

CONTRACT DOCUMENTS

FOR

RESTORATION OF KAPALAMA STREAM CRM CHANNEL WALLS

WORK AREA 1 AT KOHOU STREET
HONOLULU, OAHU, HAWAII

AND

WORK AREA 2 AT 1325 N. SCHOOL STREET
HONOLULU, OAHU, HAWAII

DEPARTMENT OF DESIGN AND CONSTRUCTION
CIVIL DIVISION
CITY AND COUNTY OF HONOLULU
HONOLULU, HAWAII

HAKU MILLES, P.E.
DIRECTOR

JOB NO. 04-25

SOLICITATION NO. RFB-DDC-1975702

JANUARY 2026

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AND

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HONOLULU, OAHU, HAWAII

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OFFER

Offeror's Legal Business Name

Honolulu, Hawaii

_____, 2026

Director of Budget and Fiscal Services
City and County of Honolulu
Honolulu, Hawaii 96813

The undersigned hereby offers and agrees, if this Offer is accepted, to furnish and pay for all labor, materials, tools, equipment and work as necessary to construct or install, in place complete, the work called for under and in accordance with the true intent of the Contract Documents for:

JOB NO. 04-25
SOLICITATION NO. RFB-DDC-1975702

RESTORATION OF KAPALAMA STREAM CRM CHANNEL WALLS

WORK AREA 1 AT KOHOU STREET
HONOLULU, OAHU, HAWAII

AND

WORK AREA 2 AT 1325 N. SCHOOL STREET
HONOLULU, OAHU, HAWAII

on file in the Office of the Division of Purchasing, Department of Budget and Fiscal Services, City and County of Honolulu, and that undersigned shall take in payment therefor the unit and/or lump sum prices rounded off to the nearest cent as itemized in the following schedule:

ITEM NO.	ITEM	ESTIMATED QTY	UNIT	UNIT PRICE	AMOUNT
1.	Mobilization of Work Area 1 (Item Nos. 2-12). (Not to exceed 6% of the total bid less this item and allowance items. Cost of demobilization shall be incidental to mobilization cost).	1	LS	LS	\$ _____
2.	Installation of Best Management Practices for the Restoration of Kapalama Channel Walls - Work Area 1, including but not limited to stabilized construction access using FODS mat, or approved equal (approximately 200 square feet), inlet protection for storm drain catch basins (two total), installation of bio-sock/filter sock at each end of Contractor work area on Kapalama Gardens side of Construction work area and use of 3' x 3' Super Sacks for work area cofferdam protection (including shifting Super Sacks during the construction period), in place complete.	1	LS	LS	\$ _____
3.	Clearing and grubbing (1,125 SF/0.025 Acres) of the Project Work area on Kapalama Gardens side of the drainage channel, including both City & County property and Kapalama Gardens property and re-stabilization with seeding after CRM Wall re-construction, and channel tree removal and patching, in place complete and to the satisfaction of the Officer-in-Charge with 90 days of temporary irrigation. Clearing and Grubbing shall be done in accordance with SP 003 Standard Specifications.	1	LS	LS	\$ _____

ITEM NO.	ITEM	ESTIMATED QTY	UNIT	UNIT PRICE	AMOUNT
4.	Fence removal and replacement including removal and disposal of 85 Linear Feet 4' high CLF on Kouhou Street side of channel and 95 linear feet 4' high CLF on Kapalama Gardens side of channel Replacement fence shall include 80 Linear Feet of 4' high CLF on the Kouhou Street side of channel per City & County Standard Detail R-18, and replacement with 80 Linear Feet 4' high CLF on the Kapalama Gardens side of channel per City & County Standard Detail R-18 after wall re-construction (with temporary fence provisions during construction), in place complete.	1	LS	LS	\$ _____
5.	Removal of all existing Emergency Kapalama Channel Wall improvements currently bracing the east channel wall section which is sloping in the inverse direction, in place complete. Removal includes, but is not limited to HDG braces, screw jacks and supports, bottom braces and 3/4" traffic type steel plate brace plates, NOTE: The BMPs in Item 2 shall be in place for the removal to proceed. The road plates belong to Royal Construction Company. The plates shall be dismantled, stacked, and Royal Contracting Company shall be notified for pick-up.	1	LS	LS	\$ _____

ITEM NO.	ITEM	ESTIMATED QTY	UNIT	UNIT PRICE	AMOUNT
6.	77 Linear Feet (2,160 cubic feet/80 cubic yards) of existing CRM channel wall dismantling, storing in Contractor Storage area on Kapalama Gardens side of channel, sorting and removing approximately 400 cubic feet/15 cubic yards of CRM stones that could be suitable for use at Work Area 2 (to provide exterior facing matching the Kapalama Stream Channel at Work Area 2). Work also includes reconstruction of 77 linear feet (4,320 Cubic Feet/160 cubic yards) of new channel CRM wall at Work Area 1 using existing CRM wall stone on exterior surface to match existing channel appearance and the remaining existing and new imported supplemental CRM stone for interior sections of the new CRM channel wall and installation of concrete footing and slab at base of CRM wall, in place complete.	1	LS	LS	\$ _____
7.	Compliance with all SP 194 Permits and Regulations including but not limited to Corps Pre-Construction Notification (PCN), Corps Nationwide Permit Verification (NWPV), Blanket Water Quality Certification (BWQC) and further including all documentation requirements, mandatory meeting requirements, monitoring requirements and reporting requirements, in place complete.	1	LS	LS	\$ _____
8.	Compliance with all SP 195 Environmental Pollution Control provisions including completion of Contractor portions of Storm Water Pollution Prevention Plan (SWPPP) and reporting, monitoring and documentation requirements per SWPPP during the actual construction period, in place complete.	1	LS	LS	\$ _____

ITEM NO.	ITEM	ESTIMATED QTY	UNIT	UNIT PRICE	AMOUNT
9.	Compliance with all SP 205 - In-Water Work (Section 404 Permit Nationwide Permit w/ Section 401 Blanket WQC) monitoring and reporting requirements as contained in the Attachments at the rear of SP 205, in place complete.	1	LS	LS	\$ _____
10.	Traffic Control for the construction period including daily set-up and take-down, in place complete.	1	LS	LS	\$ _____
11.	As-built drawings.	1	LS	LS	\$ _____
12.	Pre- and Post-construction surveys of site conditions	1	LS	LS	\$ _____
13.	Additional water pollution, dust, and erosion control	ALLOW*	ALLOW*	ALLOW*	\$ <u>20,000</u>
14.	Additional traffic control devices	F/A*	F/A*	F/A*	\$ <u>20,000</u>
15.	Additional police officers	ALLOW*	ALLOW*	ALLOW*	\$ <u>15,000</u>
16.	Archaeological monitoring	ALLOW*	ALLOW*	ALLOW*	\$ <u>30,000</u>
TOTAL SUM BID WORK AREA 1 (Items 1 to 16)					\$ <u> </u>

ITEM NO.	ITEM	ESTIMATED QTY	UNIT	UNIT PRICE	AMOUNT
17.	Mobilization of Work Area 2 at 1325 N. King Street (Item Nos. 18-30). (Not to exceed 6% of the total bid less this item and allowance items. Cost of demobilization shall be incidental to mobilization cost).	1	LS	LS	\$ _____
18.	Installation of Best Management Practices for the Restoration of Kapalama Channel Walls - Work Area 2, including use of bio-sock/filter sock (65 linear feet) at the top of Kapalama Gardens pavement to deflect runoff from entering the CRM replacement wall work area and use of 3' x 3' Super Sacks for work area cofferdam protection (including shifting Super Sacks during the construction period), in place complete.	1	LS	LS	\$ _____
19.	Grassing and finished surface restoration behind new CRM channel wall and Kapalama Gardens parking surface 41 linear feet (540 square feet), in place complete and to the satisfaction of Officer-in-Charge with 60 days of temporary irrigation.	1	LS	LS	\$ _____
20.	Fence removal and replacement including removal of 41 Linear Feet 4' high CLF on Kapalama Gardens side of channel and replace with 41 linear feet of 4' CLF per City & County Standard Detail R-18, in place complete.	1	LS	LS	\$ _____

ITEM NO.	ITEM	ESTIMATED QTY	UNIT	UNIT PRICE	AMOUNT
21.	Removal of all existing Emergency Kapalama Channel Wall improvements currently bracing the Kapalama Gardens side of the Emergency channel wall, in place complete. Removal includes but is not limited to HDG braces, screw jacks and supports, bottom braces and 3/4" traffic type steel plates brace plates, NOTE: The BMPs in Item 18 shall be in place for the removal to proceed. The road plates belong to Royal Construction Company. The plates shall be dismantled, stacked and Royal Contracting Company shall be notified for pick-up.	1	LS	LS	\$ _____
22.	41 Linear Feet of existing CRM Wall/Emergency/CLSM wall removal including 31 Linear Feet (945 cubic feet/35 cubic yards) of Emergency CLSM wall removal disposal and 5-Feet of CRM at each end (270 cubic feet/10 cubic yards. existing CRM wall de-construction with stockpile and re-use for new CRM wall and 40 Linear feet (1,890 cubic feet/70 cubic yards) excavation of soil behind wall and stockpile for new wall backfill, complete. Associated work shall be stepping stone removal and replacement after new CRM wall backfill is in place.	1	LS	LS	\$ _____
23.	41 Linear Feet (2160 cubic feet/80 cubic yards) of new CRM channel wall construction using existing CRM wall stone (from Work area 1 and end segments of Work Area 2) on exterior surface to match existing channel appearance and the remaining existing and new imported supplemental CRM stone for interior sections of the new CRM channel wall and installation of concrete footing and slab at base of CRM wall, in place complete.	1	LS	LS	\$ _____

ITEM NO.	ITEM	ESTIMATED QTY	UNIT	UNIT PRICE	AMOUNT
24.	Compliance with all SP 194 Permits and Regulations including but not limited to Corps Pre-Construction Notification (PCN), Corps Nationwide Permit Verification (NWPV), Blanket Water Quality Certification (BWQC) and further including all documentation requirements, mandatory meeting requirements, monitoring requirements, and reporting requirements, in place complete.	1	LS	LS	\$ _____
25.	Compliance with all SP 195 Environmental Pollution Control provisions including completion of Contractor portions of Storm Water Pollution Prevention Plan (SWPPP) and reporting, monitoring and documentation requirements per SWPPP during the actual construction period, in place complete.	1	LS	LS	\$ _____
26.	Compliance with all SP 205 - In-Water Work (Section 404 Permit Nationwide Permit w/Section 401 Blanket WQC) monitoring and reporting requirements as contained in the Attachments at the rear of SP 205, in place complete.	1	LS	LS	\$ _____
27.	As-built drawings.	1	LS	LS	\$ _____
28.	Pre- and Post-construction surveys of site conditions	1	LS	LS	\$ _____
29.	Additional water pollution, dust, and erosion control	ALLOW*	ALLOW*	ALLOW*	\$ <u>20,000</u>
30.	Archaeological monitoring	ALLOW*	ALLOW*	ALLOW*	\$ <u>30,000</u>
TOTAL SUM BID Work Area 2 (Items 17 to 30)					_____

ITEM NO.	ITEM	ESTIMATED QTY	UNIT	UNIT PRICE	AMOUNT
TOTAL SUM BID Work Area 1 and 2 (Items 1 to 30)					\$ _____

* Use of and payment for this item authorized only when written authorization for its use is given by the Officer-in Charge. Any unused portions of the Allowance and Force Account items shall remain with the City upon completion of the project. Contractor shall not make a claim in the event the City chooses to delete any Allowance or Force Account item from the Contract.

The undersigned also agrees as follows:

1. That the quantities of work shown herein are approximate only and are subject to increase or decrease, and offers to do the work whether the quantities are increased or decreased at the unit prices stated in the Offer schedule.

2. The quantities shown on items for which a UNIT PRICE is given in this Offer are only for the purpose of comparing, on a uniform basis, submitted bids offered for the work under this contract, and that they are satisfied with and shall at no time dispute said quantities as a means of comparing the Offers. The Contractor shall make no claim for anticipated profit or loss of profit because of a difference between the quantities of the various classes of work done or the materials and equipment actually installed and the said quantities.

3. That if the product of the UNIT PRICE bid by the number of units does not equal the total amount named by the Offeror of any items, it shall be assumed that the error was made in computing the total amount and for the purpose of computing the lowest Offeror, the named UNIT PRICE alone shall be considered as representing the Offeror's intention and the total amount bid on such item shall be considered to be the amount arrived at by multiplying the UNIT PRICE by the number of units.

4. Method of Award. The City shall award a contract to the responsive, responsible Offeror with the lowest Total Sum Bid, considering any applicable preferences. The City shall only consider an Offer with pricing on all items listed. The award is subject to the availability of funding.

5. That the time of completion shall be within 270 consecutive calendar days from the official commencement date of the Notice to Proceed (NTP).

The City anticipates issuing the NTP within 365 calendar days of contract execution. Should the NTP be issued within 365 calendar days of the date of contract execution, no claim for cost escalation shall be considered. The Special Provision on Price Adjustment due to NTP issuance provides clarification on the price adjustments.

Upon written instructions from the Officer-in-Charge, the Contractor shall proceed with preparatory work such as: making submittals and obtaining permits. No work shall be allowed at the job site and no ordering of materials shall be allowed until: (a) the date stipulated in the NTP, or (b) upon earlier written notice from the Officer-in-Charge.

6. That the liquidated damages for each and every calendar day delay in the completion of the contract shall be as specified in the Special Provisions.

7. The undersigned certifies that they are licensed to undertake this project pursuant to Chapter 444, Hawaii Revised Statutes (HRS), relating to licensing of Contractors.

8. Tax Clearance. The apparent successful Offeror shall be required to submit tax clearances from the State Department of Taxation and the Internal Revenue Service upon award of contract.

9. That the Offeror is aware of the applicability of HRS Section 103-55.6, relating to Public Works Construction, Apprenticeship Agreement, and, if applicable, that the Offeror has attached with their bid, written proof of being a party to a registered apprenticeship agreement for each apprenticeable trade the Offeror shall employ to construct this project. Furthermore, the Contractor shall continue to certify monthly in writing that the Contractor is a party to all applicable registered apprenticeship agreement.

10. That the Offeror is aware of the applicability of Section 4.2 of the General Instructions to Offerors (Dated 2/9/17) namely the Certificate of Acceptance of Solicitation Requirements form, which shall be completed, signed by the Offeror, and submitted with the Offeror's offer.

11. Contractor Performance Records. The City shall maintain records pertaining to the Contractor's performance on contracts with the City. The Contractor shall be required to participate in performance assessment activities during or after the performance of the Contract, in accordance with a performance assessment plan that shall be prescribed by the City. Contractor performance records may be used to determine a contractor's responsibility, qualifications, and eligibility for the award of future contracts with the City.

12. Final Payment. Proof of compliance with HRS Section 103D-328 and HRS Section 103D-310 is required for final payment. Proof of compliance may be through Hawaii Compliance Express (HCE) or written clearance issued by the Hawaii Department of Taxation, Internal Revenue Service, Hawaii Department of Labor, and Hawaii Department of Commerce and Consumer Affairs.

13. Enclosed herewith is:
- | | |
|---|--------------|
| Surety bond |) |
| Legal tender |) |
| Certificate of deposit, share certificate,) | (Circle one) |
| cashier's check, treasurer's check, |) |
| teller's check, official check, |) |
| certified check |) |

for the sum of _____

DOLLARS (\$), being not less than five percent (5%) of the total amount bid.

Respectfully submitted,

Offeror's Legal Business Name

By _____
Authorized Signature

Print or Type Name and Title of Above

Address: _____

Telephone No.: _____

Fax No.: _____

Email: _____

In accordance with Section 103D-302, HRS, all Offers shall include the name of *each* person or firm to be engaged by the Offeror as a joint contractor or subcontractor in the performance of the contract for construction, and the nature and scope of work to be performed by each joint contractor or subcontractor. Offers that do not comply with this requirement may be evaluated in accordance with Section 103D-302(b) of the HRS.

It is the sole responsibility of the Offeror to review the requirements of this project and determine the appropriate contractor's licenses that are required to complete the project. The Offeror acknowledges that as a general contractor ('A' or 'B' license), the Offeror is prohibited from undertaking any work solely or as part of a larger project which would require the Offeror to act as a specialty contractor ('C' license) in any area in which the Offeror has no specialty contractor's license. The Offeror must have the appropriate specialty contractor's license either obtained on its own, or obtained automatically under HAR §16-77-32.

In determining work that is to be performed by joint contractors or subcontractors, Offerors shall be familiar with HRS 444, relating to licensing of contractors and the Hawaii Administrative Rules, Title 16, Department of Commerce and Consumer Affairs, Chapter 77, Contractors.

General Engineering 'A' Contractors automatically have these 'C' specialty contractor's licenses: C-3, C-9, C-10, C-17, C-24, C-31a, C-32, C-35 C-37a, C-37b, C-38, C-43, C-49, C-56, C-57a, C-57b, and C-61.

General Building 'B' Contractors automatically have these 'C' specialty contractor's licenses: C-5, C-6, C-10, C-12, C-24, C-25, C-31a, C-32a, C-42a, and C-42b.

Contractors that are suspended or debarred by the State of Hawaii, State Procurement Office (SPO) under HRS Chapter 103D, cannot be considered for award during the suspension or debarment. However, suspended or debarred subcontractors may be listed. It shall be the responsibility of the Offeror to check the SPO website for current suspensions and debarments: www.hawaii.gov/spo, or phone (808)587-4700.

Contractors or subcontractors that are suspended or debarred by the State of Hawaii, Department of Labor and Industrial Relations (DLIR) under HRS Chapter 104 are prohibited from performing **any work** on any State or county public works construction project. Therefore, if an Offer involves a contractor or listed subcontractor that is suspended by DLIR, the Offer may be rejected as being nonresponsible. It shall be the responsibility of the Offeror to check the DLIR website for current suspensions and debarments: www.hawaii.gov/labor, or phone: (808)586-8771.

When more than one joint contractor or subcontractor is listed for a category of work, the Offeror shall identify the scope of work each will perform. Joint contractors or subcontractors shall also be listed for work to be completed under additives or alternates.

All work not within the scope of work of the listed joint contractor(s) or subcontractor(s), shall be performed by the Offeror.

List the required joint contractors or subcontractors for this project in the following table. Write in the complete name of the Joint Contractor or Subcontractor, the Contractor License Number, and the Nature and Scope of work to be performed by the firm.

COMPLETE NAME OF JOINT CONTRACTOR OR SUBCONTRACTOR	CONTRACTOR LICENSE NUMBER	SPECIFIC DESCRIPTION OF THE NATURE AND SCOPE OF WORK

ACKNOWLEDGMENT OF LIQUIDATED DAMAGES PROVISION

PROJECT NAME AND NUMBER:

JOB NO. 04-25

RESTORATION OF KAPALAMA STREAM

CRM CHANNEL WALLS

WORK AREA 1 AT KOHOU STREET

HONOLULU, OAHU, HAWAII

AND

WORK AREA 2 AT 1325 N. SCHOOL STREET

HONOLULU, OAHU, HAWAII

This is to certify that the undersigned understands and agrees to the provisions for Liquidated Damages, Section 3.16 of the General Terms and Conditions, City and County of Honolulu, and that submittal of our Offer constitutes acceptance of the provisions and amount of liquidated damages that may be assessed per calendar day as specified in Section SP 180 - Liquidated Damages.

Offeror's Legal Business Name

Signature and Title

Dated:_____

CERTIFICATION OF COMPLIANCE
WITH HRS 396-18, SAFETY AND HEALTH PROGRAMS
FOR CONTRACTOR BIDDING ON CITY JOBS

PROJECT NAME AND NUMBER:

JOB NO. 04-25

RESTORATION OF KAPALAMA STREAM
CRM CHANNEL WALLS

WORK AREA 1 AT KOHOU STREET
HONOLULU, OAHU, HAWAII

AND

WORK AREA 2 AT 1325 N. SCHOOL STREET
HONOLULU, OAHU, HAWAII

This is to certify that the undersigned shall comply with the requirements of HRS 396-18, as follows:

- (A) Pursuant to HRS 396-18, all bids and offers in excess of \$100,000 shall include a signed certification from the Offeror that a written safety and health plan for the job will be available and implemented by the Notice to Proceed dates of the project. The written safety and health plan shall include:
 - (1) A safety and health policy statement reflecting management commitment;
 - (2) A description of the safety and health responsibilities of all levels of management and supervisors on the job and a statement of accountability appropriate to each;
 - (3) The details of:
 - (a) The mechanism for employee involvement in job hazard analysis;
 - (b) Hazard identification, including periodic inspections and hazard correction and control;
 - (c) Accident and "near-miss" investigations; and
 - (d) Evaluations of employee training programs;
 - (4) A plan to encourage employees to report hazards to management as soon as possible and to require management to address these hazards promptly; and
 - (5) A certification by a senior corporate or company manager that the plan is true and correct.
- (B) Failure to submit the required certification may be grounds for disqualification of the Offer.
- (C) Failure to have available on site or failure to implement the written safety and health plan by the project's Notice to Proceed date shall be

considered willful noncompliance and be sufficient grounds to disqualify the award and terminate the contract.

Offeror's Legal Business Name

Date:_____

Signature and Title

**CERTIFICATE OF ACCEPTANCE
OF SOLICITATION REQUIREMENTS**

It is understood and agreed that the undersigned acknowledges the following:

1. The Offeror has read this solicitation document including any addenda, in its entirety;
2. The Offeror understands and agrees to furnish, deliver, and perform the requirements of the solicitation in strict compliance with the solicitation document as amended, including any specifications, plans, and scope of work descriptions, without any exceptions, if awarded a contract;
3. The Offeror understands and agrees that no substitution or alternate brands may be furnished without the **written approval** of the City;
4. The Offeror understands that the Contractor shall resolve any noncompliance with the requirements of the awarded contract at the Contractor's own expense;
5. The Offeror shall make all modifications or customizations to the brand and model being offered as necessary to meet all specifications, at no additional cost. Offeror guarantees that all modifications or customizations done to meet specifications shall not affect the quality or operation of the product; and
6. The Offeror understands that **FAILURE TO MEET CONTRACT REQUIREMENTS SHALL CONSTITUTE A BREACH OF CONTRACT THAT MAY RESULT IN SUSPENSION OR DEBARMENT, AND THE EXERCISE OF RIGHTS AND REMEDIES AS PROVIDED BY LAW.** Contract requirements include any specifications, plans, and scope of work descriptions;
7. The undersigned is an authorized representative of the Offeror and can legally obligate the Offeror thereto.

Offeror's Legal

Business Name: _____

Signature: _____

Print Name: _____

Title: _____

Date: _____

Business Phone: _____

SURETY BID BOND
(11/17/98)

Bond No. _____

KNOW TO ALL BY THESE PRESENTS:

That we, _____,
(Full Name or Legal Title of Offeror)

as Offeror, hereinafter called Principal, and _____,
(Name of Bonding Company)

as Surety, hereinafter called Surety, a corporation authorized to transact business as a
Surety

in the State of Hawaii, are held and firmly bound unto _____,
(State/County Entity)

as Owner, hereinafter called Owner, in the penal sum of _____

(Required Amount of Bid Security)

Dollars (\$_____), lawful money of the United States of America, for the payment of
which sum well and truly to be made, the said Principal and the said Surety bind ourselves,
our heirs, executors, administrators, successors and assigns, jointly and severally, firmly by
these presents.

WHEREAS:

The Principal has submitted an offer for _____

(Project by Number and Brief Description)

NOW, THEREFORE:

The condition of this obligation is such that if the Owner shall reject said offer, or in
the alternate, accept the offer of the Principal and the Principal shall enter into a Contract
with the Owner in accordance with the terms of such offer, and give such bond or bonds as
may be specified in the solicitation or Contract Documents with good and sufficient surety
for the faithful performance of such Contract and for the prompt payment of labor and
material furnished in the prosecution thereof as specified in the solicitation then this
obligation shall be null and void, otherwise to remain in full force and effect.

Signed this _____ day of _____, _____.

(Seal)

Name of Principal (Offeror)

Signature

Title

(Seal)

Name of Surety

Signature

Title

CONTRACT NO. XX-XXX-XXXXXXX
SOLICITATION NO. RFB-DDC-1975702

THIS AGREEMENT, made and entered into on _____ (Date), by and between the CITY AND COUNTY OF HONOLULU, a municipal corporation existing under and by virtue of the laws of the State of Hawaii, whose principal place of business is 530 SOUTH KING STREET ROOM 208, HONOLULU, HAWAII 96813, hereinafter called the "CITY," and _____, whose principal place of business is CONTRACTOR'S ADDRESS, hereinafter referred to as the "CONTRACTOR."

WITNESSETH THAT:

WHEREAS, the CITY desires to engage the CONTRACTOR to perform work for the Project Description; and

WHEREAS, a solicitation for bids and the selection of the CONTRACTOR were made in accordance with section 103D-302, Hawaii Revised Statutes (HRS) and the related Hawaii Administrative Rules (HAR). The CONTRACTOR has been identified as the lowest responsible and responsive Offeror, whose offer meets the requirements and criteria set forth in the invitation; and

WHEREAS, the CONTRACTOR is willing and able to provide the services set forth in this AGREEMENT;

NOW, THEREFORE, the CITY and the CONTRACTOR, in consideration of the foregoing and of the mutual promises hereinafter set forth, the sufficiency and adequacy of which are hereby acknowledged, and intending to be legally bound, hereby mutually agree as follows:

1. This Contract and the following documents, appendices and exhibits collectively form the "AGREEMENT" or "Contract Documents", all of which are attached hereto and incorporated herein:

This Contract

Solicitation No. RFB-DDC-1975705

CONTRACTOR's Offer

The Contract Documents as listed hereinabove are in the order of controlling preference should there be any conflict in the terms; provided, however, that portions in the CONTRACTOR's Offer that exceed specification requirements in the solicitation document shall become the new minimum Contract requirements.

2. The CONTRACTOR shall furnish all services, labor, goods, materials, supplies, equipment and other work reasonably necessary for the successful completion of the work contemplated under this AGREEMENT (Work).
3. The CITY agrees to pay the CONTRACTOR for the satisfactory performance and completion of the Work in accordance with the payments schedule and provisions, all as set

forth in the AGREEMENT. The total amount of this AGREEMENT shall not exceed Dollar Amount Spelled Out (\$XX.XX), which is the maximum payable under this AGREEMENT and inclusive of all taxes. The CONTRACTOR shall not pass through any increases in taxes to the CITY.

4. The term of the Agreement shall be the duration as provided in Solicitation No. RFB-DDC-1975705.

5. The CONTRACTOR shall prosecute said work in an efficient manner so as entirely to complete and perform said work within the time set forth in Solicitation No. RFB-DDC-1975705.

IN WITNESS WHEREOF, this AGREEMENT is executed herein by the duly authorized officer or agent of the CITY and the CONTRACTOR.

CITY AND COUNTY OF HONOLULU	CONTRACTOR'S LEGAL NAME
BY:	BY:
PRINTED NAME:	PRINTED NAME:
TITLE: Director, Department of Budget and Fiscal Services	TITLE:
DATE:	DATE:

APPROVED AS TO FORM AND
LEGALITY

Deputy Corporation Counsel

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The following Section shall be made a part of the Standard Specifications:

"SECTION SP 2 - GENERAL INSTRUCTIONS TO OFFERORS AND GENERAL TERMS AND CONDITIONS"

SP 2.1 GENERAL

The current "GENERAL INSTRUCTIONS TO OFFERORS", and the current "GENERAL TERMS AND CONDITIONS", of the Department of Budget and Fiscal Services, City and County of Honolulu, are by reference incorporated herein and made a part of these specifications. The terms "General Instructions" and "General Conditions" used hereinafter refer to the current "GENERAL INSTRUCTIONS TO OFFERORS", and the current "GENERAL TERMS AND CONDITIONS", respectively. Copies of the General Instructions and General Conditions may be obtained online at <http://www.honolulu.gov/pur>. Any provision of the General Instructions and General Conditions not in conflict with the Hawaii Administrative Rules, Title 3, Department of Accounting and General Services, shall be applicable to this contract.

SP 2.2 GENERAL INSTRUCTIONS

The General Instructions shall be amended as follows:

- A. Delete Section 2.19 "Solicitation Addenda" (b) (2) in its entirety.

The City is posting all formal solicitations on the State of Hawaii - Hawaii Awards & Notices Data System (HANDS) (<https://hands.ehawaii.gov/>) for goods, services, construction, grants and concessions. HANDS gathers information from multiple state and county procurement platforms and displays it all in one place. Offerors are solely responsible to check HANDS website for any updates and addenda issued by the City.

- B. Notwithstanding Section 2.5 "Examination of site" of the General Instructions, every Offeror bidding upon the work shall examine carefully the site and satisfy himself as to the character and amount of work to be performed as indicated on the plans and called for by these specifications and the conditions under which it must be performed. No additional payment shall be granted because of the lack of knowledge of such conditions.

- C. Delete Subsection 5.4 (a) relating to Time for Acceptance of offer, in its entirety and replace with the following:

"(a) For City-funded projects or projects funded in whole or in part by the federal government; within one hundred eighty (180) days of the date of solicitation opening or receipt of Offers;"

- D. Delete Section 6.9 Cost Analysis Data in its entirety and replace with the following:

"6.9 Cost Analysis Data

The City reserves the right to request cost data to

conduct a cost analysis. Pursuant to HRS 103D-312 and HAR 3-122 Subchapter 15, this cost data will be used to determine if the offer is fair and reasonable. Information provided by the Offeror may remain confidential and proprietary in accordance with HRS §92F-13(3)."

- E. Delete Section 8.4(a) Notarization in its entirety and replace with the following:

"(a) Notarization

Signatures appearing on bond forms (if applicable) must be notarized by a notary public."

SP 2.3 GENERAL CONDITIONS

The General Conditions shall be amended as follows:

- A. Section 2.10 Indemnity of the General Conditions is deleted in its entirety and replaced with the following:

"2.10 Indemnity

The Contractor shall perform the work as an independent Contractor and shall indemnify and hold harmless the City, its departments, and all of their officers, employees or agents, from any and all deaths, injuries, losses and damages to persons or property, and any and all claims, demands, suits, action and liability therefor including reasonable attorney fees and cost of defense, caused by error, omissions, negligence or willful or intentional misconduct in the performance of the contract by the Contractor or the Contractor's subcontractors, agents and employees, and this requirement shall survive the termination of contract."

- B. Add the following new paragraph (F) to Section 3.11 Price Adjustment in Construction Contracts, Subsection (1) Price adjustment methods:

"(F) In determining the adjustment in price to a lump sum pay item resulting from an increase or decrease in quantities, the Officer-in-Charge shall base the adjustment of the lump sum item on the calculated proportionate unit price, only when the quantity is provided with the pay item. The Officer-in-Charge shall calculate the proportionate unit price by dividing the original contract lump sum price by the quantity established by the contract documents."

- C. Section 4.5 Payments, Section (a) is deleted in its entirety and replaced with the following:

"(a) Payments will be authorized by the Director after completion of performance or delivery and acceptance by the Director of all materials, goods, and services stipulated in the contract or Purchase Order and after the

invoices, in triplicate, are received by the using agency, Attention: Fiscal Officer. The invoices must list the following information: contract and confirmation purchase order numbers (if any), item numbers, description of items, quantities, unit prices, and extended totals. Payments will be computed in accordance with any applicable unit prices bid. Payments will be made as soon thereafter as the regular course of business will allow; provided, however, that payments shall be made no later than thirty (30) calendar days following receipt of the statement for goods received and services completed."

- D. Section 5.2.2 "Payment and Performance Schedules," subparagraph (e)(4) of the General Conditions is deleted in its entirety and replaced with the following:

"(4) The Contractor's Three (3)-Week Look Ahead Schedule. Contractor shall provide a weekly three week look ahead schedule for the project. The schedule shall include, but not be limited to, all activities, their description, duration, relationship and dependencies necessary to the completion of the contract. If the schedule is not accepted, it shall be revised as directed by the Officer-in-Charge. Changes in the schedule shall be made only with the written acceptance of the Officer-in-Charge."

- E. Section 5.2.15 Environmental Pollution and Hazardous Materials, Substances, and/or Waste Control, subparagraph (a) of the General Conditions is deleted in its entirety and replaced with the following:

"(a) Environmental pollution prevention and hazardous materials, substances, and/or waste control shall consist of the protection of human health and the environment from pollution or the release of contaminants during and as a result of construction operations under the contract. The control of environmental pollution and hazardous materials, substances, and/or waste requires the consideration of air, water and land from pollutants, including but not limited to, solid and hazardous waste management, noise, dust, as well as other pollutants. It is the responsibility of the Contractor to investigate and comply with all applicable laws, including but not limited to those relating to control, remediation, and abatement. Unless otherwise advised in writing by the City, the requirements in this section shall be considered necessary to and part of the Contractor's performance of the contract.

However, any subsurface hazardous materials or subsurface environmental hazards discovered at the site differing materially from those indicated in this contract may be considered for price adjustments and/or time for performance for any remediation and abatement."

- F. Section 5.2.26 Final Inspection, subparagraph (e) of the General Conditions, is deleted in its entirety and replaced with the following:

"(e) The Officer-in-Charge shall then make a determination as to whether or not the project is ready for inspection. If the Officer-in-Charge is not satisfied, the Contractor shall be notified in writing of the items that require completion prior to inspection. The Officer-in-Charge shall determine the length of time (remedial time) for the Contractor to correct and address the deficiencies. After the Contractor complies with the instructions of the Officer-in-Charge, the Contractor shall again submit, in writing, a request for inspection."

- G. Section 5.2.26 Final Inspection, subparagraph (h) of the General Conditions, is deleted in its entirety and replaced with the following:

"(h) The Contractor shall, within seven (7) calendar days after receipt of the punch list, or as determined by the Officer-in-Charge, proceed to complete the items on the punch list. Upon completion, the Contractor shall submit a written request for final inspection, after which, if the Officer-in-Charge finds that all discrepancies are satisfactorily corrected, the Officer-in-Charge shall accept the project as completed, hereinafter referred to as "final acceptance.""

- H. Section 5.2.28 As-Built Drawings of the General Conditions, is deleted and substituted with Section SP 181 As-Built Drawings.

- I. Notwithstanding Section 5.3.6 of the General Conditions, relating to variations in estimated quantities for unit price bid items, add the following:

"Payment shall be made for the actual quantities of units incorporated into the contract multiplied by the unit prices of the contract items. The actual quantity of any item may vary from the estimated quantity in the Offer."

- J. Delete Section 5.4.6 Payment for Delivered Materials or Equipment in its entirety.
- K. Delete Section 5.4.7 Final Payment, Section (a)(1) and Section (a)(2) in its entirety.
- L. Delete Exhibit L Report of Equipment Purchased with Construction Contracts in its entirety.
- M. All other provisions of the General Conditions are unmodified and shall remain in full force and effect."

SP 2.4 REVISED ORDINANCES OF HONOLULU

The Revised Ordinances of Honolulu 2021 shall be amended as follows:

A. "Anti-Discrimination

In accordance with Section 1-11 of the Revised Ordinances of Honolulu 2021, as amended, the Contractor shall not engage in discriminatory practices for any work provided under this Agreement. Discriminatory practices are practices that discriminate on the basis of a classification protected by any federal, State, or City law, including retaliation for opposing discrimination or participation in an investigation or proceeding that alleges discrimination."

END OF SECTION SP 2

The following Section shall be made a part of the Standard Specifications:

"SECTION SP 3 - STANDARD SPECIFICATIONS

The "STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION, SEPTEMBER 1986", of the Departments of Public Works, County of Kauai, City and County of Honolulu, County of Maui, and County of Hawaii, of the State of Hawaii, is by reference incorporated herein and made a part of these specifications. The term "Standard Specifications" used hereinafter refers to this "STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION, SEPTEMBER 1986". Copies of the Standard Specifications may be obtained online at <https://www.honolulu.gov/rep/site/dpp/rules/standard-specifications-counties-state-hawaii.pdf>.

The work embraced herein shall be done in accordance with the Standard Specifications, insofar as they may apply and in accordance with the following Special Provisions. These Special Provisions supplement and modify the General Instructions, General Conditions, and Standard Specifications."

END OF SECTION SP 3

The following Section shall be made a part of the Standard Specifications:

"SECTION SP 4 - STANDARD DETAILS

The "STANDARD DETAILS FOR PUBLIC WORKS CONSTRUCTION, SEPTEMBER 1984", as amended, of the Departments of Public Works, County of Kauai, City and County of Honolulu, County of Maui, and County of Hawaii, of the State of Hawaii, is by reference incorporated herein and made a part hereof. The term "Standard Details" used hereinafter refers to this "STANDARD DETAILS FOR PUBLIC WORKS CONSTRUCTION, SEPTEMBER 1984". Copies of the Standard Details may be obtained online at <https://www.honolulu.gov/rep/site/dpp/rules/standard-details-public-works-construction-2000.pdf>.

The work embraced herein shall be done in accordance with the Standard Details, insofar as they may apply."

END OF SECTION SP 4

The following Section shall be made a part of the Standard Specifications:

"SECTION SP 5 - CONTRACTOR/SUBCONTRACTOR LICENSE REQUIREMENTS

Implementation of the Hawaii Supreme Courts January 28, 2002 Decision in the Okada Trucking Case. "A" general engineering contractors and "B" general building contractors are reminded that due to the Hawaii Supreme Court's January 28, 2002 decision in *Okada Trucking Co., Ltd. v. Board of Water Supply, et al.*, 97 Haw. 450 (2002), they are prohibited from undertaking any work, solely or as part of a larger project, which would require the general contractor to act as a specialty contractor in any area where the general contractor has no license. Although the "A" and "B" contractor may still bid on and act as the "prime" contractor on an "A" or "B" project (See, HRS § 444-7 for the definitions of an "A" and "B" project.), respectively, the "A" and "B" contractor may only perform work in the areas in which they have the appropriate contractor's license (An "A" or "B" contractor obtains "C" specialty contractor's licenses either on its own, or automatically under HAR § 16-77-32.). The remaining work must be performed by appropriately licensed entities. It is the sole responsibility of the contractor to review the requirements of this project and determine the appropriate licenses that are required to complete the project.

To be eligible to bid, offerors must possess a valid State of Hawaii General Engineering Contractor's "A" license at the time of bid opening."

END OF SECTION SP 5

Amend Section 39 - Portland Cement Concrete to read as follows:

"SECTION SP 39 - PORTLAND CEMENT CONCRETE

SP 39.1 DESCRIPTION

This section shall apply to Portland cement concrete for use in the various types of concrete structures, and to cement mortar. The furnishing and storing of Portland cement and aggregates, mixing, transporting and placing the concrete of the various classes, and curing and finishing the concrete structures shall conform to the requirements specified herein.

The work shall comply with and conform to the standard practices and codes as set forth by the American Concrete Institute, the Concrete Reinforcing Steel Institute, the "Uniform Building Code", "International Building Code 2003", and "AASHTO LRFD Bridge Design Specifications", Third edition, 2004.

SP 39.2 SUBMITTALS

A. Design Mixes: For each concrete mix. Include alternate mix designs when characteristics of materials, project conditions, weather, test results, or other circumstances warrant adjustments.

- 1) Indicate amounts of mix water to be withheld for later addition at Project site.

B. Material Certificates: Signed by manufacturers certifying that each of the following items complies with requirements:

- 1) Curing materials.
- 2) Bonding agents.
- 3) Adhesives.
- 4) Vapor retarders.
- 5) Epoxy joint filler.
- 6) Joint-filler strips.
- 7) Repair materials.

SP 39.3 QUALITY ASSURANCE

A. ACI Publications: Comply with the following, unless more stringent provisions are indicated and maintain a copy at the field office.

- 1) ACI 301, "Specification for Structural Concrete."
- 2) ACI 117, "Specifications for Tolerances for Concrete Construction and Materials."
- 3) ACI 347R "Guide to Formwork for Concrete"

SP 39.4 MATERIALS

A. Portland Cement: ASTM 150, Type I, IL or II.

B. Pozzolans:

1) Fly Ash: ASTM C 618/AASHTO M 295, Class C or F.

2) Blended Hydraulic Cement: ASTM C595M.

3) Ground Granulated Blast-Furnace Slag: ASTM C 989, Grade 100 or 120.

C. Blended Hydraulic Cement: ASTM C 595M; Type IS - Portland blast-furnace slag cement, Type IP - Portland/pozzolan cement, Type I (PM) - pozzolan-modified Portland cement, or Type I (SM) - slag-modified Portland cement.

D. Silica Fume: ASTM C 1240, amorphous silica.

E. Water: Potable and complying with ASTM C 94 or non potable meeting ASTM C-94 Acceptance Criteria for Questionable Water Supply. Use only potable water for job site mixing.

F. Size of Coarse Aggregate: Except when otherwise specified or permitted, maximum size of coarse aggregate shall not exceed three-fourths of the minimum clear spacing between reinforcing bars (or bundled bars), one-fifth of the narrowest dimension between the sides of forms, or one-third of the thickness of slabs or toppings.

G. Admixture

1) General: Admixtures certified by manufacturer to contain not more than 0.1 percent water-soluble chloride ions by mass of cementitious material and to be compatible with other admixtures and cementitious materials. Do not use admixtures containing calcium chloride.

2) Corrosion-Inhibiting Admixture: Commercially formulated, anodic inhibitor or mixed cathodic and anodic inhibitor; capable of forming a protective barrier and minimizing chloride reactions with steel reinforcement in concrete.

a) Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, the following:

b) Products: Subject to compliance with requirements, provide one of the following:

(1) DCI or DCI-S; W. R. Grace & Co., Construction Products Div.

(2) Rheocrete CNI or Rheocrete 222+; Master Builders, Inc.

(3) FerroGard-901; Sika Corporation.

(4) Eucon-CIA; Euclid Chemical corporation.

H. Mortar: Shall be used within 30 minutes after its preparation.

I. Form-Facing Materials

1) Smooth-Formed Finished Concrete: Comply with ACI 347R. Provide new or good finish form-facing panels that will provide continuous, true, and smooth concrete surfaces. Furnish in largest practicable sizes to minimize number of joints.

a) Plywood, metal, or other ACI 347R approved panel materials.

2) Rough-Formed Finished Concrete: Plywood, lumber, metal, or another approved material. Provide lumber dressed on at least two edges and one side for tight fit.

3) Pan-Type Forms: Glass-fiber-reinforced plastic or formed steel, stiffened to resist plastic concrete loads without detrimental deformation.

4) Void Forms: Biodegradable paper surface, treated for moisture resistance, structurally sufficient to support weight of plastic concrete and other superimposed loads.

5) Form-Release Agent: Commercially formulated form-release agent that will not bond with, stain, or adversely affect concrete surfaces and will not impair subsequent treatments of concrete surfaces. Form oils or waxes shall not be used for concrete surfaces intended to be painted.

a) Formulate form-release agent with rust inhibitor for steel form-facing materials.

6) Form Ties: Factory-fabricated, removable or snap-off metal or glass-fiber-reinforced plastic form ties designed to resist lateral pressure of fresh concrete on forms and to prevent spalling of concrete on removal.

a) Furnish units that will leave no corrodible metal closer than 1 inch to the plane of the exposed concrete surface.

b) Furnish ties that, when removed, will leave holes not larger than 1 ½ inches in diameter in concrete surface.

J. Curing Materials and Evaporation Retarders

1) Evaporation Retarder: Waterborne, monomolecular film forming, manufactured for application to fresh concrete.

2) Absorptive Cover: AASHTO M 182, Class 2, burlap cloth made from jute or kenaf, weighing approximately 9 oz./sq. yd. dry.

- 3) Moisture-Retaining Cover: ASTM C 171 and AASHTO M 171, polyethylene film or white burlap-polyethylene sheet.
- 4) Water: Potable.
- 5) Clear, Solvent-Borne, Membrane-Forming Curing and Sealing Compound: ASTM C 1315, Type 1, Class A.
- 6) Clear, Waterborne, Membrane-Forming Curing and Sealing Compound: ASTM C 1315, Type 1, Class A.

K. Related Materials

- 1) Epoxy Joint Filler: Two-component, semirigid, 100 percent solids, epoxy resin with a Shore A hardness of 80 per ASTM D 2240.
- 2) Bonding Agent: ASTM C 1059, Type II, non-redispersible, acrylic emulsion or styrene butadiene.
- 3) Epoxy-Bonding Adhesive: ASTM C 881, two-component epoxy resin, capable of humid curing and bonding to damp surfaces, of class and grade to suit requirements, and as follows:
 - a) Type II, non-load bearing, for bonding freshly mixed concrete to hardened concrete.
 - b) Types I and II, non-load bearing, for bonding hardened or freshly mixed concrete to hardened concrete.
 - c) Types IV and V, load bearing, for bonding hardened or freshly mixed concrete to hardened concrete.
- 4) Cementitious Coatings: Cement based polymer modified concrete finishing materials. Available Products subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, the following:
 - a) ProFinish by Bonded Materials
 - b) Polycoat by Tremcrete Systems Incorporated
 - c) Durus by Durus High Tech Cement
 - d) MBT RS-1150 by Master Builders Technologies.
- 5) Sleeves:
 - a) Schedule 40 pipe, galvanized per ASTM A53.
 - b) Schedule 40 PVC Pipe.

L. Repair Materials

- 1) Repair Underlayment: Cement-based, polymer-modified, self-leveling product that can be applied in thicknesses from 1/8 inch

and that can be feathered at edges to match adjacent floor elevations. Products shall contain no added gypsum.

- a) Cement Binder: ASTM C 150, Portland cement or hydraulic or blended hydraulic cement as defined in ASTM C 219.
 - b) Primer: Product of underlayment manufacturer recommended for substrate, conditions, and application.
 - c) Aggregate: Well-graded, washed gravel, 1/8 to 1/4 inch or coarse sand as recommended by underlayment manufacturer.
 - d) Compressive Strength: Not less than 4000 psi (27.6 MPa) at 28 days when tested according to ASTM C 109/C 109M.
- 2) Repair Topping: Traffic-bearing, cement-based, polymer-modified, self-leveling product that can be applied in thicknesses from 1/4 inch. Products shall contain no added gypsum.
- a) Cement Binder: ASTM C 150, Portland cement or hydraulic or blended hydraulic cement as defined in ASTM C 219.
 - b) Primer: Product of topping manufacturer recommended for substrate, conditions, and application.
 - c) Aggregate: Well-graded, washed gravel, 1/8 to 1/4 inch or coarse sand as recommended by topping manufacturer.
 - d) Compressive Strength: Not less than 5500 psi (39 MPa) at 28 days when tested according to ASTM C 109/C 109M.

SP 39.5 CONCRETE MIXES QUALITY

A. Prepare design mixes for each type and strength of concrete determined by either laboratory trial mix or field test data bases, as follows:

- 1) Proportion normal-weight concrete according to ACI 211.1 and ACI 301.

B. Cementitious Materials: For concrete exposed to deicers, limit percentage, by weight, of cementitious materials other than Portland cement according to ACI 301 requirements.

C. Limit water-soluble, chloride-ion content in hardened concrete per ACI 318 Chapter 4 for corrosion protection of reinforcing steel.

D. Concrete Slump:

<u>Types of Construction</u>	<u>Slump in Inches</u>
Footing	4 (max.)
Slab on Grade	3-1/2" (max.)

E. Admixtures: May be used to improve the quality of concrete, provided that prior approval from the Officer-in-Charge of Construction is obtained. Use admixtures according to manufacturer's written instructions.

- 1) Use water-reducing admixture or high-range water-reducing admixture (superplasticizer) in concrete, as required, for placement and workability.
- 2) Use water-reducing and retarding admixture when required by high temperatures, low humidity, or other adverse placement conditions.
- 3) Use water-reducing admixture in pumped concrete, concrete required to be watertight, and concrete with a water-cementitious materials ratio below 0.55.

SP 39.6 CONSTRUCTION

A. Concrete Mixing

- 1) Ready-Mixed Concrete: Measure, batch, mix, and deliver concrete according to ASTM C 94, and ASTM C 1116 and furnish batch ticket information. Batch ticket information shall include design mix reference, water that can be added at the jobsite, and admixtures. For transit mixing, complete not less than 70 revolutions of the drum at the manufacturer's rated mixing speed. Discharge concrete into its final position within 90 minutes after introduction of batch water to the cement. If a retarder admixture is used, the discharge time limit of 90 minutes may be increased by the time specified for retardation by the admixture manufacturer or the concrete supplier. Mix concrete a minimum of one minute at mixing speed immediately prior to discharge.
- 2) Project-Site Mixing: Measure, batch, and mix concrete materials according to ASTM C 94. Mix concrete materials in appropriate drum-type batch machine mixer.
 - a) For mixer capacity of 1 cu. yd.0.76 cu. m or less, continue mixing at least one and one-half minutes, but not more than five minutes after all ingredients are in mixer, before any part of batch is released.
 - b) For mixer capacity larger than 1 cu. yd.0.76 cu. m, increase mixing time by 15 seconds for each additional 1 cu. yd.0.76 cu. m.
 - c) Provide batch ticket for each batch discharged and used in the Work, indicating Project identification name and number, date, mix type, mix time, quantity, and amount of water added. Record approximate location of concrete placement in structure.
 - d) Hand mixed concrete will not be allowed, except to make up shortages for fence post footing, thresholds, curbs and gutters, thrust block and utility trench encasements.

B. Placing Concrete

1) Before placing concrete, verify that installation of formwork, reinforcement, and embedded items is complete and that required inspections have been performed. Provide one day notification to the Officer-in-Charge of Construction for each scheduled pour.

2) Convey concrete from mixer to the place of final deposit rapidly by methods that prevent segregation or loss of ingredients and will insure the required quality of concrete. Use conveying equipment, conveyors, hoppers, baffles, chutes, pumps that are sized and designed to prevent cold joints from occurring and prevent segregation in discharged concrete. Clean conveying equipment before each placement.

3) Deposit concrete continuously or in layers of such thickness that no new concrete will be placed on concrete that has hardened enough to cause seams or planes of weakness. If a section cannot be placed continuously, provide construction joints as specified. Deposit concrete to avoid segregation.

4) Deposit concrete in forms in horizontal layers with proper consolidation into previous layers and in a manner to avoid inclined construction joints. Place each layer while preceding layer is still plastic, to avoid cold joints. For high wall pours (above 12 feet), the Contractor must show its experience and demonstrate its proficiency before the City will permit pours in excess of 12 feet.

a) Consolidate placed concrete with mechanical vibrating equipment. Use equipment and procedures for consolidating concrete recommended by ACI 309R.

b) Do not use vibrators to transport concrete inside forms. Insert and withdraw vibrators vertically at uniformly spaced locations no farther than the visible effectiveness of the vibrator. Place vibrators to rapidly penetrate placed layer and at least 6 inches into preceding layer. Do not insert vibrators into lower layers of concrete that have begun to lose plasticity. At each insertion, limit duration of vibration to time necessary to consolidate concrete and complete embedment of reinforcement and other embedded items without causing mix constituents to segregate.

c) Make construction joints only where located on Drawings unless otherwise approved by the City. Plan pours to continuously place concrete from one construction joint to another.

5) Hot-Weather Placement: Place concrete according to recommendations in ACI 305R and as follows, when hot-weather conditions exist:

a) Cool ingredients before mixing to maintain concrete temperature below 90 deg F at time of placement. Chilled mixing water or chopped ice may be used to control

temperature, provided water equivalent of ice is calculated to total amount of mixing water. Using liquid nitrogen to cool concrete is the Contractor's option.

b) Cover steel reinforcement with water-soaked burlap so steel temperature will not exceed ambient air temperature immediately before embedding in concrete.

c) Fog-spray forms, steel reinforcement, and subgrade just before placing concrete. Keep subgrade moisture uniform without standing water, soft spots, or dry areas.

C. Curing

1) General: Protect freshly placed concrete from premature drying and excessive cold or hot temperatures. Comply with ACI 306.1 for cold-weather protection and with recommendations in ACI 305R for hot-weather protection during curing.

2) Evaporation Retarder: Apply evaporation retarder to unformed concrete surfaces before and during finishing operations. Apply according to manufacturer's written instructions after placing, screeding, and bull floating or darbying concrete, but before float finishing.

3) Formed Surfaces: Cure formed concrete surfaces, including underside of beams, supported slabs, and other similar surfaces. If forms remain during curing period, moist cure after loosening forms. If removing forms before end of curing period, continue curing by one or a combination of the curing methods listed in paragraph 39.6 C.4

4) Unformed Surfaces: Begin curing immediately after finishing concrete. Cure unformed surfaces, including floors and slabs, concrete floor toppings, and other surfaces, by one or a combination of the following methods:

a) Moisture Curing: Keep surfaces continuously moist for not less than seven days with the following materials:

(1) Water.

(2) Continuous water-fog spray.

(3) Absorptive cover, water saturated, and kept continuously wet. Cover concrete surfaces and edges with 12-inch lap over adjacent absorptive covers.

b) Moisture-Retaining-Cover Curing: Cover concrete surfaces with moisture-retaining cover for curing concrete, placed in widest practicable width, with sides and ends lapped at least 12 inches, and sealed by waterproof tape or adhesive. Cure for not less than seven days. Immediately repair any holes or tears during curing period using cover material and waterproof tape.

(1) Moist cure or use moisture-retaining covers to cure concrete surfaces to receive floor coverings.

(2) Moist cure or use moisture-retaining covers to cure concrete surfaces to receive penetrating liquid floor treatments.

(3) Cure concrete surfaces to receive floor coverings with either a moisture-retaining cover or a curing compound that the manufacturer recommends for use with floor coverings.

c) Curing Compound: Apply uniformly in continuous operation by spray or roller according to manufacturer's written instructions. Recoat areas subjected to heavy rainfall within three hours after initial application. Maintain continuity of coating and repair damage during curing period.

d) Curing and Sealing Compound: Apply uniformly to floors and slabs indicated in a continuous operation by spray or roller according to manufacturer's written instructions. Recoat areas subjected to heavy rainfall within three hours after initial application where recommended by the manufacturer. Repeat process 24 hours later and apply a second coat. Maintain continuity of coating and repair damage during curing period.

D. Formwork

1) Design, erect, shore, brace, and maintain formwork, according to ACI 301, to support vertical, lateral, static, and dynamic loads, and construction loads that might be applied, until concrete structure can support such loads.

2) Construct formwork so concrete members and structures are of size, shape, alignment, elevation, and position indicated, within tolerance limits of ACI 117.

3) Construct forms to prevent loss of concrete mortar.

4) Fabricate forms for easy removal without hammering or prying against concrete surfaces. Provide crush or wrecking plates where stripping may damage cast concrete surfaces. Provide top forms for inclined surfaces steeper than 1.5 horizontal to 1 vertical. Kerf wood inserts for forming keyways, reglets, recesses, and the like, for easy removal.

a) Do not use rust-stained steel form-facing material.

5) Set edge forms, bulkheads, and intermediate screed strips for slabs to achieve required elevations and slopes in finished concrete surfaces. Provide and secure units to support screed strips; use strike-off templates or compacting-type screeds. Maintain the integrity of the vapor retarder membrane.

6) Provide temporary openings for cleanouts and inspection ports where interior area of formwork is inaccessible. Close openings

with panels tightly fitted to forms and securely braced to prevent loss of concrete mortar. Locate temporary openings in forms at inconspicuous locations.

7) Chamfer exterior corners and edges of permanently exposed concrete.

8) Form openings, chases, offsets, sinkages, keyways, reglets, blocking, screeds, and bulkheads required in the Work. Determine sizes and locations from trades providing such items.

9) Clean forms and adjacent surfaces to receive concrete. Remove chips, wood, sawdust, dirt, and other debris just before placing concrete.

10) Retighten forms and bracing before placing concrete, as required, to prevent mortar leaks and maintain proper alignment.

11) Coat contact surfaces of forms with form-release agent, according to manufacturer's written instructions, before placing reinforcement.

E. Removal of Forms

1) General: Formwork, for sides of beams, walls, columns, and similar parts of the Work, that does not support weight of concrete may be removed after cumulatively curing at not less than 50 deg F(10 deg C) for 24 hours after placing concrete provided concrete is hard enough to not be damaged by form-removal operations and provided curing and protection operations are maintained. The 24 hour period may be reduced to 12 hours in compliance with ACI 347R with prior approval from the Contracting Officer.

2) Leave formwork, for shear key, restrictor boot, seat extender, beam soffits, joists, slabs, and other structural elements, that supports weight of concrete in place until concrete has achieved the following:

a) 28-day design compressive strength.

b) Determine compressive strength of in-place concrete by testing representative field or laboratory-cured test specimens according to ACI 301.

c) Remove forms only if shores have been arranged to permit removal of forms without loosening or disturbing shores.

3) Clean and repair surfaces of forms to be reused in the Work. Split, frayed, delaminated, or otherwise damaged form-facing material will not be acceptable for exposed surfaces. Apply new form-release agent.

4) When forms are reused, clean surfaces, remove fins and laitance, and tighten to close joints. Align and secure joints to avoid offsets. Do not use patched forms for exposed concrete surfaces unless approved by the Contracting Officer.

F. Shores and Reshores

- 1) Comply with ACI 318, ACI 318M, ACI 301, and recommendations in ACI 347R for design, installation, and removal of shoring and reshoring.
- 2) Plan sequence of removal of shores and reshore to avoid damage to concrete. Locate and provide adequate reshoring to support construction without excessive stress or deflection.

G. Joints

- 1) General: Construct joints true to line with faces perpendicular to surface plane of concrete.
- 2) Construction Joints: Install so strength and appearance of concrete are not impaired, at locations indicated or as approved by Contracting Officer.
 - a) Place joints perpendicular to main reinforcement. Continue reinforcement across construction joints, unless otherwise indicated.
 - b) Form from preformed galvanized steel, plastic keyway-section forms, or bulkhead forms with keys, unless otherwise indicated. Embed keys at least 1-1/2 inches into concrete.
 - c) Use epoxy-bonding adhesive at locations where fresh concrete is placed against hardened or partially hardened concrete surfaces.

H. Surface Finishes

All concrete shear keys, restrictor boots, and repair patches shall be finished to a smooth surface, and shall conform, as close as possible, to the existing, adjacent concrete surfaces.

SP 39.7 MISCELLANEOUS CONCRETE ITEMS

A. Filling In: Fill in holes and openings left in concrete structures, unless otherwise indicated, after work of other trades is in place. Mix, place, and cure concrete, as specified, to blend with in-place construction. Provide other miscellaneous concrete filling indicated as required to complete Work.

SP 39.8 JOINT FILLING

A. Prepare, clean, and install joint filler according to manufacturer's written instructions. Defer joint filling as long as possible. Do not fill joints until construction traffic has permanently ceased.

B. Remove dirt, debris, saw cuttings, curing compounds, and sealers from joints; leave contact faces of joint clean and dry.

C. Install semirigid epoxy joint filler full depth in saw-cut joints and at least 2 inches deep in formed joints. Overfill joint and trim joint filler flush with top of joint after hardening.

SP 39.9 CONCRETE SURFACE REPAIRS

A. Defective Concrete: Repair and patch defective areas. Remove and replace concrete that cannot be repaired and patched to the Officer-in-Charge of Construction's approval.

B. Patching Mortar: Mix dry-pack patching mortar, consisting of one part Portland cement to two and one-half parts fine aggregate passing a No. 16(1.2-mm) sieve, using only enough water for handling and placing.

C. Repairing Formed Surfaces: Surface defects include color and texture irregularities, cracks, spalls, air bubbles, honeycombs, rock pockets, fins and other projections on the surface, and stains and other discolorations that cannot be removed by cleaning.

- 1) Immediately after form removal, cut out honeycombs, rock pockets, and voids more than [1/2 inch] in any dimension in solid concrete but not less than [1 inch] in depth. Make edges of cuts perpendicular to concrete surface. Clean, dampen with water, and brush-coat holes and voids with bonding agent. Fill and compact with patching mortar before bonding agent has dried. Fill form-tie voids with patching mortar or cone plugs secured in place with bonding agent.

- 2) Repair defects on surfaces exposed to view by blending white Portland cement and standard Portland cement so that, when dry, patching mortar will match surrounding color. Patch a test area at inconspicuous locations to verify mixture and color match before proceeding with patching. Compact mortar in place and strike off slightly higher than surrounding surface.

- 3) Repair defects on concealed formed surfaces that affect concrete's durability and structural performance as determined by the Officer-in-Charge of Construction.

D. Repairing Unformed Surfaces:

- 1) Repair finished surfaces containing defects. Surface defects include spalls, popouts, honeycombs, rock pockets, crazing and cracks in excess of 0.01 inch wide or that penetrate to reinforcement or completely through unreinforced sections regardless of width, and other objectionable conditions.

- 2) Repair defective areas, except random cracks and single holes 1-inch or less in diameter, by cutting out and replacing with fresh concrete. Remove defective areas with clean, square cuts and expose steel reinforcement with at least 3/4-inch clearance all around. Dampen concrete surfaces in contact with patching concrete and apply bonding agent. Mix patching concrete of same materials and mix as original concrete except without coarse aggregate. Place, compact, and finish to blend with adjacent finished concrete. Cure in same manner as adjacent concrete.

3) Repair random cracks and single holes 1-inch or less in diameter with patching mortar. Groove top of cracks and cut out holes to sound concrete and clean off dust, dirt, and loose particles. Dampen cleaned concrete surfaces and apply bonding agent. Place patching mortar before bonding agent has dried. Compact patching mortar and finish to match adjacent concrete. Keep patched area continuously moist for at least 72 hours.

E. Perform structural repairs of concrete, subject to the Officer-in-Charge of Construction's approval, using epoxy adhesive and patching mortar.

F. Repair materials and installation not specified above may be used, subject to the Officer-in-Charge of Construction's approval.

SP 39.10 FIELD QUALITY CONTROL

A. Testing Agency: Engage a qualified independent testing and inspecting agency to sample materials, perform tests, and submit test reports during concrete placement according to requirements specified in this Article.

B. Testing: At least one series of control tests (slump, air content, unit weight, and temperature) shall be conducted for each 100 yd³, or fraction thereof, of each mixture class of concrete placed in any one day. Care shall be taken when sampling to obtain a random sample reflecting true project conditions. The time and truck number shall be reported when the samples are secured. All data required by ASTM C 94 shall be included on the delivery tickets. At a minimum, test the first batch of concrete each day for slump, temperature and air content.

Composite samples of concrete shall be obtained in accordance with AASHTO T 23. Four compressive strength specimens shall be made from each composite concrete sample in accordance with AASHTO T 22. Field sampling of fresh concrete shall be in accordance with AASHTO T 141. Test for slump of the composite concrete sample for each strength test, and whenever consistency of concrete appears to vary, in accordance with AASHTO T 119. Weight per cubic foot yield and air content shall be tested according to AASHTO T 121. Ambient air temperature and the composite concrete sample temperature at the time of sampling for each test strength in accordance with ASTM C 1064.

C. When strength of field-cured cylinders is less than 85 percent of companion laboratory-cured cylinders, the Contractor shall evaluate operations and provide corrective procedures for protecting and curing in-place concrete.

D. Strength of each concrete mix will be satisfactory if every average of any three consecutive compressive-strength tests equals or exceeds specified compressive strength and no compressive-strength test value falls below specified compressive strength by more than 500 psi (3.4 MPa).

E. Test results shall be reported in writing to the Officer-in-Charge of Construction, the concrete manufacturer, and the Contractor within 48 hours of testing. Reports of compressive-strength tests shall contain Project identification name and number, date of concrete placement, name of concrete testing and inspecting agency, location of concrete batch in Work, design

compressive strength at 28 days, concrete mix proportions and materials, compressive breaking strength, and type of break for both 7-and 28-day tests.

F. Nondestructive Testing: Impact hammer, sonoscope, or other nondestructive device may be permitted by the Officer-in-Charge of Construction but will not be used as sole basis for approval or rejection of concrete.

G. Moisture Vapor Emission Test: Standard test method meeting ASTM F-1869.

H. Additional Tests: Testing and inspecting agency shall make additional tests of concrete when test results indicate that slump, air entrainment, compressive strengths, or other requirements have not been met, as directed by the Officer-in-Charge of Construction. Testing and inspecting agency may conduct tests to determine adequacy of concrete by cored cylinders complying with ASTM C 42 or by other methods as directed by the Officer-in-Charge of Construction.

SP 39.10 PAYMENT

Payment for concrete shall be considered as included in the cost of the CRM wall construction and shall not be paid for directly. The cost for reinforcing steel , finish and testing shall be considered as included in the cost of the concrete, and shall not be paid for directly. The cost to roughen and clean the concrete surfaces prior to pouring new concrete shall be considered as included in the cost of the concrete, and shall not be paid for directly. The cost to spalling and crack repair shall be considered as included in the cost of the concrete, and shall not be paid for directly."

END OF SECTION SP 39

Amend Section 48 - REINFORCING STEEL to read as follows:

"SECTION SP 48 - REINFORCING STEEL

SP 48.1 DESCRIPTION

This work shall include furnishing, fabricating, and placing reinforcement of the shape, size and dimensions shown on the drawings and as specified under these specifications.

SP 48.2 SUBMITTALS

A. Steel Reinforcement Shop drawings: Details of fabrication, bending, and placement, prepared according to ACI 315, "Details and Detailing of Concrete Reinforcement." Include material, grade, bar schedules, stirrup spacing, bent bar diagrams, arrangement, and supports of concrete reinforcement. Include special reinforcement required for openings through concrete structures.

SP 48.3 MATERIALS

Deformed Bar Reinforcement: ASTM A 615/A 615M, Grade 60.

SP 48.4 CONSTRUCTION DETAILS

A. Hooks and Bend Dimensions: Dimensions of hooks and diameters of bends shall be in accordance with the contract documents. When dimensions of hooks or diameter of bends are not indicated in the contract documents, they shall conform to AASHTO LRFD Bridge Design Specifications, Third Edition, Article 5.10.2 - Hooks and Bends and ACI Building Code.

B. Covering: The minimum concrete cover should comply with AASHTO LRFD Bridge Design Specifications, Ninth Edition, Article 20.6.1.3 - Concrete Cover and ACI Building Code unless specified otherwise.

Unless specified or noted otherwise, concrete cover measured from concrete surface to the near face of reinforcing bars shall be: 3 inches minimum when concrete is placed against ground; and 2 inches minimum elsewhere.

C. Splicing: Except as shown on the plans, splices in the reinforcing steel will not be permitted without the approval of the Officer-in-Charge of Construction. However, where permitted, the length of lap shall not be less than 48 bars diameters or 24 inches, whichever is longer.

SP 48.4 PAYMENT

The Officer-in-Charge of Construction will not pay for reinforcing steel separately and will consider cost as included in the contract prices for the various contract pay items. The work is for the work prescribed in this section and the Contract Documents."

END OF SECTION SP 48

The following Section shall be made a part of the Standard Specifications:

"SECTION SP 69 - EARTHWORK

SP 69.1 GENERAL

Unless otherwise specified herein or in the Geotechnical Investigation Report, all work shall also conform to the following sections of the Standard Specifications:

- A. Clearing and Grubbing - Section 10
- B. Crushed Rock - Section 15
- C. Borrow - Section 16
- D. Subgrade - Section 29

SP 69.2 SUBGRADE

Excavation is not required for this project. Earthwork only involves fill to be placed above a CLSM layer to create a finished bank. The subgrade will be the top of the CLSM layer behind the new channel wall.

SP 69.3 IMPORTED FILL

Imported fill shall consist of borrow material as specified in Item 69.1.C. and as identified in the Project Technical Report which have been made part of the Contract Documents

SP 69.4 EXECUTION

Earthwork shall be performed as directed in the Geotechnical Report prepared for this project which has been made part of the Contract Documents.

SP 69.4 MEASUREMENT AND PAYMENT

The Officer-in-Charge will not measure the work under this section for payment. The Officer-in-Charge will not pay for the work under this section and will consider this work as included in the contract prices for the various contract pay items related to CRM wall de-construction and re-construction."

END OF SECTION 69

The following Section shall be made part of the Standard Specifications

"SECTION SP 73 - CONCRETE RUBBLE MASONRY (CRM)

SP 73.1 GENERAL

Concrete Rubble Masonry (CRM) shall be constructed following SECTION 508 - CONCRETE RUBBLE MASONRY as contained in HAWAII STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION STATE OF HAWAII, CURRENT EDITION, shall be utilized.

73.2 MATERIALS

Materials as contained in HAWAII STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION STATE OF HAWAII, CURRENT EDITION, Section 508.02 shall be utilized.

73.3 CONSTRUCTION

Construction as contained in HAWAII STANDARD SPECIFICATIONS For ROAD AND BRIDGE CONSTRUCTION STATE OF HAWAII, CURRENT EDITION with the exception that Section 508.03 related to excavation and backfill shall be shall be deleted and SPECIAL PROVISION 69 EARTHWORK of the Contract Documents shall be utilized.

73.4 MEASUREMENT AND PAYMENT

Concrete Rubble Masonry (CRM) following State Standard Specifications for Grouted rubble paving, including deconstruction of grouted rubble paving where specified and shown on the plans and including construction of concrete wall base shall be paid for on a lump sum basis as stated in the offer and, shall include full compensation for all material, tools and labor necessary to complete the work."

END OF SECTION SP 73

The following Section shall be made a part of the Standard Specifications:

"SECTION SP 150 - EXISTING UTILITIES

SP 150.1 DESCRIPTION

This section shall supplement Subsection 12.3 "PROTECTION OF EXISTING IMPROVEMENTS", of the Standard Specifications and Subsection 2.5 (b), "Utilities, underground", of the General Instructions and Subsection 5.2.21 of the General Conditions, and Section 3.9 "Differing Site Conditions for Construction Projects", of the General Conditions.

SP 150.2 Contractor's Duty to Coordinate Utility Work

The Contractor shall contact and cooperate with each affected utility owner in order for the work to progress on schedule and without unreasonable disruption of such utility services. If the work calls for permanent utility service installations or corrections to, or modifications of existing utilities, the Contractor is responsible for scheduling and coordinating such work with appropriate utility owners. If the work required by the contract documents conflicts with the instructions, demands, or requirements of a utility owner, the Contractor shall notify the Officer-in-Charge immediately. The Contractor shall furnish the Officer-in-Charge with evidence that the Contractor has provided all relevant utility owners reasonable opportunity to review the drawings.

When the City has a separate agreement with a utility owner for work to be performed within the worksite, the Contractor shall make available all portions of the work and the worksite necessary for the utility owners to do their work.

The Contractor hereby holds the City harmless against all risks arising from acts or omissions of utility owners that damage the work, or create delays, disruptions, and additional cost to the Contractor in the performance of the work. Contract time for the work may be extended on account of acts and omissions of utility owners that delay the work without fault of the Contractor.

The Contractor accepts the risk of differing site conditions and the Contractor accepts the conditions at the construction site as they may eventually be found to exist. Any damages to existing utilities shall be repaired wholly at the Contractor's own cost and expense. If the Officer-in-Charge determines that the existing site conditions requires a design change to the project, a price adjustment may be permitted by the Officer-in-Charge.

The Contractor may relocate or adjust the utility lines or service connections for its convenience with the permission of the owner of the utility and the Officer-in-Charge at no increase in contract price or contract time.

SP 150.3 Contractor's Duty to Locate and Protect Utility

A. Before beginning any work at the worksite, the Contractor shall research, ascertain and identify the exact horizontal location and depth of all utilities within the project area where a conflict could occur with the proposed work. The Contractor may probe for utilities at critical locations with approval of the Officer-in-Charge, utilize the One-Call Center system, use electromagnetic locating systems, ground penetrating radar systems, or other utility locating systems, research as-built information from the utility

companies/agencies and other development/project plans to obtain the utility information. The location of existing utilities shown on the plans is approximate and does not accurately reflect all the utilities.

B. Within one (1) month after notice-to-proceed (NTP) or at least two (2) weeks prior to proceeding with any work which may affect utilities, the Contractor shall submit to the Officer-in-Charge in writing, all locations where a conflict between an existing utility and the proposed work exists. Based on the redesign and change in work, a time extension may be granted. No cost claims related to the time extension shall be granted.

C. The Contractor shall acquaint all personnel working near utilities with the type, size, location, and depth of the utilities, as well as the consequences that might result from disturbances. The Contractor shall take reasonable steps to protect the utilities and prevent service disruption.

D. Whenever the Contractor damages a utility or causes any interruption to any utility service, the Contractor shall promptly notify the Officer-in-Charge, the affected utility owner, and the appropriate governmental authorities. The Contractor shall be responsible for the safety and protection of the public and the utility. The Contractor shall cooperate with the affected utility owner, and the appropriate governmental authorities in the restoration of service. The Contractor shall be responsible for all costs associated with its repair and restoration of service at no increase in contract price or contract time. No time extensions shall be granted for time delays in coordinating with the utility companies/agency and delays in work being done by the utility companies/agency. Compensation to the utility company/agency for any repair work shall be made directly between the Contractor and the utility company/agency. It is essential that the Contractor thoroughly research and identify all potential conflicting utilities within the one (1)-month period of NTP and exercise caution in excavating near utilities.

