

**American River Flood Control District  
Central Valley Flood Protection Board Permit Applications  
1620 & 1622 McClaren Road**

**Staff Report**

**Discussion:**

The parcel owners at 1620 McClaren Road (Friedman) and 1622 McClaren Road (Bass) in Carmichael, California seek to obtain encroachment permits to construct bank protection work along their properties on the north bank of the American River. The proposed project is to remove existing gunnite bank protection that has failed and replace it with rock toe protection and Flexamat fabric on the bank slope. The work will require demolition and removal of the existing gunnite and then excavation to prepare the bank to install the Flexamat. The completed work will be planted with native grasses and pole cuttings.

The permit application also includes a request to have a name change on the original permits for bank protection issued to previous residents at these locations.

All of the work described in these applications is outside the levee prism and toe area and the work will not have an impact on the District levee.

**Recommendation:**

The General Manager recommends that the Board of Trustees endorse both permit applications.

## TECHNICAL MEMORANDUM

TO: Mr. Jonathan Kors, PE

FROM: Mr. Jay Punia, PE  
Mr. Chuck Hilliard, PE

DATE: October 8, 2019

SUBJECT: Project Description – Friedman and Bass Revetment Replacement Project  
1620 and 1622 McLaren Drive, Carmichael, California

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## INTRODUCTION

At the right bank of the American River near U.S. Army Corps of Engineers (USACE) River Mile (RM) 13.4, the gunite bank protection that was installed in early 1960s is failing and needs to be replaced with a more robust design. The attached exhibit shows the location and the initial design for restoring the erosion protection at this site. The gunite extends approximately 250 lineal feet along the bank line and includes Dr. Bass' and Mrs. Friedman's properties along the river. Dr. Bass's property extent is the upstream (approximately) 90 feet of bank line, while Mrs. Friedman's is the remaining downstream 160 feet. The vertical extents of the gunite extend from the toe of the slope below the low summer water levels up to the top of the river bank. Dr. Bass's pool and retaining wall are located near the top edge of the river bank, while Mrs. Friedman's fence, gate, and landscaped structures are located near the top of the slope.

The purpose of this Technical Memorandum is to provide the needed information for preparing the California Environmental Quality Act (CEQA/Nation Environmental Protection Act (NEPA) analyses, and describe the project to regulatory and permitting agencies.

## PROJECT DESCRIPTION

The proposed project will replace the existing gunite bank protection with Flexamat permanent erosion control mat for arresting erosion and for stabling the bank slope at this location. Based on the initial input from the Central Valley Flood Protection Board (CVFPB), two separate permit applications will be submitted. Application number one (on behalf of Dr. Bass) will cover a portion located approximately 90 feet (upstream) of the project, and a second application (on behalf of Mrs. Friedman) will cover the remaining 160 feet.

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## SITE CHARACTERISTICS

- The banks are steep at this location and could become steeper with increased scour at the toe of the bank.
- Flow velocities are very high at or above the toe of the bank.
- Bank material can be mobilized at all flows.
- Toe scour is possible at the estimated velocities, which could encourage bank failure.
- Erosion behind the gunite wall is evident and with continued failure of the gunite wall could become worse.
- Further erosion and bank failure would likely lead to structural damage of Dr. Bass's retaining wall and pool, as well as Mrs. Friedman's staircase, fence, and lawn.

## PROPOSED DESIGN

As shown in attached Project Overview drawings C-301, C-302 and C-303, the existing gunite structure would be removed. Flexamat will be laid over the slope. The subgrade prepared for placement of mat shall be smooth and free of all rocks, sticks, roots, other protrusions, or debris of any kind.

Flexamat is a permanent erosion control mat utilized for stabilizing levee slopes, channels, low water crossings, inlet/outlet protection, and shorelines. It consists of concrete blocks (6.5" x 6.5" with a 2.25" profile) locked together and embedded into a high strength geogrid. There is 1.5" spacing between the blocks that gives the mat flexibility and allows for optional vegetation growth. The mat is packaged in rolls, making transporting and installing Flexamat efficient. **Figure 1** shows the Flexamat providing erosion protection to a waterside slope of a channel.



Figure 1

To secure the toe, launch-able rock will be placed between the existing concrete block and along the slope up to 6 feet from the existing ground surface.

Once the Flexamat has been installed the overall site would be revegetated with a combination of pole cuttings near the upper slope and native grass plugs (e.g. creeping wild rye plugs) established within the interstitial spaces of the Flexamat blocks. The vegetation will provide an number of important functions and benefits including: mitigating for potential aquatic habitat impacts of the proposed work below the ordinary high water mark (likely a condition of permits required by the Resource Agencies); an aesthetic benefit to the proposed project by providing cover over the concrete blocks that would acknowledge the importance of the wild & scenic character of the Lower American River; and an added slope stability/erosion protection benefit from reduced velocities and improved soil shear strength (plant roots) to the overall project design.

The proposed design is based on velocities and shear stresses reflected in the Northwest Hydraulic Consultants (NHC) Report (December 6, 2019).

## ACCESS

The project site is accessible from Mrs. Friedman’s property through a gate near the top of the slope and down concrete steps constructed into the gunite protection. There is no existing access for construction equipment to reach the bottom of the steep slope through Mrs. Friedman’s property. Dr. Bass has a small boat ramp that passes through the upstream extent of the gunite protection. The boat launch connects to Dr. Bass’s driveway and is a feasible location for equipment access to reach the bottom of the slope.

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## CONSTRUCTION SEQUENCE

The original gunite bank protection will be removed and hauled away from the project site, with the exception of the concrete anchor block at the waterside toe of the riverbank. The anchor block will remain in its current location, or will be relocated (shifted laterally) as necessary to accommodate the placement of the angular launch-able rock revetment at the toe.

Construction Sequence will be as follows:

1. Clear all debris and vegetation from the riverbank slope.
2. Prepare subgrade surfaces for placement of mats. The subgrade shall be smooth and free of all rocks, sticks, roots, other protrusions, or debris of any kind.
3. Install Flexamat rolls on the slope that are 15' wide with a 18" geogrid extension.
4. Install mats so that the matting extends 36" past crest of slope, if possible.
5. The top edge and upstream/downstream sides of mat shall be embedded 24".
6. Secure overlap seams in 2' increments using cross-plate percussion anchors. Anchors shall penetrate through the upstream mat and geogrid extension from adjacent downstream mat.
7. Fill and compact termination trench with cohesive soil or concrete.
8. Install cross-plate percussion anchors in 2' increments along the initial upstream edge of armor.
9. Establish vegetation on finished slope.

Topsoil materials may be added to facilitate vegetative growth.

## CONSTRUCTION SCHEDULE

<u>Activity</u>	<u>Month/Year</u>
Permits	October 2019–April 2020
Advertise Const. Contract	May–June 2020
Actual Construction	June–Sept. 2020

## EQUIPMENT

Construction Phase	Number of Each Equipment Type	Duration of Use (Days)
Removing and hauling existing gunite bank protection	Excavator with demolition attachment (hydraulic hammer), skid-steer loader, front-end loader, hauling trucks (1-2).	5-7 days
Clearing and grubbing/stripping	Front-end loader, skid-steer loader, haul trucks, pickup trucks	5-7 days
Placing Flexamat over prepared slope	Manual labor, Front-end loader, excavator, haul trucks, and backhoe	5-7 days
Placing angular launch-able rock at the toe	Front-end loader, skid-steer loader, haul trucks, pickup trucks, Manual labor	3-5 days

## MATERIALS DELIVERY

Typical deliveries and hauling for the project would include the rock for launch-able toe-protection, Flexamat rolls, and bedding material needed to reconstruct the bank slope. The existing gunite and demolition debris would be hauled away to the nearest disposal site.

The project will require approximately 150 cubic yards (about 300 tons) of rock to be imported and installed for the toe protection, approximately 11,400 square feet of Flexamat rolls, and approximately 115 tons of gunite and concrete will be demolished and removed from the site. These numbers will be revised once the design is finalized.

