PROGRAM MANAGEMENT PLAN

September 2013

Regional Transportation District
1560 Broadway, Suite 700
Denver, CO 80202

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Date 9/23/13

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Date 10/10/13
**LIST OF REVISIONS**

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<tr>
<td>AA</td>
<td>Alternatives Analysis</td>
</tr>
<tr>
<td>AC</td>
<td>Alternating Current</td>
</tr>
<tr>
<td>AGM</td>
<td>Assistant General Manager</td>
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<tr>
<td>B&amp;A</td>
<td>Before and After (study)</td>
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<tr>
<td>BE</td>
<td>Basic Engineering</td>
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<tr>
<td>BNSF</td>
<td>Burlington Northern Santa Fe Railroad</td>
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<tr>
<td>BRT</td>
<td>Bus Rapid Transit</td>
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<tr>
<td>CAC</td>
<td>Citizens Advisory Committee</td>
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<tr>
<td>CAD</td>
<td>Computer Aided Design</td>
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<tr>
<td>CATEX</td>
<td>Categorical Exclusion</td>
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<tr>
<td>CBD</td>
<td>Central Business District</td>
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<tr>
<td>CCB</td>
<td>Change Control Board</td>
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<tr>
<td>CCD</td>
<td>City and County of Denver</td>
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<tr>
<td>CDOT</td>
<td>Colorado Department of Transportation</td>
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<tr>
<td>CFR</td>
<td>Code of Federal Regulations</td>
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<tr>
<td>CM</td>
<td>Construction Manager or Construction Management</td>
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<td>CM/GC</td>
<td>Construction Manager/General Contractor</td>
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<tr>
<td>CML</td>
<td>Consolidated Mainline Railroad Corridor</td>
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<tr>
<td>COP</td>
<td>Certificates of Participation</td>
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<tr>
<td>CPM</td>
<td>Critical Path Method (schedule)</td>
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<td>CPUC</td>
<td>Colorado Public Utilities Commission</td>
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<td>CPTED</td>
<td>Crime Prevention Through Environmental Design</td>
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<tr>
<td>CPV</td>
<td>Central Platte Valley</td>
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<tr>
<td>CRS</td>
<td>Colorado Revised Statutes</td>
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<tr>
<td>D-B</td>
<td>Design Build</td>
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<tr>
<td>D-B-B</td>
<td>Design-Bid-Build</td>
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<tr>
<td>DBE</td>
<td>Disadvantaged Business Enterprise</td>
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<tr>
<td>DBFOM</td>
<td>Design-Build-Finance-Operate-Maintain</td>
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<tr>
<td>DC</td>
<td>Direct Current</td>
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<tr>
<td>DEIS</td>
<td>Draft Environmental Impact Statement</td>
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<tr>
<td>DIA</td>
<td>Denver International Airport</td>
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</table>
DMU Diesel Multiple Unit
DOT Department of Transportation
DRCOG Denver Regional Council of Governments
D/SBE Disadvantaged/Small Business Enterprise
DUS Denver Union Station
EA Environmental Assessment
EAT Environmental Advisory Team
ECCS Enterprise Cost Control System
ECMS Enterprise Content Management System
EE Environmental Evaluation
EIS Environmental Impact Statement
EOC Executive Oversight Committee
EPB Environmental Programs Branch (of CDOT)
ERP Enterprise Resource Planning (financial system)
ESA Environmental Site Assessment
FASTRACKS RTD’s Voter Approved Transit Improvement Program
FT PMP FasTracks Program Management Plan
FEIS Final Environmental Impact Statement
FFGA Full Funding Grant Agreement
FHWA Federal Highway Administration
F/LS Fire/Life Safety
FONSI Finding of No Significant Impact
FRA Federal Railroad Administration
FT FasTracks
FTA Federal Transit Administration
GMP Guaranteed Maximum Price
ITP Integrated Test Plan
I-225 Interstate 225
I-25 Interstate 25
I-70 Interstate 70
IFB Invitation for Bid
IGA Intergovernmental Agreement
LNOP Letter of No Prejudice
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<tr>
<td>RFP</td>
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<tr>
<td>ROCIP</td>
<td>Rolling Owner Controlled Insurance Program</td>
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<tr>
<td>ROD</td>
<td>Record of Decision</td>
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<tr>
<td>RTD</td>
<td>Regional Transportation District</td>
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<td>SAFETEA-LU</td>
<td>Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users</td>
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<tr>
<td>SB</td>
<td>Senate Bill</td>
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<tr>
<td>SBE</td>
<td>Small Business Enterprise</td>
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<tr>
<td>SCADA</td>
<td>Supervisory Control and Data Acquisition</td>
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<tr>
<td>SEC</td>
<td>Systems Engineering Consultant or Southeast Corridor</td>
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<tr>
<td>SH</td>
<td>State Highway</td>
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<tr>
<td>SOW</td>
<td>Scope of Work</td>
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<td>SMOG</td>
<td>Senior Management Oversight Group</td>
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<tr>
<td>SMT</td>
<td>Senior Management Team</td>
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<tr>
<td>STIP</td>
<td>State Transportation Improvement Program</td>
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<tr>
<td>SWC</td>
<td>Southwest Corridor</td>
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<tr>
<td>T&amp;M</td>
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<td>TEA-21</td>
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<td>TIFIA</td>
<td>Transportation Infrastructure Finance and Innovation Act</td>
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<tr>
<td>TIP</td>
<td>Transportation Improvement Program</td>
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<tr>
<td>TOD</td>
<td>Transit Oriented Development</td>
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<tr>
<td>T-REX</td>
<td>Transportation Expansion Project</td>
</tr>
<tr>
<td>TPSS</td>
<td>Traction Power Substation</td>
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<tr>
<td>UDFCD</td>
<td>Urban Drainage and Flood Control District</td>
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<tr>
<td>UPRR</td>
<td>Union Pacific Railroad</td>
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<td>USACOE</td>
<td>United States Army Corps of Engineers</td>
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<tr>
<td>USC</td>
<td>United States Code</td>
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<td>USDOT</td>
<td>United States Department of Transportation</td>
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<td>V</td>
<td>Volts</td>
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<td>WBS</td>
<td>Work Breakdown Structure</td>
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1.0 INTRODUCTION

1.1 FASTRACKS PROGRAM MANAGEMENT PLAN

This FasTracks Program Management Plan describes the organization, management controls systems, and processes that guide the full range of activities required to implement the FasTracks Program. The FasTracks Program Management Plan is consistent with the Federal Transit Administration (FTA) guidelines and requirements related to project management plans for major capital projects, including 49 CFR Part 6330, the FTA “Project and Construction Management Guidelines 2003 Update,” and FTA Circular 5010.1C. Specifically, the FasTracks Program Management Plan is developed to:

- Summarize the FasTracks Program, including the scope, schedule, and capital budget.
- Describe reporting relationships.
- Establish goals and objectives that form the basis of RTD’s FasTracks Program.
- Provide information about the organization, control systems, processes, roles and responsibilities, and lines of authority within RTD’s FasTracks Program.
- Cite definitive and authoritative references, including specific policies and procedures.
- Describe inter-relationships between the FasTracks practices and the agency-wide policies and procedures.
- Establish consistent management practices.
- Establish mechanisms for managing technical and financial risks.
- Demonstrate to stakeholders that FasTracks is structured in accordance with RTD, Denver Regional Council of Governments (DRCOG) and federal requirements.

