FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	901A-01-19	2020	1	167

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STATE OF HAWAII

DEPARTMENT OF TRANSPORTATION

HIGHWAYS DIVISION

HONOLULU, HAWAII

PLANS FOR

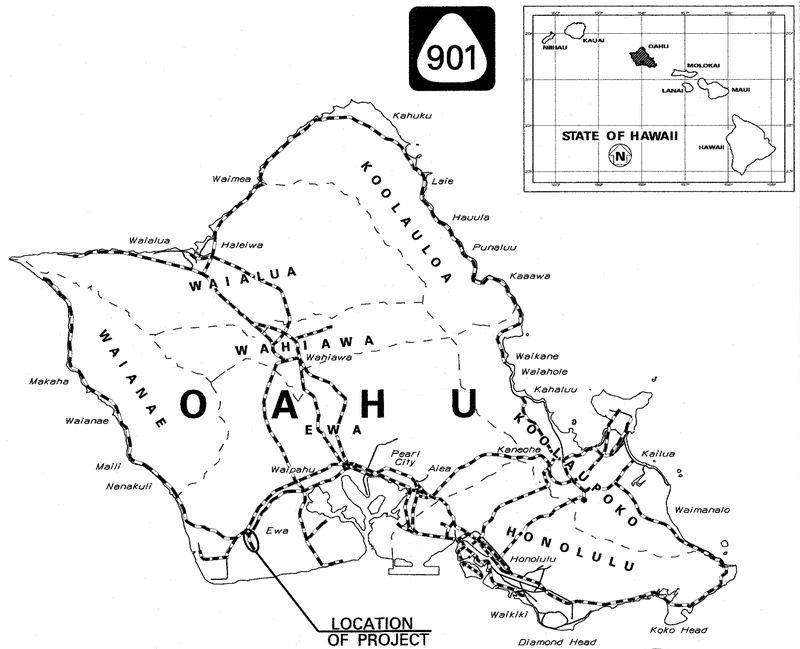
FORT BARRETTE ROAD OPERATIONAL IMPROVEMENTS

ROOSEVELT AVENUE TO FARRINGTON HIGHWAY

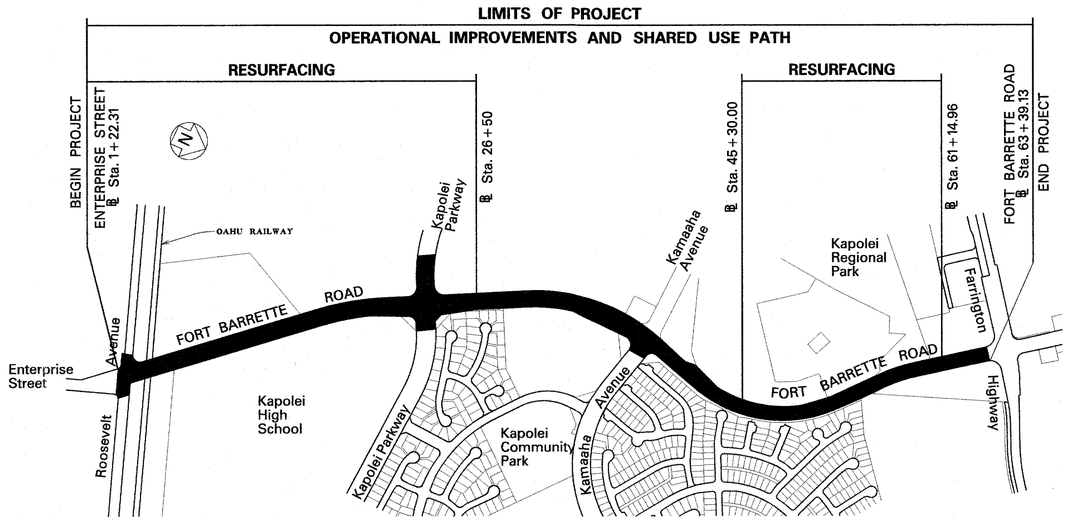
PROJECT NO. 901A-01-19

DISTRICT OF EWA

ISLAND OF OAHU



RTE 901 MILE POST 0.00 TO RTE 901 MILE POST 1.22



LAYOUT PLAN

5 0 5 10 15

SCALE IN HUNDRED FEET

NET LENGTH OF PROJECT..... 1.22 MILES

HWY-D / WSP USA Inc. DESIGNED BY

HWY-DD MANAGED BY

692-7581 PHONE

Feb 2020 DATE

DEPARTMENT OF TRANSPORTATION
STATE OF HAWAII

APPROVED:

DIR. OF TRANSPORTATION — DATE 1/30/20

STANDARD PLANS SUMMARY

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	901A-01-19	2020	2	167

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

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

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

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

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

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

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

NOTE:

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

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

STANDARD PLANS SUMMARY

FORT BARRETTE ROAD OPERATIONAL IMPROVEMENTS
Roosevelt Avenue to Farrington Highway
Project No. 901A-01-19

Scale: Not to Scale *Date: January, 2020*

SHEET No. *1* OF *1* SHEETS

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

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	901A-01-19	2020	3	167

GENERAL NOTES

1. The scope of work for this project consists of cold planing; resurfacing; reconstruction of weakened pavement areas; utility adjustment; widening; regrading; hydro-mulch seeding; removal of existing guardrail and existing obsolete irrigation pipes; installation of guardrail, end treatments, grouted rubble paving (GRP); safety edge, shoulder dressing, pavement markings, striping, retroreflective borders on all overhead traffic signal heads, milepost reference markers, signs, curb ramps, curbing, traffic signals, and shared-use path; modification of traffic signal timing and phasing; and upgrading of existing railroad crossing.

2. The Contractor is reminded of the requirements of Subsection 105.16 - Subcontracts, 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 Special Provisions: Subsection 104.09 - Maintenance of Traffic; Subsection 104.11 - Utilities and Services; Subsection 107.06 - Contractor Duty Regarding Public Convenience; and the 2005 Hawaii Standard Specifications for Road and Bridge Construction Section 645 - Work Zone Traffic Control.

4. The existence and location of underground utilities, manholes, monuments and structures as shown on the plans are from the latest available data, but the accuracy is not guaranteed. The encountering of other obstacles during the course of work is possible. The Contractor shall tone for the exact locations and depths of all underground utilities, either shown on or omitted from the plans, in areas where work, such as the placement of sign posts, installation of guardrail, catch basins, traffic signal, widening, etc. may affect these properties. Toning shall be considered incidental to the various contract items and will not be paid for seperately. The Contractor shall be held liable for any damages incurred to the existing facilities and/or improvements as a result of his operations. All damaged portions shall be replaced in accordance with the standards and specifications of the affected utility company at no cost to the State.

5. All existing utilities, whether or not shown on the plans, shall be protected at all times by the Contractor during construction unless specified on the plans to be abandoned. The Contractor shall be held liable for any damages incurred to the existing utilities as a result of his operations. All damaged portions shall be replaced in accordance with the Standards and Specifications of the affected utility company at no cost to the State.

6. The Contractor shall verify the presence of existing aerial and underground utilities which may conflict with construction activities and shall coordinate with the utility company for temporary relocations, as necessary. All costs associated with temporary relocations shall be borne by the Contractor.

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

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

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

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

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

12. The Contractor shall notify the Department of Transportation Services, Public Transit Division at ph. #768-8396 and the Oahu Transit Services, Inc. Bus Operations (ph. #848-4578 or 852-6016) and Paratransit Operations (ph. #454-5041 or 454-5020) of the scope of work, location, proposed closure of any street, traffic lane, sidewalk, or bus stop, and duration of project at least two (2) weeks prior to starting construction operations.

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

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

15. The Contractor shall remove and dispose of all existing raised pavement markers and traffic tapes prior to the overlaying of Asphalt Concrete. This work shall be considered incidental to Hot Mix Asphalt Pavement, Mix No. IV and will not be paid for separately.

16. All holes, depressions and wheel ruts shall be filled and compacted with Hot Mix Asphalt Pavement, Mix No. V prior to resurfacing. This work shall be considered incidental to various contract items.

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

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

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

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

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

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

23. All saw cutting and safety edge work shall be considered incidental to various contract items.

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

25. Existing facilities and/or pavement to remain which has been damaged by the Contractor shall be restored to its original condition at no cost to the State.

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

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

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

29. After completion of resurfacing, the Contractor and the Engineer will test for and determine ponding areas (i.e. low spots within resurfaced area). It shall be the responsibility of the Contractor to correct and resurface and/or repair all such ponding areas. Corrective measures shall be approved by the Engineer.

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

31. The vertical riding surface drop-off between adjacent surfaces shall not exceed 3-inches. This shall include differences in height between adjacent pavement surfaces, cold planed surfaces, bridge decks and new concrete slabs. If a vertical riding surface drop-off exists at the end of each day's work, the Contractor shall provide temporary transition tapers with maximum slopes of 48:1 for travel in the longitudinal direction and 6:1 for transverse movements. See detail on Sheet No. A5.

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

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

34. The Contractor shall coordinate with the Honolulu Police Department Special Duty Section to hire police officers for traffic control operations and transporting of project equipment to ensure minimal delay due to lane closures.

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

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

GENERAL NOTES & LEGEND

FORT BARRETTE ROAD OPERATIONAL IMPROVEMENTS
Roosevelt Avenue to Farrington Highway
Project No. 901A-01-19

Date: January, 2020

SHEET No. 1 OF 6 SHEETS

GENERAL NOTES (Cont.)

35. Any Survey Monuments that are disturbed shall be restored under the supervision of a licensed land surveyor registered in the State of Hawaii at no cost to the State. All survey data shall be certified by the surveyor and submitted to the Engineer.

36. All work specified in the contract but not listed seperately in the proposal schedule shall be considered incidental to the other various contract items and shall not be paid for seperately.

37. Material and/or equipment shall be stockpiled or stored within the highway right-of-way and approved by the Engineer. If use of location is approved by the Engineer, the Contractor shall obtain a permit to use the property within the highway right-of-way from the State Highways Right-of-Way Branch at ph. #692-7332.

38. The Contractor shall probe to verify the exact location of any underground utilities within the project limits prior to installing guardrail posts. The Contractor shall adjust the location of guardrail posts accordingly to account for the actual locations of underground utilities. Any adjustments to the contract or underground utilities shall be considered incidental to various items of work. The Contractor shall be held liable for any damages incurred to existing facilities and/or improvements as a result of his operations. All damaged portions shall be replaced in accordance with the standards and specifications of the affected utility company at the Contractor's expense.

39. Hydro-mulch Seed newly graded areas with Bermuda Seeding.

40. For toning of US Army Cables, one of the following vendors shall be utilized to do the work:

    1. Verizon Federal/AT&T
       Contact: Doug Ellenberg (Douglas.Ellenberg@verizon.com)
       or Nichole Nakamichi (Nichole.L.Nakamichi@verizon.com)
    2. Bering Sea (BSeT)
       Contact: Shelton Choy (Shelton.Choy@beringseagroup.com)

    Cables shall be toned prior to the start of the project.

PAVING AROUND MANHOLES

1. The Contractor shall first lower manholes more than cold planing thickness indicated on typical sections prior to cold planing. The work shall be considered incidental to the various paving contract items. Upon final paving, the manhole shall be raised and paid under the various contract items pertaining to manhole adjustments.

2. The Contractor shall place hot asphalt concrete around manholes and compact properly with a vibrating plate compactor.

3. If a plate compactor is not used, the Contractor shall use a pneumatic roller to roll the area around the manhole which is not rolled by the steel roller.

4. The Contractor shall fog seal or brush emulsion seal on the material placed as backfill on the area around the manhole that was not compacted by the roller. Black sand shall be used to blot our the area if the fog is too heavy.

HAWAII ONE CALL CENTER

1. Before conducting any excavation in the public right of way or on private property, the Contractor shall call the Hawaii One Call Center at least five (5) working days before beginning excavation operations. Be sure to give them the address and location of the nearest cross street(s) near the planned excavation site.

   Call 811 toll-free 24 hours a day. For more information, go to www.callbeforeyoudig.org

2. The Hawaii One Call Center will contact all utility companies to tone, mark, or identify the location of their underground utilities for free. Mark the area where you plan to excavate in White and label all of the other utilities as listed below.

RED	Electric power lines, cables, or conduits, and lighting cables.
YELLOW	Gas, oil steam, petroleum or other hazardous liquid or gaseous materials.
ORANGE	Communications, cable TV, alarm or signal lines, cables, or conduits.
BLUE	Water, irrigation, and slurry lines.
GREEN	Sewers, storm sewer facilities or other drain lines.
WHITE	Proposed excavation.
PINK	Temporary survey markings.
PURPLE	Reclaimed water, irrigation and slurry lines.

HAWAIIAN TELCOM UTILITY ADJUSTMENT NOTES

1. Adjust existing manholes to the required elevations to match final roadway surface. All applicable construction work shall be in accordance with the "Hawaiian Telcom Standard Specifications for Placing Telephone Systems" dated January 2007, all subsequent amendments and additions, and all other pertinent standards for telecommunications construction. The Contractor shall familiarize his personnel by obtaining the applicable specifications.

DIVISION OF FORESTRY AND WILDLIFE NOTES

1. To avoid impacts to the Hawaiian hoary bat, no barbed wire shall be used, and woody plants greater than 15 feet tall shall not be disturbed, removed or trimmed during the bat birthing and pup rearing season (June 1 through September 15).

2. If nighttime lighting is required, any lights used shall be fully shielded to minimize impacts to native seabirds.

3. Soil or plant material shall not be moved from the project site to be used in other locations on the island due to the possible presence of pathogens.

LEGEND

- Reconstruction Areas
- Resurfacing Limits
- e — Existing Electrical Line
- gp — Existing Guy Pole
- pp — Existing Power Pole
- hemh — Existing Hawaiian Electric Manhole
- HEMH — Adjusted Elec. MH Frame/Cover
- hehh — Existing Hawaiian Electric Hand Hole
- hepb — Existing Hawaiian Electric Pullbox
- t — Existing Underground Telephone Line
- tp — Existing Telephone Pole
- tmh — Existing Telephone Manhole
- TMH — Adjusted Telphone Manhole Frame/Cover
- thh — Existing Telephone Hand Hole
- htmh — Existing Hawaiian Telcom Manhole
- HTMH — Adjusted Hawaiian Telcom Manhole Frame/Cover
- htpb — Existing Hawaiian Telcom Pullbox
- sc — Existing Signal Corps Line
- us army cable — Existing US Army Line
- us navy cable — Existing US Navy Line
- tvmh — Existing TV Manhole
- TVMH — Adjusted TV Manhole Frame/Cover
- tv — Existing TV Cable
- w — 30 — Existing 30" Water Line
- w — 24 — Existing 24" Water Line
- w — 12 — Existing 12" Water Line
- w — 8 — Existing 8" Water Line
- w — 6 — Existing 6" Water Line
- w — 4 — Existing 4" Water Line
- w — 2½ — Existing 2½" Water Line
- w — 2 — Existing 2" Water Line
- w — 1½ — Existing 1½" Water Line
- w — 1 — Existing 1" Water Line
- wmh — Existing Water Manhole
- WMH — Adjusted Water MH Frame/Cover
- av — Existing Water Air Valve
- AV — Adjusted Water Air Valve
- wv — Existing Water Valve Box
- WV — Adjusted Water Valve Box
- wm — Existing Water Meter
- WM — Adjusted Water Meter
- fh — Existing Fire Hydrant
- FH — Adjusted Fire Hydrant
- ib — Existing Irrigation Box
- 42" rcp — Existing 42" Reinforced Concrete Pipe
- 30" rcp — Existing 30" Reinforced Concrete Pipe

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- s — 30 — Existing 30" Sewer Line
- s — 18 — Existing 18" Sewer Line
- s — 12 — Existing 12" Sewer Line
- s — 10 — Existing 10" Sewer Line
- s — 8 — Existing 8" Sewer Line
- smh — Existing Sewer Manhole
- SMH — Adjusted Sewer MH Frame/Cover
- o — Existing Oil Line
- g — 6 — Existing 6" Gas Line
- g — 4 — Existing 4" Gas Line
- g — 2 — Existing 2" Gas Line
- g — 1 — Existing 1" Gas Line
- g — ¾ — Existing ¾" Gas Line
- gv — Existing Gas Valve Box
- GV — Adjusted Gas Valve Box
- gmh — Existing Gas Manhole
- GMH — Adjusted Gas MH Frame/Cover
- mon. — Existing Monument
- MON. — Adjusted Monument
- d — 24 — Existing 24" Drain Line
- sdmh — Existing Storm Drain Manhole
- SDMH — Adjusted Storm Drain MH Frame/Cover
- gdi — Existing Grated Drop Inlet
- cb — Existing Catch Basin
- sl — Existing Highway Lighting Standard
- slb — Existing Highway Lighting Standard Pullbox
- SLB — Adjusted Highway Lighting Standard Pullbox
- tsp — Existing Traffic Signal Pole
- TSP — Existing Traffic Signal Pole
- tsb — Existing Traffic Signal Pullbox
- TSB — Adjusted Traffic Signal Pullbox
- TSB — New Traffic Signal Pullbox
- ub — Existing Utility Pullbox

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STATE OF HAWAII
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GENERAL NOTES & LEGEND

FORT BARRETTE ROAD OPERATIONAL IMPROVEMENTS
Roosevelt Avenue to Farrington Highway
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SHEET No. 2 OF 6 SHEETS

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CITY & COUNTY OF HONOLULU CONSTRUCTION NOTES

1. All applicable construction work shall be done in accordance with the Standard Specifications for Public Works Construction, September 1986 and Standard Details for Public Works Construction, September 1984, as amended, of the Department of Public Works, City and County of Honolulu and the Counties of Kauai, Maui, and Hawaii.

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

3. No Contractor shall perform any construction operation so as to cause falling rocks, soil or debris in any form to fall, slide or flow into existing City drainage systems, or adjoining properties, streets or natural watercourses. Should such violations occur, the Contractor may be cited and the Contractor shall immediately make all remedial actions necessary.

4. The general contractor/developer/owner of the project shall be responsible for conformance with applicable provisions of the Hawaii Administrative Rules, Title 11, Chapter 54, "Water Quality Standards," and Title 11, Chapter 55, "Water Pollution Control", as well as Chapter 14 of the Revised Ordinances of Honolulu, as amended. Best Management Practices shall be employed at all times during construction.

   The general contractor/developer/owner of the project shall obtain National Pollutant Discharge Elimination System (NPDES) Permit coverage(s) for the following:

   1. Storm water discharges associated with construction activities that disturb one (1) acre or more, and
   2. Discharges of hydrotesting effluent, dewatering effluent, and well drilling effluent to state waters.

   In accordance with State law, all discharges related to project construction or operations are required to comply with State Water Quality Standards (Hawaii Administrative Rules, Chapter 11-54). Best Management Practices shall be used to minimize or prevent the discharge of sediment, debris, and other pollutants to State waters. Permit coverage is available from the Department of Health, Clean Water Branch at http://health.Hawaii.gov/cwb. The owner/developer/contractor is responsible for obtaining other Federal, State, or local authorizations as required by law.

5. For non-City projects, the Contractor shall notify the Civil Engineering Branch, D.P.P. at 768-8084 to arrange for inspectional services and submit two (2) sets of approved Construction Plans seven (7) days prior to commencement of construction work. For City projects, the Contractor shall coordinate inspectional services with the responsible City agency.

6. For non-City projects, the Contractor may submit a substitution request to precast any City owned and/or maintained drainage structure (ex., catch basins, drain manholes, drain inlets, culverts, etc). However, prior to construction and installation of any precast structure, the Contractor shall a) submit six (6) sets of shop drawings to the Civil Engineering Branch, Department of Planning and Permitting and obtain written approval and b) notify the Civil Engineering Branch, Department of Planning and Permitting at 768-8084 to arrange for inspectional services. Non-compliance with any of these requirements shall mean immediate suspension of all precast construction work and rejection of all precast structures already constructed.

   For City projects, the Contractor shall submit shop drawings to the responsible City agency for review and approval. Also, the Contractor shall coordinate inspectional services with the responsible City agency.

7. Confined Space

   For entry by City personnel, including inspectors, into a permit required confined space as defined in 29 CFR Part 1910.146(b), the Contractor shall be responsible for providing:

   I. All safety equipment required by the confined space regulations applicable to all parties other than the construction industry, to include, but not limited to, the following:

   a. Full body harnesses for up to two personnel.
   b. Lifeline and associated clips.
   c. Ingress/egress and fall protection equipment.
   d. Two-way radios (walkie-talkies) if out of line-of-sight.
   e. Emergency (escape) respirator (10 minute duration).
   f. Cellular telephone to call for emergency assistance.
   g. Continuous gas detector (calibrated) to measure oxygen, hydrogen sulfide, carbon monoxide and flammables (capable of monitoring at a distance at least 20-feet away).
   h. Personal multi-gas detector to be carried by inspector.

   II. Continuous forced air ventilation adequate to provide safe entry conditions.

   III. One attendant/rescue personnel topside (two, if conditions warrant it).

8. Pursuant to Chapter 6E, HRS, in the event any artifacts or human remains are uncovered during construction operations, the Contractor shall immediately suspend work and notify the Honolulu Police Department, the State Department of Land and Natural Resources-Historic Preservation Division (692-8015). In addition, for non-City projects, the Contractor shall inform the Civil Engineering Branch, Department of Planning and Permitting (768-8084); and for City projects, notify the responsible City agency.

9. For projects abutting State Highways rights-of way, the owner or his authorized representative shall notify the State Department of Transportation, Highways Division, Oahu District, Drainage Discharge Unit at 831- 6793 for an assessment of State Highways permit requirements.

10. For Bench Mark, see Roadway Plans.

11. Prior to commencement of work within City Right-of-Way, the Contractor shall obtain a Street Usage Permit from the Department of Transportation Services (DTS) and a Trenching Permit from the Department of Planning and Permitting (DPP). DPP will provide an over-the-counter plan review for the Trenching Permit.

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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

GENERAL NOTES & LEGEND

FORT BARRETTE ROAD OPERATIONAL IMPROVEMENTS
Roosevelt Avenue to Farrington Highway
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Date: January, 2020

SHEET No. 3 OF 6 SHEETS

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HAWAIIAN ELECTRIC COMPANY NOTES

1. *Location of Hawaiian Electric Facilities.*

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

2. *Compliance With Hawaii Occupational Safety and Health Laws.*

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

3. *Excavation Clearance.*

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

4. *Caution!!! Electrical Hazard!!!*

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

5. *Overhead Lines.*

   State law (OSHA) requires that a worker and the longest object he or she may contact cannot come closer than a specified minimum radial clearance when working close to or under any overhead lines. It is the Contractor's responsibility To be informed of and comply with the law. At any time should the Contractor anticipate that his work will result in the need to encroach within the minimum required clearance as stated in the law, the Contractor shall notify Hawaiian Electric at least three (3) months prior to the planned encroachment so that, if feasible, the necessary protections (e.g. relocate Or de-energize Hawaiian Electric lines) can be investigated. Hawaiian Electric may also be able to blanket its distribution (12kv and below) lines to provide a visual aid in preventing accidental contact. Hawaiian Electric's cost of safeguarding or identifying its lines will be charged to the Contractor. Contact Hawaiian Electric's customer installations division at 543-7070 for assistance in identifying and safeguarding overhead power lines.

6. *Pole Bracing.*

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

7. *Underground Lines.*

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

   Special precautions are required when excavating near Hawaiian Electric's 138kv or 46kv underground lines (see Hawaiian Electric instructions to Consultants/Contractors on "Excavation Near Hawaiian Electric's Underground 138kv and/or 46kv Lines" for detailed requirements).

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

8. *Underground Fuel Pipelines.*

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

9. *Excavations. When trench excavation is adjacent to or beneath Hawaiian Electric's existing structures or facilities, the Contractor is responsible for:*
   - a) *Arranging for Hawaiian Electric standby personnel to observe work at Contractor's cost.*
   - b) *Sheeting, bracing, or otherwise supporting the excavation and stabilizing the existing ground to render it safe and secure and to prevent possible slides, Cave-ins, and settlements.*
   - c) *Properly supporting existing structures or facilities with beams, struts, under-pinnings, or other necessary methods to fully protect it from damage.*
   - d) *Backfilling with proper backfill material including special thermal backfill where existing (refer to engineering division for thermal backfill specifications).*

10. *Relocation of Hawaiian Electric Facilities.*

    Any work required to relocate or modify Hawaiian Electric facilities shall be done by Hawaiian Electric, or by the Contractor under Hawaiian Electric's supervision. The Contractor shall be responsible for all coordination, and shall provide necessary support for Hawaiian Electric's work, which may include, but not be limited to, staking of pole/anchor locations, identifying right of way and property lines, excavation and backfill, permits and traffic control, barricading, and restoration of pavement, sidewalks, and other facilities.

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

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

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GENERAL NOTES & LEGEND

FORT BARRETTE ROAD OPERATIONAL IMPROVEMENTS
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HAWAIIAN ELECTRIC COMPANY NOTES (Cont.)

12. *Damage To Hawaiian Electric Facilities.*

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

In case of damage or suspected damage to Hawaiian Electric's fuel pipeline, the Contractor shall immediately notify Hawaiian Electric's security command center at 543-7685 (a 24-hour number) so Hawaiian Electric personnel can secure the damaged section and report any oil spills to the proper authorities. All costs associated with the damage, repair, and oil spill cleanup shall be borne by the Contractor.

13. *Hawaiian Electric Stand-by Personnel.*

The Contractor may request Hawaiian Electric to provide an inspector to stand-by during construction near Hawaiian Electric's facilities. The cost of such inspection Will be charged to the Contractor. The Contractor shall call Hawaiian Electric's customer installations division at 543-7070 a minimum of three (3) months in advance to arrange for Hawaiian Electric stand-by personnel.

14. *Clearances.*

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

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

UNDERGROUND UTILITY	HAWAIIAN ELECTRIC DIRECT BURIED CABLE	HAWAIIAN ELECTRIC DIRECT BURIED IN CONDUIT (no conc. encasement)	HAWAIIAN ELECTRIC 3" (MIN.) CONCRETE ENCASEMENT	APPLICABLE NOTES:
Hawaiian Electric DB Conduits	12"	3"	0"	
Hawaiian Electric 3" Encasement	0"	0"	0"	
Telephone / CATV DB	12"	12"	6"	
Telephone / CATV DB Ducts	12"	12"	6"	
Telephone / CATV 3" Encasement	0"	0"	0"	5
Traffic Signal	12"	12"	12"	
Water DB (BWS Owned)	36"	36"	36"	1, 4
Customer Owned Water Service Laterals	12"	12"	12"	
Water (Concrete Jacketed) (BWS Owned)	36"	36"	36"	1, 4
Gas DB	12"	12"	12"	1
Gas (Concrete Jacketed)	12"	12"	12"	1
Sewer DB	36"	36"	36"	1, 2
Sewer (Concrete Jacketed)	36"	36"	36"	1, 2
Drain	12"	12"	12"	1
Fuel Pipelines				3

Notes:

1. *Where space is available, parallel clearance to other utilities, or foreign structures other than communication or traffic signal shall be 36".*
2. *If 36" clearance cannot be met:*
   - *If clearance is less than 12", jacket sewer line with reinforced concrete (per Hawaiian Electric's std. 30-1030) for a distance of 5' plus pipe diameter.*
   - *If clearance is between 12" and 36", jacket sewer line with plain concrete.*
3. *All Fuel Pipeline crossings shall be reviewed and approved by the company that owns and maintains it.*
4. *5 feet clear to water mains 16" and larger.*
5. *For situations with 0" minimum separation, a 6" separation is recommended.*
6. *Clearances measured from outer edges or diameters of utilities. Whenever concrete jackets are involved, clearances shall be total clear distance between the concrete jacket and utility concerned.*

GUIDELINES FOR MINIMUM VERTICAL (CROSSINGS) CLEARANCES BETWEEN HAWAIIAN ELECTRIC AND OTHER UNDERGROUND UTILITIES

UNDERGROUND UTILITY	HAWAIIAN ELECTRIC DIRECT BURIED CABLE	HAWAIIAN ELECTRIC DIRECT BURIED IN CONDUIT (no conc. encasement)	HAWAIIAN ELECTRIC 3" (MIN.) CONCRETE ENCASEMENT	APPLICABLE NOTES:
Hawaiian Electric DB Conduits	6"	3"	0"	
Hawaiian Electric 3" Encasement	0"	0"	0"	
Telephone / CATV DB	12"	12"	6"	
Telephone / CATV DB Ducts	12"	12"	6"	
Telephone / CATV 3" Encasement	0"	0"	0"	3
Traffic Signal	12"	12"	6"	
Water DB (BWS Owned)	12"	12"	12"	5
Customer Owned Water Service Laterals	6"	6"	6"	
Water (Concrete Jacketed) (BWS Owned)	12"	12"	12"	5
Gas DB	12"	12"	12"	
Gas (Concrete Jacketed)	12"	12"	12"	
Sewer DB	24"	24"	24"	1
Sewer (Concrete Jacketed)	24"	24"	24"	1
Drain	12"	12"	6"	
Fuel Pipelines				2

Notes:

1. *If clearance cannot be met:*
   - *If clearance is less than 12", jacket sewer line with reinforced concrete (per Hawaiian Electric's std. 30-1030) for a distance of 5' plus pipe diameter.*
   - *If clearance is between 12" and 24", jacket sewer line with plain concrete.*
2. *All Fuel Pipeline crossings shall be reviewed and approved by the company that owns and maintains it.*
3. *For situations with 0" minimum separation, a 6" separation is recommended.*
4. *Clearances measured from outer edges or diameters of utilities. Whenever concrete jackets are involved, clearances shall be total clear distance between the concrete jacket and utility concerned.*
5. *36" clearance is required for trenchless installation work.*

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

15. *Indemnity.*

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

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HAWAIIAN ELECTRIC COMPANY NOTES (Cont.)

ADDITIONAL NOTES WHEN WORK INVOLVES CONSTRUCTION OF HAWAIIAN ELECTRIC FACILITIES

16. *Schedule.*

The Contractor shall furnish his construction schedule six (6) months prior to starting work on Hawaiian Electric Facilities. The Contractor shall give Hawaiian Electric, in writing, three (3) months notice to proceed with Hawaiian Electric's portion of work.

17. *Authority.*

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

18. *Specifications.*

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

19. *Construction.*

The Contractor shall furnish all labor, materials, equipment, and services to properly perform and fully complete all work shown on the contract, drawings, and specifications. All materials shall be new and manufactured in the United States of America. All manhole, handhole, and ductline installations shall be inspected and approved by Hawaiian Electric prior to excavation and prior to placing concrete. The Contractor shall notify Hawaiian Electric's Inspection Group at 543-4399 at least five (5) working days prior to installing facilities or placing concrete.

The Contractor to coordinate work to break into Hawaiian Electric's existing electrical facilities with Hawaiian Electric's Inspection Group at 543-4399 at least ten (10) working days in advance.

20. *Stakeout.*

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

21. *Ductlines.*

All ductline installations shall be PVC Schedule 40 encased in concrete, unless otherwise noted. All completed ductlines shall be mandrel tested by the Contractor in the presence of Hawaiian Electric's Inspector using Hawaiian Electric's Standard Practice. The Contractor shall install 1800# tensile strength muletape pull line in all completed ductlines after mandrel testing is complete.

22. *Joint Pole Removal.*

The last joint pole occupant off the poles shall remove the poles.

23. *As-Built Plans.*

The Contractor shall provide Hawaiian Electric with a set of electronic and hard copy plans of each sheet showing the offsets, stationing, and vertical elevation of the ductline(s) constructed.

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WATER POLLUTION AND EROSION CONTROL NOTES:

A. GENERAL:

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

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

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

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

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

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

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

B. WASTE DISPOSAL:

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

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

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

C. EROSION AND SEDIMENT CONTROL INSPECTION AND MAINTENANCE PRACTICES:

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

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

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

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

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

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

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

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

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

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

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

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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

WATER POLLUTION & EROSION CONTROL NOTES

FORT BARRETTE ROAD OPERATIONAL IMPROVEMENTS
Roosevelt Avenue to Farrington Highway
Project No. 901A-01-19

Date: January, 2020

SHEET No. 1 OF 3 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
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WATER POLLUTION AND EROSION CONTROL NOTES (Cont.):

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

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

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

D. GOOD HOUSEKEEPING BEST MANAGEMENT PRACTICES:

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

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

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

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

3. Onsite and Offsite Product Specific Plan
   The following product specific practices shall be followed onsite:

   a. Petroleum Based Products:
   Monitor all onsite vehicles for leaks and perform regular preventive maintenance to reduce the chance of leakage. Store petroleum products in tightly sealed containers which are clearly labeled. Apply asphalt substances used onsite according to the manufacturer's recommendation.

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

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

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

4. Spill Control Plan
   a. Post a spill prevention plan to include measures to prevent and clean up each spill.
   b. The Contractor shall be the spill prevention and cleanup coordinator. Designate at least three site personnel who shall receive spill prevention and cleanup training. These individuals shall each become responsible for a particular phase of prevention and cleanup. Post the names of responsible spill personnel in the material storage area on a weatherproof bulletin board or other accessible location acceptable to the Engineer and in the office trailer onsite.
   c. Clearly post manufacturers' recommended methods for spill cleanup. Make site personnel aware of the procedures and the location of the information and cleanup supplies.
   d. Keep ample materials and equipment necessary for spill cleanup in the material storage area onsite.
   e. Clean up all spills immediately after discovery.
   f. Keep the spill area well ventilated. Personnel shall wear appropriate protective clothing to prevent injury from contact with a hazardous substance.

   g. Report spills of toxic hazardous material to the appropriate State or local government agency, regardless of the size. Where a leak, spill, or other release containing a hazardous substance or oil in an amount equal to or in excess of a reportable quantity established under either 40 CFR Part 110, 40 CFR Part 117, or 40 CFR Part 302 occurs during a 24-hour period, the Contractor shall notify the Engineer as soon as the Contractor has knowledge of the discharge. The Engineer will notify the National Response Center (NRC) at (800) 424-8802, the Clean Water Branch during regular business hours at 586-4309, and the Hawaii State Hospital Operator at 247-2191 and the Clean Water Branch (DOH-CWB) via email at cleanwaterbranch@doh.hawaii.gov during non-business hours immediately. The Contractor shall also provide to the Engineer, within 7 calendar days of knowledge of the release, a description of the release, the circumstances leading to the release, and the date of the release. The Engineer will provide this information to the DOH-CWB. The Engineer will provide information to the NRC if requested.

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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

WATER POLLUTION & EROSION CONTROL NOTES

FORT BARRETTE ROAD OPERATIONAL IMPROVEMENTS
Roosevelt Avenue to Farrington Highway
Project No. 901A-01-19

Date: January, 2020

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	901A-01-19	2020	11	167

WATER POLLUTION AND EROSION CONTROL NOTES (Cont.):

E. PERMIT REQUIREMENTS:

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

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

   a. NPDES Permit for Construction Activities

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

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

Follow the requirements below:

1. Protect all Drainage Inlets receiving runoff from disturbed areas (SC-2).

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

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

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

5. Contain pollutants within the Construction Staging/Storage Area BMP with applicable Perimeter Sediment Controls and Site Management BMP. Include a Stabilized Construction Entrance/Exit (EC-2) for all areas which exit onto a paved street. Restrict vehicle access to these points.

6. Manage Concrete Waste including installing a Concrete Washout Area (SM-5) and properly disposing of Concrete Curing Water (California Stormwater BMP Handbook NS-12 Concrete Curing).

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

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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

WATER POLLUTION & EROSION CONTROL NOTES

FORT BARRETTE ROAD OPERATIONAL IMPROVEMENTS
Roosevelt Avenue to Farrington Highway
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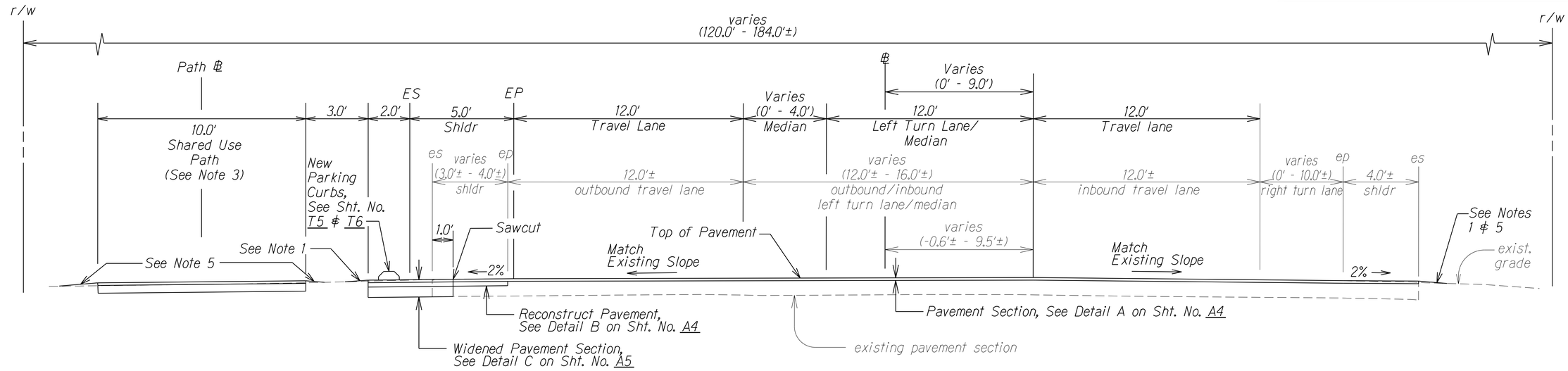
FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	901A-01-19	2020	12	167



TYPICAL SECTION ON TANGENT
℄ STA. 8+00.0± TO ℄ STA. 20+56± (KAPOLEI PARKWAY)

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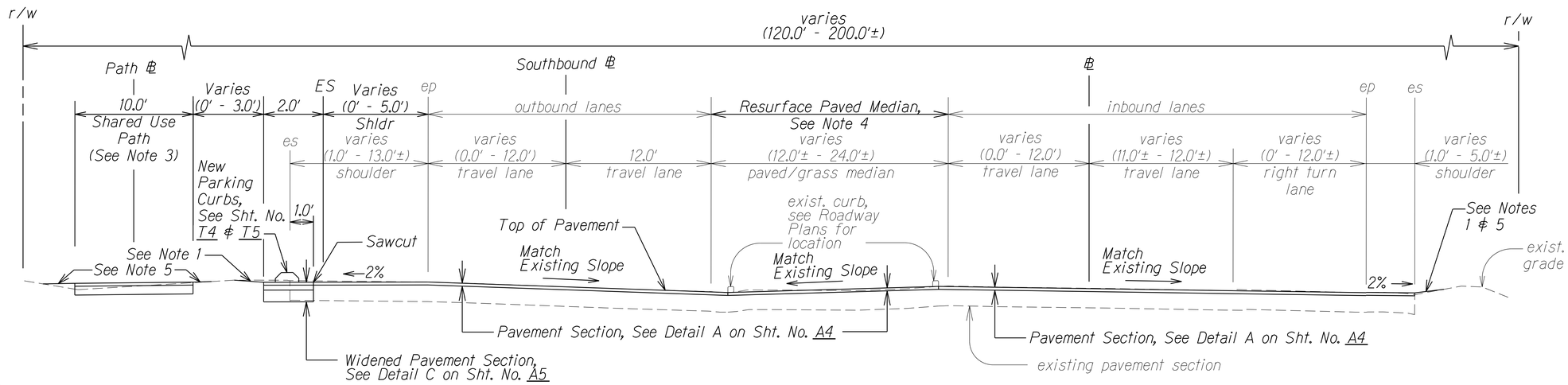

Notes:

1. Safety Edge/Shoulder Dressing. See Typical Pavement Edge Detail on Sht. No. A5.
2. For limits of reconstruction, see Roadway Plans.
3. See Shared Use Path Typical Sections on Sht. No. A5.
4. Resurface paved median where there is no existing curb.
5. Hydro-mulch Seed newly graded areas with Bermuda Seeding.

TYPICAL SECTION
ENTERPRISE STREET ℄ STA. 1+22.31± TO ℄ STA. 8+00.0±

Scale: N.T.S.

ORIGINAL PLAN
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STATE OF HAWAII
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TYPICAL SECTIONS

FORT BARRETTE ROAD OPERATIONAL IMPROVEMENTS
Roosevelt Avenue to Farrington Highway
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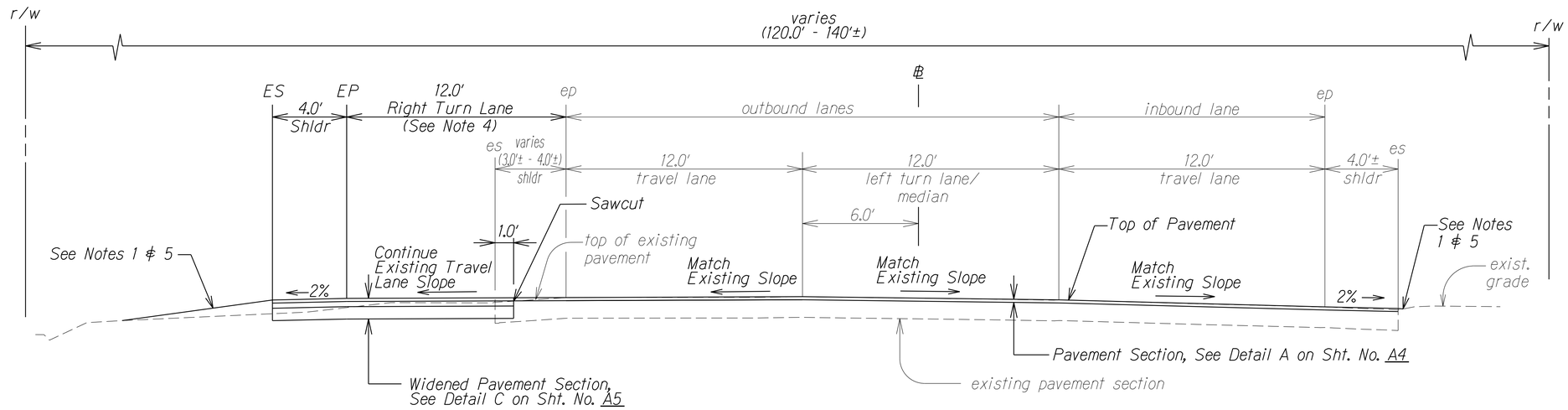
SHEET No. A1 OF 7 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	901A-01-19	2020	13	167



TYPICAL SECTION
℄ STA. 21+81± (KAPOLEI PARKWAY) TO ℄ STA. 26+00.0±

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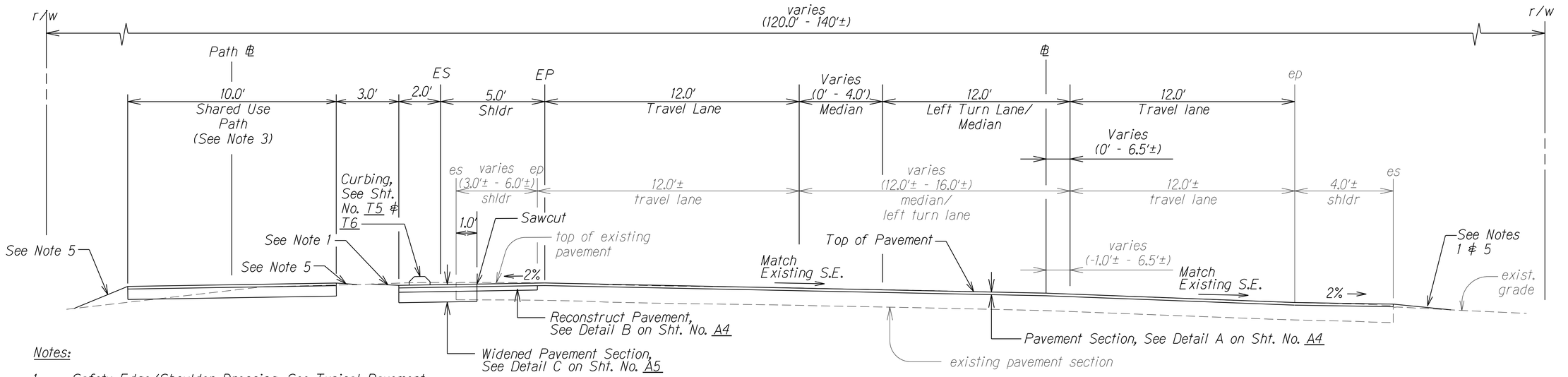

TYPICAL SECTION ON CURVE
℄ STA. 8+00.0± TO ℄ STA. 20+56± (KAPOLEI PARKWAY)

Scale: N.T.S.

Notes:

1. Safety Edge/Shoulder Dressing. See Typical Pavement Edge Detail on Sht. No. A5.
2. For limits of reconstruction, see Roadway Plans.
3. See Shared Use Path Typical Sections on Sht. No. A5.
4. See Roadway Cross Sections and Pavement Grade Plan for New Right Turn Lane.
5. Hydro-mulch Seed newly graded areas with Bermuda Seeding.

ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
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TYPICAL SECTIONS

FORT BARRETTE ROAD OPERATIONAL IMPROVEMENTS
Roosevelt Avenue to Farrington Highway
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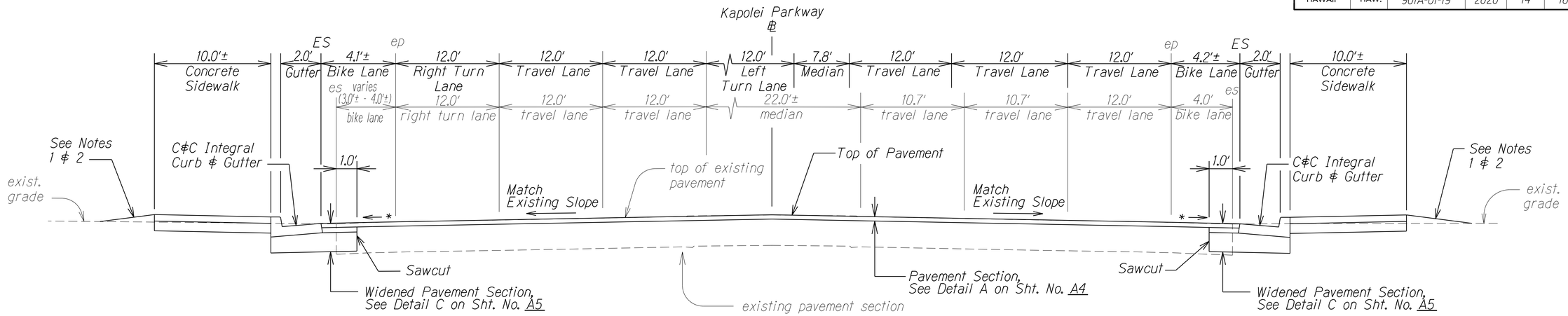
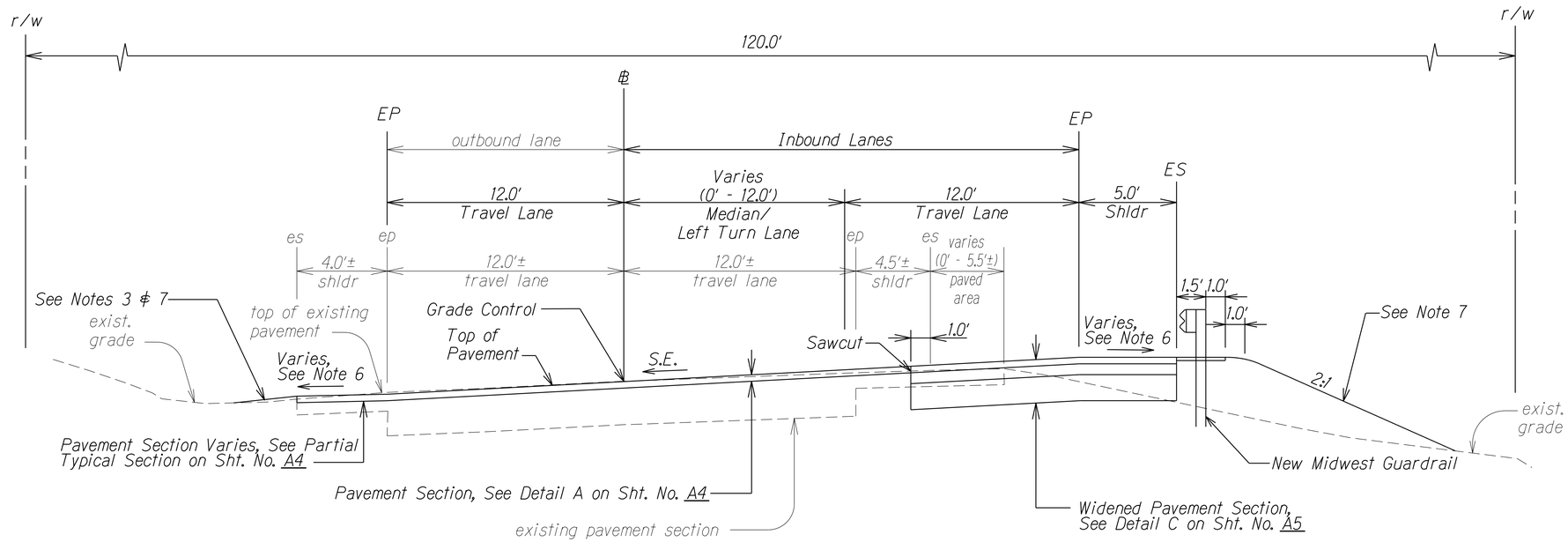
SHEET No. A2 OF 7 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	901A-01-19	2020	14	167



TYPICAL SECTION
KAPOLEI PARKWAY ℄ STA. 0+29.0± TO KAPOLEI PARKWAY ℄ STA. 84+00.0±
Scale: N.T.S.



TYPICAL SECTION
℄ STA. 45+30.0± TO ℄ STA. 55+74.24±
Scale: N.T.S.

Notes:

1. For New Concrete Sidewalk typical details, see Standard Plan D-15. For New C℄C Integral Curb ℄ Gutter typical details, see C℄C Std. Detail R-4A Rev.

* 2. For cross slope and new grades at New Edge of Shoulder, see Sht. No. C8 ℄ C9.

3. Safety Edge/Shoulder Dressing. See Typical Pavement Edge Detail on Sht. No. A5.

4. For limits of Midwest Guardrail, see Roadway Plans. For details, see Guardrail Details sheets.

5. See Superelevation Plans and Roadway Cross Sections for new pavement grades at widened roadway.

6. For New Shoulder Cross Slopes, see Sht. No. SE3 ℄ SE4.

7. Hydro-mulch Seed newly graded areas with Bermuda Seeding.

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TYPICAL SECTIONS

FORT BARRETTE ROAD OPERATIONAL IMPROVEMENTS
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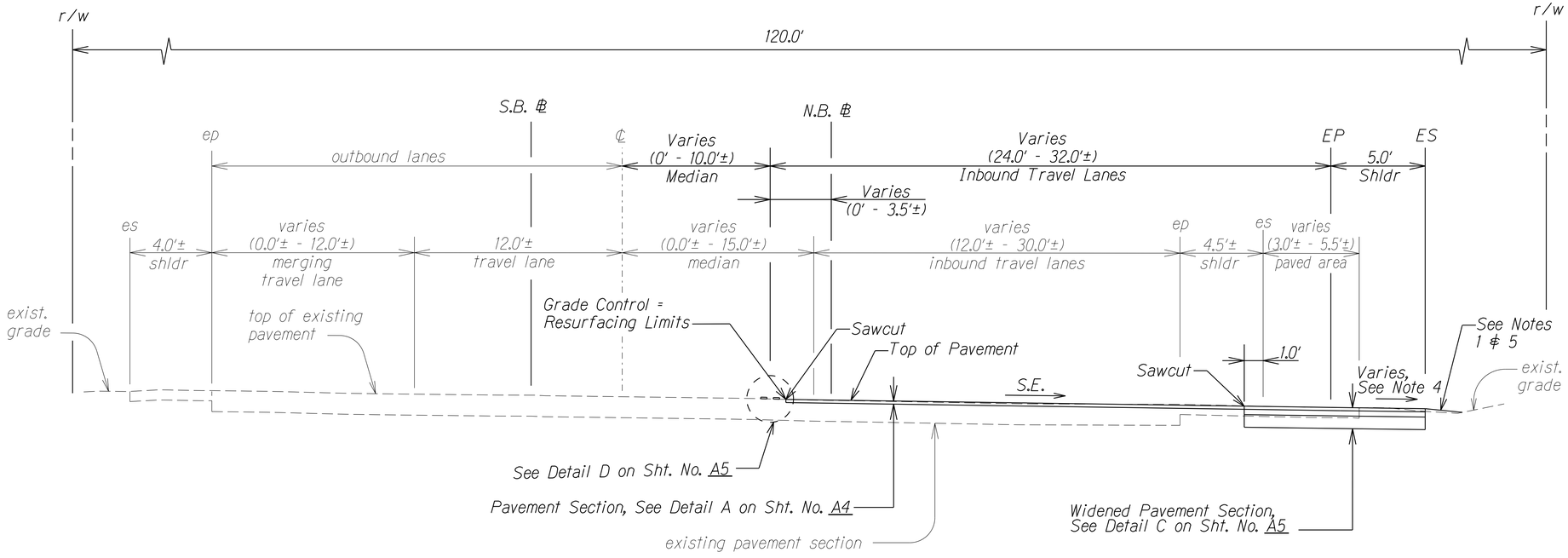
SHEET No. A3 OF 7 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	901A-01-19	2020	15	167



Notes:

1. Safety Edge/Shoulder Dressing. See Typical Pavement Edge Detail on Sht. No. A5.
2. For limits of Midwest Guardrail, see Roadway Plans. For details, see Guardrail Details sheets.
3. See Superelevation Plans and Roadway Cross Sections for new pavement grades at widened roadway.
4. For New Shoulder Cross Slopes, see Sht. No. SE3 & SE4.
5. Hydro-mulch Seed newly graded areas with Bermuda Seeding.

TYPICAL SECTION
N.B. ℄ STA. 55+74.24± TO N.B. ℄ STA. 61+17.0±

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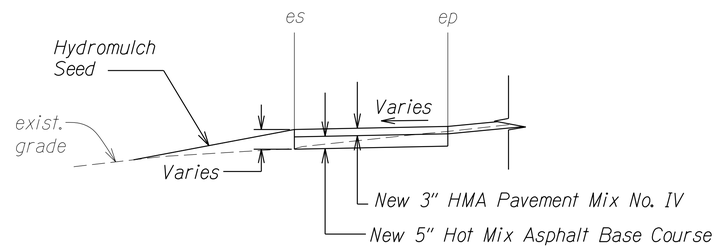
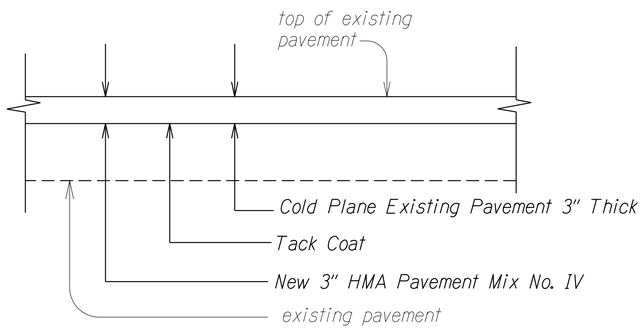


Note: See Typical Section on Sht. No. A3.

PARTIAL TYPICAL SECTION
℄ STA. 45+50.0± TO ℄ STA. 50+00.0±

Scale: N.T.S.



DETAIL A - AC PAVEMENT SECTION FOR RESURFACING

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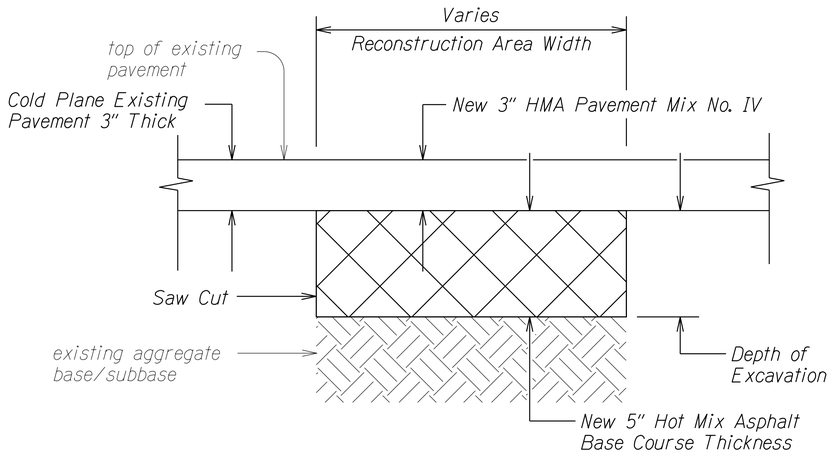

DETAIL B - AC PAVEMENT RECONSTRUCTION DETAIL

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TYPICAL SECTIONS & DETAILS

FORT BARRETTE ROAD OPERATIONAL IMPROVEMENTS
Roosevelt Avenue to Farrington Highway
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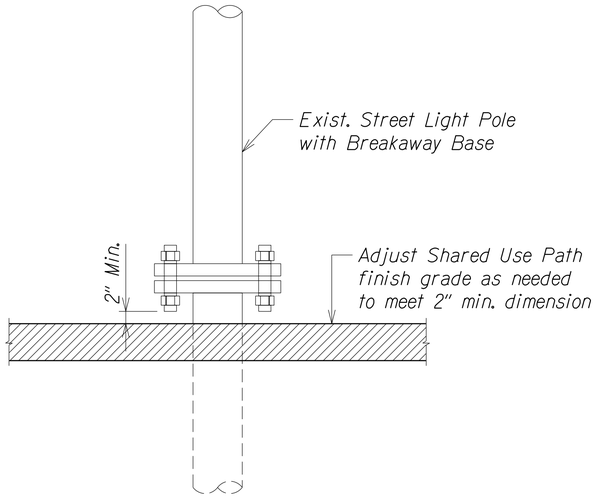
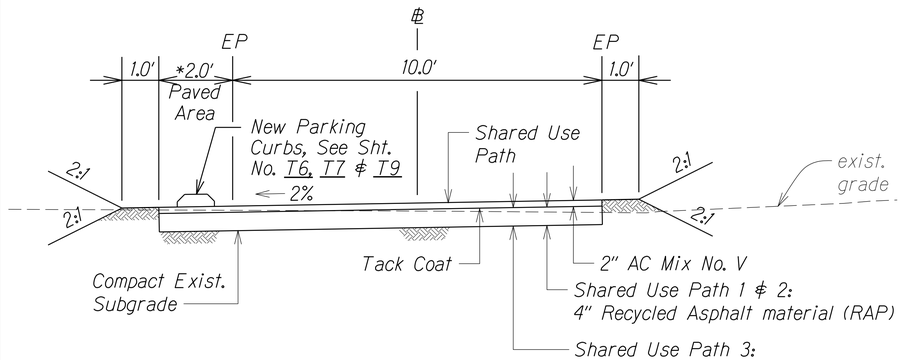


SHARED USE PATH EXISTING STREET LIGHT POLE BREAKAWAY BASE DETAIL

Scale: N.T.S.



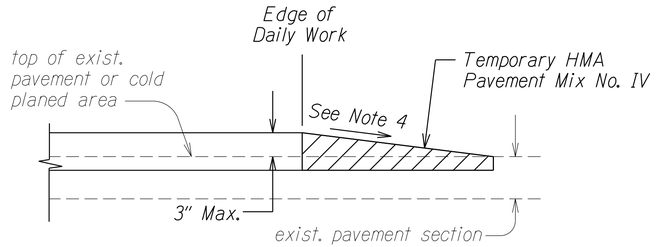
*Note: For limits of Paved Area, see Shared Use Path Roadway Plans.

SHARED USE PATH 1, 2, & 3 TYPICAL SECTION

Scale: N.T.S.

Shared Use Path Typical Section Notes:

1. For edge of pavement elevations, see Shared Use Path Plan & Profile and Shared Use Path Cross Sections.
2. Provide tack coat at connection between New A.C. Shared Use Path and existing concrete sidewalk, New Concrete Sidewalk, or New Concrete Ramp.
3. Hydro-mulch Seed newly graded areas with Bermuda Seeding.

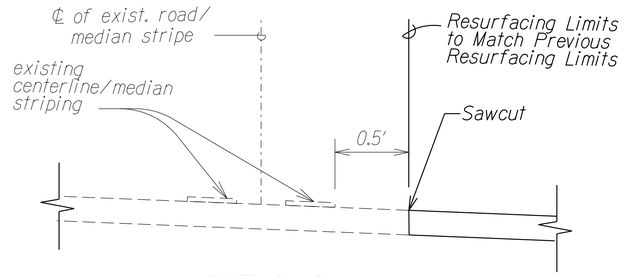


Notes:

1. Temporary HMA Pavement shall be removed prior to placement of new pavement.
2. Placement of Temporary HMA Pavement shall be incidental to HMA Pavement, Mix No. IV.
3. Removal of Temporary HMA Pavement shall be incidental to Cold Planing.
4. Slope of temporary HMA Pavement shall be 48:1 or flatter for longitudinal transitions and 6:1 or flatter for transverse transitions.

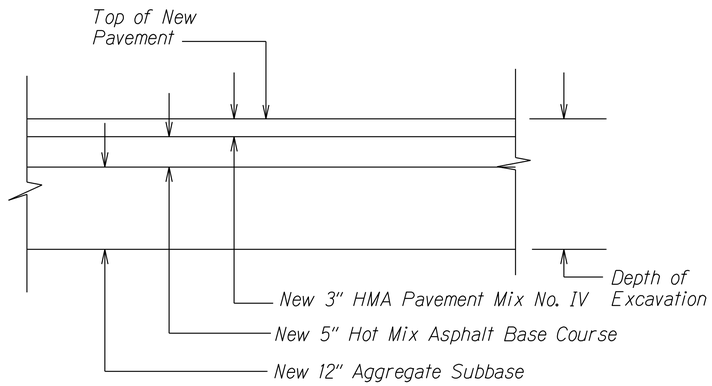
TEMPORARY TREATMENT OF GRADE DIFFERENCES DURING NON WORK HOURS

Scale: N.T.S.



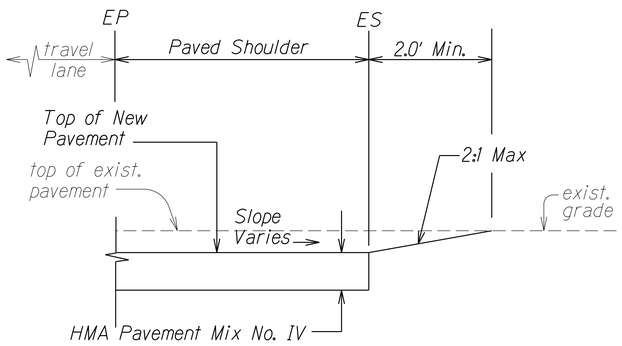
DETAIL D

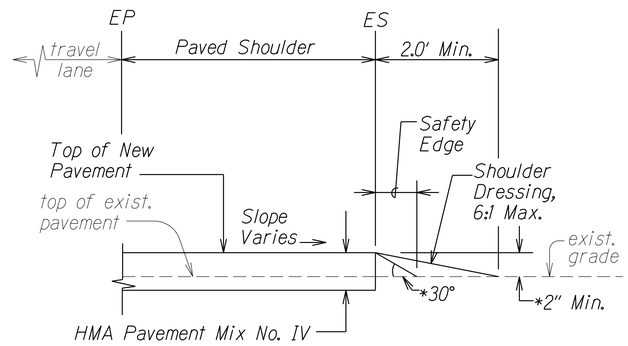
Scale: N.T.S.



DETAIL C - AC PAVEMENT SECTION FOR WIDENING

Scale: N.T.S.





*Notes:

1. Contractor shall mount a device directly on the paver screed extension to provide a 30° beveled shoulder "safety edge."
2. For shoulder edge grade differences of less than 2", Safety Edge is not required, but shoulder shall be dressed according to detail.

TYPICAL PAVEMENT EDGE DETAIL

Scale: N.T.S.

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

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

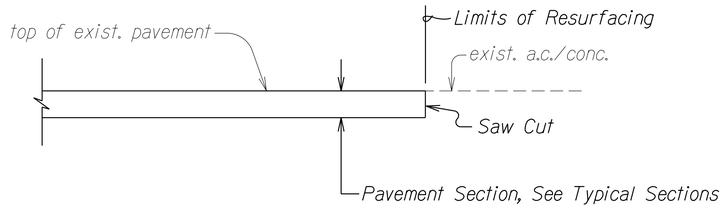
TYPICAL DETAILS

FORT BARRETTE ROAD OPERATIONAL IMPROVEMENTS
Roosevelt Avenue to Farrington Highway
Project No. 901A-01-19

Scale: Not to Scale Date: January, 2020

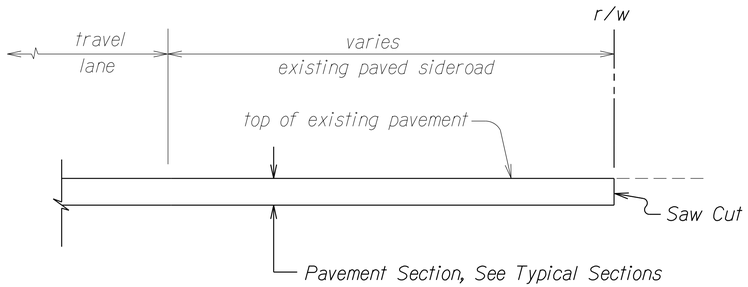
SHEET No. A5 OF 7 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	901A-01-19	2020	17	167



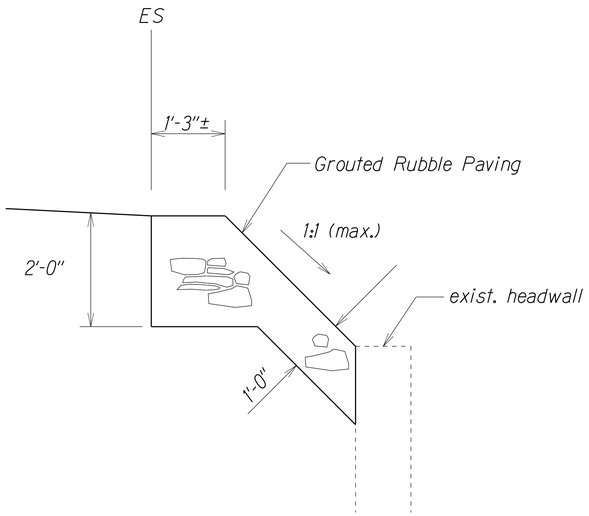
TYPICAL A.C. RESURFACING AT BEGIN/END PROJECT ℄ CONCRETE SLAB DETAIL

Scale: N.T.S.



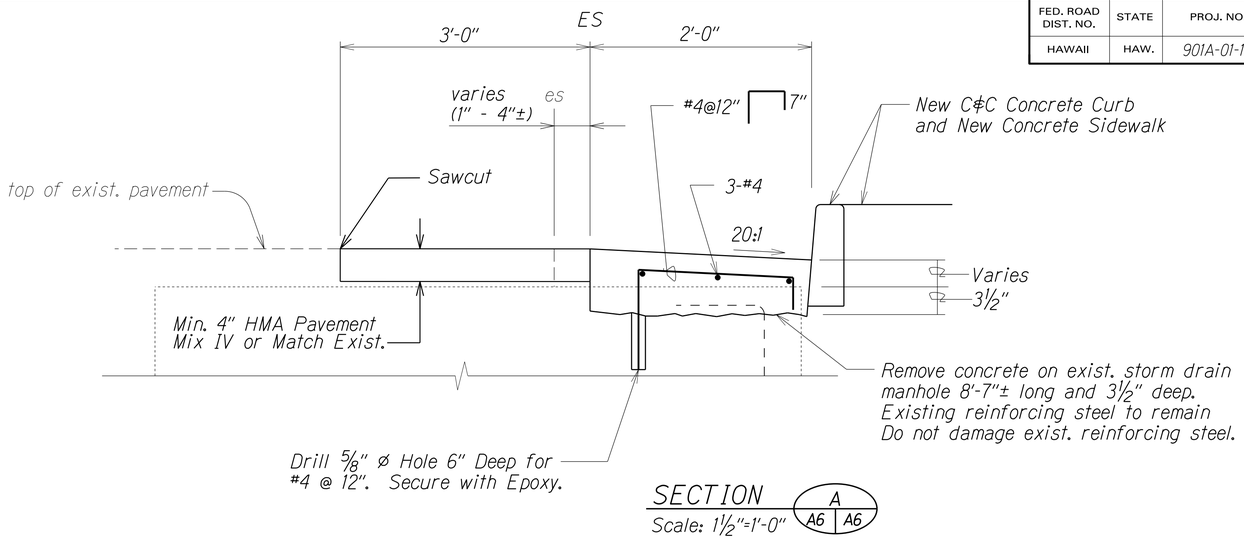
TYPICAL A.C. RESURFACING AT PAVED SIDEROAD DETAIL

Scale: N.T.S.



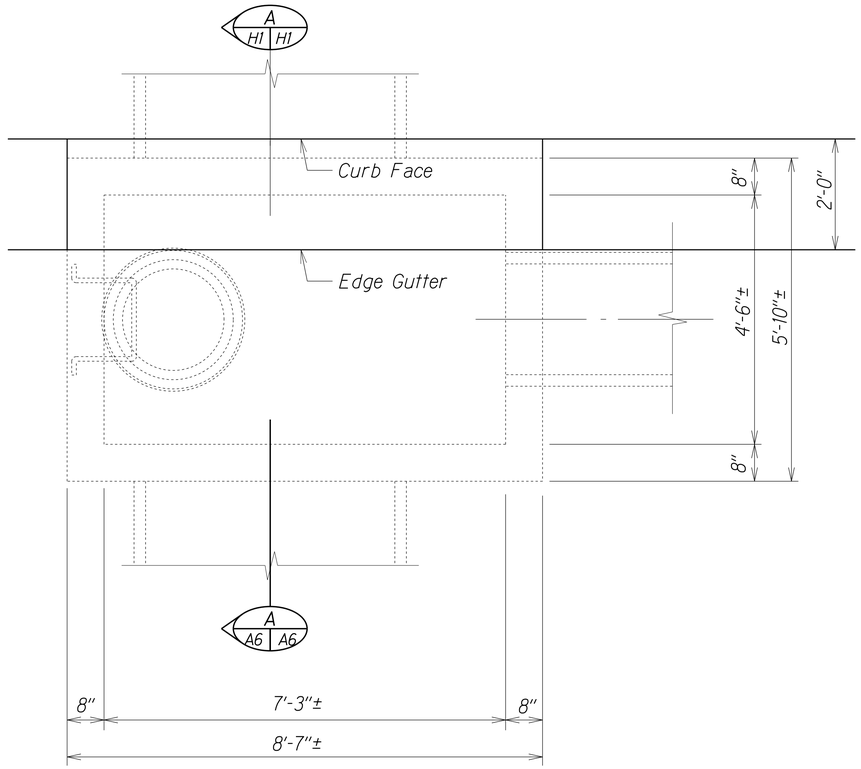
GROUTED RUBBLE PAVING DETAIL ℄ STA. 59+03± TO 59+24± RT.

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



SECTION

Scale: 1½"=1'-0"



PLAN

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

GUTTER DETAIL AT C℄C STORM DRAIN MANHOLE

Note:
1) Dimensions are approximate.
Contractor shall verify dimensions.

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

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

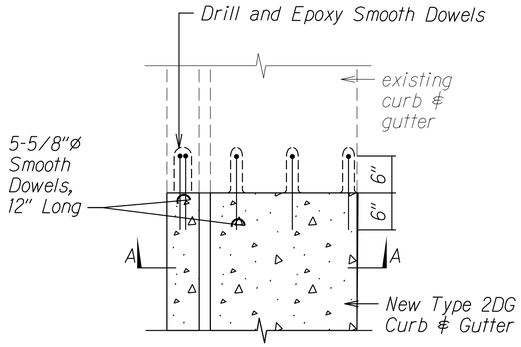
TYPICAL DETAILS

FORT BARRETTE ROAD OPERATIONAL IMPROVEMENTS
Roosevelt Avenue to Farrington Highway
Project No. 901A-01-19

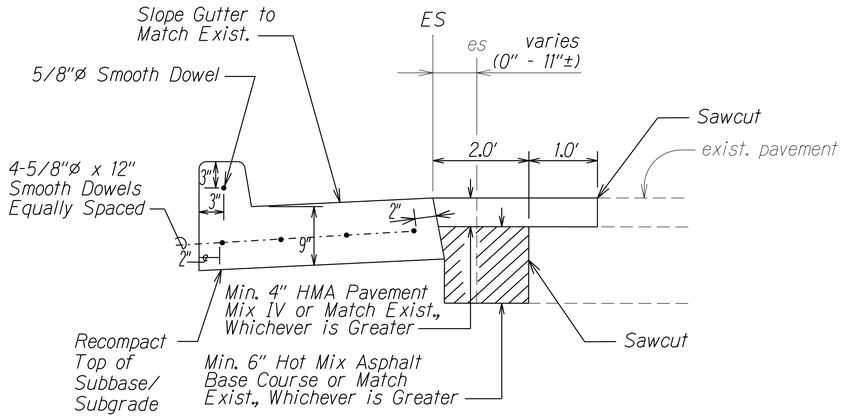
Scale: As Shown Date: January, 2020

SHEET No. A6 OF 7 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	901A-01-19	2020	18	167



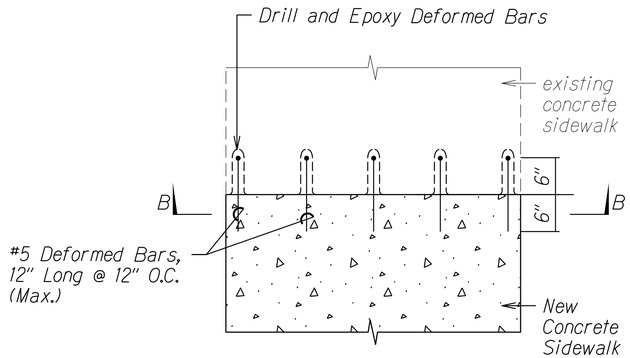
PLAN



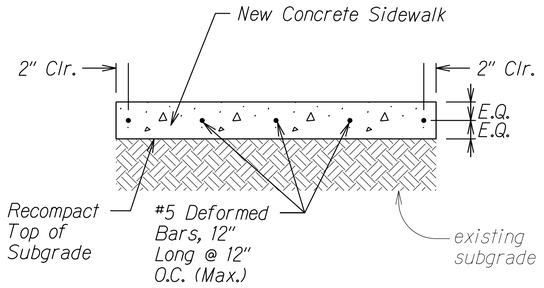
SECTION "A-A"

CITY & COUNTY CONCRETE CURB & GUTTER CONNECTION DETAIL

Scale: Not to Scale



PLAN



SECTION "B-B"

CITY & COUNTY CONCRETE SIDEWALK CONNECTION DETAIL

Scale: Not to Scale

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

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

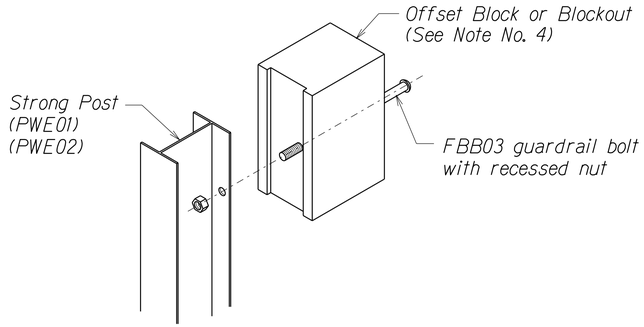
TYPICAL DETAILS

FORT BARRETTE ROAD OPERATIONAL IMPROVEMENTS
Roosevelt Avenue to Farrington Highway
Project No. 901A-01-19

Scale: Not to Scale Date: January, 2020

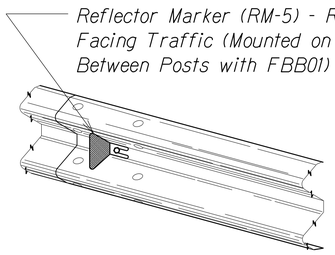
SHEET No. A7 OF 7 SHEETS

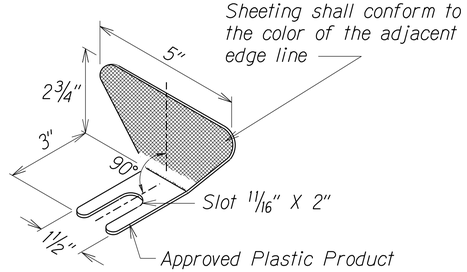
FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	901A-01-19	2020	19	167



Exploded View
(Rail and washer not shown)

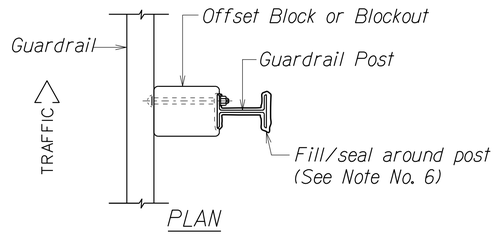
STEEL POST AND BLOCK DETAIL



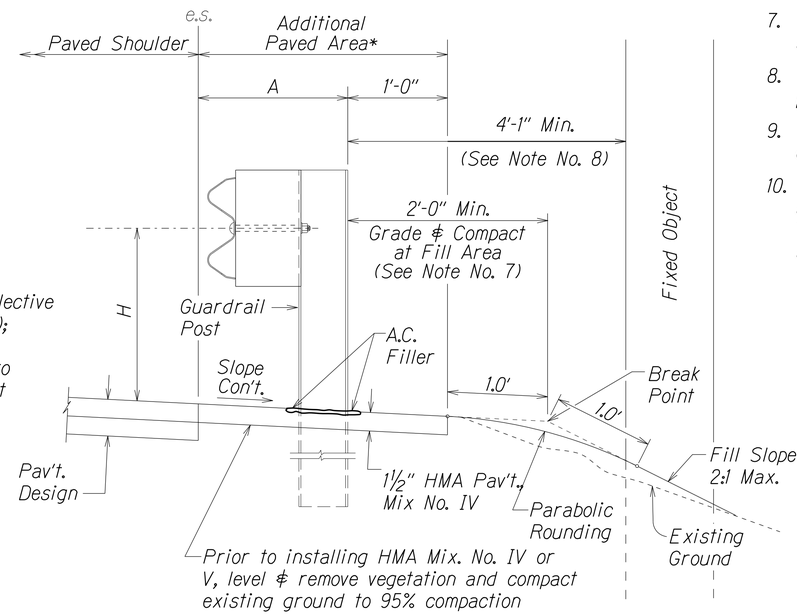


REFLECTOR MARKER (RM-5) DETAIL AND TYPICAL INSTALLATION

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



PLAN



ELEVATION

TYPICAL GUARDRAIL INSTALLATION

GENERAL NOTES

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

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

r05/03/18 D:\sar2\Ernest\standards\Traffic Guardrail Standards\ml_te50revd.dgn

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

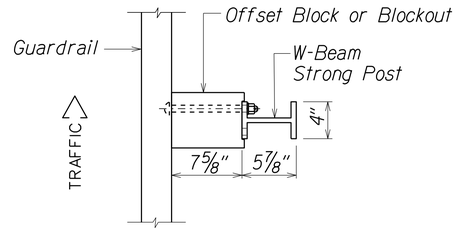
GUARDRAIL DETAILS & NOTES

FORT BARRETTE ROAD OPERATIONAL IMPROVEMENTS
Roosevelt Avenue to Farrington Highway
Project No. 901A-01-19

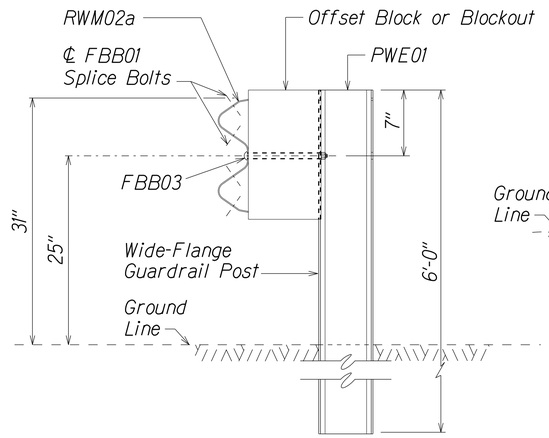
Scale: NTS Date: January, 2020

SHEET No. 1 OF 5 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	901A-01-19	2020	20	167

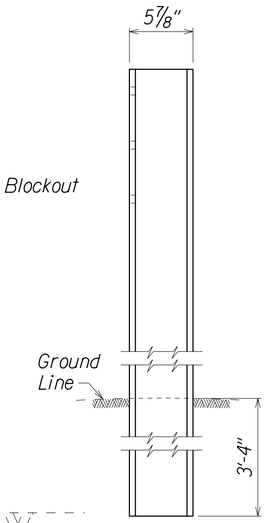


PLAN

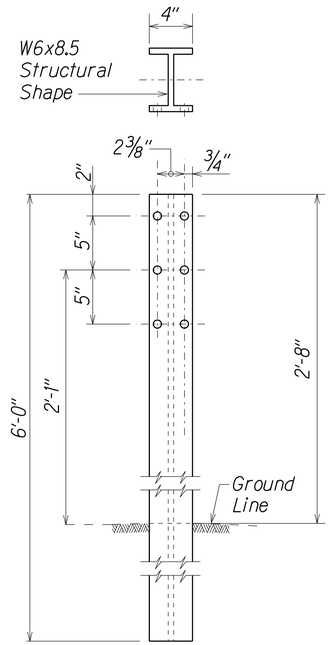


SECTION A-A

NOTE:
All Holes are
3/4" Dia.

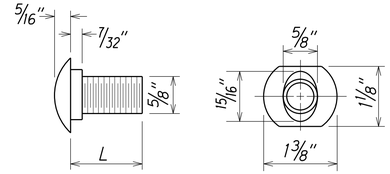


SIDE

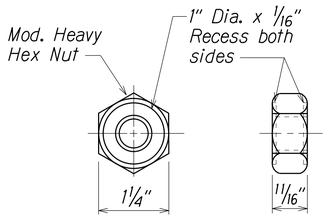


FRONT

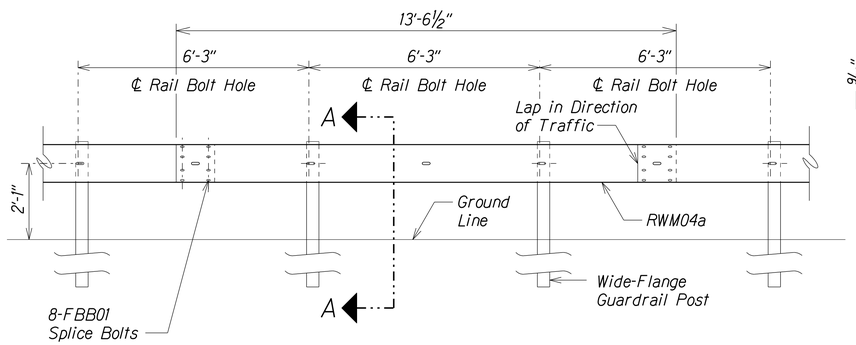
WIDE-FLANGE GUARDRAIL POST (PWE01)



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



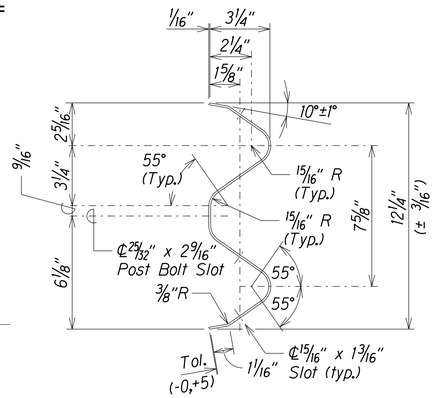
GUARDRAIL BOLTS AND RECESSED NUT

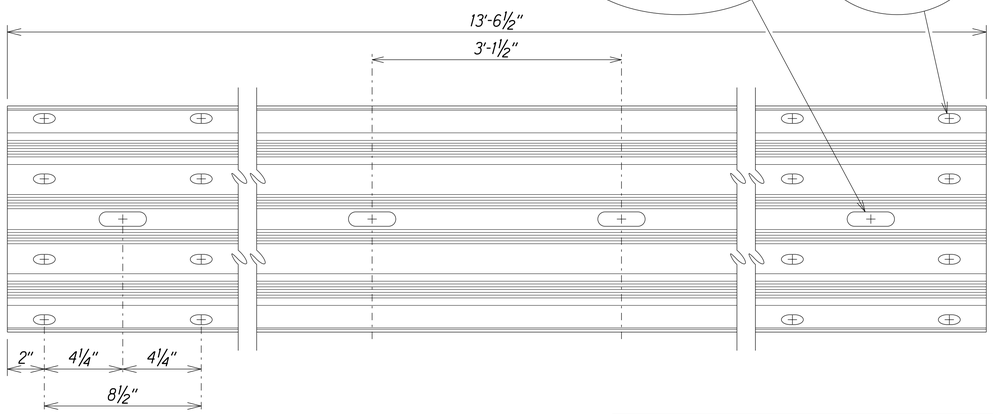


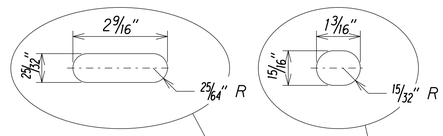
ELEVATION

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

DESIGNATOR	BASE METAL THICKNESS
RWM04a	12 Gauge







4 SPACE W-BEAM GUARDRAIL (RWM04a)

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

r08/08/18 Dusr2/Ernest/standards/Traffic Guardrail Standards/archive/m2_wbeamsdotgn

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

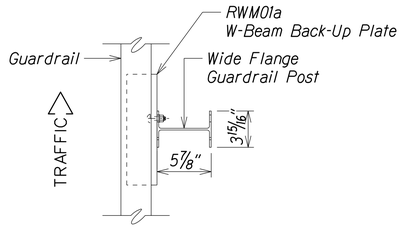
31" W-BEAM GUARDRAIL WITH STANDARD 8" OFFSET BLOCK

FORT BARRETTE ROAD OPERATIONAL IMPROVEMENTS
Roosevelt Avenue to Farrington Highway
Project No. 901A-01-19

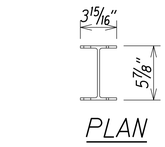
Scale: NTS Date: January, 2020

SHEET No. 2 OF 5 SHEETS

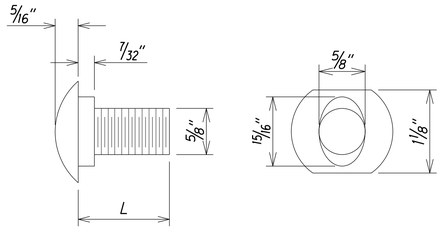
FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	901A-01-19	2020	21	167



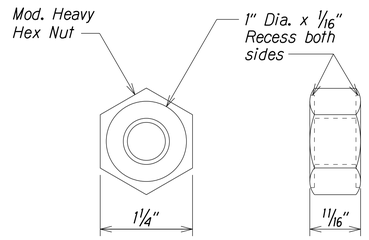
PLAN

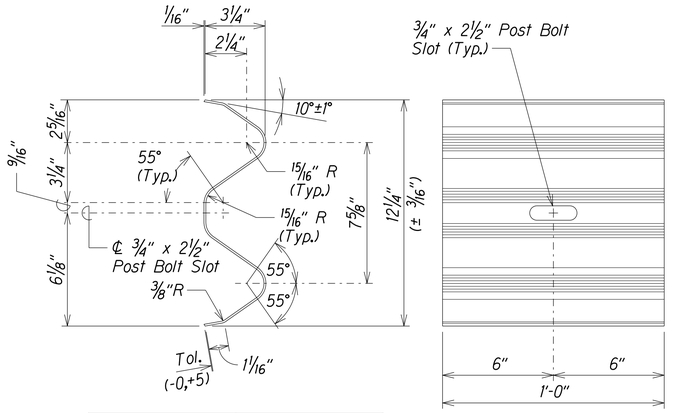


PLAN



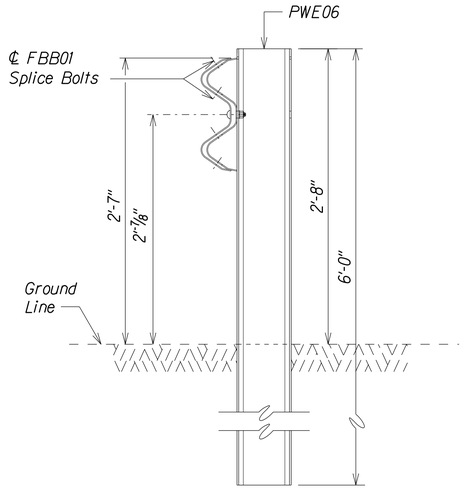
DESIGNATOR	L
FBB01	1 3/8"
FBB02	2"



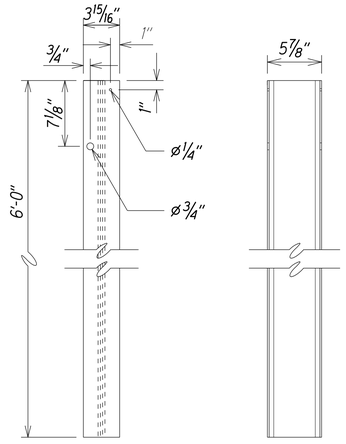


DESIGNATOR	BASE METAL THICKNESS
RWM01a	12 Gauge

W-BEAM BACK-UP PLATE (RWM01a)



SECTION A-A

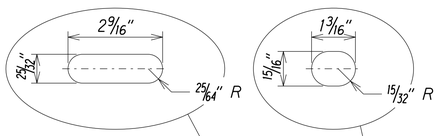


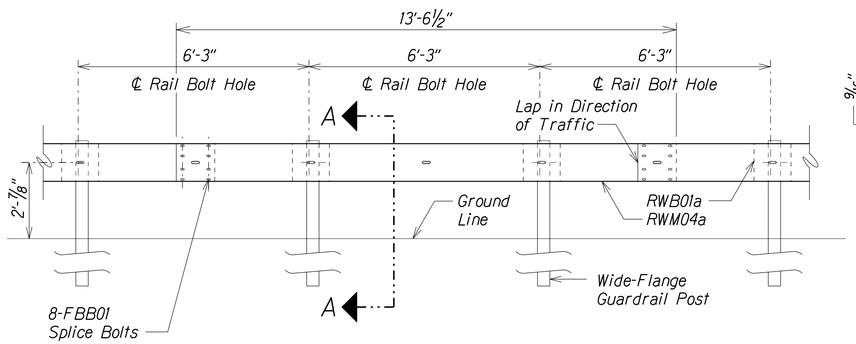
ELEVATION

SIDE

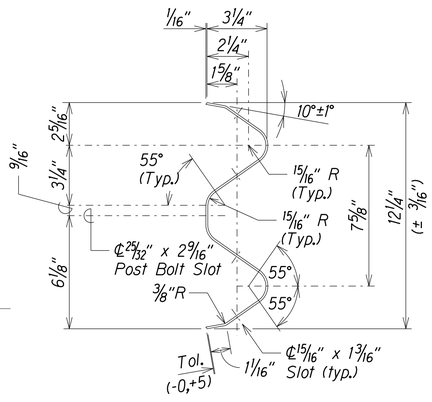
WIDE-FLANGE GUARDRAIL POST (PWE06)

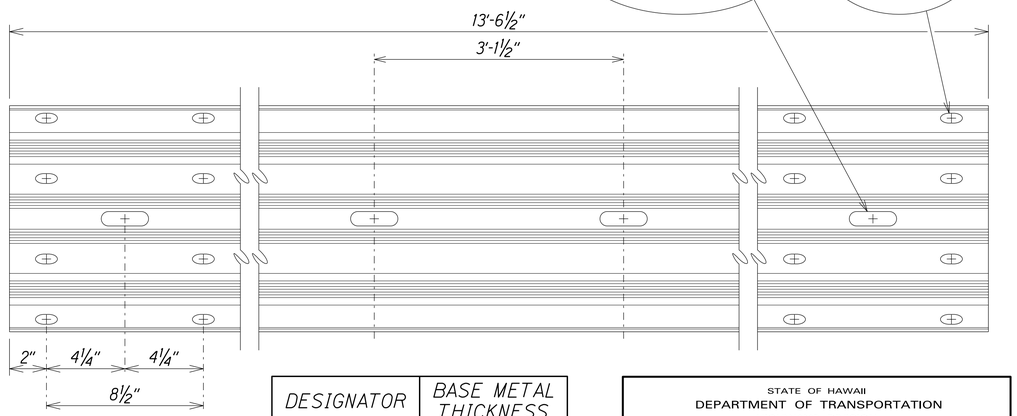
GUARDRAIL BOLTS AND RECESSED NUT





ELEVATION





DESIGNATOR	BASE METAL THICKNESS
RWM04a	12 Gauge

MIDWEST GUARDRAIL SYSTEM WITH NO BLOCKOUTS (SGR41)

4 SPACE W-BEAM GUARDRAIL (RWM04a)

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

MIDWEST GUARDRAIL SYSTEM WITH NO BLOCKOUTS

FORT BARRETTE ROAD OPERATIONAL IMPROVEMENTS
Roosevelt Avenue to Farrington Highway
Project No. 901A-01-19

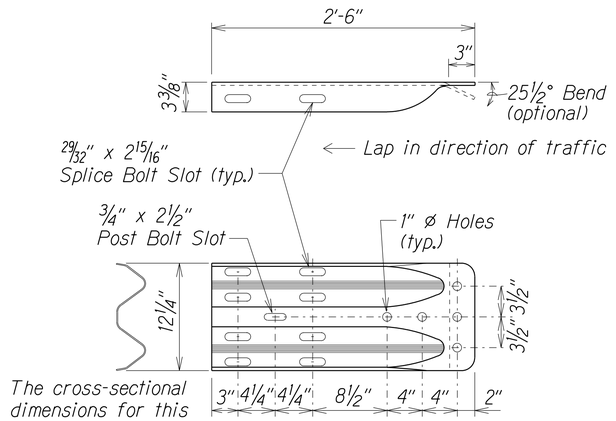
Scale: NTS Date: January, 2020

SHEET No. 3 OF 5 SHEETS

ORIGINAL PLAN
SURVEY PLOTTED BY
DRAWN BY
TRACED BY
DESIGNED BY X
QUANTITIES BY
CHECKED BY
DATE
NOTE BOOK
FILE NAME m_mgswbeam2

r07/28/17 Dust2:/Ernest/standards/Traffic Guardrail Standards/m3_mgswbeam2.dgn

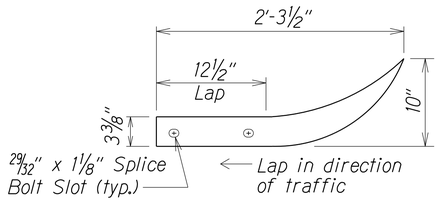
FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	901A-01-19	2020	22	167

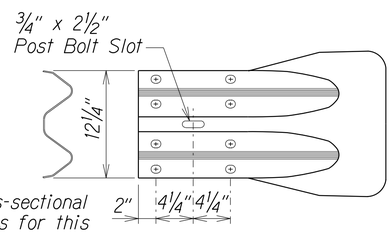


The cross-sectional dimensions for this part are to fit over part RWM02a on the approach end and under part RWM02a on the trailing end.

DESIGNATOR	BASE METAL THICKNESS
RWE02b	10 Gauge

W-BEAM TERMINAL CONNECTOR (RWE02b)

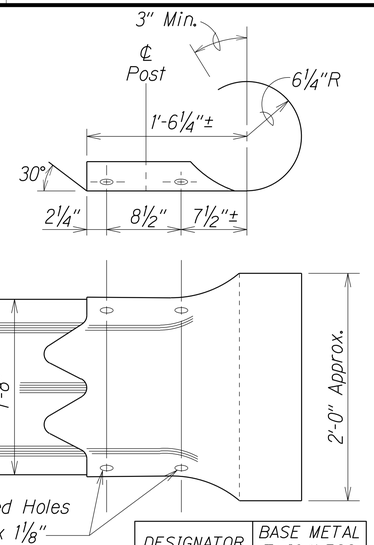




The cross-sectional dimensions for this part are to fit over part RWM02a on the approach end and under part RWM02a on the trailing end.

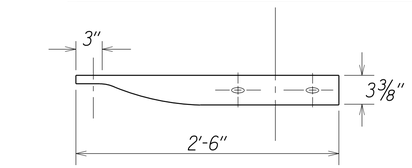
DESIGNATOR	BASE METAL THICKNESS
RWE01a	12 Gauge

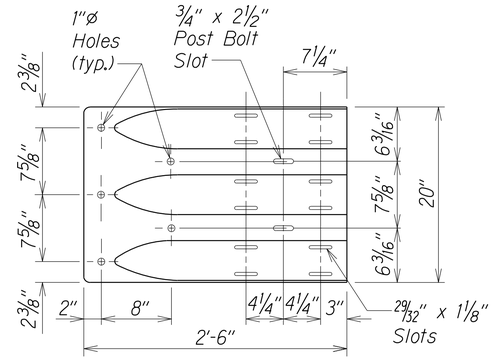
W-BEAM END SECTION (FLARED RWE01a)



DESIGNATOR	BASE METAL THICKNESS
RTE02b	10 Gauge

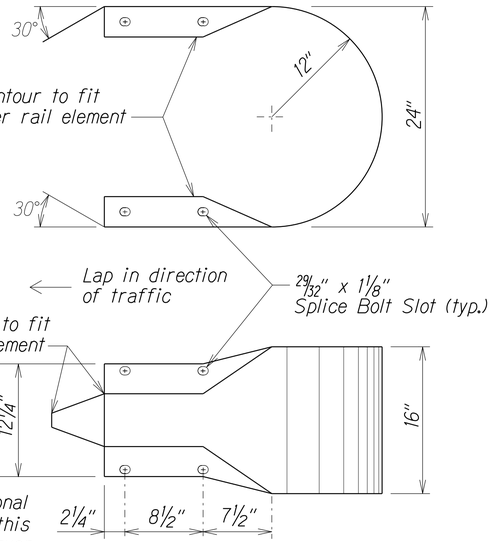
THRIE-BEAM SECTION (ROUNDED) (RTE02b)





DESIGNATOR	BASE METAL THICKNESS
RTE01b	10 Gauge

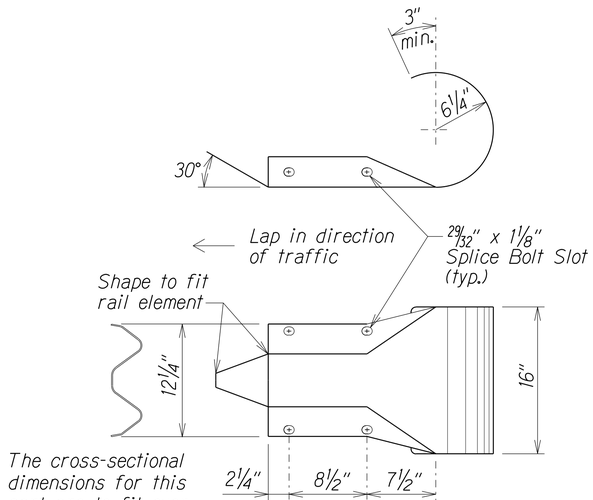
THRIE-BEAM TERMINAL CONNECTOR (RTE01b)



The cross-sectional dimensions for this part are to fit over part RWM02a

DESIGNATOR	BASE METAL THICKNESS
RWE06a	12 Gauge

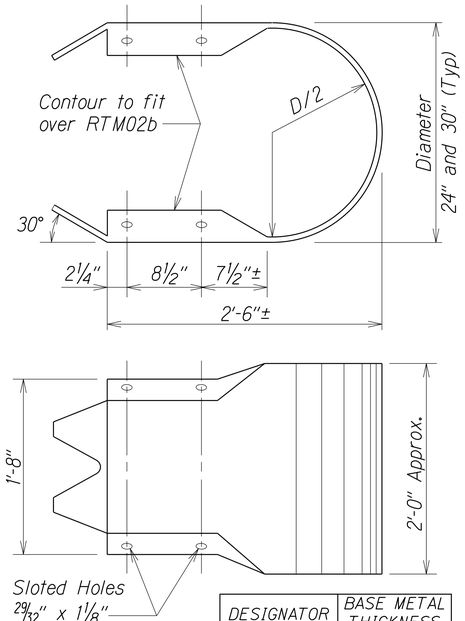
W-BEAM END SECTION (BUFFER RWE06a)



The cross-sectional dimensions for this part are to fit over part RWM02a

DESIGNATOR	BASE METAL THICKNESS
RWE03a	12 Gauge

W-BEAM END SECTION (ROUNDED RWE03a)



DESIGNATOR	BASE METAL THICKNESS
RTE03b & RTE04b	10 Gauge

THRIE-BEAM END SECTION (BUFFER RTE03b or RTE04b)

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

r01/28/17 Dsdir2/Ernest/standards/TrafFic Guardrail Standards/m4_teSlreudgn

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

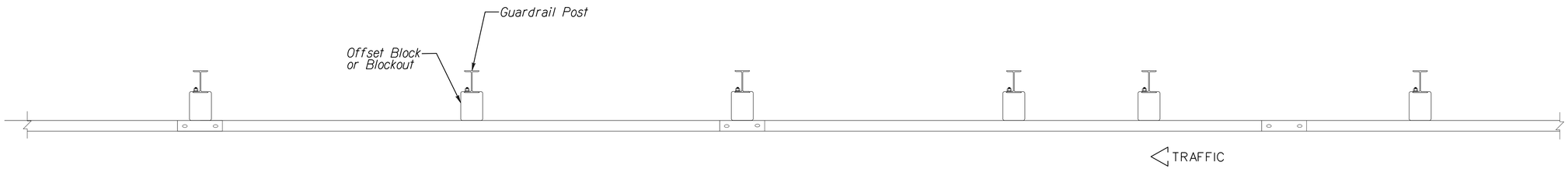
GUARDRAIL TERMINAL CONNECTORS AND END SECTIONS

FORT BARRETTE ROAD OPERATIONAL IMPROVEMENTS
Roosevelt Avenue to Farrington Highway
Project No. 901A-01-19

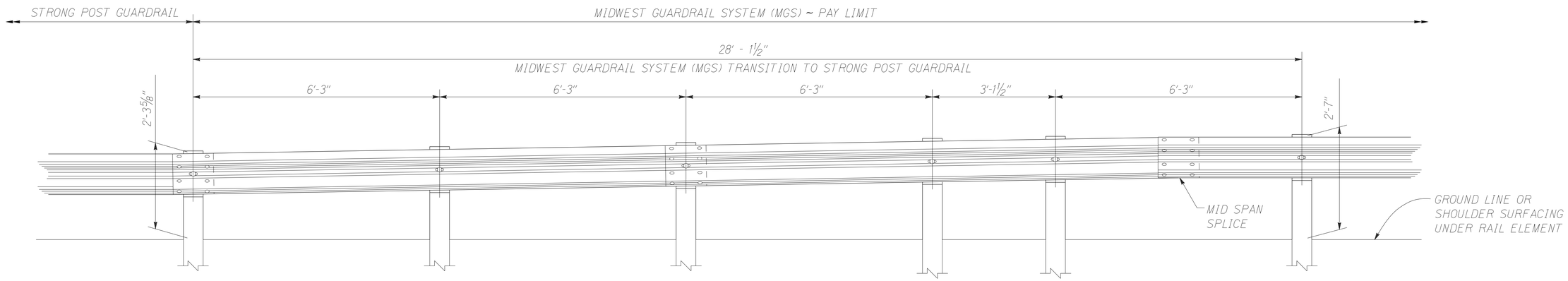
Scale: NTS Date: January, 2020

SHEET No. 4 OF 5 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	901A-01-19	2020	23	167



PLAN



ELEVATION

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

r09/06/16 Dusr2/Ernest/standards/Traffic Guardrail Standards/mt7_midwest.dgn

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

MGS TRANSITION TO STRONG POST GUARDRAIL

FORT BARRETTE ROAD OPERATIONAL IMPROVEMENTS
Roosevelt Avenue to Farrington Highway
Project No. 901A-01-19

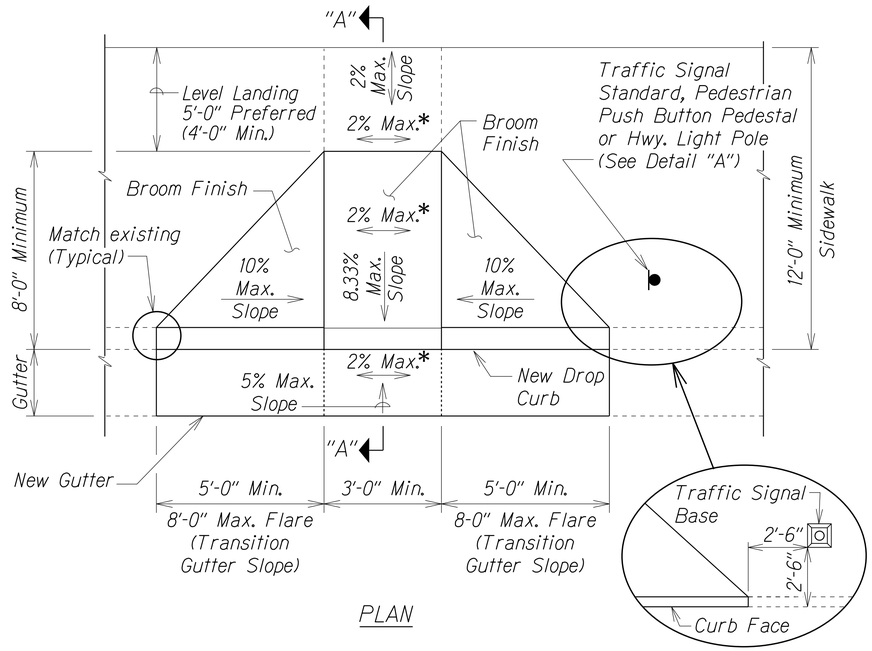
Scale: NTS Date: January, 2020

SHEET No. 5 OF 5 SHEETS

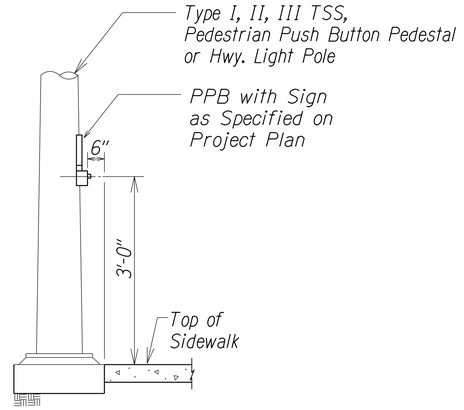
FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	901A-01-19	2020	24	167

CURB RAMP AND SIDEWALK NOTES:

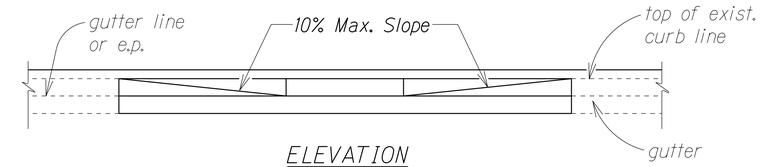
1. These typical details are intended as curb ramp guidelines for design and construction. These guidelines shall not replace site specific curb ramp plans.
2. A 2% maximum cross slope shall be maintained in the direction of pedestrian traffic.
3. Subject to field conditions, the Engineer shall determine 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 pedestrian push button shall meet operational and reach requirements of the American with Disabilities Act Accessibility Guidelines (ADAAG):
   a) Forward Reach. The maximum height for forward reach shall be 48".
   b) Side Reach. The maximum height for side reach shall be 48".
   c) Operation. Controls and operating mechanisms shall be operable with one hand and shall not require tight grasping, pinching, or twisting of the wrist. The force required to activate controls shall be no greater than 5 lbf.
9. 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.
10. 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.
11. Construction joints are required to join curb ramps with sidewalks.
12. Unless otherwise noted, new gutters are required as shown.
13. All curb ramps shall be reinforced with 6x6 W1.4/W1.4 welded wire fabric.
14. Surface of sidewalks and curb ramps shall be firm, stable, and slip-resistant. This includes the surfaces of pullboxes, valve covers, manhole covers, etc.
15. Bed course material is required for curb ramps, sidewalks, and gutters.
16. 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.
17. 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.
18. If possible, install utility poles, fire hydrants, light poles, sign posts, pullboxes, etc. off of sidewalk but within the right-of-way.
19. 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.
20. 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 ¼ inch per 10 ft. (±0.2%). Remedial measures will not be accepted.



