Track 1: Capital Programs: Regional Activities

CRMF – A DB Experience From Designer’s Point of View

Nathan Reinard, PE
Asst. Manager of TR Maintenance Facilities
Industrial Lead

June 12, 2018
COMMUTER RAIL MAINTENANCE FACILITY (CRMF)
DENVER, CO
Project Overview

Eagle P3 Project
Project Overview

• P3 – Public Private Partnership

• DBFMO – Design Build Finance Maintain and Operation

• 34 Year Contract
Project Overview

- Total Contract $66,000,000
  - Includes appx $14M in Equipment
- 230,000 sf Main Shop and Stand-alone Train Wash Building
- LEED Silver – Achieved Gold
- Awarded AGC’s Best Building Project in the $40-70M Range
- USGBC Innovative Project of the Year – Central PA
Project Overview

- 6 Tracks
  - 3 Daily Servicing (Electrified)
  - 1 Periodic Inspection
  - 1 Wheel Truing
  - 1 Component Changeout
- Component Shops
  - Air Brake
  - Compressor
  - Battery
  - HVAC
  - Pantograph
  - Electronics
- OCC
- MofW Workshop
- Storeroom
- Welfare and office spaces
Project Overview

- 2004 – RTD’s 2004 Voter Approved FasTracks Plan
- 2009 – RTD Advertises Eagle P3
- 2010 – RTD Selects DTP
- CRMF Design Start: May 2011
- CRMF Construction Start October 2012
- CRMF Completion: September 2014
- 2014 – December, First 4 Cars Arrive
- 2016 – Project Opens
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>DESIGN DEVELOPMENT</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>East Rail Line</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Commuter Rail Maintenance Facility</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NWES</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gold Line</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>CONSTRUCTION</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>East Rail Line</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Commuter Rail Maintenance Facility</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NWES</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gold Line</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>TESTING &amp; COMMISSIONING</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>East Rail Line</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Commuter Rail Maintenance Facility</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NWES</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gold Line</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>REVENUE SERVICE</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>East Rail Line</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NWES</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gold Line</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>BUILDING COMPLETED</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Commuter Rail Maintenance Facility</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>VEHICLES DELIVERED</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pilot Cars</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Production Cars</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

[Legend: ACTIVITY Timeline, START DATE - Revenue Service, CRMF - Completed]
Building Layout

NM Expansion

Tracks 6-9

Tracks 10-11

Workshop, OCC and Support Areas
Phasing
Phasing
Underground and Foundations
Underground and Foundations
Phasing
Phasing
Phasing

PREPARE For Your Work Term
Completed Site

September 2014
Daily Service and Inspection Tracks
Daily Service and Inspection Tracks
Tracks 6-9 Elevated Work Platforms and Trestle Tracks
Tracks 10-11

Shop Area Tracks

Track 11

Track 10
Tracks 10-11
Tracks 10-11
Workshops, OCC and Support Areas
Workshops, OCC and Support Areas
Operational Control Center
Funding

- P3 – Public Private Partnership
- DBFMO – Design Build Finance Maintain and Operation
- FTA – Federal Funding
  - FTA Buy America (CFR 49 Part 661)
  - Disadvantaged Business Enterprise Requirements – 20%
Funding

- FTA Buy America (CFR 49 Part 661)
  - Compliance
    - Rolling Stock
    - Steel
  - Waivers
- Premiums and Lead Times
THANK YOU