

HDR



Structuring the Procurement Phase of a Progressive Design Build Project to Meet a Rapidly Approaching Permit Deadline

A Case Study with Great Lakes Water Authority



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Project Background

- Detroit's WRRF is the largest single site wastewater treatment plant in North America
- Meets 35% of Michigan population's treatment needs including Detroit and 76 surrounding communities
- Serves a combined sewer system
 - Wet weather capacity of 1,700 MGD and secondary treatment capacity of 930 MGD
 - When secondary treatment is exceeded, primary effluent is sent to Detroit River Outfall (DRO) or Rouge River Outfall (RRO)
- Only the DRO has disinfection and RRO needs disinfection to meet NPDES permit



RRO Disinfection Project

- Modifications needed at the WRRF in order to achieve disinfection under all flow conditions
- Successful completion of this project would discharge 1,700 MGD of treated effluent while meeting effluent limits for bacteria and total residual chlorine
- Three previous related projects were not finished due to funding or construction issues
- 3 year design and construction timeframe to meet NPDES permit substantial completion deadline



NPDES Implementation Timeline	
Milestone	Deadline
Basis of Design/Detailed Engineering Report (including permitting plan)	June 01, 2016
Submit complete plans and specifications for first segment	November 01, 2016
Commencement of Construction	April 01, 2017
Substantial Completion	April 01, 2019

RRO Disinfection Project Permit Timeline

1 MDEQ Performance Requirements Must be Completely Met

Excess wet-weather flow from the RRO is treated to primary treatment standards but not disinfected. NPDES requires that **100%** of wastewater treated at the WRRF is disinfected.

2 Strict Delivery Timeline Requirements

GLWA must deliver a basis of design report by **June 1, 2016**, commence project construction by **April 1, 2017**, and reach substantial completion by **April 1, 2019**.

3 Critical Need to Optimize Technical Approach

Although a viable concept existed, GLWA remains interested in the **exploration of other technical solutions** (including a substitute for chlorine gas).

4 Project Needs to be Structured to Attract Bidder Interest

GLWA to conduct a **single, streamlined procurement process** that attracts sufficient market interest and allows for innovation, technical competition, and opportunities for fair pricing through the use of "off-ramps."

RRO Disinfection Project - Challenges

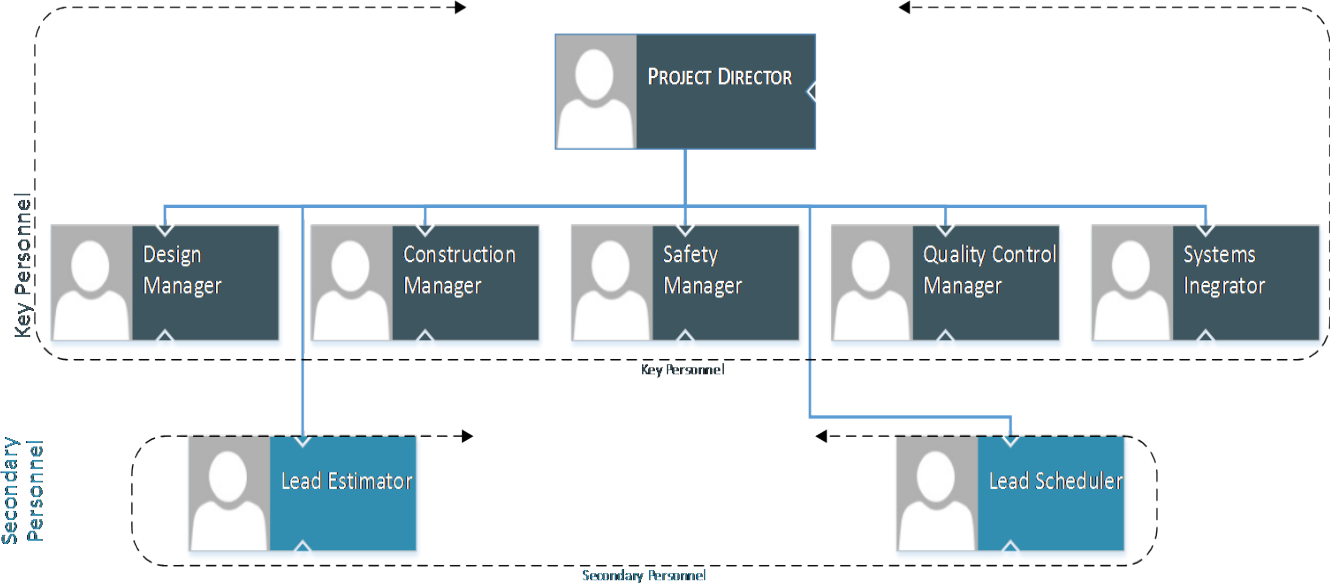
The project challenges led GLWA to take the following actions:

- ✓ Attain a team of financial and technical advisors to assist in the project procurement
- ✓ Select a design-build approach to meet compressed delivery timeframe
- ✓ Evaluate design-build methods to elect the best fit for this project
- ✓ Choose a qualitative Design Build team selection process to solicit innovative time and cost-saving solutions



Overall Procurement Approach

- 1. Advisory Team Support
- 2. Qualifications-based Selection (Request for Statement of Qualifications)
- 3. One-Step Request for Qualifications, Interviews & Negotiation
- 4. Role-based Team and Project Experience
- 5. Encourage Creative, High-Quality Technical Solutions
- 6. Thoughtful Evaluation of Project Delivery Method



Advisory Team Roles

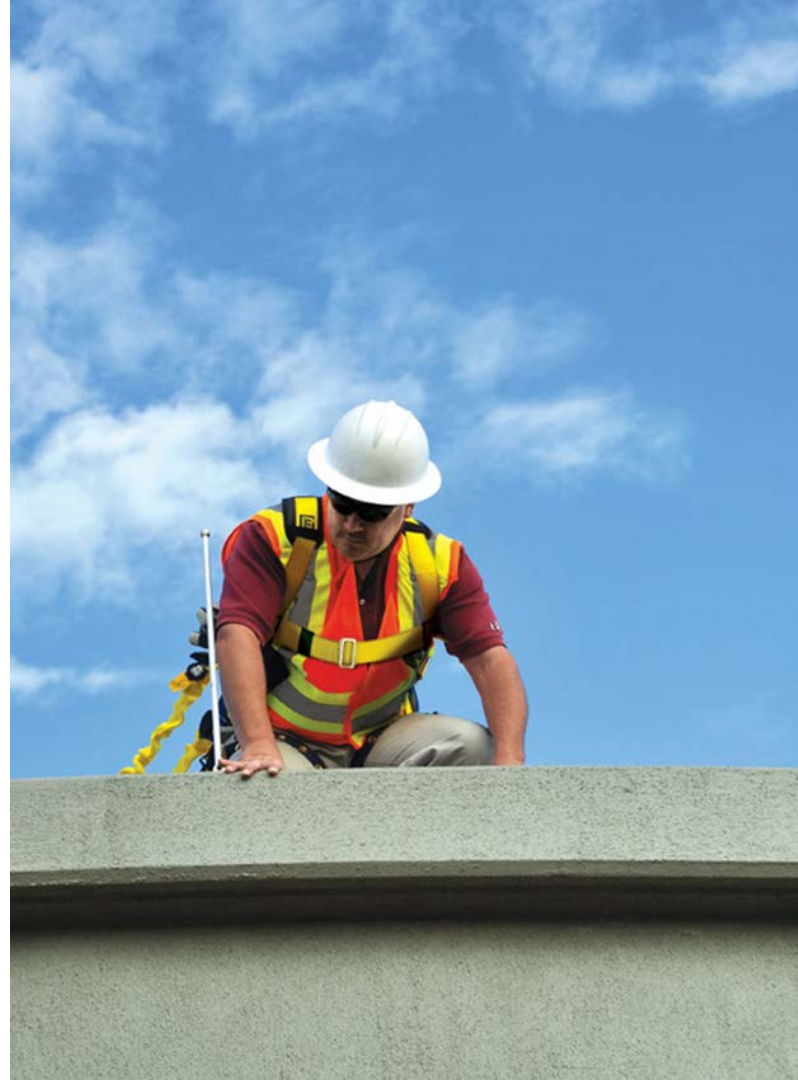
- Assist with selection of Alternative Delivery approach
- Communication with Procurement and Board for process buy-in
- Contribute to development of the Request for Statement of Qualifications (RFSOQ) including minimum qualification requirements
- Set up online Data Room in support of RFSOQ process
- Participate in technical review of qualifications and design approach
- Input for interview evaluation criteria and list of standard questions
- Support during negotiation process