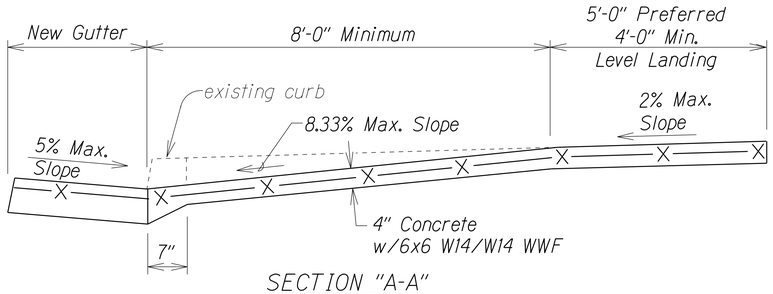
PLAN



DETAIL "A"



ELEVATION



SECTION "A-A"

CURB RAMP - TYPE "A"

SIDEWALK WIDTH 12'-0" OR GREATER

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

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

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

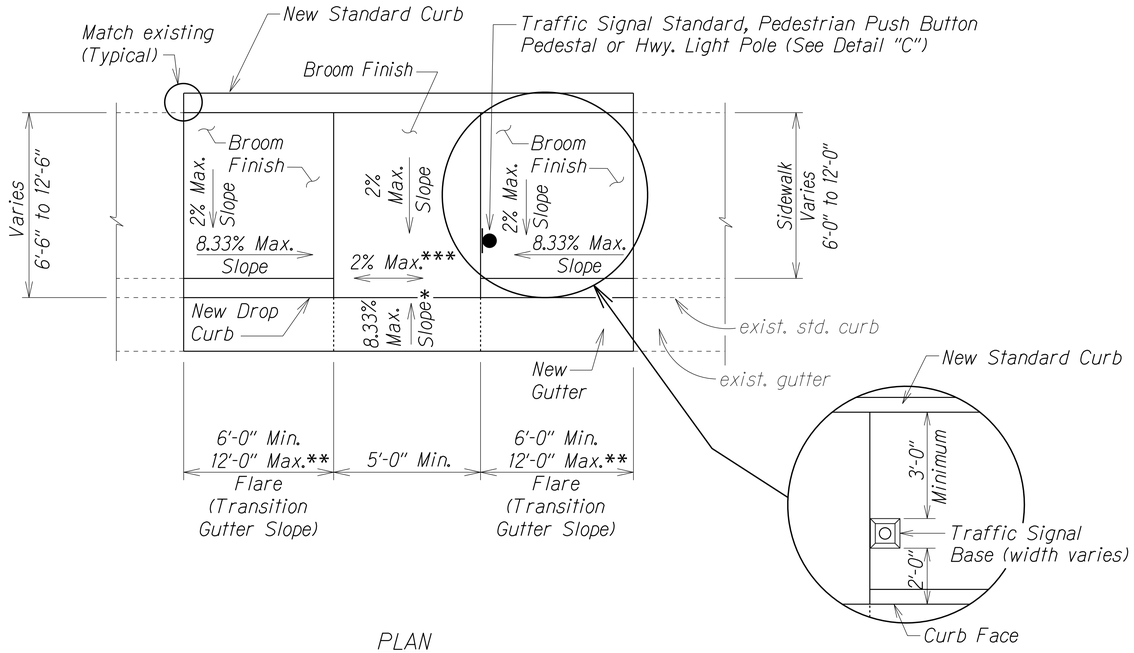
CURB RAMP NOTES & DETAILS

FORT BARRETTE ROAD OPERATIONAL IMPROVEMENTS
Roosevelt Avenue to Farrington Highway
Project No. 901A-01-19

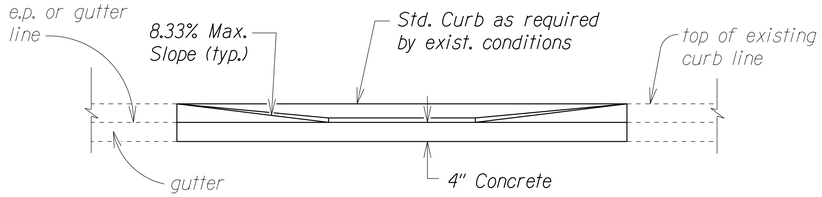
Scale: Not to Scale Date: January, 2020

SHEET No. C1 OF 10 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	901A-01-19	2020	25	167



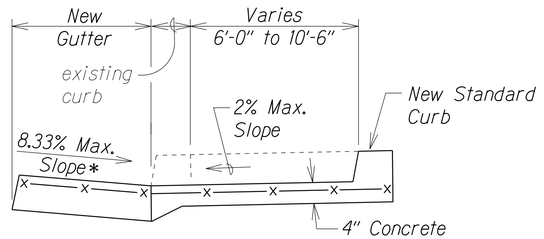
PLAN



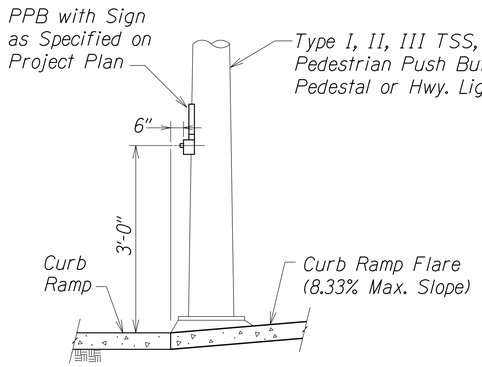
ELEVATION

CURB RAMP - TYPE "B" MODIFIED

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



TYPICAL SECTION



DETAIL "C"

* See Sht. No. C1 Note No. 9.

** 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

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

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

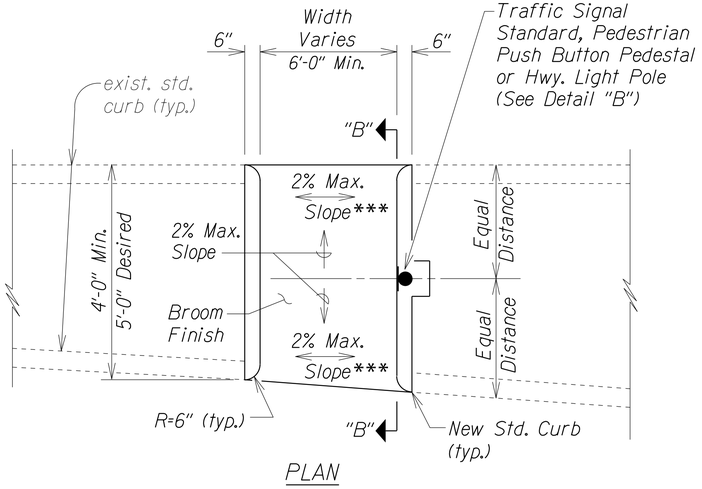
CURB RAMP DETAILS

FORT BARRETTE ROAD OPERATIONAL IMPROVEMENTS
Roosevelt Avenue to Farrington Highway
Project No. 901A-01-19

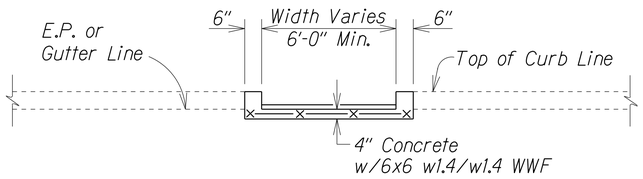
Scale: Not to Scale Date: January, 2020

SHEET No. C2 OF 10 SHEETS

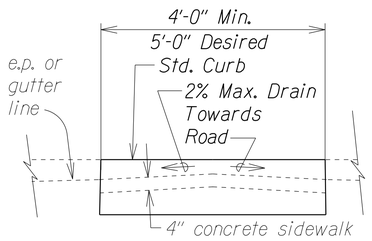
FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	901A-01-19	2020	26	167



PLAN



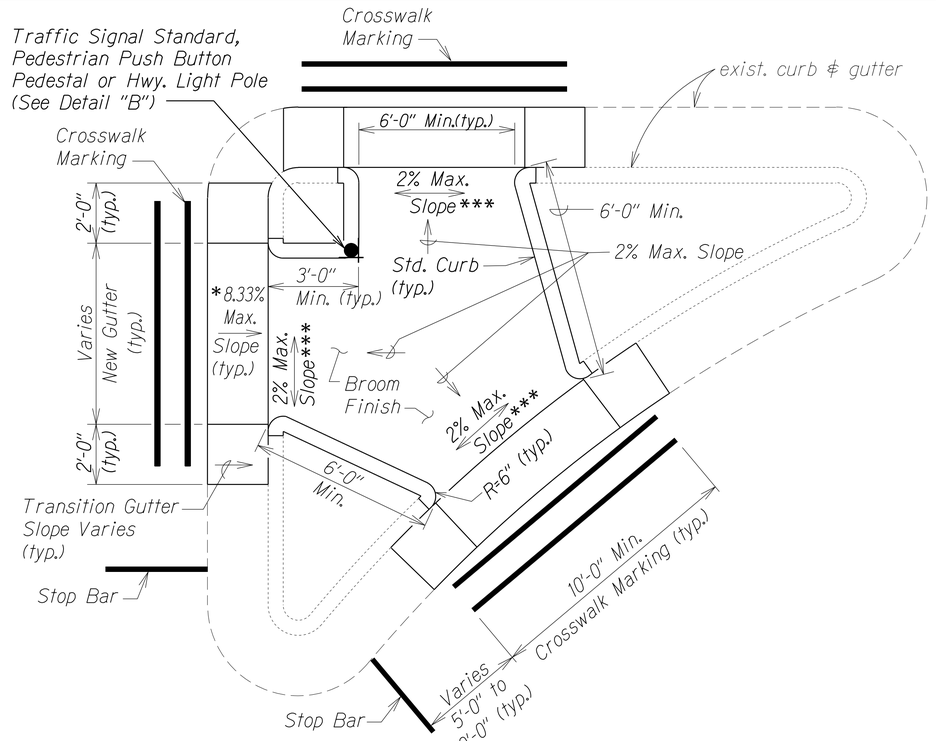
ELEVATION



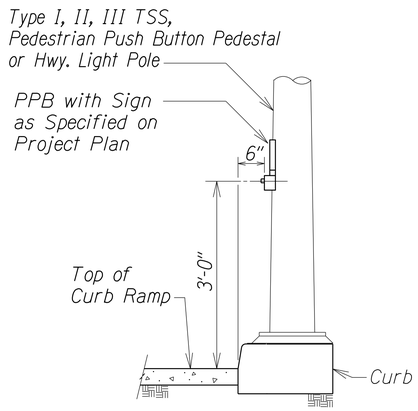
SECTION "B-B"

CURB RAMP - TYPE "C"

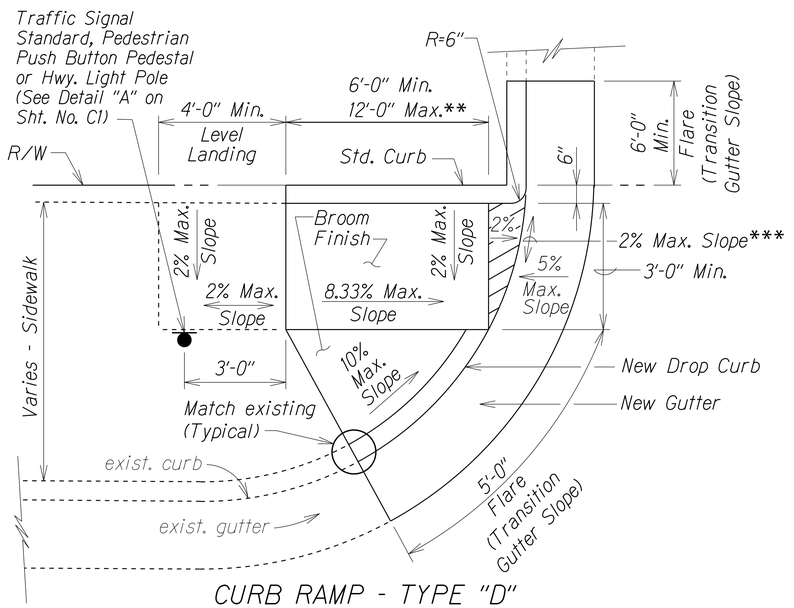
USE AT MEDIAN CROSSINGS, ISLANDS



CURB RAMP - TYPE "C" MODIFIED



DETAIL "B"



CURB RAMP - TYPE "D"

* See Sht. No. C1 Note No. 9.

** 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

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

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

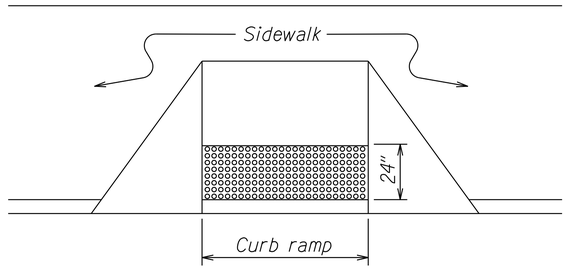
CURB RAMP DETAILS

FORT BARRETTE ROAD OPERATIONAL IMPROVEMENTS
Roosevelt Avenue to Farrington Highway
Project No. 901A-01-19

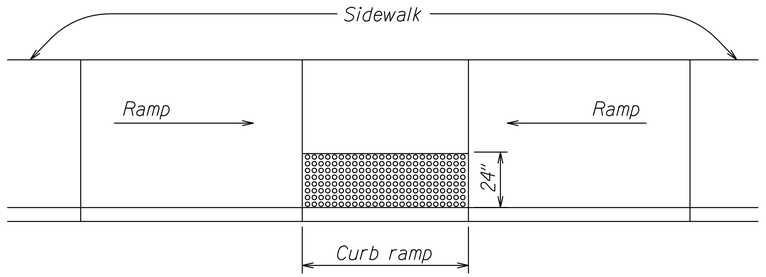
Scale: Not to Scale Date: January, 2020

SHEET No. C3 OF 10 SHEETS

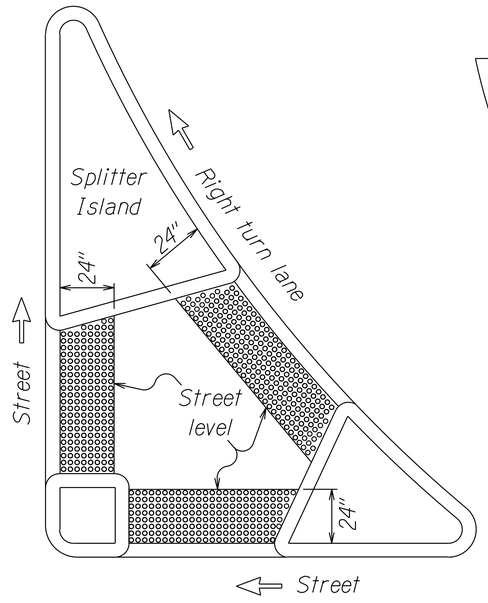
FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	901A-01-19	2020	27	167



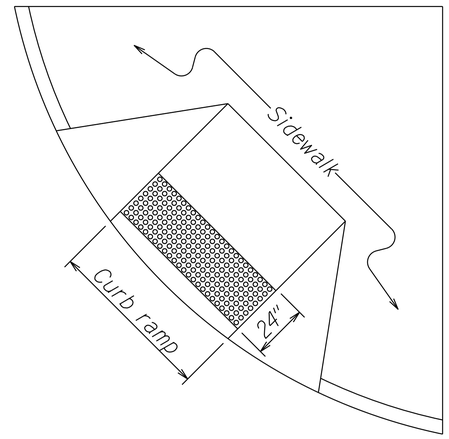
DETECTABLE WARNING AT CURB RAMP



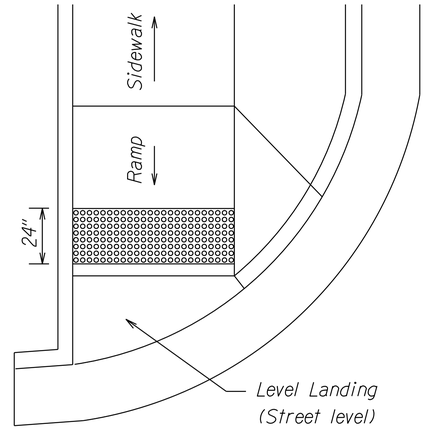
TRANSITION RAMP WITH DETECTABLE WARNING



REFUGE ISLAND WITH DETECTABLE WARNING



SHARED CURB RAMP WITH DETECTABLE WARNING



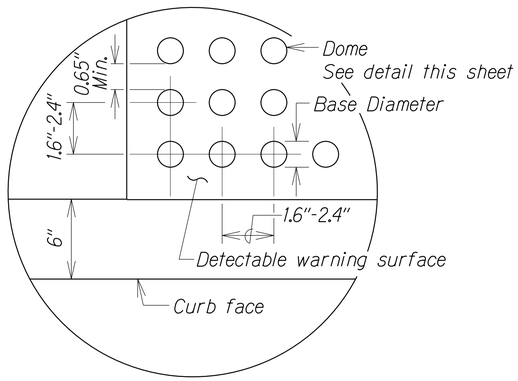
END OF SIDEWALK CURB RAMP WITH DETECTABLE WARNING

TYPICAL INSTALLATION OF DETECTABLE WARNINGS

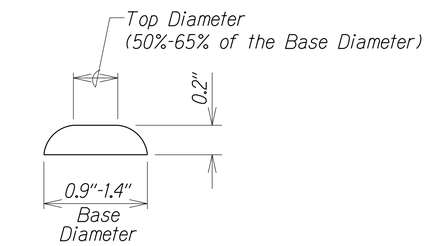
Not to Scale

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



DOME SECTION

DETECTABLE WARNING DETAIL

Not to Scale

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

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

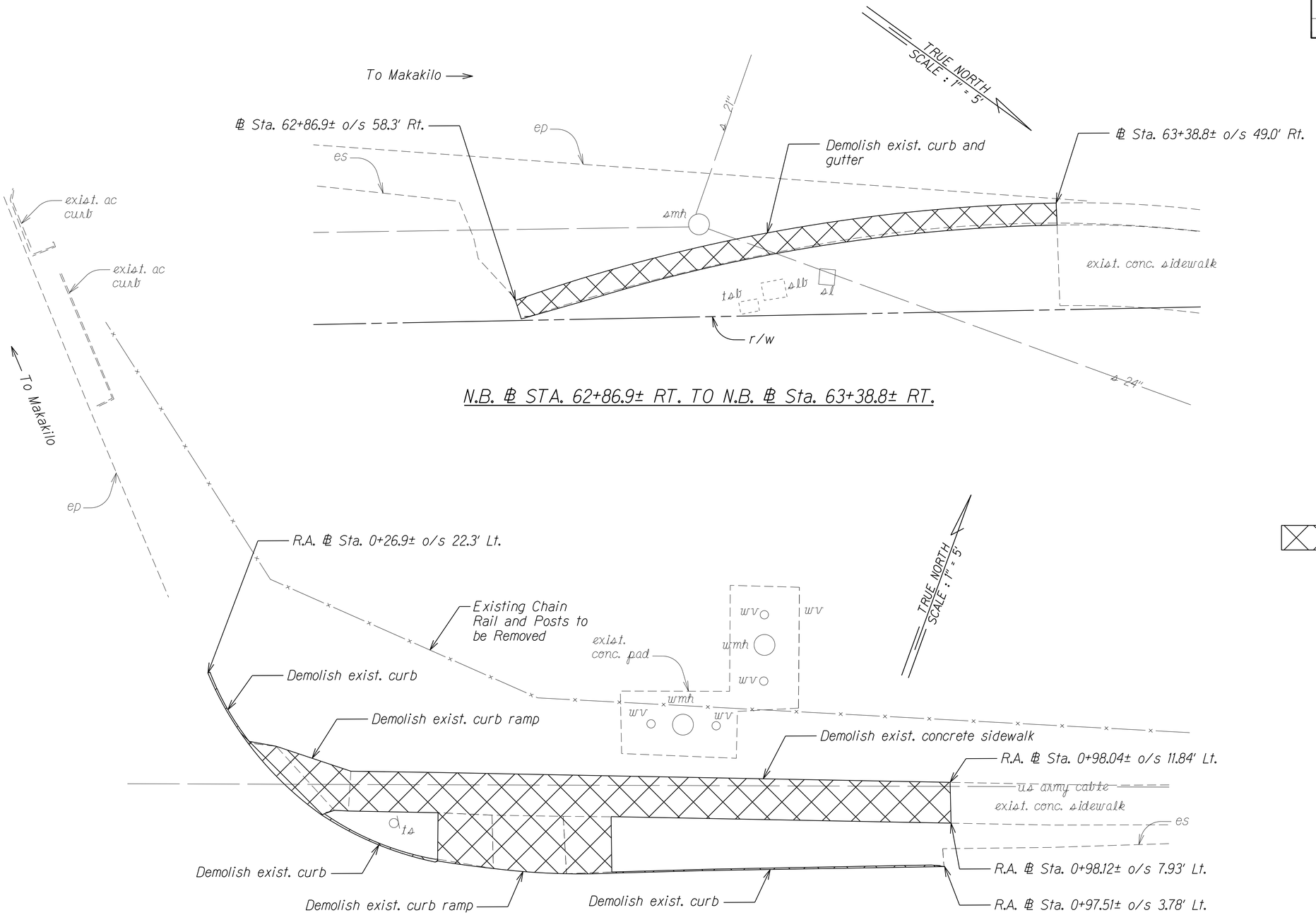
DETECTABLE WARNING DETAILS

FORT BARRETTE ROAD OPERATIONAL IMPROVEMENTS
Roosevelt Avenue to Farrington Highway
Project No. 901A-01-19

Scale: Not to Scale Date: January, 2020

SHEET No. C4 OF 10 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	901A-01-19	2020	28	167



N.B. ℄ STA. 62+86.9± RT. TO N.B. ℄ Sta. 63+38.8± RT.

ROOSEVELT AVENUE (R.A.) ℄ STA. 0+26.9± LT. to R.A. ℄ Sta. 0+98.12± LT.

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

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

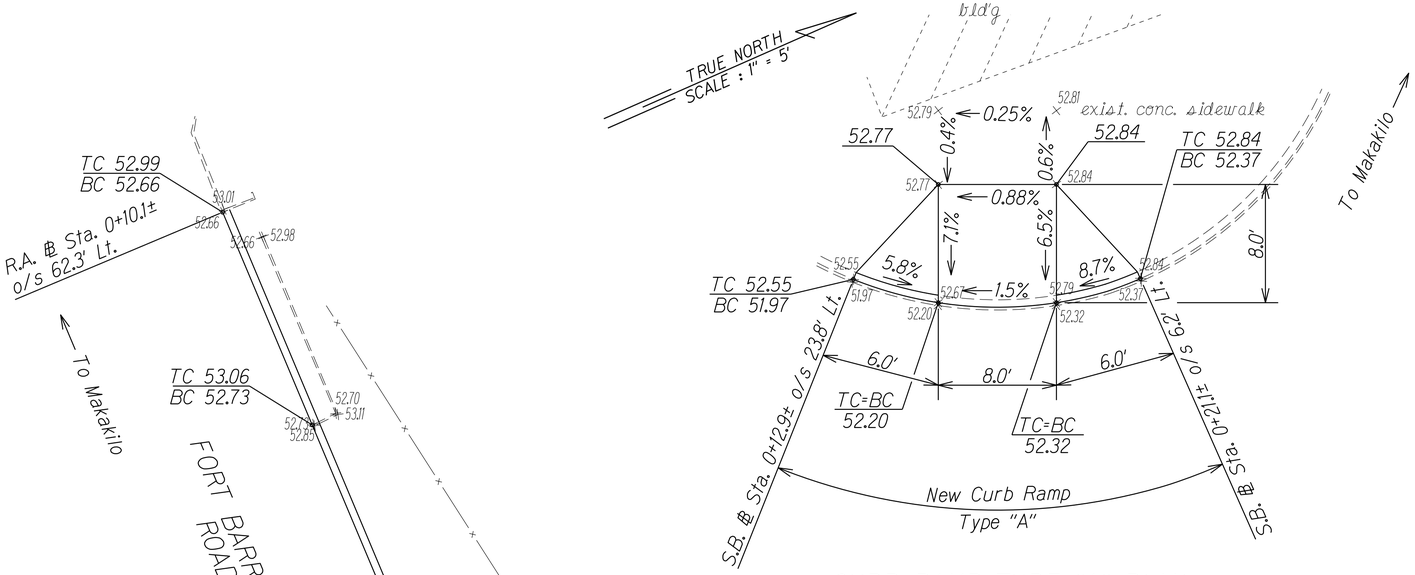
DEMOLITION PLAN

FORT BARRETTE ROAD OPERATIONAL IMPROVEMENTS
Roosevelt Avenue to Farrington Highway
Project No. 901A-01-19

Scale: 1" = 5' Date: January, 2020

SHEET No. C5 OF 10 SHEETS

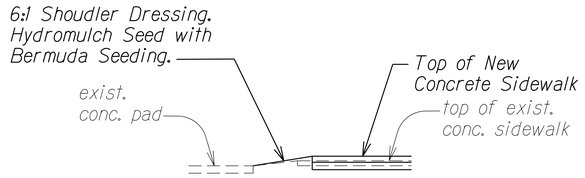
FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	901A-01-19	2020	29	167



CURB RAMP TYPE "A" AND "D" AND SIDEWALK PLAN
ROOSEVELT AVENUE (R.A.) ℄ Sta. 0+10.1± LT. TO R.A. ℄ Sta. 0+98.1± LT.

Notes:

1. For New Traffic Signal Pole and Pullbox locations, see Traffic Signal Plans.
2. For New Type 2D Curb and New Concrete Sidewalk details, see Standard Plan D-05 and D-15, respectively.
3. For demolition details, see Sht. No. C5.
4. For Typical Curb Ramp details, see Sht. No. C1 & C3. Install Detectable Warning Mat at each New Curb Ramp per details on Sht. No. C4.



SECTION "A"
Scale: N.T.S.

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

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

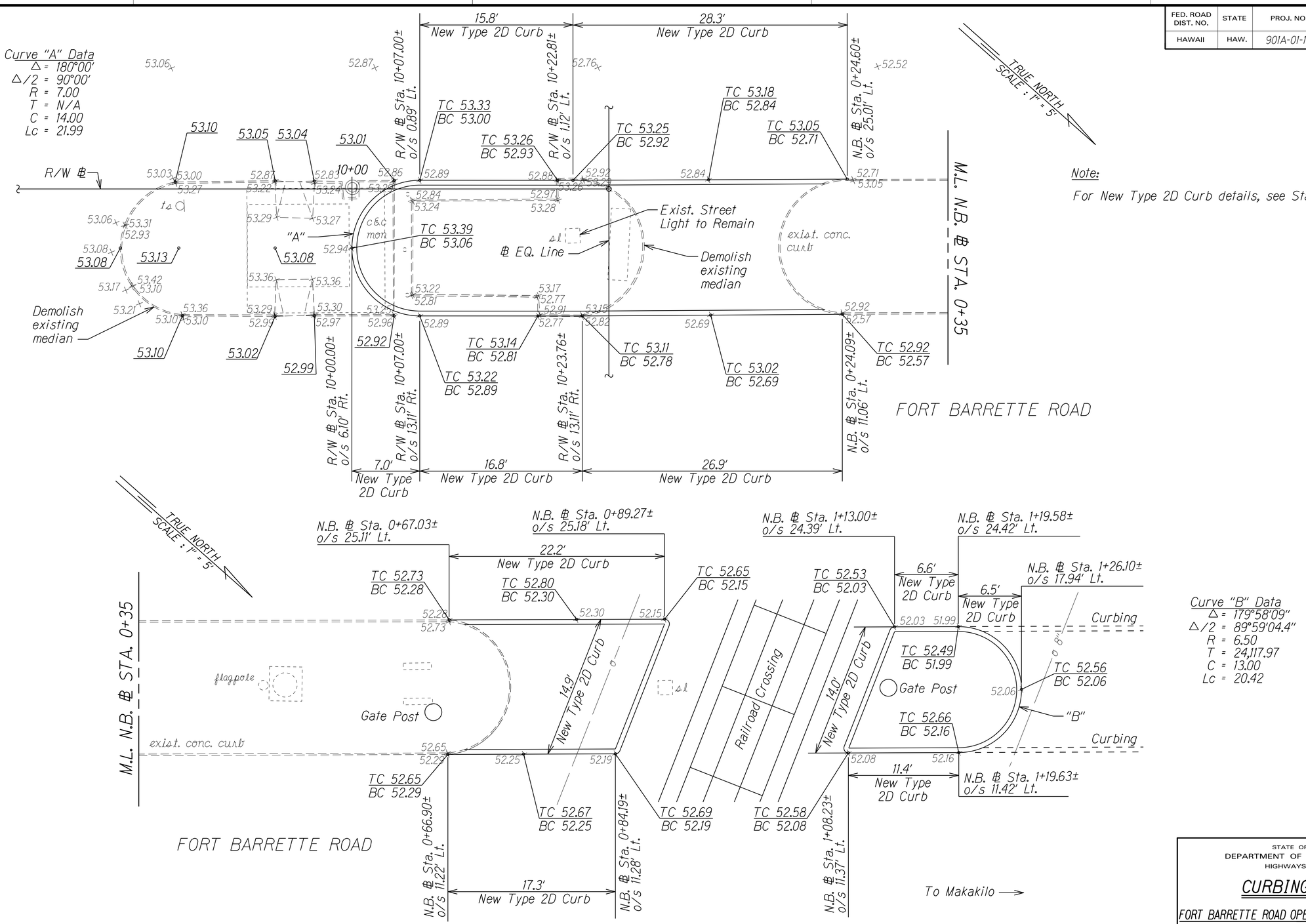
CURB RAMP & SIDEWALK PLANS

FORT BARRETTE ROAD OPERATIONAL IMPROVEMENTS
Roosevelt Avenue to Farrington Highway
Project No. 901A-01-19

Scale: 1" = 5' Date: January, 2020

SHEET No. C6 OF 10 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	901A-01-19	2020	30	167



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

CURBING PLAN
R/W ℄ STA. 10+00.00± TO N.B. ℄ STA. 1+26.10± LT.

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

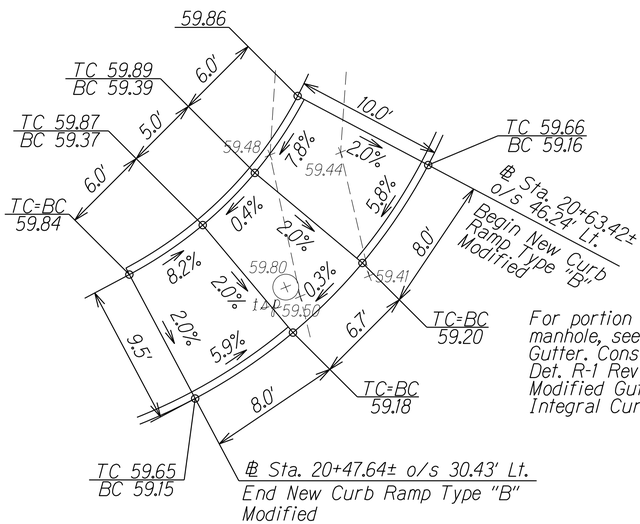
CURBING PLANS

FORT BARRETTE ROAD OPERATIONAL IMPROVEMENTS
Roosevelt Avenue to Farrington Highway
Project No. 901A-01-19

Scale: 1" = 10' Date: January, 2020

SHEET No. C7 OF 10 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	901A-01-19	2020	31	167



INSET "A"
Scale: 1" = 5'

NEW LEFT EDGE OF SIDEWALK
CURVE DATA
△ = 62°05'57"
△/2 = 31°02'58.3"
R = 28.00'
T = 16.86'
C = 28.88'
Lc = 30.35'

NEW ES CURVE DATA
△ = 90°01'18"
△/2 = 45°00'39.1"
R = 40.00
T = 40.02
C = 56.58
Lc = 62.85

Notes:

1. For New Traffic Signal Pole and Pullbox locations, see Traffic Signal Plans.
2. For Typical Curb Ramp details, see Sht. No. C1 ∉ C2. Install Detectable Warning Mat at New Curb Ramp per details on Sht. No. C4.
3. For New Shared Use Path details, see Shared Use Path Plans.
4. Demolishing, removing, and disposing existing drainage structure and cutting pipe flush with inner face shall be considered incidental to Type "D" Catch Basin.
5. For construction of New Curb ∉ Gutter, see detail on Sht. No. A7. For construction of New Modified Gutter above existing storm drain manhole, see detail on Sht. No. A6.
6. Sawcutting, demolishing, removing, and disposing of existing concrete walkway shall be considered incidental to New Concrete Sidewalk.

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

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

CURB RAMP ∉ SIDEWALK PLANS

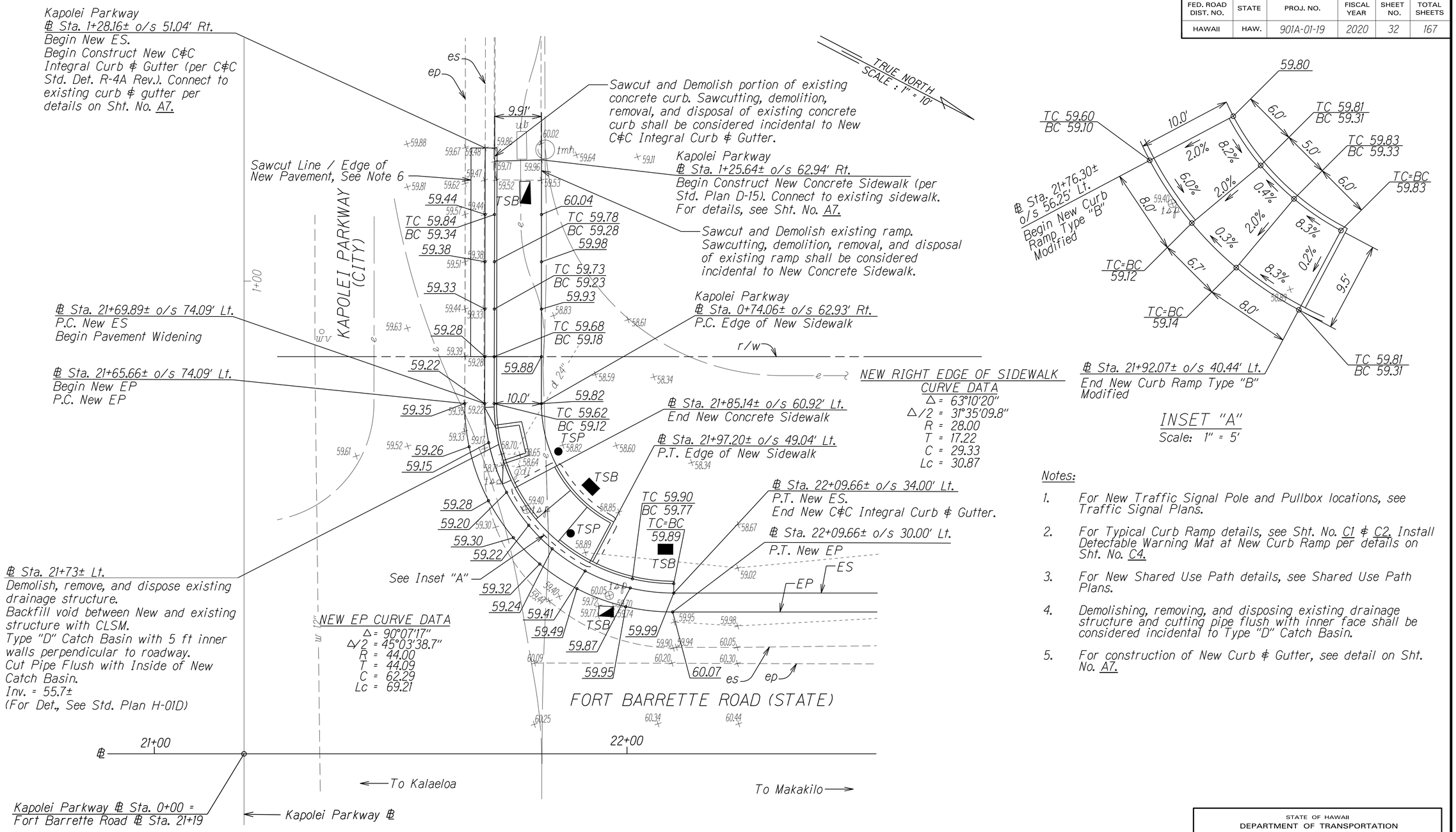
FORT BARRETTE ROAD OPERATIONAL IMPROVEMENTS
Roosevelt Avenue to Farrington Highway
Project No. 901A-01-19

Scale: 1" = 10' Date: January, 2020

SHEET No. C8 OF 10 SHEETS

CURB RAMP TYPE "B" MODIFIED AND SIDEWALK PLAN
FORT BARRETTE ROAD ℄ Sta. 20+41.79± LT. TO KAPOLEI PARKWAY ℄ Sta. 1+27.82± LT.

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	901A-01-19	2020	32	167



INSET "A"
Scale: 1" = 5'

Notes:

1. For New Traffic Signal Pole and Pullbox locations, see Traffic Signal Plans.
2. For Typical Curb Ramp details, see Sht. No. C1 ℄ C2. Install Detectable Warning Mat at New Curb Ramp per details on Sht. No. C4.
3. For New Shared Use Path details, see Shared Use Path Plans.
4. Demolishing, removing, and disposing existing drainage structure and cutting pipe flush with inner face shall be considered incidental to Type "D" Catch Basin.
5. For construction of New Curb ℄ Gutter, see detail on Sht. No. A7.

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

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

CURB RAMP & SIDEWALK PLANS

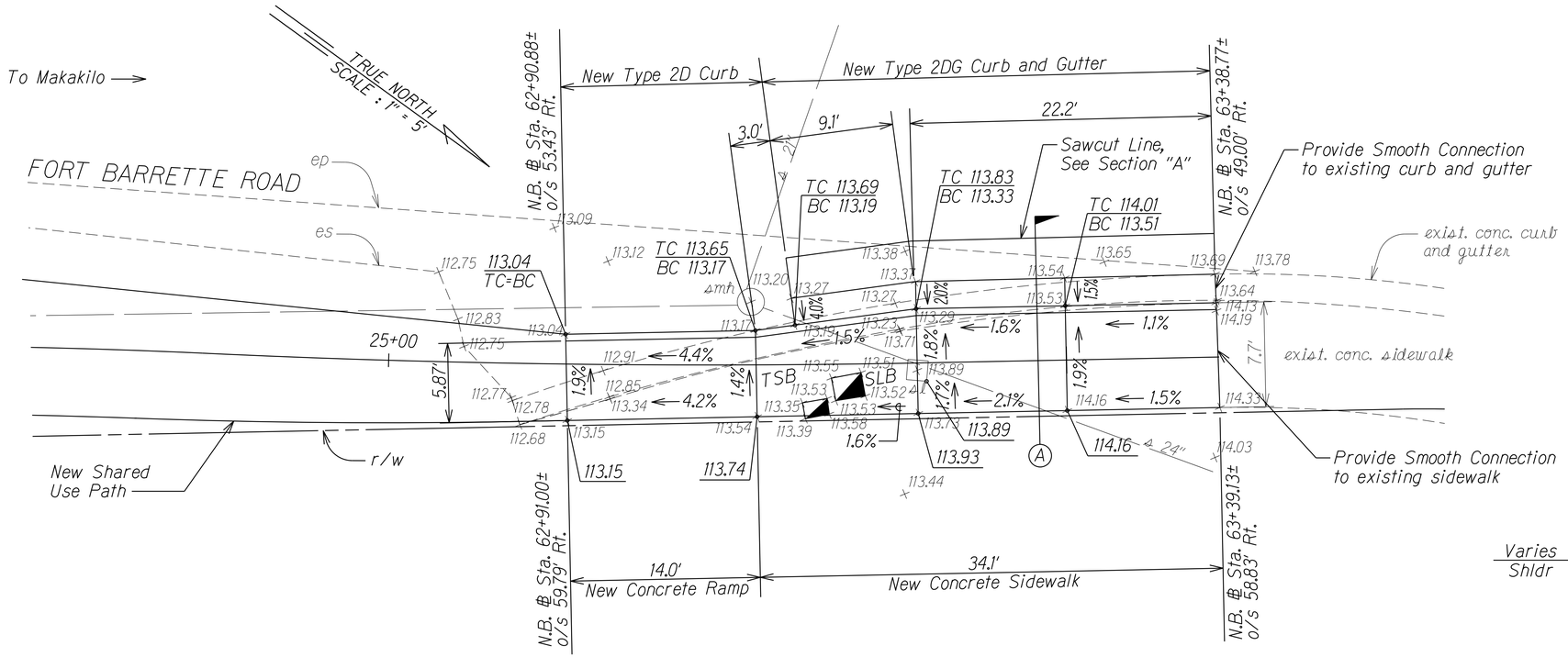
FORT BARRETTE ROAD OPERATIONAL IMPROVEMENTS
Roosevelt Avenue to Farrington Highway
Project No. 901A-01-19

Scale: 1" = 10.0' Date: January, 2020

SHEET No. C9 OF 10 SHEETS

CURB RAMP TYPE "B" MODIFIED, SIDEWALK AND RIGHT TURN PLAN
KAPOLEI PARKWAY ℄ Sta. 1+28.16± RT. TO FORT BARRETTE ROAD ℄ Sta. 22+09.66± LT.

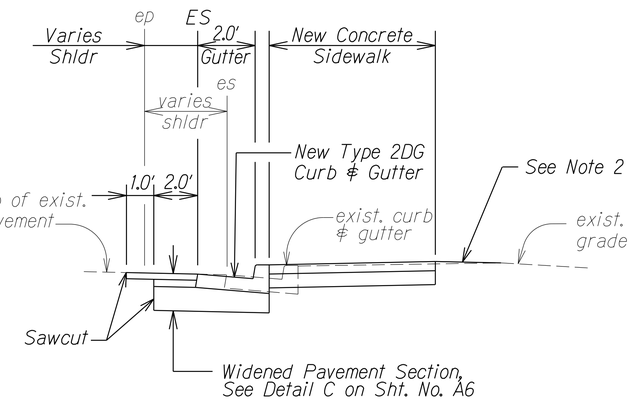
FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	901A-01-19	2020	33	167



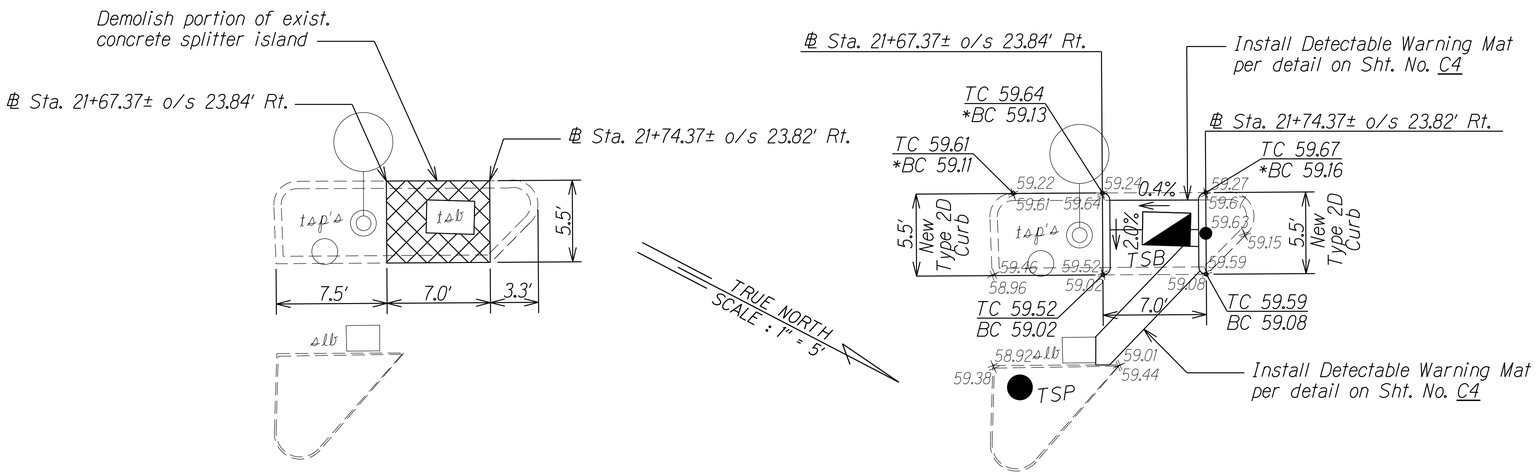
RAMP AND SIDEWALK PLAN
N.B. ℄ STA. 62+90.88± RT. TO N.B. ℄ Sta. 63+38.77± RT.

Notes:

1. For New Traffic Signal Pole and Pullbox locations, see Traffic Signal Plans.
2. For New Type 2D Curb and Type 2DG Curb & Gutter details, see Standard Plan D-05. For New Concrete Sidewalk and Concrete Ramp details, see Standard Plan D-15.
3. For demolition details, see Sht. No. C5.
4. For Typical Curb Ramp details, see Sht. No. C1 & C3.
* 5. Note New Top of Pavement Grades shall match New Bottom of Curb Grades.



SECTION "A"
Scale: N.T.S.



DEMOLITION PLAN

MODIFICATION OF EXISTING CURB RAMP TYPE "C" PLAN
℄ STA. 21+67.37± RT. TO ℄ Sta. 21+74.37± RT.

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

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

CURB RAMP & SIDEWALK PLANS

FORT BARRETTE ROAD OPERATIONAL IMPROVEMENTS
Roosevelt Avenue to Farrington Highway
Project No. 901A-01-19

Scale: 1" = 5' Date: January, 2020

SHEET No. C10 OF 10 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	901A-01-19	2020	34	167

R/W ℄ Sta. 10+00

Preserve and reinstall existing C℄C monument after resurfacing. For details, see Standard Plan D-08.

ENTERPRISE ST. ℄ CURVE DATA
△ = 21°34'00"
△/2 = 10°47'00"
R = 762.00'
T = 145.13'
C = 285.13'
Lc = 286.82'

Roosevelt Avenue ℄ Sta. -0+3.20 = Fort Barrette Road R/W ℄ Sta. 9+53.74

Enterprise Street ℄ Sta. 0+00 = Roosevelt Avenue ℄ Sta. 0+00

TRUE NORTH
SCALE : 1" = 40'

℄ Sta. 0+12.9± o/s 23.8' Lt. to ℄ Sta. 0+21.1± o/s 6.2' Lt.

Demolish, remove, and dispose portion of existing concrete sidewalk and construct New Curb Ramp Type "A". Demolition, removal, and disposal of existing concrete sidewalk shall be considered incidental to New Curb Ramp Type "A". For details, see Sht. No. C5 ⅋ C6. Install Detectable Warning Mat on Curb Ramp per details on Sht. No. C4.

* S.B. ℄ Sta. 1+98.98± Lt. to ℄ Sta. 20+39.50± Lt.

Realign existing edge of pavement and widen existing shoulder. For details, see Alignment Plans and Typical Sections.

S.B. ℄ Sta. 3+20±
N.B. ℄ Sta. 3+20±

Install New EVC Station. For details, see EVC Traffic Counting System plans.

← To Kalaeloa

P.T. ℄ Sta. 4+00.28

BEGIN PROJECT
Enterprise Street
℄ Sta. 1+22.31

P.C. ℄ Sta. 1+13.46

Future HDOT R/W

hcda r/w

ENTERPRISE STREET

ROOSEVELT AVENUE

Limits of Resurfacing

Warning Light

318° 30' 00.0" 0+00

10+00

1+00

-1+00

138° 30' 00.0"

300.00

138° 30' 00" → 795.68

WMH(2)

HEMH

HTMH

TVMH

TSP

TSB

*EP

*ES

New Shared Use Path. See Shared Use Path Plans.

Southbound ℄

5+00

146° 00' 00.0"

FORT BARRETTE ROAD

M.L. ℄ STA. 6+00

conc. swale

Northbound ℄

To Makakilo →

Gate Post

Roosevelt Avenue ℄ Sta. 1+49.1± o/s 15.1' Lt. to R/W ℄ Sta. 9+98.4± o/s 39.4' Rt.

Remove and dispose of existing chain rail and posts.

R/W ℄ Sta. 10+26.52 (BK.) = S.B. ℄ Sta. 0+00 o/s 24.0' Lt. (AH.)
N.B. ℄ Sta. 0+00 o/s 24.0' Rt. (AH.)

EQ

S.B. ℄ CURVE DATA
△ = 7°30'00.1"
△/2 = 3°45'00.03"
R = 1,000.00'
T = 65.54'
C = 130.81'
Lc = 130.90'

S.B. P.C. ℄ Sta. 3+00.00

S.B. P.T. ℄ Sta. 4+30.90

Reconstruct existing railroad crossing. See Railroad Plans.

Roosevelt Avenue ℄ Sta. 0+10.1± Lt. to Roosevelt Avenue ℄ Sta. 0+98.1± Lt.

Demolish, remove, and dispose existing concrete sidewalk, curb, and curb ramps. Construct New Concrete Sidewalk, New Type 2D Curb, and New Curb Ramps Type "A" and Type "D". Demolition, removal, and disposal of existing concrete sidewalk, curbs, and curb ramps shall be considered incidental to New Concrete Sidewalk, New Type 2D Curb, and New Curb Ramps Type "A" and Type "D", respectively. For details, see Sht. No. C5, C6, and Standard Plan D-05 and D-15. Install Detectable Warning Mats on each Curb Ramp per details on Sht. No. C4.

R/W ℄ Sta. 9+76.09± to N.B. ℄ Sta. 1+26.10± Lt.

Demolish existing curbing and concrete median. Install New Type 2D Curbing. Demolition and disposal of existing curbing and concrete median shall be considered incidental to New Type 2D Curbing. For details, see Sheet No. C7 and Standard Plan D-05.

N.B. ℄ Sta. 1+19.6± o/s 11.4' Lt. to N.B. ℄ Sta. 1+71.8± o/s 11.6' Lt.
N.B. ℄ Sta. 1+19.6± o/s 24.4' Lt. to N.B. ℄ Sta. 1+70.3± o/s 24.6' Lt.

Install New Longitudinal Channelizing Curb System. See Sht. No. T4 ⅋ T11.

△6 TRAVERSE INFO:
GPS CALIBRATION POINT
TRAV GATE 3/4" PIPE W/ CAP
-18653.0330
1498.2921
ELEV. = 52.16

Notes:
1. For relocation of traffic signs, see Signing ⅋ Pavement Marking Plans.
2. For Traffic Signal related work, see Traffic Signal Plans.
3. For New Railroad Gate Posts, Warning Light, and Crossing Plans, see Railroad Plans.

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

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

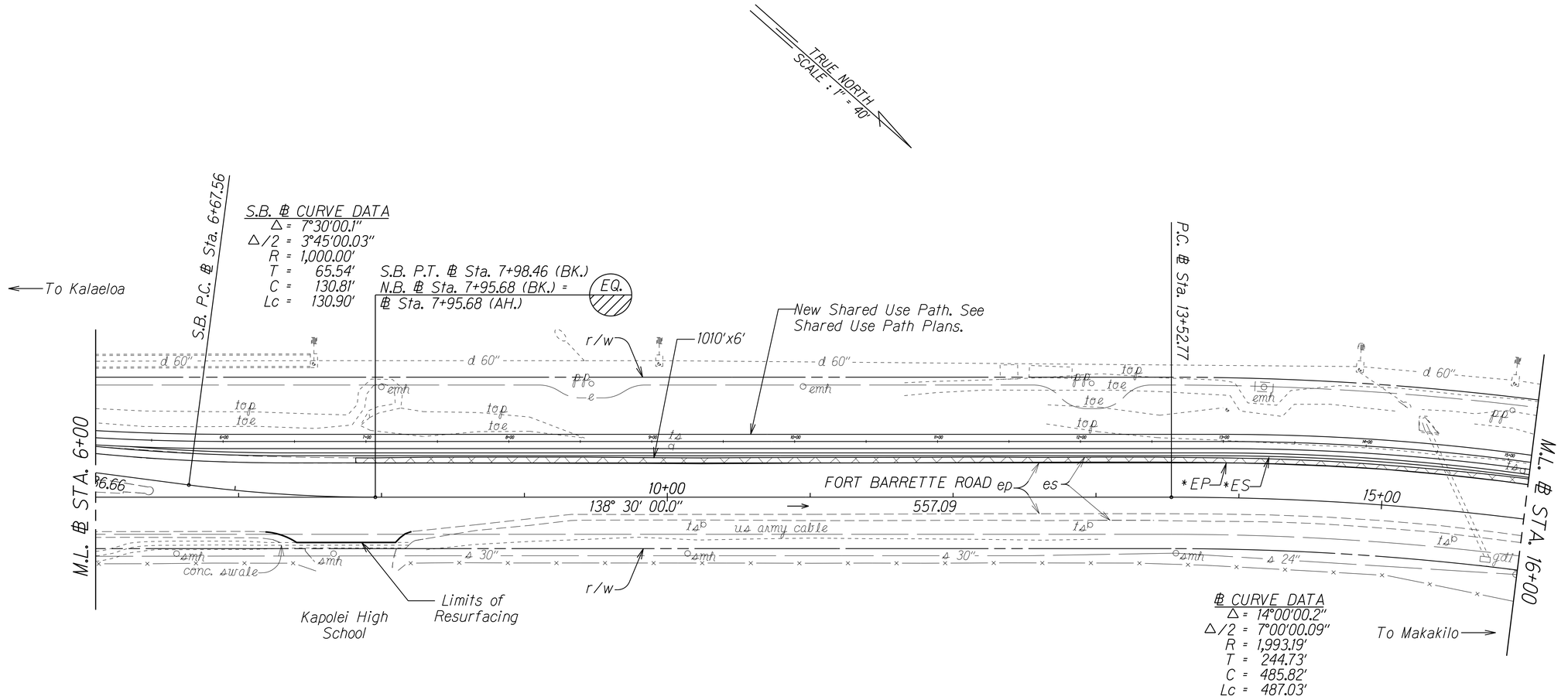
ROADWAY PLANS

FORT BARRETTE ROAD OPERATIONAL IMPROVEMENTS
Roosevelt Avenue to Farrington Highway
Project No. 901A-01-19

Scale: 1" = 40.0' Date: January, 2020

SHEET No. 1 OF 6 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	901A-01-19	2020	35	167



Notes:

1. For relocation of traffic signs, see Signing & Pavement Marking Plans.
*2. For new alignment of New EP, ES, and Paved Area Beyond Shoulder, see Alignment Plans.

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

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

ROADWAY PLANS

FORT BARRETTE ROAD OPERATIONAL IMPROVEMENTS
Roosevelt Avenue to Farrington Highway
Project No. 901A-01-19

Scale: 1" = 40.0' Date: January, 2020

SHEET No. 2 OF 6 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	901A-01-19	2020	36	167

TRUE NORTH
SCALE : 1" = 40'

Fort Barrette Road ℄ Sta. 20+41.79± Lt. to
Kapolei Parkway ℄ Sta. 1+27.82± Lt.

Demolish, remove, and dispose existing concrete walkway. Construct New Concrete Sidewalk and New C&C Integral Curb and Gutter. Construct New Curb Ramp Type "B" Modified. For details, see Sht. No. C8. Install Detectable Warning Mat on Curb Ramp per details on Sht. No. C4.

℄ Sta. 20+68± Lt.
℄ Sta. 21+73± Lt.

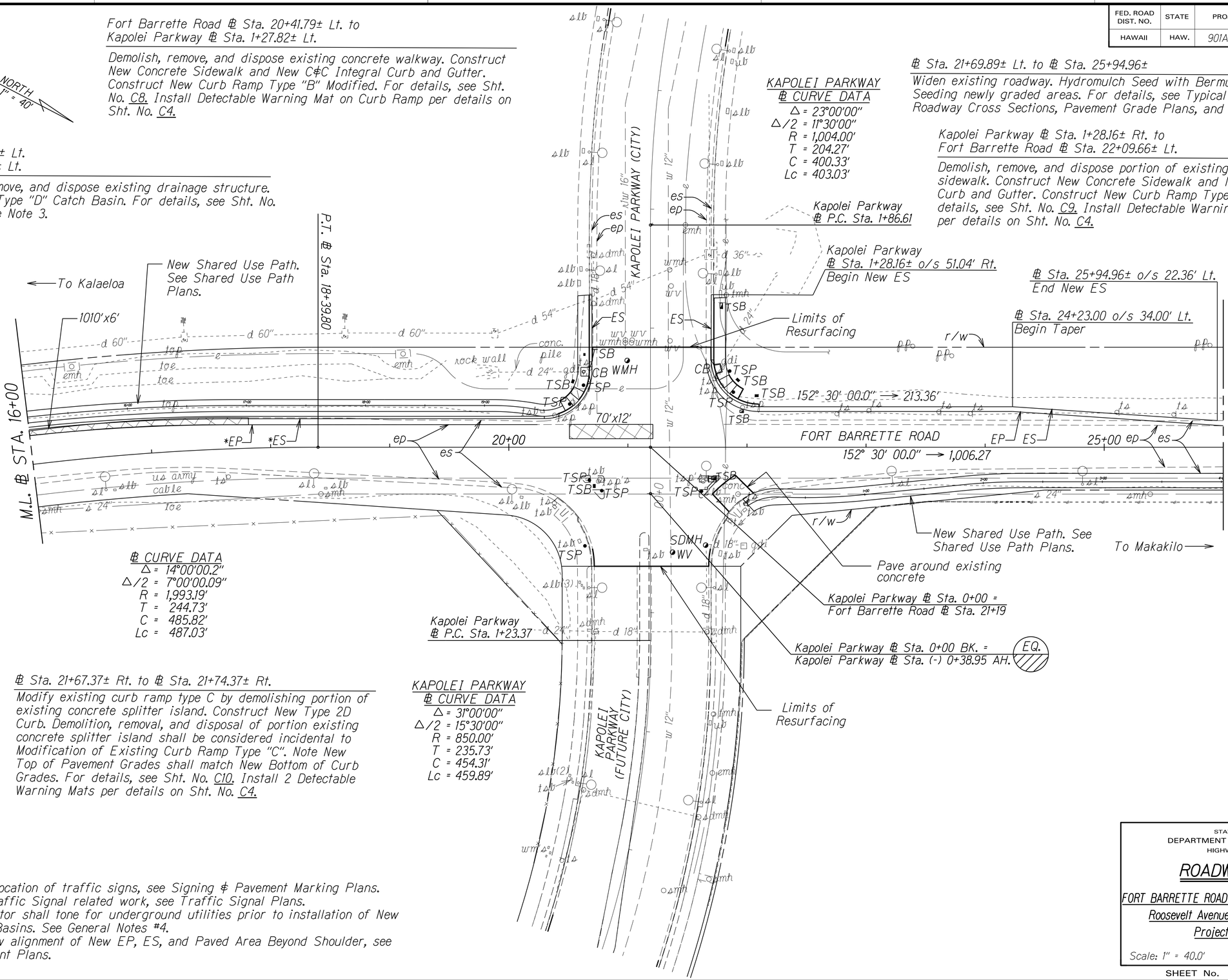
Demolish, remove, and dispose existing drainage structure. Install New Type "D" Catch Basin. For details, see Sht. No. C8 & C9. See Note 3.

℄ Sta. 21+69.89± Lt. to ℄ Sta. 25+94.96±

Widen existing roadway. Hydromulch Seed with Bermuda Seeding newly graded areas. For details, see Typical Sections, Roadway Cross Sections, Pavement Grade Plans, and Sht. No. C9.

Kapolei Parkway ℄ Sta. 1+28.16± Rt. to
Fort Barrette Road ℄ Sta. 22+09.66± Lt.

Demolish, remove, and dispose portion of existing curb and concrete sidewalk. Construct New Concrete Sidewalk and New C&C Integral Curb and Gutter. Construct New Curb Ramp Type "B" Modified. For details, see Sht. No. C9. Install Detectable Warning Mat on Curb Ramp per details on Sht. No. C4.



Notes:

1. For relocation of traffic signs, see Signing & Pavement Marking Plans.
2. For Traffic Signal related work, see Traffic Signal Plans.
3. Contractor shall tone for underground utilities prior to installation of New Catch Basins. See General Notes #4.
* 4. For new alignment of New EP, ES, and Paved Area Beyond Shoulder, see Alignment Plans.

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

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

ROADWAY PLANS

FORT BARRETTE ROAD OPERATIONAL IMPROVEMENTS
Roosevelt Avenue to Farrington Highway
Project No. 901A-01-19

Scale: 1" = 40.0' Date: January, 2020

SHEET No. 3 OF 6 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	901A-01-19	2020	37	167

TRUE NORTH
SCALE : 1" = 40'

℄ Sta. 26+50.0
End Resurfacing.
Begin Resurfacing Exception.

To Kalaeloa

M.L. ℄ STA. 26+00

r/w

conc. barriers

conc.

ep

es

30+00

FORT BARRETTE ROAD

M.L. ℄ STA. 35+00

P.C. ℄ Sta. 28+46.07

us army cable

cane haul road (waimanalo rd.)

us navy cable

New Shared Use Path. See Shared Use Path Plans.

℄ CURVE DATA
△ = 38°00'59.9"
△/2 = 19°00'29.95"
R = 1,226.00'
T = 422.34'
C = 798.63'
Lc = 813.47'

℄ Sta. 29+91± o/s 18.4' Lt. to ℄ Sta. 31+03± o/s 24.2' Lt.
℄ Sta. 29+59± o/s 21.8' Rt. to ℄ Sta. 30+91± o/s 17.6' Rt.

Remove and dispose 231± L.F. existing guardrail. Removal and disposal shall be considered incidental to guardrail installation.

△ TRAVERSE INFO:
GPS CALIBRATION POINT
TRAV KAP 3/4" PIPE W/ CAP
-14734.9273
-67.1160
ELEV. = 94.30

TRUE NORTH
SCALE : 1" = 40'

℄ CURVE DATA
△ = 59°50'00.7"
△/2 = 29°55'00.37"
R = 876.00'
T = 504.06'
C = 873.79'
Lc = 914.80'

KAMAAHA AVE. (CITY)

KAMAAHA AVE. (FUTURE CITY)

FORT BARRETTE ROAD

190° 31' 00.0"

40+00

640.25

ep

es

45+00

EP

M.L. ℄ STA. 46+00

M.L. ℄ STA. 35+00

P.T. ℄ Sta. 36+59.54

P.C. ℄ Sta. 42+99.79

New Shared Use Path. See Shared Use Path Plans.

New Shared Use Path. See Shared Use Path Plans.

℄ Sta. 45+30.0
End Resurfacing Exception.
Begin Resurfacing.

To Makakilo

℄ Sta. 40+25.3± o/s 24.7' Rt. to ℄ Sta. 53+52.6± o/s 29.0' Rt.

Install 1,350± L.F. New MGS Guardrail including MGS End Treatment each end. See General Notes #38. Probing for utilities shall be considered incidental to Guardrail items.

Resurfacing Limits (hatched for clarity)

Notes:

1. For relocation of traffic signs, see Signing ⊕ Pavement Marking Plans.
2. For Traffic Signal related work, see Traffic Signal Plans.

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

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

ROADWAY PLANS

FORT BARRETTE ROAD OPERATIONAL IMPROVEMENTS
Roosevelt Avenue to Farrington Highway
Project No. 901A-01-19

Scale: 1" = 40.0' Date: January, 2020

SHEET No. 4 OF 6 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	901A-01-19	2020	38	167

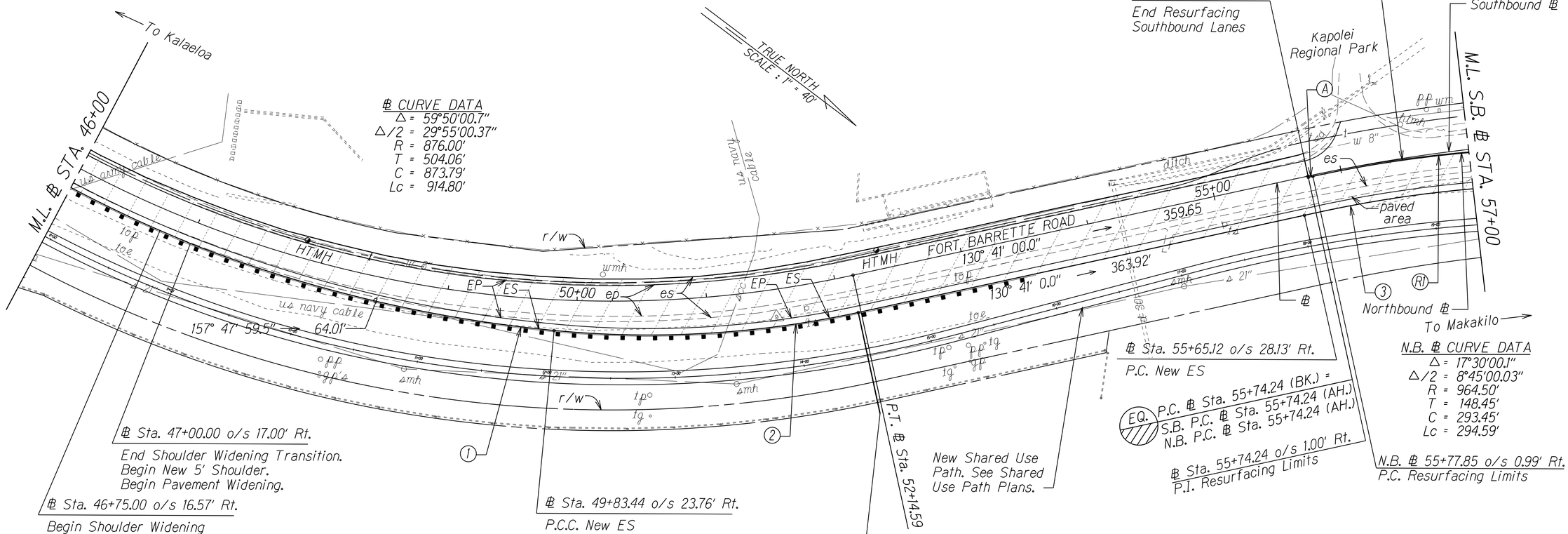
CURVE DATA FOR NEW ES			
	①	②	③
△	15°53'18.8"	17°46'6.9"	15°05'22.5"
△/2	7°56'39.4"	8°53'03.5"	7°32'41.3"
R	1,045.00'	762.00'	945.00'
T	145.83'	119.11'	125.16'
C	288.86'	235.37'	248.16'
Lc	289.79'	236.31'	248.88'
S.E.	0.08 ft/ft	0.08 ft/ft	0.08 ft/ft

CURVE DATA FOR RESURFACING LIMITS	
	(RI)
△	12° 23' 27.00"
△/2	6° 11' 43.50"
R	961.00'
T	104.32'
C	207.42'
Lc	207.83'
Azimuth (A)	130° 41' 00.00" → 3.605'

℄ CURVE DATA
△ = 59°50'00.7"
△/2 = 29°55'00.37"
R = 876.00'
T = 504.06'
C = 873.79'
Lc = 914.80'

S.B. ℄ CURVE DATA
△ = 13°23'22.0"
△/2 = 6°41'41.0"
R = 1,264.71'
T = 148.45'
C = 294.88'
Lc = 295.55'

N.B. ℄ CURVE DATA
△ = 17°30'00.1"
△/2 = 8°45'00.03"
R = 964.50'
T = 148.45'
C = 293.45'
Lc = 294.59'



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

△ TRAVERSE INFO:
GPS CALIBRATION POINT
TRAV FORT B-1 3/4" PIPE W/ CAP
-14196.4538
-328.3468
ELEV. = 98.94

Notes:
1. For relocation of traffic signs, see Signing and Pavement Marking Plans.
2. For new pavement grades, see Profile, Superelevation Plans and Cross Sections.

Resurfacing Limits (hatched for clarity)

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

ROADWAY PLANS

FORT BARRETTE ROAD OPERATIONAL IMPROVEMENTS
Roosevelt Avenue to Farrington Highway
Project No. 901A-01-19

Scale: 1" = 40.0' Date: January, 2020

SHEET No. 5 OF 6 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	901A-01-19	2020	39	167

△ TRAVERSE INFO:
GPS CALIBRATION POINT
BRASS DISK "FORT B"
-13210.9293
-1133.6612
ELEV. = 114.95

TRUE NORTH
SCALE : 1" = 40'

END PROJECT
Fort Barette Road N.B. ℄ Sta. 63+39.13

S.B. ℄ CURVE DATA
△ = 13°23'22.0"
△/2 = 6°41'41.0"
R = 1,264.71'
T = 148.45'
C = 294.88'
Lc = 295.55'

← To Kalaeloa

N.B. ℄ 57+85.81 o/s 0.28' Rt.
P.C.C. Resurfacing Limits

N.B. ℄ 58+32.89 o/s 0.09' Rt.
P.T. Resurfacing Limits

S.B. P.T. ℄ Sta. 58+69.79

Resurfacing Limits to Match Previous Resurfacing Limits. Limits follow the existing ℄/median striping. See Table for Curve Data. See Detail D on Sht. No. A5.

EQ. S.B. ℄ Sta. 64+55.63 BK. =
Makakilo Drive ℄ Sta. (-) 0+36.21 AH.
o/s 12.49' Rt.

145° 46' 22.5" → 282.04'

Southbound ℄

FORT BARRETTE ROAD

60+00
60+00
144° 04' 22.0"
585.88

0+00

M.L. S.B. ℄ STA. 57+00

Rt
R2
ep
es
EP
ES
paved area
3
B
r/w
TSB-SLB

Makakilo Drive
P.C. ℄ Sta. 2+20.94

FARRINGTON HIGHWAY

40+00

Makakilo Drive ℄

To Makakilo →

N.B. ℄ CURVE DATA
△ = 17°30'00.1"
△/2 = 8°45'00.03"
R = 964.50'
T = 148.45'
C = 293.45'
Lc = 294.59'

N.B. ℄ Sta. 58+32.92 o/s 28.09' Rt.
P.T. New Shoulder

N.B. P.R.C. ℄ Sta. 58+68.83

N.B. ℄ CURVE DATA
△ = 4°06'38.3"
△/2 = 2°03'19.16"
R = 1,694.35'
T = 60.81'
C = 121.53'
Lc = 121.56'

New Shared Use Path. See Shared Use Path Plans.

N.B. P.T. ℄ Sta. 59+90.35

N.B. ℄ Sta. 61+14.96 o/s 2.19' Rt.
N.B. ℄ Sta. 61+13.97 o/s 35.12' Rt.
End Resurfacing Northbound Lanes

Limits of Resurfacing

℄

EQ. N.B. ℄ Sta. 64+55.46 (BK.) =
Makakilo Drive ℄ Sta. (-) 0+36.21 (AH.)
o/s 2.52' Lt.

N.B. ℄ Sta. 59+00± Rt. to ℄ Sta. 60+25± Rt.

Remove and dispose of existing concrete irrigation pipes. See Roadway Cross Sections for new grading.

N.B. ℄ Sta. 59+03.00± Rt. to ℄ Sta. 59+24.00± Rt.

Install Grouted Rubble Paving over existing headwall structure. For details, see Sht. No. A6.

N.B. ℄ Sta. 60+19.07 o/s 27.35' Rt.

End Pavement Widening.
End New 5' Shoulder.

CURVE DATA FOR NEW ES	
	(3)
△	15°05'22.5"
△/2	7°32'41.3"
R	945.00'
T	125.16'
C	248.16'
Lc	248.88'
S.E.	0.08 ft/ft
Azimuth (B)	145° 46' 22.5" → 187.04'

CURVE DATA FOR RESURFACING LIMITS		
	(R1)	(R2)
△	12° 23' 27.00"	2° 41' 55.50"
△/2	6° 11' 43.50"	1° 20' 57.75"
R	961.00'	999.00'
T	104.32'	23.53'
C	207.42'	47.05'
Lc	207.83'	47.06'

N.B. ℄ Sta. 62+86.90± Rt. to N.B. ℄ Sta. 63+38.77± Rt.

Demolish, remove, and dispose existing curb and gutter. Construct New Concrete Sidewalk, Type 2DG Curb ⊄ Gutter, and Concrete Ramp. Demolition, removal, and disposal of existing curb and gutter shall be considered incidental to New Type 2DG Curb ⊄ Gutter. For details, see Sheet No. C5, C10, and Standard Plan D-05 and D-15.

Notes:
1. For relocation of traffic signs, see Signing ⊄ Pavement Marking Plans.
2. For new pavement grades, see Profile, Superelevation Plans and Cross Sections.

Resurfacing Limits (hatched for clarity)

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

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

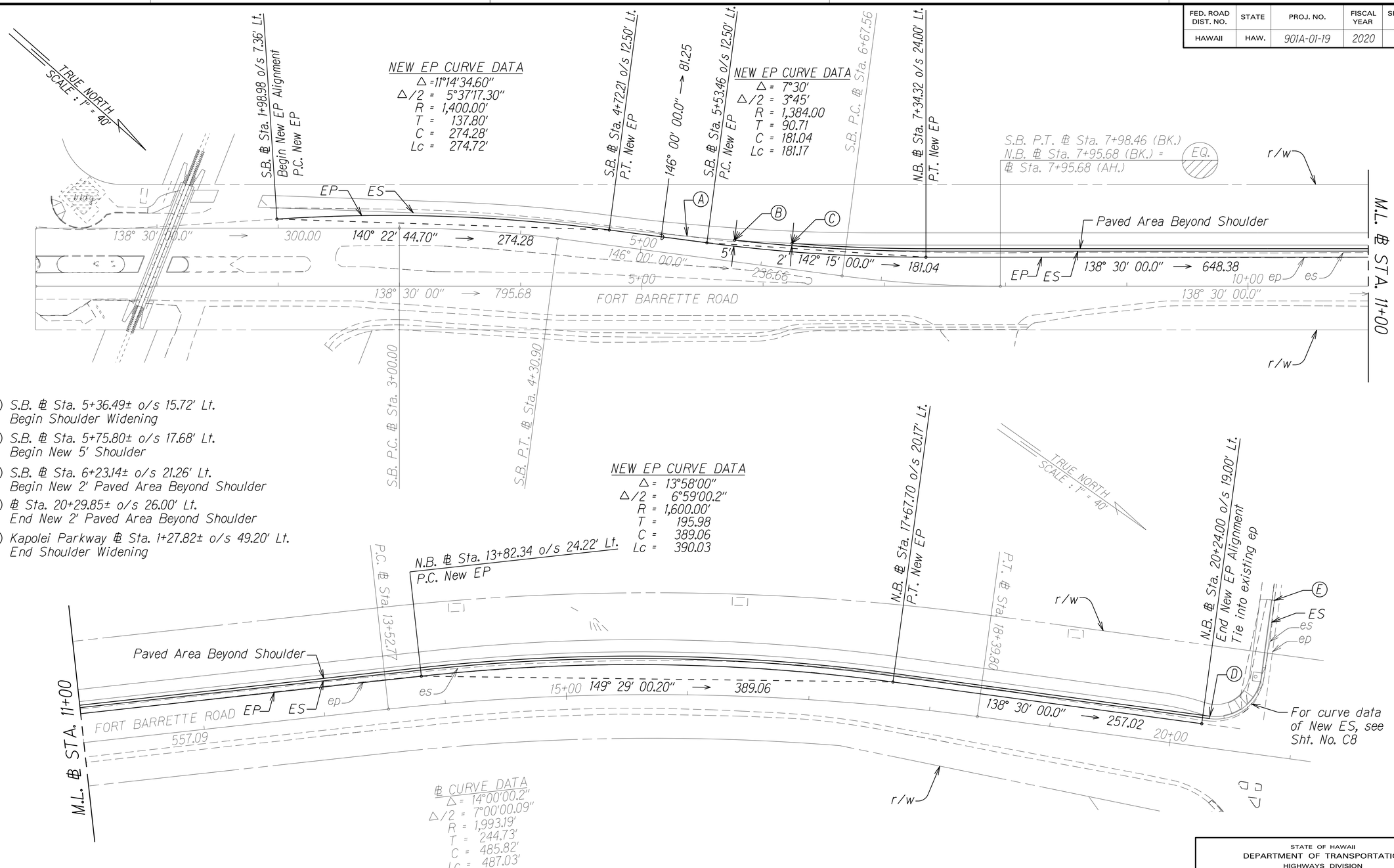
ROADWAY PLANS

FORT BARRETTE ROAD OPERATIONAL IMPROVEMENTS
Roosevelt Avenue to Farrington Highway
Project No. 901A-01-19

Scale: 1" = 40.0' Date: January, 2020

SHEET No. 6 OF 6 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	901A-01-19	2020	40	167



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

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

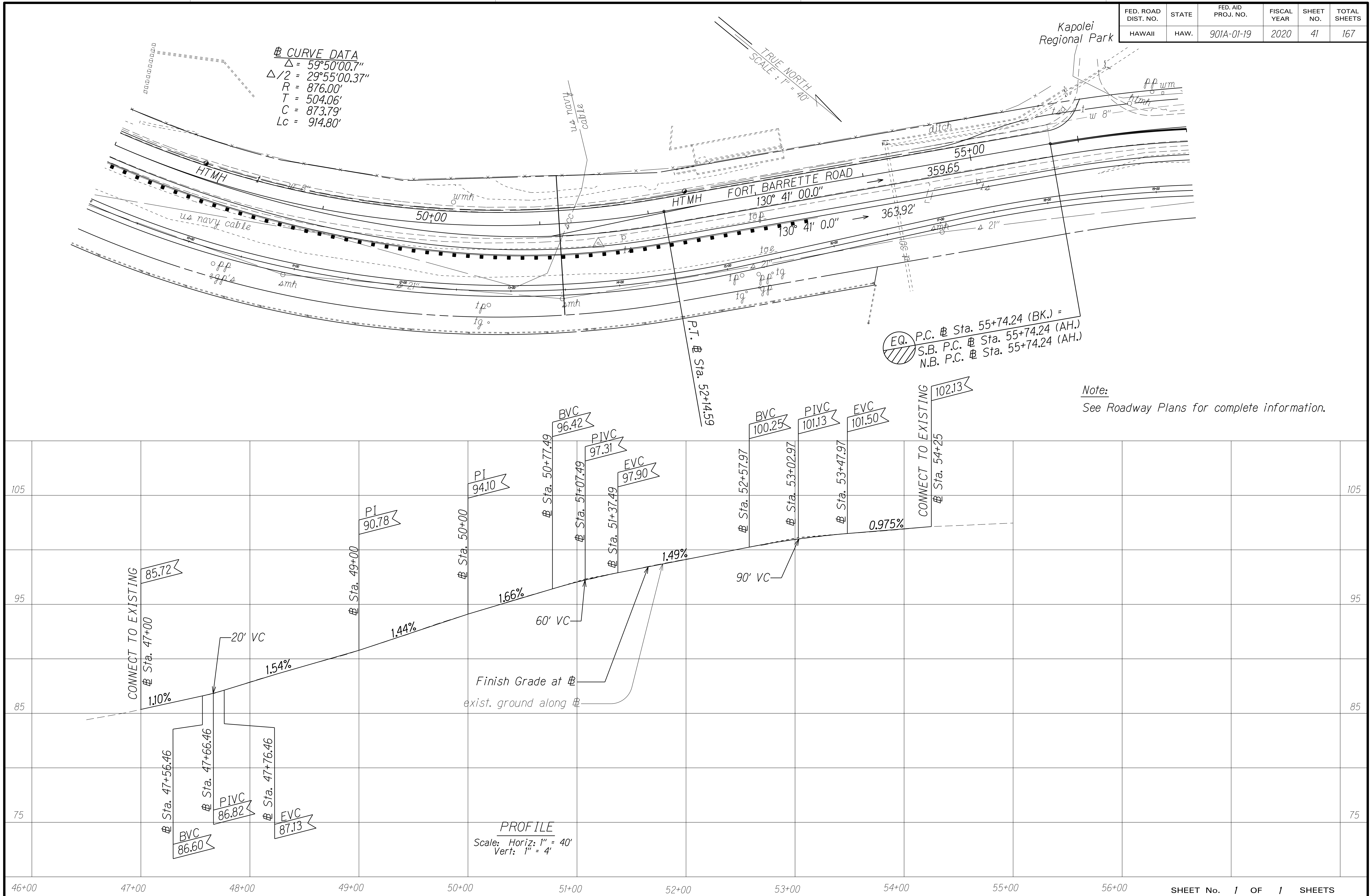
ALIGNMENT PLANS
NEW EDGE OF PAVEMENT

FORT BARRETTE ROAD OPERATIONAL IMPROVEMENTS
Roosevelt Avenue to Farrington Highway
Project No. 901A-01-19

Scale: 1" = 40.0' Date: January, 2020

SHEET No. 1 OF 1 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	901A-01-19	2020	41	167



Note:
See Roadway Plans for complete information.

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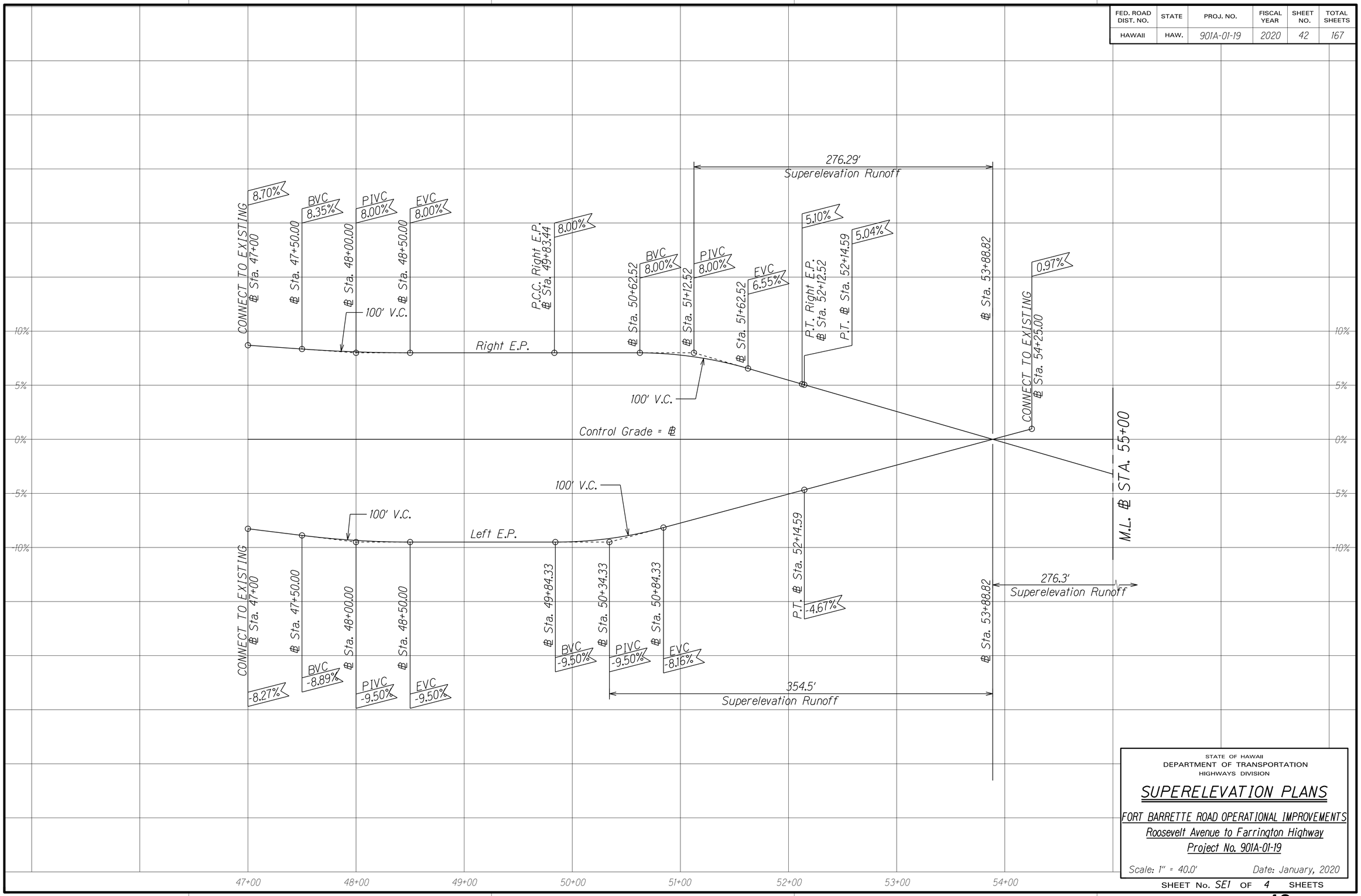
	TRACED BY	
	DESIGNED BY	
	QUANTITIES BY	
NOTE BOOK	CHECKED BY	
No.		

SHEET No. 1 OF 1 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	901A-01-19	2020	42	167



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	DESIGNED BY	
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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

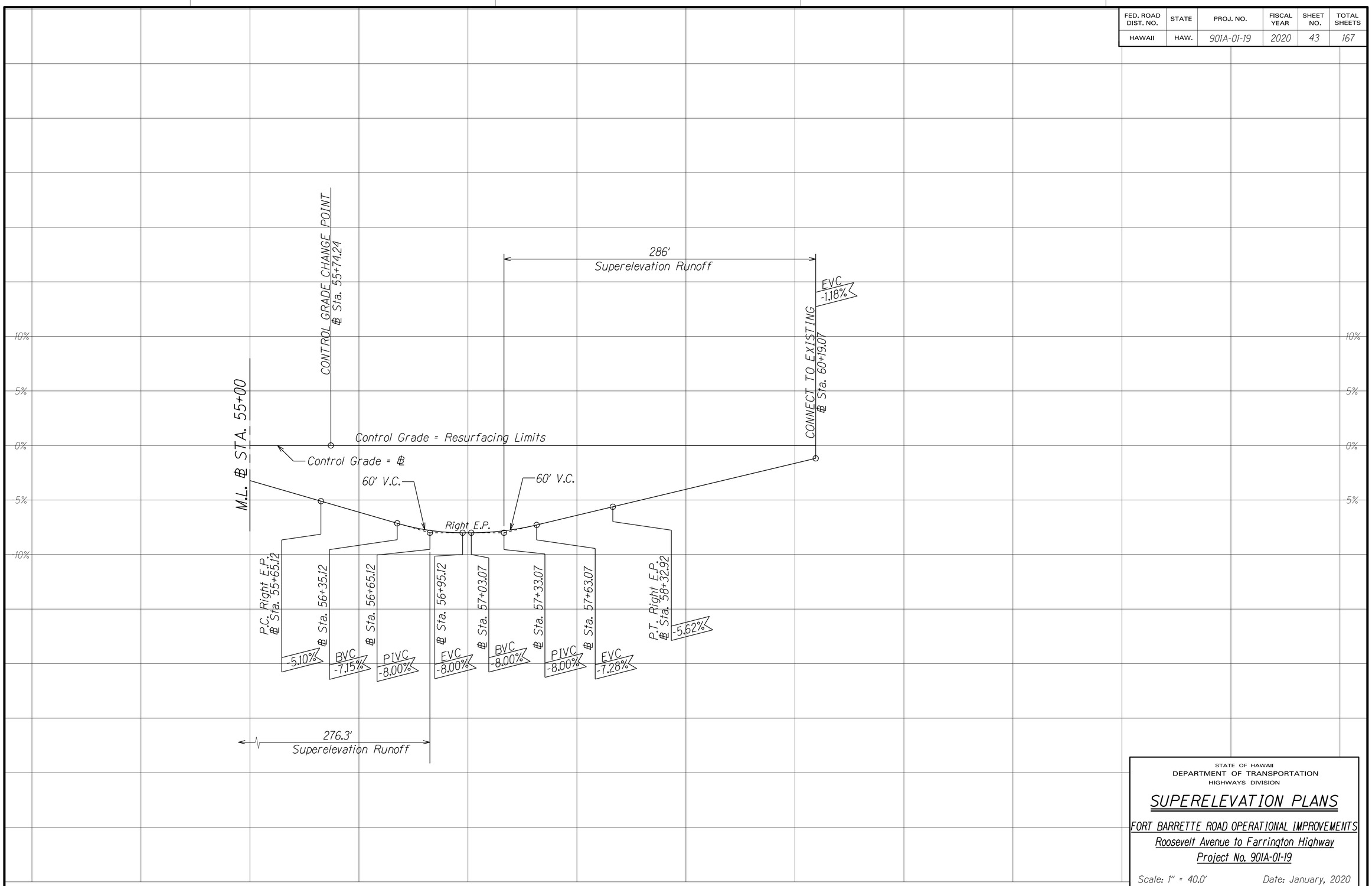
SUPERELEVATION PLANS

FORT BARRETTE ROAD OPERATIONAL IMPROVEMENTS
Roosevelt Avenue to Farrington Highway
Project No. 901A-01-19

Scale: 1" = 40.0' Date: January, 2020

SHEET No. SE1 OF 4 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	901A-01-19	2020	43	167



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	DESIGNED BY	
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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

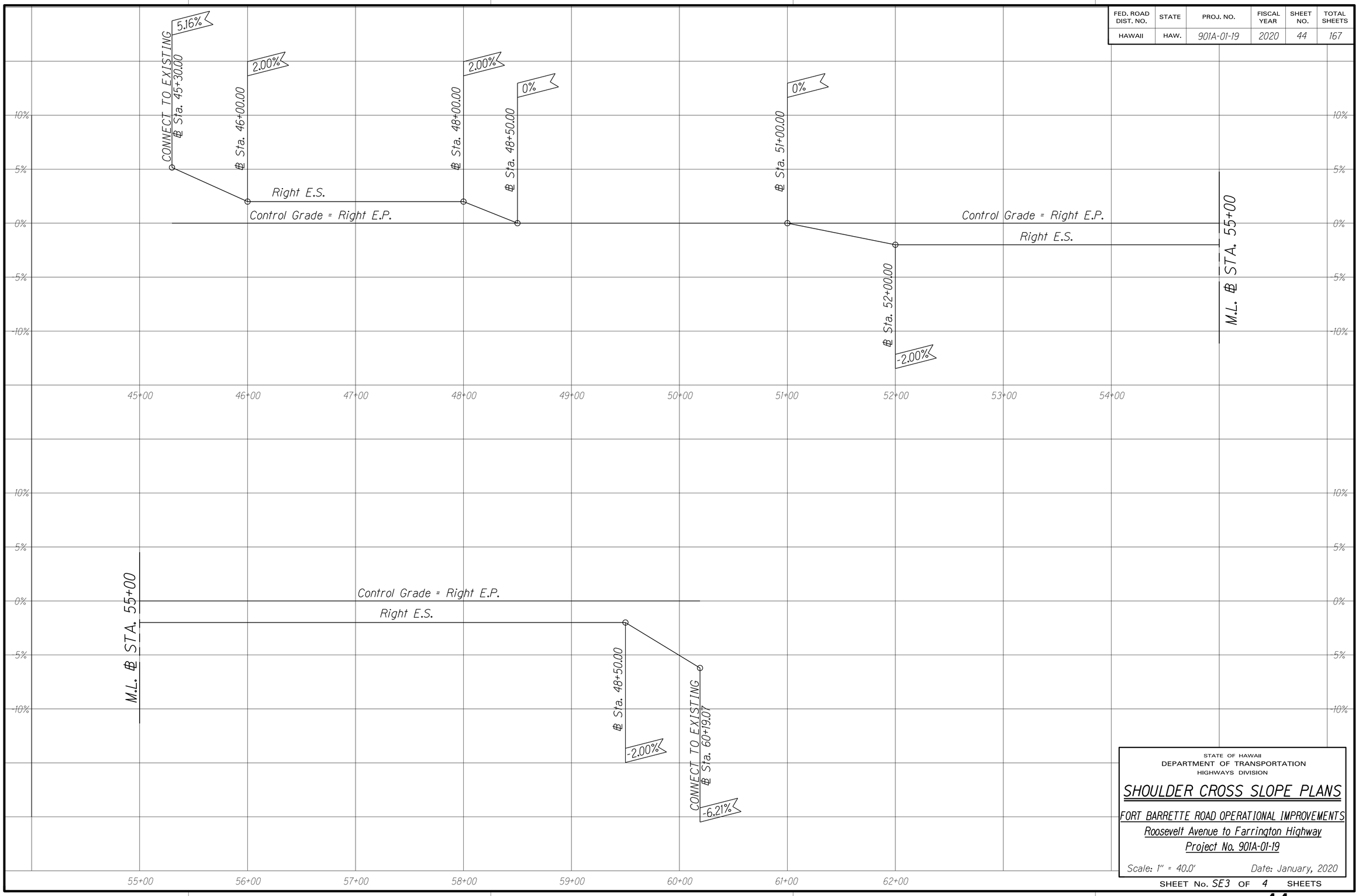
SUPERELEVATION PLANS

FORT BARRETTE ROAD OPERATIONAL IMPROVEMENTS
Roosevelt Avenue to Farrington Highway
Project No. 901A-01-19

Scale: 1" = 40.0' Date: January, 2020

SHEET No. SE2 OF 4 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	901A-01-19	2020	44	167



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No.	CHECKED BY	

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

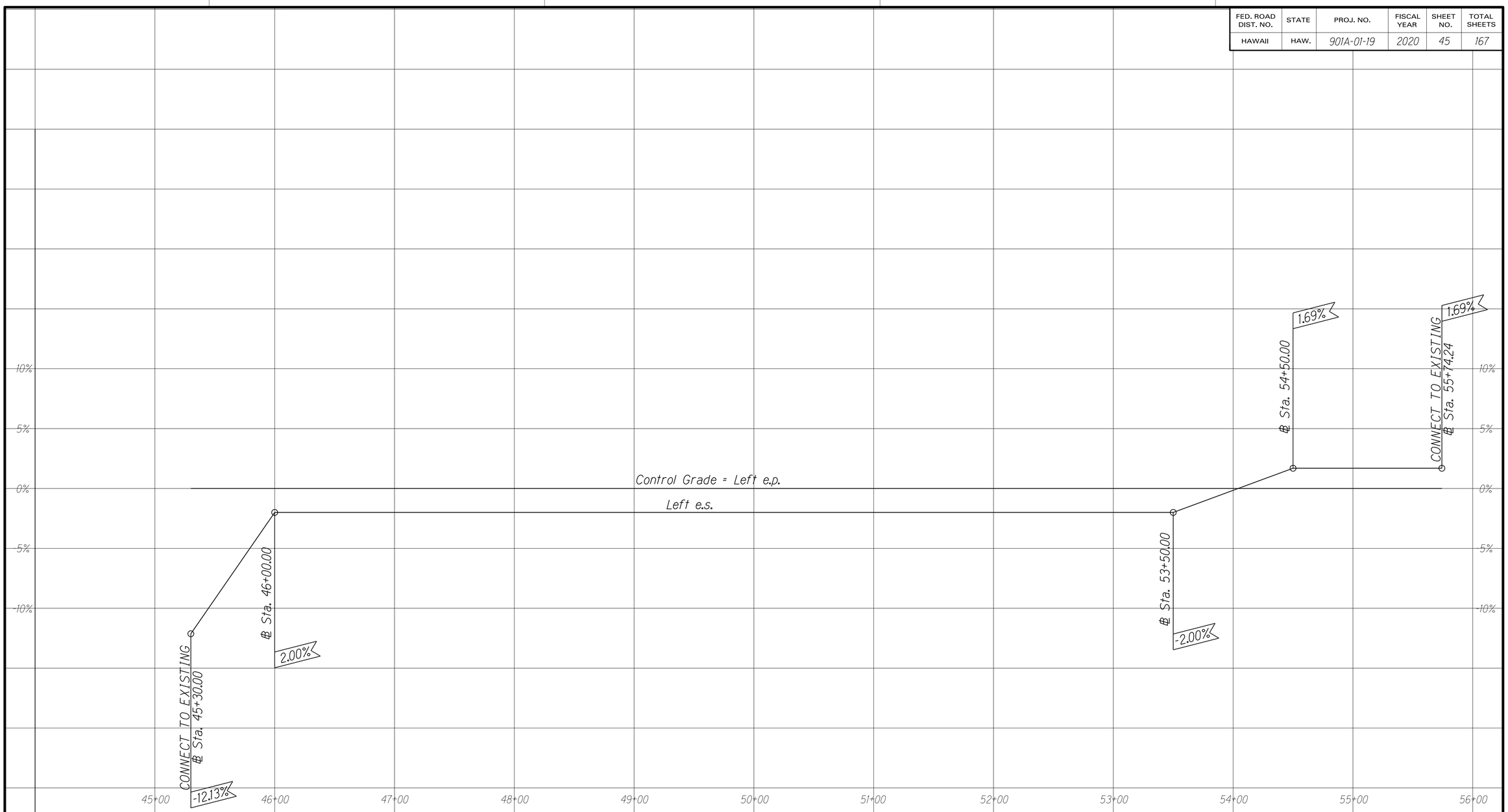
SHOULDER CROSS SLOPE PLANS

FORT BARRETTE ROAD OPERATIONAL IMPROVEMENTS
Roosevelt Avenue to Farrington Highway
Project No. 901A-01-19

Scale: 1" = 40.0' Date: January, 2020

SHEET No. SE3 OF 4 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	901A-01-19	2020	45	167



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	DESIGNED BY	
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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

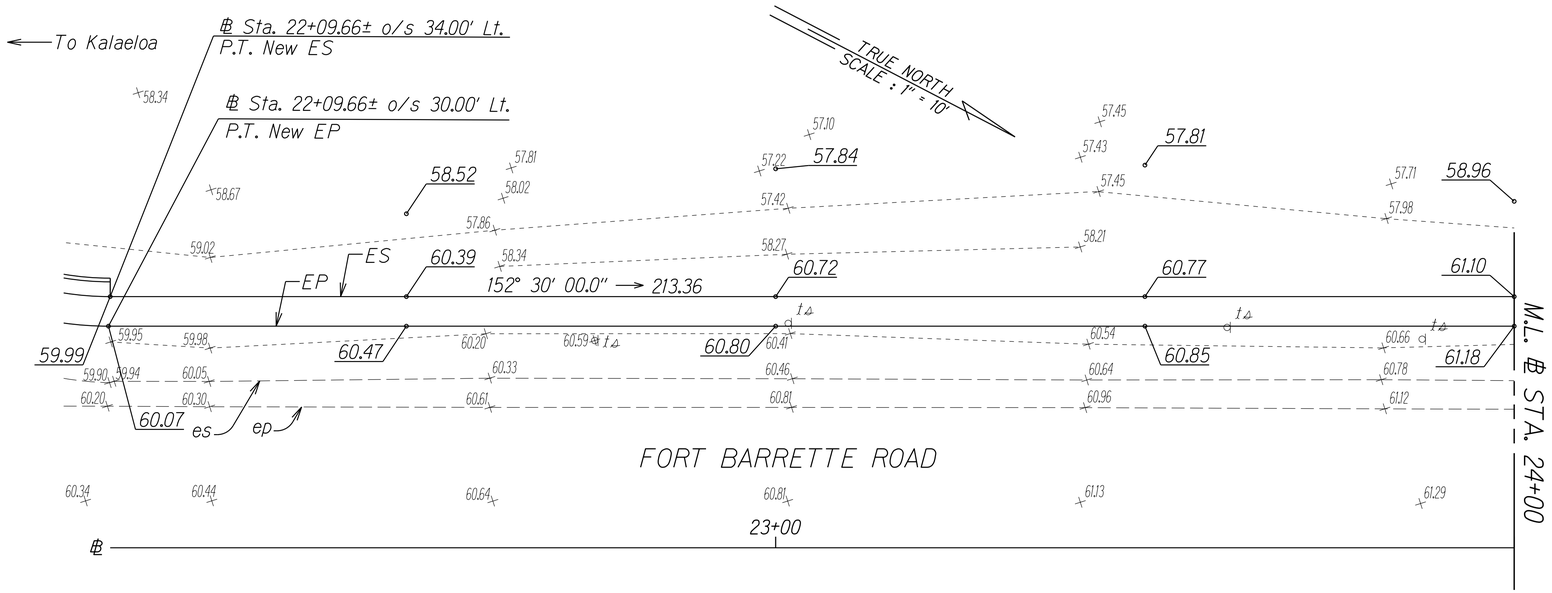
SHOULDER CROSS SLOPE PLANS

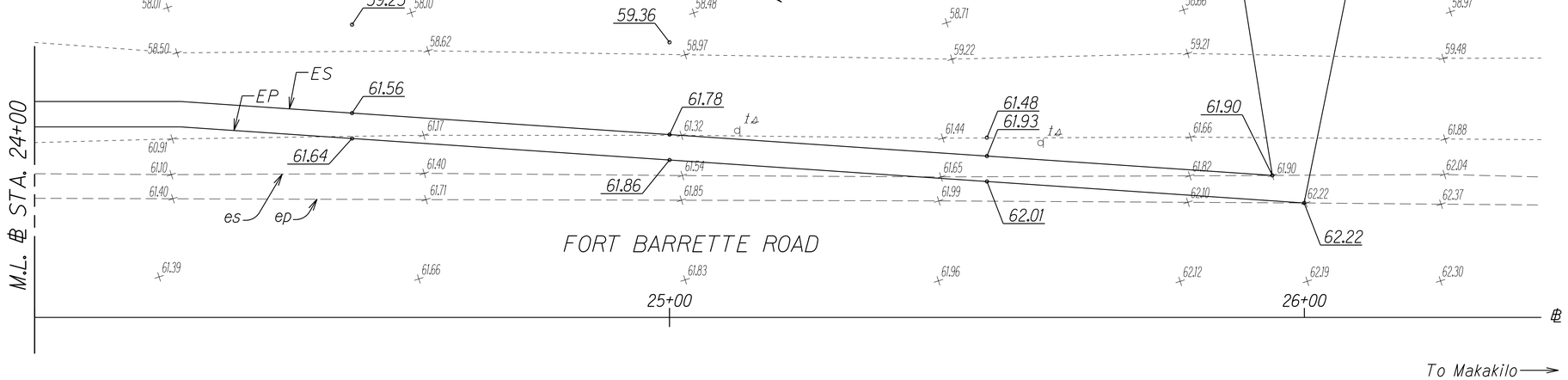
FORT BARRETTE ROAD OPERATIONAL IMPROVEMENTS
Roosevelt Avenue to Farrington Highway
Project No. 901A-01-19

Scale: 1" = 40.0' Date: January, 2020

SHEET No. SE4 OF 4 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	901A-01-19	2020	46	167





Notes:

1. See Roadway Cross Sections.
2. See Sht. No. C9 for Right Turn Curve details.

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RIGHT TURN LANE PLAN
℄ Sta. 22+09.66± LT. TO ℄ Sta. 25+99.96± LT.

