



# **Bridges to Bypass UCT 2019**

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January 29, 2019**



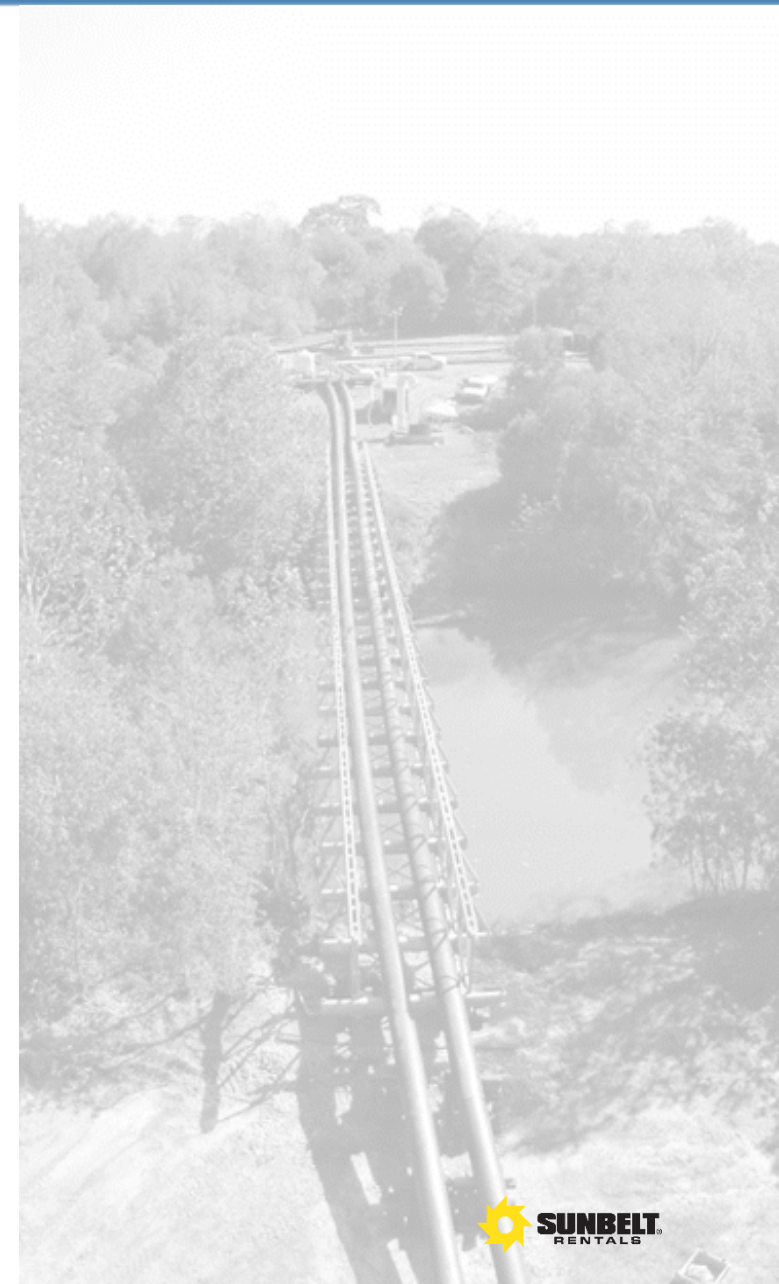




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## Presentation Overview

- Review sewer siphon rehab project in Montgomery, Ala.
- Importance of bid specifications
- Overcoming exceptional challenges with engineered solution





## The Project

- City of Montgomery released bid for sewer siphon rehab in spring 2017
- CIPP rehab of four separate siphons with pipes ranging from 14"-64"
- Extensive bypass required to support CIPP



Montgomery Water Works  
& Sanitary Sewer Board

**JACOBS** **ch2m**



**SAK**



## The Challenges

Priority: reduce the owner's risk of SSO

- Higher bypass flow requirement for rainy season (Nov. – April)
- Redundancy
- Bypass discharge piping could not be placed in creeks where siphons crossed





