

Memorandum

To: Papio-Missouri River Natural Resources District Programs Projects and Operations Subcommittee

From: Paul W. Woodward PE, Groundwater Management Engineer

Date: August 5, 2021

Re: Review and Recommendation on Missouri River Levee R616 & R613 Improvement Project – Graham Construction Contract Change Order #10

The District executed a contract with Graham Construction Inc. on February 15, 2019 to construct modifications to the Missouri River R-613 and R-616 Federal Levee Systems. The original bid price of the contract was \$22,811,811. Following delays caused by the 2019 flood, Graham Construction proceeded to complete construction actions on the levee system under limited notices to proceed (as USACE repairs on the levees were also completed) and finally under a full notice to proceed on May 7, 2020.

Since the beginning of construction, Graham has been issued 9 change orders approved by management, amounting to an increase of 2,354,581.45. This is 110% of the original contract price. Please find attached a letter from FYRA Engineering which explains the major unforeseen construction conditions, changes or additions that resulted in the change orders.

District policy 15.1 Purchasing – Construction Services states, “The General Manager is authorized to effect change orders accumulating not more than a total of 10% of the contract amount.” Pursuant to this policy, Management is seeking Board approval to exceed the 10% contract amount limit.

Enclosed is a copy of proposed Change Order #10 for \$1,026,701.88, which would bring the total contract price up to \$26,193,094.33, or 14.8%, over the original contract price. This change order covers major necessary construction items including using additional berms along the Papillion Creek channel as borrow areas for levee fill, as well as other items outlined in the change order and FYRA’s letter attached.

Management recommends that the Subcommittee recommend to the Board that the General Manager be authorized to approve Change Order #10 with Graham Construction Inc. in the amount of \$1,026,701.88, for the Missouri River R-613 and R-616 Federal Levee Systems Improvement Project, bringing the total construction contract price to \$26,193,094.33.



2 August 2021

Mr. John Winkler
Papio-Missouri River NRD
via email

Re: Federal Levee Systems R-613/R-616-613 Construction Contract Amendment

Mr. Winkler:

This letter is an update to the contracted fee for the above-referenced construction project contract with Graham Construction and offers an opportunity to document scope items that have changed since the start of the project. The contract with Graham Construction was executed on 15 February 2019 for a total amount of \$22,811,811.

As you are aware, the March 2019 flood created significant changes to this project and the project timeline. Adjustments to quantities, several design modifications, and undocumented items in the levee prism have also brought required modifications to the contract. The following outlines the major items that have been included in previous change orders to date: that have occurred since the start of construction.

- Change Order #1 - Included the repair of a levee overtop on R-613 Missouri River Right Bank upstream of Highway 34. This work was completed in April 2019. It was imperative that this section of levee be repaired quickly to prevent additional floodwaters from entering the protected area (which included Highway 34) and to prevent additional damage to the R-613 levee system. The change order for this repair was over \$400K.
- Change Order #2 - Flooding at the City of Omaha's Papillion Creek Wastewater Treatment Plant caused significant damages. Repairs of fencing and utilities after the flood required a change in design of the utility trench through this facility and resulted in an increase in costs of approximately \$70K. Other minor changes required after the 2019 flood were also included in this change order.
- Change Order #3
 - The levee tieback on R-613 Papillion Creek Right Bank falls along Tregaron Golf Course property. As part of the land rights negotiation for this area, Tregaron requested that cart path access be relocated off the levee. The change for this modification was over \$38K.
 - During the bench stripping along R-613 Papillion Creek Left Bank (upstream of Hwy 75) an abandoned Northern Natural Gas 18" diameter steel pipe was located and was found to run through the levee prism. The pipe was required to be filled with grout through the levee prism as part of USACE guidelines for abandoning a utility within the levee prism. The cost of this work was \$6K.
 - As part of the Hwy 75 trail project that the P-MRNRD is working on with Schemmer, the levee top width near Hwy 75 and R-613 Platte River Left Bank was required to be increased from a 10-ft width to a 14-ft width to accommodate the future trail. This required an increase of \$1.2K to the project.



