

**Meeting of the Central Valley Flood Protection Board  
November 20, 2015**

**Staff Report - Title 33 U.S.C. Section 408 Request  
to U.S. Army Corps of Engineers, Sacramento District**

**On behalf of Sacramento Area Flood Control Agency  
North Sacramento Streams Levee Improvement Project, Sacramento County**

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**1.0 –ITEM**

Consider Central Valley Flood Protection Board (Board) approval to send a letter (Attachment A) to the U.S. Army Corps of Engineers (USACE) Sacramento District requesting permission to consider alteration of a portion of the Sacramento River Flood Control Project (SRFCP) along the Natomas East Main Drainage Canal (NEMDC) east (left) bank, Arcade Creek north (right) bank, and Arcade Creek south (left) bank levees based on the North Sacramento Streams (NSS) Levee Improvement Project (Application No. 19055) and pursuant to Title 33, U.S.C. 408 (Section 408).

The letter states:

- That the Board has reviewed the relevant documents and has determined that the improvements will not be injurious to the public interest and will not impair the usefulness of the SRFCP.
- That within 180 days of completion of the proposed alteration, the Board will provide both information to the USACE for the purpose of preparing a revised Operation and Maintenance Manual for this portion of the SRFCP and As-built Plans and Specifications for the alteration.
- That if the proposed project is formally incorporated within the federal SRFCP by the USACE, the State of California, acting through the Board, will accept the altered project for operation and maintenance and hold and save the United States free from damage due to the construction works.

This is not a flood system improvement project evidentiary hearing, and no construction permit is being considered for issuance at this time. The letter is intended only to facilitate USACE review of the project. This action is based upon Board staff's review of 65% plans and specifications. Final project approval will be considered at a future evidentiary hearing.

## **2.0 – APPLICANT**

Sacramento Area Flood Control Agency (SAFCA)

## **3.0 – PROJECT LOCATION**

The project area is located in the City of Sacramento (approximate population of 485,000, 2010 census) north of the American River, and east of the Natomas Basin along the NEMDC and Arcade Creek (Attachment B).

The NEMDC is a north to south canal beginning at the southern terminus of the Pleasant Grove Creek Canal, near Sankey Road, traveling south to its terminus at the American River. The NSS Project would alter approximately 2,200 linear-feet of the NEMDC east levee beginning at the intersection of the Arcade Creek south levee.

Arcade Creek is located generally east to west and is one of several local streams collecting and conveying water from the eastern floodplains to the NEMDC. The NSS Project would alter approximately 7,200 linear-feet of the Arcade Creek north levee and 6,500 linear-feet of the Arcade Creek south levee.

## **4.0 – PROJECT DESCRIPTION**

The primary purpose of the NSS Project is to provide a 200-year level of flood protection for the City of Sacramento. The NSS Project would primarily address seepage deficiencies and slope stability concerns through improvements to approximately three (3) miles of levee along the NEMDC east, Arcade Creek north, and Arcade Creek south levees. Remediation measures include slurry cutoff walls, relief wells, and waterside slope replacement (Attachment C).

Borrow will be obtained from SAFCA's "2K" borrow site, adjacent to NEMDC approximately 4.5 miles north of the NAS project area. The "2K" site is adjacent to the "2L" borrow area used previously by SAFCA for levee improvements and reclaimed for habitat enhancement (Attachment B). Following borrow activities the 2K site will be planted to create freshwater marsh and seasonal wetland habitat to provide mitigation for project impacts to wetland habitat. Upland areas disturbed during borrow activities will be seeded with native perennial grasses.

Additional mitigation to compensate for the NSS project impacts is proposed at the 6.5-acre Robla Creek Mitigation Site (Attachment B), where SAFCA is proposing to create a wetland, riparian woodland, and oak savannah habitat along the north (right) bank of Robla Creek, downstream of the Rio Linda Boulevard Bridge.

The project does not propose any raises to existing levees. Construction is proposed to begin in 2016 and is expected to be completed in 2017.

## **5.0 – AUTHORITY OF THE BOARD**

California Water Code § 8534, 8590 – 8610.5, and 8700 – 8710

Title 23:

- § 6 - Need for a Permit
- § 106 - Existing Encroachments within the Adopted Plan of Flood Control
- § 112 - Streams Regulated and Nonpermissible Work Periods
- § 116 - Borrow and Excavation Activities – Land and Channel
- § 120 - Levees
- § 121 - Erosion Control
- § 131 - Vegetation

Rivers and Harbors Act of 1899, Title 33 United States Code, Section 408

## **6.0 – PROJECT ANALYSIS**

### **6.1 – Project Background**

Proposed NSS Project improvements are a component of the USACE American River Watershed California, Common Features General Reevaluation Report (GRR) issued in March 2015. The proposed alteration is anticipated to be recommended to Congress as part of the tentatively selected plan. SAFCA and the USACE have executed a Memorandum of Understanding for credit consideration pursuant to Section 221 of the Flood Control Act of 1970 for the NSS Project. Construction of the NSS Project is anticipated to be completed by 2017 prior to any GRR authorized construction. The advance work will provide interim flood risk reduction to the City of Sacramento and will not preclude USACE from implementing work proposed in the GRR.

The proposed alterations include cutoff walls, relief wells, and slope replacement and shaping. The cutoff walls and relief wells are proposed to address existing seepage deficiencies of the authorized project and meet modern levee standards. The slope replacement and shaping are proposed to address stability deficiencies of the authorized project and meet modern levee standards.

While the proposed project was designed for a flood event in excess of the authorized design flow, past performance of the levee during flood events has demonstrated that seepage and stability deficiencies exist in the identified project reaches. The proposed alterations would correct these problems and provide a 200-year level of flood protection (including the authorized design).

The proposed alterations would allow the authorized project to function as it was originally intended (i.e., without seepage or instability) and would therefore be eligible for rehabilitation assistance under Public Law (PL) 84-99, as it is integral to the proper functioning of the authorized project. No changes to levee geometry are proposed, therefore there will be no impairment to the authorized project.

## **6.2 – Hydraulic Review**

The proposed project does not include any waterside alterations to the levee or floodway. The project proposes to degrade the levee and restore it to the existing geometry, resulting in no change to channel hydraulics for the SRFCP. Board staff has determined that no hydraulic analysis is needed for either application.

## **6.3 – Geotechnical Review**

Board staff has reviewed the geotechnical information provided by SAFCA for their 65% design and has determined that the proposed project is expected to result in no adverse geotechnical impacts to the SRFCP levees. The current design is expected to comply with applicable Title 23 and Urban Levee Design Criteria (ULDC) standards.

## **6.4 – Real Estate Requirements**

The NSS Project will require acquisition of mostly temporary real estate rights from local agencies including Reclamation District 1000, the American River Flood Control District, the Sacramento-San Joaquin Drainage District, and the City of Sacramento. A few parcels are owned privately by residents, Pacific Gas and Electric Company, Western Pacific Railroad Company (Union Pacific), and the Sacramento Northern Railway. In addition, SAFCA owns some of the parcels. Permanent acquisitions are not anticipated. SAFCA anticipates acquiring temporary construction easements for approximately 50 parcels.

Borrow will be obtained from lands owned by Reclamation District 1000. Mitigation will occur on lands owned by SAFCA and/or the Sacramento-San Joaquin Drainage District. Mitigation will occur on SAFCA-owned lands.

## **6.5 – Environmental Review**

SAFCA as the lead State agency prepared an Environmental Impact Report (EIR) pursuant to the California Environmental Quality Act (CEQA) for this Levee Accreditation Project. USACE will comply with the National Environmental Policy Act (NEPA) through preparation of an Environmental Assessment (EA). It is anticipated that the EA will be released for public review in the January-March 2016 timeframe. Board responsible agency CEQA findings will be developed by staff.

## **6.6 – Anticipated Project Benefits**

The proposed NSS project, has the following benefits:

- It brings the NSS into compliance with the FEMA and current ULDC standards
- It provides 200-year protection to the surrounding urban area of Sacramento consistent with the requirements of Senate Bill 5 (2008)
- It remediates current geotechnical deficiencies along the NEMDC east levee and the Arcade Creek north and south levees

## **6.7 – Consistency with Central Valley Flood Protection Plan**

Based on information provided by SAFCA to date, it is the Board staff's opinion that the proposed project will be consistent with the adopted 2012 Central Valley Flood Protection Plan (CVFPP) State System-wide Investment Approach, and with the 2017 CVFPP Sacramento Basin-wide planning efforts (Attachment D).

## **7.0 – STAFF RECOMMENDATION**

Staff recommends that the Board:

### **Approve:**

- the Draft Section 408 Request Letter to USACE (Attachment A), in substantially the form provided; and

### **Direct:**

- the Executive officer to sign and send the letter to the USACE, Sacramento District.

**8.0 – LIST OF ATTACHMENTS**

A – Draft USACE 408 Request Letter

B – Project Maps

C – Typical Project Design

D – Compliance with CVFPP

E – Project Summary Report

Technical Review:

Deb Biswas, PhD, PE, Engineer

Document Review:

Nancy Moricz, PE, Senior Engineer

Eric Butler, PE, Projects and Environmental Branch Chief

Nicole Rinke, Deputy Attorney General

Leslie Gallagher, Executive Officer

**CENTRAL VALLEY FLOOD PROTECTION BOARD**

3310 El Camino Ave., Rm. 151  
SACRAMENTO, CA 95821  
(916) 574-0609 FAX: (916) 574-0682  
PERMITS: (916) 574-0685 FAX: (916) 574-0682



November 20, 2015

Colonel Michael J. Farrell, District Commander  
U.S. Army Corps of Engineers, Sacramento District  
1325 J Street  
Sacramento, California 95814

Subject: Sacramento Area Flood Control Agency, North Sacramento Streams Levee Improvement Project, Title 33 United States Code Section 408 Request (Application No. 19055)

Dear Colonel Farrell:

Pursuant to Title 33 United States Code Section 408 (Section 408) as described by the U.S. Army Corps of Engineers (USACE) Engineering Circular 1165-2-216, Section 7c(2) *Policy and Procedural Guidance for Processing Requests to Alter US Army Corps of Engineers Civil Works Projects Pursuant to 33 USC 408*, the Central Valley Flood Protection Board (Board), on behalf of the Sacramento Area Flood Control Agency (SAFCA), is requesting permission to alter approximately three (3) miles of Sacramento River Flood Control Project (SRFCP) levees along the Natomas East Main Drainage Canal east (left bank) levee, Arcade Creek north (right bank) levee, and Arcade Creek south (left bank) levee in Sacramento County, California. These alterations are components of SAFCA's North Sacramento Streams (NSS) Levee Improvement Project.

The SRFCP was authorized by the Flood Control Act of March 1917 and modified by various Flood Control and/or River and Harbor Acts in May 1928, August 1937, and August 1941. Additional modifications on the Sacramento River and tributaries were authorized by the Flood Control Acts of December 1944 and May 1950, and were incorporated under Sacramento River and Major and Minor Tributaries. Although construction of the SRFCP began in 1918 many of the levees had been previously constructed by local interests, and were subsequently modified and adopted as part of the SRFCP. The Board has participated as the local sponsor of the SRFCP and is responsible for the operation and maintenance of project facilities.

Proposed alterations include construction of cutoff walls, installation of relief wells, and replacement of waterside slope. Borrow will be obtained from SAFCA's "2K" borrow site. Following borrow activities; the 2K site will be planted to create a freshwater marsh and

seasonal wetland habitat to provide mitigation for project impacts to wetland habitat. Upland areas disturbed during borrow activities will be seeded with native perennial grasses, and additional mitigation to compensate for NSS project impacts is proposed at the 6.5-acre Robla Creek Mitigation Site, where SAFCA is proposing to create a wetland, riparian woodland, and oak savannah habitat along the north (right) bank of Robla Creek downstream of the Rio Linda Boulevard Bridge.

The proposed alterations are also being considered by the USACE as part of the American River Common Features Project. The Board, on behalf of the State of California, anticipates seeking credit for the proposed alterations under Section 221 of the Flood Control Act of 1970. Approval under Section 404 of the Clean Water Act is also anticipated to be required for these proposed alterations. The proposed project will require lands owned in fee or easement by the non-Federal sponsor, and will not require any lands owned by the USACE.

Based on review of 65% plans, the Board concludes the following:

- That the Board has reviewed the relevant documents and has determined that the improvements will not be injurious to the public interest and will not impair the usefulness of the SRFCP.
- That within 180 days of completion of the proposed alteration, the Board will provide both information to the USACE for the purpose of preparing a revised Operation and Maintenance Manual for this portion of the SRFCP and As-built Plans and Specifications for the alteration.
- That if the proposed project is formally incorporated within the federal SRFCP by the USACE, the State of California, acting through the Board, will accept the altered project for operation and maintenance and hold and save the United States free from damage due to the construction works.

If you have any questions regarding this request, please contact me at (916) 574-0609, or your staff may contact Deb Biswas, Engineer, Projects and Environmental Branch at (916) 574-2383 or by email at [Debabrata.Biswas@water.ca.gov](mailto:Debabrata.Biswas@water.ca.gov).