The FasTracks Program Management Plan governs the conduct of all program participants, including RTD staff, consultants, and contractors. The provisions of this plan apply throughout the FasTracks Program, including the following phases:

- Planning and environmental analyses
- Right-of-way assessment, acquisition, and relocation
- Preliminary engineering and final design
- Contract procurement and administration
- Construction management and design support during construction
- Testing and start-up

In addition, there are chapters devoted to the FasTracks organization and staffing, program implementation, DBE/SBE program, Transit Oriented Development, civil and systems work elements, QA/QC program, safety and security, risk management and insurance, and community involvement.
1.1.1 Relationship to Project Management Plans

The FasTracks Program Management Plan provides an overview of the RTD management requirements and systems used to implement an efficient and effective rail transit system. This Program Management Plan is supplemented with project-specific Project Management Plans to provide additional details that are unique to each major capital project. Should a conflict exist between the FasTracks Program Management Plan and a Project Management Plan, the requirements of the specific Project Management Plan shall govern.

1.1.2 Maintenance and Updating

The FasTracks Program Management Plan is updated as necessary to address any changes in the FasTracks organizational structure, management controls, internal or external relationships, system schedule, or similar.

A project-specific Project Management Plan is developed and/or updated prior to the start of each phase of a FasTracks capital project, regardless of procurement type. A project’s initial Project Management Plan is prepared prior to the start of Preliminary Engineering. Project Management Plan updates are then required prior to the start of Final Design and Construction. In addition, it should be updated annually as necessary throughout the project’s development.

Program Management Plans and Project Management Plans are provided to staff in electronic formats via the FasTracks Intranet so that the most current versions are continuously available.

Changes to the FasTracks Program Management Plan must be approved by the AGM of Capital Programs and the AGM of Planning.

Changes to Project Management Plans must be approved by the respective Project/Corridor Project Manager.

1.1.3 Distribution, Revisions and Updates

The FasTracks Program Management Plan is prepared and issued under the authority of RTD’s Assistant General Manager (AGM), Capital Programs and is revised and updated as the FasTracks Program evolves. The FasTracks Program Management Plan is distributed to program participants as a controlled document and is subject to formal configuration control and administration. Modifications are made only in accordance with the FasTracks configuration management and change control procedures. Subsequent revisions are formally issued as these modifications are approved and incorporated. All holders of controlled copies automatically receive updates. The FasTracks Document Control Manager is responsible for the maintenance and distribution of the FasTracks Program Management Plan.

1.2 FASTRACKS PROGRAM DESCRIPTION

FasTracks is RTD’s multi-billion dollar comprehensive plan for high-quality transit service and facilities in the Denver region. The RTD Board of Directors established three major goals for the FasTracks Program, as defined in the FasTracks Plan (April 22, 2004):

- Provide improved transportation choices and options to the citizens of the RTD District.
- Increase transit mode share during peak travel times.
- Establish a proactive plan that balances transit needs with future regional growth.
In addition to the Board goals, in 2010 the RTD Senior Management Team established its own goals for managing the program:

- Deliver the current scope in the most cost effective way
- Provide positive benefit to the community
- Build trust, unity and collaboration and maximize internal and external communication
- Build a safe, high-quality system

FasTracks includes expansions and extensions of existing light rail lines, construction of new light rail and commuter rail lines, and construction of the stations and other improvements for bus rapid transit. When complete, the program will add approximately 120 miles of light rail and commuter rail in addition to approximately 18 miles of bus rapid transit (BRT).

Other elements include enhanced bus service and transit hubs, a downtown multimodal center at Denver Union Station, and system enhancements designed to improve passenger safety, convenience, and use of the transit system.

Implementation of FasTracks required an increase in the RTD sales tax throughout the district from 0.6 percent to a full 1.0 percent sales tax (0.4 percent increase). The 0.4 percent increase is earmarked specifically for the construction and operations associated with the FasTracks Program. The sales tax increase was placed on the November 2004 general election ballot and passed with approximately 58 percent of the vote in favor of the tax.

The FasTracks Program includes:

**Two new light rail corridors:**

<table>
<thead>
<tr>
<th>Corridor</th>
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<tbody>
<tr>
<td>West Corridor</td>
<td>CPV Spur to Jefferson County Government Center</td>
</tr>
<tr>
<td>I-225 Corridor</td>
<td>Parker Road (Nine Mile Station) to Peoria (I-70 Corridor)</td>
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**Four new commuter rail corridors:**

<table>
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<th>Corridor</th>
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<tbody>
<tr>
<td>East Corridor</td>
<td>Denver Union Station (DUS) to Denver International Airport</td>
</tr>
<tr>
<td>Northwest Rail</td>
<td>DUS to Longmont</td>
</tr>
<tr>
<td>Gold Line</td>
<td>DUS to Ward Road</td>
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Extensions of three existing light rail corridors:

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<tr>
<th>Corridor</th>
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<tbody>
<tr>
<td>Central Corridor Extension</td>
<td>30th and Downing to 38th and Blake</td>
</tr>
<tr>
<td>Southwest Extension</td>
<td>Mineral Station to C-470 and Lucent</td>
</tr>
<tr>
<td>Southeast Extension</td>
<td>Lincoln Station to Ridgegate</td>
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BRT improvements for the US 36 Corridor from DUS to Boulder.

<table>
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<th>Corridor</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>US 36 Phase 1</td>
<td>Broomfield (US 36 &amp; 116th) Bus Transit Facility</td>
</tr>
<tr>
<td>US 36 Phase 2</td>
<td>US 36 Queue Jumps, Table Mesa pnR upgrade and proportionate share of funding for US36 managed lanes</td>
</tr>
</tbody>
</table>

Other elements contained in the FasTracks plan:

<table>
<thead>
<tr>
<th>Facility</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Light Rail Maintenance</td>
<td>Improve the existing Elati and Mariposa facilities</td>
</tr>
<tr>
<td>Commuter Rail Maintenance</td>
<td>New facility at 48th and Fox to accommodate EMU and DMU vehicles</td>
</tr>
<tr>
<td>Bus Maintenance</td>
<td>TBD (for new facility or improve existing, as determined to meet final requirements)</td>
</tr>
</tbody>
</table>
Denver Union Station (DUS) | The hub for all RTD modes, incorporated into a downtown transit oriented development (TOD)

Plus, minor improvements to the existing light rail and bus systems, including four-car platforms, power switches, upgrades to the traction power substations (TPSS), added parking, and additional buses and light rail vehicles (LRVs).

