

**Request for Proposals  
to  
Provide Construction Implementation  
for  
Agricultural Water Storage Ponds and Irrigation Infrastructure  
4/10/2017**

***Contracting Entity***

The San Mateo Resource Conservation District (RCD) is the contracting entity and project manager. The RCD helps people protect, conserve, and restore natural resources through information, education, and technical assistance programs. The work of the RCD is accomplished through strong voluntary partnerships with land owners and managers, technical advisors, area jurisdictions, government agencies, advocates, and others.

RCDs were established by the state of California to be locally governed special districts that act as focal points for local conservation efforts, using very diverse means to conserve natural resources on public and private lands. Established in 1939, San Mateo County's RCD was the first such district in California. For more information about the RCD, visit [www.sanmateorcd.org](http://www.sanmateorcd.org).

***Project Summary***

The RCD seeks qualified contractors to construct two agricultural water storage ponds and associated irrigation infrastructure. The ponds will be built at Butano Farm and Harley Farm located in Pescadero, California. The intent of this project is to 1) enhance stream flows in Pescadero and Butano Creeks for the benefit of native steelhead and coho salmon and 2) increase water security and maintain viable agriculture on the properties.

***Land Owners***

Butano Farms: Peninsula Open Space Trust (POST)

Harley Farms: Dee Harley

***Bid Process***

Bids for the Butano Farm and Harley Farm Pond and Irrigation Projects in the Pescadero-Butano watershed will be received by the San Mateo Resource Conservation District (RCD) by **7:00 p.m. on May 1st, 2017** at the following email address: [Joe@sanmateoRCD.org](mailto:Joe@sanmateoRCD.org). **Interested contractors can submit bids for one or both pond sites and/or may also include bids for irrigation designs at one or both sites.**

A pre-bid site inspection will be held at both project sites on **Monday, April 17th, 2017 from 10:00 a.m. to 2:00pm**. Attendance at the pre-bid meeting is strongly suggested for all prospective bidders. If planning to attend, confirm with Joe Issel by email to [joe@sanmateoRCD.org](mailto:joe@sanmateoRCD.org). Meeting location will be at the Butano Farm site ([click for directions from Half Moon Bay](#)).

The following plans, specifications, proposal forms, and sample contracting documents can be downloaded [here](#) (**irrigation designs will be uploaded by Thursday April 13<sup>th</sup>**):

**1. Butano Farm:**

- a. Pond designs and specifications
  - i. Geotechnical report
- b. Irrigation designs, specifications

**2. Harley Farm:**

- a. Pond designs and specifications
  - i. Geotechnical report
- b. Irrigation designs, specifications

**3. Sample Contract**

**4. Bid Submittals**

- a) Blank Bid Sheets:
  - a. Butano Farm Pond Component
  - b. Butano Farm Irrigation Component
  - c. Harley Farm Pond Component
  - d. Harley Farm Irrigation Component
- b) Authorized Bidders Statement Regarding Insurance coverage
- c) Authorized Non-Collusion Affidavit
- d) List of proposed suppliers and subcontractors.
- e) License and experience statement.

***Selection Criteria***

The RCD will consider the following when reviewing bids.

- 1. Cost effectiveness
- 2. Qualifications and relevant experience
- 3. References

Bidders are required to provide the following to meet qualifications for this bid notice:

- 1. A completed bid sheet. Use the blank bid sheet provided for each project component submitting a bid for:
  - a. Butano Farm Pond Component
  - b. Butano Farm Irrigation Component
  - c. Harley Farm Pond Component
  - d. Harley Farm Irrigation Component
- 2. Authorized Bidders Statement Regarding Insurance coverage. Use attached version.
- 3. Authorized Non-Collusion Affidavit. Use attached version.

4. List of proposed suppliers and subcontractors. Provide all information requested in the blank sheet provided.
5. License and experience statement. Provide all information requested in the blank sheet provided.
6. Submission of all bid materials by the deadline listed above.

***Additional Construction Requirements***

Construction Timeline: Construction can take place between approximately July 1st and October 15<sup>th</sup>, 2017. The timing for some of the irrigation infrastructure work will need to be agreed upon by the RCD and the landowners to ensure critical farming practices can continue as needed. However, the pond locations will be free and clear for construction to take place.

Project Permitting: A Stormwater Pollution Prevention Plan (SWPPP) is being developed for the Butano Farm project only. The SWPPP will be provided by Monday April 24<sup>th</sup>. The SWPPP will be finalized by the project Qualified SWPPP Developer (QSD) after selection of a Contractor for project construction. The Contractor will be responsible for providing Qualified SWPPP Practitioner (QSP) services during project construction.

Biological Monitoring: Contractors will be required to participate in a training on sensitive species that may be encountered during the project, and to adhere to all permit requirements. Biological monitors provided by the RCD will be present at some points during construction and will have authority to stop work if sensitive species are found.

Notice of Grant Funding: Bidders are notified that these projects are grant-funded. Butano and Harley Farms pond projects are funded by the Department of Water Resources (DWR, Grant Agreement # 4600010883). The DWR funds for these projects were appropriated through Proposition 84 round 3 of the Integrated Regional Water Management (IRWM) Implementation Grants. Funds for irrigation upgrades have been made available through the USDA Natural Resources Conservation Service (NRCS).

Prevailing Wage Requirement and Labor Compliance Program: This project is subject to prevailing wage requirements and a labor compliance program will be established by the RCD using a third-party consultant to oversee contractor compliance.

Eligibility requirements for bidding contractors for prevailing wage projects include:

- Be in good legal standing with no outstanding judgments or liens owed to workers or to the State of California.
- Not be [debarred from doing public works](#) by the United States Department of Labor or any state that has public works debarment laws.
- Have a California Contractors State License if one is required (non-construction contractors must provide their professional license number if one exists for their profession).

Visit <http://www.dir.ca.gov/Public-Works/Contractors.html> for more information.

## **Harley Farm RFP Attachments 4/10/2017**

- A.1 Site Maps
- A.2 Site Photos
- A.3 Pond Designs
- A.4 Pond Specifications
- A.5 Pond Site Geotechnical Investigation Report
- A.6 Irrigation Designs
- A.7 Sample Contract
- A.8 Required Bid Submittals
  - Bid sheets
    - Pond Component
    - Irrigation Component
  - Authorized Bidders Statement Regarding Insurance coverage. Use attached version.
  - Authorized Non-Collusion Affidavit. Use attached version.
  - List of proposed suppliers and subcontractors. Provide all information requested in the blank sheet provided.
  - License and experience statement. Provide all information requested in the blank sheet provided.

**Submission of all bid materials is due by May 1<sup>st</sup>, 2017 by 7pm.**



## **A.1 LOCATION MAPS**



← from 1958 Pescadero Creek Rd, Pescadero, CA 94060  
to 182-452 North St, Pescadero, CA 94060

**5 min** (3.0 miles)



via Pescadero Creek Rd

Fastest route, the usual traffic

**1958 Pescadero Creek Rd**

Pescadero, CA 94060

↑ Head east on Pescadero Creek Rd toward Reservoir Rd

2.9 mi

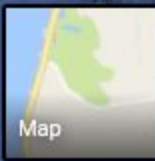
↩ Turn left onto North St

0.1 mi

**182-452 North St**

Pescadero, CA 94060

These directions are for planning purposes only. You may find that construction projects, traffic, weather, or other events may cause conditions to differ from the map results, and you should plan your route accordingly. You must obey all signs or notices regarding your route.

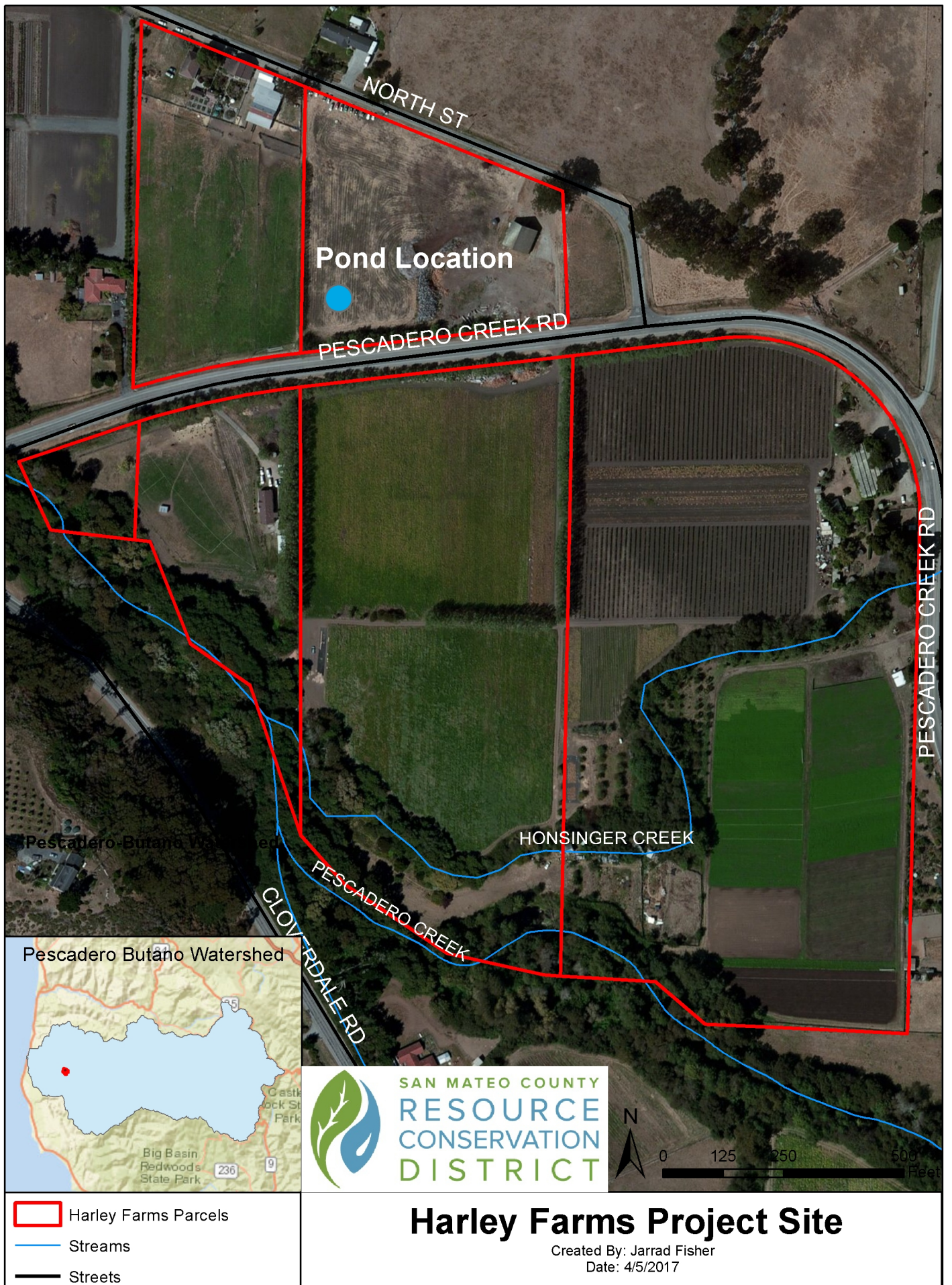


Live traffic

Fast Slow









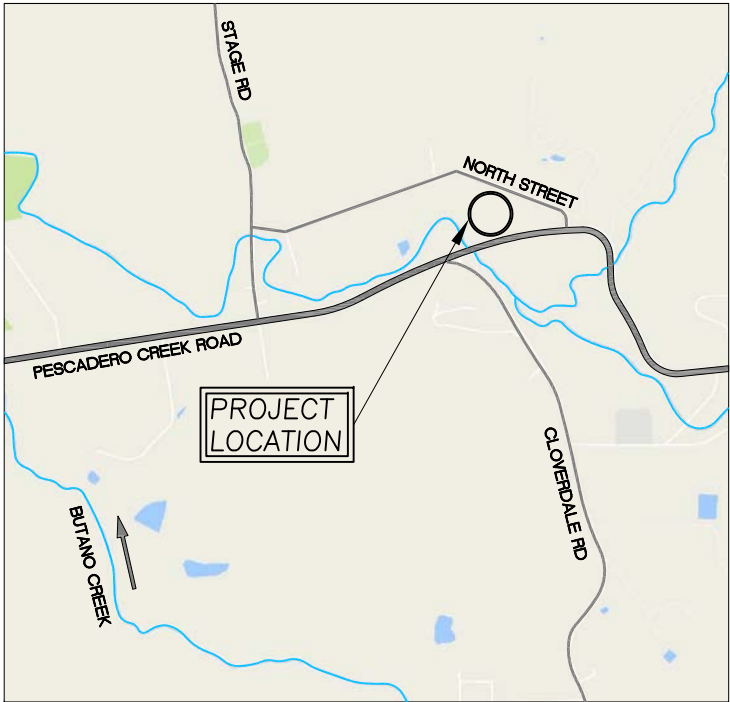
## A.2 Harley Farm Site Photos



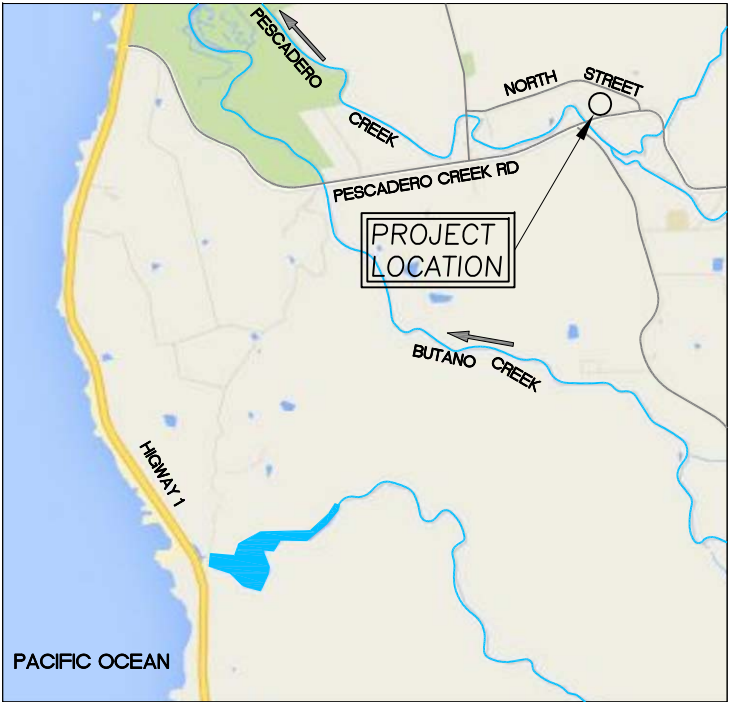
## **A.3 Pond Design**

# HARLEY FARMS POND (2 ACRE-FT)

## 100% DESIGN SUBMITTAL



VICINITY MAP  
N.T.S. (GOOGLE)



REGIONAL MAP  
N.T.S. (GOOGLE)

### GENERAL NOTES

- PREPARED AT THE REQUEST OF:  
ATTN: JOE ISSEL  
SAN MATEO COUNTY RCD  
625 MIRAMONTES STREET, SUITE 103  
HALF MOON BAY, CALIFORNIA 94019
- TOPOGRAPHIC MAPPING WAS PERFORMED BY:  
WATERWAYS CONSULTING, INC.  
509A SWIFT STREET  
SANTA CRUZ, CALIFORNIA 95062  
SURVEY DATE: AUGUST 17, 2016.
- ELEVATION DATUM: AN ASSUMED ELEVATION OF 1000.00' WAS ESTABLISHED AT SURVEY CONTROL POINT #1 (1/2"X24", REBAR) SHOWN ON SHT. C2.
- BASIS OF BEARINGS: BASIS OF BEARINGS BETWEEN POINTS #1 AND #2 IS N00°00'00"E.
- CONTOUR INTERVAL IS ONE FOOT. ELEVATIONS AND DISTANCES SHOWN ARE IN DECIMAL FEET.
- THIS IS NOT A BOUNDARY SURVEY. PROPERTY LINES ARE NOT SHOWN HEREON.
- IF DISCREPANCIES ARE DISCOVERED BETWEEN THE CONDITIONS EXISTING IN THE FIELD AND THE INFORMATION SHOWN ON THESE DRAWINGS, NOTIFY THE ENGINEER PRIOR TO PROCEEDING WITH CONSTRUCTION.
- TREE DIMENSIONS: TRUNK DIAMETERS SHOWN REPRESENT DIAMETER AT BREAST HEIGHT (DBH), MEASURED IN INCHES. DBH IS MEASURED 4.5 FT ABOVE GROUND FOR SINGLE TRUNKS AND TRUNKS THAT SPLIT INTO SEVERAL STEMS CLOSE TO THE GROUND. THE DBH FOR TREES THAT SPLIT INTO SEVERAL STEMS CLOSE TO THE GROUND MAY BE CONSOLIDATED INTO A SINGLE DBH BY TAKING THE SQUARE ROOT OF THE SUM OF ALL SQUARED STEM DBH'S, UNLESS OTHERWISE NOTED. WHERE TREES FORK NEAR BREAST HEIGHT, TRUNK DIAMETER IS MEASURED AT THE NARROWEST PART OF THE MAIN STEM BELOW THE FORK. FOR TREES ON A SLOPE, BREAST HEIGHT IS REFERENCED FROM THE UPPER SIDE OF THE SLOPE. FOR LEANING TREES, BREAST HEIGHT IS MEASURED ON THE SIDE THAT THE TREE LEANS TOWARD. TREES WITH DBH LESS THAN 8" ARE TYPICALLY NOT SHOWN.  
  
12"P = 12" DBH PINE
- TREE SPECIES ARE IDENTIFIED WHEN KNOWN. HOWEVER, FINAL DETERMINATION SHOULD BE MADE BY A QUALIFIED BOTANIST. REFER TO THE LEGEND FOR TREE SPECIES SYMBOLS.
- ALL CONSTRUCTION AND MATERIALS SHALL CONFORM TO THE 2010 EDITION OF THE STATE OF CALIFORNIA STANDARD SPECIFICATIONS, ISSUED BY THE DEPARTMENT OF TRANSPORTATION (HEREAFTER REFERRED TO AS "STANDARD SPECIFICATIONS").

### ABBREVIATIONS

AVG.	AVERAGE
CC	CONCRETE
CY	CUBIC YARDS
DIA.	DIAMETER
E	EXISTING
EG	EXISTING GROUND
ELEV.	ELEVATION
DI	DRAINAGE INLET
FG	FINISHED GRADE
FT	FEET
INV	INVERT
N	NEW
NIC	NOT IN CONTRACT
N.T.S.	NOT TO SCALE
O.C.	ON CENTER
RC	RELATIVE COMPACTION
RSP	ROCK SLOPE PROTECTION
SPK	SPIKE
SQ.FT.	SQUARE FOOT
T	TREE
T.B.D.	TO BE DETERMINED
TYP	TYPICAL
UNK	UNKNOWN
WSE	WATER SURFACE ELEVATION
YR	YEAR

TREE SPECIES  
W WILLOW

### PROJECT DESCRIPTION

THESE DRAWINGS PROVIDE 90% DESIGN LEVEL DETAILS FOR THE CONSTRUCTION OF A REGULATING RESERVOIR WITH TWO ACRE-FEET OF STORAGE IN SAN MATEO COUNTY, CALIFORNIA.

WORK CONSISTS OF EXCAVATION AND CONSTRUCTION OF EMBANKMENTS.

### SHEET INDEX

C1	COVER SHEET
C2	SITE PLAN
C3	SECTIONS AND DETAILS
C4	NOTES

### SECTION AND DETAIL CONVENTION

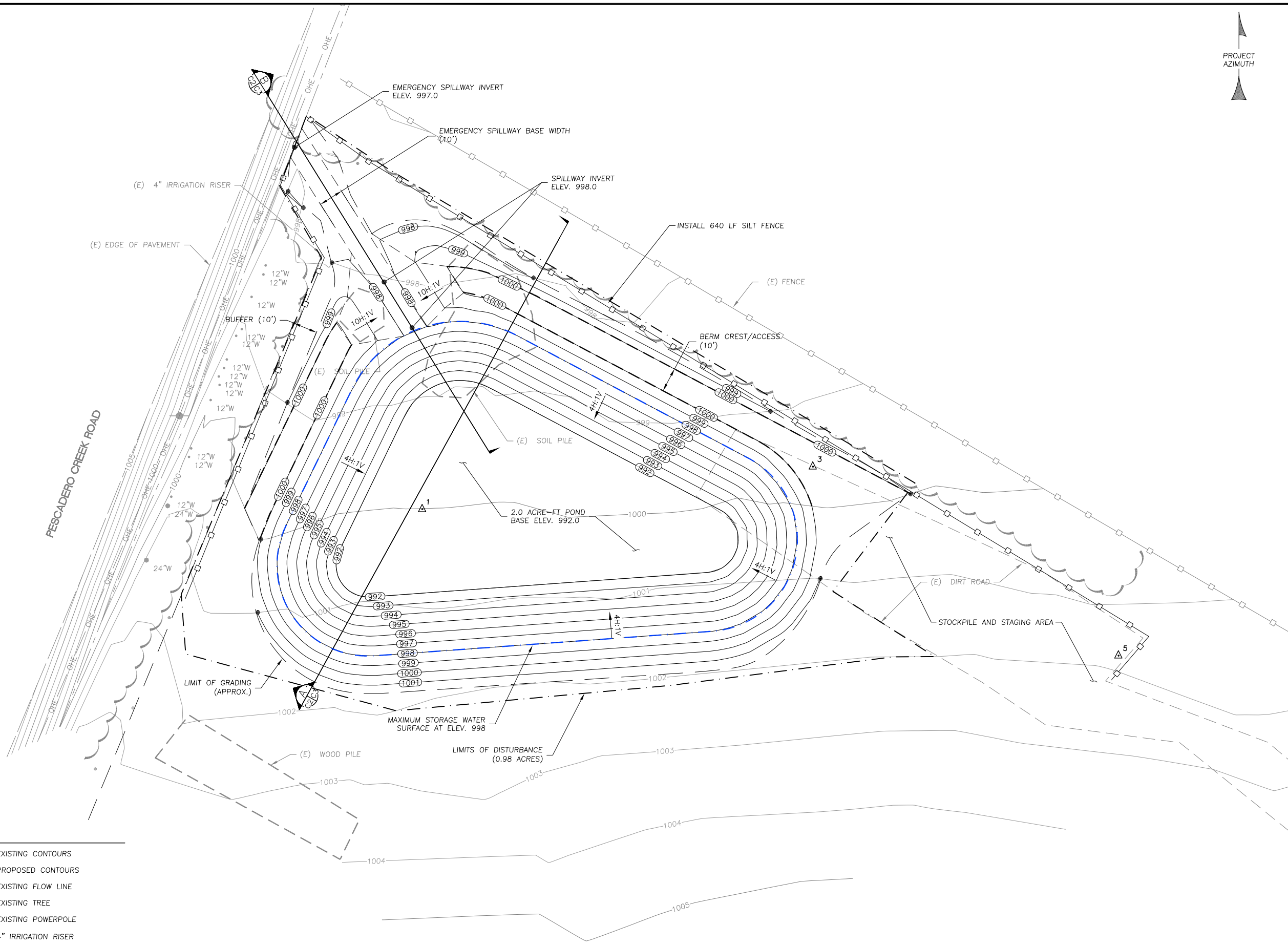
SECTION OR DETAIL IDENTIFICATION  
(NUMBER OR LETTER)



REFERENCE SHEET FROM WHICH  
DETAIL OR SECTION IS TAKEN.

REFERENCE SHEET ON WHICH  
SECTION OR DETAIL IS SHOWN.





LEGEND

- 85 86 EXISTING CONTOURS
- 100 PROPOSED CONTOURS
- 101 EXISTING FLOW LINE
- 8"A EXISTING TREE
- EXISTING POWERPOLE
- 4" IRRIGATION RISER
- DRIP LINE

SITE PLAN

SCALE: 1" = 20'

**WATERWAYS CONSULTING INC.**  
509A SWIFT ST.  
SANTA CRUZ, CA 95060  
PH: (831) 725-1111 FAX: (831) 725-1112  
WWW.WATERWAYS.COM

DATE: 3/30/17  
No. 62235  
Exp. 9-30-17  
MATT W. WELD  
REGISTERED PROFESSIONAL ENGINEER  
STATE OF CALIFORNIA  
CIVIL

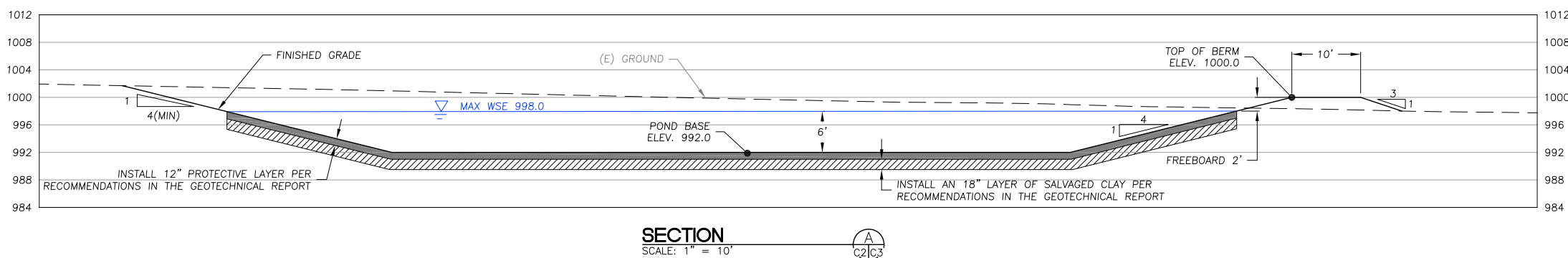
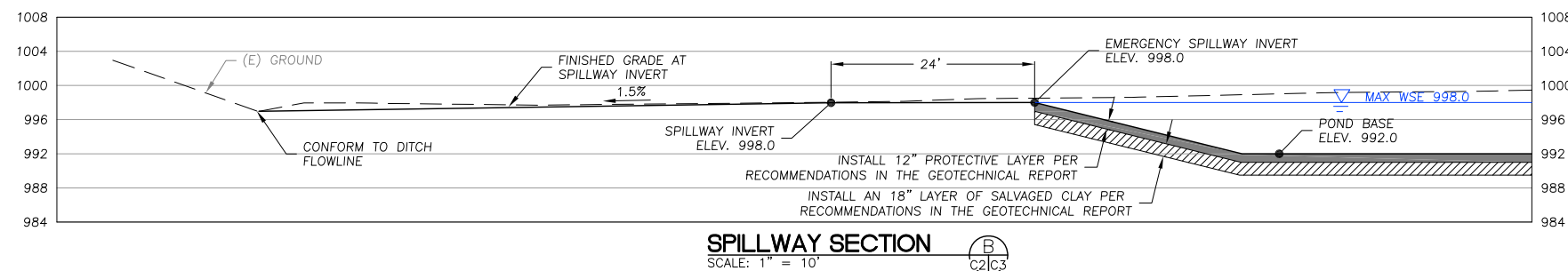
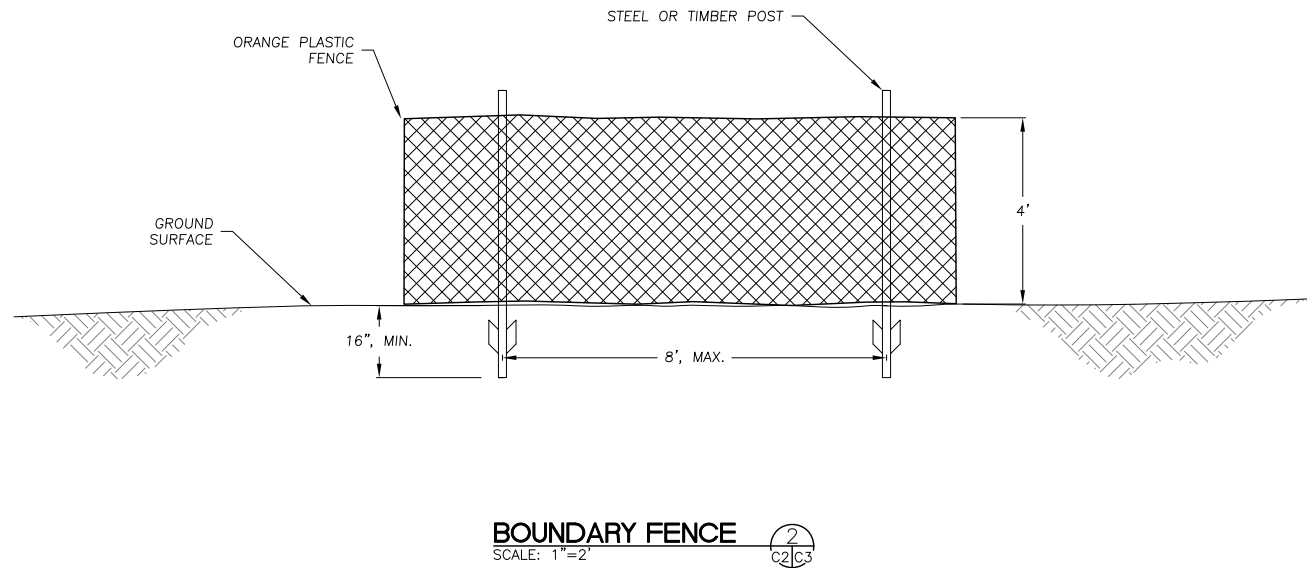
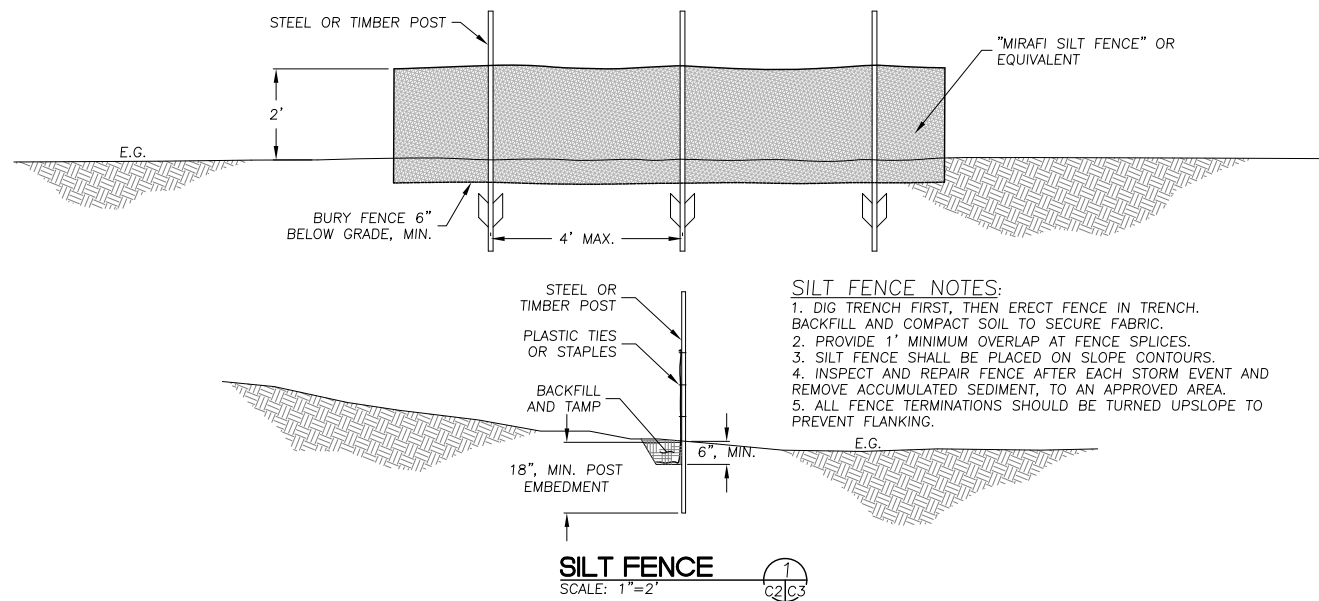
PREPARED AT THE REQUEST OF:  
SAN MATEO COUNTY RCD

SITE PLAN

HARLEY FARMS POND  
100% SUBMITTAL

DESIGNED BY: B.M.S.  
DRAWN BY: B.M.S.  
CHECKED BY: M.W.W.  
DATE: 3/30/17  
JOB NO.: 16-033

BAR IS ONE INCH ON  
ORIGINAL DRAWING.  
ADJUST SCALES FOR  
REDUCED PLOTS





GENERAL NOTES

1. PREPARED AT THE REQUEST OF:  
SAN MATEO COUNTY RESOURCE CONSERVATION DISTRICT  
625 MIRAMONTES STREET, SUITE 103  
HALF MOON BAY, CALIFORNIA 94019  
TELEPHONE: (650) 712-7765

2. AFFECTED APN'S:  
087-042-060

3. NOTIFY THE ENGINEER AT LEAST 48 HOURS PRIOR TO CONSTRUCTION. THE ENGINEER OR A DESIGNATED REPRESENTATIVE SHALL OBSERVE THE CONSTRUCTION PROCESS, AS NECESSARY TO ENSURE PROPER INSTALLATION PROCEDURES.