Alternative Delivery

Advantages

- Schedule efficiencies
- Less risk for Owner
(Avoid dilution of responsibility)
- Fewer claims
- 'Best Value' based selection
- Guaranteed Maximum Price Collaborative Design
(with Constructor's input)

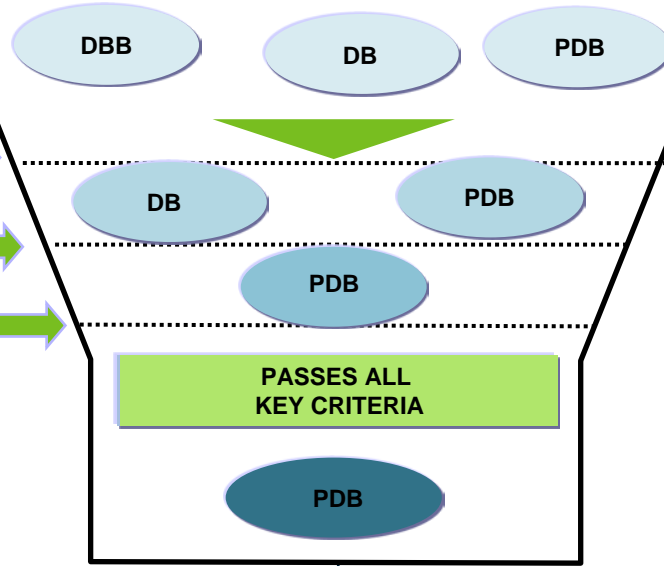


Key Criteria

1. Ability to Achieve Accelerated Timeline

2. Technical Innovation/Flexibility

3. Market Participation



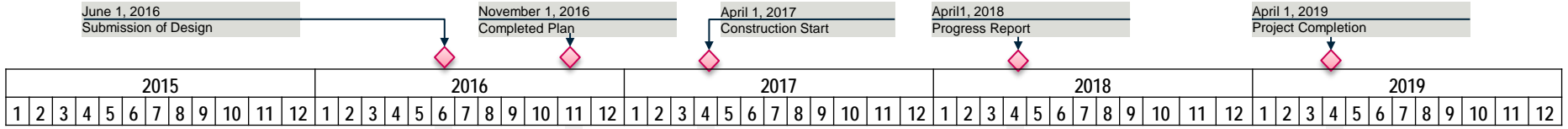
Shortest Turnaround Time

Maximum Bidder
Competition

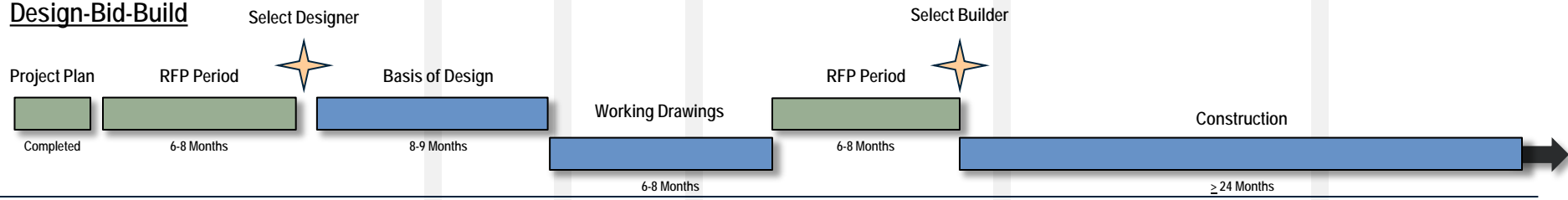
Reduced Risk

Qualifications Based Selection

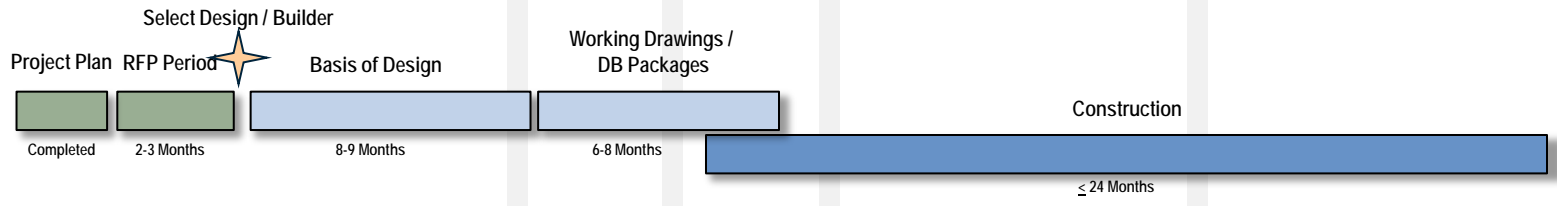
Alternative Delivery Method Evaluation



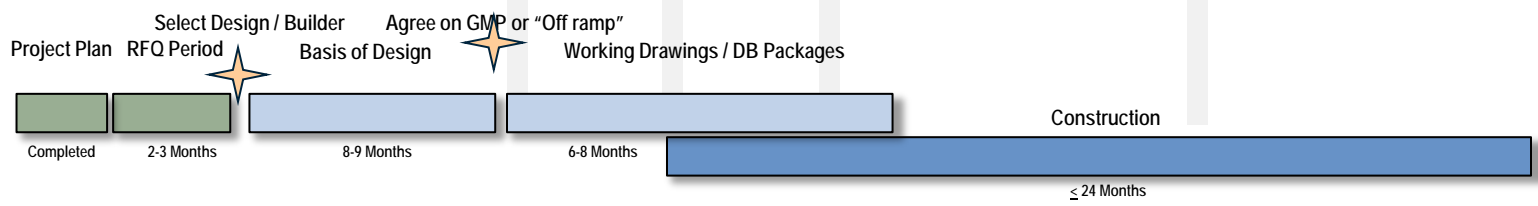
Design-Bid-Build



Traditional Design-Build



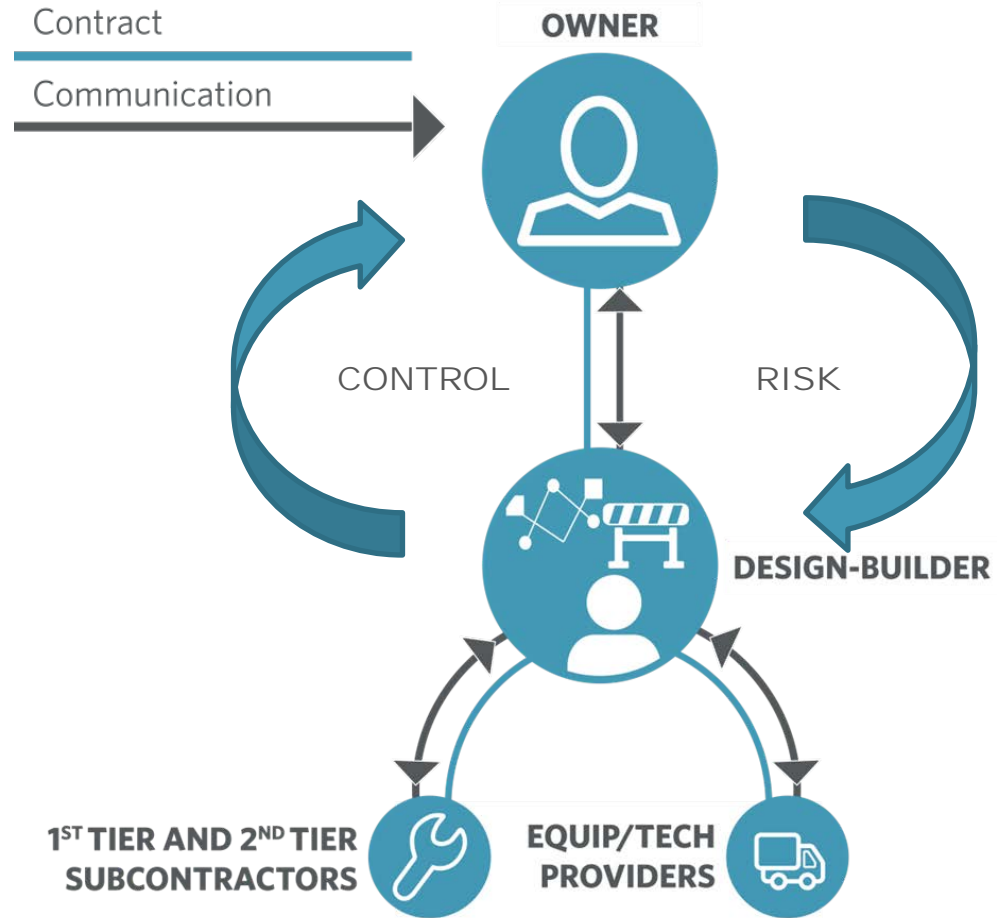
Progressive Design-Build



Alternative Delivery Method Evaluation

Progressive Design-Build Advantages

- Qualifications contribute to selection
- Single Point of Responsibility
- Accelerated schedule
- Project can be implemented in phases or task orders
- Owner has specific preferences and desires high degree of involvement
- Promotes innovation during design with input from contractor and owner
- Cost analysis of options available as project progresses

