

**Integrated Mitigation Project  
Located Southwest of Briggs Road and Golden Jay Lane  
In the french Valley Community  
Project No. C7-0032**

<b>CONTRACTOR QUESTIONS AND RESPONSES</b>		
<b>53</b>	Question	Is there a geotechnical investigation for this project that can be made available to the contractors prior to the bid date?
	Response	<a href="#">See Response to Question No. 6</a>
<b>54</b>	Question	The project site surface geology indicates large boulders scattered around the site. In the section 20-1.03 Cultivation, the specs state: "Remove rocks and debris as ordered. This work is change order work.". This appears to pertain to plant installation and not the creek and wetland grading. Will the contractor receive a change order if rocks are encountered?
	Response	<a href="#">Please see revised Special Provision Section 20-1.03.</a>
<b>55</b>	Question	The City of Menifee Supply Line plans are from 2017. Have there been any improvements or changes to the Briggs Rd-Scott Rd intersection that are relevant to installing this supply line?
	Response	<a href="#">County is not aware of any changes.</a>
<b>56</b>	Question	Provided the City of Menifee Supply Line plans are to be constructed under this bid, the City plans indicate a 2-inch supply line, however the IMP plans sheet IP-6 shows connection to a 3-inch line. Please clarify if the installed line along Briggs is to be 2-inch diameter or 3-inch diameter.
	Response	<a href="#">See Revised Plans issued by Addendum No.1</a>
<b>57</b>	Question	Will the County employ a third party compliance company to monitor certified payroll reports? If so, can you tell us who that would be?
	Response	<a href="#">County will monitor internally</a>
<b>58</b>	Question	Will the County possibly allow an electronic submission of the bid documents?
	Response	<a href="#">No. We do not currently have option for electronic submission of bids. Paper Sealed bids must be delivered to address shown in Notice to Bidders.</a>
<b>59</b>	Question	There are several items of work shown on sheets 34 and 35 of 37 that have no pay items. Under which bid items do we get paid for these: a. 4" PVC Pipe (CN #2) b. Repair roadway (CN #13) c. Repair parkway (CN # 12) d. ¾" Meter (CN #8) e. Guard Posts (CN #10) f. 1" Backflow Preventer (CN #9) g. 1-1/2" Service (CN #3) h. 1-1/2" Threaded Copper Pipe Spool i. 4" Flanged RW Gate Valve j. 4" DI 90deg Bend (CN #5)
	Response	<a href="#">Refer to Addendum No. 3</a>
<b>60</b>	Question	Please provide details and scope of work for Bid Schedules C & D. We cannot locate it in the documents.
	Response	<a href="#">An effort was made to provide construction notes that would cover the advertised scope of work, in conjunction with the applicable standard specifications and special provisions.</a>
<b>61</b>	Question	The specs call for 6" topsoil stripping and replacement (19-2.03D). Does the 6" of topsoil go back on top of the design finish grades, or is the top elevation of the 6" topsoil supposed to be the design finish grade?
	Response	<a href="#">The top elevation of the 6" topsoil is the design finish grade.</a>

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<b>CONTRACTOR QUESTIONS AND RESPONSES</b>		
<b>62</b>	Question	Sheet IP-6 shows a 3" Gate Valve at the POC to the potable water pipeline. Under which item does this get paid?
	Response	<a href="#">Refer to Revised Proposal item 30</a>
<b>63</b>	Question	Please provide a detail for connection to the EMWD pipeline. Additionally, who will pay any EMWD fees for service and/or connection?
	Response	<a href="#">See Sheet 37. Refer to Spec 17-02.04 for updated payment clause</a>
<b>64</b>	Question	Is new Item #50A (Addendum #1) meant to cover the Geotextile Filter Fabric referenced on Sheet C-1 in the ¼ Ton Riprap Detail?
	Response	<a href="#">Rock Slope Protection Fabric is intended to underlay gravel mulch at Staging Areas along 1) Briggs Rd and 2) Golden J Lane. The rock slope protection covers the payment for geotextile filter fabric for the ¼ Ton riprap detail.</a>
<b>65</b>	Question	Under which item does the 6" Gravel Blanket (Sheet C-1) get paid?
	Response	<a href="#">The rock riprap, Gravel base and filter fabric are paid for as 1 item/cy. These items are covered under the price paid for Rock Slope Protection.</a>
<b>66</b>	Question	What is the gradation for the 6" Gravel Blanket (Sheet C-1)?
	Response	<a href="#">Use Class 3 gradation from Caltrans Standard Specification, Section 25-1.02B.</a>
<b>67</b>	Question	After discussing internally, would the County consider separating Line Item 7 into two lines -7a) Excavation (cut and fill grading) for xxxx CY -7b) Haul Off (Excess soil) for XXXx CY  This would help reduce cost in the long term for the County by not having to incorporate haul off cost into the excavation work.
	Response	<a href="#">No. The excavation costs is inclusive of all applicable work.</a>
<b>68</b>	Question	Line Item #7 Channel Excavation, plans are showing closer to 11,000 CY of excavation and export, where as you only have 5,036 CY listed
	Response	<a href="#">See Revised Proposal for quantities update</a>
<b>69</b>	Question	Line Item 12 Plant (Group P), plans have 1565 plug style plants, where as the bid schedule only has 410 EA listed.
	Response	<a href="#">Refer to Revised Proposal for quantities update.</a>
<b>70</b>	Question	Line Item 13 – Plant (Group A), plans have 1165 1-gal plants listed, where the bid schedule has 295 EA listed.
	Response	<a href="#">Refer to Revised Proposal for quantities update.</a>
<b>71</b>	Question	Line Item 14 Plant (Group B), plans have 165 5-gal plants listed, where the bid schedule has 65 listed
	Response	<a href="#">Refer to Revised Proposal for quantities update</a>
<b>72</b>	Question	There is no line item for Briggs road Cuttings called out on Revised Plans page PL-1 under sections Southern Willow Scrub, Sycamore riparian, seasonal wetland areas.
	Response	<a href="#">Refer to Revised Proposal item 59.</a>
<b>73</b>	Question	Sheet PP-6 has three notes showing "GATE – SEE SHEET IP-6." One on Golden J Lane and two on Briggs Road. Sheet IP-6 only shows the one location on Golden J Lane. Where is the info for the two on Briggs Road?

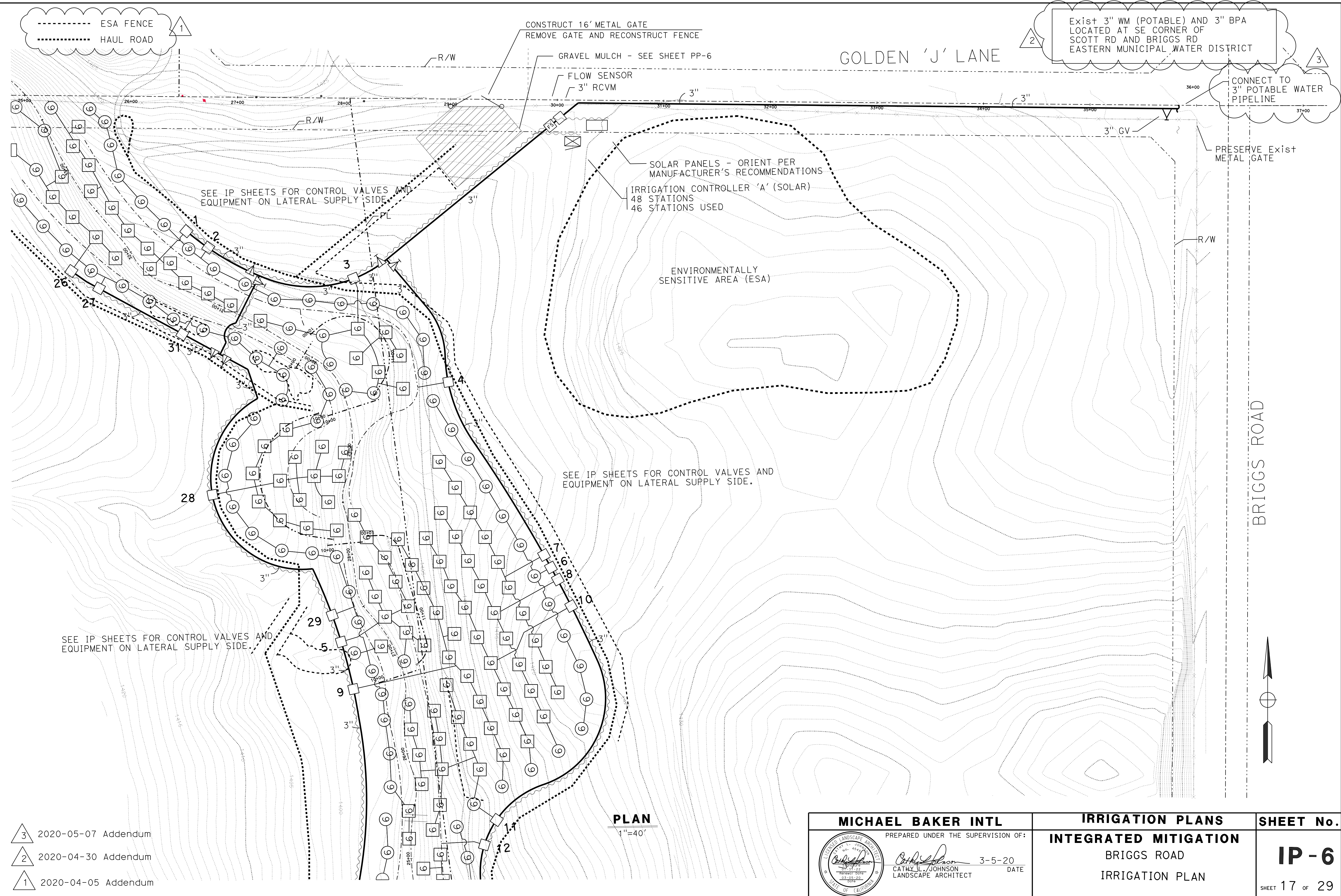
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<b>CONTRACTOR QUESTIONS AND RESPONSES</b>		
	Response	Please see Sheet IP-1.
74	Question	The Point of Connection note states "CONNECT TO Exist 3" POTABLE WATER PIPELINE." Do we actually connect to an existing 3" water pipeline southwest of the intersection of Briggs and Golden J or do we construct the pipeline shown on sheets 33 through 37 to connect east of the intersection of Briggs and Scott Road?
	Response	Construct pipeline and connect to it.
75	Question	My quantity takeoff for Bid Item #7 is showing that it will more than double in quantity. You may want to consider revising the item quantity. I'd be happy to share my takeoff for your information.
	Response	See Response to Question No. 69 above.
76	Question	The plans for the 3" water line entitled City of Menifee irrigation pipeline dated Oct 2017 appear to be plans for providing an irrigation water supply source to the Mitigation site. We assume from Addendum 1 that this is the case. What bid item captures this work?
	Response	Refer to bid item 37
77	Question	Please explain how plan sheet 37 of 37 fits into the construction of the new 3" water line. It appears to show an existing 24" Water Transmission Main on Scott Rd. however the match lines on either end refer to sheet 6 & 8 respectively which are not a part of these plan documents. Is this merely to show the existing 24" main that we are to install the 1.5" copper utility crossing over the 24" T Main due to the close proximity of the top of the 24" main to the new 1.5" copper line? We assume no work on the 24" main is to be done. Is this correct?
	Response	See response to Question 32 above
78	Question	Is the Contractor responsible for any hookup fees with the City of Menifee or is the County of Riverside paying these connection fees?
	Response	Yes, refer to updated pay clause item in addendum No. 3 for section 17-02.04 Payment.
79	Question	Is the County of Riverside providing compaction testing & inspection related to the installation of this water line?
	Response	Contractor should be responsible for these costs, County is compensating entire construction. Contractor shall obtain the permit.
80	Question	They rip rap details on page C-1 contradict each other. The detail shows 3' of rip rap but, cross sections show anywhere from 3" to 6' thick. Which is correct?
	Response	The dimension are corrected updated sheet issued with Addendum 3.
81	Question	Do you know when this project will start? That plays a factor on price of export
	Response	See response to Question 22 above
82	Question	Is this project a unit price as my quantities do not match the estimates?
	Response	The units of measurement are shown on bid proposal.
83	Question	Note 3 on Sheet D-1 states Overexcavate proposed seasonal wetland and backfill with clay and loam soil but it does not point to a "hatched" area as on subsequent sheets. Is this because this is the 1/3 of the project where we excavate and screen for this material but no select native material is replaced here?
	Response	The note applies and does not make any representation on the type of material at this location. Please assume hatching on the wetland areas on Sheet D-1, similar to other sheets.










- 3 2020-05-07 Addendum
- 2 2020-04-30 Addendum
- 1 2020-04-05 Addendum

PLAN  
1"=40'

	<b>MICHAEL BAKER INTL</b>		<b>IRRIGATION PLANS</b>	<b>SHEET No.</b>
	PREPARED UNDER THE SUPERVISION OF:		<b>INTEGRATED MITIGATION</b>	<b>IP-6</b>
	CATHY L. JOHNSON LANDSCAPE ARCHITECT		BRIGGS ROAD IRRIGATION PLAN	
3-5-20 DATE		SHEET 17 OF 29		



21,100 SQFT EPHEMERAL DRAINAGE  
EROSION CONTROL TYPE 1

LEGEND:

- WATERS OF THE STATE
- REMOVE EXOTIC PLANTS
- MOTORIZED EQUIPMENT EXCLUSION AREA
- ESA FENCE - CONSTRUCT AT ESA AND PRESERVE EXISTING HABITAT AREAS
- HAUL ROAD

NOTES:

- AVERAGE WIDTH OF EPHEMERAL DRAINAGES ASSUMED AT 10 FT.
- REMOVE GRAVEL MULCH AND FILTER FABRIC PRIOR TO BEGINNING PLANT ESTABLISHMENT WORK.

4,100 SQFT EPHEMERAL DRAINAGE  
EROSION CONTROL TYPE 1

5,450 SQFT EPHEMERAL DRAINAGE  
EROSION CONTROL TYPE 1

2,750 SQFT EPHEMERAL DRAINAGE  
EROSION CONTROL TYPE 1

MOTORIZED EQUIPMENT  
EXCLUSION AREA

4,300 SQFT EPHEMERAL DRAINAGE  
EROSION CONTROL TYPE 1

MOTORIZED EQUIPMENT  
EXCLUSION AREA

5,900 SQFT EPHEMERAL DRAINAGE  
EROSION CONTROL TYPE 1

PRESERVE  
EXISTING  
HABITAT

PRESERVE  
EXISTING  
HABITAT

PRESERVE  
EXISTING  
HABITAT

MOTORIZED EQUIPMENT  
EXCLUSION AREA

GATES - SEE SHEET IP-6  
4,300 SQFT GRAVEL MULCH  
479 SQYD FILTER FABRIC  
REMOVE GRAVEL MULCH AND  
FILTER FABRIC (SEE NOTE)  
4,300 SQFT EROSION CONTROL TYPE 1

4,150 SQFT EPHEMERAL DRAINAGE  
EROSION CONTROL TYPE 1

18,500 SQFT GRAVEL MULCH  
2,056 SQYD FILTER FABRIC  
REMOVE GRAVEL MULCH AND  
FILTER FABRIC (SEE NOTE)  
18,500 SQFT EROSION CONTROL TYPE 1

STAGING AREA

BRIGGS ROAD

GATE - SEE SHEET IP-1

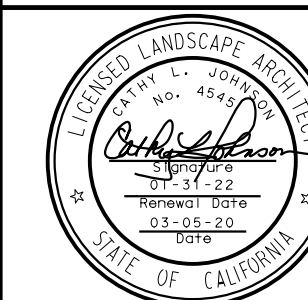
GATE - SEE SHEET IP-1

PLAN

1"=80'

MICHAEL BAKER INTL

PREPARED UNDER THE SUPERVISION OF:



CATHY L. JOHNSON  
LANDSCAPE ARCHITECT

3-5-20  
DATE

LANDSCAPE PLANS

INTEGRATED MITIGATION

BRIGGS ROAD

PLANTING PLAN

SHEET No.

PP-6

SHEET 27 OF 29

2 2020-05-07 Addendum

1 2020-04-05 Addendum

BORDER LAST REVISED 07/21/2015

RELATIVE BORDER SCALE  
IS IN INCHES

0 1 2 3

USERNAME => CATHYJ  
DGN FILE => A1-3250-su-PP-6\_MERGED.dgn

WO XX-XXXX

COUNTY  
FILE No. 968 J

ATTACHMENT "C" TO ADDENDUM NO. 3

DATE PLOTTED => 07-MAY-2020  
TIME PLOTTED => 11:39  
LAST REVISION 00-00-00



EROSION CONTROL TYPE 1 - EROSION CONTROL

SEQUENCE	ITEM	MATERIAL	MATERIAL TYPE	APPLICATION RATE
STEP 1	HYDROSEED	SEED	MIX 1	33.0 LB/ACRE
		FIBER	WOOD	800 LB/ACRE
STEP 2	HYDROMULCH (N)	FIBER	WOOD	1200 LB/ACRE
		TACKIFIER	PLANT BASED	120 LB/ACRE

EROSION CONTROL TYPE 2 - SOUTHERN WILLOW SCRUB

SEQUENCE	ITEM	MATERIAL	MATERIAL TYPE	APPLICATION RATE
STEP 1	HYDROSEED	SEED	MIX 2	2.25 LB/ACRE
		FIBER	WOOD	800 LB/ACRE
STEP 2	HYDROMULCH (N)	FIBER	WOOD	1200 LB/ACRE
		TACKIFIER	PLANT BASED	100 LB/ACRE

EROSION CONTROL TYPE 3 - SYCAMORE RIPARIAN

SEQUENCE	ITEM	MATERIAL	MATERIAL TYPE	APPLICATION RATE
STEP 1	HYDROSEED	SEED	MIX 3	5.0 LB/ACRE
		FIBER	WOOD	800 LB/ACRE
STEP 2	HYDROMULCH (N)	FIBER	WOOD	1200 LB/ACRE
		TACKIFIER	PLANT BASED	100 LB/ACRE

EROSION CONTROL TYPE 4 - EXISTING CREEK CHANNEL

SEQUENCE	ITEM	MATERIAL	MATERIAL TYPE	APPLICATION RATE
STEP 1	HYDROSEED	SEED	MIX 4	6.0 LB/ACRE
		FIBER	WOOD	800 LB/ACRE
STEP 2	HYDROMULCH (N)	FIBER	WOOD	1200 LB/ACRE
		TACKIFIER	PLANT BASED	100 LB/ACRE

EROSION CONTROL TYPE 5 - CREATED CHANNEL/ PERENNIAL GRASSLAND

SEQUENCE	ITEM	MATERIAL	MATERIAL TYPE	APPLICATION RATE
STEP 1	HYDROSEED	SEED	MIX 5	10.0 LB/ACRE
		FIBER	WOOD	800 LB/ACRE
STEP 2	HYDROMULCH (N)	FIBER	WOOD	1200 LB/ACRE
		TACKIFIER	PLANT BASED	100 LB/ACRE

(N) not a separate bid item

NOTE:  
SEE EROSION CONTROL DETAILS FOR CORRESPONDING SEED MIXES

EROSION CONTROL QUANTITIES PER PLAN SHEET

DESCRIPTION	UNIT	SHEET NUMBER						TOTALS	UNIT	DESCRIPTION
		PP-1	PP-2	PP-3	PP-4	PP-5	PP-6			
HYDROSEED (TYPE 1)	SQFT	-	-	-	-	2,055	70,550	72,605	SQFT	HYDROSEED (TYPE 1)
HYDROSEED (TYPE 2)	SQFT	36,505	13,790	13,850	2,925	4,905	-	78,975	SQFT	HYDROSEED (TYPE 2)
HYDROSEED (TYPE 3)	SQFT	6,800	10,190	5,440	-	-	-	22,430	SQFT	HYDROSEED (TYPE 3)
HYDROSEED (TYPE 4)	SQFT	3,345	2,205	6,120	3,925	3,530	-	19,125	SQFT	HYDROSEED (TYPE 4)
HYDROSEED (TYPE 5)	SQFT	9,735	17,270	14,980	23,210	-	-	65,195	SQFT	HYDROSEED (TYPE 5)
HYDROSEED (TYPE 6)	SQFT	-	10,655	2,340	5,495	-	-	18,490	SQFT	HYDROSEED (TYPE 6)
HYDROSEED (TYPE 7)	SQFT	-	34,525	-	-	-	-	35,725	SQFT	HYDROSEED (TYPE 7)
HYDROSEED (TYPE 8)	SQFT	-	5,175	-	3,425	2,525	-	11,125	SQFT	HYDROSEED (TYPE 8)
HYDROSEED (TYPE 9)	SQFT	-	-	-	-	8,550	-	8,550	SQFT	HYDROSEED (TYPE 9)
DRY SEED (TYPE 10)	SQFT	1,750	2,970	-	28,795	495	-	34,010	SQFT	DRY SEED (TYPE 10)

EROSION CONTROL TYPE 6 - SEASONAL WETLAND

SEQUENCE	ITEM	MATERIAL	MATERIAL TYPE	APPLICATION RATE
STEP 1	HYDROSEED	SEED	MIX 6	15.5 LB/ACRE
		FIBER	WOOD	800 LB/ACRE
STEP 2	HYDROMULCH (N)	FIBER	WOOD	1200 LB/ACRE
		TACKIFIER	PLANT BASED	100 LB/ACRE

EROSION CONTROL TYPE 7 - LARGE SEASONAL WETLAND

SEQUENCE	ITEM	MATERIAL	MATERIAL TYPE	APPLICATION RATE
STEP 1	HYDROSEED	SEED	MIX 7	18.25 LB/ACRE
		FIBER	WOOD	800 LB/ACRE
STEP 2	HYDROMULCH (N)	FIBER	WOOD	1200 LB/ACRE
		TACKIFIER	PLANT BASED	100 LB/ACRE

EROSION CONTROL TYPE 8 - COAST LIVE OAK WOODLAND

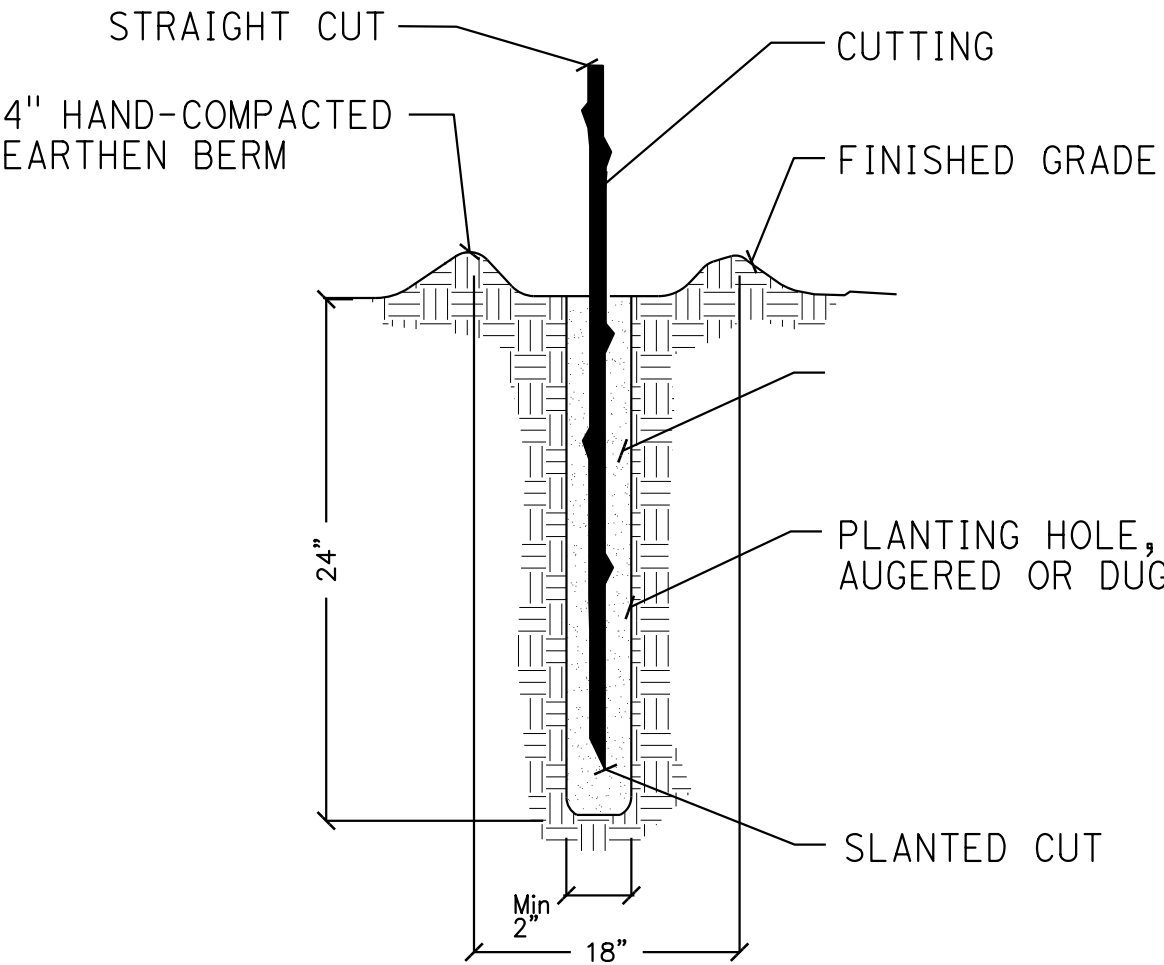
SEQUENCE	ITEM	MATERIAL	MATERIAL TYPE	APPLICATION RATE
STEP 1	HYDROSEED	SEED	MIX 8	7.0 LB/ACRE
		FIBER	WOOD	800 LB/ACRE
STEP 2	HYDROMULCH (N)	FIBER	WOOD	1200 LB/ACRE
		TACKIFIER	PLANT BASED	100 LB/ACRE

