



Bedford Heights WWTP Phase 1 Improvements & CMAR Delivery Method



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Tyler L. Smith, P.E.
Corinne Sackett, P.E.

Project Team



- Mayor Phil Stevens
- Dave Pocaro, Director of Water Reclamation
- Mike Mearini, Chief Plant Operator



- Don Bierut, PE, City Engineer
- Tyler Smith, PE, Project Engineer



- Corinne Sackett, PE, Senior Principal Engineer
- Jamie Gellner, PE, Vice President
- Scott Ankrom, PE, Senior Associate

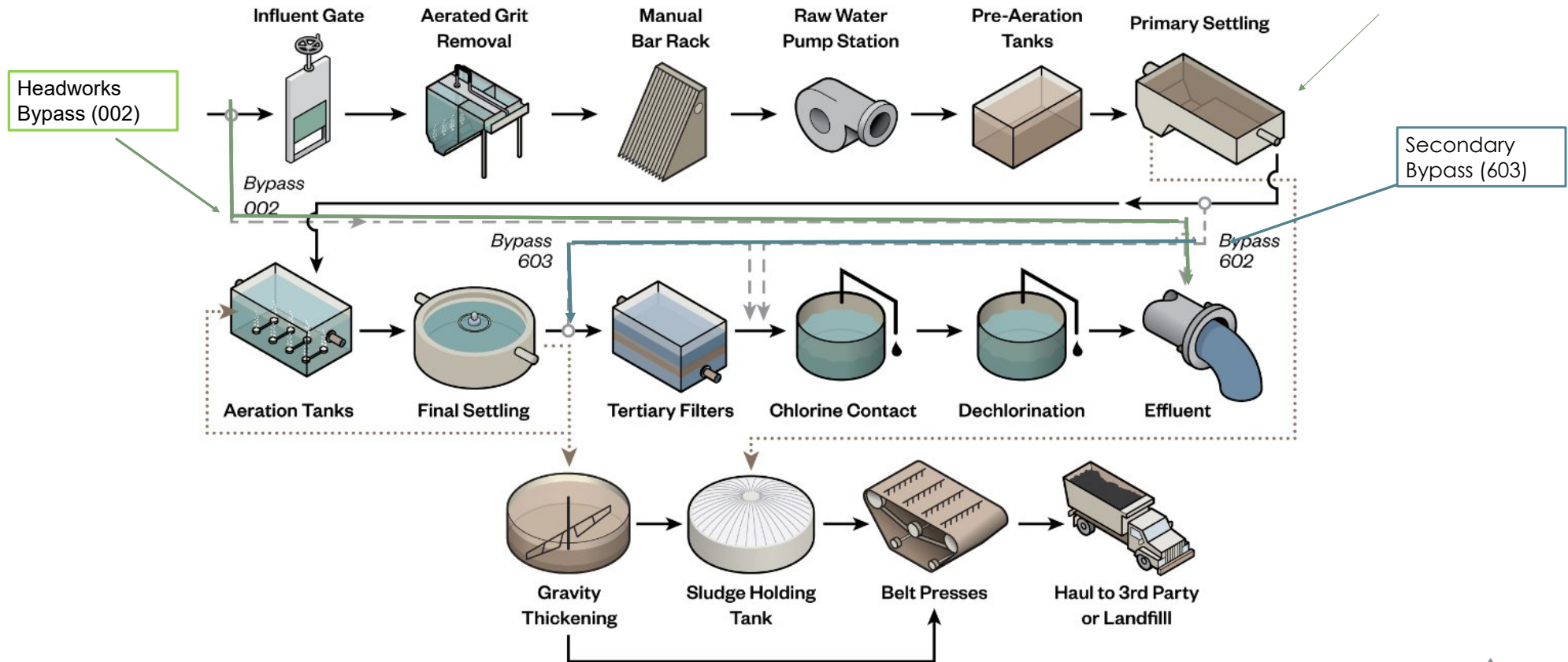


Background & Project History

- Bedford Heights WWTP had its last major plant upgrade in 1988
- Required as part of 2020 NPDES permit renewal to complete a No Feasible Alternatives analysis eliminate or reduce headworks and secondary treatment bypasses at the plant