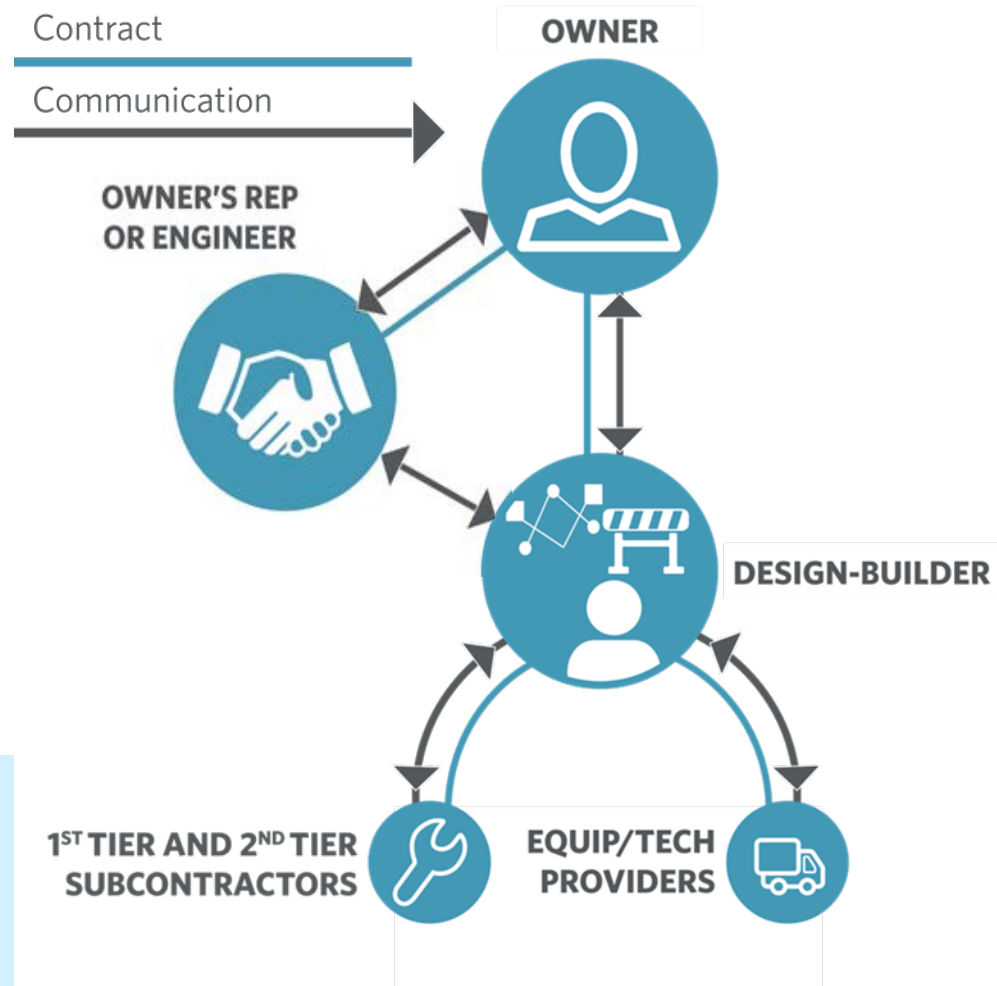


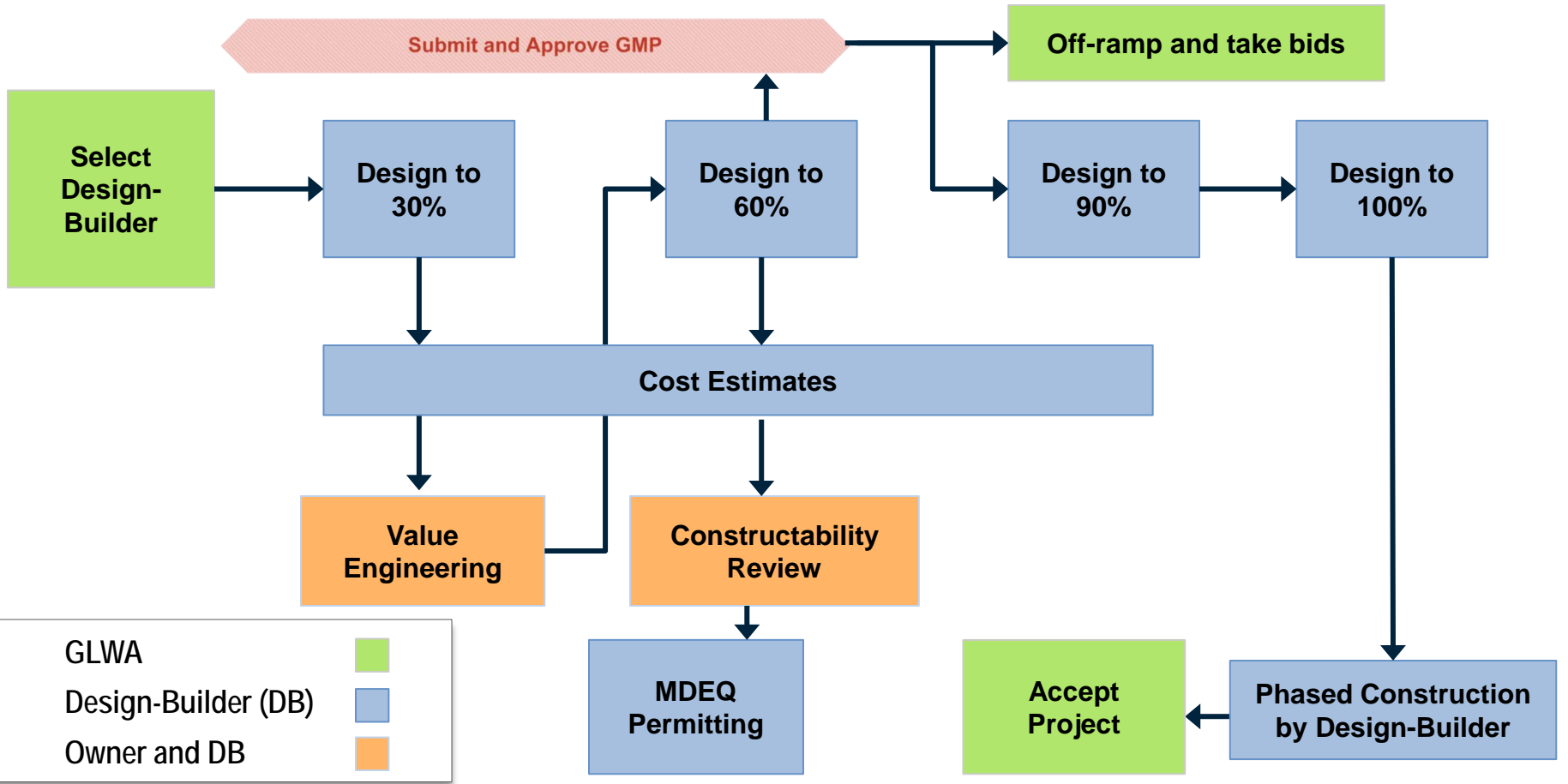
Progressive Design-Build

Disadvantages

- Perceived lack of competitive selection by governing bodies
- Off-ramp decision after GMP may impact project schedule
- Owner access to engineer may be through contractor
- Significant Owner effort and oversight needed for buy-out and GMP negotiation

An Owner's Representative or Engineer can assist in overcoming these disadvantages by overseeing the work completed by the Design-Builder and providing a third-party opinion of the GMP





Progressive Design-Build Process Map

RFSOQ Item	Description
General Information	Legal notices, definitions, and contents of RFSOQ
Scope of Services	High level overview of requirements
Progressive Design Build Services	Outline of Phase 1 and 2 services and roles of design-builder and GLWA
Procurement Considerations	Structure and process of selection, pre-submittal meeting, data access, and procurement deadlines
Submission Requirements	Design builder profiles, project team, minimum experience, project and technical approach
Evaluation/Selection Criteria	Details of criteria and evaluation process for selection
Attachments	Scope of services, general terms and services, project technical requirements, compliance forms, insurance / bond requirements, contract form for Phases I & II, required performance criteria*

