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July 21, 2016

Emergency Management Coordinator
Pinellas County Emergency Management
10750 Ulmerton Road
Building 1, Suite 267
Attention: Inaki A. Rezola, FPEM

Dear Inaki,

The following is an explanation for the increase in cost and scope to the original GMP for the emergency potable water supply system at Largo High School.

Design Recap for the Emergency Management Upgrades

The Largo High School water supply system was designed to provide the adequate flow capacity for potable demand of the school facilities for normal operation. The design was accomplished to provide the PCSB a cost effective system. During the course of the design process the determination to establish the school as an emergency shelter required the inclusion of separate and distinct regulatory guidelines to provide safe drinking water to the occupants of the shelter.

The 2014 State of Florida Emergency Shelter Plan guidelines were implemented to satisfy this change. The guidelines require a separate potable water source independent of the public water supply (which may be dysfunctional during an emergency event) be provided. The decision was made to contain costs to utilize an onsite irrigation well proposed for the site as a source for this redundant water source.

The Pinellas County Health Department criterion for using a private well for potable water supply requires the water to be treated to drinking water standards. These requirements also stipulate that a permanent cross-connection to another water supply is prohibited. Since this dual school/shelter function required two sources of potable water a method of making the cross-connection distinctly separate by mechanical means, a unique apparatus was required installed so both water supplies could not be connected to the buildings simultaneously. The resultant Emergency Water Supply system now incorporates:

- Public Water supply by Pinellas County Utilities
- Private well supply on site utilized by the irrigation system during non-emergency times
- Cross-connection piping, detachable spool piping, and valves to separate the supply's
- Hydro-pneumatic tank to regulate the pressure of the well system water supply
- Chlorinator to provide disinfection of the well system water supply

The changes in the water system design to accommodate the emergency water supply were made at junctions in the previously designed water system to contain construction costs to the minimum necessary incorporating two cross connect points and the hydro-pneumatic tank and chlorinator in the vicinity of the Central Energy Plant for access control, security and hazard protection.

During the course of the evaluation of two other systems similar to Largo High School that were recently constructed at Palm Harbor University High School and East Lake High School, a change in the installation was requested to facilitate a much less time consuming procedure to make the switch from public to private well water supplies. The resultant revision required the addition of approximately 1000 feet of 6" water pipe, and relocation of all the cross-connection pipes, adding quick connect piping and valves adjacent to the hydro-pneumatic tank inside the Central Energy Plant equipment yard. The chlorinator tank and feed were relocated outside of the Mechanical building inside a secured vault to provide adequate venting and remove the potential for chemical interaction inside the building.

The completed emergency water supply water system provides the most efficient use of the public water supply and private well supply to satisfy the needs of the school during normal operating condition, irrigation during normal operating conditions and emergency water supply during emergency shelter conditions. The increase in costs to upgrade the system will accommodate a much simpler and time efficient process to transfer the water supply from public to treated well water supply in the event of an emergency.

Chronological Bidding Recap for the Emergency Management Upgrades

In early October 2014, the Largo High School site work was awarded to David Nelson Construction Company (Nelson). Nelson immediately mobilized to start site clearing, earthwork and building the building pads. At that time, the Emergency Management Upgrades Design was not yet complete.

Meanwhile, at the same time in October 2014, the Electrical work was bidding. The electrical drawings included an alternate to isolate the electrical cost associated with upgrading the generator from the 250KW to the 700KW as required by the Emergency Management Upgrades. As such, the electrical work was bid out and the cost of the generator upgrade was identified as \$153,237. Tri-City was awarded the electrical subcontract. But, until the design was completed, the upgraded generator was not made part of their subcontract.

In early December 2014, the Harvard Jolly (Architect), Matrix Engineering (Electrical/Mechanical Engineer), and George F Young issued the complete Emergency Management Drawings in ASI 6.

In December 2014, ASI 6 was priced out by Nelson and Tri-City. Those Emergency Management Upgrades cost were compiled and summarized in a letter dated January 14, 2015. The letter included the subcontractor pricing and bid information as an Estimate Summary. The value of the Summary Estimate was \$351,582. That value was later approved by PCSB in as part of the contract with Ajax. It was identified as Alternate 14. Alternate 14 was accepted and made part of the Ajax contract. The Ajax contract, including Alternate 14 was signed in February of 2015. The scope was primarily made of two major components: (1) Emergency Potable Water System, Nelson; (2) Enhanced Emergency Power, Tri-City.

Award of Emergency Management Upgrades – Increase \$21,834

In May of 2015, Ajax issued a change order (Tri-City CO#2) to Tri-City for the same value that was included in the approved Alternate 14, \$184,639. This include the original bid for the generator upgrade and additional electrical to support the equipment included in the emergency potable water system.

In June of 2015, Ajax issued a change order (Nelson CO #6) to Nelson for the majority of the emergency potable water system. This change included all the related site piping, the chlorinator, and hydro-pneumatic tank. However, since there were open questions regarding the requirements for the well since it was to be used for both irrigation and drinking water, the well was not included with the change.

