J:/Project Data - 2020 Projects/20-076 DHHL PS-20-LDD-012 T01 Rehabilitation of School Seawall/Drawings/Structural/Me10/001-TITLE SHEET Plot date: 4-May-2026

STATE OF HAWAII
DEPARTMENT OF HAWAIIAN HOME LANDS

NANAKULI FLOOD CONTROL CHANNEL OUTLET REPAIRS

NANAKULI, OAHU, HAWAII

T.M.K.: (1) 8-9-001:004, (1) 8-9-001:002

IFB-26-HHL-010

GENERAL NOTES

1. THE INFORMATION CONTAINED HEREIN IS BASED UPON LIMITED FIELD INVESTIGATIONS AND AVAILABLE RECORD DRAWINGS.
2. DRAWINGS ARE INTENDED TO PROVIDE A GRAPHIC ILLUSTRATION OF DESIGN CONCEPT ONLY AND DEPICT THE GENERAL PLACEMENT OF CERTAIN COMPONENTS IN RELATION TO EACH OTHER.
3. FOR CLARITY, DETAIL DRAWINGS DO NOT SHOW ALL COMPONENTS OR ILLUSTRATE ALL FIELD CONDITIONS THAT MAY BE PRESENT.
4. CONTRACTOR SHALL TAKE MEASUREMENTS AND FIELD-VERIFY ALL CONDITIONS AND DIMENSIONS PRIOR TO CONSTRUCTION AND/OR FABRICATION.
5. ALL CONSTRUCTION SHALL CONFORM TO THE FOLLOWING BUILDING CODES: 2012 IBC

PARCEL DATA

PARCEL NUMBER:	8900100400000
TOTAL LAND AREA (ACRES):	18.052
PROPERTY CLASS:	RESIDENTIAL
ZONING DESIGNATION:	R-5, P-2
FEMA FLOOD DESIGNATION:	ZONE AE

PREPARED FOR

DEPARTMENT OF HAWAIIAN HOME LANDS, STATE OF HAWAII

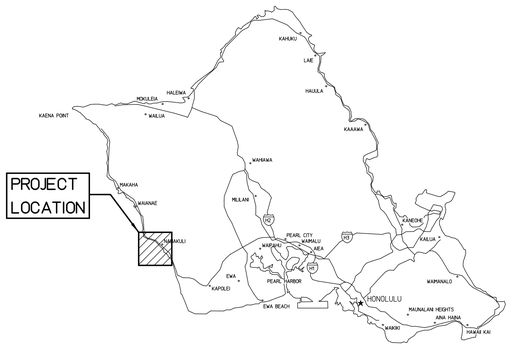
LAND DEVELOPMENT DIVISION
91-5420 KAPOLEI PARKWAY
KAPOLEI, HAWAII 96707

CONTACT:

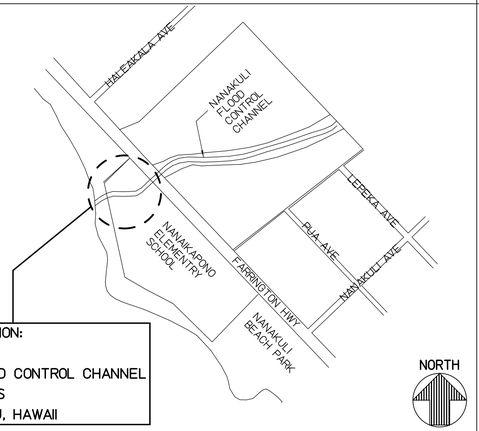
WILLIAM J. AILA JR.
CHAIRMAN, HAWAIIAN HOMES COMMISSION

INDEX TO DRAWINGS

ISLAND MAP



LOCATION MAP



PROJECT LOCATION:

NANAKULI FLOOD CONTROL CHANNEL
OUTLET REPAIRS
NANAKULI, OHAU, HAWAII

PREPARED BY

HAWAII ENGINEERING GROUP, INC.

1088 BISHOP STREET, SUITE 2506
HOHOLULU, HAWAII 96813

BID SET
2026-03-20

REVISION NO.	DATE	REVISIONS	BY
1	02/29/24	DPP COMMENTS	

ATHER R. DAR
LICENSED PROFESSIONAL ENGINEER
No. 7808-S
HAWAII U.S.A.
Exp. Date: 4-30-28

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION AND CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION

DEPARTMENT OF HAWAIIAN HOME LANDS

NANAKULI FLOOD CONTROL CHANNEL
OUTLET REPAIRS
NANAKULI, OAHU, HAWAII
T.M.K.: (1) 8-9-001:004, (1) 8-9-001:002

TITLE SHEET

DESIGNED BY:	TTP
DRAWN BY:	AK
CHECKED BY:	AD
SUPV:	
DATE:	10/17/2022

HAWAII ENGINEERING GROUP, Inc.
Civil & Structural Engineers
1088 BISHOP STREET #2506
HONOLULU, HI 96813
Tel: 808-533-2092

JOB NO.

SHEET 001
1 OF 19 SHTS

FILE ___ ___ DRAWER ___ ___ ___ FOLDER ___ ___

J:/Project Data - 2020 Projects/20-076 DHHL PS-20-LDD-012 T01 Rehabilitation of School Seawall/Drawings/Structural/Ma10/S101-SITE PLAN Plot date: 4-May-2026

PROJECT:

1. PROVIDE CONCRETE LINING ON BOTH SIDES OF CHANNEL
2. REMOVE AND REPLACE PEDESTRIAN BRIDGE
3. PROVIDE CHAINLINK FENCE ON BOTH SIDES OF CHANNEL
4. PROVIDE RIP-RAP BEHIND EXISTING WALL.

DEPARTMENT OF HAWAIIAN HOME LANDS WILL PROVIDE THE CONTRACTOR A MINIMUM OF 7500 SF OF STAGING AREA (HATCHED)

PROPERTY LINE

T.M.K.: (1) 8-9-001:004

PROPERTY LINE

EXIST BOX CULVERT BELOW

FARRINGTON HIGHWAY

A

B

C

D

E

F

G

H

I

J

K

L

M

N

O

P

Q

7'-3"

28'-9 1/16"

EXIST GATE

28'-3"

27'-7 5/8"

27'-4 9/16"

7'-1"

31'-11 3/16"

31'-8 13/16"

29'-11 1/8"

28'-5 1/8"

31'-9 3/16"

EXIST CHAINLINK FENCE

32'-9 3/16"

EXIST GATE

18'-1 7/8"

14'-7 7/16"

7'-3 13/16"

5'-7 5/8"

31'-8 15/16"

31'-9 15/16"

31'-8 5/16"

32'-10 7/8"

31'-7 7/8"

29'-11 1/4"

EXIST PEDESTRIAN BRIDGE

28'-4 11/16"

EXIST GATE

26'-11 3/4"

EXIST CHANNEL WALL

30'-0 5/8"

28'-8 9/16"

28'-1 1/8"

30'-0 9/16"

29'-11 1/16"

30'-0 7/16"

29'-10 5/8"

20'-6 1/4"

29'-9 7/16"

EXIST CHAIN LINK FENCE

30'-4 1/4"

20'-7 9/16"

END OF CHANNEL

60'-0" SHORE LINE SETBACK

T.M.K.: (1) 8-9-001:002

PROPERTY LINE

PACIFIC OCEAN

KA WAIHONA O KA NAAUAO CHARTER SCHOOL

7'-6"

BID SET
2026-03-20

LEGEND:

A — GRID NUMBER. GRIDS ARE LOCATED AT EXISTING CONSTRUCTION JOINTS.

NORTH

SITE PLAN
SCALE : 1" = 20'

0 4' 10' 20' 40' 60'
Scale: 1"=20'

REVISION NO.	DATE	REVISIONS	BY

ATHER R. DAR
LICENSED PROFESSIONAL ENGINEER
No. 7808-S
HAWAII U.S.A.
Exp. Date: 4-30-28

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DEPARTMENT OF HAWAIIAN HOME LANDS

NANAKULI FLOOD CONTROL CHANNEL
OUTLET REPAIRS
NANAKULI, OAHU, HAWAII
T.M.K.: (1) 8-9-001:004, (1) 8-9-001:002

SITE PLAN

DESIGNED BY:	TTP	JOB NO.
DRAWN BY:	AK	
CHECKED BY:	AD	
SUPV:		SHEET S101
DATE:	10/17/2022	2 OF 19 SHTS

HAWAII ENGINEERING GROUP, Inc.
Civil & Structural Engineers
1088 BISHOP STREET #2506
HONOLULU, HI 96813
Tel: 808-533-2092

FILE ___ DRAWER ___ FOLDER ___

J:/Project Data - 2020 Projects/20-076 DHHL PS-20-LDD-012 T01 Rehabilitation of School Seawall/Drawings/Structural/Mel0/S102-NOTES Plot date: 4-May-2026

GENERAL NOTES

GENERAL:

1. ALL WORK SHALL CONFORM TO THE 2006 INTERNATIONAL BUILDING CODE (IBC) WITH THE CITY AND COUNTY OF HONOLULU AMENDMENTS.
2. THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND CONDITIONS PRIOR TO THE START OF THE JOB AND NOTIFY ALL DISCREPANCIES TO THE ARCHITECT
3. ALL WORK SHALL CONFORM TO THE BEST PRACTICE PREVAILING IN THE VARIOUS TRADES COMPRISING THE WORK.
4. FEATURES OF CONSTRUCTION SHOWN ARE TYPICAL, AND THEY SHALL APPLY GENERALLY THROUGHOUT FOR SIMILAR CONDITIONS. MODIFY TYPICAL DETAILS AS DIRECTED TO MEET SPECIAL CONDITIONS.
5. SPECIFIC NOTES AND DETAILS SHALL TAKE PRECEDENCE OVER GENERAL NOTES AND TYPICAL DETAILS.
6. THE CONTRACTOR SHALL REFER TO THE SPECIFICATIONS FOR INFORMATION NOT COVERED BY THESE GENERAL NOTES OR THE STRUCTURAL DRAWINGS.
7. THE CONTRACTOR SHALL REFER TO THE ARCHITECTURAL, ELECTRICAL AND MECHANICAL DRAWINGS FOR CONDITIONS, DEPRESSIONS, OPENINGS, ITEMS TO BE EMBEDDED OR ATTACHED TO STRUCTURAL ELEMENTS, ETC., NOT SHOWN ON THE STRUCTURAL DRAWINGS.
8. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL SHORING. THE CONTRACTOR SHALL PROVIDE TEMPORARY ERECTION BRACING AND SHORING FOR ALL STRUCTURAL MEMBERS AS REQUIRED FOR STRUCTURAL STABILITY OF THE STRUCTURE DURING ALL PHASES OF CONSTRUCTION. THE CONTRACTOR SHALL ALSO BE RESPONSIBLE FOR MEANS AND METHODS OF CONSTRUCTION INCLUDING BUT NOT LIMITED TO SAFETY MEASURES TO PROTECT THE STRUCTURE, WORKMEN OR OTHER PERSONS DURING CONSTRUCTION. OBSERVATION VISITS BY THE OFFICER-IN-CHARGE OR HIS REPRESENTATIVE SHALL NOT INCLUDE INSPECTION OF THE CONTRACTOR'S SAFETY MEASURES.
9. THE CONTRACTOR SHALL TAKE ALL STEPS NECESSARY TO INSURE THE PROPER ALIGNMENT OF THE STRUCTURES.
10. MODIFICATION TO DRAWINGS: THE GENERAL CONTRACTOR AND HIS SUBCONTRACTORS MUST SUBMIT IN WRITING ANY REQUESTS FOR MODIFICATIONS TO THE PLANS AND SPECIFICATIONS. SHOP DRAWINGS THAT ARE SUBMITTED TO THE ENGINEER FOR HIS REVIEW DO NOT CONSTITUTE "IN WRITING". IN ANY EVENT, CHANGES TO THE PLANS AND SPECIFICATIONS BY MEANS OF SHOP DRAWINGS BECOME THE RESPONSIBILITY OF THE PERSON INITIATING SUCH CHANGES.
11. THE CONTRACTOR SHALL PROTECT AND SHIELD FROM DAMAGE ALL AREAS ADJACENT TO AND SURROUNDING THE CONSTRUCTION WORK. EXISTING CONDITIONS OR AREAS DAMAGED OR DISTURBED BY THE CONTRACTOR'S OPERATIONS SHALL BE RESTORED TO THEIR ORIGINAL CONDITION.

DESIGN DATA:

1. PEDESTRIAN BRIDGE LIVE LOAD . . . . . 100 PSF
2. SOIL PROPERTIES USING IN RETAINING WALL DESIGN
   - A. ACTIVE PRESSURE EQUVALENT . . . . . 45 PCF
   - B. PASSIVE PRESSURE EQUVALENT . . . . . 300 PCF
   - C. COEFFICIENT OF FRICTION 0.4
   - D. SOIL DENSITY . . . . . 110 PCF
3. SOIL BEARING PRESSURE . . . . . 1500 PSF

CONCRETE:

1. ALL WORK SHALL CONFORM TO ACI-318-11.
2. VERIFY LOCATIONS AND DIMENSIONS OF SLOTS, ANCHORS, DUCTS, ETC., RELATING TO MECHANICAL, ELECTRICAL WORK BEFORE POURING CONCRETE.
3. ALL INSERTS, ANCHOR BOLTS, PLATES, ETC. EMBEDDED IN CONCRETE SHALL BE HOT-DIPPED GALVANIZED UNLESS NOTED OTHERWISE.
4. THE 28-DAY COMPRESSIVE STRENGTH OF CAST-IN-PLACE CONCRETE SHALL BE MIN. 4,000 PSI (MAXIMUM W/C = 0.42) AND THE MAXIMUM AGGREGATE SIZE SHALL BE 3/4". CONCRETE SLUMP SHALL BE 4.5". USE HIGH RANGE WATER REDUCERS (SUPERPLASTICIZERS) AS REQUIRED TO INCREASE WORKABILITY. SUBMIT CONCRETE MIX DESIGNS TO OFFICER-IN-CHARGE FOR REVIEW 14 DAYS PRIOR TO CONCRETE POUR. COMPRESSIVE STRENGTHS OF PRECAST CONCRETE ARE SPECIFIED IN SHEETS S302 AND S303.
5. FOR WALKS AND SLABS ON GRADE THE CONCRETE SHALL BE DESIGNED SUCH THAT THE WATER- CEMENT RATIO DOES NOT EXCEED 0.50 BY WEIGHT. FOR CONCRETE GROUT UNDER PRECAST PANEL, THE AGGREGATE SHALL BE "PEA GRAVEL" SIZED.
6. ALL CONCRETE SHALL BE THOROUGHLY CONSOLIDATED DURING PLACEMENT USING A MECHANICAL VIBRATOR. ALL CONCRETE SHALL BE CURED FOR A PERIOD OF NOT LESS THAN 7 DAYS.
7. UNLESS OTHERWISE NOTED, MINIMUM REINFORCEMENT FOR CONCRETE SLAB SHALL BE #4 @ 18" ON CENTERS, EACH WAY, AT MID-DEPTH.
8. UNLESS OTHERWISE INDICATED, CHAMFER EXPOSED CORNERS 3/4" x 3/4". VERIFY WITH ARCHITECTURAL DRAWINGS.
9. NOTIFY OFFICER-IN-CHARGE THREE (3) WORKING DAYS PRIOR TO ANY CONCRETE POUR. NO CONCRETE SHALL BE POURED PRIOR TO OBSERVATION BY THE OFFICER-IN-CHARGE OR HIS REPRESENTATIVE.