SP 150.4 DEPARTMENT OF ENVIRONMENTAL SERVICES

The Contractor shall notify the Department of Environmental Services' Collection System Maintenance Division at (808) 768-7272 immediately whenever a sewer facility is damaged. This number is answered twenty four (24) hours a day, seven (7) days a week.

All Contractor-related damages which are knowingly not reported immediately to the Collection System Maintenance Division, and results in sewer backups, spills, and overflow; the Contractor shall be billed for the actual cost of the clean-up by the City, and any subsequent fines imposed upon the City by the Environmental Protection Agency (EPA) and/or State Department of Health shall be backcharged to the Contractor.

SP 150.5 HAWAIIAN ELECTRIC COMPANY (HECO)

A. The Contractor shall exercise extreme caution when the excavation and construction crosses or is in close proximity of underground electrical facilities and maintain adequate clearance for their equipment while working close to and/or under the overhead facilities.

B. The Contractor shall comply with the directions of the State of Hawaii Occupational Safety and Health Law.

C. The Contractor shall obtain an excavation permit from HECO Mapping and Records Division, 4th floor, 820 Ward Avenue, two (2) weeks prior to start of construction.

D. For verifying the location of underground duct lines and for assistance in providing proper support and protection of the underground duct lines, the Contractor shall contact HECO Underground Division at (808) 548-7846 a minimum of seventy-two (72) hours in advance. Should a HECO inspector be required on the job site, call (808) 543-7920.

E. Should it become necessary, any work required to relocate and/or repair HECO facilities except perhaps raising of manholes shall be done by HECO forces. The Contractor shall be responsible for all coordination.

F. The Contractor shall be liable for any damages to HECO'S existing facilities.

G. The Contractor shall report any damages to HECO's facilities to the HECO Trouble Dispatcher at (808) 548-7961.

SP 150.6 HAWAIIAN TELCOM

The Contractor shall call HAWAIIAN TELCOM's Inspection Branch at (808) 546-6960 a minimum of forty-eight (48) hours prior to adjusting HAWAIIAN TELCOM structures.

Prior to commencing cold planing and reconstruction operations, the Contractor shall verify and locate underground communication lines, including fiber optic lines. The Contractor shall exercise due diligence in toning, locating, and protecting these communication lines. The Contractor shall be responsible for and shall pay for all damages to existing communication lines.

SP 150.7 BOARD OF WATER SUPPLY (BWS)

A. Unless otherwise specified, all materials and construction of water system facilities and appurtenances shall be in accordance with the Honolulu BWS WATER SYSTEM STANDARDS, Volume 1, and the APPROVED MATERIAL LIST AND STANDARD DETAILS FOR WATER SYSTEM CONSTRUCTION, Volume 2, dated 2002.

B. Prior to any excavating, the Contractor shall verify in the field the location of existing water mains and appurtenances.

C. The Contractor shall notify the BWS one (1) week prior to commencing work on the water facilities.

Windward Area - (808) 748-5671
Metropolitan Area - (808) 748-5601
All Other Areas - (808) 748-5611

D. Whenever any brick type water meter box with a cast iron frame and cover to be adjusted is encountered, the following shall apply:

1. The Contractor shall salvage the frame and cover and deliver them to the BWS, Kalihi Yard, at 2442 Kini Place.
2. The BWS shall replace the frame and cover, one for one, with a concrete type water meter box.

3. The Contractor shall install the concrete type meter box to the new sidewalk grade.
4. Whenever any Type III brick type meter box or bigger is encountered, the Contractor shall furnish the frame and cover.
5. Any adjustments to the existing water system required during construction to meet requirements of BWS Standards, whether shown on the plans or not, shall be done by the Contractor at no cost to the BWS.

SP 150.8 DEPARTMENT OF TRANSPORTATION SERVICES (DTS)/DEPARTMENT OF INFORMATION TECHNOLOGY (DIT)

A. The Contractor shall notify the Traffic Control Branch, Department of Transportation Services at (808) 768-8388, seventy-two (72) hours prior to any construction within any signalized intersection.

B. Prior to commencing cold planing and reconstruction operations, the Contractor shall verify and locate underground traffic signal and communication lines/conduits, including fiberoptic lines/conduits. The Contractor shall exercise due diligence in toning, locating, and protecting these traffic signal and communication lines/conduits. The Contractor shall be responsible for any and all damages to existing traffic signal and communication lines/conduits, including vehicle detector loops, as a result of the work. All damages shall be repaired by the Contractor at no additional cost to the City.

C. The Contractor shall notify, immediately, any damages to existing traffic signal lines/conduits and loop detectors to the Traffic Control Branch at (808) 564-6101.

SP 150.9 CHARTER COMMUNICATIONS, INC. (aka SPECTRUM)

A. The location of cable television (CATV) facilities shown on the plans are from existing records with varying degrees of accuracy as to its actual fixed location. The Contractor shall use extreme caution when working in close proximity of CATV facilities.

B. For any field assistance or verification of CATV facilities, the Contractor shall call the OSP Engineering Hotline at (808) 625-8570 or send an email to: haw.engineering.research@charter.com.

C. Any work required to relocate CATV facilities shall be done by Charter Communications, Inc., and the Contractor shall be responsible for all coordination requirements and associated applicable costs.

D. Any damage to Charter Communications, Inc.'s facilities shall be reported immediately to Charter Communications, Inc.'s Regional Operation Center at (808) 625-8169.

SP 150.10 HAWAII GAS

A. Hawaii Gas gas pipelines in the project area are plastic coated and cathodically protected. The Contractor shall be extremely careful when working near these gas pipelines.

B. Written clearances must be obtained from Hawaii Gas, Maps and Records Department, 515 Kamakee Street, at least five (5) working days prior to starting excavation near these gas pipelines.

C. Since gas line locations on field maps are approximate, the Contractor, after obtaining written clearance, shall call Hawaii One Call Center a minimum of five (5) working days before starting excavation to arrange for field location of existing gas pipelines. The telephone number is 811 or (866) 423-7287.

D. The Contractor shall excavate and backfill around gas pipelines in the presence of a representative of Hawaii Gas. All backfill within six (6) inches of any gas pipeline shall be select cushion material approved by Hawaii Gas.

E. For relocation of any gas pipeline, the Contractor shall notify Hawaii Gas five (5) working days before starting work. The telephone number is (808) 535-5933. The Contractor shall provide the necessary excavation and backfill, obtain traffic permits, and restore pavement, sidewalks, and other facilities. Any relocation of gas facilities shall be done by Hawaii Gas and paid for by the Contractor.

F. The Contractor shall notify Hawaii Gas immediately after any damage has been caused to existing gas pipelines, coatings, or its cathodic protection devices. The telephone number is (808) 526-0066, twenty-four (24) hours a day. The Contractor shall be liable for any damage to Hawaii Gas facilities. Repair work on such damage shall be done by Hawaii Gas with payment for this work to be borne by the Contractor.

G. Minimum vertical and horizontal clearance between the gas pipelines and other pipelines, conduits, ductlines, or other facilities shall be twelve (12) inches. Adequate support and protection for gas pipelines exposed in the trench shall be provided by the Contractor and approved by Hawaii Gas.

H. The Contractor shall work in an expeditious manner in order to keep uncovered gas pipelines exposed for as short a period of time as possible.

SP 150.11 HAWAII-AMERICAN WATER COMPANY

For field assistance or verification of the sewer system facilities in the Hawaii Kai area, the Contractor shall call Hawaii American Water Company. The telephone number is 1-888-237-1333, twenty-four (24) hours a day.

SP 150.12 MEASUREMENT AND PAYMENT

The Officer-in-Charge will not measure coordinating, locating, and protecting existing utilities for payment. The Officer-in-Charge will not pay for coordinating, locating, and protecting existing utilities separately and will consider the cost for coordinating, locating, and protecting existing utilities as included in the contract prices for the various contract pay items. The cost is for the work prescribed in this section and the contract documents."

END OF SECTION SP 150

The following Section shall be made a part of the Standard Specifications:

"SECTION SP 151 - DESCRIPTION OF WORK

The project is for the following:

Work Area 1: Removal of 77 linear feet (80 cubic yards) of concrete rubble masonry (CRM) that is bowing, followed by re-construction of the same 77 linear feet with grouted rubble masonry built to the details contained in these plans. The new 77 linear Feet of wall will require 140 cubic yards of CRM. The exterior stones are to be sorted so that exterior stones match the current exterior wall appearance. Stones forming the CRM wall interior shall be imported. The excess Work Area 1 interior stones shall be used for Work Area 2 CRM wall construction.

Work Area 2: De-construction of 41 linear feet of temporary CLSM wall that has been washed away during a rainfall event. De-construction of the temporary CLSM wall is approximately (35 cubic yards. Re-construction of the new CRM wall (70 cubic yards) shall use the sorted stones from Work Area 1 for the exterior wall face. Internal stones required shall be imported as required.

END OF SECTION SP 151

The following Section shall be made a part of the Standard Specifications:

"SECTION SP 153 - DELETION OF WORK"

The OIC reserves the right to delete any portion of the work in the Offer and no payment shall be made for the deleted work."

END OF SECTION SP 153

The following Section shall be made a part of the Standard Specifications:

"SECTION SP 154 - PRICE ADJUSTMENT DUE TO NTP ISSUANCE

The City may issue the Notice to Proceed (NTP) up to 365 calendar days after the execution of the contract. Should the NTP be issued within 365 calendar days of the date of contract execution, no claim for any delays or cost escalation shall be considered.

If the NTP is issued more than 365 calendar days after the date of contract execution, the Contractor may submit a request to adjust any unit bid price(s) and/or lump sum bid price(s) contained in the Offer. The price adjustment shall be based on the "20-City Average Construction Cost Index (CCI)" from the latest weekly publication of the *Engineering News Record* magazine. The adjusted amount will be determined by computing the average yearly rate of increase in the 20-City Average CCI over the previous twelve (12) months. Each price adjustment is subject to the availability of funds. The adjusted bid prices must be used for payment of services provided.

Once the NTP has been issued, no further price adjustments will be given and the Contractor must perform all work at the latest readjusted prices."

END OF SECTION SP 154

The following Section shall be made a part of the Standard Specifications:

"SECTION SP 160 - SURVEYS AND CONSTRUCTION STAKES, LINES AND GRADE

SP 160.1 GENERAL

Notwithstanding the commencement requirements of the General Conditions, the following also applies:

SP 160.2 CONTRACTOR RESPONSIBILITIES

The Officer-in-Charge shall identify bench marks and control points for the Contractor's guidance. The Contractor shall furnish all other land surveys and construction stakeout necessary for the completion and acceptance of this project. All survey work shall be laid out and checked by a Surveyor or Civil Engineer licensed in the State of Hawaii. The Contractor shall furnish a certificate or document signed by the Surveyor or Civil Engineer certifying that the completed lines, levels and elevations are in conformity with the contract.

The Contractor shall verify all lines, levels and elevations indicated in the contract before any excavation or construction begins. Any discrepancy shall be immediately brought to the attention of the Officer-in-Charge and any change shall be made in accordance with this instruction. The Contractor shall not be entitled to any additional payment if they fail to report the discrepancies before proceeding with work within the area affected by the discrepancies.

SP 160.3 MEASUREMENT AND PAYMENT

The Officer-in-Charge will not measure the work under this section for payment. The Officer-in-Charge will not pay for the work under this section and will consider this work as included in the contract prices for the various contract pay items. The cost is for the work prescribed in this section and the contract documents."

END OF SECTION SP 160

The following Section shall be made a part of the Standard Specifications:

"SECTION SP 170 - CERTIFICATION OF COMPLIANCE

The Officer-in-Charge may permit use prior to sampling and testing of certain materials or assemblies accompanied by Certificates of Compliance stating that such materials or assemblies fully comply with the requirements of the contract; when requested by the Officer-in-Charge, substantiating test data shall be furnished with the Certificate of Compliance. The certificate shall be signed by notarized signature of a person having legal authority to bind the manufacturer. Each lot of such materials or assemblies delivered to the work must be accompanied by a Certificate of Compliance in which the lot is clearly identified. Material or assemblies used on the basis of Certificate of Compliance may be sampled and tested at any time and if found not to be in conformity with contract requirements will be subject to rejection whether in place or not."

END OF SECTION SP 170

The following Section shall be made a part of the Standard Specifications:

"SECTION SP 180 - LIQUIDATED DAMAGES

SP 180.1 GENERAL

When the Contractor fails to complete the work or any portion of the work within the time or times specified in the Contract or any extension thereof, it is agreed that the Contractor shall pay to the City the amount specified below.

Liquidated damage per calendar day of delay: \$275.00

The Contractor hereby agrees to pay the amount as liquidated damages, and not by way of penalty, to the City and further authorizes the City to deduct the amount of the damages from monies due the Contractor under the Contract, computed as previously mentioned. If the monies due the Contractor are insufficient or no monies are due the Contractor, the Contractor shall pay the City the difference or the entire amount, whichever may be the case, upon demand by the City."

END OF SECTION SP 180

The following Section shall be made a part of the Standard Specifications:

"SECTION SP 181 - AS-BUILT DRAWINGS

SP 181.1 GENERAL

The following replaces the As-Built Drawings subsection of the General Conditions:

- A. The Contractor shall maintain at the job site one (1) set of full size contract drawings, marking them in red documenting all construction changes, alterations and/or deletions indicated or specified in the contract documents and buried or concealed construction, including location and depth of existing utilities toned.
- B. Where a choice of material or method is permitted herein or where variations in scope of or character of work from that of the original contract are authorized, the drawings shall be marked to define the construction actually provided. Where equipment installation is involved the size, manufacturer's name, model number, power input or output characteristic applicable shall be shown on the As-Built construction.
- C. The representation of such change shall conform to standard drafting practice and shall include such supplementary notes, legends, and details as necessary to clearly portray the As-Built construction. The changes shall be shown in legible block print. The language shall be clear and concise using industry standard terminology to eliminate need for interpretation by others.
- D. The drawings shall be maintained and updated on a monthly basis and are subject to review by the City. The update is a condition of payment for the work performed.
- E. Upon completion of the work, the Contractor shall deliver the marked-up drawings and letter of certification to the OIC indicating the construction is in accordance with City Standards, Specifications and as represented in attached "As-Built Drawings". The City will review the changes, alterations, and/or deletions to the original bid set. If Record Drawing tracings will be prepared, the Contractor shall also sign the following stamp in permanent black ink on the title sheet of the Record Drawing tracings:

RECORD DRAWING TRACINGS

CONTRACTOR

As-Built Drawings

Certified by: _____ Date: _____

Print Name: _____

Company: _____

LICENSED PROFESSIONAL ENGINEER

Prepared by: _____ Date: _____

Print Name: _____

Company: _____

THIS SET OF "RECORD DRAWINGS" IS BASED ON INFORMATION PROVIDED BY THE CONTRACTOR AS "AS-BUILT" DRAWINGS AND HAS NOT BEEN FIELD VERIFIED BY THE LICENSED PROFESSIONAL ENGINEER. "RECORD DRAWINGS" ARE DRAWINGS DEFINED AS RECORD DOCUMENTS PREPARED BY THE LICENSED PROFESSIONAL ENGINEER UPON THE COMPLETION OF CONSTRUCTION. THESE DRAWINGS ARE BASED UPON THE DRAWINGS AND OTHER DATA FURNISHED BY THE CONTRACTOR AND OTHERS SHOWING THE FINAL CONSTRUCTED IMPROVEMENTS, REPRESENTING ALL FIELD MARKUPS, DESIGN CHANGES, AND CHANGES IN THE WORK MADE DURING CONSTRUCTION. THE LICENSED PROFESSIONAL ENGINEER IS NOT RESPONSIBLE FOR FIELD VERIFICATION OF THE ACCURACY AND/OR COMPLETENESS OF THIS INFORMATION AND SHALL NOT BE RESPONSIBLE FOR ANY ERRORS OR OMISSIONS ON THESE DRAWINGS RESULTING FROM ERRONEOUS INFORMATION PROVIDED BY OTHERS.

SP 181.2 MEASUREMENT AND PAYMENT

The OIC will not measure As-Built Drawings for payment. The OIC will pay for the accepted As-Built Drawings on a contract lump sum basis. Payment shall be full compensation for furnishing the necessary material, equipment, and labor to complete the Work in place prescribed in this section and the contract documents."

END OF SECTION SP 181

The following Section shall be made a part of the Standard Specifications:

"SECTION SP 190 - PRESS RELEASE

SP 190.1 DESCRIPTION

The Contractor shall provide project information for a press release to the Officer-in-Charge prior to the start of work on this project. This information shall be submitted to the Officer-in-Charge for review by the Director of the Department of Design and Construction before being publicized. It shall contain, but not be limited to, the following:

1. Map of project area, identifying the street(s) to be affected, together with a general description of work to be undertaken.
2. Date work will start and approximate date of completion.
3. Working hours and days of work.
4. Detour pattern(s), if any, and two-way traffic flow in detour area.
5. Suggestion that motorists use alternative routes, and drive with caution in construction area.
6. If the project will be constructed in phases, include phases and anticipated start and completion date.
7. Posting of No-Parking signs by the Contractor one (1) week prior to construction in the work area.
8. Telephone number for questions related to the project.
9. Any other information which will be of help to the public.

Within seven (7) calendar days from the acceptance of the performance schedule, the Contractor shall submit the schedule together with maps identifying the affected street(s) to the Neighborhood Board(s).

SP 190.2 MEASUREMENT AND PAYMENT

The Officer-in-Charge will not measure the providing of press release information for payment. The Officer-in-Charge will not pay for the providing of press release information separately and will consider the cost for providing the press release information as included in the contract prices for the various contract pay items. The cost is for the work prescribed in this section and the contract documents."

END OF SECTION SP 190

The following Section shall be made a part of the Standard Specifications:

"SECTION SP 191 - PROTECTION AND CONTROL OF PEDESTRIANS AND VEHICULAR TRAFFIC

SP 191.1 GENERAL

The Contractor shall, during the progress of the work, use proper precautions and methods of procedure and construction for the protection and control of pedestrians and vehicular traffic in accordance with Subsection 5.2.13 of the General Conditions and as supplemented herein.

SP 191.2 ACCESS

During the progress of the work, the Contractor shall provide free access to water meters, water valves, and abutting public and private property. No material or obstruction of any sort shall be placed within 25 feet of any fire hydrant. Fire hydrants must be readily accessible to the Fire Department at all times.

The Contractor shall provide proper traffic bridges where necessary so that all streets, roads, lanes, alleys, driveways, and garages shall be accessible to traffic at all times. These bridges shall be constructed so that their decks are flush with the pavement, and maintained free from projecting nails, splinters, or rough edges. In lieu of the traffic bridges, the Contractor may use suitable steel plates. The bridges and/or steel plates shall be able to support all legal highway loads permitted by law and shall have a non-skid surface.

Special attention is called to private and public rights-of-way. Driveways shall be kept open unless the owners of the property using these rights-of-way are otherwise provided for satisfactorily. During the construction of driveways and driveway ramps, satisfactory accesses shall be provided by the Contractor.

In the event of the Contractor's failure to comply with the foregoing provisions, the City may, with or without notice, cause the access to be provided, and deduct the costs of such work from any moneys due or to become due the Contractor under this contract, but the performance of such work by the City shall serve in no way to release the Contractor from their liability for the safety of the public or the work.

SP 191.3 TRAFFIC CONTROL, PEDESTRIAN WALKWAYS AND WARNING SIGNS

The Contractor shall be responsible for preparing the site specific traffic control plans (TCPs) and obtaining City reviews and approvals. The TCPs are required to obtain a street usage permit.

The Contractor shall become familiar with and shall meet the latest requirements of the Department of Planning and Permitting - Traffic Review Branch (DPP) and the Department of Transportation Services (DTS) for traffic control plans. After the execution of the contract, the Contractor shall submit a traffic control plan to the DPP for review and approval in conjunction with the application for a street usage permit. The TCPs shall meet all DPP and DTS requirements, including preparation by, or under the supervision of, a licensed professional engineer.

A Street Usage permit shall be obtained from the DTS before work on any portion of a public street or highway may begin. All traffic controls shall conform to the requirements of the Department of Transportation Services, the current Traffic Code for Honolulu, the "Administrative Rules of Hawaii Governing the Use of Traffic Control Devices at Work Sites On or Adjacent to Public Streets and Highways in the State of Hawaii", adopted by the Director of Transportation, the Federal Highway Administration's "Manual on Uniform Traffic Control Devices for Streets and Highways, Part VI - Traffic Controls for Street and Highway Construction and Maintenance Operations", and the provisions hereunder. The Contractor shall notify the Department of Transportation Services at least five (5) working days prior to removal of any existing City traffic control sign or device.

The Contractor shall so conduct their operations as to minimize inconvenience to traffic and they shall have under construction no greater amount of work than they demonstrate that they can handle properly with due regard for the rights of the public.

The Contractor shall cooperate with the Officer-in-Charge, the Department of Transportation Services and other authorized persons in locating all warning signs, lights, walkways and detours required under this section. If the Contractor fails to promptly provide adequate warning signs, lights, walkways and detours, the City may, at its option, so provide them at the Contractor's expense. The Contractor shall pay the cost of such work to the City, or the City may deduct the cost from any moneys due the Contractor from the City.

The Contractor shall cover all existing parking regulation signs and uncover them after the completion of resurfacing. The Contractor shall also provide and post "No Parking" information signs on streets to be worked on one (1) week prior to construction in the work area. The signs shall conform to the following requirements.

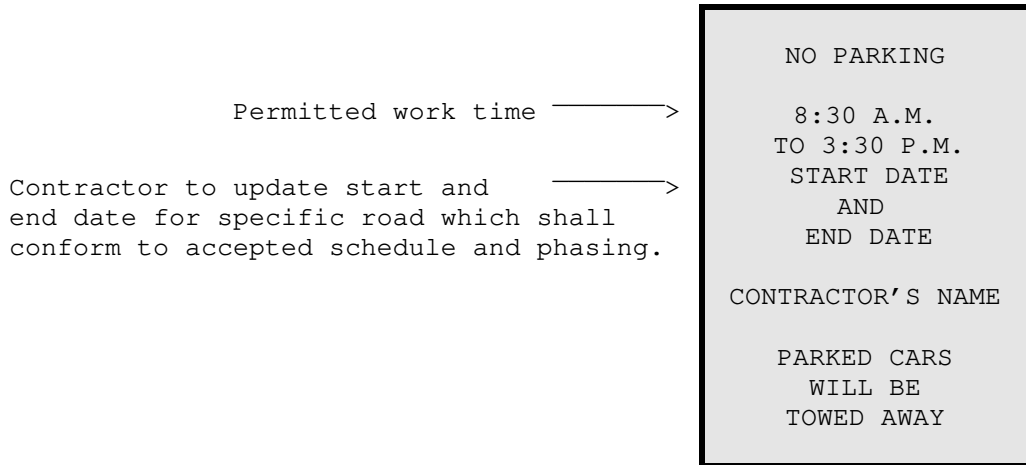
Signs shall be mounted on 4-foot high portable stands.

Size--18" x 24" x 0.063" with 1-1/2" radius corners.

Materials--Aluminum conforming to ASTM Designation B 209-68. Paint shall be 3M Scotchlite Process Color or approved substitute.

Color--Red lettering on white reflectorized background except at the upper left corner where the word "No" shall be white lettering on red background.

Information on Signs--The signs shall contain the information noted and conform to the layout as shown on the following schematic drawing.



The type of sign required is available for examination at the Division of Road Maintenance Office at 99-1077 Iwaena Street.

Sample--The Contractor shall submit to the Officer-in-Charge for review, a full scale sample of the sign and stand, not later than three (3) calendar days after formal execution of the contract.

Number of Signs--The Contractor shall have a minimum of twenty-five (25) signs available for posting at locations to be determined by the Officer-in-Charge.

SP 191.4 RESTRICTIONS

While construction is in progress within any City street, the Contractor shall provide and maintain traffic lanes in good condition in accordance with the following requirements.

A. Normal Hours: 8:30 a.m. to 3:30 p.m., Monday to Friday.

1. During working hours, the Contractor shall provide two (2) lanes of roadway open to traffic at all times. On streets too narrow to make this practicable, the Contractor may work in one-half the roadway, keeping the other half open to traffic. The Contractor shall take adequate measures to ensure that service by the buses of the Oahu Transit Service of Honolulu, Inc. is not interrupted by this project.
2. During non-working hours, all trenching located within the existing pavement area shall be covered and all lanes shall be opened to traffic. The Contractor shall construct proper bridges and approach ramps as required (non-skid steel plates may be used) to provide for the smooth flow

of traffic. All trenches within the sidewalk areas shall be covered, providing safe passageways for pedestrians.

3. The Contractor shall notify the Honolulu Police Department, Honolulu Fire Department and Oahu Transit Services of Honolulu, Inc. fourteen (14) calendar days prior to any work blocking any City street during construction.
 4. The Contractor shall notify the Traffic Control Branch, Department of Transportation Services, telephone (808) 768-8388, seventy-two (72) hours prior to any construction within any signalized intersection. The Contractor shall be responsible for any and all damages to existing traffic signal conduits and loop detectors as a result of their work. All damages shall be repaired by the Contractor.
- B. Failure to open lanes to traffic. Rental fees shall be assessed for failure to open lanes to traffic during peak hours. Morning and afternoon peak hours shall be from 5:30 a.m. to 8:30 a.m. and 3:30 p.m. to 6:30 p.m., respectively, Monday through Friday.

In addition to all other remedies available to the City for Contractor's breach of the terms of the contract, the Officer-in-Charge will assess the rental fees in the amount of \$100.00 for every one-to fifteen-minute increment for each roadway lane closed to the public use or occupied beyond the time periods authorized in the contract or by the Officer-in-Charge. The maximum amount assessed per day shall be \$1,000.00. The City may, at its discretion, deduct the amount from monies due or that may become due under the contract. The rental fee may be waived in whole or part if the Officer-in-Charge determines that the unauthorized period of lane closure or occupancy was due to factors beyond the control of the Contractor.

SP 191.5 MEASUREMENT AND PAYMENT

The Officer-in-Charge will not measure the traffic control for payment. The Officer-in-Charge will pay for the accepted traffic control on a contract lump sum basis. Payment will be full compensation for furnishing the necessary material, equipment, and labor to complete the work in place prescribed in this section and the contract documents.

The Officer-in-Charge will pay for the accepted additional traffic control devices on a force account basis. Payment for the maintenance and removal operations for additional devices will also be on a force account basis. Payment shall be full compensation for the work directed by the Officer-in-Charge and shall be deducted from the force account set in the Offer. The unused portion of the force account item shall remain with the City upon completion of the contract.

END OF SECTION SP 191

The following Section shall be made a part of the Standard Specifications:

"SECTION SP 193 - NOTIFICATION OF PROPERTY OWNERS AFFECTED BY THE PROJECT

SP 193.1 DESCRIPTION

The Contractor shall notify all owners of properties, tenants, and businesses abutting the project site and along any detour routes of the impending construction work in writing (notification flier) at least fourteen (14) calendar days prior to commencing construction.

In addition to the above, when work within private property is required, the Contractor shall notify each property owner affected by such work of the approximate starting date and total duration of the work within their property. This notification shall also be made in writing (notification flier) at least fourteen (14) calendar days prior to commencing the work.

In either case, a draft letter of the notification shall be submitted to the Officer-in-Charge for review.

SP 193.2 MEASUREMENT AND PAYMENT

The Officer-in-Charge will not measure notification of property owners affected by the project for payment. The Officer-in-Charge will not pay for notification of property owners affected by the project separately and will consider the cost for such notification as included in the contract prices for the various contract pay items. The cost is for the work prescribed in this section and the contract documents."

END OF SECTION SP 193

The following Section shall be made a part of the Standard Specifications:

"SECTION SP 194 - PERMITS AND REGULATIONS

SP 194.1 GENERAL

The Contractor shall obtain all permits and licenses; pay all charges, fees, and taxes; give all notices; and comply with all laws, ordinances, rules and regulations bearing on the conduct of the work as drawn and specified.

These may include, but, are not limited to, the following:

- A. Demolition permit.
- B. Solid Waste Permits.
- C. Grading and trenching permit.
- D. Stockpiling permit.
- E. Traffic (street usage) permit.
- F. Community Noise permit.
- G. City Park Right-of-Entry permit.
- H. Environmental Permits/Certification

As applicable, the Contractor shall be familiar with the latest requirements of the National Pollutant Discharge Elimination System (NPDES) Permits (Form C, Form G, Form F), Clean Water Act, Section 401 Water Quality Certification (WQC), Department of the Army Permits, Stream Channel Alteration Permit (SCAP), Coastal Zone Management Permit (CZM), and all other required environmental permits. If the required permits or certification have not been obtained by the City, or if the Contractor triggers a permit by their means and methods, the Contractor shall apply for and obtain the required permits or certification and pay for the applicable filing fees.

(a) NPDES Permit Authorizing Discharges of Storm Water Associated with Construction Activity

(1) NPDES Permitted Projects. The City will apply for the NPDES Notice of General Permit Coverage (NGPC) or NPDES Individual Permit from the State of Hawaii, Department of Health, Clean Water Branch (DOH-CWB) authorizing discharges of storm water associated with construction activity and will prepare the required Storm Water Pollution Prevention Plan (SWPPP). The Contractor shall complete the SWPPP. The permit will be issued for the disturbed areas and discharge points identified in the NPDES Notice of Intent (NOI) and NPDES Permit. The Contractor shall be responsible to comply with all requirements and conditions of the NPDES Permit, including, but not limited to, updating, completing, and submitting to the Officer-in-Charge for acceptance, the updated construction schedule

and SWPPP, which includes a Site-Specific Best Management Practices (BMP) Plan.

The Contractor shall assess whether they will be triggering another NPDES Permit per their means and methods; and if so, the Contractor shall be responsible for preparing the required NPDES NOI application and shall be responsible for all related fees.

(A) NPDES General Permitted Project - If there is any additional disturbed area as defined by the NPDES Program, or any additional discharge points, an NPDES General or NPDES Individual Permit Authorizing Discharges of Storm Water Associated with Construction Activity is required for the project. The Contractor shall prepare the State Department of Health, Clean Water Branch, NPDES NOI Form C, as required by the project, and any other documents such as the SWPPP for the Officer-in-Charge's review and acceptance. After receiving approval, the Contractor shall submit the permit application to the DOH-CWB.

(B) NPDES Individual Permitted Project - The Contractor shall keep track of any additional disturbed area as defined by the NPDES Program.

If the total additional disturbed area is less than one (1) acre, and there are no additional discharge points, the Contractor shall submit an amendment to the SWPPP to include the additional disturbed area to the Officer-in-Charge for review and acceptance. The Contractor shall not work in the additional disturbed area until the SWPPP Amendment is accepted by the Officer-in-Charge.

If the total additional disturbed area is one (1) acre or more, and/or if there are any additional discharge points, another NPDES Permit is required for the project. The Contractor shall prepare and submit NPDES NOI Form C and any other documents including the SWPPP for the Officer-in-Charge's review and acceptance.

(2) Non-NPDES Permitted Project. If the project has less than one (1) acre of disturbed area, a NPDES Permit Authorizing Discharges of Storm Water Associated with Construction Activity is not required. The Contractor shall complete the SWPPP template included in the SPs.

The Contractor shall document the total acreage of disturbed area as defined by the NPDES Program. Disturbed area for the project is cumulative. If the total disturbed area becomes one (1) acre or more, an NPDES Permit Authorizing Discharges of Storm Water Associated with Construction Activity is required for the project. The Contractor shall apply for and obtain the appropriate NPDES permits required by the DOH-CWB.

The Contractor shall prepare and submit the NPDES NOI Form C and the SWPPP and any other documents for the Officer-in-Charge's review and acceptance. The NPDES NOI Form C shall not be submitted to the DOH-CWB until the Officer-in-Charge has reviewed and accepted it. Submit all supplemental documentation and the final NPDES NGPC or NPDES Individual Permit to the Officer-in-Charge.

(b) NPDES Permit Authorizing Discharges Associated with Construction Activity Dewatering

(1) NPDES Permitted Project. If the NPDES NOI Form G is included in the contract documents, the City has applied for or obtained the NPDES NGPC or NPDES Individual Permit authorizing discharges associated with construction activity dewatering for the project to the State receiving waters identified in the NPDES Permit. The Contractor shall be responsible to comply with all requirements and conditions of the NPDES Permit, including, but not limited to, preparing and submitting to the Officer-in-Charge for acceptance, the updated construction schedule, Site-Specific Dewatering Plan, and any other requirements of the permit.

If the Contractor, per their means and methods, proposes to discharge dewatering effluent into a non-permitted discharge point, the Contractor shall prepare an NPDES NOI Form G and submit to the Officer-in-Charge for review and acceptance prior to submission to the DOH-CWB. After the Contractor receives the Officer-in-Charge's acceptance, submit the permit application (NPDES NOI Form G) to DOH-CWB. Submit NPDES NOI Form G, as required by the project, and any other documents including amendments to the SWPPP to the Officer-in-Charge. Submit all supplemental documentation and the final NPDES NGPC or NPDES Individual Permit to the Officer-in-Charge.

(2) Non-NPDES Permitted Project. If the project does not have a NPDES Permit Authorizing Discharges Associated with Construction Activity Dewatering and the dewatering activities require discharge of dewatering effluent into State waters or drainage systems, the Contractor shall obtain an NPDES General Permit or NPDES Individual Permit authorizing discharges associated with construction activity dewatering from the DOH-CWB. The Contractor shall prepare an NPDES NOI Form G and submit to the Officer-in-Charge for review and acceptance prior to submission to the DOH-CWB. After the Contractor receives the Officer-in-Charge's acceptance, submit permit application (NPDES NOI Form G) to DOH-CWB. Submit NPDES NOI Form G, as required by the project, and any other documents including amendments to the SWPPP to the Officer-in-Charge. Submit all supplemental documentation and the final NPDES NGPC or NPDES Individual Permit to the Officer-in-Charge.

(c) NPDES Permit Authorizing Discharges of Hydrotesting Waters

(1) NPDES Permitted Project. If the NPDES NOI Form F is included in the Special Provisions, the City has applied for or obtained the NPDES NGPC or NPDES Individual Permit Authorizing Discharges of Hydrotesting Waters from the project to the State receiving waters identified in the NPDES Permit. The Contractor shall be responsible to comply with all requirements and conditions of the NPDES Permit, including, but not limited to, preparing and submitting to the Officer-in-Charge for acceptance, the updated construction schedule, Site-Specific BMP Plan, Hydrotesting BMP Plan, and any other requirements of the permit.

(2) Non-NPDES Permitted Project. If work includes removing, relocation or installing waterlines, and the Contractor elects to flush waterline or discharge hydrotesting effluent into State receiving waters or drainage systems, the Contractor shall obtain an NPDES General Permit or NPDES Individual Permit authorizing discharges of hydrotesting waters from the DOH-CWB.

The Contractor shall prepare an NPDES NOI Form F and submit to the Officer-in-Charge for review and acceptance prior to submission to the DOH-CWB. After the Contractor receives the Officer-in-Charge's acceptance, submit permit application (NPDES NOI Form F) to DOH-CWB. Submit NPDES NOI Form F, as required by the project, and any other documents including amendments to the SWPPP to the Officer-in-Charge. Submit all supplemental documentation and the final NPDES NGPC or NPDES Individual Permit to the Officer-in-Charge.

Conduct Hydrotesting operations in accordance with the conditions of the NGPC or Individual Permit.

(d) Section 404 and Section 10 Department of the Army Permit. If the Department of the Army Permit is included in the contract documents, the City has obtained a Section 404 and/or Section 10 permit from the Department of the Army, U.S. Army Engineer District, Honolulu. The Contractor shall be responsible to comply with all requirements and conditions of the Department of the Army Permit.

(e) Section 401 Water Quality Certification (WQC). If the Section 401 WQC is included in the contract documents, the City has obtained a Section 401 WQC from the DOH-CWB. The Contractor shall be responsible to comply with all requirements and conditions of the Section 401 WQC, including, but not limited to, implementation of the Applicable Monitoring and Assessment Plan (AMAP).

(f) Stream Channel Alteration Permit (SCAP). If the SCAP is included in the contract documents, the City has obtained a SCAP from the Department of Land and Natural Resources, Commission on Water Resource Management. The Contractor shall be responsible to comply with all requirements and conditions of the SCAP.

(g) Coastal Zone Management (CZM) permit. If the CZM is included in the contract documents, the City has obtained a CZM from the

State of Hawaii, Department of Business and Economic Development and Tourism (DBEDT) Office of Planning. The Contractor shall be responsible for complying with all conditions of the CZM permit.

(h) Special Management Area (SMA) Use Permit. If the SMA Use Permit is included in the contract documents, the City has obtained a SMA Use Permit from the City's Department of Planning and Permitting. The Contractor shall be responsible for complying with all conditions of the permit.

SP 194.2 MEASUREMENT AND PAYMENT

The Officer-in-Charge will not measure permits for payment. The Officer-in-Charge will not pay for the accepted permits separately and will consider the cost for permits as included in the contract prices for the various contract pay items. The cost is for the work described in this section and the contract documents."

END OF SECTION SP 194

ATTACHMENT P-1
NWP COMPLETE

(TO BE ADDED WHEN OBTAINED)

ATTACHMENT P-1
PCN SUBMITTED TO CORPS

U.S. Army Corps of Engineers (USACE)
NATIONWIDE PERMIT PRE-CONSTRUCTION NOTIFICATION (PCN)

For use of this form, see 33 CFR 330; the proponent agency is CECW-CO-R.

Form Approved -
OMB No. 0710-0003
Expires: 2027-03-31

DATA REQUIRED BY THE PRIVACY ACT OF 1974

Authority Rivers and Harbors Act, Section 10, 33 USC 403; Clean Water Act, Section 404, 33 USC 1344; Regulatory Program of the Corps of Engineers (Corps); Final Rule 33 CFR 320-332.

Principal Purpose Information provided on this form will be used in evaluating the nationwide permit pre-construction notification.

Routine Uses This information may be shared with the Department of Justice and other federal, state, and local government agencies, and the public and may be made available as part of the agency coordination process.

Disclosure Submission of requested information is voluntary, however, if information is not provided the permit application cannot be evaluated nor can a permit be issued.

The public reporting burden for this collection of information, 0710-0003, is estimated to average 11 hours per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding the burden estimate or burden reduction suggestions to the Department of Defense, Washington Headquarters Services, at whs.mc-alex.esd.mbx.dd-dod-information-collections@mail.mil. Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to any penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number.

PLEASE DO NOT RETURN YOUR RESPONSE TO THE ABOVE EMAIL.

One set of original drawings or good reproducible copies which show the location and character of the proposed activity must be attached to this application (see *sample drawings and/or instructions*) and be submitted to the district engineer having jurisdiction over the location of the proposed activity. An application that is not completed in full will be returned.

(ITEMS 1 THRU 4 TO BE FILLED BY THE CORPS)

1. APPLICATION NO.	2. FIELD OFFICE CODE	3. DATE RECEIVED	4. DATE APPLICATION COMPLETE
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(ITEMS BELOW TO BE FILLED BY APPLICANT)

5. APPLICANT'S NAME First - Haku Middle - Last - Milles Company - C&C of Honolulu, Department of Design and Construction Company Title - Director E-mail Address - kching1@honolulu.gov (Project Manager)	8. AUTHORIZED AGENT'S NAME AND TITLE (<i>agent is not required</i>) First - David Middle - B Last - Bills Company - Bills Engineering Inc. E-mail Address - dbills@bowersandkubota.com
6. APPLICANT'S ADDRESS Address- 650 South King Street, 11th Floor City - Honolulu State - HI Zip - 96813 Country - USA	9. AGENT'S ADDRESS Address- 2153 N. King Street City - Honolulu State - HI Zip - 96819 Country - USA
7. APPLICANT'S PHONE NOS. with AREA CODE a. Residence b. Business c. Fax d. Mobile 808 768-8480	10. AGENT'S PHONE NOS. with AREA CODE a. Residence b. Business c. Fax d. Mobile 808 781-1660 808 792-2022 808 781-1600

STATEMENT OF AUTHORIZATION

11. I hereby authorize, David B. Bills to act in my behalf as my agent in the processing of this nationwide permit pre-construction notification and to furnish, upon request, supplemental information in support of this nationwide permit pre-construction notification.

 2/13/25
SIGNATURE OF APPLICANT DATE

NAME, LOCATION, AND DESCRIPTION OF PROJECT OR ACTIVITY

12. PROJECT NAME or TITLE (*see instructions*)
Restoration of Kapalama CRM Channel Walls
Work Area 1 at Kouhou Street Honolulu, Oahu, Hawaii &
Work Area 2 at 1325 N. School Street Honolulu, Oahu, Hawaii

NAME, LOCATION, AND DESCRIPTION OF PROJECT OR ACTIVITY

13. NAME OF WATERBODY, IF KNOWN *(if applicable)*
 Kapalama Stream Near Kouhou and School Streets

14. PROPOSED ACTIVITY STREET ADDRESS *(if applicable)*
 Kohou Street and 1325 N. School Street

15. LOCATION OF PROPOSED ACTIVITY *(see instructions)*
 Latitude °N Longitude °W
 21°19' 53" 157° 51' 56" W

City: State: Zip:
 Honolulu HI 96817

16. OTHER LOCATION DESCRIPTIONS, IF KNOWN *(see instructions)*

State Tax Parcel ID

Municipality

(1) 1-6-005: No Parcel Numbers

Section

Township

Range

17. DIRECTIONS TO THE SITE

Starting at the Intersection of Houghtailing Street and N School Street

Work Area 1: Go South (makai) on Houghtailing Street one block to Kouhou Street. The Work Area is 200 yards down Kouhou Street on the left hand side.

Work Area 2: Go East on School Street to first possible right turn into a property. That property is 1325 North School Street.

18. IDENTIFY THE SPECIFIC NATIONWIDE PERMIT(S) YOU PROPOSE TO USE

NWP 3 (Maintenance)

19. DESCRIPTION OF PROPOSED NATIONWIDE PERMIT ACTIVITY *(see instructions)*

See Attachment for Item 19

20. DESCRIPTION OF PROPOSED MITIGATION MEASURES *(see instructions)*

The work Area will be separated from the remainder of the channel by approximately 1/2 of the channel width with Super Sacks filled with clean gravel. The BMP Details are shown on the Construction Plans (See Item 30)

Work Area 1: SHTS C009 & C010

Work Area 2 SHTS C017 & C018

21. PURPOSE OF NATIONWIDE PERMIT ACTIVITY *(Describe the reason or purpose of the project, see instructions)*

The purpose of the NWP 3 is to re-construct failing Kapalama CRM Channel walls. The anticipated starting and ending dates are:

Starting Date: October 2025

Ending date: March 2026

22. QUANTITY OF WETLANDS, STREAMS, OR OTHER TYPES OF WATERS DIRECTLY AFFECTED BY PROPOSED NATIONWIDE PERMIT ACTIVITY *(see instructions)*

Acres

Linear Feet

Cubic Yards Dredged or Discharged

1260 SF (0.03 Acres) and 480 SF (0.012 Acres) 75 and 45 LF

160 CY and 70 CY

Each PCN must include a delineation of wetlands, other special aquatic sites, and other waters, such as lakes and ponds, and perennial, intermittent, and ephemeral streams, on the project site.

23. List any other NWP(s), regional general permit(s), or individual permit(s) used or intended to be used to authorize any part of the proposed project or any related activity. *(see instructions)*

N/A

24. If the proposed activity will result in the loss of greater than 1/10-acre of wetlands and requires pre-construction notification, explain how the compensatory mitigation requirement in paragraph (c) of general condition 23 will be satisfied, or explain why the adverse environmental effects are no more than minimal and why compensatory mitigation should not be required for the proposed activity.

N/A

25. Is any portion of the nationwide permit activity already complete?

☐

Yes

☒

No

If Yes, describe the completed work:

26. List the name(s) of any species listed as endangered or threatened under the Endangered Species Act that might be affected by the proposed NWP activity or utilize the designated critical habitat that might be affected by the proposed NWP activity. (see instructions)

A Natural Resources Report has been made for the subject Project (See Item 30 for Complete Report). The Discussions and Recommendations have been extracted from the Natural Resources Report are attached as the Attachment for Item 26.

27. List any historic properties that have the potential to be affected by the proposed NWP activity or include a vicinity map indicating the location of the historic property or properties. (see instructions)

The Kapalama Channel is over 50 years old and is considered a historic property. A SHPD 6E submittal has been prepared for submission to the State Historic Preservation Division of the State of Hawaii, but a determination is not available as of this date. SHPD 6E's are prepared for Archaeological or Architectural purposes. This SHPD 6E is being prepared for Architectural purposes due to visual wall appearances. To address Architectural appearances, excess rocks/stone that match the existing facade from the de-construction of Work Area 1 will be salvaged for use at the exterior layer of Work Area 2.

28. For a proposed NWP activity that will occur in a component of the National Wild and Scenic River System, or in a river officially designated by Congress as a "study river" for possible inclusion in the system while the river is in an official study status, identify the Wild and Scenic River or the "study river":

N/A

29. If the proposed NWP activity also requires permission from the Corps pursuant to 33 U.S.C. 408 because it will alter or temporarily or permanently occupy or use a U.S. Army Corps of Engineers federally authorized civil works project, have you submitted a written request for section 408 permission from the Corps district having jurisdiction over that project? ☐ Yes ☒ No

If "yes", please provide the date your request was submitted to the Corps district:

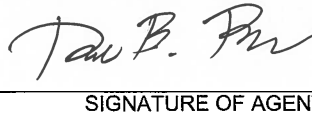
30. If the terms of the NWP(s) you want to use require additional information to be included in the PCN, please include that information in this space or provide it on an additional sheet of paper marked Block 30. (see instructions)

- 1) The complete Construction Plans for the Project are attached as Attachment 1 for Item 30
- 2) The complete Water Quality and Natural Resources Assessment for the Restoration of Kapalama Canal, Honolulu, Oahu is attached as Attachment 2 for Item 30

31. Pre-construction notification is hereby made for one or more nationwide permit(s) to authorize the work described in this notification. I certify that the information in this pre-construction notification is complete and accurate. I further certify that I possess the authority to undertake the work described herein or am acting as the duly authorized agent of the applicant.


SIGNATURE OF APPLICANT


DATE


SIGNATURE OF AGENT

2/10/2025
DATE

The pre-construction notification must be signed by the person who desires to undertake the proposed activity (applicant) and, if the statement in Block 11 has been filled out and signed, the authorized agent.

18 U.S.C. Section 1001 provides that: Whoever, in any manner within the jurisdiction of any department or agency of the United States knowingly and willfully falsifies, conceals, or covers up any trick, scheme, or disguises a material fact or makes any false, fictitious or fraudulent statements or representations or makes or uses any false writing or document knowing same to contain any false, fictitious or fraudulent statements or entry, shall be fined not more than \$10,000 or imprisoned not more than five years or both.

ATTACHMENT FOR ITEM 19

INTRODUCTION

As a result of a large storm event in 2021, a portion of the Kapalama Stream Channel at Work Area 2 a 45-foot-long section of the Kapalama Stream Channel concrete rubble masonry channel (CRM) (right bank looking downstream) completely washed away. Inspection of the CRM wall failure led to inspection of the whole immediate area of Work Area Work Area No 2 and Work Area 1 was discovered to have CRM wall potential failure due to the fact the CRM wall channel face was leaning (bulging) in the wrong direction. That defect led to adding Work Area 1 into the total scope of the project.

Clearance was obtained from the Corps and the State Historic Preservation Division (SHPD) to perform emergency work to provide temporary channel bracing at both Work Area 1 and 2. The temporary bracing is still in place today and this project addresses permanent connections to the defects at both Work Areas 1 and 2. A Vicinity Map of both repair areas is included at the end of this Attachment to locate both areas of permanent improvements for orientation purposes

WORK AREA 1

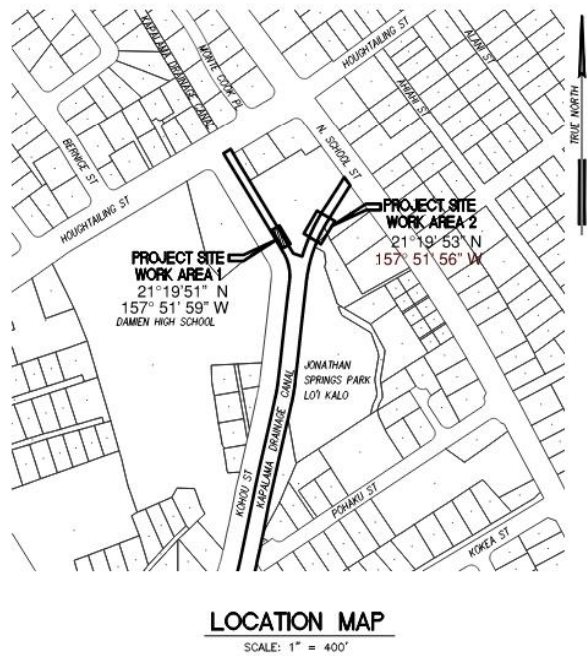
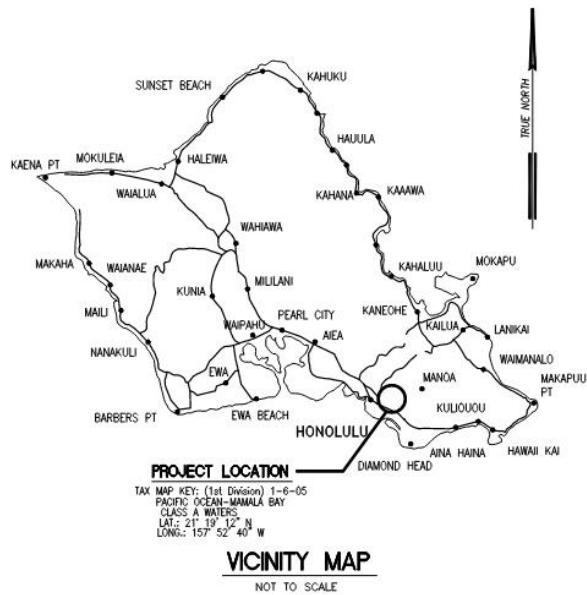
Work Area 1 will de-construct a 75-foot section of CRM wall and replace it with a new CRM wall with proper concrete slab base and re-construct the channel section with properly designed new CRM channel wall. The de-constructed CRM channel wall rock sections will be sorted to salvage as many rocks as possible to allow the channel face to match the current appearance and save extra rocks for use at Work Area 2 where the channel face is completely lost. This is being done to allow Work Area 2 to have an exterior face matching the lost face and is consistent with SHPD requirements. CRM rocks behind the face can be made up of unmatching stone since this stone will not be visible.

Work Area 2

The 2021 storm completely washed away a 45-foot section of CRM channel wall. The Emergency solution replaced the CRM wall with a CLSM wall. The CLSM wall was placed in three (3) separate pours to ensure unnecessary hydrostatic pressure against the road plates forming the wall face.

Work Area 2 will remove the CLSM temporary backfill and road plates forming the wall face and replace it with a properly constructed CRM wall with proper concrete base slab and proper CRM wall design. Rocks salvaged from Work Area 1 will be used for the exterior wall face and rocks/stone behind the exterior wall face can be of un-matching appearance.

The complete construction plans for both Work Areas are part of this application (See Attachment for Item 30)



Wed, 25 Sep 2024 - 10:05am
 F:_REV_FILES\Projects\700-01 KAPALAMA PERMANENT REPAIRS (AREA 1 AND 2)\EXHIBITS\VICINITY AND LOCATION MAP EXHIBIT.dwg

CADD: 700-01	Bills Engineering Inc. Civil/Environmental Engineering 2153 N. King St., Suite 200 Honolulu, HI 96813	RESTORATION OF KAPALAMA STREAM CRM CHANNEL WALLS HONOLULU, OAHU, HAWAII	
SCALE: SCALE AS SHOWN			
DATE: SEPT. 2024			
		VICINITY AND LOCATION MAP WORK AREA 1 & 2	

Discussion and Recommendations

Recommendations presented here are partly based on U.S. Fish and Wildlife Service, Animal Avoidance and Minimization Measures (USFWS-PIFWO, 2023). Implementation of the recommendations (provided below as bulleted items) will minimize impacts to listed species to the maximum extent practicable.

Terrestrial Resources

Flora

The vegetation of the project area is highly disturbed. No plant species proposed for listing or listed as endangered or threatened under either federal or State of Hawai'i endangered species statutes (HDLNR, 1998; USFWS, nd-b) were observed during the course of our survey.

Avian

All avian species recorded in the Project area by our survey are non-native species naturalized in the Hawaiian Islands.

Listed night-flying seabirds in Hawai'i include Hawaiian Petrel (*Pterodroma sandwichensis*), Newell's Shearwater (*Puffinus newelli*), and Band-rumped Storm-Petrel (*Hydrobates castro*). In the summer and fall, night-flying seabirds (especially fledglings) transiting to the sea from inland can become disoriented by exterior lighting. When disoriented, seabirds may collide with man-made structures or the ground. If not killed outright, dazed or injured birds are targets of opportunity for feral mammals (Podolsky et al., 1998; Ainley et al., 2001; Day et al., 2003). The primary cause of mortality in these seabird species is predation by alien mammalian species at the nesting colonies (USFWS, 1983; Ainley et al., 2001). Collision with man-made structures is considered the second-most significant cause of mortality of these seabirds in Hawai'i. No suitable nesting habitat for seabird species occurs in the Project area.

- The Project can minimize or avoid risks to protected night-flying seabirds by not conducting night-time construction and ensuring that any outdoor lighting associated with the Project is fully shielded (dark sky compliant; see HDLNR-DOFAW, 2016).

White Tern (*Gygis alba*), or *manu o Kū*, is an indigenous seabird listed as threatened under State of Hawai'i endangered species statute on the Island of O'ahu (HDLNR, 2015). White Tern was not observed during our survey. In the main Hawaiian Islands, most of the White Tern population is found in central urban and suburban Honolulu, with a known nesting range extending from Niu

Valley to Aloha Tower (isolated pairs occur at Hickam Air Force Base; VanderWerf and Downs, 2018).

- The Project can minimize impacts to white terns by examining trees for white tern nesting prior to any trimming.

Mammals

It is possible that the endangered Hawaiian hoary bat uses resources within the Project area. Trees suitable for roosting of Hawaiian hoary bat (*Lasiurus semotus*) are present in the Project vicinity. This bat species is solitary and uncommon but with a widespread distribution on Hawai'i Island. As Hawaiian hoary bat uses multiple roosts within a home territory (Bonaccorso, 2015), the disturbance associated with removal of any tree would be minimal. An exception would be during the pupping season if a female bat carrying a pup or an unattended pup is in a tree being felled. These individuals may be unable to flee the tree.

- Potential adverse impacts to Hawaiian hoary bat can be avoided or minimized by not clearing woody vegetation taller than 4.6 m (15 ft) between June 1 and September 15, the bat pupping season.

Aquatic Resources

No federal or state-listed threatened or endangered aquatic species (USFWS, nd-b; HDLNR, 2015) are known to be present in Kapālama Canal.

Though not observed during this survey, endemic aquatic 'o'opu, 'ōpae, and hīhīwai and hapawai, have been observed in the stream during previous surveys (AECOS, 2017; Englund et al., 2000). These species are diadromous: eggs are laid in the stream and the larvae that hatch from these eggs move downstream and out into the ocean where they develop for a period of time before migrating back into fresh water to grow to maturity (Ford and Kinzie, 1982; Kinzie, 1988).

Though not an ideal environment, diadromous organisms inhabit and migrate through the Project area. There is no relationship between local population density and habitat quality (McRae, 2007) and 'o'opu recruit to any freshwater source, regardless of habitat quality (Holmquist et al., 1998). Project activities must not impede the migratory pathways of native amphidromous species. Water quality is a priority, and good water quality should be maintained when work occurs in or near aquatic habitat. Apply appropriate construction BMPs for all in-water work.

- If in-water work is required, BMPs for work in aquatic environments

should be incorporated into the Project plans to minimize the degradation of water quality and impacts to biological resources.

- Instream migration pathways for amphidromous species should be maintained at all times.

Water Quality

The purpose of water quality measurements presented in this report is to characterize existing conditions and not to establish compliance with state water quality standards (Table 6). In fact, the state criteria for nutrients and particulates require making comparisons with geometric mean values, so a minimum of three separate sampling events per station would be required to

generate statistics for comparison with these criteria. The water quality sampling results from this event could be used as part of a larger data set to establish ambient conditions for various parameters in the future.

Table 6. Applicable state of Hawai'i water quality criteria for streams (HAR §11-54-5.2; HDOH, 2021).

Parameter	Season	Geometric Mean value not to exceed this value	Value not to be exceeded more than 10% of the time	Value not to be exceeded more than 2% of the time
Total Nitrogen (µg N/l)	Wet*	250.0	520.0	800.0
	Dry**	180.0	380.0	600.0
Nitrate + Nitrite (µg N/l)	Wet	70.0	180.0	300.0
	Dry	30.0	90.0	170.0
Total Phosphorus (µg P/l)	Wet	50.0	100.0	150.0
	Dry	30.0	60.0	80.0
Total Suspended Solids (mg/l)	Wet	20.0	50.0	80.0
	Dry	10.0	30.0	55.0
Turbidity (NTU)	Wet	5.0	15.0	25.0
	Dry	2.0	5.5	10.0

* Wet season – November 1 through April 30.

** Dry season – May 1 through October 31.

Other criteria:

- pH units are not to deviate more than 0.5 units from ambient conditions and are neither to be lower

than 5.5 nor higher than 8.0.

- Dissolved oxygen is not to decrease below 80% saturation.
 - Temperature is not to vary more than 1C° from ambient conditions.
 - Specific conductance is not to be more than 300 µmhos/cm
-

Criteria for DO saturation and specific conductance are not-to-exceed values and these criteria were met at all three sampling stations. pH values at all three stations were above the range specified for streams. The criteria for temperature (and also a second criterion for pH) are based on “deviations from ambient conditions”—criteria essentially pertaining to discharges that might cause deviations.

As noted above, the limited data indicates that eutrophic conditions are present in Kapālama Canal in the Project area. Benthic algae, fueled by soluble nutrients, is resulting in high pH and high DO in the water. Water in the side channel is more typical of recent run-off.

The concrete lined canal with steep banks downstream of the Project area offers few opportunities to mitigate the introduction of any pollutants from this project, so minimizing introduction of pollutants to the stream is a best management practice (BMP). BMPs should be employed during project design and construction to maintain good water quality at Kapālama Canal. It is important to reduce transport of sediments to the stream because of the potential for pollutants associated with particulates (e.g., chlordane) carried to nearshore waters. Project work may be completed with minimum impacts to stream water quality and without negative impacts to long-term water quality if proper BMPs are implemented:

- Minimize turbidity and siltation from project-related work. Use effective silt containment devices and curtail work during adverse weather conditions.
- Prior to use, clean pollutants from all project-related materials and equipment (dredges, barges, backhoes, etc.) that will be placed in the water.
- Do not stockpile project-related materials (fill, revetment rock, pipe, etc.) in the canal channel.
- Dispose of all debris removed from aquatic environments at an approved upland or ocean dumping site.
- Prevent contamination (trash or debris disposal, non-native species introductions, attraction of non-native pests, etc.) of aquatic habitats from project-related activities. Implement a litter-control plan and develop a hazard analysis and critical control point plan to prevent attraction and

introduction of non-native species.

- Fuel project-related vehicles and equipment away from the canal and develop a contingency plan to control petroleum products accidentally spilled during the work. Store absorbent pads and containment booms on-site, as appropriate, to facilitate the clean-up of accidental petroleum releases.

Other Resources of Potential Concern

Critical Habitat

Federally delineated Critical Habitat is not present in the Project area (USFWS, 2015). No equivalent designation exists under state law.

DEPARTMENT OF DESIGN AND CONSTRUCTION
CIVIL DIVISION

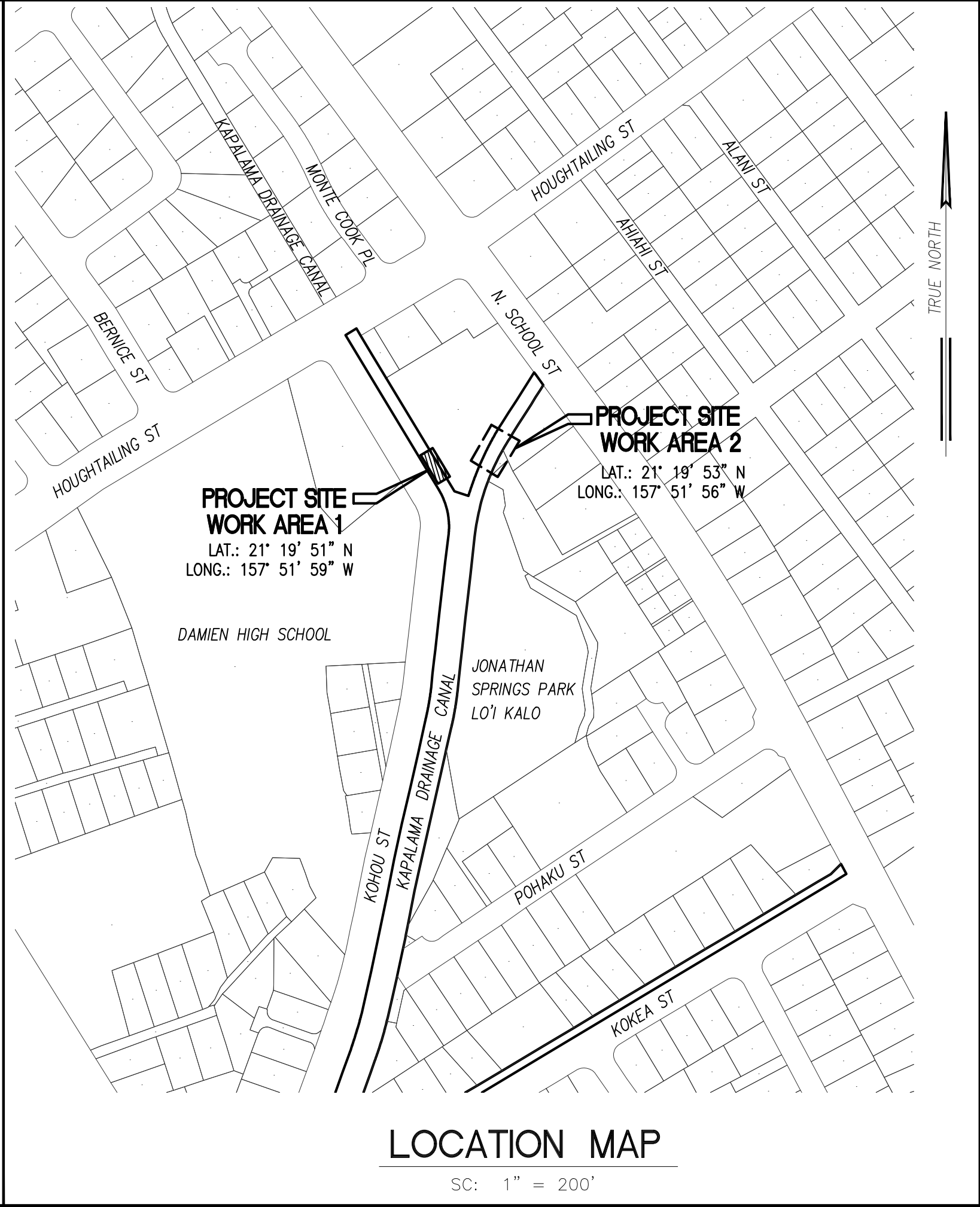
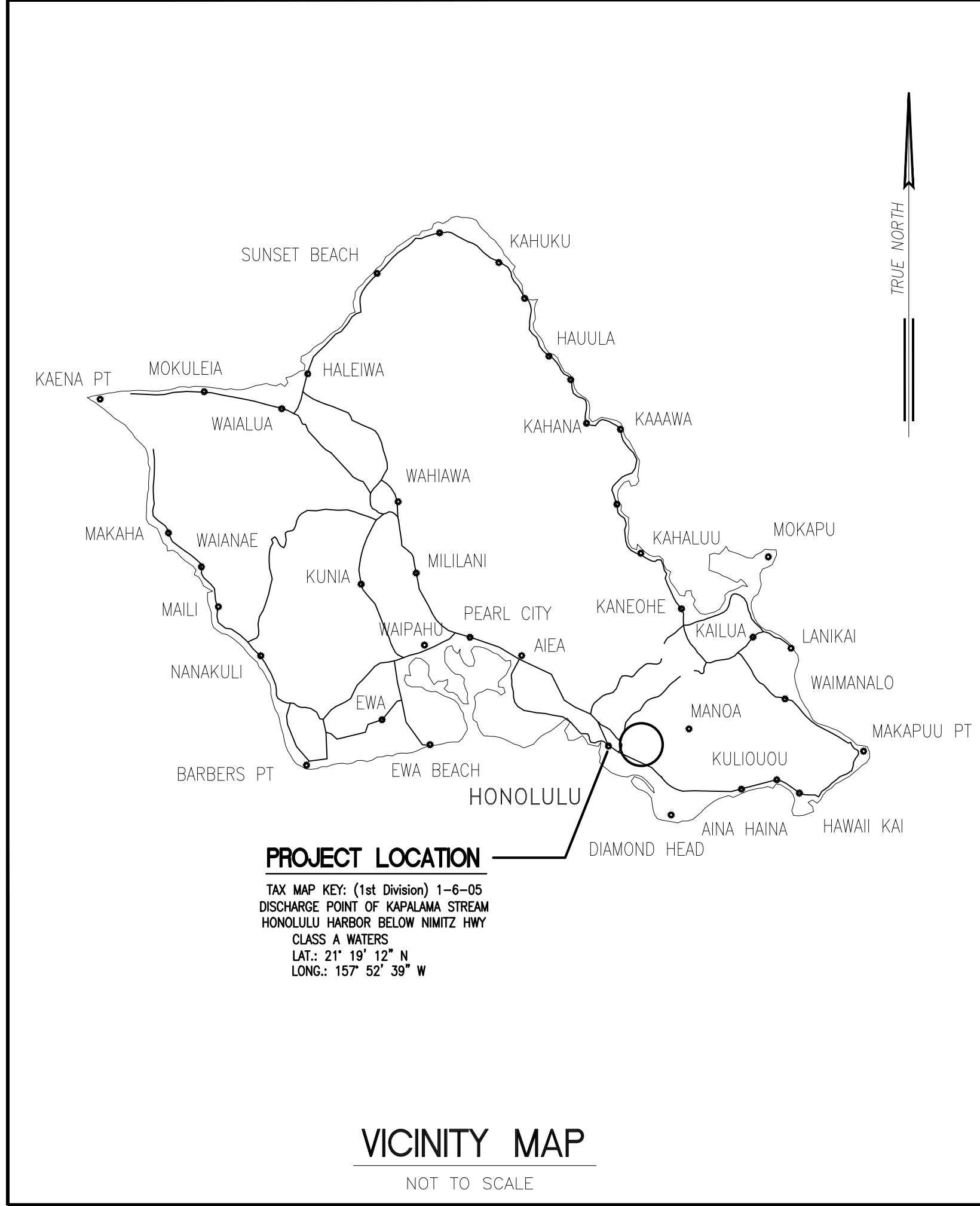
CITY & COUNTY OF HONOLULU

JOB NO. XX-XX

Attachment 1
for Item 30

RESTORATION OF KAPALAMA STREAM
CRM CHANNEL WALLS - Work Area 1 at Kohou Street
and Work Area 2 at 1325 N. School Street

HONOLULU, OAHU, HAWAII
TMK: (1st Division) 1-6-05



DESCRIPTION	SHEET NO.
TITLE SHEET	C001
GENERAL PLAN - WORK AREA 1 AND WORK AREA 2	C002
GENERAL NOTES - WORK AREA 1 AND WORK AREA 2	C003
BEFORE AND AFTER PHOTOS - WORK AREA 1	C004
EXISTING CONDITIONS SITE PLAN - WORK AREA 1	C005
RESTORATION SITE PLAN - WORK AREA 1	C006
SECTIONS - WORK AREA 1	C007
MISCELLANEOUS DETAILS - WORK AREA 1	C008
EROSION AND SEDIMENT CONTROL PLAN - WORK AREA 1	C009
EROSION AND SEDIMENT CONTROL NOTES AND DETAILS - WORK AREA 1	C010
TRAFFIC CONTROL PLAN - WORK AREA 1	C011
BEFORE AND AFTER PHOTOS - WORK AREA 2	C012
EXISTING CONDITIONS SITE PLAN - WORK AREA 2	C013
RESTORATION SITE PLAN - WORK AREA 2	C014
WALL SECTIONS - WORK AREA 2	C015
MISCELLANEOUS DETAILS - WORK AREA 2	C016
EROSION AND SEDIMENT CONTROL PLAN - 2 - WORK AREA 2	C017
EROSION AND SEDIMENT CONTROL NOTES & DETAILS - WORK AREA 2	C018
GENERAL NOTES AND TYPICAL DETAILS - WORK AREA 1 AND WORK AREA 2	S001A
RETAINING WALL SECTION - WORK AREA 1 AND WORK AREA 2	S002A

APPROVED:

DIRECTOR, DEPARTMENT OF DESIGN AND CONSTRUCTION CITY & COUNTY OF HONOLULU	DATE
--	------

FILE	POCKET	FOLDER	NUMBER

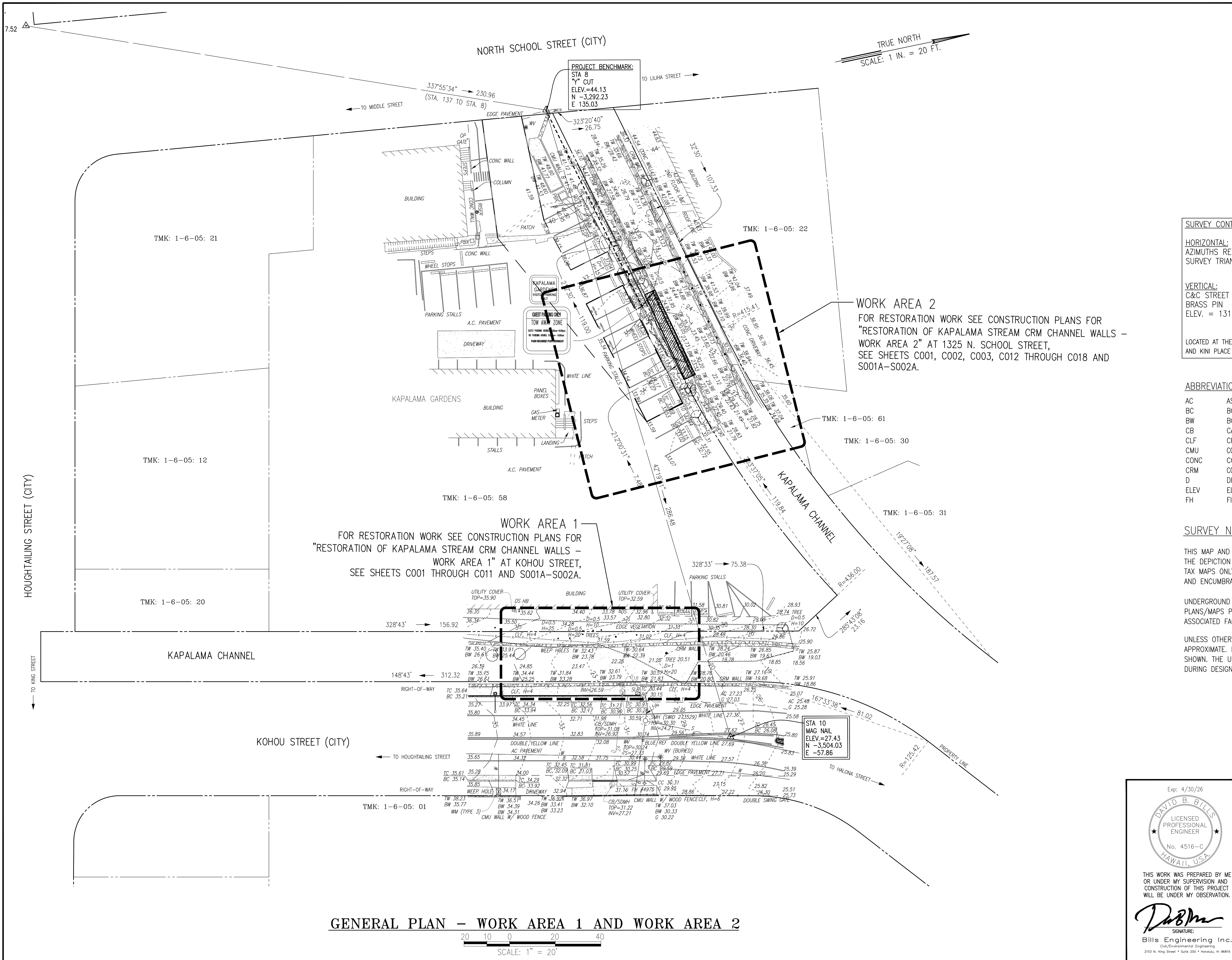
DRAWING NO. C001

SHEET 1 OF 20

Thu 10 Oct 2024 - 9:44am
T:_BUILFILES\Projects\700-01 KAPALAMA PERMANENT REPAIRS (AREA 1 AND 2)\Coast Plans Restoration\COMBINED AREAS.dwg 700-01 C001 TITLE SHEET - Work Area 1 & 2.dwg

Restoration of Kapalama Stream CRM Channel Walls - Area 1 and 2
JOB NO. XX-XX (XXXX/CP-X)

Mon, 14 Oct 2024 - 8:00am
T:_BEL FILES\Projects\700-01 KAPALAMA PERMANENT REPAIRS (AREA 1 AND 2)\Const Plans Restoration\COMBINED AREAS.dwg 700-01 C002 GENERAL PLAN - Work Area 1 and Work Area 2.dwg



SURVEY CONTROLS: (BENCHMARK)

HORIZONTAL:
AZIMUTHS REFERRED TO GOVERNMENT
SURVEY TRIANGULATION STATION "MOKAUEA"

VERTICAL:
C&C STREET MONUMENT
BRASS PIN
ELEV. = 131.33 FT., MSL

LOCATED AT THE INTERSECTION OF KAMEHAMEHA IV ROAD
AND KINI PLACE

ABBREVIATIONS:

AC	ASPHALT CONCRETE	G	GROUND
BC	BOTTOM CURB	H	HEIGHT
BW	BOTTOM WALL	HB	HOSE BIB
CB	CATCH BASIN	INV	INVERT
CLF	CHAIN LINK FENCE	PBX	PANEL BOX \ PULL BOX
CMU	CONCRETE MASONRY UNIT (HOLLOW TILE)	SDMH	STORM DRAIN MANHOLE
CONC	CONCRETE	SLB	STREET LIGHT BOX
CRM	CONCRETE RUBBLE MASONRY (ROCK) WALL	SMH	SEWER MANHOLE
D	DIAMETER \ DRAIN	T	TOP
ELEV	ELEVATION	TC	TOP CURB
FH	FIRE HYDRANT	TW	TOP WALL
		WV	WATER VALVE

SURVEY NOTES:

THIS MAP AND ASSOCIATED CADD FILE IS A TOPOGRAPHIC SURVEY OF THE SUBJECT PARCEL OR PROJECT SITE. THE DEPICTION OF BOUNDARIES AND ENCUMBRANCES AFFECTING THE PROJECT SITE ARE TAKEN FROM LATEST TAX MAPS ONLY. OBTAINING A COPY OF THE CURRENT TITLE REPORT OR DEED FOR AREAS WHERE PROPERTY AND ENCUMBRANCE ISSUES ARE CRITICAL IS RECOMMENDED PRIOR TO ANY DESIGN AND CONSTRUCTION WORK.