EROSION CONTROL TYPE 9 - MIXED OAK WOODLAND

SEQUENCE	ITEM	MATERIAL	MATERIAL TYPE	APPLICATION RATE
STEP 1	HYDROSEED	SEED	MIX 9	7.0 LB/ACRE
		FIBER	WOOD	800 LB/ACRE
STEP 2	HYDROMULCH (N)	FIBER	WOOD	1200 LB/ACRE
		TACKIFIER	PLANT BASED	100 LB/ACRE

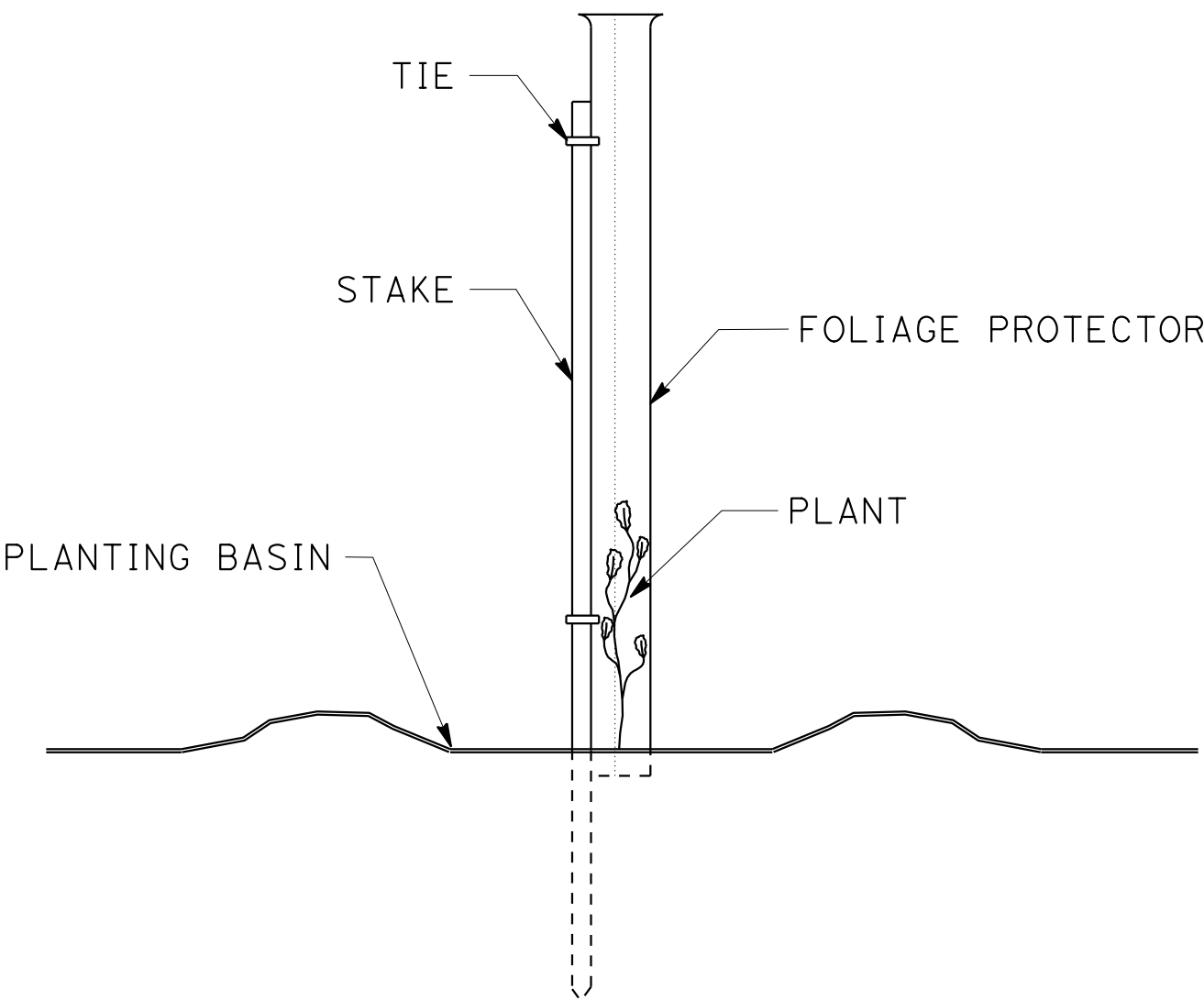
EROSION CONTROL TYPE 10 - DIEGAN COASTAL SCRUB

SEQUENCE	ITEM	MATERIAL	MATERIAL TYPE	APPLICATION RATE
STEP 1	DRY SEED	SEED	MIX 10	5.0 LB/ACRE



NOTES:  
BURY CUTTING Min 16" OR 2/3 CUTTING LENGTH,  
LEAVE Min 4-6 HEALTHY BUDS EXPOSED

A CUTTING PLANTING  
SCALE: NOT TO SCALE



B FOLIAGE PROTECTOR INSTALLATION  
SCALE: NOT TO SCALE

PLANTING QUANTITIES

DESCRIPTION	MATERIAL	UNIT	TOTAL
GRAVEL MULCH	CLASS 2 AB	CY	420
	FILTER FABRIC	SQYD	2,535
FOLIAGE PROTECTOR	SEE SHEET PL-1	EA	1,195
BASIN MULCH	WOOD MULCH	CY	14
16' METAL GATE	SEE SHEET ID-1	EA	3

1 SEE IQ-1

**MICHAEL BAKER INTL**  
PREPARED UNDER THE SUPERVISION OF:  
  
CATHY L. JOHNSON  
LANDSCAPE ARCHITECT  
3-5-20  
DATE

**LANDSCAPE PLANS**  
**INTEGRATED MITIGATION**  
BRIGGS ROAD  
PLANTING AND EROSION  
CONTROL DETAILS

**SHEET No.**  
**PD-1**  
SHEET 28 OF 29

- 2 2020-04-30 Addendum
- 1 2020-04-05 Addendum



Patricia Romo, P.E.  
Director of Transportation

# COUNTY OF RIVERSIDE

## TRANSPORTATION AND LAND MANAGEMENT AGENCY

Mojahed Salama, P.E.  
Deputy for Transportation/Capital Projects  
Richard Lantis, P.L.S.  
Deputy for Transportation/Planning and  
Development

### Transportation Department

#### **ADDENDUM NUMBER 4**

**Dated May 14, 2020**

**to the  
Specifications and Contract Documents  
for the construction of**

**Integrated Mitigation Project  
Located Southwest of Briggs Road and Golden Jay Lane  
In the French Valley Community  
Project No. C7-0032**

**Bids Due: Wednesday, May 20, 2020; 2:00 p.m.**  
14<sup>th</sup> Street Transportation Annex  
3525 14<sup>th</sup> Street; Riverside, CA 92501  
(951) 955-6780

This Addendum is issued pursuant to the Instructions to Bidders, Item No. 8, of the Contract Documents for the reference project. This Addendum is issued as a supplement to the specification and special provisions for the referenced project. The revisions to the specifications shall become a part of the Contract Documents, and each bidder shall acknowledge receipt thereof on the Bid (Proposal). Bidders are directed to sign this addendum as acknowledged and attach the signed addendum to the contractor's submitted proposal.

Note: During the advertisement period of this project, this document and attachments (if any) are available upon request at the office of the Transportation Department, and are available as a free download at the Transportation Department's website:

<http://rctlma.org/trans/Contractors-Corner/Notices-Inviting-Bids>

#### **MODIFICATIONS / CLARIFICATIONS:**

##### **Item 1: Water Supply Line (EMWD)**

The following Special Provisions are added to the Contract documents and made part thereof. These provisions contain additional specifications and information more than required to furnish and install 3 inch Water Supply line for this project. The contractors are to bid and construct in compliance with applicable Special Provisions and specific designations and design requirements of the plans.

#### **SECTION 02310: TRENCHING, BACKFILLING, AND COMPACTING**

##### **PART 1 - GENERAL**

##### **1.01 DESCRIPTION**

- A. This section describes materials, testing, and performance of trench excavation, backfilling, and compacting.



1.02 RELATED WORK SPECIFIED ELSEWHERE

- A. Section 02240, Dewatering
- B. Section 02260, Excavation Support Systems

1.03 SUBMITTALS

- A. Submit shop drawings in accordance with the Section 01300, Submittal Procedures.
- B. Submit six copies of a report from a testing laboratory verifying that backfill material conforms to the specified gradations or characteristics specified.

1.04 PROTECTION OF EXISTING UTILITIES AND FACILITIES

- A. General: The Contractor shall be responsible for the care and protection of all existing sewer pipelines, water pipelines, gas mains, storm drains, culverts, telecommunications conduit, electrical conduit, power poles or other facilities and structures that may be encountered in or near the area of work.
- B. Notification: The Contractor shall notify each agency having jurisdiction and make arrangements for locating each agency's facilities prior to beginning construction.
- C. Damage: In the event of damage to any existing facilities during the progress of the work due to the failure of the Contractor to exercise the proper precautions, the Contractor shall be responsible for the cost of all repairs and protection to said facilities. The Contractor's work may be stopped until repair operations are complete.
- D. Protection of Landscaping
  - 1. General: The Contractor shall protect all trees, shrubs, fences, and other landscape items adjacent to or within the site unless directed otherwise on the plans. In the event of damage to landscape items, replace the damaged items in a manner satisfactory to the Owner's Representative.
  - 2. Restoration: After the completion of the work, restore such areas to original condition. Restoration shall include regrading, placement of 8 inches of topsoil on disturbed areas, and hydroseeding.

**PART 2 - MATERIALS**

2.01 DEFINITION OF ZONES

- A. Trench Zone: The trench zone shall include the portion of the trench from the top of the pipe zone to the ground surface, or the bottom of the pavement section in paved areas.
- B. Pipe Zone: The pipe zone shall include the full width of trench from the bottom of the pipe or conduit to a horizontal level 12 inches above the top of the pipe. Where multiple pipes or conduits are placed in the same

trench, the pipe zone shall extend from the bottom of the lowest pipes to a horizontal level above the top of the highest or topmost pipe.

- C. Pipe Base: The pipe base shall be defined as the layer of material immediately below the pipe zone and extending over the full trench width, 6-inches deep.

## 2.02 SELECT NATIVE BACKFILL--TRENCH ZONE

- A. Excavated native earth backfill shall be fine-grained non-organic materials free from peat, roots, debris, and rocks larger than 3 inches, with not more than 15 percent by weight larger than 2-1/2 inches, and which can be compacted to the specified relative compaction and approved by soils engineer.

## 2.03 SAND--PIPE ZONE AND PIPE BASE--PRESSURE PIPELINES

- A. Imported sand used in the pipe zone shall be free from clay or organic material, be non-plastic, well-graded natural and/or manufactured sand with angular particles, with a sand equivalency of 30 per ASTM D 2419, and shall have the following gradation:

Sieve Size	Percent Passing by Weight
1-inch	100
No. 4	75 - 100
No. 30	30 - 60
No. 200	0 - 5

- B. Native sand may be used provided it meets the same requirements for imported sand above. Contractor shall be responsible for providing test results for each batch of sand produced.

## 2.04 AGGREGATE BASE—PIPE ZONE AND PIPE BASE—GRAVITY PIPELINES

- A. Aggregate base material shall be a well-graded crushed rock and sand mixture, or naturally occurring rock and sand mixture, meeting the requirements of ASTM D 2321 Class IB or Class II materials, and conforming to the gradation shown below (similar to Caltrans Class 2 Aggregate Base, 1-inch maximum, but with limited fines):

Sieve Size	Percent Passing by Weight
1-inch	100
3/4-inch	90 - 100
No. 4	35 - 60
No. 30	10 - 30
No. 200	0 - 5



## 2.05 REFILL MATERIAL FOR FOUNDATION STABILIZATION

- A. If overexcavation is required by the Owner below the pipe base, or if the Contractor digs below the pipe base level, the area below the pipe base level shall be filled with refill material. The Contractor shall not be compensated for refill material installed unless overexcavation is required, as directed by the Owner, in order to remove unsuitable material.
- B. Refill material below the pipe shall be a well-graded crushed rock and sand mixture, or naturally occurring rock and sand mixture, meeting the requirements of ASTM D 2321 Class IB or Class II materials, and conforming to the gradation shown below (similar to Caltrans Class 2 Aggregate Base, 1-1/2-inch maximum, but with limited fines and allows for larger rocks):

Sieve Size	Percent Passing By Weight
3-inch	100
1-1/2-inch	90 - 100
3/4-inch	50 - 85
No. 4	25 - 45
No. 30	10 - 25
No. 200	0 - 5

## 2.06 STABILIZATION GEOTEXTILE

- A. Where needed for foundation stabilization or where required by the geotechnical engineer, a geotextile material meeting the requirements of AASHTO M288-96, Class 3, shall be used. Geotextile shall be Mirafi 500X, or approved equal.

## 2.07 CONTROLLED LOW STRENGTH MATERIAL (CLSM)

- A. Controlled density fill will be accepted in lieu of the standard backfill specifications. It shall be mandatory in trenches 8-inches wide or less where the prevention of subsequent settlement after placement of backfill is required. CLSM shall conform to the following requirements:
  - 1. Strength Requirements
    - a. Permanent: Unless specified otherwise, CLSM shall be designed as a permanent material, not designed for future removal. Design strength for this permanent type of CLSM shall be a minimum 28-day unconfined compressive strength of 300 psi.
    - b. Machine Excavatable: CLSM designed to be machine tool excavatable shall produce a 28-day unconfined compressive strength between 150 psi and 200 psi.

- c. Hand Excavatable: CLSM designed to be excavatable by hand tools shall produce a 28-day unconfined compressive between 50 psi to a maximum of 100 psi.

2. Materials

- a. Cement shall meet the standards as set forth in ASTM C-150, Type II Cement.
- b. Fly ash shall meet the standards as set forth in ASTM C-618, for Class F pozzolans. The fly ash shall not inhibit the entrainment of air.
- c. Air entraining agent shall meet the standards as set forth in ASTM C-260.
- d. Aggregates need not meet the standards as set forth in ASTM C-33. Any aggregate, producing performances characteristics of the CLSM, for any project will be accepted for consideration as follows. The amount of material passing a #200 sieve shall not exceed 12 percent and no plastic fines shall be present.

3. Mix Proportions

- a. CLSM shall be a mixture of cement, Class F pozzolan, aggregate, air entraining agent and water. CLSM shall be batched by a ready mixed concrete plant and delivered to the job site by means of transit mixing trucks.
- b. The actual mix proportions shall be determined by the producer of the controlled density fill to meet job site conditions, minimum and maximum strengths, and unit weight. Entrained air content shall be a minimum of 4.0 percent. The actual entrained air content shall be established for each job with the materials and aggregates to be used to meet the placing and unit weight requirements. Entrained air content may be as high as 20 percent for fluidity requirements.

4. Mix Design

- a. Mix design shall meet the Engineer's approval.

2.08 WATER FOR COMPACTION

- A. Water used in compaction shall have a maximum chloride concentration of 500 mg/l, a maximum sulfate concentration of 500 mg/l, and shall have a pH of 7.0 to 9.0. Water shall be free of acid, alkali, or organic materials injurious to the pipe coatings.



## **PART 3 - EXECUTION**

### **3.01 TESTING FOR COMPACTION**

- A. **Material Testing:** Construction Manager will test all imported or native materials before the start of compaction operations to determine the moisture density relationship for materials with cohesive components, and the maximum density for cohesionless materials. Variations in imported or native earth materials may require a number of base curves of the moisture-density relationship.
- B. **Testing Intervals:** Unless noted otherwise, Construction Manager will perform initial compaction tests at random depths and at 300-foot intervals, and as directed by the Construction Manager. The Contractor shall notify the Construction Manager 24 hours in advance of when backfill lifts are ready for testing. Costs for retesting of work not conforming to the Specifications shall be paid by the Contractor.
- C. **Methods:** Determine the density of soil in place by the sand cone method, ASTM D 1556, or by the nuclear method, ASTM D 2922 or D 3017.
- D. **Soil Moisture-Density Relationship:** Determine the laboratory moisture-density relations of soils shall be determined per ASTM D 1557.
- E. **Cohesionless Materials:** Determine the relative density of cohesionless materials by ASTM D 4253 and D 4254.
- F. **Sampling:** Sample backfill materials per ASTM D 75.
- G. **Relative Compaction:** Express "relative compaction" as the ratio, expressed as a percentage, of the in-place dry density to the laboratory maximum dry density.
- H. **Compaction Compliance:** Compaction shall be deemed to comply with the Specifications when none of the tests falls below the specified relative compaction.

### **3.02 COMPACTION REQUIREMENTS**

Unless otherwise shown on the Drawings or otherwise described in the Specifications for the particular type of pipe installed, relative compaction in pipe trenches shall be as follows:

- A. **Pipe Base and Pipe Zone:** Pipe base and pipe zone—90 percent relative compaction.
- B. **Trench Zone:** Backfill in trench zone not beneath paving—90 percent relative compaction. Top 12 inches of trench zone under paving or aggregate base shall be 95 percent relative compaction.
- C. **Foundation Stabilization:** Refill material for foundation stabilization—90 percent relative density.

- D. Overexcavation: Refill for overexcavation—90 percent relative density.

### 3.03 MATERIAL REPLACEMENT

- A. The Contractor shall remove trenching and backfilling material that does not meet the Specifications and replace at no additional expense to the Owner. All excavations shall be returned to the original grades, unless otherwise shown, with positive drainage to existing or proposed drainage courses.

### 3.04 SHEETING, SHORING, AND BRACING OF TRENCHES

- A. Shore and sheet excavations over 5 ft in depth in accordance with Section 02260, Excavation Support Systems.

### 3.05 TRENCH WIDTHS

- A. For pipes with nominal pipe diameter of 16 inch and smaller, trench width in the pipe zone shall be equal to the pipe outside diameter plus 12 inches (OD+12") minimum and OD plus 24 inches (OD+24") maximum.  
  
For pipes with nominal pipe diameter greater than 16 inch and smaller than 24 inch, trench widths in the pipe zone shall be equal to the pipe outside diameter plus 16 inches (OD+16") minimum and OD plus 24 inches (OD+24") maximum.  
  
For pipes with nominal pipe diameter of 24 inch or larger, trench widths in the pipe zone shall be equal to OD plus 24 inches (OD+24") minimum and twice the pipe outside diameter (2\*OD) maximum.
- B. Trench width above the pipe zone shall not be limited except where width of excavation would undercut adjacent structures and footings. In such cases, width of trench shall be such that there is at least 18 inches between the top edge of the trench and the structure or footing.

### 3.06 GRADE

- A. Excavate trenches to the lines and grades shown on the Layout Drawings with allowance for pipe thickness and for pipe base. If the trench is excavated below the required grade, refill the portion of the trench excavated below the grade with refill material at no additional cost to the Owner. Place the refill material over the full width of trench in compacted layers not exceeding 6-inches deep to the required grade with allowance for the pipe base. Alternatively, CLSM may be used in place of refill material. Remove hard spots that would prevent a uniform thickness of pipe base. Before laying pipe sections, check the grade with a straightedge and any irregularities corrected. The trench bottom shall form a continuous and uniform bearing and support for the pipe at every point.

### 3.07 DEWATERING

- A. The Contractor shall keep excavations free from water during construction in accordance with Section 02240, Dewatering.



### 3.08 STORAGE OF EXCAVATED MATERIAL

- A. During trench excavation, store excavated material only within the work boundary and as approved by the Owner. Do not obstruct roadways or streets. The safe loading of trenches with excavated material shall conform to federal, state, and local codes.

### 3.09 REMOVAL AND DISPOSAL OF EXCAVATED MATERIAL

- A. All equipment used by the Contractor in excavation, breaking, and removal operations within the public rights-of-way shall be equipped with rubber tires or treads.
- B. Excavated materials shall not be stored in the public rights-of-way. All materials excavated in the public rights-of-way shall be immediately hauled away from the site, and legally disposed of, recycled, or stored at an approved site, at the expense of the Contractor.

### 3.10 LENGTH OF OPEN TRENCH

- A. The length of open trench shall be limited to the amount of pipe installed in one (1) working day. Complete backfilling of the pipe at the end of the day is required. Backfill or adequately bridge sidewalks, driveways and other traveled ways to provide safe access and egress at the completion of each day's work. Any open trench shall be protected to the satisfaction of the Owner.

### 3.11 FOUNDATION STABILIZATION

- A. After the required excavation has been completed, the Owner's Representative shall inspect the exposed trench subgrade to determine the need for any additional excavation. It is the intent that additional excavation shall be conducted in all areas within the influence of the pipeline where unacceptable materials exist at the exposed subgrade. Overexcavation shall include the removal of all such unacceptable material that exists directly beneath the pipe base and to the depth required. The presence of unacceptable material may require excavating a wider trench. Backfill the overexcavated portion of the trench to the subgrade of the pipe base with refill material for foundation stabilization. Stabilization geotextile below the refill material may be required by the soil conditions, or where specified during construction by the Engineer. Place foundation stabilization material over the full width of the excavation and compacted in layers not exceeding 6 inches in depth, to the required grade.

### 3.12 TRENCH BACKFILLING AND COMPACTION

- A. General: Trench backfill shall conform to requirements of the detailed piping specification for the particular type of pipe and following.

- B. Pipe Base: Place the specified thickness of pipe base material over the full width of trench. Grade the top of the pipe base ahead of the pipe laying to provide firm, uniform support along the full length of pipe.
- C. Bell Holes: Excavate holes at each joint to permit proper assembly and inspection of the entire joint.
- D. Pipe Zone: After the pipe has been bedded, place pipe zone material simultaneously on both sides of the pipe, keeping the level of backfill the same on each side. Carefully place material around the pipe so that the pipe barrel is completely supported and that no voids or uncompacted areas are left beneath the pipe. Particular care shall be taken in placing material on the underside of the pipe to prevent lateral movement during subsequent backfilling.
- E. Trench Zone: Carefully deposit backfill material onto the backfill previously placed in the pipe zone. Free fall of the material shall not be permitted until at least 2 feet of cover is provided over the top of the pipe. Do not drop sharp, heavy pieces of material directly onto the pipe or the tamped material around the pipe.
- F. Trench Backfill: Compact trench backfill to the specified relative compaction. Perform compaction by using mechanical compaction or hand tamping equipment. Unless specified otherwise, consolidation by jetting or flooding shall not be permitted. Do not use high impact hammer-type equipment except where the pipe manufacturer warrants in writing that such use will not damage the pipe.
- G. Equipment: Do not use axle-driven or tractor-drawn compaction equipment within 5 feet of walls and structures.

