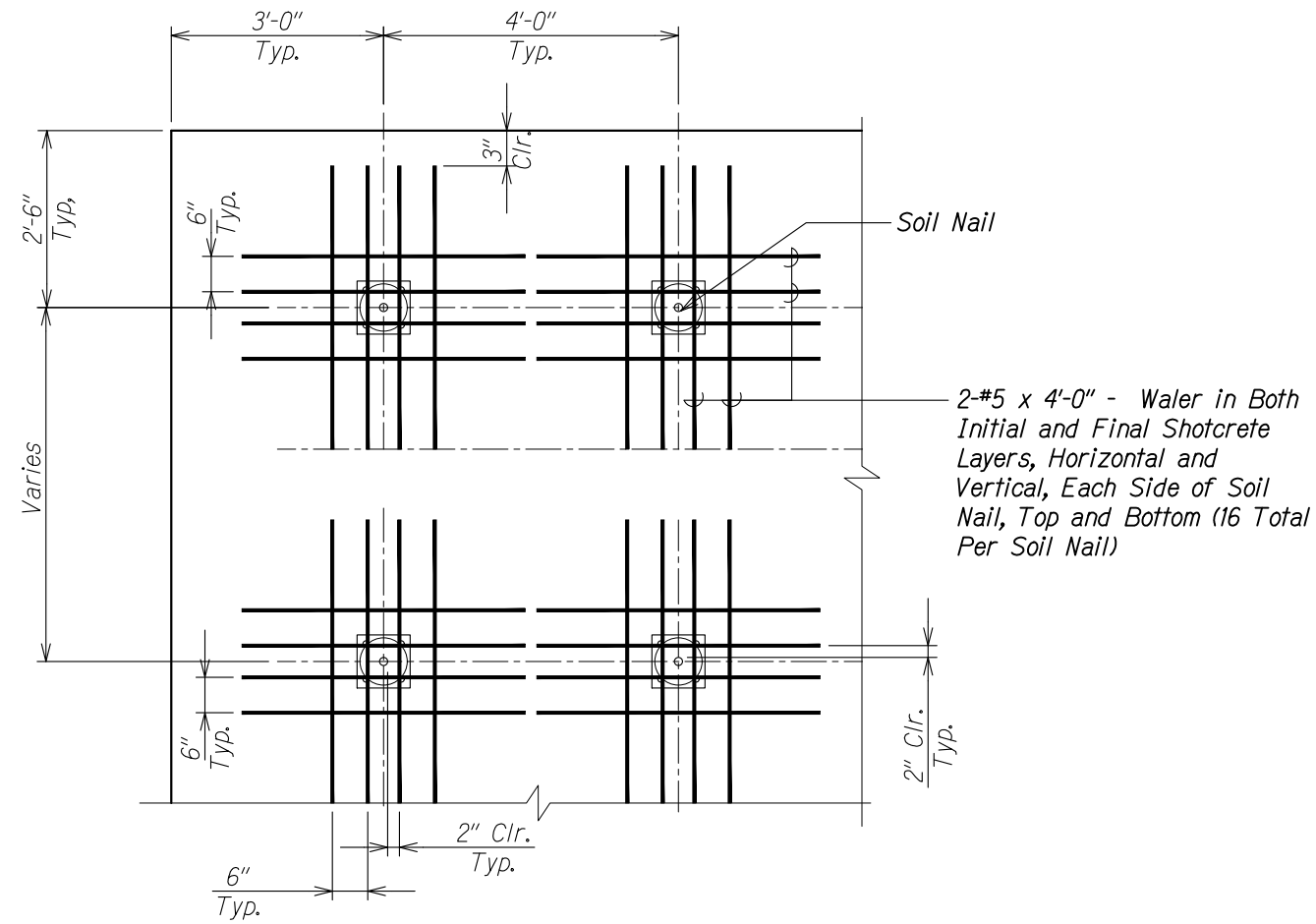
HAWAII BELT ROAD
Seismic Retrofit of Kaholo Stream Bridge
Fed. Aid Proj. No. BR-019-2(072)

Scale: As Noted Date: Jul. 2024
SHEET No. S7.2 OF 5 SHEETS

DESIGNED BY	DATE
CHECKED BY	
DATE	
DESIGNED BY	
CHECKED BY	
DATE	
DESIGNED BY	
CHECKED BY	
DATE	

DRAWING NAME: Z:\00 ONGOING\19-031-HBR KAHOLO SEISMIC RETROFIT\01 CAD\07-16-24_100PCT\HBR-S701 ABUT REIN.DWG PLOT TIME: 07-15-24, 7:27 PM

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	BR-019-2(072)	2024	77	85



TYPICAL WALER BAR DETAIL 1
 Scale: 3/4" = 1'-0" S8.1 S8.3

ORIGINAL PLAN	DATE
NO. _____	_____
DESIGNED BY _____	_____
CHECKED BY _____	_____

DRAWING NAME: Z:\00 ONGOING\19-031-HBR KAHALO SEISMIC RETROFIT\01 CAD\07-16-24-100PCT\KBR-S801.TYP DET.DWG PLOT TIME: 07-15-24, 6:55 PM



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WALER BAR REINFORCING DETAIL

HAWAII BELT ROAD
Seismic Retrofit of Kahalo Stream Bridge
Fed. Aid Proj. No. BR-019-2(072)