- Because of the water sitting behind the levees after the 2019 flood, haul routes for the project were damaged and unstable. Sarpy County would not rehabilitate these roads in time for the contractor to use them, so the contractor brought in rock to stabilize the roads. The change for this addition was \$17K.
 - A buried manhole was located during excavation on R-613 Papillion Creek Left Bank that had to be elevated which resulted in a cost increase of \$8.2K
- Change Order #4 - Because the area behind the levees had been under water for a long period of time after the 2019 flood, subgrade stabilization was required for the structures and culverts that were constructed in the area. Filter fabric and crushed rock aggregate was placed in many locations. The change order for these additions was over \$25K.
- Change Order #5
 - After the 2019 flood event, it was determined that an elevated access road through Hayworth Park was necessary to ensure that staff had full access to the Highway 370 closure section during flood events for effective flood fighting. The change for this ramp was over \$142K.
 - A small modification to the culverts within the LaPlatte Road closure section resulted in an increase of \$4K.
- Change Order #6
 - Flood debris removal was required near penetration R-5 along R-616 Missouri River Left Bank to complete the required work. This resulted in an increase of over \$13K.
 - While rehabilitating a penetration through the levee, it was noted that a culvert that drained a trail head parking lot was severely degraded as well and could compromise the P-MRNRD's access road. It was decided to rehabilitate this culvert as well and this work resulted in an increase of \$20.9K.
 - Railroad flagging requirements were greater than the contractor expected and resulted in an increase of \$80.2K to the contract.
- Change Order #7
 - The 2019 flood deposited large amounts of sediment in many of the larger reinforced concrete box stormwater penetrations through the levees. To prevent interior flooding during future rain events and to perform some of the contracted work, the sediment needed to be removed from these culverts. The change order for this work was \$159K.
 - During flood fighting events on R-616 Missouri River Right Bank large equipment damaged several concrete trail panels and caused large ruts on the side of the levee. The change order for these repairs were over \$136K.
 - During the 2019 flood a minor low spot was discovered in a small segment of the R-616 Missouri River Right Bank levee. It was decided to make a minor raise in this short section of levee to blend in with the rest of the system. The change order for this was \$63K.
 - Several areas of the Papillion Creek system experienced scour and sloughing due to the highwater in the channel during the flood event and repairs to these areas were added to the project. The change orders for these repairs were over \$13K.



- When Graham bid the project in Jan 2019, MUD did not require zinc coated ductile iron pipe for water lines. In February 2019, MUD changed their specification to require zinc coated ductile iron pipe. This change in pipe material from what was previously bid resulted in an increase of \$35K.
- While excavating, an abandoned steel pipe on R-613 Papillion Creek Left Bank was discovered to run under the levee prism. Abandoning this pipe with grout resulted in an additional cost of \$8K.
- The 2019 flood deposited additional material on the benches of the Papillion Creek near the confluence of the Missouri River. This material was removed and used on other areas of the project. This work resulted in an increase of \$89K.
- An area along R-613 Papillion Creek Left Bank between UPRR and BNSF had a large amount of material on the riverside edge of the concrete trail. It was determined it was prudent to remove this excess material that created trail drainage problems. The change order for this modification was over \$43K.
- Change Order #8
 - After the USACE repaired some of the relief wells, it was determined that placing relief well housings would provide better protection and access to the relief wells. The change order for this work was over \$12K.
 - After the box culverts were cleaned out, it was noted that there were some minor joint gaps that should be rehabilitated in several of the aging box culverts. The cost to rehabilitate these joints was over \$47K.
 - Since the original design, the City of Omaha modified some of the penetration/sanitary sewer crossings on the project which resulted in the modifications to the planned rehabilitation method. PL-19 along R-613 Papillion Creek Left Bank required one of the biggest modifications and resulted in an increase of \$33.5K.
- Change Order #9 - Adjustments to earthwork/embankment quantities are typical with all projects as quantities are just an estimate of the work to be done based on survey and design data. On a large, linear earthwork project such as this (over 19 miles) undulations in the existing ground are expected. In addition to these undulations, there were locations that changes of material types (sand versus clay/dirt) were modified in the field for various reasons. The increased costs due to these adjustments were \$1.3M.

