

**City of Fayetteville Staff Review Form**

**2020-0899**

**Legistar File ID**

**11/5/2020**

City Council Meeting Date - Agenda Item Only  
N/A for Non-Agenda Item

Tim Nyander

10/14/2020

WASTEWATER TREATMENT (730)

**Submitted By**

**Submitted Date**

**Division / Department**

**Action Recommendation:**

Staff recommends approval of Change Order No. 1 with Midland Industrial Services, LLC in the amount of \$349,814.99 for additional cabling, concrete, and labor on the Noland WRRF electrical upgrade project.

**Budget Impact:**

5400.730.5800-5400.00

Water and Sewer

Account Number

Fund

02032.1

WWTP Building Improvements

Project Number

Project Title

**Budgeted Item?** Yes

Current Budget \$ 3,887,656.00

Funds Obligated \$ 3,247,736.72

Current Balance **\$ 639,919.28**

**Does item have a cost?** Yes

Item Cost \$ 349,814.99

**Budget Adjustment Attached?** No

Budget Adjustment \$ -

Remaining Budget **\$ 290,104.29**

V20180321

**Purchase Order Number:** 2020-484

**Previous Ordinance or Resolution #** 160-20

**Change Order Number:** 1

**Approval Date:**

**Original Contract Number:** 2020-34

**Comments:**



**MEETING OF NOVEMBER 5, 2020**

**TO:** Mayor and City Council

**THRU:** Susan Norton, Chief of Staff

**FROM:** Tim Nyander, Utilities Director

**DATE:** October 14, 2020

**SUBJECT: Project Change Order (Midland Industrial Services) for the Noland WRRF Electrical Upgrades**

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**RECOMMENDATION:**

Staff recommends approval of Change Order No. 1 with Midland Industrial Services, LLC in the amount of \$349,814.99 for additional cabling, concrete, and labor on the Noland WRRF electrical upgrade project.

**BACKGROUND:**

Upon noticed to proceed on the project, the contractor began a review through the Noland Plant to determine their construction schedule. The contractor discovered some smaller, missing items that were left out of the original equipment bid.

However, the largest discovery was that approximately 7,500 feet of underground cable is incompatible and will not work with the ten large transformers ordered for this project. There is an increase of 139% in cable footage. Due to safety concerns, the design engineer was unable to observe the existing cabling during the study-phase of this project in 2017. The original plans did not indicate that this type of cable was used.

**DISCUSSION:**

Upon Midland's inspection, it was discovered that the 15kV underground cable had a tape shielding instead of a physical wire concentric neutral. In conjunction with the new, modern transformers the existing tape-shielding cable cannot handle fault currents like the concentric neutral cable. The additional length of underground cable replacement is 7,455 feet, and represents a 139% increase in overall cabling for the project.

At each cable manhole and endpoint, a complex termination must be fabricated. These locations are further complicated due to the requirement for confined space entry procedures. Additionally, the switchgear produced by the manufacturer are larger than originally planned and will require larger concrete pads and bigger roofs for support and protection.

**BUDGET/STAFF IMPACT:**

Funds are available in the WWTP Building Improvements account within the Water & Sewer fund.

**ATTACHMENTS:**

Engineer Recommendation  
Contractor Pricing Quote  
Change Order No. 1



**ALLGEIER, MARTIN and ASSOCIATES, INC.**  
Consulting Engineers

October 6, 2020

Mr. Corey Granderson, P.E.  
Utilities Engineer  
City of Fayetteville  
113 W. Mountain Street  
Fayetteville, AR 72701

Re: Noland WWTP Change Order

Dear Mr. Granderson:

Upon noticed to proceed, Midland Industrial Services began a review through the Noland WWTP to determine their construction schedule.

Midland informed Allgeier, Martin the 15kV switchgear was missing a connector bushing. We have recently sent a request to order these since they were left out of the original equipment bid. These have been ordered.

Midland informed my inspector and myself that the 15kV underground cable had a tape shielding not a physical wire concentric neutral. This underground cable does not work well with the ten large transformers ordered for this project. We recommended a Y-Y transformer configuration as opposed to the delta-Y that currently exists. This configuration is more prevalent today and easier to get replacements for if required. They are the industry standard. The tape shielding cannot handle fault currents like the concentric neutral. The original plans did not indicate that tape shielding was used. Tape shielding is used more in the mining industry not industrial plants. The additional underground cable is 7,455 feet. This is a 139% increase in cable footage. This means that all of the 15kV underground cable will need to be replaced and their corresponding terminations.

Unknowns in the manholes have resulted in additional work for pulling and connecting multiple 15kV underground cables and terminations. These were identified in Midlands review of the project. Midland pumped water out of the manholes to see these issues. This will require many additional hours of "confined space work" that was not originally anticipated. The man holes contain termination modules to connect the cables. There are many of these.