UNDERGROUND UTILITY LINES AND/OR STRUCTURES, IF SHOWN, ARE PROVIDED BASED ON INFORMATION FROM PLANS/MAPS PREPARED BY OTHERS, AND NEED TO BE REVIEWED BY PUBLIC UTILITY AGENCIES OR ASSOCIATED FACILITIES.

UNLESS OTHERWISE NOTED, ALL LOCATIONS OF UNDERGROUND UTILITY LINES AND/OR STRUCTURES ARE APPROXIMATE. NO GUARANTEE IS MADE ON THE ACCURACY OF COMPLETENESS OF THE INFORMATION SHOWN. THE USER(S) OF THIS TOPOGRAPHIC SURVEY MAP SHALL VERIFY THE INFORMATION, AS NEEDED, DURING DESIGN AND CONSTRUCTION.

REVISION	DATE	DESCRIPTION	ENGR.	APPROVED

Exp: 4/30/26 DAVID B. BILLS LICENSED PROFESSIONAL ENGINEER No. 4516-C HAWAII, USA		DEPARTMENT OF DESIGN AND CONSTRUCTION CITY AND COUNTY OF HONOLULU CIVIL DIVISION	
RESTORATION OF KAPALAMA STREAM CRM CHANNEL WALLS - Work Area 1 at Kohou Street and Work Area 2 at 1325 N. School Street Honolulu, Oahu, Hawaii			
GENERAL PLAN - WORK AREA 1 AND WORK AREA 2			
DESIGN: DB	APPROVED:	DRAWING NO. C002	
DRAWN: RE		SHEET 2	
CHECKED: DB	CHIEF, CIVIL DIVISION, DDC	DATE	
DATE: 2024		OF 20 SHEETS	
JOB NO. xx-xx	FILE	DRAW	FOLDER
		NUMBER	

CONSTRUCTION NOTES

1. ALL APPLICABLE CONSTRUCTION WORK SHALL BE DONE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION, SEPTEMBER 1986 AND STANDARD DETAILS FOR PUBLIC WORKS CONSTRUCTION, SEPTEMBER 1984, AS AMENDED, OF THE DEPARTMENT OF PUBLIC WORKS, CITY AND COUNTY OF HONOLULU AND THE COUNTIES OF KAUAI, MAUI AND HAWAII.
2. THE UNDERGROUND PIPES, CABLES OR DUCTLINES KNOWN TO EXIST BY THE ENGINEER FROM HIS/HER SEARCH OF RECORDS ARE INDICATED ON THE PLANS. THE CONTRACTOR SHALL VERIFY THE LOCATIONS AND DEPTHS OF THE FACILITIES AND EXERCISE PROPER CARE IN EXCAVATING IN THE AREA. WHEREVER CONNECTIONS OF NEW UTILITIES TO EXISTING UTILITIES ARE SHOWN ON THE PLANS, THE CONTRACTOR SHALL EXPOSE THE EXISTING LINES AT THE PROPOSED CONNECTIONS TO VERIFY THEIR LOCATIONS AND DEPTHS PRIOR TO EXCAVATION FOR THE NEW LINES.
3. NO CONTRACTOR SHALL PERFORM ANY CONSTRUCTION OPERATION SO AS TO CAUSE FALLING ROCKS, SOIL OR DEBRIS IN ANY FORM TO FALL, SLIDE OR FLOW INTO EXISTING CITY DRAINAGE SYSTEMS, OR ADJOINING PROPERTIES, STREETS OR NATURAL WATERCOURSES. SHOULD SUCH VIOLATIONS OCCUR, THE CONTRACTOR MAY BE CITED AND THE CONTRACTOR SHALL IMMEDIATELY MAKE ALL REMEDIAL ACTIONS NECESSARY.
4. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CONFORMANCE WITH THE APPLICABLE PROVISIONS OF THE HAWAII ADMINISTRATIVE RULES, TITLE 11, CHAPTER 54, "WATER QUALITY STANDARDS" AND TITLE 11, CHAPTER 55, "WATER POLLUTION CONTROL", AS WELL AS CHAPTER 14 OF THE REVISED ORDINANCES OF HONOLULU, AS AMENDED. BEST MANAGEMENT PRACTICES SHALL BE EMPLOYED AT ALL TIMES DURING CONSTRUCTION.

THE CONTRACTOR SHALL OBTAIN NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PERMIT COVERAGES(S) FOR THE FOLLOWING:

1. STORM WATER DISCHARGES ASSOCIATED WITH CONSTRUCTION ACTIVITIES THAT DISTURB ONE (1) ACRE OR MORE, AND
2. DISCHARGES OF HYDROTESTING EFFLUENT, DEWATERING EFFLUENT, AND WELL DRILLING EFFLUENT TO STATE WATERS.

IN ACCORDANCE WITH STATE LAW, ALL DISCHARGES RELATED TO PROJECT CONSTRUCTION OR OPERATIONS ARE REQUIRED TO COMPLY WITH STATE WATER QUALITY STANDARDS (HAWAII ADMINISTRATIVE RULES, CHAPTER 11-54). BEST MANAGEMENT PRACTICES SHALL BE USED TO MINIMIZE OR PREVENT THE DISCHARGE OF SEDIMENT, DEBRIS, AND OTHER POLLUTANTS TO STATE WATERS. PERMIT COVERAGE IS AVAILABLE FROM THE DEPARTMENT OF HEALTH, CLEAN WATER BRANCH AT [HTTP://HEALTH.HAWAII.GOV/CWB](http://health.hawaii.gov/cwb) . THE CONTRACTOR IS RESPONSIBLE FOR OBTAINING OTHER FEDERAL, STATE, OR LOCAL AUTHORIZATIONS AS REQUIRED BY LAW.

5. FOR NON-CITY PROJECTS, THE CONTRACTOR SHALL NOTIFY THE CIVIL ENGINEERING BRANCH, D.P.P. AT 808-768-8084 TO ARRANGE FOR INSPECTIONAL SERVICES AND SUBMIT TWO (2) SETS OF APPROVED CONSTRUCTION PLANS SEVEN (7) DAYS PRIOR TO COMMENCEMENT OF CONSTRUCTION WORK. FOR CITY PROJECTS, THE CONTRACTOR SHALL COORDINATE INSPECTIONAL SERVICES WITH THE RESPONSIBLE CITY AGENCY.
6. CONFINED SPACE
FOR ENTRY BY CITY PERSONNEL, INCLUDING INSPECTORS, INTO A PERMIT REQUIRED CONFINED SPACE AS DEFINED IN 29 CFR PART 1910.146(B), THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING:

- I. ALL SAFETY EQUIPMENT REQUIRED BY THE CONFINED SPACE REGULATIONS APPLICABLE TO ALL PARTIES OTHER THAN THE CONSTRUCTION INDUSTRY, TO INCLUDE, BUT NOT LIMITED TO, THE FOLLOWING:

A. FULL BODY HARNESSES FOR UP TO TWO PERSONNEL.

B. LIFELINE AND ASSOCIATED CLIPS.

C. INGRESS/EGRESS AND FALL PROTECTION EQUIPMENT.

D. TWO-WAY RADIOS (WALKIE-TALKIES) IF OUT OF LINE-OF-SIGHT.

E. EMERGENCY (ESCAPE) RESPIRATOR (10-MINUTE DURATION).

F. CELLULAR TELEPHONE TO CALL FOR EMERGENCY ASSISTANCE.

G. CONTINUOUS GAS DETECTOR (CALIBRATED) TO MEASURE OXYGEN, HYDROGEN SULFIDE, CARBON MONOXIDE AND FLAMMABLES (CAPABLE OF MONITORING AT A DISTANCE AT LEAST 20 FEET AWAY).

H. PERSONAL MULTI-GAS DETECTOR TO BE CARRIED BY INSPECTOR.
- II. CONTINUOUS FORCED AIR VENTILATION ADEQUATE TO PROVIDE SAFE ENTRY CONDITIONS.
- III. ONE ATTENDANT/RESCUE PERSONNEL TOPSIDE (TWO, IF CONDITIONS WARRANT IT).

7. PURSUANT TO CHAPTER 6E, HRS, IN THE EVENT ANY ARTIFACTS OR HUMAN REMAINS ARE UNCOVERED DURING CONSTRUCTION OPERATIONS, THE CONTRACTOR SHALL IMMEDIATELY SUSPEND WORK AND NOTIFY THE HONOLULU POLICE DEPARTMENT, THE STATE DEPARTMENT OF LAND AND NATURAL RESOURCES-HISTORIC PRESERVATION DIVISION (808-692-8015). IN ADDITION, FOR NON-CITY PROJECTS, THE CONTRACTOR SHALL INFORM THE CIVIL ENGINEERING BRANCH, D.P.P. (808-768-8084); AND FOR CITY PROJECTS, NOTIFY THE RESPONSIBLE CITY AGENCY.
8. FOR PROJECTS ABUTTING STATE HIGHWAYS' RIGHTS-OF-WAY, THE OWNER OR HIS/HER AUTHORIZED REPRESENTATIVE SHALL NOTIFY THE STATE DEPARTMENT OF TRANSPORTATION, HIGHWAYS DIVISION, OAHU DISTRICT, DRAINAGE DISCHARGE UNIT AT 808-831-6793 FOR AN ASSESSMENT OF STATE HIGHWAYS PERMIT REQUIREMENTS.
9. FOR BENCHMARK SEE DWG C002.

GRADING NOTES

1. ALL GRADING WORK SHALL BE DONE IN ACCORDANCE WITH CHAPTER 18A, ARTICLES 1, 2, 3 & 4 AS RELATED TO GRADING, SOIL EROSION AND SEDIMENT CONTROL OF THE REVISED ORDINANCES OF HONOLULU, 2021, AS AMENDED. AND REPORT GEOTECHNICAL INVESTIGATION, PERMANENT REPAIR KAPALAMA STREAM CRM WALL WORK AREAS 1 & 2, KOHOU STREET, HONOLULU, HAWAII TMK: (1) 1-6-005, BY SHINSATO ENGINEERING, INC, DATED JANUARY 4, 2024.
2. NO CONTRACTOR SHALL PERFORM ANY GRADING OPERATION SO AS TO CAUSE FALLING ROCKS, SOIL OR DEBRIS IN ANY FORM TO FALL, SLIDE OR FLOW ONTO ADJOINING PROPERTIES, STREETS OR NATURAL WATERCOURSES. SHOULD SUCH VIOLATIONS OCCUR, THE CONTRACTOR MAY BE CITED AND THE CONTRACTOR SHALL IMMEDIATELY MAKE ALL REMEDIAL ACTIONS NECESSARY.
3. THE CONTRACTOR, AT HIS/HER OWN EXPENSE, SHALL KEEP THE PROJECT AREA AND SURROUNDING AREA FREE FROM DUST NUISANCE. THE WORK SHALL BE IN CONFORMANCE WITH THE AIR POLLUTION CONTROL STANDARDS CONTAINED IN THE HAWAII ADMINISTRATIVE RULES, TITLE 11, CHAPTER 60.1, "AIR POLLUTION CONTROL".
4. THE UNDERGROUND PIPES, CABLES OR DUCTLINES KNOWN TO EXIST BY THE ENGINEER FROM THE SEARCH OF RECORDS ARE INDICATED ON THE PLANS. THE CONTRACTOR SHALL VERIFY THE LOCATIONS AND DEPTHS OF THE FACILITIES AND EXERCISE PROPER CARE IN EXCAVATING IN THE AREA. WHEREVER CONNECTIONS OF NEW UTILITIES ARE SHOWN ON THE PLANS, THE CONTRACTOR SHALL EXPOSE THE EXISTING LINES AT THE PROPOSED CONNECTIONS TO VERIFY THEIR LOCATIONS AND DEPTHS PRIOR TO EXCAVATION FOR THE NEW LINES.
5. ADEQUATE PROVISIONS SHALL BE MADE TO PREVENT SURFACE WATERS FROM DAMAGING THE CUT FACE OF AN EXCAVATION OR THE SLOPED SURFACES OF A FILL. FURTHERMORE, ADEQUATE PROVISIONS SHALL BE MADE TO PREVENT SEDIMENT-LADEN RUNOFF FROM LEAVING THE SITE.
6. ALL SLOPES AND EXPOSED AREAS SHALL BE SODDED OR PLANTED AS SOON AS FINAL GRADES HAVE BEEN ESTABLISHED. PLANTING SHALL NOT BE DELAYED UNTIL ALL GRADING WORK HAS BEEN COMPLETED. GRADING TO FINAL GRADE SHALL BE CONTINUOUS, AND ANY AREA WITHIN WHICH WORK HAS BEEN INTERRUPTED OR DELAYED SHALL BE PLANTED.
7. FILLS IN SLOPES STEEPER THAN 5:1 SHALL BE KEYED.
8. THE CITY SHALL BE INFORMED OF THE LOCATION OF THE BORROW/DISPOSAL SITE FOR THE PROJECT WHEN THE APPLICATION FOR A GRADING PERMIT IS MADE. THE BORROW/DISPOSAL SITE MUST ALSO FULFILL THE REQUIREMENTS OF THE GRADING ORDINANCE.
9. NO GRADING WORK SHALL BE DONE ON SATURDAYS, SUNDAYS AND HOLIDAYS AT ANY TIME WITHOUT PRIOR NOTICE TO THE DIRECTOR D.P.P., PROVIDED SUCH GRADING WORK IS ALSO IN CONFORMANCE WITH THE COMMUNITY NOISE CONTROL STANDARDS CONTAINED IN THE HAWAII ADMINISTRATIVE RULES, TITLE 11, CHAPTER 46, "COMMUNITY NOISE CONTROL".
10. THE LIMITS OF THE AREA TO BE GRADED SHALL BE FLAGGED BEFORE THE COMMENCEMENT OF THE GRADING WORK.
11. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL GRADING OPERATIONS TO BE PERFORMED IN CONFORMANCE WITH APPLICABLE PROVISIONS OF THE HAWAII ADMINISTRATIVE RULES, TITLE 11, CHAPTER 54, "WATER QUALITY STANDARDS" AND TITLE 11, CHAPTER 55, "WATER POLLUTION CONTROL", AS WELL AS CHAPTER 14 OF THE REVISED ORDINANCES OF HONOLULU, AS AMENDED. BEST MANAGEMENT PRACTICES SHALL BE EMPLOYED AT ALL TIMES DURING CONSTRUCTION.

THE CONTRACTOR SHALL OBTAIN NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PERMIT COVERAGES(S) FOR THE FOLLOWING:

1. STORM WATER DISCHARGES ASSOCIATED WITH CONSTRUCTION ACTIVITIES THAT DISTURB ONE (1) ACRE OR MORE, AND
2. DISCHARGES OF HYDROTESTING EFFLUENT, DEWATERING EFFLUENT, AND WELL DRILLING EFFLUENT TO STATE WATERS.

IN ACCORDANCE WITH STATE LAW, ALL DISCHARGES RELATED TO PROJECT CONSTRUCTION OR OPERATIONS ARE REQUIRED TO COMPLY WITH STATE WATER QUALITY STANDARDS (HAWAII ADMINISTRATIVE RULES, CHAPTER 11-54). BEST MANAGEMENT PRACTICES SHALL BE USED TO MINIMIZE OR PREVENT THE DISCHARGE OF SEDIMENT, DEBRIS, AND OTHER POLLUTANTS TO STATE WATERS. PERMIT COVERAGE IS AVAILABLE FROM THE DEPARTMENT OF HEALTH, CLEAN WATER BRANCH AT [HTTP://HEALTH.HAWAII.GOV/CWB](http://health.hawaii.gov/cwb) . THE CONTRACTOR IS RESPONSIBLE FOR OBTAINING OTHER FEDERAL, STATE, OR LOCAL AUTHORIZATIONS AS REQUIRED BY LAW.

12. WHERE APPLICABLE AND FEASIBLE THE MEASURES TO CONTROL EROSION AND OTHER POLLUTANTS SHALL BE IN PLACE BEFORE ANY EARTH MOVING PHASE OF THE GRADING IS INITIATED.
13. TEMPORAY EROSION CONTROL PROCEDURES SHALL BE SUBMITTED FOR APPROVAL PRIOR TO APPLICATION FOR GRADING PERMIT. TEMPORARY EROSION CONTROLS SHALL NOT BE REMOVED BEFORE PERMANENT EROSION CONTROLS ARE IN-PLACE AND ESTABLISHED.
14. IF THE GRADING WORK INVOLVES CONTAMINATED SOIL, THEN ALL GRADING WORK SHALL BE DONE IN CONFORMANCE WITH APPLICABLE STATE AND FEDERAL REQUIREMENTS.
15. PURSUANT TO CHAPTER 6E, HRS, IN THE EVENT ANY ARTIFACTS OR HUMAN REMAINS ARE UNCOVERED DURING CONSTRUCTION OPERATIONS, THE CONTRACTOR SHALL IMMEDIATELY SUSPEND WORK AND NOTIFY THE HONOLULU POLICE DEPARTMENT, THE STATE DEPARTMENT OF LAND AND NATURAL RESOURCES-HISTORIC PRESERVATION DIVISION (808-692-8015). FOR CITY PROJECTS, NOTIFY THE RESPONSIBLE CITY AGENCY.

GRADING NOTES, CONT'D

16. FOR ALL PROJECTS, WHICH WILL DISTURB ONE (1) ACRE OR MORE OF LAND, THE CONTRACTOR SHALL NOT START CONSTRUCTION UNTIL A NOTICE OF GENERAL PERMIT COVERAGE (NGPC) IS RECEIVED FROM THE DEPARTMENT OF HEALTH, STATE OF HAWAII, AND HAS SATISFIED ANY OTHER APPLICABLE REQUIREMENTS OF THE NPDES PERMIT PROGRAM. ALSO, FOR NON-CITY AND OTHER NON-GOVERNMENTAL AGENCY PROJECTS, THE CONTRACTOR SHALL PROVIDE A WRITTEN COPY OF THE NGPC TO THE PERMITTING AND INSPECTION SECTION, CIVIL ENGINEERING BRANCH, D.P.P., AT LEAST SEVEN (7) CALENDAR DAYS BEFORE THE START OF THE CONSTRUCTION. FOR CITY OR OTHER GOVERNMENTAL PROJECTS, THE CONTRACTOR SHOULD PROVIDE A WRITTEN COPY OF THE NGPC TO THE APPROPRIATE CITY DEPARTMENT OR GOVERNMENTAL AGENCY PER THEIR REQUIREMENTS.
17. ALL GRADING AND CONSTRUCTION WORK SHALL IMPLEMENT MEASURES TO ENSURE THAT THE DISCHARGE OF POLLUTANTS FROM THE CONSTRUCTION SITE WILL BE REDUCED TO THE MAXIMUM EXTENT PRACTICABLE AND WILL NOT CAUSE OR CONTRIBUTE TO AN EXCEEDANCE OF WATER QUALITY STANDARDS.
18. NON-COMPLIANCE TO ANY OF THE ABOVE REQUIREMENTS SHALL MEAN IMMEDIATE SUSPENSION OF ALL WORK, AND REMEDIAL WORK SHOULD COMMENCE IMMEDIATELY. ALL COSTS INCURRED SHALL BE BILLED TO THE VIOLATORS. FURTHERMORE, VIOLATORS SHALL BE SUBJECTED TO ADMINISTRATIVE, CIVIL AND/OR CRIMINAL PENALTIES.
19. FOR BENCHMARK SEE DWG. C002.

PUBLIC HEALTH AND SAFETY CONVENIENCE NOTES

1. THE CONTRACTOR SHALL OBSERVE AND COMPLY WITH ALL FEDERAL, STATE AND LOCAL LAWS REQUIRED FOR THE PROTECTION OF HEALTH AND SAFETY AND ENVIRONMENTAL QUALITY.
2. THE CONTRACTOR, AT HIS/HER OWN EXPENSE, SHALL KEEP THE PROJECT AND ITS SURROUNDING AREAS FREE FROM DUST NUISANCE. THE WORK SHALL BE IN CONFORMANCE WITH THE AIR POLLUTION STANDARDS AND REGULATIONS OF THE STATE DEPARTMENT OF HEALTH. THE CITY MAY REQUIRE SUPPLEMENTAL MEASURES AS NECESSARY.
3. NO CONTRACTOR SHALL PERFORM ANY CONSTRUCTION ACTIVITY SO AS TO CAUSE FALLING ROCKS, SOIL OR DEBRIS IN ANY FORM TO FALL, SLIDE OR FLOW ONTO ADJOINING PROPERTIES, STREETS OR NATURAL WATER COURSES. SHOULD SUCH VIOLATIONS OCCUR, THE COSTS INCURRED BY THE CITY FOR ANY REMEDIAL ACTION SHALL BE PAYABLE BY THE CONTRACTOR.
4. THE CONTRACTOR SHALL PROVIDE, INSTALL AND MAINTAIN ALL NECESSARY SIGNS, LIGHTS, FLARES, BARRICADES, MARKERS, CONES, AND OTHER PROTECTIVE FACILITIES AND SHALL TAKE ALL NECESSARY PRECAUTIONS FOR THE PROTECTION, CONVENIENCE AND SAFETY OF THE PUBLIC.
5. THE CONTRACTOR SHALL APPLY FOR A COMMUNITY NOISE PERMIT AND/OR COMMUNITY NOISE VARIANCE FOR CONSTRUCTION ACTIVITY MAY EXCEED THE ESTABLISHED NOISE STANDARD IN CHAPTER 11-46, HAWAII ADMINISTRATIVE RULES.
6. THE CONTRACTOR SHALL NOTIFY THE HONOLULU FIRE DEPARTMENT, FIRE COMMUNICATION SECTION AT 808-523-4411 WHEN FIRE HYDRANTS ARE TO GO IN AND OUT OF SERVICE.
7. ALL CONSTRUCTION WORK SHALL BE DONE IN ACCORDANCE WITH THE "STANDARD DETAILS FOR PUBLIC WORKS CONSTRUCTION", AS AMENDED, AND THE "STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION", SEPTEMBER 1986, OF THE DEPARTMENT OF PUBLICS WORKS, CITY AND COUNTY OF HONOLULU, AND THE REVISED ORDINANCES OF HONOLULU, 1990, AS AMENDED.
8. THE CONTRACTOR SHALL PAY FOR ALL NECESSARY CONSTRUCTION PERMITS.
9. THE CONTRACTOR SHALL PROVIDE ACCESS TO AND FROM DRIVEWAYS AND PUBLIC STREETS DURING NON-WORKING HOURS.
10. ALL EXISTING UTILITIES SHALL BE PROTECTED AT ALL TIMES BY THE CONTRACTOR DURING CONSTRUCTION, AND ANY DAMAGE TO THEM SHALL BE REPAIRED AND PAID FOR BY THE CONTRACTOR.

DISABILITY AND COMMUNICATION ACCESS BOARD (DCAB) REQUIREMENTS:

THIS PROJECT SHALL MEET THE ACCESSIBILITY REQUIREMENTS OF HAWAII REVISED STATUES (HRS) 103-50 AND AMERICANS WITH DISABILITIES ACT ACCESSIBILITY GUIDELINES (ADAAG) SECTIONS 4.1.1(4) AND 4.3.

WATER NOTES FOR CITY PROJECTS

1. UNLESS OTHERWISE SPECIFIED, ALL MATERIALS AND CONSTRUCTION OF WATER SYSTEM FACILITIES AND APPURTENANCES SHALL BE IN ACCORDANCE WITH THE CITY AND COUNTY OF HONOLULU BOARD OF WATER SUPPLY'S "WATER SYSTEM STANDARDS", DATED 2002, THE "WATER SYSTEM EXTERNAL CORROSION CONTROL STANDARDS", VOLUME 3 DATED 1991, AND ALL SUBSEQUENT AMENDMENTS AND ADDITIONS.
2. ALL PLANS APPROVED BY THE BOARD OF WATER SUPPLY ARE BASED SOLELY ON THE ADEQUACY OF THE WATER SUPPLY. ALL OTHER FEATURES OF THE WATER SYSTEM, SUCH AS LINES, GRADES, FITTINGS, DRAINAGE, ETC., AND OTHER FEATURES OF IMPROVEMENTS SHALL NOT BE THE RESPONSIBILITY OF THE BOARD OF WATER SUPPLY.
3. THE CONTRACTOR SHALL NOTIFY BWS CAPITAL PROJECTS DIVISION, CONSTRUCTION SECTION IN WRITING AND SUBMIT SIX (6) SETS OF APPROVED CONSTRUCTION PLANS ONE WEEK PRIOR TO COMMENCING WORK ON THE WATER SYSTEM.
4. THE EXISTENCE AND LOCATION OF UNDERGROUND UTILITIES AND STRUCTURES AS SHOWN ON THE PLANS ARE FROM THE LATEST AVAILABLE DATA BUT IS NOT GUARANTEED AS TO THE ACCURACY OR THE ENCOUNTERING OF OTHER OBSTACLES DURING THE COURSE OF THE WORK. THE CONTRACTOR SHALL BE RESPONSIBLE AND PAY FOR ALL DAMAGES TO EXISTING UTILITIES. THE CONTRACTOR SHALL NOT ASSUME THAT WHERE NO UTILITIES ARE SHOWN, NONE EXIST.
5. RE-APPROVAL SHALL BE REQUIRED IF THIS PROJECT IS NOT UNDER CONSTRUCTION WITHIN A PERIOD OF TWO (2) YEARS.
6. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF ALL WATER LINES DURING CONSTRUCTION. THE CONTRACTOR SHALL BE ESPECIALLY CAREFUL WHEN EXCAVATING BEHIND WATER LINES, TEES, AND BENDS WHEREVER THERE IS A POSSIBILITY OF WATER LINE MOVEMENT DUE TO THE REMOVAL OF THE SUPPORTING EARTH BEYOND THE EXISTING REACTION BLOCKS. THE CONTRACTOR SHALL TAKE WHATEVER MEASURE NECESSARY TO PROTECT THE WATER LINES, SUCH AS CONSTRUCTING SPECIAL REACTION BLOCKS (WITH BWS APPROVAL) AND/OR MODIFYING HIS/HER CONSTRUCTION METHOD.
7. PRIOR TO ANY EXCAVATING, THE CONTRACTOR SHALL VERIFY IN THE FIELD THE LOCATION OF EXISTING WATER MAINS AND APPURTENANCES.

REVISION	DATE	DESCRIPTION		ENGR. APPROVED

Exp: 4/30/26

DAVID B. BILLS

LICENSED PROFESSIONAL ENGINEER

No. 4516-C

HAWAII, USA

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

David B. Bills

SIGNATURE:

Bills Engineering Inc.

Civil/Environmental Engineering

2153 N. King Street • Suite 200 • Honolulu, HI 96819

DEPARTMENT OF DESIGN AND CONSTRUCTION
CITY AND COUNTY OF HONOLULU
CIVIL DIVISION

RESTORATION OF KAPALAMA STREAM CRM CHANNEL WALLS -
Work Area 1 at Kohou Street and Work Area 2 at 1325 N. School Street
Honolulu, Oahu, Hawaii

GENERAL NOTES - WORK AREA 1 AND WORK AREA 2

DESIGN: DB

DRAWN: RE

CHECKED: DB

DATE: 2024

APPROVED:

CHIEF, CIVIL DIVISION, DDC

DATE

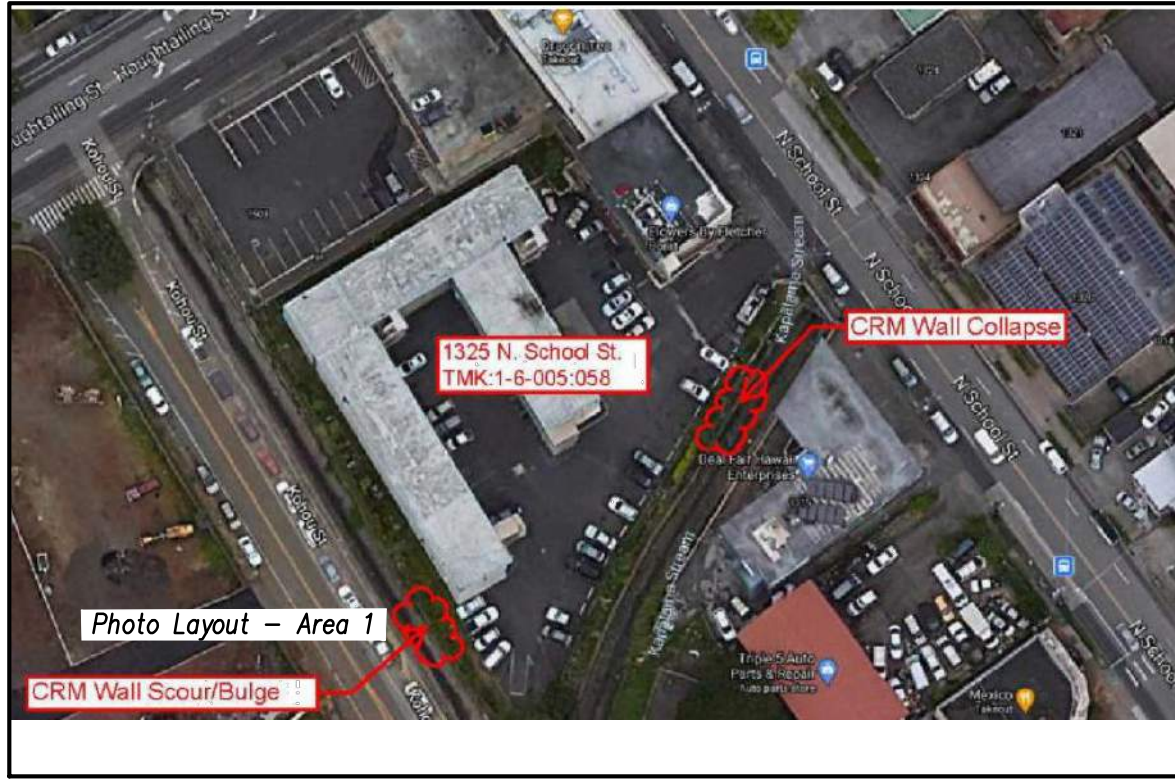
DRAWING NO.
C003
SHEET **3**
OF **20** SHEETS

JOB NO. xx-xx FILE DRAW FOLDER NUMBER

APPROVED:

CHIEF, CIVIL ENGINEERING BRANCH, DPP

DATE



LOCATION MAP

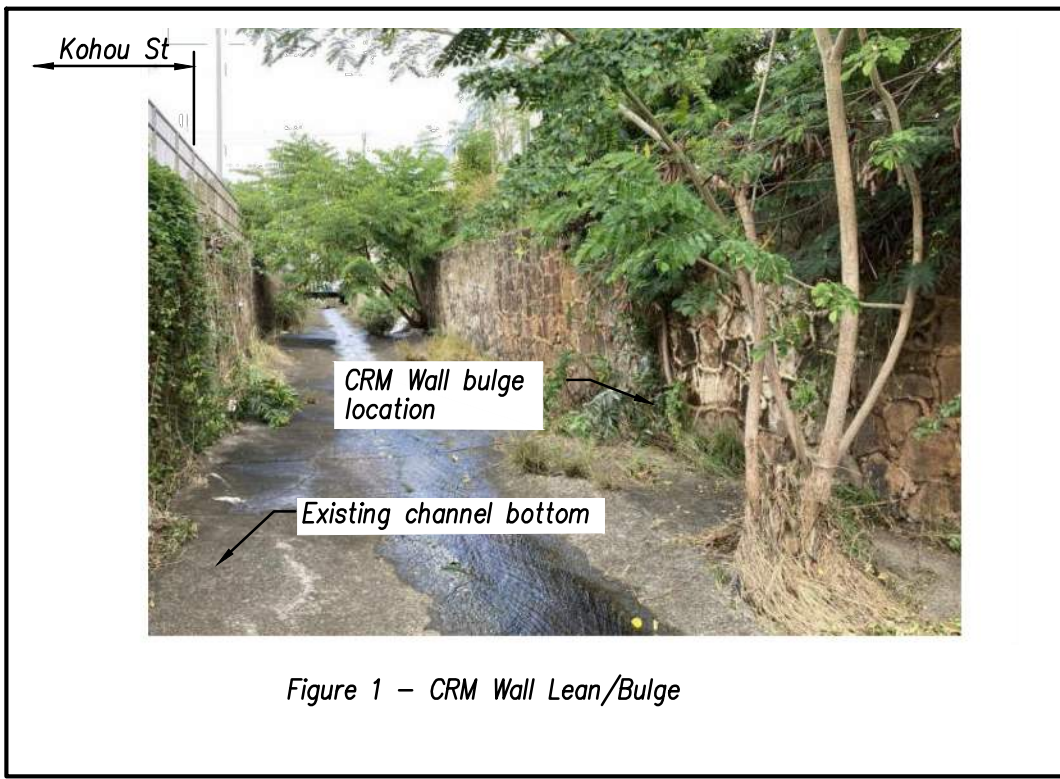


PHOTO LAYOUT – AREA 1 (CRM WALL BULGE)

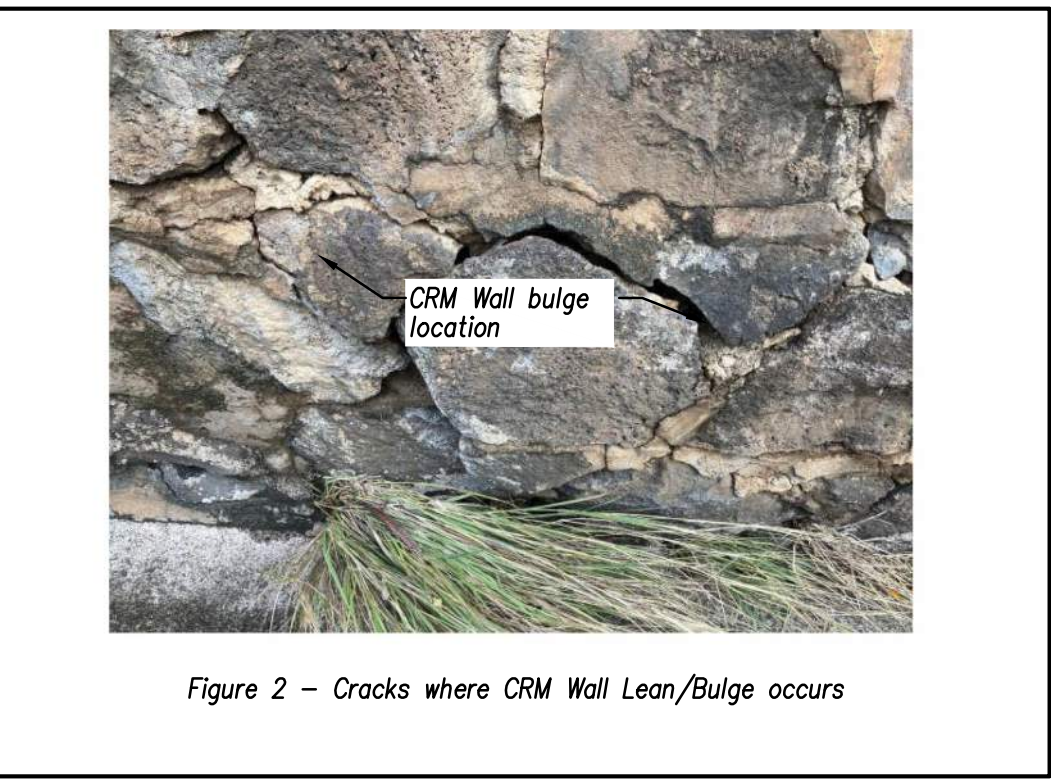


Figure 2 – Cracks where CRM Wall Lean/Bulge occurs

PROJECT STATUS BEFORE EMERGENCY REPAIRS – WORK AREA 1



BRACING FROM UPSTREAM



BRACING CONNECTION
OPPOSITE ROAD PLATES



CLOSE UP
BRACE CONNECTION



BRACING FROM UPSTREAM



WORK AREA FROM ACROSS
KOHOU STREET

PROJECT STATUS AFTER EMERGENCY REPAIRS – WORK AREA 1

REVISION	DATE	DESCRIPTION	ENGR.	APPROVED

Exp: 4/30/26

DAVID B. BILLS

LICENSED PROFESSIONAL ENGINEER

No. 4516-C

HAWAII, USA

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SIGNATURE:

Bills Engineering Inc.
Civil/Environmental Engineering
2153 N. King Street • Suite 200 • Honolulu, HI 96819

DEPARTMENT OF DESIGN AND CONSTRUCTION
CITY AND COUNTY OF HONOLULU
CIVIL DIVISION

RESTORATION OF KAPALAMA STREAM CRM CHANNEL WALLS –
Work Area 1 at Kohou Street and Work Area 2 at 1325 N. School Street
Honolulu, Oahu, Hawaii

BEFORE AND AFTER PHOTOS - WORK AREA 1

DESIGN: DB

DRAWN: RE

CHECKED: DB

DATE: 2024

APPROVED:

CHIEF, CIVIL DIVISION, DDC

DATE

DRAWING NO.

C004

SHEET 4

OF 20 SHEETS

JOB NO. xx-xx

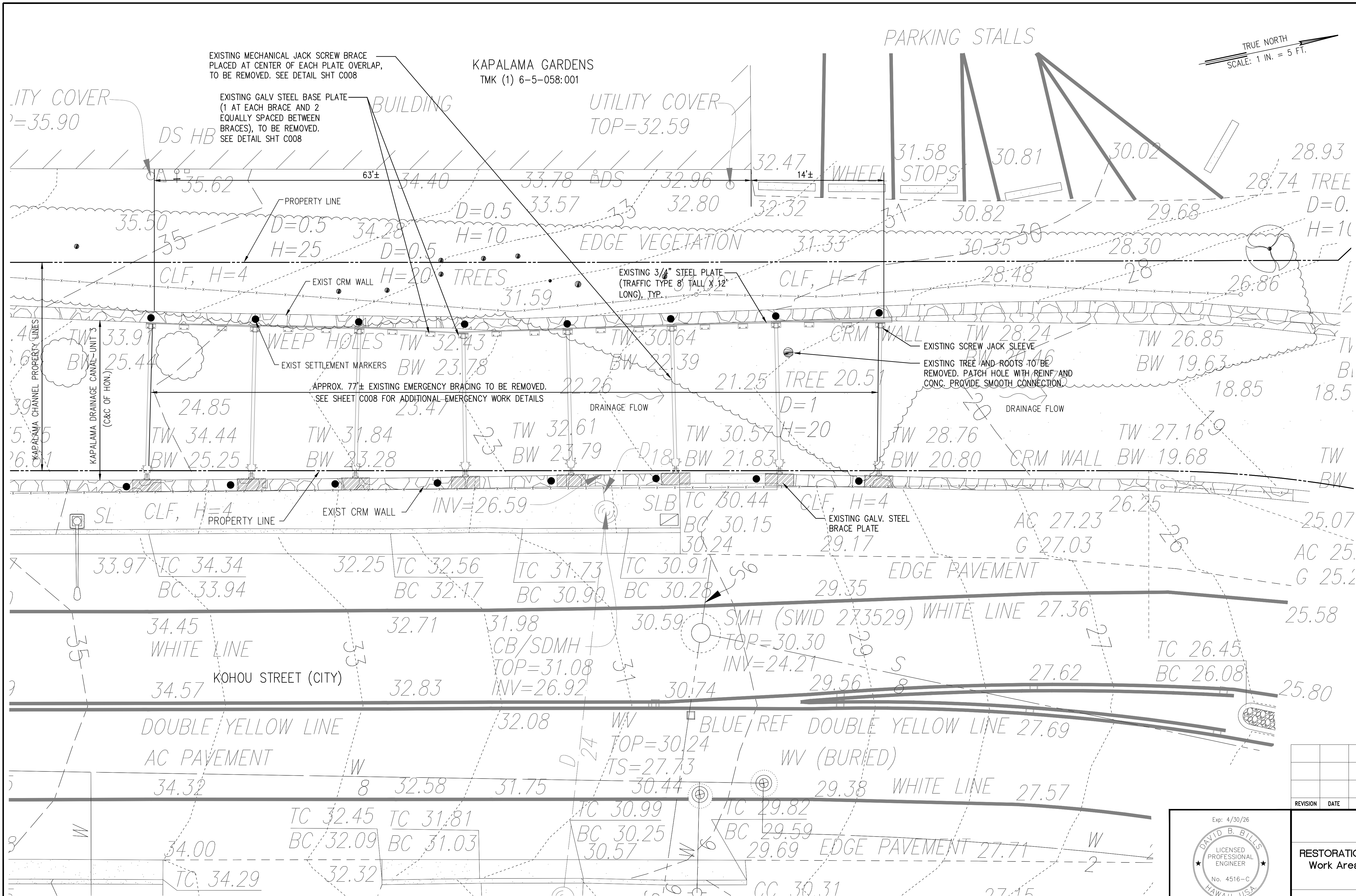
FILE

DRAW

FOLDER

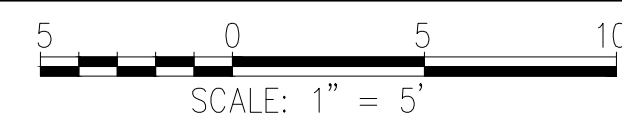
NUMBER

File: 27 Sep 2024 - 10:30am
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- LEGEND
- TREE
 - SETTLEMENT MARKERS

EXISTING CONDITIONS SITE PLAN - WORK AREA 1



NOTE: ALL EXISTING EMERGENCY WORK SHOWN ON THIS SHT AND SHT C008 TO BE REMOVED PRIOR TO RECONSTRUCTION WORK.

APPROVED:

CHIEF, CIVIL ENGINEERING BRANCH, DPP

Exp: 4/30/26

DAVID B. BILLS
LICENSED PROFESSIONAL ENGINEER
No. 4516-C
HAWAII, USA

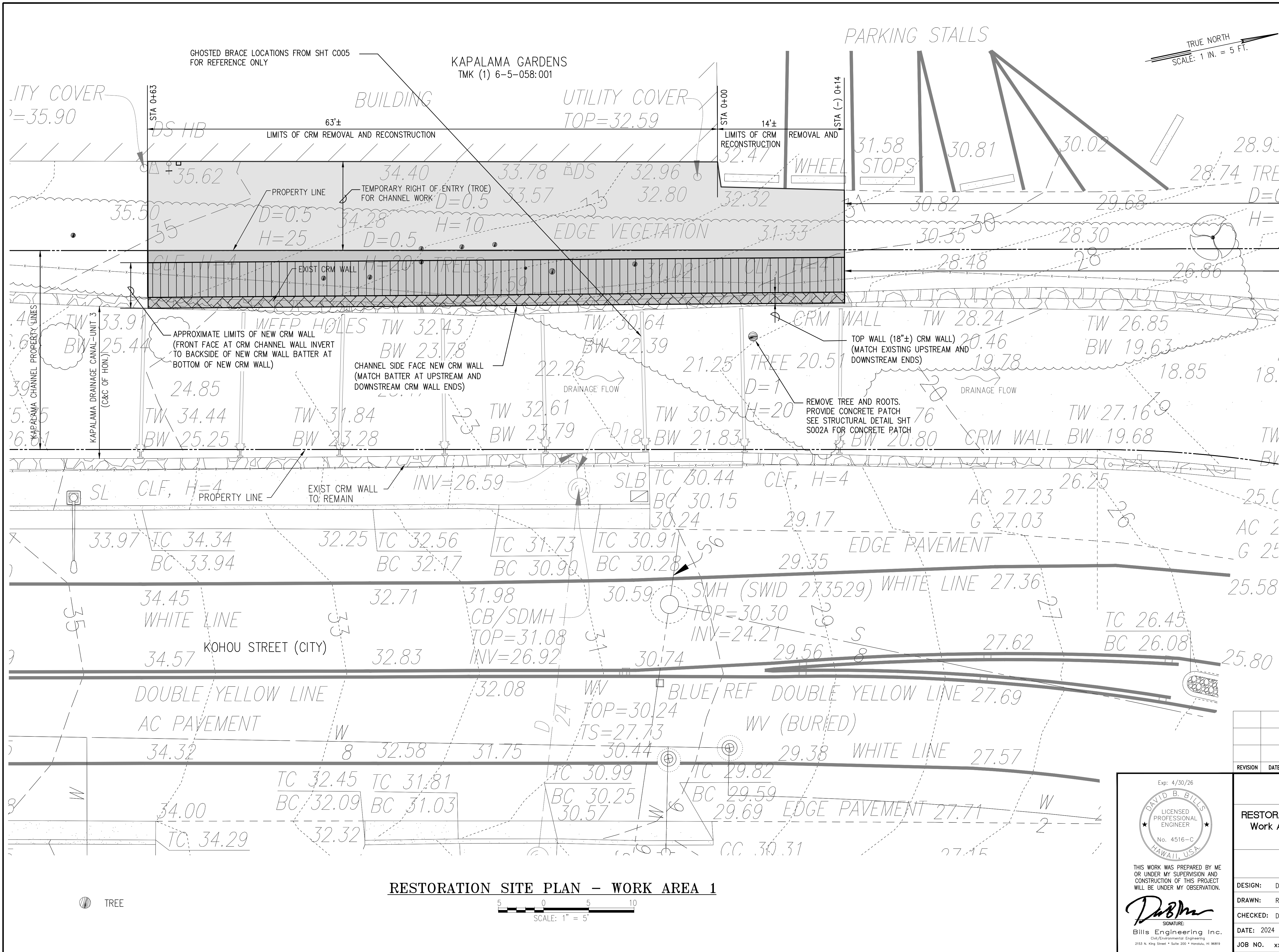
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION AND CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION.

SIGNATURE: *David B. Bills*

Bills Engineering Inc.
Civil/Environmental Engineering
2153 N. King Street • Suite 200 • Honolulu, HI 96819

REVISION	DATE	DESCRIPTION	ENGR.	APPROVED
DEPARTMENT OF DESIGN AND CONSTRUCTION CITY AND COUNTY OF HONOLULU CIVIL DIVISION				
RESTORATION OF KAPALAMA STREAM CRM CHANNEL WALLS - Work Area 1 at Kohou Street and Work Area 2 at 1325 N. School Street Honolulu, Oahu, Hawaii				
EXISTING CONDITIONS SITE PLAN - WORK AREA 1				
DESIGN: DB	APPROVED:		DRAWING NO. C005	
DRAWN: RE	CHIEF, CIVIL DIVISION, DPP		SHEET 5	
CHECKED: DB	DATE: 2024		OF 20 SHEETS	
JOB NO. xx-xx	FILE		DRAW FOLDER NUMBER	

Mon, 14 Oct 2024 - 7:25am
T:_BEL FILES\Projects\700-01 KAPALAMA PERMANENT REPAIRS (AREA 1 AND 2)\Cost Plans Restoration\COMBINED AREAS.dwg 700-01 C006 RESTORATION SITE PLAN - Work Area 1.dwg



- WORK AREA NOTES KAPALAMA GARDENS SIDE OF CHANNEL
1. PROJECT WORK AREA IN TMK (1) 6-5-058:001 (BY MEANS OF CITY OBTAINED TEMPORARY RIGHT OF ENTRY AND CONSTRUCTION) FOR CONCRETE RUBBLE MASONRY STONE STORAGE PRIOR TO CRM WALL RE-CONSTRUCTION AND SORTING TO FIND SUITABLE ROCK (QUALITY AND QUANTITY) NEEDED AT CRM WALL RESTORATION AT WORK AREA 2)
 2. PROJECT WORK AREA IN CITY AND COUNTY OF HONOLULU DRAINAGE EASEMENT FOR CONCRETE RUBBLE MASONRY STONE STORAGE PRIOR TO CRM WALL RE-CONSTRUCTION AND SORTING TO FIND SUITABLE ROCK (QUALITY AND QUANTITY) NEEDED AT CRM WALL RESTORATION AT WORK AREA 2)

EARTHWORK SUMMARY
CATEGORY: N/A
EXCAVATION= 80 CY (WALL DE-CONSTRUCTION)
EMBANKMENT= 160 CY (WALL RE-CONSTRUCTION)
AREA TO BE GRADED AND DISTURBED= 1,260 SQ. FT. (0.03 acs)

REVISION	DATE	DESCRIPTION	ENGR.	APPROVED

Exp: 4/30/26

DAVID B. BILLS

LICENSED PROFESSIONAL ENGINEER

No. 4516-C

HAWAII, USA

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

Signature

Bill's Engineering Inc.

Civil/Environmental Engineering

2153 N. King Street • Suite 200 • Honolulu, HI 96819

DEPARTMENT OF DESIGN AND CONSTRUCTION
CITY AND COUNTY OF HONOLULU
CIVIL DIVISION

RESTORATION OF KAPALAMA STREAM CRM CHANNEL WALLS -
Work Area 1 at Kohou Street and Work Area 2 at 1325 N. School Street
Honolulu, Oahu, Hawaii

RESTORATION SITE PLAN - WORK AREA 1

DESIGN: DB

DRAWN: RE

CHECKED: DB

DATE: 2024

APPROVED:

CHEF, CIVIL DIVISION, DDC

DATE

DRAWING NO.

C006

SHEET 6

OF 20 SHEETS

JOB NO.

xx-xx

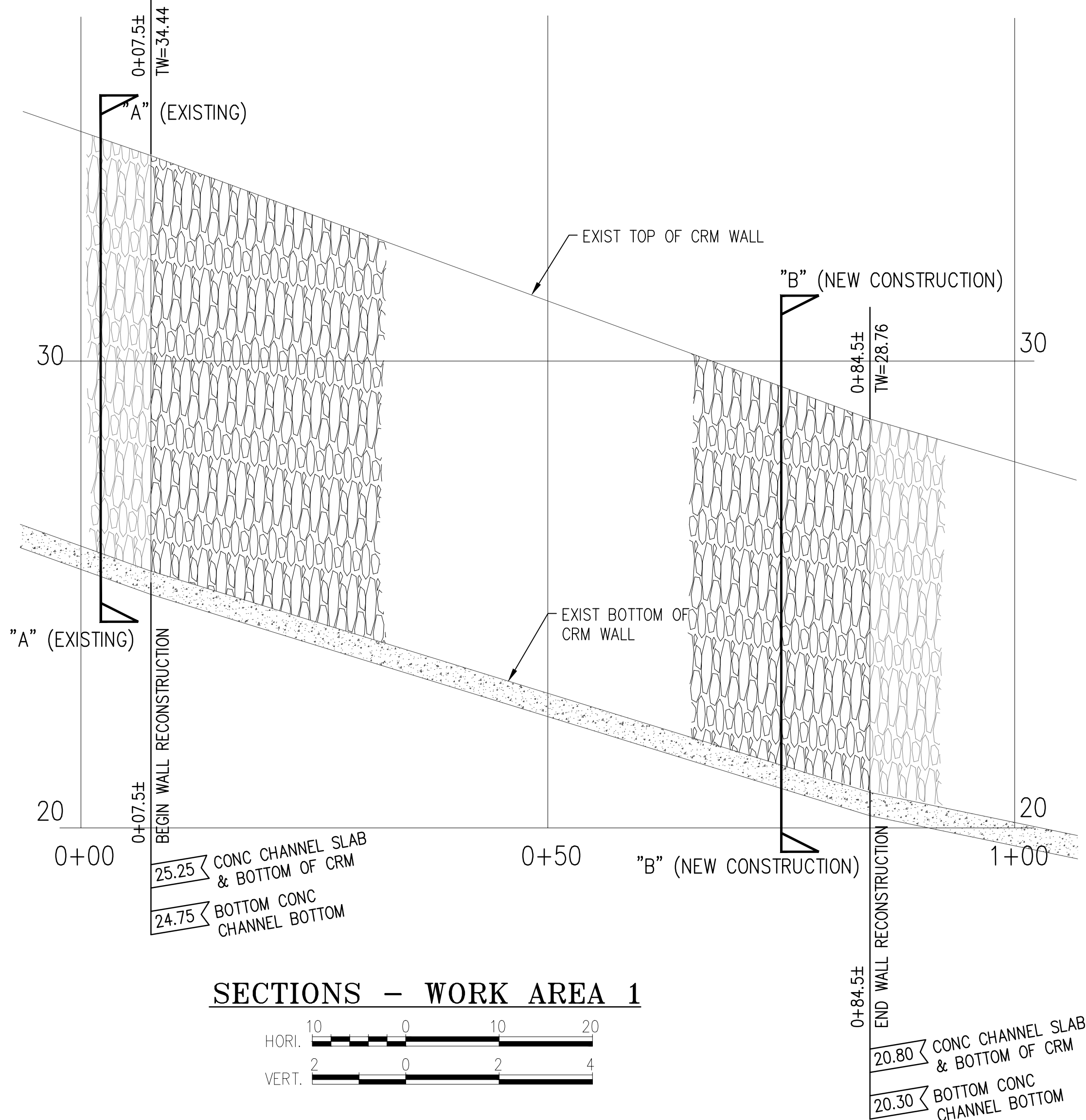
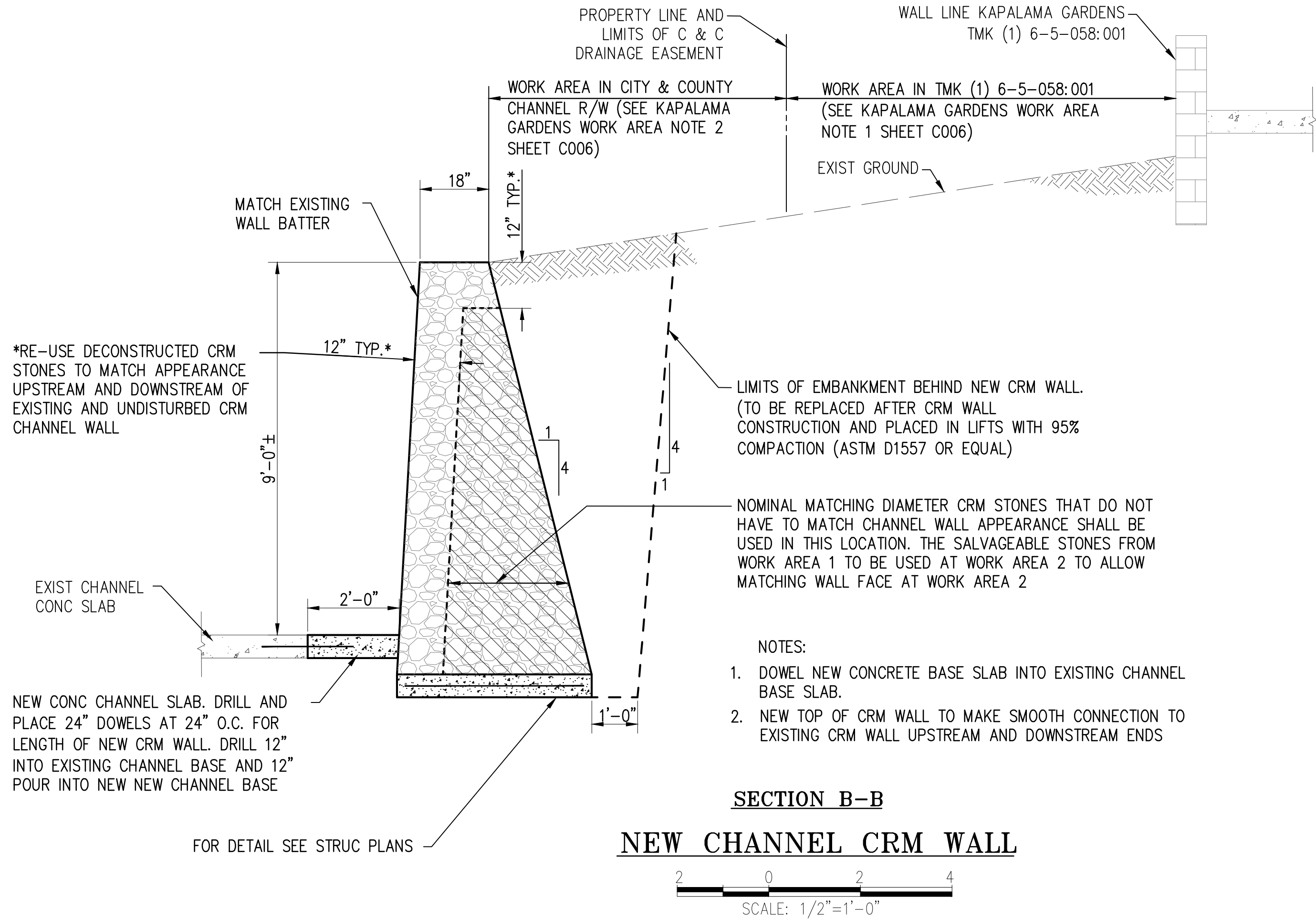
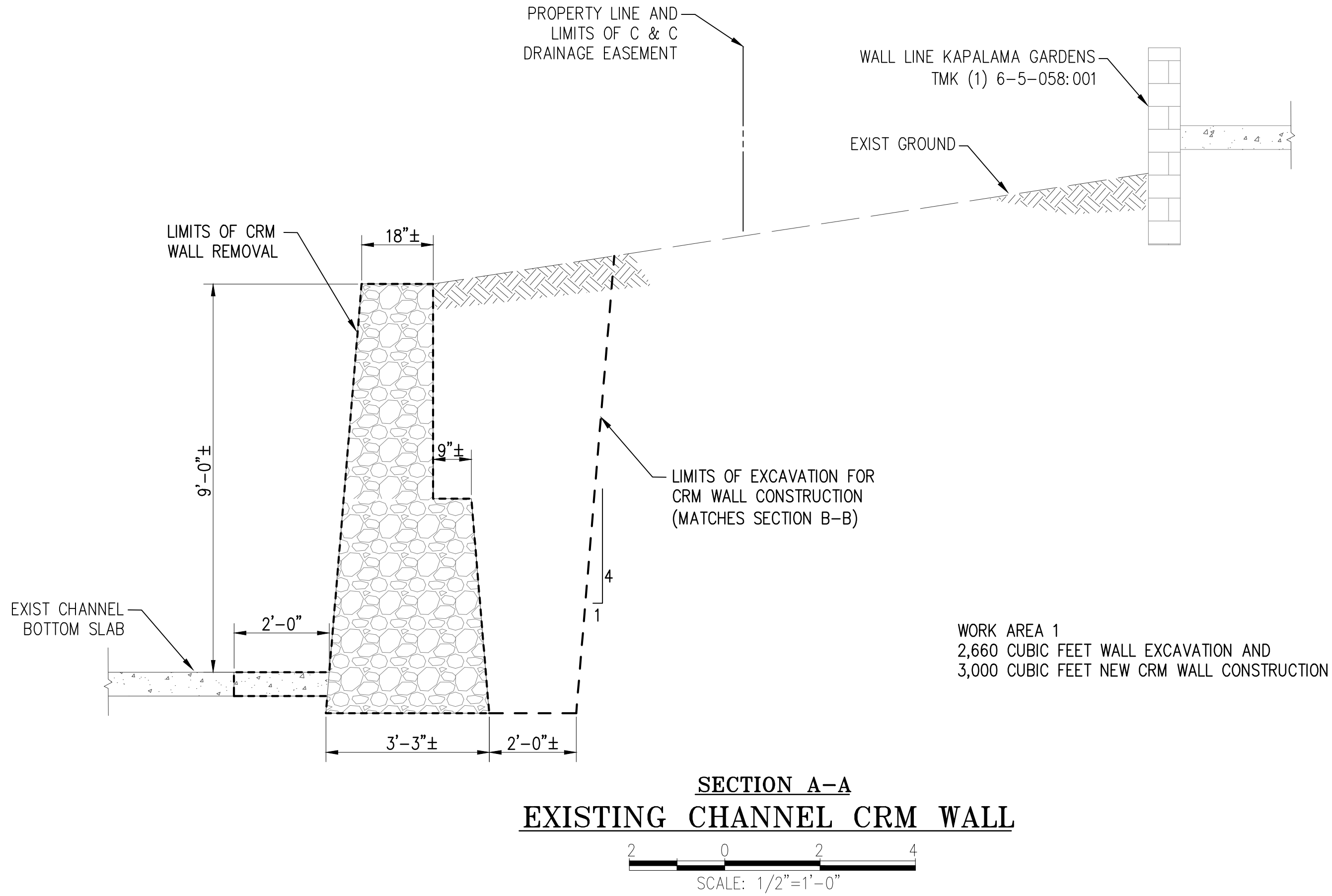
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NUMBER

Fig. 27 Sep 2024 - 10:36am
T:_BCL FILES\Projects\700-01 KAPALAMA PERMANENT REPAIRS (AREA 1 AND 2)\Const Plans Restoration\COMBINED AREAS.dwg\700-01 C007 SECTIONS - Work Area 1.dwg



RE-USE OF WORK AREA 1 CRM STONES AT WORK AREA 2

THIS PROJECT INVOLVES TWO SETS OF CONSTRUCTION DOCUMENTS. THE DOCUMENTS ARE REFERRED TO AS:

1. RESTORATION OF KAPALAMA CHANNEL WALLS-WORK AREA 1, AND
2. RESTORATION OF KAPALAMA CHANNEL WALLS-WORK AREA 2

WORK AREA 1 ONLY INVOLVES DE-CONSTRUCTION OF AN 80± LENGTH OF CRM WALL FOLLOWED BY RE-CONSTRUCTION OF THE WALL DUE TO INVERSE CHANNEL SLOPE RESULTING FROM EXCESS WALL PRESSURES. NO CRM WALL SECTION OF STONES FOR THE EXISTING CRM WALL HAVE BEEN DISLODGED OR WASHED AWAY.

WORK AREA 2 BY CONTRAST, HAD CRM WALL FAILURE AND 40± LINEAR FEET OF CRM WALL WERE COMPLETELY LOST IN A RANFALL AND CHANNEL FLOODING EVENT.

IN 2020, THE CITY & COUNTY OF HONOLULU DEPARTMENT OF PLANNING & PERMITTING AUTHORIZED AN ENVIRONMENTAL IMPACT STATEMENT (EIS) FOR THE "KAPALAMA CANAL CATALYTIC PROJECT". THE EIS REPORTED THAT KAPALAMA CHANNEL WAS ENTIRELY LOCATED WITHIN THE HISTORIC BOUNDARIES OF THE AHUPUA'A OF KAPALAMA.

THEREFORE, THIS PROJECT DESIGN PHILOSOPHY IS TO RE-BUILD THE DESTROYED CRM CHANNEL WALL AT WORK AREA 2 TO THE MAXIMUM EXTENT POSSIBLE WITH AN EXTERIOR APPEARANCE AS CLOSE TO MATCHING THE EXISTING CONDITIONS BEFORE THE CHANNEL AT WORK AREA 2 WAS DESTROYED.

WORK AREA 1 WILL HAVE NON-VISIBLE CRM WALL STONE THAT CAN BE REPLACED WITH EQUIVALENT CRM STONE AND THE NON-VISIBLE STONE WILL BE SALVAGED AND USED AT WORK AREA 2.

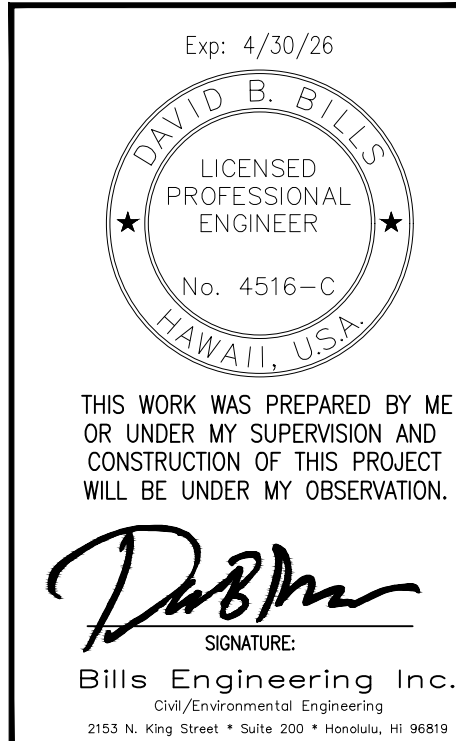
THIS EFFORT WILL NOT COMPROMISE THE STRUCTURAL AND GEOTECHNICAL REQUIREMENTS FOR A NEW CRM WALL BUILT TO CURRENT CODE. THIS EFFORT WILL ALSO ALLOW THE NEW CRM WALL SECTION AT WORK AREA 2 TO MATCH AS CLOSE AS POSSIBLE THE PRIOR EXTERIOR APPEARANCE.

