

Agenda Item: 6.

MEMORANDUM

TO: Programs, Projects and Operations Subcommittee
FROM: Martin P. Cleveland
DATE: July 7, 2017
SUBJECT: Big Papio Levee Culverts Phase 2 Rehab Project

In April 2015, The District Board of Directors selected FYRA Engineering to provide professional services for the Big Papio Levee Culverts Phase 1 Rehab Project. Their work included providing project management, preliminary design, permitting, final design and construction administration for rehabilitation of eight culverts and the replacement of four culverts. The total fee, not to exceed contract amount for Phase 1, was \$263,053.00.

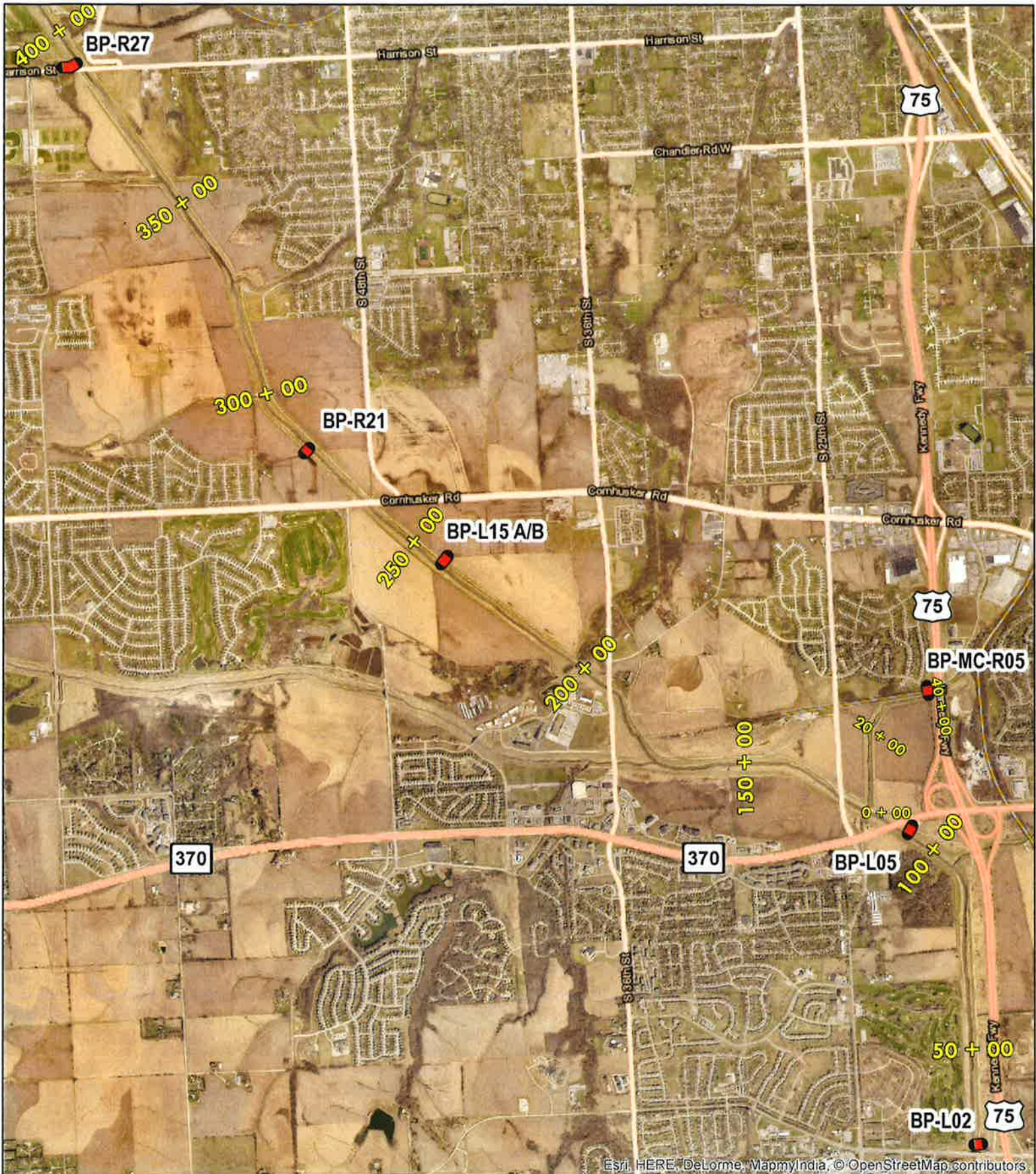
The Phase 1 culvert rehab work was constructed by Nelson and Rock Contracting, Inc. and is anticipated to be completed in early July 2017 at a cost of \$1,769,875.00. The City of Bellevue funded one culvert in the amount of \$124,288.00. The City of Omaha funded four culverts in the amount of \$350,000.00. The two entities own these five culverts under the District levee.