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

PAVEMENT GRADE PLANS

FORT BARRETTE ROAD OPERATIONAL IMPROVEMENTS
Roosevelt Avenue to Farrington Highway
Project No. 901A-01-19

Scale: 1" = 10.0' Date: January, 2020

SHEET No. 1 OF 1 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	901A-01-19	2020	47	167

ELECTRONIC VEHICLE COUNTING (EVC) SYSTEM NOTES

1. The location of new sensor loops and piezo sensors shall be staked out in the field by the Contractor and approved by the Engineer prior to installation.
2. The Contractor shall inform the Engineer at least three days prior to saw-cutting pavement and installing sensor loops and piezo sensors.
3. Pull in in-bound lanes sensor loop cable and piezo sensor lead cables into conduit, where indicated. Cables shall be tested for acceptance before and after installation into conduit.
4. Piezo lead cables shall be continuous with no splices.
5. The Contractor shall restore all affected areas to their original condition. This item of work shall not be paid for separately, but shall be considered incidental to work of other paid items.
6. The Contractor shall verify the location of the existing utilities and underground structures whether or not it is shown on the plans.
7. The Contractor shall assume that existing underground utilities not shown on the plans may exist. The Contractor shall be responsible for contacting the different utility companies for information and toning.
8. The Contractor shall be held liable for any damages incurred to the existing utilities and underground structures as a result of his operations. All damaged portions shall be replaced in accordance with the standards and specifications of the affected utility company at no cost to the State.
9. Changes to the contract plans and specifications will not be permitted, unless approved by the Engineer in writing.
10. All cables are to be terminated within the EVC cabinet and shall have a minimum 12" additional slack.
11. Highway crossing conduit shall be provided with 36" cover.
12. Saw cuts shall be made by wet cutting only.
13. Clean away collected dust, dirt, and refuse after saw cutting is done. The saw cuts shall be cleared by water applied by pressure washer. Residual water within the saw cuys shall be vacuumed by use of a wet/dry vacuum. The saw cuts shall then be dried by air compressor.
14. After slots are dried, any remaining debris stuck within the slot shall be removed. The saw cuts must be completely clean and dry before inserting the sensors and filling the voids with Epoxy Loop Sealant (for sensor loops) or PU200 Piezo Installation Resin (for piezo sensors).
15. The collected slurry shall be disposed of appropriately (i.e., either, placed in a Filter Fabric Lined Filtration Box or in a Filter Fabric Lined Dug Up Retention/Percolation Basin, and after Filtration/Percolation, the Filter Fabric and the retained sediments, disposed of appropriately).
16. Poles for solar panel assemblies and excavation warning signs shall be no more than 20 feet from EVC cabinets.

SENSOR LOOP LAYOUT NOTES

1. Detector loop shall consist of four turns of 1C #14 cable meeting IMSA Spec 51-3 or equivalent embedded in a 3/8" wide by 4" deep sawcut, except as noted. Detector loop shall be provided a minimum 2" cover.
2. After laying sensor loop in four (4) turns within the 4" deep cut, press 1" long pieces of backer rod in each foot of the loop and the loop lead saw cut, to anchor the wire in the slot before applying the Epoxy Loop Sealant. Backer rod shall be embedded at least 2" below the top of pavement. The backer rod shall be placed into the saw cut with a blunt object, such as a wooden paint stir stick. No sharp objects such as a screw driver shall be used to place the backer rod into the pavement.
3. Sensor loop and lead cable shall be one continuous wire. Lead wires from the same loop shall be twisted in pairs, five twists per foot from the edge of paved shoulder to the pullbox. Do not twist one loop pair with another loop pair.
4. Continuity of sensor loops and lead-in wires shall be tested and warranted for one year from the date of acceptance by the Engineer.
5. Sensor loop lead cables shall be spliced only at the final pullbox to the EVC cabinet. Splice point of cables must be suspended near the top of the pullbox with a j-hook.
6. Splices shall be made by use of a splice kit.
7. All sensor loop lead cables shall be crimped with open end lugs that will fit into the terminal board slots snugly.
8. Stagger sensor loops on roadways with lanes that are less than 12 feet in width.
9. The Contractor shall connect the sensor loop wires on each terminal slot, as shown on plans.
10. The left lane in the direction of traffic flow is designated as lane 1, and the next lane to its right as lane 2 and so on as indicated on plans.
11. All sensor loop lead wires in the EVC cabinet and the pullboxes shall be identified and labeled by direction of traffic flow and lane number as shown on plans.
12. Only one sensor loop shall be placed per saw cut.

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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

EVC TRAFFIC COUNTING SYSTEM NOTES

FORT BARRETTE ROAD OPERATIONAL IMPROVEMENTS
Roosevelt Avenue to Farrington Highway
Project No. 901A-01-19

Scale: 1" = 10.0' Date: January, 2020

SHEET No. 1 OF 5 SHEETS

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HAWAII	HAW.	901A-01-19	2020	48	167

BOUNDARY LABEL LEGEND

ep = Edge of pavement/travelway
es = Edge of shoulder
esp = Edge of shared use path
r/w = Right of Way

LOOP LABEL LEGEND

N = North
S = South
A = Approaching
T = Trailing

N 2 T
- T — Indicates approaching or trailing loop
- 2 — Indicates lane number
- N — Indicates directions*

Conduit "A" Table:

Conduit* #-Size	Class 1 BL Sensor Lead Cables	2C #18 Loop Detector Cable	In-Road Temperature Sensor Cable
1 - 2"	4	4	1

Conduit "B" Table:

Conduit* #-Size	Class 1 BL Sensor Lead Cables	2C #18 Loop Detector Cable	In-Road Temperature Sensor Cable
2 - 2"	8	8	1

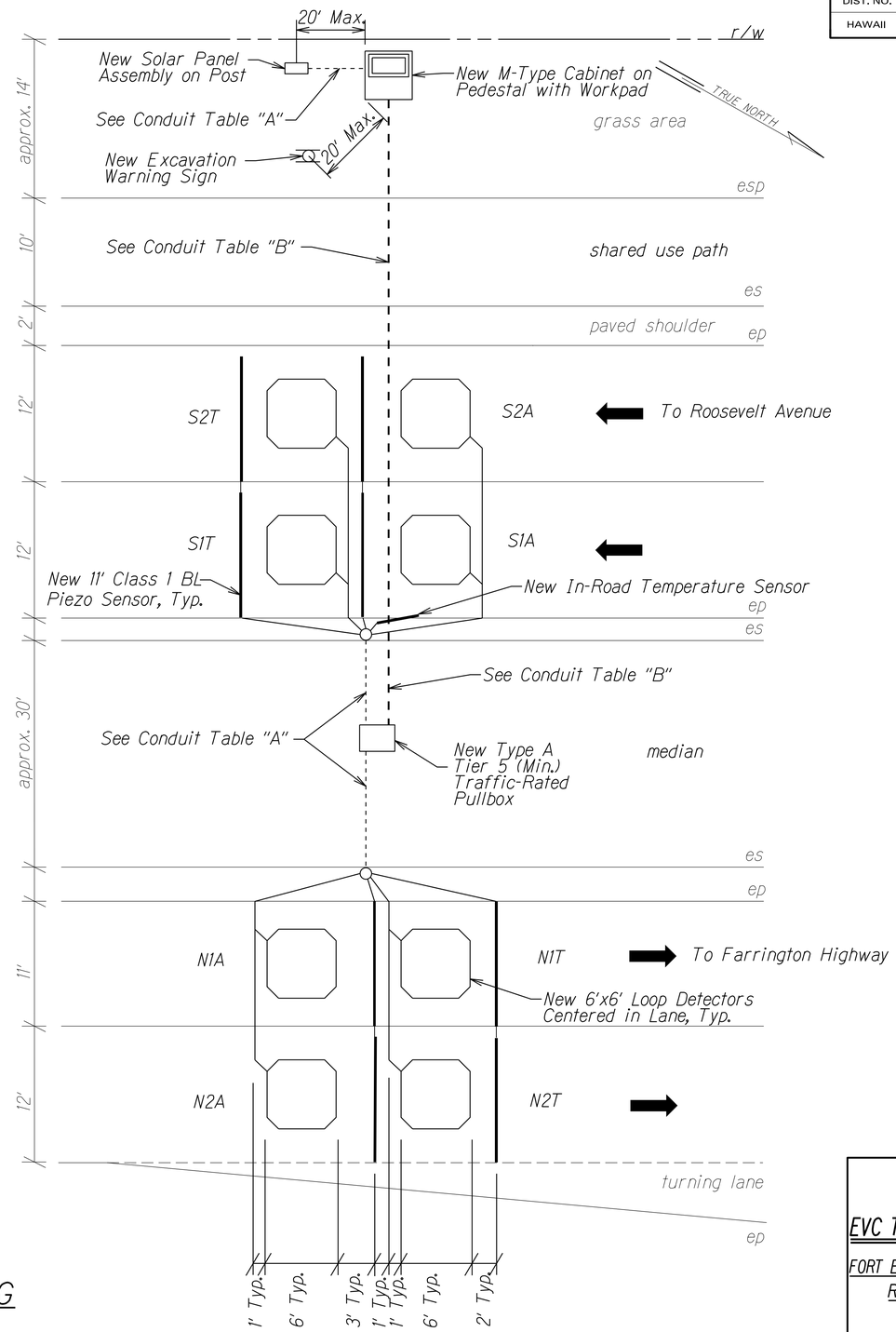
*Conduits under pavement and at utility crossings shall be concrete encased

*NOTES:

1. All dimensions and callouts are typical unless otherwise noted on plan
2. Contractor shall coordinate service agreements and connections to electrical and communication service. Contractor shall also contact the appropriate State Dept. of Transportation Representative for service agreement. (Highway Planning, Contact, Goro Sulijoadikusumo, P.E., at 587-1839).

EVC TRAFFIC COUNTING SYSTEM LAYOUT AND LABELING

Not to Scale



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

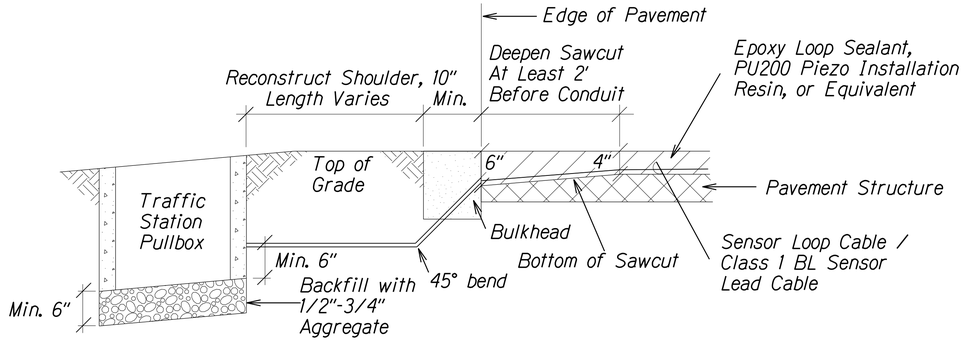
EVC TRAFFIC COUNTING SYSTEM LAYOUT

FORT BARRETTE ROAD OPERATIONAL IMPROVEMENTS
Roosevelt Avenue to Farrington Highway
Project No. 901A-01-19

Scale: N.T.S. Date: January, 2020

SHEET No. 2 OF 5 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	901A-01-19	2020	49	167

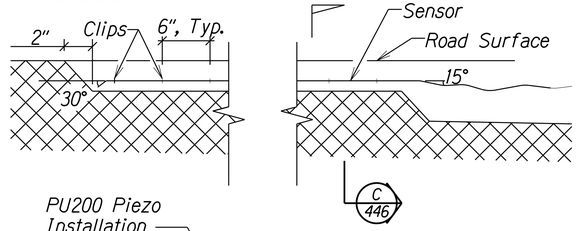


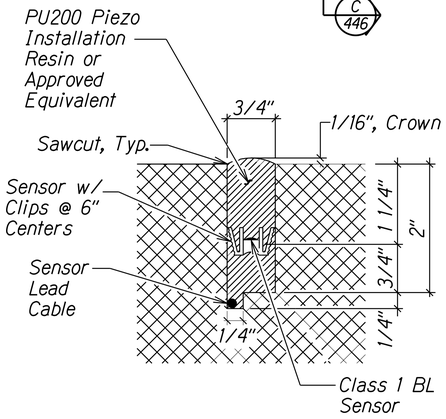
NOTES ON CONSTRUCTION AT END OF SAWCUT:

1. Seal roadway of conduit after installation of conductor.
2. Install bulkhead across conduit trench.
3. Place Epoxy Loop Sealant, PU200 Piezo Installation Resin or Equivalent in sawcut.
4. Backfill over conduit with new AC.
5. Reconstruct curb and gutter as required.
6. Conduit should be installed at least 10 inches from the edge of paved shoulder. If the depth of pavement is 4 inches or less at the shoulder, conduit should be installed at least 12 inches from the edge of paved shoulder.

DETAIL OF SENSOR LOOP/CLASS 1 BL SENSOR AT EDGE OF ROADWAY

Not to Scale

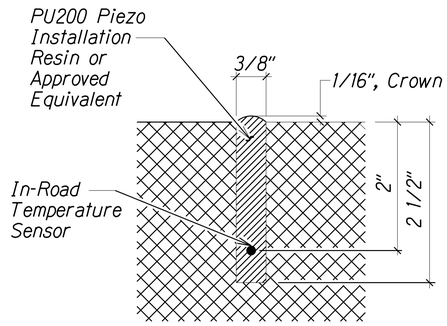




SECTION C 446
Not to Scale

PIEZOELECTRIC SENSOR INSTALLATION DETAIL

Not to Scale

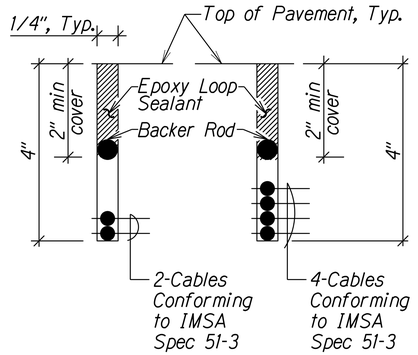


IN-ROAD TEMPERATURE SENSOR INSTALLATION DETAIL

Not to Scale

SENSOR LOOP SAWCUT NOTES:

Length of overcuts shall be kept to a minimum. All overcuts shall be backfilled with Epoxy Loop Sealant or equivalent.

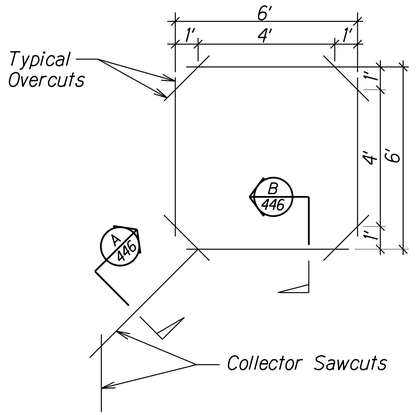


SECTION A 446
Not to Scale

SECTION B 446
Not to Scale

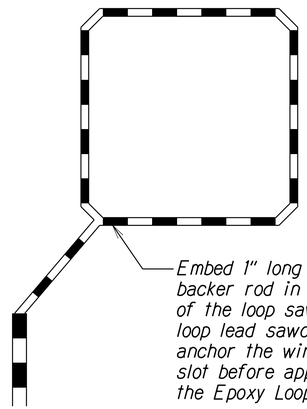
TYPICAL SECTION THROUGH SENSOR LOOP

Not to Scale



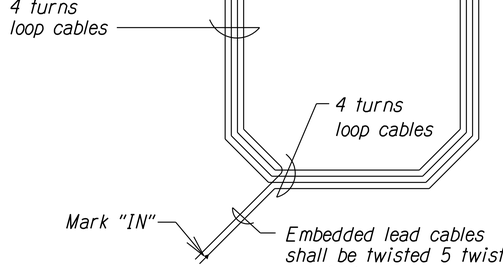
TYPICAL SENSOR LOOP SAWCUT DETAIL

Not to Scale



TYPICAL SENSOR LOOP BACKER ROD PLACEMENT DIAGRAM

Not to Scale



PLAN

TYPICAL SENSOR LOOP WIRING DIAGRAM

Not to Scale

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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

EVC TRAFFIC COUNTING SYSTEM SENSOR DETAILS

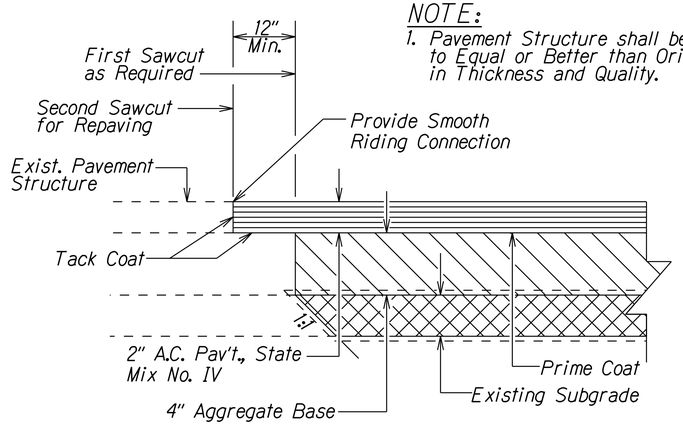
FORT BARRETTE ROAD OPERATIONAL IMPROVEMENTS
Roosevelt Avenue to Farrington Highway
Project No. 901A-01-19

Scale: 1" = 10.0' Date: January, 2020

SHEET No. 3 OF 5 SHEETS

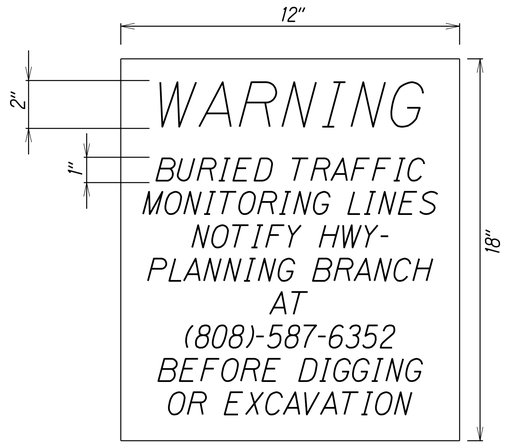
FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	901A-01-19	2020	50	167

NOTE:
1. Pavement Structure shall be Restored to Equal or Better than Original Condition in Thickness and Quality.



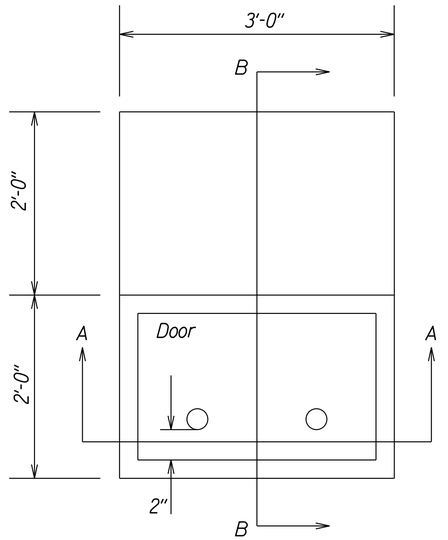
EXIST. A.C. PAVEMENT RESTORATION DETAIL
NOT TO SCALE

NOTES:
1. Mount type M-1 cabinet slab and secured with bolts and nuts.
2. Concrete slab shall be poured in place.
3. Connect 110 VAC power to dual outlet boxes mounted on inside wall of the cabinet.
4. The Contractor shall furnish the State key(s) to the cabinet.
5. Provide #8 copper wire ground terminal to the cabinet.
6. Mount one 10 pin terminal board on inside of cabinet.
7. All conduits shall be steel or PVC schedule 80.

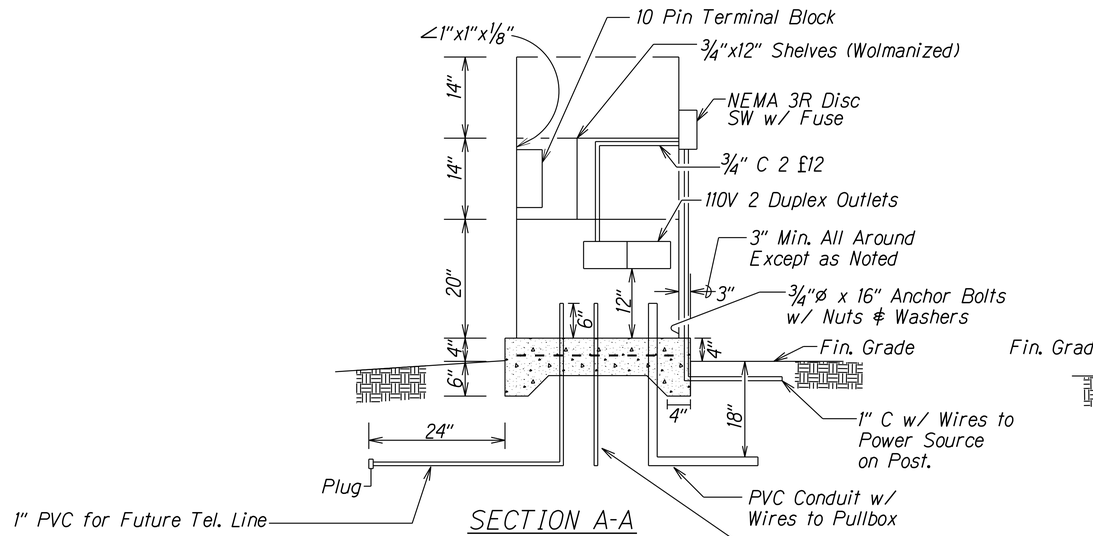


NOTES:
1. For sign post detail, see State Standard Plans TE-01 thru TE-04
2. Two (2) warning signs shall be placed on each sign post "Back-to-Back".
3. Text on sign shall be centered both ways.

WARNING SIGN DETAIL
NOT TO SCALE

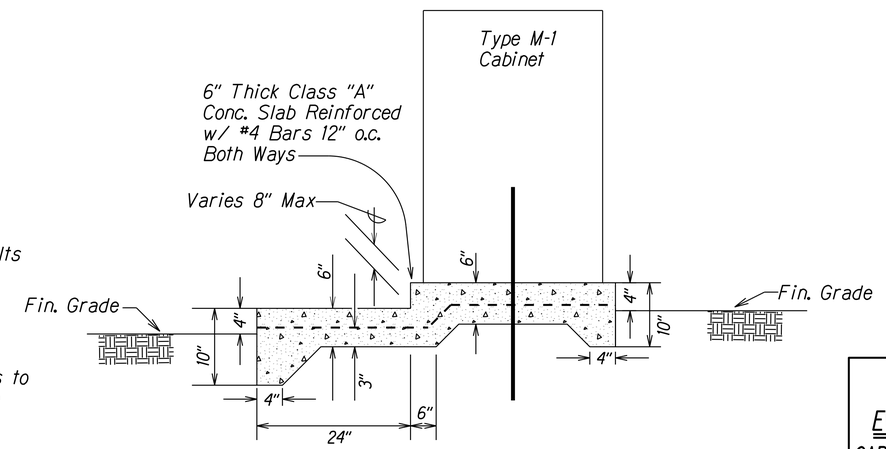


PLAN



SECTION A-A

TYPE M-1 CABINET DETAIL
NOT TO SCALE



SECTION B-B

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

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

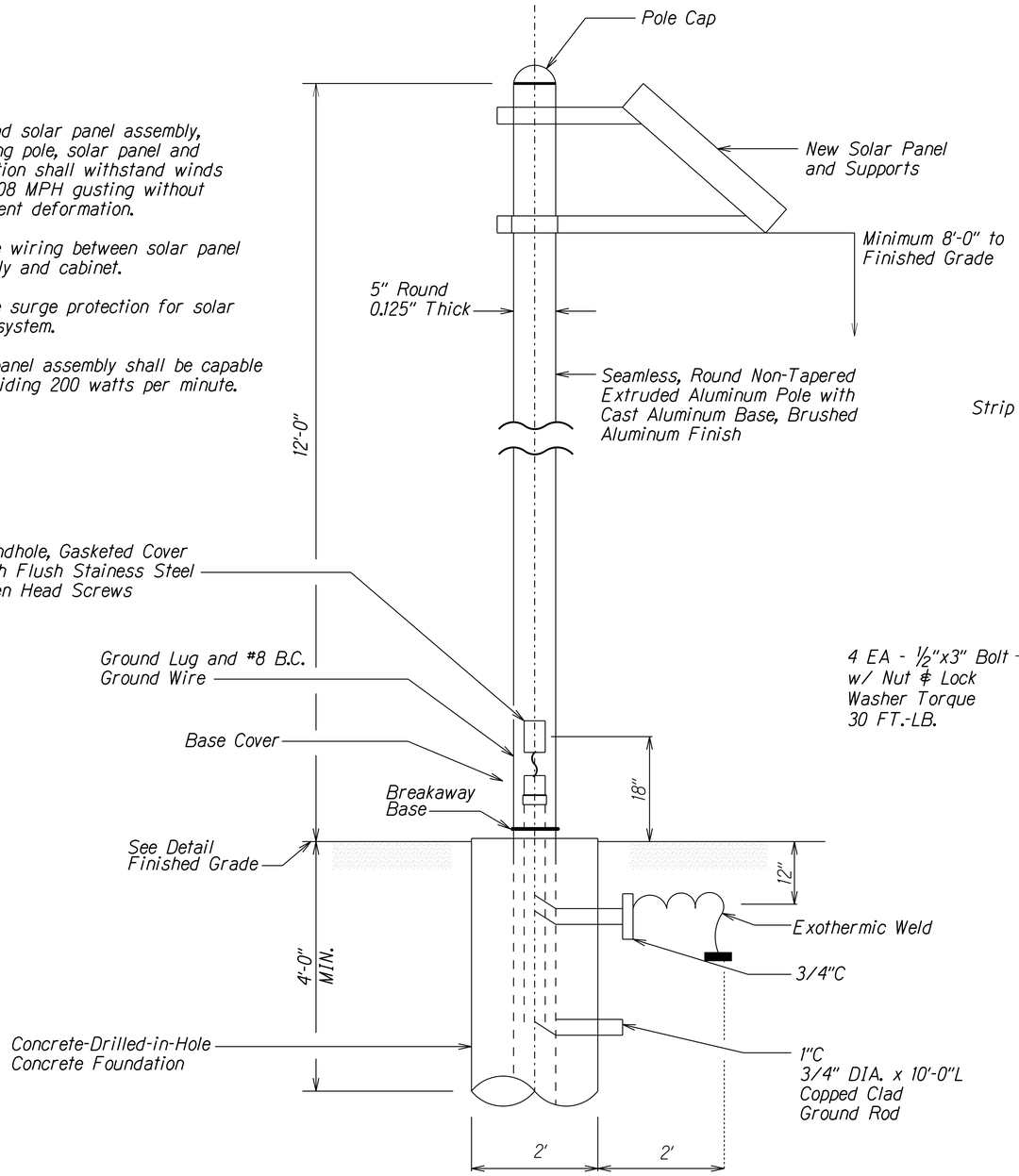
EVC TRAFFIC COUNTING SYSTEM
CABINET FOUNDATION AND OTHER DETAILS
FORT BARRETTE ROAD OPERATIONAL IMPROVEMENTS
Roosevelt Avenue to Farrington Highway
Project No. 901A-01-19
Scale: 1" = 10.0' Date: January, 2020

SHEET No. 4 OF 5 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	901A-01-19	2020	51	167

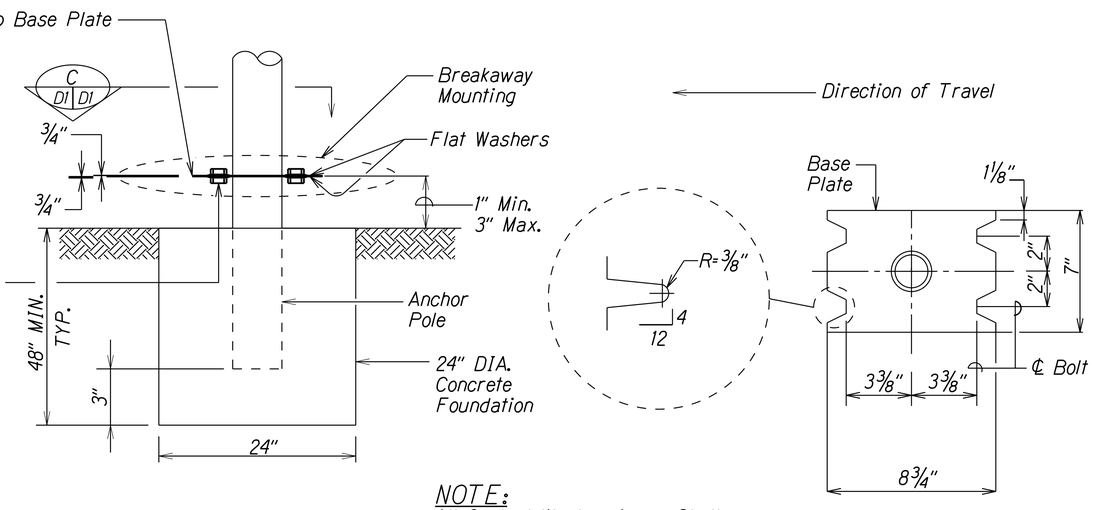
NOTES:

1. Pole and solar panel assembly, including pole, solar panel and foundation shall withstand winds up to 108 MPH gusting without permanent deformation.
2. Provide wiring between solar panel assembly and cabinet.
3. Provide surge protection for solar power system.
4. Solar panel assembly shall be capable of providing 200 watts per minute.



POLE AND SOLAR PANEL ASSEMBLY

NOT TO SCALE



NOTE:
All Contact Washer Areas Shall Be Free of Galvanizing Runs and Beads and Rubbed with Parafin.

CIDH CONC. FOUNDATION W/ BREAKAWAY MOUNTING

NOT TO SCALE

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

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

EVC TRAFFIC COUNTING SYSTEM SOLAR POWER DETAILS

FORT BARRETTE ROAD OPERATIONAL IMPROVEMENTS

Roosevelt Avenue to Farrington Highway

Project No. 901A-01-19

Scale: 1" = 10.0' Date: January, 2020

SHEET No. 5 OF 5 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	901A-01-19	2020	52	167

LEGEND

10' White Profiled Thermoplastic Stripe
Type C Raised Pavement Markers @ 40'-0" o.c.

10' Yellow Profiled Thermoplastic Stripe
Type D Raised Pavement Markers @ 40'-0" o.c.

8" White Stripe with Type C Raised Pavement Markers @ 20'-0" o.c. (Tape, Type I or Thermoplastic Extrusion)

4" Double Solid Yellow with Type D Raised Pavement Markers @ 20'-0" o.c. (Tape, Type I or Thermoplastic Extrusion))

4" Double Solid Yellow Stripes with Type H Raised Pavement Markers @ 20'-0" o.c. (Tape, Type II or Thermoplastic Exrusion))

6" Yellow Edge Stripe with Type H Raised Pavement Markers @ 40'-0" o.c. (Tape, Type II or Thermoplastic Extrusion))

4" Double Solid White Stripes with Type C Raised Pavement Markers @ 20'-0" o.c. (Tape, Type I or Thermoplastic Extrusion)

Lane Change Restriction Marking
10' White Profiled Thermoplastic Stripe
Type C Raised Pavement Markers @ 20'-0" o.c.
4" White Stripe (Tape, Type I or Thermoplastic Extrusion)

6" or 8" White Edge Stripe with Type C Raised Pavement Markers @ 40'-0" o.c. (Tape, Type II or Thermoplastic Extrusion)

4" White Guide Lines (Tape, Type III or Thermoplastic Extrusion except for bus bays)

Transverse Median Marking (Tape, Type II or Thermoplastic Extrusion)

Transverse Shoulder Marking (Tape, Type II or Thermoplastic Extrusion)

Channelizing Island or Deceleration Lane Gore (Tape, Type II or Thermoplastic Extrusion)

② Crosswalk and Stop Line. All Stop Lines shall be 10'-0" from Crosswalk unless otherwise noted. The circled number indicates the number of lanes for payment (Tape, Type III or Thermoplastic Extrusion)

Pavement Arrow (Tape, Type III or Thermoplastic Extrusion)

STOP Pavement Word (Tape, Type III or Thermoplastic Extrusion)

10' Yellow Profiled Thermoplastic Stripe
Type D Raised Pavement Markers @ 40'-0" o.c.
Type H Raised Pavement Markers (Reflective Surface facing no-passing direction)
4" Single Solid Yellow Stripe (Tape, Type I or Thermoplastic Extrusion)

10' 10' 10' 10' Extension of Edge Line, 4" Wide x 2'-0" Long White Stripe @ 10'-0" o.c. w/Type C Markers @ 40'-0" o.c. (Tape, Type III or Thermoplastic Extrusion)

ORIGINAL PLANS — SURVEY PLOTTED BY — DRAWN BY — TRACED BY — DESIGNED BY — QUANTITIES BY — CHECKED BY — DATE — NOTE BOOK — N. Hartleydon

NOTES

1. Layout of pavement markings and striping shall be done by the Contractor and approved by the Engineer prior to any installation work.
2. Existing pavement markings not incorporated in the final traffic pattern shall be removed as directed by the Engineer. 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. Existing signs not shown on these plans shall remain as posted unless otherwise directed by the Engineer. Removal and disposal of existing signs and/or posts as designated on these plans shall be incidental to the various signing items.
6. Final locations of all Stop Lines shall be approved by the Engineer prior to installation.
7. All pavement striping 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. All pedestrian warning signs with supplemental sign shall be on a fluorescent yellow-green retroreflective background with a black legend and border.

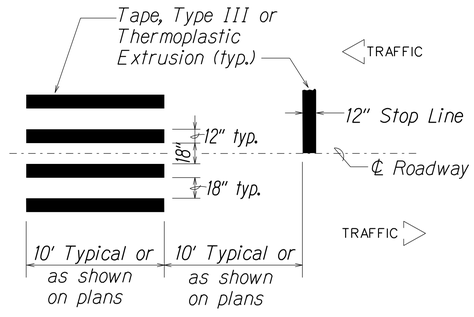
LEGEND:

SW Reflector Marker (RM-2, White) w/ Steel Post

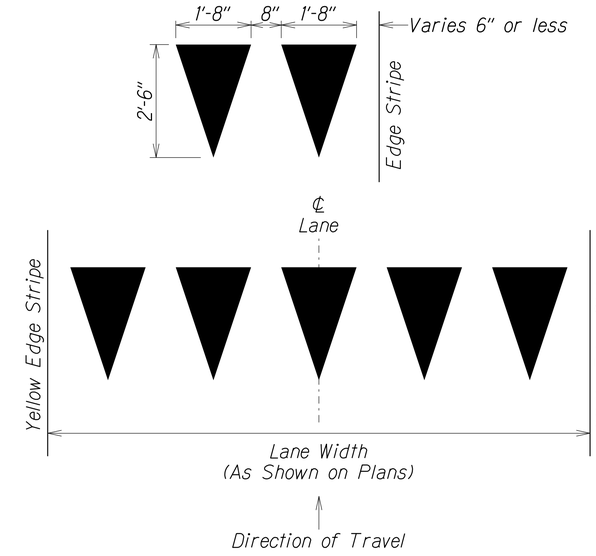
FW Reflector Marker (RM-2, White) w/ Flexible Post

FY Reflector Marker (RM-2, Yellow) w/ Flexible Post

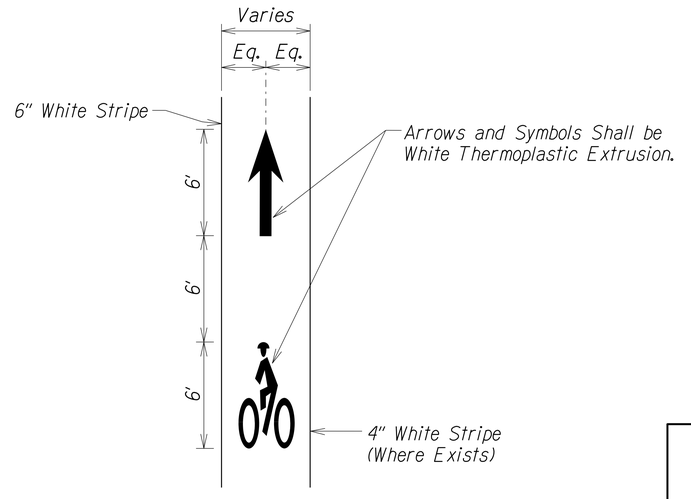
⊕ Anchor Base for Portable Contra-flow Sign With White Circle Around Sleeve



CROSSWALK STRIPING DETAIL
Not to Scale



YIELD LINE



BIKE LANE PAVEMENT MARKING DETAIL
Not to Scale

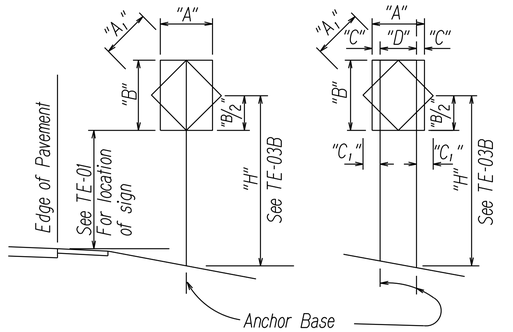
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

PAVEMENT MARKING LEGEND, NOTES & DETAILS

FORT BARRERTTE ROAD OPERATIONAL IMPROVEMENTS
Roosevelt Avenue to Farrington Highway
PROJECT NO. 901A-01-19
Scale: As Noted Date: Jan., 2020

SHEET No. T1 OF 13 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	901A-01-19	2020	53	167



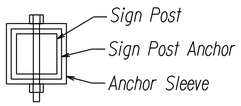
1 - POST
"A" or "A_1" less than 36"

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

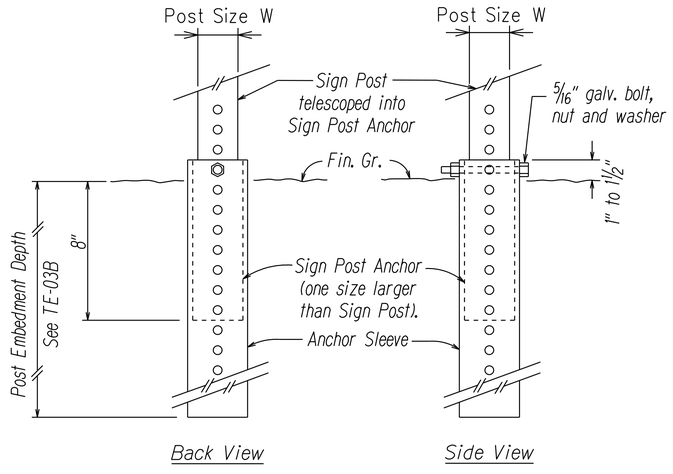
"A" or "A_1"	"C"	"C_1"
Less than 36"	6"	-
Greater than 36" and less than 48"	9"	19"
Greater than 48"	12"	24"

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

TYPICAL INSTALLATION



TOP VIEW



Back View Side View

SIGN POST INSTALLATION

ANCHOR BASE DETAIL

Not to Scale

GENERAL NOTES

1. Design Specifications:
   (A) "Traffic Signal Supports and Foundations design shall conform with the AASHTO LRFD Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals, 1st Edition, with latest Interim Revisions and as modified by HDOT Memorandum with subject title, "Changes to Design Criteria for Bridges and Structures" (Letter No. HWY-DB 2.5098) dated January 8, 2018."
2. Loads:
   (A) Basic Wind Speed: 105 mph.
   (B) Recurrence Interval of 10 years.
3. Materials:
   (A) Post shall conform to the Standard Specifications.
   (B) All connection bolts shall be AASHTO M164 bolts and anchor bolts shall be AASHTO M314-105 bolt.
   (C) Lap splice nuts and bolts shall be M180, with an ultimate tensile strength of 180 ksi, min.
   (D) Aluminum members and surfaces in contact with structural steel shall be isolated with neoprene material as approved by the Engineer.
4. General:
   (A) See General Notes on B-01, TE-01, and TE-03B for additional information.
   (B) All square tube posts shall be 12 gauge unless otherwise specified or shown on the plans.
   (C) Square tube posts shall be perforated with $^{7}/_{16}$"ø holes, 1" o.c., 4 sides, along entire length of post.
   (D) All accessories, fittings and stiffener details (as required) shall be submitted to the Engineer for approval 20 days prior to installation.
   (E) Alternate designs in accordance with the plans and specifications shall use the Service Load Design Method and shall be stamped by a registered structural engineer of the State of Hawaii and submitted to the Engineer for approval.
   (F) All sign support posts without break away anchor base shall be outside of the clear zone or shielded by an appropriate traffic barrier system. The traffic barrier system shall be submitted to the Engineer for his approval.
   (G) The Contractor shall use templates while installing the anchor bolts. Anchor bolts shall be vertical.
   (H) Excavation and backfill shall be considered incidental to the cost of the sign foundation.

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

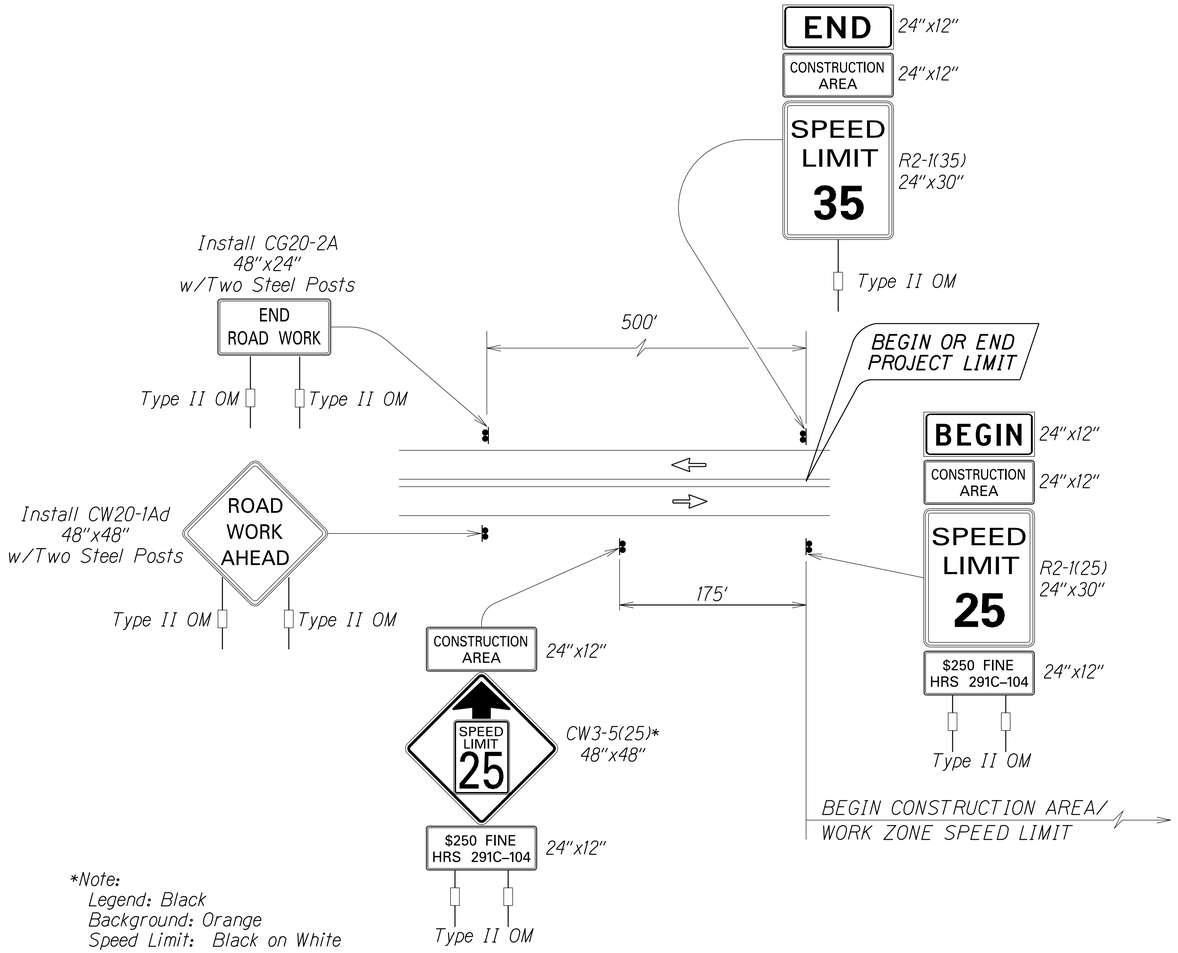
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

GALVANIZED SQUARE TUBE SIGN POST MOUNTING

FORT BARRERTTE ROAD OPERATIONAL IMPROVEMENTS
Roosevelt Avenue to Farrington Highway
PROJECT NO. 901A-01-19
Scale: Not to Scale Date: Jan., 2020

SHEET No. T2 OF 13 SHEETS

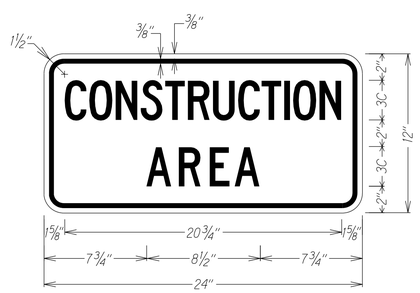
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	901A-01-19	2020	54	167



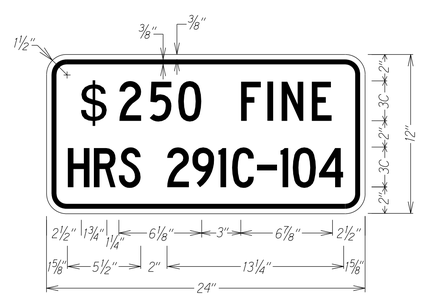
*Note:
Legend: Black
Background: Orange
Speed Limit: Black on White

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

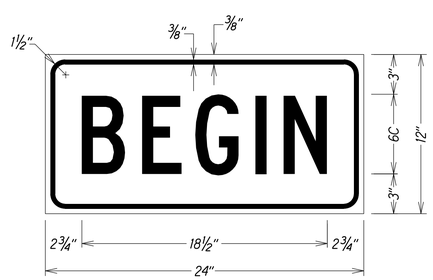
Not to Scale



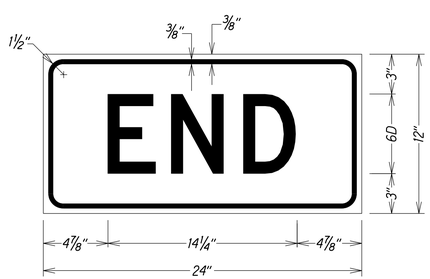
LEGEND: BLACK
BACKGROUND: ORANGE



LEGEND: BLACK
BACKGROUND: WHITE



LEGEND: BLACK
BACKGROUND: ORANGE



LEGEND: BLACK
BACKGROUND: ORANGE

Work Zone Notes:

1. *This Work Zone Sign Plan is intended for use on long-term stationary work zones/construction phases (3 days or more). All work zones or construction phases less than 3 days duration will use Traffic Control Plans shown in Section 645 of the Standard Specifications and/or Special Provisions.*
2. *All existing regulatory speed limit signs with posts within the work zone/project limits shall be removed and replaced with work zone speed limit sign assemblies (R2-1(25) and CW3-5(25) with "CONSTRUCTION AREA" and "$250 FINE HRS 291C-104" Supplemental Signs).*
3. *Construction sign assemblies shall be installed on both the approaching and trailing ends of each work zone as shown on this plan.*
4. *Each construction warning sign shall have a minimum of two (2) Type II OM. Each work zone speed limit assembly shall have a minimum of one (1) Type II OM. Installation of each Type II OM shall be considered incidental to Item No. 645.0100 - 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. 645.0100 - Traffic Control.*

ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
	DRAWN BY X	
	TRACED BY	
NOTE BOOK	DESIGNED BY X	
N/A	QUANTITIES BY	
1for1p2.dgn	CHECKED BY	

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

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

FORT BARRERTTE ROAD OPERATIONAL IMPROVEMENTS
Roosevelt Avenue to Farrington Highway
PROJECT NO. 901A-01-19

Scale: Not to Scale Date: Jan., 2020

SHEET No. T3 OF 13 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	901A-01-19	2020	55	167

Roosevelt Avenue ℄ Sta. -0+3.20 =
Fort Barrette Road R/W ℄ Sta. 9+53.74

Enterprise Street ℄ Sta. 0+00 =
Roosevelt Avenue ℄ Sta. 0+00

TRUE NORTH
SCALE : 1" = 40'

Install CG20-2A
48"x24"
w/Two Steel Posts
END ROAD WORK
Type II OM Type II OM

New 10' White Profiled Lane Stripe
w/Type "C" Raised Pavement
Markers @ 40' O.C. (Typ.)

New 6" Yellow Edge Stripe
w/Type "H" Raised Pavement
Markers @ 40' O.C.

R4-7 (24"x30")
KEEP RIGHT (24"X18")
RM-3

STOP ALL WAY

Tie Into Exist. Pav't Markings

(STATE)

To Kalaeloa Airport

500'

5+00

ENTERPRISE ST. (HCDA)

Tie Into Exist. Pav't Markings

SPEED LIMIT 25
R2-1(25) (24"x30")
RM-3

Tie Into Exist. Pav't Markings

STOP ALL WAY

R=75'

R=40'

or℄ r/w

NAVAL AIR MUSEUM
RAILWAY MUSEUM

Warning Light

YIELD
R1-2 (36"x36"x36")
RM-3

SPEED LIMIT 25
UNLESS OTHERWISE POSTED

STOP

RAIL CROSSING
ROAD
EXEMPT

New 12" Yellow Diagonal
Stripe @ 20' O.C.

New 12" White Diagonal
Stripe @ 20' O.C.

Rail X-ing Pavement Marking
See Detail on Sht. T11

New 4" White Edge Stripe
Along Shared-Use Path

New 6" White Edge Stripe
w/Type "C" Raised Pavement
Markers @ 40' O.C.

Install Pre-Cast Parking Curb
Adjacent to Paved Shoulder
See Detail "A" on Plan Sht. T12

New 6" Yellow Edge Stripe
w/Type "H" Raised Pavement
Markers @ 40' O.C.

W10-1 (36")
RM-3

SPEED LIMIT 25
R2-1(25) (36"x48")
RM-3 RM-3

M.L. ℄ STA. 6+00

Gate Post

Gate Post

Sta. 2+64 Beg. Taper

Sta. 4+24 Beg. Taper

ADOPT A HIGHWAY LITTER CONTROL NEXT 2 MILES
U.S. VETS

W4-2(L) (36"x36")
W4-1E (24"x18")
MERGE
RM-3

R3-40 (30"x30")
ONLY
RM-3

New Longitudinal Channelizing
Curb System. See Details on
Sht. T11

R8-3 (24"x24")
R7-201p (12"x6")
RM-3

New 10' White Profiled Lane Stripe
w/Type "C" Raised Pavement
Markers @ 40' O.C. (Typ.)

Rail X-ing Pavement Marking
See Detail on Sht. T11

To Makakilo
FORT BARRETTE RD.
(STATE)

conc. swale

r/w

New 10' White Profiled Lane Stripe
w/Type "C" Raised Pavement
Markers @ 40' O.C. (Typ.)

Install CW20-1Ad
48"x48"
w/Two Steel Posts
ROAD WORK AHEAD
Type II OM Type II OM

R7-107a (12"x30")
RM-3

ADOPT A HIGHWAY LITTER CONTROL NEXT 2 MILES
YOUTH CHALLENGE ACADEMY

ADOPT A HIGHWAY LITTER CONTROL NEXT 2 MILES

STOP ALL WAY

ROOSEVELT AVE. (STATE)

Tie Into Exist. Pav't Markings

R/W ℄ Sta. 10+26.52 (BK.) = -- (AH.)
S.B. ℄ Sta. 0+00 o/s 24.0' Lt. (AH.)
N.B. ℄ Sta. 0+00 o/s 24.0' Rt. (AH.)
EQ.

W10-1 (36")
RM-3

KEY:

1. Exist. Sign(s) to Remain
2. Exist. Sign(s) ⊄ Post(s) to Remain
3. Remove Exist. Sign(s)
4. Remove Exist. Sign(s) w/ Post(s)
5. Remove Exist. Sign(s) w/ Post(s) ⊄ Install New Sign(s) w/ Post(s)
6. Install New Sign(s) ⊄ Post(s)
7. Install New Sign(s)
8. Install Exist. Sign(s) on New Post(s)

(A) R=140'
(B) R=50'
(C) R=50'
(D) R=120'

ORIGINAL PLAN
SURVEY PLOTTED BY
DRAWN BY X
TRACED BY
DESIGNED BY X
QUANTITIES BY
CHECKED BY
DATE X
NOTE BOOK
X 12/19/2020

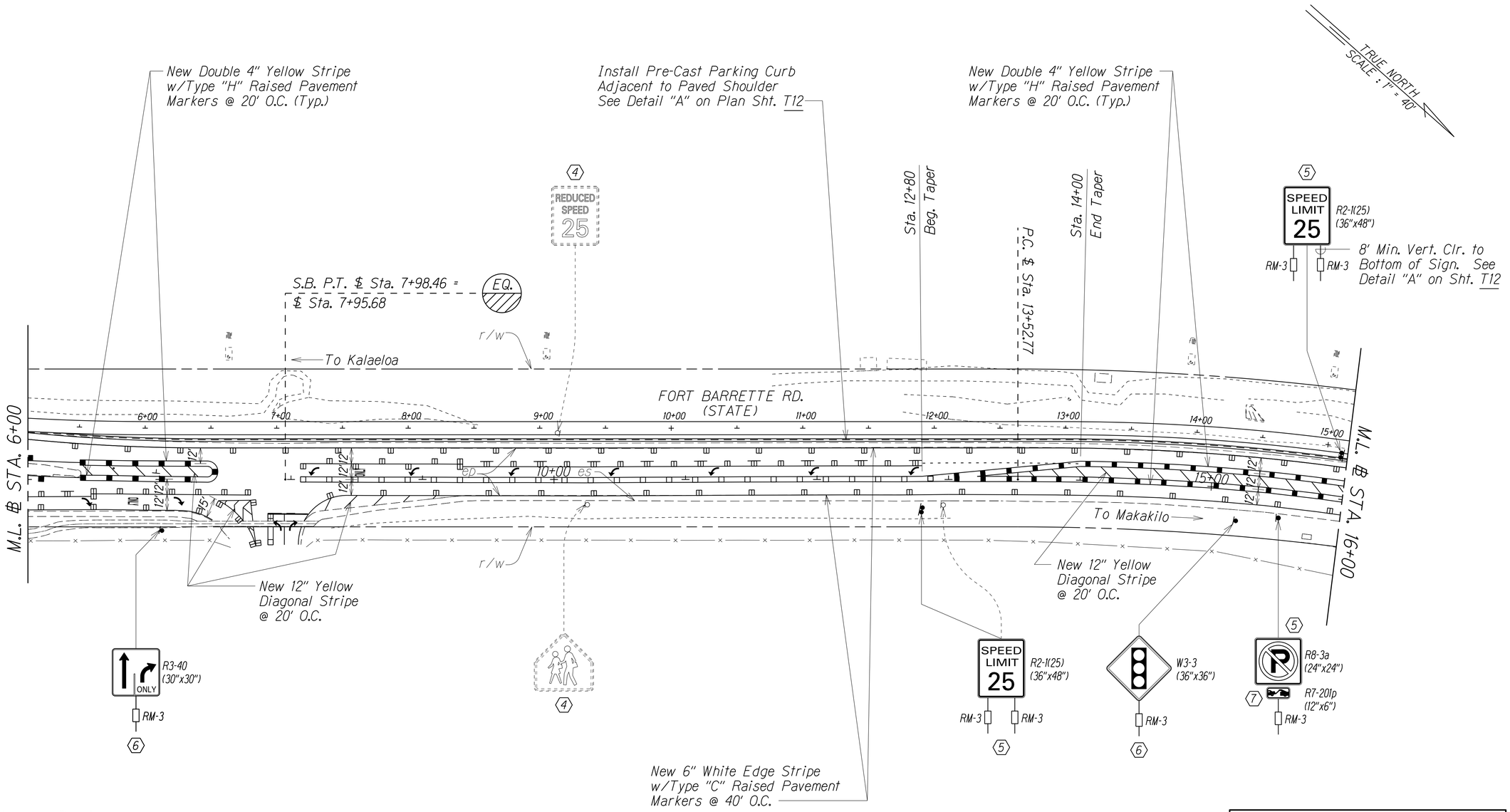
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

PAVEMENT MARKING ⊄ SIGNING PLAN

FORT BARRERTTE ROAD OPERATIONAL IMPROVEMENTS
Roosevelt Avenue to Farrington Highway
PROJECT NO. 901A-01-19
Scale: 1" = 40' Date: Jan., 2020

SHEET No. T4 OF 13 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	901A-01-19	2020	56	167



KEY:

1. Exist. Sign(s) to Remain
2. Exist. Sign(s) ℄ Post(s) to Remain
3. Remove Exist. Sign(s)
4. Remove Exist. Sign(s) w/ Post(s)
5. Remove Exist. Sign(s) w/ Post(s) ℄ Install New Sign(s) w/ Post(s)
6. Install New Sign(s) ℄ Post(s)
7. Install New Sign(s)
8. Install Exist. Sign(s) on New Post(s)

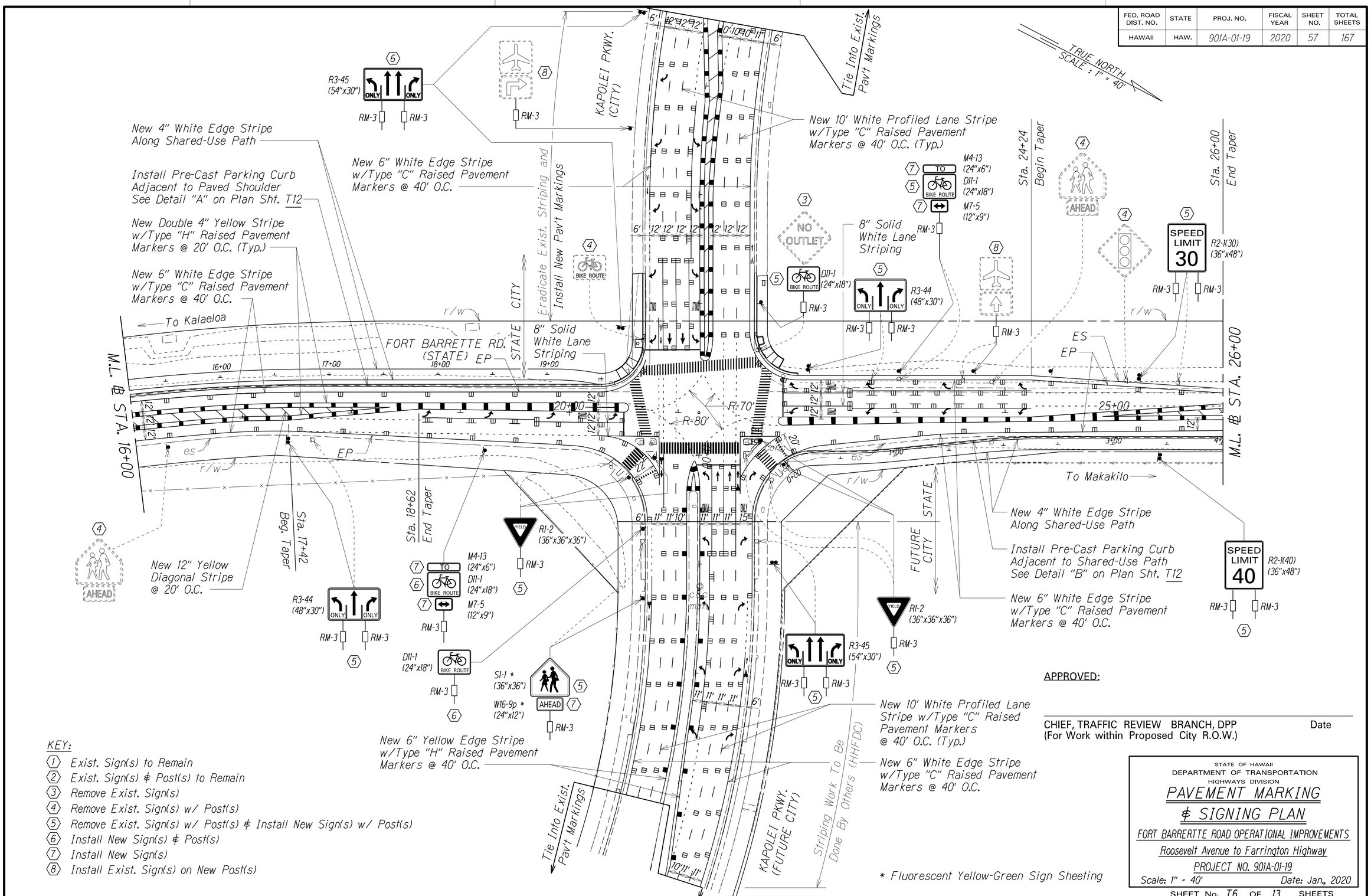
ORIGINAL PLAN
SURVEY PLOTTED BY
DRAWN BY
TRACED BY
DESIGNED BY X
NOTE BOOK
QUANTITIES BY
CHECKED BY
DATE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

PAVEMENT MARKING ℄ SIGNING PLAN

FORT BARRERTTE ROAD OPERATIONAL IMPROVEMENTS
Roosevelt Avenue to Farrington Highway
PROJECT NO. 901A-01-19
Scale: 1" = 40' Date: Jan., 2020
SHEET No. T5 OF 13 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	901A-01-19	2020	57	167



KEY:

1. Exist. Sign(s) to Remain
2. Exist. Sign(s) & Post(s) to Remain
3. Remove Exist. Sign(s)
4. Remove Exist. Sign(s) w/ Post(s)
5. Remove Exist. Sign(s) w/ Post(s) & Install New Sign(s) w/ Post(s)
6. Install New Sign(s) & Post(s)
7. Install New Sign(s)
8. Install Exist. Sign(s) on New Post(s)

APPROVED:

CHIEF, TRAFFIC REVIEW BRANCH, DPP — Date
(For Work within Proposed City R.O.W.)

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

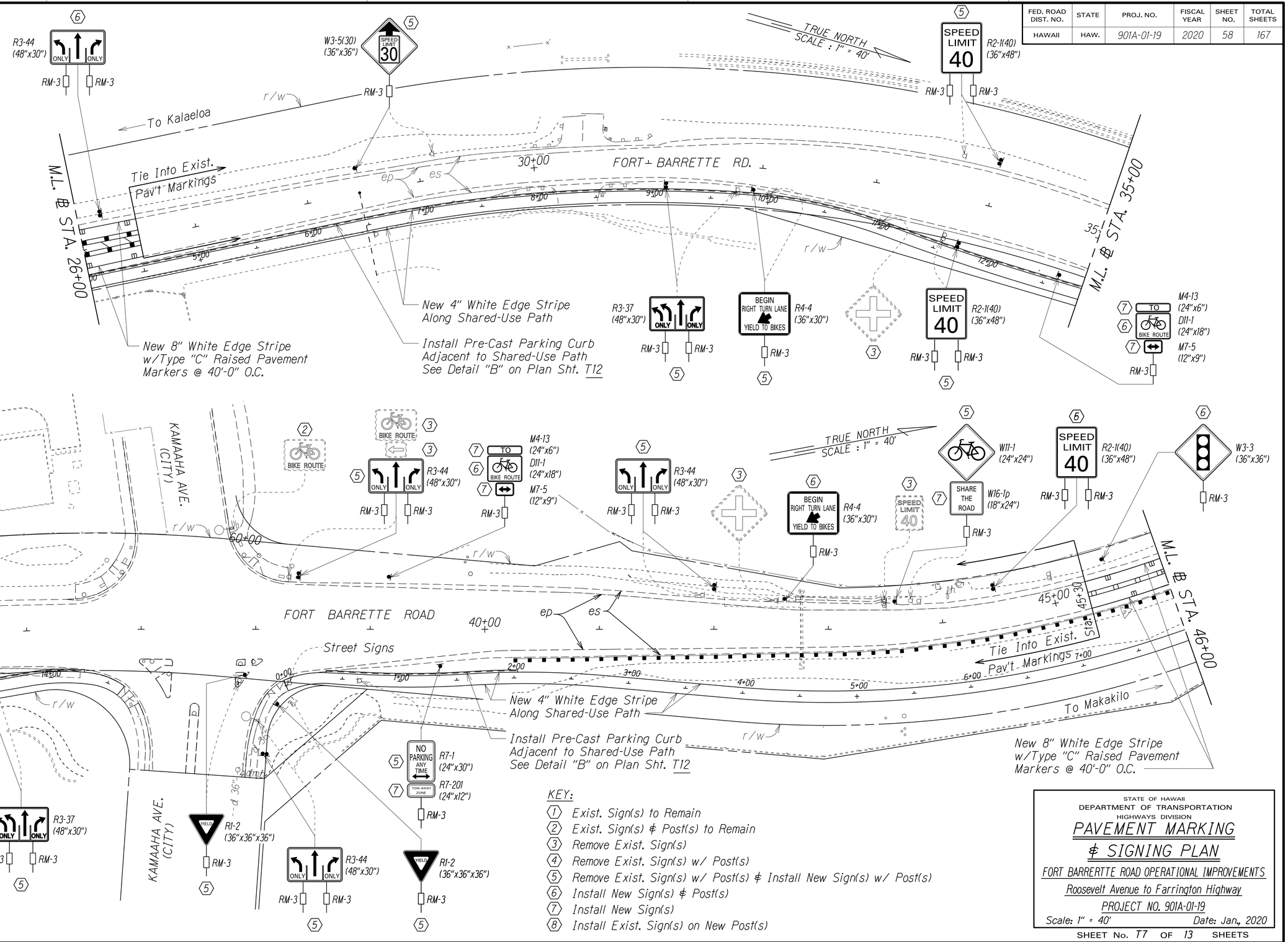
PAVEMENT MARKING & SIGNING PLAN

FORT BARRERTTE ROAD OPERATIONAL IMPROVEMENTS
Roosevelt Avenue to Farrington Highway
PROJECT NO. 901A-01-19
Scale: 1" = 40' Date: Jan., 2020

SHEET No. T6 OF 13 SHEETS

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

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	901A-01-19	2020	58	167



KEY:

1. Exist. Sign(s) to Remain
2. Exist. Sign(s) & Post(s) to Remain
3. Remove Exist. Sign(s)
4. Remove Exist. Sign(s) w/ Post(s)
5. Remove Exist. Sign(s) w/ Post(s) & Install New Sign(s) w/ Post(s)
6. Install New Sign(s) & Post(s)
7. Install New Sign(s)
8. Install Exist. Sign(s) on New Post(s)

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

PAVEMENT MARKING & SIGNING PLAN

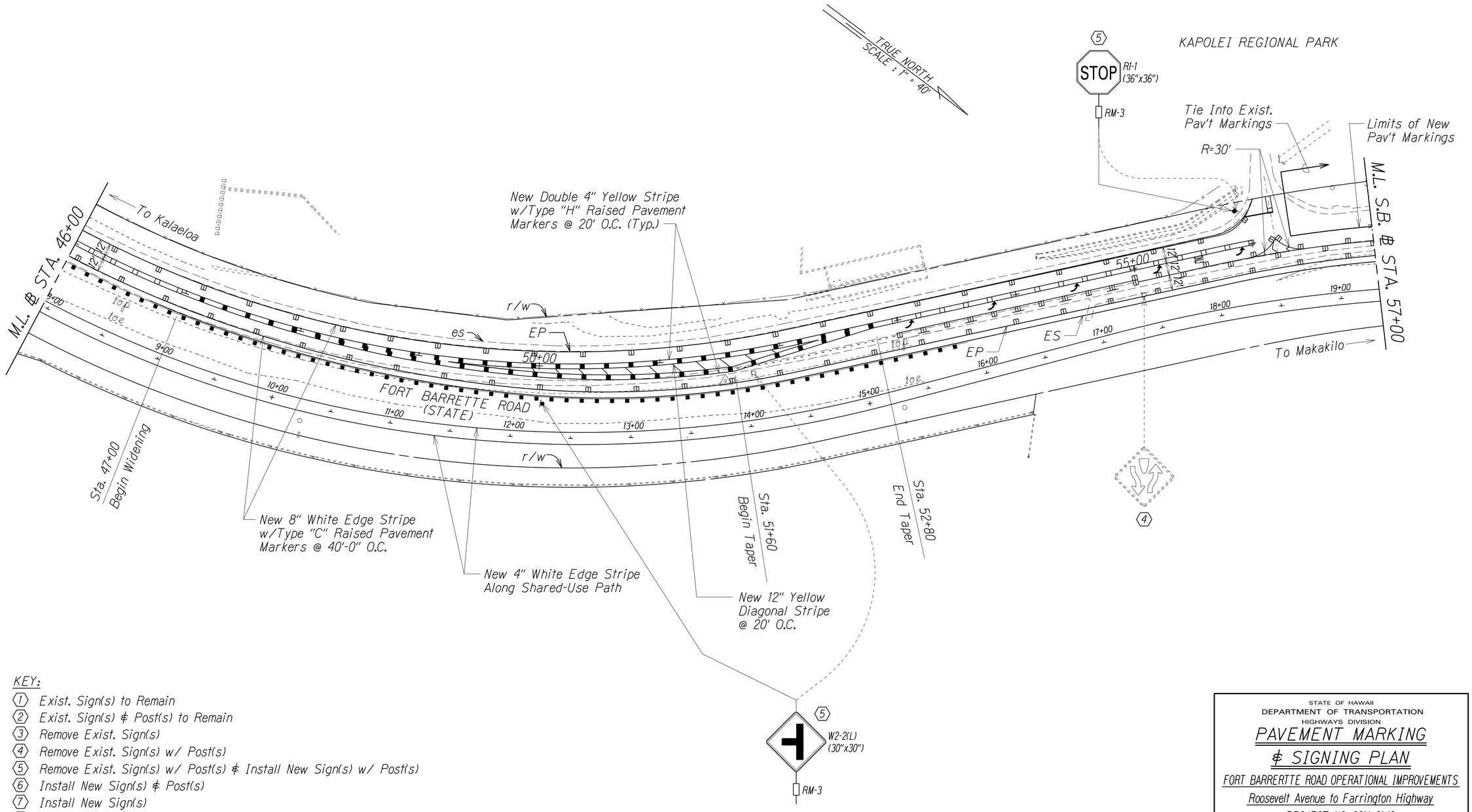
FORT BARRERTTE ROAD OPERATIONAL IMPROVEMENTS
Roosevelt Avenue to Farrington Highway
PROJECT NO. 901A-01-19

Scale: 1" = 40' Date: Jan., 2020

SHEET No. T7 OF 13 SHEETS

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

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	901A-01-19	2020	59	167



KEY:

1. Exist. Sign(s) to Remain
2. Exist. Sign(s) & Post(s) to Remain
3. Remove Exist. Sign(s)
4. Remove Exist. Sign(s) w/ Post(s)
5. Remove Exist. Sign(s) w/ Post(s) & Install New Sign(s) w/ Post(s)
6. Install New Sign(s) & Post(s)
7. Install New Sign(s)
8. Install Exist. Sign(s) on New Post(s)

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

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

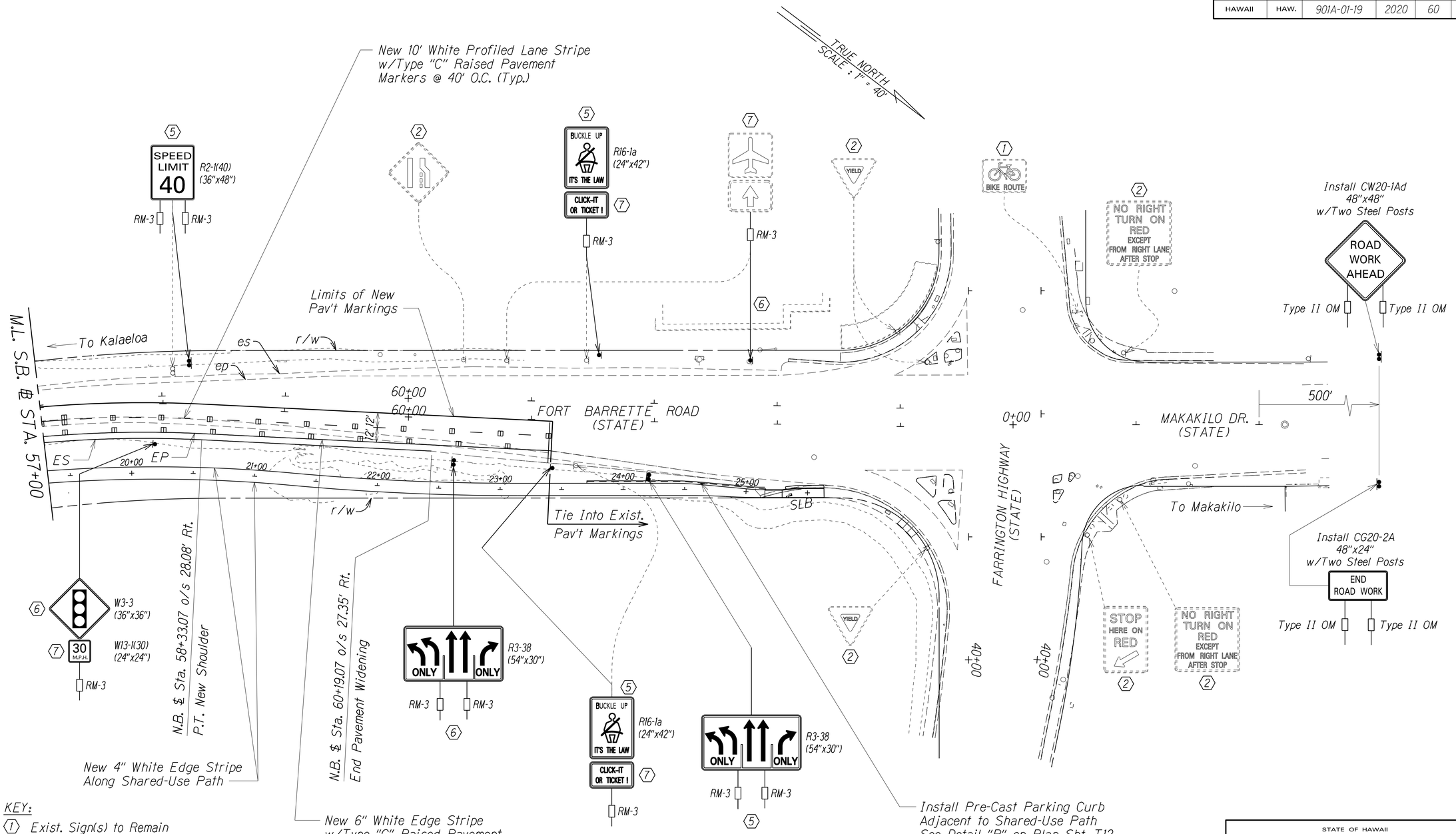
PAVEMENT MARKING & SIGNING PLAN

FORT BARRERTTE ROAD OPERATIONAL IMPROVEMENTS
Roosevelt Avenue to Farrington Highway
PROJECT NO. 901A-01-19

Scale: 1" = 40' Date: Jan., 2020

SHEET No. T8 OF 13 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	901A-01-19	2020	60	167



KEY:

1. Exist. Sign(s) to Remain
2. Exist. Sign(s) & Post(s) to Remain
3. Remove Exist. Sign(s)
4. Remove Exist. Sign(s) w/ Post(s)
5. Remove Exist. Sign(s) w/ Post(s) & Install New Sign(s) w/ Post(s)
6. Install New Sign(s) & Post(s)
7. Install New Sign(s)
8. Install Exist. Sign(s) on New Post(s)

ORIGINAL PLAN

NOTE BOOK

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

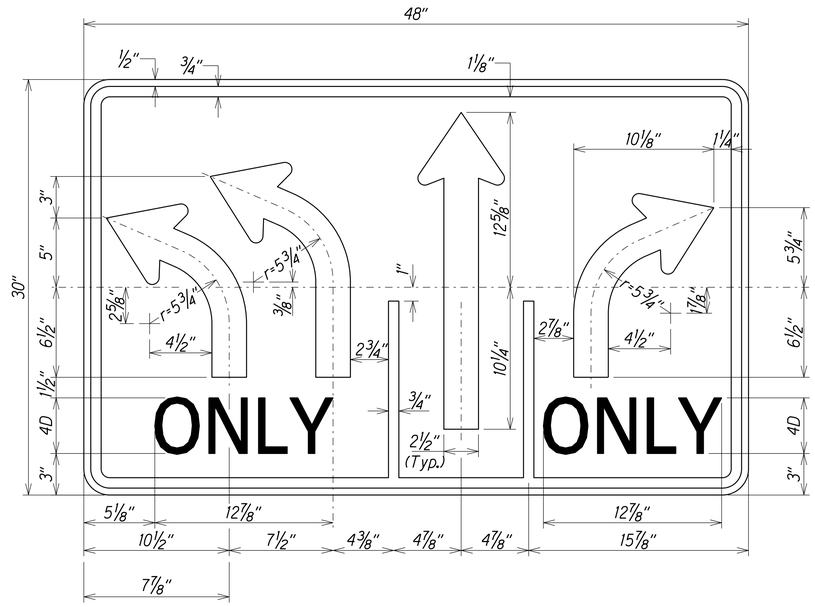
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

PAVEMENT MARKING & SIGNING PLAN

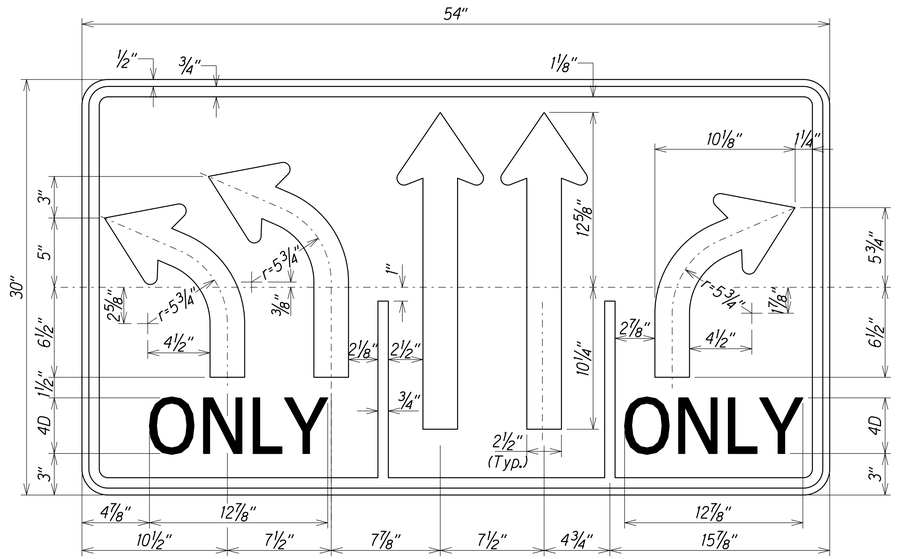
FORT BARRERTTE ROAD OPERATIONAL IMPROVEMENTS
Roosevelt Avenue to Farrington Highway
PROJECT NO. 901A-01-19
Scale: 1" = 40' Date: Jan., 2020

SHEET No. T9 OF 13 SHEETS

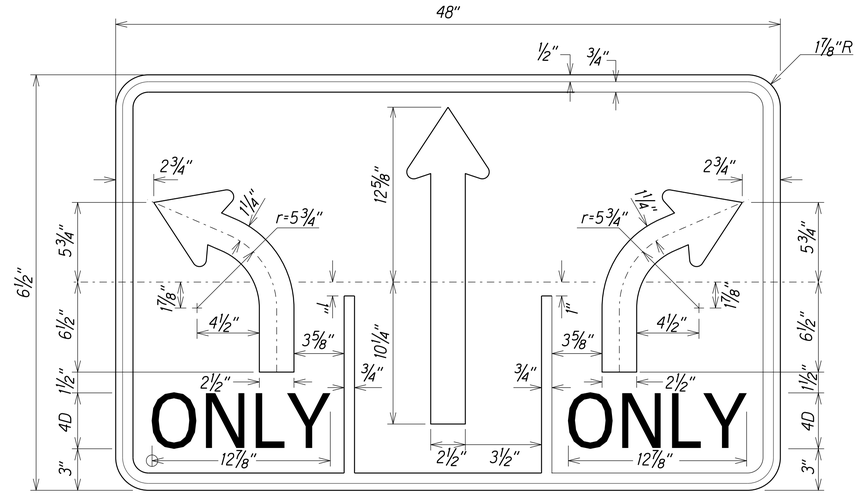
FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	901A-01-19	2020	61	167



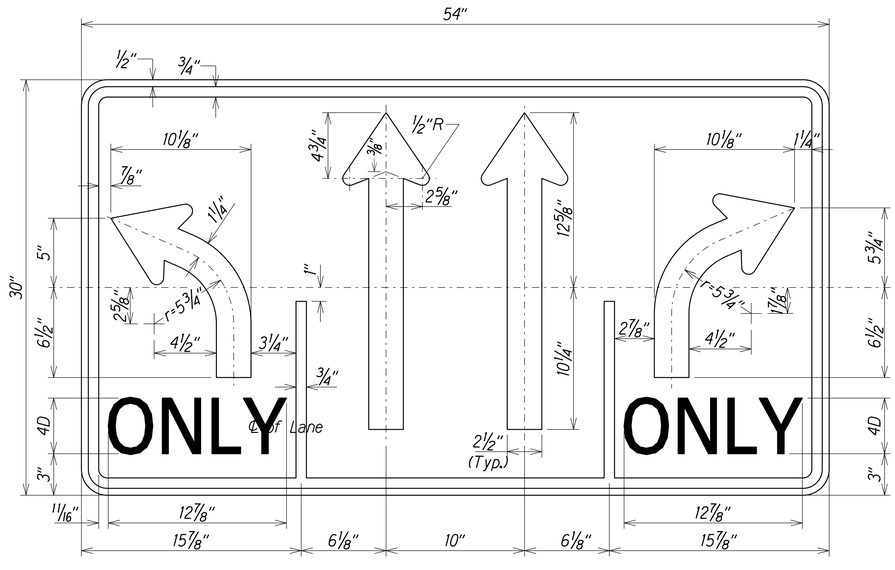
R3-37
Not to Scale



R3-38
Not to Scale



R3-44
Not to Scale



R3-45
Not to Scale

ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
	DRAWN BY	
	TRACED BY	
NOTE BOOK	DESIGNED BY	
	QUANTITIES BY	
NL hfortsd.dgn	CHECKED BY	

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

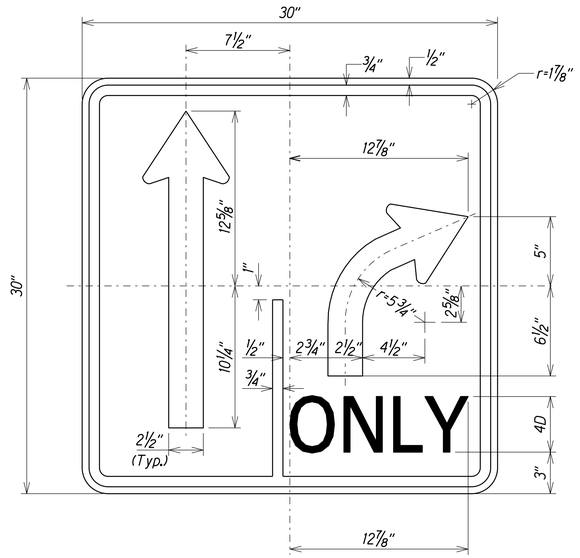
MISCELLANEOUS SIGN DETAILS

FORT BARRERTTE ROAD OPERATIONAL IMPROVEMENTS
Roosevelt Avenue to Farrington Highway
PROJECT NO. 901A-01-19

Scale: Not to Scale Date: Jan., 2020

SHEET No. T10 OF 13 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	901A-01-19	2020	62	167

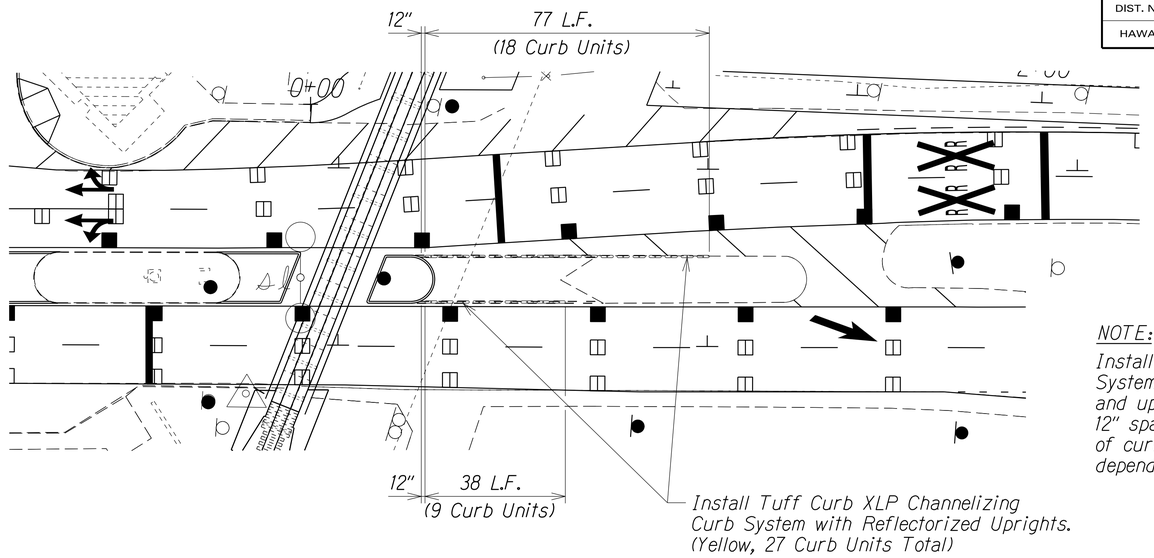


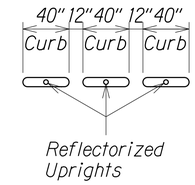
NOTE:

1. Sign R3-40 is a varaiation of sign R3-8. Plate and arrow details shall conform to sign R3-8.

R3-40

Not to Scale



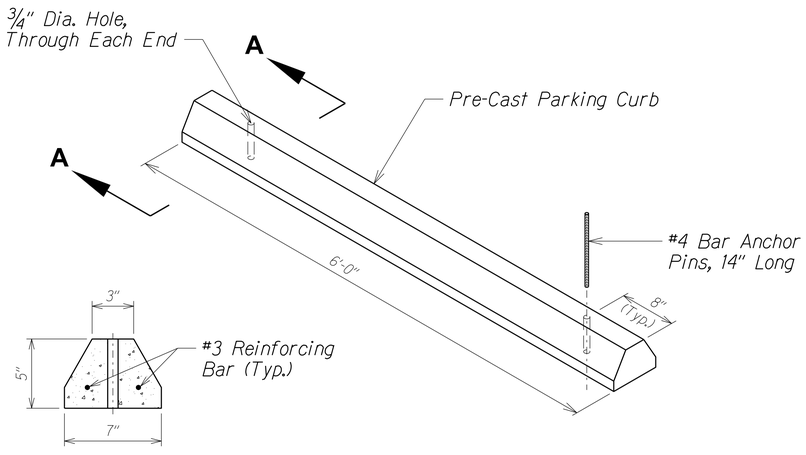


NOTE:

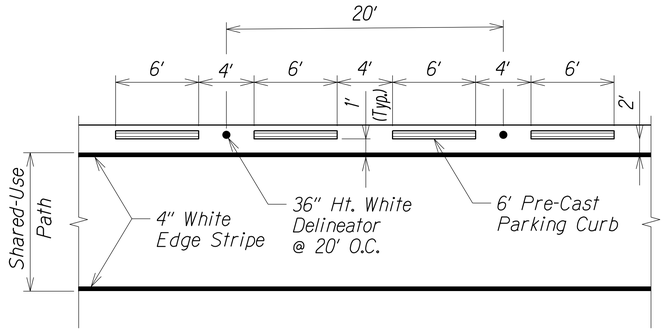
Install new Longitudinal Channelizing Curb System with Reflectorize Uprights. Curbs and uprights shall be white. Provide a 12" space between each curb unit. Amount of curb units and uprights used is dependent on type of curb system installed.

LONGITUDINAL CHANNLELINZING CURB SYSTEM DETAIL

Not to Scale



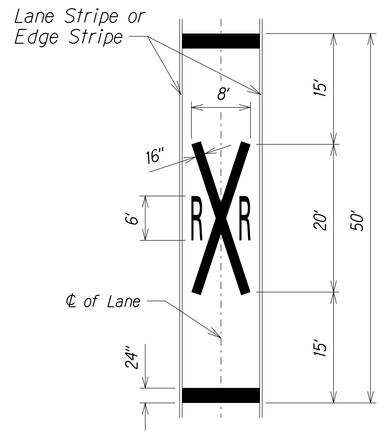
Section A-A
(Typical)



Plan View

PRE-CAST CONCRETE PARKING CURB DETAIL

Not to Scale



RAIL X-ING PAVEMENT MARKING DETAILS

Not to Scale

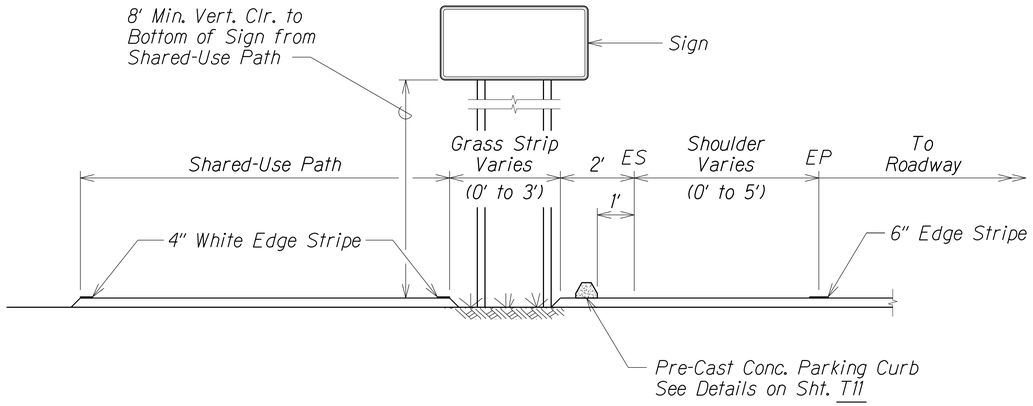
ORIGINAL PLANS	SURVEY PLOTTED BY	DATE
	DRAWN BY X	
	TRACED BY	
NOTE BOOK	DESIGNED BY X	
	QUANTITIES BY	
	CHECKED BY	

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

MISCELLANEOUS DETAILS

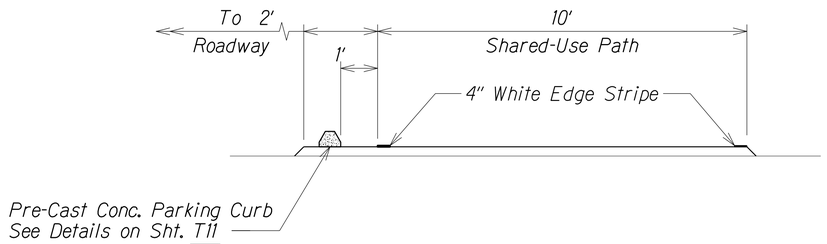
FORT BARRERTTE ROAD OPERATIONAL IMPROVEMENTS
Roosevelt Avenue to Farrington Highway
PROJECT NO. 901A-01-19
Scale: Not to Scale Date: Jan., 2020
SHEET No. T11 OF 13 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	901A-01-19	2020	63	167



PARKING CURB ADJACENT TO PAVED SHOULDER (DETAIL "A")

Not to Scale



PARKING CURB ALONG SHARED-USE PATH (DETAIL "B")

Not to Scale

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

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

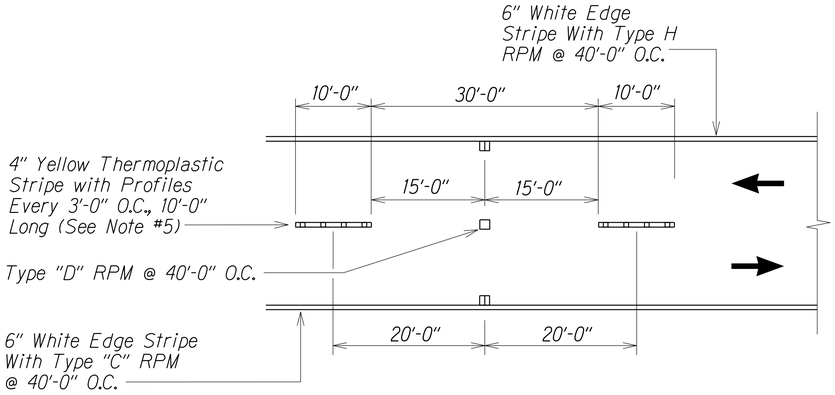
MISCELLANEOUS DETAILS

FORT BARRERTTE ROAD OPERATIONAL IMPROVEMENTS
Roosevelt Avenue to Farrington Highway
PROJECT NO. 901A-01-19

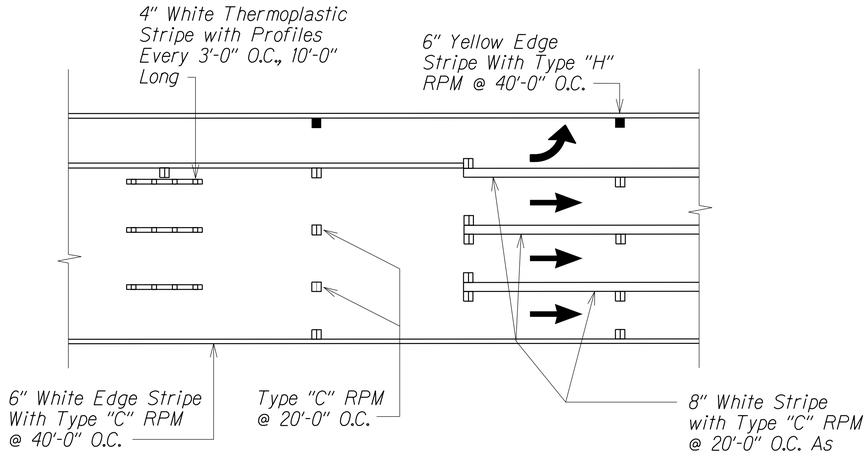
Scale: Not to Scale Date: Jan., 2020

SHEET No. T12 OF 13 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	901A-01-19	2020	64	167

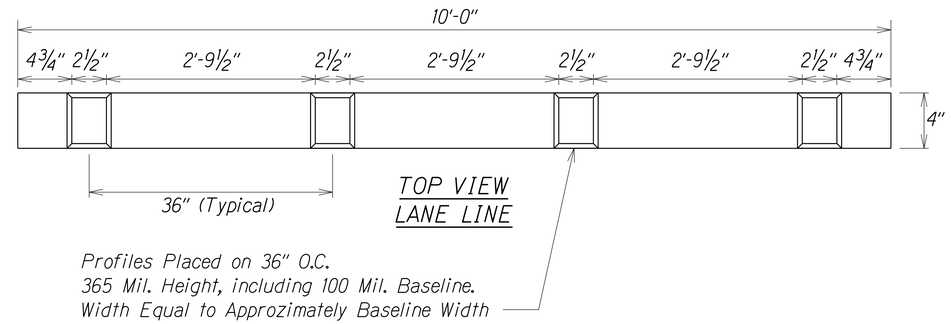


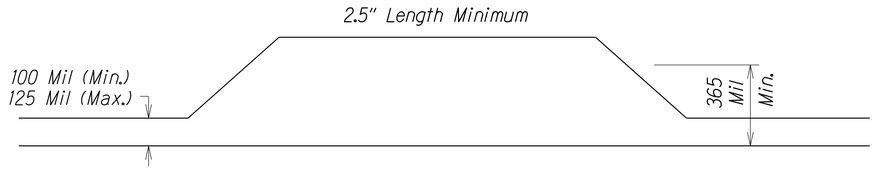
PASSING ZONE



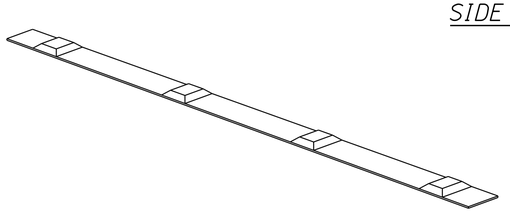
LANE LINE

DETAIL
Not To Scale

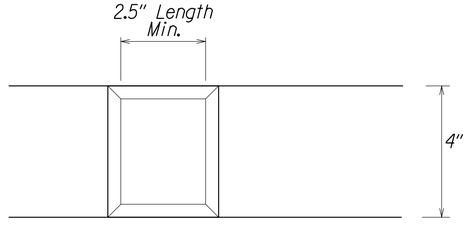




SIDE VIEW



PERSPECTIVE VIEW



TOP VIEW

PROFILED THERMOPLASTIC STRIPING
Not to Scale

NOTES:

1. The thermoplastic material shall be a alkyd-based compund formulated for profiled pavement marking. See specs subsection 629.03 for additional requirements
2. The Engineer will include the longitundinal gaps for skip striping, up to thirty (30) feet long, in the measurement for payment.
3. Install white profiled thermoplastic stripes as lane line.
4. Install yellow profiled thermoplastic stripes for centerlline passing zone.
5. In areas with centerline milled rumble strips, install standard yellow thermoplastic stripes without raised profiles

ORIGINAL PLAN
SURVEY PLOTTED BY
DRAWN BY
TRACED BY
DESIGNED BY
QUANTITIES BY
CHECKED BY
DATE
NOTE BOOK
N:\Orlsf\dgn

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

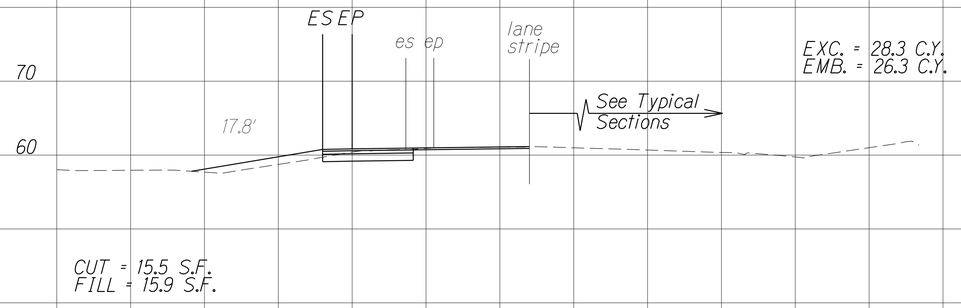
PROFILED PAVEMENT MARKING
DETAILS

FORT BARRERTTE ROAD OPERATIONAL IMPROVEMENTS
Roosevelt Avenue to Farrington Highway
PROJECT NO. 901A-01-19

Scale: Not to Scale Date: Jan., 2020

SHEET No. T13 OF 13 SHEETS

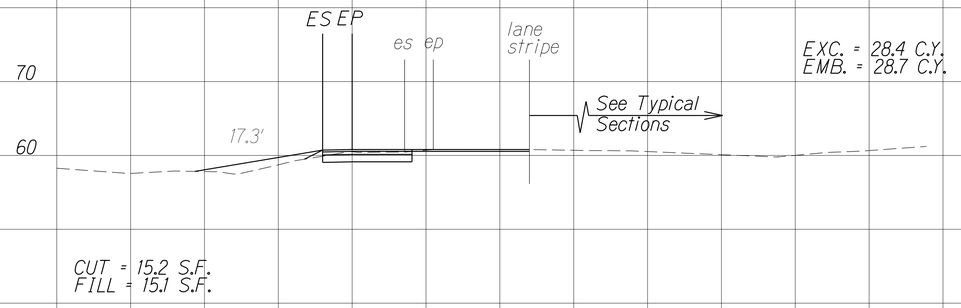
FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	901A-01-19	2020	65	167



EXC. = 28.3 C.Y.
EMB. = 26.3 C.Y.

CUT = 15.5 S.F.
FILL = 15.9 S.F.

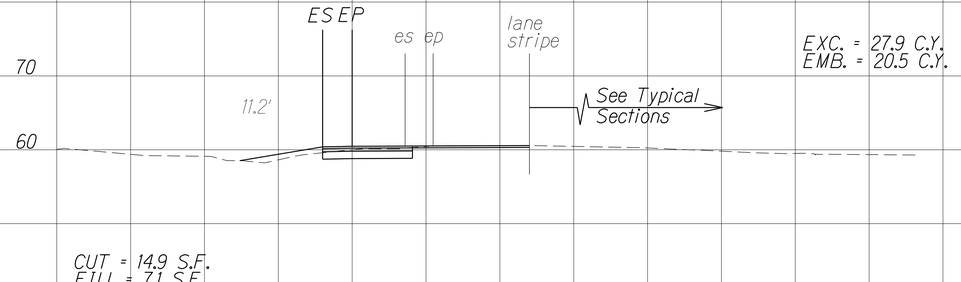
23+50



EXC. = 28.4 C.Y.
EMB. = 28.7 C.Y.

CUT = 15.2 S.F.
FILL = 15.1 S.F.

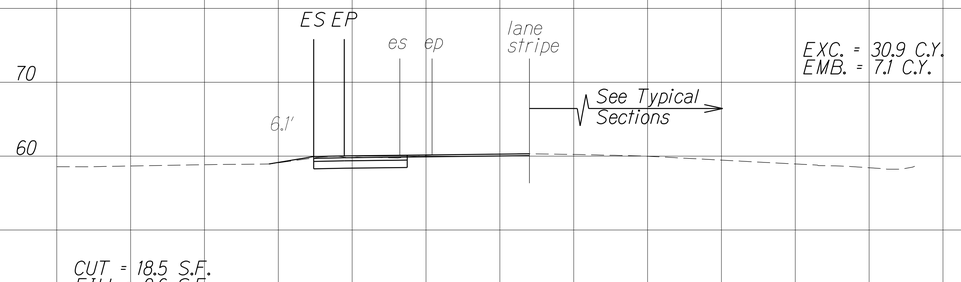
23+00



EXC. = 27.9 C.Y.
EMB. = 20.5 C.Y.

CUT = 14.9 S.F.
FILL = 7.1 S.F.

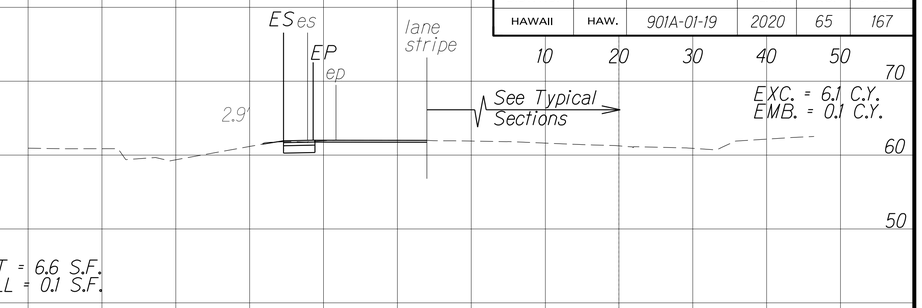
22+50



EXC. = 30.9 C.Y.
EMB. = 7.1 C.Y.

CUT = 18.5 S.F.
FILL = 0.6 S.F.

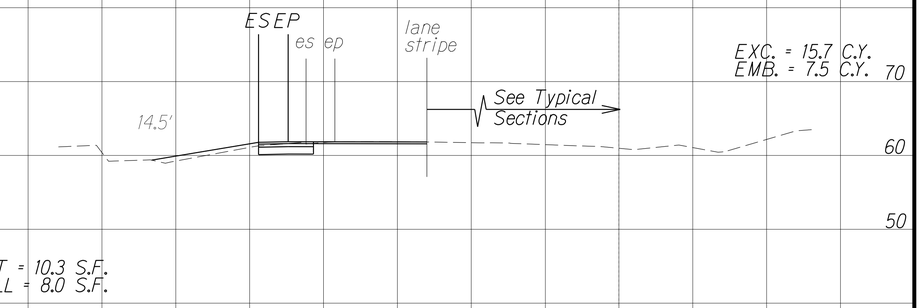
22+00



EXC. = 6.1 C.Y.
EMB. = 0.1 C.Y.

CUT = 6.6 S.F.
FILL = 0.1 S.F.

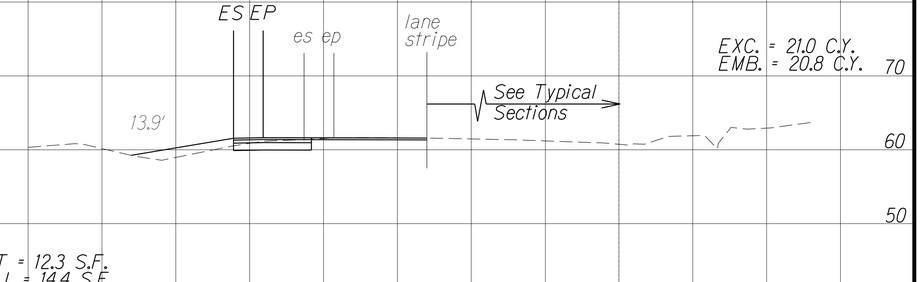
25+50



EXC. = 15.7 C.Y.
EMB. = 7.5 C.Y.