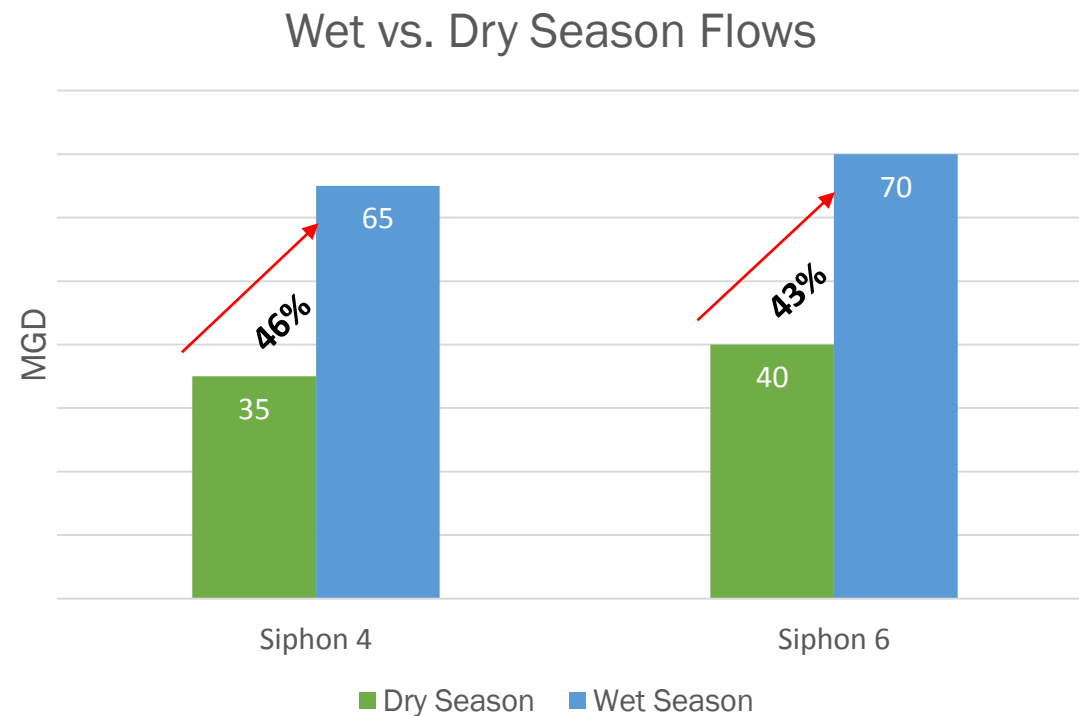
## Overcoming Obstacles

### Challenge 1: Wet vs. Dry Season

Wet season flows significantly higher than dry season flows

- 46% and 43% for siphons 4 and 6, respectively

Perform large diameter rehab first to stay within dry months







# Overcoming Obstacles

## Challenge 2: Redundancy

- Reduce risk of mechanical failure
- Larger diameter siphons required four primary pumps + 50% redundancy
- Transducers used to regulate flow