District staff continues to clean levee/channel project culverts and inspect via rover camera equipment weekly. All levee and channel projects in federal assistance program (PL- 84-99) administered by the US Army Corps of Engineers (USACE) must be inspected once per 5-year period. Most of District project culvert inspection reports are due in 2017 and reports have to be submitted to USACE. One of the levee systems, Big Papio Creek, has had its 154 culverts inspected and staff assessment is that 16 of the culverts are in unacceptable condition. These 16 culverts need to be rehabilitated or replaced (Phase 2). See attached maps. The estimated rehabilitation construction cost is \$2,300,000.00.

District Management recommends that FYRA Engineering, Inc. be hired to provide professional services for Big Papio Levee Culverts Phase 2 Rehab Project. FYRA has been very effective at completing Phase 1 work and is very familiar with permitting, design and construction aspects of pipe rehabilitation after completing Phase 1 work.

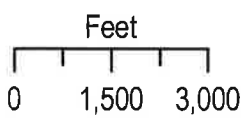
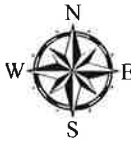
Attached is a proposed Big Papio Levee Culverts Phase 2 Rehab Project Scope of Services, Fee and Work Schedule by FYRA Engineering. The proposed Scope of Services not to exceed fee of \$360,085.00 includes all the professional services needed to design, permit and construct the culvert rehabilitation project. It is anticipated that design and permitting would be complete for bidding next spring and a construction start in early summer.

Management recommends that the Programs, Projects and Operations Subcommittee recommend to the Board of Directors that the requirements of Board Policy 15.2 Purchasing – Professional Services be suspended, and the General Manager be authorized to execute the proposed professional services contract with FYRA Engineering, Inc. for the Big Papio Levee Culverts Phase 2 Rehab Project for a maximum not to exceed fee of \$360,085.00, subject to changes deemed necessary by the General Manager and approval as to form by District Legal Counsel.