CUT = 10.3 S.F.
FILL = 8.0 S.F.

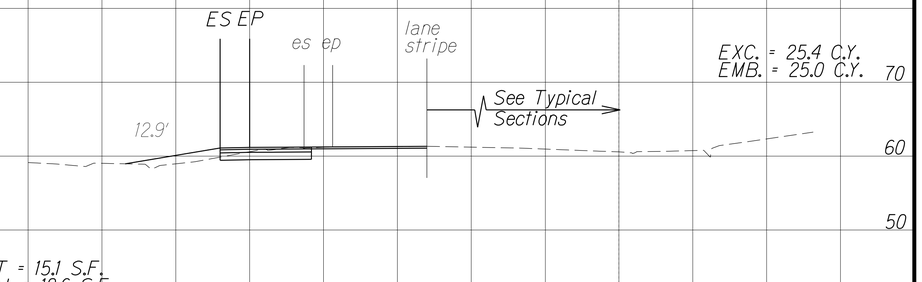
25+00



EXC. = 21.0 C.Y.
EMB. = 20.8 C.Y.

CUT = 12.3 S.F.
FILL = 14.4 S.F.

24+50



EXC. = 25.4 C.Y.
EMB. = 25.0 C.Y.

CUT = 15.1 S.F.
FILL = 12.6 S.F.

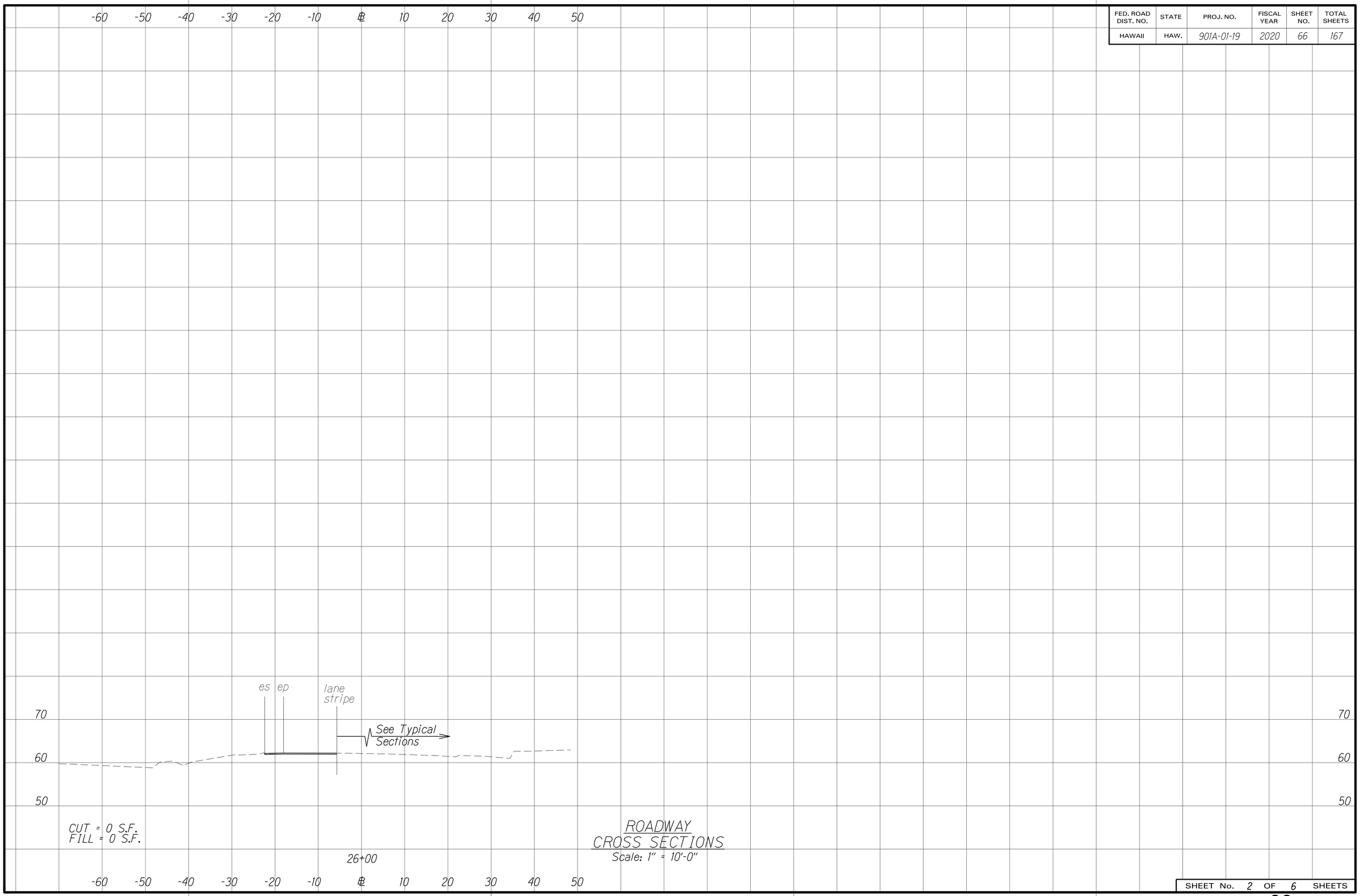
24+00

ROADWAY CROSS SECTIONS

Scale: 1" = 10'-0"

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

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	901A-01-19	2020	66	167



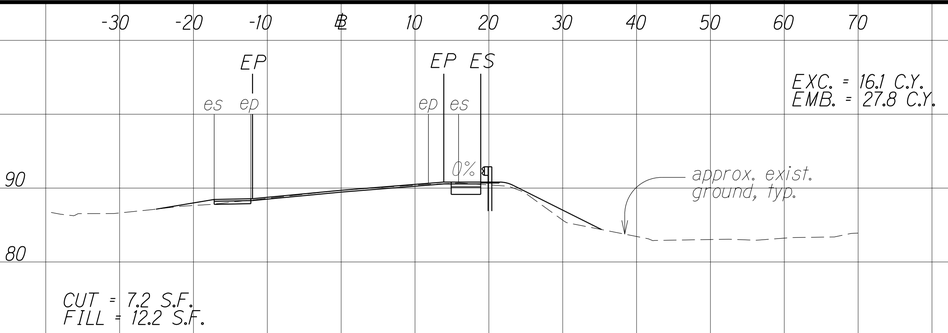
ROADWAY
CROSS SECTIONS
Scale: 1" = 10'-0"

ORIGINAL PLAN
NOTE BOOK
No.

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

SHEET No. 2 OF 6 SHEETS

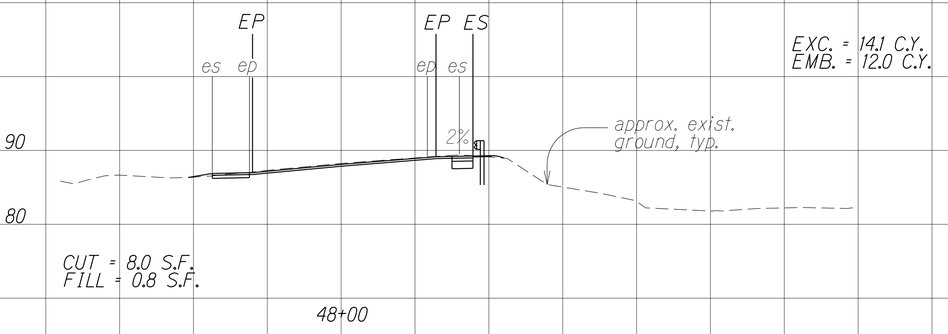
FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	901A-01-19	2020	67	167



EXC. = 16.1 C.Y.
EMB. = 27.8 C.Y.

CUT = 7.2 S.F.
FILL = 12.2 S.F.

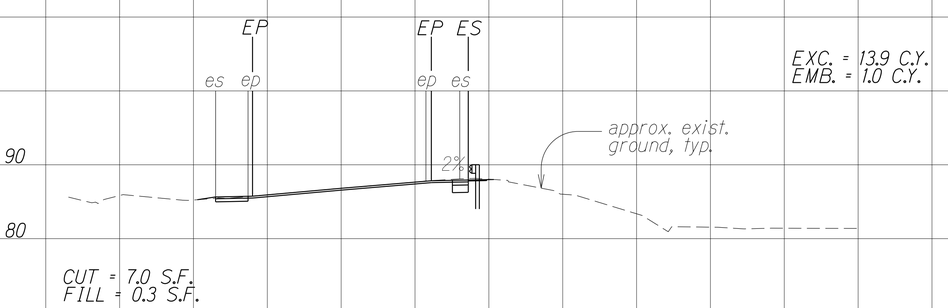
48+50



EXC. = 14.1 C.Y.
EMB. = 12.0 C.Y.

CUT = 8.0 S.F.
FILL = 0.8 S.F.

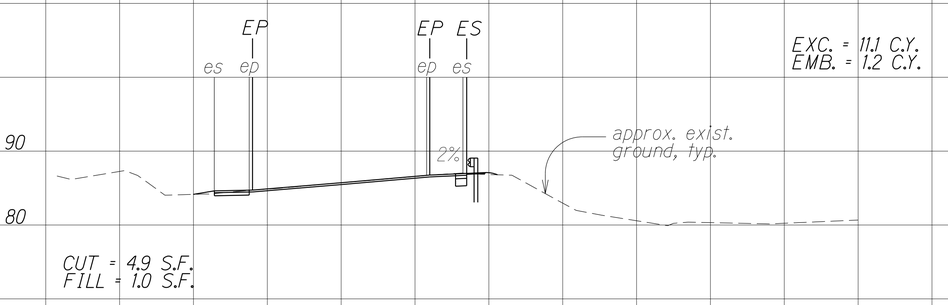
48+00



EXC. = 13.9 C.Y.
EMB. = 1.0 C.Y.

CUT = 7.0 S.F.
FILL = 0.3 S.F.

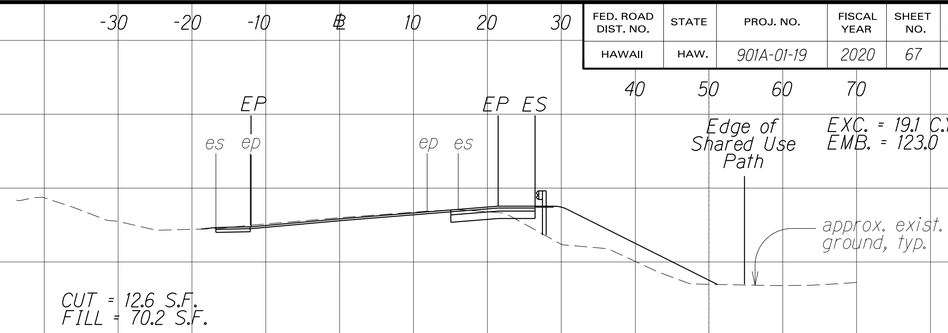
47+50



EXC. = 11.1 C.Y.
EMB. = 1.2 C.Y.

CUT = 4.9 S.F.
FILL = 1.0 S.F.

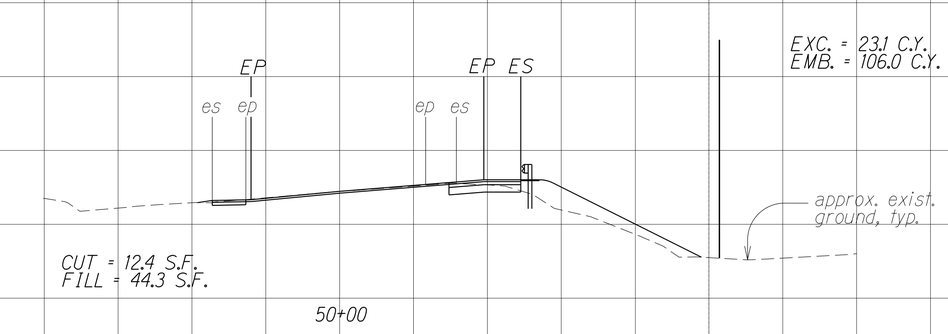
47+00



EXC. = 19.1 C.Y.
EMB. = 123.0 C.Y.

CUT = 12.6 S.F.
FILL = 70.2 S.F.

50+50



EXC. = 23.1 C.Y.
EMB. = 106.0 C.Y.

CUT = 12.4 S.F.
FILL = 44.3 S.F.

50+00

EXC. = 23.6 C.Y.
EMB. = 65.3 C.Y.

CUT = 13.1 S.F.
FILL = 26.2 S.F.

49+50

EXC. = 21.6 C.Y.
EMB. = 40.7 C.Y.

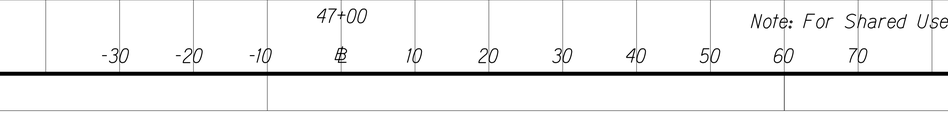
CUT = 10.2 S.F.
FILL = 17.8 S.F.

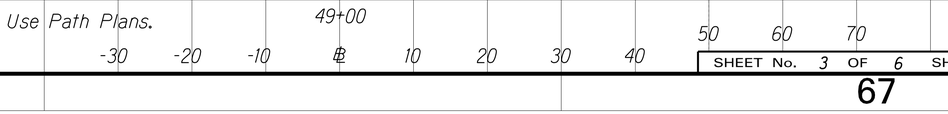
49+00

ROADWAY CROSS SECTIONS

Scale: 1" = 10'-0"

Note: For Shared Use Path cross sections, see Shared Use Path Plans.

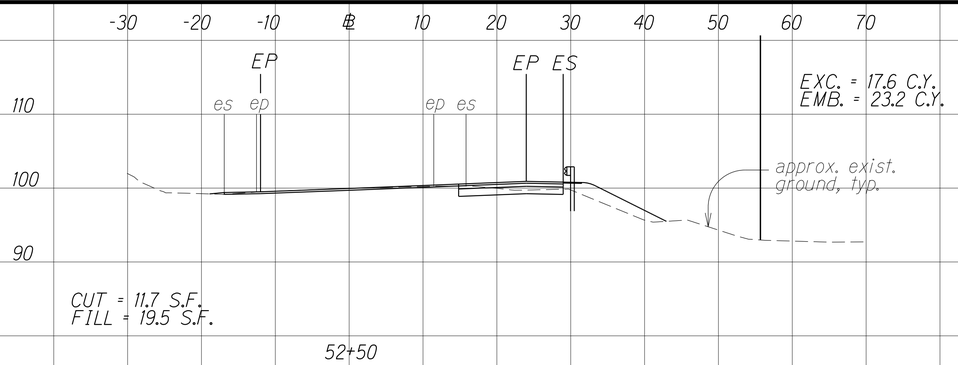




ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
	DRAWN BY	
NOTE BOOK	TRACED BY	
	DESIGNED BY	
	QUANTITIES BY	
	CHECKED BY	
	No.	

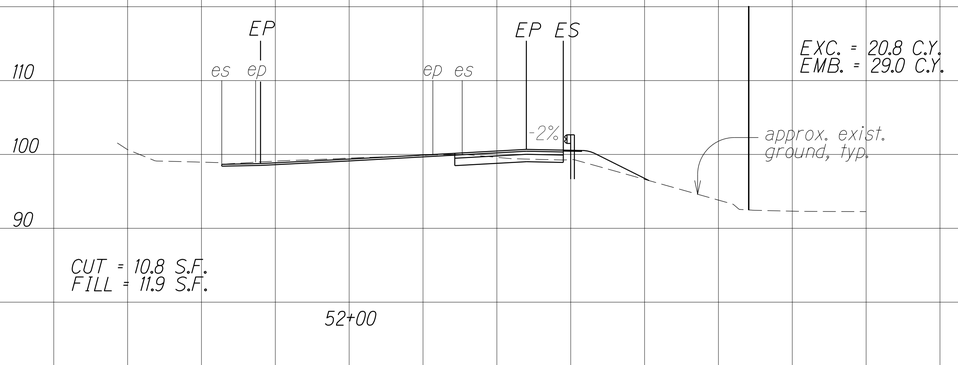
SHEET No. 3 OF 6 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	901A-01-19	2020	68	167



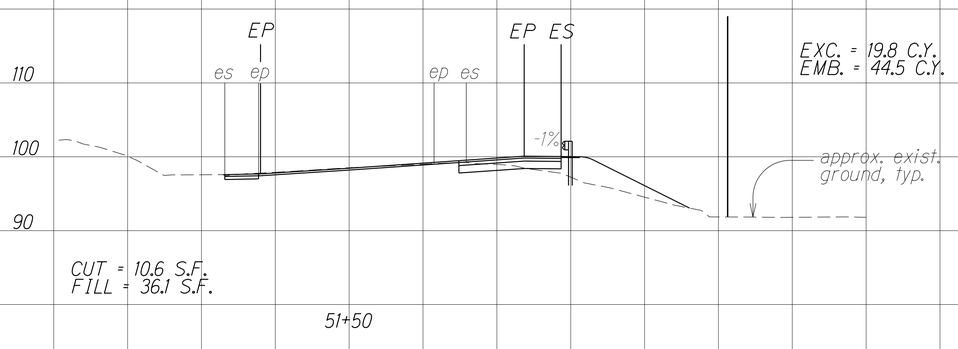
CUT = 11.7 S.F.
FILL = 19.5 S.F.

52+50



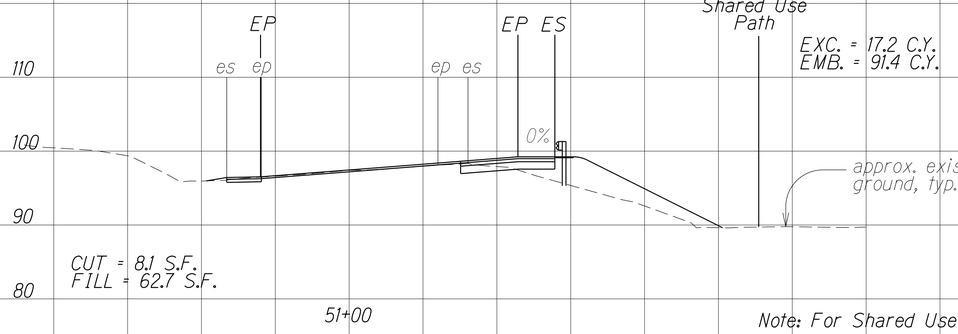
CUT = 10.8 S.F.
FILL = 11.9 S.F.

52+00



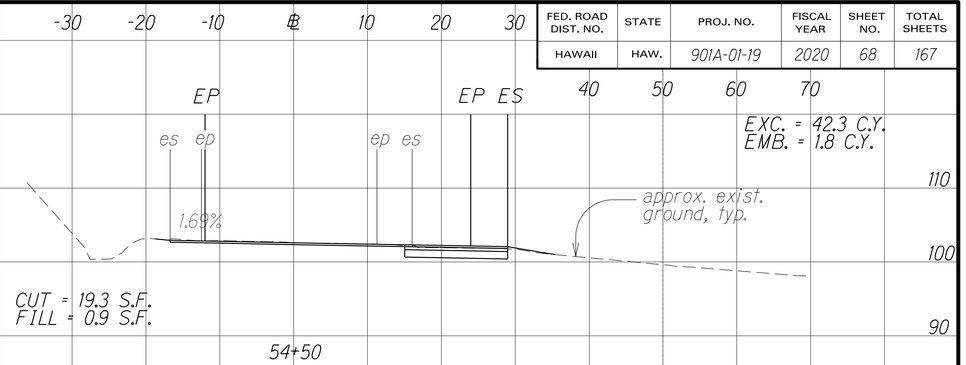
CUT = 10.6 S.F.
FILL = 36.1 S.F.

51+50



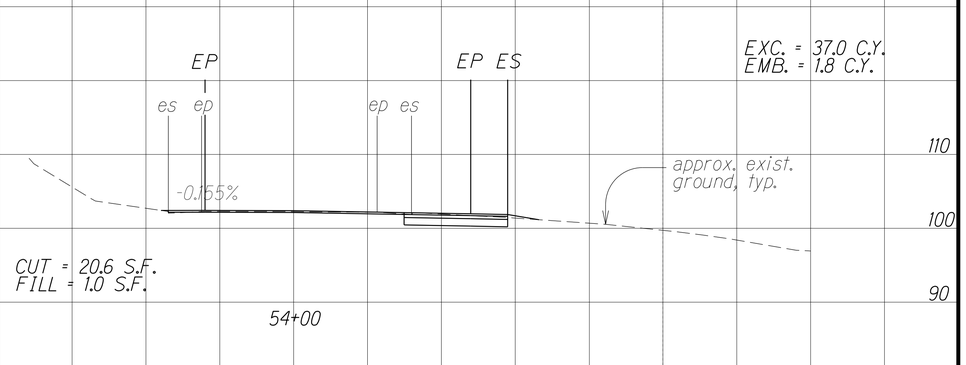
CUT = 8.1 S.F.
FILL = 62.7 S.F.

51+00



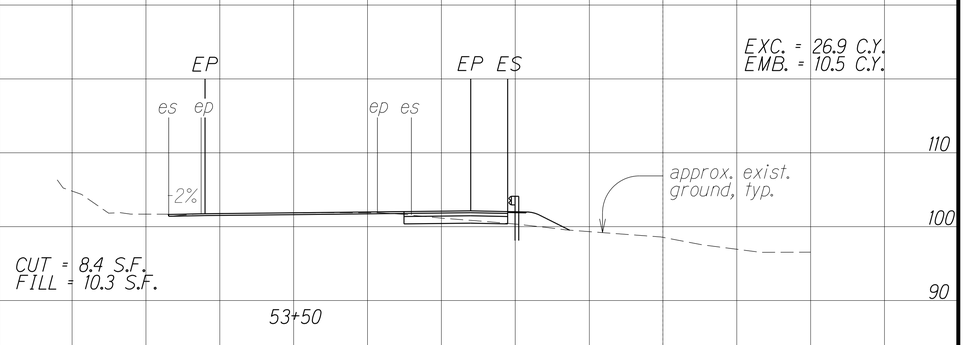
CUT = 19.3 S.F.
FILL = 0.9 S.F.

54+50



CUT = 20.6 S.F.
FILL = 1.0 S.F.

54+00



CUT = 8.4 S.F.
FILL = 10.3 S.F.

53+50

CUT = 7.3 S.F.
FILL = 5.6 S.F.

53+00

ROADWAY CROSS SECTIONS

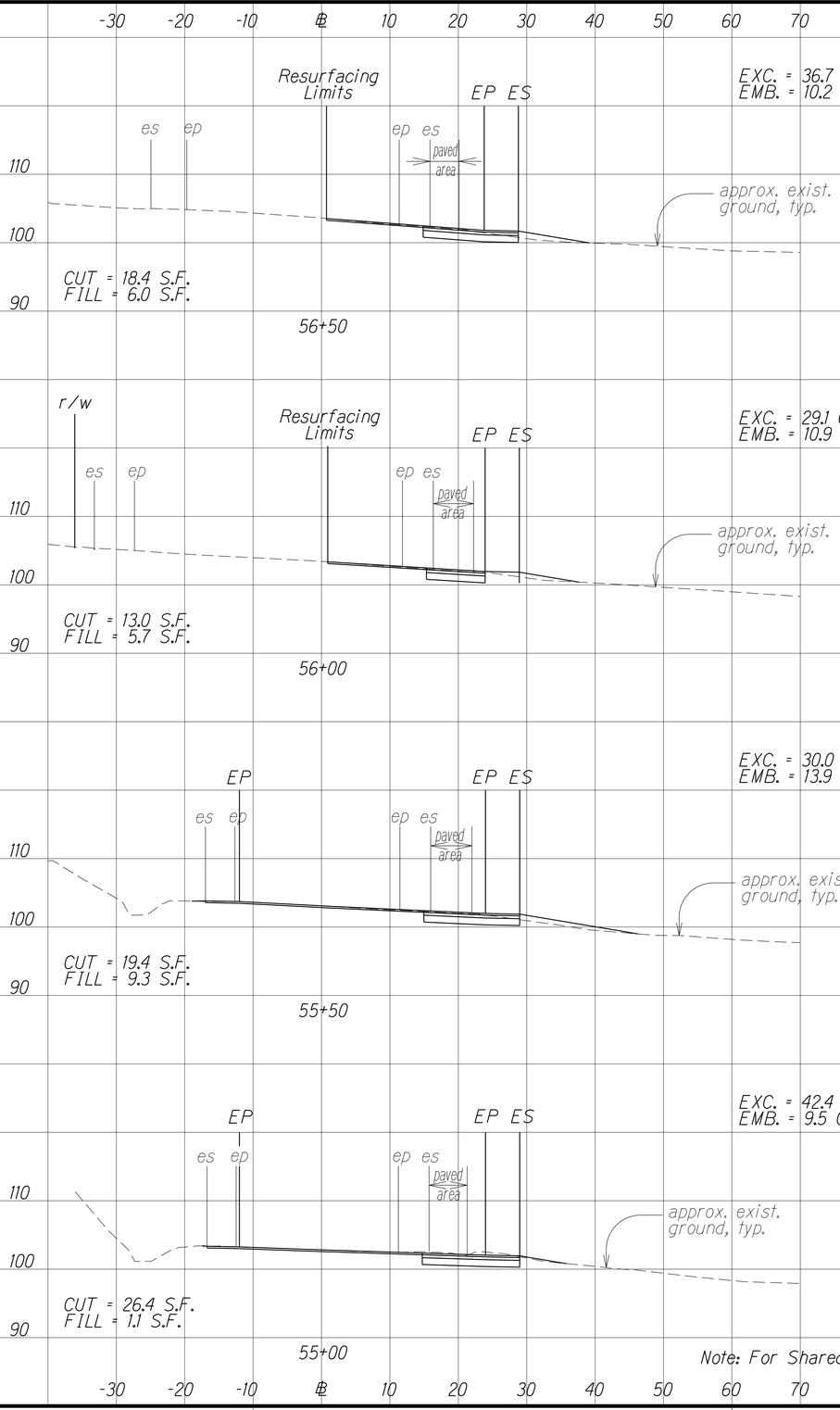
Scale: 1" = 10'-0"

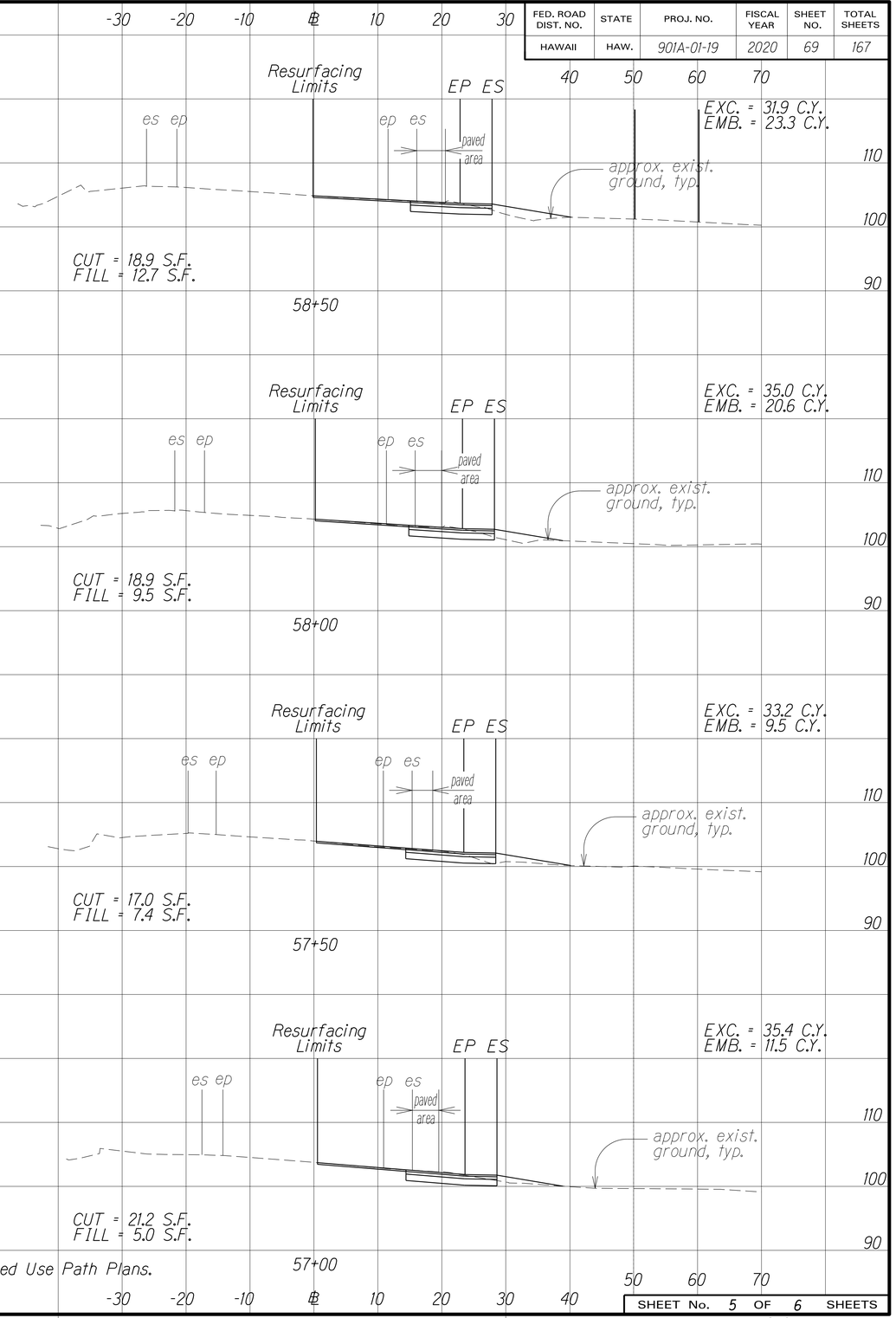
Note: For Shared Use Path cross sections, see Shared Use Path Plans.

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

SHEET No. 4 OF 6 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	901A-01-19	2020	69	167





ROADWAY CROSS SECTIONS

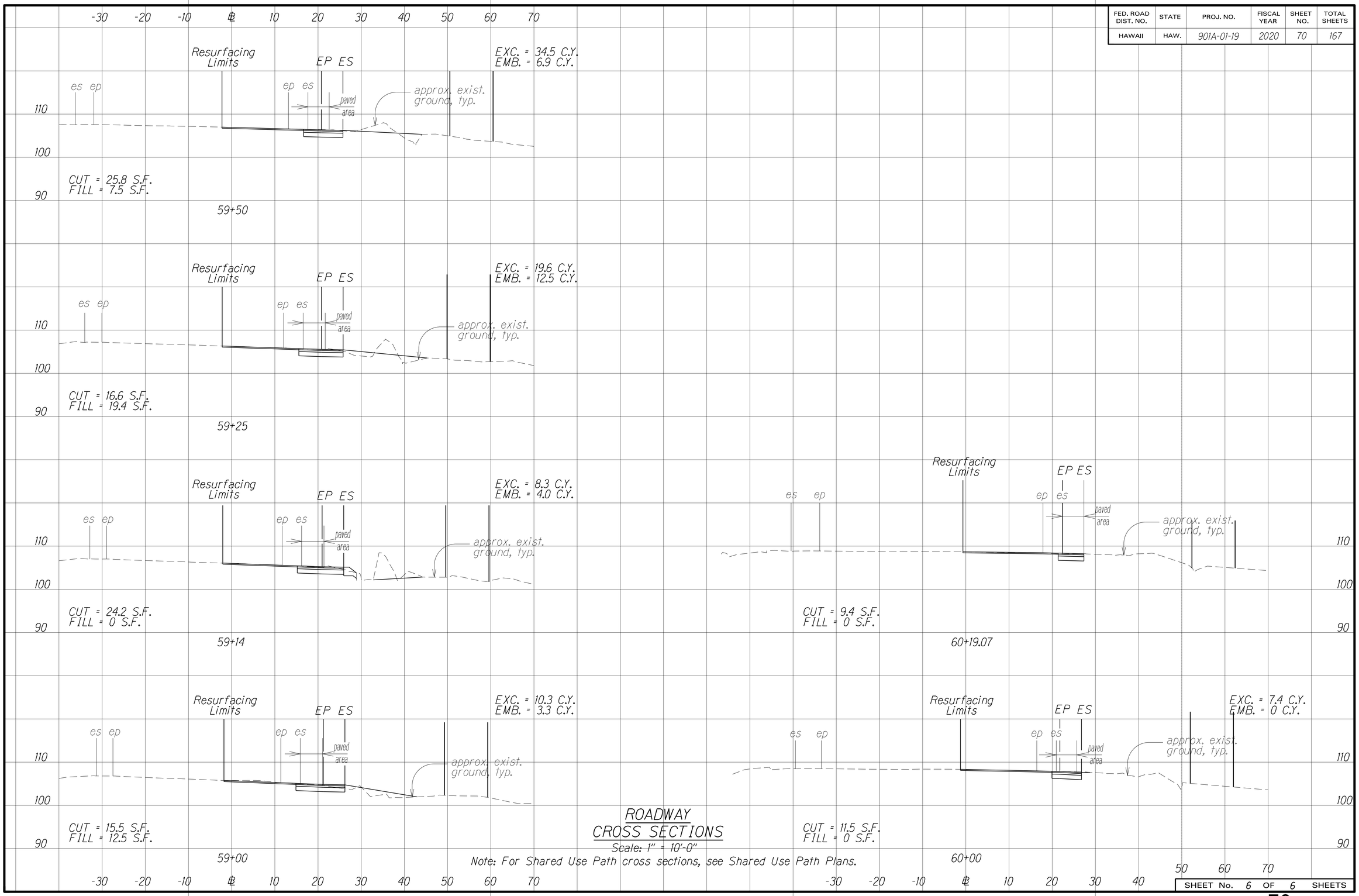
Scale: 1" = 10'-0"

Note: For Shared Use Path cross sections, see Shared Use Path Plans.

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

SHEET No. 5 OF 6 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	901A-01-19	2020	70	167



ROADWAY
CROSS SECTIONS
Scale: 1" = 10'-0"

Note: For Shared Use Path cross sections, see Shared Use Path Plans.

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

SHEET No. 6 OF 6 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	901A-01-19	2020	71	167

TRUE NORTH
SCALE : 1" = 20'

CURVE 1 DATA
△ = 30°9'23.3"
R = 15.00'
T = 4.04'
C = 7.80'
Lc = 7.89'

CURVE 2 DATA
△ = 29°28'51.6"
R = 55.00'
T = 14.47'
C = 27.99'
Lc = 28.30'

CURVE 3 DATA
△ = 15°54'57.8"
R = 50.00'
T = 6.99'
C = 13.84'
Lc = 13.89'

CURVE 4 DATA
△ = 13°50'8.6"
R = 50.00'
T = 6.07'
C = 12.04'
Lc = 12.07'

ROOSEVELT AVE. (STATE)

To Kalaeloa

ENTERPRISE ST. (STATE)

Traffic Signal Pullbox (Typ.) See Note 1

Sta. 00+00, Begin Shared Use Path 1

PRC Sta. 0+7.89
R = 15'
R = 55'

Sta. 00+22.55

Sta. 00+38.39

Sta. 00+58.02

PT Sta. 0+36.19
R = 55'

PC Sta. 0+61.08
R = 50'

146 27'28.98", 13.84'

147°29'53.57", 12.04'

℄ Shared Use Path 1

R/W

M.L. ℄ STA. 2+00
SEE SHEET AL-2

138°30'00.06", 24.88'

123°45'34.27", 27.99'

Sta. 00+94.88

es
ep

140°34'49.25", 164.13'

EP

124°05'50.16", 7.80'

PC Sta. 00+00.00
R = 15'

PRC Sta. 0+74.97
R = 50.00'
R = 50.00'

PT Sta. 0+87.05
R = 50'

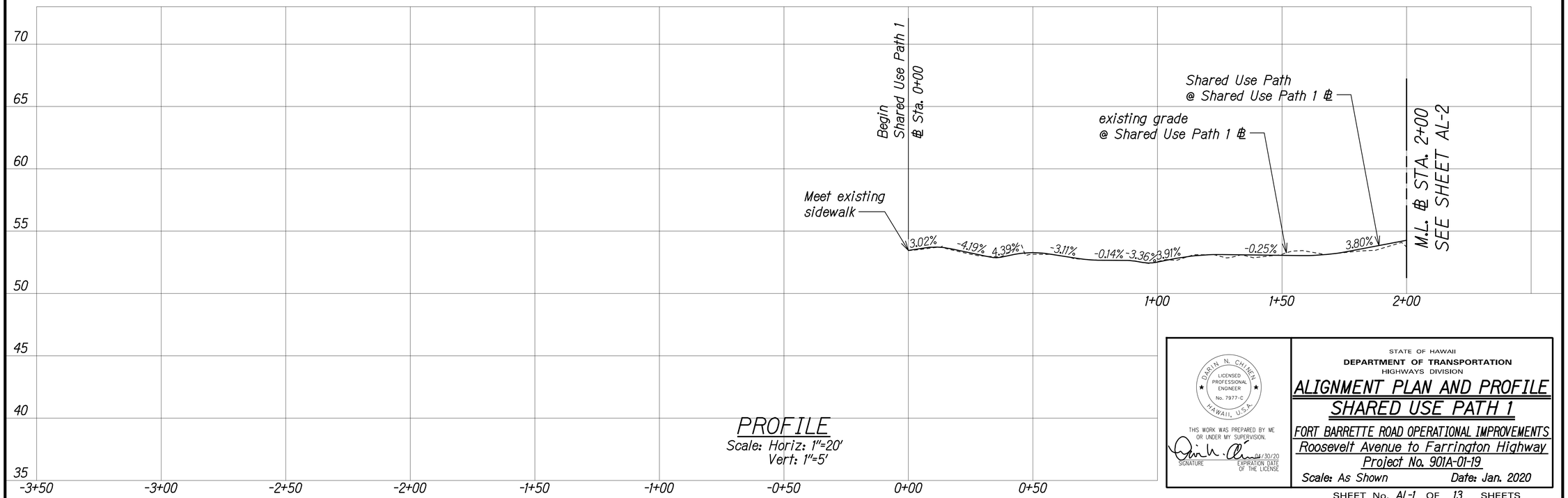
FT BARETTE ROAD (STATE)

To Makakilo

R/W

NOTES:
1. See Traffic Signal Interconnect Plans TS-14 and TS-15 for Traffic Signal Pullbox location.
2. See sheet TS-9 for Traffic Signal Pullbox details.

PLAN
Scale: 1"=20'



PROFILE
Scale: Horiz: 1"=20'
Vert: 1"=5'

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

DARIN N. CHIMEN
LICENSED PROFESSIONAL ENGINEER
No. 7977-C
HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.

SIGNATURE
04/30/20
EXPIRATION DATE OF THE LICENSE

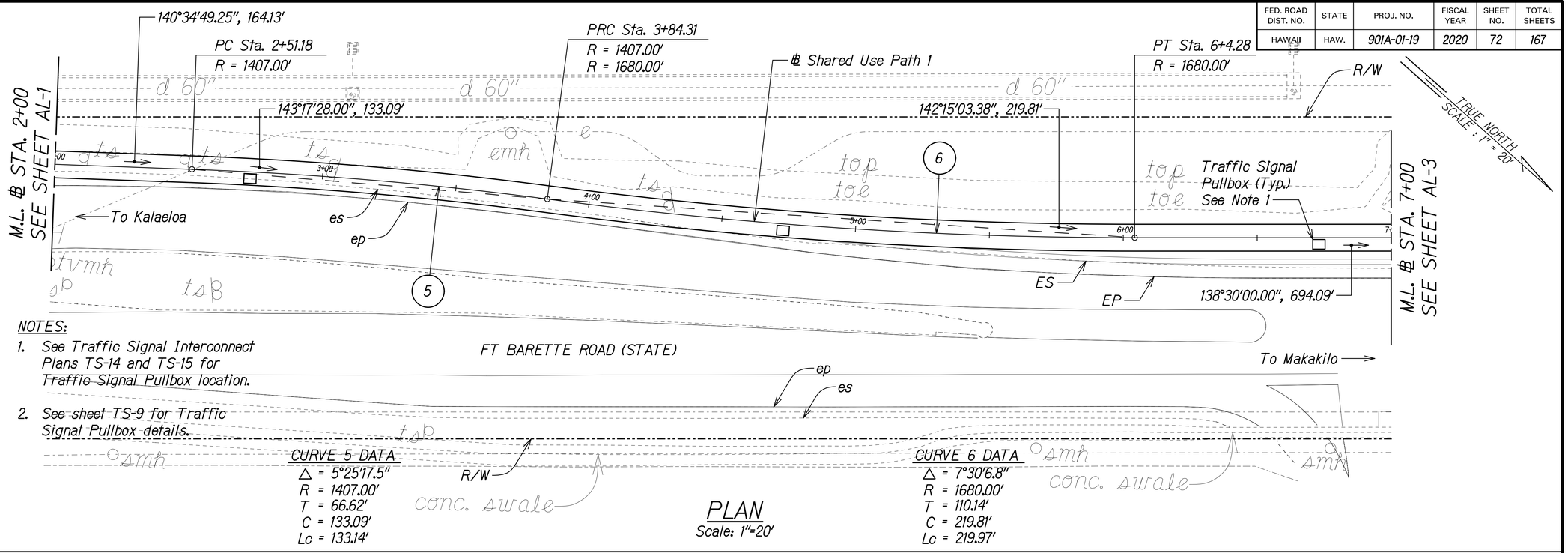
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

ALIGNMENT PLAN AND PROFILE
SHARED USE PATH 1
FORT BARRETTE ROAD OPERATIONAL IMPROVEMENTS
Roosevelt Avenue to Farrington Highway
Project No. 901A-01-19

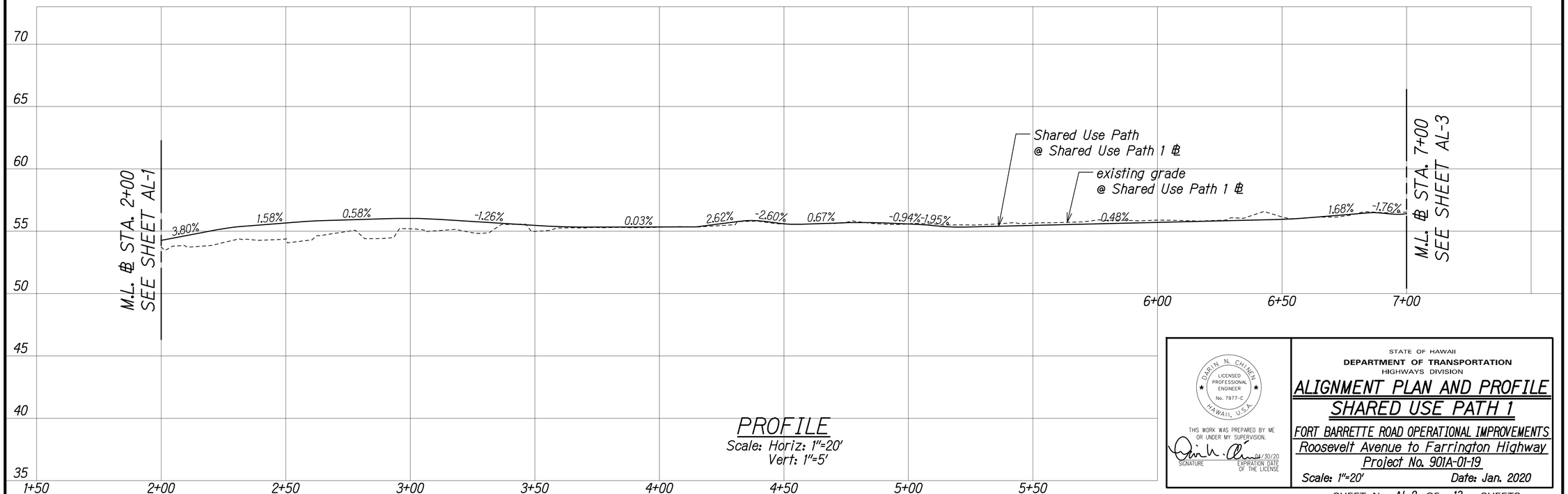
Scale: As Shown Date: Jan. 2020

SHEET No. AL-1 OF 13 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	901A-01-19	2020	72	167



PLAN
Scale: 1"=20'



PROFILE
Scale: Horiz: 1"=20'
Vert: 1"=5'

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

DARIN N. CHINEN
LICENSED PROFESSIONAL ENGINEER
No. 7977-C
HAWAII, U.S.A.

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STATE OF HAWAII
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HIGHWAYS DIVISION

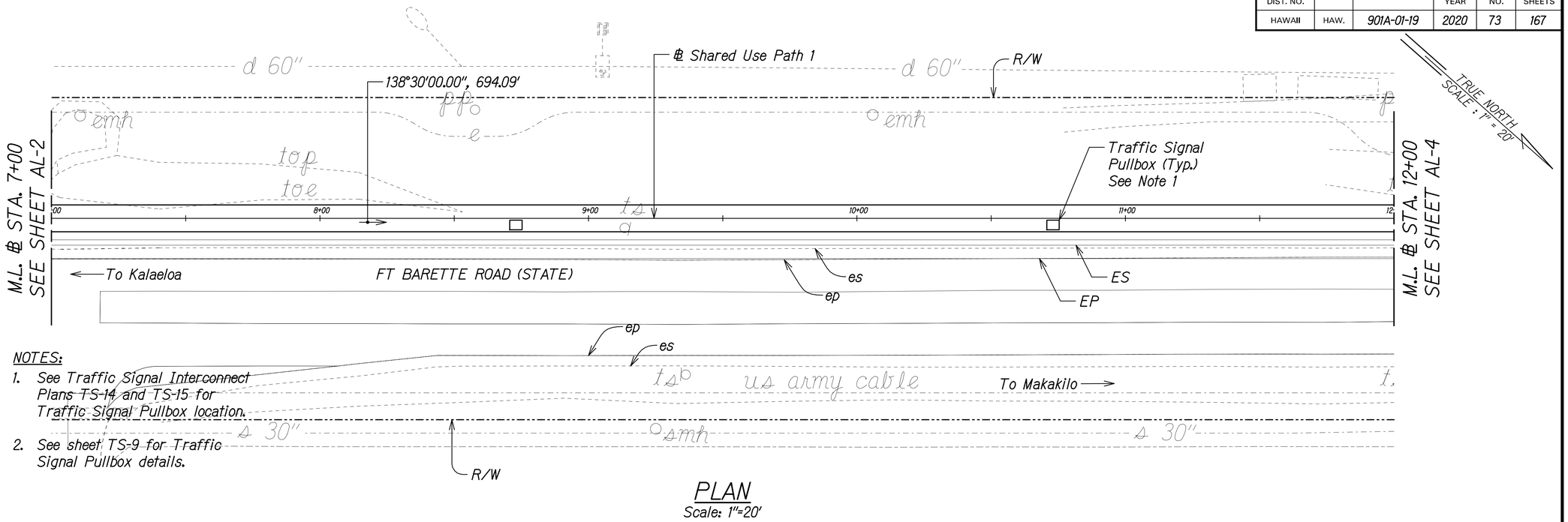
ALIGNMENT PLAN AND PROFILE
SHARED USE PATH 1

FORT BARRETTE ROAD OPERATIONAL IMPROVEMENTS
Roosevelt Avenue to Farrington Highway
Project No. 901A-01-19

Scale: 1"=20' Date: Jan. 2020

SHEET No. AL-2 OF 13 SHEETS

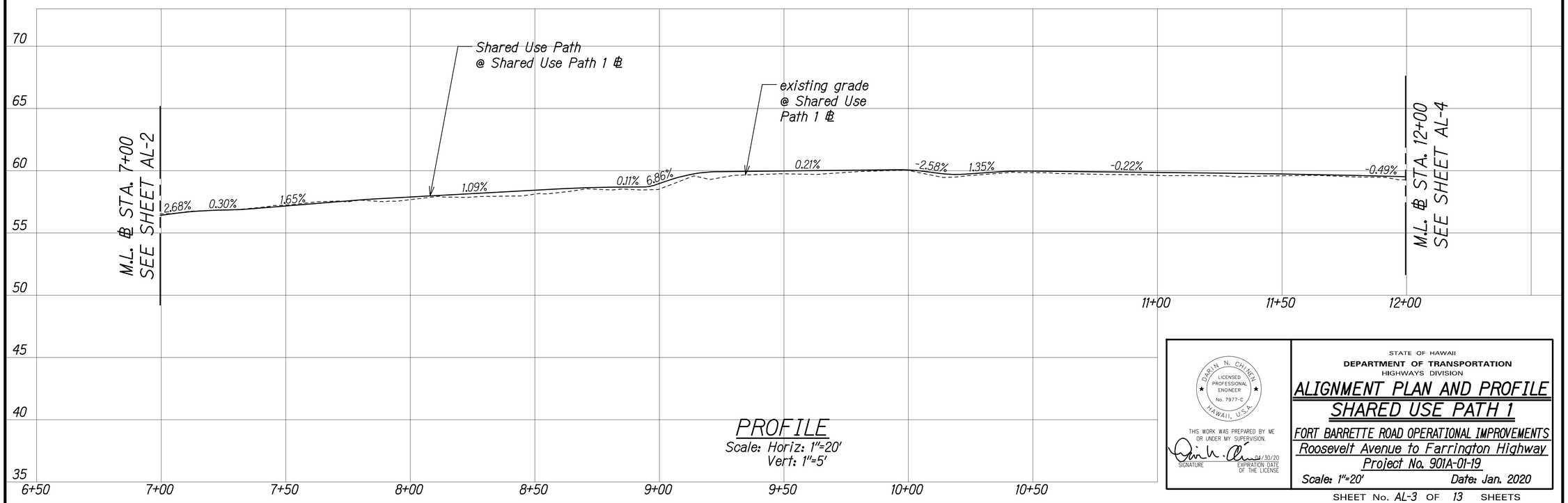
FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	901A-01-19	2020	73	167



NOTES:

1. See Traffic Signal Interconnect Plans TS-14 and TS-15 for Traffic Signal Pullbox location.
2. See sheet TS-9 for Traffic Signal Pullbox details.

PLAN
Scale: 1"=20'



PROFILE
Scale: Horiz: 1"=20'
Vert: 1"=5'

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

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EXPIRATION DATE OF THE LICENSE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

ALIGNMENT PLAN AND PROFILE
SHARED USE PATH 1
FORT BARRETTE ROAD OPERATIONAL IMPROVEMENTS
Roosevelt Avenue to Farrington Highway
Project No. 901A-01-19

Scale: 1"=20' Date: Jan. 2020

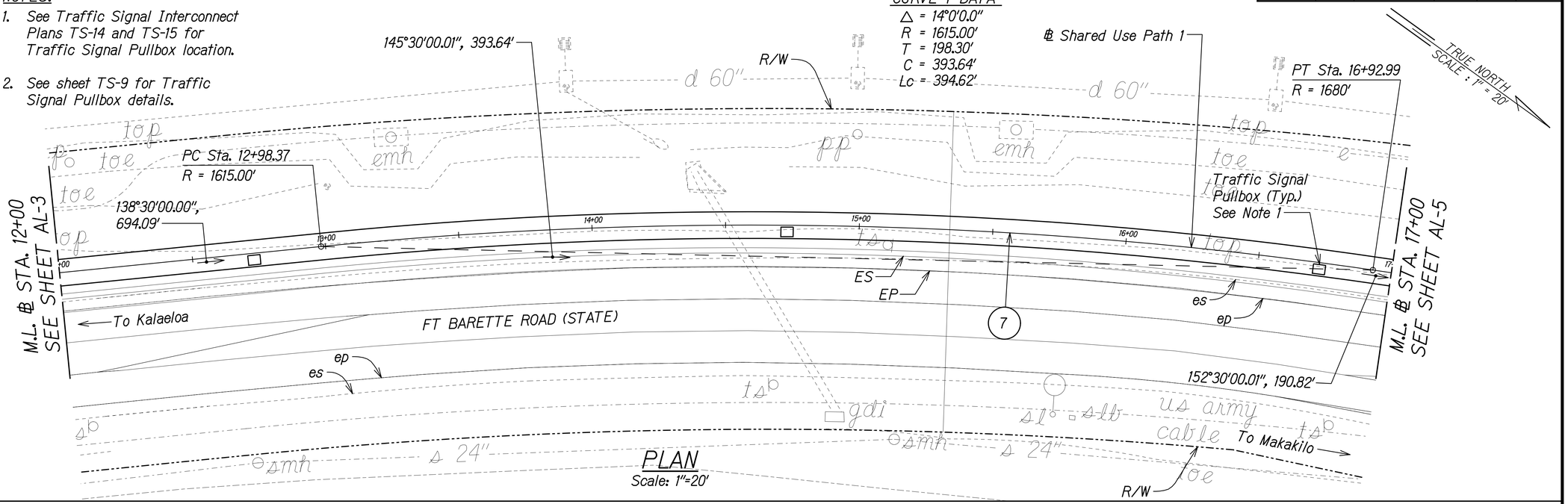
SHEET No. AL-3 OF 13 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	901A-01-19	2020	74	167

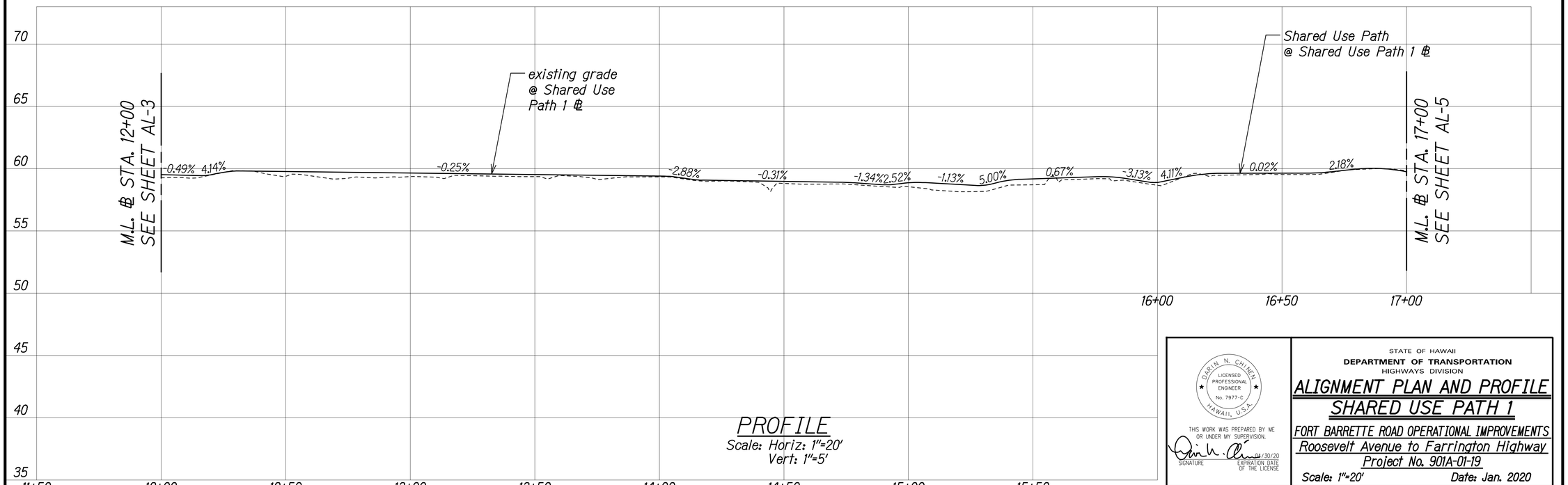
NOTES:

1. See Traffic Signal Interconnect Plans TS-14 and TS-15 for Traffic Signal Pullbox location.
2. See sheet TS-9 for Traffic Signal Pullbox details.

CURVE 7 DATA
△ = 14°0'0.0"
R = 1615.00'
T = 198.30'
C = 393.64'
Lc = 394.62'



PLAN
Scale: 1"=20'



PROFILE
Scale: Horiz: 1"=20'
Vert: 1"=5'

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

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STATE OF HAWAII
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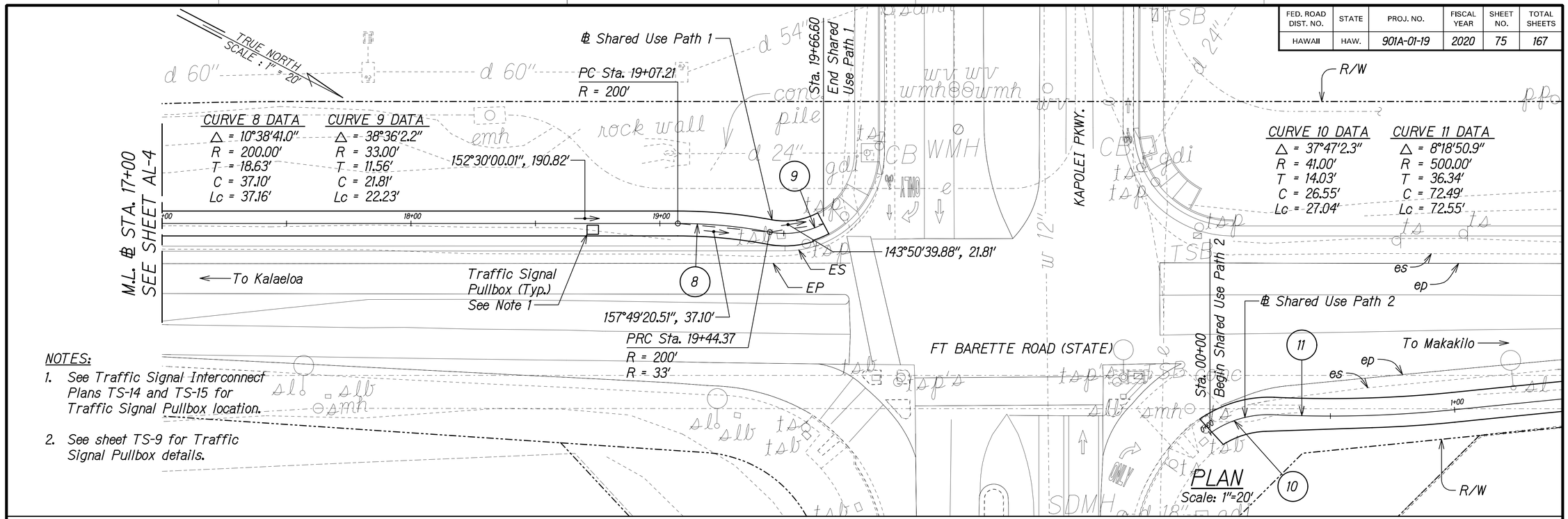
HIGHWAYS DIVISION

ALIGNMENT PLAN AND PROFILE
SHARED USE PATH 1

FORT BARRETTE ROAD OPERATIONAL IMPROVEMENTS
Roosevelt Avenue to Farrington Highway
Project No. 901A-01-19
Scale: 1"=20' Date: Jan. 2020

SHEET No. AL-4 OF 13 SHEETS

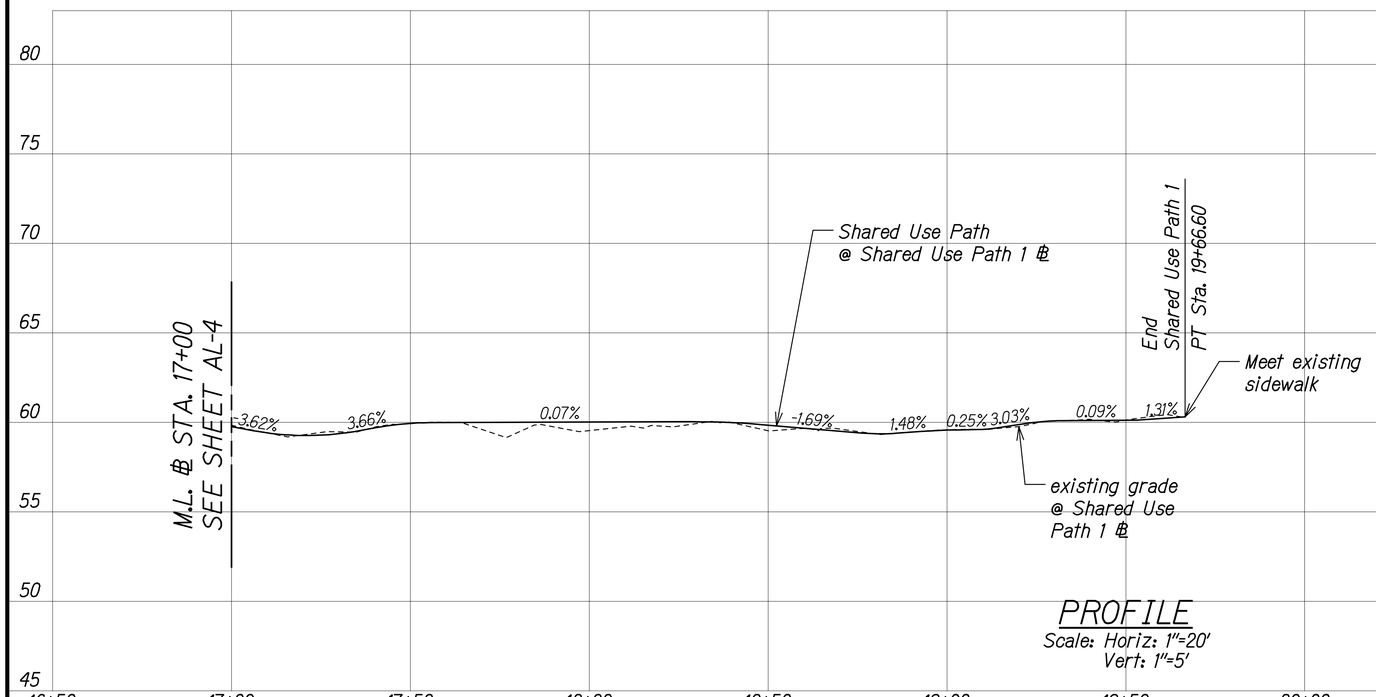
FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	901A-01-19	2020	75	167



NOTES:

1. See Traffic Signal Interconnecf Plans TS-14 and TS-15 for Traffic Signal Pullbox location.
2. See sheet TS-9 for Traffic Signal Pullbox details.

PLAN
Scale: 1"=20'



PROFILE
Scale: Horiz: 1"=20'
Vert: 1"=5'

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

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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

ALIGNMENT PLAN AND PROFILE
SHARED USE PATH 1

FORT BARRETTE ROAD OPERATIONAL IMPROVEMENTS
Roosevelt Avenue to Farrington Highway
Project No. 901A-01-19

Scale: 1"=20' Date: Jan. 2020

SHEET No. AL-5 OF 13 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	901A-01-19	2020	76	167

TRUE NORTH
SCALE : 1" = 20'

KAPOLEI PKWY.

R/W

CURVE 10 DATA	CURVE 11 DATA	CURVE 12 DATA
△ = 37°47'2.3"	△ = 8°18'50.9"	△ = 5°44'1.1"
R = 41.00'	R = 500.00'	R = 500.00'
T = 14.03'	T = 36.34'	T = 25.04'
C = 26.55'	C = 72.49'	C = 50.01'
Lc = 27.04'	Lc = 72.55'	Lc = 50.04'

℄ Shared Use Path 2

To Kalaeloa

PRC Sta. 0+27.04
R = 41'
R = 500'

PT Sta. 0+99.59
R = 500'

FT BARETTE ROAD (STATE)

Traffic Signal Pullbox (Typ.)
See Note 1

11
150°55'25.38", 72.49'

Sta. 00+00 Begin Shared Use Path 2

10
136°11'19.69", 26.55'
PC Sta. 00+00.00
R = 41'

146°45'59.91", 83.13'

R/W

PC Sta. 1+82.72
R = 500'

12

PT Sta. 2+32.76
R = 500'
149°38'00.44", 50.01'

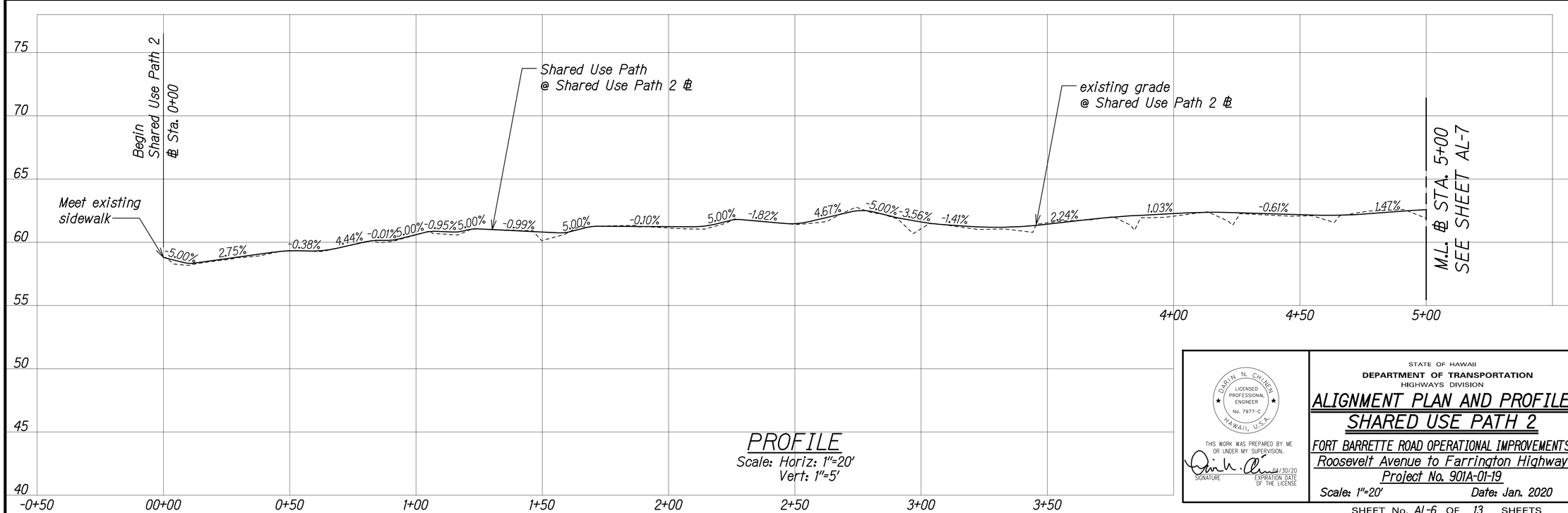
152°30'00.96", 414.92'

To Makakilo

M.L. ℄ STA. 5+00
SEE SHEET AL-7

PLAN
Scale: 1"=20'

NOTES:
1. See Traffic Signal Interconnect Plans TS-14 and TS-15 for Traffic Signal Pullbox location.
2. See sheet TS-9 for Traffic Signal Pullbox details.



PROFILE
Scale: Horiz: 1"=20'
Vert: 1"=5'

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

DARIN N. CHIMEN
LICENSED PROFESSIONAL ENGINEER
No. 7977-C
HAWAII, U.S.A.

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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

ALIGNMENT PLAN AND PROFILE
SHARED USE PATH 2

FORT BARRETTE ROAD OPERATIONAL IMPROVEMENTS
Roosevelt Avenue to Farrington Highway
Project No. 901A-01-19

Scale: 1"=20' Date: Jan. 2020

SHEET No. AL-6 OF 13 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	901A-01-19	2020	77	167

TRUE NORTH
SCALE : 1" = 20'

R/W

CURVE 13 DATA
△ = 15°54'19.1"
R = 1197.00'
T = 167.22'
C = 331.22'
Lc = 332.29'

To Kalaeloa

FT BARETTE ROAD (STATE)

To Makakilo

Traffic Signal Pullbox (Typ.) See Note 1

M.L. ℄ STA. 5+00
SEE SHEET AL-6

M.L. ℄ STA. 10+00
SEE SHEET AL-8

NOTES:
1. See Traffic Signal Interconnect Plans TS-14 and TS-15 for Traffic Signal Pullbox location.
2. See sheet TS-9 for Traffic Signal Pullbox details.

PC Sta. 6+47.68
R = 1197'
152°30'00.96", 414.92'

13

℄ Shared Use Path 2

160°27'10.51", 331.22'

PCC Sta. 9+79.97
R = 1197'
R = 450'
176°33'59.93", 127.76'

PLAN
Scale: 1"=20'

Shared Use Path
@ Shared Use Path 2 ℄

existing grade
@ Shared Use Path 2 ℄

-0.59% 1.68% 0.15% -2.62% 3.84% -3.98% 2.95% -5.00% 4.43% 0.57% 2.02% -2.98% 1.10% -4.27% 3.97% -0.08% 1.71%

M.L. ℄ STA. 5+00
SEE SHEET AL-6

M.L. ℄ STA. 10+00
SEE SHEET AL-8

PROFILE
Scale: Horiz: 1"=20'
Vert: 1"=5'

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

DARIN N. CHIMEN
LICENSED PROFESSIONAL ENGINEER
No. 7977-C
HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.

SIGNATURE

04/30/20
EXPIRATION DATE OF THE LICENSE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

ALIGNMENT PLAN AND PROFILE
SHARED USE PATH 2
FORT BARRETTE ROAD OPERATIONAL IMPROVEMENTS
Roosevelt Avenue to Farrington Highway
Project No. 901A-01-19

Scale: 1"=20' Date: Jan. 2020

SHEET No. AL-7 OF 13 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	901A-01-19	2020	78	167

TRUE NORTH
SCALE : 1" = 20'

R/W

NOTES:

1. See Traffic Signal Interconnect Plans TS-14 and TS-15 for Traffic Signal Pullbox location.
2. See sheet TS-9 for Traffic Signal Pullbox details.

CURVE 14 DATA	CURVE 15 DATA	CURVE 16 DATA	CURVE 17 DATA
△ = 16°19'19.7"	△ = 4°3'47.9"	△ = 17°36'15.5"	△ = 29°13'31.5"
R = 450.00'	R = 2000.00'	R = 175.00'	R = 54.00'
T = 64.53'	T = 70.95'	T = 27.10'	T = 14.08'
C = 127.76'	C = 141.81'	C = 53.56'	C = 27.25'
Lc = 128.19'	Lc = 141.84'	Lc = 53.77'	Lc = 27.54'

To Kalaeloa

FT BARETTE ROAD (STATE)

PC Sta. 13+82.22

PCC Sta. 14+35.99
R = 175'
R = 54'

Sta. 14+63.54
End Shared Use Path 2

To Makakilo

KAMAAHA AVE.

Traffic Signal Pullbox (Typ.) See Note 1

15

16

17

14

es

ep

M.L. ℄ STA. 10+00
SEE SHEET AL-7

176°33'59.93", 127.76'

PRC Sta. 11+08.16
R = 450'
R = 2000'

182°41'45.87", 141.81'

℄ Shared Use Path 2

R/W

PT Sta. 12+50,
R = 2000'

180°39'51.93", 132.22'

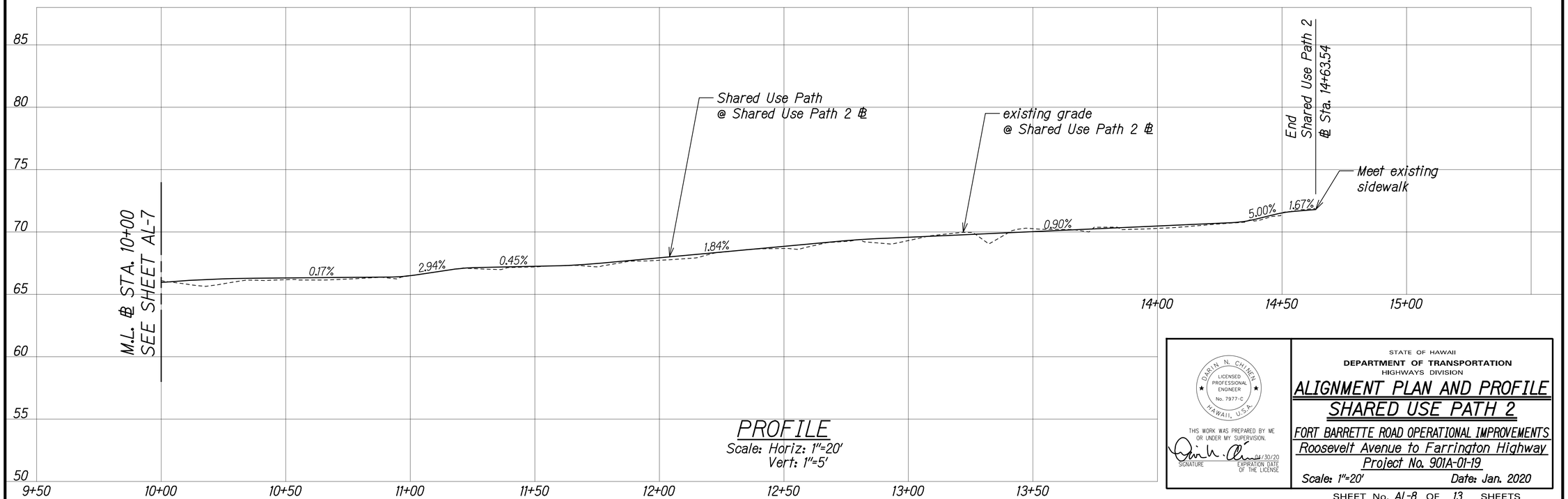
180°39'51.93", 132.22'

189°27'59.70", 53.56'

212°46'07.13", 27.04'

PT Sta. 14+63.54
R = 54'

PLAN
Scale: 1"=20'



PROFILE
Scale: Horiz: 1"=20'
Vert: 1"=5'

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

DARIN N. CHIMEN
LICENSED PROFESSIONAL ENGINEER
No. 7977-C
HAWAII, U.S.A.

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SIGNATURE

04/30/20
EXPIRATION DATE OF THE LICENSE

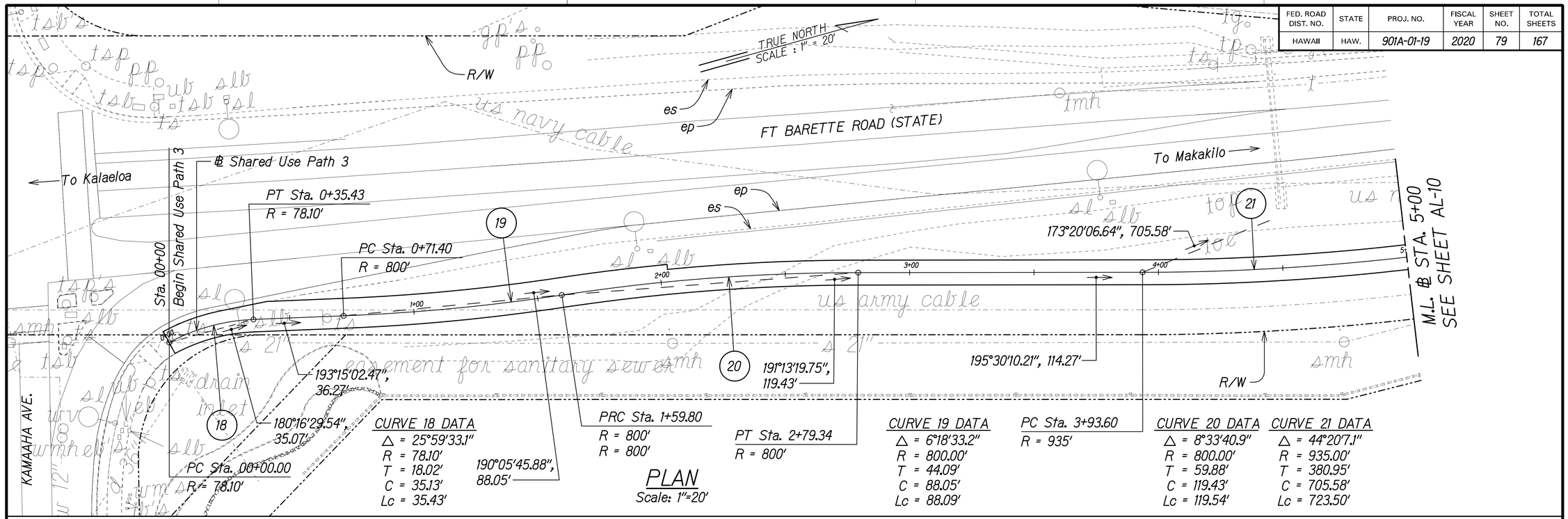
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

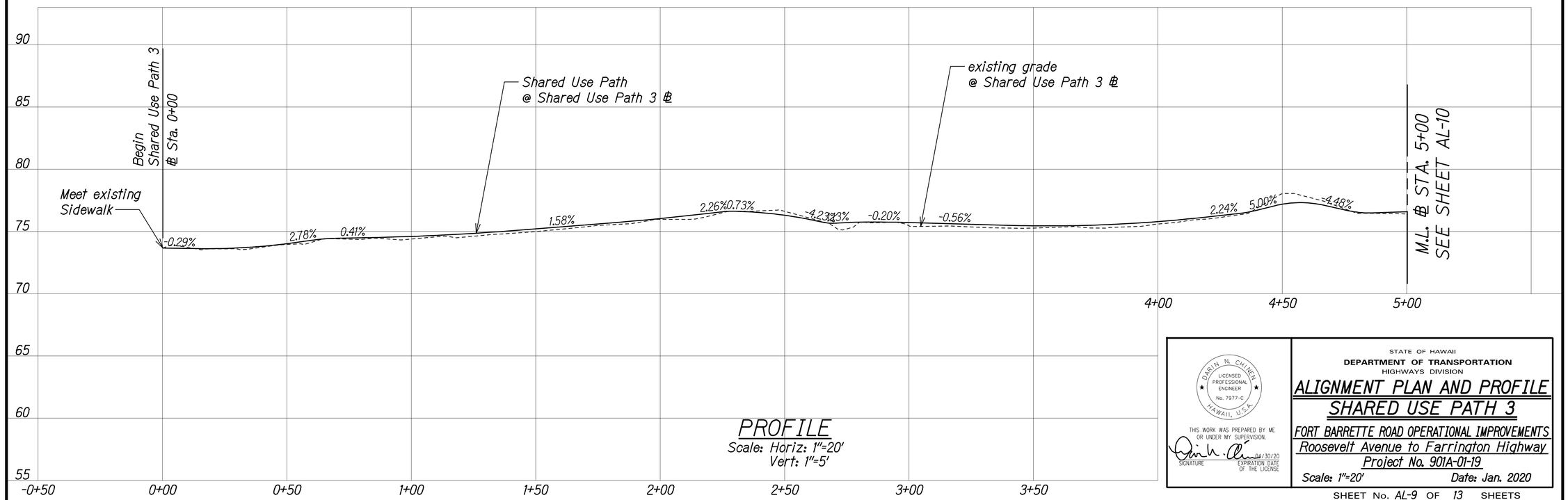
ALIGNMENT PLAN AND PROFILE
SHARED USE PATH 2
FORT BARRETTE ROAD OPERATIONAL IMPROVEMENTS
Roosevelt Avenue to Farrington Highway
Project No. 901A-01-19

Scale: 1"=20' Date: Jan. 2020

SHEET No. AL-8 OF 13 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	901A-01-19	2020	79	167





ORIGINAL PLAN

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

NOTE BOOK _____ No. _____

DARIN N. CHIMEN
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SIGNATURE 04/30/20 EXPIRATION DATE OF THE LICENSE

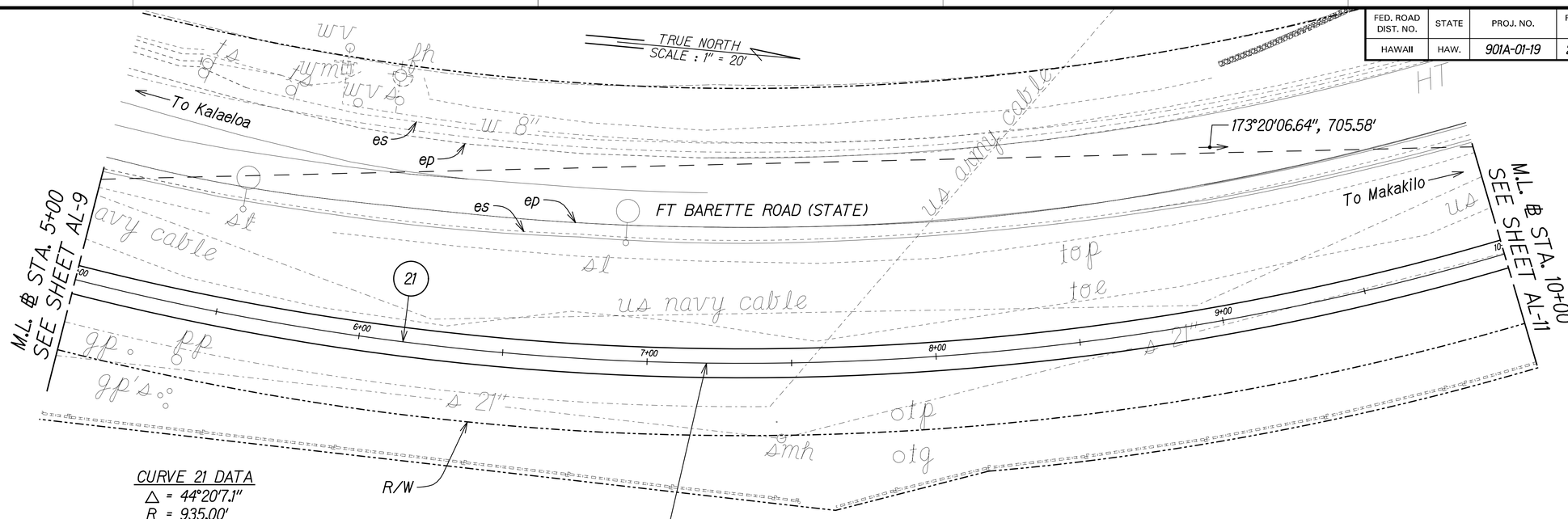
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

ALIGNMENT PLAN AND PROFILE
SHARED USE PATH 3
FORT BARRETTE ROAD OPERATIONAL IMPROVEMENTS
Roosevelt Avenue to Farrington Highway
Project No. 901A-01-19

Scale: 1"=20' Date: Jan. 2020

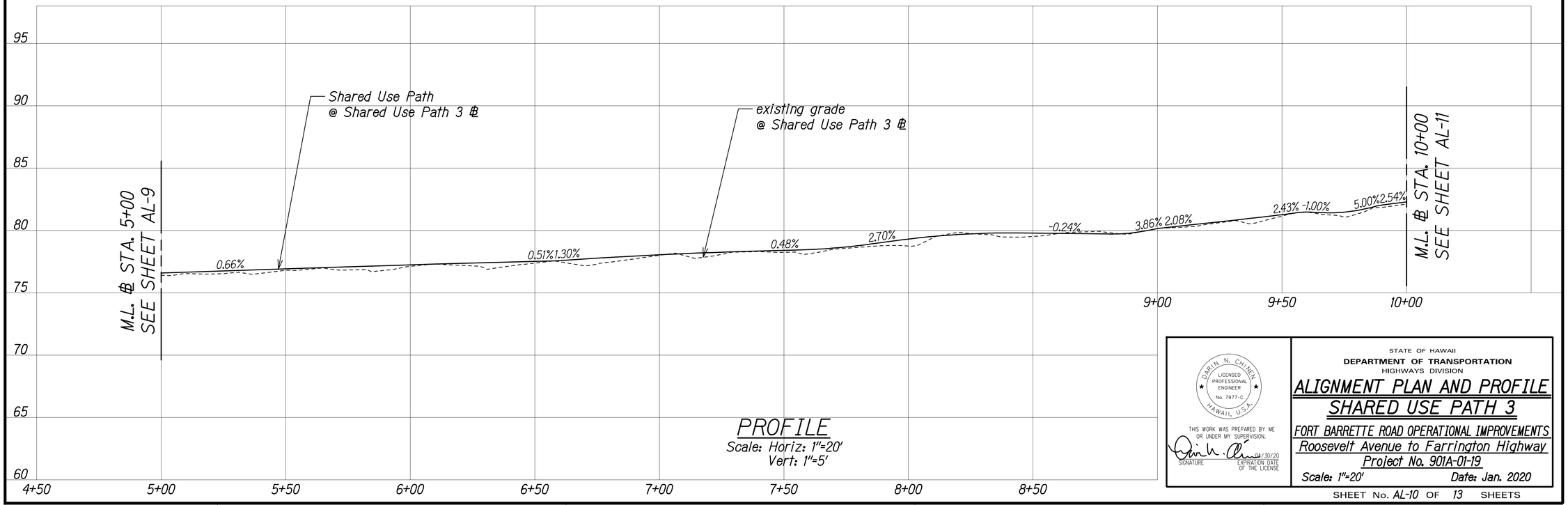
SHEET No. AL-9 OF 13 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	901A-01-19	2020	80	167



CURVE 21 DATA
△ = 44°20'7.1"
R = 935.00'
T = 380.95'
C = 705.58'
Lc = 723.50'

PLAN
Scale: 1"=20'



PROFILE
Scale: Horiz: 1"=20'
Vert: 1"=5'

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

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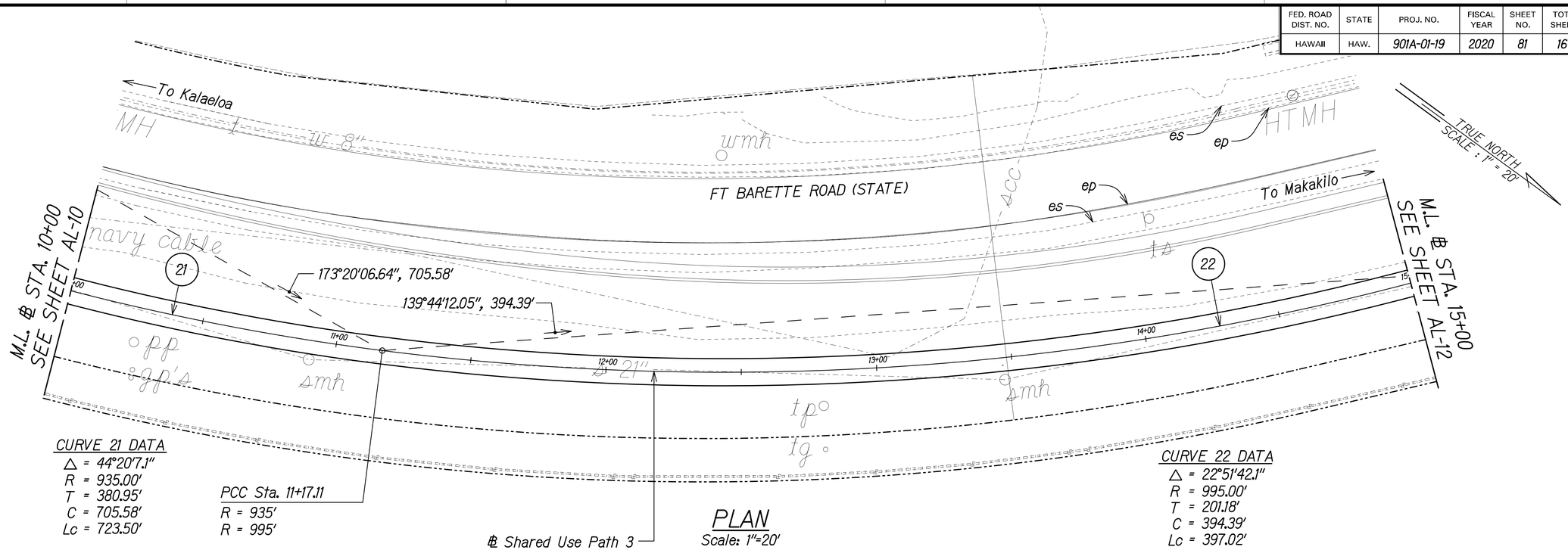
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

ALIGNMENT PLAN AND PROFILE
SHARED USE PATH 3
FORT BARRETTE ROAD OPERATIONAL IMPROVEMENTS
Roosevelt Avenue to Farrington Highway
Project No. 901A-01-19
Scale: 1"=20' Date: Jan. 2020

SHEET No. AL-10 OF 13 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	901A-01-19	2020	81	167

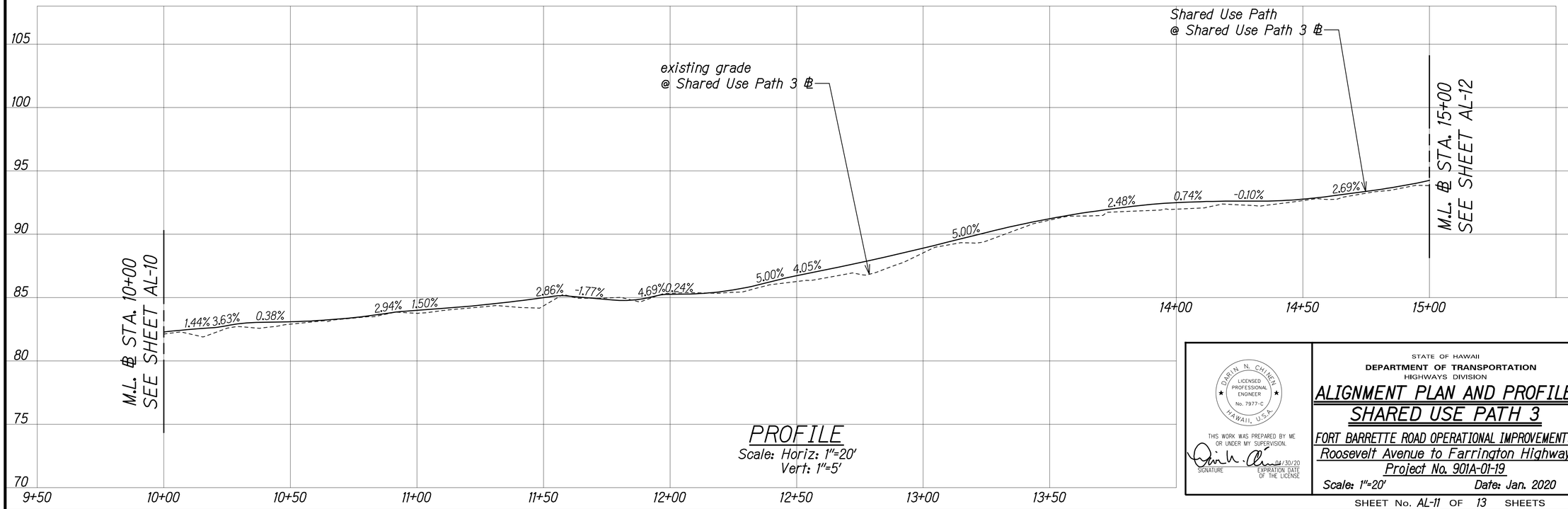


CURVE 21 DATA
Δ = 44°20'7.1"
R = 935.00'
T = 380.95'
C = 705.58'
Lc = 723.50'

PCC Sta. 11+17.11
R = 935'
R = 995'

PLAN
Scale: 1"=20'

CURVE 22 DATA
Δ = 22°51'42.1"
R = 995.00'
T = 201.18'
C = 394.39'
Lc = 397.02'



PROFILE
Scale: Horiz: 1"=20'
Vert: 1"=5'

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

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STATE OF HAWAII
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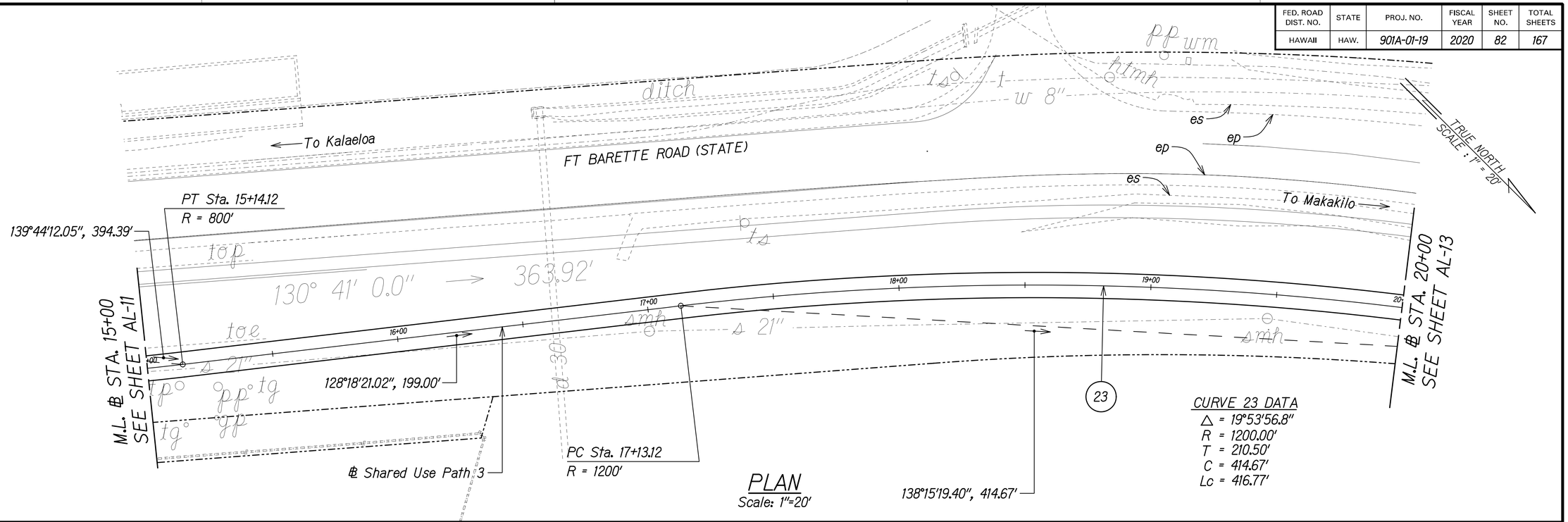
ALIGNMENT PLAN AND PROFILE
SHARED USE PATH 3

FORT BARRETTE ROAD OPERATIONAL IMPROVEMENTS
Roosevelt Avenue to Farrington Highway
Project No. 901A-01-19

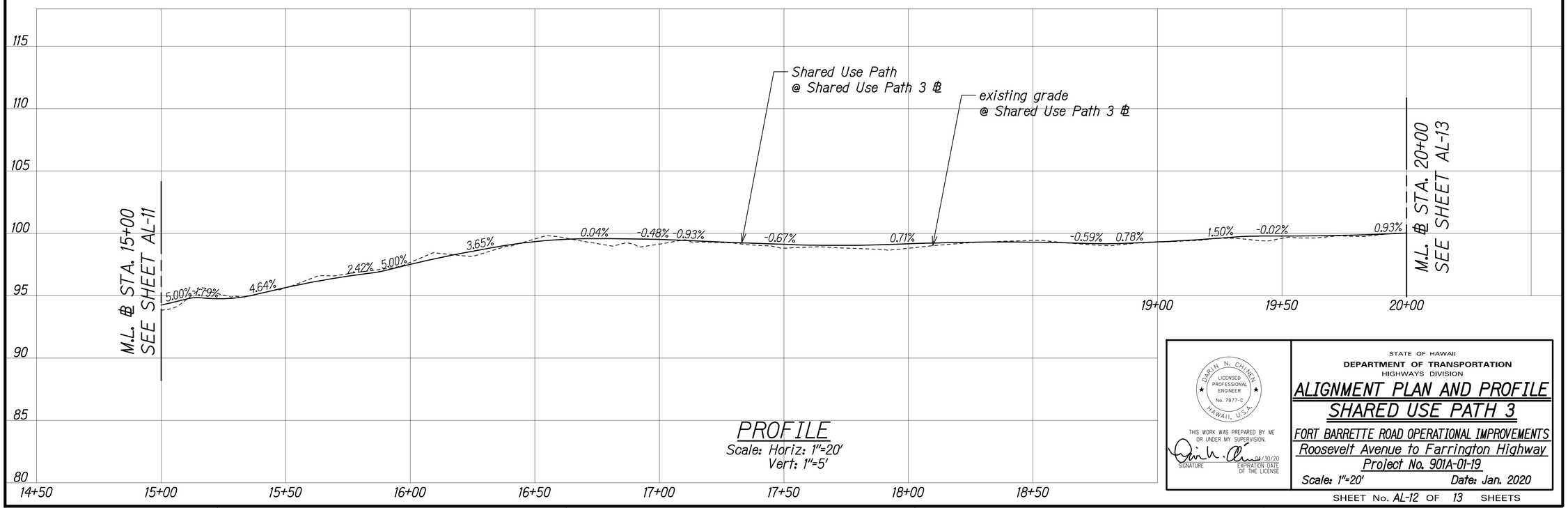
Scale: 1"=20' Date: Jan. 2020

SHEET No. AL-11 OF 13 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	901A-01-19	2020	82	167



PLAN
Scale: 1"=20'



PROFILE
Scale: Horiz: 1"=20'
Vert: 1"=5'

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

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STATE OF HAWAII
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HIGHWAYS DIVISION

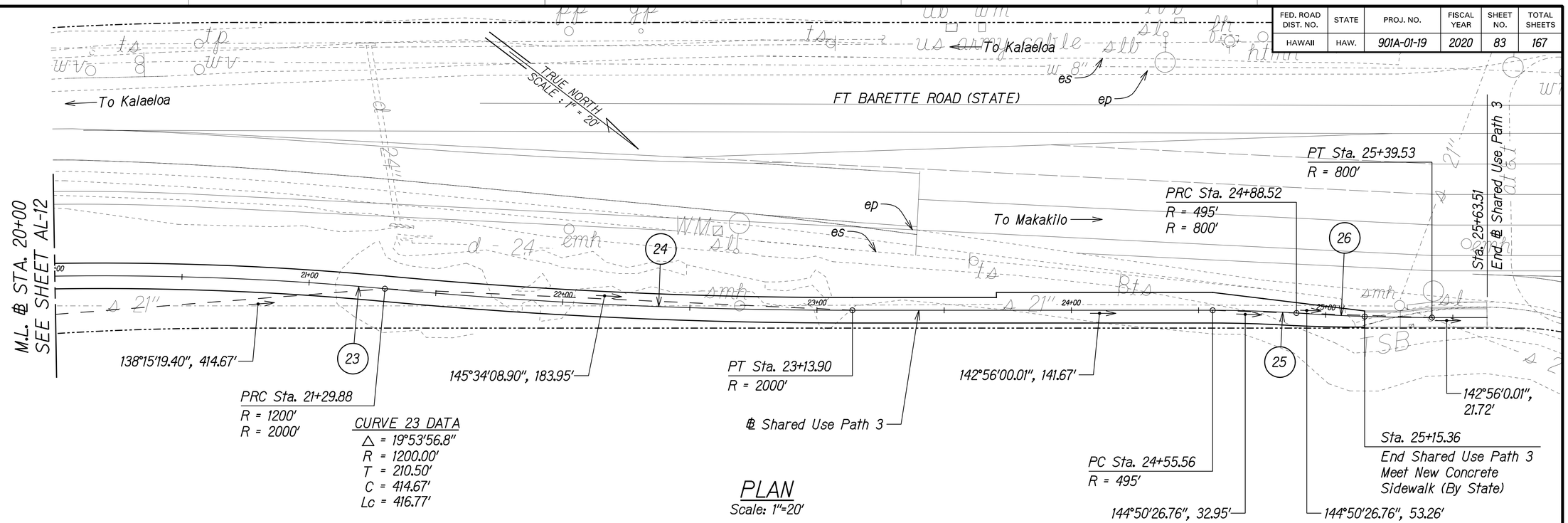
ALIGNMENT PLAN AND PROFILE
SHARED USE PATH 3

FORT BARRETTE ROAD OPERATIONAL IMPROVEMENTS
Roosevelt Avenue to Farrington Highway
Project No. 901A-01-19

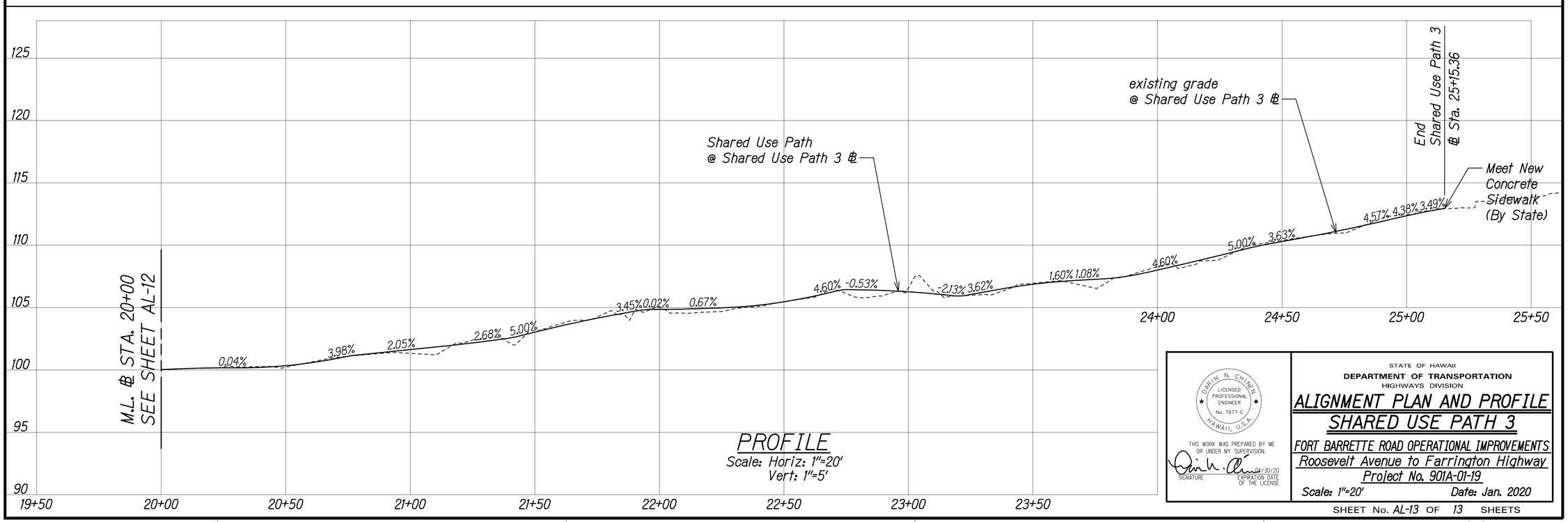
Scale: 1"=20' Date: Jan. 2020

SHEET No. AL-12 OF 13 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	901A-01-19	2020	83	167



PLAN
Scale: 1"=20'



PROFILE
Scale: Horiz: 1"=20'
Vert: 1"=5'

ORIGINAL PLAN
NOTE BOOK
N.

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

LICENSED PROFESSIONAL ENGINEER
DARIN N. CHUNG
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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

ALIGNMENT PLAN AND PROFILE
SHARED USE PATH 3

FORT BARRETTE ROAD OPERATIONAL IMPROVEMENTS
Roosevelt Avenue to Farrington Highway
Project No. 901A-01-19

Scale: 1"=20' Date: Jan. 2020

SHEET No. AL-13 OF 13 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	901A-01-19	2020	84	167

TRUE NORTH
SCALE : 1" = 20'

NOTE:

1. See Signing and Pavement Marking Plans for relocation of signs.

ROOSEVELT AVE. (STATE)

Sta. 0+00 Begin Shared Use Path 1

Relocate exist metal posts, chain and signs for exist utility lines

Relocate exist metal gate, gate posts and fence to R/W line.

℄ Shared Use Path 1

R/W

Meet existing sidewalk

Warning Light

5′

5′

M.L. ℄ STA. 2+00
SEE SHEET BELOW

To Kalaeloa

ENTERPRISE ST. (STATE)

See Detail A this Sheet

Relocate exist sign

See Detail B on Sheet RD-2

Relocate exist sign

es

ep

EP

See Detail C on Sheet RD-2

FT BARETTE ROAD (STATE)

To Makakilo

ep

es

R/W

R/W

PLAN
Scale: 1"=20'

M.L. ℄ STA. 2+00
SEE SHEET ABOVE

Relocate exist signs

℄ Shared Use Path 1

Relocate exist sign

R/W

Relocate exist sign

TRUE NORTH
SCALE : 1" = 20'

M.L. ℄ STA. 6+00
SEE SHEET RD-2

To Kalaeloa

es

ep

5′

5′

EP

ES

FT BARETTE ROAD (STATE)

To Makakilo

ep

es

R/W

conc. swale

PLAN
Scale: 1"=20'

Sta. 0+08.69,
o/s 3.06′ Lt.

Sta. 0+14.74,
o/s 5.0′ Lt.

Sta. 0+25.77,
o/s 5.0′ Lt.

Sta. 0+00.30,
o/s 0.0′

R=10′

TRUE NORTH
SCALE : 1" = 10'

℄ Shared Use Path 1

R=10′

Sta. 0+00.00,
o/s 5.0′ Rt.

Sta. 0+07.89,
o/s 5.0′ Rt.

Sta. 0+22.55.
o/s 0.0′

Sta. 0+14.89,
o/s 5.0′ Rt.