Sincerely,

Leslie Gallagher  
Executive Officer

cc and attachments: (Please see attached list)

Enclosure: Attachments for project application materials including all maps, 65% design drawings and specifications, and analyses submitted by SAFCA to the Board

cc: (via electronic file)

Mr. Rick Johnson, Executive Director  
Sacramento Area Flood Control Agency

Mr. Pete Ghelfi, Director of Engineering  
Sacramento Area Flood Control Agency

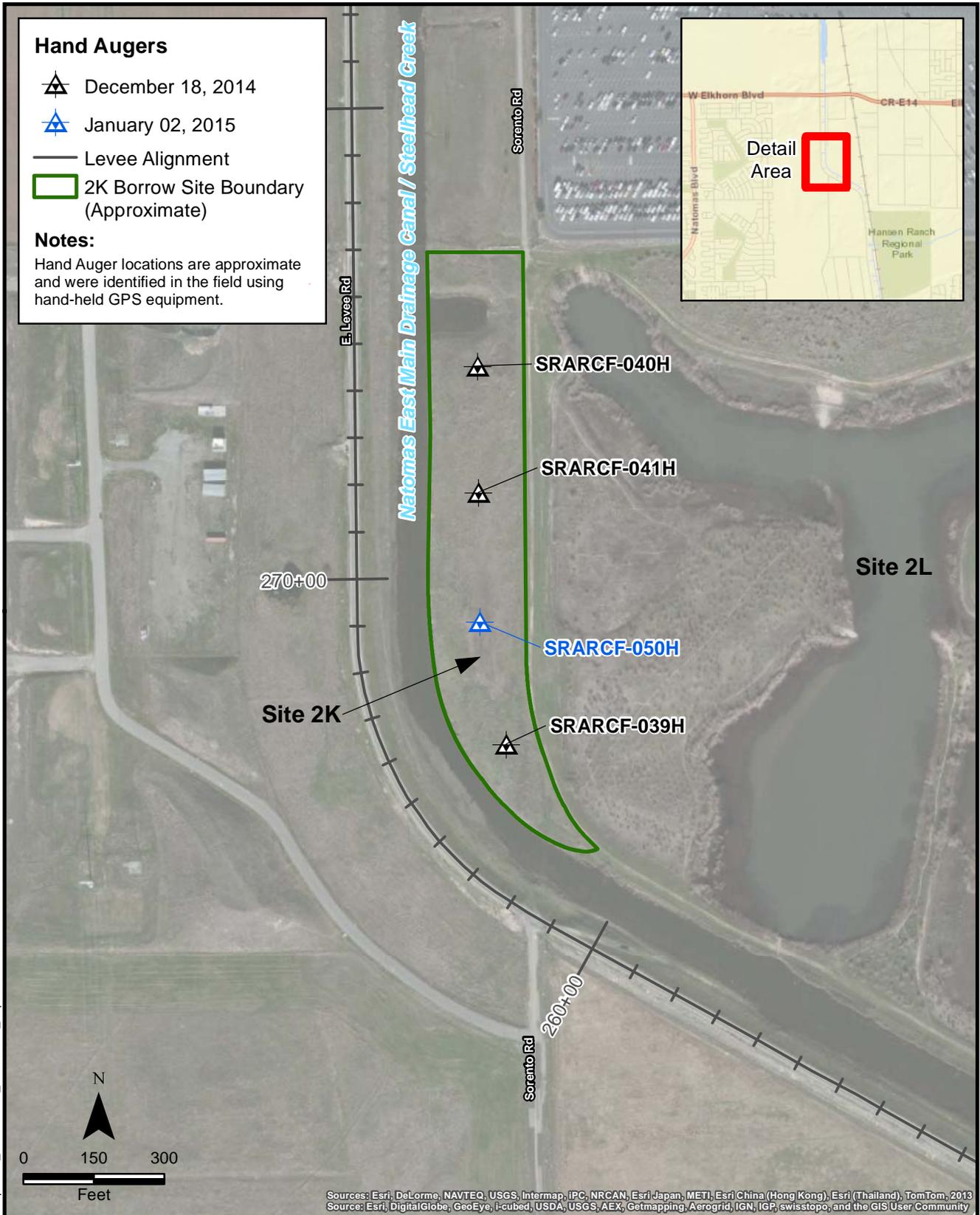
Ms. Claire Marie Turner, Project Manager  
MBK Engineers



# SAFCA Levee Accreditation Project

## North Sacramento Streams Levee Improvement Reaches





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**Exploration Locations**  
SAFCA Borrow Site 2K

SAFCA NORTH AREA STREAMS  
LEVEE IMPROVEMENT PROJECT

**Figure**  
1



# SACRAMENTO AREA FLOOD CONTROL AGENCY

## PROJECT PLANS FOR CONSTRUCTION OF

### North Sacramento Streams Levee Improvement Project

### Robla Creek Aquatic and Riparian Habitat Creation Project

65% Submittal  
July 20, 2015

ROBLA CREEK  
AQUATIC AND RIPARIAN  
HABITAT CREATION PROJECT

#### PROJECT OVERVIEW

The Robla Creek Aquatic and Riparian Habitat Creation Project proposes to create wetland, riparian woodland, and oak savannah habitat along the north bank of Robla Creek to mitigate for unavoidable habitat losses during the North Sacramento Streams Levee Improvement Project. The footprint of the approximately 6-acre mitigation site extends for approximately 1,800 feet along the creek, ranging from approximately 100 to 165 feet wide from the existing top of bank to an existing fence that bounds the north end of the site.

Mitigation construction would consist of grading the creek bank to a gentler slope and planting slopes with riparian vegetation, excavating wetland benches and planting them with tules, and planting upland areas with valley oak and native grasses. Constructing the gentler slope provides a more stable bank edge, increases hydraulic capacity on site, and provides an appropriate slope for riparian planting. Establishing wetland and riparian plantings would increase structural diversity and improve habitat functions and values.

PAGE	DRAWING INDEX
1	L-1 Cover Sheet
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3	L-3 Access Plan
4	L-4 Grading Plan
5	L-5 Grading Plan
6	L-6 Grading Plan
7	L-7 Planting Legend
8	L-8 Planting Plan
9	L-9 Planting Plan
10	L-10 Planting Plan
11	L-11 Typical Sections
12	L-12 Details

#### PREPARED FOR:

Sacramento Area Flood Control Agency  
1007 7th Street  
7th Floor  
Sacramento, CA 95814  
(916) 874-7606  
Contact: Peter Buck, Director, Natural Resources

#### PROJECT LANDSCAPE ARCHITECT:

AECOM  
2020 L Street, Suite 400  
Sacramento, CA 95811  
(916) 414-5800  
Contact: Kesha Chapman, Project Manager



2020 L Street, Suite 400  
Sacramento CA 95811  
Tel: (916) 414-5800  
Fax: (916) 414-5850

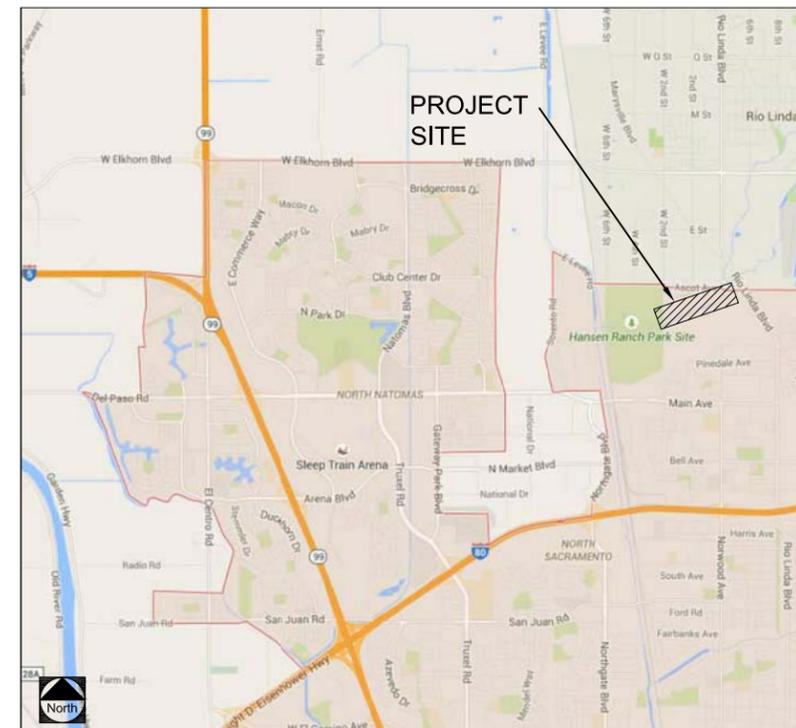
CONTRACT XXXX

COVER SHEET

#### VICINITY MAP



#### LOCATION MAP



Accepted By: \_\_\_\_\_ Date: \_\_\_\_\_

Accepted By: \_\_\_\_\_ Date: \_\_\_\_\_

Contract Number: CXXXX

Approved On: \_\_\_\_\_ By: SAFCA Board of Directors

Resolution No: \_\_\_\_\_  
Clerk of the Board

65% SUBMITTAL

scale: NTS  
job no.: 60312876  
drawn by: SR  
checked by: KC

sheet no.: L-1

sheet 1 of 12  
date: 07/20/2015



ROBLA CREEK  
AQUATIC AND RIPARIAN  
HABITAT CREATION PROJECT



2020 L Street, Suite 400  
Sacramento CA 95811  
Tel: (916) 414-5800  
Fax: (916) 414-5850

CONTRACT XXXX

GENERAL NOTES AND  
SYMBOLS

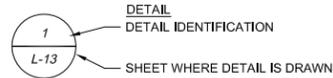
65% SUBMITTAL

scale:	NTS
job no.:	60312876
drawn by:	SR
checked by:	KC

sheet no.: L-2

sheet   2   of   12    
date: 07/20/2015

LANDSCAPE SYMBOLS



CONSTRUCTION ACCESS

- ALL HAUL AND ACCESS ROUTES SHALL BE EXISTING ROADS AS DIRECTED FOR SUCH USE BY THE AGENCY. MOVEMENT OF HEAVY EQUIPMENT TO AND FROM THE PROJECT SITE SHALL BE RESTRICTED TO ESTABLISHED ROADWAYS. THE CONTRACTOR'S CONSTRUCTION ACCESS POINTS SHALL BE LIMITED TO THOSE SHOWN ON THE DRAWINGS OR DEFINED IN THE SPECIFICATIONS, OR AS DIRECTED IN THE FIELD BY THE AGENCY. PAVED AREAS AT THESE CONTROLLED ACCESS POINTS SHALL BE SWEEPED, AS NECESSARY, BY THE CONTRACTOR TO CONTROL DUST AND CLEANUP MATERIAL TRACKED OR SPILLED ON SAID PAVED AREAS. THE CONTRACTOR SHALL CONFORM TO ALL GOVERNING CODES, LAWS AND ORDINANCES.
- EXCEPT AS SPECIFIED HEREIN, OR AS SHOWN ON THE DRAWINGS, EXISTING STRUCTURES OR OTHER IMPROVEMENTS IN THE AREA ADJACENT TO THE WORK AREA SHALL NOT BE DISTURBED, DAMAGED, OR UNDERMINED BY THE CONTRACTOR, EXCEPT WHERE IN THE OPINION OF THE AGENCY IT IS ESSENTIAL TO RELOCATE SUCH IMPROVEMENTS. IF RELOCATION OF ANY FACILITY IS REQUIRED, THE CONTRACTOR SHALL RELOCATE THE IMPROVEMENTS SO AS TO BE AT LEAST EQUAL IN CONDITION AND UTILITY TO THE ORIGINAL. THE CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS TO PREVENT ANY DAMAGE TO EXISTING FACILITIES. SHOULD DAMAGE OR INJURY OCCUR AS A RESULT OF THE CONTRACTOR'S OPERATIONS, THE CONTRACTOR SHALL REPAIR OR REPLACE SUCH DAMAGED FACILITIES TO THE AGENCY'S SATISFACTION AT THE CONTRACTOR'S EXPENSE.
- THE CONTRACTOR SHALL REPAIR ANY DAMAGE CAUSED TO EXISTING INFRASTRUCTURE, IRRIGATION OR PUMPING FACILITIES, STORM DRAIN PIPES, PAVEMENT, PUBLIC STREETS, OR OTHER UTILITIES AND IMPROVEMENTS RESULTING FROM THE CONTRACTOR'S OPERATIONS.
- SEE THE GENERAL NOTES AND PROJECT SPECIFICATIONS FOR ADDITIONAL INFORMATION.

PROTECTIVE FENCING

- AT NO TIME SHALL CONSTRUCTION OPERATIONS, VEHICLE OR EQUIPMENT PARKING, PLACEMENT OF STRUCTURES, OR ANY OTHER ACTIVITY OCCUR WITHIN AREAS TO BE PRESERVED OR CONTAINED BY PROTECTIVE FENCING UNLESS OTHERWISE NOTED ON THE DRAWINGS AND APPROVED BY THE AGENCY. ALL AREAS SHOWN ON THE DRAWINGS AS PRESERVATION AREAS SHALL HAVE RESTRICTED ACCESS AND SHALL BE PROTECTED WITH PROTECTIVE FENCING ACCORDING TO THE SPECIFICATIONS. WITHIN THE PROJECT AREAS TO BE PRESERVED, NO EXCAVATIONS SHALL BE MADE, NO MATERIALS OR EQUIPMENT SHALL BE STORED, AND NO HEAVY EQUIPMENT OR VEHICLES SHALL BE OPERATED OR PARKED.

EQUESTRIAN TRAIL

- THE TRAIL CLASS SHALL BE DETERMINED BY THE AGENCY WHO CONSIDERS SPECIFIC TRAIL USES WHEN DESIGNING, CONSTRUCTING, AND MAINTAINING A TRAIL. TRAIL CLASSES ARE BASIC CATEGORIES THAT REFLECT THE DESIRED MANAGEMENT OF EACH TRAIL, TAKING INTO ACCOUNT OTHER MANAGEMENT ACTIVITIES IN THE AREA, USER PREFERENCES, SETTINGS, AND PROTECTION OF SENSITIVE RESOURCES.
- THE TRAIL SHALL BE CATEGORIZED FROM THE FIVE TRAIL CLASSES RANGE FROM MINIMAL DEVELOPMENT TO FULL DEVELOPMENT.
- THE LAYOUT OF THE TRAIL SHALL BE AS SHOWN ON THE DRAWINGS AND A STANDARD WIDTH OF 10'.
- THE TREAD SHALL BE WIDE AND RELATIVELY SMOOTH WITH FEW IRREGULARITIES.
- WIDTH MAY CONSISTENTLY ACCOMMODATE TWO-LANE TRAVEL.
- NATIVE OR IMPORTED MATERIALS IF NEEDED MAY BE HARDENED.
- IN AREAS WITH LOW DEVELOPMENT, STOCK TEND TO TRAVEL ABOUT 18" FROM THE EDGE OF THE TREAD SURFACE. RIDERS OFTEN GUIDE THEIR ANIMALS FARTHER AWAY FROM FENCES OR OTHER OBSTACLES BECAUSE THE RIDERS ARE MORE COMFORTABLE THERE. THE TROD AREA SHALL LIE 2 FEET OR MORE AWAY FROM OBSTACLES.
- THE DESIGNED TRAIL SHALL HAVE A 10' to 12' HIGH VERTICAL CLEARANCE.