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Culvert Location Map



**PAPIO-MISSOURI RIVER
NATURAL
RESOURCES
DISTRICT**

8901 S. 154th Street
Omaha, NE 68138-3621

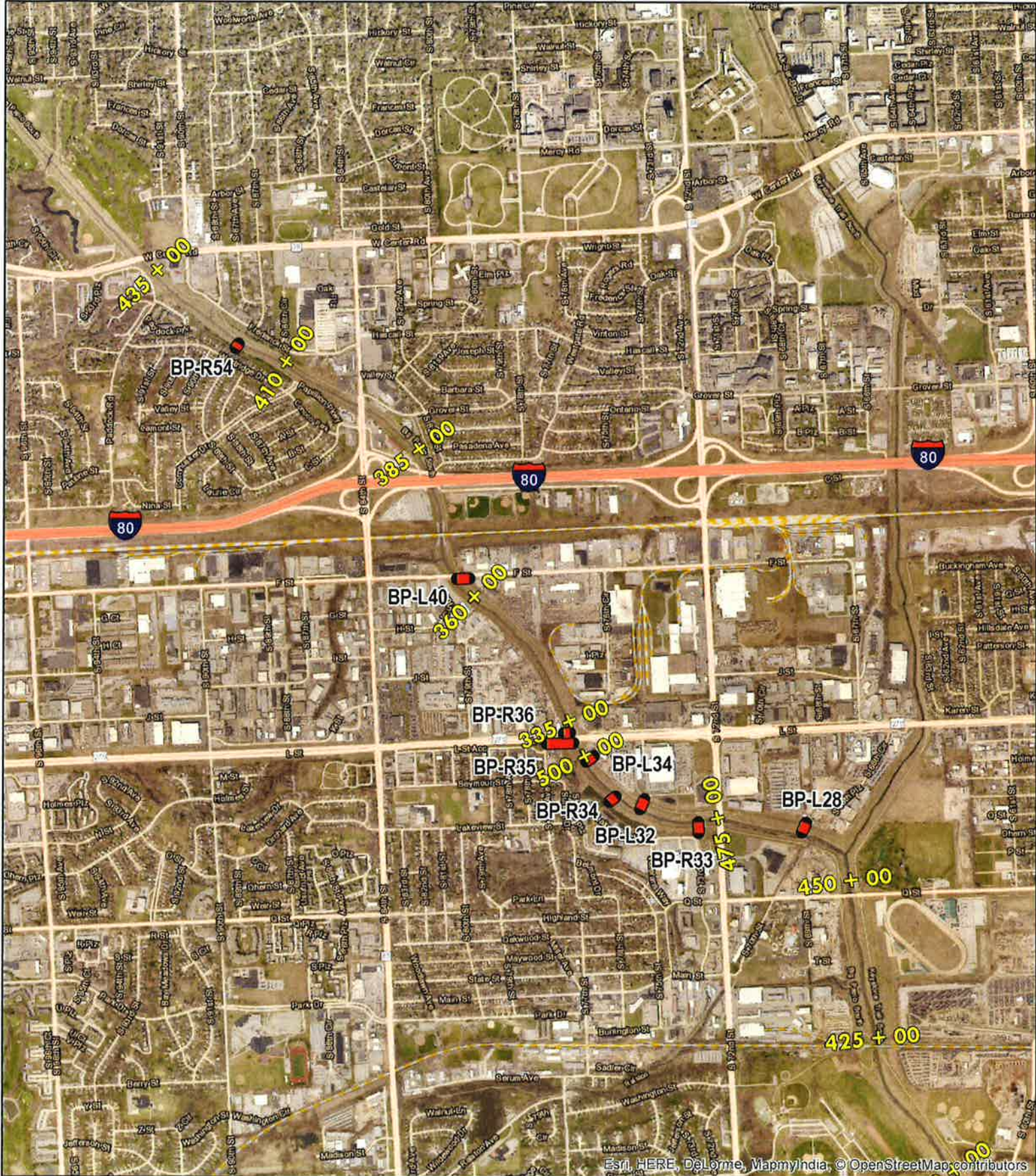
**BIG PAPIO LEVEE
CULVERTS PROJECT - PHASE 2**

**CAPEHART RD. TO
HARRISON ST.**

Phase 2

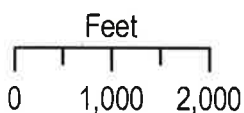
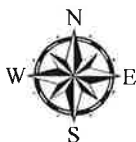
Sheet 1 of 2

Date: 7/3/2017



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Culvert Location Map



**PAPIO-MISSOURI RIVER
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8901 S. 154th Street
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**BIG PAPIO LEVEE
CULVERTS PROJECT - PHASE 2**

**W. CENTER RD. TO
"Q" ST.**

Phase 2

Sheet 2 of 2

Date: 7/3/2017

Attachment 1 to Exhibit A

1 PROJECT MANAGEMENT

1.1 Client Meetings

Preparation for and attendance of up to five (5) meetings, exclusive of other meetings specified in this Attachment 1 to Exhibit A, with the Papio-Missouri River Natural Resources District (P-MRNRD). Project review meetings will occur after the Preliminary Design phase, Final Design phase and Construction phase and at the request of the P-MRNRD. Meeting minutes and project task lists will be prepared by FYRA and distributed after each meeting for approval by the P-MRNRD.

1.2 Monthly Invoicing & Project/Schedule Updates

Preparation of monthly project invoices, incorporation of sub-consultant invoices and a summary of work completed during the invoicing period. Invoices will be sent to the P-MRNRD prior to the first of the month and will include task item and invoice breakouts for any project partners (City of Omaha, City of Bellevue, etc) as required. Updates will include budget and schedule tracking.

