DRAWING INDEX

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HONOMŪ SUBSISTENCE AGRICULTURE SUBDIVISION PHASE 1

TMK: (3) 2-8-011: 011

AKAKA FALLS ROAD
HONOMŪ, HAWAI'I 96728

DEPARTMENT OF HAWAIIAN HOME LANDS
LAND DEVELOPMENT DIVISION
91-5420 KAPOLEI PARKWAY
KAPOLEI, HI 96707

Okahara and Associates, Inc.
ENGINEERS AND LANDSCAPE ARCHITECTS

HILO: 200 KOHOLA STREET
HILO, HAWAII 96720
PH: (808) 961-5527
FAX: (808) 961-5529

HONOLULU: 677 ALA MOANA BLVD., SUITE 703
HONOLULU, HAWAII 96813
PH: (808) 524-1224
FAX: (808) 521-3151

LENNIE OKANO-KENDRICK
Licensed Professional Engineer
No.11108-C
HAWAII, U.S.A.

This work was prepared by me or under my supervision and construction to this project will be under my observation

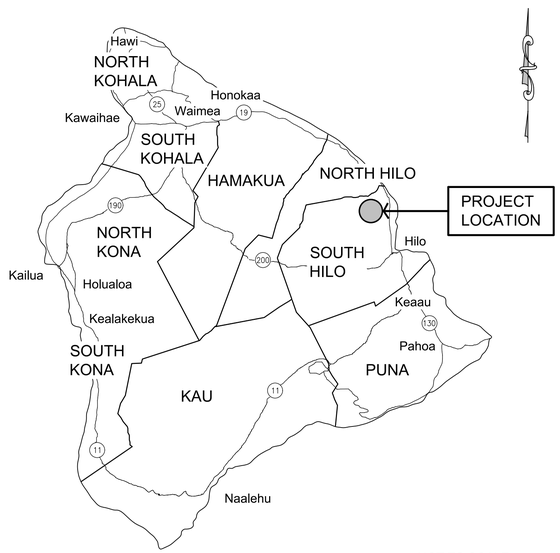
Lennie Okano-Kendrick

Expiration Date of License 4/30/22

Revisions

No.	Date	Description

PROJECT LOCATION - HAWAI'I ISLAND



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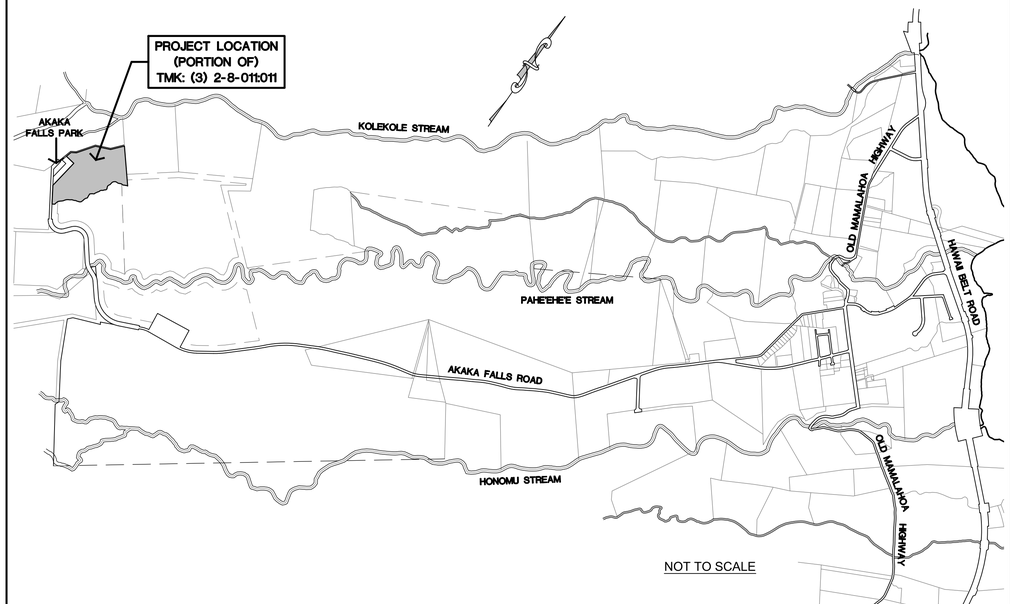
PROJECT SITE VICINITY MAP



NOT TO SCALE

APPROVALS

DIRECTOR OF PUBLIC WORKS, COUNTY OF HAWAII — DATE

DISTRICT ENGINEER, DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION - HAWAII DISTRICT — DATE

CONSULTANTS

CIVIL ENGINEER:
OKAHARA AND ASSOCIATES, INC.
200 Kohola Street
Hilo, Hawaii 96720

ELECTRICAL ENGINEER:
WALLACE T. OKI, P.E., INC.
688 Kinoole Street, Suite 115B
Hilo, Hawaii 96720

LAND SURVEYOR:
ISLAND SURVEY
17 MAKA'ALA STREET, SUITE 102
Hilo, Hawaii 96720

AERIAL SURVEYOR:
DUDEK
970 NORTH KALAHEO AVENUE, SUITE C206
KAILUA, OAHU, HAWAII, 96734

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Project

HONOMŪ SUBSISTENCE AGRICULTURE SUBDIVISION PHASE 1

TMK: (3) 2-8-011 :011
AKAKA FALLS ROAD
HONOMU, HAWAI'I 96728

Sheet Title

TITLE SHEET AND DRAWING INDEX

LOK		218-026	
Project Director		Project No.	
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Drawn By	Checked By	CAD File Name:	
AS SHOWN			
Scale:			
MAY 2020		T-1.0	
Date			
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1 of 18 Sheets

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GENERAL NOTES

1. THE SCOPE OF WORK FOR THIS PROJECT INCLUDES GRADING, PAVING, DRAINAGE IMPROVEMENTS, ELECTRICAL INFRASTRUCTURE, AND INTERSECTION CONSTRUCTION.
2. THE CONTRACTOR, AT HIS OWN EXPENSE, SHALL KEEP THE PROJECT AND SURROUNDING AREAS FREE FROM DUST NUISANCES. THE WORK SHALL BE IN CONFORMANCE WITH THE AIR POLLUTION CONTROL RULES OF THE STATE DEPARTMENT OF HEALTH, HAR 11-60.1, FUGITIVE DUST.
3. THE CONTRACTOR SHALL PROVIDE A SMOOTH-RIDING CONNECTION TO EXISTING STREETS.
4. EXISTING UTILITIES SHALL REMAIN IN SERVICE DURING CONSTRUCTION. CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATION OF WORK WITHIN THE SCOPE AND WORK DONE BY OTHERS.
5. IN PERFORMING ALL WORK, THE CONTRACTOR SHALL EXERCISE DUE CARE AND CAUTION NECESSARY TO AVOID ANY DAMAGE TO AND IMPAIRMENT IN THE USE OF ANY EXISTING UTILITY LINE. ANY DAMAGE INFLICTED ON EXISTING UTILITY LINES RESULTING FROM THE CONTRACTOR'S OPERATIONS SHALL BE IMMEDIATELY REPAIRED OR RESTORED AS DIRECTED BY THE DHHL AND/OR ENGINEER AT THE CONTRACTOR'S EXPENSE.
6. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY DAMAGE DONE TO THE DWS WATER SYSTEM, HAWAII GAS LINES, HAWAIIAN TELCOM SYSTEM, HELCO SYSTEM, OR OTHER UTILITY LINES (UNDERGROUND OR OVERHEAD).
7. THE CONTRACTOR AGREES THAT HE SHALL ASSUME SOLE AND COMPLETE RESPONSIBILITY FOR THE JOB SITE CONDITIONS DURING THE COURSE OF CONSTRUCTION OF THIS PROJECT, INCLUDING THE SAFETY OF ALL PERSONS AND PROPERTY; THAT THIS REQUIREMENT SHALL APPLY CONTINUOUSLY AND NOT BE LIMITED TO NORMAL WORKING HOURS; AND THAT THE CONTRACTOR SHALL DEFEND, INDEMNIFY AND HOLD THE OWNER AND ENGINEER HARMLESS FROM ANY AND ALL LIABILITY, REAL OR ALLEGED, IN CONNECTION WITH THE PERFORMANCE OF WORK ON THIS PROJECT, EXCEPTING FOR LIABILITY ARISING FROM THE SOLE NEGLIGENCE OF THE DHHL OR THE ENGINEER.
8. ANY PAVEMENT, PAVEMENT MARKINGS, STRUCTURES, SIGNS AND OTHER APPURTENANCES DAMAGED BY THE CONTRACTOR AS A RESULT OF CONSTRUCTION OPERATIONS SHALL BE RESTORED TO ITS ORIGINAL, OR BETTER CONDITION.
9. THE CONTRACTOR SHALL NOTIFY ALL AGENCIES TO VERIFY THE ACTUAL LOCATION OF ALL UTILITIES IN THE PROJECT AREA PRIOR TO START OF CONSTRUCTION. THE CONTRACTOR SHALL COORDINATE AND SCHEDULE ALL WORK WITH AGENCIES AND UTILITY COMPANIES. ALL UTILITY WORK WITH UNDERGROUND INSTALLATIONS MUST BE COMPLETED PRIOR TO PAVING WORK BEING DONE ABOVE THEM.
10. WORK INCIDENTAL TO THE CONTRACT AND NECESSARY TO COMPLETE THE PROJECT, ALTHOUGH NOT SPECIFICALLY REFERRED TO ON THE CONTRACT DOCUMENT, SHALL BE FURNISHED AND PERFORMED BY THE CONTRACTOR AT HIS OWN COST.
11. THE CONTRACTOR IS TO COMPLY WITH THE DIRECTIONS OF THE STATE OF HAWAII OCCUPATIONAL SAFETY AND HEALTH LAW (DOSH).
12. THE ENGINEER RESERVES THE RIGHT TO MAKE CHANGES TO THE DRAINAGE SYSTEM AS SUCH CHANGES ARE FOUND TO BE NECESSARY.
13. THE CONTRACTOR SHALL BE RESPONSIBLE TO OBTAIN, FROM THE APPROPRIATE COUNTY AND STATE AGENCIES, ALL PERMITS REQUIRED TO COMPLETE THE WORK SHOWN ON THESE PLANS INCLUDING, BUT NOT LIMITED TO, ALL DEMOLITION, CLEARING AND GRUBBING, GRADING, AND AUTHORIZATION TO WORK WITHIN STATE RIGHT-OF-WAY, AT NO ADDITIONAL COST TO THE OWNER.
14. ALL WORK SHALL BE DONE IN ACCORDANCE WITH THE "STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION" DATED SEPTEMBER 1986, FOR THE DEPARTMENT OF PUBLIC WORKS, COUNTY OF HAWAII.

HELCO AND HTCO NOTES

1. THE CONTRACTOR SHALL EXERCISE CAUTION WHEN THE EXCAVATION AND CONSTRUCTION CROSSES OR IS IN CLOSE PROXIMITY OF UNDERGROUND TELEPHONE AND SIGNAL CABLE FACILITIES AND MAINTAIN ADEQUATE CLEARANCE FOR HIS EQUIPMENT WHILE WORKING CLOSE TO AND/OR UNDER THE OVERHEAD FACILITIES. ANY DAMAGE TO THE EXISTING UNDERGROUND AND OVERHEAD UTILITIES SHALL BE REPAIRED AND PAID FOR BY THE CONTRACTOR.
2. SHOULD IT BECOME NECESSARY, ANY WORK REQUIRED TO RELOCATE HELCO FACILITIES SHALL BE DONE BY HELCO AND PAID FOR BY THE CONTRACTOR. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL COORDINATION.
3. FOR FIELD LOCATION OF HTCO'S FACILITIES, CONTACT HTCO OUTSIDE PLANT ENGINEERING SECTION A MINIMUM OF 72 HOURS IN ADVANCE OF THE START OF CONTRUCTION.
4. THE CONTRACTOR IS TO EXERCISE EXTREME CAUTION WHEN THE EXCAVATION AND CONSTRUCTION CROSSES OR IS IN CLOSE PROXIMITY OF HELCO UNDERGROUND AND OVERHEAD ELECTRICAL FACILITIES AND MAINTAIN ADEQUATE CLEARANCE FOR HIS EQUIPMENT WHILE WORKING CLOSE TO AND/OR UNDER HELCO'S FACILITIES.
5. THE CONTRACTOR IS TO OBTAIN AN EXCAVATION PERMIT FROM COUNTY DPW PRIOR TO START OF CONSTRUCTION.
6. FOR VERIFYING THE LOCATION OF HELCO UNDERGROUND DUCTLINES AND FOR ASSISTANCE IN PROVIDING PROPER SUPPORT AND PROTECTION OF THE UNDERGROUND DUCTLINES, THE CONTRACTOR IS TO CONTACT "ONE CALL" A MINIMUM OF 72 HOURS IN ADVANCE. PH. (866)423-7287.
7. WHEN TRENCH EXCAVATION IS ADJACENT TO OR UNDER EXISTING STRUCTURES OR FACILITIES, THE CONTRACTOR IS RESPONSIBLE FOR PROPERLY SHEETING AND BRACING THE EXCAVATION AND STABILIZING THE EXISTING GROUND TO RENDER IT SAFE AND SECURE FROM POSSIBLE SLIDES, CAVE-INS AND SETTLEMENT, AND FOR PROPERLY SUPPORTING EXISTING STRUCTURES AND FACILITIES WITH BEAMS, STRUTS OR UNDERPINNING TO FULLY PROTECT IT FROM DAMAGE.
8. SHOULD FIELD CONDITIONS AND/OR CONSTRUCTION PROCEDURES REQUIRE THAT POLES BE BRACED TO FACILITATE CONSTRUCTION, THE CONTRACTOR IS TO CONTACT HELCO A MINIMUM OF 72 HOURS IN ADVANCE FOR BRACING INSTRUCTION. ANY WORK REQUIRED TO RELOCATE HELCO FACILITIES SHALL BE DONE BY HELCO AND PAID FOR BY THE CONTRACTOR. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL COORDINATION.
9. THE EXISTENCE AND LOCATION OF HELCO OVERHEAD AND UNDERGROUND FACILITIES AS SHOWN ON THE PLANS ARE FROM EXISTING RECORDS OF VARYING DEGREES OF ACCURACY AND ARE NOT GUARANTEED AS SHOWN. SHOULD RELOCATION OF HELCO FACILITIES BE REQUIRED, HELCO IS TO BE CONTACTED FOUR (4) WEEKS IN ADVANCE. ANY WORK REQUIRED TO RELOCATE HELCO FACILITIES SHALL BE DONE BY HELCO AND PAID FOR BY THE CONTRACTOR. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL COORDINATION.
10. THE CONTRACTOR IS TO COMPLY WITH THE DIRECTIONS OF THE STATE OF HAWAII OCCUPATIONAL SAFETY AND HEALTH LAW (DOSH).
11. THE CONTRACTOR SHALL REPORT ANY DAMAGES TO HELCO'S FACILITIES TO THE HELCO TROUBLE DISPATCHER. PH. (808)969-6666.
12. THE CONTRACTOR SHALL EXCAVATE AND BACKFILL AROUND TELEPHONE CABLES IN THE PRESENCE OF HTCO ENGINEER OR HIS REPRESENTATIVE. ALL EXCAVATION WITHIN TWO FEET OF TELEPHONE CABLES SHALL BE DONE BY HAND.
13. FOR RELOCATION OF ANY TELEPHONE CABLES AND/OR DUCTLINES, THE CONTRACTOR SHALL NOTIFY HTCO FIVE (5) WORKING DAYS BEFORE STARTING WORK. THE CONTRACTOR SHALL PROVIDE THE NECESSARY EXCAVATION AND BACKFILL, ARRANGE FOR TRAFFIC PERMITS AND RESTORE SIDEWALK, PAVEMENT OR OTHER FACILITIES.
14. THE CONTRACTOR SHALL NOTIFY HTCO IMMEDIATELY AFTER ANY DAMAGE HAS BEEN CAUSED TO EXISTING CABLES, DUCTLINES, PULLBOXES, MANHOLES, POLES AND GUYS. REPAIR WORK ON DAMAGED CABLES SHALL BE DONE BY HTCO AND OTHER WORK INVOLVING EXISTING UNDERGROUND FACILITIES SHALL BE DONE BY THE CONTRACTOR IN THE PRESENCE OF HTCO ENGINEER OR HIS REPRESENTATIVE WITH PAYMENT FOR THIS WORK TO BE BORNE BY THE CONTRACTOR.
15. PROVIDE ADEQUATE SUPPORT AND PROTECTION OF TELEPHONE CABLES AND/OR DUCTLINES EXPOSED IN THE TRENCH. SUCH SUPPORT AND PROTECTION SHALL BE APPROVED BY HTCO.

SOLID WASTE CONSTRUCTION NOTES

1. UNLESS OTHERWISE SPECIFIED, THE CONTRACTOR IS RESPONSIBLE FOR THE PROPER HANDLING, STORAGE AND/OR DISPOSAL OF ALL WASTE GENERATED BY THIS CONSTRUCTION, INCLUDING GRUBBING AND EXCESS EXCAVATED MATERIAL. ANY MATERIAL BROUGHT TO THE COUNTY LANDFILL WILL BE SUBJECTED TO THE INSTITUTED TIPPING FEE SYSTEM, WITH NO EXCEPTION OR EXEMPTIONS.
2. ALL WASTES GENERATED BY CONSTRUCTION, INCLUDING GRUBBING, DEMOLITION AND EXCESS EXCAVATION MATERIAL MAY BE BROUGHT TO THE WEST HAWAII LANDFILL. THE CONTRACTOR SHALL CHECK WITH THE SOLID WASTE DIVISION FOR DISCLOSURE OF THE CURRENT LANDFILL FEE AND CONSIDERATION OF THAT FEE SHALL BE INCLUDED IN THE CONTRACTOR'S BID SUM.
3. CONSTRUCTION, DEMOLITION AND GRUBBING MATERIAL SHALL NOT BE DEPOSITED AT ANY OF THE COUNTY TRANSFER STATIONS, BUT SHALL BE TRANSPORTED FOR DISPOSAL TO THE WEST HAWAII LANDFILL.
4. NO ASBESTOS CONTAINING MATERIAL SHALL BE USED FOR THIS PROJECT.
5. CHIP - GRUBBED MATERIAL BEFORE BRINGING TO THE COUNTY LANDFILL IN ACCORDANCE WITH REGULATIONS OF THE SOLID WASTE DIVISION, DEPARTMENT OF PUBLIC WORKS.

EROSION/TEMPORARY DUST AND SEDIMENT CONTROL NOTES

1. DURING CONSTRUCTION, PREVENTIVE MEASURES SHALL BE USED TO CONTROL FORESEEABLE DUST, EROSION OR SEDIMENTATION PROBLEMS WHICH MAY ARISE AS THE JOB PROGRESSES.
2. DRAINAGE SYSTEMS AS SHOWN ON THE CONSTRUCTION PLANS SHALL BE CONSTRUCTED AS EARLY AS PRACTICALLY POSSIBLE.
3. ALL FILL, SUBBASE AND BASE MATERIAL PLACED WITHIN THE ROAD PAVEMENT PRISM SHALL BE SUBSTANTIALLY COMPACTED BY THE END OF THE DAY.
4. THE CONTRACTOR SHALL CONDUCT HIS GRADING OPERATIONS SO THAT EXCAVATION, EMBANKMENT AND IMPORTED MATERIAL SHALL BE DAMPENED WITH WATER DURING HIS GRADING OPERATIONS AT ALL TIMES.
5. WATER TRUCK AND/OR TEMPORARY SPRINKLERS SHALL BE AVAILABLE ON THE JOB SITE AT ALL TIMES TO ENSURE BARE EARTH DOES NOT CREATE A DUST PROBLEM.
6. FUGITIVE DUST AND SOLID WASTE DISPOSAL DURING GRUBBING AND GRADING ACTIVITIES SHALL MEET REQUIREMENTS OF ADMINISTRATIVE RULES, TITLE 11, CHAPTER 60, AIR POLLUTION CONTROL, AND CHAPTER 58, SOLID WASTE MANAGEMENT CONTROL.

EROSION AND SEDIMENT CONTROL NOTES

CONSTRUCTION MANAGEMENT TECHNIQUES:

1. CLEARING AND GRUBBING SHALL BE HELD TO THE MINIMUM NECESSARY FOR TRENCHING, EXCAVATING AND EQUIPMENT OPERATION. LIMITS OF THE CLEARING AND THE GRUBBING SHALL BE STAKED PRIOR TO THE START OF CONSTRUCTION.
2. CONSTRUCTION SHALL BE SEQUENCED TO MINIMIZE THE EXPOSURE TIME OF THE CLEARED SURFACE AREA.
3. CONSTRUCTION SHALL BE STAGED OR PHASED FOR LARGE AREAS. AREAS OF ONE PHASE SHALL BE STABILIZED BEFORE ANOTHER PHASE IS INITIATED. STABILIZATION SHALL BE ACCOMPANIED BY TEMPORARILY OR PERMANENTLY PROTECTING THE DISTURBED SOIL SURFACE FROM RAINFALL IMPACTS AND RUNOFF.
4. EROSION AND SEDIMENT CONTROL MEASURES SHALL BE IN PLACE AND FUNCTIONAL BEFORE EARTH MOVING OPERATIONS BEGIN. THESE MEASURES SHALL BE PROPERLY CONSTRUCTED AND MAINTAINED THROUGHOUT THE CONSTRUCTION PERIOD. SILT FENCES SHALL BE INSTALLED ALONG THE ENTIRE DOWNSLOPE SIDE OF THE ACTIVE CONSTRUCTION ZONE IN AREAS WHERE ON-SITE RUNOFF FLOWS OFF THE PROJECT SITE.
5. ALL CONTROL MEASURES SHALL BE INSPECTED AT LEAST ONCE A WEEK AND FOLLOWING ANY RAINFALL EVENT OF 0.5 INCHES OR GREATER WITHIN A 24-HOUR PERIOD. DURING PROLONGED RAINFALL, DAILY CHECKING IS NECESSARY.
6. ALL EROSION CONTROL MEASURES SHALL BE MAINTAINED IN GOOD WORKING ORDER. IF REPAIR IS NECESSARY, IT SHALL BE INITIATED WITHIN 24 HOURS AFTER THE INSPECTION.
7. SILT SCREENS OR FENCES SHALL BE INSPECTED FOR DEPTH OF SEDIMENT AND TEARS, TO VERIFY THAT THE FABRIC IS SECURELY ATTACHED TO THE FENCE POSTS, AND TO VERIFY THAT THE FENCE POSTS ARE FIRMLY IN THE GROUND.
8. THE CONTRACTOR SHALL SELECT A SPECIFIC INDIVIDUAL WHO SHALL BE RESPONSIBLE FOR EROSION AND SEDIMENT CONTROLS ON THE PROJECT SITES.

GRADING NOTES

1. ALL GRADING WORK SHALL CONFORM TO CHAPTER 10 OF THE HAWAII COUNTY CODE. SHOULD A GRADING PERMIT BE REQUIRED, NO WORK SHALL COMMENCE UNTIL THE DEPARTMENT OF PUBLIC WORKS (DPW) APPROVES A GRADING PERMIT.
2. THE CONTRACTOR SHALL REMOVE ALL SILT AND DEBRIS DEPOSITED IN THE DRAINAGE FACILITIES, ROADWAYS AND OTHER AREAS RESULTING FROM HIS WORK. THE COSTS INCURRED FOR ANY NECESSARY REMEDIAL ACTION BY THE DPW SHALL BE PAYABLE BY THE CONTRACTOR.
3. THE CONTRACTOR, AT HIS OWN EXPENSE, SHALL KEEP THE PROJECT AND SURROUNDING AREAS FREE FROM DUST NUISANCES. THE WORK SHALL BE IN CONFORMANCE WITH THE AIR POLLUTION CONTROL RULES OF THE STATE DEPARTMENT OF HEALTH, HAR 11-60.1, FUGITIVE DUST.
4. ALL GRADING OPERATIONS SHALL BE PERFORMED IN CONFORMANCE WITH THE APPLICABLE PROVISIONS OF THE HAWAII ADMINISTRATIVE RULES, TITLE 11, CHAPTER 55, WATER POLLUTION CONTROL AND CHAPTER 54, WATER QUALITY STANDARDS, AND TO THE EROSION AND SEDIMENTATION CONTROL STANDARDS AND GUIDELINES OF THE DEPARTMENT OF PUBLIC WORKS, COUNTY OF HAWAII.
5. THE CONTRACTOR SHALL SOD OR PLANT ALL SLOPES AND EXPOSED AREAS IMMEDIATELY AFTER THE GRADING WORK HAS BEEN COMPLETED.
6. FILLS ON SLOPES STEEPER THAN 5:1 SHALL BE KEYED.
7. THE CONTRACTOR SHALL INFORM THE DPW OF THE LOCATION OF THE DISPOSAL AND/OR BORROW SITES(S) REQUIRED FOR THIS PROJECT WHEN AN APPLICATION FOR A GRADING PERMIT IS MADE. THE DISPOSAL AND/OR BORROW SITES(S) MUST ALSO FULFILL THE REQUIREMENTS OF THE GRADING ORDINANCE.
8. NO GRADING WORK SHALL BE DONE ON SATURDAYS, SUNDAYS AND HOLIDAYS ANYTIME WITHOUT PRIOR APPROVAL FROM THE DEPARTMENT OF PUBLIC WORKS. GRADING WORK ON NORMAL WORKING DAYS SHALL BE BETWEEN THE HOURS OF 7:00 A.M. TO 3:30 P.M.
9. FILLS SHALL BE COMPACTED TO 90 PERCENT (90%) OF MAXIMUM DENSITY PER ASTM D-1557 TEST.
10. THE CONTRACTOR SHALL REMOVE ALL VEGETATION BEFORE PLACING FILLS ON NATURAL GROUND SURFACES.