4. EXISTING UNDERGROUND UTILITY LOCATIONS:

A. CALL UNDERGROUND SERVICE ALERT (1-800-642-2444) TO LOCATE ALL UNDERGROUND UTILITY LINES PRIOR TO COMMENCING CONSTRUCTION.

B. PRIOR TO BEGINNING WORK, CONTACT ALL UTILITIES COMPANIES WITH REGARD TO WORKING OVER, UNDER, OR AROUND EXISTING FACILITIES AND TO OBTAIN INFORMATION REGARDING RESTRICTIONS THAT ARE REQUIRED TO PREVENT DAMAGE TO THE FACILITIES.

C. EXISTING UTILITY LOCATIONS SHOWN ARE COMPILED FROM INFORMATION SUPPLIED BY THE APPROPRIATE UTILITY AGENCIES AND FROM FIELD MEASUREMENTS TO ABOVE GROUND FEATURES READILY VISIBLE AT THE TIME OF SURVEY. LOCATIONS SHOWN ARE APPROXIMATE. THE CONTRACTOR IS CAUTIONED THAT ONLY ACTUAL EXCAVATION WILL REVEAL THE DIMENSIONS, SIZES, MATERIALS, LOCATIONS, AND DEPTH OF UNDERGROUND UTILITIES.

D. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR THE LOCATION AND/OR PROTECTION OF ALL EXISTING AND PROPOSED PIPING, UTILITIES, TRAFFIC SIGNAL EQUIPMENT (BOTH ABOVE GROUND AND BELOW GROUND), STRUCTURES, AND ALL OTHER EXISTING IMPROVEMENTS THROUGHOUT CONSTRUCTION.

E. PRIOR TO COMMENCING FABRICATION OR CONSTRUCTION, DISCOVER OR VERIFY THE ACTUAL DIMENSIONS, SIZES, MATERIALS, LOCATIONS, AND ELEVATIONS OF ALL EXISTING UTILITIES AND POTHOLE THOSE AREAS WHERE POTENTIAL CONFLICTS ARE LIKELY OR DATA IS OTHERWISE INCOMPLETE.

F. TAKE APPROPRIATE MEASURES TO PROTECT EXISTING UTILITIES DURING CONSTRUCTION OPERATIONS. CONTRACTOR IS SOLELY RESPONSIBLE FOR THE COST OF REPAIR/REPLACEMENT OF ANY EXISTING UTILITIES DAMAGED DURING CONSTRUCTION.

G. UPON LEARNING OF THE EXISTENCE AND/OR LOCATIONS OF ANY UNDERGROUND FACILITIES NOT SHOWN OR SHOWN INACCURATELY ON THE PLANS OR NOT PROPERLY MARKED BY THE UTILITY OWNER, IMMEDIATELY NOTIFY THE UTILITY OWNER AND THE CITY BY TELEPHONE AND IN WRITING.

H. UTILITY RELOCATIONS REQUIRED FOR THE CONSTRUCTION OF THE PROJECT FACILITIES WILL BE PERFORMED BY THE UTILITY COMPANY, UNLESS OTHERWISE NOTED.

5. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO BE FULLY INFORMED OF AND TO COMPLY WITH ALL LAWS, ORDINANCES, CODES, REQUIREMENTS AND STANDARDS WHICH IN ANY MANNER AFFECT THE COURSE OF CONSTRUCTION OF THIS PROJECT, THOSE ENGAGED OR EMPLOYED IN THE CONSTRUCTION AND THE MATERIALS USED IN THE CONSTRUCTION.

6. ANY TESTS, INSPECTIONS, SPECIAL OR OTHERWISE, THAT ARE REQUIRED BY THE BUILDING CODES, LOCAL BUILDING DEPARTMENTS, OR THESE PLANS, SHALL BE DONE BY AN INDEPENDENT INSPECTION COMPANY. JOB SITE VISITS BY THE ENGINEER DO NOT CONSTITUTE AN OFFICIAL INSPECTION. IT IS THE CONTRACTOR'S RESPONSIBILITY TO ENSURE THAT THE REQUIRED TESTS AND INSPECTIONS ARE PERFORMED.

7. PROJECT SCHEDULE: PRIOR TO COMMENCEMENT OF WORK, SUBMIT TO THE ENGINEER FOR REVIEW AND APPROVAL A DETAILED CONSTRUCTION SCHEDULE. DO NOT BEGIN ANY CONSTRUCTION WORK UNTIL THE PROJECT SCHEDULE AND WORK PLAN IS APPROVED BY THE ENGINEER. ALL CONSTRUCTION SHALL BE CLOSELY COORDINATED WITH THE ENGINEER SO THAT THE QUALITY OF WORK CAN BE CHECKED FOR APPROVAL. PURSUE WORK IN A CONTINUOUS AND DILIGENT MANNER TO ENSURE A TIMELY COMPLETION OF THE PROJECT.

8. THE CONTRACTOR SHALL BE RESPONSIBLE FOR DESIGN, PERMITTING, INSTALLATION, AND MAINTENANCE OF ANY AND ALL TRAFFIC CONTROL MEASURES DEEMED NECESSARY.

9. THE CONTRACTOR SHALL BE RESPONSIBLE FOR GENERAL SAFETY DURING CONSTRUCTION. ALL WORK SHALL CONFORM TO PERTINENT SAFETY REGULATIONS AND CODES. THE CONTRACTOR SHALL BE SOLELY AND COMPLETELY RESPONSIBLE FOR FURNISHING, INSTALLING, AND MAINTAINING ALL WARNING SIGNS AND DEVICES NECESSARY TO SAFEGUARD THE GENERAL PUBLIC AND THE WORK, AND PROVIDE FOR THE PROPER AND SAFE ROUTING OF VEHICULAR AND PEDESTRIAN TRAFFIC DURING THE PERFORMANCE OF THE WORK. THE CONTRACTOR SHALL BE SOLELY AND COMPLETELY RESPONSIBLE FOR COMPLIANCE WITH ALL APPLICABLE PROVISIONS OF OSHA IN THE CONSTRUCTION PRACTICES FOR ALL EMPLOYEES DIRECTLY ENGAGED IN THE CONSTRUCTION OF THIS PROJECT.

10. CONSTRUCTION CONTRACTOR AGREES THAT IN ACCORDANCE WITH GENERALLY ACCEPTED CONSTRUCTION PRACTICES, CONSTRUCTION CONTRACTOR WILL BE REQUIRED TO ASSUME SOLE AND COMPLETE RESPONSIBILITY FOR JOB SITE CONDITIONS DURING THE COURSE OF CONSTRUCTION OF THE PROJECT, INCLUDING SAFETY OF ALL PERSONS AND PROPERTY; THAT THIS REQUIREMENT SHALL BE MADE TO APPLY CONTINUOUSLY AND NOT BE LIMITED TO NORMAL WORKING HOURS, AND CONSTRUCTION CONTRACTOR FURTHER AGREES TO DEFEND, INDEMNIFY AND HOLD DESIGN PROFESSIONAL HARMLESS FROM ANY AND ALL LIABILITY, REAL OR ALLEGED, IN CONNECTION WITH THE PERFORMANCE OF WORK ON THIS PROJECT, EXCEPTION LIABILITY ARISING FROM THE SOLE NEGLIGENCE OF DESIGN PROFESSIONAL. NEITHER THE PROFESSIONAL ACTIVITIES OF CONSULTANT NOR THE PRESENCE OF CONSULTANT OR HIS OR HER EMPLOYEES OR SUB-CONSULTANTS AT A CONSTRUCTION SITE SHALL RELIEVE THE CONTRACTOR AND ITS SUBCONTRACTORS OF THEIR RESPONSIBILITIES INCLUDING, BUT NOT LIMITED TO, CONSTRUCTION MEANS, METHODS, SEQUENCE, TECHNIQUES OR PROCEDURES NECESSARY FOR PERFORMING, SUPERINTENDING OR COORDINATING ALL PORTIONS OF THE WORK OF CONSTRUCTION IN ACCORDANCE WITH THE CONTRACT DOCUMENTS AND APPLICABLE HEALTH OR SAFETY REQUIREMENTS OF ANY REGULATORY AGENCY OR OF STATE LAW.

11. MAINTAIN A CURRENT, COMPLETE, AND ACCURATE RECORD OF ALL AS-BUILT DEVIATIONS FROM THE CONSTRUCTION AS SHOWN ON THESE DRAWINGS AND SPECIFICATIONS, FOR THE PURPOSE OF PROVIDING THE ENGINEER OF RECORD WITH A BASIS FOR THE PREPARATION OF RECORD DRAWINGS.

12. MAINTAIN THE SITE IN A NEAT AND ORDERLY MANNER THROUGHOUT THE CONSTRUCTION PROCESS. STORE ALL MATERIALS WITHIN APPROVED STAGING AREAS.

13. PROVIDE, AT CONTRACTOR'S SOLE EXPENSE, ALL MATERIALS, LABOR AND EQUIPMENT REQUIRED TO COMPLY WITH ALL APPLICABLE PERMIT CONDITIONS AND REQUIREMENTS.

14. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL CONSTRUCTION STAKING AND LAYOUT, UNLESS OTHERWISE SPECIFIED.

15. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION AND PRESERVATION OF ALL SURVEY MONUMENTS OR PROPERTY CORNERS. DISTURBED MONUMENTS SHALL BE RESTORED BACK TO THEIR ORIGINAL LOCATION AND SHALL BE CERTIFIED BY A REGISTERED CIVIL ENGINEER OR LAND SURVEYOR AT THE SOLE EXPENSE OF THE CONTRACTOR.

16. ALL STANDARD STREET MONUMENTS, LOT CORNER PIPES, AND OTHER PERMANENT MONUMENTS DISTURBED DURING THE PROCESS OF CONSTRUCTION SHALL BE REPLACED AND A RECORD OF SURVEY OR CORNER RECORD PER SECTION 8771 OF THE PROFESSIONAL LAND SURVEYORS ACT FILED BEFORE ACCEPTANCE OF THE IMPROVEMENTS BY THE COUNTY. COPIES OF ANY RECORD OF SURVEY OR CORNER RECORDS SHALL BE SUBMITTED TO THE COUNTY.

17. CONTRACTOR IS REQUIRED TO ASSUME SOLE AND COMPLETE RESPONSIBILITY FOR JOB SITE CONDITIONS DURING THE COURSE OF CONSTRUCTION OF THE PROJECT, INCLUDING SAFETY OF ALL PERSONS AND PROPERTY; THIS REQUIREMENT SHALL BE MADE TO APPLY CONTINUOUSLY AND NOT BE LIMITED TO NORMAL WORKING HOURS.

18. THE CONTRACTOR SHALL CONFORM TO THE RULES AND REGULATIONS OF THE CONSTRUCTION SAFETY ORDERS OF THE CALIFORNIA DIVISION OF OCCUPATIONAL SAFETY AND HEALTH PERTAINING TO EXCAVATION AND TRENCHES THE CALIFORNIA CODE OF REGULATIONS TITLE 8, SUBCHAPTER 4 CONSTRUCTION SAFETY ORDERS, ARTICLE 6 EXCAVATION.

19. CULTURAL RESOURCES: IN THE EVENT THAT HUMAN REMAINS AND/OR CULTURAL MATERIALS ARE FOUND, ALL PROJECT-RELATED CONSTRUCTION SHALL CEASE WITHIN A 100-FOOT RADIUS. THE CONTRACTOR SHALL, PURSUANT TO SECTION 7050.5 OF THE HEALTH AND SAFETY CODE, AND SECTION 5097.94 OF THE PUBLIC RESOURCES CODE OF THE STATE OF CALIFORNIA, NOTIFY THE SAN MATEO COUNTY CORONER IMMEDIATELY.

EARTHWORK NOTES

1. ALL GRADING SHALL COMPLY WITH THE RECOMMENDATIONS OF THE GEOTECHNICAL REPORT, AND WITH THE APPLICABLE REQUIREMENTS OF THE SAN MATEO COUNTY GRADING ORDINANCE. REFER TO GEOTECHNICAL INVESTIGATION REPORT BY:

CMAG ENGINEERING, INC.  
62 HANGAR WAY, SUITE A  
WATSONVILLE, CA 95076  
(831) 475-1411  
JOB No. 16-141-SM

PRIOR TO PERFORMING ANY WORK, THE CONTRACTOR SHALL BE FAMILIAR WITH THE GEOTECHNICAL INVESTIGATION. IN THE EVENT OF DISCREPANCY BETWEEN THE REPORT AND THE NOTES HEREIN, THE REPORT SHALL PREVAIL. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO VISIT THE SITE AND MAKE HIS OWN INTERPRETATIONS WITH REGARD TO MATERIALS, METHODS AND EQUIPMENT NECESSARY TO PERFORM THE WORK REQUIRED FOR THIS PROJECT.

2. GRADING SUMMARY:

TOTAL CUT VOLUME =

5,130 CY

TOTAL FILL VOLUME =

220 CY

OFFHAUL =

4,910 CY

THE ABOVE QUANTITIES ARE APPROXIMATE IN-PLACE VOLUMES CALCULATED AS THE DIFFERENCE BETWEEN EXISTING GROUND AND THE PROPOSED FINISH GRADE, PREPARED FOR PERMITTING PURPOSES ONLY. EXISTING GROUND IS DEFINED BY THE TOPOGRAPHIC CONTOURS AND/OR SPOT ELEVATIONS ON THE PLAN. PROPOSED FINISH GRADE IS DEFINED AS THE DESIGN SURFACE ELEVATION OF WORK TO BE CONSTRUCTED. THE QUANTITIES HAVE NOT BEEN FACTORED TO INCLUDE ALLOWANCES FOR BULKING, CLEARING AND GRUBBING, SUBSIDENCE, SHRINKAGE, OVER EXCAVATION, AND RECOMPACTION, UNDERGROUND UTILITY AND SUBSTRUCTURE SPOILS AND CONSTRUCTION METHODS.

THE CONTRACTOR SHALL PERFORM AN INDEPENDENT EARTHWORK ESTIMATE FOR THE PURPOSE OF PREPARING BID PRICES FOR EARTHWORK. THE BID PRICE SHALL INCLUDE COSTS FOR ANY NECESSARY IMPORT AND PLACEMENT OF EARTH MATERIALS OR THE EXPORT AND PROPER DISPOSAL OF EXCESS OR UNSUITABLE EARTH MATERIALS.

3. PRIOR TO COMMENCING WORK, PROTECT ALL SENSITIVE AREAS TO REMAIN UNDISTURBED WITH TEMPORARY FENCING, AS SHOWN ON THE DRAWINGS, AS SPECIFIED, OR AS DIRECTED BY THE ENGINEER.
4. DO NOT DISTRURB AREAS OUTSIDE OF THE DESIGNATED LIMITS OF DISTURBANCE, UNLESS AUTHORIZED IN WRITING BY THE ENGINEER. THE COST OF ALL ADDITIONAL WORK ASSOCIATED WITH RESTORATION AND REVEGETATION OF DISTURBED AREAS OUTSIDE THE DESIGNATED LIMITS OF DISTURBANCE, AS SHOWN ON THE DRAWINGS, SHALL BE BORN SOLELY BY THE CONTRACTOR.

5. REMOVE ALL EXCESS SOILS TO AN APPROVED DUMP SITE OR DISPOSE OF ON SITE AT A LOCATION TO BE APPROVED BY THE ENGINEER, IN A MANNER THAT WILL NOT CAUSE EROSION.
6. CLEARING AND GRUBBING, SUBGRADE PREPARATION AND EARTHWORK SHALL BE PERFORMED IN ACCORDANCE WITH SECTION 19 OF THE STANDARD SPECIFICATIONS, THESE DRAWINGS, AND THE TECHNICAL SPECIFICATIONS.

7. PRIOR TO STARTING WORK ON THE PROJECT, THE CONTRACTOR SHALL SUBMIT FOR ACCEPTANCE BY THE ENGINEER A HAZARDOUS MATERIALS CONTROLS AND SPILL PREVENTION PLAN. THE PLAN SHALL INCLUDE PROVISIONS FOR PREVENTING HAZARDOUS MATERIALS FROM CONTAMINATING SOIL OR ENTERING WATER COURSES, AND SHALL ESTABLISH A SPILL PREVENTION AND COUNTERMEASURE PLAN.

8. UNSUITABLE SOIL OR MATERIALS, NOT TO BE INCLUDED IN THE WORK INCLUDE:

- A. ORGANIC MATERIALS SUCH AS PEAT, MULCH, ORGANIC SILT OR SOD.

B. SOILS CONTAINING EXPANSIVE CLAYS.

C. MATERIAL CONTAINING EXCESSIVE MOISTURE.

D. POORLY GRADED COARSE MATERIAL, PARTICLE SIZE IN EXCESS OF 6 INCHES.

E. MATERIAL WHICH WILL NOT ACHIEVE SPECIFIED DENSITY OR BEARING.

9. FINE GRADING ELEVATIONS, CONFORMS, AND SLOPES NOT CLEARLY SHOWN ON THE DRAWINGS SHALL BE DETERMINED BY THE CONTRACTOR IN THE FIELD TO DIRECT DRAINAGE TO PROTECTED DRAINAGE CONTROL STRUCTURES OR NATURAL WATERWAYS IN A MANNER THAT SUPPORTS THE INTENT OF THE DESIGN. ALL FINAL GRADING SHALL BE SUBJECT TO APPROVAL OF THE ENGINEER.

10. THE TOP 6" OF SUBGRADE UNDER ALL PAVED SURFACES SUBJECT TO VEHICULAR USE SHALL BE COMPACTED TO A MINIMUM OF 95% RELATIVE COMPACTION, IN ACCORDANCE WITH ASTM-D1557. ALL OTHER FILL TO BE COMPACTED TO A MINIMUM OF 90% MAXIMUM DENSITY AS DETERMINED BY ASTM-D1557 AND SO CERTIFIED BY TESTS AND REPORTS FROM THE CIVIL ENGINEER IN CHARGE OF THE GRADING CERTIFICATION.

11. FILL MATERIAL SHALL BE SPREAD IN LIFTS OF APPROXIMATELY 8 INCHES, MOISTENED OR DRIED TO NEAR OPTIMUM MOISTURE CONTENT AND RECOMPACTED. THE MATERIALS FOR ENGINEERED FILL SHALL BE APPROVED BY A REGISTERED CIVIL ENGINEER. ANY IMPORTED MATERIALS MUST BE APPROVED BEFORE BEING BROUGHT TO THE SITE. THE MATERIALS USED SHALL BE FREE OF ORGANIC MATTER AND OTHER DELETERIOUS MATERIALS.

12. ALL CONTACT SURFACES BETWEEN ORIGINAL GROUND AND RECOMPACTED FILL SHALL BE EITHER HORIZONTAL OR VERTICAL. ALL ORGANIC MATERIAL SHALL BE REMOVED AND THE REMAINING SURFACE SCARIFIED TO A DEPTH OF AT LEAST 12 INCHES, UNLESS DEEPER EXCAVATION IS REQUIRED BY THE ENGINEER.

ACCESS AND STAGING AREA NOTES

1. USE ONLY THE APPROVED ACCESS POINTS, AS SHOWN ON THE DRAWINGS. STOCKPILE MATERIALS WITHIN AN EXISTING FLAT AND PREVIOUSLY DISTURBED AREA.
2. THE ACCESS PLAN SHOWN ON THE DRAWINGS IS SCHEMATIC. SUBMIT A SITE ACCESS PLAN FOR APPROVAL BY THE ENGINEER, PRIOR TO MOBILIZATION.
3. CONTAIN THE DOWNSLOPE PERIMETER OF STAGING OR STOCKPILE AREAS WITH SILT FENCE.
4. STORE, MAINTAIN AND REFUEL ALL EQUIPMENT AND MATERIALS IN A DESIGNATED PORTION OF THE STAGING AREA.

EROSION CONTROL NOTES

1. THE EROSION CONTROL PLAN SHOWN IS INTENDED FOR THE SUMMER CONSTRUCTION SEASON (APRIL 15TH TO OCTOBER 15TH). IF THE DRAINAGE FEATURES SHOWN ON THESE DRAWINGS ARE NOT COMPLETED AND DISTURBED AREAS STABILIZED BY OCTOBER 1ST, CONSULT THE ENGINEER FOR ADDITIONAL RAINY SEASON EROSION CONTROL MEASURES.

2. PRIOR TO COMMENCING WORK, PROTECT AREAS TO REMAIN UNDISTURBED WITH ESA FENCING, AS SHOWN ON THE DRAWINGS. ADDITIONAL FENCING MAY BE REQUIRED AT THE DIRECTION OF THE ENGINEER.

3. BETWEEN OCTOBER 15 AND APRIL 15, PROTECT EXPOSED SOIL FROM EROSION AT ALL TIMES. DURING CONSTRUCTION, SUCH PROTECTION MAY CONSIST OF MULCHING AND/OR PLANTING OF NATIVE VEGETATION OF ADEQUATE DENSITY. BEFORE COMPLETION OF THE PROJECT, STABILIZE ALL EXPOSED SOIL ON DISTURBED SLOPES AGAINST EROSION.

4. MAINTAIN A STANDBY CREW FOR EMERGENCY WORK AT ALL TIMES DURING THE RAINY SEASON (OCTOBER 15 THROUGH APRIL 15). STOCKPILE NECESSARY MATERIALS AT CONVENIENT LOCATIONS TO FACILITATE RAPID CONSTRUCTION OF TEMPORARY DEVICES.

5. CONSTRUCT TEMPORARY EROSION CONTROL MEASURES AS SHOWN ON THIS PLAN AND/OR AS DIRECTED BY THE ENGINEER TO CONTROL DRAINAGE WHICH HAS BEEN AFFECTED BY GRADING AND/OR TRENCHING OPERATIONS.

6. INCORPORATE ADEQUATE DRAINAGE PROCEDURES DURING THE CONSTRUCTION PROCESS TO ELIMINATE EXCESSIVE PONDING AND EROSION.

7. CONSTRUCT AND MAINTAIN EROSION CONTROL MEASURES TO PREVENT THE DISCHARGE OF EARTHEN MATERIALS FROM DISTURBED AREAS UNDER CONSTRUCTION AND FROM COMPLETED CONSTRUCTION AREAS.

8. INSTALL ALL PROTECTIVE DEVICES AT THE END OF EACH WORK DAY WHEN THE FIVE-DAY RAIN PROBABILITY EQUALS OR EXCEEDS 50 PERCENT AS DETERMINED FROM THE NATIONAL WEATHER SERVICE FORECAST OFFICE: WWW.SRH.NOAA.GOV.

9. AFTER EACH RAINSTORM, REMOVE ALL SILT AND DEBRIS FROM CHECK BERMS AND SEDIMENTATION BASIN AND PUMP THE BASIN DRY.

10. THE EROSION CONTROL DEVICES ON THIS PLAN ARE A SCHEMATIC REPRESENTATION OF WHAT MAY BE REQUIRED. EROSION CONTROL DEVICES MAY BE RELOCATED, DELETED, OR ADDITIONAL ITEMS MAY BE REQUIRED DEPENDING ON THE ACTUAL SOIL CONDITIONS ENCOUNTERED, AT THE DISCRETION OF THE ENGINEER.

11. MAINTAIN ALL EROSION CONTROL DEVICES AND MODIFY THEM AS SITE PROGRESS DICTATES.

12. MONITOR THE EROSION CONTROL DEVICES DURING STORMS AND MODIFY THEM IN ORDER TO PREVENT PROGRESS OF ANY ONGOING EROSION.

13. CLEAN DAILY ANY EROSION OR DEBRIS SPILLING ONTO A PUBLIC STREET.

14. CONTACT THE ENGINEER IN THE EVENT THAT THE EROSION CONTROL PLAN AS DESIGNED REQUIRES ANY SUBSTANTIAL REVISIONS.

15. BE FAMILIAR WITH THE CONDITIONS OF APPROVAL OF ALL REQUIRED PROJECT PERMITS AND IMPLEMENT ALL REQUIRED BMP'S PRIOR TO COMMENCING SITE DISTURBING ACTIVITIES.

SEEDING NOTES

STABILIZE DISTURBED AREAS NOT RECEIVING ROCK WITH THE SEED MIX LISTED IN TABLE 1. FOLLOWING SEED APPLICATION, RAKE SURFACES LIGHTLY, AND COVER WITH 2 INCHES OF STRAW MULCH. STRAW MULCH SHALL BE DERIVED FROM WHEAT OR BARLEY. THE CONTRACTOR SHALL FURNISH EVIDENCE THAT CLEARANCE HAS BEEN OBTAINED FROM THE COUNTY AGRICULTURAL COMMISSIONER, AS REQUIRED BY LAW, BEFORE STRAW OBTAINED OUTSIDE THE COUNTY IN WHICH IT IS TO BE USED IS DELIVERED TO THE SITE. STRAW THAT HAS BEEN USED FOR STABLE BEDDING SHALL NOT BE USED. STRAW SHALL BE FREE OF MOLD. STRAW SHALL BE CURED AND DRY WITH NO WATER ADDED AFTER BAILING. SOURCE MUST MEET OR EXCEED STATE CERTIFICATION STANDARDS FOR "WEEK FREE".

TABLE 1. SEED MIX	
SEED TYPE	SEED APPLICATION RATE
HORDEUM VULGARE (CEREAL ANNUAL BARLEY)	200 LB/ACRE (5 LBS/1,000 SQ.FT.)
FESTUCA RUBRA (RED FESQUE)	18 LB/ACRE (0.5 LBS/1,000 SQ.FT.)

DUST CONTROL NOTES

1. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CONTINUOUS DUST CONTROL, THROUGHOUT THE CONSTRUCTION, IN ACCORDANCE WITH THE PERMIT CONDITIONS OF APPROVAL. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE REGULAR CLEANING OF ALL MUD, DIRT, DEBRIS, ETC., FROM ANY AND ALL ADJACENT ROADS AND SIDEWALKS, AT LEAST ONCE EVERY 24 HOURS WHEN OPERATIONS ARE OCCURRING.

2. ALL DISTURBED AREAS, INCLUDING UNPAVED ACCESS ROADS OR STORAGE PILES, NOT BEING ACTIVELY UTILIZED FOR CONSTRUCTION PURPOSES, SHALL BE EFFECTIVELY STABILIZED OF DUST EMISSIONS USING WATER, CHEMICAL STABILIZER/SUPPRESSANT, OR VEGETATIVE GROUND COVER.

3. ALL GROUND-DISTURBING ACTIVITIES (E.G., CLEARING, GRUBBING, SCRAPING, AND EXCAVATION) SHALL BE EFFECTIVELY CONTROLLED OF FUGITIVE DUST EMISSIONS UTILIZING APPLICATION OF WATER OR BY PRE-SOAKING.

4. ALL MATERIALS TRANSPORTED OFFSITE SHALL BE COVERED OR EFFECTIVELY WETTED TO LIMIT DUST EMISSIONS.

5. FOLLOWING THE ADDITION OF MATERIALS TO, OR THE REMOVAL OF MATERIALS FROM, THE SURFACES OF OUTDOOR STORAGE PILES, SAID PILES SHALL BE EFFECTIVELY STABILIZED OF FUGITIVE DUST EMISSIONS UTILIZING SUFFICIENT WATER OR CHEMICAL STABILIZER/SUPPRESANT.

6. ONSITE VEHICLE SPEED ON UNPAVED SURFACES SHALL BE LIMITED TO 15 MPH.

7. DISTURBED AREAS SHALL BE SEEDED PRIOR TO OCTOBER 15TH OR EARLIER AS REQUIRED BY THE APPLICABLE PERMIT CONDITIONS.

WATERWAYS

CONSULTING INC.

509A SWIFT ST.  
SANTA CRUZ, CA 95060  
PH: (831) 426-1311 FAX: (888) 919-6847  
WWW.WATWAYS.COM

3/30/17

DATE

REGISTERED PROFESSIONAL ENGINEER  
No. 62235  
Exp. 9-30-17  
STATE OF CALIF.

WATT W. WELD

PREPARED AT THE REQUEST OF:  
SAN MATEO COUNTY RCD

NOTES

HARLEY FARMS POND  
100% SUBMITAL

DESIGNED BY: B.M.S.  
DRAWN BY: B.M.S.  
CHECKED BY: B.M.W.  
DATE: 3/30/17  
JOB NO.: 16-033

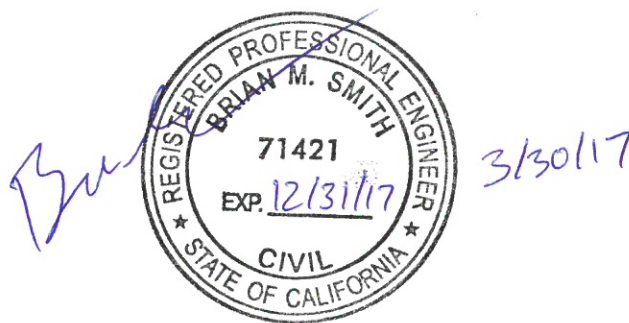
BAR IS ONE INCH ON  
ORIGINAL DRAWING,  
ADJUST SCALES FOR  
REDUCED PLOTS  
0 1" 1"

C4 4 OF 4

## **A.4 Design Specifications**

**Technical Specifications**  
**For**  
**Harley Farms Pond**  
**Prepared for**  
**San Mateo County Resource Conservation District**  
**100% Submittal**

**March 30, 2017**



FOR USE IN CONNECTION WITH  
**STATE OF CALIFORNIA, DEPARTMENT OF TRANSPORTATION STANDARD  
SPECIFICATIONS, CURRENT EDITION**

**Harley Farms Pond  
Technical Specifications  
100% Submittal**

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**SECTION 015000**  
**TEMPORARY FACILITIES AND CONTROLS**  
**(a.k.a. Mobilization & Demobilization)**

**1. GENERAL**

**1.1 DESCRIPTION**

- A. The work covered by this section consists of the construction facilities and temporary controls, including mobilization and demobilization, as specified, as shown on the Drawings, or as otherwise directed by the Engineer. Work includes traffic control, temporary fencing – type ESA, tree protection, and erosion control items not specifically addressed under other pay items.
- B. Mobilization shall consist of preparatory work and operations, including, but not limited to, those necessary for the movement of personnel, equipment, supplies, and incidentals to the site; for the establishment of all offices, and other facilities necessary for work on the project; and for all other work and operations which must be performed, or costs incurred prior to beginning work, on the various items on the project site.
- C. Demobilization shall consist of work and operations necessary to disband all mobilized items and cleanup the site. The removal of all temporary crossings, ramps, access ways, roads, signs, and fencing; dewatering facilities; and temporary facilities or works, and the restoration of surfaces to an equal or better than existing condition shall also be included as part of demobilization.