### 3.13 EXCESS MATERIAL

- A. Excess soil material generated by trenching operations shall be disposed of at an approved site, at the expense of the Contractor, as directed by the Owner's Representative and in accordance with the Specifications.

### 3.14 MOISTURE CONTENT OF BACKFILL MATERIAL

- A. During the compacting operations, maintain optimum practicable moisture content required for compaction purposes in each lift of the backfill material. Maintain moisture content throughout the lift at a uniform level. If placement is discontinued and proper moisture content not maintained, bring the upper layer back to proper moisture content by sprinkling, cultivating and rolling the backfill material before placing new material. At the time of compaction, the water content of the material shall be at optimum water content plus or minus two percentage points. Do not work material that contains excessive moisture to obtain the required compaction. Material having excessive moisture content may be dried by blading, disking, or harrowing.

### 3.15 TEMPORARY RESURFACING OF TRENCHES

- A. Temporary resurfacing shall be placed at the end of each work day; no open trenches shall be permitted overnight. Bituminous surface shall be maintained at locations where excavation is made through pavement, sidewalks, or driveways. Surface in sidewalk areas shall be at least 1-inch thick; in all other areas it shall be 2-inches thick. At major intersections and other critical locations, a greater thickness may be required.
- B. Prior to placing temporary resurfacing, the Contractor shall level and compact the backfill on which the surface is to be placed. The surfacing shall be placed, rolled, maintained, removed, and disposed of by the Contractor.
- C. Steel plates may be substituted for backfill and temporary resurfacing at locations specifically approved by the Owner and controlling agency. No additional compensation will be allowed for the use of steel plates. Temporary asphalt concrete shall be placed against the steel plates to form a ramp with a maximum slope of 10:1. Warning barricades with slow signs (Caltrans Standard C28B) shall be placed at all sites where steel plates are used.

### 3.16 SURFACE RESTORATION

- A. Unless otherwise shown in the Plans or Specifications, or required by controlling agency permit, all surface improvements damaged or removed as a result of the Contractor's operations shall be reconstructed by the Contractor to the same dimensions, and with the same type of materials used in the original work.
- B. Traffic loop detectors, traffic striping, reflective and non-reflective pavement markers shall be replaced per controlling agency standards.

### END OF SECTION

## **SECTION 15000: GENERAL PIPING REQUIREMENTS AND APPURTENANCES**

### **PART 4 - GENERAL**

#### **4.01 SCOPE OF WORK**

- A. The Contractor shall provide all piping systems indicated, complete and operable, in accordance with the Contract Documents.
- B. The mechanical drawings define the general layout, configuration, routing, method of support, pipe size, and pipe type. The mechanical drawings are not pipe construction or fabrication drawings. It is the Contractor's responsibility to develop the details necessary to construct all mechanical



pipng systems, to accommodate the specific equipment provided, and to provide and install all spools, spacers, adapters, supports, anchors, and connectors for a complete and functional system.

#### 4.02 RELATED WORK SPECIFIED ELSEWHERE

- A. Section 02310, Trenching, Backfilling, and Compacting
- B. Section 02240, Dewatering
- C. Section 15040, PVC Pressure Pipe

#### 4.03 CONTRACTOR SUBMITTALS

- A. General:
  - 1. Submittals shall be furnished in accordance with Section 01300, Submittal Procedures.
  - 2. Contractor shall incorporate pothole information into the pipe layout drawings, showing the size, depth and station of each utility potholed.
- B. Shop Drawings: Shop drawings shall contain the following information:
  - 1. Layout drawings including all necessary dimensions, stations and inverts, details, pipe joints, fittings, specials, valves, appurtenances, anchors, supports, guides, and material lists.
  - 2. Fabrication drawings shall indicate all spool pieces, spacers, adapters, connectors, fittings, and supports to accommodate the equipment and valves in a complete and functional system.
- C. Samples: All expenses incurred in making samples for certification of tests shall be borne by the Contractor at no increase in cost to the Owner.
- D. Certifications
  - 1. All necessary certificates, test reports, and affidavits of compliance shall be obtained by the Contractor and shall be submitted to the Engineer.
  - 2. Fabricator Statement: A statement from the pipe fabricator certifying that all pipes will be fabricated subject to a recognized quality control program. An outline of the program shall be submitted to the Engineer for review prior to the fabrication of any pipe.

### **PART 5 - PRODUCTS**

#### 5.01 GENERAL

- A. All products in contact with potable water shall be certified to NSF-61 and, where applicable, NSF-372 standards, per California Health and Safety Code Section 116875 (California AB-1953), unless otherwise exempt.
- B. Extent of Work: All pipes, fittings, and appurtenances shall be provided in accordance with the requirements of the applicable sections of Division 15 and as indicated.

- C. Pressure Rating: All piping systems shall be designed for the maximum expected test pressure.
- D. Inspection: All pipe shall be subject to inspection at the place of manufacture. During the manufacture of the pipe, the Engineer shall be given access to all areas where manufacturing is in progress and shall be permitted to make all inspections necessary to confirm compliance with requirements.
- E. Tests: Except where otherwise indicated, all materials used in the manufacture of the pipe shall be tested in accordance with the applicable specifications and standards. The Contractor shall perform all tests at no additional cost to the Owner.
- F. Welding Requirements: All welding procedures used to fabricate pipe shall be pre-qualified under the provisions of ANSI/AWS D1.1 - Structural Welding Code. Welding procedures shall be required for longitudinal and girth or spiral welds for pipe cylinders, spigot and bell ring attachments, reinforcing plates and ring flange welds, and plates for lug connections.

#### 5.02 PIPE FLANGES

- A. For Steel Pipe: Where the design pressure is 150 psi or less, flanges shall conform to ANSI/AWWA C207 - Steel Pipe Flanges for Waterworks Service—Sizes 4 inch through 144 inch, Class D.

Where the design pressure is greater than 150 psi up to a maximum of 275 psi, flanges shall conform to ANSI/AWWA C207 Class E.

AWWA flanges shall not be exposed to test pressures greater than 125 percent of rated capacity. For higher test pressures, the next higher rated AWWA flange shall be selected.

- B. For Ductile Iron Pipe: Where the design pressure is 250 psi or less, use flat faced ductile iron flanges conforming to AWWA C115.
- C. For Copper Pipe: Connect to flanged valves and fittings with bronze flanges conforming to ANSI B16.24, Class 125 or Class 150, to match the connecting flange. Use solder end companion flanges.
- D. Blind Flanges: Blind flanges shall be of the same material as the mating flange. All blind flanges for pipe sizes 12 inches and larger shall be provided with lifting eyes in form of welded or screwed eye bolts.
- E. Flange Coating: All machined faces of metal blind flanges and pipe flanges shall be coated with a temporary rust-inhibitive coating to protect the metal until the installation is completed.
- F. Insulating Flanges: Insulated flanges shall have bolt holes 1/4-inch diameter greater than the bolt diameter.

- G. Flange Insulation Kits: Flange insulation kits suitable for the design pressure of the pipeline shall be provided where shown on the drawings and shall be NSF/ANSI-61 certified. Materials for flange isolation kits on pipes containing water up to 280°F shall consist of the following components:
1. Isolating and Sealing Gasket  
One full-faced isolating and sealing gasket, Type "E", 1/8" thick, G-10 epoxy glass retainer containing a precision tapered groove to accommodate the controlled compression of an EPDM quad-ring sealing gasket. Sealing gasket placement shall accommodate either flat, raised or RTJ face flanges. The G-10 retainer shall have 550 volts/mil dielectric strength and a minimum 50,000 psi compressive strength. The full faced flange isolating gasket shall be 1/8" less in I.D. than the I.D. of the flange in which it is installed. Gasket shall be GPT Line Backer sealing gasket as manufactured by GPT, an EnPro Industries Company.
  2. Full Length Bolt Isolating Sleeves and Washers  
One full length G-10 epoxy glass sleeve (extending half way into both stainless steel washers) for each flange bolt. The sleeve shall be a 1/32 inch thick tube with 400 volts/mil dielectric strength and water absorption of 0.1% or less.  
  
Two, 1/8 inch thick, G-10 epoxy glass isolating washers for each bolt. Their compressive strength shall be 50,000 psi, dielectric strength 500 volts/mil and water absorption 0.1% or less.  
  
Two, 1/8 inch thick Type 316 Stainless Steel washers for each bolt. The I.D. of all washers shall fit over the isolating sleeve and the stainless steel and isolating washers shall have the same I.D. and O.D.
  3. Manufacturer  
Flange isolating kits shall be manufactured at a facility that has a registered ISO 9001:2000 Quality Management System. Submittals shall include copy of valid registration. Kits shall be manufactured by Pipeline Seal and Insulator, Inc.
- H. Flange Adapter Couplings: Restrained flange adapters shall be suitable for use with steel, ductile iron, and PVC pipe. Flanged adapters shall be made of ductile iron conforming to ASTM A536, have flange bolt circles that are compatible with AWWA C110, and be coated with fusion bonded epoxy. Restraint for flange adapter shall consist of a plurality of individual actuated gripping wedges to maximize restraint capability. Torque limiting actuating screws shall be used to insure proper initial set of gripping wedges. Flange adapter gaskets shall be EPDM rubber. The flange adapters shall be capable of deflection during assembly or permit lengths of pipe to be field cut to allow a minimum 0.6 inch gap between the end of the pipe and the mating flange without affecting the integrity of the seal. Pressure ratings



shall be equal to the pressure rating of the pipe. The flange adapter shall be the Series 2100 Megaflange Restrained Flange Adapter as produced by EBAA Iron, Inc. or approved equal.

- I. Flange Gaskets: All gaskets shall have a thickness of 1/8-inch. For full-face gaskets, the gasket bolt hole pattern shall match the flange drilling pattern. The use of jointing compounds, release agents, lubricants, grease, or adhesives on either the gasket or flange faces is not allowed unless specifically recommended by the manufacturer. Manufacturer shall provide bolt torques required for each pipe diameter and working pressure. Gaskets shall meet the following requirements:

1. Working Pressure  $\leq$  150 psi

Gasket shall be full face, NSF-61 certified EPDM, and shall be in accordance with ANSI/AWWA C111/A21.11. Flanged gaskets shall have a rated working pressure of at least 150 psi and a rated maximum pressure of at least 200 psi, and shall have at least three (3) bulb type rings molded into both faces of the gasket to reduce bolting torque. Flanged gaskets shall be U.S. Pipe Full-Face Flange-Type Gasket, or approved equal.

2. Working Pressure  $>$  150 psi up to 250 psi

Gasket shall be full-face type, NSF-61 certified, compressed non-asbestos synthetic fibers with an elastomeric binder, with a rated working pressure of at least 250 psi and a rated maximum pressure of at least 300 psi. Gasket shall be Garlock Multi-Swell Style 3760-U, or approved equal.

#### 5.03 BOLTS AND NUTS FOR DUCTILE IRON OR STEEL FLANGES AND COUPLINGS

- A. Bolts and nuts for flanges and couplings shall be Type 316 stainless steel conforming to Heavy Hex Head ASTM A 193 (Grade B8M) for bolts, and Heavy Hex Head ASTM A 194 (Grade 8M) for nuts. Nuts shall be coated using a three layer system consisting of a metallic base coat, an adhesion coat, and a heat cured fluoropolymer compound containing PTFE or TEFLON® as topcoat. Coating shall be FluoroKote#1 by Metal Coatings Corp., Tripac 2000 Blue Coating System by Tripac Fasteners, Xylan 1424 Aqueous coating system by Whitford, or approved equal.
- B. Washers shall be provided for each nut, and shall be the same material and coating as the nut. Bolts shall extend through the nuts a minimum of 1/4-inch.

#### 5.04 BOLTS AND NUTS FOR FLANGES ON COPPER TUBING

- A. When both above ground adjoining flanges are bronze, use bronze bolts and nuts. Bolts shall conform to ASTM F 468, Grade C65100 or C63000. Nuts shall conform to ASTM F 467, Grade C65100 or C63000.

- B. When only one of the aboveground adjoining flanges is bronze, use Type 316 stainless-steel bolts and nuts conforming to ASTM A 193 (Grade B8M) for bolts and ASTM A 194 (Grade 8M) for nuts.
- C. Connect to buried ferrous flanges with flange insulation kits. Bolts used in flange insulation kits shall conform to ASTM B 193, Grade B7. Nuts shall comply with ASTM A 194, Grade 2H. If the adjoining buried flange is bronze, use bronze bolts and nuts as described above, without a flange insulation kit.
- D. Provide washers for each nut. Washers shall be of the same material as the nuts.

#### 5.05 LUBRICATION FOR STAINLESS STEEL NUTS AND BOLTS

- A. Apply a liberal coat of a white food grade anti-seizing compound containing PTFE or Teflon to the threads of all stainless steel nuts and bolts, and to the face of all washers. The compound shall have operating range covering -20°F to 440°F, be NSF approved (or meet USDA-H1 and FDA requirements for incidental food contact), suitable for use on stainless steel, with a coefficient of friction no greater than  $K=0.13$ . Compound shall be White-Knight as manufactured by Jet-Lube, or approved equal.

#### 5.06 DIELECTRIC NIPPLES

- A. Dielectric nipples shall create a dielectric waterway to inhibit galvanic corrosion between two dissimilar metals. Dielectric nipples shall be Schedule 40 carbon steel with plastic lining conforming to the requirements of ASTM A53 and ASTM F1545, and shall be coated in accordance with Section 09900. Dielectric nipples shall be Victaulic Dielectric Waterway, or approved equal.

#### 5.07 THREADED INSULATING CONNECTIONS

- A. General: Threaded insulating bushings, unions, or couplings, as appropriate, shall be used for joining threaded pipes of dissimilar metals and for piping systems where corrosion control and cathodic protection are involved.
- B. Materials: Threaded insulating connections shall be of nylon, Teflon, polycarbonate, polyethylene, or other non-conductive materials, and shall have ratings and properties to suit the service and loading conditions.
- C. Couplings shall be Lochinvar V-line or equal.

#### 5.08 GROOVED OR SHOULDERED PIPE COUPLINGS

- A. Couplings used on ductile iron pipe shall conform to the requirements of ANSI/AWWA C606 - Grooved and Shouldered Joints. Couplings used on steel pipe shall conform to the requirements of ASTM F1476 - Standard Specification for Performance of Gasketed Mechanical Couplings for Use in

Piping Applications. Couplings used on hard copper tubing shall be manufactured to copper tube dimensions (flaring tube or fitting ends to accommodate alternate sized couplings is not permitted). All gaskets shall be compatible with the piping service and fluid utilized, in accordance with the coupling manufacturer's recommendations. The wall thickness of all grooved piping shall conform to the coupling manufacturer's recommendations to suit the highest expected pressure. All mechanical-type couplings on buried piping shall be bonded. The Contractor shall have the coupling manufacturer's service representative verify the correct choice and application of all couplings and gaskets, and the workmanship, to assure a correct installation. Couplings shall be coated with alkyl enamel. Nuts and bolts shall be Type 316 stainless steel. To assure uniform and compatible piping components, all grooved fittings, couplings, and valves shall be from the same manufacturer.

B. Manufacturers of couplings, or equal, shall be:

1. Steel Pipe: Victaulic Style 77, or Style 31 with Type "E" Vic-Ring Adapter
2. Ductile Iron Pipe: Victaulic Style 31
3. Copper Pipe: Victaulic Style 606

5.09 ARCHED BAND TYPE COUPLINGS (BOLTED SPLIT SLEEVE)

- A. Arched band type couplings shall be of the shoulder type design, provide pipe restraint for the full pipe pressure rating, be fabricated from carbon steel, and be provided with Type 316 stainless steel hardware and EPDM gaskets. The coupling shall be coated with 16 mils of NSF-61 approved fusion bonded epoxy coating suitable for interior and exterior pipe coating applications. Coating shall be Skotchkote 206N, or equal. The mounting pipe shall be plain end with external restraint rings shop welded to the piping ends for fixed type couplings. The couplings shall be Victaulic Bolted Split-Sleeve Style 233 (Formerly Depend-O-Lok FxF Type 2), as manufactured by Victaulic, or approved equal.

5.10 SLEEVE-TYPE COUPLINGS

- A. Construction: Sleeve-type couplings shall be provided where indicated, in accordance with ANSI/AWWA C219 - Standard for Bolted Sleeve-Type Couplings for Plain-End Pipe, and shall be of steel with Type 316 stainless steel bolts, without pipe stop, and shall be of sizes to fit the pipe and fittings indicated. The middle ring shall be not less than 1/4 inch in thickness and shall be either 5- or 7-inches long for sizes up to and including 30 inches and 10-inches long for sizes greater than 30 inches, for standard steel couplings, and 16-inches long for long-sleeve couplings. The followers shall be single-piece contoured mill sections welded and cold-expanded as required for the middle rings, and of sufficient strength to accommodate the number of bolts necessary to obtain adequate gasket pressures without excessive rolling. The shape of the follower shall be of such design as to



provide positive confinement of the gasket. Buried sleeve-type couplings shall be epoxy-coated at the factory.

- B. Pipe Preparation: The ends of the pipe where indicated, shall be prepared for flexible steel couplings. Plain ends for use with couplings shall be smooth and round for a distance of 12 inches from the ends of the pipe, with outside diameter not more than 1/64-inch smaller than the nominal outside diameter of the pipe. The middle ring shall be tested by cold-expanding a minimum of 1 percent beyond the yield point, to proof-test the weld to the strength of the parent metal. The weld of the middle ring shall be subjected to air test for porosity.

- C. Gaskets: Gaskets for sleeve-type couplings shall be rubber-compound material that will not deteriorate from age or exposure to air under normal storage or use conditions. Gaskets for wastewater and sewerage applications shall be Buna-N, Grade 60, or equivalent suitable elastomer. The rubber in the gasket shall meet the following specifications.

Property	Specification
Color	Jet black
Surface	Non blooming
Durometer Hardness	74+5
Tensile Strength	1000 psi minimum
Elongation	175 percent minimum

The gaskets shall be immune to attack by impurities normally found in water or wastewater. All gaskets shall meet the requirements of ASTM D 2000 - Classification System for Rubber Products in Automotive Applications, AA709Z, meeting Suffix B13 Grade 3, except as noted above. All gaskets shall be compatible with the piping service and fluid utilized.

- D. Insulating Couplings: Where insulating couplings are required, both ends of the coupling shall have a wedge-shaped gasket that assembles over a rubber sleeve of an insulating compound in order to obtain insulation of all coupling metal parts from the pipe.
- E. Restrained Joints: All sleeve-type couplings on pressure lines shall be harnessed or supplied with locking pins for restraint. Harnesses shall be in accordance with the appropriate reference standard, or as indicated.
- F. Manufacturers, or approved equal, shall be:
1. EBAA Mega-Coupling Series 3800
  2. Romac Style 400
  3. Dresser, Style 38;
  4. Smith-Blair, Style 411.

## **PART 6 - EXECUTION**

### **6.01 GENERAL**

- A. All pipes, fittings, and appurtenances shall be installed in accordance with the requirements of AWWA and the applicable sections herein.
- B. Lined Piping Systems: The lining manufacturer shall take full responsibility for the complete, final product and its application. All pipe ends and joints of lined pipes at screwed flanges shall be epoxy-coated to assure continuous protection.
- C. Where core drilling is required for pipes passing through existing concrete, core drilling locations shall be determined by radiograph of concrete construction to avoid damage to embedded raceways and rebar.
- D. Pipe for use with flexible couplings shall have plain ends as specified in the respective pipe sections.
- E. Prior to assembly of split couplings, the grooves as well as other parts shall be thoroughly cleaned. The ends of the pipes and outside of the gaskets shall be moderately coated with petroleum jelly, cup grease, soft soap or graphite paste, and the gasket shall be slipped over one pipe end. After the other pipe has been brought to the correct position, the gasket shall be centered properly over the pipe ends with the lips against the pipes. The housing sections then shall be placed. After the bolts have been inserted, the nuts shall be tightened until the housing sections are firmly in contact, metal-to-metal, without excessive bolt tension.
  - 1. Grooved joints shall be installed in accordance with the manufacturer's published installation instructions.
  - 2. Gaskets shall be molded and produced by the coupling manufacturer, and shall be suitable for the intended service.
  - 3. The coupling manufacturer's factor trained representative shall provide on-site training for the contractor's field personnel in the use of grooving tools and installation of grooved joint products. The representative shall periodically visit the project site to ensure best practices in grooved installation are being followed (a distributor's representative is not considered qualified to conduct the training or field visits).
- F. Prior to the installation of sleeve-type couplings, the pipe ends shall be cleaned thoroughly for a distance of 8 inches. Soapy water may be used as a gasket lubricant. A follower and gasket, in that order, shall be slipped over each pipe to a distance of about 6 inches from the end, and the middle ring shall be placed on the already laid pipe end until it is properly centered over the joint. The other pipe end shall be inserted into the middle ring and brought to proper position in relation to the pipe already laid.

The gaskets and followers shall then be pressed evenly and firmly into the middle ring flares. After the bolts have been inserted and all nuts have been made up finger-tight, diametrically opposite nuts shall be progressively and uniformly tightened all around the joint, preferably by use of a torque wrench of the appropriate size and torque for the bolts.

#### 6.02 MATERIAL DELIVERY, STORAGE, AND PROTECTION

- A. Delivery: All piping materials, fittings, valves, and accessories shall be delivered in a clean and undamaged condition. All defective or damaged materials shall be replaced with new materials.
- B. Onsite Storage Limitation: Onsite storage shall be limited to working areas unless exception is approved by the Owner.
- C. Care of Pipe: Care shall be taken to avoid cracking of the cement mortar coating and/or lining on steel pipe. Plastic sheet caps shall be used to close pipe ends and keep coating and linings moist.
- D. Stored pipe shall at all times be supported on sawdust bags, sand bags, or other suitable support. Bags shall be of sufficient size to prevent contact of the pipe coating with the ground or any other obstruction. Rolling the pipe on the ground will not be permitted.

#### 6.03 HANDLING OF PIPE AND FITTINGS

- A. Pipe shall be transported from the plant to the job site on padded bunks with nylon tie-down straps or padded banding to adequately protect the pipe and coating.
- B. Each section of pipe 20 inches in diameter and larger, including bends and special fittings, shall be protected from undue deformation during handling, transportation and installation by proper internal bracing. The bracing shall be placed near each end of the pipe and at suitable intervals between the end bracings, as required to prevent the pipe from exceeding 1.0 percent deformation measured on the pipe diameter. Such 1.0 percent deformation shall be a total combination of pipe deflection and the pipe manufacturer's tolerances, in accordance with AWWA C200, AWWA C205, AWWA C151, and AWWA C110, as applicable.
- C. Bracing shall have a minimum of six points of bearing on the pipe and shall be fitted to the curvature of the interior pipe surface and shall be wedged against the mortar lining in a manner that will secure the bracing during handling, installation and backfilling and shall also prevent damage of the interior lining. All internal bracing shall remain in place until the pipe has been installed and backfilled, or until its removal is otherwise authorized by the Owner.
- D. Pipe shall be handled, stored and shipped in a manner that will prevent damage to the coating and lining. Pipe shall be handled with wide belt



slings or rubber padded forklifts. Chains, cables or other equipment likely to cause damage to the pipe or coating shall not be used.

