

Key Largo Wastewater Treatment District Board of Commissioners Meeting Agenda Item Summary

Meeting Date:
December 6, 2022

Agenda Item Number: O-3

Action Required:
Yes

Department:
Capital Projects

Sponsor:
Steve Suggs

Subject:
Change Order No. 1 for Collection System Monitoring Project

Summary of Discussion:

Installation of the vacuum system monitoring components requires running conduit and wires into the existing Airvac air intake pedestals. During construction, it was found that unanticipated cutting and replacement of some of the pedestal concrete bases is needed. The Field Operations Department has also identified flood-prone areas where it is recommended to extend the PVC air intake pipes higher above ground level. The concrete work and remounting of pedestals and the extension of the air intake pipes is a change in the scope of work, increasing the cost of the project. Staff recommends that the Board approve the attached Change Order as further detailed in the WEC memo. +

<u>Reviewed / Approved</u>	<u>Financial Impact</u>	<u>Attachments</u>
Operations: _____	\$ 450,500.00	1. WEC memo 2. Change Order No. 1 Form 3. Backup unit cost quote from FloVac
Administration: _____	Expense	
Finance: _____	Funding Source:	
District Counsel: _____	Grant(s)	
District Clerk: _____	Budgeted:	
Engineering: _____	Partially	

Approved By:  Date: 12-1-22
General Manager

MEMORANDUM

To: KLWTD Board of Commissioners

From: Steve Suggs, P.E.

Date: November 30, 2022

Re: KLWTD Collection Monitoring System- Change Order #1

As discussed at the 11/15/2022 Key Largo Board Meeting, some of the existing anticipated field conditions in Basin D differed from the expected and planned for conditions during the design of the project. This resulted in additional effort by the Contractor in order to properly install the equipment. There were two main field conflicts that were identified that caused the additional work and are shown below.

Field Conflicts:

Concrete Pad Thickness:

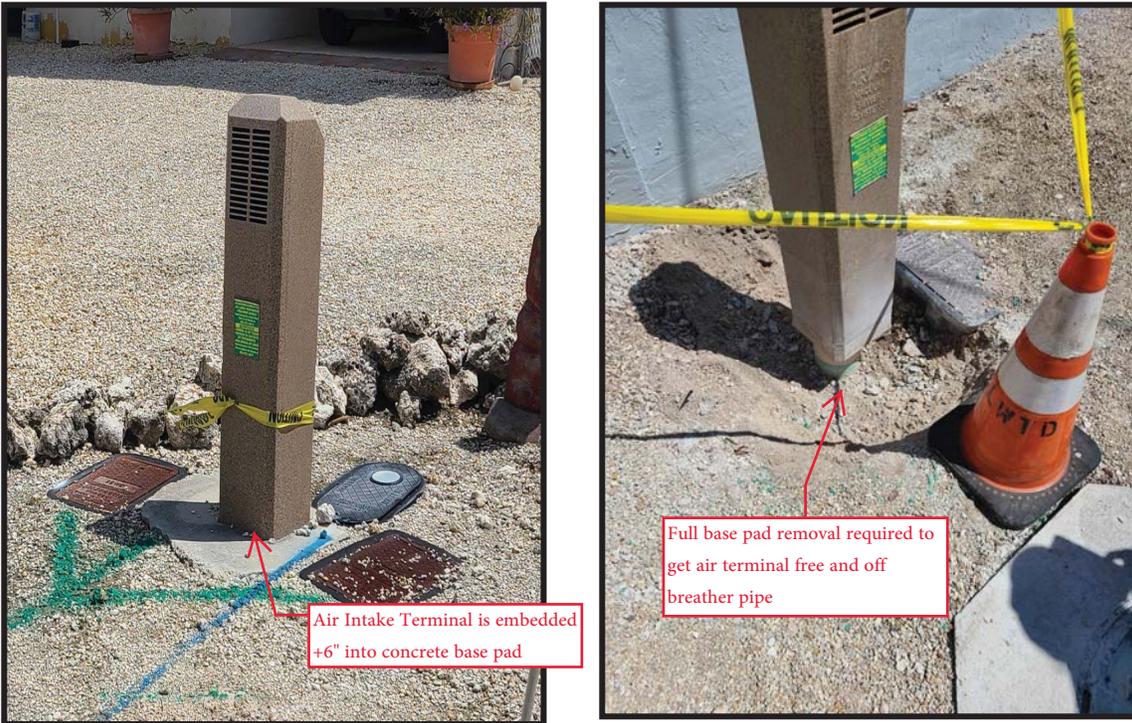
The first issue encountered was the thickness of the house keeping pad under the air intake terminals (tombstones). Typically, these housekeeping pads are expected to be 4”-6” thick with minimal reinforcement which is what was planned for as part of the Collection System Monitoring project. However, in Basin D it was quickly discovered that the housekeeping pads were 16”-24” thick. This thickness meant that FloVac’s plan of under excavating the pad and coring a hole for the 2” conduit through it would no longer be possible as it would require drilling through +16” of concrete.



