FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	HSIP-0130(031)	2013	1	103

INDEX TO DRAWINGS

STATE OF HAWAII

DEPARTMENT OF TRANSPORTATION

HIGHWAYS DIVISION
HONOLULU, HAWAII

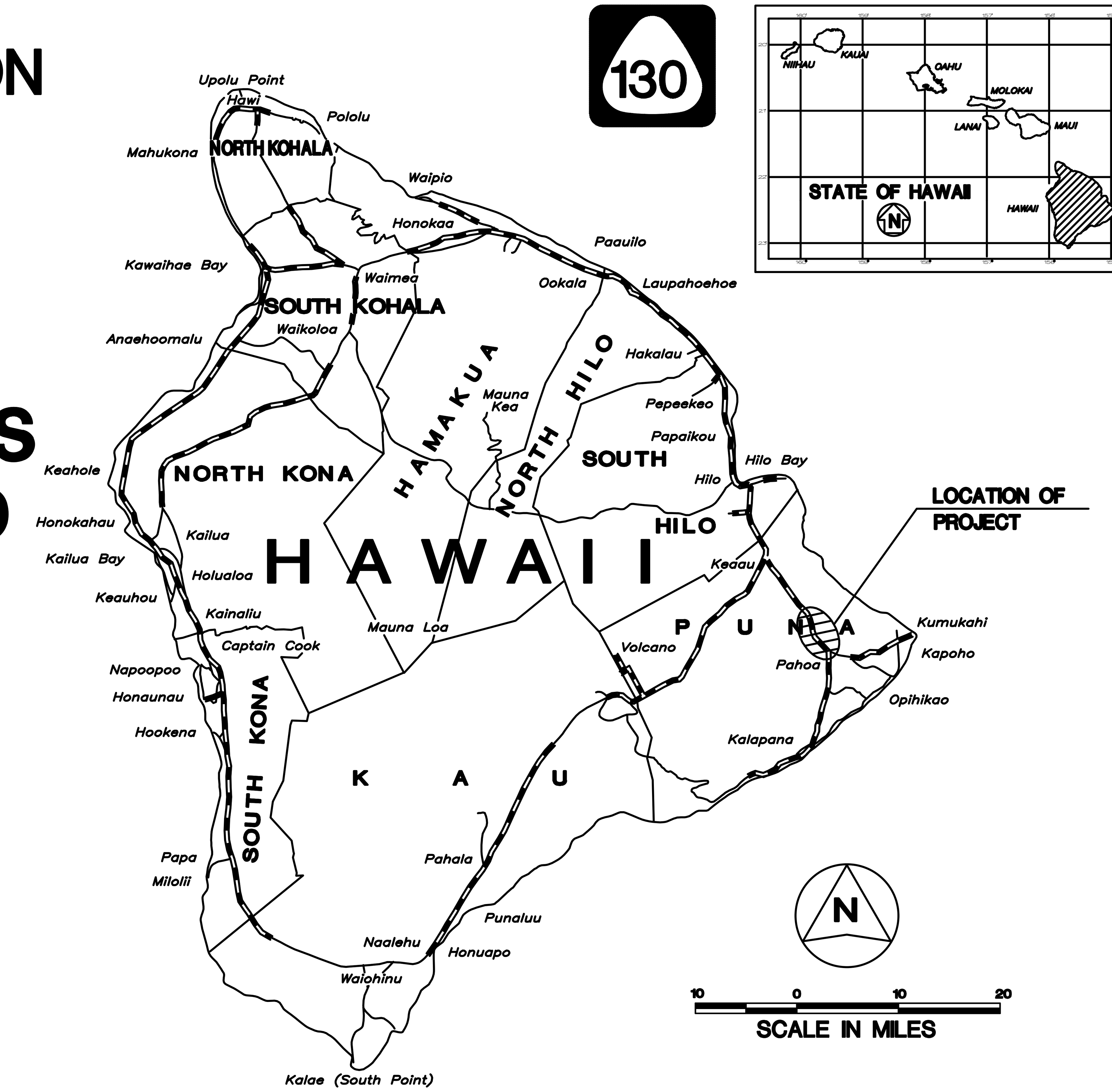
PLANS FOR

KEAAU-PAHOA ROAD INTERSECTION IMPROVEMENTS AT OLD GOVERNMENT ROAD

VICINITY OF PAHOA VILLAGE ROAD

FEDERAL-AID PROJECT NO.
HSIP-0130(031)

DISTRICT OF PUNA
ISLAND OF HAWAII

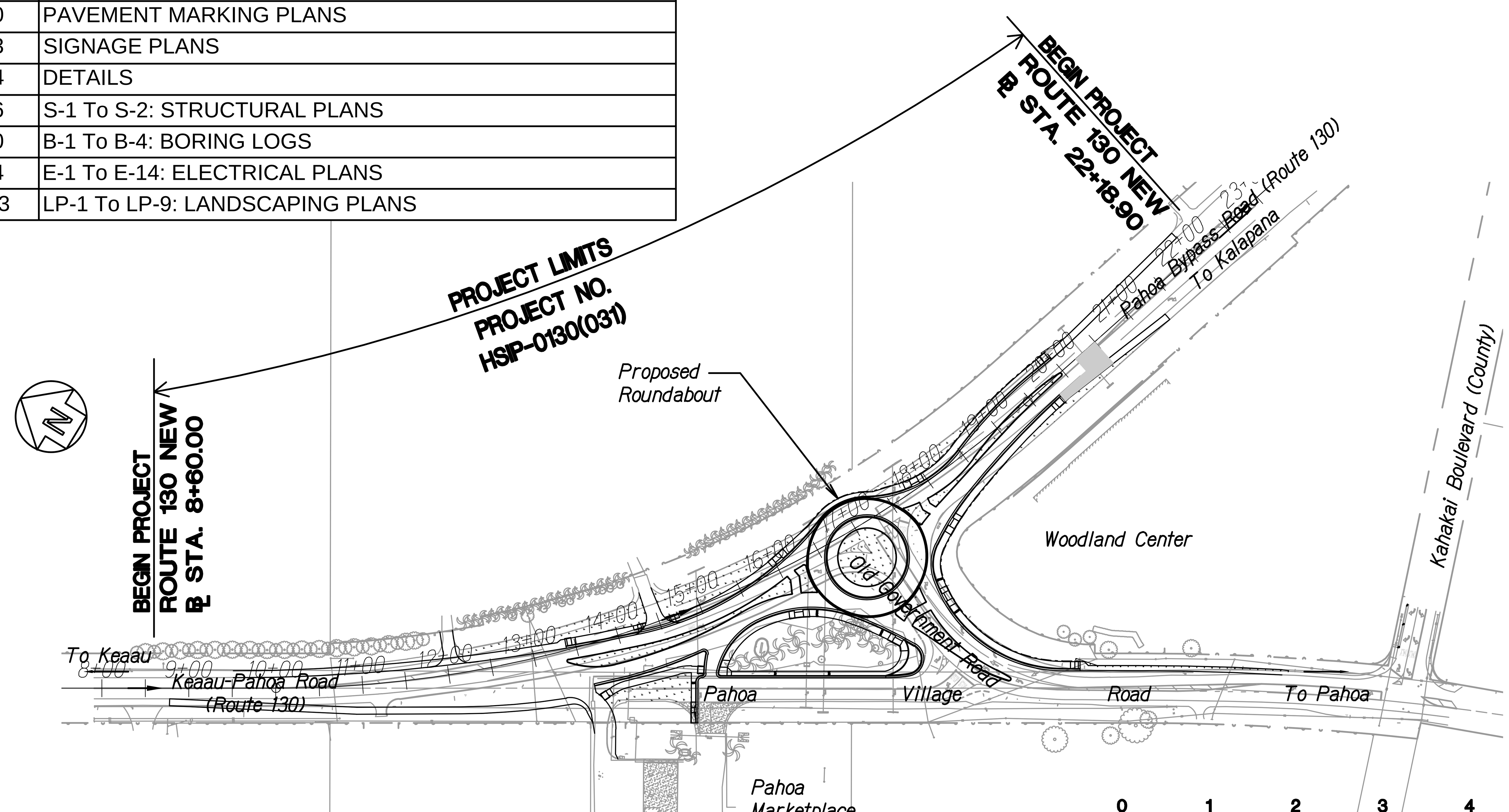


FEDERAL AID PROJECTS PREVIOUSLY CONSTRUCTED OR UNDER CONSTRUCTION

MILE POST 9.5 TO MILE POST 10.5

DESIGN DESIGNATION

	Route 130	Roundabout	Pahoa Village Road
ADT (2014)	16,900	16,900	6,100
ADT (2034)	34,600	17,300	10,600
DHV	2,800	1,600	1,000
K_{DES}	8.0%	9.2%	9.8%
D_{DES}	57/43	100/0	52/48
T_{DES}	4.7	4.7	3.7
T_{24}	4.7%	4.7%	3.7%
V	50	25	35



SCALE IN HUNDRED FEET (0 1 2 3 4)

LAYOUT PLAN

LENGTH OF PROJECT . . . . 0.26 MILES

FINAL SUBMITTAL

DATE: APRIL 24, 2013

APPROVED:

DIRECTOR OF PUBLIC WORKS — DATE
COUNTY OF HAWAII
(FOR WORK WITHIN COUNTY R/W ONLY)

MANAGER, DEPARTMENT OF WATER SUPPLY — DATE
COUNTY OF HAWAII

DEPARTMENT OF TRANSPORTATION
STATE OF HAWAII
APPROVED:
DIR. OF TRANSPORTATION — DATE

DESIGNED BY	MANAGED BY	PHONE	DATE
AECOM	HWY-TD	692-7682	APRIL 2013

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

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	HSIP-0130(031)	2013	2	103

STANDARD PLANS SUMMARY

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	05/31/07
	SPLICE CAN DETAILS	
B-12A ·	PRESTRESSED CONCRETE PILES, PILE &	05/31/07
	COMPRESSION SPLICE CAN DETAILS & NOTES	
B-12B ·	PILE INTERACTION DIAGRAM	05/31/07
B-13 ·	PRESTRESSED CONCRETE PILE BUILD-UP DETAILS	05/31/07
D-01 ·	CATTLE GATE	05/31/07
D-02 ·	CHAIN LINK FENCE WITH TOPRAIL	05/31/07
D-03 ●	CHAIN LINK FENCE WITHOUT TOPRAIL	05/31/07
D-04 ·	WIRE FENCE WITH METAL POSTS	05/31/07
D-05 ●	TYPICAL DETAILS OF CURBS AND/OR GUTTERS	05/31/07
D-06 ·	TYPICAL DETAIL OF REINFORCED CONCRETE DROP	05/31/07
	DRIVEWAY	
D-07 ●	CENTERLINE AND REFERENCE SURVEY MONUMENTS	05/31/07
D-08 ●	STREET SURVEY MONUMENT	05/31/07
D-15 ●	CONCRETE SIDEWALK	05/31/07
D-16 ·	P.C.C. BUS PAD	05/31/07
D-17 ·	P.C.C. BUS PAD	05/31/07
D-18 ●	P.C.C. PAVEMENT LAYOUT	05/31/07
D-19 ●	P.C.C. PAVEMENT W/ PERMEABLE BASE JOINT DETAILS	05/31/07
D-20 ●	P.C.C. PAVEMENT W/ PERMEABLE BASE JOINT DETAILS	05/31/07
D-21 ●	P.C.C. LONGITUDINAL JOINT DETAILS	05/31/07
D-22 ●	P.C.C. CONNECTION TO CURBS AND GUTTERS	05/31/07
D-23 ●	JOINTS	05/31/07
L-01 ·	TREE PLANTING	08/16/06
L-02 ·	TREE PLANTING	08/16/06
L-03 ·	TREE TRANSPLANTING	08/16/06
L-04 ·	PALM PLANTING	08/16/06
L-05 ·	SHRUB PLANTING	08/16/06
L-06 ·	LANDSCAPE DETAILS	08/16/06
L-07 ·	LANDSCAPE DETAILS	08/16/06
L-08 ·	LANDSCAPE DETAILS	08/16/06
L-09 ·	LANDSCAPE DETAILS	08/16/06
L-10 ·	LANDSCAPE DETAILS	08/16/06
L-11 ·	PLANTING NOTES	08/16/06
L-12 ·	IRRIGATION DETAILS	08/16/06
L-13 ·	IRRIGATION DETAILS	08/16/06
L-14 ·	IRRIGATION DETAILS	08/16/06
L-15 ·	IRRIGATION DETAILS	08/16/06
L-16 ·	IRRIGATION DETAILS	08/16/06
L-17 ·	IRRIGATION DETAILS	08/16/06
L-18 ·	IRRIGATION DETAILS	08/16/06
L-19 ·	IRRIGATION DETAILS	08/16/06
L-20 ·	IRRIGATION DETAILS	08/16/06
L-21 ·	IRRIGATION DETAILS	08/16/06
L-22 ·	IRRIGATION DETAILS	08/16/06
L-23 ·	IRRIGATION DETAILS	08/16/06
L-24 ·	IRRIGATION NOTES	08/16/06

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

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

STANDARD PLAN NO.	TITLE	DATE
TE-25 ●	GUIDE SIGNS LUMINAIRE MOUNTINGS	05/31/07
TE-26 ●	RAISED PAVEMENT MARKERS AND STRIPING	07/11/08
TE-27 ●	RAISED PAVEMENT MARKERS AND STRIPING	07/11/08
TE-28 ●	ENTRANCE AND EXIT PAVEMENT MARKINGS	07/11/08
TE-28A ●	MISCELLANEOUS PAVEMENT MARKINGS	07/11/08
TE-29 ●	PAVEMENT ARROWS AND SYMBOLS	07/11/08
TE-30 ●	PAVEMENT ALPHABETS, NUMBERS & SYMBOLS	07/11/08
TE-31 ●	PAVEMENT ALPHABETS, NUMBERS & SYMBOLS	07/11/08
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	07/11/08
	BRIDGES	
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 ●)

MINGXUN DING
LICENSED PROFESSIONAL ENGINEER
NO. 9246-C
HAWAII, U.S.A.

LICENSE EXPIRES 4/30/14

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

STANDARD PLANS SUMMARY

Keaau-Pahoa Road Intersection
Improvements at Old Government Road
Federal-Aid Project No. HSIP-0130(031)

Scale: None   Date: April 2013

SHEET No. 1 OF 1 SHEETS

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

GENERAL NOTES:

1. The Scope of Work for this project consists of converting the existing T-Intersection into a single-lane roundabout (center island, truck apron and circular path); pavement reconstruction; reinforced slopes; landscaping improvements; electrical conduits and street lights; drainage improvements; underdrain installations; installing ADA compliant curb ramps and sidewalks; installing chain link fences and guardrails; installing signage and striping; workzone traffic control and/or detour roads; and adjusting and relocation of various utilities, as necessary.

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

3. The Contractor's attention is directed to the following Sections of the Standard Specifications and Special Provisions: Subsection 104.11 - Utilities and Services; Subsection 107.06 - Contractor Duty Regarding Public Convenience; Subsection 107.11 - Safety: Accident Prevention; Subsection 107.12 - Protection of Persons and Property; and Section 645 - Work Zone Traffic Control.

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

5. The existence and location of 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.

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

7. Earth swales shall be graded to drain. This work shall be considered incidental to the various contract items.

8. All saw cutting work shall be considered incidental to the various contract items.

9. The Contractor shall provide for free and safe access to and from all existing side streets at all times.

10. The Contractor shall provide for access to and from all existing driveways at all times. The Contractor shall coordinate with the Homeowner if driveway closure is required.

11. Where pedestrian walkways exist, they shall be maintained in a safe and passable condition, or other facilities for pedestrians shall be provided. Passages between walkways at intersections shall likewise be provided at all times.

12. This Project will affect bus routes, bus stops, and/or paratransit operations; therefore, the Contractor shall notify the Mass Transit Agency at 961-8343, and Hele-On Bus at 808-961-8744 of the scope of work, location, proposed closure of any street, traffic lane, sidewalk, or bus stop and duration of the project at least two weeks prior to construction.

13. The Contractor shall follow the requirements of various permits and Best Management Practices (BMP) during the construction.

14. No work or equipment shall be located or take place within 10' of any overhead wires or any HELCo utility pole. No excavation shall take place within 5' of any HELCo utility pole.

15. The Contractor will immediately report to the Engineer and utility companies damage discovered or caused by his work to any utilities.

16. The Contractor is advised that in addition to other Contractors working in the same areas, various utility companies (or their contractors) including Hawaii Electric Light Company, Hawaiian Telcom, Oceanic Time Warner Cable, The Gas Company, and the Department of Water Supply may be performing work within the project area.

17. The Contractor shall coordinate all work with other Contractors in the areas. In case of unresolved conflict among contractors regarding access or work sites, the Engineer will make the final determination of priorities.

18. All holes, depressions and wheel ruts shall be filled and compacted with Asphalt Concrete Pavement, Mix No. V prior to resurfacing. This work shall be incidental to Asphalt Concrete Pavement.

19. Smooth riding connections shall be constructed at all limits of the project, including the beginning and end of project, connecting approaches, side streets and driveways as shown on the plans and/or as directed by the Engineer.

20. All guardrail spacer blocks shall be recycled plastic blockouts or polyethylene offset blocks approved by DOT.

21. The Contractor shall clean and remove any accumulation of aggregates along the roadside within 15 feet of the edge of pavement. This work shall be considered incidental to the various contract items.

22. Demolishing, removing and disposing of existing drainage structures shall be considered incidental to the various contract items.

23. All necessary permits shall be obtained by the Contractor at his own cost.

24. 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.

25. All lanes shall be opened to traffic during the morning peak hours from 6:30 a.m. to 8:30 a.m., during the afternoon peak hours from 3:00 p.m. to 6:00 p.m. and off work hours or as directed by the Engineer. Only one lane of highway shall be closed during work hours.

26. The Contractor shall maintain at least one paved shoulder free and clear of debris for pedestrian and bicycle traffic at the end of each work day.

27. Material from cold planing operations shall remain the property of the State and all excess shall be stock piled within 2 miles of the project limits.

28. All new and existing sign posts within the project limits shall be painted with yellow traffic paint. This work shall be considered incidental to various pavement marking items.

GENERAL CONSTRUCTION NOTES:

1. The Contractor shall notify all agencies to verify the actual location of all utilities in the project area prior to excavating. The Contractor shall coordinate all work.

2. All work called for on the plans and not itemized in the proposal and all work not called for but required for the construction of this project shall be considered incidental to various bid items.

3. The Contractor shall restore to their original condition all improvements damaged as a result of the construction, including pavements, embankments, curbs, signs, landscaping, structures, utilities, walls, fences, etc. unless provided for specifically in the proposal. Demolition and restoration of existing items shall be incidental to the various contract items.

4. The Contractor shall observe and comply with the administrative rules of The Department of Health regarding noise control of Hawaii.

5. No section of incomplete guardrail, footing and/or excavation shall be left unshielded at the end of each work day. Intermediate concrete barriers and crash cushion end treatments used for shielding shall meet current SOH DOT standards and guidelines along with manufacturer's specifications. All shielding used during construction shall be considered incidental to various guardrail items.

6. Contractor shall maintain landscaping within the State right-of-way for the duration of the project until final acceptance. The cost shall be incidental to the various contract items.

MINGXUN DING
LICENSED PROFESSIONAL ENGINEER
NO. 9246-C
HAWAII, U.S.A.

LICENSE EXPIRES 4/30/14

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

GENERAL NOTES

Keaau-Pahoa Road Intersection Improvements at Old Government Road
Federal-Aid Project No. HSIP-0130(031)

Scale: None   Date: April 2013

SHEET No. 1 OF 3 SHEETS

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

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	HSIP-0130(031)	2013	4	103

NOTES FOR CONSTRUCTION WITHIN STATE RIGHT-OF-WAY

1. The Contractor shall obtain a Permit to Perform Work Upon State Highway from the Hawaii District, State Highways, at 50 Makaala Street, Hilo, prior to commencement of work within the State highway right-of-way.

2. Construction and restoration of all existing highway facilities within State right-of-way shall be done in accordance with all applicable sections of the 2005 Standard Specifications for Road and Bridge Construction, and the Specifications for Installation of Miscellaneous Improvements within State Highways, of the State Highways Division.

3. Work may be performed only between the hours of 8:30 a.m. and 3:00 p.m., Monday through Friday, except holidays, unless otherwise permitted by the Engineer.

4. The Contractor shall provide, install, and maintain all necessary signs, lights, flares, barricades, markers, cones, and other protective items, and shall take necessary precautions for the protection, convenience, and safety of public traffic. All such protective facilities and precautions to be taken shall conform with the "Administrative Rules of Hawaii Governing the Use of Traffic Control Devices at Work Sites on or Adjacent to Public Streets and Highways", adopted by the Director of Transportation, and the current U.S. Federal Highway Administration "Manual on Uniform Traffic Control Devices for Streets and Highways, Part VI - Standards and Guides for Traffic Controls for Street and Highway Construction, Maintenance, Utility and Incident Management Operations" and NCHRP 350.

5. No material and/or equipment shall be stockpiled or otherwise stored within the highway right-of-way, except at locations designated in writing and approved by the Engineer.

6. The Contractor shall be required to provide adequate, safe, non-skid bridging material over any trench, including shoring, when trenching in pavement areas to handle all types of vehicular traffic.

7. No trench shall be opened more than 200 feet in advance of the installed and tested pipe and/or ductline. No jumps or spaces will be permited unless approved in writing by the Engineer.

8. Drainage within the project limits shall be maintained at all times to allow freeflow.

9. All regulatory, guide and construction signs and barricades shall be high intensity reflective sheeting.

10. All fill slopes that do not meet the clear zone requirements set forth by the latest edition of the AASHTO Roadside Design Guide shall be shielded by NCHRP Report 350 and HDOT approved devices.

11. The Contractor shall inform the State DOT Highway Hawaii District Permit Office at 933-8866 at least five (5) working days prior to any lane closures or changes to lane closures.

COLD PLANING NOTES

1. All saw cutting work shall be considered incidental to Cold Planing.

2. The Contractor shall compact the existing aggregate base in accordance with Section 304 - Aggregate Base Course. This preparation work shall be considered incidental to the new Asphalt Concrete Base Course, and will not be paid for separately.

3. If a vertical pavement drop-off exists at the end of each day's cold planing and paving, the Contractor shall provide a wedge with a 48:1 transition taper for transverse drop-off and no steeper than 6:1 for longitudinal drop-off, as approved by the Engineer. This work shall be considered incidental to Cold Planing.

4. The Contractor shall lower manholes prior to Cold Planing, backfill with hot mix and re-adjust after final paving. This work shall be considered incidental to Manhole Adjustments.

5. Unless otherwise shown on plans, the Contractor shall remove asphalt concrete from existing gutters and swales and shall exercise caution in doing so. The Contractor shall be held liable for any damage caused to the gutters and swales by this removal. This work shall be considered incidental to Cold Planing.

PUBLIC HEALTH, SAFETY, AND CONVENIENCE NOTES

1. The Contractor shall observe and comply with all Federal, State, and Local laws required for the protection of public health and safety and environmental quality.

2. The Contractor, at his own expense, shall keep the project and its surrounding areas free from dust nuisance. The work shall be in conformance with the air pollution control standards and regulations of the State Department of Health. The County may require supplementary measures as necessary.

3. No Contractor shall perform any trenching operation so as to cause falling rocks, soil or debris in any form to fall, slide or flow onto adjoining properties, streets or natural water-courses. Should such violations occur, the cost incurred for any remedial action by the Director, DOT shall be payable by the Contractor.

4. The Contractor shall provide, install and maintain all necessary signs, lights, flares, barricades, markers, cones, and other protective facilities and shall take all necessary precautions for the protection, convenience, and safety of the public. The Contractor shall apply for a construction permit with a noise pollution control plan if work should extend beyond permitted working hours.

ARCHAEOLOGICAL NOTES:

1. In the event that an archaeological or historic structure within the work area is inadvertently damaged during construction, cease work in the vicinity of the site and notify the Engineer and the State Historic Preservation Division (SHPD) of the Department of Land and Natural Resources of the damage. SHPD will determine the appropriate mitigation measures.

2. In the event that a previously unknown archaeological feature is exposed by construction, cease work in the vicinity of the new feature and notify the Engineer, the SHPD, and the Hawaii County Planning Department of the new discovery.

3. In the event that previously unknown human remains are exposed by construction, cease all work in the area of the remains, and protect the area with an appropriate material. Notify HDOT and the SHPD at 692-8015.

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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

CONSTRUCTION NOTES

Keaau-Pahoa Road Intersection Improvements at Old Government Road
Federal-Aid Project No. HSIP-0130(031)

Scale: None Date: April 2013

SHEET No. 2 OF 3 SHEETS

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

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	HSIP-0130(031)	2013	5	103

WATER NOTES

1. All work shall conform to the State of Hawaii "Water System Standards" dated 2002, as amended.

2. All existing waterline, waterline appurtenances and other utility locations shown on the plans are obtained from latest reliable sources. The Contractor shall be responsible to verify the exact location of all utilities in the field whether shown on the plans or not, and shall bear all costs for damages done during the contract period.

3. Whenever connection to existing mains are shown on the plans, the Contractor shall expose the existing main by hand excavation prior to excavating trenches for new mains.

4. The Contractor shall inform the Department of Water Supply (DWS) Engineer 72 hours prior to the beginning of any waterline work and one week prior to any connection, chlorination, shut-off or relocation.

5. All fittings (Class 250) and gate valves (Class 200) shall be ductile iron, mechanical joint, unless otherwise specified. Butterfly valves shall be Class 250 with epoxy coated interior unless otherwise specified.

6. All pipeline 4" and larger in diameter shall be ductile iron (Class 52) with push on joint (Class 52), and all pipelines smaller than 4" in diameter shall be soft copper, Type K, unless otherwise specified.

7. All work and materials furnished by DWS shall be payed for by the Contractor.

8. The Contractor shall be responsible for the chlorination of the water system and shall bear all cost. The persons engaged to do the chlorination work must have the appropriate license to perform the work in the State of Hawaii.

9. The water system shall be tested in the presence of a DWS representative. The water line shall be tested at a minimum of 225 p.s.i. or one and half times the static pressure at the low point, under DWS supervision just prior to paving the roadways.

10. All connection to existing mains shall be supervised by the DWS and paid for by the Contractor. The Contractor shall do all excavation, backfill, furnish all materials, construct reaction blocks and valve boxes, pavement repair, provide flagmen when necessary, and all necessary equipment to make hook-up.

11. The DWS will not assume ownership of nor grant any water service until the water system being connected to is dedicated to the DWS along with all necessary easements and documents.

12. Where water shut-off of more than 3 hours becomes necessary, the Contractor, at his own cost, shall provide a temporary bypass line, size of which shall be determined by the DWS Engineer. The DWS Engineer, also reserves the right to require bypass lines, regardless of the water shut-off period, if it is deemed necessary.

13. Minimum horizontal clearance between waterlines and other utilities shall be 8 feet unless otherwise specified. Minimum vertical clearance between waterline and other utilities shall be 12 inches provided concrete jackets are used and 18 inches if no concrete jackets are used. In all instances, the waterline shall be at a grade higher than other utilities unless otherwise specified.

14. 4'x4'x4" reinforced concrete slab for fire hydrant shall be reinforced with 6x6-10/10 welded wire fabric.

15. Existing waterline, valves, fitting and appurtenances not designated "remove" shall be abandoned in place. All exposed valve boxes, valves, pipes and appurtenances shall be removed and disposed of properly at no cost to the DWS.

APPROVED:

____

Manager, Department of Water Supply   Date
County of Hawaii

ABBREVIATIONS

Ah.	Ahead	Max	Maximum
ARV	Air Relief Valve	ML	Matchline
AC	Asphaltic Concrete	Min	Minimum
Bk.	Back	Mauka	Mountainside
BL	Baseline	NTS	Not to Scale
BB	Bottom of Bank	No.	Number
CL	Centerline	Makai	Oceanside
Conc	Concrete	O/S	Offset
CP	Construction Parcel	Pvmt	Pavement
CY	Cubic Yard	PC	Point of Curvature
DOT	Department of Transportation	PI	Point of Intersection
Det	Detail	PRC	Point of Reverse Curvature
Div	Diversion	PT	Point of Tangency
DMH	Storm Drain Manhole	RPM	Reflective Pavement Marker
Ea	Each	Rt	Right
Esmt	Easement	ROW	Right-of-Way
EP	Edge of Pavement	Sht	Sheet
ES	Edge of Shoulder	SF	Square Feet
EL	Elevation	Std	Standard
EMB	Embankment	Sta	Station
EXC	Excavation	Struct	Structural
Exist	Existing	SE	Superelevation
Hwy	Highway	TB	Top of Bank
Lt	Left	Typ	Typical
Lc	Length of Curve	VC	Vertical Curve
LF	Linear Feet	WL	Waterline

LEGEND

- New Pavement/Reconstruction
- Transitional Cold Planing Areas
- Resurfacing Limits
- Existing Electrical Line
- New Electrical Line
- Existing Joint Pole
- Existing Power Pole
- Existing Electric Manhole
- Adjusted Elec. MH Frame/Cover
- New Electric Manhole
- Existing Sewer Line
- Existing Telephone Line
- New Telephone Line
- Existing Telephone Pole
- Existing Telephone Manhole
- Adjusted Tele. MH Frame/Cover
- New Telephone Manhole
- Existing Water Line
- Existing Water Manhole
- Adjusted Water MH Frame/Cover
- New Water Manhole
- Existing Water Valve Box
- Adjusted Water Valve Box
- New Water Valve Box
- Existing Water Air Valve
- Adjusted Water Air Valve
- New Water Air Valve
- Existing Water Meter
- Adjusted Water Meter
- New Water Meter
- Existing Fire Hydrant
- New Underdrain
- Existing Monument
- Adjusted Monument
- New Monument
- Existing Traffic Sign
- Existing Highway Lighting Standard
- New Highway Lighting Standard

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WATER NOTES, ABBREVIATIONS AND LEGEND

Keaau-Pahoa Road Intersection Improvements at Old Government Road
Federal-Aid Project No. HSIP-0130(031)

Scale: None   Date: April 2013

SHEET No. 3 OF 3 SHEETS

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

WATER POLLUTION AND EROSION CONTROL NOTES:

A. GENERAL:

1. See 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.
2. Effective October 1, 2008, follow the guidelines in the "Construction Best Management Practices Field Manual", dated January 2008 in developing, installing and maintaining the Best Management Practices (BMP) for the project.
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, 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. For projects that require an NPDES Permit from the Department of Health, 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, and have an opening of at least one-inch in diameter. Install the rain gage on the project site in an area that will not deter rainfall from entering the gage opening. 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.

B. WASTE DISPOSAL:

1. Waste Materials. Collect and store all waste materials in a securely lidded metal dumpster. 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 a minimum of twice per week or as often as is deemed necessary. 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 and the Contractor shall be responsible for seeing that these procedures are followed.
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.

C. EROSION AND SEDIMENT CONTROL INSPECTION AND MAINTENANCE PRACTICES:

1. Inspect all control measures at least once each week and within 24 hours of any rainfall event of 0.5 inches or greater within a 24 hour period.
2. Maintain all measures in good working order. If repair is necessary, it shall be initiated within 24 hours after the inspection.
3. Remove built-up sediment from silt fence when it has reached one-third the height of the fence.
4. 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.
5. Inspect temporary and permanent seeding and planting for bare spots, washouts and healthy growth.
6. Make a maintenance inspection report promptly after each inspection. Submit a copy to the Engineer no later than one week from the date of the inspection.
7. Provide a stabilized construction entrance to reduce vehicle tracking of sediments. Include stabilized construction entrance in the Water Pollution,⅓Dust, 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. Clean the paved⅓street adjacent to the site entrance daily or as required to remove any excess⅓mud, cold -planed materials, dirt or rock tracked from the site. Cover dump trucks hauling material from the construction site with a tarpaulin.
8. Include designated Concrete Washout Area(s) in the Water Pollution, Dust, and Erosion Control submittals.
9. Submit the name of a specific individual designated responsible for inspections, maintenance and repair activities and filling out the inspection and maintenance report.
10. 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.
11. Contain, remove, and dispose slurry generated from saw cutting of pavement in accordance with approved BMP practices. Payment for confinement, removal, and disposal of slurry shall be considered incidental to the various contract items.

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	Fertilizers
Detergents	Petroleum Based Products
Paints (enamel and latex)	Cleaning Solvents
Metal Studs	Wood
Tar	Masonry Block

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 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. Once applied, work fertilizer into the soil to limit exposure to storm water. Storage shall be in a covered shed. 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 highway drainage system. Dispose properly according to manufacturers' instructions or State and local regulations.

d. Concrete Trucks: Wash Out or discharge concrete truck drum wash water only at a designated site. Do not discharge water in the highway drainage system or waters of the United States. Contact Safe Drinking Water Branch, Department of Health at 974-4000, ext. 64258, to receive permission to designate a disposal site. Clean disposal site as required or as requested by the Owner's representative.

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 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 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.

E. PERMIT REQUIREMENTS:

1. If a National Pollutant Discharge Elimination System (NPDES) Permit is required for Construction Activities of one acre or more, submit to the Engineer six sets of the Water Pollution and Erosion Control Submittals as detailed in Subsection 209.03 of the specifications. The Contractor's attention is directed to the applicable NPDES Permit documents on the bid package compact disc.

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

a. NPDES Permit for Construction Activities

b. NPDES Permit for Construction Dewatering

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HIGHWAYS DIVISION

WATER POLLUTION AND EROSION CONTROL NOTES

Keaau-Pahoa Road Intersection Improvements at Old Government Road
Federal-Aid Project No. HSIP-0130(031)

Scale: None   Date: April 2013

SHEET No. 1 OF 1 SHEETS

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

PLOT DATE: April 24, 2013 @ 08:15:28 am

LAST UPDATE: April 23, 2013 @ 01:47:10 pm

PATH/FILENAME: P:\USIG\Civil\Dot-Hwy\60248741-KP_RDABT\400 Design\DWG\03-06_KP_RDABT_GENERAL NOTES.dwg

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	HSIP-0130(031)	2013	7	103

Route 130 New ℄

	① ℄ CURVE DATA	② ℄ CURVE DATA	③ ℄ CURVE DATA	④ ℄ CURVE DATA
Δ =	27°44'25"	11°23'51"	34°16'40"	08°54'14"
R =	810.00'	350.00'	350.00'	1180.00'
T =	200.01'	34.93'	107.93'	91.87'
L =	388.35'	69.51'	206.28'	183.19'
Lc =	392.17'	69.62'	209.39'	183.37'

Notes:

1. Keaau-Pahoa Road: Route 130 Exist. ℄ Sta 9+00 to Sta 17+00
2. Pahoa Bypass Road: Route 130 Exist. ℄ Sta 17+00 to Sta 20+00

TRUE NORTH
SCALE : 1" = 50'
T.M.K. 1-05-07:79
Route 130
New ℄ Sta. 22+18.90
Project No. HSIP-0130(031)
END PROJECT
To Kalapana
Route 130
Exist. ℄ Sta 22+00
= Route 130
New ℄ Sta 22+18.90
EQ
PT: 20+19.27
286° 51' 03"
199.69
PAHOA BYPASS ROAD
(ROUTE 130)
T.M.K. 1-05-07:20
Woodland Center
Old Government Road
New ℄ Sta 0+00.00
= Route 130
New ℄ Sta 17+06.99
EQ
PRC: 18+35.86
Proposed Roundabout
PRC: 16+26.45
New Splitter Island
PRC: 15+56.83
Route 130 New ℄
New Splitter Island
BP: 0+00.00
PC: 1+04.40
Old Government Road New ℄
T.M.K. 1-05-07:19
Route 130
New ℄ Sta. 8+60.00
Project No. HSIP-0130(031)
BEGIN PROJECT
Old Government Road New
℄ Sta. 5+42.00
Project No. HSIP-0130(031)
END PROJECT
KAHAKAI BOULEVARD
(COUNTY)
KEAAU-PAHOA ROAD
(ROUTE 130)
PC: 11+64.66
328° 34' 03"
164.66
To Keaau
164° 34' 10"
91.85
New Splitter Island
PT: 2+78.10
PC: 3+70.05
PAHOA VILLAGE ROAD
To Pahoa
Pahoa Marketplace
T.M.K. 1-05-07:08
T.M.K. 1-05-07:80
T.M.K. 1-05-07:07

OVERALL SITE PLAN

Scale: 1" = 50'

0 50 100 150

HORIZ: 1" = 50' FEET

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OVERALL SITE PLAN

Keaau-Pahoa Road Intersection
Improvements at Old Government Road
Federal-Aid Project No. HSIP-0130(031)

Scale: 1" = 50' Date: April 2013

SHEET No. 1 OF 1 SHEETS

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

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	HSIP-0130(031)	2013	8	103

Recommended Phases Only:

(A) Prepare Site For Detour Road Construction

(B) Construct Detour Road, See Detour Detour Plans, Sheet 13-14

CONSTRUCTION PHASING PLANS
PHASE 1
Scale: 1" = 80'

0 20 40 60
HORIZ: 1" = 20' FEET

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CONSTRUCTION PHASING PLANS

PHASE 1

Keaau-Pahoa Road Intersection Improvements at Old Government Road Federal-Aid Project No. HSIP-0130(031)

Scale: 1" = 80' Date: April 2013

SHEET No. 1 OF 3 SHEETS

ORIGINAL PLAN
NOTE BOOK
No.
SURVEY PLOTTED BY
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DATE

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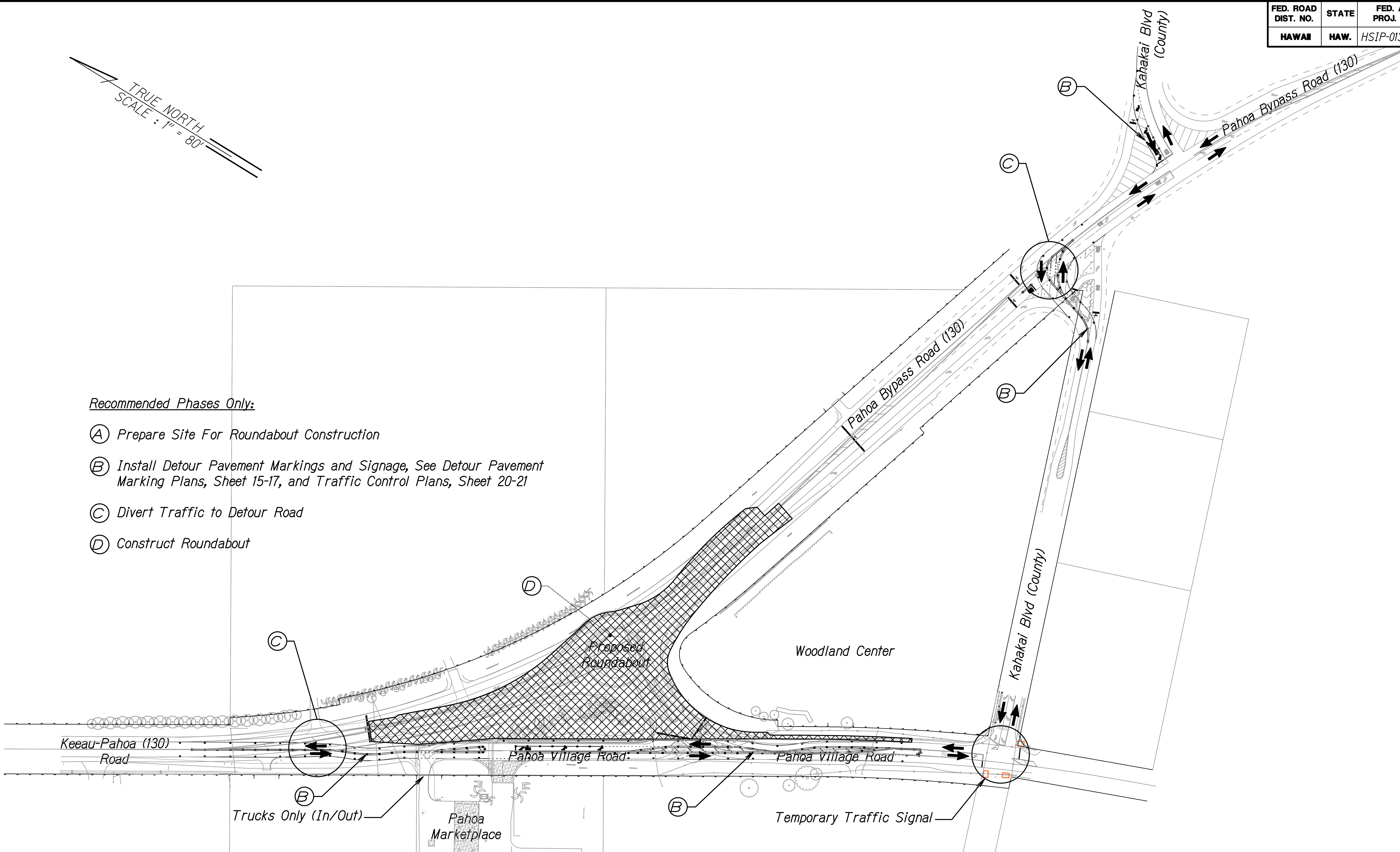
HAWAII	HAW.	HSIP-0130(031)	2013	9	103



Recommended Phases Only:

Ⓐ Prepare Site For Roundabout Construction

Ⓑ Install Detour Pavement Markings and Signage, See Detour Pavement Marking Plans, Sheet 15-17, and Traffic Control Plans, Sheet 20-21

Ⓒ Divert Traffic to Detour Road

Ⓓ Construct Roundabout

CONSTRUCTION PHASING PLANS
PHASE 2
Scale: 1" = 80'

0 20 40 60
HORIZ: 1" = 20' FEET

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CONSTRUCTION PHASING PLANS

PHASE 2

Keaau-Pahoa Road Intersection Improvements at Old Government Road
Federal-Aid Project No. HSIP-0130(031)

Scale: 1" = 80' Date: April 2013

SHEET No. 2 OF 3 SHEETS

ORIGINAL PLAN	NOTE BOOK	No.
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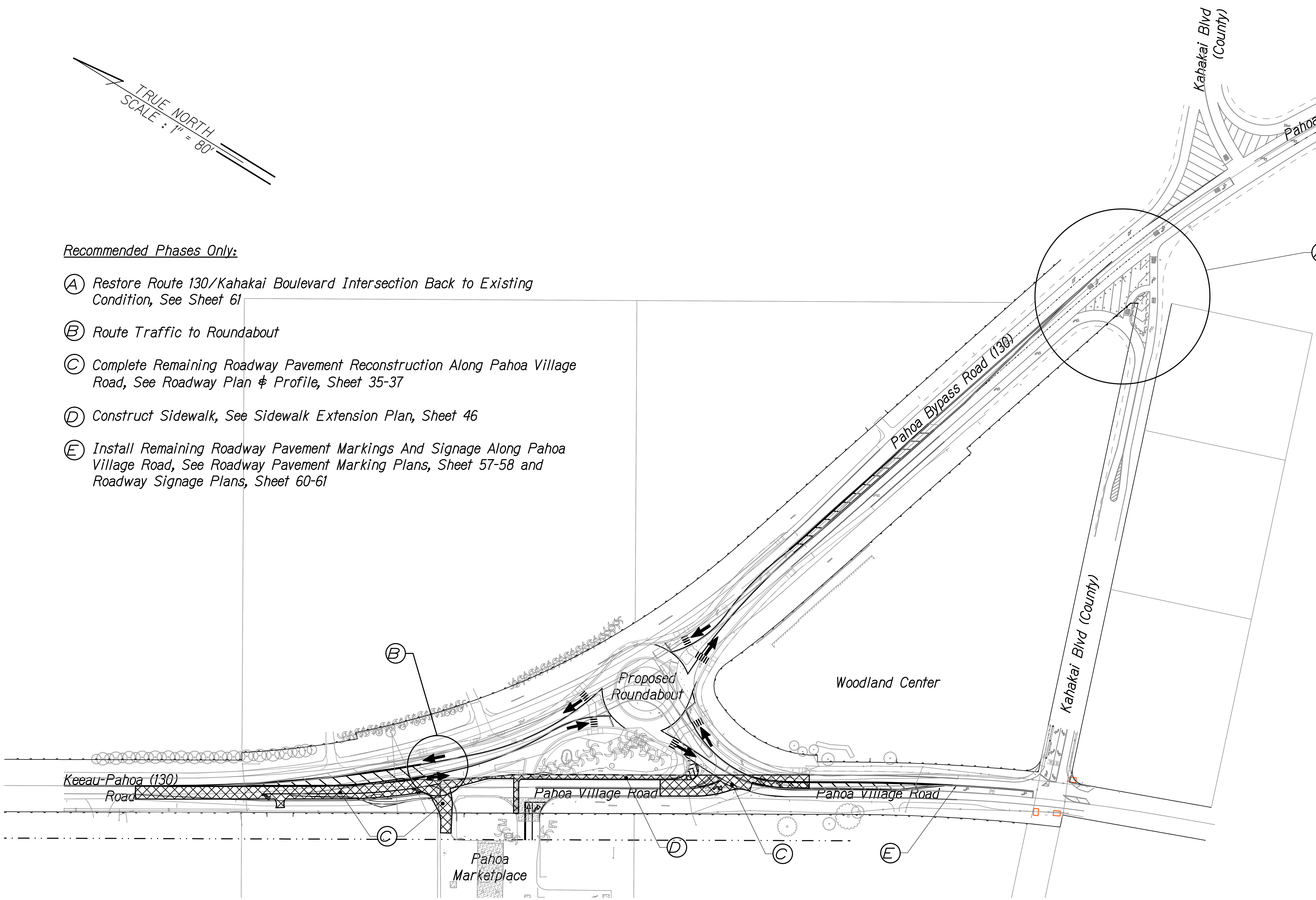
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	HSIP-0130(031)	2013	10	103



Recommended Phases Only:

(A) Restore Route 130/Kahakai Boulevard Intersection Back to Existing Condition, See Sheet 61

(B) Route Traffic to Roundabout

(C) Complete Remaining Roadway Pavement Reconstruction Along Pahoa Village Road, See Roadway Plan & Profile, Sheet 35-37

(D) Construct Sidewalk, See Sidewalk Extension Plan, Sheet 46

(E) Install Remaining Roadway Pavement Markings And Signage Along Pahoa Village Road, See Roadway Pavement Marking Plans, Sheet 57-58 and Roadway Signage Plans, Sheet 60-61

CONSTRUCTION PHASING PLANS
PHASE 3
Scale: 1" = 80'

0 20 40 60
HORIZ: 1" = 20' FEET

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CONSTRUCTION PHASING PLANS
PHASE 3
Keaau-Pahoa Road Intersection Improvements at Old Government Road
Federal-Aid Project No. HSIP-0130(031)

Scale: 1" = 80' Date: April 2013

SHEET No. 3 OF 3 SHEETS

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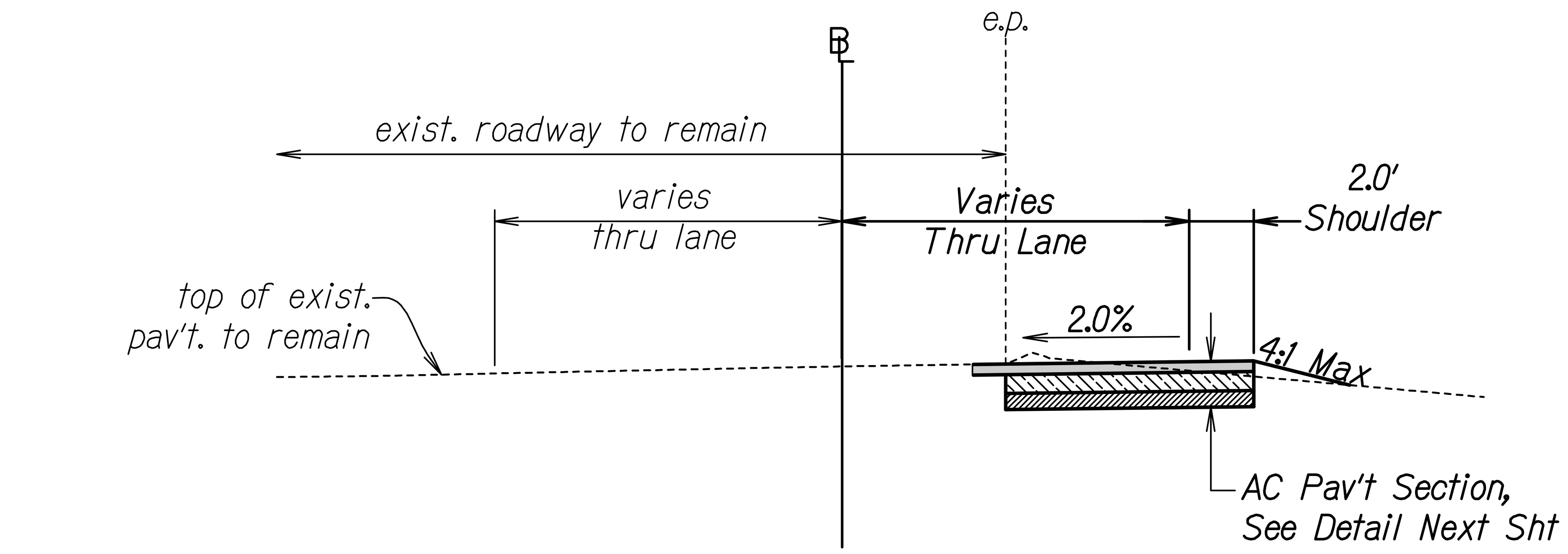
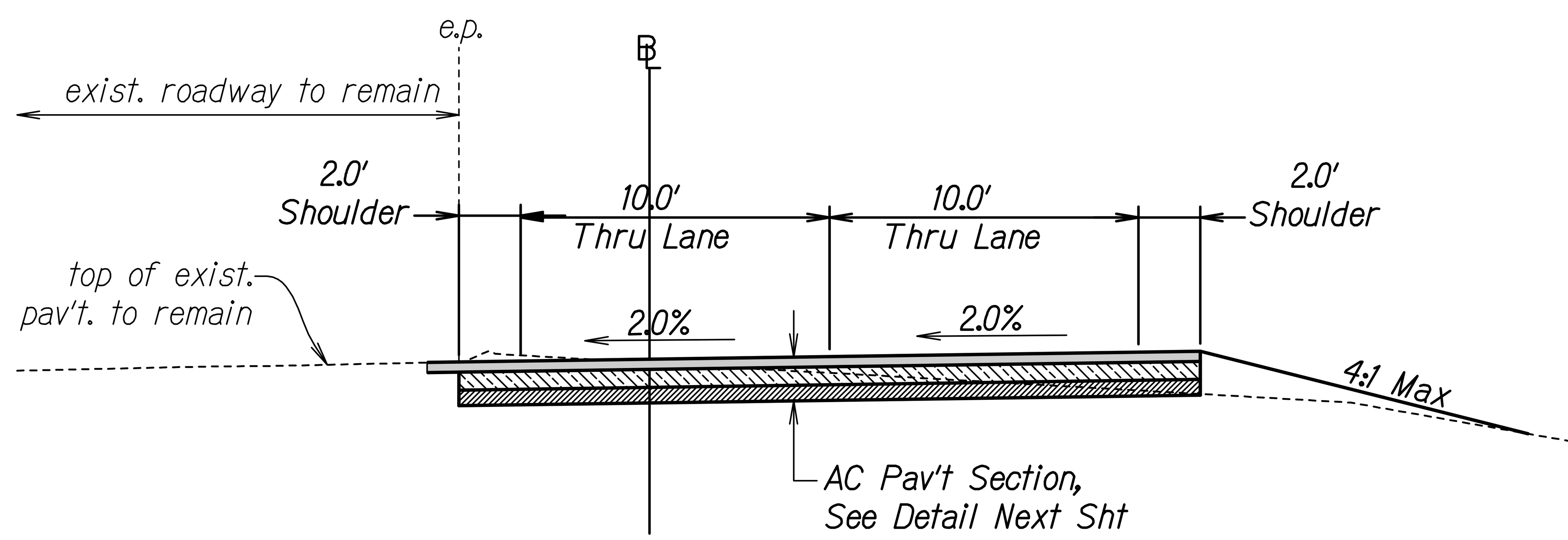
NOTE BOOK No. ____

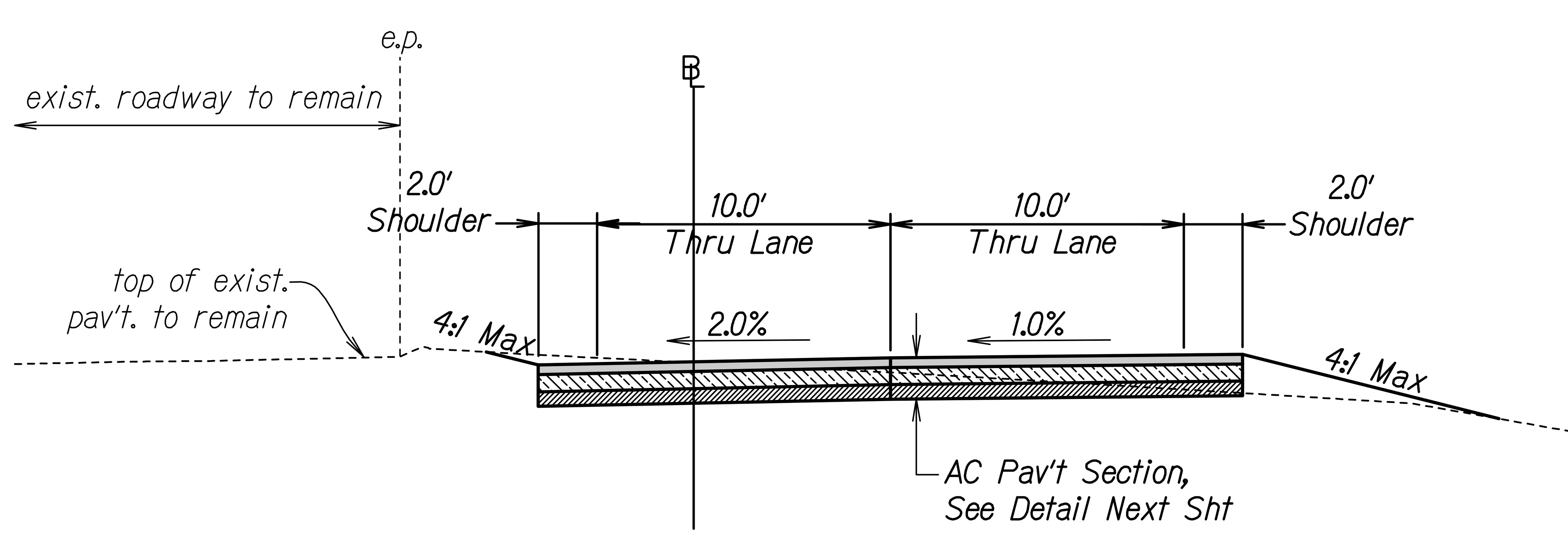
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	HSIP-0130(031)	2013	11	103



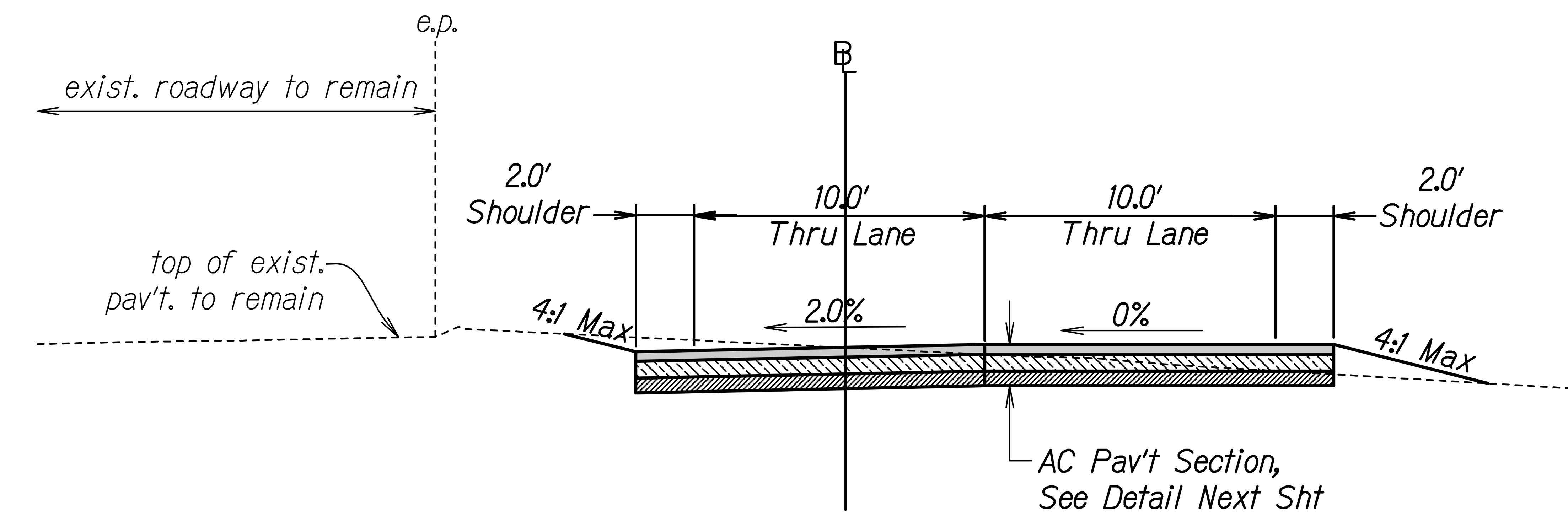
Pahoa Village Rd Exist ℄
Sta 36+24.10 to Sta 37+59.72
Scale: 1" = 4'



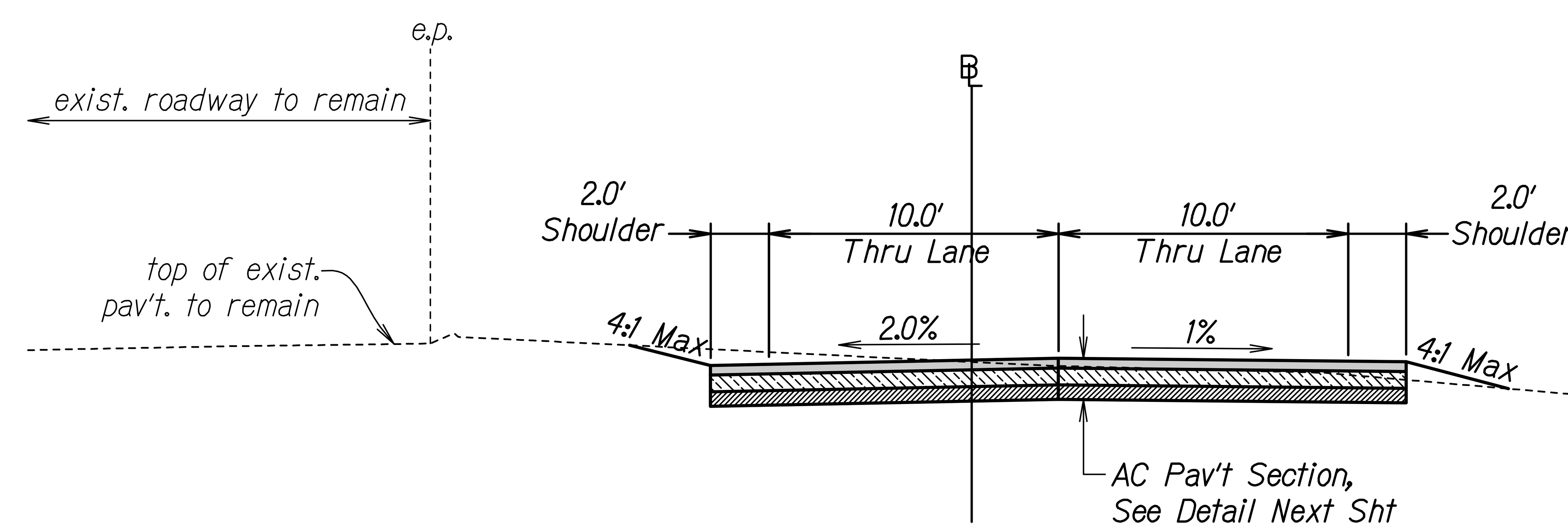
Pahoa Village Rd Exist ℄
Sta 37+59.72 to Sta 37+84
Scale: 1" = 4'



Pahoa Village Rd Exist ℄
Sta 37+84 to Sta 38+07
Scale: 1" = 4'



Pahoa Village Rd Exist ℄
Sta 38+07 to Sta 38+31.32
Scale: 1" = 4'



Pahoa Village Rd Exist ℄
Sta 38+31.32 to Sta 38+55.46
Scale: 1" = 4'

0 4 8 12
HORIZ: 1" = 4' FEET

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DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

DETOUR TYPICAL SECTIONS

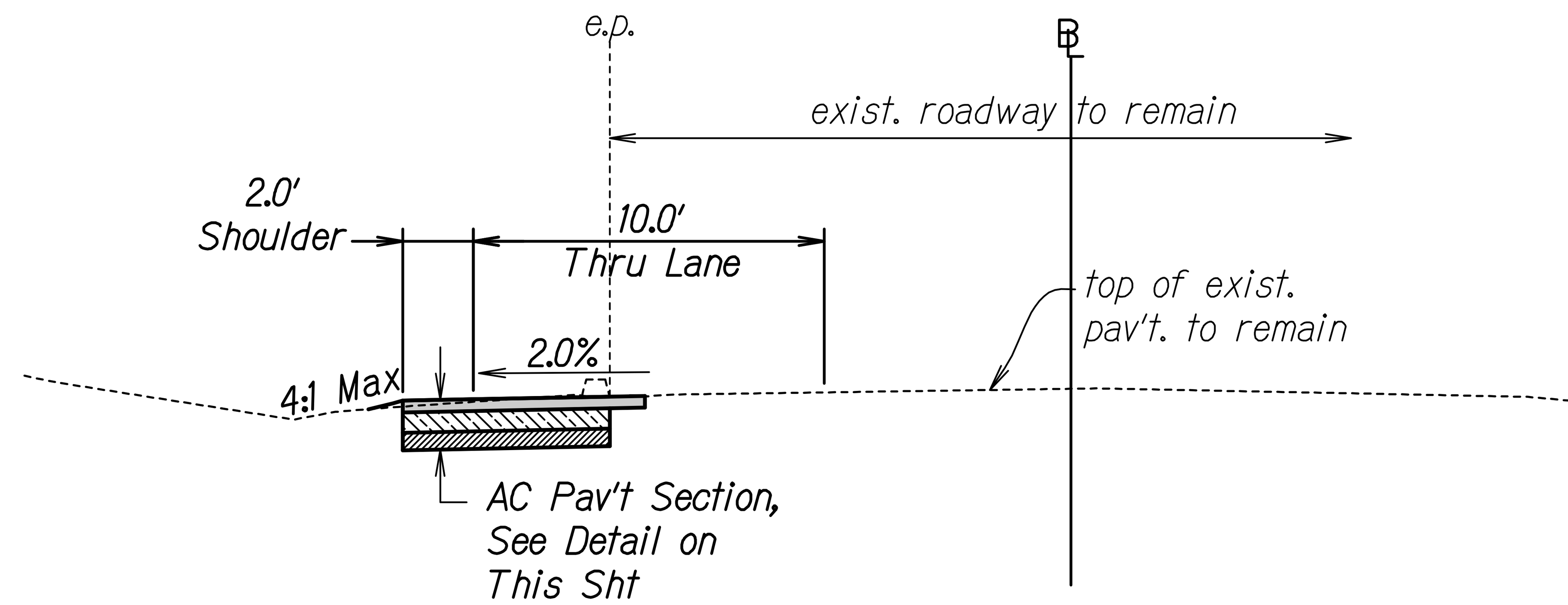
PAHOA VILLAGE RD

Keaau-Pahoa Road Intersection
Improvements at Old Government Road
Federal-Aid Project No. HSIP-0130(031)

Scale: 1" = 4' Date: April 2013

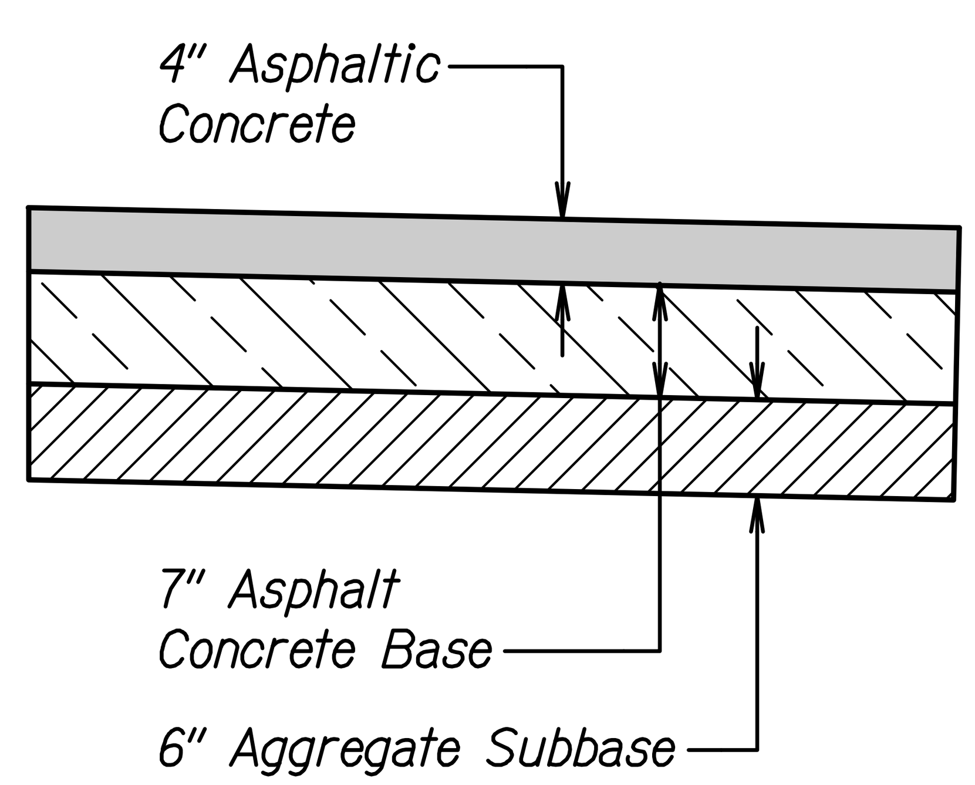
SHEET No. 1 OF 2 SHEETS

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



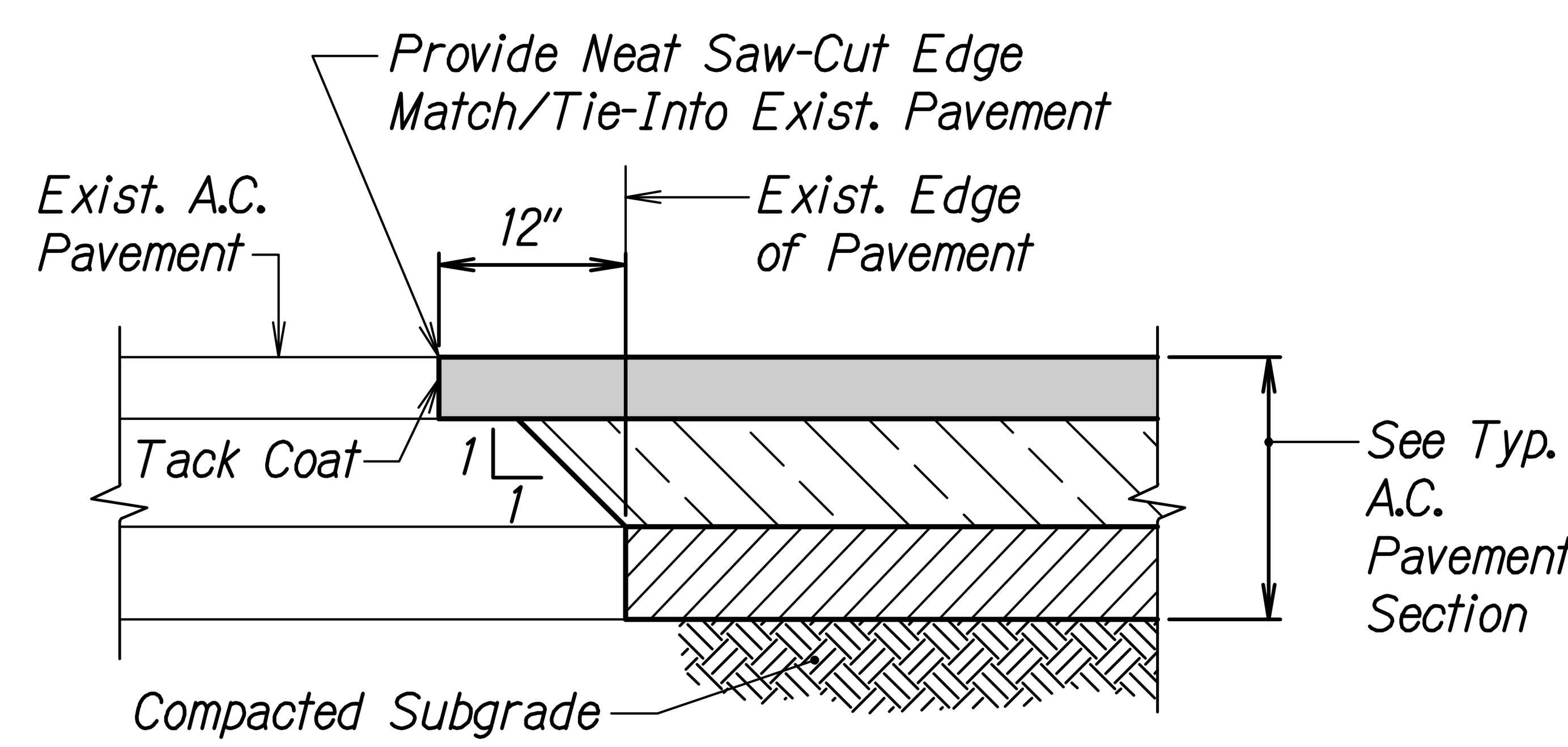
Pahoa Village Rd Exist ℄ Sta 39+03.63 to Sta 42+27.16

Scale: 1" = 4'



AC Pavement Section Detail

Not to Scale



Notes:

1. New Construction Shall Be Equal Or Better Than Existing In Thickness & In Quality.
2. Pavement Slope Shall Match Existing Pavement Slope So As To Provide Smooth Riding Connection.

New AC to Existing AC Connection Detail

Not to Scale

0 4 8 12
HORIZ: 1" = 4' FEET

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HIGHWAYS DIVISION

DETOUR TYPICAL SECTIONS

PAHOA VILLAGE RD & PVMT STRUCTURE

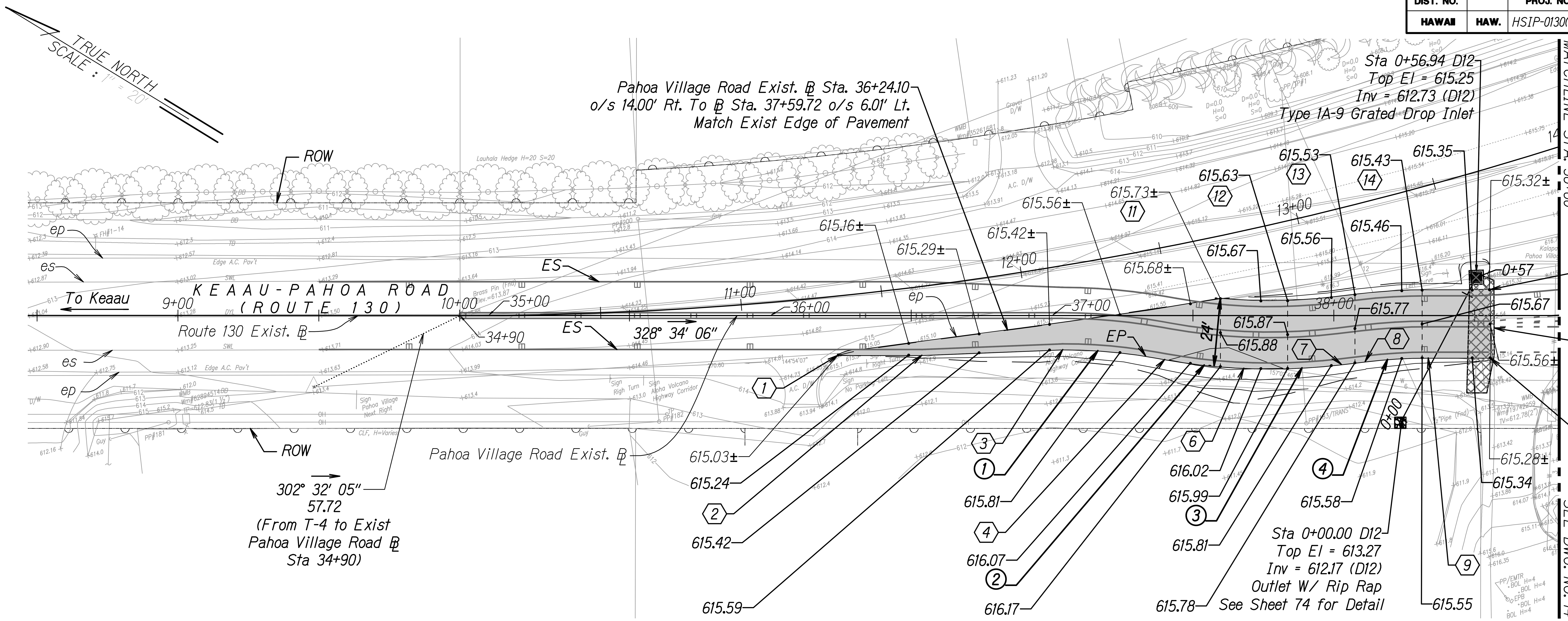
Keaau-Pahoa Road Intersection
Improvements at Old Government Road
Federal-Aid Project No. HSIP-0130(031)

Scale: 1" = 4', NTS   Date: April 2013

SHEET No. 2 OF 2 SHEETS

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

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	HSIP-0130(031)	2013	13	103



Station & Offset Table

Point	℄ Station	Offset	Description
⟨1⟩	36+24.10	14.00' Rt.	Begin AC Pavement
⟨2⟩	36+53.80	14.00' Rt.	AC Pavement
⟨3⟩	37+03.80	12.00' Rt.	AC Pavement
⟨4⟩	37+40.00	15.50' Rt.	AC Pavement
⟨5⟩	37+59.72	6.01' Lt.	Begin 24' Wide AC Pavement
⟨6⟩	37+68.05	18.62' Rt.	24' Wide AC Pavement
⟨7⟩	38+02.66	17.31' Rt.	24' Wide AC Pavement
⟨8⟩	38+11.10	16.30' Rt.	24' Wide AC Pavement
⟨9⟩	38+33.50	14.96' Rt.	24' Wide AC Pavement
⟨10⟩	38+55.46	14.96' Rt.	End 24' Wide AC Pavement
⟨11⟩	37+59.72	0.00'	Begin Super Elevation Transition
⟨12⟩	37+83.59	0.00'	Super Elevation Transition
⟨13⟩	38+07.46	0.00'	Super Elevation Transition
⟨14⟩	38+31.32	0.00'	Super Elevation Transition
⟨15⟩	38+55.38	0.00'	End Super Elevation Transition (Match Exist Crown)

Note:
1. ℄ Stations In Table Reference Pahoa Village Road Exist ℄
2. Spot Elevations at 25' Spacing, Typical

Curve Data Table

No.	Δ	Δ/2	R	T	C	LC
1	10°56'10"	5°28'05"	190.808'	18.265'	36.365'	36.420'
2	7°38'04"	3°49'02"	212.000'	14.145'	28.227'	28.248'
3	9°22'12"	4°41'06"	212.000'	17.374'	34.631'	34.670'
4	6°50'34"	3°25'17"	188.000'	11.240'	22.439'	22.453'

4" Asphaltic Concrete, 7" Asphalt Concrete Base, 6" Aggregate Subbase

Demolish Structure

Right of Way

Limits of Grading

DETOUR PLAN - 1
Scale: 1" = 20'

0 20 40 60
HORIZ: 1" = 20' FEET

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DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

DETOUR PLAN - 1

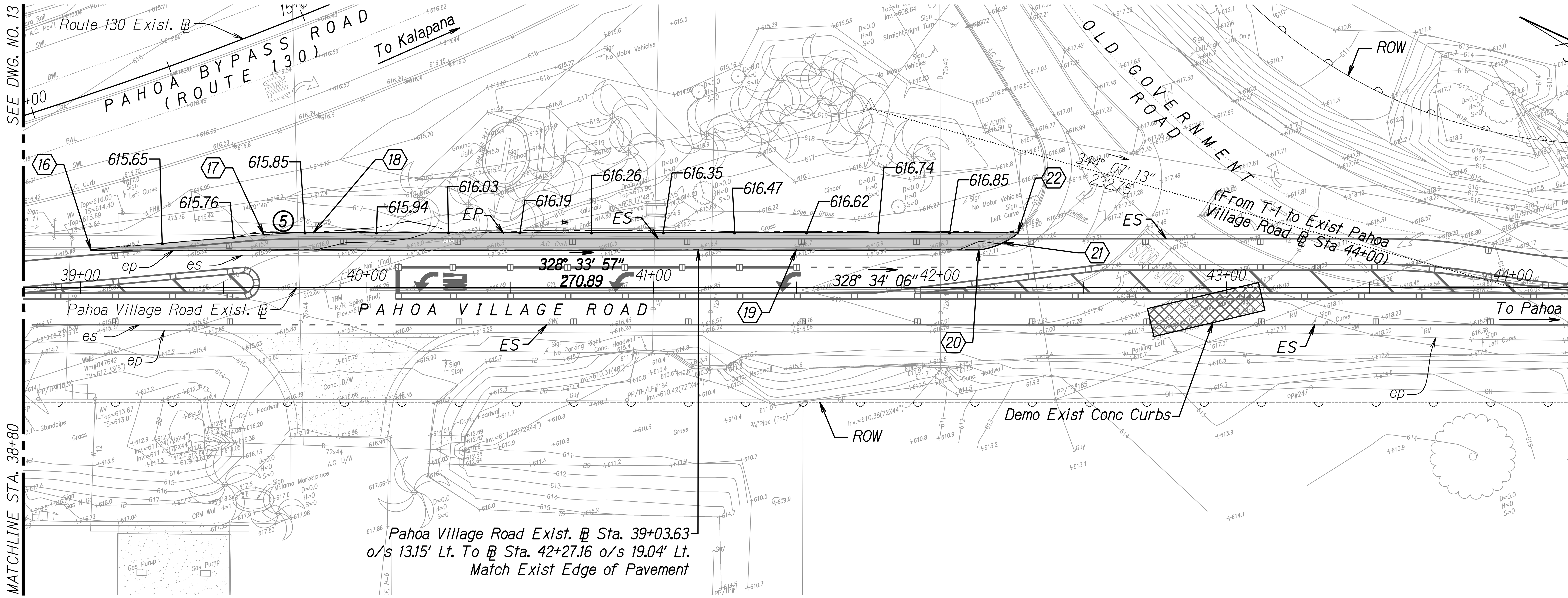
Keaau-Pahoa Road Intersection Improvements at Old Government Road
Federal-Aid Project No. HSIP-0130(031)

Scale: 1" = 20' Date: April 2013

SHEET No. 1 OF 2 SHEETS

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

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	HSIP-0130(031)	2013	14	103



Station & Offset Table			
Point	℄ Station	Offset	Description
16	39+03.63	13.15' Lt.	Begin AC Pavement
17	39+64.05	18.31' Lt.	AC Pavement
18	39+81.22	19.04' Lt.	AC Pavement
19	41+49.81	13.16' Lt	AC Pavement
20	42+13.54	13.20' Lt.	AC Pavement
21	42+21.88	15.66' Lt.	AC Pavement
22	42+27.16	19.04' Lt.	End AC Pavement

Curve Data Table						
No.	Δ	Δ/2	R	T	C	LC
5	4°52'30"	2°26'15"	202.000'	8.599'	17.182'	17.187'

Note:

1. ℄ Stations In Table Reference Pahoa Village Road Exist ℄
2. Spot Elevations at 25' Spacing, Typical

4" Asphaltic Concrete, 7" Asphalt Concrete Base, 6" Aggregate Subbase

Demolish Structure

Right of Way

Limits of Grading

DETOUR PLAN - 2

Scale: 1" = 20'

0 20 40 60
HORIZ: 1" = 20' FEET

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HIGHWAYS DIVISION

DETOUR PLAN - 2

Keaau-Pahoa Road Intersection Improvements at Old Government Road
Federal-Aid Project No. HSIP-0130(031)

Scale: 1" = 20' Date: April 2013

SHEET No. 2 OF 2 SHEETS

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

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	HSIP-0130(031)	2013	15	103

LEGEND:

Limits of Pavement Marking Eradication/Removal

Note:
For Pavement Marking Notes & Legend, See Sheet 58.

DETOUR PAVEMENT MARKING PLAN - 1

Scale: 1" = 20'

0 20 40 60
HORIZ: 1" = 20' FEET

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HIGHWAYS DIVISION

DETOUR PAVEMENT MARKING PLAN - 1

Keaau-Pahoa Road Intersection
Improvements at Old Government Road
Federal-Aid Project No. HSIP-0130(031)

Scale: 1" = 20' Date: April 2013

SHEET No. 1 OF 3 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	HSIP-0130(031)	2013	16	103

Pahoa Vllg. ℄ Sta. 43+55.45 o/s 17.04' Lt.
P.C. 4" White Edge Line
Pahoa Vllg. ℄ Sta. 43+55.45 o/s 7.04' Lt.
P.C. Double 4" Yellow Median
Pahoa Vllg. ℄ Sta. 43+89.98 o/s 14.18' Lt.
P.T. 4" White Edge Line
Pahoa Vllg. ℄ Sta. 44+00.77 o/s 12.38' Lt.
P.T. 4" White Edge Line
Pahoa Vllg. ℄ Sta. 44+08.40 o/s 17.16' Lt.
P.T. 4" White Edge Line
Pahoa Vllg. ℄ Sta. 44+74.04 o/s 14.18' Lt.
P.T. 4" White Edge Line
Pahoa Vllg. ℄ Sta. 44+63.24 o/s 12.38' Lt.
P.T. 4" White Edge Line
Pahoa Vllg. ℄ Sta. 45+56.62 o/s 18.01' Lt.
P.C. 4" Double Yellow Line
Pahoa Vllg. ℄ Sta. 45+56.62 o/s 8.01' Lt.
P.C. 4" Double Yellow Line
SEE DWG. NO. 15
SEE BELOW LEFT
Pahoa Vllg. ℄ Sta. 40+10.00
12" Stop Bar
140' Long, 8" Solid White Line w/ Type "C" RPM @ 20'-0" o.c. (Typ.)
Pavement Marking Arrow & Lettering (Typ.)
Pahoa Vllg. ℄ Sta. 42+56.93 o/s 7.04' Lt.
P.I. Double 4" Yellow Median
Pahoa Vllg. ℄ Sta. 41+76.93 o/s 2.96' Lt.
P.I. Double 4" Yellow Median
4" White Guide Line (Typ.)
Type "H" RPM Refer to Std Plan TE-27 (Typ.)
PC 44+81.95
40+00
50'
41+00
50'
42+00
43+00
44+00
45+00
46+00
10'
11'
PAHOA VILLAGE ROAD
328° 34' 06"
Pahoa Vllg. ℄ Sta. 40+10.00 o/s 2.96' Rt.
Begin 4" Double Yellow Line
4" Double Yellow Line w/Type "D" RPM @ 20'-0" o.c. (Typ.)
4" White Edge Line w/Type "C" RPM @ 40'-0" o.c. (Typ.)
12" Yellow Transverse Lines @ 20'-0" o.c. (Typ.)
Pahoa Vllg. ℄ Sta. 44+42.01 o/s 12.96' Rt.
Begin 4" White Edge Taper
4" White Guide Line (Typ.)
MATCHLINE STA 46+10
4" White Dotted Line (Typ.)
Limits of Pavement Marking Removal/Eradication:
Eradicate All Exist Pavement Markings, RPM's & Remove Any Signs, A.C. Curbs, & Delineators Within Work Limits (Typ.)
Pahoa Vllg. ℄ Sta. 43+88.33 o/s 4.32' Lt.
P.T. Double 4" Yellow Median
Pahoa Vllg. ℄ Sta. 43+99.13 o/s 2.52' Lt.
P.C. Double 4" Yellow Median
Pahoa Vllg. ℄ Sta. 44+64.89 o/s 2.52' Lt.
P.T. Double 4" Yellow Median
Pahoa Vllg. ℄ Sta. 44+75.68 o/s 4.32' Lt.
P.C. Double 4" Yellow Median
Pahoa Vllg. ℄ Sta. 44+92.06 o/s 13.94' Rt.
End 4" White Edge Line Taper
Pahoa Vllg. ℄ Sta. 45+57.17 o/s 12.98' Rt.
P.I. 4" White Edge Line
Pahoa Vllg. ℄ Sta. 45+22.93 o/s 2.67' Rt.
P.I. Double 4" Yellow Median
Pahoa Vllg. ℄ Sta. 45+08.49 o/s 7.16' Lt.
P.T. Double 4" Yellow Median
MATCHLINE STA. 40+00
TRUE NORTH
SCALE : 1" = 20'
SEE ABOVE RIGHT
Pahoa Vllg. ℄ Sta. 46+12.97 o/s 8.24' Lt.
P.I. End Double Yellow Median
4" Double Yellow Line w/Type "D" RPM @ 20'-0" o.c. (Typ.)
Pahoa Vllg. ℄ Sta. 46+62.00 o/s 20.45'± Lt.
End 4" White Edge Line
Match/Tie-into Exist. Striping
Pahoa Vllg. ℄ Sta. 46+62.00 o/s 9.24'± Lt.
End 4" Double Yellow Line
Match/Tie-into Exist. Striping
KAHAKAI BOULEVARD (COUNTY)
TRUE NORTH
SCALE : 1" = 20'
12" Stop Line & Pavement Lettering
Pavement Marking Arrow
46+00
47+00
48+00
PAHOA VILLAGE ROAD
12" Stop Line
4" White Guide Line
Pahoa Vllg. ℄ Sta. 46+62.00 o/s 0.78'± Rt.
End 4" Double Yellow Line
Match/Tie-into Exist. Striping
307° 08' 09"
46.71
(From T-2 to Exist Pahoa Village Road ℄ Sta 47+66.04)
Pahoa Vllg. ℄ Sta. 46+62.00 o/s 11.89'± Rt.
End 4" White Edge Line
Match/Tie-into Exist. Striping
Pahoa Vllg. ℄ Sta. 46+39.10 o/s 1.34' Rt.
Begin 8" Solid White Line
4" White Edge Line w/Type "C" RPM @ 40'-0" o.c. (Typ.)
MATCHLINE STA. 46+10

1 ℄ CURVE DATA

Δ = 5°40'54"
R = 2864.79'
T = 142.16'
L = 283.97'
Lc = 284.09'

L E G E N D:

Limits of Pavement Marking Eradication/Removal

Note:
For Pavement Marking Notes & Legend, See Sheet 58.

DETOUR PAVEMENT MARKING PLAN - 2

Scale: 1" = 20'

0 20 40 60
HORIZ: 1" = 20' FEET

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LICENSED PROFESSIONAL ENGINEER
NO. 9246-C
HAWAII, U.S.A.

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HIGHWAYS DIVISION

DETOUR PAVEMENT MARKING PLAN - 2

Keaau-Pahoa Road Intersection Improvements at Old Government Road
Federal-Aid Project No. HSIP-0130(031)

Scale: 1" = 20' Date: April 2013

SHEET No. 2 OF 3 SHEETS

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

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	HSIP-0130(031)	2013	17	103

2

℄ CURVE DATA

Δ = 19°30'00"
R = 2000.00'
T = 343.66'
L = 677.40'
Lc = 680.68'

LEGEND:

⋯⋯ Limits of Pavement Marking Eradication/Removal
Eradicate All Exist Pav't Markings, RPM's & Remove Any Signs, A.C. Curbs, & Delineators Within Work Limits

Note:
For Pavement Marking Notes & Legend, See Sheet 58.

DETOUR PAVEMENT MARKING PLAN - 3

Scale: 1" = 20'

0 20 40 60
HORIZ: 1" = 20' FEET

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DETOUR PAVEMENT MARKING PLAN - 3

Keaau-Pahoa Road Intersection Improvements at Old Government Road
Federal-Aid Project No. HSIP-0130(031)

Scale: 1" = 20' Date: April 2013

SHEET No. 3 OF 3 SHEETS

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

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	HSIP-0130(031)	2013	18	103

GENERAL NOTES FOR TRAFFIC CONTROL PLAN

1. The Permitee Shall Make Minor Adjustments At Intersections, Driveways, Bridges, Structures, Etc., To Fit Field Conditions.

2. Cones Or Delineators Shall Be Extended To A Point Where They Are Visible To Approaching Traffic.

3. Traffic Control Devices Shall Be Installed Such That The Sign Or Device Farthest From The Work Area Is Placed First. The Others Shall Then Be Placed Progressively Toward The Work Area.

4. Regulatory And Warning Signs Within The Construction Zone That Are In Conflict With The Traffic Control Plans Shall Be Removed Or Covered.

5. Flaggers And/Or Police Officers Shall Be In Sight Of Each Other Or In Direct Communication At All Times.

6. When Required By The Issuing Office, The Permittee Shall Install A Flashing Arrow Signal As Shown On The Traffic Control Plans.

7. Sign Spacing (D), Taper Lengths (T) And Spacing Of Cones Or Delineators Shall Be As Shown In Table 1, Unless Otherwise Noted On The Traffic Control Plans.

8. All Traffic Lanes Shall Be A Minimum Of 10-Feet Wide.

9. All Construction Warning Signs Shall Be Promptly Removed Or Covered Whenever The Message Is Not Applicable Or Not In Use.

10. The Backs Of All Signs Used For Traffic Control Shall Be Appropriately Covered To Preclude The Display Of Inapplicable Sign Messages (I.E., When Signs Have Messages On Both Faces).

13. Driveways Shall Be Kept Open Unless The Owners Of The Property Using The Right-Of-Way Are Otherwise Provided For Satisfactorily. Further, The Permittee Shall Control Traffic Going In And Out Of Driveways.

14. Buffer And Taper Areas On Approach To Any Work Area Shall Be Kept Clear Of Vehicles And Equipment.

15. At The End of Each Day's Work, Or As Soon As The Work Is Completed, The Permittee 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.

16. Replace Existing Faded Or Obliterated Pavement Markings That Are Necessary For Safe Traffic Flow In The Construction Area, With Temporary Or Permanent Markings Before Opening The Roadway To Public Traffic Each Day.

17. All Work Zone Traffic Control Devices Shall Comply With The "Statewide Guideline For Work Zone Traffic Control Devices," Dated September 13, 2000.

18. Construction Lasting Three (3) Days Or Longer Throughout The Project Corridor Shall Require Long-Term Construction Warning Signs And Regulatory Speed Limit Signs, See The HDOT Work Zone Signing Plan, Notes & Details.

GENERAL NOTES FOR TRAFFIC CONTROL PLAN (Cont'd.)

19. Work May Be Performed Only Between The Hours Of 8:30 a.m. And 3:00 p.m., Monday Through Friday, Except State Holidays, Unless When Otherwise Approved In Writing By The HDOT Director.

    During Work Hours, Written Approval By The HDOT Director Shall Be Required For Any Of The Following:
    - Street Closures
    - Ramp Closures
    - Lane Closures Of More Than One (1) Lane.

20. The Contractor Shall Submit The Site-Specific Traffic Control Plan(s) Intended For Use During Construction To The State Of Hawaii Department Of Transportation's District Engineer, With The Traffic Notification, A Minimum Of One (1) Week Prior To The Scheduled Start Of The Associated Construction Activites For Review And Approval. Construction May Not Proceed Until The District Engineer Has Approved The Site-Specified Traffic Control Plan(s).

21. Include A Signed Certification Statement Affirming That The Site-Specific Traffic Control Plan(s) Submitted To HDOT Has Been Prepared Under The Direction Or Supervision Of A Licensed Professional Engineer, Is In Compliance With The Current HDOT And FHWA Standards, And Is An Appropriate Application Of Traffic Control Measures For The Construction Work To Be Performed.

TABLE 1 FOR TRAFFIC CONTROL PLAN

POSTED SPEED LIMIT (M.P.H.)	SIGN SPACING (L) (FEET)	TAPER LENGTH (T) (FEET)		LONGITUDINAL BUFFER SPACE (B) (FEET)	SPACING OF CONES OR DELINEATORS (FEET)		
		W = 12' OR LESS *	W = GREATER THAN 12' *		TAPER	TANGENT	WORK AREA
20	250	200	W X 17	35	20	20	10
25	250	200	W X 17	55	25	25	10
30	250	250	W X 20	85	30	30	10
35	250	250	W X 20	120	35	35	10
40	500	350	W X 30	170	40	40	10
45	500	550	W X 45	220	45	45	10
50	1000	600	W X 50	280	50	50	10
55	1000	700	W X 55	335	55	55	10

* W = WIDTH OF LANE OR OFFSET

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HIGHWAYS DIVISION

GENERAL NOTES FOR TRAFFIC CONTROL

Keaau-Pahoa Road Intersection Improvements at Old Government Road
Federal-Aid Project No. HSIP-0130(031)

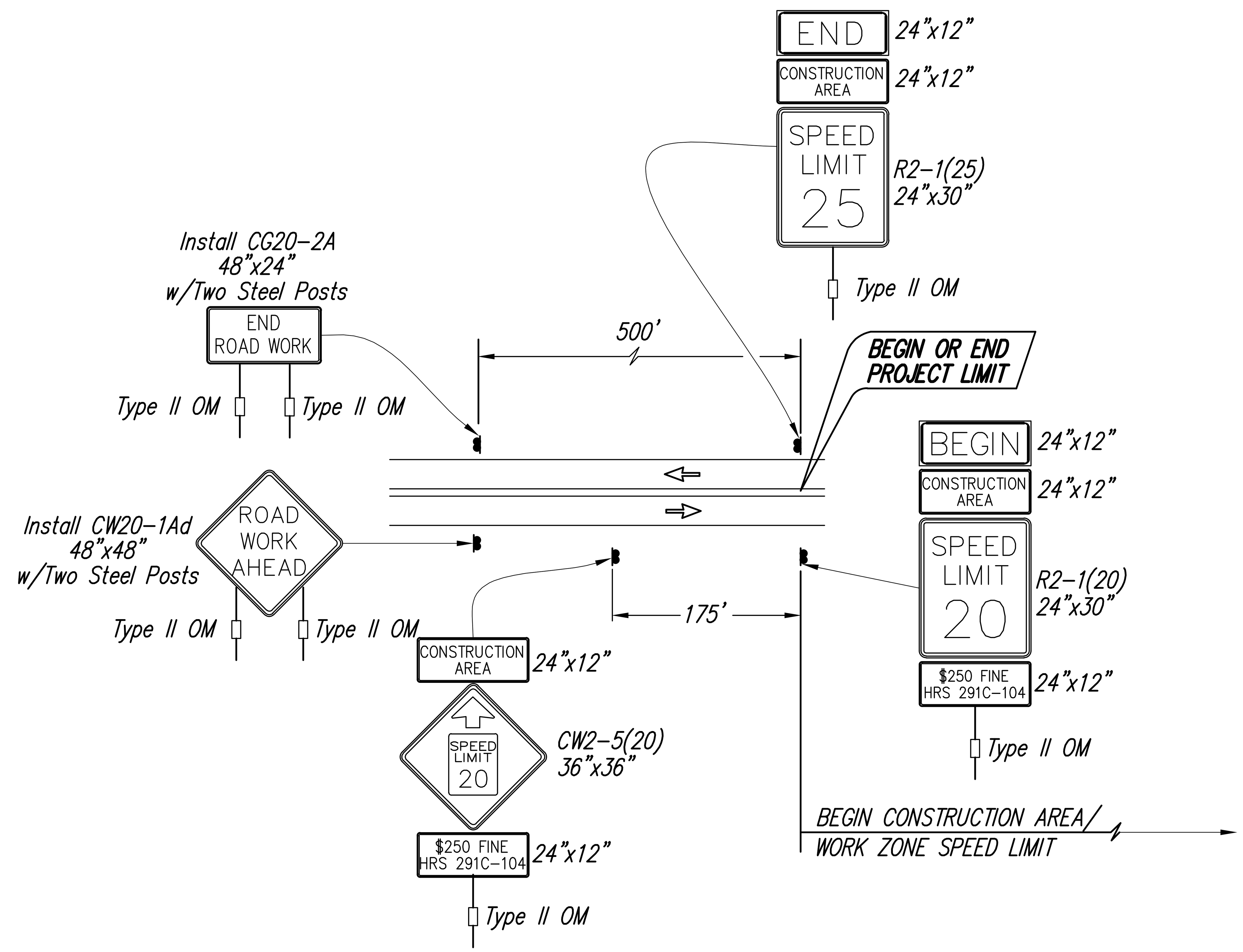
Scale: None   Date: April 2013

SHEET No. 1 OF 1 SHEETS

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

PLOT DATE: April 24, 2013 @ 08:19:18 am
LAST UPDATE: November 28, 2012 @ 08:29:03 am

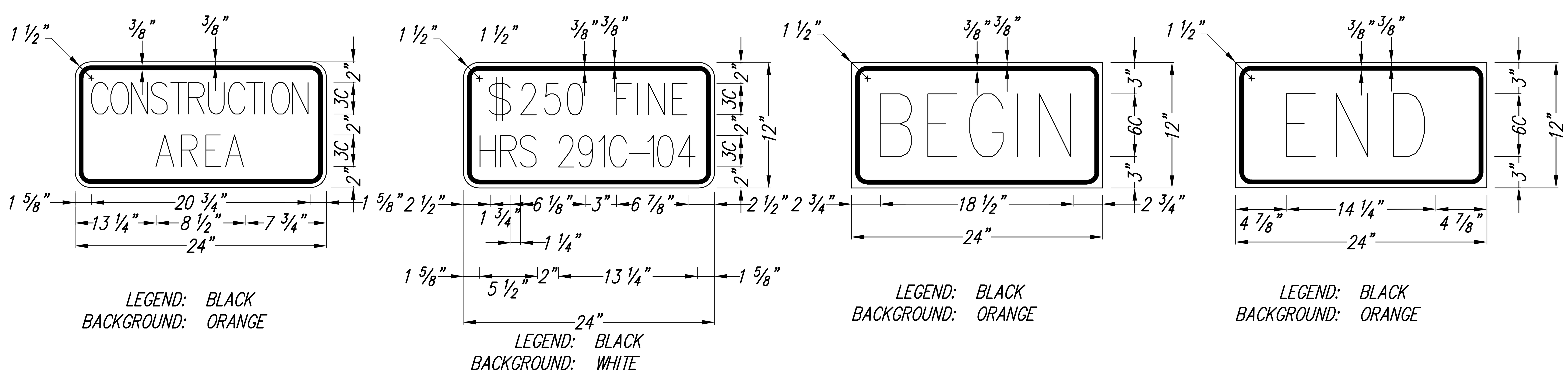
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	HSIP-0130(031)	2013	19	103



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

Work Zone Notes:

1. This Work Zone Sign Plan is intended for use on long-term stationary work zones/construction phases (3 days or more). All work zones or construction phases less than 3 days duration will use Traffic Control Plans shown in Section 945 of the Special Provisions.
2. All Existing Regulatory speed limit signs with posts within the work zone/project limit shall be removed and replaced with work zone speed limit sign assemblies (R2-1(20) and CW2-5(20) with "CONSTRUCTION AREA" and "$250 FINE HRS 291C-104" Supplemental Signs).
3. Construction sign assemblies shall be installed on both the approaching and trailing ends of each work zone as shown on this plan.
4. Each construction warning sign shall have a minimum of two (2) Type II OM. Each work zone speed limit assembly shall have a minimum of one (1) Type II OM. Installation of each Type II OM shall be considered incidental to Item No. 645.1000, Traffic Control.
5. Upon the completion of all physical work or as directed by the Engineer, all construction signs and work zone speed limit assemblies shall be removed. All speed limit signs and posts that were existing at the start of the project within the work zone/project limits shall be restored back to their original locations and configurations.
6. Placement of construction signs shall not obstruct the path of pedestrians and bicyclists.
7. The removal and restoration of existing regulatory speed limit signs with new posts along with the installation, maintenance and removal of work zone speed limit sign assemblies shall be considered incidental to Item No. 645.1000 - Traffic Control.
8. The installation, maintenance and removal of work zone speed limit sign assemblies shall be paid for under Item No. 645.1000 - Traffic Control.
9. The work zone speed limit signs shall be new and become the property of the State and shall be delivered at a location designated by the Engineer.