Over the next couple months, Ajax continued researching the well requirements and how the hydro-pneumatic tank, well, and other equipment worked together to control the water and treat the water. Depending on which mode the system is in, there are various automatic switches and manual valves, and components required to operate the system. There is a fair amount of complexity involved in transitioning the system from public supply mode to private well supply mode and keeping the system balanced. In short order, it became apparent that the appropriate type of subcontractor suited to perform the complex work to provide chlorinated potable water from the well would be a mechanical contractor rather than a site contractor. Nelson did not have the depth of experience or resources suited for this type of installation. BCH had a much better understanding of the system. They also had more experience and skilled manpower suited for these types of components.

In September 2015, Ajax made the decision to remove the equipment from Nelson's contract in a deductive change order (Nelson CO #10). The hydro-pneumatic tank and chlorinator were removed. All the site piping and valve junctions remained.

In September 2015, Ajax issued a change order (BCH CO #10) to BCH Mechanical. That change order included the hydro-pneumatic tank, hydro-pneumatic tank wind load calculations, chlorinator and all other smaller components. The change also included the well and related permitting.

As part of this buyout process, there were some increases. The original value anticipated value was \$351,582. The actual value the original system was bought out at was \$373,416, a difference of \$21,834.

The increase were driven by several factors:

- Tank Pricing Error - The original pricing from Nelson included a \$35,000 hydro-pneumatic Tank. The pricing was used to compile the cost to PCSB and Emergency Management in the January 14, 2015 letter. A few days after Ajax issued the letter, Nelson corrected a pricing error. The cost of the hydro-pneumatic Tank was actually \$45,000. This led to a \$10,000 increase.
- Enhanced Scope & Services - In the transition between Nelson and BCH, there was a cost difference of about \$27,790. This cost difference was associated with added permitting and wind load calculations on the hydro-pneumatic tank. It also included some additional labor for bringing the system online, testing it, and providing a higher level of service conducting the demonstration services that will be required to train the those who will be operating and maintaining the system.

- Contingency Offset - Ajax had included a contingency of \$15,956 in the original estimate of \$351,582.
- Increase Calculation - As such, the net increase is \$21,834 (= \$10,000 + \$27,790 - \$15,956)

Design Changes & Unforeseen Conditions – Increase \$63,228.35

Subsequent, to this award of \$373,416, there were additional design changes and unforeseen conditions.

- Well Depth, Unforeseen Condition, Excluded – In the original cost summary for the Emergency Management Upgrades the pricing included a well depth of up to 60 feet. However, the well had to be drilled to a depth of 177 feet to penetrate the rock layer and reach the aquifer. This represents an increase cost of \$8,551.73.
- Design Changes
 - ASI 113 & 113R – Pipe Routing Changes, and Junction Changes
In March 2016, GFY and PCSB reviewed the design and opted to make some changes to improve how the system would function during the cross-over procedure and how it would be maintained. These changes greatly reduced the potential efforts required to bring the emergency system online. The efficiency, reliability, and ease of operation/maintenance were improved. Mostly importantly, the changes facilitated a fast, short transition from irrigation mode to emergency mode, without the risk associated with cleaning and sanitizing a 1000 foot long stretch of piping during an emergency event.
 - Minor Changes - ASI 113R2, RFI 561, RFI 590, further clarified the design. The chlorine injector was secured in an outdoor vault for increased ventilation and to prevent potential damage and tampering. More efficient spool connectors were specified providing the ability to quickly disconnect spool components without specialized tools. These changes provided addition security and efficiency in the system.

The increase for the above Design Changes was \$54,676.62. In addition there was a cost of incurred to increase the depth of the wells of \$8,551.73. The sum total of these two items is \$63,228.35. (See attached detailed recap pricing sheet)

Other Additional Cost not included in the GMP: Increase \$78,972.58

- Costs for the emergency management system design by Harvard Jolly Architecture, which was \$38,250.
- The cost of \$40,972.58 for the additional Square D electrical gear such as panels, circuit breakers and motor starters required for the emergency management system that were purchased directly by Pinellas County Schools. (See attachment).

In summary here are the list of items attributed to the cost incurred by the Pinellas School District for the design and construction of the emergency management systems at Largo High School:

- GMP cost\$436,644.53
- Architectural / Engineering Design Fee \$38,250.00
- Owner Direct Purchased Electrical Gear\$40,972.58
- Total Cost **\$515,867.11**

I am requesting approval from the Pinellas County Board of Commissioners for the reimbursable cost of \$515,867.11 to design and construct the emergency management systems at Largo High School.

Sincerely,

Doug Pollei, A.I.A.
Director of Facilities Design and Construction

Cc: Award of Emergency Management to Subs and Pending Issues Recap, Ajax Building Corp. 6/22/16
CED / Raybro Electrical Supplies – Emergency Management Equipment – Direct Owner Purchase