REINFORCING STEEL:

1. ALL REINFORCING STEEL SHALL BE "UNS S32304 DUPLEX" STAINLESS STEEL, GRADE 60, CONFORMING TO ASTM A959, A955 AND A276.
2. CONCRETE COVERAGE FOR REINFORCING BARS SHALL BE AS FOLLOWS, UNLESS OTHERWISE NOTED:
   SLABS & WALLS (EXPOSED FACES) . . . . . 2"
3. BAR LAPS SHALL BE MADE AWAY FROM POINTS OF MAXIMUM STRESS AND UNLESS NOTED OTHERWISE, SPLICES, LAPS, DOWEL EXTENSIONS AND EMBEDMENTS SHALL BE 48 BAR DIAMETERS BUT NOT LESS THAN 24 INCHES. SPLICES SHALL BE STAGGERED WHERE POSSIBLE.
4. BENDS NOT DIMENSIONED SHALL BE STANDARD HOOKS.
5. BOLSTER AND SUPPORT BARS FOR SLAB AND TOPPING REINFORCEMENT (INCLUDING SLABS ON GRADE) SHALL BE A MINIMUM OF #4 @ 24" O.C.
6. BEFORE PLACING OF CONCRETE, GENERAL CONTRACTOR SHALL INSPECT REINFORCEMENT PLACEMENT TO INSURE CONFORMANCE WITH THE DRAWINGS. ALL DISCREPANCIES SHALL BE CORRECTED PRIOR TO CONCRETE POUR OR GROUTING.
7. BARS NOTED "CONT" SHALL BE CONTINUOUS AND SHALL HAVE A MINIMUM LAP SPLICE LENGTH OF 48 BAR DIAMETERS BUT NOT LESS THAN 24 INCHES.

RIP-RAP:

1. STONES SHALL BE HAWIIAN BASALTIC "BLUE ROCK", CLEAN, NORMAL WEIGHT, HARD, SOUND AND DURABLE.
2. STONES SHALL BE NOT LESS THAN 12 INCHES IN ALL DIMENSIONS AND HAVE A VOLUME OF NOT LESS THAN 3 CUBIC FOOT
3. STONES SHALL BE LAID FLAT WITH LARGEST FACE UP OR DOWN. STONES SHALL BE INTERLOCKING , WITH JOINTS OVERLAPPING IN ALL DIRECTIONS, TO FORM A FIRM BOND.
4. RIPRAP SHOULD BE UNGROUTED.

EPOXY GROUTING:

1. EPOXY GROUTING OF REBARS: EPOXY SHALL BE SIKA EPOXY INJECTION GEL SYSTEM, SIMPSON SET-XP OR APPROVED EQUAL. SUBMIT ICC-ES EVALUATION REPORT AND TECHNICAL DATA FOR ALL EPOXY PRODUCTS. HOLE SIZE FOR REBAR GROUTING SHALL BE 1/8" LARGER THAN REBAR DIAMETER. JUST PRIOR TO GROUTING, EACH HOLE SHALL BE SCRAPED AND NYLON BRUSHED, AND THEN, SHALL BE BLOWN OUT USING OIL FREE COMPRESSED AIR TO REMOVE ANY RESIDUE. GROUTING PREPARATION AND APPLICATION SHALL STRICTLY CONFORM TO THE EPOXY MANUFACTURER'S INSTRUCTIONS AND RECOMMENDATIONS.
2. PROTECT CONCRETE SURFACES BEYOND THE LIMITS OF THE SURFACE RECEIVING THE EPOXY GROUT AGAINST SPILLAGE. IMMEDIATELY REMOVE ANY EPOXY COMPOUND, APPLIED OR SPILLED, BEYOND THE DESIRED AREAS. PERFORM CLEAN UP WITH MATERIALS AS RECOMMENDED BY THE EPOXY MANUFACTURER.

CONCRETE GROUTING (OR NEW CONCRETE FLOOR) PREPARATION:

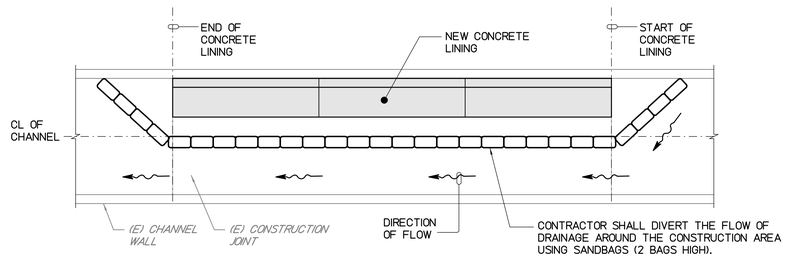
1. CLEAN OUT DEBRIS SANDS ON EXISTING CHANNEL FLOOR.
2. ROUGHEN EXISTING CHANNEL SURFACE UNDER NEW LINING WITH 1/2 INCH AMPLITUDE TO PROMOTE BONDING BETWEEN GROUT (NEW CONCRETE) AND EXISTING CONCRETE. USE SMALL DEMOLITION TOOLS SUCH AS BUSH HAMMER TO PREVENT CRACKS IN EXISTING CONCRETE.
3. INSTALL EPOXY DOWELS AND REINFORCEMENT AS INDICATED IN DETAIL B/S301 PRIOR TO PRECAST ERECTION AND CONCRETE GROUTING
4. FOLLOW BEST MANAGEMENT PRACTICES (BMP) IN THIS GENERAL NOTES DURING GROUTING.

SPECIAL INSPECTION:

1. SPECIAL INSPECTION PER 2012 INTERNATIONAL BUILDING CODE (IBC) ARE REQUIRED FOR THE FOLLOWING TYPES OF WORK:
   - A. CONCRETE CONSTRUCTION:
     GROUT PLACEMENT: CONTINUOUS INSPECTION
     FRESH CONCRETE SAMPLING: CONTINUOUS
     REINFORCING STEEL: PERIODIC
     BOLTS INSTALLED IN CONCRETE: CONTINUOUS INSPECTION
     OTHER ITEMS: PERIODIC
2. THE CONTRACTOR SHALL NOTIFY THE SPECIAL INSPECTOR AT LEAST THREE (3) WORKING DAYS PRIOR TO PERFORMING WORK REQUIRING SPECIAL INSPECTIONS. WORK PERFORMED WITHOUT REQUIRED SPECIAL INSPECTION WILL BE SUBJECT TO REJECTION.

GOOD HOUSEKEEPING BMPS:

1. MATERIALS DELIVERY, STORAGE AND USE MANAGEMENT. PREVENT, REDUCE, OR ELIMINATE THE DISCHARGE OF POLLUTANTS FROM MATERIAL DELIVERY, STORAGE, AND USE TO THE STORM WATER SYSTEM OR WATERCOURSES BY MINIMIZING THE STORAGE OF HAZARDOUS MATERIALS ONSITE, STORING MATERIALS IN A DESIGNATED AREA, INSTALLING SECONDARY CONTAINMENT. CONSTRUCTION MATERIALS, WASTE, TOXIC AND HAZARDOUS SUBSTANCES, STOCKPILES AND OTHER SOURCES OF POLLUTION SHALL NOT BE STORED IN BUFFER AREAS, NEAR AREAS OF CONCENTRATED FLOW, OR AREAS ABUTTING THE MS4, RECEIVING WATERS, OR DRAINAGE IMPROVEMENTS THAT DISCHARGE OFF-SITE. PRIMARY AND SECONDARY CONTAINMENT CONTROLS AND COVERS SHALL BE IMPLEMENTED TO THE MEP.
2. SPILL PREVENTION AND CONTROL. PROJECTS SHALL CREATE AND IMPLEMENT SPILL PREVENTION AND RESPONSE PLANS TO ELIMINATE AND MINIMIZE THE DISCHARGE OF POLLUTANTS TO THE MS4 AND RECEIVING WATERS FROM LEAKS AND SPILLS BY REDUCING THE CHANCE FOR SPILLS, ABSORBING, CONTAINING, AND CLEANING UP SPILLS AND PROPERLY DISPOSING OF SPILL MATERIALS. AT A MINIMUM, ALL PROJECTS SHALL CLEANUP ALL LEAKS AND SPILLS IMMEDIATELY.
3. HAZARDOUS MATERIALS. PREVENT OR REDUCE THE DISCHARGE OF POLLUTANTS TO STORM WATER FROM HAZARDOUS WASTE THROUGH PROPER MATERIAL USE AND WASTE DISPOSAL. IN THE EVENT THAT HAZARDOUS MATERIALS ARE DISCHARGED TO THE MS4, THE PROPERTY OWNER OR ESCP COORDINATOR SHALL IMMEDIATELY NOTIFY THE DEPARTMENT OF FACILITIES MAINTENANCE, HONOLULU FIRE DEPARTMENT, AND HONOLULU POLICE DEPARTMENT OF THE DISCHARGE BY TELEPHONE. A WRITTEN REPORT DESCRIBING THE POLLUTANTS THAT WERE DISCHARGED, THE REASONS FOR THE DISCHARGE, AND THE MEASURES THAT HAVE BEEN TAKEN OR WILL BE TAKEN TO PREVENT A REOCCURRENCE OF THE DISCHARGE SHALL BE SUBMITTED TO THE DIRECTOR NO LESS THAN 3 DAYS AFTER NOTIFICATION BY PHONE.
4. NONHAZARDOUS MATERIALS. IN THE EVENT THAT NONHAZARDOUS MATERIALS ARE DISCHARGED TO THE MS4, THE PROPERTY OWNER OR ESCP COORDINATOR SHALL NOTIFY THE CITY DEPARTMENT OF FACILITIES MAINTENANCE BY TELEPHONE NO LATER THAN THE NEXT BUSINESS DAY. A WRITTEN REPORT DESCRIBING THE POLLUTANTS THAT WERE DISCHARGED, THE REASONS FOR THE DISCHARGE, AND THE MEASURES THAT HAVE BEEN TAKEN OR WILL BE TAKEN TO PREVENT A REOCCURRENCE OF THE DISCHARGE SHALL BE SUBMITTED TO THE DIRECTOR NO LESS THAN 3 DAYS AFTER NOTIFICATION BY PHONE.
5. SOLID WASTE MANAGEMENT. PREVENT OR REDUCE DISCHARGE OF POLLUTANTS TO THE LAND, GROUNDWATER, AND IN STORM WATER FROM SOLID WASTE OR CONSTRUCTION AND DEMOLITION WASTE BY PROVIDING DESIGNATED WASTE COLLECTION AREAS, COLLECT SITE TRASH DAILY, AND ENSURING THAT CONSTRUCTION WASTE IS COLLECTED, REMOVED, AND DISPOSED OF ONLY AT AUTHORIZED DISPOSAL AREAS.
6. SANITARY/SEPTIC WASTE MANAGEMENT. TEMPORARY AND PORTABLE SANITARY AND SEPTIC WASTE SYSTEMS SHALL BE MOUNTED OR STAKED IN, WELL-MAINTAINED AND SCHEDULED FOR REGULAR WASTE DISPOSAL AND SERVICING. SOURCES OF SANITARY AND/OR SEPTIC WASTE SHALL NOT BE STORED NEAR THE MS4 OR RECEIVING WATERS.
7. STOCKPILE MANAGEMENT. STOCKPILES SHALL NOT BE LOCATED IN DRAINAGE WAYS. WITHIN 50 FEET FROM AREAS OF CONCENTRATED FLOWS, AND ARE NOT ALLOWED IN THE CITY RIGHT-OF-WAY. SEDIMENT BARRIERS OR SILT FENCES SHALL BE USED AROUND THE BASE OF ALL STOCKPILES. STOCKPILES SHALL NOT EXCEED 15 FEET IN HEIGHT. STOCKPILES GREATER THAN 15 FEET IN HEIGHT SHALL REQUIRE 8-FOOT WIDE BENCHING IN ACCORDANCE WITH ROH CHAPTER 14, ARTICLE 15. STOCKPILES MUST BE COVERED WITH PLASTIC SHEETING OR A COMPARABLE MATERIAL IF THEY WILL NOT BE ACTIVELY USED WITHIN 7 DAYS.
8. CONCRETE WASTE MANAGEMENT. PREVENT OR REDUCE THE DISCHARGE OF POLLUTANTS TO STORM WATER FROM CONCRETE WASTE BY CONDUCTING WASHOUT OFFSITE OR PERFORMING ONSITE WASHOUT IN A DESIGNATED AREA CONSTRUCTED AND MAINTAINED IN SUFFICIENT QUANTITY AND SIZE TO CONTAIN ALL LIQUID AND CONCRETE WASTE GENERATED BY WASHOUT OPERATIONS. PLASTIC LINING MATERIAL SHOULD BE A MINIMUM OF 10-MILLIMETER POLYETHYLENE SHEETING AND SHOULD BE FREE OF HOLES, TEARS, OR OTHER DEFECTS THAT COMPROMISE THE IMPERMEABILITY OF THE MATERIAL. CONTAINMENT AREAS OR DEVICES SHOULD NOT BE LOCATED WHERE ACCIDENTAL RELEASE OF THE CONTAINED LIQUID CAN DISCHARGE TO WATER BODIES, CHANNELS, OR STORM DRAINS. WASHOUT FACILITIES MUST BE CLEANED, OR NEW FACILITIES MUST BE CONSTRUCTED AND READY FOR USE ONCE THE WASHOUT IS 75 PERCENT FULL. ONCE CONCRETE WASTES ARE WASHED INTO THE DESIGNATED AREA AND ALLOWED TO HARDEN, THE CONCRETE SHOULD BE BROKEN UP, REMOVED, AND DISPOSED OF AS SOLID WASTES.



A / S102 TYPICAL BMP ON CONCRETE LINING CONSTRUCTION
NOT TO SCALE

BID SET 2026-03-20

REVISION NO.	DATE	REVISIONS	BY

ATHER R. DAR — LICENSED PROFESSIONAL ENGINEER — No. 7808-S — HAWAII, U.S.A.
Exp. Date: 4-30-28

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DEPARTMENT OF HAWAIIAN HOME LANDS

NANAKULI FLOOD CONTROL CHANNEL OUTLET REPAIRS
NANAKULI, OAHU, HAWAII
T.M.K.: (1) 8-9-001:004, (1) 8-9-001:002

GENERAL NOTES AND BMP DETAIL

DESIGNED BY:	TTP
DRAWN BY:	AK
CHECKED BY:	AD
SUPV:	
DATE:	10/17/2022

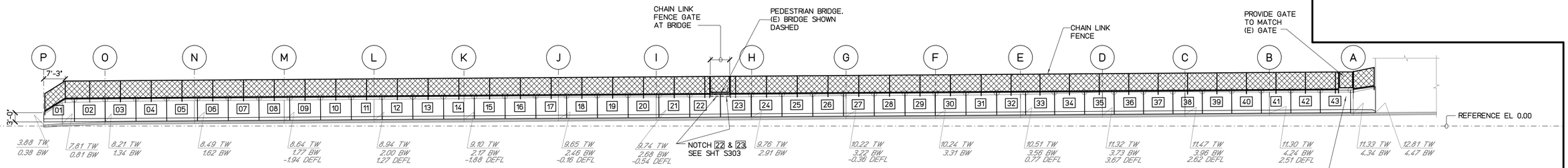
HAWAII ENGINEERING GROUP, Inc.
Civil & Structural Engineers
1088 BISHOP STREET #2506
HONOLULU, HI 96813
Tel: 808-533-2092

JOB NO.