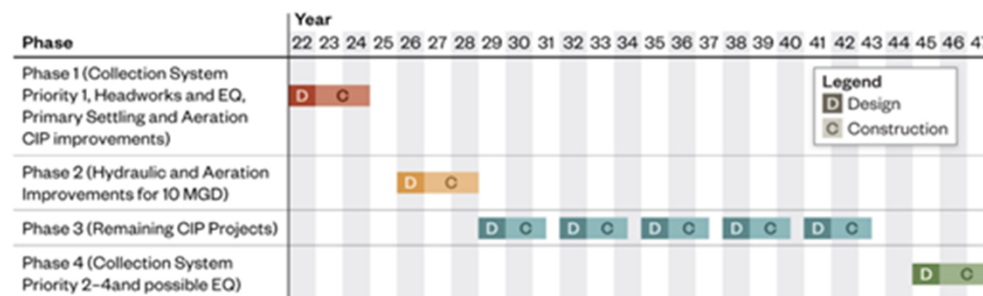


Bedford Heights WWTP PFD

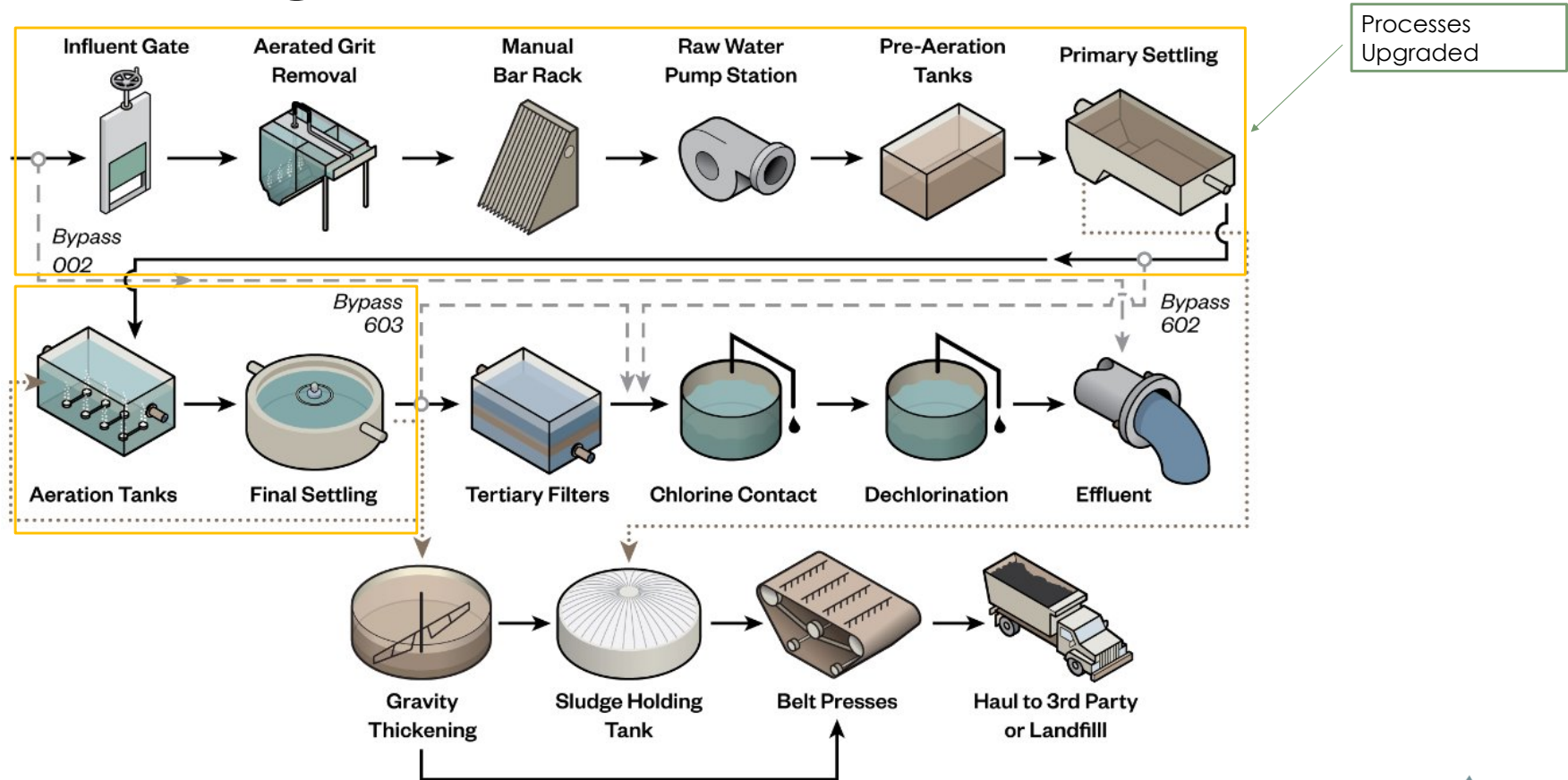


Background & Project History

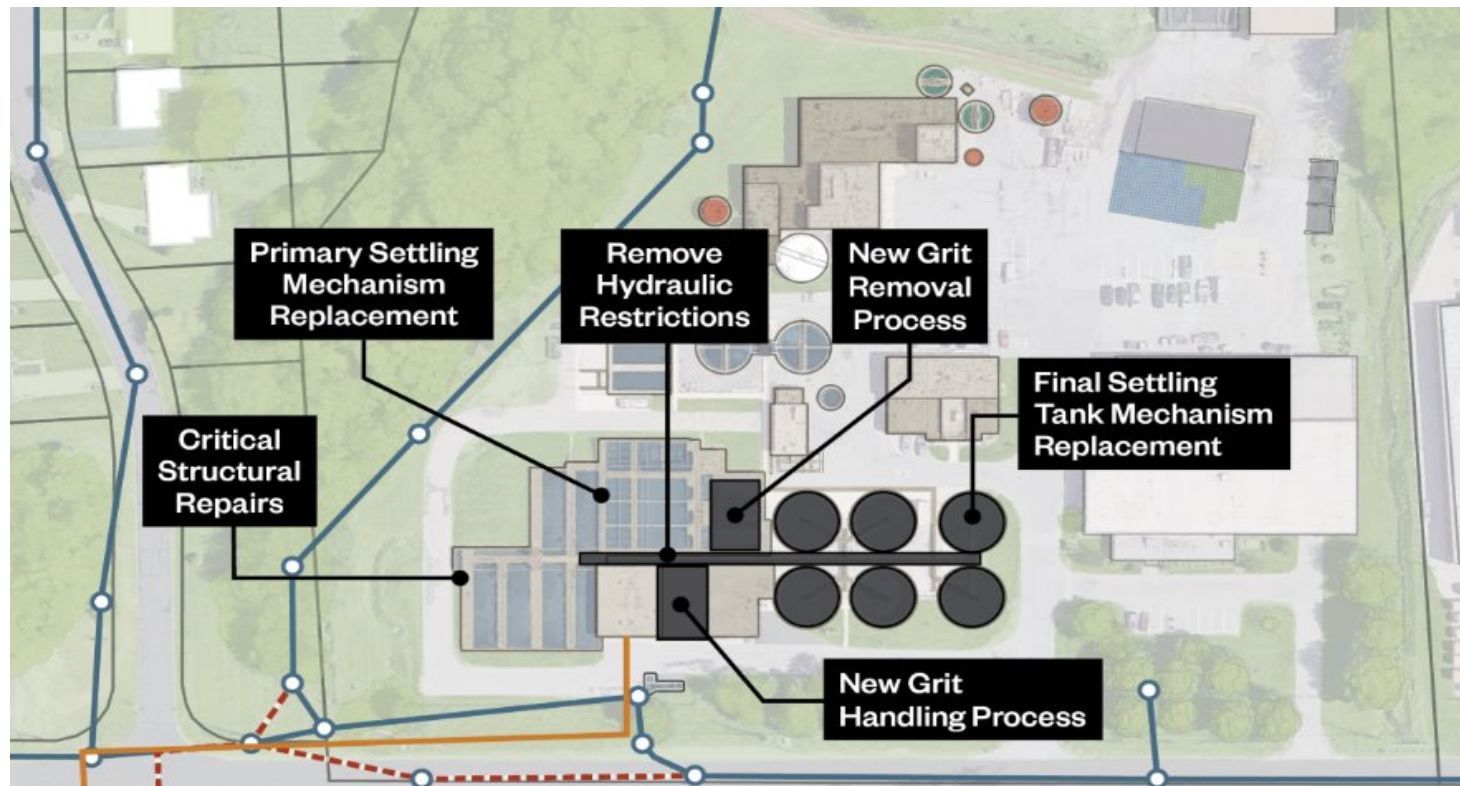
- Hazen completed the NFA in 2021 and produced an integrated plan that included improvements to reduce bypasses and address condition concerns
- The recommendations of the first phase of the NFA include:
 - New **headworks building** with 28 mgd **influent and EQ pumping** and screening capacity
 - New **2.2 MG Equalization tank (5 year storm LOS)**
 - Expansion of secondary treatment from **7.0 mgd to 10 mgd**
 - Upgrades to **grit removal, aeration, primary treatment, final clarifiers**
- After Integrated Plan was accepted by the Ohio EPA in 2021, Hazen was brought in to complete the design of Phase 1 and 2 of the NFA.
- Hazen suggested to Bedford Heights that they consider CMAR for the project delivery due to complexity & unknowns regarding unit process locations