1.3 USACE Levee Safety Coordination Meetings

Preparation for and attendance of up to two (2) meetings, exclusive of other meetings specified in this Attachment 1 to Exhibit A, with the Omaha District USACE Levee Safety and Readiness teams and P-MRNRD. First meeting will occur early in the Preliminary Design phase to review the project and conceptual design. Second meeting will occur during Final Design to ensure that all construction documents and specifications meet the requirements and design guidelines of the USACE 408 permit (on 3 culverts that fall within Federal Levees) and the PL 84-99 program. Meeting minutes and project task lists will be prepared by FYRA and distributed after each meeting for approval by the P-MRNRD.

1.4 USACE Regulatory Coordination Meetings

Preparation for and attendance of up to two (2) meetings, exclusive of other meetings specified in this Attachment 1 to Exhibit A, with the Omaha District USACE Regulatory division and P-MRNRD. The first meeting will be the pre-application meeting and the second will be the 404 permit submittal meeting. Coordination between the engineer and the USACE Regulatory project manager will occur between the first and second meetings, but shall occur via email and phone calls. Meeting minutes and project task

lists will be prepared by FYRA and distributed after each meeting for approval by the P-MRNRD.

1.5 City of Omaha Coordination Meeting

Preparation for and attendance of up to one (1) meeting, exclusive of other meetings specified in this Attachment 1 to Exhibit A, with the City of Omaha and the P-MRNRD specifically for the City of Omaha culverts. This will occur after the preliminary design phase. Meeting minutes and project task lists will be prepared by FYRA and distributed after this meeting for approval by the P-MRNRD.

1.6 City of Bellevue Coordination Meeting

Preparation for and attendance of up to one (1) meeting, exclusive of other meetings specified in this Attachment 1 to Exhibit A, with the City of Bellevue and the P-MRNRD specifically for the City of Bellevue culverts. This will occur after the preliminary design phase. Meeting minutes and project task lists will be prepared by FYRA and distributed after this meeting for approval by the P-MRNRD.

1.7 Landowner Coordination and Review

Preparation for and attendance of up to five (5) meetings, exclusive of other meetings specified in this Attachment 1 to Exhibit A, with the P-MRNRD as may be needed for this project. These meetings may include coordination for project licenses for construction. Meeting minutes and project task lists will be prepared by FYRA and distributed after each meeting for approval by the P-MRNRD.

1.8 Project Team QA/QC

Internal review of all preliminary design, analysis, cost estimates, final design, permitting documents, final design, final design documents, construction reports, as-built data and Operation and Maintenance (O&M) manual updates. All reviews will be completed by a professional engineer registered in the State of Nebraska.

2 PRELIMINARY DESIGN

2.1 Penetration, Utilities, Site Investigation and Survey

Project investigation and information gathering that is required for design of this project. It is anticipated that some minimal information (inlet of the culverts and surrounding utility information) will need to be gathered on these 16 culverts.



2.2 Alternatives Constructability Review

Review of each of the selected alternatives (specifically the sliplining rehabilitated recommendations) and conducting an on-site review with supplier representatives and/or contractors to determine the constructability of the sliplined rehabilitation at each location.

2.3 Hydraulic Analysis

Drainage analysis to develop site hydrology at each culvert location.

2.4 Preliminary Plan and Profiles

Preparation of preliminary plan and profile sheets for each of the culvert rehabilitations and/or replacements within the project. Preliminary plan and profile sheets will be delivered as 11x17 documents and as .pdfs on a project thumb drive and will include plan and profiles, construction notes, preliminary cost estimates per site and drainage basins and culvert information for each site.

2.5 Preliminary Cost Estimate

Preparation of preliminary cost estimate for project, detailing individual costs of all sites. The P-MRNRD has requested that the preliminary project cost estimate is delivered by **1 May 2018 for fiscal year 2018-2019 budgeting purposes.**

3 PERMITTING

3.1 Wetland Delineation/Ordinary High Water Mark Field Work and Reporting

Wetland delineation of up to fifteen (15) project sites and Ordinary High Water Mark (OHWM) determination on all sites. This includes field work and the preparation of all documents required for wetland delineation and OHWM determinations. This also includes the preparation of one (1) final report outlining all the project findings which will be included with the permit applications for all sites.

