Your Best Laid Plans Will Change

Managing Change Orders During Construction

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Safety Minute – Jobsite Hazard Appraisal

Agenda

- Four Change Order Stories
  - Introduction
  - Nature of change order
  - How it was resolved
  - Lessons learned
- Commonalities/Best Defense Tip

1 - Soil Improvements at a Greenfield Site

Expectation

7 to 12 inches of total settlement

3 to 9 months to achieve primary consolidation

1 - Monitoring Revealed Settlement Issues

1 - Resolution and Lessons Learned

- Resolution – Aggressive Change Management
  - Design modifications with $650k cost impact
  - Phased preload removal
  - No cost impacts related to delay of work

- Lessons Learned
  - Understand geotechnical risks
  - Require CPM scheduling with updates
  - Address schedule float in contract

2 – Major Water Distribution Project

- 4 contracts
  - 8 miles of WSP
  - 35 MGD PS
  - 12 MG Reservoir
  - 1,100-ft river crossing
- Contracts began concurrently

2 – Microtunnel Machine vs. Boulder

- Differing site condition
- Granite boulder in pipeline alignment

2 - Resolution and Lessons Learned

- Resolution –
  - Construct new launch shaft, 20-foot deeper, to miss previous alignment
  - Approximate 1 year delay of project completion
  - Multi-million dollar change order

- Lessons Learned
  - Importance of engineering data and equipment selection
  - Phase projects to take care of high-risk areas early to mitigate risk to project delivery

3 – Lagoon Treatment System Upgrade

3 – Discovered Lagoon Liner Compromised

3 - Resolution and Lessons Learned

- Resolution –
  - Re-lined lagoons with 80-mil HDPE
  - New subcontractor brought in to perform work
  - $2.5M change order
  - 4 months added to schedule

- Lessons Learned
  - Condition assessment could/should have been performed

4 – Ocean Outfall Testing and Repair

4 – Seasonal Weather Impacts Work

4 – Project Update

4 - Resolution and Lessons Learned

- Resolution –
  - Project postponed 5 months
  - Change order claims could be pending

- Lessons Learned
  - Got started too late relative to seasonal working window
  - Construction window for unique project – review carefully
  - Schedule work when you're sure to be capable of doing it

Common Thread and Best Defense

- Risk – Anticipated and Unanticipated
- Not possible to mitigate all risks
- Is possible to be more aware of risks
- Want to better handle surprises?
  - Develop a risk register and response in advance of initiating work
  - Involve knowledgeable people on risks