MINGXUN DING LICENSED PROFESSIONAL ENGINEER NO. 9246-C HAWAII, U.S.A.

LICENSE EXPIRES 4/30/14

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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

LOW SPEED UNDIVIDED HIGHWAY WORK ZONE SIGNING PLAN AND DETAILS

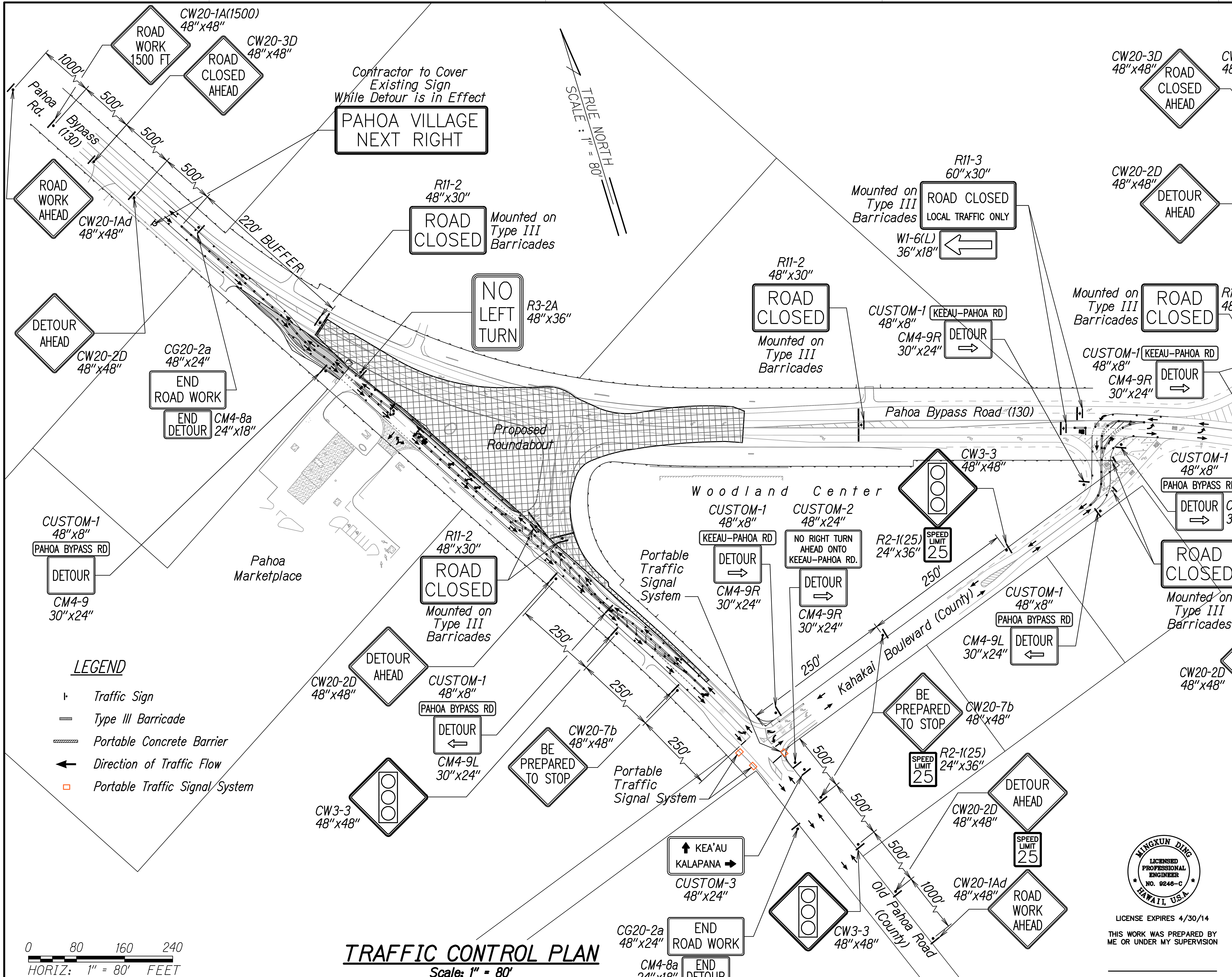
Keaau-Pahoa Road Intersection Improvements at Old Government Road
Federal-Aid Project No. HSIP-0130(031)

Scale: None   Date: April 2013

SHEET No. 1 OF 1 SHEETS

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

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	HSIP-0130(031)	2013	20	103



ROAD WORK 1500 FT
CW20-1A(1500) 48"x48"
ROAD CLOSED AHEAD
CW20-3D 48"x48"
Contractor to Cover Existing Sign While Detour is in Effect
PAHOA VILLAGE NEXT RIGHT
TRUE NORTH
SCALE : 1" = 80'
Pahoa Rd.
Bypass (130)
1000'
500'
500'
500'
220' BUFFER
ROAD WORK AHEAD
CW20-1Ad 48"x48"
DETOUR AHEAD
CW20-2D 48"x48"
R11-2 48"x30"
ROAD CLOSED
Mounted on Type III Barricades
NO LEFT TURN
R3-2A 48"x36"
CG20-2a 48"x24"
END ROAD WORK
END DETOUR
CM4-8a 24"x18"
Proposed Roundabout
Pahoa Marketplace
CUSTOM-1 48"x8"
PAHOA BYPASS RD
DETOUR
CM4-9 30"x24"
R11-3 60"x30"
Mounted on Type III Barricades
ROAD CLOSED LOCAL TRAFFIC ONLY
W1-6(L) 36"x18"
CUSTOM-1 48"x8"
KEEAU-PAHOA RD
CM4-9R 30"x24"
DETOUR
Pahoa Bypass Road (130)
Woodland Center
CW3-3 48"x48"
R2-1(25) 24"x36"
SPEED LIMIT 25
CUSTOM-2 48"x24"
NO RIGHT TURN AHEAD ONTO KEEAU-PAHOA RD.
Portable Traffic Signal System
CM4-9R 30"x24"
Kahakai Boulevard (County)
250'
CUSTOM-1 48"x8"
PAHOA BYPASS RD
CM4-9L 30"x24"
DETOUR
BE PREPARED TO STOP
CW20-7b 48"x48"
CW20-2D 48"x48"
DETOUR AHEAD
CW20-3D 48"x48"
ROAD CLOSED AHEAD
CW20-1A(1500) 48"x48"
ROAD WORK 1500 FT
CW20-1Ad 48"x48"
ROAD WORK AHEAD
Kahakai Boulevard (County)
Pahoa Bypass Rd. (130)
1000'
500'
KEA'AU
KALAPANA
CUSTOM-3 48"x24"
CG20-2a 48"x24"
CM4-8a 24"x18"
Old Pahoa Road (County)
LEGEND
Traffic Sign
Type III Barricade
Portable Concrete Barrier
Direction of Traffic Flow
Portable Traffic Signal System
0 80 160 240
HORIZ: 1" = 80' FEET

TRAFFIC CONTROL PLAN

Scale: 1" = 80'

MINGXUN DING
LICENSED PROFESSIONAL ENGINEER
NO. 9246-C
HAWAII, U.S.A.

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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

TRAFFIC CONTROL PLAN

Keaau-Pahoa Road Intersection Improvements at Old Government Road
Federal-Aid Project No. HSIP-0130(031)

Scale: 1" = 80' Date: April 2013

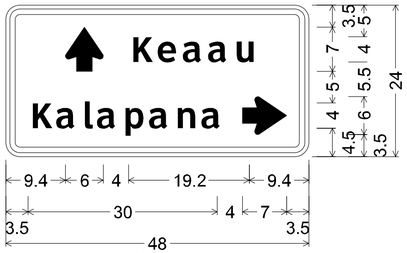
SHEET No. 1 OF 1 SHEETS

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

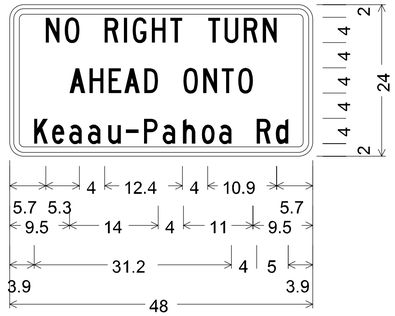
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	HSIP-0130(031)	2012	21	103

NOTES:

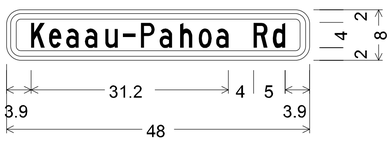
1. All Letters and Figures Shall Conform to the Latest Edition of FHWA Publication "Standard Alphabets for Highway Signs" and as Amended.
2. For Sign Panel Mounting Details Refer to "Laminated Aluminum Sign Panels (Ground Mounted)" TE-23 of the State Highways Standard Plans.



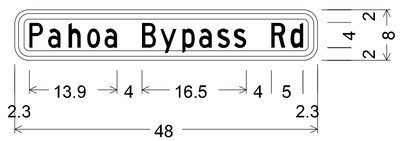
2.3" Radius, 0.9" Border, 0.6" Indent, Black on Orange;
Standard Arrow Custom 7.0" X 6.0" 90°;
[Keaau] ClearviewHwy-5-W;
[Kalapana] ClearviewHwy-5-W;
Standard Arrow Custom 7.0" X 6.0" 0°;



2.3" Radius, 0.9" Border, 0.6" Indent, Black on Orange;
[NO RIGHT TURN] C;
[AHEAD ONTO] C;
[Keaau-Pahoa Rd] C;



2.3" Radius, 0.9" Border, 0.6" Indent, Black on Orange;
[Keaau-Pahoa Rd] C;



2.3" Radius, 0.9" Border, 0.6" Indent, Black on Orange;
[Pahoa Bypass Rd] C;

MINGXUN DING
LICENSED PROFESSIONAL ENGINEER
NO. 9246-C
HAWAII, U.S.A.

LICENSE EXPIRES 4/30/14

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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

TRAFFIC CONTROL SIGN DETAILS

Keaau-Pahoa Road Intersection Improvements at Old Government Road
Federal-Aid Project No. HSIP-0130(031)

Scale: Date: April 2013

SHEET No. 1 OF 1 SHEETS

21

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

PLOT DATE: ccccSYSTIME$$
LAST UPDATE: ccccSYSTIME$$
PATH/FILENAME: ccccDOnCSPECIFICATIONccccc

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	HSIP-0130(031)	2013	22	103

LEGEND

- Compost Filter Sock, see Plan Sheet No. 65 for Detail
- Compost Filter Sock Inlet Protection, see Plan Sheet No. 65 for Detail
- Dust Control Fence, see Plan Sheet No. 65 for Detail
- Drain Inlet Protection, see Plan Sheet No. 65 for Detail
- Direction of Flow
- Limits of Grading

EROSION CONTROL PLAN

Scale: 1" = 30'

0 30 60 90
HORIZ: 1" = 30' FEET

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LICENSED PROFESSIONAL ENGINEER
NO. 9246-C
HAWAII, U.S.A.

LICENSE EXPIRES 4/30/14

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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

EROSION CONTROL PLAN

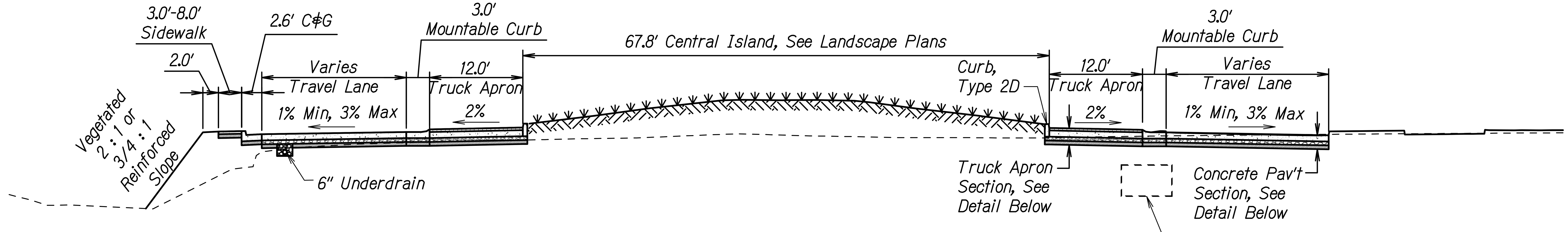
Keaau-Pahoa Road Intersection Improvements at Old Government Road
Federal-Aid Project No. HSIP-0130(031)

Scale: As Shown Date: April 2013

SHEET No. 1 OF 1 SHEETS

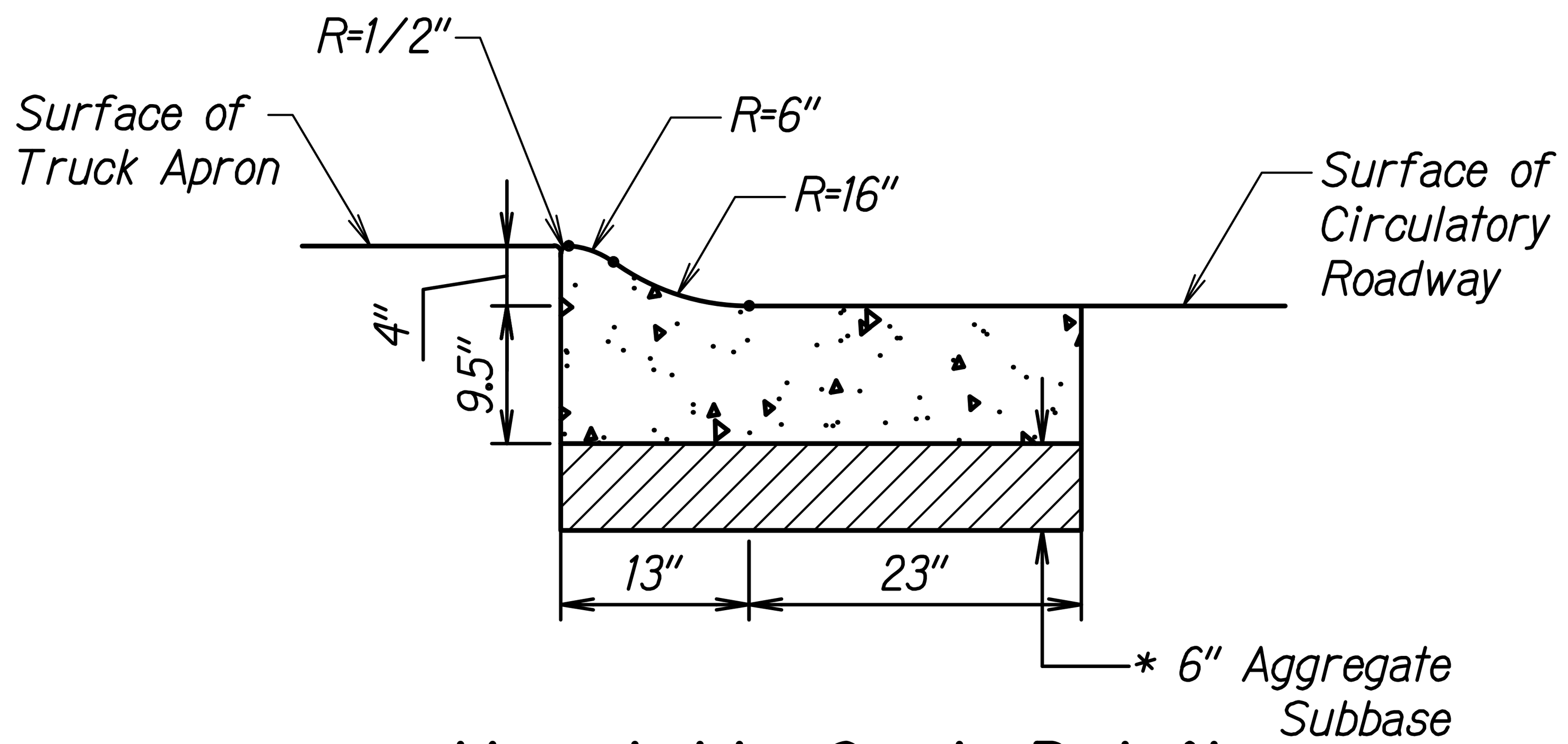
ORIGINAL PLAN / NOTE BOOK / No. — SURVEY PLOTTED BY / DRAWN BY / TRACED BY / DESIGNED BY / QUANTITIES BY / CHECKED BY — DATE

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	HSIP-0130(031)	2013	23	103



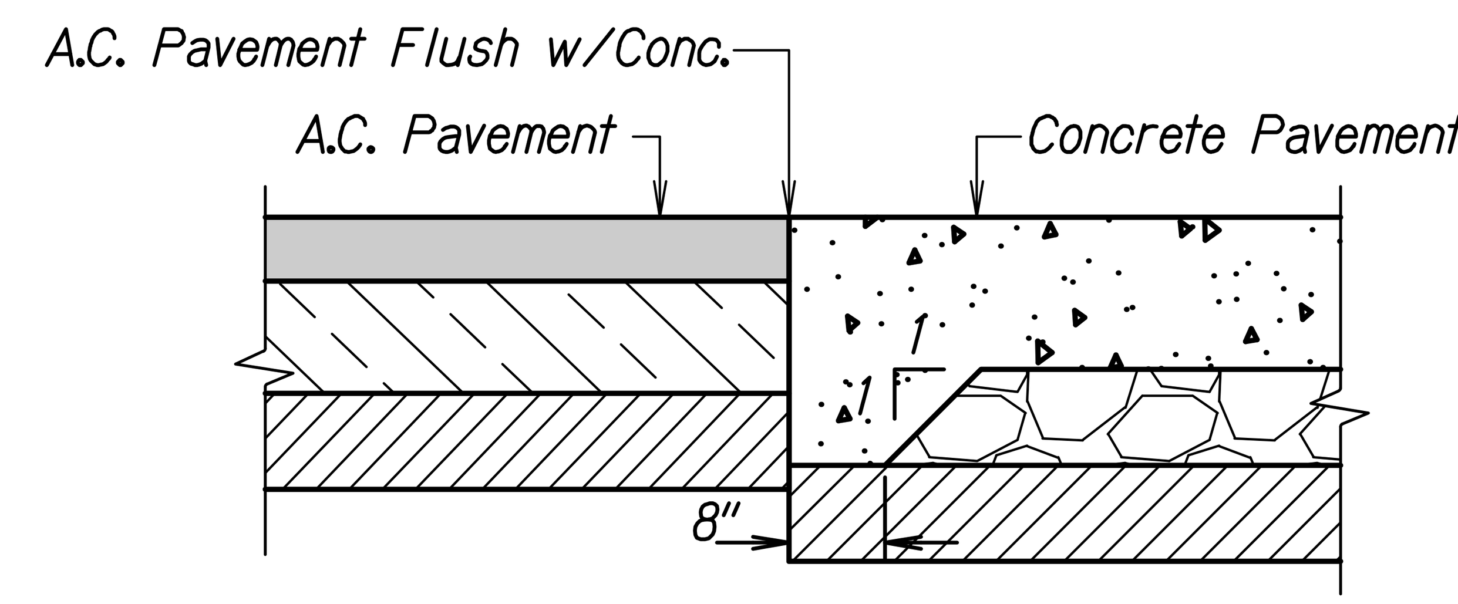
Typical Roundabout Section

Scale: 1" = 8'



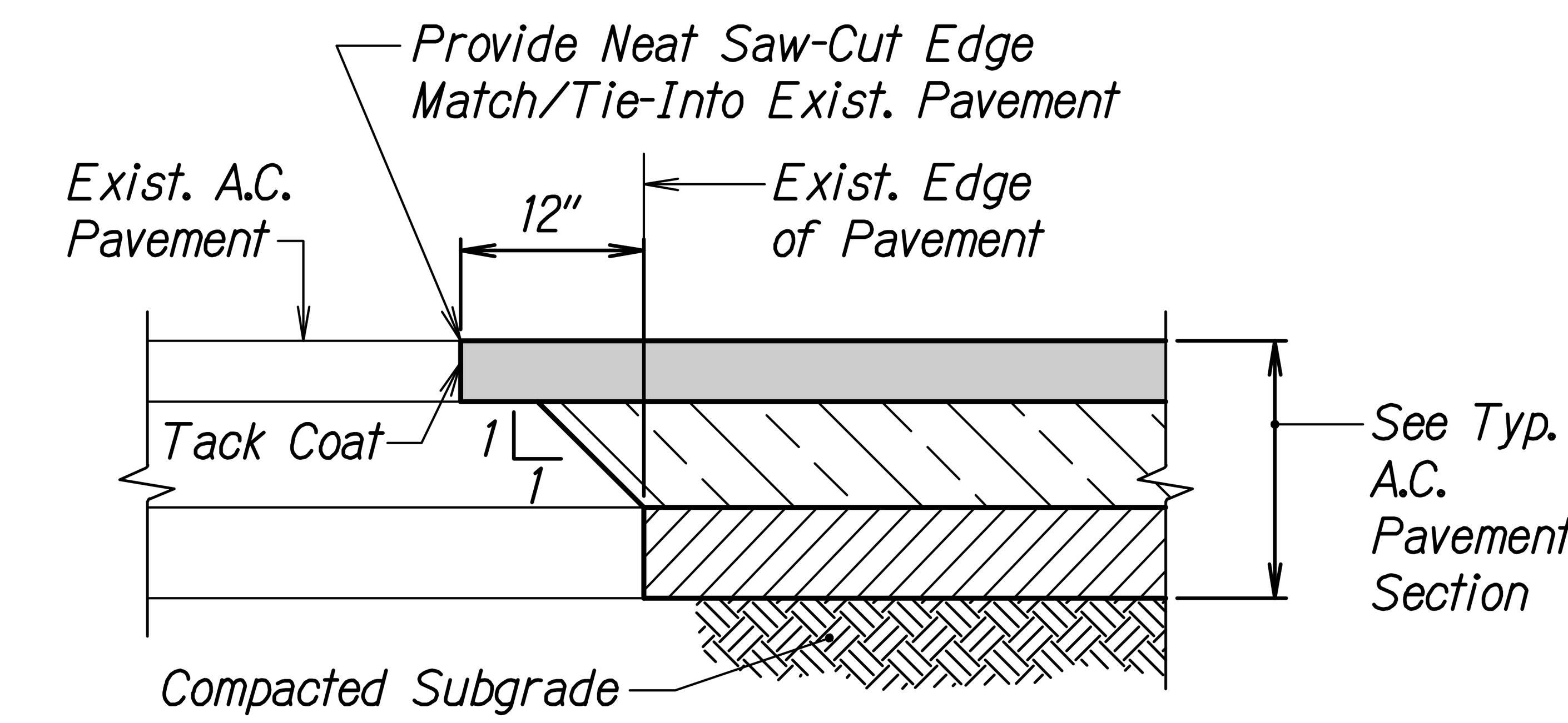
Mountable Curb Detail

Not to Scale



New Concrete to Existing AC Connection Detail

Not to Scale

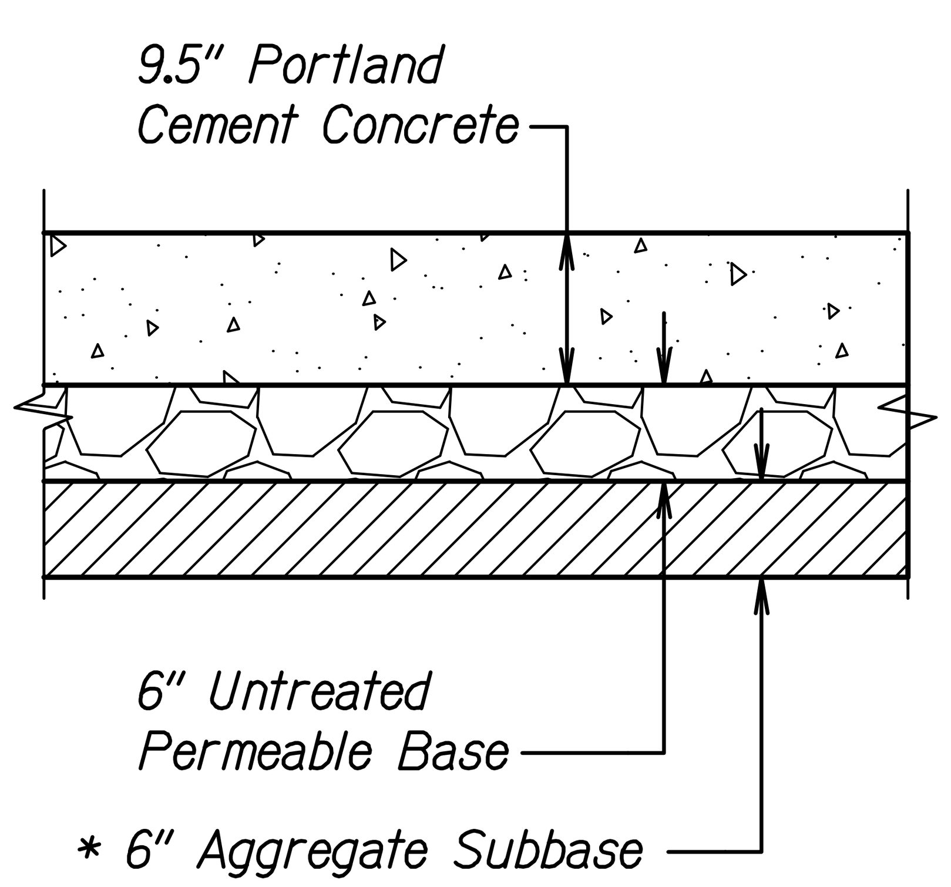


Notes:

1. New Construction Shall Be Equal Or Better Than Existing In Thickness & In Quality.
2. Pavement Slope Shall Match Existing Pavement Slope So As To Provide Smooth Riding Connection.

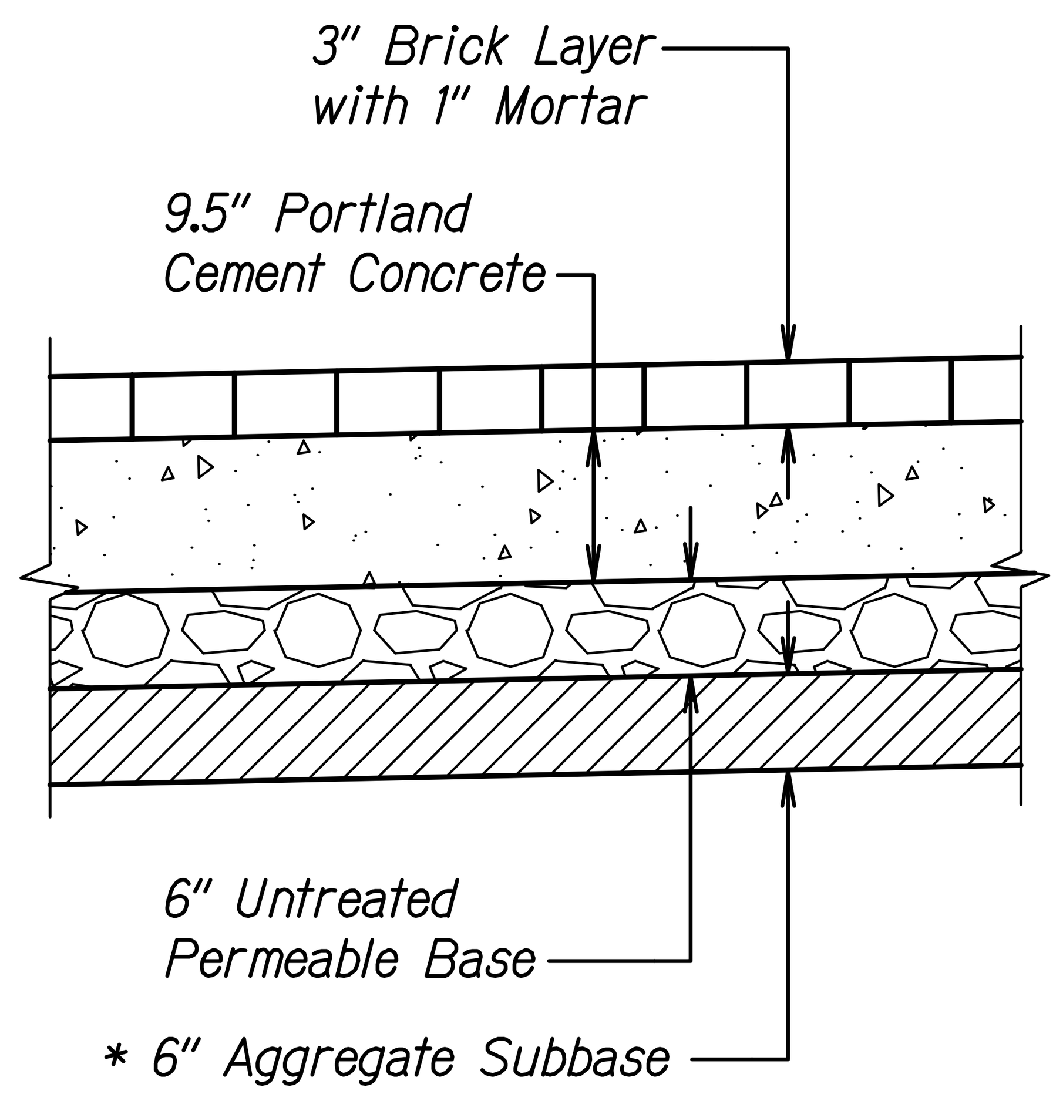
New AC to Existing AC Connection Detail

Not to Scale



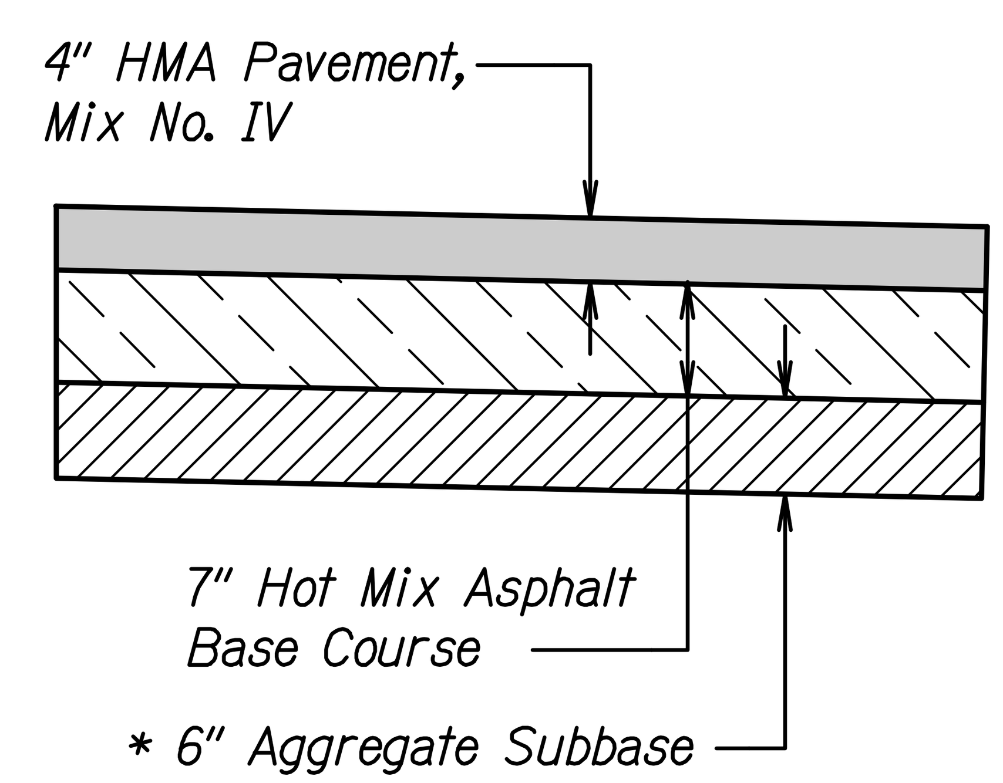
Concrete Pavement Section Detail

Not to Scale



Truck Apron Section Detail

Not to Scale

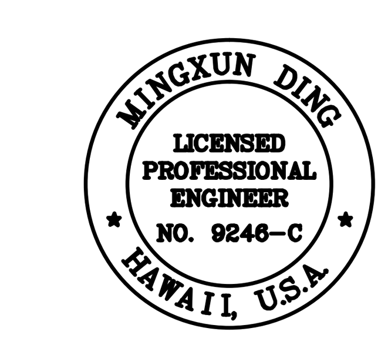


AC Pavement Section Detail

Not to Scale

* The 6" Subbase Layer can be Eliminated in Areas where Hard Basalt Rock is Encountered at the depth where the Aggregate Subbase should be placed. However, the Untreated Permeable Base and Asphalt Concrete Base are still required. Refer to Boring Locations and Logs on Sheets B-1 to B-4 for Approximate Locations of Rock.

0 8 16 24
HORIZ: 1" = 8' FEET



LICENSE EXPIRES 4/30/14

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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

TYPICAL SECTIONS

ROUNDABOUT & PAVEMENT STRUCTURE

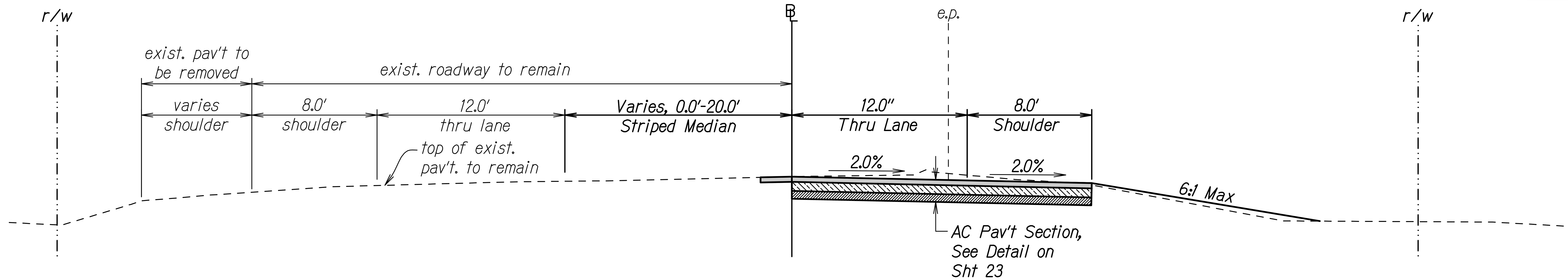
Keaau-Pahoa Road Intersection Improvements at Old Government Road
Federal-Aid Project No. HSIP-0130(031)

Scale: 1" = 8', NTS Date: April 2013

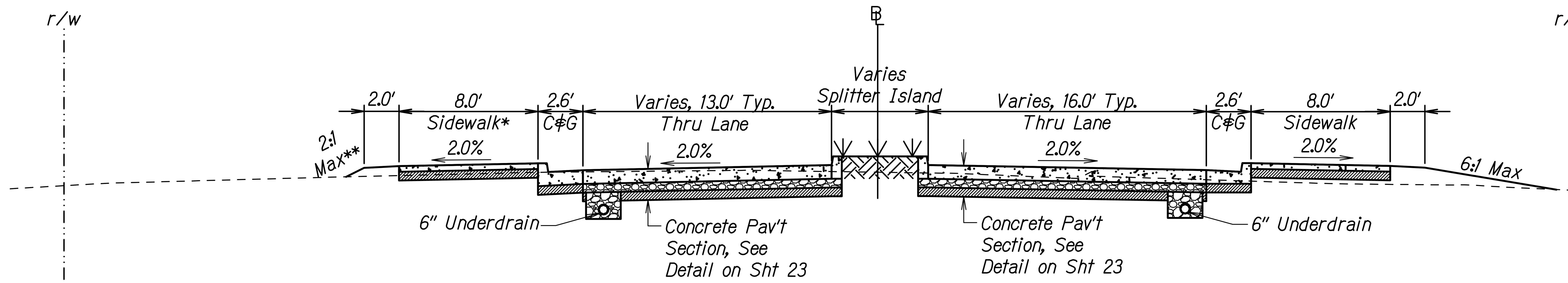
SHEET No. 1 OF 5 SHEETS

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

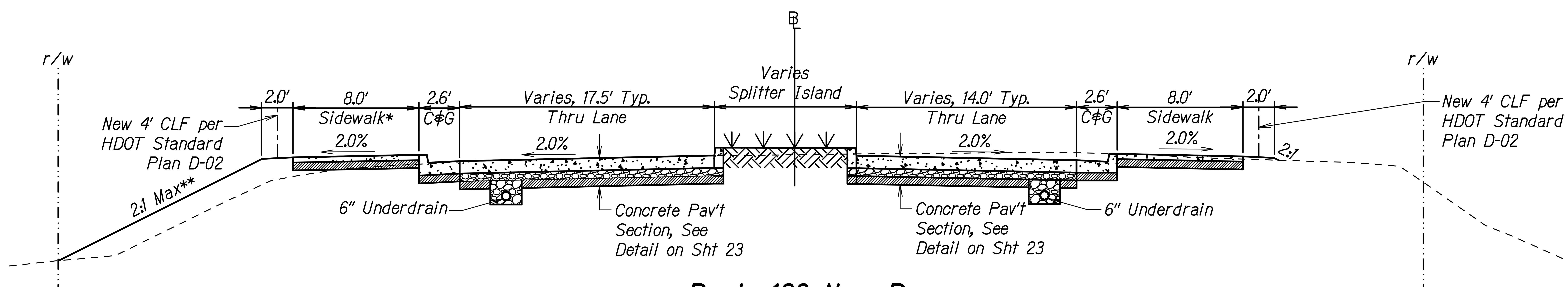
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	HSIP-0130(031)	2013	24	103



Route 130 New ℄
Sta 9+00 to Sta 13+38.96
Scale: 1" = 4'



Route 130 New ℄
Sta 13+38.96 to Sta 16+37.36
Scale: 1" = 4'



Route 130 New ℄
Sta 17+77.43 to Sta 20+16.45
Scale: 1" = 4'

* 3.0' Sidewalk from Sta 16+72.67 to Sta 17+49.79

** 3/4:1 Reinforced Slope from Sta 16+55.46 to Sta 17+51.72, See Sheet 22 for Typical Reinforced Slope Section

0 4 8 12
HORIZ: 1" = 4' FEET

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NO. 9246-C
HAWAII, U.S.A.

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DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

TYPICAL SECTIONS

PAHOA BYPASS ROAD ROUTE 130

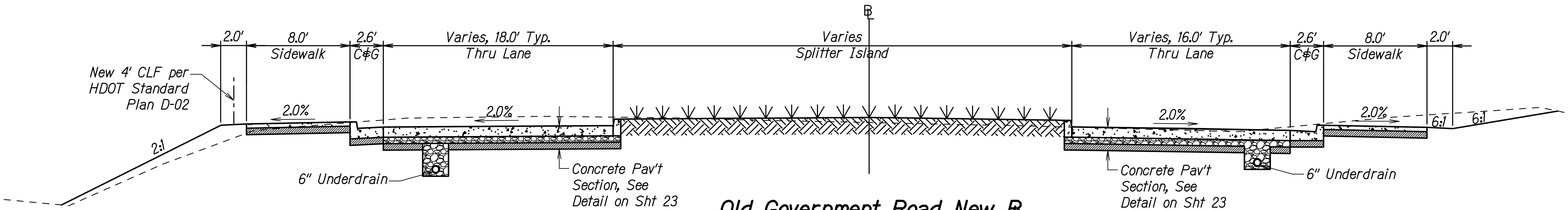
Keaau-Pahoa Road Intersection Improvements at Old Government Road
Federal-Aid Project No. HSIP-0130(031)

Scale: 1" = 4' Date: April 2013

SHEET No. 2 OF 5 SHEETS

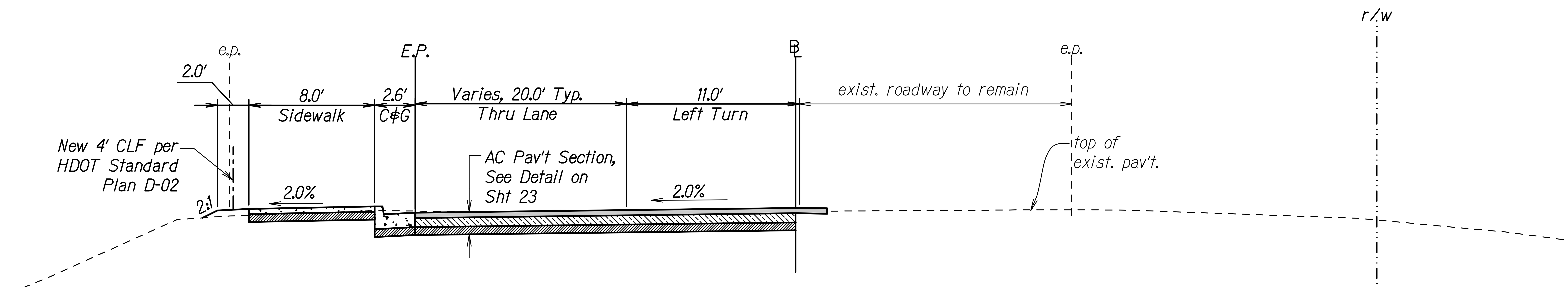
ORIGINAL PLAN / NOTE BOOK No. / SURVEY PLOTTED BY / DRAWN BY / TRACED BY / DESIGNED BY / QUANTITIES BY / CHECKED BY / DATE

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	HSIP-0130(031)	2013	25	103



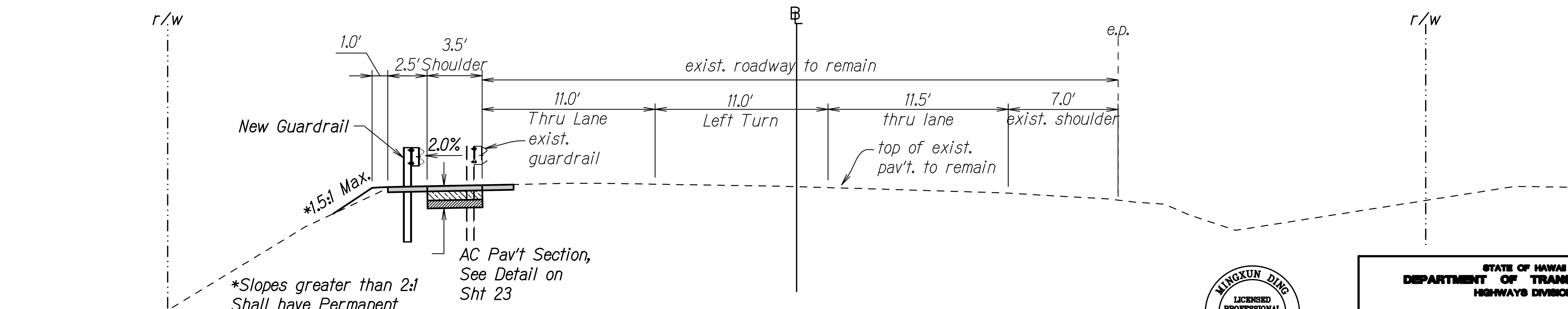
Old Government Road New ℄ Sta 0+69.83 to Sta 1+29.11

Scale: 1" = 4'



Old Government Road New ℄ Sta 2+20.00 to Sta 3+07.68

Scale: 1" = 4'



*Slopes greater than 2:1 Shall have Permanent Erosion Control Matting

Old Government Road New ℄ Sta 3+07.68 to Sta 5+34.33

Scale: 1" = 4'

0 4 8 12
HORIZ: 1" = 4' FEET

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NO. 9246-C
HAWAII, U.S.A.

LICENSE EXPIRES 4/30/14

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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

TYPICAL SECTIONS

OLD GOVERNMENT ROAD

Keaau-Pahoa Road Intersection Improvements at Old Government Road
Federal-Aid Project No. HSIP-0130(031)

Scale: 1" = 4' Date: April 2013

SHEET No. 3 OF 5 SHEETS

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

PATH/FILENAME: P:\USIG\Civil\Dot-Hwy\60248741-KP_RDABT\400 Design\DWG\23-25_KP_RDABT_TYPICAL SECTIONS.dwg

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	HSIP-0130(031)	2013	26	103

Note:

See Reinforced Slope Plan, Sheet No. 43 for plan location.

TYPICAL REINFORCED SLOPE SECTION

Horizontal Scale: 1" = 2'
Vertical Scale: 1" = 2'

Legend:

- Pavement Section
- Compacted Aggregate Base Course Backfill
- Existing Subsoil

2 1 0 2 4 6
HORIZ/VERT: 1" = 2' FEET

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

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GEOLABS, INC.
LICENSE EXPIRES 4-30-14

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

TYPICAL REINFORCED SLOPE SECTION

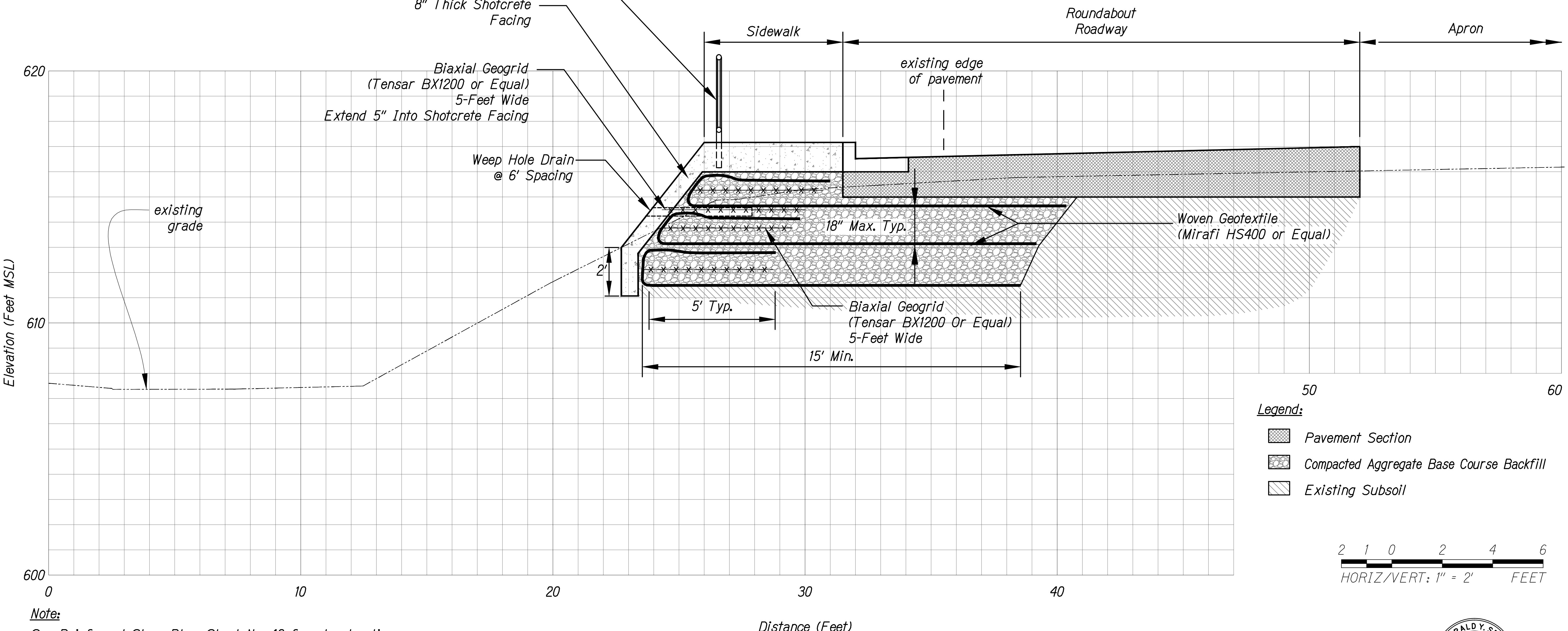
Keaau-Pahoa Road Intersection
Improvements at Old Government Road
Federal-Aid Project No. HSIP-0130(031)

Scale: 1" = 2' Date: April 2013

SHEET No. 4 OF 5 SHEETS

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

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	HSIP-0130(031)	2013	27	103

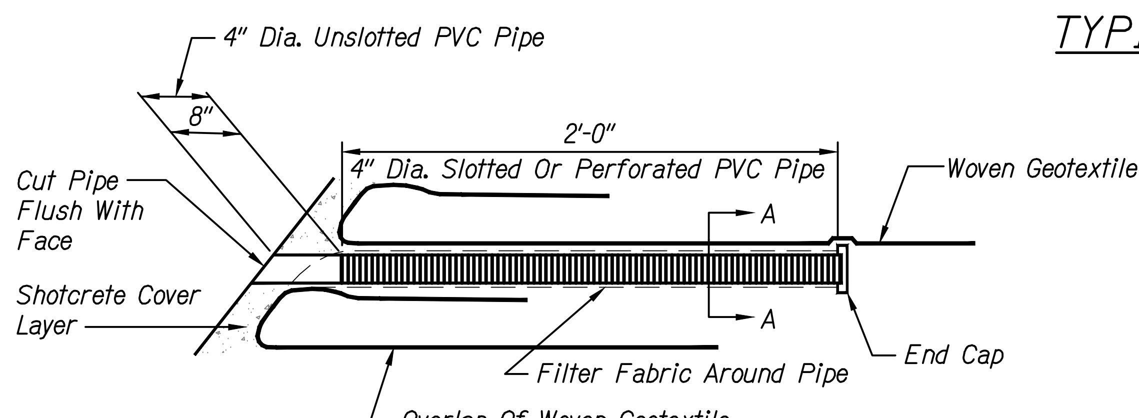


Note:

See Reinforced Slope Plan, Sheet No. 43 for plan location.

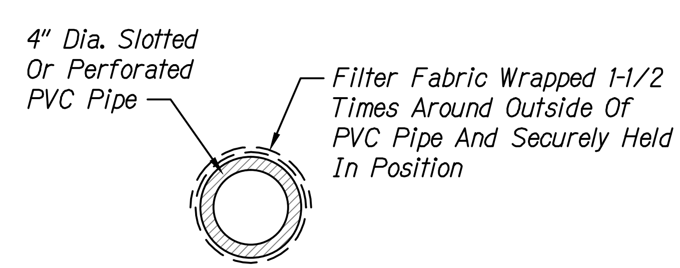
TYPICAL TRANSITION REINFORCED SLOPE SECTION

Horizontal Scale: 1" = 2'
Vertical Scale: 1" = 2'



TYPICAL WEEP HOLE DRAIN

N.T.S.



SECTION A-A

N.T.S.

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

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GEOLABS, INC.
LICENSE EXPIRES 4-30-14

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

TYPICAL TRANSITION REINFORCED SLOPE SECTION

Keaau-Pahoa Road Intersection Improvements at Old Government Road
Federal-Aid Project No. HSIP-0130(031)

Scale: 1" = 2'   Date: April 2013

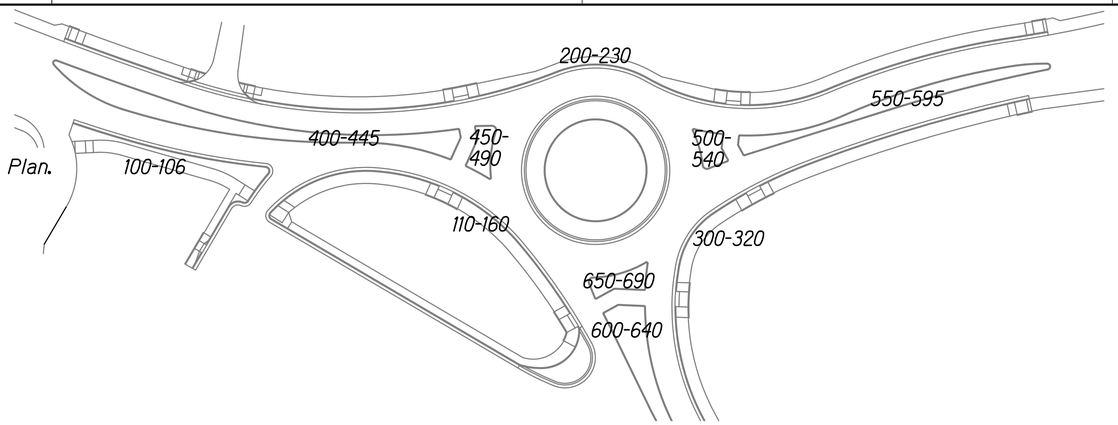
SHEET No. 5 OF 5 SHEETS

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

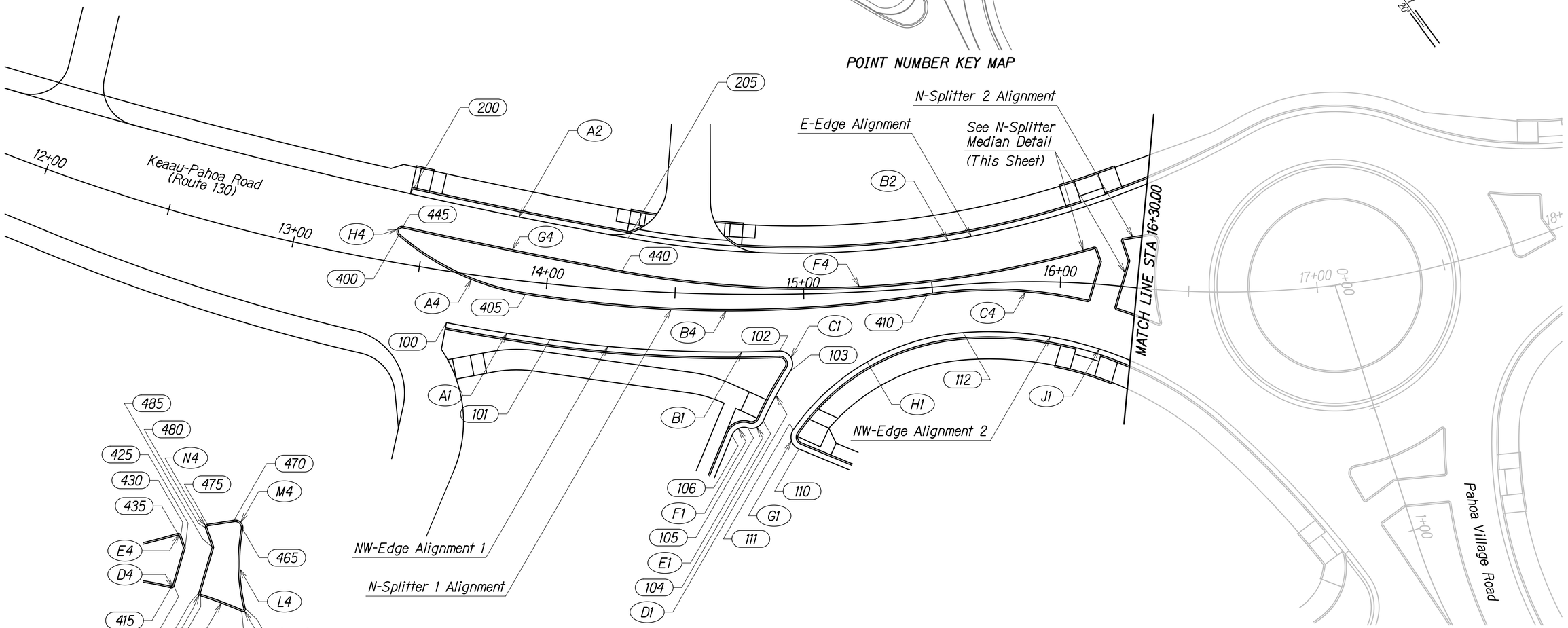
NOTES:

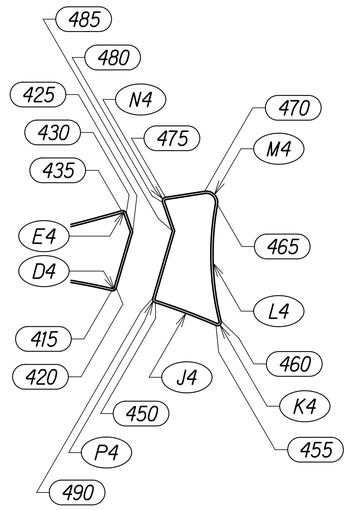
1. See Staking Data Sheets for Coordinate and Curve Information.
2. All Alignments, Points and Curves on Curb and Gutter are at Lip of Gutter. Barrier Curb Points are at Bottom Face of Curb.
3. Coordinates are Based on Benchmark and Control Points Shown on Overall Site Plan.

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	HSIP-0130(031)	2012	28	103



POINT NUMBER KEY MAP





N-Splitter Median Detail

0 20 40 80
HORIZ: 1" = 20' FEET

MINGXUN DING
LICENSED PROFESSIONAL ENGINEER
NO. 9248-C
HAWAII, U.S.A.

LICENSE EXPIRES 4/30/14

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

STAKING SHEET

Keaau-Pahoa Road Intersection Improvements at Old Government Road
Federal-Aid Project No. HSIP-0130(031)

Scale: 1"=20'-0" Date: April 2013

SHEET No. 1 OF 2 SHEETS

ORIGINAL PLAN
NOTE BOOK
No.

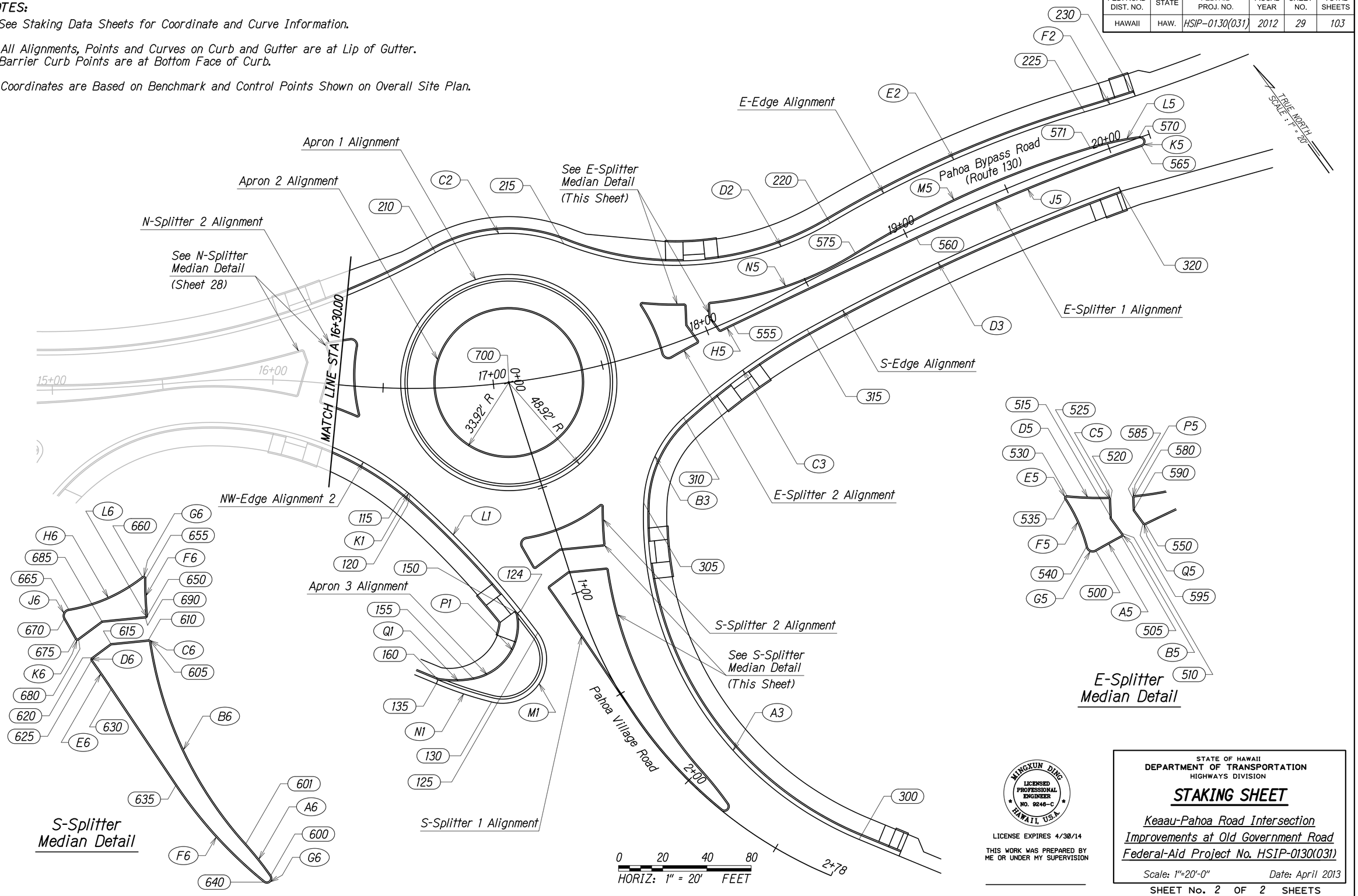
SURVEY PLOTTED BY _____ DATE
DRAWN BY _____ " "
TRACED BY _____ " "
DESIGNED BY _____ " "
QUANTITIES BY _____ " "
CHECKED BY _____

PLOT DATE: 4/22/2013 @ 1:24:35 PM
LAST UPDATE: 4/22/2013 @ 1:24:35 PM
PATH/FILENAME: P:\60248741 H:\CAD\06_Civil\Sheets\XK_KP_ROAD1_Staking Sheet 01.dgn

NOTES:

1. See Staking Data Sheets for Coordinate and Curve Information.
2. All Alignments, Points and Curves on Curb and Gutter are at Lip of Gutter. Barrier Curb Points are at Bottom Face of Curb.
3. Coordinates are Based on Benchmark and Control Points Shown on Overall Site Plan.

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	HSIP-0130(031)	2012	29	103



ORIGINAL PLAN

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

NOTE BOOK _____
No. _____

PLOT DATE: 4/22/2013 @ 1:25:04 PM
LAST UPDATE: 4/22/2013 @ 1:25:04 PM
PATH/FILENAME: P:\60248741 IH\CAD\006_Civil\Sheets\XX_AP_ROAB1_Staking Sheet 02.dgn

MINGXUN DING
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NO. 9248-C
HAWAII, U.S.A.

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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

STAKING SHEET

Keaau-Pahoa Road Intersection Improvements at Old Government Road Federal-Aid Project No. HSIP-0130(031)

Scale: 1"=20'-0" Date: April 2013

SHEET No. 2 OF 2 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	HSIP-0130(031)	2012	30	103

	No.	Point	Station	Northing	Easting	Delta	Radius	Tangent	Length	External	Elevation
NW-Edge 1	100	PC	10+00.00	243539.614	1827438.238						615.83
	A1					2°59'39"	780.00	20.39	40.76	0.27	
	101	PCC	10+40.76	243510.563	1827466.825						616.01
	B1					10°02'36"	510.00	44.81	89.40	1.97	
	102	PRC	11+30.16	243454.446	1827536.268						616.38
	C1					125°06'57"	5.00	9.63	10.92	5.85	
	103	PRC	11+41.08	243445.628	1827535.266						616.28
	D1					8°28'15"	150.00	11.11	22.18	0.41	
	104	PRC	11+63.25	243436.195	1827515.219						616.08
	E1					82°48'19"	5.00	4.41	7.23	1.67	
	105	PRC	11+70.48	243437.566	1827508.749						616.01
	F1					84°48'11"	5.00	4.57	7.40	1.77	
	106	PT	11+77.88	243438.849	1827502.129						616.08
NW-Edge 2	110	PC	12+00.00	243419.177	1827520.012						616.09
	G1					102°08'55"	5.00	6.19	8.91	2.96	
	111	PCC	12+08.91	243426.504	1827522.627						616.15
	H1					51°12'34"	88.00	42.17	78.65	9.58	
	112	PCC	12+87.57	243418.130	1827598.225						616.68
	J1					43°21'50"	140.00	55.66	105.96	10.66	
	115	PCC	13+93.52	243334.858	1827659.602						617.01
	K1					1°57'56"	50.00	0.86	1.72	0.01	
	120	PCC	13+95.24	243333.192	1827660.009						617.00
	L1					12°13'36"	400.00	42.84	85.36	2.29	
	125	PCC	14+80.60	243248.565	1827669.848						616.49
	M1					140°41'12"	20.00	55.99	49.11	39.46	
	130	PCC	15+29.71	243235.573	1827634.490						616.80
	N1					8°23'58"	180.00	13.22	26.39	0.48	
	135	PT	15+56.09	243257.001	1827619.131						616.97
Apron 3	150	PC	16+00.00	243261.131	1827667.535						616.31
	P1					90°55'05"	25.00	25.40	39.67	10.64	
	155	PCC	16+39.67	243248.662	1827634.150						617.20
	Q1					20°23'35"	46.00	8.27	16.37	0.74	
	160	PT	16+56.04	243258.044	1827620.838						616.87
E-Edge	200	PC	20+00.00	243588.351	1827456.429						615.93
	A2					2°09'48"	2288.00	43.20	86.39	0.41	
	205	PCC	20+86.39	243524.579	1827514.703						616.17
	B2					39°47'47"	360.00	130.31	250.05	22.86	
	210	PRC	23+36.44	243414.856	1827733.817						617.04
	C2					51°04'55"	67.50	32.26	60.18	7.31	
	215	PRC	23+96.62	243383.803	1827783.048						616.74
	D2					52°20'25"	137.00	67.32	125.15	15.65	
	220	PRC	25+21.77	243320.459	1827885.960						614.70
	E2					14°08'50"	510.00	63.29	125.93	3.91	
	225	PRC	26+47.70	243293.236	1828008.583						613.38
	F2					1°46'15"	780.00	12.06	24.11	0.09	
	230	PT	26+71.81	243285.505	1828031.417						613.03
S-Edge	300	PC	30+00.00	243087.339	1827732.201						618.69
	A3					69°48'42"	158.00	110.25	192.51	34.66	
	305	PCC	31+92.51	243267.831	1827743.157						616.41
	B3					45°37'13"	55.00	23.13	43.79	4.67	
	310	PCC	32+36.31	243288.382	1827780.523						615.92
	C3					13°08'40"	300.00	34.56	68.82	1.98	
	315	PCC	33+05.13	243287.697	1827849.193						615.14
	D3					8°53'52"	1000.00	77.80	155.29	3.02	
	320	PT	34+60.43	243256.520	1828001.167						613.40

NOTES:

1. See Staking Plan Sheets for Point Locations.
2. All Alignments, Points and Curves on Curb and Gutter are at Lip of Gutter. Barrier Curb Points are at Bottom Face of Curb.
3. Coordinates are Based on Benchmark and Control Points Shown on Overall Site Plan.

Additional Grading Points			
No.	Northing	Easting	Elevation
114	243352.188	1827653.808	617.06
121	243313.582	1827663.932	616.72
122	243309.431	1827664.632	616.63
123	243289.620	1827667.362	616.23
123a	243269.698	1827669.097	616.36
124	243261.212	1827669.533	616.41
216	243374.701	1827789.310	616.65
217	243366.126	1827796.291	616.49
219	243326.538	1827856.644	615.18
221	243316.736	1827915.724	614.34

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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

STAKING DATA SHEET

Keaau-Pahoa Road Intersection Improvements at Old Government Road Federal-Aid Project No. HSIP-0130(031)

Scale: Date: April 2013

SHEET No. 1 OF 3 SHEETS

30

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

PLOT DATE: 4/22/2013 @ 1:36:08 PM
LAST UPDATE: 4/22/2013 @ 1:36:08 PM
PATH/FILENAME: P:\60248741 int\CAD\006_Civil\Sheet\Vx_XP_ROAB1_Staking Data Sheet_01.dgn

	No.	Point	Station	Northing	Easting	Delta	Radius	Tangent	Length	External	Elevation
N-Splitter 1	400	PC	40+00.00	243577.987	1827443.216						615.98
	A4					31°30'23"	100.00	28.21	54.99	3.90	
	405	PCC	40+54.99	243530.451	1827469.460						616.25
	B4					18°10'37"	494.00	79.02	156.72	6.28	
	410	PRC	42+11.71	243438.154	1827595.306						616.91
	C4					22°13'17"	162.00	31.81	62.83	3.09	
	415	PRC	42+74.54	243399.476	1827644.319						617.12
	D4					87°01'58"	1.00	0.95	1.52	0.38	
	420	PT	42+76.06	243399.335	1827645.689						617.14
	425	PI	42+91.49	243408.761	1827657.911						617.12
	430	PC	42+96.74	243413.780	1827659.457						617.05
	E4					87°09'30"	1.00	0.95	1.52	0.38	
	435	PRC	42+98.27	243415.014	1827658.842						617.04
	F4					26°32'05"	400.00	94.32	185.25	10.97	
	440	PCC	44+83.51	243515.627	1827505.270						616.37
	G4					2°09'48"	2301.00	43.45	86.88	0.41	
	445	PRC	45+70.40	243579.763	1827446.666						615.89
	H4					151°48'40"	2.00	7.97	5.30	6.21	
	400	PT	45+75.69	243577.987	1827443.216						615.98
N-Splitter 2	450	PC	46+00.00	243390.141	1827651.745						617.15
	J4					6°03'22"	162.00	8.57	17.12	0.23	
	455	PRC	46+17.12	243375.846	1827661.157						617.19
	K4					127°32'49"	1.00	2.03	2.23	1.26	
	460	PRC	46+19.35	243375.975	1827662.946						617.23
	L4					24°20'12"	73.00	15.74	31.01	1.68	
	465	PRC	46+50.36	243401.402	1827680.282						617.21
	M4					109°10'00"	3.00	4.22	5.72	2.18	
	470	PT	46+56.07	243406.243	1827679.591						617.12
	475	PC	46+66.52	243411.033	1827670.305						617.05
	N4					100°09'57"	1.00	1.20	1.75	0.56	
	480	PT	46+68.27	243410.439	1827668.891						617.06
	485	PI	46+76.28	243402.783	1827666.533						617.16
	490	PC	46+94.71	243391.526	1827651.939						617.16
	P4					88°44'51"	1.00	0.98	1.55	0.40	
	450	PT	46+96.26	243390.141	1827651.745						617.15
E-Splitter 2	500	PC	50+00.00	243313.405	1827792.071						616.18
	A5					2°00'58"	380.00	6.69	13.37	0.06	
	505	PRC	50+13.37	243311.785	1827805.344						616.04
	B5					98°02'21"	1.00	1.15	1.71	0.52	
	510	PT	50+15.08	243312.777	1827806.483						616.05
	515	PI	50+23.64	243321.338	1827806.472						616.10
	520	PC	50+32.22	243328.475	1827811.220						616.03
	C5					88°54'54"	1.00	0.98	1.55	0.40	
	525	PRC	50+33.77	243329.851	1827810.957						616.04
	D5					6°56'54"	154.50	9.38	18.74	0.28	
	530	PRC	50+52.50	243341.429	1827796.241						616.34
	E5					128°55'48"	1.00	2.09	2.25	1.32	
	535	PRC	50+54.76	243340.730	1827794.577						616.38
	F5					18°44'26"	73.00	12.05	23.88	0.99	
	540	PRC	50+78.63	243317.488	1827789.590						616.26
	G5					105°31'38"	3.00	3.95	5.53	1.96	
	500	PT	50+84.16	243313.405	1827792.071						616.18

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	HSIP-0130(031)	2012	31	103

NOTES:

1. See Staking Plan Sheets for Point Locations.
2. All Alignments, Points and Curves on Curb and Gutter are at Lip of Gutter. Barrier Curb Points are at Bottom Face of Curb.
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MINGXUN DING
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HAWAII, U.S.A.

LICENSE EXPIRES 4/30/14

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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

STAKING DATA SHEET

Keaau-Pahoa Road Intersection Improvements at Old Government Road
Federal-Aid Project No. HSIP-0130(031)

Scale: Date: April 2013

SHEET No. 2 OF 3 SHEETS

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

PLOT DATE: 4/22/2013 @ 1:37:31 PM
LAST UPDATE: 4/22/2013 @ 1:37:31 PM
PATH/FILENAME: P:\60248741 H\CAD\006_Civil\Sheets\VK_KP_ROADT_Staking Data Sheet_02.dgn

No.	Point	Station	Northing	Easting	Delta	Radius	Tangent	Length	External	Elevation
550	PC	55+00.00	243309.915	1827817.315						616.00
H5					0°55'37"	380.00	3.07	6.15	0.01	
555	PT	55+06.15	243308.820	1827823.364						616.00
560	PC	55+97.86	243291.758	1827913.471						614.84
J5					6°13'30"	1014.00	55.14	110.17	1.50	
565	PRC	57+08.02	243265.429	1828020.390						613.44
K5					168°14'44"	2.25	21.86	6.61	19.72	
570	PCC	57+14.63	243269.555	1828022.126						613.48
L5					9°23'02"	140.00	11.49	22.93	0.47	
571	PCC	57+37.56	243278.874	1828001.204						614.00
M5					14°56'36"	448.00	58.76	116.84	3.84	
575	PRC	58+54.40	243302.791	1827887.173						615.00
N5					25°55'22"	154.50	35.56	69.90	4.04	
580	PRC	59+24.30	243323.442	1827821.014						616.00
P5					86°39'42"	1.00	0.94	1.51	0.37	
585	PT	59+25.82	243323.132	1827819.676						615.90
590	PI	59+31.59	243318.321	1827816.476						615.96
595	PC	59+39.02	243310.899	1827816.485						615.93
Q5					80°08'02"	1.00	0.84	1.40	0.31	
550	PT	59+40.42	243309.915	1827817.315						616.00
600	PC	60+00.00	243135.300	1827694.018						618.23
A6					6°59'22"	150.00	9.16	18.30	0.28	
601		60+18.30	243153.571	1827693.262						618.00
B6					33°32'53"	175.00	52.75	102.47	7.78	
605	PCC	61+20.76	243252.754	1827712.384						616.86
C6					87°13'46"	1.00	0.95	1.52	0.38	
610	PT	61+22.29	243254.080	1827712.005						616.86
615	PI	61+39.44	243262.776	1827697.218						617.00
620	PC	61+50.16	243262.671	1827686.501						616.75
D6					88°51'59"	1.00	0.98	1.55	0.40	
625	PRC	61+51.71	243261.681	1827685.511						616.74
E6					1°37'39"	555.00	7.88	15.76	0.06	
630	PT	61+67.47	243245.921	1827685.129						616.96
635	PC	62+19.93	243193.505	1827683.115						617.69
F6					16°59'25"	200.00	29.87	59.31	2.22	
640	PCC	62+79.24	243134.770	1827689.593						618.29
G6					164°05'00"	2.25	16.09	6.44	14.00	
600	PT	62+85.68	243135.300	1827694.018						618.23
650	PC	65+00.00	243263.225	1827718.143						616.72
F6					5°33'34"	173.26	8.41	16.81	0.20	
655	PRC	65+16.81	243277.228	1827727.434						616.65
G6					128°29'36"	1.00	2.07	2.24	1.30	
660	PRC	65+19.05	243278.820	1827726.591						616.68
H6					28°53'35"	73.00	18.81	36.81	2.38	
665	PRC	65+55.87	243286.579	1827691.004						616.60
J6					110°23'21"	3.00	4.32	5.78	2.26	
670	PT	65+61.65	243284.232	1827686.672						616.51
675	PC	65+72.16	243273.782	1827685.508						616.61
K6					96°54'56"	1.00	1.13	1.69	0.51	
680	PT	65+73.85	243272.671	1827686.512						616.64
685	PI	65+87.24	243272.802	1827699.895						616.85
690	PC	66+06.82	243262.875	1827716.777						616.74
L6					89°40'16"	1.00	0.99	1.57	0.41	
650	PT	66+08.39	243263.225	1827718.143						616.72
Apron 1 700	CC		243347.818	1827725.940		48.92		307.35		621.28
Apron 2 700	CC		243347.818	1827725.940		33.92		213.11		621.28

E-Splitter 1 | S-Splitter 1 | S-Splitter 2

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	HSIP-0130(031)	2012	32	103

NOTES:

1. See Staking Plan Sheets for Point Locations.
2. All Alignments, Points and Curves on Curb and Gutter are at Lip of Gutter. Barrier Curb Points are at Bottom Face of Curb.
3. Coordinates are Based on Benchmark and Control Points Shown on Overall Site Plan.

Additional Grading Points			
No.	Northing	Easting	Elevation
701	243374.494	1827684.937	617.70
702	243327.119	1827770.262	616.70

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DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

STAKING DATA SHEET

Keaau-Pahoa Road Intersection Improvements at Old Government Road Federal-Aid Project No. HSIP-0130(031)

Scale: Date: April 2013

SHEET No. 3 OF 3 SHEETS

32

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

PLOT DATE: 4/22/2013 @ 1:39:10 PM
LAST UPDATE: 4/22/2013 @ 1:39:10 PM
PATH/FILENAME: P:\60248741 int\CAD\006_Civil\Sheet\Vx_XP_ROAB1_Staking Data Sheet_03.dgn

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	HSIP-0130(031)	2013	33	103

NOTES:

1. See Staking Data Sheets for Coordinate and Elevation Information.
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3. Contours Shown are Half-Foot (0.5') Contours.

LICENSED PROFESSIONAL ENGINEER NO. 9246-C MINGXUN DING HAWAII, U.S.A.

LICENSE EXPIRES 4/30/14

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

GRADING PLAN

BEGIN TO STA 16+30

Keaau-Pahoa Road Intersection Improvements at Old Government Road
Federal-Aid Project No. HSIP-0130(031)

Scale: 1" = 20' Date: April 2013

SHEET No. 1 OF 2 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	HSIP-0130(031)	2013	34	103

NOTES:

1. See Staking Data Sheets for Coordinate and Elevation Information.
2. All Alignments, Points and Curves on Curb and Gutter are at Lip of Gutter. Barrier Curb Points are at Face of Curb.
3. Contours Shown are Half-Foot (0.5') Contours.

0 20 40 60

HORIZ: 1" = 20' FEET

LICENSED PROFESSIONAL ENGINEER MINGXUN DING NO. 9246-C HAWAII, U.S.A.

LICENSE EXPIRES 4/30/14

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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

GRADING PLAN

STA 16+30 TO END

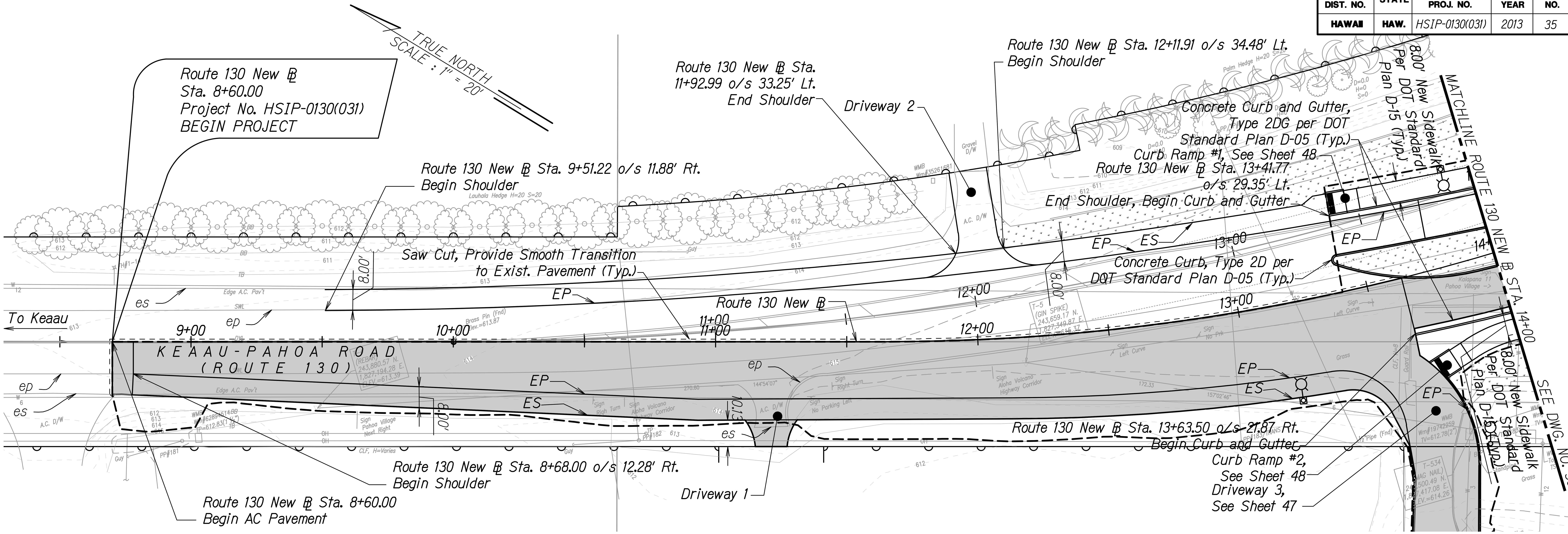
Keaau-Pahoa Road Intersection Improvements at Old Government Road
Federal-Aid Project No. HSIP-0130(031)

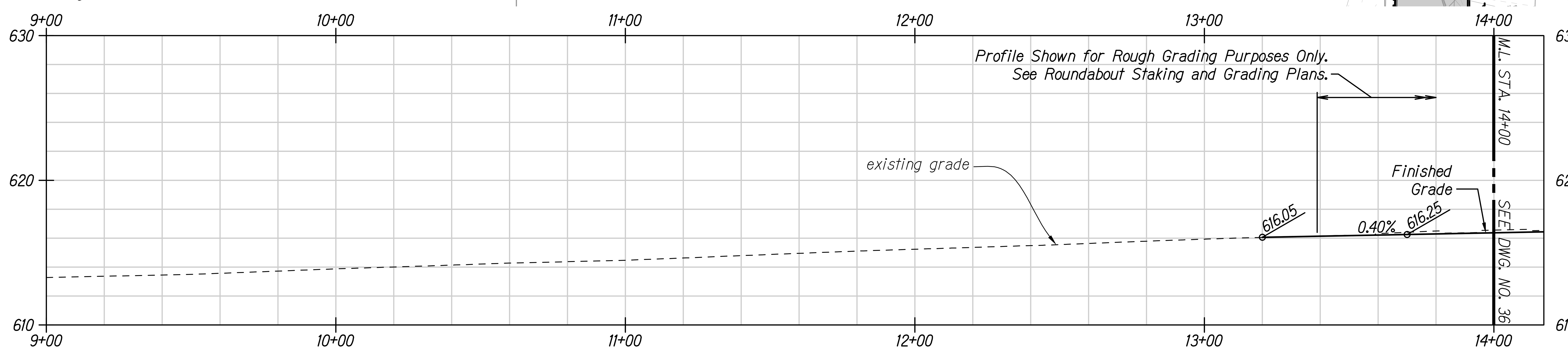
Scale: 1" = 20' Date: April 2013

SHEET No. 2 OF 2 SHEETS

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

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	HSIP-0130(031)	2013	35	103





Notes:
1. Spot Elevations on Profile are at 50' Spacing, Typical

LEGEND

- 9.5" Portland Cement Concrete, 6" Untreated Permeable Base, 6" Aggregate Subbase
- 4" Asphaltic Concrete, 7" Asphalt Concrete Base, 6" Aggregate Subbase
- Sidewalk Culvert, See Sheet 74 for Details
- Truck Apron, See Sheet 23 for Details
- Guardrail, See Sheet 71 for Details
- 4'-High Chain Link Fence per HDOT Standard Plan D-02 with 5' max post spacing
- Right of Way
- Limits of Grading
- Light Pole, See Electrical Plans
- Landscaping, See Landscape Plans

ROADWAY PLAN & PROFILE
ROUTE 130 STA 9+00 TO STA 14+00

Horizontal Scale: 1" = 20'
Vertical Scale: 1" = 4'

0 20 40 60 HORIZ: 1" = 20' FEET
0 4 8 12 VERT: 1" = 4' FEET

MINGXUN DING LICENSED PROFESSIONAL ENGINEER NO. 9246-C HAWAII, U.S.A.
LICENSE EXPIRES 4/30/14
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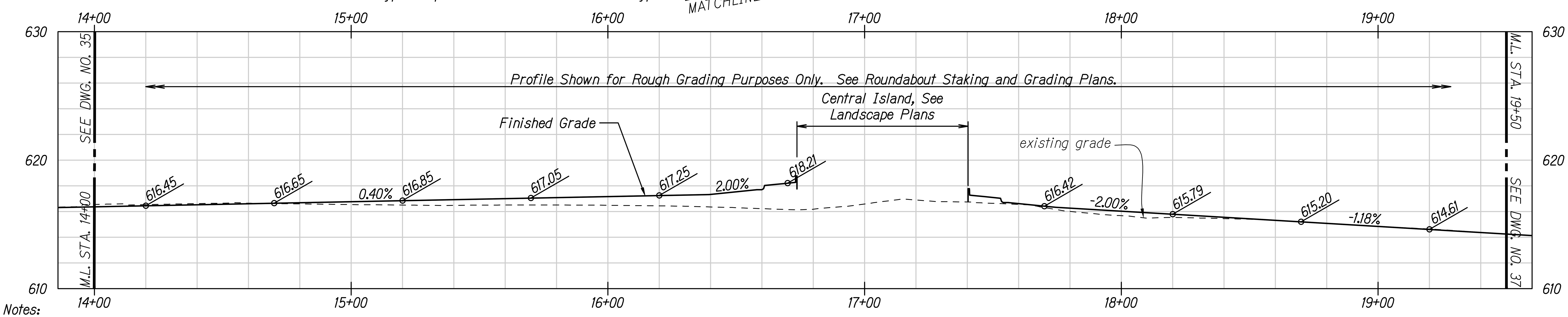
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

ROADWAY PLAN & PROFILE
ROUTE 130 STA 9+00 TO STA 14+00
Keaau-Pahoa Road Intersection Improvements at Old Government Road
Federal-Aid Project No. HSIP-0130(031)
Scale: As Shown Date: April 2013
SHEET No. 1 OF 4 SHEETS

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

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	HSIP-0130(031)	2013	36	103



Notes:

1. Spot Elevations on Profile are at 50' Spacing, Typical

LEGEND

- 9.5" Portland Cement Concrete, 6" Untreated Permeable Base, 6" Aggregate Subbase
- 4" Asphaltic Concrete, 7" Asphalt Concrete Base, 6" Aggregate Subbase
- Sidewalk Culvert, See Sheet 74 for Details
- Truck Apron, See Sheet 23 for Details
- Guardrail, See Sheet 71 for Details
- 4'-High Chain Link Fence per HDOT Standard Plan D-02 with 5' max post spacing
- Right of Way
- Limits of Grading
- Light Pole, See Electrical Plans
- Reinforced Slope, See Sheet 22 for Detail
- Landscaping, See Landscape Plans

ROADWAY PLAN & PROFILE
ROUTE 130 STA 14+00 TO STA 19+50

Horizontal Scale: 1" = 20'
Vertical Scale: 1" = 4'

0 20 40 60 HORIZ: 1" = 20' FEET
0 4 8 12 VERT: 1" = 4' FEET

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HIGHWAYS DIVISION

ROADWAY PLAN & PROFILE
ROUTE 130 STA 14+00 TO STA 19+50
Keaau-Pahoa Road Intersection Improvements at Old Government Road
Federal-Aid Project No. HSIP-0130(031)

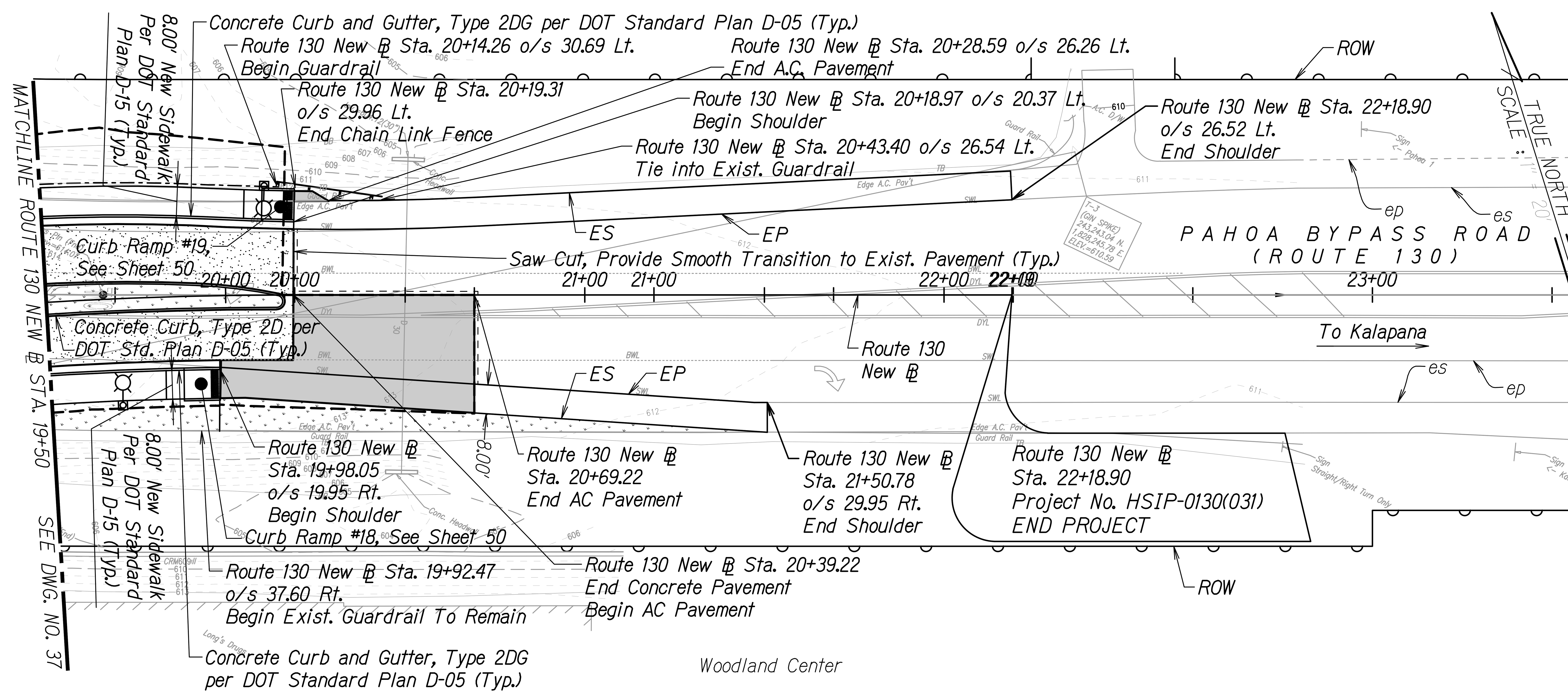
Scale: As Shown Date: April 2013

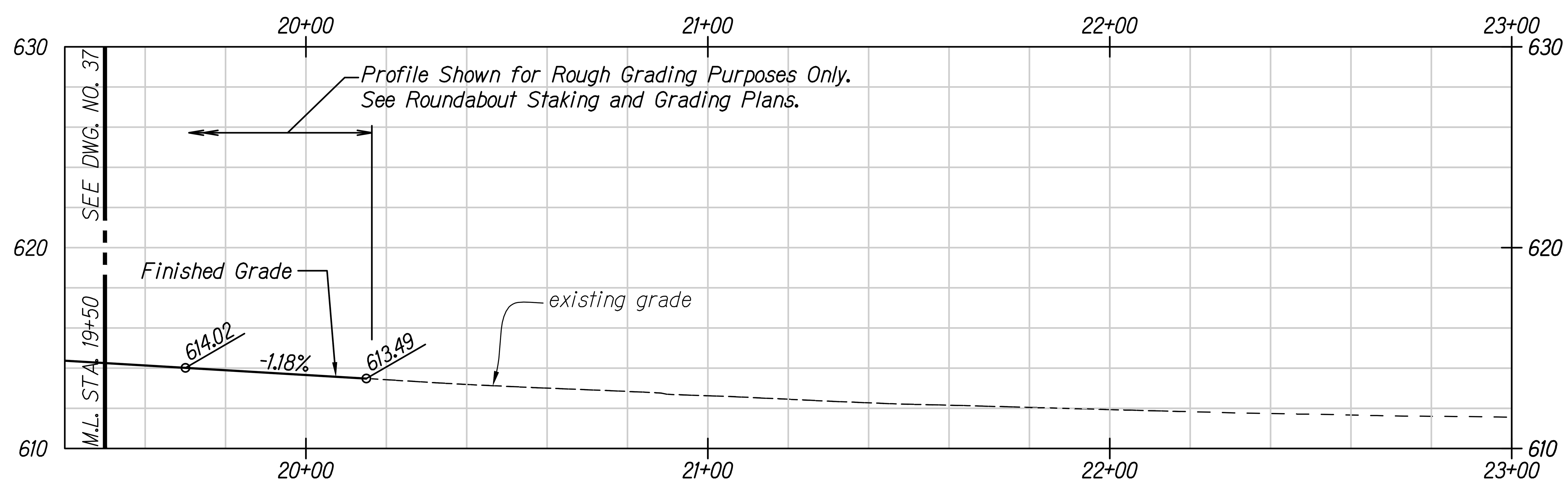
SHEET No. 2 OF 4 SHEETS

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

DATE

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	HSIP-0130(031)	2013	37	103





Notes:
1. Spot Elevations on Profile are at 50' Spacing, Typical

ROADWAY PLAN & PROFILE
ROUTE 130 STA 19+50 TO STA 22+00

Horizontal Scale: 1" = 20'
Vertical Scale: 1" = 4'

LEGEND

- 9.5" Portland Cement Concrete, 6" Untreated Permeable Base, 6" Aggregate Subbase
- 4" Asphaltic Concrete, 7" Asphalt Concrete Base, 6" Aggregate Subbase
- Sidewalk Culvert, See Sheet 74 for Details
- Truck Apron, See Sheet 23 for Details
- Guardrail, See Sheet 71 for Details
- 4'-High Chain Link Fence per HDOT Standard Plan D-02 with 5' max spacing
- Right of Way
- Limits of Grading
- Light Pole, See Electrical Plans
- Landscaping, See Landscape Plans

0 20 40 60 HORIZ: 1" = 20' FEET
0 4 8 12 VERT: 1" = 4' FEET

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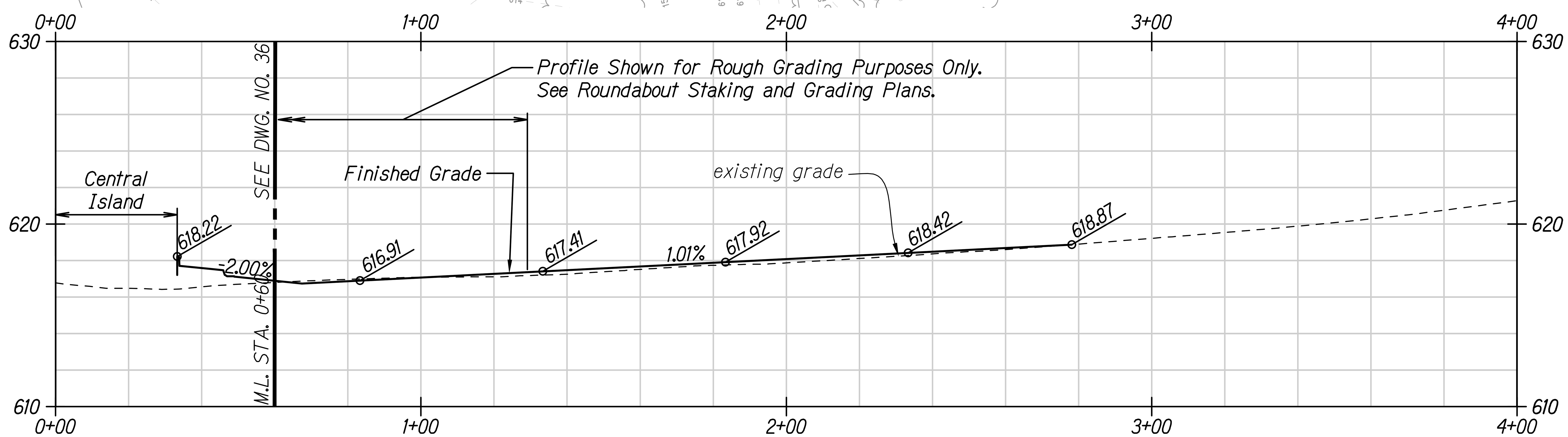
HIGHWAYS DIVISION

ROADWAY PLAN & PROFILE
ROUTE 130 STA 19+50 TO STA 22+00
Keaau-Pahoa Road Intersection Improvements at Old Government Road
Federal-Aid Project No. HSIP-0130(031)

Scale: As Shown Date: April 2013
SHEET No. 3 OF 4 SHEETS

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

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	HSIP-0130(031)	2013	38	103



Notes:
1. Spot Elevations on Profile are at 50' Spacing, Typical

LEGEND

- 9.5" Portland Cement Concrete, 6" Untreated Permeable Base, 6" Aggregate Subbase
- 4" Asphaltic Concrete, 7" Asphalt Concrete Base, 6" Aggregate Subbase
- Transition 2" Coldplane, See Sheet 23 for Details
- Sidewalk Culvert, See Sheet 74 for Details
- Truck Apron, See Sheet 23 for Details
- Guardrail, See Sheet 71 for Details
- 4'-High Chain Link Fence per HDOT Standard Plan D-02 with 5' max post spacing
- Right of Way
- Limits of Grading
- Light Pole, See Electrical Plans
- Landscaping, See Landscape Plans

ROADWAY PLAN & PROFILE
OLD GOV'T ROAD STA 0+60 TO END

Horizontal Scale: 1" = 20'
Vertical Scale: 1" = 4'

0 20 40 60
HORIZ: 1" = 20' FEET
0 4 8 12
VERT: 1" = 4' FEET

MINGXUN DING
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NO. 9246-C
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DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

ROADWAY PLAN & PROFILE

OLD GOV'T ROAD STA 0+60 TO END

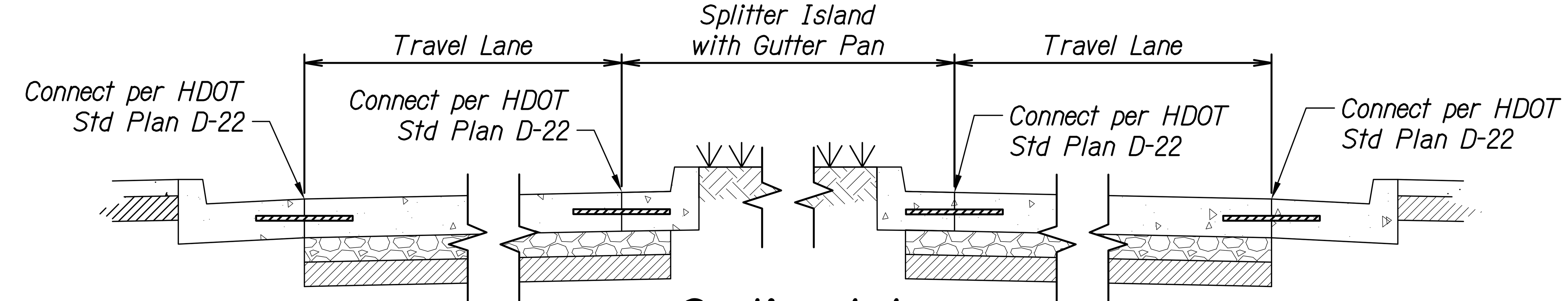
Keaau-Pahoa Road Intersection Improvements at Old Government Road
Federal-Aid Project No. HSIP-0130(031)

Scale: As Shown Date: April 2013

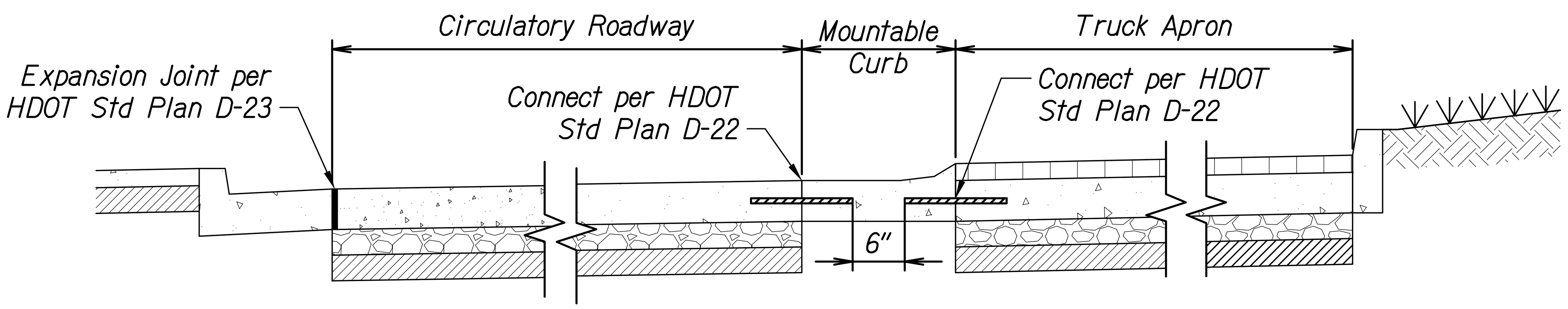
SHEET No. 4 OF 4 SHEETS

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

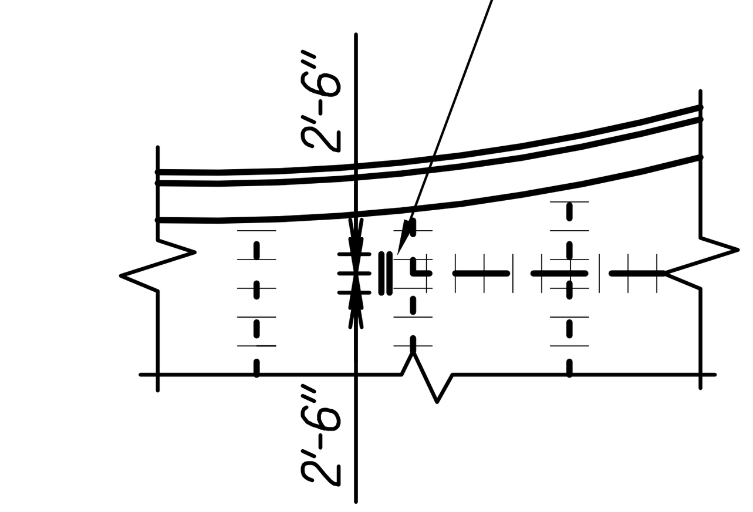
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	HSIP-0130(031)	2013	39	103



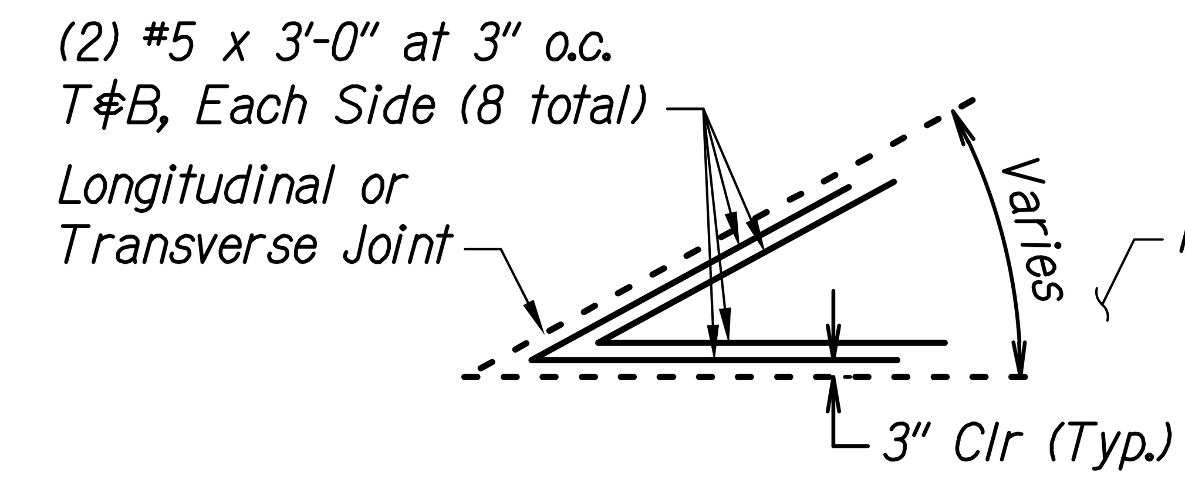
Section A-A
Not to Scale



Section B-B
Not to Scale



Mismatched Joint Trim Bar
Not to Scale



Acute Angle Trim Bar
Not to Scale

Notes:
1. Joints through Gutter and Curbs should match the Transverse Joints in the Pavement.
2. P.C.C. Pavement Connection to Curb and Gutters should be per HDOT Standard Plan D-22, unless otherwise indicated as an Expansion Joint on the plan.