SHEET S102
3 OF 19 SHTS

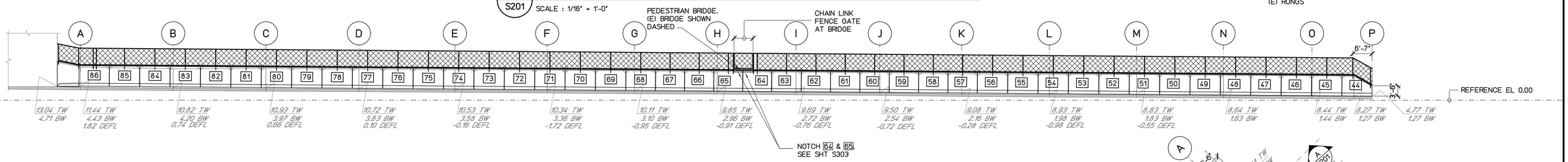
FILE ___ DRAWER ___ ___ FOLDER ___ ___

L:/Project Data - 2020 Projects/20-076 DHHL PS-20-LDD-012 T01 Rehabilitation of School Seawall/Drawings/Structural/Mel0/S201-PLAN-ELEV
Plot date: 4-May-2026



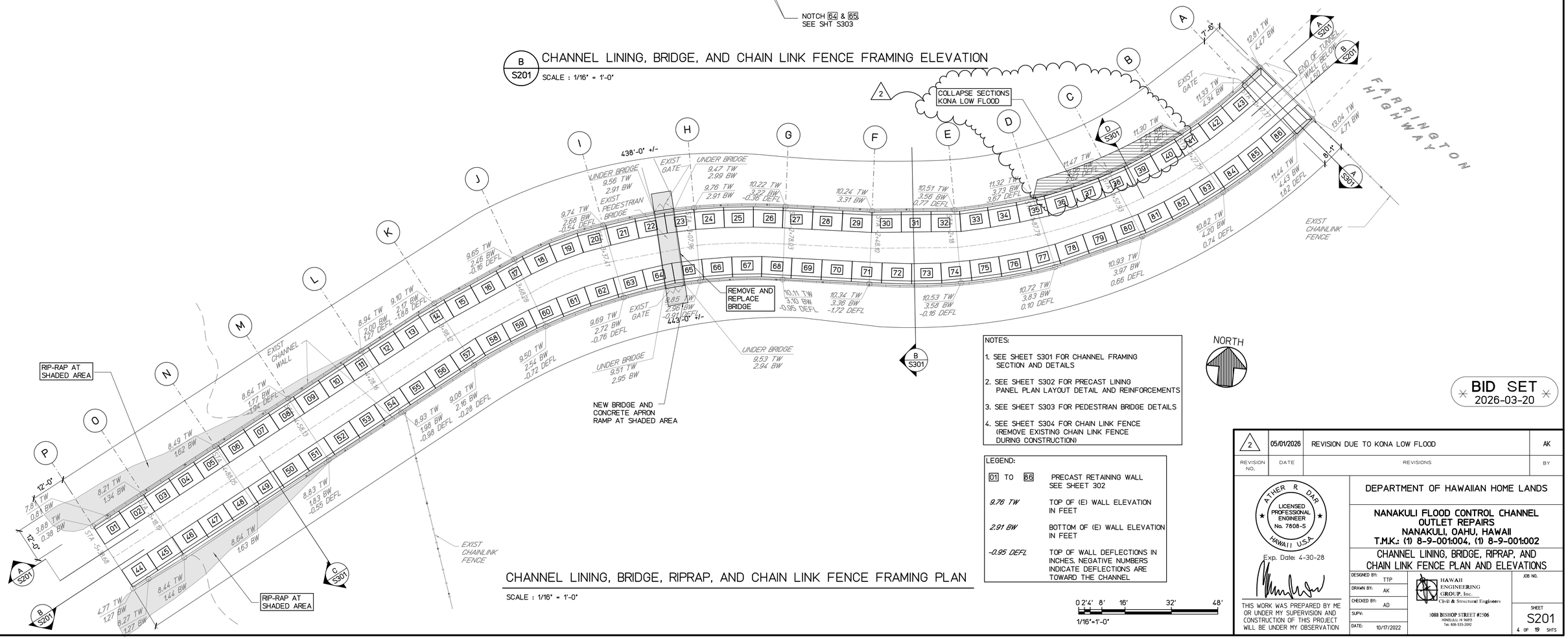
A S201 CHANNEL LINING, BRIDGE, AND CHAIN LINK FENCE FRAMING ELEVATION

SCALE : 1/16" = 1'-0"



B S201 CHANNEL LINING, BRIDGE, AND CHAIN LINK FENCE FRAMING ELEVATION

SCALE : 1/16" = 1'-0"



CHANNEL LINING, BRIDGE, RIPRAP, AND CHAIN LINK FENCE FRAMING PLAN

SCALE : 1/16" = 1'-0"

NOTES:

1. SEE SHEET S301 FOR CHANNEL FRAMING SECTION AND DETAILS
2. SEE SHEET S302 FOR PRECAST LINING PANEL PLAN LAYOUT DETAIL AND REINFORCEMENTS
3. SEE SHEET S303 FOR PEDESTRIAN BRIDGE DETAILS
4. SEE SHEET S304 FOR CHAIN LINK FENCE (REMOVE EXISTING CHAIN LINK FENCE DURING CONSTRUCTION)

LEGEND:

01 TO 86	PRECAST RETAINING WALL SEE SHEET 302
9.76 TW	TOP OF (E) WALL ELEVATION IN FEET
2.91 BW	BOTTOM OF (E) WALL ELEVATION IN FEET
-0.95 DEFL	TOP OF WALL DEFLECTIONS IN INCHES. NEGATIVE NUMBERS INDICATE DEFLECTIONS ARE TOWARD THE CHANNEL

NORTH

0 2'4' 8' 16' 32' 48'

1/16"=1'-0"

BID SET
2026-03-20

REVISION NO.	DATE	REVISIONS	BY
2	05/01/2026	REVISION DUE TO KONA LOW FLOOD	AK

ATHER R. DAR
LICENSED PROFESSIONAL ENGINEER
No. 7808-S
HAWAII U.S.A.
Exp. Date: 4-30-28

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION AND CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION

DEPARTMENT OF HAWAIIAN HOME LANDS

NANAKULI FLOOD CONTROL CHANNEL OUTLET REPAIRS
NANAKULI, OAHU, HAWAII
T.M.K.: (1) 8-9-001:004, (1) 8-9-001:002

CHANNEL LINING, BRIDGE, RIPRAP, AND CHAIN LINK FENCE PLAN AND ELEVATIONS

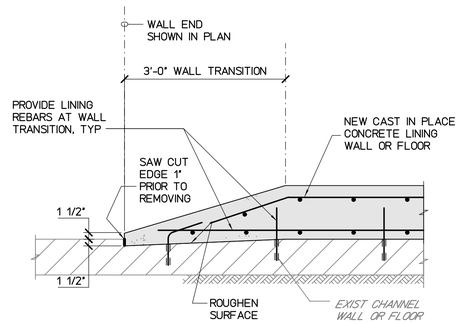
DESIGNED BY:	TTP
DRAWN BY:	AK
CHECKED BY:	AD
SUPV:	
DATE:	10/17/2022

HAWAII ENGINEERING GROUP, Inc.
Civil & Structural Engineers
1088 BISHOP STREET #2506
HONOLULU, HI 96813
Tel: 808-533-2092

JOB NO.

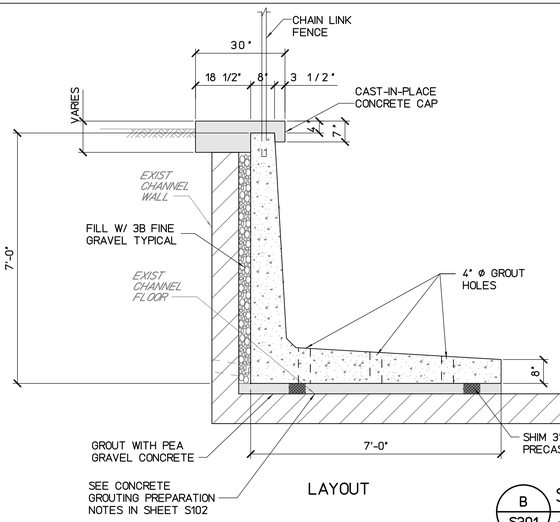
SHEET
S201
4 OF 19 SHTS

FILE ___ DRAWER ___ ___ FOLDER ___ ___



1 / S301 TYPICAL TRANSITION AT CAST-IN-PLACE WALL END

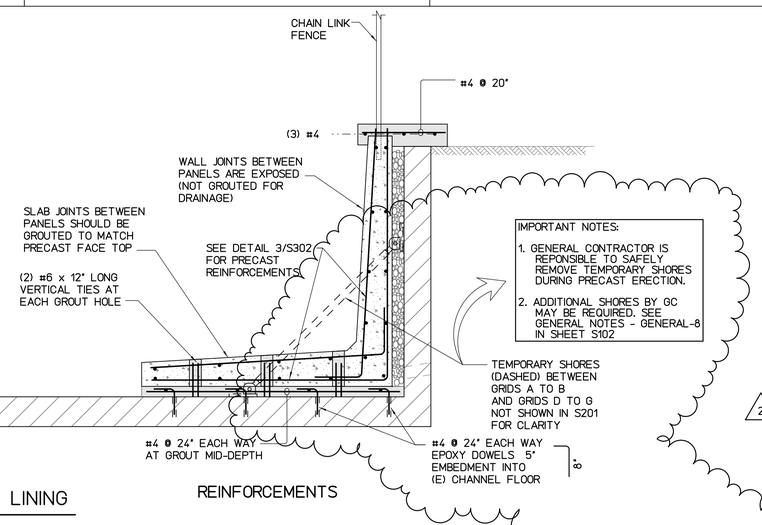
NOT TO SCALE



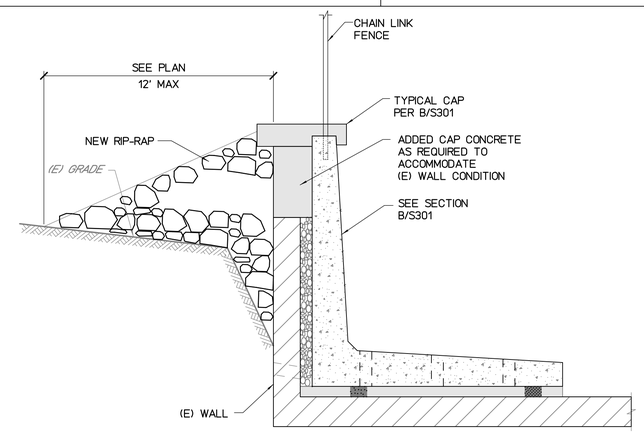
LAYOUT

B / S301 SECTION @ PRECAST LINING

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

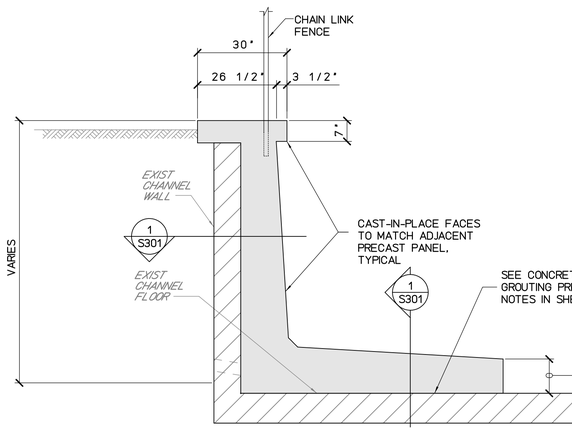


REINFORCEMENTS

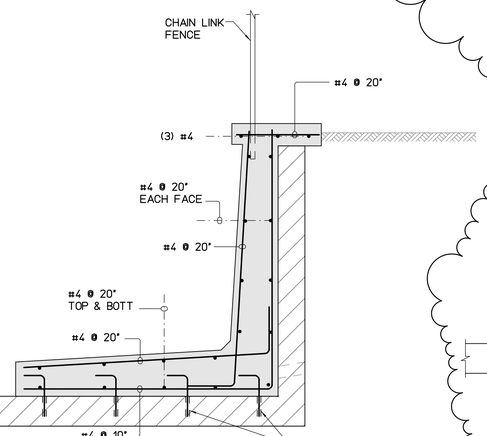


C / S301 SECTION @ RIP-RAP

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



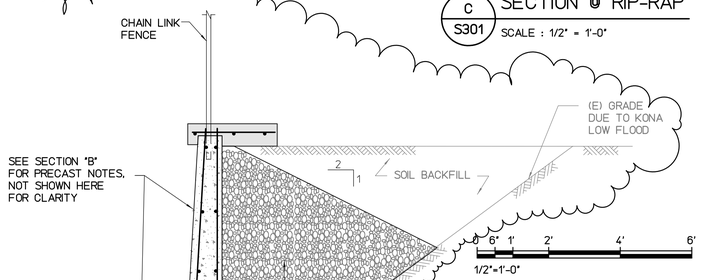
LAYOUT



REINFORCEMENTS

A / S301 SECTION @ CAST-IN-PLACE LINING

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



D / S301 SECTION @ PRECAST LINING DUE TO KONA LOW FLOOD DAMAGES

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

BID SET
2026-03-20

REVISION NO.	DATE	REVISIONS	BY
2	05/01/2026	REVISION DUE TO KONA LOW FLOOD	AK

ATHER R. DAR
LICENSED PROFESSIONAL ENGINEER
No. 7808-S
HAWAII U.S.A.
Exp. Date: 4-30-28

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DEPARTMENT OF HAWAIIAN HOME LANDS

NANAKULI FLOOD CONTROL CHANNEL OUTLET REPAIRS
NANAKULI, OAHU, HAWAII
T.M.K.: (1) 8-9-001:004, (1) 8-9-001:002

CHANNEL LINING SECTION AND DETAILS

DESIGNED BY:	TTP
DRAWN BY:	AK
CHECKED BY:	AD
SUPV:	
DATE:	10/17/2022

HAWAII ENGINEERING GROUP, Inc.
Civil & Structural Engineers
1088 BISHOP STREET #2506
HONOLULU, HI 96813
Tel: 808-533-2092

JOB NO.

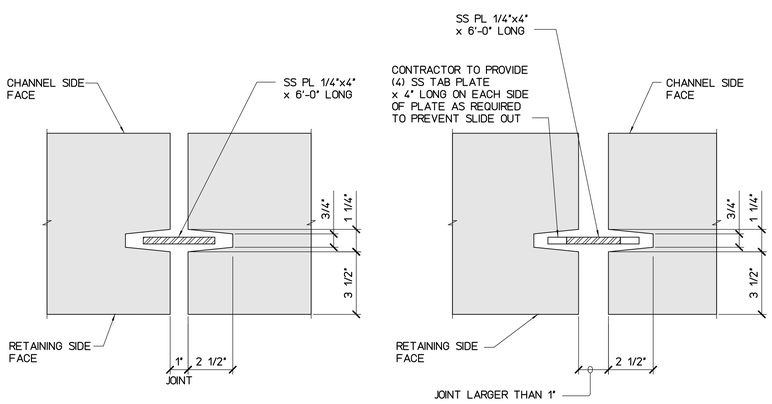
SHEET S301
5 OF 19 SHTS

FILE ___ DRAWER ___ ___ FOLDER ___ ___

J:/Project Data - 2020 Projects/20-076 DHHL PS-20-LDD-012 T01 Rehabilitation of School Seawall/Drawings/Structural/Mel0/S301-SECTIONS

Plot date: 4-May-2026

J:\Project Data - 2020 Projects\20-076 DHHL PS-20-LDD-012 T01 Rehabilitation of School Seawall\Drawings\Structural\Me10\S302-DETAILS-REINFOR Plot date: 4-May-2026



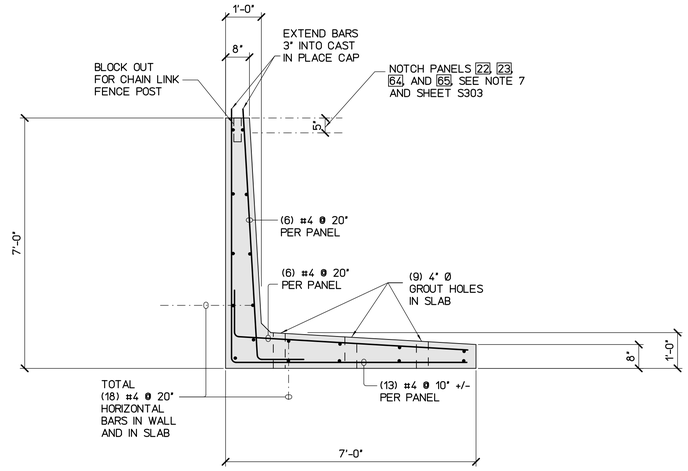
CONDITION 1" WIDE JOINT

CONDITION JOINT LARGER THAN 1"