DETAIL A
Scale: 1"=10'

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

DARIN N. CHIMEN
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04/30/20
EXPIRATION DATE OF THE LICENSE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

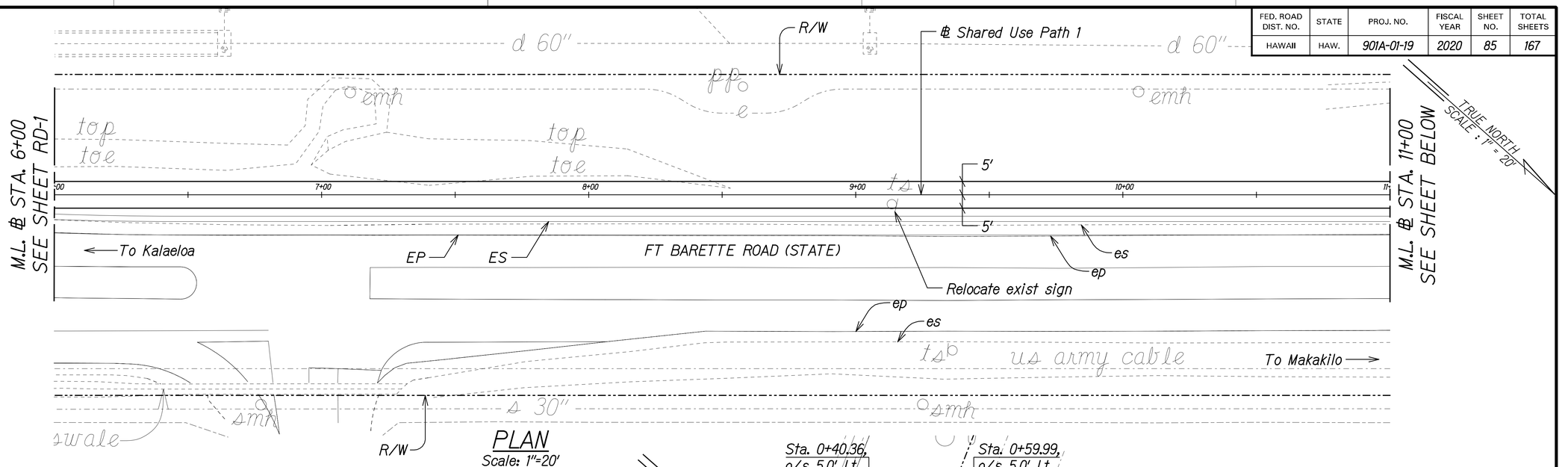
ROADWAY PLAN
SHARED USE PATH

FORT BARRETTE ROAD OPERATIONAL IMPROVEMENTS
Roosevelt Avenue to Farrington Highway
Project No. 901A-01-19

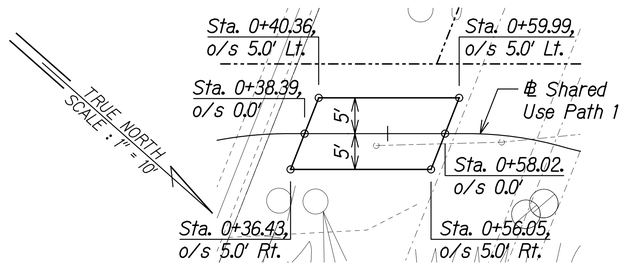
Scale: As Noted Date: Jan. 2020

SHEET No. RD-1 OF 8 SHEETS

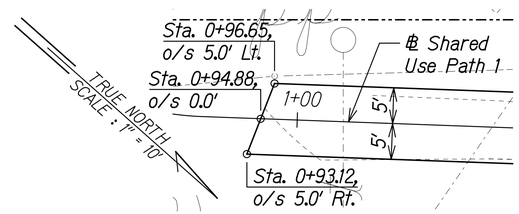
FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	901A-01-19	2020	85	167



PLAN
Scale: 1"=20'

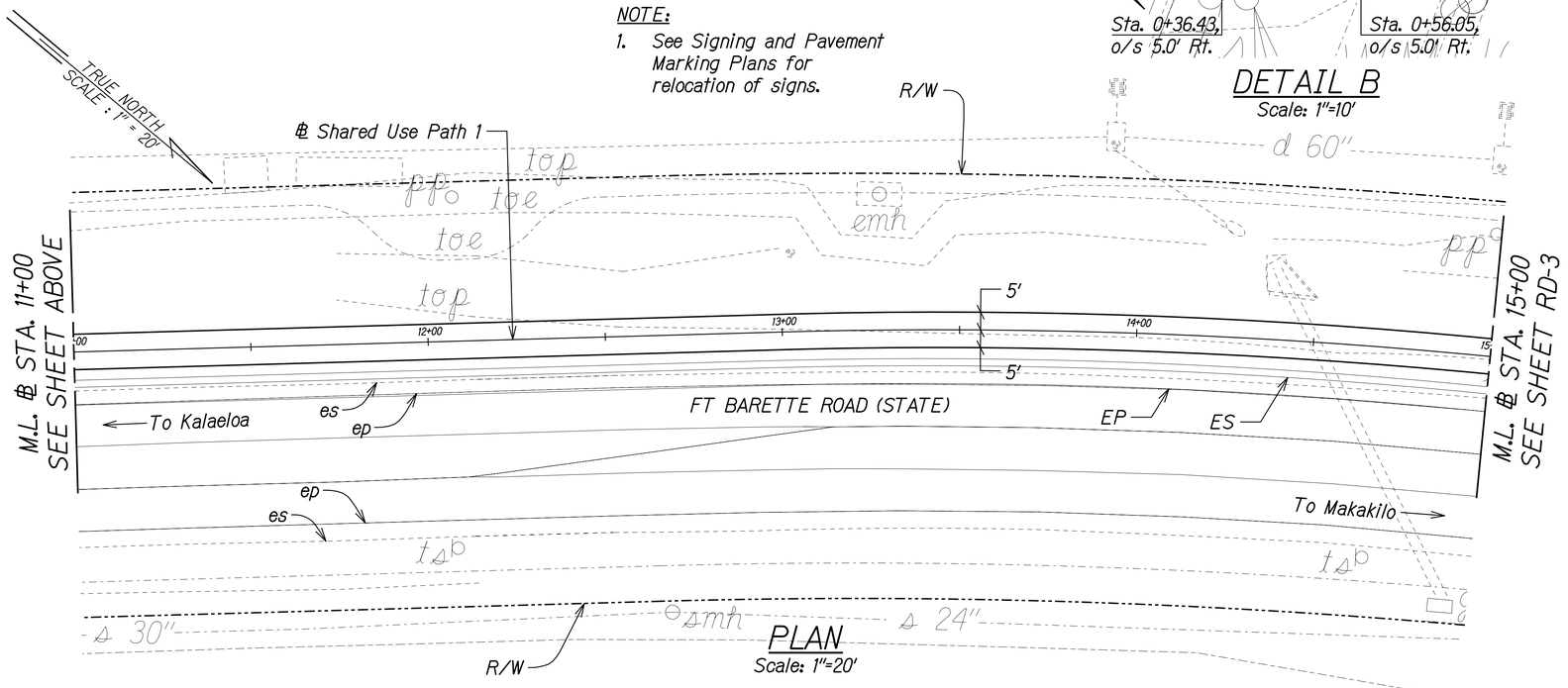


DETAIL B
Scale: 1"=10'



DETAIL C
Scale: 1"=10'

NOTE:
1. See Signing and Pavement Marking Plans for relocation of signs.



PLAN
Scale: 1"=20'

ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
	DRAWN BY	
NOTE BOOK	TRACED BY	
	DESIGNED BY	
No.	QUANTITIES BY	
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STATE OF HAWAII
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HIGHWAYS DIVISION

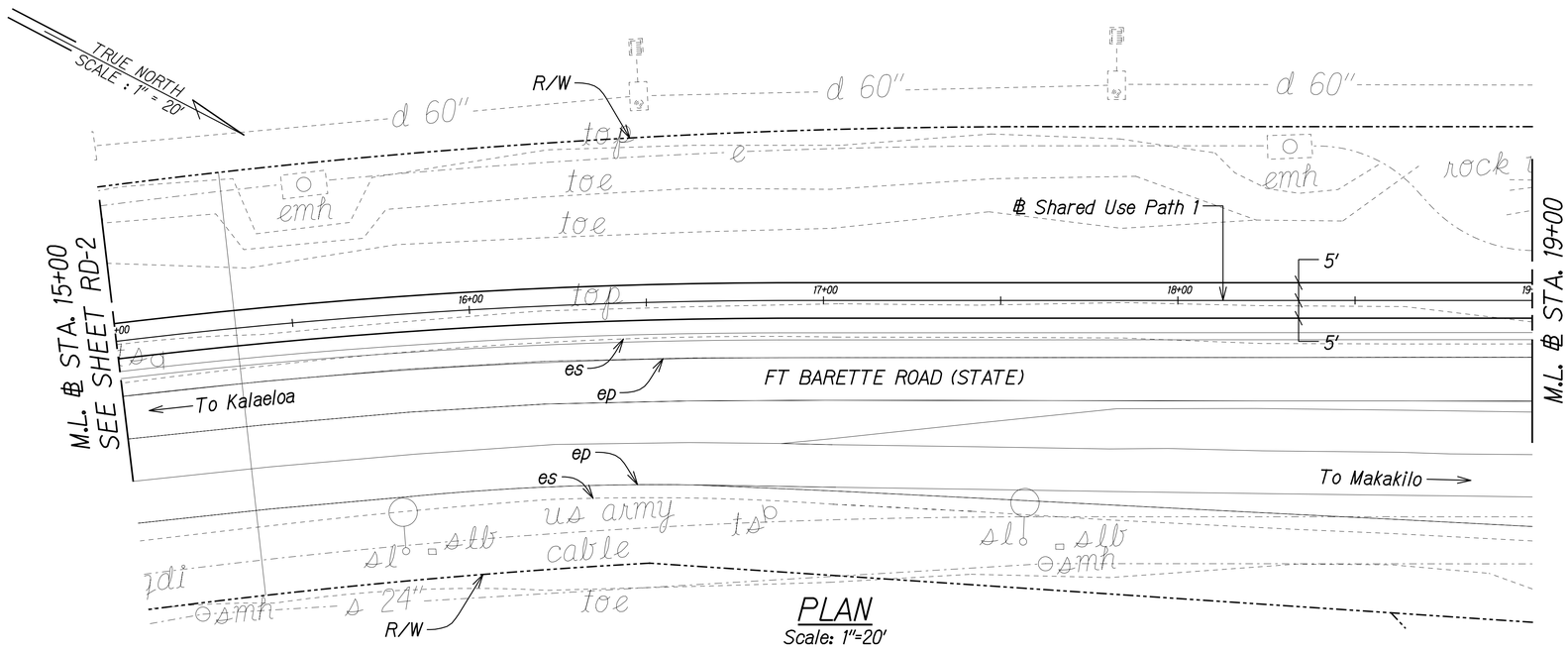
ROADWAY PLAN
SHARED USE PATH

FORT BARRETTE ROAD OPERATIONAL IMPROVEMENTS
Roosevelt Avenue to Farrington Highway
Project No. 901A-01-19

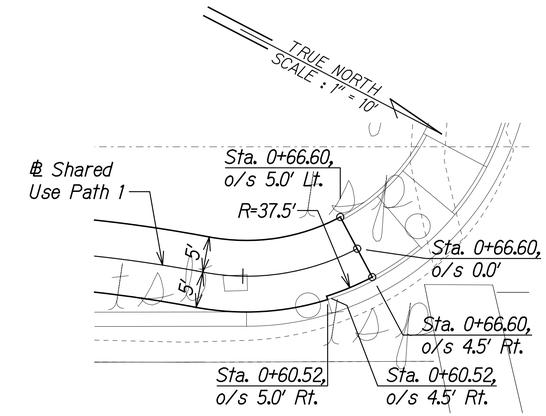
Scale: As Noted Date: Jan. 2020

SHEET No. RD-2 OF 8 SHEETS

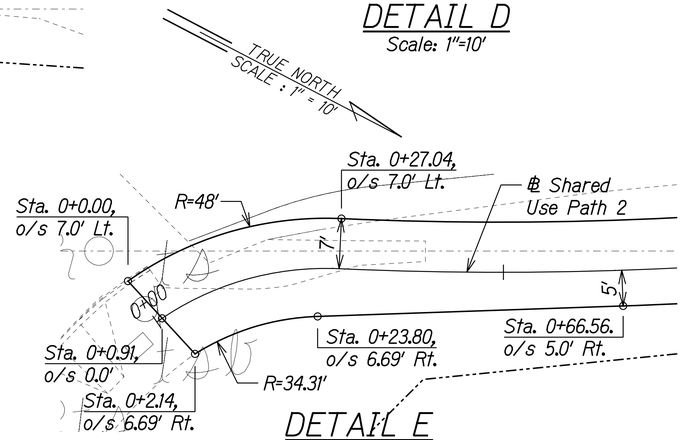
FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	901A-01-19	2020	86	167



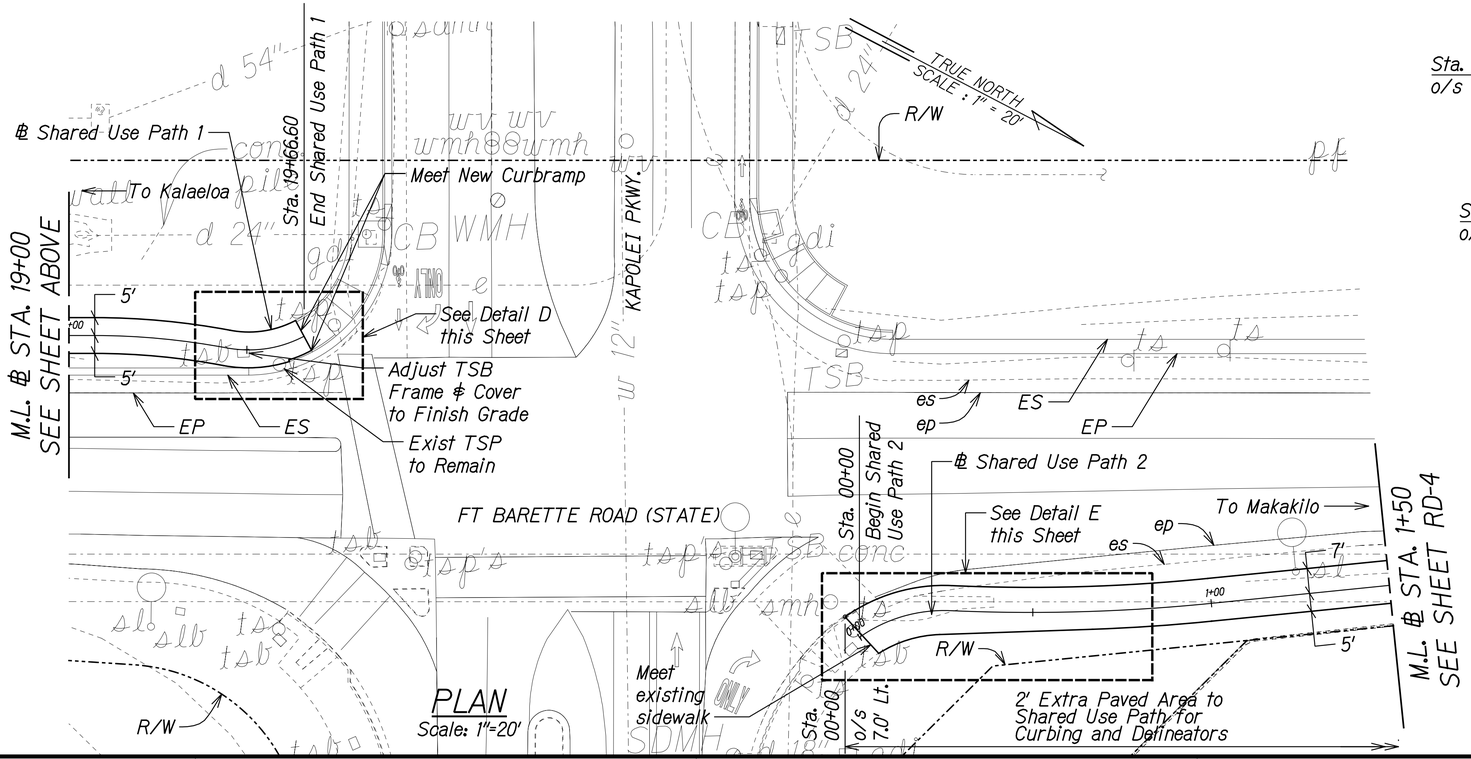
PLAN
Scale: 1"=20'



DETAIL D
Scale: 1"=10'



DETAIL E
Scale: 1"=10'



PLAN
Scale: 1"=20'

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

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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

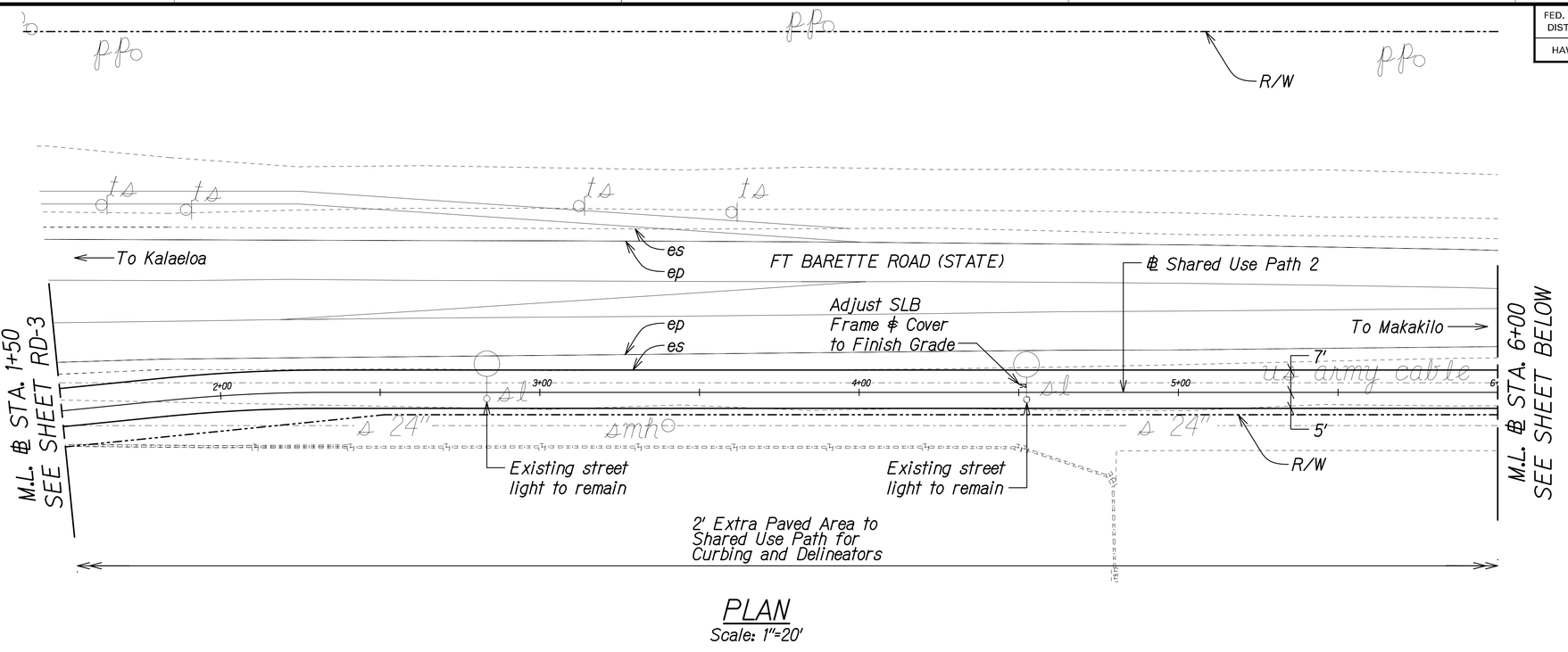
ROADWAY PLAN
SHARED USE PATH

FORT BARRETTE ROAD OPERATIONAL IMPROVEMENTS
Roosevelt Avenue to Farrington Highway
Project No. 901A-01-19

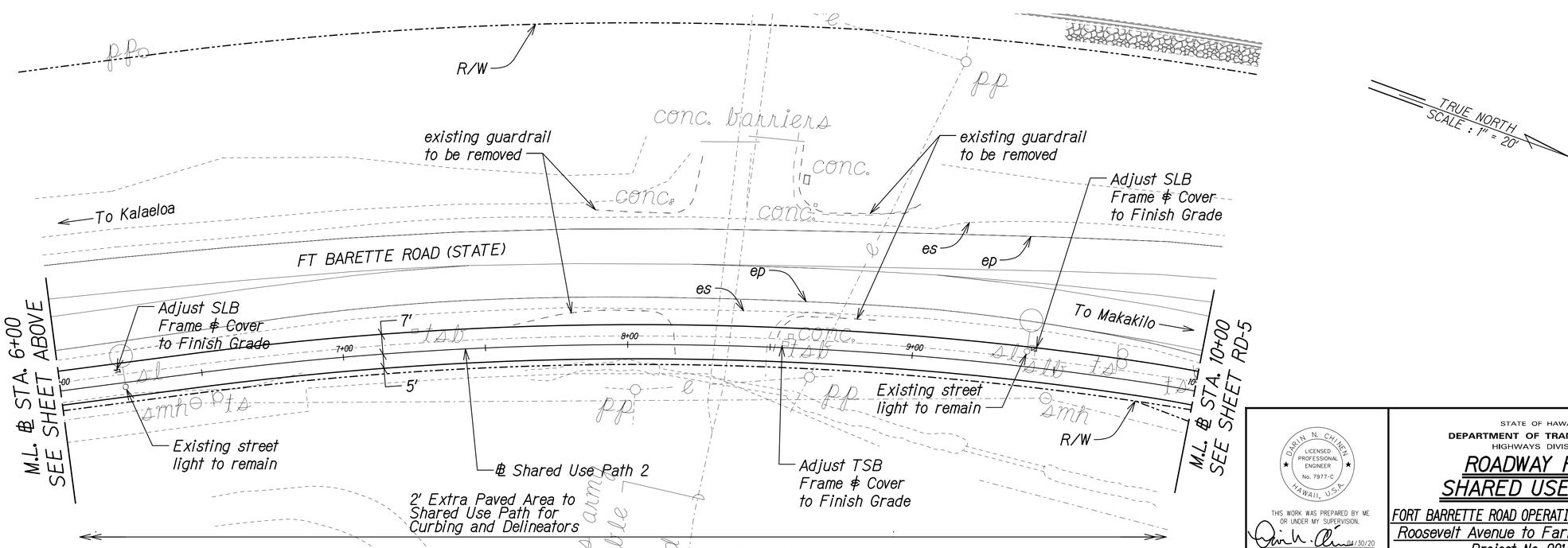
Scale: As Noted — Date: Jan. 2020

SHEET No. RD-3 OF 8 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	901A-01-19	2020	87	167



PLAN
Scale: 1"=20'



PLAN
Scale: 1"=20'

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

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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

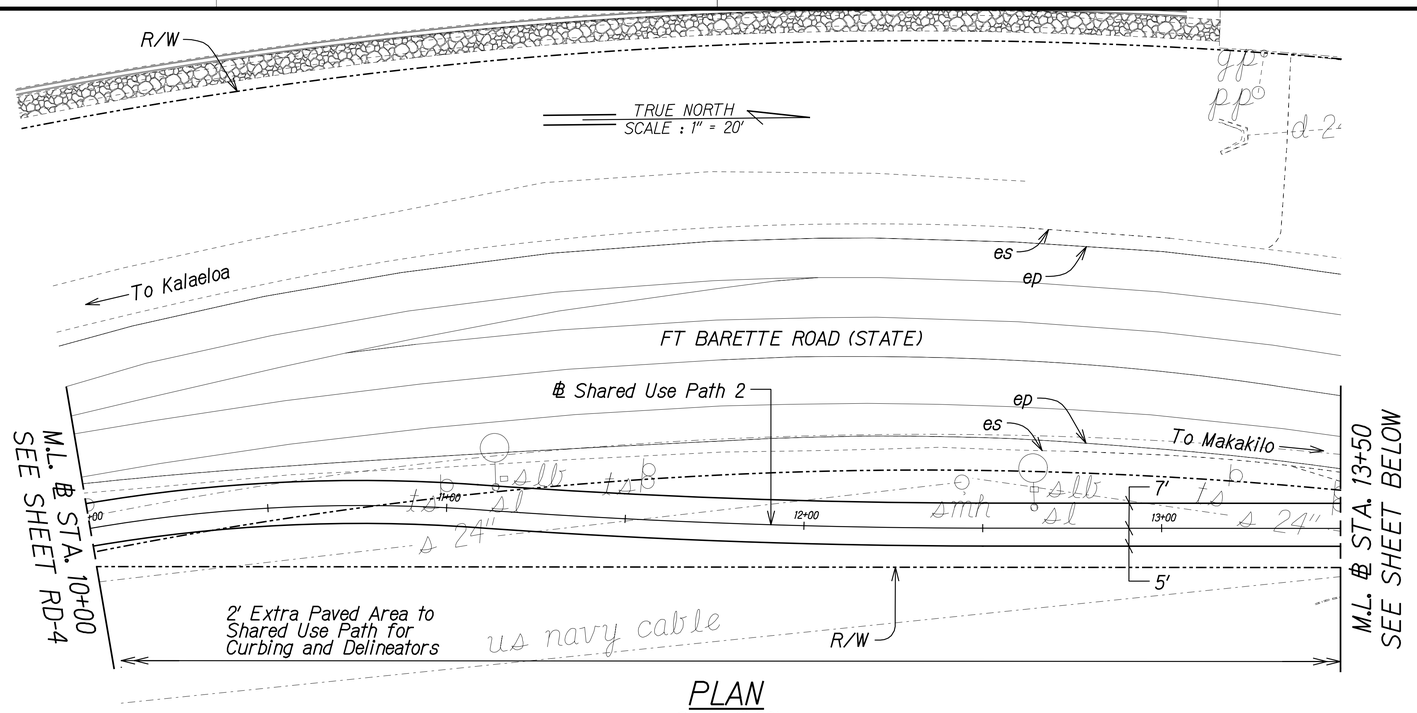
ROADWAY PLAN
SHARED USE PATH

FORT BARRETTE ROAD OPERATIONAL IMPROVEMENTS
Roosevelt Avenue to Farrington Highway
Project No. 901A-01-19

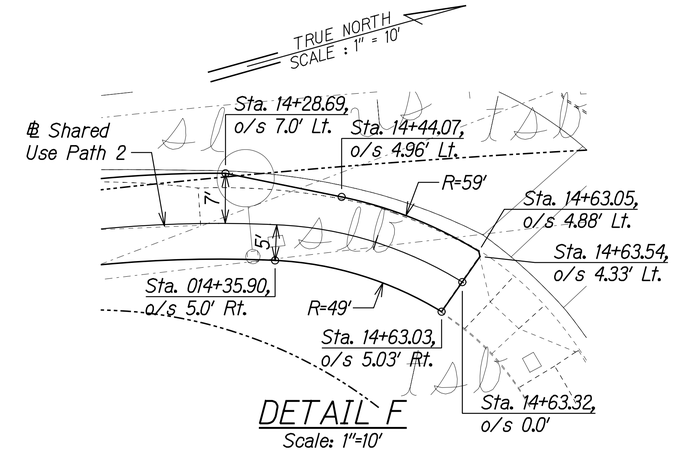
Scale: 1"=20' Date: Jan. 2020

SHEET No. RD-4 OF 8 SHEETS

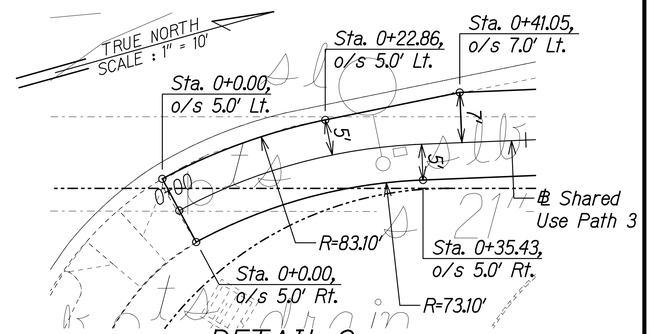
FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	901A-01-19	2020	88	167



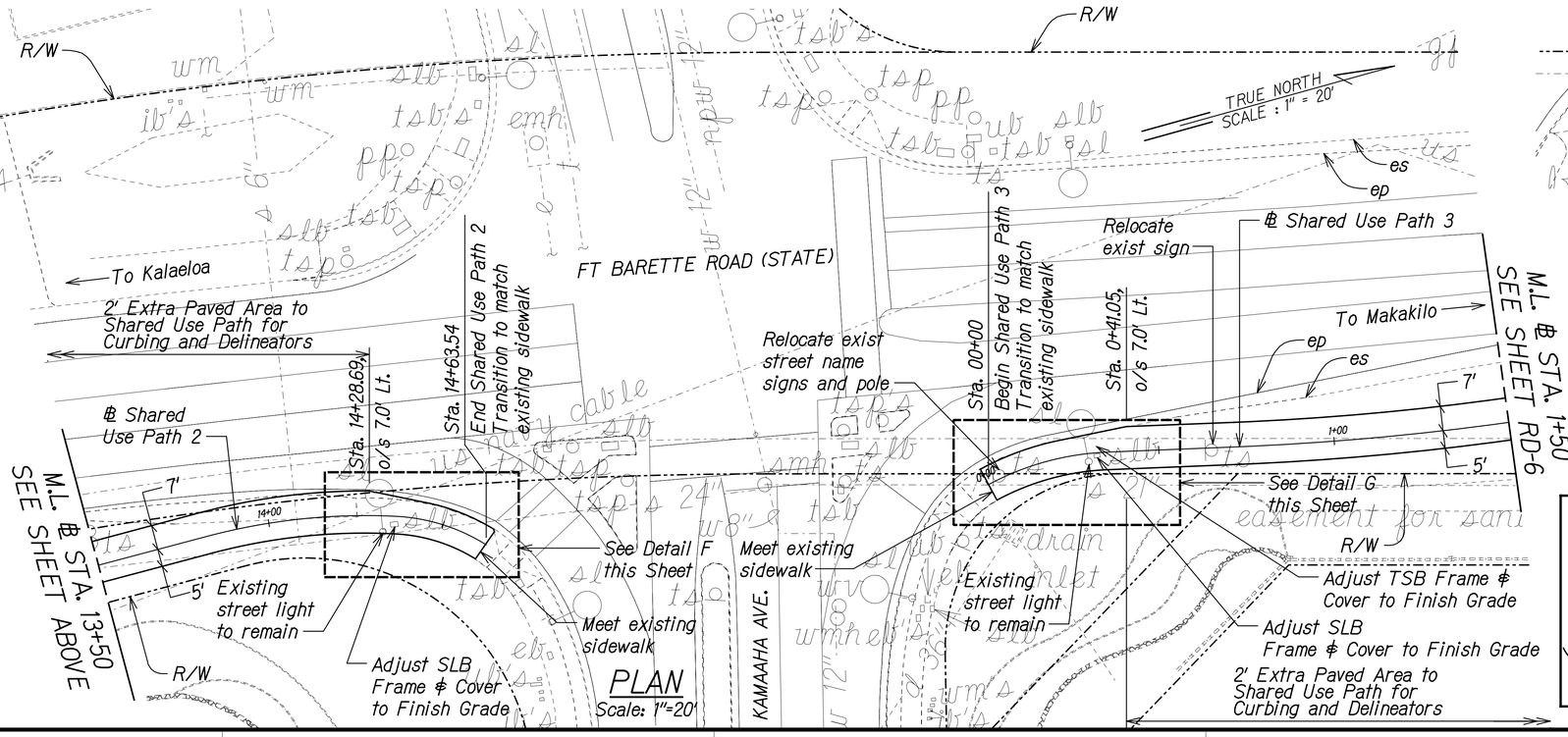
PLAN
Scale: 1"=20'



DETAIL F
Scale: 1"=10'



DETAIL G
Scale: 1"=10'



PLAN
Scale: 1"=20'

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

DARIN N. CHINEN
LICENSED PROFESSIONAL ENGINEER
No. 7977-C
HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.

SIGNATURE — EXPIRATION DATE OF THE LICENSE: 12/30/20

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

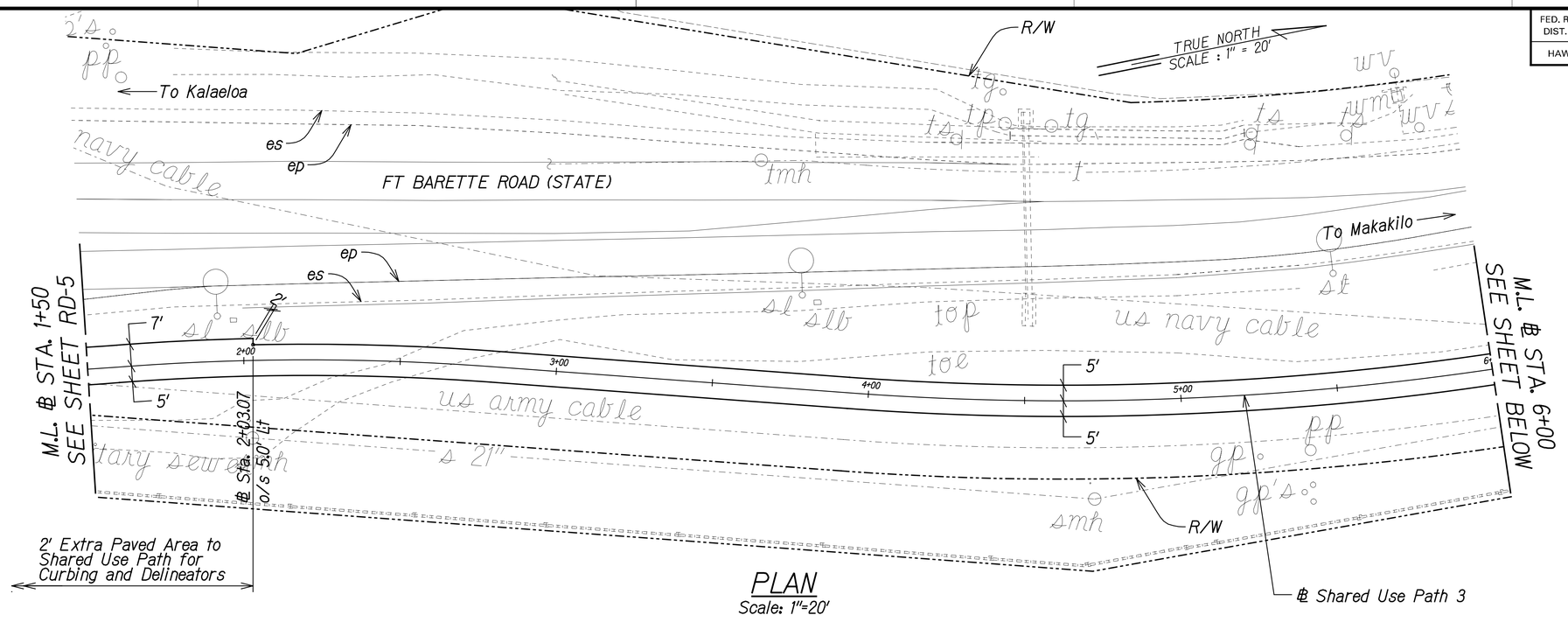
ROADWAY PLAN
SHARED USE PATH

FORT BARRETTE ROAD OPERATIONAL IMPROVEMENTS
Roosevelt Avenue to Farrington Highway
Project No. 901A-01-19

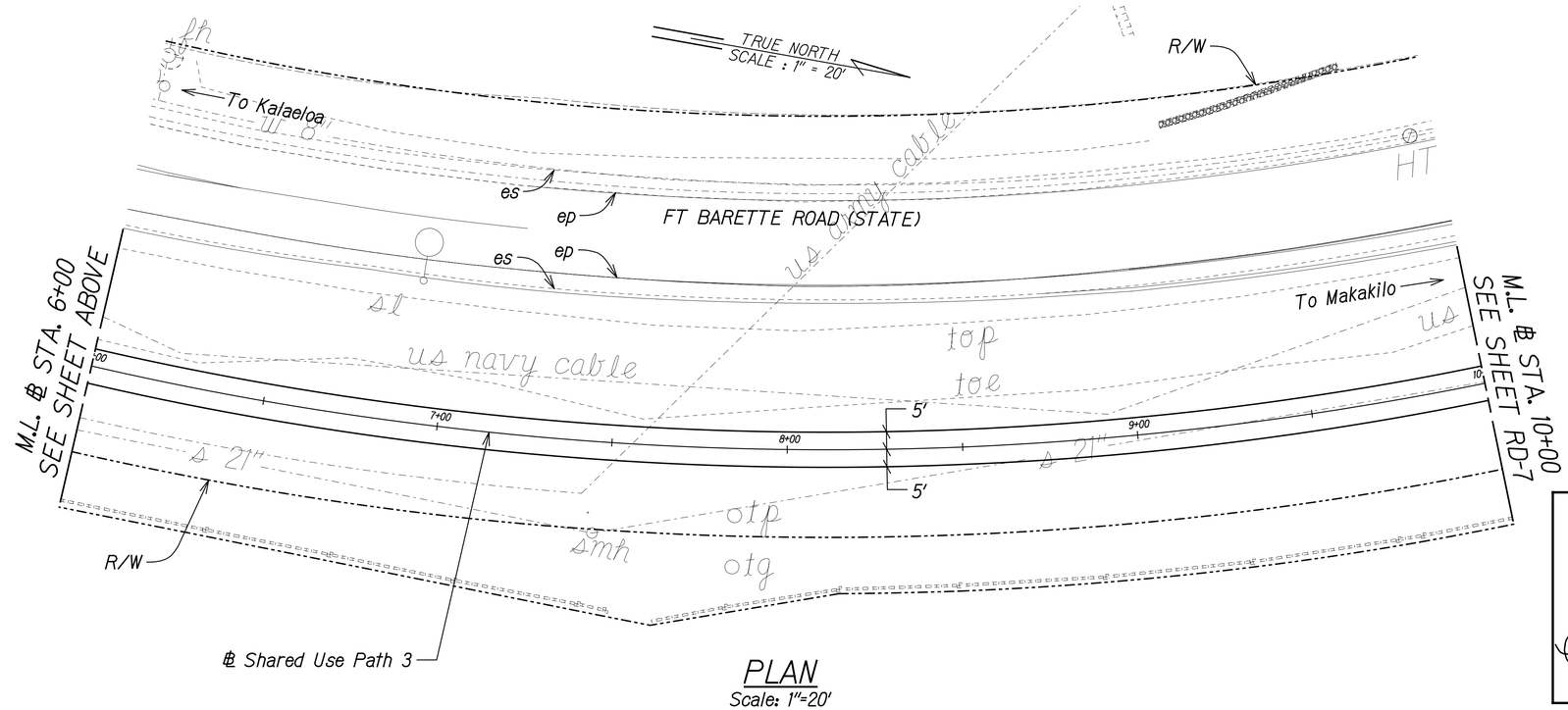
Scale: As Noted Date: Jan. 2020

SHEET No. RD-5 OF 8 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	901A-01-19	2020	89	167



PLAN
Scale: 1"=20'



PLAN
Scale: 1"=20'

ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
	DRAWN BY	
NOTE BOOK	TRACED BY	
	DESIGNED BY	
	QUANTITIES BY	
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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

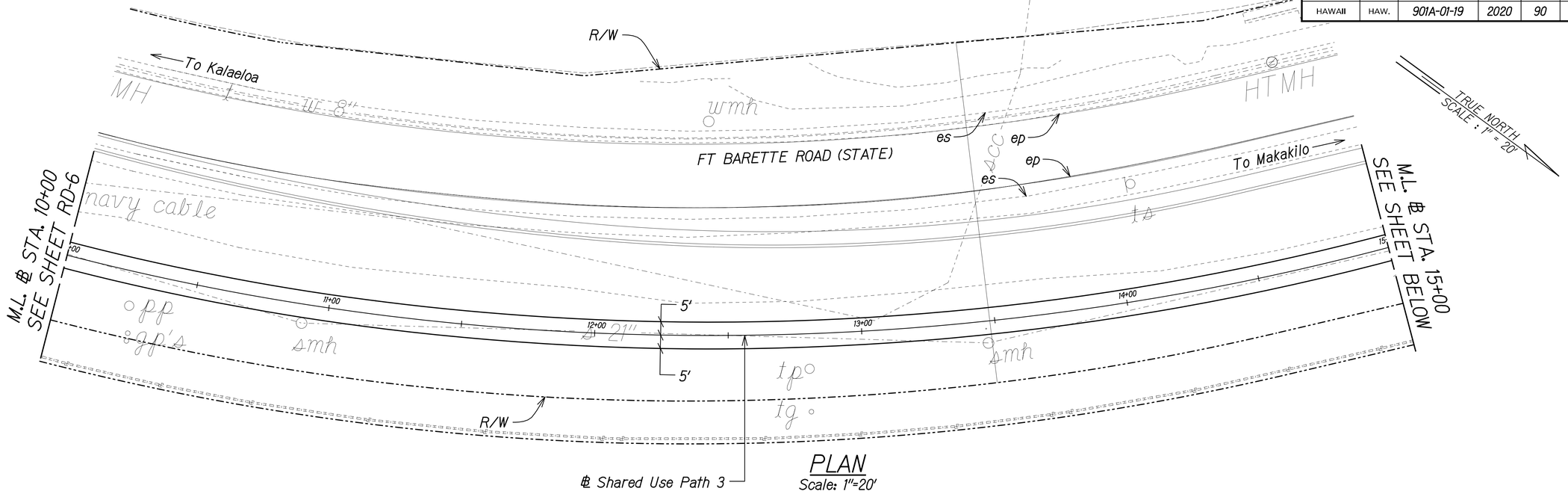
ROADWAY PLAN
SHARED USE PATH

FORT BARRETTE ROAD OPERATIONAL IMPROVEMENTS
Roosevelt Avenue to Farrington Highway
Project No. 901A-01-19

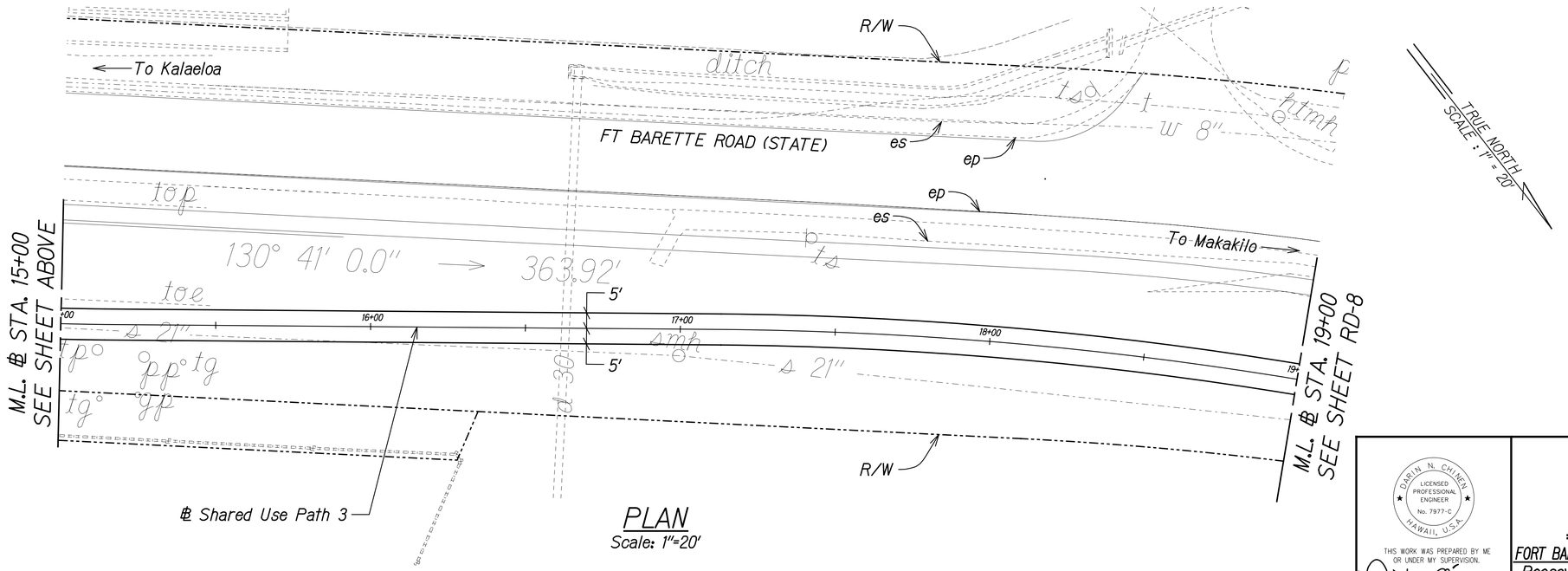
Scale: 1"=20' Date: Jan. 2020

SHEET No. RD-6 OF 8 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	901A-01-19	2020	90	167



PLAN
Scale: 1"=20'



PLAN
Scale: 1"=20'

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

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SIGNATURE ____ 4/30/20 EXPIRATION DATE OF THE LICENSE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

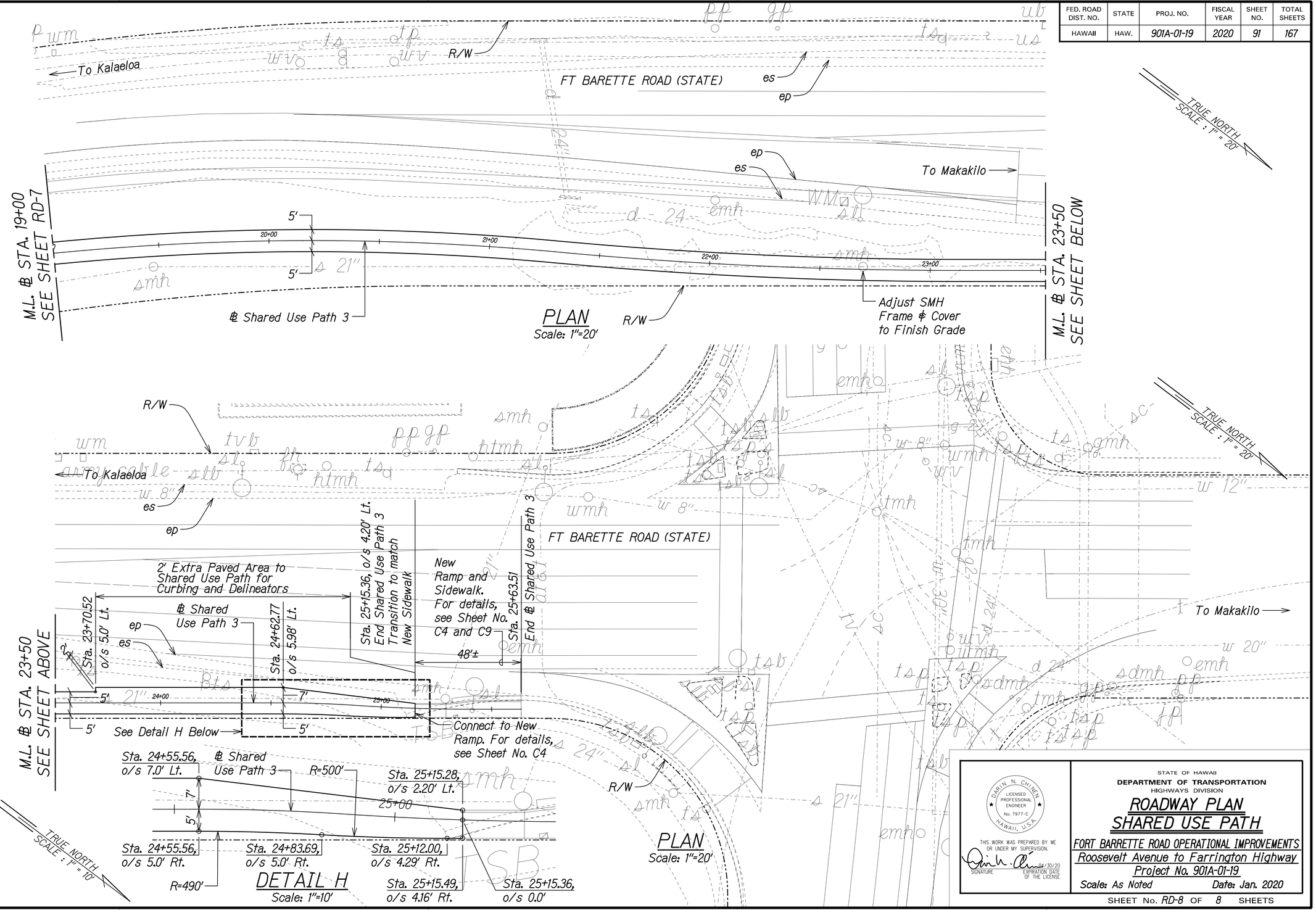
ROADWAY PLAN
SHARED USE PATH

FORT BARRETTE ROAD OPERATIONAL IMPROVEMENTS
Roosevelt Avenue to Farrington Highway
Project No. 901A-01-19

Scale: 1"=20' Date: Jan. 2020

SHEET No. RD-7 OF 8 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	901A-01-19	2020	91	167



ORIGINAL PLAN
NOTE BOOK

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

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No. 7977-C
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SIGNATURE

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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

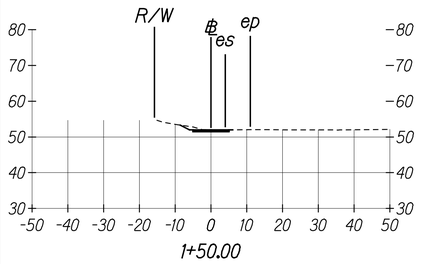
ROADWAY PLAN
SHARED USE PATH

FORT BARRETTE ROAD OPERATIONAL IMPROVEMENTS
Roosevelt Avenue to Farrington Highway
Project No. 901A-01-19

Scale: As Noted Date: Jan. 2020

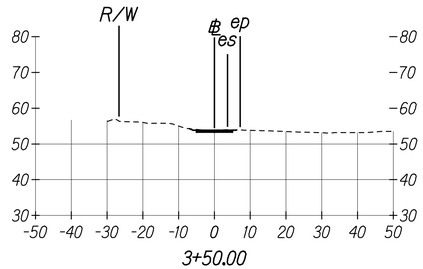
SHEET No. RD-8 OF 8 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	901A-01-19	2020	92	167



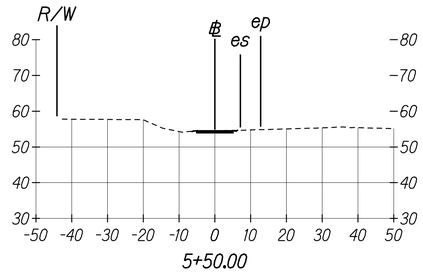
1+50.00

CUT: 8.29
FILL: 0.12
EXC: 12.57
EMB: 0.15



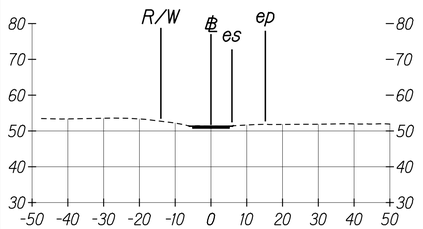
3+50.00

CUT: 6.06
FILL: 0.71
EXC: 12.57
EMB: 1.45



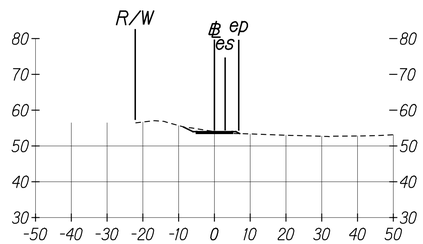
5+50.00

CUT: 5.15
FILL: 0.17
EXC: 9.55
EMB: 0.33



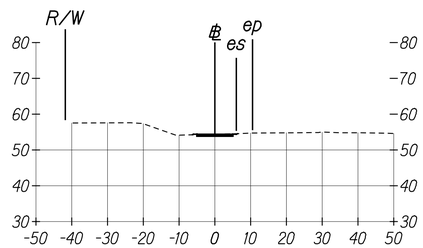
1+00.00

CUT: 5.28
FILL: 0.04
EXC: 10.03
EMB: 0.11



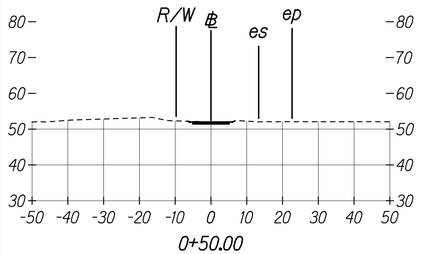
3+00.00

CUT: 7.50
FILL: 0.85
EXC: 9.17
EMB: 3.57



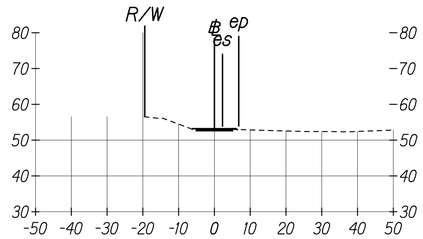
5+00.00

CUT: 5.16
FILL: 0.19
EXC: 9.51
EMB: 0.23



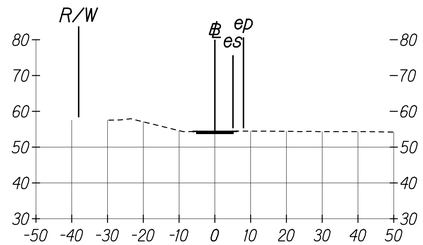
0+50.00

CUT: 5.55
FILL: 0.08
EXC: 9.64
EMB: 0.19



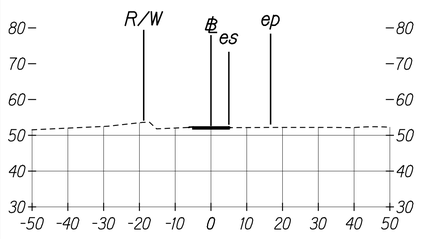
2+50.00

CUT: 2.39
FILL: 2.99
EXC: 10.44
EMB: 3.60



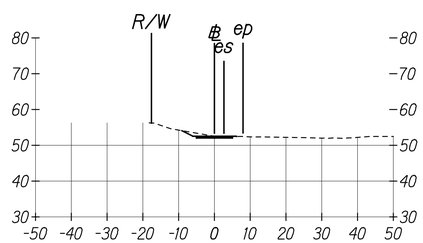
4+50.00

CUT: 5.11
FILL: 0.05
EXC: 9.30
EMB: 0.11



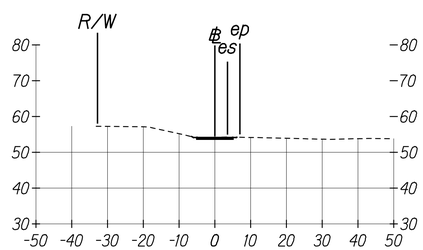
0+00.00

CUT: 4.86
FILL: 0.13
EXC: 0.00
EMB: 0.00



2+00.00

CUT: 8.88
FILL: 0.90
EXC: 15.90
EMB: 0.94



4+00.00

CUT: 4.94
FILL: 0.06
EXC: 10.18
EMB: 0.72

ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
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No.	CHECKED BY	

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SIGNATURE

12/30/20
EXPIRATION DATE OF THE LICENSE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

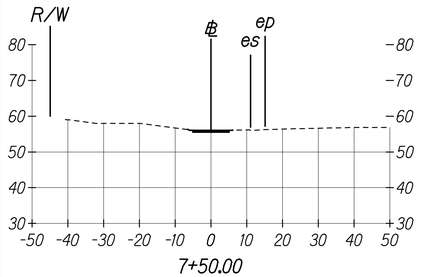
CROSS SECTION
SHARED USE PATH 1

FORT BARRETTE ROAD OPERATIONAL IMPROVEMENTS
Roosevelt Avenue to Farrington Highway
Project No. 901A-01-19

Scale: 1"=20' Date: Jan. 2020

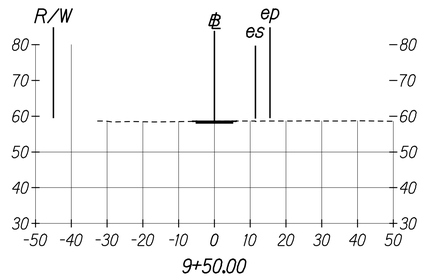
SHEET No. XS-1 OF 12 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	901A-01-19	2020	93	167



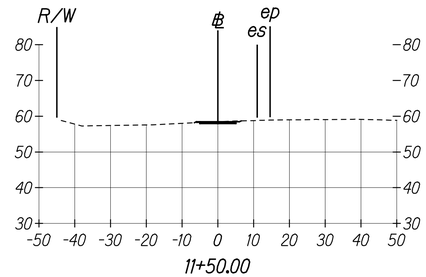
7+50.00

CUT: 5.36
FILL: 0.01
EXC: 9.83
EMB: 0.13



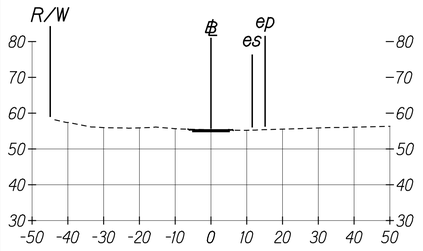
9+50.00

CUT: 5.11
FILL: 0.03
EXC: 11.42
EMB: 0.07



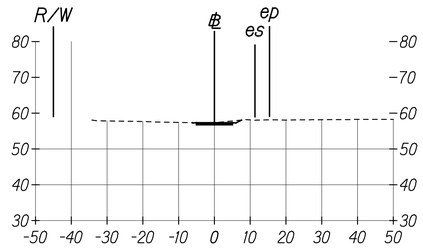
11+50.00

CUT: 5.26
FILL: 0.28
EXC: 9.78
EMB: 0.46



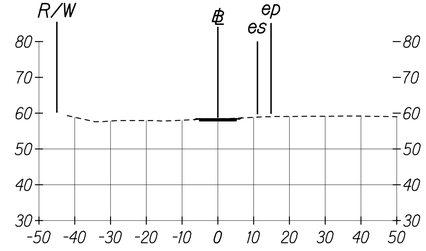
7+00.00

CUT: 5.25
FILL: 0.13
EXC: 10.00
EMB: 0.17



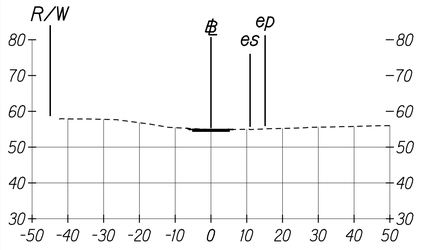
9+00.00

CUT: 7.23
FILL: 0.05
EXC: 12.43
EMB: 0.04



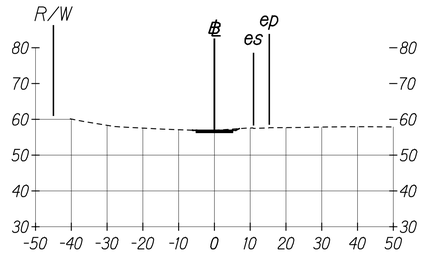
11+00.00

CUT: 5.30
FILL: 0.22
EXC: 9.72
EMB: 0.33



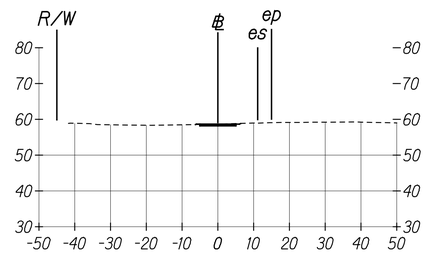
6+50.00

CUT: 5.55
FILL: 0.06
EXC: 9.85
EMB: 0.27



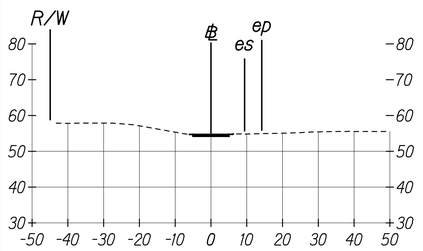
8+50.00

CUT: 6.19
FILL: 0.00
EXC: 11.05
EMB: 0.01



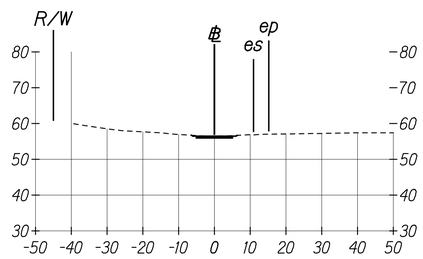
10+50.00

CUT: 5.20
FILL: 0.14
EXC: 9.20
EMB: 0.27



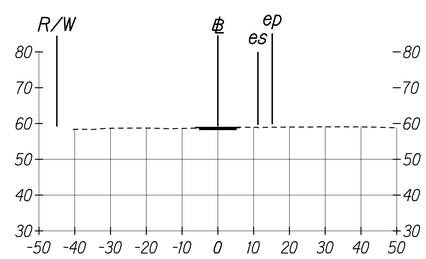
6+00.00

CUT: 5.08
FILL: 0.23
EXC: 9.48
EMB: 0.37



8+00.00

CUT: 5.74
FILL: 0.01
EXC: 10.28
EMB: 0.02



10+00.00

CUT: 4.74
FILL: 0.16
EXC: 9.12
EMB: 0.18

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

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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

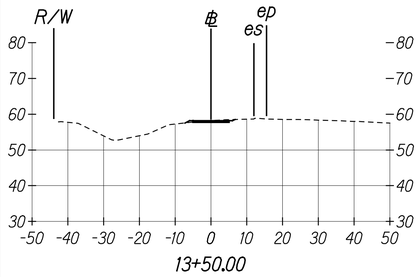
CROSS SECTION
SHARED USE PATH 1

FORT BARRETTE ROAD OPERATIONAL IMPROVEMENTS
Roosevelt Avenue to Farrington Highway
Project No. 901A-01-19

Scale: 1"=20' Date: Jan. 2020

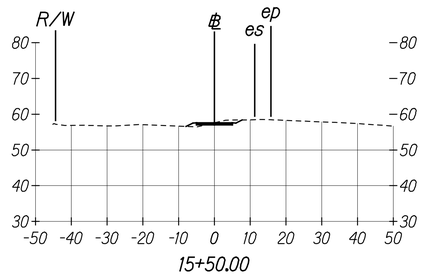
SHEET No. XS-2 OF 12 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	901A-01-19	2020	94	167



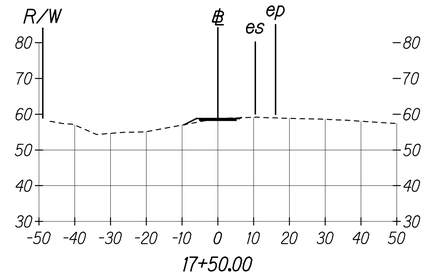
13+50.00

CUT: 10.97
FILL: 0.80
EXC: 14.73
EMB: 3.55



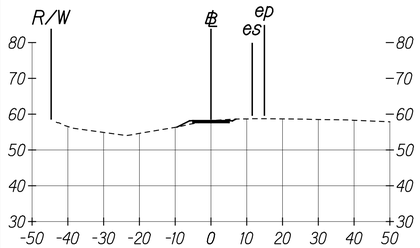
15+50.00

CUT: 9.35
FILL: 3.03
EXC: 16.48
EMB: 6.37



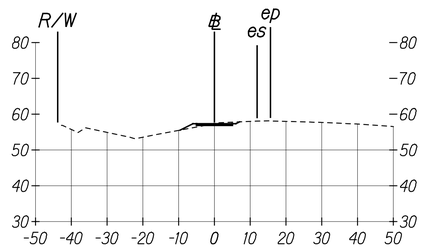
17+50.00

CUT: 4.27
FILL: 3.15
EXC: 7.51
EMB: 5.53



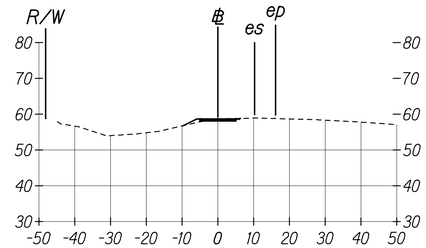
13+00.00

CUT: 4.91
FILL: 3.02
EXC: 10.87
EMB: 3.09



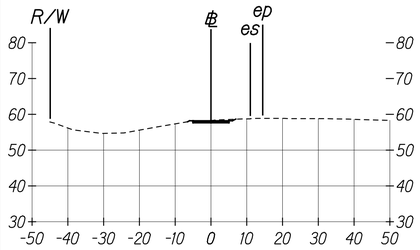
15+00.00

CUT: 8.44
FILL: 3.83
EXC: 13.02
EMB: 15.98



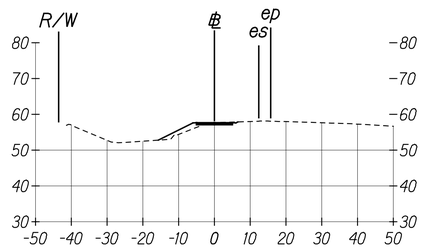
17+00.00

CUT: 3.84
FILL: 2.83
EXC: 8.82
EMB: 4.45



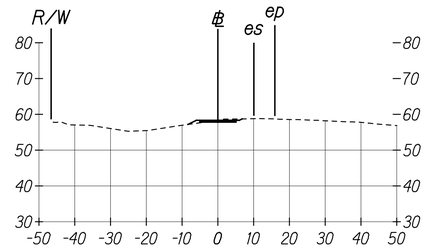
12+50.00

CUT: 6.83
FILL: 0.32
EXC: 11.41
EMB: 1.03



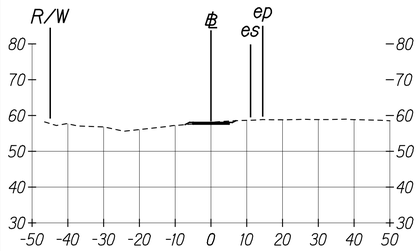
14+50.00

CUT: 5.60
FILL: 13.35
EXC: 22.78
EMB: 12.75



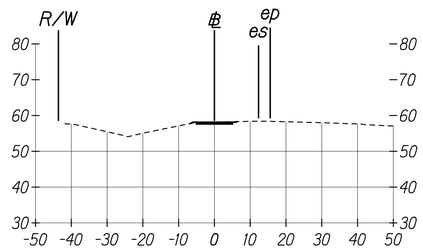
16+50.00

CUT: 5.70
FILL: 1.97
EXC: 12.63
EMB: 3.09



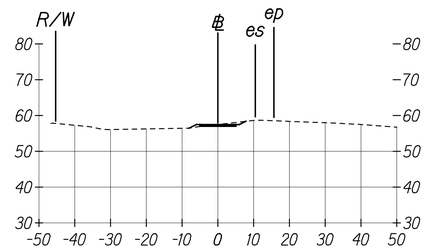
12+00.00

CUT: 5.49
FILL: 0.79
EXC: 9.95
EMB: 0.99



14+00.00

CUT: 18.89
FILL: 0.34
EXC: 27.78
EMB: 1.06



16+00.00

CUT: 7.95
FILL: 1.36
EXC: 16.02
EMB: 4.08

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

DARIN N. CHINEN
LICENSED PROFESSIONAL ENGINEER
No. 7977-C
HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.

SIGNATURE

04/30/20
EXPIRATION DATE OF THE LICENSE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

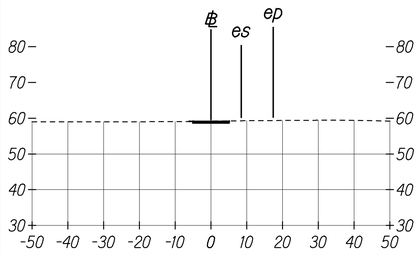
CROSS SECTION
SHARED USE PATH 1

FORT BARRETTE ROAD OPERATIONAL IMPROVEMENTS
Roosevelt Avenue to Farrington Highway
Project No. 901A-01-19

Scale: 1"=20' Date: Jan. 2020

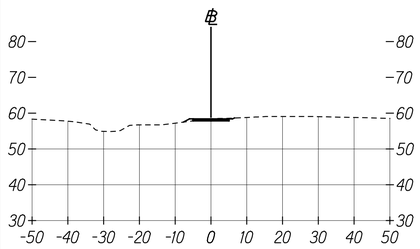
SHEET No. XS-3 OF 12 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	901A-01-19	2020	95	167



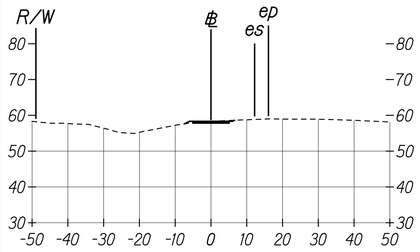
19+66.00

CUT: 5.02
FILL: 0.05
EXC: 12.10
EMB: 1.44



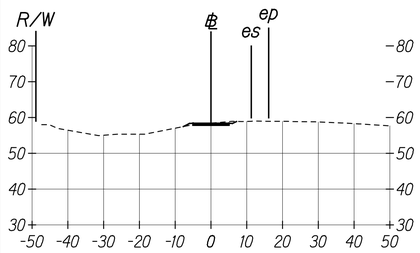
19+00.00

CUT: 4.82
FILL: 1.18
EXC: 9.66
EMB: 1.64



18+50.00

CUT: 5.61
FILL: 0.60
EXC: 10.87
EMB: 1.43



18+00.00

CUT: 6.13
FILL: 0.95
EXC: 9.63
EMB: 3.79

SUMMARY

SHARED USE PATH 1	EXC CU YD	EMB CU YD
TOTAL	455	84

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

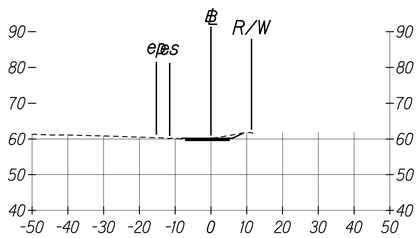
CROSS SECTION SHARED USE PATH 1

FORT BARRETTE ROAD OPERATIONAL IMPROVEMENTS
Roosevelt Avenue to Farrington Highway
Project No. 901A-01-19

Scale: 1"=20' Date: Jan. 2020

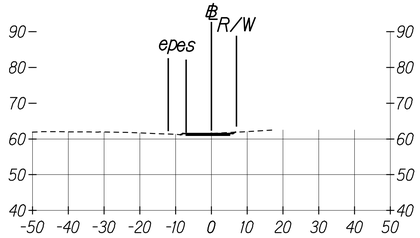
SHEET No. XS-4 OF 12 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	901A-01-19	2020	96	167



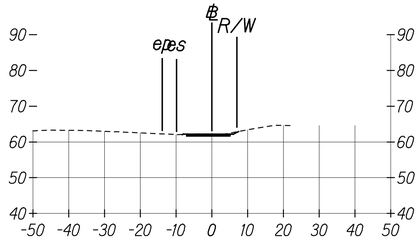
1+50.00

CUT: 7.98
FILL: 0.25
EXC: 13.46
EMB: 0.76



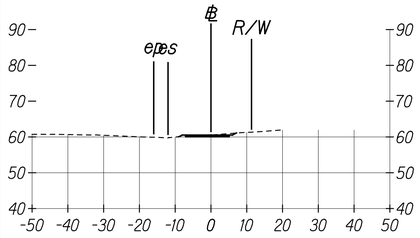
3+50.00

CUT: 5.75
FILL: 0.56
EXC: 9.75
EMB: 1.21



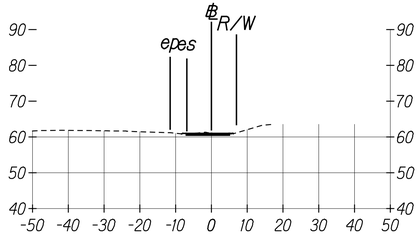
5+50.00

CUT: 6.79
FILL: 0.13
EXC: 12.24
EMB: 0.57



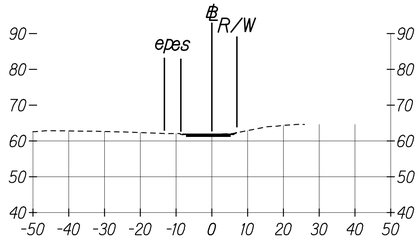
1+00.00

CUT: 6.56
FILL: 0.57
EXC: 11.82
EMB: 0.55



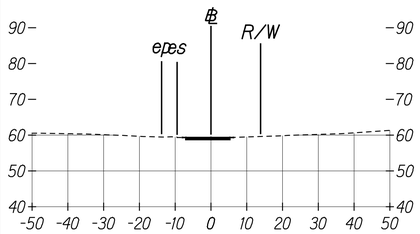
3+00.00

CUT: 4.77
FILL: 0.74
EXC: 10.69
EMB: 2.02



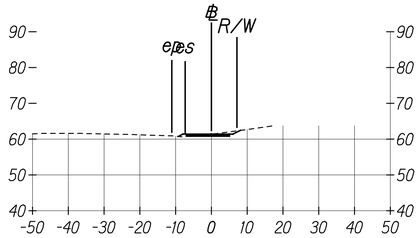
5+00.00

CUT: 6.43
FILL: 0.48
EXC: 13.27
EMB: 0.98



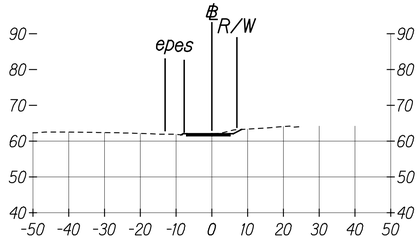
0+50.00

CUT: 6.21
FILL: 0.03
EXC: 11.23
EMB: 0.73



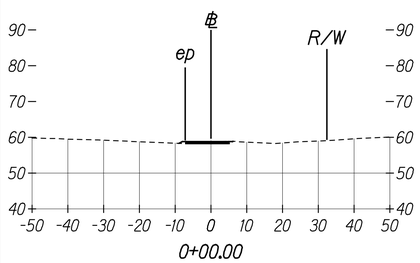
2+50.00

CUT: 6.78
FILL: 1.44
EXC: 11.98
EMB: 2.43



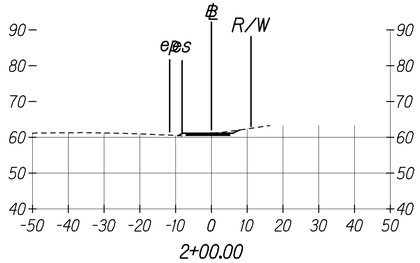
4+50.00

CUT: 7.91
FILL: 0.58
EXC: 13.07
EMB: 1.57



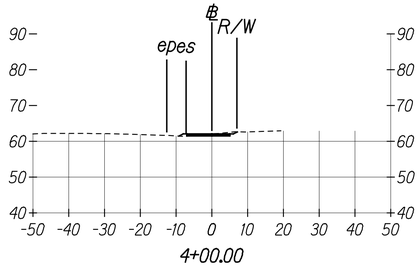
0+00.00

CUT: 5.80
FILL: 0.69
EXC: 0.00
EMB: 0.00



2+00.00

CUT: 6.20
FILL: 1.15
EXC: 13.11
EMB: 1.31



4+00.00

CUT: 6.20
FILL: 1.12
EXC: 11.07
EMB: 1.56

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

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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

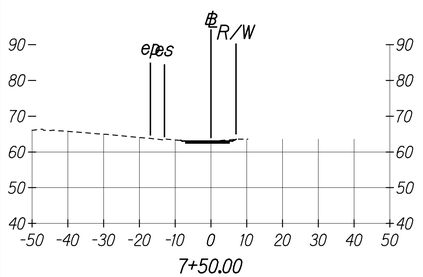
CROSS SECTION
SHARED USE PATH 2

FORT BARRETTE ROAD OPERATIONAL IMPROVEMENTS
Roosevelt Avenue to Farrington Highway
Project No. 901A-01-19

Scale: 1"=20' Date: Jan. 2020

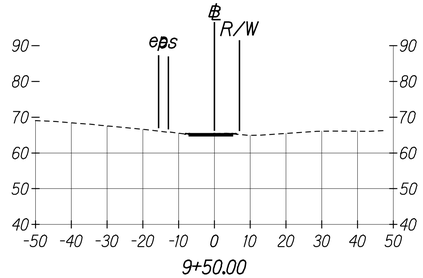
SHEET No. XS-5 OF 12 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	901A-01-19	2020	97	167



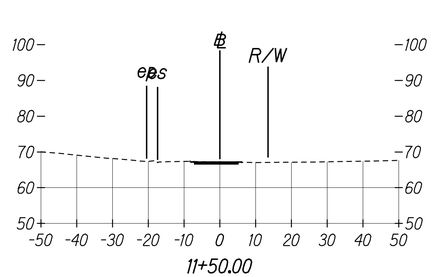
7+50.00

CUT: 6.86
FILL: 0.00
EXC: 15.51
EMB: 0.00



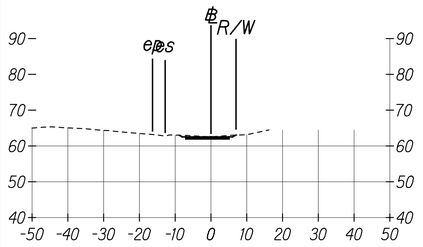
9+50.00

CUT: 5.42
FILL: 0.34
EXC: 12.06
EMB: 0.40



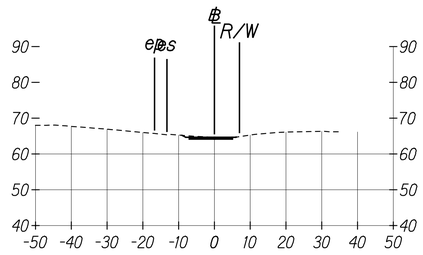
11+50.00

CUT: 6.42
FILL: 0.08
EXC: 12.07
EMB: 0.28



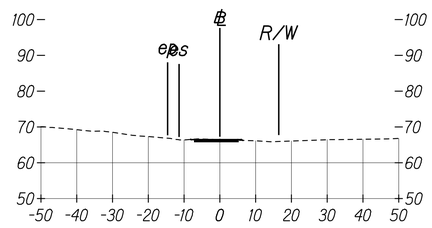
7+00.00

CUT: 9.88
FILL: 0.00
EXC: 15.33
EMB: 0.01



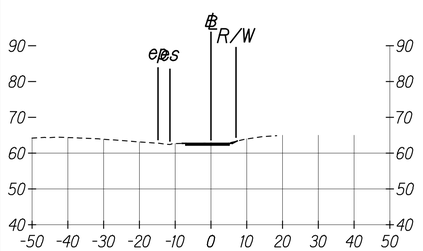
9+00.00

CUT: 7.59
FILL: 0.09
EXC: 12.06
EMB: 0.14



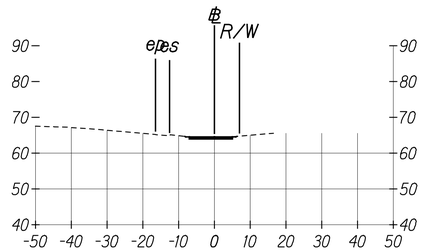
11+00.00

CUT: 6.62
FILL: 0.22
EXC: 11.74
EMB: 0.21



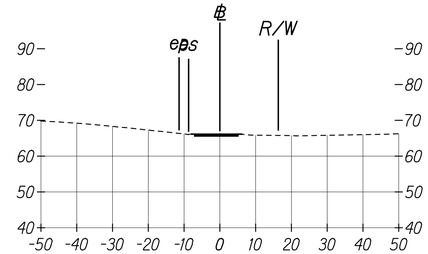
6+50.00

CUT: 6.66
FILL: 0.01
EXC: 11.91
EMB: 1.12



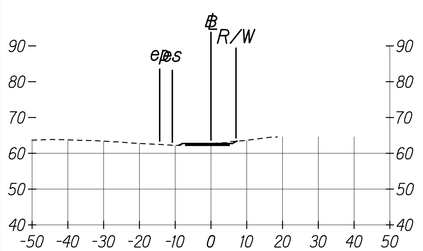
8+50.00

CUT: 5.42
FILL: 0.06
EXC: 10.30
EMB: 0.24



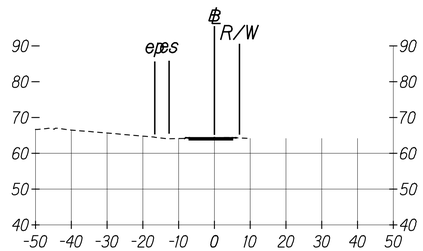
10+50.00

CUT: 6.02
FILL: 0.01
EXC: 11.73
EMB: 0.28



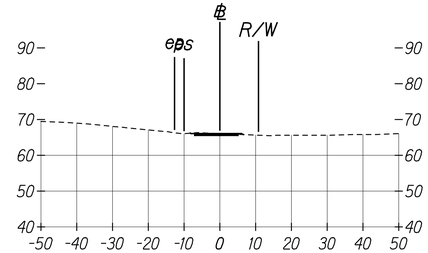
6+00.00

CUT: 6.20
FILL: 1.20
EXC: 12.04
EMB: 1.23



8+00.00

CUT: 5.69
FILL: 0.20
EXC: 11.63
EMB: 0.19



10+00.00

CUT: 6.61
FILL: 0.29
EXC: 11.15
EMB: 0.59

ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
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NOTE BOOK	TRACED BY	
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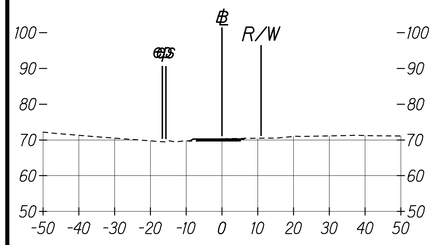
CROSS SECTION
SHARED USE PATH 2

FORT BARRETTE ROAD OPERATIONAL IMPROVEMENTS
Roosevelt Avenue to Farrington Highway
Project No. 901A-01-19

Scale: 1"=20' Date: Jan. 2020

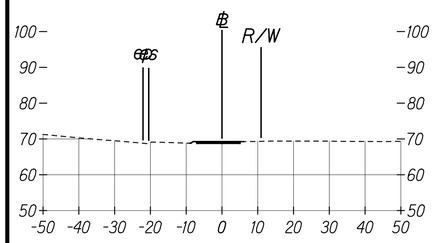
SHEET No. XS-6 OF 12 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	901A-01-19	2020	98	167



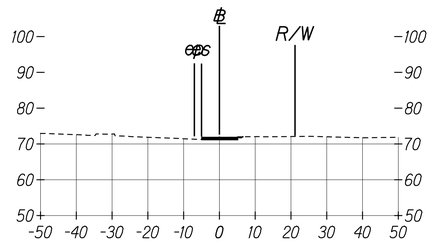
13+50.00

CUT: 5.75
FILL: 0.93
EXC: 10.81
EMB: 1.50



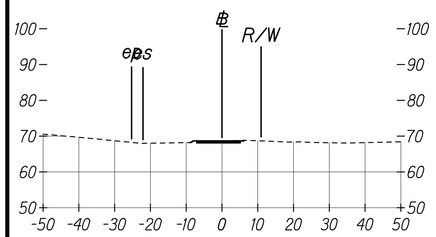
13+00.00

CUT: 5.92
FILL: 0.70
EXC: 10.81
EMB: 1.12



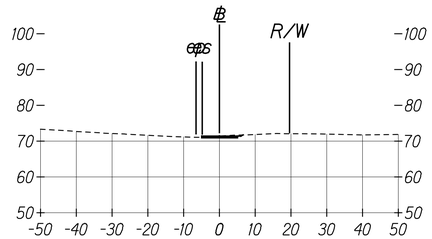
14+63.54

CUT: 5.18
FILL: 0.00
EXC: 2.63
EMB: 0.07



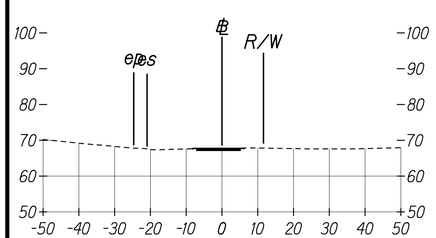
12+50.00

CUT: 5.76
FILL: 0.51
EXC: 10.83
EMB: 0.57



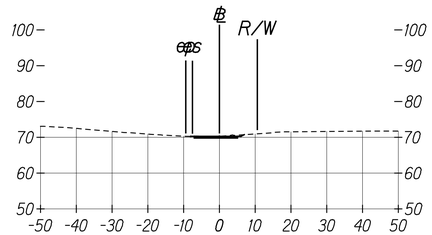
14+50.00

CUT: 5.56
FILL: 0.31
EXC: 12.58
EMB: 1.39



12+00.00

CUT: 5.94
FILL: 0.10
EXC: 11.44
EMB: 0.17



14+00.00

CUT: 8.24
FILL: 1.33
EXC: 12.91
EMB: 2.08

SUMMARY

SHARED USE PATH 2	EXC CU YD	EMB CU YD
TOTAL	351	25

DARIN N. CHINEN
LICENSED PROFESSIONAL ENGINEER
No. 7977-C
HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.

SIGNATURE

/30/20
EXPIRATION DATE OF THE LICENSE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

CROSS SECTION
SHARED USE PATH 2

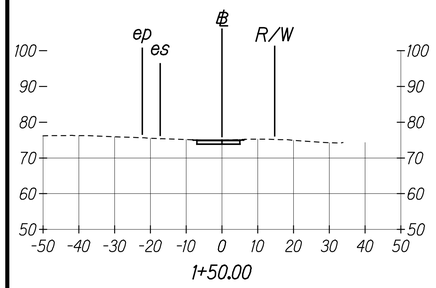
FORT BARRETTE ROAD OPERATIONAL IMPROVEMENTS
Roosevelt Avenue to Farrington Highway
Project No. 901A-01-19

Scale: 1"=20' Date: Jan. 2020

SHEET No. XS-7 OF 12 SHEETS

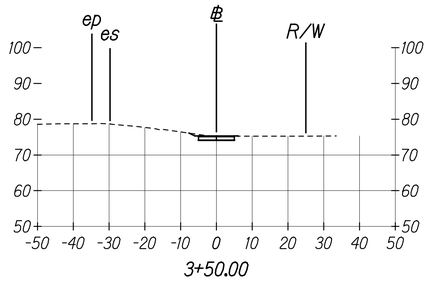
ORIGINAL PLAN
NOTE BOOK
SURVEY PLOTTED BY
DRAWN BY
TRACED BY
DESIGNED BY
QUANTITIES BY
CHECKED BY
DATE
NO.

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	901A-01-19	2020	99	167



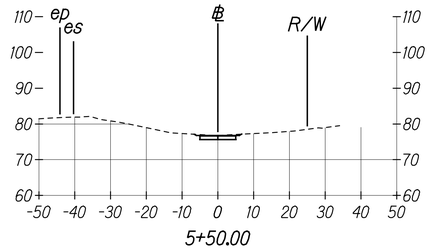
1+50.00

CUT: 14.39
FILL: 0.00
EXC: 26.77
EMB: 0.10



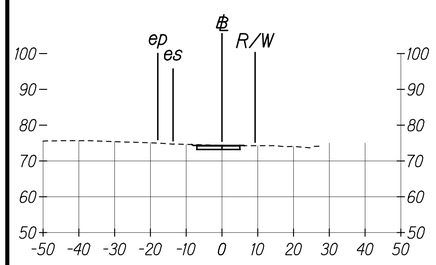
3+50.00

CUT: 13.35
FILL: 0.02
EXC: 23.43
EMB: 0.29



5+50.00

CUT: 13.34
FILL: 0.00
EXC: 23.58
EMB: 0.36



1+00.00

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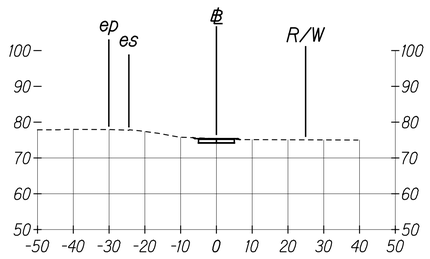
EXC: 27.10
EMB: 0.20



3+00.00

CUT: 11.96
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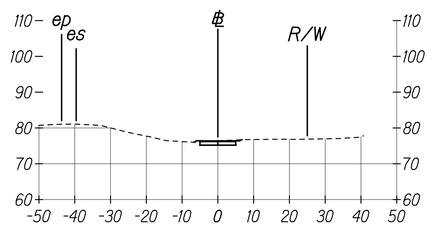
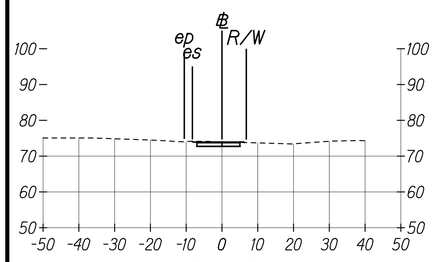
EXC: 19.84
EMB: 5.28



5+00.00

CUT: 12.11
FILL: 0.39
EXC: 20.07
EMB: 3.88



0+50.00

CUT: 14.74
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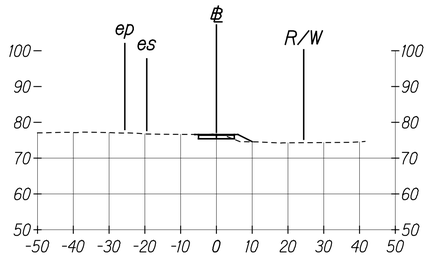
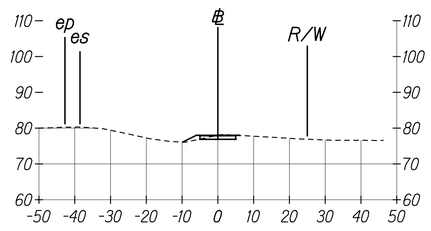
EXC: 24.49
EMB: 0.54



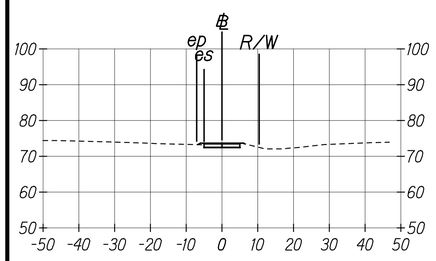
2+50.00

CUT: 9.45
FILL: 5.44
EXC: 21.66
EMB: 5.09



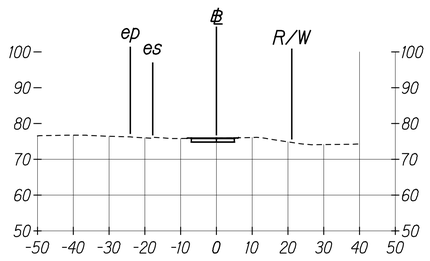
4+50.00

CUT: 9.55
FILL: 3.83
EXC: 19.79
EMB: 3.66



0+00.00

CUT: 11.52
FILL: 0.47
EXC: 0.00
EMB: 0.00



2+00.00

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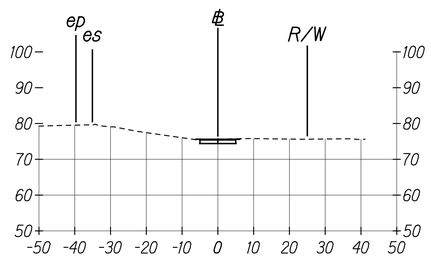
EMB: 0.10



4+00.00

CUT: 11.82
FILL: 0.15
EXC: 23.30
EMB: 0.16

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

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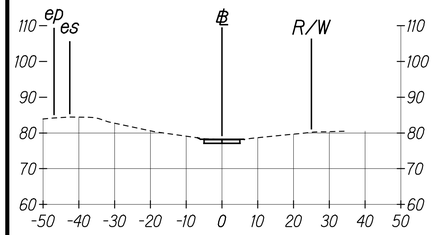
CROSS SECTION
SHARED USE PATH 3

FORT BARRETTE ROAD OPERATIONAL IMPROVEMENTS
Roosevelt Avenue to Farrington Highway
Project No. 901A-01-19

Scale: 1"=20' Date: Jan. 2020

SHEET No. XS-8 OF 12 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	901A-01-19	2020	100	167



CUT: 12.08
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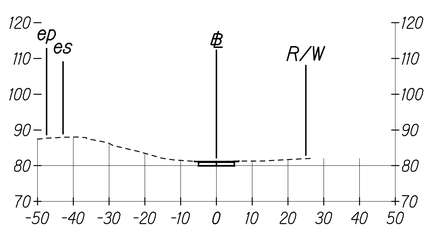
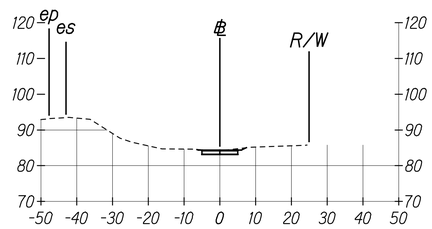
EXC: 22.80
EMB: 0.10

7+50.00



CUT: 11.97
FILL: 0.00
EXC: 22.85
EMB: 0.00

9+50.00



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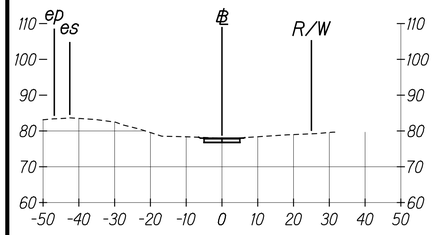
EXC: 24.37
EMB: 0.00

11+50.00



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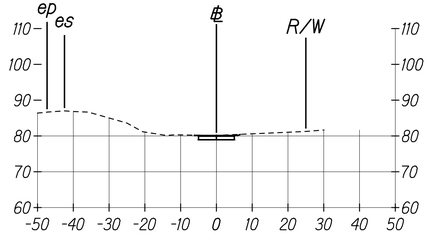
EMB: 0.00

7+00.00



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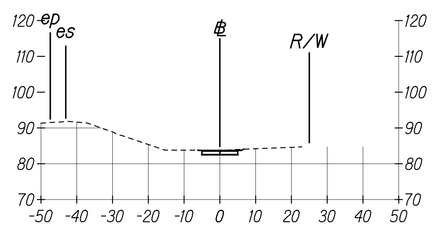
FILL: 0.00
EXC: 23.23
EMB: 0.26

9+00.00



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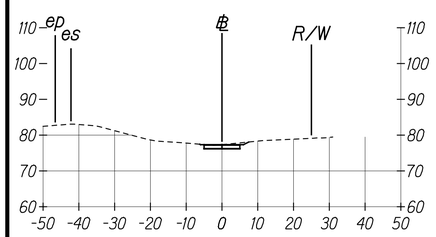
FILL: 0.00
EXC: 23.42
EMB: 0.09

11+00.00



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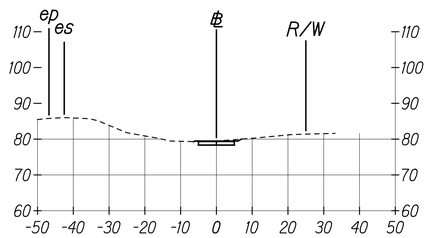
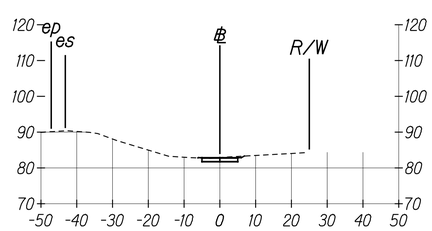
FILL: 0.00
EXC: 23.41
EMB: 0.02

6+50.00



CUT: 12.37
FILL: 0.28
EXC: 23.50
EMB: 0.26

8+50.00



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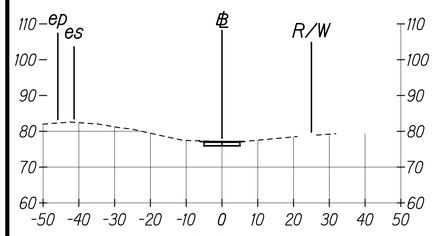
EXC: 22.64
EMB: 0.21

10+50.00



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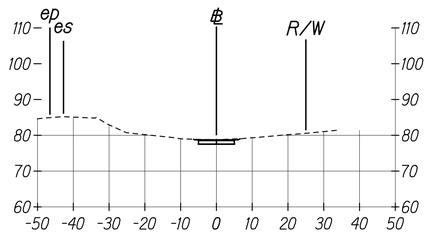
EXC: 23.44
EMB: 0.02

6+00.00



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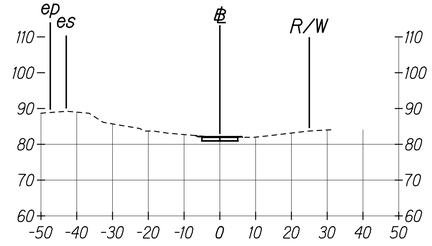
FILL: 0.00
EXC: 23.22
EMB: 0.10

8+00.00



CUT: 11.99
FILL: 0.13
EXC: 22.19
EMB: 0.12

10+00.00

ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
NOTE BOOK	DRAWN BY	
NO.	TRACED BY	
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DARIN N. CHINEN
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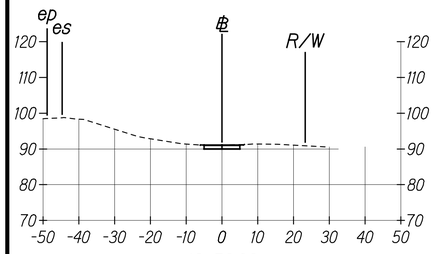
CROSS SECTION
SHARED USE PATH 3

FORT BARRETTE ROAD OPERATIONAL IMPROVEMENTS
Roosevelt Avenue to Farrington Highway
Project No. 901A-01-19

Scale: 1"=20' Date: Jan. 2020

SHEET No. XS-9 OF 12 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	901A-01-19	2020	101	167



13+50.00

CUT: 11.79
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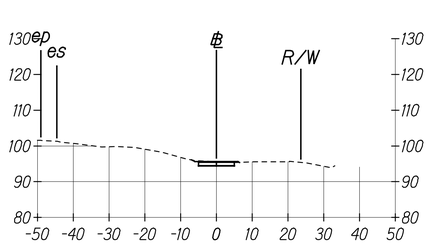
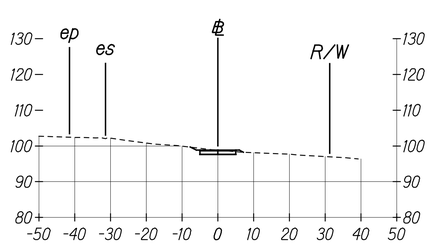
EXC: 21.73
EMB: 0.08



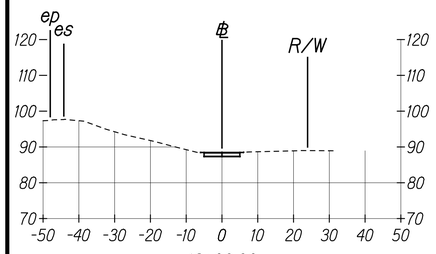
15+50.00

CUT: 12.08
FILL: 0.31
EXC: 22.30
EMB: 0.60



17+50.00

CUT: 13.08
FILL: 0.76
EXC: 26.06
EMB: 2.88



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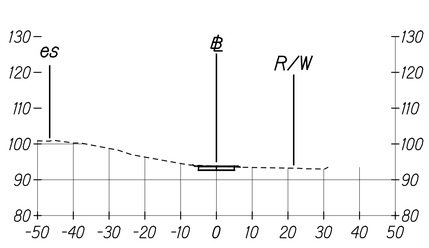
EMB: 0.00



15+00.00

CUT: 12.00
FILL: 0.34
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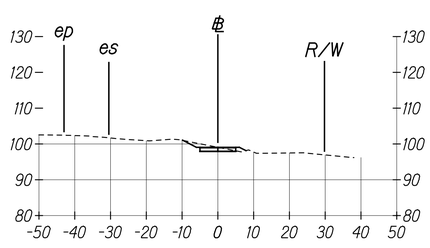
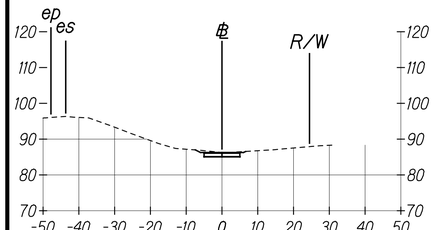


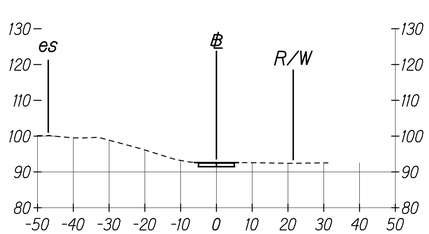
17+00.00

CUT: 15.02
FILL: 2.37
EXC: 25.27
EMB: 5.82



12+50.00

CUT: 14.52
FILL: 0.00
EXC: 24.37
EMB: 0.13



14+50.00

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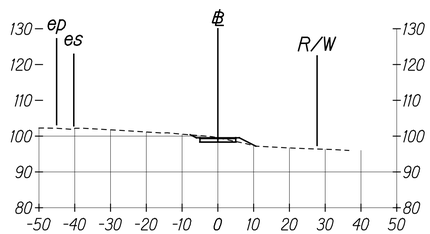
EMB: 0.20



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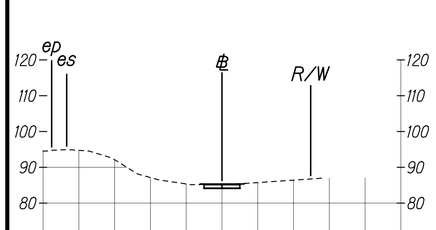
EMB: 4.61



12+00.00

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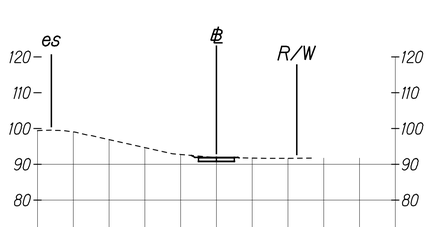

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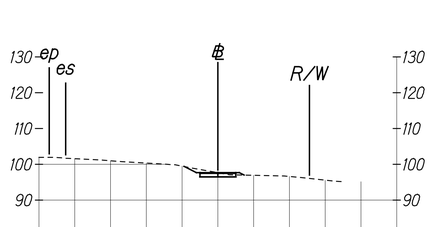

16+00.00

CUT: 14.73
FILL: 1.06
EXC: 24.82
EMB: 1.27

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

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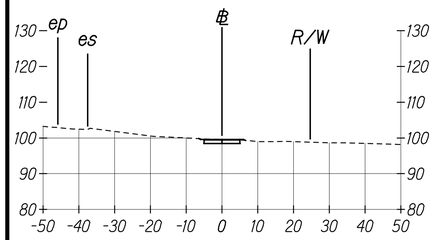
Roosevelt Avenue to Farrington Highway
Project No. 901A-01-19

Scale: 1"=20' Date: Jan. 2020

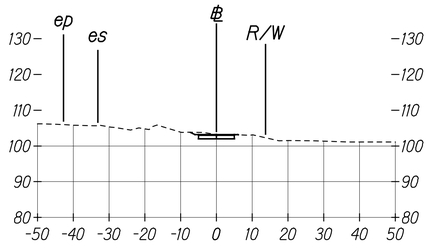
SHEET No. XS-10 OF 12 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	901A-01-19	2020	102	167



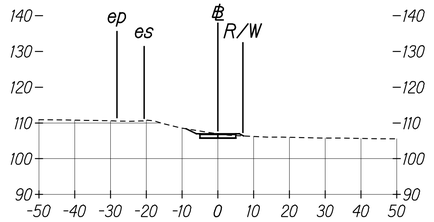
19+50.00

CUT: 11.88
FILL: 0.28
EXC: 22.96
EMB: 0.56



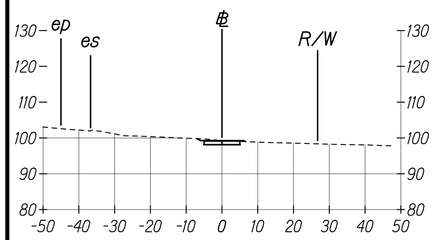
21+50.00

CUT: 13.94
FILL: 0.10
EXC: 24.36
EMB: 0.44



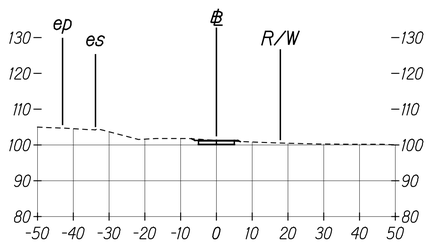
23+50.00

CUT: 14.25
FILL: 0.83
EXC: 31.37
EMB: 2.84



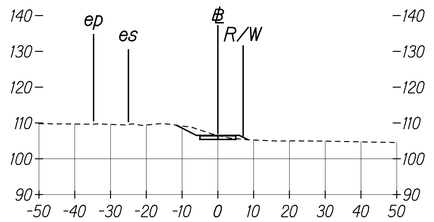
19+00.00

CUT: 12.91
FILL: 0.32
EXC: 23.27
EMB: 0.81



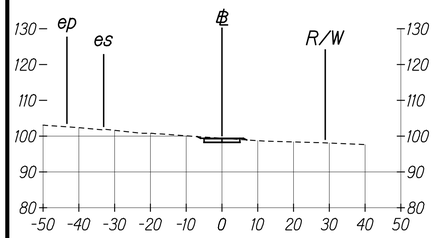
21+00.00

CUT: 12.37
FILL: 0.38
EXC: 22.31
EMB: 0.40



23+00.00

CUT: 19.63
FILL: 2.23
EXC: 29.45
EMB: 2.71



18+50.00

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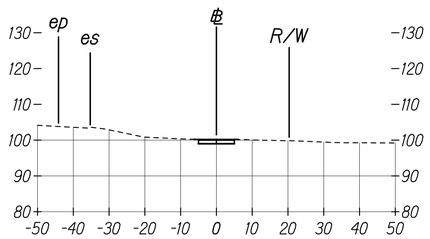
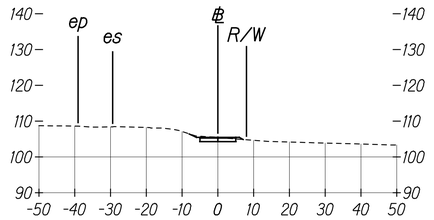
EXC: 22.82
EMB: 0.91



20+50.00

CUT: 11.72
FILL: 0.05
EXC: 22.10
EMB: 0.41



22+50.00

CUT: 12.22
FILL: 0.69
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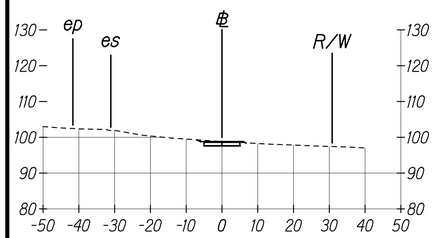
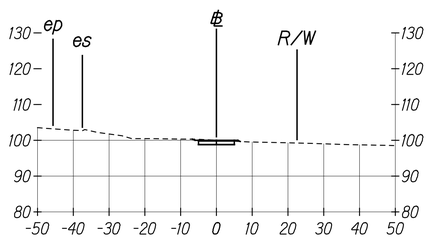
EMB: 3.51



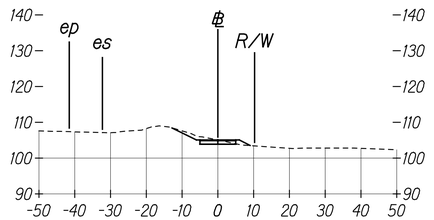
18+00.00

CUT: 12.42
FILL: 0.43
EXC: 23.63
EMB: 1.09



20+00.00

CUT: 12.15
FILL: 0.39
EXC: 22.26
EMB: 0.63



22+00.00

CUT: 17.15
FILL: 3.09
EXC: 28.75
EMB: 2.95

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

DARIN N. CHINEN
LICENSED PROFESSIONAL ENGINEER
No. 7977-C
HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.