EARTHWORK QUANTITIES

ROAD "A" EARTHWORK
EXCAVATION: 4,400 C.Y.
EMBANKMENT: 5,300 C.Y.

DRAINAGE EARTHWORK
EXCAVATION: 2,200 C.Y.
EMBANKMENT: 0 C.Y.

TOTAL EXCAVATION: 6,600 C.Y.
TOTAL EMBANKMENT: 5,300 C.Y.
TOTAL AREA GRADE: 2.5 ACRES

ABBREVIATIONS

A.C.	ASPHALT CONCRETE
APPROX.	APPROXIMATE
BL	BASELINE
CL	CENTERLINE
DHHL	DEPARTMENT HAWAIIAN HOMELANDS
EOP	EDGE OF PAVEMENT
EXIST.	EXISTING
HELCO	HAWAIIAN ELECTRIC COMPANY
HORIZ.	HORIZONTAL
HTCO	HAWAIIAN TELCOM COMPANY
MIN.	MINIMUM
ROW	RIGHT OF WAY
SHT.	SHEET
STA.	STATION
TMK	TAX MAP KEY
TYP.	TYPICAL
VERT.	VERTICAL

LEGEND

- MONUMENT
- RIGHT OF WAY/PROPERTY LINE
- NEW A.C. PAVEMENT OR AS NOTED ON PLANS
- DEMOLITION AREAS
- NEW REINFORCED CONCRETE
- W_{12} NEW DUCTILE IRON WATERLINE
- NEW WATER VALVE
- AIR RELIEF VALVE
- REDUCER
- NEW FIRE HYDRANT
- NEW WATER METER BOX
- CLEANOUT & PLUG
- fh EXISTING FIRE HYDRANT
- W_8 EXISTING WATERLINE
- wvb EXISTING WATER VALVE BOX
- wmh EXISTING WATER MANHOLE
- wm EXISTING WATER METER
- wv EXISTING WATER VALVE
- c/o EXISTING CLEANOUT
- $G_{1\frac{1}{4}}$ EXISTING GAS LINE
- REF EXISTING REFLECTORS & POST
- etp 49 EXISTING TEL/POWER POLE W/GUY WIRE
- usm EXISTING US MAILBOX
- EXISTING WALL
- NEW REINF. CONCRETE RET. WALL
- EXISTING CHAIN LINK FENCE
- NEW CHAIN LINK FENCE
- EXISTING GUARDRAIL
- NEW GUARDRAIL
- TOP OF SLOPE
- TOE OF SLOPE (DAYLIGHT LINE)
- TYPE 1 DRYWELL
- TYPE 1 INLET BOX
- B-3 BORING SYMBOL & BORING LOG NUMBER
- EXISTING TRAFFIC SIGN
- NEW TRAFFIC SIGN
- FGUT FACE OF GUTTER
- TC TOP OF CURB
- BC BOTTOM OF CURB
- R/W RETAINING WALL

IF THIS SHEET IS LESS THAN 36"x24", IT IS A REDUCED PRINT. SCALE REDUCED ACCORDINGLY.

Okahara and Associates, Inc.
ENGINEERS AND LANDSCAPE ARCHITECTS

HILO: 200 KOHOLA STREET, HILO, HAWAII 96720, PH: (808) 961-5527, FAX: (808) 961-5529

HONOLULU: 677 ALA MOANA BLVD., SUITE 703, HONOLULU, HAWAII 96813, PH: (808) 524-1224, FAX: (808) 521-3151

LENNIE OKANO-KENDRICK
Licensed Professional Engineer
No.11108-C
HAWAII, U.S.A.

This work was prepared by me or under my supervision and construction to this project will be under my observation

Lennie Okano-Kendrick

Expiration Date of License 4/30/22

Revisions

No.	Date	Description

Project

HONOMŪ SUBSISTENCE AGRICULTURE SUBDIVISION PHASE 1

TMK: (3) 2-8-011 :011
AKAKA FALLS ROAD
HONOMU, HAWAI'I 96728

Sheet Title

CIVIL NOTES, ABBREVIATIONS AND LEGEND

LOK (Project Director)	218-026 (Project No.)
SLP/LG (Drawn By)	BKM (Checked By)
CAD File Name:	
AS SHOWN (Scale:)	
MAY 2020 (Date)	C-1.0
Const. Issue Date	2 of 18 Sheets

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NOTES FOR CONSTRUCTION WITHIN THE STATE RIGHT-OF-WAY

1. THE CONTRACTOR SHALL OBTAIN A PERMIT TO PERFORM WORK UPON STATE HIGHWAYS FROM THE HAWAII DISTRICT ENGINEER, STATE HIGHWAYS, AT 50 MAKAALA STREET, PRIOR TO COMMENCEMENT OF WORK WITHIN THE STATE'S HIGHWAY RIGHT-OF-WAY.

2. CONSTRUCTION AND RESTORATION OF ALL EXISTING HIGHWAY FACILITIES WITHIN THE STATE'S RIGHT-OF-WAY, INCLUDING THE LEGAL RELATIONS AND RESPONSIBILITY TO THE PUBLIC, SHALL BE IN ACCORDANCE WITH THE CURRENT "HAWAII STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION", AND THE "SPECIFICATIONS FOR INSTALLATION OF MISCELLANEOUS IMPROVEMENTS WITHIN STATE HIGHWAYS", OF THE STATE HIGHWAYS DIVISION.

3. WORK MAY BE PERFORMED ONLY BETWEEN THE HOURS OF 8:30 A.M. TO 3:00 P.M. MONDAY THROUGH FRIDAY, EXCEPT STATE HOLIDAYS, UNLESS OTHERWISE APPROVED IN WRITING BY THE DISTRICT ENGINEER AND UNLESS OTHERWISE INDICATED. DURING WORK HOURS, ONLY ONE LANE OF TRAFFIC SHALL BE CLOSED, UNLESS OTHERWISE APPROVED IN WRITING BY THE DISTRICT ENGINEER. AT CERTAIN LOCATIONS, "NO LANE CLOSURE" WILL BE ALLOWED DURING THE "BACK TO SCHOOL JAM", THANKSGIVING WEEKEND, CHRISTMAS/NEW YEAR PERIOD AND AT OTHER TIMES AS DIRECTED BY THE HIGHWAYS DIVISION.

4. THE CONTRACTOR SHALL PROVIDE, INSTALL, AND MAINTAIN ALL NECESSARY SIGNS, LIGHTS, FLARES, BARRICADES, MARKERS, CONES, AND OTHER PROTECTIVE FACILITIES, AND SHALL TAKE ALL NECESSARY PRECAUTIONS FOR THE PROTECTION, CONVENIENCE, AND SAFETY OF THE PUBLIC TRAFFIC. ALL SUCH PROTECTIVE FACILITIES AND PRECAUTIONS TO BE TAKEN SHALL CONFORM WITH THE "ADMINISTRATIVE RULES OF HAWAI'I GOVERNING THE USE OF TRAFFIC CONTROL DEVICES AT WORK SITES ON, OR ADJACENT TO, PUBLIC STREETS AND HIGHWAYS", ADOPTED BY THE DIRECTOR OF TRANSPORTATION, AND THE "U.S. FEDERAL HIGHWAY ADMINISTRATION MUTCD – "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, PART VI – TEMPORARY TRAFFIC CONTROL". LANE CLOSURES SHALL CONFORM TO THE TRAFFIC CONTROL PLAN INCORPORATED INTO THESE CONSTRUCTION PLANS AND MUST BE APPROVED BY THE DIVISION PRIOR TO THE ISSUANCE OF THE PERMIT.

5. THE MINIMUM PAVEMENT STRUCTURE SHALL CONSIST OF:

   A. RESIDENTIAL DRIVEWAYS, ON MINOR HIGHWAYS:

      (1) 2-1/2" ASPHALT CONCRETE (MIX IV), 6" AGGREGATE BASE COURSE AND 12" SUBBASE, OR 2-1/2" ASPHALT CONCRETE AND 6" ASPHALT CONCRETE BASE COURSE.

      (2) 6" OF CLASS "A" CONCRETE REINFORCED WITH 6" X 6"-W2.9 X W2.9 WIRE MESH ON 12" AGGREGATE SUBBASE, IF DEEMED NECESSARY BY THE ENGINEER.

   B. COMMERCIAL DRIVEWAYS AND SIDEROADS ON MINOR HIGHWAYS:

      (1) 2-1/2" ASPHALT CONCRETE (MIX IV), 6" ASPHALT CONCRETE BASE COURSE AND 12" SUBBASE, OR 4" ASPHALT CONCRETE (MIX IV) AND 8" ASPHALT CONCRETE BASE COURSE.

      (2) 8" OF CLASS "A" CONCRETE REINFORCED WITH 6" X 6" – W2.9 X W2.9 WIRE MESH ON 12" AGGREGATE SUBBASE, IF DEEMED NECESSARY BY THE ENGINEER.

   C. CHANNELIZED INTERSECTIONS ON MAJOR HIGHWAYS:

      4" ASPHALT CONCRETE (MIX IV), 8" ASPHALT CONCRETE BASE COURSE AND 12" AGGREGATE SUBBASE, OR 4" ASPHALT CONCRETE (MIX IV) AND 12" ASPHALT CONCRETE BASE COURSE.

6. NO MATERIAL AND/OR EQUIPMENT SHALL BE STOCKPILED OR OTHERWISE STORED WITHIN THE HIGHWAY RIGHT-OF-WAY, EXCEPT AT LOCATIONS DESIGNATED IN WRITING AND APPROVED BY THE DISTRICT ENGINEER.

7. COMPACTION TESTS SHALL BE TAKEN IN ACCORDANCE WITH THE "SPECIFICATIONS FOR INSTALLATION OF MISCELLANEOUS IMPROVEMENTS WITHIN STATE HIGHWAYS", AS FOLLOWS:

   A. SUBBASE: ONE (1) COMPACTION TEST PER LIFT PER 200 LINEAR FEET OF ROADWAY.

   B. BASE COURSE: ONE (1) COMPACTION TEST PER LIFT PER 200 LINEAR FEET OF ROADWAY.

   C. ASPHALT CONCRETE: ONE (1) COMPACTION TEST PER LIFT PER 300 LINEAR FEET OF TRENCH.

   D. A COPY OF THE TEST RESULTS SHALL BE SUBMITTED TO THE DISTRICT ENGINEER.

8. THE CONTRACTOR SHALL TAKE A PROFILE ALONG THE CENTERLINE OF THE PROPOSED UTILITY TRENCH, BOTH BEFORE COMMENCING TRENCH EXCAVATION WORK AND AFTER TRENCH HAS BEEN REPAVED. PROFILES SHALL BE SUBMITTED TO THE DISTRICT ENGINEER AND SHALL BE USED TO VERIFY THE ROADWAY SURFACE HAS BEEN RESTORED TO ITS ORIGINAL CONDITION OR SMOOTHER.

9. THE DISTANCE FROM THE PAVED SURFACE TO THE TESTING EDGE OF A TEN-FOOT LONG STRAIGHT EDGE BETWEEN TWO POINTS SHALL NOT EXCEED $\frac{1}{16}$ INCH.

10. THE CONTRACTOR SHALL PROVIDE AN ADEQUATE AND SAFE NON-SKID BRIDGING MATERIAL, INCLUDING SHORING, OVER TRENCHES IN PAVEMENT AREAS. THE BRIDGING SHALL BE ABLE TO SUPPORT ALL TYPES OF VEHICULAR TRAFFIC. BRIDGING MATERIALS SHALL NOT BE USED ON HIGH SPEED ROADWAYS, WHICH ARE ROADS WITH A DESIGN SPEED OF 50 MPH OR HIGHER. SMOOTH RIDING CONNECTION BETWEEN ROADWAY SURFACES AND BRIDGING MATERIAL SHALL BE PROVIDED. SHOULD COMPLAINTS BE RECEIVED DUE TO NOISE GENERATED FROM THIS WORK, THE CONTRACTOR SHALL IMMEDIATELY ADDRESS THOSE COMPLAINTS.

11. THE CONTRACTOR SHALL MAKE EVERY EFFORT TO MINIMIZE THE USE AND THE DURATION OF USE OF BRIDGING MATERIALS. THE STATE MAY REQUIRE THE BACKFILLING AND PATCHES OF TRENCHES DUE TO THE EXCESSIVE USAGE OF STEEL PLATES.

12. UNLESS OTHERWISE NOTED, NO TRENCH SHALL BE OPENED MORE THAN 300 FEET IN ADVANCE OF THE INSTALLED AND TESTED PIPELINE AND/OR DUCTLINE.

13. EXISTING DRAINAGE SYSTEMS SHALL BE FUNCTIONAL AT ALL TIMES.

14. THE CONTRACTOR SHALL EXERCISE CARE TO MINIMIZE DAMAGES TO EXISTING HIGHWAY IMPROVEMENTS. ALL DAMAGES SHALL BE REPAIRED BY THE CONTRACTOR, AT HIS EXPENSE, TO THE SATISFACTION OF THE DISTRICT ENGINEER.

15. APPROVAL OF PERMIT CONSTRUCTION PLANS SHALL BE VALID FOR A PERIOD OF ONE (1) YEAR FROM THE DATE OF NOTIFICATION OF APPROVAL TO THE APPLICANT. IN THE EVENT CONSTRUCTION DOES NOT COMMENCE WITHIN THIS ONE-YEAR PERIOD, THE APPLICANT WILL BE REQUIRED TO RESUBMIT THE CONSTRUCTION PLANS FOR THE DIVISION'S REVIEW AND RE-APPROVAL.

16. ALL REGULATORY, GUIDE, AND CONSTRUCTION SIGNS AND BARRICADES SHALL HAVE A HIGH-INTENSITY TYPE III OR IV RETROREFLECTIVE BACKGROUND.

17. THE CONTRACTOR SHALL INFORM THE STATE HIGHWAY'S PERMIT OFFICE (933-8866) AT LEAST TWO (2) DAYS PRIOR TO CLOSING ANY LANES.

18. DRIVEWAYS SHALL BE KEPT OPEN UNLESS THE OWNERS OF THE PROPERTIES USING THESE RIGHTS-OF-WAYS ARE OTHERWISE PROVIDED FOR SATISFACTORILY.

19. WHERE PEDESTRIAN WALKWAYS EXIST THEY SHALL BE MAINTAINED IN A SAFE AND PASSABLE CONDITION, OR OTHER FACILITIES FOR PEDESTRIANS SHALL BE PROVIDED. PASSAGES BETWEEN WALKWAYS AT INTERSECTIONS SHALL LIKEWISE BE PROVIDED. ALL WALKWAYS SHALL CONFORM TO ADA REQUIREMENTS.

20. THE CONTRACTOR SHALL REFERENCE, TO THE SATISFACTION OF THE DISTRICT ENGINEER, ALL EXISTING TRAFFIC SIGNS, POSTS, AND PAVEMENT MARKINGS PRIOR TO THE COMMENCEMENT OF CONSTRUCTION. THE CONTRACTOR SHALL REPLACE OR REPAIR ALL TRAFFIC SIGNS, POSTS, AND PAVEMENT MARKINGS DISTURBED BY HIS ACTIVITIES, AT HIS EXPENSE, UNLESS DIRECTED BY THE DISTRICT ENGINEER OR HIS REPRESENTATIVE.

21. THE CONTRACTOR SHALL EXERCISE CARE WHEN PERFORMING WORK, IN OR ADJACENT TO THE STATE HIGHWAY RIGHT-OF-WAY. DAMAGES TO THE EXISTING FACILITIES SHALL BE IMMEDIATELY REPORTED TO THE RESPECTIVE UTILITY COMPANIES, AND/OR CITY OR STATE AGENCIES. THE REPAIR WORK SHALL BE DONE AT THE CONTRACTOR'S EXPENSE.

22. HIGHWAY LIGHTS SHALL BE KEPT OPERATIONAL DURING CONSTRUCTION. SHOULD WORK BE NECESSARY, THE CONTRACTOR SHALL NOTIFY THE STATE HIGHWAYS' HIGHWAY LIGHTING SUPERVISOR (933-8866), THREE (3) WORKING DAYS PRIOR TO COMMENCING WORK.

23. THE PERMIT TO PERFORM WORK UPON A STATE HIGHWAY MAY BE REVOKED BECAUSE OF DEFAULT IN ANY OF THE FOLLOWING, BUT NOT LIMITED TO, CONDITIONS:

   A. WORK PERFORMED BEFORE OR AFTER PERMITTED HOURS.

   B. FAILURE TO MAINTAIN ROADWAY SURFACES IN A SMOOTH AND SAFE CONDITION.

   C. FAILURE TO CLEAN UP CONSTRUCTION DEBRIS GENERATED FROM PROJECT WORK.

   D. FAILURE TO PROVIDE PROPER TRAFFIC CONTROL.

   E. FAILURE TO REPLACE DAMAGED PAVEMENT MARKINGS AND SIGNS.

   F. FAILURE TO MAINTAIN HIGHWAY LIGHTS AND/OR TRAFFIC SIGNAL SYSTEMS.

   G. FAILURE TO ADDRESS PUBLIC COMPLAINTS TO THE SATISFACTION OF THE DISTRICT ENGINEER.

24. THE CONTRACTOR SHALL NOTIFY THE STATE HIGHWAYS PERMIT OFFICE (933-8866) AT LEAST TWO DAYS PRIOR TO PERFORMING ANY TRENCH RESTORATION WORK. THIS WORK SHALL INCLUDE ANY BACKFILLING AND COMPACTING OF TRENCH MATERIAL; ANY PLACING AND COMPACTING OF BASE COURSE MATERIAL; AND ANY PAVING OPERATIONS. ANY TRENCH RESTORATION WORK PERFORMED BY THE CONTRACTOR THAT IS NOT WITNESSED BY A STATE REPRESENTATIVE WILL BE REQUIRED TO BE REMOVED AND RESTORED WITH A STATE REPRESENTATIVE PRESENT. ALL RESTORATION WORK WILL BE AT THE CONTRACTOR'S EXPENSE.

25. TEMPORARY COLD MIX TRENCH PATCHES WILL BE PERMITTED IN ANY GIVEN AREA FOR A MAXIMUM DURATION OF TWO WEEKS, AND SHALL BE A MINIMUM OF 2 INCHES THICK. ALL TEMPORARY PATCHES SHALL BE PLACED OVER PROPERLY PLACED AND COMPACTED BACKFILL AND BASE COURSE LAYERS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING ALL TEMPORARY PATCHES AND TO MAKE REPAIRS TO UNSATISFACTORY PATCHES WITHIN 24 HOURS.

26. PLASTIC MARKING TAPE. PROVIDE PLASTIC MARKING TAPE THAT IS ACID AND ALKALI RESISTANT POLYETHYLENE FILM 6 INCHES WIDE WITH MINIMUM THICKNESS OF 0.004 INCH. PROVIDE TAPE WITH MINIMUM STRENGTH OF 1750 PSI LENGTHWISE AND 1500 PSI CROSSWISE. MANUFACTURE TAPE WITH INTEGRAL WIRES, FOIL BACKING OR OTHER MEANS TO ENABLE DETECTION BY A METAL DETECTOR WHEN THE TAPE IS BURIED UP TO 3 FEET DEEP. MANUFACTURE TAPE SPECIFICALLY FOR MARKING AND LOCATING UNDERGROUND UTILITIES. PROVIDE THE METALLIC CORE OF THE TAPE ENCASED IN A PROTECTIVE JACKET OR PROVIDED WITH OTHER MEANS TO PROTECT IT FROM CORROSION. CONFORM TO THE FOLLOWING TAPE COLOR AND BEAR A CONTINUOUS PRINTED INSCRIPTION DESCRIBING THE SPECIFIC UTILITY.

RED:	ELECTRIC
YELLOW:	GAS, OIL, DANGEROUS MATERIALS
ORANGE:	TELEPHONE, TELEGRAPH, TELEVISION, POLICE, AND FIRE COMMUNICATIONS
BLUE:	WATER SYSTEMS
GREEN:	SEWER SYSTEMS

27. THE CONTRACTOR SHALL PROVIDE THE DISTRICT ENGINEER WITH "AS-BUILT" PLANS UPON COMPLETION OF THE WORK DONE IN THE STATE RIGHT-OF-WAY. THIS SHALL BE DONE PRIOR TO THE DEPARTMENT'S RELEASE OF THE PERFORMANCE BOND.

GENERAL NOTES FOR TRAFFIC CONTROL PLAN

1. THE PERMITTEE SHALL MAKE MINOR ADJUSTMENTS AT INTERSECTIONS, DRIVEWAYS, BRIDGES, STRUCTURES, ETC., TO FIT FIELD CONDITIONS.

2. CONES OR DELINEATORS SHALL BE EXTENDED TO A POINT WHERE THEY ARE VISIBLE TO APPROACHING TRAFFIC.

3. TRAFFIC CONTROL DEVICES SHALL BE INSTALLED SUCH THAT THE SIGN OR DEVICE FARTHEST FROM THE WORK AREA SHALL BE PLACED FIRST. THE OTHERS SHALL THEN BE PLACED PROGRESSIVELY TOWARD THE WORK AREA.

4. REGULATORY AND WARNING SIGNS WITHIN THE CONSTRUCTION ZONE THAT ARE IN CONFLICT WITH THE TRAFFIC CONTROL PLANS SHALL BE REMOVED OR COVERED. ALL SIGNS SHALL BE RESTORED UPON COMPLETION OF THE WORK.

5. FLAGGERS AND/OR POLICE OFFICERS SHALL BE IN SIGHT OF EACH OTHER OR IN DIRECT COMMUNICATION AT ALL TIMES.

6. WHEN REQUIRED BY THE ISSUING OFFICE, THE PERMITTEE SHALL INSTALL A FLASHING ARROW SIGNAL AS SHOWN ON THE TRAFFIC CONTROL PLANS.

7. SIGN SPACINGS (D), TAPER LENGTHS (T) AND SPACINGS OF CONES OR DELINEATORS SHALL BE AS SHOWN, UNLESS OTHERWISE NOTED ON THE TRAFFIC CONTROL PLANS.

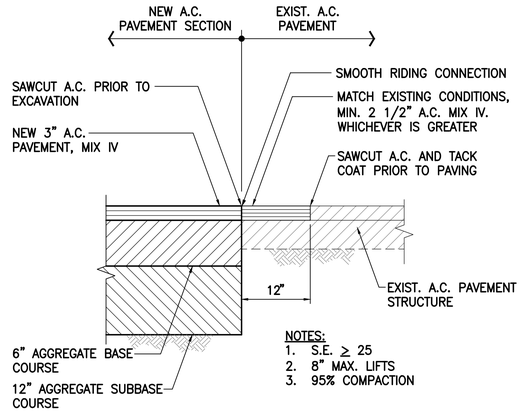
8. ALL TRAFFIC LANES SHALL BE A MINIMUM OF 10 FEET WIDE.

9. ALL CONSTRUCTION WARNING SIGNS SHALL BE PROMPTLY REMOVED OR COVERED WHENEVER THE MESSAGE IS NOT APPLICABLE OR NOT IN USE.

10. THE BACKS OF ALL SIGNS USED FOR TRAFFIC CONTROL SHALL BE APPROPRIATELY COVERED TO PRECLUDE THE DISPLAY OF INAPPLICABLE SIGN MESSAGES (I.E., WHEN SIGNS HAVE MESSAGES ON BOTH FACES).

11. AT THE END OF EACH DAY'S WORK OR AS SOON AS THE WORK IS COMPLETED, THE PERMITTEE SHALL REMOVE ALL TRAFFIC CONTROL DEVICES NO LONGER NEEDED TO PERMIT FREE AND SAFE PASSAGE OF PUBLIC TRAFFIC. REMOVAL SHALL BE IN THE REVERSE ORDER OF INSTALLATION.

12. PERMANENT PAVEMENT MARKINGS AND TRAFFIC SIGNS SHALL BE REPLACED UPON THE COMPLETION OF EACH PHASE OF WORK.



1 / C-1.1 TYPICAL PAVEMENT REPAIR DETAIL (STATE HIGHWAYS)

NOT TO SCALE

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Okahara and Associates, Inc.
ENGINEERS AND LANDSCAPE ARCHITECTS

HILO: 200 KOHOLA STREET, HILO, HAWAII 96720, PH: (808) 961-5527, FAX: (808) 961-5529

HONOLULU: 677 ALA MOANA BLVD., SUITE 703, HONOLULU, HAWAII 96813, PH: (808) 524-1224, FAX: (808) 521-3151

LENNIE OKANO-KENDRICK Licensed Professional Engineer No.11108-C HAWAII, U.S.A.