LEGEND

- Longitudinal Joint, per HDOT Standard Plan D-21
- Transverse Joint, per HDOT Standard Plan D-19
- Expansion Joint, per HDOT Standard Plan D-23
- Reinforced Concrete, see Special Provisions Section 719

JOINTING PLAN
Scale: 1" = 20'

0 20 40 60
HORIZ: 1" = 20' FEET

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DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

JOINTING PLAN

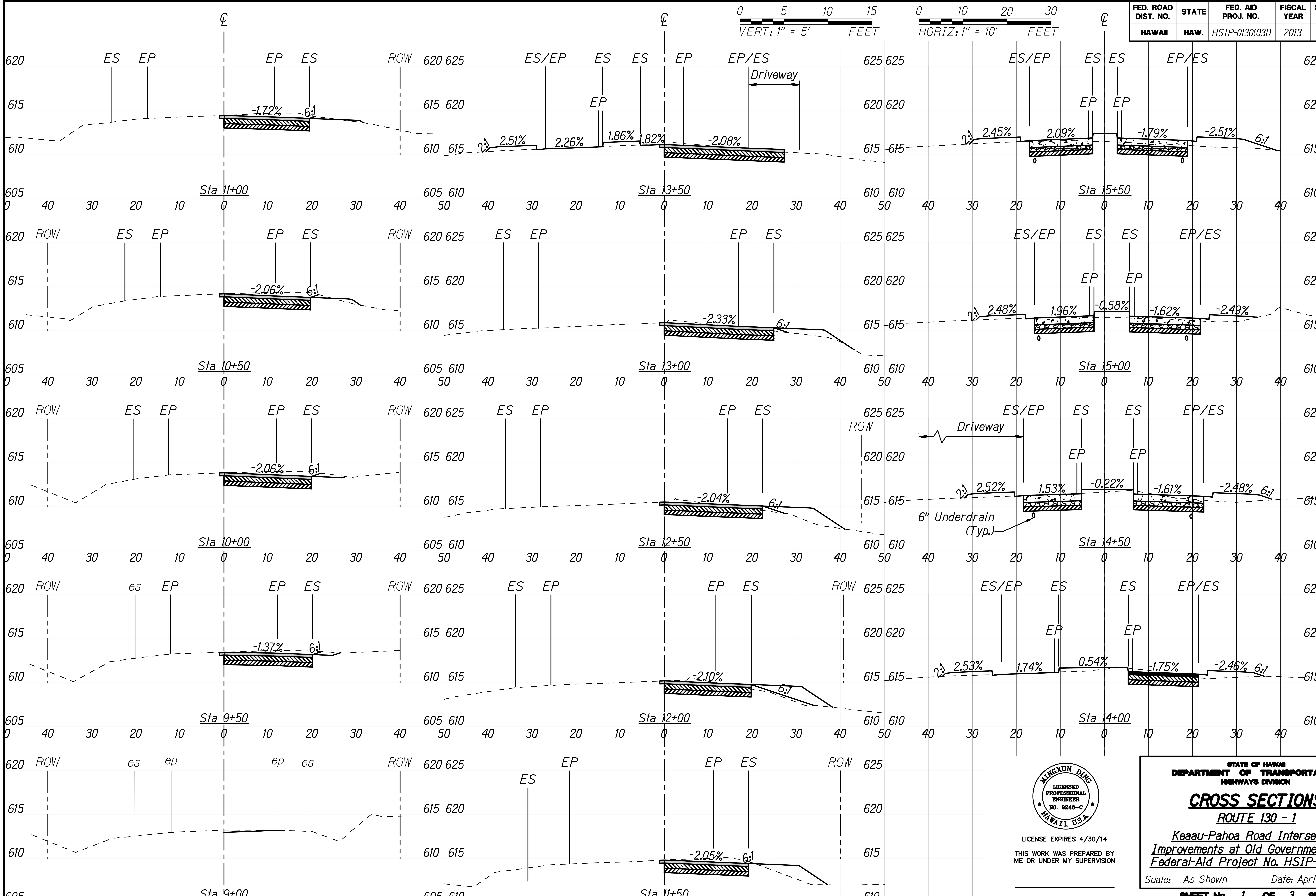
Keaau-Pahoa Road Intersection Improvements at Old Government Road
Federal-Aid Project No. HSIP-0130(031)

Scale: 1" = 20'   Date: April 2013

SHEET No. 1 OF 1 SHEETS

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

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	HSIP-0130(031)	2013	40	103



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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

CROSS SECTIONS

ROUTE 130 - 1

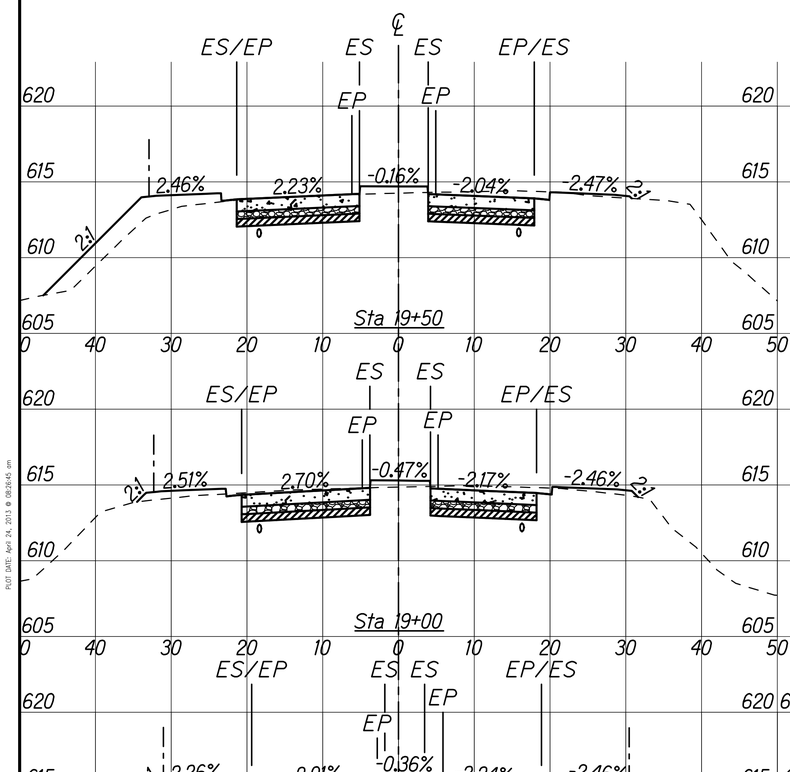
Keaau-Pahoa Road Intersection Improvements at Old Government Road
Federal-Aid Project No. HSIP-0130(031)

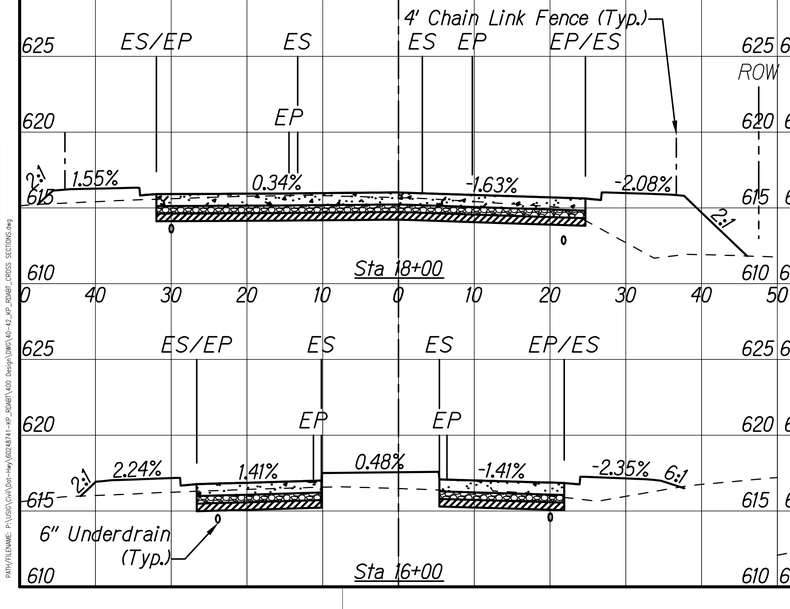
Scale: As Shown Date: April 2013

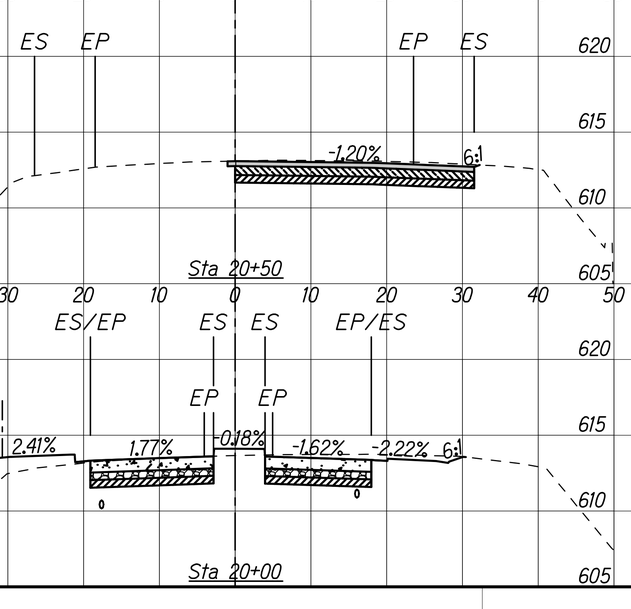
SHEET No. 1 OF 3 SHEETS

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

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	HSIP-0130(031)	2013	41	103







0 10 20 30
HORIZ: 1" = 10' FEET

0 5 10 15
VERT: 1" = 5' FEET

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

MINGXUN DING
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NO. 9246-C
HAWAII, U.S.A.

LICENSE EXPIRES 4/30/14

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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

CROSS SECTIONS

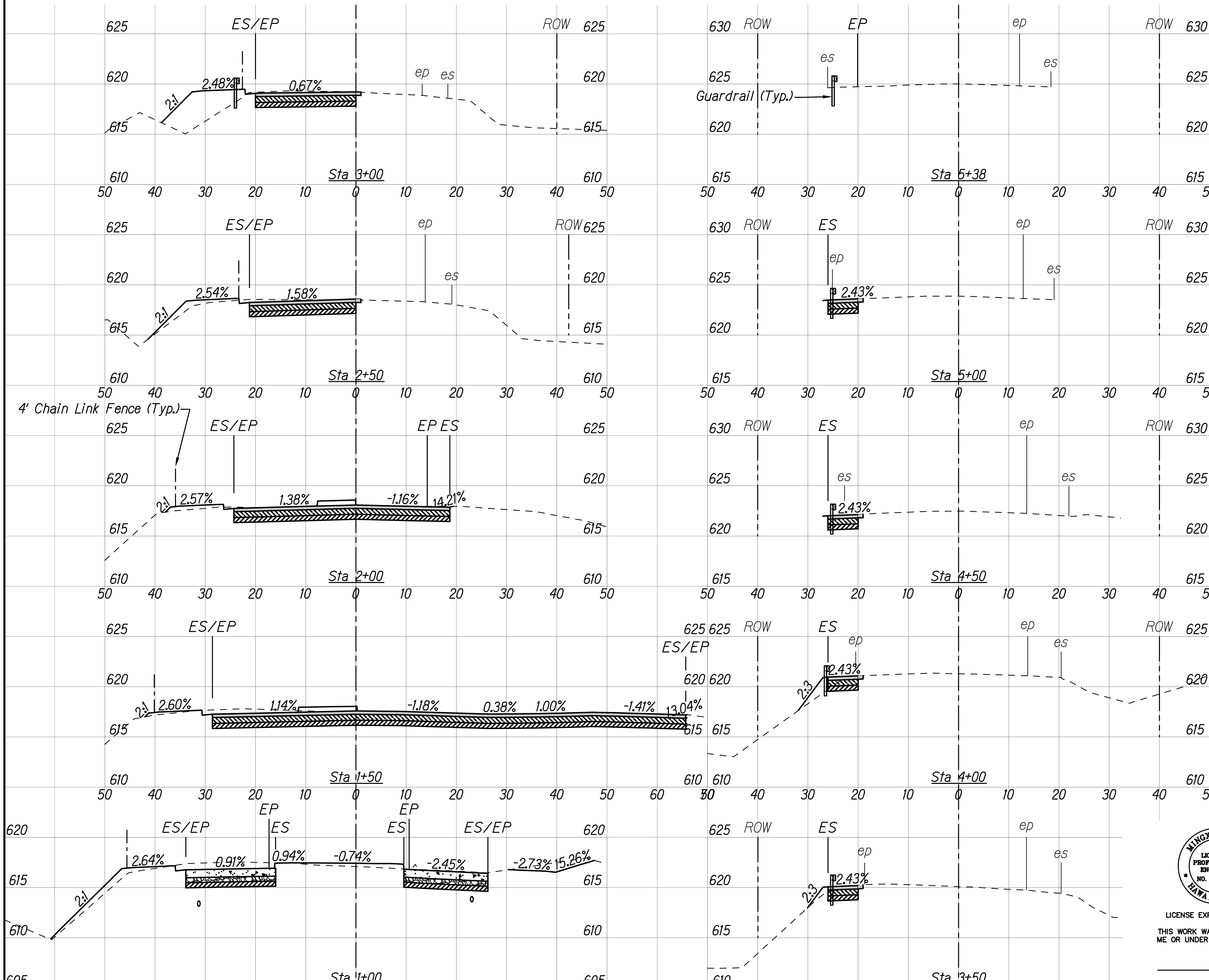
ROUTE 130 - 2

Keaau-Pahoa Road Intersection Improvements at Old Government Road
Federal-Aid Project No. HSIP-0130(031)

Scale: As Shown Date: April 2013

SHEET No. 2 OF 3 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	HSIP-0130(031)	2013	42	103



HORIZ: 1" = 10' FEET

VERT: 1" = 5' FEET

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NO. 9246-C
HAWAII, U.S.A.

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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

CROSS SECTIONS

PAHOA VILLAGE ROAD

Keaau-Pahoa Road Intersection Improvements at Old Government Road
Federal-Aid Project No. HSIP-0130(031)

Scale: As Shown Date: April 2013

SHEET No. 3 OF 3 SHEETS

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

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	HSIP-0130(031)	2013	43	103

ⓘ ℄ CURVE DATA
Δ = 51°04'55"
R = 75.08'
T = 35.88'
L = 64.75'
Lc = 66.94'

Notes:
1. Existing Concrete Headwall should Remain in place. Refer to S-1 for details.
2. Refer to Sheet No. 44 and 45 for Sections.

REINFORCED SLOPE PLAN
Scale: 1" = 5'

0 5 10 15
HORIZ: 1" = 5' FEET

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HIGHWAYS DIVISION

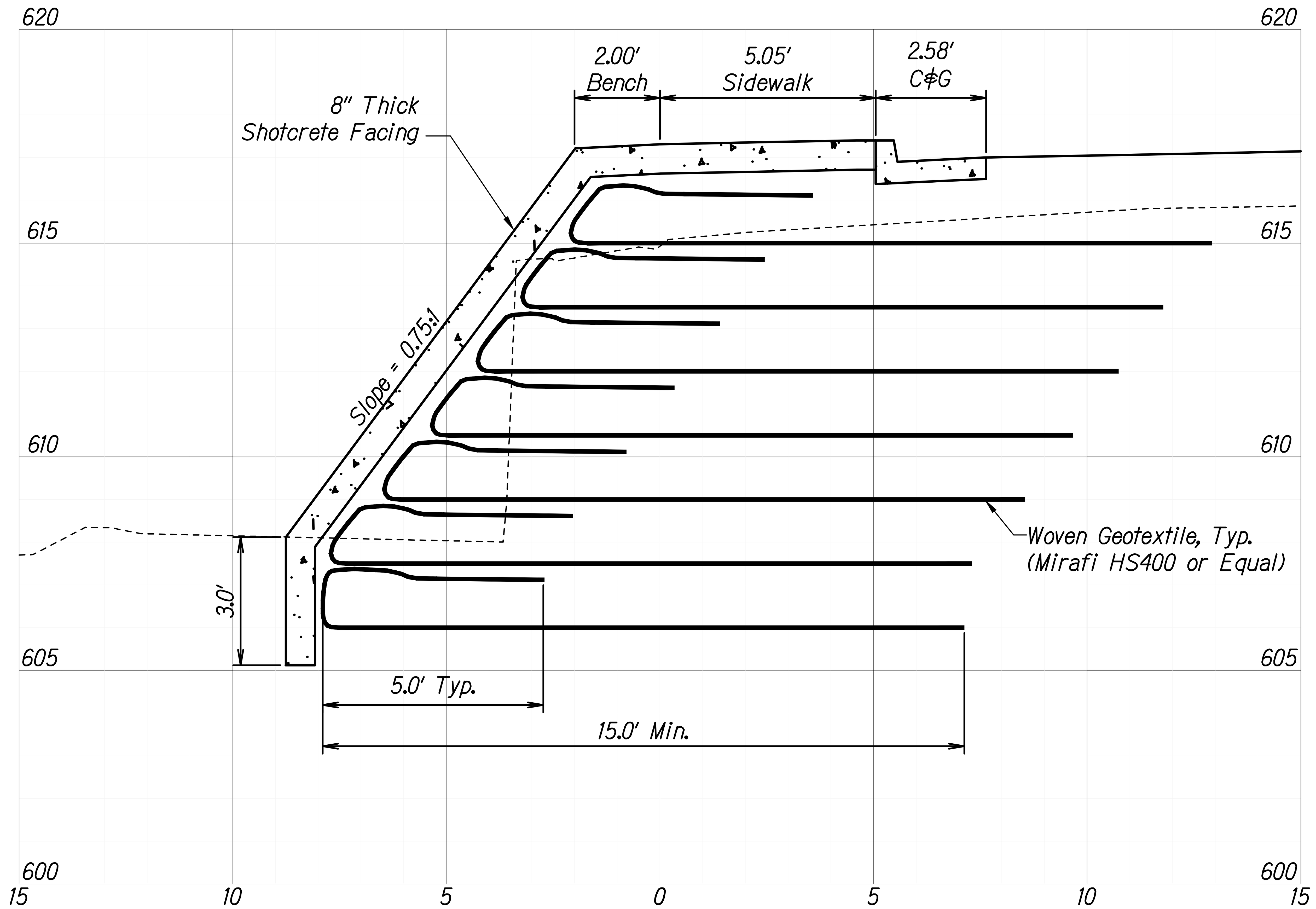
REINFORCED SLOPE
PLAN

Keaau-Pahoa Road Intersection
Improvements at Old Government Road
Federal-Aid Project No. HSIP-0130(031)

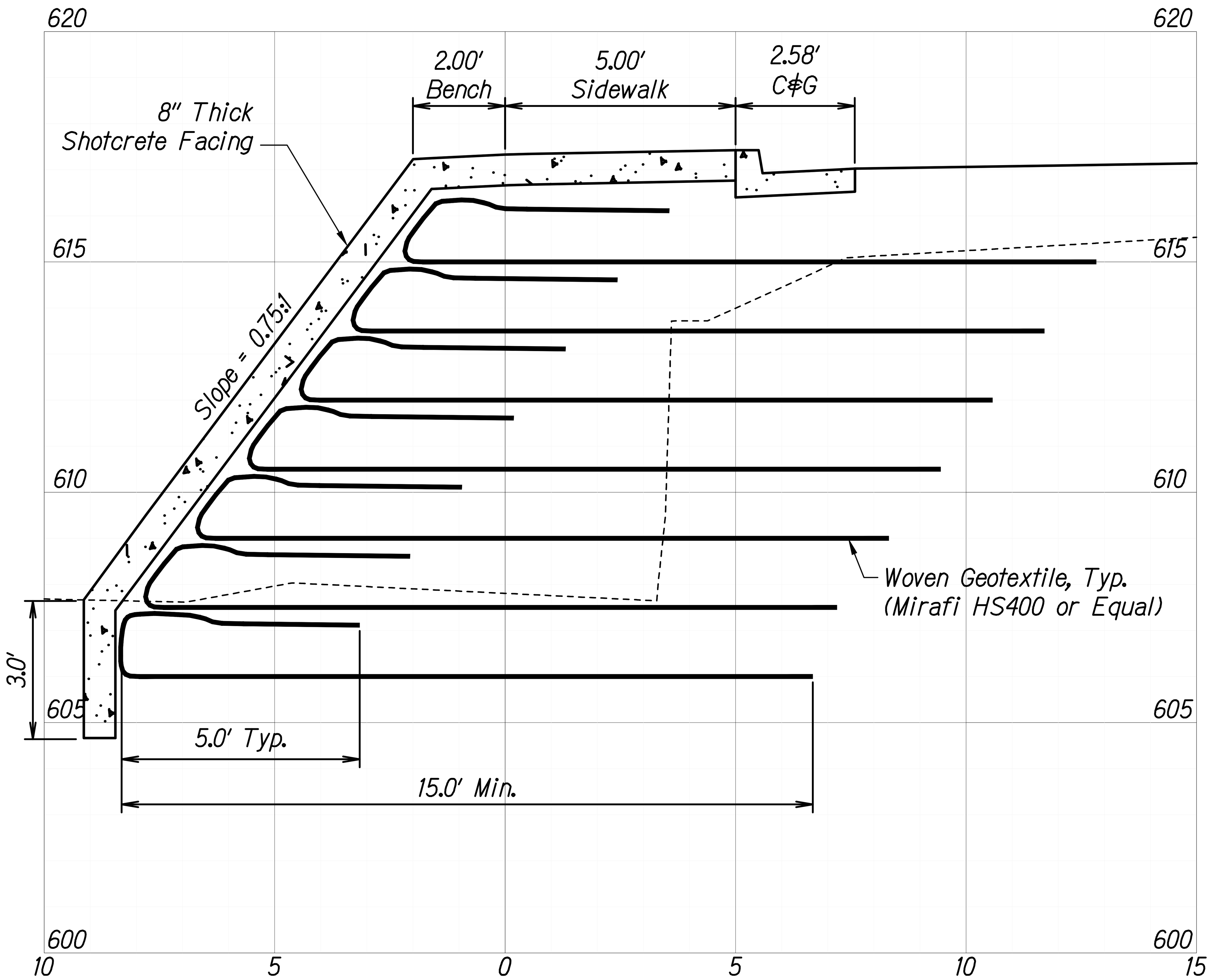
Scale: 1" = 5' Date: April 2013

SHEET No. 1 OF 3 SHEETS

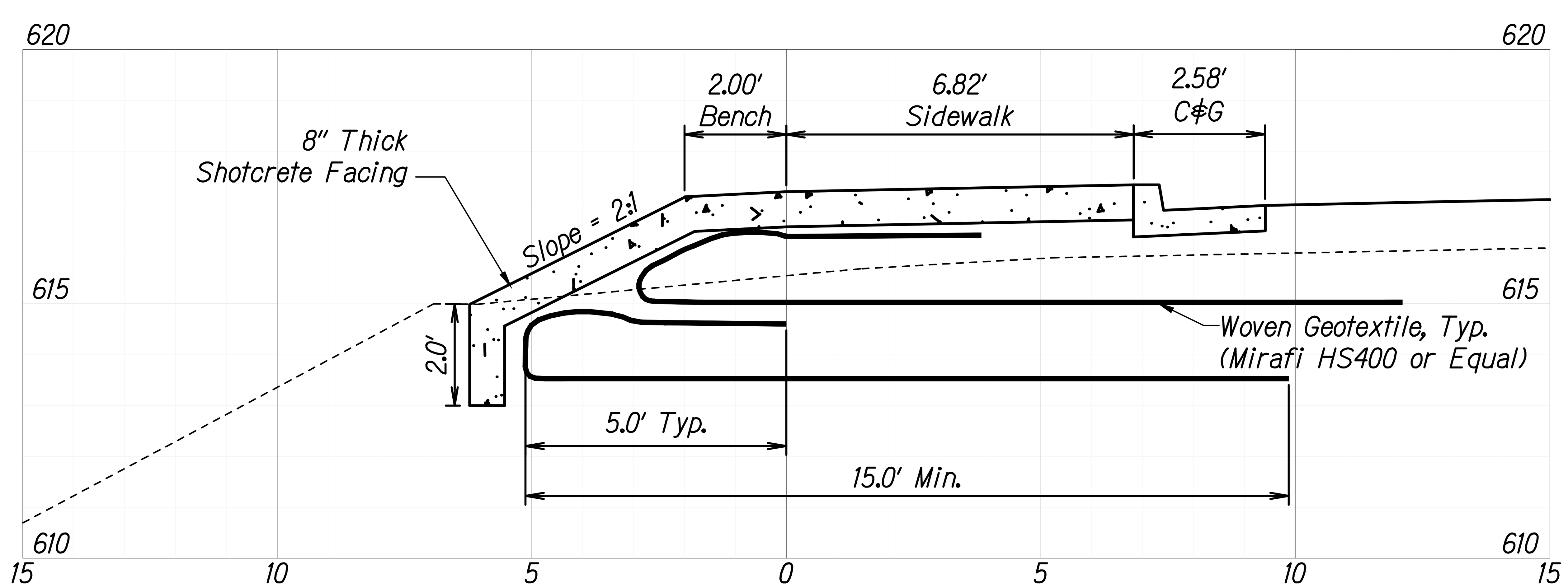
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	HSIP-0130(031)	2013	44	103



Sta 0+20
Horizontal Scale: 1" = 2'
Vertical Scale: 1" = 2'



Sta 0+40
Horizontal Scale: 1" = 2'
Vertical Scale: 1" = 2'



Sta 0+00
Horizontal Scale: 1" = 2'
Vertical Scale: 1" = 2'

0 2 4 6
HORIZ: 1" = 2' FEET

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NO. 9246-C
HAWAII, U.S.A.

LICENSE EXPIRES 4/30/14

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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

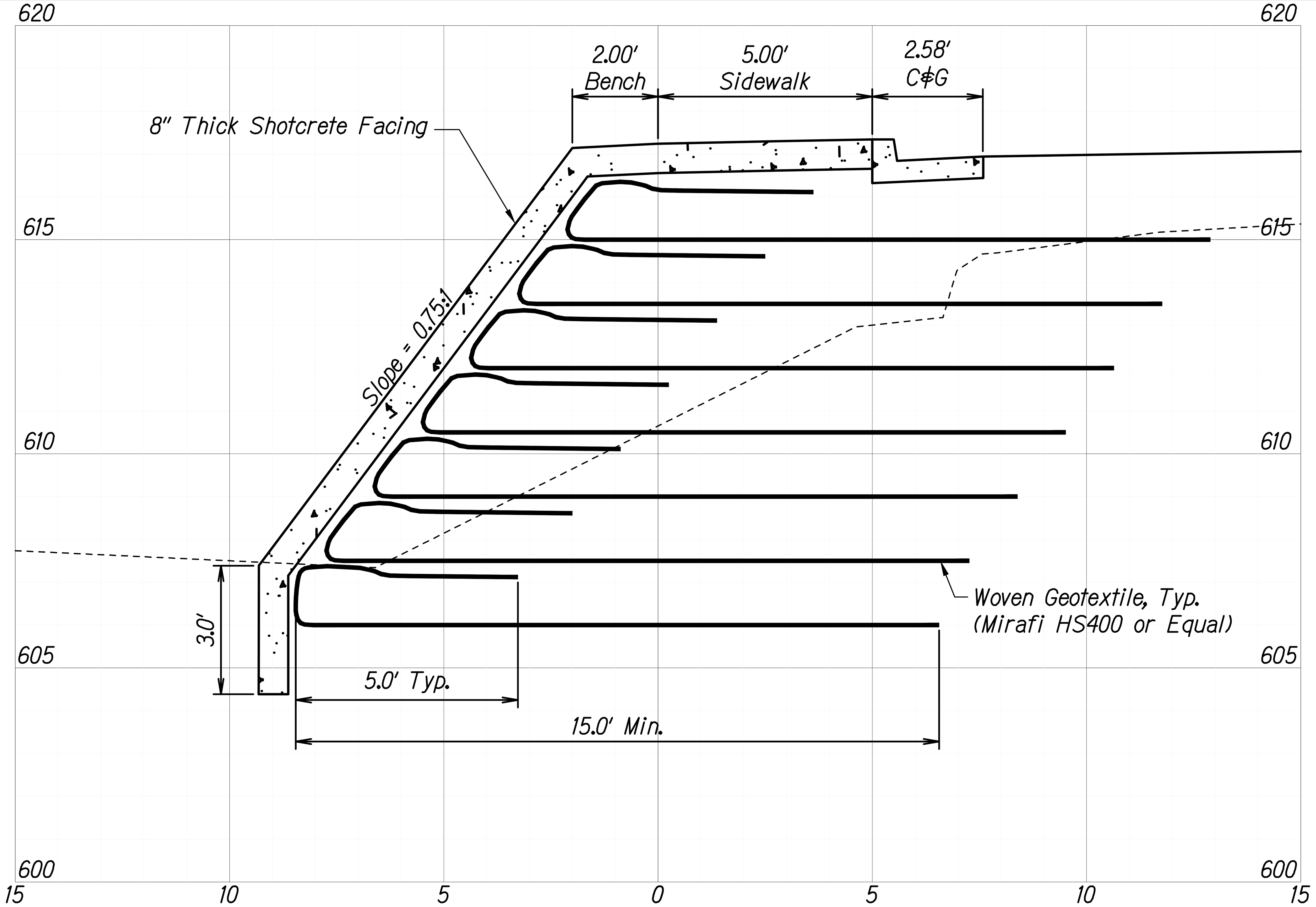
REINFORCED SLOPE
SECTIONS - 1

Keaau-Pahoa Road Intersection Improvements at Old Government Road
Federal-Aid Project No. HSIP-0130(031)

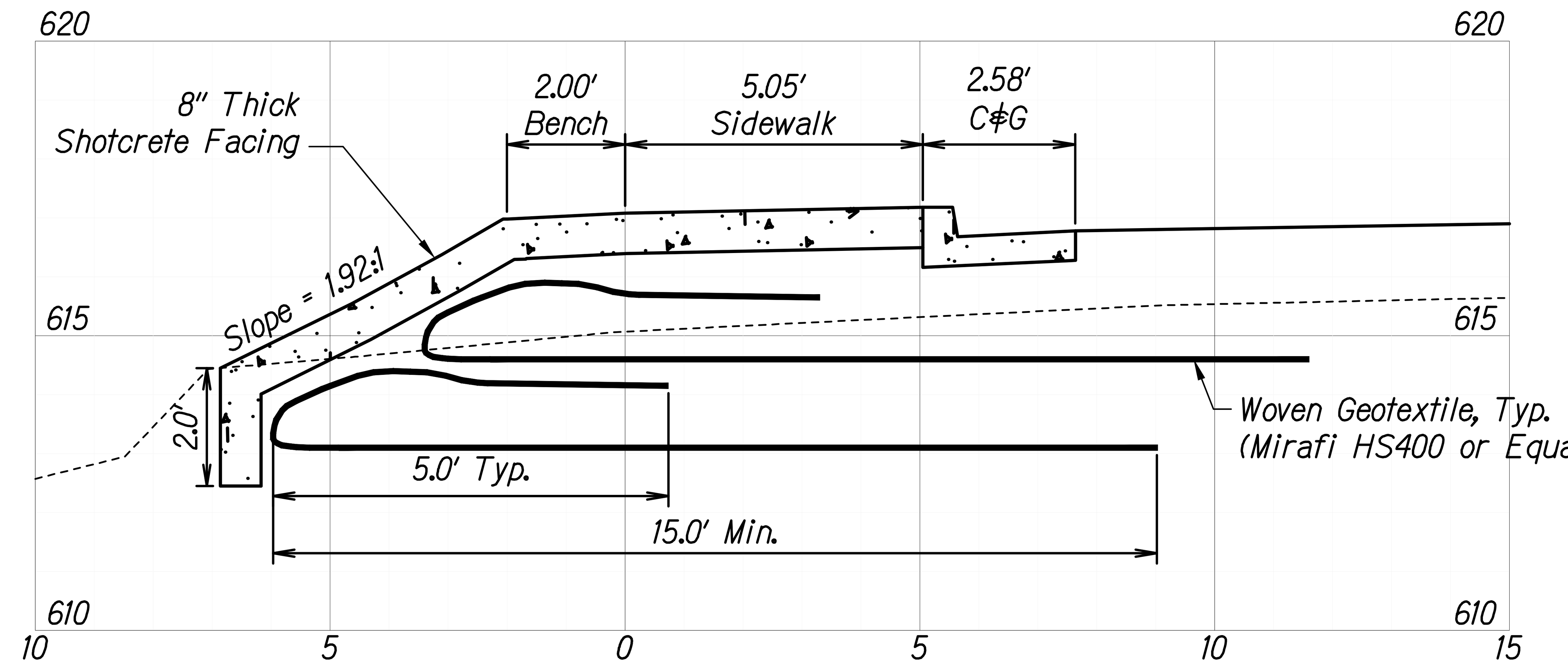
Scale: 1" = 2' Date: April 2013

SHEET No. 2 OF 3 SHEETS

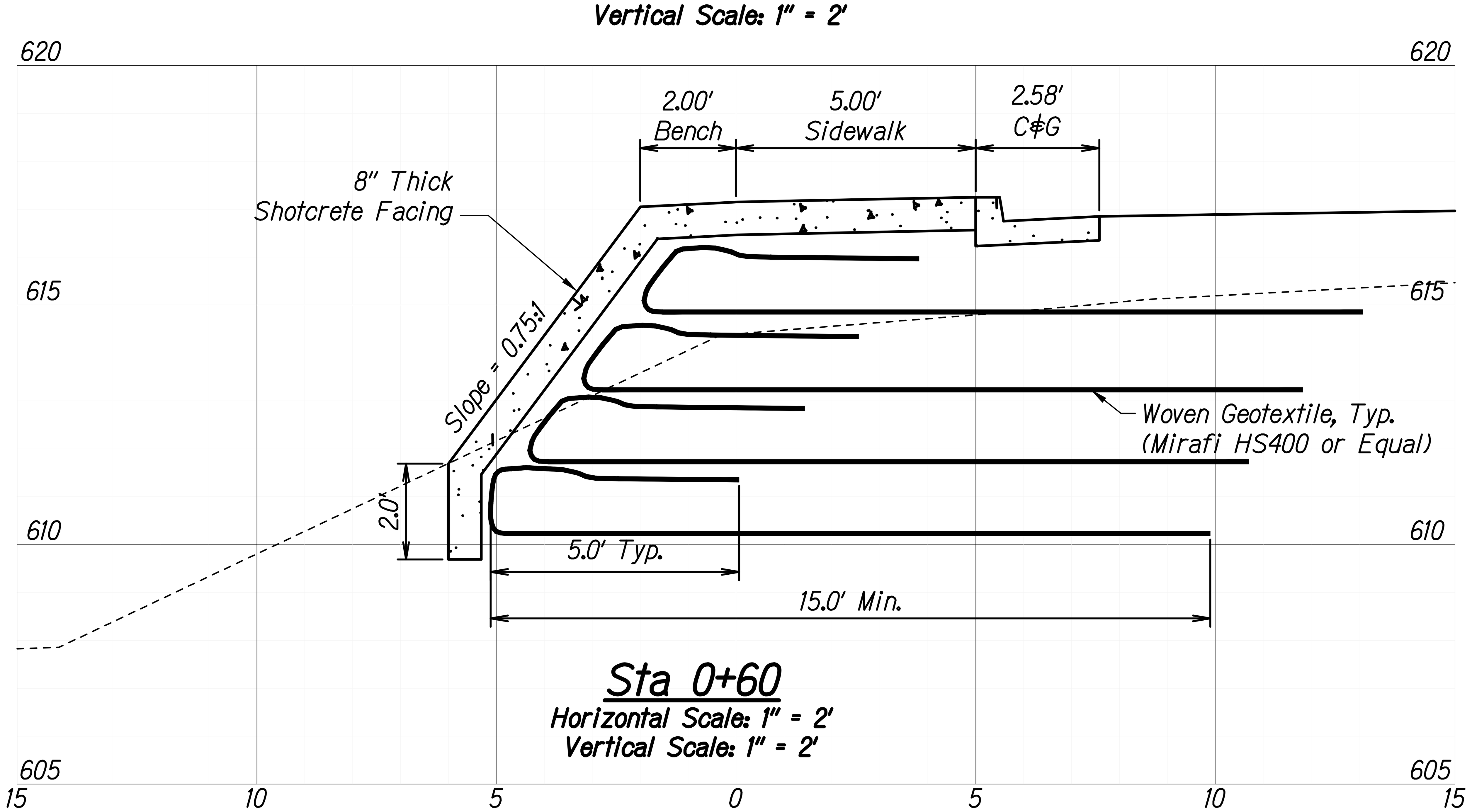
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	HSIP-0130(031)	2013	45	103



Sta 0+80
Horizontal Scale: 1″ = 2′
Vertical Scale: 1″ = 2′



Sta 1+00
Horizontal Scale: 1″ = 2′
Vertical Scale: 1″ = 2′



Sta 0+60
Horizontal Scale: 1″ = 2′
Vertical Scale: 1″ = 2′

0 2 4 6
HORIZ: 1″ = 2′ FEET

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HAWAII, U.S.A.
LICENSE EXPIRES 4/30/14
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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

REFORCED SLOPE

SECTIONS - 2

Keaau-Pahoa Road Intersection Improvements at Old Government Road
Federal-Aid Project No. HSIP-0130(031)

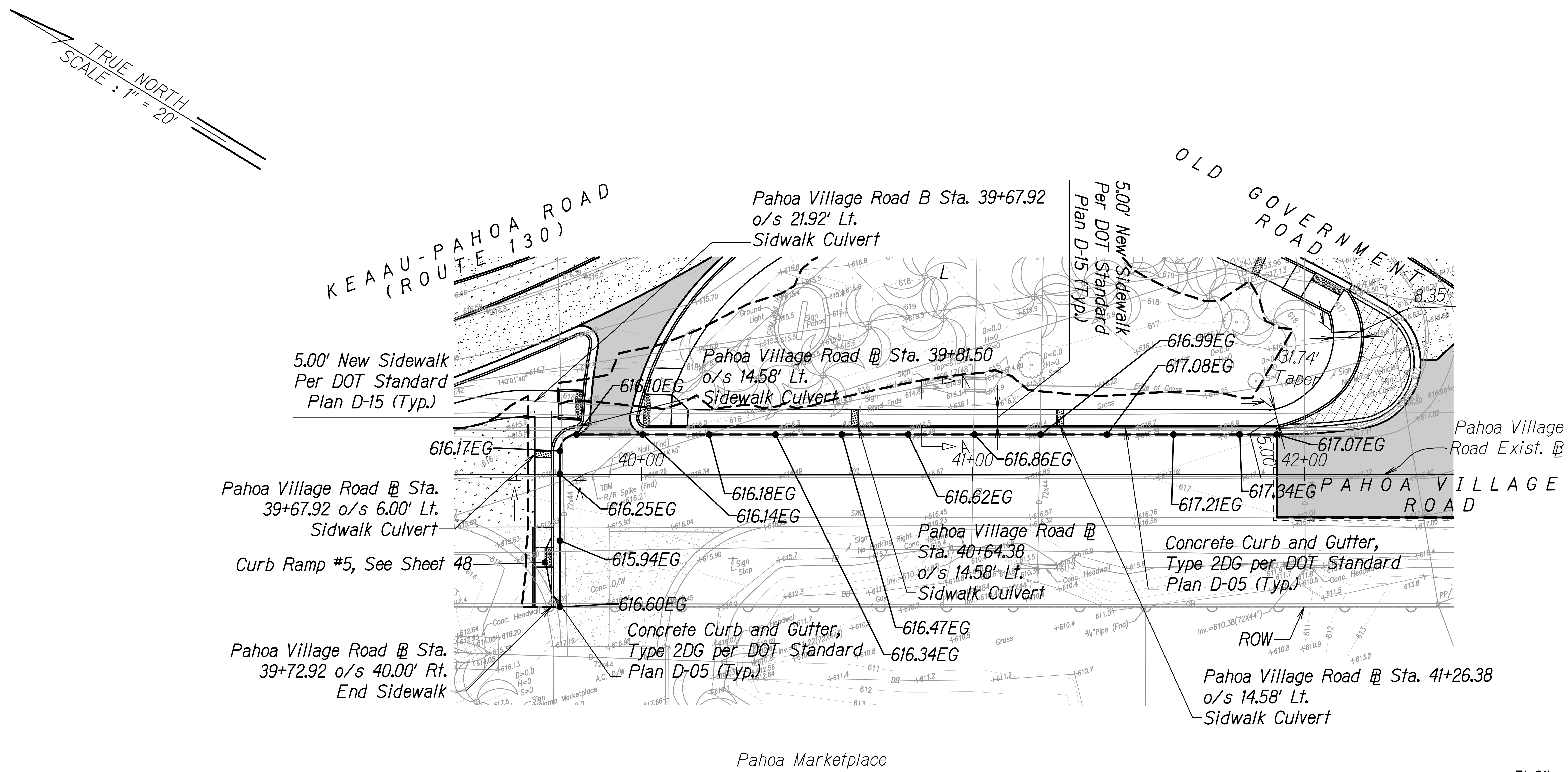
Scale: 1″ = 2′ Date: April 2013

SHEET No. 3 OF 3 SHEETS

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

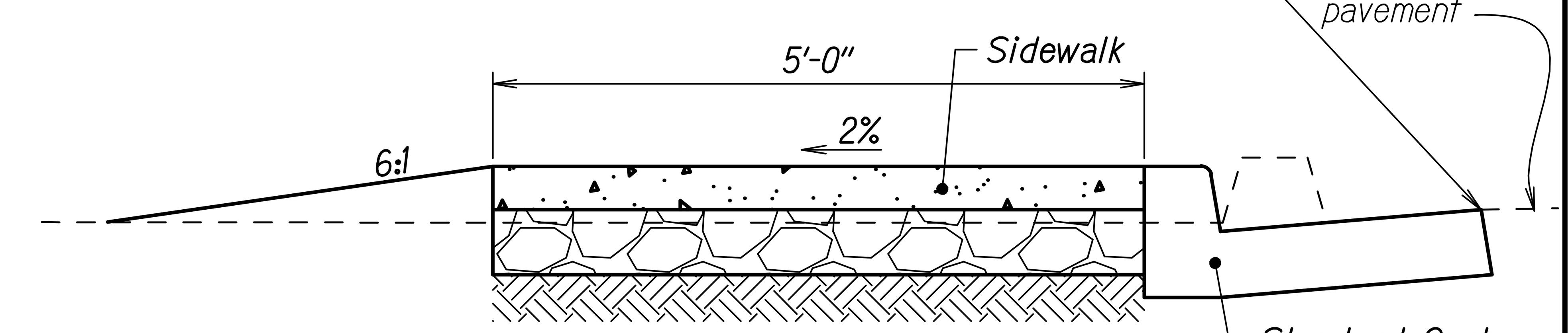
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	HSIP-0130(031)	2013	46	103

* See Roadway Plan & Profile, Sheet 36-38
For Continuation



SIDEWALK EXTENSION PLAN

Scale: 1" = 20'



Section A-A

Not to Scale

LEGEND

- 9.5" Portland Cement Concrete, 6" Untreated Permeable Base, 6" Aggregate Subbase
- 4" Asphaltic Concrete, 7" Asphalt Concrete Base, 6" Aggregate Subbase
- Sidewalk Culvert, See Sheet 74 for Details
- Truck Apron, See Sheet 23 for Details
- Light Pole, See Electrical Plans
- Guardrail, See Sheet 71 for Details
- 4'-High Chain Link Fence per HDOT Standard Plan D-02
- Right of Way
- Limits of Grading
- Landscaping, See Landscape Plans

0 20 40 60
HORIZ: 1" = 20' FEET

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HIGHWAYS DIVISION

SIDEWALK EXTENSION PLAN

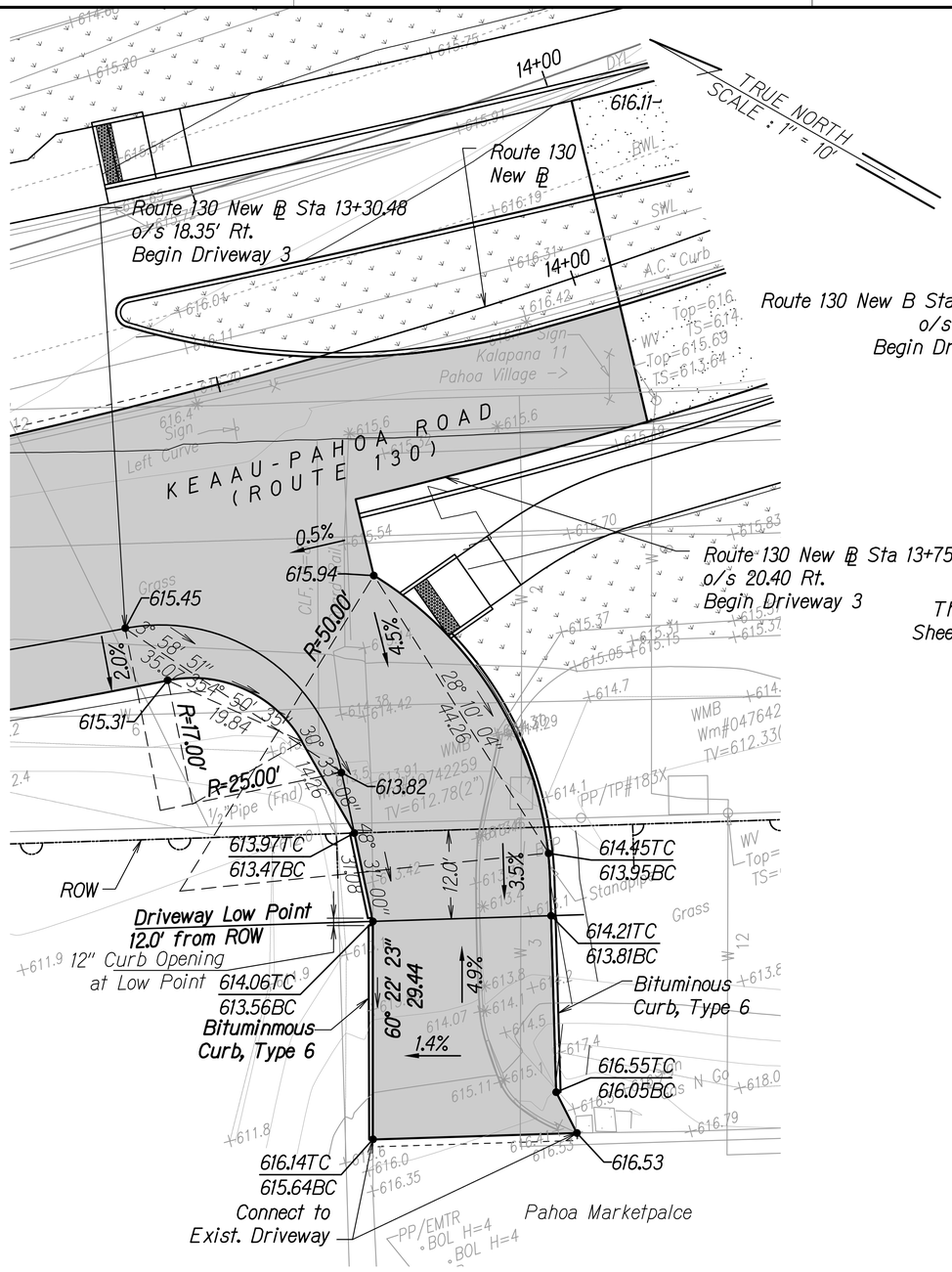
Keaau-Pahoa Road Intersection
Improvements at Old Government Road
Federal-Aid Project No. HSIP-0130(031)

Scale: As Shown   Date: April 2013

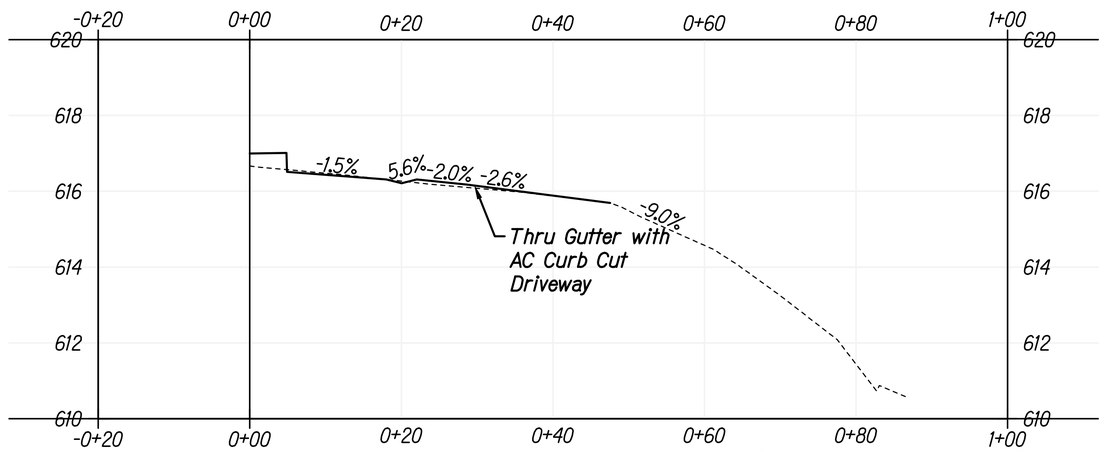
SHEET No. 1 OF 1 SHEETS

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

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	HSIP-0130(031)	2013	47	103



DRIVEWAY 3
Scale: 1" = 10'



DRIVEWAY 4
Scale: 1" = 10'

LEGEND

- 4" Asphaltic Concrete, 7" Asphalt Concrete Base, 6" Aggregate Subbase
- Saw Cut, Provide Smooth Transition to Existing Pavement
- Right of Way

0 10 20 30
HORIZ: 1" = 10' FEET

MINGXUN DING
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NO. 9246-C
HAWAII, U.S.A.

LICENSE EXPIRES 4/30/14

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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

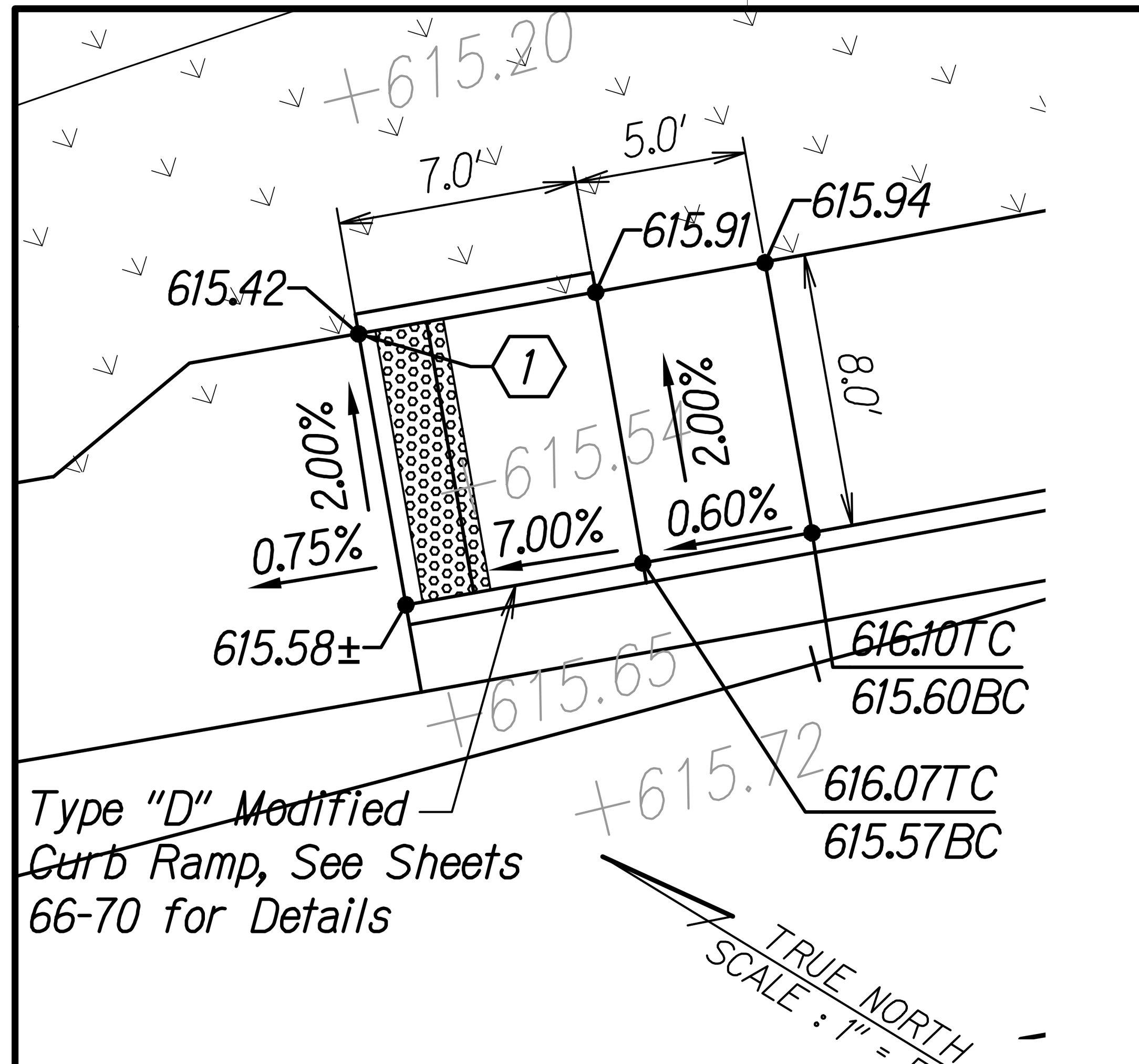
DRIVEWAY PLANS

Keaau-Pahoa Road Intersection Improvements at Old Government Road
Federal-Aid Project No. HSIP-0130(031)

Scale: None Date: April 2013

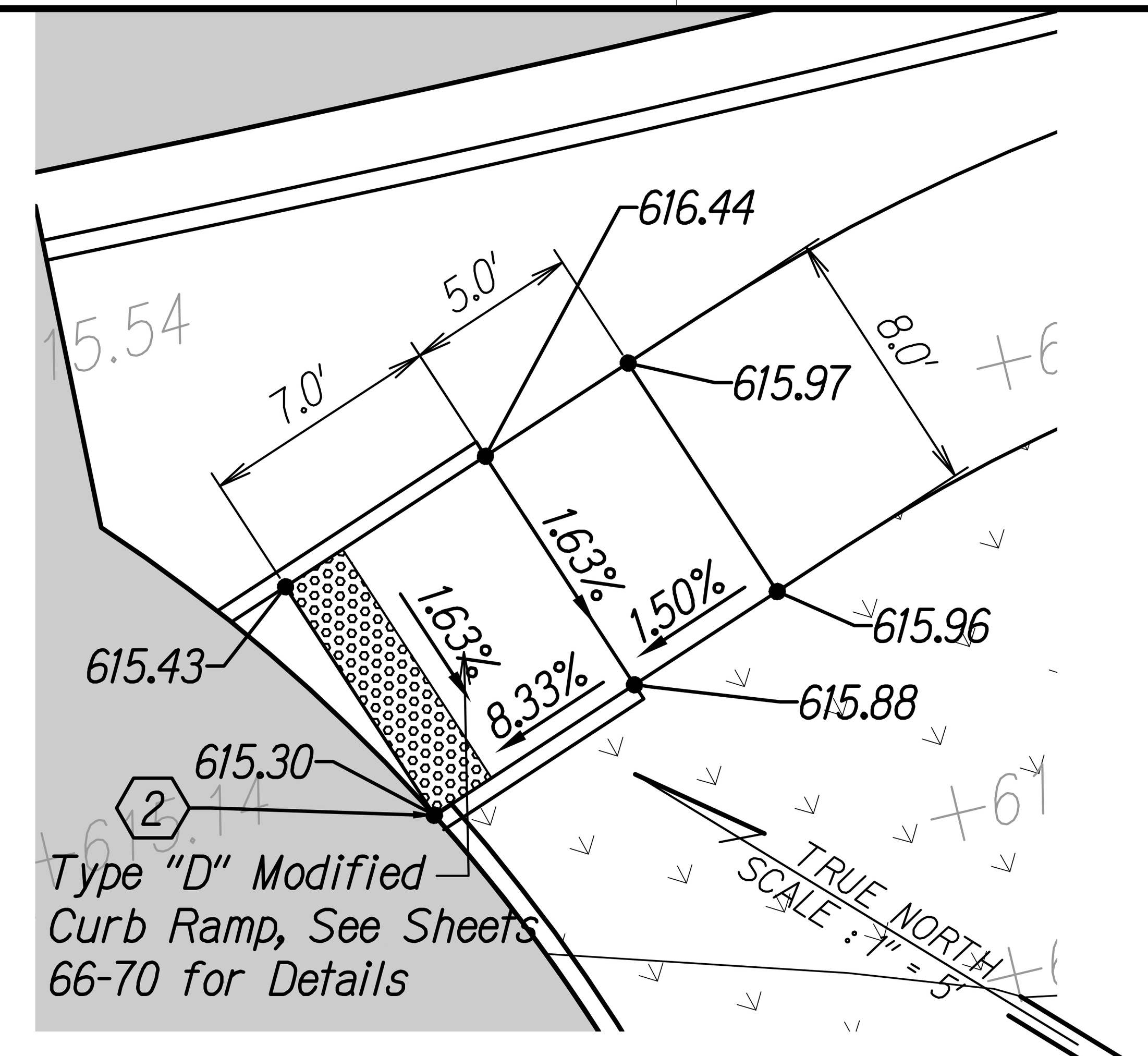
SHEET No. 1 OF 1 SHEETS

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



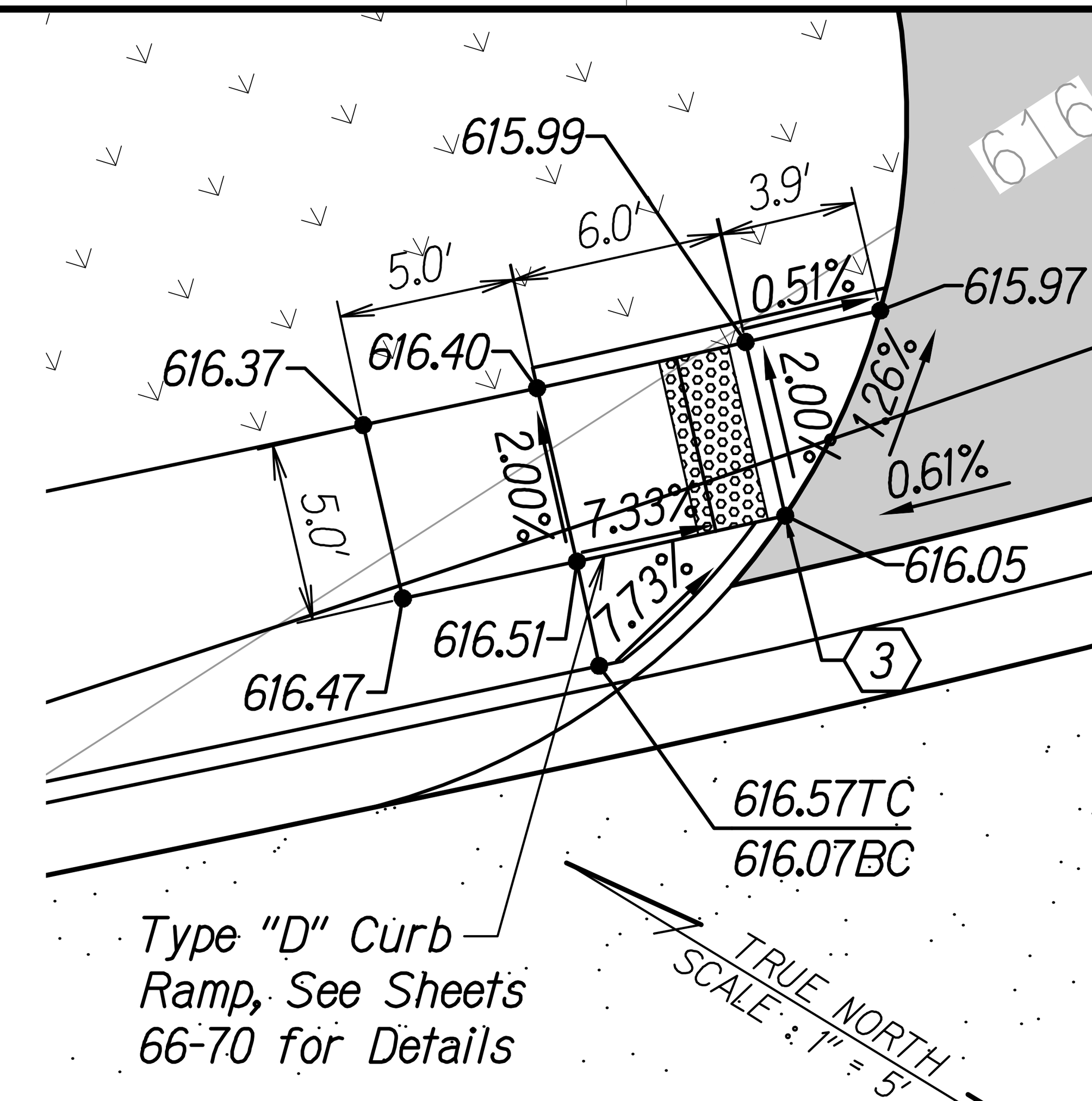
CURB RAMP #1

Scale: 1" = 5'



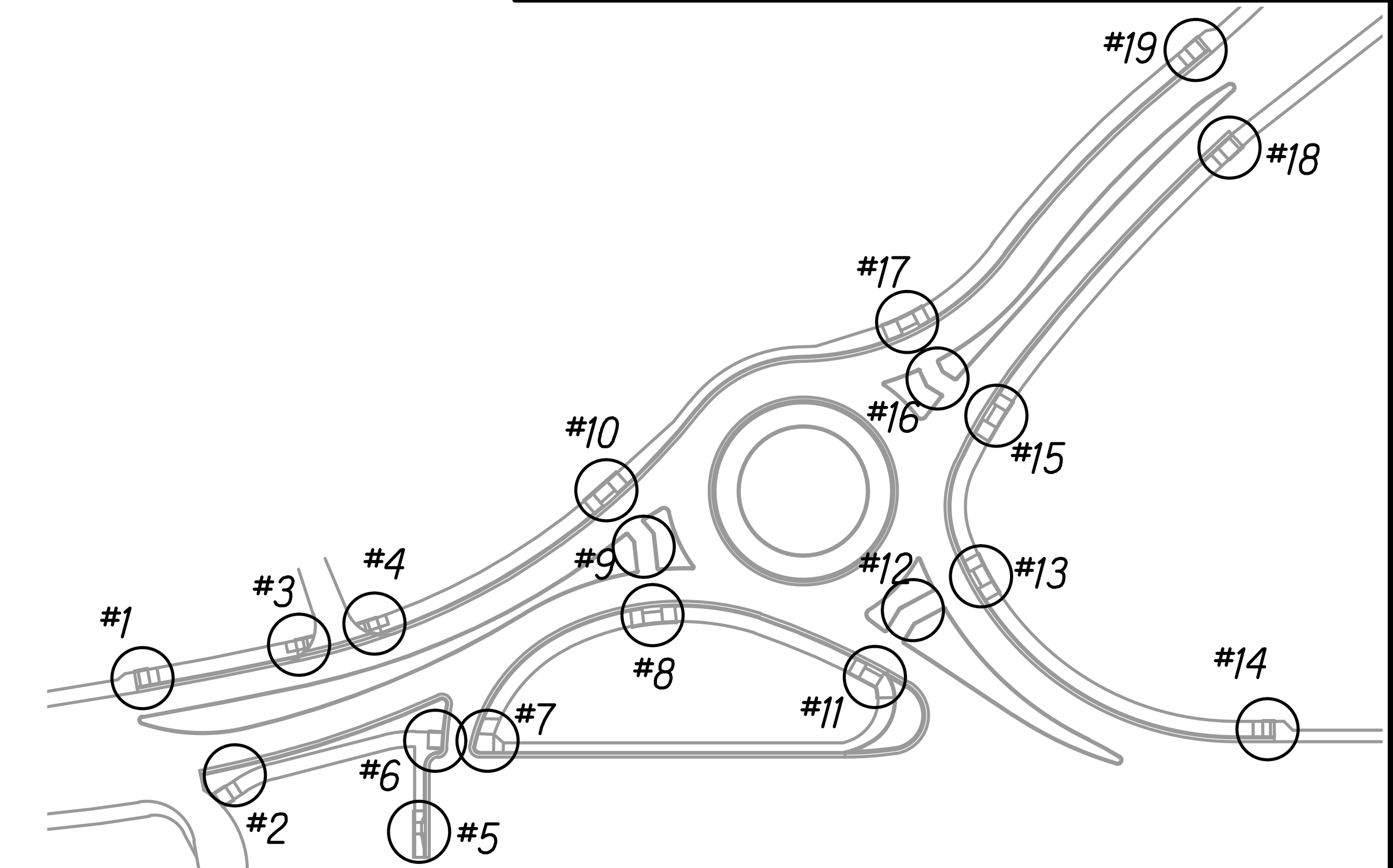
CURB RAMP #2

Scale: 1" = 5'



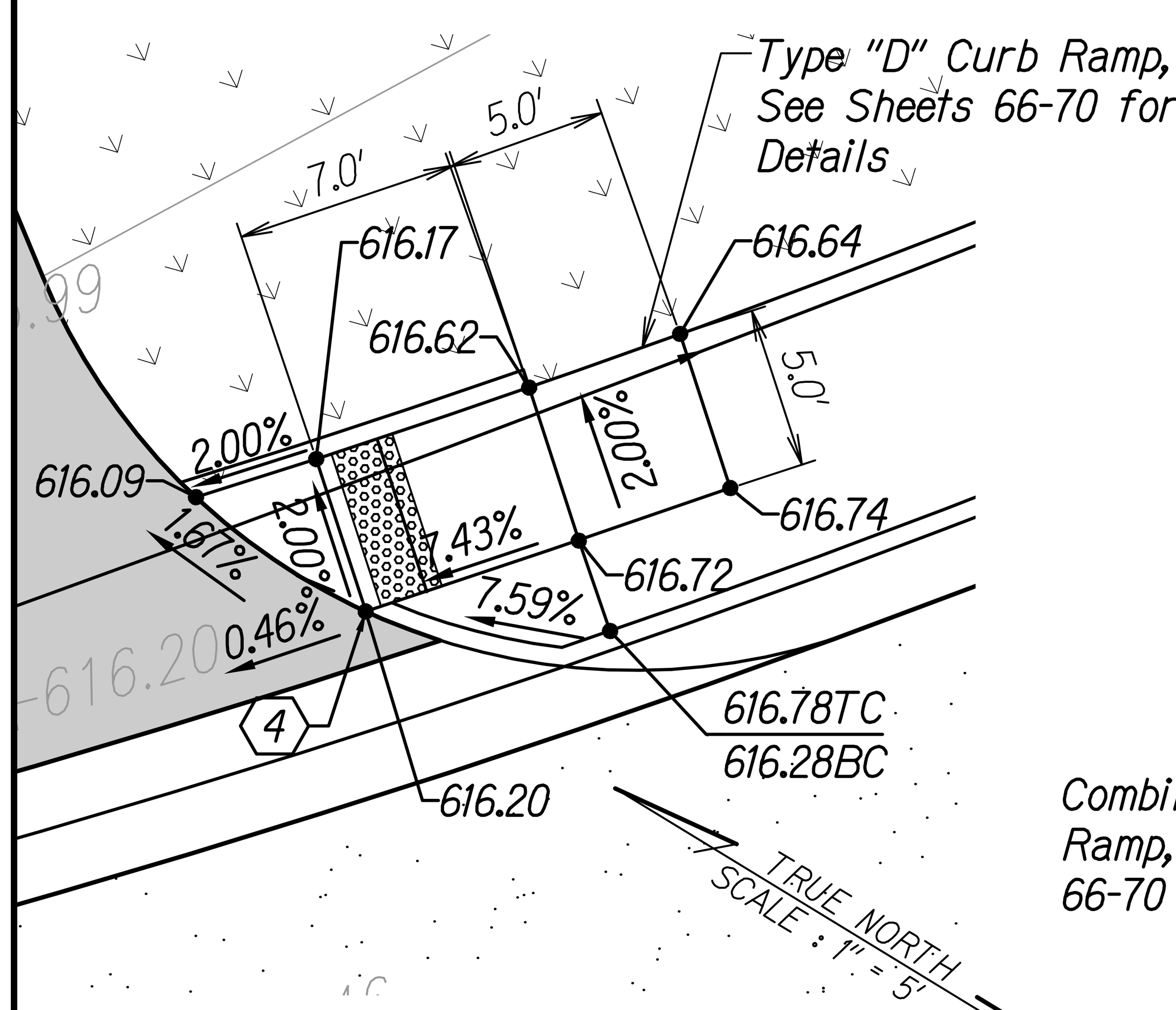
CURB RAMP #3

Scale: 1" = 5'



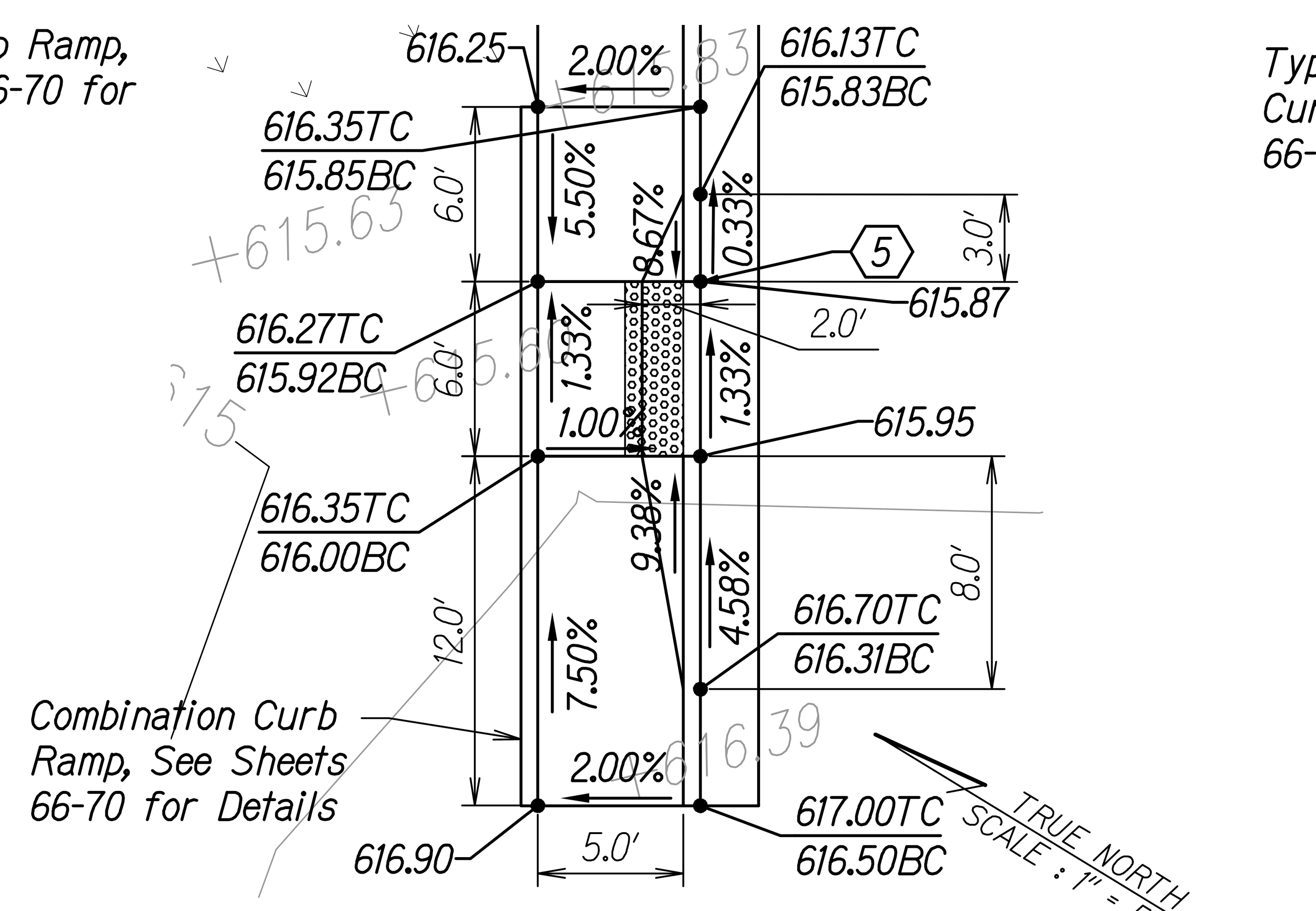
CURB RAMP NUMBER KEY MAP

Scale: 1" = 80'



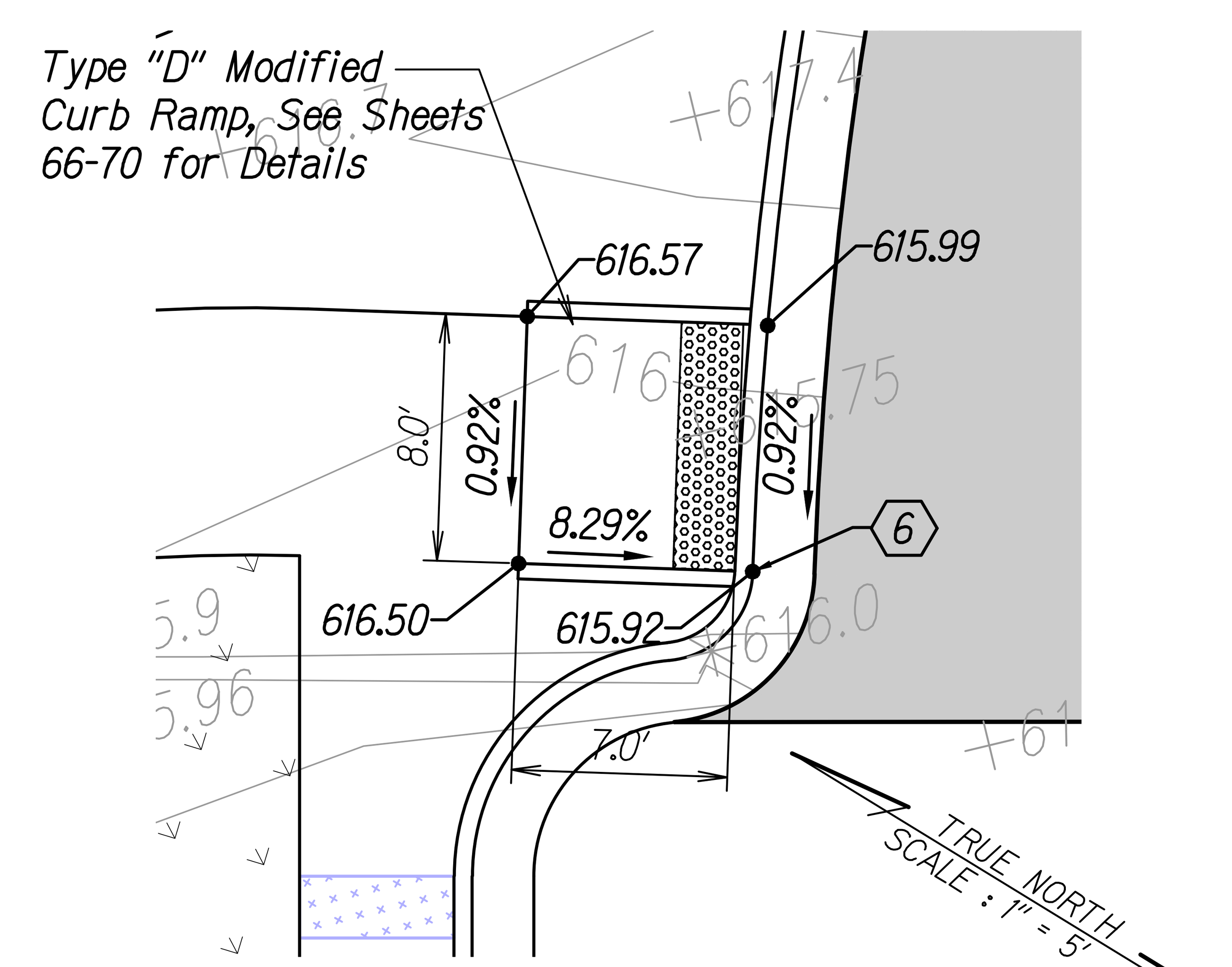
CURB RAMP #4

Scale: 1" = 5'



CURB RAMP #5

Scale: 1" = 5'



CURB RAMP #6

Scale: 1" = 5'

COORDINATE TABLE			
Point	Northing	Easting	Description
1	243595.34	1827464.37	North Corner, Bottom Curb
2	243519.65	1827428.40	West Corner, Bottom Curb
3	243524.66	1827522.37	South Corner, Bottom Curb
4	243503.21	1827545.28	West Corner, Bottom Curb
5	243425.43	1827476.34	East Corner, Bottom Curb
6	243437.94	1827514.24	South Corner, Bottom Curb

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

MINGXUN DING
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NO. 9246-C
HAWAII, U.S.A.

LICENSE EXPIRES 4/30/14

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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

ACCESSIBLE PLANS

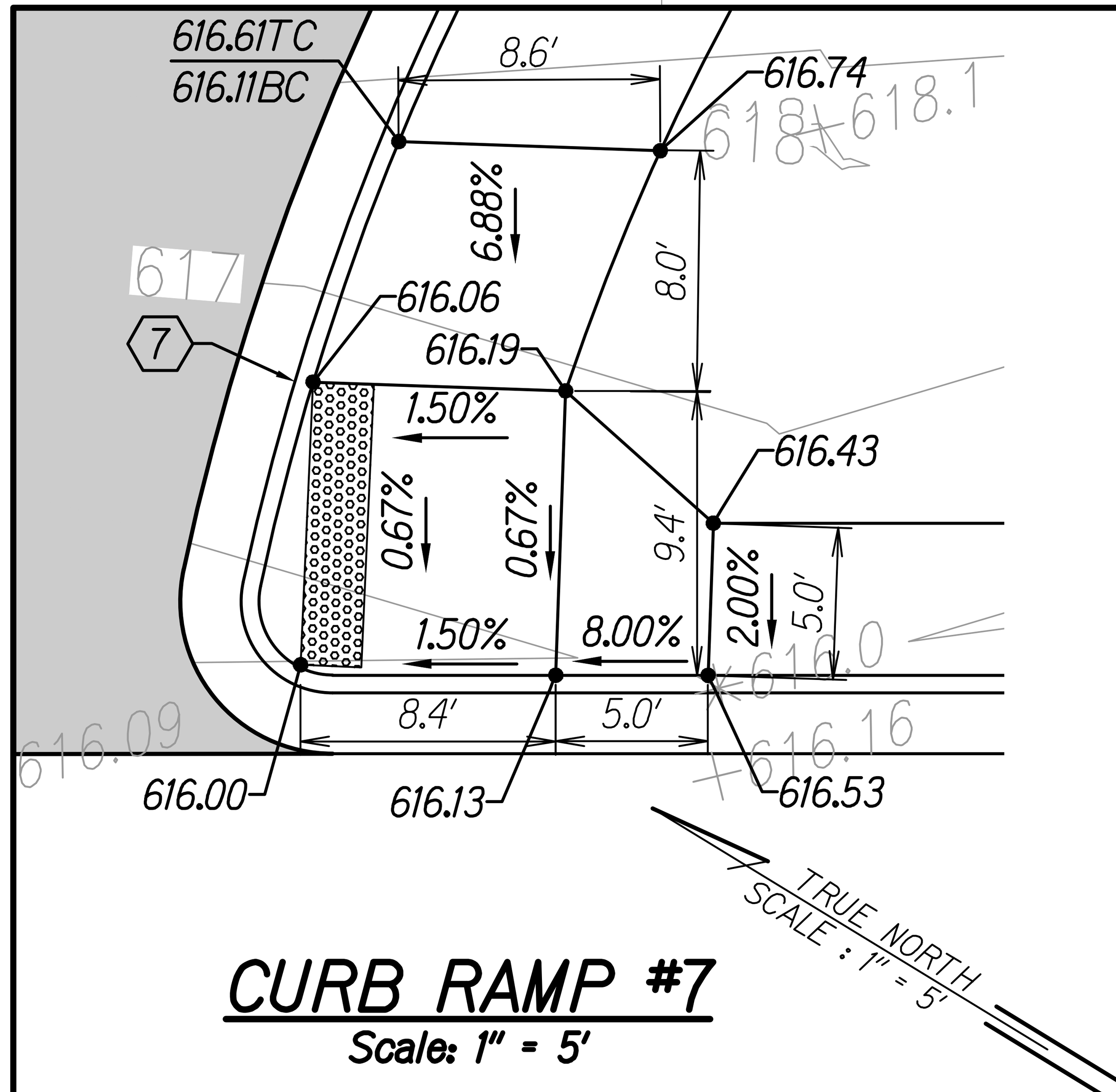
CURB RAMPS #1 - #6

Keaau-Pahoa Road Intersection
Improvements at Old Government Road
Federal-Aid Project No. HSIP-0130(031)

Scale: 1" = 5' Date: April 2013

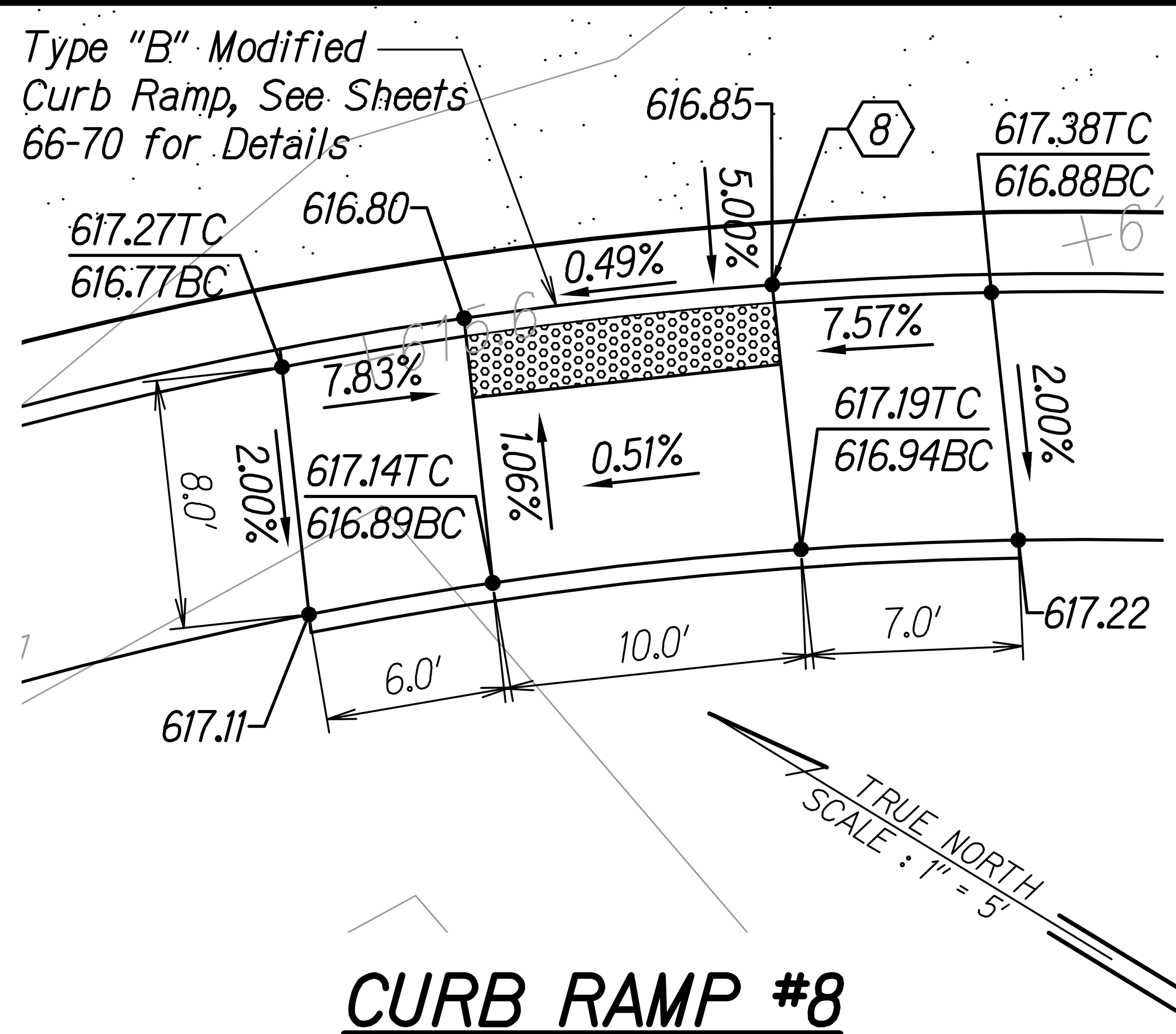
SHEET No. 1 OF 3 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	HSIP-0130(031)	2013	49	103



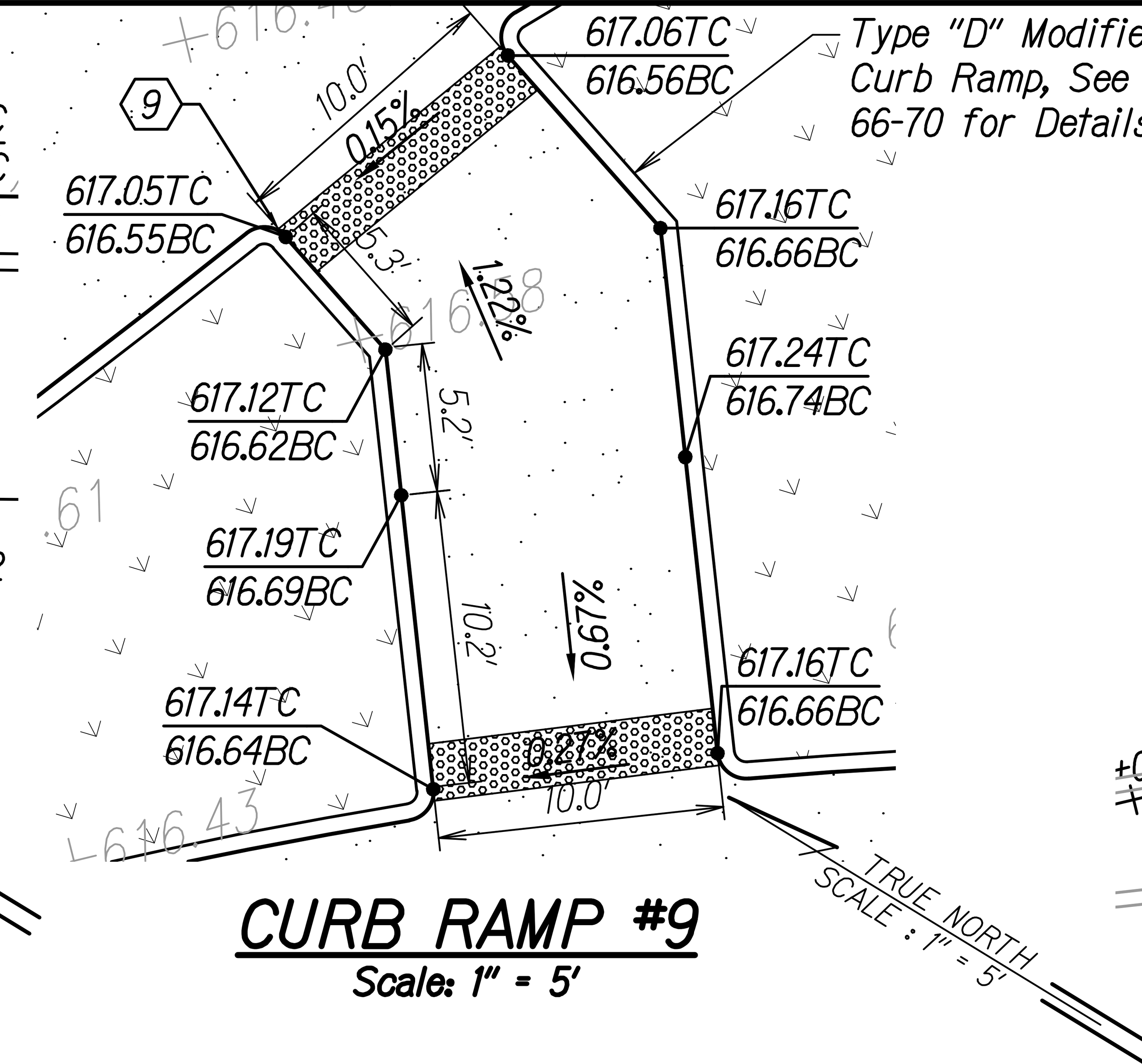
CURB RAMP #7

Scale: 1" = 5'



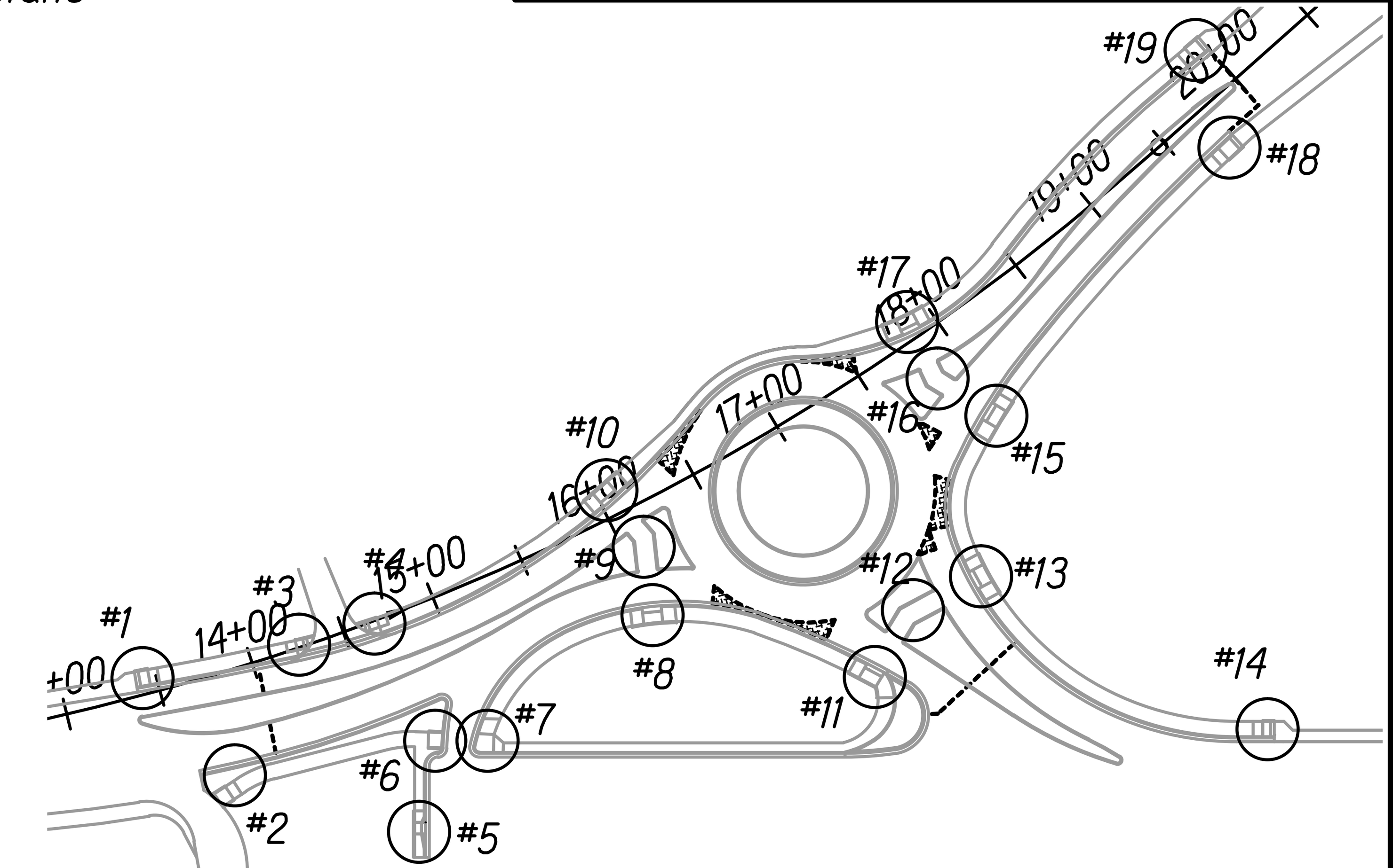
CURB RAMP #8

Scale: 1" = 5'



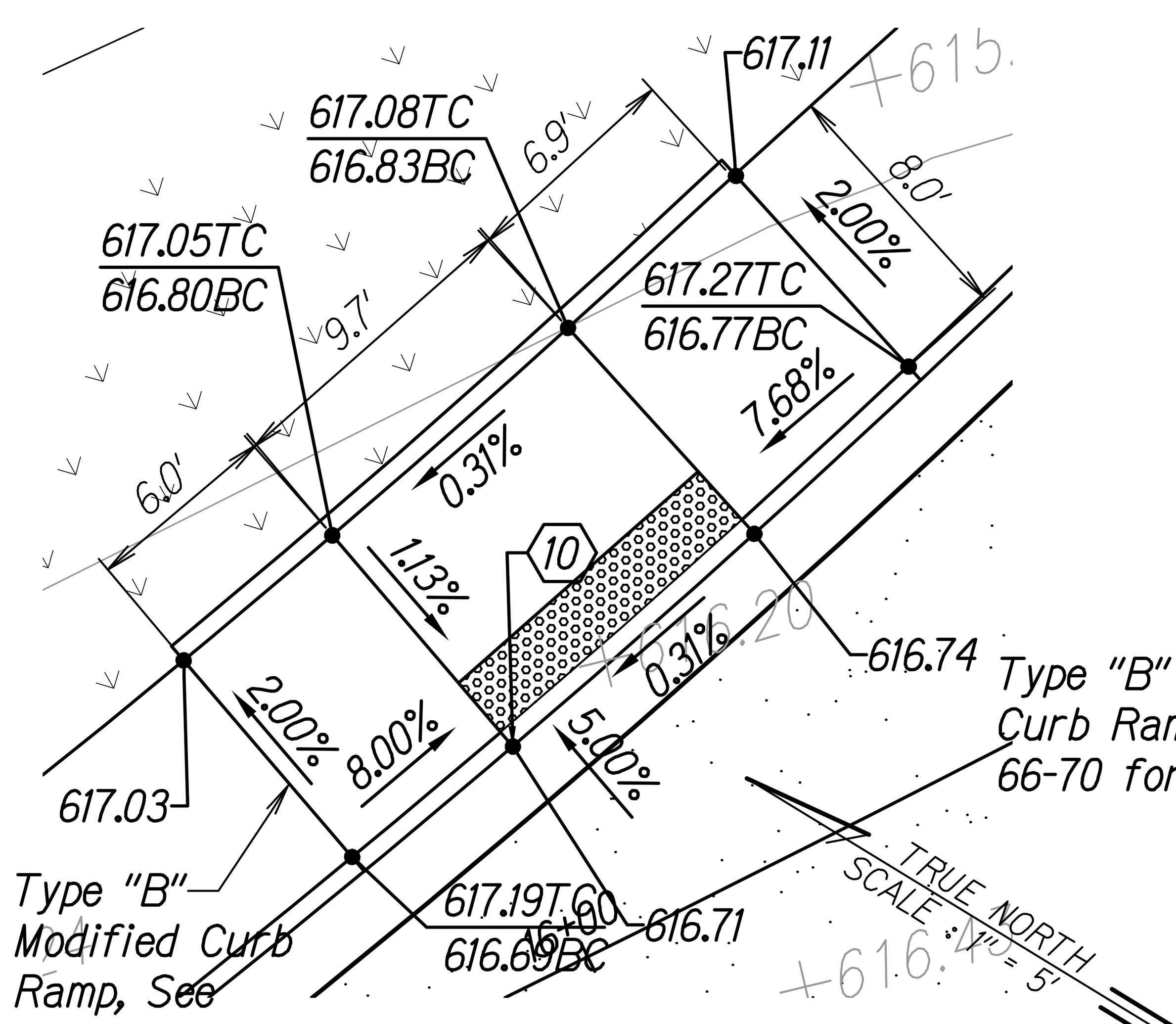
CURB RAMP #9

Scale: 1" = 5'



CURB RAMP NUMBER KEY MAP

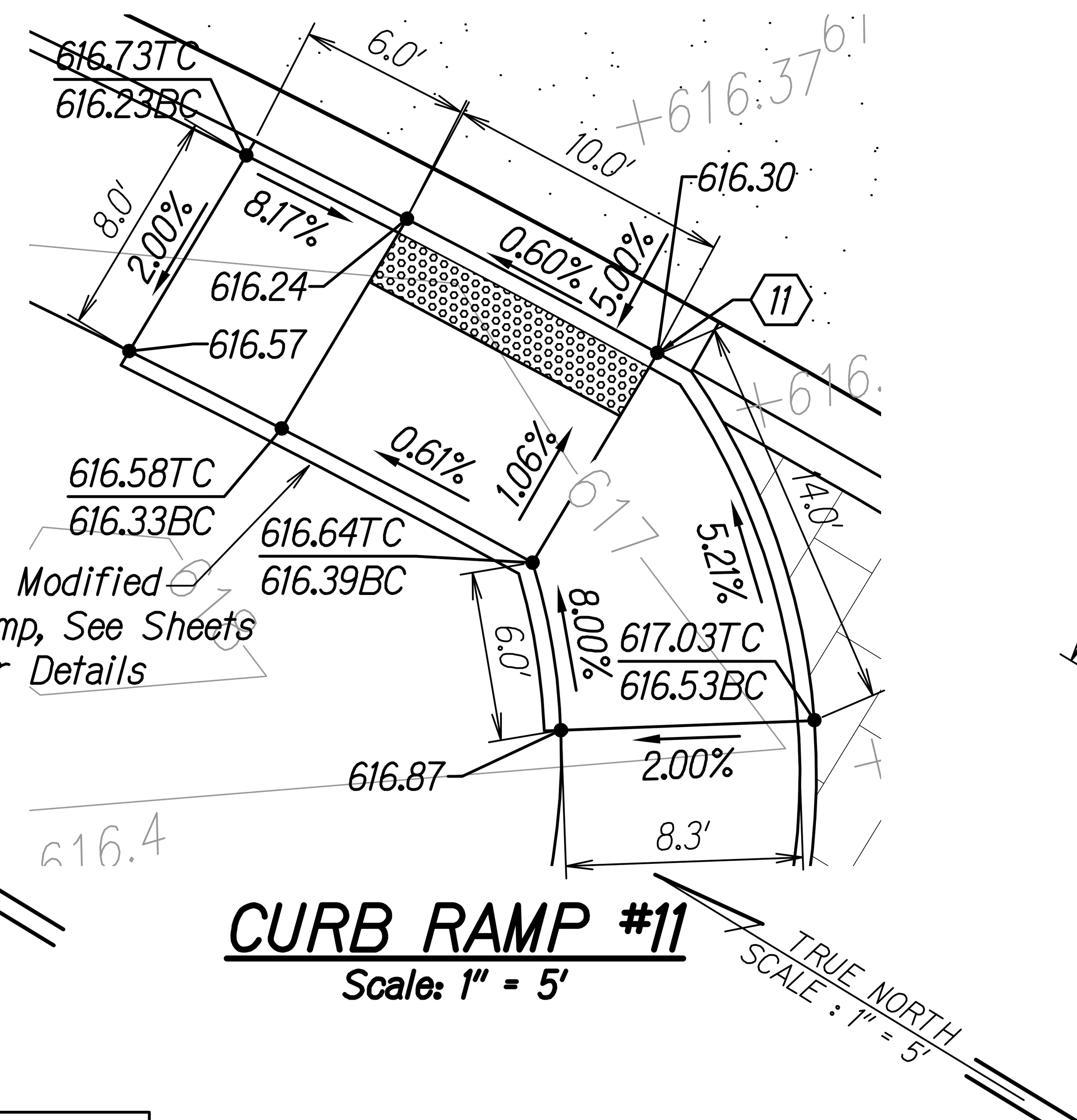
Scale: 1" = 80'



Type "B" Modified Curb Ramp, See Sheets 66-70 for Details

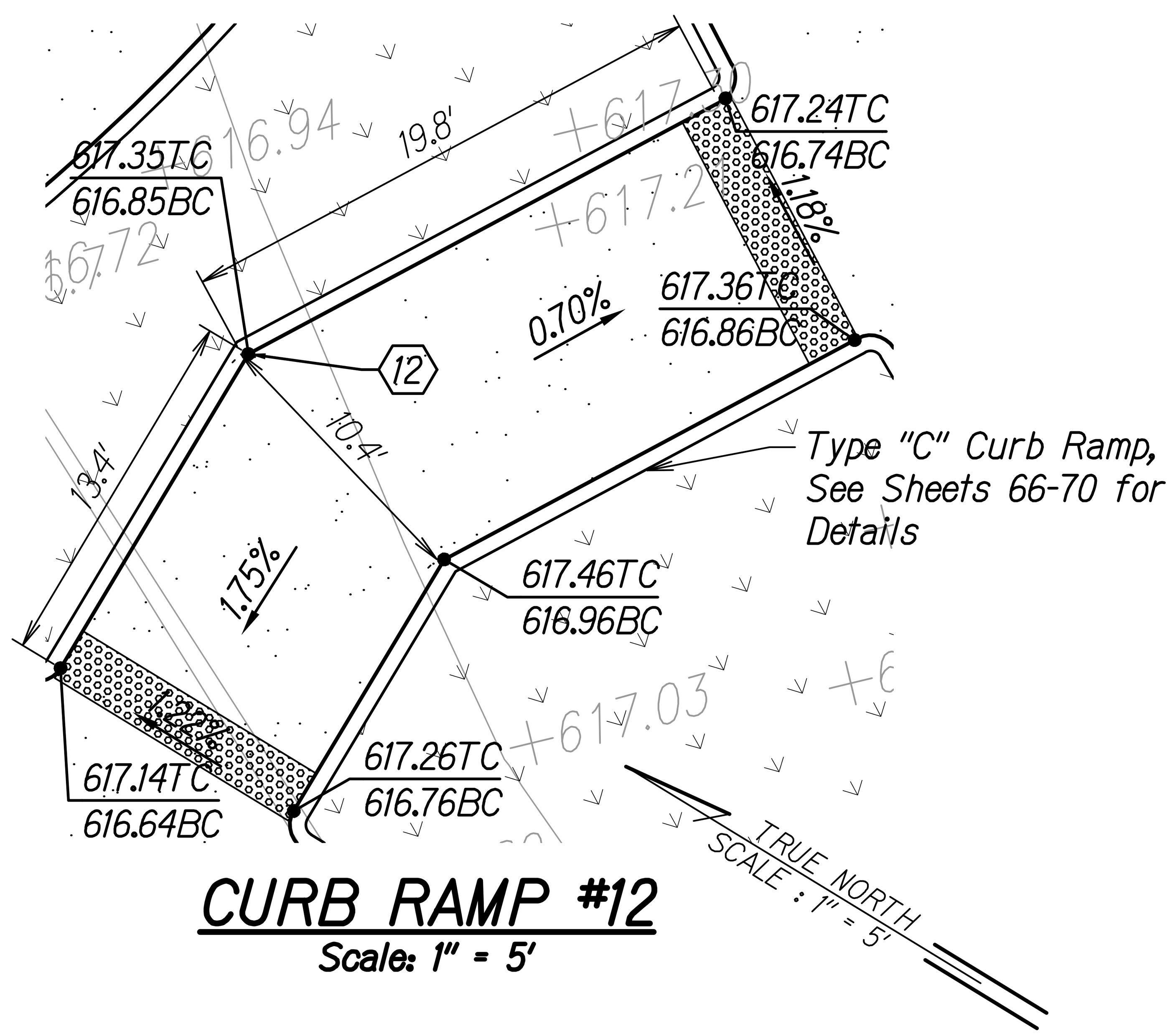
CURB RAMP #10

Scale: 1" = 5'



CURB RAMP #11

Scale: 1" = 5'



CURB RAMP #12

Scale: 1" = 5'

COORDINATE TABLE

Point	Northing	Easting	Description
7	243426.61	1827529.81	North Corner, Bottom Curb
8	243379.58	1827636.44	East Corner, Bottom Curb
9	243414.15	1827659.57	North Corner, Bottom Curb
10	243431.94	1827665.12	West Corner, Bottom Curb
11	243262.48	1827667.48	Southeast Corner, Bottom Curb
12	243272.80	1827699.90	North Corner, Bottom Curb

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

MINGXUN DING
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NO. 9246-C
HAWAII, U.S.A.

