CALAVERAS COUNTY WATER DISTRICT
EBBETTS PASS WATER SYSTEM
REACH 1 WATER PIPELINE REPLACEMENT PROJECT

ADDENDUM #3

Issued: Tuesday, February 12, 2019

***** Receipt of addenda must be acknowledged by Bidders on the BID FORM, Section 00410, Page 410-1; failure to acknowledge receipt may cause rejection of bid. *****

Bid Date (No Change): The current bid opening date and time is Tuesday, February 26, 2019 at 2:00 PM. Bids will be accepted at office of the Calaveras County Water District at 120 Toma Ct., San Andreas, CA 95249 no later than 2:00 PM local time on Tuesday, February 26, 2019, at which time all bids received will be publically opened and read aloud.

PART A. PROJECT MANUAL / SPECIFICATIONS

1. Amend Bid Items No.28a and 28b as follows:

   All temporary bypass piping place on the ground surface or otherwise installed on the project shall be anchored at the ends and stabilized and restrained to prevent lateral movement that may risk the safety of traffic, workers or cause damage to trees, vegetation, fences and other property. The methods of anchoring shall be as recommended in by the Plastic Pipe Institute, Second Edition of Handbook of PE Pipe, Chapter 8, Above-Ground Applications for PE Pipe. This publication is available online at https://plasticpipe.org/publications/pe-handbook.html.

2. For Appendix D of the Project Manual, the following permit approvals, permit applications and related documents have been posed on the District's website under the link "Capital Improvements" at https://ccwd.org/current-projects/ and are herein incorporated by reference.

   a) CalTrans Permit 1018-NUK-0308 encroachment permit issued by State of California Department of Transportation, District 10, Stockton.

   b) §401 Water Quality Certification issued by the Central Regional Water Quality Control Board for compliance with §401 of the Clean Water Act

   c) §404 Permit (USACE) Nationwide Permit NWP 12 for Utility Line Activities in conformance with §404 of the Clean Water Act as issued by the U.S. Army Corps of Engineer

   d) §1600 Permit (CDF&W) Streambed Alteration, Notification No. 1600-2018-0179-R2 as issued by the California Department of Fish and Wildlife (CDF&W).

   e) Biological Resources Report is provided for reference and is a common attachment to the §401, §404 and §1600 permits.

   The above permits and related documents can also be made available to prospective bidders at the District's office upon request by contacting Alesia Danner at (209) 754-3181.

PART B. DRAWINGS

1. None at this time.

PART C. BIDDER’S QUESTIONS / REQUESTS FOR INFORMATION

1. None at this time.

END

control any change of physical dimensions; anchoring can take advantage of PE's unique stress relaxation properties to control movement and deflection mechanically.[12]

Free Movement

An unrestrained pipe installation requires that the pipe be placed on a bed or right-of-way that is free of material that may abrade or otherwise damage the exterior pipe surface. The object is to let the pipe "wander" freely without restriction or potential for point damage. This installation method usually entails "snaking" the PE pipe along the right-of-way. The excess pipe then allows some slack that will be taken up when the temperature drops and the pipe contracts.

Figure 2 Typical Above-Ground Installations with PE Pipe

Figure 2a On-grade Installation of PE Pipe in an Industrial Application. Note "snaking" along right of way.

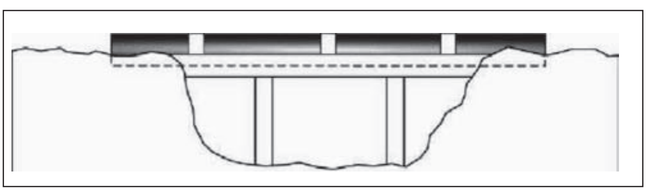

Figure 2b Continuous Support of PE Pipe at Ravine Crossing

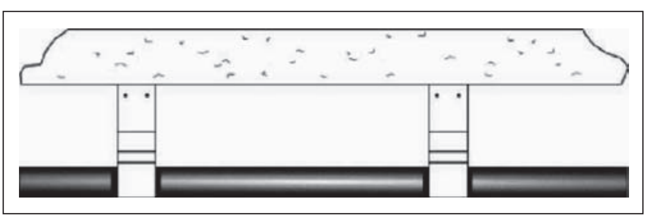

Figure 2c Intermittent Support of PE Pipe Suspended from Rigid Structure

In all likelihood, a free-moving PE pipe must eventually terminate at or connect to a rigid structure of some sort. It is highly recommended that transitions from free-moving PE pipe to a rigid pipe appurtenance be fully stabilized so as to prevent stress concentration within the transition connection.

Figure 3 illustrates some common methods used to restrain the pipe at a distance of one to three pipe diameters away from the rigid termination. This circumvents the stress-concentrating effect of lateral pipe movement at termination points by relieving the stresses associated with thermal expansion or contraction within the pipe wall itself.