PLANTING NOTES

- PLANT QUANTITIES SHOWN IN THE PROJECT PLANT LEGEND ARE FOR INFORMATION ONLY. THE CONTRACTOR SHALL VERIFY FIELD CONDITIONS AND PROVIDE THE ACTUAL PLANT QUANTITIES NEEDED TO IMPLEMENT THE PLANTING SCHEME AS SHOWN IN THESE DRAWING AND THE PROJECT SPECIFICATIONS.
- PLANTS AND SEEDED AREAS SHALL BE LOCATED BY THE CONTRACTOR ACCORDING TO THE LAYOUT SHOWN ON THE DRAWINGS. PLANTS SHALL BE DISTRIBUTED WITHIN EACH PLANTING ZONE TO MIMIC NATURAL CONDITIONS SUPPORTED BY THE SITE. INDIVIDUAL PLANT LOCATIONS SHALL BE FLAGGED AND IDENTIFIED BY SPECIES FOR VERIFICATION AND APPROVAL BY THE AGENCY PRIOR TO PLANT INSTALLATION.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING POSITIVE DRAINAGE IN ALL PLANTING AREAS AND AT INDIVIDUAL PLANT LOCATIONS. THE CONTRACTOR SHALL RECEIVE APPROVAL FOR ALL METHODS TO BE USED TO CORRECT DRAINAGE PROBLEMS BEFORE IMPLEMENTATION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING A 2% MINIMUM CROSS-SLOPE AROUND EACH PLANT TO ENSURE POSITIVE DRAINAGE.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING THE PLANTS IN A HEALTHY CONDITION THROUGHOUT THE MAINTENANCE PERIOD ACCORDING TO THE PROJECT SPECIFICATIONS.
- PLANTING MATERIALS SHALL BE TREPOT4, DEEPOTS, PLUGS, 1-GALLON, TREEBANDS, AND CUTTINGS, AS DESIGNATED ON THE PLANT LEGEND.
- SEE THE GENERAL NOTES AND PROJECT SPECIFICATIONS FOR ADDITIONAL INFORMATION.

MAINTENANCE NOTES

- THE CONTRACTOR SHALL FURNISH ALL LABOR, MATERIALS, EQUIPMENT, AND INCIDENTALS DURING THE MAINTENANCE PERIOD. REPAIRS DUE TO NATURAL DISASTERS, SUCH AS SEVERE FLOODING, SHALL NOT BE A MAINTENANCE RESPONSIBILITY OF THE CONTRACTOR. ALL MAINTENANCE ACTIVITIES SHALL BE COORDINATED WITH THE AGENCY. THE MAINTENANCE OPERATIONS SHALL INCLUDE, BUT NOT BE LIMITED TO:
  - MAINTAINING PLANTING SITES AND CONDUCTING WEED CONTROL, WATERING IF REQUIRED, AND DEBRIS REMOVAL FOR THE DURATION OF THE CONTRACT PERIOD;
  - REPLACING ALL DEAD OR SEVERELY STRESSED PLANTS AND OTHER MATERIALS, AS REQUIRED;
  - MAINTAINING ALL WATERING BASINS TO BE WEED FREE AND REMOVING ALL NOXIOUS WEEDS AND ALL OTHER UNWANTED, NON-NATIVE PLANTS FROM PROJECT SITE, AS DIRECTED BY THE AGENCY;
  - KEEPING UP-TO-DATE "AS-BUILT" DRAWINGS DURING THE MAINTENANCE PERIOD.

- CONTRACTOR SHALL REMOVE ALL THE CHAIN LINK FENCING THAT THEY INSTALLED, ALL INSTALLED CHAIN LINK FENCES SHALL BE REMOVED FROM THE FLOODWAY DURING THE FLOOD SEASON AND AT THE END OF THE CONTRACT.
- CONTRACTOR SHALL REMOVE ALL THE PROTECTIVE FENCING THAT THEY INSTALLED, ALL INSTALLED CHAIN LINK FENCES SHALL BE REMOVED FROM THE FLOODWAY DURING THE FLOOD SEASON AND AT THE END OF THE CONTRACT.
- SEE THE GENERAL NOTES AND PROJECT SPECIFICATIONS FOR ADDITIONAL INFORMATION

ABBREVIATIONS

(E) (N) &	EXISTING NEW AND	F FIN. F.O.B. FOC. FOF. FOC. FOM. FOS. FOW. FT. FTG. FWM.	FINISH FACE OF BLOCK FACE OF CONCRETE FACE OF FINISH FACE OF CURB FACE OF MASONRY FACE OF STUD FACE OF WALL FOOT OR FEET FOOTING FRESH WATER MARSH	O OC. OD.	ON CENTER OUTSIDE DIAMETER (DIM.)
A AB ADJ. AGGR. APPROX. ARCH. ASPH. AVG	AGGREGATE BASE ADJACENT AGGREGATE APPROXIMATE ARCHITECT ASPHALT AVERAGE	G GA. GALV. G. GPM. GRD.	GAUGE GALVANIZED GROUND GALLONS PER MINUTE GRADE	P PT. PVC.	POINT POLYVINYL CHLORIDE
B BITUM. BLDG. BOT.	BITUMINOUS BUILDING BOTTOM	H HB. HP. HT. H/ HORIZ. HR.	HOSE BIB HORSE POWER HEIGHT HORIZONTAL HOUR	Q QT.	QUART
C C.J. CLR. CMP CMU CONC. CONSTR. CONTR. CONT. COT CSK. CTR.	CONTROL JOINT CLEAR(ANCE) CORRUGATED METAL PIPE CONCRETE MASONRY UNIT CONCRETE CONSTRUCTION CONTRACTOR CONTINUE COTTONWOOD COUNTER SUNK CENTER	I ID. IE INT. INV IWM	INSIDE DIAMETER (DIM) INVERT ELEVATION INTERIOR INVERT INSTREAM WOODY MATERIAL	R R. RCP REF. REINF. REQ. RWD.	RADIUS REINFORCED CONCRETE PIPE REFERENCE REINFORCE REQUIRE REDWOOD
D (D) DBL. DEPT. DF. DIA. DIAG. DIM. DIP DN. DET. DWG.	DECIDUOUS DOUBLE DEPARTMENT DRINKING FOUNTAIN DIAMETER DIAGONAL DIMENSION DUCTILE IRON PIPE DOWN DETAIL DRAWING	J JT.	JOINT	S S. SCH SECT. SF SH. SF. SQ. SST. STD. STL. STRUCT. SW SWPPP SYMM	SOUTH SCHEDULE SECTION SQUARE FEET SHEET SIMILAR SQUARE STAINLESS STEEL STANDARD STEEL STRUCTURAL SEASONAL WETLAND STORM WATER POLLUTION PREVENTION PLAN SYMMETRICAL
E E. EA EJ. EL. ELEC. ELEV. ENCL. EQ. EQUIP. EW EX EXT.	EAST EACH EXPANSION JOINT ELEVATION ELECTRIC ELEVATION ENCLOSURE EQUAL EQUIPMENT EACH WAY EXISTING EXTERIOR	L LB. L.O.W.	POUND LIMIT OF WORK	T TO THK. TS. TYP.	TOP OF THICK(NESS) TUBE STEEL TYPICAL
		M MAX. MED. MFR. MIN. MISC.	MAXIMUM MEDIUM MANUFACTURER MINIMUM MISCELLANEOUS	U UNFIN. UNK UNO.	UNFINISH UNKNOWN UNLESS NOTED OTHERWISE
		N N. NCMWC.	NORTH NATOMAS CENTRAL MUTUAL WATER COMPANY	V VRFY. V / VERT.	VERIFY VERTICAL
		NIC. NO. NOM. NPDES.	NOT IN CONTRACT NUMBER NOMINAL NATIONAL POLLUTION DISCHARGE ELIMINATION SYSTEM	W W. W/ WSEL. WWF.	WEST OR WIDE WITH WATER SURFACE ELEVATION WELDED WIRE FABRIC
		NTS	NOT TO SCALE		

- ALL WORK SHALL BE PERFORMED BY A LICENSED CONTRACTOR AND EXPERIENCED WORKERS. THE CONTRACTOR SHALL CONFORM TO ALL FEDERAL, STATE, AND LOCAL CODES AND OBTAIN ALL PERMITS NECESSARY TO COMPLETE WORK.
- THE CONTRACTOR SHALL ASSUME SOLE RESPONSIBILITY FOR JOB SITE CONDITIONS DURING THE COURSE OF THE PROJECT INCLUDING SAFETY OF ALL PERSONS AT ALL TIMES. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROTECTING CONSTRUCTION EQUIPMENT AND MATERIALS FROM THEFT AND VANDALISM DURING THE CONTRACT PERIOD.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR VISITING THE PROJECT SITE TO VERIFY SITE CONDITIONS AND COMPLETELY UNDERSTAND THE REQUIRED SCOPE OF WORK SHOWN ON THESE DRAWINGS AND CONTAINED IN THE PROJECT SPECIFICATIONS.
- ALL AREAS OF PLANTING ARE SUBJECT TO IN-FIELD DESIGN VERIFICATION AND ADJUSTMENTS AS DIRECTED BY THE AGENCY.
- THE CONTRACTOR SHALL VERIFY THE LOCATION OF ALL EXISTING UNDERGROUND UTILITIES BEFORE THE START OF ANY CONSTRUCTION OPERATIONS, INCLUDING AND NOT LIMITED TO EXCAVATION OR TRENCHING. THE CONTRACTOR SHALL CALL UNDERGROUND SERVICE ALERT (U.S.A.) AT 811/1-800-227-2600. THE CONTRACTOR SHALL PROVIDE A MINIMUM OF 48 HOURS ADVANCE NOTICE FOR LOCATING UTILITIES.
- THE CONTRACTOR SHALL CONTACT THE AGENCY IMMEDIATELY UPON FINDING ANY FIELD CONDITIONS THAT WOULD CONFLICT WITH THE INFORMATION INDICATED ON THESE DRAWINGS OR THE PROJECT SPECIFICATIONS. ALL FIELD ADJUSTMENTS MUST BE APPROVED BY THE AGENCY BEFORE CONSTRUCTION OF SAID ADJUSTMENTS; FAILURE TO DO SO SHALL RESULT IN THE CONTRACTOR ASSUMING FULL RESPONSIBILITY FOR ANY REQUIRED REVISIONS OR FIELD MODIFICATIONS, AS DIRECTED BY THE AGENCY, AT NO ADDITIONAL COST.
- ALL STORAGE OF EQUIPMENT AND MATERIALS SHALL OCCUR WITHIN THE STAGING AREA AS PRESCRIBED ON THESE DRAWINGS AND IN THE SPECIFICATIONS. ALL LUBRICATION, REFUELING OR MAINTENANCE OF CONSTRUCTION VEHICLES SHALL BE CONDUCTED WITHIN APPROVED CONSTRUCTION STAGING AREAS.
- TEMPORARY FENCING SHALL BE INSTALLED AND MAINTAINED BY THE CONTRACTOR AROUND THE PERIMETER OF THE PROJECT AREA AND AT OTHER LOCATIONS DEEMED NECESSARY BY THE CONTRACTOR. NO WORK OUTSIDE OF THE DESIGNATED LIMIT OF WORK AREA WILL BE PERMITTED WITHOUT THE APPROVAL OF THE AGENCY. SEE SPECIFICATIONS FOR ADDITIONAL INFORMATION.
- CONFORM TO EXISTING GRADES AND CONDITIONS WHENEVER POSSIBLE. ANY ADJACENT OR OFFSITE AREAS DISTURBED BY THE CONTRACTOR'S OPERATION MUST BE RESTORED BY THE CONTRACTOR TO THE PREDISTURBANCE CONDITION TO THE SATISFACTION OF THE AGENCY.
- IF ARTIFACTS, FOREIGN OBJECTS, BONE, OR UNKNOWN MATERIALS ARE ENCOUNTERED WHILE DIGGING OR EXCAVATING ON SITE, THE CONTRACTOR SHALL SUSPEND WORK WITHIN 50 FEET OF THE LOCATION UNTIL A QUALIFIED ARCHAEOLOGIST IS ABLE TO ASSESS THE SITE AND FINDINGS TO DETERMINE SIGNIFICANCE. SEE SPECIFICATIONS FOR ADDITIONAL INFORMATION.
- THE CONTRACTOR IS RESPONSIBLE FOR SOIL EROSION CONTROL MEASURES THAT ARE REQUIRED THROUGH THE DURATION OF THE CONTRACT PERIOD. SHOULD SOIL EROSION CONDITIONS EXIST WHEN THE CONTRACTOR INITIALLY ACCEPTS THE SITE, THE AGENCY SHALL BE CONTACTED. FAILURE OF THE CONTRACTOR TO NOTIFY THE AGENCY IMPLIES ACCEPTANCE OF THE SITE BY THE CONTRACTOR IN ITS EXISTING CONDITION. ALL COSTS NECESSARY TO MITIGATE EXISTING EROSION CONTROL PROBLEMS SHALL BE AT THE CONTRACTOR'S EXPENSE AND AT NO ADDITIONAL COST TO THE AGENCY OR INCREASE IN ORIGINAL BID PRICE SHALL BE PERMITTED.
- THE PROJECT SITE IS LOCATED WITHIN THE ROBLA CREEK FLOODPLAIN AND, THEREFORE, SUBJECT TO INUNDATION. THE CONTRACTOR IS HEREBY NOTICED TO KEEP APPRISED OF LOCAL WEATHER AND RIVER FLOW CONDITIONS TO ENSURE PEOPLE, EQUIPMENT, AND SUPPLIES ARE MOVED TO HIGHER GROUND IN CASE OF A FLOOD EVENT.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR KEEPING THE PROJECT SITE IN A NEAT AND ORDERLY CONDITION, FREE OF RUBBISH AND DEBRIS, AT ALL TIMES; REFER TO THE PROJECT SPECIFICATIONS FOR ADDITIONAL SITE CLEANUP REQUIREMENTS.
- AT ANY TIME, THE CONTRACTOR'S OPERATIONS AND CONSTRUCTION SHALL BE SUBJECT TO OBSERVATION BY THE AGENCY; REFER TO THE PROJECT SPECIFICATIONS FOR ADDITIONAL INFORMATION.
- ALL WRITTEN DIMENSIONS SUPERCEDE SCALED DIMENSIONS.
- REFER TO THE PROJECT SPECIFICATIONS AND THE DETAILS ON THE DRAWINGS FOR ADDITIONAL INFORMATION.
- DRAWINGS AND SPECIFICATIONS ARE PART OF THE FULL CONSTRUCTION DOCUMENTATION. CONTRACTOR IS RESPONSIBLE TO UNDERSTAND THE REQUIREMENTS OF EACH IN CONSTRUCTION OF THE PROJECT.