3.2 408 Permitting/PL 84-99 Approvals

Preparation of all required 408 documents required for the alteration of a federal project and is included on three (3) culverts that are within federal channels. This would also include the review and documentation necessary under the PL 84-99 program for all the culverts and a structural write-up that may be required.



3.3 Regulatory Permitting

Preparation of a pre-construction notification letter and accompanying figure(s) as required, and the preparation and submittal of up to fifteen (15) separately submitted 404 nationwide permit applications and any associated documents that may be required for the application package. This includes computing all wetland impacts, correspondence with USACE and updates that may be necessary for issuance of required permits.

3.4 City of Omaha/NPDES Stormwater Permit

This includes the preparation and submittal of all necessary permit applications as may be required on up to five (5) cut and cover replacement sites.

4 FINAL DESIGN

4.1 Final Hydraulic Analysis

Final drainage analysis for the site and proposed modifications to culverts. A brief memorandum will be prepared for each site and pertinent information will be included on the construction document plan and profile sheets for each of the sites.

4.2 Final Opinion of Costs

Preparation of a final Engineer's Opinion of Probable Construction Cost (EOPCC) for each of the sites. Individual quantities shall be shown on each plan and profile sheet with a project total on the title page.

4.3 Construction Documents and Specifications

Preparation of all construction documents. This shall include project title sheets, project notes and overall project quantities sheet, site access and staging sheets, plan and profile sheets, details, SWPP plan, technical specifications and all bidding documents. Plan and profiles (P&P) sheets shall document drainage basin information, modified culvert hydraulic capacity (at full flow), erosion control measures and individual site quantities. Construction plans will be provided as electronic 24x36 sheet sets.

4.4 Easement License Descriptions

Preparation of full, legal descriptions for construction or permanent easements as may be required on up to fifteen (15) project sites with multiple property owners.



5 CONSTRUCTION

5.1 Pre-Bid Coordination and Meeting

Preparation for and attendance of one (1) pre-bid meeting with interested contractors. Meeting will occur at one of the representative project sites and include review of the plans and addressing any inquiries about the project. FYRA will prepare meeting minutes to be distributed to all interested parties.

5.2 Project Bidding

Preparation for and attendance of the bid opening, collection of bids, verification of bids and bonds and recommendation of contractor to the P-MRNRD. Upon award of the project by the P-MRNRD board, a Notice of Award will be prepared by FYRA Engineering and followed by a Notice to Proceed.

5.3 Pre-Construction Meeting

Preparation for and attendance of a pre-construction meeting with the selected contractor and the P-MRNRD to discuss all pertinent construction-related project issues. This include preparation and distribution of meeting minutes.

5.4 Construction Observation

On-site construction observation for a thirty (30) week long construction time frame. Construction observation is included for all times that contractor is doing major work items and is anticipated for 85% of the construction items and will include shop drawing reviews.

5.5 Construction Reporting

Preparation, review and distribution of weekly construction reports which document the work performed daily and include photos, photo descriptions, videos (if applicable) and items of interest from the past week. These reports will be sent to the P-MRNRD and any other project stakeholders electronically on a weekly basis. This task also includes preparation, review and submittal of contractor payment applications to the P-MRNRD.

5.6 Final Walkthrough

Final walkthrough with the contractor and the P-MRNRD after substantial completion to generate a final "punch list" for the contractor to address prior to final payment being issued.



5.7 As-Built Data

Data collection of all as-built data including as required for the as-built drawings including, but not limited to inlet and outlet elevations, top of levee/channel surveying for cut and cover replacement sites and extents of riprap placement.

5.8 As-Built Drawings

Preparation of final as-built drawings to document the constructed rehabilitation and/or replacement. As-built drawings will be given to the P-MRNRD as 11x17 sheets, .pdfs and in shapefile format that the P-MRNRD can integrate into their GIS database. The shapefile shall show attributes for pipe length, size, type, inlet elevation, outlet elevation and other pertinent culvert information and be hyperlinked to the as-built plan and profile sheets.

5.9 O&M Modifications and Submittal

Prepare Operation & Maintenance Manual addendums for sixteen (16) culvert alterations that fall within a federal project and/or the PL 84-99 program as per Omaha District USACE *Guidance on Operation & Maintenance Manual Addendums for Flood Risk Reduction Projects* (January 2013). This includes preparation and submittal of a preliminary and final addendum for fifteen (16) culvert alterations to the P-MRNRD. The P-MRNRD will then submit these addendums to the USACE as the project sponsor.