Sometime during the bid the process, the manufacturer of the 480-volt switchgear changed their designs of what they sent to Allgeier, Martin. The switchboards at the Aeration Basin and the Ozone Buildings grew in size. We were unaware of this until lately. These changes require additional work at both buildings including concrete slabs and the engineered building covering the switchgear. The size grew by 55% at the Aeration Basin.

Mr. Corey Granderson, P.E.  
October 6, 2020  
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The concrete slabs that support the existing 15kV switchgear were thicker than normal which has caused several changes to enable the new switchgear to be installed. The Effluent Area has a concrete slab that is approximately 30 inches thick with no rebar. This is an extremely thick slab for the transformers. There are changes required to provide new electrical supply to the new transformers.

Midland and Allgeier, Martin have had multiple discussions on this additional work. We have concluded that the additional work is warranted, and a change order will be required with an amount of \$349,814.99. This is approximately a 34% increase over the original bid. See the attached information provided by Midland.

When Allgeier, Martin performed the electrical system evaluation back in 2017, we were limited to what equipment was allowed to be opened due to safety concerns. We were told that some equipment may not operate correctly if it were operated. It was discussed that plant processes could not be deenergized just to look at all the equipment. Manholes were flooded and visual inspection could not happen. It was not safe to look at and below most of equipment while it was still energized. Allgeier, Martin made recommendations based upon our previous experience with this type of equipment and other locations.

Midland would also like to have an extension of 60 days to the contract to perform the additional work. I agree with this extension. There have been many conversations to reach these conclusions.

We would like to proceed with a change order for this project.

I am available for discussion on this project.

Sincerely,

**ALLGEIER, MARTIN and ASSOCIATES, INC.**

*Brent Corwin*

A. Brent Corwin, P.E.  
Electrical Project Manager

ABC

Enclosures

cc: Tim Nyander  
Enclosures

## Midland Proposed Change Order

New medium voltage cable and medium voltage terminations from switchgear 100 to new vault in front of head works.

- Demo, provide, and install (170' x 3) 510' - \$12,936.88
- Terminations - \$19,369.32
- Confined space labor and equipment - \$15,689.75

New medium voltage cable and medium voltage terminations from new vault in front of headworks to new switchgear 102.

- Demo, provide, and install (500' x 3) 1500' - \$12,781.25
- Terminations - \$18,208.72
- Confined space labor and equipment - \$16,935.62

New medium voltage cable and medium voltage terminations from switchgear 102 to transformers at blower building.

- Demo, provide, and install (425' x 3 x 2) 2550' - \$44,684.38
- Terminations - \$16,210.00
- Confined space labor and equipment - \$14,093.75

New medium voltage cable and medium voltage terminations from switchgear 102 to old ops building transformer.

- Demo, provide, and install (45' x 3) 135' - \$7,100.19
- Terminations - \$16,210.00

New medium voltage cable, conduit, medium voltage terminations and additional cut outs at pole at effluent pump station transformer.

- Demo, provide and install (250' x 3 x 2) 1500' - \$28,343.75
- Terminations/testing - \$16,598.11

New medium voltage cable and medium voltage terminations from PMH19 switchgear at aeration building to transformers at ozone building.

- Demo, provide, and install (150' x 3 x 2) 900' - \$19,006.25
- Terminations/testing - \$15,898.40

New medium voltage cable and medium voltage terminations from PMH19 switchgear to aeration building transformers.

- Demo, provide, and install (60' x 3 x 2) 360' - \$10,602.50
- Terminations/Testing - \$16,396.14

New Enclosures at vista switches and effluent pump station.

- \$5,435.25

Building size and concrete pad increased at aeration basin due to switchgear size being increased.

- \$5,096.00

Additional concrete work at influent pump station.

- \$8,963.58

Additional concrete work at old ops building.

- \$12,758.45

Additional concrete work at effluent pump station.

- \$12,968.23

Relocate 480/120 transformer at ozone building.

- \$3,528.47



**CITY OF  
FAYETTEVILLE  
ARKANSAS**

**CHANGE ORDER**

Contract Title: Bid 20-30, Construction, Noland WWTP Electrical Upgrades

Change Order No. 1

Date of Issuance: October 14, 2020

To Contractor: Midland Industrial Services, LLC

ORDINANCE/RESOLUTION: 160-20

Effective: June 4, 2020

The Contract is changed as follows:

