Marquette Interchange Reconstruction
Mike Paddock, PE, PS
Project History

- Built – 1968
- Begin Study – 2000
- Preliminary engineering – 2002
- Final engineering - 2003 & 2004
- Mitigation construction - Spring 2004
- Freeway construction - Spring 2005 to Sept. 2008
Marquette Interchange Program Budget

- $76M Design - including Department
- $58M Real Estate
- $23M Compensable Utilities
- $20M Mitigation
- $633M Construction & Construction Administration

-$810M Total
Goals of the Marquette Interchange

- Modernize Freeway to Satisfy Safety and Operations
- On Time - Open by Dec. 31 ‘08
- On Budget - $810M Program Cost
- Minimize Impacts on the Community and Environment
  - Keep Milwaukee “Open for Business” during construction
- Protect the safety of the traveling public and workers
What were the problems?

- Interchange structures were at the end of their useful life
- Crash rates are high
- Traffic congestion is increasing
Deteriorating joints between two bridges

Deteriorating Voided Slab Bridge

Deteriorating Pier

Deteriorating Box Girder
Mega Projects
“Creating their own weather”
Project Manager & Scout
Project limits and cost

$1.1 to $1.4B

$890M

$810M
Marquette Interchange Program Scope

- 2M sf of bridge deck
  - Steel I girder 560,000 sf
  - Prestressed concrete I girder 990,000 sf
  - Steep box girder 450,000 sf

- 5 miles of retaining walls
  - 300,000 sf
Wisconsin DOT project staff and the design team are housed in the Milwaukee Amtrak station, in the heart of the Marquette Interchange.
Community OUTreach

- Meet “Anytime & Anyplace”
- 1200 meetings
- Community Liaisons
- 1.5% of budget
User Communication – Web Site

- "Map-It" Tool helps users plan routes during construction by generating directions and map.
- Toolbar Icon: Icon can be installed on computer toolbar; flashes when alerts occur within user’s selected routes.
Community Aesthetics

- Advisory Group
- Fixed Budget
Conflict Forecasting

- Funding
- Cost / Scope Creep
- Schedule
Funding – Building Support

- Minimize acquisition
- Keep Downtown “Open for Business”
- Job & Business Opportunities
Utility costs reduced from $120M to $23M
Aldrich Chemical Building

- City
- County
- Dept of Commerce
- DOT
Maintaining Traffic
Construction by Year
Construction by Year
Mitigation task force

WisDOT & FHWA

Advisory Committee

4-Subcommittees
- Freeway Operations & Incident Management
- Public Information
- Transit & Demand Management
- Local Road Operations
Job and Labor Opportunities

- Job Training
- DBE Capacity and Opportunities
  - Mandatory Subcontracts
  - Small Contracts
Cost /Scope Creep

- **Scope “Lockdown”**
- **Quarterly Estimates**
  - Track major items (Steel & Cement)
- **Flexibility**
  - Plate girders
  - Staining
  - Stainless steel rebar
Project Controls

- Schedule Variance
- Cost Variance
- Earned Value

Cost/Schedule Analysis
- 20% Complete...23% Spent

Total Schedule Variance ($3,879,980)  (BCWP - BCWS) -
Total Schedule Variance ($3,655,084)  (CWP - BCWS) -
Cost Variance ($4699)  (BCWP - ACWP)

Forecast at Completion
- Baseline Budget $15,569,982
- Estimate at Completion $15,900,101
- Cost Variance at Completion ($330,119) Unfavorable ($15,900,1)

Data Date: August 1, 2003

Cost Variance at Completion

-earned Values

- Actual Cost Values

Original Baseline Plan

Total Baseline Plan

Base Plan

- August 1, 2003

 Earned Values
Schedule

Detailed Construction Schedule

- Local Government Agreements & talk with neighbors
  - Noise, Air Quality, Health
- Advance Risky work
  - Utility MOU’s
- Safety
Constructibility

300 ton crawler
340’ boom, 130’ mast
160’ radius 70 ton capacity
280’ radius 26 ton capacity
Marquette Interchange
Not WisDOT Business as Usual!

- MPC / Perpetual Pavements
- Steel Tub Design
- Pile Load Test
- Escrow Bid Documents
- Mobilization Workshops
- ADR for Claims Process
- Owner Controlled Insurance Program
- Pay Plan Quantity
- Reporting DBE Payments
- Haul Roads
- Noise
- Vibration
- Project Air Quality
- Executive Partnering
- Scheduling Specifications
- New Employee Training
Keys to Success

- Minimized Handoffs
- Early and extensive Outreach to neighbors
- Detailed Scoping
- Aggressive Change Management
  - Quarterly Cost Estimates
- Forecast Conflict