IN ORDER TO ACHIEVE RE-USE OF WORK AREA 1 CRM STONE AT WORK AREA 2. WORK AREA 1 WORK SHALL PRECEDE WORK AREA 2. SALVAGEABLE CRM STONE SHALL BE RESTORED AT THE WORK AREA 2 TEMPORARY CONSTRUCTION ACCESS AS SHOWN ON SHEET C006

APPROVED:

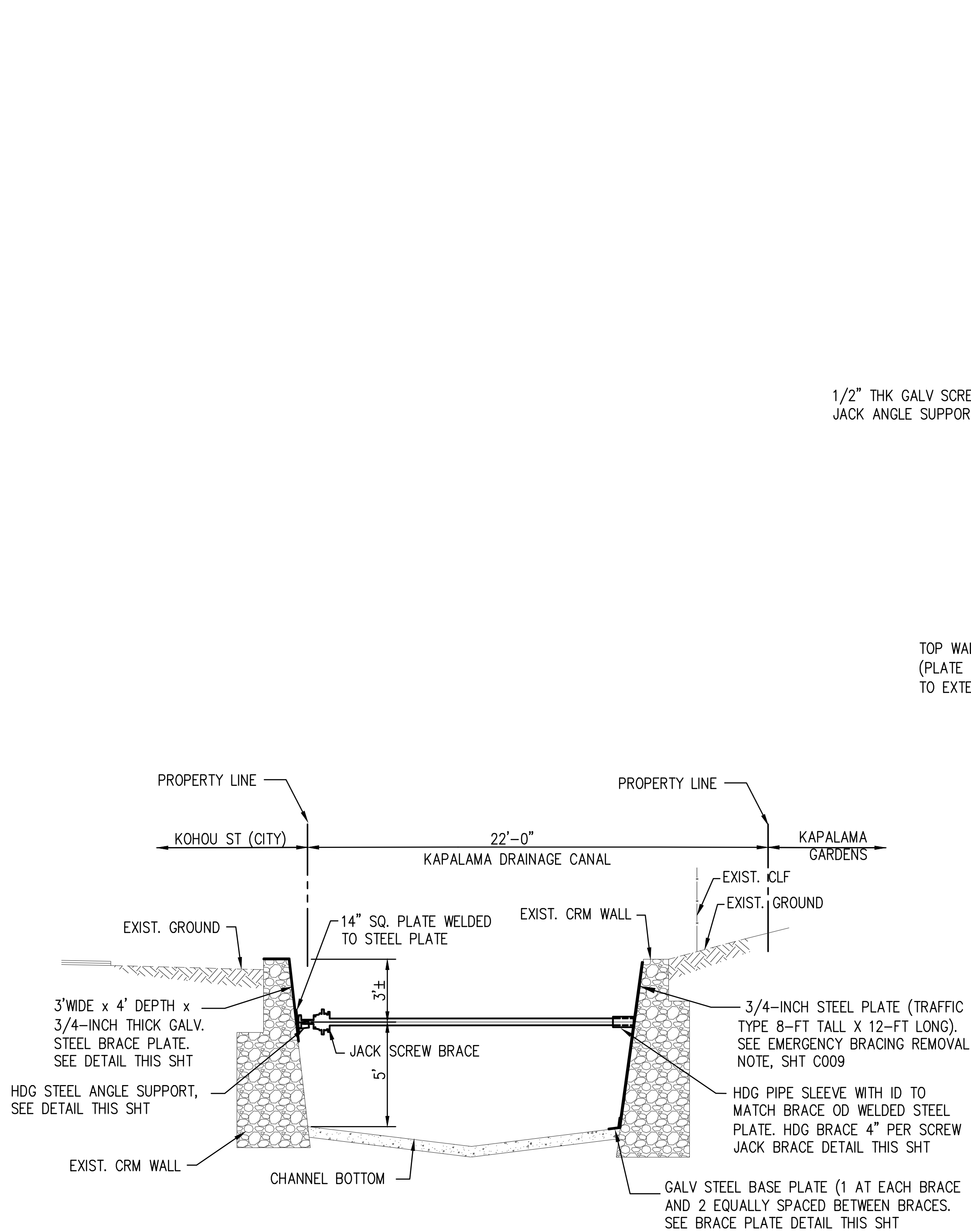
CHIEF, CIVIL ENGINEERING BRANCH, DPP

DATE



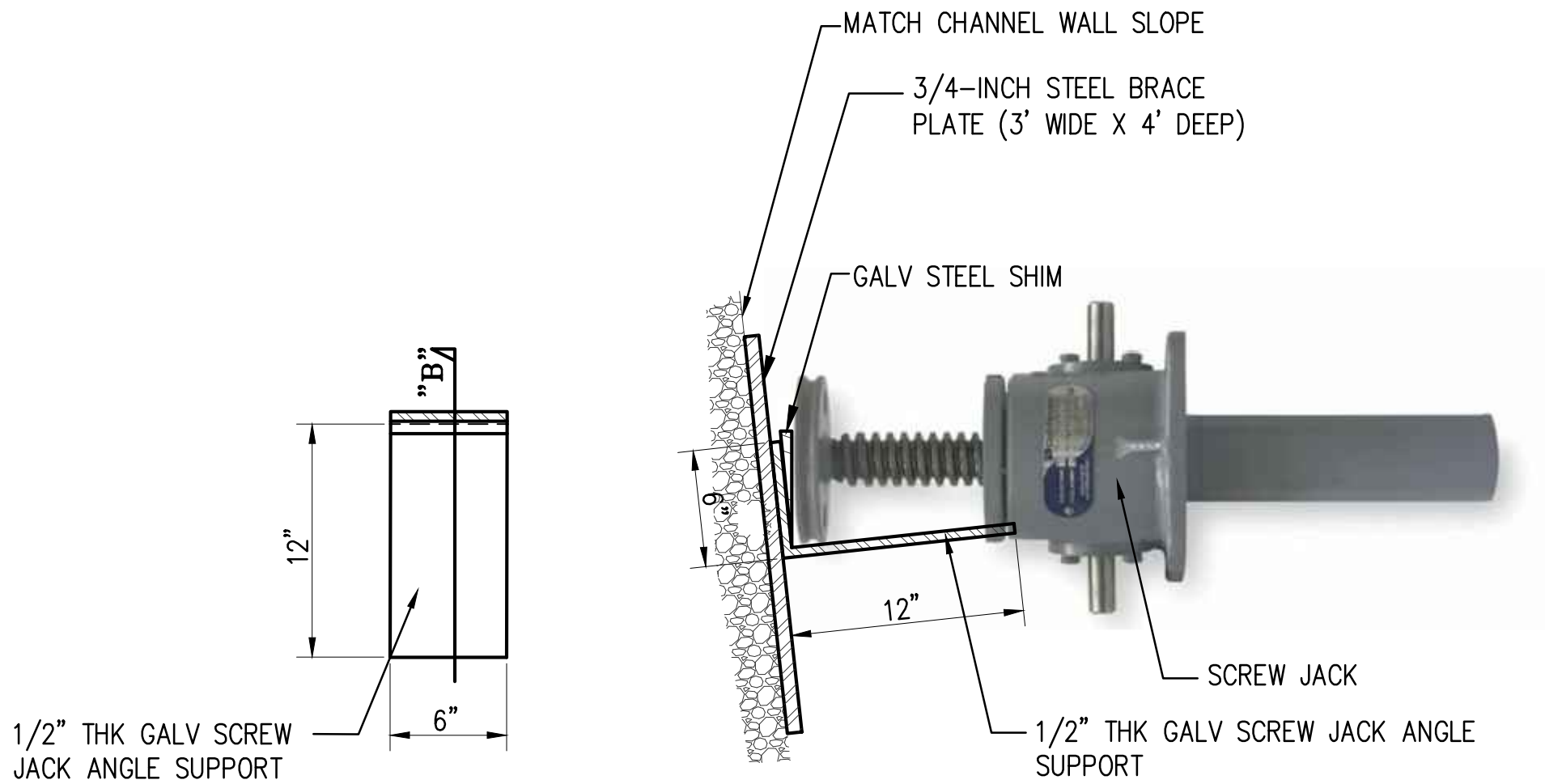
REVISION	DATE	DESCRIPTION	ENGR.	APPROVED
DEPARTMENT OF DESIGN AND CONSTRUCTION CITY AND COUNTY OF HONOLULU CIVIL DIVISION				
RESTORATION OF KAPALAMA STREAM CRM CHANNEL WALLS - Work Area 1 at Kohou Street and Work Area 2 at 1325 N. School Street Honolulu, Oahu, Hawaii				
SECTIONS - WORK AREA 1				
DESIGN: DB	APPROVED:	DRAWING NO. C007		
DRAWN: RE		SHEET 7		
CHECKED: DB	CHIEF, CIVIL DIVISION, DDC	DATE		
DATE: 2024		OF 20 SHEETS		
JOB NO. xx-xx	FILE	DRAW	FOLDER	NUMBER

File: 27 Sep 2024 - 10:41am
T:_BEG FILES\Projects\700-01 KAPALAMA PERMANENT REPAIRS (AREA 1 AND 2)\Const Plans Restoration\COMBINED AREAS.dwg 700-01 C008 MISC DETAILS - Work Area 1.dwg



TYPICAL SECTION "A-A" (EXISTING)

4 2 0 4 8
SCALE: 1" = 4'

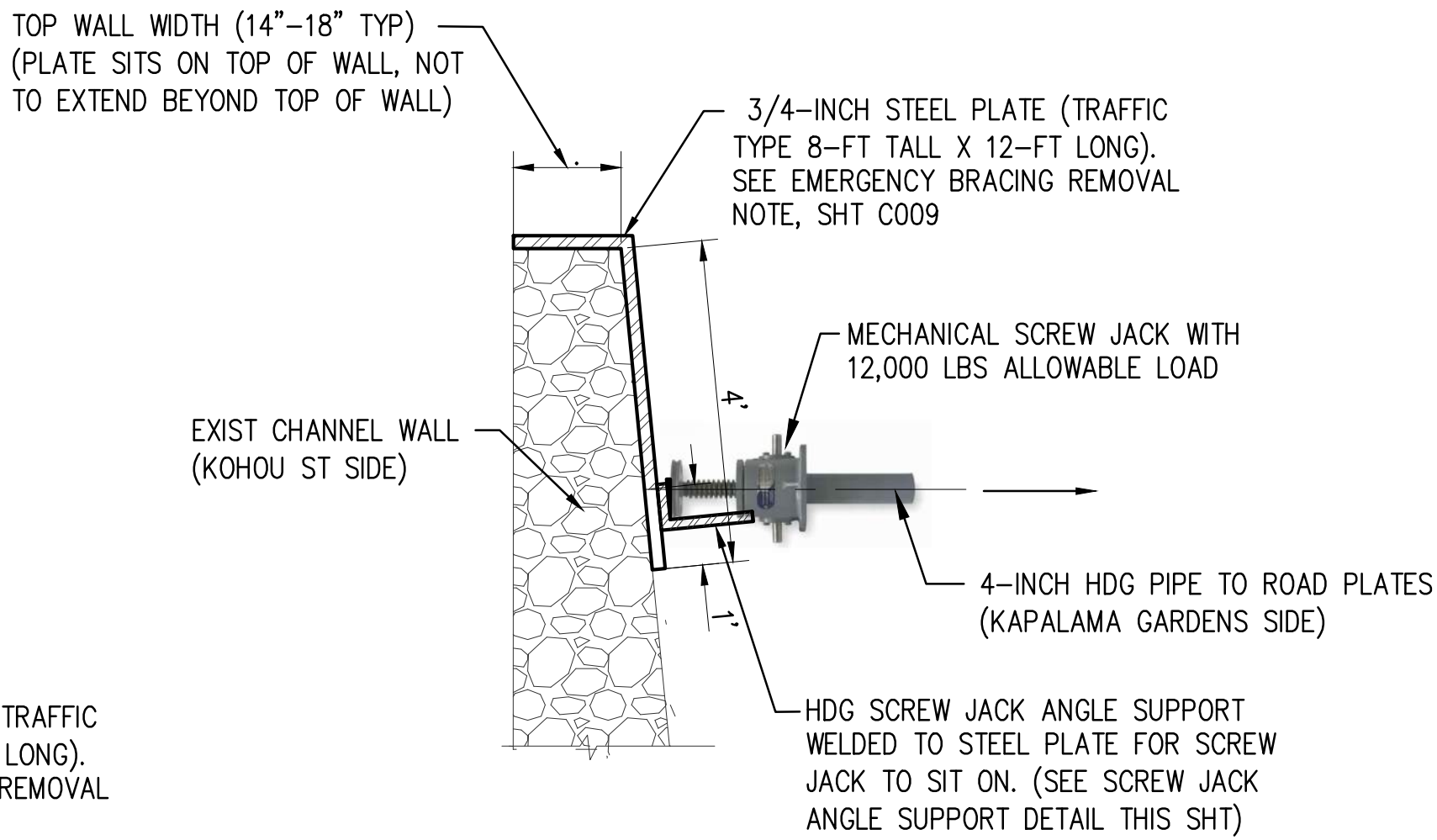


PLAN

SECTION "B"

SCREW JACK ANGLE SUPPORT DETAIL (EXISTING)

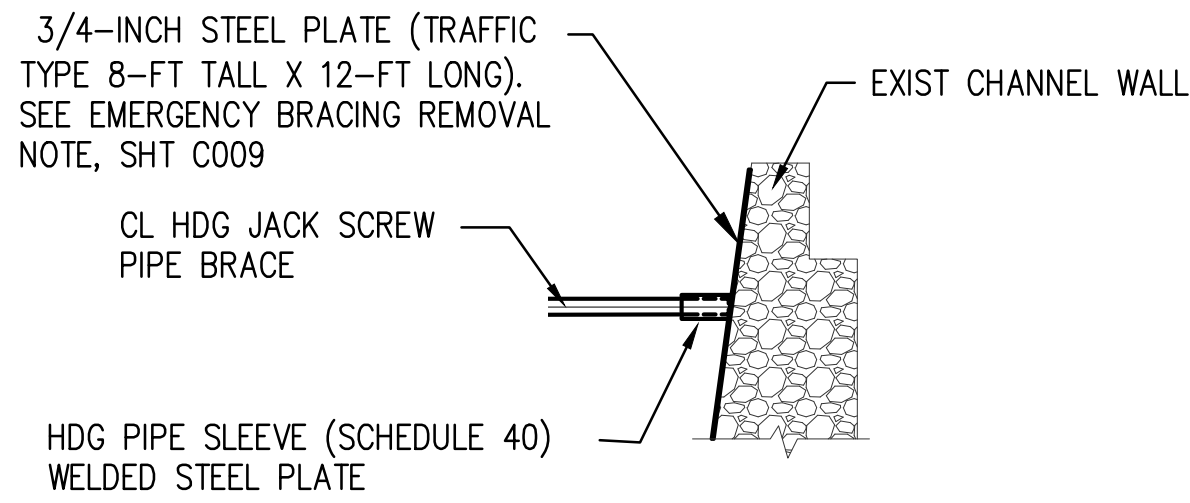
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SECTION "A"

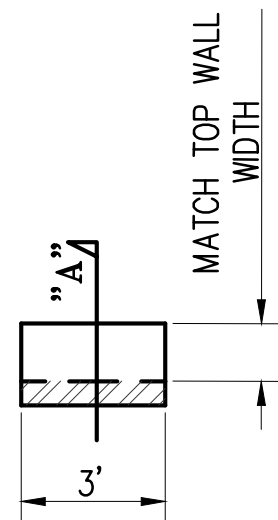
SCREW JACK BRACE SUPPORT DETAIL (EXISTING)

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



PIPE SLEEVE DETAIL (EXISTING)

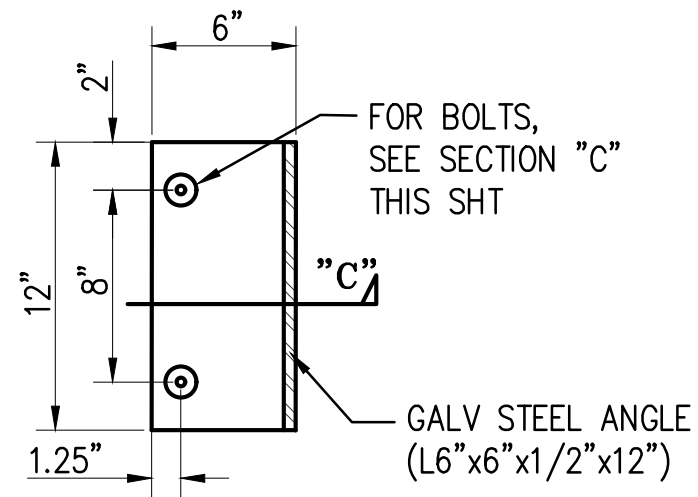
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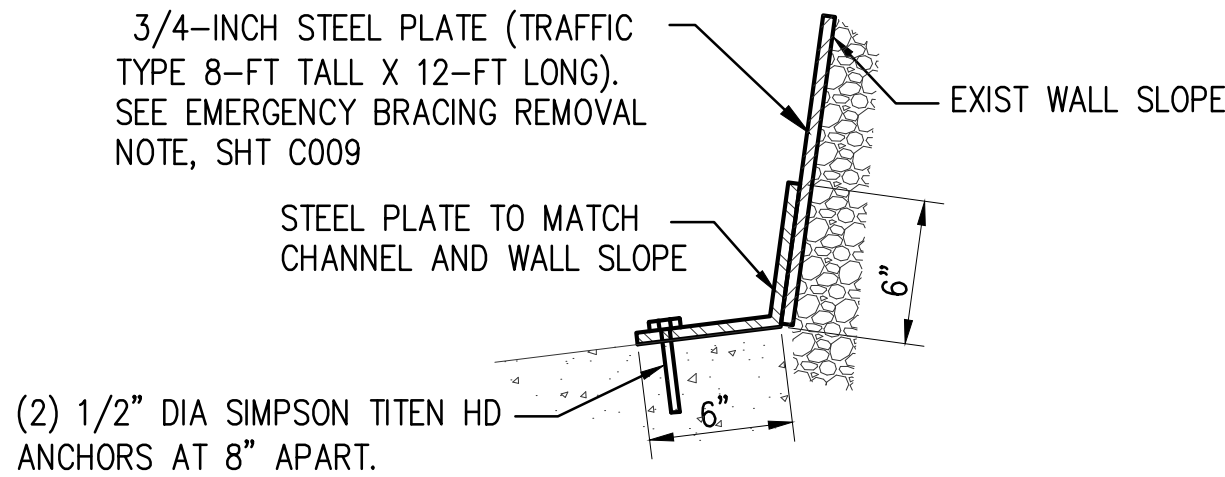
PLAN

STEEL BRACE PLATE DETAIL (EXISTING)

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



PLAN



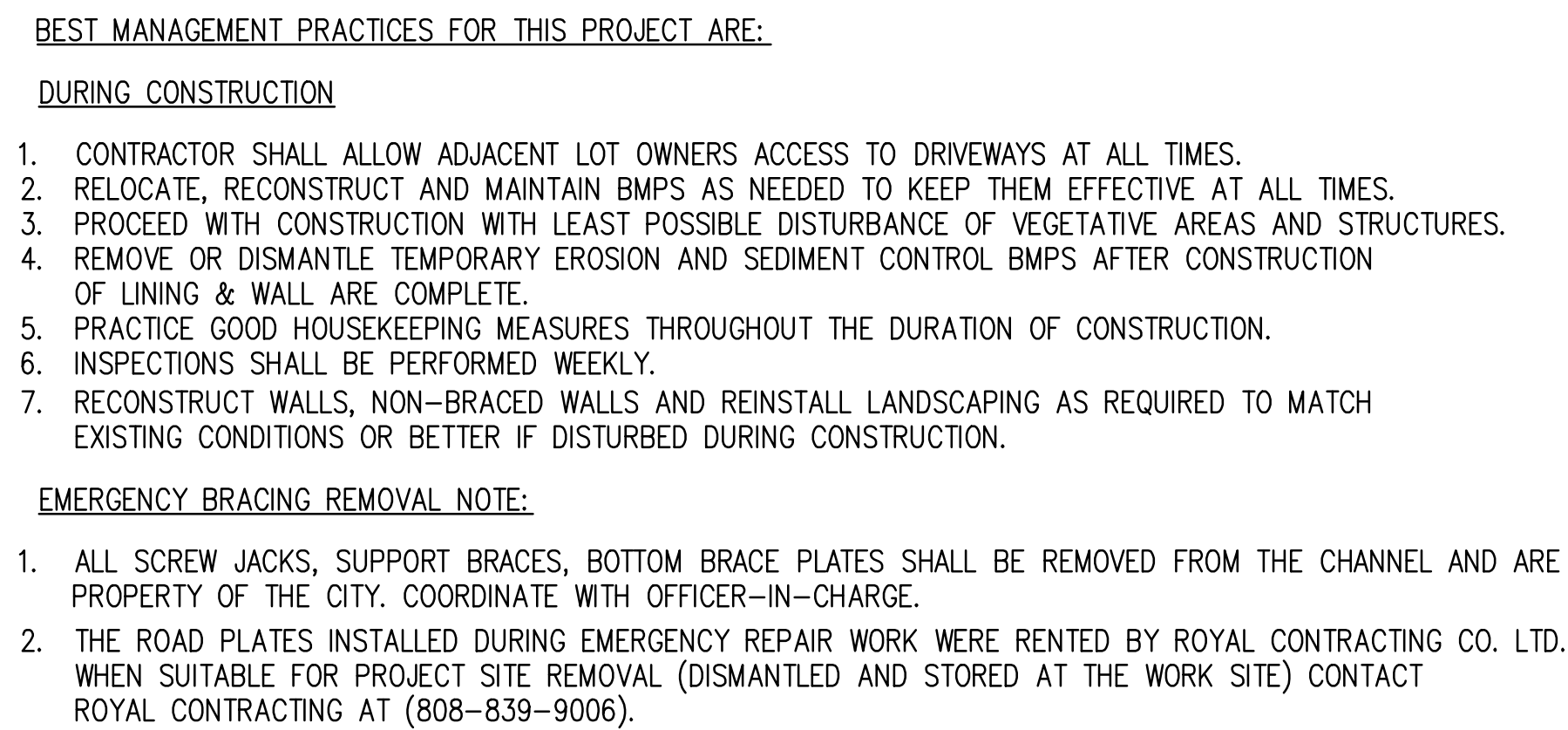
SECTION "C"

ANGLE IRON BOTTOM BRACE PLATE DETAIL (EXISTING)

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

REVISION	DATE	DESCRIPTION	ENGR.	APPROVED

Exp: 4/30/26 DAVID B. BILLS LICENSED PROFESSIONAL ENGINEER No. 4516-C HAWAII, USA THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION AND CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION. SIGNATURE: Bill's Engineering Inc. Civil/Environmental Engineering 2153 N. King Street • Suite 200 • Honolulu, HI 96819		DEPARTMENT OF DESIGN AND CONSTRUCTION CITY AND COUNTY OF HONOLULU CIVIL DIVISION RESTORATION OF KAPALAMA STREAM CRM CHANNEL WALLS - Work Area 1 at Kohou Street and Work Area 2 at 1325 N. School Street Honolulu, Oahu, Hawaii MISCELLANEOUS DETAILS FROM EMERGENCY WORK TO ASSIST IN REMOVAL ACTIVITY AT WORK AREA 1 DESIGN: DB DRAWN: RE CHECKED: DB DATE: 2024 APPROVED: CHIEF, CIVIL DIVISION, DDC DATE DRAWING NO. C008 SHEET 8 OF 20 SHEETS JOB NO. xx-xx FILE DRAW FOLDER NUMBER	
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REVISION	DATE	DESCRIPTION	ENGR.	APPROVED

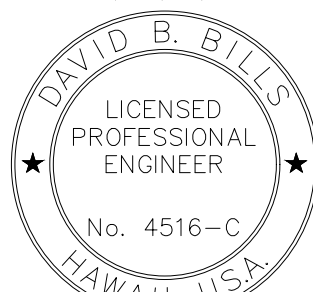
Exp: 4/30/26  DAVID B. BILLS LICENSED PROFESSIONAL ENGINEER No. 4516-C HAWAII, U.S.A. THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION AND CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION.  SIGNATURE: Bills Engineering Inc. Civil/Environmental Engineering 2153 N. King Street • Suite 205 • Honolulu, HI 96819	DEPARTMENT OF DESIGN AND CONSTRUCTION CITY AND COUNTY OF HONOLULU CIVIL DIVISION RESTORATION OF KAPALAMA STREAM CRM CHANNEL WALLS - Work Area 1 at Kohou Street and Work Area 2 at 1325 N. School Street Honolulu, Oahu, Hawaii EROSION AND SEDIMENT CONTROL PLAN - 1 WORK AREA 1 <table border="1" style="width: 100%; border-collapse: collapse; margin-top: 20px;"> <tr> <td style="width: 45%; padding: 5px;"> DESIGN: DB DRAWN: RE CHECKED: DB DATE: 2024 </td> <td style="width: 55%; padding: 5px;"> APPROVED: CHIEF, CIVIL DIVISION, DOC _____ DATE _____ </td> </tr> <tr> <td colspan="2" style="text-align: right; padding: 5px;"> DRAWING NO. C009 SHEET 9 OF 20 SHEETS </td> </tr> </table> <table border="1" style="width: 100%; border-collapse: collapse; margin-top: 20px;"> <tr> <td style="width: 40%; padding: 5px;"> JOB NO. xx-xx </td> <td style="width: 60%; padding: 5px;"> FILE ____ DRAW ____ FOLDER ____ NUMBER ____ </td> </tr> </table>	DESIGN: DB DRAWN: RE CHECKED: DB DATE: 2024	APPROVED: CHIEF, CIVIL DIVISION, DOC _____ DATE _____	DRAWING NO. C009 SHEET 9 OF 20 SHEETS		JOB NO. xx-xx	FILE ____ DRAW ____ FOLDER ____ NUMBER ____
DESIGN: DB DRAWN: RE CHECKED: DB DATE: 2024	APPROVED: CHIEF, CIVIL DIVISION, DOC _____ DATE _____						
DRAWING NO. C009 SHEET 9 OF 20 SHEETS							
JOB NO. xx-xx	FILE ____ DRAW ____ FOLDER ____ NUMBER ____						

Fig. 11 Oct 2024 - 8:29am
T:_BEG FILES\Projects\700-01 KAPALAMA PERMANENT REPAIRS (AREA 1 AND 2)\Const Plans Restoration\COMBINED AREAS.dwg\700-01 C010 ESC NOTES AND DETAILS - Work Area 1.dwg

EROSION AND SEDIMENT CONTROL PLAN NOTES:

PROJECT SEQUENCE:

1. INSTALL STABILIZED CONSTRUCTION INGRESS/EGRESS, SEDIMENT FILTER FOR CATCH BASINS, & PERIMETER CONTROL FOR PROTECTED AREAS.
2. PROCEED WITH CLEARING OF AREAS WHERE SHOTCRETE IS TO BE APPLIED.
3. PROCEED WITH THE INSTALLATION OF SHOTCRETE SLOPE STABILIZATION.
4. PRACTICE GOOD HOUSEKEEPING MEASURES THROUGHOUT THE DURATION OF CONSTRUCTION.
5. INSPECTIONS SHALL BE PERFORMED WEEKLY.

RAIN RESPONSE PLAN NOTES:

1. THE FOLLOWING SHALL BE PERFORMED WHEN HEAVY RAIN, TROPICAL STORM OR HURRICANE IS IMMINENT, OR IS FORECASTED IN THE NEXT 48 HOURS.
2. TEMPORARILY SUSPEND ACTIVE GRADING.
3. INSPECT ALL PERIMETER CONTROLS AND INLET PROTECTION DEVICES AND MAINTAIN AS NEEDED. IF A SEVERE STORM IS EXPECTED, REMOVE INLET PROTECTION DEVICES TO PREVENT FLOODING ON SURROUNDING STREETS.
4. COVER OR RELOCATE MATERIAL STOCKPILES AND LIQUID MATERIAL CONTAINERS TO AVOID CONTACT WITH RAINWATER.
5. PLACE SPILL PANS OR OIL-ONLY SPILL PADS UNDER CONSTRUCTION VEHICLES TO PREVENT RUNOFF FROM CONTACTING ANY SPILLED PETROLEUM PRODUCTS. PROPERLY DISPOSE OF ANY ACCUMULATED OILY WATER AFTER THE RAIN EVENT.
6. RE-INSPECT AFTER THE APPROACHING HEAVY RAINS, TROPICAL STORM OR HURRICANE, AND REPLACE OR MAINTAIN BMPS AS NEEDED.

GOOD HOUSEKEEPING BMPS NOTES:

1. STREET SWEEPING, VACUUMING. ALL POLLUTANTS DISCHARGED FROM CONSTRUCTION SITE TO OFFSITE AREAS MUST BE SWEPT OR VACUUMED EACH DAY BEFORE LEAVING THE JOB SITE.
2. 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 POLLUTANT SHALL NOT BE STORED IN BUFFER AREAS, NEAR AREAS OF CONCENTRATED FLOW, OR AREAS ABUTTING THE MS4, RECEIVING WATERS, OR DRAINAGE IMPROVEMENTS THAT DISCHARGE OFFSITE. PRIMARY AND SECONDARY CONTAINMENT CONTROLS AND COVERS SHALL BE IMPLEMENTED TO THE MEP.
3. SPILL PREVENTION AND CONTROL. CREATE AND IMPLEMENT SPILL PREVENTION AND RESPONSE PLAN 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.
4. 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.
5. NONHAZARDOUS MATERIALS. IN THE EVENT THAT NONHAZARDOUS MATERIALS ARE DISCHARGE 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.
6. VEHICLE AND EQUIPMENT CLEANING. ELIMINATE AND MINIMIZE THE DISCHARGE OF POLLUTANTS TO STORM WATER FROM VEHICLE AND EQUIPMENT CLEANING OPERATIONS BY USING OFFSITE FACILITIES WHEN FEASIBLE, WASHING IN DESIGNATED, CONTAINED AREAS ONLY, AND ELIMINATING DISCHARGES TO THE STORM DRAIN SYSTEM BY EVAPORATING AND/OR TREATING WASH WATER, AS APPROPRIATE OR INFILTRATING WASH WATER FOR EXTERIOR CLEANING ACTIVITIES THAT USE WATER ONLY.
7. VEHICLE AND EQUIPMENT FUELING. PREVENT FUEL SPILLS AND LEAKS BY USING OFFSITE FACILITIES, FUELING ONLY IN DESIGNATED AREAS, ENCLOSING OR COVERING STORED FUEL, AND IMPLEMENTING SPILL CONTROLS SUCH AS SECONDARY CONTAINMENT AND ACTIVE MEASURES USING SPILL RESPONSE KITS.
8. VEHICLE AND EQUIPMENT MAINTENANCE. ELIMINATE AND MINIMIZE THE DISCHARGE OF POLLUTANTS TO STORM WATER FROM VEHICLE AND EQUIPMENT MAINTENANCE OPERATIONS BY USING OFFSITE FACILITIES WHEN FEASIBLE, PERFORMING WORK IN DESIGNATED AREAS ONLY, USING SPILL PADS UNDER VEHICLES AND EQUIPMENT, CHECKING FOR LEAKS AND SPILLS, AND CONTAINING AND CLEANING UP SPILLS IMMEDIATELY.
9. SOLID WASTE MANAGEMENT. PREVENT OR REDUCE DISCHARGE OF POLLUTANTS TO THE LAND, GROUNDWATER, IN STORM WATER, FROM SOLID WASTE OR CONSTRUCTION AND DEMOLITION WASTE, BY PROVIDING DESIGNATED WASTE COLLECTION AREAS. COLLECT SITE TRASH DAILY, AND ENSURE THAT CONSTRUCTION WASTE IS COLLECTED, REMOVED, AND DISPOSED OF, ONLY AT AUTHORIZED DISPOSAL AREAS.
10. 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.
11. 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.
12. LIQUID WASTE MANAGEMENT. LIQUID WASTE SHALL BE CONTAINED IN A CONTROLLED AREA SUCH AS A HOLDING PIT, SEDIMENT BASIN, ROLL-OFF BIN, OR PORTABLE TANK, OF SUFFICIENT VOLUME AND TO CONTAIN THE LIQUID WASTES GENERATED. CONTAINMENT AREAS OR DEVICES MUST BE IMPERMEABLE AND LEAK FREE AND SHOULD NOT BE LOCATED WHERE ACCIDENTAL RELEASE OF THE CONTAINED LIQUID CAN DISCHARGE TO WATER BODIES, CHANNEL OR STORM DRAINS.
13. 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 SHALL BE A MINIMUM OF 10 MILLIMETER POLYETHYLENE SHEETING AND SHALL BE FREE OF HOLES, TEARS, OR OTHER DEFECTS THAT COMPROMISE THE IMPERMEABILITY OF THE MATERIAL. CONTAINMENT AREAS AND DEVICES SHALL 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 DESIGNATED AREA AND ALLOWED TO HARDEN, THE CONCRETE SHALL BE BROKEN UP, REMOVED, AND DISPOSED OF AS SOLID WASTES.
14. CONTAMINATED SOIL MANAGEMENT. AT A MINIMUM, CONTAIN CONTAMINATED MATERIAL SOIL BY SURROUNDING WITH IMPERMEABLE LINED BERMS OR COVER EXPOSED CONTAMINATED MATERIAL WITH PLASTIC SHEETING. CONTAMINATED SOIL SHALL BE DISPOSED OF PROPERLY IN ACCORDANCE WITH ALL APPLICABLE REGULATIONS.
15. BMP & SITE MAINTENANCE. RELOCATE, RECONSTRUCT AND MAINTAIN BMPS AS NEEDED TO KEEP THEM EFFECTIVE AT ALL TIMES. PROCEED WITH CONSTRUCTION WITH LEAST POSSIBLE DISTURBANCE OF VEGETATIVE AREAS AND STRUCTURES. REMOVE OR DISMANTLE TEMPORARY EROSION CONTROL STRUCTURES AFTER CONSTRUCTION OF LINING ARE COMPLETE. PRACTICE GOOD HOUSEKEEPING MEASURES THROUGHOUT THE DURATION OF CONSTRUCTION. INSPECTIONS SHALL BE PERFORMED WEEKLY.
16. DUST CONTROL. THE CONTRACTOR, AT HIS/HER OWN EXPENSE, SHALL KEEP THE PROJECT AND ITS SURROUNDING AREAS FREE FROM DUST NUISANCE. THE WORK SHALL BE IN CONFORMANCE WITH THE AIR POLLUTION STANDARDS AND REGULATIONS OF THE STATE DEPARTMENT OF HEALTH.

EROSION PREVENTION/SEDIMENT CONTROL NOTES:

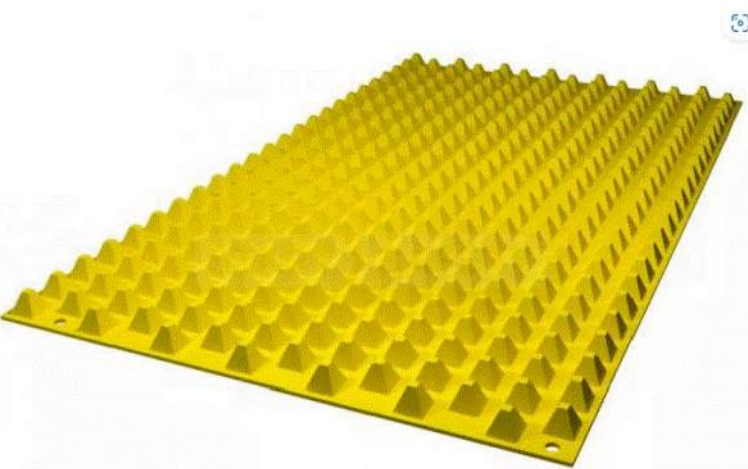
1. THE CONTRACTOR SHALL FOLLOW THE GUIDELINES IN THE CITY & COUNTY OF HONOLULU'S "RULES RELATING TO WATER QUALITY".
2. MEASURES TO CONTROL EROSION AND OTHER POLLUTANTS SHALL BE IN PLACE BEFORE ANY EARTHWORK IS INITIATED.
3. TEMPORARY STABILIZATION IS REQUIRED ON DISTURBED AREAS WHICH ARE AT FINAL GRADE OR WHEN THE DISTURBED AREA WILL NOT BE WORKED FOR 7 CONSECUTIVE DAYS OR MORE.
4. PERMANENT STABILIZATION. ALL DISTURBED AREAS SHALL BE PERMANENTLY STABILIZED USING VEGETATIVE COVERING, PAVEMENT, OR EQUIVALENT, PRIOR TO REMOVING EROSION AND SEDIMENT MEASURES. TRAPPED SEDIMENT AND AREAS OF DISTURBED SOIL WHICH RESULT FROM THE REMOVAL OF THE TEMPORARY MEASURES SHALL BE IMMEDIATELY AND PERMANENTLY STABILIZED.
5. PRESERVE EXISTING VEGETATION. CLEARLY MARK THE AREAS TO BE PRESERVED WITH FLAGS OR TEMPORARY FENCING. WHERE TEMPORARY FENCING IS USED, FENCING SHALL BE ADEQUATELY SUPPORTED BY POSTS AND MAINTAINED IN AN UPRIGHT POSITION.
6. MINIMIZE SOIL COMPACTION AREAS. WHERE FINAL STABILIZATION OR INFILTRATION PRACTICES ARE TO BE INSTALLED, AREA SHALL BE PROTECTED FROM EXCESSIVE COMPACTION DURING CONSTRUCTION. VEHICLE AND EQUIPMENT USE SHALL BE RESTRICTED OR TECHNIQUES TO CONDITION THE SOILS TO SUPPORT VEGETATION SHALL BE IMPLEMENTED IN THE AREAS THAT HAVE BEEN COMPACTED AND ARE DESIGNATED TO REMAIN VEGETATIVE OR POST-CONSTRUCTION INFILTRATION AREAS. CLEARLY MARK THE AREAS TO BE AVOIDED WITH FLAGS OR TEMPORARY FENCING. WHERE TEMPORARY FENCING IS USED, FENCING SHALL BE ADEQUATELY SUPPORTED BY POSTS AND MAINTAINED IN AN UPRIGHT POSITION.
7. PERIMETER CONTROLS ARE REQUIRED DOWN SLOPE OF ALL DISTURBED AREAS.
8. INLET PROTECTION (SEDIMENT FILTER)
 - A) ALL STORM DRAIN INLETS ONSITE AND THOSE OFFSITE WHICH MAY RECEIVE RUNOFF FROM THE SITE SHALL USE AN INLET PROTECTION DEVICE UNLESS THEY ARE DIRECTED TO A SEDIMENT BASIN.
 - B) SEDIMENT LEVELS MAY NOT EXCEED ONE THIRD OF THE HEIGHT OF A SEDIMENT BARRIER OR INLET PROTECTION DEVICE AT ANY POINT ALONG THE LENGTH OF THE SEDIMENT BARRIER OR THE INLET PROTECTION DEVICE.
 - C) SEDIMENT BARRIERS AND INLET PROTECTION DEVICES SHALL BE UNCLOGGED AND CLEANED WHEN PERFORMANCE IS COMPROMISED.
 - D) TORN, WEATHERED, OR SAGGING, SEDIMENT BARRIERS OR INLET PROTECTION DEVICES SHALL BE REPAIRED OR REPLACED IMMEDIATELY.
9. TRACKING CONTROL
 - A) MINIMIZE SEDIMENT TRACK-OUT ONTO OFFSITE STREETS, OTHER PAVED AREAS, AND SIDEWALKS FROM VEHICLES EXITING THE CONSTRUCTION SITE BY RESTRICTING VEHICLE TRAFFIC TO PROPERLY DESIGNATED AREAS AND USING ADDITIONAL CONTROLS TO REMOVE SEDIMENT FROM VEHICLE TIRES PRIOR TO EXITING THE SITE.
 - B) VEHICULAR PARKING AND MOVEMENTS ON PROJECT SITE SHALL BE CONFINED TO PAVED SURFACES OF PREDEFINED PARKING AREAS AND VEHICLE PATHS, WHICH SHALL BE MARKED WITH FLAGS OR BOUNDARY FENCING.
 - C) ALL POLLUTANTS AND MATERIALS THAT ARE DROPPED, WASHED, TRACKED, SPILLED OR OTHERWISE DISCHARGED FROM A PROJECT TO OFFSITE STREETS, OTHER PAVED AREAS, SIDEWALKS OR THE MS4 SHALL BE CLEANED USING DRY METHODS SUCH AS SWEEPING OR VACUUMING.
 - D) WASHING POLLUTANTS AND MATERIALS THAT ARE DISCHARGED FROM THE PROJECT SITE TO THE MS4 INTO DRAIN INLETS OR CATCH BASINS IS PROHIBITED UNLESS THE MATERIAL IS SEDIMENT AND THE INLETS ARE DIRECTED TO A SEDIMENT BASIN OR SEDIMENT TRAP.
10. SLOPE PROTECTION IS REQUIRED ON AREAS WITH SLOPES GREATER THAN 15% AND ON AREAS OF MODERATE SLOPE THAT ARE PRONE TO EROSION UNLESS THEY ARE BEING ACTIVELY WORKED. USE DIVERSION UPSTREAM OF SLOPE (DIKES, SWALES, SLOPE DRAINS) TO DIVERT WATER AROUND THE SLOPE. PROVIDE A 10-FT BUFFER ZONE AT THE TOE OF SLOPE. ONLY 5 ACRES MAY BE DISTURBED AT ANYTIME ON SLOPES GREATER THAN 15%.
11. BEST MANAGEMENT PRACTICES (BMPS) SHALL NOT BE REMOVED UNTIL FINAL STABILIZATION IS COMPLETE FOR THAT PHASE.
12. REFER TO CITY & COUNTY OF HONOLULU BEST MANAGEMENT PRACTICES MANUAL – CONSTRUCTION, FOR MORE INFORMATION ON BMPS.
13. A PERSON RESPONSIBLE FOR IMPLEMENTING THE ESCP AT THE PROJECT SITE ("ESCP COORDINATOR") MUST BE DESIGNATED PRIOR TO PERMIT ISSUANCE USING THE FORM PROVIDED IN APPENDIX A TO THE RULES RELATING TO WATER QUALITY.
 - a) Velocity dissipation devices
 - b) Diversion BMPS
 - c) Dewatering operations BMPS
15. CONTRACTOR SHALL COMPLY WITH THE PROJECT SCHEDULE REQUIREMENTS OF THE CITY'S RULES RELATING TO WATER QUALITY AND IS TO SUBMIT THE SCHEDULED START DATE TWO WEEKS PRIOR.



3' HIGH X 3' WIDE PLASTIC-LINED BULK SACKS (FLEXIBLE INTERMEDIATE BULK CONTAINERS "FIBC") OR APPROVED SUBSTITUTE FILLED WITH SAND TO ISOLATE WORK AREA. WRAP BULK BAGS WITH 10 MM PLASTIC LINER & HEAVY DUTY FILTER FABRIC (MIRAFI 160N OR APPROVED SUBSTITUTE) TO REDUCE WATER INFILTRATION. ALLOW FOR PASSAGE OF WATER AT ALL TIMES. BARRIERS ARE TO BE MOVED AND ADJUSTED TO MATCH THAT REQUIRED FOR EACH CONSTRUCTION PHASE.

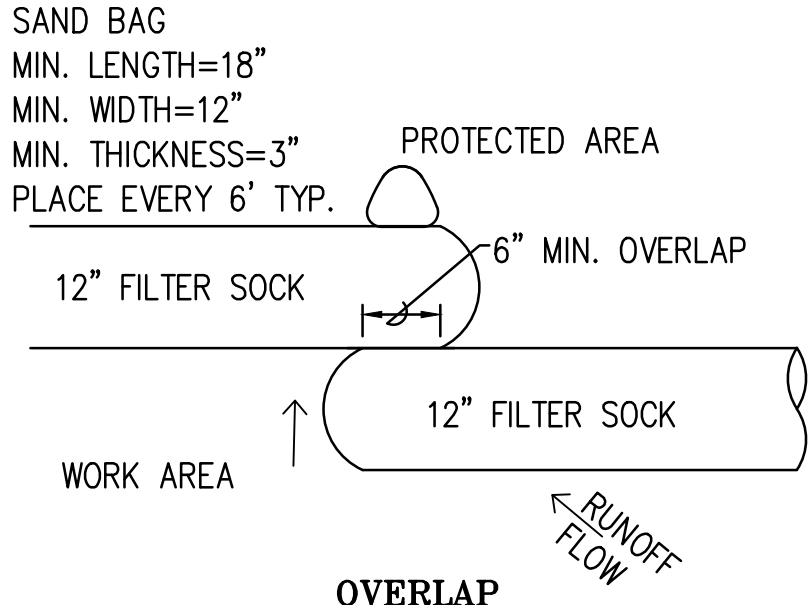
**TYPICAL FIBC BAGS
(OR APPROVED SUBSTITUTE)**

NOT TO SCALE

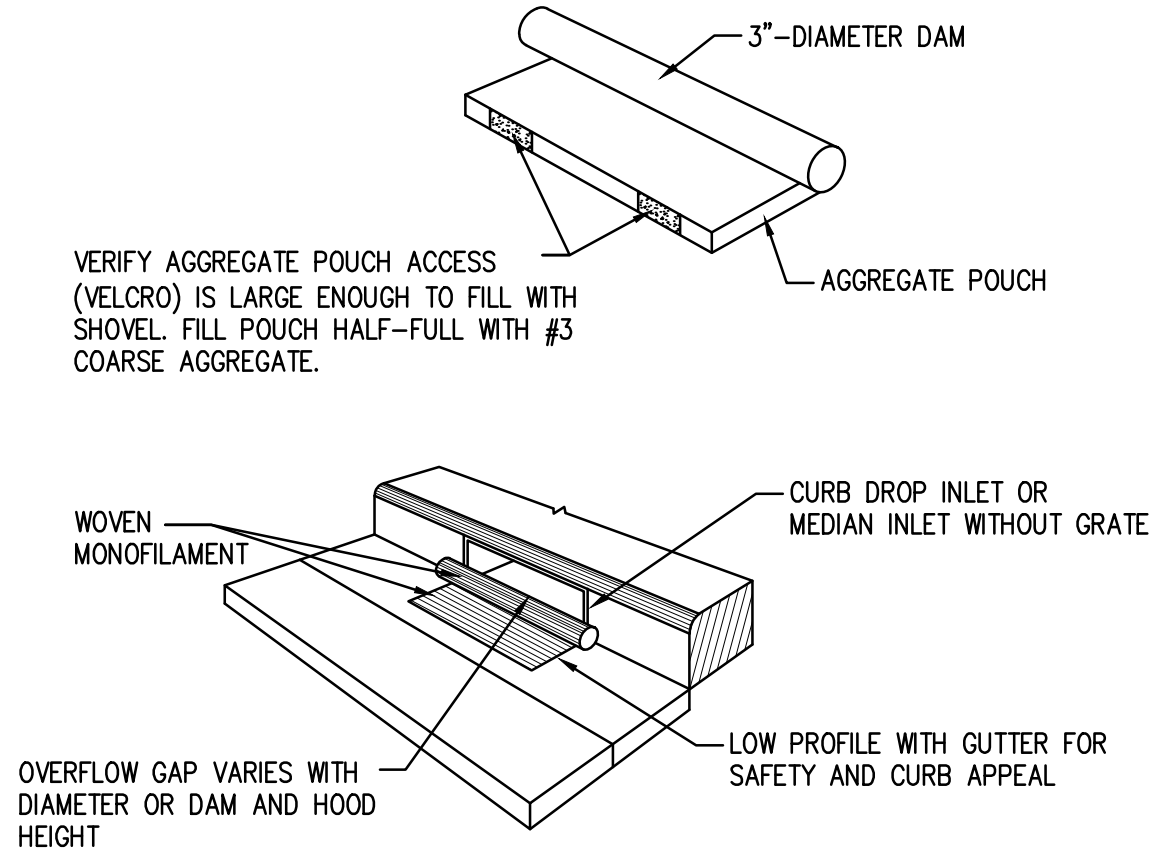


**FODS TRACKOUT CONTROL SYSTEM
(OR APPROVED SUBSTITUTE)**

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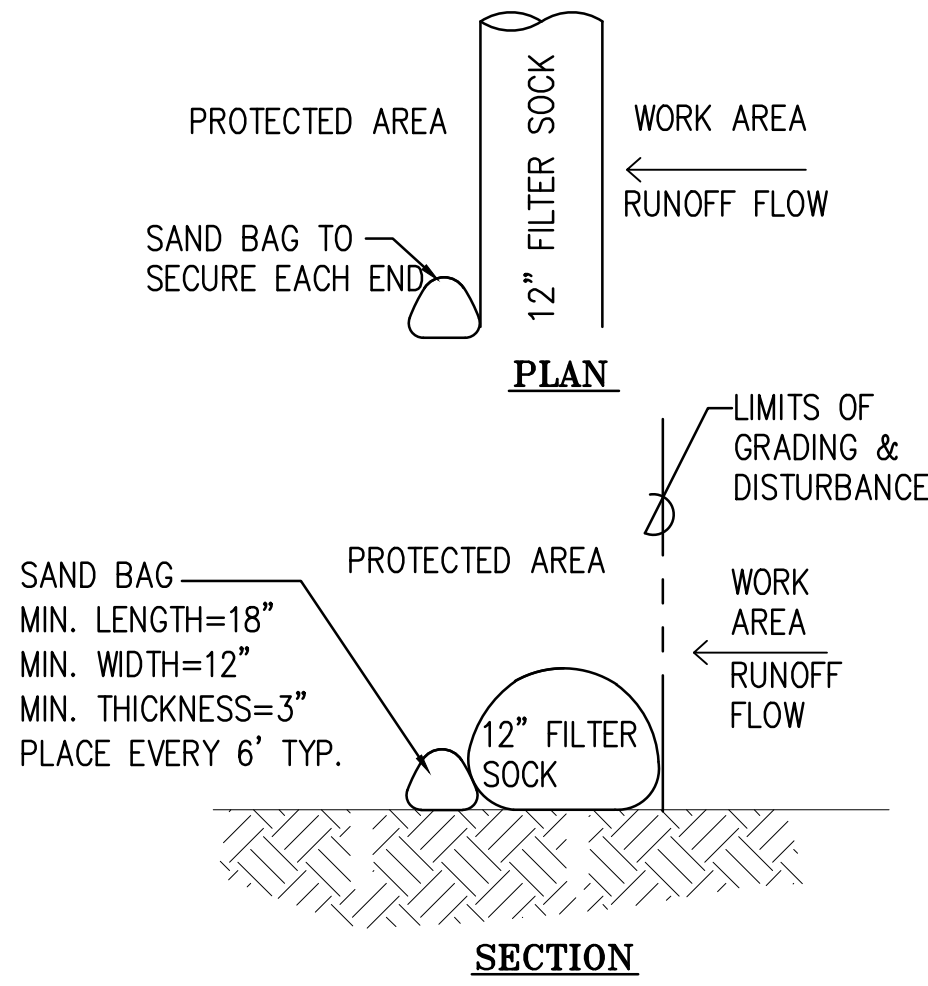


OVERLAP



SEDIMENT FILTER FOR CATCH BASIN DETAILS

NOT TO SCALE



SECTION

BIO-SOCK FILTER DETAILS

NOT TO SCALE

PRE-CONSTRUCTION, DURING CONSTRUCTION AND POST-CONSTRUCTION BMP TABLE

PRE-CONSTRUCTION	DURING CONSTRUCTION	POST-CONSTRUCTION
STABILIZED CONSTRUCTION INGRESS/EGRESS (FODS)	RELOCATE, RECONSTRUCT AND MAINTAIN BMPS AS NEEDED TO KEEP THEM EFFECTIVE AT ALL TIMES. PROCEED WITH CONSTRUCTION WITH LEAST POSSIBLE DISTURBANCE OF VEGETATIVE AREAS AND STRUCTURES. PRACTICE GOOD HOUSEKEEPING MEASURES THROUGHOUT THE DURATION OF CONSTRUCTION. INSPECTIONS SHALL BE PERFORMED WEEKLY. RECONSTRUCT WALL(S) AND REINSTALL LANDSCAPING AS REQUIRED TO MATCH EXISTING CONDITIONS OR BETTER. TEMPORARY STABILIZATION. MAXIMIZE IN CHANNEL WORK WITH NO FLOW IN CHANNEL	PERMANENT STABILIZATION (GRASS TROE AREA)

APPROVED:

CHIEF, CIVIL ENGINEERING BRANCH, DPP

DATE

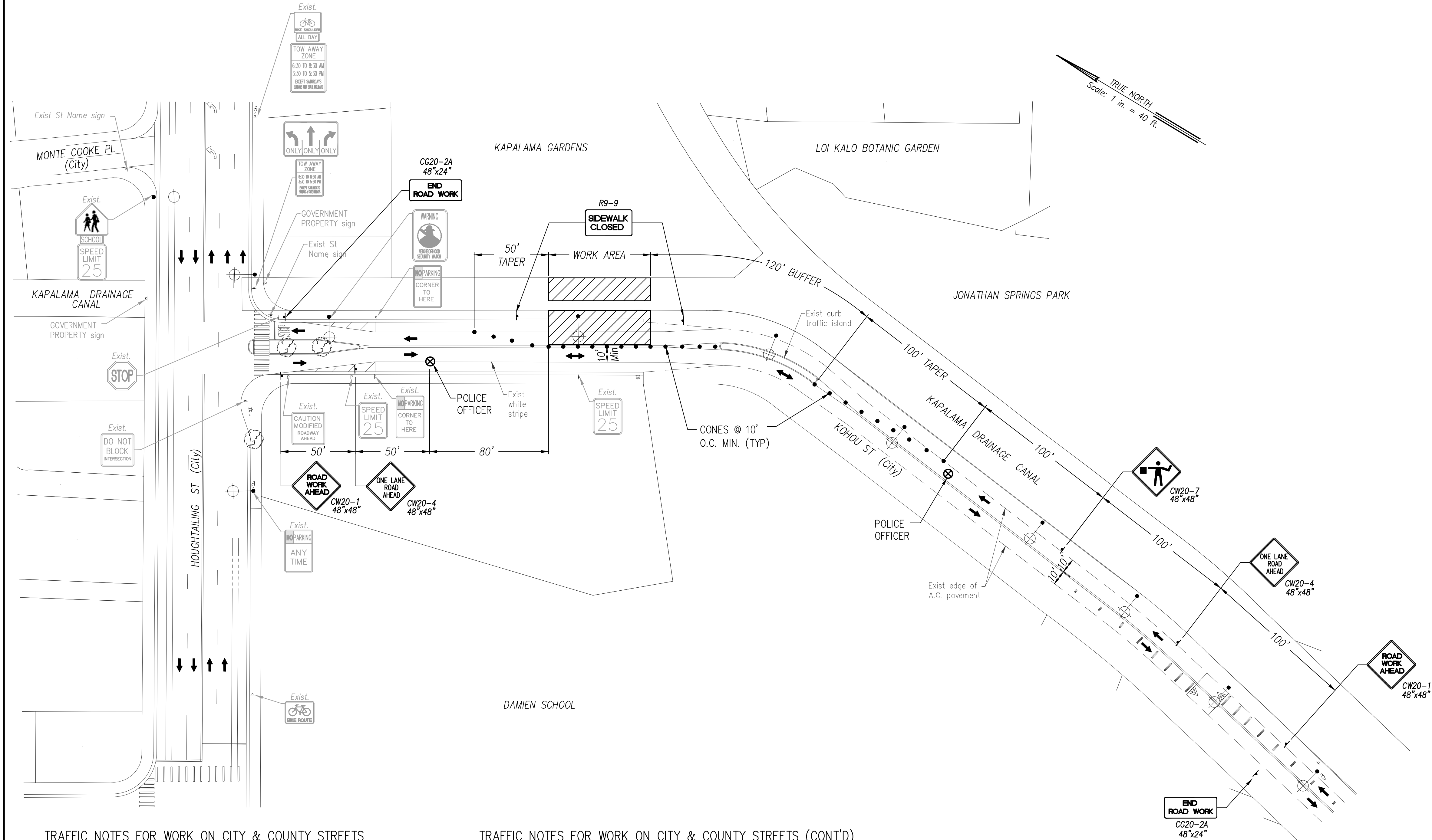
Exp: 4/30/26

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

SIGNATURE:
Bills Engineering Inc.
Civil/Environmental Engineering
2153 N. King Street • Suite 200 • Honolulu, HI 96819

REVISION	DATE	DESCRIPTION	ENGR.	APPROVED
DEPARTMENT OF DESIGN AND CONSTRUCTION CITY AND COUNTY OF HONOLULU CIVIL DIVISION				
RESTORATION OF KAPALAMA STREAM CRM CHANNEL WALLS - Work Area 1 at Kohou Street and Work Area 2 at 1325 N. School Street Honolulu, Oahu, Hawaii				
EROSION AND SEDIMENT CONTROL NOTES AND DETAILS - WORK AREA 1				
DESIGN: DB	APPROVED:	DRAWING NO. C010		
DRAWN: RE		SHEET 10		
CHECKED: DB	CHIEF, CIVIL DIVISION, DDC	DATE		
DATE: 2024	OF 20 SHEETS			
JOB NO. xx-xx	FILE	DRAW	FOLDER	NUMBER

File: 27 Sep 2024 - 10:54am
T:_BEG FILES\Projects\700-01 KAPALAMA PERMANENT REPAIRS (AREA 1 AND 2)\Const Plans Restoration\COMBINED AREAS.dwg 700-01 C011 TRAFFIC CONTROL PLAN - Work Area 1.dwg



TRAFFIC NOTES FOR WORK ON CITY & COUNTY STREETS

- A PERMIT SHALL BE OBTAINED FROM THE DEPARTMENT OF TRANSPORTATION SERVICES BEFORE WORK ON ANY PORTION OF A PUBLIC STREET OR HIGHWAY MAY BEGIN. CONSTRUCTION TRAFFIC CONTROL PLANS APPROVED BY THE DEPARTMENT OF TRANSPORTATION SERVICES AND/OR THE DEPARTMENT OF PLANNING AND PERMITTING MUST BE PROVIDED WHEN APPLYING FOR THE PERMIT.
- THE CONTRACTOR SHALL PROVIDE, INSTALL, AND MAINTAIN ALL NECESSARY SIGNS AND OTHER PROTECTIVE FACILITIES, WHICH SHALL CONFORM WITH THE "HAWAII ADMINISTRATION RULES GOVERNING THE USE OF TRAFFIC CONTROL DEVICES AT WORK SITES ON OR ADJACENT TO PUBLIC STREETS AND HIGHWAYS" ADOPTED BY THE DIRECTOR OF TRANSPORTATION, AND THE CURRENT U.S. FEDERAL HIGHWAYS ADMINISTRATION'S "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS, PART VI - TRAFFIC CONTROLS FOR STREET AND HIGHWAY CONSTRUCTION AND MAINTENANCE OPERATIONS".
- WORK ON ANY CITY STREET AREA MAY BE PERFORMED ONLY BETWEEN THE HOURS OF 8:30 A.M. TO 3:30 P.M., MONDAY THROUGH FRIDAY, UNLESS OTHERWISE PERMITTED BY THE DEPARTMENT OF TRANSPORTATION SERVICES.
- DURING WORKING HOURS, THE CONTRACTOR SHALL PROVIDE FOR THROUGH TRAFFIC. DURING NON-WORKING HOURS, ALL TRENCHES SHALL BE COVERED WITH A SAFE NON-SKID BRIDGING MATERIAL AND ALL LANES SHALL BE OPEN TO TRAFFIC.
- AS REQUIRED BY THE DEPARTMENT OF TRANSPORTATION SERVICES, THE CONTRACTOR SHALL PROVIDE OFF-DUTY POLICE OFFICERS TO CONTROL THE FLOW OF TRAFFIC.

TRAFFIC NOTES FOR WORK ON CITY & COUNTY STREETS (CONT'D)

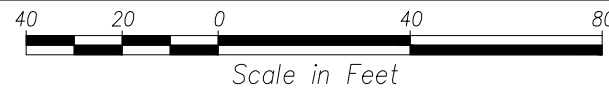
- WHERE PEDESTRIAN WALKWAYS EXIST, THEY SHALL BE MAINTAINED IN PASSABLE CONDITION OR OTHER FACILITIES FOR PEDESTRIANS SHALL BE PROVIDED. PASSAGE BETWEEN WALKWAYS AT INTERSECTIONS SHALL LIKEWISE BE PROVIDED.
- DRIVEWAYS SHALL BE KEPT OPEN UNLESS THE OWNERS OF THE PROPERTY USING THESE RIGHTS-OF-WAY ARE OTHERWISE PROVIDED FOR SATISFACTORILY.
- THE CONTRACTOR SHALL REFERENCE TO THE APPROVAL OF THE DEPARTMENT OF TRANSPORTATION SERVICES AND THE DEPARTMENT OF PLANNING AND PERMITTING, 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.
- THE CONTRACTOR SHALL NOTIFY THE DEPARTMENT OF PLANNING AND PERMITTING, AT 808-768-8084 ONE (1) WEEK PRIOR TO ANY WORK DONE ON SIGNS, POST AND PAVEMENT MARKINGS.
- NO EQUIPMENT SHALL BE STORED WITHIN STREET RIGHTS-OF-WAY, EXCEPT AT LOCATIONS DESIGNATED IN WRITING AND APPROVED BY THE DEPARTMENT OF TRANSPORTATION SERVICES.
- DDC SHALL ENSURE THAT THE CONTRACTOR INSTALLS THE CONSTRUCTION TRAFFIC CONTROL DEVICES IN ACCORDANCE WITH THE MUTCD AND THE "HAWAII ADMINISTRATION RULES" AS SPECIFIED IN TRAFFIC NOTE #2.

LEGEND:

- SIGN
- CONE OR DELINEATOR
- DIRECTION OF TRAFFIC
- WORK AREA
- POLICE OFFICER

Posted Speed Limit:
N. School St. (City) = 30 MPH
Kohou St. (City) = 25 MPH
Houghtailing St. (City) = 25 MPH

TRAFFIC CONTROL PLAN - WORK AREA 1



APPROVED:

CHIEF, TRAFFIC REVIEW BRANCH, DPP

DATE

GENERAL NOTES FOR TRAFFIC CONTROL PLAN:

- THE PERMITTEE SHALL MAKE MINOR ADJUSTMENTS AT INTERSECTIONS, DRIVEWAYS, BRIDGES, STRUCTURES, ETC., TO FIT FIELD CONDITIONS.
- CONES OR DELINEATORS SHALL BE EXTENDED TO A POINT WHERE THEY ARE VISIBLE TO APPROACHING TRAFFIC.
- TRAFFIC CONTROL DEVICES SHALL BE INSTALLED SUCH THAT THE SIGN OR DEVICE FARTHEST FROM THE WORK AREA IS PLACED FIRST. THE OTHERS SHALL THEN BE PLACED PROGRESSIVELY TOWARD THE WORK AREA.
- REGULATORY AND WARNING SIGNS WITHIN THE CONSTRUCTION ZONE THAT ARE IN CONFLICT WITH THE TRAFFIC CONTROL PLANS SHALL BE REMOVED OR COVERED.
- FLAGGERS AND/OR POLICE OFFICERS SHALL BE IN SIGHT OF EACH OTHER OR IN DIRECT COMMUNICATION AT ALL TIMES.
- WHERE REQUIRED BY THE ISSUING OFFICE, THE PERMITTEE SHALL INSTALL A FLASHING ARROW SIGNAL AS SHOWN ON THE TRAFFIC CONTROL PLANS.
- ALL TRAFFIC LANES SHALL BE A MINIMUM OF TEN (10) FEET WIDE.
- ALL CONSTRUCTION WARNING SIGNS SHALL BE PROMPTLY REMOVED OR COVERED WHENEVER THE MESSAGE IS NOT APPLICABLE OR NOT IN USE.
- THE BACKS OF ALL SIGNS USED FOR TRAFFIC CONTROL SHALL BE APPROPRIATELY COVERED TO PRECLUDE THE DISPLAY OF INAPPROPRIATE SIGN MESSAGES (I.E., WHEN SIGNS HAVE MESSAGE ON BOTH FACES).
- LANE CLOSURE SHALL BE LIMITED ONLY TO THE EXTENT OF ACCOMPLISHING EACH DAY'S WORK. AS SOON AS EACH DAY'S 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.
- EXISTING FADED OR OBLITERATED PAVEMENT MARKINGS THAT ARE NECESSARY FOR SAFE TRAFFIC FLOW IN THE CONSTRUCTION AREA SHALL BE REPLACED WITH TEMPORARY OR PERMANENT MARKINGS BEFORE OPENING THE ROADWAY TO PUBLIC TRAFFIC EACH DAY. PERMANENT PAVEMENT MARKINGS AND TRAFFIC SIGNS SHALL BE REPLACED UPON COMPLETION OF EACH PHASE OF WORK.
- CONES AND DELINEATORS SHALL SPACED AT A MAXIMUM DISTANCE OF 20 FEET APART. A MINIMUM OF SIX (6) CHANNELIZING DEVICES SHALL BE USED FOR EACH TAPER LENGTH.
- DRIVEWAY SHALL BE KEPT OPEN UNLESS THE OWNERS OF THE PROPERTY USING THE RIGHT-OF-WAY ARE OTHERWISE PROVIDED FOR SATISFACTORILY. FURTHER, THE PERMITTEE SHALL CONTROL TRAFFIC GOING IN AND OUT OF THE DRIVEWAYS.
- BUFFER AND TAPER AREAS ON APPROACH TO ANY WORK AREA SHALL BE KEPT CLEAR OF VEHICLES AND EQUIPMENT.
- A HIGH LEVEL WARNING DEVICE (FLAG TREE) SHALL BE INSTALLED ON APPROACH TO ALL WORK AREAS.
- "NO PARKING" SIGNS SHALL BE POSTED WITHIN ANY WORK AREA AND FOR THE BUFFER AND TAPER AREAS APPROACHING THE WORK AREA.
- TRAFFIC CONTROL PLANS ARE APPROVED FOR WORK ON ANY CITY STREET AREA ONLY BETWEEN THE HOURS OF 8:30 A.M. AND 3:30 P.M. (MONDAY-FRIDAY).

REVISION	DATE	DESCRIPTION	ENGR.	APPROVED

Exp: 4/30/26 DAVID B. BILLS LICENSED PROFESSIONAL ENGINEER No. 4516-C HAWAII, USA		DEPARTMENT OF DESIGN AND CONSTRUCTION CITY AND COUNTY OF HONOLULU CIVIL DIVISION	
RESTORATION OF KAPALAMA STREAM CRM CHANNEL WALLS - Work Area 1 at Kohou Street and Work Area 2 at 1325 N. School Street Honolulu, Oahu, Hawaii			
TRAFFIC CONTROL PLAN - WORK AREA 1			
DESIGN: DB	APPROVED:	DRAWING NO. C011	
DRAWN: RE		SHEET 11	
CHECKED: DB	CHIEF, CIVIL DIVISION, DDC	DATE	
DATE: 2024		of 20 SHEETS	
JOB NO. xx-xx	FILE	DRAW	FOLDER
		NUMBER	

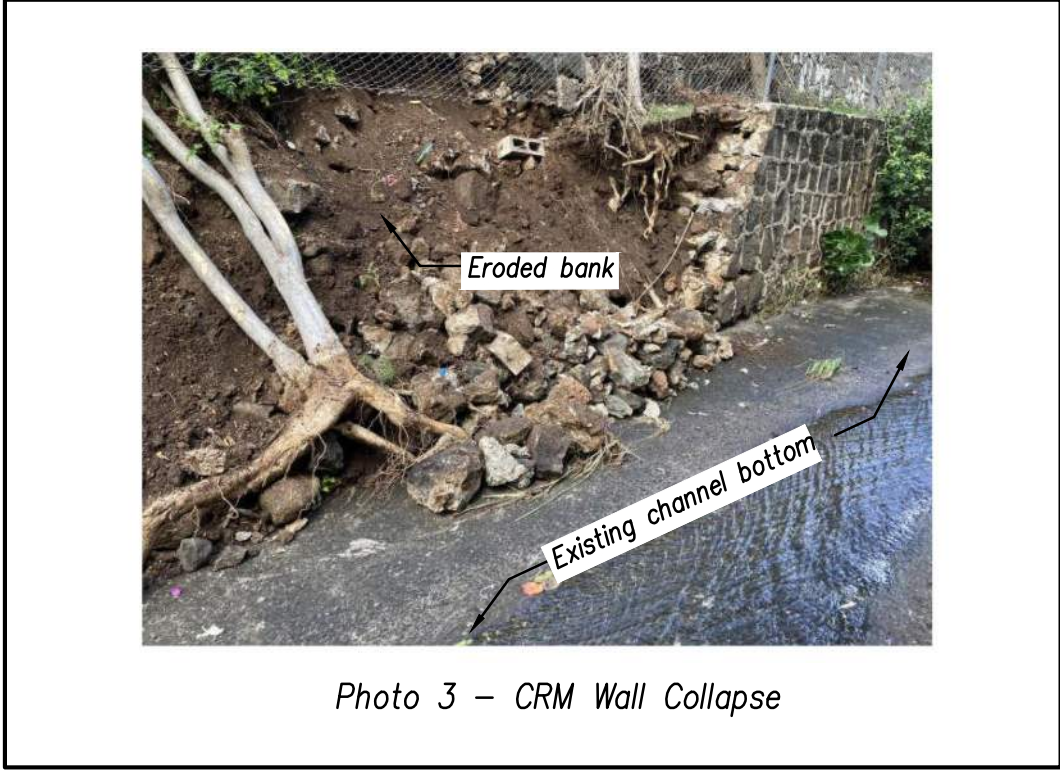
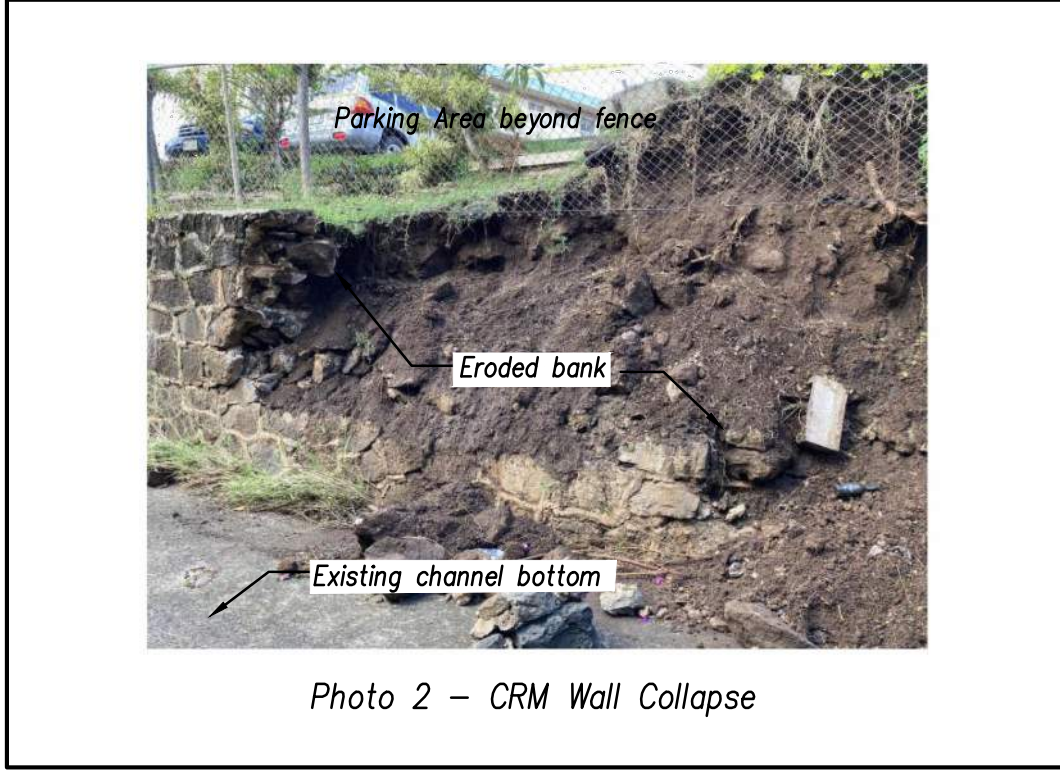
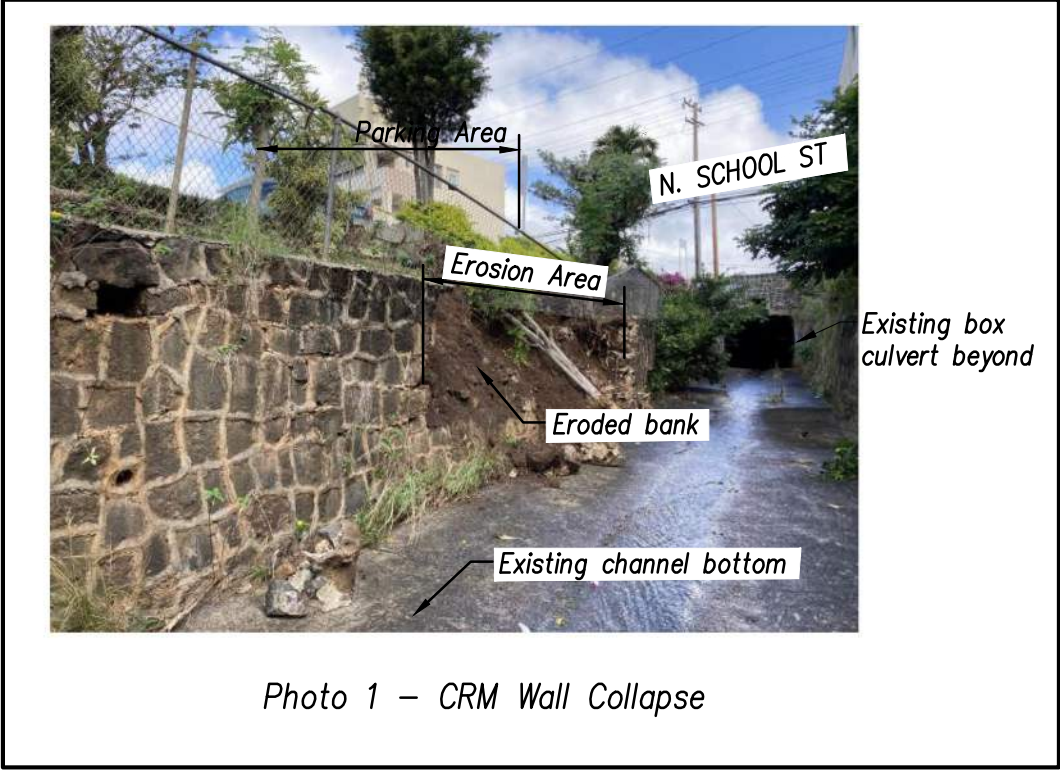
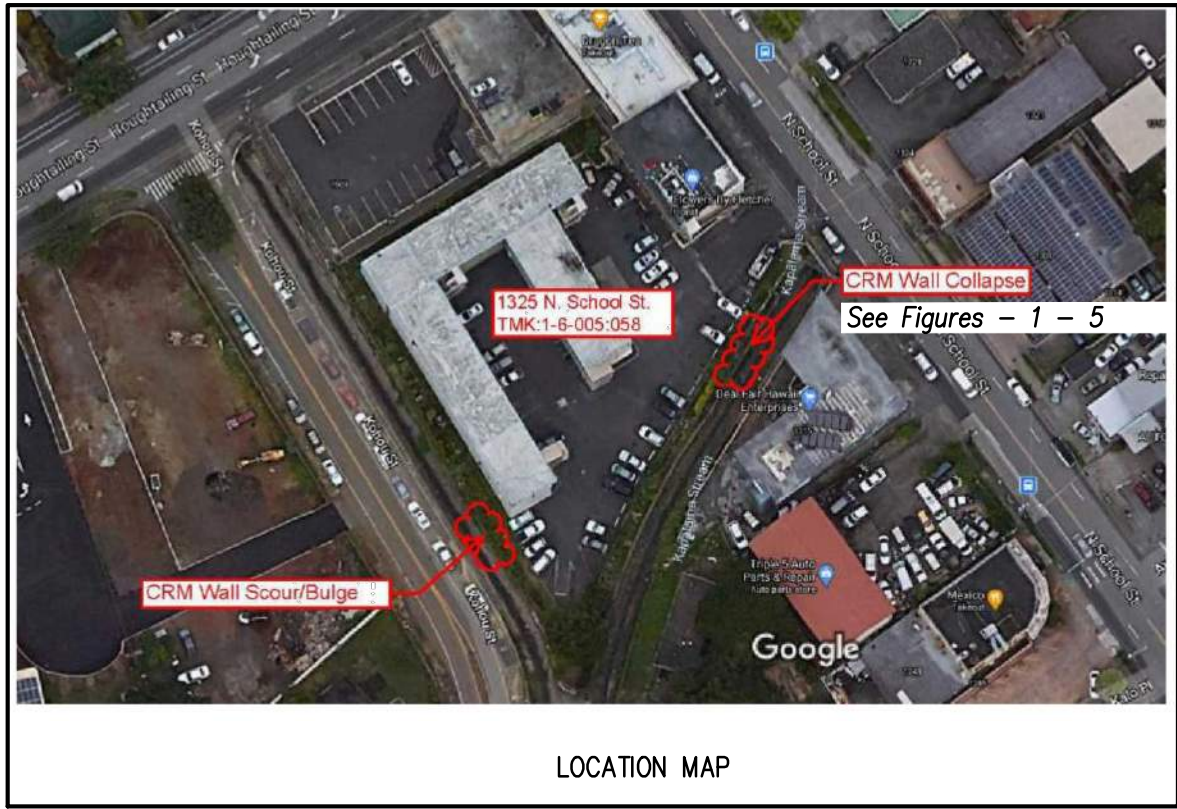