**1.2 RELATED SECTIONS**

- 1. Section 015626, Temporary Fence – Type ESA
- 2. Section 015713.02, Silt Fence

**2. PRODUCTS – Not Used**

**3. EXECUTION**

**3.1 CONTRACTOR'S PLANT AND EQUIPMENT**

- A. Security. Contractor shall, at all times, be responsible for security of their plant and equipment. Owner shall not be responsible for missing or damaged equipment, tools, or personal belongings.
- B. Construction Power and Communication Facilities. Contractor shall be responsible for providing sufficient electrical power and communication facilities to construct the work.
- C. Storage Facilities.
  - 1. Provide storage facilities for the protection of materials and supplies from weather, and shall keep the facilities clean and in proper order at all times.
  - 2. Provide a storage area for lubricants, oils, and hazardous materials with sufficient means to contain spills. Facilities, handling, and any required cleanup will comply with all current local, state, and federal standards. Petroleum products stored on the site shall be secured from vandalism.
- D. Sanitary Facilities. Maintain adequate toilet facilities at or near the work site.

- E. Solid Waste Handling. Provide sufficient solid waste handling facilities to maintain site in a clean, orderly condition.
- F. Water. Contractor shall provide all water necessary for construction and maintenance as specified. A water source will be discussed at the Pre-bid meeting.

### **3.2 MOBILIZATION AND DEMOBILIZATION**

- A. General. Perform mobilization and demobilization activities in accordance with the Drawings, and as specified.

### **3.3 PROJECT SIGNS**

- A. General. Erect project, safety and hard hat signs at each work site within five (5) days after commencement of work at that site.

### **3.4 EXCAVATION**

- A. The Contractor, and any subcontractor, is required to notify U.S.A. forty-eight hours in advance of performing excavation work, by calling the toll free number (800) 642-2444.

### **3.5 PROTECTIVE BARRIERS**

- A. Protective barriers shall be erected around sensitive areas as designated on the Drawings or as directed by the Engineer. Barriers shall be constructed using bright orange plastic safety fencing (type ESA), per Section 015626, Temporary Fence – Type ESA.
- B. Temporary fencing shall be maintained during construction. Except as directed by the Engineer, barriers shall be removed after completion of work.

### **3.6 BULLETIN BOARD**

- A. Provide a bulletin board at the project site, or in a location approved by the Engineer. The bulletin board shall be easily accessible at all times and shall contain wage rates, equal opportunity notice, and other items required to be posted.

### **3.7 STAGING AREAS**

- A. General. Staging areas at the project site are provided for the Contractor's use. By making this area available to the Contractor, the Engineer, and any other person or agency connected with the properties shall in no way be responsible or liable for any activity of the Contractor, subcontractors, or any individual or organization connected with the project.
- B. Alternative Staging Areas. Alternative sites must be acceptable to Owner, and the Contractor must make all arrangements for their use at the Contractor's expense, and in accordance with all local, State and Federal regulations.
- C. Additional Storage Areas. Should the Contractor require space in addition to that available on-site, the Contractor shall make arrangements for storage of materials and equipment in locations off the construction site, and shall provide the Engineer a copy of the letter of authorization for storage from the Owner.

### **3.8 DUST CONTROL**

- A. General. The Contractor shall be responsible for the control of dust within the limits of the project at all times. The Contractor shall take whatever steps are necessary to eliminate the

nuisance of blowing dust. Responsibility for any damage to property, crops, or orchards from dust caused by the Contractor's operations shall be borne by the Contractor.

- B. Dust Control. Periodically, water or otherwise treat access roads and haul roads, as required to suppress dust. Cover or control water content of earthen materials being hauled, as required to control dust emissions. Cover or otherwise stabilize soil stockpiles to prevent erosion by wind.
- C. Cleanup. The Contractor shall keep all streets, roadways, and easements, as well as all ground adjacent to the project site, clean and free of dust, mud and debris resulting from the Contractor's operations. Daily cleanup throughout the project shall be required as the Contractor progresses with the work. Spillage of earth, gravel, concrete, asphalt, or other materials resulting from hauling operations along or across any public street or private driveway or access road shall be removed immediately by the Contractor.

### **3.9 HAZARDOUS MATERIALS CONTROL AND SPILL PREVENTION PLAN**

- A. General. Before starting work on the project, the Contractor shall submit for acceptance by the Engineer a Hazardous Materials Controls and Spill Prevention Plan. The Plan shall include provisions for preventing hazardous materials from contaminating soil or entering water courses and shall establish a Spill Prevention and Countermeasure Plan.
- B. Facilities. Provide staging and storage areas for equipment, as required to contain contaminants away from water courses. Provide a contained, locked storage facility for fuels, lubricants, construction chemicals and other hazardous materials and supplies stored at site. Provide a lined pit for concrete washdown, if necessary, located where spills or overflow cannot enter nearby watercourses. The pit shall be located a minimum of 75 feet from any flowing watercourse.
- C. Equipment Maintenance. Clean and maintain equipment to prevent any leakage of fuel and lubricants. Establish a designated equipment refueling area. All fueling and maintenance of vehicles and other equipment and staging area shall occur at least 75 feet from any riparian habitat or water body.
- D. Spills Countermeasures. Isolate work areas during in-water construction activities by using oil containment booms. Maintain a supply of oil booms, sorbent pads and other supplies to contain and clean spills. Contain and cleanup any hazardous material spills immediately and notify Engineer.

### **3.10 CONSTRUCTION SITE HOUSEKEEPING**

- A. Remove rubbish, trash, and debris from site on a regular basis. Transport and dispose of all rubbish and debris in accordance with all local regulations. Maintain staging area in an orderly manner. Regularly clean mud and debris, resulting from work at the site, from roadways. Sweeping and washing construction site sediment tracked onto roadways into roadside ditches is a violation. Cleanup and dispose of all concrete debris and washings when concrete work is complete.

### **3.11 PROTECTION OF EXISTING IMPROVEMENTS**

- A. Existing facilities, utilities, and property shall be protected from damage resulting from the Contractor's operations. Roadways and other improved surfaces shall be protected from damage by vehicles with tracks or lugs. Any damage resulting from the Contractor's operations shall be repaired by the Contractor to the condition which existed prior to the damage, and to the satisfaction of the Engineer, at no additional cost to the Owner.



### **3.12 RESTORATION OF STRUCTURES AND SURFACES**

- A. Structures, Fencing, Equipment, and Pipework. The Contractor shall remove such existing structures, fencing, equipment, and pipework as may be necessary for the performance of the work, and shall rebuild, or replace, the items thus removed in as good a condition as found. Contractor shall repair any existing structures that were damaged as a result of the Work.
- B. Roads and Streets. Roadways used by the Contractor for hauling materials, equipment, supplies, etc., shall be cleaned and repaired if the condition of the roadway is damaged, or otherwise affected, due to the Contractor's operations.
- C. Curbs, Gutters, Driveways, and Sidewalks. All curbs, gutters, driveways, sidewalks, and similar structures that are broken, or damaged, by the installation of the work shall be reconstructed by the Contractor. Reconstruction shall be of the same kind of materials with the same finish, and in not less than the same dimensions as to original work. Repairs shall be made by removing and replacing the entire portions between joints or scores, and not merely refinishing any damaged part. All restoration work shall match the appearance of the existing improvements, as nearly as possible.
- D. Cultivated Areas and Other Surface Improvements. All cultivated and natural areas, either agricultural or lawns, and other surface improvements which are damaged by actions of the Contractor, shall be restored, including roadside drainage ditches, as nearly as possible, to their original conditions.

### **3.13 STORAGE OF MATERIALS AND EQUIPMENT**

- A. Materials and equipment shall be stored so as to ensure the preservation of their quality and fitness for the work. Stores of equipment and materials shall be located so as to facilitate inspection. The Contractor shall be responsible for all damages that occur in connection with the care and protection of all materials and equipment, supplied by the Contractor, until completion and final acceptance of the Work by the Owner.

### **3.14 TRAFFIC CONTROL**

- A. General. The Contractor shall be responsible for public safety and traffic control at all times.
- B. The Contractor shall furnish, install, and maintain temporary construction warning signs, flaggers, barricades, and other devices necessary to safeguard the general public and the work, and to provide for the safe and proper routing of all vehicular and pedestrian traffic within and through the limits of the project during the performance of the work.

## **4. MEASUREMENT AND PAYMENT**

### **4.1 MEASUREMENT**

- A. Work under this section will be measured for payment on a lump sum basis.

### **4.2 PAYMENT**

- A. The lump sum contract price for Construction Facilities and Temporary Controls, also known as Mobilization and Demobilization, will include full compensation for the furnishing of all labor, materials, tools, equipment, administrative costs, and incidentals for mobilization; demobilization; and temporary facilities and controls.
- B. Payment will be made under:

Pay Item

Mobilization & Demobilization

Pay Unit

Lump Sum

**END OF SECTION**

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## **SECTION 015626**

### **TEMPORARY FENCE – TYPE ESA**

#### **1. GENERAL**

##### **1.1 DESCRIPTION**

- A. Work under this section includes furnishing all labor, materials, equipment, and incidentals to install, maintain, and remove Temporary Fence – Type ESA , as shown on the Drawings, as specified, or as otherwise directed by the Engineer.

##### **1.2 RELATED SECTIONS**

- 1. Section 015000, Mobilization
- 2. Section 311100, Clearing and Grubbing
- 3. Section 312316, Stripping and Excavation

##### **1.3 REFERENCES**

- A. State of California, Department of Transportation (CALTRANS) State Standard Specifications, current edition

##### **1.4 SUBMITTALS**

- A. Submit to the Engineer, for review, the following:
  - 1. Manufacturer's data for proposed fencing fabric.
  - 2. Manufacturer's data or descriptive literature for proposed fence posts.

#### **2. PRODUCTS**

##### **2.1 MATERIALS**

- A. High Visibility Fabric. High visibility fabric shall be machine produced, orange colored mesh manufactured from polypropylene or polyethylene. High visibility fabric may be made of recycled materials. Materials shall not contain biodegradable filler materials that can degrade the physical or chemical characteristics of the finished fabric. High visibility fabric shall be fully stabilized ultraviolet resistant and a minimum of four feet in width with a maximum mesh opening of 2" x 2". High visibility fabric shall be furnished in one continuous width and shall not be spliced to conform to the specified width dimension.
- B. Posts. Posts for temporary fence (Type ESA) shall be of one of the following:
  - 1. Wood posts shall be fir or pine, shall have a minimum cross section of 2" x 2", and a minimum length of 5.25 feet. The end of the post to be embedded in the soil shall be pointed. Wood posts shall not be treated with wood preservative.
  - 2. Steel posts shall have a "U," "T," "L," or other cross sectional shape that resists failure from lateral loads. Steel posts shall have a minimum weight of 0.75 pounds per linear foot and a minimum length of 5.25 feet. One end of the steel post shall be pointed and the other end shall have a high visibility colored top.

- C. Fasteners. Fasteners for attaching high visibility fabric to the posts shall be as follows:
  - 1. The high visibility fabric shall be attached to wooden posts with commercial quality nails or staples, or as recommended by the manufacturer or supplier.
  - 2. Tie wire or locking plastic fasteners shall be used for attaching the high visibility fabric to steel posts. Maximum spacing of tie wire or fasteners shall be 24 inches along the length of the steel post.
- D. Used materials may be installed provided the used materials conform to these Specifications.

### **3. EXECUTION**

#### **3.1 INSTALLATION**

- A. All fence construction activities shall be conducted from the work side of the ESA as shown on the Drawings or as flagged in the field by the Engineer.
- B. Posts shall be embedded in the soil a minimum of 16 inches. Post spacing shall be eight feet maximum from center to center and shall at all times support the fence in a vertical position.
- C. Temporary fence (Type ESA) shall be constructed prior to clearing and grubbing work, shall enclose the foliage canopy (drip line) of protected plants, and shall not encroach upon visible roots of the plants.
- D. Temporary fence (Type ESA) shall be located so that it is clearly visible, as determined by the Engineer.

#### **3.2 MAINTENANCE**

- A. Temporary fence (Type ESA) that is damaged during the progress of the work shall be repaired or replaced by the Contractor the same day the damage occurs.

#### **3.3 REMOVAL**

- A. When Type ESA fence is no longer required, as determined by the Engineer, it shall be removed and disposed of in conformance with the provisions in Section 7-1.13, "Disposal of Material Outside the Highway Right of Way," of the State Specifications, except when reused as provided in this section.
- B. Holes caused by the removal of temporary fence (Type ESA) shall be backfilled in conformance with the provisions in Section 15-1.02, "Preservation of Property," of the State Specifications.

### **4. MEASUREMENT AND PAYMENT**

#### **4.1 MEASUREMENT**

- A. Temporary Fence – Type ESA will not be separately measured for payment.

#### **4.2 PAYMENT**

- A. No separate payment will be made for Temporary Fence – Type ESA. Full compensation for all costs associated with this work shall be included in the contract price for Temporary Erosion Control and BMPs in accordance with Section 015713.

**END OF SECTION**

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## **SECTION 015713**

### **TEMPORARY EROSION CONTROL AND BMP'S**

#### **1. GENERAL**

##### **1.1 DESCRIPTION**

- A. This work shall consist of temporary erosion control and water or air quality control measures, devices, and BMPs that may be shown on the Drawings, and as specified in the Contract Documents, Project Permit(s), Standard Specifications, these Technical Specifications, or as directed by the Engineer during the life of the contract. Temporary erosion control measures and other BMP's will also be required at staging/storage areas utilized during project construction. Said work is intended to provide prevention, control, and abatement of water and air pollution within the limits of the project and to minimize damage to the work, adjacent properties, streams or other bodies of water.
- B. Installation and maintenance of temporary erosion control measures, devices and BMPs shall conform to the requirements as shown on the Drawings stated within this section, and RWQCB requirements.

##### **1.2 RELATED SECTIONS**

- 1. Section 015626, Temporary Fence – Type ESA
- 2. Section 015713.02, Silt Fence
- 3. Section 015713.01, Fiber Roll
- 4. Section 312319, Dewatering
- 5. Section 015000, Mobilization

##### **1.3 SUBMITTALS**

#### **2. PRODUCTS – Not Used**

#### **3. EXECUTION**

##### **3.1 GENERAL**

- A. Install temporary soil stabilization materials for water pollution control in all disturbed work areas that are considered inactive (i.e. excess of 14 days) or before forecast storm events. Should any temporary erosion control of this nature be required elsewhere as directed by the Engineer and/or regulatory agencies, install them within 48 hours of notification. Where applicable and upon acceptance of the Engineer, furnish and apply/install temporary mulch, temporary hydraulic mulch, temporary erosion control blankets, or temporary covers in conformance with the Standard Specifications and these Technical Specifications. Materials

and construction methods shall comply with the Standard Specifications and these Technical Specifications.

- B. Maintain a temporary cover on all stockpiles at all times and install and maintain appropriate BMPs (sediment logs, filter fence, check dams, etc.) around the perimeter at the base of stockpile to control the potential runoff of any loose sediments and pollutants. Whenever a temporary cover is removed to perform other work, replace and secure the temporary cover within one (1) hour of stopping work.

### **3.2 MAINTENANCE**

- A. Maintain all temporary erosion control measures, devices, and/or BMPs placed in the work for the duration of the project. Maintenance includes all Manufacturer recommendations, and includes but is not limited to the following:
  - 1. Immediately repair upon discovery damage to any temporary erosion control devices and/or BMPs during the course of the project at the Contractor's expense.
  - 2. Inspect temporary erosion control devices and/or BMPs routinely, immediately after each rainfall event, and at least daily during prolonged rainfall events. Make required repairs immediately.
  - 3. Inspect construction limit and tree protection fencing daily and repair, secure, and/or replace as necessary to maintain and preserve its intended purpose.
  - 4. Routinely inspect all signage as required for the project and repair or replace upon discovery of damage, vandalism, and/or missing parts.
  - 5. Should the filter fence fabric decompose or become ineffective prior to the end of the expected usable life and the barrier is still necessary, replace fabric promptly.
  - 6. Should a sediment log decompose or become ineffective prior to the end of the expected usable life and the barrier is still necessary, replace sediment log promptly.
  - 7. Replace single or group of gravel bag(s) when the bag material is ruptured or when the yarn has failed, allowing the bag contents to spill out.
  - 8. Routinely inspect stakes and/or rope used to secure a sediment log in place and repair as necessary if found to be loose or ineffective.
  - 9.
  - 10. Remove sediment deposits and other debris when they reach approximately one-half the height of the sediment barrier (or as recommended by the Manufacturer) and dispose of in a manner acceptable to the Engineer, and in conformance with the SWPPP.
  - 11. Remove and dispose of sediment deposits remaining in place after the temporary erosion control measure and/or BMPs is no longer required in a manner acceptable to the Engineer.

### **3.3 DUST CONTROL**

- A. General. The Contractor shall be responsible for the control of dust within the limits of the project at all times. Take whatever steps are necessary to eliminate the nuisance of blowing dust. Responsibility for any damage to property, crops, or orchards from dust caused by the Contractor's operations shall be borne by the Contractor.



- B. Dust Control. Periodically, water or otherwise treat access roads and haul roads, as required to suppress dust. Cover or control water content of earthen materials being hauled, as required to control dust emissions. Cover or otherwise stabilize soil stockpiles to prevent erosion by wind.
- C. Cleanup. Keep all streets, roadways, and easements, as well as all ground adjacent to the project site, clean and free of dust, mud and debris resulting from the Contractor's operations. Daily cleanup throughout the project shall be required as the Contractor progresses with the work. Immediately remove spillage of earth, gravel, concrete, asphalt, or other materials resulting from hauling operations along or across any public street or private driveway or access road.

### **3.4 HAZARDOUS MATERIALS CONTROL AND SPILL PREVENTION PLAN**

- A. General. Before starting work on the project, submit for acceptance by the Engineer a Hazardous Materials Controls and Spill Prevention Plan. The Plan shall include provisions for preventing hazardous materials from contaminating soil or entering water courses and shall establish a Spill Prevention and Countermeasure Plan.
- B. Facilities. Provide staging and storage areas for equipment, as required to contain contaminants away from water courses. Provide a contained, locked storage facility for fuels, lubricants, construction chemicals and other hazardous materials and supplies stored at site.
- C. Equipment Maintenance. Clean and maintain equipment to prevent any leakage of fuel and lubricants. Establish a designated equipment refueling area. All fueling and maintenance of vehicles and other equipment and staging area shall occur at least 75 feet from any riparian habitat or water body.
- D. Spills Countermeasures. Isolate work areas during in-water construction activities by using oil containment booms. Maintain a supply of oil booms, sorbent pads and other supplies to contain and clean spills. Contain and cleanup any hazardous material spills immediately and notify Engineer.

### **3.5 CONSTRUCTION SITE HOUSEKEEPING**

- A. Remove rubbish, trash, and debris from site on a regular basis. Transport and dispose of all rubbish and debris in accordance with all local regulations. Maintain staging area in an orderly manner. Regularly clean mud and debris, resulting from work at the site, from roadways. Cleanup and dispose of all concrete debris and washings when concrete work is complete.

## **4. MEASUREMENT AND PAYMENT**

### **4.1 MEASUREMENT**

- A. Temporary Erosion Control and BMP's will be measured on lump sum basis.

### **4.2 PAYMENT**

- A. The lump sum contract price for Temporary Erosion Control and BMP's will include full compensation for the furnishing of all labor, materials, tools, equipment, administrative costs, and incidentals for temporary erosion control measures, devices, and BMPs, stockpile management, dust control, sweeping, and maintenance of all such water pollution control measures that may be shown on the Project Drawings, and as specified in the Contract Documents, Project Permit(s), Standard Specifications, these Technical Specifications, and as directed by the Engineer, and no additional compensation shall be allowed therefore.
- B. Payment will be made under:

<u>Pay Item</u>	<u>Pay Unit</u>
Temporary Erosion Control and BMP's	Lump Sum

**END OF SECTION**

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**SECTION 015713.01**  
**FIBER ROLL**

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## **SECTION 015713.01**

### **FIBER ROLL**

#### **1. GENERAL**

##### **1.1 DESCRIPTION**

- A. Work under this Section includes furnishing all labor, materials, equipment, and incidentals to install, maintain, remove and dispose of Fiber Roll, as shown on the Drawings, as specified herein, or as otherwise directed by the Engineer.
- B. Fiber Roll shall be furnished, installed, and maintained at the locations shown on the Drawings, or as specified by the Engineer.
- C. Fiber Roll shall be installed on excavation and embankment slopes and other disturbed soil areas, active or non-active.
- D. Related Sections
  - 1. Section 015000, Mobilization
  - 2. Section 312316, Stripping and Excavation
  - 3. Section 015713, Temporary Erosion Control and BMPs

##### **1.2 SUBMITTALS**

- A. Submit to the Engineer, for review, the following manufacturer's data and Certification's:
  - 1. A certificate stating the name of the Fiber Roll manufacturer, product name, style compositions of filaments or yarns and other pertinent information to fully describe the geotextile, along with the manufacturer's certification of compliance with the material specifications contained herein.

#### **2. PRODUCTS**

##### **2.1 MATERIALS**

- A. Fiber Roll materials may generally be either of the two types indicated below, unless coir rolls are specifically specified on the Drawings. Where coir rolls are indicated on the drawings, straw rolls will not be allowed as a substitute.
- B. Coir Roll. Coir Roll shall be:
  - 1. A pre-manufactured roll made from coconut fiber encapsulated within a biodegradable jute, sisal, or coir fiber netting. The use of plastic/photodegradable netting shall not be allowed. The netting shall have a minimum durability of 2 years after installation. The netting shall be secured tightly at each end of the roll. Rolls shall be between eight inches and 12 inches in diameter. Rolls between eight inches and ten inches in diameter shall have a minimum weight of one pound per linear foot and a minimum length of 20 feet. Rolls between ten inches and 12 inches in diameter shall have a minimum weight of three pounds per linear foot and a minimum length of 10 feet.
- C. Straw Roll. Straw Roll shall be:
  - 1. A pre-manufactured roll made from 100% weed free rice straw and wrapped in a 100% biodegradable tubular 7 oz. Plain Burlap liner. The burlap is Medium Weight Natural Burlap with a 9 X 8 Warp & Fill, and a minimum weight of 7 oz. per square yard. Plastic

netting will not be accepted as an alternate.

2. 9-inch rolls shall have a minimum weight of approximately 1.6 pounds per foot.
  3. 12-inch rolls shall have a minimum weight of approximately 3.8 pounds per foot.
- D. Stakes. Wood stakes shall be a minimum of 2" x 4" x 24" (ripped diagonally) for Type 1 installation or a minimum of 1" x 2" x 24" in size for Type 2 installation. Wood stakes shall be untreated fir, redwood, cedar, or pine and cut from sound timber. They shall be straight and free of loose or unsound knots and other defects which would render them unfit for the purpose intended. Metal stakes shall not be used.
- E. Rope. Rope shall be biodegradable, such as sisal or manila, with a minimum diameter of 1/4 inch.

### **3. EXECUTION**

#### **3.1 INSTALLATION**

- A. Fiber Roll shall be installed as follows:
- B. Type 1: Furrows shall be constructed to a depth between three inches and four inches, and to a sufficient width to hold the Fiber Roll. Soil excavated from the trench shall be placed on the uphill or flow side of the roll to prevent water from undercutting the roll. Stakes shall be driven through the center of the roll (perpendicular to the finished grade) at 36 inches apart along the length of the Fiber Roll and stopped at 12 inches from each end of the rolls. Stakes shall be driven to between two and three inches above the top of the roll.
- C. Type 2: Rope and notched stakes shall be used to restrain the Fiber Rolls against the slope. Stakes shall be driven into the slope until the notch is even with the top of the Fiber Roll. Rope shall be knotted at each stake and laced between stakes. After installation of the rope, stakes shall be driven into the slope such that the rope will hold the Fiber Roll tightly to the slope. Furrows will not be required.
- D. Fiber Roll shall be placed 10 feet apart along the slope for slope inclination (horizontal:vertical) of 2:1 and steeper, 15 feet apart along the slope for slope inclination between 2:1 and 4:1, 20 feet apart along the slope for slope inclination between 4:1 and 10:1, and a maximum of 50 feet apart along the slope for slope inclination of 10:1 and flatter.
- E. The bedding area for the Fiber Roll shall be cleared of obstructions including rocks, clods, and debris greater than one inch in diameter before installation.
- F. Fiber Roll shall be installed approximately parallel to the slope contour and the terminus of rows shall be angled up-slope at 45 degrees for a distance of three feet. Where fiber rolls meet, provide an overlap of two feet, with adjacent rolls tightly abutting each other.
- G. Fiber Roll shall be installed prior to seeding where used without slope protection fabric.
- H. Fiber roll shall be installed over fabric (after seeding) where slope protection fabric is specified.

#### **3.2 MAINTENANCE**

- A. The Contractor shall inspect all Fiber Roll immediately after each rainfall, and at least daily during prolonged rainfall. Any deficiencies shall be immediately corrected by the Contractor.
- B. The Contractor shall also make a daily review of the location of Fiber Roll in areas where construction activities have altered the natural contour and drainage runoff to ensure that the Fiber Rolls are properly located for effectiveness. Where deficiencies exist as determined by the Engineer, additional Fiber Rolls shall be installed as directed by the Engineer.

- C. Damaged or otherwise ineffective Fiber Roll shall be repaired or replaced promptly. Fiber Roll shall be maintained to disperse concentrated water runoff and to reduce runoff velocities. Split, torn, or unraveling rolls shall be repaired or replaced. Broken or split stakes shall be replaced. Sagging or slumping Fiber Roll shall be repaired with additional stakes or replaced. Locations where rills and other evidence of concentrated runoff have occurred beneath the rolls shall be corrected. Fiber Roll shall be repaired or replaced within 24 hours of identifying the deficiency.

### **3.3 REMOVAL**

- A. Fiber Rolls shown on the Drawings shall remain in place after project completion, unless otherwise specified, and be allowed to naturally degrade.

## **4. MEASUREMENT AND PAYMENT**

### **4.1 MEASUREMENT**

- A. Fiber Roll will be measured by the linear foot of Fiber Roll installed at the locations indicated on the Drawings, as specified, or as directed by the Engineer
- B. Fiber Roll that the Contractor installs for stabilization of stockpiles and staging areas, in addition to that shown on the Drawings, shall not be separately measured for payment.

### **4.2 PAYMENT**

- A. Fiber Roll will be paid for at the contract price per linear foot, which price will be payment in full for furnishing all labor, materials, tools, equipment, and incidentals necessary to install, maintain throughout the construction, and, where specified, to remove Fiber Roll after site stabilization.
- B. Fiber Roll that the Contractor installs for stabilization of stockpiles and staging areas, in addition to that shown on the Drawings, shall be paid for under Temporary Erosion Control and BMPs, Section 015713.
- C. Fiber Rolls required or used on a short term basis that are not permanently staked in place or are anticipated to be moved on a daily or routine basis (such as areas immediately adjacent to trench excavations, temporary stockpiles, active areas for soil processing/screening operations, spill containment devices, etc.) shall be considered as included in prices paid for the various contract items of work involved, and no additional compensation will be allowed.
- D. Payment shall be made under:

<b>Pay Item</b>	<b>Pay Unit</b>
Fiber Roll	Linear Foot

**END OF SECTION**

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## **SECTION 015713.02**

### **SILT FENCE**

#### **1. GENERAL**

##### **1.1 DESCRIPTION**

- A. Work under this Section includes furnishing all labor, materials, equipment, and incidentals to install, maintain, and remove silt fence, as shown on the Drawings, and as specified, or as directed by the Engineer.
- B. This Specification is applicable to the use of a geotextile as a vertical, permeable interceptor designed to remove suspended soil from overland water flow. The function of a temporary silt fence is to filter and allow settlement of soil particles from sediment-laden water. The purpose is to prevent the eroded soil from being transported off the construction site by water runoff.

##### **1.2 RELATED SECTIONS**

- 1. Section 312319, Dewatering
- 2. Section 015000, Mobilization
- 3. Section 312316, Stripping and Excavation
- 4. Section 015713, Temporary Erosion Control and BMP's

##### **1.3 REFERENCES**

- A. American Society for Testing and Materials (ASTM):
  - 1. D 4355 - Test Method for Deterioration of Geotextiles from Exposure to Ultraviolet Light and Water (Xenon-Arc Type Apparatus).
  - 2. D 4491 - Test Methods for Water Permeability of Geotextiles by Permittivity.
  - 3. D 4632 - Test Method for Grab Breaking Load and Elongation of Geotextiles.
  - 4. D 4751 - Test Method for Determining Apparent Opening Size of a Geotextile.
  - 5. D 4833 - Test Method for Index Puncture Resistance of Geotextiles, Geomembranes, and Related Products.
  - 6. D 4873 - Guide for Identification, Storage, and Handling of Geotextiles.

##### **1.4 SUBMITTALS**

- A. Submit to the Engineer for review, the following:
- B. Manufacturer's Data and Certification:
  - 1. The Contractor shall provide the Engineer a certificate stating the name of the silt fence manufacturer, product name, style, chemical compositions of filaments or yarns and other pertinent information to fully describe the silt fence fabric.
  - 2. The Manufacturer is responsible for establishing and maintaining a quality control program to assure compliance with the requirements of the Specification. Documentation describing the quality control program shall be made available upon request.
  - 3. Manufacturing Quality Control (MQC) test results shall be provided upon request.



## 1.5 DELIVERY, STORAGE, AND HANDLING

- A. Silt fence fabric labeling, shipment and storage shall follow ASTM D 4873.
- B. Product labels shall clearly show the manufacturer or supplier name, style name, and roll number.
- C. Each shipping document shall include a notation certifying that the material is in accordance with the manufacturer's certificate.
- D. Each silt fence roll shall be wrapped with a material that will protect the silt fence from damage due to shipment, water, sunlight, and contaminants.
- E. The protective wrapping shall be maintained during periods of shipment and storage. If the wrapping is damaged prior to installation, the outer wrap of silt fence material must be discarded before installation.
- F. During storage, silt fence rolls shall be elevated off the ground and adequately covered to protect them from the following: Site construction damage, extended exposure to ultraviolet (UV) radiation, precipitation, chemicals that are strong acids or strong bases, flames, sparks, temperatures in excess of 71 deg C (160 deg F) and any other environmental condition that might damage the silt fence .