NOTES:
1. GROOVE IN WALL END FACES ARE 6'-0" HEIGHT FROM WALL TOP
2. STAINLESS STEEL PLATE SHALL BE GRADE 316

2 S302 TYPICAL GROOVES JOINT IN PRECAST WALL

NOT TO SCALE



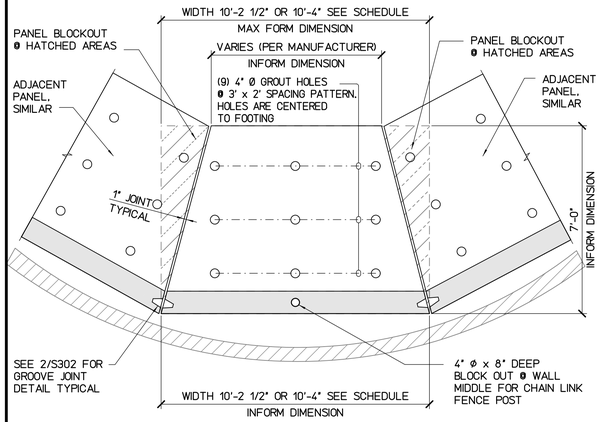
3 S302 TYPICAL PRECAST REINFORCEMENT

NOT TO SCALE

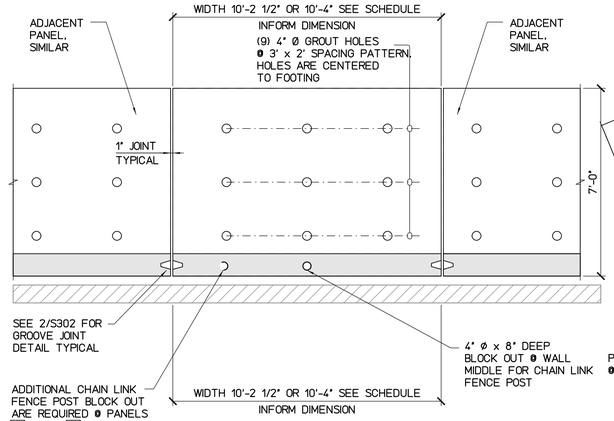
1. PRECAST PRESTRESSED CONCRETE MEMBERS SHALL COMPLY WITH THE FOLLOWING:
   A. PCI MNL-116, MANUAL FOR QUALITY CONTROL FOR PLANTS AND PRODUCTION OF PRECAST AND PRESTRESSED CONCRETE PRODUCTS.
   B. PCI MNL-120, PCI DESIGN HANDBOOK - PRECAST AND PRESTRESSED CONCRETE.
2. QUALITY ASSURANCE: THE PRECAST CONCRETE MANUFACTURER SHALL BE CERTIFIED BY THE PRECAST / PRESTRESSED CONCRETE INSTITUTE PLANT CERTIFICATION PROGRAM.
3. SUBMITTALS. SUBMIT THE FOLLOWING 14 DAYS PRIOR TO MANUFACTURE OF THE MEMBERS:
   A. SHOP DRAWINGS: ERECTION AND PRODUCTION DRAWINGS INCLUDING PIECE MARKS, PLANS, ELEVATIONS, SECTIONS, CONNECTION DETAILS, EDGE AND SUPPORT CONDITIONS AND FINISH. ALSO, INCLUDE SHIM HEIGHT AMD LOCATIONS REQUIREMENTS AT EACH WALL PANEL.
   B. DESIGN CALCULATIONS: DESIGN LOADS ARE SHOWN IN SHEET S102. CALCULATIONS SHALL BE PREPARED AND SEALED BY A STRUCTURAL ENGINEER LICENSED IN THE STATE OF HAWAII. VERIFY ALL WALL REINFORCEMENTS SHOWN IN THIS SHEET.
   C. CONCRETE MIX DESIGNS FOR PRECAST WALL MEMBERS.
4. PRODUCTS:
   A. CONCRETE: 28 DAY COMPRESSIVE STRENGTH = 5,000 PSI, W/C = 0.4, NO CHLORIDE ADDITIVES.
   B. ALL REINFORCING STEEL SHALL BE "UNS S32304 DUPLEX" STAINLESS STEEL, GRADE 60, CONFORMING TO ASTM A959, A955 AND A276
5. ERECTION: MEMBERS SHALL BE LIFTED BY MEANS OF SUITABLE LIFTING DEVICES AT POINTS PROVIDED BY THE MANUFACTURER. TEMPORARY SHORING AND BRACING SHALL BE ERECTED AS NECESSARY AND SHALL COMPLY WITH THE MANUFACTURER'S RECOMMENDATIONS. MEMBERS SHALL BE PROPERLY ALIGNED AND LEVELED AS REQUIRED BY THE APPROVED SHOP DRAWINGS.
6. COORDINATE ALL OPENINGS AND BLOCKOUTS WITH CHAIN LINK FENCE DRAWINGS. RELOCATE REINFORCEMENTS AROUND ALL OPENINGS AS REQUIRED.
7. NOTCH PANELS 22, 23, 64, AND 65 AT TOP 5" DEPTH TO CLEAR BRIDGE, SEE SHEET S303
8. THE 10/27/2020 TOPOGRAPHIC SURVEY IS INDICATED IN SHEET S401 TO ASSIST THE MANUFACTURER FOR THE INITIAL PANEL PLAN LAYOUT. THE MANUFACTURER SHALL CONFIRM THE ACURARY OF THIS SURVEY FOR THE FINAL LAYOUT IN SHOP DRAWINGS.
9. SEE ELEVATIONS A, B/S201 FOR PANELS 01 AND 44 ADDITIONAL DIMENSIONS.
10. CHAMFER 3/4"x3/4" ALL EXPOSED EDGES

4 S302 PRECAST WALL NOTES

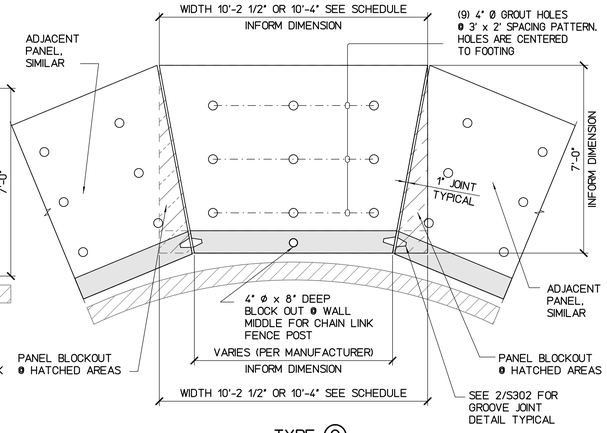
NOT TO SCALE



TYPE (A)
CONDITION CONCAVE CHANNEL WALL



TYPE (B)
CONDITION STRAIGHT CHANNEL WALL



TYPE (C)
CONDITION CONVEX CHANNEL WALL

1 S302 PRECAST PANEL PLAN LAYOUT

NOT TO SCALE

SCHEDULE			
PANELS	TYPE	WIDTH	REMARK
1 TO 13, 16, 28, 31	(B)	10'-2 1/2"	1. PROVIDE ADDITIONAL CHAINLINK FENCE GATE POST BLOCKOUTS Ø PANELS 22, 23, 43, 64, AND 65 2. PROVIDE RUNGS TO MATCH EXISTING IN PANEL 43 PRECAST MANUFACTURER TO FIELD VERIFY
14, 15, 17 TO 27	(A)		
29, 30, 32 TO 43	(C)		
44 TO 56, 69, 70	(B)	10'-4"	
57 TO 68	(C)		
71 TO 86	(A)		

BID SET
2026-03-20

REVISION NO.	DATE	REVISIONS	BY

ATHER R. DAR
LICENSED PROFESSIONAL ENGINEER
No. 7808-S
HAWAII U.S.A.
Exp. Date: 4-30-28

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DEPARTMENT OF HAWAIIAN HOME LANDS

NANAKULI FLOOD CONTROL CHANNEL OUTLET REPAIRS
NANAKULI, OAHU, HAWAII
T.M.K.: (1) 8-9-001:004, (1) 8-9-001:002

PRECAST LINING PANEL PLAN LAYOUT, DETAILS, AND REINFORCEMENTS

DESIGNED BY:	TTP
DRAWN BY:	AK
CHECKED BY:	AD
SUPV:	
DATE:	10/17/2022

HAWAII ENGINEERING GROUP, Inc.
Civil & Structural Engineers
1088 BISHOP STREET #2506
HONOLULU, HI 96813
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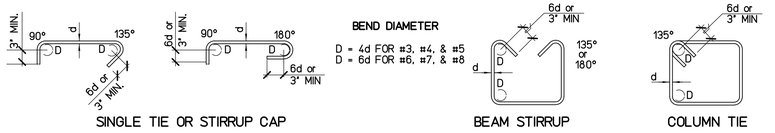
JOB NO.

SHEET
S302
6 OF 19 SHTS

FILE ___ ___ DRAWER ___ ___ FOLDER ___ ___



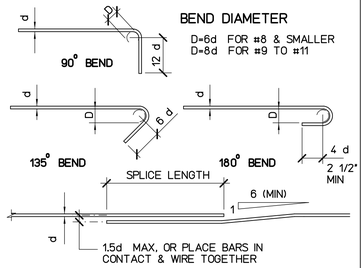
SINGLE TIE OR STIRRUP CAP

BEAM STIRRUP

COLUMN TIE

BEAM STIRRUPS AND COLUMN TIES ONLY

MIN SPLICE & EMBEDMENT LENGTHS							
BAR SIZE	LAP SPLICE			EMBEDMENT IN CONC			NOTES
	IN CMU	IN CONCRETE		STRAIGHT		w/ STD HOOK	
		BOT BAR	TOP BAR	BOT BAR	TOP BAR		
#4	26"	25"	33"	19"	25"	10"	1. LENGTHS ARE FOR CONCRETE W/ BARS SPACED 6" MIN, INCREASE BAR LENGTH 25% FOR BARS SPACED LESS THAN 6"
#5	40"	31"	41"	24"	31"	12"	2. "TOP BARS" ARE HORIZONTAL BARS WITH 12" OR MORE OF CONCRETE CAST BELOW.
#6	54"	37"	49"	29"	37"	15"	
#7	63"	54"	71"	42"	54"	17"	3. SPLICE LENGTH BASED ON CLASS 'B' SPLICE (ACI 318-05)
#8	72"	62"	81"	48"	62"	19"	

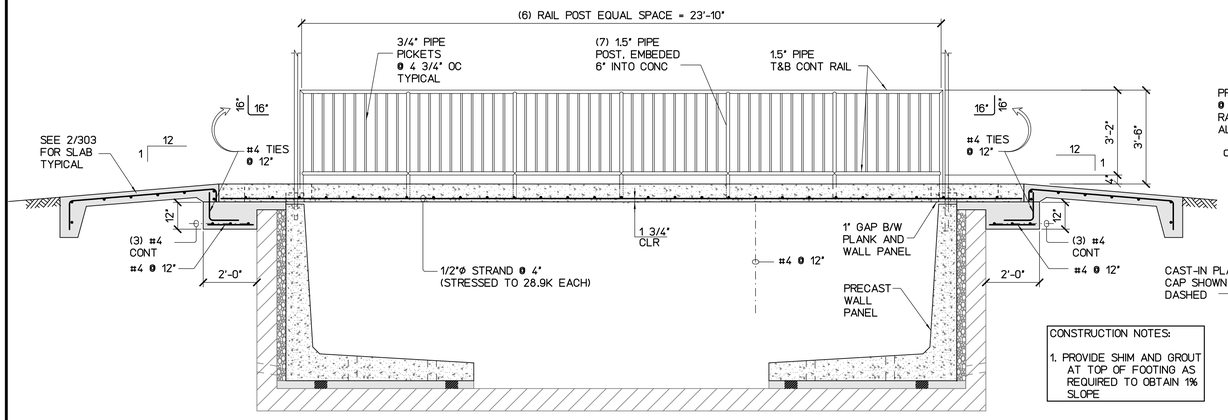


BAR LAP

ALL REINF EXCEPT BEAM STIRRUPS AND COLUMN TIES

4 S303 REBAR SPLICE AND EMBED LENGTH

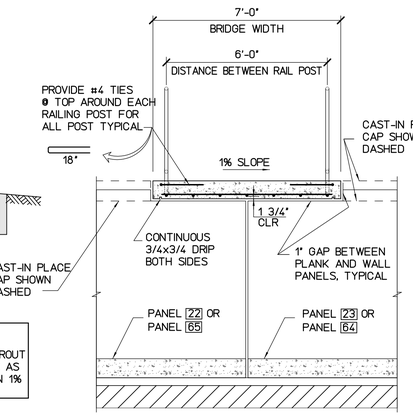
NOT TO SCALE



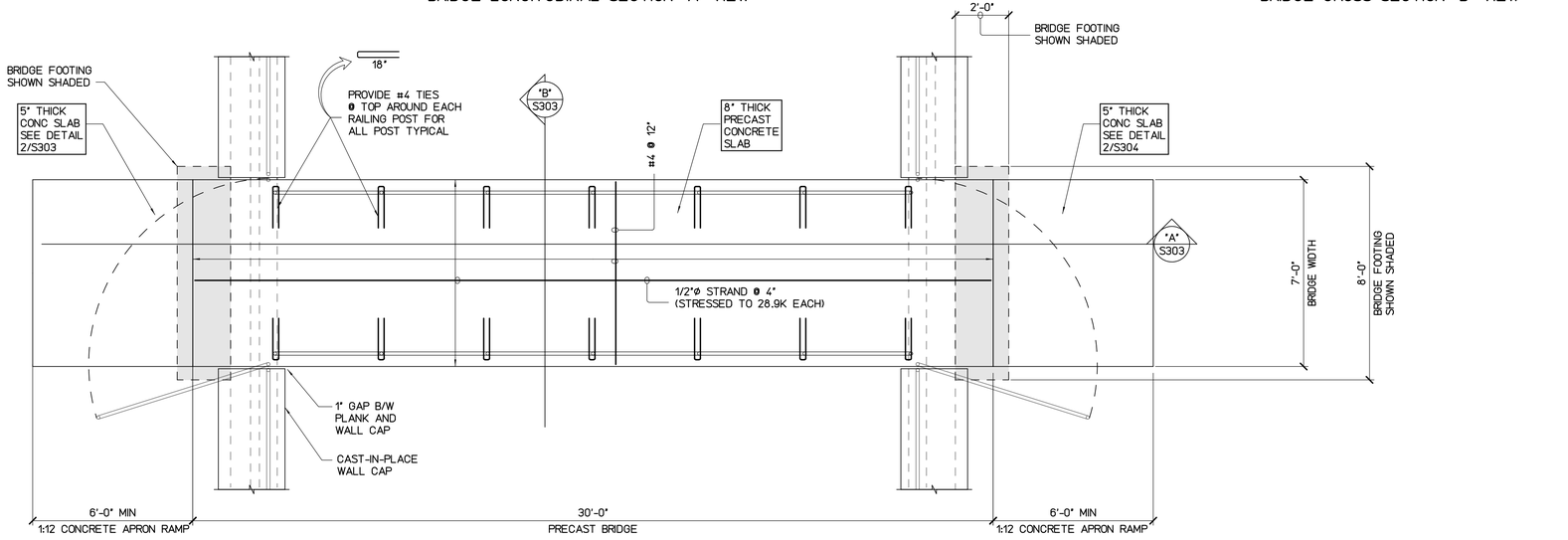
BRIDGE LONGITUDINAL SECTION "A" VIEW

CONSTRUCTION NOTES:

1. PROVIDE SHIM AND GROUT AT TOP OF FOOTING AS REQUIRED TO OBTAIN 1% SLOPE



BRIDGE CROSS SECTION "B" VIEW



BRIDGE PLAN VIEW

1 S303 PEDESTRIAN BRIDGE DETAIL

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

0 1' 2' 4' 8' 12' 16'

3/16"=1'-0"

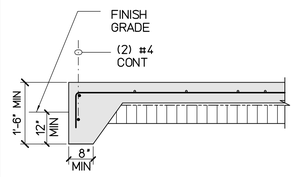
1. PRECAST PRESTRESSED CONCRETE MEMBERS SHALL COMPLY WITH THE FOLLOWING:
   A. PCI MNL-116, MANUAL FOR QUALITY CONTROL FOR PLANTS AND PRODUCTION OF PRECAST AND PRESTRESSED CONCRETE PRODUCTS.
   B. PCI MNL120-99, PCI DESIGN HANDBOOK - PRECAST AND PRESTRESSED CONCRETE.
2. QUALITY ASSURANCE: THE PRECAST CONCRETE MANUFACTURER SHALL BE CERTIFIED BY THE PRECAST / PRESTRESSED CONCRETE INSTITUTE PLANT CERTIFICATION PROGRAM.
3. SUBMITTALS. SUBMIT THE FOLLOWING 14 DAYS PRIOR TO MANUFACTURE OF THE MEMBERS:
   A. SHOP DRAWINGS: ERECTION AND PRODUCTION DRAWINGS INCLUDING PIECE MARKS, PLANS, ELEVATIONS, SECTIONS, CONNECTION DETAILS, EDGE AND SUPPORT CONDITIONS AND FINISH. ALSO, INCLUDE SHORING REQUIREMENTS AND ESTIMATED MIDSPAN CAMBER AT ERECTION. THE PLANK TOP SURFACE SHALL BE BROOM FINISHED SUITABLE FOR FOOT TRAFFIC.
   B. DESIGN CALCULATIONS: DESIGN LOADS ARE SHOWN IN SHEET S102. CALCULATIONS SHALL BE PREPARED AND SEALED BY A STRUCTURAL ENGINEER LICENSED IN THE STATE OF HAWAII. VERIFY ALL PLANK REINFORCEMENTS SHOWN IN THIS SHEET. TENSION IN CONCRETE ARE NOT PERMITTED IN THE DESIGN TO ENHANCE CORROSION PROTECTION OF THE TENDONS.
   C. CONCRETE MIX DESIGNS FOR PRECAST PRESTRESSED MEMBERS.
4. PRODUCTS:
   A. CONCRETE: 28 DAY COMPRESSIVE STRENGTH = 6,000 PSI, W/C = 0.4; MINIMUM STRENGTH AT RELEASE = 5,000 PSI, NO CHLORIDE ADDITIVES.
   B. PRESTRESSING TENDONS: UNCOATED, 7-WIRE, LOW RELAXATION STRANDS CONFORMING TO ASTM A 416, WITH MINIMUM GUARANTEED ULTIMATE TENSILE STRENGTH OF 270,000 PSI.
   C. REINFORCING STEEL SHALL BE "UNS S32304 DUPLEX" STAINLESS STEEL, GRADE 60, CONFORMING TO ASTM A959, A955 AND A276.
5. ERECTION: MEMBERS SHALL BE LIFTED BY MEANS OF SUITABLE LIFTING DEVICES AT POINTS PROVIDED BY THE MANUFACTURER. TEMPORARY SHORING AND BRACING SHALL BE ERECTED AS NECESSARY AND SHALL COMPLY WITH THE MANUFACTURER'S RECOMMENDATIONS. MEMBERS SHALL BE PROPERLY ALIGNED AND LEVELED AS REQUIRED BY THE APPROVED SHOP DRAWINGS.
6. COORDINATE ALL OPENINGS WITH OTHER TRADES. RELOCATE REINFORCEMENTS AROUND ALL OPENINGS AS REQUIRED.
7. PIPES FOR RAILING SHALL CONFORM TO ASTM A53, GRADE B SCHEDULE 40. HOT DIP GALVANIZE EACH RAIL ASSEMBLY AFTER FABRICATION. CONTRACTOR TO SUBMIT SHOP DRAWINGS FOR REVIEW. THE RAILING PROFILE SHALL CONFORM TO CURRENT CODES.
8. CHAMFER 3/4"x3/4" ALL EXPOSED EDGES

3 S303 PRECAST PLANK AND PIPE RAILING NOTES

NOTES:

1. ALL SLABS ARE 5" THICK.
2. SLABS ARE REINFORCED W/ #4 @ 12" EACH WAY, PLACE REINFORCING IN MIDDLE OF SLAB.
3. PROVIDE VAPOR BARRIER ONLY AT INTERIOR SLABS.

BID SET
2026-03-20



AT EDGE

2 S303 TYPICAL SLAB DETAIL

NOT TO SCALE

REVISION NO.	DATE	REVISIONS	BY

ATHER R. DAR
LICENSED PROFESSIONAL ENGINEER
No. 7808-S
HAWAII U.S.A.
Exp. Date: 4-30-28

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DEPARTMENT OF HAWAIIAN HOME LANDS

NANAKULI FLOOD CONTROL CHANNEL OUTLET REPAIRS
NANAKULI, OAHU, HAWAII
T.M.K.: (1) 8-9-001:004, (1) 8-9-001:002

BRIDGE DETAILS

DESIGNED BY:	TTP
DRAWN BY:	AK
CHECKED BY:	AD
SUPV:	
DATE:	10/17/2022

HAWAII ENGINEERING GROUP, Inc.
Civil & Structural Engineers
1088 BISHOP STREET #2506
HONOLULU, HI 96813
Tel: 808-533-2092

JOB NO.

SHEET S303
7 OF 19 SHTS

FILE ___ DRAWER ___ ___ FOLDER ___ ___

J:/Project Data - 2020 Projects/20-076 DHHL PS-20-LDD-012 TO1 Rehabilitation of School Seawall/Drawings/Structural/Mel10/S303-DETAILS-BRIDGE

Plot date: 4-May-2026

J:/Project Data - 2020 Projects/20-076 DHHL PS-20-LDD-012 T01 Rehabilitation of School Seawall/Drawings/Structural/Me10/S304-DETAILS-CLF Plot date: 4-May-2026

CHAIN LINK FENCE AND WALK GATE SPECIFICATIONS

1. FABRIC SHALL MEET THE GENERAL REQUIREMENTS FOR METALLIC-COATED STEEL CHAIN LINK FENCE FABRIC FOR INDUSTRIAL USAGE, AS COVERED BY ASTM A392. THE FABRIC SHALL BE OF A 2-INCH MESH WOVEN FROM A GOOD COMMERCIAL QUALITY STEEL WIRE OF NO. 9 GAUGE, 0.148 INCH NOMINAL DIAMETER BEFORE GALVANIZING. THE WIRE SHALL WITHSTAND A BREAKING LOAD OF 1,290 LBS. THE FABRIC SHALL BE HOT DIPPED GALVANIZED, NOT LESS THAN 1.2 OZ. OF ZINC PER SQUARE FOOT OF ACTUAL SURFACE COVERED, AFTER WEAVING AND FURNISHED WITH TOP AND BOTTOM SELVAGE TWISTED. THE FABRIC HEIGHT SHALL BE AS SHOWN ON THE PROJECT DRAWING. THE FABRIC SHALL BE VINYL COATED.

2. POST SHALL BE HOT DIPPED GALVANIZED, INSIDE AND OUTSIDE, ROUND PIPE CONFORMING TO ASTM A120 STANDARD WEIGHT. ALL POSTS SHALL BE SET TRUE TO LINE AND GRADE AND EMBEDDED IN CONCRETE FOOTINGS. ORNAMENTAL TOPS SHALL BE PROVIDED WHEN NECESSARY.

   LINE POSTS SHALL BE 2-3/8 INCH O.D. PIPE. 3.65 LBS. PER LINEAL FOOT BEFORE GALVANIZING, SPACED NOT MORE THAN 10 FEET CENTER-TO-CENTER. FASTEN FABRIC TO LINE POSTS WITH GALVANIZED STEEL WIRE AT INTERVALS NOT EXCEEDING 15 INCHES. CORNER OR END POSTS SHALL BE 2-7/8 INCH O.D. PIPE 5.79 LBS. PER LINEAL FOOT BEFORE GALVANIZING.

   WALK GATE POSTS SHALL BE 2-7/8 INCH O.D. PIPE, 5.79 LBS. PER LINEAL FOOT BEFORE GALVANIZING, SPACED 4 FEET CENTER-TO-CENTER.

3. BRACING AND TOP RAIL SHALL BE HOT DIPPED GALVANIZED, INSIDE AND OUTSIDE, 1-5/8 INCH O.D. PIPE. 2.27 LBS. PER LINEAL FOOT. CONFORMING TO ASTM A120 STANDARD WEIGHT. INSTALL THE HORIZONTAL BRACE AT EACH CORNER, END, WALK GATE, AND DRIVE-GATE POSTS AT MID-HEIGHT OF THE FABRIC. EACH BRACE SHALL BE DIAGONALLY TRUSSED WITH A 3/8 INCH ROUND ROD, HOT DIPPED GALVANIZED, FROM THE LINE POST BACK TO THE CORNER, END, WALK GATE, OR DRIVE-GATE POST. EACH TRUSS ROD SHALL BE PROVIDED WITH A TURNBUCKLE, A HEAVY TRUSS TIGHTENER, AND BRACE END FITTINGS. FASTEN FABRIC TO BRACE RAIL WITH STEEL WIRE SPACED 24 INCHES O.C. ALL MATERIALS SHALL BE GALVANIZED.

4. GATES SHALL BE SWING TYPE, COMPLETE WITH LATCHES, STOPS, KEEPERS AND 3 HINGES.

   GATE FRAMES SHALL BE CONSTRUCTED OF HOT DIPPED GALVANIZED, INSIDE AND OUTSIDE, 2 INCH O.D. PIPE, 2.72 LBS. PER LINEAL FOOT, CONFORMING TO ASTM A120 STANDARD WEIGHT. THE MEMBERS SHALL BE WELDED AT ALL CORNERS OR ASSEMBLED WITH FITTINGS AND RIGIDLY TRUSSED AND BRACED TO PREVENT SAG OR TWIST. WHERE WELDING IS DONE, CLEAN AND GRIND SMOOTH THE AREA BEFORE APPLYING AMERON "AMERCOAT 160" OR CARBOLINE "CARBOMASTIC 15" PER THE MANUFACTURE'S DIRECTION.

   GATE HINGES SHALL BE MALLEABLE INDUSTRIAL HINGES (90 DEGREES), GALVANIZED. THE HINGES SHALL BE OF ADEQUATE STRENGTH AND CAPABLE OF THE GATE BEING OPENED OR CLOSED EASILY BY ONE PERSON.

   GATE LATCHES, STOPS OR KEEPERS SHALL BE PROVIDED FOR ALL GATES. ALL DOUBLE SWING GATES SHALL HAVE A LATCH OF THE PLUNGER (DROP) ROD TYPE ARRANGED TO FULLY ENGAGE THE CENTER STOP. ALL SINGLE LEAF GATES SHALL BE EQUIPPED WITH A MALLEABLE FORK LATCH. ALL LATCHES SHALL BE ARRANGED FOR LOCKING (PAD LOCKS SHALL BE PROVIDED BY HAWAII ELECTRIC LIGHT COMPANY INC.). KEEPERS SHALL CONSIST OF A MECHANICAL DEVICE FOR SECURING THE FREE END OF THE GATE WHEN IN THE FULL OPEN POSITION. ALL MATERIALS SHALL BE GALVANIZED.

   GATE FABRIC SHALL BE THE SAME TYPE AS USED IN THE FENCE CONSTRUCTION. THE FABRIC SHALL BE ATTACHED SECURELY TO THE GATE FRAME AT INTERVALS NOT EXCEEDING 15 INCHES.

5. TENSION BARS AND BANDS SHALL BE PROVIDED AT ALL CORNER, END, AND GATE POSTS. TENSION BARS SHALL NOT BE LESS THAN 2 INCHES SHORTER THAN THE HEIGHT OF THE FABRIC WITH WHICH IT IS TO BE USED. TENSION BANDS SHALL BE OF ADEQUATE STRENGTH AND OF SUFFICIENT NUMBER TO ADEQUATELY FASTEN THE FABRIC AND TENSION BAR TO THE CORNER, END, OR GATE POSTS AT INTERVALS NOT EXCEEDING 15 INCHES. ALL MATERIALS SHALL BE GALVANIZED.

6. TENSION WIRE SHALL BE MARCELLED NO. 7 GAUGE, 0.177 INCH NOMINAL DIAMETER, GALVANIZED WIRE. THE TENSION WIRE SHALL BE FASTENED TO THE FABRIC AT INTERVALS NOT EXCEEDING 24 INCHES.

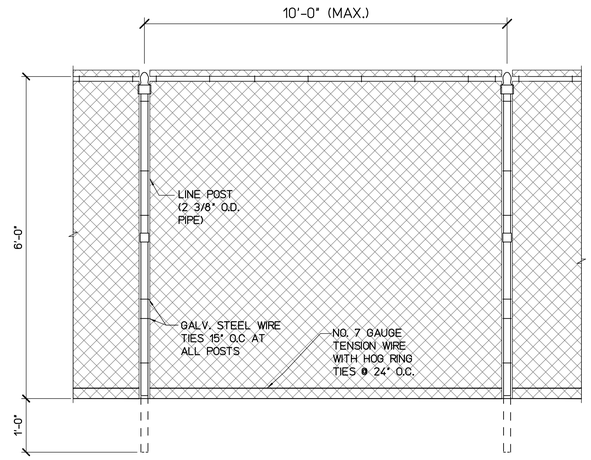
7. ALL ITEMS 1 THROUGH 6 SHALL BE VINYL COATED AFTER HOT-DIP GALVANIZING. THE VINYL COADTING COLOR SHALL BE "FORREST GREEN".

8. INSTALLATION OF FENCING, INCLUDING GATES, SHALL MEET THE REQUIREMENTS OF ASTM F567.

9. GALVANIZING OF ALL STEEL PARTS FOR THE FENCING AND GATES ABOVE AND BELOW GROUND SHALL BE BY THE HOT DIPPED PROCESS IN ACCORDANCE WITH THE ASTM DESIGNATION FOR THE PARTICULAR PART.

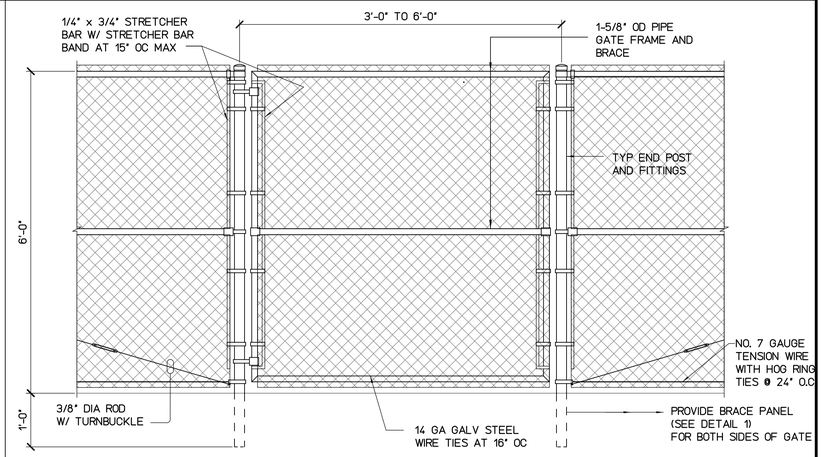
10. FENCE GROUND WIRE SHALL BE IN ACCORDANCE WITH THE PROJECT GROUNDING PLAN AND SPECIFICATIONS.

11. GENERAL ALL MATERIALS SHALL BE NEW AND MANUFACTURED IN THE UNITED STATES OF AMERICA. THERE SHALL BE NO SPLICING OF PIPES AND RODS ALLOWED.