PHOTO LAYOUT – WORK AREA 2 (COLLAPSED CRM WALL)

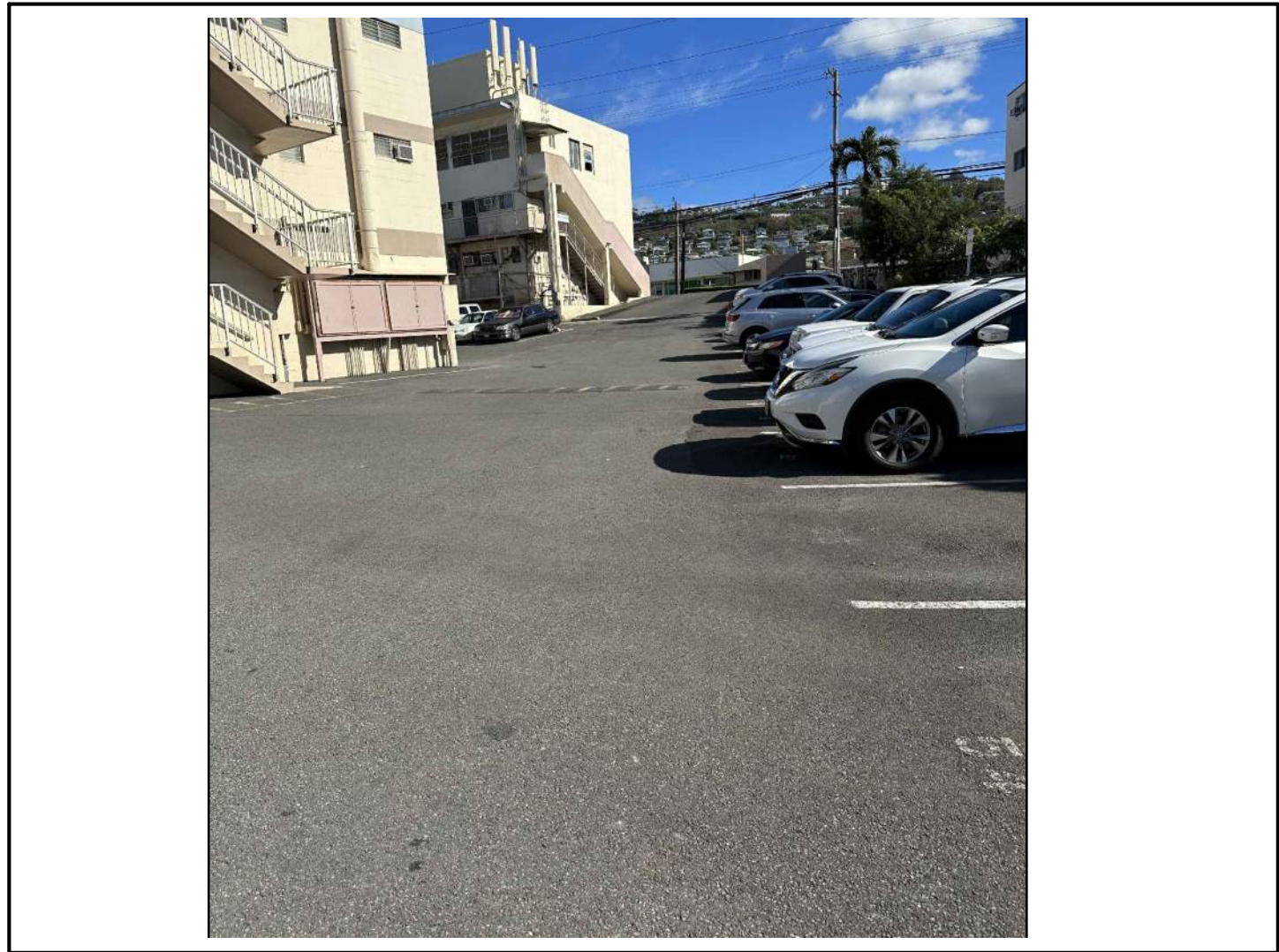
PROJECT STATUS BEFORE EMERGENCY REPAIRS – WORK AREA 2



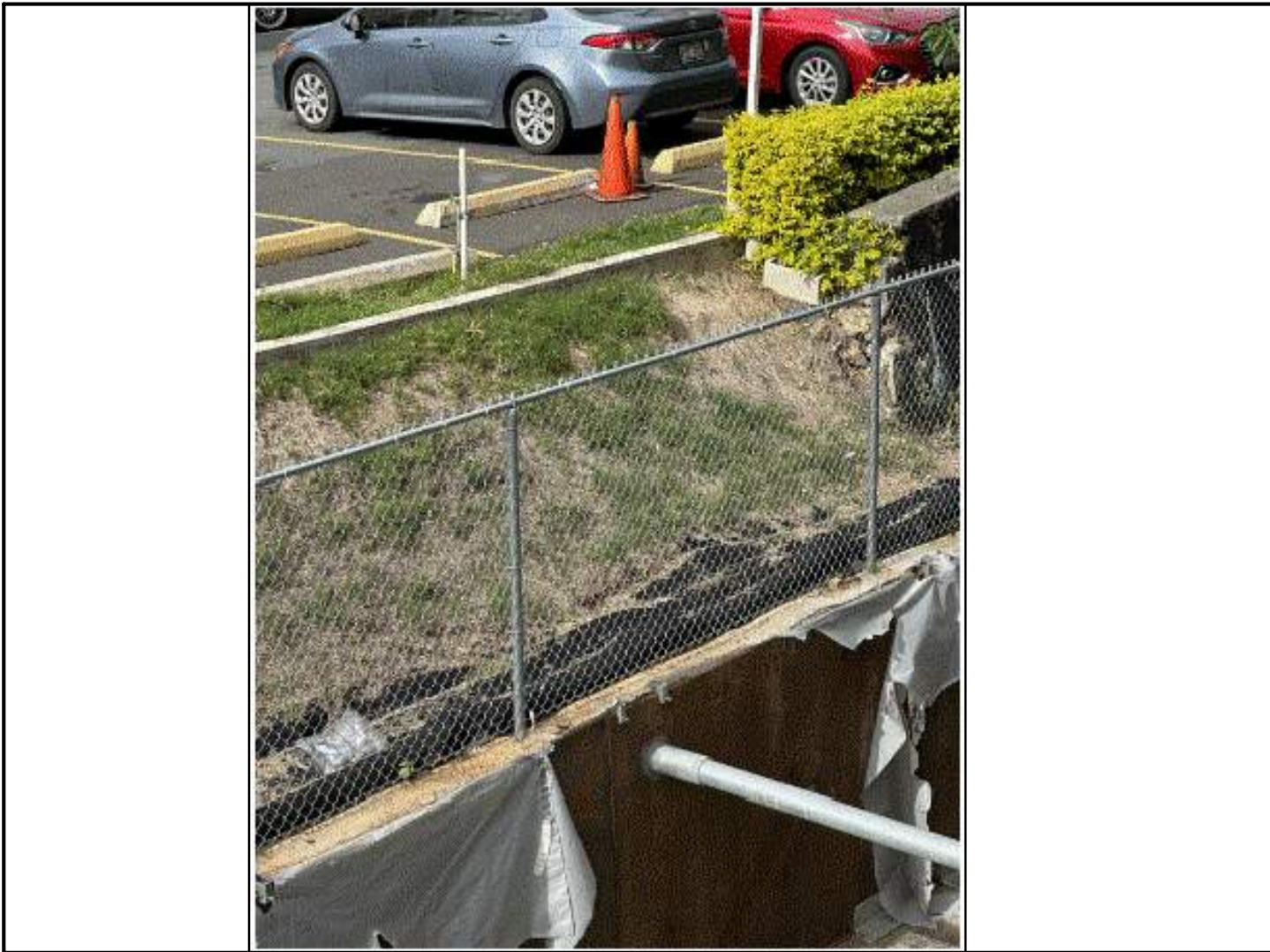
BRACING FROM UPSTREAM



BRACE UP BRACE CONNECTION



ACCESS TO SCHOOL STREET
(CRM WALL RESTORATION TO
RIGHT OF WHITE PARKED CARS)



EMERGENCY REPAIR WORK
UPSTREAM END OF CHANNEL

PROJECT STATUS AFTER EMERGENCY REPAIRS – WORK AREA 2

REVISION	DATE	DESCRIPTION	ENGR.	APPROVED

Exp: 4/30/26

DAVID B. BILLS

LICENSED PROFESSIONAL ENGINEER

No. 4516-C

HAWAII, USA

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

Signature

SIGNATURE: Bills Engineering Inc. Civil/Environmental Engineering 2153 N. King Street • Suite 200 • Honolulu, HI 96819

DEPARTMENT OF DESIGN AND CONSTRUCTION
CITY AND COUNTY OF HONOLULU
CIVIL DIVISION

RESTORATION OF KAPALAMA STREAM CRM CHANNEL WALLS –
Work Area 1 at Kohou Street and Work Area 2 at 1325 N. School Street
Honolulu, Oahu, Hawaii

BEFORE AND AFTER PHOTOS - WORK AREA 2

DESIGN: DB
DRAWN: RE
CHECKED: DB
DATE: 2024

APPROVED:

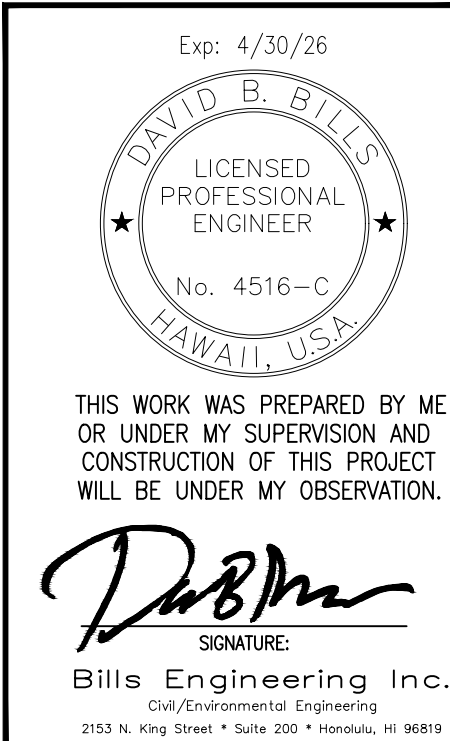
CHIEF, CIVIL DIVISION, DDC
DATE

DRAWING NO.
C012
SHEET 12
OF 20 SHEETS

JOB NO. xx-xx

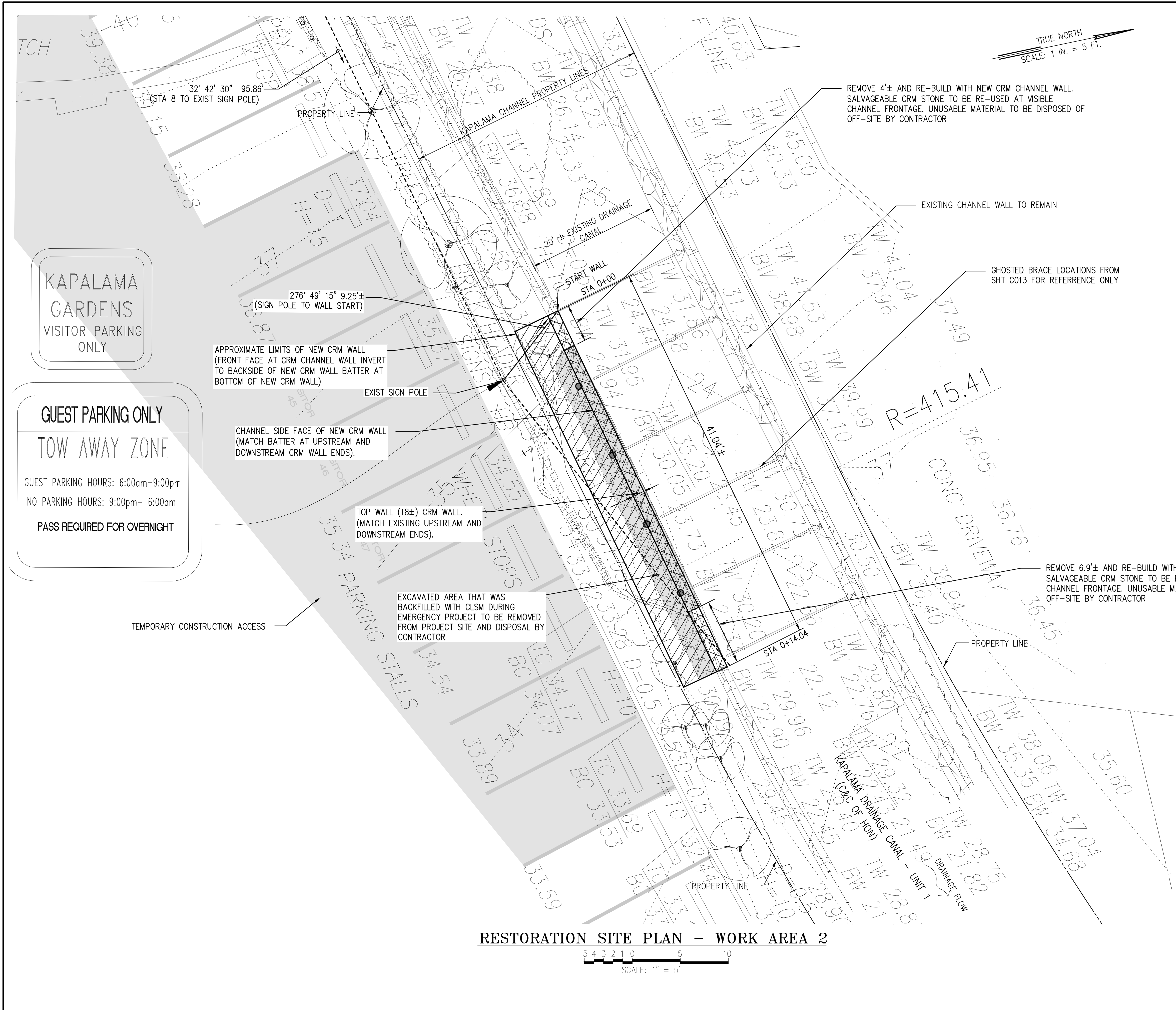
FILE DRAW FOLDER NUMBER

Fri, 27 Sep 2024 - 10:56am
T:_BGL FILES\Projects\700-01 KAPALAMA PERMANENT REPAIRS (AREA 1 AND 2)\Const Plans Restoration\COMBINED AREAS.dwg(700-01 C012 BEFORE AND AFTER PHOTOS - Work Area 2.dwg



REVISION	DATE	DESCRIPTION			ENGR. APPROVED
DEPARTMENT OF DESIGN AND CONSTRUCTION CITY AND COUNTY OF HONOLULU CIVIL DIVISION					
RESTORATION OF KAPALAMA STREAM CRM CHANNEL WALLS - Work Area 1 at Kohou Street and Work Area 2 at 1325 N. School Street Honolulu, Oahu, Hawaii					
EXISTING CONDITIONS SITE PLAN - WORK AREA 2					
DESIGN: DB	APPROVED: _____ CHIEF, CIVIL DIVISION, DDC			DRAWING NO. C013	
DRAWN: RE				SHEET 13	
CHECKED: DB				OF 20 SHEETS	
DATE: 2024					
JOB NO. xx-xx		FILE ____ DRAW ____ FOLDER ____ NUMBER ____			

Fig. 11 Oct 2024 - 8:59am
T:_BCL FILES\Projects\700-01 KAPALAMA PERMANENT REPAIRS (AREA 1 AND 2)\Const Plans Restoration\COMBINED AREAS.dwg 700-01 C014 RESTORATION SITE PLAN - Work Area 2.dwg



TRUE NORTH
SCALE: 1 IN. = 5 FT.

LEGEND

- PROPERTY LINE
- EXISTING DRAINLINE
- EXIST CONTOUR
- LIMITS OF CLSM BACKFILL (EMERGENCY PROJECT)
- LIMITS OF EXCAVATION BEHIND CLSM BACKFILL
- TREE

EARTHWORK SUMMARY
CATEGORY: N/A
EXCAVATION= 35 CY (WALL DE-CONSTRUCTION)
EMBANKMENT= 70 CY (WALL RE-CONSTRUCTION)
AREA TO BE GRADED AND DISTURBED= 480 SQ. FT. (0.012 acs)

REVISION	DATE	DESCRIPTION	ENGR.	APPROVED

Exp: 4/30/26

DAVID B. BILLS

LICENSED PROFESSIONAL ENGINEER

No. 4516-C

HAWAII, USA

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

David B. Bills

SIGNATURE:

Bills Engineering Inc.

Civil/Environmental Engineering

2153 N. King Street • Suite 200 • Honolulu, HI 96819

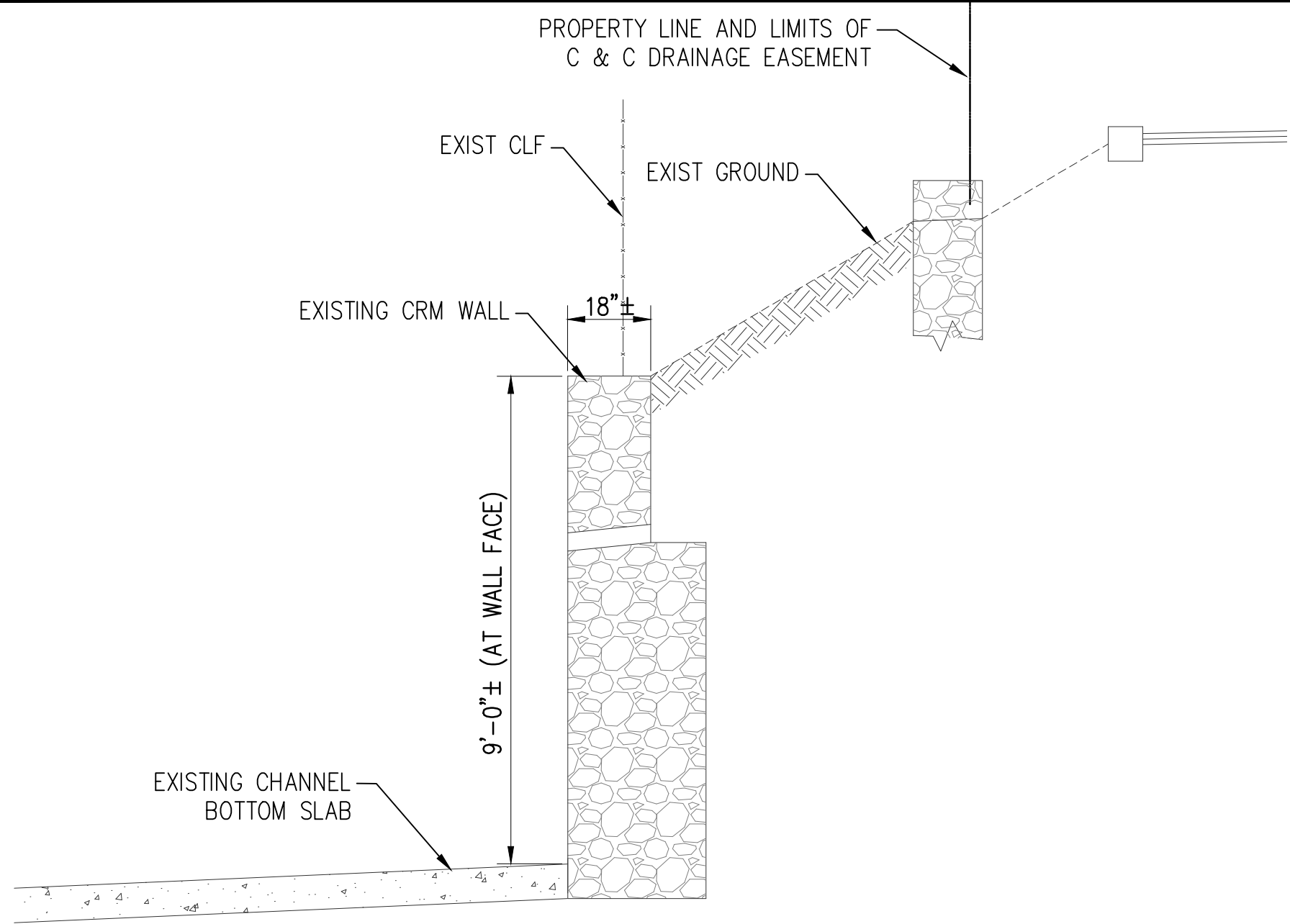
DEPARTMENT OF DESIGN AND CONSTRUCTION
CITY AND COUNTY OF HONOLULU
CIVIL DIVISION

RESTORATION OF KAPALAMA STREAM CRM CHANNEL WALLS -
Work Area 1 at Kohou Street and Work Area 2 at 1325 N. School Street
Honolulu, Oahu, Hawaii

RESTORATION SITE PLAN - WORK AREA 2

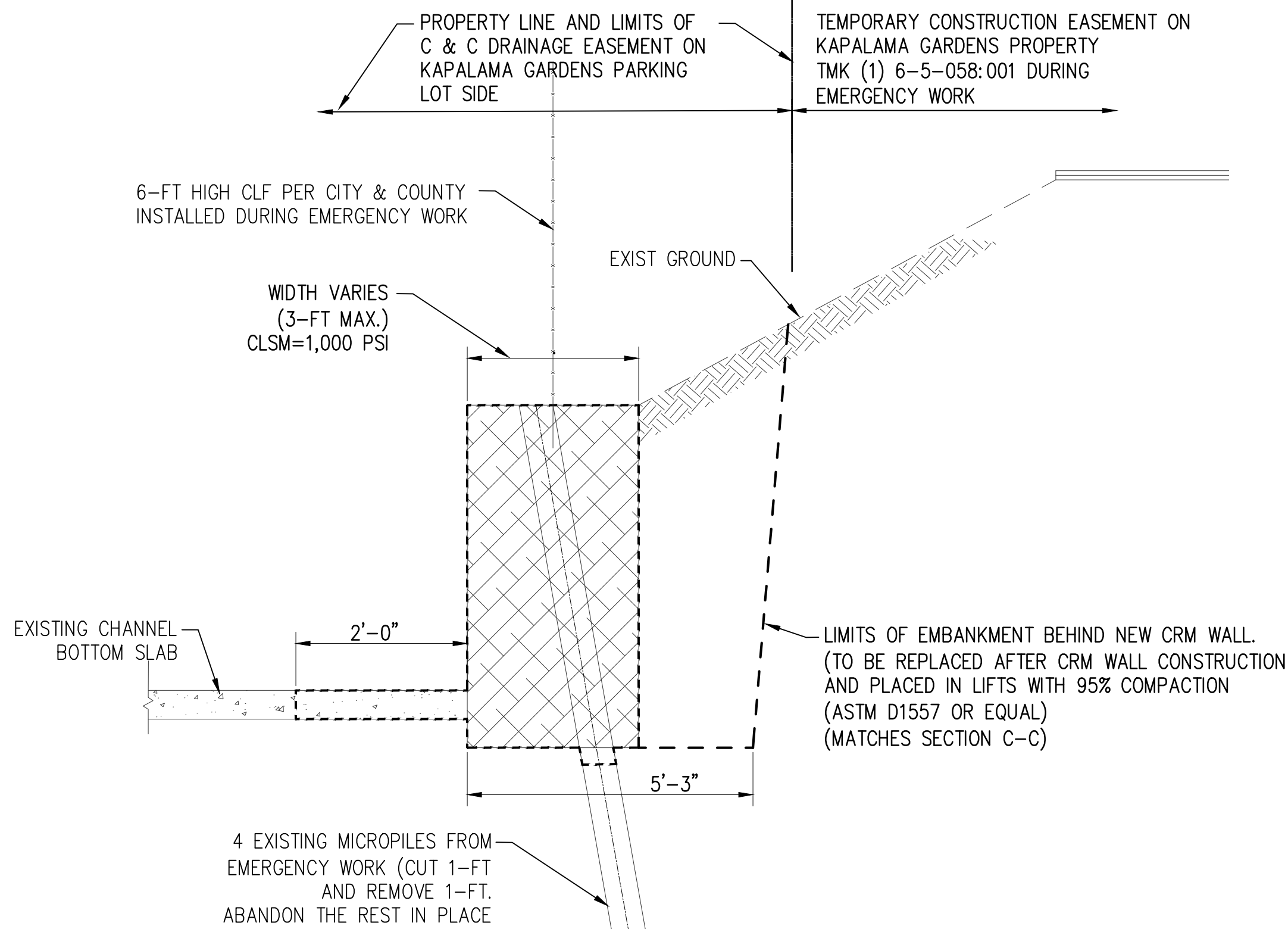
DESIGN: DB	APPROVED:	DRAWING NO. C014
DRAWN: RE	CHIEF, CIVIL DIVISION, DDC	SHEET 14
CHECKED: DB	DATE	OF 20 SHEETS
DATE: 2024	FILE	DRAW
JOB NO. xx-xx	FOLDER	NUMBER

Fig. 11 Oct 2024 - 9:05am
T:_BCL FILES\Projects\700-01 KAPALAMA PERMANENT REPAIRS (AREA 1 AND 2)\Const Plans Restoration\COMBINED AREAS.dwg 700-01 C015 WALL SECTIONS - Work Area 2.dwg



SECTION A-A
ORIGINAL CHANNEL CRM WALL
PRIOR TO CRM WALL FAILURE OR ON UPSTREAM
AND DOWNSTREAM SIDE OF FAILED CRM WALL

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



SECTION B-B
EXISTING CHANNEL WALL AFTER
EMERGENCY REPAIR CROSS SECTION

2 1 0 2 4
SCALE: 1/2"=1'-0"
LIMITS OF EXISTING WALL DEMOLITION FOR NEW CRM WALL

*RE-USE OF WORK AREA 1 CRM STONES AT WORK AREA 2

THIS PROJECT INVOLVES TWO SEPARATE SET OF CONSTRUCTION DOCUMENTS. THE DOCUMENTS ARE REFERRED TO AS:

1. RESTORATION OF KAPALAMA CRM CHANNEL WALLS—WORK AREA 1, AND
2. RESTORATION OF KAPALAMA CRM CHANNEL WALLS—WORK AREA 2

WORK AREA 1 ONLY INVOLVES DE-CONSTRUCTION OF AN 80± LENGTH OF CRM WALL FOLLOWED BE RE-CONSTRUCTION OF THE WALL DUE TO INVERSE CHANNEL SLOPE RESULTING FROM EXCESS WALL PRESSURES. NO CRM WALL SECTION OF STONES FOR THE EXISTING CRM WALL HAVE BEEN DISLODGED OR WASHED AWAY.

WORK AREA 2 BY CONTRAST, HAD CRM WALL FAILURE AND 40± LINEAR FEET OF CRM WALL WERE COMPLETELY LOST IN A RANFALL AND CHANNEL FLOODING EVENT.

IN 2020, THE CITY & COUNTY OF HONOLULU DEPARTMENT OF PLANNING & PERMITTING AUTHORIZED AN ENVIRONMENTAL IMPACT STATEMENT (EIS) FOR THE "KAPALAMA CANAL CATALYTIC PROJECT". THE EIS REPORTED THAT KAPALAMA CHANNEL WAS ENTIRELY LOCATED WITHIN THE HISTORIC BOUNDARIES OF THE AHUPUA'A OF KAPALAMA.

THEREFORE, THIS PROJECT DESIGN PHILOSOPHY IS TO RE-BUILD THE DESTROYED CRM CHANNEL WALL AT WORK AREA 2 TO THE MAXIMUM EXTENT POSSIBLE WITH AN EXTERIOR APPEARANCE AS CLOSE TO MATCHING THE EXISTING CONDITIONS BEFORE THE CHANNEL AT WORK AREA 2 WAS DESTROYED.

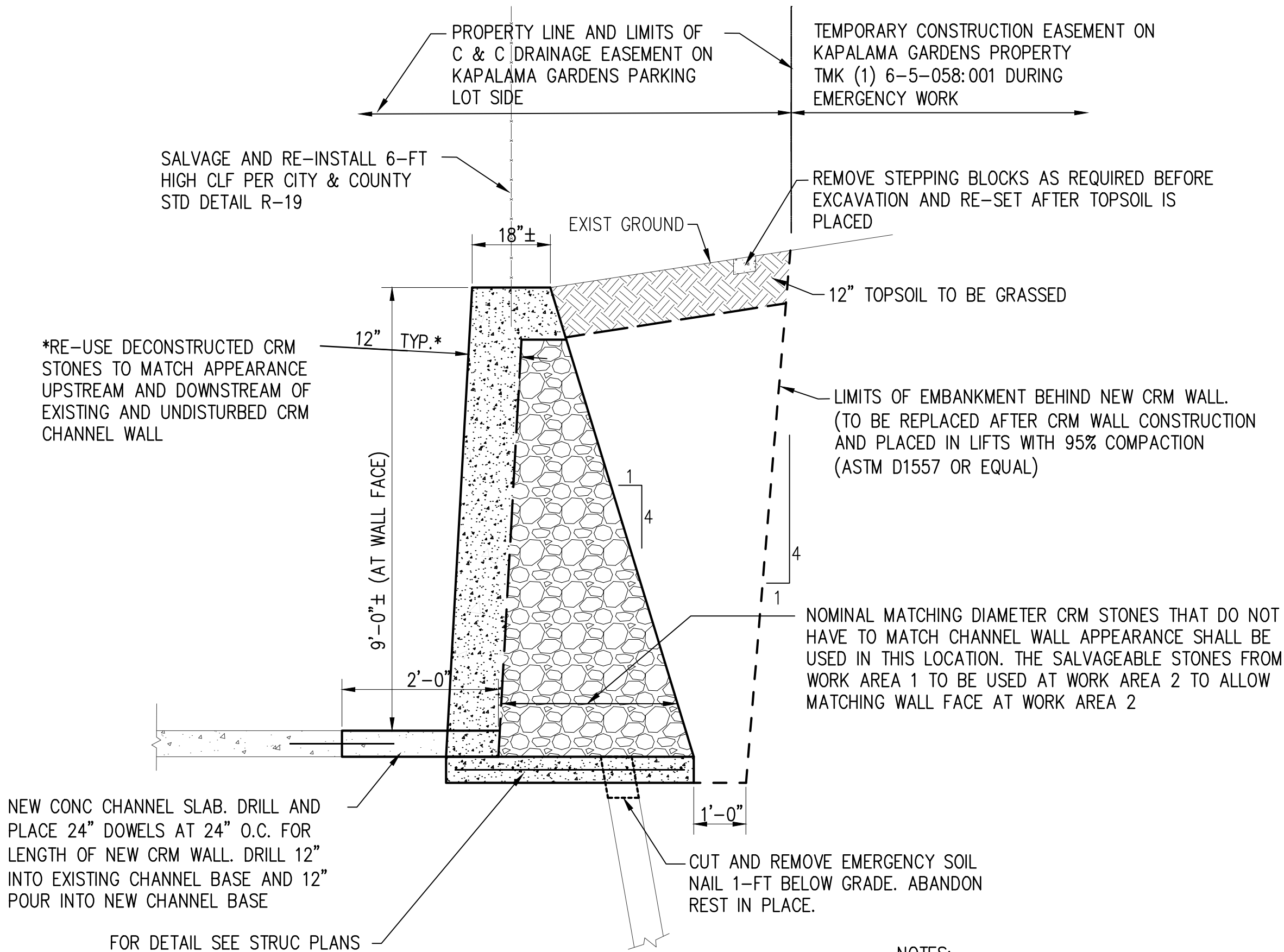
WORK AREA 1 WILL HAVE NON-VISIBLE CRM WALL STONE THAT CAN BE REPLACED WITH EQUIVALENT CRM STONE AND THE NON-VISIBLE STONE WILL BE SALVAGED AND USED AT WORK AREA 2.

THIS EFFORT WILL NOT COMPROMISE THE STRUCTURAL AND GEOTECHNICAL REQUIREMENTS FOR A NEW CRM WALL BUILT TO CURRENT CODE. THIS EFFORT WILL ALSO ALLOW THE NEW CRM WALL SECTION AT WORK AREA 2 TO MATCH AS CLOSE AS POSSIBLE THE PRIOR EXTERIOR APPEARANCE.

IN ORDER TO ACHIEVE RE-USE OF WORK AREA 1 CRM STONE AT WORK AREA 2. WORK AREA 1 WORK SHALL PRECEDE WORK AREA 2. SALVAGEABLE CRM STONE SHALL BE RESTORED AT THE WORK AREA 2 TEMPORARY CONSTRUCTION ACCESS AS SHOWN ON SHEET C014

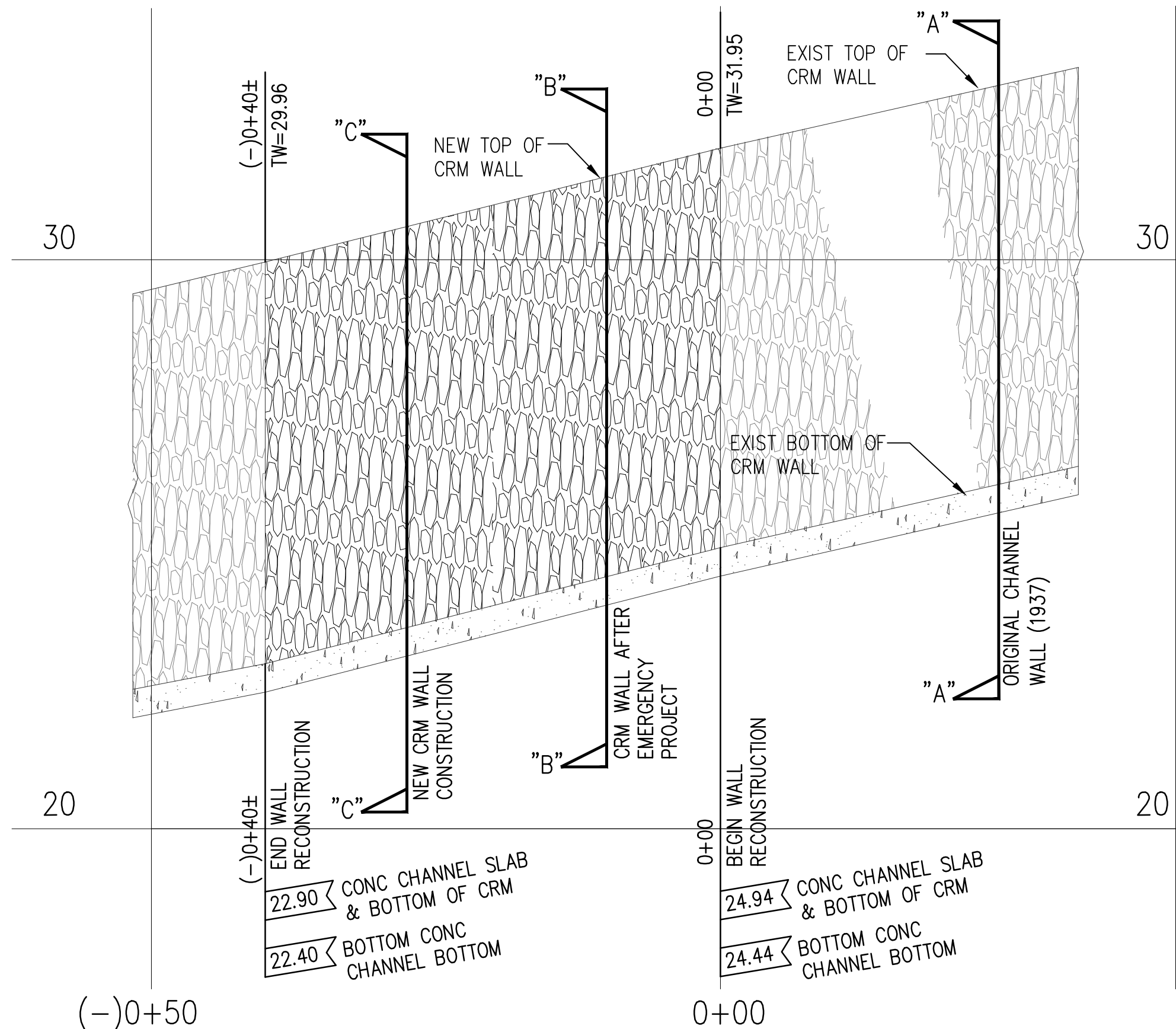
NOTES:

1. DOWEL NEW CONCRETE SLAB INTO EXISTING CHANNEL BASE SLAB.
2. NEW TOP OF CRM WALL TO MAKE SMOOTH CONNECTION TO EXISTING CRM WALL UPSTREAM AND DOWNSTREAM ENDS



SECTION C-C
NEW CHANNEL WALL CROSS SECTION

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



SECTIONS - WORK AREA 2

HORI. 10 0 10 20
VERT. 2 0 2 4

REVISION	DATE	DESCRIPTION	ENGR.	APPROVED

Exp: 4/30/26 DAVID B. BILLS LICENSED PROFESSIONAL ENGINEER No. 4516-C HAWAII, USA THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION AND CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION. SIGNATURE: <i>David B. Bills</i> Bills Engineering Inc. Civil/Environmental Engineering 2153 N. King Street • Suite 200 • Honolulu, HI 96819		DEPARTMENT OF DESIGN AND CONSTRUCTION CITY AND COUNTY OF HONOLULU CIVIL DIVISION RESTORATION OF KAPALAMA STREAM CRM CHANNEL WALLS - Work Area 1 at Kohou Street and Work Area 2 at 1325 N. School Street Honolulu, Oahu, Hawaii	
WALL SECTIONS - WORK AREA 2			
DESIGN: DB	APPROVED:	DRAWING NO. C015	
DRAWN: RE		SHEET 15	
CHECKED: DB	CHIEF, CIVIL DIVISION, DDC	DATE	
DATE: 2024		OF 20 SHEETS	
JOB NO. xx-xx	FILE	DRAW	FOLDER NUMBER

APPROVED:

CHIEF, CIVIL ENGINEERING BRANCH, DPP

DATE

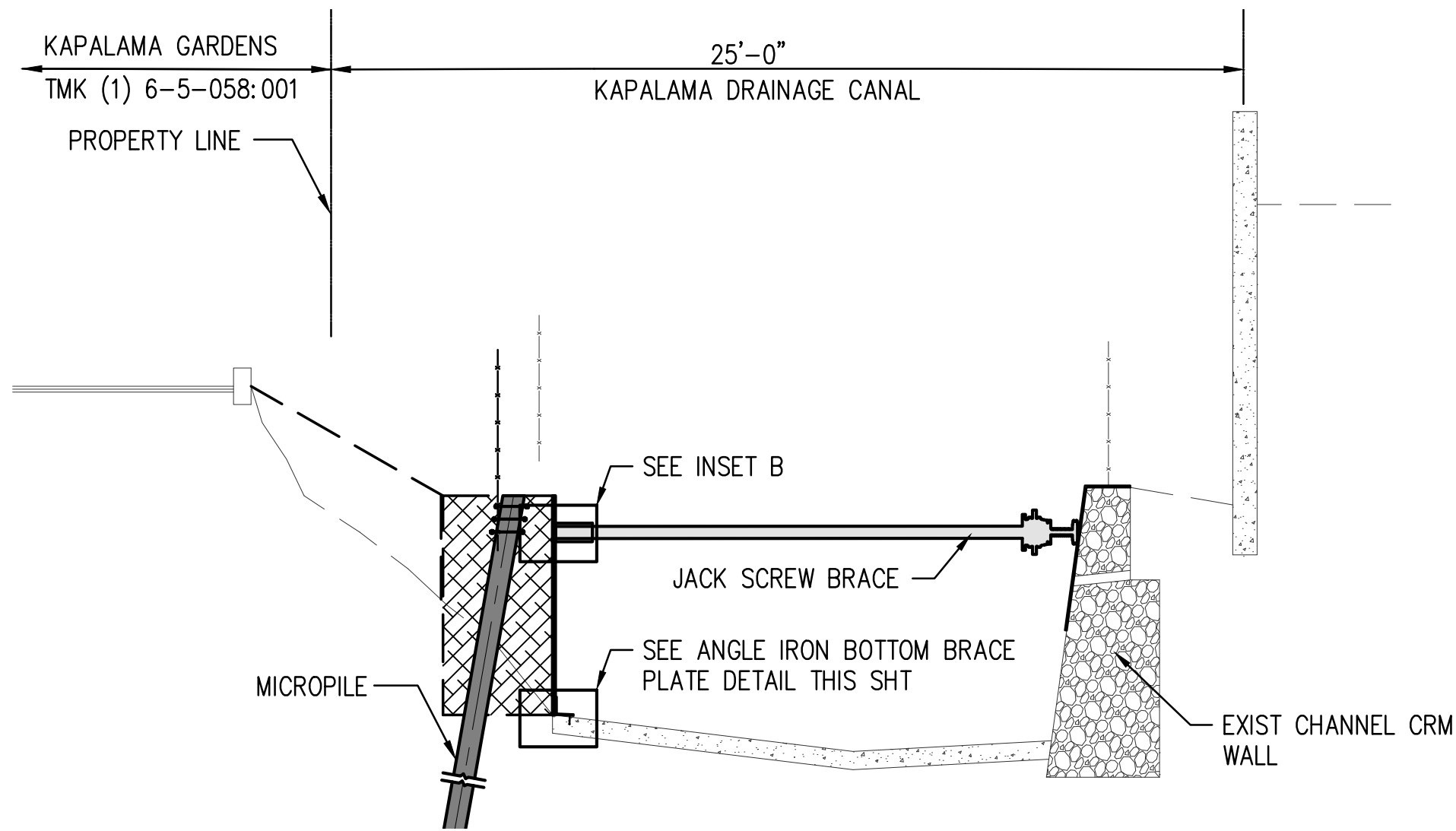
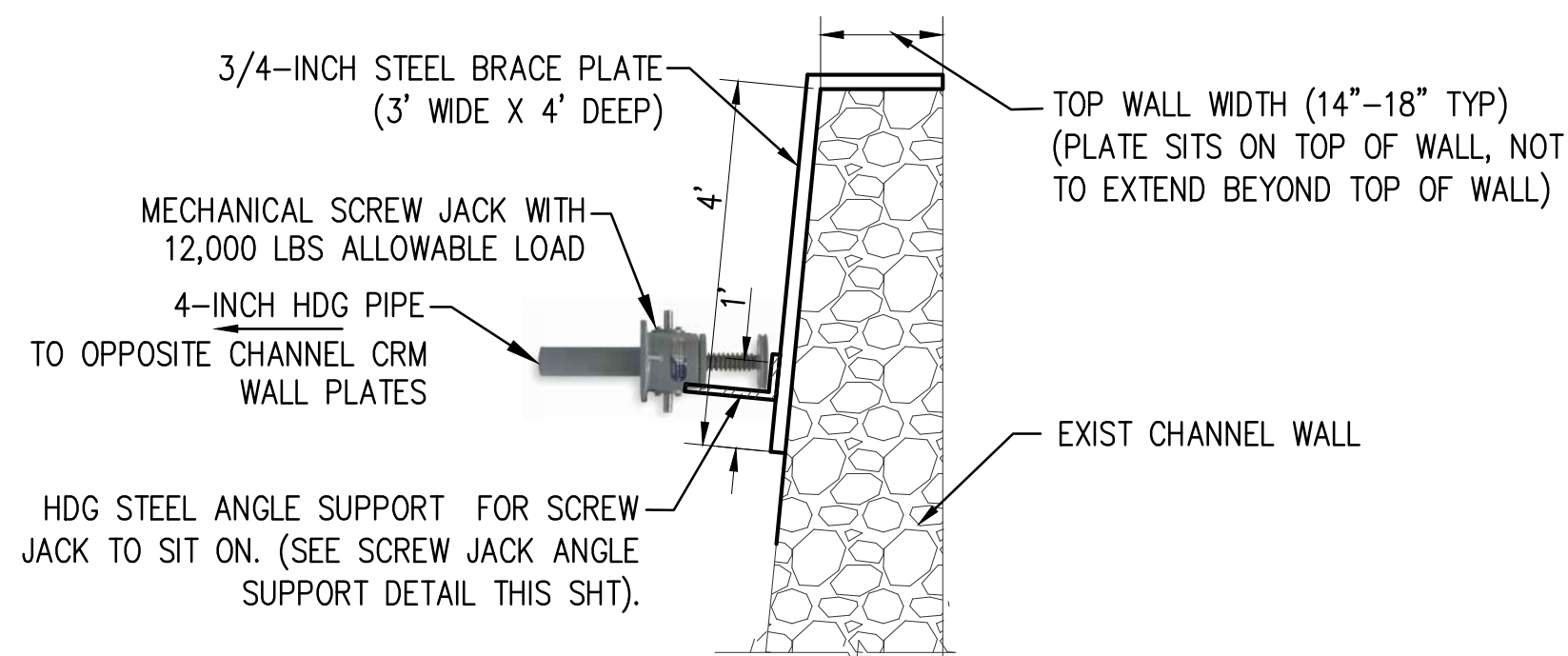
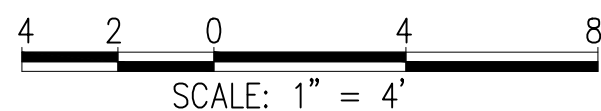


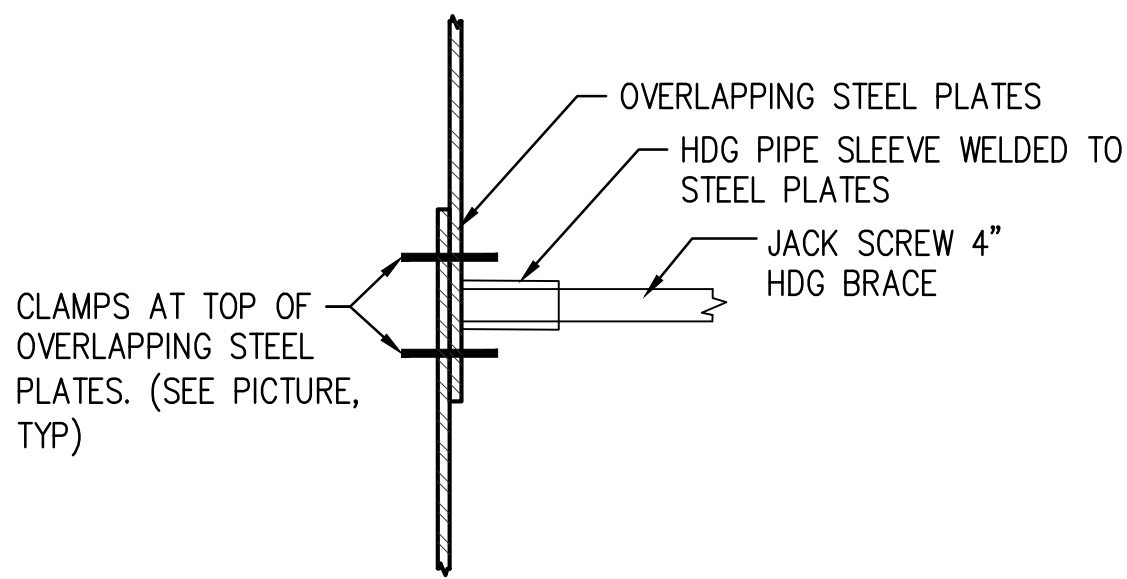
PLATE BRACING WHERE CRM WALL HAS COLLAPSED (EXISTING)



SECTION "A"

SCREW JACK BRACE DETAIL (EXISTING)

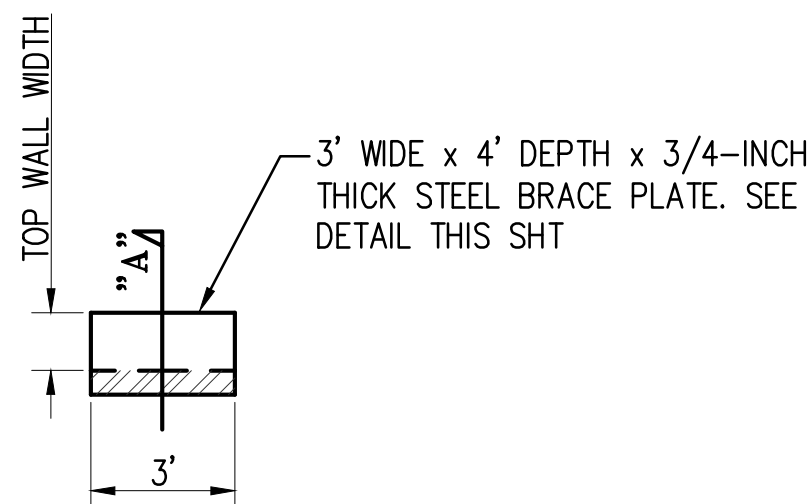
SCALE: 1/2"=1'-0"



INSET B (EXISTING)



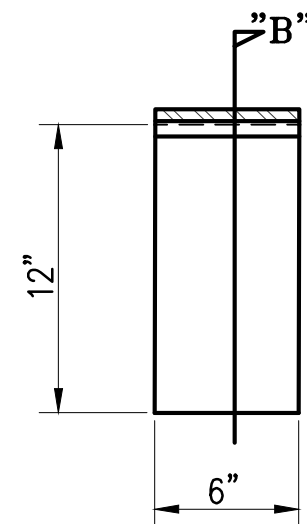
PICTURE (EXISTING)



PLAN

STEEL BRACE PLATE DETAIL (EISTING)

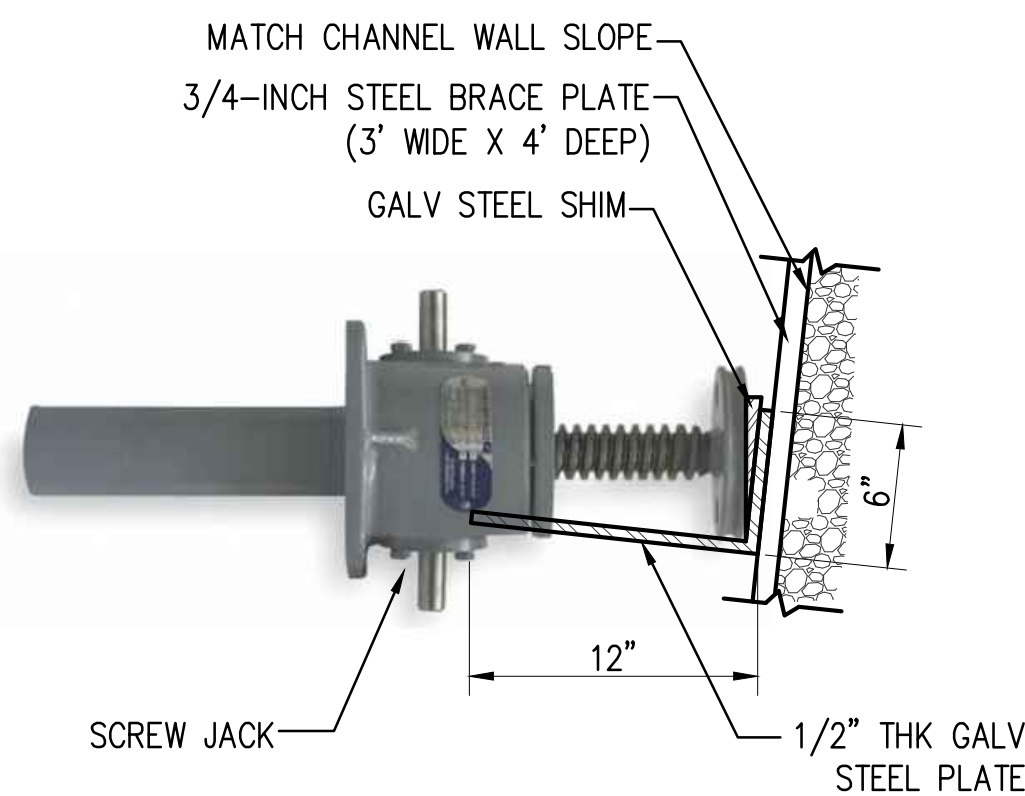
SCALE: 1/4"=1'-0"



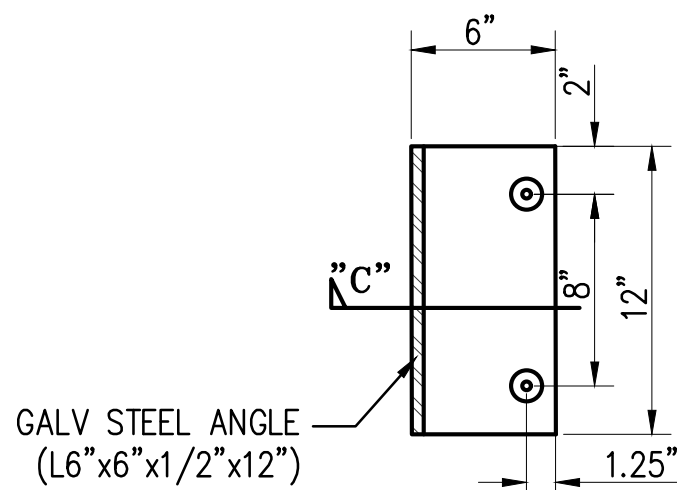
PLAN

SCREW JACK ANGLE SUPPORT DETAIL (EXISTING)

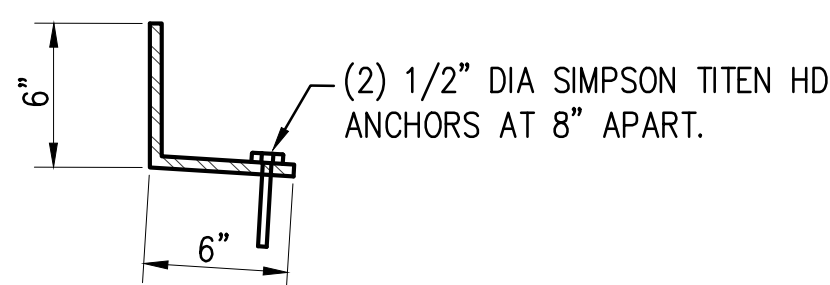
SCALE: 1 1/2"=1'-0"



SECTION "B"



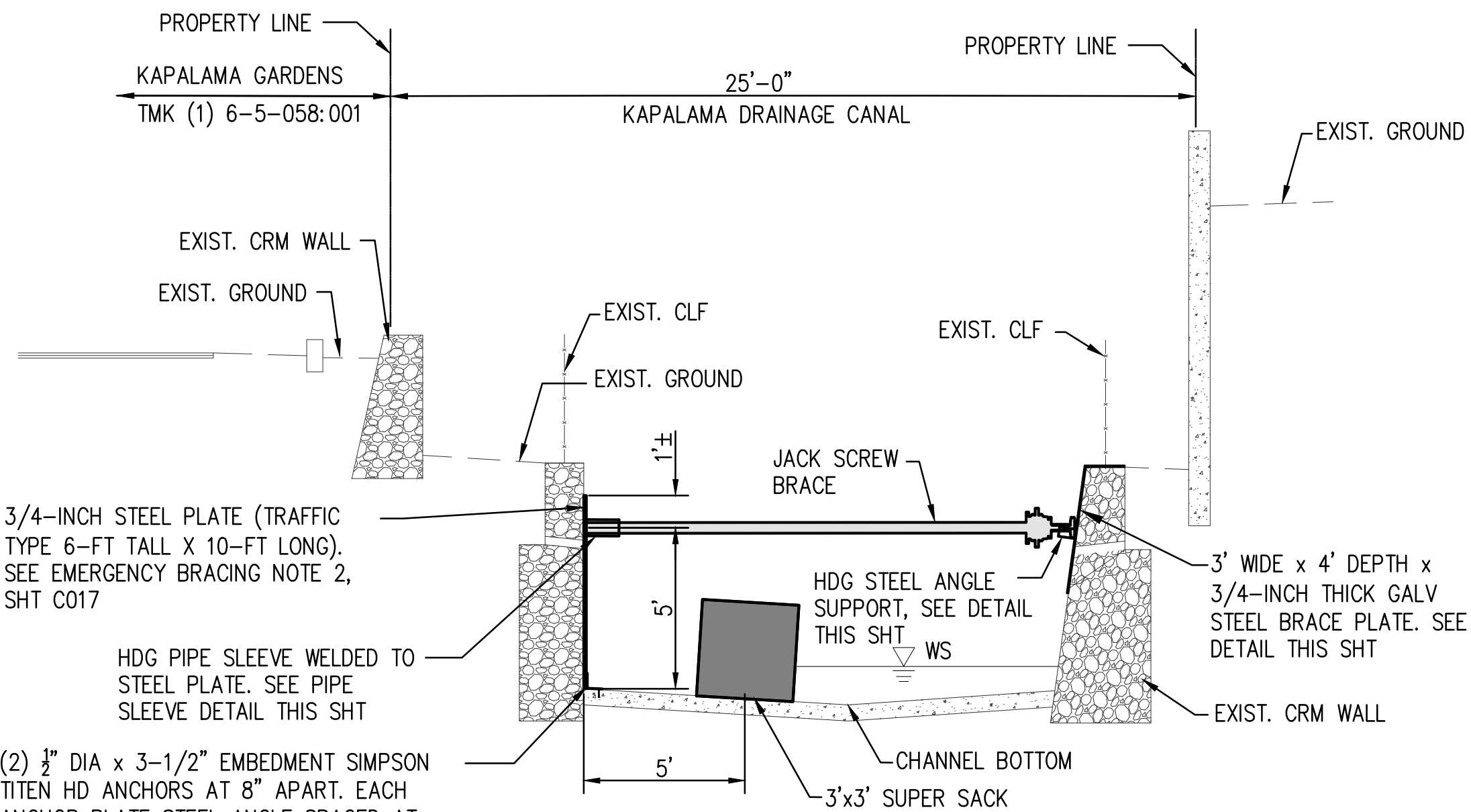
PLAN



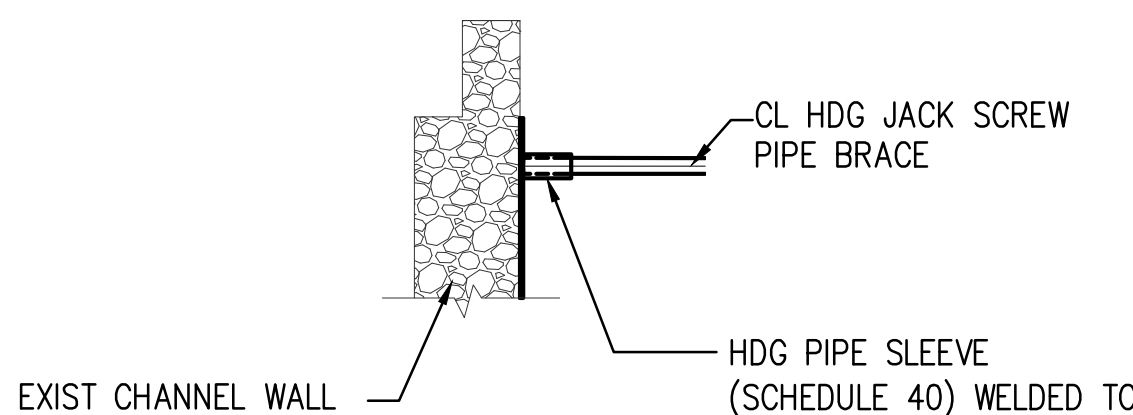
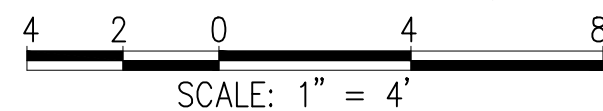
SECTION "C"

ANGLE IRON BOTTOM BRACE PLATE DETAIL (EXISTING)

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

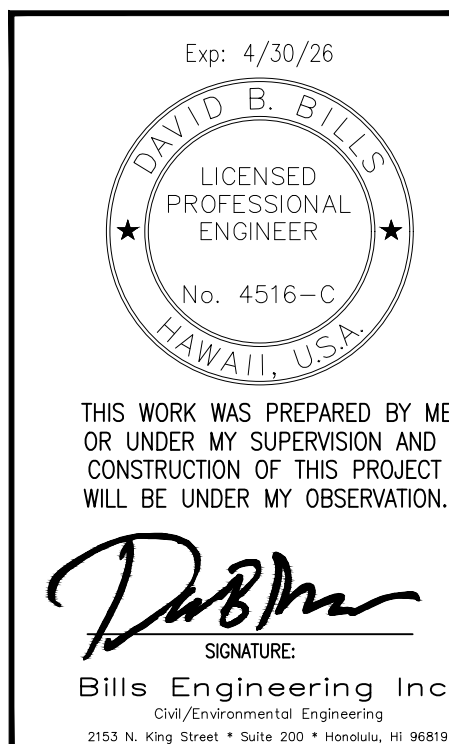


TYPICAL SECTION "A-A" (EXISTING)

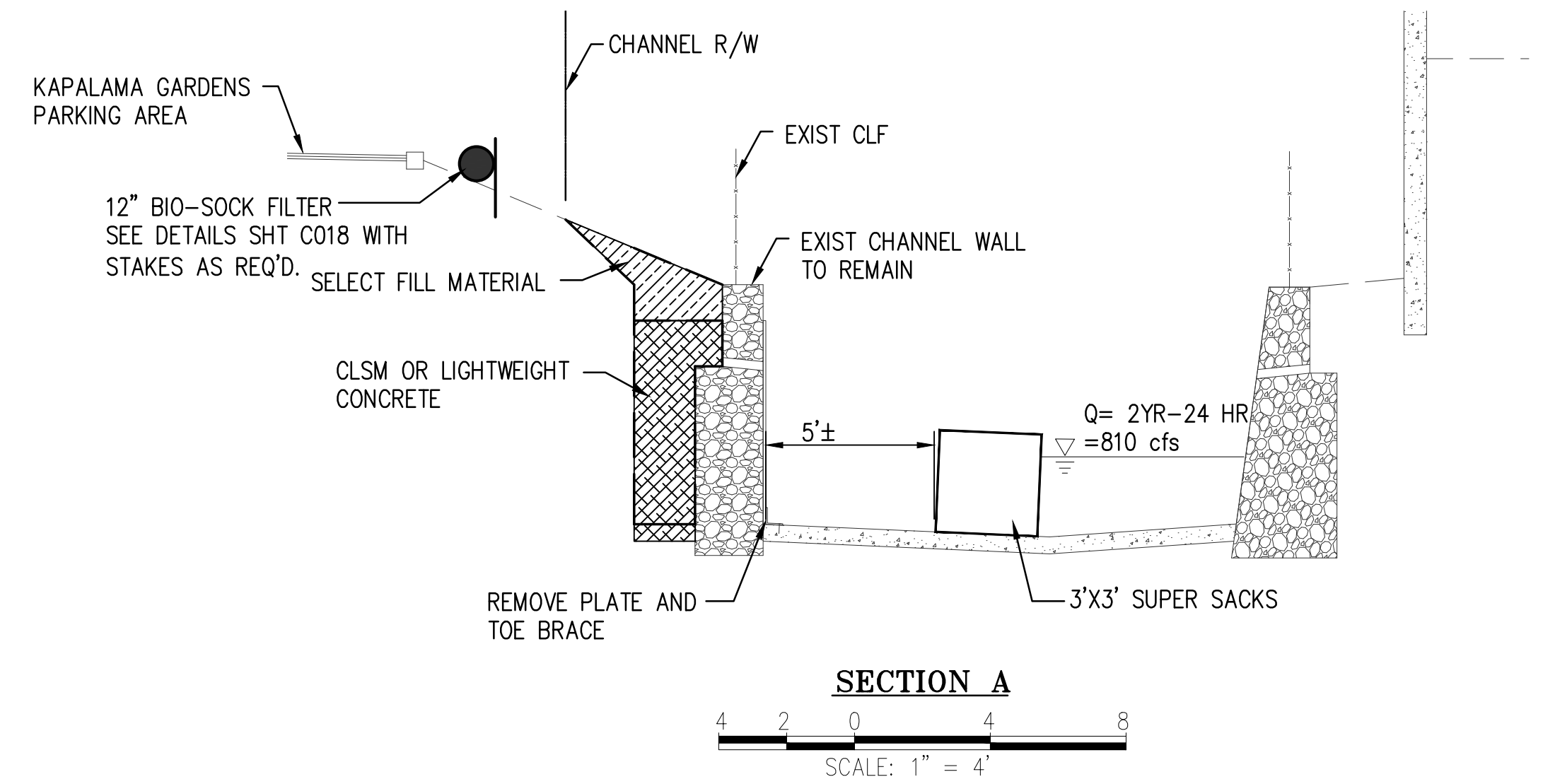


PIPE SLEEVE DETAIL (EXISTING)

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



REVISION	DATE	DESCRIPTION	ENGR.	APPROVED
DEPARTMENT OF DESIGN AND CONSTRUCTION CITY AND COUNTY OF HONOLULU CIVIL DIVISION				
RESTORATION OF KAPALAMA STREAM CRM CHANNEL WALLS - Work Area 1 at Kohou Street and Work Area 2 at 1325 N. School Street Honolulu, Oahu, Hawaii				
MISCELLANEOUS DETAILS FROM EMERGENCY WORK TO ASSIST IN REMOVAL ACTIVITY AT WORK AREA 2				
DESIGN: DB	APPROVED:		DRAWING NO.	
DRAWN: RE			C016	
CHECKED: DB			SHEET 16	
DATE: 2024			OF 20 SHEETS	
JOB NO. xx-xx	FILE		DRAW	FOLDER
				NUMBER



1. ALL SCREW JACKS, SUPPORT BRACES, BRACE PLATES SHALL BE REMOVED FROM THE CHANNEL.
2. THE ROAD PLATES INSTALLED DURING EMERGENCY REPAIR WORK WERE RENTED BY ROYAL CONTRACTING CO. LTD. WHEN SUITABLE FOR PROJECT SITE REMOVAL (DISMANTLED AND STORED AT THE WORK SITE) CONTACT ROYAL CONTRACTING AT (808-839-9006).

REVISION	DATE	DESCRIPTION	ENGR.	APPROVED

Exp: 4/30/26 	DEPARTMENT OF DESIGN AND CONSTRUCTION CITY AND COUNTY OF HONOLULU CIVIL DIVISION								
RESTORATION OF KAPALAMA STREAM CRM CHANNEL WALLS - Work Area 1 at Kohou Street and Work Area 2 at 1325 N. School Street Honolulu, Oahu, Hawaii									
EROSION AND SEDIMENT CONTROL PLAN - 2 WORK AREA 2 DURING NEW CRM WALL CONSTRUCTION									
THIS PLAN WAS PREPARED BY ME OR UNDER MY SUPERVISION AND CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION.  SIGNATURE: Bills Engineering Inc. Civil/Environmental Engineering 2153 N. King Street • Suite 200 • Honolulu, HI 96819	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%;">DESIGN: DB</td> <td style="width: 50%;">DRAWING NO.</td> </tr> <tr> <td>DRAWN: RE</td> <td style="text-align: center; font-size: 2em;">C017</td> </tr> <tr> <td>CHECKED: DB</td> <td style="text-align: center;">SHEET 17</td> </tr> <tr> <td>DATE: 2024</td> <td style="text-align: center;">OF 20 SHEETS</td> </tr> </table>	DESIGN: DB	DRAWING NO.	DRAWN: RE	C017	CHECKED: DB	SHEET 17	DATE: 2024	OF 20 SHEETS
DESIGN: DB	DRAWING NO.								
DRAWN: RE	C017								
CHECKED: DB	SHEET 17								
DATE: 2024	OF 20 SHEETS								
CHIEF, CIVIL DIVISION, DDC _____ DATE _____									
JOB NO. xx-xx	FILE ____ DRAW ____ FOLDER ____ NUMBER ____								

Fri, 27 Sep 2024 - 11:04am
 T:_BEG FILES\Projects\700-01 KAPALAMA PERMANENT REPAIRS (AREA 1 AND 2)\Const Plans Restoration\COMBINED AREAS.dwg\700-01 C018 ESCP NOTES AND DETAILS - Work Area 2.dwg

EROSION AND SEDIMENT CONTROL PLAN NOTES:

PROJECT SEQUENCE:

1. INSTALL STABILIZED CONSTRUCTION INGRESS/EGRESS, SEDIMENT FILTER FOR CATCH BASINS, & PERIMETER CONTROL FOR PROTECTED AREAS.
2. PROCEED WITH CLEARING AND GRUBBING OF AREAS WHERE SHOTCRETE IS TO BE APPLIED.
3. PROCEED WITH THE INSTALLATION OF SHOTCRETE SLOPE STABILIZATION.
4. PRACTICE GOOD HOUSEKEEPING MEASURES THROUGHOUT THE DURATION OF CONSTRUCTION.
5. INSPECTIONS SHALL BE PERFORMED WEEKLY.

RAIN RESPONSE PLAN NOTES:

1. THE FOLLOWING SHALL BE PERFORMED WHEN HEAVY RAIN, TROPICAL STORM OR HURRICANE IS IMMINENT, OR IS FORECASTED IN THE NEXT 48 HOURS.
2. TEMPORARILY SUSPEND ACTIVE GRADING.
3. INSPECT ALL PERIMETER CONTROLS AND INLET PROTECTION DEVICES AND MAINTAIN AS NEEDED. IF A SEVERE STORM IS EXPECTED, REMOVE INLET PROTECTION DEVICES TO PREVENT FLOODING ON SURROUNDING STREETS.
4. COVER OR RELOCATE MATERIAL STOCKPILES AND LIQUID MATERIAL CONTAINERS TO AVOID CONTACT WITH RAINWATER.
5. PLACE SPILL PANS OR OIL-ONLY SPILL PADS UNDER CONSTRUCTION VEHICLES TO PREVENT RUNOFF FROM CONTACTING ANY SPILLED PETROLEUM PRODUCTS. PROPERLY DISPOSE OF ANY ACCUMULATED OILY WATER AFTER THE RAIN EVENT.
6. RE-INSPECT AFTER THE APPROACHING HEAVY RAINS, TROPICAL STORM OR HURRICANE, AND REPLACE OR MAINTAIN BMPS AS NEEDED.