Change Orders #1 through #9 resulted in an increase in the total contract price from \$22,811,811.00 to \$25,166,392.45, which is 110% of the original contract price.

Recent modifications are proposed to be added with Change Order #10 which are detailed as follows:

- During the original design and project bidding, a project borrow site was identified for additional embankment that would be needed throughout the project. Unfortunately, due to the delay in the project start because of the 2019 flood, this identified borrow site was no longer available when the embankment was needed. The P-MRNRD and FYRA has identified new



- borrow sites for the contractor to use and the costs associated with these new sites is expected to be around \$720K.
- An additional design change has also been made so that the P-MRNRD staff can safely access the slide gates throughout this system during flood events. This work is estimated to be completed for \$42K.
 - While excavating, an abandoned culvert on R-613 Papillion Creek Left Bank was discovered to run under the levee prism. The costs to abandon the culvert with grout is over \$41k.
 - Additional quantity adjustments for crushed rock and gatewell grates are expected to total \$116K.
 - A large scour hole along R-613 Papillion Creek left bank downstream of Fort Crook Road that developed after the 2019 flood poses a potential threat to the levee prism. The cost to repair this large scour hole is \$100K.

The addition of Change Order #10 would result in an increase of \$1,026,701.88 for a total increase of \$3,381,283.33 which is 14.8% over the original contract price. The contract amendment that is being requested at this time would bring the construction contract total to \$26,193,094.33. Please know that FYRA Engineering is always working as an advocate for your NRD when negotiating these contract changes and we work with the contractor to negotiate prices and ensure that changes that do take place are fair and in line with prices on other local contracts.

As always, please feel free to contact me if you have any questions regarding this summary.

Sincerely,

A handwritten signature in black ink that reads "Lindy Rogers". The signature is written in a cursive, flowing style.

Lindy Rogers, PE

Date of Issuance: 8/2/2021

Effective Date: 8/2/2021

Owner: Papio-Missouri River NRD

Owner's Contract No.: 560

Contractor: Graham Construction, Inc.

Contractor's Project No.: -

Engineer: FYRA Engineering

Engineer's Project No.: 001-12-01

Project: Modification of Federal Levee Systems R-613 and R-616-613

Item(s) added to contract (required change order)

The Contract is Modified as follows upon execution of this Change Order:

ITEM #	ITEM DESCRIPTION	UNIT	CHANGE IN QUANTITY	UNIT COST	TOTAL
1.009	SEEDING	AC	29	\$ 855.00	\$ 24,795.00
1.011	BENCH STRIPPING	AC	81000	\$ 2.05	\$ 166,050.00
1.012	STRIP, STOCKPILE, AND REPLACE 9" TOPSOIL	AC	82100	\$ 0.75	\$ 61,575.00
1.120	GROUT TO FILL VOIDS	AC	13	\$ 575.00	\$ 7,360.00
2.008	SEEDING	AC	0.5	\$ 850.00	\$ 425.00
2.017	EROSION CONTROL BLANKET	AC	1200	\$ 0.90	\$ 1,080.00
2.018	REMOVE AND SALVAGE 6" CRUSHED ROCK	AC	-1512	\$ 10.00	\$ (15,120.00)
2.064	36" OD HDPE SLIPLINING W/GROUT	AC	-234	\$ 271.00	\$ (63,414.00)
1.126	HAUL OFFSITE BORROW - SITES 1 & 2	AC	81000	\$ 5.08	\$ 411,480.00
1.127	SURVEY FOR OFFSITE BORROW - SITES 1 & 2	AC	1	\$ 4,000.00	\$ 4,000.00
1.128	EROSION CONTROL - WATTLE	AC	13100	\$ 3.85	\$ 50,435.00
1.129	SAW CUTTING AND ANGLE IRON INSTALLATION	AC	1	\$ 4,145.59	\$ 4,145.59
1.130	CULVERT CLEANING - VAC TRUCK	AC	4	\$ 250.00	\$ 1,000.00
1.131	CLASS "B" EMBANKMENT FOR SCOUR	AC	500	\$ 18.25	\$ 9,125.00
1.132	TYPE "B" RIPRAP FOR SCOUR	AC	304	\$ 63.00	\$ 19,152.00
1.133	TYPE "C" RIPRAP FOR SCOUR	AC	1012	\$ 63.00	\$ 63,756.00
1.134	6" BEDDING MATERIAL FOR SCOUR	AC	956	\$ 8.00	\$ 7,648.00
1.135	CLASS "A" EMBANKMENT FOR DEGRADED RIPRAP SUBGRADE	AC	110	\$ 18.50	\$ 2,035.00
2.166	32" OD HDPE SLIPLINING W/GROUT	AC	234	\$ 250.00	\$ 58,500.00
2.167	GATE WELL BUMP OUT EARTHWORK	AC	1	\$ 40,425.77	\$ 40,425.77
2.168	REMOVE AND GROUT PIPE AT STA 397+00	AC	1	\$ 41,528.52	\$ 41,528.52
2.169	REMOVE & SALVAGE 6" CRUSHED ROCK-SY	AC	9072	\$ 10.00	\$ 90,720.00
2.170	REMOVE AND REPLACE GRATE	AC	4	\$ 10,000.00	\$ 40,000.00