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CONTRACT XXXX

ACCESS PLAN

65% SUBMITTAL

scale: NTS  
job no.: 60312876  
drawn by: SR  
checked by: KC

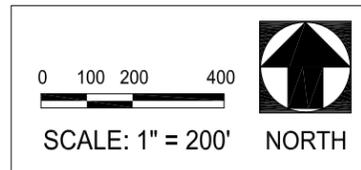
sheet no.: L-3

sheet 3 of 12  
date: 07/20/2015



LEGEND

- INGRESS / EGRESS ROUTES
- ★ STAGING AREA & P.O.C.
- - MATCH LINES



Note:  
 1. See sheets L4 - L6 for grading plans.  
 2. See sheet L7 for seed mixes and planting palettes.  
 3. See sheets L8 - L10 for planting plans.  
 2. Date of aerial map is 20xx and may not reflect the most current site conditions.



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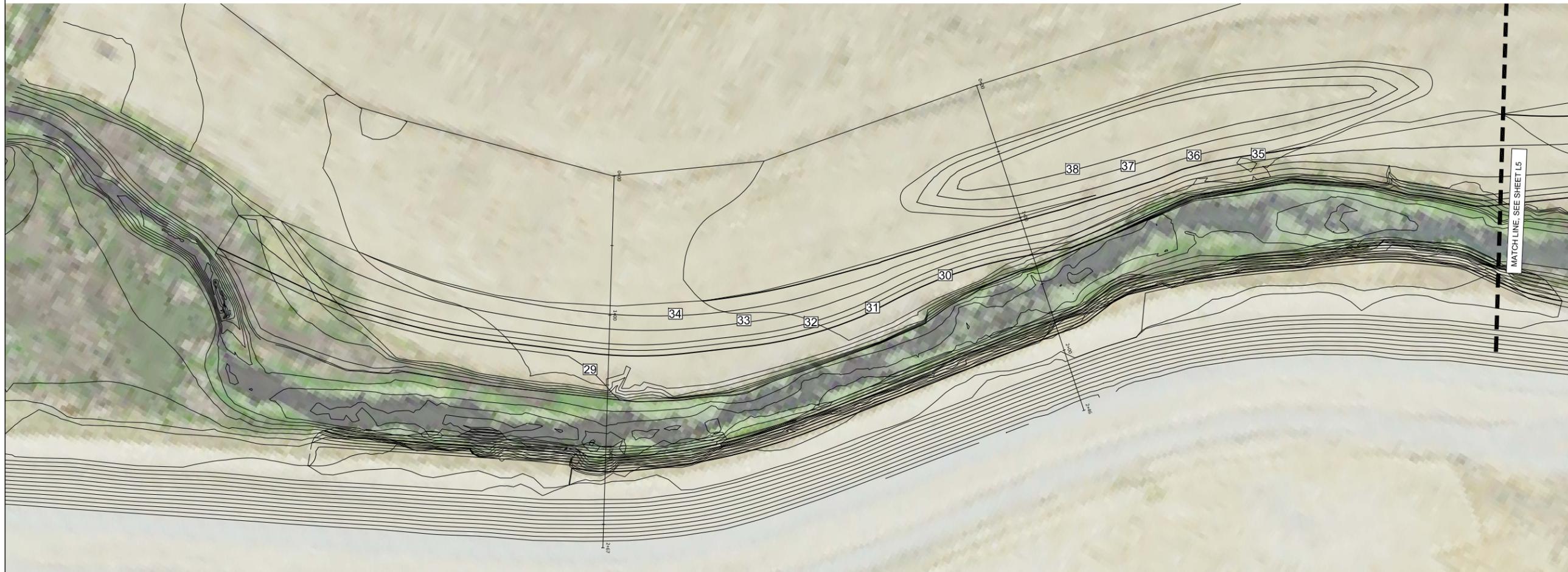
GRADING PLAN

65% SUBMITTAL

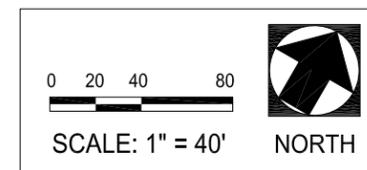
scale: AS SHOWN  
job no.: 60312876  
drawn by: SR  
checked by: KC

sheet no.: L-4

sheet 4 of 12  
date: 07/20/2015



Note:  
1. See planting sheets L-8 for limit of work.





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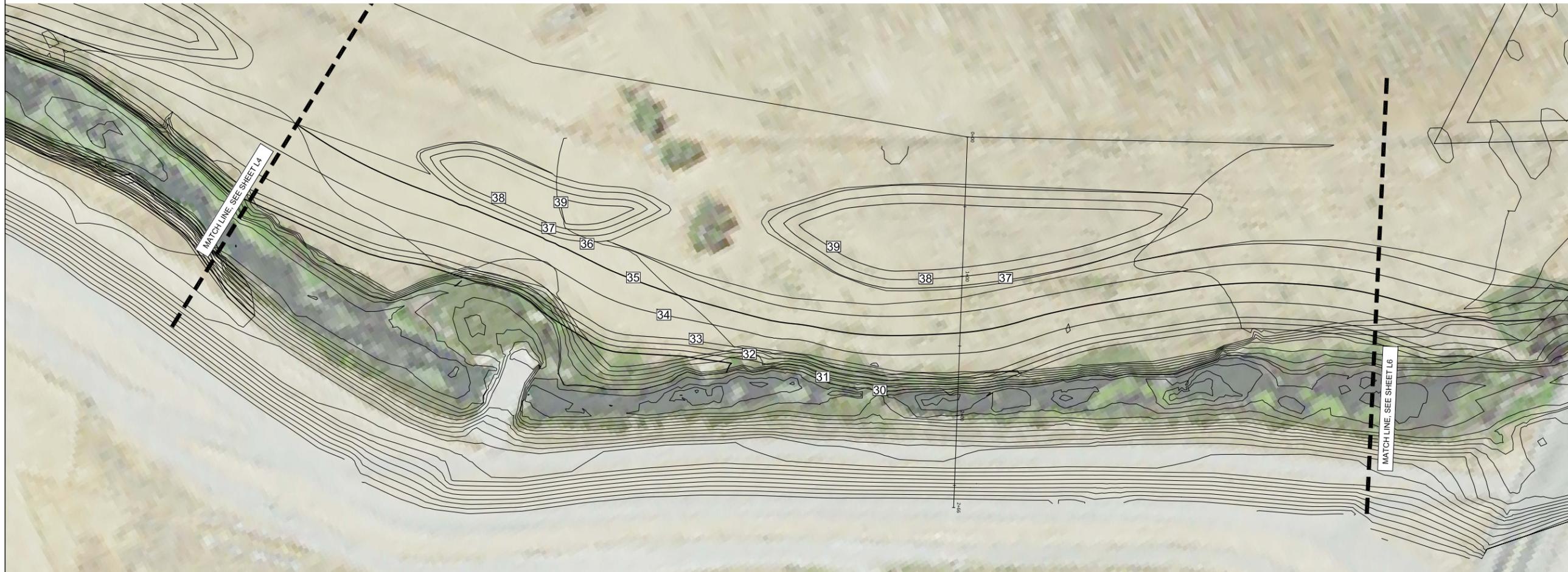
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65% SUBMITTAL

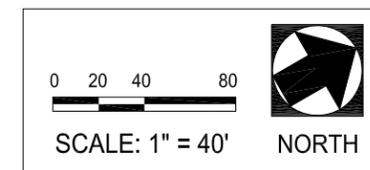
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job no.: 60312876  
drawn by: SR  
checked by: KC

sheet no.: L-5

sheet 5 of 12  
date: 07/20/2015



Note:  
1. See planting sheets L-9 for limit of work.





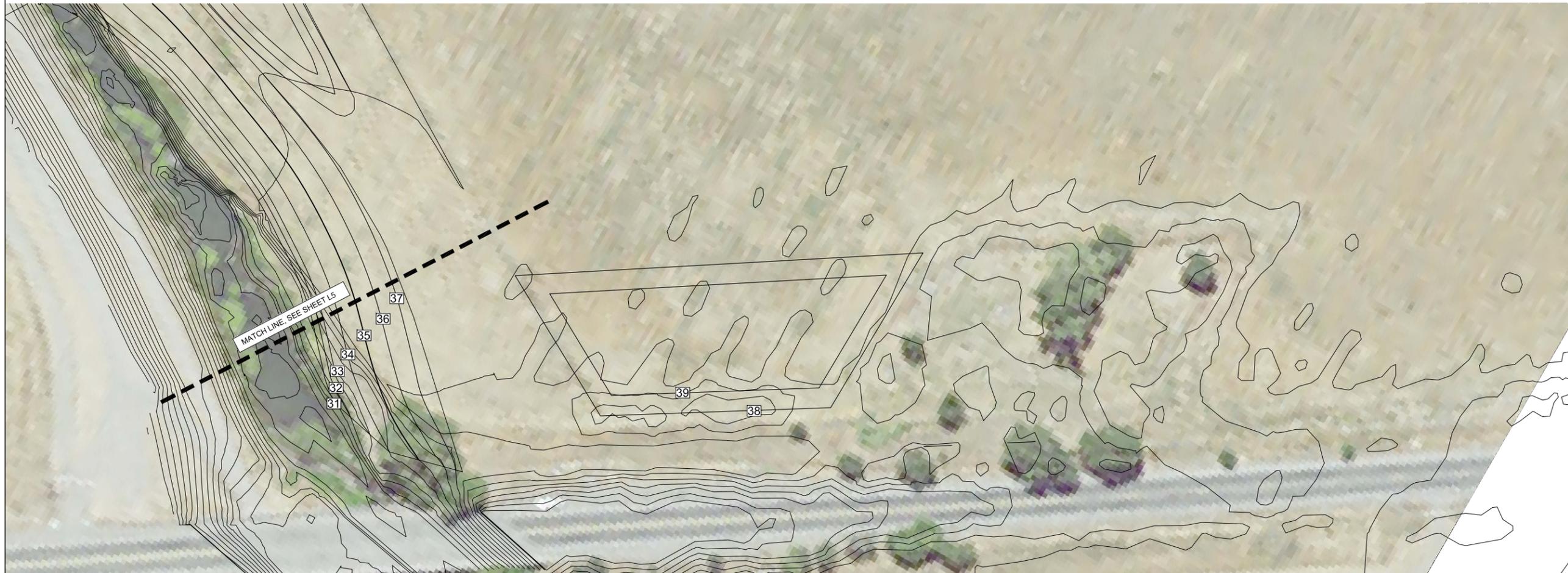
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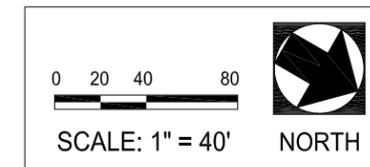
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CONTRACT XXXX

GRADING PLAN



Note:  
1. See planting sheet L-10 for limit of work.