Bedford Heights WWTP PFD



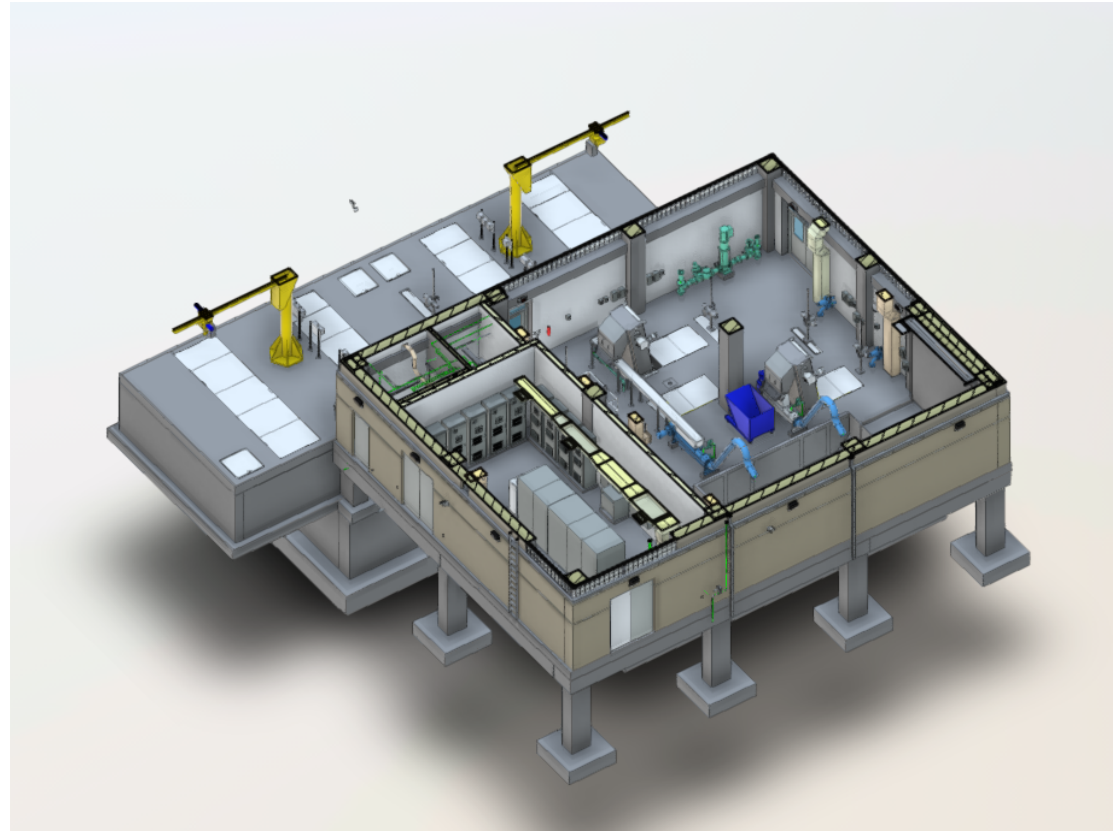
Bedford Heights WWTP- Existing Plant Improvements



This detailed site plan illustrates the layout of the 2.25 MG Equalization Basin and its surrounding infrastructure. The central feature is a large circular equalization basin, divided into five sections (B-1 to B-5) with various pipe diameters (6", 18", 24") and materials (NPW, EQI, EQO). To the left of the basin is a rectangular structure labeled 'Vac Truck Station' with a 'DUMPSTER' and 'VAC TRUCK STATION' area. To the right is the 'Electrical Building' containing a 'GENERATOR', 'MAIN SWITCHGEAR 504+56', and 'TRANSFORMER'. Other key structures include the 'Influent Pump Station', 'Headworks', 'SEPTAGE RECEIVING STATION', and 'EQUIPMENT VAULT'. The plan also shows 'SOLON RD. (60' R/W)', 'CONC. DRIVE', 'ASPH. DRIVE', and 'BOLLARD (TYP.)'. Various utility lines (8" PLANT RETURN LINE, 18" FM, 2" WATER, 15" SAN, 3" GATE) and gates (40' SLIDING GATE, 10' GATE) are indicated. Stationing markers (e.g., 500+00, 501+00, 600+00) and specific pipe segments (e.g., R20.00', R50.00', R61.00') are labeled throughout the plan.

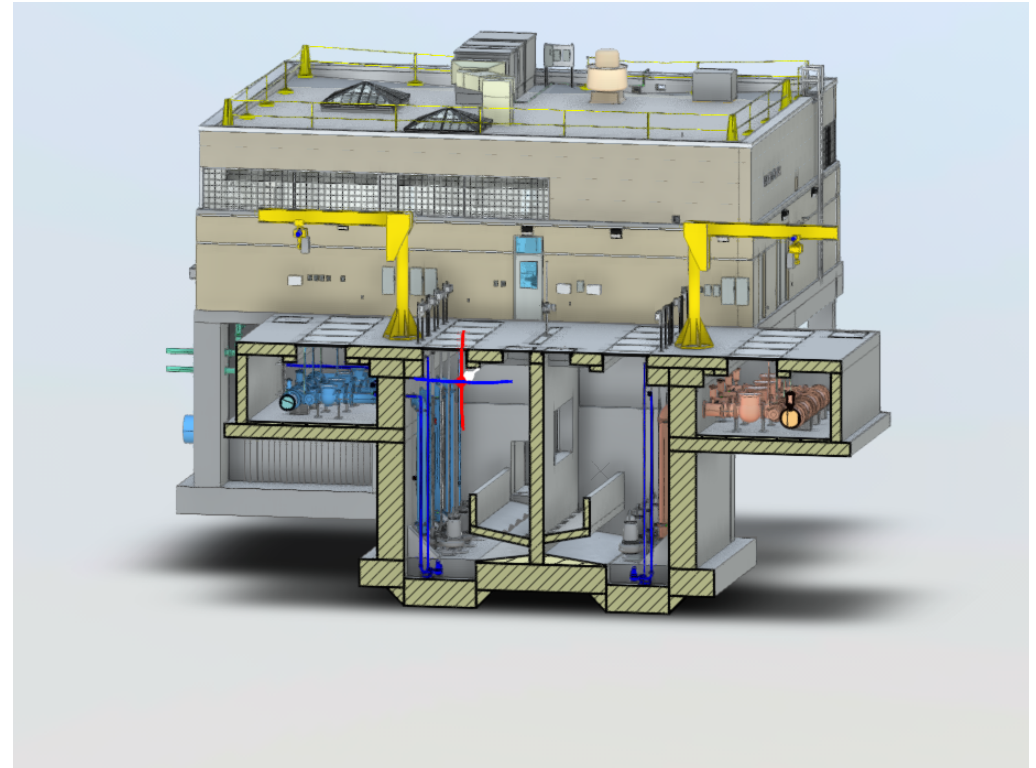
Bedford Heights WWTP- New Headworks

- Screening capacity: 28 mgd
- 1/4" screening will vastly improve operations throughout the plant
- Multi-rake bar screens and washer compactors