Contract Tasks and Fees
Big Papio Levee Culverts Project Phase 2
 Papio-Missouri River Natural Resources District
 Sarpy and Douglas County, NE
 FYRA Project No. 001-17-04

FYRA Engineering							
Prj Manager	Sr Engineer	Prj Engineer	Prj Engineer	Prj Engineer	El	El	Intern
Rogers	Sotak	Gregalunas	Kaufman	Jones	Miller	Roenigk	Furman
\$135	\$190	\$135	\$135	\$95	\$90	\$80	\$65

Tasks

										Expenses	Total
No. Project Management											
1.1	Client Meeting (5 meetings)	15	20							\$140	
1.2	Monthly Invoicing & Project/Schedule Update (24 months)	60	16								
1.3	USACE Levee Safety Coordination Meetings (2 meetings)	10	5							\$40	
1.4	USACE Regulatory Coordination Meetings (2 meetings)	10		15	10					\$40	
1.5	City of Omaha Coordination Meeting (1 meeting)	3	2							\$20	
1.6	City of Bellevue Coordination Meeting (1 meeting)	3	2								
1.7	Landowner Coordination and Review (Up to 5 meetings)	10	5							\$20	
1.8	Project Team QA/QC	10	25	40	5						
	Project Management Task Total	\$16,335	\$14,250	\$5,400	\$2,700	\$950	\$0	\$0	\$0	\$260	\$39,895
No. Preliminary Design											
2.1	Penetration, Utilities, Site Investigation and Survey	16			30	20		20		\$1,000	
2.2	Alternatives Constructability Review (For sliplined culverts)	16	6		15						
2.3	Hydraulic Analysis (16 culverts)	40		30	80	40		40		\$50	
2.4	Preliminary Plan and Profiles	20	5		50	40		30		\$85	
2.5	Preliminary Cost Estimate	20	4		20	8					
	Preliminary Design Task Total	\$15,120	\$2,850	\$4,050	\$0	\$18,525	\$9,720	\$0	\$5,850	\$1,135	\$57,250
No. Permitting											
3.1	Wetland Delineation/Ordinary High Water Mark Field Work and Reporting				120	25	10	25	20	\$300	
3.2	408 Permitting/PL 84-99 Approvals	43	6								
3.3	Regulatory Permitting (Up to 15 404 permit applications)	9			120			25			
3.4	City of Omaha/NPDES/Stormwater Permits	10	2			30		8			
	Permitting Task Total	\$8,370	\$1,520	\$0	\$32,400	\$5,225	\$900	\$4,640	\$1,300	\$300	\$54,655
No. Final Design											
4.1	Final Hydraulic Analysis	24	4	20		40			14		
4.2	Final Opinion of Costs	30	4			30	16	20			
4.3	Construction Documents and Specifications	60	20	10	10	120	60		50	\$700	
4.4	Easement License Descriptions	8				40	25		20		
	Final Design Task Total	\$16,470	\$5,320	\$4,050	\$1,350	\$21,850	\$9,090	\$1,600	\$5,460	\$700	\$65,890
No. Construction											
5.1	Pre-Bid Coordination and Meeting	30	10			10					
5.2	Project Bidding	8				8		8			
5.3	Pre-Construction Meeting	4	3			8					
5.4	Construction Observation	20	20			510	510			\$2,000	
5.5	Construction Reporting	14	4			30	30				
5.6	Final Walkthrough	4	4			4					
5.7	As-Built Data					10	10		10	\$1,000	
5.8	As-Built Drawings	8				12	12	16	16		
5.9	O&M Modifications and Submittal	29	4			24	26				
	Construction Task Total	\$15,795	\$8,550	\$0	\$0	\$58,520	\$52,920	\$1,920	\$1,690	\$3,000	\$142,395
	Subtotal Hours	534	171	100	270	1,106	807	102	220	\$5,395	
	Subtotal Costs	\$72,090	\$32,490	\$13,500	\$36,450	\$105,070	\$72,630	\$8,160	\$14,300	\$5,395	\$360,085

Big Papio Levee Culverts Phase II - Project Schedule