Refer to Figure 1-1 for a complete map of the FasTracks corridors.
1.2.1 Project Work Elements
Below is a brief description of the Major Project Work Elements (Corridors/Facilities) for the FasTracks Program: (For a more detailed description of each project, refer to the specific Project Management Plan(s).)

1.2.1.1 Central Corridor Extension

The Central Corridor Extension is 0.8-miles in length and extends from the 30th and Downing Station to the 38th/Blake Station where it facilitates transfers to the East Corridor. The Board adopted the Final EE in January 2010.

1.2.1.2 Denver Union Station

Denver Union Station is a multimodal transportation hub that will include light rail, commuter rail, and bus connections, as well as pedestrian access to downtown businesses and the 16th Street Mall Shuttle system. In October 2008, the Federal Transit Administration (FTA) signed the Record of Decision (ROD), and a contract for early construction was signed in May 2009. The Denver Union Station Project Authority (DUSPA) was created in 2008 to provide oversight. The light rail station opened in August 2011, and the bus concourse will open in May 2014.

1.2.1.3 East Corridor

The East Corridor is a commuter rail corridor, using Electric Multiple Units (EMU), 22.8-miles in length that extends from DUS to Denver International Airport (DIA). It was selected, along with the Gold Line, for the FTA Public-Private Partnership Pilot Program (Penta-P) in 2007. In April 2009, the FTA issued permission to enter Preliminary Engineering (PE). The FTA signed the ROD in November 2009. In April 2010, the FTA issued Approval to Enter Final Design as well as a Letter of No Prejudice (LONP) allowing RTD to incur costs for the work included in Notice to Proceed 1 (NTP 1) of the Eagle Project. In August 2011, the FTA issued a FFGA allowing full construction of the project.

1.2.1.4 Gold Line

The Gold Line is a commuter rail corridor (EMU), 11.2-miles in length that extends from DUS to Ward Road in Wheat Ridge. It shares three miles from DUS to Pecos with Northwest Rail. The Gold Line, along with the East Corridor, was selected for the FTA Penta-P in 2007. In April 2009, the FTA issued permission to enter PE. The FTA signed a ROD in November 2009. In April 2010, the FTA issued Approval to Enter Final Design as well as a Letter of No Prejudice (LONP) allowing RTD to incur costs for the work included in Notice to Proceed 1 (NTP 1) of the Eagle Project. In August 2011, the FTA issued a FFGA allowing full construction of the project.

1.2.1.5 I-225 Corridor

I-225 is a 10.5-mile light rail corridor that extends from the existing Nine Mile Station, north and east to a station that will be constructed at Peoria/Smith. This station will serve as a transfer point to the East Corridor. The I-225 Corridor will be built in two segments with two different procurement delivery methods. The RTD Board adopted the Final EE in October 2009. In March 2012, RTD received an unsolicited proposal for the I-225 corridor. The proposal was deemed to have merit, so RTD released an RFP for competitive procurement in May. After receiving two proposals, RTD completed an evaluation and awarded a design-
build contract for completion of the entire corridor in July 2012. Revenue service is scheduled for 2016.

1.2.1.6 North Metro
North Metro is an 18.4-mile commuter rail corridor from DUS north to 162nd Avenue. In 2009, additional analysis was done on alignment refinements in the southern portion of the corridor. In February 2013, RTD received an unsolicited proposal for the North Metro corridor. The proposal was deemed to have merit, so RTD released an RFP for competitive procurement in June. As of the time of this revision, RTD expected to award a contract in December 2013 for design-build of some portion of North Metro corridor.

1.2.1.7 Northwest Rail Corridor
The Northwest Rail Corridor is a 41-mile commuter rail corridor using diesel multiple units (DMUs) that extends from DUS to 1st and Terry in Longmont. Three miles from DUS to Pecos are shared with the Gold Line. In 2008, this section of the alignment was refined as a result of railroad negotiations and it was determined that the Burlington Northern Santa Fe (BNSF) will construct the corridor north from the 71st/Lowell Station. The DUS to 71st electrified segment will be built as part of the Eagle Project. In May 2013, RTD initiated the Northwest Area Mobility Study to determine options for providing service to the corridor.

1.2.1.8 Southeast Corridor Extension
The Southeast Corridor Extension is a 2.3-mile light rail extension from the current Southeast Corridor end-of-line station at Lincoln Avenue and I-25, south the RidgeGate Parkway/I-25 interchange. The EE for this project was adopted by the Board in February 2010. Subsequently, RTD decided to apply for New Starts funding, which required an Alternatives Analysis, leading to adoption by the Board of a Locally Preferred Alternative in February 2012. In April 2013, the FTA accepted the corridor into the Project Development phase of the Federal New Starts Grant Funding process, with anticipation of a FFGA in April 2015.

1.2.1.9 Southwest Corridor Extension
The Southwest Corridor Extension is a 2.5-mile light rail extension from the current Southwest Corridor end-of-line station at Mineral Avenue and Santa Fe Drive (US-85), south and east to the southwest corner of the C470/Lucent Boulevard interchange. The EE for this project was initiated in July 2008 and adopted by the Board in February 2010.

1.2.1.10 US 36 BRT - Phase 1
This project includes park-n-Ride improvements, improved pedestrian access to the bus stations, and the construction of bus loading areas along US 36. All improvements associated with Phase I have been completed.

1.2.1.11 US 36 BRT - Phase 2
The US 36 BRT-Phase 2 includes funding for RTD’s proportionate share of 18 miles of managed lanes (high-occupancy toll and vehicle and BRT) on US 36. Also included is construction of a pedestrian bridge at the Table Mesa park-n-Ride and a new eastbound bus pull-out ramp on the south side of US 36. The DEIS was released in August 2007 and the
FEIS was released in November 2009. The ROD was signed in December 2009. In February 2012, CDOT, HTPE, and RTD awarded a contract for design-build of the corridor from Federal Boulevard to 88th Street. In April 2013, CDOT and HTPE awarded a contract to a Concessionaire to complete construction of the managed lanes from 88th Street to Table Mesa, and maintain the entire corridor once construction is complete. The term of this contract is 50 years. The segment up to 88th Street will open in January 2015, while the segment to Table Mesa will open in late 2015.

1.2.1.12 West Corridor

The West Corridor originates at DUS and extends for 12.1-miles ending at the Jefferson County Government Center. On January 16, 2009, an FFGA with FTA was executed for $308.68 million to help fund the corridor. A full Notice to Proceed (NTP) was issued on June 16, 2009. The corridor opened to the public on April 26, 2013.

1.2.1.13 Maintenance Facilities

LIGHT RAIL MAINTENANCE FACILITY

This project includes the expansion of existing light rail maintenance facilities at Elati and Mariposa to double the maintenance and operational capacity for light rail. Construction began in May 2009 and was completed in September 2011.