- E. No metal tools or heavy objects shall be permitted to come into contact unnecessarily with the finished coatings and linings. Workmen will be permitted to walk upon the coating only when necessary, in which case they shall wear shoes with rubber or composition soles and heels. All pipe and fittings, specials and couplings shall be examined before laying and no piece shall be installed that is found to be defective. Any damage to the coatings and linings shall be repaired as acceptable to the Owner.
- F. If any defective pipe is discovered after it has been laid, it shall be removed and replaced with a sound pipe in a satisfactory manner by the Contractor, at his own expense.
- G. Fittings shall be lowered into trench by means of rope, cable, chain, or other acceptable means without damage to the fittings. Cable, rope, or other devices used for lowering fitting into trench shall be attached around exterior of fitting for handling. Under no circumstances shall the cable, rope or other device be attached through the fittings interior for handling. Fittings shall be carefully connected to pipe or other facility, and joints shall be checked to ensure a sound and proper joint.

#### 6.04 PLACEMENT OF PIPE IN TRENCH

- A. General: Dewatering, excavation, shoring, sheeting, bracing, backfilling material placement, material compaction, compaction testing, and pipe laying requirements and limitations shall be in accordance with Special Provisions and Section 02310, Trenching, Backfilling and Compacting.
- B. Sanitation of Pipe Interior: During laying operations, tools, clothing, or other materials shall not be placed in or allowed in the pipe.
- C. Prevention of Entry into Pipe: When pipe laying is not in progress, including lunch-hour, the ends of the pipe shall be closed using vermin-proof plugs constructed in a manner to also prevent entry by children.
- D. Laying Pipe on Grades over 10 Percent: Pipes shall be laid in an upgradient direction whenever the grade exceeds 10 percent.
- E. Depressions at Joints and Pipe Sling Points: Depressions shall be dug into pipe base material to accommodate the pipe bell and external joint filler form, and to permit removal of the pipe handling slings.
- F. Placement of Pipe on Pipe Base: Pipe shall be lowered onto the bedding and installed to line and grade its full length on firm bearing except at the bell and at sling depressions. Unless specified otherwise, the tolerance on grade shall be 1/4 inch; the tolerance on line shall be 1 inch. Grade shall be measured along the pipe invert.

- G. Pipe Installation: Pipe shall be installed without springing, forcing, or stressing the pipe or any adjacent connecting valves or equipment. Precaution shall be taken to prevent pipe from being displaced by water entering trench. Damaged or displaced pipe shall be replaced or returned to specified condition and grade.
- H. Pipe Deflection: The deflection at any flexible joint shall not exceed that prescribed by the manufacturer of the pipe. The manufacturer's printed installation guide outlining the radius of curvature that can be negotiated with pipe sections of various lengths shall be followed.
- I. Equipment for Installation of Pipe: Proper implements, tools, and facilities as recommended by the pipe manufacturer's standard printed installation instructions shall be provided and used by the Contractor for safe and efficient execution of the work. All pipe, fittings, valves, and accessories shall be carefully lowered into the trench using suitable equipment in such a manner as to prevent damage to pipe and fittings. Under no circumstances shall pipe or accessories be dropped or dumped into the trench.
- J. Cutting and Machining Pipe: Cutting and machining of the pipe shall be accomplished in accordance with the pipe manufacturer's standard procedures for this operation. Pipe shall not be cut with a cold chisel, standard iron pipe cutter, or any other method that may fracture the pipe or produce ragged, uneven edges.

#### 6.05 PIPELINE CLOSURE ASSEMBLIES

- A. General: Pipeline closure assemblies shall be employed to unite sections of pipeline laid from opposite directions; to adjust the field length of the pipeline to meet structures, other pipelines, and points established by design stations; and to close areas left open to accommodate temporary test bulkheads for hydrostatic testing. Either follower ring design or butt strap design shall be used. Follower ring closures shall be installed as recommended by the pipe manufacturer.
- B. Butt Straps: For steel pipe, shaped steel butt straps shall be centered over the ends of the pipe sections they are to join. Butt straps shall be welded to the outside of the pipes with complete circumferential fillet welds equal in size to the thinnest part being joined. All butt strap welds shall be double pass welds for the entire circumference.
- C. General Requirements for Cement Mortar Lining for Closure Assemblies: Closure assemblies shall be cement-mortar lined to a mortar thickness at least equal to the adjoining standard pipe sections. The steel or ductile iron shall be cleaned with wire brushes and a cement and water wash coat applied prior to applying the cement mortar. Where more than a 4-inch joint strip of mortar is required, welded wire mesh reinforcement having a 2-inch by 4-inch pattern of No. 13 gauge shall be placed over the exposed surface. The mesh shall be installed so that the wires on the 2-inch spacing run circumferentially around the pipe. The wires on the 4-inch

spacing shall be crimped to support the mesh 3/8 inch from the metal surface. The interior mortar shall have a steel-troweled finish to match adjoining mortar lined pipe sections.

- D. Mortar Coating Exterior Surfaces of Closure Assemblies: The exterior of closure assemblies shall be reinforced with wire mesh as described in Paragraph C above. The surface shall be coated with mortar, or a poured concrete encasement to cover all steel to a minimum thickness of 1-1/2 inches. Exterior mortar shall be protected to retard drying while curing. Concrete shall be poured and vibrated on one side of the closure assembly only, until mortar is visible on the opposite side, after which the coating can be completed over the top of the assembly.

#### 6.06 FLANGED CONNECTIONS

- A. Bolthole Alignment: Pipe shall be set with flange boltholes straddling the pipe horizontal and vertical centerlines.
- B. Nuts and Bolts: Nuts and bolts shall be lubricated graphite prior to installation.
- C. Flange Wrapping: Flanges that connect with buried valves or other equipment shall be wrapped with sheet polyethylene film as specified for the valves and equipment. The wrap shall be extended over the flanges and bolts and secured around the adjacent pipe circumference with tape.
- D. Coating: Flanges and stainless steel bolts shall be completely coated as specified in Section 09900, Painting and Coating.

#### 6.07 BLOW-OFF ASSEMBLIES

- A. General: In-line type or end-of-line type blow-off assemblies shall be installed in accordance with the Drawings at the locations noted.
- B. Location: The assembly shall be installed in a level section of pipe. The tap for blow-off in the line shall be no closer than 12 inches to a valve, coupling, joint, or fitting unless it is at the end of the main.

#### 6.08 INSTALLING MECHANICAL CLAMP-TYPE COUPLINGS

- A. Install grooved or shouldered end pipe and fittings in accordance with the coupling or adapter manufacturer's recommendations and the following:
- B. Clean loose scale, rust, oil, grease, and dirt from the pipe or fitting groove or shoulder before installing coupling or adapter. Apply the coupling manufacturer's gasket lubricant to the gasket exterior including lips, pipe ends, and housing interiors.
- C. Fasten coupling alternately and evenly until coupling segments are seated. Use torques as recommended by the coupling manufacturer.

## 6.09 WARNING TAPE

- A. Warning tape shall be 6-inch wide detectable tape, with a minimum 5.0 mil overall thickness. Tape shall be manufactured using a 0.8 mil clear virgin polypropylene film, reverse printed and laminated to a 0.35 mil solid aluminum foil core, and then laminated to a 3.75 mil clear virgin polyethylene film. Tape shall meet the APWA Uniform Color Code for identification of buried utilities. Tape legends shall be standard stock (non-custom) where possible. Warning tape shall be installed at the top of the pipe zone over the entire pipe length of all buried pipes.
  - 1. Tape for potable water pipelines shall be blue with black lettering, with the following legend: "CAUTION WATER LINE BURIED BELOW."
  - 2. Tape for reclaimed water pipelines shall be purple with black lettering, with the following legend: "CAUTION RECLAIMED WATER LINE BURIED BELOW."
  - 3. Tape for sewer pipelines shall be green with black lettering, with the following legend: "CAUTION SEWER LINE BURIED BELOW."

## 6.10 REQUIRED CATHODIC PROTECTION TESTING AND RECORD KEEPING

- A. The Contractor shall furnish all necessary equipment, material and qualified personnel required to perform all tests described herein.
  - 1. Continuity Tests: The Contractor shall notify the Owner's Representative when continuity bonding has been completed and all test boxes have been completed. A registered corrosion engineer retained by the Contractor shall test and measure the electrical continuity of metallic pipelines. The pipeline shall be considered electrically continuous when the measured longitudinal resistance of the pipeline between each pair of adjacent test stations is no greater than 20 percent higher than the theoretical resistance of that section of pipeline.

If tests indicate that adequate electrical continuity has not been achieved the Contractor, at its own expense, shall excavate to investigate and locate improperly bonded joints and shall make repairs until electrical continuity is achieved to the satisfaction of the Owner.
  - 2. Test Stations: The Contractor shall notify the Owner's representative when insulator test box wires are ready for testing. The wires shall remain disconnected to facilitate testing. A registered corrosion engineer retained by the Contractor shall conduct the tests to certify that none of the wires were damaged or broken during the installation. If tests indicate damage, the entire wire shall be replaced and retested at the Contractor's expense.

Records shall be made of all test stations and shall be submitted to the Owner.

3. Insulation Joints: The Contractor shall test each insulated joint with the insulator tester in accordance with the manufacturer's written instructions. All damaged or defective insulation parts shall be replaced and retested.

Records shall be kept of all insulated joint tests and shall be submitted to the Owner.

4. Acceptance: The Contractor shall submit a certified report by the corrosion engineer stating that the facilities are performing satisfactorily. All tests made must be reviewed and approved by the Owner before the work is accepted. The Owner reserves the right to spot check any or all tests performed by the Contractor. All construction defects must be repaired and retested before final acceptance is made. All unacceptable tests must be re-performed by the Contractor at no additional cost to the Owner. Contractor shall connect all lead wires after testing is completed.

#### 6.11 CLEANUP

- A. After completion of the work, all remaining pipe cuttings, joining and wrapping materials, and other scattered debris shall be removed from the site. The entire piping system shall be handed over in a clean and functional condition.

### END OF SECTION

## SECTION 15005: LEAKAGE AND PRESSURE TESTING

### PART 7 - GENERAL

#### 7.01 DESCRIPTION

- A. Section Includes: Testing for any signs of leakage in all pipelines and structures required to be watertight.
  1. Test gravity sewers and drain lines by low pressure air testing.
  2. Test all other pipelines with hydrostatic testing under the specified pressures.
- B. Operation of Existing Facilities: Conduct all tests in a manner to minimize as much as possible any interference with the day-to-day operations of existing facilities or other Contractors working on the site.

#### 7.02 RELATED WORK SPECIFIED ELSEWHERE

- A. Section 15010, Disinfection

#### 7.03 SUBMITTALS

- A. Shop drawings shall be submitted in accordance with Section 01300.



- B. Submit test bulkhead locations, design calculations, pipe attachment details, and methods to prevent excessive pipe wall stresses.
- C. Testing Report: Prior to placing the system into service submit for review and approval a detailed bound report summarizing the leakage test data, describing the test procedure and showing the calculations on which the leakage test data is based.

#### 7.04 JOB CONDITIONS

- A. Notify Owner 72 hours in advance of performing hydrostatic tests.
- B. Furnish all labor, equipment, air, water and materials, including meters, gauges, smoke producers, blower, pumps, compressors, fuel, water, backflow preventers (reduced pressure principal type), bulkheads and accessory equipment.
- C. Leakage and pressure testing shall be successfully completed prior to connecting new facilities to existing facilities.
- D. All testing shall be performed by the Contractor as directed and witnessed by the Owner.
- E. The Contractor shall provide gauges and meters which have been calibrated and certified within the previous 12 months.

### **PART 8 - PRODUCTS**

#### 8.01 WATER

All water used in testing of potable water pipes shall be potable water.

#### 8.02 TEST BULKHEADS

- A. Test bulkheads shall be designed and tested in accordance with Section VIII of the ASME Boiler and Pressure Vessel Code. Materials shall comply with Part UCS of said code. Bulkhead design pressure shall be at least 2.0 times the specified test pressure for the section of pipe containing the bulkhead. Stress shall be limited to 70% of yield strength of the bulkhead material at the bulkhead design pressure. Air-release and water drainage connections shall be included.

#### 8.03 MANUAL AIR-RELEASE VALVES

- A. Temporary manual air-release valves shall be provided as necessary for pipeline test. The pipe outlet shall be constructed in the same manner as for a permanent air valve and after use, sealed with a blind flange, pipe cap, or plug and coated equal to the adjacent pipe.

## PART 9 - EXECUTION

### 9.01 CLEANING

- A. All mains shall be cleaned or flushed to remove all sand and other foreign matter.

Pipes 24 inches and smaller shall be flushed at a minimum water velocity of 3 fps. Flushing shall be terminated at the direction of the Engineer. Dispose of the flushing water without causing a nuisance or property damage, in accordance with applicable regulations and permits.

Pipes larger than 24 inches shall be swept or blown clean.

- B. Temporary flush out connections shall be installed on all dead end water mains and at other locations needed for proper cleaning and testing.

### 9.02 HYDROSTATIC TESTING

- A. Piping and appurtenances to be tested shall be within sections between valves unless alternate methods have received prior approval from the Owner. The test shall be conducted with valves in the test section open. Ends of each test section, open ends of pipes, valves, and fittings shall be suitably closed.
- B. The pipe to be tested must be sufficiently backfilled to prevent movement while under the test pressure. Testing shall not proceed until concrete thrust blocks are in place and cured, or other permanent restraining devices are installed.
- C. While the piping is being filled with water, care shall be exercised to permit the escape of air from extremities of the test section, with additional release cocks provided if required. The flow velocity during filling shall not exceed 2-fps.
- D. Hydrostatic testing shall be performed with a sustained pressure for a minimum of **two hours at a pressure equal to 125 percent of the pipe working pressure** measured at the lowest elevation of the pipe section being tested, unless otherwise approved by Owner.
- E. The testing procedure shall include the continued application of the specified pressure to the test system, for the two-hour period, by way of a pump taking supply from a container suitable for measuring water loss. The amount of loss shall be determined by measuring the volume displaced from said container.
- F. The allowable rate of leakage shall be less than the number of gallons per hour determined by the following formula:

$$L = \frac{CND(P)^{1/2}}{7,400}$$

L = Allowable leakage (gal/hr);

N = Number of joints tested in line (pipe joints and fittings);

D = Nominal diameter of the pipe (in.);

P = Average test pressure maintained during the leakage test (psi)

C = 1 for PVC, DIP, or ACP pipe with rubber gasket joints.

C = 2 for reinforced concrete pressure pipe with rubber joints, cylinder type.

C = 6 for reinforced concrete pressure pipe with rubber joints, non-cylinder type.

C = 0 (no leakage allowed) for welded steel pipe with welded joints, or PVC with solvent welded joints.

- G. Should the test fail, source of leakage shall be found, necessary repairs shall be accomplished, and tests shall be repeated by the Contractor, at Contractor's expense, until results are within the established limits. The Contractor shall furnish the necessary labor, water, pumps, gauges, and all other items required to conduct the testing and perform necessary repairs.

#### 9.03 LOW PRESSURE AIR TEST

After completing backfill of a section of gravity pipe, conduct a Line Acceptance Test using low pressure air. The test shall be performed using the below stated equipment, under the supervision of the Owner, with 48 hours advanced notice provided.

A. Equipment:

1. Pneumatic plugs shall have a sealing length equal to or greater than the diameter of the pipe to be inspected.
2. Pneumatic plugs shall resist internal bracing or blocking.
3. All air used shall pass through a single control panel.
4. Three individual hoses shall be used for the following connections:
  - a. From control panel to pneumatic plugs for inflation.
  - b. From control panel to sealed line for introducing the low pressure air.
  - c. From sealed line to control panel for continually monitoring the air pressure rise in the sealed line.

B. Procedures:

1. All pneumatic plugs shall be seal tested before being used in the actual test installation. One length of pipe shall be laid on the ground and sealed at both ends with the pneumatic plugs to be checked. Air shall be introduced into the plugs to 25-psi. The sealed pipe shall be pressurized

to 5-psi. The plugs shall hold against this pressure without bracing and without movement of the plugs out of the pipe.

2. After a manhole to manhole reach of pipe has been backfilled and cleaned and the pneumatic plugs are checked by the above procedure, the plugs shall be placed in the line at each manhole and inflated to 25-psi. Low pressure air shall be introduced into this sealed line until the internal air pressure reaches 4-psi greater than the average back pressure of any ground water that may be over the pipe. At least two (2) minutes shall be allowed for the air pressure to stabilize. After the stabilization period (3.5- psi minimum pressure in the pipe), the air hose from the control panel to the air supply shall be disconnected.
3. The portion of line being tested shall be termed "Acceptable", if the time required for the pressure to decrease from 3.5-psi to 2.5-psi (greater than the average back pressure of any ground water that may be over the pipe) is greater than the times shown for the given diameters in the following table:

1 Pipe Diameter (in.)	2 Minimum Time (min)	3 Time for Tested Length (sec)
4	3.8	0.38 L
6	5.7	0.85 L
8	7.5	1.5 L
10	9.6	2.4 L
12	11.3	3.4 L
15	14.1	5.3 L
18	17.3	7.7 L
21	20.1	10.5 L
24	22.8	13.7 L
27	25.4	17.3 L
30	28.5	21.4 L
33	31.1	25.9 L
36	33.9	30.8 L
42	39.8	41.9 L
48	45.6	54.7 L
Time for the 1-psi pressure drop to occur must be greater than both columns 2 and 3. L = Length of test section.		

4. In areas where ground water is known to exist, the Contractor shall install capped pipe adjacent to the top of one of the gravity lines. This shall be done at the time the gravity line is installed. Immediately prior to the performance of the Line Acceptance Test, the ground water shall be determined by removing the pipe cap, and a measurement of the height in feet of water over the invert of the pipe shall be taken. The height in feet shall be divided by 2.3 to establish the pounds of pressure that will be added to all readings. (For example, if the height of water is 11-1/2 feet, then the added pressure will be 5 psi. This increases the 3.5 psi to 8.5 psi, and the 2.5 psi to 7.5 psi. The allowable drop of one pound and the timing remain the same).

5. Should the test fail, source of leakage shall be found, necessary repairs shall be accomplished, and tests shall be repeated by the Contractor, until results are within the established limits. The Contractor shall furnish the necessary labor, equipment, and all other items required to conduct the testing and perform necessary repairs.

#### 9.04 LEAKAGE TESTS FOR STRUCTURES

- A. Structure Leakage Testing: Perform leakage tests of wet wells, tanks, vaults, manholes and similar purpose structures before backfilling by filling the structure with water to within 6-inches of the top of the overflow level and observing the water surface level for the following 24 hours.
  1. Make an inspection for leakage of the exterior surface of the structure, especially in areas around construction joints.
  2. Leakage will be accepted as within the allowable limits for structures from which there are no visible leaks.
  3. If visible leaks appear, repair the structure by removing and replacing the leaking portions of the structure, waterproofing the inside, or by other methods approved by the Owner.
  4. Water for testing is the responsibility of the Contractor per the General Requirements.

#### END OF SECTION

### SECTION 15040: PVC PRESSURE PIPE (12-INCH DIAMETER AND SMALLER)

#### PART 10 - GENERAL

##### 10.01 DESCRIPTION

- A. This section includes materials, installation, and testing for pressure pipelines to be used for potable water, reclaimed water, sewer force mains, and chemical containment pipe.

##### 10.02 RELATED WORK SPECIFIED ELSEWHERE

- A. Section 02310, Trenching, Backfilling, and Compacting
- B. Section 15000, General Piping Requirements and Appurtenances
- C. Section 15005, Leakage and Pressure Testing
- D. Section 15010, Disinfection

##### 10.03 REFERENCES

- |           |  |
|-----------|--|
| AWWA C111 | Rubber Gasket Joints for Ductile-Iron and Gray-Iron Pressure Pipe and Fittings |
|-----------|--|



AWWA C115	Flanged Ductile- Iron and Gray- Iron Pipe with Threaded Flanges
AWWA C153	Ductile Iron Compact Fittings, 4 inch through 12 inch, for Water and Other Liquids
AWWA C509	Resilient- Wedge Gate Valves, 4 inch through 12 inch, for Water
AWWA C605	Underground Installation of Polyvinyl Chloride (PVC) Pressure Pipe and Fittings for Water
AWWA C900	Polyvinyl Chloride (PVC) Pressure Pipe, 4 inch through 12 inch, for Water
ASTM D1785	Standard Specification for Poly Vinyl Chloride (PVC) Plastic Pipe, Schedules 40, 80, and 120
ASTM D2466	Standard Specification for Socket- Type Poly Vinyl Chloride (PVC) Plastic Pipe Fittings, Schedule 40
ASTM D2467	Standard Specification for Socket- Type Poly Vinyl Chloride (PVC) Plastic Pipe Fittings, Schedule 80
ASTM D2855	Standard Practice for Making Solvent- Cemented Joints with Poly Vinyl Chloride (PVC) Pipe and Fittings
ASTM F656	Standard Specification for Primers for Use in Solvent Cement Joints of Poly(Vinyl Chloride) (PVC) Plastic Pipe and Fittings
ASTM D2564	Standard Specification for Solvent Cements for Poly(Vinyl Chloride) (PVC) Plastic Piping Systems

#### 10.04 SUBMITTALS

- A. Shop drawing submittals for piping under this section shall include all data and information required for the complete piping systems. All dimensions shall be based on the actual equipment to be furnished. Types and locations of pipe hangers and/or supports shall be shown on the piping layout for each piping submittal.
- B. The Contractor shall submit shop drawings and catalog cuts for the pipe, fittings, valves, primer, solvent cement, and any other equipment supplied under this section, in accordance with the Specifications.
- C. Submit the pipe manufacturer's recommendations for handling, storing, and installing pipe and fittings.

### **PART 11 - MATERIALS**

#### 11.01 PVC PRESSURE PIPE 4-INCH THROUGH 12-INCH DIAMETER

- A. Pipe shall be manufactured in accordance with AWWA C900, cast iron outside diameter, Class 235 (DR 18), unless otherwise indicated on the Construction Drawings. The pipe shall have integral bell joints, complete with a gasket installed by the manufacturer. The Contractor shall furnish certification that all PVC pipe supplied for this project has been manufactured in compliance with all requirements of AWWA C900.

- B. Potable water pipe shall either be colored blue or white, reclaimed water pipe shall be purple, and sewage force main pipe shall be green.
- C. Material used to produce the pipe shall be made from Class 12454-A or B virgin compounds as defined in ASTM D 1784, with an established hydrostatic design basis rating of 4,000 psi for water at 73.4°F (23°C).
- D. Laying lengths shall be 20 feet with the manufacturer's option to supply up to 15 percent random (minimum length 10 feet).
- E. Each pipe length shall be marked showing the date of manufacture, nominal pipe size and outside diameter base, the AWWA pressure class and the AWWA specification designation (AWWA C900).
- F. Pipe shall be manufactured by PW Pipe, JM Eagle, or approved equal.

#### 11.02 FITTINGS 4-INCH THROUGH 12-INCH DIAMETER

- A. Buried fittings shall have push-on joints, be cast from gray or ductile-iron, and meet the requirements of ANSI/AWWA C110/A.21.10, for use with C900 PVC pipe, with a minimum pressure rating of 250 psi. Ductile iron compact body fittings may be used, and shall be manufactured in accordance with ANSI/AWWA C153/A21.53. All fittings shall be provided with restraining ears.
- B. The interior and exterior of all fittings shall be coated with fusion-bonded heat cured thermo setting epoxy, meeting the application and performance requirements of AWWA C550.
- C. Fittings shall be carried and placed into trench using fabric straps. Chains and cables shall not be used, and fittings shall not be dropped into trenches.
- D. Buried fittings shall have flanged outlets adjacent to the valves and either push-on joint bells or flange by push-on adapters on pipe runs where no valves are required.
- E. Above ground fittings shall have flanged joints.
- F. Fittings and all accessories shall be of domestic manufacture by U.S. Pipe, Pacific States, Union Foundry, Tyler, or approved equal.

#### 11.03 POLYETHYLENE ENCASEMENT

- A. Wrap all buried ductile iron pipes, valves and fittings with 8-mil polyethylene film per ANSI A21.5/AWWA C-105. Use only tube type for pipe. Complete the wrap prior to placing concrete anchors, collars, supports, or thrust blocks. Repair polyethylene if damaged during installation.