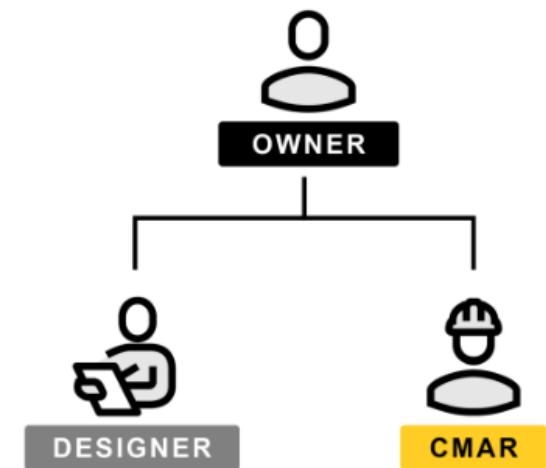
Bedford Heights WWTP- New Pump Station

- Influent Pumping
Capacity: 12 mgd
- EQ pumping
Capacity: 16 mgd
- Submersible pumps
with below grade
valve vault



What is CMAR?

- “Construction Manager at Risk”
- Project delivery method where the construction manager takes on financial responsibility for completing a project within a predetermined "guaranteed maximum price" (GMP)
- Owner brings in the CM early in the process, where they provide input on costs, schedules, and constructability. The construction manager also oversees subcontractors, ensuring the project aligns with the budget and schedule.



Benefits of CMAR

- CM assumes the risk of cost overruns, so owners have more financial predictability. If the project goes beyond the agreed-upon GMP, the construction manager absorbs the costs.
- Better Cost Control and Transparency. Better expectations earlier in the process.
- Design Input from Contractor
- Better Bidding Environment (Less Surprises)
- Increased Schedule Certainty & Quicker Delivery than traditional DBB
- Overall Less Burdensome on Owner***

***Does not apply to individual(s) managing contracts, documentation, & coordination

CMAR vs. Design-Build/PDB

- Key Difference: CMAR GMP provides a financial safeguard to the owner
- Design Engineer Contracted with the Owner rather than being part of the DB Team:
“Collaborative Design”
- Risk is more evenly spread in CMAR
- Potentially less control over entities in DB/PDB
- DB allows construction to begin while designers hammer out later phases. DB may be better suited for projects with reduced timelines.

Starting a CMAR Project

- Determine if CMAR should be used during the planning process or very early in the design process
- Check your local legal requirements and pass any legislation necessary
- Establish CMAR Schedule in Coordination with your Design Schedule
 - Leave ample time for review of contracts by Owner and Selected CM during negotiation phase
 - General Recommendation: CMAR under contract around 30% Design Submittal. Bedford Heights CMAR was under contract prior to 30% Submittal and received the documents for review at the same time as the owner and were part of the review process.
- Recommendation: Informally reach out to potentially interested CMAR Firms

CMAR Selection Timeline

1. Review Legal Requirements & Establish Project Criteria
2. Advertise RFQ (30 days minimum)
3. Score Qualifications & Shortlist
4. Send Out RFP to Shortlisted Firms
5. Collect Proposals, Conduct Interviews, Evaluate Pricing & Technical Proposals and Perform “Best-Value” Scoring and Selection
6. Negotiate Contract with best-ranked CMAR

1. Legislation, Legal, & Administrative Items

- **Engage your legal department early!**
- Review Current ORC & OAC Requirements
- Determine Contract Type – AIA, ConsensusDOCS, or CMAA. *EJCDC & WCDA Contracts are not allowed through OAC for CMAR.*
- Establish Evaluation Committee – more on this shortly!
- Establish Qualifications Criteria, Scoring Method, & Minimum Requirements (OAC 153:1-6-01.C)
- Establish Pricing and Performance Scoring Criteria for Proposal Phase (Discussed Later)

1. Legislation, Legal, & Administrative Items

Evaluation Committee:

The composition of the committee is at the discretion of the public authority; however, the composition of the committee shall not consist of enough members of a public body to constitute a quorum. As used in this rule, the term "public body" has the meaning defined in section 121.22 of the Revised Code. A public authority may permit the projects professional design firm or other independent advisors to support the evaluation committee or advise it on technical and pricing issues, but shall not permit participation as a voting member of the committee.

1. Legislation, Legal, & Administrative Items

REQUEST FOR QUALIFICATIONS - RESPONDENT SCORING

CITY OF BEDFORD HEIGHTS - WWTP PHASE 1 IMPROVEMENTS - CONSTRUCTION MANAGER AT RISK

FIRM	Qualifications of Firm and Experience of Key Individuals Assigned (25 Points Max.)	Experience and Past Performance on Similar Projects (25 Points Max.)	Proposed Approach and Implementation of Project (25 Points Max.)	Financial Responsibility and Availability of Resources (25 Points Max.)	Total Score (100 Points Max.)