GOOD HOUSEKEEPING BMPS NOTES:

1. STREET SWEEPING, VACUUMING. ALL POLLUTANTS DISCHARGED FROM CONSTRUCTION SITE TO OFFSITE AREAS MUST BE SWEPT OR VACUUMED EACH DAY BEFORE LEAVING THE JOB SITE.
2. 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 POLLUTANT SHALL NOT BE STORED IN BUFFER AREAS, NEAR AREAS OF CONCENTRATED FLOW, OR AREAS ABUTTING THE MS4, RECEIVING WATERS, OR DRAINAGE IMPROVEMENTS THAT DISCHARGE OFFSITE. PRIMARY AND SECONDARY CONTAINMENT CONTROLS AND COVERS SHALL BE IMPLEMENTED TO THE MEP.
3. SPILL PREVENTION AND CONTROL. CREATE AND IMPLEMENT SPILL PREVENTION AND RESPONSE PLAN 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.
4. 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.
5. NONHAZARDOUS MATERIALS. IN THE EVENT THAT NONHAZARDOUS MATERIALS ARE DISCHARGE 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.
6. VEHICLE AND EQUIPMENT CLEANING. ELIMINATE AND MINIMIZE THE DISCHARGE OF POLLUTANTS TO STORM WATER FROM VEHICLE AND EQUIPMENT CLEANING OPERATIONS BY USING OFFSITE FACILITIES WHEN FEASIBLE, WASHING IN DESIGNATED, CONTAINED AREAS ONLY, AND ELIMINATING DISCHARGES TO THE STORM DRAIN SYSTEM BY EVAPORATING AND/OR TREATING WASH WATER, AS APPROPRIATE OR INFILTRATING WASH WATER FOR EXTERIOR CLEANING ACTIVITIES THAT USE WATER ONLY.
7. VEHICLE AND EQUIPMENT FUELING. PREVENT FUEL SPILLS AND LEAKS BY USING OFFSITE FACILITIES, FUELING ONLY IN DESIGNATED AREAS, ENCLOSING OR COVERING STORED FUEL, AND IMPLEMENTING SPILL CONTROLS SUCH AS SECONDARY CONTAINMENT AND ACTIVE MEASURES USING SPILL RESPONSE KITS.
8. VEHICLE AND EQUIPMENT MAINTENANCE. ELIMINATE AND MINIMIZE THE DISCHARGE OF POLLUTANTS TO STORM WATER FROM VEHICLE AND EQUIPMENT MAINTENANCE OPERATIONS BY USING OFFSITE FACILITIES WHEN FEASIBLE, PERFORMING WORK IN DESIGNATED AREAS ONLY, USING SPILL PADS UNDER VEHICLES AND EQUIPMENT, CHECKING FOR LEAKS AND SPILLS, AND CONTAINING AND CLEANING UP SPILLS IMMEDIATELY.
9. SOLID WASTE MANAGEMENT. PREVENT OR REDUCE DISCHARGE OF POLLUTANTS TO THE LAND, GROUNDWATER, IN STORM WATER, FROM SOLID WASTE OR CONSTRUCTION AND DEMOLITION WASTE, BY PROVIDING DESIGNATED WASTE COLLECTION AREAS. COLLECT SITE TRASH DAILY, AND ENSURE THAT CONSTRUCTION WASTE IS COLLECTED, REMOVED, AND DISPOSED OF, ONLY AT AUTHORIZED DISPOSAL AREAS.
10. 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.
11. 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.
12. LIQUID WASTE MANAGEMENT. LIQUID WASTE SHALL BE CONTAINED IN A CONTROLLED AREA SUCH AS A HOLDING PIT, SEDIMENT BASIN, ROLL-OFF BIN, OR PORTABLE TANK, OF SUFFICIENT VOLUME AND TO CONTAIN THE LIQUID WASTES GENERATED. CONTAINMENT AREAS OR DEVICES MUST BE IMPERMEABLE AND LEAK FREE AND SHOULD NOT BE LOCATED WHERE ACCIDENTAL RELEASE OF THE CONTAINED LIQUID CAN DISCHARGE TO WATER BODIES, CHANNEL OR STORM DRAINS.
13. 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 SHALL BE A MINIMUM OF 10 MILLIMETER POLYETHYLENE SHEETING AND SHALL BE FREE OF HOLES, TEARS, OR OTHER DEFECTS THAT COMPROMISE THE IMPERMEABILITY OF THE MATERIAL. CONTAINMENT AREAS AND DEVICES SHALL 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 DESIGNATED AREA AND ALLOWED TO HARDEN, THE CONCRETE SHALL BE BROKEN UP, REMOVED, AND DISPOSED OF AS SOLID WASTES.
14. CONTAMINATED SOIL MANAGEMENT. AT A MINIMUM, CONTAIN CONTAMINATED MATERIAL SOIL BY SURROUNDING WITH IMPERMEABLE LINED BERMS OR COVER EXPOSED CONTAMINATED MATERIAL WITH PLASTIC SHEETING. CONTAMINATED SOIL SHALL BE DISPOSED OF PROPERLY IN ACCORDANCE WITH ALL APPLICABLE REGULATIONS.
15. BMP & SITE MAINTENANCE. RELOCATE, RECONSTRUCT AND MAINTAIN BMPS AS NEEDED TO KEEP THEM EFFECTIVE AT ALL TIMES. PROCEED WITH CONSTRUCTION WITH LEAST POSSIBLE DISTURBANCE OF VEGETATIVE AREAS AND STRUCTURES. REMOVE OR DISMANTLE TEMPORARY EROSION CONTROL STRUCTURES AFTER CONSTRUCTION OF LINING ARE COMPLETE. PRACTICE GOOD HOUSEKEEPING MEASURES THROUGHOUT THE DURATION OF CONSTRUCTION. INSPECTIONS SHALL BE PERFORMED WEEKLY.
16. DUST CONTROL. THE CONTRACTOR, AT HIS/HER OWN EXPENSE, SHALL KEEP THE PROJECT AND ITS SURROUNDING AREAS FREE FROM DUST NUISANCE. THE WORK SHALL BE IN CONFORMANCE WITH THE AIR POLLUTION STANDARDS AND REGULATIONS OF THE STATE DEPARTMENT OF HEALTH.

EROSION PREVENTION/SEDIMENT CONTROL NOTES:

1. THE CONTRACTOR SHALL FOLLOW THE GUIDELINES IN THE CITY & COUNTY OF HONOLULU'S "RULES RELATING TO WATER QUALITY".
2. MEASURES TO CONTROL EROSION AND OTHER POLLUTANTS SHALL BE IN PLACE BEFORE ANY EARTHWORK IS INITIATED.
3. TEMPORARY STABILIZATION IS REQUIRED ON DISTURBED AREAS WHICH ARE AT FINAL GRADE OR WHEN THE DISTURBED AREA WILL NOT BE WORKED FOR 7 CONSECUTIVE DAYS OR MORE.
4. PERMANENT STABILIZATION. ALL DISTURBED AREAS SHALL BE PERMANENTLY STABILIZED USING VEGETATIVE COVERING, PAVEMENT, OR EQUIVALENT, PRIOR TO REMOVING EROSION AND SEDIMENT MEASURES. TRAPPED SEDIMENT AND AREAS OF DISTURBED SOIL WHICH RESULT FROM THE REMOVAL OF THE TEMPORARY MEASURES SHALL BE IMMEDIATELY AND PERMANENTLY STABILIZED.
5. PRESERVE EXISTING VEGETATION. CLEARLY MARK THE AREAS TO BE PRESERVED WITH FLAGS OR TEMPORARY FENCING. WHERE TEMPORARY FENCING IS USED, FENCING SHALL BE ADEQUATELY SUPPORTED BY POSTS AND MAINTAINED IN AN UPRIGHT POSITION.
6. MINIMIZE SOIL COMPACTION AREAS. WHERE FINAL STABILIZATION OR INFILTRATION PRACTICES ARE TO BE INSTALLED, AREA SHALL BE PROTECTED FROM EXCESSIVE COMPACTION DURING CONSTRUCTION. VEHICLE AND EQUIPMENT USE SHALL BE RESTRICTED OR TECHNIQUES TO CONDITION THE SOILS TO SUPPORT VEGETATION SHALL BE IMPLEMENTED IN THE AREAS THAT HAVE BEEN COMPACTED AND ARE DESIGNATED TO REMAIN VEGETATIVE OR POST-CONSTRUCTION INFILTRATION AREAS. CLEARLY MARK THE AREAS TO BE AVOIDED WITH FLAGS OR TEMPORARY FENCING. WHERE TEMPORARY FENCING IS USED, FENCING SHALL BE ADEQUATELY SUPPORTED BY POSTS AND MAINTAINED IN AN UPRIGHT POSITION.
7. PERIMETER CONTROLS ARE REQUIRED DOWN SLOPE OF ALL DISTURBED AREAS.
8. INLET PROTECTION (SEDIMENT FILTER)
 - A) ALL STORM DRAIN INLETS ONSITE AND THOSE OFFSITE WHICH MAY RECEIVE RUNOFF FROM THE SITE SHALL USE AN INLET PROTECTION DEVICE UNLESS THEY ARE DIRECTED TO A SEDIMENT BASIN.
 - B) SEDIMENT LEVELS MAY NOT EXCEED ONE THIRD OF THE HEIGHT OF A SEDIMENT BARRIER OR INLET PROTECTION DEVICE AT ANY POINT ALONG THE LENGTH OF THE SEDIMENT BARRIER OR THE INLET PROTECTION DEVICE.
 - C) SEDIMENT BARRIERS AND INLET PROTECTION DEVICES SHALL BE UNCLOGGED AND CLEANED WHEN PERFORMANCE IS COMPROMISED.
 - D) TORN, WEATHERED, OR SAGGING, SEDIMENT BARRIERS OR INLET PROTECTION DEVICES SHALL BE REPAIRED OR REPLACED IMMEDIATELY.
9. TRACKING CONTROL
 - A) MINIMIZE SEDIMENT TRACK-OUT ONTO OFFSITE STREETS, OTHER PAVED AREAS, AND SIDEWALKS FROM VEHICLES EXITING THE CONSTRUCTION SITE BY RESTRICTING VEHICLE TRAFFIC TO PROPERLY DESIGNATED AREAS AND USING ADDITIONAL CONTROLS TO REMOVE SEDIMENT FROM VEHICLE TIRES PRIOR TO EXITING THE SITE.
 - B) VEHICULAR PARKING AND MOVEMENTS ON PROJECT SITE SHALL BE CONFINED TO PAVED SURFACES OF PREDEFINED PARKING AREAS AND VEHICLE PATHS, WHICH SHALL BE MARKED WITH FLAGS OR BOUNDARY FENCING.
 - C) ALL POLLUTANTS AND MATERIALS THAT ARE DROPPED, WASHED, TRACKED, SPILLED OR OTHERWISE DISCHARGED FROM A PROJECT TO OFFSITE STREETS, OTHER PAVED AREAS, SIDEWALKS OR THE MS4 SHALL BE CLEANED USING DRY METHODS SUCH AS SWEEPING OR VACUUMING.
 - D) WASHING POLLUTANTS AND MATERIALS THAT ARE DISCHARGED FROM THE PROJECT SITE TO THE MS4 INTO DRAIN INLETS OR CATCH BASINS IS PROHIBITED UNLESS THE MATERIAL IS SEDIMENT AND THE INLETS ARE DIRECTED TO A SEDIMENT BASIN OR SEDIMENT TRAP.
10. SLOPE PROTECTION IS REQUIRED ON AREAS WITH SLOPES GREATER THAN 15% AND ON AREAS OF MODERATE SLOPE THAT ARE PRONE TO EROSION UNLESS THEY ARE BEING ACTIVELY WORKED. USE DIVERSION UPSTREAM OF SLOPE (DIKES, SWALES, SLOPE DRAINS) TO DIVERT WATER AROUND THE SLOPE. PROVIDE A 10-FT BUFFER ZONE AT THE TOE OF SLOPE. ONLY 5 ACRES MAY BE DISTURBED AT ANYTIME ON SLOPES GREATER THAN 15%.
11. BEST MANAGEMENT PRACTICES (BMPS) SHALL NOT BE REMOVED UNTIL FINAL STABILIZATION IS COMPLETE FOR THAT PHASE.
12. REFER TO CITY & COUNTY OF HONOLULU BEST MANAGEMENT PRACTICES MANUAL – CONSTRUCTION, FOR MORE INFORMATION ON BMPS.
13. A PERSON RESPONSIBLE FOR IMPLEMENTING THE ESCP AT THE PROJECT SITE ("ESCP COORDINATOR") MUST BE DESIGNATED PRIOR TO PERMIT ISSUANCE USING THE FORM PROVIDED IN APPENDIX A TO THE RULES RELATING TO WATER QUALITY.
 - a) Velocity dissipation devices
 - b) Diversion BMPS
 - c) Dewatering operations BMPS
15. CONTRACTOR SHALL COMPLY WITH THE PROJECT SCHEDULE REQUIREMENTS OF THE CITY'S RULES RELATING TO WATER QUALITY AND IS TO SUBMIT THE SCHEDULED START DATE TWO WEEKS PRIOR.

PRE-CONSTRUCTION, DURING CONSTRUCTION AND POST-CONSTRUCTION BMP TABLE

PRE-CONSTRUCTION	DURING CONSTRUCTION	POST-CONSTRUCTION
STABILIZED CONSTRUCTION INGRESS/EGRESS FILTER SOCK PERIMETER CONTROL	RELOCATE, RECONSTRUCT AND MAINTAIN BMPS AS NEEDED TO KEEP THEM EFFECTIVE AT ALL TIMES. PROCEED WITH CONSTRUCTION WITH LEAST POSSIBLE DISTURBANCE OF VEGETATIVE AREAS AND STRUCTURES. PRACTICE GOOD HOUSEKEEPING MEASURES THROUGHOUT THE DURATION OF CONSTRUCTION. INSPECTIONS SHALL BE PERFORMED WEEKLY. RECONSTRUCT WALL(S) AND REINSTALL LANDSCAPING AS REQUIRED TO MATCH EXISTING CONDITIONS OR BETTER. TEMPORARY STABILIZATION. MAXIMIZE IN CHANNEL WORK WITH NO FLOW IN CHANNEL	PERMANENT STABILIZATION

APPROVED:

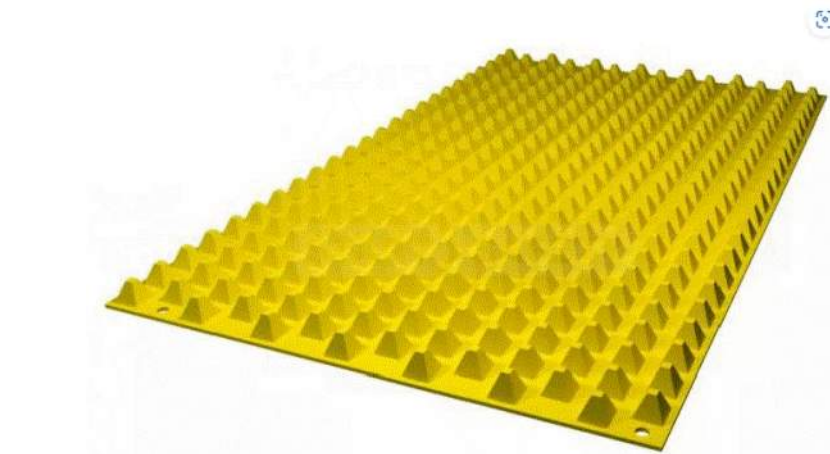
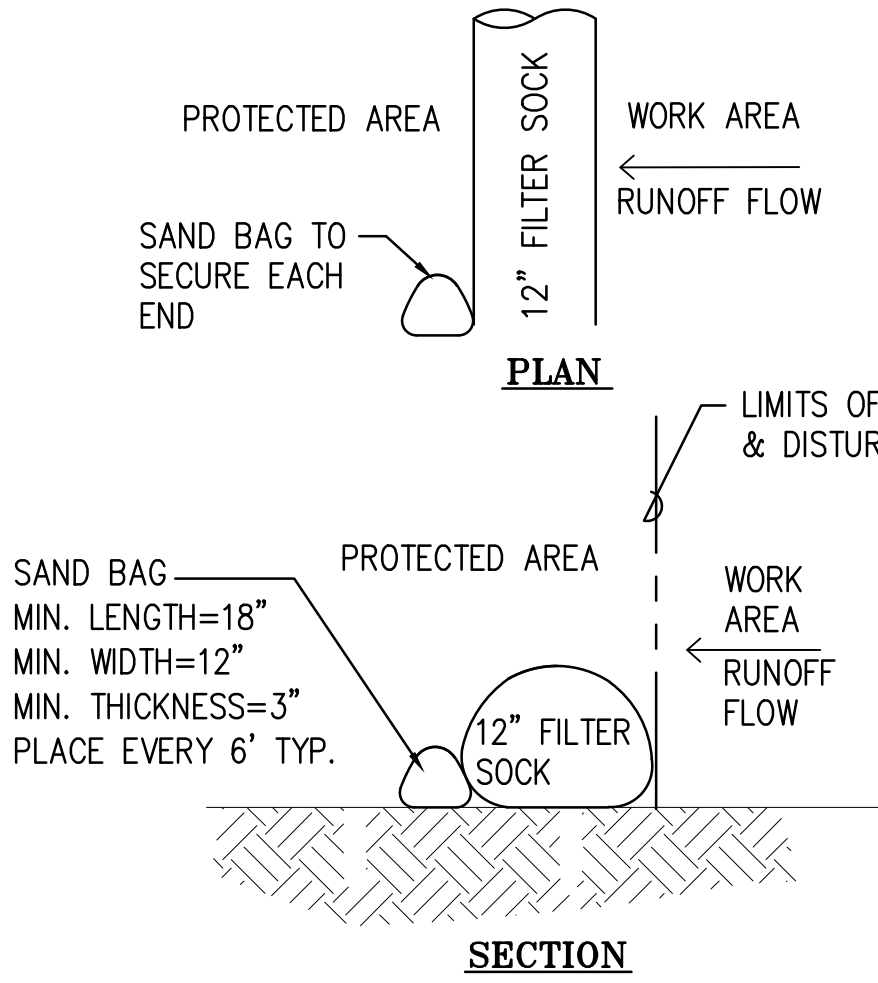
CHIEF, CIVIL ENGINEERING BRANCH, DPP

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3' HIGH X 3' WIDE PLASTIC-LINED BULK SACKS (FLEXIBLE INTERMEDIATE BULK CONTAINERS "FIBC") OR APPROVED SUBSTITUTE FILLED WITH SAND TO ISOLATE WORK AREA. WRAP BULK BAGS WITH 10 MM PLASTIC LINER & HEAVY DUTY FILTER FABRIC (MIRAFI 160N OR APPROVED SUBSTITUTE) TO REDUCE WATER INFILTRATION. ALLOW FOR PASSAGE OF WATER AT ALL TIMES. BARRIERS ARE TO BE MOVED AND ADJUSTED TO MATCH THAT REQUIRED FOR EACH CONSTRUCTION PHASE.

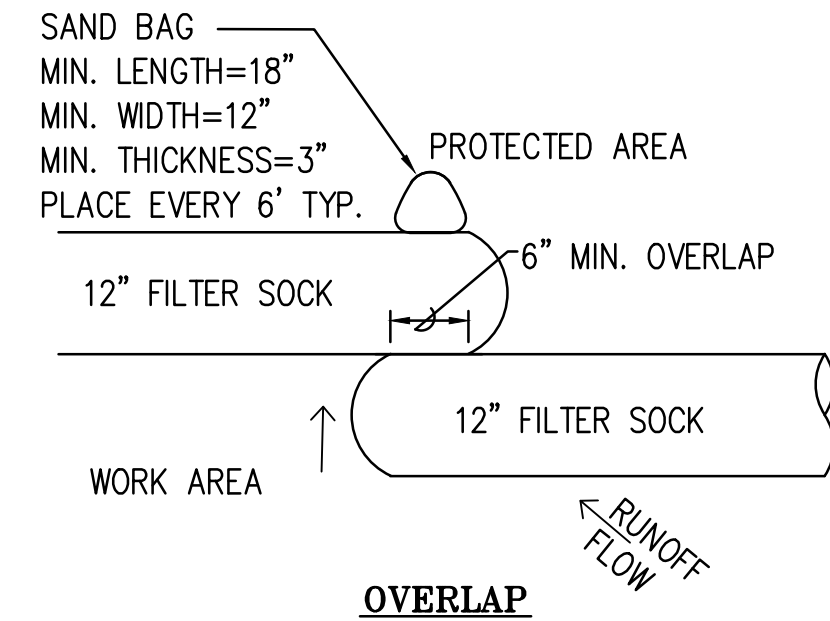
TYPICAL FIBC BAGS (OR APPROVED SUBSTITUTE)

NOT TO SCALE



FODS TRACKOUT CONTROL SYSTEM (OR APPROVED SUBSTITUTE)

NOT TO SCALE



BIO FILTER SOCK DETAILS

NOT TO SCALE

REVISION	DATE	DESCRIPTION		ENGR.	APPROVED
DEPARTMENT OF DESIGN AND CONSTRUCTION CITY AND COUNTY OF HONOLULU CIVIL DIVISION					
RESTORATION OF KAPALAMA STREAM CRM CHANNEL WALLS - Work Area 1 at Kohou Street and Work Area 2 at 1325 N. School Street Honolulu, Oahu, Hawaii					
EROSION AND SEDIMENT CONTROL PLAN NOTES AND DETAILS - WORK AREA 2					
DESIGN: DB	APPROVED:		DRAWING NO.		C018
DRAWN: RE			SHEET 18		
CHECKED: DB			OF 20 SHEETS		
DATE: 2024		CHIEF, CIVIL DIVISION, DDC		DATE	
JOB NO. xx-xx		FILE		DRAW FOLDER NUMBER	

Exp: 4/30/26

DAVID B. BILLS

LICENSED PROFESSIONAL ENGINEER

No. 4516-C

HAWAII, U.S.A.

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



SIGNATURE:

Bills Engineering Inc.

Civil/Environmental Engineering

2153 N. King Street • Suite 200 • Honolulu, HI 96819

GENERAL NOTES

1. ALL WORK SHALL CONFORM TO THE 2018 INTERNATIONAL BUILDING CODE AS AMENDED BY CHAPTER 16 OF THE REVISED ORDINANCES OF HONOLULU.
2. ALL MATERIALS AND WORKMANSHIP SHALL CONFORM TO THE DRAWINGS AND SPECIFICATIONS.
3. THE GENERAL NOTES AND TYPICAL DETAILS SHALL APPLY UNLESS OTHERWISE SHOWN.
4. DIMENSIONS SHALL TAKE PRECEDENCE OVER SCALES SHOWN ON DRAWINGS.
5. DRAWINGS INDICATE GENERAL AND TYPICAL DETAILS OF CONSTRUCTION. WHERE CONDITIONS ARE NOT SPECIFICALLY INDICATED BUT ARE OF SIMILAR CHARACTER TO DETAILS SHOWN, SIMILAR DETAILS OF CONSTRUCTION SHALL BE USED, SUBJECT TO REVIEW BY THE ENGINEER.
6. ALL INFORMATION SHOWN ON THE DRAWINGS RELATIVE TO EXISTING CONDITIONS IS GIVEN AS THE BEST PRESENT KNOWLEDGE, BUT WITHOUT GUARANTEE OF ACCURACY. THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND CONDITIONS PRIOR TO THE START OF THE JOB AND NOTIFY ALL DISCREPANCIES TO THE ENGINEER.
7. ALL OMISSIONS OR CONFLICTS BETWEEN THE VARIOUS ELEMENTS OF THE WORKING DRAWINGS SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER BEFORE PROCEEDING WITH ANY WORK SO INVOLVED.
8. DURING THE CONSTRUCTION PERIOD THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE SAFETY OF THE BUILDING AND THE PROTECTION OF ADJACENT PROPERTIES, STRUCTURES, STREETS AND UTILITIES FROM DAMAGE. THE CONTRACTOR SHALL PROVIDE ADEQUATE SHORING, BRACING AND GUYS IN ACCORDANCE WITH ALL NATIONAL, STATE AND LOCAL SAFETY STANDARDS. ANY DEVIATION MUST BE APPROVED BY OSHA.
9. ALL ERECTION PROCEDURES SHALL CONFORM TO OSHA STANDARDS. ANY DEVIATION MUST BE APPROVED BY OSHA.

10. THE CONTRACTOR SHALL NOTIFY ENGINEERING (PH. 536-7692) TWO (2) WORKING DAYS PRIOR TO BEGINNING ANY WORK WHICH WILL CONCEAL STRUCTURAL ELEMENT SUCH AS POURING CONCRETE (CONCEALING REINFORCING) OR SHEATHING WALLS (CONCEALING HOLD DOWN ANCHORS).

FOUNDATION

1. THE FOUNDATION DESIGN IS BASED ON THE RECOMMENDATIONS IN THE GEOTECHNICAL ENGINEERING EXPLORATION REPORT BY SHINSATO ENGINEERING HAWAII, PROJECT 23-0046 DATED 1/4/24 UNLESS OTHERWISE INDICATED. FOUNDATION WORK SHALL BE PERFORMED IN ACCORDANCE WITH THIS REPORT. THE REPORT IS PART OF THIS PLAN AND SHOULD BE KEPT ON THE JOB SITE AT ALL TIMES.
2. TO REDUCE THE POTENTIAL FOR CAVE-INS OF THE SIDES OF THE EXCAVATIONS DURING RAINY WEATHER SPECIAL CONSTRUCTION METHODS WILL BE REQUIRED.
3. ALL FOOTINGS SHALL BEAR ON FIRM ONSITE SOILS OR PROPERLY COMPACTED FILL. ALL FOOTING EXCAVATIONS SHALL BE OBSERVED AND APPROVED BY A QUALIFIED FOUNDATION ENGINEER PRIOR TO PLACEMENT OR REBARS.
4. ALL WATER, MUD AND DEBRIS SHALL BE REMOVED FROM THE BOTTOM OF FOOTING EXCAVATIONS PRIOR TO THE PLACEMENT OF CONCRETE.
5. CONTRACTOR SHALL NOTIFY GEOLABS HAWAII, 3 WORKING DAYS PRIOR TO BEGINNING ANY FOUNDATION WORK (BOTTOM OF FOOTING, STRUCTURAL FILL, ETC.).

CRM RETAINING WALLS

1. ALL WORK SHALL CONFORM TO SECTIONS 508.02 MATERIALS AND 508.03 CONSTRUCTION REQUIREMENTS OF THE 'HAWAII STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION' (LATEST).
2. ALL STONES SHALL BE CLEAN AND FREE FROM DIRT OR LOOSE MATERIAL. THE STONE TYPE USED FOR THE WALL CONSTRUCTION SHALL BE MINIMUM 140 PCF DENSITY AND SHALL MATCH THE ON-SITE STONES AS APPROVED BY THE DIRECTOR. IMPORTED STONES SHALL MEET THIS SAME CRITERIA.
3. THE WALL SHALL BE GROUTED SOLID. GROUT AND MORTAR SHALL HAVE MINIMUM COMPRESSIVE STRENGTH OF 2,000 PSI AT 28 DAYS.
4. THE FIRST COURSE OF STONES SHALL BE SET INTO A 6" MINIMUM THICK LAYER OF FRESH BEDDING MORTAR WHEN NO CONCRETE BASE IS PROVIDED. WHERE A CONCRETE BASE IS PROVIDED, SET STONES INTO CONCRETE BEFORE THE CONCRETE SETS. THE FRONT 12" OF THE RETAINING WALL FACING THE CHANNEL SHALL BE COMPOSED OF DECONSTRUCTED CRM STONES FROM THE ORIGINAL WALL. THE FRONT FACE OF WALL SHALL MATCH THE APPEARANCE OF THE EXISTING CRM WALL ON THE UPSTREAM AND DOWNSTREAM SIDES.

5. DO NOT EXPOSE GROUT LINES.

6. WEEPHOLES, 4 INCHES IN DIAMETER, SHALL BE PLACED AT CORNERS AND SPACED NOT MORE THAN 6 FEET ON CENTER HORIZONTALLY AND VERTICALLY ALONG WALLS. A 12" THICK INCH MINIMUM SECTION OF CONTINUOUS DRAIN ROCK SHALL BE PLACED ALONG THE ENTIRE LENGTH OF WALLS CONNECTING THE WEEPHOLES. ALIGN WEEPHOLES VERTICALLY.

7. DRAIN ROCK SHALL BE WRAPPED IN A GEOTEXTILE FILTER FABRIC SUCH AS MIRAFIBRON OR SIMILAR AND SHALL CONFORM TO ASTM C33 #61 AGGREGATE.
8. BACKFILL SHALL CONSIST OF ON-SITE SOIL THAT IS FREE OF ORGANICS AND DEBRIS OR SELECT GRANULAR FILL MATERIAL, LESS THAN 3 INCHES IN GREATEST DIMENSION. THE TOP 12 INCHES OF BACKFILL MATERIAL SHALL BE FINE GRAINED, COHESIVE SOIL.
9. RETAINING WALL DESIGN IS BASED ON THE FOLLOWING DESIGN CRITERIA:
- | | |
|----------------------------|-------------------------|
| ACTIVE EARTH PRESSURE | 50 PCF (LEVEL BACKFILL) |
| COEFFICIENT OF FRICTION | 0.45 |
| ALLOWABLE BEARING PRESSURE | 2,000 PSF |
| PASSIVE PRESSURE | 275 PCF |

CONCRETE

1. ALL CONCRETE WORK SHALL CONFORM TO ACI 318-05.
2. ALL MIXES FOR CONCRETE SLABS SHALL CONTAIN 64 OZ. OF TETRAGUARD A820 PER CUBIC YARD OF CONCRETE.
3. ALL CONCRETE UNLESS OTHERWISE NOTED SHALL BE NORMAL WEIGHT HARD ROCK TYPE (150 #/CUFT.). AGGREGATES SHALL CONFORM TO ASTM C-33. MAXIMUM WATER-CEMENT RATIO SHALL NOT EXCEED 0.55.
4. UNLESS OTHERWISE NOTED, THE COMPRESSIVE STRENGTHS OF CONCRETE AT 28 DAYS AND MAXIMUM AGGREGATE SIZES AND SLUMPS SHALL BE AS FOLLOWS:

	STRENGTH	AGGR. SIZE	MAX. SLUMP
FOOTING	3000 PSI	1-1/2"	4"
SLAB ON GRADE	2500 PSI	1-1/2"	3-1/2"
ALL OTHERS	3000 PSI	3/4"	4"

4. ONE SET OF FIELD SAMPLES OF EACH CLASS OF CONCRETE PLACED EACH DAY SHALL BE TAKEN NOT LESS THAN ONCE A DAY, NOR LESS THAN ONCE FOR EACH 50 CUBIC YARDS, NOR LESS THAN ONCE FOR EACH 2000 SQUARE FEET OF SURFACE AREA FOR SLABS OR WALLS. ONE SET OF FIELD SAMPLES SHALL CONSIST OF 3 TEST CYLINDERS AND ONE SLUMP TEST. TEST CYLINDERS SHALL BE MADE AND CURED IN ACCORDANCE WITH ASTM C 31 AND TESTED IN ACCORDANCE WITH ASTM C 39. SLUMP TESTS SHALL BE MADE IN ACCORDANCE WITH ASTM C143.

6. CONCRETE SHALL BE PLACED INTO ITS FINAL POSITION WITHIN 90 MINUTES AFTER THE INTRODUCTION OF THE MIXING WATER TO THE CEMENT AND AGGREGATES PER ASTM C 94. AFTER 90 MINUTES HAS ELAPSED, THE SPECIAL INSPECTOR SHALL HAVE THE RIGHT TO REJECT THE CONCRETE BATCH. AFTER 150 MINUTES HAS ELAPSED, NO CONCRETE SHALL BE PLACED.

7. PIPES OTHER THAN ELECTRICAL CONDUITS SHALL NOT BE EMBEDDED IN STRUCTURAL CONCRETE EXCEPT WHERE SPECIFICALLY APPROVED.
8. CONCRETE SHALL BE MAINTAINED IN A MOIST CONDITION FOR A MINIMUM OF FIVE (5) DAYS AFTER PLACEMENT. ALTERNATE METHODS WILL BE APPROVED IF SATISFACTORY PERFORMANCE CAN BE ASSURED.

9. UNLESS OTHERWISE INDICATED, SLABS AND BEAMS SHALL BE SHORED 28 DAYS AFTER POURING OR UNTIL THEY HAVE ATTAINED THEIR CONCRETE STRENGTH. NO CONSTRUCTION LOADS EXCEEDING 60% OF THE DESIGN LIVE LOADS SHALL BE SUPPORTED ON ANY UNSHORED PORTION OF THE STRUCTURE.

10. FORMS FOR SLABS AND BEAMS SHALL BE PRECAMBERED L/240 FOR CANTILEVERS AND L/480 FOR OTHER SPANS WHERE 'L' IS EQUAL TO THE SPAN.

11. PROVIDE 3/4" CHAMFER AT PROJECTING CORNERS OF BEAMS, WALLS, COLUMNS, ETC. UNLESS NOTED OTHERWISE ON THE ARCHITECTURAL DRAWINGS.

12. ALL INSERTS, ANCHOR BOLTS, PLATES AND OTHER ITEMS EMBEDDED IN CONCRETE SHALL BE GALVANIZED UNLESS OTHERWISE NOTED.

13. VERIFY LOCATIONS AND DIMENSIONS OF SLOTS, ANCHORS, DUCTS, ETC., RELATING TO MECHANICAL, ELECTRICAL AND ARCHITECTURAL WORK BEFORE POURING CONCRETE.

14. REINFORCEMENT, ANCHOR BOLTS, REGLETS, DOWELS AND ALL OTHER EMBEDDED ITEMS SHALL BE POSITIVELY SECURED BEFORE POURING.

15. CONTRACTOR SHALL BE RESPONSIBLE FOR PROPER PLACEMENT OF ALL INSERTS, ANCHOR BOLTS, PLATES, REGLETS, ETC.

16. LOCATIONS OF ALL VERTICAL CONSTRUCTION JOINTS IN SLABS, BEAMS OR GIRDERS SHALL BE COORDINATED WITH AND APPROVED BY THE ARCHITECT AND THE ENGINEER.

17. HORIZONTAL CONSTRUCTION JOINTS SHALL BE RAKED CLEAN AND LAITANCE REMOVED BEFORE NEXT POUR.

18. VERTICAL CONSTRUCTION JOINTS SHALL BE THOROUGHLY CLEANED AND WETTED BEFORE POUR.

19. SAWED CONCRETE CONTROL JOINTS FOR SLABS ON GRADE SHALL BE CUT AS SOON AS POSSIBLE AFTER FINISHING WITHOUT POPPING THE AGGREGATE BUT NOT MORE THAN 8 HOURS AFTER FINISHING.

20. WHEN NEW CONCRETE IS POURED AGAINST EXISTING CONCRETE, THE EXISTING CONTACT SURFACE SHALL BE CLEANED AND ROUGHENED. IMMEDIATELY PRIOR TO PLACING THE NEW CONCRETE, AN APPROVED BONDING AGENT SHALL BE APPLIED TO THE CONTACT SURFACE.

21. WHEN REBARS OR THREADED RODS ARE DRILLED AND GROUTED IN PLACE USE SIMPSON EPOXY-TIE ADHESIVE. HOLE DIAMETER SHALL BE AS PER MANUFACTURER'S RECOMMENDATIONS. HOLES SHALL BE BRUSHED AND AIR BLOWN TO REMOVE LOOSE PARTICLES. MANUFACTURER'S REPRESENTATIVE SHALL BE PRESENT TO SUPERVISE INSTALLATION OF FIRST BAR OR ROD.

REINFORCING STEEL

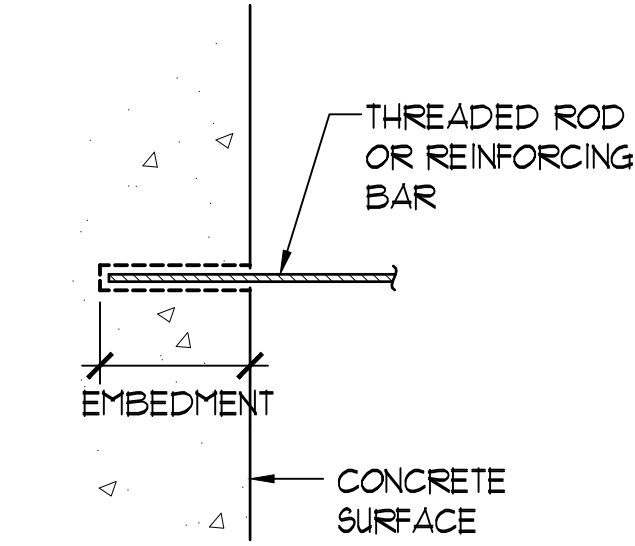
1. IN GENERAL, ALL REINFORCING STEEL SHALL CONFORM TO ASTM A615 GRADE 60. WELDED BARS SHALL BE ASTM A706. THE ENGINEER SHALL APPROVE ALL BARS TO BE WELDED.
2. UNLESS OTHERWISE NOTED, SPLICES, LAPS, DOWEL EXTENSIONS AND EMBEDMENTS SHALL BE 45 BAR DIAMETERS MINIMUM.
3. ALL REINFORCING BARS MARKED CONTINUOUS (CONT.) ON THE PLANS SHALL BE LAPPED 45 BAR DIAMETERS MINIMUM.
4. BENDS NOT DIMENSIONED SHALL BE STANDARD HOOKS.
5. STAGGER ALL SPLICES WHERE POSSIBLE.
6. WELD SPLICE SHALL BE CAPABLE OF DEVELOPING 125% OF THE SPECIFIED YIELD STRENGTH OF THE BAR IN TENSION.
7. ALL WELDING OF REINFORCING SHALL CONFORM TO 'STRUCTURAL WELDING CODE - REINFORCING STEEL' (AWS D14).
8. WELDED WIRE FABRIC SHALL BE GALVANIZED AND CONFORM TO ASTM A-185.
9. LAP OUTERMOST CROSS WIRES OF EACH SHEET OF WELDED WIRE FABRIC ONE SPACING OF CROSS WIRES PLUS 2" MINIMUM.
10. REBARS SHALL BE SUPPORTED ON METAL 'CHAIRS', BENT AND PLACED AS PER 'MANUAL OF STANDARD PRACTICE FOR DETAILING CONCRETE STRUCTURES' ACI 315 (LATEST).
11. MINIMUM COVER IN INCHES FOR REBARS FOR CAST-IN-PLACE CONCRETE:

CONCRETE CAST AGAINST EARTH	3"
FORMED CONCRETE EXPOSED TO EARTH OR WEATHER:	
#5 AND SMALLER	1-1/2"
#6 AND LARGER	2"

CONCRETE NOT EXPOSED TO EARTH OR WEATHER:	
SLABS, WALLS, AND JOISTS	3/4"
BEAMS AND COLUMNS	1-1/2"

12. AT TIME CONCRETE IS PLACED, REINFORCING SHALL BE FREE FROM MUD, OIL, LAITANCE OR OTHER COATINGS ADVERSELY AFFECTING BOND CAPACITY.

13. BEFORE THE POUR THE GENERAL CONTRACTOR INSPECT THE PLACED REINFORCING TO INSURE CONFORMANCE TO THE DRAWINGS. ALL DISCREPANCIES SHALL BE CORRECTED PRIOR TO POURING.

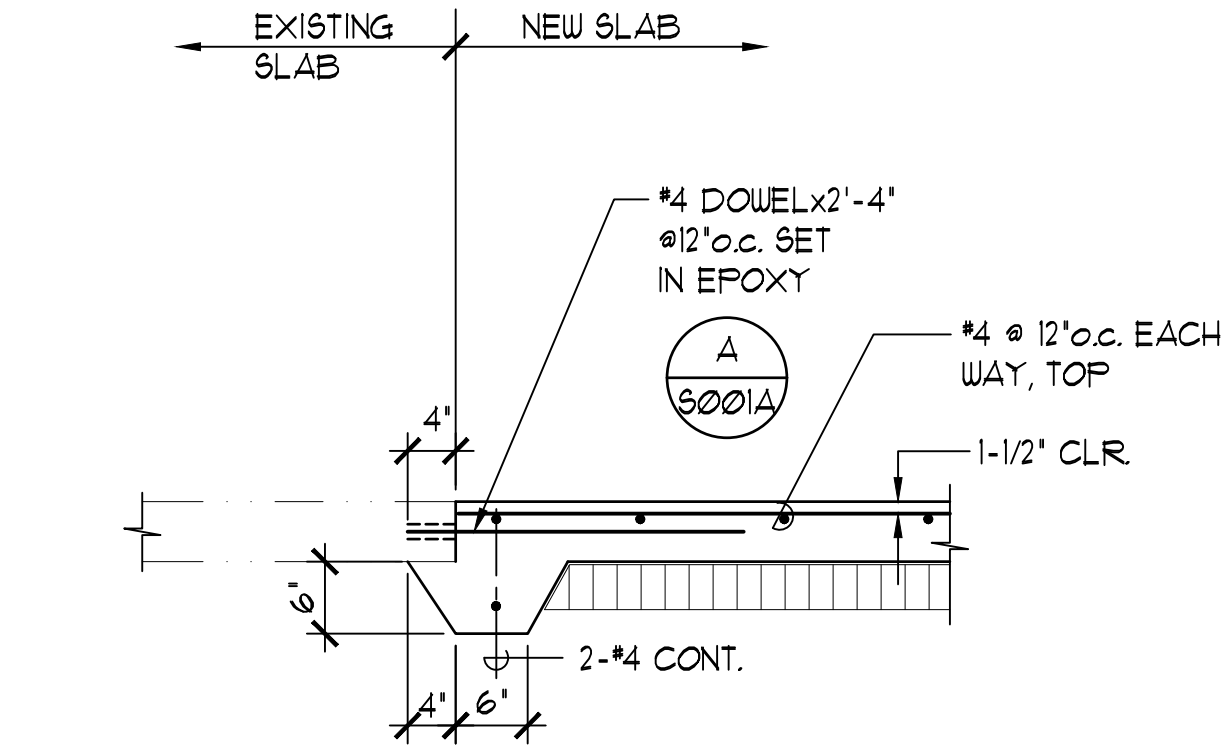


THREADED ROD (REBAR)	DRILL BIT DIAMETER	MINIMUM EMBEDMENT
1/2" (#4)	5/8"	4"
5/8" (#5)	3/4"	6"
3/4" (#6)	7/8"	7"

- NOTES:
- A. PRE APPROVAL FOR SIMPSON STRONG TIE SET-XP EPOXY TIE ADHESIVE. ALL SUBSTITUTION REQUEST SHALL BE SUBMITTED WITH CURRENT ICC-ESR REPORT TO ENGINEER FOR REVIEW AND APPROVAL.
- B. ALL THREAD ROD SHALL BE CARBON STEEL CONFORMING TO ASTM F1554, GRADE 36 HOT DIP GALVANIZED. REINFORCING BAR SHALL BE ASTM A615 GRADE 60.
- C. PRE DRILL HOLE WITH DRILL BIT COMPLYING WITH ANSI B21.15-1994.
- D. CLEAN HOLE WITH OIL FREE COMPRESSED AIR (80 PSI MINIMUM) AND NYLON BRUSH.
- E. FILL HOLE HALF TO TWO THIRDS FULL WITH ADHESIVE STARTING FROM BOTTOM, THEN INSERT ANCHOR TO BOTTOM OF HOLE AND TWIST CLOCKWISE TO ENSURE ADHESIVE COVERS THE ANCHOR SURFACE. ADHESIVE MUST BE LEVEL WITH CONCRETE SURFACE AFTER INSERTION OF ANCHOR.
- F. ANCHOR INSTALLATION REQUIRES SPECIAL INSPECTION. CONTRACTOR SHALL USE SIMPSON ARC (ADHESIVE RETAINING CAP) AS NEEDED FOR HORIZONTAL AND OVERHEAD APPLICATIONS.
- G. PROVIDE STANDARD WASHER UNDER NUT UNLESS NOTED OTHERWISE.

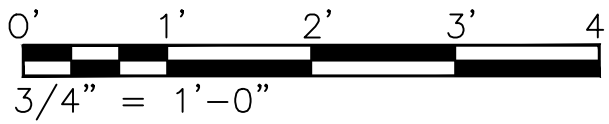
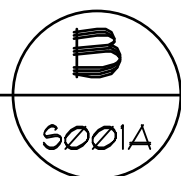
EPOXY ANCHOR DETAIL

NO SCALE



NEW SLAB

SC: 3/4"±1'-0"



REVISION	DATE	DESCRIPTION	ENGR.	APPROVED
DEPARTMENT OF DESIGN AND CONSTRUCTION CITY AND COUNTY OF HONOLULU CIVIL DIVISION				
RESTORATION OF KAPALAMA STREAM CRM CHANNEL WALLS - Work Area 2 at Kohou Street Honolulu, Oahu, Hawaii				
GENERAL NOTES AND TYPICAL DETAILS				
DESIGN: AL	APPROVED:		DRAWING NO. S001A	
DRAWN: MA			SHEET 19 OF 20 SHEETS	
CHECKED: AL	CHIEF, CIVIL DIVISION, DDC		DATE	
DATE: 2024				
JOB NO. xx-xx	FILE	DRAW	FOLDER	NUMBER

Exp: 4/30/26

ADRIAN C.M. LEE

LICENSED PROFESSIONAL ENGINEER

No. 9164-S

HAWAII, U.S.A.

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

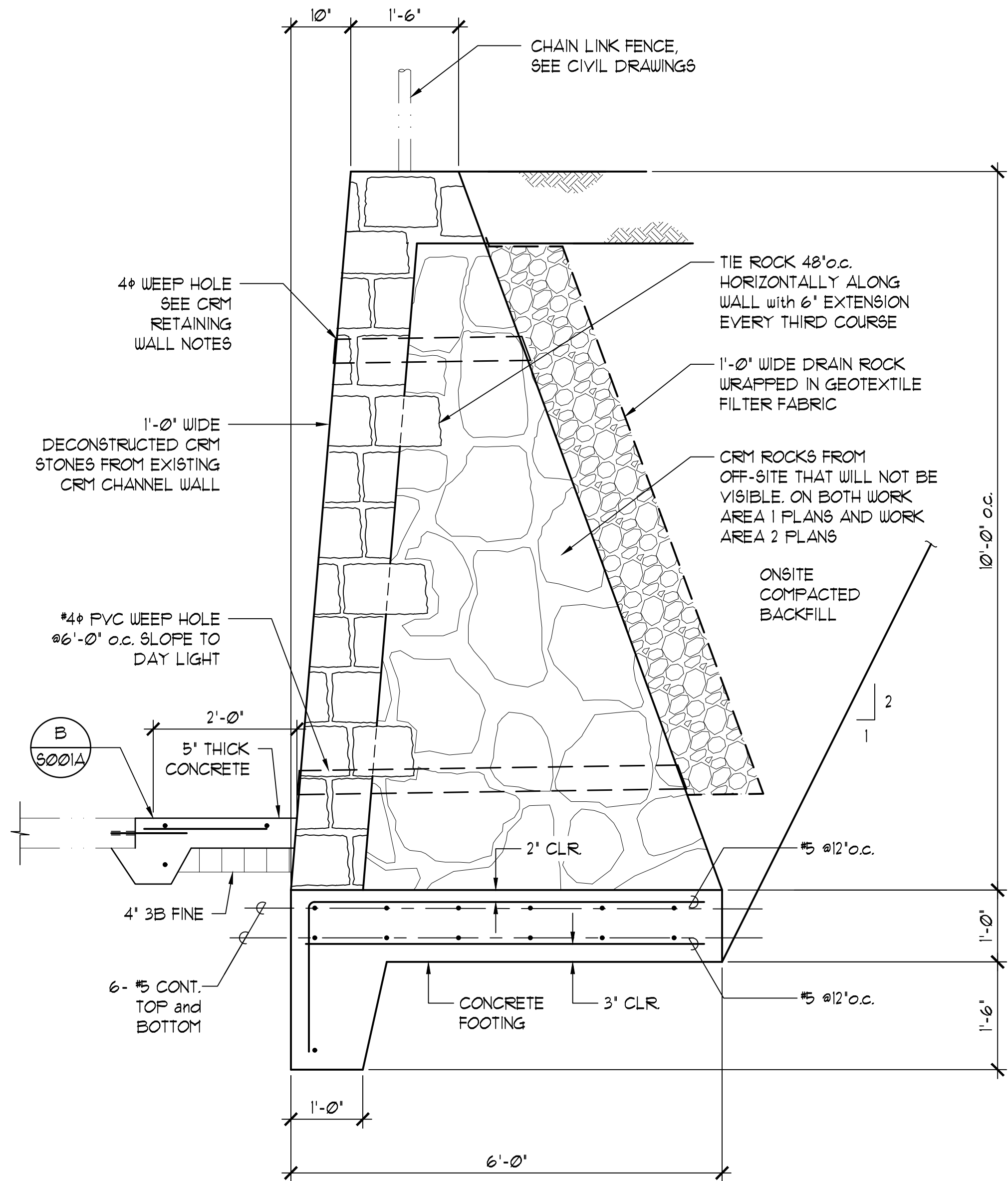
Adrian Lee

SIGNATURE:

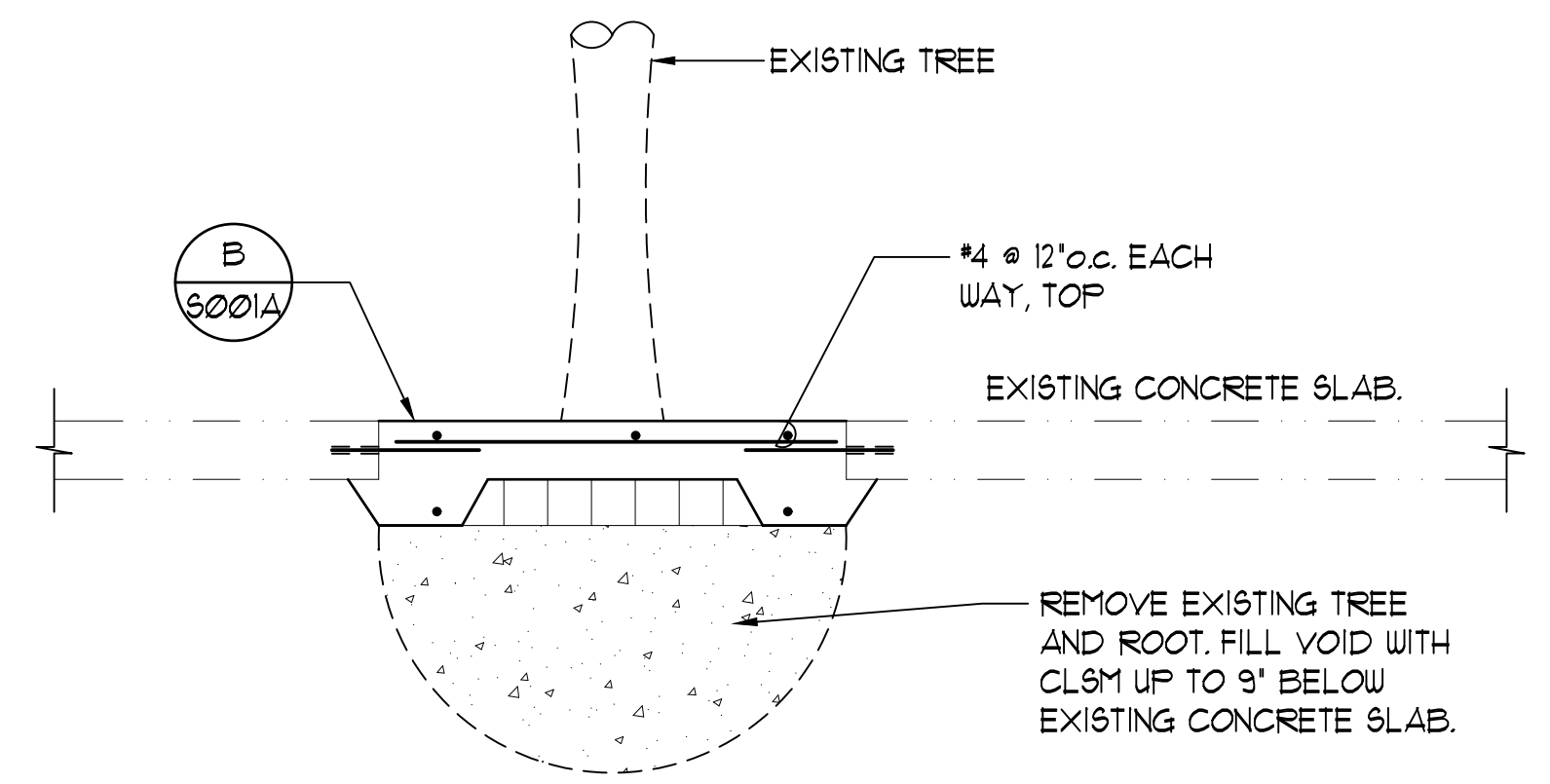
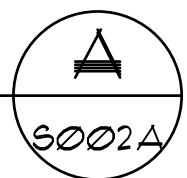
ENGINEERING, INC.

CONSULTING STRUCTURAL ENGINEERS

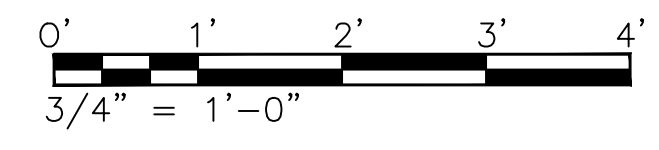
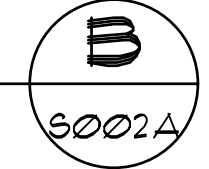
201 Merchant Street Suite 905 • Honolulu, HI 96813



RW 10.0
SC: 3/4" = 1'-0"



SLAB PATCH DETAIL AT TREE
SC: 3/4" = 1'-0"



REVISION	DATE	DESCRIPTION	ENGR.	APPROVED	

Exp: 4/30/26

ADRIAN C.M. LEE

LICENSED PROFESSIONAL ENGINEER

No. 9164-S

HAWAII, U.S.A.

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Adrian Lee

SIGNATURE:

ENGINEERING, INC.

CONSULTING STRUCTURAL ENGINEERS

201 Merchant Street Suite 905 Honolulu, HI 96813

DEPARTMENT OF DESIGN AND CONSTRUCTION

CITY AND COUNTY OF HONOLULU

CIVIL DIVISION

RESTORATION OF KAPALAMA STREAM

CRM CHANNEL WALLS - Work Area 2

at Kohou Street

Honolulu, Oahu, Hawaii

RETAINING WALL SECTION

DESIGN: AL

DRAWN: MA

CHECKED: AL

DATE: 2024

APPROVED:

CHIEF, CIVIL DIVISION, DDC

DATE

DRAWING NO.

S0002A

SHEET

20

OF 20 SHEETS

JOB NO. xx-xx

FILE

DRAW

FOLDER

NUMBER

Water quality and natural resource assessment for the restoration of Kapālama canal, Honolulu, O'ahu

AECOS No. 1786

Phone: (808) 234-7770 Fax: (808) 234-7775 Email: carmen@aecos.com

The City and County of Honolulu (C&C), Department of Design and Construction Drainage Section (DCDS) proposes emergency restoration of the Kapālama Canal walls in the Kalihi-Pālama neighborhood of Honolulu, O‘ahu (the “Project;” Figure 1). *AECOS* Inc. has been contracted to conduct baseline water quality sampling and provide an assessment of natural resources for the Project area¹.

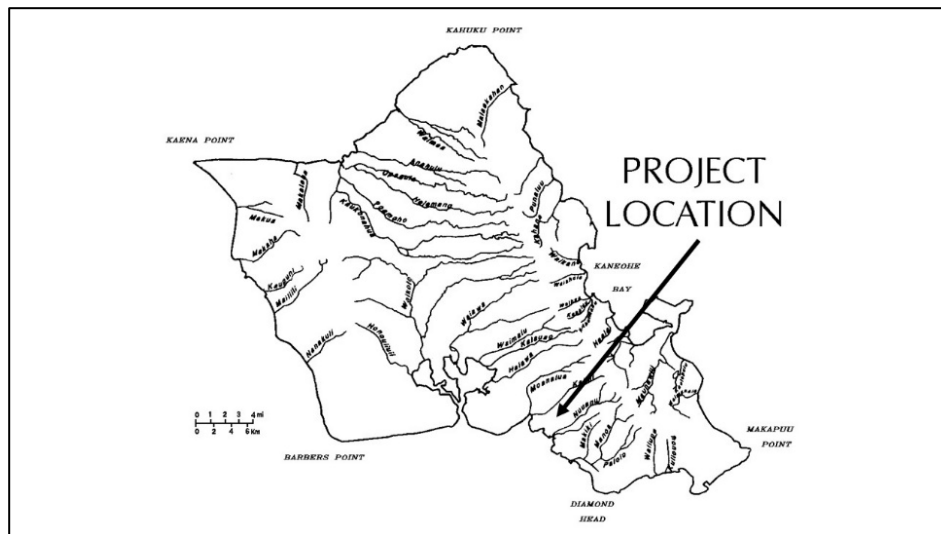


Figure 1. The Project location on the Island of O‘ahu.

¹ This report was prepared for Bills Engineering Inc. as a part of the environmental review and permit application process.

Site Description

The Project site (Figure 2) is approximately 1,147 sq.m (12,346 sq.ft) in total area, comprising two work areas along Kapālama Canal *mauka* (towards the mountains) of the H-1 freeway. The canal is adjacent to Kohou Street, where work area 1 is located downstream of Houghtailing Street (Figure 3A). Work area 2 is located along a side channel that enters the Kapālama Canal from the left (looking in the downstream direction) and is downstream of North School Street (Figure 3B). Currently, screw jack braces hold up steel plates in both work areas for temporary reinforcement where the CRM walls have collapsed (Figure 4).



Figure 2. The Project site comprises two work areas in Kalihi-Pālama.



Figure 3. (A) Work area 1 and (B) Work area 2.



Figure 4. Screw jack braces and cleats hold metal plates where the channel walls have collapsed.

The Rainfall Atlas of Hawai‘i approximates average annual rainfall in the Project area as 940 mm (37 in), with most rainfall occurring during the wet season from November through April (Giambelluca et al., 2013). The nearest U.S. Climate Normals data station is “MOANALUA 770,” which reports an average of 806.5 mm (31.75 in), also distributed unequally with distinct wet and dry seasons (NOAA-NCEI, 2021). Climate Normals are based on a 30-year average (1991-2020).

Kapālama Canal

Kapālama Canal is a man-made drainage canal that was constructed in the 1930s to prevent flooding of the surrounding low-lying land (Ruzicka and Tice, 2015). Prior to the 1850s, most of Pālama consisted of *loko i‘a* or fishponds (WCIT, 2016) and terraced *lo‘i kalo* or taro pondfields fed by two streams: Kapālama and Niuhelewai (Sterling and Summers, 1978). In the 1920s, the “worthless swamp lands” (as described by the Superintendent of Public Works for the Territory of Hawai‘i) began to be filled with dredged spoils from Honolulu Harbor (Ruzicka and Tice, 2015). Ultimately, the wetlands of Kapālama were converted to the

commercial and industrial district it is today and surface run-off of the watershed and coastal springs directed into Kapālama Canal.

Kapālama Watershed is assigned state code No. 33010 in the Hawaiian Watershed Atlas (Parham et al., 2008). According to the watershed atlas, the longest continuous reach of Kapālama Stream is 9.0 km (5.6 mi); the stream drains an 8.5-km² (3.3-mi²) watershed. Most of the watershed is privately owned land in the urban district; only 16% of the watershed is in state Conservation District.

Kapālama Stream is classified in the Hawai'i water quality standards as a Class 2 stream. This classification means that uses of these waters are to be protected "for recreational purposes, the support and propagation of aquatic life, agricultural and industrial water supplies, shipping, and navigation" (HDOH, 2021). The stream is confined to the Kapālama Canal in the Project area. The federal jurisdictional limit authorized by the Clean Water Act is the ordinary high water mark (OHWM), located on the vertical concrete rock masonry (CRM) walls of the canal.

Methods

Biologists conducted a walking survey of the Project area on August 22, 2023. The survey included an assessment of flora and fauna, with particular attention paid to any sensitive biological resources and environments, and water quality sampling. Sensitive biota would include species listed as endangered, threatened, or proposed for listing under federal or state statutes (HDLNR, 1998, 2015a; USFWS, nd-b), or a biological assemblage comprising native plants and animals that may or may not be under any specific threat of extirpation, but which would be regarded as special and worthy of preservation.

Terrestrial Biology

Flora Survey

AECOS botanist G. López identified and noted relative abundance of all ferns, fern allies, gymnosperms, and flowering plants growing in the survey area on August 22, 2023. Field notes were translated into a flora listing. For the most part, plant names given in the listing follow *Manual of the Flowering Plants of Hawai'i* (Wagner, Herbst, & Sohmer, 1990; Wagner & Herbst, 1999) for native and naturalized flowering plants, Hawai'i's Ferns and Fern Allies (Palmer, 2003) and *Taxonomic and Nomenclatural Updates to the Fern and Lycophyte Flora of the*

Hawaiian Islands (Ranker et al, 2019) for ferns, and *A Tropical Garden Flora* (Staples and Herbst, 2005) for ornamental plants. Some names have been updated to reflect more recent taxonomic or nomenclatural changes as presented in Imada (2019).

Avian Survey

A survey of extant birds was conducted by biologist K. Yoneshige during the mid-day hours of August 22, 2023. Birds were identified to species by visual observation aided by Leica 10 X 42 BA binoculars, and by listening for vocalizations. Because the site is primarily urban, avian point-counts were not made. Species observed in the Project area were simply noted as present. Weather conditions were ideal, with unlimited visibility, no precipitation, and light winds. The avian phylogenetic order and nomenclature used in this report follows the AOU *Check-List of North and Middle American Birds* 2022, and the 64th supplement to the checklist (Chesser et al., 2022, 2023).

Mammalian Survey

Biologist C. Hoyt made a list of all mammals encountered during the survey. Indicators of mammalian presence, such as tracks, scat, and other sign were noted. Mammalian phylogenetic order and nomenclature follow *Mammal Species of the World* (Wilson and Reeder, 2005), and Pinzari et al. (2020) for Hawaiian hoary bat.

Aquatic Biology

Biologist C. Hoyt made visual observations of aquatic organisms and used dip nets to catch animals to confirm the identification of species observed. Animal names follow *Hawai'i's Native & Exotic Freshwater Animals* (Yamamoto and Tagawa, 2000).

Water Quality

AECOS scientists C. Hoyt and K. Yoneshige took field measurements and collected water quality samples on August 22, 2023. Three stations were selected surrounding Work area 1: “Downstream”, “Mid”, and “Upstream”. Due to low water flow, no samples were collected for Work area 2.

Temperature, conductivity, pH, and dissolved oxygen (DO) were measured *in situ*. Turbidity was measured by instrument in the field. Water samples were collected, chilled, and returned to the AECOS Laboratory (AECOS Log No. 48606) in Kāneʻohe, Oʻahu, for analysis of total suspended solids (TSS). Additional water

samples were frozen and shipped to the University of Hawai'i Hilo (UHH) analytical laboratory for the following analyses: nitrate + nitrite (NO₃+NO₂), total nitrogen (TN), and total phosphorus (TP). Table 1 lists the analytical methods and instruments used for field and laboratory analyses.

Table 1. Analytical methods used in AECOS water quality sampling.

Analysis	Units	Method	Reference
Temperature	°C	SM 2550B	SM (1998)
Conductivity	µS/cm	SM 2510B	SM (1998)
pH	standard units	SM 4500H+	SM (2017)
Dissolved Oxygen	mg/L, % saturation	SM 4500- O G	SM (2017)
Turbidity	NTU	EPA 180.1 Rev 2.0	USEPA (1993a)
Total Suspended Solids	mg/L	SM 2540 D	SM (2017)
Nitrate + Nitrite*	µg/L	EPA 353.2	USEPA (1997)
Total Nitrogen*	µg/L	ASTM D5176- 08	ASTM (2015)
Total Phosphorus*	µg/L	EPA 365.5	USEPA (1993b)

*Samples analyzed at U.H. Hilo Analytical Laboratory

Results

Rainfall

The nearest active National Oceanographic and Atmospheric Administration–National Weather Service (NOAA–NWS) rain gage—Moanalua Stream (MOAH1)—recorded a total of 285 mm (11.22 in) of rainfall in the three months preceding our field visits in August 2023 (NOAA–NWS, 2023). Total rainfall in that three-month period (May 2023 through July 2023) was 73% of the moving 30-year average rainfall for that gage: 389 mm (15.31 in). Climate conditions can be considered within parameters of a ‘typical year.’

Table 2. Prior rainfall conditions for the August 22, 2023 field survey.

	Total rainfall, May-July 2023 (in)	Highest monthly rain (in)
Moanalua Stream (MOAH1)	11.22, 73% of AVG	4.71 in May

Terrestrial Biology

Flora Survey

The CRM walls and surrounding urban environment support mostly herbaceous growth and are regularly maintained.

A botanical listing (flora) with approximate relative abundance for all plant taxa encountered in the survey is presented in Table 3. Entries are arranged alphabetically under family names and include scientific name, common name, status (i.e., native or non-native; see key at end of table), and a relative abundance value by survey area. “Status” reflects the state-wide distribution of the species.

A total of 69 plant taxa were recorded during the survey. Among them, three (4%) species are early Polynesian introductions (so-called “canoe plants”) and two are indigenous species representing 3% of the total. No endemic species were recorded. All the remaining taxa are plants introduced to the Hawaiian Islands after 1778, including 47 naturalized species (i.e., grow naturally in the wild; 67% of the total number of species) and 18 ornamentals.

The indigenous species recorded are the widespread ‘uhaloa (*Waltheria indica*) and the sedge, *Cyperus polystachyos*. Early Polynesian introductions recorded are: ti or kī (*Cordyline fruticosa*), ‘uala or sweet potato (*Ipomoea batatas*), and primrose willow (*Ludwigia octovalvis*). These are all common plants across the Hawaiian Islands.

Table 3. Listing of plants observed at Kapālama Canal on August 22, 2023.

Species listed by family	Common name	Status	Abundance	Notes
PTERIDOPHYTES - FERNS & FERN ALLIES				
NEPHROLEPIDACEAE				
<i>Nephrolepis brownii</i> (Desv.) Hovenkamp & Miyam.	Asian sword fern	Nat	U	
FLOWERING PLANTS				
MONOCOTS				
ARECACEAE				
<i>Dypsis lutescens</i> (H. Wendl.) Beentje & J. Dransf.	golden-fruited palm	Orn	R	<2>
<i>Chamaedorea elegans</i> Mart.	parlor palm	Orn	p	<2>
ASPARAGACEAE				
<i>Cordyline fruticosa</i> (L.) A. Chev.	kī	Pol	p	
<i>Cordyline fruticosa</i> (L.) A. Chev.	ti cultivars	Orn	p	<2>
<i>Dracaena fragrans</i> (L.) Ker Gawl.	fragrant dracaena	Orn	p	<2>
<i>Dracaena marginata</i> Lam.	money tree	Orn	p	<2>
<i>Sansevieria trifasciata</i> Prain	bowstring-hemp	Nat	p	<2>
BROMELIACEAE				
<i>Aechmea blanchetiana</i> (Baker) Smith	---	Orn	p	<1,2>
CYPERACEAE				
<i>Eleocharis</i> sp.	spikerush	Nat	O	
<i>Cyperus involucratus</i> Rottb.	umbrella sedge	Nat	O	
<i>Cyperus polystachyos</i> Rottb.	---	Ind	O	
POACEAE				
<i>Bothriochloa bladhii</i> (Retz.) S. T. Blake	beardgrass	Nat	O	
<i>Chloris barbata</i> (L.) Sw.	swollen fingergrass	Nat	C	
<i>Chloris virgata</i> Sw.	feather fingergrass	Nat	O	
<i>Cenchrus echinatus</i> L.	common sandbur	Nat	U	
<i>Cynodon dactylon</i> (L.) Pers.	Bermuda grass	Nat	C	
<i>Digitaria insularis</i> (L.) Mez ex Ekman	sourgrass	Nat	U	

Table 3 (continued).

Species listed by family	Common name	Status	Abundance	Notes
POACEAE (cont.)				
<i>Eragrostis pectinacea</i> (Michx.) Nees	Carolina lovegrass	Nat	R	
<i>Megathryus maximus</i> (Jacq.) B.K. Simon & W.L. Jacobs	Guinea grass	Nat	A	
<i>Melinis repens</i> (Willd.) Zizka	Natal redtop	Nat	R	
<i>Urochloa mutica</i> (Forssk.) T.Q. Nguyen	California grass	Nat	O	
FLOWERING PLANTS				
EUDICOTS				
ACANTHACEAE				
<i>Asystasia gangetica</i> (L.) T. Anderson	Chinese violet	Nat	C	
<i>Ruellia brittoniana</i> E. Leonard	Mexican petunia	Nat	R	
AMARANTHACEAE				
<i>Amaranthus viridis</i> L.	slender amaranth	Nat	R	
ANNONACEAE				
<i>Annona muricata</i> L.	soursop	Orn	p	<2>
APOCYNACEAE				
<i>Catharanthus roseus</i> (L.) G. Don	Madagascar periwinkle	Nat	p	<2>
<i>Plumeria pudica</i> Jacq.	---	Orn	p	<2>
ARALIACEAE				
<i>Polycias guilfoylei</i> (W. Bull.) L. H. Bailey	panax	Orn	R	
ASTERACEAE (COMPOSITAE)				
<i>Emilia fosbergii</i> Nicolson	Flora's paintbrush	Nat	R	
<i>Eclipta prostrata</i> (L.) L.	false daisy	Nat	R	
<i>Tridax procumbans</i> L.	coat buttons	Nat	C	
BIGNONIACEAE				
<i>Spathodea campanulata</i> P. Beauv.	African tulip tree	Nat	R	<2>
CACTACEAE				
<i>Hylocereus undatus</i> (Haw.) Britton & Rose	night-blooming cereus	Orn	R	

Table 3 (continued).

Species listed by family	Common name	Status	Abundance	Notes
CARICACEAE				
<i>Carica papaya</i> L.	papaya	Nat	R	<2>
CLUSIACEAE				
<i>Clusia rosea</i> Jacq.	autograph tree	Nat	U	
CONVOLVULACEAE				
<i>Ipomoea obscura</i> (L.) Ker-Gawl	---	Nat	O	<1>
<i>Ipomoea batatas</i> (L.) Lam.	'uala, sweet potato	Pol	U	
CUCURBITACEAE				
<i>Coccinia grandis</i> (L.) Voigt	ivy gourd	Nat	U	
<i>Momordica charantia</i> L.	wild bitter melon	Nat	O	
FABACEAE				
<i>Albizia saman</i> F. Muell.	monkeypod	Nat	R	<2>
<i>Desmanthus pernambucanus</i> (L.) Thellung	virgate mimosa	Nat	R	
<i>Leucaena leucocephala</i> (Lam.) de Wit	koa haole	Nat	C	
<i>Pithecellobium dulce</i> (Roxb.) Benth.	'opiuma	Nat	O	<2>
<i>Sesbania grandiflora</i> (L.) Poir.	sesban	Orn	p	<2>
LAMIACEAE				
<i>Mesosphaerum pectinatum</i> (L.) Kuntze	comb hyptis	Nat	C	
<i>Coleus amboinicus</i> Lour.	Cuban oregano	Orn	U	<2>
<i>Ocimum gratissimum</i> L.	wild basil	Nat	R	
MALVACEAE				
<i>Abelmoschus exculentus</i> (L.) Moench	okra	Orn	p	<2>
<i>Waltheria indica</i> L.	'uhaloa	Ind	R	
MORACEAE				
<i>Ficus elastica</i> Roxb. ex Hornem	Indian rubber tree	Orn	P	<1,2>
<i>Ficus microcarpa</i> L. fil.	Chinese banyan	Nat	O	
MYRTACEAE				
<i>Psidium cattleianum</i> Sabine	strawberry guava	Nat	U	
<i>Syzygium cuminii</i> (L.) Skeels	Java plum	Nat	O	
NYCTAGINACEAE				
<i>Boerhavia coccinea</i> Mill.	false alena	Nat	U	
<i>Bougainvillea spectabilis</i> Wild.	bougainvillea	Orn	R	<2>

Table 3 (continued).

Species listed by family	Common name	Status	Abundance	Notes
ONAGRACEAE				
<i>Ludwigia octovalvis</i> (Jacq.) Raven	primrose willow	Pol	R	
PASSIFLORACEAE				
<i>Turnera ulmifolia</i> L.	yellow alder	Nat	U	
<i>Passiflora suberosa</i> L.	huehue haole	Nat	R	
PHYLLANTHACEAE				
<i>Phyllanthus debilis</i> Klein ex Willd.	niuri	Nat	R	
PHYTOLACCACEAE				
<i>Rivina humilis</i> L.	coral berry	Nat	U	
POLYGONACEAE				
<i>Antigonon leptopus</i> Hook. & Arnott	Mexican creeper	Nat	O	<2>
RUBIACEAE				
<i>Citrus reticulata</i> Blanco	Mandarin orange	Orn	p	<2>
<i>Citrus maxima</i> (Burm.) Merr.	pummelo	Orn	R	<2>
<i>Ixora</i> sp.	ixora	Orn	R	<2>
<i>Paederia foetida</i> L.	maile pilau	Nat	C	
SOLANACEAE				
<i>Solanum lycopersicum</i> var. <i>cerasiforme</i> (Dunal) Spooner, G.J. Anderson & R.K. Jansen	cherry tomato	Nat	R	
<i>Solanum torvum</i> Sw.	turkey plant	Nat	O	
ULMACEAE				
<i>Trema orientalis</i> (L.) Blume	gunpowder tree	Nat	R	

Legend to Table 3

STATUS = distributional status for the Hawaiian Islands:

- Ind** - indigenous; native to Hawaii, but not unique to the Hawaiian Islands.
Nat - naturalized, exotic, plant introduced to the Hawaiian Islands since the arrival of Cook Expedition in 1778, and well-established outside of cultivation.
Orn - A cultivated plant; a species not thought to be naturalized in Hawai'i.
Pol - An early Polynesian introduction. Introduced before 1778.

ABUNDANCE = occurrence ratings for plant species:

- R** - Rare seen in only one or two locations.
U - Uncommon seen at most in several locations.
O - Occasional seen with some regularity.
C - Common observed numerous times during the survey.

Table 3 (continued).

A - Abundant	found in large numbers; may be locally dominant.
AA - Very abundant	abundant and dominant; a defining vegetation type.
p - Present	abundance not established due to the intentional cultivation of the plant for ornamental or agricultural purposes.

NOTES: <1> Plant a juvenile or lacking flowers or fruit; identification therefore uncertain.
<2> Parking lot or surrounding buildings landscaping.

Avian Survey

A total of 11 species representing eight families were encountered across the Project area (Table 4). All the species recorded are non-native (alien) species established in the Hawaiian Islands. Avian diversity was in keeping with the urban nature of the area.

Table 4. Avian species observed at Kapālama Canal on August 22, 2023.