LICENSE EXPIRES 4/30/14

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DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

ACCESSIBLE PLANS

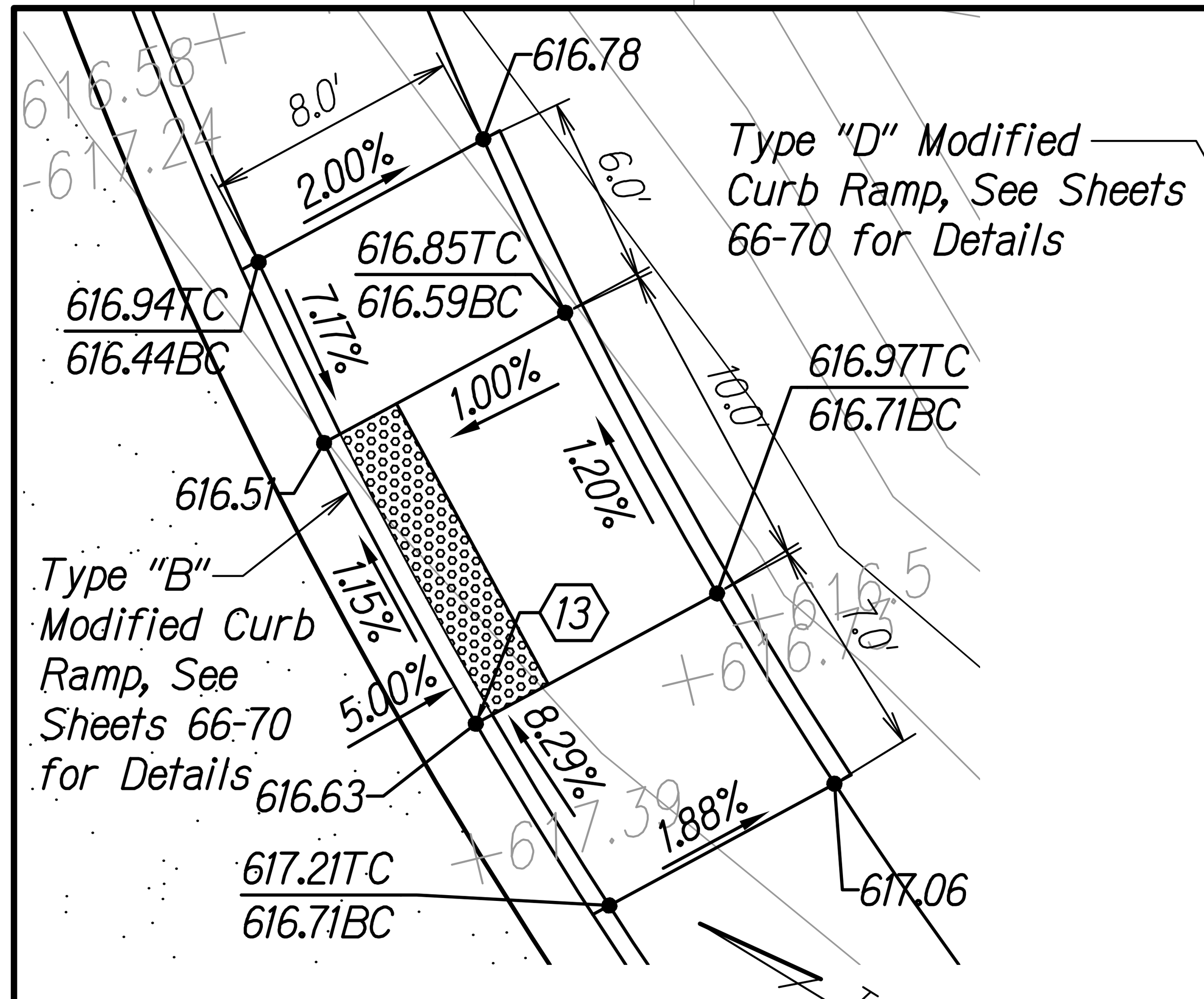
CURB RAMPS #7 - #12

Keaau-Pahoa Road Intersection Improvements at Old Government Road
Federal-Aid Project No. HSIP-0130(031)

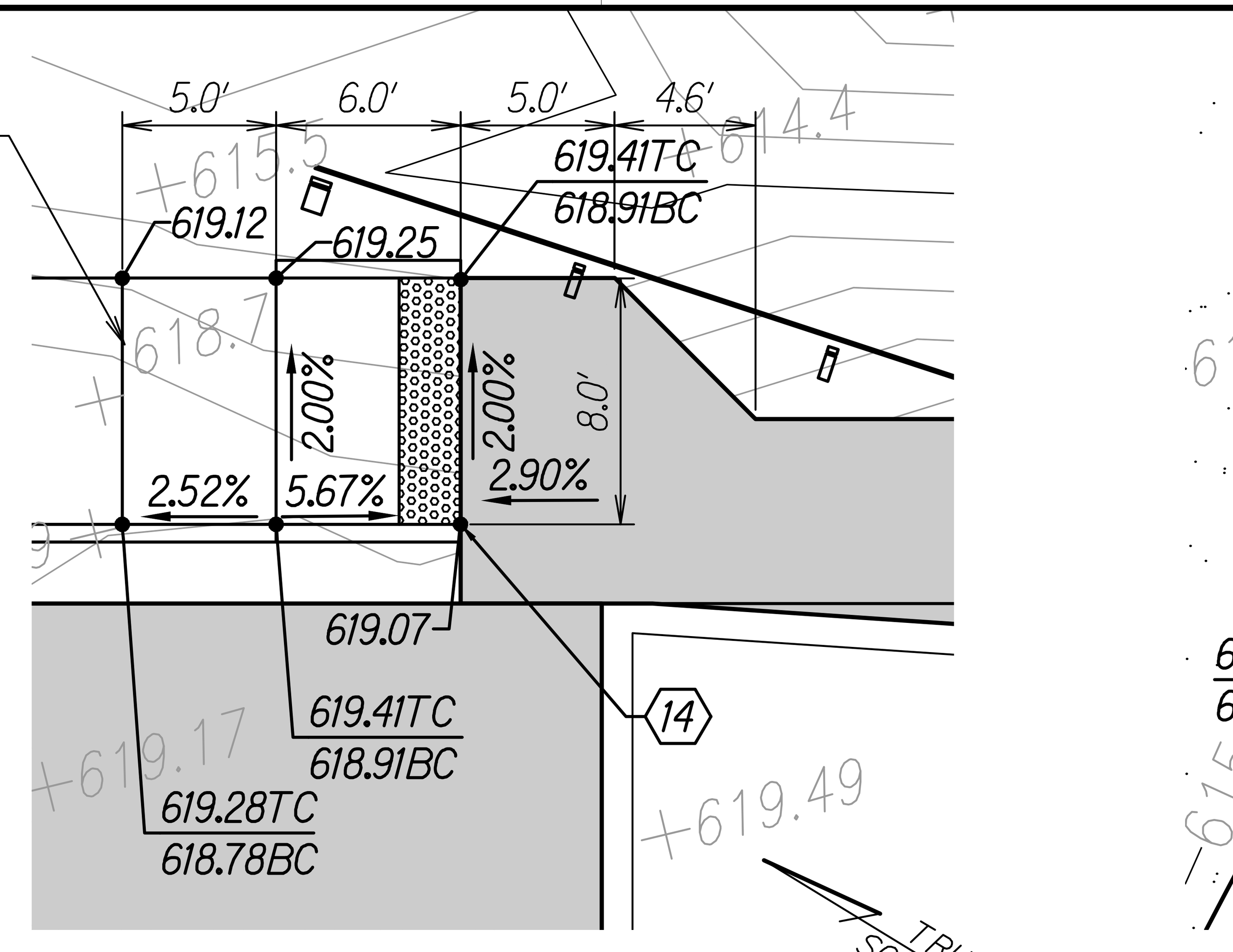
Scale: 1" = 5'   Date: April 2013

SHEET No. 2 OF 3 SHEETS

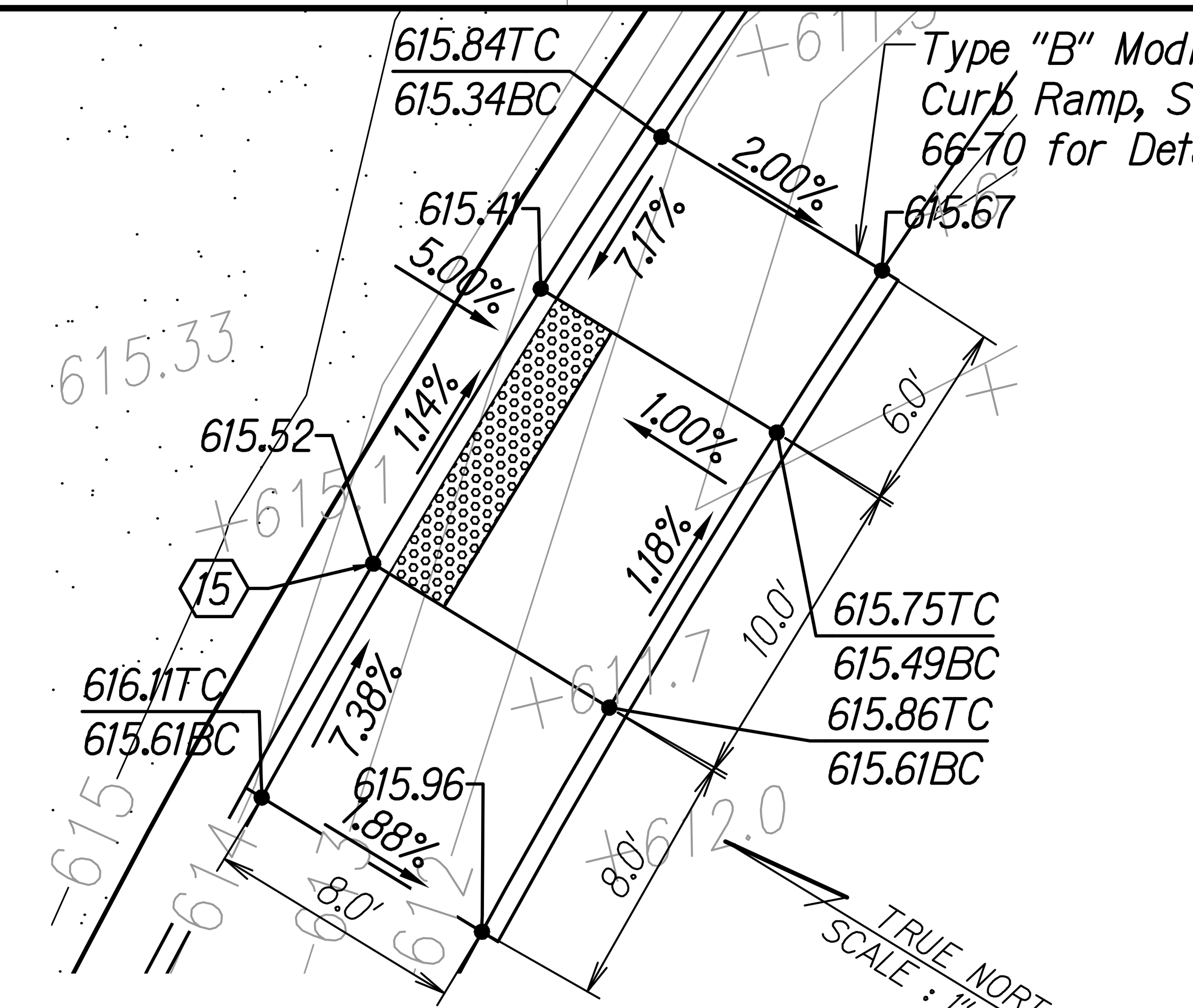
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	HSIP-0130(031)	2013	50	103



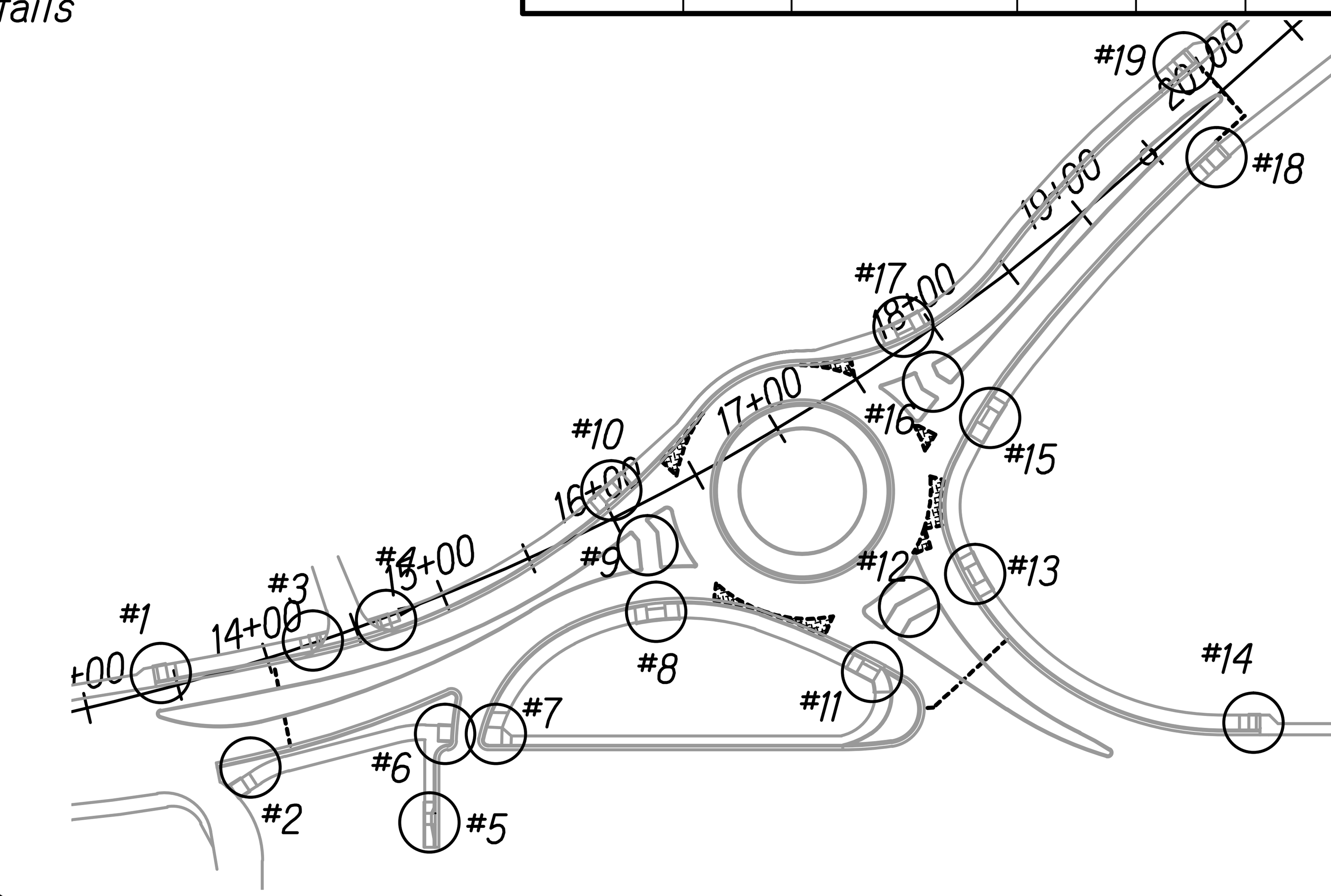
CURB RAMP #13
Scale: 1" = 5'



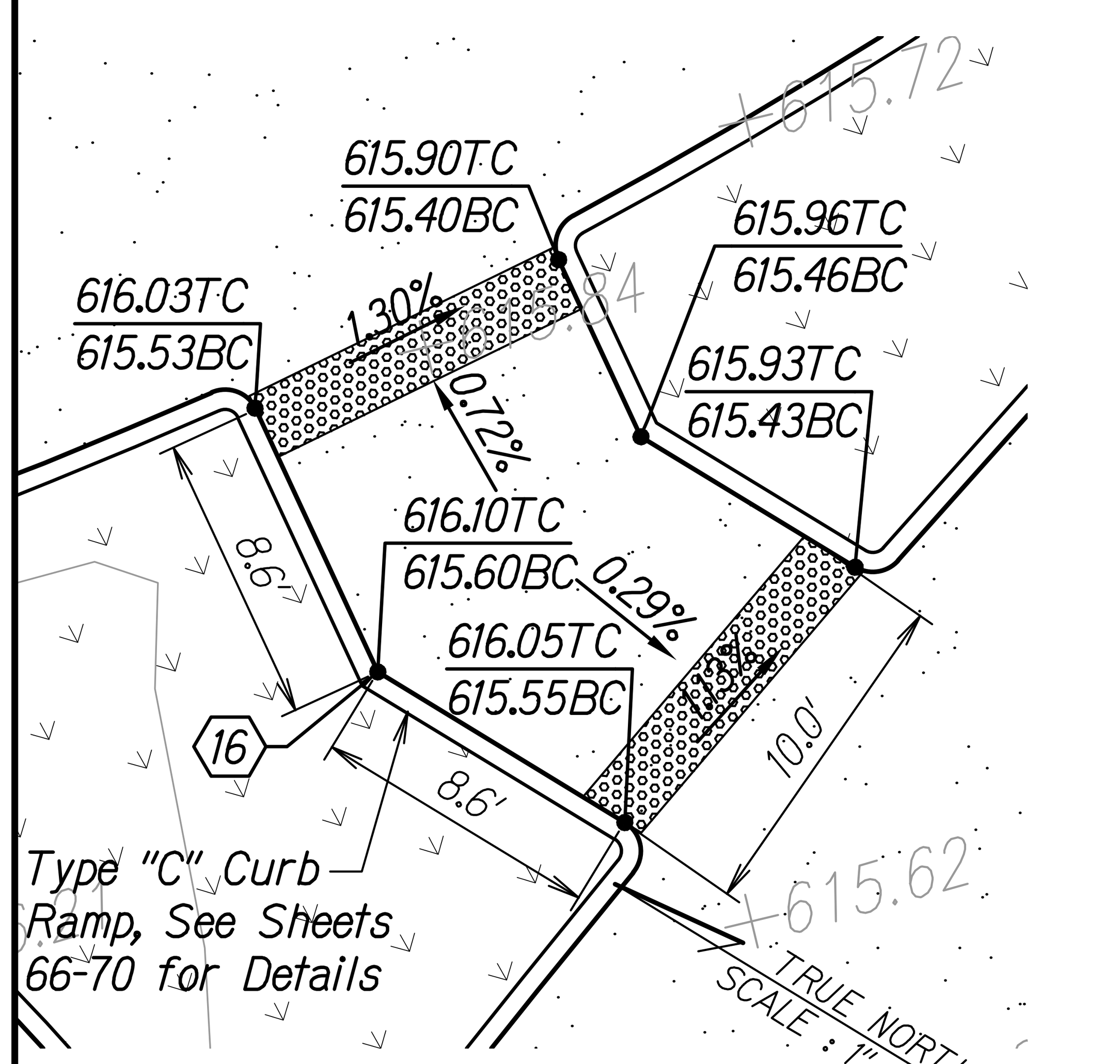
CURB RAMP #14
Scale: 1" = 5'



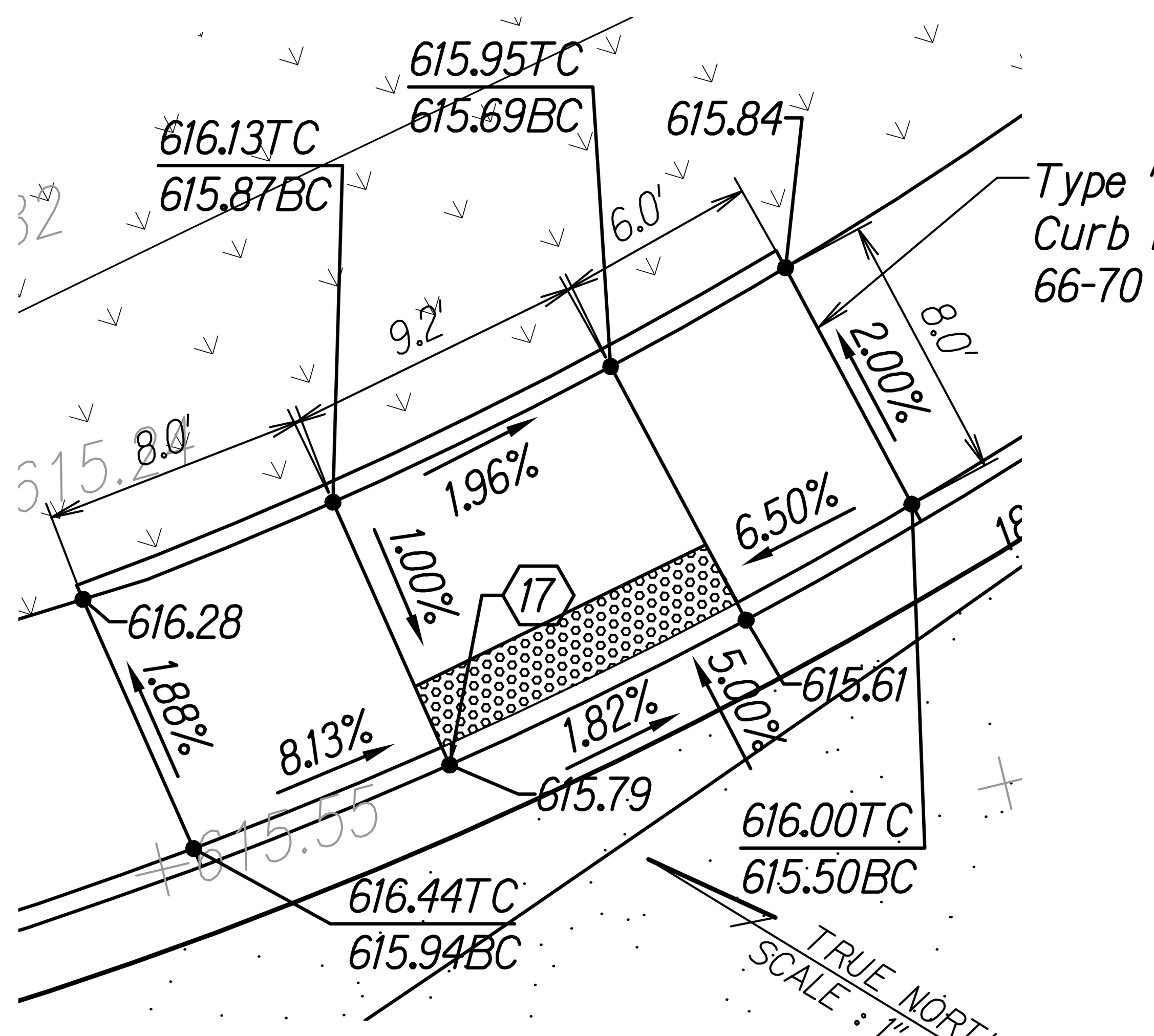
CURB RAMP #15
Scale: 1" = 5'



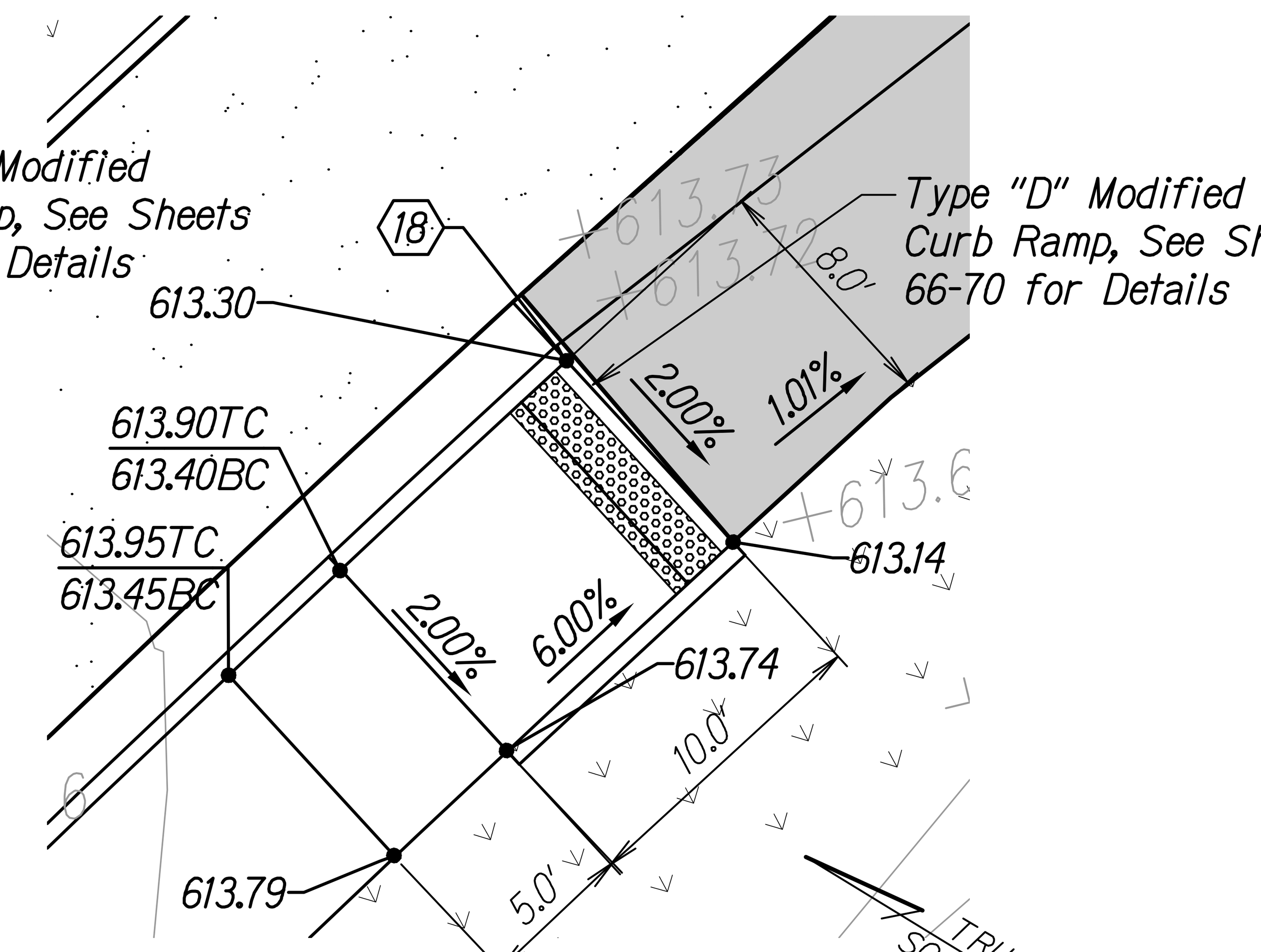
CURB RAMP NUMBER KEY MAP
Scale: 1" = 80'



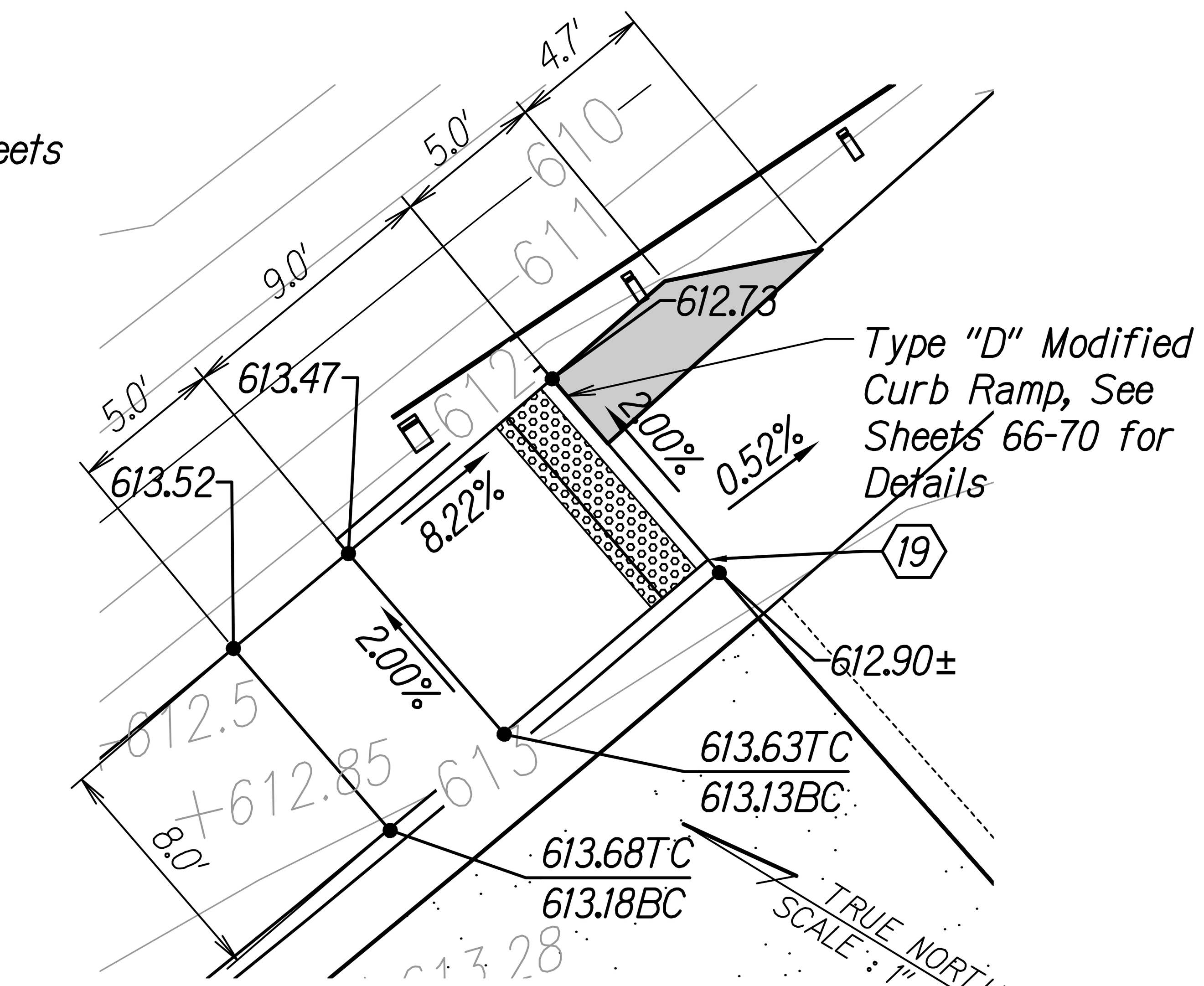
CURB RAMP #15
Scale: 1" = 5'



CURB RAMP #16
Scale: 1" = 5'



CURB RAMP #18
Scale: 1" = 5'



CURB RAMP #19
Scale: 1" = 5'

COORDINATE TABLE			
Point	Northing	Easting	Description
13	243243.79	1827729.71	West Corner, Bottom Curb
14	243071.97	1827744.62	South Corner, Bottom Curb
15	243287.98	1827806.51	Northwest Corner, Bottom Curb
16	243321.34	1827806.47	West Corner, Bottom Curb
17	243345.75	1827822.25	West Corner, Bottom Curb
18	243254.04	1828000.45	East Corner, Bottom Curb
19	243287.96	1828032.21	South Corner, Bottom Curb

MINGXUN DING
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NO. 9246-C
HAWAII, U.S.A.

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HIGHWAYS DIVISION

ACCESSIBLE PLANS
CURB RAMPS #13 - #19

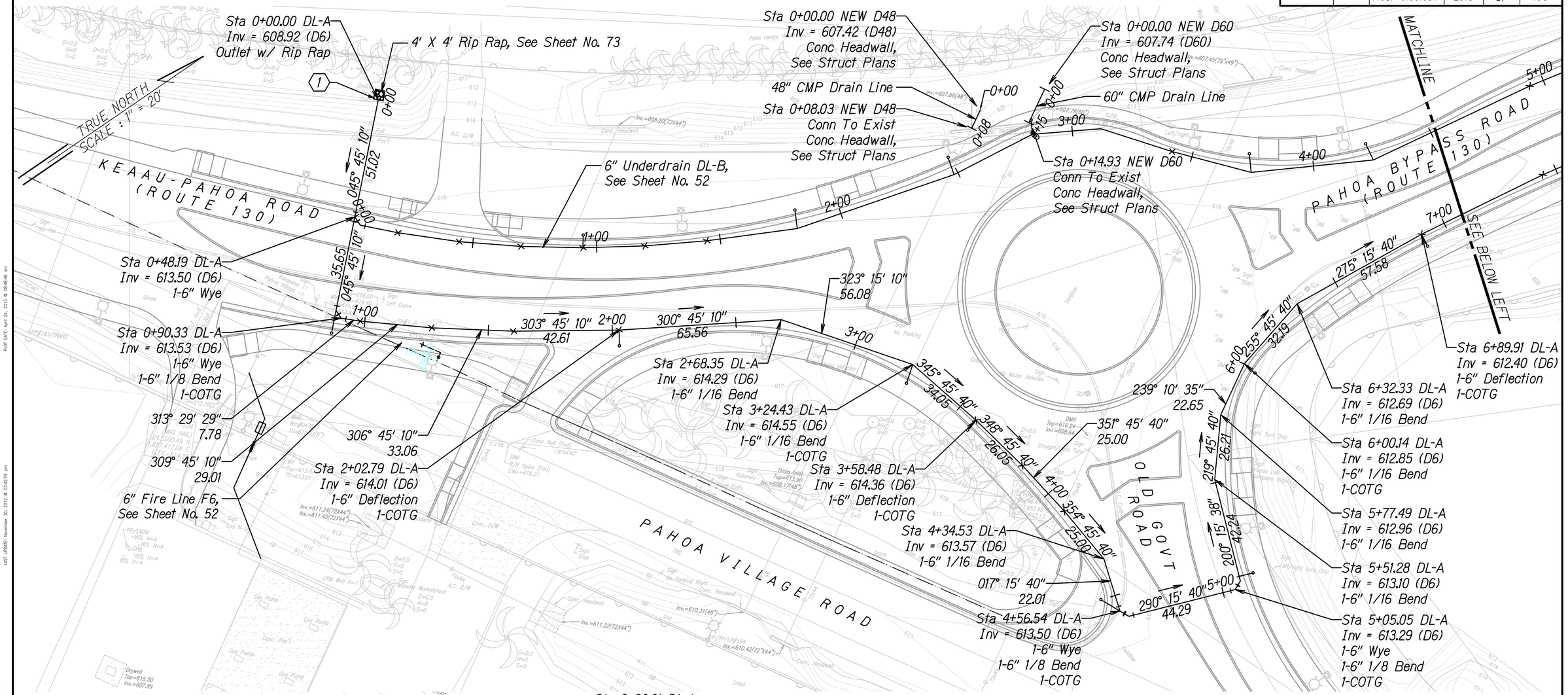
Keaau-Pahoa Road Intersection Improvements at Old Government Road
Federal-Aid Project No. HSIP-0130(031)

Scale: 1" = 5' Date: April 2013

SHEET No. 3 OF 3 SHEETS

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

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	HSIP-0130(031)	2013	51	103



LEGEND

× 6" Deflection

—o COTG, See Sheet No. 74

COORDINATE TABLE			
Point	Northing	Easting	Description
1	243571.18	1827536.29	Begin Underdrain DL-A
2	243304.76	1828054.02	End Underdrain DL-A

Utility Plan - 1
Scale: 1" = 20'

0 20 40 60
HORIZ: 1" = 20' FEET

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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

UTILITY PLAN 1

DL-A, D48 and D60

Keaau-Pahoa Road Intersection Improvements at Old Government Road
Federal-Aid Project No. HSIP-0130(031)

Scale: 1" = 20' Date: April 2013

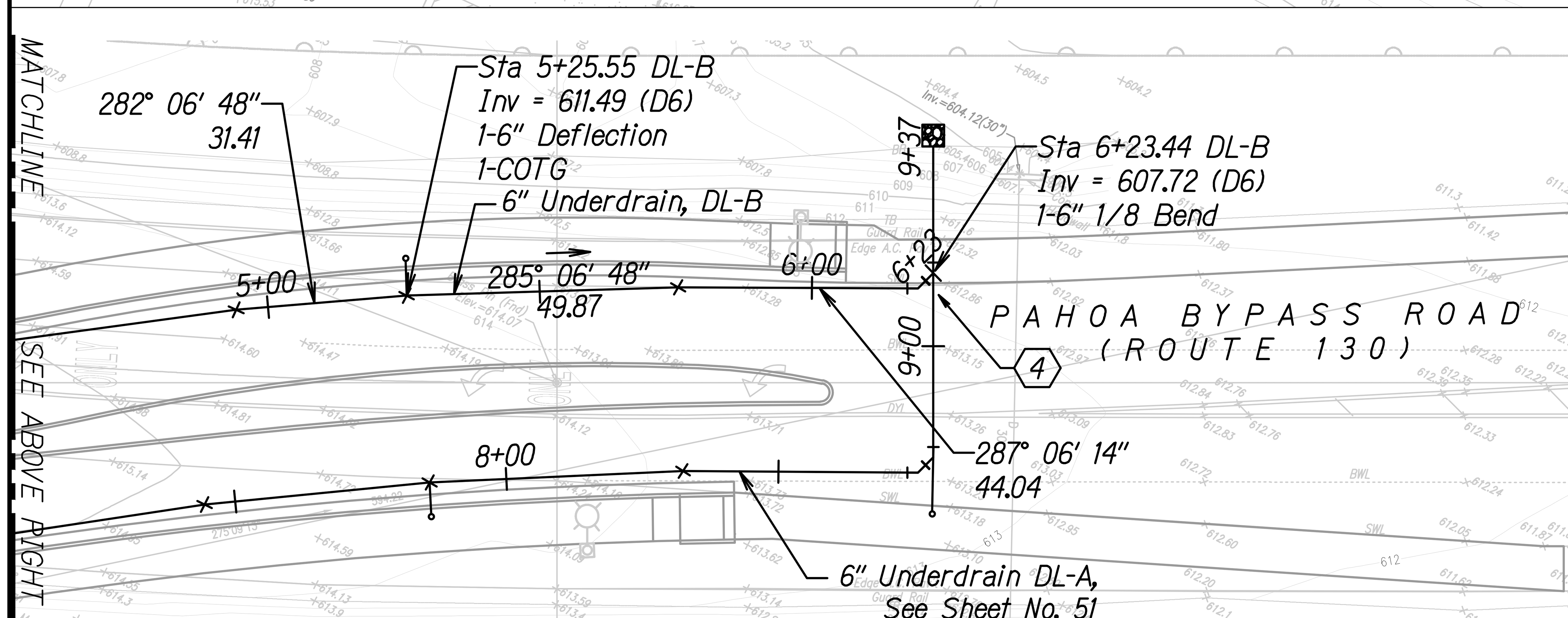
SHEET No. 1 OF 6 SHEETS

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

PLOT DATE: November 30, 2012 @ 03:42:59 pm
LAST UPDATE: November 30, 2012 @ 08:48:48 am

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	HSIP-0130(031)	2013	52	103

TRUE NORTH
SCALE: 1" = 20'
KEAAU-PAHOA ROAD (ROUTE 130)
PAHOA BYPASS ROAD (ROUTE 130)
OLD GOVERNMENT ROAD
PAHOA VILLAGE ROAD
MATCHLINE
SEE BELOW LEFT
Sta 0+00.00 DL-B Inv = 613.50 (D6) 1-6" 1/8 Bend
302° 41' 52" 25.00
Sta 0+94.48 DL-B Inv = 613.95 (D6) 1-6" Deflection 1-COTG
305° 41' 52" 25.00
Sta 1+81.42 DL-B Inv = 614.20 (D6) 1-6" 1/16 Bend 1-COTG
Sta 2+48.28 DL-B Inv = 614.51 (D6) 1-6" 1/32 Bend 1-COTG
48" Drain Line, D48 See Sheet No. 51
60" Drain Line, D60 See Sheet No. 51
Sta 2+83.80 DL-B Inv = 614.44 (D6) 1-6" 1/16 Bend 1-COTG
Sta 3+11.60 DL-B Inv = 614.29 (D6) 1-6" 1/16 Bend
279° 06' 48" 69.88
Sta 4+24.26 DL-B Inv = 612.71 (D6) 1-6" 1/16 Bend 1-COTG
312° 41' 52" 25.00
315° 41' 52" 15.48
299° 41' 52" 25.00
296° 41' 52" 36.95
285° 26' 52" 66.86
322° 11' 52" 30.15
319° 11' 52" 32.98
299° 41' 52" 27.80
277° 11' 52" 35.52
6" Underdrain, DL-B
308° 41' 52" 25.00
6" Fire Line F6, See Sheet No. 53
Relocated W2, See Sheet No. 53
298° 36' 48" 49.53
Sta 3+74.73 DL-B Inv = 613.56 (D6) 1-6" 1/16 Bend 1-COTG
6" Underdrain DL-A, See Sheet No. 51



LEGEND

- × 6" Deflection
- —○ COTG, See Sheet No. 74

COORDINATE TABLE			
Point	Northing	Easting	Description
3	243535.58	1827499.75	Begin Underdrain DL-B
4	243279.82	1828046.47	End Underdrain DL-B

Utility Plan - 2

Scale: 1" = 20'

0 20 40 60
HORIZ: 1" = 20' FEET

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HIGHWAYS DIVISION

UTILITY PLAN 2

DL-B

Keaau-Pahoa Road Intersection Improvements at Old Government Road
Federal-Aid Project No. HSIP-0130(031)

Scale: 1" = 20' Date: April 2013

SHEET No. 2 OF 6 SHEETS

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

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	HSIP-0130(031)	2013	53	103

MATCHLINE — SEE ABOVE RIGHT

COORDINATE TABLE			
Point	Northing	Easting	Description
5	243470.77	1827496.03	Begin Fireline F6
6	243509.75	1827431.04	Begin Relocated W2
7	243489.96	1827424.18	Begin 1.5" WM
8	243445.41	1827392.64	End Relocated W2

Utility Plan - 3
Scale: 1" = 20'

0 20 40 60
HORIZ: 1" = 20' FEET

APPROVED:

Manager, Department of Water Supply, County of Hawaii — Date

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DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

UTILITY PLAN 3

F6 & Relocated W2

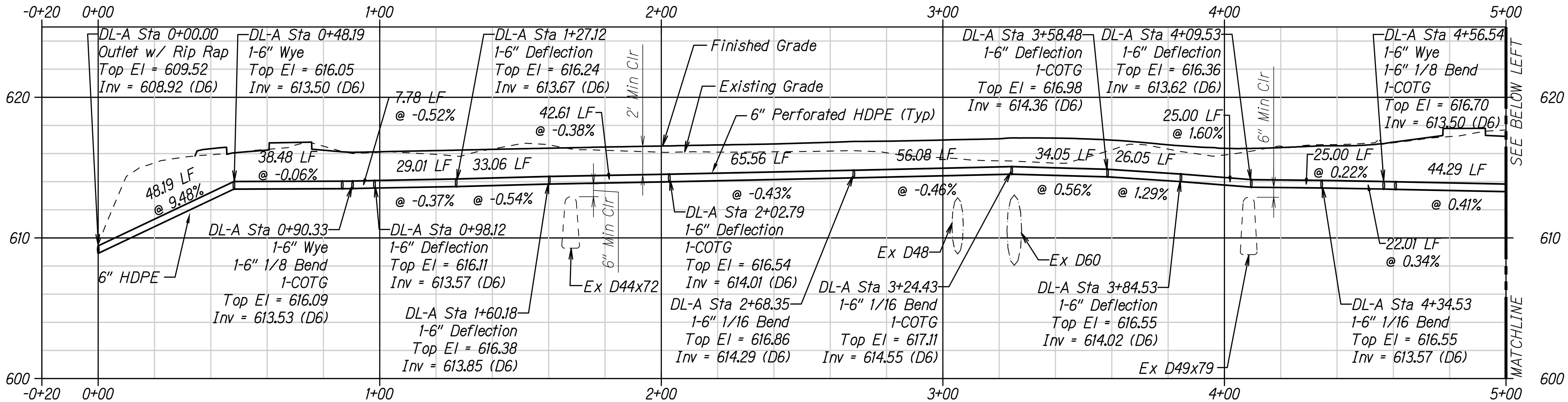
Keaau-Pahoa Road Intersection Improvements at Old Government Road
Federal-Aid Project No. HSIP-0130(031)

Scale: 1" = 20' Date: April 2013

SHEET No. 3 OF 6 SHEETS

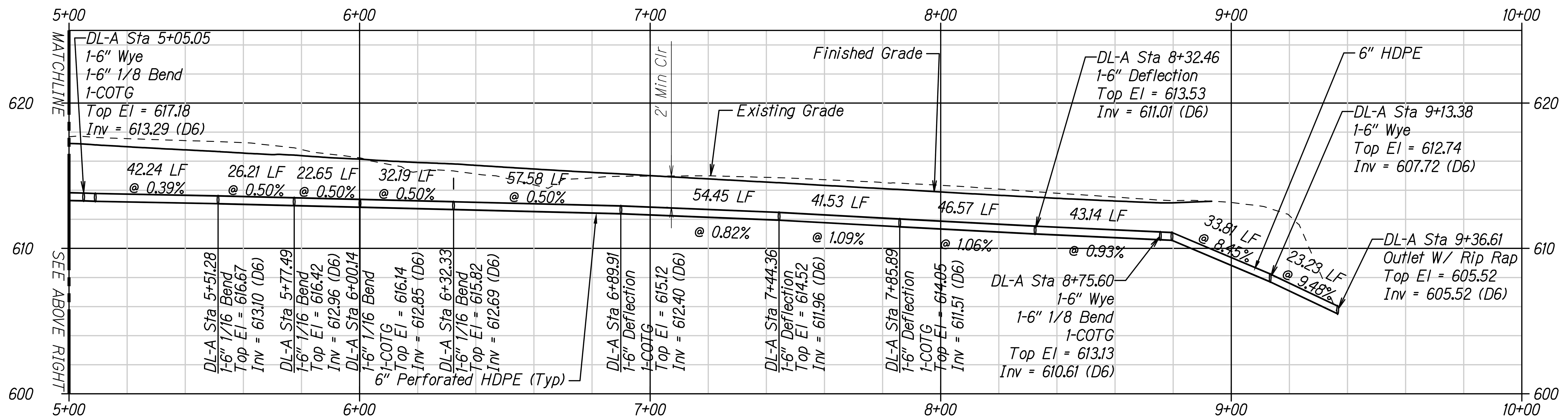
ORIGINAL PLAN	SURVEY PLOTTED BY / DRAWN BY / TRACED BY / DESIGNED BY / QUANTITIES BY / CHECKED BY	DATE
NOTE BOOK No.		

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	HSIP-0130(031)	2013	54	103



6" UNDERDRAIN DL-A PROFILE

Horizontal Scale: 1" = 20'
Vertical Scale: 1" = 4'



6" UNDERDRAIN DL-A PROFILE

Horizontal Scale: 1" = 20'
Vertical Scale: 1" = 4'

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0 4 8 12
VERT: 1" = 4' FEET

0 20 40 60
HORIZ: 1" = 20' FEET

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

UTILITY PROFILE - 1

DL-A

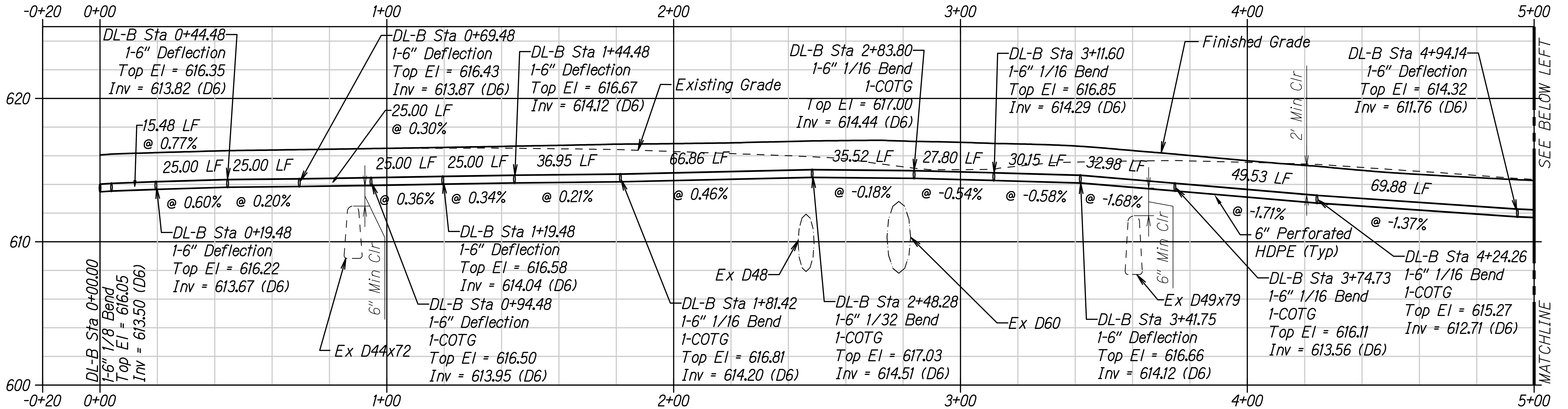
Keaau-Pahoa Road Intersection
Improvements at Old Government Road
Federal-Aid Project No. HSIP-0130(031)

Scale: As Shown Date: April 2013

SHEET No. 4 OF 6 SHEETS

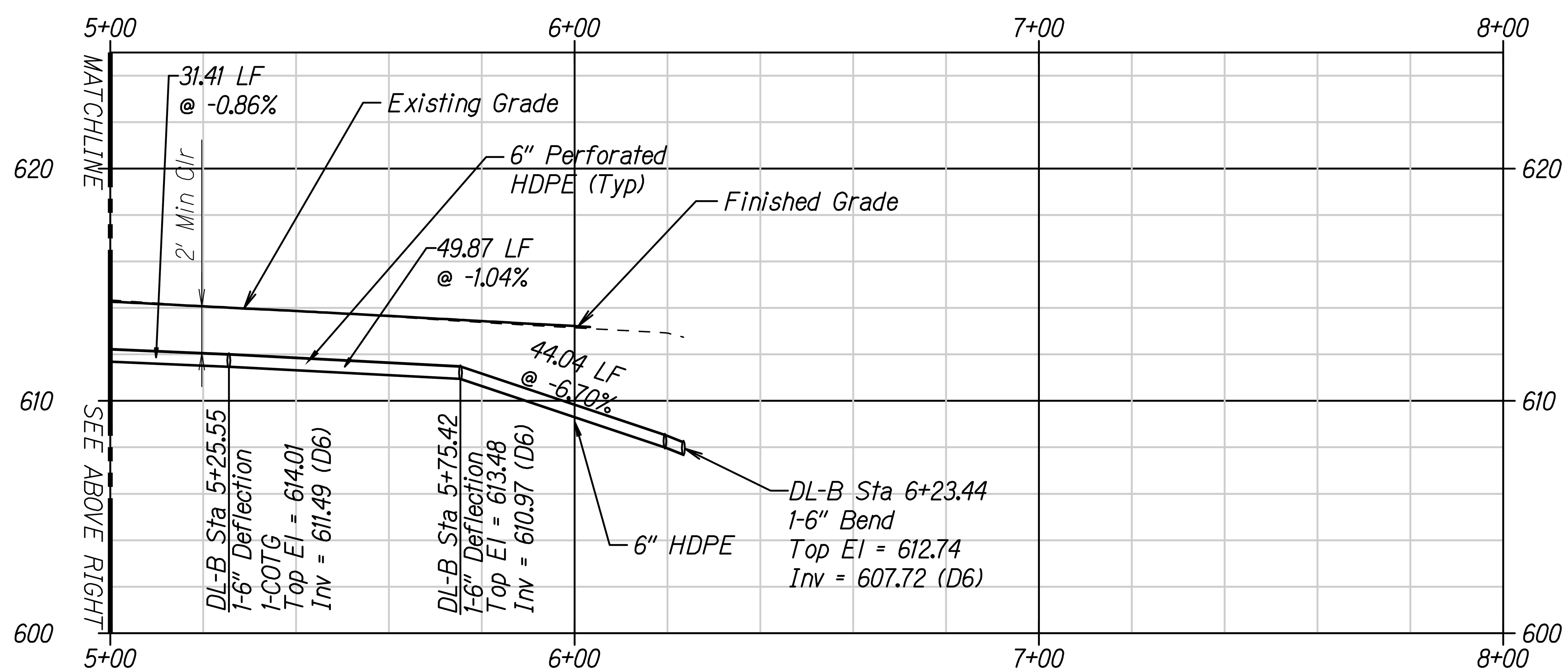
ORIGINAL PLAN | SURVEY PLOTTED BY | DRAWN BY | TRACED BY | DESIGNED BY | QUANTITIES BY | CHECKED BY | NOTE BOOK | No. | DATE

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	HSIP-0130(031)	2013	55	103



6" UNDERDRAIN DL-B PROFILE

Horizontal Scale: 1" = 20'
Vertical Scale: 1" = 4'



6" UNDERDRAIN DL-B PROFILE

Horizontal Scale: 1" = 20'
Vertical Scale: 1" = 4'

VERT: 1" = 4' FEET 0 4 8 12
HORIZ: 1" = 20' FEET 0 20 40 60

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LICENSE EXPIRES 4/30/14
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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
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UTILITY PROFILE - 2

DL-B

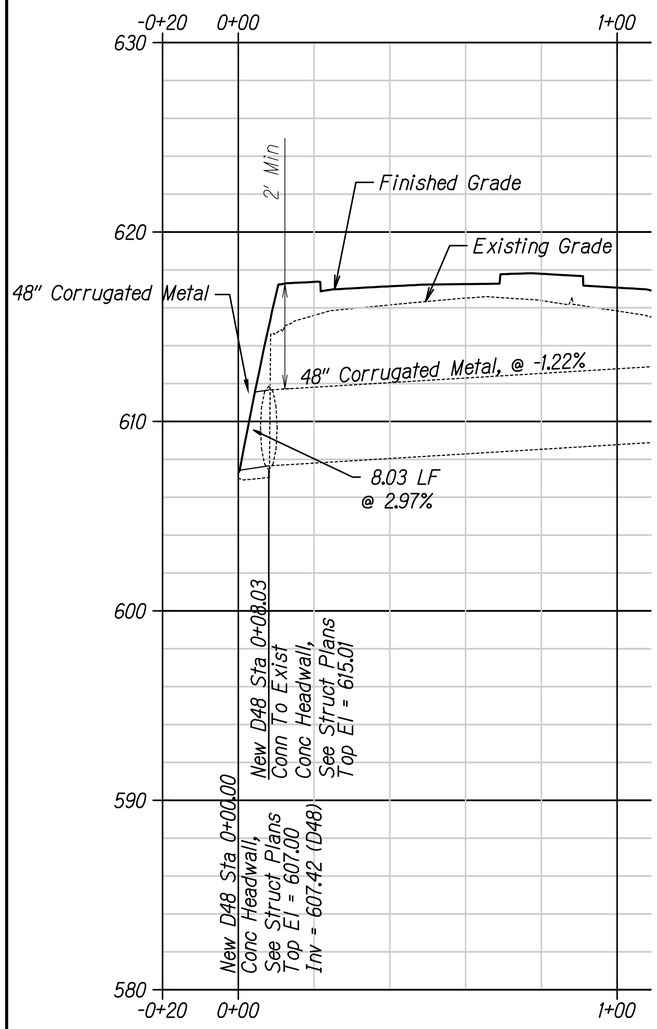
Keaau-Pahoa Road Intersection Improvements at Old Government Road
Federal-Aid Project No. HSIP-0130(031)

Scale: As Shown Date: April 2013

SHEET No. 4 OF 5 SHEETS

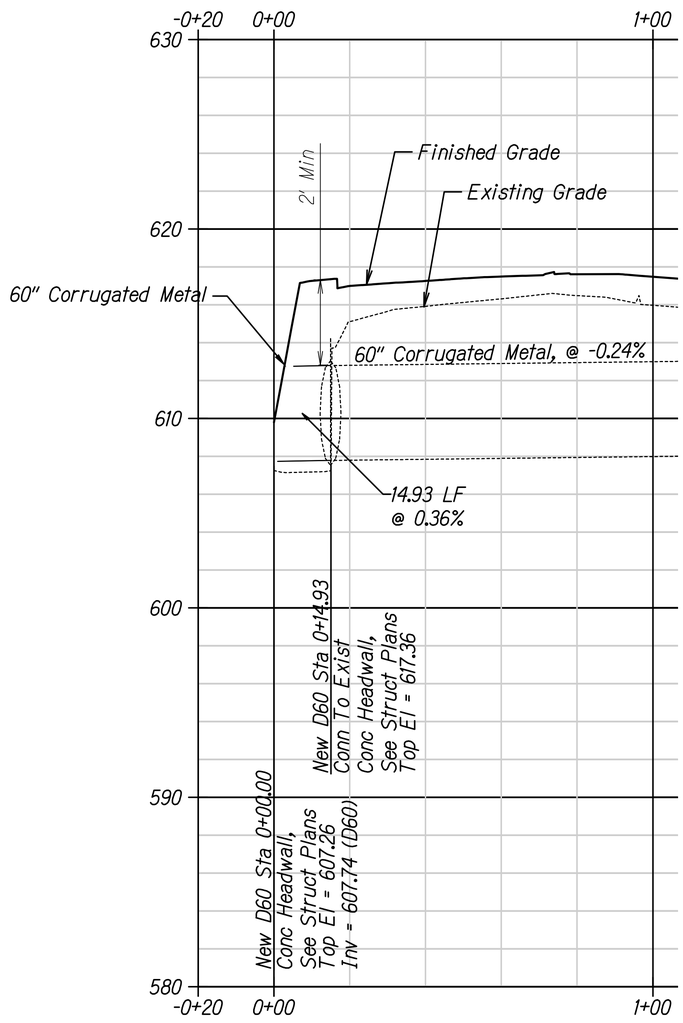
ORIGINAL PLAN / NOTE BOOK / No. — SURVEY PLOTTED BY / DRAWN BY / TRACED BY / DESIGNED BY / QUANTITIES BY / CHECKED BY — DATE

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	HSIP-0130(031)	2013	56	103



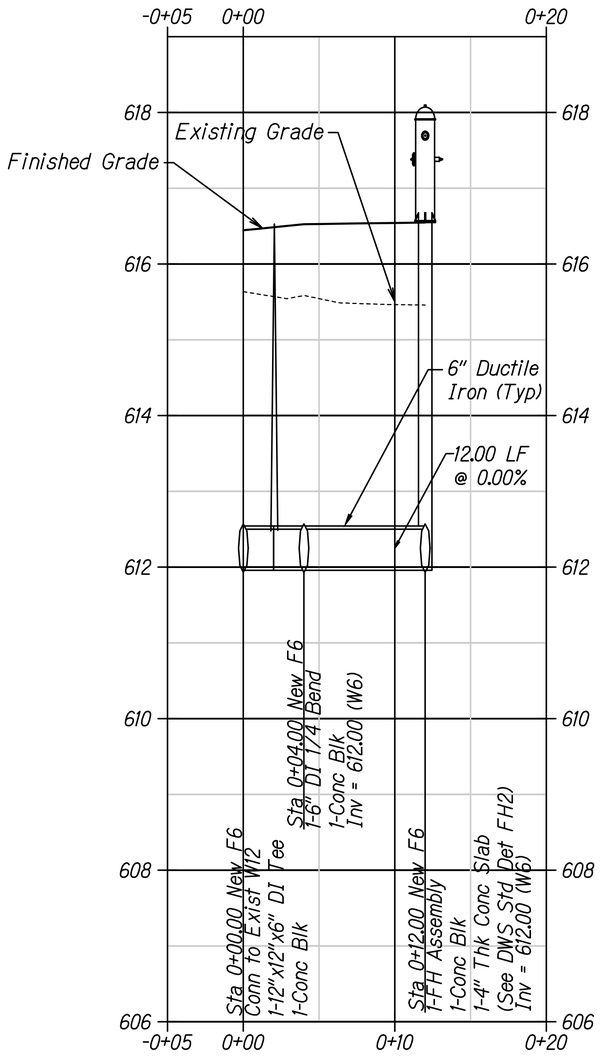
48" DRAIN LINE PROFILE

Horizontal Scale: 1" = 20'
Vertical Scale: 1" = 4'



60" DRAIN LINE PROFILE

Horizontal Scale: 1" = 20'
Vertical Scale: 1" = 4'



6" FIRE LINE PROFILE

Horizontal Scale: 1" = 5'
Vertical Scale: 1" = 1'

0 4 8 12
VERT: 1" = 4' FEET

0 20 40 60
HORIZ: 1" = 20' FEET

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

MINGXUN DING
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HAWAII, U.S.A.

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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

UTILITY PROFILE - 3

D48, D60 & F6

Keaau-Pahoa Road Intersection Improvements at Old Government Road
Federal-Aid Project No. HSIP-0130(031)

Scale: As Shown Date: April 2013

SHEET No. 6 OF 6 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	HSIP-0130(031)	2013	57	103

PAVEMENT MARKING & SIGNAGE NOTES

1. Layout of pavement markings and signage shall be done by the Contractor and approved by the Engineer prior to any installation work.

2. Exist pavement markings not incorporated in the final traffic pattern shall be removed as directed by the Engineer. Costs shall be incidental to the various pavement marking items.

3. Raised pavement markers shall not be installed within crosswalks.

4. Final locations of all signs shall be approved by the Engineer prior to any installation work.

5. Exist 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.

6. Final locations of all Stop Lines shall be approved by the Engineer prior to installation.

7. All pavement markings shall be as noted on the legend or plans.

8. All preformed pavement marking tapes over existing pavement shall be applied with an approved primer as recommended by the tape manufacturer and as approved by the Engineer. The primer shall be allowed to dry to the tacky stage prior to tape application.

9. Removal of Exist Delineators and Posts as directed by the Engineer shall be considered incidental to the various signing items.

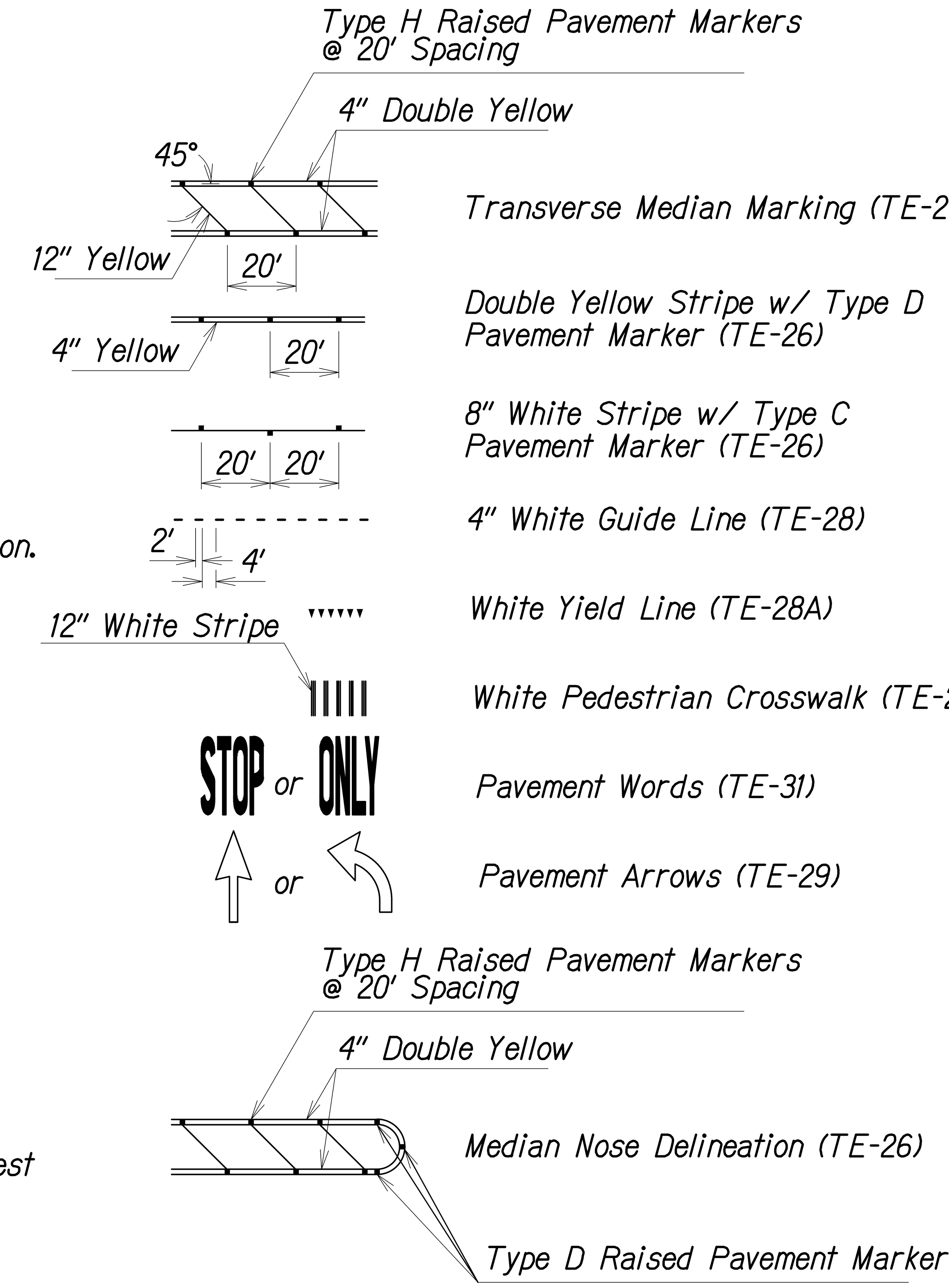
10. Exist signs that are to be replaced shall not be removed until new signs are installed as replacements, or the messages are no longer necessary.

11. Backing for all new regulatory and warning signs shall not be spliced.

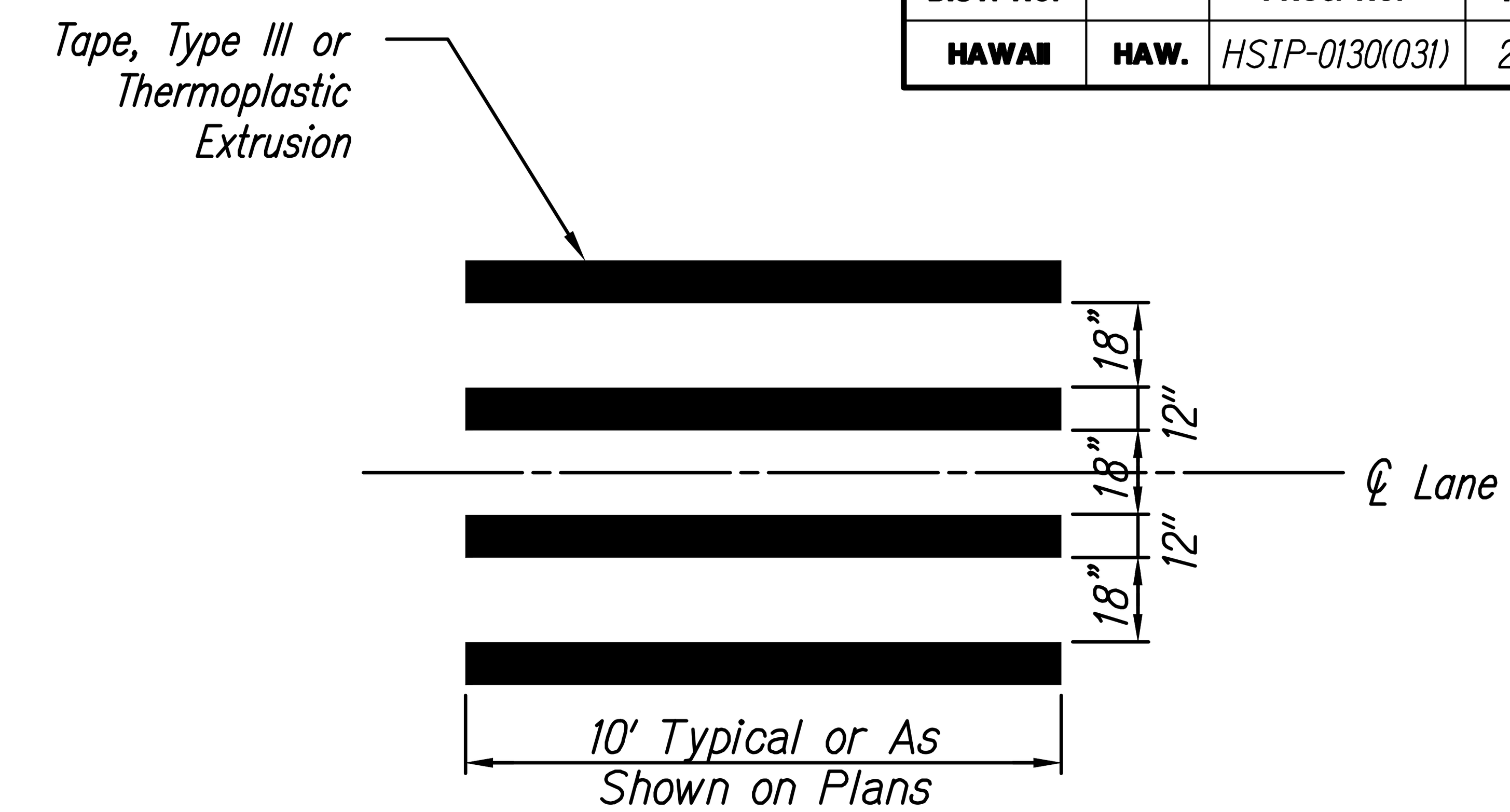
12. All sign panels shall conform to Section 629 to 631 of Special Provisions and the latest editions and amendments of the following FHWA publications:
    a. "Manual on Uniform Traffic Control Devices for Street and Highways" (MUTCD)
    b. "Standard Highway Signs"
    c. "Standard Alphabets for Highway Signs"

13. The Contractor shall erect at the beginning of the project and at the end of the project advance construction warning signs as indicated on the plans or as directed by the Engineer for the duration of the highway project and shall be maintained by the Contractor. These signs shall be placed in addition to the required traffic control signs called for in Section 645-Work Zone Traffic Control. The advance construction warning signs shall be new and become the property of the State. The Contractor shall remove, clean, and deliver the signs and posts to the Oahu District Baseyard or as directed by the Engineer at the end of the project.

LEGEND



- Transverse Median Marking (TE-27)
- Double Yellow Stripe w/ Type D Pavement Marker (TE-26)
- 8" White Stripe w/ Type C Pavement Marker (TE-26)
- 4" White Guide Line (TE-28)
- White Yield Line (TE-28A)
- White Pedestrian Crosswalk (TE-28A)
- Pavement Words (TE-31)
- Pavement Arrows (TE-29)
- Median Nose Delineation (TE-26)



TYPICAL CROSSWALK STRIPING

Not to Scale

MINGXUN DING
LICENSED PROFESSIONAL ENGINEER
NO. 9246-C
HAWAII, U.S.A.

LICENSE EXPIRES 4/30/14

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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

PAVEMENT MARKING AND SIGNAGE NOTES AND LEGEND

Keaau-Pahoa Road Intersection
Improvements at Old Government Road
Federal-Aid Project No. HSIP-0130(031)

Scale: None   Date: April 2013

SHEET No. 1 OF 1 SHEETS

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

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	HSIP-0130(031)	2012	58	103

NOTES:

1. See Dwg. No. 60 & 61 for Signage.
2. Contractor to Tie New & Existing Lines with Smooth Transition.
3. Lane Width Dimensions are from Face of Curb or Edge of Pavement to Center of Stripe.

TRUE NORTH
SCALE : 1" = 40'
4" White
20'
20'
Type "C"
Type "A"
10'
30'
10'
STRIPE DETAIL A
Lane Change Restriction Zone Stripe (TE-27)
Sta 16+43 o/s 28.55'± Lt to
Sta 16+43 o/s 16.40'± Rt
4" White Stripe, R=69'±
Sta 16+22 o/s 19.12'± Lt to
Sta 16+43 o/s 28.55'± Lt
4" Yellow Stripe with
Type H Markers @ 40' o.c.
R=399'±
Pedestrian Crosswalk
Sta 40+00 to Sta 42+00
4" White Stripe with
Type C Markers @ 40' o.c.
Sta 10+93 to Sta 13+64
4" White Stripe per
Stripe Detail A.
Sta 13+41 to Sta 16+12
4" Yellow Stripe with
Type H Markers @ 40' o.c.
Sta 10+34 to Sta 13+41
4" Double Yellow Transverse
Median Marking with Type H
Markers @ 20' o.c.
Pahoa Bypass Road
(Route 130)
MATCH LINE SEE DWG. NO. 58
Varies
Keaau-Pahoa Road
(Route 130)
Pahoa Village Road
Stop Bar
R=25'±
24'
White Yield Line
Sta 9+51 to Sta 10+34
4" Double Yellow Stripe with
Type D Markers @ 20' o.c.
Tie into Exist.
Sta 13+43 to Sta 16+12
4" Yellow Stripe with
Type H Markers @ 40' o.c.
Sta 16+43 o/s 16.40'± Rt to
Sta 16+56 o/s 42.44'± Rt
4" White Guide Line, R=124'±
Sta 13+48 o/s 19'± Rt to
Sta 13+75 o/s 75'± Rt
4" White Stripe, R=50'±
Sta 40+00 to Sta 42+71
4" Double Yellow with
Type D Markers @ 20' o.c.
Sta 8+78 o/s 12'± Rt to
Sta 14+00 o/s 75'± Rt
4" White Stripe with
Type C Markers @ 40' o.c.
Tie into Exist.
Sta 40+42 to Sta 43+00
4" White Stripe with
Type C Markers @ 40' o.c.
Sta 39+85 o/s 23'± Rt to
Sta 39+85 o/s 80'± Rt
4" Double Yellow with
Type D Markers @ 20' o.c.
Sta 39+96 o/s 23'± Rt to
Sta 39+96 o/s 80'± Rt
8" White Stripe
Sta 16+22 o/s 10.21'± Rt to
Sta 16+43 o/s 16.40'± Rt
4" Yellow Stripe with
Type H Markers @ 40' o.c.
R=160'±
0 40 80 120
HORIZ: 1" = 40' FEET

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LICENSE EXPIRES 4/30/14

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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

PAVEMENT MARKING PLAN

Keaau-Pahoa Road Intersection Improvements at Old Government Road
Federal-Aid Project No. HSIP-0130(031)

Scale: Date: April 2013

SHEET No. 1 OF 3 SHEETS

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

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	HSIP-0130(031)	2012	59	103

TRUE NORTH
SCALE : 1" = 40'

Sta 17+72 o/s 25.01'± Lt to Sta 17+71 o/s 17.23'± Rt
4" White Stripe, R=69'±

Sta 17+39 o/s 57.99'± Rt to Sta 17+60 o/s 42.88'± Rt
4" White Guide Line, R=140'±

Sta 16+98 o/s 66.72'± Lt to Sta 17+39 o/s 57.99'± Rt
4" White Stripe, R=69'±

White Yield Line

Sta 17+59 o/s 49.95'± Lt to Sta 17+72 o/s 25+01'± Lt
4" White Guide Line, R=93'±

Keaau-Pahoa Road (Route 130)

Sta 17+72 to Sta 17+95
4" Yellow Stripe with Type H Markers @ 40' o.c.

Pedestrian Crosswalk

Sta 18+07 to Sta 20+13
4" Yellow Stripe with Type H Markers @ 40' o.c.

Sta 20+13 to Sta 22+81
4" Double Yellow Transverse Median Marking with Type H Markers @ 20' o.c.

Sta 20+19 to Sta 22+00
4" White Stripe with Type C Markers @ 40' o.c.

Sta 22+00
Tie into Exist.

Pahoa Bypass Road (Route 130)

MATCH LINE SEE DWG. NO. 57

Sta 18+06 to Sta 20+13
4" Yellow Stripe with Type H Markers @ 40' o.c.

Pedestrian Crosswalk

Sta 19+98 to Sta 21+30
4" White Guide Line

Sta 21+30 to Sta 22+81
4" White Stripe per Stripe Detail A.

Sta 22+81
Tie into Exist.

Sta 21+30 to Sta 22+81
4" White Stripe with Type C Markers @ 40' o.c.

Sta 17+71 o/s 17.23'± Rt to Sta 17+97 o/s 10.38'± Rt
4" Yellow Stripe with Type H Markers @ 40' o.c. R=679'±

Sta 16+97 o/s 66.97'± Rt to Sta 17+07 o/s 85.83'± Rt
4" Yellow Stripe with Type H Markers @ 40' o.c. R=554'±

Sta 17+60 o/s 42.88'± Rt to Sta 17+73 o/s 35.19'± Rt
4" White Stripe

Sta 0+94 o/s 12.53'± Rt to Sta 2+20 o/s 1'± Rt
4" Yellow Stripe with Type H Markers @ 40' o.c. R=554'±

Sta 17+54 o/s 59.45'± Rt to Sta 17+60 o/s 42.88'± Rt
4" White Stripe

White Yield Line

Sta 1+27 o/s 3.60'± Rt to Sta 1+50 o/s 0.75'± Rt
4" Double Yellow Stripe with Type D Markers @ 20' o.c. R=554'±

Sta 1+32 o/s 17.47'± Rt to Sta 2+16 o/s 14.09'± Rt
4" White Guide Line, R=340'±

12" White Stripe

Sta 42+45 to Sta 42+71
4" Double Yellow with Type D Markers @ 20' o.c.

Pedestrian Crosswalk

SEE INSET

Stop Bar

Sta 43+00 to Sta 46+38
4" White Stripe with Type C Markers @ 40' o.c.

Sta 43+32 to Sta 44+60
4" Double Yellow Stripe with Type D Markers @ 20' o.c.
8" White Stripe with Type C Markers @ 40' o.c.

Sta 44+60 to Sta 45+22
4" White Guide Line

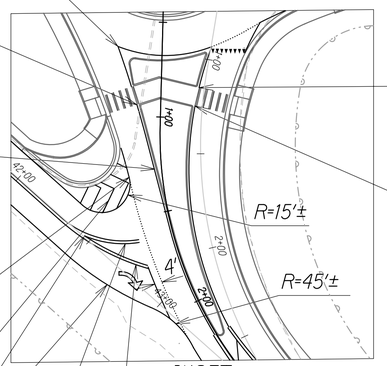
Sta 44+15 to Sta 46+46
4" White Stripe with Type C Markers @ 40' o.c.
Tie into Exst.

Sta 44+69 to Sta 46+18
4" Double Yellow Transverse Median Marking with Type H Markers @ 20' o.c.

Sta 46+18 to Sta 46+38
4" Double Yellow with Type D Markers @ 20' o.c.
Tie into Exist.

Pahoa Village Road

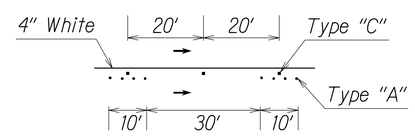
Kahakai Boulevard (County)



INSET
Scale: 1"=40'

Sta 17+35 o/s 80.21'± Rt to Sta 17+39 o/s 57.99'± Rt
4" Yellow Stripe with Type H Markers @ 40' o.c. R=172'±

Sta 0+94 o/s 18.14'± Rt to Sta 2+20 o/s 7.48'± Lt
4" Yellow Stripe with Type H Markers @ 40' o.c. R=172'±



STRIPE DETAIL A
Lane Change Restriction Zone Stripe (TE-27)

0 40 80 120
HORIZ: 1" = 40' FEET

MINGXUN DING
LICENSED PROFESSIONAL ENGINEER
NO. 9246-C
HAWAII, U.S.A.

LICENSE EXPIRES 4/30/14

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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

PAVEMENT MARKING PLAN

Keaau-Pahoa Road Intersection Improvements at Old Government Road
Federal-Aid Project No. HSIP-0130(031)

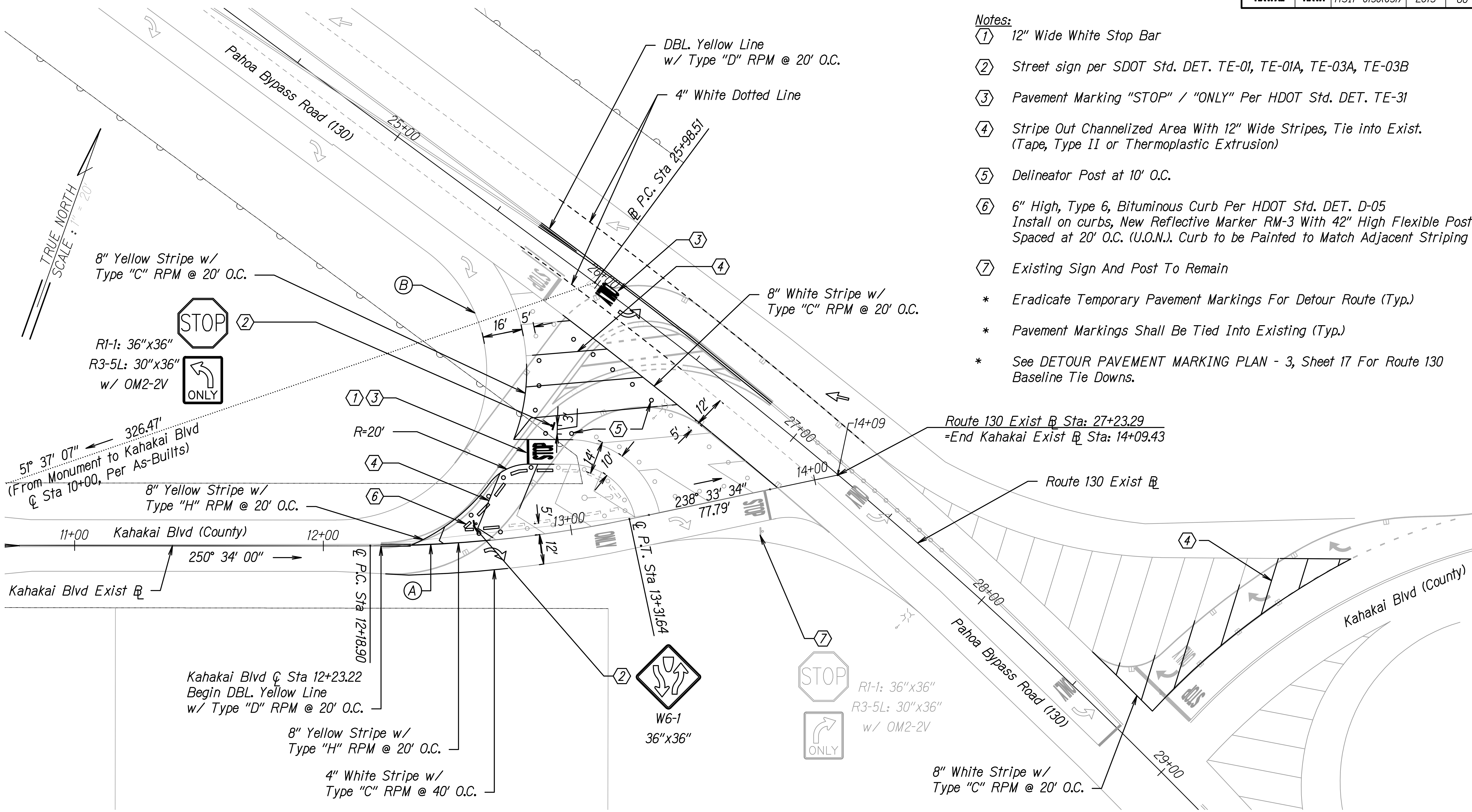
Scale: Date: April 2013

SHEET No. 2 OF 3 SHEETS

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

PLOT DATE: ccccSYSTIME$$
LAST UPDATE: ccccSYSTIME$$
PATH/FILENAME: ccccc:\DGN\SPEC\FICATION\ccccc

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	HSIP-0130(031)	2013	60	103



Notes:

1. 12" Wide White Stop Bar
2. Street sign per SDOT Std. DET. TE-01, TE-01A, TE-03A, TE-03B
3. Pavement Marking "STOP" / "ONLY" Per HDOT Std. DET. TE-31
4. Stripe Out Channelized Area With 12" Wide Stripes, Tie into Exist. (Tape, Type II or Thermoplastic Extrusion)
5. Delineator Post at 10' O.C.
6. 6" High, Type 6, Bituminous Curb Per HDOT Std. DET. D-05 Install on curbs, New Reflective Marker RM-3 With 42" High Flexible Post Spaced at 20' O.C. (U.O.N.). Curb to be Painted to Match Adjacent Striping
7. Existing Sign And Post To Remain

* Eradicate Temporary Pavement Markings For Detour Route (Typ.)

* Pavement Markings Shall Be Tied Into Existing (Typ.)

* See DETOUR PAVEMENT MARKING PLAN - 3, Sheet 17 For Route 130 Baseline Tie Downs.

Curve Data					
Mark	R	Lc	Δ	C	Desc.
A	500'	112.74'	12°00'26"	112.50'	C.L.
B	60'	150.34'	143°34'00"	113.99'	W.L.