## 2. PRODUCTS

### 2.1 MATERIALS

- A. At the Contractor's option, temporary silt fence shall be prefabricated or constructed with silt fence fabric, posts, and fasteners.
- B. Silt Fence Fabric. Silt fence fabric shall be geotextile manufactured from woven polypropylene or polymer material. Silt fence fabric may be virgin, recycled, or a combination of virgin and recycled polymer materials. No virgin or recycled polymer materials shall contain biodegradable filler materials that can degrade the physical or chemical characteristics of the finished fabric. Silt fence fabric shall conform to the following requirements:

Specification	Requirements
Width, inches, min.	36
Grab tensile strength, KN (25 mm grip in each direction) ASTM Designation: D 4632*	0.45, min.
Elongation, percent minimum in each direction ASTM Designation: D 4632*	20, min.
Permittivity, 1/sec., min. ASTM Designation: D 4491	0.1-0.15
Ultraviolet stability, percent tensile strength retained after 500 hours, min. ASTM Designation: D 4355 (xenon-arc lamp and water spray weathering method)	90, min.
* or appropriate test method for specific polymer	

- C. Posts. Posts for temporary silt fence shall be one of the following:
  - 1. Untreated fir or pine, a minimum of 2" x 2" in size, and four feet in length. One end of the post shall be pointed.
  - 2. Steel and have a "U," "T," "L," or other cross sectional shape that can resist failure from lateral loads. The steel posts shall have a minimum weight of 0.8-pound per foot and a minimum length of 4 feet. One end of the steel posts shall be pointed and the other

end shall be capped with an orange or red plastic safety cap which fits snugly to the steel post. The Contractor shall submit to the Engineer for approval a sample of the capped steel post prior to installation.

- D. Fasteners. Fasteners for attaching silt fence fabric to posts shall be as follows:
1. When prefabricated silt fence is used, posts shall be inserted into sewn pockets.
  2. Silt fence fabric shall be attached to wooden posts with nails or staples as shown on the Drawings or as recommended by the manufacturer or supplier. Tie wire or locking plastic fasteners shall be used to fasten the silt fence fabric to steel posts. Maximum spacing of fasteners shall be eight inches along the length of the steel post.

### **3. EXECUTION**

#### **3.1 FIELD ASSEMBLY:**

- A. The silt fence fabric shall be installed on the side of the posts facing the slope.
- B. The silt fence fabric at the bottom of the fence shall be buried in a "J" configuration to a minimum depth of 150 mm (six inches) in a trench so that no flow can pass under the silt fence. Mechanically pushing 12 inches of the silt fence fabric vertically through the soil may be allowed if the Contractor can demonstrate to the Engineer that the silt fence fabric will not be damaged and will not slip out of the soil resulting in sediment passing under the silt fence fabric.
- C. The trench shall be backfilled and the soil compacted over the upslope side of the silt fence fabric.
- D. When joints are necessary, filter fence fabric shall be spliced together only at a support post, with a minimum twelve (12) inches overlap and securely sealed or stitched.
- E. The Contractor must demonstrate to the satisfaction of the Engineer that the silt fence fabric can withstand a sediment load of 1/3 the height of the fence.
- F. The posts shall be placed at the spacing as shown on the Drawings. Post should be driven or placed a minimum of 450 mm (18 inches) into the ground. Depth shall be increased to 600 mm (24 inches) if fence is placed on a slope of 3:1 or greater. Where 450 mm (18 inches) depth is impossible to attain, the posts should be adequately secured to prevent overturning of the fence due to sediment loading.
- G. Support fence, if required, shall be fastened securely to the upslope side of the fence post. The support fence shall extend from the ground surface to the top of the silt fence fabric.
- H. When self-supported fence is used, the silt fence fabric shall be securely fastened to fence posts.
- I. Temporary silt fence shall be installed parallel with the slope contour in reaches not to exceed 500 feet. A reach is considered a continuous run of temporary silt fence from end to end or from an end to an opening, including joined panels. Each reach shall be constructed so that the elevation at the base of the fence does not deviate from the contour more than 1/3 of the fence height. The fence shall be placed such that water cannot runoff around the end of the fence; this may be accomplished by constructing end-returns that angle up the slope.
- J. The silt fence should be limited to handle an area equivalent to 90 square meters (100 sy) per three meters (ten feet) of fence. Caution should be used where the site slope is greater than 1:1 and water flow rates exceed three liters (0.8 gallons) per second per three meters (ten feet) of fence.

### **3.2 INSPECTION**

- A. The Contractor shall inspect all temporary silt fences immediately after each rainfall, and at least daily during prolonged rainfall. Any deficiencies shall be immediately corrected by the Contractor.
- B. The Contractor shall also make a daily review of the location of silt fences in areas where construction activities have altered the natural contour and drainage runoff to ensure that the silt fences are properly located for effectiveness. Where deficiencies exist as determined by the Engineer, additional silt fence shall be installed as directed by the Engineer. Damaged or otherwise ineffective silt fences shall be repaired or replaced promptly.
- C. Should the filter fence fabric decompose or become ineffective prior to the end of the expected usable life and the barrier is still necessary, the fabric shall be replaced promptly.
- D. Sediment deposits shall either be removed when the deposit reaches one third the height of the fence, or a second silt fence shall be installed as directed by the Engineer.

### **3.3 REMOVAL**

- A. The silt fence shall remain in place for the complete duration of the project as necessary to conform to the Project Permit(s) and SWPPP, or until the Engineer directs it be removed. Upon removal, the Contractor shall remove and dispose of any excess sediment accumulations, use hand tools to grade disturbed areas to drain in the pre-disturbance direction, and revegetate all bare areas in accordance with contract requirements. Trimming the silt fence fabric and leaving it in place will not be allowed.
- B. Removed silt fence may be used at other locations provided the silt fence fabric and other material requirements continue to be met to the satisfaction of the Engineer.
- C. Ground disturbance caused by the installation and removal of the temporary silt fence shall be backfilled and repaired in conformance with the provisions in Section 15-1.02, "Preservation of Property," of the Standard Specifications.

## **4. MEASUREMENT AND PAYMENT**

### **4.1 MEASUREMENT**

- A. Temporary silt fence will not be separately measured for payment.

### **4.2 PAYMENT**

- A. No separate payment will be made for temporary silt fence. Full compensation for all costs associated with this work, as shown on the Drawings, as specified, or as directed by the Engineer shall be paid for under Section 015713, Temporary Erosion Control and BMPs.

**END OF SECTION**

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## **SECTION 017123.16 CONSTRUCTION SURVEYING**

### **1. GENERAL**

#### **1.1 DESCRIPTION.**

- A. The work required under this Section shall include, but is not limited to, all labor, tools, materials, equipment and incidentals required to perform construction surveying necessary to establish the lines and grades of the proposed work, as shown on the Drawings, as specified, or as directed by the Engineer.
- B. The Contractor's surveyor will be provided with the northing, easting and elevation of the control points existing in the field as shown on the Drawings. In addition, the Engineer of Record will also provide the Contractor's surveyor with the final linework file developed in AutoCAD Civil 3D. The Contractor's surveyor will be required to access AutoCAD in order to use the electronic files.
- C. The Engineer shall provide survey control for all lines and grades required for the construction of the proposed work from the established control points shown on the Drawings, as outlined below. The survey control shall be provided as one set of finished grade stakes.

#### **1.2 WORK INCLUDED**

- A. The Contractor shall preserve and protect all project survey control, construction stakes and reference points shown on the Drawings and located outside the limits of disturbance. Monuments, control or construction stakes disturbed by the Contractor shall be reestablished by the Contractor at his sole expense. The Contractor shall be responsible for procuring professional land surveying services as necessary to provide additional surveying or grade-setting required to construct this project.
- B. If the existing survey control network is disturbed, the Contractor's replacement of control points shall be performed by a California licensed Land Surveyor, or Civil Engineer authorized to practice land surveying as defined in the Professional Land Surveyors Act.
- C. The Contractor shall be solely responsible for the protection and maintenance of all existing and Contractor-established survey marks and monuments.

#### **1.3 SUBMITTALS**

- A. The Contractor shall provide the name, license number, and documentation for the required minimum qualifications of the Land Surveyor to be employed by the Contractor for the Project, prior to any work being completed by the Contractor or Surveyor.

#### **1.4 REFERENCES**

- A. State of California, Department of Transportation (CALTRANS) State Standard Specifications (current edition).

#### **1.5 QUALITY ASSURANCE**

- A. All Work must be performed to the satisfaction of the Engineer.
- B. The Engineer may, at his sole discretion, perform his own surveys for: verification of project control points, verification of lines and grades, and inspection of survey monument preservation. Contractor shall provide unrestricted access for the Engineer to spot-check the work. This does not relieve the Contractor of their responsibility to perform additional independent surveying, as need to complete the work.
- C. In the event that the construction staking reveals a design inconsistency or error, Contractor shall notify the Engineer immediately and shall not proceed with the work until directed by the Engineer.

## **2. PRODUCTS (Not Used)**

## **3. EXECUTION**

- A. The Engineer will establish the following reference points for the work shown on the Drawings.
  - 1. Staking to identify Staging Area limits.
  - 2. Offset stakes for referencing the the culvert pipe end point invert elevations.
  - 3. Offsets stakes for referencing the limits of grading.
- B. These points will be set once.
- C. Staking diagrams will be provided to the Contractor (.pdf) showing the location and elevation of all reference monuments.
- D. From this information, the Contractor shall establish all additional detailed surveys and measurements and establish markings or monuments necessary for their construction of the work, as dimensioned on the Drawings.

## **4. MEASUREMENT AND PAYMENT**

### **4.1 MEASUREMENT**

- A. Construction Surveying will not be independently measured for payment.

### **4.2 PAYMENT**

- A. No separate payment will be made for the work covered under this section. Full compensation for all costs in connection with Construction Surveying shall be included in the contract price for related work.
- B. In the event that that Owner is required to replace control points disturbed by the Contractor in order to verify the accuracy of the Contractor's work, the cost of establishing and verifying control points disturbed by the Contractor will be borne by the Contractor. The cost of any such verification or replacement of bench marks and/or control survey points will be deducted from any monies due to the Contractor. The Contractor will not be allowed any adjustment in working days for such verification or replacement of survey control points.

**END OF SECTION**

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**CLEARING AND GRUBBING**

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## **SECTION 311100 CLEARING AND GRUBBING**

### **1. GENERAL**

#### **1.1 DESCRIPTION**

- A. The work covered by this section consists of furnishing all labor, equipment, and materials necessary to perform the clearing and grubbing, the removal or disposal of all cleared and grubbed materials, and the filling of all grubbing holes, as specified, as shown on the Drawings, or as directed by the Engineer.
- B. Related Sections
  - 1. Section 015000, Mobilization
  - 2. Section 312316, Excavation
  - 3. Section 312323, Engineered Fill

#### **1.2 REFERENCES**

- A. State of California, Department of Transportation (CALTRANS) State Standard Specifications, current edition.

### **2. PRODUCTS - Not Used**

### **3. EXECUTION**

#### **3.1 CLEARING**

- A. General. All work shall comply with Section 16, Clearing and Grubbing of the Standard Specifications.
- B. All trees, stumps, down timber, snags, brush, vegetation, old piling, stone, concrete rubble, abandoned structures, and similar debris shall be cleared within the limits of the construction extents, unless otherwise shown on the Drawings or directed by the Engineer.
- C. In areas where grubbing is not required, the clearing operations shall consist of the complete removal of all obstructions above the ground surface.
- D. Downed plant materials shall be removed from tree protection zones and protected natural resource areas by hand or with equipment located outside fencing. Contractor shall extract debris by lifting the material out, not skidding it across the soil surface,
- E. Trees. Where trees are approved for removal, trees shall be felled in such a manner as to avoid damage to trees left standing, to the existing structures and installations, as well as with due regard for the safety of employees and others. Stumps shall be removed to minimum depth of 4 feet, or to a point where remaining roots are less than 1.5 inches in diameter, whichever depth is greater. Trees located beyond the limits for clearing and grubbing that are not marked for removal, shall be protected from damage, as indicated on the Drawings and as specified.



- F. Vegetation. Vegetation to be removed shall consist of all heavy growth of brush and woody vegetation, unless shown otherwise on the Drawings or directed by the Engineer.
- G. Debris Removal. Abandoned foundations, rip rap, drainage materials, debris, and other unsuitable material and any other debris designated for removal on the Drawings shall be removed and disposed of in accordance with this section. Buried unsuitable debris encountered during excavations shall be removed and disposed of in accordance with Section 312316, Stripping and Excavation.

### **3.2 GRUBBING**

- A. General. Grubbing shall consist of the removal of all stumps, roots, buried logs, old piling, old paving, concrete, abandoned utilities, timbers, fencing, and other objectionable matter encountered.
- B. Limits. Except as noted on the Drawings, the entire area within the limits of the footprint of the proposed grading limits, shall be thoroughly grubbed.
- C. Filling of Holes. All holes caused by grubbing operations, except in borrow areas, shall be excavated with 3 to 1 (horizontal to vertical) side slopes in conformance with Section 312316, Stripping and Excavation. The excavation shall then be backfilled with compacted embankment material in conformance with Section 312323, Engineered Fill.

### **3.3 DISPOSAL OF DEBRIS**

- A. Cleared and Grubbed Materials. Except as hereinafter specified or otherwise indicated on the Drawings, all logs, brush, strippings, concrete, asphalt, timbers, slash, and other non-organic debris which are the products of the clearing and grubbing operations shall be disposed of. Remove any or all of the products of clearing and grubbing operations from the site and dispose of the material at other locations or through other sources arranged for, by, and at the expense of the Contractor, in accordance with applicable laws and ordinances.
- B. Clean woody plant material products of the clearing and grubbing operations not designated for salvage may be chipped and disposed of on site at the location shown on the Drawings, or as specified by the Engineer, subject to approval of the Owner.

## **4. MEASUREMENT AND PAYMENT**

### **4.1 MEASUREMENT**

- A. Clearing and Grubbing will be measured as a lump sum pay item.

### **4.2 PAYMENT**

- A. Clearing and Grubbing will be paid for at the lump sum contract price, which price will be payment in full for furnishing all labor, materials, tools, equipment and incidentals, and doing all work necessary to complete the clearing and grubbing operation as specified, including disposal or salvage of materials, and restoration of ground surfaces.
- B. Removal and disposal of buried debris, not encountered during grubbing operations, will be paid for in accordance with Section 02222, Excavation – Unsuitable Debris.

C. Payment will be made under:

<u>Pay Item</u>	<u>Pay Unit</u>
Clearing and Grubbing	Lump Sum

**END OF SECTION**

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**STRIPPING AND EXCAVATION**

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## **SECTION 312316**

### **STRIPPING AND EXCAVATION**

#### **1. GENERAL**

##### **1.1 Description**

- A. The work covered by this section consists of furnishing all labor, equipment, materials, and performing all operations necessary to complete Stripping and Excavation, as specified in the geotechnical report, as shown on the Drawings, or as directed by the Engineer. Work includes, but is not limited to the following:
  - 1. Stripping for removal of vegetation and surface organics.
  - 2. Excavation for removal of unsuitable material.
  - 3. Pond Excavation
  - 4. Topsoil salvage, storage and replacement
  - 5. Clay layer salvage, storage and replacement
  - 6. Other miscellaneous excavation incidental to the construction of the improvements.
- B. Over-excavation for placement of RSP (angular stone) is not included within this section, but is considered incidental to the work for which it is required.
- C. Related Sections
  - 1. Section 311100, Clearing and Grubbing
  - 2. Section 312323, Engineered Fill

##### **1.2 References**

- A. State of California, Department of Transportation (CALTRANS) State Standard Specifications (current edition).
- B. Geotechnical Engineering Investigation by:
  - CMAG Engineering, Inc.
  - PO Box 640
  - Aptos, CA 95001
  - (831) 475-1411
  - Job No. 16-141-SM
  - Dated: March 24, 2017

##### **1.3 Quality Assurance**

- A. Comply with all applicable permits and regulations.
- B. Contractor shall provide necessary construction staking and references points, as required to meet the specified tolerances for the work.

## **2. PRODUCTS – SECTION NOT USED**

## **3. EXECUTION**

### **3.1 General**

- A. The Contractor shall protect existing utilities in performing any excavation work.
- B. The Contractor shall comply with all permit conditions in performing any excavation work.
- C. Contractor shall perform an independent earthwork estimate for the purpose of preparing bid prices for earthwork. Quantities indicated on the Drawings are approximate estimates provided only for permitting purposes and are not suitable for bidding purposes.
- D. The bid price shall include costs for any necessary export and proper disposal of excess or unsuitable earth materials off-site, at locations to be arranged and paid for by the Contractor.

### **3.2 Stripping**

- A. Stripping. Strip surfaces of excavations and fill foundations of heavy growth of crops, grass, weeds and other vegetation as specified in Section 311100, Clearing and Grubbing. Greater depths of stripping may be necessary in selected areas to remove vegetation, as determined by the Engineer.
- B. Unless otherwise specified, the stripped materials shall be disposed of off-site, at locations to be arranged and paid for by the Contractor

### **3.3 Topsoil (salvage for protective layer)**

- A. Topsoil work shall consist of excavating, windrowing or stockpiling topsoil, removing from windrows or stockpiles, spreading, and compacting topsoil as shown on the Drawings, as specified, or as directed by the Engineer.
- B. Topsoil shall be obtained from sources within the project as shown on the Drawings, as specified, or as directed by the Engineer.
- C. Attention is directed to Section 311100, Clearing and Grubbing, regarding the clearing of vegetation. Excavating topsoil shall not be performed in an area until clearing and grubbing has been completed in that area.

- D. Topsoil for the protective layer shall be obtained by removing the upper 6 inches (minimum) of highly organic material that includes all sod and plant material and removed from the site. The material between 6 inches and 12 inches below grade shall be salvaged for use as the protective layer over the clay liner. This material shall be stockpiled onsite at locations approved in writing by the Engineer and shown on the Drawings.
- E. Upon completion of the rough grading and clay layer placement, the protective layer shall be spread to a uniform depth of not less than 12 inches and compacted to the finished grade elevations shown on the Drawings, to the recommendations of the geotechnical report.
- F. Topsoil shall be placed on the designated areas and amended as specified before seeding or erosion control materials are applied.

### **3.4 CLAY (salvage for clay layer)**

- A. Clay Salvage work shall consist of excavating, windrowing or stockpiling clay material, removing from windrows or stockpiles, spreading, and compacting clay material as shown on the Drawings, as specified in the geotechnical report, or as directed by the Engineer.
- B. Clay shall be obtained from sources within the project as shown on the Drawings, as specified in the geotechnical report, or as directed by the Engineer.
- C. Clay material shall be obtained by excavating and sorting of material from proposed excavation and embankment areas where shown on the plans or designated by the Engineer. The clay material, approved for use as a clay liner, shall be stockpiled onsite at locations approved in writing by the Engineer and shown on the Drawings.

### **3.5 Excavation**

- A. General. Excavations shall extend into firm, undisturbed native soils as outlined in the geotechnical report. Excavation shall consist of removal of material for embankment foundation preparation, mass excavation and finish grading of the ponds, and other miscellaneous excavations to the lines and grades shown on the Drawings, or as directed by the Engineer. In the event that organic materials, yielding sub-grade (pumping) or other deleterious materials are encountered during foundation excavations, they shall be removed as directed by the Engineer.
- B. Control of Water. Water control shall be performed in accordance with project permit conditions, and Dewatering, Section 312319 of these Specifications. When water is encountered, either ground water or surface runoff, the Contractor shall furnish, install, maintain, and operate all necessary machinery and equipment required to keep the excavation reasonably free from water, as approved by the Engineer, until the placement of backfill material has been completed, inspected, and approved, and all danger of flotation and other

damage is removed. Water pumped from the excavation shall be disposed of in such manner as will not cause injury to public or private property, or constitute a nuisance or menace to the public, and the disposal method shall be subject to the approval of the Engineer. Water shall be controlled until work is complete.

- C. Excess Excavation. Care shall be exercised by the Contractor not to excavate below the grades shown on the Drawings, except as specified herein, and as directed by the Engineer. All excavations in excess of the grades shown on the Drawings which are not directed by the Engineer shall be backfilled with compacted embankment at the Contractor's expense, per Section 312323, Engineered Fill.
- D. Temporary Excavations. With exposure and drying, on-site soils may experience progressive sloughing if excavated near vertical and left un-shored during construction.
- E. Tolerances. The excavation tolerance shall typically be +0.1 feet to -0.2 feet from the grades shown on the Drawings, except within the low flow channel, where excavation tolerance shall be +0.1 feet to -0.1 feet from the elevations shown on the Drawings.

### **3.6 Unclassified Excavation.**

- A. Unclassified Excavation. Unclassified excavation shall consist of the excavation and disposal of all material, regardless of its nature, which is not otherwise classified and paid for under Excavation of Unsuitables or Rock Excavation described below. Unclassified Excavation includes excavation required to reach finished grade. Over-excavation for the placement of materials (clay layer and protective/topsoil layer) or the removal of unsuitables, as described below under Excavation of Unsuitables, is not included in Unclassified Excavation.

### **3.7 Excavation of Unsuitables.**

- A. Excavation of Unsuitables. Areas of unsuitable in-place soils, as determined by the Engineer, may also be encountered. Material shall not be classified as unsuitable solely based on moisture content. Material within the limits of Excavation, as described above under Unclassified Excavation, or within the limits of over-excavation for the placement of materials shall not be classified as unsuitable. The Contractor shall anticipate having to over-excavate areas of unsuitables as directed by the Engineer and dispose of materials. The actual locations of these excavations will be determined in the field by the Engineer. The side slopes of the excavations shall be no steeper than 1 to 1 (horizontal to vertical). The over-excavations shall be backfilled with embankment materials in accordance with Section 312323, Engineered Fill.
- B. Disposition of Unsuitable Materials. The excavated materials that are considered unsuitable based solely on moisture content shall be processed as necessary to meet specification requirements for suitability and used as embankment material. Materials which are unsuitable

based on organic content will be ordered wasted and shall be disposed of off-site in accordance to Section 7-1.13, "Disposal of Material Outside the Highway Right of Way", of the State Standard Specifications.

### **3.8 Rock Excavation**

- A. Rock Excavation. Rock excavation consists of the removal of hard igneous, metamorphic, and/or sedimentary rock in solid beds or masses in original or stratified position which can be removed only by continuous drilling, blasting or the use of pneumatic tools, and all boulders of 5 cubic yards in volume or larger. Material which can be loosened with a pick, frozen materials, soft laminated shale and hardpan, which for convenience or economy is loosened by drilling, blasting, wedging or the use of pneumatic tools, removal of concrete pavement and retaining walls, shall not be classified as rock excavation. When rock is encountered within the limits of the excavation, immediately notify the Owner and Engineer and do not proceed further until instructions are received and measurements made for the purpose of establishing the volume of rock excavation. Contractor shall note that blasting is not approved for this project. The need for specialized rock excavating equipment should be anticipated if rock is encountered.

## **4. MEASUREMENT AND PAYMENT**

### **4.1 MEASUREMENT**

- A. Stripping. Stripping will not be separately measured for payment.
- B. Topsoil (Salvage for Protective Layer). Topsoil will not be separately measured for payment.
- C. Clay (Salvage for Clay Layer). Clay material will not be separately measured for payment.
- D. Unclassified Excavation. Unclassified Excavation will be measured by the cubic yard of Unclassified Excavation, based on the Dimensions shown on the Drawings. Unclassified Excavation is a Final Pay Item in accordance with Section 9-1.02C "Final Pay Item Quantities" of the Standard Specifications. Where the dimensions of any portion of the work are revised by the Engineer, or a portion of the work is eliminated, the change will be measured by the cubic yard.
- E. Excavation - Unsuitable Materials. Excavation to remove materials that are designated by the Engineer as unsuitable for reuse will be measured by the cubic yard from the stripped foundation. Measurement will be based on surveyed cross sections before and after the excavation.
- F. Rock Excavation. Rock Excavation will be measured by the cubic yard of rock excavation, as determined by cross sections surveyed before and after the excavation



- G. Other Miscellaneous Excavations. All other excavations will not be measured for payment.
- H. Surveys: Construction staking will not be separately measured for payment.

#### **4.2 PAYMENT**

- A. Stripping. No separate payment will be made for stripping. All costs in connection with this work will be considered incidental to the contract price per cubic yard for Excavation.
- B. Topsoil (Salvage for Protective Layer). No separate payment will be made for excavating, windrowing or stockpiling, removing from windrows or stockpiles, spreading, and compacting topsoil. All costs in connection with this work will be considered incidental to the contract lump sum price for Unclassified Excavation.
- C. Clay (Salvage for Clay Layer). No separate payment will be made for excavating, windrowing or stockpiling, removing from windrows or stockpiles, spreading, and compacting clay material. All costs in connection with this work will be considered incidental to the contract lump sum price for Unclassified Excavation.
- D. Unclassified Excavation, measured as specified above, will be paid for at the contract unit price per cubic yard, which price will be payment in full for furnishing all labor, materials, tools, equipment and incidentals, and doing all work necessary to complete Unclassified Excavation, as specified, including mass excavation and finish grading of channel banks and floodplains, to the lines and grades shown on the Drawings.
- E. Excavation - Unsuitable Materials, measured as specified above, will be paid for at the contract unit price per cubic yard, which price will be payment in full for furnishing all labor, materials, tools, equipment and incidentals, and doing all work necessary to complete the excavation as specified, including dewatering, all handling of materials, and disposal of unsuitable materials.
- F. Rock Excavation, measured as specified above, will be paid for at the contract unit price per cubic yard, which price will be payment in full for furnishing all labor, materials, tools, equipment and incidentals, and doing all work necessary to complete the Rock Excavation as specified, including dewatering, all handling of materials, and disposal of unsuitable materials.
- G. No separate payment will be made for other miscellaneous grading incidental to the work. All costs in connection with this work will be considered incidental to the cost of construction of associated improvement.
- H. Surveys: No separate payment will be made for surveys or construction staking. All costs in connection with this work will be considered incidental to the contract price per cubic yard for Excavation.
- I. Mixing and offhaul of suitable materials for reuse or shall be paid for under Engineered Fill, Section 02226.

J. Payment will be made under:

<u>Pay Item</u>	<u>Pay Unit</u>
Unclassified Excavation	Cubic Yard (F)
Excavation – Unsuitable Materials	Cubic Yard
Rock Excavation	Cubic Yard

**END OF SECTION**

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**DEWATERING**

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## **SECTION 312319**

### **DEWATERING**

#### **1. GENERAL**

##### **1.1 DESCRIPTION**

- A. Furnish all labor, materials, equipment, and incidentals necessary to design, construct, operate, maintain, and remove all cofferdams, flumes shoring, diversions, filtration systems and/or other measures, including pumping, to dewater the construction site 24 hours a day during the entire field construction period, as shown on the Drawings, as specified, or as directed by the Engineer.
- B. Dewatering details on the Drawings (if provided) are schematic. The design and implementation of the Dewatering Plan is solely the responsibility of the Contractor. Contractor shall make their own independent evaluation of water sources (surface and groundwater) in preparing their Dewatering Plan.
- C. Dewatering shall comply with all project permit conditions, applicable laws and local ordinances.

##### **1.2 RELATED SECTIONS**

- 1. Section 015713.01, Fiber Roll
- 2. Section 015713, Temporary Erosion Control and BMP's

##### **1.3 SUBMITTALS**

##### **1.4 QUALITY ASSURANCE**

- A. Comply with all applicable permits and regulations.

#### **2. PRODUCTS**

##### **2.1 MATERIALS**

- A. General. The Contractor shall be responsible for sizing and design of well points, pumps, drains, pipes and other dewatering facilities. Comply with Drawings and regulatory requirements.
- B. Imported Rock. Use only clean washed rock.
- C. Dewatering Facilities. Provide and operate dewatering facilities of suitable size and capacity. The use of equipment shall be consistent with the manufacturer's recommendations.
- D. Silt Fence. Comply with Section 015713.02, Silt Fence.

### **3. EXECUTION**

#### **3.1 GENERAL**

- A. Contractor is solely responsible for the design, construction, and maintenance and monitoring of the dewatering facilities. Comply with the Drawings, Specifications, and applicable permit conditions.

#### **3.2 SEDIMENT CONTROL**

- A. Materials. Earthen materials shall not be used within the flowing channel, with the exception of clean, washed rock.
- B. Discharge of diverted flow. Unless otherwise specified, a diversion must discharge into the same natural drainage way in which its headworks are located. Construct energy dissipators at diversion outlets, where necessary to prevent erosion at point of discharge.
- C. Discharge of Seepage/Groundwater. Discharge water from the dewatered construction site either by gravity or pumping in a manner to prevent excessive turbidity from entering Pescadero Creek and to prevent scour and erosion outside of the construction site. Pumped water should be pre-filtered with sand/gravel pack around sumps for subsurface flows and a silt fence or hay bales around pumps for surface flow.
- D. Discharge pumped water into isolated local depressions, or temporary sediment basins. Where discharging water into the creek will create excessive turbidity, route water through a sediment interceptor or other facilities to remove sediment from water.

#### **3.3 HAZARDOUS MATERIAL CONTROL**

- A. General. Comply with the approved Hazardous Materials Control and Spill Prevention Plan (HMC&SPP) in accordance with Construction Facilities and Temporary Controls, Section 01500.
- B. Equipment and Lubricants. Steam-clean all equipment prior to its use. Inspect all equipment for cleanliness and fluid leaks prior to use and monitor during its use. Maintain equipment as required. Equipment refueling shall only take place in a designated, contained area.
- C. Isolation of Construction Area. Prior to performing work within flowing water, outside of cofferdams, install oil containment booms downstream of the work area. Maintain booms until completion of the work within the channel is complete.
- D. Spills. Maintain a supply of oil spill booms, sorbent pads, and other supplies to contain and clean spills. Comply with approved HMC&SPP should spills occur.

#### **3.4 COFFERDAMS**

- A. General. The Contractor is solely responsible for the design, construction, maintenance, and monitoring of cofferdams, dikes and other isolation facilities. Cofferdams with an exposed height greater than 10 feet shall be designed by a Professional Engineer registered in the State of California, based on available soil data.

- B. Configuration. Cofferdam alignments, as shown on the Drawings, reflect the maximum allowable encroachment into the channel. Construct cofferdam alignments as shown on the Drawings, unless otherwise approved by Engineer. Provide cofferdams high enough to account for water surface fluctuations.
- C. Secondary Dikes/Seepage Control. Secondary dikes within the isolated construction area can be used to control seepage and groundwater around excavations, provided all dike materials are removed from the exposed channel upon completion, prior to re-watering the work area.

### **3.5 DEWATERING**

- A. General. Remove water from construction area using pumping, well points, drains, or other approved methods. Discharge of water shall comply with 3.2.D. Construction water shall be segregated from seepage water and routed through sediment interceptors or other facilities to remove contaminants and sediment. Excavated slopes in the saturated soils may need to be retained, tied back, or otherwise stabilized. Refer to the Geotechnical Report.
- B. Well Points. Well points shall be designed to preclude the loss of fine soil by sand/gravel packing or other suitable means.
- C. Pumping Facilities. All pump intakes shall be screened to prevent the entrainment of fish, in accordance with project permit conditions. Pumps and discharge piping shall be suitable for the type of service provided and shall be a sufficient size and capacity to satisfactorily dewater work areas. Engines shall be muffled to avoid excess noise and pump intakes shall be fitted with screens as required.
- D. Power Supply. Consider the availability and reliability of power sources for dewatering operation in dewatering system design and make provisions for temporary or backup power supply as deemed necessary. Where the primary diversion is operated by pumping, provide a backup system with automatic controls capable of starting the backup upon failure of the primary system.
- E. Groundwater. Dewatering shall maintain water surfaces below the base of temporary excavations or trenches, to allow for visual inspection of the work, if requested by the Engineer. Lower groundwater tables within excavations for structures to a minimum of two (2) feet below foundations or as otherwise required to establish a firm, stable foundation. Control groundwater within excavation until completion of backfill operations.