Common Name	ORDER FAMILY <i>Species</i>	Status
COLUMBIFORMES		
	COLUMBIDAE	
Rock Pigeon	<i>Columba livia</i>	NN
Zebra Dove	<i>Geopelia striata</i>	NN
Spotted Dove	<i>Streptopelia chinensis</i>	NN
PASSERIFORMES		
	ESTRILDIDAE	
Common Waxbill	<i>Estrilda astrild</i>	NN
Java Sparrow	<i>Padda oryzivora</i>	NN
	MUSCICAPIDAE	
White-rumped Shama	<i>Copsychus malabaricus</i>	NN
	PASSERIDAE	
House Sparrow	<i>Passer domesticus</i>	NN
	PYCNONOTIDAE	
Red-vented Bulbul	<i>Pycnonotus cafer</i>	NN

Table 4 (continued).

Common Name	ORDER FAMILY <i>Species</i>	Status
	STURNIDAE	
Common Myna	<i>Acridotheres tristis</i>	NN
	THRAUPIDAE	
Red-crested Cardinal	<i>Paroaria coronata</i>	NN
	ZOSTEROPIDAE	
Warbling White-eye	<i>Zosterops japonicus</i>	NN

Legend to Table 4.

STATUS = distributional status for the Hawaiian Islands:

NN = Non-native; naturalized, introduced to the Hawaiian Islands.

Avian species recorded during a previous (2016) survey near the Lo'i Kalo Mini Park that were not observed during the 2023 survey include chicken (*Gallus sp.*) and *Manu o Kū* or White Tern (*Gygis alba*; AECOS, 2017). No waterbirds were observed in either survey.

Mammalian Survey

A dead rat was observed in the Project area during the survey. Feral cat (*Felis catus*) and domestic dog (*Canis lupus familiaris*) were observed adjacent to the canal. While not observed, it is likely that the Project area is utilized by small Indian mongoose (*Herpestes javanicus*) and one or more Muridae (rats and mice) presently established in the Hawaiian Islands.

Aquatic Biology

During our survey, we observed only three aquatic species. These species include non-native poeciliid liberty/Mexican molly hybrid complex (*Poecilia spp.*), cane toad (*Rhinella marina*), and scarlet skimmer (*Crocothemis servilia*). No HDLNR-DAR aquatic biota surveys are reported from Kapālama Watershed in the *Atlas of Hawaiian Watersheds* (Parham et al., 2008).

Though drainage ditches might provide suitable habitat for damselflies, they are typically populated by introduced fish species with which endemic *Megalagrion* species of damselflies rarely coexist (Polhemus and Asquith, 1996). As expected,

no damselflies were observed during this survey, including no endemic Hawaiian damselflies of the genus *Megalagrion*.

Water Quality

The locations of the three water quality stations are shown in Figure 5. Results of the water quality sampling event are presented in Table 5. The highest water temperature was at Sta. Mid and lowest at Sta. Downstream. DO decreased in the downstream direction, along with pH. Conductivity was lowest at Sta. Downstream and highest at Sta. Mid. TSS, along with turbidity, decreased from Upstream to Downstream.

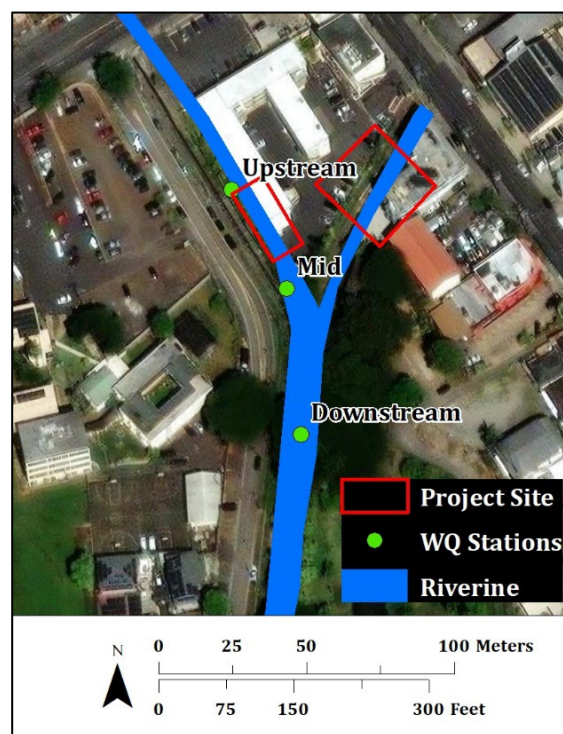


Figure 5. Water quality sampling stations at the Project sites.

Since water was below the junction of the confluent canals, an influence from the side channel (Work area 2) is likely. The side channel is part of the storm drain system that discharges into the canal (Hawai'i Statewide GIS Program, 2023). Although the flow in the side channel was very low on the day of sampling, from Figs 3A and 3B it can be seen that the contribution of water from the side channel to Sta. Downstream is significant. Indeed, several parameters measured at Sta. Downstream deviate from the two stations a short distance upstream on the Kapālama Canal; note elevated soluble nitrate+nitrite and reduced temperature, conductivity, pH, turbidity, and TSS.

The two parameters most deviant from expected stream water quality are pH and dissolved oxygen (DO). High pH and high DO result from enhanced primary productivity by algae growing on the bottom of the channel. During the day, the algal mat utilizes sunlight for photosynthesis. This process removes dissolved CO₂ from the water (present as a mild acid) raising the pH and generating oxygen. The process also explains the low soluble nutrients measured in the water at the Upstream and Mid stations; the result of uptake by the algal mat.

Table 5. Water quality in Kapālama Canal from sampling event on August 22, 2023.

Station	Time	Temp (°C)	Cond. (µS/cm)	pH	DO (DO sat.) (mg/L)	Turb. (ntu)	TSS (mg/L)	NO ₃ + NO ₂ (µg N/L)	Total N (µg N/L)	Total P (µg P/L)
Sta. Upstream	1310	35.4	659	10.27	8.00 (115%)	2.45	10	6	613	128
Sta. Mid	1300	36.1	661	10.23	7.76 (114%)	2.02	5.4	5	606	62
Sta. Downstream	1240	29.7	525	9.18	8.65 (113%)	1.42	2.8	1080	1370	74

Discussion and Recommendations

Recommendations presented here are partly based on U.S. Fish and Wildlife Service, Animal Avoidance and Minimization Measures (USFWS-PIFWO, 2023). Implementation of the recommendations (provided below as bulleted items) will minimize impacts to listed species to the maximum extent practicable.

Terrestrial Resources

Flora

The vegetation of the project area is highly disturbed. No plant species proposed for listing or listed as endangered or threatened under either federal or State of Hawai'i endangered species statutes (HDLNR, 1998; USFWS, nd-b) were observed during the course of our survey.

Avian

All avian species recorded in the Project area by our survey are non-native species naturalized in the Hawaiian Islands.

Listed night-flying seabirds in Hawai'i include Hawaiian Petrel (*Pterodroma sandwichensis*), Newell's Shearwater (*Puffinus newelli*), and Band-rumped Storm-Petrel (*Hydrobates castro*). In the summer and fall, night-flying seabirds (especially fledglings) transiting to the sea from inland can become disoriented by exterior lighting. When disoriented, seabirds may collide with man-made structures or the ground. If not killed outright, dazed or injured birds are targets of opportunity for feral mammals (Podolsky et al., 1998; Ainley et al., 2001; Day et al., 2003). The primary cause of mortality in these seabird species is predation by alien mammalian species at the nesting colonies (USFWS, 1983; Ainley et al., 2001). Collision with man-made structures is considered the second-most significant cause of mortality of these seabirds in Hawai'i. No suitable nesting habitat for seabird species occurs in the Project area.

- The Project can minimize or avoid risks to protected night-flying seabirds by not conducting night-time construction and ensuring that any outdoor lighting associated with the Project is fully shielded (dark sky compliant; see HDLNR-DOFAW, 2016).

White Tern (*Gygis alba*), or *manu o Kū*, is an indigenous seabird listed as threatened under State of Hawai'i endangered species statute on the Island of O'ahu (HDLNR, 2015). White Tern was not observed during our survey. In the main Hawaiian Islands, most of the White Tern population is found in central urban and suburban Honolulu, with a known nesting range extending from Niu Valley to Aloha Tower (isolated pairs occur at Hickam Air Force Base; VanderWerf and Downs, 2018).

- The Project can minimize impacts to white terns by examining trees for white tern nesting prior to any trimming.

Mammals

It is possible that the endangered Hawaiian hoary bat uses resources within the Project area. Trees suitable for roosting of Hawaiian hoary bat (*Lasiurus semotus*) are present in the Project vicinity. This bat species is solitary and uncommon but with a widespread distribution on Hawai'i Island. As Hawaiian hoary bat uses multiple roosts within a home territory (Bonaccorso, 2015), the disturbance associated with removal of any tree would be minimal. An exception would be during the pupping season if a female bat carrying a pup or an

unattended pup is in a tree being felled. These individuals may be unable to flee the tree.

- Potential adverse impacts to Hawaiian hoary bat can be avoided or minimized by not clearing woody vegetation taller than 4.6 m (15 ft) between June 1 and September 15, the bat pupping season.

Aquatic Resources

No federal or state-listed threatened or endangered aquatic species (USFWS, nd-b; HDLNR, 2015) are known to be present in Kapālama Canal.

Though not observed during this survey, endemic aquatic *‘o‘opu*, *‘ōpae*, and *hīhīwai* and *hapawai*, have been observed in the stream during previous surveys (AECOS, 2017; Englund et al., 2000). These species are diadromous: eggs are laid in the stream and the larvae that hatch from these eggs move downstream and out into the ocean where they develop for a period of time before migrating back into fresh water to grow to maturity (Ford and Kinzie, 1982; Kinzie, 1988).

Though not an ideal environment, diadromous organisms inhabit and migrate through the Project area. There is no relationship between local population density and habitat quality (McRae, 2007) and *‘o‘opu* recruit to any freshwater source, regardless of habitat quality (Holmquist et al., 1998). Project activities must not impede the migratory pathways of native amphidromous species. Water quality is a priority, and good water quality should be maintained when work occurs in or near aquatic habitat. Apply appropriate construction BMPs for all in-water work.

- If in-water work is required, BMPs for work in aquatic environments should be incorporated into the Project plans to minimize the degradation of water quality and impacts to biological resources.
- Instream migration pathways for amphidromous species should be maintained at all times.

Water Quality

The purpose of water quality measurements presented in this report is to characterize existing conditions and not to establish compliance with state water quality standards (Table 6). In fact, the state criteria for nutrients and particulates require making comparisons with geometric mean values, so a minimum of three separate sampling events per station would be required to

generate statistics for comparison with these criteria. The water quality sampling results from this event could be used as part of a larger data set to establish ambient conditions for various parameters in the future.

Table 6. Applicable state of Hawai'i water quality criteria for streams (HAR §11-54-5.2; HDOH, 2021).

Parameter	Season	Geometric Mean value not to exceed this value	Value not to be exceeded more than 10% of the time	Value not to be exceeded more than 2% of the time
Total Nitrogen (µg N/l)	Wet* Dry**	250.0 180.0	520.0 380.0	800.0 600.0
Nitrate + Nitrite (µg N/l)	Wet Dry	70.0 30.0	180.0 90.0	300.0 170.0
Total Phosphorus (µg P/l)	Wet Dry	50.0 30.0	100.0 60.0	150.0 80.0
Total Suspended Solids (mg/l)	Wet Dry	20.0 10.0	50.0 30.0	80.0 55.0
Turbidity (NTU)	Wet Dry	5.0 2.0	15.0 5.5	25.0 10.0

* Wet season – November 1 through April 30.

** Dry season – May 1 through October 31.

Other criteria:

- pH units are not to deviate more than 0.5 units from ambient conditions and are neither to be lower than 5.5 nor higher than 8.0.
- Dissolved oxygen is not to decrease below 80% saturation.
- Temperature is not to vary more than 1C° from ambient conditions.
- Specific conductance is not to be more than 300 µmhos/cm

Criteria for DO saturation and specific conductance are not-to-exceed values and these criteria were met at all three sampling stations. pH values at all three stations were above the range specified for streams. The criteria for temperature (and also a second criterion for pH) are based on “deviations from ambient conditions”—criteria essentially pertaining to discharges that might cause deviations.

As noted above, the limited data indicates that eutrophic conditions are present in Kapālama Canal in the Project area. Benthic algae, fueled by soluble nutrients, is resulting in high pH and high DO in the water. Water in the side channel is more typical of recent run-off.

The concrete lined canal with steep banks downstream of the Project area offers few opportunities to mitigate the introduction of any pollutants from this project, so minimizing introduction of pollutants to the stream is a best management practice (BMP). BMPs should be employed during project design and construction to maintain good water quality at Kapālama Canal. It is important to reduce transport of sediments to the stream because of the potential for pollutants associated with particulates (e.g., chlordane) carried to nearshore waters. Project work may be completed with minimum impacts to stream water quality and without negative impacts to long-term water quality if proper BMPs are implemented:

- Minimize turbidity and siltation from project-related work. Use effective silt containment devices and curtail work during adverse weather conditions.
- Prior to use, clean pollutants from all project-related materials and equipment (dredges, barges, backhoes, etc.) that will be placed in the water.
- Do not stockpile project-related materials (fill, revetment rock, pipe, etc.) in the canal channel.
- Dispose of all debris removed from aquatic environments at an approved upland or ocean dumping site.
- Prevent contamination (trash or debris disposal, non-native species introductions, attraction of non-native pests, etc.) of aquatic habitats from project-related activities. Implement a litter-control plan and develop a hazard analysis and critical control point plan to prevent attraction and introduction of non-native species.
- Fuel project-related vehicles and equipment away from the canal and develop a contingency plan to control petroleum products accidentally spilled during the work. Store absorbent pads and containment booms on-site, as appropriate, to facilitate the clean-up of accidental petroleum releases.

Other Resources of Potential Concern

Critical Habitat

Federally delineated Critical Habitat is not present in the Project area (USFWS, 2015). No equivalent designation exists under state law.

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**Water quality and natural resource
assessment for the restoration of Kapālama
canal, Honolulu, O'ahu**

Site Description

The Project site (Figure 2) is approximately 1,147 sq.m (12,346 sq.ft) in total area, comprising two work areas along Kapālama Canal *mauka* (towards the mountains) of the H-1 freeway. The canal is adjacent to Kohou Street, where work area 1 is located downstream of Houghtailing Street (Figure 3A). Work area 2 is located along a side channel that enters the Kapālama Canal from the left (looking in the downstream direction) and is downstream of North School Street (Figure 3B). Currently, screw jack braces hold up steel plates in both work areas for temporary reinforcement where the CRM walls have collapsed (Figure 4).



Figure 2. The Project site comprises two work areas in Kalihi-Pālama.



Figure 3. (A) Work area 1 and (B) Work area 2.



Figure 4. Screw jack braces and cleats hold metal plates where the channel walls have collapsed.

The Rainfall Atlas of Hawai‘i approximates average annual rainfall in the Project area as 940 mm (37 in), with most rainfall occurring during the wet season from November through April (Giambelluca et al., 2013). The nearest U.S. Climate Normals data station is “MOANALUA 770,” which reports an average of 806.5 mm (31.75 in), also distributed unequally with distinct wet and dry seasons (NOAA-NCEI, 2021). Climate Normals are based on a 30-year average (1991-2020).

Kapālama Canal

Kapālama Canal is a man-made drainage canal that was constructed in the 1930s to prevent flooding of the surrounding low-lying land (Ruzicka and Tice, 2015). Prior to the 1850s, most of Pālama consisted of *loko i‘a* or fishponds (WCIT, 2016) and terraced *lo‘i kalo* or taro pondfields fed by two streams: Kapālama and Niuhelewai (Sterling and Summers, 1978). In the 1920s, the “worthless swamp lands” (as described by the Superintendent of Public Works for the Territory of Hawai‘i) began to be filled with dredged spoils from Honolulu Harbor (Ruzicka and Tice, 2015). Ultimately, the wetlands of Kapālama were converted to the

commercial and industrial district it is today and surface run-off of the watershed and coastal springs directed into Kapālama Canal.

Kapālama Watershed is assigned state code No. 33010 in the Hawaiian Watershed Atlas (Parham et al., 2008). According to the watershed atlas, the longest continuous reach of Kapālama Stream is 9.0 km (5.6 mi); the stream drains an 8.5-km² (3.3-mi²) watershed. Most of the watershed is privately owned land in the urban district; only 16% of the watershed is in state Conservation District.

Kapālama Stream is classified in the Hawai‘i water quality standards as a Class 2 stream. This classification means that uses of these waters are to be protected “for recreational purposes, the support and propagation of aquatic life, agricultural and industrial water supplies, shipping, and navigation” (HDOH, 2021). The stream is confined to the Kapālama Canal in the Project area. The federal jurisdictional limit authorized by the Clean Water Act is the ordinary high water mark (OHWM), located on the vertical concrete rock masonry (CRM) walls of the canal.

Methods

Biologists conducted a walking survey of the Project area on August 22, 2023. The survey included an assessment of flora and fauna, with particular attention paid to any sensitive biological resources and environments, and water quality sampling. Sensitive biota would include species listed as endangered, threatened, or proposed for listing under federal or state statutes (HDLNR, 1998, 2015a; USFWS, nd-b), or a biological assemblage comprising native plants and animals that may or may not be under any specific threat of extirpation, but which would be regarded as special and worthy of preservation.

Terrestrial Biology

Flora Survey

AECOS botanist G. López identified and noted relative abundance of all ferns, fern allies, gymnosperms, and flowering plants growing in the survey area on August 22, 2023. Field notes were translated into a flora listing. For the most part, plant names given in the listing follow *Manual of the Flowering Plants of Hawai‘i* (Wagner, Herbst, & Sohmer, 1990; Wagner & Herbst, 1999) for native and naturalized flowering plants, Hawai‘i’s Ferns and Fern Allies (Palmer, 2003) and *Taxonomic and Nomenclatural Updates to the Fern and Lycophyte Flora of the*

Hawaiian Islands (Ranker et al, 2019) for ferns, and *A Tropical Garden Flora* (Staples and Herbst, 2005) for ornamental plants. Some names have been updated to reflect more recent taxonomic or nomenclatural changes as presented in Imada (2019).

Avian Survey

A survey of extant birds was conducted by biologist K. Yoneshige during the mid-day hours of August 22, 2023. Birds were identified to species by visual observation aided by Leica 10 X 42 BA binoculars, and by listening for vocalizations. Because the site is primarily urban, avian point-counts were not made. Species observed in the Project area were simply noted as present. Weather conditions were ideal, with unlimited visibility, no precipitation, and light winds. The avian phylogenetic order and nomenclature used in this report follows the AOU *Check-List of North and Middle American Birds* 2022, and the 64th supplement to the checklist (Chesser et al., 2022, 2023).

Mammalian Survey

Biologist C. Hoyt made a list of all mammals encountered during the survey. Indicators of mammalian presence, such as tracks, scat, and other sign were noted. Mammalian phylogenetic order and nomenclature follow *Mammal Species of the World* (Wilson and Reeder, 2005), and Pinzari et al. (2020) for Hawaiian hoary bat.

Aquatic Biology

Biologist C. Hoyt made visual observations of aquatic organisms and used dip nets to catch animals to confirm the identification of species observed. Animal names follow *Hawai'i's Native & Exotic Freshwater Animals* (Yamamoto and Tagawa, 2000).

Water Quality

AECOS scientists C. Hoyt and K. Yoneshige took field measurements and collected water quality samples on August 22, 2023. Three stations were selected surrounding Work area 1: “Downstream”, “Mid”, and “Upstream”. Due to low water flow, no samples were collected for Work area 2.

Temperature, conductivity, pH, and dissolved oxygen (DO) were measured *in situ*. Turbidity was measured by instrument in the field. Water samples were collected, chilled, and returned to the AECOS Laboratory (AECOS Log No. 48606) in Kāneʻohe, Oʻahu, for analysis of total suspended solids (TSS). Additional water

samples were frozen and shipped to the University of Hawai‘i Hilo (UHH) analytical laboratory for the following analyses: nitrate + nitrite (NO₃+NO₂), total nitrogen (TN), and total phosphorus (TP). Table 1 lists the analytical methods and instruments used for field and laboratory analyses.

Table 1. Analytical methods used in AECOS water quality sampling.

Analysis	Units	Method	Reference
Temperature	°C	SM 2550B	SM (1998)
Conductivity	µS/cm	SM 2510B	SM (1998)
pH	standard units	SM 4500H+	SM (2017)
Dissolved Oxygen	mg/L, % saturation	SM 4500- O G	SM (2017)
Turbidity	NTU	EPA 180.1 Rev 2.0	USEPA (1993a)
Total Suspended Solids	mg/L	SM 2540 D	SM (2017)
Nitrate + Nitrite*	µg/L	EPA 353.2	USEPA (1997)
Total Nitrogen*	µg/L	ASTM D5176- 08	ASTM (2015)
Total Phosphorus*	µg/L	EPA 365.5	USEPA (1993b)

*Samples analyzed at U.H. Hilo Analytical Laboratory

Results

Rainfall

The nearest active National Oceanographic and Atmospheric Administration–National Weather Service (NOAA–NWS) rain gage—Moanalua Stream (MOAH1)—recorded a total of 285 mm (11.22 in) of rainfall in the three months preceding our field visits in August 2023 (NOAA–NWS, 2023). Total rainfall in that three-month period (May 2023 through July 2023) was 73% of the moving 30-year average rainfall for that gage: 389 mm (15.31 in). Climate conditions can be considered within parameters of a ‘typical year.’

Table 2. Prior rainfall conditions for the August 22, 2023 field survey.

	Total rainfall, May-July 2023 (in)	Highest monthly rain (in)
Moanalua Stream (MOAH1)	11.22, 73% of AVG	4.71 in May

Terrestrial Biology

Flora Survey

The CRM walls and surrounding urban environment support mostly herbaceous growth and are regularly maintained.

A botanical listing (flora) with approximate relative abundance for all plant taxa encountered in the survey is presented in Table 3. Entries are arranged alphabetically under family names and include scientific name, common name, status (i.e., native or non-native; see key at end of table), and a relative abundance value by survey area. “Status” reflects the state-wide distribution of the species.

A total of 69 plant taxa were recorded during the survey. Among them, three (4%) species are early Polynesian introductions (so-called “canoe plants”) and two are indigenous species representing 3% of the total. No endemic species were recorded. All the remaining taxa are plants introduced to the Hawaiian Islands after 1778, including 47 naturalized species (i.e., grow naturally in the wild; 67% of the total number of species) and 18 ornamentals.

The indigenous species recorded are the widespread ‘uhaloa (*Waltheria indica*) and the sedge, *Cyperus polystachyos*. Early Polynesian introductions recorded are: ti or kī (*Cordyline fruticosa*), ‘uala or sweet potato (*Ipomoea batatas*), and primrose willow (*Ludwigia octovalvis*). These are all common plants across the Hawaiian Islands.

Table 3. Listing of plants observed at Kapālama Canal on August 22, 2023.

Species listed by family	Common name	Status	Abundance	Notes
PTERIDOPHYTES - FERNS & FERN ALLIES				
NEPHROLEPIDACEAE				
<i>Nephrolepis brownii</i> (Desv.) Hovenkamp & Miyam.	Asian sword fern	Nat	U	
FLOWERING PLANTS				
MONOCOTS				
ARECACEAE				
<i>Dypsis lutescens</i> (H. Wendl.) Beentje & J. Dransf.	golden-fruited palm	Orn	R	<2>
<i>Chamaedorea elegans</i> Mart.	parlor palm	Orn	p	<2>
ASPARAGACEAE				
<i>Cordyline fruticosa</i> (L.) A. Chev.	kī	Pol	p	
<i>Cordyline fruticosa</i> (L.) A. Chev.	ti cultivars	Orn	p	<2>
<i>Dracaena fragrans</i> (L.) Ker Gawl.	fragrant dracaena	Orn	p	<2>
<i>Dracaena marginata</i> Lam.	money tree	Orn	p	<2>
<i>Sansevieria trifasciata</i> Prain	bowstring-hemp	Nat	p	<2>
BROMELIACEAE				
<i>Aechmea blanchetiana</i> (Baker) Smith	---	Orn	p	<1,2>
CYPERACEAE				
<i>Eleocharis</i> sp.	spikerush	Nat	O	
<i>Cyperus involucratus</i> Rottb.	umbrella sedge	Nat	O	
<i>Cyperus polystachyos</i> Rottb.	---	Ind	O	
POACEAE				
<i>Bothriochloa bladhii</i> (Retz.) S. T. Blake	beardgrass	Nat	O	
<i>Chloris barbata</i> (L.) Sw.	swollen fingergrass	Nat	C	
<i>Chloris virgata</i> Sw.	feather fingergrass	Nat	O	
<i>Cenchrus echinatus</i> L.	common sandbur	Nat	U	
<i>Cynodon dactylon</i> (L.) Pers.	Bermuda grass	Nat	C	
<i>Digitaria insularis</i> (L.) Mez ex Ekman	sourgrass	Nat	U	

Table 3 (continued).

Species listed by family	Common name	Status	Abundance	Notes
POACEAE (cont.)				
<i>Eragrostis pectinacea</i> (Michx.) Nees	Carolina lovegrass	Nat	R	
<i>Megathryus maximus</i> (Jacq.) B.K. Simon & W.L. Jacobs	Guinea grass	Nat	A	
<i>Melinis repens</i> (Willd.) Zizka	Natal redtop	Nat	R	
<i>Urochloa mutica</i> (Forssk.) T.Q. Nguyen	California grass	Nat	O	
FLOWERING PLANTS				
EUDICOTS				
ACANTHACEAE				
<i>Asystasia gangetica</i> (L.) T. Anderson	Chinese violet	Nat	C	
<i>Ruellia brittoniana</i> E. Leonard	Mexican petunia	Nat	R	
AMARANTHACEAE				
<i>Amaranthus viridis</i> L.	slender amaranth	Nat	R	
ANNONACEAE				
<i>Annona muricata</i> L.	soursop	Orn	p	<2>
APOCYNACEAE				
<i>Catharanthus roseus</i> (L.) G. Don	Madagascar periwinkle	Nat	p	<2>
<i>Plumeria pudica</i> Jacq.	---	Orn	p	<2>
ARALIACEAE				
<i>Polycias guilfoylei</i> (W. Bull.) L. H. Bailey	panax	Orn	R	
ASTERACEAE (COMPOSITAE)				
<i>Emilia fosbergii</i> Nicolson	Flora's paintbrush	Nat	R	
<i>Eclipta prostrata</i> (L.) L.	false daisy	Nat	R	
<i>Tridax procumbans</i> L.	coat buttons	Nat	C	
BIGNONIACEAE				
<i>Spathodea campanulata</i> P. Beauv.	African tulip tree	Nat	R	<2>
CACTACEAE				
<i>Hylocereus undatus</i> (Haw.) Britton & Rose	night-blooming cereus	Orn	R	

Table 3 (continued).

Species listed by family	Common name	Status	Abundance	Notes
CARICACEAE				
<i>Carica papaya</i> L.	papaya	Nat	R	<2>
CLUSIACEAE				
<i>Clusia rosea</i> Jacq.	autograph tree	Nat	U	
CONVOLVULACEAE				
<i>Ipomoea obscura</i> (L.) Ker-Gawl	---	Nat	O	<1>
<i>Ipomoea batatas</i> (L.) Lam.	'uala, sweet potato	Pol	U	
CUCURBITACEAE				
<i>Coccinia grandis</i> (L.) Voigt	ivy gourd	Nat	U	
<i>Momordica charantia</i> L.	wild bitter melon	Nat	O	
FABACEAE				
<i>Albizia saman</i> F. Muell.	monkeypod	Nat	R	<2>
<i>Desmanthus pernambucanus</i> (L.) Thellung	virgate mimosa	Nat	R	
<i>Leucaena leucocephala</i> (Lam.) de Wit	koa haole	Nat	C	
<i>Pithecellobium dulce</i> (Roxb.) Benth.	'opiuma	Nat	O	<2>
<i>Sesbania grandiflora</i> (L.) Poir.	sesban	Orn	p	<2>
LAMIACEAE				
<i>Mesosphaerum pectinatum</i> (L.) Kuntze	comb hyptis	Nat	C	
<i>Coleus amboinicus</i> Lour.	Cuban oregano	Orn	U	<2>
<i>Ocimum gratissimum</i> L.	wild basil	Nat	R	
MALVACEAE				
<i>Abelmoschus exculentus</i> (L.) Moench	okra	Orn	p	<2>
<i>Waltheria indica</i> L.	'uhaloa	Ind	R	
MORACEAE				
<i>Ficus elastica</i> Roxb. ex Hornem	Indian rubber tree	Orn	P	<1,2>
<i>Ficus microcarpa</i> L. fil.	Chinese banyan	Nat	O	
MYRTACEAE				
<i>Psidium cattleianum</i> Sabine	strawberry guava	Nat	U	
<i>Syzygium cuminii</i> (L.) Skeels	Java plum	Nat	O	
NYCTAGINACEAE				
<i>Boerhavia coccinea</i> Mill.	false alena	Nat	U	
<i>Bougainvillea spectabilis</i> Wild.	bougainvillea	Orn	R	<2>

Table 3 (continued).

Species listed by family	Common name	Status	Abundance	Notes
ONAGRACEAE				
<i>Ludwigia octovalvis</i> (Jacq.) Raven	primrose willow	Pol	R	
PASSIFLORACEAE				
<i>Turnera ulmifolia</i> L.	yellow alder	Nat	U	
<i>Passiflora suberosa</i> L.	huehue haole	Nat	R	
PHYLLANTHACEAE				
<i>Phyllanthus debilis</i> Klein ex Willd.	niuri	Nat	R	
PHYTOLACCACEAE				
<i>Rivina humilis</i> L.	coral berry	Nat	U	
POLYGONACEAE				
<i>Antigonon leptopus</i> Hook. & Arnott	Mexican creeper	Nat	O	<2>
RUBIACEAE				
<i>Citrus reticulata</i> Blanco	Mandarin orange	Orn	p	<2>
<i>Citrus maxima</i> (Burm.) Merr.	pummelo	Orn	R	<2>
<i>Ixora</i> sp.	ixora	Orn	R	<2>
<i>Paederia foetida</i> L.	maile pilau	Nat	C	
SOLANACEAE				
<i>Solanum lycopersicum</i> var. <i>cerasiforme</i> (Dunal) Spooner, G.J. Anderson & R.K. Jansen	cherry tomato	Nat	R	
<i>Solanum torvum</i> Sw.	turkey plant	Nat	O	
ULMACEAE				
<i>Trema orientalis</i> (L.) Blume	gunpowder tree	Nat	R	

Legend to Table 3

STATUS = distributional status for the Hawaiian Islands:

- Ind** - indigenous; native to Hawaii, but not unique to the Hawaiian Islands.
- Nat** - naturalized, exotic, plant introduced to the Hawaiian Islands since the arrival of Cook Expedition in 1778, and well-established outside of cultivation.
- Orn** - A cultivated plant; a species not thought to be naturalized in Hawai'i.
- Pol** - An early Polynesian introduction. Introduced before 1778.

ABUNDANCE = occurrence ratings for plant species:

- R** - Rare seen in only one or two locations.
- U** - Uncommon seen at most in several locations.
- O** - Occasional seen with some regularity.
- C** - Common observed numerous times during the survey.

Table 3 (continued).

A - Abundant	found in large numbers; may be locally dominant.
AA - Very abundant	abundant and dominant; a defining vegetation type.
p - Present	abundance not established due to the intentional cultivation of the plant for ornamental or agricultural purposes.

NOTES: <1> Plant a juvenile or lacking flowers or fruit; identification therefore uncertain.
<2> Parking lot or surrounding buildings landscaping.

Avian Survey

A total of 11 species representing eight families were encountered across the Project area (Table 4). All the species recorded are non-native (alien) species established in the Hawaiian Islands. Avian diversity was in keeping with the urban nature of the area.

Table 4. Avian species observed at Kapālama Canal on August 22, 2023.

Common Name	ORDER FAMILY <i>Species</i>	Status
COLUMBIFORMES		
	COLUMBIDAE	
Rock Pigeon	<i>Columba livia</i>	NN
Zebra Dove	<i>Geopelia striata</i>	NN
Spotted Dove	<i>Streptopelia chinensis</i>	NN
PASSERIFORMES		
	ESTRILDIDAE	
Common Waxbill	<i>Estrilda astrild</i>	NN
Java Sparrow	<i>Padda oryzivora</i>	NN
	MUSCICAPIDAE	
White-rumped Shama	<i>Copsychus malabaricus</i>	NN
	PASSERIDAE	
House Sparrow	<i>Passer domesticus</i>	NN
	PYCNONOTIDAE	
Red-vented Bulbul	<i>Pycnonotus cafer</i>	NN

Table 4 (continued).

Common Name	ORDER FAMILY <i>Species</i>	Status
	STURNIDAE	
Common Myna	<i>Acridotheres tristis</i>	NN
	THRAUPIDAE	
Red-crested Cardinal	<i>Paroaria coronata</i>	NN
	ZOSTEROPIDAE	
Warbling White-eye	<i>Zosterops japonicus</i>	NN

Legend to Table 4.

STATUS = distributional status for the Hawaiian Islands:

NN = Non-native; naturalized, introduced to the Hawaiian Islands.

Avian species recorded during a previous (2016) survey near the Lo'i Kalo Mini Park that were not observed during the 2023 survey include chicken (*Gallus sp.*) and *Manu o Kū* or White Tern (*Gygis alba*; AECOS, 2017). No waterbirds were observed in either survey.

Mammalian Survey

A dead rat was observed in the Project area during the survey. Feral cat (*Felis catus*) and domestic dog (*Canis lupus familiaris*) were observed adjacent to the canal. While not observed, it is likely that the Project area is utilized by small Indian mongoose (*Herpestes javanicus*) and one or more Muridae (rats and mice) presently established in the Hawaiian Islands.

Aquatic Biology

During our survey, we observed only three aquatic species. These species include non-native poeciliid liberty/Mexican molly hybrid complex (*Poecilia spp.*), cane toad (*Rhinella marina*), and scarlet skimmer (*Crocothemis servilia*). No HDLNR-DAR aquatic biota surveys are reported from Kapālama Watershed in the *Atlas of Hawaiian Watersheds* (Parham et al., 2008).

Though drainage ditches might provide suitable habitat for damselflies, they are typically populated by introduced fish species with which endemic *Megalagrion* species of damselflies rarely coexist (Polhemus and Asquith, 1996). As expected,

no damselflies were observed during this survey, including no endemic Hawaiian damselflies of the genus *Megalagrion*.

Water Quality

The locations of the three water quality stations are shown in Figure 5. Results of the water quality sampling event are presented in Table 5. The highest water temperature was at Sta. Mid and lowest at Sta. Downstream. DO decreased in the downstream direction, along with pH. Conductivity was lowest at Sta. Downstream and highest at Sta. Mid. TSS, along with turbidity, decreased from Upstream to Downstream.

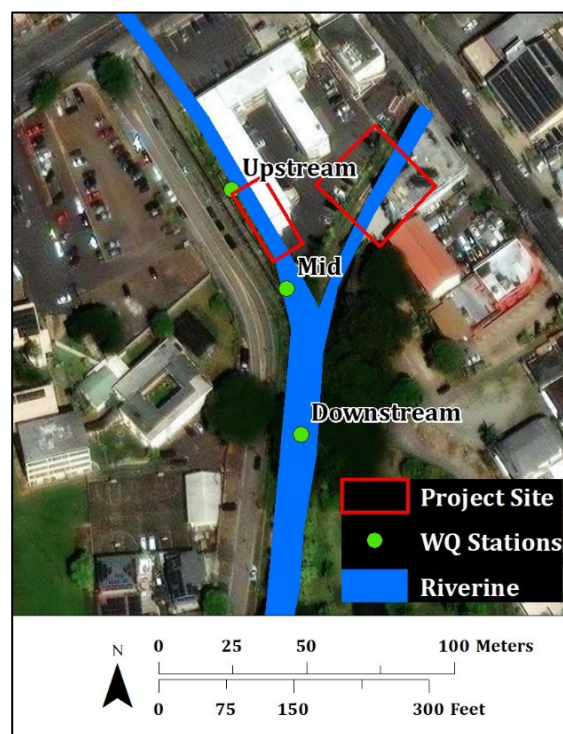


Figure 5. Water quality sampling stations at the Project sites.

Since water was below the junction of the confluent canals, an influence from the side channel (Work area 2) is likely. The side channel is part of the storm drain system that discharges into the canal (Hawai'i Statewide GIS Program, 2023). Although the flow in the side channel was very low on the day of sampling, from Figs 3A and 3B it can be seen that the contribution of water from the side channel to Sta. Downstream is significant. Indeed, several parameters measured at Sta. Downstream deviate from the two stations a short distance upstream on the Kapālama Canal; note elevated soluble nitrate+nitrite and reduced temperature, conductivity, pH, turbidity, and TSS.

The two parameters most deviant from expected stream water quality are pH and dissolved oxygen (DO). High pH and high DO result from enhanced primary productivity by algae growing on the bottom of the channel. During the day, the algal mat utilizes sunlight for photosynthesis. This process removes dissolved CO₂ from the water (present as a mild acid) raising the pH and generating oxygen. The process also explains the low soluble nutrients measured in the water at the Upstream and Mid stations; the result of uptake by the algal mat.

Table 5. Water quality in Kapālama Canal from sampling event on August 22, 2023.

Station	Time	Temp (°C)	Cond. (µS/cm)	pH	DO (DO sat.) (mg/L)	Turb. (ntu)	TSS (mg/L)	NO ₃ + NO ₂ (µg N/L)	Total N (µg N/L)	Total P (µg P/L)
Sta. Upstream	1310	35.4	659	10.27	8.00 (115%)	2.45	10	6	613	128
Sta. Mid	1300	36.1	661	10.23	7.76 (114%)	2.02	5.4	5	606	62
Sta. Downstream	1240	29.7	525	9.18	8.65 (113%)	1.42	2.8	1080	1370	74

Discussion and Recommendations

Recommendations presented here are partly based on U.S. Fish and Wildlife Service, Animal Avoidance and Minimization Measures (USFWS-PIFWO, 2023). Implementation of the recommendations (provided below as bulleted items) will minimize impacts to listed species to the maximum extent practicable.

Terrestrial Resources

Flora

The vegetation of the project area is highly disturbed. No plant species proposed for listing or listed as endangered or threatened under either federal or State of Hawai'i endangered species statutes (HDLNR, 1998; USFWS, nd-b) were observed during the course of our survey.

Avian

All avian species recorded in the Project area by our survey are non-native species naturalized in the Hawaiian Islands.

Listed night-flying seabirds in Hawai'i include Hawaiian Petrel (*Pterodroma sandwichensis*), Newell's Shearwater (*Puffinus newelli*), and Band-rumped Storm-Petrel (*Hydrobates castro*). In the summer and fall, night-flying seabirds (especially fledglings) transiting to the sea from inland can become disoriented by exterior lighting. When disoriented, seabirds may collide with man-made structures or the ground. If not killed outright, dazed or injured birds are targets of opportunity for feral mammals (Podolsky et al., 1998; Ainley et al., 2001; Day et al., 2003). The primary cause of mortality in these seabird species is predation by alien mammalian species at the nesting colonies (USFWS, 1983; Ainley et al., 2001). Collision with man-made structures is considered the second-most significant cause of mortality of these seabirds in Hawai'i. No suitable nesting habitat for seabird species occurs in the Project area.

- The Project can minimize or avoid risks to protected night-flying seabirds by not conducting night-time construction and ensuring that any outdoor lighting associated with the Project is fully shielded (dark sky compliant; see HDLNR-DOFAW, 2016).

White Tern (*Gygis alba*), or *manu o Kū*, is an indigenous seabird listed as threatened under State of Hawai'i endangered species statute on the Island of O'ahu (HDLNR, 2015). White Tern was not observed during our survey. In the main Hawaiian Islands, most of the White Tern population is found in central urban and suburban Honolulu, with a known nesting range extending from Niu Valley to Aloha Tower (isolated pairs occur at Hickam Air Force Base; VanderWerf and Downs, 2018).

- The Project can minimize impacts to white terns by examining trees for white tern nesting prior to any trimming.

Mammals

It is possible that the endangered Hawaiian hoary bat uses resources within the Project area. Trees suitable for roosting of Hawaiian hoary bat (*Lasiurus semotus*) are present in the Project vicinity. This bat species is solitary and uncommon but with a widespread distribution on Hawai'i Island. As Hawaiian hoary bat uses multiple roosts within a home territory (Bonaccorso, 2015), the disturbance associated with removal of any tree would be minimal. An exception would be during the pupping season if a female bat carrying a pup or an

unattended pup is in a tree being felled. These individuals may be unable to flee the tree.

- Potential adverse impacts to Hawaiian hoary bat can be avoided or minimized by not clearing woody vegetation taller than 4.6 m (15 ft) between June 1 and September 15, the bat pupping season.

Aquatic Resources

No federal or state-listed threatened or endangered aquatic species (USFWS, nd-b; HDLNR, 2015) are known to be present in Kapālama Canal.

Though not observed during this survey, endemic aquatic *‘o‘opu*, *‘ōpae*, and *hīhīwai* and *hapawai*, have been observed in the stream during previous surveys (AECOS, 2017; Englund et al., 2000). These species are diadromous: eggs are laid in the stream and the larvae that hatch from these eggs move downstream and out into the ocean where they develop for a period of time before migrating back into fresh water to grow to maturity (Ford and Kinzie, 1982; Kinzie, 1988).

Though not an ideal environment, diadromous organisms inhabit and migrate through the Project area. There is no relationship between local population density and habitat quality (McRae, 2007) and *‘o‘opu* recruit to any freshwater source, regardless of habitat quality (Holmquist et al., 1998). Project activities must not impede the migratory pathways of native amphidromous species. Water quality is a priority, and good water quality should be maintained when work occurs in or near aquatic habitat. Apply appropriate construction BMPs for all in-water work.

- If in-water work is required, BMPs for work in aquatic environments should be incorporated into the Project plans to minimize the degradation of water quality and impacts to biological resources.
- Instream migration pathways for amphidromous species should be maintained at all times.

Water Quality

The purpose of water quality measurements presented in this report is to characterize existing conditions and not to establish compliance with state water quality standards (Table 6). In fact, the state criteria for nutrients and particulates require making comparisons with geometric mean values, so a minimum of three separate sampling events per station would be required to

generate statistics for comparison with these criteria. The water quality sampling results from this event could be used as part of a larger data set to establish ambient conditions for various parameters in the future.

Table 6. Applicable state of Hawai'i water quality criteria for streams (HAR §11-54-5.2; HDOH, 2021).

Parameter	Season	Geometric Mean value not to exceed this value	Value not to be exceeded more than 10% of the time	Value not to be exceeded more than 2% of the time
Total Nitrogen (µg N/l)	Wet* Dry**	250.0 180.0	520.0 380.0	800.0 600.0
Nitrate + Nitrite (µg N/l)	Wet Dry	70.0 30.0	180.0 90.0	300.0 170.0
Total Phosphorus (µg P/l)	Wet Dry	50.0 30.0	100.0 60.0	150.0 80.0
Total Suspended Solids (mg/l)	Wet Dry	20.0 10.0	50.0 30.0	80.0 55.0
Turbidity (NTU)	Wet Dry	5.0 2.0	15.0 5.5	25.0 10.0

* Wet season – November 1 through April 30.

** Dry season – May 1 through October 31.

Other criteria:

- pH units are not to deviate more than 0.5 units from ambient conditions and are neither to be lower than 5.5 nor higher than 8.0.
- Dissolved oxygen is not to decrease below 80% saturation.
- Temperature is not to vary more than 1C° from ambient conditions.
- Specific conductance is not to be more than 300 µmhos/cm

Criteria for DO saturation and specific conductance are not-to-exceed values and these criteria were met at all three sampling stations. pH values at all three stations were above the range specified for streams. The criteria for temperature (and also a second criterion for pH) are based on “deviations from ambient conditions”—criteria essentially pertaining to discharges that might cause deviations.

As noted above, the limited data indicates that eutrophic conditions are present in Kapālama Canal in the Project area. Benthic algae, fueled by soluble nutrients, is resulting in high pH and high DO in the water. Water in the side channel is more typical of recent run-off.

The concrete lined canal with steep banks downstream of the Project area offers few opportunities to mitigate the introduction of any pollutants from this project, so minimizing introduction of pollutants to the stream is a best management practice (BMP). BMPs should be employed during project design and construction to maintain good water quality at Kapālama Canal. It is important to reduce transport of sediments to the stream because of the potential for pollutants associated with particulates (e.g., chlordane) carried to nearshore waters. Project work may be completed with minimum impacts to stream water quality and without negative impacts to long-term water quality if proper BMPs are implemented:

- Minimize turbidity and siltation from project-related work. Use effective silt containment devices and curtail work during adverse weather conditions.
- Prior to use, clean pollutants from all project-related materials and equipment (dredges, barges, backhoes, etc.) that will be placed in the water.
- Do not stockpile project-related materials (fill, revetment rock, pipe, etc.) in the canal channel.
- Dispose of all debris removed from aquatic environments at an approved upland or ocean dumping site.
- Prevent contamination (trash or debris disposal, non-native species introductions, attraction of non-native pests, etc.) of aquatic habitats from project-related activities. Implement a litter-control plan and develop a hazard analysis and critical control point plan to prevent attraction and introduction of non-native species.
- Fuel project-related vehicles and equipment away from the canal and develop a contingency plan to control petroleum products accidentally spilled during the work. Store absorbent pads and containment booms on-site, as appropriate, to facilitate the clean-up of accidental petroleum releases.

Other Resources of Potential Concern

Critical Habitat

Federally delineated Critical Habitat is not present in the Project area (USFWS, 2015). No equivalent designation exists under state law.

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SHPD 6E

(To be added when available)

The following section shall be made a part of the Standard Specifications:

"SECTION SP 195 - ENVIRONMENTAL POLLUTION CONTROL

SP 195.1 GENERAL

This section shall supplement any provision for Environmental pollution and hazardous materials, substances and/or waste control of the General Conditions.

SP 195.2 DESCRIPTION

The Contractor shall comply with the requirements of Hawaii Administrative Rules (HAR) Chapter 11-54 Water Quality Standards and Chapter 11-55 Water Pollution Control. In addition, the Contractor shall be responsible for updating, completing, and implementing the Storm Water Pollution Prevention Plan (SWPPP), including, but not limited to, the Site-Specific Best Management Practices (BMPs), to prevent polluted run-off from discharging from the project site to any established Municipal Separate Storm Sewer System (MS4), drainage systems, private property, or State receiving waters. The Contractor shall be responsible for updating the SWPPP as required.

This section describes the following:

- A. The Contractor shall update and complete a SWPPP using the SWPPP template to reflect their means and methods, including, but not limited to: detailed plans, diagrams, maps and figures, and Site-Specific BMP Plans; constructing, maintaining, and repairing temporary water pollution, dust, and erosion control measures at the project site and project staging areas, including local material sources, work areas and haul roads; removing and disposing hazardous wastes; control of fugitive dust (defined as uncontrolled emission of solid airborne particulate matter from any source other than combustion); and in compliance with HAR 11-54 and HAR 11-55. Potential pollutant identification and mitigation measures are listed in the SWPPP template.

Requirements of this section also apply to, but are not limited to, the following: construction support activities, including concrete or asphalt batch plants, rock crushing plants, equipment staging yards/areas, material storage areas, excavated material disposal areas, and borrow areas located outside the City Right-of-Way. These requirements apply to construction support activities that are established for the sole benefit and use of the project, and not commercial sources.

- B. Work associated with construction storm water, dewatering, and hydrotesting activities and complying with conditions of the National Pollutant Discharge Elimination System (NPDES) permit(s) authorizing discharges of storm water associated with construction activity, discharges associated with construction activity dewatering, and discharges of hydrotesting waters.
- C. Determination and characterization of fill material.

SP 195.3 MATERIALS

Comply with applicable materials described in the latest City and County of Honolulu Storm Water BMP Manual Construction. In addition, the materials shall comply with the following:

- A. Slope Drains. Slope drains may be constructed of pipe, fiber, mats, erosion control fabric, geotextiles, rubble, portland cement concrete, bituminous concrete, plastic sheets, or other materials acceptable to the Officer-in-Charge.
- B. Mulches. Mulches shall be recycled materials include bagasse, hay, straw, wood cellulose, bark, wood chips, or other materials acceptable to the Officer-in-Charge. Mulches shall be clean and free of noxious weeds and deleterious materials.
- C. Grass. Grass shall be a quick growing species such as rye grass, Italian rye grass, or cereal grasses. Grass shall be suitable to the area and provide a temporary cover that will not compete later with permanent cover. Alternative grasses are allowable if acceptable to the Officer-in-Charge.
- D. Fertilizer and Soil Conditioners. Fertilizer and soil conditioners shall be a standard commercial grade acceptable to the Officer-in-Charge. Fertilizer shall conform to Standard Specification Section 51.2(G) - Commercial Fertilizer.
- E. Hydro-mulching. Hydro-mulching used as a BMP shall consist of materials in SP 195(B) - Mulches, 195(C) - Grass, and 195(D) - Fertilizer and Soil Conditioners above. Submit hydro-mulching mix and irrigation plan for the Officer-in-Charge's acceptance. Potable water shall be used. Submit alternate sources of irrigation water for the Officer-in-Charge's acceptance. Install non-vegetative controls including mulch or rolled erosion control products while the vegetation is being established. Water and fertilize grass. Apply fertilizer as recommended by the manufacturer. Replace grass the Officer-in-Charge considers unsuitable or sick. Remove and dispose of trash and debris. Remove invasive species. Mow as needed to prevent site or signage obstructions, fire hazard, or nuisance to the public. Do not remove down stream sediment control measures until the vegetation is uniformly established, including no large bare areas, and provides seventy (70) percent of the density of pre-disturbance vegetation. Temporary vegetative stabilization shall not be used longer than one year.
- F. Silt Fences. Silt fences shall be synthetic filter fabric mounted on posts and embedded in compacted ground in accordance with contract documents, and shall be in compliance with ASTM D6462, Standard Practice for Silt Fence Installation.
- G. Berms. Berms shall be gravel or sand wrapped with geotextile material. Alternate materials are allowable if acceptable to the Officer-in-Charge.

Alternative materials or methods to control, prevent, remove and dispose pollution are allowable if acceptable to the Officer-in-Charge.

SP 195.4 CONSTRUCTION

A. Preconstruction Requirements.

(a) Water Pollution, Dust, and Erosion Control Meeting. The Contractor shall schedule a water pollution, dust, and erosion control meeting after the SWPPP is accepted by the Officer-in-Charge. Meeting shall be scheduled fourteen (14) calendar days before start of construction work. The meeting shall include, but not be limited to, discussion of sequence of work, plans and proposals for water pollution, dust, and erosion control. The meeting shall include, but not be limited to, the Officer-in-Charge, project inspector, the City's design project manager and consultant, the City's environmental consultant, the Contractor, and all subcontractors.

(b) Water Pollution, Dust, and Erosion Control Submittals. The Contractor shall submit a SWPPP to the Officer-in-Charge within thirty (30) calendar days of contract execution. Submission of complete and acceptable SWPPP is the sole responsibility of the Contractor. Additional contract time shall not be issued for delays due to incompleteness. The SWPPP shall include, but is not limited to, the following:

(1) Written description of activities to minimize water pollution and soil erosion into State waters, drainage or sewer systems. The description shall include at a minimum:

- (A) An identification of potential pollutants and their sources.
- (B) A list of all materials and heavy equipment to be used during construction.
- (C) Descriptions of the methods and devices used to minimize the discharge of pollutants into State waters, drainage or sewer systems.
- (D) Details of the procedures used for the maintenance and subsequent removal of any erosion or siltation control devices.
- (E) Methods of removing and disposing hazardous wastes encountered or generated during construction.
- (F) Methods of removing and disposing concrete and asphalt pavement cutting slurry, concrete curing water, and hydrodemolition water.
- (G) Spill control and Prevention and Emergency Spill Response Plan.
- (H) Fugitive dust control, including dust from grinding, sweeping, or brooming off operations or combination thereof.
- (I) Methods of storing and handling of oils, paints and other products used for the project.
- (J) Material storage and handling areas, and other staging areas.

- (K) Concrete truck washouts.
- (L) Concrete waste control.
- (M) Fueling and maintenance of vehicles and other equipment.
- (N) Tracking of sediment offsite from project entries and exits.
- (O) Litter management.
- (P) Sanitary Waste facilities.
- (Q) Other factors that may cause water pollution, dust and erosion control.

(2) Plans indicating location of water pollution, dust and erosion control devices; plans and details of BMPs to be installed or utilized; areas of soil disturbance in cut and fill, indicate areas used for staging and storage including items (A) through (Q) above, areas for storage of aggregate (indicate type of aggregate), asphalt cold mix, soil or solid waste, equipment and vehicle parking, and areas where vegetative practices are to be implemented. Plans indicating intended drainage pattern, using flow arrows, through work area and staging areas. Include separate drawing for each phase of construction that alters drainage patterns and indicate approximate date when device(s) will be installed and removed.

(3) Construction schedule.

(4) The Contractor shall identify an individual as the designee responsible for the implementation, inspection, and oversight of an approved Erosion and Sediment Control Plan (ESCP) and/or SWPPP during construction and shall be the designated ESCP Coordinator for the project. This individual must have a current ESCP Coordinator Certificate from the City's Department of Planning and Permitting. Include home and business telephone numbers, fax numbers, and e-mail addresses.

(5) Description of fill material to be used.

(6) For NPDES-Permitted projects, information required for compliance with the conditions of the NPDES Notice of General Permit Coverage (NGPC) or NPDES Individual Permit.

(7) Site-Specific BMP Plan (SSBMPP)/SWPPP Review Checklist. The Contractor shall submit the completed checklist to the Officer-in-Charge along with the SWPPP.

The Contractor shall date and sign the SWPPP, and keep an updated and accepted copy on site (i.e. at project office, in foreman's truck, etc.) throughout the duration of the project. The SWPPP shall be made available at the time of an on-site inspection or upon request by the Officer-in-Charge, City Third-Party Inspector, and or DOH/EPA Representative. Modify the SWPPP, if necessary, by creating an Amendment to conform to the revisions. Include the actual date of installation and removal of Site-Specific BMP measures.

Obtain written acceptance by the Officer-in-Charge before implementing revised Site-Specific BMPs in the field. Amendments to the SWPPP shall be kept with the original SWPPP and clearly labeled.

Follow the latest version of the guidelines in the "City and County of Honolulu Storm Water Best Management Practice Manual Construction", in developing, installing, and maintaining BMPs for all projects. The manual can be obtained by downloading from the City website at www.cleanwaterhonolulu.com. Follow City and County of Honolulu's "Rules for Soil Erosion Standards and Guidelines". For any conflicting requirements between the Manual and applicable contract documents, the applicable strictest requirements shall govern. Should a requirement not be clearly described within the applicable contract documents, notify the Officer-in-Charge immediately for interpretation. For the purposes of clarification "applicable contract documents" include the construction plans, standard specifications, special provisions, Permits, and the SWPPP, when applicable.

(A) Non-NPDES Permitted Project - The Contractor shall indicate in their SWPPP, the total acreage of disturbed area as defined by the NPDES Program. Disturbed area for the project is cumulative. If the total disturbed area is one acre or more see SP 194.1.

(B) NPDES Permitted Project - If there is any additional disturbed area as defined by the NPDES Program or any additional discharge points, see SP 194.1.

B. Construction Requirements. Do not begin work until all submittals are completed and accepted by the Officer-in-Charge.

(a) General

(1) Install, maintain, monitor, repair and replace Site-Specific BMP measures, such as for water pollution, dust, and erosion control; installation, monitoring, and operation of dewatering and hydrotesting activities; removal and disposal of hazardous waste, removal and disposal of solid waste, concrete cutting slurry, concrete curing water; or hydrodemolition water. Site-Specific BMP measures shall be in place, functional and accepted by the Officer-in-Charge prior to initiating any ground disturbing activities.

(2) BMP measures shall be in place and operational (such as shaping the earthwork to control and directing the runoff) at the end of workday or as required by the timeframes in Table 195.1. Shaping earthwork may include constructing earth berms along the top edges of embankments if acceptable to the Officer-in-Charge.

(3) Cleanup and remove any pollutant that can be attributed to the Contractor.

(4) Coordinate temporary control provisions with permanent control features throughout the construction and post-construction period.

(5) Limit maximum surface area of earth material exposed at any time to 300,000 square feet. Do not expose or disturb surface area of earth material (including clearing and grubbing) until BMP measures are installed and accepted by the Officer-in-Charge. Protect temporarily or permanently disturbed soil surface from rainfall impact, runoff and wind before end of workday.

(6) Properly maintain all Site-Specific BMP measures.

(7) The Contractor's designated representative specified in Subsection 195.4 A.(b)(4) shall address any BMP deficiencies or administrative non-compliance concerns brought up by the Officer-in-Charge immediately, including weekends and holidays, and complete work to fix the deficiencies and within the timeframes listed in Table 195.1.

(b) SWPPP Amendments. Modify and resubmit plans and construction schedules to correct conditions that develop during construction which were unforeseen during the design and pre-construction stages. Install or modify Site-Specific BMP measures due to change in Contractor's means and methods, or for conditions which require a change to the Site-Specific BMP Plan. All Amendments to the SWPPP shall be submitted to the Officer-in-Charge for acceptance prior to implementation in the field.

(c) Rain Gauge and Rain Gauge Data Log. Furnish and install rain gauge in a secure location prior to starting field work, which includes the installation of Site-Specific BMPs. Provide rain gauge with a tolerance of at least 0.05 inches of rainfall. Install rain gauge at the project site in an area that will not deter rainfall from entering the gate opening. Do not install in a location where rainwater may splash into the rain gauge. The rain gauge installation shall be stable and plumbed. Maintain rain gauge and replace rain gauge that is stolen, does not function properly or accurately, is worn out, or needs to be relocated. Do not begin field work until rain gauge is installed and Site-Specific BMPs are in place. If the Contractor proposes to use a rain gauge nearby, the Contractor shall submit the location and website to the Officer-in-Charge for review and approval. Keep daily rain gauge logs readily available on-site and submit a copy of the rain gauge logs weekly to the Officer-in-Charge.

(d) Inspections and Reporting. The Contractor shall conduct Weekly and Rainfall Event inspections. Inspect, prepare a written inspection report, and make repairs to BMP measures at the following intervals:

(1) Weekly.

(2) Within twenty-four (24) hours of any rainfall of 0.25 inch or greater which occurs in a 24-hour period. If the project has an NPDES Individual Permit, conduct rainfall event inspections as required by the permit.

(3) Daily during periods of prolonged rainfall.

(4) When existing erosion control measures are damaged or not operating properly as required by Site-Specific BMP Plan or SWPPP.

(5) Maintain records of inspections of Site-Specific BMPs. Keep continuous records for duration of the project. Submit copy of Inspection Reports to the Officer-in-Charge within twenty-four (24) hours after each inspection.

(e) Monthly Compliance Reports. The Contractor shall complete a Monthly Compliance Report within two (2) working days of the end of the month. The Monthly Compliance Report shall document any instances of non-compliance and corrective actions, discharges, and major incidents reported to DOH that occurred within the month. The report shall be kept on-site and made available by the end of the next business day when requested by DOH.

(f) Receiving State Waters Inspections Report for NPDES Individual Permits. The Contractor shall inspect, at a minimum of once per week, the receiving state waters, storm water runoff and control measures and BMPs to detect violations of and conditions which may cause or contribute to a violation of the basic water quality criteria as specified in the Hawaii Administrative Rules, Chapter 11-54, Section 11-54-4. The Contractor shall visually inspect storm water discharges and receiving state waters for turbidity, color, floating oil and grease, floating debris and scum, materials that will settle, substances that will produce taste in the water or detectable off-flavor in fish, and inspect for items that may be toxic or harmful to human or other life. If any of these are observed, the Contractor shall conduct an inspection of the project site to determine if there were polluted discharge originating from the site. The Contractor shall notify the Officer-in-Charge immediately upon discovery of discharges from the project site. Any discharge from the site shall be isolated, contained, reported and documented following the procedures in the SWPPP.

The Contractor shall document the inspections of the State Receiving Waters and submit a copy of the inspection reports to the Officer-in-Charge within twenty-four (24) hours of conducting the inspection.

(g) Construction Discharge Report. If a discharge of non-storm water or polluted storm water discharge has or may have

potentially entered a storm drain or Receiving State Waters, if a discharge (e.g. spill) has occurred, if a polluted discharge is observed leaving the projects limits, or if there is evidence of an unreported polluted discharge leaving the projects limits prior to inspection (such as a silty trail, eroded areas beyond project limits), the Contractor shall complete a Construction Discharge Report. If the discharge is a result of construction activities, the Contractor shall immediately stop the activity which caused the discharge and isolate and contain the discharge. The Contractor shall immediately inform the Officer-in-Charge. If the discharge involves hazardous materials or poses a threat to the public or environment, the Contractor shall call 911, and notify the responsible parties and follow the protocols listed in the project's Emergency Spill Response Plan.

The Contractor shall submit a complete Construction Discharge Report to the Officer-in-Charge within twenty-four (24) hours of the discovery of the discharge.

Best Management Practices

The Contractor shall implement as appropriate the following BMPs, but not limited to:

(1) Sediment Track-Out. Install and maintain stabilized construction entrance to minimize tracking of dirt and mud onto roadways. See BMP Manual or construction plans for requirements on size of rock and minimum dimensions. Install and maintain wheel wash, as required. Restrict traffic to stabilized construction areas only. Clean dirt, mud, or other material tracked onto the road, sidewalk, or other paved area by the end of the same day in which the track-out occurs. Modify stabilized construction entrances to prevent dirt or mud from being tracked onto road. Stabilize entire access roads, if necessary.

(2) Dust Control and Sediment Containment. Cover exposed surface of materials completely with tarpaulin or similar device when transporting aggregate, soil, excavated material or material that may be source of fugitive dust.

Cover stockpiles with sheet plastic or similar device and install perimeter control around stockpiles when stockpiles are not in use.

(3) Sanitary/Septic Waste. Provide secondary containment for portable sanitary waste facilities and secure to prevent falling over.

(4) Stabilization. Immediately initiate stabilizing areas with exposed soil upon completion of earth-disturbing activities for areas permanently or temporarily ceased on any portion of the site. Earth-disturbing activities have permanently ceased when clearing and excavation activities within any area of the construction site that does not have permanent structures has been completed. Earth-disturbing activities have temporarily ceased when clearing, grading, and excavation activities within

any area of the site that does not have permanent structures will not resume for a period of fourteen (14) or more calendar days, but such activities will resume in the future. The term "immediately" is used in this section to define the deadline for initiating stabilization measures. "Immediately" means as soon as practicable, but no later than the end of the next work day, following the day when the earth-disturbing activities have temporarily or permanently ceased.

For all projects stabilization shall be as follows:

(i) For construction areas discharging into waters not impaired for nutrients or sediments, complete initial stabilization within fourteen (14) calendar days after the temporary or permanent cessation of earth-disturbing activities.

(ii) For construction areas discharging into nutrient or sediment impaired waters, complete initial stabilization within seven (7) calendar days after the temporary or permanent cessation of earth-disturbing activities.

Any of the following types of activities constitutes initiation of stabilization:

(i) Prepping the soil for vegetative or non-vegetative stabilization;

(ii) Applying mulch or other non-vegetative product to the exposed area;

(iii) Seeding or planting the exposed area;

(iv) Starting any of the activities in items (i) - (iii) above on a portion of the area to be stabilized, but not on the entire area; and

(v) Finalizing arrangements to have stabilization product fully installed in compliance with the deadline for completing initial stabilization activities.

Any of the following types of activities constitutes completion of initial stabilization activities:

(i) For vegetative stabilization, complete all activities necessary to initially seed or plant the area to be stabilized; and/or

(ii) For non-vegetative stabilization, complete the installation or application of all such non-vegetative measures.

If the Contractor is unable to meet the deadlines aforementioned due to circumstances beyond the

Contractor's control, and the Contractor is using vegetative cover for temporary or permanent stabilization, the Contractor shall provide to the Officer-in-Charge a Plan for acceptance and the Contractor shall implement the accepted Plan. The Plan shall consist of the following.

(i) Immediately initiate and provide a timeframe, to complete the installation of temporary non-vegetative stabilization measures to prevent erosion;

(ii) Provide a schedule to complete all soil conditioning, seeding, watering or irrigation installation, mulching, and other required activities related to the planting and initial establishment of vegetation as soon as practicable on the site; and

(iii) Provide a justification to the Officer-in-Charge of the circumstances that prevent the Contractor from meeting the deadlines above for stabilization and the schedule the Contractor shall follow for initiating and completing initial stabilization and as agreed to by the Officer-in-Charge.

(iv) Follow the applicable requirements of the specifications and special provisions including Standard Specifications Section 51 - Planting Trees, Shrubs, Ground Cover and Grass.

(v) Immediately after seeding or planting the area to be vegetatively stabilized, to the extent necessary to prevent erosion on the seeded or planted area, select, design, and install non-vegetative erosion controls that provide cover (e.g., mulch, rolled erosion control products) to the area while vegetation is becoming established. Period of maintenance, final inspection, and acceptance shall be in accordance with the requirements of Subsection 51.5 (Planting Trees, Shrubs, Ground Cover and Grass - Period of Maintenance) and Subsection 51.6 (Planting Trees, Shrubs, Ground Cover and Grass - Final Inspection and Acceptance) of the Standard Specifications unless otherwise specified in the contract documents.

(vi) Protect exposed or disturbed surface area with mulches, grass seeds or hydromulch. Spray mulches at a rate of 2,000 pounds per acre. Add tackifier to mix at a rate of 85 pounds per acre. Apply grass seeds at a rate of 125 pounds per acre. For hydromulch, use the ingredients and rates required for mulches and grass seeds. Submit recommendations

from a licensed Landscape Architect when deviating from the application rates above.

(vii) Apply fertilizer to mulches, grass seed or hydromulch per manufacturer's recommendations. Submit recommendations from a licensed Landscape Architect when deviating from the manufacturer's recommendations.

(viii) Install velocity dissipation measures when exposing erodible surfaces greater than 15 feet in height.

(ix) Chemicals may be used as soil stabilizers for either or both erosion and dust control, if acceptable to the Officer-in-Charge.

(x) Provide temporary slope drains of rigid or flexible conduits to carry runoff from cuts and embankments. Provide portable flume at the entrance. Shorten or extend temporary slope drains to ensure proper function.

(xi) Protect ditches, channels, and other drainageways leading away from cuts and fills at all times by either hydro-mulching the lower region of embankments in the immediate area, installing check dams and siltation control devices, or implementing other methods acceptable to the Officer-in-Charge.

(xii) Provide for controlled discharge of waters impounded, directed, or controlled by project activities or erosion control measures.

(xiii) Protect finished and previously seeded areas from damage and from spillover materials placed in upper lifts of embankment.

TABLE 195.1 Timeframes for Addressing Non-Compliances (BMP Deficiencies)

Type of Non-Compliance	Examples	Timeframe to Complete**
Track Out	Any time vehicles leaving a construction site track sediment/ gravel off-site (e.g., onto the roadway)	End of same work day as it occurs
Drain Inlet Protection	Inlet protection BMPs require maintenance	End of same work day during which it is found
Routine Maintenance	Maintenance of BMPs that were installed per accepted BMP Plan	Close of the next work day
Significant Repair	Repair to BMPs that were heavily damaged (e.g. damaged due to a storm event or other major event)	No later than 7 calendar days from time of discovery
New Sediment Erosion Control BMP	Installation of additional BMPs that were not on the accepted BMP Plan (this requires an amendment)	No later than 7 calendar days from time of discovery
Replacement Sediment Erosion Control BMP	Major replacement of BMPs already installed	No later than 7 calendar days from time of discovery
Stabilization (Non-Vegetative)	Installation of temporary non-vegetative stabilization measures to prevent erosion	7 calendar days
Stabilization (Vegetative)	All activities necessary to initially seed or plant the area to be stabilized	7 calendar days
Note: (**) The Contractor shall commence corrective action immediately and the timeframe to complete these non-compliances may be more stringent if there is an impending storm, if there is potential for imminent discharge, or if the Officer-in-Charge designates a more stringent timeframe.		

(h) Third-Party Inspections. Address any Site-Specific BMP deficiencies brought up by the City's Third-Party Inspector in the timeframes listed in Table 195.1; or as required by the City's Third-Party Inspection Program. The most stringent of these timeframes governs. The Contractor shall take all reasonable measures to minimize or prevent discharge of pollutants. When installation of a new pollution prevention control or a significant repair is needed, complete installation or repair no later than seven (7) calendar days from the time of notification/Contractor discovery or in the timeframe designated by the Officer-in-Charge. Notify the Officer-in-Charge and document why it is infeasible to complete the installation or repair within seven (7) calendar days and complete the work as soon as practicable and as agreed to by the Officer-in-Charge. Address Site-Specific BMP deficiencies discovered by the Contractor within the timeframes listed in Table 195.1.

(i) Failure to Address Deficiencies. The Contractor's failure to satisfactorily address these Site-Specific BMP deficiencies, the Officer-in-Charge reserves the right to employ outside assistance or use the Officer-in-Charge's own labor forces to provide necessary corrective measures. The Officer-in-Charge will charge the Contractor such incurred costs plus any associated project engineering costs. Failure to apply Site-Specific BMP measures may result in one (1) or more of the following: suspension, or cancellation of Contract with the Contractor being fully responsible for all additional costs incurred by the City as well as any fines or penalties.

(j) Discharges of Storm Water Associated with Construction Activity. If an NPDES Permit is triggered due to the Contractor's means and methods, see SP 194.1, the Contractor shall not begin construction activities until all required conditions of the permit are met and submittals detailed in this Section and SP 194.1 are completed and accepted by the Officer-in-Charge.

The Contractor shall review the effectiveness and adequacy of the implemented Site-Specific BMP Plans and Erosion and Sediment Control Plan at a minimum of once a week.

If the Officer-in-Charge determines and notifies the Contractor that the Site-Specific BMP Plan(s) and/or the Erosion and Sediment Control Plan are ineffective, inadequate and do not meet the requirements of the NGPC/NPDES Individual Permit, the Contractor shall immediately cease all work and construction activity associated with and contributing to the unauthorized discharge. If the Contractor observes an unauthorized discharge, the Contractor shall immediately notify the Officer-in-Charge of the unauthorized discharge upon discovery and immediately cease the construction activity causing the discharge. The Contractor shall take immediate remedial actions as appropriate to isolate and contain the discharge, investigate the cause, cleanup, and modify the Site-Specific BMP Plans, and Erosion and Sediment Control Plan to prevent the unauthorized discharge to the satisfaction of the Officer-in-Charge.

The Contractor shall prepare and submit a revised written Site-Specific BMP Plan(s) to the Officer-in-Charge for review and acceptance within twenty-four (24) hours from discovery of the unauthorized discharge. All work and construction activity associated with and contributing to the unauthorized discharge shall not resume until adequate mitigative measures are implemented, appropriate corrective actions are taken, and the revised Site-Specific BMP Plan(s) are accepted by the Officer-in-Charge.

(k) Discharges of Hydrotesting Waters. If work includes removing, relocating or installing waterlines, and the Contractor elects to flush waterline or discharge hydrotesting effluent into State waters or drainage systems, see SP 194.1. The Contractor shall not begin hydrotesting activities until DOH-CWB has issued an NPDES Permit and all required conditions of the permit are met and submittals detailed in this Section

and SP 194.1 are completed and accepted by the Officer-in-Charge.

(l) Discharges Associated with Construction Activity Dewatering. If dewatering activities require effluent discharge into State waters or drainage systems, see SP 194.1. The Contractor shall not begin dewatering activities until DOH-CWB has issued an NPDES Permit and all required conditions of the permit are met and submittals detailed in this Section and SP 194.1 are completed and accepted by the Officer-in-Charge.

The Contractor shall conduct dewatering operations in accordance with the conditions in the NPDES Permit.

The Contractor shall review the effectiveness and adequacy of the implemented Site-Specific Dewatering Plan and other related plans during any dewatering operations. The Officer-in-Charge will determine the frequency of review.

The Contractor shall be responsible for monitoring the discharge effluent as indicated in the NPDES Permit, reviewing the monitoring results, and submitting the monitoring results to the Officer-in-Charge immediately when they become available to determine the effectiveness and adequacy of the site-specific plans.

If the monitoring results of the discharge effluent indicate pollutant levels exceeding the discharge limits or if the Officer-in-Charge determines that the site-specific plan(s) are ineffective, inadequate and do not meet the requirements of the NGPC, the Contractor shall immediately cease all discharge of effluent into State receiving waters, and take immediate and appropriate action by modifying the site-specific plan(s).

The Contractor shall notify the Officer-in-Charge immediately after discovering that pollutant levels of the discharge effluent exceeded the discharge limits and provide an explanation of the origin of the pollutant. The Officer-in-Charge will report the monitoring results and pollutant origin to the DOH-CWB within twenty-four (24) hours after becoming aware that pollutant levels exceeded the discharge limit.