As can be seen in the pictures above, the concrete had to be chipped out in order to get the conduit installed. In Basin D there were 205 of the 240 pits that required this additional chipping work.

Embedded Air Intake Terminals:

The second issue encountered was that some of the air intakes were embedded approximately 6” into the concrete housekeeping pads and could not be removed without breaking the pad apart. As with the aforementioned pads, these were also 16”-24” thick but because of the embedment it required full removal of the pad to complete the installation of the FloVac sensors & conduits.



The picture above (left) shows an air intake terminal embedded in the concrete. The other picture above (right) shows the terminal after the pad has been removed. In Basin D there were 35 terminals that were discovered to be embedded in the concrete which require full removal of the pad.

Summary of Two Main Field Conflicts:

As discussed above, in Basin D 205 of the 240 total air intake terminals were poured too thick and required additional effort for the Contactor to install the system. Additionally, 35 of the 240 air intake terminals were embedded approximately 6” into the concrete which required full pad removal resulting in additional effort. This additional effort was beyond what was expected based on project records and design standards. The contractor should be compensated for the work beyond the original scope of the project.

Since this project is at the beginning and is ongoing there is a concern that these two conflicts may arise in the remaining basins. In order to prepare for that WEC along with KLWTD staff & FloVac, have conducted site visits and reviewed the installation in the other basins. After this review it is believed that these conflicts are mostly widespread in Basin D. However, their presence cannot be ruled out entirely until excavation occurs. For this reason WEC has used the collected data to estimate the impact of these conflicts in future phases of the project. Based on this analysis WEC believes that approximately 640 partial base and 150 full base replacements

(including Basin D) will be needed in order to complete the project and should be included in CO#1.

Additional System Hardening:

During construction two other items were brought to KLWTD and WEC attention that could be addressed during this project. They are increasing breather height in flood prone areas and reinforcing the air intake terminal support rod.

Increasing Breather Height:

The breather pipe is the pipe located inside the air terminal that allows air into the vacuum system. It is a crucial part of the system operation. As the air intake terminals were being removed it was noted that several of the pipes were very low to the ground. In a normal environment this may not be an issue but in coastal flood prone areas such as Key Largo, the low elevations mean that water can enter the pipe during large storm events, king tides, as well as storm surge events.

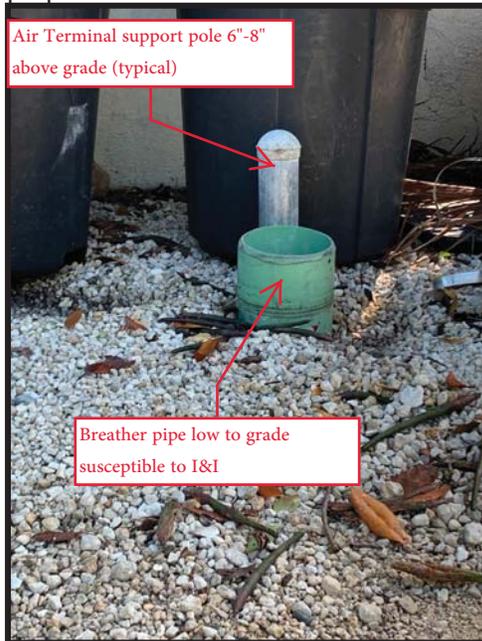
It is recommended that as a hardening effort these pipes be extended 24” above grade in the coastal flood prone areas. KLWTD staff has identified these areas and a pit count was taken. It was determined that approximately 870 breather pipes should be raised to lessen the chances of inflow and infiltration to the system.

Galvanized Air Terminal Support Rod:

Another potential storm hardening effort that was identified is the support rods for the Air Intake Terminals. Currently these supports are made of a 1”-1.5” galvanized hollow tube like that would be used in chain-link fence construction. Many of these supports currently only extend 6-8” above the grade which is very little support to the intake terminal especially during a flood event.

In order to address this WEC is proposing that a #7 (7/8”) galvanized rebar be driven into the center of the existing support and into caprock with an embedment of approximately 3ft. This will provide a much stronger support for the terminals to resist flood loadings. While it may not save all the terminals from damage, it will reduce the number of damaged ones during a large storm event which will lessen inflow and infiltration into the system.

Based on information from the KLWTD staff it is estimated that approximately 2300 (80%) of the existing supports are in the 6-8” range and should be extended for system hardening purposes.