### **3.6 WATER LEVELS DURING THE CONSTRUCTION PERIOD**

- A. The Contractor shall be responsible for making an independent evaluation of site conditions. The Contractor's dewatering plan shall address all potential sources of surface and groundwater, including but not limited to overland flow (natural or managed), domestic water lines, irrigation tailwater, seepage, and direct rainfall.
- B. Construction Dewatering. Groundwater in excavations is discussed in the Geotechnical Report.

### **3.7 CLEANUP**

- A. Thoroughly clean up area to remove debris and contaminated materials. Remove fine sediments and restore disturbed area prior to removal of the dewatering facilities. Clean and round river run gravels or cobbles, if used in cofferdam construction, may be spread in the creek channel in lieu of removal, provided grading will not interfere with facility operation.

#### **4. MEASUREMENT AND PAYMENT**

##### **4.1 MEASUREMENT**

- A. Dewatering will not be separately measured for payment.

##### **4.2 PAYMENT**

- A. No separate payment will be made for Dewatering. Full compensation for all costs associated with this work, as shown on the Drawings, as specified, or as directed by the Engineer shall be included in the contract price for related work.

**END OF SECTION**

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**ENGINEERED FILL**

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## **SECTION 312323 ENGINEERED FILL**

### **1. GENERAL**

#### **1.1 DESCRIPTION**

- A. The work covered by this section consists of furnishing all plant, labor, and materials, and performing all operations necessary for the construction of Engineered fills (unless separately designated elsewhere), including surveying, salvage and placement of topsoil and clay materials, subgrade preparation, furnishing, loading, and on-site and off-site hauling of materials, processing, screening placement and compaction of Engineered Fill materials, construction of ramps, and other incidental earthwork as may be necessary to complete the Engineered Fills, as specified in the Geotechnical Report, as shown on the Drawings, as specified, or as otherwise directed by the Engineer.
- B. All grading shall comply with Section 19 of the Standard Specifications, and with the recommendations of the Geotechnical Investigation. Prior to beginning work, the Contractor shall be familiar with the geotechnical investigation. In the event of discrepancy between the report and the notes herein, the report shall prevail. It shall be the responsibility of the Contractor to visit the site and make his own interpretations with regard to materials, methods and equipment necessary to perform the work required for this project.
- C. Temporary erosion control and BMP's shall be installed and approved by the Engineer prior to beginning Engineered Fill Construction.
- D. The Contractor is responsible to locate, identify, and protect all existing utilities from damage.

#### **1.2 RELATED SECTIONS**

- 1. Section 312316, Stripping and Excavation
- 2. Section 311100, Clearing and Grubbing

#### **1.3 REFERENCES**

- A. Geotechnical Engineering Investigation by:  
CMAG Engineering, Inc.  
PO Box 640  
Aptos, CA 95001  
(831) 475-1411  
Job No. 16-141-SM  
Dated: March 24, 2017
- B. American Society for Testing of Materials (ASTM) Standards:  
  
D1557      Test Method for Moisture-Density Relations of Soils and Soil-Aggregate  
                 Moistures Using 10 lb (4.54 kg) Rammer and 18-inch (457 mm) Drop

D2974	Test Method for the Organic Content of Soils
D6938	In-Place Density and Water Content of Soil and Soil-Aggregate by Nuclear Methods (Shallow Depth)
D4318	Test Method for the Liquid Limit and Plastic Limit of Soils
D422	Particle-Size Analysis of Soils

- C. State of California, Department of Transportation (CALTRANS) State Standard Specifications, current edition.
- D. Surveys. All construction staking shall be performed by the Contractor. Survey control points are shown on the Drawings.
- E. NRCS Construction Specification 903 – Engineered Fill, current edition.

## **2. PRODUCTS**

### **2.1 MATERIALS**

- A. Engineered Fill Materials. To the extent they are needed, all suitable materials from the specified excavations shall be used in the construction of required permanent engineered fill. The suitability of materials for specific purposes will be subject to the approval of the Engineer, as outlined in the geotechnical report, and in conformance with these specifications.
- B. Topsoil (Protective Layer for Pond Liner). To the extent they are needed, all suitable materials from the specified excavations shall be used in the construction of the top soil/protective layer. The suitability of materials for specific purposes will be subject to the approval of the Engineer, as outlined in the geotechnical report, and in conformance with these specifications.
- C. Clay (Clay Layer for Pond Liner). To the extent they are needed, all suitable materials from the specified excavations shall be used in the construction of the Clay layer. The suitability of materials for specific purposes will be subject to the approval of the Engineer, as outlined in the geotechnical report, and in conformance with these specifications.
- D. Surplus Materials. All surplus or unsuitable excavated materials will be designated as waste and shall be disposed in accordance with Section 312316, Excavation.
- E. Imported Engineered Fill. Importing of Engineered Fill material, if necessary or required to meet the grades and elevations shown on the plans, shall be considered included in the Contractor's bid for the various items of work involved and no additional compensation will be made therefore. Should such imported material be required, the Contractor shall notify the Engineer of the borrow site location at least 72 hours in advance, and provide an adequate sample size so the Engineer can verify the suitability of the material. All imported materials shall be proposed by the Contractor in writing in accordance with the submittal requirements of these Special Provisions and the Standard Specifications. The Contractor shall perform and/or submit all material testing reports and other data as necessary to provide the Engineer with established laboratory

values for optimum moisture and maximum dry density, for any imported material requiring density testing. Any proposed engineered fill that deviates from the criteria stated herein, shall have written acceptance from the Engineer and geotechnical engineer prior to import or placement in the work.

- F. If a disagreement between the Contractor and the Engineer occurs over the suitability of materials, the Contractor shall perform laboratory testing to demonstrate compliance with the specifications. The failure of the Contractor to perform the testing shall not relieve the Contractor from the obligation to provide suitable materials.

### **3. EXECUTION**

#### **3.1 ENGINEERED FILL CONSTRUCTION**

- A. General. Compacted Engineered Fill in Engineered Fills shall be placed in the dry and compacted as specified herein.
- B. Subgrade Preparation. Following Clearing and Grubbing, the subgrade surfaces shall be graded to remove surface irregularities and shall be scarified parallel to the axis of the fill and loosened to a minimum depth of 2 inches. The moisture content of the loosened material shall be controlled as specified for the Engineered Fill, and the surface materials of the subgrade shall be compacted and bonded with the first layer of Engineered Fill.
- C. Surfaces for fill placement shall be free of loose, uncompacted earth in excess of two inches in depth normal to the slope and shall be at such a moisture content that the Engineered Fill can be compacted against them to ensure a good bond between the fill and the subgrade. Fill shall not be placed until the required excavation and subgrade preparation has been completed.
- D. Fill shall not be placed on or in standing water, nor upon a frozen surface, nor shall snow, ice, or frozen material be incorporated in the fill.
- E. If soft, wet, or pumping subgrade soils are present, the Engineer shall provide subgrade stabilization recommendations in the field during grading. Recommendations may include stabilization fabric, overexcavation, or placement of rock.
- F. Horizontal Layer Construction. The compacted Engineered Fill shall be constructed to a sufficient section so as to achieve the required compaction throughout the finished section. Materials to be compacted shall be placed or spread in layers not more than eight (8) inches in loose thickness prior to compaction. Materials excavated to form keyways or over-excavations, and suitable for use as Engineered Fill, shall be blended uniformly with other excavated soils or disposed of. All fill shall be keyed and benched as specified in the Geotechnical Report.
- G. Compaction. When, in the opinion of the Engineer, the surface of any compacted layer is too smooth to bond properly with the succeeding layer, it shall be scarified to a depth of 6 inches before the succeeding layer is placed thereon. The degree of compaction required is expressed as a percentage of the maximum dry density, based on laboratory test procedure, ASTM D 1557. The Engineered Fill shall be compacted to a minimum of 90% of the maximum dry density, unless otherwise specified in the geotechnical report, or as directed by the Engineer. Construction equipment shall be operated over each layer of fill to ensure that the required compaction is obtained. Special equipment shall be used if needed to obtain the required compaction. Heavy compaction equipment

shall not be operated within 2 feet of any structure. Fill adjacent to structures, pipe, conduits, and anti-seep collars shall be compacted to a density equivalent to that of the surrounding fill by means of hand tampers or plate vibrators. Hand directed tampers or compactors shall be used on areas not accessible to heavy compaction equipment, fills compacted in this manner shall be placed in layers not greater than 4 inches in thickness before compaction, and shall meet the same density requirement as for the adjacent area. All compaction testing shall be performed by the Owner, unless otherwise noted. The cost of re-testing of areas that have failed to meet specified compaction requirements shall be borne by the Contractor.

- H. Compaction of backfill adjacent to structures shall not be started until after the expiration of the following minimum time interval after placement of the concrete:
  - 1. Anti-seep, collars, conduits,  
and cantilever outlet bents 3 days
- I. Moisture Control. The moisture content required is expressed as a percentage, based on laboratory test procedure ASTM D 1557. The moisture shall be uniformly distributed throughout the layer prior to compaction and shall meet the requirements of the geotechnical report. If the material is not within the required moisture content, the Contractor will be required to moisture condition the soil. The moisture conditioning of fill materials shall be performed prior to placement in the section. The final minor moisture conditioning may be made on the fill, as required. Harrowing, or other approved methods will be required to work the moisture into the material until a uniform distribution of moisture is obtained. Water applied on a layer of fill shall be accurately controlled in amount and distribution so that free water will not appear on the surface during or subsequent to rolling. If the material is too wet for proper compaction or soft and yielding sub-grade is experienced (pumping), the Contractor will be required to aerate the material to a moisture content within the desired limits prior to compaction. If the top surface of the preceding layer of compacted fill or a subgrade or abutment surface in the zone of contact with the fill becomes too dry to permit suitable bond, it shall either be removed or scarified and moistened to an acceptable moisture content prior to placement of the next layer of fill.
- J. Dressing. Engineered Fill slopes shall be dressed by over-building and cutting back to the required grade. The Contractor may compact the shoulder of each lift during the placement of fill materials to assist in the subsequent dressing of the slopes.

### **3.2 POND LINER CONSTRUCTION**

- A. General. Compacted Clay Layer and Top Soil/Protective Layer shall be placed in the dry and compacted per the recommendations of the geotechnical report.

### **3.3 CROSS SECTIONS AND ZONING OF MATERIALS**

- A. Standard Engineered Fill Sections. The dimensions, slopes, and zoning of materials shall conform to the sections shown on the Drawings and specified herein.
- B. Zoning of Materials. Unless otherwise specified, the Engineered Fill materials shall be homogeneous. The Engineered Fill shall be free of pockets, lenses, streaks, layers, etc. of different materials.

### **3.4 FINISH**

- A. The finished grades shall transition naturally into adjacent existing grades to provide a functional and naturalistic finished surface. Due to the complex nature of the project and the desired aesthetic and functional features, not all details can be accurately represented on the Drawings. As a result, the Contractor may be directed by the Engineer to make minor adjustments to finish grades to best achieve these results. These adjustments may include smoothing or rounding conforms, or changing slope angles or daylight points as necessary to conform to the variable geometry inherent in natural topography. Compensation for this work shall be considered as included in the price paid for the various contract items of work involved, and no additional compensation will be allowed.
- B. After the placement of the engineered fills and spoils, the sides and top shall be dressed by final passage of compaction equipment or by dragging to give a smooth surface. The surface area shall be graded to provide surface drainage to flow to desired locations.

### **3.5 ROADS AND RAMPS**

- A. Maintain Access. At locations where access roads to existing facilities are destroyed because of the work required under this contract, the Contractor shall provide temporary roads, if directed by the Engineer, to give access to fields and buildings during the construction period. Such facilities shall be removed to the extent required by the Engineer.
- B. Temporary Haul Roads. Temporary haul roads shall be constructed as required to transport materials from borrow source or excavation to Engineered Fill site. Temporary ramps to be constructed for the Contractors convenience need not comply with these foundation preparation and Engineered Fill construction requirements. Unless otherwise directed by the Engineer, temporary ramps shall be removed prior to completion of the work.

### **3.6 GRADE TOLERANCES**

- A. Engineered Fill:
  - 1. General. Engineered Fills shall be constructed to the net grade and cross section shown on the Drawings.
  - 2. Grade Tolerances. At all points a tolerance of 0.2 (two-tenths) foot above, and 0.1 (zero) foot below the prescribed grade will be permitted in the final dressing, provided that any excess material is so distributed that the crown of the Engineered Fill drains in the desired direction and that there are no abrupt humps or depressions in surfaces. However, this tolerance above grade may be modified at locations where, in the opinion of the Engineer, such modifications will not impair the design or appearance of the project.

### **3.7 SLIDES**

- A. In the event of the sliding of any part of the Engineered Fill during its construction, or during the one year period after acceptance, the Contractor shall, upon written order of the Engineer, cut out and remove the slide and then rebuild that portion of the Engineered Fill.

#### **4. MEASUREMENT AND PAYMENT**

##### **4.1 MEASUREMENT**

- A. Engineered Fill. Engineered Fill will be measured by the cubic yard of Engineered Fill, based on the dimensions shown on the Drawings. Engineered Fill is a Final Pay Item in accordance with Section 9-1.02C "Final Pay Item Quantities" of the Standard Specifications. Where the dimensions of any portion of the work are revised by the Engineer, or a portion of the work is eliminated, the change will be measured by the cubic yard.
- B. Pond Liner. Pond Liner will be measured as a lump sum pay item.

##### **4.2 PAYMENT**

- A. Engineered Fill, measured as specified above will be paid for at the contract unit price per cubic yard, which price will be payment in full for furnishing all labor, materials, tools, equipment and incidentals, and doing all work necessary to construct compacted Engineered Fills as specified, including hauling of excavated materials from the source.
- B. Pond Liner, measured as specified above will be paid for at the lump sum contract price, which price will be payment in full for furnishing all labor, materials, tools, equipment and incidentals, and doing all work necessary to construct the Pond Liner as specified, including hauling of excavated materials from the source.
- C. No payment will be made for the Engineered Fill foundation preparation, shrinkage of material or materials placed above the net grades and slopes as allowance for shrinkage.
- D. No separate payment will be made for incidental grading beyond the projected toe of the Engineered Fill cross section. The cost for this work shall be included in contract unit price for compacted Engineered Fill.
- E. No payment will be made for construction or removal of temporary roads or ramps.
- F. No additional payment will be made for costs associated with stabilizing unstable materials. The cost for this work shall be included in contract Lump Sum price for compacted Engineered Fill.
- G. Payment will be made under:

<u>Pay Item</u>	<u>Pay Unit</u>
Engineered Fill	Cubic Yard (F)
Pond Liner	Lump Sum (LS)

**END OF SECTION**

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**SECTION 329200**  
**SEEDING**

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## **SECTION 329200 SEEDING**

### **1. GENERAL**

#### **1.1 DESCRIPTION**

- A. Work covered under this section consists of furnishing all labor, tools, materials, equipment and incidentals required to perform Seeding, as specified, as shown on the Drawings, or as directed by the Engineer.

#### **1.2 RELATED WORK**

- A. The work described under this section is related to the following sections of the Specifications:
  - 1. Section 015713, Temporary Erosion Control and BMPs
  - 2. Section 312316, Excavation
  - 3. Section 312323, Engineered Fill

#### **1.3 SUBMITTALS**

- A. Submit to the Engineer, for review, the following:
  - 1. A representative one-ounce sample of each seed mixture supplied for the job, labeled as to content, purity, and germination percentage.
  - 2. Duplicate copies of invoices for all materials.

#### **1.4 QUALITY ASSURANCE**

- A. All seed shall be labeled in accordance with the California Food and Agricultural Code and shall be delivered to the site in sealed individual, unmixed bags with the vendor's certificate attached. Seed treated with mercury compounds shall not be used.
- B. Seed which has become wet, moldy, or otherwise damaged in transit or in storage, will not be acceptable.

### **2. PRODUCTS**

#### **2.1 MATERIALS**

- A. Quantities shown on the Drawings represent pure live seed (pls).
- B. Seed shall be mixed on-site in the presence of the Engineer. At no time shall the seed mix contain noxious weed seed. Seed shall be maintained in optimal health and be protected at all times from animal damage; vandalism; inclement weather conditions, including drought, wind, and frost; toxic water; sunlight; moisture; or contact with vehicles, equipment, and tools and any other conditions that would damage or reduce the viability of the seed.
- C. Seed Mix. The seed mix and application rates are as shown on the Drawings. No substitutions are allowed without written consent of the Engineer.
- D. Straw Mulch. Straw mulch shall be derived from wheat or barley. The Contractor shall furnish evidence that clearance has been obtained from the County Agricultural Commissioner, as required by law, before straw obtained from outside the county in which it is to be used is delivered to the site of the work. Straw that has been used for stable bedding shall not be



used. Straw shall be free of mold. Straw shall be cured and dry with no water added after baling. Source must meet or exceed state certification standards for "weed free".

### **3. EXECUTION**

#### **3.1 PREPARATION**

- A. General. Seed the areas disturbed by construction activities, as specified herein or as directed by the Engineer.
- B. Debris Removal. Prior to ground surface preparation operations remove and dispose of all wire, rubbish, stones, and other material which might hinder proper grading, and subsequent maintenance.
- C. Surface Preparation. Surfaces which are too hard or smooth to accept the seeding, as determined by the Engineer, shall be broken up to a minimum depth of 6 inches, by disking or other methods approved by the Engineer, until the condition of the soil is acceptable. When conditions are such, by reason of excessive moisture or other factors, that satisfactory results are not likely to be obtained, the work shall be stopped and shall be resumed only when directed. Slopes in excess of 25% shall be prepared by track-walking or equivalent method approved by the Engineer.

#### **3.2 APPLICATION OF SEED**

- A. Existing Features. During seeding operations, care shall be taken to avoid damaging existing facilities, vegetation to remain, or any other items on or around the planting areas.
- B. Seeding Areas: Apply seed to areas indicated on the Drawings, or as directed by the Engineer
- C. Time of Seeding: Perform all seeding between September 15th and October 1st of the year construction begins. The seeding operation shall be halted when, in the opinion of the Engineer, conditions of high winds, excessive moisture or other factors are not conducive to satisfactory results. Upon written request of the Contractor, and upon written approval of the Engineer, seeding may be done during off seasons provided that:
  - 1. The resulting stand of grass shall be at least equal to the stand that might be expected from planting during the normal season; and
  - 2. The establishment period shall be lengthened, as required, to produce the above specified stand at no additional cost to the Owner.
  - 3. Perform seeding prior to placement of erosion control fabric, where erosion control fabric is specified.
- D. Method of Seeding: Seeding may be performed mechanically in a dry condition or with hydro-seeding equipment, at the Contractor's option.
- E. Broadcast Seeding. Broadcast seeding may be used in lieu of hydro-seeding or to reseed any previously hydro-seeded areas disturbed during planting operations. Seed shall be dry-applied by the following method:
  - 1. Broadcast seed at the rates specified on the Drawings, uniformly by hand, mechanical hand seeder, combination seed spreader and cultipacker, or other approved equipment. Where seed is broadcast by hand or mechanical hand seeder, half the seed shall be sown with the sower moving in one direction, and the remainder sown with the sower moving at right angles to the first sowing. Broadcast seeding shall not be done during windy weather.
  - 2. Rake seed into the soil to achieve a sowing depth of approximately 1/8 inch to 1/4 inch.

3. Following the application of seed, straw mulch shall be pneumatically applied or hand broadcast at the rate of 3,000 pounds per acre (typically 1.5 to 2 tons/acre), where erosion control fabric is not specified, and 500 lbs for acre where erosion control fabric will be used.

### **3.3 REPAIR**

- A. General. When any portion of the ground surface becomes gullied or otherwise damaged following seeding within the period of Contractor's responsibility, repair the affected portion to re-establish the condition and grade of the soil prior to planting and then reseed as specified for initial planting, all at no cost to the Owner.
- B. Reseeding. When it becomes evident that the seeding has been unsuccessful, the Engineer will require that these areas be reseeded with the same seed and quantity as specified for the initial seeding. Complete reseeding within fifteen (15) days following notification and these areas shall be maintained by watering, as specified above, until the successful grass is established. Prepare the area to be reseeded as directed by the Engineer, to receive the reseeding.

### **3.4 FIELD QUALITY CONTROL**

- A. During the course of work or upon completion of the project, a check of the quantities of materials will be made against the areas treated, and if the minimum rates of application have not been met, the Engineer will require the distribution of additional quantities of those materials to make up the minimum applications specified.

## **4. MEASUREMENT AND PAYMENT**

### **4.1 MEASUREMENT**

- A. Seeding will not be separately measured for payment.
- B. Areas disturbed by the Contractor and requiring seeding outside the designated limits of disturbance shall not be measured for payment.

### **4.2 PAYMENT**

- A. Seeding will be paid for at the lump sum contract price, which price will include furnishing all labor, materials, tools, equipment, and incidentals necessary to complete the Seeding as specified, as shown on the Drawings, or as directed by the Engineer.
- B. The cost of seeding areas outside the designated limits of disturbance shall be solely borne by the Contractor.
- C. Payment will be made under:

<u>Pay Item</u>	<u>Pay Unit</u>
Seeding	Lump Sum

**END OF SECTION**

## **A.5 Geotechnical Investigation**

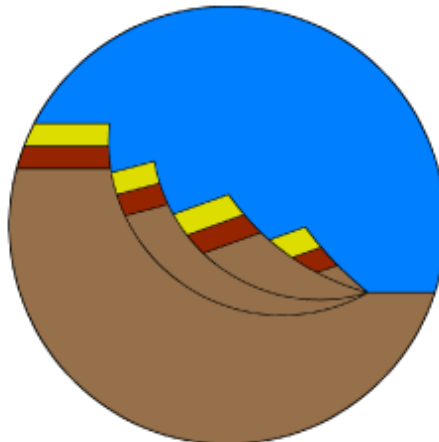
# **GEOTECHNICAL INVESTIGATION**

## **Harley Farms Regulating Reservoir Pescadero, San Mateo County, California**

Submitted to:

Waterways Consulting, Inc.  
509A Swift Street  
Santa Cruz, California 95060

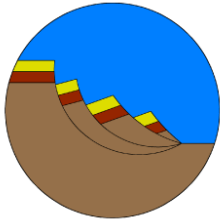
Attn: Matt Weld



Prepared by:

**CMAG ENGINEERING, INC.**

Project No. 16-141-SM  
March 24, 2017



# CMAG ENGINEERING, INC.

P.O. BOX 640 APTOS, CALIFORNIA 95001

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WWW.CMAGENGINEERING.COM

March 24, 2017  
Project No. 16-141-SM

Waterways Consulting, Inc.  
509A Swift Street  
Santa Cruz, California 95060

Attn: Matt Weld

**SUBJECT: GEOTECHNICAL INVESTIGATION**  
Proposed Regulating Reservoir  
Harley Farms, Pescadero, San Mateo County, California

Dear Mr. Weld:

In accordance with your authorization, we have completed a geotechnical investigation for the subject project. This report summarizes the findings, conclusions, and recommendations from our field exploration, laboratory testing, and engineering analysis. It is a pleasure being associated with you on this project. If you have any questions, or if we may be of further assistance, please do not hesitate to contact our office.

Sincerely,

**CMAG ENGINEERING, INC.**



Adrian L. Garner, PE, GE  
Principal Engineer  
C 66087, GE 2814  
Expires 6/30/18

Distribution: Addressee (4 Hard Copies; Electronic Copy)

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### **APPENDICES**

#### **APPENDIX A**

Field Exploration Program

#### **APPENDIX B**

Laboratory Testing Program

## **1.0 INTRODUCTION**

This report presents the results of our geotechnical investigation for the proposed regulating reservoir at Harley Farms in Pescadero, San Mateo County, California.

The purpose of our investigation was to provide information regarding the surface and subsurface soil conditions, and based on our findings, provide geotechnical recommendations for the design and construction of the proposed reservoir. Conclusions and recommendations related to general site grading, embankment fill slopes, and the reservoir liner are presented herein.

### **1.1 Terms of Reference**

CMAG Engineering, Inc.'s (CMAG) scope of work for this phase of the project included site reconnaissance, subsurface exploration, soil sampling, installation and monitoring of piezometers, laboratory testing, engineering analyses, and preparation of this report.

The work was undertaken in accordance with Waterways Consulting, Inc. *Professional Services Agreement for Subconsultants* dated August 15, 2016.

The recommendations contained in this report are subject to the limitations presented in Section 7.0 of this report.

### **1.2 Site Location**

The project site is located on the east side of Highway 1, northeast of the intersection of Cloverdale Road and Pescadero Creek Road in Pescadero, San Mateo County, California. The site location is shown on the Site Location Map, Appendix A, Figure A-1.

### **1.3 Surface Conditions**

The site is located adjacent to Pescadero Creek Road on slightly sloping farm land. The overall slope slightly descends to the southwest. The proposed reservoir location is on the southwest side of the field. A drainage ditch, running parallel to Pescadero Creek Road, is located on the south side of the proposed reservoir. The site is active farmland and it is anticipated that the surface vegetation of the field will change throughout the season.

## **2.0 PROJECT DESCRIPTION**

It is our understanding that the project consists of the construction of a 2.0-acre foot reservoir. The reservoir is triangular in shape with an overall depth of approximately 6 feet. The overall length and width of the reservoir (opposite and adjacent sides of the triangle) is approximately 210 feet and 160 feet, respectively. The proposed reservoir will be achieved by excavating into the existing grades. A small embankment, approximately 4 feet tall, is proposed on the west side. In general, 4:1 H:V (horizontal to vertical) sides slopes (cut slopes) are proposed with 4:1 H:V embankment fill slopes on the inside of the reservoir and 3:1 H:V embankment slopes on the outside of the reservoir.

## **3.0 FIELD EXPLORATION AND LABORATORY TESTING PROGRAMS**

Our field exploration program included drilling, logging, and interval sampling of 2 borings on December 15, 2016 and advancing, logging, and interval sampling of 2 test pits on November 17, 2016. The borings were advanced to depths of 10.5± feet and 11± feet below the existing grades. The test pits were advanced to depths of 7.5± feet and 8± feet below the existing grades. Two piezometers were installed and monitored from January through March 2017. Details of the field exploration program, including the Boring and Test Pit Logs, Figures A-4 through A-7, are presented in Appendix A.

## **4.0 SUBSURFACE CONDITIONS AND EARTH MATERIALS**

### **4.1 General**

The local geologic map (Brabb, E.E., 1980) depicts the subject property as underlain by Younger Alluvial Fan Deposits (Qyfo; Holocene) consisting of unconsolidated, fine sand, silt, and clayey silt.

Two borings and two test pits were advanced in the vicinity of the proposed reservoir. The subsurface profile encountered in our field exploration consisted of alluvial deposits within the depths explored. Complete subsurface profiles are presented on the Boring and Test Pit Logs, Appendix A, Figures A-4 through A-7. The boring and test pit locations are shown on the Boring and Test Pit Location Plan, Figure A-2.

### **4.2 Alluvial Deposits - Qyfo**

The deposits generally consisted of fat clays and interbedded clayey sands. The deposits varied in plasticity, consistency, and moisture. The plasticity varied from low to high and the consistency varied from soft to very stiff. The results of our laboratory testing on a sample of the fat clay indicated that the soil has medium



expansion potential. The alluvial deposits were generally moist at the time of our field exploration and increased to wet near the groundwater table. Results of our laboratory testing are presented in Table 1.

**Table 1. Laboratory Test Results - FAT CLAY**

USCS	CH
Percent Fines	90.4%
Consistency	Firm
Liquid Limit	57
Plastic Limit	19
Plasticity Index	38
Expansion Index	69
Expansion Potential	Medium
Dispersive Characteristics	Intermediate to Dispersive

#### **4.3 Groundwater**

Groundwater was encountered at approximately 8 feet below existing grade in Boring B-1 at the time our field exploration was performed.

Groundwater was encountered during our monitoring period over the winter of 2016 / 2017. The shallowest depth that the groundwater was encountered during our monitoring period was approximately 1.2 feet below grade in Piezometer P-2 on March 16, 2017.

It should be noted that groundwater conditions, perched or regional, may vary with location and may fluctuate with variations in rainfall, runoff, irrigation, and other changes to the conditions existing at the time our field investigation and monitoring was performed.

#### **5.0 DISCUSSIONS AND CONCLUSIONS**

The subsurface profile encountered in our field exploration consisted alluvial deposits within the depths explored. The alluvial deposits generally consisted of interbedded fat clays and clayey sands. Based on the results of our laboratory testing, it is our opinion that the on-site fat clays are a good candidate for use as a clay liner. Moisture conditioning and blending of the soils, to provide a uniform material, will be required prior to recompaction for use as a clay liner.

Shallow groundwater was encountered during our monitoring period. It is our opinion that the soils will be wet (over-optimum moisture) in the rainy season, spring, and early summer.

## **6.0 RECOMMENDATIONS**

### **6.1 General**

Based on the results of our field investigation, laboratory testing, and engineering analysis, it is our opinion, from the geotechnical standpoint, the subject site will be suitable for the proposed development provided the recommendations presented herein are implemented during grading and construction.

We recommend that the reservoir be constructed with maximum side slopes (cut slopes) of 4:1 H:V (horizontal to vertical). It is our opinion that this angle will allow the liner to be placed as a continuous layer, including placement of material on the side slopes (bathtub construction).

We recommend that the reservoir be lined with the on-site fat clay. We recommend that this layer be separated from the sandy soils during excavation. The clay liner should be a minimum of 18 inches thick. The results of our laboratory testing indicate that the expansion potential of this layer is medium. We recommend a 12 inch thick protective cover be placed over the liner to help prevent the soil from drying out and provide erosion protection. Earthwork recommendations are provided in Section 6.2.2 and 6.2.3.

It is our opinion that the on-site soils are suitable for use as engineered fill to construct the embankment fill for the reservoir. We recommend that the embankment have maximum slopes of 3:1 H:V (horizontal to vertical) for the proposed height of 4± feet. If taller embankment slopes are proposed, these recommendations may require revision. Earthwork recommendations are provided in Section 6.2.4.

We recommend that the reservoir be constructed during the summer months due to the seasonal shallow groundwater table and the in-situ moisture condition of the near surface soils.

### **6.2 Site Grading**

#### **6.2.1 Site Clearing**

Prior to grading, the areas to be developed should be stripped of any vegetation and cleared of any surface or subsurface obstructions, including any existing utility lines, stockpiled fills, and miscellaneous debris.

Surface vegetation and organically contaminated topsoil should be removed from areas to be graded. The required depth of stripping will vary with the time of year the work is done and should be observed by the Geotechnical Engineer. It is generally anticipated that the required depth of stripping will be 6 to 12 inches. See Section 6.2.4 for salvage of topsoil for use as a protective layer.

Holes resulting from the removal of buried obstructions that extend below finished site grades should be backfilled with compacted engineered fill compacted to the requirements of Subsection 6.2.2.

#### 6.2.2 Preparation of the Clay Liner

The fat clays should be separated from the remaining on-site soils during excavation of the reservoir. This material should be processed to provide uniform engineered fill with a moisture content of 1 to 4 percent over optimum. The clods should be pulverized to 3 inches in maximum dimension. The material should be verified by our firm, prior to placement, to confirm the moisture content and observe the extent to which the soil was processed.

The bottom of the overexcavation should be observed by our firm prior to placement of the clay liner. If conditions allow, the bottom of the overexcavation should be scarified a minimum of 8 inches, moisture conditioned, and compacted to provide a firm working surface. However, wet conditions should be anticipated, geotextile, rock, or other means may be required to stabilize the base of the overexcavation.