COMMUTER RAIL MAINTENANCE FACILITY (CRMF)

This project includes a maintenance shop for all commuter rail vehicles, a commuter rail control center, employee facilities, offices, parking, and a building and laydown areas for maintenance-of-way (MOW) equipment and materials. In early 2009, the Fox North (48th & Fox) site was selected as the preferred location in the Supplemental Environmental Assessment (SEA), which was completed in April 2009. The environmental analysis was incorporated into the East Corridor, Gold Line, and North Metro EISs. The FTA signed RODs for the East Corridor and Gold Line in November 2009. The CRMF is part of the combined Eagle Project.

BUS MAINTENANCE FACILITY

Additional bus maintenance facility capacity is not anticipated until after 2035.

1.3 LEGAL AUTHORITY

RTD was created by an Act of the Colorado General Assembly in 1969, which provides legal authority for the Board of Directors and agency powers. Colorado Revised Statutes (CRS) 32-9-101 et seq. set forth the duties, responsibilities, and powers.

RTD, through its Board of Directors, has been empowered with the authority to plan and implement a public transportation program for a seven-county area surrounding Denver, Colorado. Power is vested in a 15-member elected Board of Directors.
1.4 PROGRAM BUDGET

The FasTracks Program budget was originally estimated at $4.7 billion in YOE over a 12-year time frame (year 2004 estimate). Subsequent Annual Program Evaluations have revised this estimate due to changes in project scope, increased material cost, changes in inflation rates.

1.5 PROGRAM SCHEDULE

The FasTracks Program Schedule is maintained in Primavera by the Program Schedule Coordinator.

1.6 ANNUAL PROGRAM EVALUATION

Every year, FasTracks staff completes the Annual Program Evaluation (APE), which is a review of the full FasTracks program. The APE process updates all assumptions in the FasTracks financial plan to the most current information available:

- Capital costs are updated to reflect the current status and schedule for each project
  - Corridors under contract reflect current contract costs
  - Other projects are updated to reflect the current level of engineering or design and current unit costs
  - Cost escalation rates for projects not under contract are updated to reflect current market conditions and economic forecasts
- Future operating and maintenance costs are updated with current unit costs and inflation rate forecasts
- Revenue forecasts are updated to reflect current conditions
  - Current economic conditions
  - Changes in federal funding commitments or guidelines
  - Changes in sources of available funding

Any project reaching the 30% design level has an independent “bottoms up” cost estimate performed. The Chief Estimator assembles a team independent of the project to perform an estimate in a manner similar to that performed by a construction contractor. This independent, bottoms up estimate is compared to the project estimate, and any significant differences are reconciled.

Projects not yet at the 30% design level are estimated using current unit prices and quantities. Subject matter experts in each relevant discipline develop unit costs based on recent bids for RTD, CDOT, and related transit projects.

All costs are estimated in base year, and then escalated based on projections of construction inflation. The APE process results in updated capital cost forecasts and an updated financial plan, which are presented to the RTD Board of Directors for approval.

The responsibility for development of the APE and associated Financial Plan elements is shared between the AGM of Capital Programs, the AGM of Planning, and the Manager of Program Controls.
2.0 PROGRAM DELIVERY

2.1 PROJECT DELIVERY APPROACHES

Each of the FasTracks projects has varying cost, schedule, and environmental constraints. As such, a variety of delivery methods are used to best match each project. The contracting must ensure system integration; anticipate the local contracting community capabilities and limitations; and satisfy the federal, state, and local codes and requirements.

Design-Bid-Build, Design-Build, Design-Build-Finance-Operate-Maintain, Construction Manager/General Contractor (CM/GC), and direct procurement of equipment are all being utilized to deliver the FasTracks corridors and supporting elements. The choice of which delivery method to use on a particular project is based on size and complexity of the project, capacity of the design and construction community, schedule, cash flow, stakeholder input, integration with existing RTD operations, and other factors. In the fall of 2005, the FasTracks Team participated in two workshops to discuss the pros and cons of each delivery method, and identify the proposed delivery method. Since then, some of these initial assumptions have changed as the program has evolved. Selection of a project delivery method will be supported by a white paper, listing the pros and cons of the various options.

2.1.1 Design-Bid-Build

Design-Bid-Build (D-B-B) has served as the traditional delivery system for public works projects in the United States for over a century. Under D-B-B, the Owner retains an engineer to develop plans, specifications, cost estimates, and, when complete, advertises for bids from qualified contractors. The general contractor (bidder) usually augments its team with subcontractors to provide specialized capabilities and to access the local labor pool. Bids are generally awarded to the lowest responsive and responsible bidder; however, in some cases, selection is made based on “best value” (a combination of cost and other technical factors). This approach is used for smaller FasTracks projects that do not entail delivery of an entire corridor, such as the Light Rail Maintenance Facility upgrades.

2.1.2 Design-Build

Design-Build (D-B) is delivery method that has been increasingly utilized on public works projects in the United States.

D-B contractors are normally procured using a two-or more-step, “Best Value” selection method, with price and other factors used as selection criteria. The Owner normally assigns weighting to the evaluation factors in the “Best Value” selection. The “Best Value” approach allows for the use of Best and Final Offers (BAFOs) in identifying and selecting the winning team.

The D-B delivery method consists of one entity (the design-builder) entering into a single contract with the Owner to provide architectural/engineering design, procurement, and

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1 Engineering News Record, Construction Facts, November 2003 (modified).
construction services. The Design-Builder assumes responsibility to bring the 30% Preliminary Design Package to 100%, with Owner approval. The Design-Builder also assumes all interface coordination, permitting, and approval of third party agencies. The degree of risk and involvement the Owner is willing to assume can be negotiated with the Design-Builder prior to NTP. This approach is utilized on DUS and I-225 projects.

2.1.3 **Design-Build-Finance-Operate-Maintain**

Design, Build, Finance, Operate, and Maintain (DBFOM) is a delivery method that utilizes private equity to finance the project. Under this model, the private sector designs, builds, finances, operates and/or maintains a new facility under a long-term lease. On the FasTracks program, this delivery method is used for the East Corridor, Gold Line, and Commuter Rail Maintenance Facility; which fall under the FTA Public Private Partnership Program (Penta P). Portions of the Northwest Corridor and DUS will also be delivered under the Concession Agreement. For more information, refer to the Eagle Project Management Plan.

2.1.4 **Construction Manager/General Contractor**

The basic premise of CM/GC is that the involvement of the contractor during final design provides improved constructability, expedites the construction process, and decreases the cost of the project. The CM/GC approach is usually coupled with a negotiated guaranteed maximum price commitment from the construction contractor. In this approach, the Owner awards a contract to a general contractor following evaluation against criteria. The general contractor assumes construction management responsibilities over subcontractors and still relates to the designer, who operates under a separate contract with the Owner. CM/GC contractors are procured using qualifications-based selection criteria. A contract is awarded during the final design phase under which the CM/GC contractor provides constructability reviews and other services under a cost reimbursable professional services type agreement. At a prescribed time, the contractor provides a Guaranteed Maximum Price (GMP), which is then negotiated into the guaranteed contract cost. If agreement cannot be reached on the terms of the Agreement, the contract can be terminated at this point and the contract can be bid using a traditional D-B-B approach. This approach was utilized on the West Corridor. For more information, refer to the West Corridor Project Management Plan.