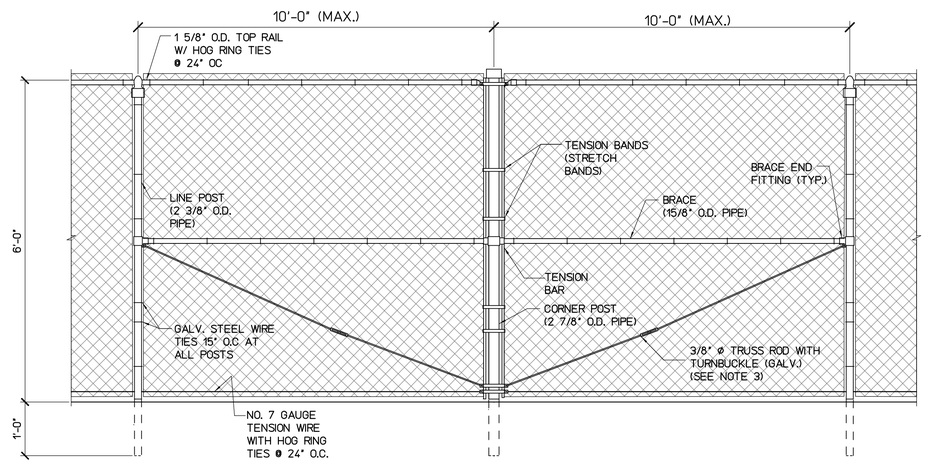
2 S304 NEW CHAIN LINK FENCE - WITHOUT BRACE

NOT TO SCALE



3 S304 TYPICAL WALK GATE DETAIL

NOT TO SCALE



1 S304 NEW CHAIN LINK FENCE - WITH BRACE

NOT TO SCALE

BID SET
2026-03-20

REVISION NO.	DATE	REVISIONS	BY

ATHER R. DAR
LICENSED PROFESSIONAL ENGINEER
No. 7808-S
HAWAII U.S.A.
Exp. Date: 4-30-28

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION AND CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION

DEPARTMENT OF HAWAIIAN HOME LANDS

NANAKULI FLOOD CONTROL CHANNEL OUTLET REPAIRS
NANAKULI, OAHU, HAWAII
T.M.K.: (1) 8-9-001:004, (1) 8-9-001:002

CHAIN LINK FENCE DETAILS

DESIGNED BY:	TTP
DRAWN BY:	AK
CHECKED BY:	AD
SUPV:	
DATE:	10/17/2022

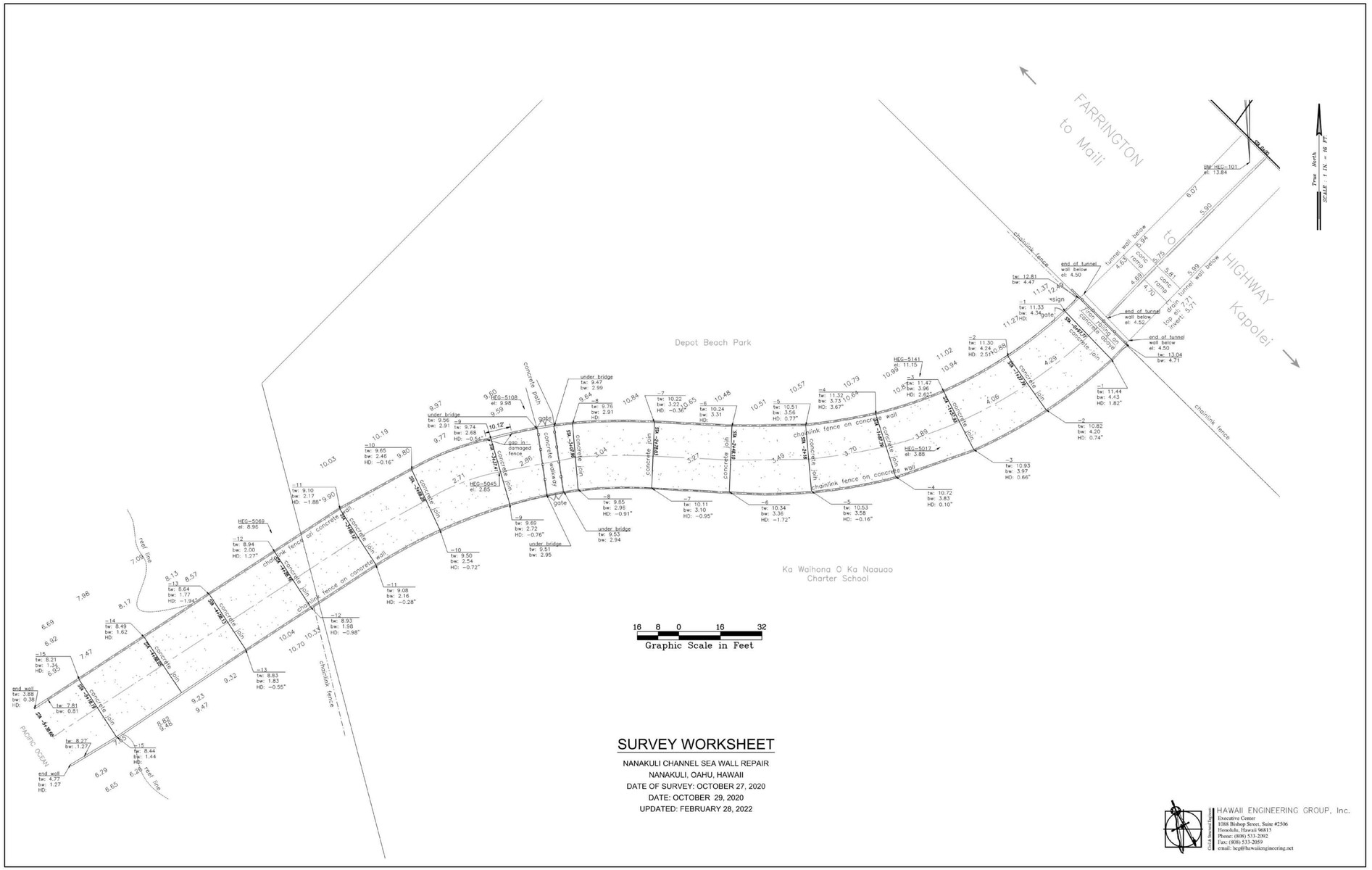
HAWAII ENGINEERING GROUP, Inc.
Civil & Structural Engineers
1088 BISHOP STREET #2506
HONOLULU, HI 96813
Tel: 808-533-2092

JOB NO.

SHEET
S304
8 OF 19 SHTS

FILE ___ ___ DRAWER ___ ___ FOLDER ___ ___

J:/Project Data - 2020 Projects/20-076 DHHL PS-20-LDD-012 T01 Rehabilitation of School Seawall/Drawings/Structural/Me10/S401-TOPO SURVEY Plot date: 4-May-2026



SURVEY WORKSHEET

NANAKULI CHANNEL SEA WALL REPAIR
NANAKULI, OAHU, HAWAII
DATE OF SURVEY: OCTOBER 27, 2020
DATE: OCTOBER 29, 2020
UPDATED: FEBRUARY 28, 2022

HAWAII ENGINEERING GROUP, Inc.
Executive Center
1088 Bishop Street, Suite #2506
Honolulu, Hawaii 96813
Phone: (808) 533-2092
Fax: (808) 533-2059
email: heg@hawaiiengineering.net

(1) X–X XXX : XXX

34" x 22"

BID SET
2026-03-20

REVISION NO.	DATE	REVISIONS	BY

ATHER R. DAR
LICENSED PROFESSIONAL ENGINEER
No. 7608-S
HAWAII U.S.A.
Exp. Date: 4-30-28

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NANAKULI FLOOD CONTROL CHANNEL OUTLET REPAIRS
NANAKULI, OAHU, HAWAII
T.M.K.: (1) 8-9-001:004, (1) 8-9-001:002

REFERENCE TOPOGRAPHIC SURVEY

DESIGNED BY:	TTP
DRAWN BY:	AK
CHECKED BY:	AD
SUPV:	
DATE:	10/17/2022

HAWAII ENGINEERING GROUP, Inc.
Civil & Structural Engineers
1088 BISHOP STREET #2506
HONOLULU, HI 96813
Tel: 808-533-2092

JOB NO.

SHEET S401
9 OF 19 SHTS

FILE ___ DRAWER ___ ___ FOLDER ___ ___

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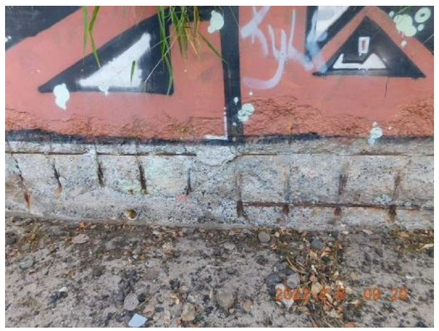

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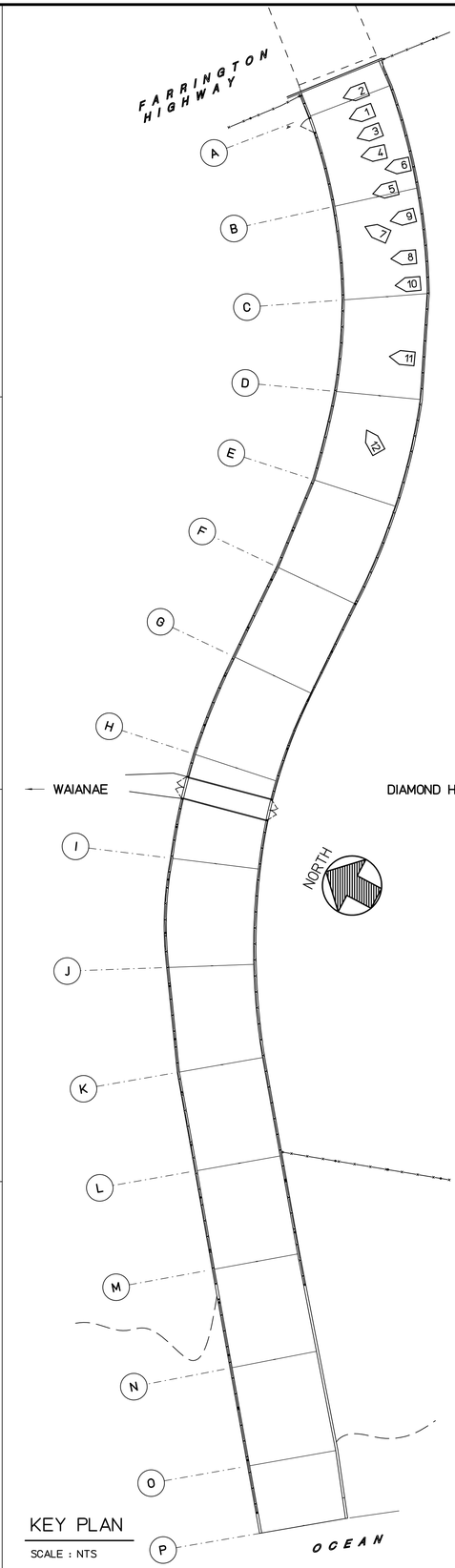

KEY PLAN

SCALE : NTS

PHOTO LEGEND:

1 CHANNEL PHOTO IDENTIFICATION NUMBER

NOTES:

1. HAWAII ENGINEERING GROUP (HEG) MARKED GRID NUMBER WITH ORANGE PAINT ON EXISTING WALLS. THE ARROW ADJACENT TO MARKED GRID NUMBER INDICATES MAKAI DIRECTION.
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BID SET
2026-03-20

REVISION NO.	DATE	REVISIONS	BY

ATHER R. DAR
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NANAKULI FLOOD CONTROL CHANNEL OUTLET REPAIRS
NANAKULI, OAHU, HAWAII
T.M.K.: (1) 8-9-001:004, (1) 8-9-001:002

REFERENCE PHOTOS SURVEY

DESIGNED BY:	TTP
DRAWN BY:	AK
CHECKED BY:	AD
SUPV:	
DATE:	10/17/2022

HAWAII ENGINEERING GROUP, Inc.
Civil & Structural Engineers
1088 BISHOP STREET #2506
HONOLULU, HI 96813
Tel: 808-533-2092

JOB NO.

SHEET S402
10 OF 19 SHTS

FILE ___ DRAWER ___ FOLDER ___

J:/Project Data - 2020 Projects/20-076 DHHL PS-20-LDD-012 T01 Rehabilitation of School Seawall/Drawings/Structural/Me10/S402-WAIANAE

Plot date: 4-May-2026

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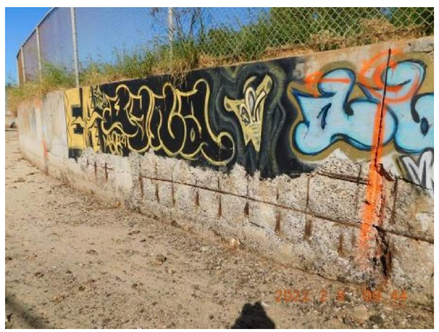

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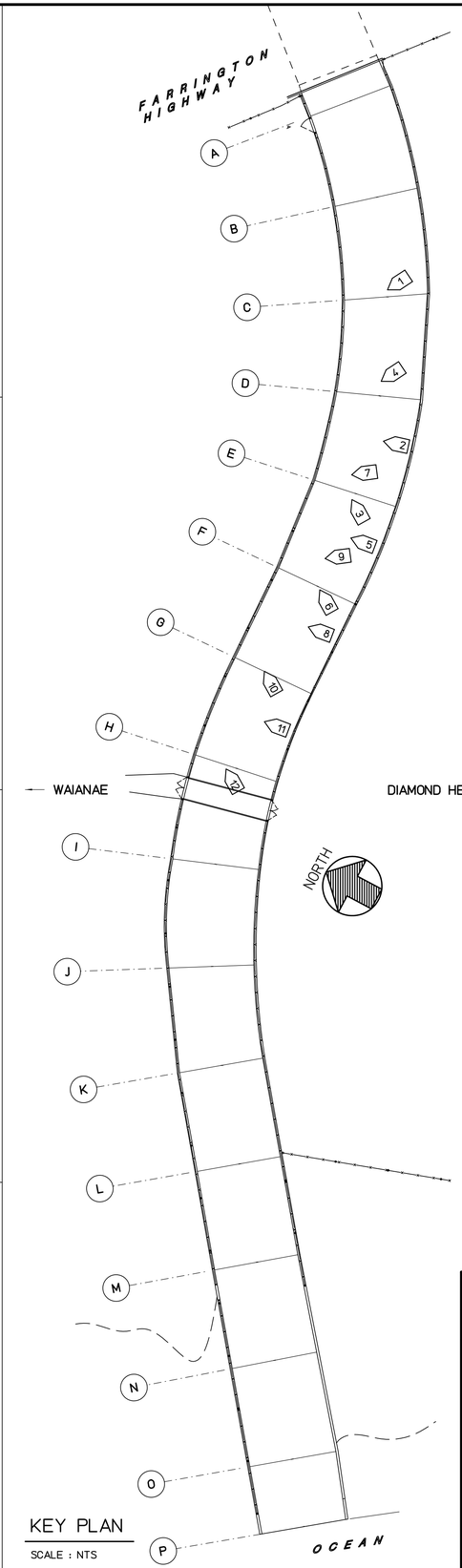

KEY PLAN

SCALE : NTS

PHOTO LEGEND:

1 CHANNEL PHOTO IDENTIFICATION NUMBER

NOTES:

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BID SET
2026-03-20

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DEPARTMENT OF HAWAIIAN HOME LANDS

NANAKULI FLOOD CONTROL CHANNEL OUTLET REPAIRS
NANAKULI, OAHU, HAWAII
T.M.K.: (1) 8-9-001:004, (1) 8-9-001:002

REFERENCE PHOTOS SURVEY

DESIGNED BY:	TTP
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SUPV:	
DATE:	10/17/2022

HAWAII ENGINEERING GROUP, Inc.
Civil & Structural Engineers
1088 BISHOP STREET #2506
HONOLULU, HI 96813
Tel: 808-533-2092

JOB NO.