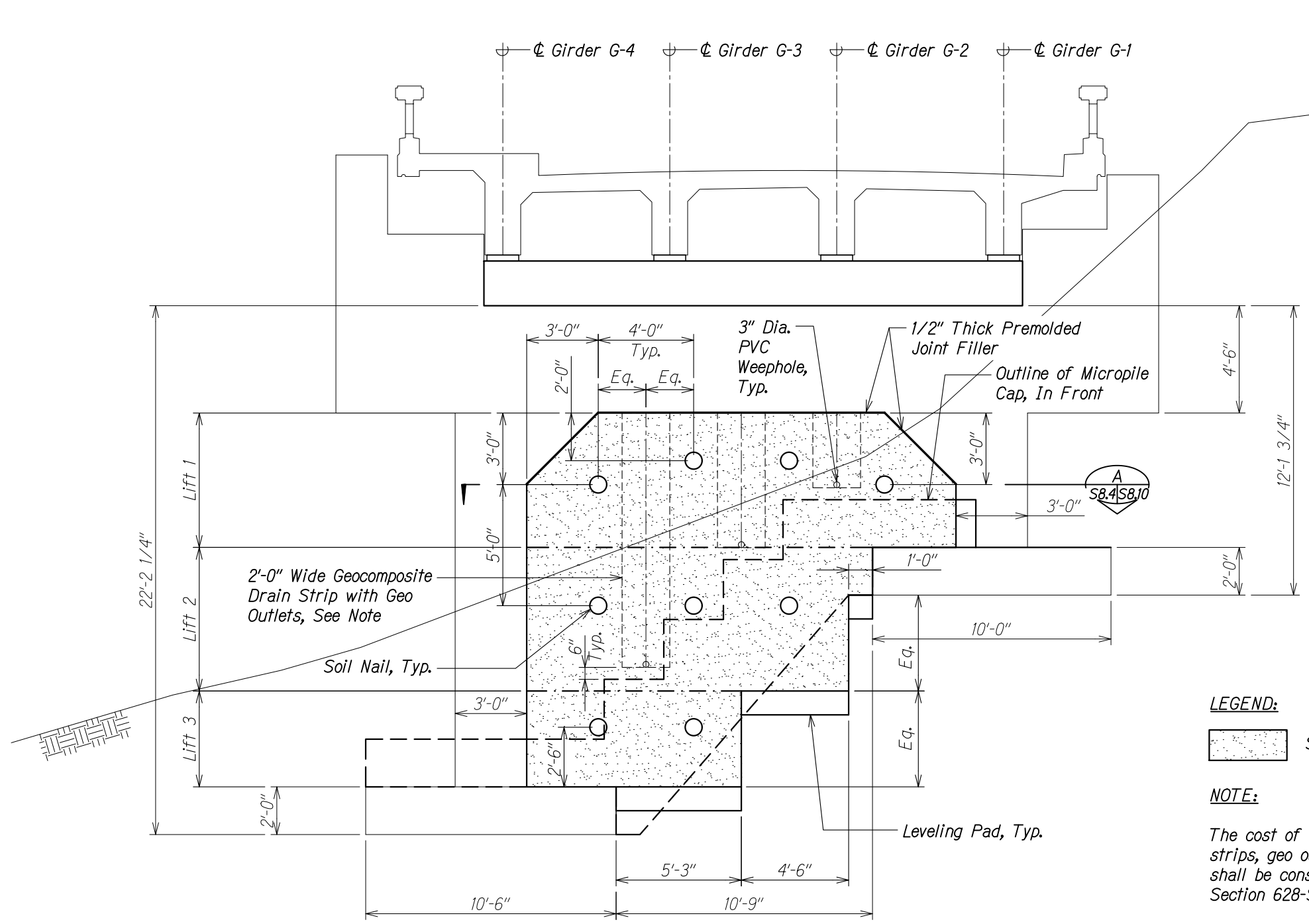
Scale: As Noted Date: Jul. 2024

SHEET No. S8.3 OF 10 SHEETS

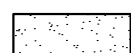
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	BR-019-2(072)	2024	78	85

← Downstream

Upstream →



approx. exist. grade

LEGEND:
 Soil Nail Wall

NOTE:
 The cost of geocomposite drain strips, geo outlets, and weepholes shall be considered incidental to Section 628-Shotcrete.



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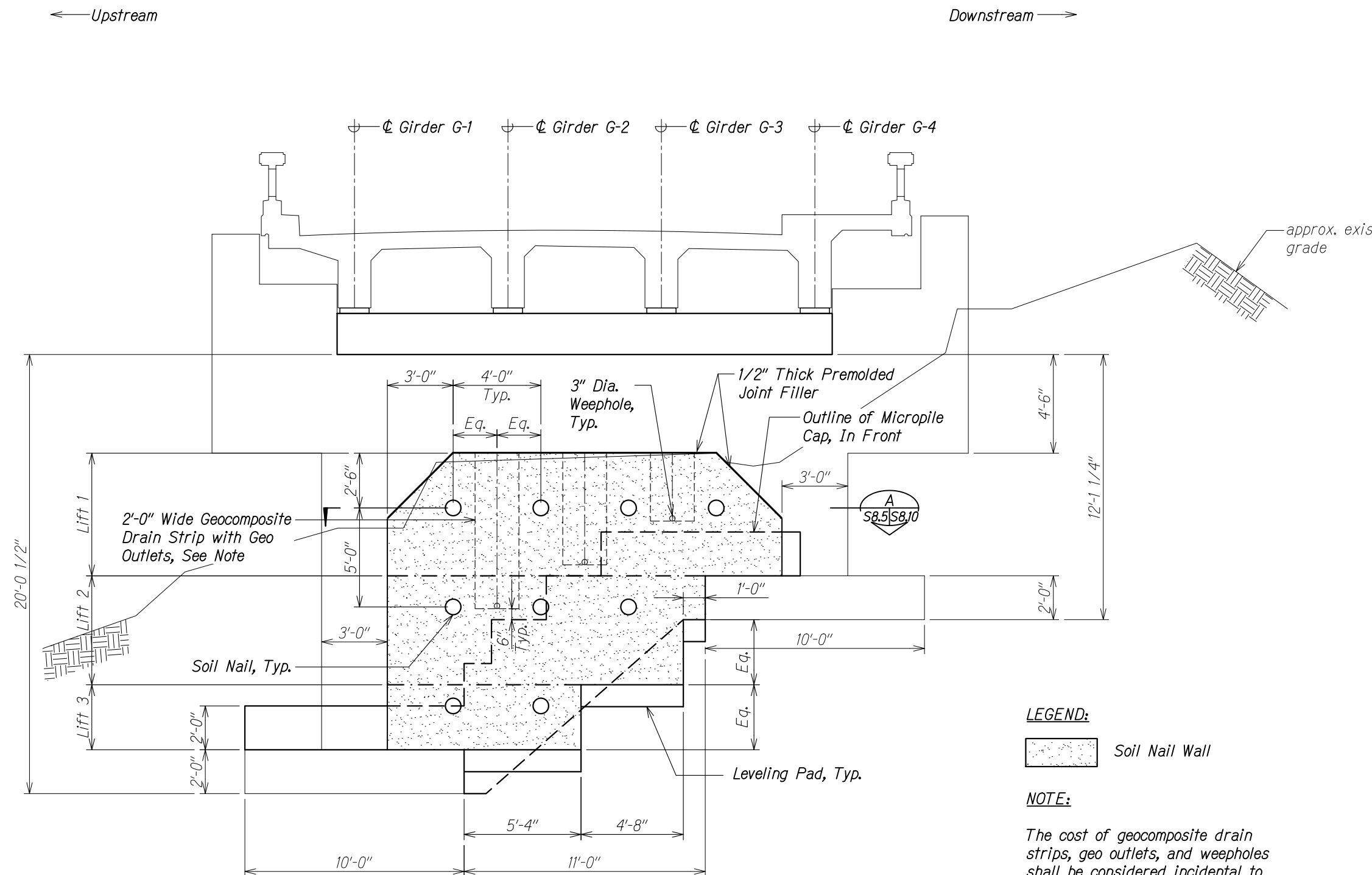
HILO ABUTMENT SOIL NAIL WALL PROFILE A
 Scale: 3/8" = 1'-0" S8.4 | S8.4