#### 11.04 PVC PRESSURE PIPE 3-INCH AND SMALLER DIAMETER.

- A. PVC pressure pipe 3 inch and smaller diameter pipe shall be solvent welded Schedule 80 and conform to the requirements of ASTM D 1785, Type 1, Grade 1. Fittings shall be solvent welded Schedule 80 in accordance with ASTM D 2467. Threaded joints can be used where needed. At threaded joints between PVC and metal pipes, the metal shall contain a threaded socket end and the PVC threaded spigot end. A metal spigot shall not be screwed into a PVC socket.

#### 11.05 COUPLING AND SLEEVES.

- A. Couplings and sleeves for 4-inch through 12-inch PVC pipe shall be fusion epoxy coated ductile iron, or Type 316 stainless steel, with a minimum working pressure equal to the connecting pipe. Couplings, sleeves, and accessories shall be of domestic manufacture.
- B. Connections of 3 inch and smaller PVC pipe to pipe or fittings of other material shall be made with PVC pipe adaptors or flexible couplings. Adaptors shall have ends specifically manufactured to receive the adjoining pipes.
- C. Where flexible connections in the piping are specified or indicated on the Plans, they shall be obtained by the use of sleeve-type couplings. All sleeve-type couplings and accessories shall be of a pressure rating at least equal to that of the pipeline in which they are to be installed. Sleeve-type couplings shall be made by Rockwell International, Pittsburgh, Pennsylvania; Dresser Mfg. Div., Bradford, Pennsylvania; or be approved equal products.
- D. Couplings for buried PVC pipe shall be Rockwell 411, Dresser Style 38, or approved equal products.

#### 11.06 FLANGES AND FLANGE ADAPTERS

- A. Unless otherwise noted, flanges on all DIP pipe shall conform to AWWA C115.
- B. Flange adapters for PVC pipe 4 inch through 12 inch in diameter shall be constructed from fusion epoxy coated ductile iron, and designed specifically for the outside diameter controlled PVC pipe being attached. Restraint for flange adapter shall consist of individually actuated gripping wedges, actuated by torque limiting screws. The flange adapters shall be Series 2100 MEGAFLANGE Restrained Flange Adapter by EBAA Iron, or approved equal.
- C. Flange connections for PVC pipe 3 inch and smaller shall be made using a tapped and threaded ductile iron blind flange. The PVC pipe to be threaded into the blind flange shall have a minimum wall thickness equal to Schedule 80 PVC.

## 11.07 GASKETS

- A. Gasket for flanged joints shall be 1/8-inch thick, cloth-inserted rubber. Gaskets shall be suitable for a water pressure of 350 psi at a temperature of 108°F.
- B. Full face type gaskets with pre-punched holes shall be used where both flanges are flat faced. Ring gaskets extending to inner edge of bolts may be used where raised face flange is present.
- C. Gaskets for push-on, mechanical, and restrained joints shall be synthetic or natural rubber in accordance with AWWA C111.
- D. Gaskets used for potable water applications shall be EPDM. Gaskets used for non-potable application shall be NBR.

## PART 12 - EXECUTION

### 12.01 INSTALLATION OF GASKETED PIPE

- A. Pipe shall be installed per AWWA C605 using a Type 4 or 5 trench unless otherwise specified.
- B. The new main shall not be connected to any existing main or service until after the new main has successfully passed testing requirements.
- C. Pipe and fittings shall be carried and placed into trench using wide fabric straps. Chains and cables shall not be used, and items shall not be dropped into trenches. All items shall be inspected by the Owner prior to placing into trench and backfilling.
- D. Inspect bell and remove any foreign.
- E. Clean off the spigot end of the pipe and apply a lubricant (approved by the manufacturer) to the spigot end covering the beveled nose and sealing surface. Place beveled end in companion bell and provide straight alignment. Push pipe straight home with a block and bar until the stop mark on the spigot is even with the end of the bell. Assembling the joint by swinging or stabbing, or by using a backhoe bucket, is not allowed. After assembly to the stop mark, the pipe may be bent up to 70 percent of the limit defined by the manufacturer. Construction of curved reaches of PVC pipe shall be accomplished by bending the pipe, not by deflecting joints or beveling ends. At fittings, the joint may be deflected up to 70 percent of the limit defined by the manufacturer. If pipe joint is to be deflected more than 2 degrees at ductile iron fittings, the spigot bevel shall be removed, and edges shall be de-burred.

### 12.02 THRUST RESTRAINT

- A. All thrust restraint locations may not be shown on the drawings, but restraints shall be provided for all pressure pipe fittings, valves, changes in

pipe size or direction, and at all other points where there is a possibility of joint separation under pressure. Provide anchors and supports where necessary for fastening work into place. Make proper provisions for expansion or contraction of pipelines.

- B. Pipe joints and fittings shall be restrained using a mechanical restraint system equivalent to the following:
  - 1. Push-on fittings to be restrained with mechanical restraints shall be provided with restraining ears, and shall be restrained using a split serrated style restraint; Series 15PF00 by EBAA Iron, Series 1300 by Uni-Flange, or approved equal.
  - 2. Pipe shall be restrained on both sides of the fitting to a length recommended by EBAA Iron's "PVC Pipe Thrust Restraint Design Handbook," using split serrated style restraints, Series 1600 by EBAA Iron, Series 1390 by Uni-Flange, or approved equal.
- C. Thrust blocks shall not be used unless special approval is obtained by the Owner for specific locations, or unless otherwise shown in the Drawings. Where thrust blocks are used, the following shall apply:
  - 1. Thrust blocks shall be constructed of concrete having a cement content of not less than six sacks of cement per cubic yard of concrete, and shall be mixed and delivered to the jobsite by an approved ready-mix concrete supplier.
  - 2. Thrust blocks shall be placed between solid ground and the pipe or fittings to be anchored as detailed. Thrust blocks shall be in accordance with AWWA C600 and pipe manufacturer's recommendations.
  - 3. Backfilling operations at thrust blocks shall not begin until concrete has set for a minimum of 12 hours. After thrust blocks have been backfilled, water may be carefully introduced into the new pipe and appurtenances for disinfection. Care shall be used not to subject the new pipe to any pressure loading at this time. Concrete shall not be disturbed or pressure loaded for at least five days after placing thrust blocks unless otherwise permitted by the Engineer.

#### 12.03 TRACING WIRE

- A. A continuous insulated AWG 10 tracing wire shall be installed upon on top of the pipe, attached at 10-foot intervals. The wire shall run along the entire pipe, and be stubbed out at valves, blowoffs, and air release valves.

#### 12.04 WARNING TAPE

- A. 3-inch wide, 5-mils thick detectable warning tape shall be installed over the entire pipe length of all mains. The tape shall be installed at the top of the pipe zone, and shall be color coded.



1. Tape for potable water pipelines shall be blue with white lettering, with the wording: "CAUTION: WATERLINE BURIED BELOW."
2. Tape for sewer force mains shall be green with black lettering, with the wording: "CAUTION: SEWER FORCE MAIN BURIED BELOW."

### **END OF SECTION**

## **SECTION 15050: COPPER TUBING**

### **PART 1 - GENERAL**

#### **1.01 DESCRIPTION**

- A. This section includes materials, installation, and testing of copper tubing and fittings for water service.

#### **1.02 RELATED WORK SPECIFIED ELSEWHERE**

- A. Section 02310, Trenching, Backfilling, and Compacting
- B. Section 15000, General Piping Requirements and Appurtenances
- C. Section 15005, Leakage and Pressure Testing
- D. Section 15010, Disinfection

#### **1.03 SUBMITTALS**

- A. Submit shop drawings in accordance with Section 01300, Submittal Procedures.
- B. Submit materials list showing material of tubing and fittings with ASTM reference and grade, and ANSI/NSF-61 and ANSI/NSF-372 certification.
- C. Submit the manufacturer's catalog data and descriptive literature for wye strainers, unions, and coatings.
- D. Submit the manufacturer's catalog data and descriptive literature for solder.

### **PART 2 - MATERIALS**

#### **2.01 GENERAL**

- A. All products in contact with potable water shall be certified to NSF-61 and, where applicable, NSF-372 standards, per California Health and Safety Code Section 116875 (California AB-1953), unless otherwise exempt.

## 2.02 TUBING

- A. Copper pipe and tubing shall meet the requirements of ASTM B 88, and shall be cylindrical, of uniform wall thickness, and free from any cracks, seams, or other defects. Piping located above floors or suspended from ceilings shall be Type "L" Hard. Piping buried or located beneath floor slab shall be Type "K" Soft. Bury at a minimum depth of 30-inches.

## 2.03 SOLDER JOINT FITTINGS

- A. Wrought copper solder joint seamless fittings shall be designed for use with copper water tube and conform to ASTM B75 and ANSI B16.22.
- B. Cast copper solder joint pressure fitting shall be designed for use with copper water tube and conform to ANSI B16.18.

## 2.04 SOLDER

- A. Solder shall be 95-5 (95 percent tin, 5 percent antimony) conforming to ASTM B32, Grade Sb5. Solder shall be lead free and NSF-61 certified.

## 2.05 SOLDER FLUX

- A. Soldering fluxes shall be in accordance with the requirements of ASTM B813. Solder flux shall be lead free and NSF/ANSI 61 certified.

## 2.06 JOINT FITTINGS

- A. Copper tubing shall be joined using Mueller 110 Compression Connection Series fittings, or approved equal.

## 2.07 COMPRESSION FITTINGS

- A. Compressing fittings shall be Mueller 110 Compression Connection Series fittings, or approved equal.

## 2.08 THREADED FITTINGS

- A. Cast bronze threaded fittings shall be designed for use with copper or brass pipe and nipples and conform to ANSI B16.15, Classes 125 and 250. Use Class 125 fittings for working pressures of 200 psi and less. Use Class 250 fittings for working pressures of greater than 200 psi but less than 400 psi.

## 2.09 PIPE AND NIPPLES

- A. Short threaded nipples and pipe shall be brass conforming to ASTM B 43 or copper conforming to ASTM B 42, regular wall thickness, except that nipples and pipe of sizes 1 inch and smaller shall be extra strong. Threads shall conform to ANSI B1.20.1.

## 2.10 WYE STRAINERS

- A. Wye strainers shall be bronze, ASTM B 61 or B 62, with 60-mesh Type 304 or 316 stainless-steel screens. Working pressure shall be at least 150 psi. Provide bronze plug on the tapped blowoff outlet. Provide one spare screen for each strainer. Strainers shall be Walworth Figure 3699-1/2, Muessco No. 351, or equal.

## 2.11 UNIONS AND INSULATING UNIONS

- A. Unions and insulating unions shall be Mueller 110 Compression Connection Series fittings, or approved equal.

# **PART 3 - EXECUTION**

## 3.01 GENERAL

- A. Piping and tubing penetrations through walls, slabs, and floors shall be as detailed in the Drawings and as specified herein.
- B. Pipe and tube hangers and supports shall be felt lined.
- C. Do not allow piping and tubing to come in contact with wood treated with ammonium sulfate fire retardant. Provide hangers or supports.

## 3.02 JOINT AND FITTING SELECTION

- A. Use solder joints and fittings in buried and exposed tubing service, except that fittings and joints 3/8 inch and smaller in exposed service may be of the nut and ferrule type with flared end connections or compression joint connections.

## 3.03 PRESSURE TESTING

- A. Test copper piping in conformance with the requirements of the Uniform Plumbing Code.

## 3.04 INSTALLATION

- A. Do not drag tubing out of tubing rack. Do not drag tubing across cement, asphalt, gravel, or any other surface that could scratch it.
- B. Tube cutters shall always be sharp. Do not take too deep a cut with each turn of the cutter or back and forth motion of a saw blade.
- C. Cut tubing square and remove burrs. Clean both the inside and outside of fitting and pipe ends with emery cloth before soldering. Prevent annealing of fittings and tubing when making connections. Do not miter joints for elbows or notch straight runs of pipe for tees.
- D. Bends in soft copper tubing shall be long sweep. Shape bends with shaping tools. Form bends without flattening, buckling, or thinning the tubing wall at any point.
- E. Install tube and pipe without springing, forcing, or stressing the pipe or any adjacent connecting valves or equipment.

- F. Clean threaded joints by wire brushing or swabbing. Apply Teflon joint compound or Teflon tape to male pipe threads before installing threaded fitting. Joints shall be watertight.

### 3.05 CONNECTING COPPER TUBING TO STEEL AND DUCTILE-IRON PIPE

- A. Provide an insulating union at the point of transition from copper tubing or piping to ferrous piping.

### 3.06 INSTALLING UNIONS

- A. Provide unions on exposed piping and tubing 3 inches and smaller as follows:

1. Provide a union 6- to 12-inches downstream of valves.
2. Where shown in the Drawings.

### 3.07 PIPE AND TUBING COATINGS

- A. Coat buried pipe and tubing with a cold-applied coal-tar tape, with prime coat, conforming to AWWA C209. Minimum thickness of tape shall be 35 mils. Apply in the form of 2-, 3-, or 4-inch-wide tape wrap. Apply tape spirally with a minimum overlap of 50 percent of the tape width. Tape shall be Tapecoat CT, Protecto-Wrap 200, or equal.

### 3.08 DISINFECTION OF POTABLE WATERLINES

- A. See Section 15010.

## END OF SECTION

## SECTION 15100: VALVES, GAUGES AND APPURTENANCES

### PART 1 - GENERAL

#### 1.01 DESCRIPTION

- A. Furnish all labor, materials, equipment, and incidentals required, and install complete and ready for operation all valves and appurtenances as shown on the Drawings and specified herein.

#### 1.02 RELATED WORK SPECIFIED ELSEWHERE

- A. Section 09900, Painting and Coating
- B. Section 15000, General Piping Requirements and Appurtenances
- C. Section 15005, Leakage and Pressure Testing
- D. Section 15010, Disinfection
- E. Section 15040, PVC Pressure Pipe
- F. Section 15050, Copper Tubing

### 1.03 SUBMITTALS

- A. Submittals shall be furnished in accordance with Section 01300, Submittal Procedures.
- B. Submit the manufacturer's catalog data. Show the dimensions, materials of construction, coatings, spare parts, and options to be provided.
- C. Submit test results and qualifications required by the individual equipment sections herein.

### 1.04 TOOLS

- A. Special tools, if required for normal operation and maintenance, shall be supplied with the equipment.

## **PART 2 - PRODUCTS**

### 2.01 GENERAL

- A. All valves and appurtenances shall be of the size shown on the Drawings and as far as possible all equipment of the same type shall be from one manufacturer.
- B. Provide valves complete with operating hand wheels, levers, chain wheels, extension stems, floor stands, worm gear operators, operating nuts, chains, and wrenches required for operation.

Valves and appurtenances shall have the name of the manufacturer, pressure rating, and the size of the valve cast or molded onto the valve body or bonnet or shown on a permanently attached plate.

- C. Valve Lining and Coating: Unless specified otherwise below, all cast or ductile iron surfaces shall be lined and coated with a fusion bonded thermosetting powdered epoxy, 12 mil minimum thicknesses.
- D. All products in contact with potable water shall be certified to NSF-61 and, where applicable, NSF-372 standards, per California Health and Safety Code Section 116875 (California AB-1953).
- E. Contractor shall verify valve flange drilling is compatible with pipeline flanges prior to ordering flanged valves.
- F. Valves installed above ground shall be painted per Section 09900 to match adjacent piping.

### 2.02 SERVICE SADDLE

- A. Service saddle for ductile iron, steel, or concrete mains shall be constructed of ductile iron with epoxy or nylon coating and with two stainless steel bands, nuts, and washers. Body casting shall be wrap-around design of high tensile ductile iron conforming to ASTM A536. Gasket shall be of 3-1/2-inch diameter and constructed of Buna-N, grooved to conform to pipe surface and bonded in place for easy installation. Outlet shall be tapped



with iron pipe threads (AWWA "IP"). Finish shall be NCA-1477 nylon fused coat, 10-12 mils thickness, with approximate dielectric strength of 1,000 V/mil or epoxy coated. Saddle shall be Mueller DR2S series, or approved equal.

- B. Service saddle on PVC main shall be constructed from lead free brass, with silicon bronze screws, specifically designed for C900 PVC pipe. The wide strap shall be specially shaped to fit the contour of the pipe, and seal dependably without pipe distortion. The strap on saddles with 1-1/2-inch or 2-inch tapped outlets shall be double-wide for added stability. Outlet shall be tapped with iron pipe threads (AWWA "IP"). Saddle shall be Mueller H-13000 series, or approved equal.

## 2.03 CORPORATION STOPS

- A. Corporation stops shall be a ball-type valve constructed of lead-free brass, with straight through design, double O-ring stem seals, PTFE coated ball, 300-psi maximum working pressure, with iron pipe inlet threads (AWWA "IP"), and conductive compression connection outlet for CTS outside diameter tubing (Mueller 110). Valve shall be Mueller B-25028, or approved equal.

## 2.04 CURB STOPS

- A. Curb stops shall be a ball-type valve constructed of lead-free brass, with straight through design, double O-ring stem seals, PTFE coated ball, 300-psi maximum working pressure, with conductive compression connection inlet and outlet for CTS outside diameter tubing (Mueller 110), except where shown otherwise in the Plans, or where other end connections are required to connect to adjacent equipment. Valve shall be Mueller B-25209, or approved equal.

## 2.05 RESILIENT SEATED GATE VALVES (2-INCH TO 24-INCH)

- A. Gate valves shall be of the resilient wedge type with non-rising stem (NRS) unless outside stem and yoke (OS&Y) is called for in the plans or required by code. Valves 2-inch to 12-inch diameter shall conform to AWWA C509 and be UL-listed and FM-approved. Valves 14-inch to 24-inch shall conform to AWWA C515. Valves shall be designed for a water working pressure equal to or greater than the pipe working pressure as indicated on the Drawings at the location installed, but not less than 150 psi.
- B. Valve bodies, bonnets and seal plates shall be cast or ductile iron. Wedges shall be either cast or ductile iron, and shall be completely encapsulated with resilient material, including the stem bare. The resilient material shall be permanently bonded to the wedge with a rubber tearing bond meeting ASTM D429. Stems shall be bronze, and all nuts and bolts shall be Type 316 stainless steel.
- C. Valves shall be capable of installation in any position with rated sealing in both directions. The valve body shall have integral guides engaging

integral lugs in the gate, in a tongue and groove manner, supporting the gate throughout the entire open/close travel.

- D. The stuffing box shall have two O-ring seals above the thrust collar. These rings shall be field replaceable without removing the valve from service stuffing box, shall be connected to the bonnet, and the bonnet shall be connected to the body using nuts and bolts. Blind bolts threaded directly into the body or bonnet are not acceptable.
- E. The body and bonnet shall be coated both interior and exterior with fusion-bonded heat cured thermo setting epoxy, meeting the application and performance requirements of AWWA C550.
- F. Zero leakage shall be maintained by the values at a water working pressure of 250 psi. Valve should be factory tested to 500 psi for structural integrity.
- G. The end configuration of valves installed above ground or in vaults shall be flanged by flanged. Buried valves shall be flanged, flanged by push-on, or push-on by push-on, and push-on joints shall be provided with a gasket. Buried valves shall be provided with a 2-inch square operating nut. Valves located above ground, or in vaults, shall be provided with a hand wheel, size as recommended by the manufacturer. All valves shall be opened by turning counterclockwise.
- H. Payment for valves shall include full compensation for all labor and materials including valve, anchor block, connection, valve box and cover where required, and all work required to install each valve in place as specified.
- I. Valves shall be Mueller, Clow, or approved equal.

## 2.06 VALVE BOX FOR BURIED VALVE

- A. A valve box shall be installed for each buried valve. Valve box shall be pre-cast concrete box with cast iron traffic cover marked "WATER", and shall be model G5 with G5C cover manufactured in the United States by Christy Concrete Products, BES Concrete Products, or approved equal.
- B. Boxes in paved areas shall be installed flush with grade, and encased within a 6-inch wide by 6-inch deep concrete collar extending from the bottom of pavement.
- C. Boxes placed in unpaved areas shall be set 3 inches above grade, flush with a 6-inch wide by 9-inch deep concrete collar.
- D. Valve box extension shall be constructed from 8-inch diameter Schedule 40 PVC pipe, and shall be properly supported from valve. For gate valves greater than 12-inches, Alhambra Foundry Company, LTD. A-3005 or A-3007 cast iron valve extension boxes shall be used.

## 2.07 DIAPHRAGM SEALS

- A. Diaphragm seals shall be installed on all pressure gauges and switches connected to pipe transporting nonclear matter in suspension of solution (includes well discharge lines). The diaphragm shall be "thread attached" to both piping and pressure gauge/switches. Diaphragm seal shall be constructed from Type 316 stainless steel, except where lower housing requires alternate material due to the process fluid and pressure being monitored.
- B. Diaphragm seals shall have a flushing connection and be Ashcroft Type 101; or equal.

## PART 3 - EXECUTION

### 3.01 INSTALLATION

- A. All valves and appurtenances shall be installed in the locations shown, true to alignment and rigidly supported. Any damage to the above items shall be repaired to the satisfaction of the Engineer before they are installed.
- B. Valves shall be carefully inspected, opened wide and then tightly closed and the various nuts and bolts shall be tested for tightness. Special care shall be taken to prevent any foreign matter from becoming lodged in the valve seat. Valves, unless shown otherwise, shall be set with their operator shaft vertically. Any valve that does not operate correctly shall be removed and replaced.
- C. Valve boxes shall be carefully centered over the operating nuts of the valves so as to permit a valve wrench or key to be fitted easily to the operating nut. Valve boxes shall be set to conform to the level of the finished surface and held in position by a ring of concrete placed under the support. The valve box shall not transmit surface loads to the pipe or valve. Care shall be taken to prevent earth and other material from entering the valve box. Any valve box that is out of alignment or whose top does not conform to the finished ground surface shall be dug out and reset. Before final acceptance of the work, all valve boxes shall be adjusted to finish grade. Valve operating risers shall be installed with any valves required to ensure that the operating nut is 30 inches or less from the ground surface.
- D. After installation, all valves and appurtenances shall be tested at least 1 hour at the working pressure corresponding to the class of pipe, unless a different test pressure is specified. If any joint proves to be defective, it shall be repaired to the satisfaction of the Engineer.
- E. Install all floor boxes, brackets, extension rods, guides, the various types of operators and appurtenances as shown on the Drawings that are in masonry floors or walls, and concrete inserts for hangers and supports as soon as forms are erected and before the concrete is poured. Before setting these items, check all plans and figures that have a direct bearing on their location and the Contractor shall be responsible for the proper

location of these valves and appurtenances during the construction of the structures.

## **END OF SECTION**

### **PAYMENT**

Full compensation for furnishing and installing 3 inch water supply line system shown on City of Menifee's plan including all labor, equipment, materials and incidentals, for performing all the work including necessary coordination with other agencies and required permitting shall be considered as included in the contract price paid per **lump sum** for 3" Water Supply Line (EMWD) and no additional compensation will be allowed therefor.

Addendum No. 4

Integrated Mitigation Project  
Located Southwest of Briggs Road and Golden Jay Lane  
In the French Valley Community  
Project No. C7-0032  
May 14, 2020  
Page 44 of 45

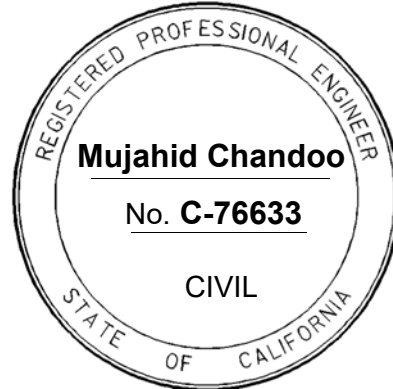
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This addendum has been prepared under the direction of the following registered Civil Engineer(s):



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Mujahid Chandoo, P.E.



**Recommended by:**



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Benjie Cho, PE  
Senior Civil Engineer

**Concurrence:**



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Khalid Nasim, P.E.  
Engineering Division Manager

**Acknowledged:** \_\_\_\_\_ **Date:** \_\_\_\_\_  
(Contractor)

JRJ: jrj:sb

Note: Submittal of this page only (signed by bidder) with bid proposal is sufficient as addendum acknowledgement.