Cost Summary & Recommendation:

Below is a cost summary of the proposed change. Amounts shown are projected for ALL basins so that there is a mechanism in place if these issues arise again. All work proposed will be on a unit cost basis as the rest of the contract is. What this means is that KLWTD will only pay for actual work completed. If approved by the Board, each breather adjusted, concrete pad replaced, support rod installed, will be billed against the quantities shown in the table below. If there is any leftover quantities at the end of the project then there will be a deductive balancing change order if required that would reduce the contract amount by the left over quantities.

FloVac Change Order 1 Qunatities				
Item	Description	Quantity	Unit Price	Amount
1	Vent Extension	870	\$ 125.00	\$ 108,750.00
2	Partial Base Chipping and Replacment	640	\$ 137.50	\$ 88,000.00
3	Full Base Chipping and Replacment	150	\$ 258.00	\$ 38,700.00
4	Galvanized Support Rod	2300	\$ 93.50	\$ 215,050.00
TOTAL				\$ 450,500.00

Notes:

- *1) Counted 658 via GIS
- *2) 205 orginally in basin "D". Assumed 15% total remaining after basin "D"
- *3) 35 orginally in basin "D". 150 POA Per WEC
- *4) 80% of total per KLWTD Staff & WEC

It is recommended that the Board approve change order 1 to the contract in the amount of **\$450,500.00**. This will cover the additional cost of the two conflicts discovered in Basin D as well as provide hardening for the system to reduce the inflow and infiltration and support the air terminal during storm events.

Grant & FY2023 Budget:

As for funding for this additional work, all the work is grant reimbursable. It may be required to shift some funding from other grant projects if necessary, but it can be fully grant reimbursable. As for the FY2023 budget, while this particular set of items is NOT part of the FY23 budget, there is a provision in the budget for “*Vacuum Pit Valve Rebuild*” (GL 401-5900-630.000.00-2023-007, \$822,000) that was intended to cover the new Air Terminals to replace the candy canes in Basin E as well as rebuild every vacuum valve in the KLWTD treatment system as recommended by FloVac since all valves would be taken apart during the project. It was decided by KLWTD staff that instead of rebuilding every valve, only valves in rough shape as identified during the sensor install would be rebuilt.

This budget item is \$822,000.00 of which the only amount currently being utilized is the purchase of the air terminals for Basin E. It is recommended that the \$450,500.00 come out of this budget line. Additionally, it is unlikely that the full \$450,500.00 will be spent in FY2023 as the project is on track for completion in mid to late 2024.

**SECTION 00950
CHANGE ORDER FORM**

<p>CONTRACTOR ("Contractor"): FloVac Inc.</p>	<p>CHANGE ORDER No. 1 PROJECT TITLE: KLWTD Collection System Monitoring Project PROJECT No. 03105.078:130</p>				
<p>OWNER: Key Largo Wastewater Treatment District (Owner), or (District)</p>	<p>ENGINEER: Weiler Engineering 6805 Overseas Hwy Marathon, Florida 33050</p>				
<p>DATE OF ISSUE: December 6, 2022</p>	<p>EFFECTIVE DATE: December 6, 2022, contingent upon approval by the District's Board of Commissioners.</p>				
<p>Description of Work to be Performed: The Contractor is hereby authorized and directed to perform the following Work, generally described as: A full or partial repair to pedestal concrete bases (on an as-needed basis determined by Owner's Representative). Extension to vent pipes in flood prone areas. Strengthening of galvanized support rods for hurricane hardness.</p> <p>Reason for Change:</p> <p>Concrete Base Replacement: Concrete was originally placed in a manner that encapsulated some existing pedestals which required full removal of the existing concrete bases.</p> <p>Concrete Base Partial Replacement: When installing the communication conduit, it was necessary to either fully or partially remove the encapsulating concrete thus requiring a full or partial repair of the concrete base.</p> <p>Breather Extension: KLWTD has identified low lying flood prone areas that are a large source of I&I during a storm or high tide event. I&I can lead to system damage and higher treatment costs of the system. Extending the vents will reduce I&I in most storm events and help harden the system during serious storm events.</p> <p>Galvanized Support Rod Installation: The pedestal posts are what keep the pedestal stationary, as a way of hurricane/storm hardness it is recommended to replace the posts with a rigid piece of rebar that is embedded +3ft into the soil within the existing support. This will help reduce damage to the breathers during large storm events.</p> <p>Attachments: Price sheet by FloVac for unit cost of the additional work.</p> <p style="text-align: center;">Total Proposed Changes in Contract Price and Contract Time for this Change Order</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%; text-align: center;">Increase (decrease) in Contract Price:</td> <td style="width: 50%; text-align: center;">Increase (decrease) in Contract Time (Calendar days):</td> </tr> <tr> <td style="text-align: center;">\$450,500.00</td> <td style="text-align: center;">+00 Days</td> </tr> </table>		Increase (decrease) in Contract Price:	Increase (decrease) in Contract Time (Calendar days):	\$450,500.00	+00 Days
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\$450,500.00	+00 Days				
<p>Acknowledgments:</p> <p>The aforementioned change, and work affected thereby, is subject to and governed by all provisions of the original Agreement and RFP. It is expressly understood and agreed that the approval of this Change Order shall have no effect on the original Agreement, including all GENERAL CONDITIONS, SUPPLEMENTARY CONDITIONS, and STANDARD SPECIFICATIONS, other than matters expressly provided herein.</p> <p>This Change Order constitutes full and mutual accord and satisfaction for the adjustment of the Contract Price and Contract Time as a result of increases or decreases in cost and time of performance caused directly and indirectly from the change. Acceptance of this Change Order constitutes an agreement between OWNER and CONTRACTOR that the Change Order represents an equitable adjustment to the Agreement and that CONTRACTOR shall waive all rights to file a Contract Claim or claim of any nature on this Change Order. Execution of this Change Order shall constitute CONTRACTOR's complete acceptance and satisfaction that it is entitled to no more costs or time (direct, indirect, impact, etc.) pursuant to this Change Order. Owner may require consent of the Contractor's surety, if any, to the terms of this Change Order.</p>					