Bid Item No.	Bid Item Description	Previous Estimated Quantity	Unit of Measure	Contract Unit Price	Revised Estimated Quantity	Revised Unit Price	Original Estimated Cost	Revised Estimated Cost
CO1.1	Demo, provide, and install (170' x 3) 510' Med. Voltage Cable; Switchgear 100 to new vault in front of headworks	0	LS	0	1	\$ 12,936.88	0	\$ 12,936.88
CO1.2	Terminations; Switchgear 100 to new vault in front of headworks	0	LS	0	1	\$ 19,369.32	0	\$ 19,369.32
CO1.3	Confined Space; Switchgear 100 to new vault in front of headworks	0	LS	0	1	\$ 15,689.75	0	\$ 15,689.75
CO1.4	Demo, provide, and install (500' x 3) 1500' Med. Voltage Cable; New vault in front of headworks to switchgear 102	0	LS	0	1	\$ 12,781.25	0	\$ 12,781.25
CO1.5	Terminations; New vault in front of headworks to switchgear 102	0	LS	0	1	\$ 18,208.72	0	\$ 18,208.72
CO1.6	Confined Space; New vault in front of headworks to switchgear 102	0	LS	0	1	\$ 16,935.62	0	\$ 16,935.62
CO1.7	Demo, provide, and install (425' x 3 x 2) 2550' Med. Voltage Cable; Switchgear 102 to Blower Bldg. Transformers	0	LS	0	1	\$ 44,684.38	0	\$ 44,684.38
CO1.8	Terminations; Switchgear 102 to Blower Bldg. Transformers	0	LS	0	1	\$ 16,210.00	0	\$ 16,210.00
CO1.9	Confined Space; Switchgear 102 to Blower Bldg. Transformers	0	LS	0	1	\$ 14,093.75	0	\$ 14,093.75
CO1.10	Demo, provide, and install (45' x 3) 135' Med. Voltage Cable; Switchgear 102 to Old Ops Bldg. Transformer	0	LS	0	1	\$ 7,100.19	0	\$ 7,100.19
CO1.11	Terminations; Switchgear 102 to Old Ops Bldg. Transformer	0	LS	0	1	\$ 16,210.00	0	\$ 16,210.00



CO1.12	Demo, provide, and install (250' x 3 x 2) 1500' Med. Voltage Cable, Conduit, cut outs at pole; Effluent Pump Station Transformer	0	LS	0	1	\$ 28,343.75	0	\$ 28,343.75
CO1.13	Terminations/Testing; Switchgear 102 to Old Ops Bldg. Transformer	0	LS	0	1	\$ 16,598.11	0	\$ 16,598.11
CO1.14	Demo, provide, and install (150' x 3 x 2) 900' Med. Voltage Cable; PMH19 Switchgear @ Aeration to Ozone Bldg.	0	LS	0	1	\$ 19,006.25	0	\$ 19,006.25
CO1.15	Terminations/Testing; PMH19 Switchgear @ Aeration to Ozone Bldg.	0	LS	0	1	\$ 15,898.40	0	\$ 15,898.40
CO1.16	Demo, provide, and install (60' x 3 x 2) 360' Med. Voltage Cable; PMH19 Switchgear to Aeration Bldg. Transformers	0	LS	0	1	\$ 10,602.50	0	\$ 10,602.50
CO1.17	Terminations/Testing; PMH19 Switchgear to Aeration Bldg. Transformers	0	LS	0	1	\$ 16,396.14	0	\$ 16,396.14
CO1.18	New Enclosures at vista switches and effluent pump station.	0	LS	0	1	\$ 5,435.25	0	\$ 5,435.25
CO1.19	Building size and concrete pad increased at aeration basin	0	LS	0	1	\$ 5,096.00	0	\$ 5,096.00
CO1.20	Additional concrete work at influent pump station	0	LS	0	1	\$ 8,963.58	0	\$ 8,963.58
CO1.21	Additional concrete work at old ops building.	0	LS	0	1	\$ 12,758.45	0	\$ 12,758.45
CO1.22	Additional concrete work at effluent pump station.	0	LS	0	1	\$ 12,968.23	0	\$ 12,968.23
CO1.23	Relocate 480/120 transformer at ozone building.	0	LS	0	1	\$ 3,528.47	0	\$ 3,528.47

Summation of Cost \$ - \$ 349,814.99

Net Cost for this Change Order \$349,814.99

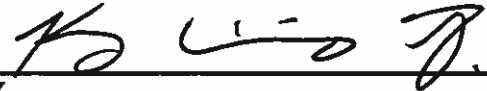
**Not valid until signed by the Owner**

The original Contract Price was		\$ 1,036,491.85
Net change by previously authorized change orders		\$ -
The Contract Price prior to this Change Order was		\$ 1,036,491.85
The Contract Price will [increase by][decrease by][remain unchanged]		\$ 349,814.99
The new Contract Price including this Change Order will be		\$ 1,386,306.84
The Contract Time(s) will [increased by][decreased by][remain unchanged]	60	calendar days
Required dates of Completion as of the date of this Change Order therefore are:		
Substantial Completion		3/28/2021
Final Completion		4/27/2021

NOTE: This summary does not reflect changes in the Contract Price or Time(s) which have been authorized by Work Change Directives not incorporated in this or previous Change Orders.

Midland Industrial Services, LLC

CITY OF FAYETTEVILLE

 10-14-2020  
BY \_\_\_\_\_ DATE

\_\_\_\_\_  
BY \_\_\_\_\_ DATE