65% SUBMITTAL

scale:	AS SHOWN
job no.:	60312876
drawn by:	SR
checked by:	KC

sheet no.: L-6

sheet 6 of 12  
date: 07/20/2015



ROBLA CREEK  
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CXXXX

PLANT LEGEND

65% SUBMITTAL

scale: NTS  
job no.: 60312876  
drawn by: SR  
checked by: KC

sheet no.: L-7

sheet 7 of 12  
date: 07/20/2015

Zone 1: Tule Bench				
Species		Container Size**	Plant Spacing (feet on center)	% of Planting Palette
Common Name	Scientific Name			
common tule*	<i>Schoenoplectus acutus var. occidentalis</i>	Plug/TB/1-gallon	2 ½	50
California bulrush*	<i>Schoenoplectus californicus</i>	Plug/TB/1-gallon	2 ½	50
Source: Data compiled by AECOM in 2015				
Notes: *observed on site ; **TB = treeband				

Zone 2: Riparian 4:1 Slope				
Species		Container Size**	Plant Spacing (feet on center)	% of Planting Palette
Common Name	Scientific Name			
<i>Herbaceous</i>				
Mugwort*	<i>Artemisia douglasiana</i>	Plug/TB	2 ½	25
Santa Barbara sedge*	<i>Carex barbarae</i>	Plug/TB	2 ½	20
Slender sedge*	<i>Carex praegracilis</i>	Plug/TB	2 ½	10
Baltic rush*	<i>Juncus balticus</i>	Plug/TB	2 ½	20
Bog rush*	<i>Juncus effusus</i>	Plug/TB	2 ½	15
Iris-bladed rush*	<i>Juncus xiphioides</i>	Plug/TB	2 ½	10
<i>Shrubs</i>				
Common buttonbush	<i>Cephalanthus occidentalis</i>	DP/TP4	10	50
California wild rose	<i>Rosa californica</i>	DP/1-gallon	10	30
Sandbar willow	<i>Salix exigua</i>	cuttings	10	20
<i>Trees</i>				
White alder*, ***	<i>Alnus rhombifolia</i>	TP4	10	10
Oregon ash*	<i>Fraxinus latifolia</i>	TP4	10	10
Fremont cottonwood*	<i>Populus fremontii</i>	TP4	10	20
Black willow*	<i>Salix gooddingii</i>	cuttings	10	30
Arroyo willow	<i>Salix lasiolepis</i>	cuttings	10	30
Source: Data compiled by AECOM in 2015				
Notes: *observed on site ; **TB = treeband, DP = deepot, TP4 = treepot 4; *** plant just above average summer water surface elevation				

Zone 3: Riparian Upland				
Species		Container Size*	Plant Spacing (feet on center)	% of Planting Palette
Common Name	Scientific Name			
<i>Bunchgrasses and Shrubs</i>				
Deergrass	<i>Muhlenbergia rigens</i>	TB/1 gallon	10	40
California wild rose	<i>Rosa californica</i>	DP/ 1 gallon	7	30
Blue elderberry	<i>Sambucus nigra</i>	DP/ 1 gallon/ TP4	7	30
<i>Trees</i>				
Box Elder	<i>Acer negundo</i>	TP4	10	30
Fremont cottonwood*	<i>Populus fremontii</i>	TP4	10	25
Valley oak*	<i>Quercus lobata</i>	acorns	10	45
Source: Data compiled by AECOM in 2015				
Notes: *observed on site ; **TB = treeband, DP = deepot, TP4 = treepot 4;				

Zone 4: Upland Mounds				
Species		Container Size**	Plant Spacing (feet on center)	% of Planting Palette
Common Name	Scientific Name			
<i>Shrubs</i>				
Coyote brush*	<i>Baccharis pilularis</i>	TP4	10	50
Western redbud	<i>Cercis occidentalis</i>	TP4	10	50
<i>Trees</i>				
Valley oak*, ***	<i>Quercus lobata</i>	acorns	25	30
Interior live oak*	<i>Quercus wislizenii</i>	acorns	25	70
Source: Data compiled by AECOM in 2015				
Notes: *observed on site ; ** TP4 = treepot 4; ***only on 1-foot of fill, or within shallow depressions				

Seed Mix 1: Riparian 4:1 Slope		
Common	Scientific Name	PLS Pounds / Acre
Creeping wildrye	<i>Elymus triticoides</i>	12
Meadow barley	<i>Hordeum brachyantherum</i>	8
<b>Total</b>		<b>20</b>
Source: Data compiled by AECOM in 2015		
Notes: *observed on site		

Seed Mix 2: Riparian Upland Grass Mix		
Common	Scientific Name	PLS Pounds / Acre
Blue wildrye*	<i>Elymus glaucus</i>	6
Slender wheatgrass*	<i>Elymus trachycaulus</i>	6
California melic*	<i>Melica californica</i>	2
Purple needlegrass*	<i>Stipa pulchra</i>	8
<b>Total</b>		<b>22</b>
Source: Data compiled by AECOM in 2015		
Notes: *observed on site		

Seed Mix 3: Riparian Upland Forbs Mix**		
Common	Scientific Name	PLS Pounds / Acre
Elegant clarkia	<i>Clarkia unguiculata</i>	0.25
Chinese houses	<i>Collinsia heterophylla</i>	0.5
California poppy	<i>Eschscholzia californica</i>	1
Woolly sunflower	<i>Eriophyllum lanatum</i>	0.25
Common gumplant	<i>Grindelia camporum</i>	3
Common sunflower	<i>Helianthus annuus</i>	1
Annual lupine	<i>Lupinus microcarpus var. densiflorus</i>	6
Arroyo lupine	<i>Lupinus succulentus</i>	3
California phacelia	<i>Phacelia californica</i>	1
Lacy phacelia	<i>Phacelia tanacetifolia</i>	1
Pacific aster	<i>Symphotrichum chilense</i>	1
<b>Total</b>		<b>18</b>
Source: Data compiled by AECOM in 2015		
Notes: *observed on site;		

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CONTRACT XXXX

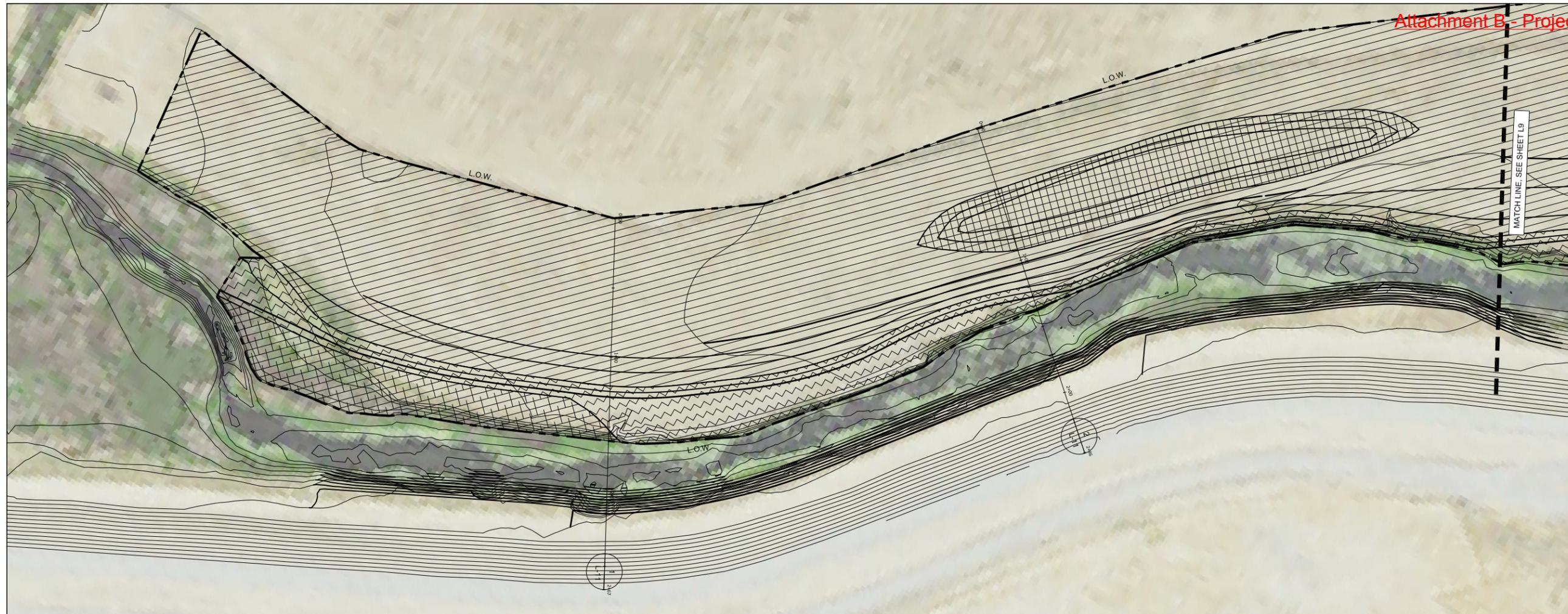
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65% SUBMITTAL

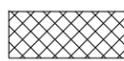
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checked by:	KC

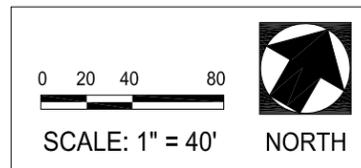
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sheet 8 of 12  
date: 07/20/2015



**SITE LEGEND**

-  LIMIT OF WORK
-  UPLAND MOUND ZONE
-  RIPARIAN UPLAND ZONE
-  RIPARIAN 4:1 SLOPE ZONE
-  TULE BENCH ZONE



Note:  
1. See sheet L-7 for additional information.

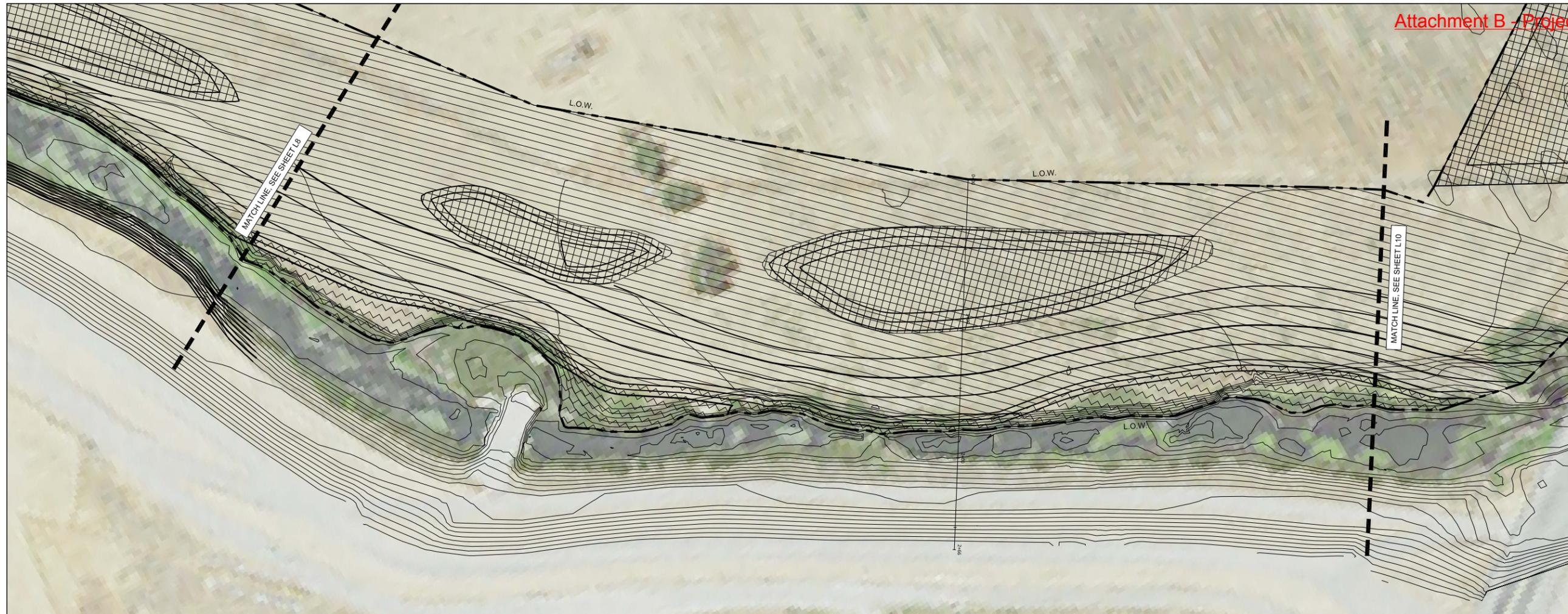
ROBLA CREEK  
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**AECOM**

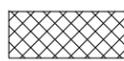
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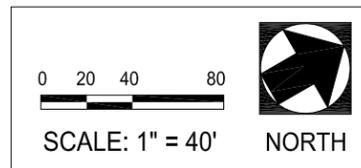
CONTRACT XXXX

PLANTING PLAN



**SITE LEGEND**

-  LIMIT OF WORK
-  UPLAND MOUND ZONE
-  RIPARIAN UPLAND ZONE
-  RIPARIAN 4:1 SLOPE ZONE
-  TULE BENCH ZONE



Note:  
1. See sheet L-7 for additional information.

