Utilizing the Progressive Design Build Delivery Model to Meet the City of St. Petersburg's Consent Order Commitment for Wet Weather Flow

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Vlanágement

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Background of Wastewater in St. Petersburg, FL

- Older system, for Florida
 - First systems installed in late 1800s/early 1900s
 - Albert Whitted facility downtown
- Current situation/projects
 - Three collection basins
 - Evaluating metersheds
 - Rehabilitating gravity system
- Inflow/Infiltration Issues
 - Located on peninsula, high groundwater
 - Excessive groundwater infiltration during wet weather events
 - Can peak at 3-4 times AADF



FDEP Consent Order

- Large wet weather events in 2015-2016 led to surcharging of gravity system and facility issues
- Consent Order issued by FDEP in 2016
- Negotiations with stakeholders and FDEP led to a scope and Design Criteria Package completed in April of 2020
- Substantial completion of this lift station and force main by May 23, 2022



Location of Lift Station and Force Main

Ultimate goal is to provide flow balance between the SWWRF and NWWRF





Design Criteria of Lift Station and Force Main

- Capacity of 3.5 mgd through 3 miles of 16inch force main
- Not in continuous use only during high wet weather events
- Utilize portable, diesel-driven pumps
 - No submersible, dedicated pumps
 - Allows for multi-purpose and flexibility
 - Maximize benefit of equipment purchased
- Archer Western and their designer Wade Trim selected in March 2021
- 14 months to CO deadline!



Unique Challenges

- Aggressive schedule
- Envision Certification
 - Ordinance 359-H
 - Verified for any civil infrastructure > \$2 million
- Community pushback
- COVID restrictions
- Supply chain issues
- Not only doing it fast, doing it right



Project Delivery Method

- Progressive Design-Build
- Collaborative Process with Design-Builder and Owner
- Schedule was a significant project driver
- Selection made on customized qualifications
 - Team Cohesiveness
 - Technical capabilities
 - Innovative ideas
 - Capacity and Availability



Benefits of Progressive Design-Build

- Goals of the project identified
- Risk mitigation
- Route evaluation
- Options of installation for the force main
- Pump station function and aesthetics
- Material volatility and availability
- Continued updates on schedule and budget
- GMP developed and approved within 5 ½ months from NTP



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Options of installation for the force main

Pump station function and aesthetics

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GMP developed and approved within 5 ¹/₂ months from NTP

Pre-Construction Phase

- Coordination meetings
 - Weekly design, design-builder and owner meetings
 - Virtual meetings
 - Urgent items discussion
 - Design decisions tracked
- Technical memorandums
 - Establish preliminary design criteria
- Design ongoing while Field Services where being done
 - Geotech, SUE, survey, environmental
- Focus on long lead items
 - Pumps, Pipe, Fittings, Valves, Structures



LIFT STATION 87 TECHNICAL MEMORANDUM

1,717 gpm @ 50 ft TDH

POR (70% to 120% of BEP)

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June 2, 202

Construction Materials

- Pump Station
 - 2 Trailer Mounted Diesel Pumps
 - FRP Wet Well
- Force Main
 - HDPE
 - DIP
 - PVC
- Gravity Sewer
 - HOBAS FRP Pipe
 - FRP Manholes



Permitting

- Pinellas County Right-of-Way
- Florida Department of Transportation
- Florida Department of Environmental Protection
 - Notification / Application for Constructing a Domestic Wastewater Collection / Transmission System
 - Joint State 404 Program and Environmental Resource Permit
- City of St. Petersburg Building Department Permit







Pre-Construction Collaboration

- Workshops
 - Risk Management
 - Preliminary Design
 - Envision Planning
 - GMP Submission
- Public outreach and community input
- PSTA SunRunner Project
- Envision Verified





Construction Phase – Buyout and Schedule

- Established the Expectation decisions based on schedule impacts
- Communication with Marketplace and Vendors
- Detailed Scoping for accurate GMP development
- Early Release of Materials
- Owner Direct Purchase



Overlapping Design and Construction

- Establish resources
- 1. Coordination with Key Subcontractors
- Coordination with City and FDOT for closures
- Materials switching from DIP to PVC
- Updating design with Material lead times in mind.



Construction Phase

- Reduced RFI's
- Expedited submittals
- No finger pointing
- No surprises
- Minimal change orders
- Work through issues or problems as a team
- Make changes if needed in a quick time frame



Current Progress

- The Consent Decree Date was met.
- The project is completely finished
- Construction duration was 5 months from beginning of construction to consent decree date.



Lessons Learned / Key Takeaways

- Involvement and Expectations of City Support Department
 - Tie into clear goals from leadership
- Virtual Environment improved team efficiency
- Volatility demands flexibility of all stakeholders
- Establish Clear Goals from Leadership
 - Success b/c of clear direction, expectations from outset
- Well Defined Design Criteria Package (DCP)
- Communication & Trust
 - Collaborative environment
 - Roles and responsibilities

Questions?