ROADWAY PAVEMENT MARKING PLAN

Scale: 1" = 20'

0 20 40 60
HORIZ: 1" = 20' FEET

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DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

ROADWAY PAVEMENT MARKING PLAN

Keaau-Pahoa Road Intersection Improvements at Old Government Road
Federal-Aid Project No. HSIP-0130(031)

Scale: 1" = 20' Date: April 2013

SHEET No. 3 OF 3 SHEETS

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

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	HSIP-0130(031)	2012	61	103

KEYS:

1. Remove Exist. Sign(s) & Post(s)
2. Remove Exist. Sign(s) w/Post(s); Relocate & Reinstall Exist. Sign(s) w/ New Post(s)
3. Exist. Sign(s) & Post(s) to Remain
4. Install New Sign(s) & Post(s)
5. Remove Exist. Sign(s) w/ Post(s); Install New Sign(s) w/ New Post(s)
6. Relocate Exist. Sign(s)

TRUE NORTH
SCALE : 1" = 40'
Pahoa Bypass Road
(Route 130)
Keaau-Pahoa Road
(Route 130)
Pahoa Village Road
MATCH LINE SEE DWG. NO. 61
R1-2 36"x36" 4
See Sheet 62 for Details 4
Keaau
W11-2 36"x36" W16-7p(L) 24"x12" 4
R5-3 24"x24" 1
NO MOTOR VEHICLES
W11-2 36"x36" W16-7p(L) 24"x12" 4
R4-7 24"x30" 4
ONE WAY
R6-1(R) 36"x12" 4
R8-3A 24"x24" R8-3AE 24"x18" 1
ANY TIME
3 KAULUNANI
SPEED LIMIT 35
4 R2-1 24"x30"
SPEED LIMIT 45
2 R2-1 24"x30" Relocate 700' NW Along Hwy from Current Location
20 MPH
4 W2-6 36"x36" W13-1(20)-A 24"x24"
1 W1-8(L) 18"x24"
ONLY
RIGHT LANE
4 R3-5(R) 30"x36" R3-5fP 30"x12"
1 R8-3A 24"x24" R8-3AE 24"x18"
1 W1-8(L) 18"x24"
1 R8-3A 24"x24" R8-3AE 24"x18"
4 R3-5(R) 30"x36" R3-5fP 30"x12"
1 W1-8(L) 18"x24"
1 W1-8(L) 18"x24"
DO NOT ENTER
4 R5-1 30"x30"
1 W1-8(L) 18"x24"
STOP
2 R1-1 30"x30"
4 R6-1(R) 36"x12"
3 R8-3A 24"x24" R8-3AE 24"x18"
ROAD ENDS
1 W14-1 36"x36"
4 R3-5(R) 30"x36" R3-5fP 30"x12"
Pahoa Marketplace NEXT RIGHT
4 See Sheet 62 for Details Temporary for 60 Days After Construction
VOLCANO HERITAGE CORRIDOR
2
Pahoa Village NEXT RIGHT
1
FOOD-SHOPS GAS-LODGING
2
NEW TRAFFIC PATTERN AHEAD
4 W23-2 36"x36" With Flags Temporary Place 775' Ahead of W2-6 for 60 Days After Construction
Kalapana 11
Pahoa Village
4
1
6 Heritage Town
LIONS
6
See Sheet 62 for Details
0 40 80 120
HORIZ: 1" = 40' FEET

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LICENSED PROFESSIONAL ENGINEER
NO. 9246-C
HAWAII, U.S.A.

LICENSE EXPIRES 4/30/14

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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

SIGNAGE PLAN

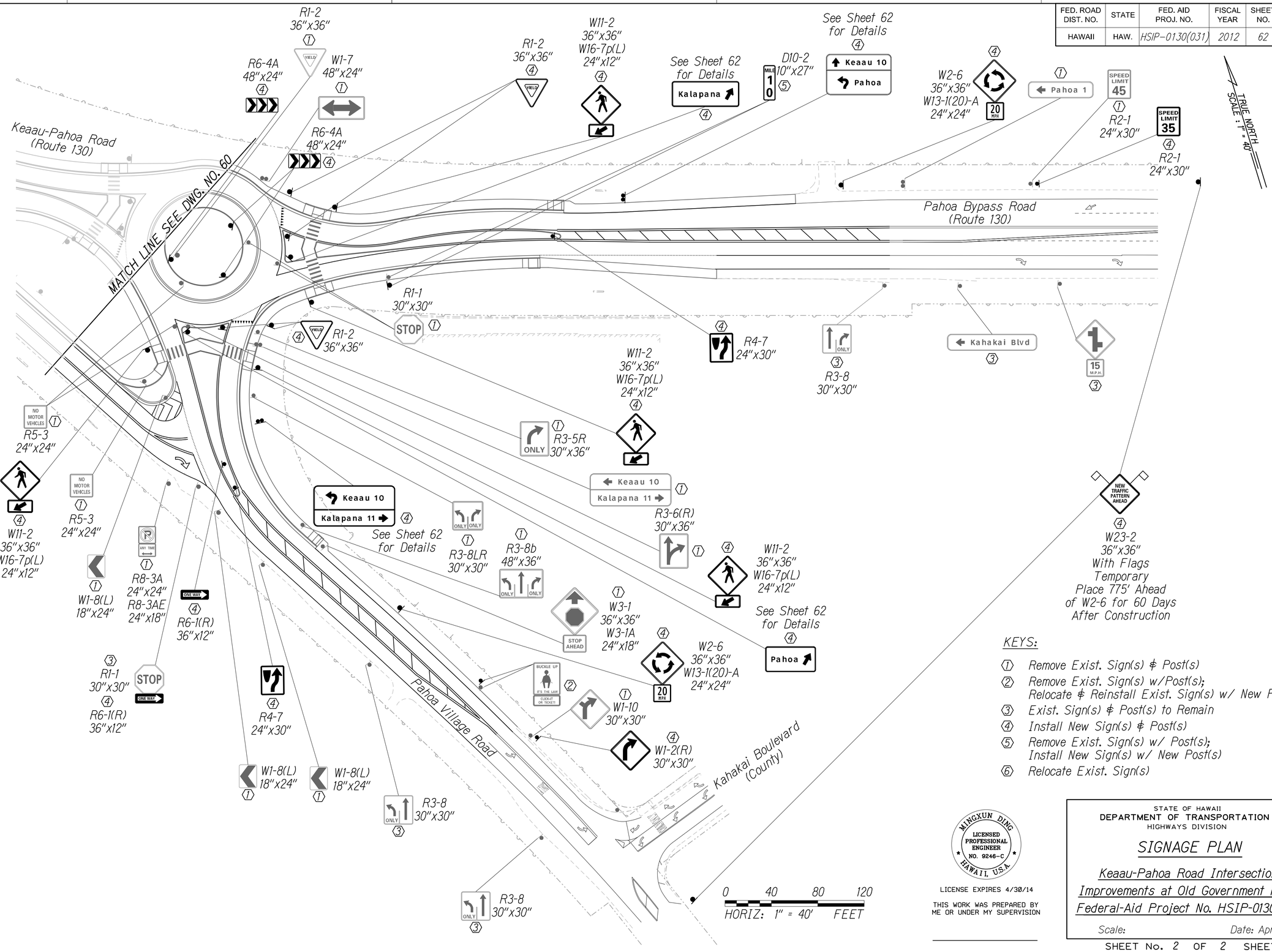
Keaau-Pahoa Road Intersection Improvements at Old Government Road
Federal-Aid Project No. HSIP-0130(031)

Scale: Date: April 2013

SHEET No. 1 OF 2 SHEETS

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

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	HSIP-0130(031)	2012	62	103



KEYS:

1. Remove Exist. Sign(s) & Post(s)
2. Remove Exist. Sign(s) w/Post(s); Relocate & Reinstall Exist. Sign(s) w/ New Post(s)
3. Exist. Sign(s) & Post(s) to Remain
4. Install New Sign(s) & Post(s)
5. Remove Exist. Sign(s) w/ Post(s); Install New Sign(s) w/ New Post(s)
6. Relocate Exist. Sign(s)

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LICENSED PROFESSIONAL ENGINEER
NO. 9246-C
HAWAII, U.S.A.

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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

SIGNAGE PLAN

Keaau-Pahoa Road Intersection Improvements at Old Government Road
Federal-Aid Project No. HSIP-0130(031)

Scale: Date: April 2013

SHEET No. 2 OF 2 SHEETS

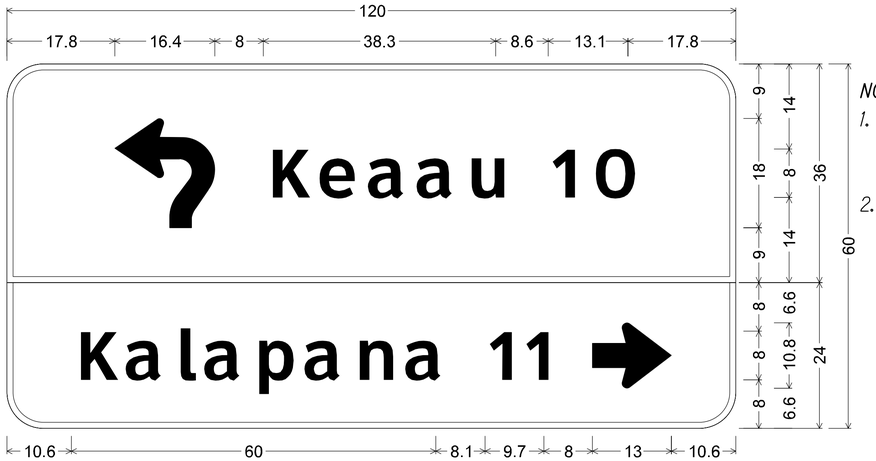
62

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

PLOT DATE: ccccSYSTIME$$
LAST UPDATE: ccccSYSTIME$$
PATH/FILENAME: ccccDGNSPECIFICATIONcccc

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	HSIP-0130(031)	2012	63	103

6.0" Radius, 1.0" Border, White on Green;
Standard Arrow Custom 13.0" X 10.8" 90°; [Kalapana 11] ClearviewHwy-5-W;
6.0" Radius, 1.0" Border, White on Green;
[Pahoa Village] ClearviewHwy-5-W; Standard Arrow Custom 13.0" X 10.8" 0°;

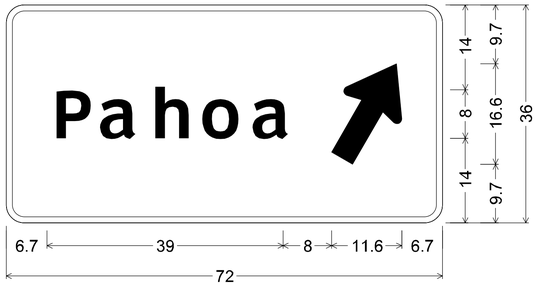


6.0" Radius, 1.0" Border, White on Green;
Roundabout Arrow - 8"; [Keaau 10] ClearviewHwy-5-W;
6.0" Radius, 1.0" Border, White on Green;
[Kalapana 11] ClearviewHwy-5-W; Standard Arrow Custom 13.0" X 10.8" 0°;

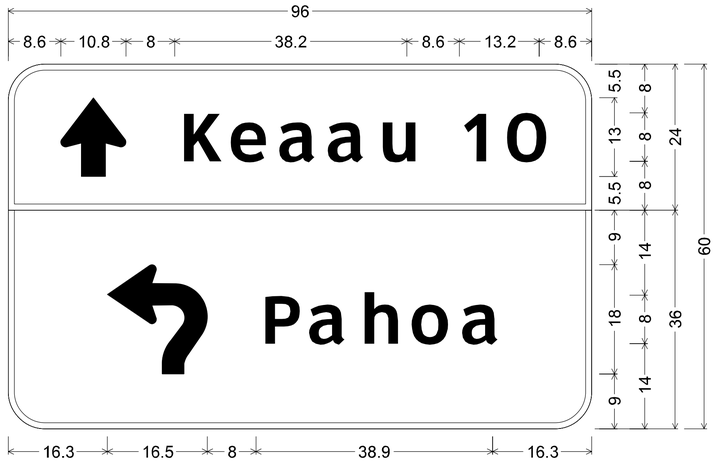
NOTES:

1. All Letters and Figures Shall Conform to the Latest Edition of FHWA Publication "Standard Alphabets for Highway Signs" and as Amended.
2. For Sign Panel Mounting Details Refer to "Laminated Aluminum Sign Panels (Ground Mounted)" TE-23 of the State Highways Standard Plans.

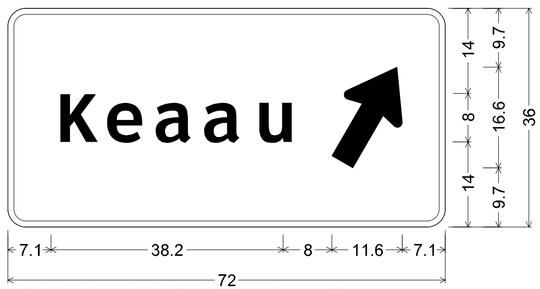
3.0" Radius, 1.0" Border, White on Green;
[Kalapana] ClearviewHwy-5-W;
Standard Arrow Custom 18.0" X 10.8" 60°;



3.0" Radius, 1.0" Border, White on Green;
[Pahoa] ClearviewHwy-5-W;
Standard Arrow Custom 18.0" X 10.8" 60°;



6.0" Radius, 1.0" Border, White on Green;
Standard Arrow Custom 13.0" X 10.8" 90°; [Keaau 10] ClearviewHwy-5-W;
6.0" Radius, 1.0" Border, White on Green;
Roundabout Arrow - 8"; [Pahoa] ClearviewHwy-5-W;



3.0" Radius, 1.0" Border, White on Green;
[Keaau] ClearviewHwy-5-W;
Standard Arrow Custom 18.0" X 10.8" 60°;

6.0" Radius, 1.0" Border, Black on Orange;
[Pahoa Marketplace] ClearviewHwy-3-W; [NEXT RIGHT] ClearviewHwy-3-W;

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

MINGXUN DING
LICENSED PROFESSIONAL ENGINEER
NO. 9246-C
HAWAII, U.S.A.

LICENSE EXPIRES 4/30/14

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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

SIGN DETAILS

Keaau-Pahoa Road Intersection Improvements at Old Government Road
Federal-Aid Project No. HSIP-0130(031)

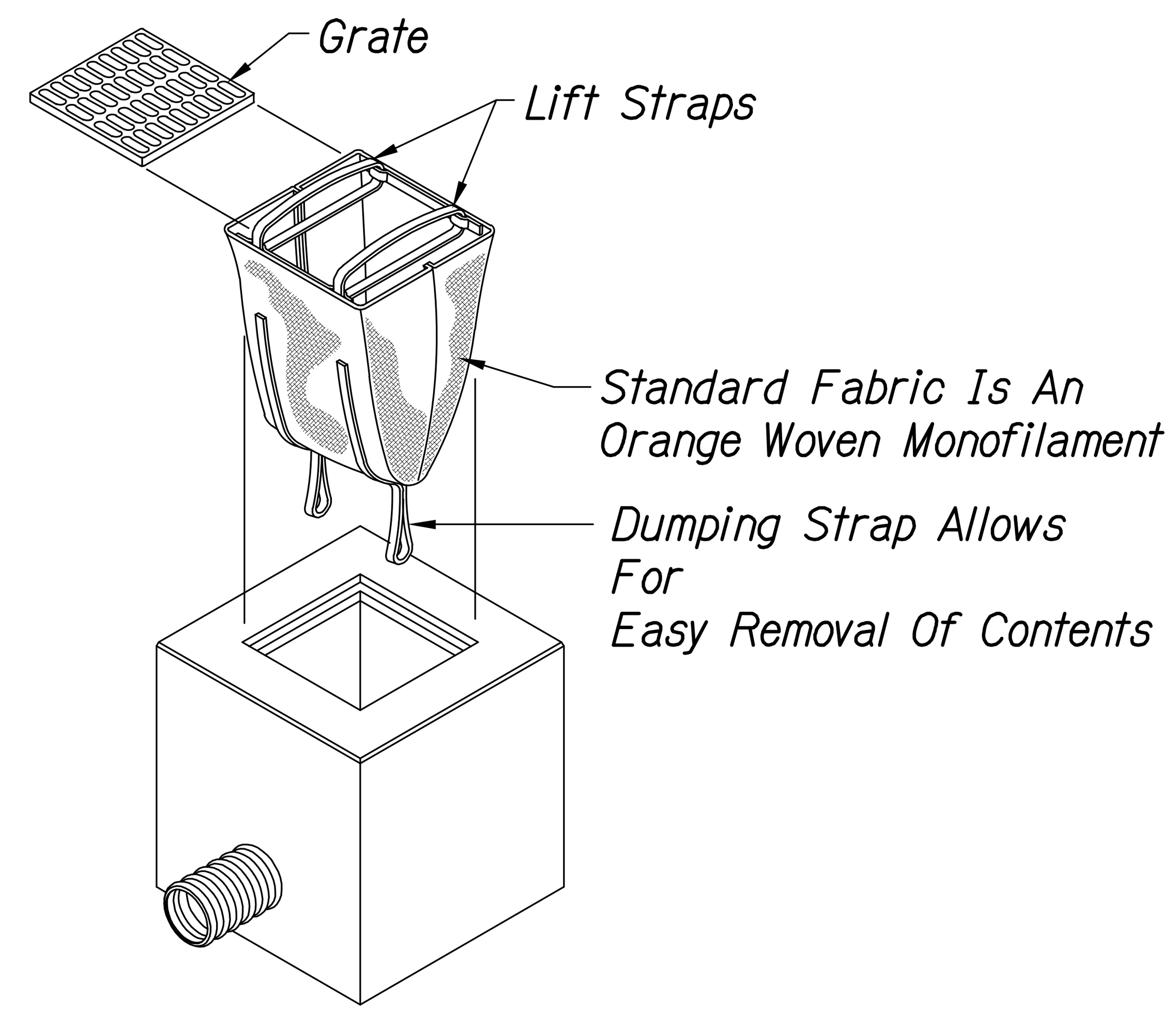
Scale:

Date: April 2013

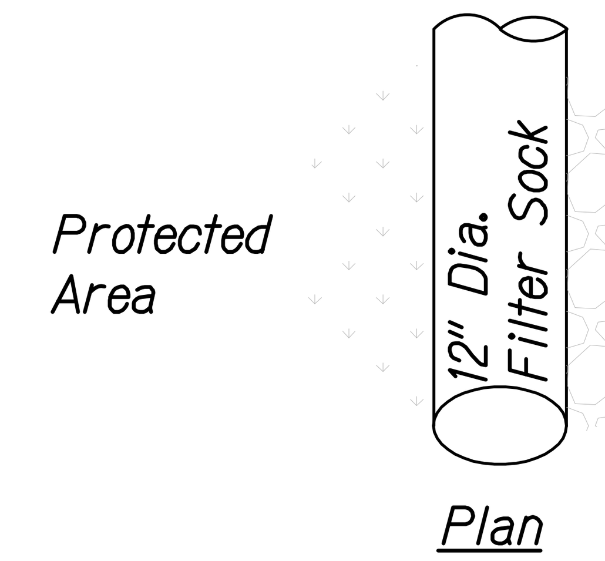
SHEET No. 1 OF 1 SHEETS

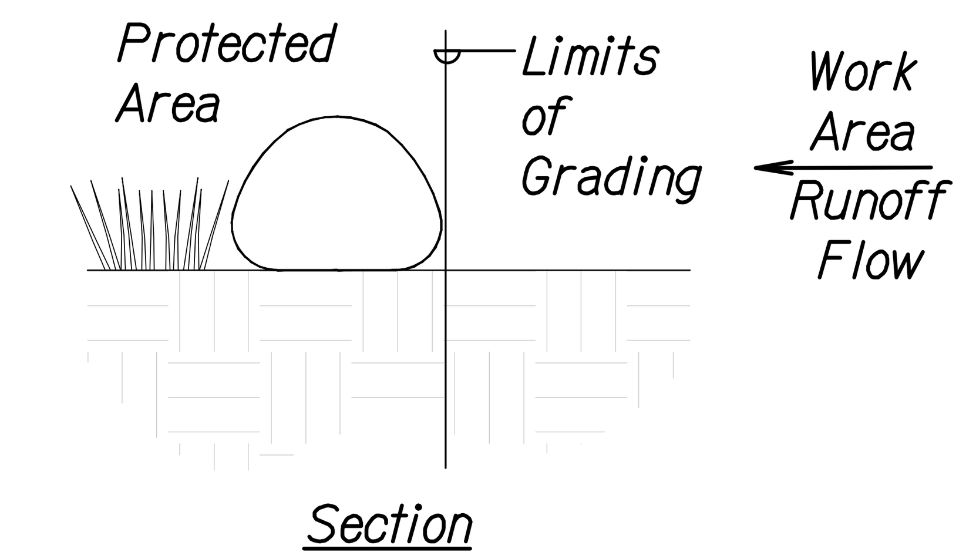
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	HSIP-0130(031)	2013	64	103

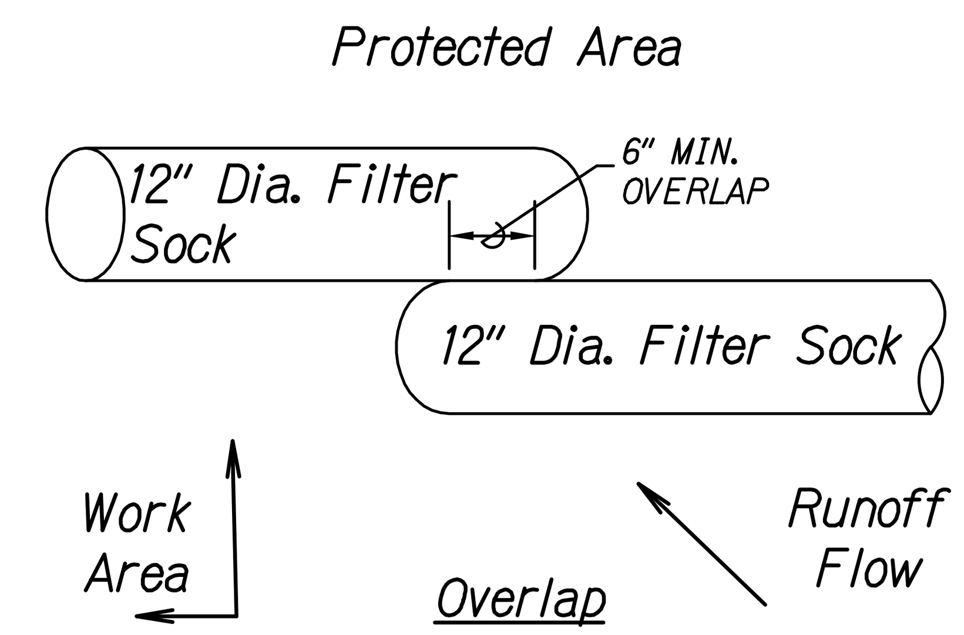
Notes:
1. The Contractor Shall Remove Filters During Times of Above Normal Rainfall Events and Replace Them When Event Has Passed.
2. The Contractor Shall Remove All Accumulated Sediment and Debris From Vicinity of Unit After Each Storm Event. The Sediment Bag Should be Checked After Each Storm Event and at Regular Intervals. If the Containment Area is More Than 1/3 Full of Sediment, the Unit Must be Emptied.



FILTER BAG FOR GRATED DRAIN INLET
Scale: Not to Scale

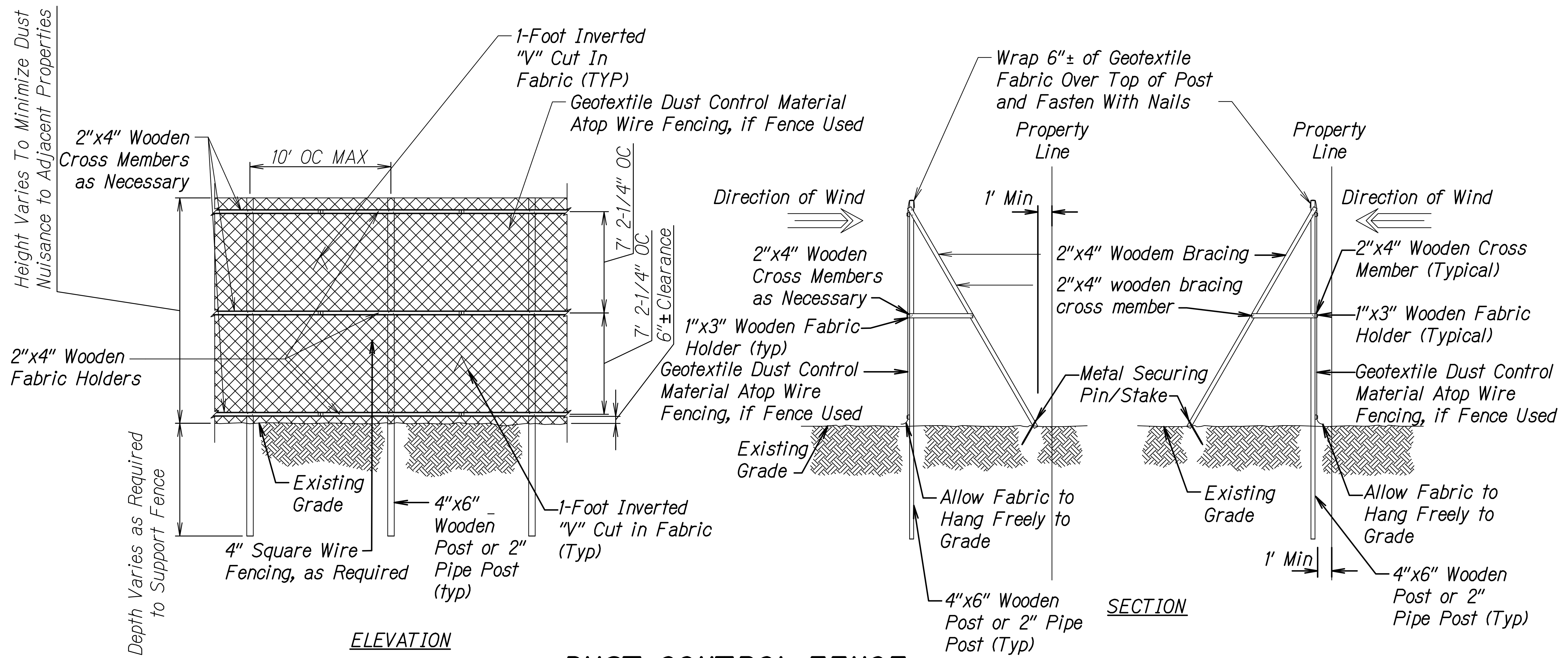






Notes:
1. Installation, Inspection, Maintenance and Removal of Compost Filter Socks Shall be Done in Accordance With Manufacturer's Recommendations.
2. Provide Necessary Training for Personnel Who Will be Responsible for Implementation of BMPs.

FILTER SOCK
Scale: Not to Scale



DUST CONTROL FENCE
Scale: Not to Scale

Notes:
1. Cross Members and Posts of the Wooden Fence Frame Shall be Held Together With Galvanized Steel Flathead Screws.
2. Wooden Fabric Holders Shall Fasten the Geotextile Fabric to the Wooden Fence Frame with Galvanized Steel Flathead Screws; Wire Ties Shall be Used if Pipe Posts are Used.
3. Wooden Bracing Pieces Shall be Attached to the Wooden Fence Frame With Galvanized Steel Flathead Screws.
4. Height of Fence Shall be Field-adjusted by the Contractor to Keep the Project Area and Surrounding Area Free From Dust Nuisance as Indicated in Grading Note 3.
5. Appropriate Depth of Wooden or Pipe Fence Frame Posts Shall be Determined in Field by the Contractor.
6. Dust Control Fence shall be located outside of clear zone.

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EROSION CONTROL DETAILS

Keaau-Pahoa Road Intersection Improvements at Old Government Road
Federal-Aid Project No. HSIP-0130(031)

Scale: None   Date: April 2013

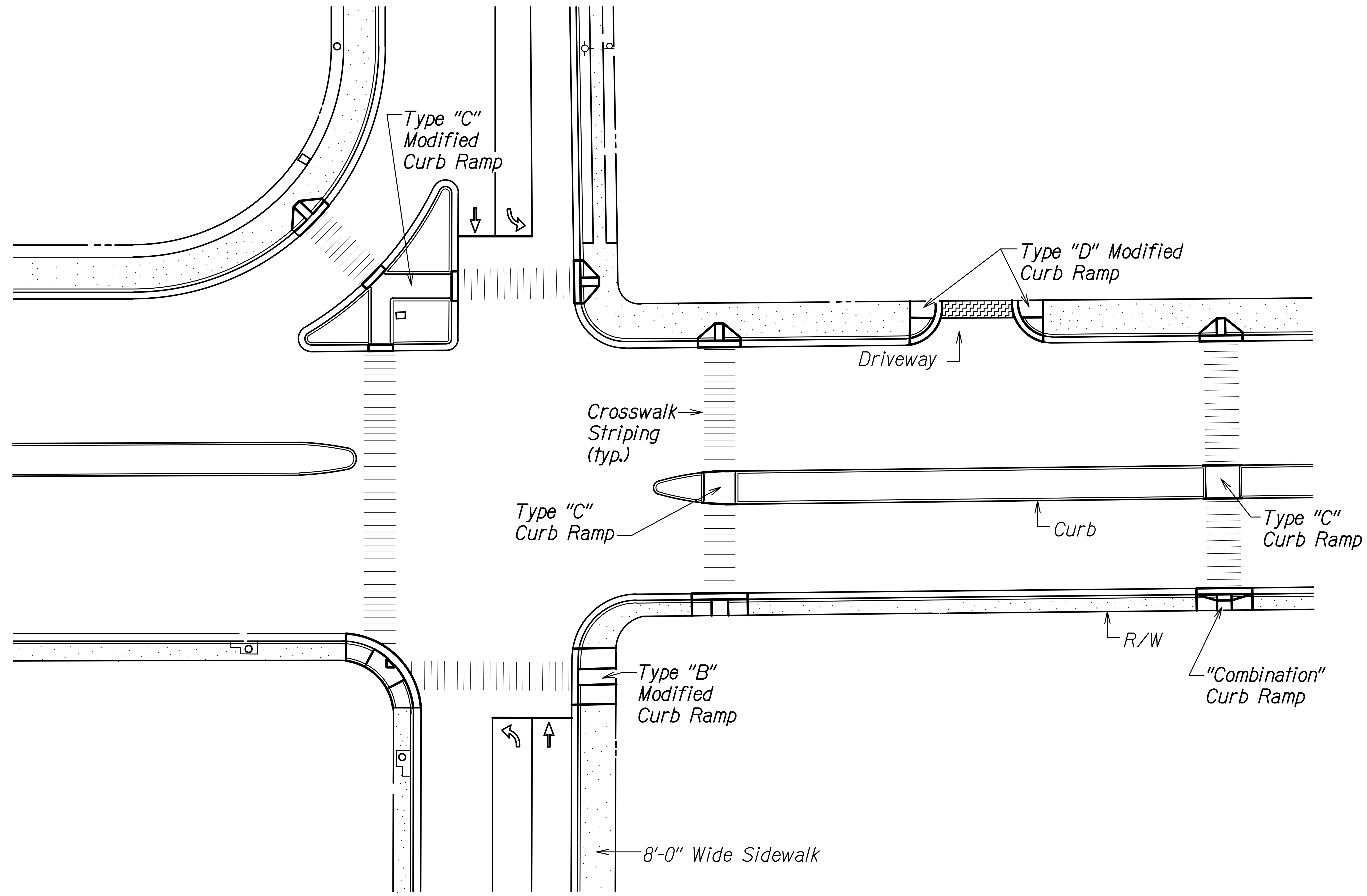
SHEET No. 1 OF 1 SHEETS

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

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	HSIP-0130(031)	2013	65	103

CURB RAMP AND SIDEWALK NOTES:

1. These typical details are intended as curb ramp guidelines for design and construction. These guidelines shall not replace site specific curb ramp plans.
2. A 2% maximum cross slope shall be maintained in the direction of pedestrian traffic.
3. Subject to field conditions, the Engineer shall determine the final location of curb ramps.
4. All pullboxes shall be installed away from the curb ramp and within the sidewalk/unpaved area to the maximum extent feasible.
5. Where necessary, existing pullboxes, handholes, manholes, etc. shall be adjusted to match curb ramp grade. Adjustments shall not be paid for separately but shall be considered incidental to the various curb ramp items unless indicated otherwise.
6. Transitions from ramps to gutters and roadways shall be flush.
7. Curb ramps and sidewalks shall be constructed to eliminate ponding to the maximum extent feasible.
8. The maximum slopes of adjoining gutters or road surface immediately fronting the curb ramp shall not exceed 5% for Type A, D and Combination ramps and 8.33% for Type B, C, and E ramps.
9. There shall be a 30"x48" level ground surface (2% max. cross slope, both directions) for a forward or side approach, as appropriate, to a pedestrian push button.
10. Construction joints are required to join curb ramps with sidewalks.
11. Unless otherwise noted, new gutters are required as shown.
12. All curb ramps shall be reinforced with 6x6 W1.4/W1.4 welded wire fabric.
13. Surface of sidewalks and curb ramps shall be firm, stable, and slip-resistant. This includes the surfaces of pullboxes, valve covers, manhole covers, etc.
14. Bed course material is required for curb ramps, sidewalks, and gutters.
15. All sidewalks shall provide a minimum clear width of 3'-0" (excluding curb) for pedestrian circulation. If this cannot be met, a minimum 32-inch clear width is allowed for a distance of 24-inches.
16. Passing spaces along new sidewalks with 5' clear width or less shall be provided at maximum 200' intervals as required by ADA guidelines. The passing area shall be a minimum 5' wide by 5' long as feasible.
17. If possible, install utility poles, fire hydrants, light poles, sign posts, pullboxes, etc. off of sidewalk but within the right-of-way.
18. Objects protruding from utility poles and walls adjacent to the sidewalks (i.e. wall mounted fire hydrants, telephones, meters on poles, etc.) shall be mounted to meet the current American with Disabilities Act Accessibility Guidelines (ADAAG) and will be subject to Engineer's approval.
19. If a curb ramp is not constructed according to the plans, the Contractor shall reconstruct the curb ramp at no cost to the State. Construction tolerance for Portland Cement Concrete shall be based on ,inch per 10 ft. (±0.2%). Remedial measures will not be accepted.



TYPICAL CURB RAMPS

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ACCESSIBLE DETAILS

CURB RAMP AND SIDEWALK NOTES

Keaau-Pahoa Road Intersection Improvements at Old Government Road
Federal-Aid Project No. HSIP-0130(031)

Scale: None Date: April 2013

SHEET No. 1 OF 6 SHEETS

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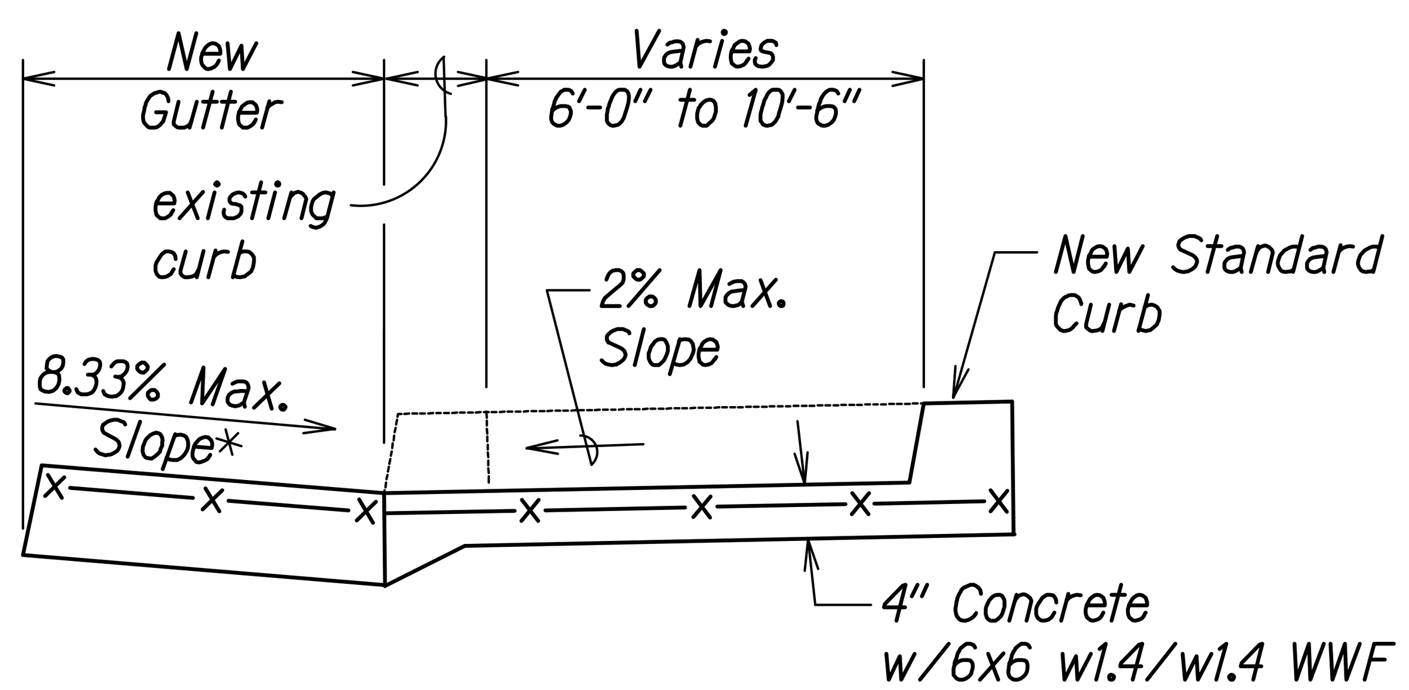

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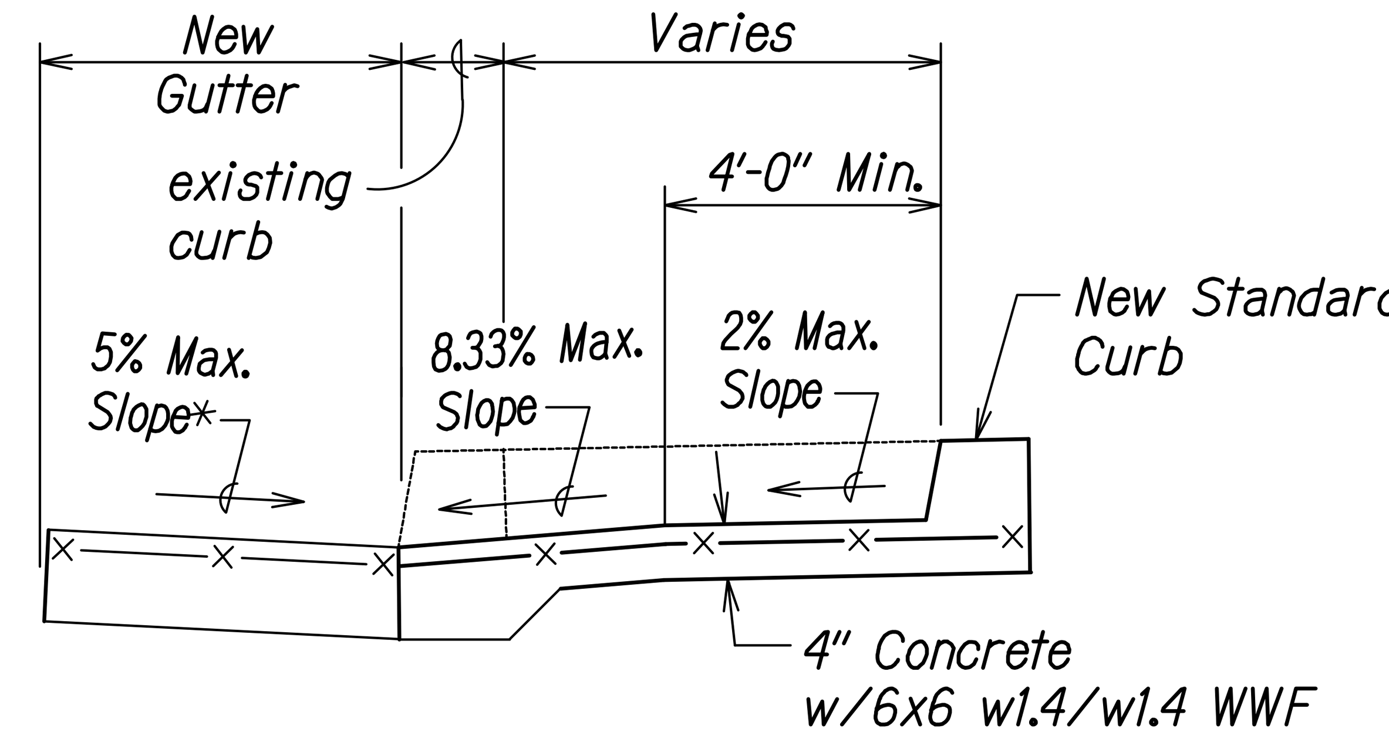

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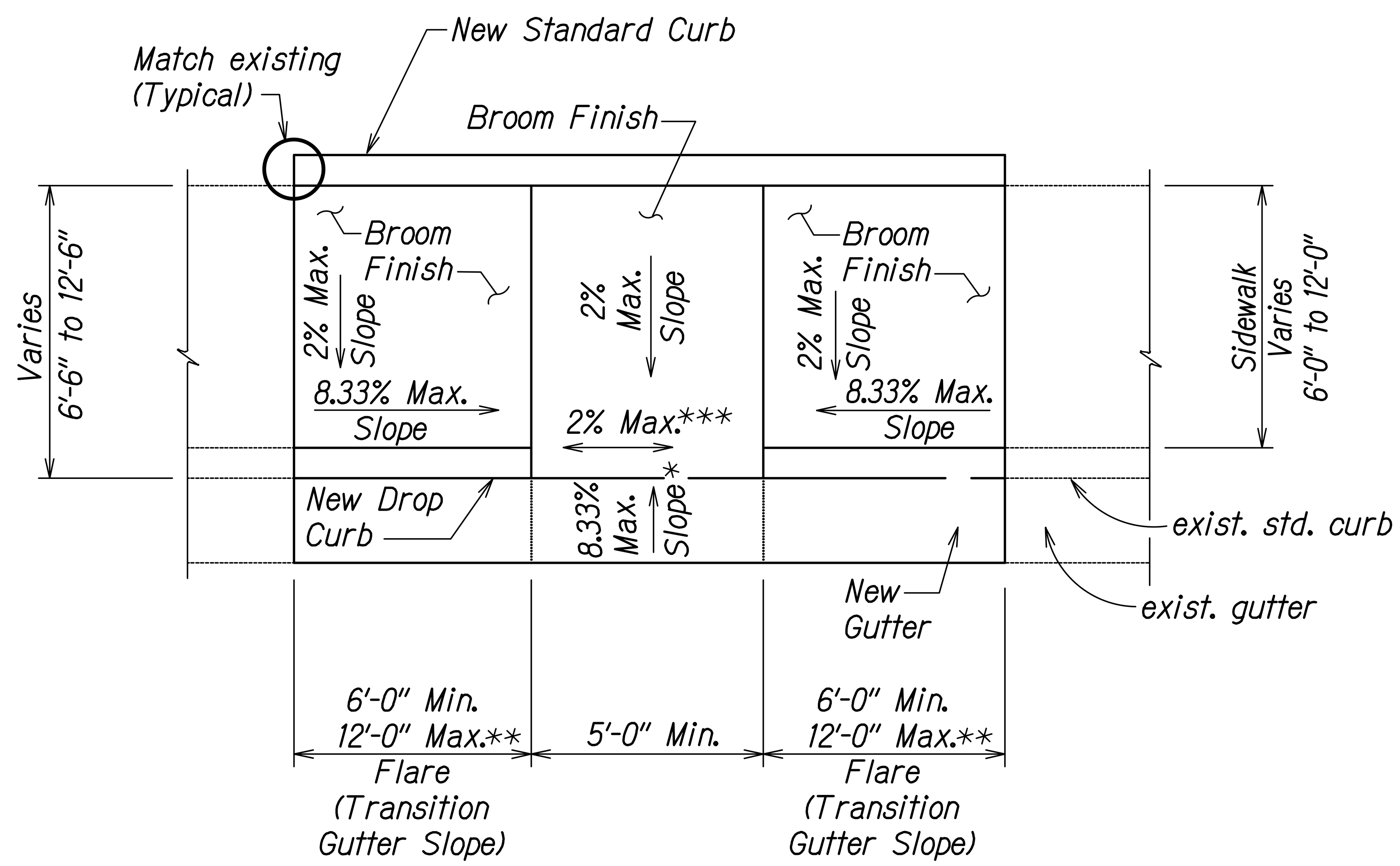

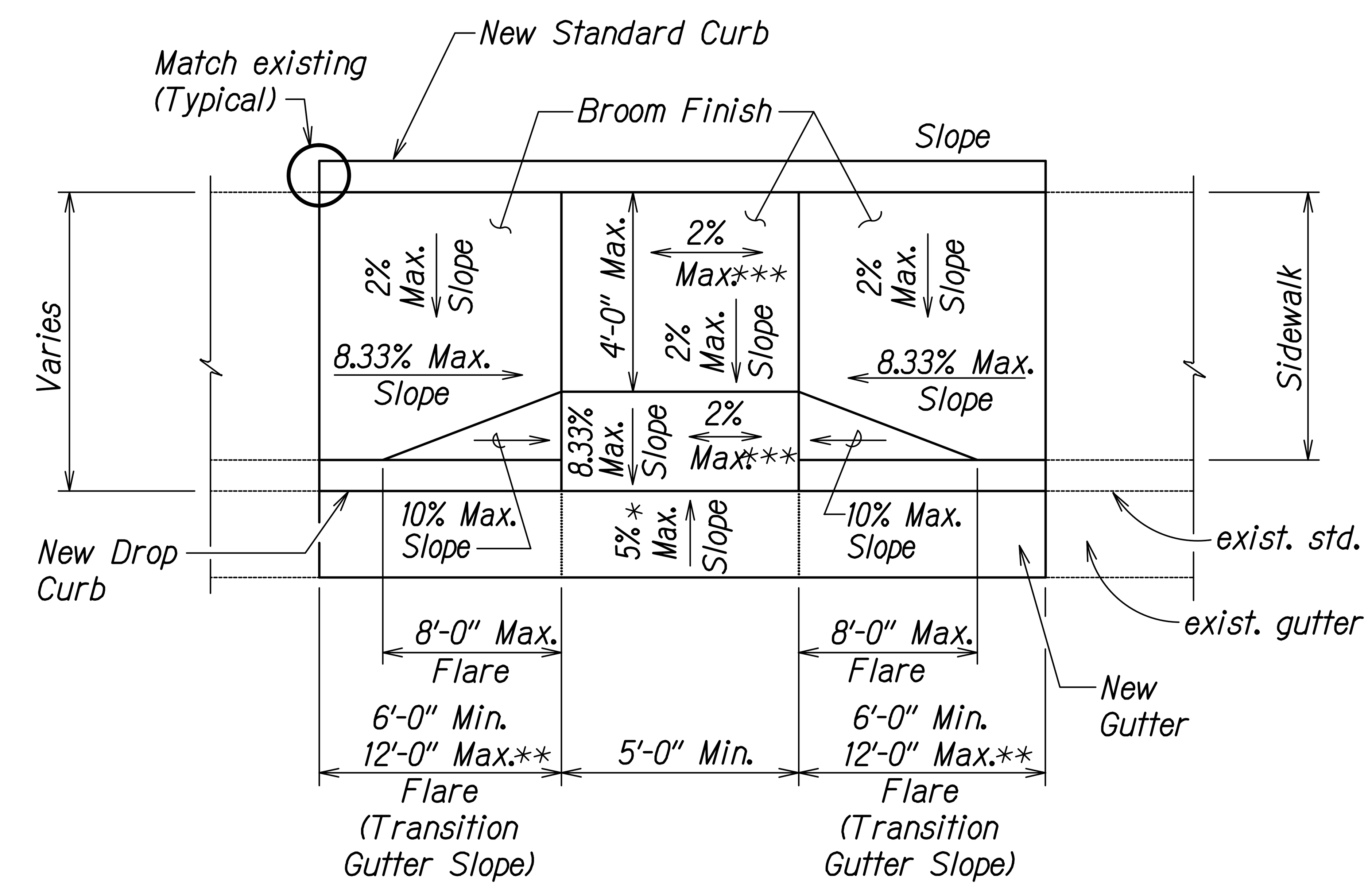

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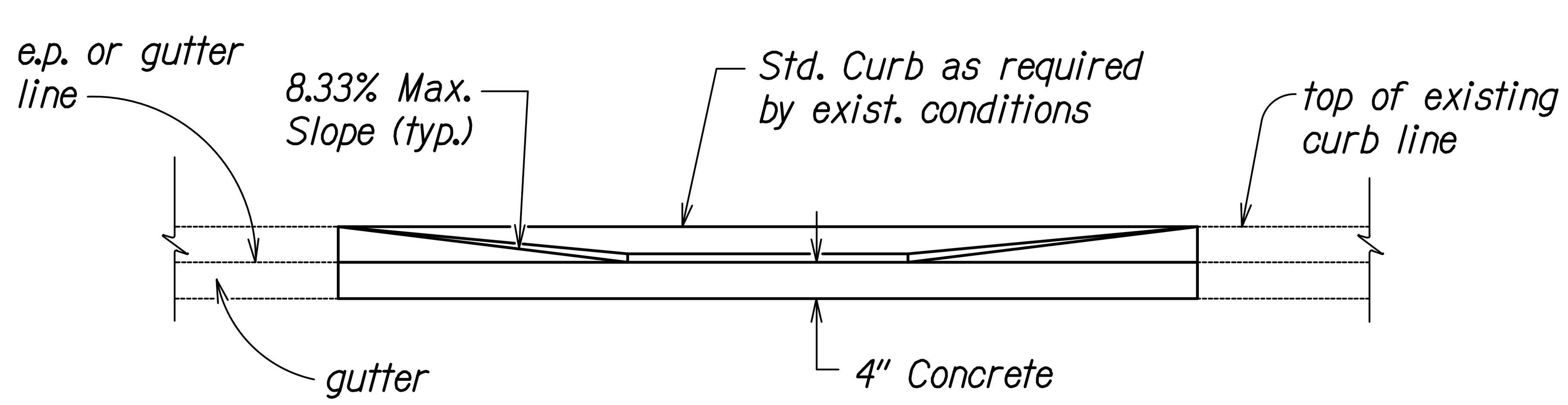
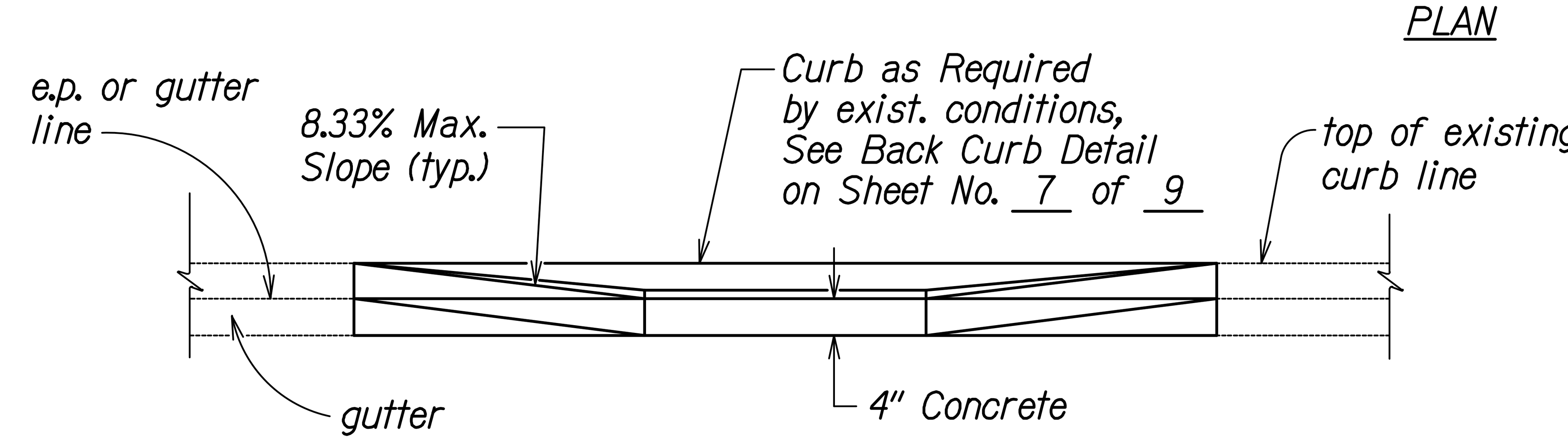
PLAN



ELEVATION



ELEVATION

CURB RAMP - COMBINATION

CURB RAMP - TYPE "B" MODIFIED

SIDEWALK WIDTH 6'-0" OR GREATER BUT LESS THAN 12'-0" WIDTH

* See Curb Ramp and Sidewalk Note No. 8

** The slope of the ramp shall take precedence over the length of the ramp. If the maximum slope of a ramp cannot be met within a length of 12 feet, then the slope of the ramp shall be set when the length of the ramp is set at the maximum of 12 feet.

*** If Roadway Slope >2% Conform to Roadway Slope and File Technical Infeasibility (TI) Statement

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ACCESSIBLE DETAILS

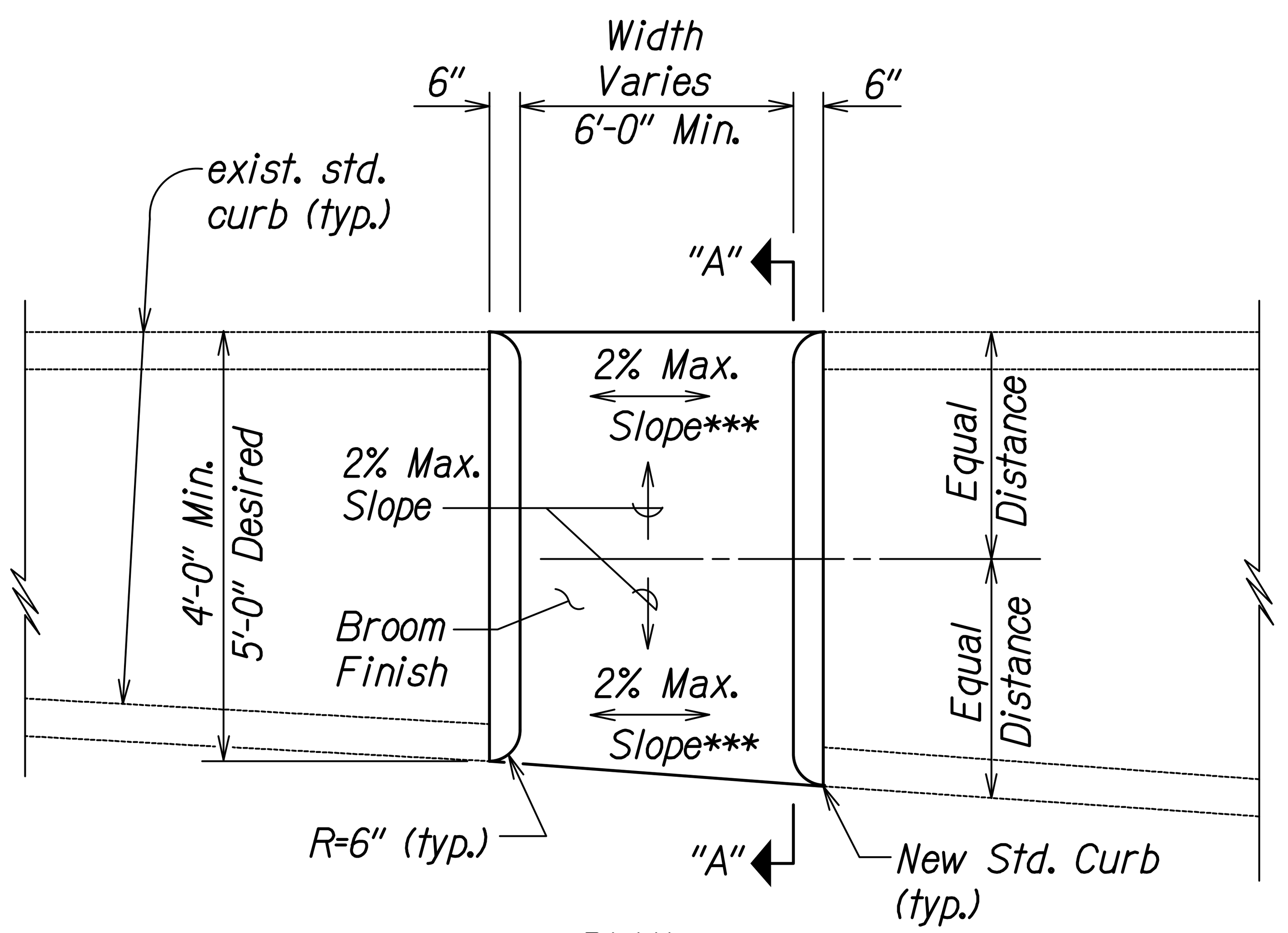
CURB RAMP B & COMBINATION DETAILS

Keaau-Pahoa Road Intersection Improvements at Old Government Road
Federal-Aid Project No. HSIP-0130(031)

Scale: None   Date: April 2013

SHEET No. 3 OF 7 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	HSIP-0130(031)	2013	67	103



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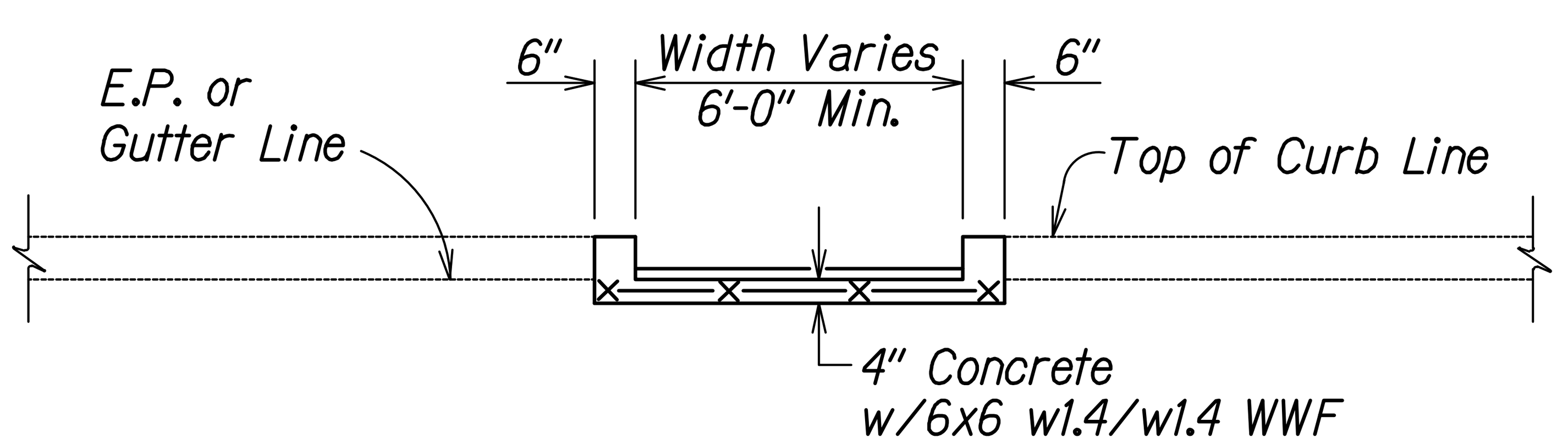

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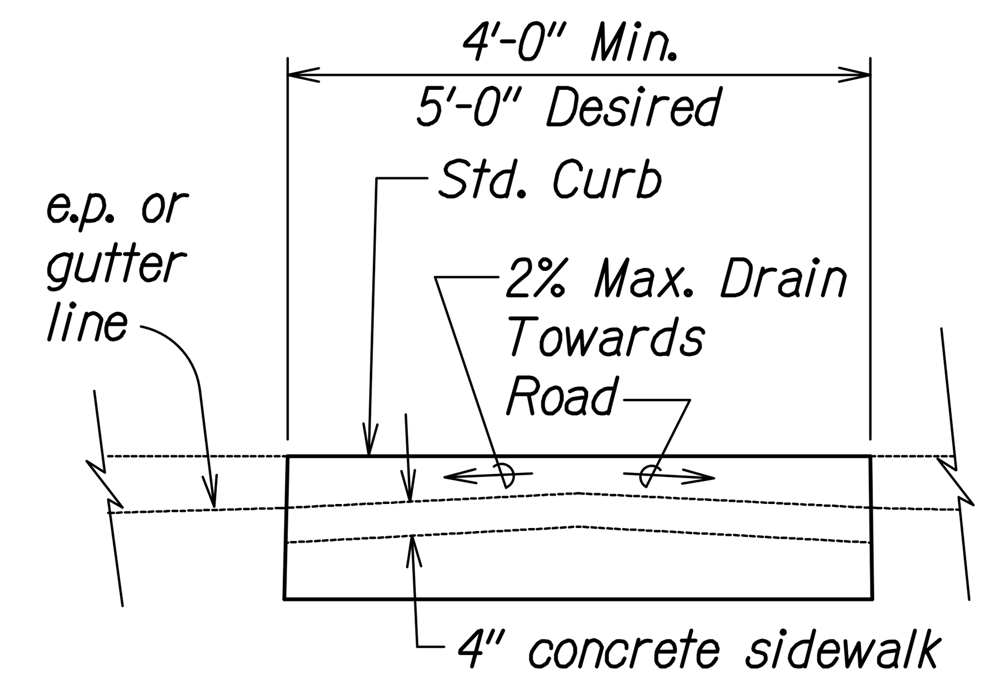
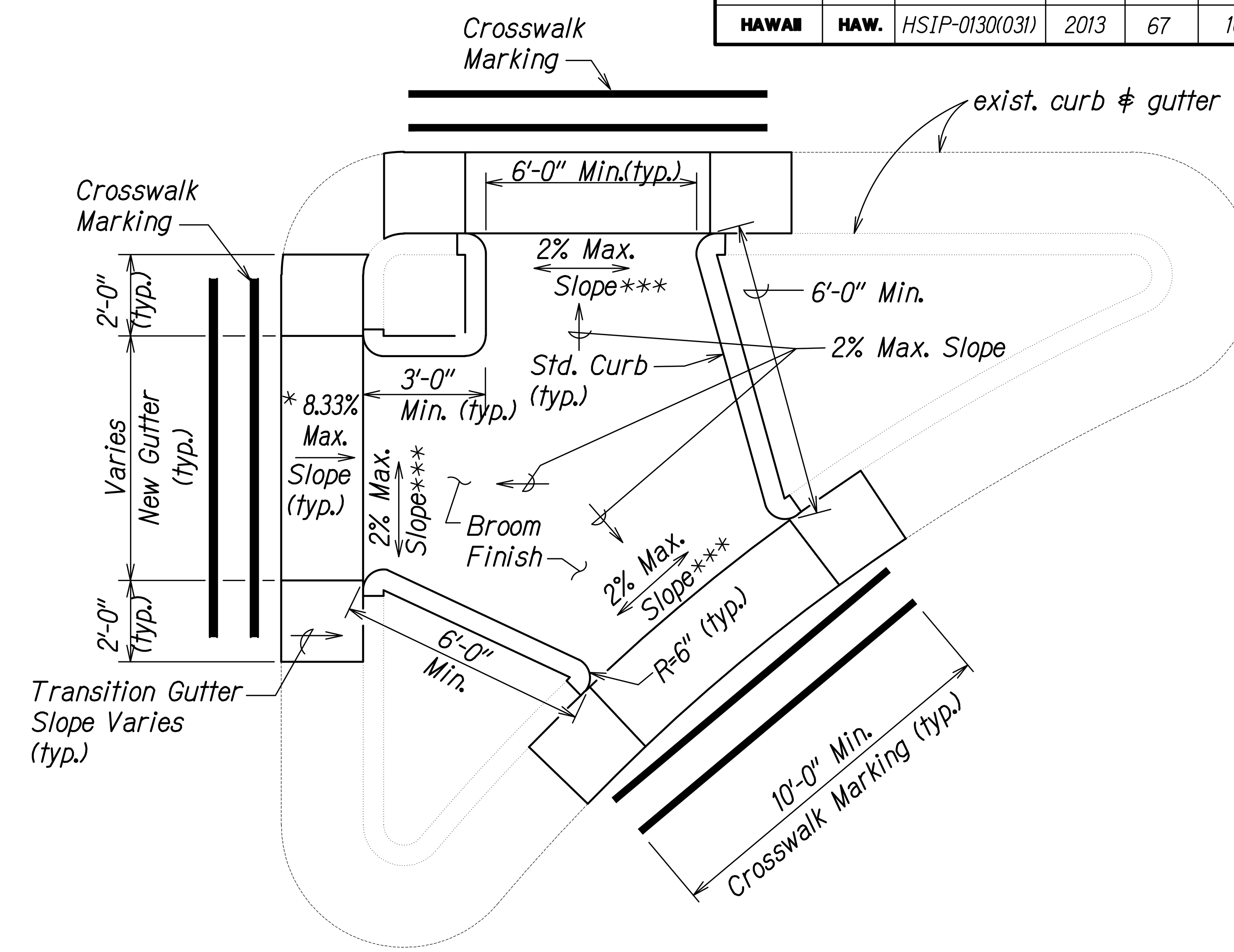


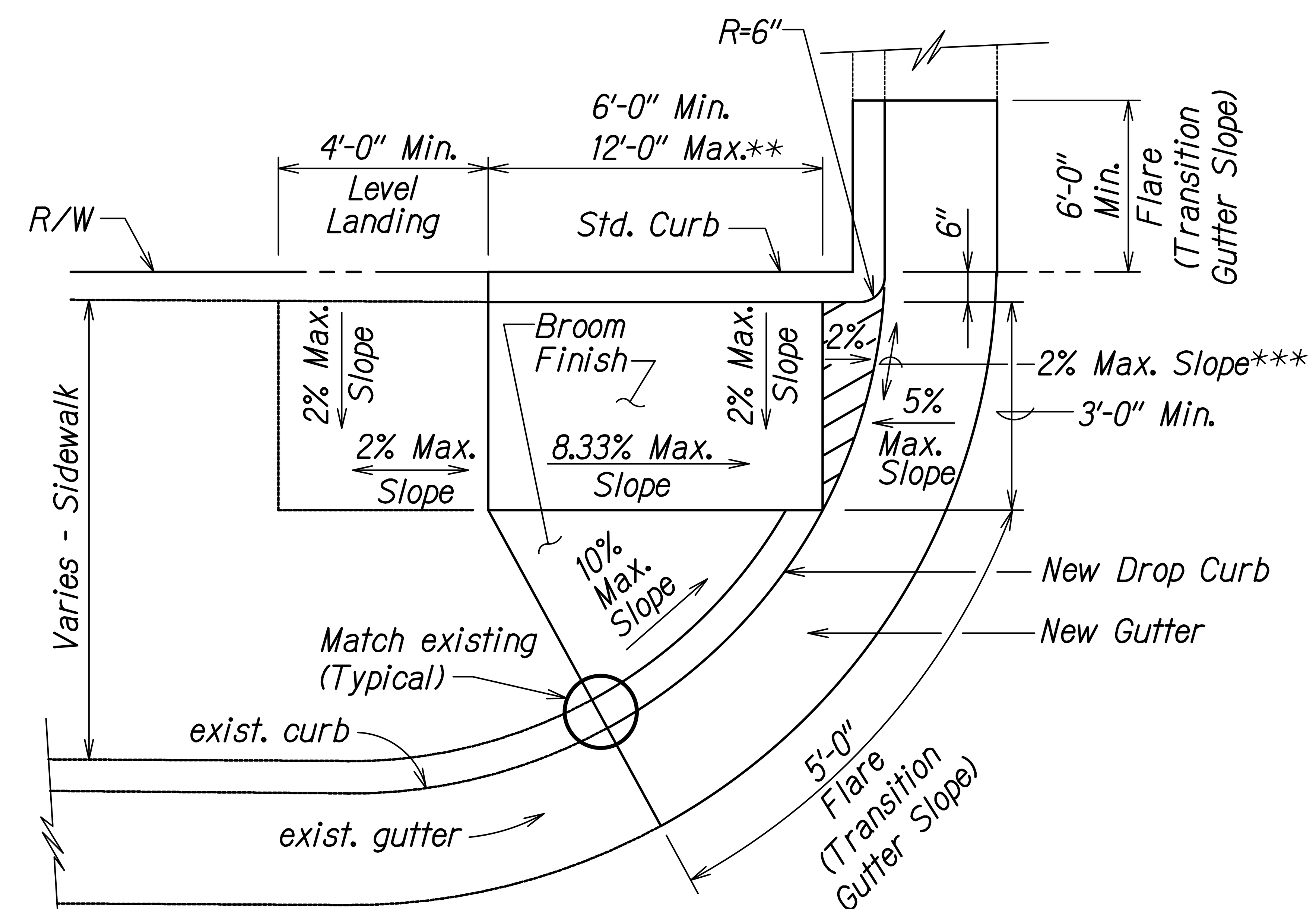
SECTION "A-A"

CURB RAMP - TYPE "C"

USE AT MEDIAN CROSSINGS, ISLANDS



CURB RAMP - TYPE "C" MODIFIED



CURB RAMP - TYPE "D" MODIFIED

* See Curb Ramp and Sidewalk Note No. 8.

** The slope of the ramp shall take precedence over the length of the ramp. If the maximum slope of a ramp cannot be met within a length of 12 feet, then the slope of the ramp shall be set when the length of the ramp is set at the maximum of 12 feet.

*** If Roadway Slope >2% Conform to Roadway Slope and File a Technical Infeasibility (TI) Statement

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ACCESSIBLE DETAILS

CURB RAMPS C & D DETAILS

Keaau-Pahoa Road Intersection Improvements at Old Government Road
Federal-Aid Project No. HSIP-0130(031)

Scale: None Date: April 2013

SHEET No. 4 OF 7 SHEETS

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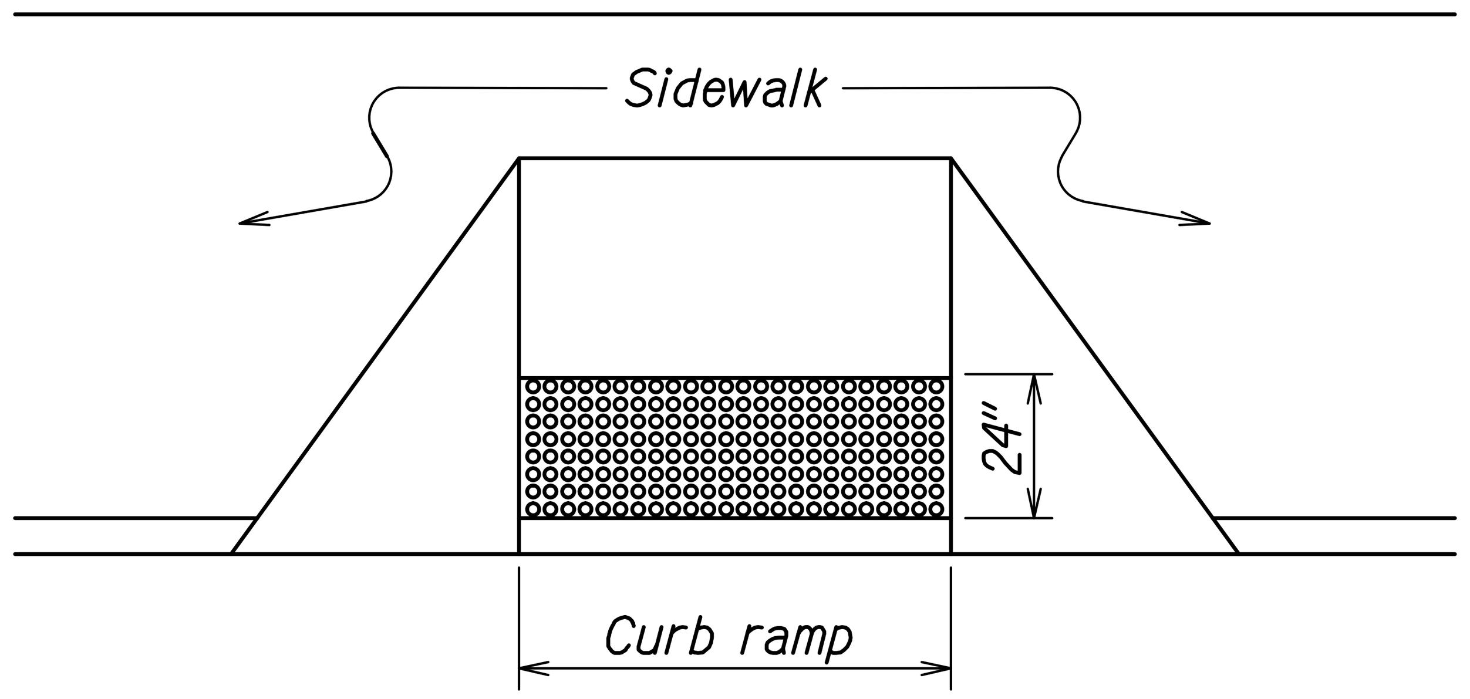
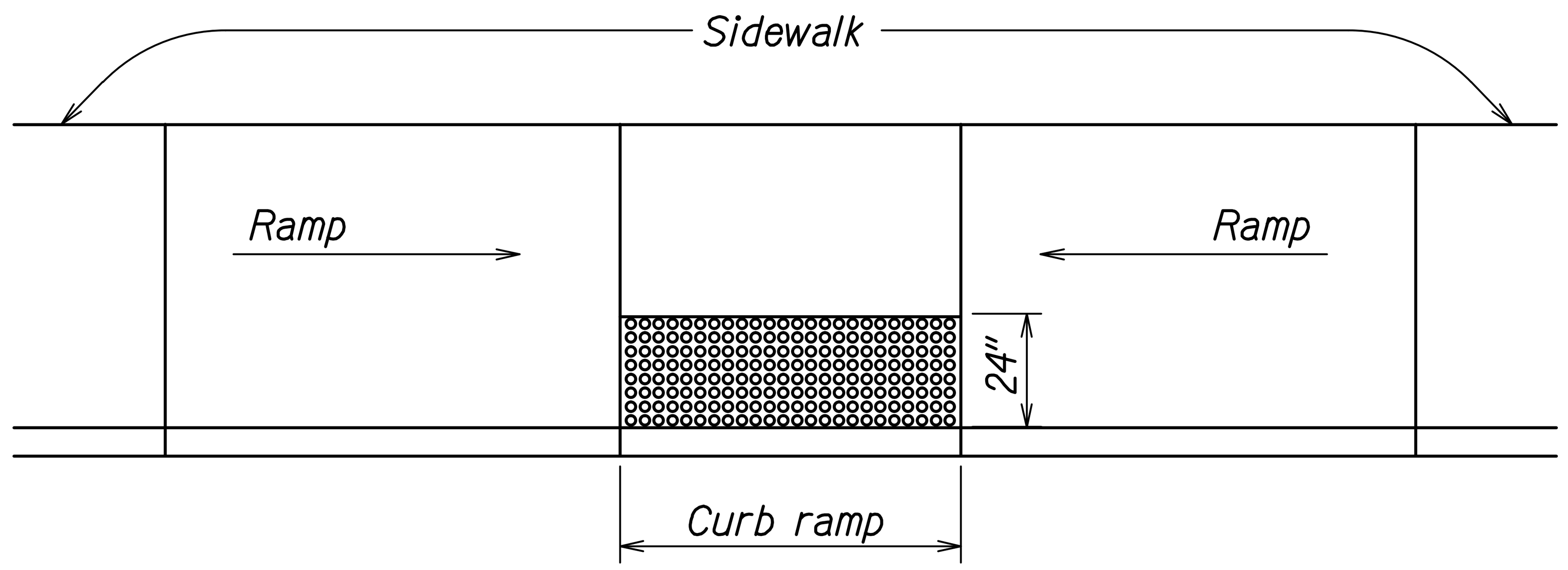
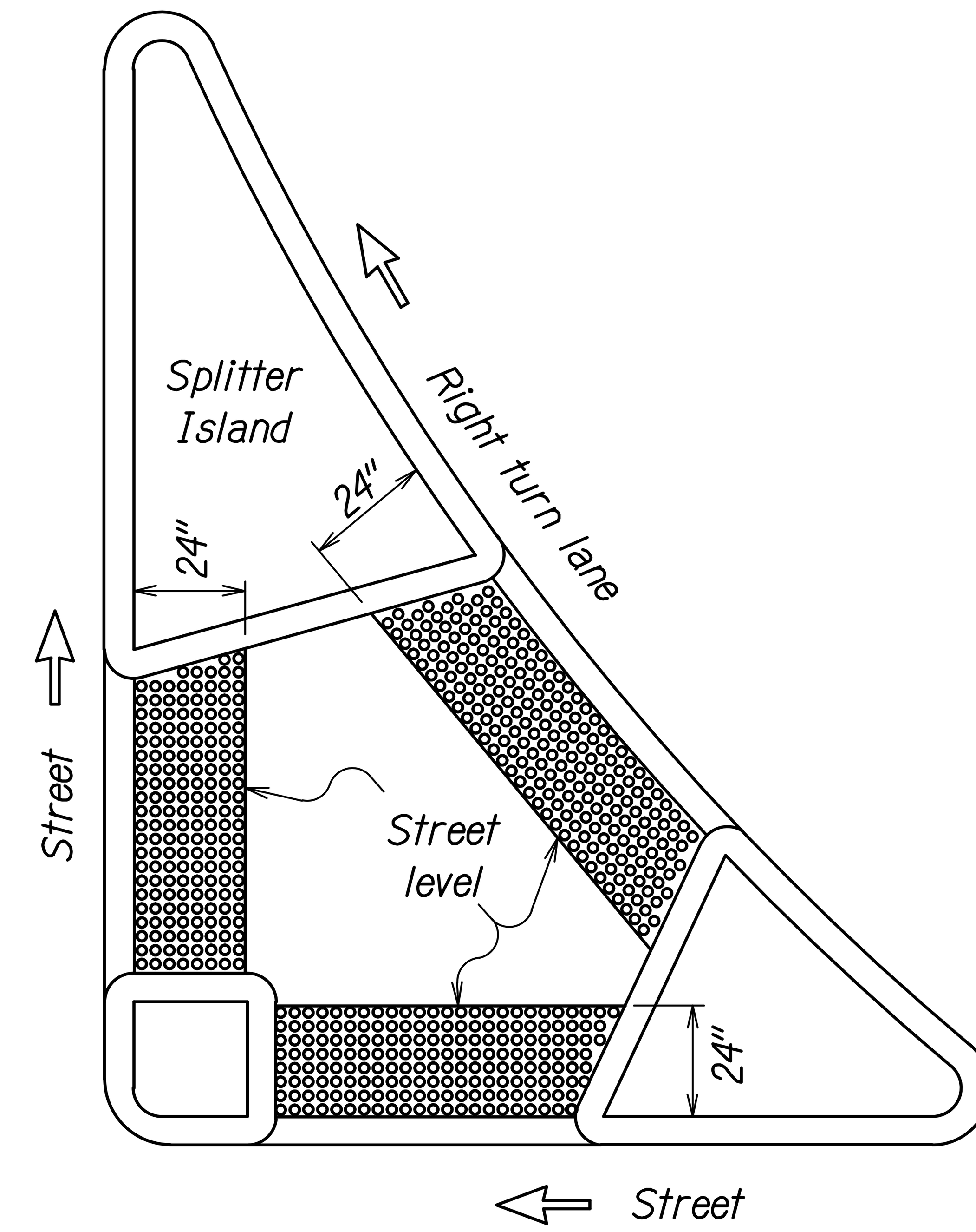


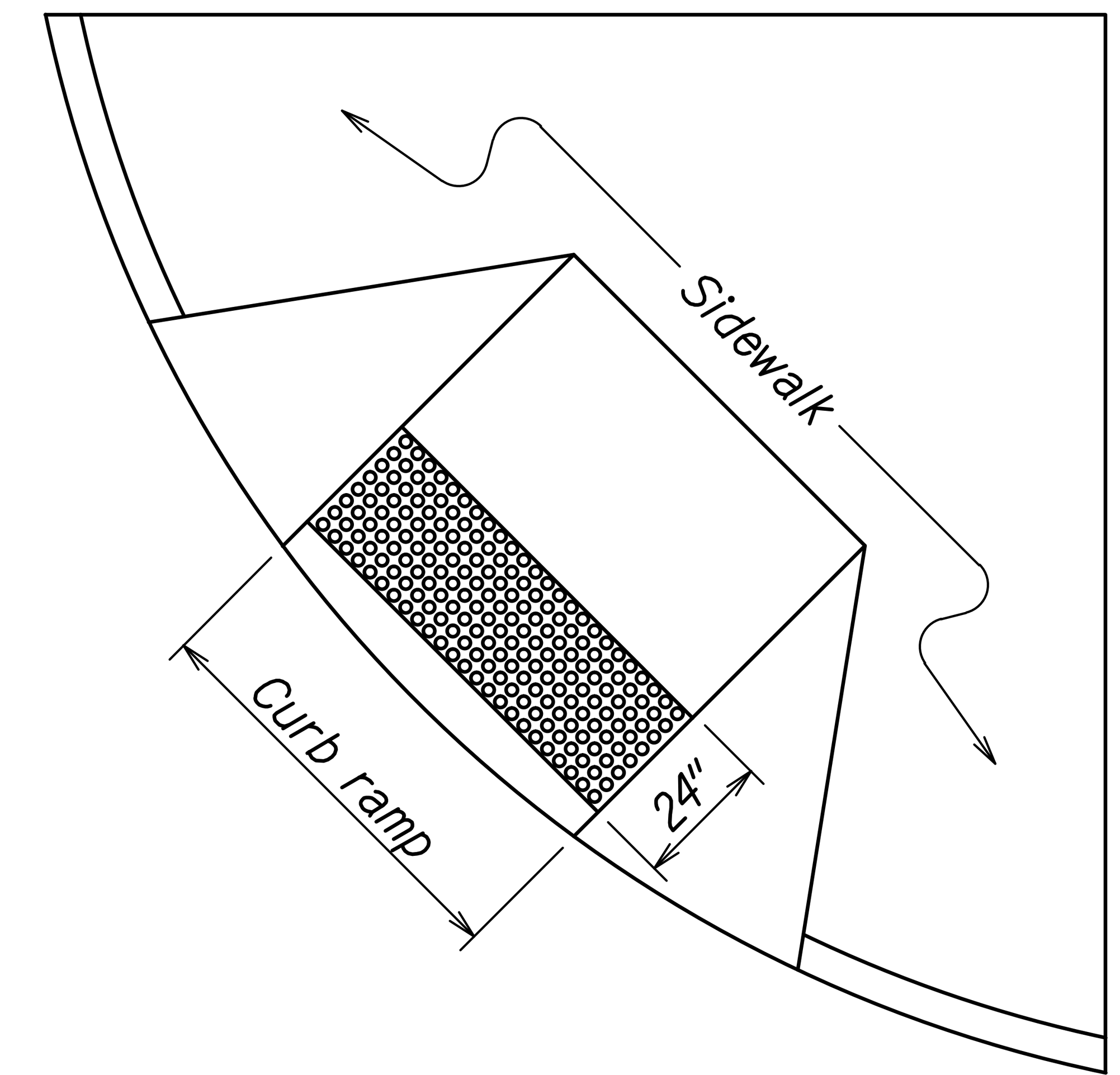
DETECTABLE WARNING AT CURB RAMP



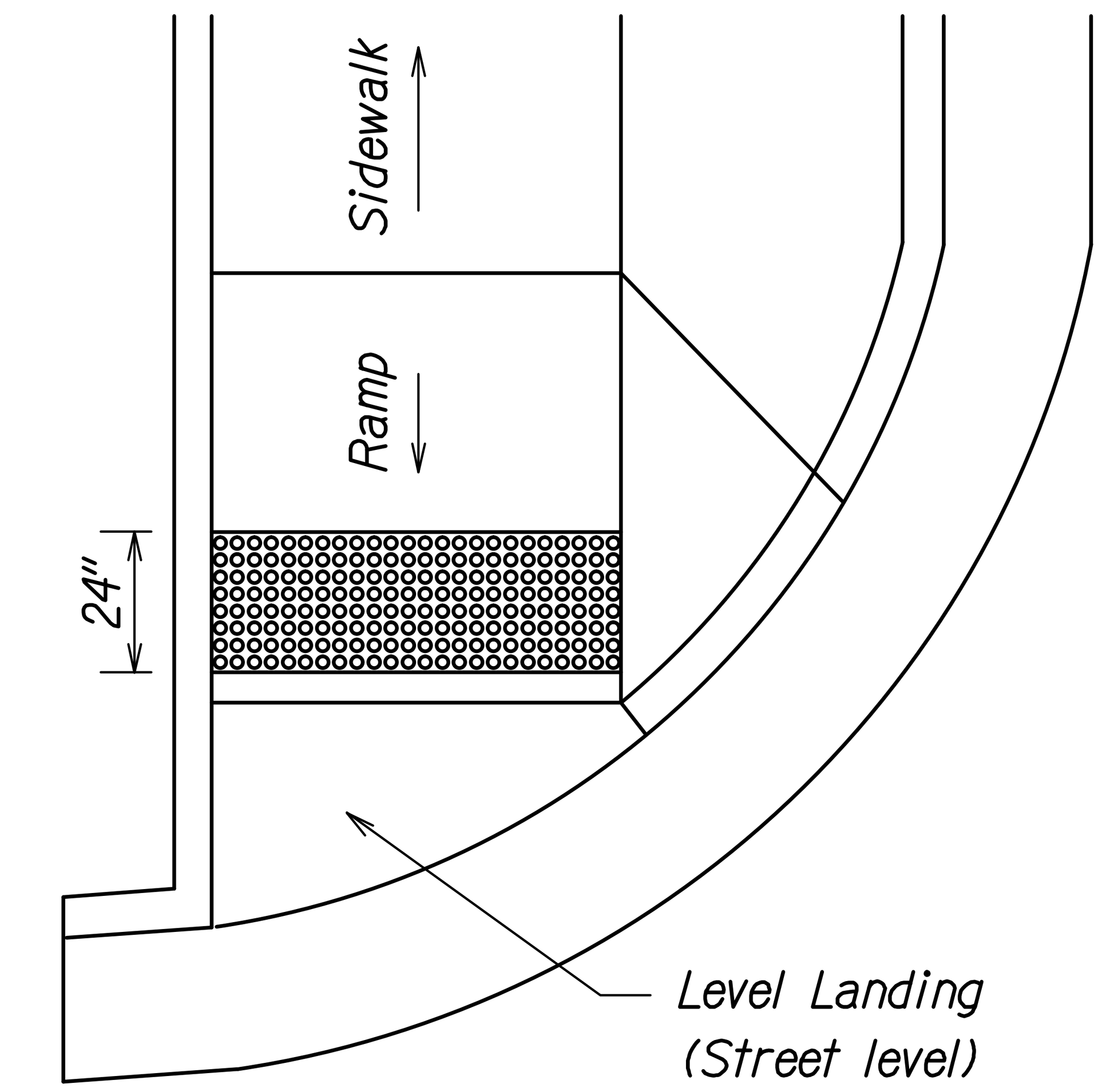
TRANSITION RAMP WITH DETECTABLE WARNING



REFUGE ISLAND WITH DETECTABLE WARNING



SHARED CURB RAMP WITH DETECTABLE WARNING



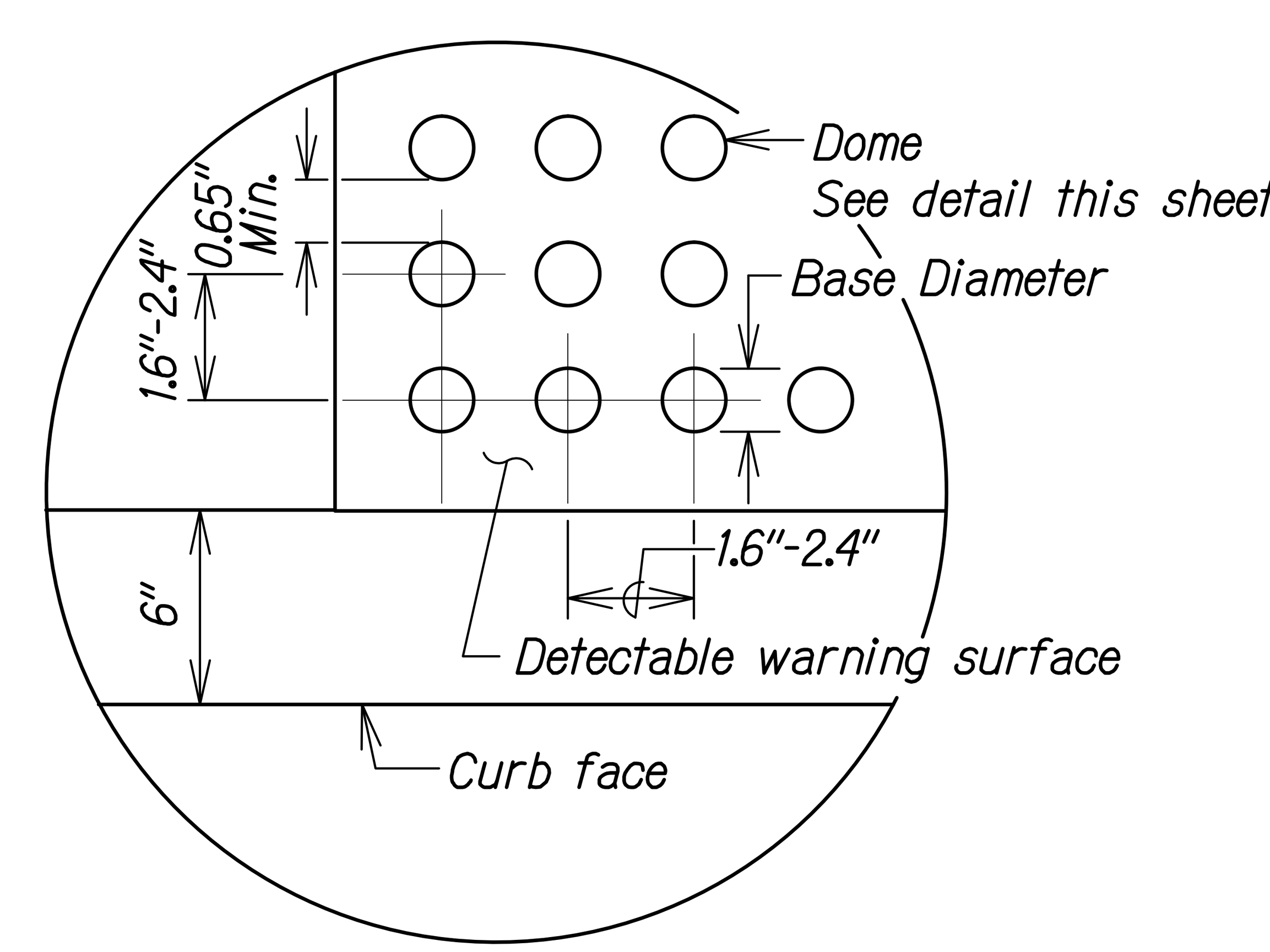
END OF SIDEWALK CURB RAMP WITH DETECTABLE WARNING

TYPICAL INSTALLATION OF DETECTABLE WARNINGS

Not to Scale

NOTES:

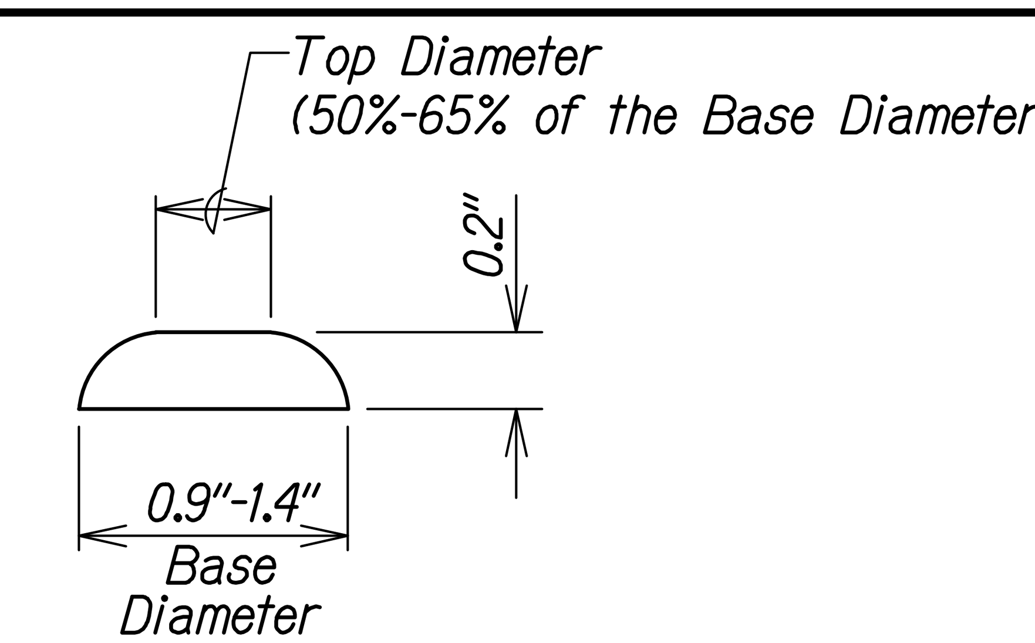
1. Detectable warnings shall be 24 inches in the direction of travel and extend the full width of the curb ramp or flush surface (does not include flares).
2. Truncated domes shall have a diameter of 0.9 to 1.4 inch at the bottom, a diameter of 50%-65% of the base diameter at the top, a height of 0.2 inch and a center-to-center spacing of 1.6 to 2.4 inches measured along one side of a square arrangement.
3. Domes shall be aligned on a square grid in the predominant direction of travel to permit wheels to roll between the domes.
4. There shall be a minimum of 70 percent contrast in light reflectance between the detectable warning and an adjoining surface, or the detectable warning shall be "safety yellow".
5. The material used to provide visual contrast shall be an integral part of the detectable warning surface.
6. The detectable warning shall be located so that the edge nearest the curb line or other potential hazard is 6 to 8 inches from the curb line.