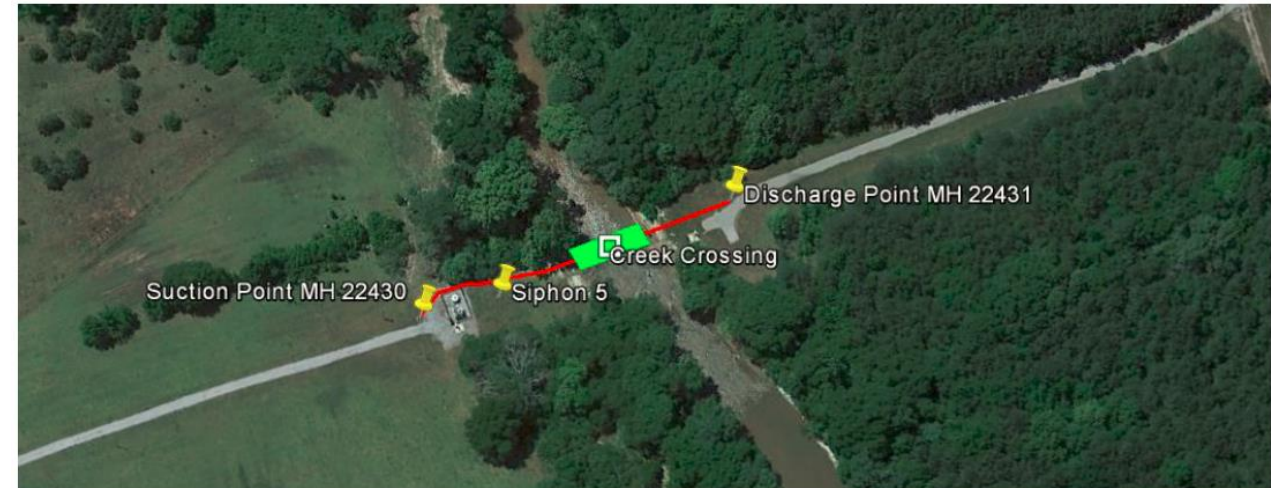
## Details

### Southlawn Siphon

- 15 MGD
- Three 12" Quiet Flow™ pumps
  - Two primary, one standby
- 150' clear span

### Siphon 5

- 15 MGD
- Three 12" Quiet Flow™ pumps
  - Two primary, one standby
- 170' clear span







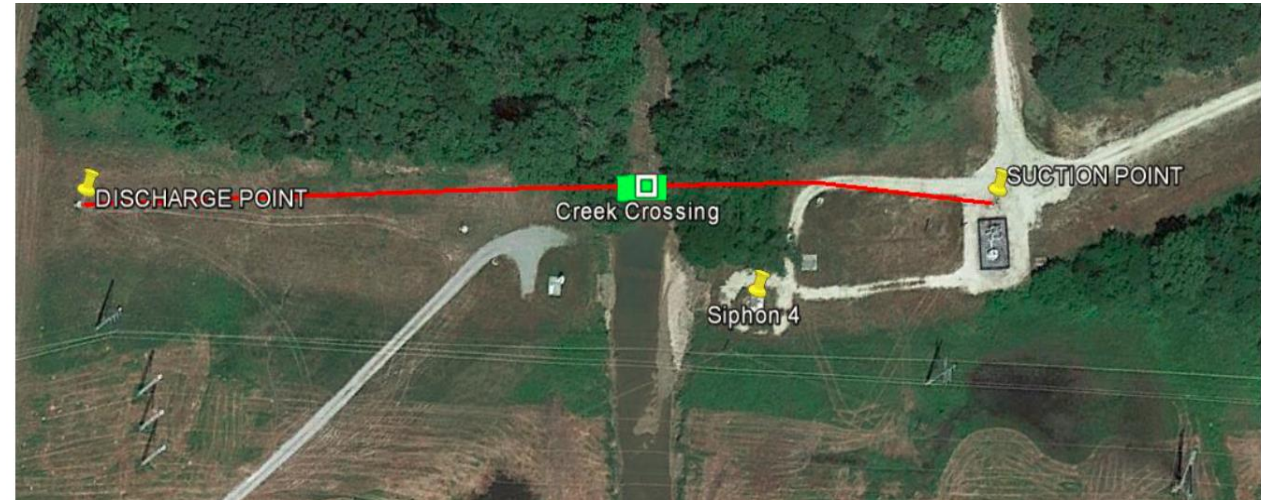
## Details

### Siphon 4

- 35 MGD
- Six 18" Quiet Flow™ pumps
  - Four primary, two standby
- 90' clear span

### Siphon 6

- 40 MGD
- Six 18" Quiet Flow™ pumps
  - Four primary, two standby
- 170' clear span