## REFERENCES

1. Northwest Hydraulic Consultants Report (December 6, 2018) to Mrs. Friedman and to Dr. Bass
2. California Code of Regulations, Title 23, Waters
3. USACE, EM 1110-2-1913, Design and Construction of Levees
4. Flexamat Product Specification Sheet

Attachments:

Drawings (G-001, C-101, C-302, and C-303)

**60% DESIGN**

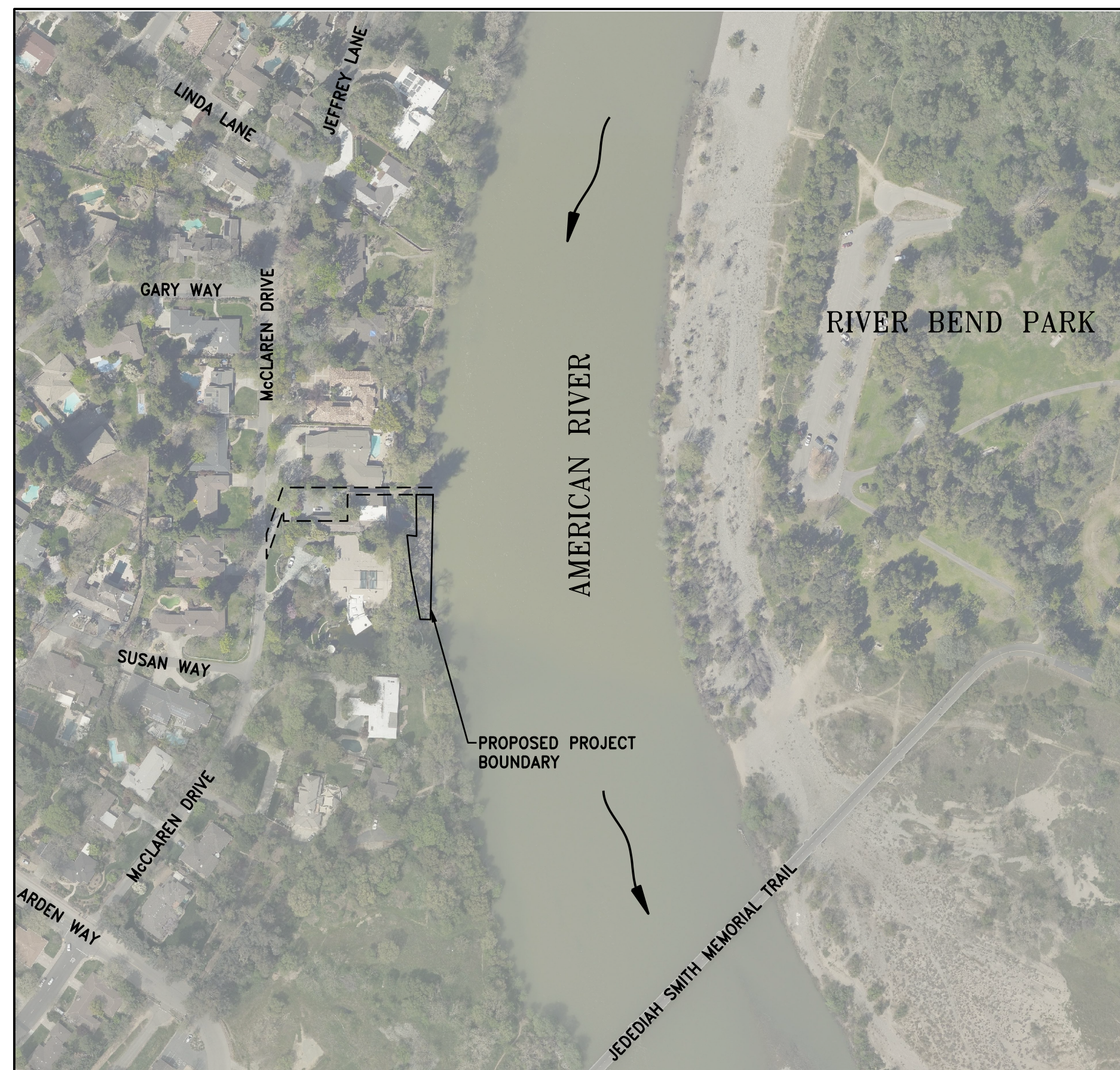
# FRIEDMAN & BASS PROPERTIES REVTMENT REPLACEMENT PROJECT

**OWNERS:**

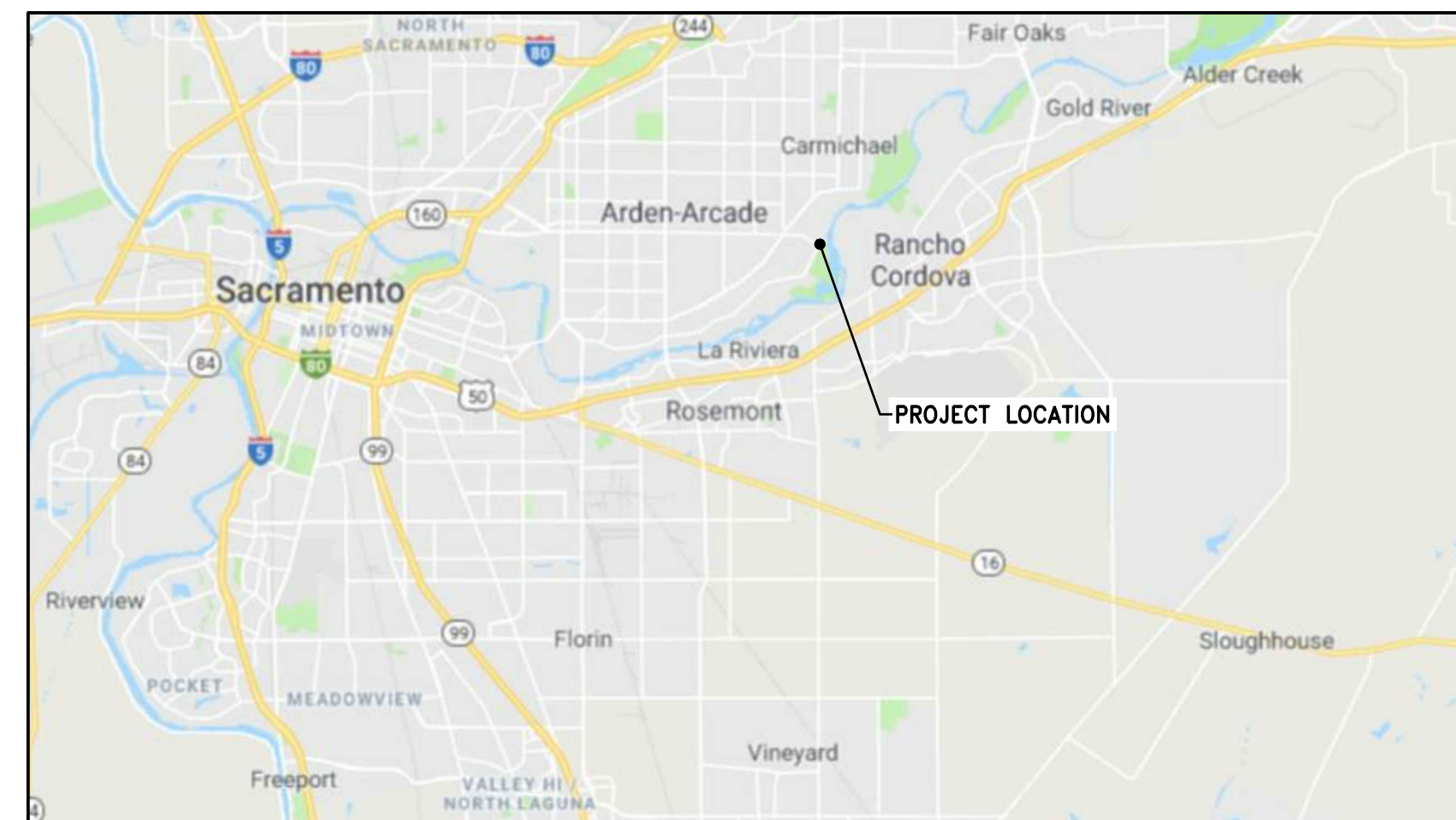
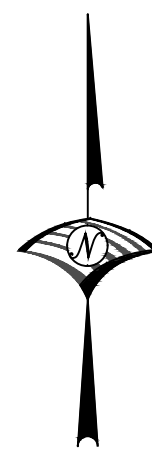
MRS. FRIEDMAN  
1620 McCLAREN DRIVE, CARMICHAEL, CALIFORNIA 95608  
DR. BASS  
1622 McCLAREN DRIVE, CARMICHEAL, CALIFORNIA 95608