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

DRAWING NAME: Z:\00 ONGOING\19-031-HBR KAHALO SEISMIC RETROFIT\01 CAD\07-16-24_100PCT\KBR-S804 WALL PROF.DWG PLOT TIME: 07-15-24, 7:31 PM

STATE OF HAWAII
 DEPARTMENT OF TRANSPORTATION
 HIGHWAYS DIVISION
**HILO ABUTMENT
 SOIL NAIL WALL PROFILE**
 HAWAII BELT ROAD
 Seismic Retrofit of Kaholo Stream Bridge
 Fed. Aid Proj. No. BR-019-2(072)
 Scale: As Noted Date: Jul. 2024
 SHEET No. S8.4 OF 10 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	BR-019-2(072)	2024	79	85



LEGEND:

 Soil Nail Wall

NOTE:

The cost of geocomposite drain strips, geo outlets, and weepholes shall be considered incidental to Section 628-Shotcrete.



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 4-30-26
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HONOKAA ABUTMENT SOIL NAIL WALL PROFILE
 Scale: 3/8" = 1'-0" 

STATE OF HAWAII
 DEPARTMENT OF TRANSPORTATION
 HIGHWAYS DIVISION
**HONOKAA ABUTMENT
 SOIL NAIL WALL PROFILE**
 HAWAII BELT ROAD
 Seismic Retrofit of Kaholo Stream Bridge
 Fed. Aid Proj. No. BR-019-2(072)
 Scale: As Noted Date: Jul. 2024
 SHEET No. S8.5 OF 10 SHEETS

ORIGINAL PLAN	DATE
DESIGNED BY	
TRACED BY	
DESIGNED BY	
QUANTITIES BY	
CHECKED BY	
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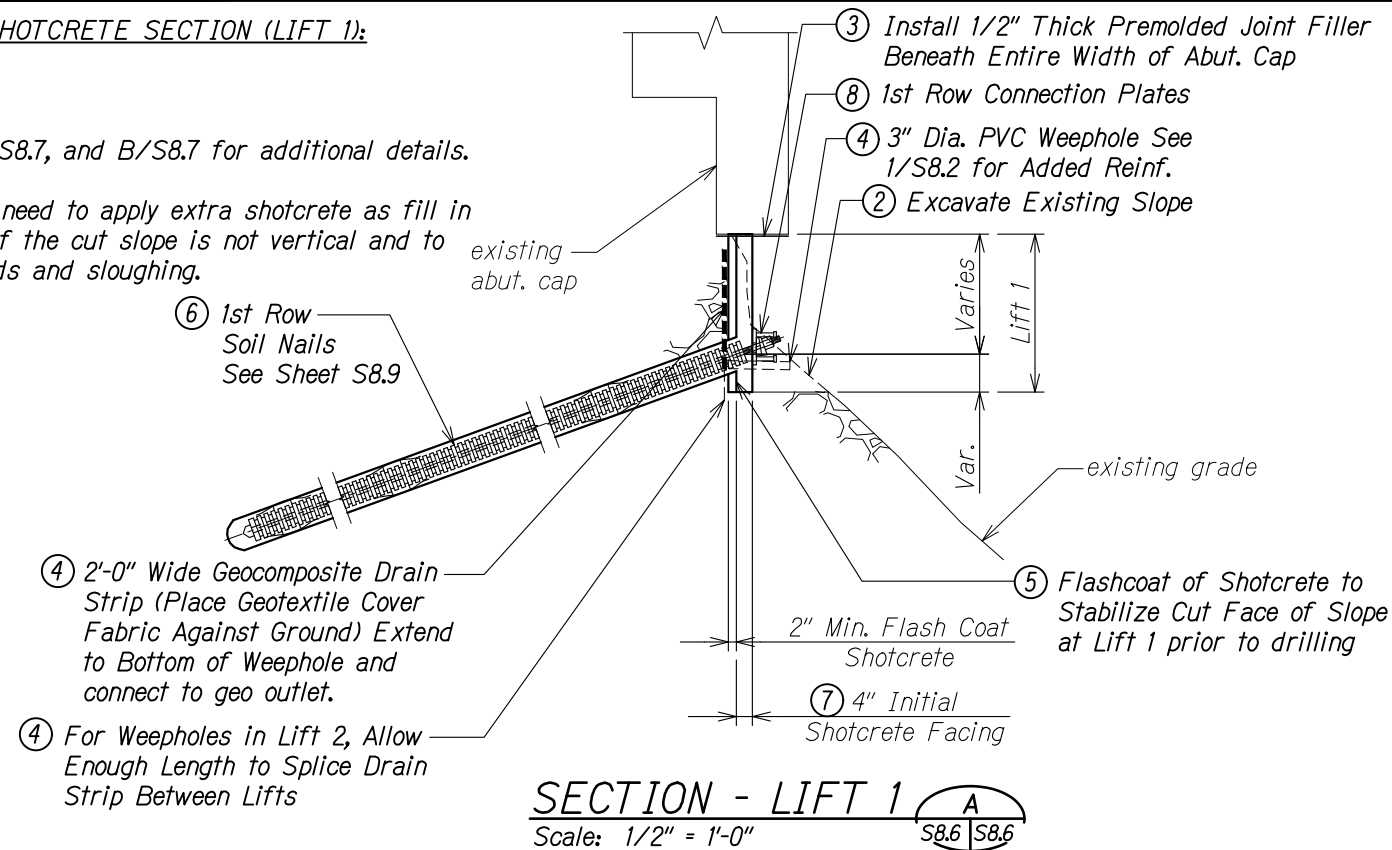
DRAWING NAME: Z:\00 ONGOING\19-031-HBR KAHOLO SEISMIC RETROFIT\01 CAD\07-16-24_100PCT\KBR-S804 WALL PROF.DWG PLOT TIME: 07-16-24, 12:20 PM