Request for Statements of Qualification

Minimum Qualifications

- Established minimum qualification threshold for eligibility:
 - Legal Eligibility
 - Performance Bond
 - Licensing and registration
 - Adequate financial capacity / no material adverse condition
 - Ability to perform work

Category	Requirement
Design Experience	Within past 10 years, Designer must have successfully completed design of <i>3 projects</i> at municipal WWTP of at least 50 MGD in USA
Construction Experience	Within past 10 years, Builder must have successfully completed construction of <i>3 projects</i> of similar size and complexity.
Design-Build Experience	Within the past 10 years, Design-Builder must have successfully completed <i>3 projects</i> for municipal WWTP of at least 50 MGD in USA
Safety Record	Builder must evidence an acceptable experience modification rate (<i>EMR</i>) for the current and past two years.

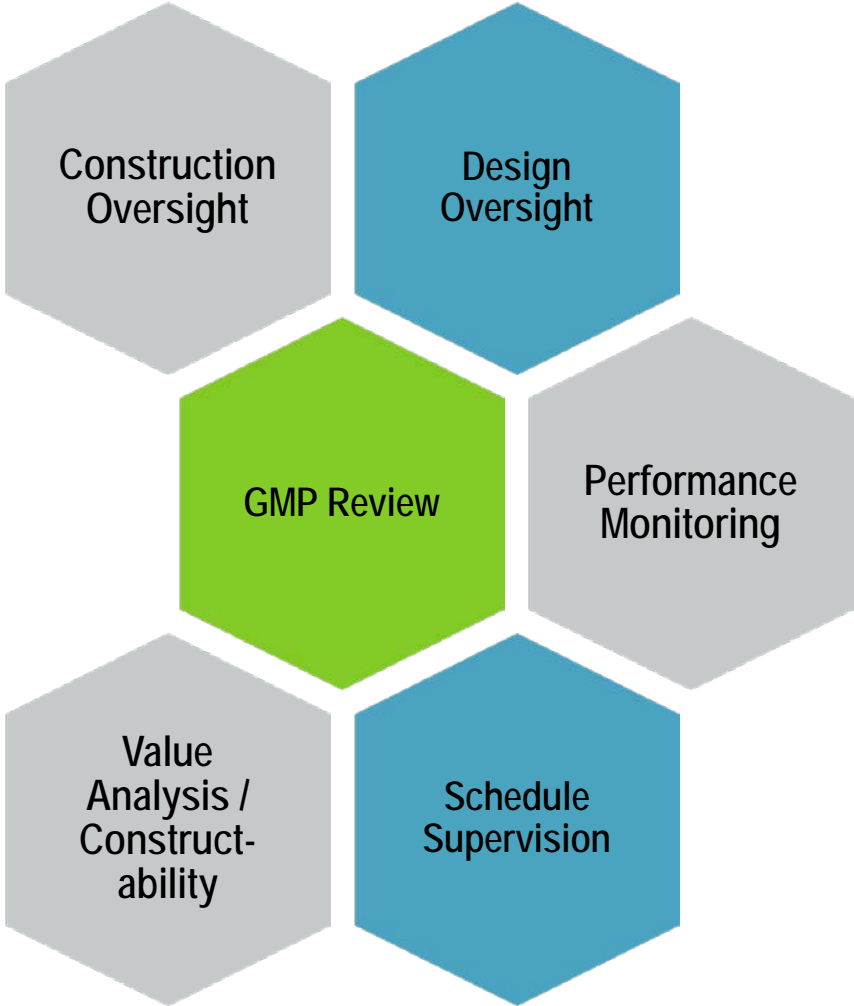
Evaluation & Selection

- Qualifications Based Selection (QBS)
- 6 team submissions received for project
- Only submissions meeting minimum qualification requirements eligible for evaluation
- Weighted comparative evaluation criteria
- Highest ranking respondents shortlisted and invited for interviews – 3 of 6 teams
- Highest score between SoQs and interviews invited for negotiation of RRO Disinfection PDB