ENLARGEMENT

DETECTABLE WARNING DETAIL

Not to Scale



DOME SECTION

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ACCESSIBLE DETAILS

DETECTABLE WARNING DETAIL

Keaau-Pahoa Road Intersection Improvements at Old Government Road
Federal-Aid Project No. HSIP-0130(031)

Scale: None Date: April 2013

SHEET No. 6 OF 7 SHEETS

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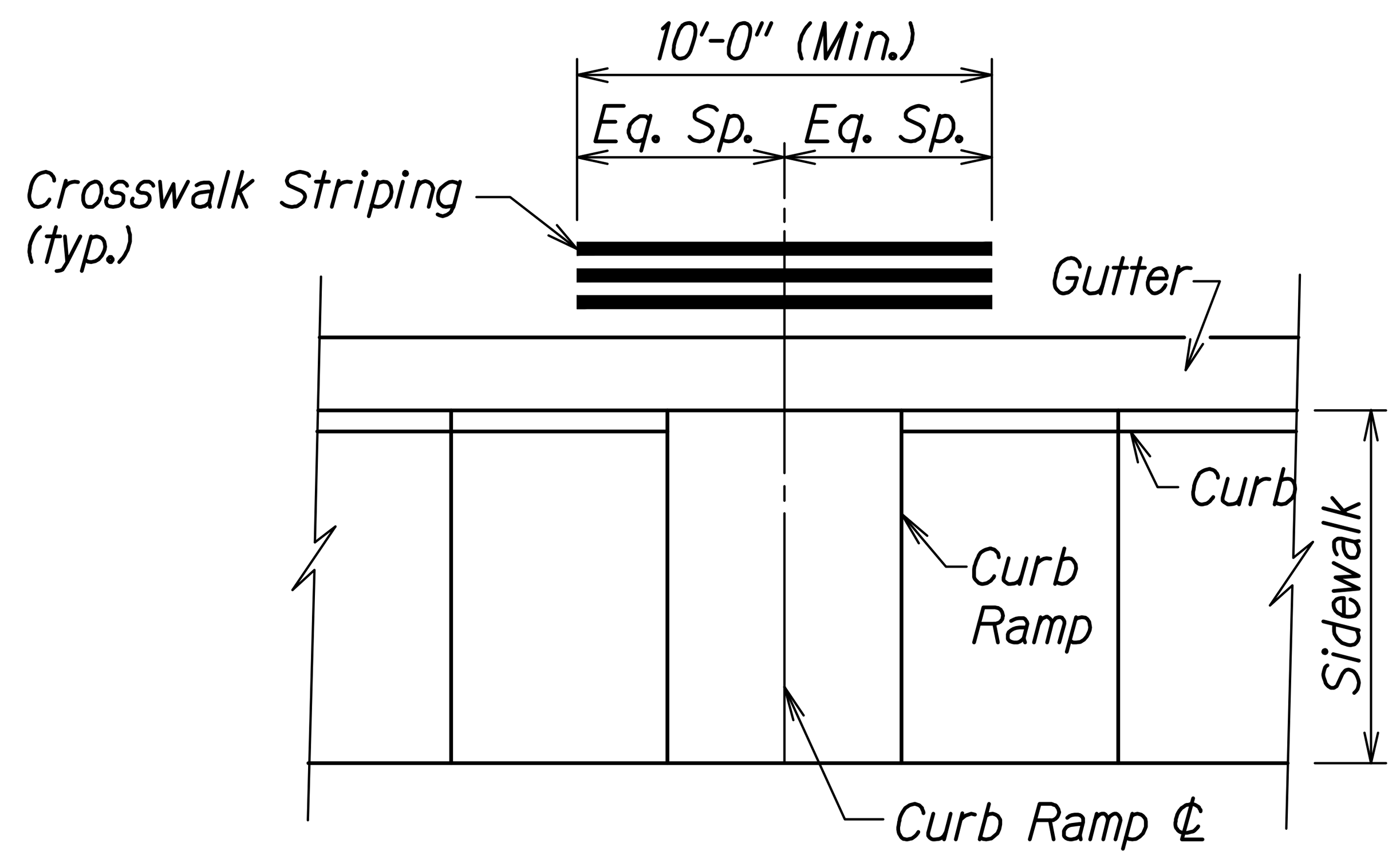
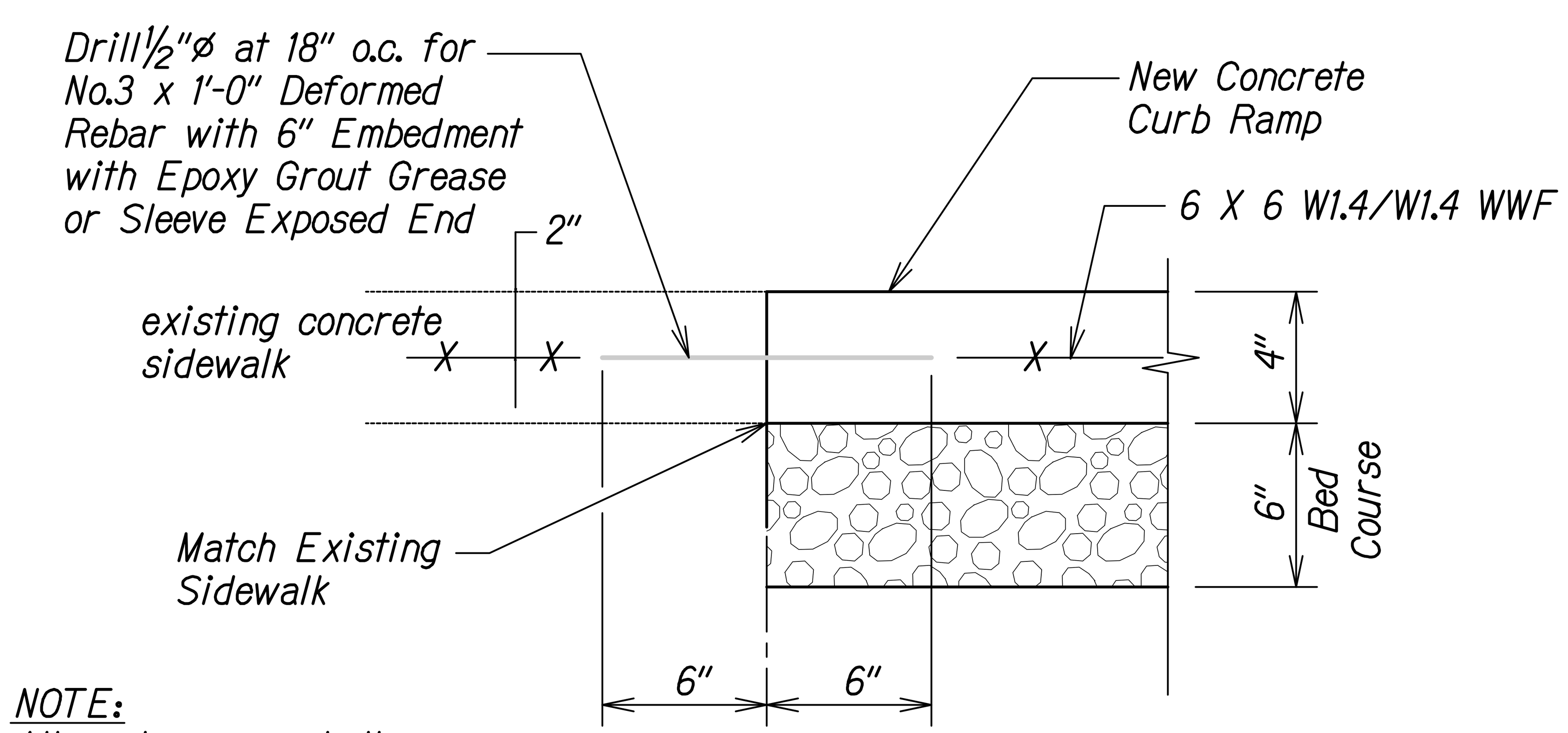
HAWAII	HAW.	HSIP-0130(031)	2013	69	103

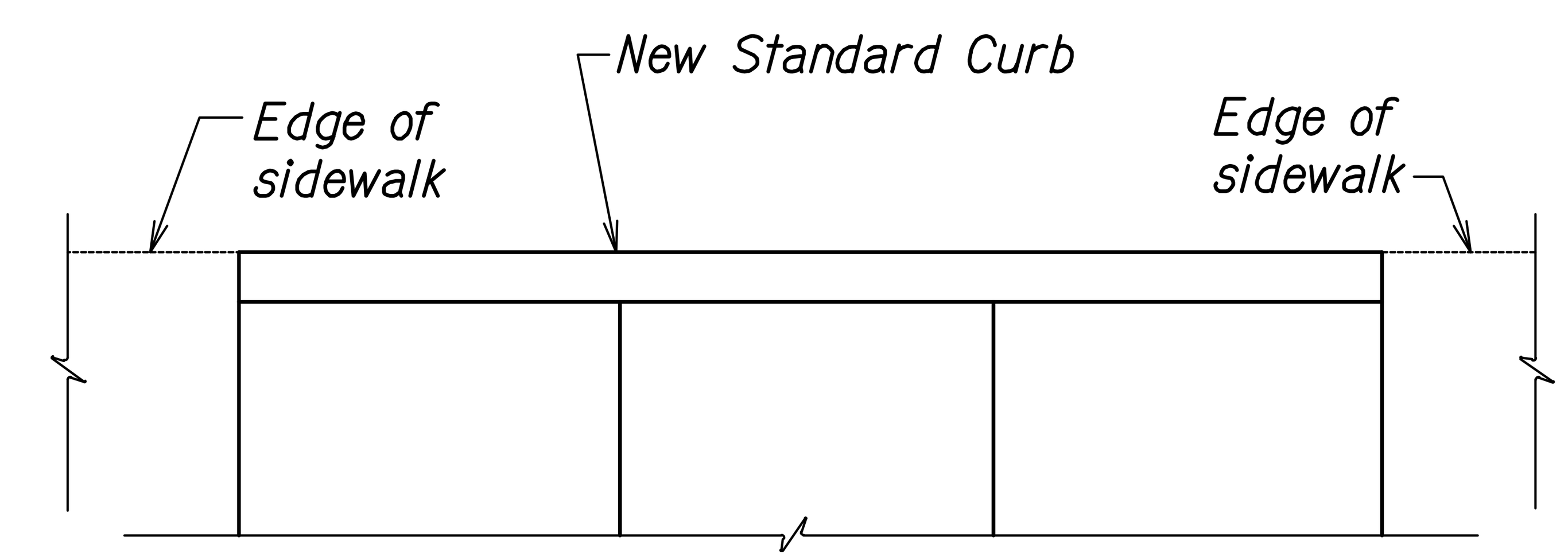


TYPICAL CROSSWALK STRIPING
AT CURB RAMP



NOTE:
All curb ramps shall be reinforced.

TYPICAL CONSTRUCTION JOINT
AT EXISTING SIDEWALK



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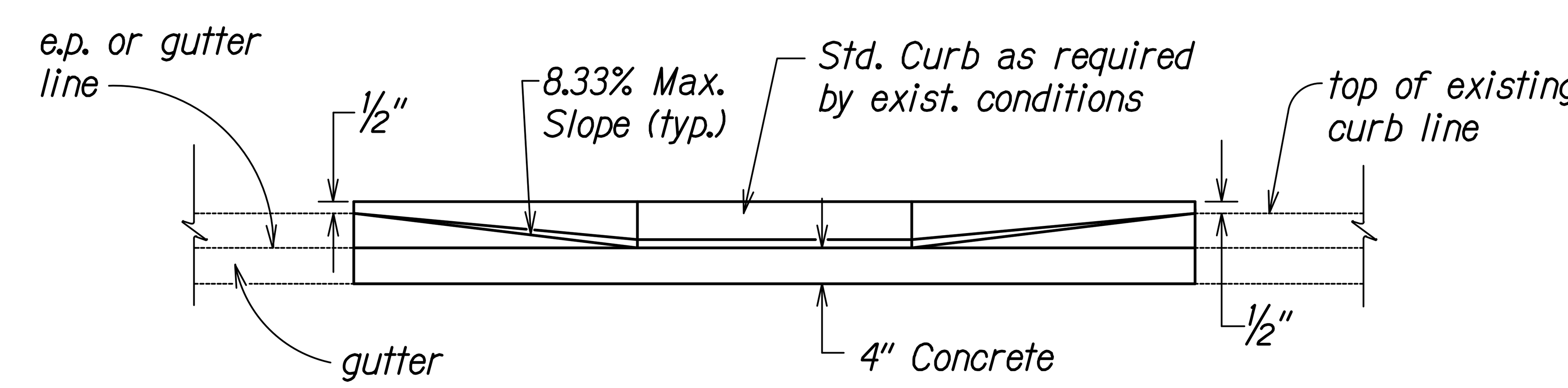

ELEVATION

DETAIL - BACK CURB

NOTE:
This detail can be used in situations where the edge of sidewalk cannot be flush with the face of (back) curb due to right of way restrictions.

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ACCESSIBLE DETAILS

MISCELLANEOUS DETAILS

Keaau-Pahoa Road Intersection
Improvements at Old Government Road
Federal-Aid Project No. HSIP-0130(031)

Scale: None   Date: April 2013

SHEET No. 7 OF 7 SHEETS

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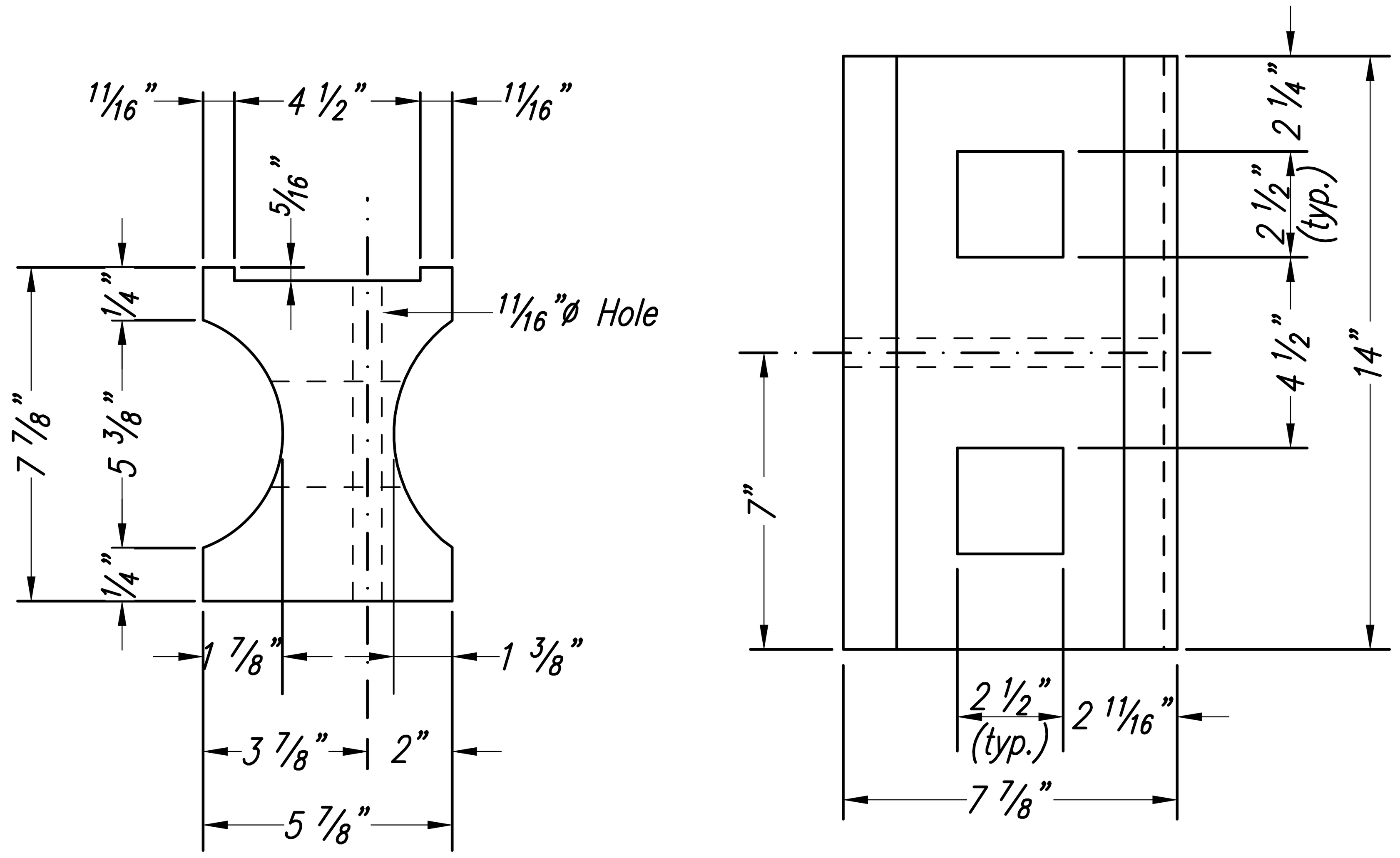
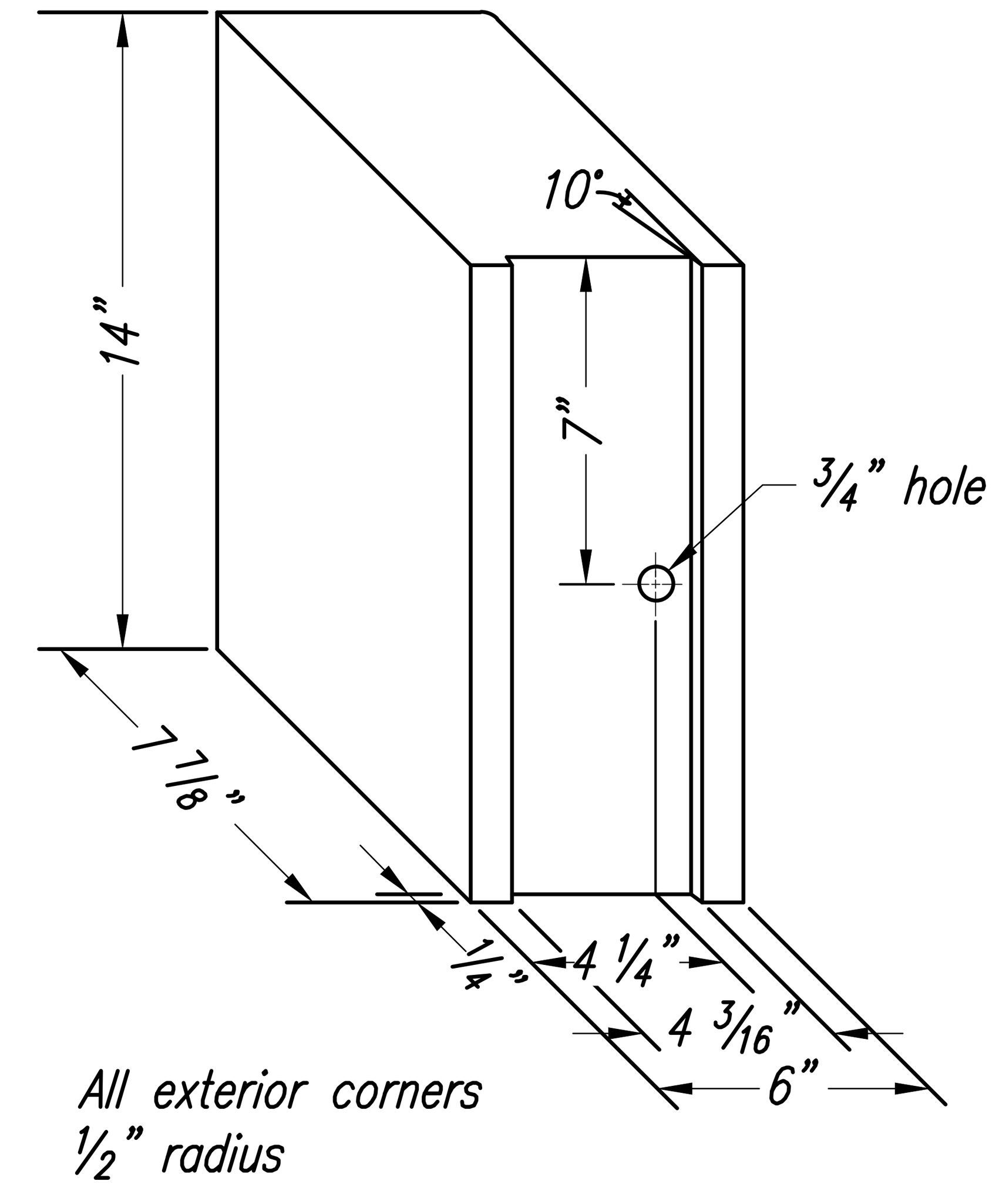
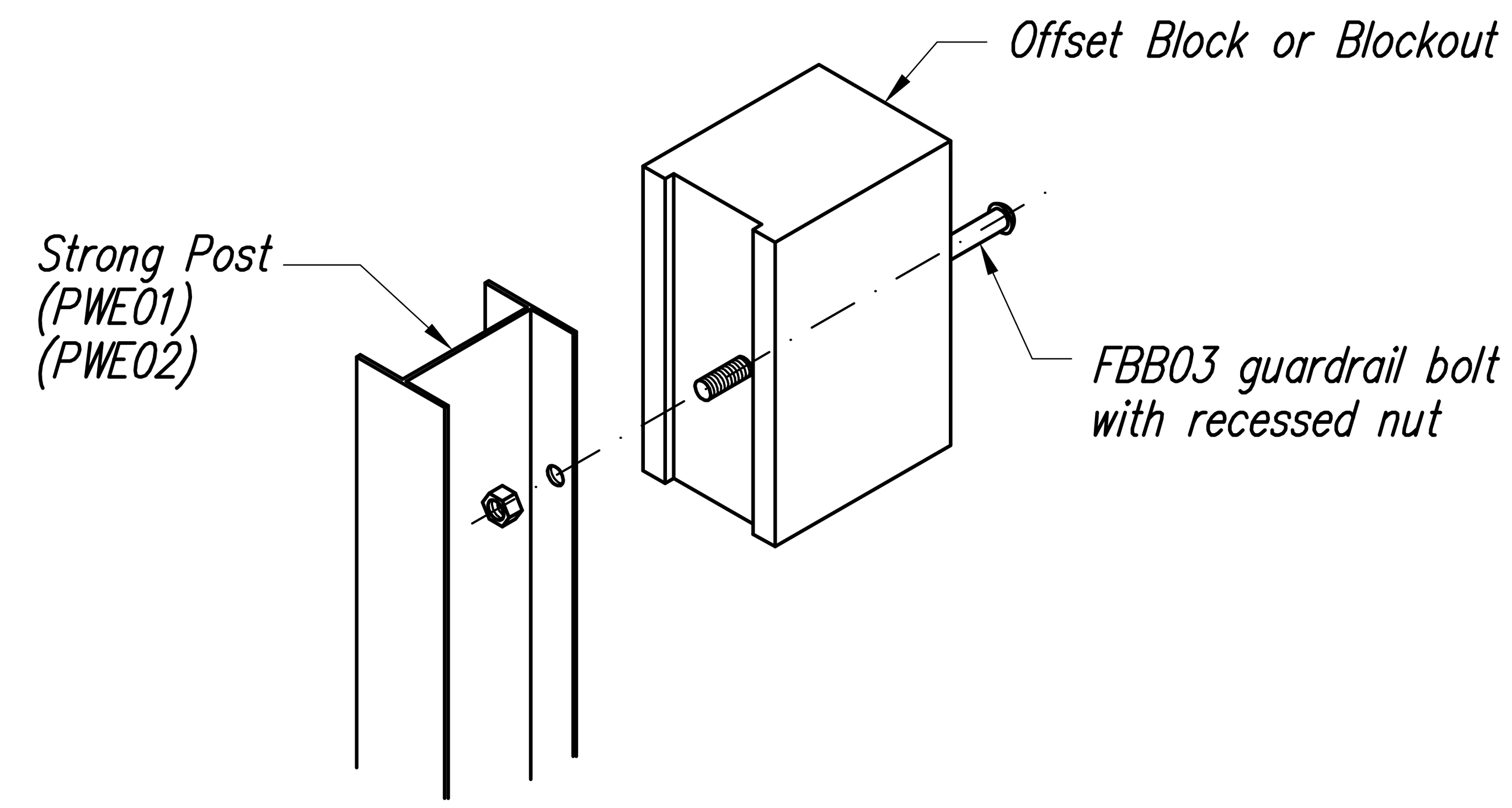


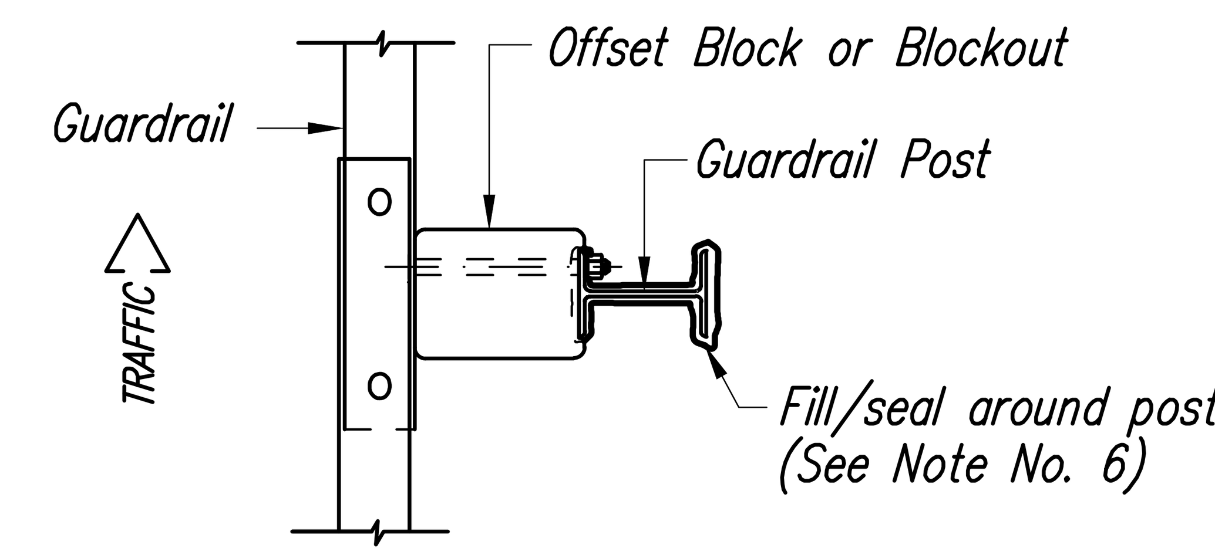
RECYCLED PLASTIC BLOCKOUT (TYPE I)



RECYCLED POLYETHYLENE OFFSET BLOCK (TYPE II)



STEEL POST AND BLOCK DETAIL



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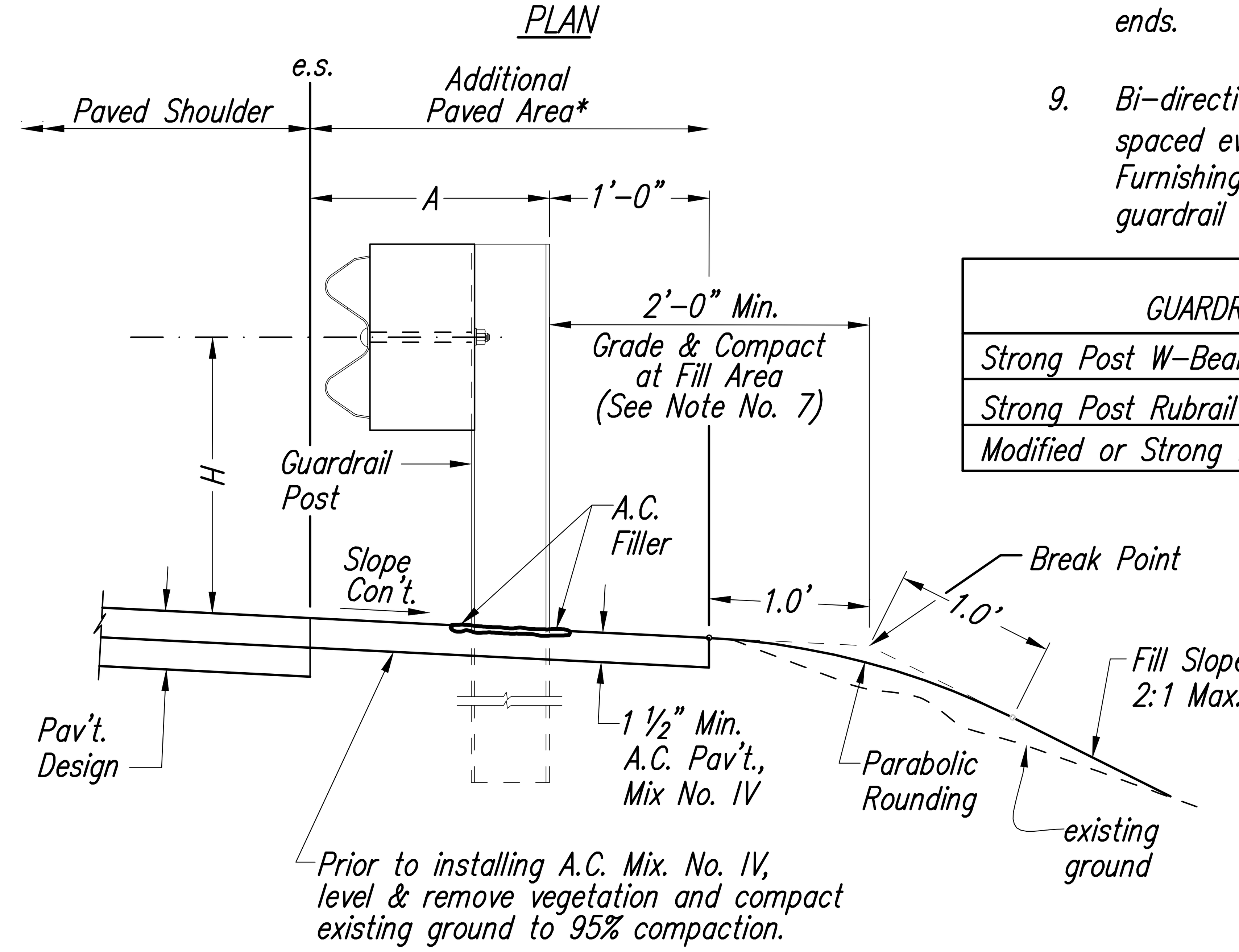
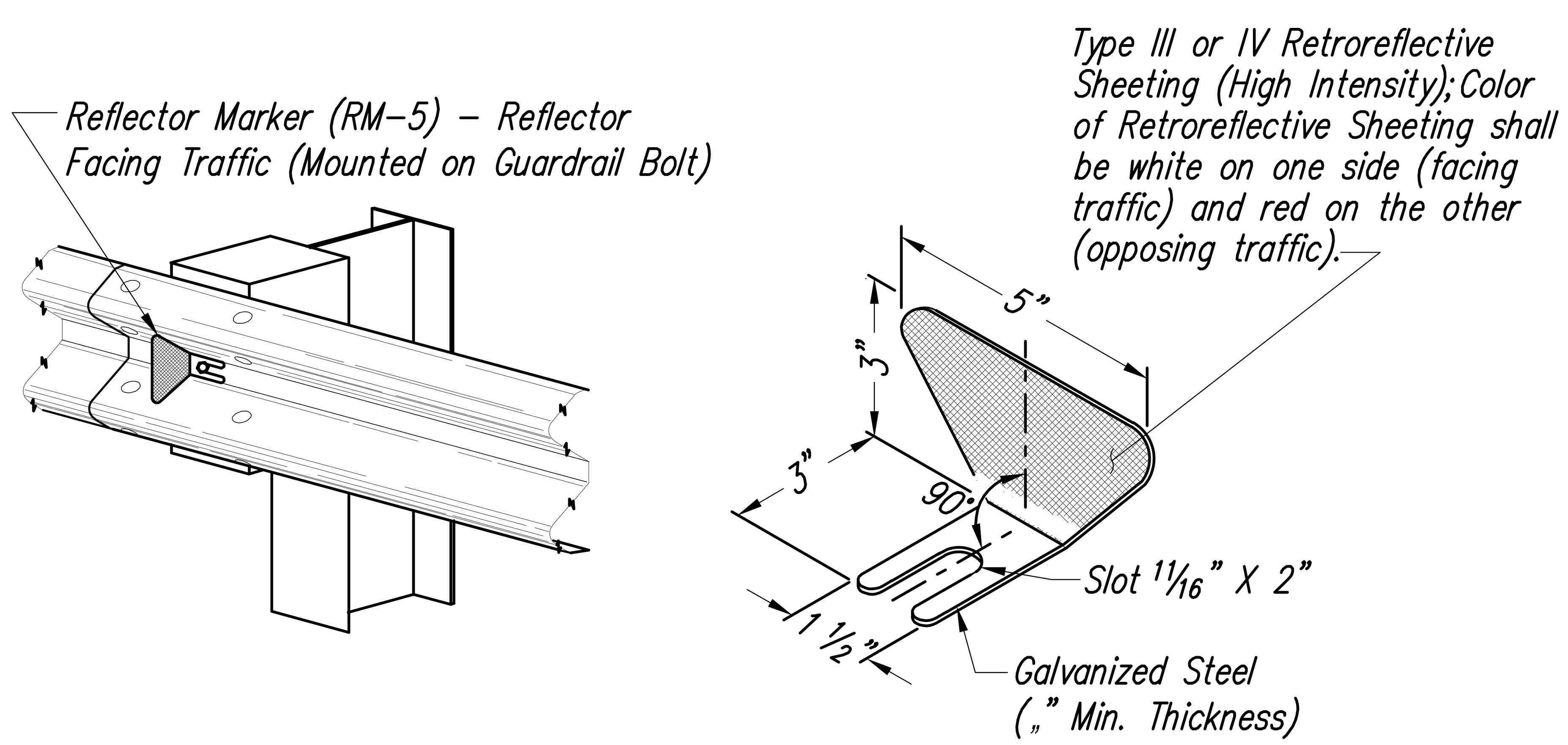


ELEVATION

TYPICAL GUARDRAIL INSTALLATION



REFLECTOR MARKER (RM-5) DETAIL AND TYPICAL INSTALLATION

Work Zone Notes:

1. All hardware, posts and fasteners shall be hot-dip zinc coated galvanized after fabrication. No punching, drilling or cutting will be permitted after galvanizing.
2. Where conditions require, special post lengths in increments of 6 inches may be specified.
3. 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.
4. The Recycled Plastic Block or Offset Block shall be approved by the State.
5. All new guardrail systems (system consists of total length of guardrail including both end treatments) shall include the Additional Paved Area.
6. After the guardrail posts are installed in the paved area, the Contractor shall fill/seal around each guardrail post and all cracks in the paved area caused during the guardrail post installation. If required by the inspector/engineer, the Contractor shall tamper the paved area around the guardrail post prior to filling/sealing. All costs associated with this work shall not be paid for separately, but shall be considered incidental to the various guardrail items.
7. When standards for the fill slope area cannot be met, a site specific, engineer approved design may be used.
8. New A.C. pavement at guardrails shall extend 6 feet longi-tudinally beyond terminal ends.
9. Bi-directional (white/red) 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.

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

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GUARDRAIL NOTES AND DETAILS

Keaau-Pahoa Road Intersection Improvements at Old Government Road
Federal-Aid Project No. HSIP-0130(031)

Scale: None   Date: April 2013

SHEET No. 1 OF 3 SHEETS

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

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
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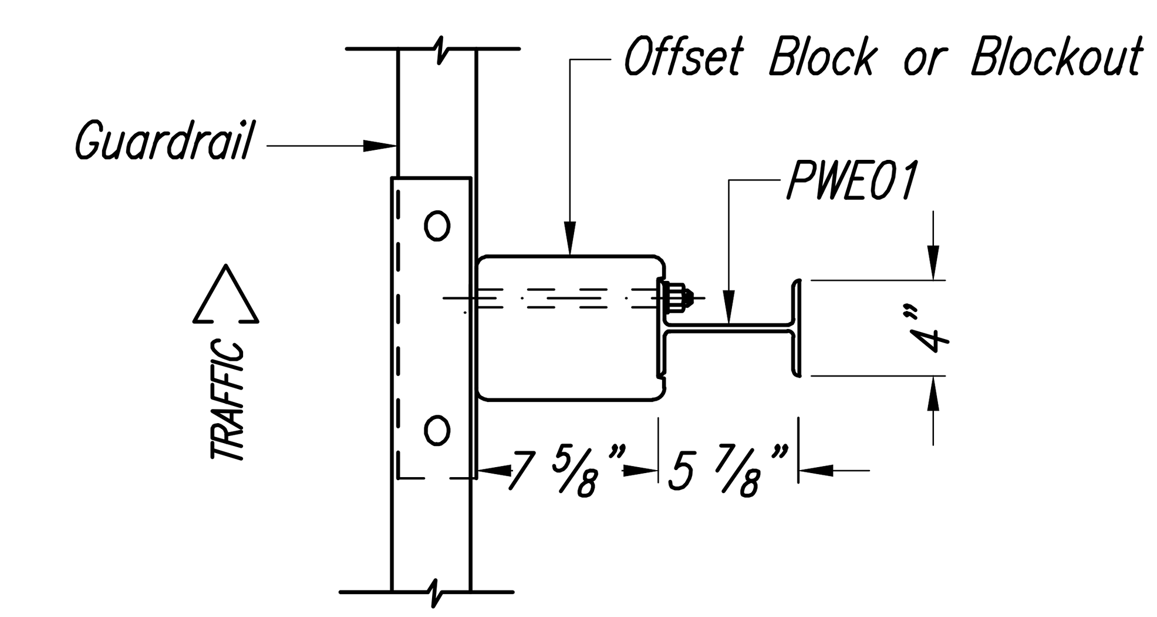
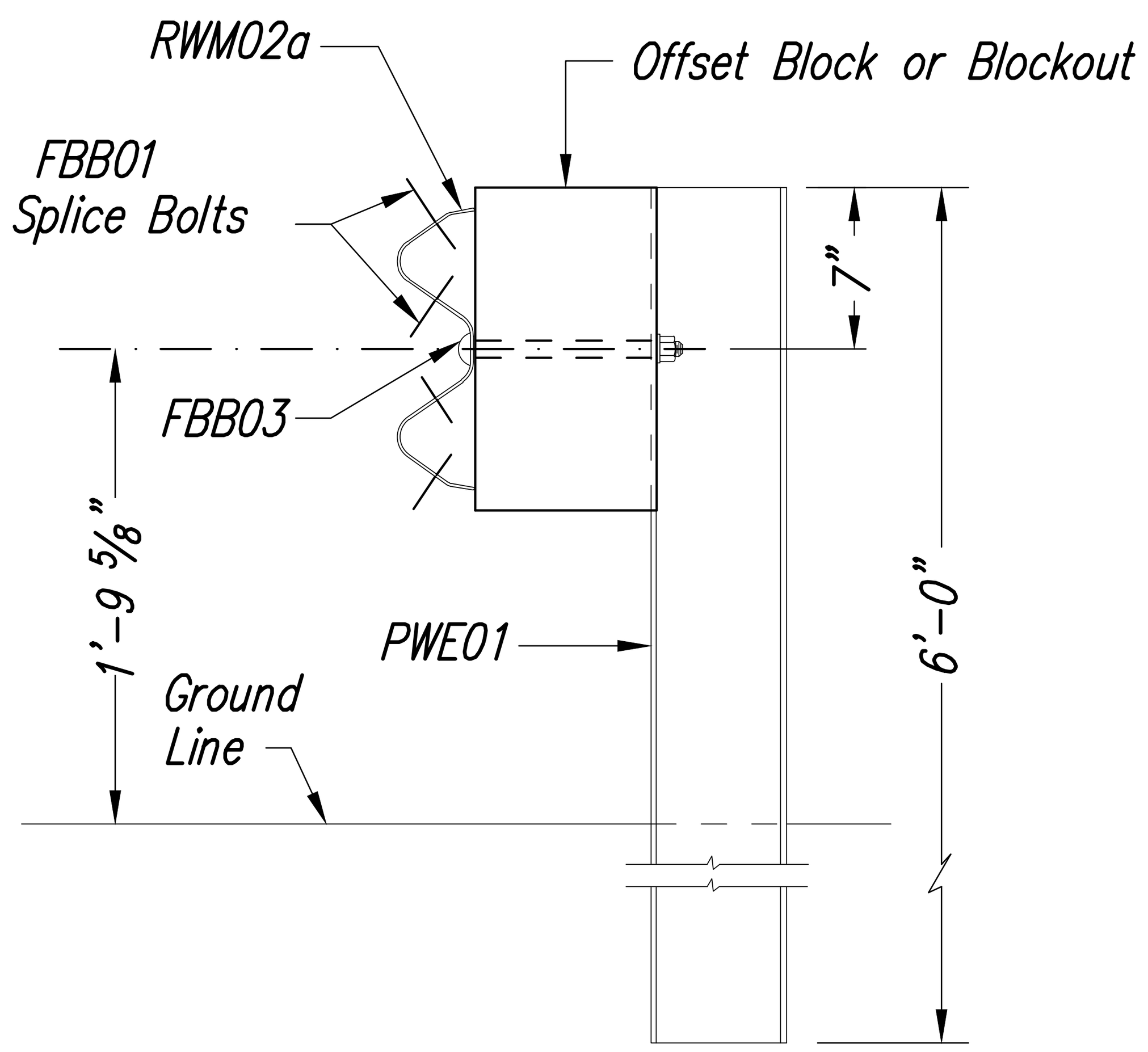


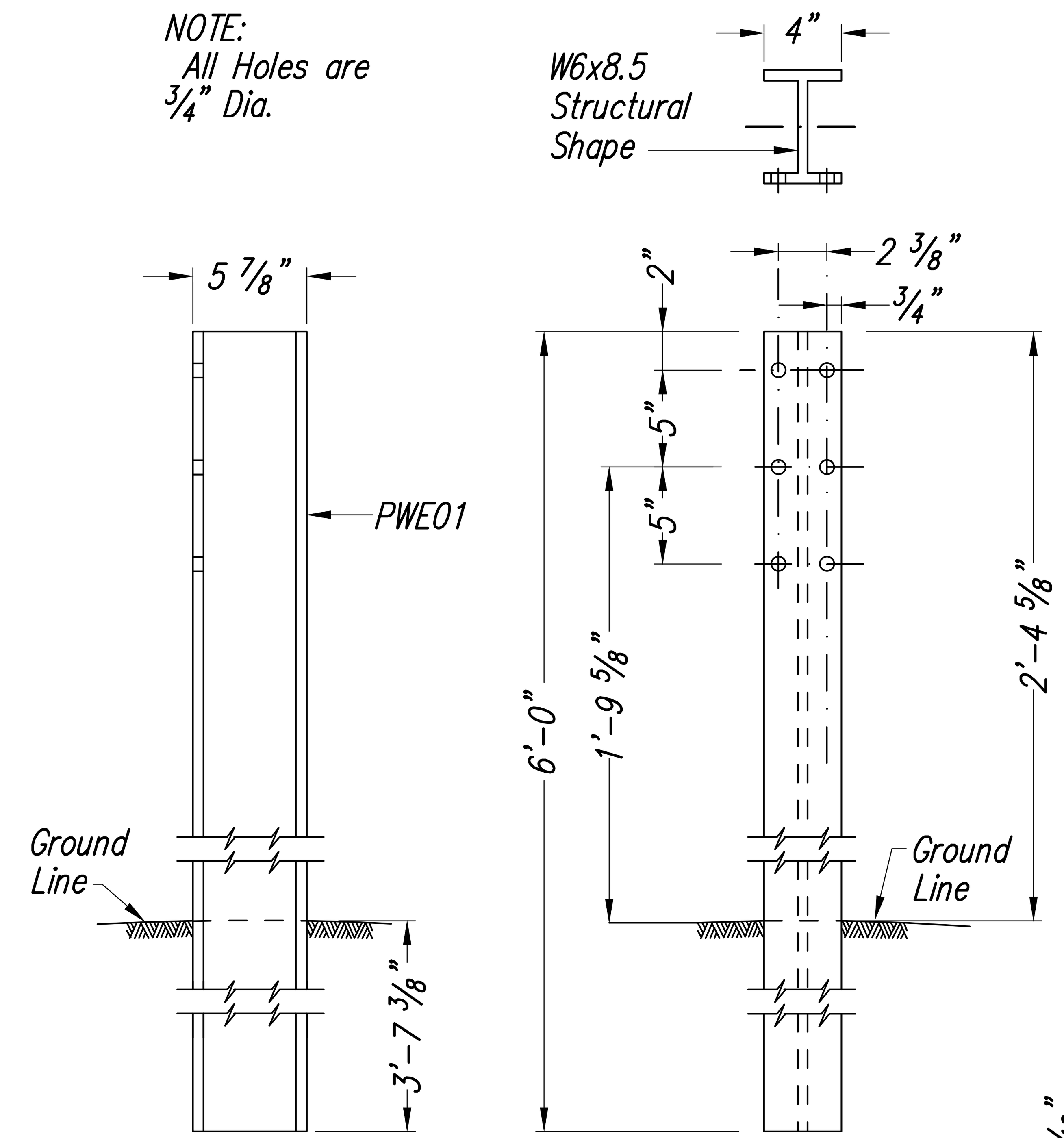
PLAN



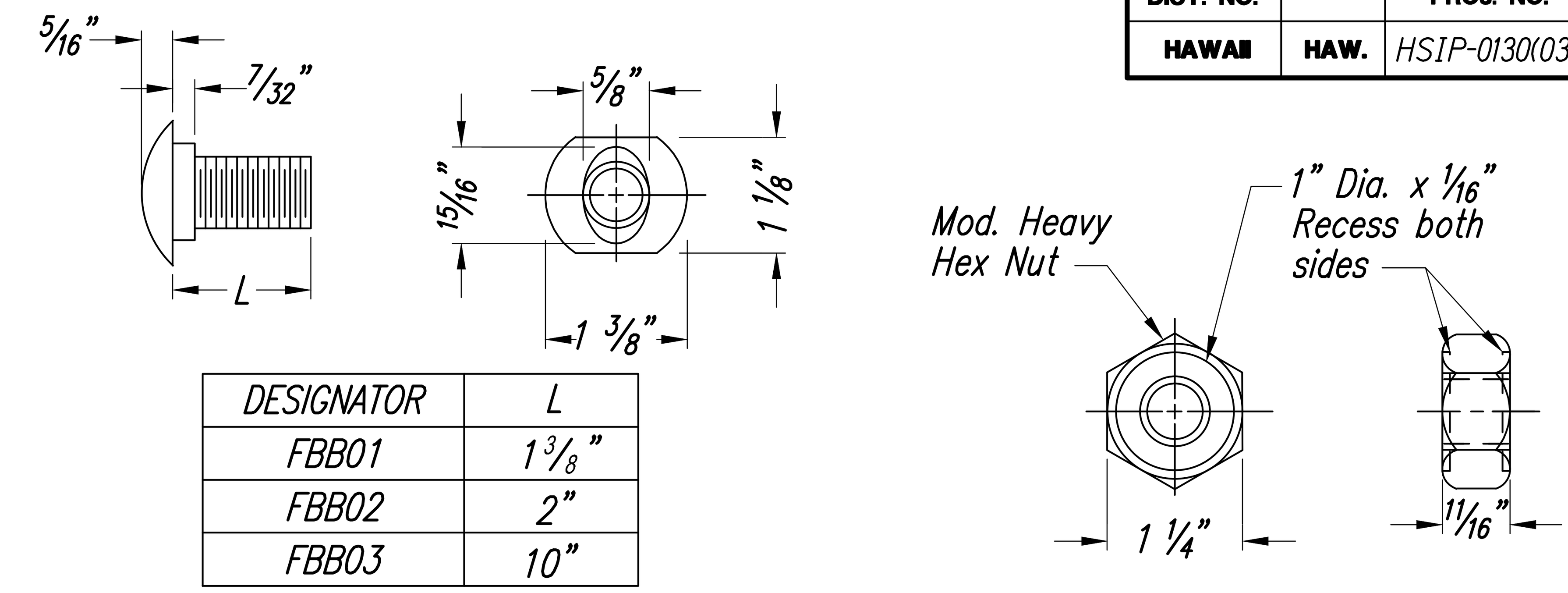
ELEVATION

STRONG POST W-BEAM GUARDRAIL

(SGR04a)

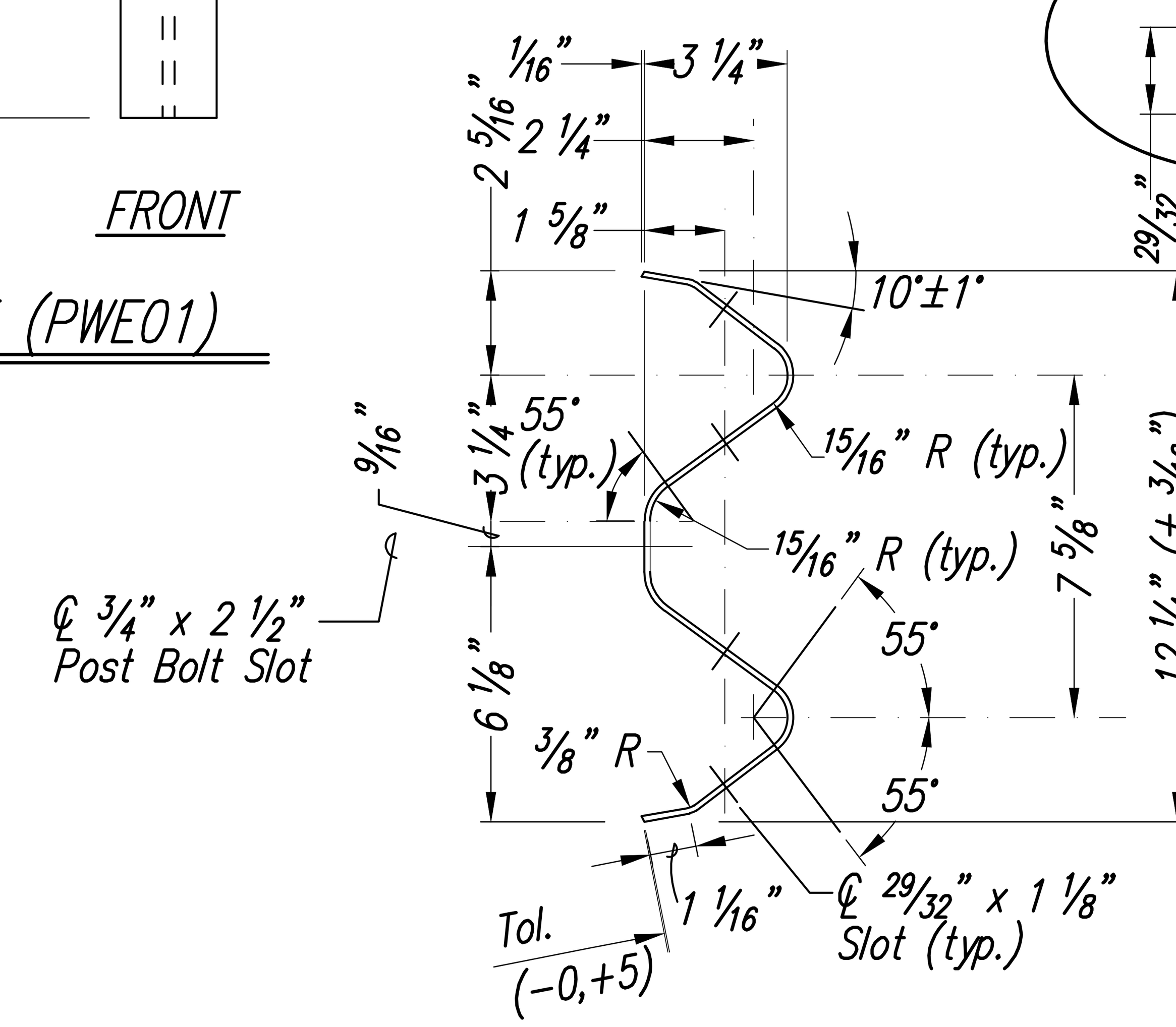


W-BEAM STRONG POST (PWE01)

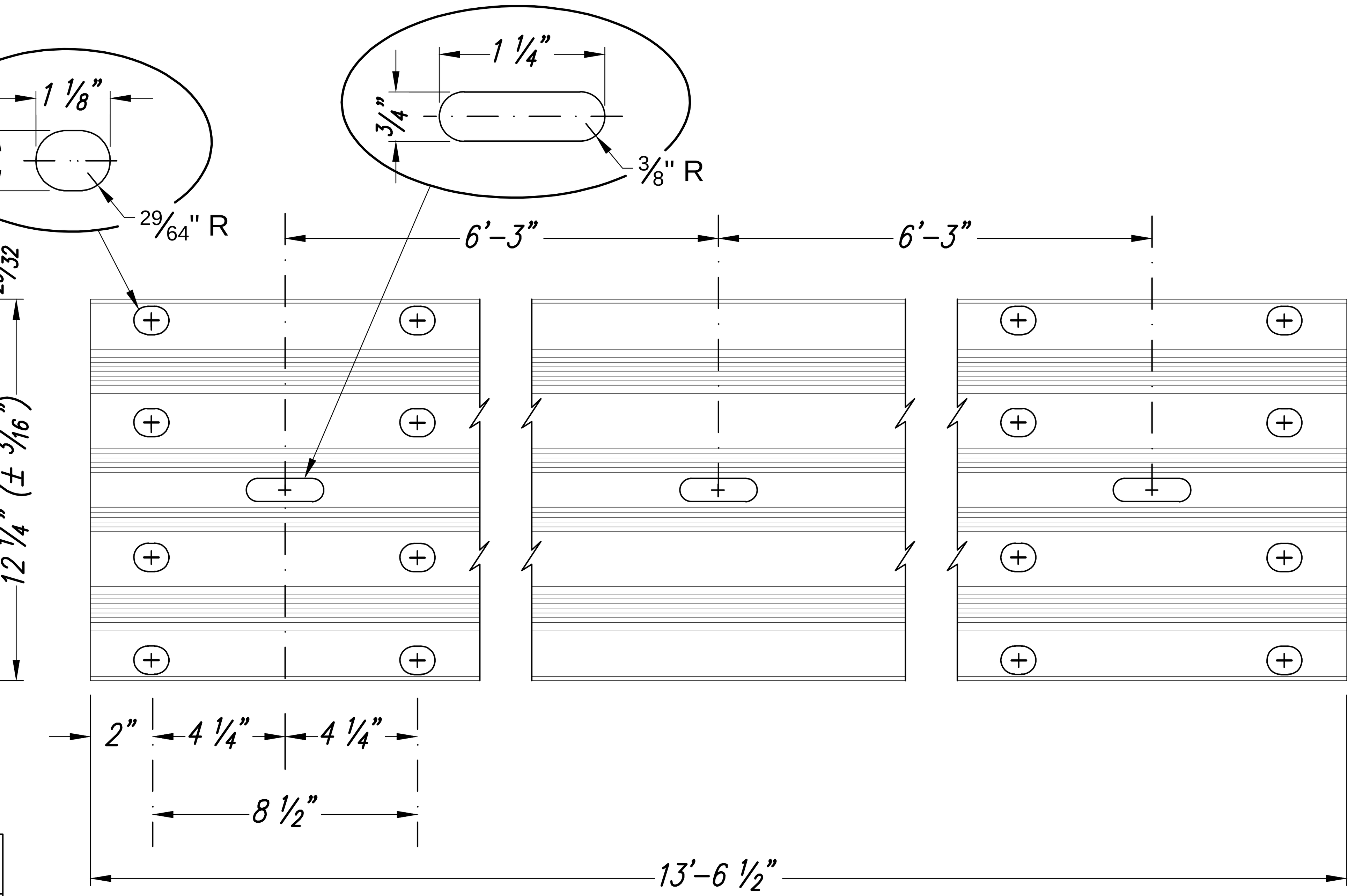


DESIGNATOR	L
FBB01	1 3/8"
FBB02	2"
FBB03	10"

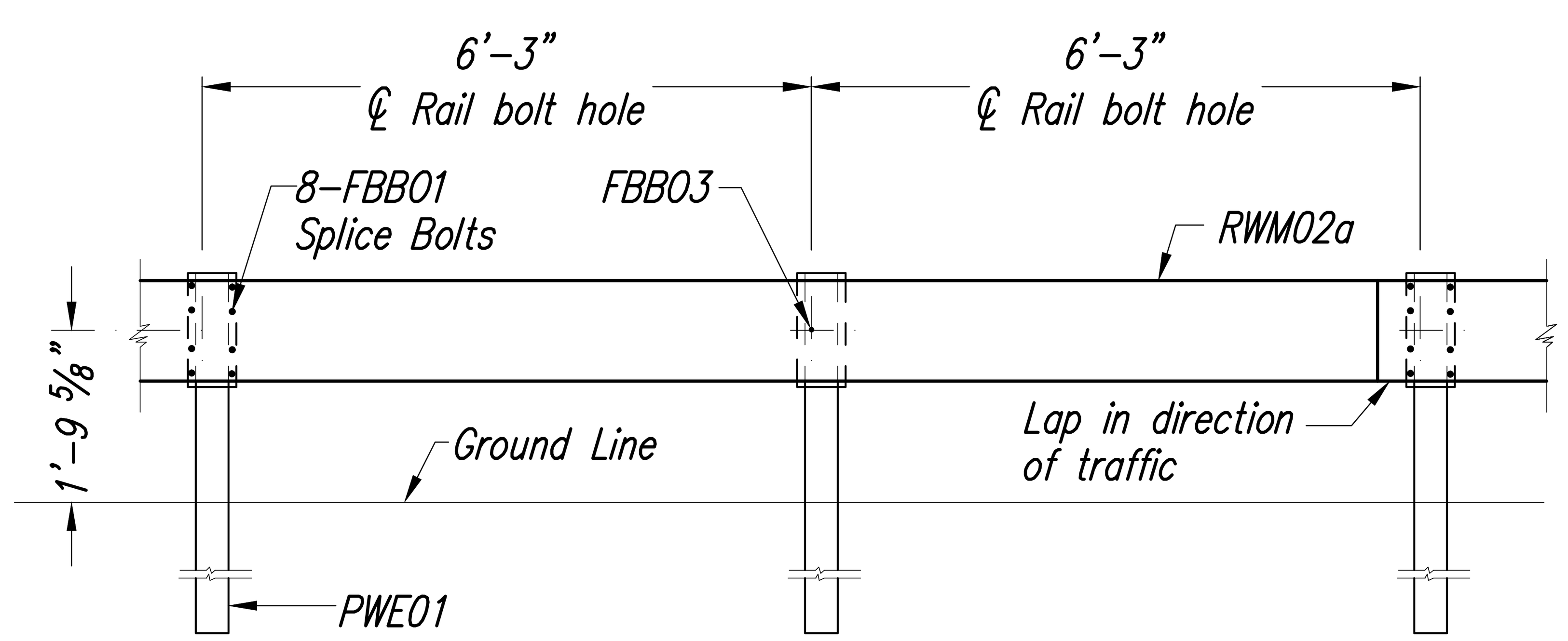
GUARDRAIL BOLTS AND RECESSED NUT



DESIGNATOR	BASE METAL THICKNESS
RWM02a	12 Gauge



2 SPACE W-BEAM GUARDRAIL (RWM02a)



ELEVATION

STRONG POST W-BEAM GUARDRAIL WITH

RECYCLED OFFSET BLOCK OR PLASTIC BLOCKOUT

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DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

STRONG POST W-BEAM GUARDRAIL DETAIL

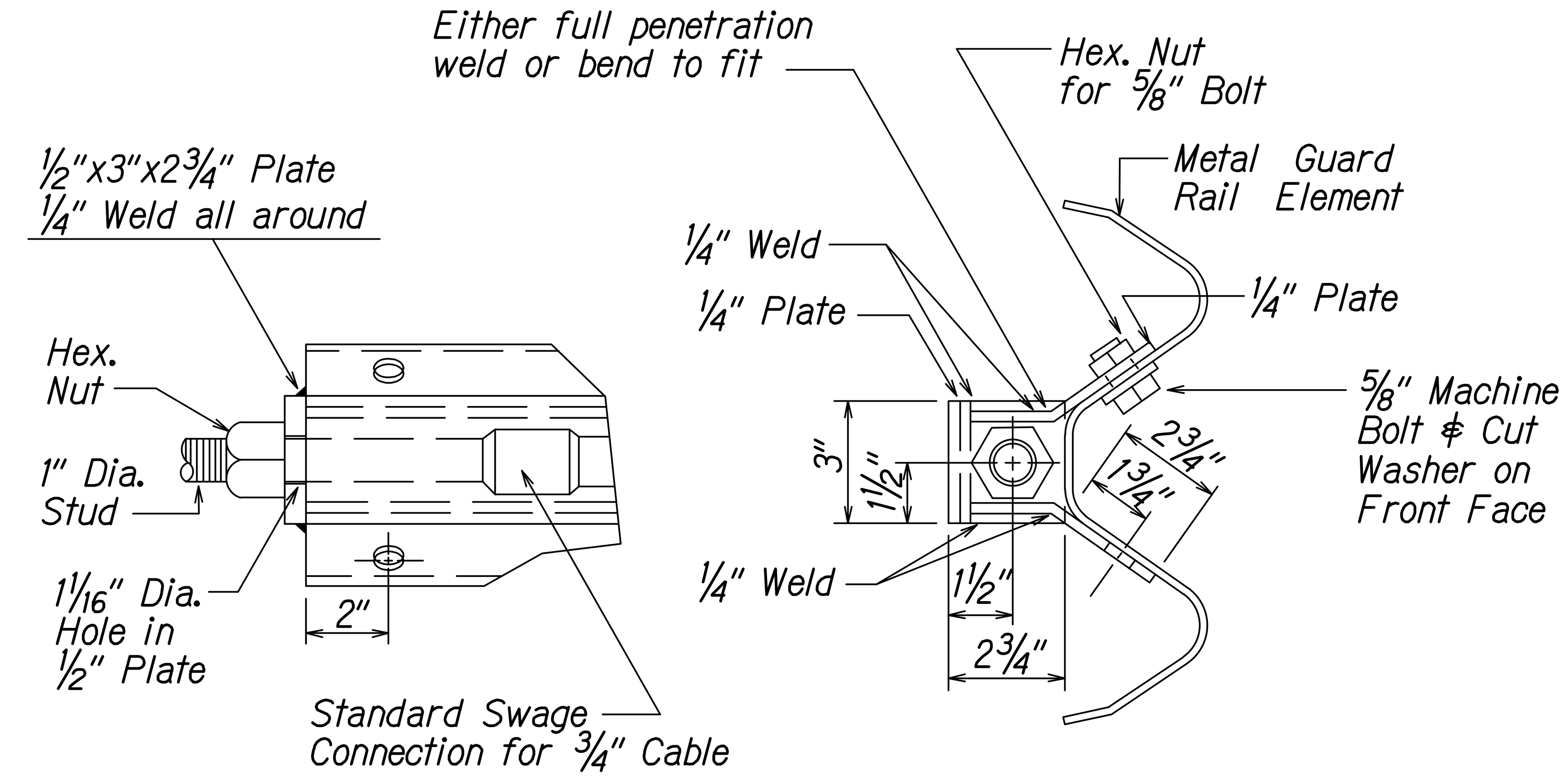
Keaau-Pahoa Road Intersection
Improvements at Old Government Road
Federal-Aid Project No. HSIP-0130(031)

Scale: None   Date: April 2013

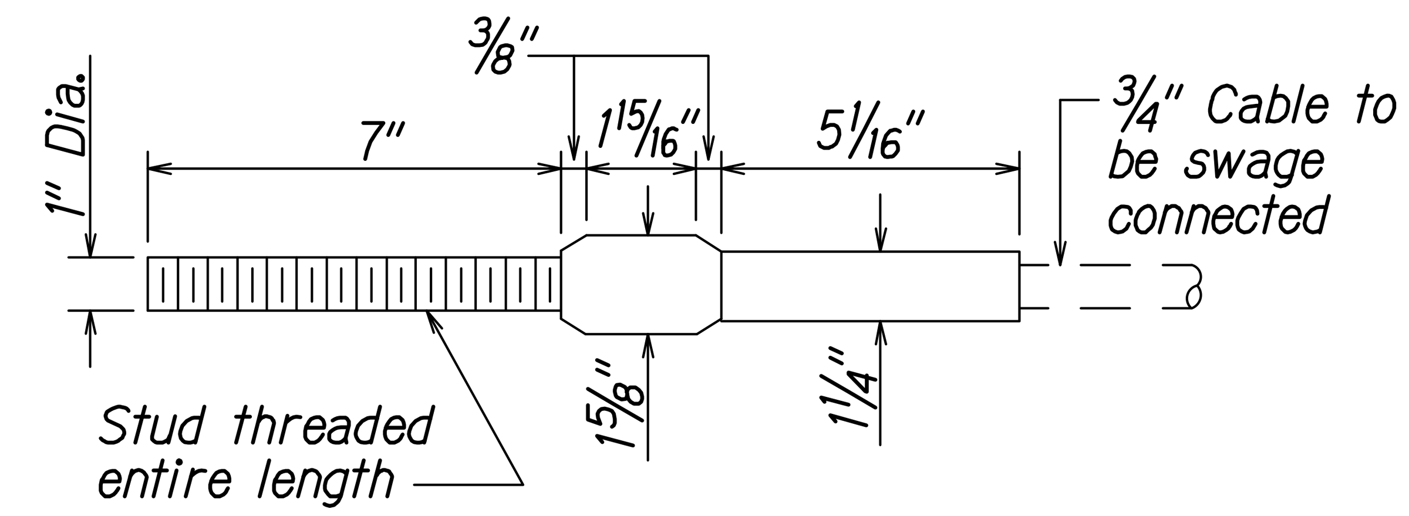
SHEET No. 2 OF 3 SHEETS

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

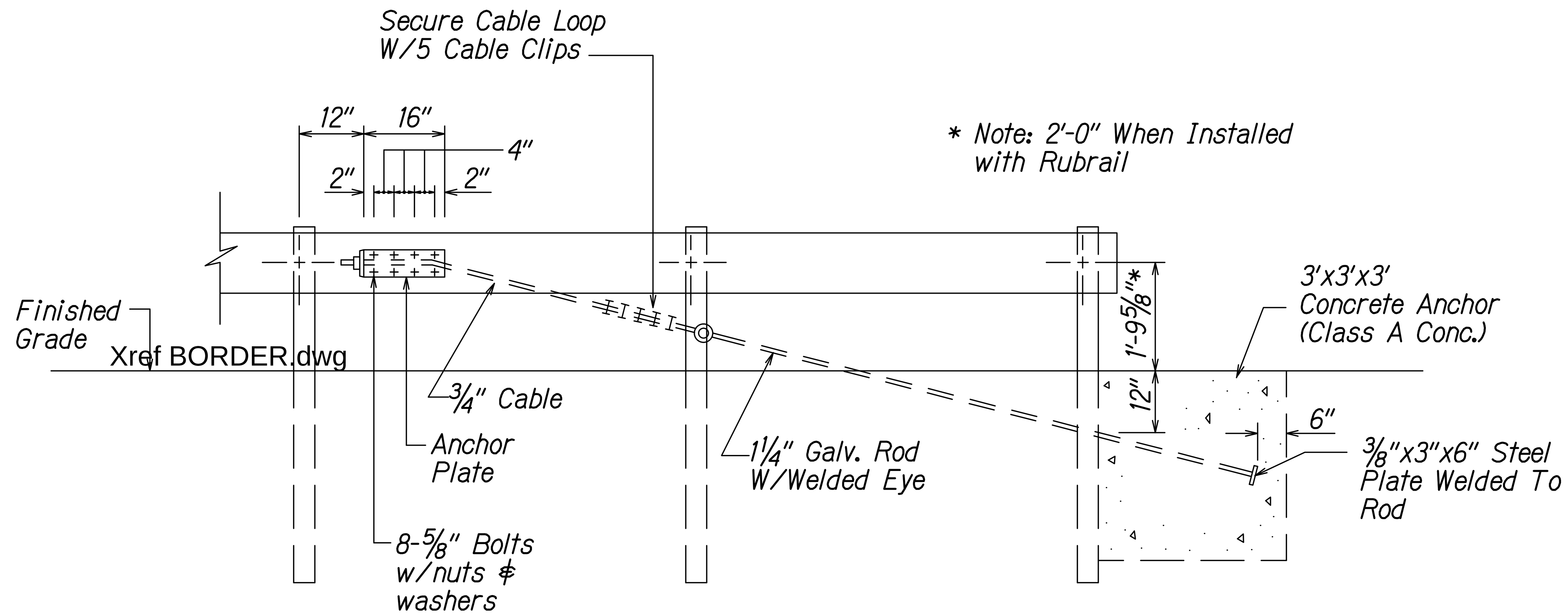
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	HSIP-0130(031)	2013	72	103



ANCHOR PLATE DETAILS



STANDARD SWAGED FITTING AND STUD



ANCHOR BLOCK DETAIL

1. Concrete, G.R.P., excavation, anchor rod and miscellaneous appurtenances necessary to anchor the guardrail ends shall be incidental to metal guardrail.

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HIGHWAYS DIVISION

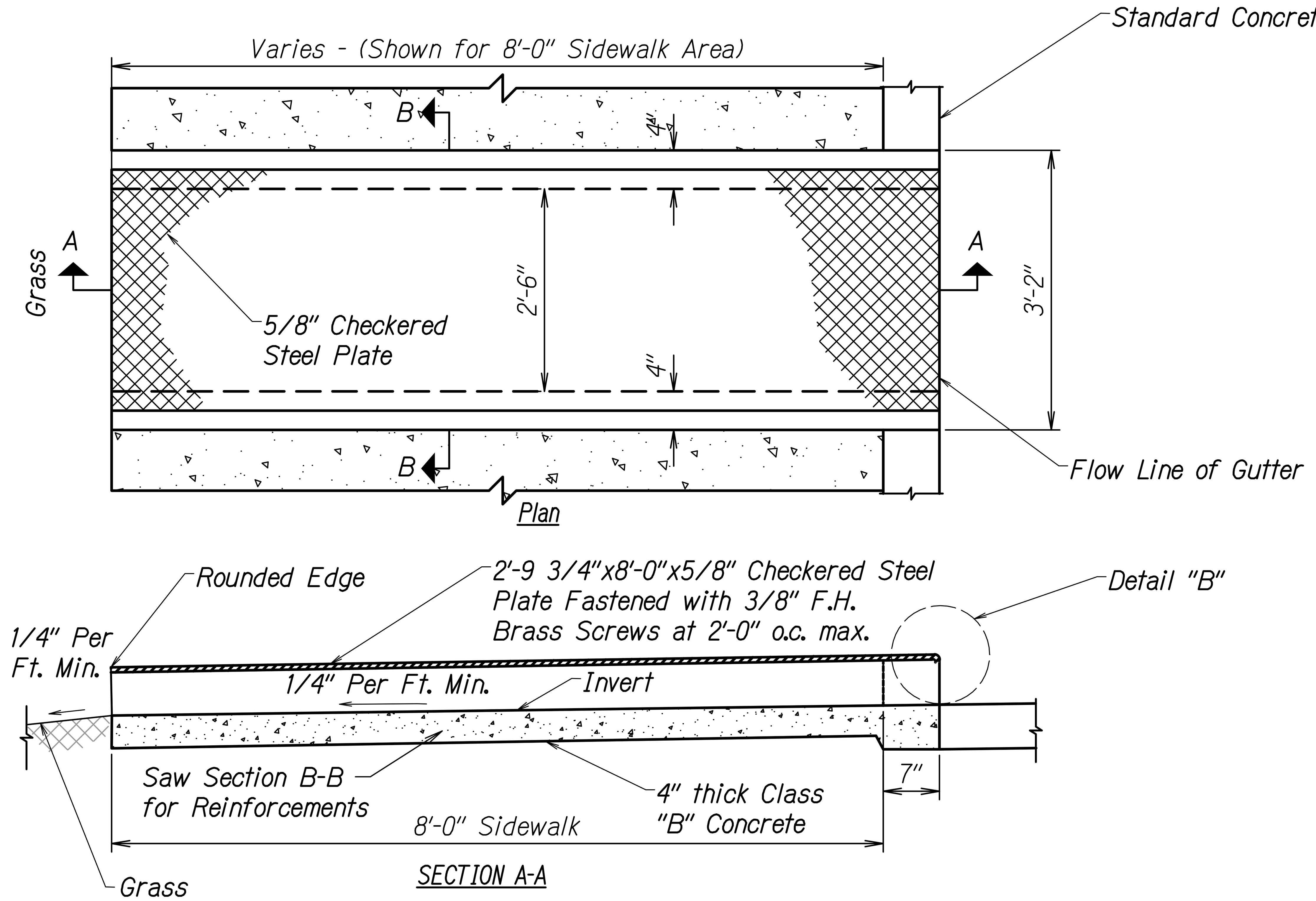
MISCELLANEOUS GUARDRAIL DETAILS

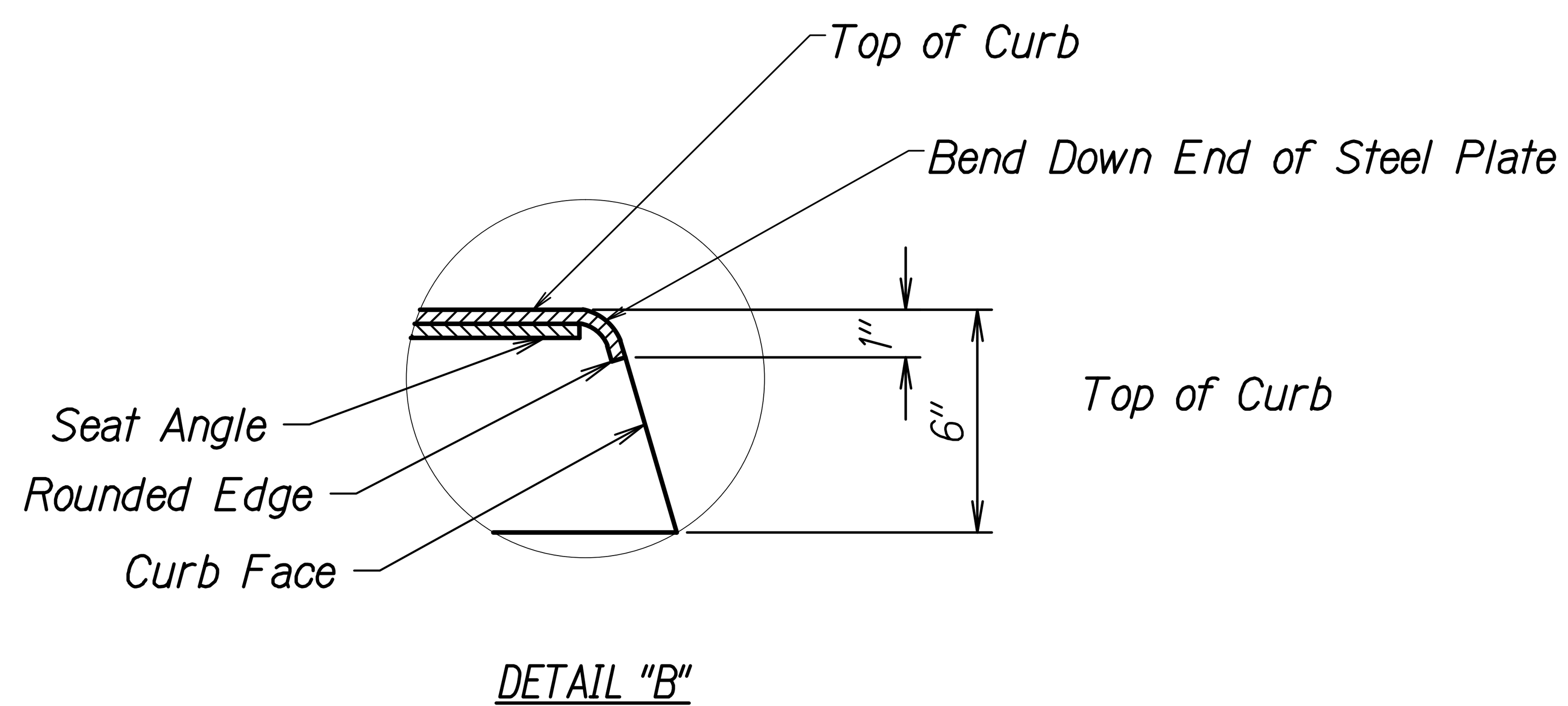
Keaau-Pahoa Road Intersection Improvements at Old Government Road
Federal-Aid Project No. HSIP-0130(031)

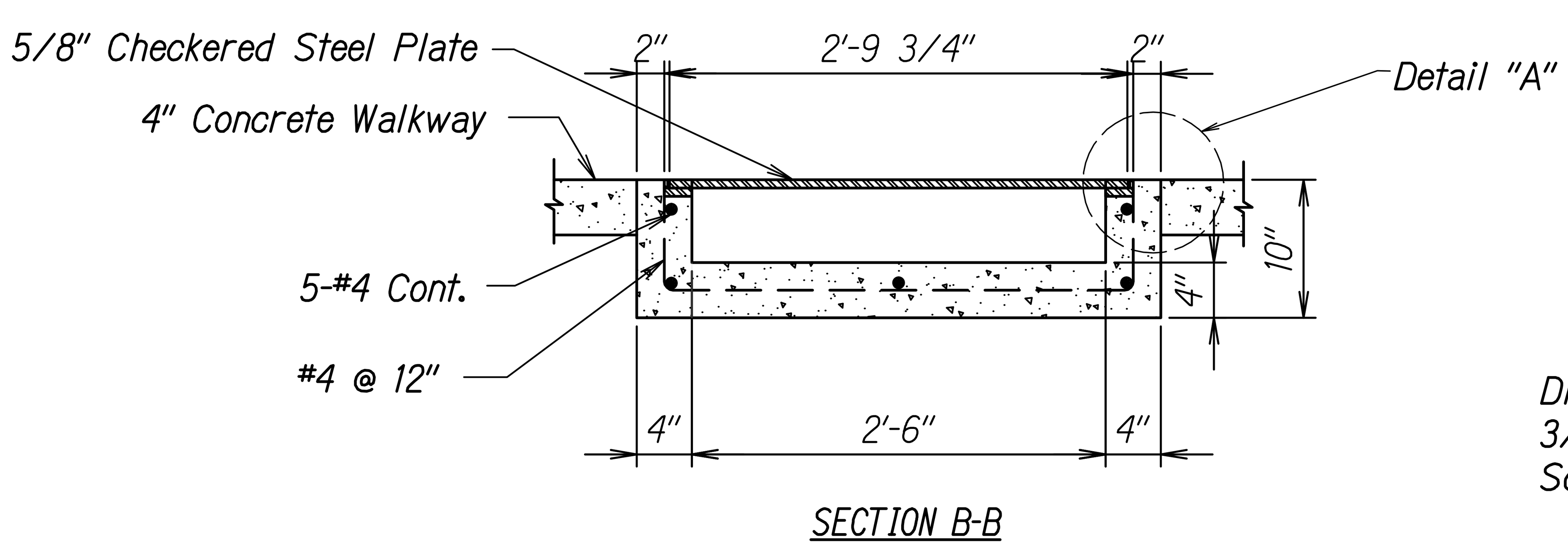
Scale: None   Date: April 2013

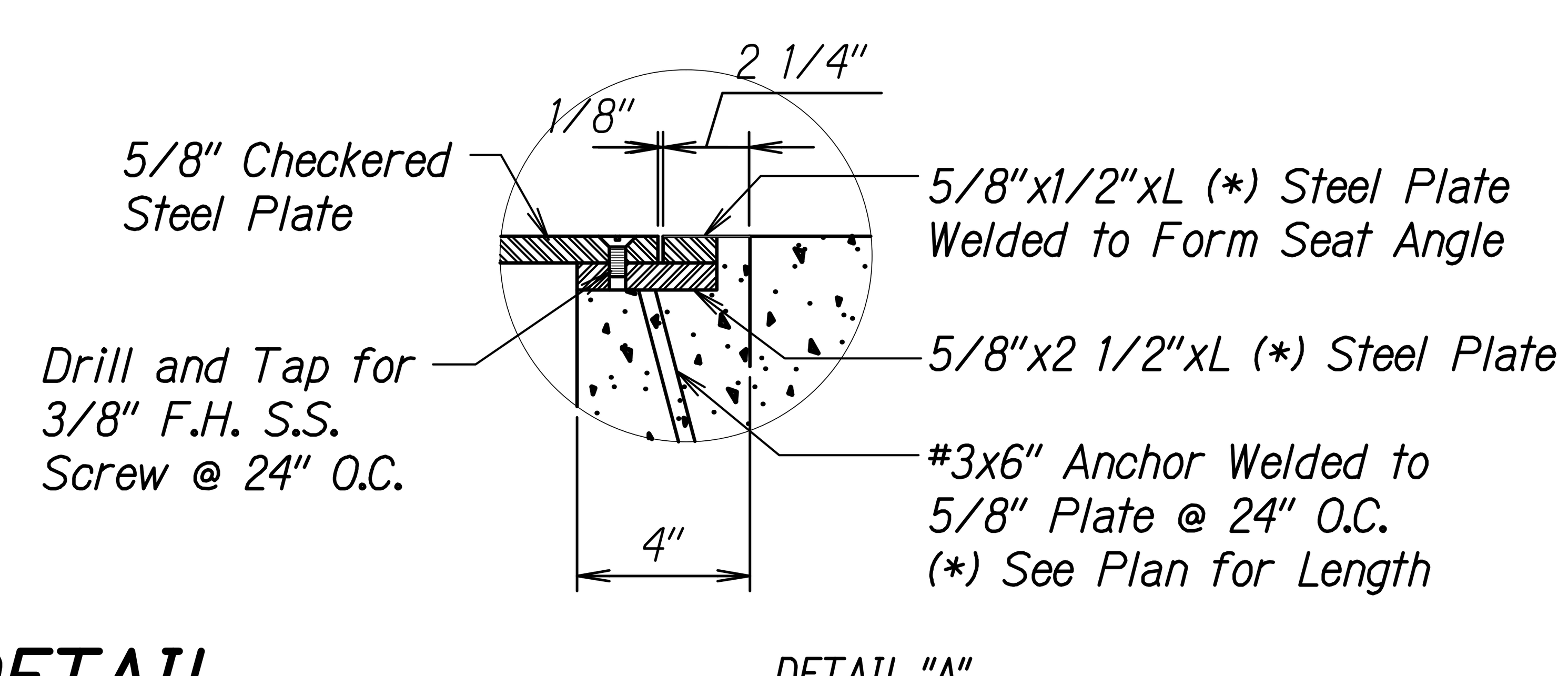
SHEET No. 3 OF 3 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	HSIP-0130(031)	2013	73	103



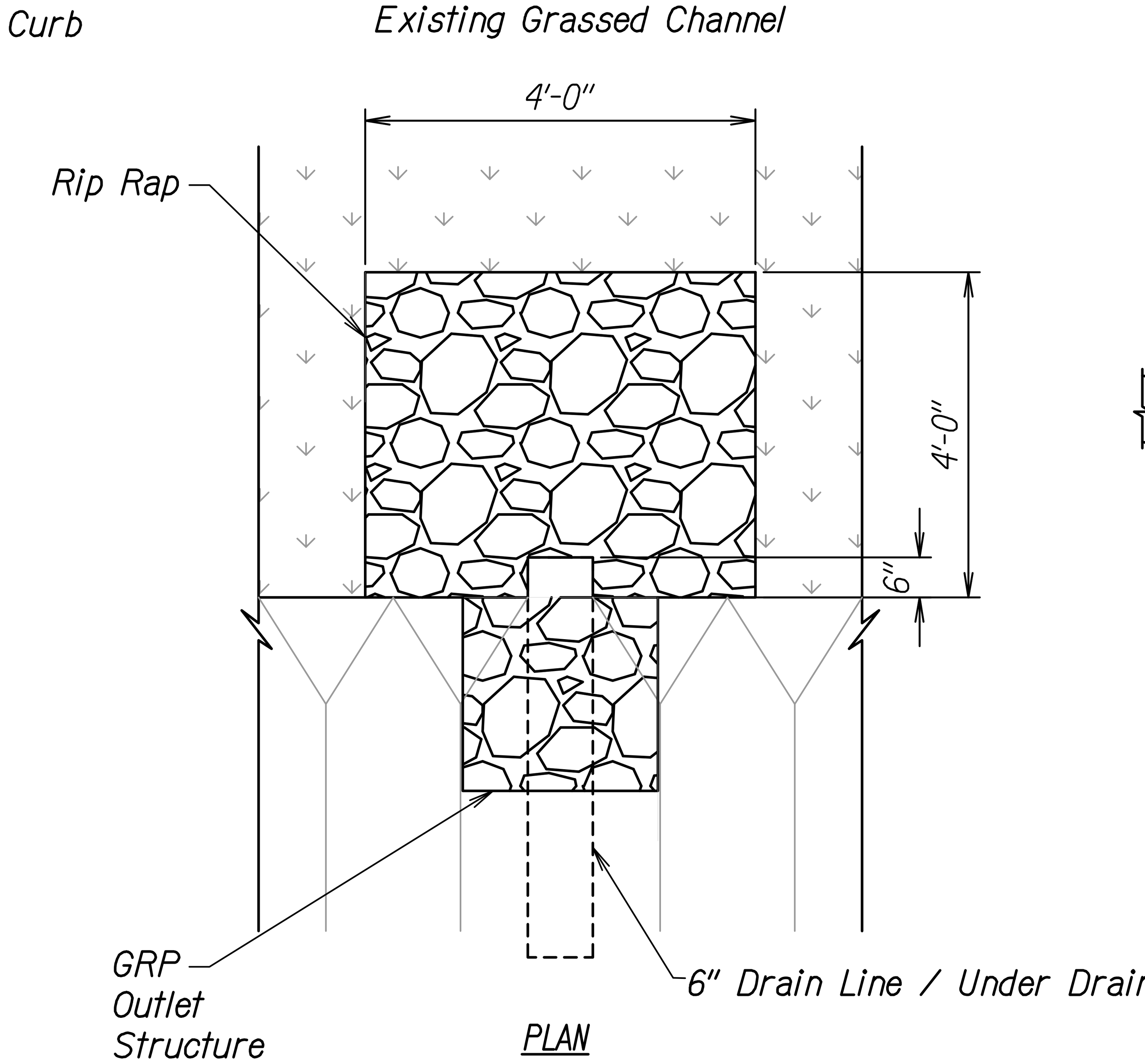


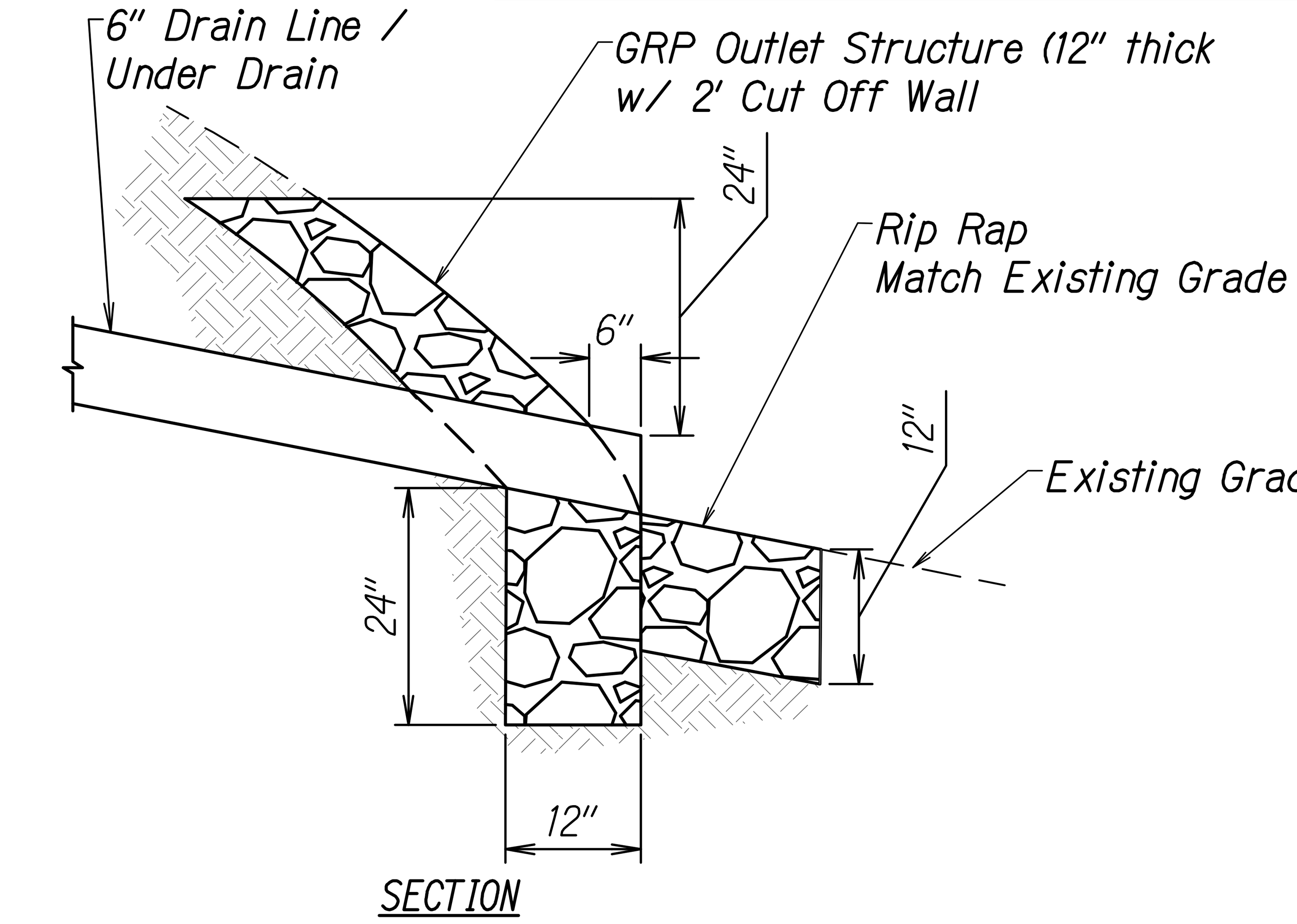




SIDEWALK CULVERT DETAIL

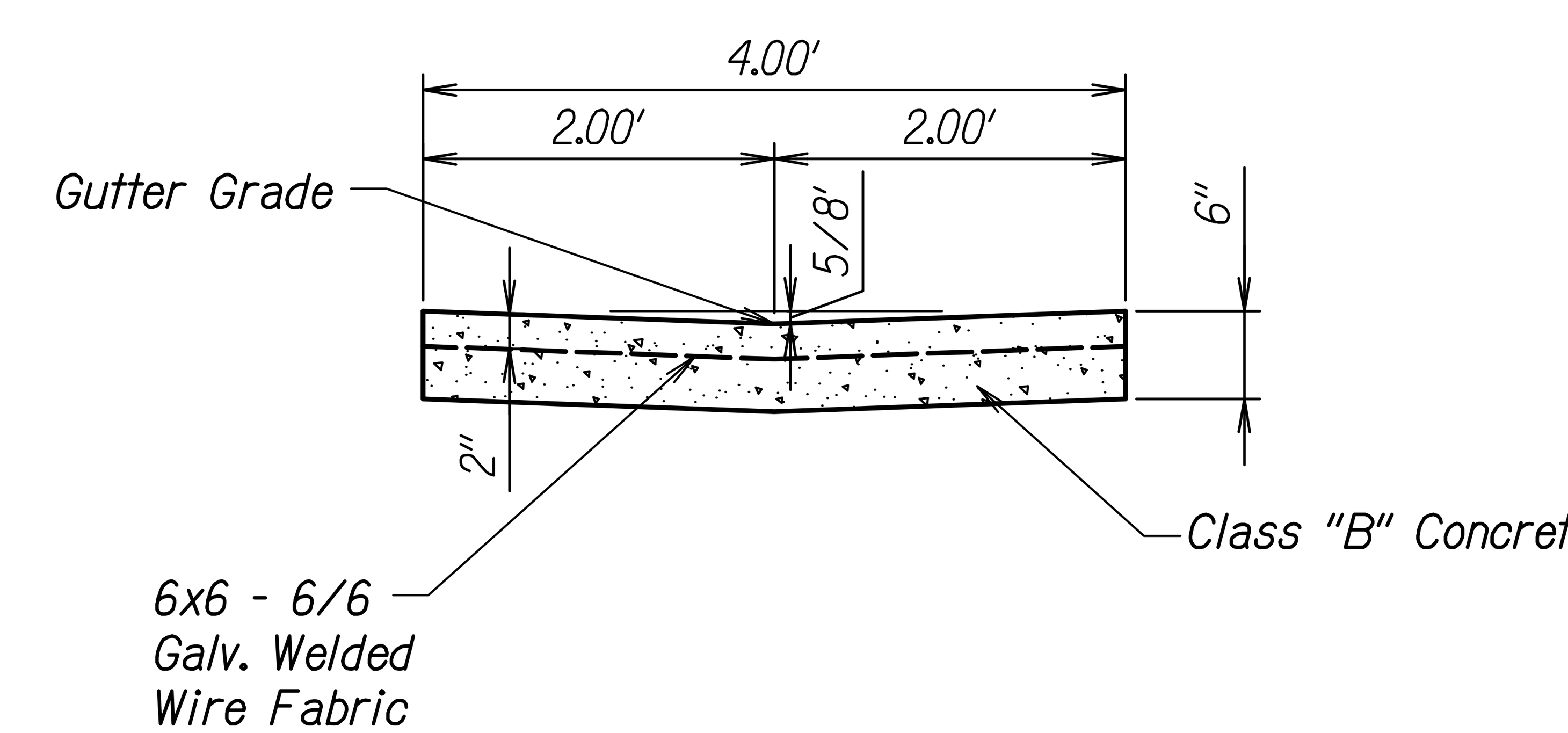
Scale: Not to Scale





OUTLET RIPRAP DETAIL

Scale: Not to Scale



THRU GUTTER DETAIL

Scale: Not to Scale

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DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

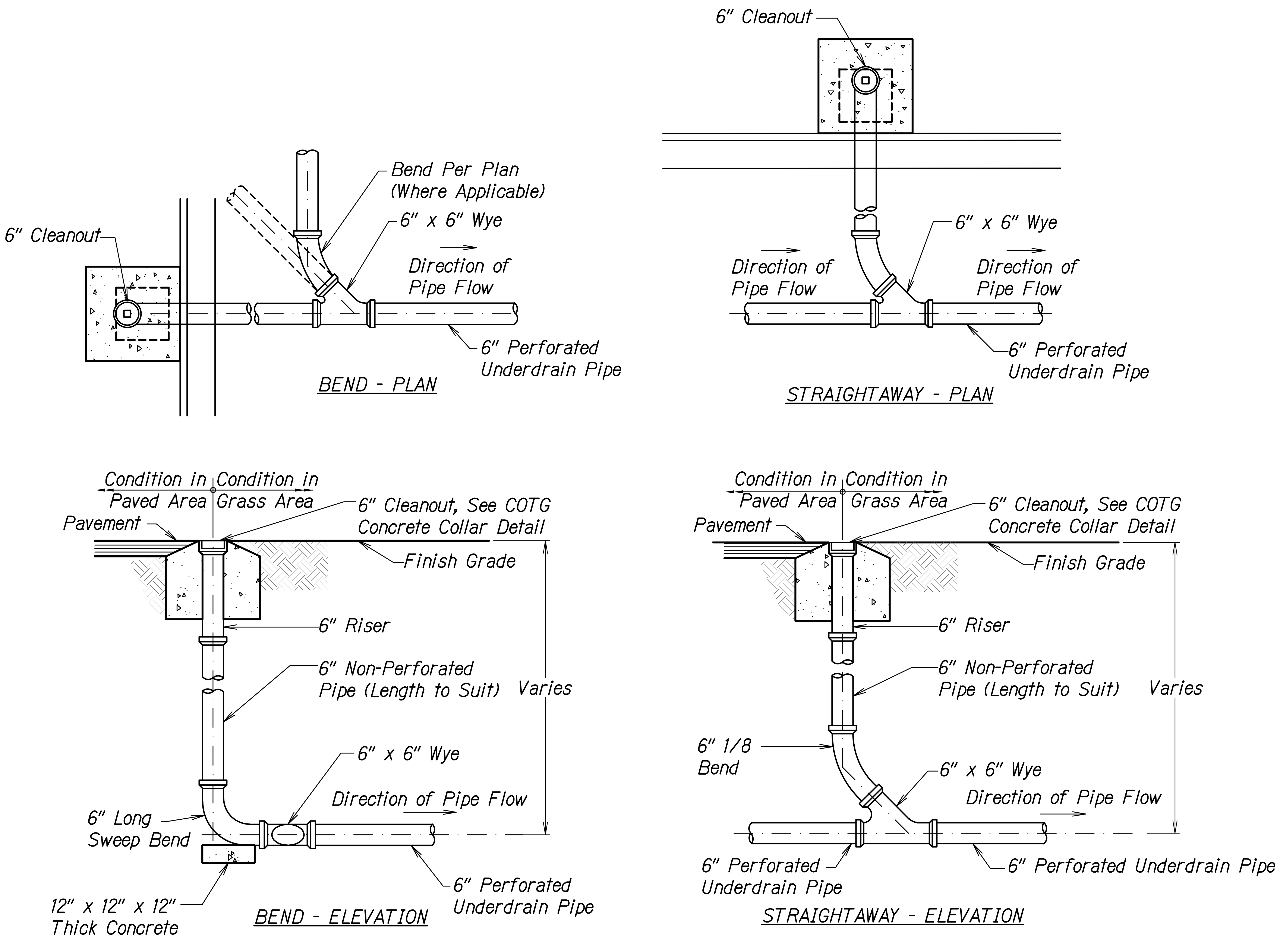
UTILITY DETAILS - 1

Keaau-Pahoa Road Intersection Improvements at Old Government Road
Federal-Aid Project No. HSIP-0130(031)

Scale: None Date: April 2013

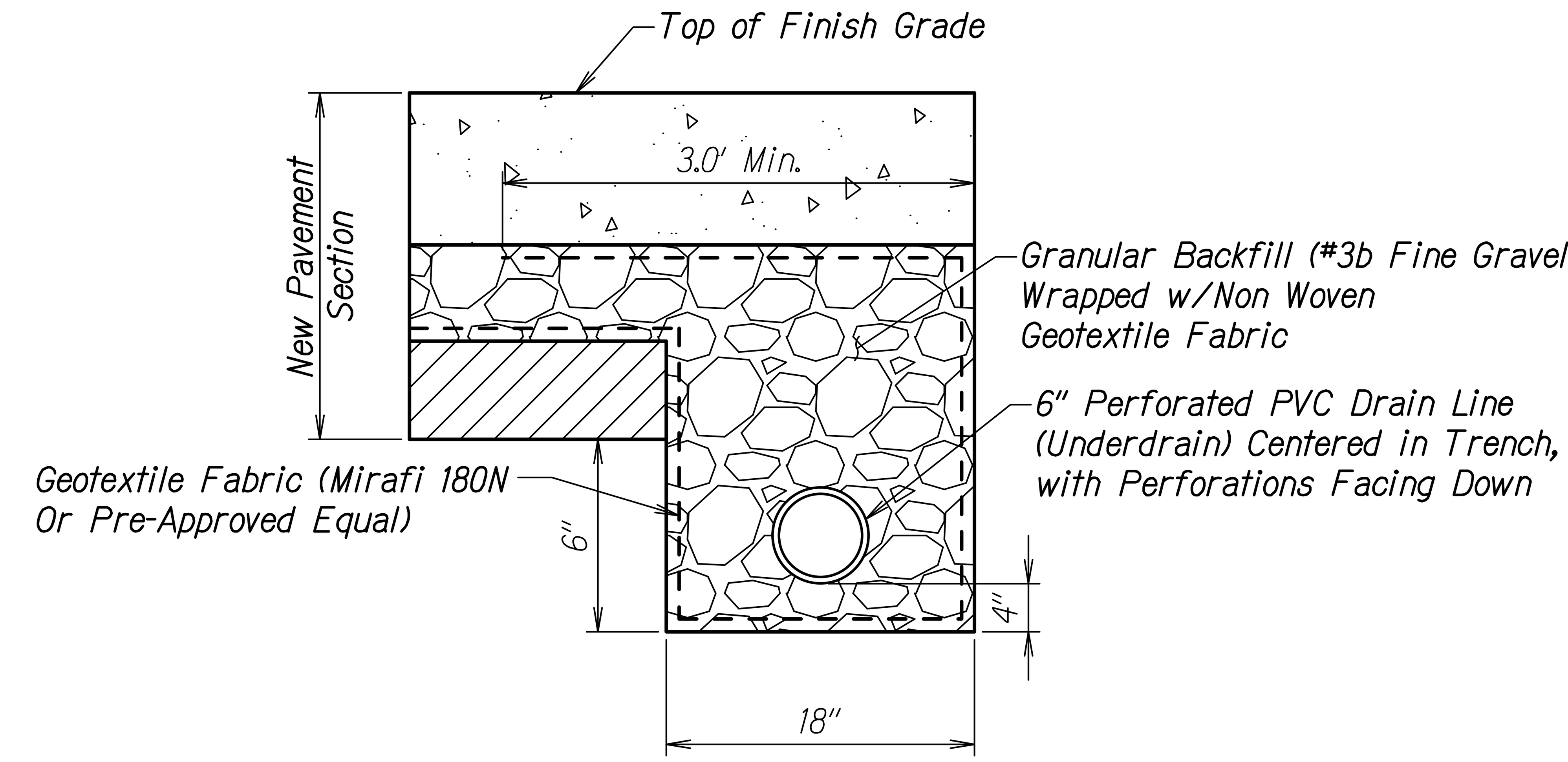
SHEET No. 1 OF 2 SHEETS

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



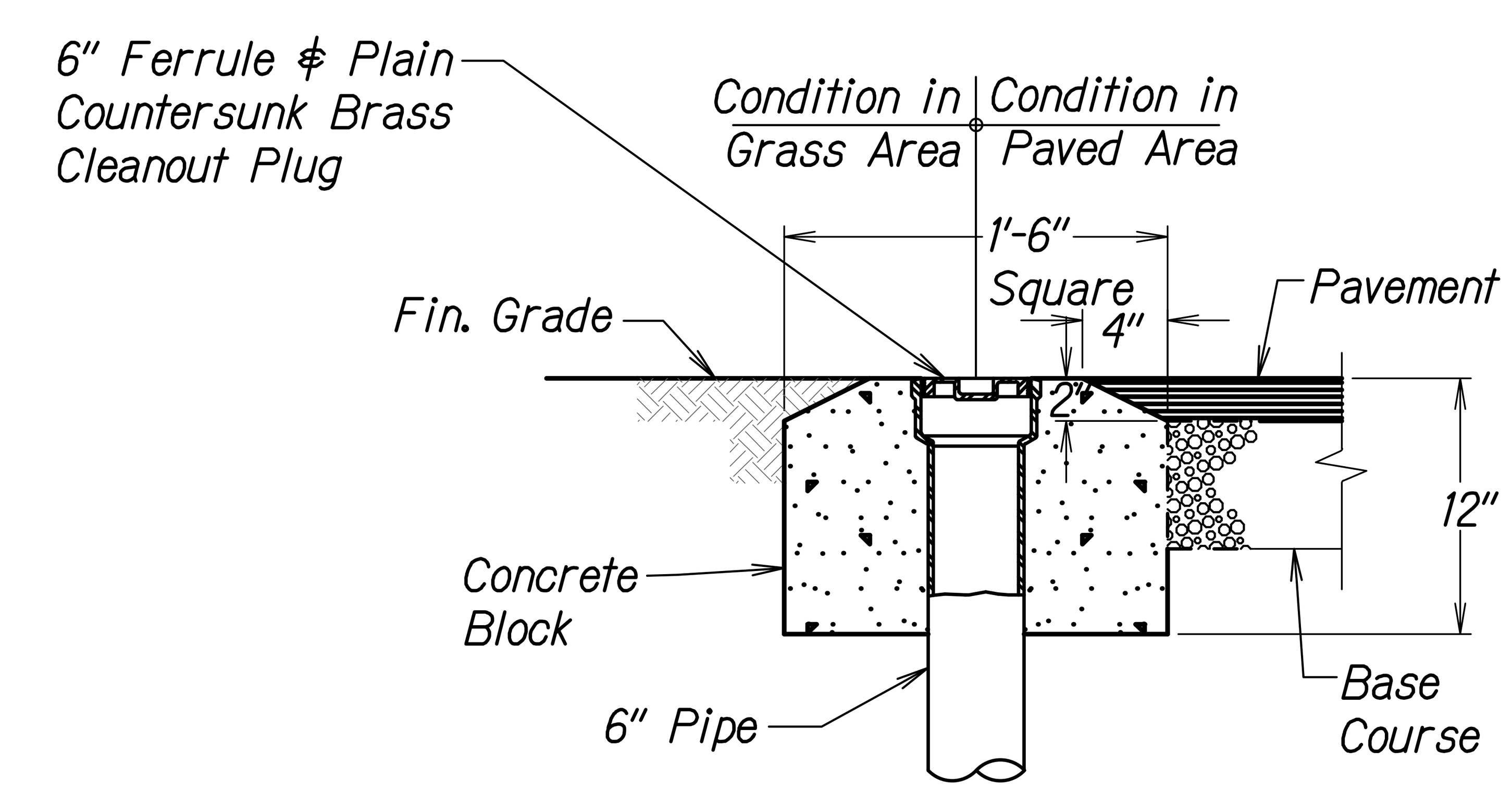
CLEANOUT TO GRADE DETAIL

Scale: Not to Scale



UNDERDRAIN TYPICAL SECTION

Scale: Not to Scale



COTG CONCRETE COLLAR DETAIL

Scale: Not to Scale

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DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

UTILITY DETAILS - 2

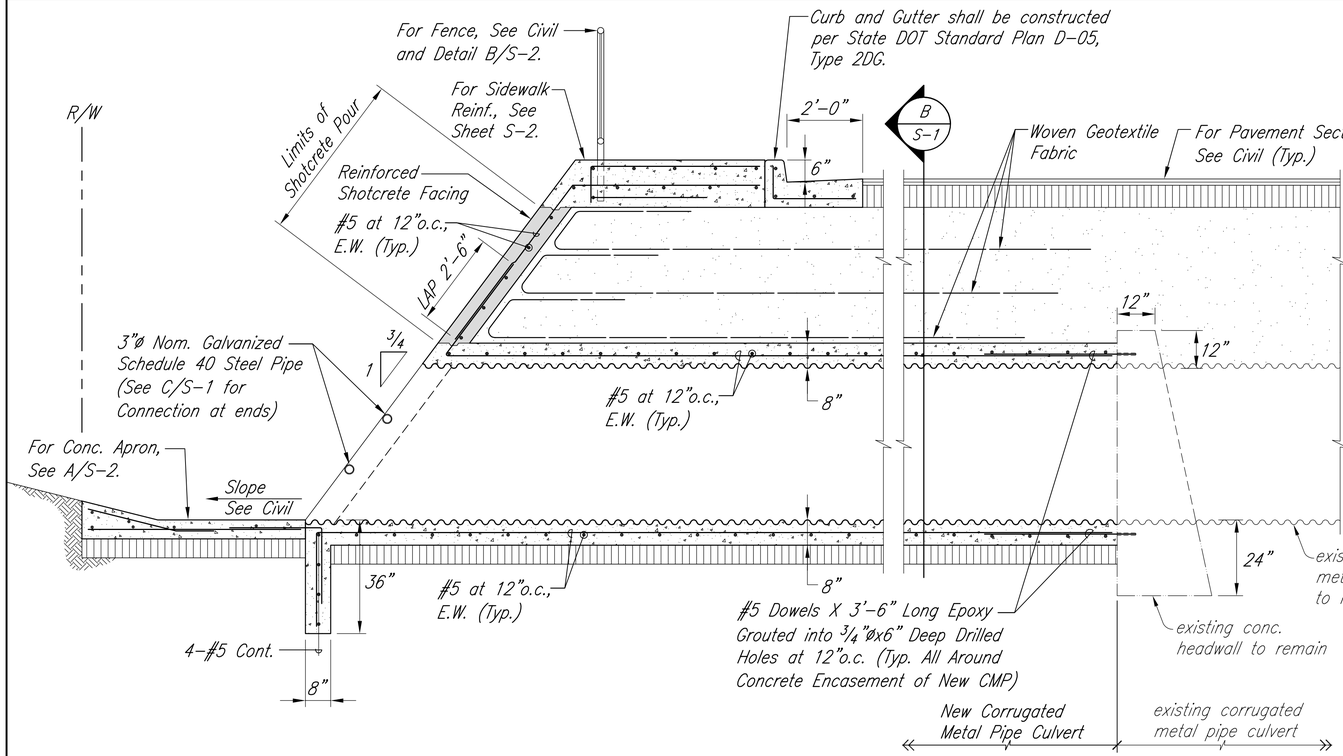
Keaau-Pahoa Road Intersection
Improvements at Old Government Road
Federal-Aid Project No. HSIP-0130(031)

Scale: None   Date: April 2013

SHEET No. 2 OF 2 SHEETS

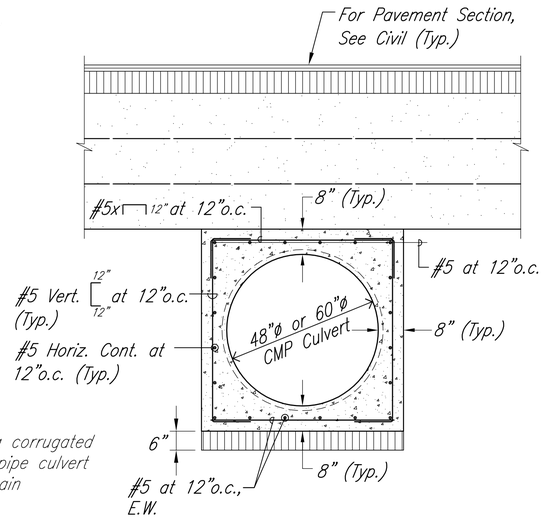
ORIGINAL PLAN | SURVEY PLOTTED BY | DATE
DRAWN BY
TRACED BY
NOTE BOOK | DESIGNED BY
QUANTITIES BY
No. | CHECKED BY

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	HSIP-0130(031)	2013	75	103



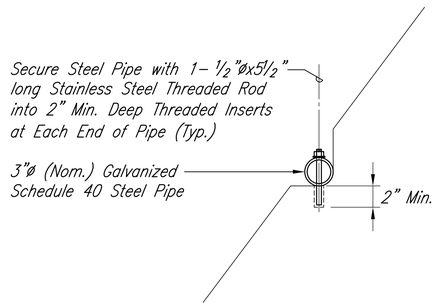
A S-1 48"Ø & 60"Ø CORRUGATED METAL PIPE CULVERT EXTENSION AND HEADWALL SECTION

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



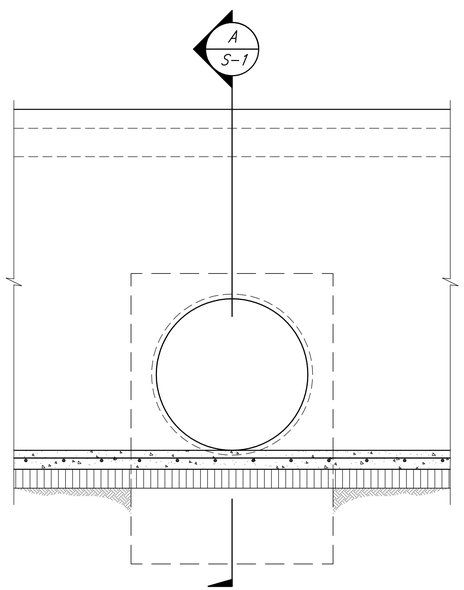
B S-1 SECTION THRU CMP CULVERT & CONC. JACKET

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



C S-1 END OF PIPE FASTENING DETAIL

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

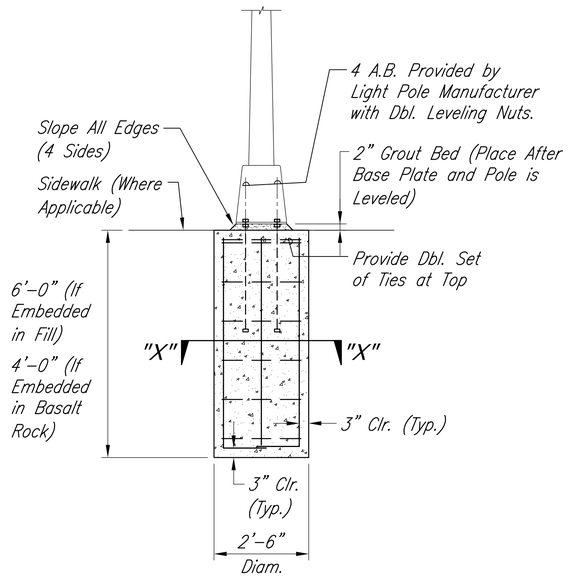


D S-1 HEADWALL ELEVATION DETAIL

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

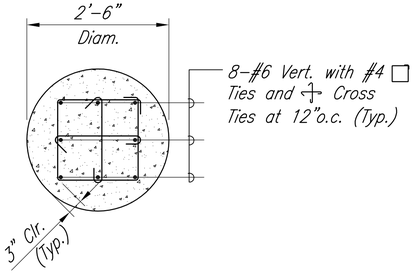
Light Pole I.D. No.	Roadway	Station No.	Embedment Material *	Drilled Shaft Length (feet)*
1	Keaau-Pahoa	13+50L	Basalt Rock	4
2	Keaau-Pahoa	14+00L	Basalt Rock	4
3	Keaau-Pahoa	14+60L	Basalt Rock	4
4	Keaau-Pahoa	15+40L	Basalt Rock	4
5	Keaau-Pahoa	16+00L	Basalt Rock	4
6	Keaau-Pahoa	16+50L	Fill	6
7	Keaau-Pahoa	17+10L	Fill	6
8	Keaau-Pahoa	17+20L	Fill	6
9	Keaau-Pahoa	17+60L	Fill	6
10	Keaau-Pahoa	18+10L	Fill	6
11	Keaau-Pahoa	19+00L	Fill	6
12	Keaau-Pahoa	20+10L	Fill	6
13	Keaau-Pahoa	13+40R	Basalt Rock	4
14	Keaau-Pahoa	14+20R	Basalt Rock	4
15	Keaau-Pahoa	15+00R	Basalt Rock	4
16	Keaau-Pahoa	15+90R	Fill	6
17	Keaau-Pahoa	16+40R	Fill	6
18	Pahoa Village Rd.	0+50R	Fill	6
19	Pahoa Village Rd.	1+00R	Fill	6
20	Pahoa Village Rd.	0+40R	Fill	6
21	Pahoa Village Rd.	2+40R	Fill	6
22	Pahoa Village Rd.	1+70L	Basalt Rock	4
23	Pahoa Village Rd.	1+00L	Basalt Rock	4
24	Pahoa Village Rd.	0+60L	Basalt Rock	4
25	Keaau-Pahoa	17+80R	Basalt Rock	4
26	Keaau-Pahoa	17+90R	Basalt Rock	4
27	Keaau-Pahoa	18+60R	Basalt Rock	4
28	Keaau-Pahoa	19+60R	Basalt Rock	4

*Note:
Embedment Material and Lengths of Shafts will still need to be verified in the field. Should differing Material be encountered, Drilled Shaft Lengths may need to be adjusted per direction from the Geotechnical Engineer.