# Attachment "A"

Riverside County Transportation Department

Project: **Integrated Mitigation Project**

Project No.(s): **C7-0032**

Expenses as of: 6/16/2020

## Project Costs and Budget

Activity	Incurred Costs	Projected Costs	Total Costs	Existing Budget	Proposed Budget
Preliminary Survey	77,942		78,000	78,000	78,000
Environmental	134,748	392,782	528,000	444,000	528,000
Design	185,247	60,500	246,000	331,000	246,000
Right-of-way		2,000	2,000		2,000
Utilities		42,241	43,000	55,000	43,000
Construction	2,801	1,799,290	2,072,000	1,216,000	2,072,000
Construction Contingency 15%		269,893			
Construction Engineering & Inspection	13,974	450,000	464,000	229,000	464,000
Construction Survey		45,832	46,000	26,000	46,000
<b>Totals:</b>	<b>414,712</b>	<b>3,062,538</b>	<b>3,479,000</b>	<b>2,379,000</b>	<b>3,479,000</b>

## Project Funding

Code	Name	Existing Budget	Proposed Budget
300	Measure A / Western	900,000	1,500,000
328	Combined Improvement Funds	1,479,000	1,979,000
<b>Totals</b>		<b>2,379,000</b>	<b>3,479,000</b>

## Comments

Printed: June 18,20 3:43 PM

BY: Andrew Martin

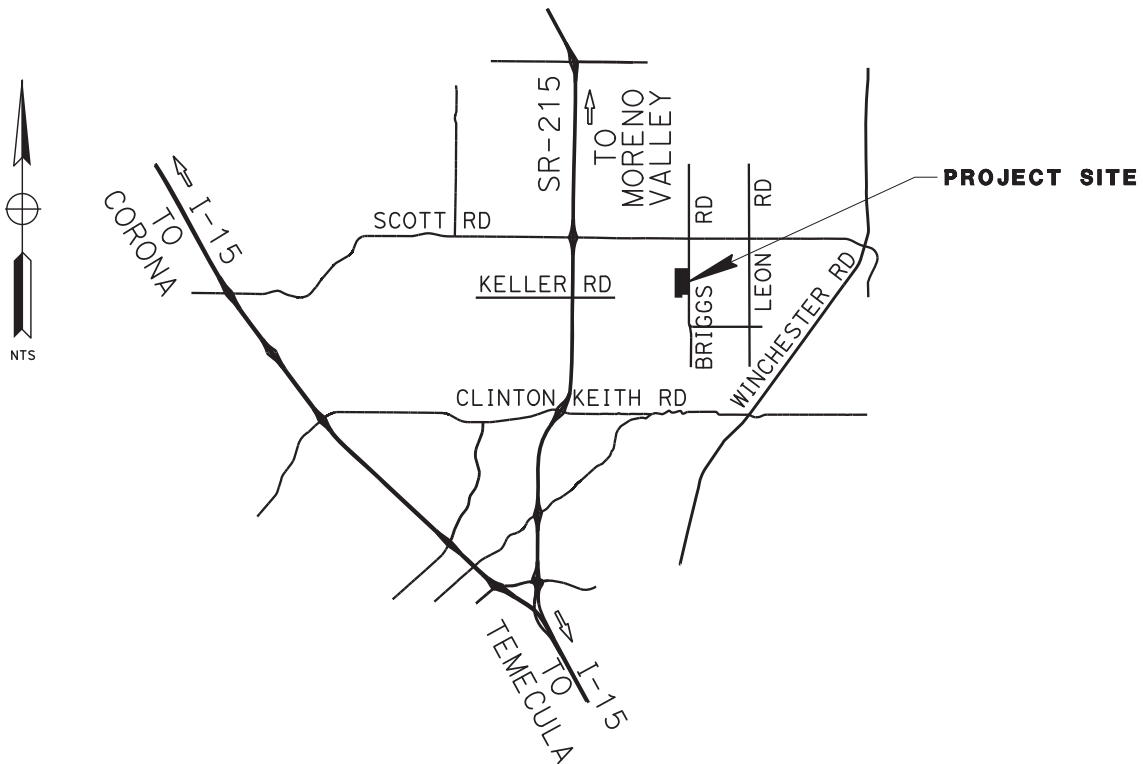
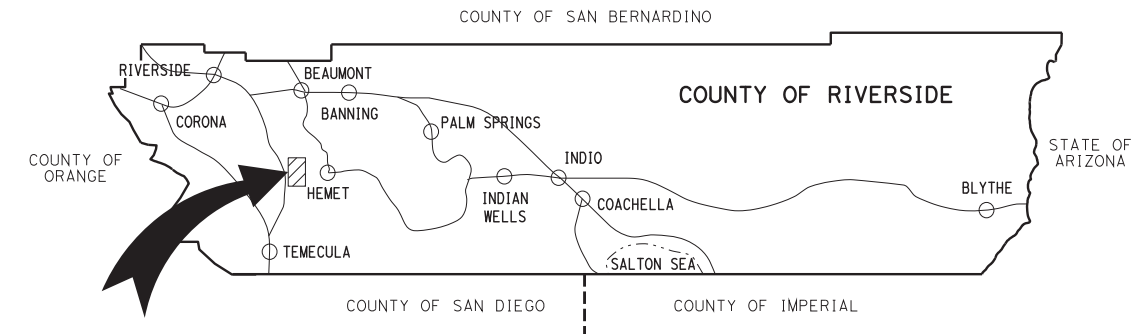


C O U N T Y   O F   R I V E R S I D E  
T R A N S P O R T A T I O N   D E P A R T M E N T

# Integrated Mitigation Project

Located Southwest of Briggs Road and Golden Jay Lane  
In the French Valley Community

Project No. C7-0032



## VICINITY MAP

TOWNSHIP 6S RANGE 3W SECTION 24  
COUNTY ROAD BOOK PAGE No. 121A

**Riverside County Transportation Department  
Summary of Bids**

Project BOS Approval: April 7, 2020 (Agenda Item No. 3.60)  
Addenda: 1 (4/22/2020), 2 (4/30/2020), 3(5/7/2020), 4(5/14/2020)  
Bids Open: 2 pm Date: Wednesday, May 20, 2020

**PROJECT: Integrated Mitigation Project**  
Located Southwest of Briggs Road and Golden Jay Lane  
In the French Valley Community

**Project No. C7-0032**

	Company Name	Base Bid Schedule A	Base Bid Schedule B	Base Bid Schedule C	Base Bid Schedule D	Total
	<b>COUNTY'S ESTIMATE</b>	1,103,486.00	583,897.15	47,220.00	53,720.00	<b>\$1,788,323.15</b>
1	<b>HELIX ENVIRONMENTAL PLANNING</b>	1,209,629.53	553,086.80	26,733.08	9,840.32	<b>\$1,799,289.73</b>
2	<b>NATURES IMAGE, INC.</b>	1,136,275.58	761,619.70	53,418.96	31,788.36	<b>\$1,983,102.60</b>
3	<b>GRIFFITH COMPANY</b>	1,555,872.00	769,003.80	33,992.00	54,833.00	<b>\$2,413,700.80</b>
4	<b>PACIFIC RESTORATION GROUP, INC.</b>	1,442,070.00	1,112,582.10	42,000.00	39,630.00	<b>\$2,636,282.10</b>
5	<b>HANFORD APPLIED REST &amp; CONSER</b>	1,983,012.00	837,782.00	45,914.00	53,946.00	<b>\$2,920,654.00</b>
	<i>Average Bid Prices</i>	<b>\$1,465,371.82</b>	<b>\$806,814.88</b>	<b>\$40,411.61</b>	<b>\$38,007.54</b>	<b>\$2,350,605.85</b>

**Riverside County Transportation Department  
Summary of Bids**

**Project BOS Approval: April 7, 2020 (Agenda Item No. 3.60)**  
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**PROJECT: Integrated Mitigation Project**  
**Located Southwest of Briggs Road and Golden Jay Lane**  
**In the French Valley Community**

**Project No. C7-0032**

BASE BID SCHEDULE A - BRIGGS ROAD (CHANNEL CONSTRUCTION)					COUNTY'S ESTIMATE		1 HELIX ENVIRONMENTAL PLANNING La Mesa, CA 91942	
ITEM NO.	ITEM CODE	CONTRACT ITEM	UNITS	QUANTITY	UNIT PRICE	ENG ESTIMATE	BID UNIT PRICE	BID ESTIMATE
1	760090	MOBILIZATION, DEMOBILIZATION, AND FINAL CLEANUP	LS	1	15,000.00	15,000.00	51,050.00	51,050.00
2	130300	PREPARE STORM WATER POLLUTION PREVENTION PLAN	LS	1	15,000.00	15,000.00	16,625.00	16,625.00
3	066102	DUST ABATEMENT	LS	1	2,000.00	2,000.00	29,000.00	29,000.00
4	170101	DEVELOP WATER SUPPLY (SCHEDULE A)	LS	1	20,400.00	20,400.00	66,000.00	66,000.00
5	141000	TEMPORARY FENCE (TYPE ESA)	LF	8,500	6.00	51,000.00	1.96	16,660.00
6	160102	CLEARING AND GRUBBING	LS	1	25,000.00	25,000.00	76,100.00	76,100.00
7	190151	CHANNEL EXCAVATION	CY	11,262	20.00	225,240.00	26.75	301,258.50
8	011901	SELECT NATIVE MATERIAL	CY	1,012	20.00	20,240.00	73.42	74,301.04
9	720000	ROCK SLOPE PROTECTION	CY	2,810	100.00	281,000.00	105.00	295,050.00
10		ITEM DELETED BY ADDENDUM						
11	001602	MISCELLANEOUS WORK (AS DIRECTED)	FA	1	60,000.00	60,000.00	60,000.00	60,000.00
11A	801364	16' METAL GATE	EA	3	3,200.00	9,600.00	4,433.33	13,299.99
11B	803060	REMOVE GATE	EA	2	450.00	900.00	460.00	920.00
11C	803100	RECONSTRUCT FENCE	LF	28	350.00	9,800.00	30.00	840.00
11D	801364	EQUESTRIAN ACCESS	EA	1	850.00	850.00	5,475.00	5,475.00
11E	808600	3" WATER SUPPLY LINE (EMWD)	LS	1	367,456.00	367,456.00	203,050.00	203,050.00
	<b>BASE BID SCH. A TOTAL ITEMS 1 - 11E</b>					<b>1,103,486.00</b>		<b>1,209,629.53</b>

**Riverside County Transportation Department  
Summary of Bids**

**Project BOS Approval: April 7, 2020 (Agenda Item No. 3.60)**  
**Addenda: 1 (4/22/2020), 2 (4/30/2020), 3(5/7/2020), 4(5/14/2020)**  
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**PROJECT: Integrated Mitigation Project**  
**Located Southwest of Briggs Road and Golden Jay Lane**  
**In the French Valley Community**

**Project No. C7-0032**

BASE BID SCHEDULE B -BRIGGS ROAD (LANDSCAPE, IRRIGATION AND PLAN ESTABLISHMENT)					COUNTY'S ESTIMATE		1 HELIX ENVIRONMENTAL PLANNING La Mesa, CA 91942	
ITEM NO.	ITEM CODE	CONTRACT ITEM	UNITS	QUANTITY	UNIT PRICE	ENG ESTIMATE	BID UNIT PRICE	BID ESTIMATE
12	204020	PLANT (GROUP P)	EA	1,440	4.50	6,480.00	5.48	7,891.20
13	204035	PLANT (GROUP A)	EA	765	14.00	10,710.00	14.33	10,962.45
14	204036	PLANT (GROUP B)	EA	165	36.00	5,940.00	41.31	6,816.15
15	204038	PLANT (GROUP U)	EA	190	90.00	17,100.00	77.38	14,702.20
16	204099	PLANT ESTABLISHMENT WORK [1250 WD] [5-YEARS]	LS	1	100,000.00	100,000.00	212,300.00	212,300.00
17	205033	GRAVEL MULCH	CY	420	70.00	29,400.00	40.00	16,800.00
18	205035	WOOD MULCH	CY	54	60.00	3,240.00	86.00	4,644.00
19	205051	FOLIAGE PROTECTOR	EA	1,195	6.00	7,170.00	12.80	15,296.00
20	206405	REMOVE IRRIGATION FACILITY	LS	1	4,000.00	4,000.00	5,030.00	5,030.00
21	206560(P)	CONTROL AND NEUTRAL CONDUCTORS	LS	1	12,000.00	12,000.00	11,335.00	11,335.00
22	206562(P)	1" REMOTE CONTROL VALVE	EA	8	250.00	2,000.00	711.00	5,688.00
23	206564(P)	1 1/2" REMOTE CONTROL VALVE	EA	38	360.00	13,680.00	613.00	23,294.00
24	206567(P)	3" REMOTE CONTROL VALVE	EA	1	480.00	480.00	1,330.00	1,330.00
25	206921(P)	SOLAR POWERED IRRIGATION CONTROLLER	EA	1	22,000.00	22,000.00	19,175.00	19,175.00
26	208221(P)	3/4" DRIP IRRIGATION TUBING	LF	2,800	3.50	9,800.00	2.11	5,908.00
27	208301(P)	IRRIGATION CONTROLLER ENCLOSURE CABINET	EA	1	1,400.00	1,400.00	4,325.00	4,325.00
28	208442(P)	FLOW SENSOR	EA	1	90.00	90.00	1,610.00	1,610.00
29	208446(P)	SPRINKLER ASSEMBLY (RISER GEAR DRIVEN)	EA	540	35.00	18,900.00	41.63	22,480.20
30	208588(P)	3" GATE VALVE	EA	1	250.00	250.00	605.00	605.00
31	208594(P-F)	3/4" PLASTIC PIPE (SCHEDULE 40)(SUPPLY LINE)	LF	7,200	6.00	43,200.00	3.37	24,264.00
32	208595(P-F)	1" PLASTIC PIPE (SCHEDULE 40)(SUPPLY LINE)	LF	2,700	7.00	18,900.00	3.75	10,125.00
33	208596(P-F)	1 1/4" PLASTIC PIPE (SCHEDULE 40)(SUPPLY LINE)	LF	3,300	9.00	29,700.00	3.81	12,573.00
34	208597(P-F)	1 1/2" PLASTIC PIPE (SCHEDULE 40)(SUPPLY LINE)	LF	1,000	10.00	10,000.00	4.98	4,980.00
35	208598(P-F)	2" PLASTIC PIPE (SCHEDULE 40)(SUPPLY LINE)	LF	1,000	12.00	12,000.00	4.60	4,600.00

**Riverside County Transportation Department  
Summary of Bids**

**Project BOS Approval: April 7, 2020 (Agenda Item No. 3.60)**  
**Addenda: 1 (4/22/2020), 2 (4/30/2020), 3(5/7/2020), 4(5/14/2020)**  
**Bids Open: 2 pm Date: Wednesday, May 20, 2020**

**PROJECT: Integrated Mitigation Project**  
**Located Southwest of Briggs Road and Golden Jay Lane**  
**In the French Valley Community**

**Project No. C7-0032**

BASE BID SCHEDULE B -BRIGGS ROAD (LANDSCAPE, IRRIGATION AND PLAN ESTABLISHMENT)					COUNTY'S ESTIMATE		<sup>1</sup> HELIX ENVIRONMENTAL PLANNING La Mesa, CA 91942	
ITEM NO.	ITEM CODE	CONTRACT ITEM	UNITS	QUANTITY	UNIT PRICE	ENG ESTIMATE	BID UNIT PRICE	BID ESTIMATE
36	208599(P-F)	2 1/2" PLASTIC PIPE (SCHEDULE 40)(SUPPLY LINE)	LF	500	15.00	7,500.00	5.92	2,960.00
37	208600(P-F)	3" PLASTIC PIPE (SCHEDULE 40)(SUPPLY LINE)	LF	5,300	18.00	95,400.00	10.35	54,855.00
38	208683(P)	BALL VALVE	EA	6	120.00	720.00	622.50	3,735.00
39	208805	6" WELDED STEEL PIPE CONDUIT (0.250" THICK)	LF	32	40.00	1,280.00	40.50	1,296.00
40	210010	MOVE-IN/MOVE-OUT (EROSION CONTROL)	EA	4	500.00	2,000.00	720.00	2,880.00
41	210210	EROSION CONTROL (DRY SEED)(SQFT)(DIEGAN COASTAL SCRUB)	SQFT	34,010	0.09	3,060.90	0.08	2,720.80
42	210430	HYDROSEED [EROSION CONTROL]	SQFT	72,605	0.35	25,411.75	0.10	7,260.50
43	210430A	HYDROSEED [SOUTHERN WILLOW SCRUB]	SQFT	78,975	0.20	15,795.00	0.06	4,738.50
44	210430B	HYDROSEED [SYCAMORE RIPARIAN]	SQFT	22,430	0.15	3,364.50	0.07	1,570.10
45	210430C	HYDROSEED [EXISTING CREEK CHANNEL]	SQFT	19,125	0.25	4,781.25	0.09	1,721.25
46	210430D	HYDROSEED [CREATED CHANNEL/PERENNIAL GRASSLAND]	SQFT	65,195	0.30	19,558.50	0.08	5,215.60
47	210430E	HYDROSEED [SEASONAL WETLAND]	SQFT	18,490	0.35	6,471.50	0.12	2,218.80
48	210430F	HYDROSEED [LARGE SEASONAL WETLAND]	SQFT	35,725	0.35	12,503.75	0.13	4,644.25
49	210430G	HYDROSEED [COAST LIVE OAK WOODLAND]	SQFT	11,125	0.20	2,225.00	0.09	1,001.25
50	210430H	HYDROSEED [MIXED OAK WOODLAND]	SQFT	8,550	0.20	1,710.00	0.08	684.00
50A	210430(P)	ROCK SLOPE PROTECTION FABRIC (CLASS 8)	SQYD	2,535	1.00	2,535.00	1.57	3,979.95
50B	204008	PLANT (GROUP H)	EA	380	3.00	1,140.00	12.82	4,871.60
		<b>BASE BID SCH. B TOTAL ITEMS 12-50B</b>				<b>583,897.15</b>		<b>553,086.80</b>

**Riverside County Transportation Department  
Summary of Bids**

**Project BOS Approval: April 7, 2020 (Agenda Item No. 3.60)**  
**Addenda: 1 (4/22/2020), 2 (4/30/2020), 3(5/7/2020), 4(5/14/2020)**  
**Bids Open: 2 pm Date: Wednesday, May 20, 2020**

**PROJECT: Integrated Mitigation Project**  
**Located Southwest of Briggs Road and Golden Jay Lane**  
**In the French Valley Community**

**Project No. C7-0032**

BASE BID SCHEDULE C (CLINTON KEITH ROAD RESTAURATION AND ENHANCEMENT)					COUNTY'S ESTIMATE		1 HELIX ENVIRONMENTAL PLANNING La Mesa, CA 91942	
ITEM NO.	ITEM CODE	CONTRACT ITEM	UNITS	QUANTITY	UNIT PRICE	ENG ESTIMATE	BID UNIT PRICE	BID ESTIMATE
51	760090	MOBILIZATION, DEMOBILIZATION AND FINAL CLEANUP [INCLUDING BEST MANAGEMENT PRACTICES (BMPS)]	LS	1	15000.00	15,000.00	6150	6,150.00
52	120100	TRAFFIC CONTROL SYSTEM [IF NECESSARY]	LS	1	10000.00	10,000.00	110	110.00
53	170101	DEVELOP WATER SUPPLY	LS	1	2500.00	2,500.00	900	900.00
54	030500	PERMANENT BOUNDARY STAKING	LS	1	1000.00	1,000.00	1150	1,150.00
55	031200	RESTORATION SIGNS - PURCHASE AND INSTALLATION	EA	4	500.00	2,000.00	312.5	1,250.00
56	160101	CLEARING AND GRUBBING [NON-NATIVE VEGETATION CLEARING AND REMOVAL]	LS	1	5000.00	5,000.00	5875	5,875.00
57	210430	HYDROSEED [NATIVE SEED MIX (0.636 AC)]	LS	1	3000.00	3,000.00	7980	7,980.00
58	032000	HARVEST WILLOW CUTTINGS ADJACENT TO SITE AND PLANT	EA	20	30.00	600.00	39	780.00
59	032001	PLANTING OF CONTAINER PLANTS AND CUTTINGS	EA	232	35.00	8,120.00	10.94	2,538.08
<b>BASE BID SCH. C TOTAL ITEMS 51-59</b>						<b>47,220.00</b>		<b>26,733.08</b>
BASE BID SCHEDULE D (CLINTON KEITH ROAD, PLANT ESTABLISHMENT)					COUNTY'S ESTIMATE		1 HELIX ENVIRONMENTAL PLANNING La Mesa, CA 91942	
ITEM NO.	ITEM CODE	CONTRACT ITEM	UNITS	QUANTITY	UNIT PRICE	ENG ESTIMATE	BID UNIT PRICE	BID ESTIMATE
60	208000	IRRIGATION [TWICE A WEEK FOR 90 DAYS]	EA	26	2,000.00	52,000.00	360	9,360.00
61	032004	REPLACEMENT PLANTING (ASSUMES 10%)	EA	24	30.00	720.00	6.68	160.32
62	030501	REPAIR OR REPLACEMENT OF BOUNDARY STAKES	EA	1	500.00	500.00	160	160.00
63	066567	REPLACEMENT OF SIGNS	EA	1	500.00	500.00	160.00	160.00
<b>BASE BID SCH. D TOTAL ITEMS 60-63</b>						<b>53,720.00</b>		<b>9,840.32</b>

<b>TOTAL (ALL BID SCHEDULES) ITEMS 1 - 63</b>					<b>1,788,323.15</b>		<b>1,799,289.73</b>	
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**Riverside County Transportation Department  
Summary of Bids**

**Project BOS Approval: April 7, 2020 (Agenda Item No. 3.60)**  
**Addenda: 1 (4/22/2020), 2 (4/30/2020), 3(5/7/2020), 4(5/14/2020)**  
**Bids Open: 2 pm Date: Wednesday, May 20, 2020**

**PROJECT: Integrated Mitigation Project**  
**Located Southwest of Briggs Road and Golden Jay Lane**  
**In the French Valley Community**

**Project No. C7-0032**

BASE BID SCHEDULE A - BRIGGS ROAD (CHANNEL CONSTRUCTION)					2 NATURES IMAGE, INC. Lake Forest, CA 92630		3 GRIFFITH COMPANY Santa Fe Springs, CA 90670	
ITEM NO.	ITEM CODE	CONTRACT ITEM	UNITS	QUANTITY	BID UNIT PRICE	BID ESTIMATE	BID UNIT PRICE	BID ESTIMATE
1	760090	MOBILIZATION, DEMOBILIZATION, AND FINAL CLEANUP	LS	1	15,000.00	15,000.00	15,000.00	15,000.00
2	130300	PREPARE STORM WATER POLLUTION PREVENTION PLAN	LS	1	15,000.00	15,000.00	15,000.00	15,000.00
3	066102	DUST ABATEMENT	LS	1	47,216.00	47,216.00	59,000.00	59,000.00
4	170101	DEVELOP WATER SUPPLY (SCHEDULE A)	LS	1	20,000.00	20,000.00	20,000.00	20,000.00
5	141000	TEMPORARY FENCE (TYPE ESA)	LF	8,500	4.23	35,955.00	5.00	42,500.00
6	160102	CLEARING AND GRUBBING	LS	1	25,000.00	25,000.00	25,000.00	25,000.00
7	190151	CHANNEL EXCAVATION	CY	11,262	28.70	323,219.40	50.00	563,100.00
8	011901	SELECT NATIVE MATERIAL	CY	1,012	48.69	49,274.28	101.00	102,212.00
9	720000	ROCK SLOPE PROTECTION	CY	2,810	113.29	318,344.90	118.00	331,580.00
10		ITEM DELETED BY ADDENDUM						
11	001602	MISCELLANEOUS WORK (AS DIRECTED)	FA	1	60,000.00	60,000.00	60,000.00	60,000.00
11A	801364	16' METAL GATE	EA	3	2,656.00	7,968.00	4,000.00	12,000.00
11B	803060	REMOVE GATE	EA	2	886.00	1,772.00	1,000.00	2,000.00
11C	803100	RECONSTRUCT FENCE	LF	28	19.00	532.00	160.00	4,480.00
11D	801364	EQUESTRIAN ACCESS	EA	1	5,533.00	5,533.00	4,000.00	4,000.00
11E	808600	3" WATER SUPPLY LINE (EMWD)	LS	1	211,461.00	211,461.00	300,000.00	300,000.00
	<b>BASE BID SCH. A TOTAL ITEMS 1 - 11E</b>					<b>1,136,275.58</b>		<b>1,555,872.00</b>