The Contractor shall prepare and submit a revised written site-specific plan(s) to the Officer-in-Charge for review and acceptance within twenty-four (24) hours after discovering pollutant levels exceeding the discharge limitations.

The discharge of effluent into State receiving waters shall not resume until adequate mitigative measures are implemented, appropriate corrective actions are taken, and the revised site-specific plan(s) is accepted by the Officer-in-Charge.

(m) Solid Wastes. Submit the signed and dated Solid Waste Disclosure Form for Construction Sites with the SWPPP. If there are any revisions to the information on the Solid Waste Disclosure Form, the form shall be resigned, dated, and submitted to the Officer-in-Charge, prior to taking solid waste to that

facility. Submit monthly a copy of all the disposal receipts from the facilities permitted by the Department of Health to receive solid waste to the Officer-in-Charge. Provide documentation from any intermediary facility where the solid waste is handled or processed, as directed by the Officer-in-Charge.

All material not used on the project may be reused, recycled, or disposed of in compliance with all Federal, State, City, and OSHA requirements and regulations. The Contractor should be aware that the roadway pavement striping and markings may contain lead.

(n) Construction BMP Training. The Contractor and their Sub-contractors responsible for installing or maintaining Site-Specific BMPs in the field shall attend Construction Best Management Practices Training. The Contractor shall keep training logs updated and readily available on-site.

SP 195.5 NON-COMPLIANCE

The Officer-in-Charge will notify the Contractor of any non-compliance with the foregoing provisions and the action to be taken. If the Contractor fails or refuses to comply promptly, the Officer-in-Charge may issue an order stopping all or part of the work until satisfactory corrective action has been taken. No extension of time or payment for excess costs or damages shall be made for the time lost due to such stop action. In addition, the Contractor shall be responsible for all citations, fines, and penalties for any non-compliance.

SP 195.6 SUBMITTALS

The Contractor shall provide to the Officer-in-Charge for the City's use, six (6) hard copies of the complete certified SWPPP: color copies, single sided, all attachments tabbed, and placed in 3-ring binders. Submit a CD of the PDF file of the complete certified SWPPP, the Word file of the certified SWPPP, and the PDF files of each attachment.

SP 195.7 MEASUREMENT AND PAYMENT

For Lump Sum measurement and payment, use the following:

The Officer-in-Charge will not measure environmental pollution control for payment. The Officer-in-Charge will pay for the accepted environmental pollution control on a contract lump sum basis. Payment shall be full compensation for furnishing the necessary material, equipment, and labor to complete the work in place described in this section and the contract documents.

The Officer-in-Charge will pay for the accepted additional water pollution, dust and erosion control as directed by the Officer-in-Charge on a force account basis as an Additional Work Item "Additional Water Pollution, Dust and Erosion Control". Payment shall be full compensation for all work prescribed in this section, and any other work directed by the Officer-in-Charge. Payment shall be full compensation for the work directed by the Officer-in-Charge and shall be deducted from the force account set in the Offer.

The unused portion of the force account item shall remain with the City upon completion of the contract.

The Officer-in-Charge will not measure for the determination and characterization of fill material. The Officer-in-Charge will not pay for the determination and characterization of fill material but will consider the cost of the determination and characterization of fill material as included in the contract prices for the various contract pay items. The cost is for the work prescribed in this section and the contract documents.

No progress payment will be authorized until the Officer-in-Charge reviews the SWPPP, or when the Contractor fails to maintain the project site in accordance with the accepted SWPPP.

For all citations, fines or penalties received from the Environmental Protection Agency (EPA), State Department of Health (DOH), U.S. Army Corps of Engineers (USACE), the City and County of Honolulu, or any other regulatory agency for non-compliances, including, but not limited to, non-compliance with the conditions of the NPDES Permit, 401 Water Quality Certification, and U.S. Army Corps of Engineer Permit(s) or violations of the Clean Water Act, the Contractor shall reimburse the City within thirty (30) calendar days for the full amounts of each of the outstanding costs, or the Officer-in-Charge will deduct the cost from the progress payment."

For "incidental" cost, use the following:

The Officer-in-Charge will not measure environmental pollution control for payment. The Officer-in-Charge will ~~not~~ pay for environmental pollution control ~~as a lump sum item. separately and will consider the cost for environmental pollution control as included in the contract prices for the various contract pay items.~~ The cost is for the work prescribed in this section and the contract documents.

The Officer-in-Charge will pay for the accepted additional water pollution, dust and erosion control as directed by the Officer-in-Charge on a force account basis as an Additional Work Item "Additional Water Pollution, Dust and Erosion Control". Payment shall be full compensation for all work prescribed in this section, and any other work directed by the Officer-in-Charge. Payment shall be full compensation for the work directed by the Officer-in-Charge and shall be deducted from the force account set in the Offer. The unused portion of the force account item shall remain with the City upon completion of the contract.

~~The Officer-in-Charge will not measure for the determination and characterization of fill material. The Officer-in-Charge will not pay for the determination and characterization of fill material but will consider the cost of the determination and characterization of fill material as included in the contract prices for the various contract pay items. The cost is for the work prescribed in this section and the contract documents.~~

No progress payment will be authorized until the Officer-in-Charge reviews the SWPPP, or when the Contractor fails to maintain the project site in accordance with the accepted SWPPP.

For all citations, fines or penalties received from the Environmental Protection Agency (EPA), State Department of Health (DOH), U.S. Army Corps of Engineers (USACE), the City and County of Honolulu, or any other regulatory agency for non-compliances, including, but not limited to, non-compliance with the conditions of the NPDES Permit, 401 Water Quality Certification, and U.S. Army Corps of Engineer Permit(s) or violations of the Clean Water Act, the Contractor shall reimburse the City within thirty (30) calendar days for the full amounts of each of the outstanding costs, or the Officer-in-Charge will deduct the cost from the progress payment."

For a Rehabilitation of Streets type of project, use the following:

~~The Officer-in-Charge will not measure environmental pollution control for payment. The Officer-in-Charge will pay for the accepted environmental pollution control on a contract lump sum basis. Payment shall be full compensation for the work prescribed in this section and the contract documents.~~

~~The Officer-in-Charge will pay for the accepted additional water pollution, dust and erosion control as directed by the Officer-in-Charge on a force account basis as an Additional Work Item "Additional Water Pollution, Dust and Erosion Control". Payment shall be full compensation for all work prescribed in this section, and any other work directed by the Officer-in-Charge. Payment shall be full compensation for the work directed by the Officer-in-Charge and shall be deducted from the force account set in the Offer. The unused portion of the force account item shall remain with the City upon completion of the contract.~~

~~The Officer-in-Charge will not measure for the determination and characterization of fill material. The Officer-in-Charge will not pay for the determination and characterization of fill material but will consider the cost of the determination and characterization of fill material as included in the contract prices for the various contract pay items. The cost is for the work prescribed in this section and the contract documents.~~

~~No progress payment will be authorized until the Officer-in-Charge reviews the SWPPP, or when the Contractor fails to maintain the project site in accordance with the accepted SWPPP.~~

~~For all citations, fines or penalties received from the Environmental Protection Agency (EPA), State Department of Health (DOH), U.S. Army Corps of Engineers (USACE), the City and County of Honolulu, or any other regulatory agency for non-compliances, including, but not limited to, non-compliance with the conditions of the NPDES Permit, 401 Water Quality Certification, and U.S. Army Corps of Engineer Permit(s) or violations of the Clean Water Act, the Contractor shall reimburse the City within thirty (30) calendar days for the full amounts of each of the outstanding costs, or the Officer-in-Charge will deduct the cost from the progress payment."~~

For a Localized Streets type of project, use the following:

~~The Officer-in-Charge will not measure environmental pollution control for payment. The Officer-in-Charge will not pay for the accepted environmental pollution control separately and will consider the cost for~~

~~environmental pollution control as included in the contract price for each respective street lump sum bid item as specified in the Offer schedule in accordance with SP 151 DESCRIPTION OF WORK.~~

~~The Officer-in-Charge will pay for the accepted additional water pollution, dust and erosion control as directed by the Officer-in-Charge on a force account basis as an Additional Work Item "Additional Water Pollution, Dust and Erosion Control". Payment shall be full compensation for all work prescribed in this section, and any other work directed by the Officer-in-Charge. Payment shall be full compensation for the work directed by the Officer-in-Charge and shall be deducted from the force account set in the Offer. The unused portion of the force account item shall remain with the City upon completion of the contract.~~

~~The Officer-in-Charge will not measure for the determination and characterization of fill material. The Officer-in-Charge will not pay for the determination and characterization of fill material but will consider the cost of the determination and characterization of fill material as included in the contract prices for the various contract pay items. The cost is for the work prescribed in this section and the contract documents.~~

~~No progress payment will be authorized until the Officer-in-Charge reviews the SWPPP, or when the Contractor fails to maintain the project site in accordance with the accepted SWPPP.~~

~~For all citations, fines or penalties received from the Environmental Protection Agency (EPA), State Department of Health (DOH), U.S. Army Corps of Engineers (USACE), the City and County of Honolulu, or any other regulatory agency for non-compliances, including, but not limited to, non-compliance with the conditions of the NPDES Permit, 401 Water Quality Certification, and U.S. Army Corps of Engineer Permit(s) or violations of the Clean Water Act, the Contractor shall reimburse the City within thirty (30) calendar days for the full amounts of each of the outstanding costs, or the Officer-in-Charge will deduct the cost from the progress payment."~~

For a Hybrid of Rehabilitation and Localized Streets type of project, use the following:

For East Manoa Road, Manoa Road, and University Avenue:

~~The Officer-in-Charge will not measure environmental pollution control for payment. The Officer-in-Charge will pay for the accepted environmental pollution control on a contract lump sum basis. Payment shall be full compensation for the work prescribed in this section and the contract documents.~~

For remaining residential Manoa Localized Streets:

~~The Officer-in-Charge will not measure environmental pollution control for payment. The Officer-in-Charge will not pay for the accepted environmental pollution control separately and will consider the cost for environmental pollution control as included in the contract price for each respective street lump sum bid item as specified in the Offer schedule in accordance with SP 151 DESCRIPTION OF WORK.~~

For ALL project streets:

~~The Officer in Charge will pay for the accepted additional water pollution, dust and erosion control as directed by the Officer in Charge on a force account basis as an Additional Work Item "Additional Water Pollution, Dust and Erosion Control". Payment shall be full compensation for all work prescribed in this section, and any other work directed by the Officer in Charge. Payment shall be full compensation for the work directed by the Officer in Charge and shall be deducted from the force account set in the Offer. The unused portion of the force account item shall remain with the City upon completion of the contract.~~

~~The Officer in Charge will not measure for the determination and characterization of fill material. The Officer in Charge will not pay for the determination and characterization of fill material but will consider the cost of the determination and characterization of fill material as included in the contract prices for the various contract pay items. The cost is for the work prescribed in this section and the contract documents.~~

~~No progress payment will be authorized until the Officer in Charge reviews the SWPPP, or when the Contractor fails to maintain the project site in accordance with the accepted SWPPP.~~

~~For all citations, fines or penalties received from the Environmental Protection Agency (EPA), State Department of Health (DOH), U.S. Army Corps of Engineers (USACE), the City and County of Honolulu, or any other regulatory agency for non-compliances, including, but not limited to, non-compliance with the conditions of the NPDES Permit, 401 Water Quality Certification, and U.S. Army Corps of Engineer Permit(s) or violations of the Clean Water Act, the Contractor shall reimburse the City within thirty (30) calendar days for the full amounts of each of the outstanding costs, or the Officer in Charge will deduct the cost from the progress payment."~~

END OF SECTION SP 195

The following Section shall be made a part of the Standard Specifications:

"SECTION SP 196 - CHARGES FOR OVERTIME INSPECTIONS

Notwithstanding the overtime inspections requirements of the General Conditions, the following also applies:

Pursuant to current Revised Ordinances of Honolulu (link below), the amount to be charged the Contractor by the City for overtime inspections shall be at the rate for the current fiscal year as set by the Department of Budget and Fiscal Services.

<https://www8.honolulu.gov/ocs/revised-ordinances-of-honolulu/>"

END OF SECTION SP 196

The following Section shall be made a part of the Standard Specifications:

"SECTION SP 198 - SAFETY PRECAUTIONS AND PROTECTION OF PROPERTY

SP 198.1 PROTECTION OF THE PUBLIC

The Contractor shall at all times provide adequate protection to passing pedestrians and vehicular traffic and shall erect and maintain suitable barriers, fences, warning signs and other necessary devices to protect the public in accordance with Subsections 5.2.12 and 5.2.13 of the General Terms and Conditions. The general area must be kept clear at all times.

SP 198.2 DUST NUISANCE

The Contractor shall take proper precautions to minimize the creation of dust during their operations and shall take all necessary steps to prevent dust from entering the adjacent buildings and private property.

SP 198.3 PROTECTION OF PROPERTY

The Contractor shall continually maintain adequate protection for all their work from damage and shall protect all City and adjacent private systems located at or adjacent to the jobsite. All existing fences and stone retaining walls shall be maintained in their existing condition. Any removal or alteration of such walls shall be performed only after receiving written permission of the landowner. A copy of the letter shall be submitted to the Officer-in-Charge seven (7) calendar days prior to modifying the wall. The Contractor shall repair, replace or pay the expense of repair for damages resulting from their fault or negligence.

SP 198.4 MEASUREMENT AND PAYMENT

The Officer-in-Charge shall not measure safety precautions and protection of property for payment. The Officer-in-Charge shall not pay for safety precautions and protection of property separately and shall consider the cost for safety precautions and protection of property as included in the contract prices for the various contract pay items. The cost is for the work prescribed in this section and the contract documents."

END OF SECTION SP 198

The following Section shall be made a part of the Standard Specifications:

"SECTION SP 199 - CONSTRUCTION AREA APPEARANCE

SP 199.1 GENERAL

The Contractor shall throughout the duration of the project keep all streets, sidewalks and driveways free from all debris produced from the project. The Contractor shall keep the project and surrounding area neat and free from dust nuisance. The City may require supplementary measures as necessary.

Upon completion of each phase of the project, the Contractor shall immediately remove all excess material and thoroughly clean the affected area.

Work includes, but is not limited to, removal of excess or splashed concrete on covers of utility boxes, street light standards, traffic signal standards and on any structures without discoloring or damaging the existing items.

SP 199.2 COMPLETION OF WORK

Upon completion of the work, the Contractor shall remove all equipment, signs, and unused materials provided for the work and shall restore the project site to a neat and clean condition and do all the other required cleaning as specified above.

SP 199.3 NON-COMPLIANCE

Should the Contractor fail to comply with the foregoing provisions, the City may, with or without notice, cause the cleaning to be done and deduct the cost of such work from any moneys due the Contractor under this contract.

SP 199.4 MEASUREMENT AND PAYMENT

The Officer-in-Charge will not measure work under this section for payment. The Officer-in-Charge will not pay for work under this section separately and will consider the cost for the work as included in the contract prices for the various contract pay items. The cost is for the work prescribed in this section and the contract documents."

END OF SECTION SP 199

The following section shall be made a part of the Standard Specifications:

"SECTION SP 202 - COST/PRICING ANALYSIS

In the event, the City receives a sole bid for this solicitation pursuant to §3-122-35 of the Hawaii Administrative Rules, the City reserves the right to request cost data from the Offeror to conduct cost and/or pricing analysis. This cost data will be used to determine that the Offeror's price is fair and reasonable and shall include, but not be limited to: material cost, labor, profit, and fixed fees e.g., taxes, freight, etc., to include published price list. Information provided by the Offeror shall remain confidential and proprietary in accordance with §3-122-58, Hawaii Administrative Rules and §92F-13(3), Hawaii Revised Statutes."

END OF SECTION SP 202

The following section shall be made a part of the Standard Specifications:

"SECTION SP 203 - PAYMENT AND FINAL PAYMENT

Proof of compliance with HRS 103D-328 and HRS 103D-310 may be through Hawaii Compliance Express (HCE) or by written clearance issued by the Hawaii Department of Taxation, Internal Revenue Service, Hawaii Department of Labor, and Hawaii Department of Commerce and Consumer Affairs."

END OF SECTION SP 203

The following section shall be made a part of the Standard Specifications:

"SECTION SP 204 - ARCHAEOLOGICAL MONITORING

SP 204.1 GENERAL

The City shall provide the approved Archaeological Monitoring Plan (AMP) for Kapalama Channel Wall Repairs Work Area 1 and Work Area 2. A copy of the FINAL AMP shall be provided to the Contractor prior to construction Notice to Proceed.

The Contractor shall engage the services of a Qualified Archaeologist to ensure that all construction activities are performed in accordance with the FINAL AMP and applicable State regulations. The Contractor shall be responsible for the necessary procedures and equipment required for full compliance with all requirements of the provisions for archaeological monitoring.

SP 204.2 QUALIFIED ARCHAEOLOGIST REQUIREMENTS

The Contractor shall engage the services of a Qualified Archaeologist prior to Notice-to-Proceed. A Qualified Archaeologist shall be approved by the State Historic Preservation Division (SHPD), meet minimal National Park Service standards as an archaeologist, and shall have the following professional qualifications:

- A. A graduate degree from an accredited institution in archaeology, or anthropology, with a specialization in archaeology, or an approved substitute field;
- B. At least one (1) year of cumulative archaeological experience in Hawaii or the Pacific;
- C. At least four (4) months of supervised archeological field and analytic experience in Hawaii;
- D. At least one (1) year of archaeological research, administration, or management at a supervisory level with at least four (4) months of field experience;
- E. A demonstrated ability to carry research to completion, as shown by completed theses, publications, and manuscripts; and
- F. A demonstrated knowledge of historic preservation laws, rules, and guidelines.

A link for the list of permitted Archaeological Consultants in the State of Hawaii is available on the page below:

<http://dlnr.hawaii.gov/shpd/about/branches/archaeology/>

SP 204.3 MONITORING

The Qualified Archaeologist shall comply with the following archaeological monitoring provisions. Any departure from specified monitoring requirements shall only follow consultation with, and written concurrence from, SHPD.

- A. Anticipated Historic Properties. The project area has a potential for pre-contact and post-contact cultural deposits as well as human burials.
- B. Locations of Historic Properties. Historic properties may be encountered anywhere within the project area.
- C. Fieldwork. Based on the results of historic background research, and recommendations by SHPD, an archaeological monitoring program is required for the construction work noted in the AMP. The Qualified Archaeologist shall be on-site for all ground disturbing activities below the existing base course, typically located approximately 12 inches (30.5 cm) below the existing ground surface. Additional on-site monitoring areas may be designated by the Qualified Archaeologist. The Contractor shall be responsible for keeping the Qualified Archaeologist fully apprised of planned work and schedule changes for required on-site monitoring.

The Qualified Archaeologist shall provide on-call monitoring for ground disturbing activities that do not extend below the existing base course.

If excavated matrix material is planned to be taken off-site, to the extent feasible, all inspections shall be within the project area prior to transporting.

The monitoring fieldwork shall include the documentation of subsurface archaeological deposits (e.g., trash pits and structural remnants) and shall employ current standard archaeological recording techniques. This includes drawing and recording the stratigraphy of excavation profiles where cultural features or artifacts are exposed as well as representative profiles. These exposures shall be photographed, located on project area maps, and sampled. Photographs and representative profiles of excavations shall be taken even if no historically-significant sites are documented. As appropriate, sampling shall include the collection of representative artifacts, bulk sediment samples, and/or the on-site screening of measured volumes of feature fill to determine feature contents. No supplemental data recovery procedures shall be implemented without prior approval by SHPD and consent of the City. Photographs of the excavations shall be included in the final report, even if no significant cultural resources were encountered.

Inadvertent finds of human remains shall be treated in accordance with the provisions of Chapter 6E-43.6, HRS and HAR 13-300-40. Should any human remains be inadvertently discovered during the course of this undertaking, all construction activities shall be halted in the immediate vicinity and SHPD shall be promptly notified. The City shall be consulted to assess the possibility of avoiding the findings. Whenever possible, avoidance shall be implemented. If human remains are positively identified, no screening of backdirt piles or invasive procedures (e.g. cleaning of soil profiles, digging into trench walls) shall be conducted

until such procedures are specified by SHPD. Measures shall be taken to ensure temporary *in-situ* protection of the remains. A decision shall be made, in consultation with SHPD, regarding the appropriate mitigation measures; *in-situ* preservation or removal and reinterment; for the burial. A burial site component of a data recovery plan or of a preservation plan, whichever is appropriate, shall be prepared for approval by SHPD, prior to implementation of any procedures.

Every effort shall be made to maintain any inadvertently discovered human skeletal materials *in situ* during the interim period awaiting determination of mitigation procedures. However, commingled human skeletal materials recovered from screening and/or displaced remains without clear proveniences shall be temporarily curated, until such time when reinterment shall take place, at one (1) of the following locations to be determined in consultation with SHPD; at an Oahu SHPD facility or in a properly climate-controlled and secure facility provided by the City.

If any significant cultural remains, other than human skeletal remains, are encountered during the course of monitoring, all construction activities in the immediate area shall be temporarily halted until the monitor can record and mitigate the remains or determine if additional procedures are needed. All conventional archaeological methods, standards, and techniques for recording and collection of data shall be followed.

- D. Archaeologist's Role. The Qualified Archaeologist shall have the authority to stop work immediately in the area of any findings so that documentation can proceed and appropriate treatment can be determined. In addition, the Qualified Archaeologist shall have the authority to slow and/or suspend construction activities in order to ensure that the necessary archaeological sampling and recording can take place.
- E. Coordination Meeting. A pre-construction coordination meeting between the Qualified Archaeologist and the construction crew shall be required. Before work begins on the project, the Qualified Archaeologist shall meet with the entire construction crew, including the Contractor, Subcontractors, and the Officer-in-Charge, and explain which activities require archaeological monitoring, the procedures to be followed during monitoring, respective responsibilities of pertinent parties, what archaeological materials may be encountered, and the procedures to follow if archaeological materials are encountered. At this meeting the Qualified Archaeologist shall emphasize their authority to temporarily halt construction and that all historic finds, including objects such as bottles, are the property of the City and may not be removed from the construction site. Also at this meeting, it shall be made clear that the Qualified Archaeologist shall be on-site for all required ground disturbing activities below the existing base course.
- F. Laboratory work. Laboratory work shall be conducted in accordance with HAR 13-279-5. Laboratory analysis of non-burial related

finds shall be tabulated into table form and standard artifact and midden recording shall be conducted as follows: artifacts shall be documented as to provenience, weight, length, width, type of material, and presumed function. Photographs of representative artifacts shall be taken for inclusion into the archaeological monitoring report. Bone and shell midden materials shall be sorted down to species, when possible, and then tabulated by provenience.

As appropriate, collected charcoal material obtained within intact cultural deposits shall be sent to the International Archaeological Research Institute (IARII) for species identification. Charcoal samples ideal for dating analyses shall be sent for radiocarbon dating. In the event that a significant and/or unusual artifact is encountered, the artifact shall be sent to the University of Hawaii-Hilo Geoarchaeology lab for Energy-Dispersive X-ray Fluorescence (EDXRF) analysis in order to identify and possibly geographically locate the source material. All analyzed samples, provenience information, and results shall be presented in table form within the archaeological monitoring report.

- G. Report Preparation. One of the primary objectives of the report shall be to present a stratigraphic overview of the project area which will allow for predictive assessments of adjacent properties, which may be the subject of future development. The report shall contain a section on stratigraphy, description of archaeological findings, monitoring methods, and results of laboratory analyses. The report shall address the requirements of a monitoring report (HAR section 13-279-5). Photographs of excavations shall be included in the monitoring report even if no historically-significant sites are documented. Should burial treatment be completed as part of the monitoring effort, a summary of this treatment shall be included in the monitoring report. Should burials and/or human remains be identified, then other letters, memos, and/or reports may be requested by the Burial Sites Program of SHPD.
- H. The Collected Data. The report shall be completed within ninety (90) calendar days from completion of the fieldwork. The final disposition of artifactual and sample materials shall be determined in coordination with the City and SHPD. All records, notes, photographs, and maps shall be archived at the Qualified Archaeologist's facilities.
- I. Archiving Materials. All burial materials shall be addressed as directed by SHPD. Materials not associated with burials shall be temporarily stored at the Qualified Archaeologist's facilities until an appropriate curation facility is selected, in consultation with the City and SHPD.

SP 204.4 MEASUREMENT AND PAYMENT

The Officer-in-Charge will pay for archaeological monitoring on an allowance basis. Payment will be full compensation for all work prescribed in this section, and any other work directed by the Officer-in-Charge. Payment

will be deducted from the allowance set in the Offer and shall be included in the monthly estimate for the progress payment upon submittal of paid invoices, with sufficient documentation to account for the costs of all labor, equipment, materials, and any other items invoiced. The Contractor shall collect and maintain sufficient documentation to validate reimbursement under this Section. The Contractor shall submit records of the work performed at the end of each day to the Officer-in-Charge to justify labor, equipment, and material costs. Individual equipment or tools having a replacement value of eight hundred dollars (\$800) or less will not be considered an allowable cost. The Contractor shall be reimbursed for the allowance item plus maximum of ten (10) percent inclusive of any administrative cost, overhead/profit, bond fee, and applicable taxes. The unused portion of the allowance item shall remain with the City upon completion of the contract."

END OF SECTION SP 204

SECTION SP 205 - IN-WATER WORK (SECTION 404 NATIONWIDE PERMIT w/ SECTION 401 BLANKET WQC)

SP 205.1 GENERAL

If included in the Special Provisions (SP), the City has obtained a U.S. Department of the Army, Section 404 Nationwide Permit (NWP) and coverage under the State Department of Health (DOH), Section 401 Blanket Water Quality Certification (BWQC). The applications and permits are provided in the Permit Applications and Approvals section of the Contract Documents (SP 194 PERMITS AND REGULATIONS).

The Contractor shall become familiar with the latest requirements of the Hawaii Revised Statutes and the Hawaii Administrative Rules, Chapter 11-54, Water Quality Standards (HRS/HAR 11-54), and the U.S. Department of the Army Permit, Section 404 NWP and DOH, Section 401 BWQC, prior to bidding on this project.

This section shall supplement any provision for Environmental pollution and hazardous materials, substances and/or waste control of the General Terms and Conditions, SP 194 - PERMITS AND REGULATIONS, and SP 195 - ENVIRONMENTAL POLLUTION CONTROL. For any conflicting requirements between the HRS/HAR 11-54, the SP sections, and all water quality permits, the stricter requirement governs. The Contractor shall carefully study and compare the requirements with each other, with the field conditions, and with the information furnished by the City and shall immediately report to the Officer-in-Charge errors, conflicts, ambiguities, inconsistencies, or omissions discovered. Should an item not be sufficiently detailed or explained in the Contract Documents, the Contractor shall report to the Officer-In-Charge immediately and request the Officer-In-Charge's clarification and interpretation.

SP 205.2 DESCRIPTION

The Contractor shall comply with the requirements of the HRS/HAR Rules Chapter 11-54 Water Quality Standards. In addition, the Contractor shall be responsible for updating and implementing the SWPPP as required in accordance with Section SP 195, including, but not limited to, Site-Specific Best Management Practices (BMPs) to prevent polluted run-off from discharging from the project site to any established Municipal Separate Storm Sewer System (MS4), drainage systems, private property, or State receiving waters.

SP 205.3 MATERIALS

The materials shall comply with the final accepted Site-Specific BMP Plan accepted by the regulatory agencies and the Officer-in-Charge.

SP 205.4 CONSTRUCTION

A. Pre-construction Requirements.

(a) In-Water Coordination Meeting. The Contractor shall coordinate with the Officer-in-Charge to schedule an In-Water Coordination Meeting after the Pre-Construction Meeting and prior to Notice to Proceed. The In-Water Coordination Meeting shall include, but not be limited to, discussing the roles and responsibilities of the Storm Water Team, chain of command

between City personnel and the Contractor, all deliverables and submittals necessary to meet all storm water permit requirements, and compliance with the conditions of the water quality permits. The meeting shall include, but not be limited to the Officer-in-Charge, project inspector, the City's design project manager and consultant and environmental consultant, the Contractor and all subcontractors associated with in-water work.

(b) Storm Water Pollution Prevention Plan (SWPPP). The Contractor shall be responsible for completing the Storm Water Pollution Prevention Plan (SWPPP) that will be accepted in writing by the Officer-in-Charge.

(c) Qualified Environmental Professional. The Contractor shall have an Environmental Professional to manage the In-Water work who has experience stated below. The Contractor should submit the following Qualification Information along with the bid:

- a. Name, address, telephone number and email address of the Environmental Professional.
- b. The Environmental Professional's experience shall consist of a minimum of one project with a U.S. Army Corps of Engineers Section 404 and/or Section 10 permit and HRS/HAR Rules Chapter 11-54 Water Quality Standards within the last five (5) years.
- c. The Contractor shall submit the name of the proposed Environmental Professional including the name of the project and client references for review and acceptance.

Qualification Information shall be complete enough such that the City is able to determine if the Environmental Professional has met the above qualifications.

The City will accept or reject the Qualification Information submittal.

(e) The Contractor shall review and be familiar with the Section 404 NWPV and Section 401 BWQC, and Site-Specific BMP Plan. If there are any concerns regarding construction means and methods, the Contractor shall inform the Officer-in-Charge before or during the In-Water Coordination Meeting. The Contractor maintains sole responsibility for the implementation of the Section 404 NWPV, Section 401 BWQC and Site-Specific BMP Plan.

(f) Prior to any construction activities, the Contractor shall install all appropriate Best Management Practices as shown on the most recently accepted SWPPP by the Officer-in-Charge.

B. Construction Requirements.

(a) Water Quality Monitoring
The Contractor shall, including but not limited to, be

responsible to coordinate site access, schedule of construction activities, Site-Specific BMPs measures, erosion and sediment control measures, and document visual observations, and comply with all requirements and conditions of the Section 404 NWPV and Section 401 BWQC, and conduct onsite including for the Contract period when in water BMP's are present photographic monitoring and visual inspections of the effectiveness of the in-water BMPs on the water quality of the surrounding waters.

Photographic monitoring and visual inspections will be conducted of the Project work area, BMP's and upstream and downstream control sites.

Preconstruction photographs will be taken once prior to the commencement of actual construction together with visual inspections 50 ft upstream of the work area, the work area, and 50 ft downstream of the work area. See Figure A in the Attachments for SP 205 for control site locations.

During Project construction, (duration) photographs will be taken with visual inspections at control sites 50 ft upstream of the work area, the work area, and 50 ft downstream of the work area.

Following the completion of the Project construction and removal of all BMP's, post construction photographs and visual inspections will be taken during one monitoring event per week for two weeks at the work area.

Contractor will record notes on the Project activity, unusual site conditions, and conditions of BMP's at the time of data collection. Contractor will perform visual inspections and record these observations on CCH's Inspection Report for In-Water Work form (See Attachments for SP 205. Observations will include, but not limited to, date, time, water depth (if present), and weather conditions. Contractor will provide a description of the Project activity, conditions of BMP's, and any other observed activities, related or unrelated to the Project, which may affect water quality and/or beneficial uses. Photograph submittals will include a date (DD/MM/YY) and time (24-hour) stamp and descriptive narrative of each photograph and be accompanied by map or diagram depicting the location and orientation of photographs taken. Contractor shall submit the Inspection Reports on a weekly basis, exact day and method of submittal shall be worked out with the Officer-in-Charge.

Construction work is expected to be completed within a period of approximately 52 weeks. All construction monitoring will occur during work hours. No inspections or in-water work will occur during storm events.

The Contractor shall be responsible for the effectiveness and adequacy of the implemented Site-Specific BMP measures, and other environmental protection measures. The Contractor shall

review and assess these measures daily or as required by the permits.

The Contractor is responsible for implementing the processes in Figure 1 - City and County of Honolulu, Department of Design and Construction, Civil Division, 404 Nationwide Permit Flow Chart (For Figure 1 see Attachments for SP 205).

If any visual monitoring indicate non-compliance with the State Water Quality Standards and the Hawaii Administrative Rules (HAR), Subsection 11-54-4(a) and Subsection 11-54-4(b), the Contractor shall immediately check the BMPs, and take appropriate action as follows:

(1) If the BMPs require reinstallation in accordance with the accepted Site-Specific BMP Plan, the Contractor shall cease activities, take immediate corrective action, document the corrective action taken, and provide a written report to the Officer-In-Charge by the close of the work day.

(2) If the BMPs do not require repair or modification, the Contractor shall determine what activities are causing the exceedances and shall provide a report to the Officer-in-Charge proposing corrective action. The Contractor may be required to perform additional field sampling by the Officer-in-Charge following corrective action to ensure the effectiveness.

(3) If the BMPs require modification, the Contractor shall cease activities, and submit an amendment to the Site-Specific BMP Plan within 24 hours to the Officer-in-Charge for review. The Contractor shall not resume work until the proposed amendments are accepted by the Officer-in-Charge. Upon the Officer-in-Charge's approval, the Contractor shall take immediate corrective action, and document the corrective action taken. Any revisions to the BMPs will require the City to consult and receive approval from the USACE.

(b) Section 404 Department of the Army Permit.

The Contractor shall implement only the Site-Specific BMPs on the Site-Specific BMP Plan/Erosion Control Plan accepted by the regulatory agencies and by the Officer-in-Charge. Unauthorized discharges are considered a violation of the agency issued permit. The Contractor shall immediately notify the Officer-in-Charge if the BMPs are insufficient for preventing discharge of pollutants. Any revisions to the BMPs will require the City to consult and receive approval from the USACE. The Contractor shall be responsible for any revisions required to modify the 404 Permit at no additional cost to the City and no extension of time if the Contractor discharges unauthorized fill.

The USACE approves the quantity, type, and location of BMPs as temporary discharges as shown on the accepted Site-Specific BMP/Erosion Control Plan. The Contractor shall notify the Officer-in-Charge immediately if the BMPs have been damaged or

displaced, or result in a discharge of material. The Officer-in-Charge must notify the USACE and obtain approval prior to recovery of discharged materials.

(c) Severe Storm Contingency Plan

The Contractor shall be aware of all the terms and conditions set forth in the City and County of Honolulu, Department of Design and Construction, Civil Division, Contingency Plan provided in Figure 2, and implement each response appropriately. (For Figure 2 see Attachments for SP 205).

(d) Discharge Response Flow Chart

The Contractor shall implement the City and County of Honolulu, Department of Design and Construction, Civil Division, Discharge Response Flow Chart provided in Figure 3, when there is evidence of pollutants leaving the confined work area or project area, or evidence of pollutants discharging into the drainage system or State Receiving Waters (For Figure 3 see Attachments for SP 205).

SP 205.5 NON-COMPLIANCE

The Officer-in-Charge will notify the Contractor of any non-compliance with the provisions and discuss the action to be taken. If the Contractor fails or refuses to comply promptly, the Officer-in-Charge may issue an order stopping all or part of the work until satisfactory corrective action has been taken. No extension of time or payment for excess costs or damages shall be made for the time lost due to such stop action.

SP 205.6 MEASUREMENT AND PAYMENT

The Officer-in-Charge will not measure In-Water Work for payment and In-Water work shall be considered incidental to SP 195 Environmental Pollution Control. The Officer-in-Charge will not pay for any additional Water Quality sampling, testing, analysis and reporting. This work shall be considered incidental to SP 195 Environmental Pollution Control.

The Officer-in-Charge will pay for any accepted additional Water Quality sampling, testing, analysis, and reporting, on an allowance basis. Payment will be deducted from the Allowance set forth in the proposal and shall be included in the monthly estimate for the progress payment upon submittal of paid invoices, with sufficient documentation to account for the costs of all labor, equipment, materials, and any other items invoiced. The Contractor shall provide sufficient documentation to validate reimbursement under this Section. The Contractor shall submit records of the work performed at the end of each day on Daily Force Account Report sheets (Form DF-49 (11/2014)), Exhibit "G" of the General Terms and Conditions (02/15/2015), issued by the Officer-in-Charge. Individual equipment or tools having a replacement value of eight hundred dollars or less will not be considered an allowable cost. The Contractor will be reimbursed for the allowance item plus ten (10) percent inclusion of any administrative cost, overhead/profit, bond fee, and applicable taxes. The unused portion of the allowance item shall remain with the City upon completion of the contract.

No progress payment will be authorized until the Officer-in-Charge

accepts the SWPPP, or when the Contractor fails to maintain the project site in accordance with the accepted SWPPP.

For all citations, fines, or penalties received by the City and County of Honolulu from the Environmental Protection Agency (EPA), State Department of Health (DOH), U.S. Army Corps of Engineers (USACE), or any other agency for non-compliances, including non-compliance with the conditions of the NPDES Permit, 401 Water Quality Certification, and U.S. Department of the Army Permit(s) or violations of the Clean Water Act, the Contractor shall reimburse the City within 30 calendar days for the full amounts of each of the outstanding costs the City has incurred, or the Officer-in-Charge will deduct the cost from the progress payment.

The Officer-in-Charge will not grant a time extension to the contract for any delays caused by or arising from the modifications to the SWPPP, Site-Specific Plan(s), erosion and sediment control plan(s) and other environmental protection plan(s).

END OF SECTION 205

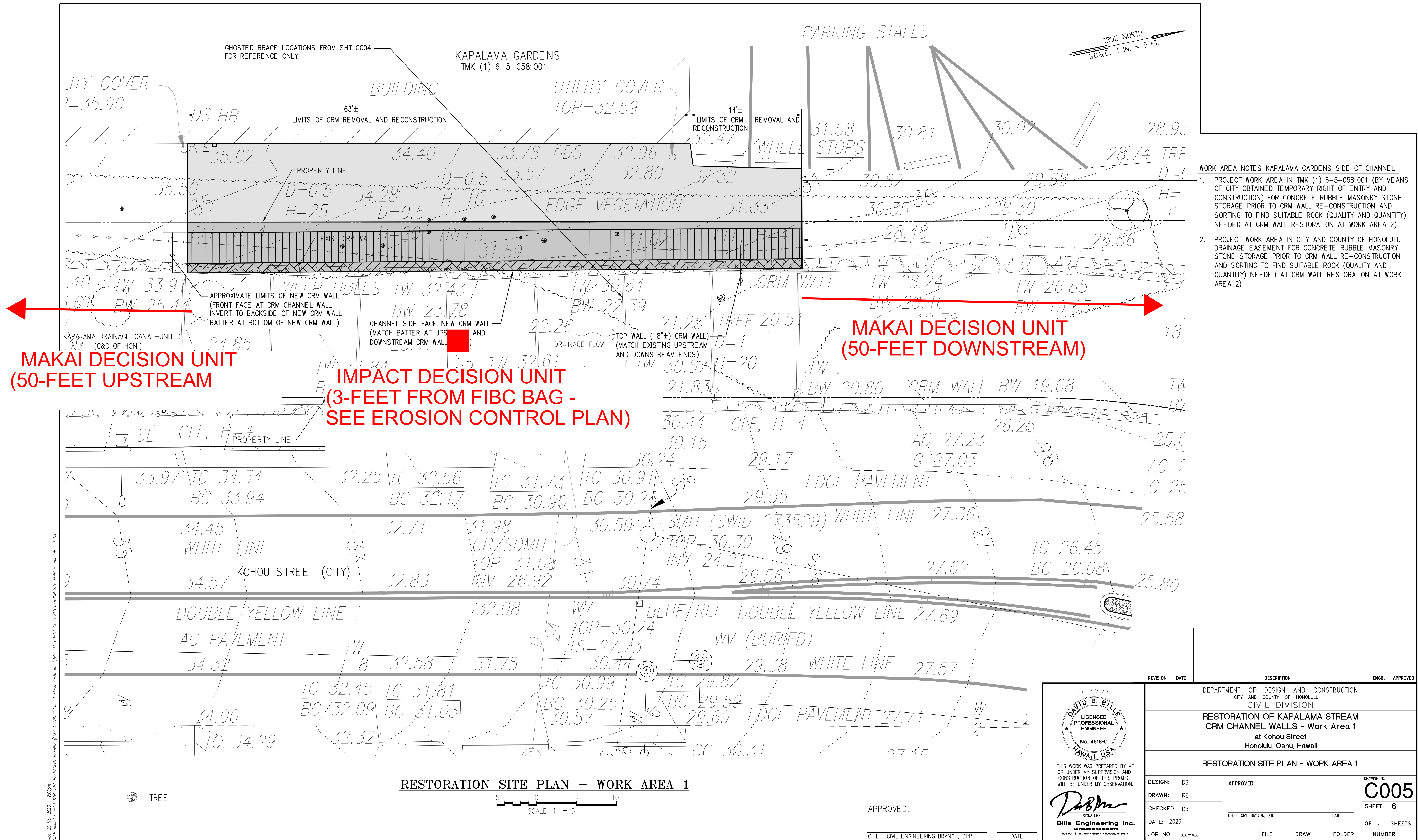
SP 205 ATTACHMENTS

SHPD LETTER

(To be added when provided
by SHPD)

AMAP

To be Provided if, and when
required by SHPD)



MAKAI DECISION UNIT
(50-FEET UPSTREAM)

IMPACT DECISION UNIT
(3-FEET FROM FIBC BAG -
SEE EROSION CONTROL PLAN)

MAKAI DECISION UNIT
(50-FEET DOWNSTREAM)

TRUE NORTH
SCALE: 1 IN. = 5 FT.

LEGEND

- PROPERTY LINE
- EXISTING DRAINLINE
- EXIST CONTOUR
- LIMITS OF CLSM BACKFILL (EMERGENCY PROJECT)

REMOVE 4'± AND RE-BUILD WITH NEW CRM CHANNEL WALL. SALVAGEABLE CRM STONE TO BE RE-USED AT VISIBLE CHANNEL FRONTAGE. UNUSABLE MATERIAL TO BE DISPOSED OF OFF-SITE BY CONTRACTOR

EXISTING CHANNEL WALL TO REMAIN

GHOSTED BRACE LOCATIONS FROM SHT C004 FOR REFERENCE ONLY

REMOVE 6.9'± AND RE-BUILD WITH NEW CRM CHANNEL WALL. SALVAGEABLE CRM STONE TO BE RE-USED AT VISIBLE CHANNEL FRONTAGE. UNUSABLE MATERIAL TO BE DISPOSED OF OFF-SITE BY CONTRACTOR

APPROXIMATE LIMITS OF NEW CRM WALL (FRONT FACE AT CRM CHANNEL WALL INVERT TO BACKSIDE OF NEW CRM WALL BATTER AT BOTTOM OF NEW CRM WALL)

EXIST SIGN POLE

CHANNEL SIDE FACE OF NEW CRM WALL (MATCH BATTER AT UPSTREAM AND DOWNSTREAM CRM WALL ENDS).

TOP WALL (18'±) CRM WALL (MATCH EXISTING UPSTREAM AND DOWNSTREAM ENDS).

EXCAVATED AREA THAT WAS BACKFILLED WITH CLSM DURING EMERGENCY PROJECT TO BE REMOVED FROM PROJECT SITE AND DISPOSAL BY CONTRACTOR

TEMPORARY CONSTRUCTION ACCESS

KAPALAMA GARDENS
VISITOR PARKING ONLY

GUEST PARKING ONLY
TOW AWAY ZONE

GUEST PARKING HOURS: 6:00am-9:00pm
NO PARKING HOURS: 9:00pm- 6:00am
PASS REQUIRED FOR OVERNIGHT

RESTORATION SITE PLAN - AREA 2

SCALE: 1" = 5'

REVISION	DATE	DESCRIPTION	ENGR.	APPROVED

Exp: 4/30/24
DAVID B. BILLS
LICENSED PROFESSIONAL ENGINEER
No. 4516-C

DEPARTMENT OF DESIGN AND CONSTRUCTION
CITY AND COUNTY OF HONOLULU
CIVIL DIVISION
RESTORATION OF KAPALAMA STREAM
CRM CHANNEL WALLS - Work Area 2
at 1325 N. School Street
Honolulu, Oahu, Hawaii

RESTORATION SITE PLAN - AREA 2		DRAWING NO. C005
DB	APPROVED:	SHEET 6
RE		OF . SHEETS
CHECKED: DB	CHIEF, CIVIL DIVISION, DDC	DATE
DATE: 2023		
JOB NO. xx-xx	FILE	DRAW FOLDER NUMBER

SIGNATURE:
Bills Engineering Inc.
Civil/Environmental Engineering
105 Fort Street, Suite 4 • Honolulu, HI 96813

Wed, 29 Nov 2023 - 10:37am
\\N:\Projects\700-01 KAPALAMA PERMANENT REPAIRS (AREA 1 AND 2)\Cost Plans Restoration\AREA 2\700-01 C005 RESTORATION SITE PLAN - Work Area 2.dwg

APPENDIX A (SAMPLE)

CCH INSPECTION REPORT

Date:	07/02/2020			DA File No.:	POH-2018-00259
Project Name:	Kanapuu Drive Culvert Emergency Repairs			CCH Job No.:	5-19
Inspector Name:	Rejie Aquino, DDC			Inspector Title:	Senior Construction Inspector
Weather:	Partly Cloudy	Rain Gauge Location	N/A	Rainfall in the Past 24 Hours (inches)	N/A

Land-Based BMP Measures and Devices Currently Installed on the Project:

LOCATION	ACTIVITY AND TYPE OF BMP MEASURE/DEVICE	ACTION REQUIRED?		NOTES/COMMENTS
		Y	N	
Staging area, Kanapuu Drive	Safety fencing installation & Housekeeping. Biosocks around, filter fabric and plastic sheeting underneath.		X	
Portable toilet, Kanapuu Drive	Safety fencing installation & Housekeeping. Biosocks around, filter fabric and plastic sheeting underneath.		X	
Catch Basin, Kahako Street	Safety fencing installation & Housekeeping. Sediment filter.		X	
Catch Basin, Kanapuu Drive	Safety fencing installation & Housekeeping. Sediment filter.		X	
Catch Basin, Kanapuu Drive	Safety fencing installation & Housekeeping. Sediment filter.		X	
Stock Pile, Heeia Kea	Housekeeping. Perimeter biosock.		X	
Construction Entrance, Heeia Kea	Housekeeping. Coarse gravel covered geo-fabric.		X	
Project Perimeter, Heeia Kea	Housekeeping. Perimeter biosock.		X	
Staging Area, Heeia Kea	Housekeeping. Biosocks around, filter fabric and plastic sheeting underneath.		X	

Use this portion of the inspection report for in-water visual inspections and photographs/discharge reporting

INSPECTION OBSERVATIONS	YES/NO	NOTES
Is there a Turbid Plume or any other indicators of a discharge? <i>If yes, stop work immediately and investigate the source of the plume.</i>	NO	
Is the suspected reason for the discharge that a storm water control is clearly not		

If yes, describe.

Location Map

[illegible]

Photos

Photo No.:	1	DA File No.:	POH-2018-00259
Project Name:	Kanapuu Drive Culvert Emergency Repairs	Job No:	5-19
Photographer:	Rejie Aquino, DDC	Time of Photo:	See photo
Description:	Photograph of Kaelepulu Stream facing upstream approximately 50ft from culvert headwall. Clear water flow observed.		



Photos

Photo No.:	2	DA File No.:	POH-2018-00259
Project Name:	Kanapuu Drive Culvert Emergency Repairs	Job No:	5-19
Photographer:	Rejie Aquino, DDC	Time of Photo:	See photo
Description:	Photograph of Kaelepulu Stream facing downstream at culvert headwall. Kaelepulu stream clear water flow observed.		



Photos

Photo No.:	3	DA File No.:	POH-2018-00259
Project Name:	Kanapuu Drive Culvert Emergency Repairs	Job No:	5-19
Photographer:	Rejie Aquino, DDC	Time of Photo:	See photo
Description:	Photograph of silt fence just upstream of downstream culvert headwall.		



Photos

Photo No.:	4	DA File No.:	POH-2018-00259
Project Name:	Kanapuu Drive Culvert Emergency Repairs	Job No:	5-19
Photographer:	Rejie Aquino, DDC	Time of Photo:	See photo
Description:	Photograph of Kaelepulu Stream facing upstream of culvert headwall. Greenish turbid water observed.		



Photos

Photo No.:	4a	DA File No.:	POH-2018-00259
Project Name:	Kanapuu Drive Culvert Emergency Repairs	Job No:	5-19
Photographer:	Rejie Aquino, DDC	Time of Photo:	See photo
Description:	Photograph of Kaelepulu Stream facing upstream of culvert headwall. Settled clear water within basin 2 passing through connective weir to basin 1 observed. Basin 2 overflow into original stream path stopped. Original stream path drying out.		



Photos

Photo No.:	4b	DA File No.:	POH-2018-00259
Project Name:	Kanapuu Drive Culvert Emergency Repairs	Job No:	5-19
Photographer:	Rejie Aquino, DDC	Time of Photo:	See photo
Description:	Photograph of Kaelepulu Stream facing upstream of culvert headwall. Settled clear water within basin 2 passing through connective weir to basin 1 observed. Basin 2 overflow into original stream path stopped. Original stream path drying out.		



Photos

Photo No.:	4c	DA File No.:	POH-2018-00259
Project Name:	Kanapuu Drive Culvert Emergency Repairs	Job No:	5-19
Photographer:	Rejie Aquino, DDC	Time of Photo:	See photo
Description:	Photograph of Kaelepulu Stream facing downstream approx. 150ft from culvert headwall. Settled water observed in basin 1. Water level overflowing pass gravel bags and entering original stream path, then to the wet land. Settled clear water exiting disturb limits.		



Photos

Photo No.:	4d	DA File No.:	POH-2018-00259
Project Name:	Kanapuu Drive Culvert Emergency Repairs	Job No:	5-19
Photographer:	Rejie Aquino, DDC	Time of Photo:	See photo
Description:	Photograph of Kaelepulu Stream facing downstream approx. 150ft from culvert headwall. Settled water observed in basin 1. Water level overflowing pass gravel bags and entering original stream path, then to the wet land. Settled clear water exiting disturb limits.		



Photos

Photo No.:	4e	DA File No.:	POH-2018-00259
Project Name:	Kanapuu Drive Culvert Emergency Repairs	Job No:	5-19
Photographer:	Rejie Aquino, DDC	Time of Photo:	See photo
Description:	Photograph of discharge pipe into wetland of treated water from frac tank processing. NO discharging observed.		



Photos

Photo No.:	4e	DA File No.:	POH-2018-00259
Project Name:	Kanapuu Drive Culvert Emergency Repairs	Job No:	5-19
Photographer:	Rejie Aquino, DDC	Time of Photo:	See photo
Description:	Photograph of discharge pipe into wetland of treated water from frac tank processing. NO discharging observed.		



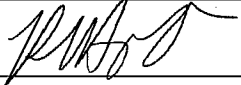
Photos

Photo No.:	6	DA File No.:	POH-2018-00259
Project Name:	Kanapuu Drive Culvert Emergency Repairs	Job No:	5-19
Photographer:	Rejie Aquino, DDC	Time of Photo:	See photo
Description:	Photograph of location of diversion pipe, routed at the east end of dewatering basin. Due terrain, unable to obtain photo of the end of stream diversion hose. No water in trench observed.		



Certification

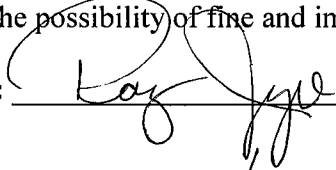
I certify that I am the person who performed the inspection documented in this report and that all information recorded in this report is a true and accurate representation of what was observed at the construction site. Any photographs attached that were taken during the inspection are a true, accurate, and unaltered representation of what was observed during the inspection documented in this report.

Inspector's Printed Name:	Rejie Aquino, DDC	Title:	Senior Construction Inspector
Inspector's Signature:		Date of Inspection:	07/02/2020

Certifying Person and Authorized Representative

The certifying person and duly authorized representative shall meet the requirements of Hawaii Administrative Rules 11-55, Appendix A, Section 15.

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Signature:  Date: 7/7/20

Duly Authorized Person's Name:	Stanley T. Katsura		
Duly Authorized Person's Position Title:	Civil Division Chief		
Duly Authorized Person's Company or Agency:	City and County of Honolulu		
Department:	Department of Design and Construction		
Division:	Civil Division		
Phone Number:	(808) 768-8836	Fax No.:	(808) 768-4287
Email:	skatsura@honolulu.gov		

APPENDIX A (CLEAN)

CCH INSPECTION REPORT

Date:		DA File No.:	
Project Name:		CCH Job No.:	
Inspector Name:		Inspector Title:	
Weather:		Rain Gauge Location	Rainfall in the Past 24 Hours (inches)

Land-Based BMP Measures and Devices Currently Installed on the Project:

LOCATION	ACTIVITY AND TYPE OF BMP MEASURE/DEVICE	ACTION REQUIRED?		NOTES/COMMENTS
		Y	N	

Use this portion of the inspection report for in-water visual inspections and photographs/discharge reporting

INSPECTION OBSERVATIONS	YES/NO	NOTES
Is there a Turbid Plume or any other indicators of a discharge? <i>If yes, stop work immediately and investigate the source of the plume.</i>		
Is the suspected reason for the discharge that a storm water control is clearly not operating as intended or that a storm water control is in need of maintenance? <i>If yes, describe.</i>		

See attached photographs

Location Map

Job No:		DA File No.:	
Project Name:			
Project Location:			

Photos

Photo No.:		DA File No.:	
Project Name:		Job No:	
Photographer:		Time of Photo:	
Description:			

Photos

Photo No.:		DA File No.:	
Project Name:		Job No:	
Photographer:		Time of Photo:	
Description:			

Photos

Photo No.:		DA File No.:	
Project Name:		Job No:	
Photographer:		Time of Photo:	
Description:			

Photos

Photo No.:		DA File No.:	
Project Name:		Job No:	
Photographer:		Time of Photo:	
Description:			

Photos

Photo No.:		DA File No.:	
Project Name:		Job No:	
Photographer:		Time of Photo:	
Description:			

Certification

I certify that I am the person who performed the inspection documented in this report and that all information recorded in this report is a true and accurate representation of what was observed at the construction site. Any photographs attached that were taken during the inspection are a true, accurate, and unaltered representation of what was observed during the inspection documented in this report.

Inspector's Printed Name:		Title:	
Inspector's Signature:		Date of Inspection:	

Certifying Person and Authorized Representative

The certifying person and duly authorized representative shall meet the requirements of Hawaii Administrative Rules 11-55, Appendix A, Section 15.

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Signature: _____ **Date:** _____

Duly Authorized Person's Name:	Timothy K. Trang		
Duly Authorized Person's Position Title:	Civil Division Chief		
Duly Authorized Person's Company or Agency:	City and County of Honolulu		
Department:	Department of Design and Construction		
Division:	Civil Division		
Phone Number:	(808) 768-8836	Fax No.:	(808) 768-4287
Email:	ttrang@honolulu.gov		

This part of the report is **ONLY** required when a non-stormwater or polluted stormwater discharge may have or may have potentially entered a storm drain or Receiving State Waters, if a discharge (e.g., spill) has occurred, if a polluted discharge is observed leaving the project limits, or if there is evidence of an unreported polluted discharge leaving project limits prior to inspection (such as: silty trail, eroded areas beyond site limits).

1) General Information

Date of Incident: _____

Incident Identified or reported by: _____

Time of Incident (note if time is approximate): _____

Duration of Incident (note if duration is approximate): _____

Source/Cause of Incident:

Describe the Incident:

Is the suspected reason for the discharge that a storm water control is clearly not operating as intended or is in need of maintenance?

☐ BMP needs maintenance ☐ BMP not operating as intended ☐ BMP is not a factor

2) Specific Discharge Information

A. Nature of the Discharge: a. ☐ Sediment – Amount: _____ b. ☐ Concrete – Amount: _____ c. ☐ Oil/Grease – Amount: _____ d. ☐ Hazardous Material (describe): _____ – Amount: _____ e. ☐ Other (describe): _____ – Amount: _____	B. Characteristic of Immediate Area Where Discharge Occurred and Location Where Discharge Originated (photos): a. ☐ Receiving Water(s) – Name(s): _____ b. ☐ Storm Drain - MS4 Owner: _____ c. ☐ Soil - Type: _____ d. ☐ Asphalt/Concrete Surface e. ☐ Other - Describe: _____
--	--

3) Action Taken

a. Describe Immediate Measures Taken (include photos on attached template):

☐ Photos attached

b. Describe Additional Follow-Up Measures Taken (include photos on attached template):

☐ Photos attached

I certify that I am the person who performed the inspection documented above and that all information recorded on this form is a true and accurate representation of what was observed at the construction site recorded above.

Inspector Name and Title

Signature

Date

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Timothy K. Trang

Duly Authorized Person's Signature

Date

Duly Authorized

Person's Name: Timothy K. Trang

Duly Authorized Person's

Position Title: Civil Division Chief

Duly Authorized Person's Company or

Agency Information:

Company or City and County of Honolulu,

Agency: Department of Design and

Construction, Civil Division

Address: 650 South King Street, 15th Floor

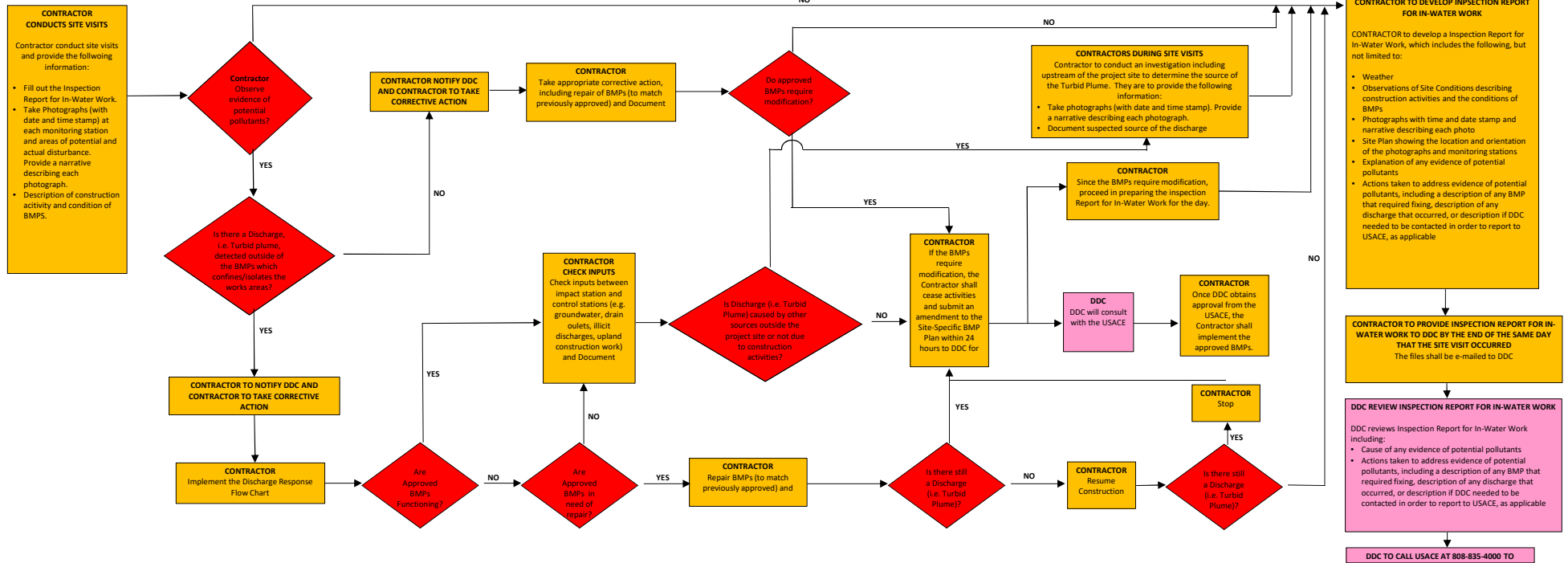
Honolulu, Hawaii 96813

Phone: (808) 768-8836

Fax: (808) 768-4287

Email: ttrang@honolulu.gov

CITY AND COUNTY OF HONOLULU DEPARTMENT OF DESIGN AND CONSTRUCTION
CIVIL DIVISION
404 NATIONWIDE PERMIT FLOW CHART - DURING CONSTRUCTION MONITORING



LEGEND

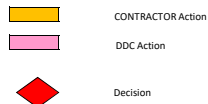


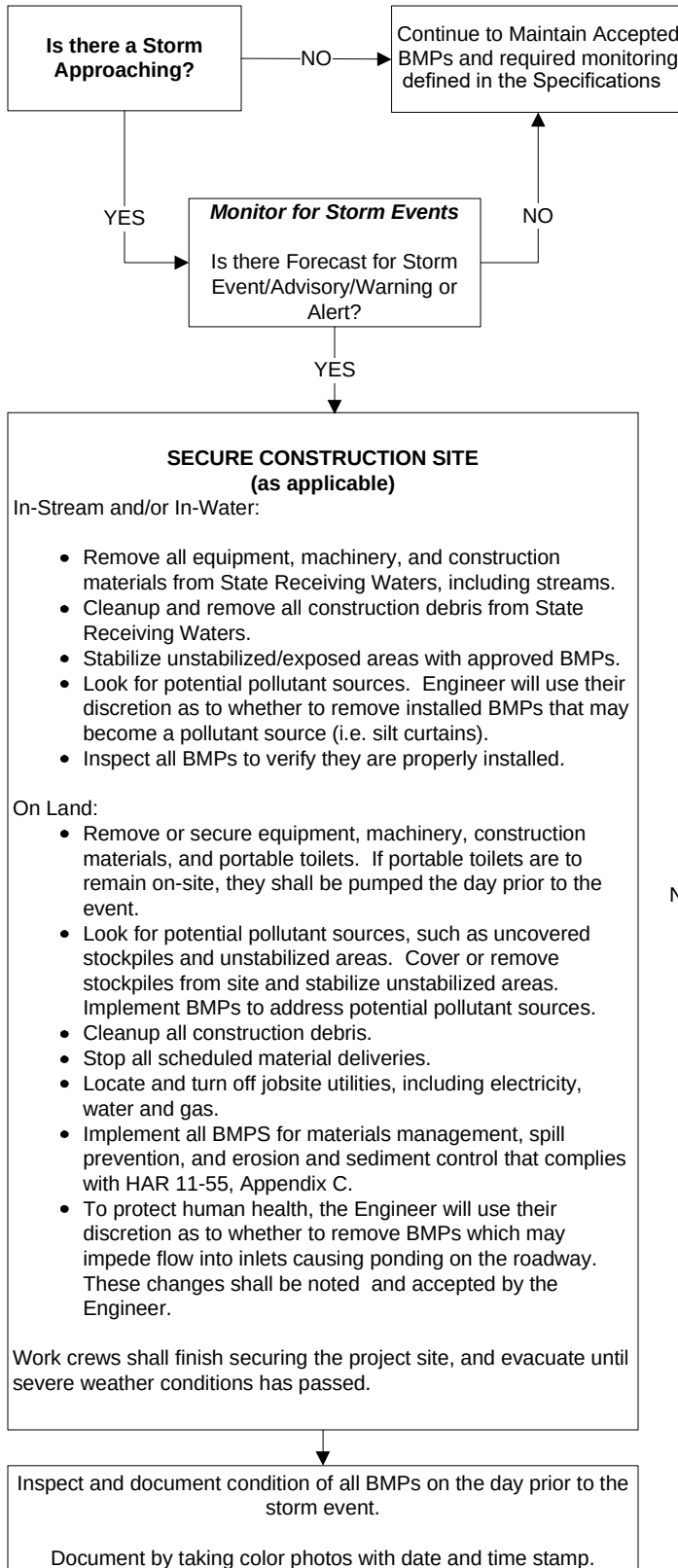
FIGURE 1

CITY and COUNTY OF HONOLULU DEPARTMENT OF DESIGN AND CONSTRUCTION

CIVIL DIVISION CONTINGENCY PLAN

The City DDC Civil Division Contingency Plan will be implemented by DDC and the General Contractor to prevent and respond to any discharge resulting from a severe storm or natural disaster or from improperly designed or implemented BMP measures. A severe storm is any event that exceeds a 2-year, 24 hour event. It is the General Contractor's responsibility to abide by the following plan as well as any other binding plan, agreement, regulation, rule, law or ordinance applicable. The Contingency Plan defines actions that are required in Preparation for a Storm Event, Following a Storm Event, and when a discharge of pollutants has occurred or is occurring.

Preparation Before Storm



After Storm or When the Discharge of Water Pollutants has Occurred or is Occurring

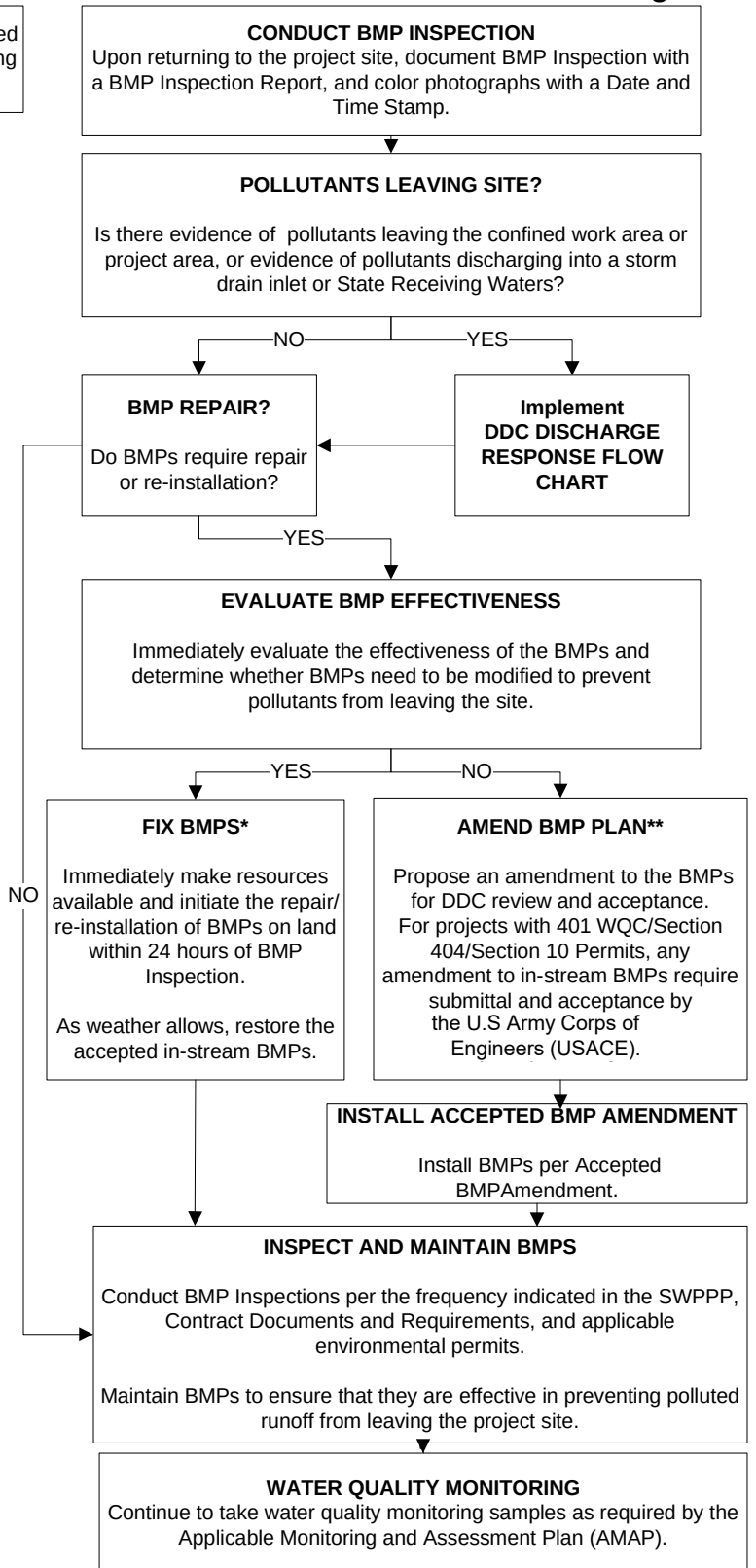


Figure 2

***FIX BMPs**

The Contractor shall contract a BMP supplier prior to the initiation of in-water work to have contingency BMP materials readily available and to have the ability to supply them within 24 hours of a severe storm event. The Contractor shall mobilize manpower and equipment to the site immediately upon returning to the site. BMP repair and re-installation shall be initiated immediately.

****AMEND BMP PLAN**

Upon returning to the project site after the storm, the Contractor shall immediately assess and document which portions of the BMP Plan need to be modified and require an amendment.

In the event that the in-stream BMPs, or a portion of them, requires an amendment, the BMPs will need to be re-designed. The Contractor shall submit the proposed amended BMPs to DDC and DDC will request acceptance from the USACE to implement the BMPs. The Contractor shall immediately implement the accepted BMPs to prevent pollutant discharge and discharge of materials from leaving the project site.

DDC will have the contracted design consultant (as applicable) re-design the BMPs and DDC will submit to the USACE (as applicable) for review and acceptance.

CITY AND COUNTY OF HONOLULU DEPARTMENT OF DESIGN AND CONSTRUCTION
CIVIL DIVISION
DISCHARGE RESPONSE FLOW CHART

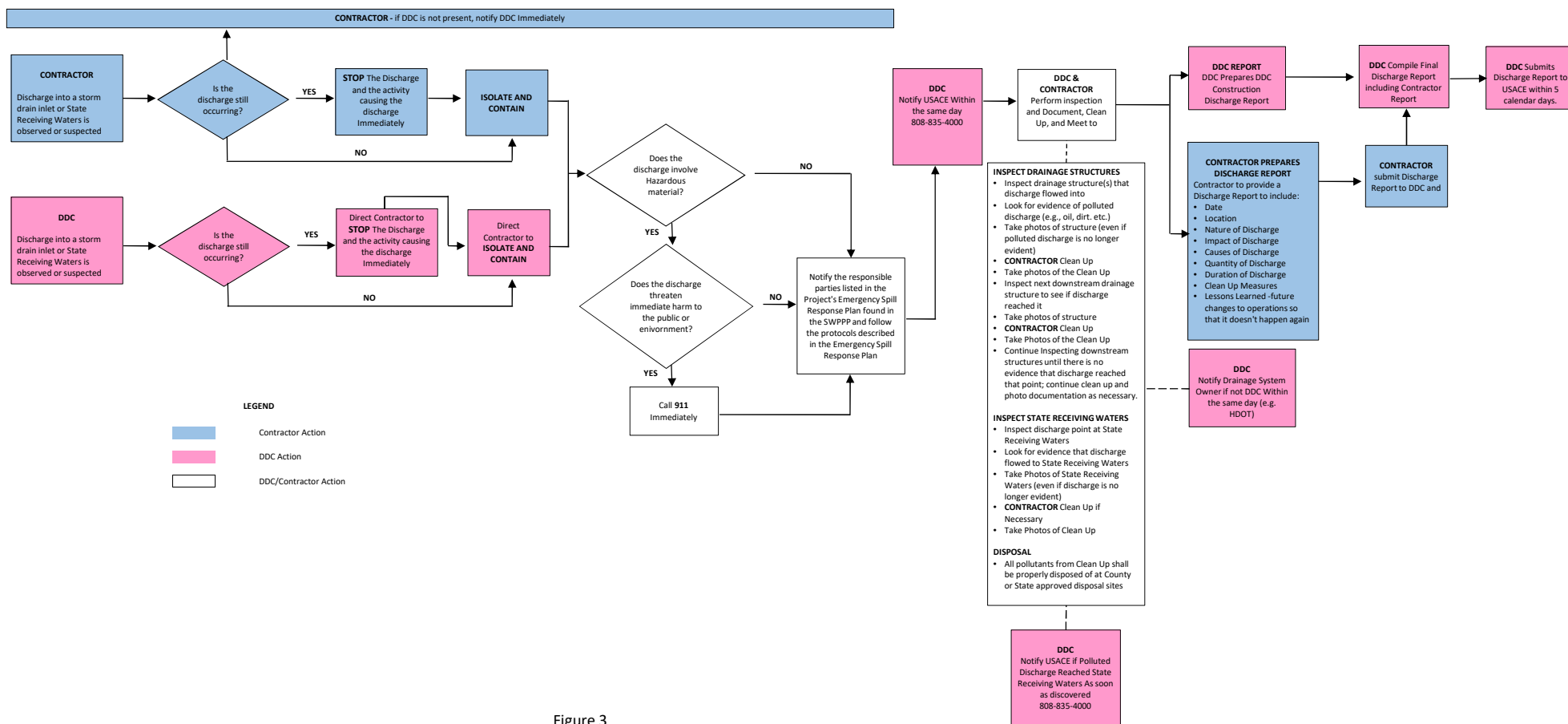


Figure 3