2. Advertise Request for Qualifications

3. RFQ Scoring & Shortlist

- Advertise your RFQ (electronic advertisement is allowed in accordance with OAC 153:1-5-01)
- Recommendation: Provide Process and Date for Submission of Questions Prior to RFQ due date. Publish Q&A Sheet in Addendum for all firms to review and provide with Qualifications Submittal.
- Collect Quals Packages and Conduct Qualifications Scoring with Evaluation Committee.
- Short-List – “...select no fewer than three firms which it considers most qualified to provide the required services, except that the evaluation committee shall select and rank fewer than three firms when it determines in writing that fewer than three qualified construction managers at risk are available.”
- Notify firms of results and proceed to Proposal Phase.

4. Request for Proposals

- Review ORC 9.334 and OAC 153:1-6-01 for legal requirements
- Establish Pricing Criteria
 - Preconstruction Fee
 - Construction Fee
 - At-risk fee
 - General Conditions
 - Contingency
 - GMP (if applicable)

4. Request for Proposals

- Establish Performance Criteria
 - Schedule
 - Approach to Work & Anticipated Self-Performed Work
 - Work Sequencing
 - Performance History
 - Approaches to Performance Specifications
 - Procurement Plan
 - DBE Plan
 - Additional Considerations or Other Project-Specific Criteria
- Assemble RFP Document
 - Recommendation: Check Ohio Facilities Construction Commission Documents for Templates
- Send out RFP
- Recommendation: Provide Process and Date for Submission of Questions Prior to RFP due date.
Publish Q&A Sheet in Addendum for all firms to review and provide with Proposal Submittal.

4. Request for Proposals

		0.00	
		Subtotal (2b) =	\$440,200.00
c. CM's Contingency (% of the Cost of Work)			
CM's proposed percentage to cover its risk of Unexpected Events	Contingency %	x CoW	= Subtotal (2c)
	1.50%	42,000,000.00	= \$630,000.00
d. CM's Fee (% of the Cost of Work + Contingency for at Risk Services)			
Including all Home Office Overhead and Profit	CM Fee %	x CoW + 2c	= Subtotal (2d)
	3.75%	42,630,000.00	= \$1,598,625.00
Total Proposed Construction Stage CM Compensation		Subtotal (2a) + Subtotal (2b) + Fees (2d)	= Subtotal (2)
Excluding Subcontracts, Self-Performed Work, Contingency	1,214,240.00	440,200.00	1,598,625.00
			\$3,253,065.00
3. Additional Information (Required - Not Calculated on the Best Value Rating Form)			
a. EDGE Participation (Services Compensation is calculated - Enter Total Compensation % from SOQ*)		Services %	Total %
EDGE-certified Business Enterprise Participation Commitment (* SOQ = Statement of Qualifications)		0.0%	
b. Schedule Enhancements (Indicate increase with positive number / decrease with negative number)		Days (+/-)	= 0
Adjustment to Preconstruction Fee (1a)			0.00

Document 00 43 23 - Proposal Form (CM at Risk Contract)
State of Ohio Standard Requirements for Public Facility Construction

Project Name: Bedford Heights WWTP Phase 1	Project Number:	Estimated Cost of Work: \$42,000,000.00
CM Proposer: Shook Construction	Submission Date: 4/24/2023	
Adjustment to Preconstruction Stage Personnel Costs Cap (1b)		0.00
Adjustment to Preconstruction Stage Reimbursable Expenses Cap (1c)		0.00
Adjustment to Construction Stage Personnel Costs Cap (2a)		0.00
Adjustment to General Conditions Costs Cap (2b)		0.00
Adjustment to Subcontracts and Self-Performed Work		0.00
Total price adjustment for alternative schedule proposed by CM	Price Adj. (+/-)	= \$0.00
c. CM Adviser Fee (See Section 2.3.2.9 of the Instructions to Proposers)	CM Adviser Fee %	x CoW = Subtotal
Excluding Personnel Costs and Reimbursable Expense (% of Cost of Work)	3.75%	42,000,000.00 = \$1,575,000.00
Total Price Proposal		
	Preconstruction + Construction	= Total Price
Price component of Best Value Selection	212,900.00	3,253,065.00 = \$3,465,965.00

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Criteria	Description	Range
1.1. Proposed Staffing	Implementation Plan, Staff Availability, Flexibility to Schedule Changes	0 - 20
1.2. Subcontracting Plan	Prequalification Plan, Packaging Plan / Self-Performance, Design-Assist Strategies	0 - 10
1.3. EDGE / DBE Plan	Outreach Plan, Demonstrated Services Participation, Construction Goal per Package	0 - 10
1.4. Estimating Strategies	A/E / CM Collaboration Strategies, Use of Estimating & Market Pricing, Design-Assist Proposals	0 - 10
1.5. Procurement Strategies	Buyout Plan, Long-lead & Bulk Purchase Strategies, Support of Owner Objectives	0 - 10
1.6. Value Added Suggestions	Alternates, Payback Periods, Benefits	0 - 5
1.7. Timeline/Schedule	Baseline / Alternate Schedule(s), Phasing / Procurement Plan(s), Milestones / Activities	0 - 15
1.8. Site Logistics & Safety Plan	Site Logistics Plan, Safety Plan, Graphic Project Phasing Plan	0 - 10
1.9. Quality Assurance / Quality Control Plan	Design Phase, Estimating & Scheduling, Construction Phase	0 - 5
1.10. Unique Challenges & Solutions, other Considerations	Project/Scope Characteristics, Budget/Schedule Characteristics, Quality/Process Characteristics, etc...	0 - 5