Design & Construction Oversight

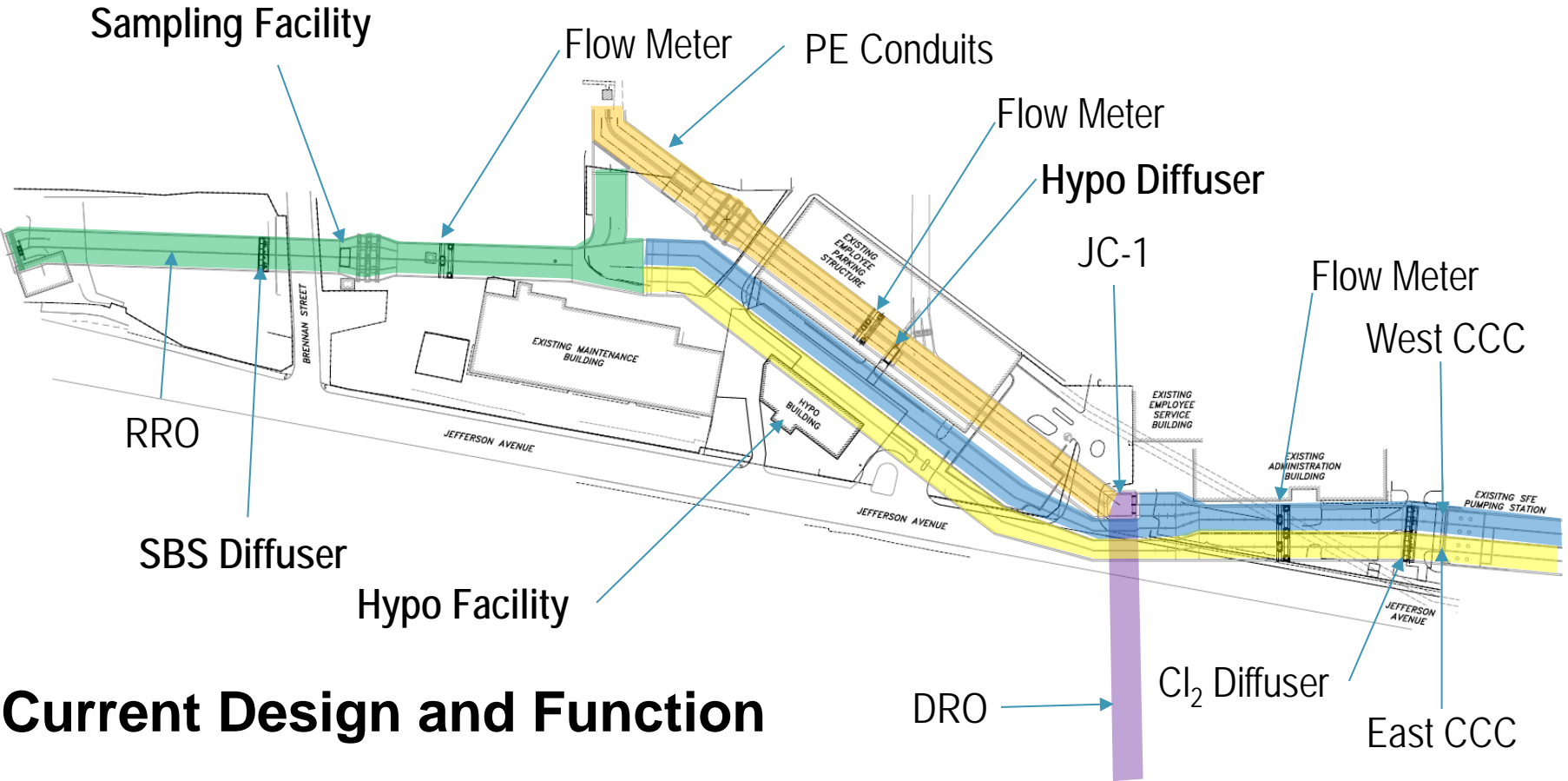
Owner's Engineer Services contract initiated in August 2016 to assist GLWA in delivery of PDB contract