This work was prepared by me or under my supervision and construction to this project will be under my observation

Lennie Okano-Kendrick

Expiration Date of License 4/30/22

Revisions

No.	Date	Description

Project

HONOMŪ SUBSISTENCE AGRICULTURE SUBDIVISION PHASE 1

TMK: (3) 2-8-011 :011
AKAKA FALLS ROAD
HONOMU, HAWAI'I 96728

Sheet Title

STATE NOTES AND DETAILS

LOK, Project Director	218-026, Project No.
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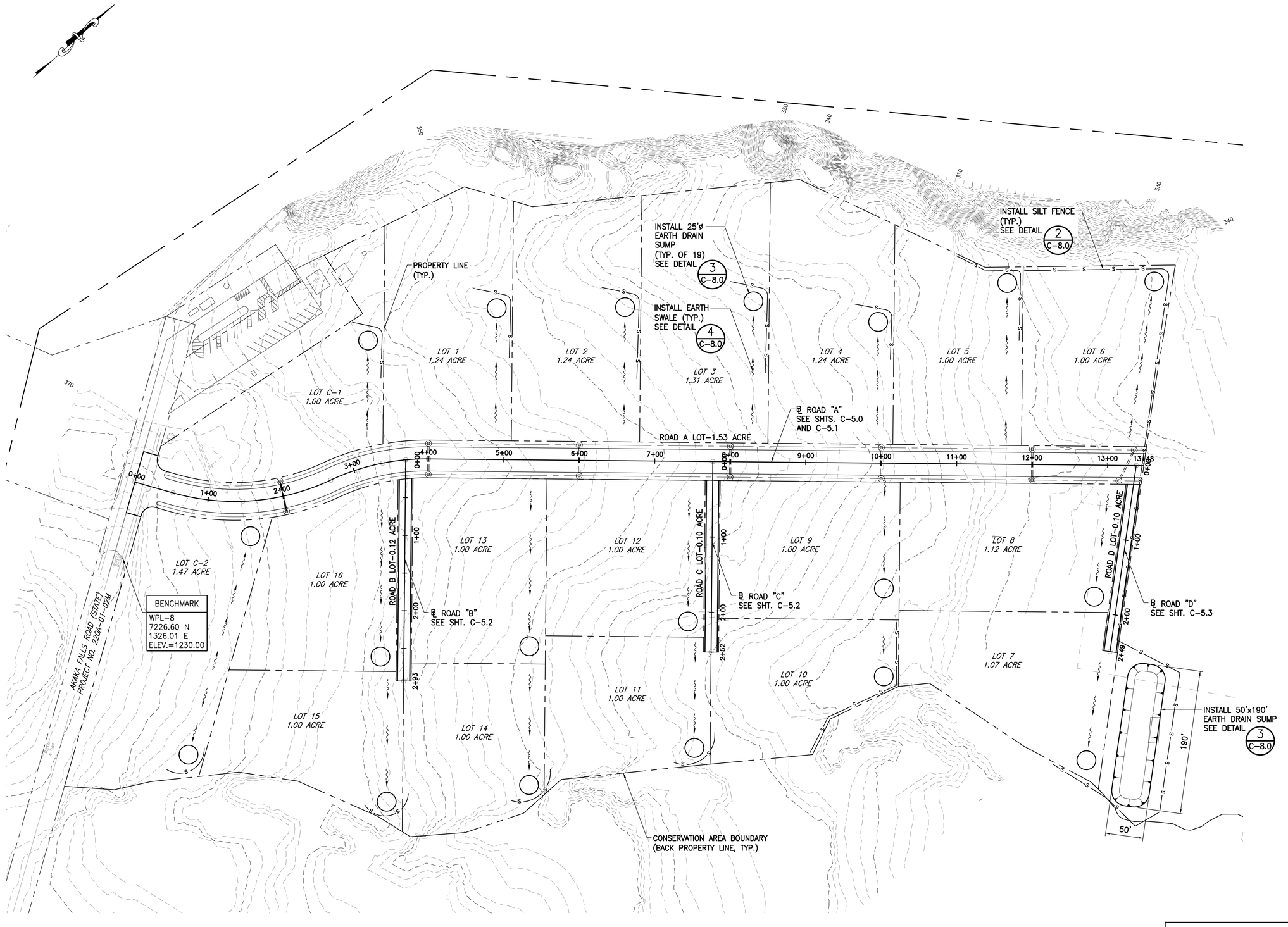
MAY 2020, Date	C-1.1
Const. Issue Date	3 or 18 Sheets



GRADING, EROSION CONTROL AND SITE DRAINAGE PLAN

SCALE: 1"=60'

SCALE: 1" = 60' (60' 30' 0 60' 120')

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HILO: 200 KOHOLA STREET, HILO, HAWAII 96720, PH: (808) 961-5527, FAX: (808) 961-5529

HONOLULU: 677 ALA MOANA BLVD., SUITE 703, HONOLULU, HAWAII 96813, PH: (808) 524-1224, FAX: (808) 521-3151

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HONOMU, HAWAI'I 96728

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GRADING, EROSION CONTROL AND SITE DRAINAGE PLAN

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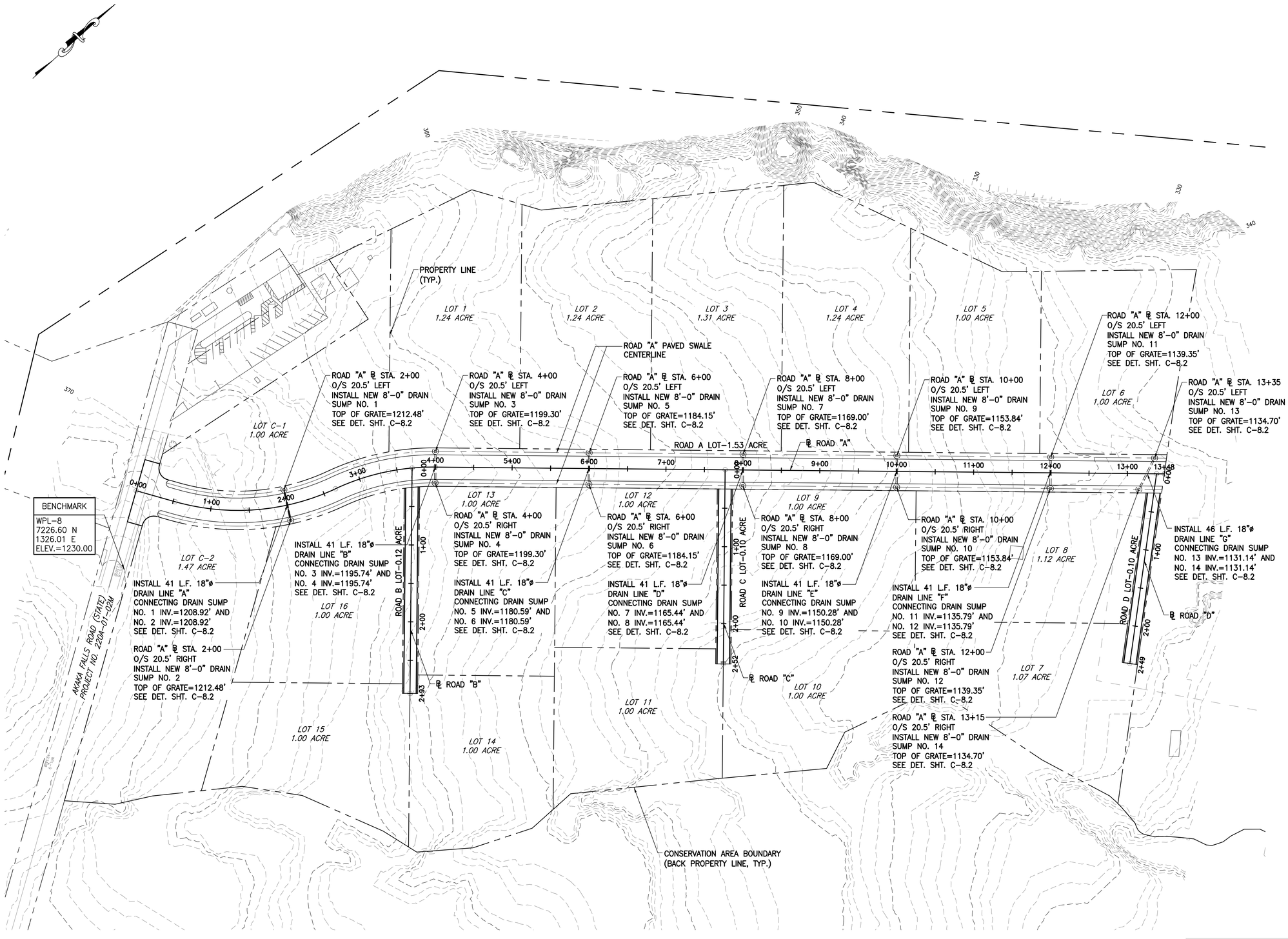

UTILITY PLAN
SCALE: 1"=60'

SCALE: 1" = 60'
60' 30' 0 60' 120'

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HILO: 200 KOHOLA STREET
HILO, HAWAII 96720
PH: (808) 961-5527
FAX: (808) 961-5529

HONOLULU: 677 ALA MOANA BLVD., SUITE 703
HONOLULU, HAWAII 96813
PH: (808) 524-1224
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UTILITY PLAN

LOK	218-026
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MAY 2020	C-3.0
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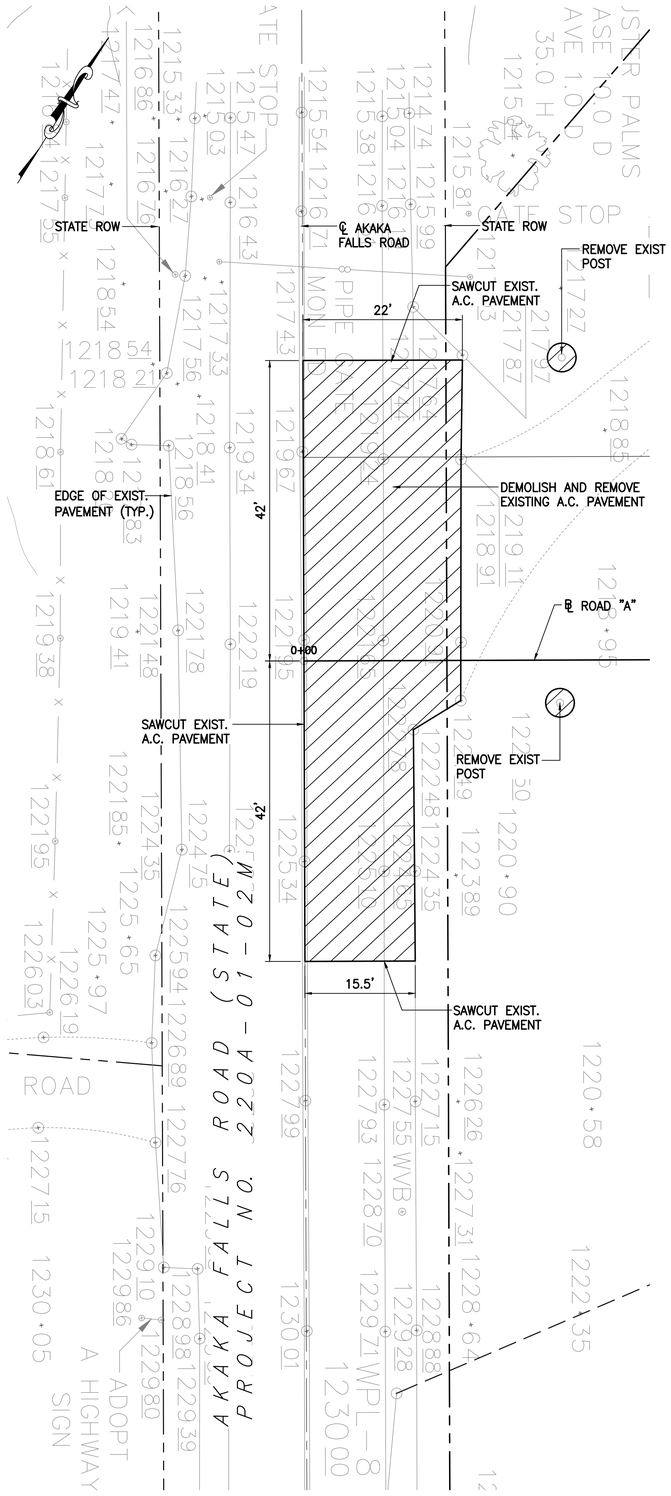

INTERSECTION DEMOLITION PLAN

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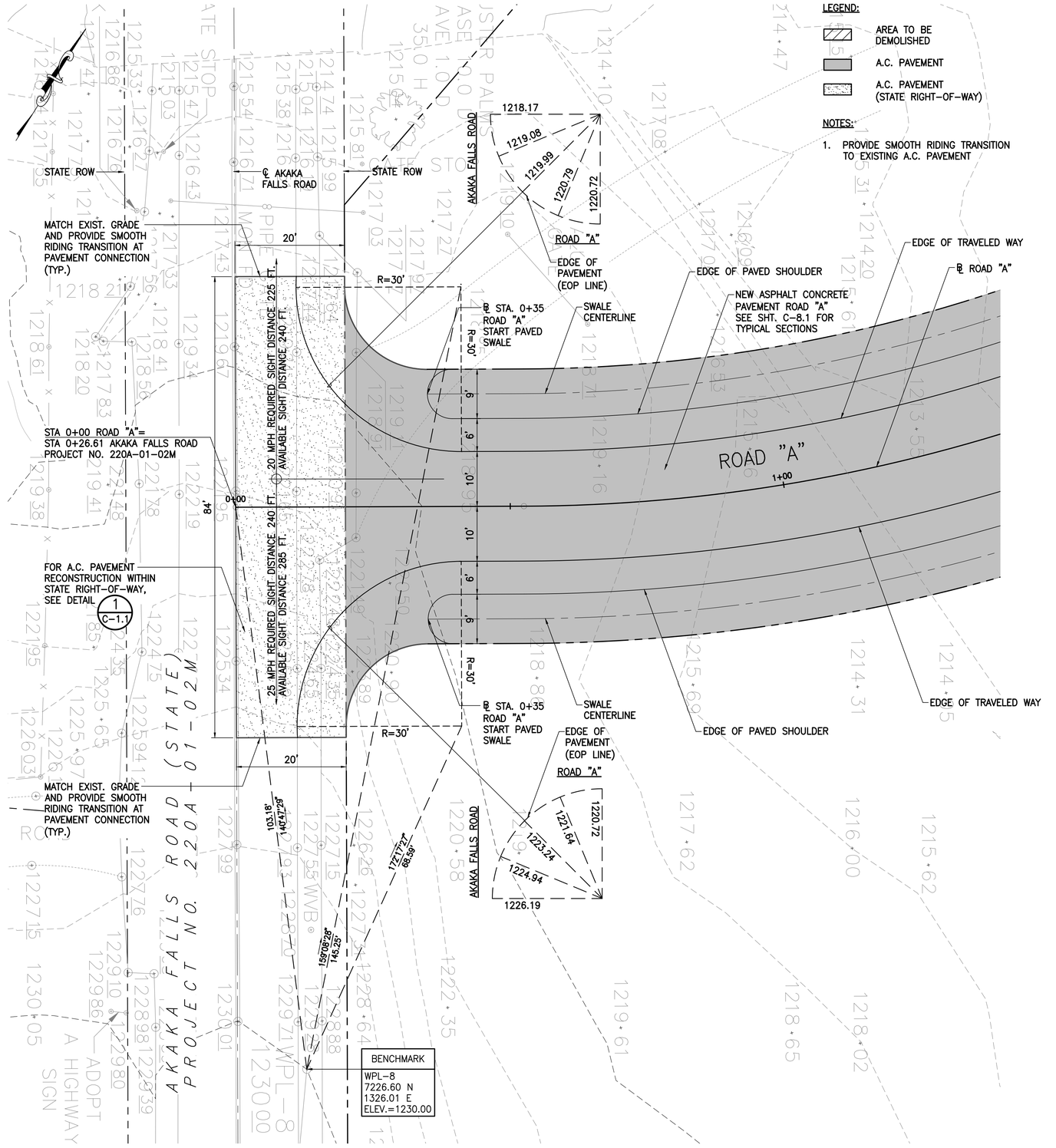

INTERSECTION PLAN AT AKAKA FALLS ROAD

SCALE: 1"=10'

LEGEND:

- AREA TO BE DEMOLISHED
- A.C. PAVEMENT
- A.C. PAVEMENT (STATE RIGHT-OF-WAY)

NOTES:

1. PROVIDE SMOOTH RIDING TRANSITION TO EXISTING A.C. PAVEMENT

SCALE: 1" = 10' — 10' 5' 0 10' 20'

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HILO: 200 KOHOLA STREET, HILO, HAWAII 96720, PH: (808) 961-5527, FAX: (808) 961-5529

HONOLULU: 677 ALA MOANA BLVD., SUITE 703, HONOLULU, HAWAII 96813, PH: (808) 524-1224, FAX: (808) 521-3151

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HONOMU, HAWAI'I 96728

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INTERSECTION PLAN AT AKAKA FALLS ROAD

LOK, Project Director	218-026, Project No.
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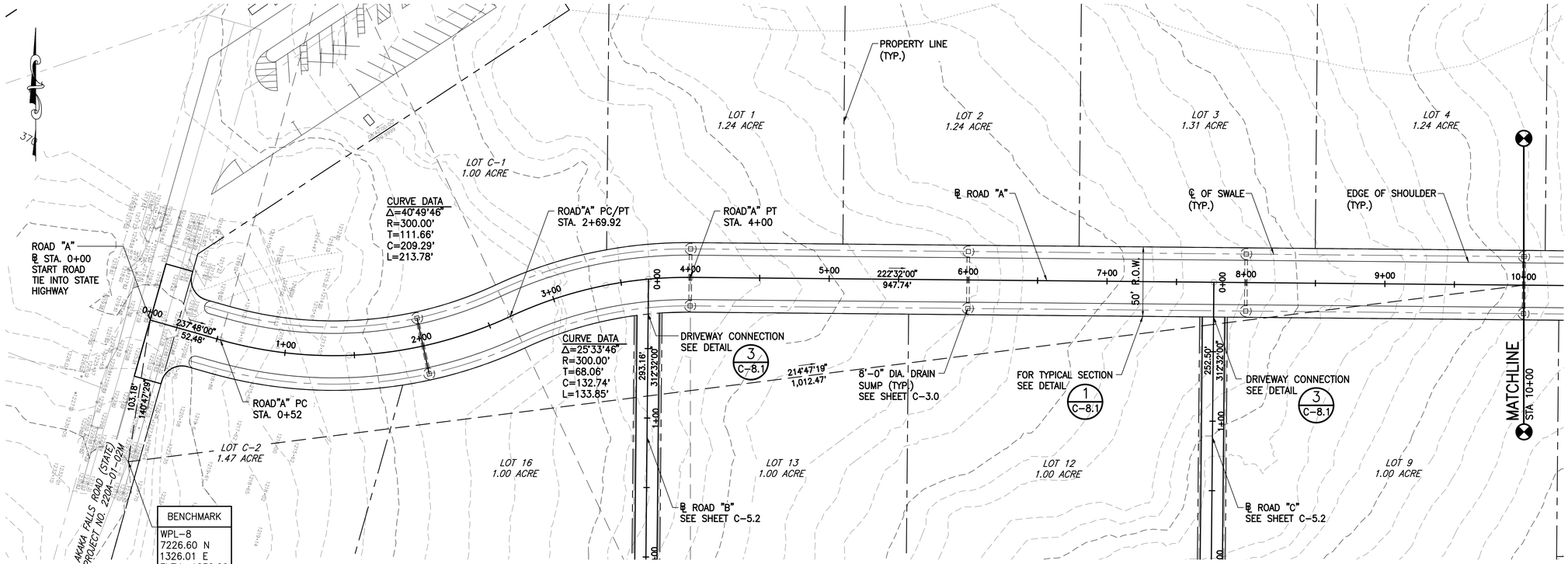
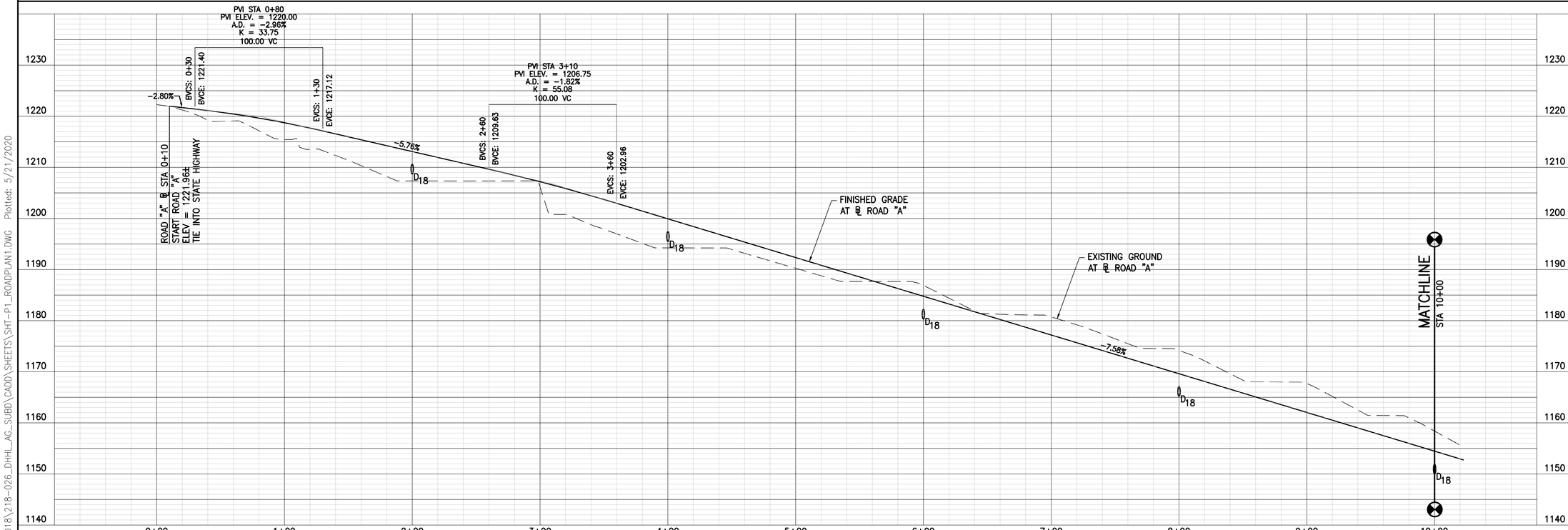


ROAD "A" – PLAN

SCALE: 1"=40'



ROAD "A" – PROFILE

SCALE: HORIZ. 1"=40'
VERT. 1"=10'

SCALE: 1" = 10' (10' 5' 0 10' 20')
SCALE: 1" = 40' (40' 20' 0 40' 80')

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HONOLULU: 677 ALA MOANA BLVD., SUITE 703, HONOLULU, HAWAII 96813, PH: (808) 524-1224, FAX: (808) 521-3151

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HONOMU, HAWAI'I 96728

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ROAD "A" – PLAN AND PROFILE

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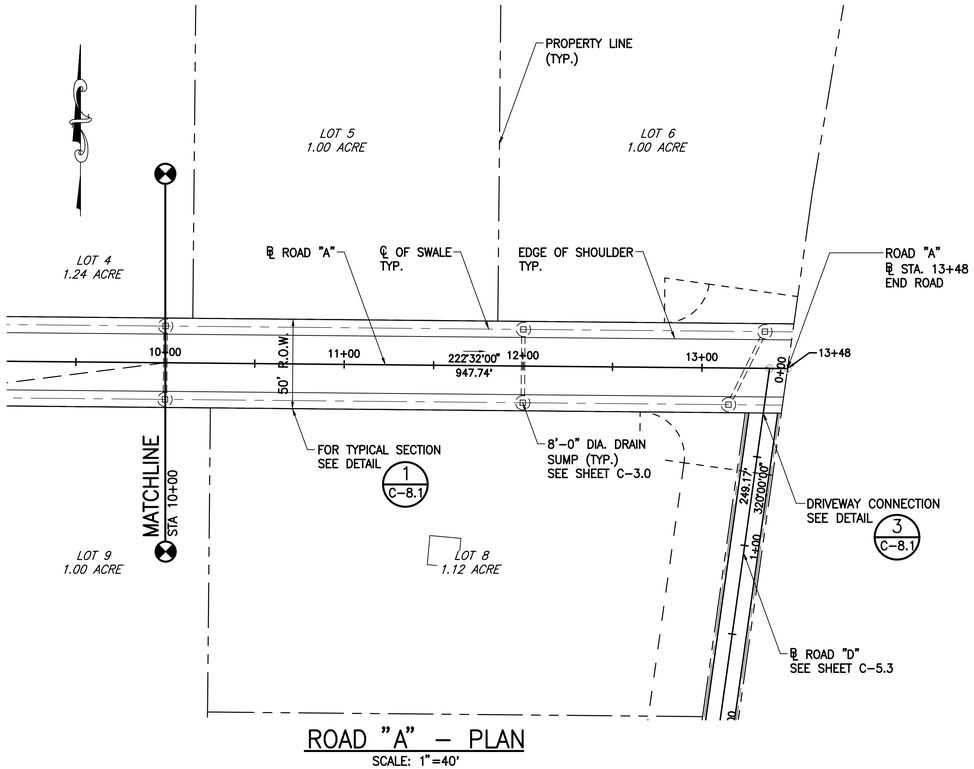

ROAD "A" – PLAN

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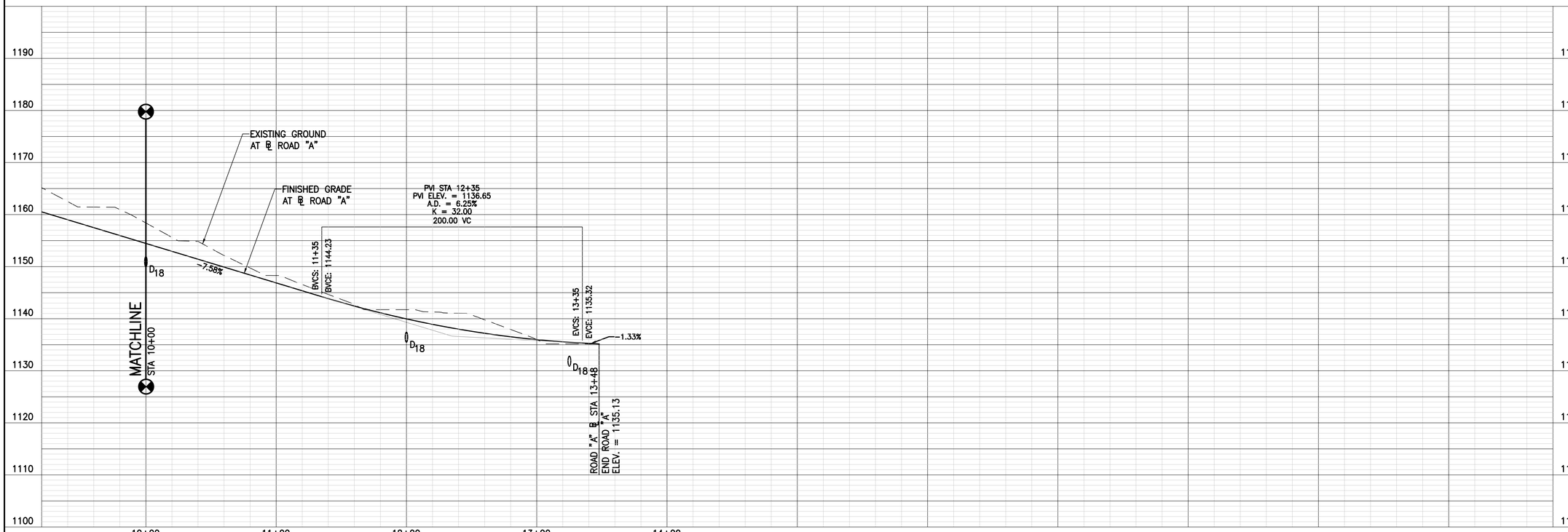

ROAD "A" – PROFILE

SCALE: HORIZ. 1"=40'
VERT. 1"=10'

SCALE: 1" = 10' — 10' 5' 0 10' 20'

SCALE: 1" = 40' — 40' 20' 0 40' 80'

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ENGINEERS AND LANDSCAPE ARCHITECTS

HILO: 200 KOHOLA STREET
HILO, HAWAII 96720
PH: (808) 961-5527
FAX: (808) 961-5529

HONOLULU: 677 ALA MOANA BLVD., SUITE 703
HONOLULU, HAWAII 96813
PH: (808) 524-1224
FAX: (808) 521-3151

LENNIE OKANO-KENDRICK
Licensed Professional Engineer
No.11108-C
HAWAII, U.S.A.