# Riverside County Transportation Department Summary of Bids

Project BOS Approval: April 7, 2020 (Agenda Item No. 3.60)  
Addenda: 1 (4/22/2020), 2 (4/30/2020), 3(5/7/2020), 4(5/14/2020)  
Bids Open: 2 pm Date: Wednesday, May 20, 2020

PROJECT: Integrated Mitigation Project  
Located Southwest of Briggs Road and Golden Jay Lane  
In the French Valley Community

Project No. C7-0032

BASE BID SCHEDULE B -BRIGGS ROAD (LANDSCAPE, IRRIGATION AND PLAN ESTABLISHMENT)					2 NATURES IMAGE, INC. Lake Forest, CA 92630		3 GRIFFITH COMPANY Santa Fe Springs, CA 90670	
ITEM NO.	ITEM CODE	CONTRACT ITEM	UNITS	QUANTITY	BID UNIT PRICE	BID ESTIMATE	BID UNIT PRICE	BID ESTIMATE
12	204020	PLANT (GROUP P)	EA	1,440	4.37	6,292.80	4.75	6,840.00
13	204035	PLANT (GROUP A)	EA	765	15.10	11,551.50	9.60	7,344.00
14	204036	PLANT (GROUP B)	EA	165	92.31	15,231.15	45.00	7,425.00
15	204038	PLANT (GROUP U)	EA	190	132.06	25,091.40	212.00	40,280.00
16	204099	PLANT ESTABLISHMENT WORK [1250 WD] [5-YEARS]	LS	1	363,665.00	363,665.00	163,500.00	163,500.00
17	205033	GRAVEL MULCH	CY	420	134.00	56,280.00	165.00	69,300.00
18	205035	WOOD MULCH	CY	54	120.00	6,480.00	146.00	7,884.00
19	205051	FOLIAGE PROTECTOR	EA	1,195	11.60	13,862.00	30.00	35,850.00
20	206405	REMOVE IRRIGATION FACILITY	LS	1	14,515.00	14,515.00	65,000.00	65,000.00
21	206560(P)	CONTROL AND NEUTRAL CONDUCTORS	LS	1	24,961.00	24,961.00	80,000.00	80,000.00
22	206562(P)	1" REMOTE CONTROL VALVE	EA	8	444.00	3,552.00	662.00	5,296.00
23	206564(P)	1 1/2" REMOTE CONTROL VALVE	EA	38	509.00	19,342.00	687.00	26,106.00
24	206567(P)	3" REMOTE CONTROL VALVE	EA	1	1,019.00	1,019.00	1,205.00	1,205.00
25	206921(P)	SOLAR POWERED IRRIGATION CONTROLLER	EA	1	22,579.00	22,579.00	20,650.00	20,650.00
26	208221(P)	3/4" DRIP IRRIGATION TUBING	LF	2,800	4.62	12,936.00	4.80	13,440.00
27	208301(P)	IRRIGATION CONTROLLER ENCLOSURE CABINET	EA	1	5,000.00	5,000.00	1,820.00	1,820.00
28	208442(P)	FLOW SENSOR	EA	1	2,689.00	2,689.00	1,460.00	1,460.00
29	208446(P)	SPRINKLER ASSEMBLY (RISER GEAR DRIVEN)	EA	540	38.00	20,520.00	41.00	22,140.00
30	208588(P)	3" GATE VALVE	EA	1	1,932.00	1,932.00	22,500.00	22,500.00
31	208594(P-F)	3/4" PLASTIC PIPE (SCHEDULE 40)(SUPPLY LINE)	LF	7,200	2.11	15,192.00	3.60	25,920.00
32	208595(P-F)	1" PLASTIC PIPE (SCHEDULE 40)(SUPPLY LINE)	LF	2,700	2.16	5,832.00	3.90	10,530.00
33	208596(P-F)	1 1/4" PLASTIC PIPE (SCHEDULE 40)(SUPPLY LINE)	LF	3,300	2.42	7,986.00	4.20	13,860.00
34	208597(P-F)	1 1/2" PLASTIC PIPE (SCHEDULE 40)(SUPPLY LINE)	LF	1,000	2.61	2,610.00	4.50	4,500.00
35	208598(P-F)	2" PLASTIC PIPE (SCHEDULE 40)(SUPPLY LINE)	LF	1,000	3.15	3,150.00	5.00	5,000.00

**Riverside County Transportation Department  
Summary of Bids**

**Project BOS Approval: April 7, 2020 (Agenda Item No. 3.60)**  
**Addenda: 1 (4/22/2020), 2 (4/30/2020), 3(5/7/2020), 4(5/14/2020)**  
**Bids Open: 2 pm Date: Wednesday, May 20, 2020**

**PROJECT: Integrated Mitigation Project**  
**Located Southwest of Briggs Road and Golden Jay Lane**  
**In the French Valley Community**

**Project No. C7-0032**

BASE BID SCHEDULE B -BRIGGS ROAD (LANDSCAPE, IRRIGATION AND PLAN ESTABLISHMENT)					2 NATURES IMAGE, INC. Lake Forest, CA 92630		3 GRIFFITH COMPANY Santa Fe Springs, CA 90670	
ITEM NO.	ITEM CODE	CONTRACT ITEM	UNITS	QUANTITY	BID UNIT PRICE	BID ESTIMATE	BID UNIT PRICE	BID ESTIMATE
36	208599(P-F)	2 1/2" PLASTIC PIPE (SCHEDULE 40)(SUPPLY LINE)	LF	500	4.09	2,045.00	6.20	3,100.00
37	208600(P-F)	3" PLASTIC PIPE (SCHEDULE 40)(SUPPLY LINE)	LF	5,300	7.76	41,128.00	6.80	36,040.00
38	208683(P)	BALL VALVE	EA	6	790.00	4,740.00	525.00	3,150.00
39	208805	6" WELDED STEEL PIPE CONDUIT (0.250" THICK)	LF	32	103.60	3,315.20	140.00	4,480.00
40	210010	MOVE-IN/MOVE-OUT (EROSION CONTROL)	EA	4	701.00	2,804.00	486.00	1,944.00
41	210210	EROSION CONTROL (DRY SEED)(SQFT)(DIEGAN COASTAL SCRUB)	SQFT	34,010	0.10	3,401.00	0.11	3,741.10
42	210430	HYDROSEED [EROSION CONTROL]	SQFT	72,605	0.12	8,712.60	0.17	12,342.85
43	210430A	HYDROSEED [SOUTHERN WILLOW SCRUB]	SQFT	78,975	0.08	6,318.00	0.11	8,687.25
44	210430B	HYDROSEED [SYCAMORE RIPARIAN]	SQFT	22,430	0.06	1,345.80	0.12	2,691.60
45	210430C	HYDROSEED [EXISTING CREEK CHANNEL]	SQFT	19,125	0.08	1,530.00	0.15	2,868.75
46	210430D	HYDROSEED [CREATED CHANNEL/PERENNIAL GRASSLAND]	SQFT	65,195	0.11	7,171.45	0.14	9,127.30
47	210430E	HYDROSEED [SEASONAL WETLAND]	SQFT	18,490	0.14	2,588.60	0.23	4,252.70
48	210430F	HYDROSEED [LARGE SEASONAL WETLAND]	SQFT	35,725	0.07	2,500.75	0.11	3,929.75
49	210430G	HYDROSEED [COAST LIVE OAK WOODLAND]	SQFT	11,125	0.08	890.00	0.25	2,781.25
50	210430H	HYDROSEED [MIXED OAK WOODLAND]	SQFT	8,550	0.08	684.00	0.29	2,479.50
50A	210430(P)	ROCK SLOPE PROTECTION FABRIC (CLASS 8)	SQYD	2,535	3.07	7,782.45	3.65	9,252.75
50B	204008	PLANT (GROUP H)	EA	380	6.30	2,394.00	0.75	285.00
		<b>BASE BID SCH. B TOTAL ITEMS 12-50B</b>				<b>761,619.70</b>		<b>769,003.80</b>

**Riverside County Transportation Department  
Summary of Bids**

**Project BOS Approval: April 7, 2020 (Agenda Item No. 3.60)**  
**Addenda: 1 (4/22/2020), 2 (4/30/2020), 3(5/7/2020), 4(5/14/2020)**  
**Bids Open: 2 pm Date: Wednesday, May 20, 2020**

**PROJECT: Integrated Mitigation Project**  
**Located Southwest of Briggs Road and Golden Jay Lane**  
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**Project No. C7-0032**

BASE BID SCHEDULE C (CLINTON KEITH ROAD RESTAURATION AND ENHANCEMENT)					2 NATURES IMAGE, INC. Lake Forest, CA 92630		3 GRIFFITH COMPANY Santa Fe Springs, CA 90670	
ITEM NO.	ITEM CODE	CONTRACT ITEM	UNITS	QUANTITY	BID UNIT PRICE	BID ESTIMATE	BID UNIT PRICE	BID ESTIMATE
51	760090	MOBILIZATION, DEMOBILIZATION AND FINAL CLEANUP [INCLUDING BEST MANAGEMENT PRACTICES (BMPS)]	LS	1	15000.00	15,000.00	15,000.00	15,000.00
52	120100	TRAFFIC CONTROL SYSTEM [IF NECESSARY]	LS	1	2716.00	2,716.00	500.00	500.00
53	170101	DEVELOP WATER SUPPLY	LS	1	2500.00	2,500.00	2,500.00	2,500.00
54	030500	PERMANENT BOUNDARY STAKING	LS	1	3275.00	3,275.00	2,430.00	2,430.00
55	031200	RESTORATION SIGNS - PURCHASE AND INSTALLATION	EA	4	516.00	2,064.00	334.00	1,336.00
56	160101	CLEARING AND GRUBBING [NON-NATIVE VEGETATION CLEARING AND REMOVAL]	LS	1	5000.00	5,000.00	5,000.00	5,000.00
57	210430	HYDROSEED [NATIVE SEED MIX (0.636 AC)]	LS	1	19213.56	19,213.56	5,225.00	5,225.00
58	032000	HARVEST WILLOW CUTTINGS ADJACENT TO SITE AND PLANT	EA	20	12.00	240.00	1.45	29.00
59	032001	PLANTING OF CONTAINER PLANTS AND CUTTINGS	EA	232	14.70	3,410.40	8.50	1,972.00
<b>BASE BID SCH. C TOTAL ITEMS 51-59</b>						<b>53,418.96</b>		<b>33,992.00</b>
BASE BID SCHEDULE D (CLINTON KEITH ROAD, PLANT ESTABLISHMENT)					2 NATURES IMAGE, INC. Lake Forest, CA 92630		3 GRIFFITH COMPANY Santa Fe Springs, CA 90670	
ITEM NO.	ITEM CODE	CONTRACT ITEM	UNITS	QUANTITY	BID UNIT PRICE	BID ESTIMATE	BID UNIT PRICE	BID ESTIMATE
60	208000	IRRIGATION [TWICE A WEEK FOR 90 DAYS]	EA	26	1,066.00	27,716.00	2,065.00	53,690.00
61	032004	REPLACEMENT PLANTING (ASSUMES 10%)	EA	24	16.89	405.36	8.50	204.00
62	030501	REPAIR OR REPLACEMENT OF BOUNDARY STAKES	EA	1	3,151.00	3,151.00	605.00	605.00
63	066567	REPLACEMENT OF SIGNS	EA	1	516.00	516.00	334.00	334.00
<b>BASE BID SCH. D TOTAL ITEMS 60-63</b>						<b>31,788.36</b>		<b>54,833.00</b>

<b>TOTAL (ALL BID SCHEDULES) ITEMS 1 - 63</b>					<b>1,983,102.60</b>		<b>2,413,700.80</b>	
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**Riverside County Transportation Department  
Summary of Bids**

**Project BOS Approval: April 7, 2020 (Agenda Item No. 3.60)**  
**Addenda: 1 (4/22/2020), 2 (4/30/2020), 3(5/7/2020), 4(5/14/2020)**  
**Bids Open: 2 pm Date: Wednesday, May 20, 2020**

**PROJECT: Integrated Mitigation Project**  
**Located Southwest of Briggs Road and Golden Jay Lane**  
**In the French Valley Community**

**Project No. C7-0032**

BASE BID SCHEDULE A - BRIGGS ROAD (CHANNEL CONSTRUCTION)					4 PACIFIC RESTORATION GROUP, INC Lake Elsinore, CA 92531		5 HANFORD APPLIED REST & CONSERVATION Petaluma, CA 94954	
ITEM NO.	ITEM CODE	CONTRACT ITEM	UNITS	QUANTITY	BID UNIT PRICE	BID ESTIMATE	BID UNIT PRICE	BID ESTIMATE
1	760090	MOBILIZATION, DEMOBILIZATION, AND FINAL CLEANUP	LS	1	25,000.00	25,000.00	288,000.00	288,000.00
2	130300	PREPARE STORM WATER POLLUTION PREVENTION PLAN	LS	1	15,000.00	15,000.00	1,500.00	1,500.00
3	066102	DUST ABATEMENT	LS	1	20,000.00	20,000.00	52,200.00	52,200.00
4	170101	DEVELOP WATER SUPPLY (SCHEDULE A)	LS	1	20,000.00	20,000.00	6,010.00	6,010.00
5	141000	TEMPORARY FENCE (TYPE ESA)	LF	8,500	5.00	42,500.00	6.50	55,250.00
6	160102	CLEARING AND GRUBBING	LS	1	75,000.00	75,000.00	27,500.00	27,500.00
7	190151	CHANNEL EXCAVATION	CY	11,262	35.00	394,170.00	54.00	608,148.00
8	011901	SELECT NATIVE MATERIAL	CY	1,012	60.00	60,720.00	94.00	95,128.00
9	720000	ROCK SLOPE PROTECTION	CY	2,810	130.00	365,300.00	183.00	514,230.00
10	_____	ITEM DELETED BY ADDENDUM	_____	_____	_____	_____	_____	_____
11	001602	MISCELLANEOUS WORK (AS DIRECTED)	FA	1	60,000.00	60,000.00	60,000.00	60,000.00
11A	801364	16' METAL GATE	EA	3	3,500.00	10,500.00	7,100.00	21,300.00
11B	803060	REMOVE GATE	EA	2	1,250.00	2,500.00	827.00	1,654.00
11C	803100	RECONSTRUCT FENCE	LF	28	85.00	2,380.00	31.50	882.00
11D	801364	EQUESTRIAN ACCESS	EA	1	2,000.00	2,000.00	3,210.00	3,210.00
11E	808600	3" WATER SUPPLY LINE (EMWD)	LS	1	347,000.00	347,000.00	248,000.00	248,000.00
	<b>BASE BID SCH. A TOTAL ITEMS 1 - 11E</b>					<b>1,442,070.00</b>		<b>1,983,012.00</b>

**Riverside County Transportation Department  
Summary of Bids**

**Project BOS Approval: April 7, 2020 (Agenda Item No. 3.60)**  
**Addenda: 1 (4/22/2020), 2 (4/30/2020), 3(5/7/2020), 4(5/14/2020)**  
**Bids Open: 2 pm Date: Wednesday, May 20, 2020**

**PROJECT: Integrated Mitigation Project**  
**Located Southwest of Briggs Road and Golden Jay Lane**  
**In the French Valley Community**

**Project No. C7-0032**

BASE BID SCHEDULE B -BRIGGS ROAD (LANDSCAPE, IRRIGATION AND PLAN ESTABLISHMENT)					4 PACIFIC RESTORATION GROUP, INC Lake Elsinore, CA 92531		5 HANFORD APPLIED REST & CONSERVATION Petaluma, CA 94954	
ITEM NO.	ITEM CODE	CONTRACT ITEM	UNITS	QUANTITY	BID UNIT PRICE	BID ESTIMATE	BID UNIT PRICE	BID ESTIMATE
12	204020	PLANT (GROUP P)	EA	1,440	12.00	17,280.00	7.00	10,080.00
13	204035	PLANT (GROUP A)	EA	765	16.00	12,240.00	19.00	14,535.00
14	204036	PLANT (GROUP B)	EA	165	65.00	10,725.00	56.50	9,322.50
15	204038	PLANT (GROUP U)	EA	190	250.00	47,500.00	184.00	34,960.00
16	204099	PLANT ESTABLISHMENT WORK [1250 WD] [5-YEARS]	LS	1	625,000.00	625,000.00	320,000.00	320,000.00
17	205033	GRAVEL MULCH	CY	420	45.00	18,900.00	65.50	27,510.00
18	205035	WOOD MULCH	CY	54	55.00	2,970.00	229.00	12,366.00
19	205051	FOLIAGE PROTECTOR	EA	1,195	15.00	17,925.00	8.25	9,858.75
20	206405	REMOVE IRRIGATION FACILITY	LS	1	25,000.00	25,000.00	24,400.00	24,400.00
21	206560(P)	CONTROL AND NEUTRAL CONDUCTORS	LS	1	60,000.00	60,000.00	10,800.00	10,800.00
22	206562(P)	1" REMOTE CONTROL VALVE	EA	8	425.00	3,400.00	453.00	3,624.00
23	206564(P)	1 1/2" REMOTE CONTROL VALVE	EA	38	450.00	17,100.00	477.00	18,126.00
24	206567(P)	3" REMOTE CONTROL VALVE	EA	1	875.00	875.00	1,380.00	1,380.00
25	206921(P)	SOLAR POWERED IRRIGATION CONTROLLER	EA	1	22,750.00	22,750.00	22,800.00	22,800.00
26	208221(P)	3/4" DRIP IRRIGATION TUBING	LF	2,800	5.50	15,400.00	2.25	6,300.00
27	208301(P)	IRRIGATION CONTROLLER ENCLOSURE CABINET	EA	1	3,500.00	3,500.00	9,170.00	9,170.00
28	208442(P)	FLOW SENSOR	EA	1	1,500.00	1,500.00	915.00	915.00
29	208446(P)	SPRINKLER ASSEMBLY (RISER GEAR DRIVEN)	EA	540	55.00	29,700.00	125.00	67,500.00
30	208588(P)	3" GATE VALVE	EA	1	900.00	900.00	980.00	980.00
31	208594(P-F)	3/4" PLASTIC PIPE (SCHEDULE 40)(SUPPLY LINE)	LF	7,200	3.00	21,600.00	1.50	10,800.00
32	208595(P-F)	1" PLASTIC PIPE (SCHEDULE 40)(SUPPLY LINE)	LF	2,700	3.25	8,775.00	2.00	5,400.00
33	208596(P-F)	1 1/4" PLASTIC PIPE (SCHEDULE 40)(SUPPLY LINE)	LF	3,300	3.50	11,550.00	2.50	8,250.00
34	208597(P-F)	1 1/2" PLASTIC PIPE (SCHEDULE 40)(SUPPLY LINE)	LF	1,000	3.75	3,750.00	2.50	2,500.00
35	208598(P-F)	2" PLASTIC PIPE (SCHEDULE 40)(SUPPLY LINE)	LF	1,000	4.00	4,000.00	3.25	3,250.00

**Riverside County Transportation Department  
Summary of Bids**

**Project BOS Approval: April 7, 2020 (Agenda Item No. 3.60)**  
**Addenda: 1 (4/22/2020), 2 (4/30/2020), 3(5/7/2020), 4(5/14/2020)**  
**Bids Open: 2 pm Date: Wednesday, May 20, 2020**

**PROJECT: Integrated Mitigation Project**  
**Located Southwest of Briggs Road and Golden Jay Lane**  
**In the French Valley Community**

**Project No. C7-0032**

BASE BID SCHEDULE B -BRIGGS ROAD (LANDSCAPE, IRRIGATION AND PLAN ESTABLISHMENT)					4 PACIFIC RESTORATION GROUP, INC Lake Elsinore, CA 92531		5 HANFORD APPLIED REST & CONSERVATION Petaluma, CA 94954	
36	208599(P-F)	2 1/2" PLASTIC PIPE (SCHEDULE 40)(SUPPLY LINE)	LF	500	4.25	2,125.00	3.75	1,875.00
37	208600(P-F)	3" PLASTIC PIPE (SCHEDULE 40)(SUPPLY LINE)	LF	5,300	12.50	66,250.00	18.00	95,400.00
38	208683(P)	BALL VALVE	EA	6	400.00	2,400.00	596.00	3,576.00
39	208805	6" WELDED STEEL PIPE CONDUIT (0.250" THICK)	LF	32	100.00	3,200.00	129.00	4,128.00
40	210010	MOVE-IN/MOVE-OUT (EROSION CONTROL)	EA	4	250.00	1,000.00	3,700.00	14,800.00
41	210210	EROSION CONTROL (DRY SEED)(SQFT)(DIEGAN COASTAL SCRUB)	SQFT	34,010	0.10	3,401.00	0.10	3,401.00
42	210430	HYDROSEED [EROSION CONTROL]	SQFT	72,605	0.12	8,712.60	0.10	7,260.50
43	210430A	HYDROSEED [SOUTHERN WILLOW SCRUB]	SQFT	78,975	0.10	7,897.50	0.20	15,795.00
44	210430B	HYDROSEED [SYCAMORE RIPARIAN]	SQFT	22,430	0.10	2,243.00	0.20	4,486.00
45	210430C	HYDROSEED [EXISTING CREEK CHANNEL]	SQFT	19,125	0.10	1,912.50	0.20	3,825.00
46	210430D	HYDROSEED [CREATED CHANNEL/PERENNIAL GRASSLAND]	SQFT	65,195	0.10	6,519.50	0.20	13,039.00
47	210430E	HYDROSEED [SEASONAL WETLAND]	SQFT	18,490	0.15	2,773.50	0.20	3,698.00
48	210430F	HYDROSEED [LARGE SEASONAL WETLAND]	SQFT	35,725	0.10	3,572.50	0.20	7,145.00
49	210430G	HYDROSEED [COAST LIVE OAK WOODLAND]	SQFT	11,125	0.10	1,112.50	0.20	2,225.00
50	210430H	HYDROSEED [MIXED OAK WOODLAND]	SQFT	8,550	0.15	1,282.50	0.20	1,710.00
50A	210430(P)	ROCK SLOPE PROTECTION FABRIC (CLASS 8)	SQYD	2,535	4.00	10,140.00	4.75	12,041.25
50B	204008	PLANT (GROUP H)	EA	380	15.00	5,700.00	22.50	8,550.00
<b>BASE BID SCH. B TOTAL ITEMS 12-50B</b>						<b>1,112,582.10</b>		<b>837,782.00</b>

**Riverside County Transportation Department  
Summary of Bids**

Project BOS Approval: April 7, 2020 (Agenda Item No. 3.60)  
Addenda: 1 (4/22/2020), 2 (4/30/2020), 3(5/7/2020), 4(5/14/2020)  
Bids Open: 2 pm Date: Wednesday, May 20, 2020

**PROJECT: Integrated Mitigation Project**  
Located Southwest of Briggs Road and Golden Jay Lane  
In the French Valley Community