65% SUBMITTAL

scale:	AS SHOWN
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drawn by:	SR
checked by:	KC

sheet no.: **L-9**

sheet 9 of 12  
date: 07/20/2015



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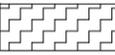
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PLANTING PLAN

65% SUBMITTAL



**SITE LEGEND**

-  LIMIT OF WORK
-  UPLAND MOUND ZONE
-  RIPARIAN UPLAND ZONE
-  RIPARIAN 4:1 SLOPE ZONE
-  TULE BENCH ZONE

0 20 40 80

SCALE: 1" = 40'

 NORTH

Note:  
1. See sheet L-7 for additional information.

scale:	AS SHOWN
job no.:	60312876
drawn by:	SR
checked by:	KC

sheet no.: L-10

sheet 10 of 12  
date: 07/20/2015



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CONTRACT XXXX

TYPICAL SECTIONS

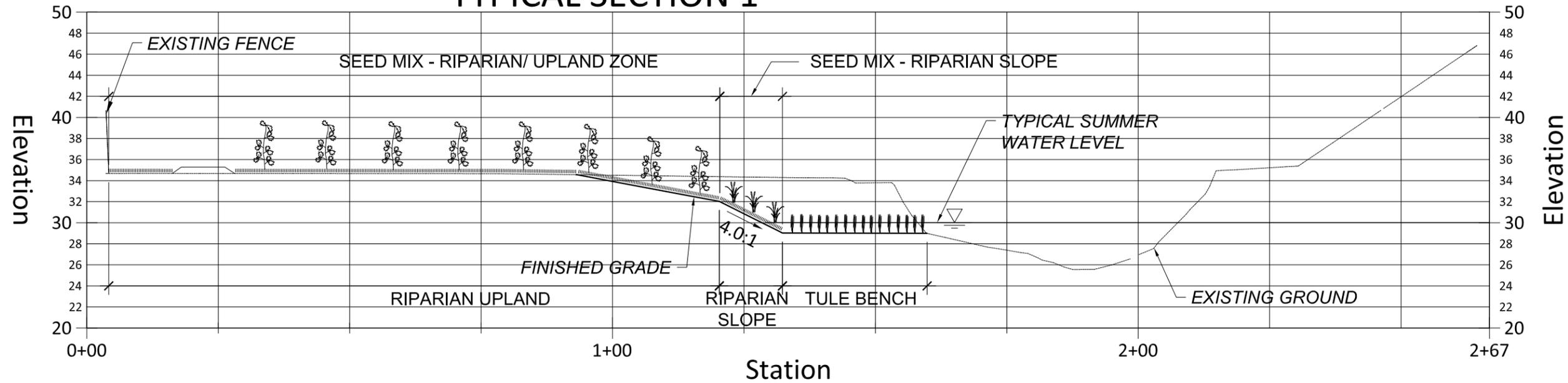
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drawn by:	SR
checked by:	KC

sheet no.: L-11

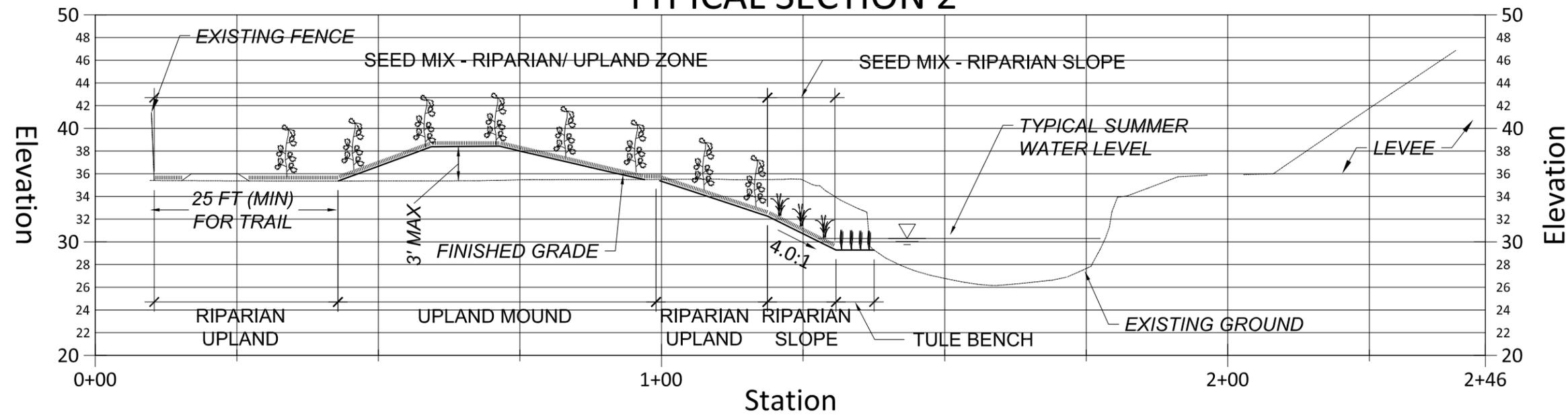
sheet 11 of 12  
date: 07/20/2015

### TYPICAL SECTION 1



1 TYPICAL CROSS SECTION  
L-11 NOT TO SCALE

### TYPICAL SECTION 2



2 BEAVER EXCLUSION FENCING  
L-11 NOT TO SCALE

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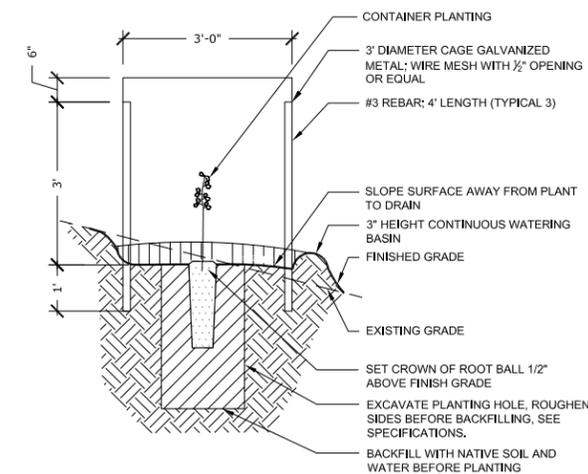
PLANTING DETAILS

65% SUBMITTAL

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drawn by: SR  
checked by: KC

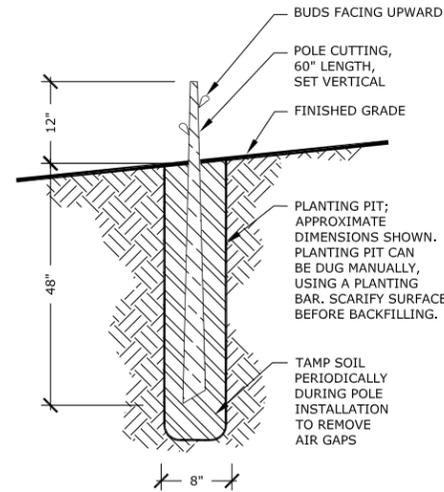
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sheet 12 of 12  
date: 07/20/2015



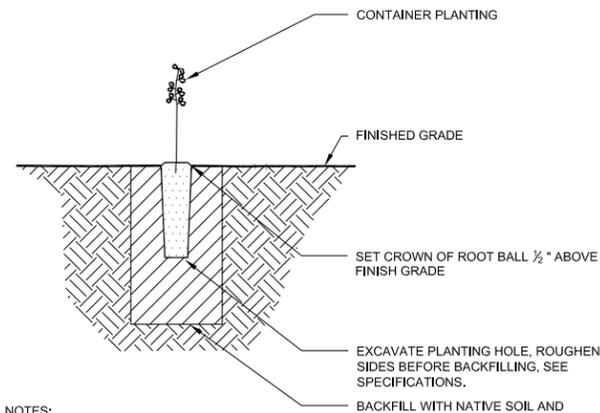
- NOTES:
- SEE PLANTING NOTES AND SHEET L-5 FOR PLANT SPECIES AND ADDITIONAL INFORMATION.
  - REFER TO THE SPECIFICATIONS FOR ADDITIONAL INFORMATION.

3 CONTAINER PLANTING ON SLOPE (ZONES 1-4)  
L-12 NOT TO SCALE SECTION ELEVATION



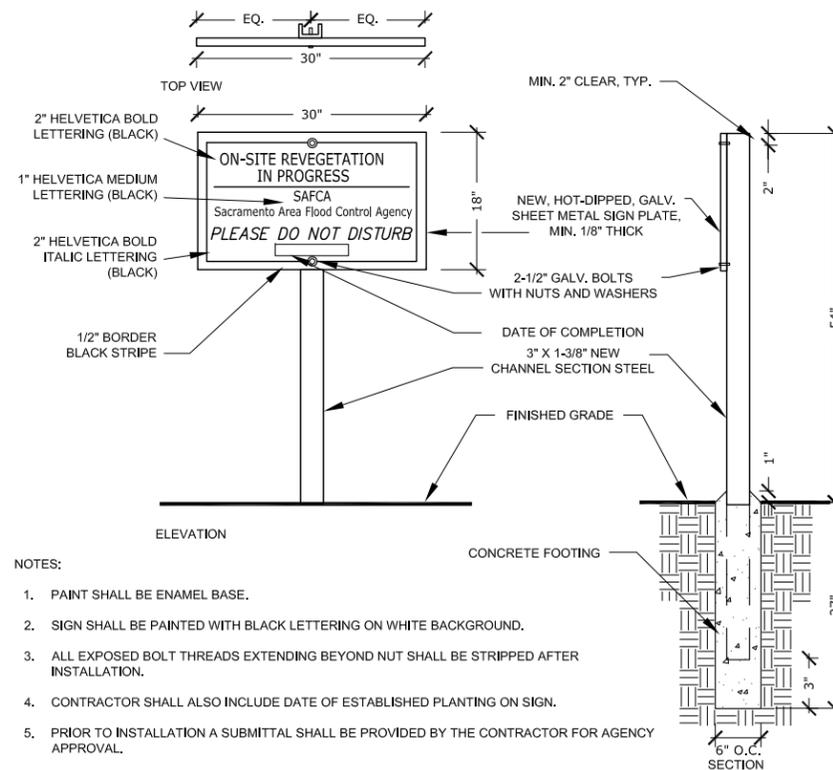
- NOTES:
- SEE SHEET L-5 AND THE SPECIFICATIONS FOR ADDITIONAL INFORMATION.

2 POLE CUTTING  
L-12 NOT TO SCALE SECTION ELEVATION



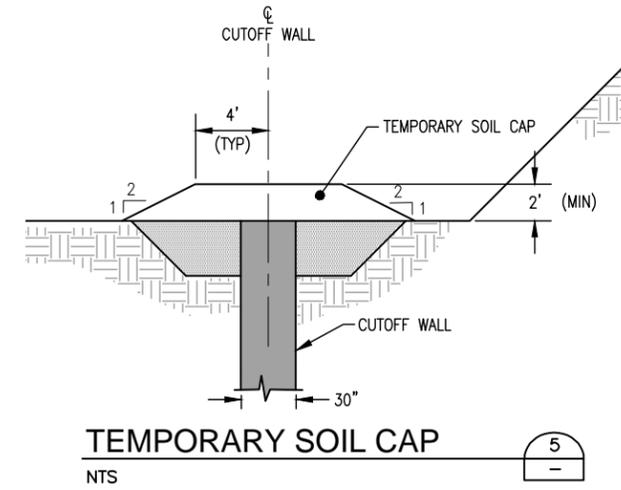
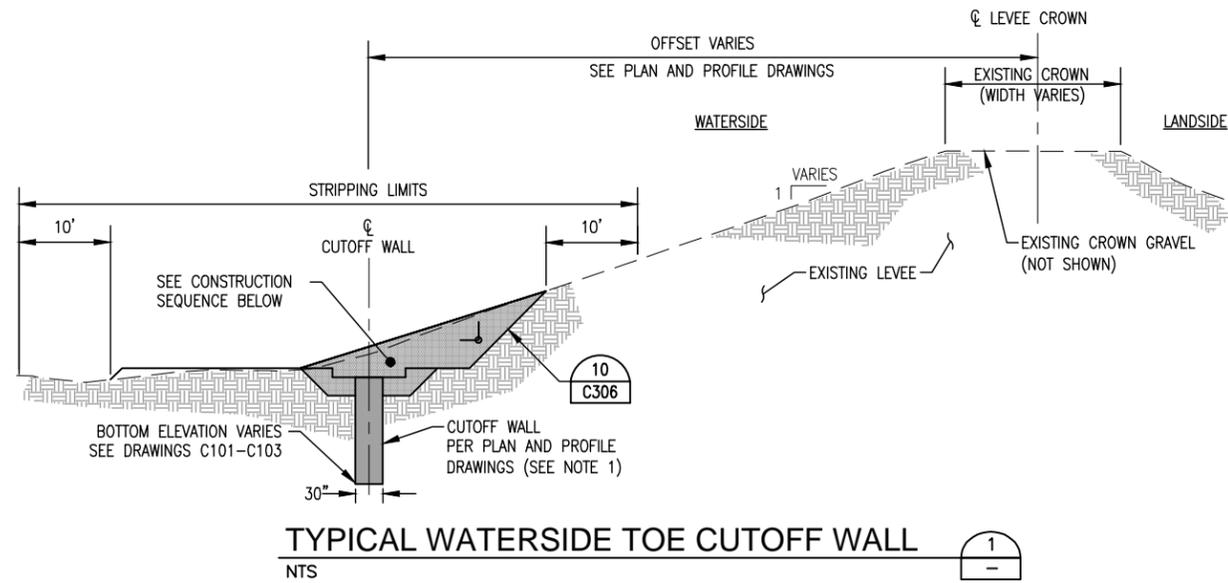
- NOTES:
- SEE PLANTING NOTES AND SHEET L-5 FOR PLANT SPECIES AND ADDITIONAL INFORMATION.
  - REFER TO THE SPECIFICATIONS FOR ADDITIONAL INFORMATION.