**SHEET INDEX**

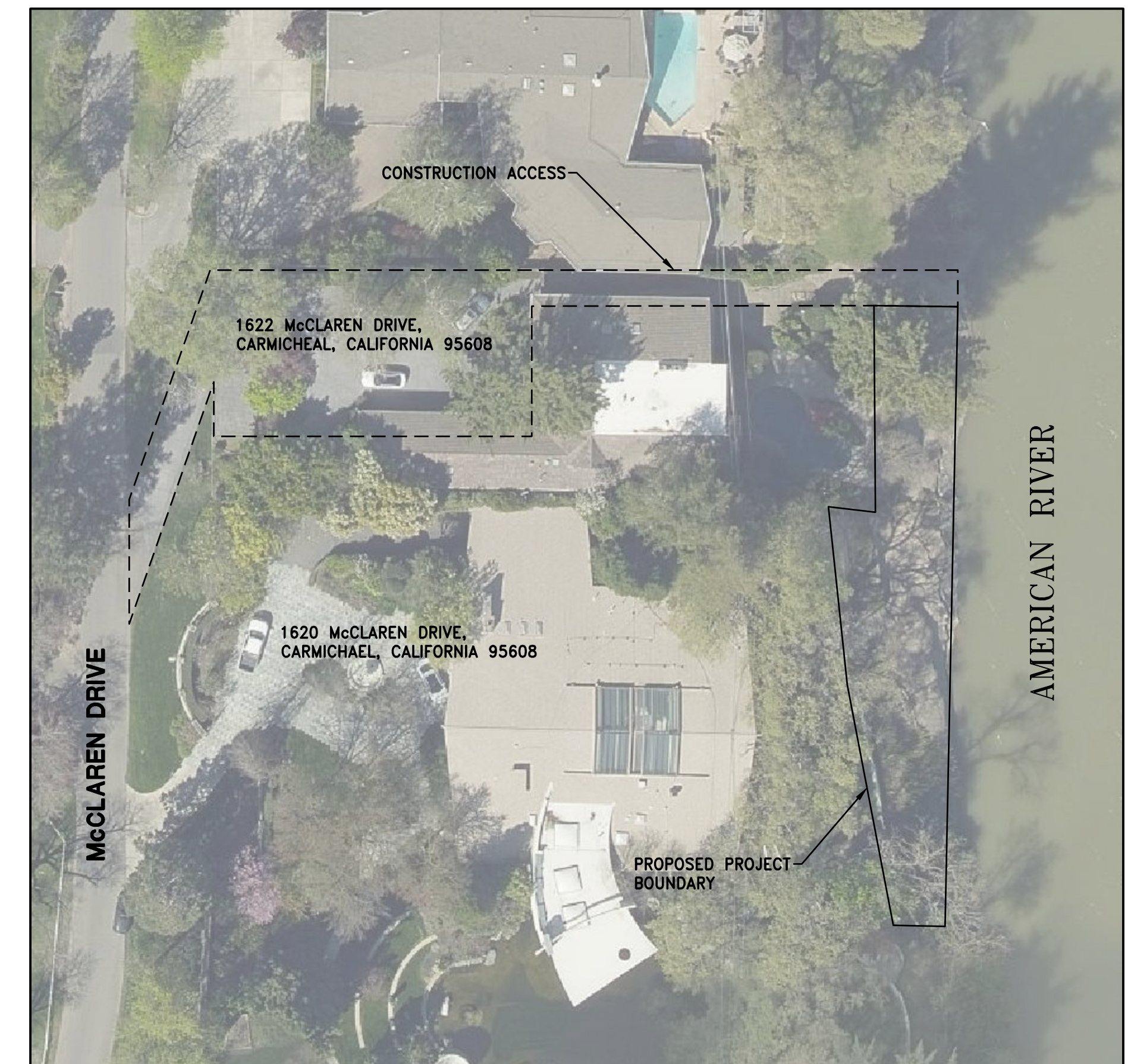
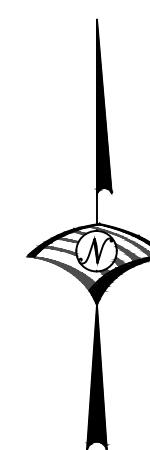
SHEET NUMBER	DRAWING NUMBER	DRAWING TITLE
1	G-001	TITLE SHEET AND SHEET INDEX
2	G-002	GENERAL NOTES AND SPECIFICATIONS
3	C-101	GENERAL PLAN
4	C-102	SITE ACCESS PHOTOS
5	C-103	EXISTING SITE PHOTOS
6	C-201	CROSS SECTIONS STA 0+30 TO 0+60
7	C-202	CROSS SECTIONS STA 0+70 TO 1+00
8	C-203	CROSS SECTIONS STA 1+10 TO 1+40
9	C-204	CROSS SECTIONS STA 1+50 TO 1+80
10	C-205	CROSS SECTIONS STA 1+90 TO 2+20
11	C-206	CROSS SECTIONS STA 2+30 TO 2+40
12	C-301	TYPICAL SECTIONS (1 OF 3)
13	C-302	TYPICAL SECTIONS (2 OF 3)
14	C-303	TYPICAL SECTIONS (3 OF 3)



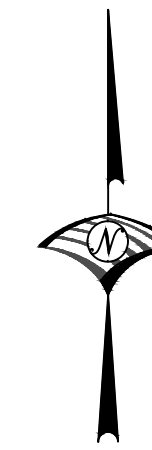
**VICINITY MAP**  
1"=200'



**LOCATION MAP**  
NOT TO SCALE

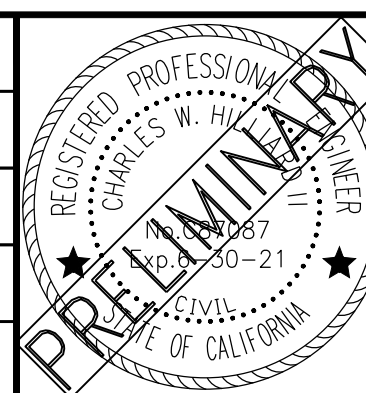


**SITE MAP**  
SCALE: 1"=40'



REV.	DATE	BY	CHK.	APPR.	DESCRIPTION

DESIGNED BY:  
C. HILLIARD  
DRAWN BY:  
J. KAUP  
CHECKED BY:  
J. KORS  
IN CHARGE:  
C. HILLIARD  
DATE:  
XX/XX/XXXX



**WOOD RODGERS**  
DEVELOPING • INNOVATIVE • DESIGN • SOLUTIONS  
3301 C STREET, BLDG. 100-B, SACRAMENTO, CA 95816  
PHONE: (916) 341-7769 FAX: (916) 341-7767

SUBMITTED \_\_\_\_\_ APPROVED \_\_\_\_\_

**FRIEDMAN & BASS PROPERTIES**  
**REVTMENT REPLACEMENT PROJECT**  
**TITLE SHEET**

VERIFY SCALES BAR IS ONE INCH ON ORIGINAL DRAWING. ADJUST SCALES FOR REDUCED PLOTS	
0" = 1"	
DRAWING NO.	SHEET
<b>G-001</b>	<b>1</b>

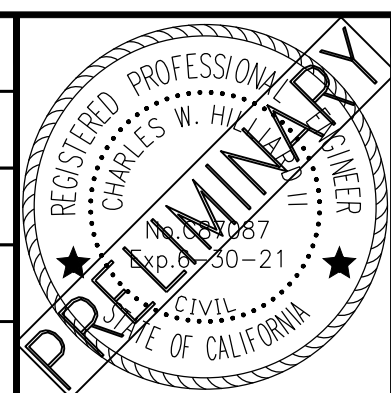
**60% DESIGN**

LEGEND:  
PROJECT AREA 



REV.	DATE	BY	CHK.	APPR.	DESCRIPTION


DESIGNED BY:  
C. HILLIARD  
DRAWN BY:  
J. KAUP  
CHECKED BY:  
J. KORS  
IN CHARGE:  
C. HILLIARD  
DATE:  
XX/XX/XXXX



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SUBMITTED \_\_\_\_\_ APPROVED \_\_\_\_\_