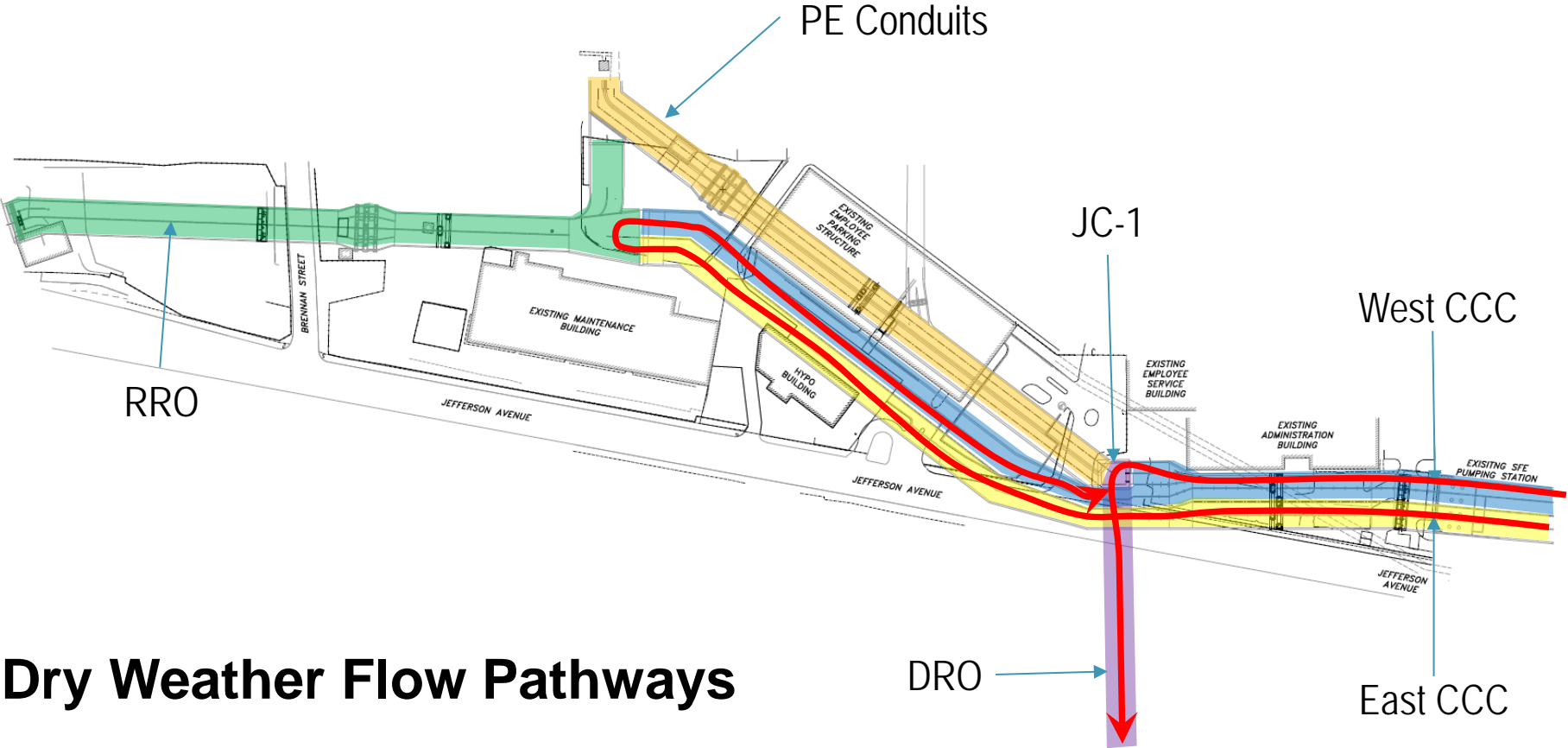
Current Project Status

- Basis of Design/Detailed Engineering Report submitted to MDEQ on June 1, 2016
- 60% Design documents and Part 41 permit application submitted to MDEQ on November 1, 2016
- Submitted Final GMP Design Documents to GLWA
- Submitted GMP to GLWA on January 20, 2017 and negotiated successfully
- Begun construction by April 1, 2017
- Current RRO disinfection project has an estimated total cost of \$44.5 M





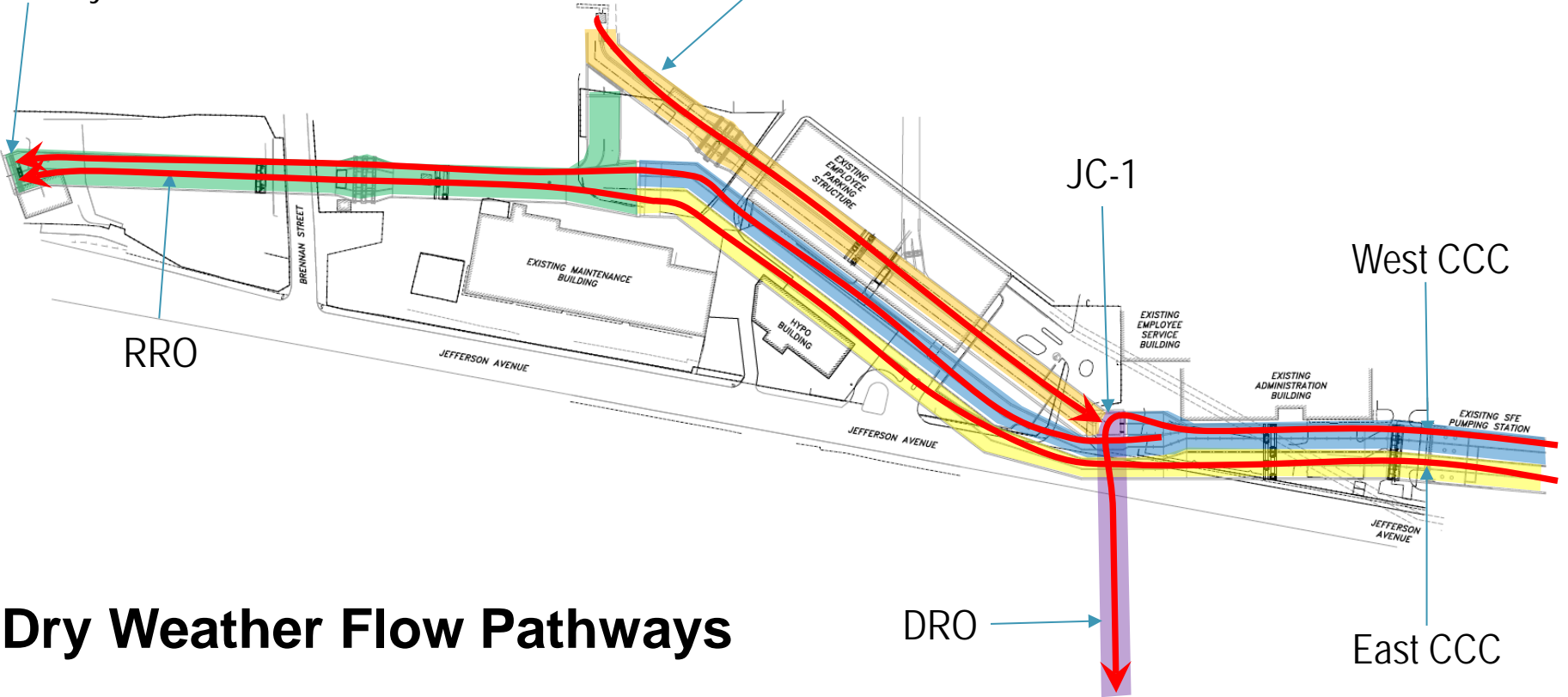
Current Design and Function



Dry Weather Flow Pathways

Mostly SE

PE Conduits



Dry Weather Flow Pathways

DRO

Both PE and SE

West CCC

East CCC

JC-1

RRO

Procurement Process Results

A design-build team was on board within 6 months of the Request for Qualifications Posting to meet first permit deadline

Date	Procurement Step
8/1/2015	Request for Qualifications Posted
8/14/2015	Pre-Solicitation Meeting and Site Tour
9/4/2015	Submittal of Qualifications
10/9/2015	Notice of Award
10/2015 to 1/20/2016	Scoping and Contract Negotiation
1/27/2016	Contract Approved by Board of Directors
2/19/2016	Start Work Letter Issued
3/2/2016	Project Kickoff Meeting
6/1/2016	Basis of Design Report Deadline

Lessons Learned

1. Create a **dedicated procurement team** with sufficient authority and support to adopt and execute an innovative procurement strategy
2. Establish the **right level and type of minimum qualifications**
3. Provide **clear selection criteria**, a dedicated Request for Qualifications data center, and detailed orientation sessions
4. Emphasize innovation that will **result in time and cost-savings ideas** from the design community
5. Provide more than one month for **due diligence and bid presentation** to enhance the quality of bids and development of innovative solutions
6. Use Design-Build Institute of America (DBIA) or Water Design Build Council **standard procurement and contract documents and guidelines**, attaching them to the Request for Qualifications – **incorporate provisions to protect the Owner's interests**

Lessons Learned Continued

7. Establish **equitable construction contract terms and conditions** (including **performance guarantee**) before receiving initial proposals
8. Competitively establish **construction pricing criteria** before initial contract award
9. Consider **culture and organizational change** as a critical factor during the process as the organization endures short-term uncertainty over pricing to realize longer-term savings in schedule, and change order costs



Acknowledgements

- Wendy Barrott (GLWA)
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- Stephen Goldsmith (Baker & McKenzie)

Thanks for Attending!