Project No. C7-0032

BASE BID SCHEDULE C (CLINTON KEITH ROAD RESTAURATION AND ENHANCEMENT)					4 PACIFIC RESTORATION GROUP, INC Lake Elsinore, CA 92531		5 HANFORD APPLIED REST & CONSERVATION Petaluma, CA 94954	
ITEM NO.	ITEM CODE	CONTRACT ITEM	UNITS	QUANTITY	BID UNIT PRICE	BID ESTIMATE	BID UNIT PRICE	BID ESTIMATE
51	760090	MOBILIZATION, DEMOBILIZATION AND FINAL CLEANUP [INCLUDING BEST MANAGEMENT PRACTICES (BMPS)]	LS	1	15000.00	15,000.00	18,200.00	18,200.00
52	120100	TRAFFIC CONTROL SYSTEM [IF NECESSARY]	LS	1	2500.00	2,500.00	2,140.00	2,140.00
53	170101	DEVELOP WATER SUPPLY	LS	1	2500.00	2,500.00	1,800.00	1,800.00
54	030500	PERMANENT BOUNDARY STAKING	LS	1	3500.00	3,500.00	2,800.00	2,800.00
55	031200	RESTORATION SIGNS - PURCHASE AND INSTALLATION	EA	4	100.00	400.00	695.00	2,780.00
56	160101	CLEARING AND GRUBBING [NON-NATIVE VEGETATION CLEARING AND REMOVAL]	LS	1	10000.00	10,000.00	7,790.00	7,790.00
57	210430	HYDROSEED [NATIVE SEED MIX (0.636 AC)]	LS	1	2000.00	2,000.00	3,810.00	3,810.00
58	032000	HARVEST WILLOW CUTTINGS ADJACENT TO SITE AND PLANT	EA	20	15.00	300.00	16.50	330.00
59	032001	PLANTING OF CONTAINER PLANTS AND CUTTINGS	EA	232	25.00	5,800.00	27.00	6,264.00
<b>BASE BID SCH. C TOTAL ITEMS 51-59</b>						<b>42,000.00</b>		<b>45,914.00</b>
BASE BID SCHEDULE D (CLINTON KEITH ROAD, PLANT ESTABLISHMENT)					4 PACIFIC RESTORATION GROUP, INC Lake Elsinore, CA 92531		5 HANFORD APPLIED REST & CONSERVATION Petaluma, CA 94954	
ITEM NO.	ITEM CODE	CONTRACT ITEM	UNITS	QUANTITY	BID UNIT PRICE	BID ESTIMATE	BID UNIT PRICE	BID ESTIMATE
60	208000	IRRIGATION [TWICE A WEEK FOR 90 DAYS]	EA	26	1,500.00	39,000.00	1,820.00	47,320.00
61	032004	REPLACEMENT PLANTING (ASSUMES 10%)	EA	24	20.00	480.00	144.00	3,456.00
62	030501	REPAIR OR REPLACEMENT OF BOUNDARY STAKES	EA	1	50.00	50.00	1,670.00	1,670.00
63	066567	REPLACEMENT OF SIGNS	EA	1	100.00	100.00	1,500.00	1,500.00
<b>BASE BID SCH. D TOTAL ITEMS 60-63</b>						<b>39,630.00</b>		<b>53,946.00</b>

<b>TOTAL (ALL BID SCHEDULES) ITEMS 1 - 63</b>					<b>2,636,282.10</b>		<b>2,920,654.00</b>	
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**Maintenance/Warranty Bond**

<b>Surety</b>	Harco National Insurance Company	<b>Surety</b>	Everest Reinsurance Company	<b>Principal</b>	Helix Environmental Construction Group, Inc.
Address	702 Oberlin Road	Address	P.O. Box 70	Address	7578 El Cajon Blvd
City/State	Raleigh, NC	City/State	Orange, CA	City/State	La Mesa, CA
Zip	27605	Zip	92856	Zip	91942
Phone	800-342-0753	Phone	(908) 604-3000	Phone	(619) 462-1515

**KNOW ALL MEN BY THESE PRESENTS** that we, Helix Environmental Construction Group, Inc., as Principal, and Harco National Insurance Company, a corporation organized and existing under the laws of the State of California, and Everest Reinsurance Company, a corporation organized and existing under the laws of the State of Delaware, as Surety, are held and firmly bound unto the County of Riverside, a political subdivision of the State of California, in the penal sum of \$1,132,697.58 (One Million One Hundred Thirty-Two Thousand Six Hundred Ninety-Seven and fifty-eight cents), lawful money of the United State of America, for the payment whereof well and truly to be made, we and each of us, jointly and severally, bind ourselves, our and each of our heirs, executors, administrators, successors and assigns, firmly by these presents.

**THE CONDITION OF THIS BOND IS SUCH:**

THAT WHEREAS the Principal did on August 4, 2020 enter into a Contract with the County of Riverside for Integrated Mitigation Project, Located Southwest of Briggs Road and Golden Jay Lane, In the French Valley Community, Prj.

No. C7-0032 that was substantially complete on August 10, 2021, and which requires a five year Maintenance and Warranty period as described in Sections 20 LANDSCAPE, 20-1 GENERAL, 20-2 IRRIGATION, 20-3 PLANTING, and 20-4 PLANT ESTABLISHMENT WORK of the Contract Specifications, which Contract is hereby made a part hereof as if fully copied herein;

NOW THEREFORE, if the Principal herein shall faithfully and truly observe the terms, provisions, conditions, stipulations, directions, and requirements of said Contract and shall in all respects, whether the same be enumerated here or not, faithfully comply with the same and shall assume the defense of, indemnify and save harmless the County of Riverside, its officers, agents and employees from all claims, liabilities, loss, damage or injury which may have been suffered or claimed to have been suffered to persons or property directly or indirectly resulting from or arising out of the operations or conduct of said Principal or any subcontractor in the performance of the work under said Contract, and shall in all respects faithfully keep and observe all of said terms, provision, conditions, stipulations, directions, and requirements, then this obligation is void, otherwise it shall remain in full force and effect.

As a part of the obligation secured hereby and in addition to the face amount specified therefore, there shall be included costs and reasonable expenses and fees, including reasonable attorney's fees, incurred by the County in successfully enforcing such obligations, all to be taxed as costs and included in any judgment rendered.

**IN WITNESS WHEREOF**, this instrument has been duly executed by the Principal and Surety above named on  
October 1, 2021

**Principal**

Helix Environmental Construction Group, Inc.

By

Signature

By

Print/type name

**Surety**Harco National Insurance Company and  
Everest Reinsurance Company

By

Signature

By

Tara Bacon, Attorney-in-fact

Print/type name

Its Attorney in Fact  
"Surety"

(Corporate Seal)

(Corporate Seal)

**NOTE:** This Bond must be executed by both parties with corporate seal affixed. All signatures must be acknowledged. (Attach acknowledgements).

**CALIFORNIA ALL-PURPOSE ACKNOWLEDGMENT**  
**CIVIL CODE § 1189**

A notary public or other officer completing this certificate verifies only the identity of the individual who signed the document to which this certificate is attached, and not the truthfulness, accuracy, or validity of that document.

State of California  
County of San Diego )

On October 1, 2021 before me, Minna Huovila, Notary Public  
(insert name and title of the officer)

personally appeared Tara Bacon  
who proved to me on the basis of satisfactory evidence to be the person(s) whose name(s) is/are  
subscribed to the within instrument and acknowledged to me that he/she/they executed the same in  
his/her/their authorized capacity(ies), and that by his/her/their signature(s) on the instrument the  
person(s), or the entity upon behalf of which the person(s) acted, executed the instrument.

I certify under PENALTY OF PERJURY under the laws of the State of California that the foregoing  
paragraph is true and correct.

WITNESS my hand and official seal.

Signature



(Seal)



## ACKNOWLEDGMENT

A notary public or other officer completing this certificate verifies only the identity of the individual who signed the document to which this certificate is attached, and not the truthfulness, accuracy, or validity of that document.

State of California  
County of San Diego )

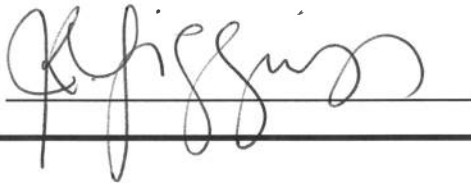
On 10/6/21 before me, Karla Liggins, Notary Public  
(insert name and title of the officer)

personally appeared Justin Fischbeck,  
who proved to me on the basis of satisfactory evidence to be the person(s) whose name(s) is/are  
subscribed to the within instrument and acknowledged to me that he/she/they executed the same in  
his/her/their authorized capacity(ies), and that by his/her/their signature(s) on the instrument the  
person(s), or the entity upon behalf of which the person(s) acted, executed the instrument.

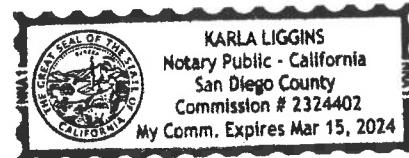
I certify under PENALTY OF PERJURY under the laws of the State of California that the foregoing  
paragraph is true and correct.

WITNESS my hand and official seal.

Signature



(Seal)



**POWER OF ATTORNEY**

Bond # 798010

**HARCO NATIONAL INSURANCE COMPANY  
INTERNATIONAL FIDELITY INSURANCE COMPANY**

Member companies of IAT Insurance Group, Headquartered: 4200 Six Forks Rd, Suite 1400, Raleigh, NC 27609

**KNOW ALL MEN BY THESE PRESENTS:** That **HARCO NATIONAL INSURANCE COMPANY**, a corporation organized and existing under the laws of the State of Illinois, and **INTERNATIONAL FIDELITY INSURANCE COMPANY**, a corporation organized and existing under the laws of the State of New Jersey, and having their principal offices located respectively in the cities of Rolling Meadows, Illinois and Newark, New Jersey, do hereby constitute and appoint

SARAH MYERS, JAMES D. CASTLE, TARA BACON, LAWRENCE F. MCMAHON, GEOFFREY SHELTON, MARIA HALLMARK, JANICE MARTIN

San Diego, CA

their true and lawful attorney(s)-in-fact to execute, seal and deliver for and on its behalf as surety, any and all bonds and undertakings, contracts of indemnity and other writings obligatory in the nature thereof, which are or may be allowed, required or permitted by law, statute, rule, regulation, contract or otherwise, and the execution of such instrument(s) in pursuance of these presents, shall be as binding upon the said **HARCO NATIONAL INSURANCE COMPANY** and **INTERNATIONAL FIDELITY INSURANCE COMPANY**, as fully and amply, to all intents and purposes, as if the same had been duly executed and acknowledged by their regularly elected officers at their principal offices.

This Power of Attorney is executed, and may be revoked, pursuant to and by authority of the By-Laws of **HARCO NATIONAL INSURANCE COMPANY** and **INTERNATIONAL FIDELITY INSURANCE COMPANY** and is granted under and by authority of the following resolution adopted by the Board of Directors of **INTERNATIONAL FIDELITY INSURANCE COMPANY** at a meeting duly held on the 13th day of December, 2018 and by the Board of Directors of **HARCO NATIONAL INSURANCE COMPANY** at a meeting held on the 13th day of December, 2018.

"RESOLVED, that (1) the Chief Executive Officer, President, Executive Vice President, Senior Vice President, Vice President, or Secretary of the Corporation shall have the power to appoint, and to revoke the appointments of, Attorneys-in-Fact or agents with power and authority as defined or limited in their respective powers of attorney, and to execute on behalf of the Corporation and affix the Corporation's seal thereto, bonds, undertakings, recognizances, contracts of indemnity and other written obligations in the nature thereof or related thereto; and (2) any such Officers of the Corporation may appoint and revoke the appointments of joint-control custodians, agents for acceptance of process, and Attorneys-in-fact with authority to execute waivers and consents on behalf of the Corporation; and (3) the signature of any such Officer of the Corporation and the Corporation's seal may be affixed by facsimile to any power of attorney or certification given for the execution of any bond, undertaking, recognizance, contract of indemnity or other written obligation in the nature thereof or related thereto, such signature and seals when so used whether heretofore or hereafter, being hereby adopted by the Corporation as the original signature of such officer and the original seal of the Corporation, to be valid and binding upon the Corporation with the same force and effect as though manually affixed."

IN WITNESS WHEREOF, **HARCO NATIONAL INSURANCE COMPANY** and **INTERNATIONAL FIDELITY INSURANCE COMPANY** have each executed and attested these presents on this 31st day of December, 2020



STATE OF NEW JERSEY  
County of Essex

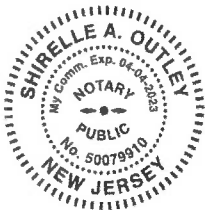
Kenneth Chapman

Executive Vice President, Harco National Insurance Company  
and International Fidelity Insurance Company

STATE OF ILLINOIS  
County of Cook



On this 31st day of December, 2020, before me came the individual who executed the preceding instrument, to me personally known, and, being by me duly sworn, said he is the therein described and authorized officer of **HARCO NATIONAL INSURANCE COMPANY** and **INTERNATIONAL FIDELITY INSURANCE COMPANY**; that the seals affixed to said instrument are the Corporate Seals of said Companies; that the said Corporate Seals and his signature were duly affixed by order of the Boards of Directors of said Companies.



IN TESTIMONY WHEREOF, I have hereunto set my hand affixed my Official Seal, at the City of Newark, New Jersey the day and year first above written.

Shirelle A. Outley a Notary Public of New Jersey  
My Commission Expires April 4, 2023

**CERTIFICATION**

I, the undersigned officer of **HARCO NATIONAL INSURANCE COMPANY** and **INTERNATIONAL FIDELITY INSURANCE COMPANY** do hereby certify that I have compared the foregoing copy of the Power of Attorney and affidavit, and the copy of the Sections of the By-Laws of said Companies as set forth in said Power of Attorney, with the originals on file in the home office of said companies, and that the same are correct transcripts thereof, and of the whole of the said originals, and that the said Power of Attorney has not been revoked and is now in full force and effect.

IN TESTIMONY WHEREOF, I have hereunto set my hand on this day, October 1, 2021

Irene Martins, Assistant Secretary

**POWER OF ATTORNEY  
EVEREST REINSURANCE COMPANY  
DELAWARE**

KNOW ALL PERSONS BY THESE PRESENTS: That Everest Reinsurance Company, a corporation of the State of Delaware ("Company") having its principal office located at 477 Martinsville Road, Liberty Corner, New Jersey 07938, do hereby nominate, constitute, and appoint:

**Lawrence F. McMahon, Ryan E. Warnock, Christopher Conte, Sarah Myers, Janice Martin, Tara Bacon, Maria Hallmark**

its true and lawful Attorney(s)-in-fact to make, execute, attest, seal and deliver for and on its behalf, as surety, and as its act and deed, where required, any and all bonds and undertakings in the nature thereof, for the penal sum of no one of which is in any event to exceed UNLIMITED, reserving for itself the full power of substitution and revocation.

Such bonds and undertakings, when duly executed by the aforesaid Attorney(s)-in-fact shall be binding upon the Company as fully and to the same extent as if such bonds and undertakings were signed by the President and Secretary of the Company and sealed with its corporate seal.

This Power of Attorney is granted and is signed by facsimile under and by the authority of the following Resolutions adopted by the Board of Directors of Company ("Board") on the 28th day of July 2016:

*RESOLVED, that the President, any Executive Vice President, and any Senior Vice President and Anthony Romano are hereby appointed by the Board as authorized to make, execute, seal and deliver for and on behalf of the Company, any and all bonds, undertakings, contracts or obligations in surety or co-surety with others and that the Secretary or any Assistant Secretary of the Company be and that each of them hereby is authorized to attest to the execution of any such bonds, undertakings, contracts or obligations in surety or co-surety and attach thereto the corporate seal of the Company.*

*RESOLVED, FURTHER, that the President, any Executive Vice President, and any Senior Vice President and Anthony Romano are hereby authorized to execute powers of attorney qualifying the attorney named in the given power of attorney to execute, on behalf of the Company, bonds and undertakings in surety or co-surety with others, and that the Secretary or any Assistant Secretary of the Company be, and that each of them is hereby authorized to attest the execution of any such power of attorney, and to attach thereto the corporate seal of the Company.*

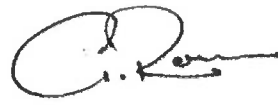
*RESOLVED, FURTHER, that the signature of such officers named in the preceding resolutions and the corporate seal of the Company may be affixed to such powers of attorney or to any certificate relating thereto by facsimile, and any such power of attorney or certificate bearing such facsimile signatures or facsimile seal shall be thereafter valid and binding upon the Company with respect to any bond, undertaking, contract or obligation in surety or co-surety with others to which it is attached.*

IN WITNESS WHEREOF, Everest Reinsurance Company has caused their corporate seals to be affixed hereto, and these presents to be signed by their duly authorized officers this 28th day of July 2016.



  
Attest: Nicole Chase, Assistant Secretary

Everest Reinsurance Company

  
By: Anthony Romano, Vice President

On this 28th day of July 2016, before me personally came Anthony Romano, known to me, who, being duly sworn, did execute the above instrument; that he knows the seal of said Company; that the seal affixed to the aforesaid instrument is such corporate seal and was affixed thereto; and that he executed said instrument by like order.

**LINDA ROBINS  
Notary Public, State of New York  
No 01R06239736  
Qualified in Queens County  
Term Expires April 25, 2023**



Linda Robins, Notary Public

IN WITNESS WHEREOF, I have hereunto set my hand and affixed the seal of said Company, at the Liberty Corner, this 1st day of October 2021.

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**Company Information**
**HARCO NATIONAL INSURANCE COMPANY**

**4200 SIX FORKS RD STE 1400  
RALEIGH, NC 27609  
800-342-0753**

**Old Company Names**
**Effective Date**

Old Company Names	Effective Date
HARCO NATIONAL INSURANCE COMPANY OF ILLINOIS	12/31/1994

**Agent For Service**

AMANDA GARCIA  
330 N Brand Blvd Ste 700  
Glendale CA 91203-2336

**Reference Information**

NAIC #:	26433
California Company ID #:	3711-9
Date Authorized in California:	09/09/1994
License Status:	UNLIMITED-NORMAL
Company Type:	Property & Casualty
State of Domicile:	ILLINOIS

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**NAIC Group List**

NAIC Group #:	<b>0225</b>	IAT Reins Co Grp
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**Lines Of Business**

The company is authorized to transact business within these lines of insurance. For an explanation of any of these terms, please refer to the [glossary](#).

AIRCRAFT  
AUTOMOBILE  
BOILER AND MACHINERY  
BURGLARY  
COMMON CARRIER LIABILITY  
CREDIT  
FIRE  
LIABILITY  
MARINE  
MISCELLANEOUS  
PLATE GLASS  
SPRINKLER  
SURETY  
TEAM AND VEHICLE  
WORKERS' COMPENSATION

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# Harco National Insurance Company

AMB #: 000960    NAIC #: 26433    FEIN #: 136108721

## Mailing Address

4200 Six Forks Road  
Raleigh, North Carolina 27609  
United States

**Web:** [www.iatinsurancegroup.com](http://www.iatinsurancegroup.com)

**Phone:** 847-321-4800

**Fax:** 847-321-4810

[View Additional Address Information](#)

**AM Best Rating Unit:** AMB #: 018240 - Harco National Group

Assigned to insurance companies that have, in our opinion, an excellent ability to meet their ongoing insurance obligations.



[View additional news, reports and products for this company.](#)

Based on AM Best's analysis, 046846 - Goose Creek Capital Inc. is the **AMB Ultimate Parent** and identifies the topmost entity of the corporate structure. [View a list of operating insurance entities in this structure.](#)

## Best's Credit Ratings

### Financial Strength View Definition

**Rating (Rating Category):** A- (Excellent)

**Affiliation Code:** p (Pooled)

**Outlook (or Implication):** Stable

**Action:** Affirmed

**Effective Date:** December 10, 2020

**Initial Rating Date:** June 30, 1959

### Long-Term Issuer Credit View Definition

**Rating (Rating Category):** a- (Excellent)

**Outlook (or Implication):** Stable

**Action:** Affirmed

**Effective Date:** December 10, 2020

**Initial Rating Date:** June 20, 2007



### Financial Size Category View Definition

**Financial Size Category:** XI (\$750 Million to \$1 Billion)

u Denotes Under Review Best's Rating

### Best's Credit Rating Analyst

**Rating Office:** A.M. Best Rating Services, Inc.

**Senior Financial Analyst:** Joni Cerbone

**Director:** Jacqueline Lentz, CPA

*Note: See the Disclosure information Form or Press Release below for the office and analyst at the time of the rating event.*

### Disclosure Information

#### Disclosure Information Form

[View AM Best's Rating Disclosure Form](#)

[View AM Best's Rating Review Form](#)

## Rating History

AM Best has provided ratings & analysis on this company since 1959.

### Financial Strength Rating

Effective Date	Rating
12/10/2020	A-
12/18/2019	A-
10/19/2018	A-
9/28/2017	A-
10/11/2016	A-

### Long-Term Issuer Credit Rating

Effective Date	Rating
12/10/2020	a-
12/18/2019	a-
10/19/2018	a-
9/28/2017	a-
10/11/2016	a-

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**EVEREST REINSURANCE COMPANY**

**100 EVEREST WAY  
WARREN, NJ 07059  
800-269-6660**

**Old Company Names**

PRUDENTIAL REINSURANCE COMPANY

**Effective Date**

04/10/1996

**Agent For Service**

Melissa DeKoven  
2710 Gateway Oaks Drive, Suite 150N  
Sacramento CA 95833-3505

**Reference Information**

NAIC #:	26921
California Company ID #:	2259-0
Date Authorized in California:	10/24/1977
License Status:	UNLIMITED-NORMAL
Company Type:	Property & Casualty
State of Domicile:	DELAWARE

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**NAIC Group List**

NAIC Group #: **1120** EVEREST REINS HOLDINGS GRP

**Lines Of Business**

The company is authorized to transact business within these lines of insurance. For an explanation of any of these terms, please refer to the [glossary](#).

AIRCRAFT  
AUTOMOBILE  
BOILER AND MACHINERY  
BURGLARY  
COMMON CARRIER LIABILITY  
CREDIT  
DISABILITY  
FIRE  
LIABILITY  
MARINE  
MISCELLANEOUS  
PLATE GLASS  
SPRINKLER  
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# Everest Reinsurance Company

AMB #: 003519    NAIC #: 26921    FEIN #: 222005057

## Administrative Office

Warren Corporate Center 100 Everest Way

Warren, New Jersey 07059

United States

**Web:** [www.everestre.com](http://www.everestre.com)

**Phone:** 908-604-3000

**Fax:** 908-604-3450

[View Additional Address Information](#)

**AM Best Rating Unit:** AMB #: 058455 - Everest Re Group, Ltd.

Assigned to insurance companies that have, in our opinion, a superior ability to meet their ongoing insurance obligations.



[View additional news, reports and products for this company.](#)

Based on AM Best's analysis, 058455 - Everest Re Group, Ltd. is the **AMB Ultimate Parent** and identifies the topmost entity of the corporate structure. [View a list of operating insurance entities in this structure.](#)

## Best's Credit Ratings

### Financial Strength View Definition

**Rating (Rating Category):** A+ (Superior)

**Affiliation Code:** g (Group)

**Outlook (or Implication):** Stable

**Action:** Affirmed

**Effective Date:** May 07, 2021

**Initial Rating Date:** June 30, 1978

### Long-Term Issuer Credit View Definition

**Rating (Rating Category):** aa- (Superior)

**Outlook (or Implication):** Stable

**Action:** Affirmed

**Effective Date:** May 07, 2021

**Initial Rating Date:** June 02, 2004

#### Financial Size Category View Definition

**Financial Size Category:** XV (\$2 Billion or greater)

u Denotes Under Review Best's Rating

#### Best's Credit Rating Analyst

**Rating Office:** A.M. Best Rating Services, Inc.

**Senior Financial Analyst:** Clare Finnegan

**Director:** Steven M. Chirico, CPA

*Note: See the Disclosure information Form or Press Release below for the office and analyst at the time of the rating event.*

**Note:** Credit Ratings on this company are European Union Endorsed and United Kingdom Endorsed

#### Disclosure Information

##### Disclosure Information Form

[View AM Best's Rating Disclosure Form](#)

##### Press Release

AM Best Affirms Credit Ratings of Everest Re Group, Ltd. and Its Subsidiaries

May 07, 2021

[View AM Best's Rating Review Form](#)

#### Rating History

AM Best has provided ratings & analysis on this company since 1978.

##### Financial Strength Rating

Effective Date	Rating
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