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ROAD "A" – PLAN AND PROFILE

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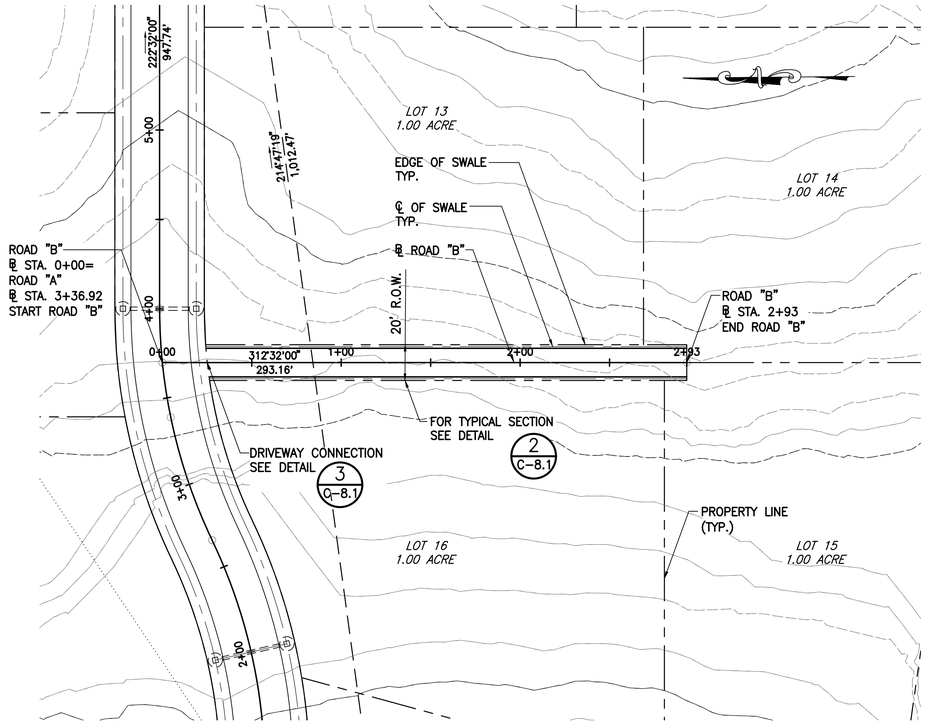

ROAD "B" – PLAN
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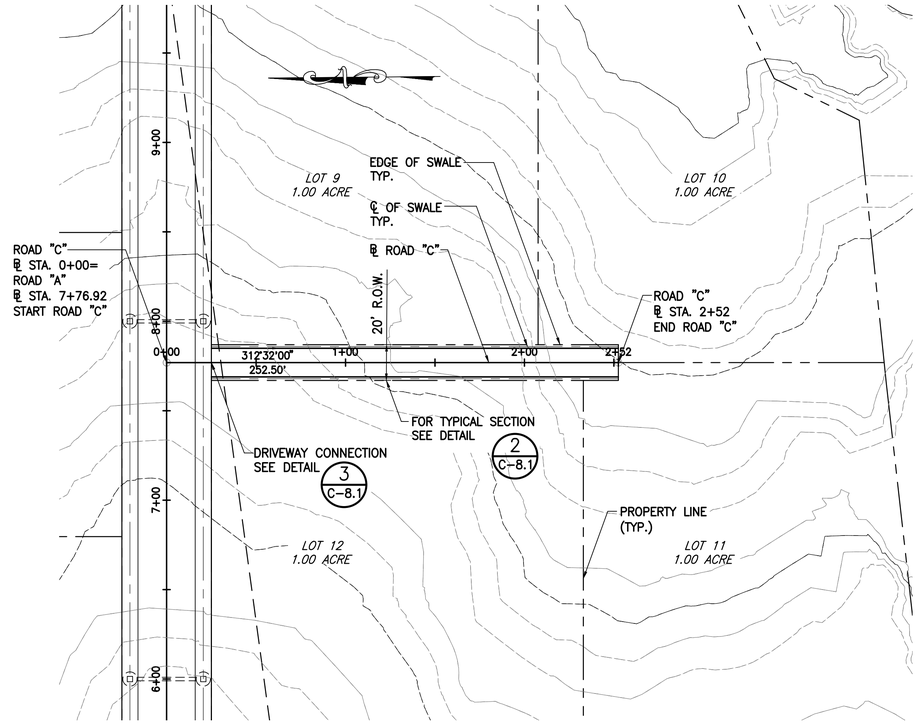

ROAD "C" – PLAN
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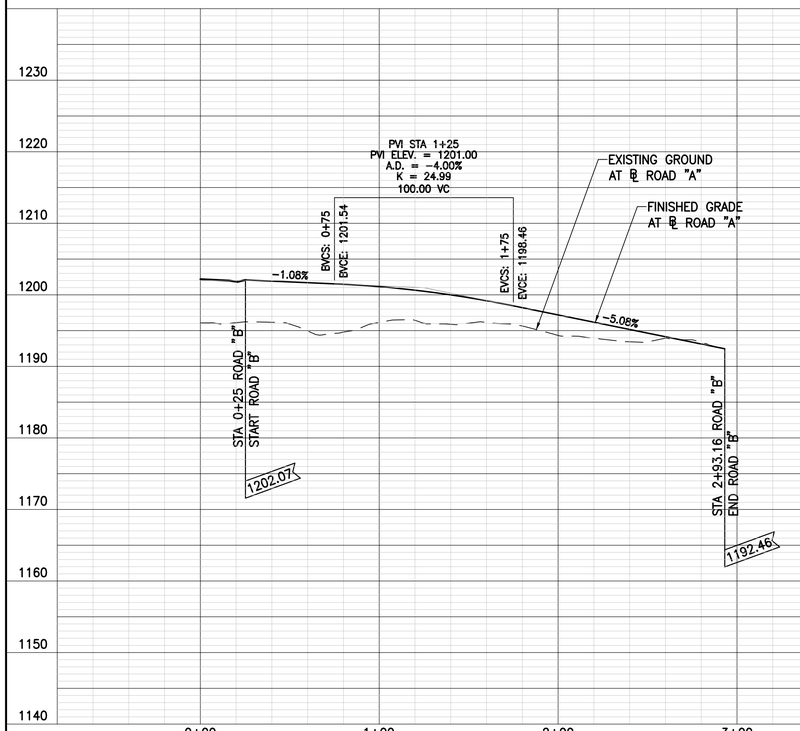
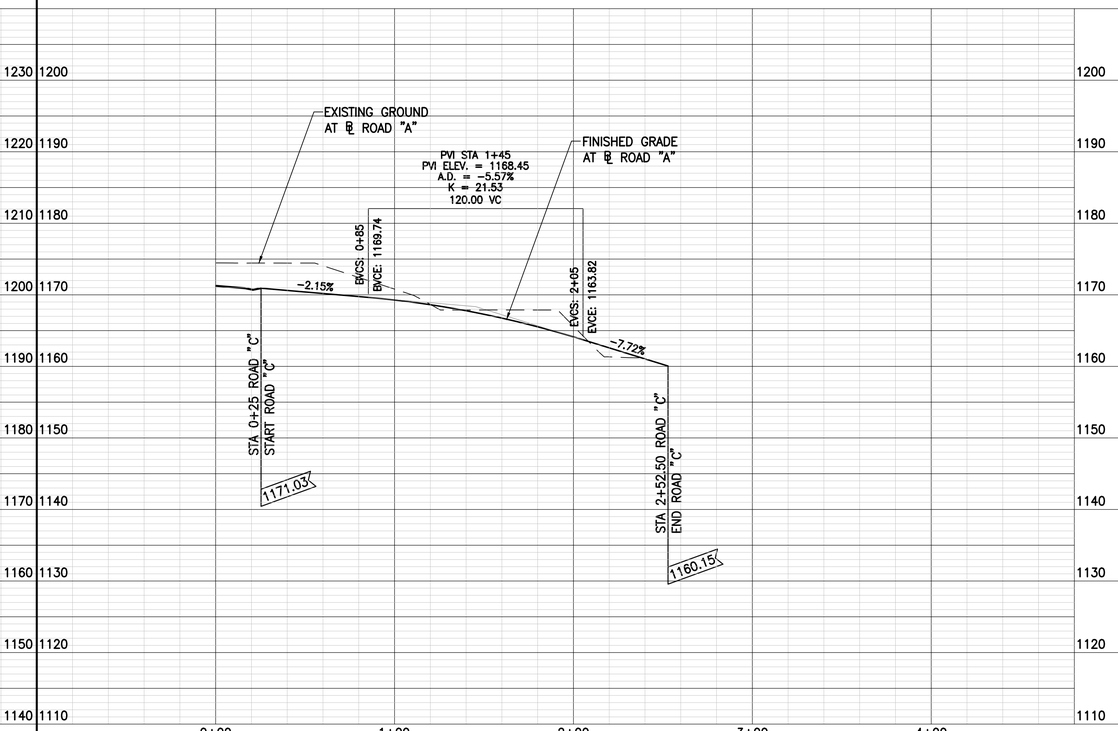


ROAD "B" – PROFILE
SCALE: HORIZ. 1"=40'
VERT. 1"=10'

SCALE: 1" = 10'
10' 5' 0 10' 20'

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



ROAD "C" – PROFILE
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VERT. 1"=10'

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ENGINEERS AND LANDSCAPE ARCHITECTS

HILO: 200 KOHOLA STREET
HILO, HAWAII 96720
PH: (808) 961-5527
FAX: (808) 961-5529

HONOLULU: 677 ALA MOANA BLVD., SUITE 703
HONOLULU, HAWAII 96813
PH: (808) 524-1224
FAX: (808) 521-3151

LENNIE OKANO-KENDRICK
Licensed Professional Engineer
No.11108-C
HAWAII, U.S.A.

This work was prepared by me or under my supervision and construction to this project will be under my observation

Lennie Okano-Kendrick

Expiration Date of License 4/30/22

Revisions

No.	Date	Description

Project

HONOMŪ SUBSISTENCE AGRICULTURE SUBDIVISION PHASE 1

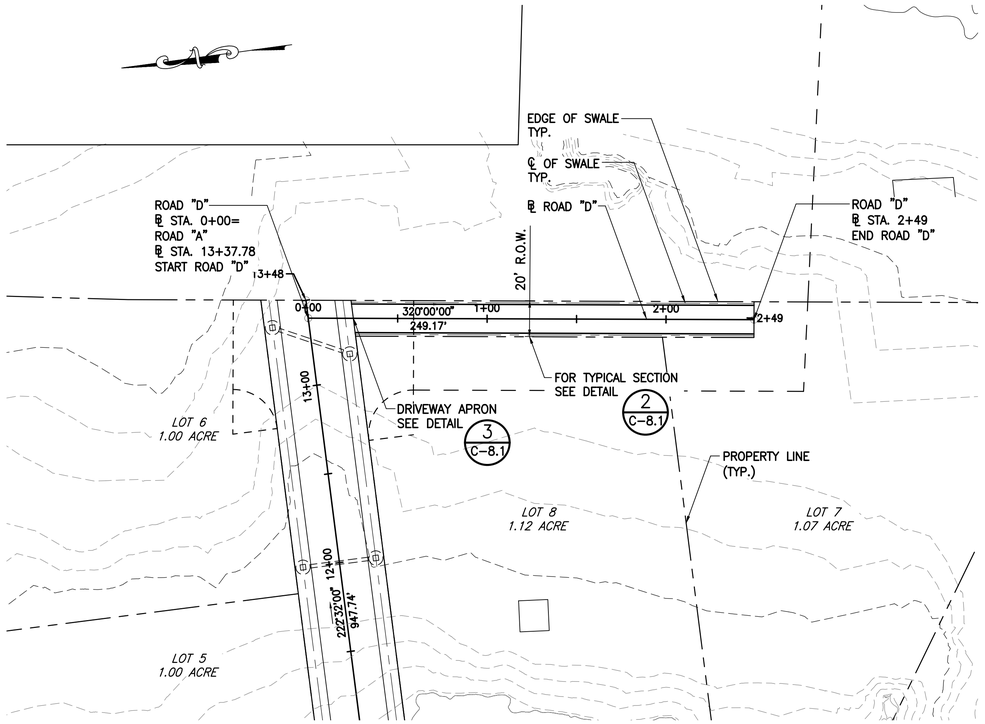
TMK: (3) 2-8-011:011
AKAKA FALLS ROAD
HONOMU, HAWAI'I 96728

Sheet Title

ROAD "B" AND "C" PLAN AND PROFILE

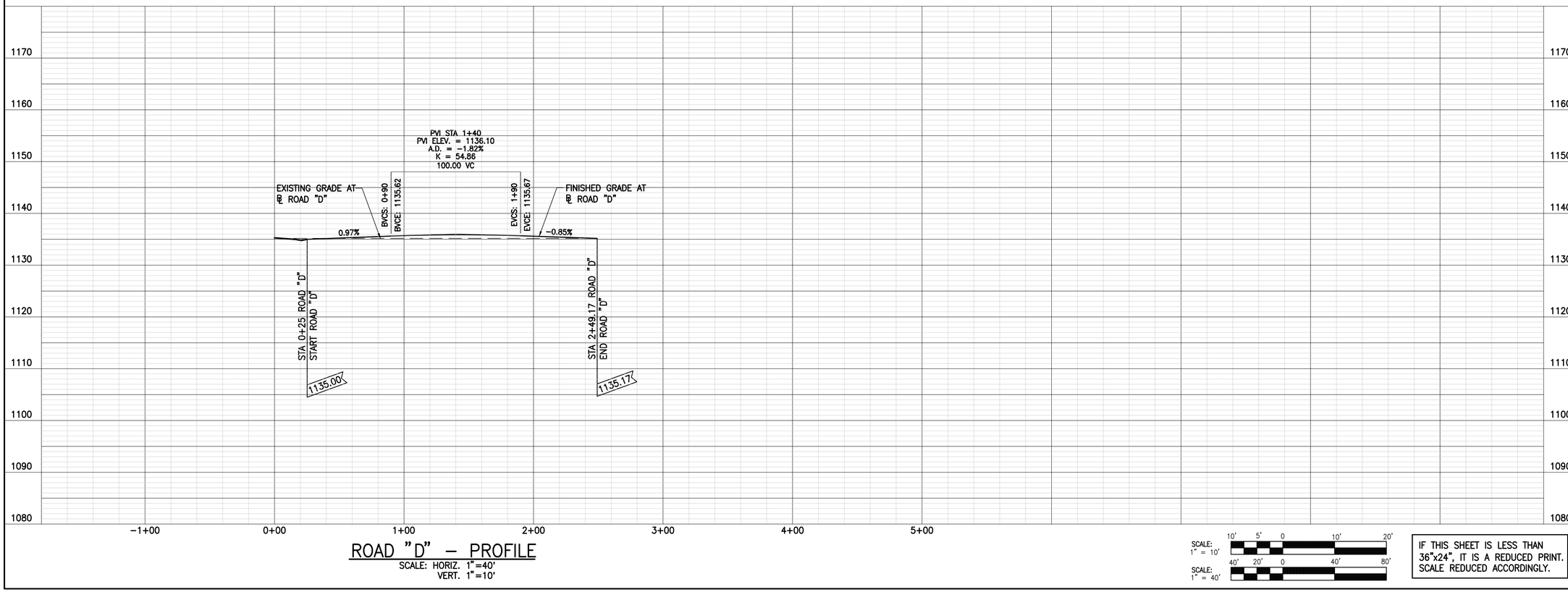
LOK (Project Director)	218-026 (Project No.)
SLP/LG (Drawn By)	BKM (Checked By)
CAD File Name:	
AS SHOWN (Scale:)	
MAY 2020 (Date)	C-5.2
Const. Issue Date	

9 of 18 Sheets



ROAD "D" – PLAN

SCALE: 1"=40'



ROAD "D" – PROFILE

SCALE: HORIZ. 1"=40'
VERT. 1"=10'

SCALE: 1" = 10' 10' 5' 0 10' 20'

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

IF THIS SHEET IS LESS THAN 36"x24", IT IS A REDUCED PRINT. SCALE REDUCED ACCORDINGLY.

Okahara and Associates, Inc.
ENGINEERS AND LANDSCAPE ARCHITECTS

HILO: 200 KOHOLA STREET
HILO, HAWAII 96720
PH: (808) 961-5527
FAX: (808) 961-5529

HONOLULU: 677 ALA MOANA BLVD., SUITE 703
HONOLULU, HAWAII 96813
PH: (808) 524-1224
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LENNIE OKANO-KENDRICK
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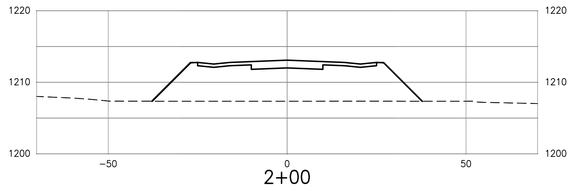
TMK: (3) 2-8-011:011
AKAKA FALLS ROAD
HONOMU, HAWAI'I 96728

Sheet Title

ROAD "D" PLAN AND PROFILE

LOK	218-026
Project Director	Project No.
SLP/LG	BKM
Drawn By	Checked By
CAD File Name:	
AS SHOWN	
Scale:	
MAY 2020	C-5.3
Date	
Const. Issue Date	

10 of 18 Sheets



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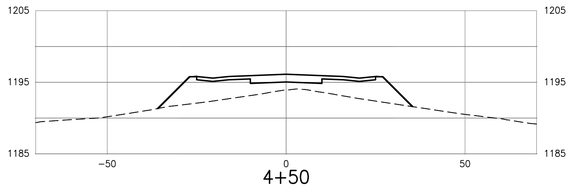

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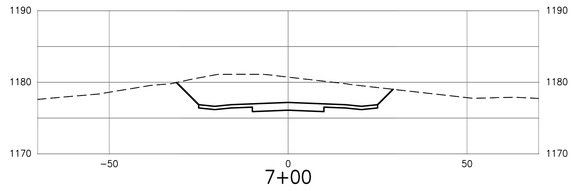

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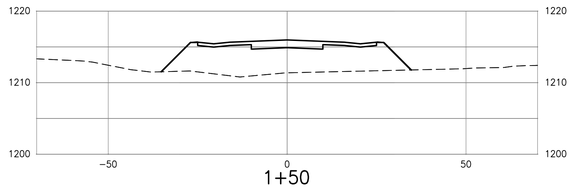

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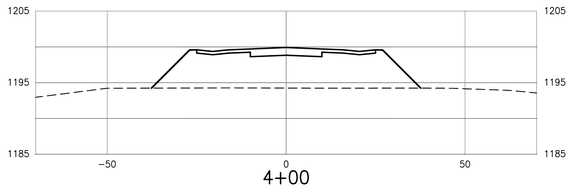

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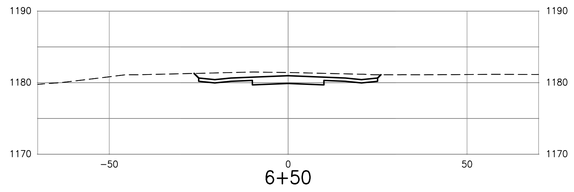

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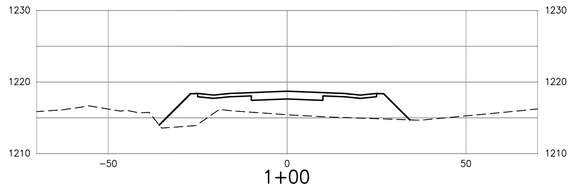

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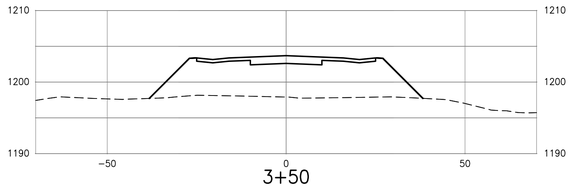

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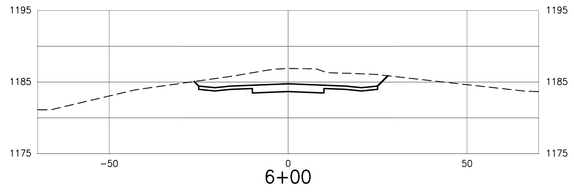

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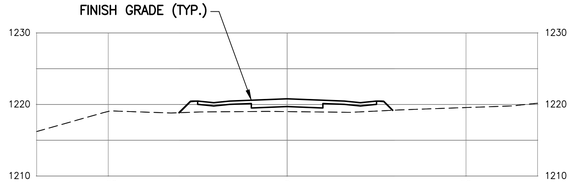

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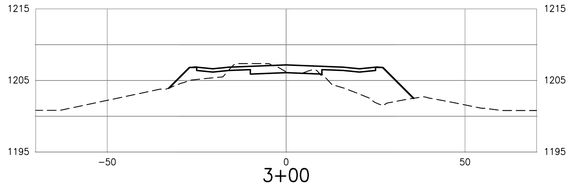

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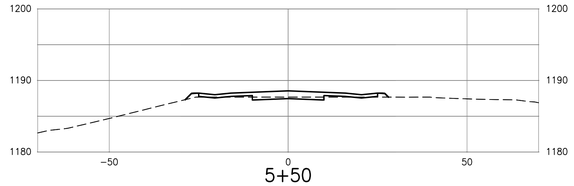

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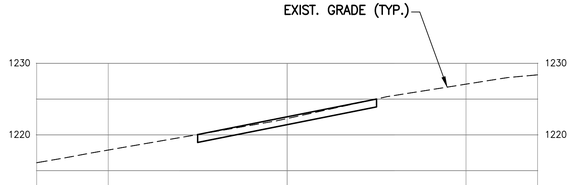

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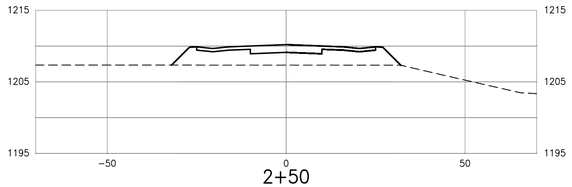

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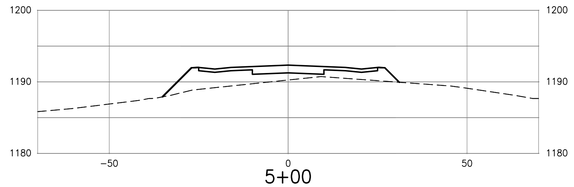

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ROAD "A" – CROSS SECTIONS

SCALE: HORIZ.: 1"=20'
VERT.: 1"=10'