Original Contract Price: \$2,000,000.00		Original Contract Time: 790 Days (calendar days or dates)	
SUMMARY OF PRIOR CHANGE ORDERS			
C-O No.	Description of Change	Change in Contract Price	Change in Contract Time
1		\$	Days
2		\$	Days
3		\$	Days
4		\$	Days
5		\$	Days
TOTAL OF ALL PRIOR CHANGES		\$ 0.00	0 Days
CURRENT CONTRACT PRICE AND TIME (Adjusted by Prior Change Orders BUT before adjusting for this Change Order)		\$2,000,000.00	790 Days
NEW CONTRACT PRICE AND TIME (Adjusted by Prior Change Orders AND this Change Order)		\$2,450,500.00	790 Days
Original Contract Substantial Completion Date: 8/21/2024		New Contract Substantial Completion Date: 8/21/2024	
APPROVAL AND CHANGE ORDER AUTHORIZATION			
Contractor: <u>Flovac, Inc.</u> _____ By (Signature) <u>Mike Pringle, Director of Operations</u> (Printed Name and Title of Officer) _____ (Date)		Owner: <u>Key Largo Wastewater Treatment District</u> _____ By (Signature) <u>Peter Rosasco, General Manager</u> (Printed Name and Title of Officer) (Date) _____	
ATTEST: _____ (Secretary) (Corporate Seal)		ATTEST: _____ District Clerk (Seal)	



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QUOTE

Key Largo Waste Water Treatment District
 Attention: Mike Dempsey
 103355 Overseas Highway
 KEY LARGO FLORIDA 33037
 USA

Date
 28 Nov 2022

15 Utility Dr, Suite A
 Palm Coast, FL 32137

Expiry
 18 Dec 2022

(386) 319-0350
 www.flovac.com

Quote Number
 QU-0332

Reference
 Monitoring Project

Item	Description	Quantity	Unit Price	Tax	Amount USD
	Vent Pipe Extension- Ea. Up to 2 feet per pedestal as needed. Included supply and installation of coupling and pipe per submittals. Directive on where and when to install (min-height and finished height requirements) to come from the customer	1.00	125.00	Tax Exempt	125.00
	Partial pedestal concrete base repair- where excessive chipping was needed for the communication conduit install. <ul style="list-style-type: none"> • Chipped concrete from pedestal • Load and Haul Debris off the property • Level Sub-grade • Form pedestal with 2x4 • Place concrete only we're chipped • light broom finish & edging • Strip Forms • Restore materials directly around pedestal concrete 	1.00	137.50	Tax Exempt	137.50
	Full pedestal concrete base repair- where concrete was originally placed in a manner that encapsulated the existing pedestal preventing servicing. <ul style="list-style-type: none"> • Chip excess concrete from the pedestal • Load and Haul Debris off the property • Level Sub-grade • compact sub-grade materials • Form pedestal with 2x4 @ 20"x20x4" no reinforcement • Install 2-3/8"x 4' - 16g galvanized stand support pipe with cap 12" deep & 3' above grade. • Place concrete around pedestals • light broom finish & edging • Strip Forms • Restore materials directly around pedestal 	1.00	258.00	Tax Exempt	258.00

Item	Description	Quantity	Unit Price	Tax	Amount USD
	concrete <ul style="list-style-type: none"> place pedestal & anchor with galvanized perforated strapping 				
	Pedestal Post Replacement/ Repair <ul style="list-style-type: none"> Install (where called for) #7 galvanized reinforcing support rod 2' deep & 3' above grade. Grout in existing concrete. 	1.00	93.50		93.50

Terms

Terms shall follow those outlined in the existing contract with KLWTD in accordance with the KLWTD General and Supplementary Conditions.