SIGNATURE — 4/30/20 EXPIRATION DATE OF THE LICENSE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

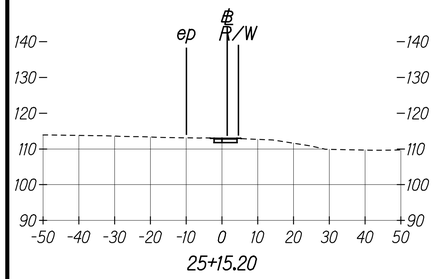
CROSS SECTION
SHARED USE PATH 3

FORT BARRETTE ROAD OPERATIONAL IMPROVEMENTS
Roosevelt Avenue to Farrington Highway
Project No. 901A-01-19

Scale: 1"=20' Date: Jan. 2020

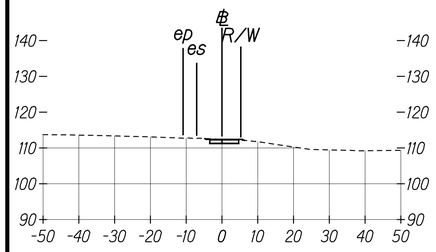
SHEET No. XS-11 OF 12 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	901A-01-19	2020	103	167



25+15.20

CUT: 7.25
FILL: 0.03
EXC: 4.67
EMB: 0.10



25+00.00

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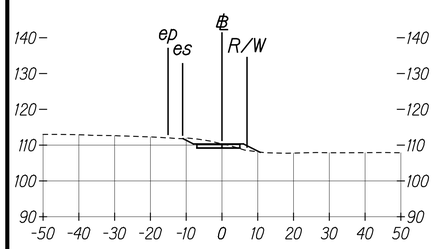
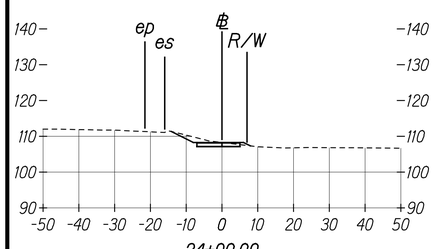
FILL: 0.32
EXC: 24.95
EMB: 5.46



24+50.00

CUT: 17.54
FILL: 5.62
EXC: 32.37
EMB: 6.46



24+00.00

CUT: 17.42
FILL: 1.35
EXC: 29.32
EMB: 2.02

SUMMARY

SHARED USE PATH 3	EXC CU YD	EMB CU YD
TOTAL	1211	68

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

DARIN N. CHINEN
LICENSED PROFESSIONAL ENGINEER
No. 7977-C
HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.

SIGNATURE

/30/20
EXPIRATION DATE OF THE LICENSE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

CROSS SECTION
SHARED USE PATH 3

FORT BARRETTE ROAD OPERATIONAL IMPROVEMENTS
Roosevelt Avenue to Farrington Highway
Project No. 901A-01-19

Scale: 1"=20' Date: Jan. 2020

SHEET No. XS-12 OF 12 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	901A-01-19	2020	104	167

GENERAL TRAFFIC SIGNAL NOTES:

1. All Traffic Signal work shall conform to the requirements of the Manual on Uniform Traffic Control Devices for Streets and Highways, U.S. Department of Transportation, Federal Highways Administration, 2009 Edition, and Amendments.
2. Contractor to verify location and condition of existing traffic signal standards, traffic signal standards with mast arm, traffic controller, transformer, pullboxes, conduits, cabling, & loop detectors out in the field and to inform the Engineer of condition of items mentioned prior to construction and installation. Contractor to inform Engineer of any discrepancy between existing conditions and locations found out in the field compared to the existing conditions as shown on plans.
3. The locations of the traffic signal standards, traffic signal standards with mast arm, traffic controller, transformer, pullboxes, conduits, & loop detectors shall be staked out in the field by the Contractor and locations accepted by the Engineer prior to construction and installation. Locations shown on plans shall be adjusted as necessary to prevent conflict with existing or new facilities.
4. All direct-buried conduits shall be PVC Schedule 80.
5. Loop detectors shall be installed according to Loop Detector Details shown on the Plans.
6. Lead-in wires in pullbox near loops shall be tagged with Loop Number(s).
7. See sheet TS-6 for Restoration of Non-Roadway Areas and Restoration of Existing Pavement Details due to Trench Excavation.
8. Steel plates for covering trenches shall have skid resistant surface.
9. All structures, pavements, utilities, landscaping, and other topographical features shown on the Plans are existing and shall remain unless noted or indicated otherwise. All grassed areas damaged by construction activities shall be top soiled and grassed.
10. A solid #8 bare copper wire shall be pulled in all conduits with the traffic control cable for equipment ground.
11. All splicing shall be done in the pullboxes.
12. All traffic signal controller equipment shall be completely wired in the cabinet and shall control the traffic signal as called for in the Plans.
13. The loop amplifier units furnished for this project shall be capable of operating the loop detector configurations shown on the Plans.
14. The Contractor shall verify with the respective utility companies and government agencies, the locations of all electric, telephone, traffic signal, street light, cable television, fire alarm, gas, water, sewer, drain and other lines crossing the excavation path or in excavation areas.
15. All work and materials for the traffic signal system shall conform to Special Provisions Section 623 - Traffic Signal System, except as otherwise provided on the Plans.
16. Provide ground rod in all pullboxes, pullboxes adjacent to signal standards, pedestals, controller cabinets, and other locations ordered by the Engineer. Ground rod connectors shall be copper welded and shall meet ground to earth resistance as specified by the National Electric Code or local inspecting agency.
17. Underground pipes, cables, or ductlines known to exist are indicated on the Plans. The Contractor shall verify the locations and depths of the facilities and exercise proper care in excavating in the area. Wherever connections of new utilities to existing utilities are shown on the Plans, the Contractor shall expose the existing lines at the proposed connections to verify their locations and depths prior to excavation for the new lines.
18. During non-working hours, the Contractor shall provide two lanes for through traffic. On streets too narrow to make this practicable, the Contractor may work in one half of the roadway keeping one lane open to traffic and alternating the flow of traffic. Payment for contraflow during non-working hours is incidental and will not be paid for separately. During non-working hours, all trenches shall be covered with a safe, non-skid, traffic-bearing bridging material and all lanes shall be open to traffic.
19. Where pedestrian walkways exist, they shall be maintained in passable condition or other facilities for pedestrians shall be provided. Passage between walkways at intersections shall likewise be provided.
20. Driveways shall be kept open unless the owners of the property using these rights-of-way are otherwise provided for satisfactorily.
21. No material and/or equipment shall be stockpiled or otherwise stored within street rights-of-way except at locations designated in writing and accepted by the Engineer.
22. Traffic Signal Supports and Foundations shall conform with the AASHTO LRFD Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals, 1st Edition, with latest Interim Revisions and as modified by HDOT Memorandum with subject title, "Changes to Design Criteria for Bridges and Structures" (Letter No. HWY-DB 2.5098) dated January 8, 2018.
23. Existing traffic signal standards to be replaced shall be removed together with its respective footing. The Contractor may elect to remove only the top portion of the footing. In such cases, the Contractor shall ensure that the remaining footing shall be 12 inches below the existing or finished grade.
24. The existing traffic signal system, including interconnect, shall remain in operation until the new traffic signal system is put into service. The Contractor shall arrange his work accordingly to provide temporary relocations and wirings, as necessary.
25. Contractor shall coordinate with C&C DTS Signal Shop (Supervisor Wally Nakihira @ 564-6101) for all traffic signal-related work. Schedule with C&C DTS Signal Shop at least two weeks in advance of the actual work, including pavement cold planing removing the existing loop detector.
26. Contractor shall perform all traffic signal-related work following field instructions from DTS Signal Shop personnel. Such field instructions shall include, but not limited to, the final location and quantity of the temporary microwave sensors and permanent detector loops. DTS Signal Shop personnel will be responsible for traffic signal controller programming at the traffic signal cabinet to accomodate the temporary and permanent operations.
27. Contractor shall promptly take down and turnover the temporary microwave sensors to DTS when the permanent detector loops are in place and operational. Contractor shall perform all necessary work to restore traffic signal system back to a neat appearance of the electrical trade.

Approved:

Chief, Traffic Signals & Technology Division, DTS Date

TRAFFIC SIGNAL LEGEND AND ABBREVIATIONS:

- Conduits and Cables, Conduit Run X
- 12" R-Y-↑ Traffic Signal Head
- 12" R-Y-G Traffic Signal Head
- 12" R-Y-← Traffic Signal Head
- Pedestrian Signal Head
- 12" R-Y-↑ Traffic Signal Head with Back Plate
- 12" R-Y-G Traffic Signal Head with Back Plate
- 12" R-Y-← Traffic Signal Head with Back Plate
- 12" R-Y-G-← Traffic Signal Head with Back Plate
- Signal Standard with Mast Arm Type II, or Type III L=Length of Mast arm, Pole X, Footing Type C
- Signal Standard Type I, Pole X, H=3', 7' or 10', Footing Type A
- Loop Detectors
- Pullbox Type A (Old Type "B")
- Pullbox Type B (Old Type "C")
- Pullbox Type C (Old Type "D")
- Pedestrian Push Button Assembly (Arrow denotes direction on Push Button Sign)
- Traffic Controller Model 170E and 332A Cabinet with Type D Concrete Base for Controller Cabinet
- Street Sign Mounted to Mast Arm
- Existing Traffic Signal Head
- Existing Traffic Signal Head with New Back Plate
- Existing Pedestrian Signal Head
- Exisitng Controller Cabinet
- Existing Pullbox
- Existing Traffic Signal Items to be removed
- Existing Signal Standard with Mast Arm Type II, or Type III
- Existing Signal Standard Type I, H=3', 7' or 10'

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

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

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.

SIGNATURE 04/30/20 EXPIRATION DATE OF THE LICENSE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

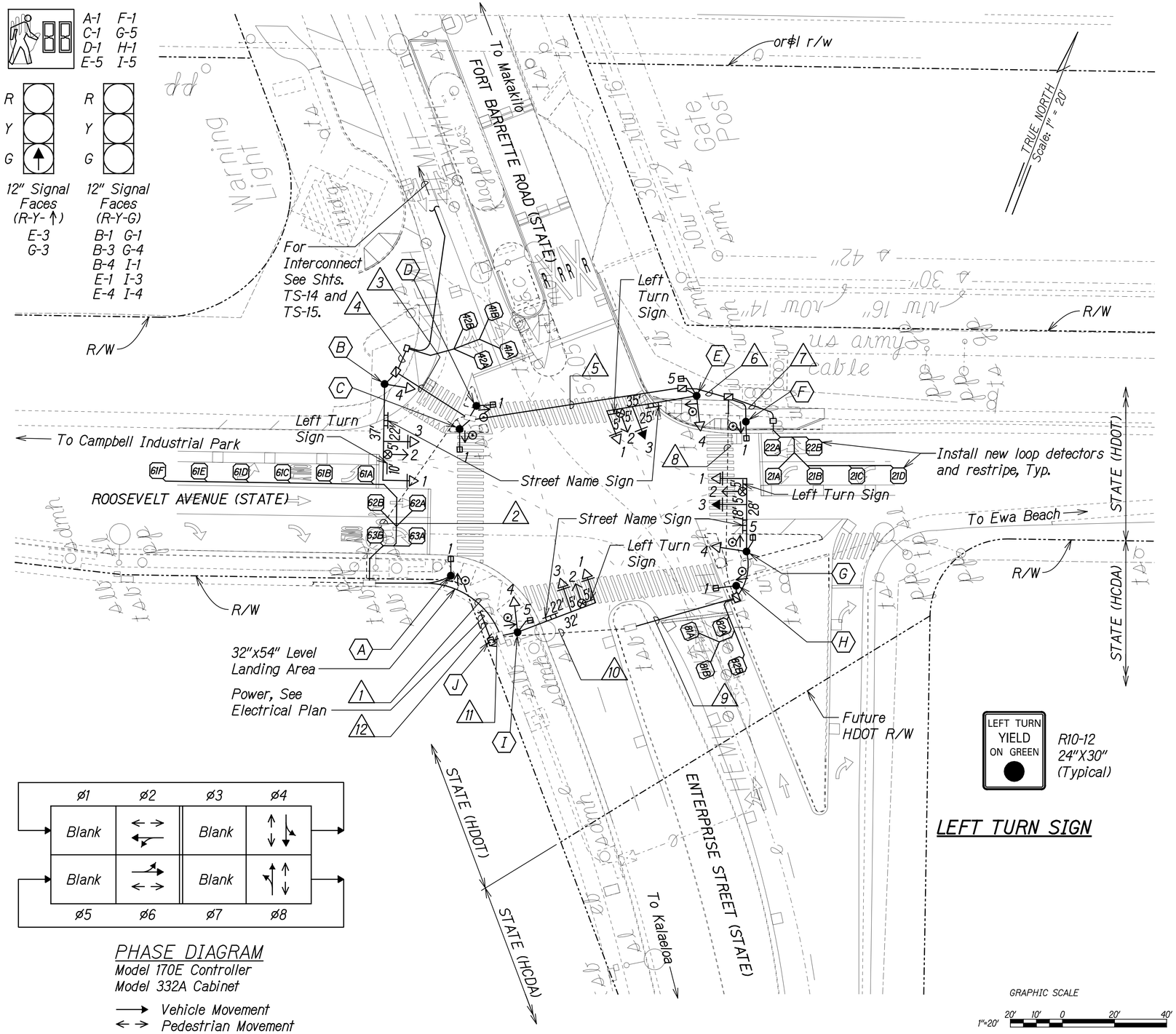
TRAFFIC SIGNAL NOTES AND LEGEND

FORT BARRETTE ROAD OPERATIONAL IMPROVEMENTS
Roosevelt Avenue to Farrington Highway
Project No. 901A-01-19

Scale: None Date: Jan. 2020

SHEET No. TS-1 OF 16 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	901A-01-19	2020	105	167



PHASE DIAGRAM
Model 170E Controller
Model 332A Cabinet

→ Vehicle Movement
←→ Pedestrian Movement

R10-12
24"X30"
(Typical)

LEFT TURN SIGN

CONSTRUCTION NOTES:

1. Construct traffic signal conduits, pullboxes, standards and controller. Sawcut existing sidewalk and restore sidewalk. See sheet TS-12 for Details.
2. Penetrate existing traffic signal pullbox for entry. Repair to match existing condition.
3. For Material List and Cable and Conduit Schedule, see sheet TS-3.
4. For Trenching and Miscellaneous Details, see sheet TS-6.
5. For Sidewalk Reconstruction Notes and Details, see sheet TS-12.
6. For Traffic Signal Details, see sheet TS-7, TS-8, TS-9, TS-10 and TS-11.
7. For Traffic Signal Standard Footing and Details, see State Standard Plans TE-32, TE-33, TE-33A.1, TE-33A.2, TE-38, TE-38A.1 and TE-38A.2.
8. Install back plates on traffic signals on mast arms. Back plates and the installation of back plates shall not be measured for payment but shall be considered incidental to the various items of the contract.

Approved:

Chief, Traffic Signals & Technology Division, DTS Date

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

DEXTER S. EJI
LICENSED PROFESSIONAL ENGINEER
No. 4739-C
HAWAII, U.S.A.
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.
SIGNATURE
04/30/20
EXPIRATION DATE OF THE LICENSE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

TRAFFIC SIGNAL PLAN
FORT BARRETTE ROAD & ROOSEVELT AVENUE
FORT BARRETTE ROAD OPERATIONAL IMPROVEMENTS
Roosevelt Avenue to Farrington Highway
Project No. 901A-01-19
Scale: 1" = 20' Date: Jan. 2020

SHEET No. TS-2 OF 16 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	901A-01-19	2020	106	167

Material List

Pole ⬡	Base Type	Standard Type	Mounting Type	PPB Assembly
A	A	I-10	(1) TP-1W	1
B	C	II-37	(1)X(3) MA-1W	
			(2) Opticom (Horiz.)	
			(4) B-1W	
C	A	I-10	(1) TP-1W (Pedhead)	1
D	A	I-10	(1) TP-1W (Pedhead)	1
E	C	II-35	(1)X(3) MA-1W	
			(2) Opticom (Horiz.)	
			(4) B-1W	
			(5) US-1W (Pedhead)	1
F	A	I-10	(1) TP-1W (Pedhead)	1
G	C	II-28	(1)X(3) MA-1W	
			(2) Opticom (Horiz.)	
			(4) B-1W	
			(5) US-1W (Pedhead)	1
H	A	I-10	(1) TP-1W (Pedhead)	1
I	C	II-32	(1)X(3) MA-1W	
			(2) Opticom (Horiz.)	
			(4) B-1W	
			(5) US-1W (Pedhead)	1
J	D		170E Controller	
			332A Cabinet and Base	

* For Traffic Signal Pole Base, See Std. Plan TE-32, TE-33, TE-33A.1 and TE-33A.2.

Cable and Conduit Schedule

Run △	Conduit Size	26C#14 Signal Control	3C#14 Signal Control	2C#14 PPB/ Loops	12PR#19 Inter-Connect	3C#20 Opticom	3C#6 Power/ Service	OTHER
1	2"(E)	1						
	2"(E)			5				
	2"(E)				1			
	2"(E)					2		
	2"(E)	SPARE						
	2"			1				
2	2"(E)	1						
	2"(E)			5				
	2"(E)			2				
	2"(E)				1			
	2"(E)					2		
	2"(E)	SPARE						
	2"(E)	SPARE						
	2"(E)	SPARE						
3	2"		1					
	2"			2				
	2"				1			
	2"					1		
	2"	SPARE						
4	2"			2				
	2"				1			
	2"	SPARE						
5	2"	1						
	2"			1				
	2"					1		
	2"	SPARE						
6	2"	1						
	2"			1				
	2"	SPARE						
7	2"			2				
	2"	SPARE						
8	2"(E)	1						
	2"(E)			4				
	2"(E)	SPARE						
	2"(E)	SPARE						
	2"(E)	SPARE						
	2"(E)	SPARE						
	2"(E)	SPARE						
	2"(E)	SPARE						
9	2"	1						
	2"			5				
	2"			1				
	2"					1		
	2"				SPARE			

Cable and Conduit Schedule

Run △	Conduit Size	26C#14 Signal Control	3C#14 Signal Control	2C#14 PPB/ Loops	12PR#19 Inter-Connect	3C#20 Opticom	3C#6 Power/ Service	OTHER
10	2"(E)	1						
	2"(E)			5				
	2"(E)			1				
	2"(E)					1		
	2"(E)	SPARE						
11	3"	2						
	3"	SPARE						
	2"			5				
	2"			5				
	2"			3				
	2"				1			
	2"					4		
	2"	SPARE						
	2"	SPARE						
12	2"						1	

Approved:

Chief, Traffic Signals & Technology Division, DTS Date

ORIGINAL PLAN

NOTE BOOK No.

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

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

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.

SIGNATURE 04/30/20 EXPIRATION DATE OF THE LICENSE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

CABLE AND CONDUIT SCHEDULE

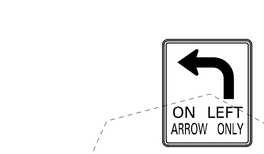
FORT BARRETTE ROAD & ROOSEVELT AVENUE

FORT BARRETTE ROAD OPERATIONAL IMPROVEMENTS
Roosevelt Avenue to Farrington Highway
Project No. 901A-01-19

Scale: None Date: Jan. 2020

SHEET No. TS-3 OF 16 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	901A-01-19	2020	107	167



R17-3A(L)
30"X36"
(Typical)

LEFT TURN SIGN

12" Signal Faces (R-Y-↑)

B-3
G-3
G-4

12" Signal Faces (R-Y-G)

A-5
B-4
D-1
G-5

12" Signal Faces (R-Y-←)

A-4
B-1 *
B-5
F-1
G-1 *
H-1

A-6
C-1
D-2
F-2
F1-1
G-6
H-2
I-1

*Programmed Visibility Signals

GRAPHIC SCALE
1"=20' 20' 10' 0 20' 40'

PHASE DIAGRAM

Exist. Model 170E Controller
Exist. Model 332A Cabinet

→ Vehicle Movement
↔ Pedestrian Movement

Approved:

Chief, Traffic Signals & Technology Division, DTS Date

CONSTRUCTION NOTES:

1. Remove existing traffic signal foundation 12" below ground. Remove and salvage existing traffic signal pole and traffic signal head.
2. Remove existing traffic signal foundation 12" below ground. Patch with 4" thick concrete. Match and meet existing condition. Remove and salvage existing traffic signal pole, mast arm, traffic and pedestrian signal heads, opticom and pedestriam button assembly.
3. Remove and salvage existing pullbox. Grade and match existing condition.
4. Saw cut at limits of reconstruction. Reconstruct 415 Square feet 4" thick concrete sidewalk. Match and meet existing condition.
5. Remove and salvage existing pullbox. Patch with 4" thick concrete. Match and meet existing condition.
6. Saw cut at limits of reconstruction. Reconstruct 1,347 square feet of AC pavement. Match and meet existing condition.
7. Construct traffic signal conduits, pullboxes, standards and controller. Sawcut existing sidewalk and restore sidewalk. See Sheet TS-12 for Details.
8. Penetrate existing traffic signal pullbox for entry. Repair to match existing condition.
9. For Material List and Cable and Conduit Schedule, see sheet TS-5 for Details.
10. For Trenching and Miscellaneous Details, see sheet TS-6.
11. For Sidewalk Reconstruction Notes and Details, see sheet TS-12.
12. For Traffic Signal Details, see sheet TS-7, TS-8, TS-9, TS-10 and TS-11.
13. For Traffic Signal Standard Footing and Details, see State Standard Plans TE-32, TE-33, TE-33A.1, TE-33A.2, TE-38, TE-38A.1 and TE-38A.2.
14. Install new back plates on existing and new traffic signals mast arms. Back plates and the installation of back plates shall not be measured for payment but shall be considered incidental to the various items of the contract.

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

DEXTER S. EU
LICENSED PROFESSIONAL ENGINEER
No. 4739-C
HAWAII, U.S.A.
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.
SIGNATURE
04/30/20
EXPIRATION DATE OF THE LICENSE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

TRAFFIC SIGNAL PLAN
FORT BARRETTE ROAD & KAPOLEI PARKWAY
FORT BARRETTE ROAD OPERATIONAL IMPROVEMENTS
Roosevelt Avenue to Farrington Highway
Project No. 901A-01-19
Scale: 1" = 20' Date: Jan. 2020

SHEET No. TS-4 OF 16 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	901A-01-19	2020	108	167

Material List				
Pole ⬡	Base Type	Standard Type	Mounting Type	PPB Assembly
A	Exist	II-(E)	(1)(3) MA-1W (Exist.)	
			(2) Opticom (Exist.)	
			(4)(5) B-2W	
			(6) US-1W (Pedhead)	1
A1	A	I-3		1
B	C	II-50	(1)(3)(4) MA-1W	
			(2) Opticom (Horiz.)	
			(5) B-1W	
C	Exist	I-3 (E)		1 (E)
D	A	I-10	(1) TP-1W	
			(2)(3) B-1W (Pedhead)	1
E	Exist	II-(E)	(1)(3) MA-1W (Exist.)	
			(2) Opticom (Exist.)	
			(4) B-1W (Exist.)	
F	A	I-10	(1) TP-1W	
			(2) B-1W (Pedhead)	1
F1	A	I-10	(1) TP-1W (Pedhead)	1
G	C	II-60	(1)(3)(4) MA-1W	
			(2) Opticom (Horiz.)	
			(5) B-1W	
			(6) US-1W (Pedhead)	1
H	A	I-10	(1) TP-1W	
			(2) B-1W (Pedhead)	1
I	A	I-10	(1) TP-1W (Pedhead)	1
J	Exist		170E Controller (Exist.)	
			332A Cabinet (Exist.)	

* For Traffic Signal Pole Base, See Std. Plan TE-32, TE-33, TE-33A.1 and TE-33A.2.

Cable and Conduit Schedule								
Run △	Conduit Size	26C#14 Signal Control	3C#14 Signal Control	2C#14 PPB/ Loops	12PR#19 Inter-Connect	3C#20 Opticom	3C#6 Power/ Service	OTHER
1	2"(E)	1E						
	2"(E)			6E				
	2"(E)				1E			
	2"(E)					2E		
	2"	1						
	2"			2				
	2-2"	SPARE						
2	2"(E)	1E						
	2"(E)			6E				
	2"(E)				1E			
	2"(E)					2E		
	2"	1						
	2"			2				
	2-2"	SPARE						
3	2"(E)	1E						
	2"(E)			6E				
	2"(E)					2E		
	2"(E)	SPARE						
3A	2"	1						
	2"			2				
	2-2"	SPARE						
4	2"(E)		4E					
	2"(E)			2E				
	2"(E)					1E		
5	2"(E)	1E						
	2"(E)			3E				
	2"(E)					1E		
	2"(E)	SPARE						
	2"	1						
	2"			2				
6	2"(E)			2E				
	2"			2				
7	2-2"	2						
	2"				1			
	2"	SPARE						
8	2-2"	2						
	2"				1			
	2"					1		
	2-2"	SPARE						
9	2-2"	2						
	2"			2				
	2"				1			
	2"					1		
	2"	SPARE						

Cable and Conduit Schedule								
Run △	Conduit Size	26C#14 Signal Control	3C#14 Signal Control	2C#14 PPB/ Loops	12PR#19 Inter-Connect	3C#20 Opticom	3C#6 Power/ Service	OTHER
10	2"(E)		4E					
	2"(E)			1E				
	2"(E)					1E		
11	2"(E)	1E						
	2"(E)			3E				
	2"(E)					2E		
	2"(E)	SPARE						
11A	2"	1						
	2"				1			
	2"					1		
	2"	SPARE						
12	3"E	2						
	3"E	2						
	2"E			5E				
	2"E			5E				
	2"E					4E		
	2"E						1E	
	2"E			3				
	2"E				2			
	2"E	SPARE						

Approved:

Chief, Traffic Signals & Technology Division, DTS Date

ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
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No.	TRACED BY	
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	CHECKED BY	

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

CABLE AND CONDUIT SCHEDULE
FORT BARRETTE ROAD & KAPOLEI PARKWAY
FORT BARRETTE ROAD OPERATIONAL IMPROVEMENTS
Roosevelt Avenue to Farrington Highway
Project No. 901A-01-19

Scale: None Date: Jan. 2020

DEXTER S. EJI
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No. 4739-C
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THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.

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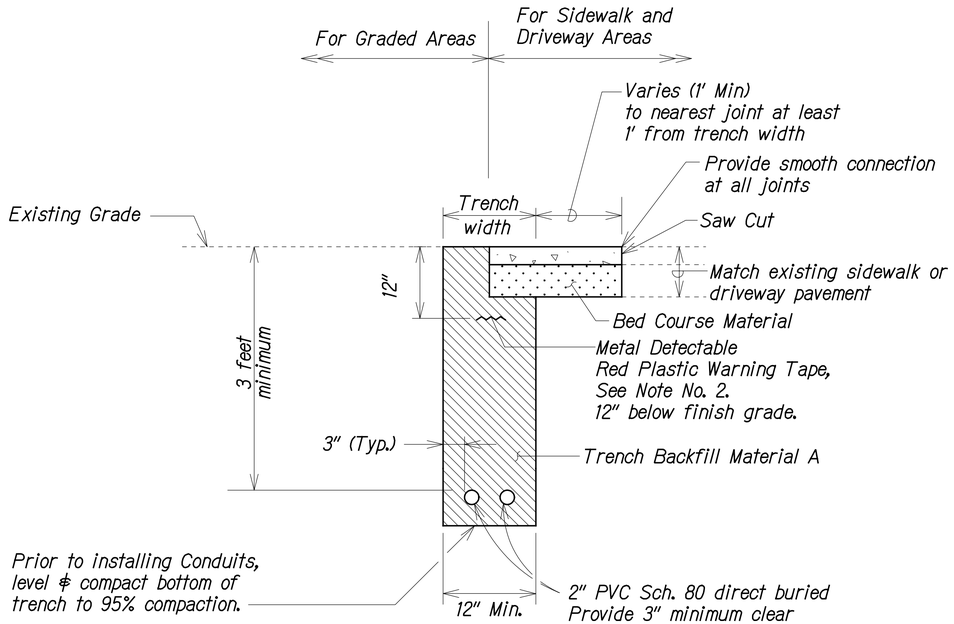
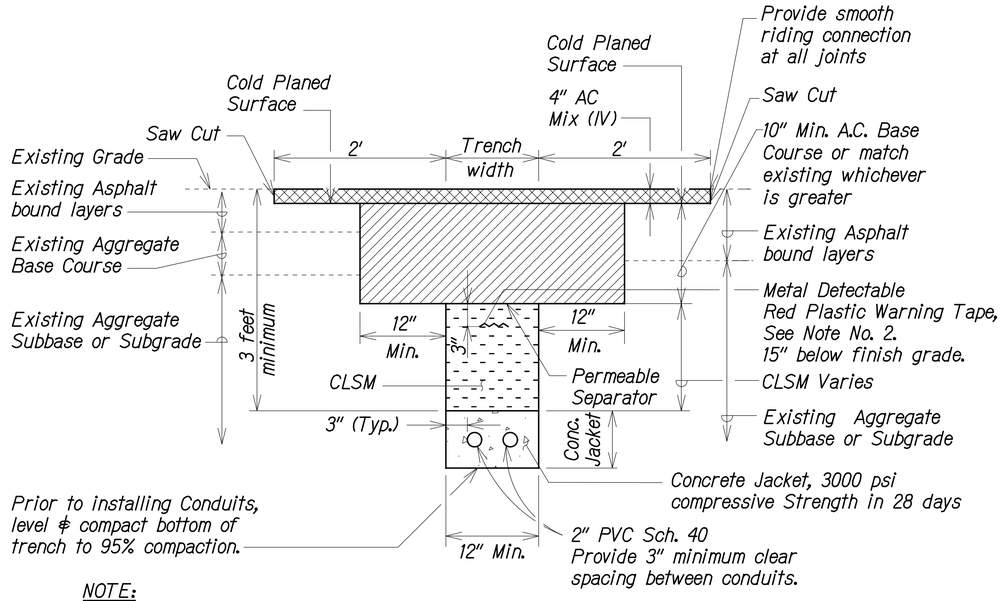
FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	901A-01-19	2020	109	167



RESTORATION OF NON-ROADWAY AREAS DUE TO TRENCH EXCAVATION

Not to Scale



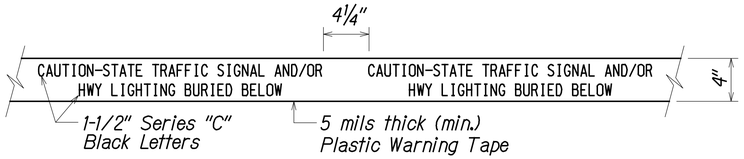
NOTE:
Tack Coat faces of Existing Asphalt Bound Materials prior to filling excavation with New Asphalt bound materials.

GENERAL NOTES

1. If trench is located on unpaved area, the Contractor shall replace 10" A.C. Base Course and 4" A.C. Pavement with Type "A" backfill material.
2. The Metal Detectable Red Plastic Warning Tape shall be a minimum 5 mils thick and 4" wide with a continuous metallic backing and corrosion resistant 1± mil thick foil core. The message on the tape shall read, "CAUTION - STATE TRAFFIC SIGNAL AND/OR HWY. LIGHTING BURIED BELOW," utilizing 1-1/2 inches series "C" black lettering. The message will be repeated with a 4-1/4" spacing between top line of message and start of next repeat.
3. The Contractor may begin backfilling the conduit trench when the concrete reaches 3000 psi compressive strength after 3 days.
4. Maximum four (4) conduits per row for multiple conduit duct section.
5. For direct buried duct sections, the concrete jacket required at the conduit by-pass for various utilities shall not be paid for separately but considered incidental to the direct buried conduits.
6. After installing all the traffic signal cables, the Contractor shall duct seal all conduits in the pullboxes, traffic signal standards and traffic signal controller cabinet concrete base. The duct seal material shall be approved by the Engineer and shall not be paid for separately but considered incidental to the direct buried and/or concrete encased conduits.

RESTORATION OF EXISTING PAVEMENT DUE TO TRENCH EXCAVATION

Not to Scale



For additional information, see Note No. 2.

METAL DETECTABLE RED PLASTIC WARNING TAPE

Not to Scale

Approved:

Chief, Traffic Signals & Technology Division, DTS Date

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

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SIGNATURE 04/30/20 EXPIRATION DATE OF THE LICENSE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

TRENCHING AND MISCELLANEOUS DETAILS

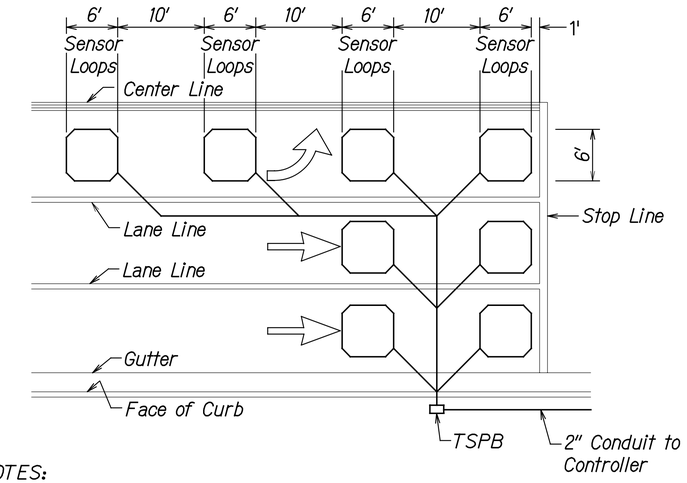
FORT BARRETTE ROAD OPERATIONAL IMPROVEMENTS
Roosevelt Avenue to Farrington Highway
Project No. 901A-01-19

Scale: NTS Date: Jan. 2020

SHEET No. TS-6 OF 16 SHEETS

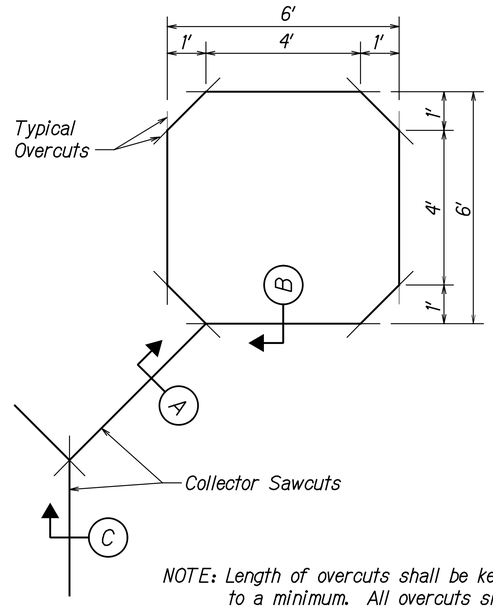
ORIGINAL PLAN
NOTE BOOK
SURVEY PLOTTED BY
DRAWN BY
TRACED BY
DESIGNED BY
QUANTITIES BY
CHECKED BY
DATE
No.

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	901A-01-19	2020	110	167



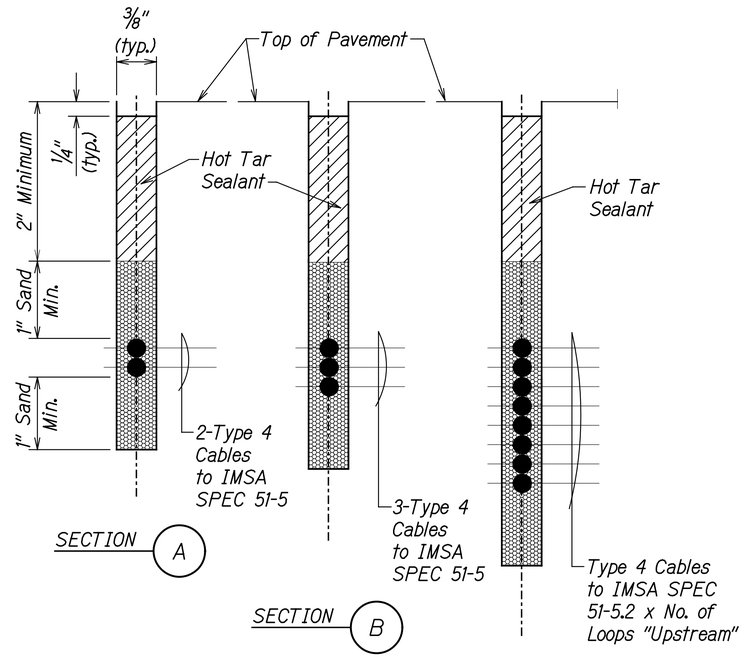
NOTES:
1. Center sensor loops in lanes.
2. Collector cables shall be twisted 2 turns per foot.
3. Number of loops and locations vary. See project plans.
4. Number and locations of collector sawcuts may be varied in the field to suit.

TYPICAL SENSOR LOOP LAYOUT

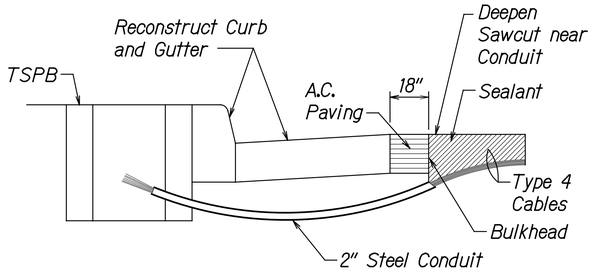


NOTE: Length of overcuts shall be kept to a minimum. All overcuts shall be back filled with hot tar.

TYPICAL SENSOR LOOP SAWCUT DETAIL

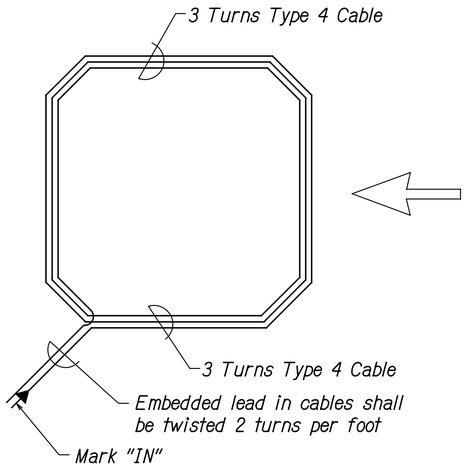


TYPICAL SECTION THROUGH SENSOR LOOP



NOTES ON CONSTRUCTION AT END OF SAWCUT
1. Seal roadway end of conduit after installation of conductors.
2. Install bulkhead across conduit trench.
3. Place hot tar in sawcut.
4. Backfill over conduit with new A.C.
5. Reconstruct curb and gutter as required.

DETAIL OF SENSOR LOOP INSTALLATION AT EDGE OF ROADWAY



TYPICAL SENSOR LOOP WIRING DIAGRAM

TYPES OF CABLES

Type 1	Signal Loop Cable: Stranded No. 14, 26 conductors
Type 2	Detector lead in cable and pedestrian push button circuit cable: Stranded, No. 14, two conductors
Type 3	Interconnect Cable: Solid No. 19, 12 pairs
Type 4	Loop Sensor Cable: Solid No. 12, single conductor to IMSA spec. 51-5
Type 5	Cable from signal loop to signal head: Stranded, No. 14, four conductors
Type 6	Service Cable: Solid, No. 6, three conductors
Type 7	Optical Detector Cable: Berktek Type B, Stranded, No. 20, three conductors
Type 8	Drop Cable: Solid, No. 14, four conductors

Approved:

Chief, Traffic Signals & Technology Division, DTS Date

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

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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

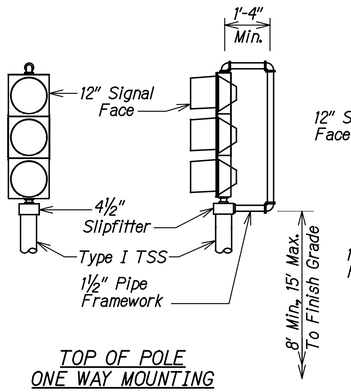
LOOP DETECTOR DETAILS

FORT BARRETTE ROAD OPERATIONAL IMPROVEMENTS
Roosevelt Avenue to Farrington Highway
Project No. 901A-01-19

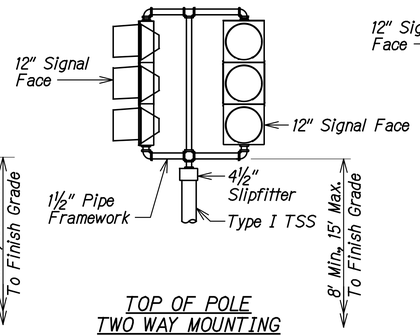
Scale: None Date: Jan. 2020

SHEET No. TS-7 OF 16 SHEETS

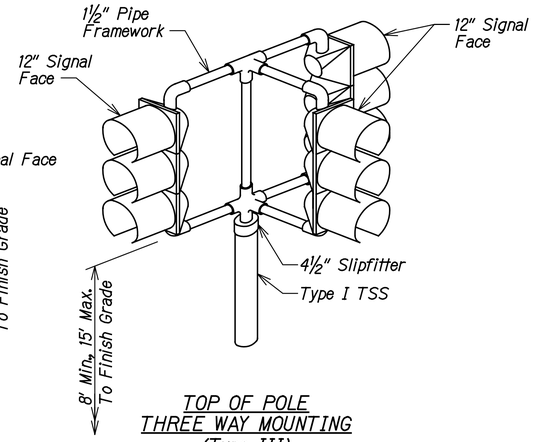
FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	901A-01-19	2020	111	167



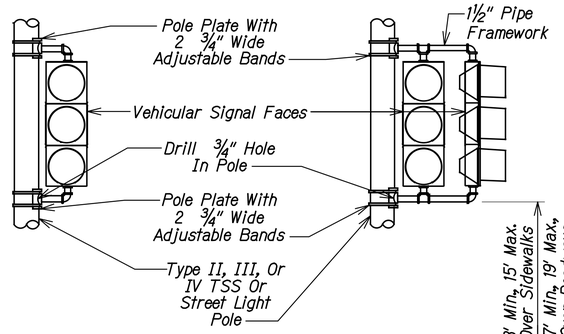
TOP OF POLE
ONE WAY MOUNTING
(Type I)



TOP OF POLE
TWO WAY MOUNTING
(Type II)

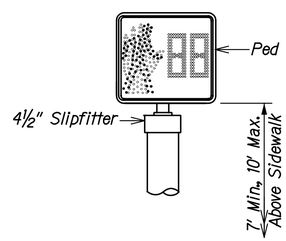


TOP OF POLE
THREE WAY MOUNTING
(Type III)

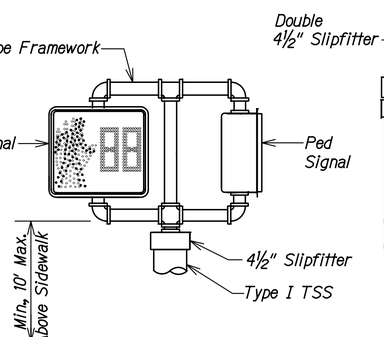


BRACKET MOUNT
ONE WAY
(Type IV)

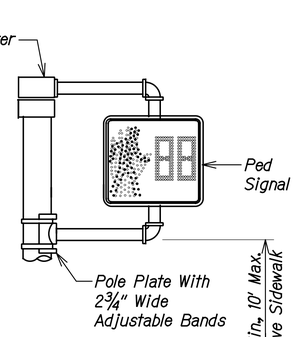
BRACKET MOUNT
TWO WAY
(Type V)



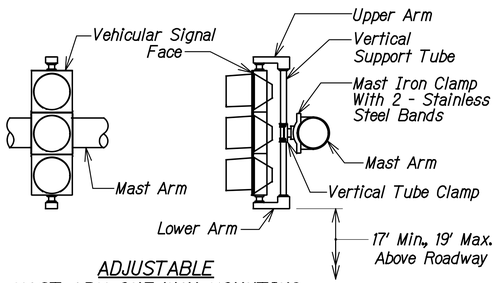
TOP OF POLE - ONE WAY
(Type I)



TOP OF POLE - TWO WAY
(Type II)

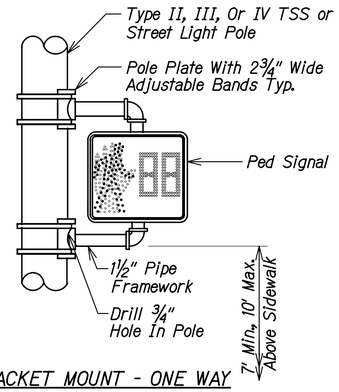


CANTILEVER - ONE WAY
(Type III)

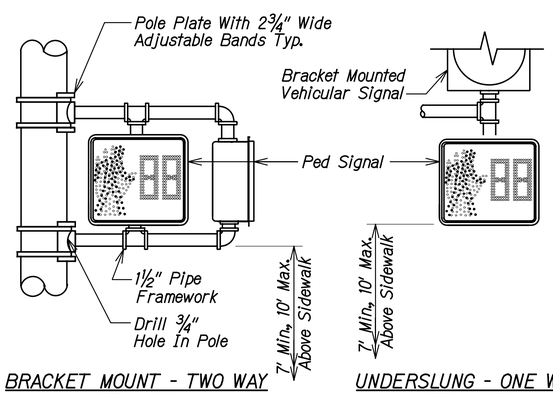


ADJUSTABLE
MAST ARM ONE WAY MOUNTING
AT INTERMEDIATE POINT
(Type VI)

VEHICULAR SIGNAL MOUNTINGS



BRACKET MOUNT - ONE WAY
(Type IV)



BRACKET MOUNT - TWO WAY
(Type V)

UNDERSLUNG - ONE WAY
(Type VI)

PEDESTRIAN SIGNAL MOUNTINGS

NOTES:

1. Stainless Steel Bands shall be ½" Wide X .050" thick, minimum. Tensile strength shall be 100,000 PSI minimum.
2. Upper Arm, Lower Arm And Vertical Support Tube shall be of 356 Cast Aluminum.
3. All Wiring Shall Be Concealed.
4. Vertical Tube Clamp shall be of Malleable Iron, Grade 32510.
5. All Aluminum Parts shall have an Alodine 1200 finish.

Approved:

Chief, Traffic Signals & Technology Division, DTS Date

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CHECKED BY
DATE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

TRAFFIC SIGNAL PLAN
MOUNTING BRACKET DETAILS

FORT BARRETTE ROAD OPERATIONAL IMPROVEMENTS
Roosevelt Avenue to Farrington Highway
Project No. 901A-01-19

Scale: None Date: Jan. 2020

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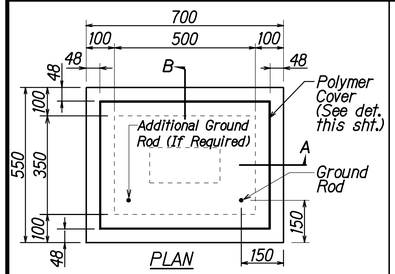
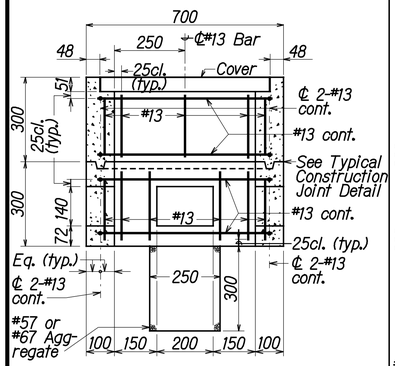
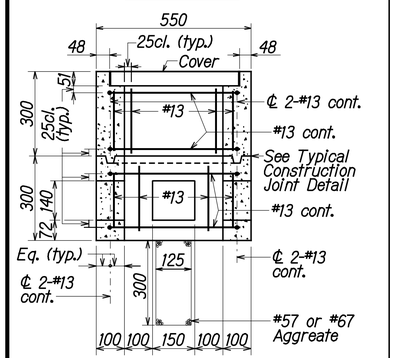
FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	901A-01-19	2020	112	167



PLAN

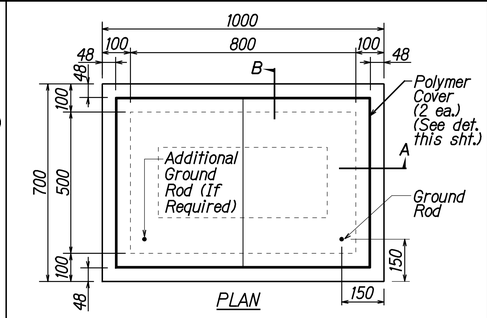


SECTION A-A

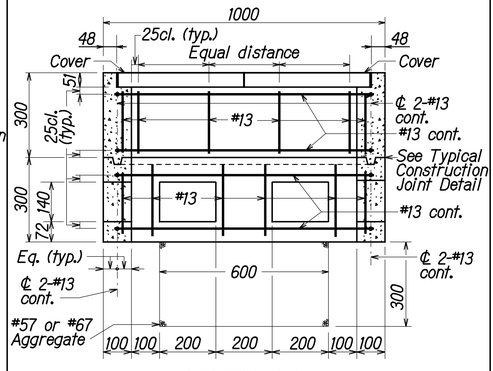


SECTION B-B

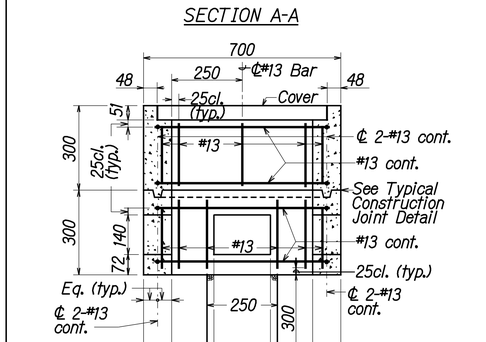
TYPE "A" PULLBOX (Old Type "B")



PLAN

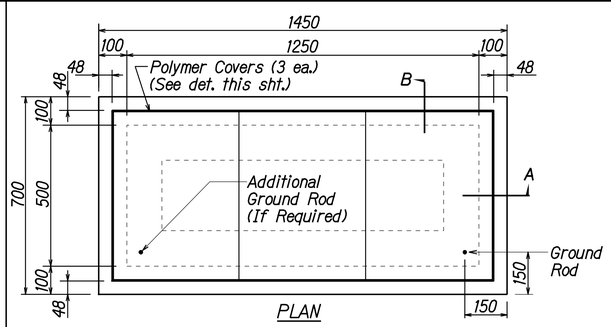


SECTION A-A

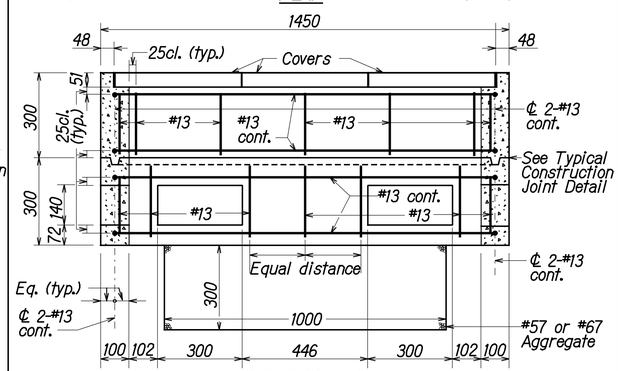


SECTION B-B

TYPE "B" PULLBOX (Old Type "C")



PLAN



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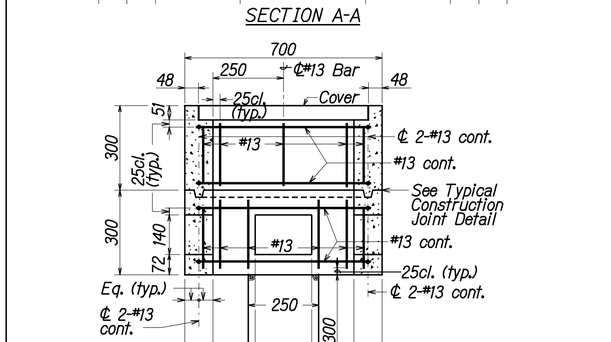
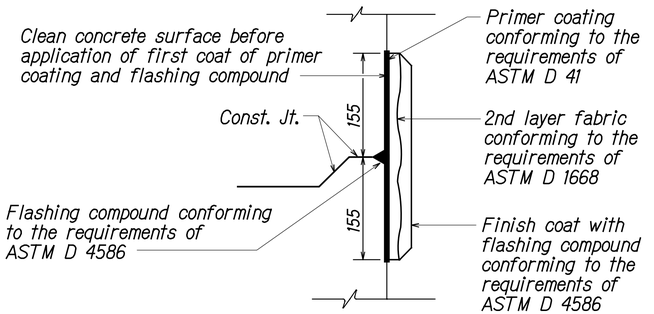


SECTION B-B

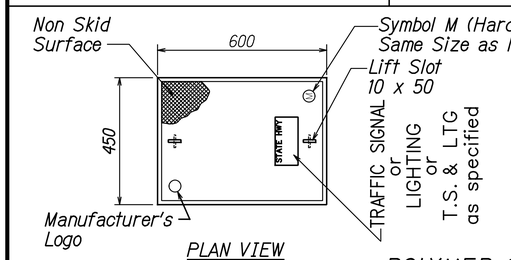
TYPE "C" PULLBOX (Old Type "D")

GENERAL NOTES

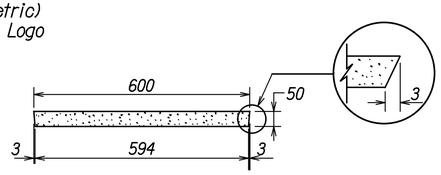
1. Provide a minimum of one 16 ø x 2.5m Copperweld Ground Rod in each pullbox. When directed by the Traffic Signal Inspector/Engineer, install additional Ground Rods. Cost of Ground Rods shall be incidental to the pullboxes.
2. All pre-cast concrete pullboxes shall be manufactured in two pieces.
3. The 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 (21 MPa (3,000 psi), 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).



TYPICAL FLASHING COMPOUND WATERPROOFING DETAILS

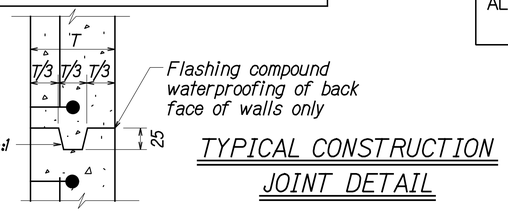


PLAN VIEW



ELEVATION

POLYMER CONCRETE COVER



TYPICAL CONSTRUCTION JOINT DETAIL

ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SHOWN

Approved:

Chief, Traffic Signals & Technology Division, DTS Date

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

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

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.

SIGNATURE 04/30/20 EXPIRATION DATE OF THE LICENSE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

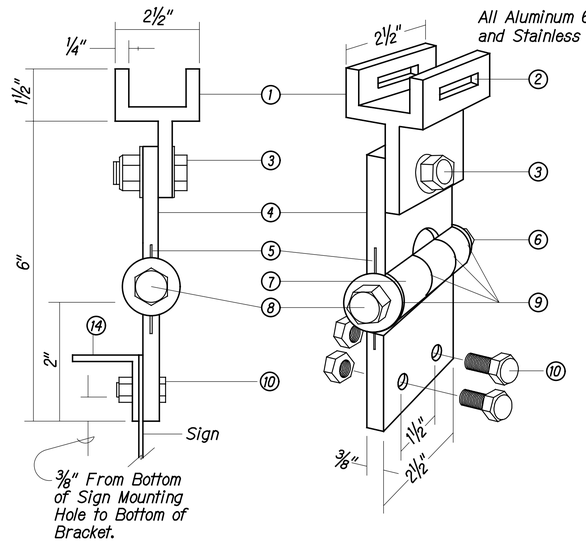
PULLBOX AND COVER DETAILS

FORT BARRETTE ROAD OPERATIONAL IMPROVEMENTS
Roosevelt Avenue to Farrington Highway
Project No. 901A-01-19

Scale: None Date: Jan. 2020

SHEET No. TS-9 OF 16 SHEETS

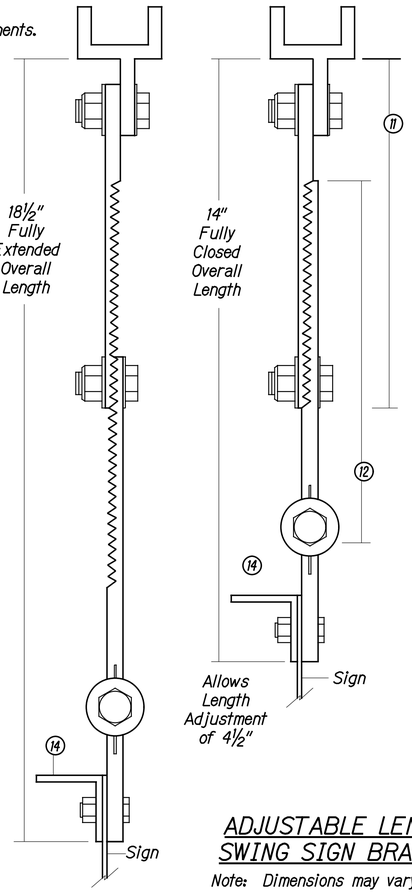
FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	901A-01-19	2020	113	167



All Aluminum 6061T6 Alloy and Stainless Steel Components.

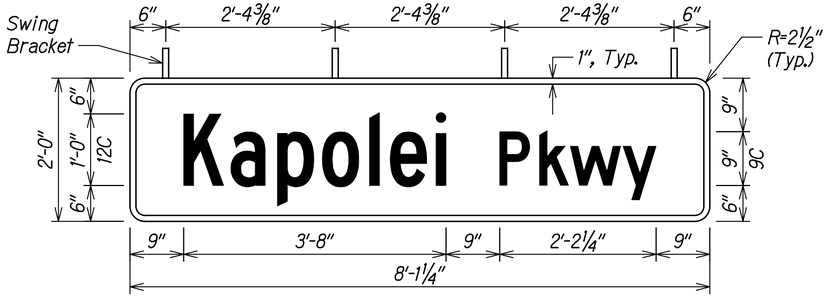
FIXED LENGTH NON-ADJUSTABLE SWING SIGN BRACKET

1. Pivotal Upper Bracket
2. 1⅝" X¼" Slot for Double Strapping to Electrolier Mast Arm. (M2G-34S(HD) .030" X ¾" Heavy Duty Stainless Steel Strap With M2G-34B(HD) Buckle Recommended.)
3. ½" - 13 X 1½" Stainless Steel Hex Head Bolt with Stainless Steel Hex Lock Nut and 1/16" Stainless Steel Washer (Both Sides). Allows Upper Bracket to Pivot and Align with Electolier Mast Arm.
4. 6" Overall Drop with Fixed Length Sign Bracket
5. Stainless Steel Damperer Spring (Removable)
6. Stainless Steel Hex Lock Nut with 1/16" Stainless Steel Washer
7. 1" O.D. Axle Housing
8. ½" - 13 X 4" Stainless Steel Hex Head Bolt with 1/16" Stainless Steel Washer
9. Oilite Bushing
10. Sign Mounting Sets, Consisting of Two Each 5/16" - 18 X 1" Stainless Steel Hex Head Bolt with Stainless Steel Hex Lock Nut. Two Holes on 1½' Centers Provide Positive Lock Sign Mounted to Bracket.
11. 8¼" Overall Length Upper Adjustable Sigh Bracket Section
12. 9" Overall Length Lower Adjustable Sign Bracket Section, Including Axle Housing (8" Overall Length to Top of Axle Housing)
13. ½" - 13 X 1½" Stainless Steel Hex Bolt with Stainless Steel Hex Lock Nut and1/16" Stainless Steel Washer (Both Sides). Loosen Lock Nut . Adjust Bracket Teeth to Level Sign.
14. 1¼" X 1¼" X⅛" Aluminum Angle



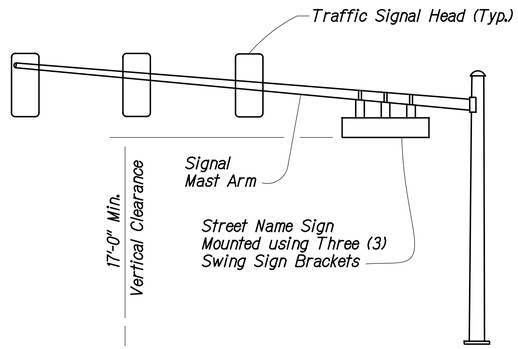
ADJUSTABLE LENGTH SWING SIGN BRACKET

Note: Dimensions may vary slightly

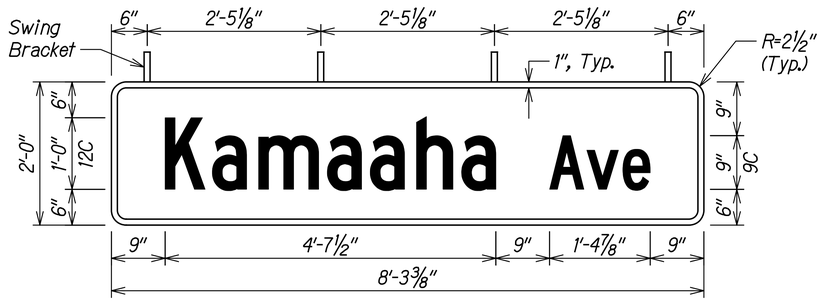


STREET NAME SIGN DETAIL (1 TS-X TS-X)

NTS



SIGN MOUNTING ON MAST ARM



STREET NAME SIGN DETAIL (2 TS-X TS-X)

NTS

NOTES:

1. Font size and spacing shall conform to Federal Highway Administration Standard Highway signs convention.
2. Legend shall be the same on both sides of sign.
3. Colors: Legend - White
   Background - Green
4. Adjust Swing Sign bracket lengths to level sign.

Approved:

Chief, Traffic Signals & Technology Division, DTS Date

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

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

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.

SIGNATURE 04/30/20 EXPIRATION DATE OF THE LICENSE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

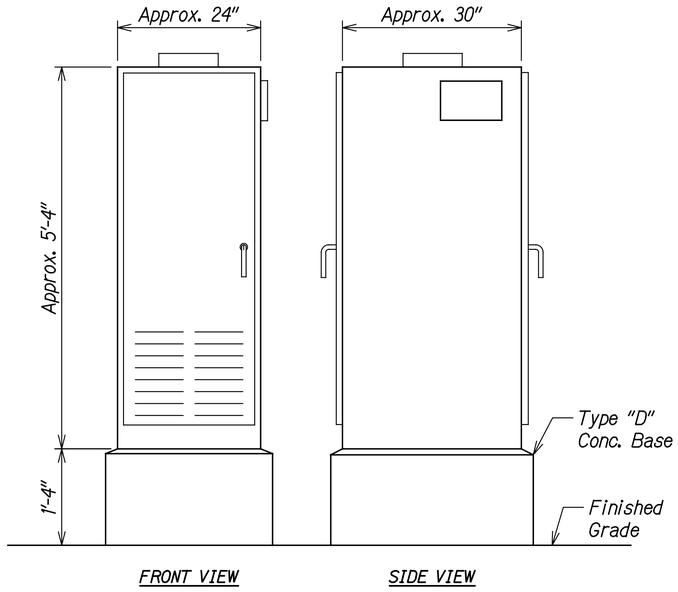
SIGN BRACKET DETAILS

FORT BARRETTE ROAD OPERATIONAL IMPROVEMENTS
Roosevelt Avenue to Farrington Highway
Project No. 901A-01-19

Scale: None Date: Jan. 2020

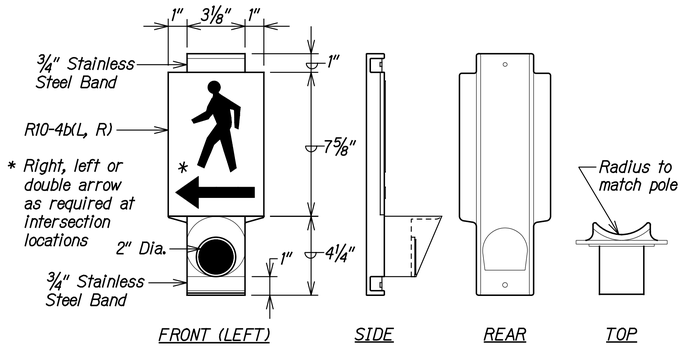
SHEET No. TS-10 OF 16 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	901A-01-19	2020	114	167



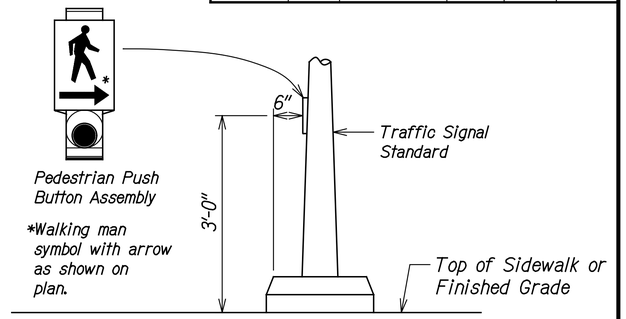
TYPE 332A CABINET

Not To Scale



PEDESTRIAN PUSH BUTTON ASSEMBLY

Not To Scale



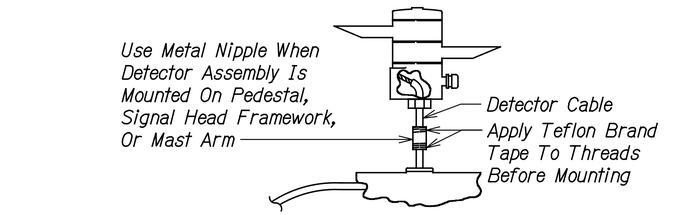
PEDESTRIAN AND AUDIO PEDESTRIAN PUSH BUTTON PLACEMENT

Not To Scale

CONCRETE BASE SCHEDULE					
Intersection	Base Type	Standard Type	Concrete Base	Ground Water	Soil Type

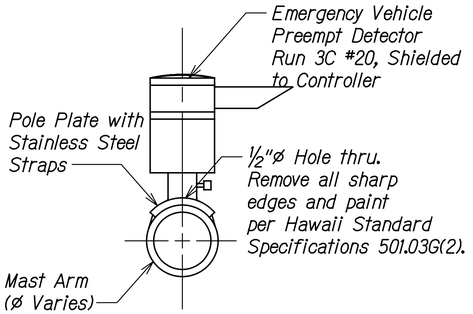
NOTE:

The Contractor shall be responsible to coordinate the foundation with the Traffic Signal Standards provided; any changes required to the foundation due to the traffic signal standard provided shall be designed by a Structural Engineer licensed in the State of Hawaii. All design and construction costs for these changes shall be borne by the Contractor.



TYPICAL MAST ARM INSTALLATION OF EVP DETECTOR

Not To Scale



TYPICAL HORIZONTAL MOUNT OF EMERGENCY VEHICLE PREEMPT DETECTOR

Not To Scale

Approved:

Chief, Traffic Signals & Technology Division, DTS Date

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

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

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.

SIGNATURE 04/30/20 EXPIRATION DATE OF THE LICENSE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

MISCELLANEOUS DETAILS

FORT BARRETTE ROAD OPERATIONAL IMPROVEMENTS
Roosevelt Avenue to Farrington Highway
Project No. 901A-01-19

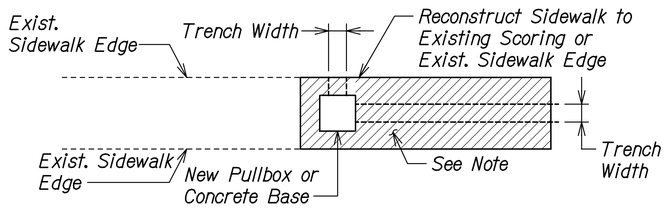
Scale: NTS Date: Jan. 2020

SHEET No. TS-11 OF 16 SHEETS

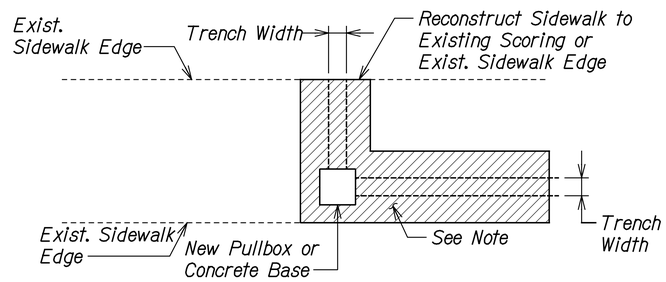
FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	901A-01-19	2020	115	167

SIDEWALK RECONSTRUCTION NOTES:

1. *Pavement structure shall be equal to or better than existing in thickness and quality.*
2. *For road grades 0% to 7.99% Prime Coat is not required.*
3. *All disturbed pavement markings shall be replaced and all required utility adjustments such as manhole covers etc. shall be done by the Permittee.*
4. *All required A.D.A. Improvements shall be undertaken by the Permittee.*
5. *Permittee shall coordinate work with all other utility entities and the Department of Facility Maintenance.*
6. *For minimum utility depths within the City's road rights-of-way, See Engineering and Policy Memorandum No. CEB-1-08, dated Feb. 15, 2008.*
7. *Contractor shall comply with the City Administration's Memorandum, dated September 30, 2004, regarding Trenching Permits and Repaving of Streets.*
8. *Joints within reconstructed sidewalk shall comply with the requirements of the City and County of Honolulu "Engineering and Policy Memorandum No. CEB-1-09" dated April 6, 2009.*



AT SINGLE BLOCK-WIDTH SIDEWALKS



AT MULTIPLE BLOCK-WIDTH SIDEWALKS

SIDEWALK RECONSTRUCTION DETAILS

Not to Scale

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

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

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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

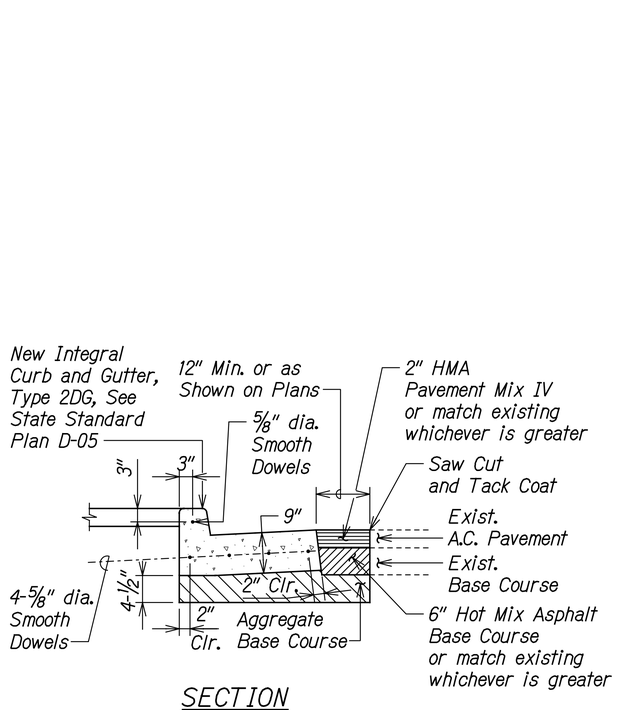
TRENCHING AND MISCELLANEOUS DETAILS

FORT BARRETTE ROAD OPERATIONAL IMPROVEMENTS
Roosevelt Avenue to Farrington Highway
Project No. 901A-01-19

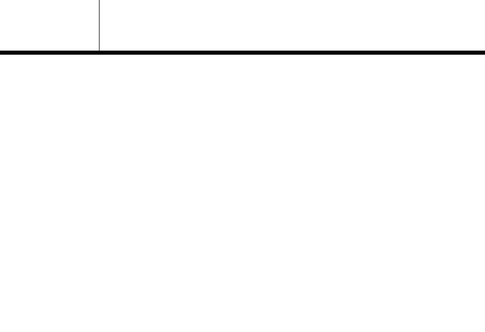
Scale: NTS *Date: Jan. 2020*

SHEET No. *TS-12* OF *16* SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	901A-01-19	2020	116	167



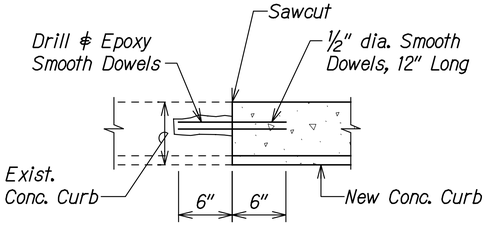
SECTION



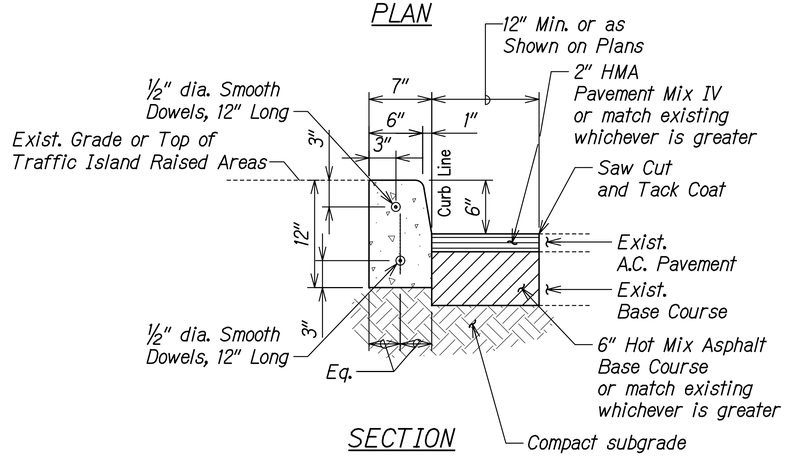
PLAN

RESTORATION OF CURB AND GUTTER DUE TO TRENCH EXCAVATION

Not to Scale



PLAN



SECTION

CURB RESTORATION DETAIL

Not to Scale

ORIGINAL PLAN

NOTE BOOK

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

LICENSED PROFESSIONAL ENGINEER
No. 4738-C
DEXTER S. FU
HAWAII, U.S.A.

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SIGNATURE 04/30/20 EXPIRATION DATE OF THE LICENSE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

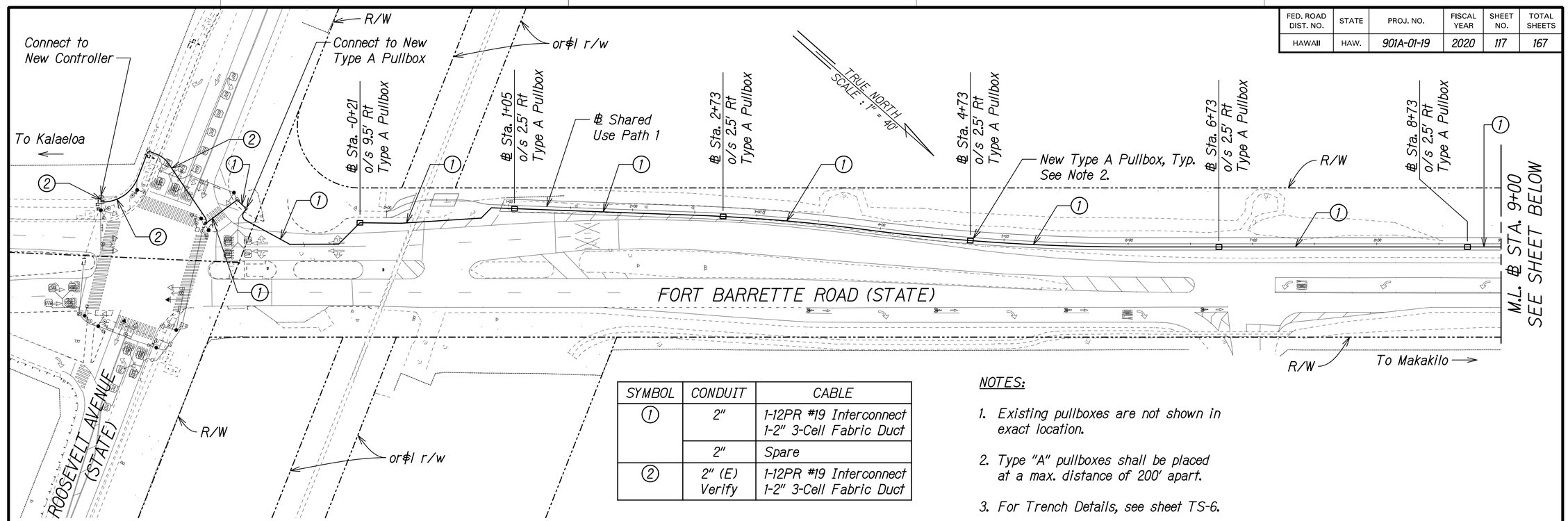
MISCELLANEOUS DETAILS

FORT BARRETTE ROAD OPERATIONAL IMPROVEMENTS
Roosevelt Avenue to Farrington Highway
Project No. 901A-01-19

Scale: NTS Date: Jan. 2020

SHEET No. TS-13 OF 16 SHEETS

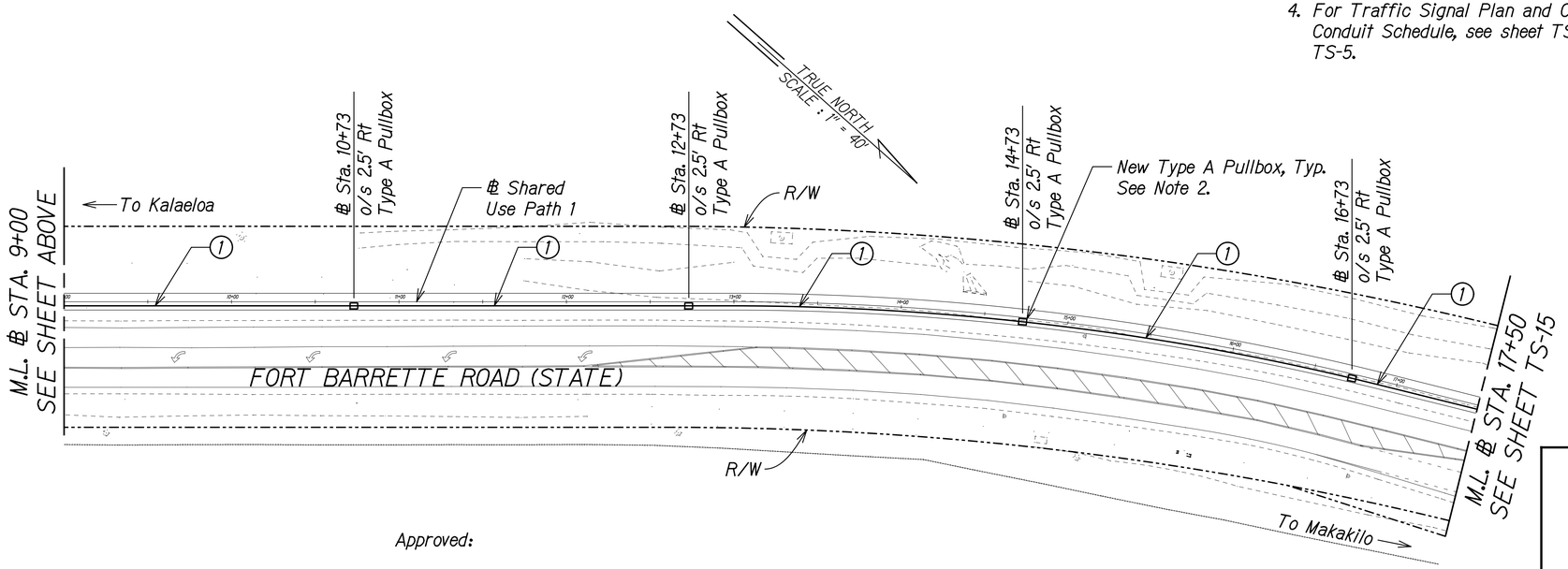
FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	901A-01-19	2020	117	167



SYMBOL	CONDUIT	CABLE
①	2"	1-12PR #19 Interconnect 1-2" 3-Cell Fabric Duct
	2"	Spare
②	2" (E) Verify	1-12PR #19 Interconnect 1-2" 3-Cell Fabric Duct

NOTES:

1. Existing pullboxes are not shown in exact location.
2. Type "A" pullboxes shall be placed at a max. distance of 200' apart.
3. For Trench Details, see sheet TS-6.
4. For Traffic Signal Plan and Cable and Conduit Schedule, see sheet TS-3 and TS-5.



Approved:

Chief, Traffic Signals ∉ Technology Division, DTS Date

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

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

DEXTER S. EJI
LICENSED PROFESSIONAL ENGINEER
No. 4739-C
HAWAII, U.S.A.
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.
SIGNATURE
04/30/20
EXPIRATION DATE OF THE LICENSE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

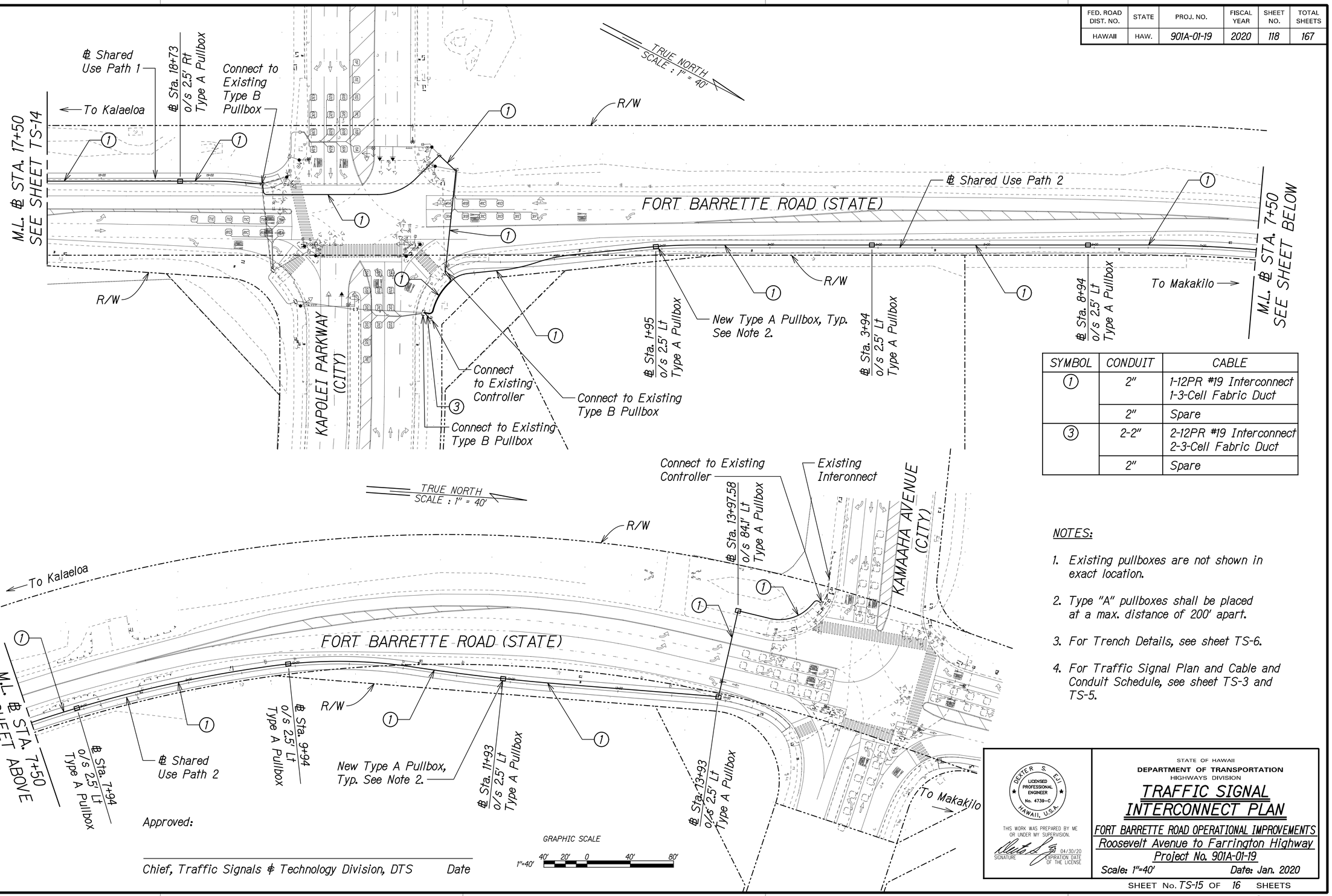
TRAFFIC SIGNAL INTERCONNECT PLAN

FORT BARRETTE ROAD OPERATIONAL IMPROVEMENTS
Roosevelt Avenue to Farrington Highway
Project No. 901A-01-19

Scale: 1"=40' Date: Jan. 2020

SHEET No. TS-14 OF 16 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	901A-01-19	2020	118	167



SYMBOL	CONDUIT	CABLE
①	2"	1-12PR #19 Interconnect 1-3-Cell Fabric Duct
	2"	Spare
③	2-2"	2-12PR #19 Interconnect 2-3-Cell Fabric Duct
	2"	Spare

NOTES:

1. Existing pullboxes are not shown in exact location.
2. Type "A" pullboxes shall be placed at a max. distance of 200' apart.
3. For Trench Details, see sheet TS-6.
4. For Traffic Signal Plan and Cable and Conduit Schedule, see sheet TS-3 and TS-5.

Approved:

Chief, Traffic Signals ℄ Technology Division, DTS Date

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

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

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

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SIGNATURE 04/30/20 EXPIRATION DATE OF THE LICENSE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

TRAFFIC SIGNAL INTERCONNECT PLAN

FORT BARRETTE ROAD OPERATIONAL IMPROVEMENTS
Roosevelt Avenue to Farrington Highway
Project No. 901A-01-19

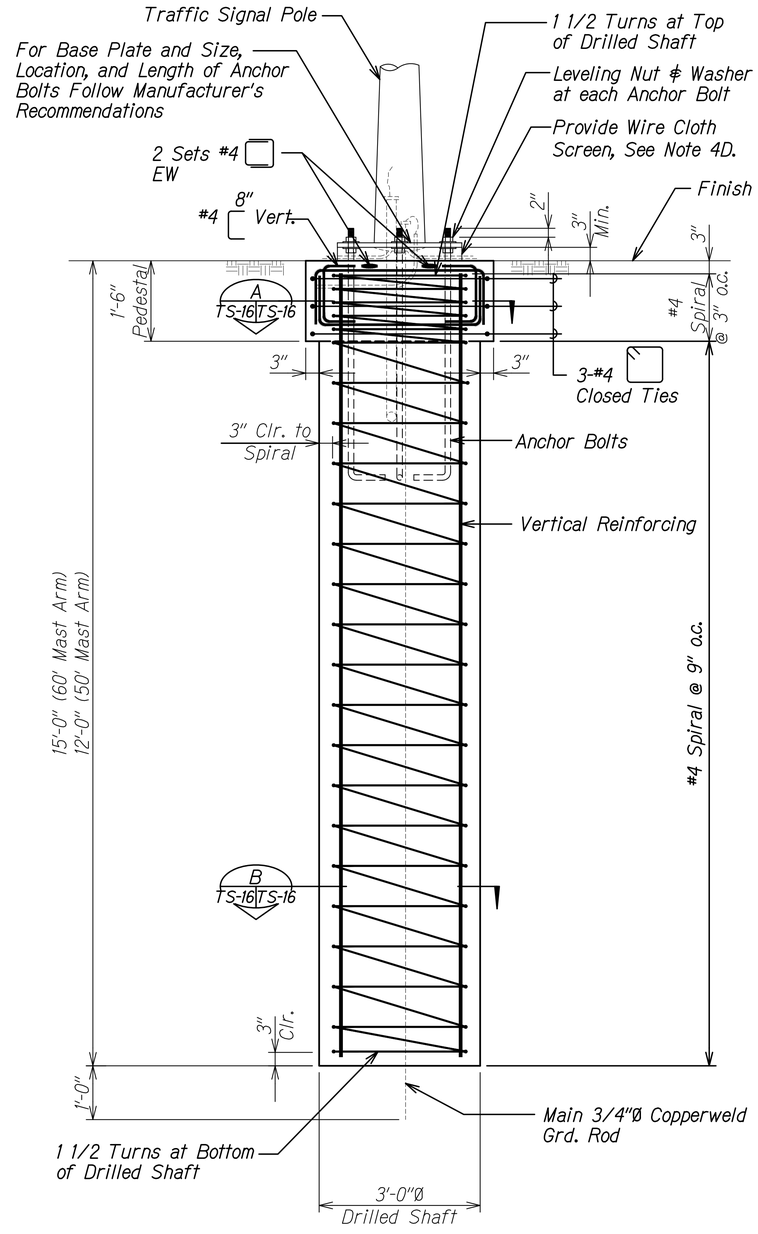
Scale: 1"=40' Date: Jan. 2020

SHEET No. TS-15 OF 16 SHEETS

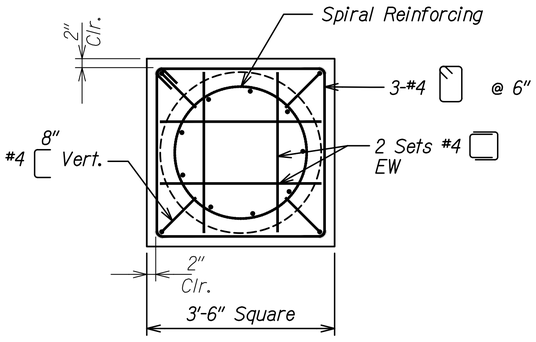
FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	901A-01-19	2020	119	167

TRAFFIC SIGNAL FOUNDATION GENERAL NOTES:

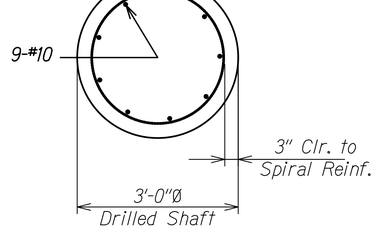
1. **Design Specifications:**
   - A. American Association of State Highway and Transportation Officials (AASHTO) 2017 LRFD Bridge Design Specifications, Eigth Edition, including the 2015 Interim revision edition as amended by Hawaii Department of Transportation (HDOT) document dated August 8, 2014 with subject title "Design Criteria for Bridges and Structures" and HDOT memorandum dated January 8, 2018 with subject title "Changes to Design Criteria for Bridges and Structures".
   - B. Design shall conform with the AASHTO LRFD Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals, First Edition 2015 with 2020 Interim Revisions.
   - C. See Structural General Notes on Sheet S0.0 for further information.
2. **Loads:**
   - A. Basic Wind Speed: 145 mph.
   - B. Recurrence Interval of 1700 years.
   - C. Fatigue importance factor, I_f, shall be based on Fatigue Category I for cantilevered traffic signal structures.
   - D. Vortex shedding induced loads shall be considered for cantilevered mast arms and pole shafts that do not have tapers or have tapers of less than 0.14 in/ft.
   - E. Traffic signal structures shall be designed for a truck induced gust based on a truck speed of 20 mph over the posted speed.
   - F. Galloping and natural wind gusts shall be considered for cantilevered traffic signal structures.
   - G. Natural Wind Gusts shall be considered for all traffic signal structures.
3. **Materials:**
   - A. Concrete for traffic signal foundation shall develop a minimum 28-day compressive strength of 4,500 psi with a maximum w/c ratio of 0.45.
   - B. All concrete shall contain a water-based amine carboxylate migrating corrosion inhibitor. Dosage shall be 24 ounces per cubic yard of concrete or as recommended by the manufacturer.
   - C. All reinforcing steel shall be ASTM A615 Grade 60 deformed bars unless otherwise noted.
   - D. All connection bolts shall be AASHTO M164 bolts and anchor bolts shall be AASHTO M314-105 bolt.
   - E. Aluminum members and surfaces in contact with structural steel shall be isolated with neoprene material as approved by the Engineer.
4. **General:**
   - A. The recommendations of the traffic pole manufacturer shall be followed. Manufacturer shall select pole, anchor bolts, etc. based on criteria given in the contract documents. The Contractor shall submit catalog cuts and calculations to the Engineer for approval.
   - B. The Contractor shall use templates while installing the anchor bolts. Anchor bolts shall be vertical.
   - C. The Contractor shall adjust the spiral vertical spacing to allow installation of anchor bolts and plates.
   - D. Wire cloth shall be galvanized steel standard grade plain weave 2x2 mexh 0.063 inch diameter wires. Wrap around base plate perimeter with 3" minimum lap. Fasten with ¼" diameter capscrew ASTM F593 with SS washer spaced at approximately 9" o.c., drilled and tapped into perimeter of base plate.
5. **Geotechnical Notes:**
   - A. Soil profile consist of very stiff silty clay over silty coral sand and gravel, over coral formation.
   - B. Assumed Undrained Cohesion of Soil - 3,000 psf (20.8 psi)
   - C. Assumed Youngs Modulus of Soil = 5,000 psi
   - D. Assumed Poisson's Ratio = 0.3
   - E. Design Loads:
     - i. Max. Moment = 338 k-ft.
     - ii. Max. Shear = 11.41 k



ELEVATION
Scale: 3/4" = 1'-0"



SECTION A
Scale: 3/4" = 1'-0" TS-16 TS-16



SECTION B
Scale: 3/4" = 1'-0" TS-16 TS-16

NOTE:

Detail of conduits, anchor bolts, etc, are approximate only. Manufacturer's recommendatons shall be followed. Contractor shall submit catalog cuts to the Engineer for approval.

RUSS S. MIYAHARA
LICENSED PROFESSIONAL ENGINEER
NO. 9444-S
HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.

SIGNATURE — EXPIRATION DATE OF THE LICENSE: 4-30-20

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

DRILLED SHAFT FOUNDATION FOR TRAFFIC SIGNAL

FORT BARRETT ROAD OPERATIONAL IMPROVEMENTS
ROOSEVELT AVENUE TO FARRINGTON HIGHWAY
PROJECT NO. 901A-01-19

Scale: As Noted — Date: Jan. 2020

SHEET No. TS-16 OF 16 SHEETS

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

DRAWING NAME: Z:\OO ONGOING\19-046-FORT BARRETT RD-RSP\01 CAD\01-31-20\TBR-TS16 DRILLED SHAFT.DWG PLOT TIME: 01-31-20, 9:31 AM

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	901A-01-19	2020	120	167

HAWAIIAN RAILWAY SOCIETY (HRS) NOTE:

CONSTRUCTION OF THIS RAILROAD AT-GRADE CROSSING SHALL BE COORDINATED WITH HRS (STEVE VENDT, 808-681-5461) FOR RAILROAD OPERATING SCHEDULE. CONSTRUCTION OF THE CROSSING SHALL BE DONE DURING WEEKDAYS (MON-FRI). THE TRACK SHALL BE IN SERVICE FOR ALL SCHEDULED TRAINS AND MAINTENANCE OPERATIONS. CONTRACTOR SHALL NOTIFY HRS AT LEAST TWO WEEKS PRIOR TO ANY TRACK CONSTRUCTION ACTIVITIES.

INDEX:

ABBREVIATIONS:

AAR	Association of American Railroads
AASHTO	American Association of State Highway Transportation Officials
AB	Aggregate Base
AC	Asphalt Concrete
ARA	American Railway Association
ASCE	American Society of Civil Engineering
AREMA	American Railway Engineering and Maintenance of Way Association
AVE	Avenue
BLDG	Building
℄	Centerline
CLR PT	Clear Point
Conc	Concrete
CWR	Continuous Welded Rail
CY	Cubic Yards
*	Degree(s)
DIA	Diameter
DR	Drive
DWG	Drawing
E	East
EL	Elevation
EOT	End of Track
EXIST	Existing
'	Foot, Feet or Minute(s)
FG	Finished Grade
HH	Head Hardened
HORIZ	Horizontal
HTTO	Hand Throw Turnout
"	Inch, Inches or Seconds
I	Total Intersection Angle
IJ	Insulated Joints
INV	Invert
Jtd	Jointed Rail
L	Length
LF	Lineal Feet
LH	Left Hand
Ls	Length of Spiral
LT	Left
MAX	Maximum
MIN	Minimum
MM	Mile Marker
MP	Mile Post
MPH	Miles Per Hour
MT	Main Track
MUTCD	Manual on Uniform Traffic Control Devices
N	North
NIC	Not in Contract
NO.	Number
NTS	Not to Scale
OH	Overhead
OTM	Other Track Material
#	Pound
PC	Point of Curve
PCC	Point of Compound Curve
PCS	Point of Curve to Spiral
PERF	Perforated
POC	Point on Curve
PF	1/2" Point of Frog
PI	Point of Intersection
PITO	Point of Intersection of Turnout
POB	Point of Beginning
POTO	Power Operated Turnout
PROP	Proposed
PS	Point of Spiral
PSC	Point of Spiral to Curve
PT	Point of Tangent
PTSW	Point of Switch
PVC	Point of Vertical Curve/Polyvinyl Chloride
PPVI	Point of Vertical Intersection
PVT	Point of Vertical Tangent
RH	Right Hand
RR	Railroad
RT	Right
Rwy	Railway
R/W	Right of Way
SCH	Schedule
SECS	Seconds
SF	Square Feet
SHT	Sheet
SLDR	Shoulder
S	South
ST	Street
STA	Station
STD	Standard
TC	Track Centers
TF	Track Feet
TO	Turnout
T/R	Top of Rail
TRK	Track
TYP	Typical
UG	Underground
VERT	Vertical
V	Velocity
V/L	Average Change in Gradient per 100'
W	West
XING	Crossing
XOVER	Cross-Over

SYMBOLS:

Flashing Light Warning Device

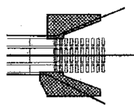
Flashing Light Warning Device with Gate

Milepost

MM Milemarker

TRACKS:

Centerline of Track



Typical Walkways at Grade Crossings

U.S. DOT CROSSING INVENTORY:

DOT: 918996X
RR MP: 19.00
ROAD: FT. BARRETTE ROAD

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

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

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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

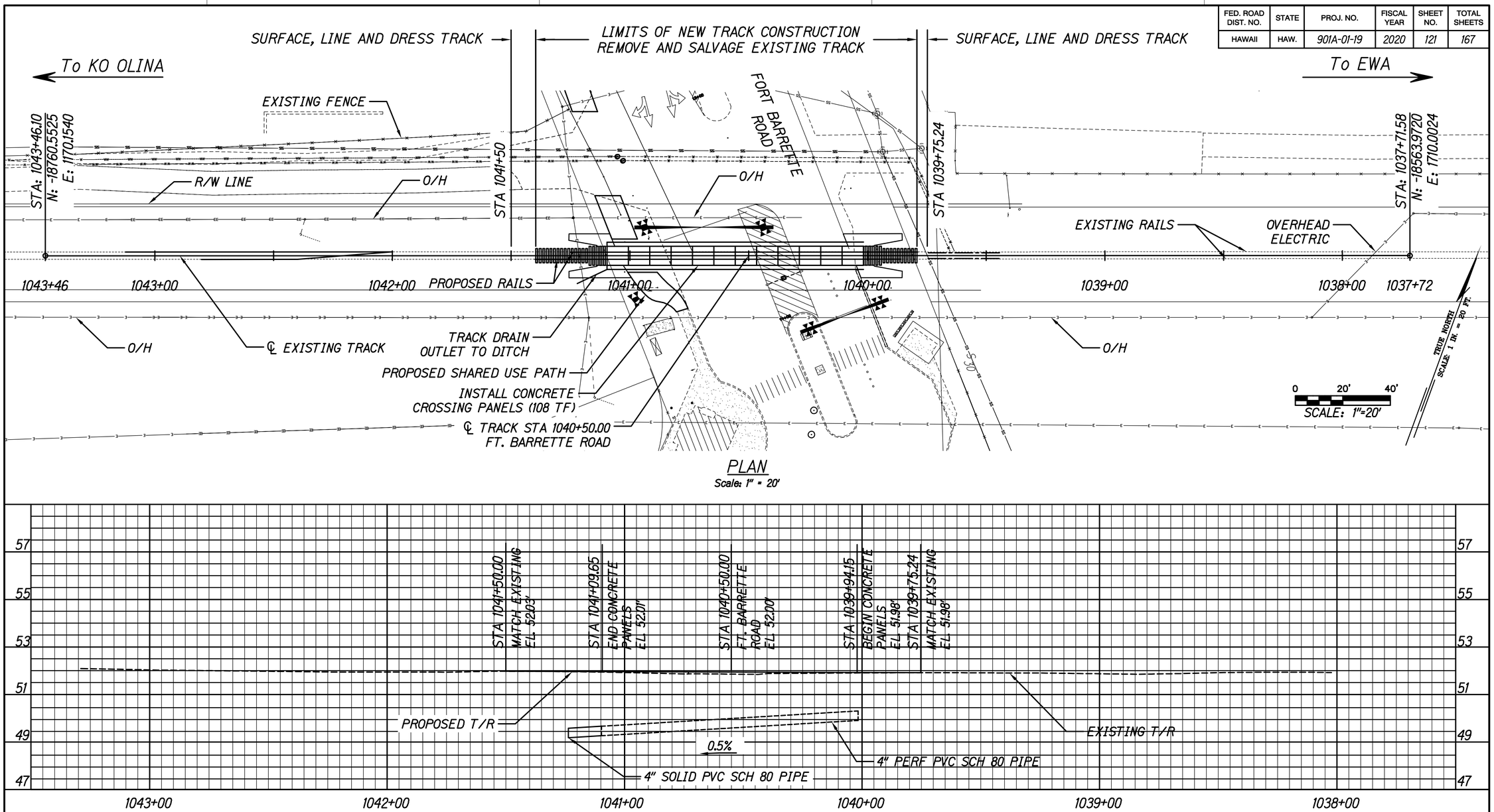
HRS NOTE, RAILROAD INDEX, LEGEND AND ABBREVIATIONS

FORT BARRETTE ROAD OPERATIONAL IMPROVEMENTS
Roosevelt Avenue to Farrington Highway
Project No. 901A-01-19

Scale: AS NOTED Date: Jan. 2020

SHEET No. RR-1 OF 16 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	901A-01-19	2020	121	167



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

NOTES:
1. THE CONTRACTOR SHALL VERIFY AVAILABLE CLEARANCES WITH EXISTING OVERHEAD UTILITY LINES PRIOR TO FABRICATION OF GATE STRUCTURES.