**FRIEDMAN & BASS PROPERTIES**  
**REVTMENT REPLACEMENT PROJECT**  
**GENERAL PLAN**

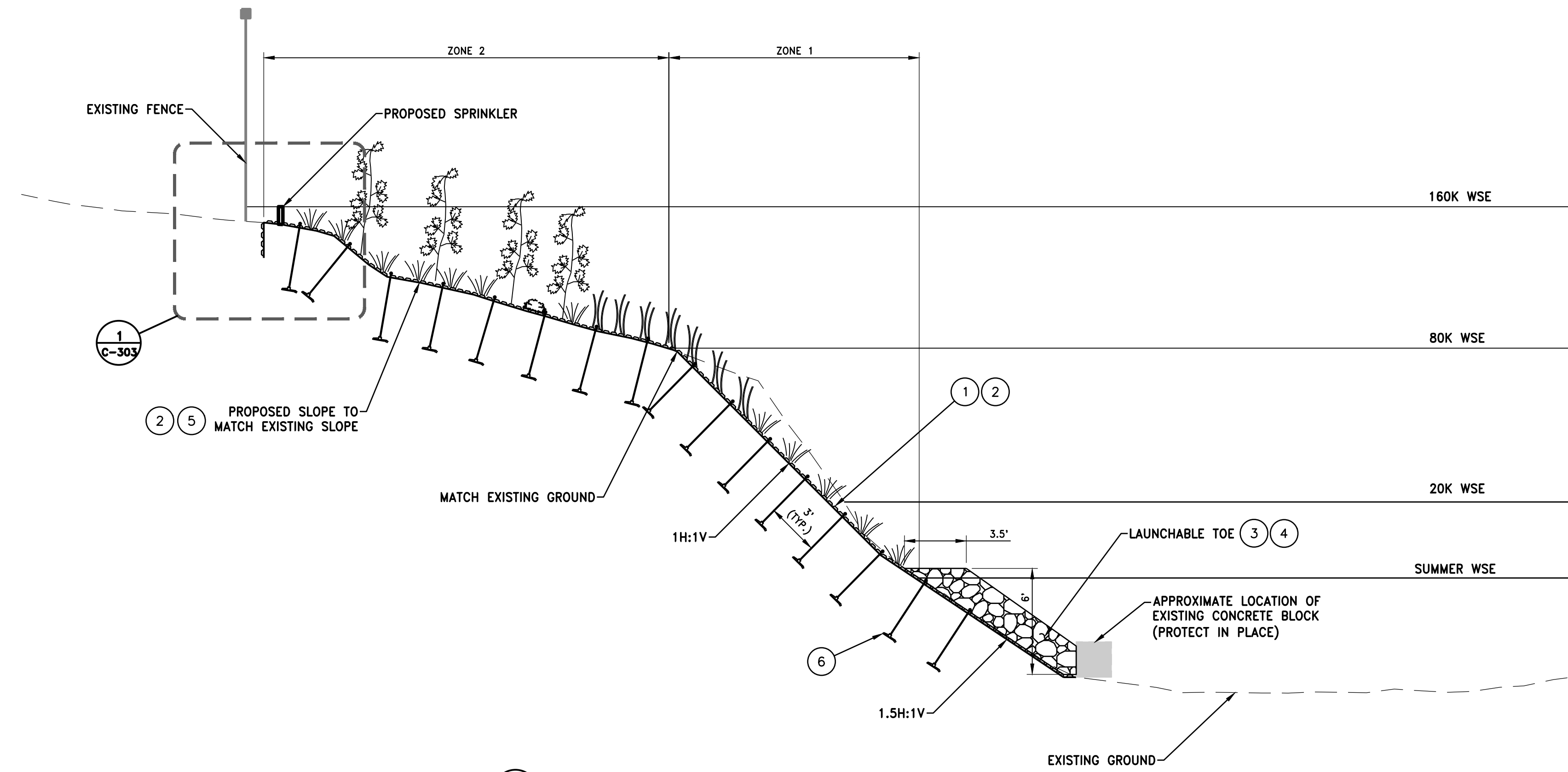
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<b>C-101</b>	<b>3</b>



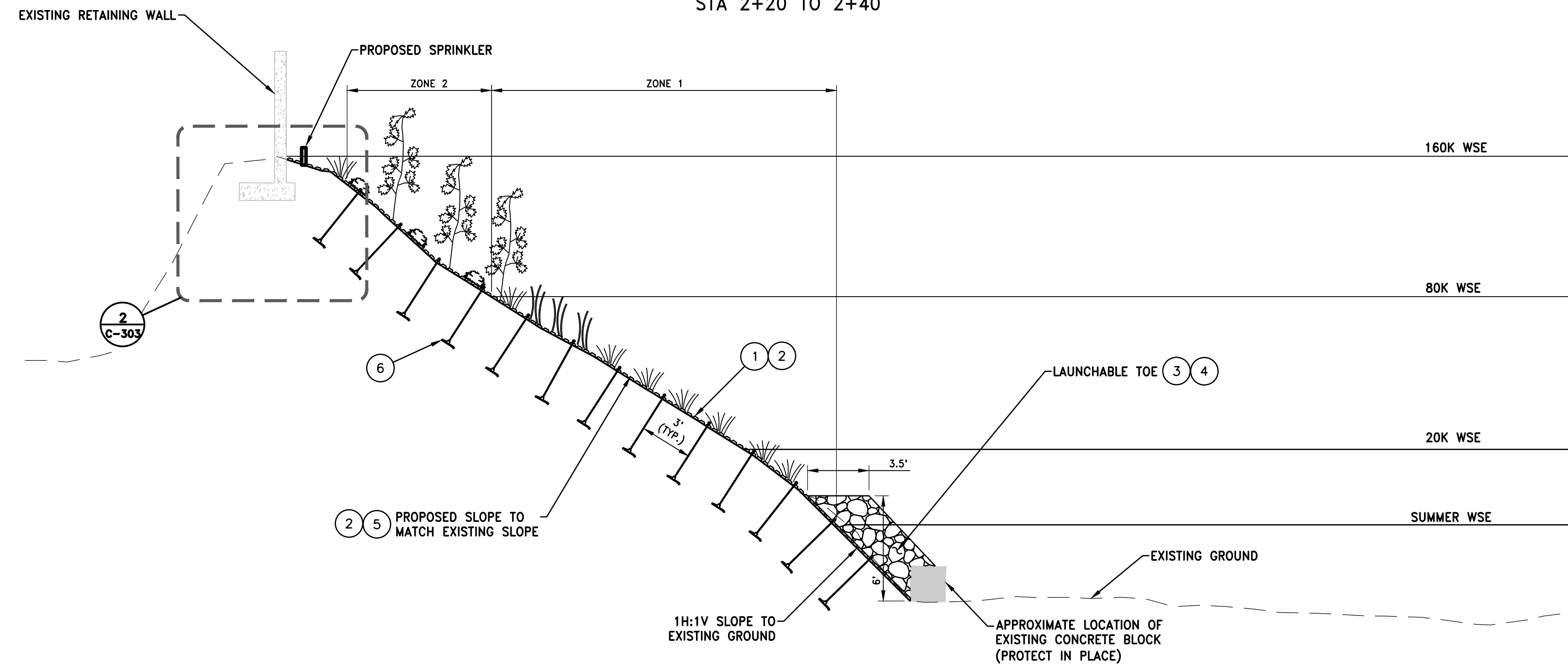
**60% DESIGN**

**CONSTRUCTION NOTES:**

- 1. INSTALL FLEXAMAT ROLLS WITH A 18" UNDERLAY EXTENSION, WITH THE UPSTREAM MATS OVER THE UNDERLAY EXTENSION OF DOWNSTREAM MATS
- 2. IF EXISTING SLOPE IS STEEPER THAN 1H:1V, EXCAVATE EXISTING SLOPE AS NEEDED TO ACHIEVE A MAXIMUM SLOPE OF 1H:1V
- 3. FILL LAUNCHABLE TOE SECTION AGAINST EXISTING CONCRETE BLOCK AS NEEDED
- 4. 2FT MINIMUM THICKNESS CALTRANS CLASS III RSP
- 5. ALL SUBGRADE SURFACES SHALL BE SMOOTH AND FREE OF ROCKS AND DEBRIS OF ANY KIND PRIOR TO PLACEMENT OF GEOTEXTILE AND FLEXAMAT
- 6. INSTALL CROSS-PLATE PERCUSSION ANCHORS BEGINNING AT ELEV 38' (2FT BELOW SUMMER WSE) AT 3' SPACING TO TOP OF REVETMENT SLOPE
- 7. ZONE 2 VEGETATION SHALL BE PLACED FROM TOP OF SLOPE TO 80K WSE (ELEV 53'). ZONE 1 VEGETATION SHALL BE PLACED FROM SUMMER WSE (ELEV 40') TO 80K WSE (ELEV 53').