E S-1 STREET LIGHTPOLE FOUNDATION DETAIL

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



SECTION "X"-"X"

SCALE: 3/4" = 1'-0"

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DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

Culvert Extension, Headwall and Lightpole Foundation Details

Keaau-Pahoa Road Intersection Improvements at Old Government Road
Federal-Aid Project No. HSIP-0130(031)

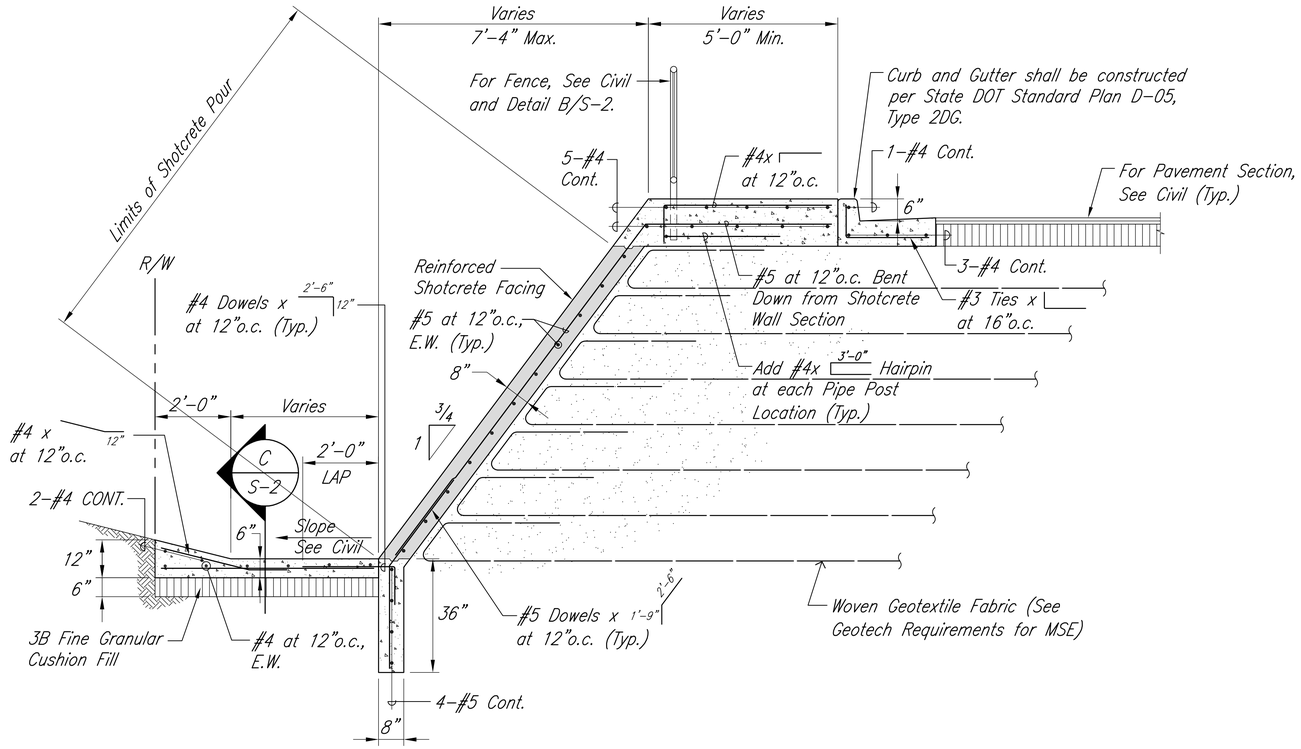
Scale: As Noted Date: November 2012

SHEET No. S-1 OF 2 SHEETS

75

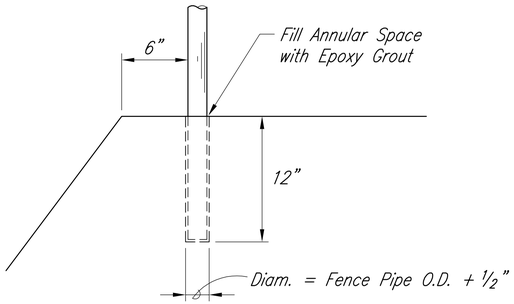
ORIGINAL PLAN
NOTE BOOK
SURVEY PLOTTED BY ____ DATE
DRAWN BY : : : : :
TRACED BY
DESIGNED BY
QUANTITIES BY
CHECKED BY
No. ____

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	HSIP-0130(031)	2013	76	103



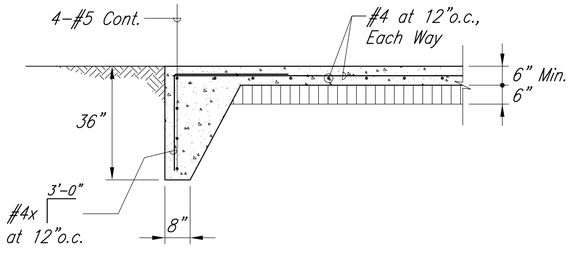
A S-2 **TYPICAL SECTION**

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



B S-2 **FENCE POST DETAIL**

NOT TO SCALE



C S-2 **SECTION AT UPSTREAM AND DOWNSTREAM EDGE**

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

ORIGINAL PLAN

NOTE BOOK No.

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

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No. 4529-S
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DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

Typical Section

Keaau-Pahoa Road Intersection Improvements at Old Government Road Federal-Aid Project No. HSIP-0130(031)

Scale: As Noted Date: November 2012

SHEET No. S-2 OF 2 SHEETS

76

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	HSIP-0130(031)	2013	77	103

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

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GEOLABS, INC.
LICENSE EXPIRES 4-30-14

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

BORING LOCATION PLAN

Keaau-Pahoa Road Intersection
Improvements at Old Government Road
Federal-Aid Project No. HSIP-0130(031)

Scale: 1" = 40' Date: April 2013

SHEET No. B-1 OF 4 SHEETS

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

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	HSIP-0130(031)	2013	78	103

GEOLABS, INC.
Geotechnical Engineering

Soil Log Legend

UNIFIED SOIL CLASSIFICATION SYSTEM (USCS)

MAJOR DIVISIONS			USCS	TYPICAL DESCRIPTIONS
COARSE-GRAINED SOILS	GRAVELS	CLEAN GRAVELS	GW	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
	MORE THAN 50% OF COARSE FRACTION RETAINED ON NO. 4 SIEVE	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
		MORE THAN 12% FINES	GC	CLAYEY GRAVELS, GRAVEL-SAND-CLAY MIXTURES
MORE THAN 50% OF MATERIAL RETAINED ON NO. 200 SIEVE	SANDS	CLEAN SANDS	SW	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
	50% OR MORE OF COARSE FRACTION PASSING THROUGH NO. 4 SIEVE	LESS THAN 5% FINES	SP	POORLY-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
		SANDS WITH FINES	SM	SILTY SANDS, SAND-SILT MIXTURES
		MORE THAN 12% FINES	SC	CLAYEY SANDS, SAND-CLAY 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
50% OR MORE OF MATERIAL PASSING THROUGH NO. 200 SIEVE	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	PEN	POCKET PENETROMETER (tsf)
	CORE SAMPLE	UC	UNCONFINED COMPRESSION (psi)
	WATER LEVEL OBSERVED IN BORING AT TIME OF DRILLING	UU	UNCONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION (ksf)
	WATER LEVEL OBSERVED IN BORING AFTER DRILLING		

Plate A-0.1

LOG LEGEND FOR SOIL 6629-00.GPJ GEOLABS.GDT 9/4/12

GEOLABS, INC.
Geotechnical Engineering

Rock Log Legend

ROCK DESCRIPTIONS

	BASALT		FINGER CORAL
	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

Plate A-0.2

LOG LEGEND FOR ROCK 6629-00.GPJ GEOLABS.GDT 9/4/12

GEOTECHNICAL NOTES

1. *A geotechnical engineering report entitled "Geotechnical Engineering Exploration, Keaau-Pahoa Road Intersection, Improvements at Old Government Road, District of Puna, Island of Hawaii" dated September 28, 2012 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.*

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

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GEOLABS, INC.
LICENSE EXPIRES 4-30-14

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

BORING LOG LEGENDS & NOTES

Keaau-Pahoa Road Intersection
Improvements at Old Government Road
Federal-Aid Project No. HSIP-0130(031)

Scale: No Scale Date: April 2013

SHEET No. B-2 OF 4 SHEETS

78

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

LAST UPDATE: April 22, 2013 @ 12:09:38 pm
PLOT DATE: April 22, 2013 @ 04:27:41 pm
PATH/FILENAME: C:\Users\HENRY~1\AppData\Local\Temp\AcPublish_12000\6629-00SheetBoringLogs.dwg

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	HSIP-0130(031)	2013	79	103

GEOLABS, INC. — Geotechnical Engineering

KEAAU-PAHOA ROAD INTERSECTION IMPROVEMENTS AT OLD GOVERNMENT ROAD, DISTRICT OF PUNA, ISLAND OF HAWAII

Log of Boring 1

Approximate Ground Surface Elevation (feet MSL): 614 *

Other Tests	Moisture Content (%)	Dry Unit Weight (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	USCS	Description
			27	7			0	GP	Gray GRAVEL with traces of sand, loose, dry (fill)
									Gray vesicular BASALT, severely fractured, unweathered, hard
			85	77			5		grades to massive to slightly fractured
UC			100	73			10		
UC			90	42			15		grades to moderately to closely fractured, slightly weathered
									grades with small voids
							20		Boring terminated at 20 feet

* Elevations estimated from Topographic Survey downloaded from AECOM website on April 25, 2012.

Date Started:	April 3, 2012	Water Level: ▽	Not Encountered
Date Completed:	April 3, 2012		
Logged By:	M. Gruver	Drill Rig:	MOBILE B-53
Total Depth:	20 feet	Drilling Method:	HQ Coring
Work Order:	6629-00	Driving Energy:	140 lb. wt., 30 in. drop

Log of Boring 3

Approximate Ground Surface Elevation (feet MSL): 616 *

Other Tests	Moisture Content (%)	Dry Unit Weight (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	USCS	Description
	19	56			32		0	SP	Reddish brown SAND with some gravel, medium dense, dry (fill)
	17				26			GP	Reddish brown and gray vesicular BASALT with traces of sand, dense (fill)
			13	0					
			67	20			5		Gray vesicular BASALT, closely fractured, unweathered, hard
UC			100	95			10		grades to massive
			88	83			15		
									grades to closely fractured, slightly weathered
							20		Boring terminated at 20 feet

Date Started:	April 3, 2012	Water Level: ▽	Not Encountered
Date Completed:	April 3, 2012		
Logged By:	M. Gruver	Drill Rig:	MOBILE B-53
Total Depth:	20 feet	Drilling Method:	4" Auger & HQ Coring
Work Order:	6629-00	Driving Energy:	140 lb. wt., 30 in. drop

Log of Boring 2

Approximate Ground Surface Elevation (feet MSL): 616 *

Other Tests	Moisture Content (%)	Dry Unit Weight (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	USCS	Description
	7	99	65	14	50/3"		0	GW	Brown GRAVEL with some sand, very dense, dry (fill)
			95	90			5		Gray vesicular BASALT, closely fractured, slightly weathered, hard
UC									grades to slightly fractured
UC									
			100	58			10		grades to brown-gray, moderately fractured
			68	37			15		grades to slightly to closely fractured
							20		Boring terminated at 20 feet

Date Started:	April 4, 2012	Water Level: ▽	Not Encountered
Date Completed:	April 4, 2012		
Logged By:	M. Gruver	Drill Rig:	MOBILE B-53
Total Depth:	20 feet	Drilling Method:	4" Auger & HQ Coring
Work Order:	6629-00	Driving Energy:	140 lb. wt., 30 in. drop

Log of Boring 4

Approximate Ground Surface Elevation (feet MSL): 616 *

Other Tests	Moisture Content (%)	Dry Unit Weight (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	USCS	Description
	20	74			38		0	GP	Reddish brown and gray GRAVEL with sand and cobbles, medium dense, dry (fill)
	15				35				
			46	0					
			47	28			5		Gray vesicular BASALT, closely to slightly fractured, slightly weathered, hard
UC			95	62			10		grades to moderately fractured
UC			87	62			15		
							20		Boring terminated at 20 feet

Date Started:	April 3, 2012	Water Level: ▽	Not Encountered
Date Completed:	April 3, 2012		
Logged By:	M. Gruver	Drill Rig:	MOBILE B-53
Total Depth:	20 feet	Drilling Method:	4" Auger & HQ Coring
Work Order:	6629-00	Driving Energy:	140 lb. wt., 30 in. drop

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

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ORIGINAL PLAN — SURVEY PLOTTED BY / DRAWN BY / TRACED BY / DESIGNED BY / QUANTITIES BY / CHECKED BY — DATE
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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

BORING LOGS

Keaau-Pahoa Road Intersection Improvements at Old Government Road
Federal-Aid Project No. HSIP-0130(031)

Scale: No Scale — Date: April 2013

SHEET No. B-3 OF 4 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	HSIP-0130(031)	2013	80	103

GEOLABS, INC.
Geotechnical Engineering

KEAAU-PAHOA ROAD INTERSECTION
IMPROVEMENTS AT OLD GOVERNMENT ROAD
DISTRICT OF PUNA, ISLAND OF HAWAII

Log of Boring 5

Approximate Ground Surface Elevation (feet MSL): 616 *

Other Tests	Moisture Content (%)	Dry Unit Weight (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample	Graphic	USCS	Description
			28	0			0			GW	4-inch ASPHALTIC CONCRETE
											Gray SANDY GRAVEL with some silt, dense (fill)
			80	27			5				Gray vesicular BASALT, severely fractured, slightly weathered, hard grades to closely fractured
UC							10				
UC			72	22							
			70	70			15				grades to massive, unweathered
							20				Boring terminated at 20 feet
							25				
							30				
							35				

Date Started:	April 4, 2012	Water Level: ▽	Not Encountered
Date Completed:	April 4, 2012		
Logged By:	M. Gruver	Drill Rig:	MOBILE B-53
Total Depth:	20 feet	Drilling Method:	HQ Coring
Work Order:	6629-00	Driving Energy:	140 lb. wt., 30 in. drop

GEOLABS, INC.
Geotechnical Engineering

KEAAU-PAHOA ROAD INTERSECTION
IMPROVEMENTS AT OLD GOVERNMENT ROAD
DISTRICT OF PUNA, ISLAND OF HAWAII

Log of Boring 7

Approximate Ground Surface Elevation (feet MSL): 616.5 *

Other Tests	Moisture Content (%)	Dry Unit Weight (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample	Graphic	USCS	Description
UC			47	42			0			GW	Gray GRAVEL with sand, dense (fill)
			100	30			5				Gray vesicular BASALT, massive to moderately fractured, slightly weathered, hard grades to severely to moderately fractured
UC			100	35			10				
			100	27			15				grades to closely fractured to massive
							20				Boring terminated at 20 feet
							25				
							30				
							35				

Date Started:	April 3, 2012	Water Level: ▽	Not Encountered
Date Completed:	April 3, 2012		
Logged By:	M. Gruver	Drill Rig:	MOBILE B-53
Total Depth:	20 feet	Drilling Method:	HQ Coring
Work Order:	6629-00	Driving Energy:	140 lb. wt., 30 in. drop

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KEAAU-PAHOA ROAD INTERSECTION
IMPROVEMENTS AT OLD GOVERNMENT ROAD
DISTRICT OF PUNA, ISLAND OF HAWAII

Log of Boring 6

Approximate Ground Surface Elevation (feet MSL): 614 *

Other Tests	Moisture Content (%)	Dry Unit Weight (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample	Graphic	USCS	Description
			20	0			0			GW	3-inch ASPHALTIC CONCRETE
											Brown and gray SANDY GRAVEL with traces of silt, dense (fill)
			60	25			5				Gray vesicular BASALT, severely to moderately fractured, unweathered, hard
UC											
			93	43			10				Brown-gray vugular BASALT, severely fractured, slightly weathered, hard
UC							15				Gray vesicular BASALT, moderately to severely fractured, slightly weathered, hard grades with small voids
			90	27			20				Brown-gray vugular BASALT, severely fractured, slightly weathered, hard
							25				Gray vesicular BASALT, moderately to slightly fractured, slightly weathered, hard
							30				Boring terminated at 20 feet
							35				

Date Started:	April 2, 2012	Water Level: ▽	Not Encountered
Date Completed:	April 2, 2012		
Logged By:	M. Gruver	Drill Rig:	MOBILE B-53
Total Depth:	20 feet	Drilling Method:	HQ Coring
Work Order:	6629-00	Driving Energy:	140 lb. wt., 30 in. drop

GEOLABS, INC.
Geotechnical Engineering

KEAAU-PAHOA ROAD INTERSECTION
IMPROVEMENTS AT OLD GOVERNMENT ROAD
DISTRICT OF PUNA, ISLAND OF HAWAII

Log of Boring 8

Approximate Ground Surface Elevation (feet MSL): 618.5 *

Other Tests	Moisture Content (%)	Dry Unit Weight (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample	Graphic	USCS	Description
	8	117			90/6"		0			SW	12-inch ASPHALTIC CONCRETE
					+25/0"						Black SAND with gravel, very dense, dry (fill)
	7		95	50	90/6"		5				Gray vesicular BASALT, slightly to closely fractured, unweathered to slightly weathered, hard
UC					+50/0"						
			100	48	30/6"		10				
UC					+50/2"						
			100	58			15				
							20				Boring terminated at 20 feet
							25				
							30				
							35				

Date Started:	April 2, 2012	Water Level: ▽	Not Encountered
Date Completed:	April 2, 2012		
Logged By:	M. Gruver	Drill Rig:	MOBILE B-53
Total Depth:	20 feet	Drilling Method:	4" Auger & HQ Coring
Work Order:	6629-00	Driving Energy:	140 lb. wt., 30 in. drop

GERALD Y. SEKI
LICENSED PROFESSIONAL ENGINEER
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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

BORING LOGS

Keaau-Pahoa Road Intersection Improvements at Old Government Road Federal-Aid Project No. HSIP-0130(031)

Scale: No Scale Date: April 2013

SHEET No. B-4 OF 4 SHEETS

80

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

PLOT DATE: April 22, 2013 @ 04:28:54 pm
LAST UPDATE: April 22, 2013 @ 12:09:38 pm
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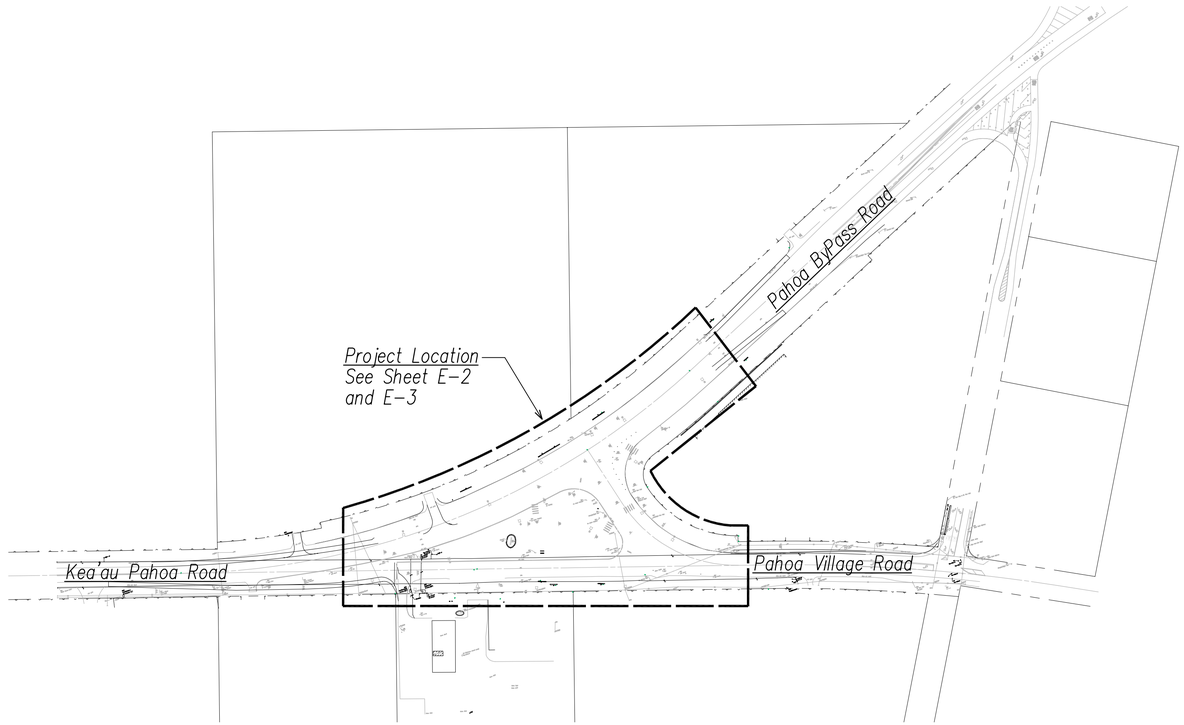
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	HSIP-0130(031)	2012	81	103

GENERAL NOTES

1. The location of overhead and underground facilities shown on the plans are from existing records with varying degrees of accuracy, and are not guaranteed as shown. The Contractor shall exercise extreme caution whenever construction crosses, or is in close proximity of underground lines and shall maintain adequate clearance when operating equipment within or under any overhead lines.
2. Any additional pullboxes or handholes required due to changes in grade or direction, shall be furnished and installed by the Contractor.
3. All electrical conduits shall cross below all water lines. Minimum vertical clearance between water line and electrical ductline crossng shall be 18".
4. All work on electrical ductlines completed by the Contractor without utility company inspection and authorization, and subsequently condemned by the utility company, shall be redone by the Contractor, at no additional cost.



ELECTRICAL SYMBOLS

SYMBOL	DESCRIPTION
	Existing Wooden Utility Pole with New Roadway Light
	Existing Roadway Light
	New Roadway Light Standard, See Sheet E-6
	Existing Wooden Utility Pole with New Roadway Light
	Existing Pole Mounted Transformer
	Existing Guy
	Existing Pullbox or Handhole, See Plans for Designation
	HELCO Pullbox
	Street Light Pullbox, Type "B", See Sheet E-12
—e—	Existing Electrical Ductline
— t —	Existing Telephone Ductline
—v—	Existing CATV Ductline
—e/oh—	Existing Overhead Electrical Line
—t/oh—	Existing Overhead Telephone Line
—v/oh—	Existing Overhead CATV Line
—sl/oh—	Existing Overhead Street Light Line
—E—	New Electrical Ductline
—SL—	New Street Light Ductline
—SL/OH—	New Overhead Street Light Conductors

Note: "X" Through Symbol Denotes Item to be Removed.

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

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HIGHWAYS DIVISION

ELECTRICAL SYMBOLS, AND LOCATION MAP

Keaau-Pahoa Road Intersection Improvements at Old Government Road Federal-Aid Project No. HSIP-0130(031)

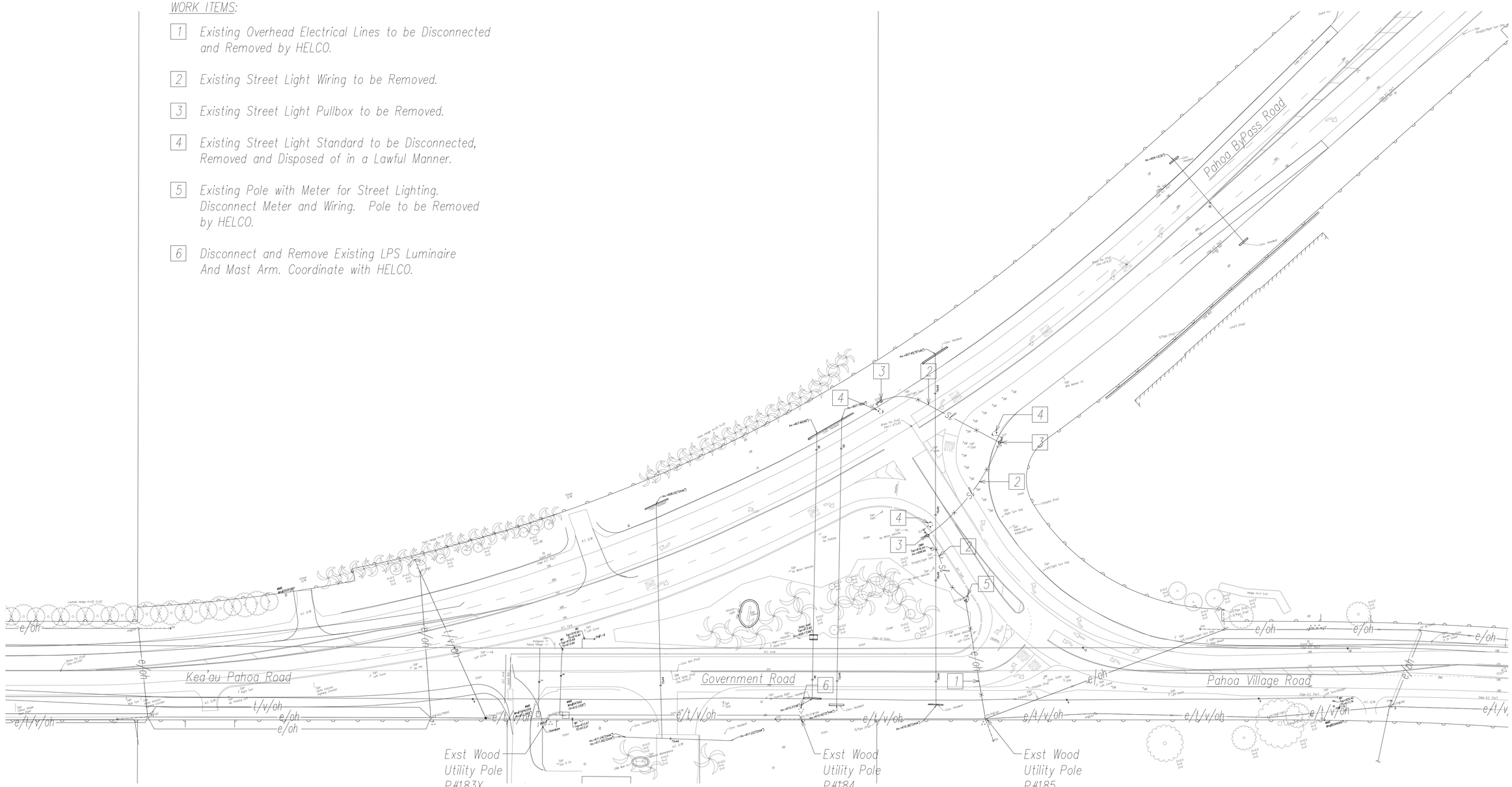
Scale: AS NOTED Date: April 2013

SHEET No. **E-1** OF **14** SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	HSIP-0130(031)	2012	82	101

WORK ITEMS:

1. Existing Overhead Electrical Lines to be Disconnected and Removed by HELCO.
2. Existing Street Light Wiring to be Removed.
3. Existing Street Light Pullbox to be Removed.
4. Existing Street Light Standard to be Disconnected, Removed and Disposed of in a Lawful Manner.
5. Existing Pole with Meter for Street Lighting. Disconnect Meter and Wiring. Pole to be Removed by HELCO.
6. Disconnect and Remove Existing LPS Luminaire And Mast Arm. Coordinate with HELCO.



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

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NORTH

ELECTRICAL DEMOLITION PLAN

Scale: 1"=40'

40' 20' 0 40' 80' 120'

SCALE: 1"=40'

GRAPHIC SCALE

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HIGHWAYS DIVISION

ELECTRICAL DEMOLITION PLAN

Keaau-Pahoa Road Intersection Improvements at Old Government Road
Federal-Aid Project No. HSIP-0130(031)

Scale: AS NOTED Date: April 2013

SHEET No. **E-2** OF **14** SHEETS

WORK ITEMS:

1. New 70W LED Street Light to be Installed on Existing Pole. See Detail C/E-9. Power Requirements, and Connection Of Power, To Be Coordinated with HELCO.
2. New 3#2 Triplex Cable for New Street Lighting, If Required.

NORTH

TEMPORARY ELECTRICAL PLAN – DETOUR CONDITION

Scale: 1"=40'

40' 20' 0 40' 80' 120'
SCALE: 1"=40'
GRAPHIC SCALE

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DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

TEMPORARY ELECTRICAL PLAN - DETOUR CONDITION

Keaau-Pahoa Road Intersection Improvements at Old Government Road
Federal-Aid Project No. HSIP-0130(031)

Scale: AS NOTED Date: April 2013

SHEET No. E-3 OF 14 SHEETS

ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
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No.	TRACED BY	
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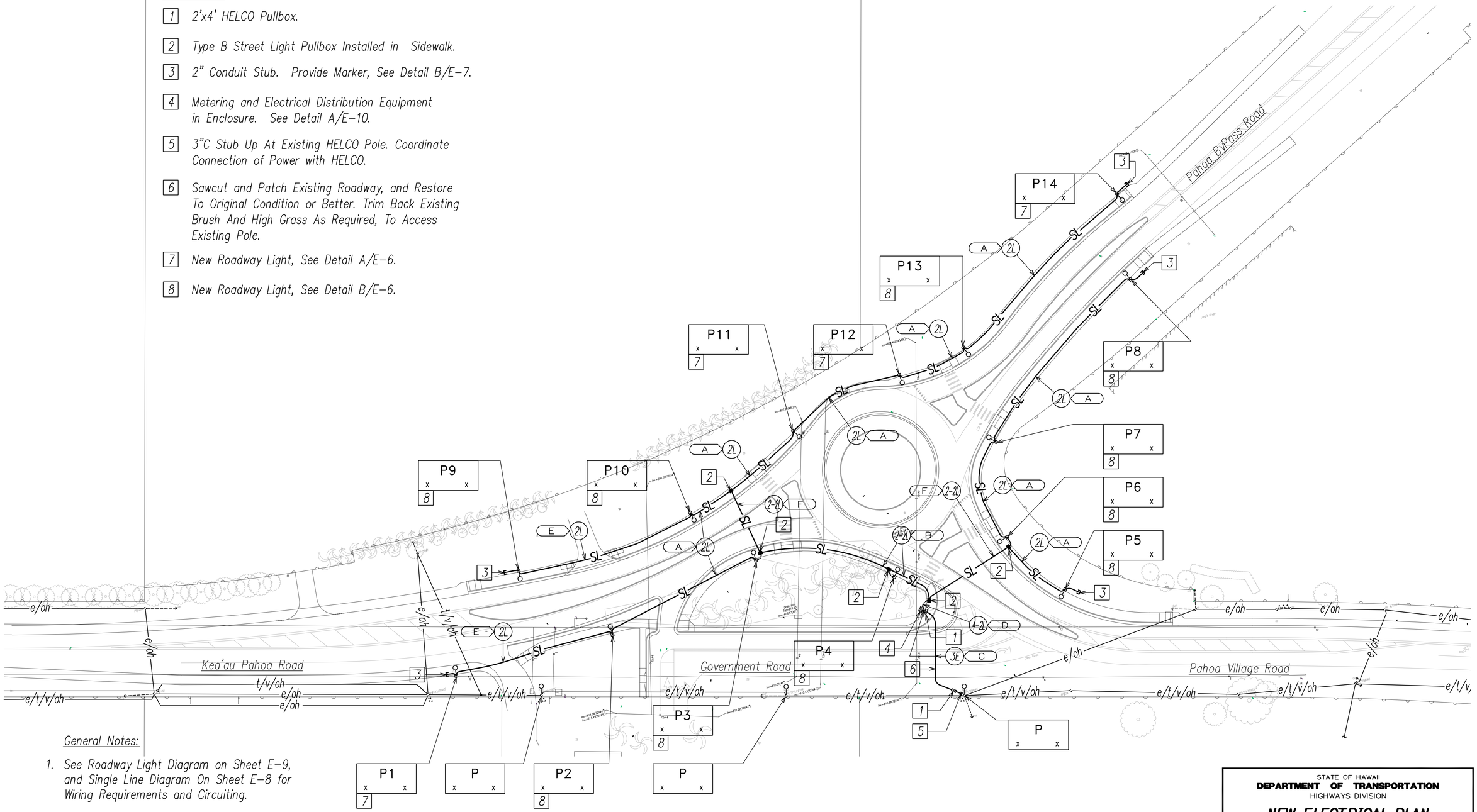
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	HSIP-0130(031)	2012	84	103

WORK ITEMS:

1. *2'x4' HELCO Pullbox.*
2. *Type B Street Light Pullbox Installed in Sidewalk.*
3. *2" Conduit Stub. Provide Marker, See Detail B/E-7.*
4. *Metering and Electrical Distribution Equipment in Enclosure. See Detail A/E-10.*
5. *3"C Stub Up At Existing HELCO Pole. Coordinate Connection of Power with HELCO.*
6. *Sawcut and Patch Existing Roadway, and Restore To Original Condition or Better. Trim Back Existing Brush And High Grass As Required, To Access Existing Pole.*
7. *New Roadway Light, See Detail A/E-6.*
8. *New Roadway Light, See Detail B/E-6.*



General Notes:

1. *See Roadway Light Diagram on Sheet E-9, and Single Line Diagram On Sheet E-8 for Wiring Requirements and Circuiting.*

NORTH

NEW ELECTRICAL PLAN

Scale: 1"=40'

40' 20' 0 40' 80' 120'

SCALE: 1"=40'

GRAPHIC SCALE

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HIGHWAYS DIVISION

NEW ELECTRICAL PLAN

Keaau-Pahoa Road Intersection Improvements at Old Government Road Federal-Aid Project No. HSIP-0130(031)

Scale: AS NOTED *Date: April 2013*

SHEET No. **E-4** OF **14** SHEETS

ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
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	DESIGNED BY	"
	QUANTITIES BY	"
No.	CHECKED BY	"

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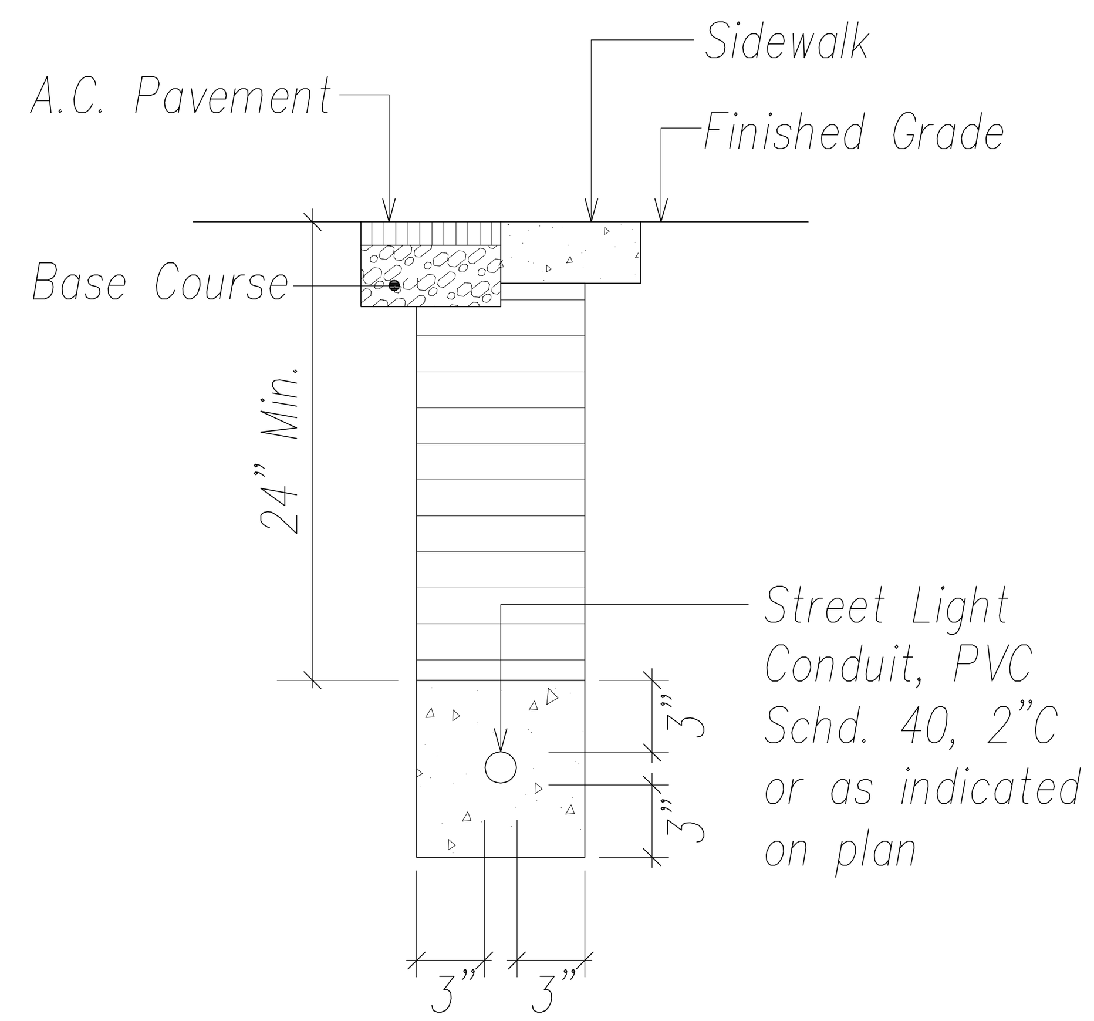
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	HSIP-0130(031)	2012	85	103



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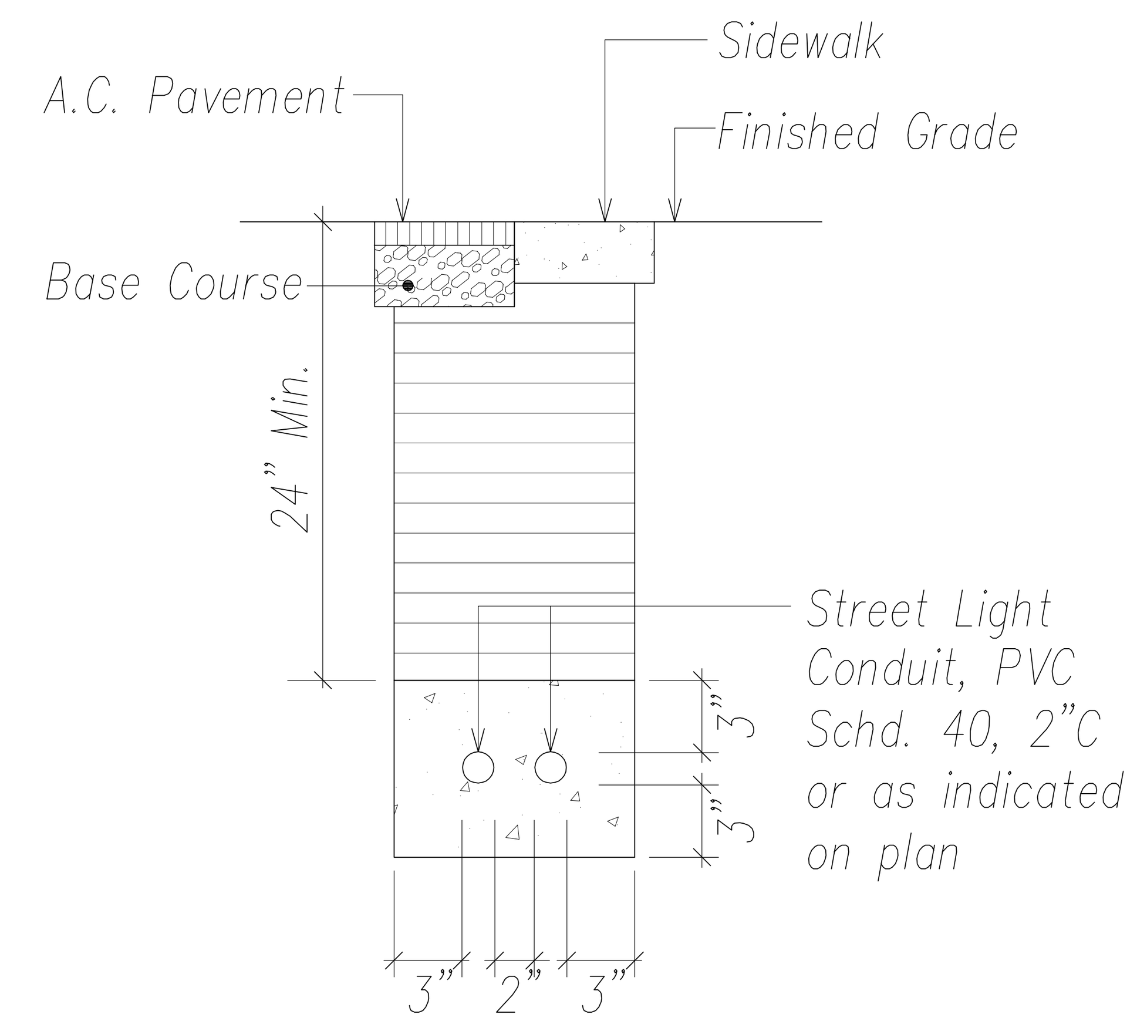

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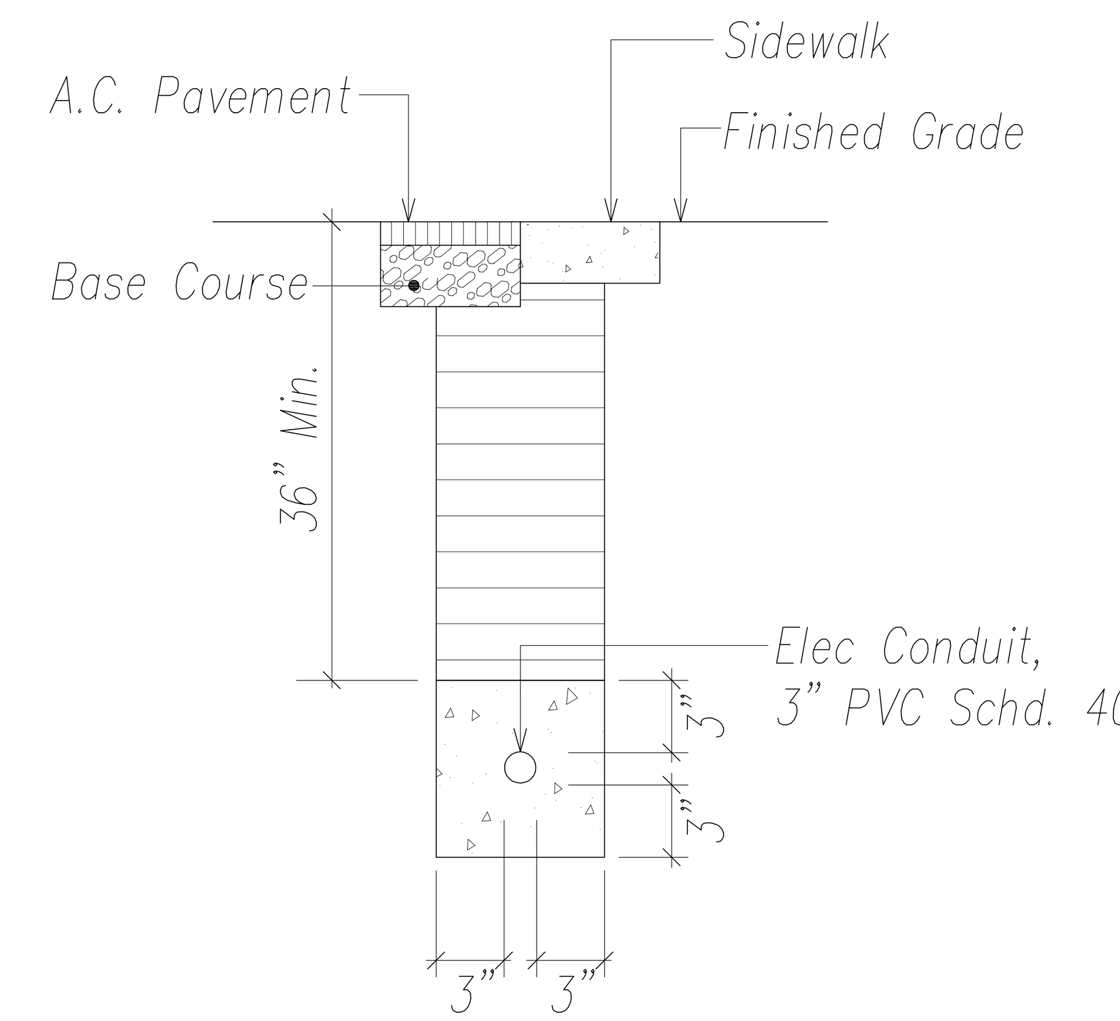


SECTION (C)

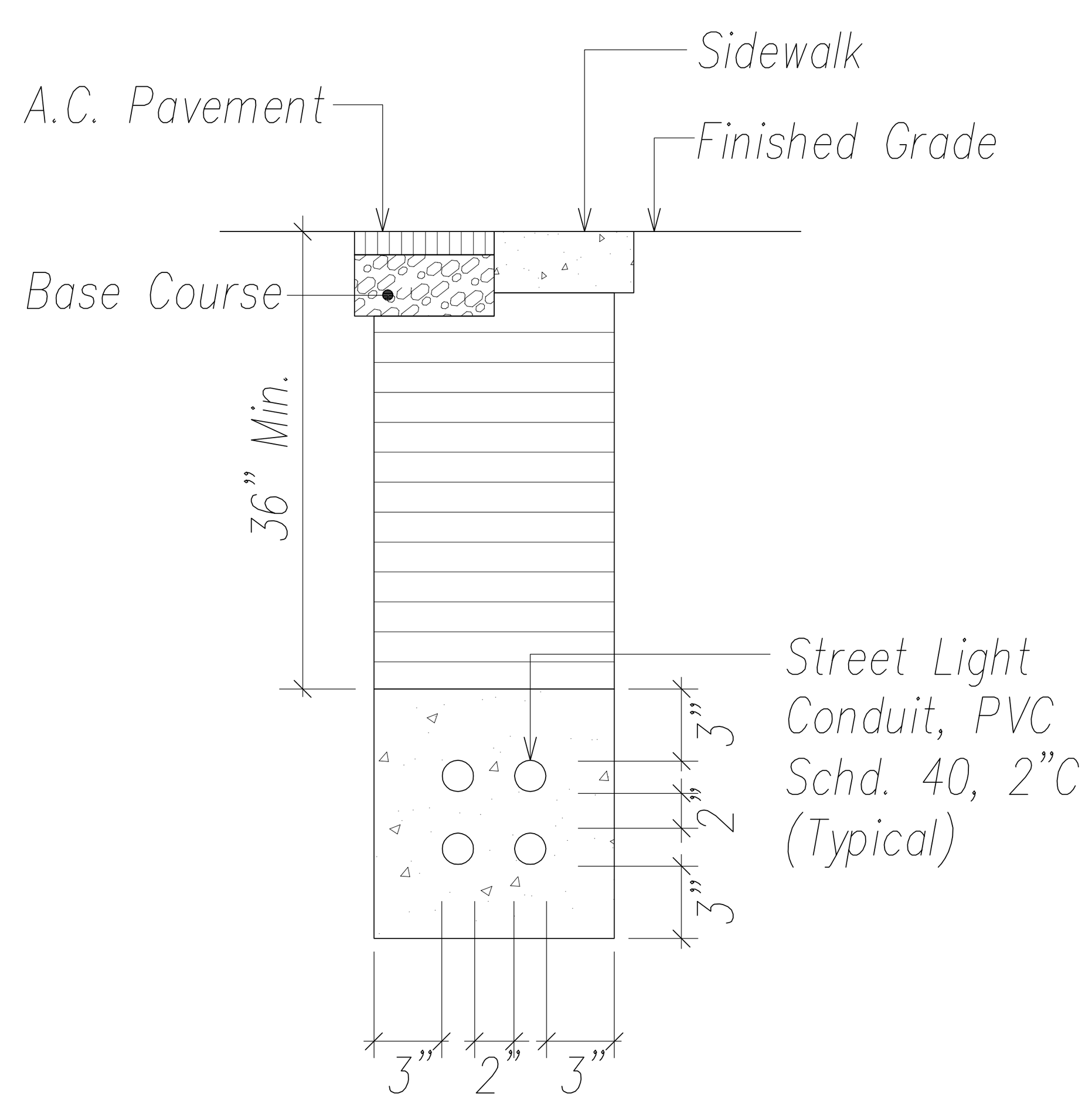
STATE BACKFILL NOTES:

Trench Backfill Material "B"
1. Sand Equivalent ≥ 2
2. 8" Maximum Lift
3. 95% Compaction

Trench Backfill Material "A"
1. Sand Equivalent ≥ 20
2. 8" Maximum Lift
3. 95% Compaction

Concrete – 3" Encasement, 2500 psi Compressive Strength @ 28 Days.

CONDUIT SCHEDULE	
ITEM	DESCRIPTION
(3E)	Electrical 1–3", PVC
(2L)	Street Light 1–2", PVC
(2-2L)	Street Light 2–2", PVC
(4-2L)	Street Light 4–2", PVC



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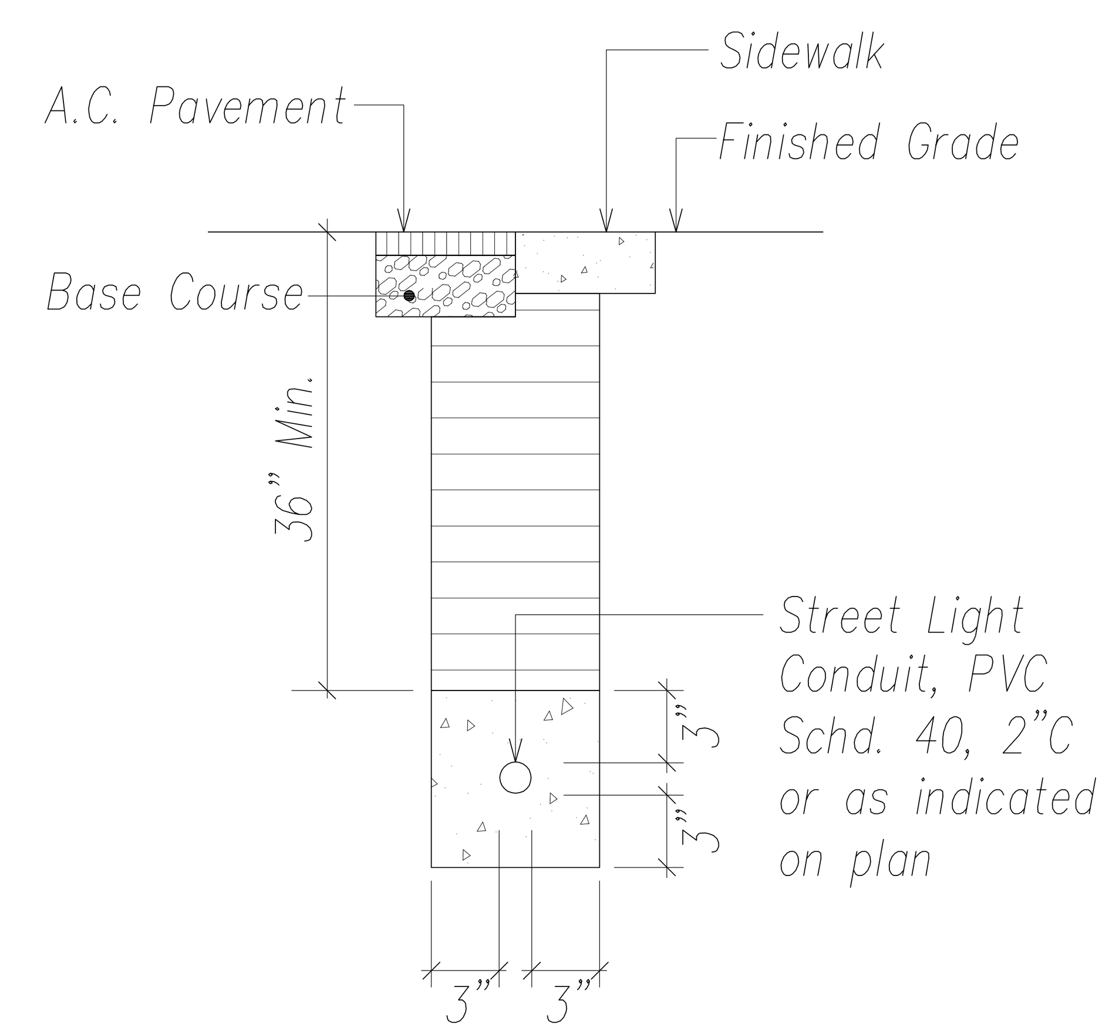

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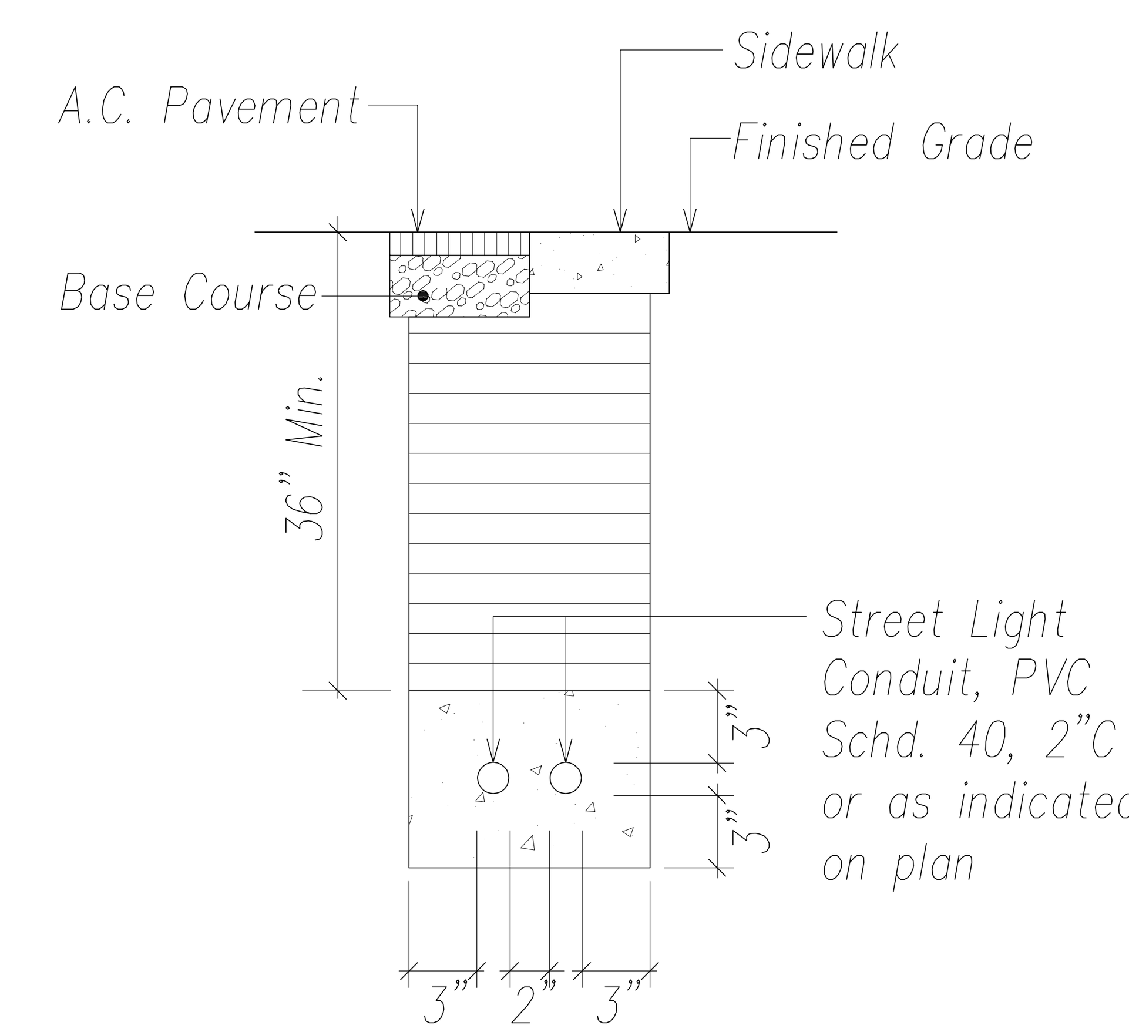

SECTION (F)

ORIGINAL PLAN | SURVEY PLOTTED BY | DRAWN BY | TRACED BY
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No. | DATE

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DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

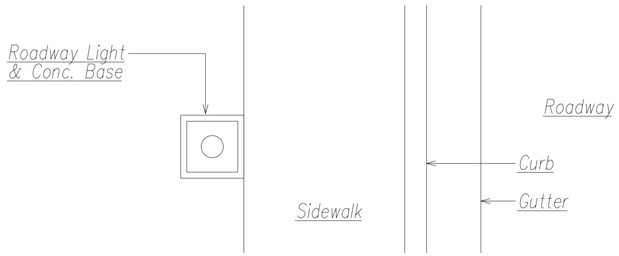
DUCT SECTIONS

Keaau-Pahoa Road Intersection Improvements at Old Government Road
Federal-Aid Project No. HSIP-0130(031)

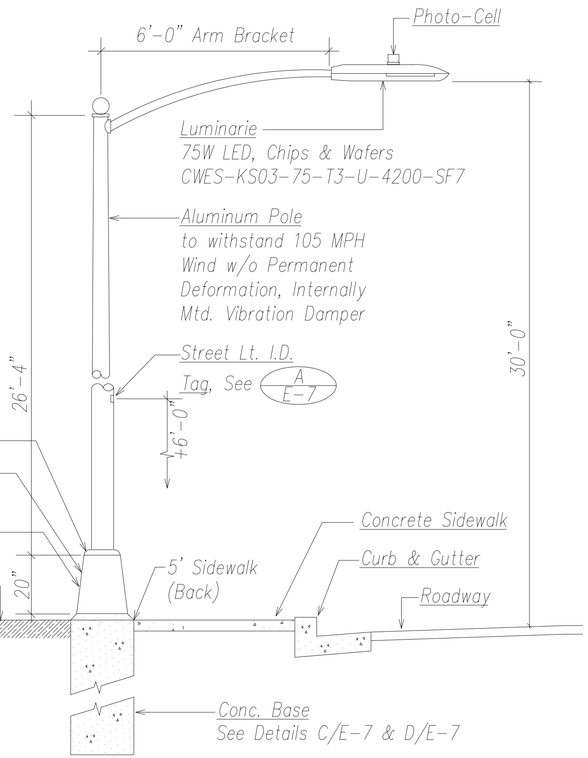
Scale: AS NOTED Date: April 2013

SHEET No. **E-5** OF **14** SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	HSIP-0130(031)	2012	86	103



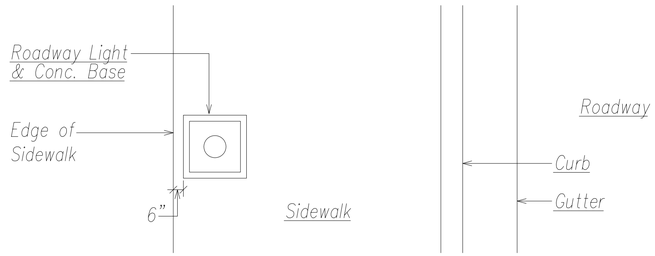
PLAN



ELEVATION

A E-6 ROADWAY LIGHT INSTALLATION DETAIL

NOT TO SCALE (Installed Outside Sidewalk)



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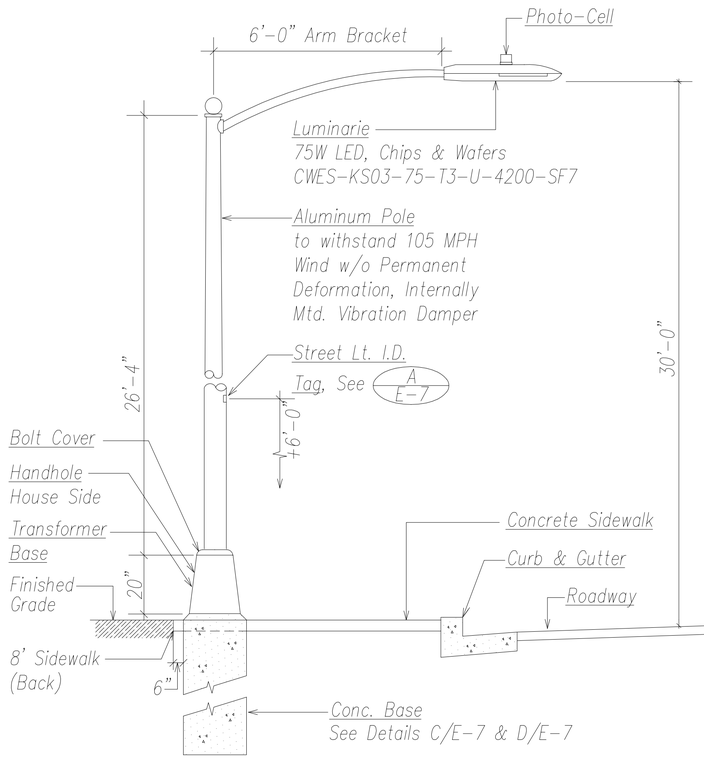

ELEVATION

B E-6 ROADWAY LIGHT INSTALLATION DETAIL

NOT TO SCALE (Installed Within Sidewalk)

NEW DESIGN REQUIREMENTS FOR LUMINAIRES, POLE STANDARDS AND TRAFFIC SIGNAL STANDARDS

Highway lighting luminaires, pole standards, bracket arms, traffic signal standards and mast arms being furnished for this project shall conform with the design requirements noted below. Design shall be in accordance with AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals, 4th Edition, including the latest interim revisions, published by the American Association of State Highway and Transportation Officials with the following modifications:

1. Basic Wind Speed [Article 3.8.2] to determine the design wind pressure shall be 105 mph.

2. Wind Importance Factor [Article 3.8.3] noted in Table 3-2 used to determine the design wind pressure shall be based on the following recurrence intervals:

   a. For traffic signal structures: 50 years

   b. For luminaire support structures: 25 years

3. Fatigue Importance Factors [Article 11.6] noted in Table 11-1 for traffic signal structures shall be based on Fatigue Category 1. Luminaire support structures with round cross sections under 50 feet do not need to be designed for fatigue.

4. Galloping [Article 11.7.1]. Traffic signal support structures shall be designed for galloping-induced cyclic loads unless approved vibration mitigation devices are installed.

5. Vortex Shedding [Article 11.7.2]. Nontapered lighting structures shall be designed to resist vortex shedding-induced loads including cantilevered mast arms and lighting structures that have tapers less than 0.14 in/ft.

6. Natural Wind Gust [Article 11.7.3]. Traffic signal structures shall be designed to resist an equivalent static natural wind gust pressure.

7. Truck-Induced Gust [Article 11.7.4]. Traffic signal support structures shall be designed to resist an equivalent static truck gust pressure range based on a truck speed of 20 mph over the posted speed.

8. Equipment manufacturers providing structural supports for luminaires and traffic signals are responsible to provide the Engineer with any information that will impact the current foundation design.

LICENSE EXPIRES 4/30/14

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HIGHWAYS DIVISION

RAODWAY LIGHT DETAILS

Keaau-Pahoa Road Intersection Improvements at Old Government Road Federal-Aid Project No. HSIP-0130(031)

Scale: AS NOTED Date: April 2013

SHEET No. **E-6** OF **14** SHEETS

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

NOTE BOOK | No.

LAST SAVE: 04/09/13 @ 14:31:45 BY: GTN PLOT SC: 1"=0"=1"
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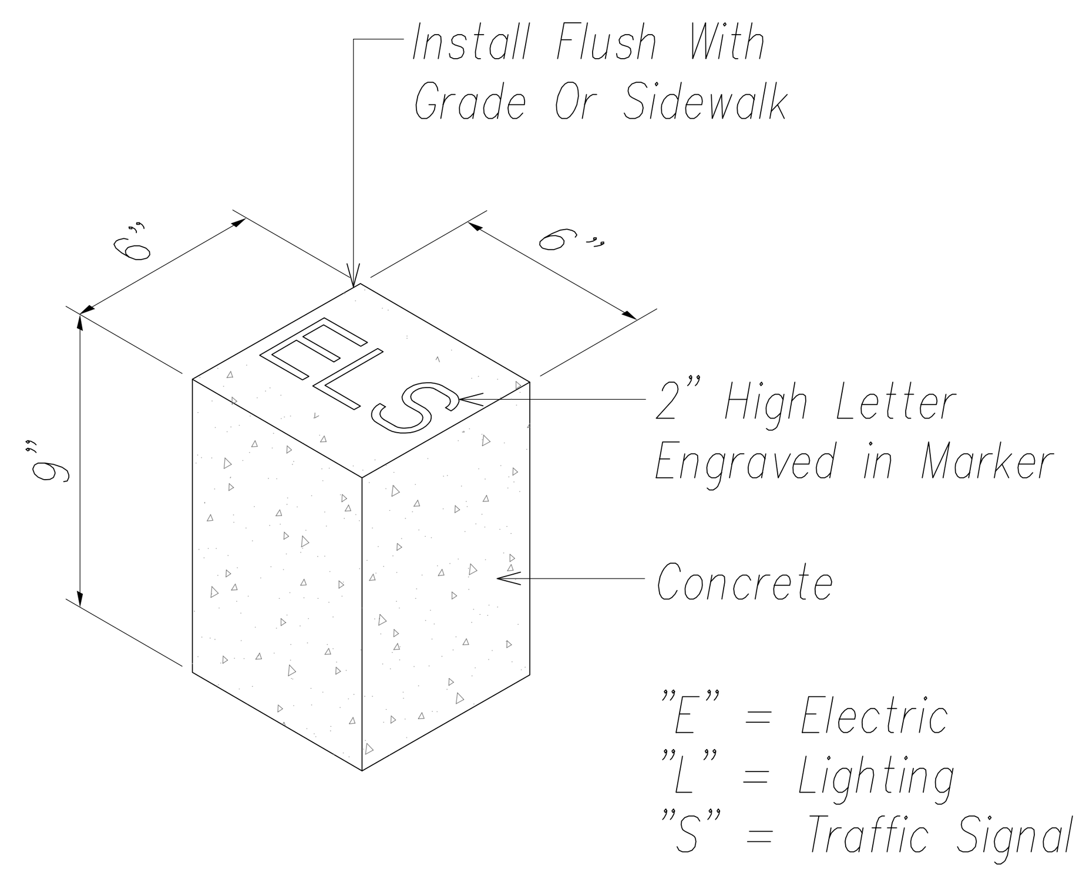
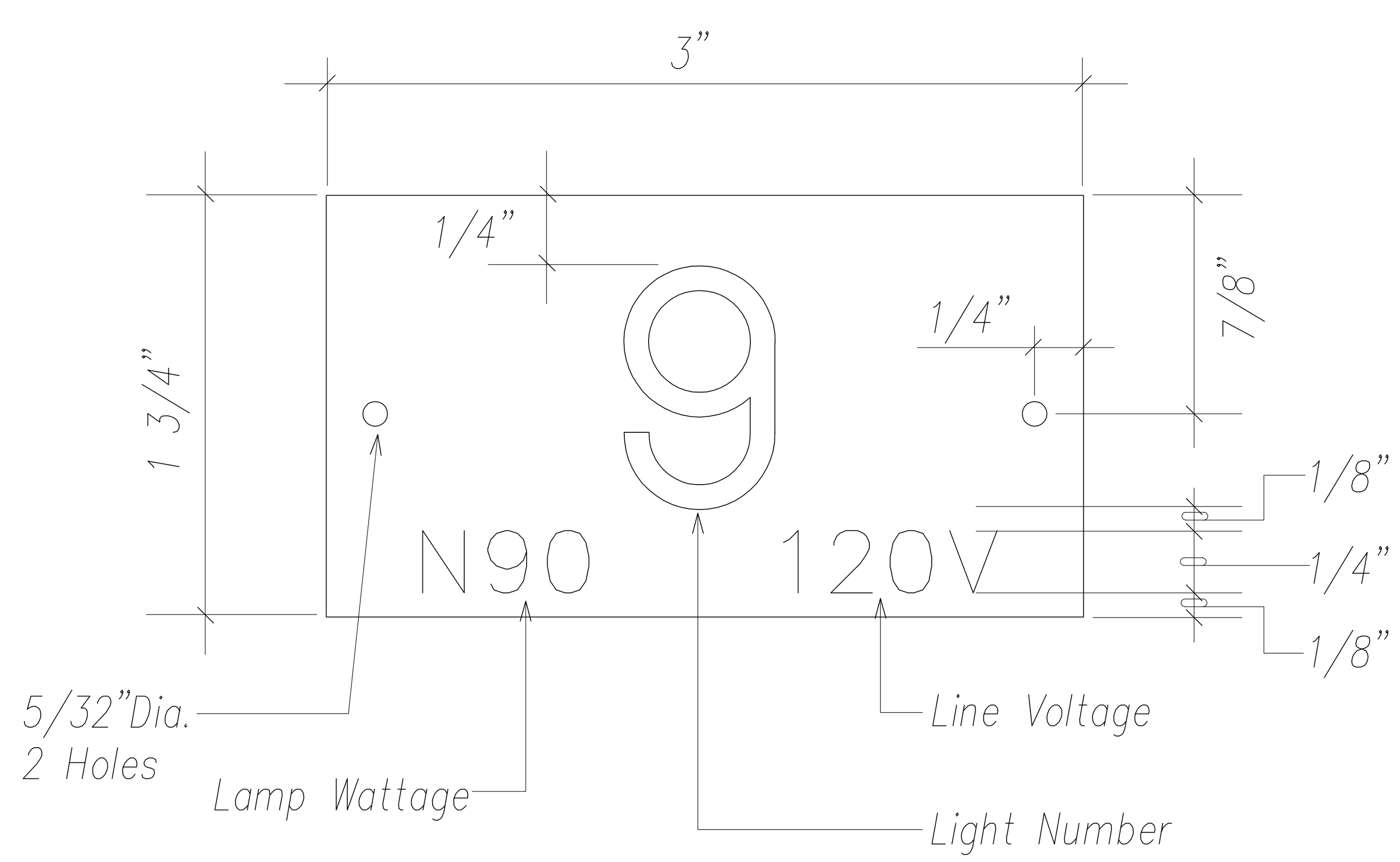
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	HSIP-0130(031)	2012	87	103



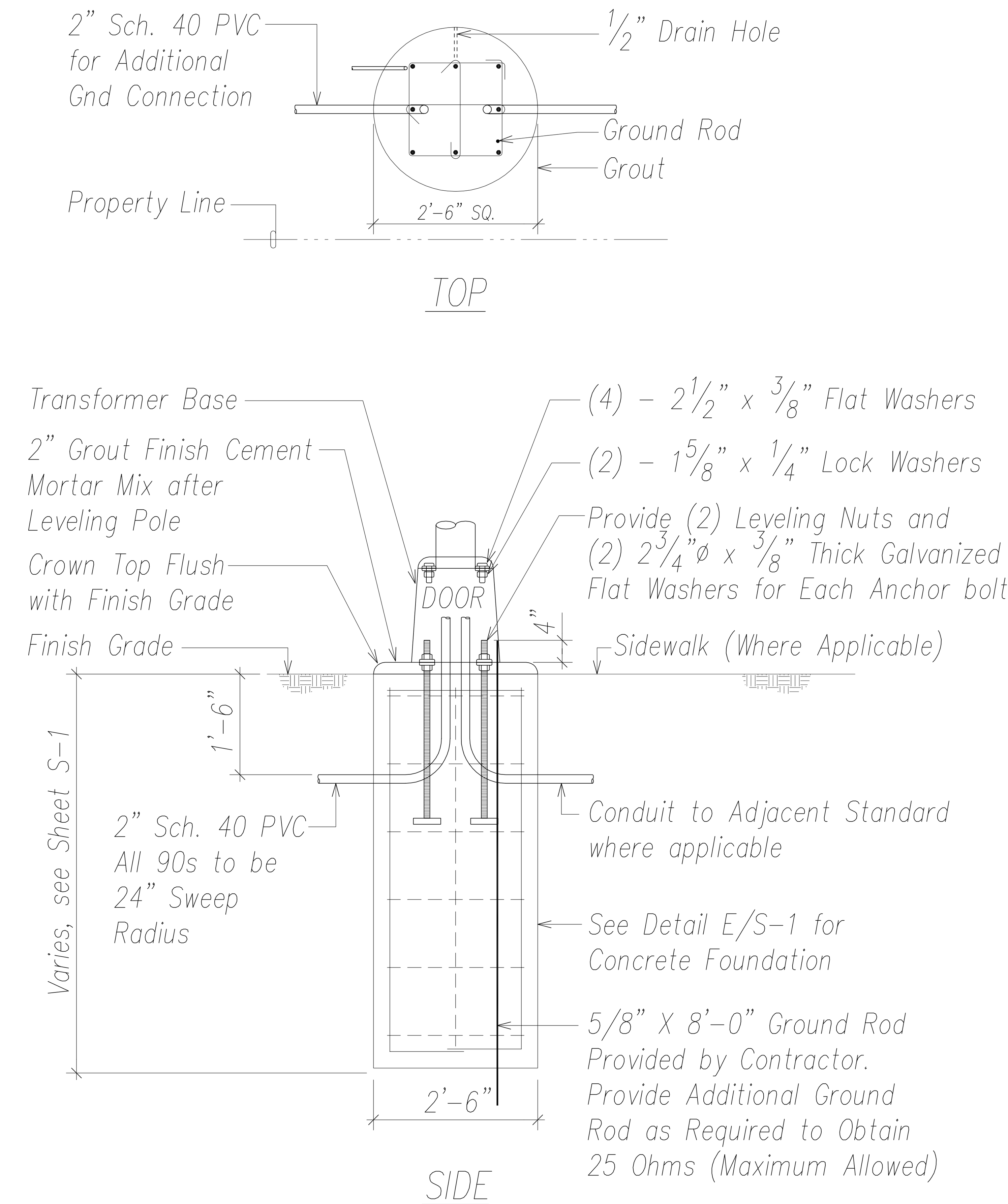
A / E-7 CONDUIT STUB-OUT MARKER
NOT TO SCALE



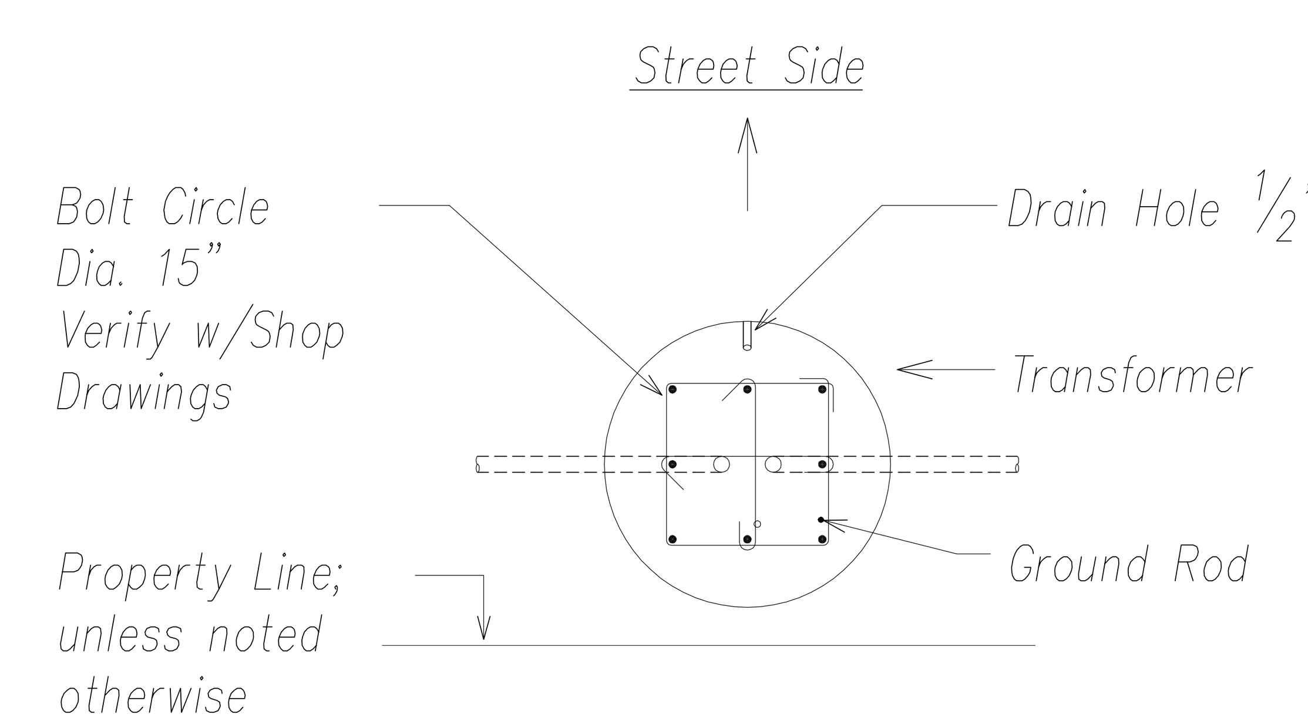
NOTES: (For Metal Poles Only)

1. Use 2 Ply Plastic – Black, White.
2. Number Size shall be 1" High and Engraved 1/8" Wide, White in Color (Number as Indicated On Plan).
3. Nomenclature Size shall be 1/4" High and Engraved 1/32" Wide, White in Color (Wattage and Voltage as required).
4. Attach to Steel Poles with No.7 Cadmium Plate Drive Screws. (a) Attach to Aluminum Pole with No.7 Aluminum Drive Screws.

B / E-7 ROADWAY LIGHT I.D. TAG DETAIL
NOT TO SCALE



C / E-7 ROADWAY LIGHT BASE DETAIL
NOT TO SCALE



D / E-7 CONCRETE BASE PLAN
NOT TO SCALE

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HIGHWAYS DIVISION

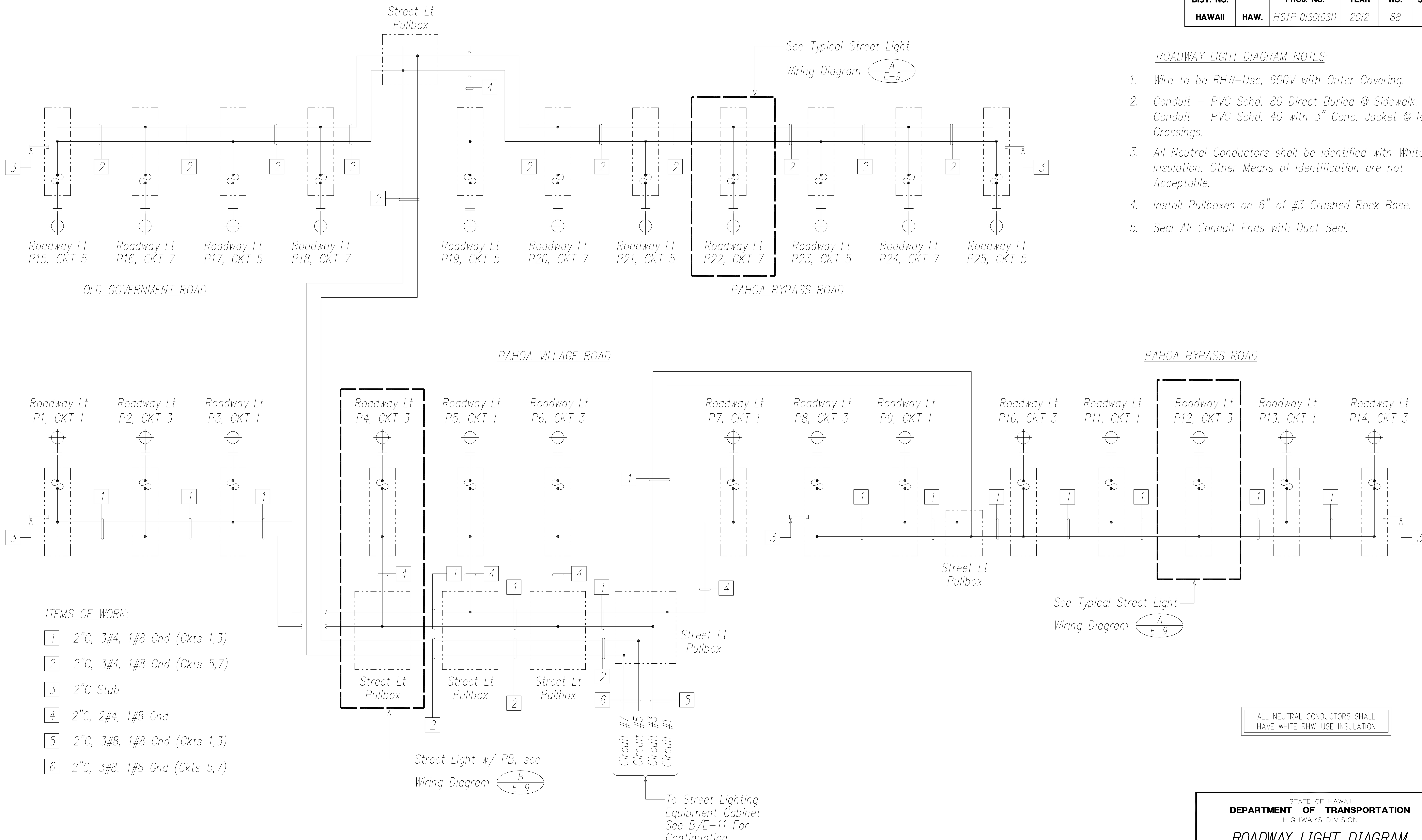
ROADWAY LIGHT DETAILS

Keaau-Pahoa Road Intersection Improvements at Old Government Road
Federal-Aid Project No. HSIP-0130(031)

Scale: AS NOTED   Date: April 2013

SHEET No. E-7 OF 14 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	HSIP-0130(031)	2012	88	103



ROADWAY LIGHT DIAGRAM NOTES:

1. Wire to be RHW-Use, 600V with Outer Covering.
2. Conduit – PVC Schd. 80 Direct Buried @ Sidewalk. Conduit – PVC Schd. 40 with 3" Conc. Jacket @ Road Crossings.
3. All Neutral Conductors shall be Identified with White Insulation. Other Means of Identification are not Acceptable.
4. Install Pullboxes on 6" of #3 Crushed Rock Base.
5. Seal All Conduit Ends with Duct Seal.

ITEMS OF WORK:

1. 2"C, 3#4, 1#8 Gnd (Ckts 1,3)
2. 2"C, 3#4, 1#8 Gnd (Ckts 5,7)
3. 2"C Stub
4. 2"C, 2#4, 1#8 Gnd
5. 2"C, 3#8, 1#8 Gnd (Ckts 1,3)
6. 2"C, 3#8, 1#8 Gnd (Ckts 5,7)

ALL NEUTRAL CONDUCTORS SHALL HAVE WHITE RHW-USE INSULATION

ROADWAY LIGHT DIAGRAM

ORIGINAL PLAN | NOTE BOOK | No.