TOTAL \$ 1,026,701.88

Attachments:

Work Change Directive 010

EJCDC® C-941, Change Order.

Prepared and published 2013 by the Engineers Joint Contract Documents Committee.

CHANGE IN CONTRACT PRICE	CHANGE IN CONTRACT TERMS <i>[note changes in Milestones if applicable]</i>
Original Contract Price: \$22,811,811.00	Original Contract Times: Substantial Completion: 4/1/2021 Ready for Final Payment: 6/1/2021 days or dates
Increase from previously approved Change Orders No. 001 to 009: \$2,354,581.45	Increase from previously approved Change Orders No. 001 to 009: Substantial Completion: 394 Ready for Final Payment: 394 days
Contract Price prior to this Change Order: \$25,166,392.45	Contract Times prior to this Change Order: Substantial Completion: 4/30/2022 Ready for Final Payment: 6/30/2022
Increase of this Change Order: \$1,026,701.88	Increase of this Change Order: Substantial Completion: 0 Ready for Final Payment: 0
Contract Price Incorporating this Change Order: \$26,193,094.33	Contract Times with all approved Change Orders: Substantial Completion: 4/30/2022 Ready for Final Payment: 6/30/2022

RECOMMENDED:	AUHTORIZED:	RECEIVED:
By: _____ Engineer (if Required)	By: _____ Owner (Authorized Signature)	By: _____ Contractor (Authorized Signature)
Title: Project Manager	Title: _____	Title: _____
Date: _____	Date: _____	Date: _____

Approved by Funding Agency (if applicable)

By: _____ Date: _____

Title: _____

Date of Issuance: 8/2/2021

Effective Date: 8/2/2021

Owner: Papio-Missouri River NRD

Owner's Contract No.: 560

Contractor: Graham Construction, Inc.

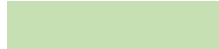
Contractor's Project No.: -

Engineer: FYRA Engineering

Engineer's Project No.: 001-12-01

Project: Modification of Federal Levee Systems R-613 and R-616-613

Item(s) added to contract (required change order)



Engineer's Estimate



Contractor is directed to proceed promptly with the following change(s):

Description:

Borrow Additions

Additional borrow is required to complete the levee raises on the R-613 Missouri River right bank and Platte River left bank. Borrow sources have been located to the north of our site, on the Papillion Creek right bank bench from Betz Ditch to Capehart Road (Site 1) and from 36th Street to 25th Street (Site 2). The total price for the additions to the contract is \$717,025.00, as per the calculations below.

