

2023 Spring Conference

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GEOPROFESSIONAL
BUSINESS
ASSOCIATION

**CASE
HISTORY** **79**

PROJECT MANAGEMENT

The Client

A city

The Project

Replace the existing underground storage tanks (USTs) at a bus-fueling, maintenance-storage facility

Assignment of the GBA-Member Firm

Perform UST replacement as the leader of a design/build team.

Background

The city-owned facility was used to fuel, maintain, and store 200 buses and other city-owned vehicles. The facility's USTs had an overall capacity of 10,000 gallons of motor-vehicle fuels, lubricants, and other fluids. The city had to remove the existing USTs and replace them with new ones to comply with new federal regulations. The city decided to issue two contracts: one for environmental site characterization and remediation; the other

The city issued a qualifications-based request for proposals (RFP) for the demolition and construction.

for demolition and construction on a design/build basis, which the GBA-Member Firm regarded as an important opportunity. Accordingly, when the city issued a qualifications-based request for proposals RFP for the demolition and construction, the Member Firm, in association with

The Member Firm won.

a demolition/construction subcontractor, prepared a proposal and participated in a competitive interview. The Member Firm won the award.

The project's scope of work included the following tasks:

- Prepare a conceptual design of the proposed facility to develop detailed pricing before final negotiations of the proposed demolition and construction.
- Prepare plans and specifications for the removal of the existing fueling-system components, including almost all of the existing USTs, all of the related vent and product lines, and parts of the existing fuel-delivery systems.
- Prepare plans and specifications for the installation of new USTs and prod-

uct lines, new electrical service, new tank-monitoring systems, and new fuel-delivery systems.

- Prepare plans and specifications for the replacement of asphaltic-concrete and Portland-cement-concrete pavements.
- Obtain the necessary permits from, and interact during design and construction with, the city's engineering department, the bus line (as the owner operator of the facility), and the city's environmental-planning department (as the local enforcement agency for UST programs).
- Demolish and construct all elements defined in the plans and specifications.

Because the facility had to remain in use during demolition and construction, little space was available for the placement of

Because the facility had to remain in use during demolition and construction, little space was available for the placement of new USTs and constructor staging during construction.

new USTs and constructor staging during construction. Other limitations also existed:

- Continuous fuel delivery to buses and police and fire vehicles had to be available on at least one of the two fueling islands.
- Continuous through-access to buses and police and fire vehicles had to be maintained.
- The strict staging/phasing that was necessary permitted the team to work on only one of four installation/removal sites at a time.
- If excavation revealed significant contamination from UST-system, petroleum-product releases in the subsurface, the team needed to wait for the remediation contractor to assess or remediate the affected soils.

Harsh Realities of a Design Build Project

- Introduction
- Background
- Problems and Outcomes
- Lessons Learned
- Questions and Discussion



Introduction

- Client – Municipality, “The City”
- Project – Replace existing underground storage tanks (USTs) at bus fueling/maintenance/storage facility
- Member Firm Assignment – Perform UST replacement as leader of design/build team



Background

- The City owns the bus facility
- Total system capacity is 110,000 gallons of motor-vehicle fluids (fuel, lubricant, etc.)
- System replacement was due to new federal regulations
- The City issued a qualifications-based selection (QBS) request for demolition of existing system and construction of new system*, on a design/build basis – WIN for the Member Firm!

*Note: No environmental characterization/remediation scope for Member Firm

Background - Scope

- Prepare conceptual design, with detailed pricing, before final negotiations
- Prepare plans and specifications for:
 - System demolition (all components)
 - System construction (all components)
 - Replacement of pavement
- Obtain permits from and coordinate with the City's engineering department, the bus line, and the City's environmental-planning department
- Demolish and construct as planned/specified

Background - Limitations

- Staging space was limited
- Uninterrupted fuel delivery to buses, police, and fire vehicles had to be available on at least one fuel island
- Continuous through-access to City vehicles had to be maintained
- If contamination encountered, the demo/construction team had to wait for a separate environmental team to evaluate; part of a different contract



Problems

- After approved conceptual plans, cost estimate came in at \$1.6 million, exceeding the City's budget by ~45%
- City requested scope modifications to reduce price
 - Downgrading systems
 - Eliminating excavation shoring
 - Substituting pavement type
 - Reducing on-site supervision time and project management time
 - Limiting markup on direct costs
- Final contract negotiated for \$300,000 less than original estimate



Problems and Outcomes

- The City designated three people who provided concurrent and uncoordinated direction and interpretation of the scope
- The City demanded no work delays, even with contaminated conditions, and threatened termination
- The City treated the design professional like a contractor
- The construction subcontractor sought additional compensation for every modification to the design/build plans



Problems and Outcomes

- The construction subcontractor superintendent was inexperienced and overwhelmed by the magnitude of the project
- The construction subcontractor's documentation was insufficient to differentiate between in-scope and out-of-scope items
- The City put off change-order reviews until late in the project
- Soil contamination was encountered in all stages of the project
- Out of \$270,000 in "extras" (prime and construction subcontractor), only \$160,000 was approved in a change order

COST OVERRUN



Lessons Learned

- **Protect yourself. Don't rely on others.** The prime assumes most of the risk as the “constructor-in-charge” and, as such, must act like a constructor-in-charge.
- **Know where the buck stops.** Relationships should be well delineated.
- **Documentation is essential.** Without iron-clad documentation, the prime is at the owner's mercy.
- **Avoid ambiguity.** Owner-directed changes are common on design/build projects, putting the prime at financial risk.



Lessons Learned

- **Pessimism/optimism, use caution.** While any number of subcontractors know how to “talk the partner talk”, few actually “walk the walk”. Subcontractors must be treated as subcontractors.
- **Respond quickly to problems.** Design professionals who become involved in construction cannot afford to be naïve. Project managers must be able to make effective field decisions and deal with changed conditions quickly.
- **Geoprofessional firms need to be compensated appropriately.** When the client doesn’t have enough money to do it right, it will probably come out wrong.



Member Firm Comments

“This was our firm’s first significant design/build project and we felt that we were in a position to handle it, especially because the client and our subcontractors seemed genuinely interested in doing a good job. As it so happened, when the chips were down, the client wanted to spend as little as possible (at our expense), and the subcontractor wanted to make as much as possible (also at our expense) . . . while we didn’t come out of the situation “whole,” we didn’t lose our collective shirt, either. And we did learn some extremely valuable lessons that have helped us become far more successful with this kind of project. When all is said and done, experience is the harshest, best teacher.”