1 CONTAINER PLANTING ON FLAT GRADE  
L-12 NOT TO SCALE SECTION ELEVATION



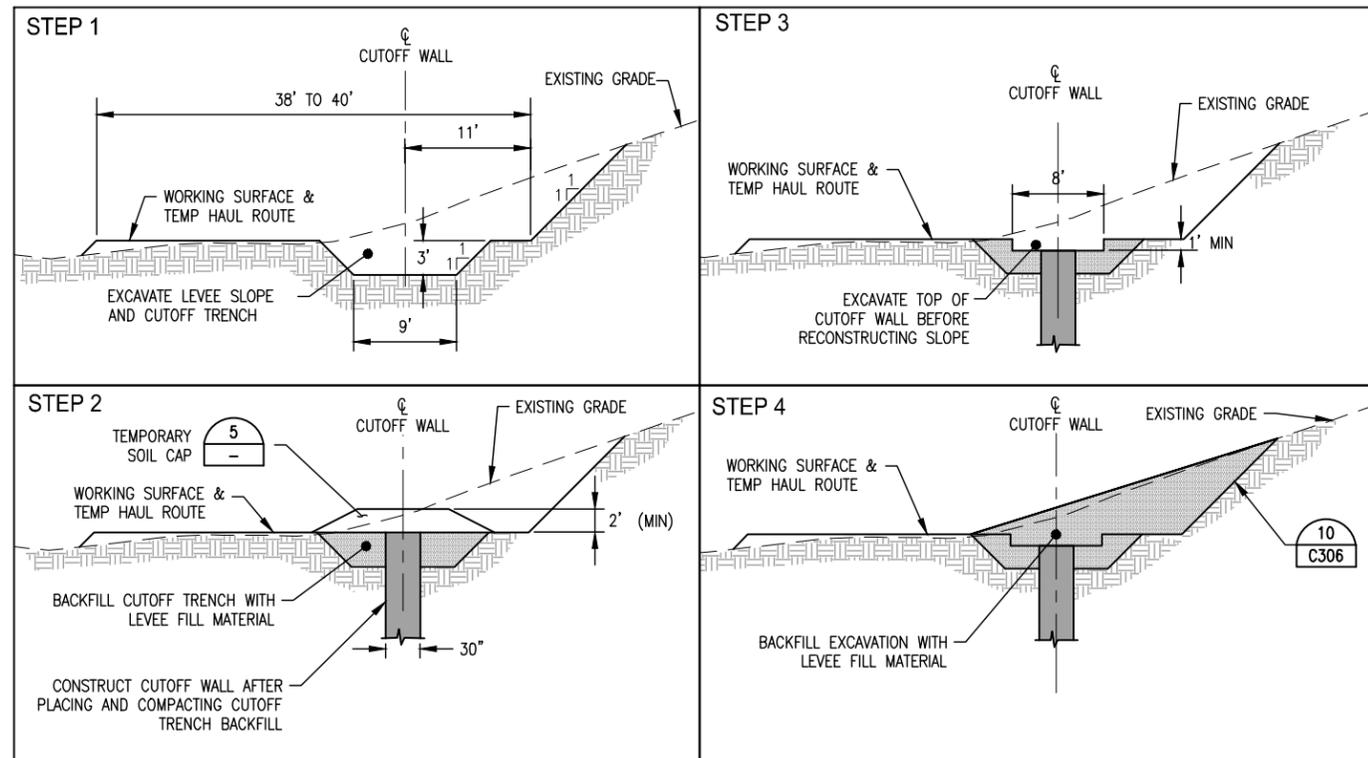
- NOTES:
- PAINT SHALL BE ENAMEL BASE.
  - SIGN SHALL BE PAINTED WITH BLACK LETTERING ON WHITE BACKGROUND.
  - ALL EXPOSED BOLT THREADS EXTENDING BEYOND NUT SHALL BE STRIPPED AFTER INSTALLATION.
  - CONTRACTOR SHALL ALSO INCLUDE DATE OF ESTABLISHED PLANTING ON SIGN.
  - PRIOR TO INSTALLATION A SUBMITTAL SHALL BE PROVIDED BY THE CONTRACTOR FOR AGENCY APPROVAL.

4 REVEGETATION SIGN  
L-12 NOT TO SCALE SECTION ELEVATION



**TYPICAL WATERSIDE TOE CUTOFF WALL**  
NTS

**TEMPORARY SOIL CAP**  
NTS



**CONSTRUCTION SEQUENCE**  
NTS

**CONSTRUCTION SEQUENCE:**

- STEP 1: STRIP GRASS AND TOPSOIL WITHIN WORKING LIMITS. EXCAVATE LEVEE SLOPE AND CONSTRUCT WORKING SURFACE. EXCAVATE CUTOFF TRENCH.
- STEP 2: BACKFILL CUTOFF TRENCH WITH LEVEE FILL MATERIAL. CONSTRUCT CUTOFF WALL. PLACE TEMPORARY SOIL CAP.
- STEP 3: AFTER APPROVAL BY THE AGENCY, REMOVE THE TEMPORARY SOIL CAPS. EXCAVATE TO A MINIMUM DEPTH OF 1.0 FT BELOW THE WORKING SURFACE TO EXPOSE SUITABLE CUTOFF TRENCH AND CUTOFF WALL MATERIAL. EXCAVATE DEEPER TO EXPOSE SUITABLE CUTOFF TRENCH AND CUTOFF WALL MATERIAL IF DIRECTED BY THE AGENCY.
- STEP 4: FILL CUTOFF TRENCH EXCAVATION AND BACKFILL LEVEE SLOPE EXCAVATION WITH COMPACTED LEVEE FILL MATERIAL.

TYPICAL SECTION APPLIES TO THE FOLLOWING LEVEES:  
NE-1 AND NE-2 STA 3029+00 TO 3052+50

**NOTES:**

- 1. CUTOFF WALL SHALL BE SCB IF OPT CONSTRUCTION METHOD IS USED OR SCCB IF CONVENTIONAL BACKHOE CONSTRUCTION METHOD IS USED.

PLOT BY: CINDY JIMENEZ - Jun 06, 2015 - 2:13:42pm  
DRAWING: G:\SAFCA\NS12\_Design\Task 2\03-PLANS MASTERS SHEETS\SAFCA-C301.DWG

65% PS&E

REV.	DATE	BY	CHK.	APPR.	DESCRIPTION

DESIGNED BY: ----
DRAWN BY: CWJ
CHECKED BY: ----
IN CHARGE: J. BARNES
DATE: ----

**URS**  
2870 Gateway Oaks Drive  
Sacramento, CA 95833  
TEL: (916) 679-2000  
FAX: (916) 679-2900

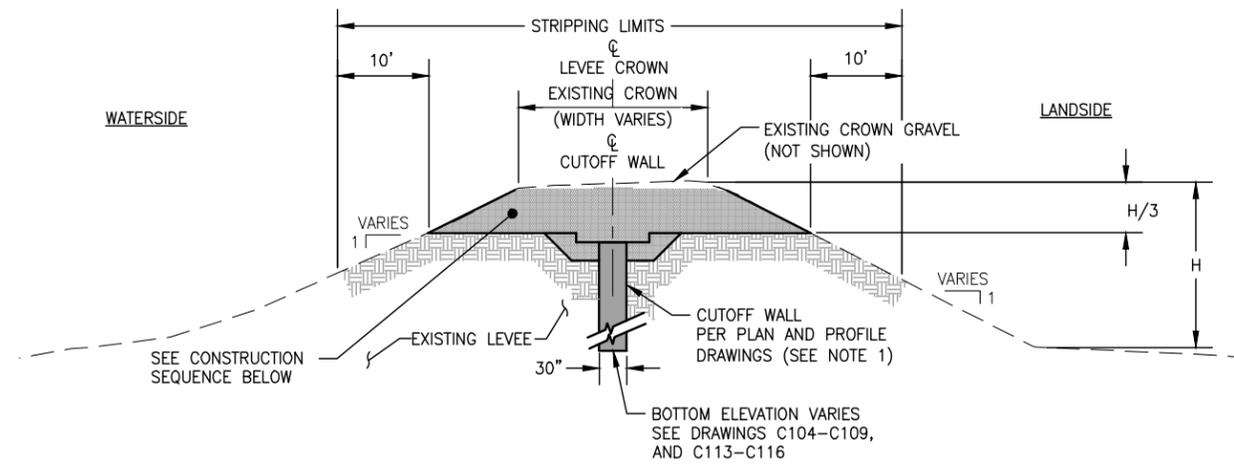
**PRELIMINARY**  
REGISTERED PROFESSIONAL ENGINEER  
JOSEPH H. BARNES  
No. 44005  
EXP. 06/30/2016  
CIVIL  
STATE OF CALIFORNIA

**SAFCA**  
Sacramento Area Flood Control Agency

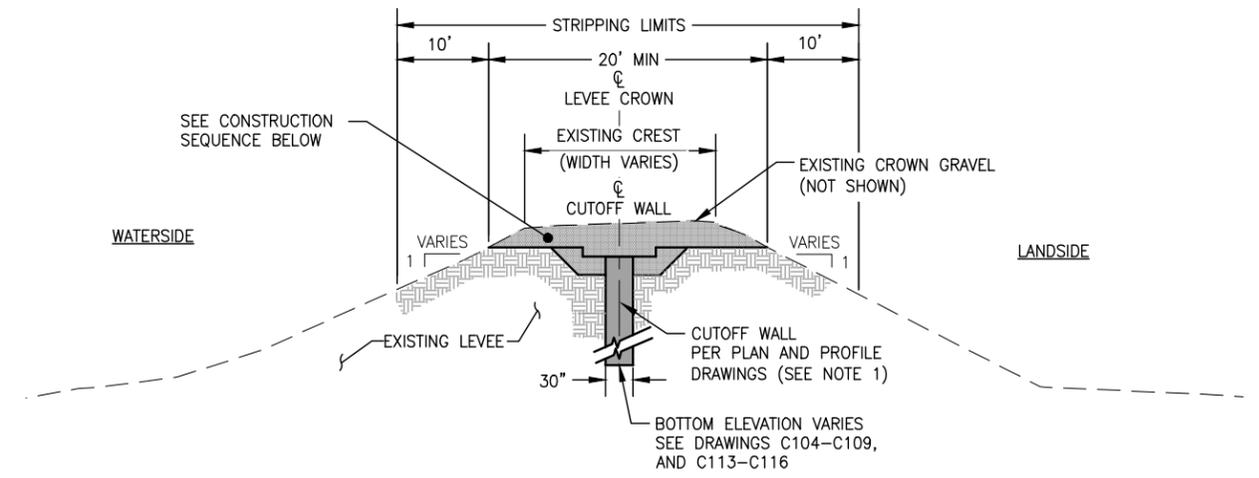
**NORTH AREA STREAMS LEVEE IMPROVEMENT PROJECT**  
NEMDC EAST - STA 3028+00 TO STA 3053+00  
ARCADE CREEK SOUTH - STA 4000+00 TO STA 4084+00  
ARCADE CREEK NORTH - STA 5023+00 TO STA 5101+00

**VOL 2 - NAS LEVEE IMPROVEMENT PLANS**  
**TYPICAL LEVEE SECTIONS**

VERIFY SCALES BAR IS ONE INCH ON ORIGINAL DRAWING. ADJUST SCALE FOR REDUCED PLOTS	
DRAWING NO. C301	SHEET 36

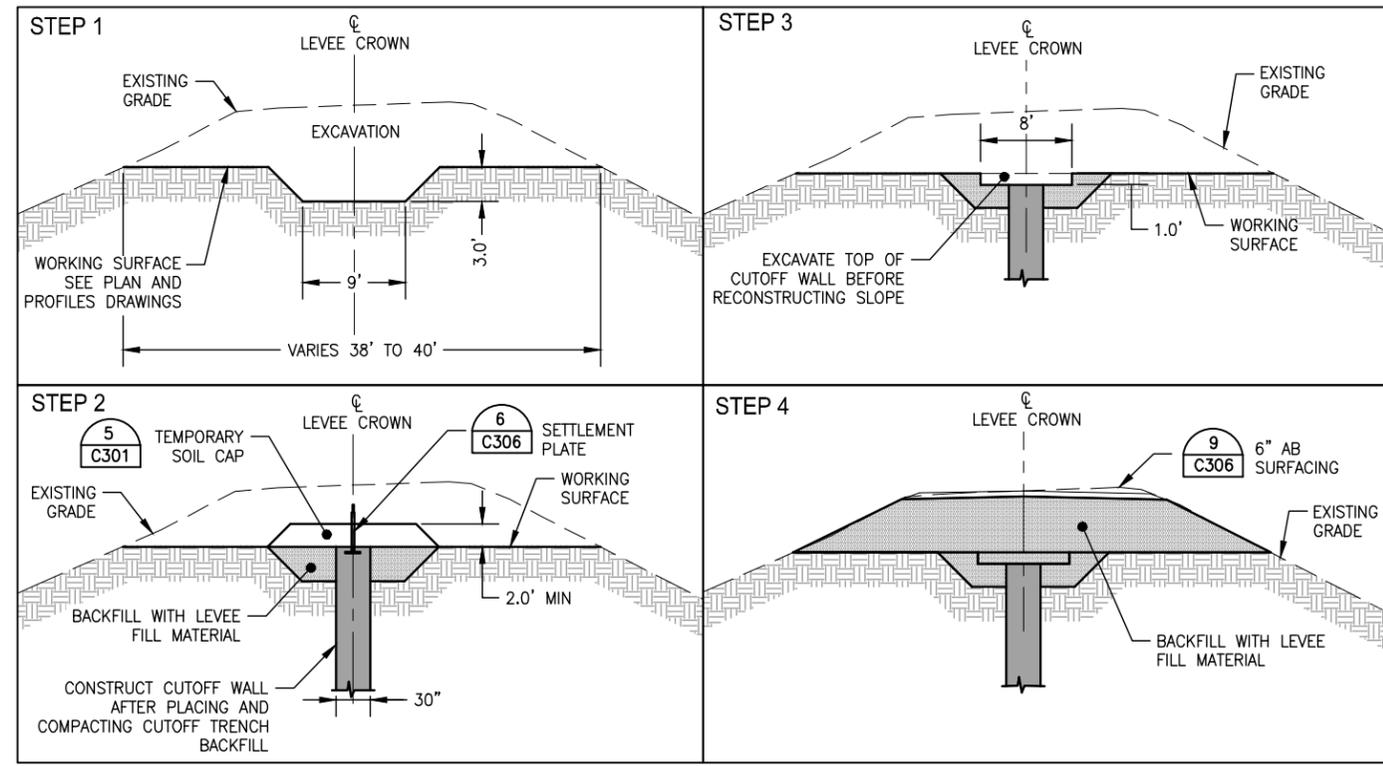


**CONVENTIONAL CONSTRUCTION METHOD**  
NTS



**OPT CONSTRUCTION METHOD**  
NTS

**TYPICAL CENTER LINE CUTOFF WALL**  
NTS



**CONSTRUCTION SEQUENCE**  
NTS

**CONSTRUCTION SEQUENCE:**

- STEP 1: STRIP GRASS AND TOPSOIL WITHIN WORKING LIMITS. EXCAVATE LEVEE SLOPE AND CONSTRUCT WORKING SURFACE. EXCAVATE CUTOFF TRENCH.
- STEP 2: BACKFILL CUTOFF TRENCH WITH LEVEE FILL MATERIAL. CONSTRUCT CUTOFF WALL. INSTALL SETTLEMENT PLATES. PLACE TEMPORARY SOIL CAP.
- STEP 3: AFTER APPROVAL BY THE AGENCY, REMOVE THE TEMPORARY SOIL CAP AND THE SETTLEMENT PLATES. EXCAVATE TO A MINIMUM DEPTH OF 1.0 FEET BELOW THE WORKING SURFACE TO EXPOSE SUITABLE CUTOFF TRENCH AND CUTOFF WALL MATERIAL. EXCAVATE DEEPER TO EXPOSE SUITABLE CUTOFF TRENCH AND CUTOFF WALL MATERIAL IF DIRECTED BY THE AGENCY.
- STEP 4: FILL CUTOFF TRENCH EXCAVATION AND BACKFILL LEVEE SLOPE EXCAVATION WITH COMPACTED LEVEE FILL MATERIAL.