Questions?

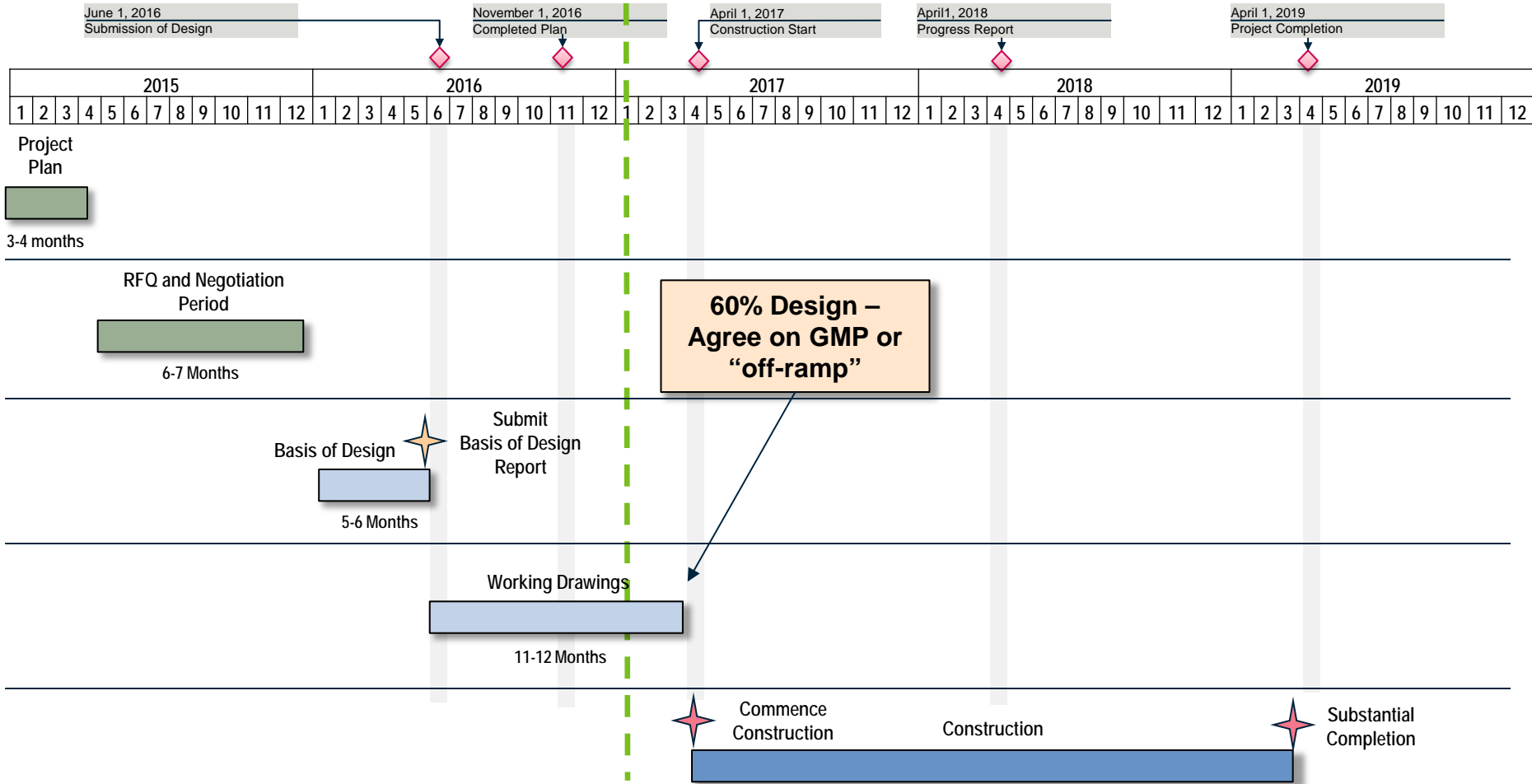


RRO Disinfection Project

Objectives

- **Regulatory Compliance:** Reliably disinfect effluents in full compliance with federal and state regulations
- **Schedule:** Meet NPDES-prescribed schedule
- **Optimized Technical Approach:** Encourage concepts that not only meet current federal and state regulations, but also minimize future regulatory compliance risk
- **Constructability & Integration:** Maximize system integration and minimize operational disruptions during construction
- **Risk:** Optimal risk allocation between GLWA and Design-Builder
- **Cost:** Minimize life-cycle costs
- **Quality & Safety:** Optimize quality and safety levels





RRO Disinfection Project Timeline



Metric	Design-Build vs. Design-Bid-Build	Design-Build vs. CM@R
Unit Cost	6.1% lower	4.5% lower
Construction Speed	12% faster	7% faster
Delivery Speed	33.5 % faster	23.5% faster
Cost Growth	5.2% less	12.6% less
Schedule Growth	11.4% less	2.2% less

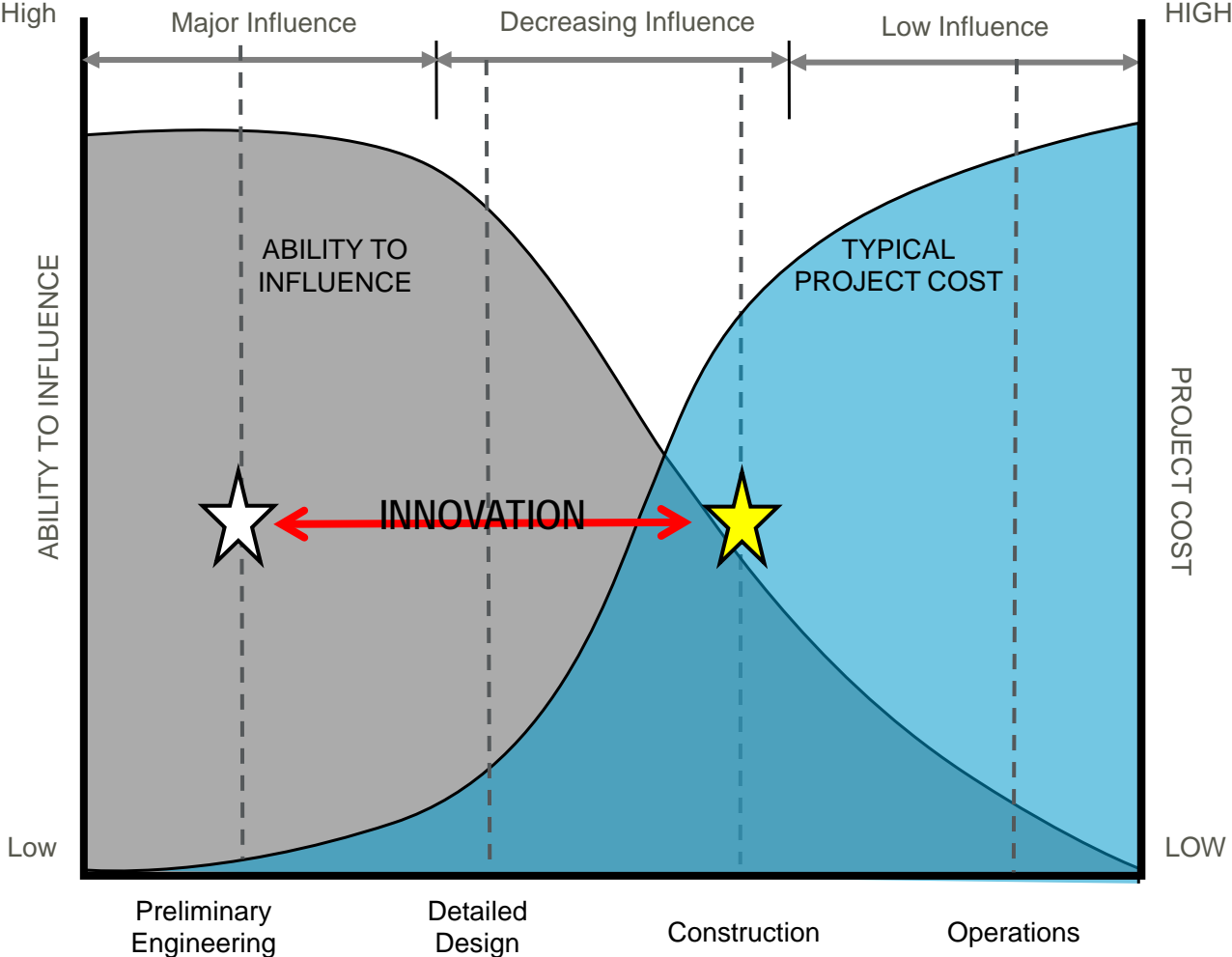
Source: Construction Industry Institute (CII)/Penn State research comprising 351 projects ranging from 5K to 2.5M square feet. The study includes varied project types and sectors.