Figure 3 Typical Anchoring Methods at Rigid Terminations of Free-Moving PE Pipe Sections

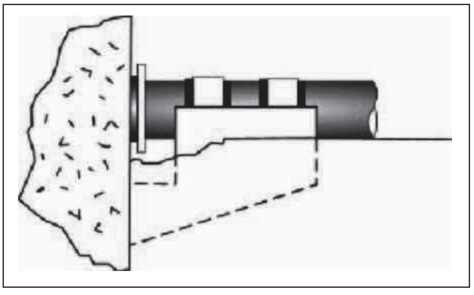

Figure 3a Connection to Concrete Vault Using Grade Beam

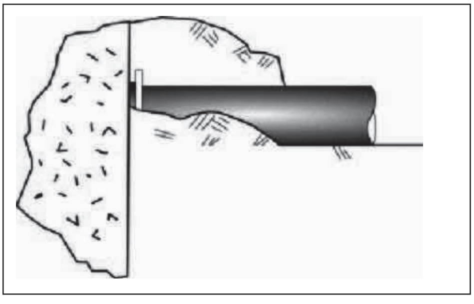

Figure 3b Connection to Rigid Structure Using Consolidated Earthen Berm

Restrained Pipelines

The design for an above-ground installation that includes restraint must consider the means by which the movement will be controlled and the anchoring or restraining force needed to compensate for, or control, the anticipated expansion and contraction stresses. Common restraint methods include earthen berms, pylons, augered anchors, and concrete cradles or thrust blocks.

The earthen berm technique may be either continuous or intermittent. The pipeline may be completely covered with a shallow layer of native earth over its entire length, or it may be stabilized at specific intervals with the earthen berms between the anchor locations. Typical earthen berm configurations are presented in Figure 4.

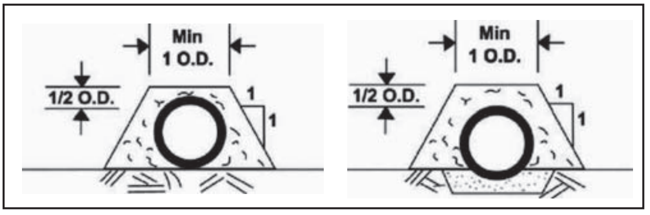

Figure 4 Earthern Berm Configurations

The continuous earthen berm serves not only to stabilize the pipe and restrain its movement but also to moderate temperature fluctuations. With less temperature fluctuation the tendency for pipe movement is reduced.

An intermittent earthen berm installation entails stabilization of the pipe at fixed intervals along the length of the pipeline. At each point of stabilization the above-ground pipe is encased with earthen fill for a distance of one to three pipe diameters. The economy of this method of pipeline restraint is fairly obvious.

Other means of intermittent stabilization are available which provide equally effective restraint of the pipeline with a greater degree of ease of operation and maintenance. These methods include pylons, augered anchors [13], or concrete cradles. These restraint techniques are depicted schematically in Figures 5 through 7.

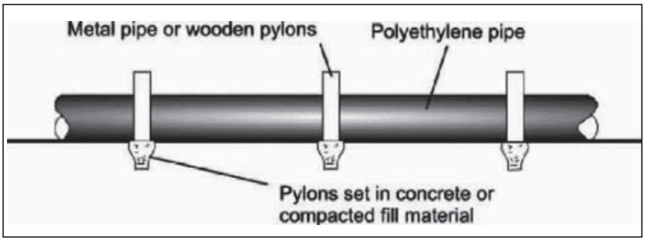

Figure 5 Pylon Type Stabilization

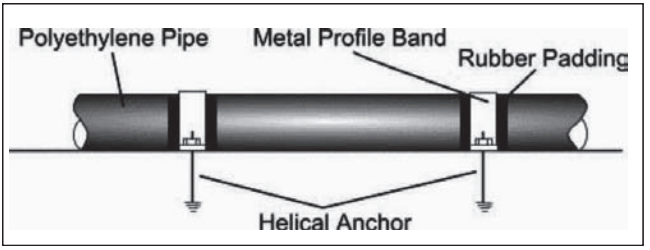

Figure 6 Augered Anchor Stabilization

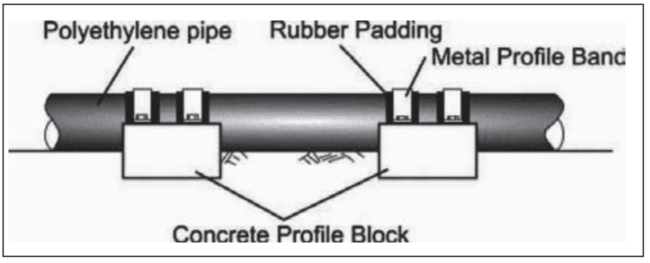

Figure 7 Concrete Cradle or Thrust Block Stabilization

A pipeline that is anchored intermittently will deflect laterally in response to temperature variations, and this lateral displacement creates stress within the pipe wall. The relationships between these variables are determined as follows:

Lateral Deflection (Approximate from Catenary Eq.)

(6) $\Delta y = L\sqrt{0.5\,\alpha\,(\Delta T)}$

WHERE

Δ_y = **Lateral deflection (in.)**

L = **Distance between anchor points (in.)**

α= **Coefficient of expansion/contraction; see Appendix, Chapter 3**

ΔT = **Temperature change (T_2 - T_1) in °F**

(7) Bending Strain Development

$$\varepsilon = \frac{D\sqrt{96\,\alpha\,(\Delta T)}}{L}$$

WHERE

ε = **Strain in pipe wall (%)**

D = **Outside diameter of pipe (in)**

α= **Coefficient of expansion/contraction; see Appendix, Chapter 3**

ΔT = **(T_2 - T_1) in °F**

L = **Length between anchor points (in)**