SCALE: 1" = 10'
10' 5' 0 10' 20'

SCALE: 1" = 20'
20' 10' 0 20' 40'

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TMK: (3) 2-8-011 :011
AKAKA FALLS ROAD
HONOMU, HAWAI'I 96728

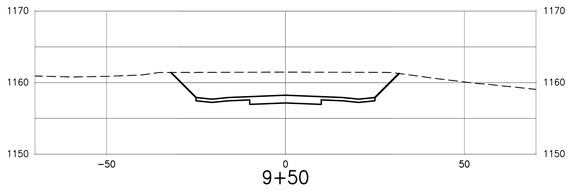
Sheet Title

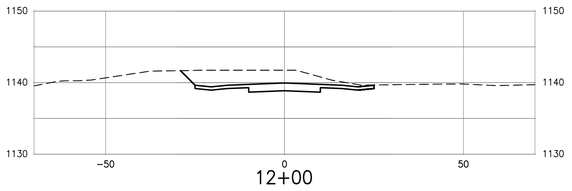
ROAD "A" – CROSS SECTIONS

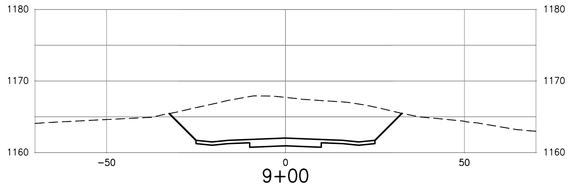
LOK — Project Director
218-026 — Project No.
SLP/LG — Drawn By
BKM — Checked By
CAD File Name:
AS SHOWN — Scale:
MAY 2020 — Date
Const. Issue Date

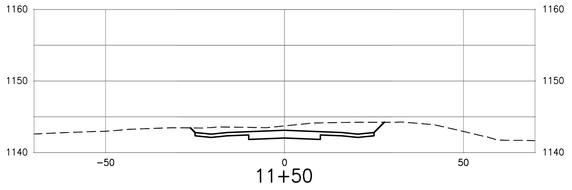
C-6.0

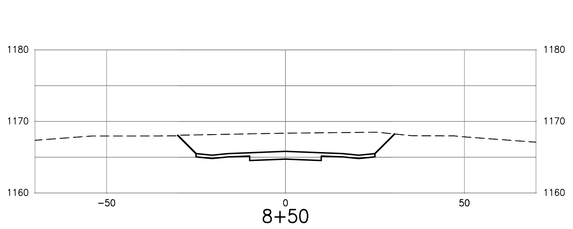
11 or 18 Sheets

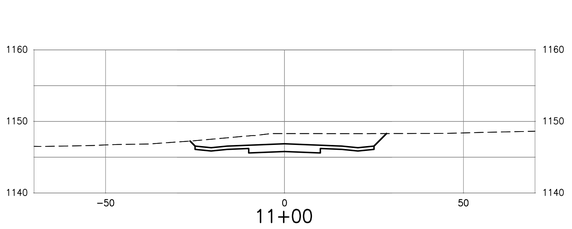


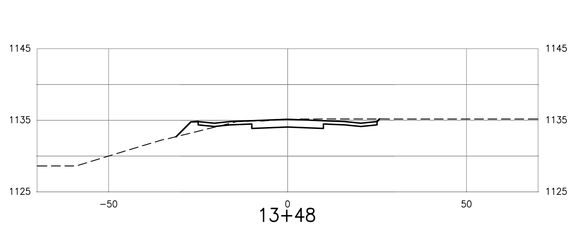


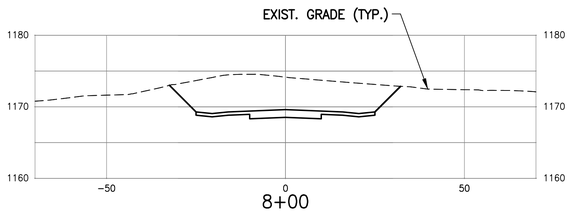


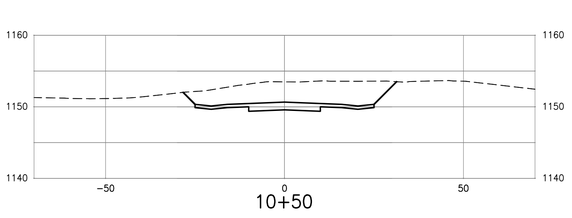


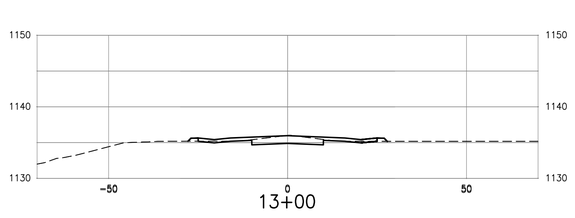


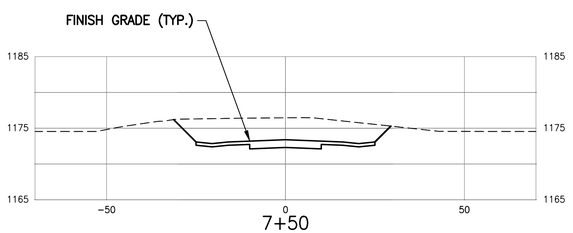


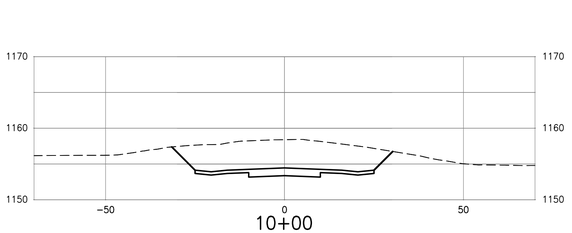


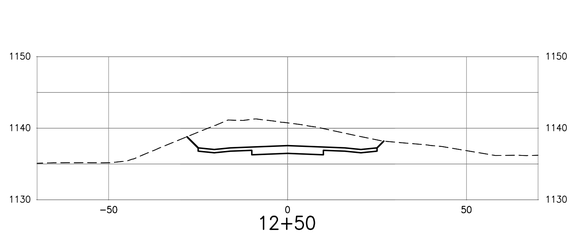












ROAD "A" – CROSS SECTIONS

SCALE: HORIZ.: 1"=20'
VERT.: 1"=10'

SCALE: 1" = 10'
10' 5' 0 10' 20'

SCALE: 1" = 20'
20' 10' 0 20' 40'

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HILO, HAWAII 96720
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No.	Date	Description

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HONOMŪ SUBSISTENCE AGRICULTURE SUBDIVISION PHASE 1

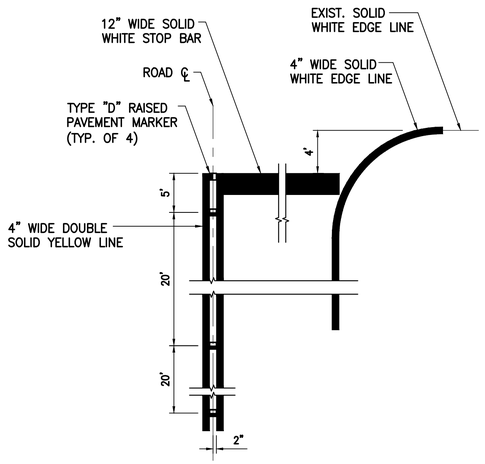
TMK: (3) 2-8-011 :011
AKAKA FALLS ROAD
HONOMU, HAWAI'I 96728

Sheet Title

ROAD "A" – CROSS SECTIONS

LOK	218-026
Project Director	Project No.
SLP/LG	BKM
Drawn By	Checked By
AS SHOWN	CAD File Name:
Scale:	
MAY 2020	C-6.1
Date	
Const. Issue Date	

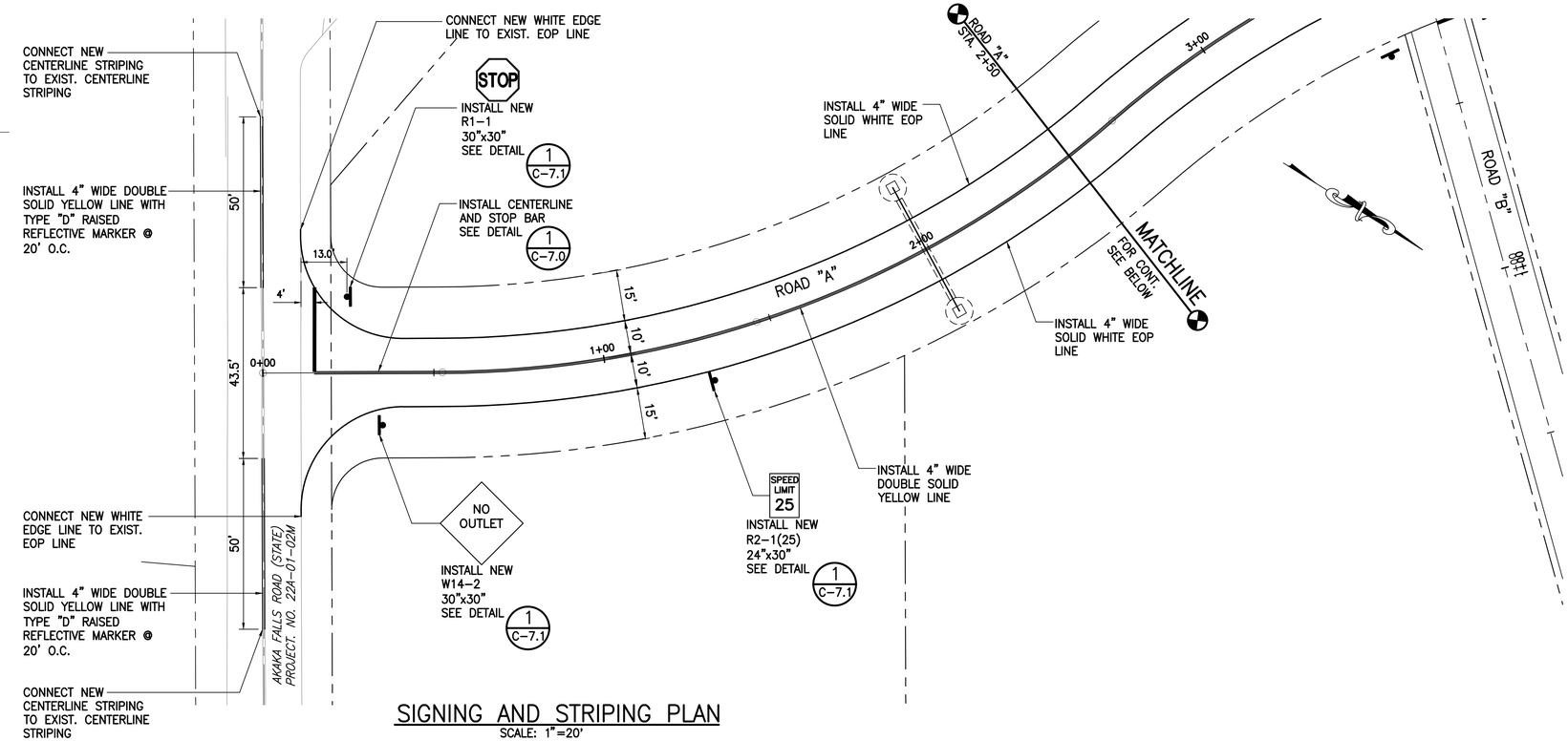
12 or 18 Sheets



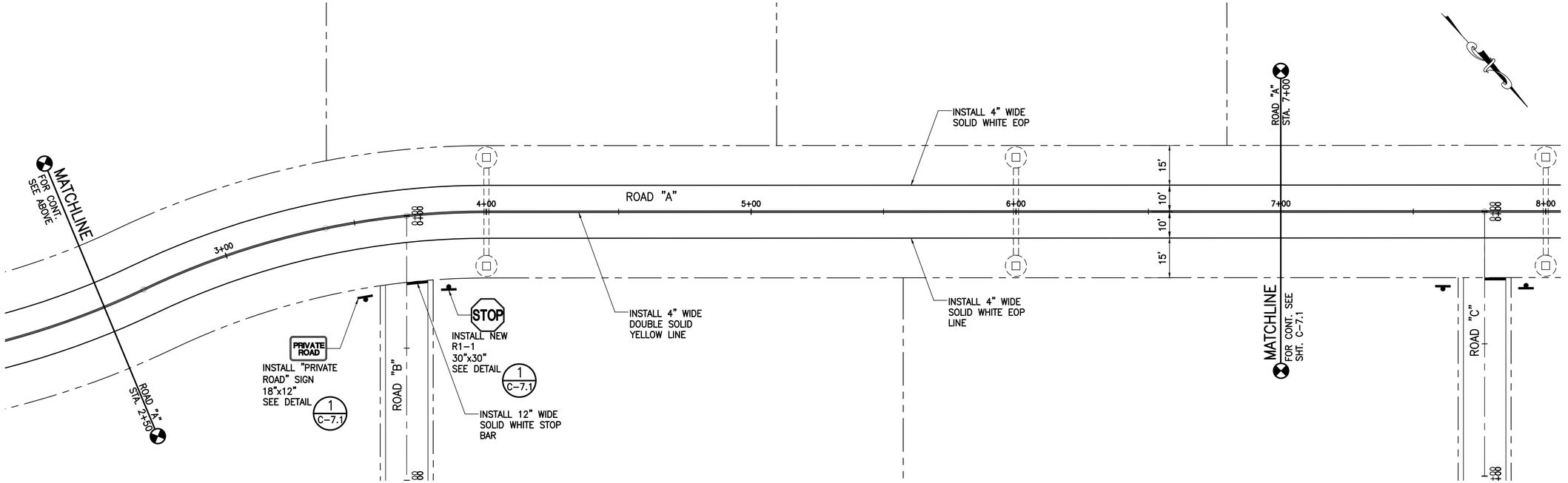
1 C-7.0 CENTERLINE AND STOP BAR DETAIL
NOT TO SCALE

NOTES:

1. SEE SHT. C-5.0 FOR CURVE DATA.
2. SEE SHT. C-7.1 FOR SIGN AND POST DETAIL.



SIGNING AND STRIPING PLAN
SCALE: 1"=20'



SIGNING AND STRIPING PLAN
SCALE: 1"=20'

SCALE: 1" = 20' (20' 10' 0 20' 40')

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TMK: (3) 2-8-011 :011
AKAKA FALLS ROAD
HONOMU, HAWAI'I 96728

Sheet Title

SIGNING AND STRIPING PLAN AND DETAILS

LOK, Project Director		218-026, Project No.
SLP/LG, Drawn By	BKM, Checked By	CAD File Name:
AS SHOWN, Scale:		
MAY 2020, Date		C-7.0
Const. Issue Date		13 of 18 Sheets

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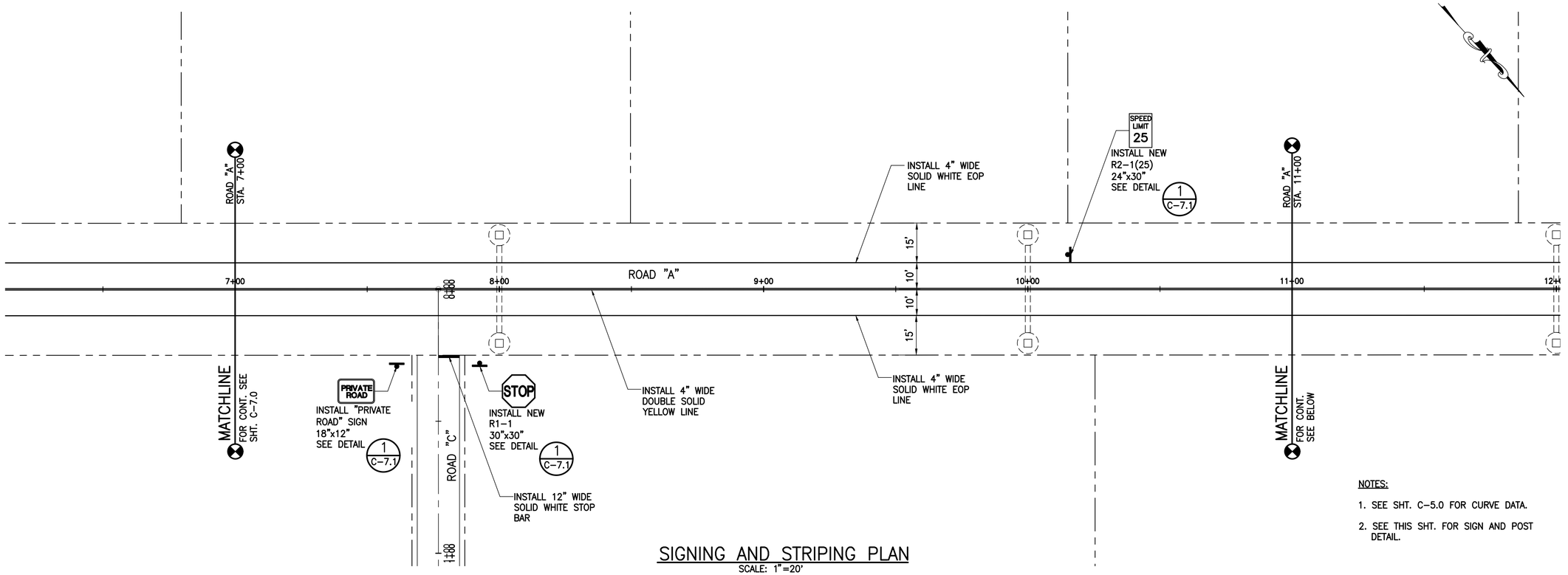
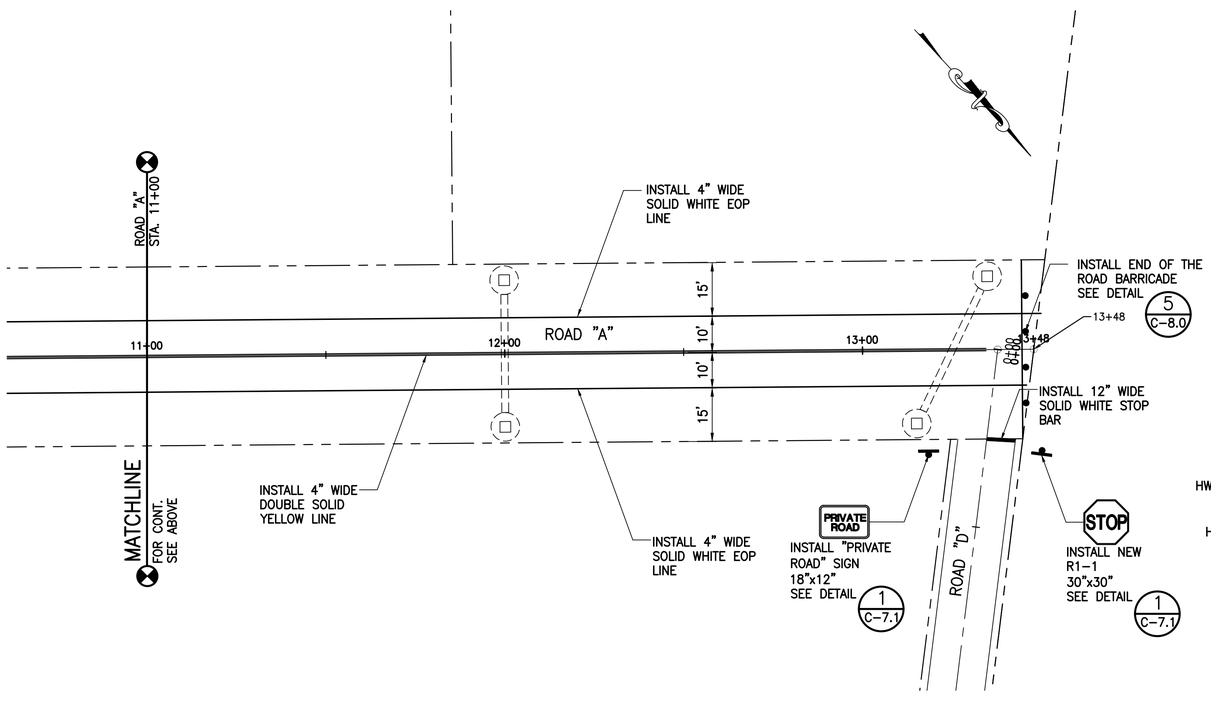


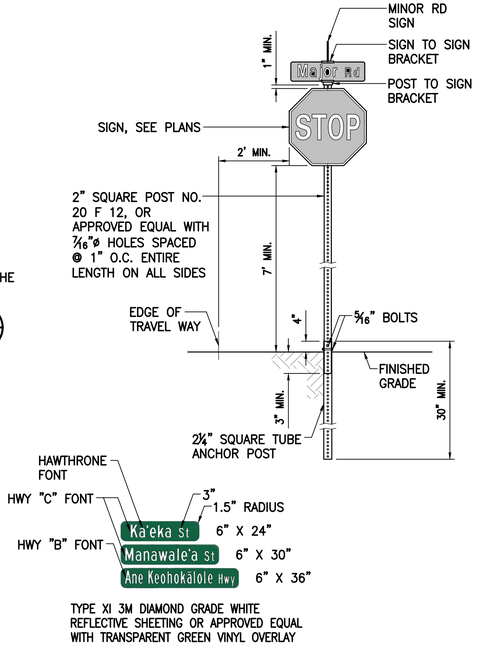
SIGNING AND STRIPING PLAN
SCALE: 1"=20'

NOTES:

1. SEE SHT. C-5.0 FOR CURVE DATA.
2. SEE THIS SHT. FOR SIGN AND POST DETAIL.



SIGNING AND STRIPING PLAN
SCALE: 1"=20'



1 C-7.1 SIGN AND POST DETAIL
NOT TO SCALE

STREET NAME SIGNS:

1. WHITE BACKGROUND SHALL BE TYPE XI 3M DIAMOND GRADE DG^3 REFLECTIVE SHEETING OR APPROVED EQUAL WITH TRANSPARENT GREEN VINYL OVERLAY.
2. LETTERING SHALL BE FIRST LETTER UPPERCASE / LOWER CASE FORMAT AND CONFORM TO THE DETAIL BELOW AND THE LATEST EDITION OF THE STANDARD HIGHWAY SIGNS BOOK.
3. STREET NAME SHALL CONFORM TO THE PROPER HAW1IAN SPELLING AS ASSIGNED BY THE COUNTY OF HAWAII PLANNING DEPARTMENT.

STOP SIGNS:

1. STOP SIGN, FACING MINOR ROAD 30" X 30" MINIMUM SIZE WITH TYPE XI 3M DIAMOND GRADE DG^3 REFLECTIVE SHEETING OR APPROVED EQUAL.

SIGN PLATES:

1. 0.080 INCH MINIMUM THICKNESS, ALUMINUM SHEET (ASTM B 209, ALLOY 6061-T6, FLAT SHEET). STREET NAME PLATES SHALL BE 24", 30", or (36" MAXIMUM).

NOTES:

1. THE INSIDE OF THE 2¼" ANCHOR POST MUST BE KEPT FREE OF IMPEDIMENTS TO ASSURE EASY INSERTION OF THE 2" SIGN POST.
2. SQUARE TUBE SIGN POST SHALL BE TELESCOPING PERFORATED TELESPAR TUBING OR APPROVED EQUAL.
3. SIGN DIMENSIONS SHALL CONFORM TO THE LATEST EDITION OF THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD) AND THE STANDARD HIGHWAY SIGNS BOOK.
4. FLANGED CHANNEL POSTS AND OCTAGONAL POSTS ARE NOT ACCEPTABLE.
5. ALL INSTALLATION SHALL BE FIRM AND PERFORMED IN A FIRST CLASS WORKMAN-LIKE MANNER ACCORDING TO INDUSTRY STANDARDS.