The liner should be placed as engineered fill, compacted between 88 to 92 percent relative compaction. We recommend that the soil for the liner be compacted with a sheepsfoot compactor. The soil should be compacted by mechanical means in uniform loose lifts not exceeding 8 inches in thickness. The lifts should be continuous, across the reservoir, including the side slopes. Bonding should be achieved between lifts, by scarification or, depending on the compaction equipment, full penetration of the sheepsfoot teeth. The relative compaction and required moisture content shall be based on the maximum dry density and optimum moisture content obtained in accordance with ASTM D1557.

The above recommended gradients do not preclude periodic maintenance of the slopes, as minor sloughing and erosion may take place.

**The Geotechnical Engineer should observe the overexcavations and construction of the liner.**

### 6.2.3 Preparation of the Protective Layer

The topsoil (strippings) between 6± inches and 12± inches below grade should be separated from the remaining strippings on the site during excavation. The intent is to remove the upper 6± inches of highly organic material, sod, and plant matter. The material between 6± inches and 12± inches should be processed to provide uniform fill with a moisture content of 1 to 4 percent over optimum. The clods should be pulverized to 3 inches in maximum dimension. The material should be verified by our firm, prior to placement, to confirm the moisture content and observe the extent to which the soil was processed.

The protective layer should be compacted between 85 to 88 percent relative compaction. We recommend that the soil for the protective layer be compacted with a sheepsfoot compactor. The soil should be compacted by mechanical means in uniform loose lifts not exceeding 8 inches in thickness. The lifts should be continuous, across the reservoir, including the side slopes. Bonding should be achieved between lifts, by scarification or, depending on the compaction equipment, full penetration of the sheepsfoot teeth. The relative compaction and required moisture content shall be based on the maximum dry density and optimum moisture content obtained in accordance with ASTM D1557.

### 6.2.4 Embankment Slope Construction

The embankment fill slopes for the reservoir should have a maximum slope of 3:1 H:V (horizontal to vertical). These assumptions are based on using the on-site soils as engineered fill and an overall height of approximately 4 feet. If import fill is utilized to construct the embankments, alternative recommendations can be provided.

The embankment slopes should be keyed into the native soil a minimum of 2.5 feet below existing grade. The key should be negatively sloped, a minimum of 2 percent, into the reservoir. If conditions allow, the bottom of the keyway should be scarified a minimum of 8 inches, moisture conditioned, and compacted to provide a firm working surface. However, wet conditions should be anticipated, geotextile, rock, or other means may be required to stabilize the base of the keyway.

The bottom of the keyway should be observed by our firm prior to placement of engineered fill. Depending on the time of year of construction, wet conditions may be encountered. Additional excavation may be required if wet, soft conditions are encountered. Geotextile, rock, or other means may be required to stabilize the base of the keyway and benches.

The embankment slopes should be constructed with engineered fill compacted to a minimum of 90 percent relative compaction. The on-site fat clay soils may be used as engineered fill, however, depending on the time of year, the soil may require moisture conditioning prior to use as engineered fill. This material should be separated during excavation and processed as uniform engineered fill. The soil should be verified by a representative of CMAG in the field during grading operations. All soils, both existing on-site and imported, to be used as fill, should contain less than 3 percent organics and be free of debris, gravel, and clods over 3 inches in maximum dimension.

Imported fill material should be approved by a representative of CMAG prior to importing. **The Geotechnical Engineer should be notified not less than 5 working days in advance of placing any fill material proposed for import.** Each proposed source of import material should be sampled, tested, and approved by the Geotechnical Engineer prior to delivery of any soils imported for use on the site.

All fill should be compacted with heavy vibratory equipment. Fill should be compacted by mechanical means in uniform horizontal loose lifts not exceeding 8 inches in thickness. The relative compaction and required moisture content shall be based on the maximum dry density and optimum moisture content obtained in accordance with ASTM D1557. **The Geotechnical Engineer should observe the overexcavations, and placement of engineered fill.**

The above recommended gradients do not preclude periodic maintenance of the slopes, as minor sloughing and erosion may take place.

#### 6.2.5 Utility Trenches

Bedding material should consist of sand with SE not less than 30 which may then be jetted.

The on-site soils may be utilized for trench backfill. Backfill of all exterior and interior trenches should be placed in thin lifts and mechanically compacted to achieve a relative compaction of not less than 90 percent per ASTM D1557. Care should be taken not to damage utility lines.

Anti-seep collars, drainage diaphragms, filter fabrics, and other means should be employed to prevent migration of water and backfill material. Recommendations can be provided upon request.

Trenches must be shored as required by the local regulatory agency, the State of California Division of Industrial Safety Construction Safety Orders, and Federal OSHA requirements.

#### 6.2.6 Vibration During Compaction

It is the contractor's responsibility to ensure that the process in which the engineered fill is placed does not adversely affect the neighboring parcels.

#### 6.2.7 Excavating Conditions

We anticipate that excavation of the on-site soils may be accomplished with standard earthmoving and trenching equipment.

Wet conditions should be anticipated, geotextile, rock, or other means may be required to stabilize the base of the overexcavation. If constructed during, or shortly after the rainy season, difficult construction due to groundwater should be anticipated.

### 6.3 Plan Review

The recommendations presented in this report are based on preliminary design information for the proposed project and on the findings of our geotechnical investigation. When completed, the Grading Plans should be reviewed by CMAG prior to submitting the plans and contract bidding. Additional field exploration and laboratory testing may be required upon review of the final project design plans.

### 6.4 Observation and Testing

Field observation and testing must be provided by a representative of CMAG to enable them to form an opinion regarding the adequacy of the site preparation, the adequacy of fill materials, and the extent to which the earthwork is performed in accordance with the geotechnical conditions present, the requirements of the regulating agencies, the project specifications, and the recommendations presented in this report. Any earthwork performed in connection with the subject project without the full knowledge of, and not under the direct observation of CMAG will render the recommendations of this report invalid.

CMAG should be notified **at least 5 working days** prior to any site clearing or other earthwork operations on the subject project in order to observe the stripping and disposal of unsuitable materials and to ensure coordination with the grading contractor. During this period, a preconstruction meeting should be held on the site to discuss project specifications, observation and testing requirements and responsibilities, and scheduling.

## **7.0 LIMITATIONS**

The recommendations contained in this report are based on our field explorations, laboratory testing, and our understanding of the proposed construction. The subsurface data used in the preparation of this report was obtained from the borings drilled during our field investigation. Variation in soil, geologic, and groundwater conditions can vary significantly between sample locations. As in most projects, conditions revealed during construction excavation may be at variance with preliminary findings. If this occurs, the changed conditions must be evaluated by the Project Geotechnical Engineer and the Geologist, and revised recommendations be provided as required. In addition, if the scope of the proposed construction changes from the described in this report, our firm should also be notified.

Our investigation was performed in accordance with the usual and current standards of the profession, as they relate to this and similar localities. No other warranty, expressed or implied, is provided as to the conclusions and professional advice presented in this report.

This report is issued with the understanding that it is the responsibility of the Owner, or of his Representative, to ensure that the information and recommendations contained herein are brought to the attention of the Architect and Engineer for the project and incorporated into the plans, and that it is ensured that the Contractor and Subcontractors implement such recommendations in the field. The use of information contained in this report for bidding purposes should be done at the Contractor's option and risk.

This firm does not practice or consult in the field of safety engineering. We do not direct the Contractor's operations, and we are not responsible for other than our own personnel on the site; therefore, the safety of others is the responsibility of the Contractor. The Contractor should notify the Owner if he considers any of the recommended actions presented herein to be unsafe.

The findings of this report are considered valid as of the present date. However, changes in the conditions of a site can occur with the passage of time, whether they be due to natural events or to human activities on this or adjacent sites. In addition, changes in applicable or appropriate codes and standards may occur, whether they result from legislation or the broadening of knowledge. Accordingly, this report may become invalidated wholly or partially by changes outside our control. Therefore, this report is subject to review and revision as changed conditions are identified.

## **REFERENCES**

ASTM International (2014). *Annual Book of ASTM Standards, Section Four, Construction*. Volume 4.08, Soil and Rock (I): D 420 - D 5876.

Brabb, E.E. (1980). *Preliminary Geologic Map of the La Honda and San Gregorio Quadrangles, San Mateo County, California*. U.S. Geological Survey Open-File Report OF-80-245, Scale 1:24,000.

Waterways Consulting, Inc. (August 15, 2016). Professional Services Agreement for Subconsultant. 9pp.



## APPENDIX A

### FIELD EXPLORATION PROGRAM

Field Exploration Procedures	Page A-1
Site Location Map	Figure A-1
Boring Location Plan	Figure A-2
Key to the Logs	Figure A-3
Logs of the Borings	Figures A-4 and A-5
Logs of the Test Pits	Figures A-6 and A-7
Piezometer Monitoring Results	Tables A-1 and A-2

## **FIELD EXPLORATION PROCEDURES**

Subsurface conditions were explored by drilling 2 borings to depths of 10.5± and 11± feet below the existing grades. The borings were drilled with a tractor mounted drill rig equipped with 6 inch diameter solid stem augers. Subsurface conditions were also explored by advancing 2 test pits to depths of 7.5± and 8± feet below the existing grades. The test pits were advanced with an excavator equipped with a 3 foot wide bucket and an 18 inch wide bucket. The Key to The Logs, the Logs of the Borings, and the Logs of the Test Pits are included in Appendix A, Figures A-3 through A-7. The approximate location of the borings and test pits are shown on the Boring and Test Pit Location Plan, Figure A-2.

The earth materials encountered in the borings and test pits were continuously logged in the field by a representative of CMAG. Bulk and relatively undisturbed samples for identification and laboratory testing were obtained in the field. These samples were classified based on field observations and laboratory tests. The classification is in accordance with the Unified Soil Classification System (Figure A-3).

Representative samples within the borings were obtained by means of a drive sampler, the hammer weight and drop being 140 lb and 30 inches, respectively. These samples were recovered using a 3 inch outside diameter Modified California Sampler or a 2 inch outside diameter Terzaghi Sampler. The number of blows required to drive the samplers 12 inches are indicated on the Boring Logs. The  $N_{60}$  values are also indicated on the Boring Logs.

Two piezometers were installed within boreholes advanced with 6 inch diameter solid stem augers, both to a depth of 10± feet below the existing grades. The piezometers consisted of 2 inch diameter schedule 40 PVC pipe with screens located on the lower 5 feet and solid casing from the top of the screen to grade. Clean, graded, kiln dried Monterey Sand was used as filter sand, and was placed in the screen section of the pipe. 3/8 inch bentonite chips were used above the screen to grade. We monitored the piezometers from January through March of 2017. The results of our monitoring are presented in Tables A-1 and A-2. The approximate location of the piezometers are shown on the Boring and Test Pit Location Plan, Figure A-2.

Two infiltration test holes were advanced to depths of 10± feet and 9± feet below the existing grades. The test holes were advanced with 6 inch diameter solid stem augers. Three inch diameter perforated pipe was installed within the test holes. The pipe was encased in 3/8 inch gravel to approximately 2 feet below the surface. The upper 2 feet was cased with 3/8 inch bentonite chips. During our monitoring of the site over the rainy season of 2016 / 2017, we observed water within the infiltration test holes, to the surface, preventing testing.

**Table A-1. Piezometer Monitoring Results - Piezometer P-1 / Boring B-1**

Piezometer	Date	Groundwater Depth Below Grade (ft)
P-1 / B-1	1/9/17	1.4
P-1 / B-1	1/23/17	1.5
P-1 / B-1	3/16/17	1.3

**Table A-2. Piezometer Monitoring Results - Piezometer P-2 / Boring B-2**

Piezometer	Date	Groundwater Depth Below Grade (ft)
P-2 / B-2	1/9/17	1.7
P-2 / B-2	1/23/17	1.5
P-2 / B-2	3/16/17	1.2



BASEMAP: DeLorme Topo USA®

SCALE: 1:50,000

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**SITE LOCATION MAP**

**FIGURE**

Harley Farms Regulating Reservoir

A-1





## KEY TO LOGS

### UNIFIED SOIL CLASSIFICATION SYSTEM

PRIMARY DIVISIONS			GROUP SYMBOL	SECONDARY DIVISIONS
<b>COARSE GRAINED SOILS</b> More than half of the material is larger than the No. 200 sieve	<b>GRAVELS</b> More than half of the coarse fraction is larger than the No. 4 sieve	<b>CLEAN GRAVELS</b> (Less than 5% fines)	GW	Well graded gravels, gravel-sand mixtures, little or no fines
			GP	Poorly graded gravels, gravel-sand mixtures, little or no fines
		<b>GRAVEL WITH FINES</b>	GM	Silty gravels, gravel-sand-silt mixtures, non-plastic fines
			GC	Clayey gravels, gravel-sand-clay mixtures, plastic fines
	<b>SANDS</b> More than half of the coarse fraction is smaller than the No. 4 sieve	<b>CLEAN SANDS</b> (Less than 5% fines)	SW	Well graded sands, gravelly sands, little or no fines
			SP	Poorly graded sands, gravelly sands, little or no fines
		<b>SAND WITH FINES</b>	SM	Silty sands, sand-silt mixtures, non-plastic fines
			SC	Clayey sands, sand-clay mixtures, plastic fines
<b>FINE GRAINED SOILS</b> More than half of the material is smaller than the No. 200 sieve	<b>SILTS AND CLAYS</b> Liquid limit less than 50		ML	Inorganic silts and very fine sands, silty or clayey fine sands or clayey silts with slight plasticity
			CL	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays
			OL	Organic silts and organic silty clays of low plasticity
	<b>SILTS AND CLAYS</b> Liquid limit greater than 50		MH	Inorganic silts, micaceous or diatomaceous fine sandy or silty soils, elastic silts
			CH	Inorganic clays of high plasticity, fat clays
			OH	Organic clays of medium to high plasticity, organic silts
			<b>HIGHLY ORGANIC SOILS</b>	

### GRAIN SIZE LIMITS

SILT AND CLAY	SAND			GRAVEL		COBBLES	BOULDERS
	FINE	MEDIUM	COARSE	FINE	COARSE		
	No. 200	No. 40	No. 10	No. 4	3/4 in.	3 in.	12 in.
US STANDARD SIEVE SIZE							

RELATIVE DENSITY	
SAND AND GRAVEL	BLOWS/FT*
VERY LOOSE	0 - 4
LOOSE	4 - 10
MEDIUM DENSE	10 - 30
DENSE	30 - 50
VERY DENSE	OVER 50

CONSISTENCY	
SILT AND CLAY	BLOWS/FT*
VERY SOFT	0 - 2
SOFT	2 - 4
FIRM	4 - 8
STIFF	8 - 16
VERY STIFF	16 - 32
HARD	OVER 32

MOISTURE CONDITION
DRY
MOIST
WET

BEDROCK
(GROUP SYMBOL)
Brackets Denote Bedrock

\* Number of blows of 140 pound hammer falling 30 inches to drive a 2 inch O.D. (1 3/8 inch I.D.) split spoon (ASTM D-1586).

## LOG OF EXPLORATORY BORING

Project No.: 16-141-SM	Boring: B-1	
Project: Harley Farms Regulating Reservoir	Location: See Figure A-2, Boring and Test Pit Location Plan	
San Mateo County, California	Elevation:	
Date: December 15, 2016	Method of Drilling: Tractor Mounted Drill Rig, 6in. Solid Stem	
Logged By: ALG	Auger, 140lb. Downhole Safety Hammer	

Depth (ft.)	Soil Type	Undisturbed	Bulk	<div> <div>2" Ring Sample</div> <div>2.5" Ring Sample</div> <div>Bulk Sample</div> <div>Terzaghi Split Spoon Sample</div> <div>Groundwater</div> <div>3" Shelby Tube</div> </div>	Blows / Foot	N <sub>60</sub>	Dry Density (pcf)	Moisture Content (%)	Other Tests
Description									
	CH			<b>Qyfo:</b> Black Sandy Fat CLAY. Soft, Wet, Plastic. Sand - Fine Grained.				36.3	
	CH			Very Dark Grayish Brown and Black Sandy Fat CLAY. Very Stiff, Moist, Plastic. Sand - Fine Grained.	24		79.5	36.3	
5					27	18	29.2		
	CH/SC			Brown Sandy Fat CLAY. Firm, Moist, Plastic. Sand - Fine Grained.					
				Beds of Clayey SAND.	16		86.1	33.2	q <sub>u</sub> = 1,204 psf c' = 50 psf Φ' = 30°
10	CH			Brown Fat CLAY with Sand. Soft, Wet, Plastic. Sand - Fine Grained.	24		79.1	42.4	
				Boring Terminated at 10.5± ft. Groundwater Encountered at 8± ft. 2" Piezometer Installed. Well Screen From 10 ± to 5±ft.					
15									
20									
25									
30									
35									

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FIGURE  
A-4

## LOG OF EXPLORATORY BORING

Project No.: 16-141-SM	Boring: B-2	
Project: Harley Farms Regulating Reservoir	Location: See Figure A-2, Boring and Test Pit Location Plan	
San Mateo County, California	Elevation:	
Date: December 15, 2016	Method of Drilling: Tractor Mounted Drill Rig, 6in. Solid Stem	
Logged By: ALG	Auger, 140lb. Downhole Safety Hammer	

Depth (ft.)	Soil Type	Undisturbed	Bulk	<div> <div>2" Ring Sample</div> <div>Terzaghi Split Spoon Sample</div> </div> <div> <div>2.5" Ring Sample</div> <div>Groundwater</div> </div> <div> <div>Bulk Sample</div> <div>3" Shelby Tube</div> </div>	Blows / Foot	N <sub>60</sub>	Dry Density (pcf)	Moisture Content (%)	Other Tests
	CH			<b>Qyfo:</b> Black Sandy Fat CLAY. Soft, Wet, Plastic. Sand - Fine Grained. Very Dark Grayish Brown and Black Sandy Fat CLAY. Stiff, Moist, Plastic. Sand - Fine Grained.	17	11		30.9	
5	SC/CH			Dark Yellowish Brown Clayey SAND and Sandy Fat CLAY. Stiff, Moist, Plastic. Sand - Fine Grained.	27		85.1	34.0	
10	CH			Black and Very Dark Grayish Brown Sandy Fat CLAY. Firm to Soft, Moist to Wet, Plastic. Sand - Fine to Coarse Grained.	10	7		25.4	
15				Boring Terminated at 11 ± ft. Groundwater Not Encountered. 2" Piezometer Installed. Well Screen From 10 ± to 5 ± ft.					
20									
25									
30									
35									

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FIGURE  
A-5



## LOG OF EXPLORATORY TEST PIT

Project No.: 16-141-SM      Test Pit: TP-1  
 Project: Harley Farms Regulating Reservoir      Location: See Figure A-2, Boring and Test Pit Location Plan  
 San Mateo County, California      Elevation:  
 Date: November 16, 2016      Method of Excavation: Excavator - 36" and 18" Bucket  
 Logged By: ALG

Depth (ft.)	Soil Type	Undisturbed	Bulk	<div> <div>2" Ring Sample</div> <div>2.5" Ring Sample</div> <div>Bulk Sample</div> <div>Terzaghi Split Spoon Sample</div> <div>Static Water Table</div> </div>	Blows / Foot	N <sub>60</sub>	Dry Density (pcf)	Moisture Content (%)	Other Tests
				Description					
	CH		X	<b>Qyfo:</b> Black Fat CLAY with Sand. Firm, Moist, Plastic. High Organincs. Sand - Fine Grained.				22.6	
	CH		X	Black, Dark Yellowish Brown, and Dark Grayish Brown Fat CLAY with Sand. Firm, Moist, Plastic. Sand - Fine Grained.				30.7	
5	CH		X	Dark Gray and Dark Yellowish Brown Fat CLAY Firm, Moist, Plastic.				41.9	LL=57 / PL=19 EI = 69 FC = 90.4%
	SC		X	Dark Gray and Dark Yellowish Brown Clayey SAND. Firm, Moist, Plastic. Sand - Fine to Medium Grained.				26.6 18.3	
10				Test Pit Terminated at 7.5± ft. Groundwater Not Encountered. Test Pit Backfilled.					
15									

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FIGURE  
A-6

## LOG OF EXPLORATORY TEST PIT

Project No.: 16-141-SM      Test Pit: TP-2  
 Project: Harley Farms Regulating Reservoir      Location: See Figure A-2, Boring and Test Pit Location Plan  
                  San Mateo County, California      Elevation:  
 Date: November 17, 2016      Method of Excavation: Excavator - 36" and 18" Bucket  
 Logged By: ALG

Depth (ft.)	Soil Type	Undisturbed	Bulk	<div> <div>2" Ring Sample</div> <div>2.5" Ring Sample</div> <div>Bulk Sample</div> <div>Terzaghi Split Spoon Sample</div> <div>Static Water Table</div> </div>	Blows / Foot	N <sub>60</sub>	Dry Density (pcf)	Moisture Content (%)	Other Tests
				Description					
	CH		X	<b>Qyfo:</b> Black Fat CLAY with Sand. Firm to Stiff, Moist, Plastic. Dessicated. Sand - Fine Grained.				27.2	
	CH		X	Very Dark Gray Fat CLAY with Sand. Stiff, Moist, Plastic. Sand - Fine Grained.				29.6	
	CH		X	Very Dark Gray and Dark Yellowish Brown Fat Clay. Stiff, Moist, Plastic.				27.7	
5			X					26.8	
	SC/CL		X	Dark Gray and Dark Yellowish Brown and Yellowish Brown Clayey SAND and Sandy Lean CLAY. Stiff, Moist, Plastic. Sand - Fine to Medium Grained.				26.2	
10				Test Pit Terminated at 8± ft. Groundwater Not Encountered. Test Pit Backfilled.					
15									

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FIGURE  
A-7

## APPENDIX B

### LABORATORY TESTING PROGRAM

Laboratory Testing Procedures	Page B-1
Direct Shear Test Results	Figure B-1
Unconfined Compression Test Results	Figure B-2
Particle Size Distribution Test Results	Figure B-3
Liquid Limit and Plastic Limit Test Results	Figure B-4
Expansion Index Test Results	Table B-1
Dispersive Characteristics Test Results	Table B-2

## **LABORATORY TESTING PROCEDURES**

### **Classification**

Soils were classified according to the Unified Soil Classification System in accordance with ASTM D 2487 and D 2488. Moisture content and dry density determinations were made for representative, relatively undisturbed samples in accordance with ASTM D 2216. Results of moisture-density determinations, together with classifications, are shown on the Boring and Test Pit Logs, Figures A-4 through A-7.

### **Direct Shear**

A consolidated drained direct shear test was performed in accordance with ASTM D 3080 on a representative, relatively undisturbed sample of the on-site soils. To simulate possible adverse field conditions the samples were saturated prior to shearing. A saturating device was used which permitted the samples to absorb moisture while preventing volume change. The direct shear test results are presented on Figure B-1.

### **Unconfined Compression**

An unconfined compression test was performed on a representative sample of the on-site soils in accordance with ASTM D 2166. The test results are presented the boring logs and Figure B-2.

### **Particle Size Distribution**

Particle size distribution tests were performed on representative samples of the underlying soils in accordance with ASTM D 422. The test results are presented on Figure B-3.

### **Liquid Limit and Plastic Limit**

Liquid limit and plastic limit tests were performed on a representative sample of the underlying soils in accordance with ASTM D 4318. The test results are presented on Figure B-4.

### **Expansion**

Expansion tests were performed on a representative remolded sample of the on-site soils in accordance with the ASTM D 4829. The test results are presented in Table B-1.

Dispersive Characteristics

The dispersive characteristics of representative samples of the on-site soils were determined in accordance with ASTM D6572. The test results are presented in Table B-2.

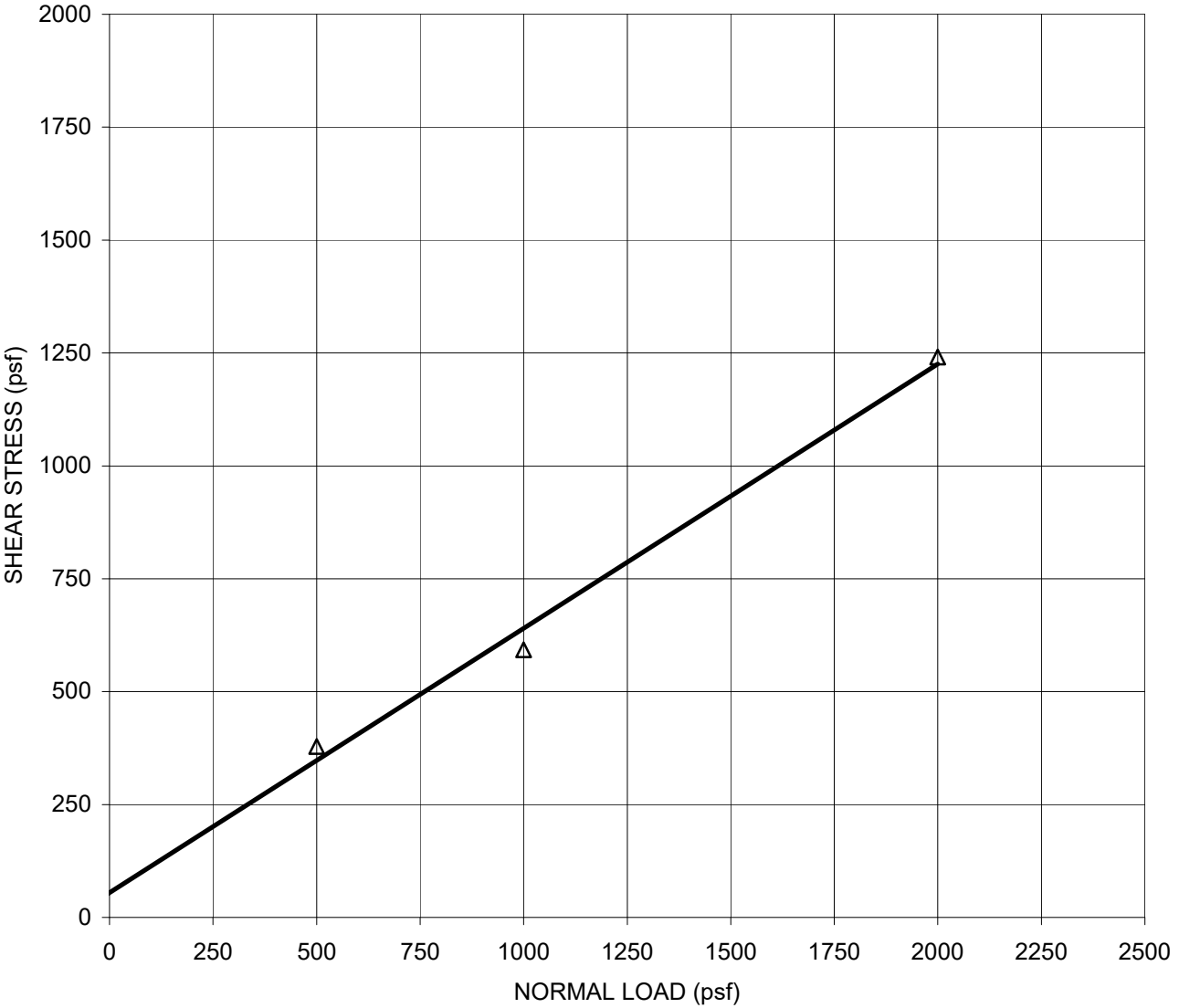
**Table B-1. Expansion Index Test Results**

Test Location	Soil Type	Expansion Index	Expansion Potential
TP-1 at 5 Feet	CH	69	Medium

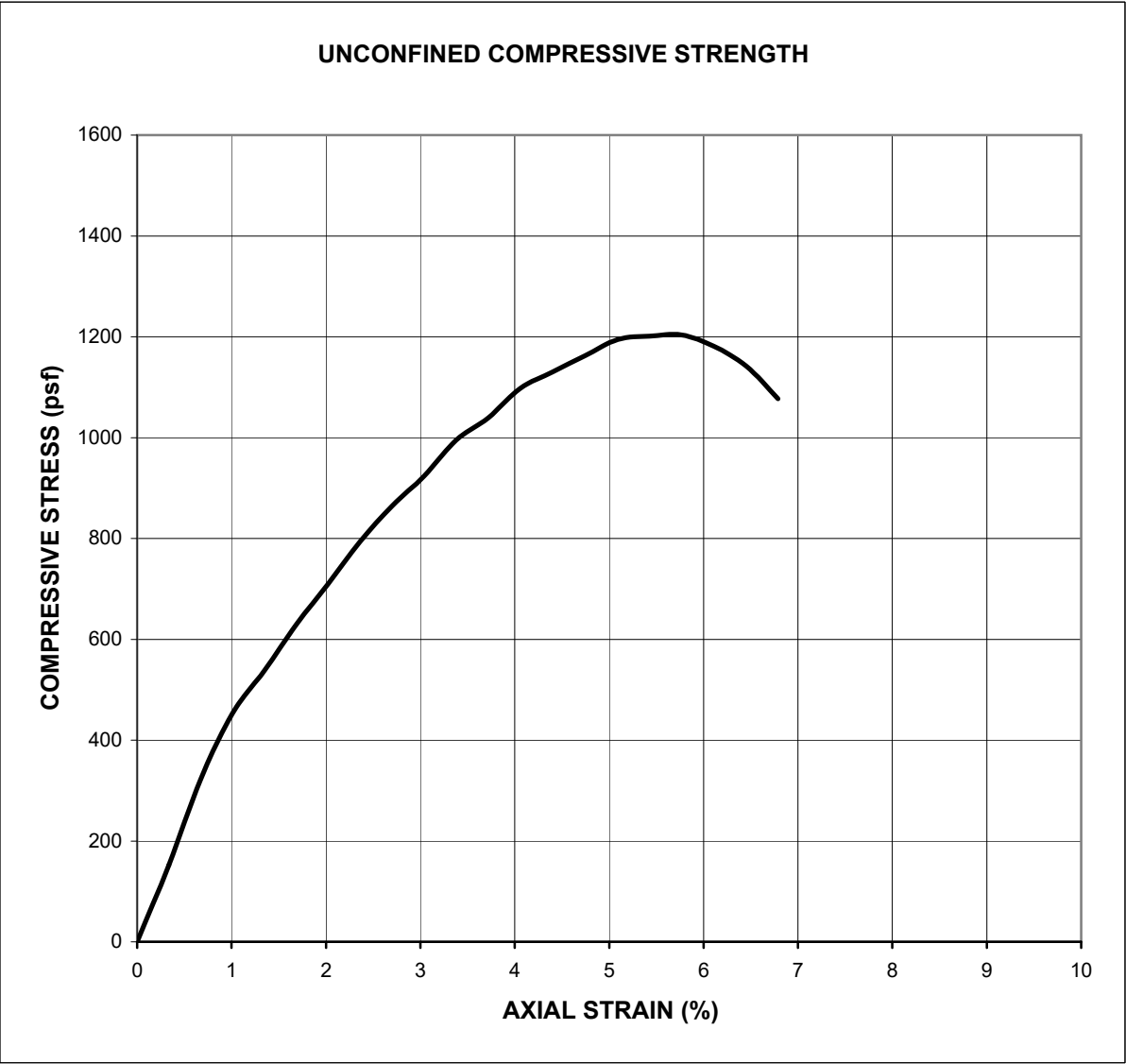
**Table B-2. Dispersive Characteristics Test Results**

Test Location	Classification	Results
B-1 at 9 Feet	CH	Dispersive
B-2 at 2 Feet	CH	Intermediate
B-2 at 5 Feet	SC	Intermediate

