Early Contractor Involvement Models on Transit Projects





Jake Speck, Kiewit Phoenix, AZ Jay Wong, Mass Electric Construction Toronto, ON



Kiewit/Mass Electric Construction

RAIL CONFERENCE

- In the last 10 years...
- 300+ Rail and Systems Projects
- \$15B+ Aggregate Contract Value
- Repeat Clients
- Every Project Delivery Model
 - CMAR/CMGC
 - DBB
 - DB
 - PPP





Key Presentation Take-Aways

- Early Contractor Involvement (ECI) Delivery brings the contractor onboard early in the project development as a service provider
- ECI Models...

RΔI

- allow for greater flexibility with project decisions
- greater degree of information for decision making

NFFRFNCF

• provide cost certainty sooner in the project lifecycle



Transit Projects in the News

Toronto-York Spadina subway extension \$400M over budget

Metrolinx doled out extra \$237M to keep Eglinton Crosstown on schedule

News

Cost of Ottawa's latest LRT delay climbing into millions

Metrolinx settles lawsuit with builders of \$5.4-billion Crosstown light-rail project

RAIL CONFERENCE

Hamilton councillors want answers about feared budget overruns for \$1-billion LRT

LRT delivery delays have cost Waterloo Region \$25 million



Transit Projects are Complex

- POLITICS
- Stakeholder Businesses
- RESIDENTS
- STREETS DESIGN
- TRAFFIC MANAGEMENT
- UTILITIES
- DEVELOPERS

- PUBLIC SPACES
- Art
- PLACEMAKING

RAIL CONFERENCE

- TRANSIT OPERATIONS
- TRANSIT INTEGRATION
- MAINTENANCE OF TRAFFIC

- PUBLIC OUTREACH & INVOLVEMENT
- TRANSIT ORIENTED
 DEVELOPMENT
- FTA
- SAFETY AND SECURITY
- Systems Integration



Transit Projects are Complex

Complex Projects Require: Flexibility

Reliable Information

Proactive Risk Management



What is ECI?

Early contractor involvement (ECI) allows the Contractor to be appointed under a two-stage contract before details of what is to be constructed have been fully developed and priced.

This enables the Contractor to take part in the project and design development.



ECI Models



ECIs – How it Works

RAIL CONFERENCE

Two-Phased Process

Phase One:

The Client choses its designer and contractor

- ECI contractor is procured based on qualifications or best-value
- Professional/technical services contract for preconstruction phase is signed
- Formal workshops to evaluate the design, risk and cost are held
 - 30%, 60% & 90% check in's Intern Pricing Milestone Process
 - Co-location of all three stakeholders to ensure communication and progress
 - No guarantee the CM will build the project

Phase Two:

If agreement is reached on price

- The CM is awarded the construction contract becomes the GC
- Bid validation process (ICE)

If no agreement on cost, the project is procured (typically and DBB), all info is retained by the agency



Types of ECI Contracts

CMGC – Construction Manager / General Contractor

RAIL CONFERENCE

- CMAR Construction Manager At-Risk
- IPD Integrated Project Delivery
- **Progressive P3**



Advantages of ECI Model

RAIL CONFERENCE

- Preconstruction Services
- Integrated teams
- Collaboration & transparency in the cost models
- Earlier Cost Certainty
- Innovation and constructability built into the design
- Historically, claims are virtually eliminated
- Active Risk Management
- Informed decision making
- Process allows for alignment of budget and design
- Flexibility with contract requirements
- Stakeholder Engagement



Cost Certainty – Industry Results

Alternative Contracting Method Performance in U.S. Highway Construction - FHWA



Cost Certainty

ECI Models provide cost certainty sooner through:

• Bottoms up - Production Based estimates

RAIL CO

- Collaboration = full understanding of scope
- Iterative estimating process identifies cost drivers and risks early

NFFRFNCF



No Surprises

Sacramento Streetcar Project in Doubt As Bids Come in Way Over Budget

2019-01-14

Sacramento Bee

ENR WEBINAR

Best Practices for Design and BIM Managers: How Digital Strategies Are Changing Project Delivery January 22, 2019 @ 2pm ET Jan. 14 -- Sacramento's effort to build a downtown streetcar suffered a major setback this week, leaving proponents uncertain over whether the long-planned project can be built. Project proponents in the cities of Sacramento and West Sacramento had hoped to start construction this year, after years of struggling to piece together funding. But when project managers opened bids on Friday for the main construction contract, they found all three bids were far higher than expected, and far beyond the project budget.

The lowest bid came in at \$184 million , a whopping \$76 million more than had been budgeted.

Sacramento City Councilman Steve Hansen , a leading proponent of the project, called the bid numbers "a dramatic setback for the project."

"The team has to step back and rethink this. As it's currently conceived, the project cannot go forward," he said.



Milwaukee Streetcar – Cost Certainty

- Team Members
 - Client City of Milwaukee
 - Designer HNTB / HDR
 - CM/GC Contractor Kiewit
 - Systems Contractor Mass Electric
- \$128 Million Program Budget
 - \$65 Million Construction Budget
- CMGC Contract awarded mid 2016
- Construction started early 2017
- Revenue Service November 2018



Informed Decision Making



ECI provides **Reliable** Cost Information for tradeoff analysis

II5 RE RAL SECTION HOT TO SCALE	Design ImpactsConstruction ImpactsFlangeway maintenance cost needs to be evaluated. Evaluation of lifecycle of tram rail vs 115RE should be evaluated (rail hardness, long erdraft details - 200MhrsSee detailed cost estimate attached. Major cost driver is
---------------------------------------	---

Active Risk Management

ECI Models provide opportunity to actively manage risk:

- Full alignment on risks early in the project
- Reliable quantification of risk to budget and schedule

NFERENCE //////////

• Collaboration for innovative solutions

RΔI



Informed Decision Making



Milwaukee Streetcar – Risk

Extensive Potholing

Designed away the Problem

Re-sequenced the schedule to avoid

conflicts



Milwaukee Streetcar – Risk

Known risk, unknown quantity

Some Risks can't be eliminated

Allowance



Flexibility with Project Requirements



- 2.75 Miles On Wire
- 1.75 Mile Off Wire
- Eliminated 1 TPSS
- Non-Redundant System



Questions?