**1**  
TYPICAL CROSS SECTION - FENCE  
STA 0+50 TO 1+70  
STA 2+20 TO 2+40  
SCALE: NTS



**2**  
TYPICAL CROSS SECTION - RETAINING WALL  
STA 1+80 TO 2+10  
SCALE: NTS



**3**  
TYPICAL FLEXAMAT INSTALLATION

- NOTE:**
- 1. REVETMENT PRODUCT IS TO BE "FLEXAMAT PLUS" THAT HAS CURELX II ECB AND RECYCLEX TRM-V UNDERLAYMENT
  - 2. EXAMPLE OF FLEXAMAT REVETMENT WITH SUBSTANTIAL TIME ALLOTTED FOR VEGETATIVE GROWTH IS DEPICTED IN THE PHOTO ABOVE

REV.	DATE	BY	CHK.	APPR.	DESCRIPTION

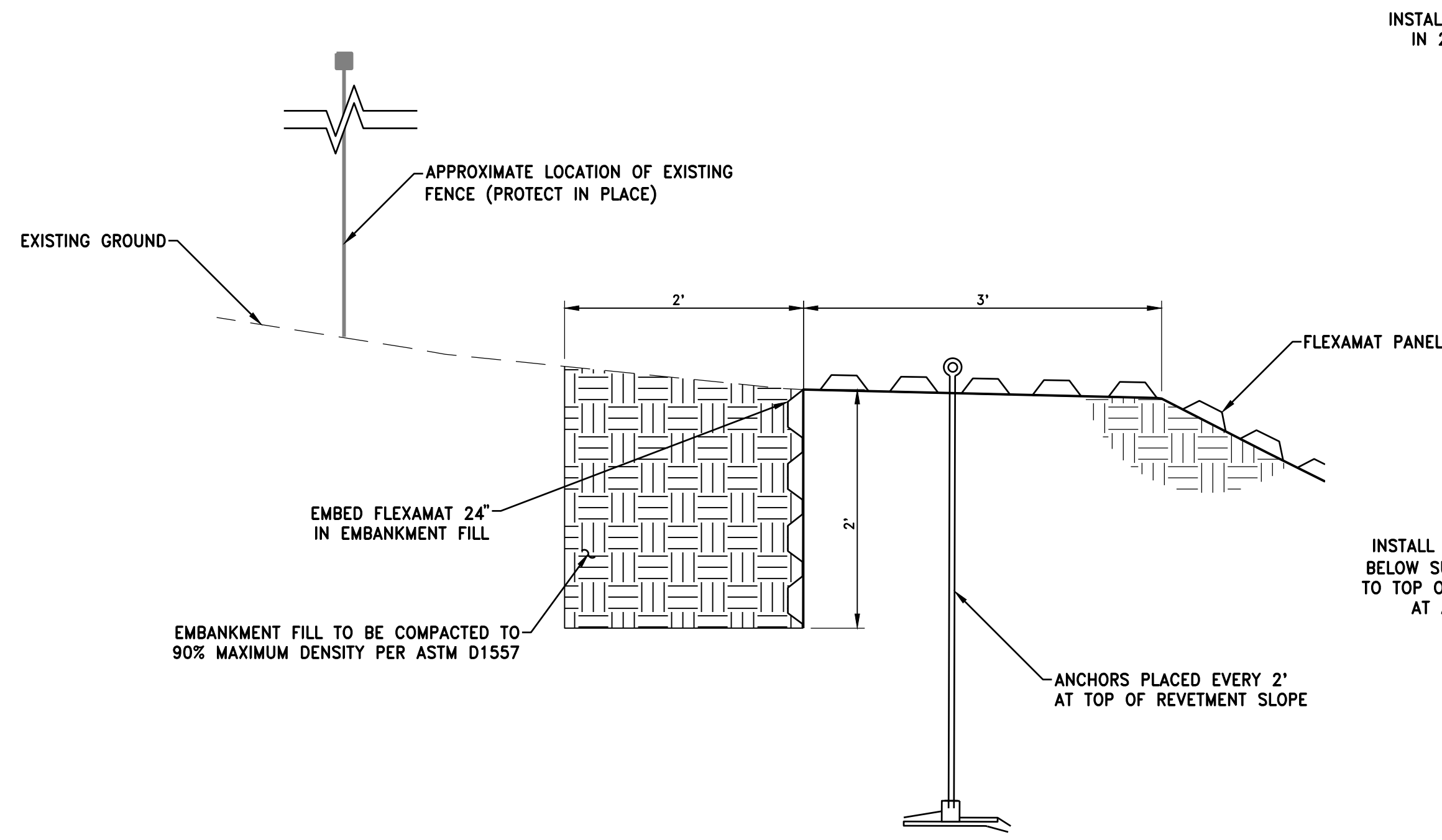
DESIGNED BY: C. HILLIARD		
DRAWN BY: J. KAUP		
CHECKED BY: J. KORS		
IN CHARGE: C. HILLIARD		
DATE: XX/XX/XXXX		
	SUBMITTED	APPROVED

<b>FRIEDMAN &amp; BASS PROPERTIES</b> <b>REVETMENT REPLACEMENT PROJECT</b> <b>TYPICAL DETAILS (2 OF 3)</b>	
DRAWING NO. <b>C-302</b>	SHEET <b>13</b>