2.1.5 **Procurement**

RTD will undertake direct procurement of transit systems, rolling stock, and materials when necessary to take advantage of favorable pricing, ensure compatibility with existing systems, utilize purchasing options from previous procurements, or economize by partnering with other transit authorities. In each case, RTD will weigh the risks of doing direct purchase versus requiring the contractor to purchase.

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2.2 PARTNERING

Partnering is the process of establishing good working relations between project stakeholders, such as the owner, designer, and contractor. More directly, partnering is the building of "trust" between the interested parties of a contract. This helps to avoid problems with the project that more often than not leads to litigation. Partnering is designed to minimize costs and schedule overruns. Whereas a contract establishes the legal relationships, the partnering process attempts to establish team-building between the parties through a mutually developed, formal strategy of commitment and communication aiming towards a "win/win" outcome for all parties.

The key elements of partnering are:

- Partnering is a voluntary process.
- Commitment is required by all parties involved.
- Team-building.
- Equity for all parties must be achieved.
- Mutual project goals/objectives for commitment.
- Trust must be established.
- Implementation of partnering strategies.
- Continuous evaluation and responsiveness to making the partnering process successful.

The partnering process incurs some up-front costs to conduct the initial partnering sessions and requires total commitment (time and effort) from its participants. These partnering costs are justified by the significant benefits that can be derived from the process, as evidenced by the impressive track record of the process on all types of projects.

2.2.1 Partnering for FasTracks

RTD has committed to implement partnering on the FasTracks Program at all levels of the FasTracks organization and extend partnering to project stakeholders. Partnering for the FasTracks Program involves a process of several basic steps. An outside (independent) facilitator conducts a one- or two-day work session with all impacted parties or stakeholders. Partnering starts with a one-day session for FasTracks staff and extends to consultant teams as project work gets underway. RTD is committed to partnering with local agencies that have a stake in the FasTracks Program. This is directed at building trust through team-building exercises. These exercises, which occur on a quarterly basis, are to build cooperation; as each project/corridor progresses through the environmental, design, and construction phases, they will focus on solving real problems associated with the project at hand. The outcome of each partnering session results in a formalized set of goals and objectives for the project. The goals are formally compiled into a "Charter" that is signed by all parties. Everyone leaves the session with the major objective of not violating the Charter.
Figure 2-1 is a copy of the FasTracks Team Program Charter developed at the November 17, 2005, partnering meeting.

### 2.2.2 Benefits of Partnering

The partnering process empowers FasTracks staff and stakeholders to accept responsibility to do their jobs by delegating decision-making and problem solving to the lowest possible level of authority. It is also used to improve the competitive procurement process through outreach and teambuilding sessions. Other benefits include:

- Reduced risk of cost and schedule overruns.
- Open communications.
- Higher quality results produced.
- Increased opportunity for innovation.
- Increased sense of ownership, accountability and mutual cooperation.
- Increased opportunity for fiscal success of the project for all involved.
Figure 2-1  FasTracks Team Program Charter
(Adopted by FasTracks Senior Management in September 2005)

**MISSION**
Provide a reliable and safe transit system that enhances mobility, responds to the growing transportation needs within the Regional Transportation District, and creates a legacy for current and future generations. We will accomplish this by achieving the following team goals:

**ON TIME/ON BUDGET**
Define and control scope
Accountability to taxpayers and communities
Manage expectations

**QUALITY**
Optimize life-cycle costs
Create opportunities for sustainability
Establish and meet performance requirements
Expect responsibility and accountability of entire team

**SAFETY**
Ensure public safety during construction through proper risk management
Provide a safe and secure work environment
Implement transit system safety and security

**COMMUNITY**
Minimize negative impacts
Maintain public confidence
Solicit, listen, and respond to community needs
Provide timely, accurate, clear, and consistent information
Develop technical and professional capabilities of the Colorado workforce

**DBE/SBE GOALS**
Create a team environment that attracts DBE/SBE participation
Create opportunities and promote their success
Provide ongoing support
Ensure compliance and enforcement

**COLLABORATIVE TEAM/TEAMWORK**
Empower team and have fun
Create sustainable organizational culture
Integrate all team members
Establish trust and respect each individual
Define roles clearly

**COMMUNICATION**
Provide timely, accurate, clear, and consistent information
Share information with the entire team
Resolve issues in a timely manner at all levels

**REPUTATION OF ALL PARTIES**
Create and share the national model for a successful transit program
Maintain RTD’s reputation for successful project delivery
3.0 PROGRAM ORGANIZATION

The FasTracks Program is managed by an integrated team composed of RTD staff from multiple departments (Capital Programs; Planning; Finance; Communications; Rail Operations; and Safety, Security and Facilities) supplemented by a Program Support Consultant, a Systems Engineering Consultant, a Quality Management Consultant, a Public Involvement Consultant, PPP and Alternative Financing Methodologies Advisors, Outside Legal Counsel (PPP Concession Agreement), and other corridor design and specialty consultants. Since the bulk of the staffing assignments are managed under the Planning and Capital Programs Departments, these entire Departments are co-located in an office space close and convenient to the RTD main headquarters, along with consultant support staff. Once projects enter construction, the respective project management teams co-locate at a field site with the prime Contractor.

Figure 3-1 illustrates the RTD Organization Senior Leadership Team, while Figure 3-2 depicts the management structure for the FasTracks Program. More detailed organization charts are contained in the RTD organization charts maintained by the RTD Human Resources Department. This includes organization charts for each department and division within RTD. In addition, each project has a detailed organization chart identifying the positions, names and organizational structure for that corridor. An example for the Eagle project is shown in Figure 3-3. Project level organization charts will be included in the respective Project Management Plans.

3.1 STANDING MANAGEMENT COMMITTEES

FasTracks managers originally formed Twelve FasTracks standing management committees. formed to provide technical guidance to FasTracks program management. These committees met on an as-needed basis to review emerging issues relative to the scope of their committees. With the evolution of FasTracks, it was determined that some committees had served their purpose and were dissolved. The remaining management committees are as follows:

- **Senior Management Committee** addresses FasTracks program issues (cost, schedule, quality, communications, safety and security); monitors overall progress (status of planning, design and construction, schedule, and budget); considers project scope/budget changes; resolves interagency coordination issues; and resolves conflicts between project functional areas.

- **FasTracks Environmental Resources Group (FERG)** focuses on completion of the NEPA process for the FasTracks corridors in a timely and cost-effective manner, while meeting NEPA’s legislative requirements and related laws, and the regulations and policies of other federal and state agencies. The committee is supported by consultant staff members from the PSC who help out on programmatic elements of NEPA for FasTracks and provide environmental expertise to the FasTracks Team.