TYPICAL SECTION APPLIES TO THE FOLLOWING LEVEES:  
ARS-1, STA 4001+85 TO 4013+00  
ARS-3, STA 4031+18 TO 4065+45  
ARN-3, STA 5039+50 TO 5071+25

**NOTES:**

- 1. CUTOFF WALL SHALL BE SB FOR CONVENTIONAL BACKHOE OR OPT METHODS OF CONSTRUCTION.

65% PS&E

PLOT BY: ONDY, JIMENEZ - Jun 06, 2015 - 2:13:52pm  
DRAWING: G:\SAFCA\NS12\_Design\Task 2\03-PLANS\MASTERS SHEETS\SAFCA-C302.DWG

REV.	DATE	BY	CHK.	APPR.	DESCRIPTION

DESIGNED BY:	
DRAWN BY:	CW
CHECKED BY:	
IN CHARGE:	J. BARNES
DATE:	

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FAX: (916) 679-2900

**SAFCA**  
Sacramento Area Flood Control Agency

REGISTERED PROFESSIONAL ENGINEER  
JOSEPH H. BARNES  
No. 44005  
EXP. 06/30/2016  
PRELIMINARY  
CIVIL  
STATE OF CALIFORNIA

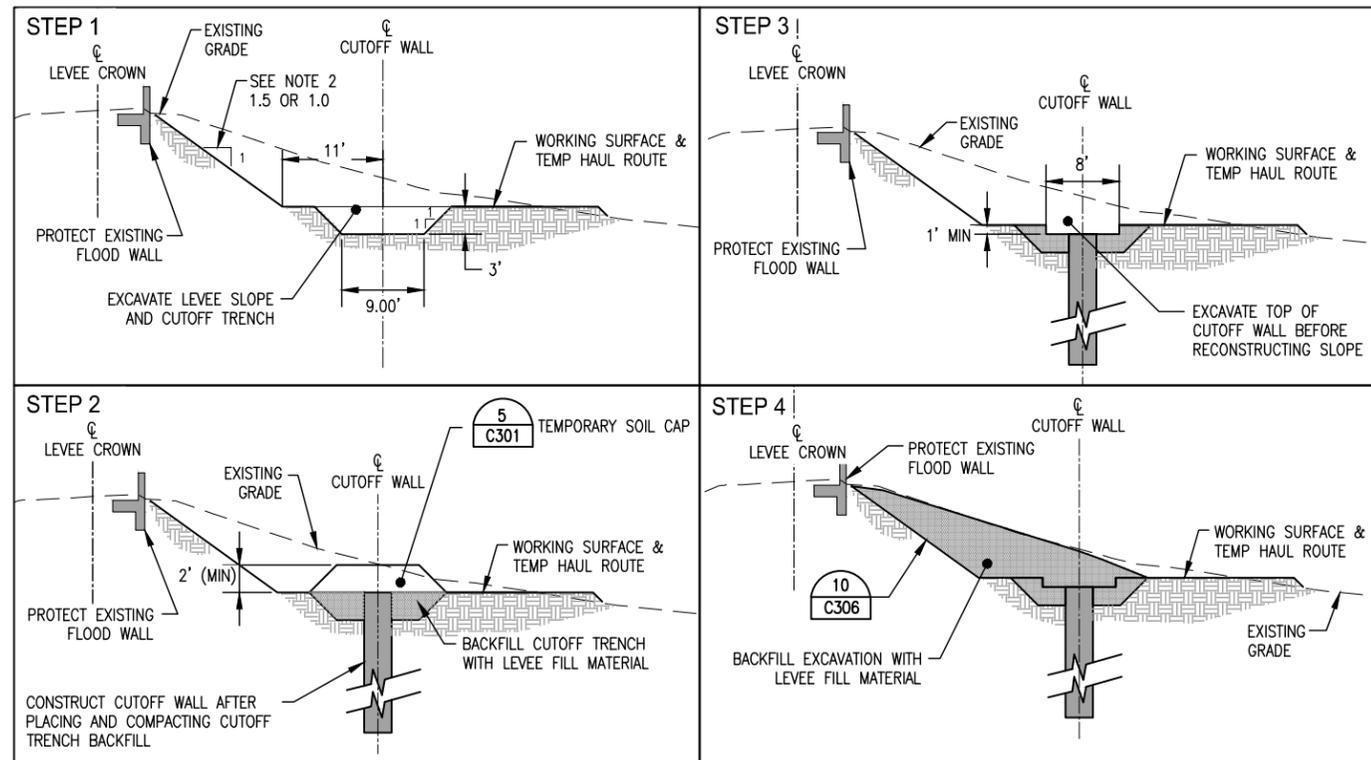
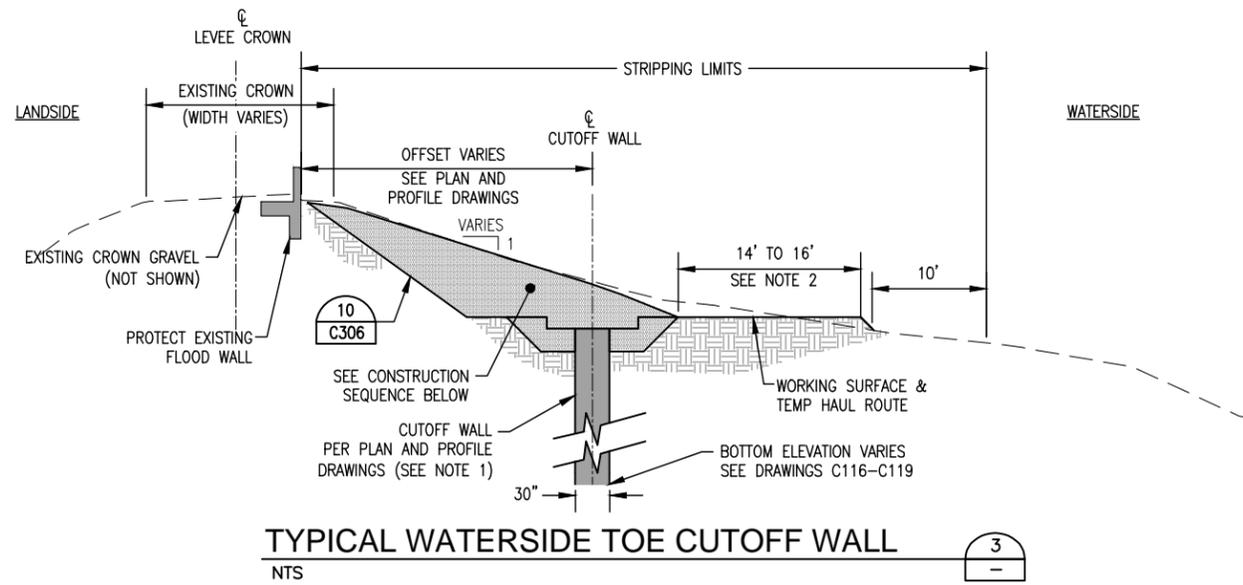
**NORTH AREA STREAMS LEVEE IMPROVEMENT PROJECT**

NEMDC EAST - STA 3028+00 TO STA 3053+00  
ARCADE CREEK SOUTH - STA 4000+00 TO STA 4084+00  
ARCADE CREEK NORTH - STA 5023+00 TO STA 5101+00

**VOL 2 - NAS LEVEE IMPROVEMENT PLANS**

**TYPICAL LEVEE SECTIONS**

VERIFY SCALES BAR IS ONE INCH ON ORIGINAL DRAWING. ADJUST SCALE FOR REDUCED PLOTS	
DRAWING NO.	SHEET
C302	37



**CONSTRUCTION SEQUENCE:**

- STEP 1: STRIP GRASS AND TOPSOIL WITHIN WORKING LIMITS. EXCAVATE LEVEE SLOPE AND CONSTRUCT WORKING SURFACE. EXCAVATE CUTOFF TRENCH.
- STEP 2: BACKFILL CUTOFF TRENCH WITH LEVEE FILL MATERIAL. CONSTRUCT CUTOFF WALL. PLACE TEMPORARY SOIL CAP.
- STEP 3: AFTER APPROVAL BY THE AGENCY, REMOVE THE TEMPORARY SOIL CAP. EXCAVATE TO A MINIMUM DEPTH OF 1.0 FT BELOW THE WORKING SURFACE TO EXPOSE SUITABLE CUTOFF TRENCH AND CUTOFF WALL MATERIAL. EXCAVATE DEEPER TO EXPOSE SUITABLE CUTOFF TRENCH AND CUTOFF WALL MATERIAL IF DIRECTED BY THE AGENCY.
- STEP 4: FILL CUTOFF TRENCH EXCAVATION AND BACKFILL LEVEE SLOPE EXCAVATION WITH COMPACTED LEVEE FILL MATERIAL.

TYPICAL SECTION APPLIES TO THE FOLLOWING LEVEES:  
ARN-4, STA 5071+00 TO 5100+00

**NOTES:**

- 1. CUTOFF WALL SHALL BE SCB OPT CONSTRUCTION METHOD IS USED OR SCCB IF CONVENTIONAL BACKHOE CONSTRUCTION IS USED.
- 2. CONTRACTOR SHALL STEEPEN CUTSLOPE TO 1:1 AND REDUCE HAUL ROAD WIDTH AS NEEDED TO AVOID PLACING ANY FILL IN THE EXISTING INCISED CHANNEL.

65% PS&E

PLOT BY: CINDY JIMENEZ - Jun 06, 2015 - 2:14:02pm  
DRAWING: G:\SAFCA\NS12\_Design\Task 2\03-PLANS MASTERS SHEETS\SAFCA-C303.dwg

REV.	DATE	BY	CHK.	APPR.	DESCRIPTION

DESIGNED BY: ----
DRAWN BY: CWJ
CHECKED BY: ----
IN CHARGE: J. BARNES
DATE: ----

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**SAFCA**  
Sacramento Area Flood Control Agency

NORTH AREA STREAMS LEVEE IMPROVEMENT PROJECT  
NEMDC EAST - STA 3028+00 TO STA 3053+00  
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**VOL 2 - NAS LEVEE IMPROVEMENT PLANS**  
**TYPICAL LEVEE SECTIONS**

VERIFY SCALES BAR IS ONE INCH ON ORIGINAL DRAWING. ADJUST SCALE FOR REDUCED PLOTS	
DRAWING NO. C303	SHEET 38

Consistency with CVFPP Goals

**Consistency with the Central Valley Flood Protection Plan & State Systemwide Investment Approach**

**Goals Compared with No Project**

CVFPP GOAL	STATE SYSTEMWIDE INVESTMENT APPROACH	NSS LEVEE IMPROVEMENT PROJECT
<b>Contributions to Primary Goal – Improve Flood Risk Management</b>		
Improve Level of Flood Protection	Overall higher protection consistent with assets being protected <ul style="list-style-type: none"> <li>Urban areas achieve protection from a 200- year flood, and for small communities achieve protection from a 100-year flood•</li> </ul>	<ul style="list-style-type: none"> <li>NSS Levee Improvement Project is an element of the Levee Accreditation Project that provides: <ul style="list-style-type: none"> <li>200-year level of flood protection for the City of Sacramento (urban area).</li> <li>Protects critical infrastructure in the City of Sacramento.</li> <li>Protects property valued at over \$4 Billion.</li> </ul> </li> </ul>
<b>Contributions to Supporting Goals</b>		
Improve Operations and Maintenance	Decrease in long-term O&M requirements <ul style="list-style-type: none"> <li>Decrease in long-term costs due to O&amp;M reforms (clarified roles and responsibilities, consistent standards, and revenue generation improvements) and physical modification to reduce geomorphic stressors</li> </ul>	<ul style="list-style-type: none"> <li>NSS Levee Improvement Project, as part of the Levee Accreditation Project, will reduce overall O&amp;M costs for flood fighting as the potential for seepage and boils will be greatly reduced.</li> </ul>
Promote Ecosystem Functions	Enhanced opportunities for systemwide ecosystem benefit <ul style="list-style-type: none"> <li>Floodway expansion provides substantial opportunity to improve ecosystem functions, fish passage, and the quantity, quality, and diversity of natural habitats</li> </ul>	<ul style="list-style-type: none"> <li>NSS Levee Improvement Project, as a stand-alone project, will result in no net losses in habitat value.</li> </ul>
Improve Institutional Support	<ul style="list-style-type: none"> <li>Improve flood management functions through changes and/or clarifications in current State policy directives, legislated authority and responsibilities, and partnerships with federal and local partners</li> </ul>	<ul style="list-style-type: none"> <li>SAFCA has significantly improved institutional support for flood management within the basin, including supporting the USACE's Sacramento River GRR Study.</li> <li>SAFCA has brought different agencies together to work collaboratively on flood risk reduction.</li> <li>SAFCA has bridged the gap between land use agencies and regional flood management agencies which will lead to better flood risk reduction land use decisions.</li> </ul>
Promote Multi- Benefit Projects	<ul style="list-style-type: none"> <li>Enhanced opportunities to integrate water quality, groundwater recharge, recreation, power, and other benefits</li> </ul>	<ul style="list-style-type: none"> <li>NSS Levee Improvement Project is part of the Levee Accreditation Project which consists of mitigation efforts that are aligned with SAFCA's involvement with the development and review of the Central Valley Flood System Conservation Strategy.</li> </ul>