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	BR-019-2(072)	2024	80	85

TYPICAL INITIAL SHOTCRETE SECTION (LIFT 1):

NOTES:

- See B/S8.6, A/S8.7, and B/S8.7 for additional details.
- Contractor may need to apply extra shotcrete as fill in case the face of the cut slope is not vertical and to account for voids and sloughing.

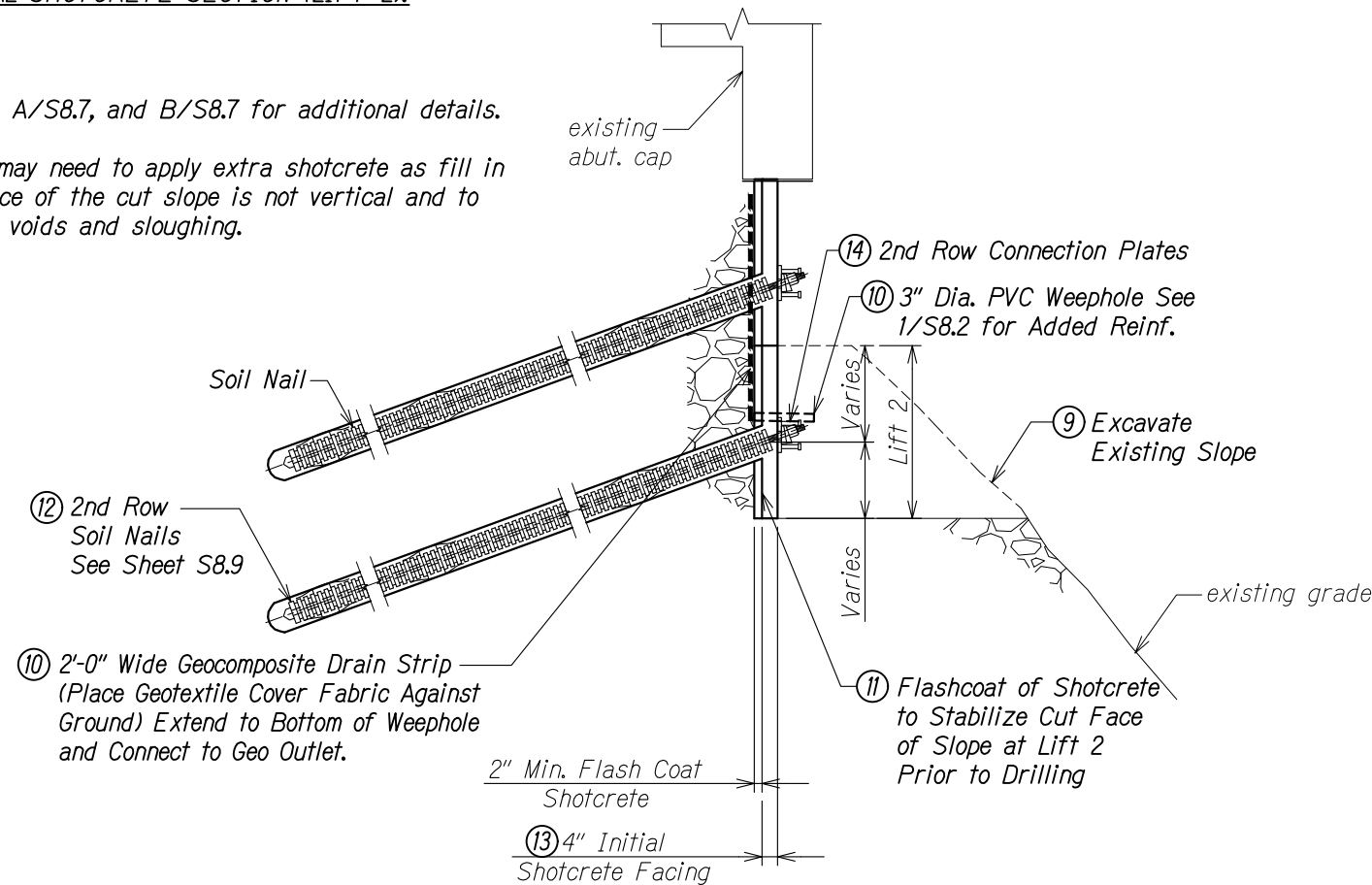


SECTION - LIFT 1 A
Scale: 1/2" = 1'-0" S8.6 | S8.6

TYPICAL INITIAL SHOTCRETE SECTION (LIFT 2):

NOTES:

- See A/S8.6, A/S8.7, and B/S8.7 for additional details.
- Contractor may need to apply extra shotcrete as fill in case the face of the cut slope is not vertical and to account for voids and sloughing.