ITEM #	ITEM DESCRIPTION	UNIT	CHANGE IN QUANTITY	UNIT COST	TOTAL
1.009	SEEDING	AC	29.00	\$ 855.00	\$ 24,795.00
1.011	BENCH STRIPPING	CY	81000	\$ 2.05	\$ 166,050.00
1.012	STRIP, STOCKPILE, AND REPLACE 9" TOPSOIL	SY	82100	\$ 0.75	\$ 61,575.00
1.126	HAUL OFFSITE BORROW - SITES 1 & 2	CY	81000	\$ 5.08	\$ 411,480.00
1.127	SURVEY FOR OFFSITE BORROW - SITES 1 & 2	LS	1	\$ 4,000.00	\$ 4,000.00
1.128	EROSION CONTROL - WATTLE	LF	13100	\$ 3.85	\$ 50,435.00
TOTAL					\$ 718,335.00

PL-12 Modifications

The existing culvert was noticed to be collapsed during a site investigation and there is not enough clearance for the design sliplined size of 36" OD HDPE. The proposed slipline pipe to be used is 30" OD HDPE. The reduction in HDPE size will result in a pipe capacity (106%) that exceeds the capacity of the existing 42" CMP. An increase in the Grout to Fill voids quantity will be added on to account for any extra grout that will be needed to fill the void spaces between the host CMP pipe and the sliplined HDPE pipe. A new bid item has been established for 32" OD HDPE for sliplining. The total price for the adjustments to our contract is \$2,446.00, as per the calculations below.

ITEM #	ITEM DESCRIPTION	UNIT	CHANGE IN QUANTITY	UNIT COST	TOTAL
1.120	GROUT TO FILL VOIDS	CY	12.80	\$ 575.00	\$ 7,360.00
2.064	36" OD HDPE SLIPLINING W/GROUT	LF	-234	\$ 271.00	\$ (63,414.00)
2.166	32" OD HDPE SLIPLINING W/GROUT	LF	234	\$ 250.00	\$ 58,500.00
TOTAL					\$ 2,446.00

Gate Well Bump Outs

Earthen bumpouts shall be constructed to provide access to the following levee penetration gate well structures: PR-10, PR-13, PR-14, PR-16, PL-10, PL-11, PL-12, PL-13, PL-14, PL-15, PL-16, PL-17A, PL-17C. The total price for the modifications is \$42,830.77.

ITEM #	ITEM DESCRIPTION	UNIT	CHANGE IN QUANTITY	UNIT COST	TOTAL
2.008	SEEDING	AC	0.5	\$ 850.00	\$ 425.00
2.017	EROSION CONTROL BLANKET	SY	1200	\$ 0.90	\$ 1,080.00
2.167	GATE WELL BUMP OUT EARTHWORK	LS	1	\$ 40,425.77	\$ 40,425.77
TOTAL					\$ 41,930.77

R-9 Flap Gate Modification

The flap gates at penetration R-9 can not be installed as originally intended. Sawing of concrete and installation of angle irons will be required to fasten the flap gates to the culvert. The culvert may need to be cleaned with a vac truck as well if there is silt buildup in the working area. The total price for the modifications is \$5,145.59, as per the calculations below.

ITEM #	ITEM DESCRIPTION	UNIT	CHANGE IN QUANTITY	UNIT COST	TOTAL
1.129	SAW CUTTING AND ANGLE IRON INSTALLATION	LS	1	\$ 4,145.59	\$ 4,145.59
1.130	CULVERT CLEANING - VAC TRUCK	HR	4	\$ 250.00	\$ 1,000.00
TOTAL					\$ 5,145.59

Pipe Abandonment at R-613 PC LB Sta 397+00

While excavating near PL-13, an abandoned 30" diameter CMP was discovered. As-builts show that this 30" CMP is coupled with a 24" RCP that runs underneath BNSF's railroad prism. This culvert was originally scheduled for abandonment during the construction of the sanitary sewer interceptor by the City of Omaha. No records are available on the methods used to abandon the culvert, but it appears that it was abandoned in place. Further abandonment procedures are being added to fulfill USACE requirements. The existing CMP shall be removed and the RCP will be grouted with flowable fill. The area will then be backfilled to the final design grade. Railroad flagging will be required during grouting operations. The total price for the modifications is \$41,528.52.