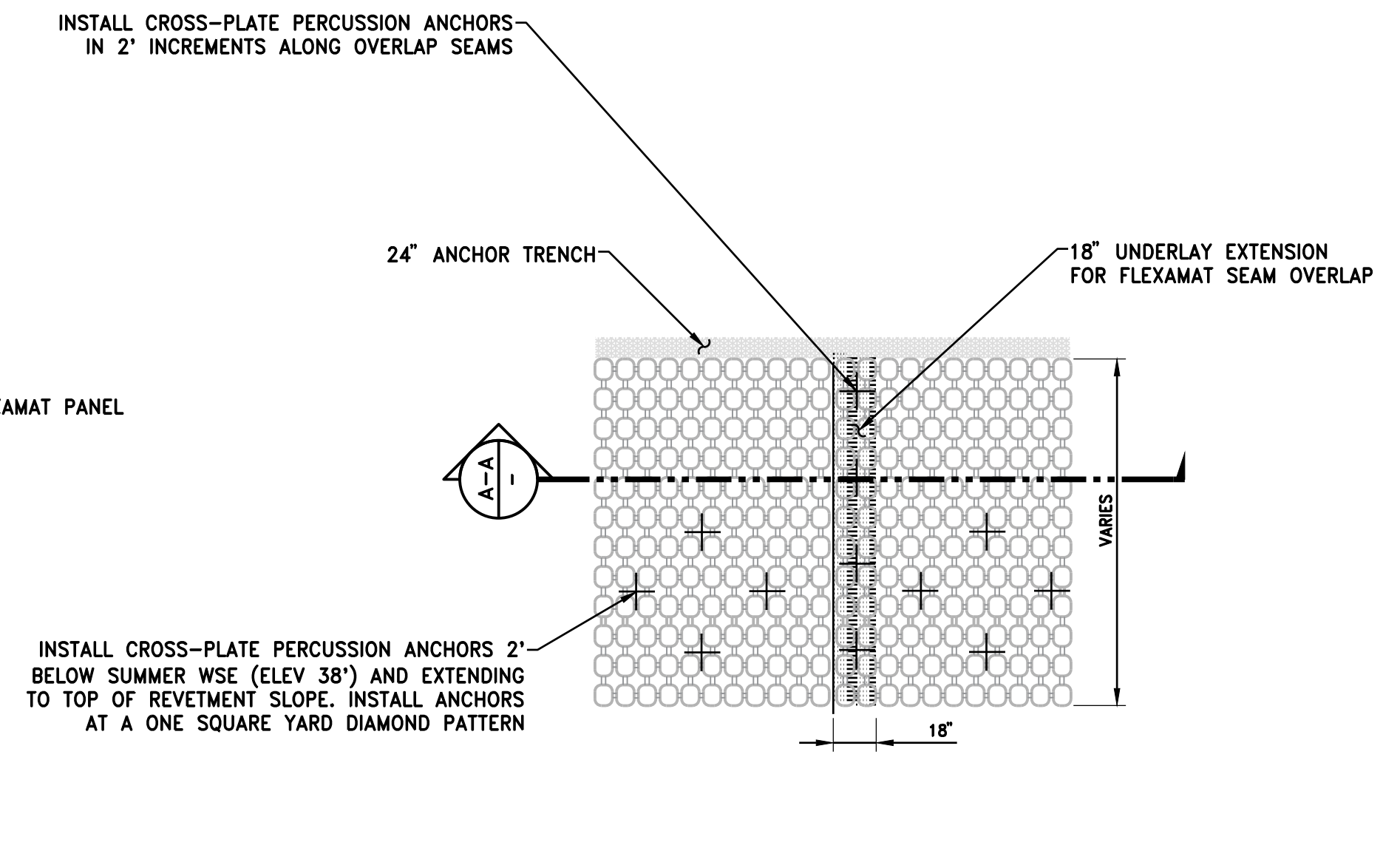
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0" = 1"

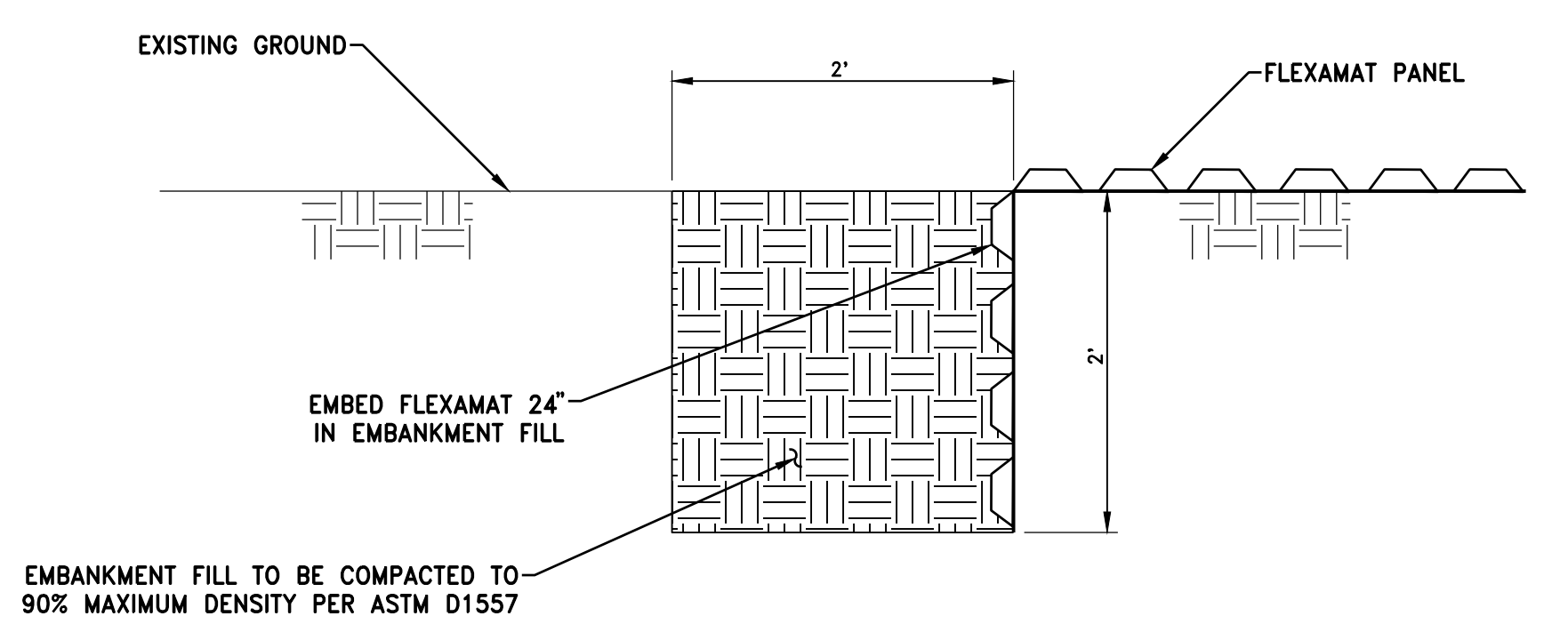
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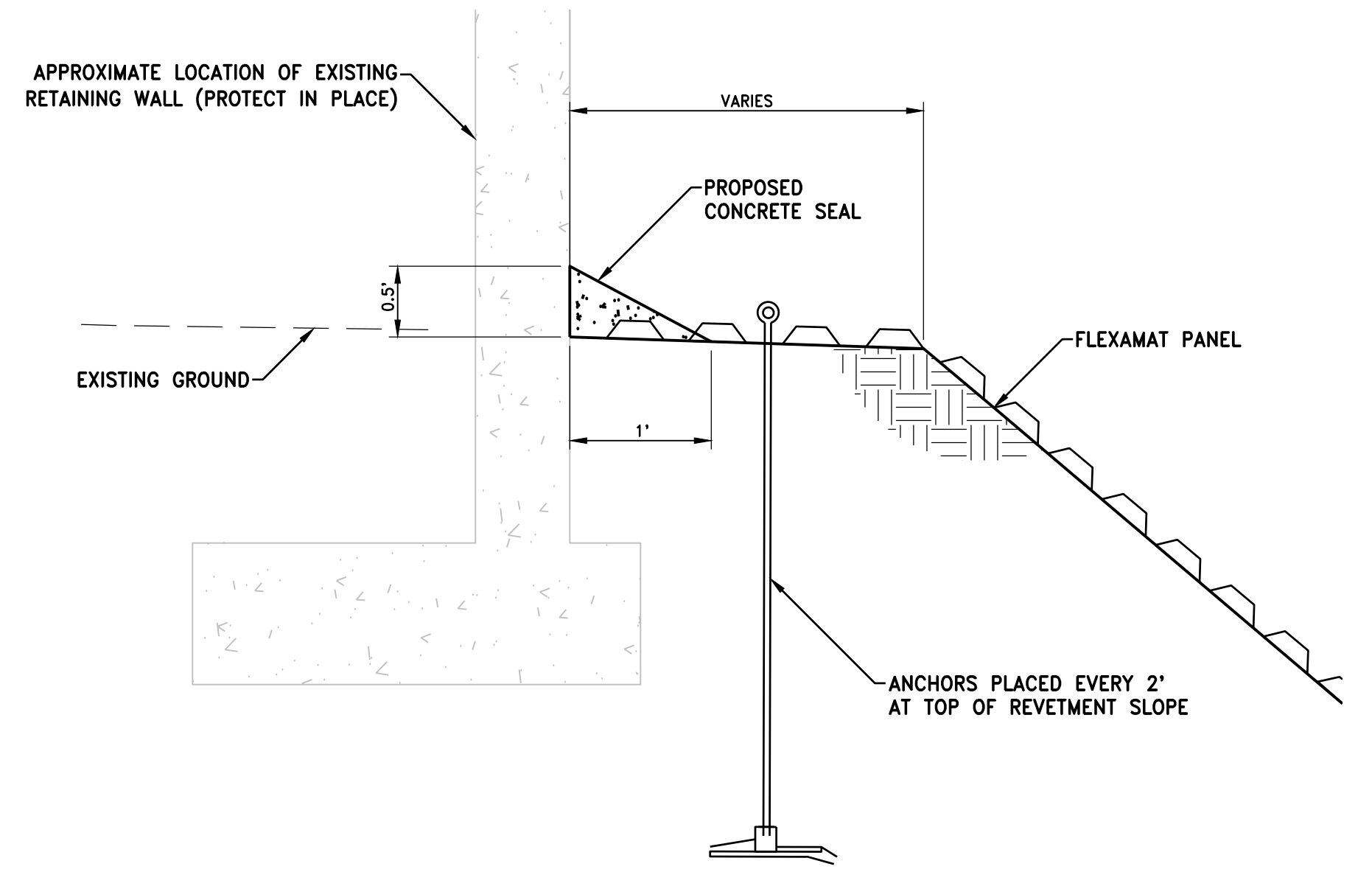
**1** TYPICAL TOP OF SLOPE TIE-IN - FENCE  
 STA 0+50 TO 1+70  
 STA 2+20 TO 2+40  
 SCALE: NTS