- **TOD, pnRs, and Stations Committee** coordinates FasTracks TOD, pnRs, and station planning, bike and pedestrian planning, urban design, sustainability features, and design and construction issues to make sure that timely decisions are made that are consistent with FasTracks budget and master schedule and are in support of corridor projects.
• **Transit Design Criteria Committee** reviews and recommends approval of light rail transit (LRT), bus, and commuter rail design criteria, and any proposed deviations to approved design criteria, for the FasTracks Program.

• **Service and Operations Planning Committee** coordinates FasTracks rail and bus service and operations planning and commissioning issues, coordination with transit facilities design and construction, and planning for enhanced bus service to make sure that timely decisions are made that are consistent with the FasTracks Plan.

• **RTD Executive Safety and Security Committee** is a cross-functional committee consisting of RTD Senior Management, Technical Staff, Safety Staff, Operations Staff, and Security Staff. This committee sets the safety and security direction for RTD. The committee’s main objective is to ensure program implementation and compliance with the District’s System Safety and System Security Program Plan.

• **Public Strategy Working Group** strategizes about how to address emerging issues and develop messaging that will be communicated in the areas of public outreach, public involvement, media relations, and government relations.

• **DBE/SBE Committee** provides a forum for discussing the development and implementation of FasTracks DBE/SBE Program.

• **Financial Management Committee** oversees and provides recommendations to the FasTracks Program Direction office on all FasTracks financing issues.

• **Systems Integration Committee** reviews design, procurement, and construction matters related to Programwide civil/systems integration issues.

• **FasTracks Sustainability Committee** provides guidance for the implementation of RTD’s Sustainability Program, and coordinates with other departments, program managers, senior leadership and stakeholders to establish sustainability goals that are cost-effective and to develop procedures for monitoring, measuring and managing activities to meet these goals.

In addition to the standing committees, the FasTracks Program will also make use of ad hoc committees as the need arises. These committees will be formed to resolve specific issues, and then disband when they’ve achieved their objective.
Figure 3-1: RTD Senior Leadership Team

CEO/General Manager
Philip Washington

Executive Administrative Assistant
Rosalie Hankus

Employee Liaison
Beverly Lindsay

AGM, Bus Operations
Bruce Abel
AGM, Capital Programs
Rick Clarke
AGM, Communications
Scott Reed
Chief Financial Officer (CFO)/AGM, Finance & Administration
Terry Howarter

General Counsel
Maria Lien
AGM, Planning
Bill Van Meter
AGM, Rail Operations
Austin Jenkins
AGM, Safety, Security & Facilities
Dave Genova

Sr. Manager, Civil Rights
Kenneth Hardin
Sr. Manager, Materials Management
Brian Iacono
Figure 3-3 Eagle Project Organization Chart (extracted from Eagle PMP)
3.2 KEY PERSONNEL ROLES AND RESPONSIBILITIES

Key roles and responsibility for those positions shown in Figure 3-2 are described below:

3.2.1 Assistant General Manager (AGM), Planning

The Assistant General Manager of Planning reports directly to the RTD General Manager. Responsibilities include:

- Provides leadership and direction to Planning Technical Services and Transit Oriented Development divisions.
- Determines and implements short and long-term strategies needed to support District goals and plans.
- Provides direction to assigned staff through objectives and programs in conjunction with goals set by the General Manager and Board of Directors.
- Manages assigned staff to ensure adherence to organizational policies, procedures, and standards.
- Provides direction in the development and implementation of District administrative policies and organizational structures.
- Coordinates the development of the annual budget.
- Performs as an integral member of the Senior Leadership Team to ensure effective interfaces and integration of activities with other organizational units.
- Provides for an environment where subordinates are nurtured and learn in every area of discipline.

3.2.2 Senior Manager of Planning Technical Services

The Senior Manager of Planning Technical Services reports to the AGM of Planning. Responsibilities include:

- Supervises and coordinates the activities of the Division’s technical resource staff, which includes interviewing, selecting, coaching, assigning and monitoring work, and conducting performance management duties.
- Develops and implements systems and procedures for efficient staff organization and utilization providing technical support resources for a variety of disciplines in support of multiple studies.
- Assures that each resource team leader provides appropriate levels of environmental, planning staff, FTA/New Starts/AA performance tracking, and technical support for all FasTracks transit corridors and facility projects.
- Resolves all staffing and technical environmental and planning support issues that arise in the following technical support disciplines identified as FasTracks planning resource areas: Environmental; Transportation Planning; Travel Forecasting; Operations Analysis; NEPA Community Involvement; FTA/New Starts/AA; and FasTracks Performance Tracking.
- Assists in preparation of the FasTracks financial plan update process, coordinating internal staff resources and financial consultant assistance. Assures the financial plan output is developed in support of the Denver Regional Council of Governments (DRCOG) SB 208 process; FTA New Starts; and FFGA processes; and for input to the RTD budget and reporting processes.

- Develops and maintains strict compliance to monitoring and tracking technical planning efforts as well as to project and program control policies for schedule, cost, document control, and progress reporting.

- Provides technical transportation planning and environmental (NEPA) expertise in the area of major and minor corridor and planning studies for the FasTracks program and Systems Planning Studies.

- Manages long-term planning studies such as the Environmental Impact Statement and Preliminary Engineering process for the RTD. Manages corridor planning studies to include the oversight of consultant contracts, writing scopes of work, independent cost estimates, and project budgets for professional services. Selects and oversees consultant and RTD staff. Ensures the adequacy, completeness, operational feasibility, and conformance with RTD, state, and federal regulations associated with the major capital improvement projects. Manages project budgets.

- Researches and verifies data with other RTD departments regarding rail and bus operations, track geometry, maintenance facilities, park-and-ride location and sizing, real property, and finance issues.

- Manages analyses and compilation of annual New Starts submittal, directly oversees analyses and compilation of all FTA project development submittals. Prepares submittals for obtaining federal New Starts funding.

- Coordinates the development of study alternatives and the recommendation of major transit capital improvements for the RTD Board of Directors’ approval.

- Manages the development and implementation of agency, community, and public involvement programs in coordination with local, state, and federal agencies. Ensures full compliance with federal regulations.

- Coordinates with FTA, CDOT and local agencies on policy and technical matters related to corridor implementation.

- Coordinates and synthesizes travel demand model development activities undertaken by DRCOG with RTD practices and procedures.

- Directs the development of long-range rail and bus service plans with corridor study teams, operational modeling and operational planning consultant(s), Service Planning and Scheduling and the FasTracks program support consultant. Assures consistency of these plans within and between corridors and on a system-wide basis.

- Assists in the development and maintenance of the District’s long range bus and rail fleet management plan.

- Oversees staff and consultants working on the development of technical procedures and planning approaches for work associated with FasTracks transit corridor planning and environmental studies.
Participates in the development of the Division’s annual budget, the RTD Transit Development Plan (TDP), and the Transportation Improvement Program (TIP).