BORING:	B-1	<div> <div></div> <div>PEAK</div> </div> <div> <div></div> <div>FULLY SOFTENED</div> </div>	COHESION	FRICTION
DEPTH (ft):	6		(psf)	ANGLE
SOIL TYPE (USCS):	CH		50	30
MOISTURE: <b>SATURATED</b>		TEST TYPE: <b>CONSOLIDATED - DRAINED</b>		

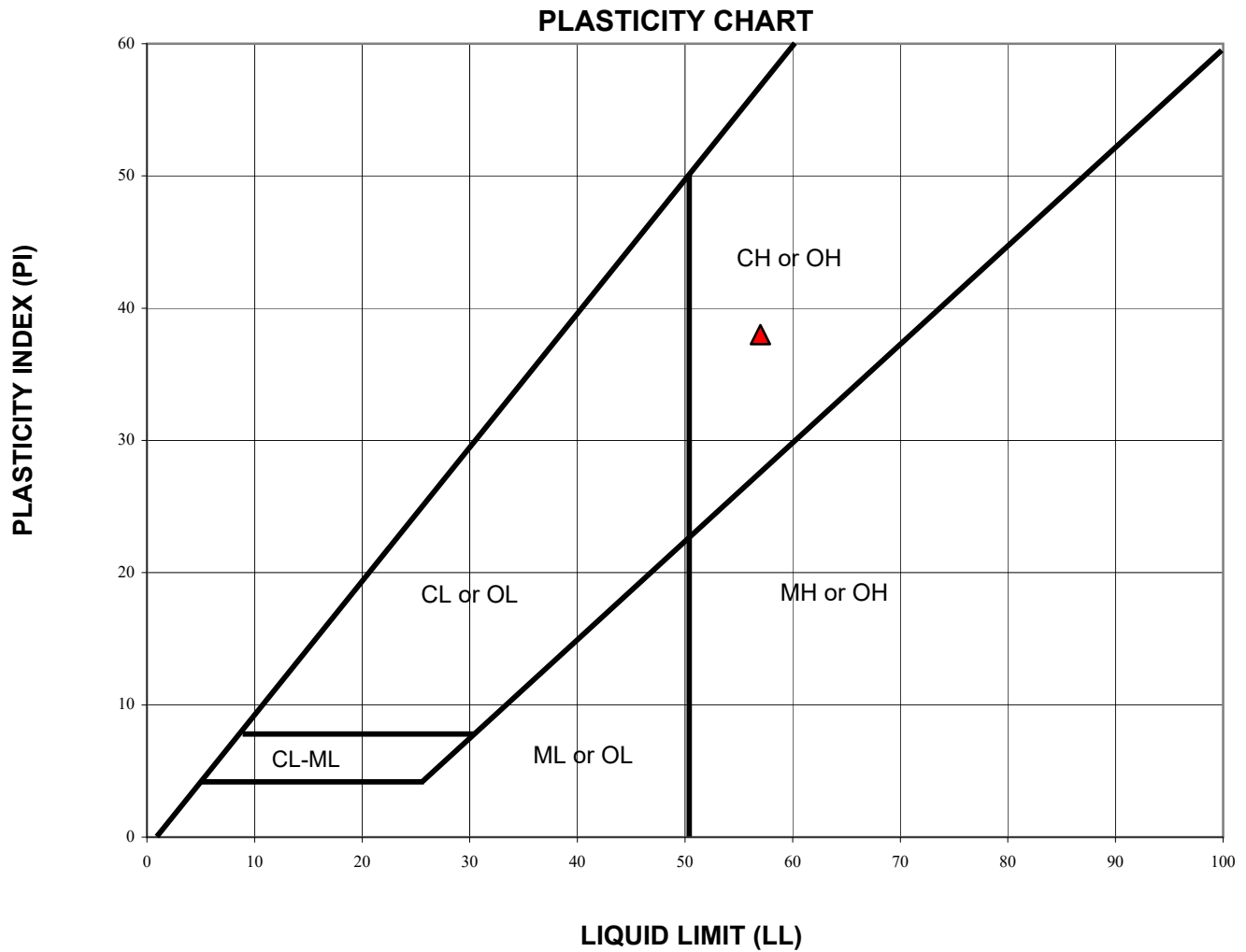


BORING:	B-1	UNDISTURBED	UCS
DEPTH (ft):	6		
SOIL TYPE (USCS):	CH		q <sub>u</sub> = 1,204 psf
MOISTURE: INSITU - SATURATED			





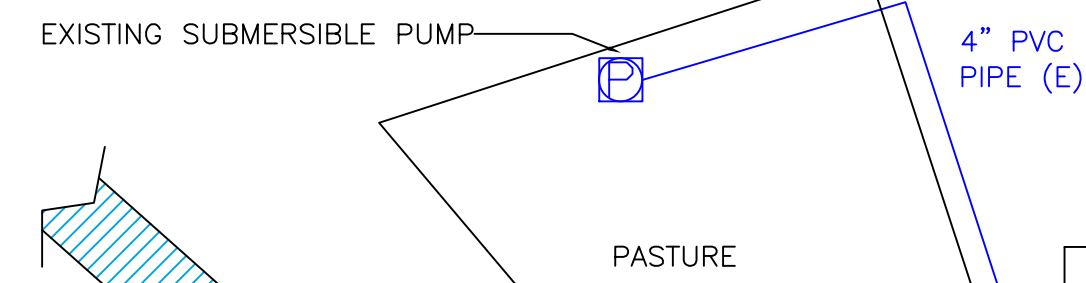
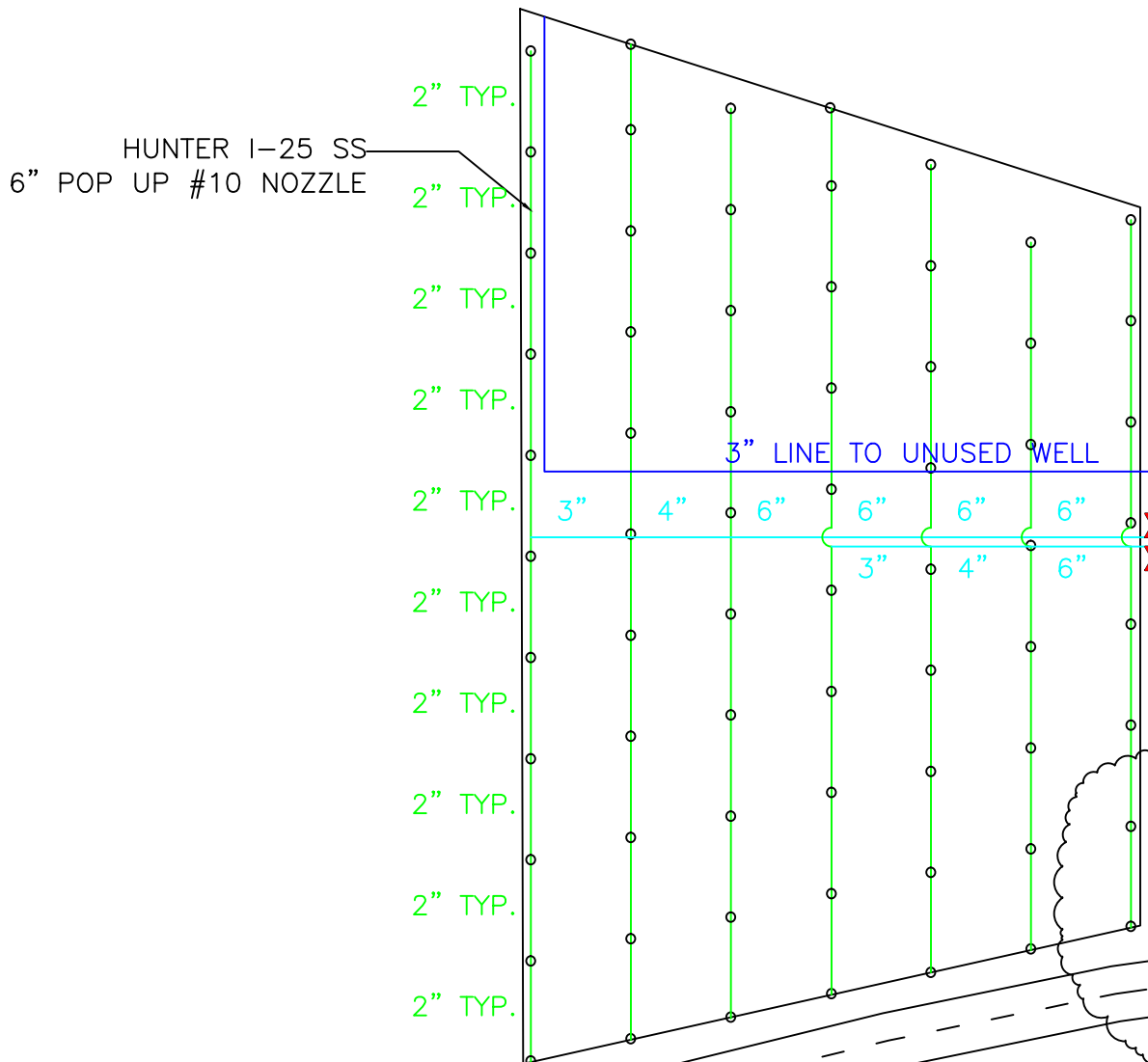
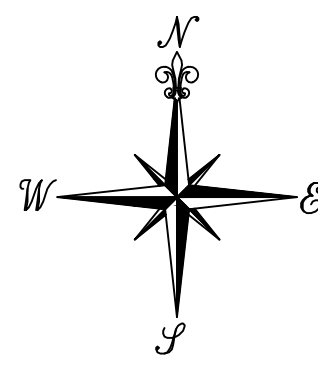




KEY					
SYMBOL	BORING	DEPTH (FT)	PL	LL	PI
▲	TP-1	5	19	57	38

## **A.6 Irrigation Design**





END OF EXISTING 4" CONNECT TO 4" DOUBLE CHEMIGATION VALVE

NELSON R2000 K2 15' PLATE, DARK BLUE NOZZLE CONNECTED TO 0.830/0.940" P.E. TUBING

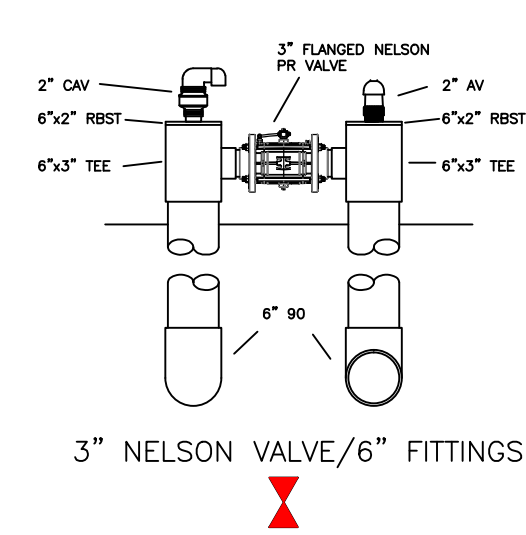
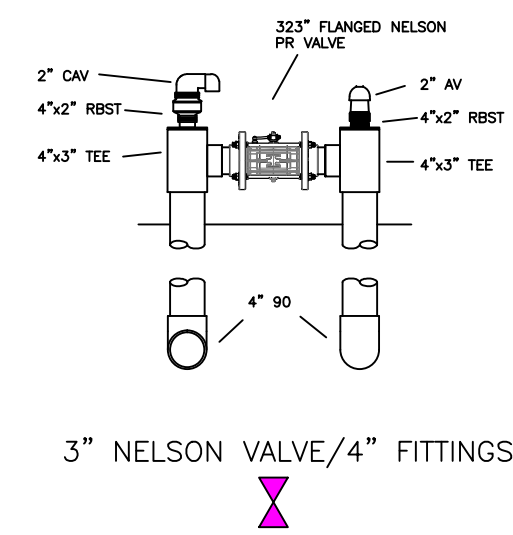
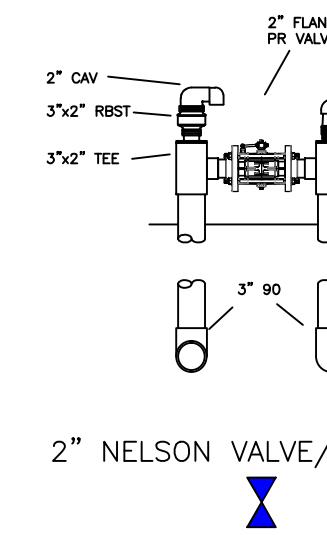
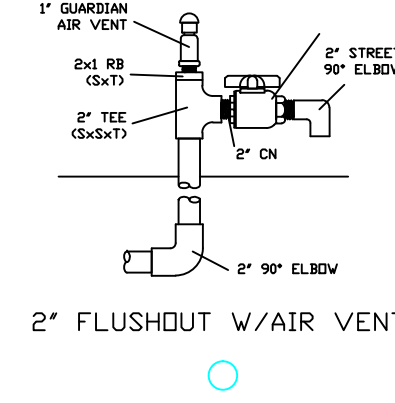
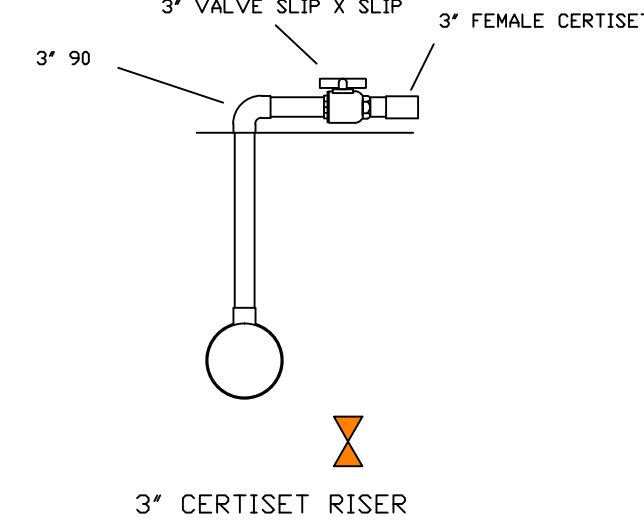
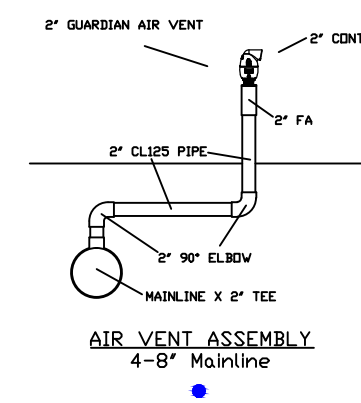
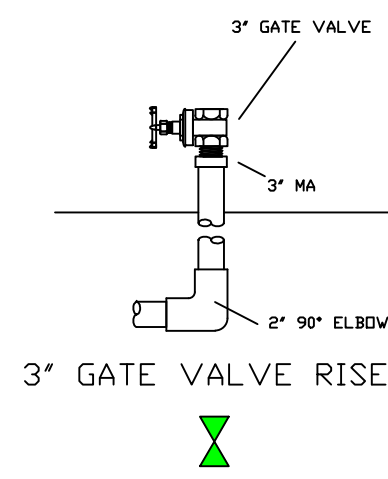
HUNTER I-25 SS 6" POP UP #10 NOZZLE

4"/182GPM/43'

3"/67GPM/670'

MIN. COVER REQUIREMENT FOR PVC PIPE  
4" AND SMALLER 24"  
5" AND LARGER 30"

PVC CEMENT AND PRIMER REQUIREMENTS  
3" AND SMALLER 705  
4" AND LARGER 717  
SADDLES 719  
FLEX PVC 795  
PRIMER P70



### LEGEND

- LATERAL (SIZE AND MAT'L AS NOTED)
- 6" CL100 IPS PVC PIPE
- PVC SUBMAIN (SIZE AS NOTED)
- PUMP
- FILTER STATION
- ISOLATION VALVE
- MAINLINE AIR VENT
- 3" NELSON 1000 SERIES P.R. VALVE (6")
- 2" NELSON 1000 SERIES P.R. VALVE (3")
- 3" NELSON 1000 SERIES P.R. VALVE (4")
- 3" GATE VALVE
- 3" BALL VALVE



VICINITY MAP



8372 S. JACK TONE RD.  
STOCKTON, CA 95215

HARLEY FARMS

13 APRIL 2017

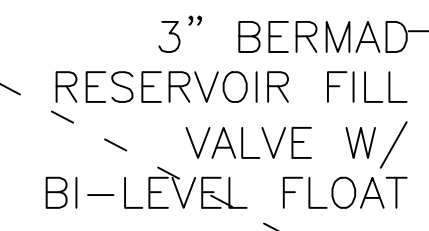
DESIGNED BY: WTH

2017057

SCALE: 1" = 100'







10'  
LEAVE OPEN  
FOR ACCESS

\*TOP OF 90 INLET TO MATCH  
GRADE OF RESERVOIR FLOOR

BOTTOM OF SUMP TO EXCEED  
RESERVOIR DEPTH BY 3' (MIN)

8 —  
99 —  
1000

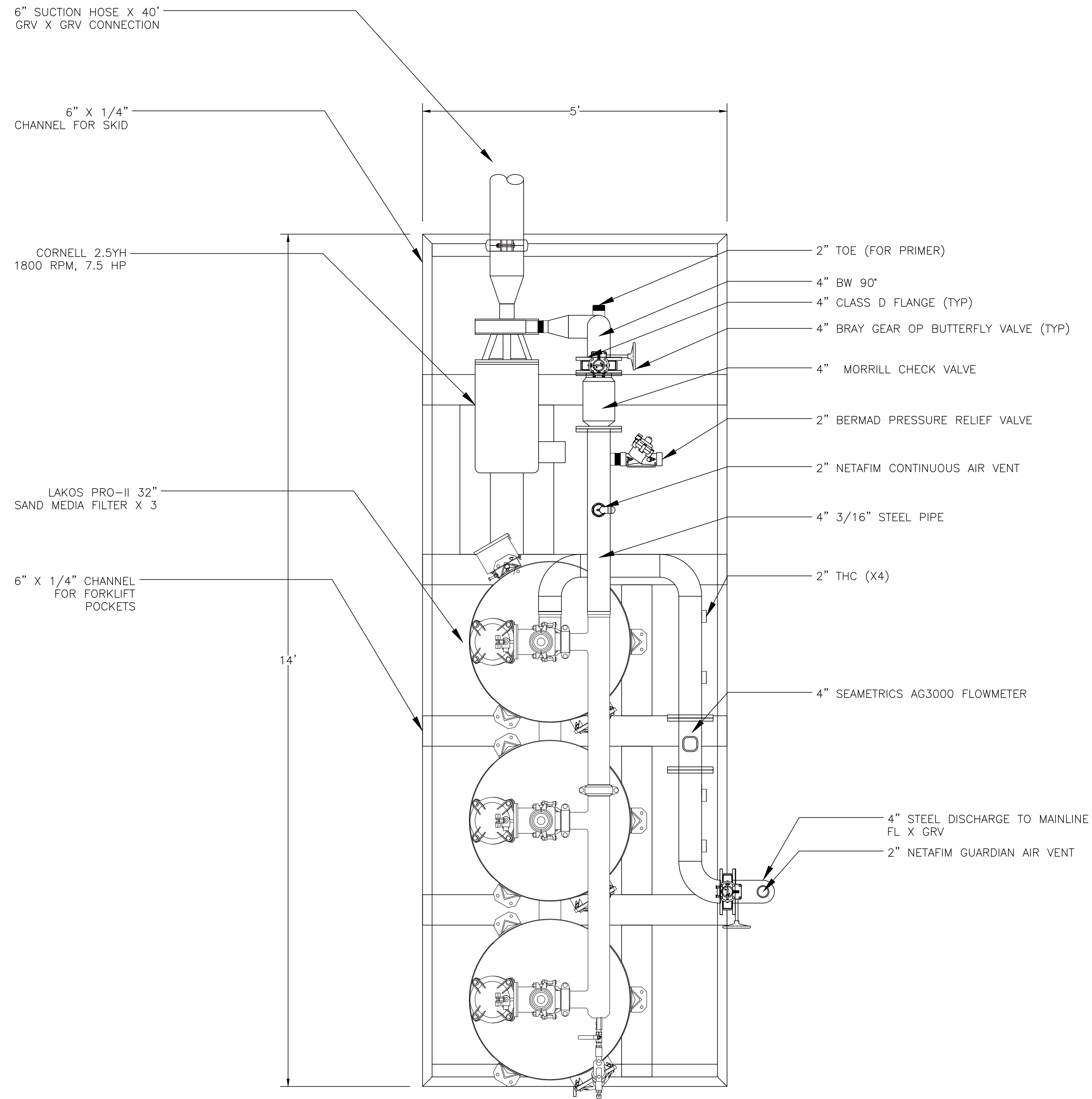
- PLAN VIEW FOR THE PROPOSED RESERVOIR PUMP AND FILTER STATION.
- CORNELL 3RB, 12.31" TRIM, STD. SEAL, 30 HP, 1800RPM MOTOR
- PUMP CAPABLE OF (WITH USE OF VFD)
  - 400 GPM @ 160 TDH (SPRINKLERS)
  - 200 GPM @ 120 TDH (DRIP)



8372 S. JACK TONE RD  
STOCKTON, CA 95215

SCALE: 1" = 8'  
ARCH D





**NOTES:**

- PLAN VIEW FOR THE PROPOSED PORTABLE PUMP AND FILTER STATION.
- CORNELL 2.5YH, 8.94" TRIM, STD. SEAL, 7.5 HP, 1800RPM MOTOR
- PUMP CAPABLE OF (WITH USE OF VFD)
  - 250 GPM @ 70 TDH (QUICK RESERVOIR FILL)
  - 70 GPM @ 50 TDH (SLOW RESERVOIR FILL)
- SKID FRAME IS CONSTRUCTED W/ 6" 1/4" WALL CHANNEL
- SKID TO HAVE 6" POCKETS FOR FORKLIFT FORKS , AS SHOWN





Pacific SouthWest Irrigation Corp.

Stockton, CA 95215

# Quote

Date	Estimate #
4/13/2017	24267

Name / Address
Harley Farms (no-app Pescadero)

Description	Qty
Harley Farms irrigation system	
Creek suction/pump and filter skid	
6" Riverscreen	1
6" Water Driven Power Drive	1
6" Foot Valve w/ Pressure Relief & Drain Valve	1
2" SCH40 STEEL PIPE	5
Stainless Steel wire rope 5/32", 2800lb	60
Wire rope clamp	4
6" Hose king nipple plain end	5
6" Steel Grooved x Plain End Adapter	6
6" Suction hose green	40
6" Grooved Coupler (Clamp)	3
6" 1/4" Wall	2
6" x 4" Butt Weld Eccentric Reducer	1
Cornell 2.5YH, 30 HP 3600 8.5" Trim,	1
6 x 20 Channel	60
2½" IPS ½" Steel Flange	1
4" x 2½" Butt Weld Concentric Reducer	1
4" Class D steel flange	7
4" Bray Gear Operated Valve	2
4" Galvanized Flanged Check Valve	1
2" Steel Threaded Half Coupler	1
2" Continuous Combination Air Release Valve	1
¼" Steel Threaded Half Coupler	2
2-1/2" Liquid Filled Pressure Gauge 0-200 psi	1
2" Steel Threaded Half Nipple	1
9 Hand Primer Pumper	1
2" (Brass) Gate Valve Threaded Full Port	1
Subtotal	
Sales Tax (8.75%)	
Total	

Pacific SouthWest Irrigation Corp.

Stockton, CA 95215

# Quote

Date	Estimate #
4/13/2017	24267

Name / Address
Harley Farms (no-app Pescadero)

Description	Qty
2" x 3" Galvanized Nipple	1
Bernad 400 Series Pressure Relief Valve 2" angle thr.	1
4" SEAMETRICS FLANGED FLOWMETER W/INTEGRAL DISPLAY AND DATA LOGGER	1
4" Full Face Gasket	3
4" Grooved Coupler (Clamp)	3
4" Steel Grooved x Plain End Adapter	3
4" Butt Weld 90° Elbow	6
2" Steel Threaded Half Nipple	1
2" Guardian Air Vent	2
4" Class D flange	6
4" 3/16 Steel IPS Pipe	30
2" Steel Threaded Half Coupler	6
2" PVC Plug Mipt Schedule 40	4
1/4" Steel Threaded Half Coupler	1
2 1/2" Liquid filled pressure gauge 0-60 P.S.I.	1
PRO II 32" 3 Tank end feed Pattern 4' Manifolds	1
240-405 U.S. GPM	
media sand #16	21
HUBBELL PS0509NBK SWIVEL MALE L/T CONN, 1/2"	2
1/2" HUBBELL B2050 POLYTUFF NM TUBING	5
1/2" FEMALE ADAPTER	3
PVC 1/2-TYPE-T COND FTG	2
1/2-PVC-SCHED-40 CONDUIT	20
PVC 1/2 TYPE LB COND FTG	3
1/2" x 2" PVC TOE Nipple Schedule 80	3
Orange TW Wire Nut	12
Media Filter Backflush Wiring	
3" PVC 90° Elbow Schedule 40	9

	<b>Subtotal</b>
	<b>Sales Tax (8.75%)</b>
	<b>Total</b>

Pacific SouthWest Irrigation Corp.

Stockton, CA 95215

# Quote

Date	Estimate #
4/13/2017	24267

Name / Address
Harley Farms (no-app Pescadero)

Description	Qty
3" PVC Tee Schedule 40	2
3" Sch40 SW Pipe	40
3" CL100 SW Pipe	160
2" x 3" PVC Reducing Male Adapter Mipt x Socket Schedule 40	2
2" (Brass) Gate Valve Threaded Full Port	1
3" x 3" x 2" PVC Reducing Tee Socket x Socket x Fipt Schedule 40	1
2" PVC Close Nipple TBE Schedule 80	1
2" Guardian Air Vent	1
3" View Tube	1
¾" x 520 ft - Teflon Tape	4
5/8" x 3" Bolt	16
5/8" x 4½" Bolt	16
5/8" x 2½" Bolt	20
5/8" Nut	52
paint	1
Danfoss VFD, 7HP, wall mount enclosure, 230VAC 3ph	1
0-150 psi transducer, 25' cable	1
RAYCAP Strikesorb	1
Harmonic Filter	1
**Note: more electrical parts will be required to wire VFD to existing service and to pump	
Mainline and fittings	
6" CL100 SW Pipe	4,800
6" PVC 90° Elbow Schedule 40	15
6" PVC 45° Elbow Schedule 40	10
6" IPS PVC 30° Elbow Class #100	6
6" IPS PVC 11.25° Elbow Class #100	10
6" PVC Tee Schedule 40	5

<b>Subtotal</b>	
<b>Sales Tax (8.75%)</b>	
<b>Total</b>	



Pacific SouthWest Irrigation Corp.

Stockton, CA 95215

# Quote

Date	Estimate #
4/13/2017	24267

Name / Address
Harley Farms (no-app Pescadero)

Description	Qty
6" x 6" x 2" PVC Reducing Tee Schedule 40	2
2" PVC 45° Elbow Schedule 40	2
2" PVC Female Adapter Socket x Fipt Schedule 40	1
2" Continuous Combination Air Release Valve	1
6" Bray Gear Operated Valve w/ 48" Ext.	1
6" PVC Flange Van Stone Style with Glass PVC Ring Schedule 80	2
3/4" x 7" Bolt	8
3/4" Nut	8
5/8" Washer	16
6" x 6" x 3" PVC Reducing Tee Schedule 40	4
6" x 6" x 4" PVC Reducing Tee Schedule 40	2
6" PVC Cap Socket Schedule 40	2
2" PVC 90° Elbow Schedule 40	2
2" PVC Female Adapter Socket x Fipt Schedule 40	1
2" Continuous Combination Air Release Valve	2
6" PVC Flange Van Stone Style with Glass PVC Ring Schedule 80	2
6" Compressed Non-Asbestos full face gasket	2
6" IPS 1/2" Steel Flange	2
3/4" x 3" Bolt	16
3/4" Nut	16
3/4" Washer	16
6" Butt Weld 90° Elbow	2
6" 1/4" Wall	20
2" Steel Threaded Half Coupler	2
4" groove PVC nipple	2
6" x 4" PVC Reducing Coupling Schedule 40	2
4" PVC 90° Elbow Schedule 40	4
3" CL100 SW Pipe	700
3" PVC 90° Elbow Schedule 40	6

	<b>Subtotal</b>
	<b>Sales Tax (8.75%)</b>
	<b>Total</b>

Pacific SouthWest Irrigation Corp.

Stockton, CA 95215

# Quote

Date	Estimate #
4/13/2017	24267

Name / Address
Harley Farms (no-app Pescadero)

Description	Qty
3" PVC 45° Elbow Schedule 40	4
3" PVC Cap Socket Schedule 40	2
2" Sch40 SW Pipe	40
Goat pasture spray field	
6" CL100 SW Pipe	400
4" CL100 SW Pipe	160
3" CL100 SW Pipe	160
2" CL125 SW Pipe	2,500
1" Sch40 Pipe	140
6" PVC Tee Schedule 40	1
6" PVC 90° Elbow Schedule 40	4
6" x 6" x 3" PVC Reducing Tee Schedule 40	4
6" x 4" PVC Reducer Bushing Spigot x Fipt Schedule 40	4
2" Continuous Combination Air Release Valve	2
2" PVC Close Nipple TBE Schedule 80	2
2" Guardian Air Vent	2
Nelson 3" FI 1000 series valve, med pressure, pressure reducing	2
6" x 3" IPS PVC Reducing Cross Class #100	2
3" x 2" PVC Reducer Bushing Spigot x Socket Schedule 40	6
4" x 2" x 4" x 2" PVC Reducing Cross Schedule 40	2
4" x 3" PVC Reducer Bushing Spigot x Socket Schedule 40	2
3" PVC Tee Schedule 40	2
2" x 2" x 1" PVC Reducing Tee Schedule 40	167
2" PVC Cap Socket Schedule 40	14
1" PVC Female Adapter Socket x Fipt Schedule 40	167
Hunter I-25 6" pop up, SS, #10 nozzle	167

	<b>Subtotal</b>
	<b>Sales Tax (8.75%)</b>
	<b>Total</b>

Pacific SouthWest Irrigation Corp.

Stockton, CA 95215

# Quote

Date	Estimate #
4/13/2017	24267

Name / Address
Harley Farms (no-app Pescadero)

Description	Qty
Berry drip system	
3" CL100 SW Pipe	600
2" CL125 SW Pipe	400
3" PVC 90° Elbow Schedule 40	4
3" x 3" x 2" PVC Reducing Tee Schedule 40	4
3" x 2" PVC Reducer Bushing Spigot x Fipt Schedule 40	4
2" Guardian Air Vent	4
2" PVC Close Nipple TBE Schedule 80	4
Nelson 1000 series 2" flanged valve, med pressure, pressure reducing	2
	2
2" PVC 90° Elbow Schedule 40	2
2" PVC Tee Socket x Socket x Fipt Schedule 40	2
2" x 1" PVC Reducer Bushing Spigot x Fipt Schedule 40	2
1" Guardian Air Vent / Vacuum Breaker Orange	2
2" PVC Close Nipple TBE Schedule 80	2
2" PVC Threaded Utility Ball Valve with EPDM O-ring Seal	2
2" PVC 90° Street Elbow Mipt x Socket Schedule 40	2
3" Saddle ¾" Socket x 1" Spigot Outlet	50
2" Saddle ¾" Socket x 1" Spigot Outlet	40
¾" x 42" IPS Flexible Tubing x Cut Length	90
MHT x 3/4" Socket 1" Spigot	90
¾" FHT x ¾" MHT General Purpose Ball Valve	90
600 Series Elbow x ¾" Female Hose Swivel	90
18mm .5 gph @ 24" Spacing PC	3,000
700 AP-8 (18mm-Figure 8) (12290018)	90
Secret Garden sprinklers	
<b>Subtotal</b>	
<b>Sales Tax (8.75%)</b>	
<b>Total</b>	

Pacific SouthWest Irrigation Corp.