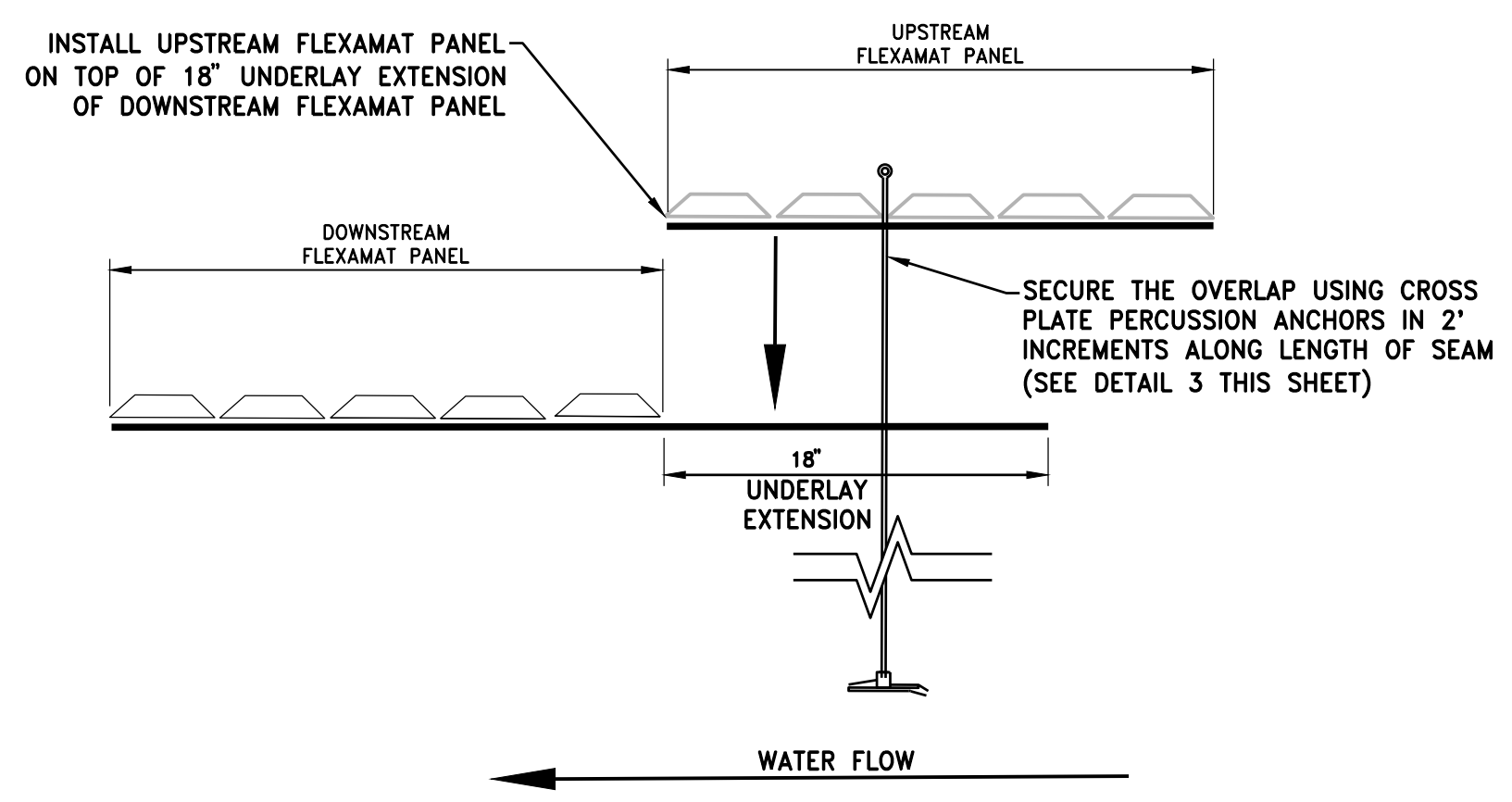
**3** FLEXAMAT OVERLAP PLAN  
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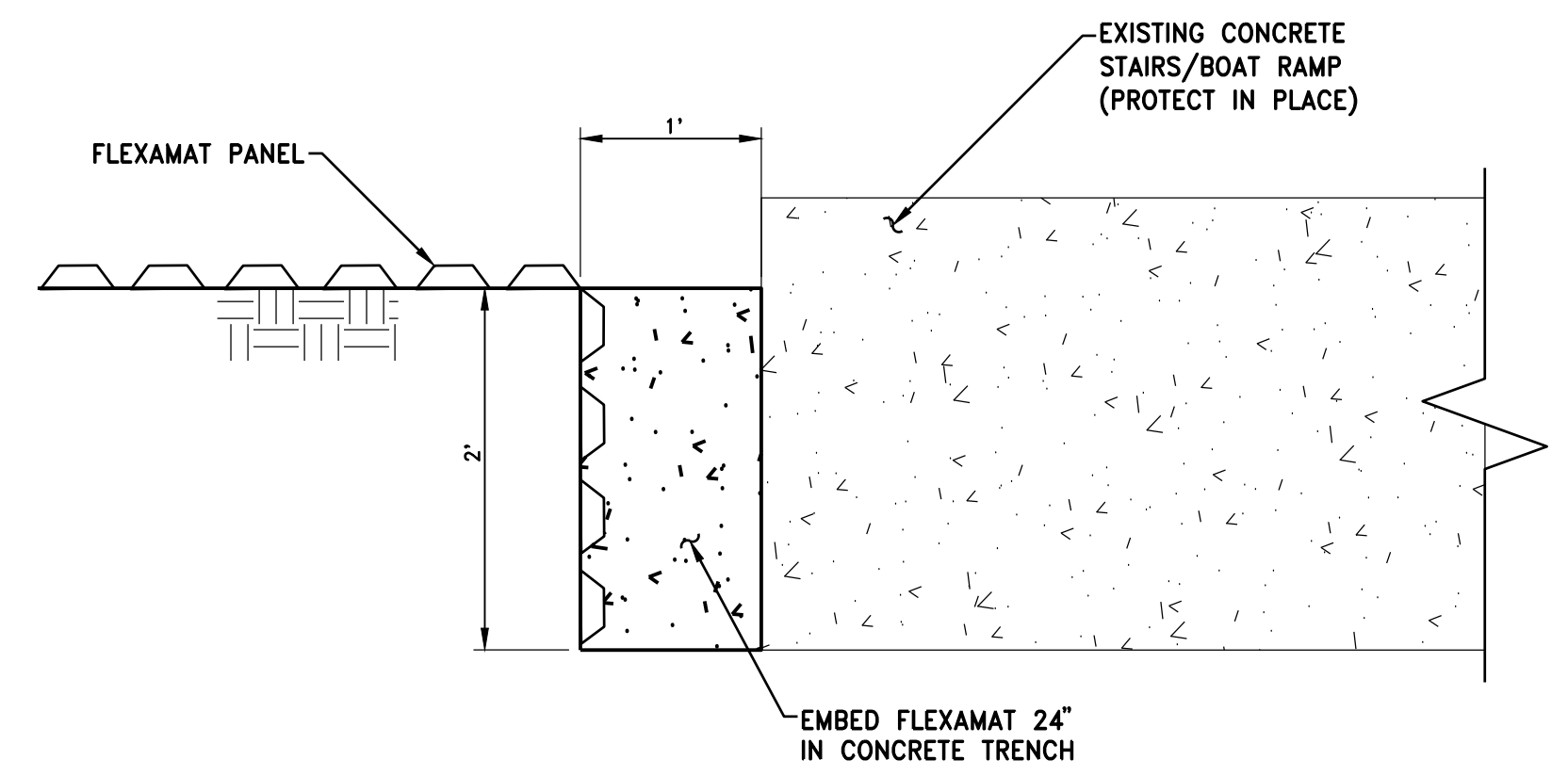
**4** DOWNSTREAM TIE-IN TRENCH DETAIL  
 STA 2+40  
 SCALE: NTS