5. Proposals, Interviews, & Scoring

- Optional: Pre-proposal Meetings, Site Visit(s)
- Collect Proposals
- Conduct Interviews with all Shortlisted Firms
 - Recommendation: 2-Phase Interview – Presentation + Q&A led by Evaluation Committee
 - Recommendation: Standard limits on time, number of attendees, etc...
- Once interviews have been completed, Evaluation Committee shall complete scoring of proposals and then “Best-value” selection made based on final scoring

6. CMAR Selection & Contract Negotiation

- Leave adequate time in your schedule for Negotiation!
- 30 Days / 4 Weeks recommended

Guaranteed Maximum Price

- GMP will contain:
 - Baseline assumptions pertaining to design items
 - Project Schedule & Equipment/Material Lead Times
 - Allowances
 - Unit Prices (where applicable)
 - Guaranteed Maximum Price Summary
 - Bid Tabulation (Subcontractor Breakdown)

Standard Estimate Report Bedford Heights WWTP - GMP

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Estimate Totals

Description	Amount	Totals
Labor		
Material	8,686,870	
Subcontract	37,986,909	
Equipment		
Other		
Cost of the Work	46,673,779	46,673,779
Owners Protective Insurance	42,980	
CMR Contingency	700,107	
CMR Fee	1,750,267	
Construction Stage Personnel - 24 mos	1,214,240	
General Conditions - 24 mos	440,200	
CSP & GC's - 5 mos	258,163	
Proposed GMP Amendment #2		51,079,736
GMP Amendment #1 - EWP Genset/SG	340,268	
Preconstruction Fee	212,900	
Total		51,632,904

WPCLF Funding Considerations

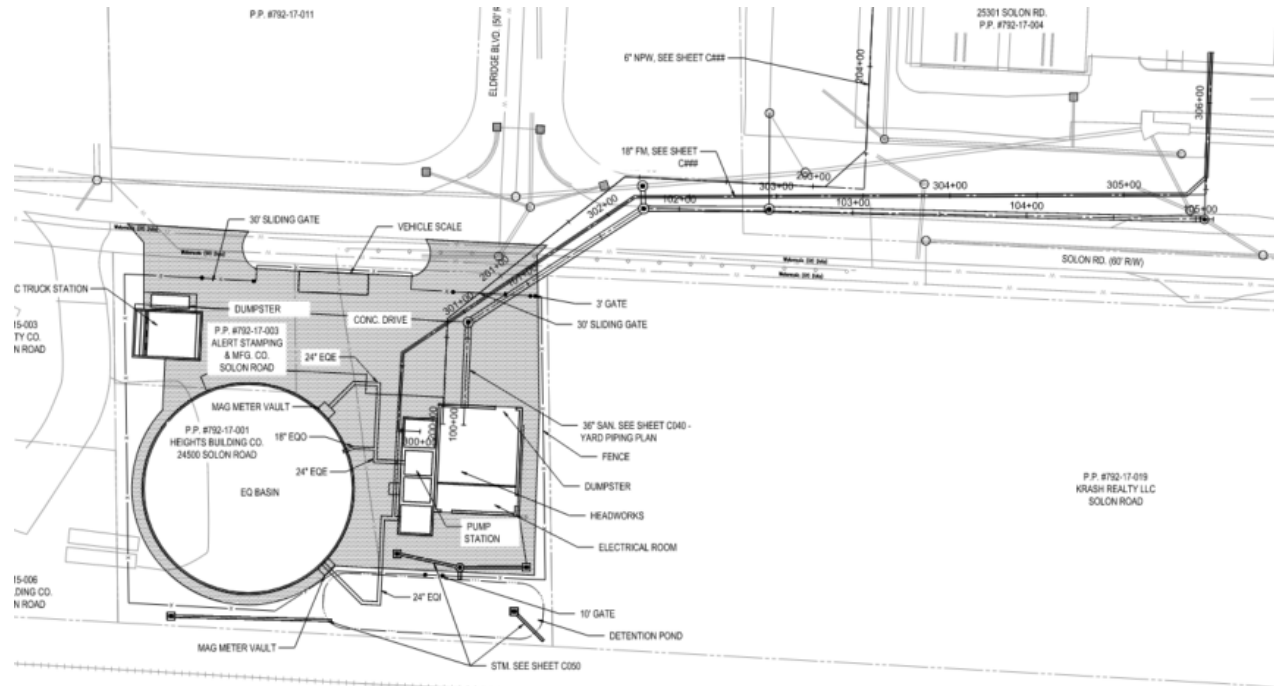
- Many Water/Wastewater Projects in Ohio Utilize WPCLF Funding which requires additional coordination
- Document Public Participation, Environmental Issues & Analysis, Regionalization Evaluation (if applicable), Alternative(s) Selection Process
- Complete Documentation Checklists!
 - Write these requirements into your contract, and make it part of your RFQ/RFP Process if possible
 - DBE 6100 Forms will be the most difficult to complete within the CMAR timeline, so plan accordingly.

