Flygt Innovative and Cost Saving Solutions for Stormwater
Des Moines, IA

Mike Zelinsky – Applications Engineer
Background
Project Overview

Combined storm and sewage pump station

Capacity: 390 MGD

Pumps: 3 Flygt CP 3501 and 6 Flygt PL 7121 pumps

6 FSIs

Flygt FSI device
  • 60% smaller footprint
  • 20% reduction in construction costs
Expansion of existing Wastewater Treatment Plant

- From Coarse Screens
- Overflow Weir (Above 50 MGD)

- 60 MGD High Flow Pumps
- 30 MGD Low Flow Pumps

Dimensions:
- 28 feet
- 40 feet
- 14 feet
- 60 feet
- 22 feet
Flygt Proposes Innovative Solution with FSI
Flygt Proposes Innovative Solution with FSI

- From Coarse Screens
- Opening through floor
- Underflow Baffle
- Treatment Pumps (0 – 30 MGD Total)
- Overflow Weir (Above 30 MGD)
- Sump Pump
- High Flow Pumps (0 – 360 MGD Total)
Flygt Proposes Innovative Solution with FSI
Discharge EL: 45.0

From Coarse Screens

Grade: 36.0

High Flow Pump Discharge (0 – 360 mgd)

Treatment Pump Discharge (0 – 30 mgd)

HWL: 12.0
LWL ~ 7.0
~36 feet to grade

Grade: 8.5 – FT
LWL ~ 7.0

HWL: 8.0
LWL: 4.0

12.5
~ 0.0

340 MGD

Flygt Proposes Innovative Solution with FSI
Discharge EL: 45.0
Flygt Proposes Innovative Solution with FSI

Chlorine Addition

Basin 1 - First Flush

Basin 2

Basin 3

Dewatering Channel

RTB Discharge Channel

High Flow By-Pass

Discharge To River
Flygt Formed Suction Intake (FSI)

• Conditions and redirects the flow toward the pump inlet
• Minimizes pump station footprint

Primary advantages:
• Save money
  Minimize pump station size with lower construction costs
• Realize operational efficiencies
  Hydraulic stability
  Longer equipment life
• Reduce unplanned costs
  Increase reliability
Flygt FSI concept resulted in reduced cost

Final savings about 10% of the pump station construction costs
Fine Tuning Concept Drawing of Design
CFD Analysis validates the Final Model
Final computer renderings
September, 2014...

It was a wet, rainy afternoon as showers fell over downtown Des Moines, IA

Same time at the pump station...
Conclusion

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Questions?

Thank you!
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