SHEET
S403
11 OF 19 SHTS

FILE ___ DRAWER ___ FOLDER ___

Plot date: 4-May-2026

J:/Project Data - 2020 Projects/20-076 DHHL PS-20-LDD-012 T01 Rehabilitation of School Seawall/Drawings/Structural/Me10/S403-WAIANAE

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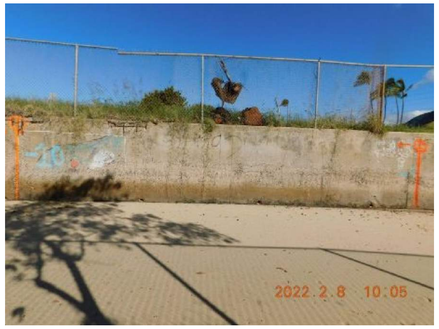

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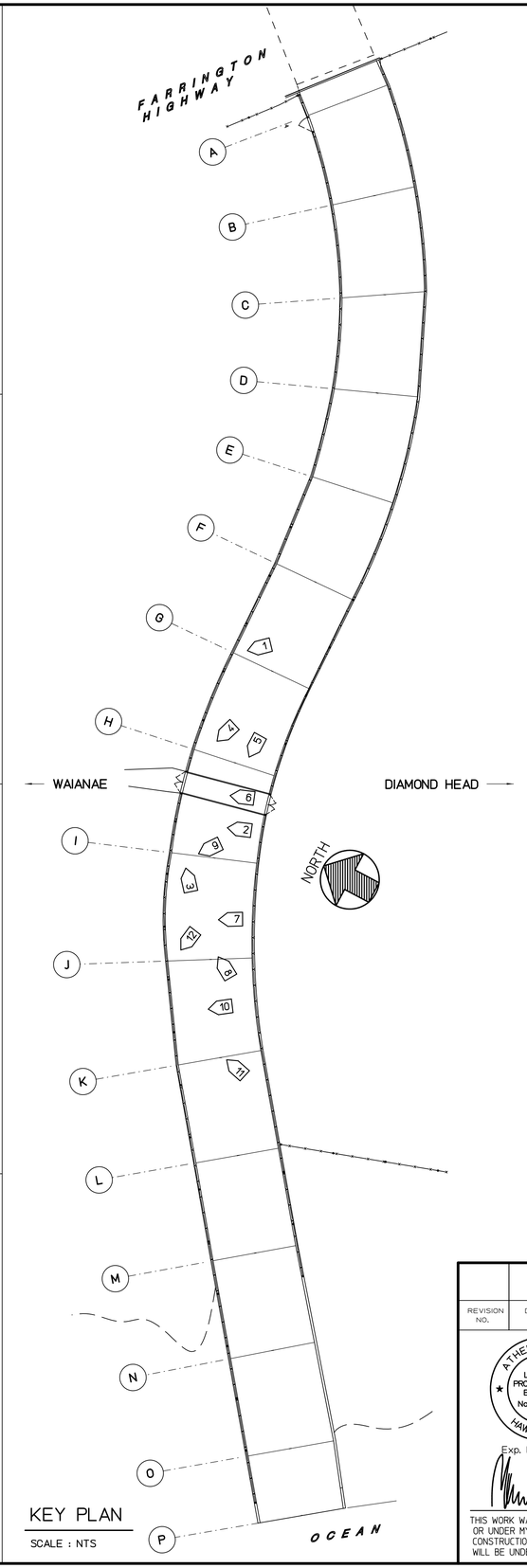

KEY PLAN

SCALE : NTS

PHOTO LEGEND:

1 CHANNEL PHOTO IDENTIFICATION NUMBER

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BID SET
2026-03-20

REVISION NO.	DATE	REVISIONS	BY

ATHER R. DAR
LICENSED PROFESSIONAL ENGINEER
No. 7808-S
HAWAII, U.S.A.
Exp. Date: 4-30-28

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DEPARTMENT OF HAWAIIAN HOME LANDS

NANAKULI FLOOD CONTROL CHANNEL OUTLET REPAIRS
NANAKULI, OAHU, HAWAII
T.M.K.: (1) 8-9-001:004, (1) 8-9-001:002

REFERENCE PHOTOS SURVEY

DESIGNED BY:	TTP
DRAWN BY:	AK
CHECKED BY:	AD
SUPV:	
DATE:	10/17/2022

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Civil & Structural Engineers
1088 BISHOP STREET #2506
HONOLULU, HI 96813
Tel: 808-533-2092

JOB NO.

SHEET S404
12 OF 19 SHTS

FILE ___ DRAWER ___ ___ FOLDER ___ ___

Plot date: 4-May-2026

J:/Project Data - 2020 Projects/20-076 DHHL PS-20-LDD-012 TO1 Rehabilitation of School Seawall/Drawings/Structural/Me10/S404-WAIANAE

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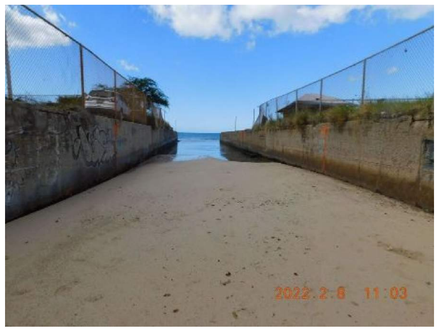

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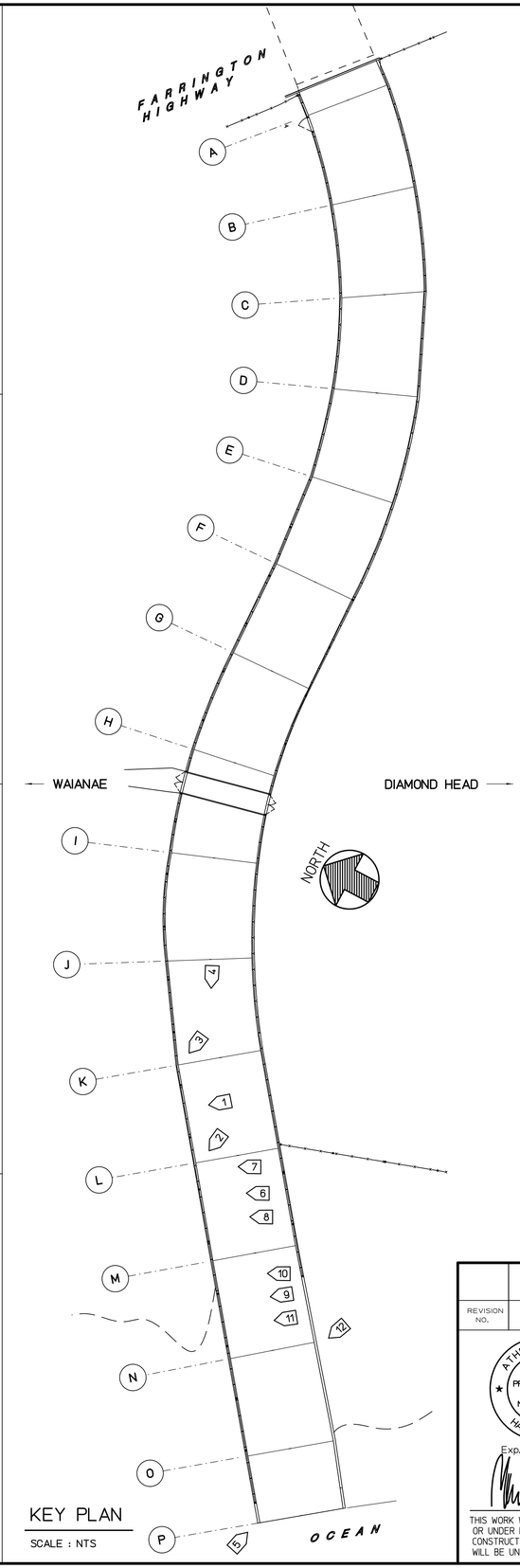

KEY PLAN

SCALE : NTS

PHOTO LEGEND:

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NOTES:

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BID SET
2026-03-20

REVISION NO.	DATE	REVISIONS	BY

ATHER R. DAR
LICENSED PROFESSIONAL ENGINEER
No. 7808-S
HAWAII U.S.A.
Exp. Date: 4-30-28

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DEPARTMENT OF HAWAIIAN HOME LANDS

NANAKULI FLOOD CONTROL CHANNEL OUTLET REPAIRS
NANAKULI, OAHU, HAWAII
T.M.K.: (1) 8-9-001:004, (1) 8-9-001:002

REFERENCE PHOTOS SURVEY

DESIGNED BY:	TTP
DRAWN BY:	AK
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SUPV:	
DATE:	10/17/2022

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Civil & Structural Engineers
1088 BISHOP STREET #2506
HONOLULU, HI 96813
Tel: 808-533-2092

JOB NO.

SHEET S405
13 OF 19 SHTS

FILE ___ DRAWER ___ ___ FOLDER ___ ___

J:/Project Data - 2020 Projects/20-076 DHHL PS-20-LDD-012 T01 Rehabilitation of School Seawall/Drawings/Structural/Me10/S405-WAIANAE

Plot date: 4-May-2026

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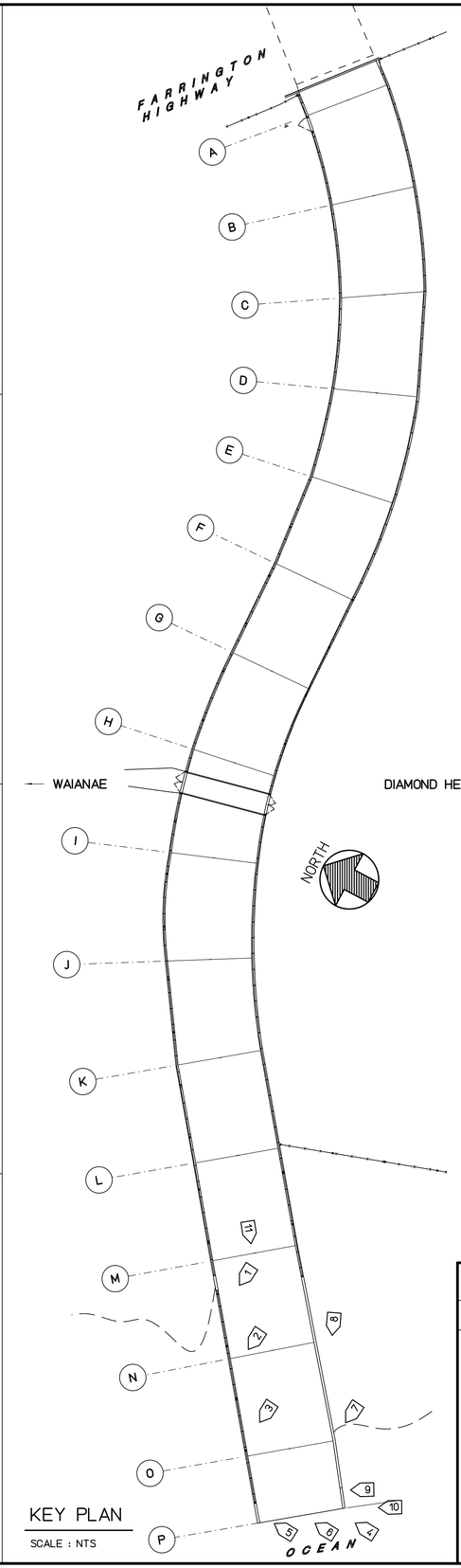

KEY PLAN

SCALE : NTS

PHOTO LEGEND:

1 CHANNEL PHOTO IDENTIFICATION NUMBER

NOTES:

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NANAKULI, OAHU, HAWAII
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HONOLULU, HI 96813
Tel: 808-533-2092

JOB NO.

SHEET S406
14 OF 19 SHTS

FILE ___ DRAWER ___ ___ FOLDER ___ ___

J:/Project Data - 2020 Projects/20-076 DHHL PS-20-LDD-012 T01 Rehabilitation of School Seawall/Drawings/Structural/Me10/S406-WAIANAE

Plot date: 4-May-2026

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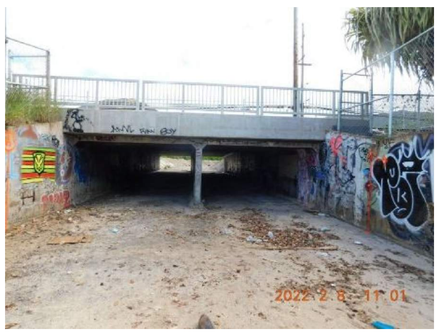

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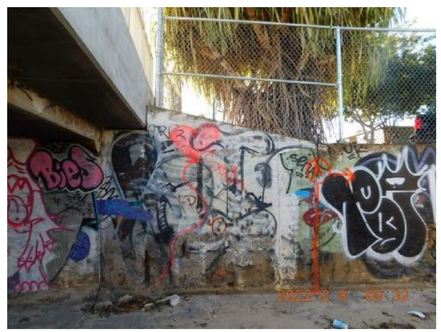

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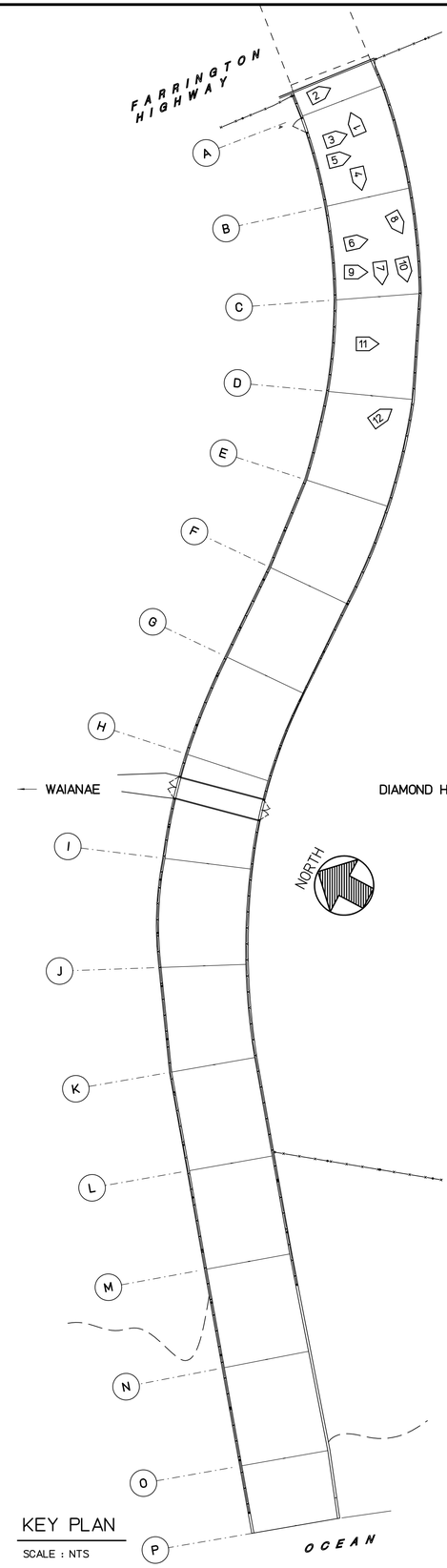

KEY PLAN

SCALE : NTS

PHOTO LEGEND:

1 CHANNEL PHOTO IDENTIFICATION NUMBER

NOTES:

1. HAWAII ENGINEERING GROUP (HEG) MARKED GRID NUMBER WITH ORANGE PAINT ON EXISTING WALLS. THE ARROW ADJACENT TO MARKED GRID NUMBER INDICATES MAKAI DIRECTION.
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BID SET
2026-03-20

REVISION NO.	DATE	REVISIONS	BY

ATHER R. DAR
LICENSED PROFESSIONAL ENGINEER
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HAWAII U.S.A.
Exp. Date: 4-30-28

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DEPARTMENT OF HAWAIIAN HOME LANDS

NANAKULI FLOOD CONTROL CHANNEL OUTLET REPAIRS
NANAKULI, OAHU, HAWAII
T.M.K.: (1) 8-9-001:004, (1) 8-9-001:002

REFERENCE PHOTOS SURVEY

DESIGNED BY:	TTP
DRAWN BY:	AK
CHECKED BY:	AD
SUPV:	
DATE:	10/17/2022

HAWAII ENGINEERING GROUP, Inc.
Civil & Structural Engineers
1088 BISHOP STREET #2506
HONOLULU, HI 96813
Tel: 808-533-2092

JOB NO.