SECTION - LIFT 2 B
Scale: 1/2" = 1'-0" S8.6 | S8.6

CONSTRUCTION SEQUENCE:

- Each stage shall be completed in its entirety before proceeding to next stage.
- Excavate to required 1st Lift and remove existing rip rap as required.
- Install and secure 1/2" thick premolded joint filler to existing abutment cap.
- Install geocomposite drain strips. Extend drain strips and install geo outlet and PVC weephole as shown on S8.4 and S8.5.
- Apply flash coat shotcrete.
- Drill, install, and grout 1st row of soil nails; run any necessary performance/proof tests.
- Place reinforcing and apply Lift 1 initial shotcrete facing.
- Install studded connection plates on 1st row.
- Excavate to required 2nd Lift and remove existing rip rap as required.
- Connect geocomposite drain strip from previous lift to geocomposite drain strip in Lift 2. Extend geocomposite drain strip and install geo outlet and PVC weephole as shown on S8.4 and S8.5.
- Apply flash coat shotcrete.
- Drill, install, and grout 2nd row of soil nails; run any necessary performance/proof tests.
- Place reinforcing and apply Lift 2 initial shotcrete facing.
- Install studded connection plates on 2nd row.
- Excavate to required leveling pad and remove existing rip rap as required.
- Apply flash coat shotcrete.
- Drill, install, and grout 3rd row of soil nails; run any necessary performance/proof tests.
- Place reinforcing for wall and leveling pad. Pour leveling pad and apply Lift 3 initial shotcrete facing.
- Install studded connection plates on 3rd row.
- Place reinforcing and drill and epoxy dowels into existing abutment column, see A/S8.10. Apply final shotcrete wall facing.
- Install micropiles and micropile cap.



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**SOIL NAIL WALL
CONSTRUCTION SEQUENCE**

HAWAII BELT ROAD
Seismic Retrofit of Kaholo Stream Bridge
Fed. Aid Proj. No. BR-019-2(072)

Scale: As Noted Date: Jul. 2024
SHEET No. S8.6 OF 10 SHEETS

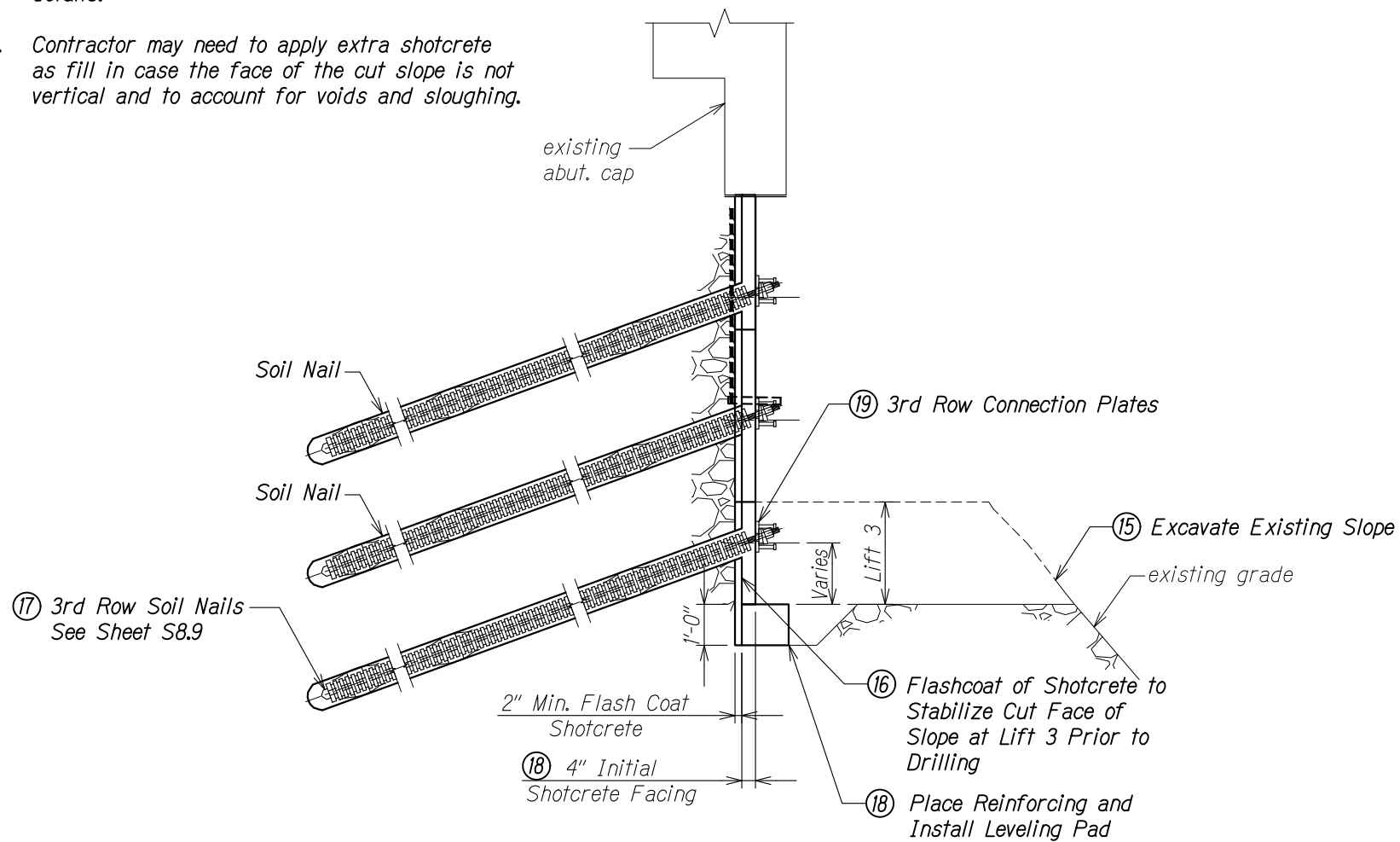
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DRAWING NAME: Z:\00 ONGOING\19-031-HBR KAHOLO SEISMIC RETROFIT\01 CAD\07-16-24-100PCT\KBR-S806 SOIL NAIL SEC.DWG PLOT TIME: 07-15-24, 7:35 PM

TYPICAL INITIAL SHOTCRETE SECTION (LIFT 3):

NOTES:

1. See A/S8.6, B/S8.6, and B/S8.7 for additional details.
2. Contractor may need to apply extra shotcrete as fill in case the face of the cut slope is not vertical and to account for voids and sloughing.