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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

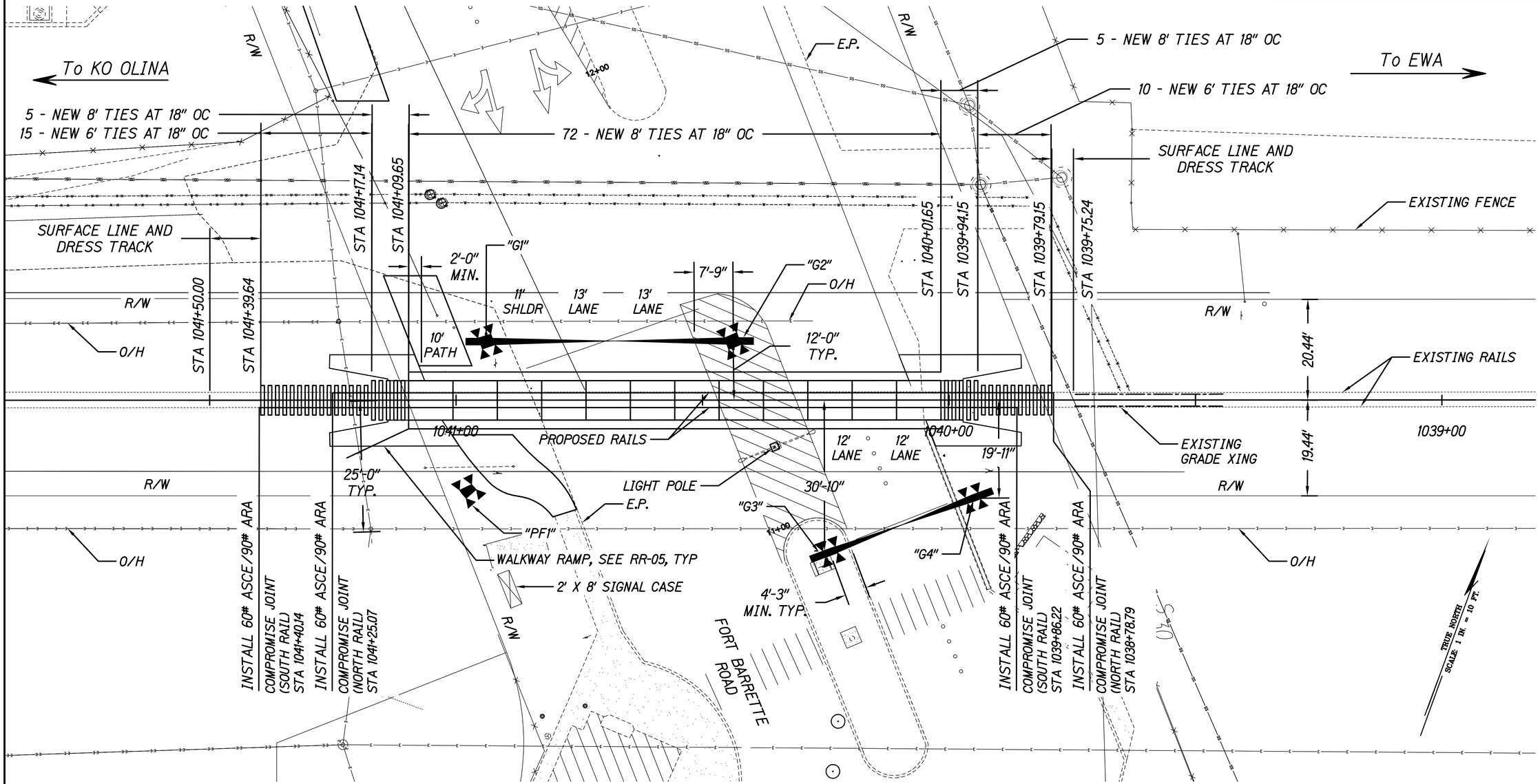
TRACK PLAN AND PROFILE

FORT BARRETTE ROAD OPERATIONAL IMPROVEMENTS
Roosevelt Avenue to Farrington Highway
Project No. 901A-01-19

Scale: AS NOTED Date: Jan. 2020

SHEET No. RR-2 OF 16 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	901A-01-19	2020	122	167



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

NOTES:

1. THE CONTRACTOR SHALL VERIFY AVAILABLE CLEARANCES WITH EXISTING OVERHEAD UTILITY LINES PRIOR TO FABRICATION OF GATE STRUCTURES.

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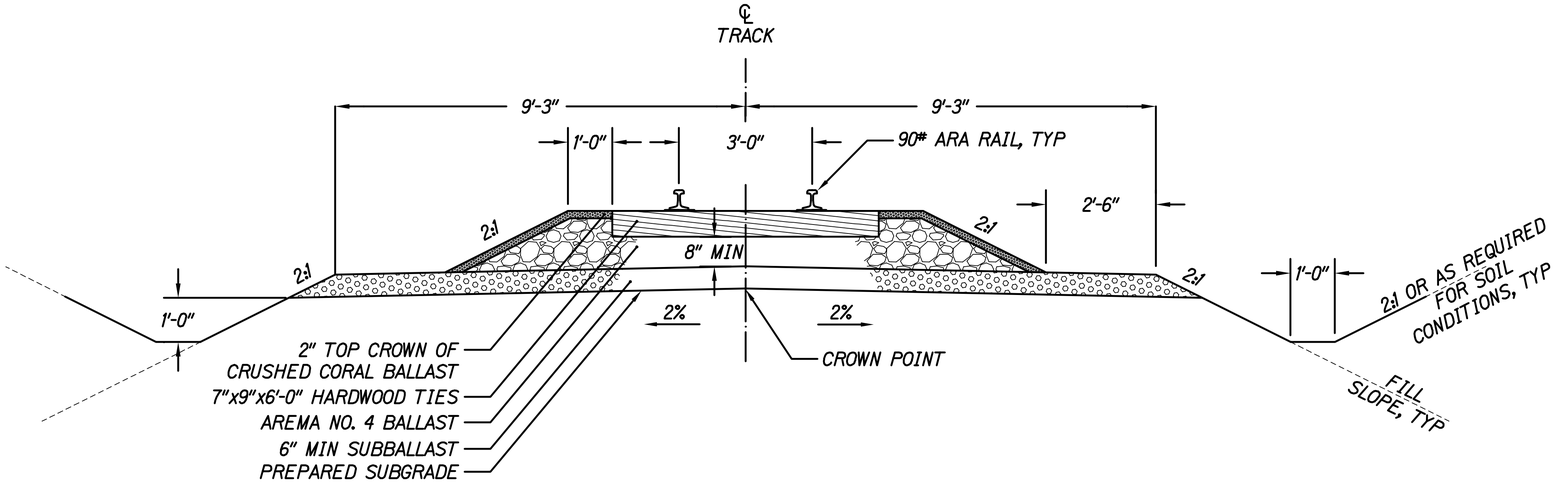
DETAILED CROSSING PLAN

FORT BARRETTE ROAD OPERATIONAL IMPROVEMENTS
Roosevelt Avenue to Farrington Highway
Project No. 901A-01-19

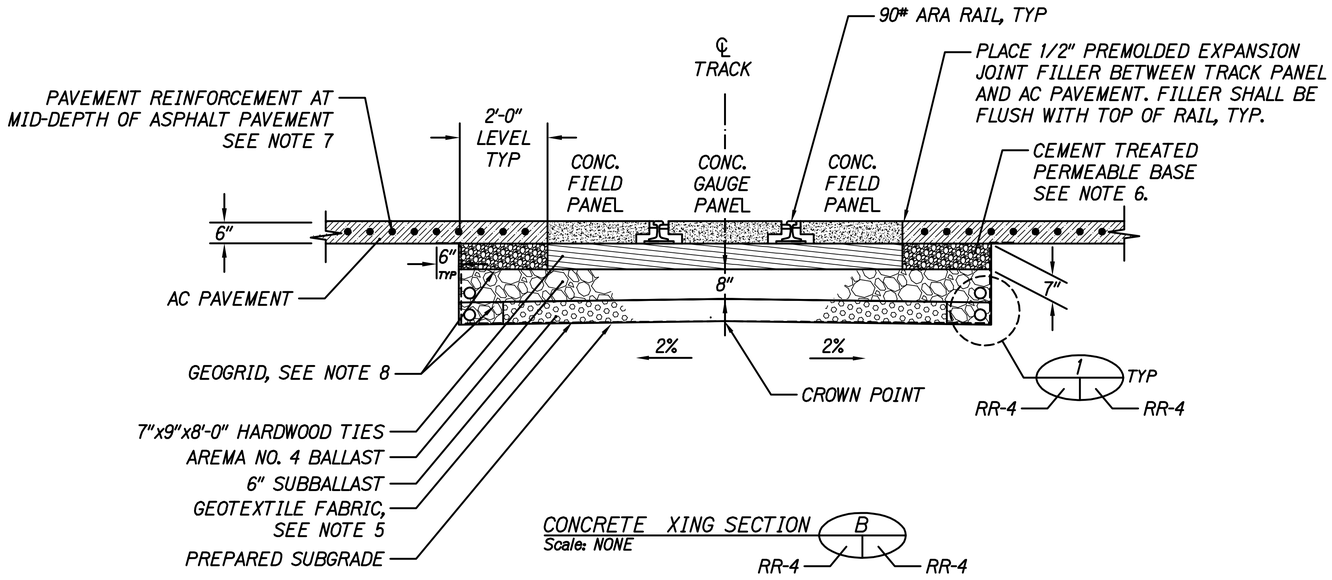
Scale: None Date: Jan. 2020

SHEET No. RR-3 OF 16 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	901A-01-19	2020	123	167



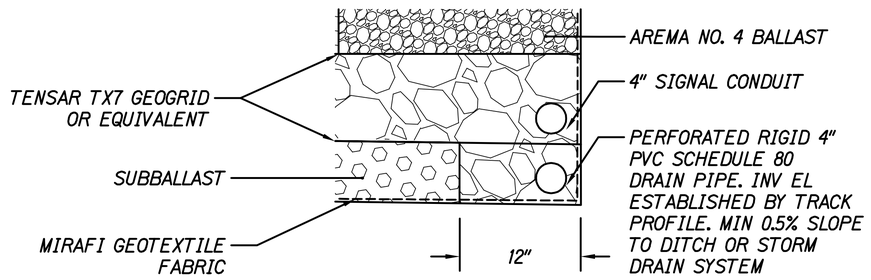
OPEN TRACK SECTION A
Scale: NONE
RR-4 RR-4



CONCRETE XING SECTION B
Scale: NONE
RR-4 RR-4

NOTES:

1. THE CONTRACTOR SHALL PROTECT ALL FOUNDATIONS AND EXISTING UNDERGROUND UTILITIES FROM DAMAGE BY EXCAVATION ACTIVITIES.
2. CONTRACTOR SHALL NOTIFY THE ENGINEER FOR INSPECTION OF CROSSING SUBGRADE. CONTRACTOR SHALL NOT COVER UP THE SUBGRADE UNTIL AFTER INSPECTION AND APPROVAL BY ENGINEER.
3. IF ALL OR PART OF THE SUBGRADE CANNOT ATTAIN SUITABLE COMPACTION, CONTRACTOR SHALL OVER EXCAVATE AND PLACE AND COMPACT SUITABLE ORDINARY BACKFILL MATERIAL AS DIRECTED BY THE ENGINEER. REMOVED EXISTING BALLAST MAY BE USED AS ORDINARY BACKFILL UNLESS DETERMINED BY THE ENGINEER TO BE UNSUITABLE.
4. ROADWAY SURFACES SHALL NOT ALLOW STORM WATER TO DRAIN INTO THE TRACK.
5. GEOTEXTILE FABRIC SHALL BE MIRAFI FW403, OR APPROVED EQUIVALENT.
6. CEMENT TREATED PERMEABLE BASE TO BE USED ABOVE GEOGRID BETWEEN WOOD TIES.
7. PAVEMENT REINFORCEMENT SHALL BE GLASGRID 8511 TF, OR APPROVED EQUIVALENT.
8. GEOGRID SHALL BE TENSAR TRIAX TX7, OR APPROVED EQUIVALENT.



DETAIL 1
Scale: NONE
RR-4 RR-4

ORIGINAL PLAN
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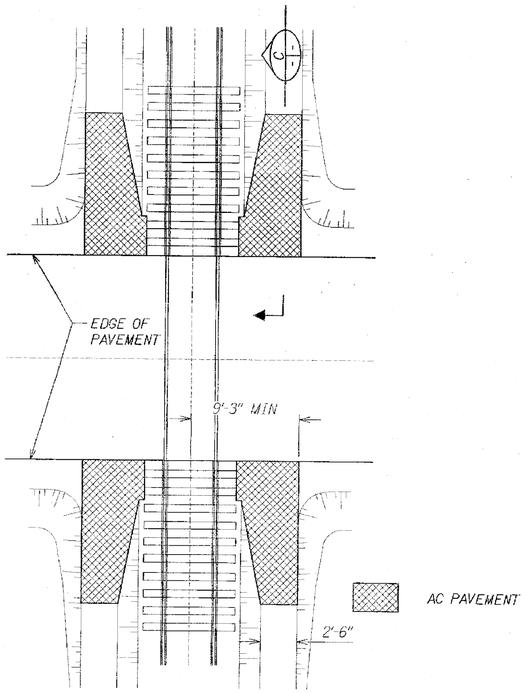
TYPICAL TRACK SECTIONS

FORT BARRETTE ROAD OPERATIONAL IMPROVEMENTS
Roosevelt Avenue to Farrington Highway
Project No. 901A-01-19

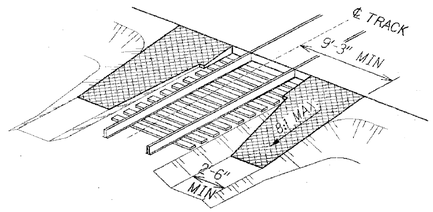
Scale: None Date: Jan. 2020

SHEET No. RR-4 OF 16 SHEETS

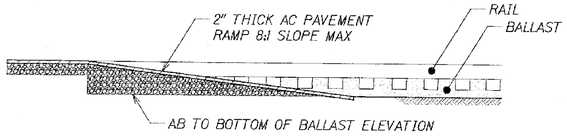
FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	901A-01-19	2020	124	167



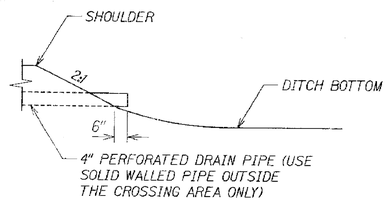
WALKWAY PLAN VIEW 2
Scale: NONE
RR-5 RR-5



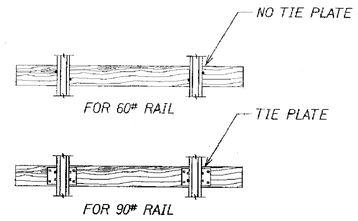
WALKWAY PICTORIAL VIEW 3
Scale: NONE
RR-5 RR-5



SECTION C
Scale: NONE
RR-5 RR-5



TYPICAL PVC PIPE OUTFALL DETAIL 5
Scale: NONE
RR-5 RR-5



SPIKING PATTERN DETAIL 4
Scale: NONE
RR-5 RR-5

ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
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No.	CHECKED BY	

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DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

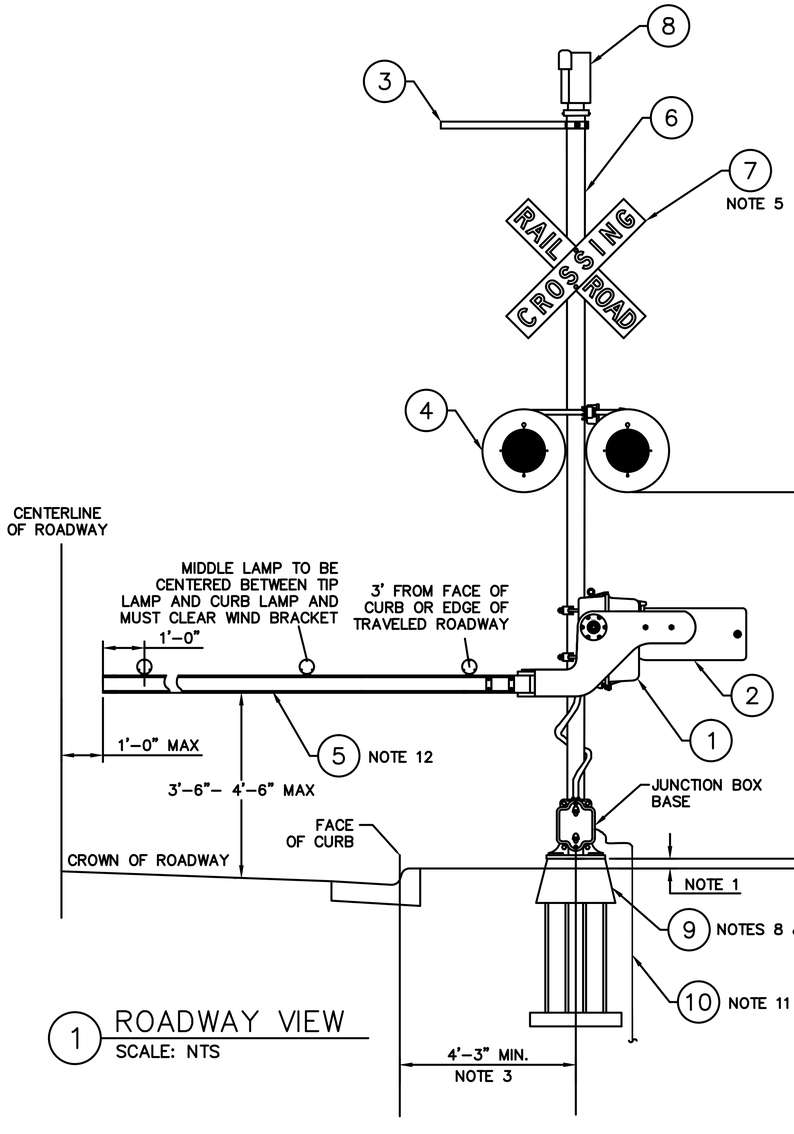
TYPICAL TRACK DETAILS

FORT BARRETTE ROAD OPERATIONAL IMPROVEMENTS
Roosevelt Avenue to Farrington Highway
Project No. 901A-01-19

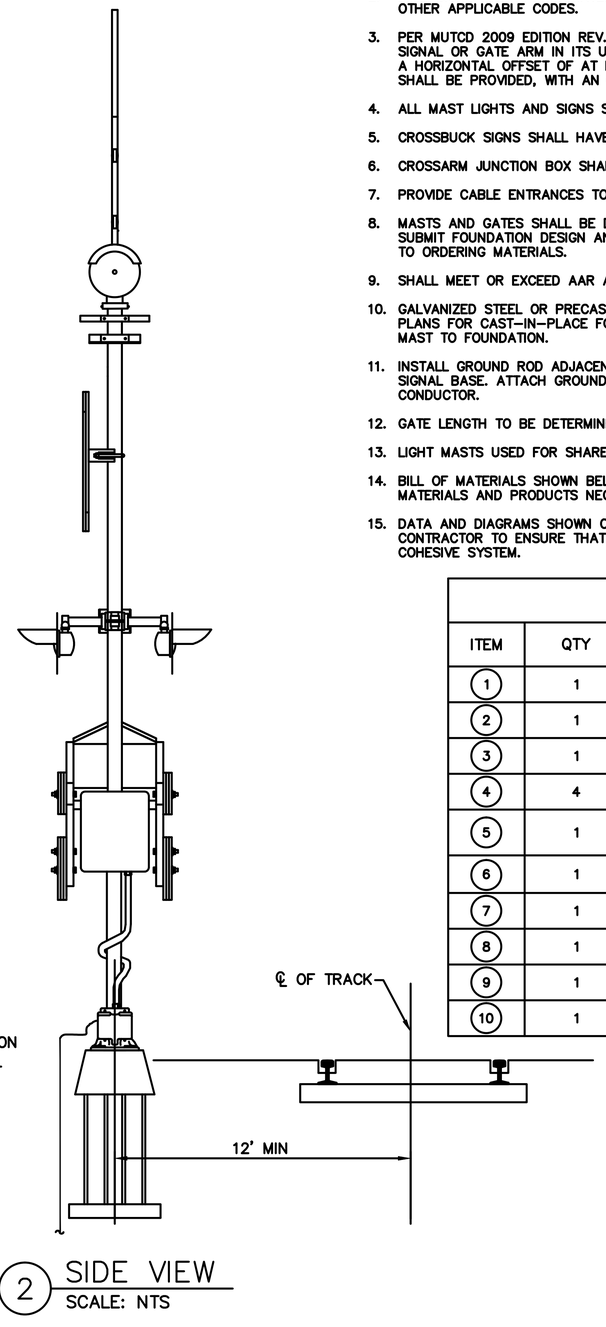
Scale: None Date: Jan. 2020

SHEET No. RR-5 OF 16 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	901A-01-19	2020	125	167



1 ROADWAY VIEW
SCALE: NTS



2 SIDE VIEW
SCALE: NTS

NOTES:

1. TOP OF FOUNDATION TO BE NO HIGHER THAN 4" ABOVE GROUND LEVEL ADJACENT TO FOUNDATION.
2. DIMENSIONS ARE APPROXIMATE. ACTUAL MEASUREMENTS ARE GOVERNED BY LAYOUT PLANS, MUTCD, AND OTHER APPLICABLE CODES.
3. PER MUTCD 2009 EDITION REV. 2. MINIMUM DISTANCE FROM FACE OF CURB TO CLOSEST PART OF THE SIGNAL OR GATE ARM IN ITS UPRIGHT POSITION IS 2 FEET. WHERE THERE IS A SHOULDER, BUT NO CURB, A HORIZONTAL OFFSET OF AT LEAST 2 FEET FROM THE EDGE OF A PAVED OR SURFACED SHOULDER SHALL BE PROVIDED, WITH AN OFFSET OF AT LEAST 6 FEET FROM THE EDGE OF THE TRAVELED WAY.
4. ALL MAST LIGHTS AND SIGNS SHALL BE MOUNTED TO MAST BY CLAMPS.
5. CROSSBUCK SIGNS SHALL HAVE EXTENSION BRACKETS INSTALLED.
6. CROSSARM JUNCTION BOX SHALL FACE AWAY FROM ROADWAY.
7. PROVIDE CABLE ENTRANCES TO FOUNDATIONS AS REQUIRED.
8. MASTS AND GATES SHALL BE DESIGNED FOR WIND LOADS OF 105 MPH WITH 30% GUST. CONTRACTOR TO SUBMIT FOUNDATION DESIGN AND DESIGN CALCULATIONS TO ENGINEER FOR REVIEW AND APPROVAL PRIOR TO ORDERING MATERIALS.
9. SHALL MEET OR EXCEED AAR AND AASHTO REQUIREMENTS.
10. GALVANIZED STEEL OR PRECAST FOUNDATIONS ARE PREFERRED. CONTRACTOR MAY ELECT TO SUBMIT PLANS FOR CAST–IN–PLACE FOUNDATIONS. GALVANIZED A325 BOLTS SHALL BE USED FOR MOUNTING MAST TO FOUNDATION.
11. INSTALL GROUND ROD ADJACENT TO FOUNDATION AND CONNECT GROUND WIRE TO GROUND STUD ON SIGNAL BASE. ATTACH GROUND ROD TO INTERNAL GROUND LUG WITH #6 BARE, SOLID COPPER GROUNDING CONDUCTOR.
12. GATE LENGTH TO BE DETERMINED BY ROAD WIDTH.
13. LIGHT MASTS USED FOR SHARED USE PATH SIMILAR BUT WITHOUT GATE ARM, WIND GUARD, AND BELL.
14. BILL OF MATERIALS SHOWN BELOW IS NOT ALL–ENCOMPASSING. CONTRACTOR SHALL PROVIDE ALL OTHER MATERIALS AND PRODUCTS NECESSARY TO ENSURE A FUNCTIONAL SYSTEM.
15. DATA AND DIAGRAMS SHOWN ON ALL DRAWINGS REPRESENT INTENT RATHER THAN SPECIFIC PRODUCTS. CONTRACTOR TO ENSURE THAT PROVIDED PRODUCTS AND MATERIALS WILL OPERATE AND FUNCTION AS A COHESIVE SYSTEM.

BILL OF MATERIALS

ITEM	QTY	DESCRIPTION
1	1	GATE MECHANISM
2	1	GATE COUNTER WEIGHT
3	1	TUBULAR TYPE WIND SUPPORT BRACE
4	4	12" LED MODULES WITH SIDE LIGHTS AND 24" BACKGROUND
5	1	GATE WITH 16" ALTERNATE REFLECTORIZED RED AND WHITE STRIPES ON BOTH SIDES
6	1	5" DIA x 16' MAST (TYP.)
7	1	SINGLE SIDED CROSSBUCK SIGN
8	1	MECHANICAL RAILROAD BELL
9	1	FOUNDATION
10	1	10' COPPER CLAD GROUND ROD

ORIGINAL PLAN
NOTE BOOK
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No. .....

DENNIS J. LI
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No. 14597–E
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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

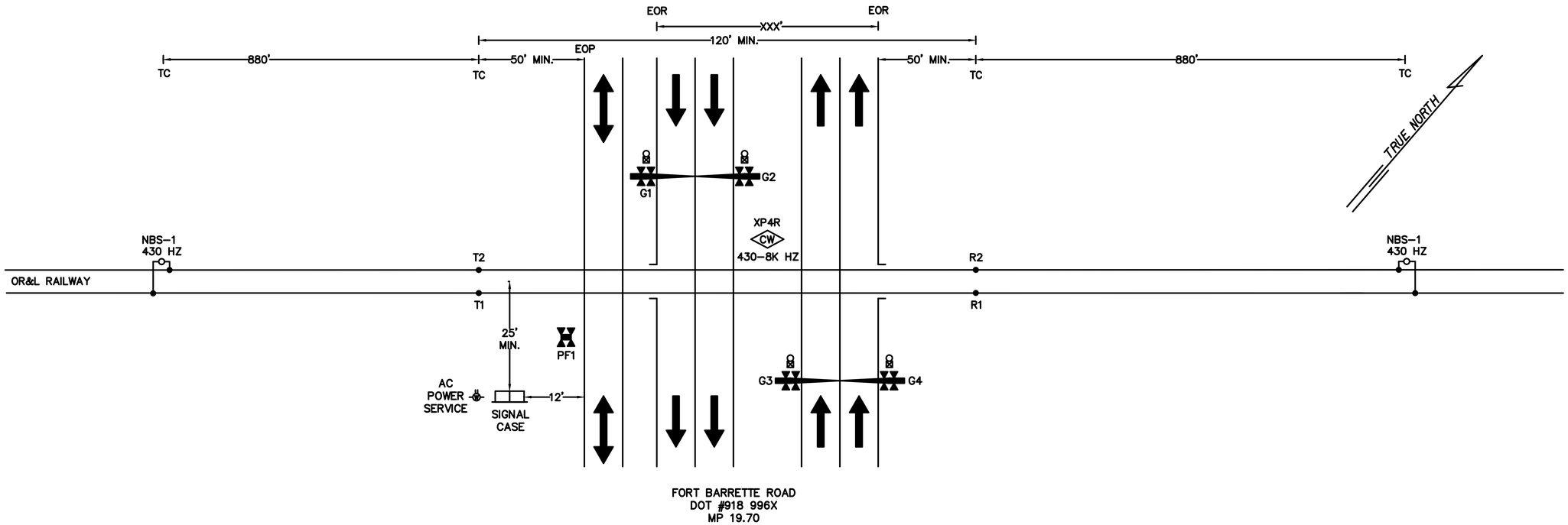
FLASHING LIGHT SIGNAL & GATE INSTALLATION DETAIL

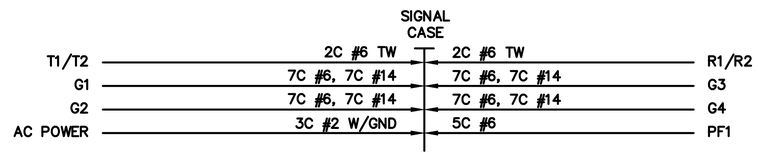
FORT BARRETTE ROAD OPERATIONAL IMPROVEMENTS
Roosevelt Avenue to Farrington Highway
Project No. 901A-01-19

Scale: None Date: Jan. 2020

SHEET No. RR-6 OF 16 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	901A-01-19	2020	126	167





SYMBOLS AND ABBREVIATIONS:

TC – TRACK CONNECTION
EOR – EDGE OF ROADWAY
EOP – EDGE OF PATHWAY
NBS – NARROW BAND SHUNT
CW – CONSTANT WARNING (ALSTOM XP4R, FREQUENCY 430 HZ, 8.0KHZ ISLAND)
– BELL
– AC POWER SERVICE
– FLASHING LIGHTS AND GATE
– PEDESTRIAN FLASHING LIGHT UNIT
– SIGNAL CASE
– TEST TERMINAL
– LINE ARRESTER
– EQUALIZER
– TWISTED WIRE, 2 TURNS PER FOOT

NOTES:

1. MINIMUM ISLAND LENGTH IS 120 FEET
2. SIGNAL CASE TO BE LOCATED MINIMUM 12' FROM ROADWAY SHOULDER AND 25' FROM TRACK CENTERLINE.
3. ALL LAMPS SHALL BE LED.
4. ALL WIRES #16 AWG UNLESS OTHERWISE NOTED.

WARNING TIME:

1. EQUIPMENT IS DESIGNED FOR 20 SECONDS MINIMUM WARNING TIME AT 10 MPH.
2. APPROACHES WERE LENGTHENED 0 SECOND(S) FOR WIDE OR ANGLED CROSSING (CT).
3. APPROACHES WERE LENGTHENED 5 SECONDS FOR BUFFER TIME (BT).
4. APPROACHES WERE LENGTHENED 30 SECONDS FOR ADVANCED PREEMPTION (APT).
5. APPROACHES WERE LENGTHENED 5 SECONDS FOR EQUIPMENT RESPONSE TIME (ERT).

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

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STATE OF HAWAII
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HIGHWAYS DIVISION

CROSSING LOCATION PLAN

FORT BARRETTE ROAD OPERATIONAL IMPROVEMENTS
Roosevelt Avenue to Farrington Highway
Project No. 901A-01-19

Scale: None Date: Jan. 2020

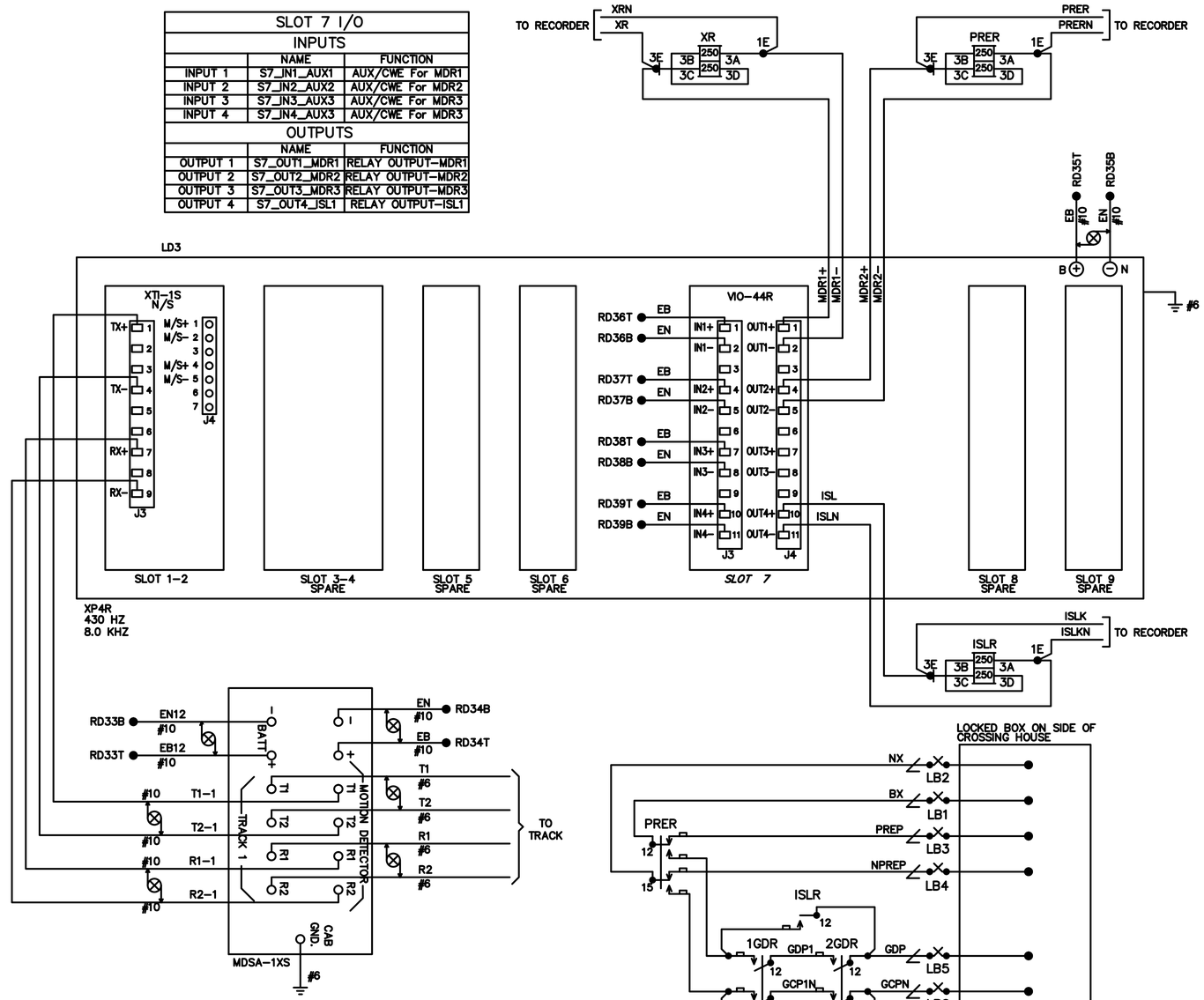
SHEET No. RR-7 OF 16 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	901A-01-19	2020	127	167

APPLICATION SOFTWARE INFO							
TYPE	REDUNDANT						
CONFIGURATION	1p						
NAME	1r_1p_11_0x_a						
CHECKSUM	1971						
CRC	C76A						
CHASSIS ID							
DIP NO.	1	2	3	4	5	6	7	8
SHUNT	X	X	X	X	X	I	X	X
CHASSIS ID DECIMAL	4						

I = TAB INTACT
X = TAB PUNCHED OUT

SLOT 7 I/O		
INPUTS		
	NAME	FUNCTION
INPUT 1	S7_IN1_AUX1	AUX/CWE For MDR1
INPUT 2	S7_IN2_AUX2	AUX/CWE For MDR2
INPUT 3	S7_IN3_AUX3	AUX/CWE For MDR3
INPUT 4	S7_IN4_AUX3	AUX/CWE For MDR3
OUTPUTS		
	NAME	FUNCTION
OUTPUT 1	S7_OUT1_MDR1	RELAY OUTPUT-MDR1
OUTPUT 2	S7_OUT2_MDR2	RELAY OUTPUT-MDR2
OUTPUT 3	S7_OUT3_MDR3	RELAY OUTPUT-MDR3
OUTPUT 4	S7_OUT4_ISL1	RELAY OUTPUT-ISL1



PROGRAM VERSION 7.20 OR LATER
☆= FIELD ADJUSTMENT TO BE MADE ACCORDING TO THE XP4 INSTRUCTION MANUAL 100323-010 AQO & SUPPLEMENTS.

BASIC APPROACH SETTINGS	
	TRACK 1
APPROACH TRACK FREQUENCY	430 HZ
MASTER/SLAVE OPERATION	MASTER
TRANSMITTER CHECK ADJUSTMENT	☆
APPROACH TRACK DIRECTION MODE	BI
LUMPED IMPEDANCE ADJUSTMENT	☆
NBS COMPENSATION (RX)	☆
TRACK ISLAND ASSIGNMENT	ISL1_ASSIGN
APPROACH LENGTH	880 FT
AUTO RX	ENABLE
ADVANCED APPROACH SETTINGS	
	TRACK 1
MD TIMER ENABLE	ENABLE
MD TIMER DELAY	10 MIN
FALSE SHUNT ENABLE	DISABLE
FALSE SHUNT RX	0
FALSE SHUNT DELAY	10 MIN
APPROACH RELEASE ENABLE	DISABLE
APPROACH RELEASE RX	0
APPROACH RELEASE DELAY	10 MIN
LOS TIME	16 SEC
IJ-LOS TIME	5 SEC
APPROACH SETTING	NORMAL
MAINTENACE SETTINGS	
	TRACK 1
APPROACH ENABLED	ENABLE
APPROACH DISABLE TIMEOUT	2 HR
BALLAST COMPENSATION	☆
PHASE COMPENSATION	☆
ISLAND SETTINGS	
	TRACK 1
ISLAND ENABLED	ENABLE
ISLAND DISABLE TIMEOUT	2 HR
ISLAND FREQUENCY	8000 HZ
LOS COUNT	2.0
FAULT DELAY	1

MDR CONFIGURATION SETTINGS			
MDR #	MDR 1	MDR 2	MDR 3
WARNING TIME	25 SEC	55 SEC	99 SEC
CONSTANT WARNING (CW) OR MOTION DETECTOR (MD) MODE	CW	CW	MD
ADVANCED PREEMPT TIME	30 SEC	NOT USED	NOT USED
CWE-WT	80 SEC	80 SEC	80 SEC
AUX RECOVERY DELAY	0 SEC	0 SEC	0 SEC
TRACK PARAMETERS			
TRACK #	TRACK 1	TRACK 1	TRACK 1
TRACK ASSIGNMENT	ASSIGNED	ASSIGNED	NOT ASSIGNED
OFFSET DISTANCE	0 FT	0 FT	0 FT
MD-RESTART	0 RX	0 RX	0 RX
SUDDEN SHUNT ZONE	0 RX	0 RX	0 RX
POSITIVE START ENABLE	DISABLE	DISABLE	DISABLE
POSITIVE START DETECTION	0 RX	0 RX	0 RX
POSITIVE START ACTIVE TIME	0 MIN	0 MIN	0 MIN
POST JOINT DETECTION ENABLE	ENABLE	ENABLE	ENABLE
POST JOINT	15 RX	15 RX	15 RX
POST JOINT DELAY	15 SEC	15 SEC	15 SEC

ORIGINAL PLAN
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HIGHWAYS DIVISION

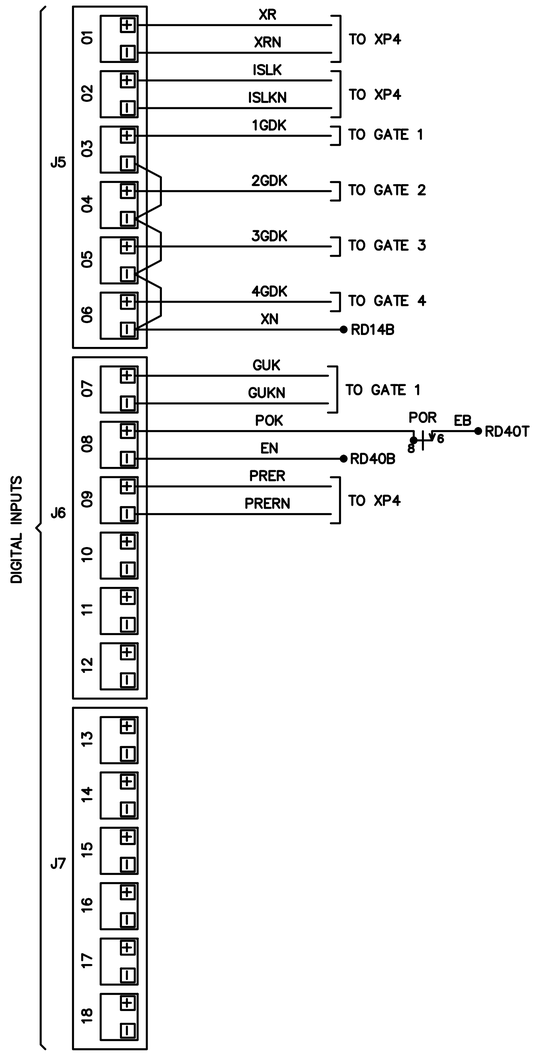
XP4 CONTROL PLAN

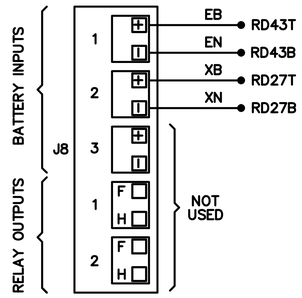
FORT BARRETTE ROAD OPERATIONAL IMPROVEMENTS
Roosevelt Avenue to Farrington Highway
Project No. 901A-01-19

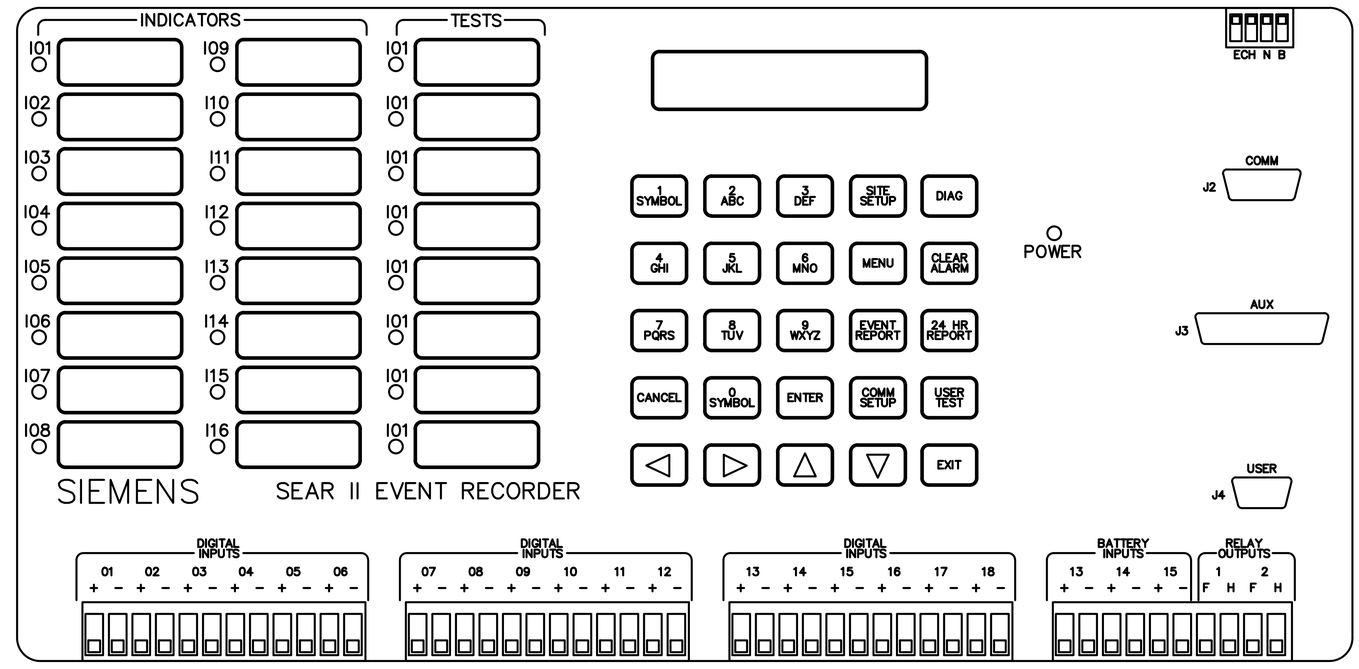
Scale: None Date: Jan. 2020

SHEET No. RR-8 OF 16 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	901A-01-19	2020	128	167







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

DENNIS J. LI
LICENSED PROFESSIONAL ENGINEER
No. 14597-E
HAWAII, U.S.A.

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SIGNATURE

04/30/20
EXPIRATION DATE OF THE LICENSE.

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

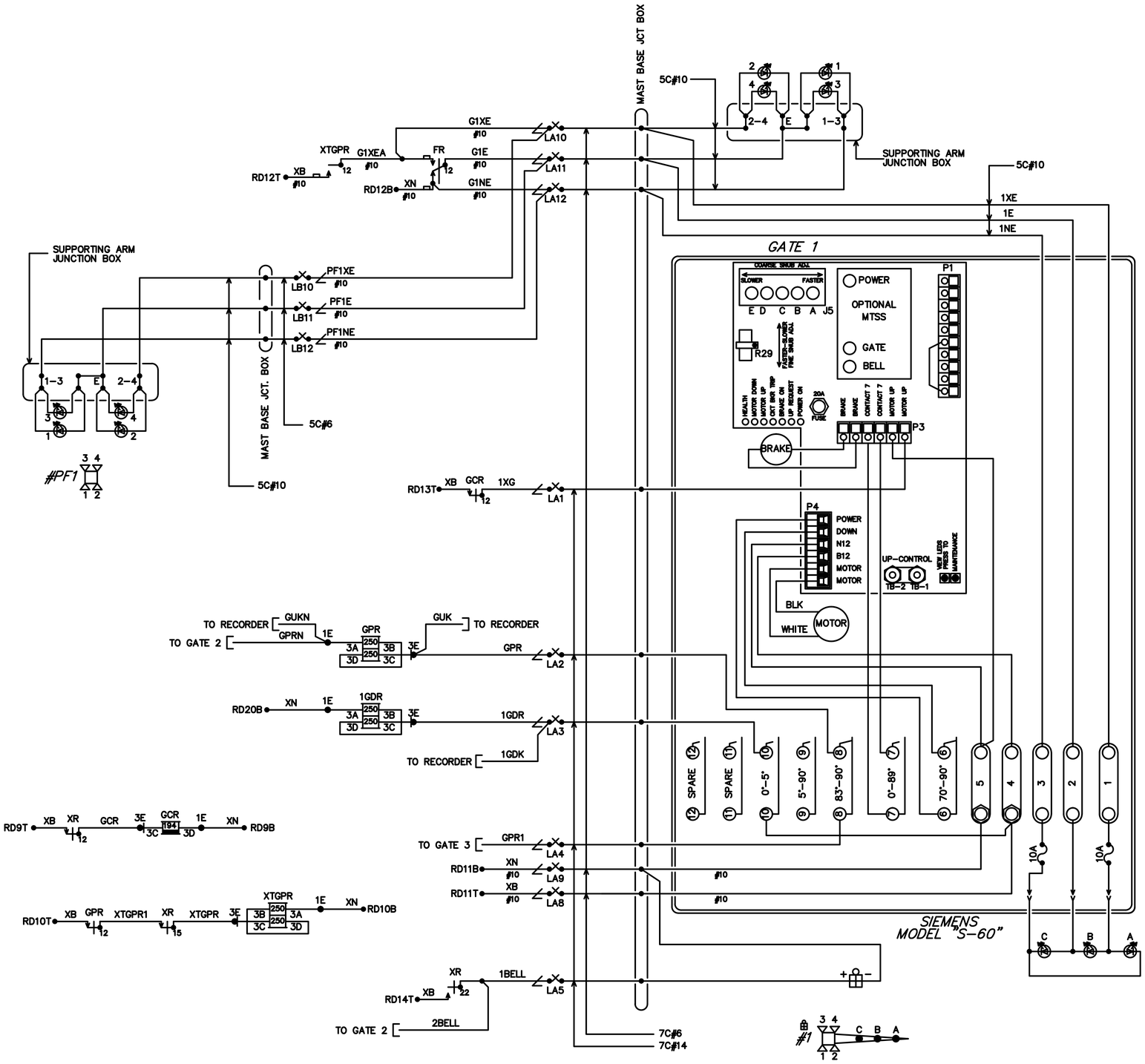
RECORDER PLAN

FORT BARRETTE ROAD OPERATIONAL IMPROVEMENTS
Roosevelt Avenue to Farrington Highway
Project No. 901A-01-19

Scale: None Date: Jan. 2020

SHEET No. RR-9 OF 16 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	901A-01-19	2020	129	167



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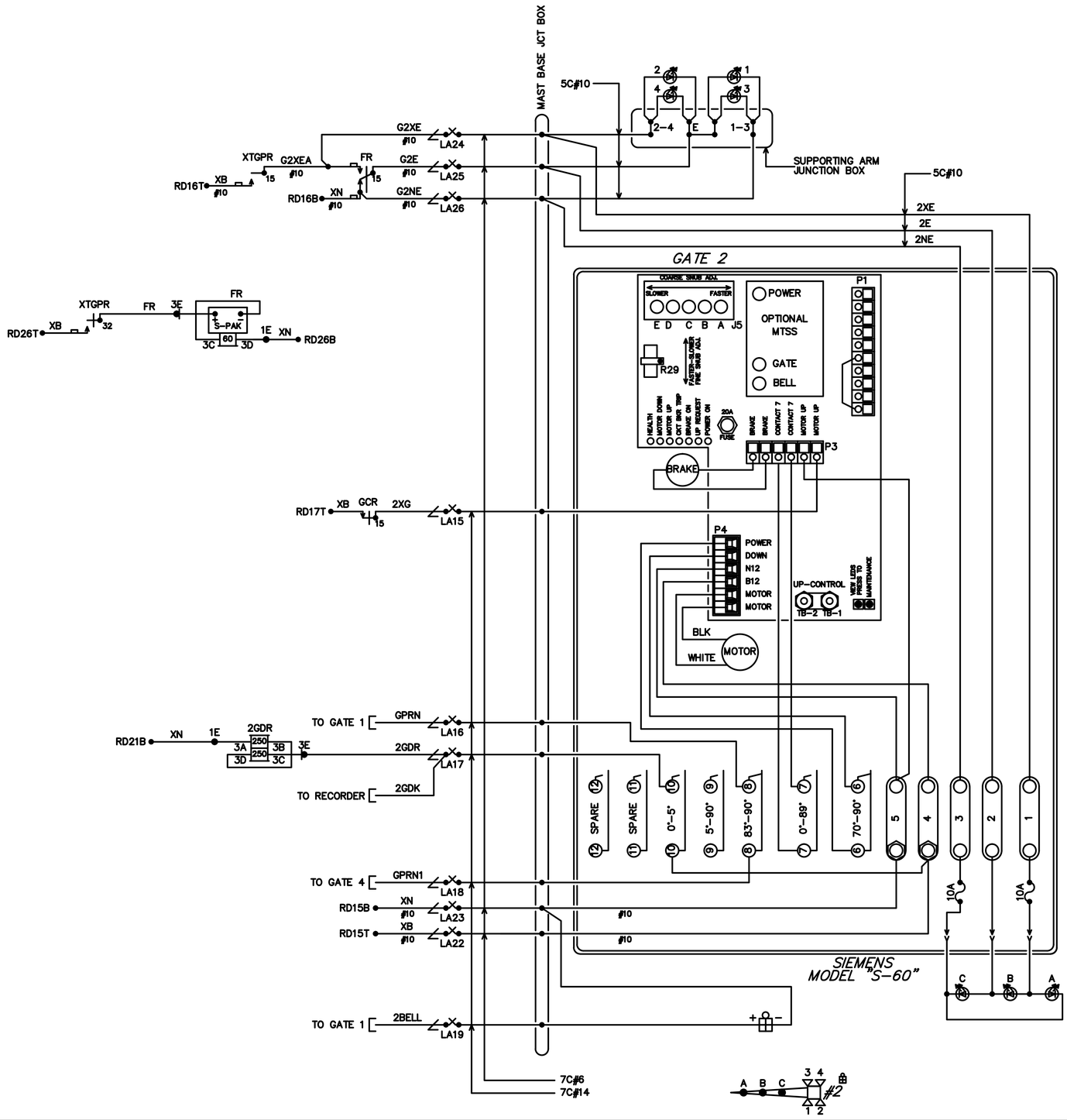
GATE 1 AND PEDESTRIAN FLASHER 1 PLAN

FORT BARRETTE ROAD OPERATIONAL IMPROVEMENTS
Roosevelt Avenue to Farrington Highway
Project No. 901A-01-19

Scale: None Date: Jan. 2020

SHEET No. RR-10 OF 16 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	901A-01-19	2020	130	167



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GATE 2 PLAN

FORT BARRETTE ROAD OPERATIONAL IMPROVEMENTS
Roosevelt Avenue to Farrington Highway
Project No. 901A-01-19

Scale: None Date: Jan. 2020

SHEET No. RR-11 OF 16 SHEETS

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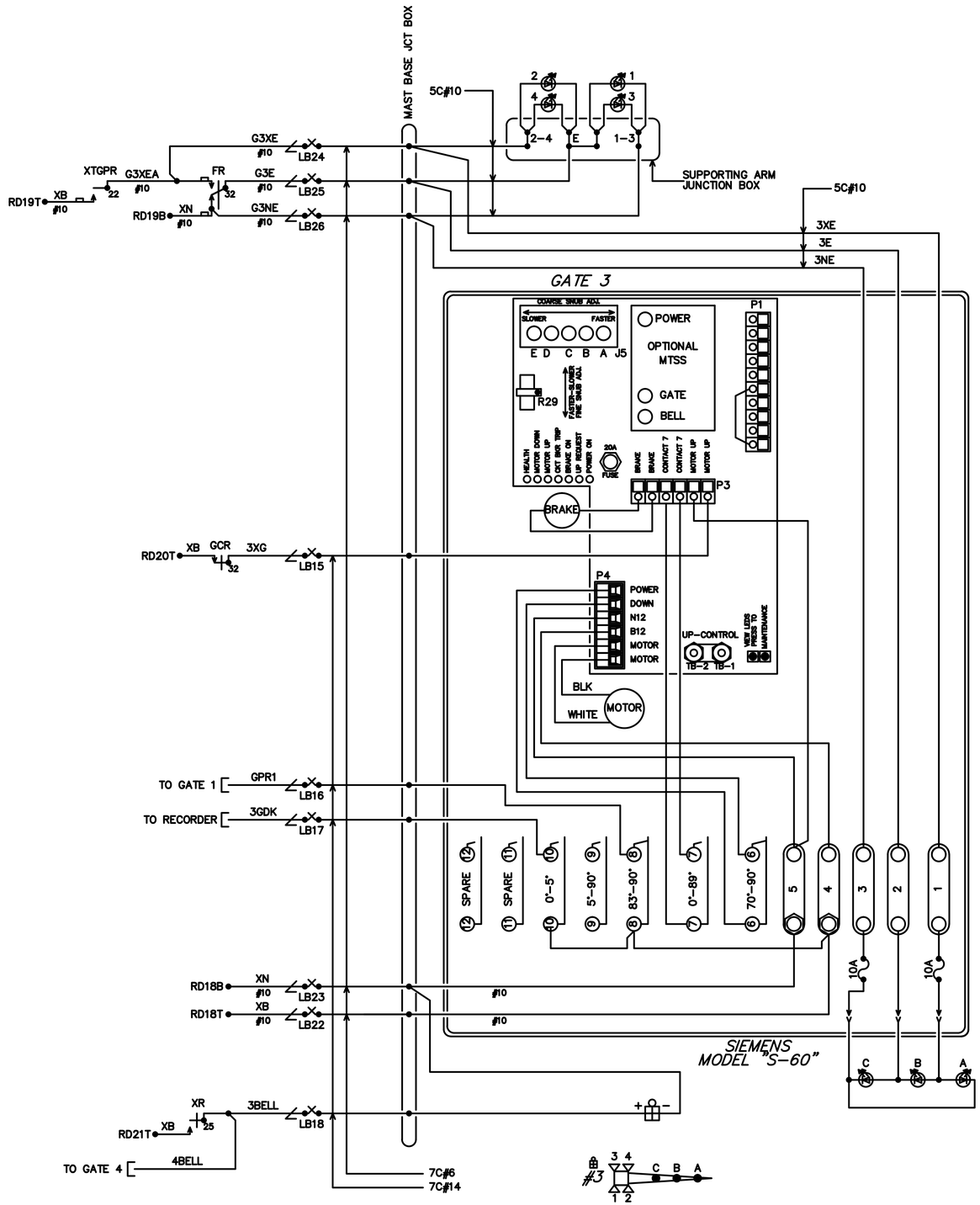

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GATE 3 PLAN

FORT BARRETTE ROAD OPERATIONAL IMPROVEMENTS
Roosevelt Avenue to Farrington Highway
Project No. 901A-01-19

Scale: None Date: Jan. 2020

SHEET No. RR-12 OF 16 SHEETS

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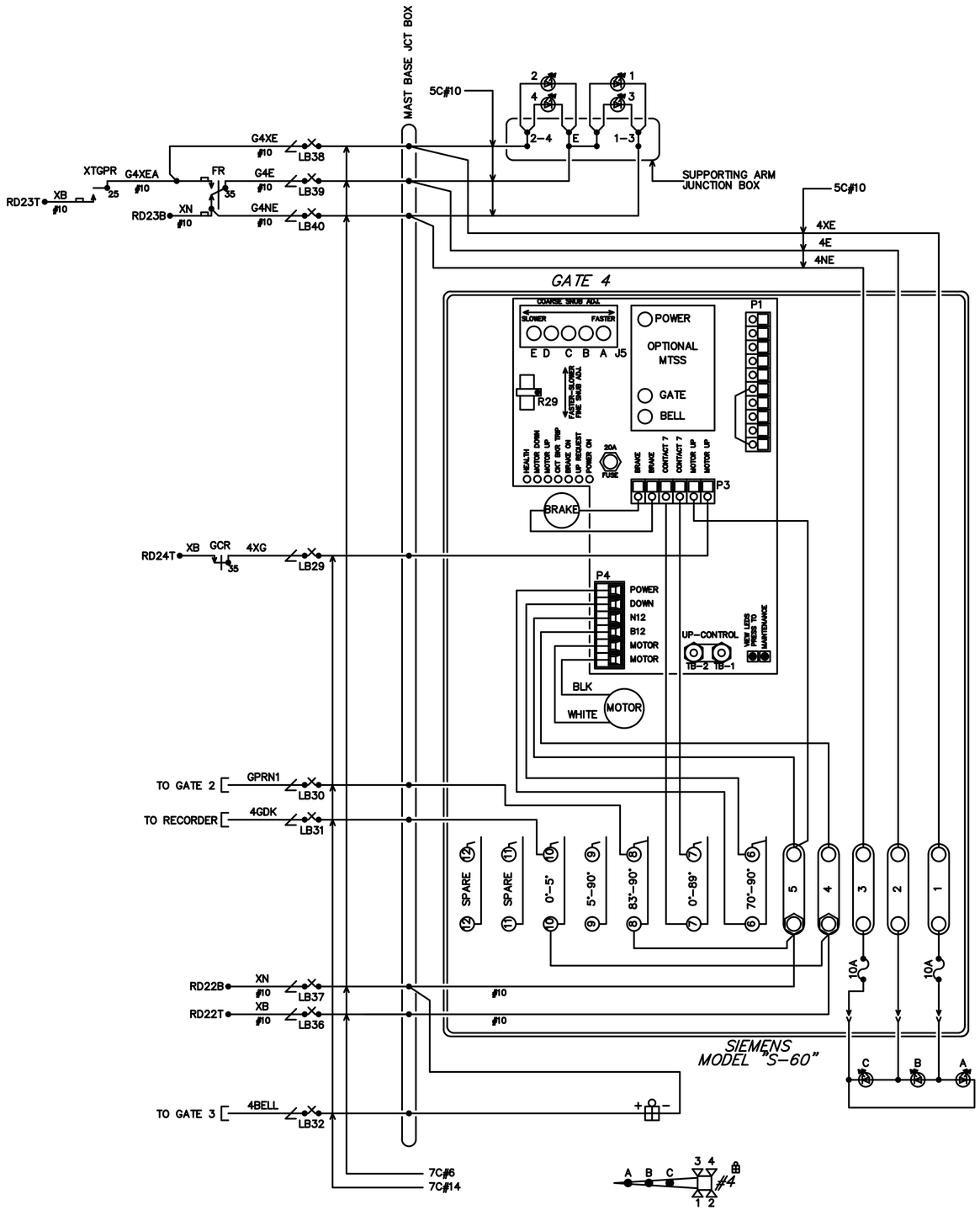

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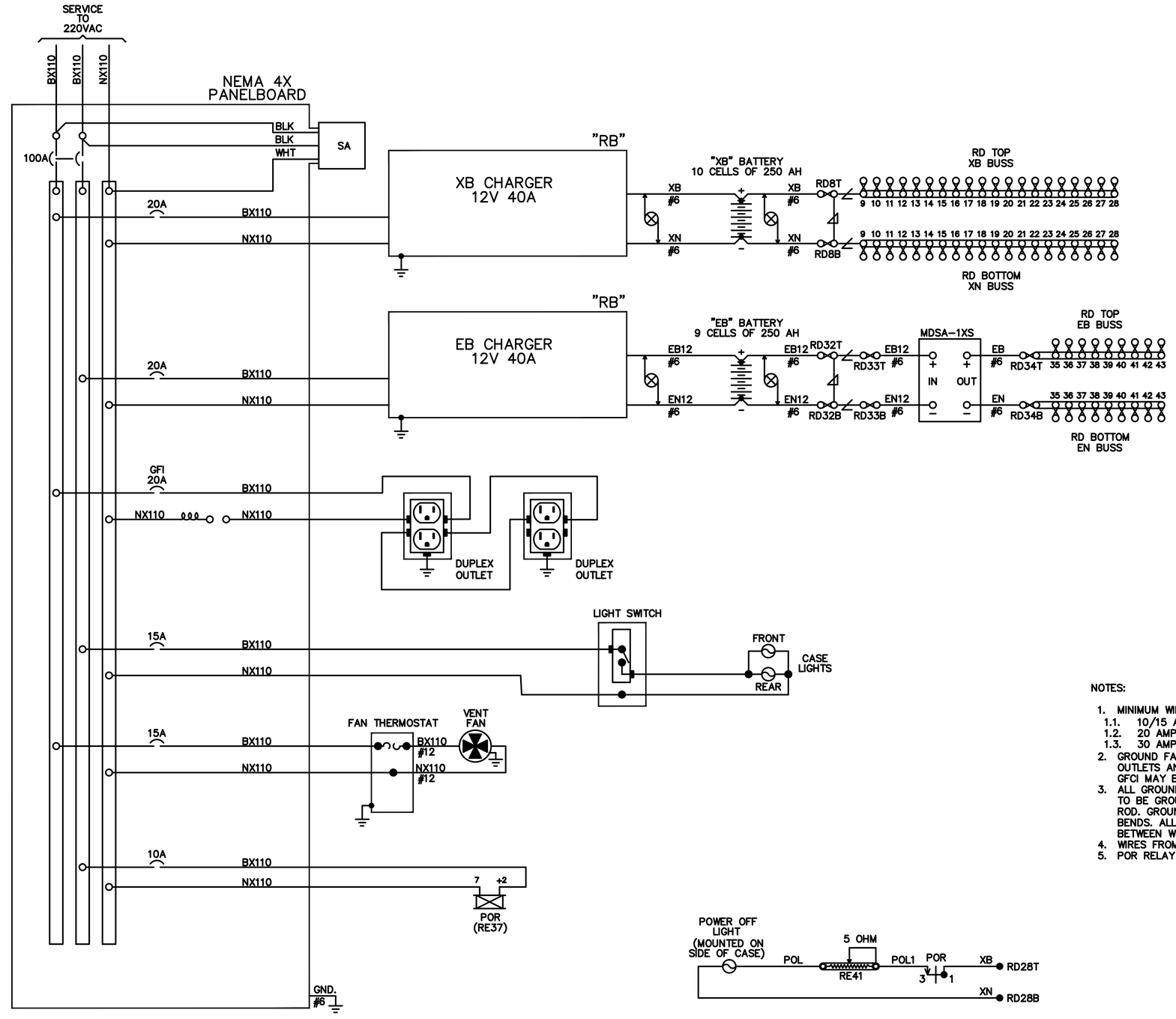
GATE 4 PLAN

FORT BARRETTE ROAD OPERATIONAL IMPROVEMENTS
Roosevelt Avenue to Farrington Highway
Project No. 901A-01-19

Scale: None Date: Jan. 2020

SHEET No. RR-13 OF 16 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	901A-01-19	2020	133	167



NOTES:

1. MINIMUM WIRE SIZE
   - 1.1. 10/15 AMP – NO. 14 AWG THHN OR THWN SOLID
   - 1.2. 20 AMP – NO 12 AWG THHN OR THWN SOLID
   - 1.3. 30 AMP – NO. 10 AWG THHN OR THWN SOLID
2. GROUND FAULT INTERRUPT (GFCI) MUST BE USED ON ALL CIRCUITS SERVICE CONVENIENCE OUTLETS AND ANY EQUIPMENT USED OUTSIDE THE SIGNAL CASE. RECEPTACLE MOUNTED GFCI MAY BE USED INSTEAD OF BREAKER TYPE.
3. ALL GROUND WIRES RUN TO BREAKER BOX GROUND BUSS. NX110 BUSS AND AC ARRESTER TO BE GROUNDED TO AC GROUND STUD. SIGNAL CASE TO BE GROUNDED TO EARTH GROUND ROD. GROUNDING WIRES TO BE #6 SOLID AND KEPT AS SHORT AS POSSIBLE. AVOID SHARP BENDS. ALL GROUND CONNECTIONS TO CASE MUST USE A STAINLESS STEEL STAR WASHER BETWEEN WIRE AND CASE.
4. WIRES FROM RECTIFIER TO BATTERY TO BE AS SHORT AS POSSIBLE.
5. POR RELAY TO BE POTTER & BRUMFIELD KRP11AN120V.

ORIGINAL PLAN
NOTE BOOK
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STATE OF HAWAII
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HIGHWAYS DIVISION

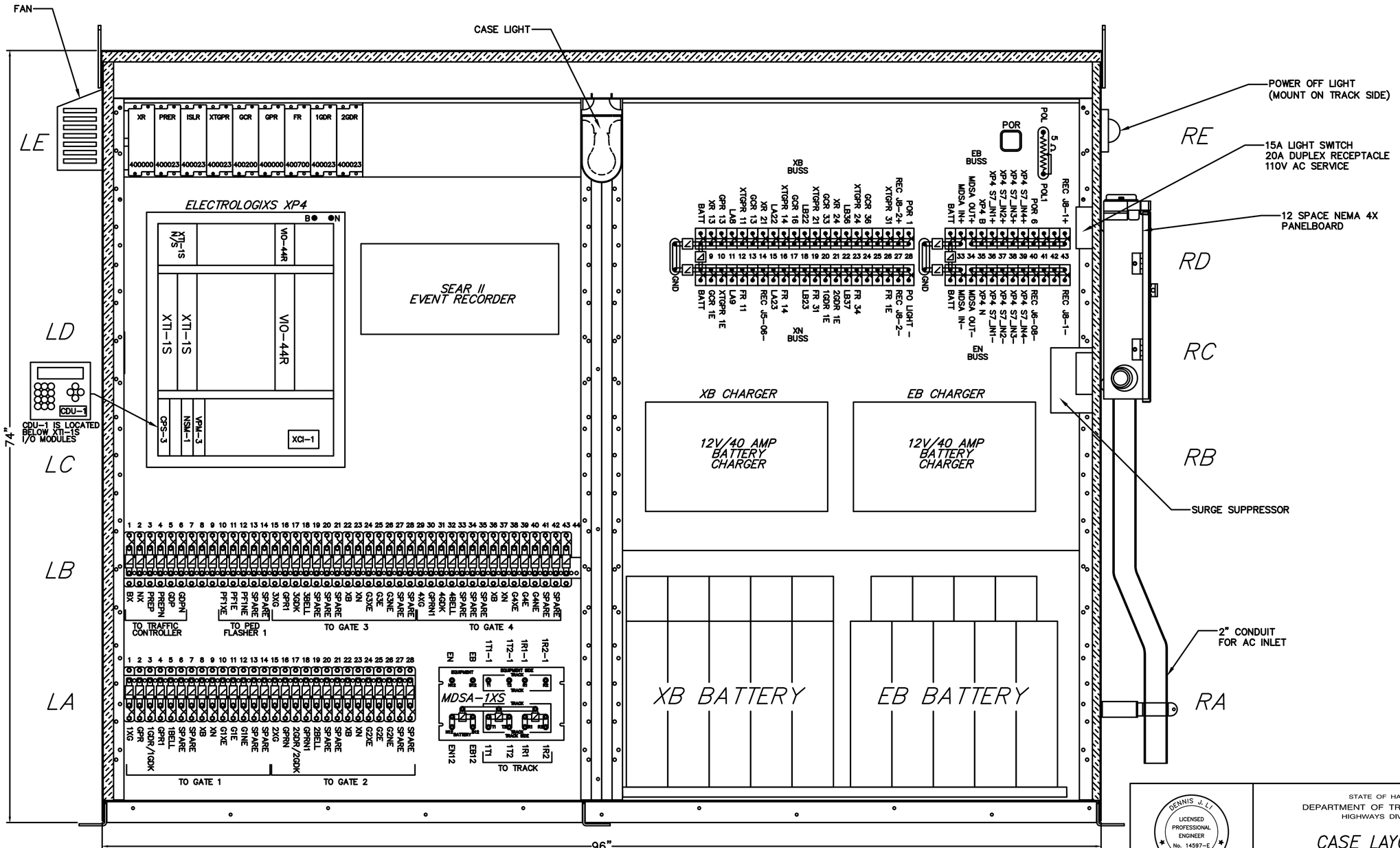
POWER DISTRIBUTION

FORT BARRETTE ROAD OPERATIONAL IMPROVEMENTS
Roosevelt Avenue to Farrington Highway
Project No. 901A-01-19

Scale: None
Date: Jan. 2020

SHEET No. RR-14 OF 16 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	901A-01-19	2020	134	167



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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

CASE LAYOUT

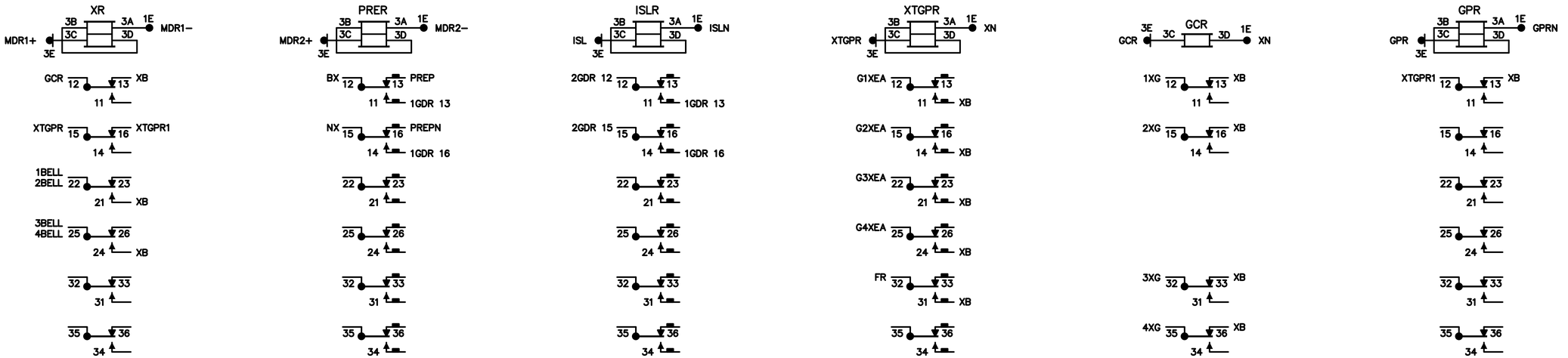
FORT BARRETTE ROAD OPERATIONAL IMPROVEMENTS
Roosevelt Avenue to Farrington Highway
Project No. 901A-01-19

Scale: None Date: Jan. 2020

SHEET No. RR-15 OF 16 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	901A-01-19	2020	135	167

VITAL RELAYS



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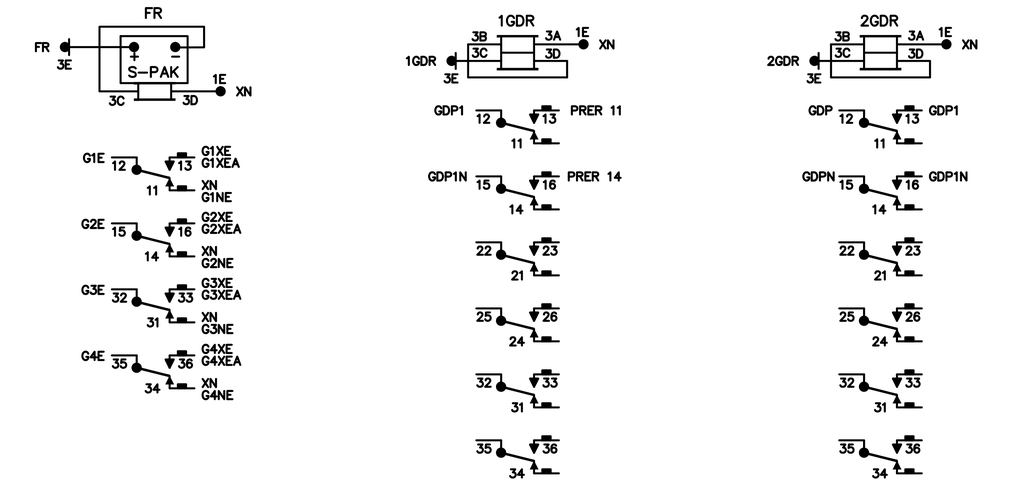
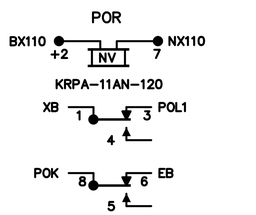


NON−VITAL RELAYS



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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

RELAY PLAN

FORT BARRETTE ROAD OPERATIONAL IMPROVEMENTS
Roosevelt Avenue to Farrington Highway
Project No. 901A-01-19

Scale: None Date: Jan. 2020

SHEET No. RR-16 OF 16 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	901A-01-19	2020	136	167

GENERAL NOTES:

1. All Work Shall be Constructed in Accordance With the Following Construction Standards and specifications:
   Construction Standards of Department of Transportation, State of Hawaii, 2005.

   Current Standards Specifications for Road and Bridge Construction, State of Hawaii.

2. It is Not the Intent of These Plans and Specifications to Indicate That All Existing Utilities are Shown on the Plans. The Information on the Existing Utilities are Based on Available Plans. The Locations are Approximate only and the Contractor Shall Verify the Location and Depth of the Facilities and Exercise Proper Care in Excavating in This Area. All Existing Utilities Whether or Not Shown on the Plans Shall be Protected at All Times by the Contractor. The Contractor shall be Responsible for Any Damages to the Facilities Whether Shown or Not Shown on Plans. Any Repair Work Shall be Provided at No Additional Cost to This Project.

3. Exercise Proper Care When Excavating in Areas With Existing Underground Facilities. Damages to the Existing Facilities Shall be Immediately Reported to the Respective Utility Companies, City or State Agency. The Repair Work Shall be Provided at no Additional Cost to the Project.

4. All Saw Cutting Work Shall be Considered Incidental to the Various Contract Items.

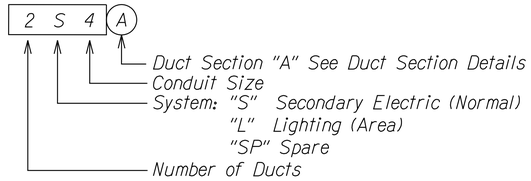
5. For Typical Construction Details Not Shown on Plans, Refer to Applicable Standard Details of Construction and Maintenance Services, Department of Transportation, State of Hawaii.

6. Furnish Install a Minimum Two Each Keyed Tamper-Proof Screws per Pullbox Cover Section Per State DOT Highways Standard. State DOT Highways Approved Screw Manufacturer is Bryce Fastener, Part #3GSRB12300 or Pre-Approved Equal, Obtain Standard DOT Key Code from State DOT Highways Project Manager.

PULLBOX SCHEDULE

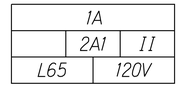
(4)	2' x 4' HECo Handhole
(6)	3' x 5' HECo Handhole
(100)	State Highways Electric Pullbox Type A, See State DOT Standard Plan TE-37A, See General Note 6.
(101A)	State Highways Street Light Pullbox Type B, See State DOT Standard Plan TE-37C, See General Note 6.

DUCT DESIGNATION



SITE ELECTRICAL SYMBOLS

⊕	Pathway Light Standard with FHWA Accepted Decorative Base Foundation, 25W LED
▭	Pullbox/Handhole
BC	Bare Copper
FHWA	Federal Highway Approved
GRS	Galvanized Rigid Steel
LED	Light Emitting Diode
UON	Unless Otherwise Noted
WP	Weatherproof
1 →	Key Note Indicator
-·-·-·-·-	Underground Ductline



Indicates Light Pole Identification Tag, See Detail A (E-1 | E-24)

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DRAWN BY
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CHECKED BY
DATE

ORIGINAL PLAN
NOTE BOOK
No.

RUSSELL K. MORI
LICENSED PROFESSIONAL ENGINEER
No. 9013-E
6/9/20
HAWAII, U.S.A.

MK ENGINEERS, LTD.
LICENSE EXPIRATION DATE: 4/30/20
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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
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ELECTRICAL SYMBOLS AND NOTES

FORT BARRETTE ROAD OPERATIONAL IMPROVEMENTS
Roosevelt Avenue to Farrington Highway
Project No. 901A-01-19

Scale: Not to Scale Date: Jan. 2020

SHEET No. E-1 OF 32 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	901A-01-19	2020	137	167

HAWAIIAN ELECTRIC COMPANY NOTES:

1. Location of Hawaiian Electric Facilities

   The Location of Hawaiian Electric's Overhead and Underground Facilities Shown on the Plans Are From Existing Records with Varying Degrees of Accuracy and Are Not Guaranteed as Shown. The Contractor Shall Verify in the Field the Locations of the Facilities and Shall Exercise Proper Care in Excavating and Working in the Area. Wherever Connections of New Utilities to Existing Utilities and Utility Crossings are Shown, the Contractor Shall Expose the Existing Lines at the Proposed Connections and Crossings to Verify the Depths Prior to Excavation for the New Lines. The Contractor Shall be Responsible for Any Damages to Hawaiian Electricc's Facilities Whether Shown or Not Shown on the Plans.

2. Compliance with Hawaii Occupational Safety and Health Laws

   The Contractor Shall Comply with the State of Hawaii's Occupational Safety and Health Laws and Regulations, Including Without Limitation, Those Related to Working on or Near Exposed or Energized Electrical Lines and Equipment.

3. Excavation Clearance

   The Contractor Shall Obtain an Excavation Clearance from Hawaiian Electric's Planning and Design Section of the Customer Installations Division (543-5654) Located at 820 Ward Avenue, 4th Floor, a Minimum of Ten (10) Working Days Prior to Starting Construction.

4. Caution!!! Electrical Hazard!!!

   Existing Hawaiian Electric Overhead and Underground Lines are Energized and Will Remain Energized During Construction Unless Prior Special Arrangements Have Been Made with Hawaiian Electric. Only Hawaiian Electric Personnel are to Handle These Energized Lines and Erect Temporary Guards to Protect These Lines from Damage. The Contractor Shall Work Cautiously at all Times to Avoid Accidents and Damage to Existing Hawaiian Electric Facilities, Which Can Result in Electrocution.

5. Overhead Lines

   State Law (OSHA) Requires that a Worker and the Longest Object He or She May Contact Cannot Come Closer than a Specified Minimum Radial Clearance When Working Close to or Under Any Overhead Lines. It is the Contractor's Responsibility to be Informed of and Comply with the Law.

   At Any Time Should the Contractor Anticipate that His Work Will Result in the Need to Encroach Within the Minimum Required Clearance as Stated in the Law, the Contractor Shall Notify Hawaiian Electric at Least Three (3) Months Prior to the Planned Encroachment so that, if Feasible, the Necessary Protections (e.g. Relocate or De-Energize Hawaiian Electric Lines) can be Investigated. Hawaiian Electric May also be Able to Blanket its Distribution (12KV and Below) Lines to Provide a Visual Aid in Preventing Accidental Contact. Hawaiian Electric's Cost of Safeguarding or Identifying its Lines will be Charged to the Contractor.

   Contact Hawaiian Electric's Customer Installations Division at 543-7070 for Assistance in Identifying and Safeguarding Overhead Power Lines.

6. Pole Bracing

   Contractor Shall not Excavate Within 10 Feet From Hawaiian Electric's Utility Poles or Any Anchor System Supporting the Utility Pole. If Contractor Must Excavate Closer than 10 Feet From a Utility Pole or its Anchor System, Contractor will be Responsible for Protecting, Supporting, Securing and Taking all Precautions to Prevent Damage to or Leaning of Existing Poles. Before Commencing such Excavation, Contractor Must Submit its Bracing Calculations and Drawings, Prepared and Stamped by a Licensed Structural Engineer, to Hawaiian Electric's Customer Installations Division (543-7070) for Review. Hawaiian Electric Requires a Minimum of Ten (10) Working Days to Conduct the Review of Contractor's Submittal. Contractor Shall be Responsible for the Design, Installation, and Removal of the Temporary Pole Bracing System, As Well As All Costs Incurred By Hawaiian Electric to Review Contractor's Drawings and to Repair or Straighten Poles Impacted by Contractor's Activities, Including Response and Restoration Costs Incurred by Hawaiian Electric Arising Out of or Related to Outages Caused by Contractor's Failure to Meet the Foregoing Requirements. Hawaiian Electric's Review and Approval of Any Contractor Submittals Including its Work Procedure Shall Not Relieve Contractor From Any Liability Resulting From Contractor's Excavation Near or Around Hawaiian Electric's Utility Poles.

7. Underground Lines

   The Contractor Shall Exercise Extreme Caution Whenever Construction Crosses or is in Close Proximity of Underground Lines. Hawaiian Electric's Existing Electrical Cables are Energized and will Remain Energized During Construction. Only Hawaiian Electric Personnel are to Break into Existing Hawaiian Electric Facilities, Handle These Cables, and Erect Temporary Guards to Protect These Cables from Damage. The Cost of Hawaiian Electric's Assistance in Providing Proper Support and Protection of its Underground Lines will be Charged to the Contractor. For Assistance/Coordination in Providing Proper Support and Protection of These Lines, the Contractor Shall Call Hawaiian Electric's Customer Installations Division at 543-7070 a Minimum of Ten (10) Working Days in Advance.

   Special Precautions are Required when Excavating Near Hawaiian Electric's 138KV or 46kV Underground Lines (See Hawaiian Electric Instructions to Consultants/Contractors on "Excavation Near Hawaiian Electric's Underground 138KV and/or 46KV Lines" for Detail Requirements).

   For Verification of Underground Lines, the Contractor Shall Call the Hawaii One Call Center at 866-423-7287 Minimum of Five (5) Working Days in Advance.

8. Underground Fuel Pipelines

   The Contractor Shall Exercise Extreme Caution Whenever Construction Crosses or is in Close Proximity of Hawaiian Electric's Underground Fuel Oil Pipelines. Special Precautions are Required When Excavating Near Hawaiian Electric's Underground Fuel Oil Pipelines (See Hawaiian Electric's Specific Fuel Pipeline "Guidelines" To Consultants/Contractors on Excavation Near Hawaiian Electric's Underground Fuel Pipelines for Detailed Requirements).

9. Excavations

   When Trench Excavations is Adjacent to or Beneath Hawaiian Electric's Existing Structures or Facilities, the Contractor is Responsible for:

   a. Arranging for Hawaiian Electric Standby Personnel to Observe Work at Contractor's Cost.
   b. Sheeting, Bracing, or Otherwise Supporting the Excavation and Stabilizing the Existing Ground to Render it Safe and Secure and to Prevent Possible Slides, Cave-Ins, and Settlements.
   c. Properly Supporting Existing Structures or Facilities with Beams, Struts, Under-Pinnings, or Other Necessary Methods to Fully Protect it From Damage.
   d. Backfilling with Proper Backfill Material Including Special Thermal Backfill Where Existing (Refer to Engineering Division for Thermal Backfill Specifications).

10. Relocation of Hawaiian Electric Facilities

    Any Work Required to Relocate or Modify Hawaiian Electric Facilities Shall be Done by Hawaiian Electric, or by the Contractor Under Hawaiian Electric's Supervision. The Contractor Shall be Responsible for all Coordination, and Shall Provide Necessary Support for Hawaiian Electrics Work, Which May Include, but Not be Limited to, Staking of Pole/Anchor Locations, Identifying Right of Way and Property Lines, Excavations 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.

ORIGINAL PLAN
NOTE BOOK N.____
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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

HECo NOTES - 1

FORT BARRETTE ROAD OPERATIONAL IMPROVEMENTS
Roosevelt Avenue to Farrington Highway
Project No. 901A-01-19

Scale: Not to Scale Date: Jan. 2020

SHEET No. E-2 OF 32 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	901A-01-19	2020	138	167

HAWAIIAN ELECTRIC COMPANY NOTES (CONT'D):

11. Conflicts

Any Redesign or Relocation of Hawaiian Electric's Facilities not Shown on the Plans May be Cause for Lengthy Delays. The Contractor Acknowledges that Hawaiian Electric is Not Responsible for any Delay or Damage that May Arise as a Result of Any Conflicts Discovered or Identified with Respect to the Location or Construction of Hawaiian Electric's Electrical Facilities in the Field, Regardless of Whether the Contractor Has Met the Requested Minimum Advance Notices. In Order to Minimize Any Delay or Impact Arising from Such Conflicts, Hawaiian Electric Should be Notified Immediately Upon Discovery or Identification of Such Conflict.

12. Damage to Hawaiian Electric Facilities

The Contractor Shall be Responsible for the Protection of all Hawaiian Electric Surface and Subsurface Utilities and Shall be Responsible for any Damages to Hawaiian Electric's Facilities as a Result of His Operations. The Contractor Shall Immediately Report Such Damages or any Hazardous Conditions Related to Hawaiian Electric's Lines to Hawaiian Electric's Trouble Dispatcher at 548-7961. Repair Work Shall be Done by Hawaiian Electric or by the Contractor Under Hawaiian Electric's Supervision. Costs for Damages to Hawaiian Electric's Facilities Shall be Borne by the Contractor.

In Case of Damage or Suspected Damage to Hawaiian Electric's Fuel Pipeline, the Contractor Shall Immediately Notify Hawaiian Electric's Security Command Center at 543-7685 (a 24-Hour Number) so Hawaiian Electric Personnel Can Secure the Damaged Section and Report any Oil Spills to the Proper Authorities. All Costs Associated with the Damage, Repair, and Oil Spill Cleanup Shall be Borne by the Contractor.

13. Hawaiian Electric Stand-by Personnel

The Contractor May Request Hawaiian Electric to Provide an Inspector to Stand-by During Construction Near Hawaiian Electric's Facilities. The Cost of Such Inspection will be Charged to the Contractor.

The Contractor Shall Call Hawaiian Electric's Customer Installations Division at 543-7070 a Minimum of Three (3) Months in Advance to Arrange for Hawaiian Electric Stand-by Personnel.

14. Clearances

The Following Clearances Shall be Maintained Between Hawaiian Electric's Ductline and all Adjacent Structures (Charted and Uncharted) in the Trench:

Guidelines For Minimum Horizontal (parallel) Clearances Between Hawaiian Electric and Other Underground Utilities				
Underground Utility	Hawaiian Electric Direct Buried Cable	Hawaiian Electric Direct Buried In Conduit (no Concrete Encasement)	Hawaiian Electric 3" (Minimum) Concrete Encasement	Applicable Notes:
Hawaiian Electric DB Conduits	12"	3"	0"	
Hawaiian Electric 3" Encasement	0"	0"	0"	
Telephone/CATV DB	12"	12"	6"	
Telephone/CATV DB Ducts	12"	12"	6"	
Telephone/CATV 3" Encasement	0"	0"	0"	5
Traffic Signal	12"	12"	12"	
Water DB (BWS Owned)	36"	36"	36"	1, 4
Customer Owned Water Service Laterals	12"	12"	12"	
Water (Concrete Jacketed) (BWS Owned)	36"	36"	36"	1, 4
Gas DB	12"	12"	12"	1
Gas (Concrete Jacketed)	12"	12"	12"	1
Sewer DB	36"	36"	36"	1, 2
Sewer (Concrete Jacketed)	36"	36"	36"	1, 2
Drain	12"	12"	12"	1
Fuel Pipelines				3

Notes:

1. Where Space is Available, Parallel Clearance to Other Utilities, or Foreign Structures other than Communication or Traffic Signal Shall be 36".

2. If 36" Clearance Cannot be Met:
   - If Clearance is Less than 12", Jacket Sewer Line with Reinforced Concrete (Per Hawaiian Electric's Std 30-1030) for a Distance of 5' Plus Pipe Diameter.
   - If Clearance is Between 12" and 36", Jacket Sewer Line with Plain Concrete.

3. All Fuel Pipeline Crossings Shall be Reviewed and Approved by the Company that Owns and Maintains it.

4. 5 Feet Clear to Water Mains 16" and Larger.

5. For Situations with 0" Minimum Separation, a 6" Separation is Recommended.

6. Clearances Measured from Outer Edges or Diameters of Utilities. Whenever Concrete Jackets are Involved, Clearances Shall be Total Clear Distance Between the Concrete Jacket and Utility Concerned.

Guidelines For Minimum Vertical (Crossing) Clearances Hawaiian Electric and Other Underground Utilities				
Underground Utility	Hawaiian Electric Direct Buried Cable	Hawaiian Electric Direct Buried In Conduit (No Concrete Encasement)	Hawaiian Electric 3" (Minimum) Concrete Encasement	Applicable Notes:
Hawaiian Electric DB Conduits	6"	3"	0"	
Hawaiian Electric 3" Encasement	0"	0"	0"	
Telephone/CATV DB	12"	12"	6"	
Telephone/CATV DB Ducts	12"	12"	6"	
Telephone/CATV 3" Encasement	0"	0"	0"	3
Traffic Signal	12"	12"	6"	
Water DB (BWS Owned)	12"	12"	12"	5
Customer Owned Water Service Laterals	6"	6"	6"	
Water (Concrete Jacketed) (BWS Owned)	12"	12"	12"	5
Gas DB	12"	12"	12"	
Gas (Concrete Jacketed)	12"	12"	12"	
Sewer DB	24"	24"	24"	1
Sewer (Concrete Jacketed)	24"	24"	24"	1
Drain	12"	12"	6"	
Fuel Pipelines				2

Notes:

1. If Clearance Cannot be Met:
   - If Clearance is Less than 12", Jacket Sewer Line with Reinforced Concrete (Per Hawaiian Electric's Std 30-1030) for a Distance of 5' Plus Pipe Diameter.
   - If Clearance is Between 12" and 24", Jacket Sewer Line with Plain Concrete.

2. All Fuel Pipeline Crossings Shall be Reviewed and Approved by The Company that Owns and Maintains It.

3. For Situations with 0" Minimum Separation, a 6" Separation is Recommended.

4. Clearances Measured from Outer Edges or Diameters of Utilities. Whenever Concrete Jackets are Involved, Clearances Shall be Total Clear Distance Between the Concrete Jacket and Utility Concerned.

5. 36" Clearance is Required for Trenchless Installation Work.

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

RUSSELL K. MORI
LICENSED PROFESSIONAL ENGINEER
No. 9013-E
HAWAII, U.S.A.
MK ENGINEERS, LTD.
LICENSE EXPIRATION DATE: 4/30/20
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

HECo NOTES - 2

FORT BARRETTE ROAD OPERATIONAL IMPROVEMENTS
Roosevelt Avenue to Farrington Highway
Project No. 901A-01-19

Scale: Not to Scale Date: Jan. 2020

SHEET No. E-3 OF 32 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	901A-01-19	2020	139	167

HAWAIIAN ELECTRIC COMPANY NOTES (CONT'D):

The Contractor Shall Notify The Construction Manager & Hawaiian Electric Of Any Heat Sources (Power Cable Duct Bank, Steamline, etc.) Encountered That Are Not Properly Identified On The Drawing.

15. Idemnity

The Contractor Shall Indemnify, Defend and Hold Harmless Hawaiian Electric from And Against all Losses, Damages, Claims and Actions, Including but not Limited to Reasonable Attorney's Fees and Costs Based Upon or Arising Out of Damage to Property or Injuries to Persons, or Other Tortious Acts Caused or Contributed to by Contractor or Anyone Acting Under its Direction or Control or on its Behalf; Provided Contractor's Indemnity Shall not be Applicable to Any Liability Based Upon the Sole Negligence of Hawaiian Electric.

Additional Notes When Work Involves Construction of Hawaiian Electric Facilites

16. Schedule

Contractor Shall Furnish His Construction Schedule Six (6) Months Prior to Starting Work on Hawaiian Electric Facilities. Contractor Shall Give Hawaiian Electric, in Writing, Three (3) Months Notice to Proceed with Hawaiian Electric's Portion of Work.

17. Authority

All Construction, Restoration Work, and Inspection Shall be Subject to Whichever Governmental Agency has Authority Over the Work.

18. Specifications

Construction of Hawaiian Electric's Underground Facilities Shall be Constructed in Accordance with The Latest Revisions of Hawaiian Electric Specifications CS7001, CS7003, CS7202, CS9301, and CS9401 and Applicable Hawaiian Electric Standards.

19. Construction

Contractor Shall Furnish All Labor, Materials, Equipment, and Services to Properly Perform and Fully Complete All Work Shown on the Contract, Drawings, and Specifications. All Materials Shall be New and Manufactured in the United States of America. All Manhole, Handhole, and Ductline Installations Shall be Inspected and Approved by Hawaiian Electric Prior to Excavation and Prior to Placing Concrete. Contractor Shall Notify Hawaii Electric's Inspection Group at 543-4325 at Least Five (5) Working Days Prior to Installing Facilities or Placing Concrete.

Contractor to Coordinate Work to Break into Hawaiian Electric's Existing Electrical Facilities with Hawaiian Electric's Inspection Group at 543-4325 at Least Ten (10) Working Days in Advance.

20. Stakeout

The Contractor Shall Arrange for Toneouts of All Underground Facilities and Shall Stakeout All Proposed Hawaiian Electric Facilities Within the Project Area so as to Not Conflict with Any Utility (Existing or Proposed) and Any Proposed Construction or Improvement Work for Verification by Hawaiian Electric Before Proceeding with Hawaiian Electric Work.

21. Ductlines

All Ductline Installations Shall be PVC Schedule 40 Encased in Concrete, Unless Otherwise Noted. All Completed Ductlines Shall be Mandrel Tested by the Contractor in the Presence of Hawaiian Electric's Inspector Using Hawaiian Electric's Standard Practice. The Contractor Shall Install 1800# Tensile Strength Muletape Pull Line in All Completed Ductlines After Mandrel Testing is Complete.

22. Joint Pole Removal

The Last Joint Pole Occupant off the Poles Shall Remove the Poles.

23. As-Built Plans

The Contractor Shall Provide Hawaiian Electric with a Set of Electronic and Hard Copy Plans of Each Sheet Showing the Offsets, Stationing, and Vertical Elevation of the Duct Line(s) Constructed.

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

RUSSELL K. MORI
LICENSED PROFESSIONAL ENGINEER
No. 9013-E
11/19/20
HAWAII, U.S.A.

MK ENGINEERS, LTD.
LICENSE EXPIRATION DATE: 4/30/20
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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

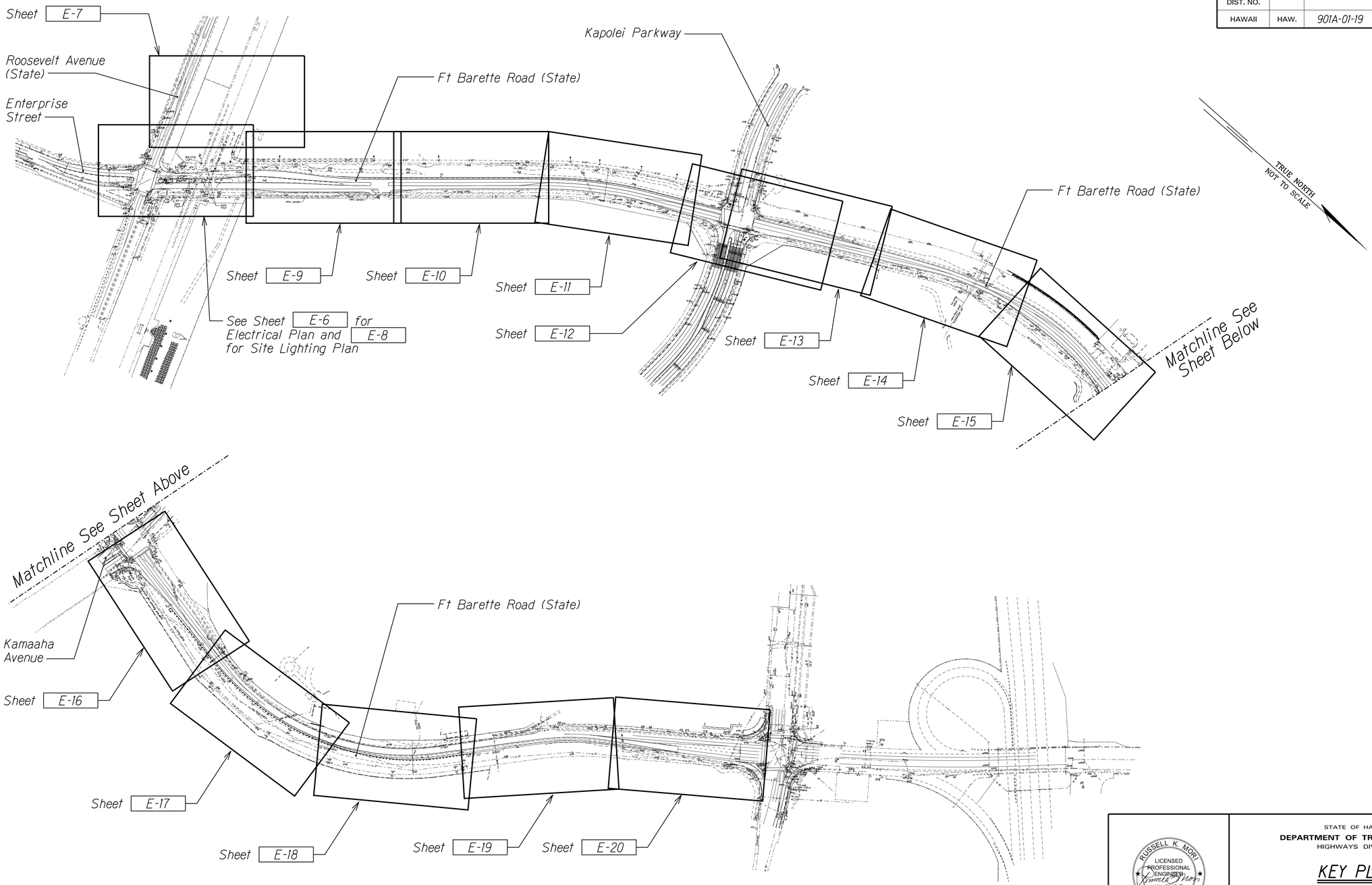
HECo NOTES - 3

FORT BARRETTE ROAD OPERATIONAL IMPROVEMENTS
Roosevelt Avenue to Farrington Highway
Project No. 901A-01-19

Scale: Not to Scale Date: Jan. 2020

SHEET No. E-4 OF 32 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	901A-01-19	2020	140	167



KEY PLAN
NOT TO SCALE

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

RUSSELL K. MORI
LICENSED PROFESSIONAL ENGINEER
No. 9013-E
2/9/20
HAWAII, U.S.A.

MK ENGINEERS, LTD.
LICENSE EXPIRATION DATE: 4/30/20
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DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

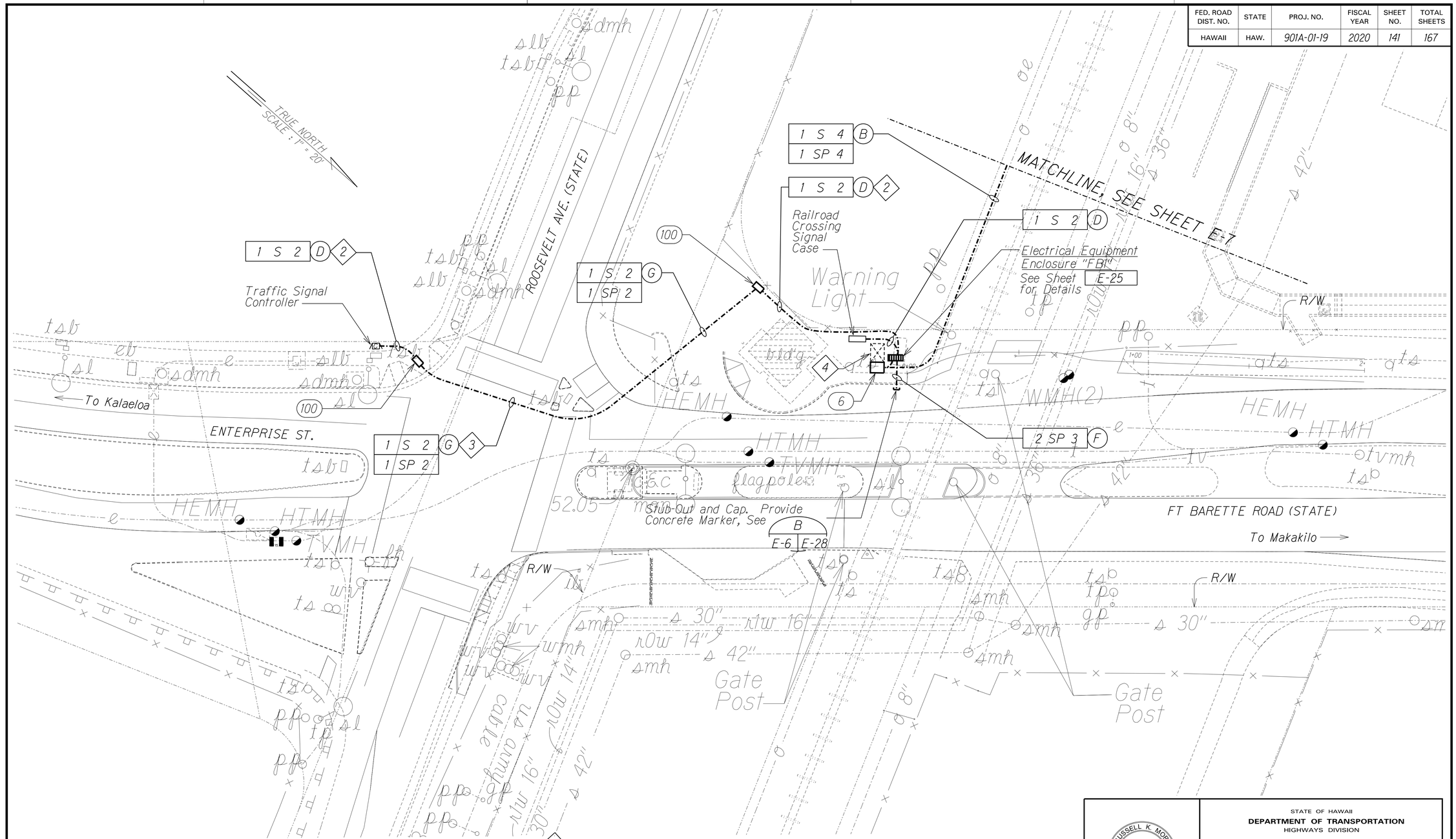
KEY PLAN

FORT BARRETTE ROAD OPERATIONAL IMPROVEMENTS
Roosevelt Avenue to Farrington Highway
Project No. 901A-01-19

Scale: Not to Scale Date: Jan. 2020

SHEET No. E-5 OF 32 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	901A-01-19	2020	141	167



SITE ELECTRICAL PLAN - 1A

SCALE: 1" = 20'-0"

NOTES:

1. ——— Light Lines Denote Existing Condition
   ——— Bold Lines Denote New Work

2. Sawcut and Restore Concrete Sidewalk to Facilitate Ductline Installation. See State DOT Standard Plan D-15 for Details.
3. Sawcut and Restore A.C. Pavement to Facilitate Ductline Installation. See Duct Section Detail on Sheet E-29 .
4. Space for Future HECo Pad-Mounted Transformer.