SHEET S407
15 OF 19 SHTS

FILE ___ DRAWER ___ ___ FOLDER ___ ___

J:/Project Data - 2020 Projects/20-076 DHHL PS-20-LDD-012 T01 Rehabilitation of School Seawall/Drawings/Structural/Ms10/S407-DIAMOND HEAD

Plot date: 4-May-2026

Plot date: 4-May-2026
J:/Project Data - 2020 Projects/20-076 DHHL PS-20-LDD-012 T01 Rehabilitation of School Seawall/Drawings/Structural/Ma10/S408-DIAMOND HEAD

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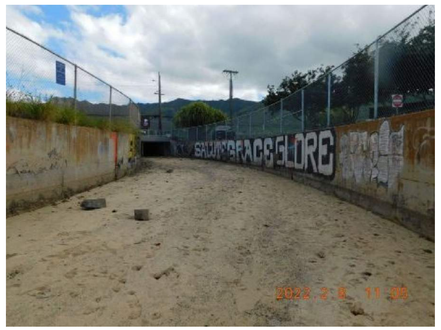

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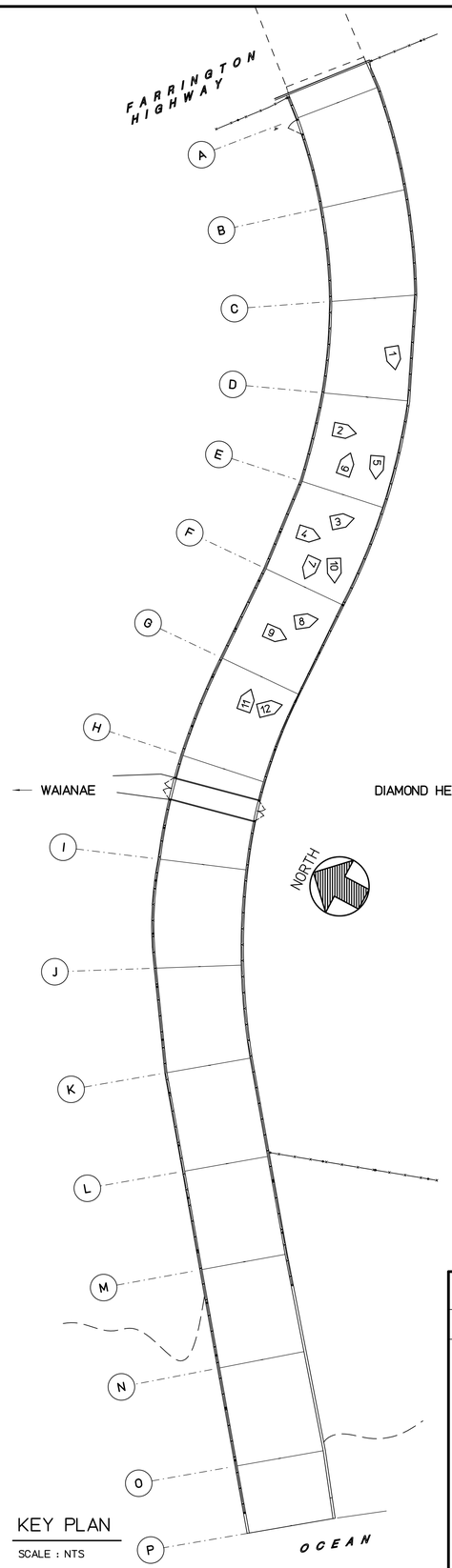

KEY PLAN

SCALE : NTS

PHOTO LEGEND:

1 CHANNEL PHOTO IDENTIFICATION NUMBER

NOTES:

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3. THE "ARROW FRAME" AROUND PHOTO IDENTIFICATION NUMBER INDICATES THE VIEW DIRECTION IN THE KEY PLAN.

BID SET
2026-03-20

REVISION NO.	DATE	REVISIONS	BY

ATHER R. DAR
LICENSED PROFESSIONAL ENGINEER
No. 7808-S
HAWAII U.S.A.
Exp. Date: 4-30-28

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION AND CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION

DEPARTMENT OF HAWAIIAN HOME LANDS

NANAKULI FLOOD CONTROL CHANNEL OUTLET REPAIRS
NANAKULI, OAHU, HAWAII
T.M.K.: (1) 8-9-001:004, (1) 8-9-001:002

REFERENCE PHOTOS SURVEY

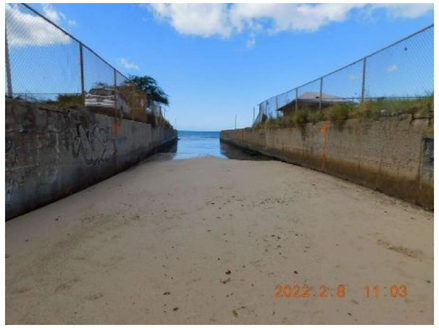
DESIGNED BY:	TTP
DRAWN BY:	AK
CHECKED BY:	AD
SUPV:	
DATE:	10/17/2022

HAWAII ENGINEERING GROUP, Inc.
Civil & Structural Engineers
1088 BISHOP STREET #2506
HONOLULU, HI 96813
Tel: 808-533-2092

JOB NO.

SHEET S408
16 OF 19 SHTS

FILE ___ DRAWER ___ ___ FOLDER ___ ___



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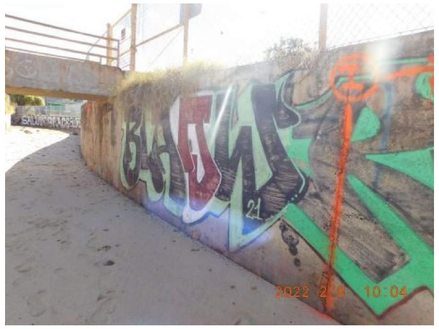

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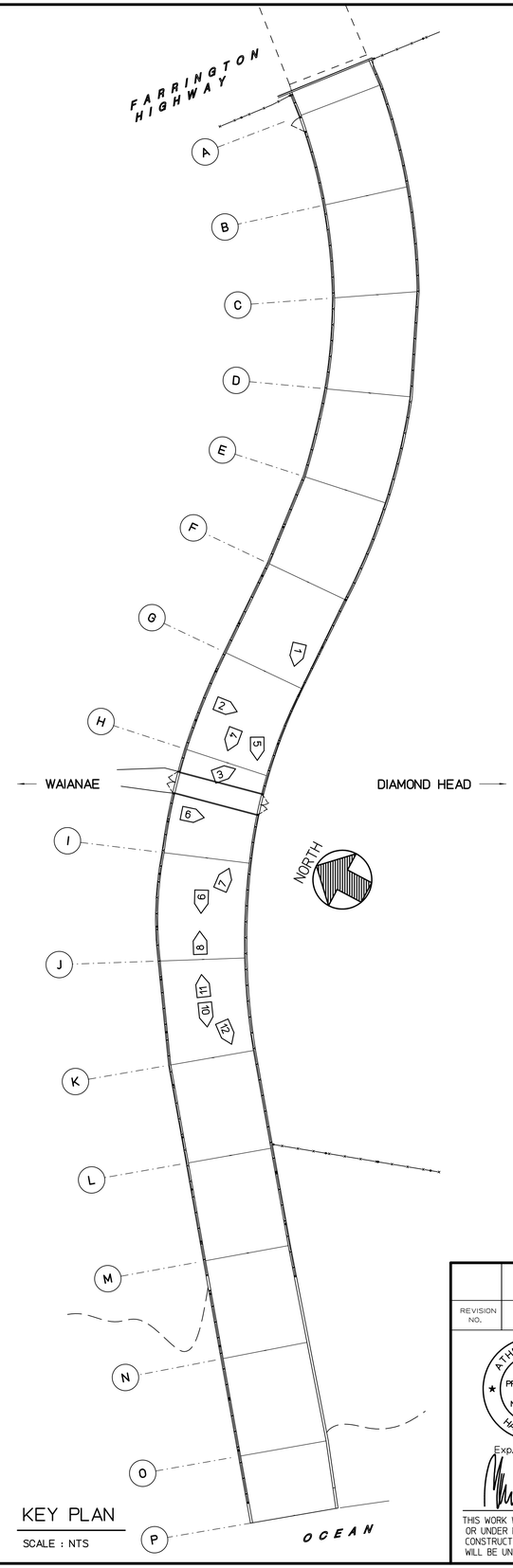

KEY PLAN

SCALE : NTS

PHOTO LEGEND:

1 CHANNEL PHOTO IDENTIFICATION NUMBER

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NANAKULI, OAHU, HAWAII
T.M.K.: (1) 8-9-001:004, (1) 8-9-001:002

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Civil & Structural Engineers
1088 BISHOP STREET #2506
HONOLULU, HI 96813
Tel: 808-533-2092

JOB NO.

SHEET S409
17 OF 19 SHTS

FILE ___ DRAWER ___ ___ FOLDER ___ ___

J:/Project Data - 2020 Projects/20-076 DHHL PS-20-LDD-012 T01 Rehabilitation of School Seawall/Drawings/Structural/Ms10/S409-DIAMOND HEAD

Plot date: 4-May-2026

10

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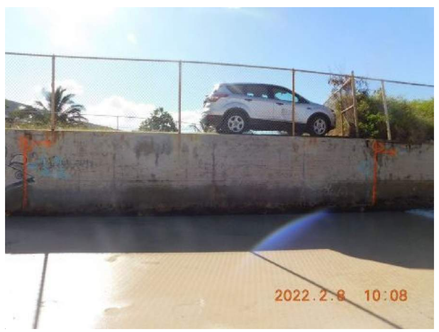

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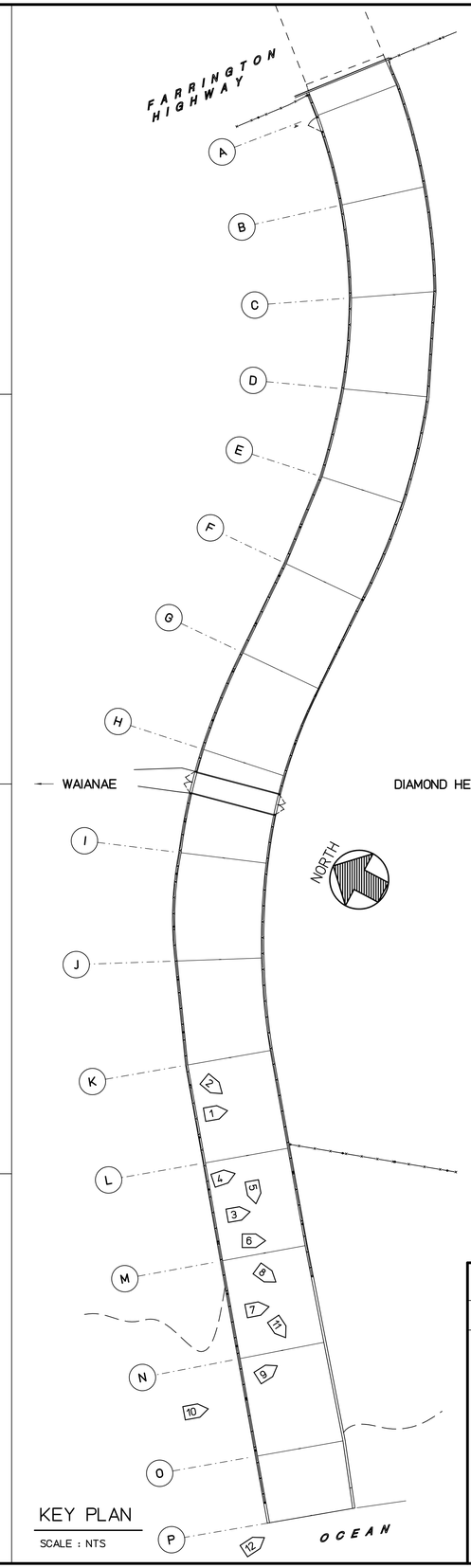

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NANAKULI, OAHU, HAWAII
T.M.K.: (1) 8-9-001:004, (1) 8-9-001:002

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HONOLULU, HI 96813
Tel: 808-533-2092

JOB NO.

SHEET S410
18 OF 19 SHTS

FILE ___ DRAWER ___ FOLDER ___

J:/Project Data - 2020 Projects/20-076 DHHL PS-20-LDD-012 T01 Rehabilitation of School Seawall/Drawings/Structural/Me10/S410-DIAMOND HEAD

Plot date: 4-May-2026

J:/Project Data - 2020 Projects/20-076 DHHL PS-20-LDD-012 T01 Rehabilitation of School Seawall/Drawings/Structural/Mel0/S411-DIAMOND HEAD Plot date: 4-May-2026

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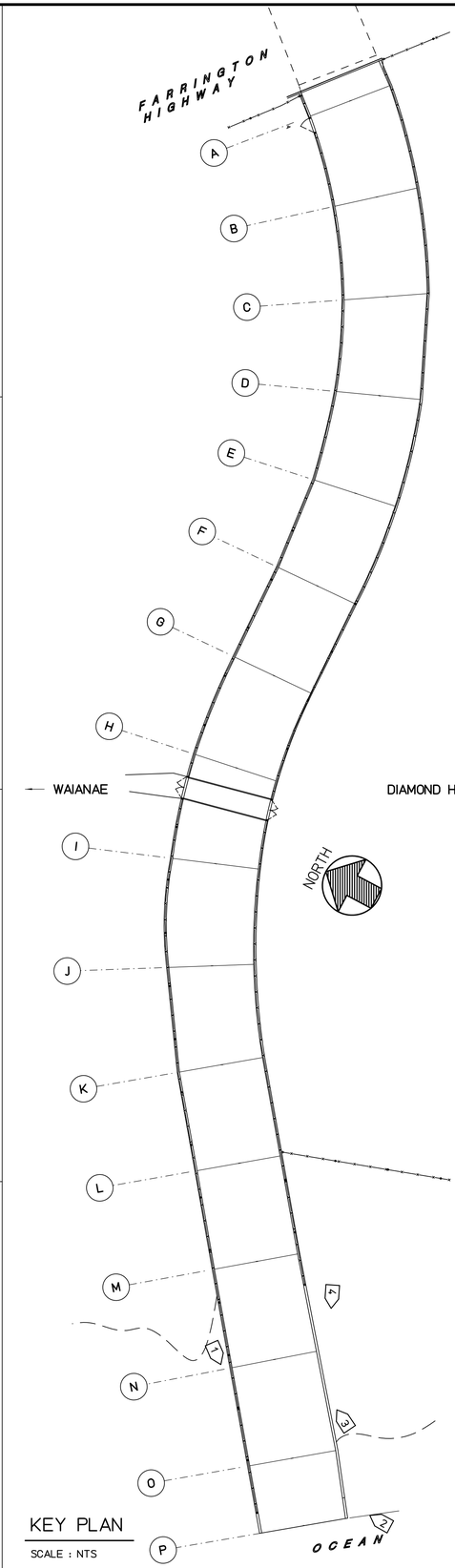

KEY PLAN

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JOB NO.

SHEET S411
19 OF 19 SHTS

FILE ___ DRAWER ___ ___ FOLDER ___ ___