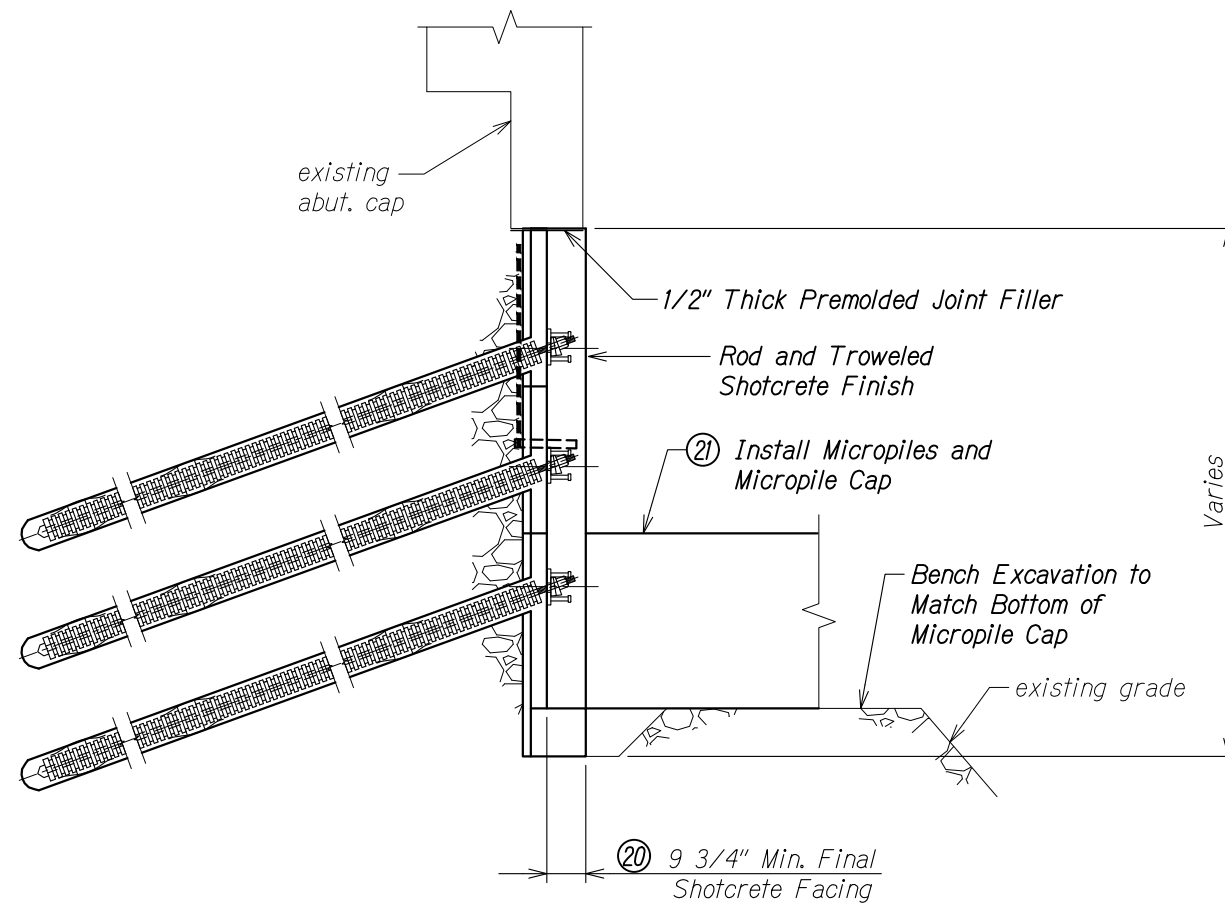


**SECTION - LIFT 3
AND LEVELING PAD** A
Scale: 1/2" = 1'-0" S8.6 | S8.7

TYPICAL FINAL SHOTCRETE SECTION:

NOTE:

See A/S8.6, B/S8.6, and A/S8.7 for additional details.



SECTION - FINAL FACING B
Scale: 1/2" = 1'-0" S8.6 | S8.7

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	BR-019-2(072)	2024	81	85

DRAWING NAME: Z:\00 ONGOING\19-031-HBR KAHOLO SEISMIC RETROFIT\01 CAD\07-16-24-100PCT\KBR-S806 SOIL NAIL SEC.DWG PLOT TIME: 07-16-24, 2:36 PM