Design Phase Items – CMAR Coordination

- I&C Design Assist
- Generator & Switchgear Early Procurement
- Temporary Operations, Bypass pumping, construction phasing
- Value Engineering
 - Construction within Solon Rd (influent sewer open cut vs trenchless)
 - Equipment Materials
 - Equipment Manufacturer Selection
- Cost Savings Evaluation for Purchase of Krash Property

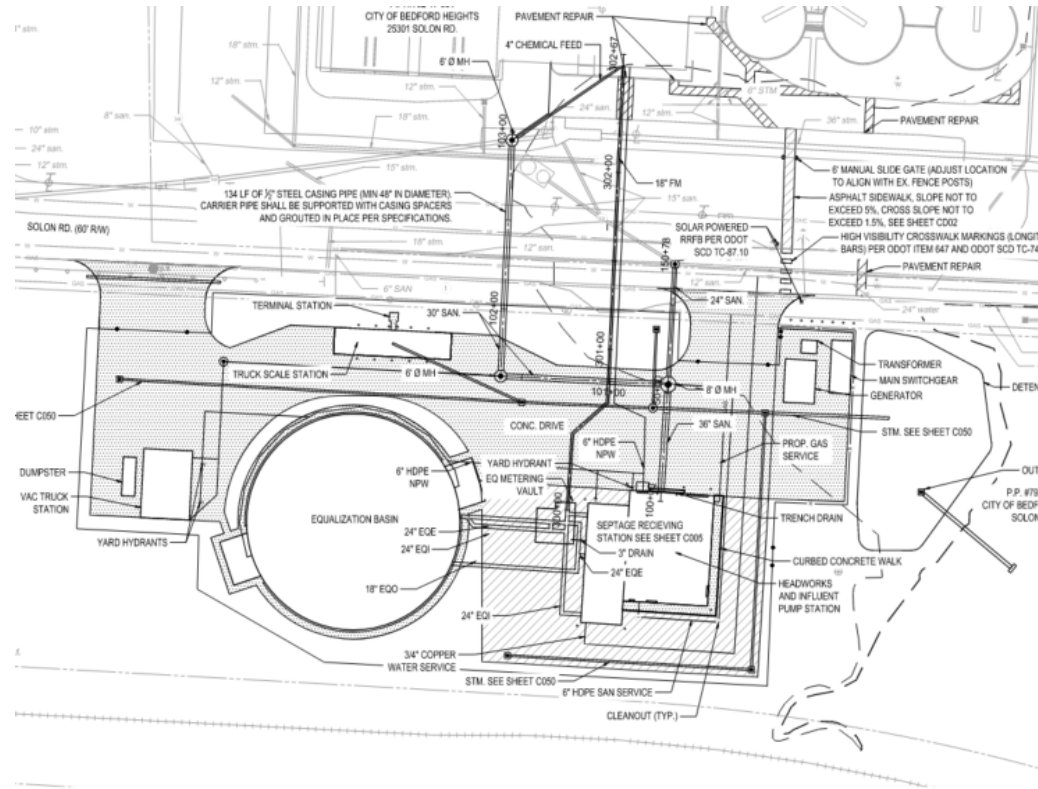
Krash Property Analysis

- Alert property parcel is smaller and further from existing WWTP
- Gravity sewers would have to fight grade (slopes up to this property)



Krash Property Analysis

- Krash Property
 - More space available
 - Directly across from the WWTP
 - Elevation similar to existing plant



Lessons Learned & Conclusion

- Consider Your Best Value Scoring Weighting
 - 80% Cost / 20% Technical Proposal Split did not allow for owner's preferred CM
- Funding Source Coordination with Project Schedule
- DBE Percentage Adjustment after review of options with Owner and CMAR
 - WPCLF Requirement: 1.5% MBE, 1.0% WBE
 - Project Goal: 9.0% MBE, 1.0% WBE
 - Agreed Upon Percentages in GMP: 6.4% MBE, 9.6% WBE
- Self-performed Work & Ensuring Competitive Bids
 - The CMAR for Bedford Heights WWTP did not have any bidders against them for the General Trades Bid Package
- Owner Approved!

References

- Ohio Facilities Construction Commission Standard Forms:
 - <https://ofcc.ohio.gov/project-resources/documents/forms/100-procurement-forms>
- WPCLF Guidance:
 - <https://epa.ohio.gov/divisions-and-offices/environmental-financial-assistance/financial-assistance/wpclf>
 - <https://epa.ohio.gov/static/Portals/29/documents/ofa/Construction-Contract-Guidance.pdf>

Questions