**2** TYPICAL TOP OF SLOPE TIE-IN - RETAINING WALL  
 STA 1+80 TO 2+10  
 SCALE: NTS



**A-A** FLEXAMAT OVERLAP SECTION A-A  
 SCALE: NTS



**5** UPSTREAM TIE-IN TRENCH DETAIL  
 STA 2+30  
 SCALE: NTS

REV.	DATE	BY	CHK.	APPR.	DESCRIPTION

DESIGNED BY: C. HILLIARD  
 DRAWN BY: J. KAUP  
 CHECKED BY: J. KORS  
 IN CHARGE: C. HILLIARD  
 DATE: XX/XX/XXXX

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 PHONE: (916) 341-7769 FAX: (916) 341-7767

REGISTERED PROFESSIONAL ENGINEER  
 CHARLES W. HILLIARD  
 No. 10087  
 State of California  
**PRELIMINARY**

SUBMITTED \_\_\_\_\_ APPROVED \_\_\_\_\_

**FRIEDMAN & BASS PROPERTIES**  
**REVTMENT REPLACEMENT PROJECT**  
 TYPICAL DETAILS (3 OF 3)

VERIFY SCALES  
 BAR IS ONE INCH ON ORIGINAL DRAWING. ADJUST SCALES FOR REDUCED PLOTS  
 0" = 1"

DRAWING NO. **C-303** SHEET **14**

**APPLICATION FOR A CENTRAL VALLEY FLOOD PROTECTION BOARD  
ENCROACHMENT PERMIT**

**Application No.** \_\_\_\_\_  
(For Office Use Only)

1. Description of proposed work being specific to include all items that will be covered under the issued permit.

The proposed project is to repair the damaged bank protection site along the American River located at 1620 McClaren Drive in Carmichael, CA. The original protection has visible cracks and the bank material beneath is exposed and eroding. This application covers approximately 160 feet of the bank repair work. We are also requesting that permit 4352 issued to Jack Steiner on August 5, 1963 be transferred to Ms. Marcy Friedman.

2. Project

Location: Sacramento County, in Section 56  
(N) (E)  
Township: 9 North (S), Range: 6 East (W), M. D. B. & M.  
Latitude: 38.594179° Longitude: -121.333174°  
Stream : American River , Levee : North Designated Floodway: Yes  
APN: 28902830440000

3. Ms. Marcy Friedman of 1620 McClaren Drive  
Name of Applicant / Land Owner Address

Carmichael CA 95608  
City State Zip Code Telephone Number  
marcy@marcyfriedman.com  
E-mail

4. Jay Punia of Wood Rodgers Inc.  
Name of Applicant's Representative Company

Sacramento CA 95816 (916) 870-0770  
City State Zip Code Telephone Number  
jpunia@woodrogers.com  
E-mail

5. Endorsement of the proposed project from the Local Maintaining Agency (LMA):

We, the Trustees of \_\_\_\_\_ approve this plan, subject to the following conditions:  
Name of LMA

- Conditions listed on back of this form       Conditions Attached       No Conditions

\_\_\_\_\_  
Trustee Date      Trustee Date

\_\_\_\_\_  
Trustee Date      Trustee Date

### APPLICATION FOR A CENTRAL VALLEY FLOOD PROTECTION BOARD ENCROACHMENT PERMIT

6. Names and addresses of adjacent property owners sharing a common boundary with the land upon which the contents of this application apply. If additional space is required, list names and addresses on back of the application form or an attached sheet.

Name	Address	Zip Code
See attached		

7. Has an environmental determination been made of the proposed work under the California Environmental Quality Act of 1970?  Yes  No  Pending

If yes or pending, give the name and address of the lead agency and State Clearinghouse Number:

\_\_\_\_\_  
\_\_\_\_\_

SCH No. \_\_\_\_\_

8. When is the project scheduled for construction? \_\_\_\_\_

9. Please check exhibits accompanying this application.

- A.  Regional and vicinity maps showing the location of the proposed work.
- B.  Drawings showing plan view(s) of the proposed work to include map scale.
- C.  Drawings showing the cross section dimensions and elevations (vertical datum?) of levees, berms, stream banks, flood plain,
- D.  Drawings showing the profile elevations (vertical datum?) of levees, berms, flood plain, low flow, etc.
- E.  A minimum of four photographs depicting the project site.

\_\_\_\_\_  
Signature of Applicant

\_\_\_\_\_  
Date

Include any additional information:

See the attached plans, specifications and x-sections

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**APPLICATION FOR A CENTRAL VALLEY FLOOD PROTECTION BOARD  
ENCROACHMENT PERMIT**

**Application No.** \_\_\_\_\_  
(For Office Use Only)

1. Description of proposed work being specific to include all items that will be covered under the issued permit.

The proposed project is to repair the damaged bank protection site along the American River located at 1622 McClaren Drive in Carmichael, CA 956. The original protection has visible cracks and the bank material beneath is exposed and eroding. This application covers approximately 90 feet of the bank repair work. We are also requesting that permit 4902 issued to Jamee Eddy on April 5, 1965 be transferred to Dr. Lawrence Bass.

2. Project

Location: Sacramento County, in Section 56  
(N) (E)  
Township: 9 North (S), Range: 6 East (W), M. D. B. & M.  
Latitude: 38.594179° Longitude: -121.333174°  
Stream : American River , Levee : North Designated Floodway: Yes  
APN: 28902830440000

3. Dr. Lawrence Bass of 1622 McClaren Drive  
Name of Applicant / Land Owner Address

Carmichael CA 95608  
City State Zip Code Telephone Number  
ljbass@surewest.net  
E-mail

4. Jay Punia of Wood Rodgers Inc.  
Name of Applicant's Representative Company

Sacramento CA 95816 (916) 870-0770  
City State Zip Code Telephone Number  
jpunia@woodrogers.com  
E-mail

5. Endorsement of the proposed project from the Local Maintaining Agency (LMA):

We, the Trustees of \_\_\_\_\_ approve this plan, subject to the following conditions:  
Name of LMA

Conditions listed on back of this form  Conditions Attached  No Conditions

\_\_\_\_\_  
Trustee Date Trustee Date  
\_\_\_\_\_  
Trustee Date Trustee Date

### APPLICATION FOR A CENTRAL VALLEY FLOOD PROTECTION BOARD ENCROACHMENT PERMIT

6. Names and addresses of adjacent property owners sharing a common boundary with the land upon which the contents of this application apply. If additional space is required, list names and addresses on back of the application form or an attached sheet.

Name	Address	Zip Code
See attached		

7. Has an environmental determination been made of the proposed work under the California Environmental Quality Act of 1970?  Yes  No  Pending

If yes or pending, give the name and address of the lead agency and State Clearinghouse Number:

\_\_\_\_\_  
\_\_\_\_\_

SCH No. \_\_\_\_\_

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- E.  A minimum of four photographs depicting the project site.

\_\_\_\_\_  
Signature of Applicant Date

Include any additional information:  
See the attached plans, specifications and x-sections

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_