SCALE: 1" = 20' (20' 10' 0 20' 40')

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AKAKA FALLS ROAD
HONOMU, HAWAI'I 96728

Sheet Title

SIGNING AND STRIPING PLAN AND DETAILS

LOK (Project Director)	218-026 (Project No.)
SLP/LG (Drawn By)	BKM (Checked By)
	CAD File Name:
AS SHOWN (Scale:)	
MAY 2020 (Date)	C-7.1
Const. Issue Date	

14 of 18 Sheets

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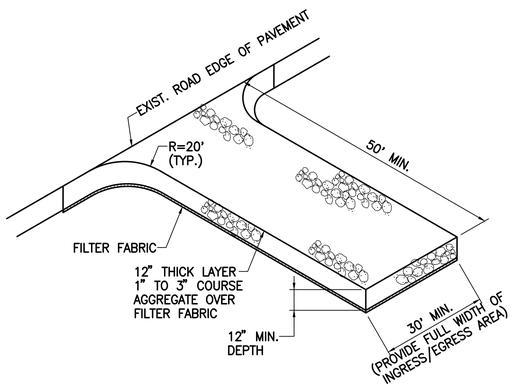
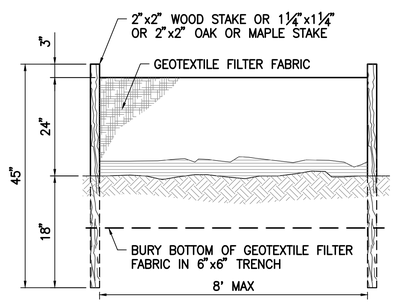


1 C-8.0 **STABILIZED CONSTRUCTION ENTRANCE/EXIST DETAIL**
NOT TO SCALE



2 C-8.0 **SILT FENCE**
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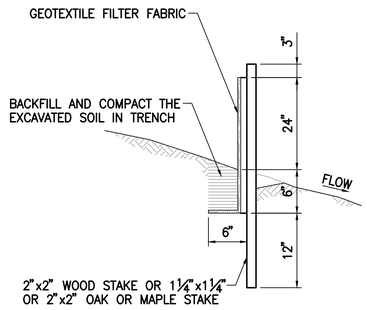

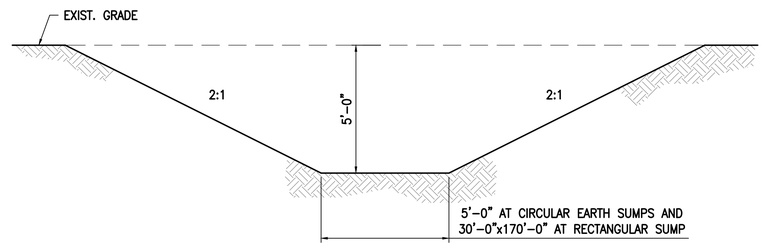

3 C-8.0 **EARTH DRAIN SUMP**
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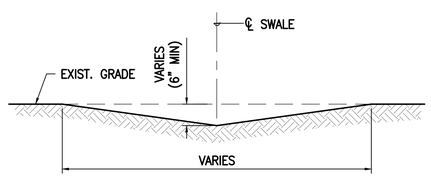

4 C-8.0 **EARTH SWALE**
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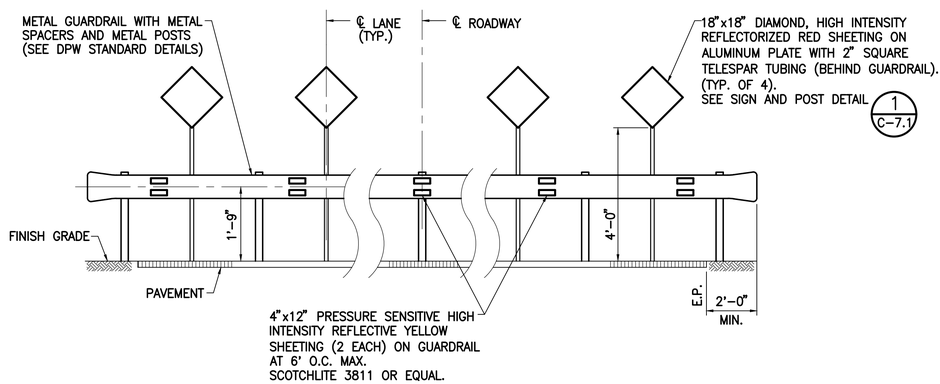

5 C-8.0 **END OF ROAD BARRICADE DETAIL**
NOT TO SCALE

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ENGINEERS AND LANDSCAPE ARCHITECTS

HILO: 200 KOHOLA STREET
HILO, HAWAII 96720
PH: (808) 961-5527
FAX: (808) 961-5529

HONOLULU: 677 ALA MOANA BLVD., SUITE 703
HONOLULU, HAWAII 96813
PH: (808) 524-1224
FAX: (808) 521-3151

LENNIE OKANO-KENDRICK
Licensed Professional Engineer
No.11108-C
HAWAII, U.S.A.

This work was prepared by me or under my supervision and construction to this project will be under my observation

Lennie Okano-Kendrick

Expiration Date of License 4/30/22

Revisions

No.	Date	Description

Project

HONOMŪ SUBSISTENCE AGRICULTURE SUBDIVISION PHASE 1

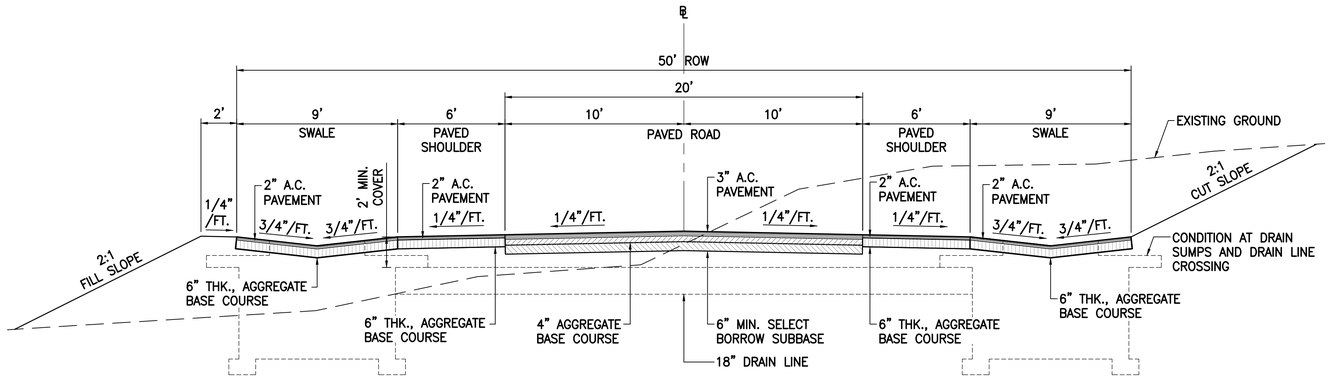
TMK: (3) 2-8-011 :011
AKAKA FALLS ROAD
HONOMU, HAWAI'I 96728

Sheet Title

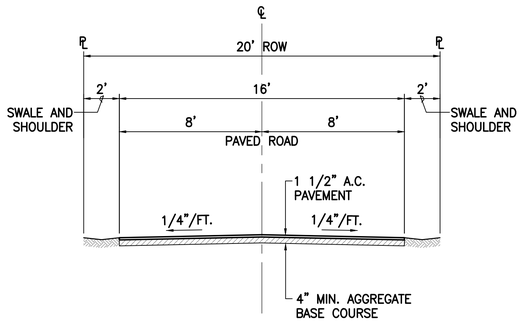
EROSION CONTROL AND GRADING DETAILS

LOK		218-026
Project Director		Project No.
SLP/LG	BKM	
Drawn By	Checked By	CAD File Name:
AS SHOWN		
Scale:		
MAY 2020		C-8.0
Date		
Const. Issue Date		

15 or 18 Sheets



1 C-8.1 **ROAD "A" TYPICAL SECTION**
1/4" = 1'-0"



2 C-8.1 **ROAD "B", "C", AND "D" TYPICAL SECTION**
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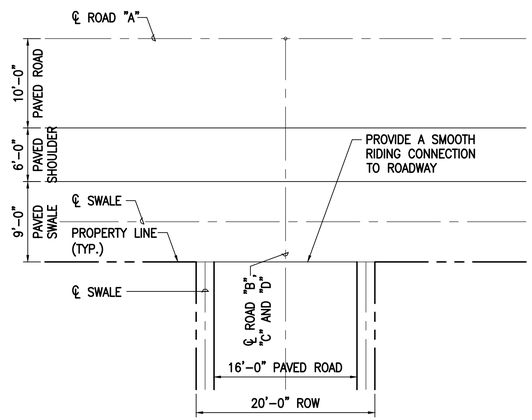

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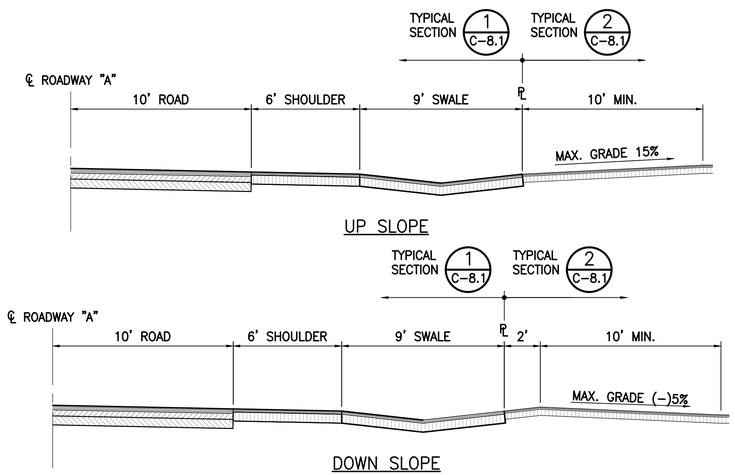

SECTION

3 C-8.1 **DRIVEWAY CONNECTION DETAILS**
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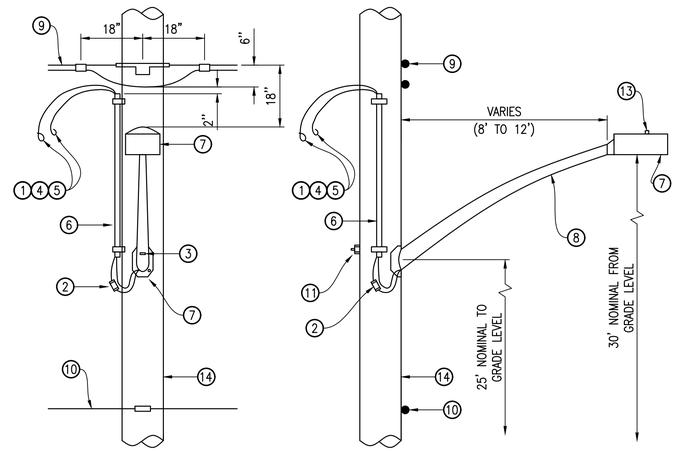

#	DESCRIPTION
1	NO. 12 AWG-RHW, BLACK AND WHITE COPPER WIRE
2	IN-LINE FUSE HOLDER AND FUSE (6 AMP) FOR NO. 12 AWG COPPER WIRE ON LOAD SIDE.
3	2" X 2" REFLECTORIZED GREEN STICKER, SIGNIFYING THAT STREET LIGHTS ARE BONDED.
4	NO. 12 AWG-RHW BLACK, SINGLE CONDUCTOR COPPER WIRE. MINIMUM 3'.
5	NO. 12 AWG-RHW WHITE, SINGLE CONDUCTOR COPPER WIRE. MINIMUM 3'.
6	3/4" SCHEDULE 80 PVC WITH CONDUIT STRAPS
7	LUMINAIRE, MODEL# CWES-HIB-SLA-74-1-5-UN-GR-YL-2V-PC-SS-BT-EL, 46 WATT
8	TAPERED ELLIPTICAL ALUMINUM MOUNTING BRACKET, LENGTH AS INDICATED.
9	SECONDARY BY HELCO, EXISTING OR NEW AS APPLICABLE.
10	H.T.CO. LINES (WHERE APPLICABLE)
11	MACHINE BOLT, 5/8" X REQUIRED LENGTH. (1-REQ'D.)
12	LAG SCREW, 1/2" X 4".
13	PHOTOCELL
14	UTILITY POLE, NEW OR EXISTING AS INDICATED.

FINAL CONNECTIONS TO BE MADE BY HAWAII ELECTRIC LIGHT COMPANY.

NOTE:
SUBMIT SKETCH TO TRAFFIC DIVISION INDICATING TOTAL POLE HEIGHT, CONTACT HEIGHTS, CONTACT HEIGHTS FOR H.T.CO., CATV, NEUTRALS, SECONDARY, PRIMARY, AND STREET LIGHT, AS APPLICABLE, PRIOR TO INSTALLATION. SUBMIT LETTER CONFIRMING THAT JOINT POLE SHARES HAVE BEEN PAID FOR BY THE CONTRACTOR.

4 C-8.1 **STREET LIGHT DETAIL**
NOT TO SCALE

SCALE: 1/4" = 1'-0"
4 3 2 1' 0 4 8

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Lennie Okano-Kendrick

Expiration Date of License 4/30/22

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HONOMŪ SUBSISTENCE AGRICULTURE SUBDIVISION PHASE 1

TMK: (3) 2-8-011 :011
AKAKA FALLS ROAD
HONOMU, HAWAI'I 96728

Sheet Title

ROAD TYPICAL SECTIONS AND DETAILS

LOK, Project Director	218-026, Project No.
SLP/LG, Drawn By	BKM, Checked By
CAD File Name:	
AS SHOWN, Scale:	
MAY 2020, Date	C-8.1
Const. Issue Date	

16 or 18 Sheets

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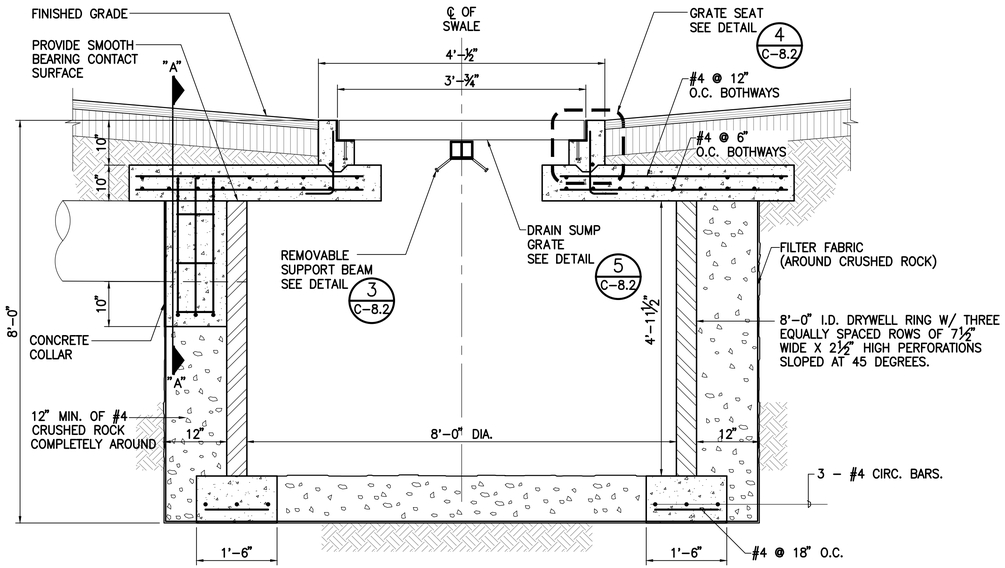

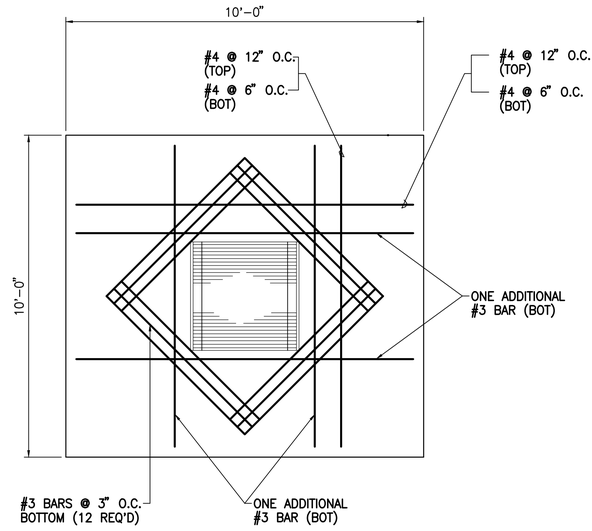

2 C-8.2 SHALLOW DRAIN SUMP PLAN DETAIL
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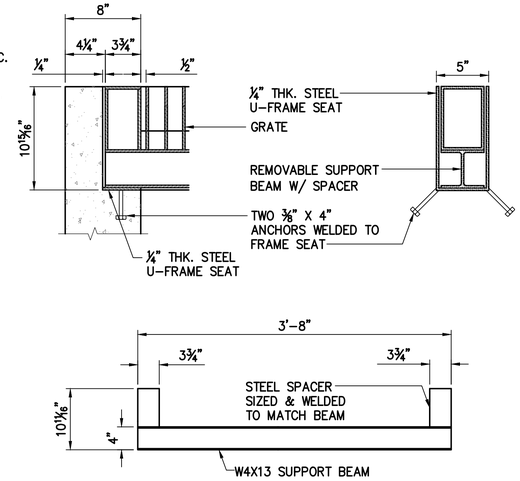

3 C-8.2 REMOVABLE SUPPORT BEAM DETAIL
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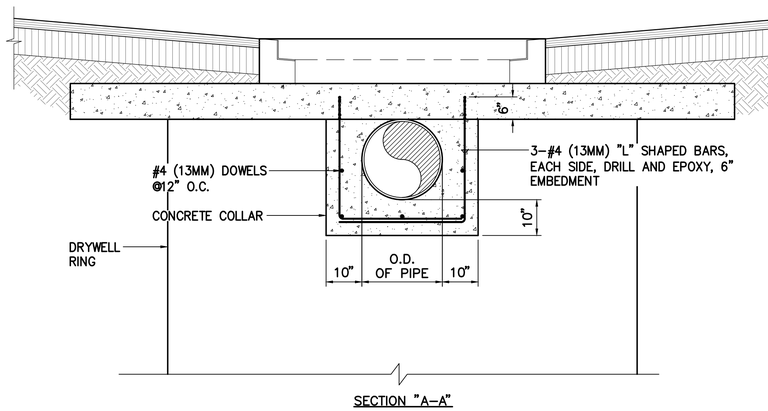

SECTION "A-A"

1 C-8.2 SHALLOW DRAIN SUMP DETAIL
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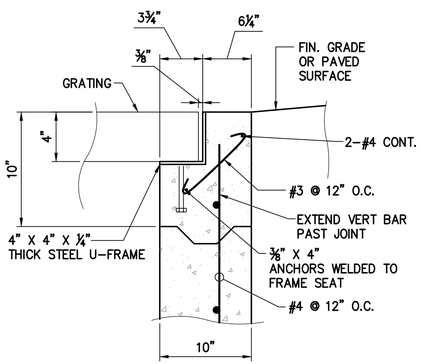

4 C-8.2 GRATE SEAT DETAIL
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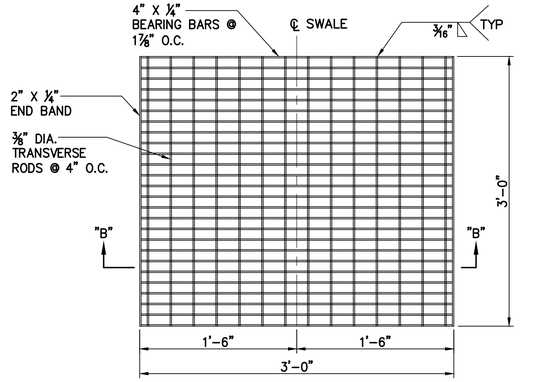

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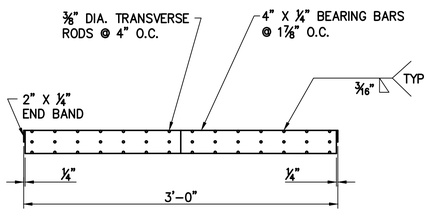

SECTION "B-B"

5 C-8.2 DRAIN SUMP GRATE DETAIL
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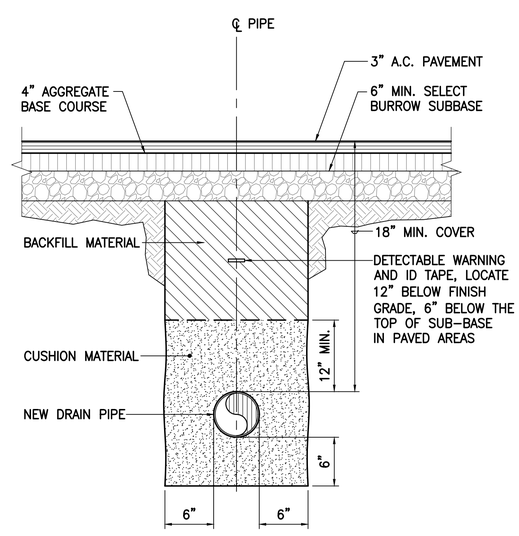

6 C-8.2 DRAIN LINE TRENCH DETAIL
NOT TO SCALE

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Expiration Date of License 4/30/22

Revisions

No.	Date	Description

Project

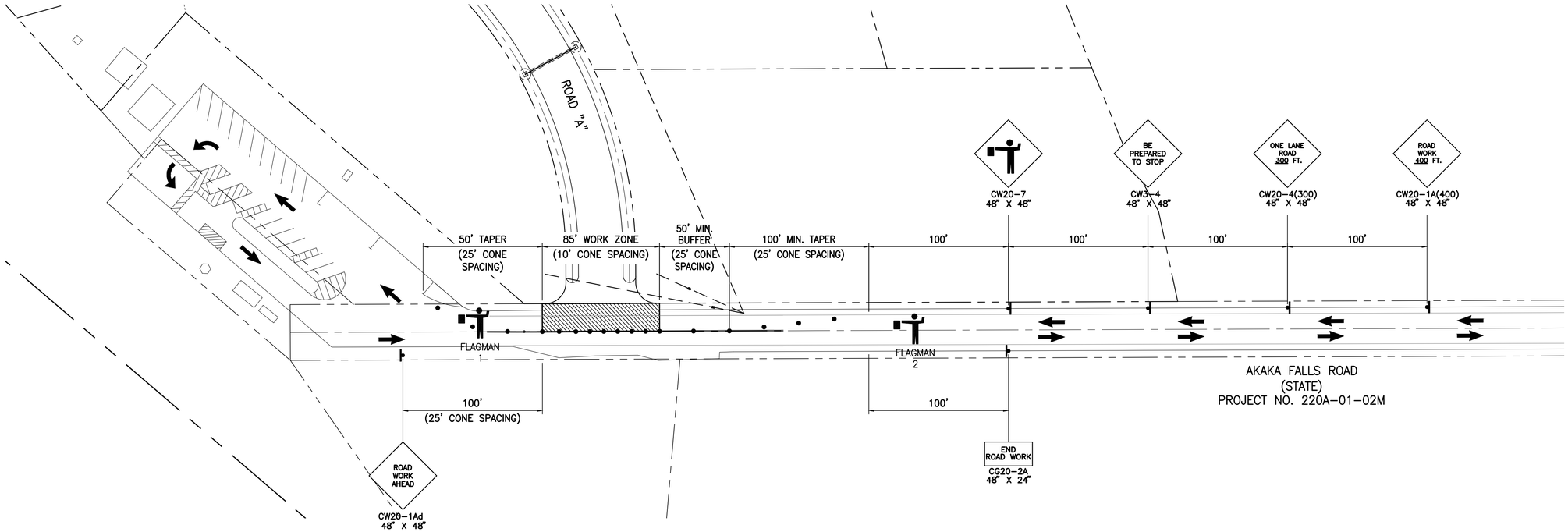
HONOMŪ SUBSISTENCE AGRICULTURE SUBDIVISION PHASE 1

TMK: (3) 2-8-011 :011
AKAKA FALLS ROAD
HONOMU, HAWAI'I 96728

Sheet Title

DRAINAGE DETAILS

LOK (Project Director)	218-026 (Project No.)
SLP/LG (Drawn By) BKM (Checked By)	(CAD File Name:)
AS SHOWN (Scale:)	
MAY 2020 (Date)	C-8.2
(Const. Issue Date)	17 or 18 Sheets



LEGEND:

- CONE OR DELINEATOR
- FLAGMAN
- DIRECTION OF TRAFFIC
- SIGN

NOTES:

1. POSTED SPEED LIMIT FOR:

   AKAKA FALLS ROAD – 25 MPH

2. CONTRACTOR SHALL PROVIDE NECESSARY ADJUSTMENTS TO ACCOMMODATE TRAFFIC, BICYCLIST, PEDESTRIANS, INCLUDING CONFORMANCE WITH AMERICANS WITH DISABILITIES ACT REQUIREMENTS.

TEMPORARY TRAFFIC CONTROL PLAN

SCALE: 1"=40'

SCALE: 1" = 40' (40' 20' 0 40' 80')

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HILO, HAWAII 96720
PH: (808) 961-5527
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HONOLULU: 677 ALA MOANA BLVD., SUITE 703
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AKAKA FALLS ROAD
HONOMU, HAWAI'I 96728

Sheet Title

TEMPORARY TRAFFIC CONTROL PLAN

LOK		218-026
Project Director		Project No.
SLP/LG	BKM	
Drawn By	Checked By	CAD File Name:
AS SHOWN		
Scale:		
MAY 2020		C-9.0
Date		
Const. Issue Date		

18 or 18 Sheets

DIVISION 2 – SITE CONSTRUCITON

SECTION 02050 – DEMOLITION AND REMOVAL

PART 1 - GENERAL

1.01 GENERAL CONDITIONS

A. As specified in Section 01010.

1.02 GENERAL REQUIREMENTS

A. Provide all equipment, materials, tools, labor, etc., as required to perform all demolition, removal work, and clearing and grubbing of the construction area, complete, as indicated on the drawings and as specified herein, including careful removal and disposal of material.

B. The Contractor shall obtain and pay for all necessary permits for removal work prior to commencement of work.

1.03 JOB CONDITIONS

A. Condition of Existing Improvements: The Engineer assumes no responsibility for the actual conditions of items or portions of structures to be removed.

B. Interference with Adjacent Occupied Spaces: Maintain free and safe passage to and from occupied spaces. Provide temporary barricades and other forms of protection as required to protect the users from injury due to demolition and/or removal work.

C. Storage or sale of removed items on site will not be permitted.

D. Protection: Provide temporary barricades and other forms of protection as required to protect the general public from injury due to selective removal work and to maintain security.

1. Provide interior and exterior shoring, bracing, or support to prevent movement, settlement, or collapse of structure or elements to be removed, and adjacent facilities or work to remain.

