Green Line Extension (GLX) Project Recovery

John Dalton

GLX Program Manager

Boston, Massachusetts
Agenda

- GLX Project History
- Scope Summary
- Contracting Strategies
- Risk Management Strategies
- Procurement Outcomes
- Construction Update
Genesis of GLX Project

Boston’s “Big Dig”
GLX Summary Fact Sheet

Seven light-rail GLX stations

- Relocated Lechmere Station
- 5 on Medford Branch
- 1 on Union Square Branch

Conforms with all environmental commitments and committed scope elements as established in the Full Funding Grant Agreement (FFGA)

Includes a multiuse community path

Procurement of 24 Green Line light rail vehicles

Vehicle Maintenance Facility (VMF)

Program Budget - $2.3Bn
GLX Project Area
Conceptual Project Sequencing
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Project Goals & Benefits

- Improves local and regional air quality
- Commonwealth Commitment to Cambridge, Somerville, and Medford
- 20% of Somerville population is within walking distance of rail transit today, and 80% is anticipated to be so with GLX
- Economic benefits, including the improvement of the commercial tax base
Project History

• “Episode 1” was CM/GC delivery method; 7 total packages

• 4 packages approved; could not agree on Guaranteed Maximum Price beyond that

• Late 2015 – State of Massachusetts/MBTA halted the project

• May 2016 – MBTA Board approved Redesign & Reprocurement

• November 2016 – Design Build procurement process began

• December 20, 2017 – “GLX Constructors” received Notice to Proceed
Redesign / Reprocurement - Key Principles

1) Significantly reduce the projected cost
   • Design scope ("brutal cuts")
   • Procurement model
2) Do not violate the requirements of the FFGA
   • Scope, Schedule, Budget
3) Reduce and manage construction risks, complexities, and uncertainties
4) Responsibly maximize affordable scope
Key Cost Drivers

Design
Redesign Concepts – Stations

PREVIOUS

REDESIGN
Redesign Concepts - Vehicle Maintenance Facility

REDUCED

DECK REMOVED

TRACK REMOVED
# Redesign Concepts – Bridges

<table>
<thead>
<tr>
<th>Bridge</th>
<th>Previous Design</th>
<th>Redesign</th>
</tr>
</thead>
<tbody>
<tr>
<td>Medford Street</td>
<td>Full Replacement</td>
<td>Modify Existing Bridge</td>
</tr>
<tr>
<td>School Street</td>
<td>Full Replacement</td>
<td>Modify Existing Bridge</td>
</tr>
<tr>
<td>Lowell Street</td>
<td>Full Replacement</td>
<td>Modify Existing Bridge</td>
</tr>
<tr>
<td>Broadway</td>
<td>Full replacement of 3-lane bridge, sidewalk, and 2 bike lanes. Partial closure</td>
<td>Full replacement of 2 lane bridge, sidewalk, and 2 bike lanes. Full closure during construction</td>
</tr>
<tr>
<td>College Ave</td>
<td>Widen bridge structure to accommodate right-hand turning lane</td>
<td>Maintain existing bridge structure to accommodate right-hand turn lane by removing sidewalk. Add new pedestrian bridge</td>
</tr>
</tbody>
</table>
Redesign Concepts – Retaining Walls

PREVIOUS

REDESIGN

- Fill no longer needed
- Retaining walls no longer needed
- Maintain existing wall
- Relocate path
Reprocurement Considerations
Procurement Guiding Principles

✓ Allow for Risk-Sharing dialogue
✓ Maintain Costs within established affordability limit
✓ Procure maximum scope without jeopardizing project budget
✓ Fully leverage competitive bidding environment
✓ Encourage innovation
✓ Guarantee “Best Value”

Selected Procurement Model =====➔ DESIGN-BUILD
Procurement Process/Innovation

- **Affordability Limit**: Contain Costs ($1.3Bn max)
- **One-on-one meetings**: Mutual Understanding
- **Alternative Technical Concepts**: Innovation
- **Additive Options**: Incentive/Maximum Scope
- **Performance vs. Prescriptive Specs**: Empower the Contractor
- **Stipend (Bid dispute waiver)**: Quality Bid Proposals
- **Proposal Scoring Mechanics**: Best Value (price, scope, quals)
Design-Build Selection Process

Evaluation Formula for “Best Value” determination:

\[
\text{Overall Value Rating} = \frac{\text{Proposal Price}}{\text{Quality Score}}
\]

- Proposal Price includes the GLX Lump Sum, Allowances, and Additive Options Price
- Quality Score is the Technical Proposal Score + AO points

Affordability Limit: $1.319 billion

Successful Proposer has the lowest price per quality score, or lowest “Overall Value Rating”
Risk Management Strategies

- Extensive Geotechnical Investigation Plan –
  - Borings at all major foundations
  - ‘Test Pits, Test Pits, and more Test Pits’
- Dispute Resolution Process & Partnering Process
- Start Testing and Commissioning Planning in Design Phase
- Strong **Contract Notice** provisions (to help the owner deal with changes)
  - 24-hour notice for Differing Site Conditions
  - 5-day notice for Potential Change Order
Contract Packaging and Management

Challenges

- Managing internal interfaces
  1. Positive Train Control
  2. Competing Operational Priorities (Flagging Support)
  3. PMIS on enterprise level
  4. Commuter Rail Operator – Outsourced
- Making a massive redesign “stick”
- Keeping up with a large DB Contractor staff/speed
- Stakeholder Relations (DB education)
Contract Packaging and Management

**Successes**

- Avoided program shut-down
- Improving organization capacity (6 FTE’s to 83 FTE’s in 16 months)
- Strengthen long term agency expertise
- Supportive engagement from FTA
- Rapid deployment of PMIS (e-BUILDER)
- Rapid procurement of staff augmentation (PM/CM)
- Co-location of program team
- Early Works
Key Lessons Learned

- Optimize risk-sharing/innovation during pre-proposal stage ("Pre-Proposal Negotiation")
- Autonomous Program Organization
- Supportive Sponsoring Group (Board)
- Try to minimize the # of Contracts
- Collaborative / Web Based - Program Management Information System (PMIS)
- Early works (utility relocation, commuter signal relocation)
Procurement Outcomes

- 3 Teams short-listed
- 2 of 3 Certified Affordability Limit compliant price offerings
- Final price offerings within 5% of each other
- Additive Option offerings included in both proposing teams’ proposal scoring mechanics (“Best Value”)
- Contract awarded for $1.082Bn
- NTP Advanced 2 months early to benefit from 2018 construction season
Procurement Outcomes

Massachusetts Bay Transportation Authority

Major Participants

FLUOR®  MIDDLESEX CORPORATION  HERZOG  Balfour Beatty

Key Subcontractor (Lead Designer)

STV 100 Years
Construction Underway
Discussion
## Design Build Selection Outcome

### Overall Value Rating Outcome

<table>
<thead>
<tr>
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<tr>
<td>GLX Constructors</td>
<td>1213.7</td>
<td></td>
<td></td>
</tr>
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<td>Green Line Partners</td>
<td>1277.2</td>
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## Contract Price Determination

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<th>Owner Contingency</th>
<th>Contract Price</th>
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<tr>
<td>GLX Constructors</td>
<td>$954,618,600</td>
<td>$127,500,000</td>
<td>$1,082,118,600</td>
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<td>$127,500,000</td>
<td>$1,180,100,000</td>
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