ITEM #	ITEM DESCRIPTION	UNIT	CHANGE IN QUANTITY	UNIT COST	TOTAL
2.168	REMOVE AND GROUT PIPE AT STA 397+00	LS	1	\$ 41,528.52	\$ 41,528.52
TOTAL					\$ 41,528.52

Quantity Adjustments

In error, the bid unit for Bid Item 2.018 was categorized in CY on the project Bid Form. Per Addendum 1, at the request of the bidders, the bid unit was updated to SY. To adjust the volumetric quantity to a 2-dimension quantity, the original bid quantity needs to be adjusted by a factor of 6. In addition, no bid item was provided for the removal and replacement of the grates for the gate well extensions at PL-11, PL-13, and R-4. A bid price of \$10,000.00 was supplied for bid item 1.071 and shall be applied for the R-613 PC LB as well. The total price for these adjustments is \$115,600.00, per the calculations below.

ITEM #	ITEM DESCRIPTION	UNIT	CHANGE IN QUANTITY	UNIT COST	TOTAL
2.018	REMOVE AND SALVAGE 6" CRUSHED ROCK	CY	-1512	\$ 10.00	\$ (15,120.00)
2.169	REMOVE & SALVAGE 6" CRUSHED ROCK-SY	SY	9072	\$ 10.00	\$ 90,720.00
2.170	REMOVE AND REPLACE GRATE	EA	4	\$ 10,000.00	\$ 40,000.00
TOTAL				\$	115,600.00

Scour hole repair - Pap Creek Sta 462+00

Scouring along the Papillion Creek right bank just down stream of Fort Crook Road shall be addressed to repair the bank to table conditions. The total price for the modifications is \$99,681.00, as per the calculations below.

ITEM #	ITEM DESCRIPTION	UNIT	CHANGE IN QUANTITY	UNIT COST	TOTAL
1.131	CLASS "B" EMBANKMENT FOR SCOUR	CY	500	\$ 18.25	\$ 9,125.00
1.132	TYPE "B" RIPRAP FOR SCOUR	TN	304	\$ 63.00	\$ 19,152.00
1.133	TYPE "C" RIPRAP FOR SCOUR	TN	1012	\$ 63.00	\$ 63,756.00
1.134	6" BEDDING MATERIAL FOR SCOUR	SY	956	\$ 8.00	\$ 7,648.00
TOTAL				\$	99,681.00

Degraded Riprap Bank Repair

The degraded riprap scheduled for removal and replacement on the R-613 Papillion Creek RB System just upstream of the BNSF Railroad Crossing extended to a greater depth than anticipated. Class "A" Embankment shall be placed and compacted to construct a levee prism to the dimensions shown on the plans. The total costs for the additional work is \$2,035.00.

ITEM #	ITEM DESCRIPTION	UNIT	CHANGE IN QUANTITY	UNIT COST	TOTAL
1.135	CLASS "A" EMBANKMENT FOR DEGRADED RIPRAP SUBGRADE	CY	110	\$ 18.50	\$ 2,035.00
				TOTAL	\$ 2,035.00

Purpose for Work Change Directive:

Directive to proceed promptly with the Work described herein, prior to agreeing to changes on Contractor Price

- Non-agreement on pricing of proposed change.
- Necessity to proceed for schedule or other Project reasons.

Estimated Change in Contract Price and Contract Times (non-binding, preliminary):

Contract Price: \$ 1,026,701.88 increase.
 Contract Time: 0 days increase.

By

- Lump Sum
- Cost of the Work
- Unit Price
- Other

RECOMMENDED:

AUTHORIZED:

RECEIVED:

By: _____ By: _____ By: _____
Engineer (Authorized Signature) Owner (Authorized Signature) Contractor (Authorized Signature)
 Title: Project Manager Title: _____ Title: _____
 Date: _____ Date: _____ Date: _____

Approved by Funding Agency (if applicable)

By: _____ Date: _____
 Title: _____