Stockton, CA 95215

# Quote

Date	Estimate #
4/13/2017	24267

Name / Address
Harley Farms (no-app Pescadero)

Description	Qty
4" CL100 SW Pipe	80
3" CL100 SW Pipe	740
2" CL125 SW Pipe	900
1" Sch40 Pipe	40
3" PVC 90° Elbow Schedule 40	4
3" x 3" x 2" PVC Reducing Tee Schedule 40	2
3" x 2" PVC Reducer Bushing Spigot x Fipt Schedule 40	2
2" Guardian Air Vent	2
2" PVC Close Nipple TBE Schedule 80	2
3" PVC 45° Elbow Schedule 40	4
3" PVC Cross Schedule 40	1
3" x 2" PVC Reducer Bushing Spigot x Socket Schedule 40	4
3" PVC Tee Schedule 40	1
2" x 2" x 1" PVC Reducing Tee Schedule 40	6
2" PVC Cap Socket Schedule 40	2
1" x 36" IPS Flexible Tubing x Cut Length	6
3/4" MHT x 1" soc	6
High Flow Valve FHS x MHT	6
800 Series Swivel Tee x 3/4" Female Hose Swivel	6
830/940 P.E. tubing	3,000
3/4 PVC-10 feedtube Assembly	70
R2000 w/ #10 blue nozzle & yellow 15deg K2 plate	70
3" PVC 90° Elbow Schedule 40	3
4" x 4" x 3" PVC Reducing Tee Schedule 40	2
4" x 2" PVC Reducer Bushing Spigot x Fipt Schedule 40	2
Nelson 1000 series 3" flanged, med pressure, pressure reducing	1
2" Continuous Combination Air Release Valve	1
2" Guardian Air Vent	1
2" PVC Close Nipple TBE Schedule 80	1
<b>Subtotal</b>	
<b>Sales Tax (8.75%)</b>	
<b>Total</b>	

Pacific SouthWest Irrigation Corp.

Stockton, CA 95215

# Quote

Date	Estimate #
4/13/2017	24267

Name / Address
Harley Farms (no-app Pescadero)

Description	Qty
4" PVC Tee Schedule 40	1
4" x 2" PVC Reducer Bushing Spigot x Socket Schedule 40	1
4" x 3" PVC Reducer Bushing Spigot x Socket Schedule 40	1
3" x 2" PVC Reducer Bushing Spigot x Socket Schedule 40	1
4" x 2" x 4" x 2" PVC Reducing Cross Schedule 40	1
3" x 2" x 3" x 2" PVC Reducing Cross Schedule 40	1
2" PVC Tee Schedule 40	1
2" PVC 45° Elbow Schedule 40	3
2" x 2" x 1" PVC Reducing Tee Schedule 40	20
1" PVC Female Adapter Socket x Fipt Schedule 40	20
Hunter I-25 6" pop up, SS, #10 nozzle	20
Certiset for Mint field	
R2000WF Cap/Plate Assy WF12 Purple Plate	350
3" X 30' Certa set pipe only	334
3" Sled coupler kit 2 o rings and splines	334
24" certa set Riser assembly yellow adaptors	334
3" certa set tee	15
3" certa set 90	40
6" x 6" x 3" PVC Reducing Tee Schedule 40	15
3" Sch40 SW Pipe	60
3" PVC 90° Elbow Schedule 40	15
3" PVC Socket Utility Ball Valve with EPDM O-ring Seal	15
3" Certa Set x ips plain end	15
3" Certa Set End Plug	40
3" certa-set spline	300
3" Certaset nipple male x male	16

	<b>Subtotal</b>
	<b>Sales Tax (8.75%)</b>
	<b>Total</b>

Pacific SouthWest Irrigation Corp.

Stockton, CA 95215

# Quote

Date	Estimate #
4/13/2017	24267

Name / Address
Harley Farms (no-app Pescadero)

Description	Qty
Reservoir pump and filter station	
10" IPS PVC 90° Elbow Class #125	1
10" CL 125 GB Pipe	100
10" IPS M&M Starter Coupler - Galvanized	1
50# Hydraulic Water-Stop	8
4' x 4' x 4' Concrete Box w/ Floor	1
4' x 4' x 4' - Concrete Box	2
BUTYL ROPE (TODD MAY) PER FOOT	40
3/4 x 9 x 48 x 96 STD EXPANDED	25
2 x 2 x 1/4" ANGLE A36	30
6" IPS M&M Starter Coupler - Galvanized	1
6" IPS 1/2" Steel Flange	2
6" Foot Valve High Volume Basket Combination Galvanized with 1/2" Perforation	1
6" Full Face Gasket	2
6" PVC 90° Elbow Schedule 40	1
6" Sch40 Pipe	20
6" PVC Flange Van Stone Style with Glass PVC Ring Schedule 80	1
6" Butt Weld 90° Elbow	1
6" 3/16 wall IPS steel pipe	2
6" x 5" Butt Weld Eccentric Reducer	1
5" IPS 1/2" Steel Flange	1
5" full face flange gasket	1
4 x 20 Channel 1/4"	4
Cornell 3RB, 30 HP, seal, 1800 rpm, 12.31" trim	1
3" Full Face Flange Gasket	1
3" IPS 1/2" Steel Flange	1
4" x 3" Butt Weld Concentric Reducer	1
4" Butt Weld 90° Elbow	4
<b>Subtotal</b>	
<b>Sales Tax (8.75%)</b>	
<b>Total</b>	

Pacific SouthWest Irrigation Corp.

Stockton, CA 95215

# Quote

Date	Estimate #
4/13/2017	24267

Name / Address
Harley Farms (no-app Pescadero)

Description	Qty
4" 3/16 Steel IPS Pipe	20
4" IPS 1/2" Steel Flange	6
2" Steel Threaded Half Nipple	1
2" (Brass) Gate Valve Threaded Full Port	1
2" x 3" Galvanized Nipple	1
9 Hand Primer Pumper	1
4" Bray Gear Operated Valve	2
6" Galvanized Flanged Check Valve	1
2" Steel Threaded Half Coupler	2
Bermad 400 Series Pressure Relief Valve 2" angle thr.	1
2" x 3" Galvanized Nipple	1
4" Steel Grooved x Plain End Adapter	3
4" Grooved Coupler (Clamp)	3
PRO II 32" 3 Tank end feed Pattern 4' Manifolds	1
240-405 U.S. GPM	
media sand #16	21
3" PVC 90° Elbow Schedule 40	10
3" PVC 45° Elbow Schedule 40	5
3" PVC Tee Schedule 40	2
2" x 3" PVC Reducing Male Adapter Mipt x Socket Schedule 40	2
2" (Brass) Gate Valve Threaded Full Port	1
3" x 3" x 2" PVC Reducing Tee Socket x Socket x Fipt Schedule 40	1
2" PVC Close Nipple TBE Schedule 80	1
2" Guardian Air Vent	1
3" View Tube	1
3" PVC Coupling Schedule 40	2
HUBBELL PS0509NBK SWIVEL MALE L/T CONN, 1/2"	2
1/2" HUBBELL B2050 POLYTUFF NM TUBING	5

	<b>Subtotal</b>
	<b>Sales Tax (8.75%)</b>
	<b>Total</b>

Pacific SouthWest Irrigation Corp.

Stockton, CA 95215

# Quote

Date	Estimate #
4/13/2017	24267

Name / Address
Harley Farms (no-app Pescadero)

Description	Qty
1/2" FEMALE ADAPTER	1
PVC 1/2-TYPE-T COND FTG	2
1/2-PVC-SCHED-40 CONDUIT	20
PVC 1/2 TYPE LB COND FTG	1
1/2" x 2" PVC TOE Nipple Schedule 80	3
Orange TW Wire Nut	104
Media Filter Backflush Wiring	
4" SEAMETRICS FLANGED FLOWMETER W/INTEGRAL DISPLAY AND DATA LOGGER	1
3/4" x 2" Bolt	8
3/4" x 3" Bolt	8
3/4" x 2 1/2" Bolt	8
5/8" x 2 1/2" Bolt	20
5/8" x 4 1/2" Bolt	16
5/8" x 2" Bolt	8
3/4" Nut	24
5/8" Nut	44
Danfoss 30HP VFD, wall mount, 230VAC 3ph	1
0-150PSI transducer w/ 25' cable	1
RAYCAP Strikesorb	1
HARMONIC FILTER	1
**Note: will require additional electrical parts depending upon electrical service	
Reservoir float valve	
6" PVC Tee Schedule 40	2
6" x 2" PVC Reducer Bushing Spigot x Fipt Schedule 40	2
2" Continuous Combination Air Release Valve	1
2" Guardian Air Vent	1
2" PVC Close Nipple TBE Schedule 80	1
<b>Subtotal</b>	
<b>Sales Tax (8.75%)</b>	
<b>Total</b>	



Stockton, CA 95215

## Quote

Date	Estimate #
4/13/2017	24267

Name / Address
Harley Farms (no-app Pescadero)

Description	Qty
3" groove PVC nipple	2
3" Grooved Coupler (Clamp)	2
Bermad level control valve w/ bi-level hydraulic float	1
6" PVC 45° Elbow Schedule 40	3
1/2-PVC-SCHED-40 CONDUIT	60
1/2" SCH 40 90 Degree Elbow (STANDARD RADIUS)	2
8 mm tubing for bermad valves	60
2" SCH40 STEEL PIPE	5
12" 80# PIP GB Pipe	5
Misc, glue	
705 PVC Clear Glue - Gallon #10085	2
717 PVC Gray Glue - Gallon #10142	16
P-70 Purple Primer - Gallon #10221	8
795 Flex PVC Clear Glue - Quart #10280	1
719 PVC White Glue - Quart #10157	1
MT-648 Empty Metal Can - Gallon #10010	2
4020 4" Swab #10009	4
DQ-150 Cap Dauber #10006	4
¾" x 520 ft - Teflon Tape	15
2" x 60 Yards x 9 Mil - Cloth Duct Tape	1
Enamel paint	1
Chip brush bristle plain wood handle	5
80# Quikrete Concrete Mix	84
	<b>Subtotal</b> \$0.00
	<b>Sales Tax (8.75%)</b> \$0.00
	<b>Total</b> \$0.00

# A.7 IRWM Butano and Harley Bid Contract Sample

## Sample Contract for Contractors

### Pescadero Creek Streamflow Improvement Project at Butano and Harley Farms

#### SAN MATEO COUNTY RESOURCE CONSERVATION DISTRICT PROFESSIONAL SERVICES AGREEMENT WITH [CONTRACTOR]

THIS AGREEMENT ("Agreement"), made and entered into this [ ] day of [ ], 2016 is by and between the SAN MATEO COUNTY RESOURCE CONSERVATION DISTRICT, a subdivision of the State of California, hereinafter referred to as "RCD," and [CONTRACTOR], hereinafter referred to as "CONTRACTOR."

#### WITNESSETH:

**WHEREAS**, RCD entered into Agreement No.4600010883 with the California Department of Water Resources for the Drought Relief for South Coast San Mateo County program; and

**WHEREAS**, the [Project Name] is a component of the program; and

**WHEREAS**, RCD desires to use the professional services of CONTRACTOR; and

**WHEREAS**, CONTRACTOR has the professional and administrative ability to implement such services; and

**WHEREAS**, RCD and CONTRACTOR desire to set forth in writing the obligations and responsibilities of each party relating to the services;

**NOW, THEREFORE**, in consideration of the promises and mutual benefits which will accrue to the parties hereto in carrying out the terms of this Agreement, the parties agree as follows:

#### **1. Scope of Services**

- a. CONTRACTOR will, in accordance with the terms of this Agreement, perform the services set forth in Exhibit A, *Drought Relief for South Coast San Mateo County: Scope of Work for [CONTRACTOR]*, hereinafter referred to as "**PROJECT**", which is incorporated herein by reference. This Agreement is limited both in scope and duration, as herein specified.

- 2. Term of Agreement.** The term of this Agreement shall commence on [DATE] and terminate on [DATE], but shall not become effective until executed by the parties.

- 3. Performance Responsibilities.** CONTRACTOR shall complete the herein described services by no later than [DATE] unless a later date is agreed upon by the parties in writing. Time is and shall be of the essence in the performance of the specified services by CONTRACTOR.

- 4. Compensation.**

- a. RCD agrees to pay CONTRACTOR an amount not to exceed [**amount in writing**], (\$xxxx) for the successful and timely completion of the specified services.
  - b. In the event that the funding on which the above described contract services relies is materially reduced or made unavailable, despite the parties understandings and expectations that no such disruptions will occur, this Agreement will terminate immediately upon notice of such funding disruption by RCD to CONTRACTOR.
- 5. Billing and Payment Procedure.** CONTRACTOR will submit requests for payment along with documentation acceptable to the RCD no more frequently than monthly and no less frequently than quarterly. RCD will issue payment to CONTRACTOR within 30 days of payment to the RCD by the project funder.
- 6. Cooperation.** RCD and CONTRACTOR agree to cooperate in any way and every way or manner on the PROJECT. RCD will immediately transmit to CONTRACTOR any new information which becomes available or any change in plans. CONTRACTOR will likewise bring any new information, issues or concerns to the RCD's attention as soon as practicable.
- 7. Assignment.** Without the written consent of RCD, this Agreement is not assignable by CONTRACTOR in whole or in part.
- 8. Conflict of Interest.** The CONTRACTOR shall comply with all applicable State laws and rules pertaining to conflicts of interest, including but not limited to, Government Code Section 1090 and Public Contract Code 10410 and 10411. If requested by the State, CONTRACTOR may be required to file a Statement of Economic Interests (Fair Political Practices Commission Form 700) if it is determined that an individual is a consultant for Political Reform Act purposes.
- 9. Applicable Laws.** All work performed on behalf of the RCD, as set forth in this Agreement shall be performed in accordance with all applicable state and federal laws, regulations, policies, procedures, and standards.
- 10. Environmental Quality.** CONTRACTOR shall comply with all applicable standards, orders, or requirements issued under Section 306 of the Clean Air Act, Title 42 U.S.C. 1857 (H), Section 508 of the Clean Air Act, Title 33 U.S.C. 1368 Executive Order 11738, and Title 40 CFR Part 15. CONTRACTOR will comply with mandatory standards and policies related to energy efficiency which are contained in the State Energy Conservation Plan issued in compliance with the Conservation Act (Publ L. 94-163). CONTRACTOR will also comply with any special permit conditions prescribed by regulatory agencies for the Project.
  - a. The CONTRACTOR shall not be (1) in violation of any order or resolution not subject to review promulgated by the State Air Resources Board; (2) subject to cease and desist order not subject to review issued pursuant to Section 13301 of the Water Code for violation of waste discharge requirements or discharge prohibitions; or (3) finally determined to be in violation of provisions of and federal or State of California law relating to air or water pollution.
  - b. All activities covered by this contract must be in compliance with the California Environmental Quality Act (CEQA). (Public Resources Code §21000 et seq.)
- 11. No Benefit To Arise For Local Employees.** Except as provided by State law, no member, officer, or employee of RCD or its designees or agents, and no public official who exercises authority over or has responsibilities with respect to the Project during their tenure or for one (1) year thereafter, shall have

any interest, direct or indirect, in any agreement or sub-agreement or the proceeds thereof, for work to be performed in connection with the services performed under this Agreement.

**12. Independent Contractor Status.** The CONTRACTOR, and the officers, the agents and employees of the CONTRACTOR, in the performance of the Agreement, shall act in an independent capacity and not as officers, employees or agents of the RCD. Nothing in this Agreement is intended nor shall be construed to create an employer-employee relationship, a joint venture relationship.

**13. Standard of Professionalism.** CONTRACTOR shall conduct all work consistent with professional standards for the industry and type of work being performed under this Agreement.

**14. Ownership of Materials.** Except as otherwise expressly stated in Exhibit A, all materials and work products, including data collected for the Work produced as a result of this Agreement are the property of the RCD. Any final products distributed or produced will acknowledge the CONTRACTOR, RCD, and other Funding Agencies as reasonably requested by the RCD. The RCD shall be entitled to use and publish the work product and deliverables under this Agreement.

**15. Indemnification.** To the fullest extent permitted by applicable law, CONTRACTOR agrees to defend, at CONTRACTOR's expense and with counsel acceptable to RCD, indemnify, and save and hold harmless RCD and all of its officers, directors, employees and agents, from and against any and all claims, suits, losses, causes of action, damages, liabilities, and expenses of any kind whatsoever arising out of the performance or nonperformance of the CONTRACTOR's Work, including without limitation, all expenses of litigation and/or arbitration, court costs, and attorneys' fees, arising on account of or in connection with injuries to or the death of any person whomsoever, or any and all damages to property, regardless of possession or ownership, which injuries, death or damages arise from, or are in any manner connected with, the Work performed by or for the CONTRACTOR under this Agreement, or are caused in whole or part by reason of the acts or omissions or presence of the person or property of the Contractor or any of its employees, agents, representatives and or suppliers.

In addition, the Contractor shall indemnify and save harmless those public and private agencies ("grantors") which provided grant funds to RCD to complete this project, specifically the *State of California* and *California Department of Water Resources* and grantors' officers, agents and employees from any and all liabilities, claims, demands, damage or costs resulting from, growing out of, or in any way connected with or incident to this agreement, except for active negligence of such agency, its officers, agents or employees. The duty of the Contractor to indemnify and save harmless includes the duty to defend as set forth in Civil Code Section 2778.

**16. Insurance.** CONTRACTOR shall obtain and maintain for the duration of this Agreement, comprehensive general liability insurance and/or other insurance necessary to protect the parties hereto, and shall provide RCD with evidence thereof. CONTRACTOR shall have RCD and funding agencies [*California Department of Water Resources*] named as an additional insured on its insurance policy, which shall have minimum coverage limits as specified in Exhibit B, as is incorporated herein by reference. CONTRACTOR's above described insurance shall serve as the primary insurance coverage for any claim arising from or relating to the services to be performed hereunder. Neither the RCD, its partners or funders are responsible for any premiums or assessments on these policies.

**17. Non-discrimination.** During the performance of this Agreement, CONTRACTOR will not unlawfully discriminate, harass, or allow harassment against any employee or applicant for employment because of sex (gender), sexual orientation, race, color, ancestry, religion, creed, national origin (including language use restriction), pregnancy, physical disability (including HIV and AIDS), mental disability, medical condition (e.g., cancer), age (over 40), marital status, and denial of medical and family care

leave or pregnancy disability leave. CONTRACTOR shall ensure that the evaluation and treatment of its employees and applicants for employment are free from such discrimination and harassment. CONTRACTOR will comply with the provisions of the Fair Employment and Housing Act (Gov Code 12990 (a-f) et seq.) and the applicable regulations promulgated there under (California Code of Regulations, Title 2, Section 7285 et seq.). The applicable regulations of the Fair Employment and Housing Commission implementing Government Code Section 12900 (a-f), set forth in Chapter 5 of Division 4 of Title 2 of the California Code of Regulations, are incorporated into this Agreement by reference and made a part hereof as if set forth in full. CONTRACTOR will give written notice of its obligations under this clause to labor organizations with which they have a collective bargaining or other Agreement.

**18. Americans with Disabilities Act:** By signing this Agreement, CONTRACTOR assures that it is in compliance with the Americans with Disabilities Act (ADA) of 1990, (42 U.S.C., 12101 et seq.), which prohibits discrimination on the basis of disability, as well as all applicable regulations and guidelines issued pursuant to the ADA.

**19. Drug-Free Workplace Certification:** By signing this Agreement, CONTRACTOR hereby certifies, under penalty of perjury under the laws of the State of California, compliance with the requirements of the Drug-Free Workplace Act of 1990 (Government Code 8350 et seq.) and have or will provide a drug-free workplace by taking the following actions:

- a. Publish a statement notifying employees, and subcontractors that unlawful manufacture, distribution, dispensation, possession, or use of a controlled substance is prohibited and specifying actions to be taken against employees, contractors, or subcontractors for violations, as required by Government Code Section 8355 (a)(1).
- b. Establish a Drug-Free Awareness Program, as required by Government Code Section 8355(a)(2) to inform employees or subcontractors about all of the following:
  - i. The dangers of drug abuse in the workplace
  - ii. Grantee's policy of maintaining a drug-free workplace,
  - iii. Any available counseling, rehabilitation, and employee assistance programs, and
  - iv. Penalties that may be imposed upon employees and subcontractors for drug abuse violations.
- c. Provide, as required by Government Code Sections 8355(a)(3), that every employee, contractor, or subcontractor who works under this Grant Agreement will receive a copy of Grantee's drug-free policy statement, and will abide by terms of the policy.

**20. Notices.** Any notice required to be given pursuant to the terms and provisions of this Agreement shall be in writing and shall be sent first-class mail. Notice shall be deemed to be effective two (2) days after mailing to the following addresses:

**To RCD:**

Kellyx Nelson, Executive Director  
San Mateo County Resource Conservation District  
625 Miramontes Street, Suite 103  
Half Moon Bay, CA 94019

**To CONTRACTOR:**

**[CONTACT INFORMATION]**

**21. Rights in Data.** CONTRACTOR agrees that all data including notes and other written and graphic work produced in performance of this Agreement are subject to the rights of the State of California.

The State shall have the right to reproduce, publish and use all such work, or any part thereof, in any manner and for any purpose whatsoever and to authorize others to do so.

- 22. Records.** CONTRACTOR is hereby notified of the rights of the auditors of the State of California to examine records of the CONTRACTOR and any subcontractors relative to the services and materials provided under this Agreement. The CONTRACTOR agrees to expeditiously provide throughout the term of this Agreement, such reports, data, information, and certifications as may be reasonably required by the RCD or by the State.
- 23. Amendments and Integration.** This Agreement supersedes all previous agreements or understandings, and constitutes the entire understanding between the parties with respect to the above referenced services, terms of compensation, and otherwise. This Agreement shall not be amended, except in a writing that is executed by authorized representatives of both parties.
- 24. Compliance with Federal Regulations.** As a grantee of the State of California, the RCD is obligated to warrant, represent that it and its contractors comply with: 1) all applicable provisions of Title 48 CFR Part 31; and 2) all general and special conditions contained in this Agreement.
- 25. Labor Code Compliance:** The CONTRACTOR will take all measures necessary to ensure compliance with applicable California Labor Code requirements, including, but not limited to Section 1720 *et seq.* of the California Labor Code regarding public works, labor compliance programs (California Labor Code Section 1771.5), and payment of prevailing wages for work done and funded pursuant to these Guidelines, including any payments to the Department of Industrial Relations under Labor Code Section 1771.3.

As a condition of receiving payments for this Project, the CONTRACTOR agrees to present to the RCD, or its designee, all applicable and necessary required documentation required to show compliance with a Labor Compliance Program, as required by the California Labor Code.

The RCD shall withhold any portion of a payment until all required forms and documentation of compliance of the Labor Compliance Program are properly submitted. In the event that certified payroll forms do not comply with the requirements of Labor Code Section 1720 *et seq.*, the RCD may continue to hold sufficient funds to cover estimated wages and penalties under the contract.

- 26. Standards for Financial Management System:** CONTRACTOR shall maintain fiscal control and accounting procedures which are sufficient to:
- a. Permit preparation of reports required by Title 48 CFR Part 31 (including those required by Title 48 CFR Part 31.40 and 31.41) and statutes authorizing the grant to the RCD;
  - b. Permit tracing of funds to a level of expenditures adequate to establish that such funds have not be used in violation of the restrictions and prohibitions of applicable statutes;
  - c. A requirement to this effect shall be placed in all subcontractors related to performance of work under this Agreement.
- 27. Termination.** This Agreement may be terminated for any of the following reasons:
- a. If CONTRACTOR fails to perform the services hereunder agreed to the satisfaction of RCD, or otherwise fails to fulfill its obligations under this Agreement, immediately upon written notice from RCD; and
  - b. Upon notice from RCD to CONTRACTOR that the funding on which this Agreement is based has been materially disrupted or discontinued.

**IN WITNESS WHEREFORE**, the parties agree to the foregoing terms and conditions and hereby enter into this Agreement.

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

**CONTRACTOR NAME**

**CONTRACTOR BUSINESS NAME**

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

**Kellyx Nelson, Executive Director**

**San Mateo County Resource Conservation District**

**EXHIBIT A**  
**SCOPE OF WORK**



## **EXHIBIT B INSURANCE**

CONTRACTOR shall procure and maintain for the duration of this Agreement insurance against claims and injuries to persons or damages to property which may arise from or in connection with the work hereunder by CONTRACTOR, its agents, representatives, employees or subcontractors. The cost of such insurance shall be the sole responsibility of CONTRACTOR.

1. Minimum Scope of Coverage and Limits of Insurance:
  - a. Comprehensive General Liability: \$1,000,000 combined single limit per occurrence for bodily injury, personal injury and property damage.
  - b. Automobile Liability: \$500,000 combined single limit per accident for bodily injury and property damage.
  - c. Worker's Compensation: Limits as set forth in the Labor Code of the State of California.
2. Contractors Liability Insurance Policy shall contain the following clauses:
  - a. RCD is added as an additional insured as respects operation of the named insured formed under contract with RCD.
  - b. It is agreed that any insurance maintained by RCD shall apply in excess of, and not contribute with, insurance provided by this policy.
  - c. The insurer agrees to waive all rights of subrogation against RCD, its officers and employees for losses arising from work performed by CONTRACTOR for RCD.
3. Each insurance policy required herein shall be endorsed to state that coverage shall not be cancelled, limited, or non-renewed except after thirty (30) days written notice has been given to RCD. Certificates of insurance evidencing the coverage required by the clauses set forth above shall be filed with RCD within 10 working days to the effective date of this Agreement.

## A.8 Required Bid Submittals

Bidders are required to provide the following to meet qualifications for this bid notice:

1. A completed bid sheet. Use the blank bid sheet provided for each project component submitting a bid for:
  - a. Pond Component
  - b. Irrigation Component
2. Authorized Bidders Statement Regarding Insurance coverage. Use attached version.
3. Authorized Non-Collusion Affidavit. Use attached version.
4. List of proposed suppliers and subcontractors. Provide all information requested in the blank sheet provided.
5. License and experience statement. Provide all information requested in the blank sheet provided.
6. **Submission of all bid materials by May 1<sup>st</sup>, 2017 by 7pm.**



**HARLEY FARMS REGULATING RESERVOIR  
2.0 ACRE-FT POND**

**BID SCHEDULE**

Job No: 16-033

3/28/2017

ITEM NO.	SPECIFICATION	ITEM	ESTIMATED QUANTITY	UNIT	UNIT COST	TOTAL
1	015000	MOBILIZATION & DEMOBILIZATION	1	LS		
2	311100	CLEARING AND GRUBBING	1	LS		
3	015713	TEMPORARY EROSION CONTROL AND BMPS	1	LS		
4	312316	UNCLASSIFIED EXCAVATION	5,130	CY(F)		
5	312323	EMBANKMENT FILL	220	CY(F)		
6	312323	POND LINER	1	LS		
7	329200	EROSION CONTROL SEEDING	1	LS		
TOTAL						

OPTIONAL BID ITEMS

8	312316	EXCAVATION - UNSUITABLE MATERIALS	Unknown	CY	
9	312316	ROCK EXCAVATION	Unknown	CY	

NOTES:

- Quantities shown are approximate only; the Contractor shall be responsible for all work indicated on the Drawings and prescribed in the Specifications.
- In the event that the product of a unit price and an estimated quantity does not equal the extended amount stated, the unit price will govern and the correct product of the unit price and the estimated quantity shall be deemed to be the bid amount.

8372 S. Jack Tone Rd  
Stockton, Ca 95215  
Office: (209) 460-0450  
Fax: (209) 982-1832



13 April 2017

## Harley Farms Irrigation System Bid Sheet

Item	Quantity	Unit	Cost/Unit	Total
Materials for Job (list attached)	1	LS		
Labor for Irrigation system installation (as per design)	1	LS		
			<b>Total</b>	

Notes:

- Quantities and locations shown in parts list and design are approximate, unforeseen utilities and customer requirements may alter design
- Please complete materials list and include with bid
- "Riverscreen" in creek pump portion of bid may be substituted with equivalent fish screen, but make and model must be noted and approved

**BIDDER'S STATEMENT REGARDING  
INSURANCE COVERAGE**

Bidder hereby certifies that he has reviewed the insurance coverage requirements specified in the Contract Specifications. Should he be awarded the contract for the work, Bidder further certifies that he can meet all the Contract Specifications requirements for insurance including insurance coverage of his subcontractors.

\_\_\_\_\_  
Bidder

By \_\_\_\_\_

\_\_\_\_\_  
Title

\_\_\_\_\_  
Date

## NON-COLLUSION AFFIDAVIT

State of California )

) ss.

RCD

\_\_\_\_\_, being first duly sworn, deposes and says that he or she is \_\_\_\_\_ of \_\_\_\_\_ the party making the foregoing bid that the bid is not made in the interest of, or on behalf of, any undisclosed person, partnership, company, association, organization, or corporation; that the bid is genuine and not collusive or sham; that the Bidder has not directly or indirectly induced or solicited any other Bidder to put in a false or sham bid, and has not directly or indirectly colluded, conspired, connived, or agreed with any Bidder or anyone else to put in a sham bid, or that anyone shall refrain from bidding; that the Bidder has not in any manner, directly or indirectly, sought by agreement, communication, or conference with anyone to fix the bid price of the Bidder or any other Bidder, or to fix any overhead, profit, or cost element of the bid price, or of that of any other Bidder, or to secure any advantage against the public body awarding the contract of anyone interested in the proposed contract; that all statements contained in the bid are true; and, further, that the Bidder has not, directly or indirectly, submitted his or her bid price or any breakdown thereof, or the contents thereof, or divulged information or data relative thereto, or paid, and will not pay, any fee to any corporation, partnership, company, association, organization, bid depository, or to any member or agent thereof to effectuate a collusive or sham bid.

\_\_\_\_\_  
Bidder

By \_\_\_\_\_

\_\_\_\_\_  
Title

\_\_\_\_\_  
Date

## PROPOSED SUPPLIERS AND SUBCONTRACTORS

List of subcontractors and suppliers who will perform work or provide materials. Bidders are not required to use this form but shall provide all requested information using these specific headers. A summary of the subcontractor's qualifications is only required for subcontractors providing more than 20 percent of the overall scope of work.

[illegible]

## LICENSE AND EXPERIENCE STATEMENT

The following outline is a record of the Bidder's experience in construction and restoration of a type similar in magnitude and character to that contemplated under this contract. Additional numbered pages outlining this portion of the proposal may be attached to this page. The Contractor must be properly licensed to perform the work in this project as determined by the State Contractor's License Board.

Contractor's License No: \_\_\_\_\_

_____	_____
Class	Description

License Expiration date: \_\_\_\_\_

These representations are being made under the penalty of perjury.

\_\_\_\_\_  
Contractor's Signature

**Relevant Experience Statement:** Include as an attachment to your proposal a statement describing relevant experience with implementing similar projects. Include specific examples of past projects similar in scope and magnitude.