2. Protect from damage existing finish work that is to remain in place and becomes exposed during demolition operations.

3. Life safety procedures and provisions shall be in conformance with all applicable Federal, State, and County regulations, including OSHA.

E. Damages: Promptly repair damages caused to adjacent facilities or areas by removal work at no cost to the State.

F. Use of explosives will not be permitted.

G. Dust and Erosion Control: Contractor shall comply with the requirements of State of Hawaii, Department of Health.

PART 2 – PRODUCTS (Not Applicable)

PART 3 - EXECUTION

3.01 CONSTRUCTION REQUIRMENTS

A. The Drawings show general information only. Contractor shall examine the site to determine exact existing conditions, character, extent of the work to be performed and demolition operations required to complete the new work. The Contractor shall exercise every precaution to preserve and protect existing improvements to remain or to be removed by others.

3.02 INSPECTION

A. Prior to commencement of selective demolition work, inspect areas in which work will be performed. Photograph existing conditions to document structure surfaces, equipment or surrounding properties which could be misconstrued as damaged as a result of the selective demolition work; file with Engineer prior to starting work.

3.03 EXISTING UTILITY LINES

A. The existence of underground utility lines other than those approximately shown is not definitely known. The Contractor shall be responsible for toning, probing, obtaining as-built drawings, etc., to determine existing utility locations prior to any demolition work. The Contractor shall promptly repair all damaged utilities at no cost to the State.

B. The Contractor shall serve proper notice and consult with the Engineer regarding any temporary disconnections of electrical or other utility lines in the area which may be required for the removal work, and all such lines where necessary shall be properly disconnected before commencing with the work.

3.04 DEMOLITION

A. All work shall be executed as indicated on the plans, with due consideration for all items to remain.

B. Limits of pavement removal shall be as shown on the plans or as directed by the Engineer. Saw cut along the excavation line to produce a uniform break line both vertically and horizontally. Remove paving so as to prevent spalling, cracking or other damage to adjacent paving which is to remain. The Contractor shall at his own expense remove and replace damaged pavement outside the limits of removal. Reuse of demolished concrete or asphalt paving, as rubble fill shall not be permitted.

C. The Contractor shall remove demolished material as specified in Section 202 of the “2005 Standard Specifications for Road and Bridge Construction”. Demolished material shall be disposed of in accordance with item entitled “3.07 DISPOSITION OF MATERIAL.”

D. Removal of existing signs, fences, gates, and railings shall include foundations below grade.

E. Any open trenches, holes, depressions and pits left open at the end of the working day shall be covered steel plates.

F. If unanticipated mechanical, electrical or structural elements which conflict with intended

function or design are encountered, investigate and measure both nature and extent of the conflict. Submit report to the Engineer in written, accurate detail. Pending receipt of directive from Engineer rearrange selective demolition schedule as necessary to continue overall job progress without delay.

3.05 REPAIR OF WORK

A. Damage resulting from removal work shall be repaired by the Contractor at his expense. The condition of all existing exposed surfaces shall be equal to or better than that that existed before the removal work. Where the method of repair work is not indicated or specified, the Contractor shall perform the repair work in accordance with the limits of generally accepted trade standards.

3.06 SALVAGE OF REMOVED ITEMS

A. The Contractor shall remove and stockpile/store all items as specified on the plans. All items not specified to be salvaged shall be disposed of in accordance with item entitled "3.07 DISPOSITION OF MATERIAL."

3.07 DISPOSITION OF MATERIAL

A. All materials resulting from removal work, except as indicated or specified otherwise, shall become the property of the Contractor and shall be removed from the limits of State property. Remove rubbish and debris from the jobsite daily, unless otherwise directed; do not allow accumulations inside or outside any buildings or roadways. The Contractor shall transport and legally dispose of materials off site. Remove and transport debris and rubbish in a manner that will prevent spillage on streets or adjacent areas.

B. If hazardous materials are encountered during demolition operations, comply with applicable State, Federal and local regulations, laws, and ordinances concerning removal, handling, and protection against exposure or environmental pollution.

C. Burning of removed materials is not permitted on project site.

3.08 CLEAN-UP AND REPAIR

A. Any disturbance to road beds, landscaped areas, concrete structures, etc., shall be restored to original condition. The Contractor shall take care to avoid damage to immediate and surrounding areas and protect property, vehicles, etc.

B. In landscaped areas, remove grass in a manner that will allow replacement close to its original condition. Use a drop cloth or similar ground cover at all times to contain and hold removal of earth, plantings, etc., whether on concrete, asphalt, lawn, and/or landscaped areas.

C. Any concrete, asphalt, or pavers removed shall be replaced in as close to original condition as possible, and within the limits of generally accepted trade standards. When regrassing is required, the grass used shall match the surrounding area.

D. The Contractor at his/her expense shall repair damage resulting from removal work. The condition of all existing exposed surfaces shall be equal to or better than that which existed before the removal work. Where the method of repair work is not indicated or specified, the Contractor shall perform the repair work in accordance with the limits of generally accepted trade standards.

E. Remove all evidence of demolition work and leave areas impacted by demolition work in clean and debris-free condition.

END OF SECTION

SECTION 02200 – EARTHWORK

PART 1 - GENERAL

1.01 GENERAL CONDITIONS

A. As specified in Section 01010.

1.02 GENERAL REQUIREMENTS

A. Furnish all labor, materials, tools, and equipment necessary for site excavation, backfilling, rough and finish grading, and related items necessary to complete all work shown on the drawings and/or specified item.

B. Specifications for Public Works Construction, dated September 1986 is hereby incorporated into and made part of these specifications by reference unless otherwise modified hereinafter with the exception of paragraphs Method of Measurement and Payment.

1.03 WORK SPECIFIED IN OTHER SECTIONS

A. Demolition and removal as specified in SECTION 02050 – DEMOLITION AND REMOVAL.

1.04 ORDINANCES AND PERMITS

A. The Contractor shall comply with all applicable ordinances and regulations and obtain the required permits. All grading work shall comply with Chapter 10 of the Hawaii County Code, as amended.

B. The Contractor shall comply with the provisions of Chapter 11-55 Water Pollution Control and Chapter 11-54 Water Quality Standards of the Hawaii Administrative Rules, Department of Health, State of Hawaii.

1.05 EXISTING UTILITY LINES

A. The existence of active underground utility lines within the construction area is not definitely known other than those indicated in their approximate locations on the drawings. Should any unknown line be encountered during excavation, the Contractor shall immediately notify the Project Manager of such discovery. The Project Manager shall then investigate and issue instructions for the preservation or disposition of the unknown line. Authorization for extra work shall be issued by the Project Manager only as he deems necessary.

1.06 LAYOUT OF PROJECT

A. The Contractor shall verify all lines, levels, elevations and improvements indicated on the drawings before any excavation begins. All lines and grades shall be verified by a Surveyor or Civil Engineer licensed in the State of Hawaii. Any discrepancy shall be immediately brought to the attention of the Project Manager and any change shall be made in accordance with his instruction. Commencement of clearing and grubbing operations shall be construed to mean that the Contractor agrees that the existing grades and improvements are essentially correct as shown. The Contractor shall not be entitled to extra payment if existing grades and improvements are in error after his verification thereof, or if he fails to report the discrepancies before proceeding with any work whether within the area affected or not.

1.07 DOCUMENTS

A. The Contractor shall have the following documents available for the use of the Project Manager at the job site:

1. Grading Ordinance (Chapter 10 of the Hawaii County Code).

2. Hawaii Administrative Rules, Chapter 11-55 Water Pollution Control and Chapter 11-54 Water Quality Standards, Department of Health, State of Hawaii

3. ASTM D1557.

4. Grubbing or Grading permit from the County of Hawaii, if required.

5. Hawaii Standard Specifications for Road and Bridge Construction, dated 2005 with the latest applicable amended sections.

PART 2 – PRODUCTS

2.01 MATERIALS

A. All materials excavated shall be considered to be unclassified and shall be paid for as such, whether earth, boulders, solid rock, concrete, steel, rubbish, wood, or other materials.

B. Fill and Backfill Material

1. Yard fill: Yard fill shall be used for all areas where no concrete or A.C. pavement is to be constructed. Fill materials shall be non-expansive soil, free from debris, perishable or combustible materials, sod, and stones larger than 6 inches in maximum dimension and shall have a plasticity index not greater than 20. Any rock shall be well distributed in earth or other fine material with all voids filled and shall not be placed within 3 feet of the finished grade.

   In the event that insufficient amount of yard fill is delivered from earthwork operations, the Contractor shall import the necessary materials without any additional cost to the State. Such imported materials shall be subject to approval of the Project Manager and shall meet the requirements as specified for the materials.

2. Structural fill: Structural fill shall be used in areas where new concrete or A.C. paving is to be constructed and shall be non-expansive, granular, well-graded material with a 3 inch maximum particle size and less than 20 percent by weight passing the No. 200 sieve. The fill material shall be free from clumps of soil, organic debris, adobe or other deleterious matter.

   The plasticity index for that portion of soil passing the #40 sieve shall not be greater than 10. The CBR shall not be less than 25. Recycled asphalt pavement shall not be used as structural fill.

3. Topsoil: Topsoil shall meet the requirements as defined in Section 617 of the “2005 Standard Specifications for Road and Bridge Construction”. All references to measurement and payment do not apply.

4. Materials excavated within the project boundary may be used as a source of fill provided that they are processed to meet gradation requirements herein.

C. Temporary geotextile silt fencing shall have the following properties:

1. Geotextile shall be a woven fabric made of polypropylene fibers.

2. Minimum Roll Width: 3 ft.

3. Grab Tensile Strength: 100 lbs. (ASTM D-4632)

4. Elongation: 15% (ASTM D-4632)

5. Mullen Burst Strength: 275 psi (ASTM D-3786)

6. Coefficient of Water Permeability: 15 gal/min/SF

7. Trapezoidal Tear Strength: 50 lbs. (ASTM D-4533)

8. Puncture Strength: 60 lbs. (ASTM D-4833)

PART 3 - EXECUTION

3.01 GENERAL

A. No excavation or filling shall be undertaken until the area has been cleared and grubbed.

B. Install temporary erosion, dust and siltation control measures as shown on the drawings or ordered by the Project Manager. Remove temporary measures after permanent erosion control measures have been established.

C. All excavation shall be protected and guarded against danger to life, limb and property.

D. Shoring, cribbing and lagging, as required to safely preserve the excavations and earth banks from damages resulting from the work shall be provided and installed by the Contractor.

E. The Contractor shall at all times control the grading around building areas so that the ground is adequately sloped to prevent any water from flowing into building areas and open trench excavations. All excavations shall be kept free from standing water. The Contractor shall do all pumping and draining that may be necessary to remove water to the extent required in carrying on the work. The Contractor shall obtain the NOI (Notice of Intent) permit from the State Department of Health for any dewatering activities.

Lowering or rising of water table in areas where ground settlement or other detrimental effects may be induced is expressly prohibited. In such areas, the excavated spaces shall be sealed prior to the pumping of water or other approved means employed by the Contractor. The Contractor shall be responsible for disposal of the pumped liquids. Water from dewatering and other construction operations shall not be discharged directly into the storm drainage system. The method of discharge shall comply with Department of Health Regulations.

Construction equipment which requires water in their operation shall not be used in the vicinity or within the building area without the approval of the Project Manager.

F. Caution shall be exercised in all excavation work adjacent to existing trees which are to remain. All exposed fibrous and branch type roots shall be carefully pruned or saw-cut to the extent required for excavation work. Every effort shall be taken to preserve the existing trees and to minimize damage to said trees.

G. The Contractor shall use the best management practices to reduce the amount of soil erosion resulting from the grading work.

The work areas and haul roads, including roadways leading to the project site, shall be continuously watered to prevent the generation of dust. Granular materials shall be spread over all unpaved haul routes. An 8-inch thick layer of #2 crushed rock shall be installed at delivery access points to reduce tracking mud onto public roadways.

All truck tires shall be free of mud before leaving the job site and entering a public roadway. The Contractor will clean all roads of mud and dirt resulting from his operations at no additional cost to the State.

H. The areas not covered by concrete or A.C. pavements shall be graded to conform to finish contours with allowance for topsoil.

I. Laying Out

1. The laying out of base lines, establishment of grades and staking out the entire work shall be done by a surveyor or a civil engineer licensed in the State of Hawaii, at the Contractor's expense. The Contractor shall be solely responsible for their accuracy. The Contractor shall erect and maintain substantial batterboards showing construction of lines and levels.

2. Should any discrepancies be discovered in the dimensions given in the plans, the Contractor shall immediately notify the Project Manager before proceeding any further with the work.

3. The Contractor shall be responsible for re-establishing property corners or survey control points which are destroyed by his operations.

3.02 EXCAVATION

A. General Requirements

1. Excavation shall be done so as to obtain the elevations called for on drawings, allowing for fill, grading, topsoil and drainage away from buildings.

2. Usable Materials as approved by the Project Manager shall be stockpiled (for later use as fill material) in a location designated by the Project Manager. Crushing basalt fragments may be necessary prior to reuse in compacted fills. This material may also be excavated directly to fill at the Contractor's option, provided that the materials conform to the requirements of the intended use as specified hereinbefore and sub grade preparation requirements have been met in the fill areas.

3. Non-usable Material such as mud, soft material, and expansive soils and excess materials shall become the property of the Contractor and shall be disposed of outside the project boundary limits at locations that have been approved by the Engineer.

4. Blasting as a means of excavation shall not be permitted.

5. Unsuitable subgrade soil, as determined by the Project Manager shall be excavated and removed by the Contractor.

B. Structural Excavation

1. As specified by Section 206 of the "2005 Standard Specifications for Road and Bridge construction" except as modified herein.

3.03 FILL AND BACKFILL

A. General Requirements

1. Filling operations shall be performed so as to bring the entire project area to the finished grades shown on the drawings, allowing for topsoil, concrete slab, or A.C. paving and base course.

2. At the time of compaction, the moisture content of fill and backfill material shall be such that the relative compactions specified can be obtained with the compacting equipment being used. At all times, it shall be the responsibility of the Contractor to employ such means as may be necessary to obtain a uniform optimum moisture content throughout the material being compacted.

3. Soft or loose soils that do not readily compact should be excavated and replaced with compacted structural fill at no cost to the State. All surface clayey silt/volcanic ash material shall be removed to the basalt or gravel strata prior to placement of the yard or structural fill.

4. All areas to receive fill shall be scarified, moisture conditioned to near optimum moisture content and compacted to a minimum of 95 percent relative compaction as determined by ASTM D1557 for a minimum depth of eight (8) inches.

5. In areas with gravelly material, the exposed gravelly material should be scarified to a depth of 6 inches and recompacted to a minimum of 95 percent compaction, as determined by ASTM D 1557, prior to placement of the fill.

6. All fill slopes shall be at 2:1 or flatter as shown on plans.

B. Yard Fill

1. Yard fill shall be placed in layers, 8 inches or less in compacted thickness, and compacted to 90 percent of maximum density as determined by the ASTM D1557 procedure.

C. Structural Fill for Pavement Areas

1. Structural fill shall be placed in layers, 8 inches or less in loose thickness, moisture conditioned to near optimum moisture content, and compacted to at least 95 percent of maximum density as determined by ASTM D1557 procedure.

D. Structural Backfill

1. Structure backfill shall be placed as specified in Section 206 of the "2005 Hawaii Standard Specifications for Road and Bridge construction".

E. Placing, Spreading, and Compacting Fill Material

1. When moisture content of the fill material is below optimum, water shall be added until the moisture content is optimum to ensure that the proper compaction can be obtained. When the moisture content of the fill material is above optimum, the fill material shall be aerated until the optimum moisture content is obtained.

2. Recompaction: Where test results indicate that the moisture content of the fil is not suitable, or that insufficient compaction has been obtained, the fill shall be reconditioned and recompacted prior to placing additional fill material.

   The Contractor shall be responsible for placing and compacting approved fill material in accordance with these Specifications. If the Contractor fails to meet the compaction requirements, he shall stop hauling or reduce his rate of haul, furnish additional spreading, watering and/or compaction equipment as may be required, or make any other adjustments necessary to produce a satisfactory compacted fill. When the work is stopped by rain, filling shall not resume until the Project Manager has verified that the moisture content and the density of the fill surface are satisfactory.

3. During construction, all fill surfaces shall be sloped to provide positive surface drainage and to prevent ponding of water. If it appears that rain is imminent, the Contractor shall roll the surface with smooth rollers or rubber-tired equipment to seal the surface against excessive infiltration of water. Temporary surface drains and ditches shall be provided by the Contractor as necessary to expedite runoff and to prevent erosion.

F. Slopes and Final Grading

1. The Contractor will be required to obtain a minimum relative compaction of 95 percent of maximum dry density out to the finish fill slope face. Fill slopes shall be constructed by over-building and cutting-back to the finished grades to expose a well-compacted surface.

2. Excavation and embankment shall be finished with all slopes cut true and straight, in accordance with the lines and grades shown in the drawings. All slopes, whether old or new, shall be maintained with true and smooth surfaces. Over breaks shall be trimmed smoothly and neatly. The tops and ends of all slopes shall be flared and rounded.

3. All cut and fill slopes shall be protected from erosion by approved methods immediately upon their completion.

4. Cut Slopes

   a. If any conditions not anticipated, such as perched water, seepage, lenticular or confined strata of a potentially adverse nature are encountered during grading, these

conditions shall be analyzed by the Project Manager and recommendations shall be made to treat these problems. The Contractor shall halt the grading work in such areas until the recommendations are made.

b. Unless otherwise specified in the drawings, no cut shall be excavated higher or steeper than that allowed by the County Ordinances. If there are substantial discrepancies in the elevations of the existing ground at the top of the slope which could result in a higher or steeper slope or could affect the location of the toe of slope, the Contractor shall immediately inform the Project Manager of such conditions, so that the drawings can be revised accordingly.

c. Cut slopes shall be 2H:1V or flatter, unless otherwise recommended by the Project Manager.

3.04 GRADING TOLERANCES

A. All graded surfaces shall be finished to within 0.10 feet from the grades and cross sections indicated on the plans.

3.05 PROTECTION

A. Protect benchmarks, property monuments, fences, and roads.

B. Protect any above and below grade utilities that are to remain.

C. Protect newly graded surface from traffic and erosion; keep areas free of trash and debris. Repair and re-establish grades in settled, rutted, and eroded area.

D. Repair all damages caused by and resulting from construction activities in accordance with the requirements these specifications and as directed by the Project Manager.

3.06 TOPSOIL

A. Topsoil shall be placed as specified. The Contractor shall deposit and spread a 4-inch layer of topsoil areas as shown on the drawings. The topsoil shall be lightly compacted to the finish elevations shown on the drawings. The topsoil shall meet the requirements as defined in Sections 50 and 51 of the Standard Specifications for Public Works Construction, dated September 1986.

3.07 CLEAN UP

A. Clean up and remove all debris accumulated from construction operations from time to time, when and as directed by the Project Manager. Upon completion of the construction work and before final acceptance of the work, remove all surplus materials, equipment, etc., and leave entire job site clean and neat.

END OF SECTION

SECTION 02225 – TRENCHING, BACKFILLING AND COMPACTING FOR UTILITIES

PART 1 - GENERAL

1.01 GENERAL CONDITIONS

A. As specified in Section 01010.

1.02 GENERAL REQUIREMENTS

A. This section covers the requirements for trenching, backfilling and compacting for utilities.

B. The Work under Section is specified in the following documents:

1. Section 11 – Trench Excavation and Backfill of the County of Hawaii Department of Public Works (DPW) Standard Specifications. All references to measurement and payment do not apply.

1.03 WORK SPECIFIED IN OTHER SECTIONS

A. Earthwork as specified in SECTION 02200 – EARTHWORK

B. Storm drain utilities as specified in SECTION 02600 – STORM DRAINAGE UTILITIES

1.04 SUBMITTALS

A. Submit in accordance with SECTION 01300

B. Shoring and Sheeting Plan (Shop Drawings and Diagrams): Describe materials of shoring system to be used. Indicate whether or not components will remain after filling or backfilling. Provide plans, sketches, or details along with calculations by a professional engineer registered in Hawai'i. Indicate sequence and method of installation and removal.

1.05 PERMITS

A. Obtain necessary permits required from applicable agencies. All permit fees will be considered incidental to work and a separate payment shall not be made.

PART 2 - PRODUCTS

2.01 BACKFILL MATERIALS

A. Bedding and backfill materials for drain lines shall be in accordance with Section 11 of the DPW Standard Specifications. Bedding and backfill for electrical conduits shall be as indicated and specified in the electrical plans.

B. Select/Cushion material for sewer and drain lines shall be sand, graded crushed rock (commonly known as "rock sand") or excavated granular or sandy material, provided that all rocks or lumps of material over one inch in its longest dimension have been removed. Select material shall be free from salt, ashes, refuse, organic material or other material, which, in the opinion of the Engineer, is unsuitable.

C. All material to be used as select/cushion material backfill shall be approved by the Engineer. If in the opinion of the Engineer the excavated material does not meet the grading requirements of select material, the Contractor shall be required to screen the material prior to its use as select/cushion material backfill.

D. Ordinary material used in the upper portion of the backfill from one foot above the top of the pipe to the surface of the ground or subgrade of the road shall not contain stone, rock or other material larger than six inches in its longest dimensions. No wood, vegetable matter or other material which, in the opinion of the Engineer, is unsuitable, shall be included in the backfill. No “adobe” or other materials determined to be deleterious by the Engineer shall be included in the backfill. Material shall conform to SECTION 02200 – EARTHWORK as applicable.

E. The Contractor shall obtain the approval of the Engineer of all backfill material.

2.02 BURIED WARNING AND IDENTIFICATION TAPE

A. Polyethylene plastic and metallic core or metallic-faced, acid and alkali resistant, polyethylene plastic warning tape manufactured specifically for warning and identification of buried utility lines. Provide tape in rolls, 3-inches minimum width, color coding as stated below for the intended utility with warning and identification imprinted in bold black letters continuously and repeatedly over the entire tape length. Warning and identification to read, “CAUTION, BURIED (intended service) LINE BELOW” or similar wording. Color and printing is to be permanent, unaffected by moisture or soil.

1. Drainage/Sewer Systems: Green

B. Warning tape for metallic piping shall be acid and alkali-resistant polyethylene plastic tape conforming to the width, color, and printing requirements specified above. Minimum thickness of tape shall be 0.003 inch. Tape shall have a minimum strength of 1,500 pounds per square inch (psi) lengthwise, and 1,250 psi crosswise, with a maximum 350 percent elongation.

C. Detectable warning tape for non-metallic piping shall be polyethylene plastic tape conforming to the width, color, and printing requirements specified above. Minimum thickness of the tape shall be 0.004 inch. Tape shall have a minimum strength of 1,500 psi lengthwise and 1,250 psi crosswise. Tape shall be manufactured with integral wires, foil backing, or other means of enabling detection by a metal detector when tape is buried up to 3 feet deep. Encase metallic element of the tape in a protective jacket or provide with other means of corrosion protection.

2.03 OTHER MATERIALS

A. Provide other materials, not specifically described but required for a complete and proper installation, as selected by the Contractor subject to approval of the Engineer.

PART 3 - EXECUTION

3.01 SURFACE CONDITIONS

A. Examine the areas and conditions under which work of this Section will be performed. Correct conditions detrimental to timely and proper completion of the work. Do not proceed until unsatisfactory conditions are corrected.

3.02 FINISH ELEVATION AND LINES

A. All material excavated from trenches shall be considered unclassified, whether consisting of earth, lava, soft rock, decomposed rock, solid rock, boulders or coral. The trench shall be so dug that the pipe can be properly installed to the alignment and grade specified. Excavation shall commence at the point directed by the Engineer and shall be carried on in an orderly manner. No jumps or spaces will be permitted unless approved by the Engineer. Before proceeding with any excavation under asphaltic concrete and concrete pavements, the Contractor shall cut the edges of the excavation with a power saw to insure a neat cut along the pavement.

B. Trench Widths

1. The widths of trenches for all pipes and appurtenances shall be as shown on the Drawings.

2. Increases in widths over those shown due to sheeting, bracing or other necessities of construction, may be made by the Contractor with the approval of the Engineer, but no additional compensation will be allowed for such extra width.

C. Trench Depths

1. In general, trench depths for all pipes and appurtenances shall be as shown on the Drawings.

2. Where necessary, the Engineer reserves the right to raise or lower the grade or to change alignments from those shown on the Drawings.

D. Excavation Below Grades

1. Any part of the trench excavated below grade by the Contractor shall be corrected with select material, thoroughly compacted in place at no cost to the State.

3.03 PROCEDURES

A. Utilities

1. All excavated areas shall be toned prior to excavation.

2. Unless shown to be removed, protect lines shown on the drawings or otherwise made known to the Contractor prior to trenching. If damaged, repair or replace at no additional cost of the State.

3. If active utility lines are encountered, and are not shown on the Drawings or otherwise made known to the Contractor, promptly take necessary steps to assure that service is not interrupted.

4. If service is interrupted as a result of work under this Section, immediately restore service by repairing the damaged utility at no additional cost to the State.

5. Expose existing utilities to confirm clearances as initial trenching work. If existing utilities are found to interfere with the permanent facilities being constructed under this Section, immediately notify the Engineer and secure his instructions.

6. Do not proceed with permanent relocation of utilities until written instructions are received from the Engineer.

B. Protection of Persons and Property

1. Barricade open holes and depressions occurring as part of the Work, and post warning lights on property adjacent to or with public access.

