Department of Public Works
Engineering Division

December 10, 2024

CITY OF BERKELEY
STRAWBERRY CREEK CULVERT MAINTENANCE PROJECT – PHASE 1
SPECIFICATION NO. 25-11689-C
ADDENDUM NO. 3

Dear Bidder:

The City of Berkeley has received questions from potential bidders regarding Specification No. 25-11689-C, Strawberry Creek Culvert Maintenance Project – Phase 1. In an effort to provide the same information to all potential bidders, the questions are included below, along with a response from City staff.

1. **Question:** Will the Owner/Engineer change Table 1 so as to allow for a 28 Day Flexural Strength of 800 psi? This is alluded to in the testing pass fail criterial found in Item 3 on page C-36 of Specification No. 25-11689-C, however, Table 1 is in conflict.

   Answer: *Table 1 minimum requirement for 28-day flexural strength has been revised to 800 psi per ASTM C78.*

2. **Question:** Will the owner / engineer please remove the requirements as found on C-29 that Design Thickness be prepared using distributed beam load over a partial ring model?

   Answer: *Per design thickness specifications for geopolymer lining bid items, if the contractor desires to submit another design method for consideration this may be done if the distributed beam load over a partial ring model is submitted as a minimum for comparison. The most conservative method will govern the design thickness. Due to hydraulic constraints, the proposed lining thickness shall be no more than 50% thicker than the thicknesses shown in the Technical Provisions.*

3. **Question:** Is the City responsible for testing or does the contractor need to account for it in their bid?

   Answer: *The City will hire a material testing firm and cover the cost for the compression and flexural strength testing. The contractor is responsible for hiring a testing firm to cover the cost of XRF testing per the specifications.*

The following amendments are hereby made to the subject documents:

1. **Specifications: Technical Provisions, Install Geopolymer Lining Bid Items, Table 1**
   Requirement for 28-day flexural strength has been revised to 800 psi.

The Bid Opening time and date remain at 2:00 PM, Thursday, December 19, 2024. All other provisions of the contract documents shall remain the same. **Bidders shall submit a signed acknowledgment of Addendum No. 3 along with their Bidder's Proposal. Failure to do so may result in bid rejection.**

Sincerely,

Ricardo Salcedo
Associate Civil Engineer

BIDDER'S ACKNOWLEDGEMENT:

Name of Company: _____

Address, City, State, Zip: _____

Signature: _____ Title: _____

Print Name: _____ Date: _____

Attachment(s): 1) Technical Provisions, Install Geopolymer Lining Bid Items, Table 1 (revised)

TABLE 1 – Geopolymer Laboratory Test Values		
Physical Properties	**ASTM / References**	**Requirements**
Compressive Strength (24-Hour)	ASTM C39	2,500 psi
Compressive Strength (28-Day)	ASTM C39	8,000 psi
Flexural Strength (FS) (28-Day)	ASTM C78	**800** ~~1,500~~ psi
Modulus of Elasticity (28-Day) (Compressive Elastic Modulus)	ASTM C469	3,900,000 psi
Tensile Strength (28-Day)	ASTM C496	700 psi
Freeze-Thaw Durability (@ 300 cycles)	ASTM C666	Max 0.5% Loss
Bond Strength to Concrete (28-Day)	ASTM C882	2,500 psi
Shrinkage (28-Day)	ASTM C1090	Max 0.02% at 65% R.H.
Abrasion Resistance (6 cycles on 28-day sample)	ASTM C1138	Max 36.3 in^3 total volume loss
XRF (X-Ray Fluorescence)	ASTM C114	70% minimum composed of SiO_2, MgO, Al_2O_3, or Fe_2O_3
Acute Toxicity	EPA-821-R-02-012)	100% survivability during product curing time (2-4 hrs) with 1 inch water flow and 3 times the retention time of being exposed to curing product

3. The Plans show the locations of access openings to the culvert. No additional access opening shall be required to apply the geopolymer ling. All access openings are at least 24 inches in diameter.
4. All materials used shall not be toxic to aquatic life after curing. All proposed materials shall be evaluated to demonstrate that they are non-toxic as noted in the Water Quality Certification and Order WDID # 2 CW455794 as included in the appendix.

The geopolymer liner shall be by GeoTree Solutions or approved equal. Additional materials may be required to prevent water infiltration prior to application of the geopolymer lining. These shall be provided by the same vendor as the geopolymer liner.