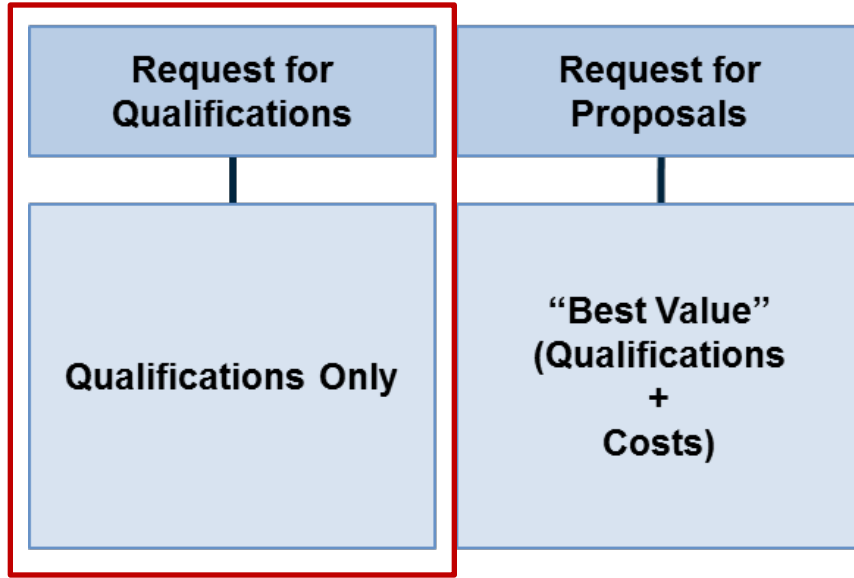
The Use of Alternative Delivery for Public Sector Projects is Growing Rapidly

GLWA has over 20 years of Design/Build experience

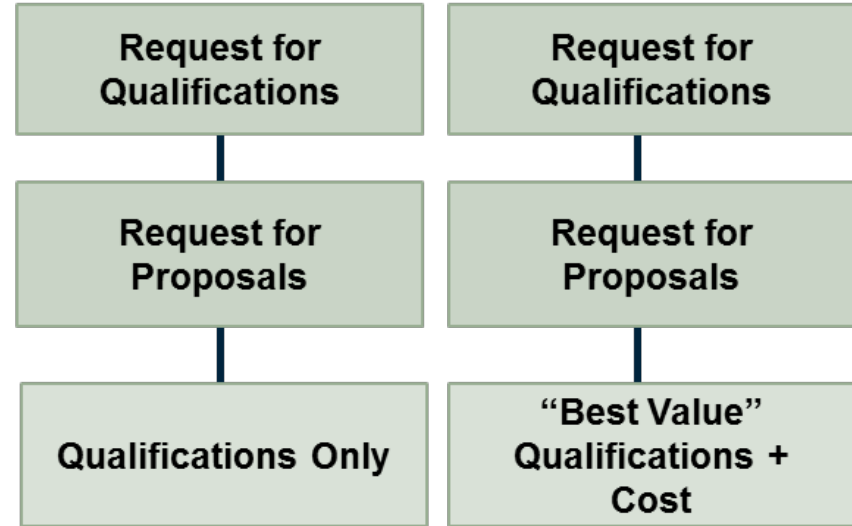
Earlier application of resources with Design Build approach enables Innovation otherwise untapped



One-Step

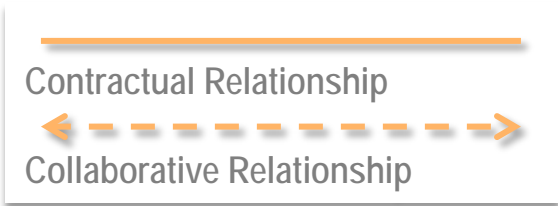
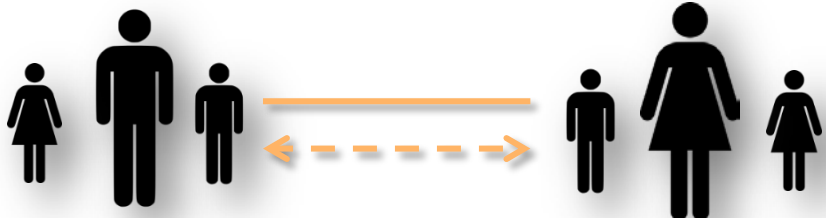


Two-Step



A one step procurement process was selected due to time limitations and a qualifications approach to partner with the most qualified team yet manage cost through the alternative delivery process

One- versus Two-Step Procurement Approach



Owner

Design-Builder



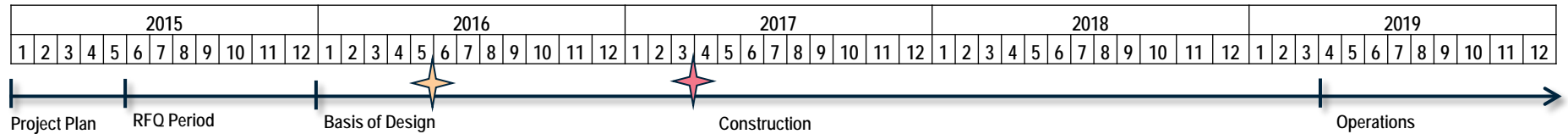
RFQ
Defines qualifications criteria; short-lists qualified firms

Select from Qualified Firms
Selection based on qualifications

Agree on GMP
Based on collaborative scope and design; pricing verified by third party

Milestones

	Complete Basis of Design	5-6 Months
	Commence Construction	11-12 Months



Progressive Design-Build: Project Approach