GRAPHIC SCALE
0' 20' 40' 60'
1" = 20'

ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
	DRAWN BY	
	TRACED BY	
	DESIGNED BY	
NOTE BOOK	QUANTITIES BY	
	CHECKED BY	
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RUSSELL K. MORI
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No. 9013-E
HAWAII, U.S.A.
MK ENGINEERS, LTD.
LICENSE EXPIRATION DATE: 4/30/20
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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

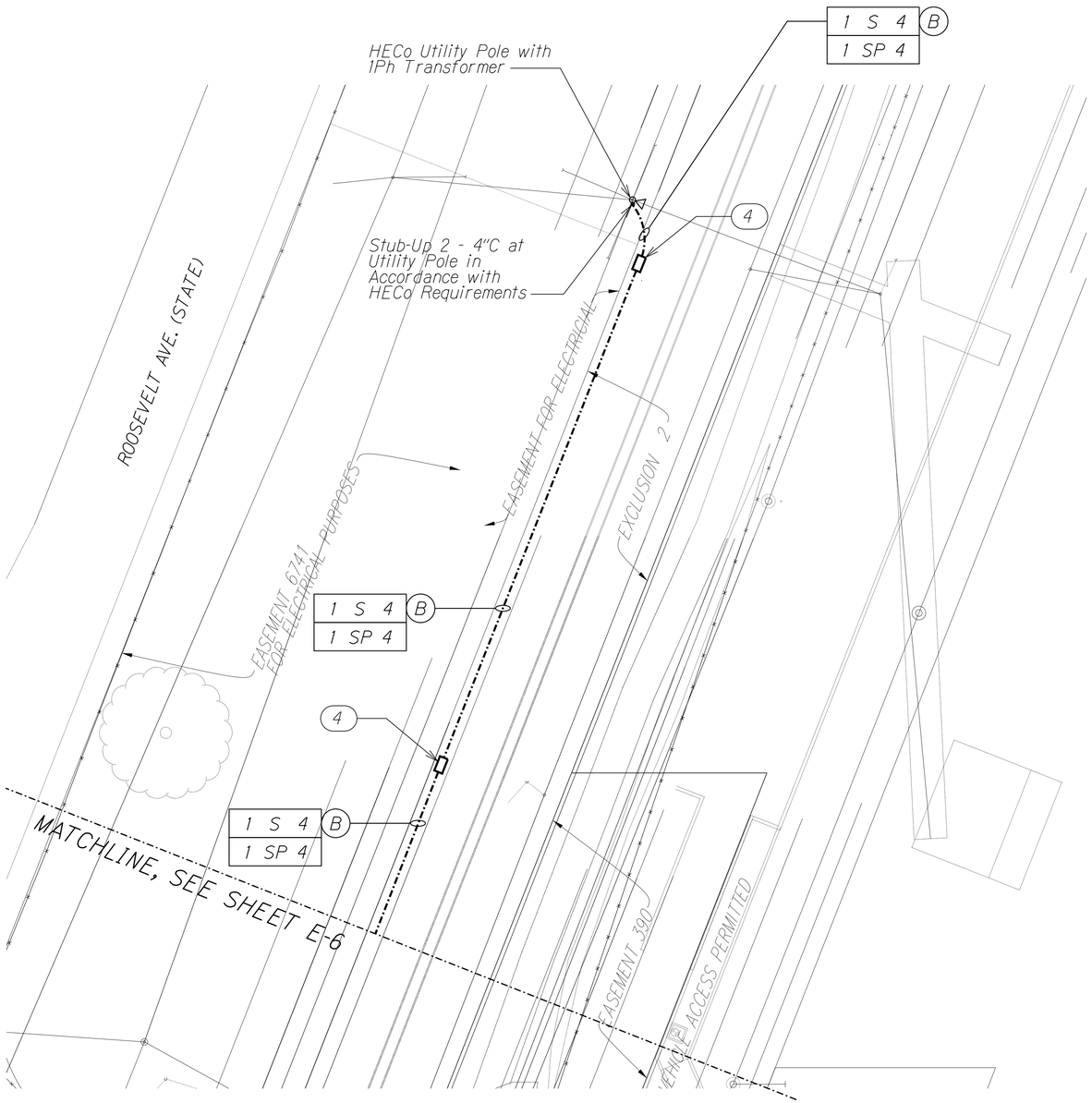
SITE ELECTRICAL PLAN - 1A

FORT BARRETTE ROAD OPERATIONAL IMPROVEMENTS
Roosevelt Avenue to Farrington Highway
Project No. 901A-01-19

Scale: 1"=20' Date: Jan. 2020

SHEET No. E-6 OF 32 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	901A-01-19	2020	142	167



TRUE NORTH
SCALE : 1" = 20'

SITE ELECTRICAL PLAN - 1B

SCALE: 1" = 20'-0"

NOTES:

1. ——— Light Lines Denote Existing Condition
   ——— Bold Lines Denote New Work

GRAPHIC SCALE

0' 20' 40' 60'

1" = 20'

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

RUSSELL K. MORI
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No. 9013-E
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MK ENGINEERS, LTD.
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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

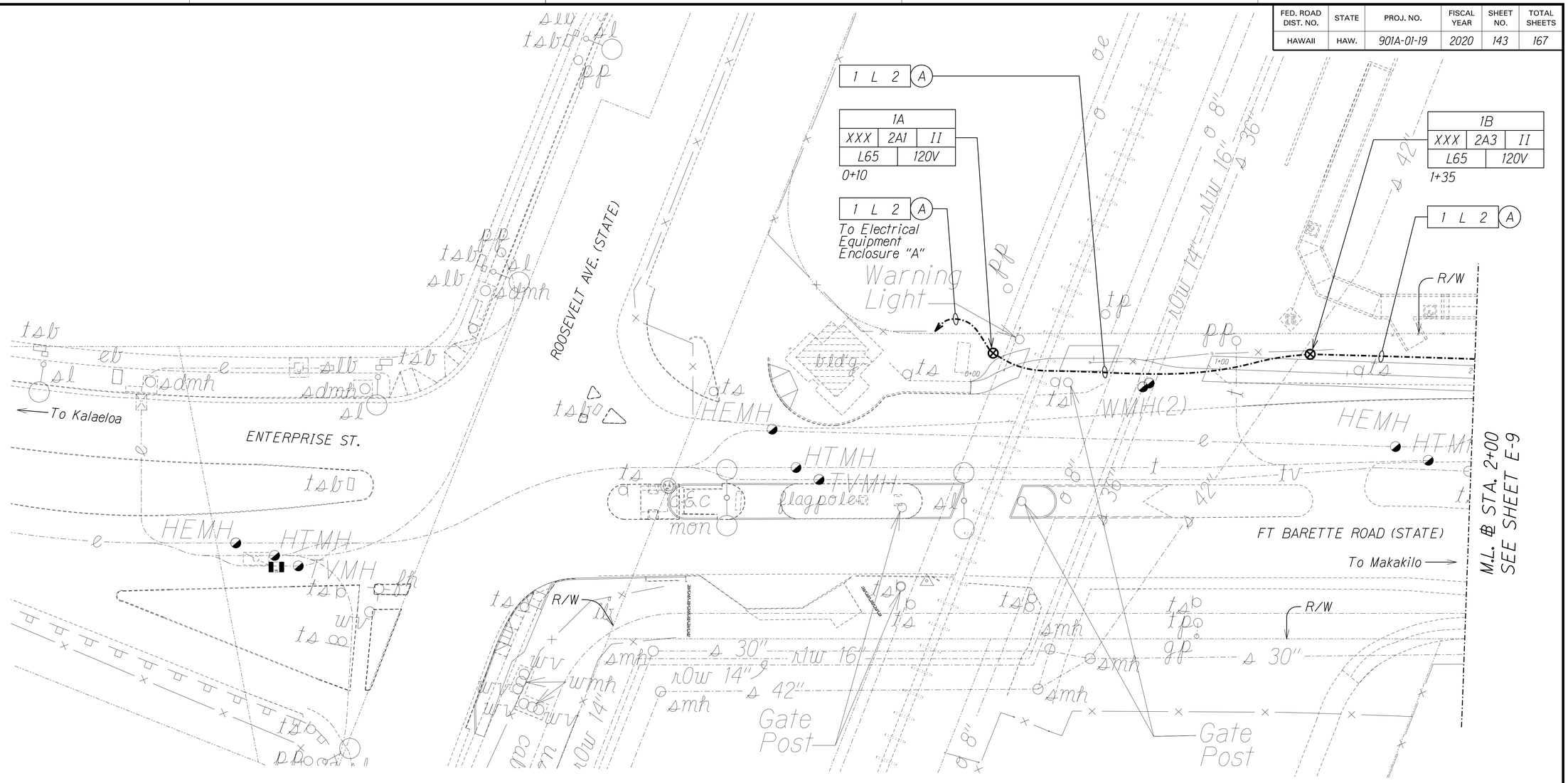
SITE ELECTRICAL PLAN - 1B

FORT BARRETTE ROAD OPERATIONAL IMPROVEMENTS
Roosevelt Avenue to Farrington Highway
Project No. 901A-01-19

Scale: 1"=20' Date: Jan. 2020

SHEET No. E-7 OF 32 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	901A-01-19	2020	143	167



TRUE NORTH
SCALE : 1" = 20'

SITE LIGHTING PLAN - 1A

SCALE: 1" = 20'-0"

NOTES:

1. ——— Light Lines Denote Existing Condition
   ——— Bold Lines Denote New Work

GRAPHIC SCALE
0' 20' 40' 60'
1" = 20'

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

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LICENSED PROFESSIONAL ENGINEER
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4/9/20
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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

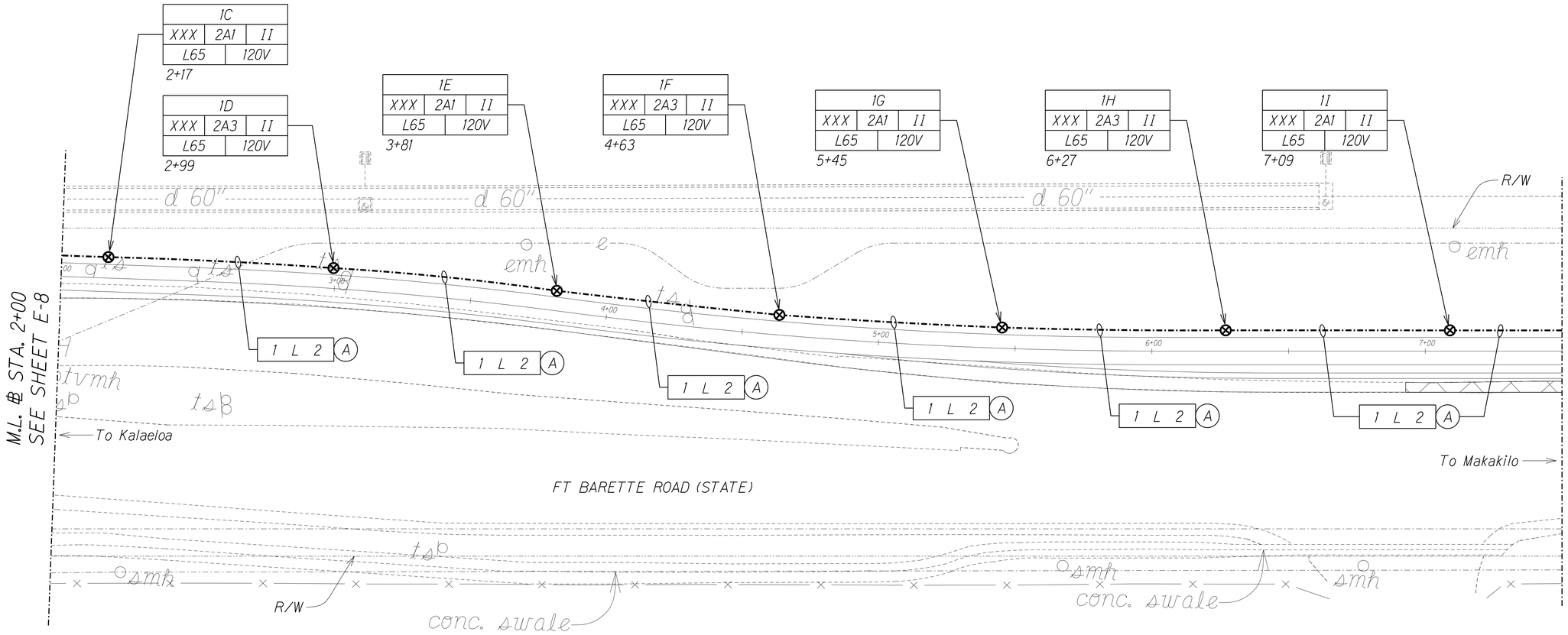
SITE LIGHTING PLAN - 1A

FORT BARRETTE ROAD OPERATIONAL IMPROVEMENTS
Roosevelt Avenue to Farrington Highway
Project No. 901A-01-19

Scale: 1"=20' Date: Jan. 2020

SHEET No. E-8 OF 32 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	901A-01-19	2020	144	167



TRUE NORTH
SCALE : 1" = 20'

SITE LIGHTING PLAN - 1B

SCALE: 1" = 20'-0"

NOTES:

1. ——— Light Lines Denote Existing Condition
   ——— Bold Lines Denote New Work

GRAPHIC SCALE

0' 20' 40' 60'

1" = 20'

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

RUSSELL K. MORI
LICENSED PROFESSIONAL ENGINEER
No. 9013-E
3/9/20
HAWAII, U.S.A.

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LICENSE EXPIRATION DATE: 4/30/20
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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

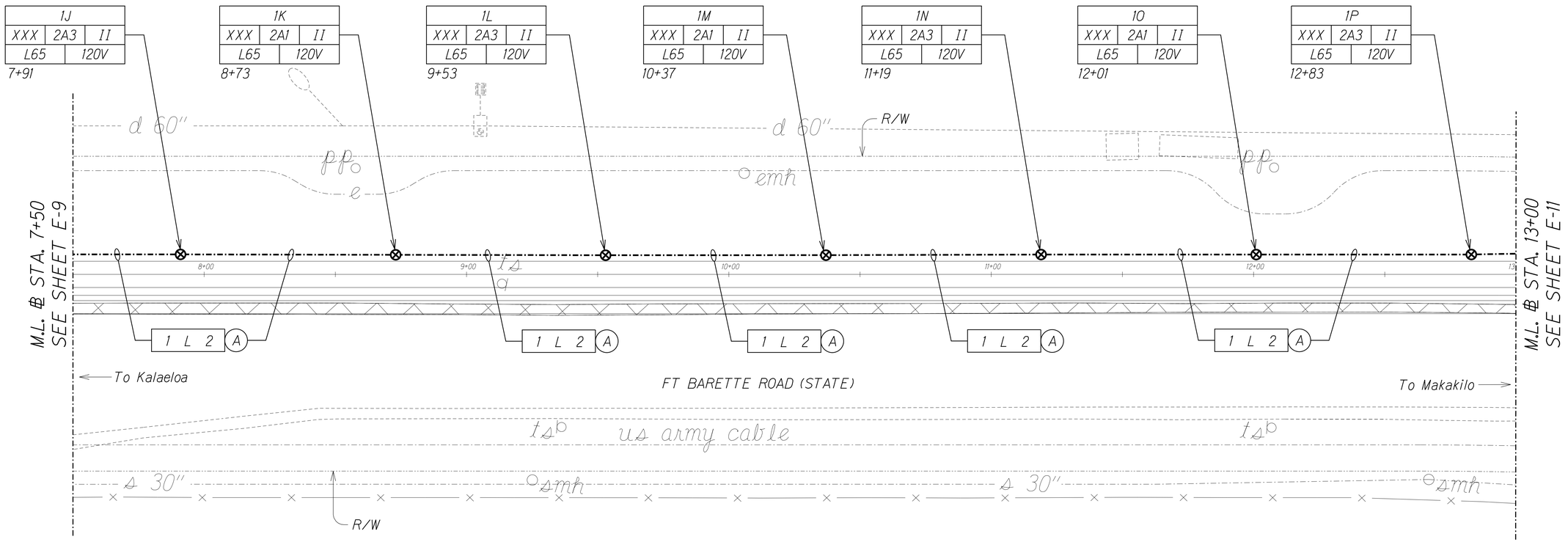
SITE LIGHTING PLAN - 1B

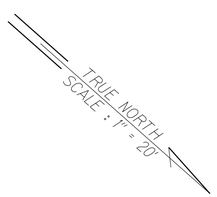
FORT BARRETTE ROAD OPERATIONAL IMPROVEMENTS
Roosevelt Avenue to Farrington Highway
Project No. 901A-01-19

Scale: 1"=20' Date: Jan. 2020

SHEET No. E-9 OF 32 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	901A-01-19	2020	145	167





SITE LIGHTING PLAN - 1C

SCALE: 1" = 20'-0"

NOTES:

1. ——— Light Lines Denote Existing Condition
   ——— Bold Lines Denote New Work

GRAPHIC SCALE

0' 20' 40' 60'

1" = 20'

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

RUSSELL K. MORI
LICENSED PROFESSIONAL ENGINEER
No. 9013-E
2/9/20
HAWAII, U.S.A.

MK ENGINEERS, LTD.
LICENSE EXPIRATION DATE: 4/30/20
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

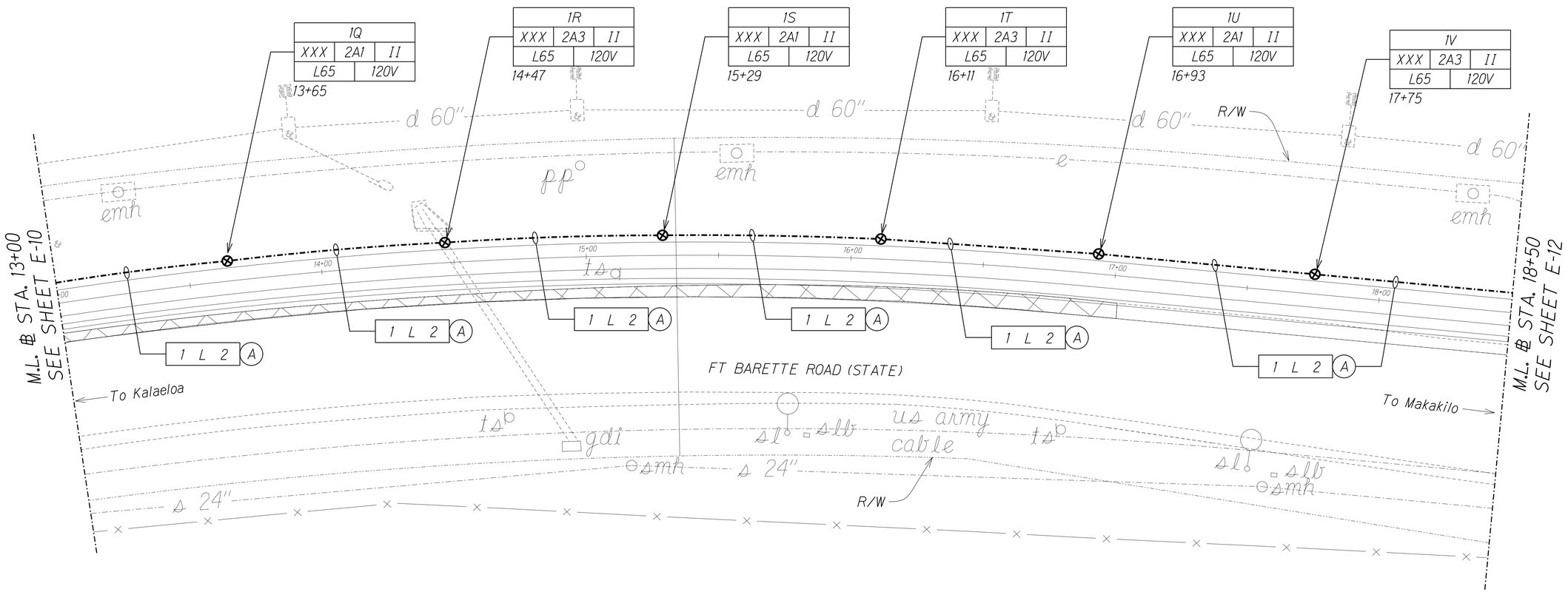
SITE LIGHTING PLAN - 1C

FORT BARRETTE ROAD OPERATIONAL IMPROVEMENTS
Roosevelt Avenue to Farrington Highway
Project No. 901A-01-19

Scale: 1"=20' Date: Jan. 2020

SHEET No. E-10 OF 32 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	901A-01-19	2020	146	167



TRUE NORTH
SCALE : 1" = 20'

SITE LIGHTING PLAN - 1D

SCALE: 1" = 20'-0"

NOTES:

1. ——— Light Lines Denote Existing Condition
   ——— Bold Lines Denote New Work

GRAPHIC SCALE
0' 20' 40' 60'
1" = 20'

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

RUSSELL K. MORI
LICENSED PROFESSIONAL ENGINEER
No. 9013-E
5/31/20
HAWAII, U.S.A.

MK ENGINEERS, LTD.
LICENSE EXPIRATION DATE: 4/30/20
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

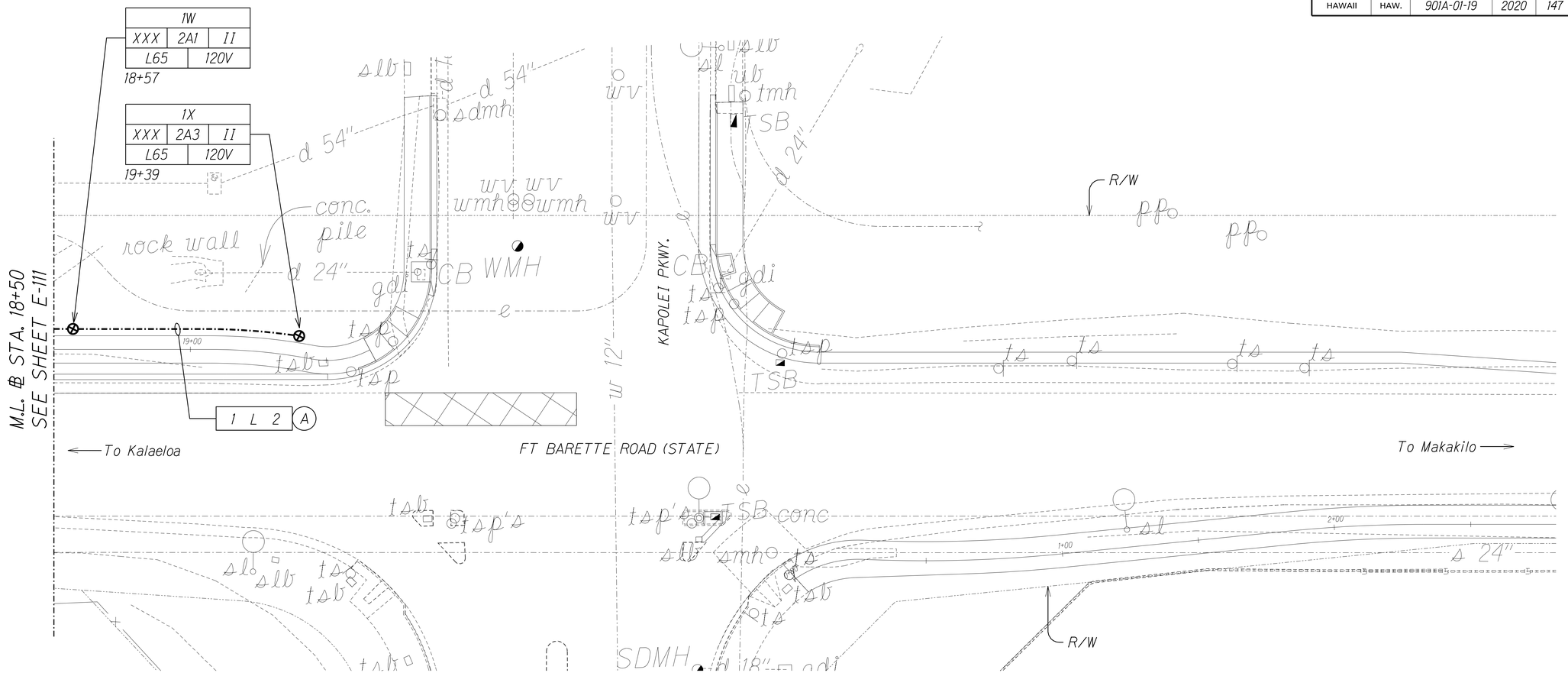
SITE LIGHTING PLAN - 1D

FORT BARRETTE ROAD OPERATIONAL IMPROVEMENTS
Roosevelt Avenue to Farrington Highway
Project No. 901A-01-19

Scale: 1"=20' Date: Jan. 2020

SHEET No. E-11 OF 32 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	901A-01-19	2020	147	167



TRUE NORTH
SCALE : 1" = 20'

SITE LIGHTING PLAN - 1E

SCALE: 1" = 20'-0"

NOTES:

1. ——— Light Lines Denote Existing Condition
   ——— Bold Lines Denote New Work

GRAPHIC SCALE

0' 20' 40' 60'

1" = 20'

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

RUSSELL K. MORI
LICENSED PROFESSIONAL ENGINEER
No. 9013-E
3/9/20
HAWAII, U.S.A.

MK ENGINEERS, LTD.
LICENSE EXPIRATION DATE: 4/30/20
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

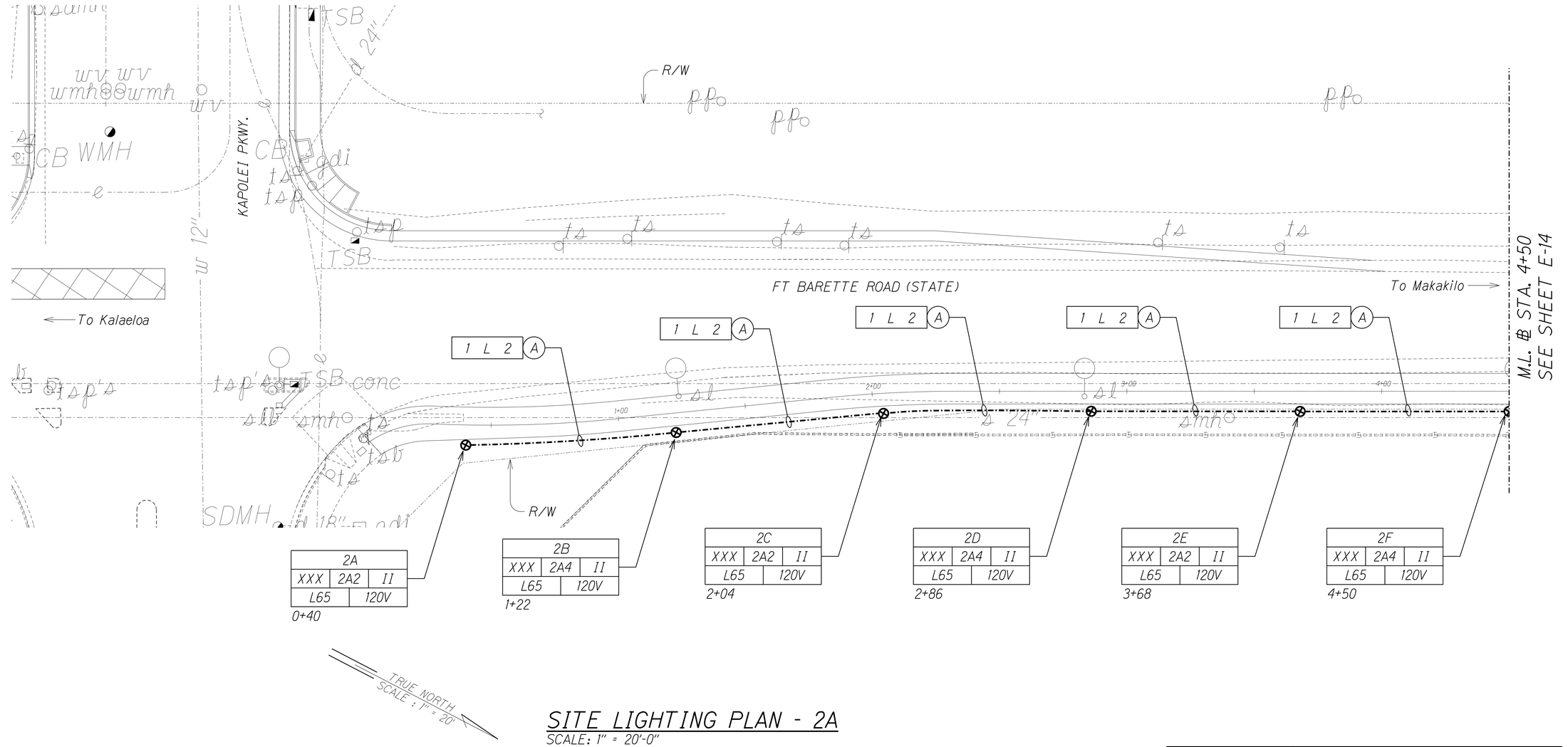
SITE LIGHTING PLAN - 1E

FORT BARRETTE ROAD OPERATIONAL IMPROVEMENTS
Roosevelt Avenue to Farrington Highway
Project No. 901A-01-19

Scale: 1"=20' Date: Jan. 2020

SHEET No. E-12 OF 32 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	901A-01-19	2020	148	167



SITE LIGHTING PLAN - 2A

SCALE: 1" = 20'-0"

NOTES:

1. ——— Light Lines Denote Existing Condition
   ——— Bold Lines Denote New Work

GRAPHIC SCALE

0' 20' 40' 60'

1" = 20'

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

RUSSELL K. MORI
LICENSED PROFESSIONAL ENGINEER
No. 9013-E
2/9/20
HAWAII, U.S.A.

MK ENGINEERS, LTD.
LICENSE EXPIRATION DATE: 4/30/20
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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

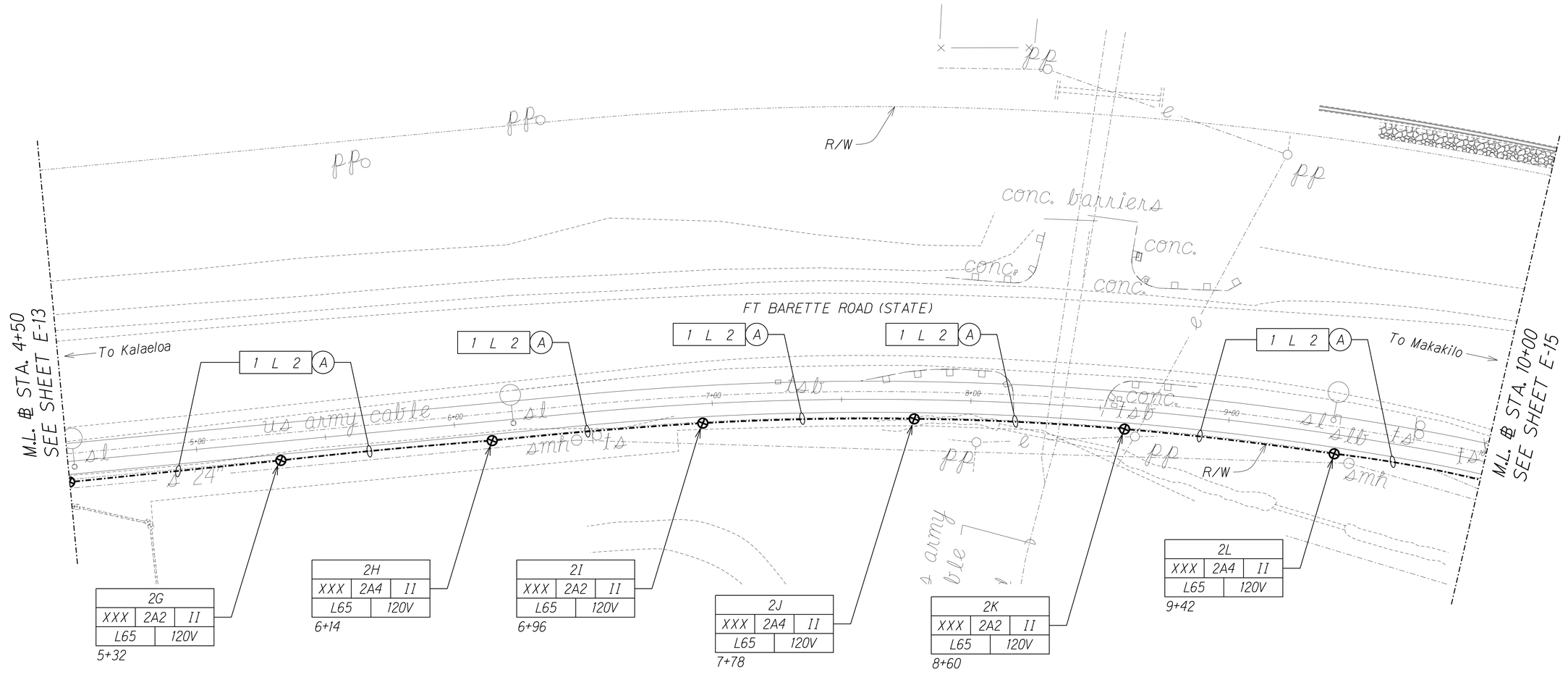
SITE LIGHTING PLAN - 2A

FORT BARRETTE ROAD OPERATIONAL IMPROVEMENTS
Roosevelt Avenue to Farrington Highway
Project No. 901A-01-19

Scale: 1"=20' Date: Jan. 2020

SHEET No. E-13 OF 32 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	901A-01-19	2020	149	167



SITE LIGHTING PLAN - 2B

SCALE: 1" = 20'-0"

NOTES:

1. ——— Light Lines Denote Existing Condition
   ——— Bold Lines Denote New Work

GRAPHIC SCALE

0' 20' 40' 60'

1" = 20'

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

NOTE BOOK | No.

RUSSELL K. MORI
LICENSED PROFESSIONAL ENGINEER
No. 9013-E
HAWAII, U.S.A.
11/9/20

MK ENGINEERS, LTD.
LICENSE EXPIRATION DATE: 4/30/20
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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

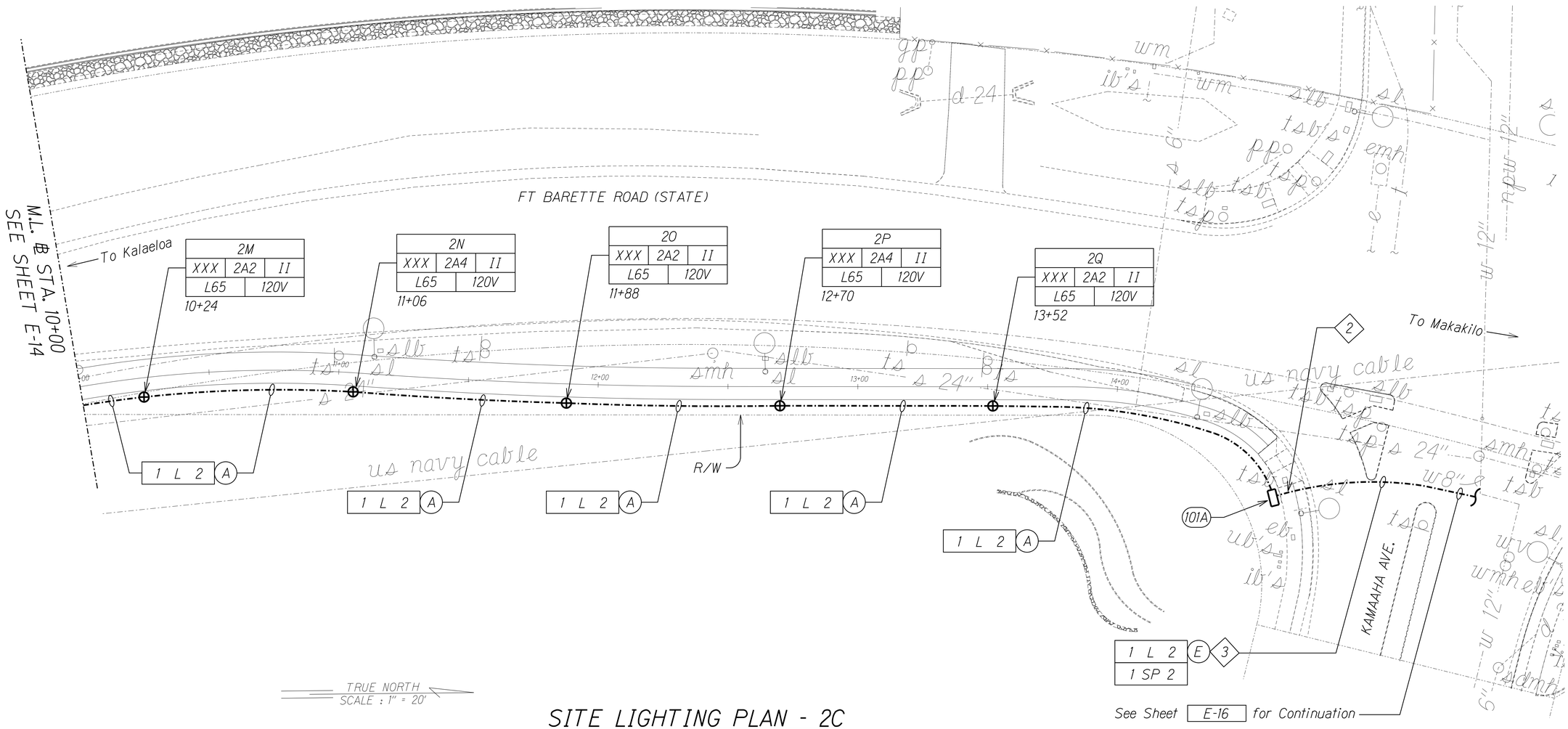
SITE LIGHTING PLAN - 2B

FORT BARRETTE ROAD OPERATIONAL IMPROVEMENTS
Roosevelt Avenue to Farrington Highway
Project No. 901A-01-19

Scale: 1"=20' Date: Jan. 2020

SHEET No. E-14 OF 32 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	901A-01-19	2020	150	167



TRUE NORTH
SCALE : 1" = 20'

SITE LIGHTING PLAN - 2C

SCALE: 1" = 20'-0"

NOTES:

1. ——— Light Lines Denote Existing Condition
   ——— Bold Lines Denote New Work

2. Sawcut and Restore Concrete Sidewalk to Facilitate Ductline Installation. See State DOT Standard Plan D-15 for Details.

3. Sawcut and Restore A.C. Pavement to Facilitate Ductline Installation. See Duct Section Detail on Sheet E-29 .

GRAPHIC SCALE
0' 20' 40' 60'
1" = 20'

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

RUSSELL K. MORI
LICENSED PROFESSIONAL ENGINEER
No. 9013-E
HAWAII, U.S.A.
MK ENGINEERS, LTD.
LICENSE EXPIRATION DATE: 4/30/20
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

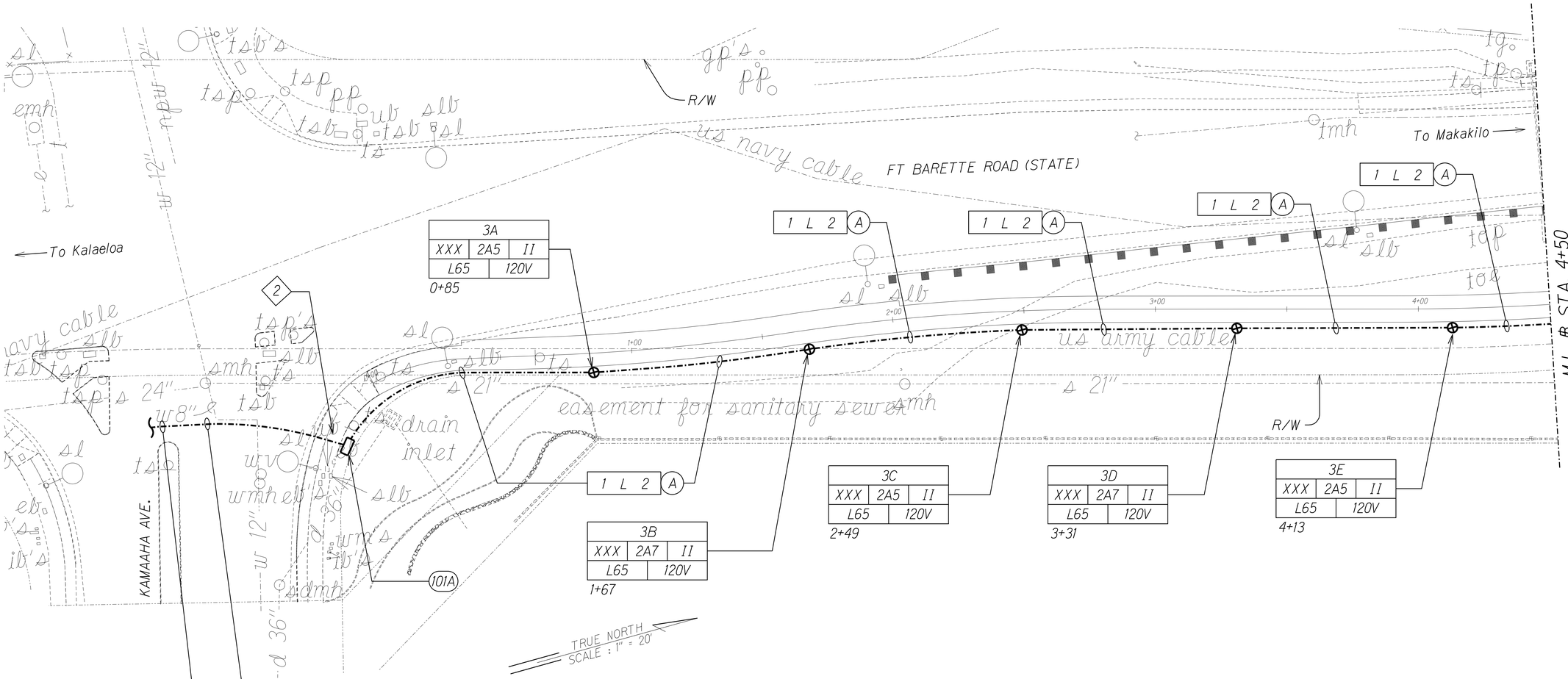
SITE LIGHTING PLAN - 2C

FORT BARRETTE ROAD OPERATIONAL IMPROVEMENTS
Roosevelt Avenue to Farrington Highway
Project No. 901A-01-19

Scale: 1"=20' Date: Jan. 2020

SHEET No. E-15 OF 32 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	901A-01-19	2020	151	167



SITE LIGHTING PLAN - 3A

SCALE: 1" = 20'-0"

NOTES:

1. ——— Light Lines Denote Existing Condition
   ——— Bold Lines Denote New Work
2. Sawcut and Restore Concrete Sidewalk to Facilitate Ductline Installation. See State DOT Standard Plan D-15 for Details.
3. Sawcut and Restore A.C. Pavement to Facilitate Ductline Installation. See Duct Section Detail on Sheet E-29 .

GRAPHIC SCALE
0' 20' 40' 60'
1" = 20'

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

RUSSELL K. MORI
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No. 9013-E
HAWAII, U.S.A.
MK ENGINEERS, LTD.
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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

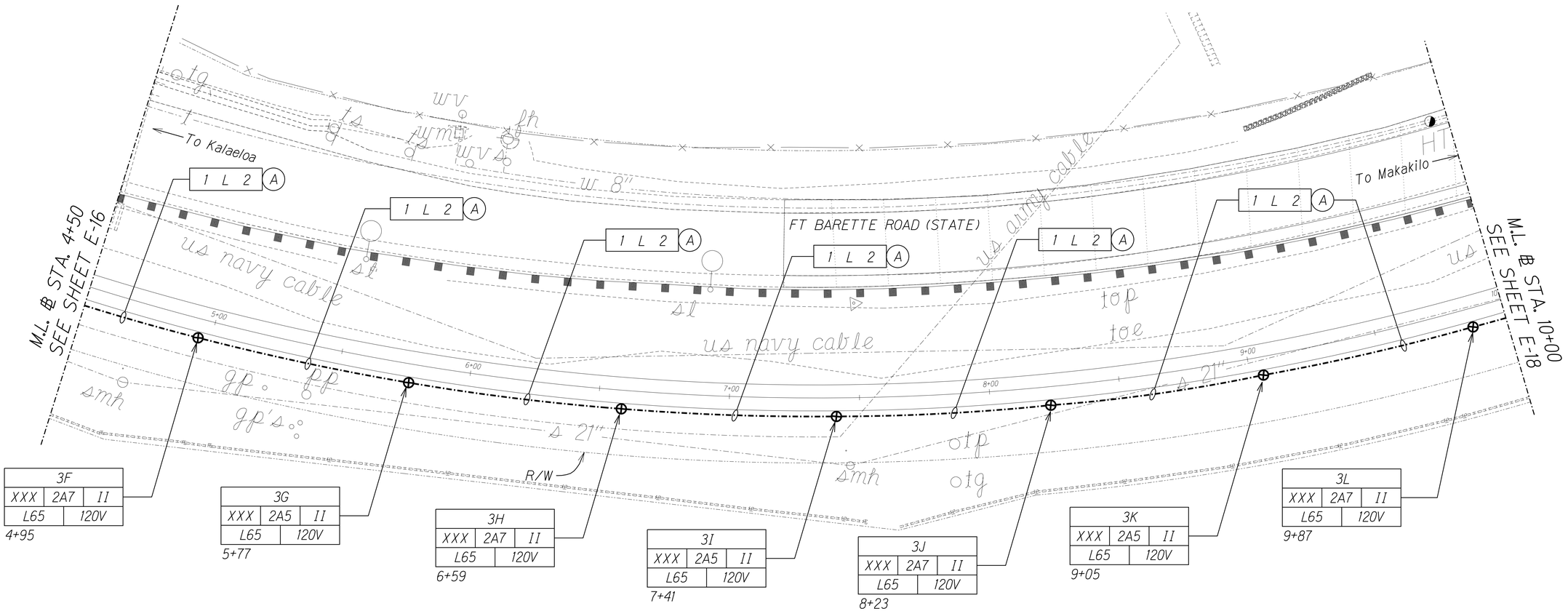
SITE LIGHTING PLAN - 3A

FORT BARRETTE ROAD OPERATIONAL IMPROVEMENTS
Roosevelt Avenue to Farrington Highway
Project No. 901A-01-19

Scale: 1"=20' Date: Jan. 2020

SHEET No. E-16 OF 32 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	901A-01-19	2020	152	167



TRUE NORTH
SCALE : 1" = 20'

SITE LIGHTING PLAN - 3B

SCALE: 1" = 20'-0"

NOTES:

1. ——— Light Lines Denote Existing Condition
   ——— Bold Lines Denote New Work

GRAPHIC SCALE
0' 20' 40' 60'
1" = 20'

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

RUSSELL K. MORI
LICENSED PROFESSIONAL ENGINEER
No. 9013-E
2/9/20
HAWAII, U.S.A.

MK ENGINEERS, LTD.
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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

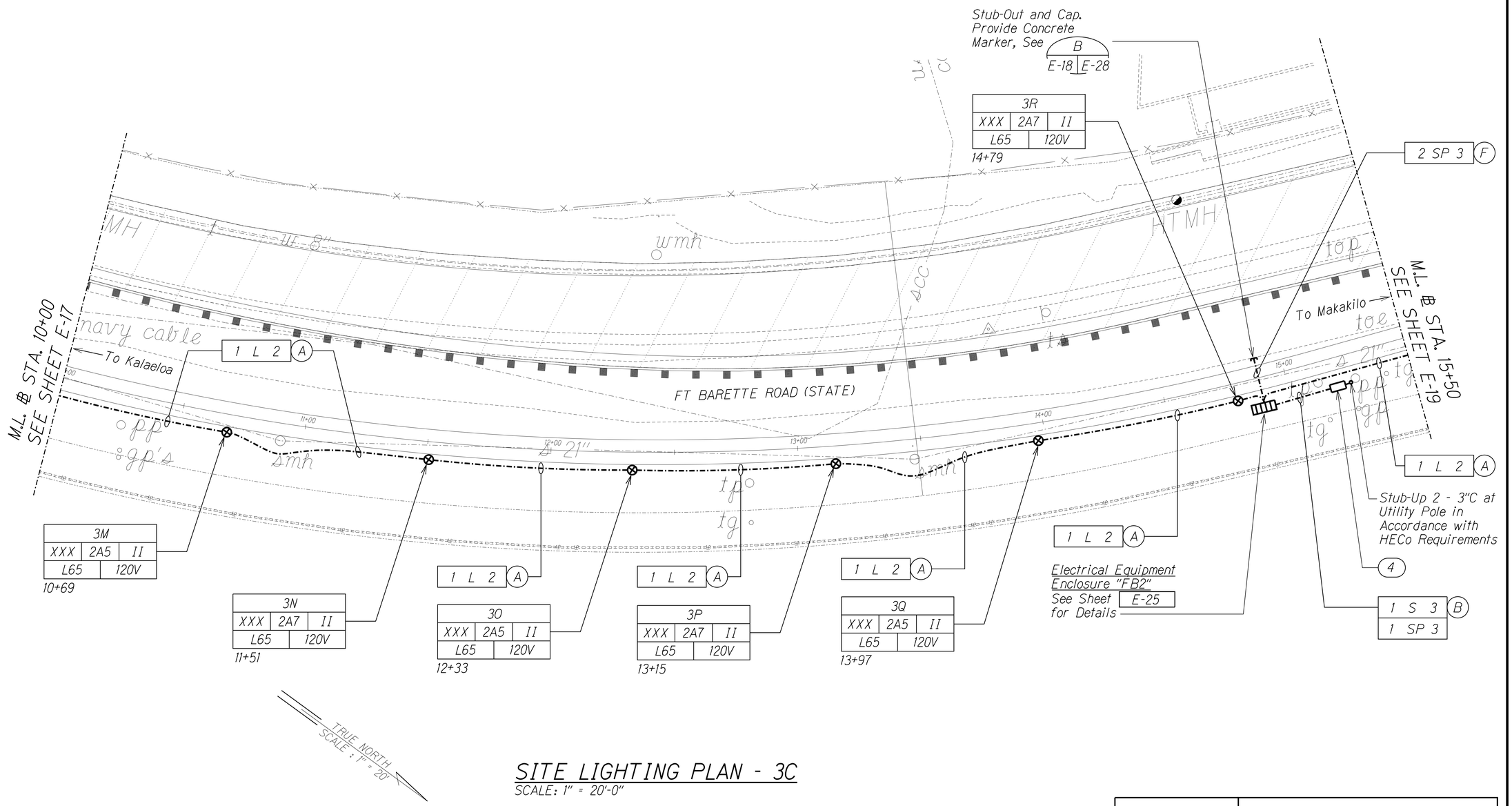
SITE LIGHTING PLAN - 3B

FORT BARRETTE ROAD OPERATIONAL IMPROVEMENTS
Roosevelt Avenue to Farrington Highway
Project No. 901A-01-19

Scale: 1"=20' Date: Jan. 2020

SHEET No. E-17 OF 32 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	901A-01-19	2020	153	167



SITE LIGHTING PLAN - 3C

SCALE: 1" = 20'-0"

NOTES:

1. ——— Light Lines Denote Existing Condition
   ——— Bold Lines Denote New Work

GRAPHIC SCALE

0' 20' 40' 60'

1" = 20'

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

RUSSELL K. MORI
LICENSED PROFESSIONAL ENGINEER
No. 9013-E
5/8/20
HAWAII, U.S.A.

MK ENGINEERS, LTD.
LICENSE EXPIRATION DATE: 4/30/20
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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

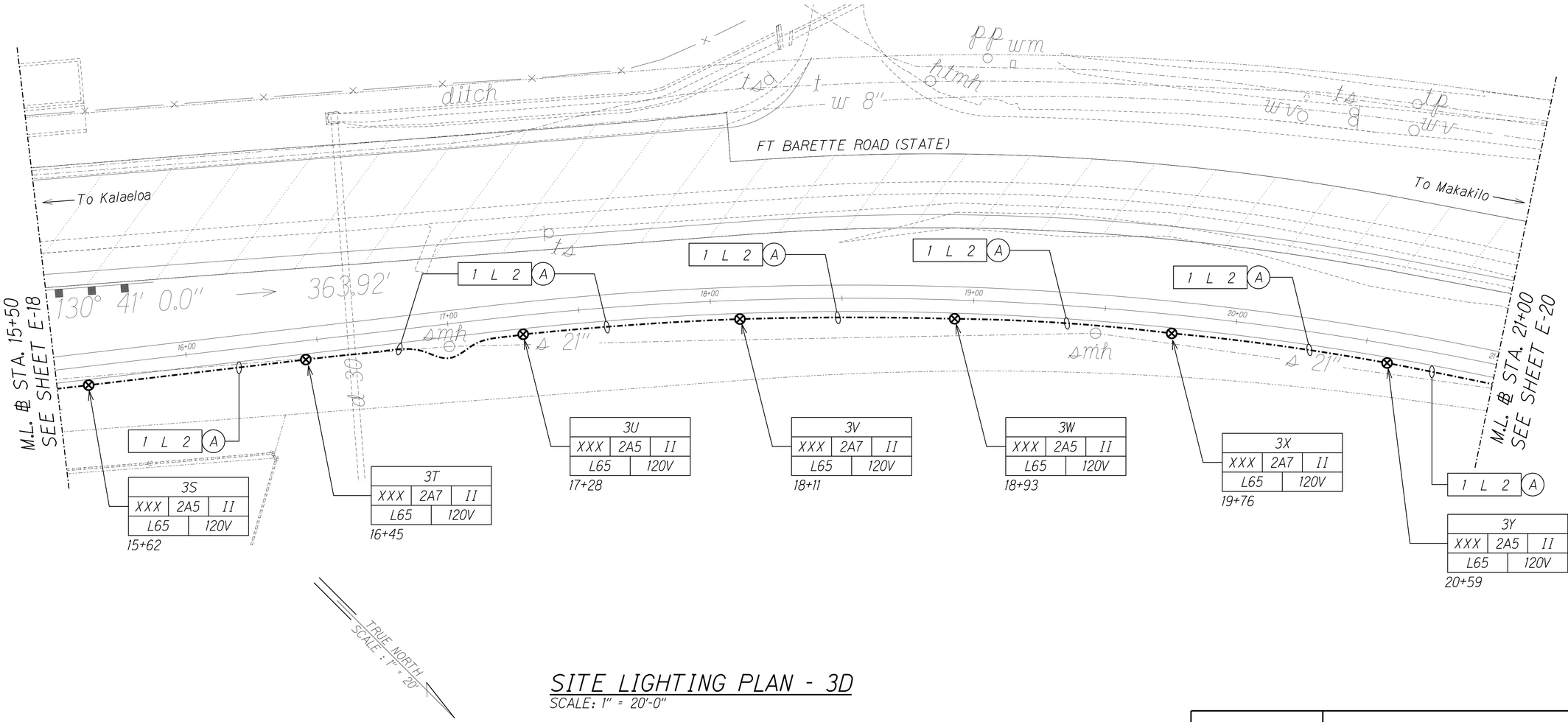
SITE LIGHTING PLAN - 3C

FORT BARRETTE ROAD OPERATIONAL IMPROVEMENTS
Roosevelt Avenue to Farrington Highway
Project No. 901A-01-19

Scale: 1"=20' Date: Jan. 2020

SHEET No. E-18 OF 32 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	901A-01-19	2020	154	167



SITE LIGHTING PLAN - 3D

SCALE: 1" = 20'-0"

NOTES:

1. ——— Light Lines Denote Existing Condition
   ——— Bold Lines Denote New Work

GRAPHIC SCALE

0' 20' 40' 60'

1" = 20'

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

RUSSELL K. MORI
LICENSED PROFESSIONAL ENGINEER
No. 9013-E
11/9/20
HAWAII, U.S.A.

MK ENGINEERS, LTD.
LICENSE EXPIRATION DATE: 4/30/20
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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

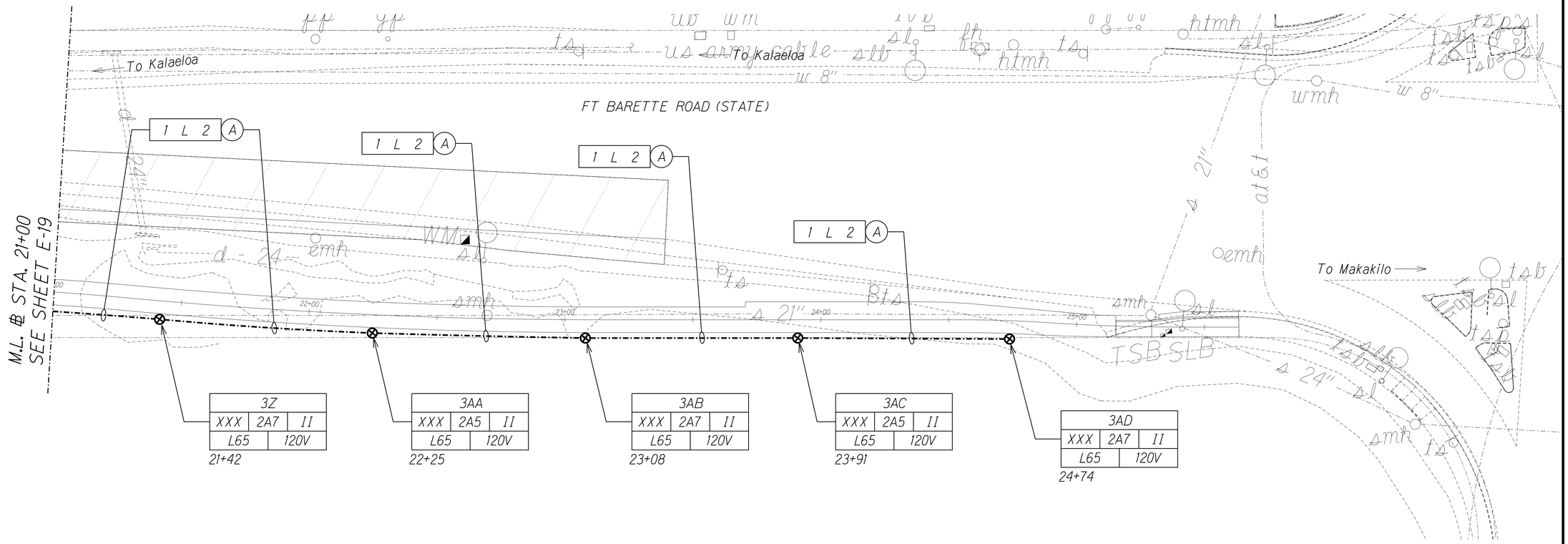
SITE LIGHTING PLAN - 3D

FORT BARRETTE ROAD OPERATIONAL IMPROVEMENTS
Roosevelt Avenue to Farrington Highway
Project No. 901A-01-19

Scale: 1"=20' Date: Jan. 2020

SHEET No. E-19 OF 32 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	901A-01-19	2020	155	167



SITE LIGHTING PLAN - 3E

SCALE: 1" = 20'-0"

NOTES:

1. ——— Light Lines Denote Existing Condition
   ——— Bold Lines Denote New Work

GRAPHIC SCALE

0' 20' 40' 60'

1" = 20'

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

ORIGINAL PLAN
NOTE BOOK
NO.

RUSSELL K. MORI
LICENSED PROFESSIONAL ENGINEER
No. 9013-E
2/3/20
HAWAII, U.S.A.

MK ENGINEERS, LTD.
LICENSE EXPIRATION DATE: 4/30/20
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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

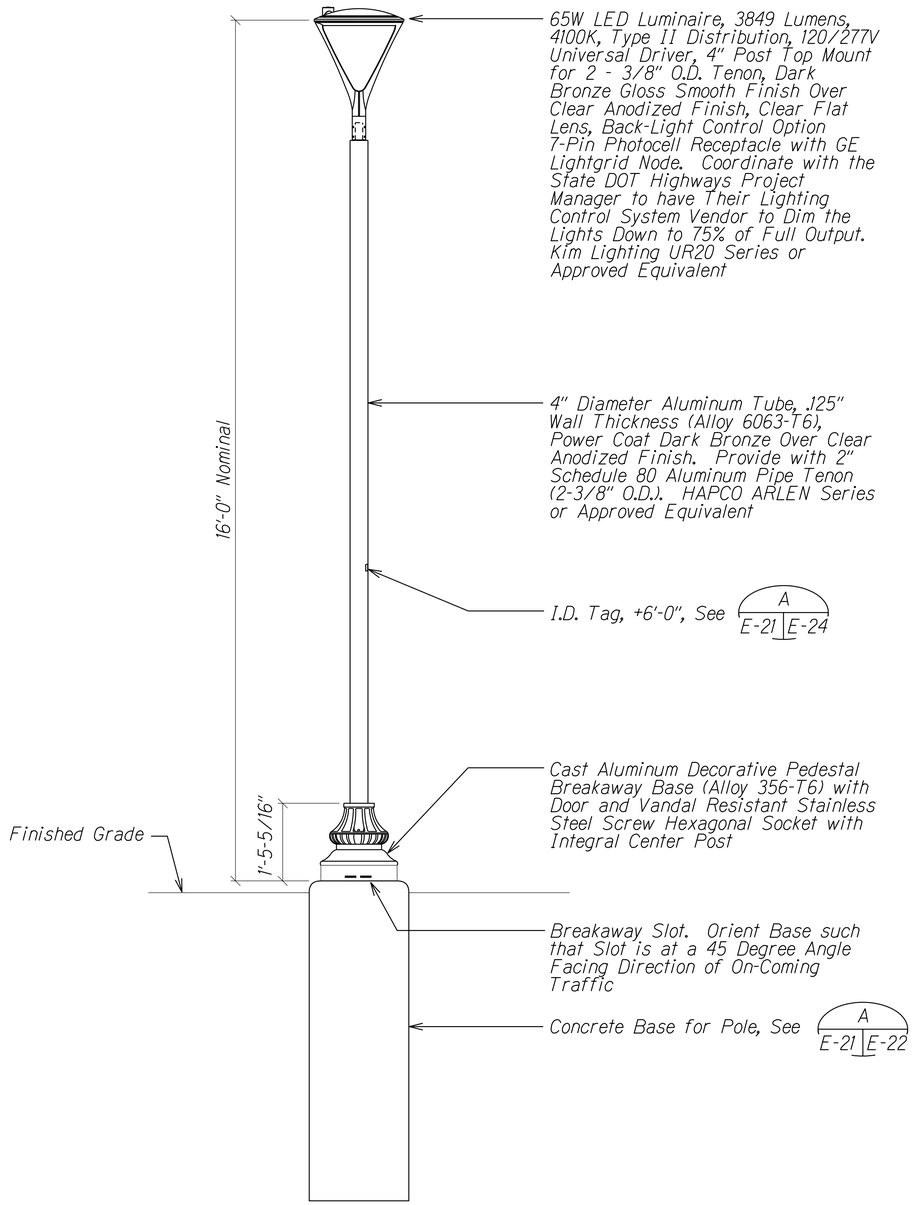
SITE LIGHTING PLAN - 3E

FORT BARRETTE ROAD OPERATIONAL IMPROVEMENTS
Roosevelt Avenue to Farrington Highway
Project No. 901A-01-19

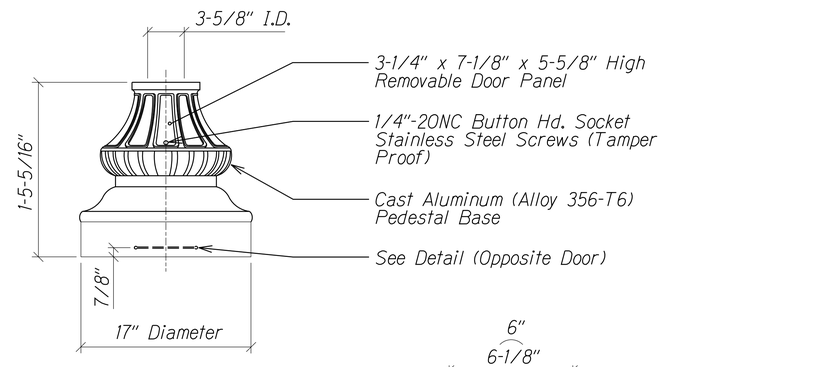
Scale: 1"=20' Date: Jan. 2020

SHEET No. E-20 OF 32 SHEETS

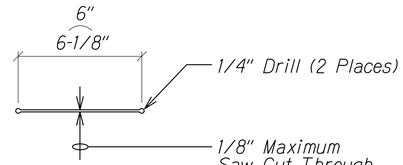
FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	901A-01-19	2020	156	167



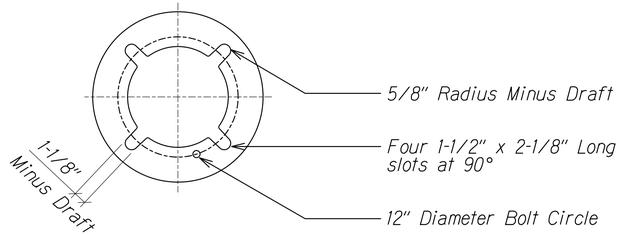
A E-21 E-21 **PATHWAY LIGHT STANDARD DETAIL**
NOT TO SCALE



Elevation



Detail



Plan

B E-21 E-21 **BREAKAWAY BASE DETAIL**
NOT TO SCALE

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

RUSSELL K. MORI LICENSED PROFESSIONAL ENGINEER No. 9013-E 2/9/20 HAWAII, U.S.A.
MK ENGINEERS, LTD.
LICENSE EXPIRATION DATE: 4/30/20
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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

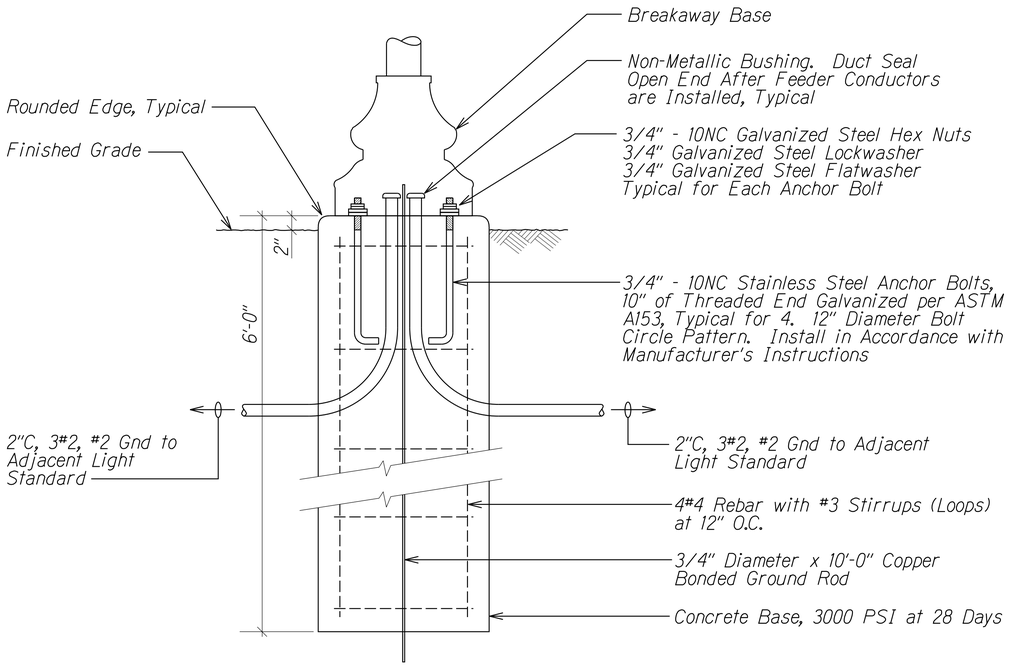
PATHWAY LIGHT STANDARD DETAIL

FORT BARRETTE ROAD OPERATIONAL IMPROVEMENTS
Roosevelt Avenue to Farrington Highway
Project No. 901A-01-19

Scale: Not to Scale Date: Jan. 2020

SHEET No. E-21 OF 32 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	901A-01-19	2020	157	167



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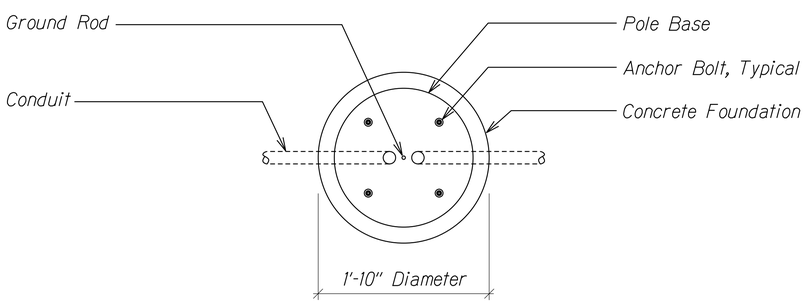
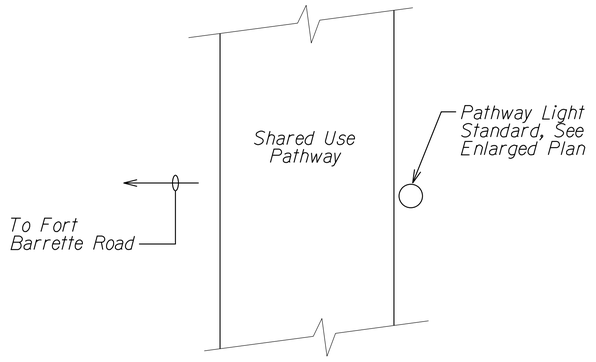
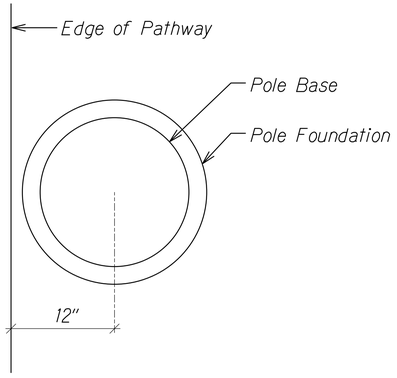


Plan

A E-21 | E-22 TYPICAL POLE BASE DETAIL
NOT TO SCALE



Partial Plan
At Shared Used Pathway



Enlarged Plan
At Light Standard

B E-22 | E-22 PATHWAY LIGHT STANDARD LOCATION DETAIL
NOT TO SCALE

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

RUSSELL K. MORI
LICENSED PROFESSIONAL ENGINEER
No. 9013-E
5/19/20
HAWAII, U.S.A.
MK ENGINEERS, LTD.
LICENSE EXPIRATION DATE: 4/30/20
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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

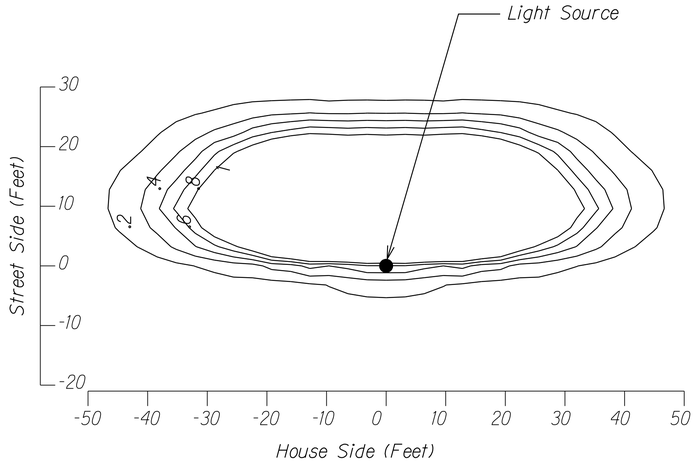
TYPICAL POLE BASE DETAIL

FORT BARRETTE ROAD OPERATIONAL IMPROVEMENTS
Roosevelt Avenue to Farrington Highway
Project No. 901A-01-19

Scale: Not to Scale Date: Jan. 2020

SHEET No. E-22 OF 32 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	901A-01-19	2020	158	167



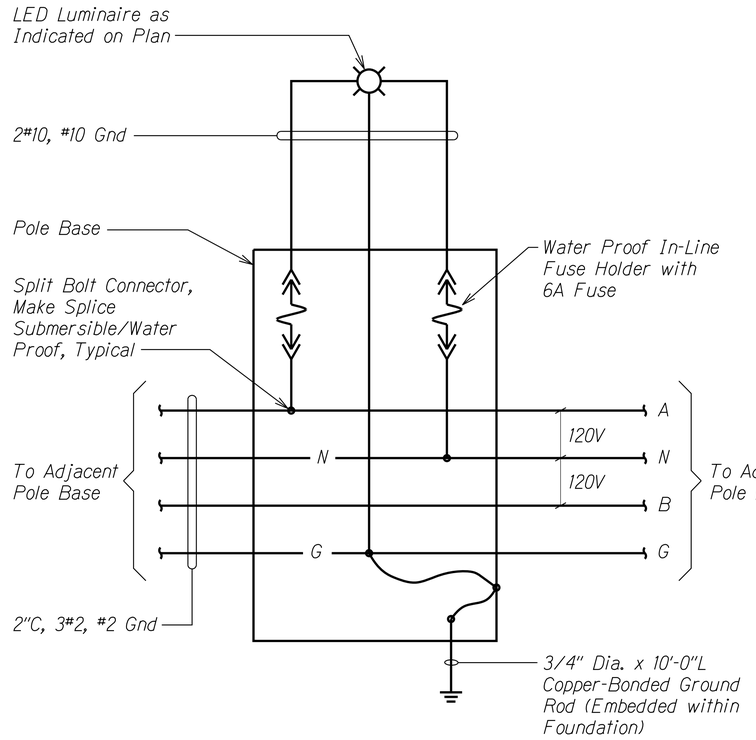
LED LUMINAIRE - ISO FOOT-CANDLE CURVE

PHOTOMETRIC DATA

NOT TO SCALSE

NOTES:

1. Distance Shown in Feet. Values Shown are Initial Foot-Candle and are Based on the Luminaire Mounted 16'-0" Above Grade.



TYPICAL PATHWAY LIGHT
STANDARD WIRING DIAGRAM

NOT TO SCALE

ORIGINAL PLAN
NOTE BOOK
NO.

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

RUSSELL K. MORI
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No. 9013-E
4/30/20
HAWAII, U.S.A.

MK ENGINEERS, LTD.
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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

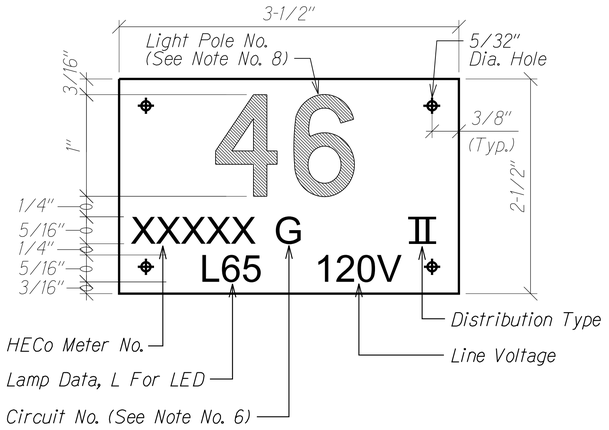
TYPICAL PATHWAY LIGHT
STANDARD WIRING DIAGRAM

FORT BARRETTE ROAD OPERATIONAL IMPROVEMENTS
Roosevelt Avenue to Farrington Highway
Project No. 901A-01-19

Scale: Not to Scale Date: Jan. 2020

SHEET No. E-23 OF 32 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	901A-01-19	2020	159	167



A
E-1 | E-24
E-21

PATHWAY LIGHT POLE TAG DETAIL

NOT TO SCALE

NOTES:

1. Use 3 Ply Laminated Flexible Plastic Black-White-Black Thickness Black Cap Sheet-0.010", White Base Sheet-0.052", Black Base Sheet-0.010".
2. Light Pole Number Size Shall Be 1" High and Engraved 1/8" Wide, White in Color (Number as Required).
3. Nomenclature Size Shall be 5/16" High and Engraved 1/32" Wide, White in Color (HECo Meter Number Panel Board and Circuit Number, Line Voltage, Lamp Data and Refractor Data as Required).
4. Attach to Aluminum and Steel Post with No. 8 Stainless Steel, 1/2" Long Drive Screws in 1/8" Drill Hole. Attach to Wood Poles with 4D Aluminum Nail.
5. Numbers are Inscribed by Cutting Through "Black Cap Sheet" to Expose "White Letters."
6. Nomenclature Required for Systems with Two or More Circuits (Letter Indicates Panel Board, Number Indicates Circuit).
7. Light Numbers Shall be Obtained From the Site Plans.

ORIGINAL PLAN
NOTE BOOK
NO.

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

RUSSELL K. MORI
LICENSED PROFESSIONAL ENGINEER
No. 9013-E
HAWAII, U.S.A.

MK ENGINEERS, LTD.
LICENSE EXPIRATION DATE: 4/30/20
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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

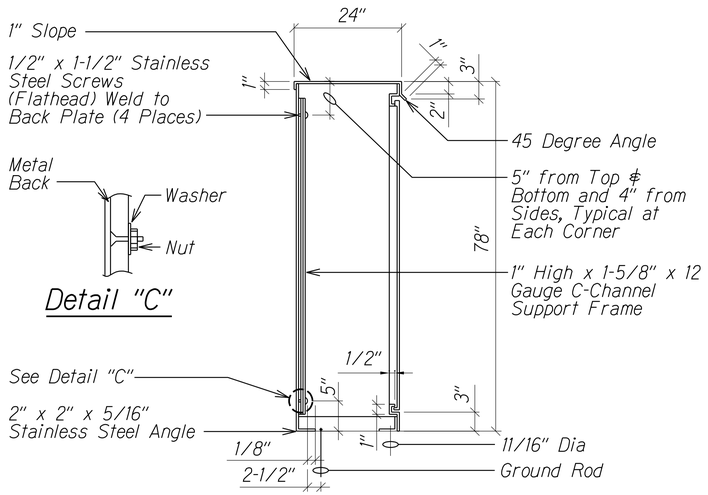
MISCELLANEOUS PATHWAY LIGHT STANDARD DETAILS

FORT BARRETTE ROAD OPERATIONAL IMPROVEMENTS
Roosevelt Avenue to Farrington Highway
Project No. 901A-01-19

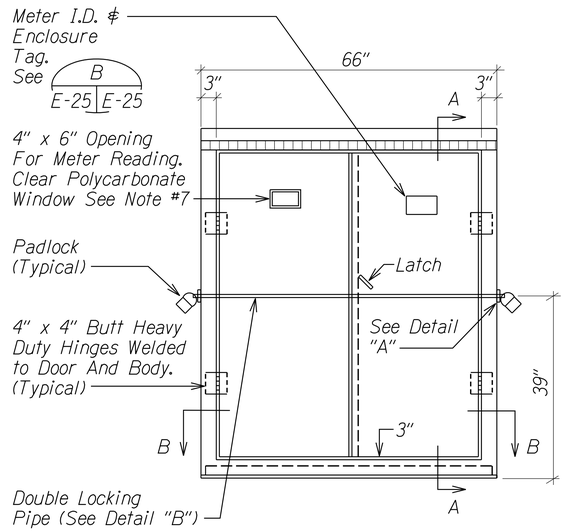
Scale: Not to Scale Date: Jan. 2020

SHEET No. E-24 OF 32 SHEETS

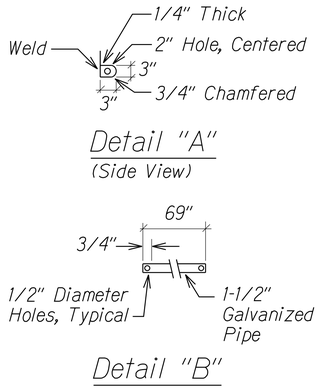
FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	901A-01-19	2020	160	167

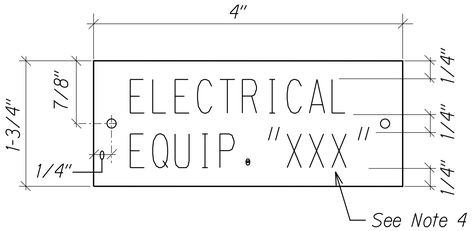


Section "A"



Elevation



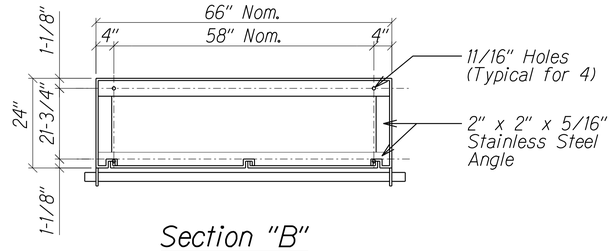


NOTES:

1. Use 2 Ply Plastic - Black, White.
2. Letter Size Shall be 1/2" High and Engraved 1/16" Wide, White in Color.
3. Attach to Equipment Enclosure with No. 7 Stainless Steel Drive Screws.
4. Label as Designated on Plan.

METER EQUIPMENT ID TAG DETAIL

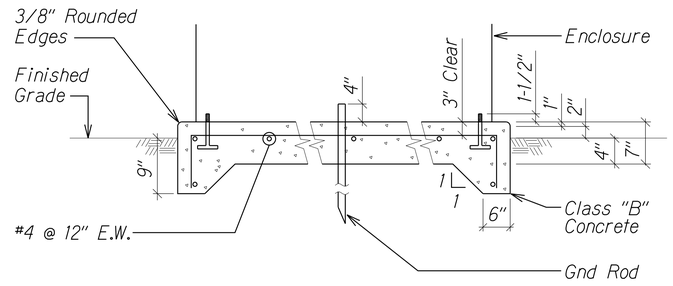
B E-25 | E-25 NTS



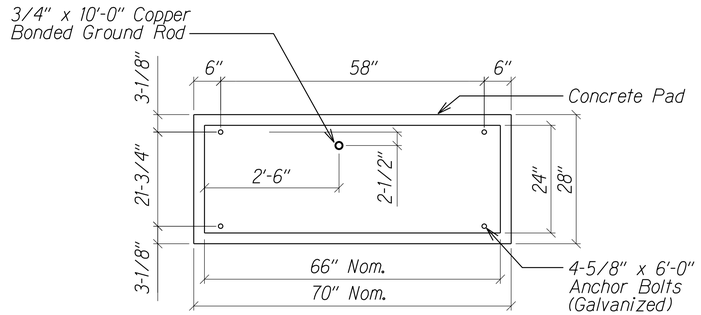
Section "B"
(Stainless Steel Angle Frame)

NOTES:

1. Cabinet to be Primed with One Coat Shop Primer.
2. Made From 12 Gauge 304D Stainless Steel.
3. Provide Acrylic Enamel Forrest Green Finish
4. Enclosure Shall be NEMA 3R with Neoprene Gasketing.
5. Padlocks:
   1-HECo Furnished
   1-Contractor Furnished, Brass Corbin Sesame Combination.
6. Shop Fabrication Drawings Shall be Submitted for Approval.
7. Location of Opening For Meter Reader to Correspond with Location of Meter.
8. Dimensions Shown are Nominal, Adjust to Suit Dimensions of Equipment Mounted Inside the Cabinet.
9. See A E-25 | E-26 and A E-25 | E-27 for Equipment Details.



Elevational View at Concrete Pad



Plan View at Concrete Pad

A E-7 | E-25 E-25

ELECTRICAL EQUIPMENT ENCLOSURE DETAILS

NOT TO SCALE

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

NOTE BOOK | No.

RUSSELL K. MORI
LICENSED PROFESSIONAL ENGINEER
No. 9013-E
2/9/20
HAWAII, U.S.A.
MK ENGINEERS, LTD.
LICENSE EXPIRATION DATE: 4/30/20
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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

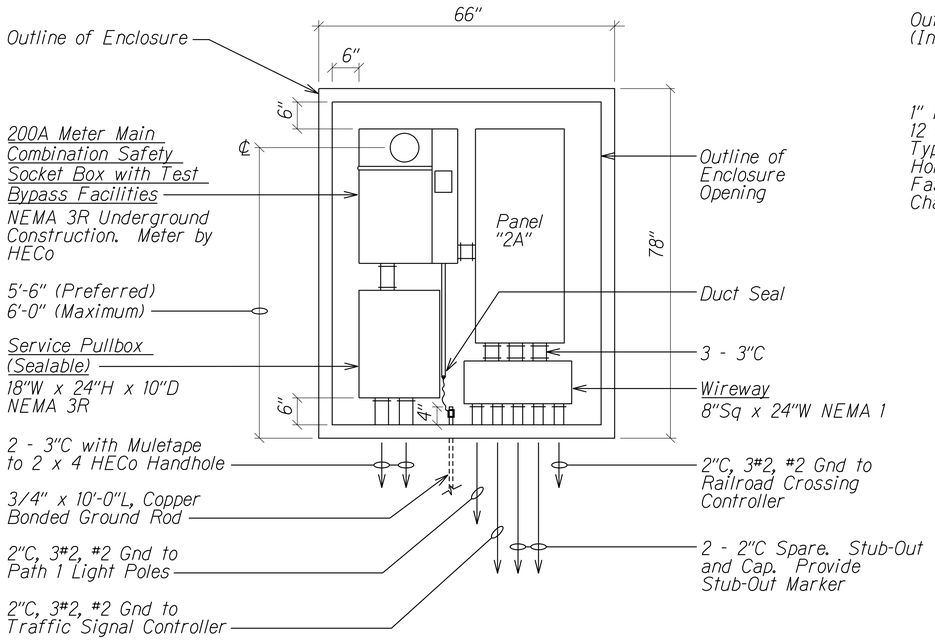
ELECTRICAL EQUIPMENT ENCLOSURE DETAILS

FORT BARRETTE ROAD OPERATIONAL IMPROVEMENTS
Roosevelt Avenue to Farrington Highway
Project No. 901A-01-19

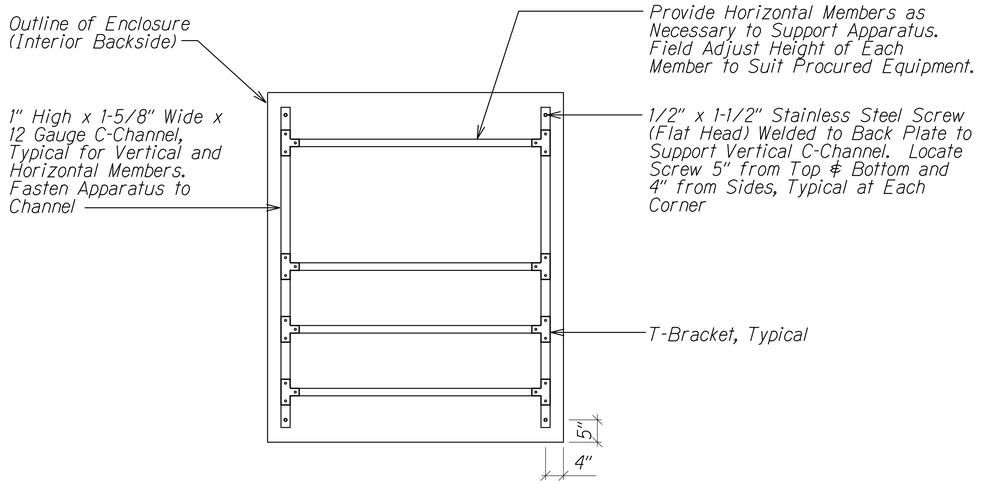
Scale: Not to Scale Date: Jan. 2020

SHEET No. E-25 OF 32 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	901A-01-19	2020	161	167



Elevation



Support Frame Elevation

A
E-25 | E-26

ELECTRICAL EQUIPMENT "FB1" DETAILS

NOT TO SCALE

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

RUSSELL K. MORI
LICENSED PROFESSIONAL ENGINEER
No. 9013-E
2/9/20
HAWAII, U.S.A.

MK ENGINEERS, LTD.
LICENSE EXPIRATION DATE: 4/30/20
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

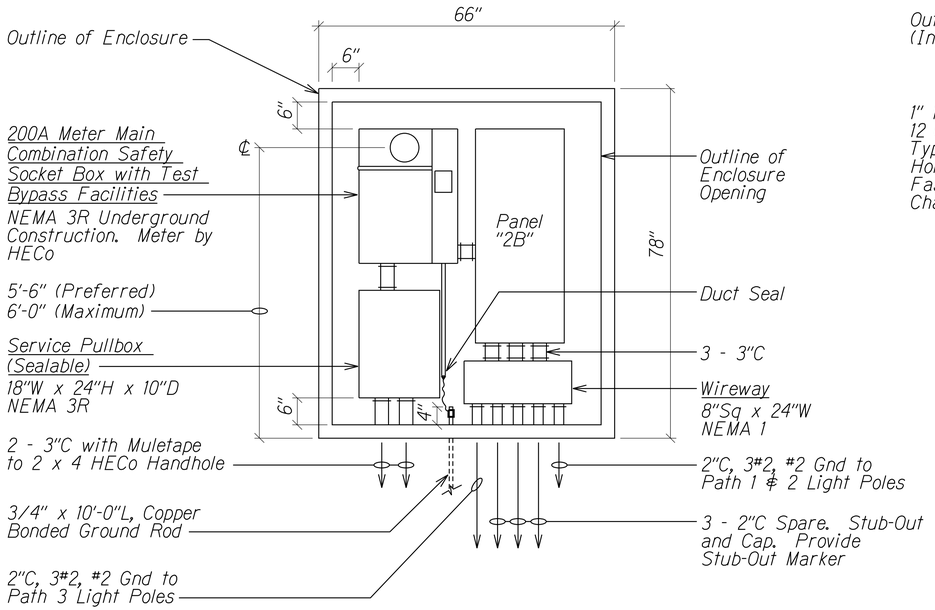
ELECTRICAL EQUIPMENT "FB1" DETAILS

FORT BARRETTE ROAD OPERATIONAL IMPROVEMENTS
Roosevelt Avenue to Farrington Highway
Project No. 901A-01-19

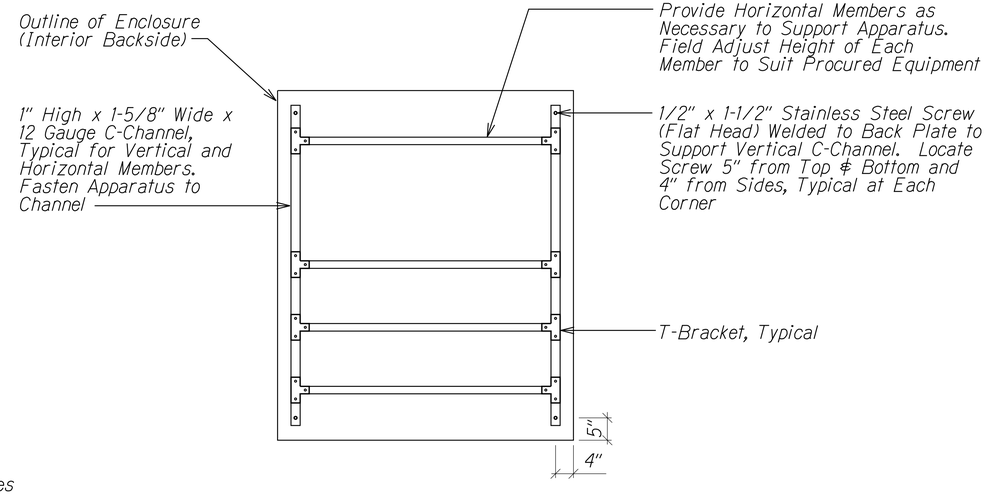
Scale: Not to Scale Date: Jan. 2020

SHEET No. E-26 OF 32 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	901A-01-19	2020	162	167



Elevation



Support Frame Elevation

A
E-25 | E-27

ELECTRICAL EQUIPMENT "FB2" DETAILS

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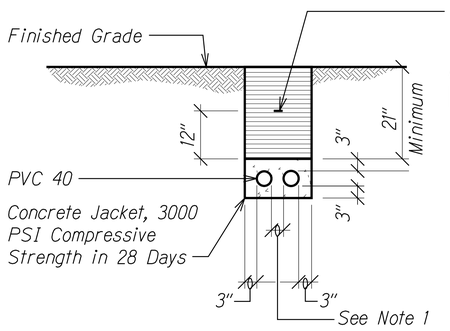
ELECTRICAL EQUIPMENT "FB2" DETAILS

FORT BARRETTE ROAD OPERATIONAL IMPROVEMENTS
Roosevelt Avenue to Farrington Highway
Project No. 901A-01-19

Scale: Not to Scale Date: Jan. 2020

SHEET No. E-27 OF 32 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	901A-01-19	2020	163	167



Traceable Warning Tape, See Standard Plan TE-36 *, General Note #2 for Warning Tape Requirements.*

Backfill:

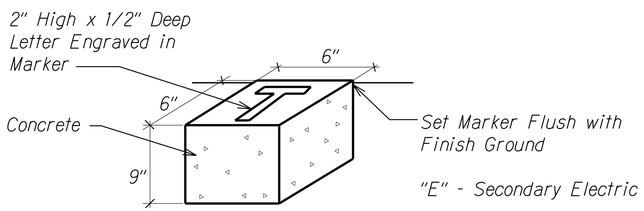
Type "A" : *Non-contaminated Native Soil Material Which Does Not Contain More than 50% Gravel, and Also, Does Not Contain Hard Lumps of Earth 3 Inches in Greatest Dimension, Rocks Larger than 3 Inches in Largest Dimension, Highly Plastic Clay, Poorly-graded Sand and Gravel (Classified as SP and GP Using the Unified Soil Classification System), Organics, Debris, or Other Unsuitable or Deleterious Materials.*

A TYPICAL DUCT SECTION (CONCRETE ENCASED) FOR UNPAVED AREAS

E-28 | E-28 NOT TO SCALE

NOTES:

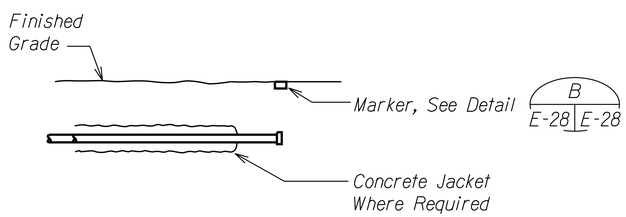
1. *Provide 2" Separation between Ducts of Same System and 3" between Ducts of Different Systems.*
2. *Where Trench Encounters Grass or Landscaping, Provide 4" Top Soil After Trench is Backfilled, and Restore Landscaping to Match Existing Adjacent Area.*
3. *See Duct Section Details for Conduit Arrangement.*



B CONCRETE MARKER DETAIL

E-6 | E-28 NOT TO SCALE

E-18



C CONCRETE STUB OUT DETAIL

E-28 | E-28 NOT TO SCALE

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STATE OF HAWAII
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HIGHWAYS DIVISION

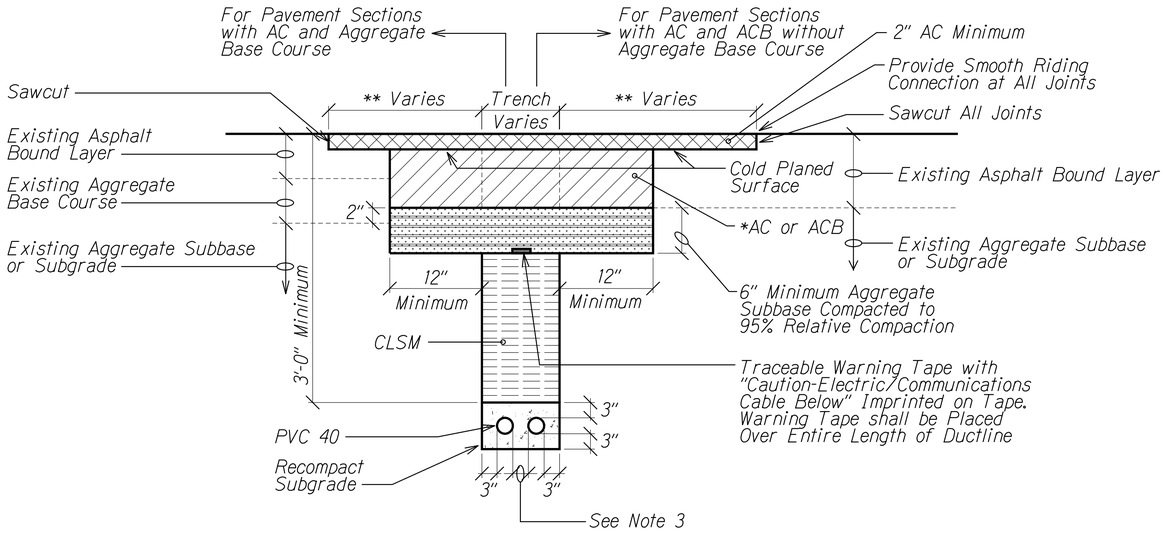
TRENCH RESTORATION DETAILS

FORT BARRETTE ROAD OPERATIONAL IMPROVEMENTS
Roosevelt Avenue to Farrington Highway
Project No. 901A-01-19

Scale: Not to Scale Date: Jan. 2020

SHEET No. E-28 OF 32 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	901A-01-19	2020	164	167



A
E-29 | E-29 TYPICAL DUCT SECTION (CONCRETE ENCASED) FOR PAVED AREAS

NOT TO SCALE

NOTES:

1. This Trench Restoration is to be Used Wherever the Pavement is an Asphalt Surface Including Medians and Paved Areas Between Guardrails. for Trenches Located in Unpaved Areas, the Backfill Need Not be CLSM and Can be Backfilled as Specified in the Standard Specifications.
2. Electrical, Telephone, and CATV Ducts Similar.
3. Provide 2" Separation Between Ducts of Same System and 3" Between Ducts of Different Systems.
4. Tack Coat Existing Asphalt Bound Material Faces Prior to Filling Excavation with Asphalt Bound Material.
5. When Ground Water is Encountered in Trenches, Backfill with Gravel Conforming to ASTM C-33, Size 67 Material Until One Foot Above the Water Level. Encapsulate the Size 67 Material with a Permeable Separator that Lines the Bottom and Sides of the Trench and Overlaps at the Top of the Material for the Width of the Trench. Complete Backfilling the Trench per Detail.

* NOTES:

1. When Thickness Less than 5", Use AC.
2. When Thickness 6" or Greater, Use ACB or AC.

** NOTES:

1. If Trench Aligned Transverse to Direction of Travel, 6 Feet on Each Side of Trench.
2. If Trench Aligned Along Direction of Travel, to Edge of Lane in Which Edge of Trench is Located.
3. Smoothness of Paved Surfaces; the Distance from the Paved Surface to the Testing Edge of a Ten-Foot Straight Edge Between Two Points of Contact Shall Not Exceed 3/16".

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

TYPICAL DUCT SECTION
(CONC ENCASED) FOR PAVED AREAS

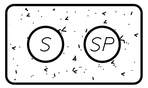
FORT BARRETTE ROAD OPERATIONAL IMPROVEMENTS
Roosevelt Avenue to Farrington Highway
Project No. 901A-01-19

Scale: Not to Scale Date: Jan. 2020

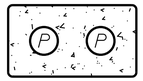
SHEET No. E-29 OF 32 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	901A-01-19	2020	165	167

SECTION (A)

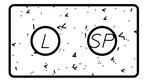


SECTION (B)

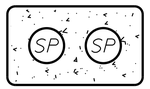


SECTION (C)

SECTION (D)



SECTION (E)



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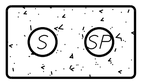

SECTION (G)

DUCT SECTION DETAILS

NOT TO SCALE

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

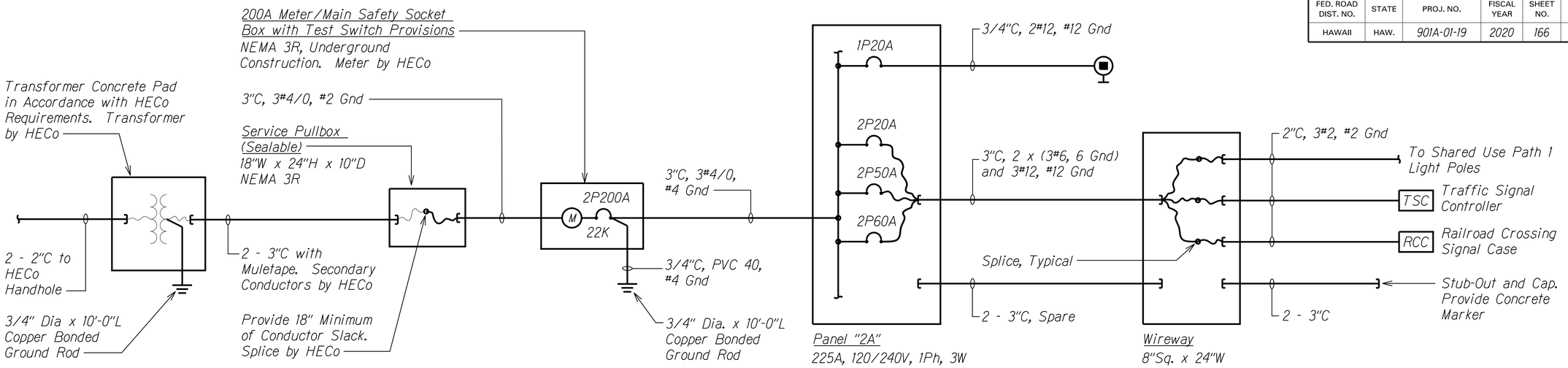
DUCT SECTION DETAILS

FORT BARRETTE ROAD OPERATIONAL IMPROVEMENTS
Roosevelt Avenue to Farrington Highway
Project No. 901A-01-19

Scale: Not to Scale Date: Jan. 2020

SHEET No. E-30 OF 32 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	901A-01-19	2020	166	167

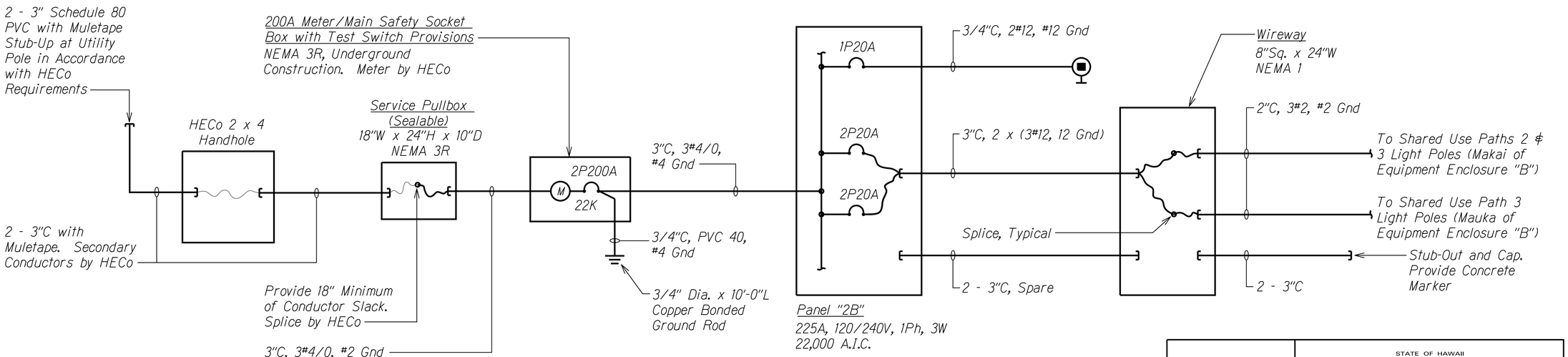


A EQUIPMENT ENCLOSURE "A" ONE-LINE DIAGRAM

E-31 | E-31 NO SCALE

NOTES:

1. ——— Light Lines Denote Existing Condition
   ——— Bold Lines Denote New Work



B EQUIPMENT ENCLOSURE "B" ONE-LINE DIAGRAM

E-31 | E-31 NO SCALE

NOTES:

1. ——— Light Lines Denote Existing Condition
   ——— Bold Lines Denote New Work

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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

ONE-LINE DIAGRAMS

FORT BARRETTE ROAD OPERATIONAL IMPROVEMENTS
Roosevelt Avenue to Farrington Highway
Project No. 901A-01-19

Scale: No Scale Date: Jan. 2020

SHEET No. E-31 OF 32 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	901A-01-19	2020	167	167

PANEL "2A"

VOLTAGE: 120/240V, 1 PH, 3W
BUS: COPPER
BUS RATING: 225A
AIC: 22,000
MAIN BKR: LUGS ONLY
TYPE: BOLT-ON
MOUNT: SURFACE
ENCLOSURE: NEMA 1
EQUIPMENT GROUND BUS: YES
ISOLATED GROUND BUS: NO
FEED THRU LUGS: NO
U.L. LISTED AS SERVICE ENTRANCE EQUIPMENT: NO

KVA A	KVA B	DESCRIPTION: L-LIGHTS R-RECEPTACLE, S-SPARE PFB-PROV FOR FUTURE CB	CKT BKR	CKT NO	CKT NO	CKT BKR	DESCRIPTION: L-LIGHTS R-RECEPTACLE, S-SPARE PFB-PROV FOR FUTURE CB	KVA A	KVA B
0.2		R - EQUIPMENT ENCLOSURE A	1P20A	1	2	1P20A	S	1.0	
	1.0	S	1P20A	3	4	1P20A	S		1.0
3.6		RAILROAD CROSSING CONTROLLER	2P60A	5	6	2P20A	L - SHARED USE PATH 1	0.3	
	3.6	PART OF 5	--	7	8	--	PART OF 2		0.3
--		S	2P50A	9	10	2P50A	TRAFFIC SIGNAL CONTROLLER	5.0	
	--	PART OF 9	--	11	12	--	PART OF 6		--
--		S	2P50A	13	14	2P40A	S (FUTURE STREET LIGHTS)	2.8	
	--	PART OF 13	1P	15	16	--	PART OF 10		2.8
--		PFB	1P	17	18	1P	PFB	--	
	--	PFB	1P	19	20	1P	PFB		--
--		PFB	1P	21	22	1P	PFB	--	
	--	PFB	1P	23	24	1P	PFB		--
3.8	4.6	SUBTOTALS						9.1	4.1

NOTES:

21.6 TOTAL KVA
1 DEMAND FACTOR
21.6 DEMAND KVA
90 DEMAND AMPS 240 volts

PANEL "2B"

VOLTAGE: 120/240V, 1 PH, 3W
BUS: COPPER
BUS RATING: 225A
AIC: 22,000
MAIN BKR: LUGS ONLY
TYPE: BOLT-ON
MOUNT: SURFACE
ENCLOSURE: NEMA 1
EQUIPMENT GROUND BUS: YES
ISOLATED GROUND BUS: NO
FEED THRU LUGS: NO
U.L. LISTED AS SERVICE ENTRANCE EQUIPMENT: NO

KVA A	KVA B	DESCRIPTION: L-LIGHTS R-RECEPTACLE, S-SPARE PFB-PROV FOR FUTURE CB	CKT BKR	CKT NO	CKT NO	CKT BKR	DESCRIPTION: L-LIGHTS R-RECEPTACLE, S-SPARE PFB-PROV FOR FUTURE CB	KVA A	KVA B
0.2		R - EQUIPMENT ENCLOSURE B	1P20A	1	2	1P20A	S	1.0	
	1.0	S	1P20A	3	4	1P20A	S		1.0
0.4		L - SHARED USE PATH 2 / 3	2P20A	5	6	2P20A	L - SHARED USE PATH 3	0.3	
	0.4	PART OF 2	--	7	8	--	PART OF 2		0.3
3.0		S (FUTURE STREET LIGHTS)	2P40A	9	10	2P40A	S (FUTURE STREET LIGHTS)	3.0	
	3.0	PART OF 9	--	11	12	--	PART OF 10		3.0
--		PFB	1P	13	14	1P	PFB	--	
	--	PFB	1P	15	16	1P	PFB		--
--		PFB	1P	17	18	1P	PFB	--	
	--	PFB	1P	19	20	1P	PFB		--
--		PFB	1P	21	22	1P	PFB	--	
	--	PFB	1P	23	24	1P	PFB		--
3.6	4.4	SUBTOTALS						4.3	4.3

NOTES:

16.6 TOTAL KVA
1 DEMAND FACTOR
16.6 DEMAND KVA
69 DEMAND AMPS 240 volts

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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

PANEL SCHEDULES

FORT BARRETTE ROAD OPERATIONAL IMPROVEMENTS
Roosevelt Avenue to Farrington Highway
Project No. 901A-01-19
Scale: Not to Scale Date: Jan. 2020

SHEET No. E-32 OF 32 SHEETS