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HIGHWAYS DIVISION

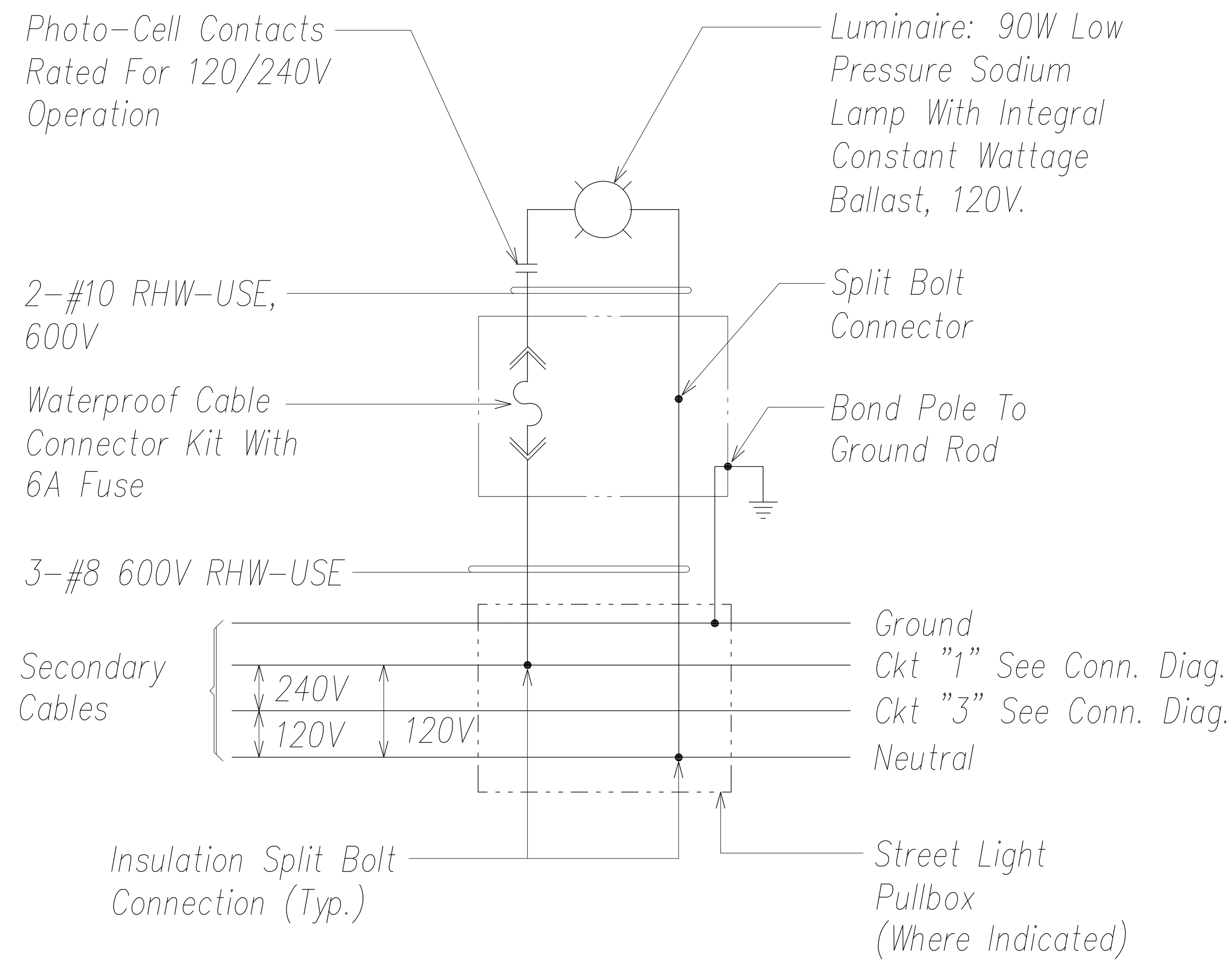
ROADWAY LIGHT DIAGRAM

Keaau-Pahoa Road Intersection Improvements at Old Government Road
Federal-Aid Project No. HSIP-0130(031)

Scale: AS NOTED   Date: April 2013

SHEET No. E-8 OF 14 SHEETS

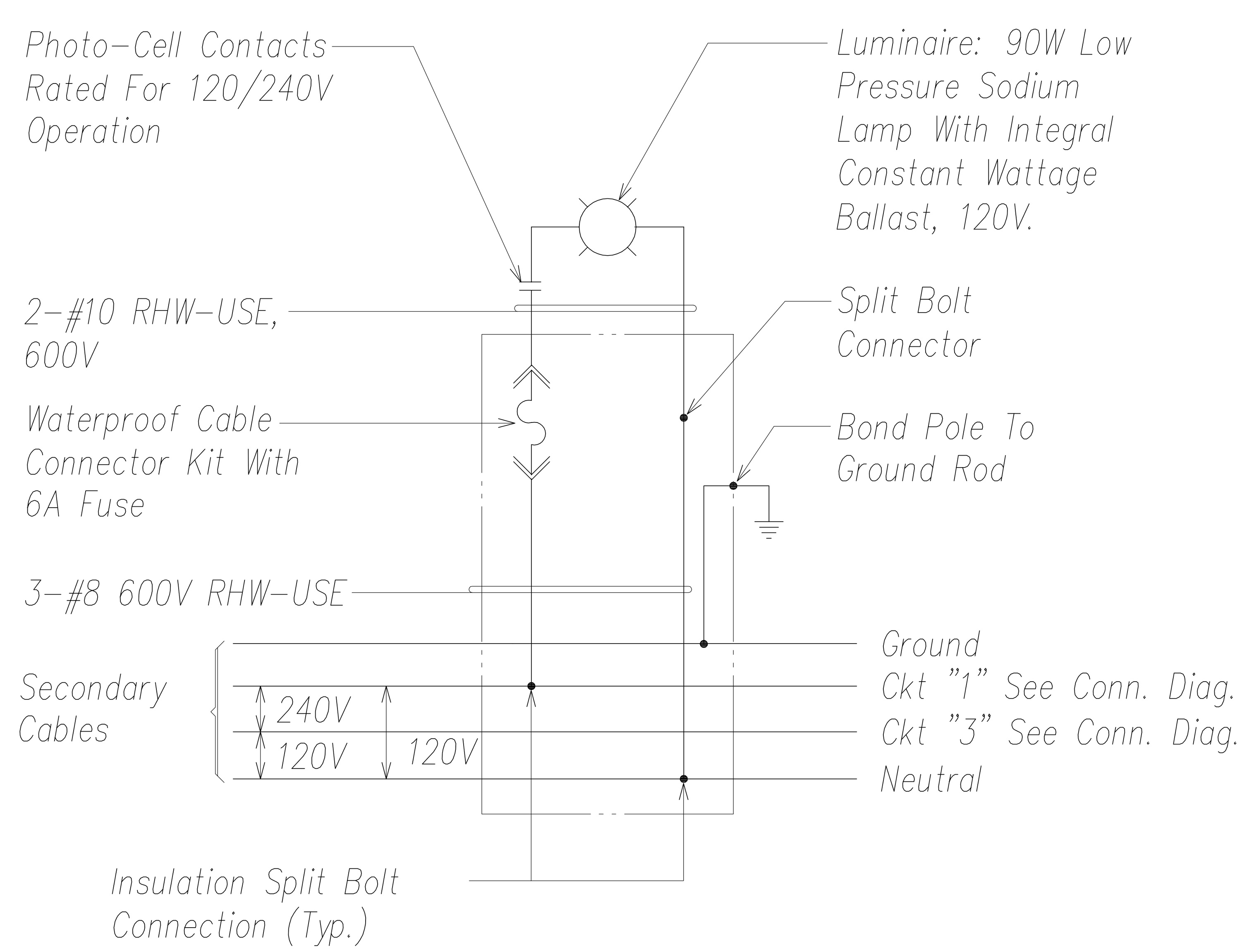
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	HSIP-0130(031)	2012	89	103



NOTES:

1. All Neutral Conductors Shall Be Identified With White Insulation. Other Means Of Identification Are Not Acceptable.

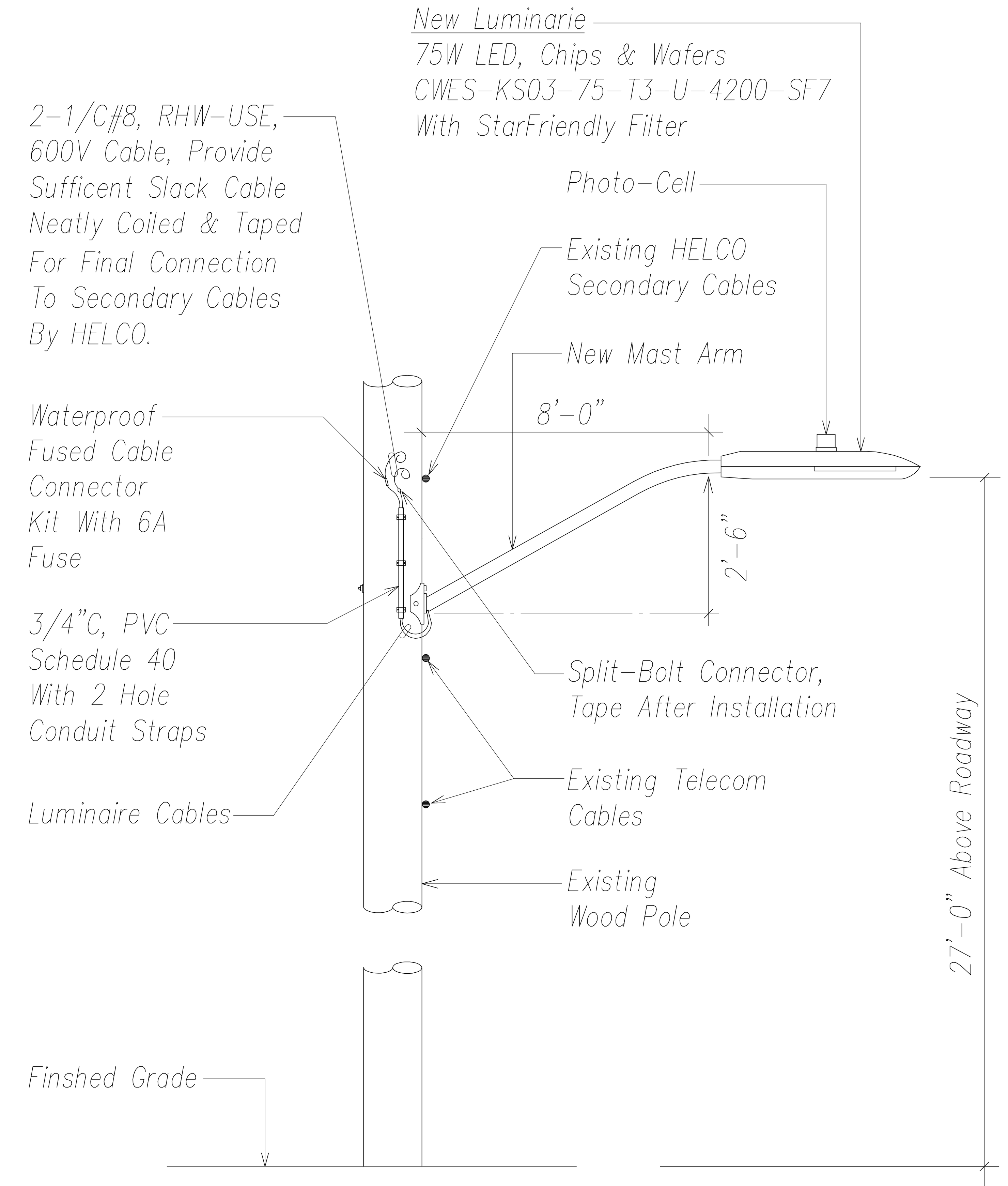
B / E-9 ROADWAY LIGHT CONNECTION DIAGRAM (W/ PULLBOX) (120/240V Metered Sysytem)



NOTES:

1. All Neutral Conductors Shall Be Identified With White Insulation. Other Means Of Identification Are Not Acceptable.

A / E-9 TYPICAL ROADWAY LIGHT CONNECTION DIAGRAM (120/240V Metered Sysytem)



NOTES:

1. Coordinate Work with HELCO. Final Connection of Power Shall Be By HELCO.
2. Installed Street Lights Shall Maintain All Required Clearances From the Existing Utilities Attached to Pole.
3. For Pole P184, the Existing LPS Luminaire Shall Be Removed, and Replaced with New LED Luminaire. Removed LPS Luminaire Shall Be Salvaged or Disposed Of, as Determined by State DOT.

C / E-9 Typical Street Light Mounting Detail Existing Pole P183x, P184 & P185 (120/240V Unmetered Sysytem)

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HIGHWAYS DIVISION

ROADWAY LIGHT DETAILS

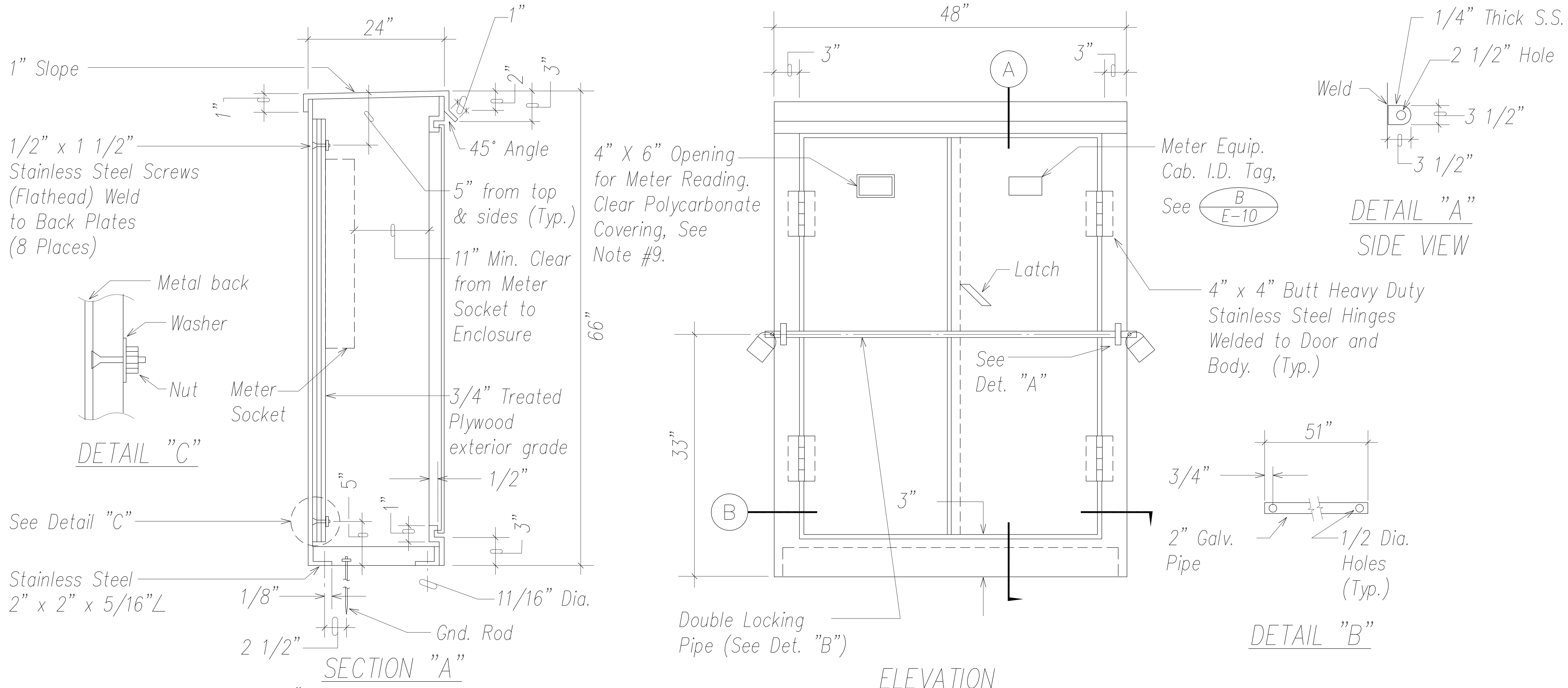
Keaau-Pahoa Road Intersection Improvements at Old Government Road Federal-Aid Project No. HSIP-0130(031)

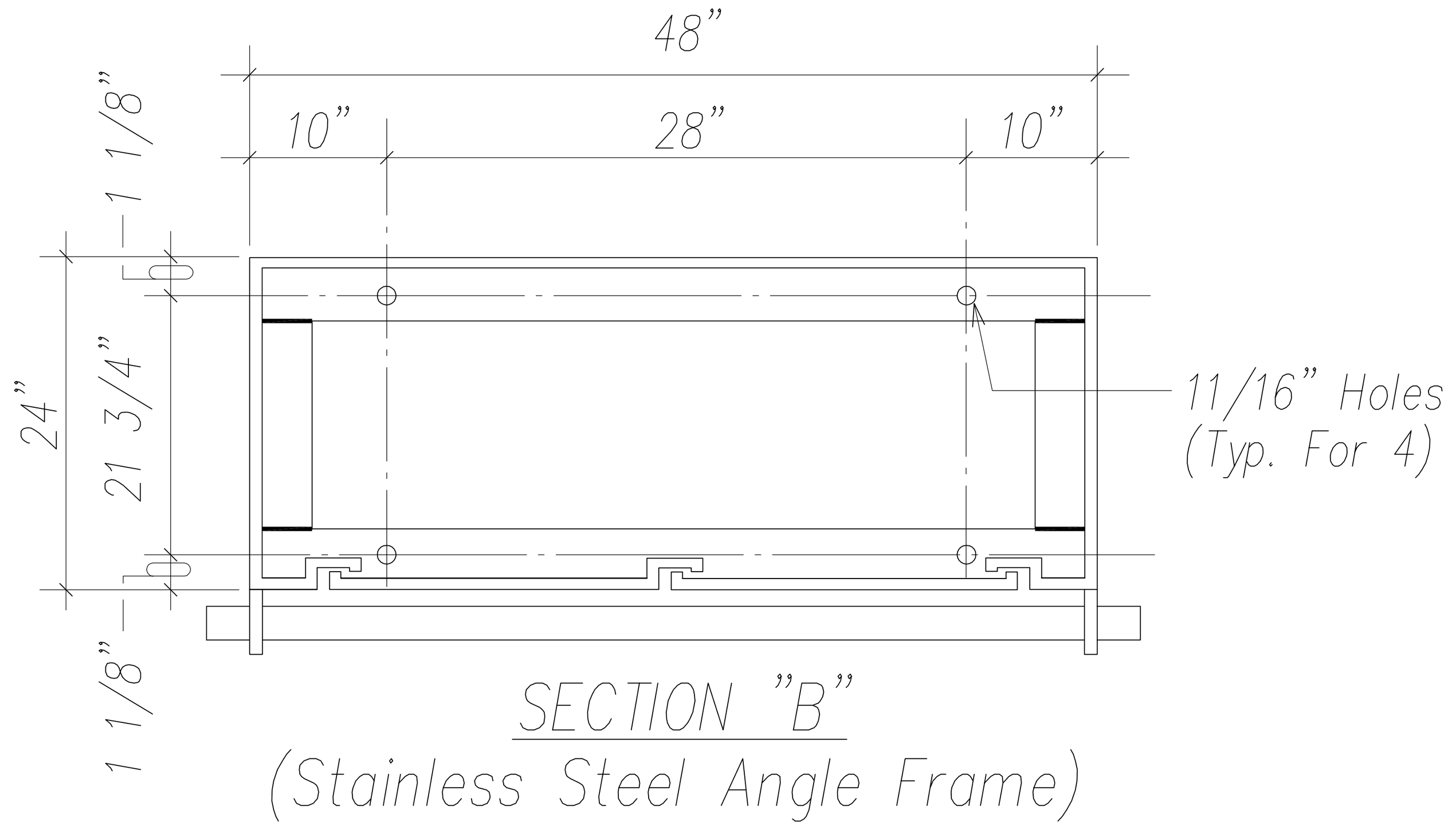
Scale: AS NOTED Date: April 2013

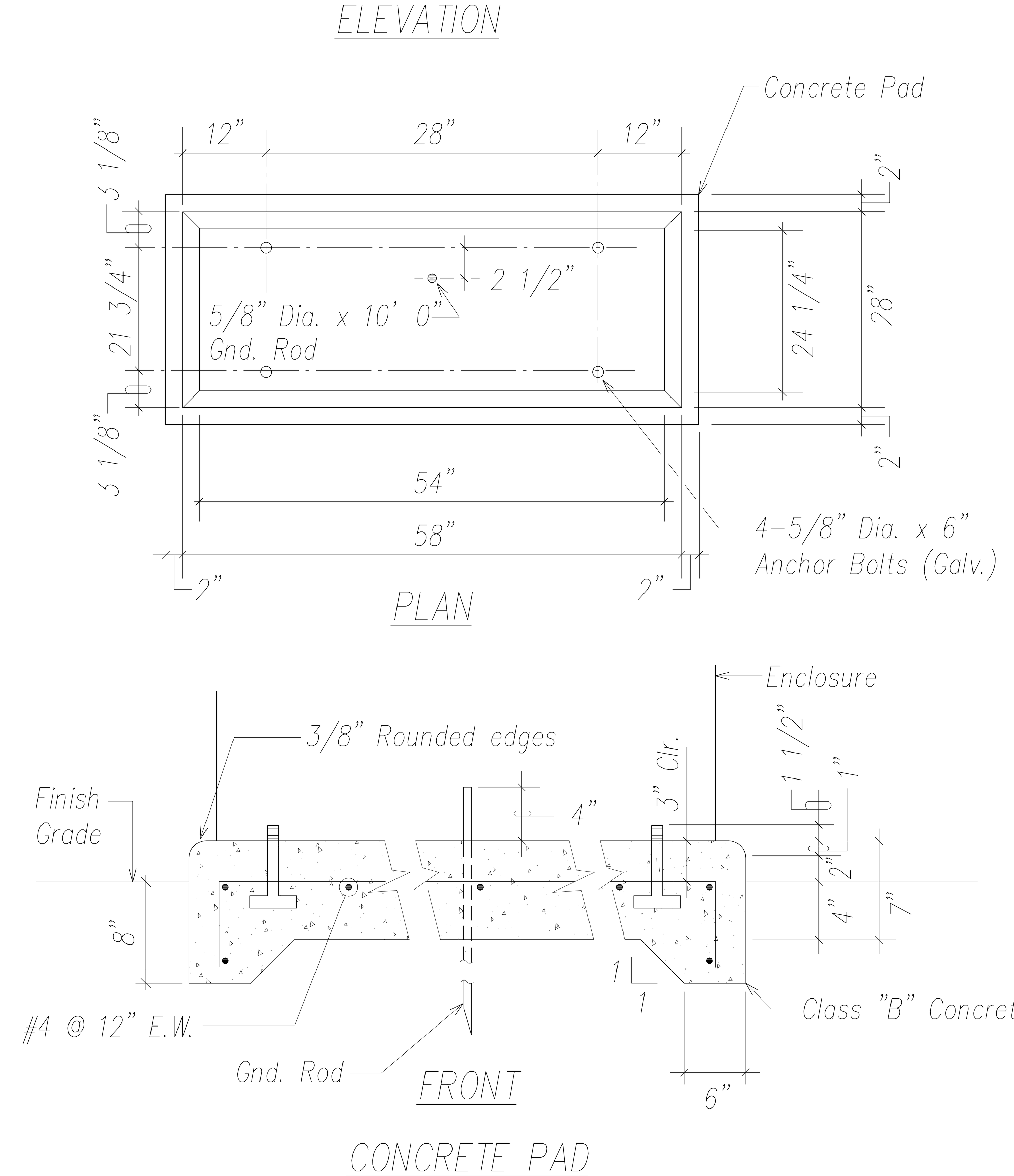
SHEET No. E-9 OF 14 SHEETS

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

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	HSIP-0130(031)	2012	90	103



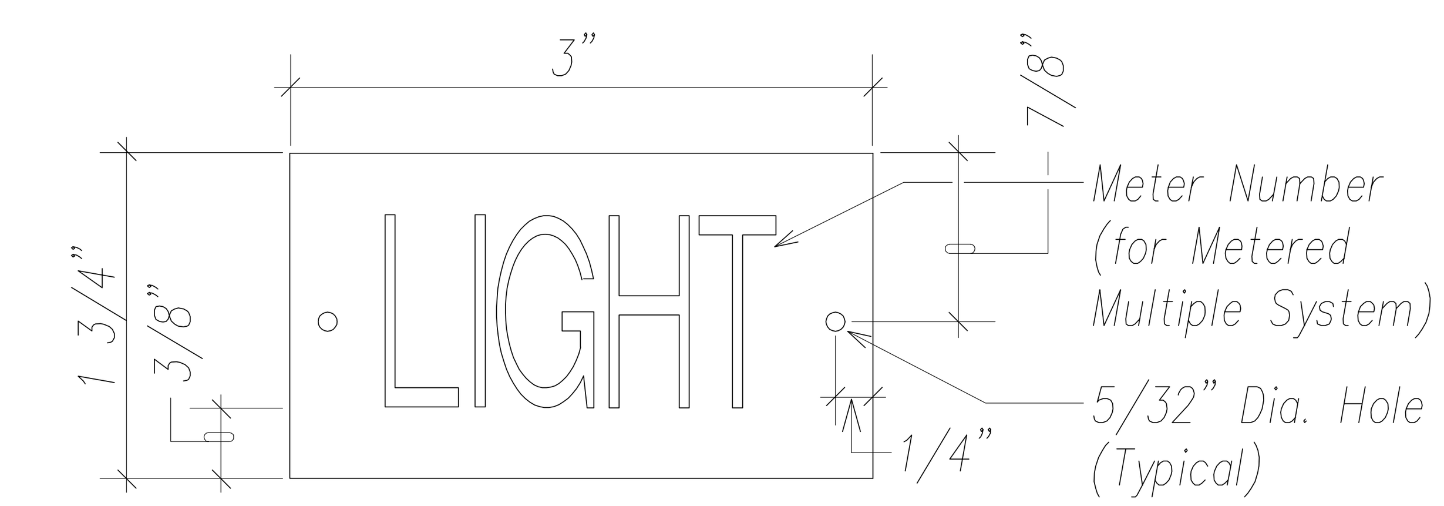




Notes:

1. Cabinet to be primed with one coat shop primer.
2. Made from 10 gauge Type 316 Stainless Steel.
3. Provide epoxy enamel finish, color shall be Munsell 7GY3.29/1.5 Green (two coats). The Munsell color notation is specified in ASTM D 1535.
4. Enclosure shall be NEMA 3R with neoprene gasketing.
5. Padlocks:
   1 – HELCo furnished
   1 – Contractor furnished
6. Shop fabrication drawings shall be submitted for approval.
7. Add additional Gnd Rod as required if gnd resistance exceeds 25 ohms (max allowed).
8. Maintain 4'-0" min. clearance fronting cabinet door, unless indicated otherwise.
9. Location of opening for meter reader to correspond with location of meter (center opening with meter socket).

A / E-10 **COMBINATION METER AND EQUIPMENT CABINET**
Not to Scale



Notes:

1. Use 2 ply plastic – black, white. Thickness: black cap sheet – 0.010"; white base sheet – 0.052"
2. Number size shall be 1" high and engraved 1/8" wide, white in color (number as required).
3. Attach to meter enclosure with No. 8 stainless steel drive screws.
4. Numbers are inscribed by cutting through "black cap sheet" to expose "white letters".

B / E-10 **METER EQUIPMENT CABINET I.D. TAG**
Not to Scale

APPROVED BY:

HAWAIIAN ELECTRIC LIGHT COMPANY, INC. DATE

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DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

STREET LIGHT EQUIPMENT CABINET DETAILS

Keaau-Pahoa Road Intersection Improvements at Old Government Road
Federal-Aid Project No. HSIP-0130(031)

Scale: AS NOTED Date: April 2013

SHEET No. E-10 OF 14 SHEETS

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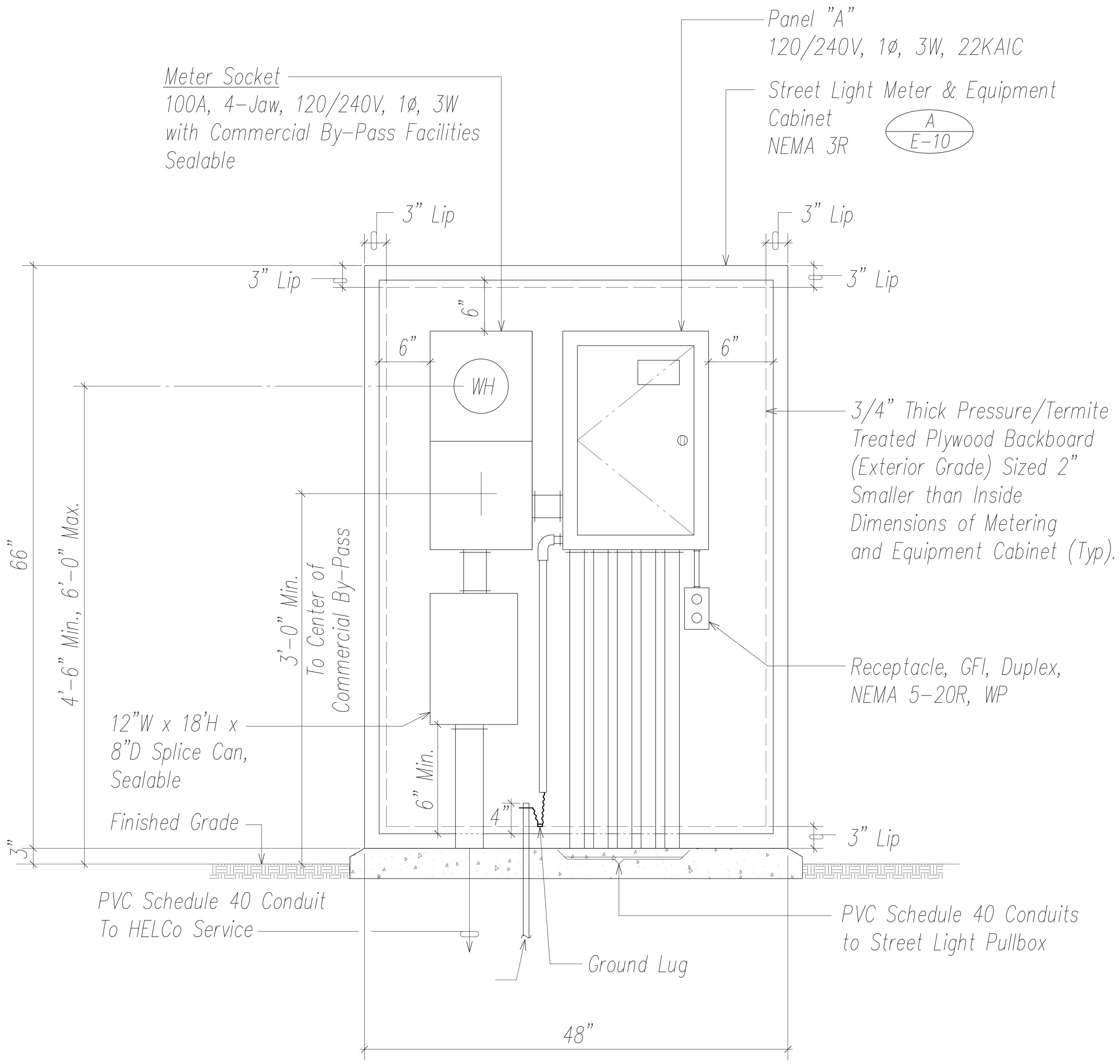
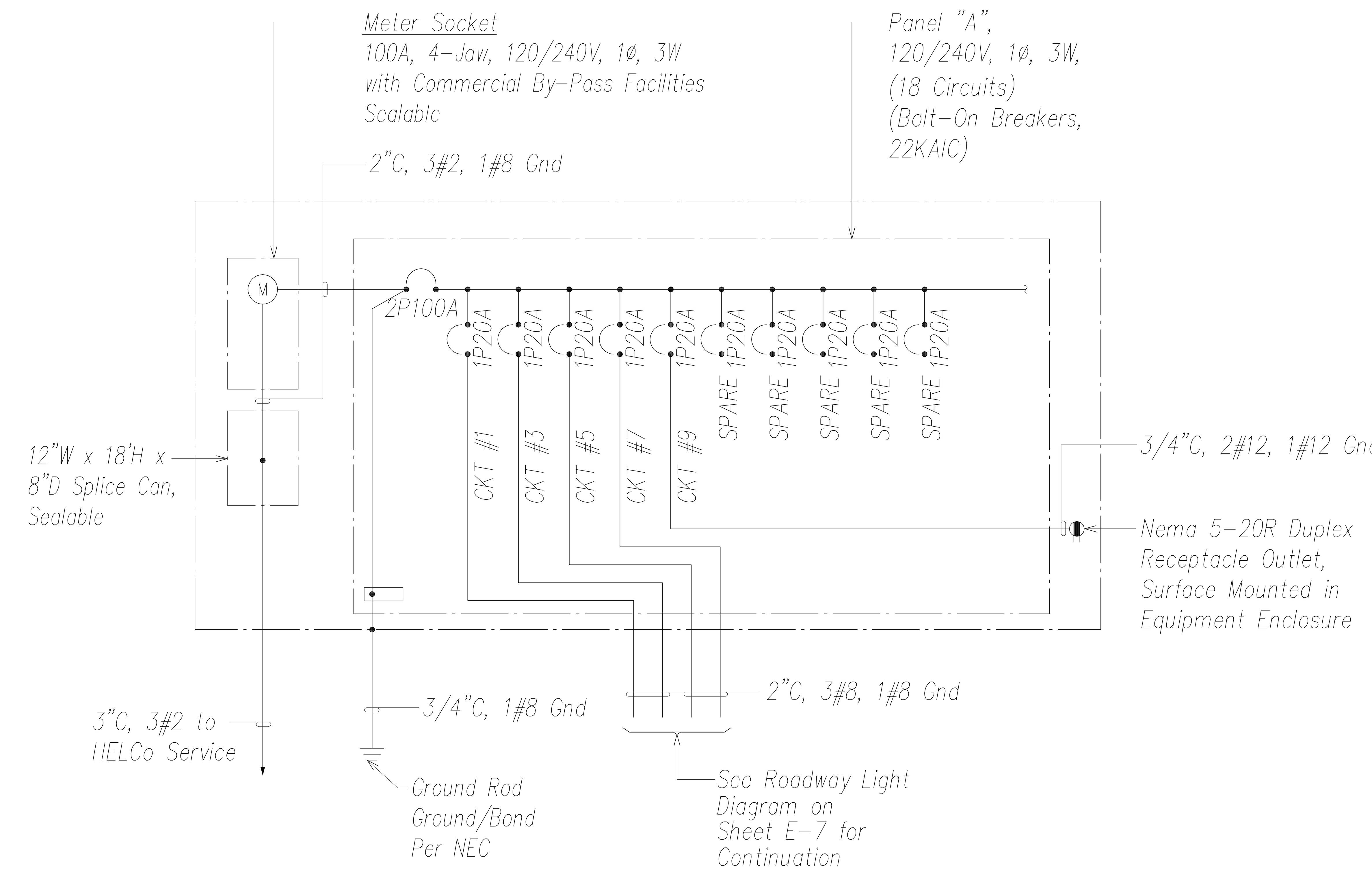
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	HSIP-0130(031)	2012	91	103



Notes:

1. See One-line Diagram B/E-11.

A / E-11 **ROADWAY LIGHTING SYSTEM EQUIPMENT ELEVATION**
NOT TO SCALE



B / E-11 **ROARWAY LIGHTING SYSTEM ONE-LINE DIAGRAM**
NOT TO SCALE

HELCO SERVICE INFORMATION:

Service Data:

1. Service Voltage:120/240V; 1 Phase, 3W
2. Load Data: Connected: 3.5KVA, Estimated Demand: 3.5KVA
3. Service Conductors: 3, #2 CU
4. Metering: HELCO Meter Std. B-5; Rate Schedule: "G"
5. Type: Underground
6. Billing Information:

ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
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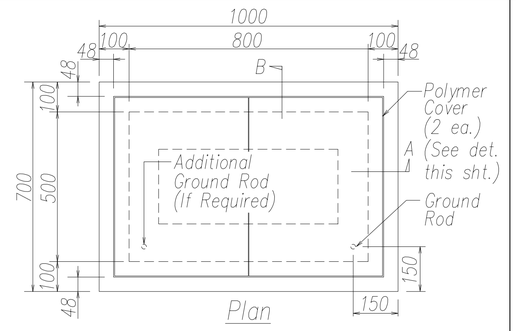
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

STREET LIGHT EQUIPMENT ELEVATION & ONE-LINE

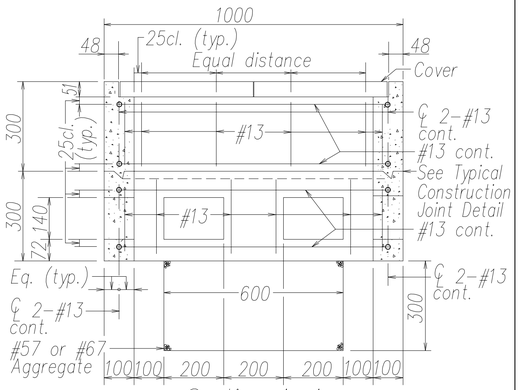
Keaau-Pahoa Road Intersection Improvements at Old Government Road Federal-Aid Project No. HSIP-0130(031)

Scale: AS NOTED Date: April 2013

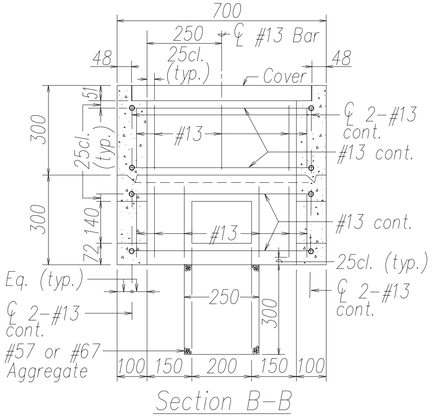
SHEET No. E-11 OF 14 SHEETS



Plan



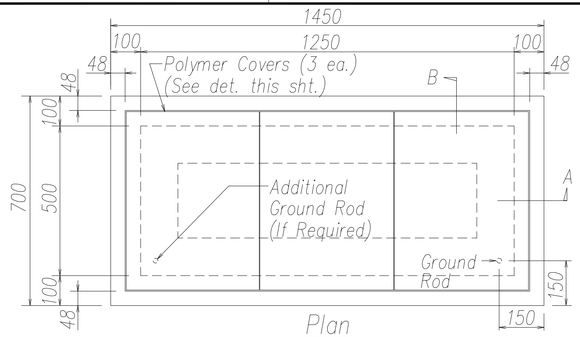
Section A-A



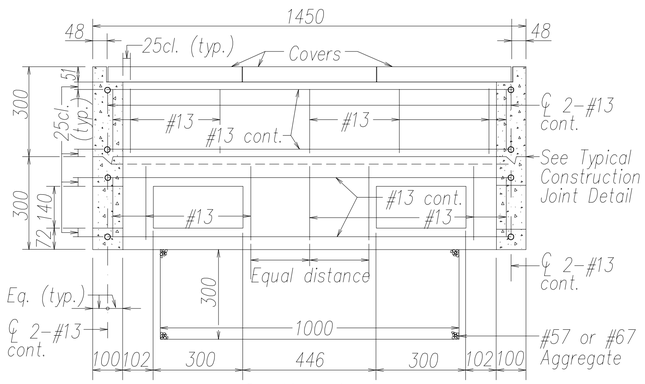
Section B-B

TYPE "B" PULLBOX

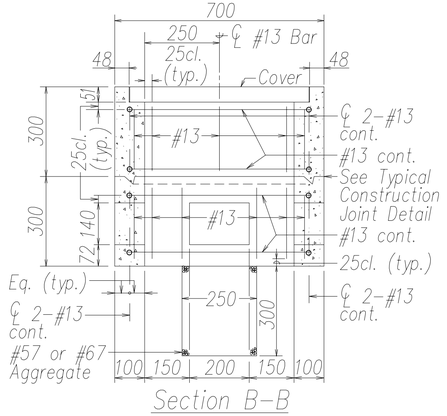
Scale: 1 : 100



Plan



Section A-A



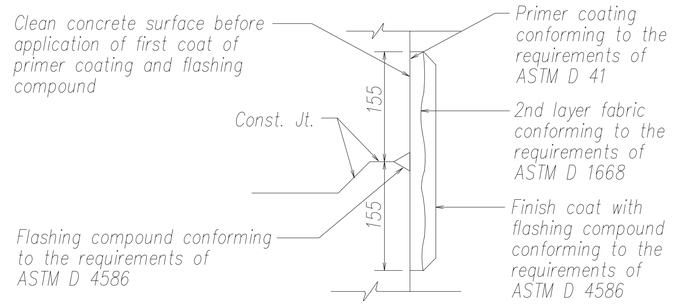
Section B-B

TYPE "C" PULLBOX

Scale: 1 : 100

All Dimensions are in Millimeters unless Otherwise shown.

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	HSIP-0130(031)	2012	92	103

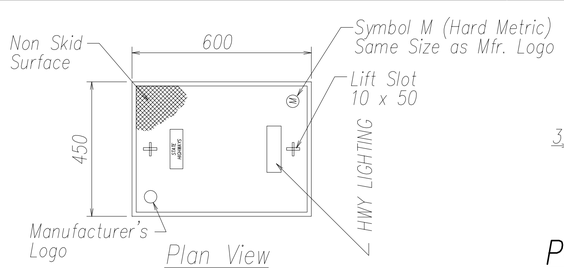


TYPICAL FLASHING COMPOUND WATERPROOFING DETAILS

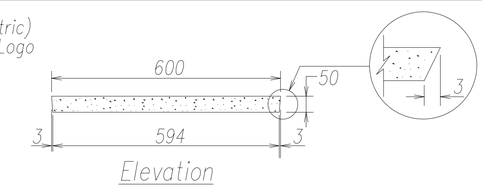
Not to Scale

General Notes:

1. Provide a minimum of one 16 ø x 2.5m Copperweld Ground Rod in each pullbox. When directed by the Traffic Signal Inspector/Engineer, install additional Ground Rods. Cost of Ground Rods shall be incidental to the pullboxes.
2. All pre-cast concrete pullboxes shall be manufactured in two pieces.
3. The pullbox with cover shall be capable of supporting an MS 18 Loading.
4. The maximum weight of the pullbox cover shall not exceed 27 kilograms.
5. The openings for the conduits on all pullboxes shall be pre-cast concrete knockouts.
6. After installing the conduits in the openings of the pullboxes, the Contractor shall fill the excess opening in the pre-cast knockouts with concrete mortar.
7. Prior to installing the pullboxes, the Contractor shall level the bottom of the trench and achieve a minimum of 95% relative compaction of the bottom of the trench.
8. All concrete shall be Class A (25MPa, min.)
9. Rebars shall be Grade 300 and all lapped splices shall be 360mm minimum.
10. The #57 or #67 size aggregate shall conform to latest version of AASHTO M43 (ASTM D 448).
11. Type "C" Pullbox shall be installed in a location protected from vehicular traffic (i.e. raised sidewalk, behind A.C. curbs, traffic signal standard or pipe guards).



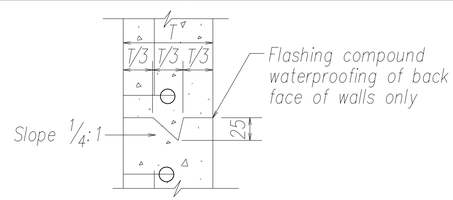
Plan View



Elevation

POLYMER CONCRETE COVER

Not to Scale



TYPICAL CONSTRUCTION JOINT DETAIL

Not to Scale

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STREET LIGHT PULLBOX DETAILS

Keaau-Pahoa Road Intersection Improvements at Old Government Road
Federal-Aid Project No. HSIP-0130(031)

Scale: AS NOTED Date: April 2013

SHEET No. **E-12** OF **14** SHEETS

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

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FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	HSIP-0130(031)	2012	93	101

HAWAIIAN ELECTRIC LIGHT COMPANY (HELCO) NOTES

1. LOCATION OF HELCO FACILITIES

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

2. COMPLIANCE WITH HAWAII OCCUPATIONAL SAFETY AND HEALTH LAWS

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

3. EXCAVATION PERMIT

The Contractor shall obtain an excavation permit from HELCo's technical division two weeks prior to starting construction. Please refer to our request number at that time.

4. CAUTION!!! ELECTRICAL HAZARD!!!

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

5. OVERHEAD LINES

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

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

Contact HELCo's Customer Installations Department for assistance in identifying and safeguarding overhead power lines.

Refer to Section X of HELCo's Electric Service Installation Manual for additional guidelines when working around HELCo's facilities. A copy may be obtained from HELCo's Customer Installations Department.

6. POLE BRACING

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

7. UNDERGROUND LINES

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

For verification of underground lines, the Contractor shall call HELCo's Underground Division a minimum of 72 hours in advance.

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

8. UNDERGROUND FUEL PIPELINES

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

9. EXCAVATIONS

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

a) Sheeting and bracing the excavation and stabilizing the existing ground to render it safe and secure and to prevent possible slides, cave-ins, and settlements.
b) Properly supporting existing structures or facilities with beams, struts, or under-pinnings to fully protect it from damage.
c) Backfilling with proper backfill material including special thermal backfill where existing (refer to engineering department for thermal backfill specifications).

10. RELOCATION OF HELCO FACILITIES

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

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

11. CONFLICTS

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

12. DAMAGE TO HELCO FACILITIES

The Contractor shall be responsible for the protection of all HELCo surface and subsurface utilities and shall be responsible for any damages to HELCo's facilities as a result of his operations. The Contractor shall immediately report such damages to HELCo's trouble dispatcher. Repair work shall be done by HELCo or by the Contractor under HELCo's supervision costs for damages to HELCo's facilities shall be borne by the Contractor.

13. HELCO STAND-BY PERSONNEL

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

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

APPROVED BY:

HAWAIIAN ELECTRIC LIGHT COMPANY, INC. DATE

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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

HELCO NOTES 1

Keaau-Pahoa Road Intersection Improvements at Old Government Road Federal-Aid Project No. HSIP-0130(031)

Scale: AS NOTED Date: April 2013

SHEET No. **E-13** OF **14** SHEETS

ORIGINAL PLAN | SURVEY PLOTTED BY | DATE
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DESIGNED BY
QUANTITIES BY
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No.

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FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	HSIP-0130(031)	2012	94	103

HAWAIIAN ELECTRIC LIGHT COMPANY (HELCO) NOTES (CONTINUED)

14. CLEARANCES

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

STRUCTURE TYPE	MINIMUM CLEARANCE(INCHES)
Water lines, parallel	36 (a)
Water lines, crossing	12 (b)
Sewer lines, parallel	36 (c)
Sewer lines, crossing	24 (d)
Drain lines, parallel	12
Drain lines, crossing	6 (e)
Electrical and gas lines, parallel	12
Electrical and gas lines, crossing	12
Telephone lines, parallel	6 (e)
Telephone lines, crossing	6 (e)
Chevron oil lines, parallel	36
Chevron oil lines, crossing	48 below oil line (f)

a. The minimum horizontal clearances to water lines parallel to electrical ductlines should be increased to 60 inches if the water line is greater than or equal to 16 inches in diameter.

b. The minimum vertical clearances to water lines crossing electrical ductlines can be reduced to 6 inches if the electrical ductline structure is concrete encased and is below the water line and the water line is less than 16 inches in diameter.

c. A minimum horizontal clearance of 36 inches is required between new handholes and existing sewer laterals.

d. The minimum vertical clearances to sewer pipes crossing electrical ductlines can be reduced to 12 inches if the sewer pipe is jacketed in concrete.

e. The minimum clearances shall be increased to 12 inches if the electrical ductline is direct buried.

f. The minimum vertical clearances to oil lines crossing electrical ductlines can be reduced to 24 inches below oil lines if the crossings are encased in 6 inches of concrete.

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

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

15. INDEMNITY

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

16. SCHEDULE

Contractor shall furnish his construction schedule 45 working days prior to starting work on HELCo facilities. Contractor shall give HELCo, in writing 40 working days notice to proceed with HELCo's portion of work.

17. AUTHORITY

All construction, restoration work, and inspection shall be subject to whichever governmental agency has authority over the work.

18. SPECIFICATIONS

Construction of HELCo's underground facilities shall be constructed in accordance with the latest revisions of HELCo Specifications CS7001, CS7003, CS7202, CS9301, and CS9401 and applicable HELCo Standards.

19. CONSTRUCTION

Contractor shall furnish all labor, materials, equipment, and services to properly perform and fully complete all work shown on the contract, drawings, and specifications. All materials shall be new and manufactured in the United States of America. All manhole, handhole, and ductline installations shall be inspected and approved by HELCo prior to excavation and prior to placing concrete. Contractor shall notify HELCo's inspection division at least 48 hours prior to placing concrete.

20. STAKEOUT

The Contractor shall arrange for toneouts of all underground facilities and shall stakeout all proposed HELCo facilities within the project area so as to not conflict with any utility (existing or proposed) and any proposed construction or improvement work for verification by HELCo before proceeding with HELCo work.

21. DUCTLINES

All ductline installations shall be PVC Schedule 40 encased in concrete, unless otherwise noted. All completed ductlines shall be mandrel tested by the Contractor in the presence of HELCo's inspector using HELCo's standard practice. the Contractor shall install a 1/8" polyolefin pull line in all completed ductlines after mandrel testing is complete.

HELCO CUSTOMER NOTES

1. All work must be coordinated with HELCo's Distribution Department, and is subject to HELCo's inspection. Contractor shall give HELCo three (3) working days inspection notice prior to the pouring of concrete or the backfilling of trenches.
2. Any additional pullboxes or hnadholes required due to changes in grade or direction, shall be furnished and installed by the Contractor.
3. Bends due to changes in grade or direction, shall have a minimum radius of 20'-0".
4. All conduits shall be Schedule 40 PVC.
5. All ductlines shall contain a 1800# mule tape (L.H. Dottie Co. Catalog No. DWP 3001 or equivalent)
6. All conduits shall be reamed with a mandrel 1/2" smaller in diameter than the conduit. Ducts shall be swabbed and cleaned of all burrs and foreign material.
7. The Contractor shall not trench to HELCo's pole and install conduit riser without HELCo's approval. The Contractor must notify HELCo's inspectors in advance of performing any work to install the riser bends.
8. Any questions as to the responsibility of any work, shall be cleared with HELCo's engineering department.

APPROVED BY:

HAWAIIAN ELECTRIC LIGHT COMPANY, INC. DATE

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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

HELCO NOTES 2

Keaau-Pahoa Road Intersection Improvements at Old Government Road Federal-Aid Project No. HSIP-0130(031)

Scale: AS NOTED Date: April 2013

SHEET No. **E-14** OF **14** SHEETS

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

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Plant Notes:

1. Contractor will field verify all plant quantities and dimensions prior to installation. Contractor must verify actual quantities. If there is a discrepancy, the planting plan shall take precedence.

2. Contractor will be responsible for locating and protecting all new and existing utilities.

3. Prior to tree and shrub planting pit excavation, all plant locations shall be staked out by the Contractor for approval by the Engineer. Do not perform planting operations until ground has been prepared, stones greater than ½" diameter have been removed, site is neat, orderly, and the Engineer has accepted the site for planting.

4. Notify Engineer immediately in writing of any discrepancies in plant locations or insufficient plant quantities due to difference in plans and actual field conditions.

5. Notify the Engineer a minimum of thirty (30) days prior to commencing with planting operations for approval of all plant material at place of growth. Plant material not approved by the Engineer will be subject to rejection.

6. The Engineer will inspect plants at the place of growth and after delivery to the project site. Each tree will be tagged by the Engineer with a consecutively numbered plastic tamper-resistant and self locking seal. Seals shall remain on trees and only be removed by the Engineer at the completion of the Plant Establishment period. Trees delivered to the project site without the Engineer's seal will be rejected.

7. Plants shall meet minimum height and spread indicated. Plants will be straight, undamaged, sound, healthy, in vigorous growing condition and free of disease and insect/pest infestation. Plants not conforming to these requirements upon delivery to the project and at the end of the Plant Establishment period will be rejected.

8. Contractor will be solely responsible for the complete removal and damages resulting from planting any plant species listed on the Hawai'i Department of Agriculture 'Noxious Weed Rules' as defined in the Stature, Hawai'i Administrative Rules 4:68:1 or the 'Federal Noxious Weed List' as defined in Title 7 of the Code of Federal Regulations (CFR), Parts 360 and 361.

9. All tree work must adhere to American National Standards Institute (or ANSI) - A300 Tree Care Standards and ANSI - Z133 Safety Standards For Tree Work. Work will be contracted to arborists that have been certified in good standing as an International Society of Arboriculture (ISA) Certified Arborist for at least five (5) years to assure that tree work is performed properly and trees are not damaged by practices such as topping, flush cuts, over-thinning, or climbing with spikes. Contractor shall submit a copy of the ISA Arborist Certification in good standing of five (5) years, including the current year, to the Engineer a minimum of seven (7) days prior to tree pruning.

10. All trees identified to remain within the Limits of Work shall be maintained in good health by the Contractor throughout the construction period, inclusive but not limited to, watering, fertilizing, and trimming.

11. For the duration of construction within the dripline of trees to remain there must be:

    11.1. No changes, alterations, or disturbance to the grade by adding fill, excavating or scraping except as noted on plans.

    11.2. No storage of construction material or equipment.

    11.3. No stockpiling of any construction material or any excavated material.

    11.4. No disposal of any liquids (e.g. concrete sleuth, gas, oil, paint, etc.).

    11.5. No vehicular traffic, equipment, or excessive pedestrian traffic.

    11.6. No attachment of any wires, ropes, lights, or any other such attachment other than those of a protective nature to any tree to be preserved.

    11.7. No cleaning of equipment or material under the canopy of any tree or group of trees to remain.

12. If trees other than those specifically designated for removal are damaged beyond survival conditions as determined by the Engineer, the Contractor will remove such trees and replace the trees with the same species and size and maintain the replacement trees for the duration of construction or twelve (12) months, whichever is greater, at no cost to the State.

13. Provide an even four (4) inch layer of imported planting soil over all planting areas. A composite sample of soil collected at the source of the imported planting soil shall be submitted by the Contractor to Crop Nutrient Solutions Inc., University of Hawai'i Agricultural Extension Service, or laboratory acceptable to the Engineer for analysis of types and quantities of required fertilizers and soil amendments. Test results and schedule of recommended fertilizer quantities and application rates shall be presented to the Engineer for review and acceptance before placing the planting soil. Uniformly distribute fertilizers and amendments over planting areas as recommended by the soil analysis report. Rototill top four (4) inches of soil to evenly incorporate fertilizers and amendments. After fertilizers and amendments have been incorporated, retest the soil to verify it meets the soil analysis recommendations. Continue to amend and retest soil until soil analysis recommendations are met. Provide copies of all soil tests to the Engineer.

14. Guy wires, flagging, stakes, windbreaks, etc. shall be maintained and replaced as necessary, and as requested by the Engineer, until the tree or shrub is able to stand unsupported. The Contractor will remove and dispose of the materials at the end of the Plant Establishment period.

15. Any planting that obstructs sight distances, signs, or traffic signals will be relocated or removed as determined by the Engineer.

16. Contractor shall verify the limits of topsoil and soil amendment application with the Engineer. The Contractor will not install new topsoil or new soil amendments in active drainage ways. The Contractor will provide and install all necessary erosion control materials and/or devices to mitigate soil runoff from the project site to adjacent streams or drainage channels.

17. The Contractor will maintain and provide a temporary above-grade irrigation system for all landscape areas within the Project Limits. The Contractor will be responsible for determining the source and method of delivery of water to the Project Site.

    17.1. The temporary irrigation system will include, but is not limited to, large radius rotor heads, mainline and lateral piping, remote control valves and valve boxes, shut-off valves, County of Hawai'i approved backflow prevention device(s), rain shut-off device, and automatic irrigation controller.

    17.2. Contractor will be responsible for coordinating water source with the County. The Contractor will provide all required cross-connection equipment and permits (if applicable).

18. The Contractor will gradually decrease the amount of water to the plant material approximately eight (8) weeks before the Final Inspection to allow the plant material to adjust to the removal of the temporary irrigation system prior to project completion. During the eight (8) week period, the Contractor will monitor the plant material to ensure the plant material remains healthy at the Final Inspection.

19. The Contractor's method of watering shall not cause erosion of existing or new planting areas. The Contractor will immediately repair all damaged areas caused by the Contractor's method of watering at no cost to the State.

20. The Contractor will remove all irrigation equipment used for watering and repair damaged plant materials caused by removal operations upon receiving final acceptance of the project by the State. Repair of damaged areas will be done at no cost to the State.

RUSSELL Y.J. CHUNG
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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

LANDSCAPE NOTES

Keaau-Pahoa Road Intersection Improvements at Old Government Road Federal-Aid Project No. HSIP-0130(031)

Scale: None   Date: April 2013

SHEET No. LP-1 OF 9 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	HSIP-0130(031)	2013	96	103

Tree Disposition Notes:

1. *All trees within the project limits are to remain unless indicated for removal. Refer to civil plans for project limits.*
2. *Contractor will provide tree protection zone fencing for all trees to remain within the project limits and affected by construction operations.*
3. *Contractor will provide protection zone fencing for areas indicated surrounding the existing sign wall.*
4. *No storage of equipment or construction material will be allowed within protection zone fencing.*
5. *Contractor will regularly inspect, repair, replace, and adjust protection zone fencing and as requested by the Engineer.*
6. *Contractor will be responsible for maintaining all planting within the protection zone fencing. The Contractor shall establish and submit a maintenance schedule for review and approval by the Engineer prior to construction operations. Maintenance will include, but is not limited to, watering, fertilizing, trimming, weeding, and mowing.*
7. *Protection zone fencing shall remain in place throughout construction. Contractor will be responsible for removal of the protection zone fencing upon completion of construction operations.*

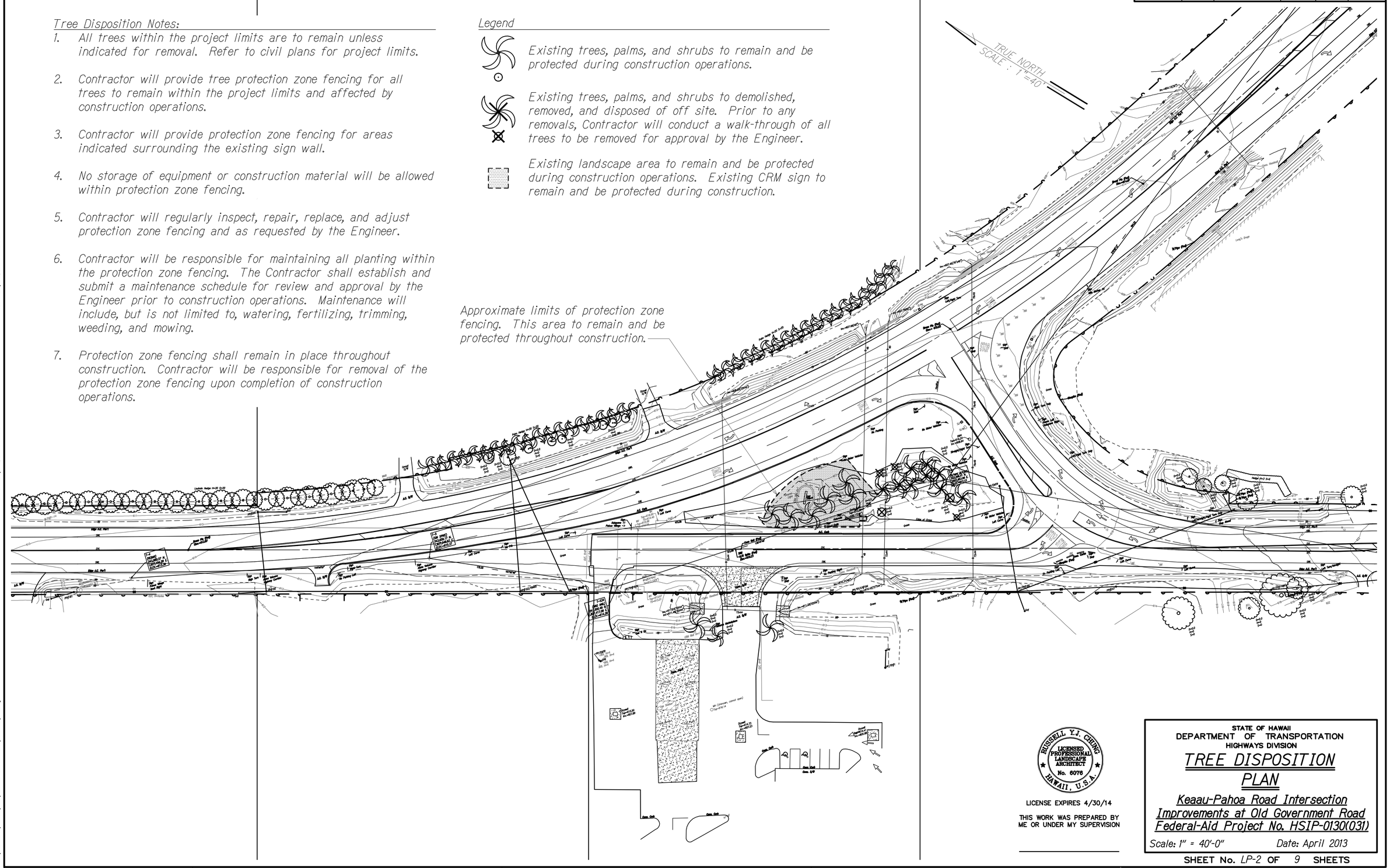
Legend

Existing trees, palms, and shrubs to remain and be protected during construction operations.

Existing trees, palms, and shrubs to demolished, removed, and disposed of off site. Prior to any removals, Contractor will conduct a walk-through of all trees to be removed for approval by the Engineer.

Existing landscape area to remain and be protected during construction operations. Existing CRM sign to remain and be protected during construction.

Approximate limits of protection zone fencing. This area to remain and be protected throughout construction.



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HIGHWAYS DIVISION

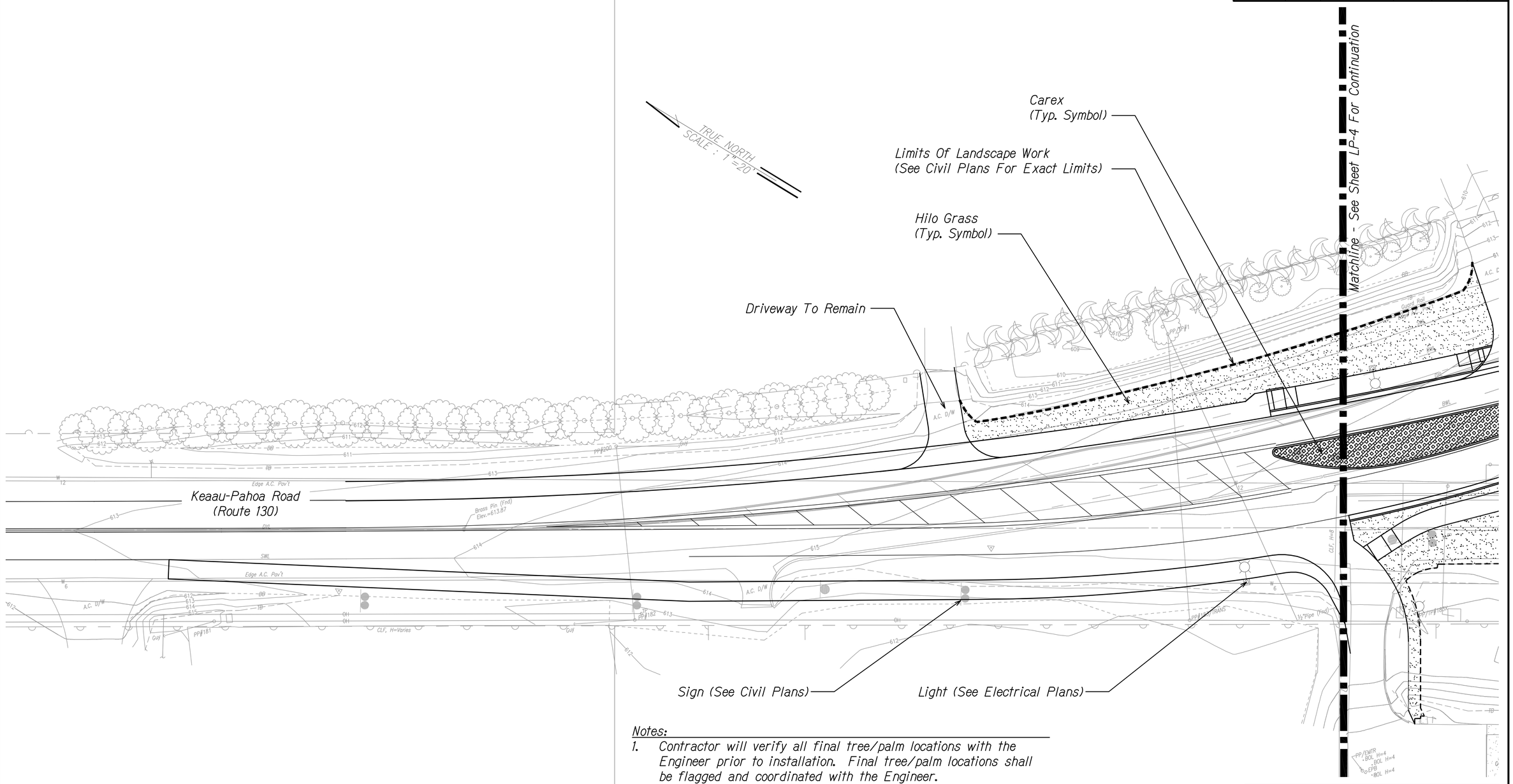
TREE DISPOSITION PLAN

Keaau-Pahoa Road Intersection Improvements at Old Government Road
Federal-Aid Project No. HSIP-0130(031)

Scale: 1" = 40'-0" Date: April 2013

SHEET No. LP-2 OF 9 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	HSIP-0130(031)	2013	97	103



Notes:

1. *Contractor will verify all final tree/palm locations with the Engineer prior to installation. Final tree/palm locations shall be flagged and coordinated with the Engineer.*

2. *Contractor will provide temporary irrigation for all existing plants to remain within the project limits as well as all new trees, shrubs, ground cover, and grass areas for the duration of the planting and plant establishment periods. Temporary irrigation system shall be considered incidental to the various planting items.*

3. *Contractor will provide a 4" layer of planting soil over all new grass and ground cover/shrub areas.*

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HIGHWAYS DIVISION

PLANTING PLAN - 1

Keaau-Pahoa Road Intersection Improvements at Old Government Road Federal-Aid Project No. HSIP-0130(031)

Scale: 1" = 20'-0" *Date: April 2013*

SHEET No. *LP-3* OF *9* SHEETS

ORIGINAL PLAN
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FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	HSIP-0130(031)	2013	98	103

Notes:

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2. Contractor will provide temporary irrigation for existing plants to remain within the project limits as well as all new trees, shrubs, ground cover, and grass areas for the duration of the planting and plant establishment periods. Temporary irrigation system shall be considered incidental to the various planting items.

3. Contractor will provide a 4" layer of planting soil over all new grass and ground cover/shrub areas.

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PLANTING PLAN - 2

Keaau-Pahoa Road Intersection Improvements at Old Government Road
Federal-Aid Project No. HSIP-0130(031)

Scale: 1" = 20'-0" Date: April 2013

SHEET No. LP-4 OF 9 SHEETS

ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
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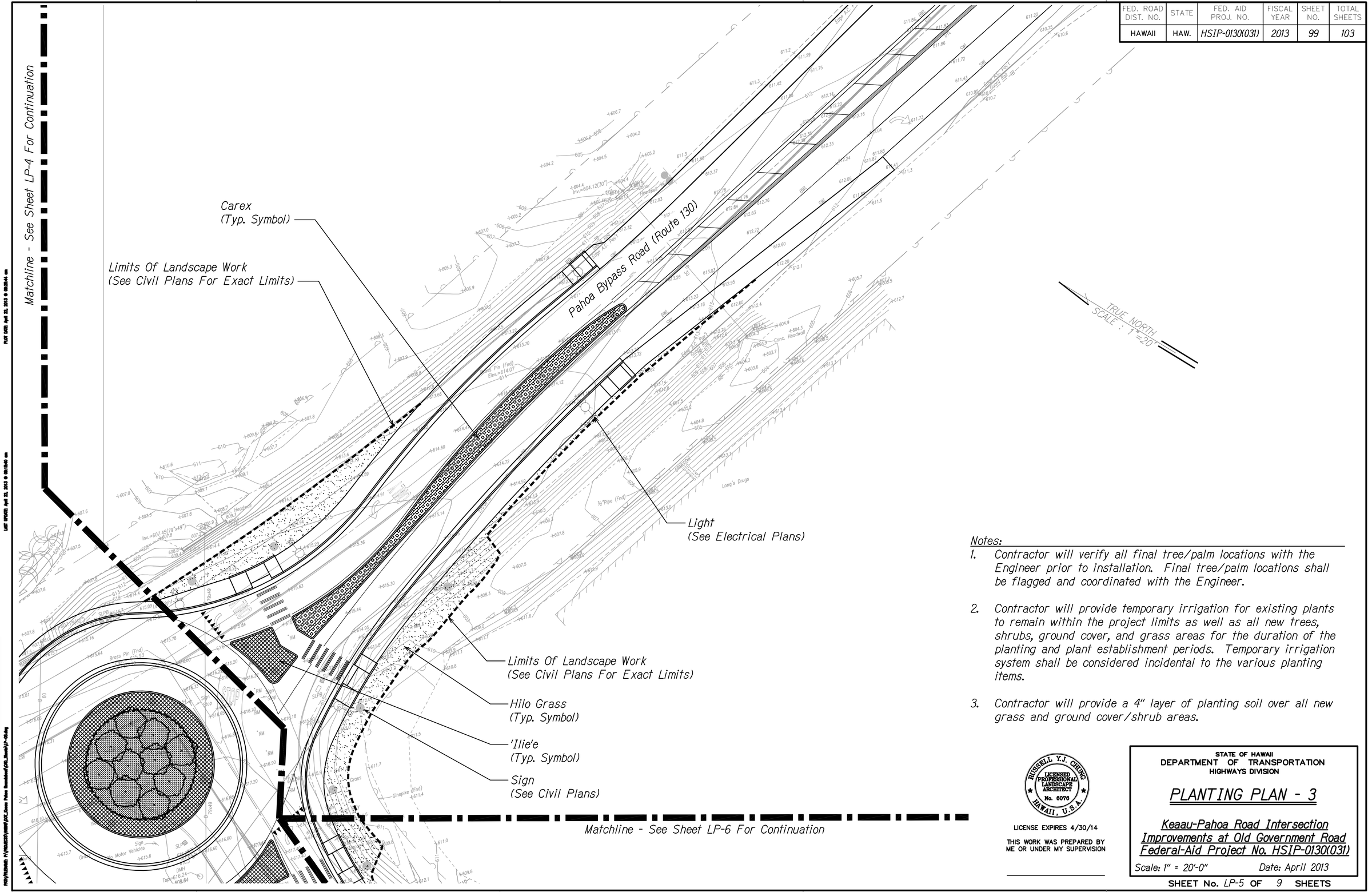
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	HSIP-0130(031)	2013	99	103



Notes:

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2. *Contractor will provide temporary irrigation for existing plants to remain within the project limits as well as all new trees, shrubs, ground cover, and grass areas for the duration of the planting and plant establishment periods. Temporary irrigation system shall be considered incidental to the various planting items.*

3. *Contractor will provide a 4" layer of planting soil over all new grass and ground cover/shrub areas.*

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HIGHWAYS DIVISION

PLANTING PLAN - 3

Keaau-Pahoa Road Intersection Improvements at Old Government Road
Federal-Aid Project No. HSIP-0130(031)

Scale: 1" = 20'-0" Date: April 2013

SHEET No. LP-5 OF 9 SHEETS

ORIGINAL PLAN
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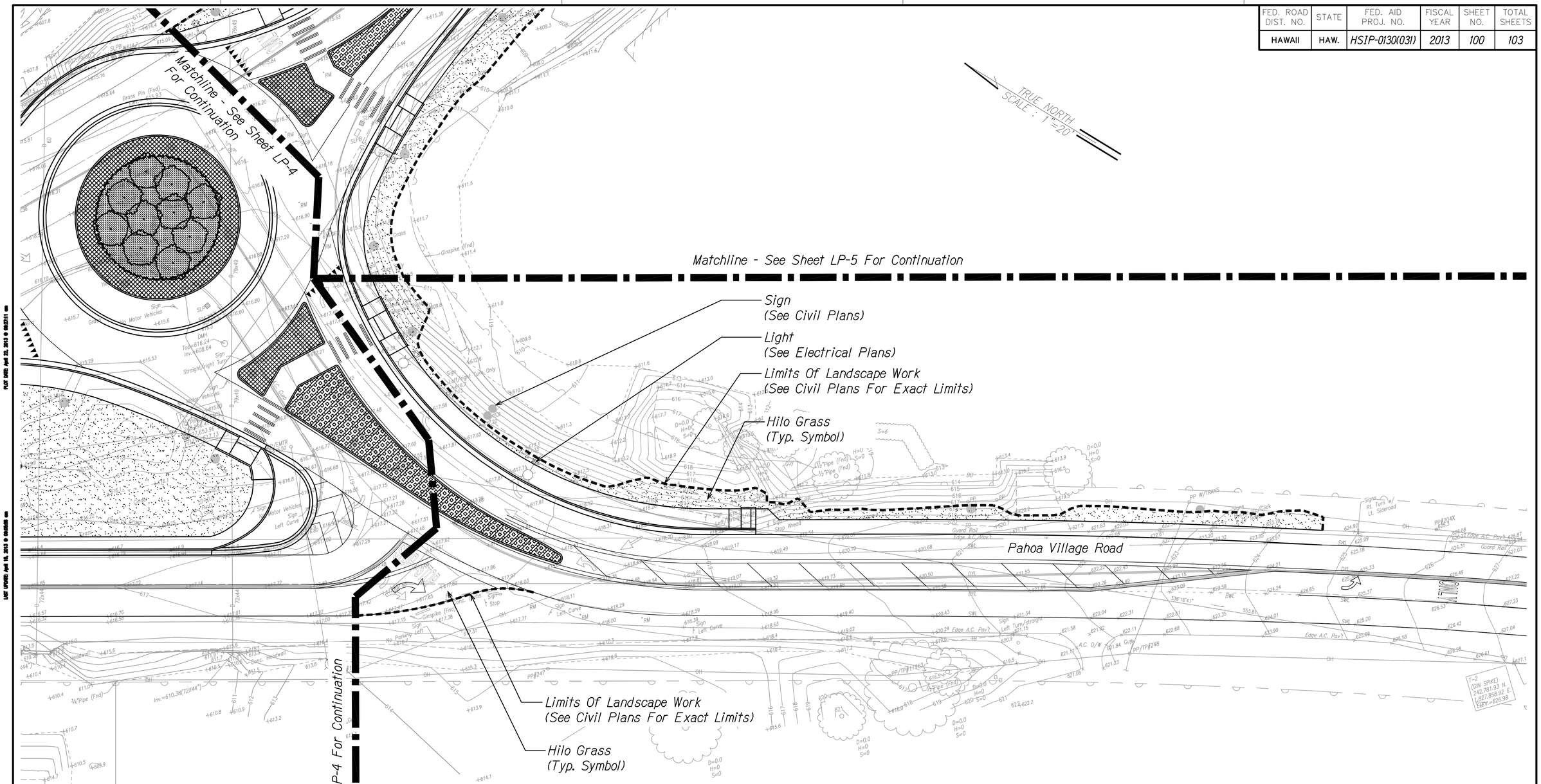
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	HSIP-0130(031)	2013	100	103



Notes:

1. Contractor will verify all final tree/palm locations with the Engineer prior to installation. Final tree/palm locations shall be flagged and coordinated with the Engineer.

2. Contractor will provide temporary irrigation for existing plants to remain within the project limits as well as all new trees, shrubs, ground cover, and grass areas for the duration of the planting and plant establishment periods. Temporary irrigation system shall be considered incidental to the various planting items.

3. Contractor will provide a 4" layer of planting soil over all new grass and ground cover/shrub areas.

ORIGINAL PLAN
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LAST UPDATED: Apr 15, 2013 @ 08:25:11 am
PLOT DATE: Apr 22, 2013 @ 08:27:11 am

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PLANTING PLAN - 4

Keaau-Pahoa Road Intersection Improvements at Old Government Road
Federal-Aid Project No. HSIP-0130(031)

Scale: 1" = 20'-0" Date: April 2013

SHEET No. LP-6 OF 9 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	HSIP-0130(031)	2013	101	103

Tree Protection Zone:

1. *All trees identified on the plans shall be protected. All trees 24" caliper or greater (as measured at 4-1/2 foot height from existing grade) within the project limits shall be protected if not specifically identified for removal. If trees other than those designated for removal are damaged beyond survival condition as determined by the Engineer, the Contractor shall remove such trees and replace with a tree of the same species and size and maintain for the duration of the construction period or 12 months, whichever is greater, at no cost to the State.*

2. *The recommended tree protection zone should be located at the outer drip line of the canopy of the tree. However, the minimum protection zone around a tree should be at least 20 feet from the external surface of the tree's trunk. For all palms, the minimum protection zone should be at least 10 feet.*

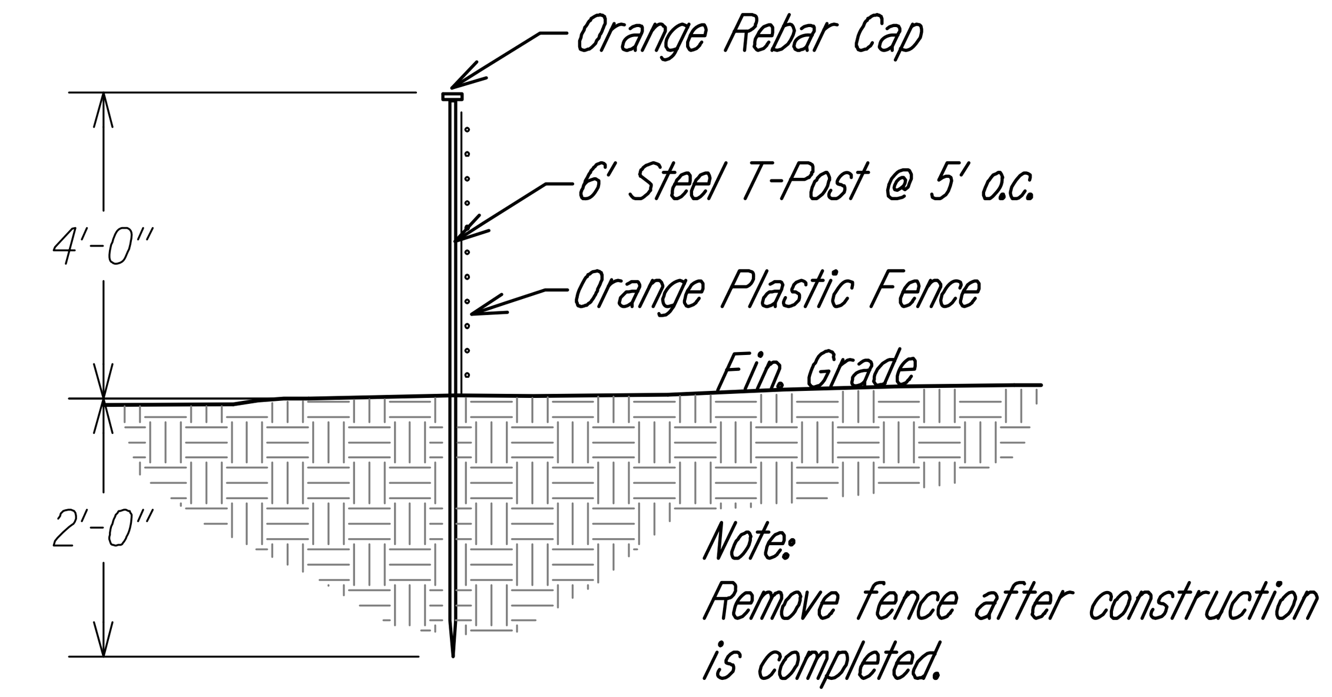
3. *All underground utilities and irrigation lines should be routed outside of the tree protection zone. If utilities must traverse the tree protection zone, they shall be tunneled or bored at a depth of 4 feet or greater within the tree protection zone.*

4. *All protected trees shall be listed on the demolition, landscape, grading and utilities plans. If there is a a discrepancy with all plans, Contractor shall contact Engineer immediately.*

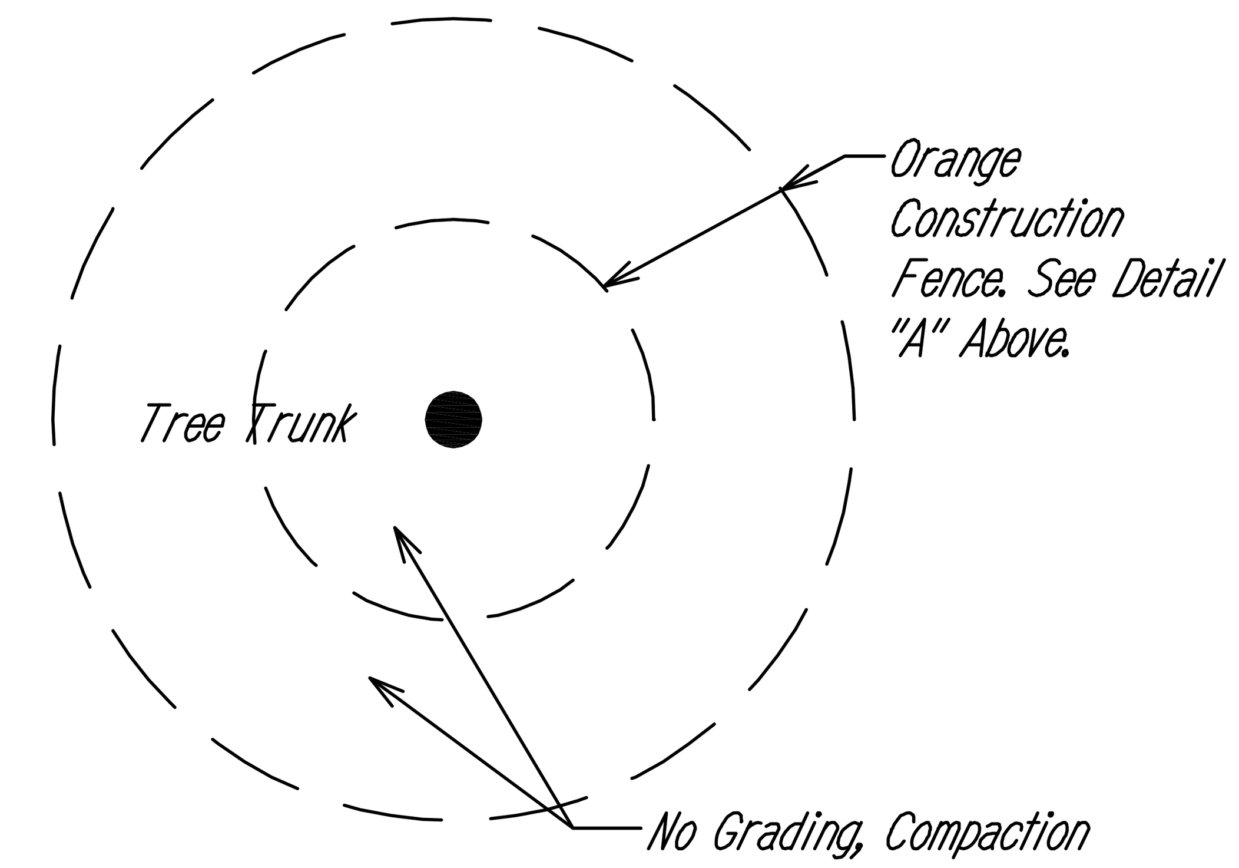
5. *Protective fences shall be erected around trees identified on plan or trees with a trunk diameter greater than 24 inches (as measured at a height of 4-1/2 feet) if they are located within the project limits and not specifically identified for removal. Protective fence shall be 4 foot high orange plastic mesh (or approved equivalent) supported on steel t-post a minimum of 6 feet long. Protective fence shall surround tree at a minimum of 10 feet from tree trunk with steel t-post at a maximum of 5 feet on center. Fence shall be installed prior to any demolition work and shall remain in place until site work is completed. Signs shall be posted on all four sides of tree to read: TREE PROTECTION ZONE [TPZ] - NO GRADE CHANGE, STORAGE OR EQUIPMENT PERMITTED WITHIN TPZ*

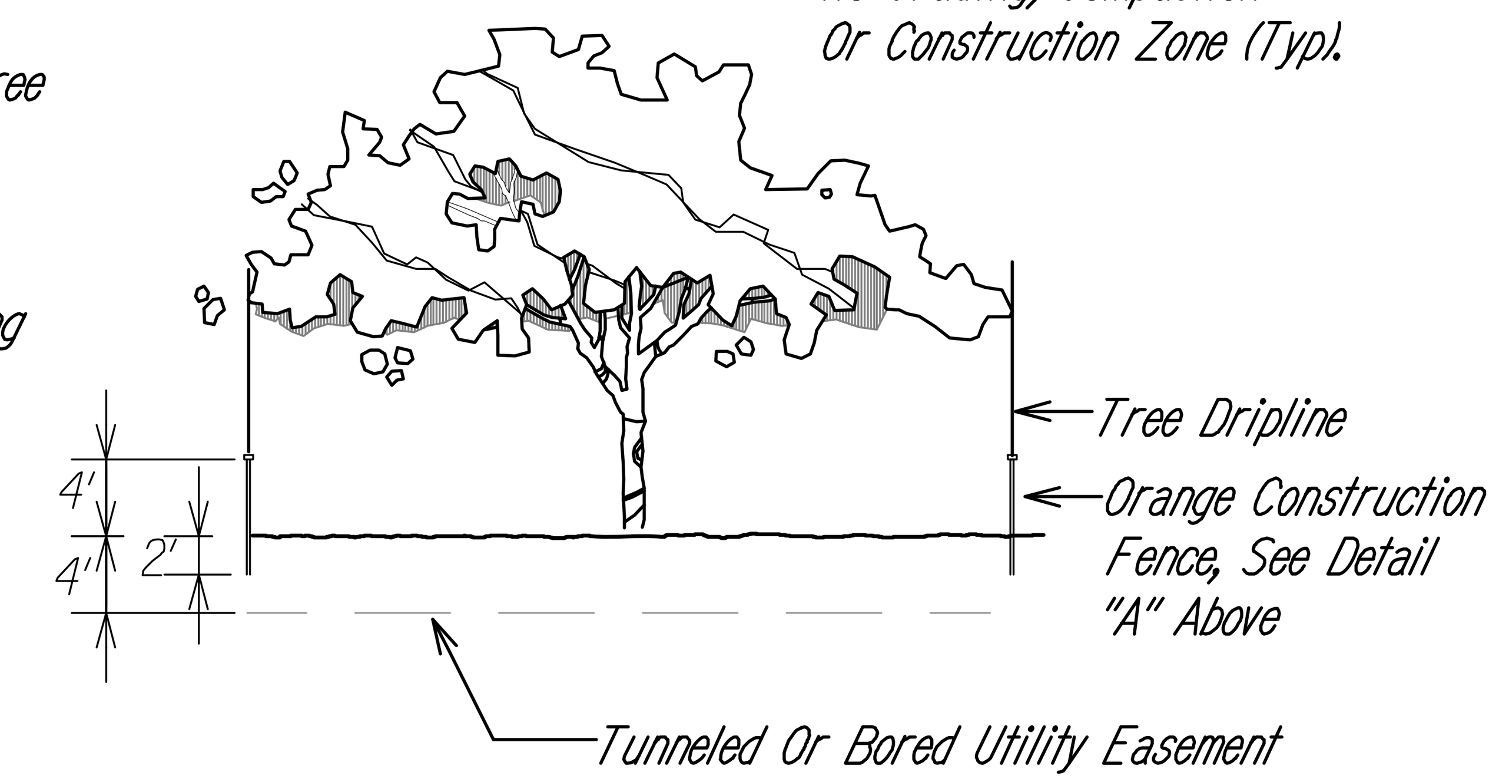
6. *For the duration of construction within the drip line of the trees to remain there must be:*
   - *No changes, alteration or disturbance to the grade by adding fill, excavating or scraping except as noted on plans;*
   - *No storage of construction materials or equipment;*
   - *No stockpiling of any construction materials or excavated materials;*
   - *No disposal of any liquids e.g. concrete sleuth, gas, oil, paint, etc.;*
   - *No vehicular traffic, equipment or excessive pedestrian traffic;*
   - *No attachment of any wires, ropes, lights or any other such attachment other than those of a protective nature to any tree to be preserved; and*
   - *No cleaning of equipment or material under the canopy of any tree or group of trees to be preserved*

7. *Auger tunneling, not trenching, shall be used where possible for utility placement within the drip line of the tree. If trenching is necessary it shall be hand dug within the drip line of the tree under the direct supervision of a certified arborist.*



Detail A - Orange Construction Fence
Not To Scale





1 TREE PROTECTION
NOT TO SCALE

329343.63-03

RUSSELL Y.J. CHUNG
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No. 6076
HAWAII, U.S.A.

LICENSE EXPIRES 4/30/14

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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

PLANTING DETAILS - 1

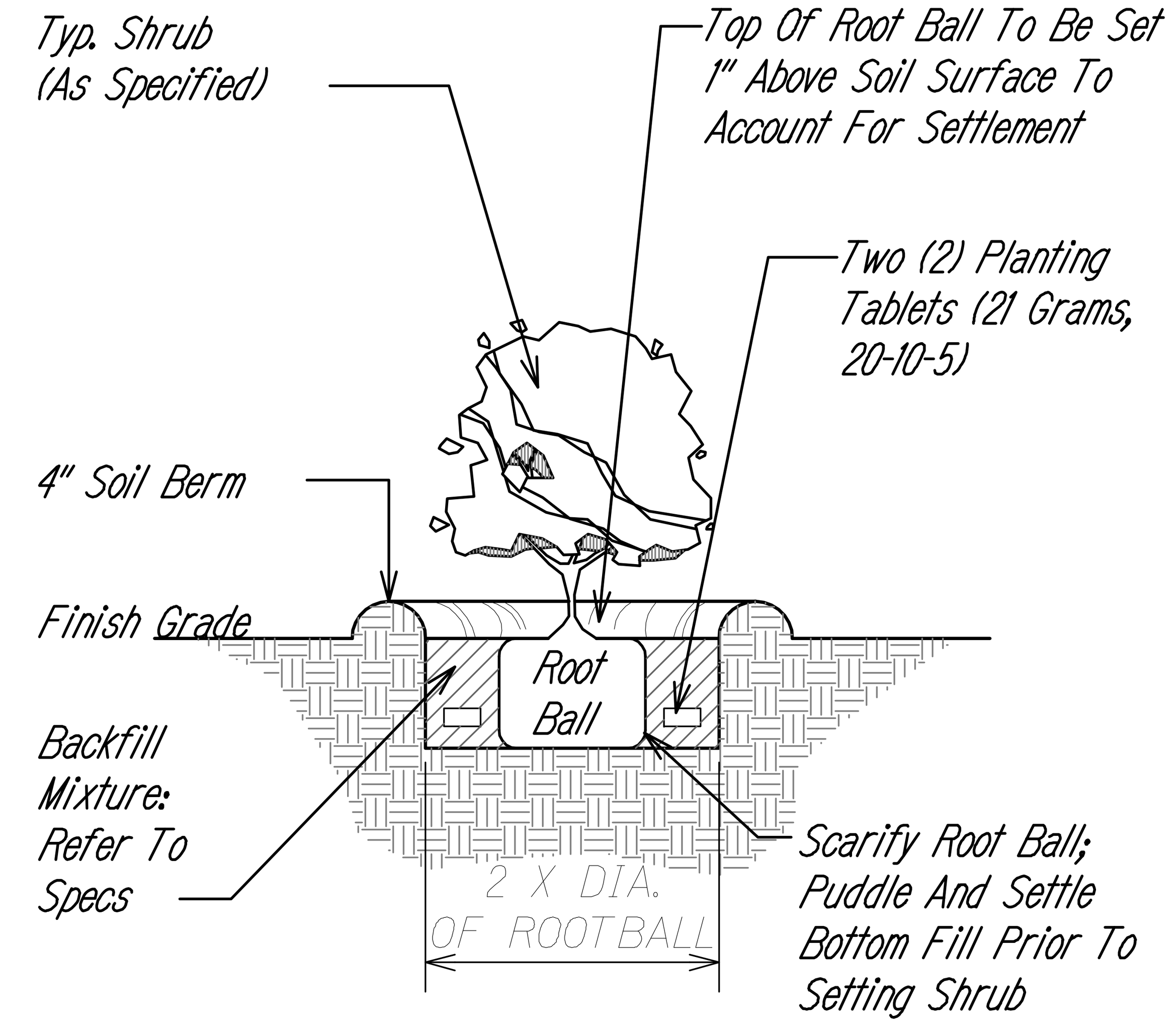
Keaau-Pahoa Road Intersection Improvements at Old Government Road
Federal-Aid Project No. HSIP-0130(031)

Scale: NONE   Date: April 2013

SHEET No. LP-7 OF 9 SHEETS

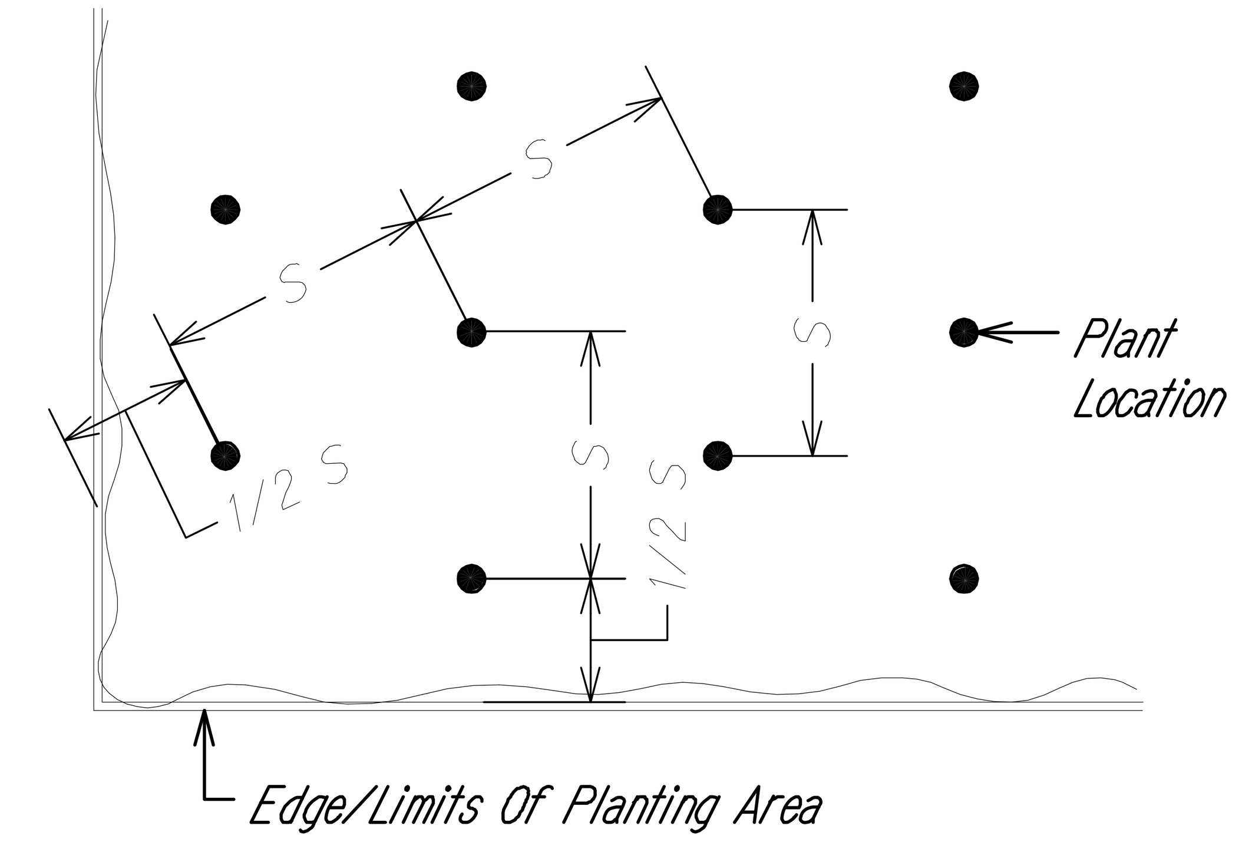
ORIGINAL PLAN | SURVEY PLOTTED BY ... DATE | DRAWN BY | TRACED BY | NOTE BOOK | DESIGNED BY | QUANTITIES BY | No. | CHECKED BY

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	HSIP-0130(031)	2013	102	103



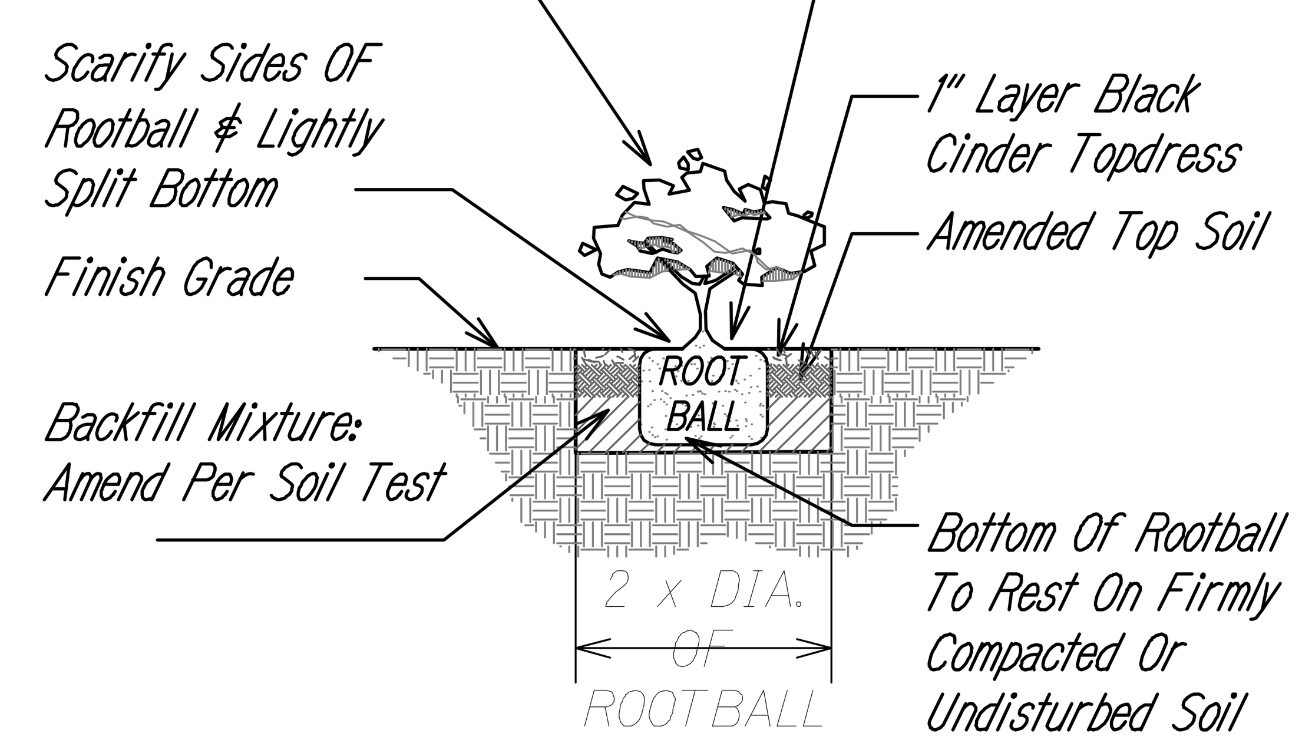
1 SHRUB PLANTING
NOT TO SCALE 329333.13-06

Note:
1. S = Spacing (Refer To Plant List For Spacing)
2. Use Spacing Layout For Shrubs, Groundcovers, And Annuals



3 TRIANGULAR SPACING
NOT TO SCALE 329313-01

Note:
Immediately after planting, water heavily to ensure soil settles around roots.



2 GROUND COVER PLANTING
NOT TO SCALE 329313-02

4 HYDRO-SPRIG DETAIL
NOT TO SCALE 329313-04

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DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

PLANTING DETAILS - 2

Keaau-Pahoa Road Intersection Improvements at Old Government Road
Federal-Aid Project No. HSIP-0130(031)

Scale: NONE   Date: April 2013

SHEET No. LP-7 OF 9 SHEETS

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

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	HSIP-0130(031)	2013	103	103

PLANT SCHEDULE

NATIVE TREES	BOTANICAL NAME	COMMON NAME	CONT	SIZE	REMARKS
	CIBOTIUM GLAUCUM	HAPU'U	FIELD STOCK	4'-6' T.H.	

SHRUB AREAS	BOTANICAL NAME	COMMON NAME	CONT	REMARKS
	DIANELLA SANDWICENSIS	'UKI'UKI	6" POTS	18" O.C. TRIANGULAR SPACING

GROUND COVERS	BOTANICAL NAME	COMMON NAME	CONT	REMARKS
	CAREX WAHUENSIS	CAREX	6" POTS @ 12" OC	
	PLUMBAGO ZEYLANICA	'ILIE'E	4" POTS @ 18" OC	

GRASSES	BOTANICAL NAME	COMMON NAME	CONT	REMARKS
	PASPALUM CONJUGATUM	HILO GRASS	SPRIGS	

LAST UPDATED: April 12, 2013 @ 10:14:52 am

PLOT DATE: April 22, 2013 @ 08:57:31 am

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

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PLANT SCHEDULE

Keaau-Pahoa Road Intersection Improvements at Old Government Road Federal-Aid Project No. HSIP-0130(031)

Scale: NONE Date: April 2013

SHEET No. LP-9 OF 9 SHEETS