3.2.3 **Corridor Planning Manager (Environmental)**

The Manager of Corridor Planning (Environmental) reports to the Senior Manager of Planning Technical Services. Responsibilities include:

- Ensures environmental regulatory processes and environmental laws are followed. Manages mitigation commitments through the life of the projects.
- Manages work programs and preparation of RFPs, scopes of work, independent cost estimates, and project budgets for professional services, selects and manages consultants and RTD staff in executing project tasks, schedules, and budgets. Has direct fiscal responsibility for project budgets.
- Manages the development and implementation of agency, community, and public involvement programs in coordination with local, state, and federal agencies. Ensures full compliance with federal regulations.
- Manages long-term planning studies such as the Environmental Impact Statement and Preliminary Engineering process for major rapid transit corridor(s) in the District. Manages Corridor Planning Studies. This includes the supervision of consultant contracts, RTD staff and managing project budget and schedules. Manages the development of study alternatives and the recommendation of major transit capital improvements for Board approval. Manages the preparation of FTA New Starts Reports required for federal funding of these transit capital improvements.
- Develops submission for FTA’s Entry into Preliminary Engineering requirements, including development of the initial Project Management Plan, assuring progress towards federal New Starts grants exceeding $100 million.
- Coordinates with FTA, CDOT and local agencies on policy and technical matters related to transit corridor implementation.
- Presents study results to RTD Board and regional policy makers. Serves as a liaison between elected officials and RTD Board of Directors to ensure local agency issues and concerns are addressed as part of project planning, engineering and construction.
- Helps coordinate the capital planning (bus, facility and rapid transit) function for the District and assists with the preparation of the District's Twenty-year Needs Assessment and Systems Plan and the six-year Transit Development Program.
- Manages the District's submissions to the DRCOG Transportation Improvement Program and Unified Planning Work Program and directs staff in the preparation and development of federal and local grant proposals, coordinating these work products with the RTD Grants and Governmental Relations, assuring compliance with federal regulations and availability of significant grant program dollars for the District through the regional planning and programming process.
- Manages the District's local and regional planning process. Coordinates local government input into the RTD planning process and represents RTD's position when serving on local government committees on planning related issues. Manages the coordination of all activities associated with the preparation of regional plans, programs.
and projects. Serves as the point-of-contact for all planning activities with DRCOG and CDOT. Manages the RTD preparation of input for the twenty-year regional transportation plan, corridor mobility plans, the Unified Planning Work Program, and other planning coordination activities.

- Manages the coordination of projects with RTD senior staff, Board members, staff at outside agencies including CDOT, DRCOG, local governments, local elected officials and private sector groups.
- Researches and verifies data related to regional and local corridor planning with other RTD departments.
- Prepares written reports and presents information to other RTD staff, RTD Board, other local agencies and the general public. Secures required local, state, and federal approvals for project implementation.

3.2.4 Planning Project Manager (Operations)

The Planning Project Manager (Operations) reports to the Senior Manager of Planning Technical Services. Responsibilities include:

- Prepares small to medium-scale scopes of work for professional services, independent cost estimates and project budgets. Manages selection and hiring of engineering consultants, and oversees consultant activities to ensure completeness, schedule adherence, and budget conformance associated with the planning major capital improvements projects. Manages project budget.
- Manages work programs and preparation of RFPs for professional services, selects and manages consultants and RTD staff in executing project tasks, schedules, and budgets.
- Manages short and long-term technical studies such as the development and refinement of bus and rail operations and cost models. This includes the oversight of consultant contracts, project budgets and schedules. Leads operational analysis consultant staff and corridor study project staff in a matrix organization. Manages the development of recommendations for Board approval. Assists with technical operations-related information for FTA New Starts and Before and After Reports as required by the Section 5309 Program.
- Provides project-level operations-related information for “No-Action”, “Baseline” optimization, and “Build” alternatives, operating cost methodology reports, development of corridor operating costs, transit operations plans, fleet management plans, incremental farebox revenues, and completion of all required submittal templates.
- Manages, develops and maintains all technical aspects of the bus and rail operational and cost modeling function for mid to long-range planning studies for the District, providing consistent and reliable forecasts of fleet sizing, related service statistics, and cost estimates. Provides direction on technical and complex functions including interface with the travel demand model, coding calibration and administration of operations and maintenance models. Manages complex operational model development and improvements including new operational model development. Coordinates with other RTD divisions on operational model development and calibration.
Provides support, as assigned, for long-term planning studies such as National Environmental Policy Act decision documents (EIS, EA, CE), including development of work scopes for professional services, preparation of RFP’s, selection of consultants, and supervision of consultant contracts and RTD staff. Assists with the coordination of public participation elements of planning studies, ensuring compliance with appropriate federal state and local regulations, and monitoring project budget and schedules. Coordinates development of work products requiring recommendations for Board approval. Prepares Board informational and action reports, as required for Board meetings.

Manages and performs technical analyses to support long-term planning studies and regional planning activities, such as corridor feasibility studies, National Environmental Policy Act studies (EIS, EA, CE), RTD’s 20-Year Needs Assessment, and the Regional Transportation Plan.

Researches and verifies data with other RTD departments regarding rail and bus operations, track geometry, maintenance facilities, park-and-ride location and sizing, real property, and finance issues.

Manages the development of mid to long-range rail and bus service plans with corridor study teams, operational modeling and operational planning consultant(s), Service Development, Design and Construction engineering staff, Operations, and the FasTracks Program Management Consultant. Assures consistency of these plans within and between corridors and on a system-wide basis.

Manages consultant contracts to perform rail operational simulation modeling and roadway operational/traffic engineering studies. Coordinates the review and buy-off of model results and recommendations with Service Development, Design and Construction engineering staff, Operations, and the FasTracks Program Management Consultant.

Identifies data needs and support for GIS. Applies complex geographic information system functions to support RTD planning activities.

Assists in the management, development, and maintenance of the District’s long range bus and rail fleet management plan.

Performs analysis and develops responses to technical inquiries from RTD senior staff, Board members, outside agencies and private sector groups including CDOT, DRCOG, and local governments.

Represents RTD’s interests at the technical advisory level for transportation planning activities sponsored by local or regional entities.

Synthesizes complex data from various sources and prepares written analytical reports for presentation to other RTD staff, the RTD Board, other local agencies and the general public. Prepares and conducts oral presentations to RTD staff, other local agencies, community groups, and the general public.

3.2.5 Planning Project Manager (Modeling)

The Planning Project Manager (Modeling) reports to the Senior Manager of Planning Technical Services. Responsibilities include:
- Prepares small to medium-scale scopes of work for professional services, independent cost estimates and project budgets. Manages selection and hiring of engineering consultants, and oversees consultant activities to ensure completeness, schedule adherence, and budget conformance associated with the planning major capital improvements projects. Manages project budget.

- Performs independent technical analyses in support of long-term planning studies and other regional planning activities such as corridor feasibility studies, NEPA documentation, RTD's 20-Year Needs Assessment Plan, as well as updates to the DRCOG MetroVision/Regional Transportation Plan.

- Performs analysis and develops responses to technical inquiries from RTD senior staff, Board members, outside public and private groups including CDOT, DRCOG, or local governments.