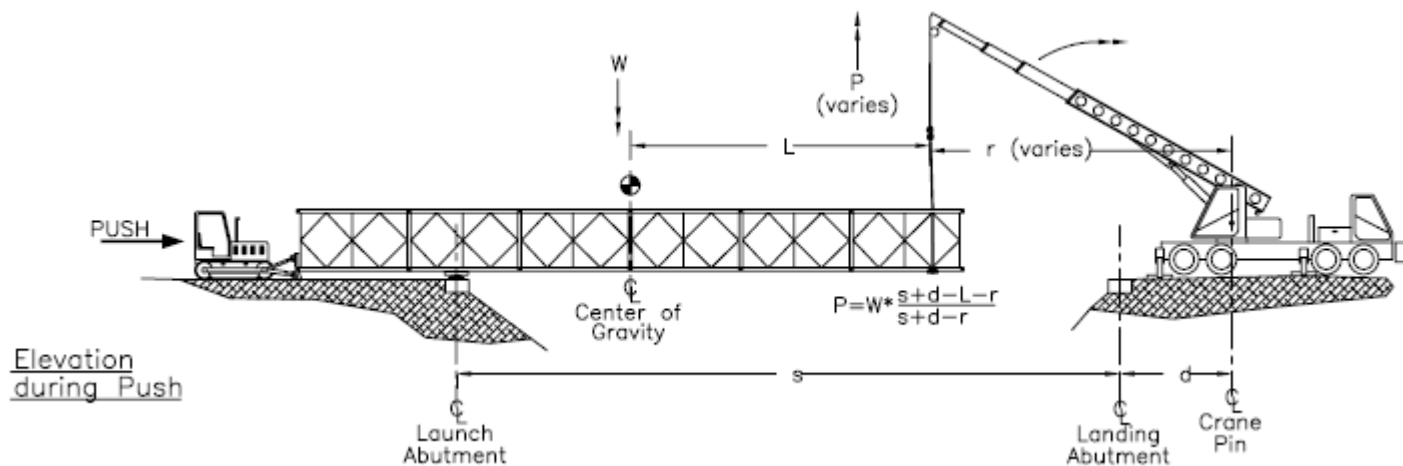
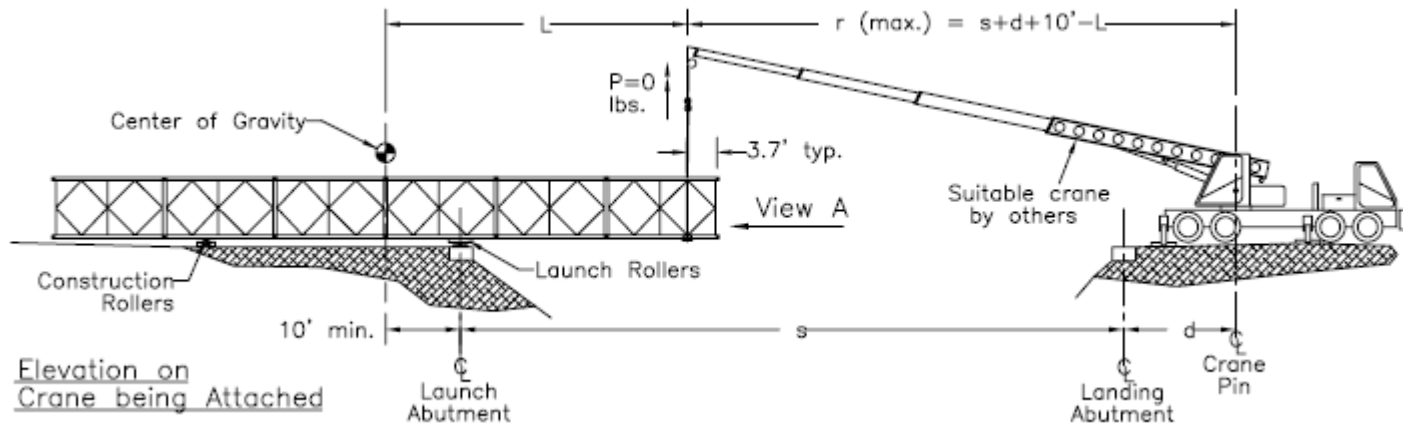


## Overcoming Obstacles

### Challenge 3: Placement of Bypass Discharge Piping

#### Factors

- Weight
  - 24" HDPE pipes
  - 194.47 – 388.94 lbs/ft
- Distance
  - 90' – 170'



## Overcoming Obstacles

### Challenge 3: Placement of Bypass Discharge Piping

Multiple options evaluated

- ~~Steel beams~~ Too Short
- ~~Trench boxes~~ Unsafe
- Temporary bridging





# THE UNDERGROUND UTILITIES EVENT

Underground Construction Technology | Jan. 29-31, 2019 | Fort Worth, TX



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## Agility

- Original plan to bypass siphons 4 and 6 first
- Access issues required change in plans and timeline



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## Success Factors

- 1 Detailed specifications
- 2 Thorough prime contractor
- 3 Ingenuity and adaptability