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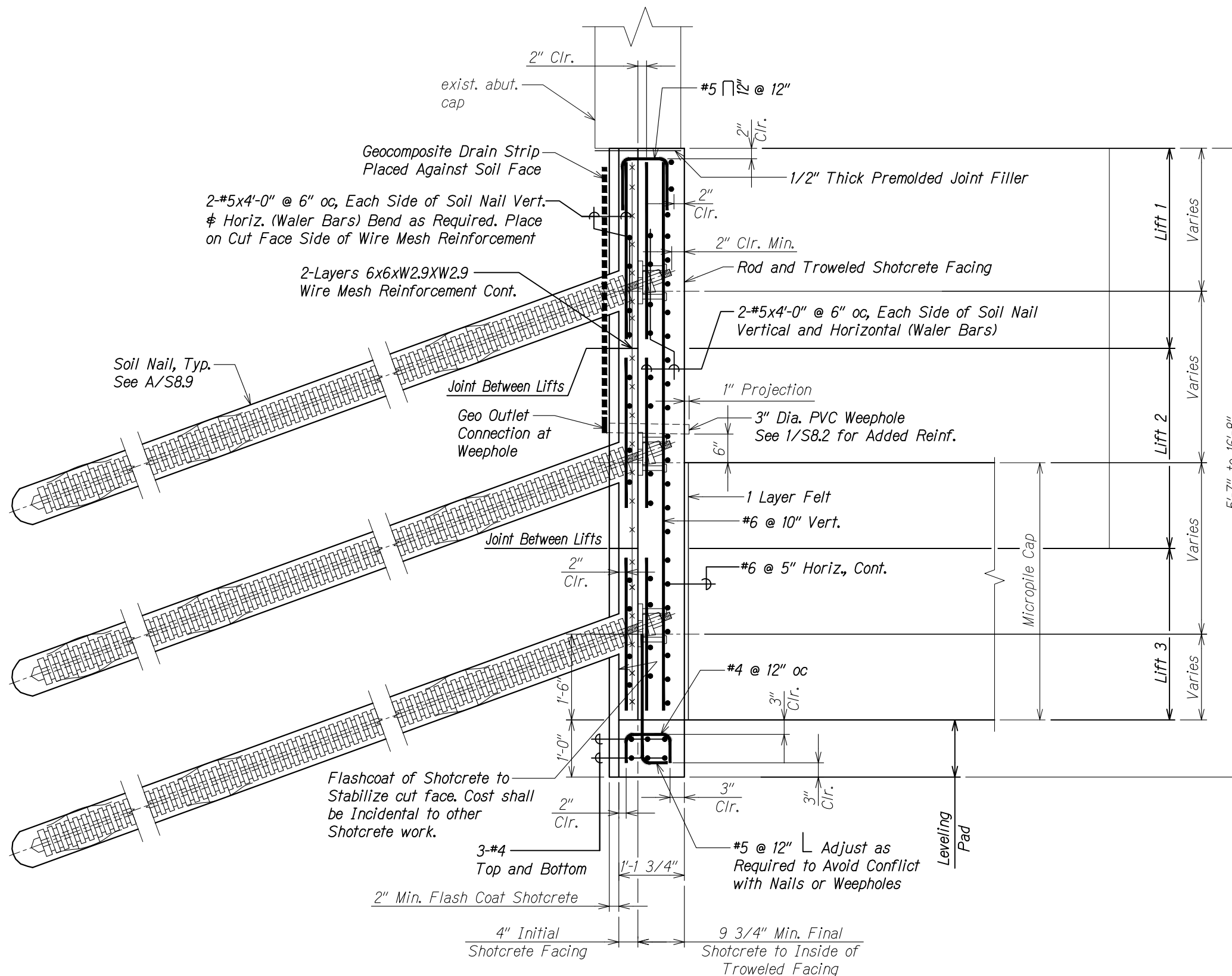
**SOIL NAIL WALL
CONSTRUCTION SEQUENCE**

HAWAII BELT ROAD
Seismic Retrofit of Kaholo Stream Bridge
Fed. Aid Proj. No. BR-019-2(072)

Scale: As Noted Date: Jul. 2024

SHEET No. S8.7 OF 10 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	BR-019-2(072)	2024	82	85



NOTES:

1. Initial shotcrete shall be applied after placement of geocomposite drain strips.
2. See Shts. S8.4 and S8.5 for weephole locations.
3. Install geocomposite drain strip per Manufacturer's recommendations.
4. During lift excavation, the Contractor shall anticipate removal of existing rip rap.

ORIGINAL PLAN	DATE
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CHECKED BY	

DRAWING NAME: Z:\00 ONGOING\19-031-HBR KAHALO SEISMIC RETROFIT\01 CAD\07-16-24_100PCT\KBR-S808 SWM REINF.DWG PLOT TIME: 07-16-24_12:24 PM

**SOIL NAIL WALL SECTION
REINFORCING DETAIL**

Scale: 1" = 1'-0"



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STATE OF HAWAII
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**TYPICAL SOIL NAIL WALL SECTION
REINFORCING DETAIL**

HAWAII BELT ROAD
Seismic Retrofit of Kahalo Stream Bridge
Fed. Aid Proj. No. BR-019-2(072)

Scale: As Noted Date: Jul. 2024

SHEET No. S8.8 OF 10 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	BR-019-2(072)	2024	85	85

CONSTRUCTION SEQUENCE:

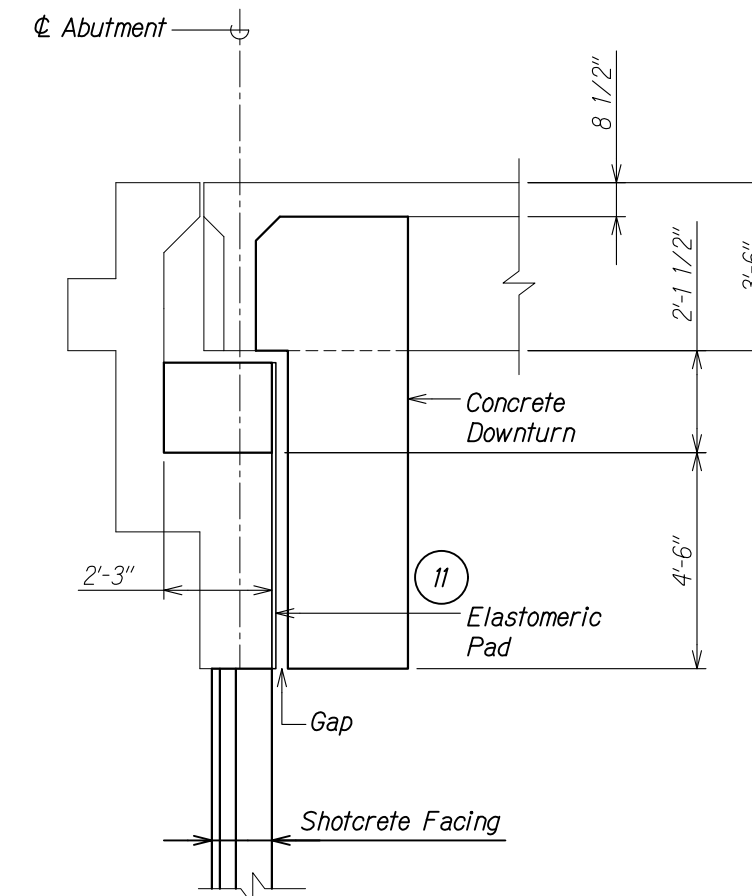
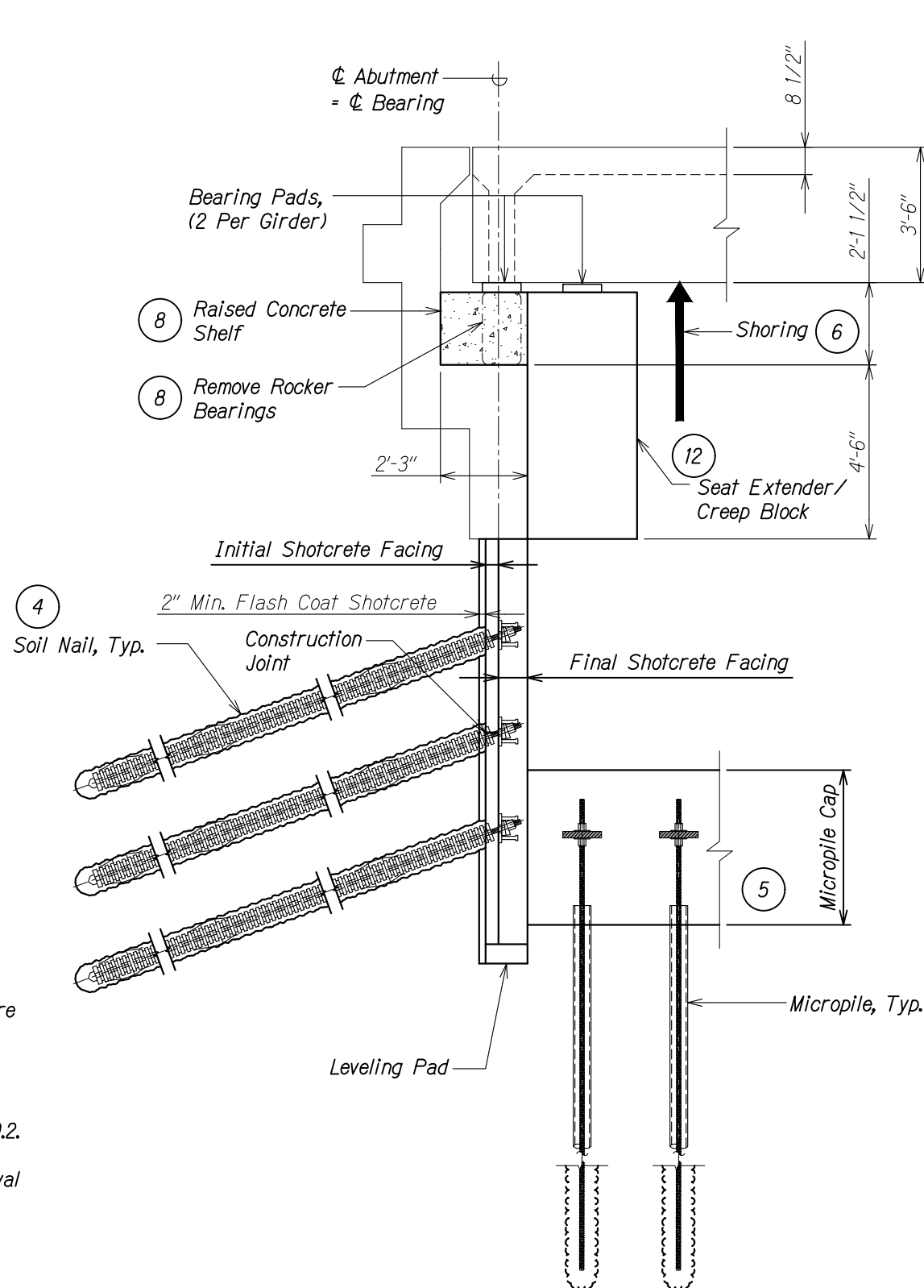
1. The Contractor shall submit a work plan that includes all stages of work for approval by the Engineer.
2. Install BMPs. See Civil plans.
3. Install temporary access road at Abutment. (Construction can begin at either Abutment.)
4. Install Soil Nail Wall.
5. Install Micropiles and Micropile Cap.
6. Construct shoring.
7. Raise bridge girders and place on Temporary Shoring. See Temporary Shoring notes for criteria.
8. Remove Rocker Bearing. Construct abutment shelf, and install Elastomeric Bearings.
9. Lower bridge girders onto Elastomeric Bearing and remove shoring.
10. Final bottom of girder elevations shall match existing bottom of girder elevations.
11. Construct concrete downturn.
12. Construct Seat Extender/Creep Blocks and install elastomeric bearings.
13. Repeat Stages 2 to 9 for other Abutment.
14. Remove BMPs. See Civil plans.

TEMPORARY SHORING NOTES:

1. All girders at the same abutment shall be raised and lowered at the same time.
2. Bridge girders shall be raised the same amount and not be raised more than 1/2" higher than it's existing elevation.
3. Bearings, jacks, and temporary shoring must be sufficient in carrying all dead loads and a HL-93 Live Load. Supports shall be considered Falsework and follow all specifications and criteria listed on Sheet S0.2. A detailed plan with plans and calculations stamped by a Structural Engineer licensed in the State of Hawaii shall be submitted for approval to the Engineer.

NOTE:

The work at the piers can be done at any time.



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DESIGNED BY	
QUANTITIES BY	
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No.	

DRAWING NAME: Z:\00 ONGOING\19-031-HBR KAHALO SEISMIC RETROFIT\01 CAD\07-16-24-100PCT\KBR-S901 CONSTR SEQ.DWG PLOT TIME: 07-16-24, 12:28 PM



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CONSTRUCTION SEQUENCE

HAWAII BELT ROAD
 Seismic Retrofit of Kahalo Stream Bridge
 Fed. Aid Proj. No. BR-019-2(072)

Scale: As Noted Date: Jul. 2024

SHEET No. S91 OF 1 SHEETS