2. Operate warning lights during hours from dusk to dawn each day and as otherwise required.

3. Protect structures, utilities, sidewalks, pavements and other facilities from damage caused by settlement, lateral movement, washout, and other hazards created by operations under this Section.

C. During the period of construction, the Contractor shall protect the public against mud, dust and similar nuisances and shall take steps to abate such nuisances.

D. Convenient access to buildings along the line of work shall be maintained and temporary approaches shall be provided and kept in order. Temporary bridges for pedestrian traffic shall have handrails securely fastened to them. Handrails shall be free from any projecting nails, splinters and rough edges.

E. Storing of excavated material alongside the trench shall be done in such a manner as not to obstruct traffic. Whenever, in the opinion of the Engineer, proper storage of excavated material cannot be made alongside the pipe trench, the material shall be hauled away from the work site. If the excavated material meets the requirements for backfill material and proper storage cannot be made alongside the pipe trench, the material shall be stockpiled at convenient locations for later use in backfill.

F. Surplus Material

1. Unless otherwise specified in the Plans or Specifications, or ordered by the Engineer, surplus excavated material shall become the Contractor's property and shall be removed from the work site and disposed of at no cost to the State.

3.04 TRENCHING

A. Provide sheeting and shoring necessary for protection of the Work, undermining of existing facilities and for the safety of personnel.

1. Prior to backfilling, remove all sheeting

2. Do not permit sheeting to remain in the trenches except when, in the opinion of the Engineer, field conditions or the type of sheeting or methods of construction such as use of concrete bedding are such as to make removal of sheeting impracticable. In such cases, the Engineer may permit portions of sheeting to be cut off and remain in the trench.

B. Excavation

1. Short sections of a trench may be tunneled if, in the opinion of the Engineer, the conduit can be installed safely and backfill can be compacted properly into such tunnel.

2. Where it becomes necessary to excavate beyond the limits of normal excavation lines in order to remove boulders or other interfering objects, backfill the voids remaining after removal of the objects at no additional cost to the State, as directed by the Engineer.

3. When the void is below the subgrade for the utility bedding, use select materials and compact to the relative density directed by the Engineer, but in no case to a relative density less than 95%.

4. When the void is below the subgrade for the utility bedding, use select materials and compact to the relative density directed by the Engineer, but in no case to a relative density less than 95%.

5. Excavating for Appurtenances

a. Excavate for cleanouts and similar structures to a distance sufficient to leave at least 12-inches clear between outer surfaces and the embankment or shoring that may be used to hold and protect the banks.

b. Overdepth excavation beyond such appurtenances that has not been directed will be considered unauthorized. Fill with sand, gravel or lean concrete as directed by the Engineer, and at no additional cost to the State.

C. Where trenching occurs in existing lawns, remove turf in sections and keep damp. Replace turf upon completion of the backfilling.

D. Cover

1. Provide a minimum cover over the top of the pipe as indicated on the drawings.

2. Where the minimum cover is not provided, jacket the pipes in concrete as indicated. Provide concrete with a minimum 28-day compressive strength of 2500 psi.

E. Buried Warning and Identification Tape: Install tape in accordance with manufacturer's recommendations except as modified herein. Bury tape six-inches below the top of subgrade under pavements and slabs.

3.05 BEDDING

A. Provide bedding as indicated on the Drawings.

3.06 BACKFILLING

A. General

1. All backfill material shall be placed in the trench by hand or by approved mechanical methods. The compaction of backfill material shall be done by tamping with hand tools or approved pneumatic tampers, by using vibratory compactors, by puddling if the backfill

material can be suitably drained, or by any combination of the three. The method of compaction shall be approved by the Engineer and all compaction shall be done to the satisfaction of the Engineer.

2. When removal of unsuitable excavated material creates a shortage of backfill material, the Contractor shall, at no cost to the State, furnish material as specified in this section in the amount required to complete the backfill.

3. When backfill material is delivered by trucks, the material shall not be dumped directly into the trench, but the fall of the material shall be broken at the edge of the trench. The backfill material shall then be deposited by hand or by approved mechanical methods.

4. Ensure that no damage is done to structures or their protective coatings.

B. Backfilling Around Pipe

1. Select material shall be used to backfill the trench from its bottom to one foot above the pipe. Prior to the laying of the pipe, the select/cushion material cushion shall be deposited in the trench and shall be leveled off, compacted, and shaped to obtain a smooth compacted bed providing firm, uniform bearing along the laying length of the pipe.

2. After the pipe is installed, but prior to testing the line, select material shall be deposited in the trench evenly on both sides and along the full length of the pipe in 6-inch maximum loose lifts. If necessary, additional select material can be deposited over the center of each length of pipe to prevent undue movement during testing of the line. Ensure that initially placed material is tamped firmly under pipe haunches. The bell holes at the pipe joints shall not be backfilled at this time.

3. The pipeline shall then be tested. After the pipeline has passed the test, the Contractor shall backfill the bell holes with select material. The select material, which had been previously deposited over the pipe trench, shall be leveled and compacted.

C. Backfilling to Grade

1. From an elevation one foot above the top of the pipe to grade, the backfill material shall be placed in layers not to exceed 12-inches in loose lifts, each lift shall be compacted to a relative density not less than 95%

2. If the trench section is flooded, no further backfill shall be placed for two (2) days. After this period, the backfill shall again be thoroughly compacted to a relative density of not less than 95% by a method and with equipment approved by the Engineer.

3.07 FIELD QUALITY CONTROL

A. The Engineer will inspect and approve open cuts and trenches before installation of utility piping or structures, and will make the following tests:

1. Assure that trenches are not backfilled until all relevant tests have been completed;

2. Check bedding for proper layer thickness and compaction;

3. Verify that test results conform to the specified requirement, and that sufficient tests are performed;

4. Assure that defective work is removed and properly replaced.

END OF SECTION

SECTION 02600 - STORM DRAINAGE UTILITIES

PART 1 – GENERAL

1.01 GENERAL CONDITIONS

A. As specified in Section 01010.

1.02 GENERAL REQUIREMENTS

A. The work to be performed under this section shall consist of furnishing all labor, materials, equipment, tools and incidentals necessary to install and complete the drainage system as shown on the plans and as specified herein.

1.03 RELATED REQUIREMENTS

A. Section 02200 – EARTHWORK

B. Section 02225 – TRENCH, BACKFILLING, AND COMPACTION FOR UTILITITES

1.04 REFERENCE STANDARDS

A. The Work under this Section is specified in the following sections of the County of Hawaii Department of Public Works (DPW) Standard Specifications:

1. Section 24 – Drain Pipes

2. Section 26 – Catch Basins and Storm Water Inlets

3. Section 39 – Portland Cement Concrete

5. Section 40 – Concrete Structures

6. Section 47 – Steel Structures

7. Section 48 – Reinforcing Steel

All references to measurement and payment are not applicable.

1.05 SUBMITTALS

A. See Section 01300 – Submittal Procedures.

B. Submit shop drawings of drain sump, drain inlet box, trench drain, steel frames, and grates.

C. Submit shop drawings or manufacturer literature for inlets, frames, gratings, and appurtenant structures.

D. Submit manufacturer’s certificates of conformance for drainpipe.

E. Submit as-built survey data for the pipe inverts at all structures constructed under the project.

PART 2 – PRODUCTS

2.01 MATERIALS

A. Structural Steel: Structural steel for inlet gratings and frames and miscellaneous steel structures shall be structural carbon steel conforming to the requirements of AASHTO M-94 and fabricated in accordance with the details shown on the plans. All steel items shall be hot-dipped galvanized after fabrication in accordance with the requirements of AASHTO M-111.

B. Drain Inlets, Trench Drains, Grates and Frames: Inlets shall be as indicated and accepted in the reviewed shop drawings. Grates and frames for drain inlets shall be as indicated or as accepted in the reviewed shop drawings.

PART 3 – EXECUTION

3.01 EXCAVATION

A. The Contractor shall do all necessary excavation to the depth required by the plans. The excavation shall be unclassified and shall be performed regardless of the material encountered.

B. When unsuitable material is encountered at the excavation, the Contractor shall be responsible for hauling and disposing of the material. The hauling and disposing shall be considered, as incidental to the excavation work and no direct payment will be made. The Geotechnical Engineer shall determine if the excavation material is unsuitable.

C. The Contractor shall properly sheet and brace all excavations to render them safe and secure from possible slides. All sheeting and bracing shall be considered, as incidental to the excavation work and no direct payment will be made.

D. All excavations shall be kept free from water during the construction and backfilling of the drainage structure.

E. All open excavations shall be covered or barricaded during non-working hours. Traffic bearing covers shall be provided where applicable.

F. All excavated material shall be piled or stored so that it does not obstruct vehicular traffic or pedestrian walkways.

3.02 DRAINAGE STRUCTURES

A. Prefabricated drainage structures shall be installed per manufacturer's instructions or as shown in the construction drawings and specifications.

B. After the drainage structure has been constructed, it shall be cleaned of all debris, form work, and loose concrete and mortar.

3.03 BACKFILLING DRAINAGE STRUCTURES

A. After a structure has been completed, the area around it shall be filled with approved material, in horizontal layers not to exceed 8 inches in loose depth, and compacted to 95 percent of the material's maximum density. Each layer shall be deposited all around the structure to approximately the same elevation. The top of the fill shall meet the elevation shown on the plans.

B. Backfilling shall not be placed against any structure until accepted and the Engineer gives permission.

3.04 PLACEMENT AND TREATMENT OF FRAMES AND FITTINGS

A. All frames and fittings shall be placed in the positions indicated on the plans or as directed by the Engineer, and shall be set true to line and to correct elevation. If frame of fittings are to be set in concrete or cement mortar, all anchors or bolts shall be in place and position before the concrete or mortar is placed. The unit shall not be disturbed until the mortar or concrete is set. Frames shall be placed such that they do not obstruct flow and cause ponding.

B. After frames or fittings have been set in final position and the concrete or mortar has been allowed to harden for seven (7) days, then the grates or covers shall be installed. Gratings and covers shall lay flat in their respective frames and shall not rock under any condition. Gratings that are warped shall be replaced.

3.05 PIPE

A. Excavation and trench preparation shall be in accordance with SECTION 02225 – TRENCHING, BACKFILLING AND COMPACTING FOR UTILITIES.

B. Backfilling operations shall conform to the requirements of SECTION 02225 – TRENCHING, BACKFILLING AND COMPACTING FOR UTILITIES.

3.06 FINISHING

A. Prior to final approval of the drainage system, the Geotechnical Engineer and the Engineer, accompanied by the Contractor's representatives, shall make a thorough review of the entire installation. Any indication of defects in material or workmanship, or obstruction to flow in the drainage structures, or settlement, shall be corrected. The Contractor without additional compensation shall correct defects due to the Contractor's negligence.

END OF SECTION

SECTION 02740 – ASPHALTIC CONCRETE PAVEMENT

PART 1 - GENERAL

1.01 GENERAL CONDITIONS

A. As specified in Section 01010.

1.02 GENERAL REQUIREMENTS

A. The work to be performed under this section shall consist of furnishing all labor, materials, equipment, tools and incidentals necessary to construct the asphalt pavement structure as shown on the plans and as specified herein.

B. The work under this Section is specified in the following sections of County of Hawaii Department of Public Works (DPW) Standard Specifications, unless modified hereinafter. All references to measurement and payment do not apply:

1. Section 29 – Subgrade.

2. Section 31 – Aggregate Base Course.

3. Section 33 – Asphalt Surface Treatment.

4. Section 34 – Asphalt Concrete Pavement.

5. Section 35 – Asphalt Concrete Resurfacing.

1.03 WORK SPECIFIED IN OTHER SECTIONS

A. Earthwork specified in SECTION 02200 – EARTHWORK.

B. Pavement markings specified in SECTION 02761 – PAVEMENT MARKINGS AND SIGNAGE.

1.04 SUBMITTALS

A. Submit in accordance with SECTION 01300 – SUBMITTAL PROCEDURES.

B. Product Data, Reports: The Contractor shall furnish the affidavits and data from the supplier for the following:

1. Design Mix for asphalt concrete pavement.

2. Base Course Material.

3. Sub-base Course Material.

C. Certificates: Testing laboratory accreditation data.

D. Certificates: Certification that the specified herbicides were applied at the specified application rate over the entire sub-grade to be paved.

1.05 SAMPLING AND TESTING

A. The Contractor shall retain and pay for an independent soil testing laboratory with at least one Licensed Civil Engineer specializing in Geotechnical Engineering to provide monitoring and testing services. The soil testing laboratory shall be accredited by the American Association of State Highway and Transportation Officials (AASHTO) or the American Association for Laboratory Accreditation and shall be accredited in the tests required under this contract. The soil testing laboratory shall meet the requirements of ASTM D 3740 - Standard Practice for Minimum Requirements for Agencies Engaged in the Testing and/or Inspection of Soil and Rock as used in Engineering Design and Construction.

The Contractor shall furnish for approval, a copy of the Certificate of Accreditation and Scope of Accreditation and latest directory of the accrediting organization for accredited laboratories. The scope of the laboratory's accreditation shall include the test methods required by the Contract. The Contractor shall submit certified test results in accordance with Section 01330 – SUBMITTAL PROCEDURES. All test results must be approved before the Contractor can proceed with placing subsequent layers or material.

B. Density tests shall be taken to determine whether the specified levels of compaction are being consistently attained. Testing shall be done as indicated, with a minimum of one test for each material.

1. Sub-Grade: One Compaction test per lift of subgrade for this project, where basalt rock is not exposed.

2. Aggregate Base: One compaction test per lift of aggregate base for this project.

3. Aggregate Sub-Base: One compaction test per lift of aggregate sub-base for this project.

C. Compaction and thickness testing for asphaltic concrete paving shall be performed at a rate of one test per lift for this project. Sampling shall be as specified in Section 34 the "Standard Specifications for Public Works Construction".

PART 2 – PRODUCTS

2.01 MATERIALS

A. Materials shall conform to the below-listed sections of the "Standard Specifications for Public Works Construction" except as amended in the plans and/or specifications herewith.

1. Subgrade	Section 29
2. Aggregate Base Course, 1 1/2-inch maximum	Section 31
3. Prime Coat for Pavement	Section 33
4. Tack Coat for Pavement	Section 33
5. Asphalt Concrete Pavement	Section 34

B. Aggregate Base Course shall have a minimum CBR value of 85.

C. Herbicides

1. Pre-paving vegetation destruction herbicide shall be Roundup by Monsanto or accepted equivalent.

2. Pre-emergence control herbicide shall be Treflan by Elanco Products Company, or accepted equivalent.

PART 3 – EXECUTION

3.01 SURFACE PREPARATION

A. The sub-grade shall be prepared and compacted in accordance with SECTION 02200 – EARTHWORK and the requirements of the DPW Standard Specifications. Soil tests shall be made at the sub-grade level and the final pavement structure verified or modified as necessary.

B. Apply pre-paving herbicide to all new pavement or gravel road areas. Application shall not be made immediately after heavy rains or when rain is forecasted within the next 48 hours. The herbicide shall be applied in accordance with the manufacturer's recommended procedures and rates. Perform two herbicide applications at least three days apart.

3.02 PAVEMENT INSTALLATION

A. Asphalt concrete shall be as indicated on the plans and shall be constructed in accordance with Section 34 of the "Standard Specifications for Public Works Construction". Aggregate base course shall be compacted to a minimum 95% compaction as determined by ASTM D1557, and constructed in accordance to Section 31 of the "Standard Specifications for Public Works Construction".

B. Demolition and removal of existing pavement is indicated on the plans and specified in SECTION 02050 – DEMOLITION AND REMOVAL.

C. Prior to placement of the base course, the subgrade shall be scarified to a depth of about 8 inches, moisture conditioned to above the optimum moisture content, and recompacted to a minimum of 95 percent relative compaction. In areas where dense clinker materials or basalt rock formations are exposed, the subgrade should be proof-rolled with a minimum 10-ton vibratory roller or similar heavy equipment for a minimum of six passes to help detect and collapse near surface cavities in lieu of scarification and compaction.

D. New asphalt concrete shall be in accordance with the plans.

E. Prime coat shall be applied as specified in Section 33 of the "Standard Specifications for Public Works Construction".

F. Pavement smoothness for the finished surface shall be true to grade and cross section, free from depressions and grainy spots, and of uniform texture. It shall not vary more than 1/8 of an inch over 10 feet.

G. Surface tolerance for the finished surface of the asphalt concrete pavement shall be within 0.04 foot above or below the theoretical grade.

H. Low or defective areas shall be corrected by cutting out the faulty areas and replacing with new materials. Skin patching for correcting low areas will not be permitted.

3.02 CLEAN UP AND REPAIR

A. Any existing asphaltic concrete pavements including roads and walkways that have been damaged by construction activities shall be repaired to the original condition and to the satisfaction of the Engineer. Damage done by the heavy equipment, especially on roads not stable for such equipment, shall be repaired to the original condition and to the satisfaction of the Engineer. Concrete curbs and sidewalks that have been cracked or damaged by the Contractor's equipment or delivery trucks shall be reconstructed.

B. Repair work may consist of asphalt concrete resurfacing, scarifying and removing the existing pavement and reconstructing a new pavement of equivalent thickness, and reconstruction of concrete curbs and sidewalks.

END OF SECTION

SECTION 02761 - PAVEMENT MARKINGS AND SIGNAGE

PART 1 – GENERAL

1.01 GENERAL CONDITIONS

A. As specified in Section 01010.

1.02 GENERAL REQUIREMENTS

A. The work shall consist of furnishing all labor, materials, and equipment, and installing complete in place pavement striping, pavement markings, and traffic signage in accordance with the plans and specifications.

B. Pavement striping, pavement markings, and traffic signage shall conform to the latest edition of the "Manual on Uniform Traffic Control Devices for Streets and Highways", as amended and the "Hawaii Standard Specifications for Road and Bridge Construction, 2005" as amended.

C. Unless otherwise specified, all signs shall conform to the latest editions and amendments of the following:

1. Manual on Uniform Traffic Control Devices and Highways (MUTCD).

2. Standard Highway Signs.

3. AASHTO Standard Specification for Structural Supports for Highway Signs, Luminaries, and Traffic Signals.

1.03 WORK SPECIFIED IN OTHER SECTIONS

A. Asphalt concrete pavement specified in SECTION 02740 – ASPHALTIC CONCRETE PAVEMENT

1.04 SUBMITTALS

A. Submit in accordance with SECTION 01300 – SUBMITTALS.

B. Submit for approval the manufacturer's certificates of compliance and data sheets for all materials herein specified.

C. Submit shop drawings of all non-standards traffic signs for approval by the Engineer prior to fabrication. When required, signage shop drawings shall include a detailed representation of each sign with dimensions. Drawings shall not be reproduction of contract drawings. Include details for attaching signs to their supports. The Contractor may propose alternate means of fabricating or installing signs but these proposals must have the approval of the Engineer and meet the intent of these specifications.

D. Submit warranty and product information for retroreflective sheeting material.

E. Submit a traffic control plan for approval prior to beginning any work.

PART 2 – PRODUCTS

2.01 MATERIALS

A. Traffic paint shall conform to Section 755.01 of the “Hawaii Standard Specifications for Road and Bridge Construction, 2005”, as amended. Include blue paint for accessible striping.

B. Pavement markers shall conform to Section 755.02 of the “Hawaii Standard Specifications for Road and Bridge Construction, 2005”, as amended.

C. Adhesives for pavement markers shall conform to Section 755.03 of the “Hawaii Standard Specifications for Road and Bridge Construction, 2005”, as amended.

D. Sign Backing: Sign panel backing shall be either sheet aluminum, or extruded aluminum panels, and shall conform to Section 750.01, paragraph (B) of the “Standard Specifications for Road and Bridge Construction, 2005".

E. Retro-reflective Sheeting: All signs shall have Type III or IV Retro-Reflective Sheeting backgrounds and direct applied legends conforming to Section 750.01, paragraph (A) of the “Standard Specifications for Road and Bridge Construction, 2005". Colors shall be as specified on the plans and shall conform to the central values and tolerance limits specified in the MUTCD.

F. Steel Sign Supports: Steel Sign Supports shall be Square Tube Posts, channel posts, or structural steel members and shall conform to Sections 750.02 and 750.04 of the “Standard Specifications for Road and Bridge Construction, 2005," respectively.

G. Sign Fasteners-Steel Sign Supports: Sign fasteners to steel sign supports shall conform to Section 750.03 of the “Standard Specifications for Road and Bridge Construction, 2005."

H. Zinc Coating: Zinc coatings shall be as specified in Section 501.03 paragraph (G) of the “Standard Specifications for Road and Bridge Construction, 2005."

I. Zinc Paint: Primer coat shall consist of zinc oxide-zinc dust paint conforming to Federal Specifications MIL-E-15145. DFT shall be 1.5 mils.

J. Concrete for sign posts shall be Class 2500.

PART 3 – EXECUTION

3.01 PAVEMENT MARKING AND STRIPING CONSTRUCTION REQUIREMENTS

A. The installation of all striping and pavement markers shall be done in accordance with Section 629.03 of the “Hawaii Standard Specifications for Road and Bridge Construction, 2005", as amended, unless specified otherwise in the contract documents.

B. Layout of pavement markings, striping, and delineators shall be done by the Contractor and approved by the Engineer prior to any installation work.

C. The Contractor shall verify all existing conditions and controlling dimensions before ordering or fabricating any of the work.

D. Existing pavement markings not incorporated into the final traffic pattern shall be removed. Removal of existing pavement markings shall be done in accordance with Section 629.03D of the “Hawaii Standard Specifications for Road and Bridge Construction, 2005", as amended.

E. Before application of the markings, the portion of the roadway surface in the work area shall be thoroughly cleaned of all dust, dirt, curing compound, grease, oil, moisture, loose or unsound layers and any other material that would adversely affect the bond of the markings.

F. No markings shall be applied when moisture or foreign matter is present on the surface to be marked, or when wind conditions are such as to cause dust to be deposited on the prepared areas or to prevent satisfactory application of the marking.

G. All stripes and segments of stripes shall present a clean-cut, uniform, and workmanlike appearance. All markings which fail to have a uniform, satisfactory appearance shall be corrected by the Contractor at his expense.

H. Traffic striping which fails to meet the requirements specified herein or is marred or damaged by traffic or from other causes shall be corrected at the Contractor’s expense.

I. Unless specified otherwise, pavement markings shall be thermoplastic extrusion.

3.02 SIGN REFLECTORIZED BACKGROUND APPLICATION

A. All backgrounds shall consist of the specified retro-reflective sheeting. The application of this sheeting whether heat-activated or pressure sensitive, and the preparation of the application surface shall be in strict accordance with the manufacturer’s instructions.

B. The Contractor shall use the best technique possible to obtain a flat uniform background under day or night conditions. Colors shall be uniform. Lap or butt joints will not be permitted unless specifically approved by the Engineer. Manufacturer splices within a given roll shall be allowed. All edges and splices shall be coated with an edge sealer recommended by the Manufacturer.

3.03 SIGN REFLECTORIZED LEGEND APPLICATION

A. The term “Legend” as used herein is defined as all word messages and symbol designs contained on the sign that serve the purpose of conveying a specific message. Borders, when used, are also included as part of the legend.

B. Legends shall be cut out of the specified retro-reflective sheeting. Letter and symbol size, style, and placement shall conform to the layout shown on the drawings and as approved on the shop drawings. Legends shall be direct applied to the reflectorized background on the sign panels. Application technique shall be in strict accordance with the manufacturer’s recommendations.

C. Edges of applied legend shall be sealed with a sealer recommended by the manufacturer.

3.04 SIGN INSTALLATION

A. Prior to installation of any sign the Contractor shall perform his own inspection to examine the areas and conditions under which the signage is to be installed. Should any condition be found unsuitable, no work shall be done until the unsatisfactory conditions have been corrected. Proceeding with work will imply acceptance of the conditions by the Contractor.

B. Locate all signs as specified in the contract drawings and mark with stakes or tags. The Contractor shall take all necessary precautions to avoid conflicts with existing utilities. Field adjustments shall be made as necessary to avoid conflicts with existing utilities, structures, etc., at no additional cost to the State.

C. The Contractor shall position sign panels per the Manufacturer's specifications to ensure maximum retro-reflectivity and minimum glare.

D. During storage, transportation, and installation, the complete sign unit shall be fully protected. Signs installed shall be clean and in first-class condition. The sign faces and finished backs shall be protected from damage.

E. The Contractor shall mount the sign panels with the specified hardware compatible to the system and as shown in the Contract drawings.

F. Hot-dip zinc-coat all exposed surfaces of post type sign supports after fabrication as specified in Section 2.01. Zinc coating shall also be applied to the inner portion of tubular steel posts and the upper ten (10) inches of anchor bolts.

3.05 CLEAN-UP AND REPAIR

A. Any disturbance to roadbeds, landscaped areas, brick pavers, etc., shall be restored to original condition. Take care to avoid damage to immediate and surrounding areas and protect property, vehicles, etc.

B. In landscaped areas, remove grass in a manner that will allow replacement close to its original condition. Use a drop cloth or similar ground cover at all times to contain and hold removal of earth, plantings, etc., whether on concrete, asphalt, lawn and/or landscaped areas.

C. Any concrete, asphalt, or brick pavers removed shall be replaced in as close to original condition as possible, and within the limits of generally accepted trade standards.

D. All areas of work shall be completely cleaned. Any damages shall be corrected at the Contractor's expense.

END OF SECTION