- Manages short and long-term technical studies such as the development of the mode choice model, refinements to model components of the travel demand model, and traffic engineering studies. This includes the oversight of consultant contracts, coordinating RTD staff and managing project budget and schedules. Manages the development of recommendations for Board approval.

- Manages, develops and maintains the travel demand modeling function for the District. Provides direction on technical and complex functions including transit coding, calibration and administration and operation of the Denver Regional Model. Manages complex model development and improvements including new model development. Coordinates with DRCOG on all improvements. Manages technical travel demand-related information in preparation of the FTA New Starts and Before and After reports.

- Provides project-level travel forecasting related information for "No-Action", "Baseline" optimization, and "Build" alternatives, SUMMIT analyses and completion of all required submittal templates.

- Provides support, as assigned, for long-term planning studies such as National Environmental Policy Act decision documents (EIS, EA, CE), including development of work scopes for professional services, preparation of RFP's, selection of consultants, and supervision of consultant contracts and coordination of RTD staff. Assists with the coordination of public participation elements of planning studies, ensuring compliance with appropriate federal state and local regulations, and monitoring project budget and schedules. Supervises development of work products requiring recommendations for Board approval. Prepares Board informational and action reports, as required for Board meetings.

- Researches and verifies data with other RTD departments regarding rail and bus operations, track geometry, maintenance facilities, park-and-ride location and sizing, real property, and finance issues.

- Assists in the development of long-range rail and bus service plans with corridor study teams, operational modeling and operational planning consultant(s), Service Planning and Scheduling and the FasTracks program support consultant. Assures consistency of these plans within and between corridors and on a system-wide basis.
Manages the development and execution of passenger survey sampling instruments for continuous travel model calibration in concert with RTD staff, FTA, and outside agencies.

Assists in performing bus and rail operational analyses for the District. Coordinates with RTD Departments and the public on long range bus and rail operating plans.

Assists in the development and maintenance of the District’s long range bus and rail fleet management plan.

Identifies data needs and support for GIS. Applies complex geographic information system functions to support RTD planning activities.

Represents RTD’s interests at the technical advisory level for transportation planning activities sponsored by local or regional entities.

Synthesizes complex data from various sources and prepares written analytical reports for presentation to other RTD staff, the RTD Board, other local agencies and the general public. Prepares and conducts oral presentations to RTD staff, other local agencies, community groups, and the general public.

### 3.2.6 Senior Manager of Transit Oriented Development (TOD) and Planning Coordination

The Senior Manager of TOD and Planning Coordination reports to the AGM of Planning. Responsibilities include:

- Represents RTD in the research, investigation, and analysis of possible joint development opportunities for the District.

- Coordinates with RTD staff and the RTD Board of Directors to define the elements of Transit Oriented Development (TOD) and to formulate RTD’s TOD goals and objectives.

- Monitors comparable TOD developments in Metropolitan Denver and elsewhere to create a reference file of TOD developments and implementation mechanisms.

- Conducts extensive outreach activities throughout business communities and political entities to identify potential sites and potential participants for joint development opportunities.

- Assists the preparation of FTA New Starts Reports required for federal funding of these transit capital improvements.

- Oversees liaison activities with local government staff, elected officials and the RTD Board of Directors on transportation and land use issues as part of project planning, engineering, construction and operation.

- Oversees land-use and development planning for the District including the review of development and zoning proposals, input to local TOD plans/projects, District annexation requests, and park-n-Ride development.

- Oversees the District's local and regional planning coordination related to the development and update of regional plans from DRCOG and CDOT, RTD’s twenty-year regional transportation plan and other planning activities.
• Analyses site plans for future development and identifies appropriate types of businesses to achieve transit oriented development.
• Conducts extensive dialogue/negotiation with potential participants to persuade them to participate in joint development opportunities.
• Negotiates leases and/or purchases with public and private entities to facilitate the development and implementation of joint development opportunities in accordance with Board Policy and General Manager Directives and in coordination with the Property Management Division.
• Prepares, monitors, and updates reports and schedules for assigned projects.
• Coordinates with local governments to insure planning and zoning requirements are met.
• Prepares and makes presentations to the RTD Board of Directors, Board Committees, local government agencies, citizen and private interest groups, and others as required.
• Manages multiple consultants providing support for RTD’s TOD program in the areas of real estate, financial, land use, and transportation analysis. This includes scope development, budget and schedule management, and contract negotiation.
• Coordinates and integrates RTD’s TOD goals with RTD’s Systems Planning efforts, including coordination with feasibility studies and Environmental Impact Statements (EIS).

3.2.7 Manager of Planning Coordination

The Manager of Planning Coordination reports to the Senior Manager of TOD and Planning Coordination. Responsibilities include:

• Manages long-term planning studies such as National Environmental Policy Act studies (EISs, EAs, EEs), transportation feasibility studies, and land use and transportation studies for the District. This includes development of RFPs, the oversight of consultant contracts and RTD staff, managing project budgets and schedules, coordination and implementation of public involvement, and ensuring compliance with appropriate federal, state and local regulations.
• Manages RTD oversight of Congestion Mitigation and Air Quality (CMAQ) and other federal grants for local governments related to transit and land use.
• Establishes and implements local government coordination program which includes information sharing and resolving issues between RTD and local government on projects addressing land use, transportation, and environmental issues.
• Manages the coordination between elected officials, local government staff, special interest groups, RTD Board of Directors, and the public to ensure local issues and concerns related to land use and transportation are addressed as part of project planning, engineering, and construction.
• Works with RTD’s TIP, TDP, UPWP and other grant and planning functions to ensure coordination of efforts with DRCOG and other RTD divisions.
• Coordinates with FTA, CDOT and DRCOG on policy and technical matters related to transit corridor implementation.
• Coordinates land-use and transit oriented development planning related to RTD plans and projects in concert with local governments.
• Researches and verifies data with other RTD departments regarding land use and transportation issues.
• Participates in the development of recommendations for RTD Board approval and presents study results to the Board and regional policy makers.
• Supports the development and implementation of agency and community involvement programs in support of planning projects in coordination with local, state, and federal agencies. Ensures full compliance with federal regulations related to community involvement.
• Supports the public and community outreach activities including coordinating outreach activities for system and corridor planning, project implementation, public forums and hearings, and public events such as park-n-Ride grand openings and bicycle events.
• Participates in the review of development proposals submitted by local governments for impacts to transit services, accessibility to transit.
• Participates in the Local Government Planning program for RTD, setting up and holding periodic meetings with local government technical and policy representatives.

3.2.8 Manager of Transit Oriented Development (TOD)
The Manager of Transit Oriented Development (TOD) reports to the Senior Manager of TOD and Planning Coordination. Responsibilities include:

• Manages RTD’s research, investigation, and analysis of possible joint development opportunities for the District.
• Serves as a primary point of contact for RTD’s implementation of joint development opportunities through RTD’s TOD Pilot Program.
• Coordinates with RTD staff, the RTD Board of Directors and other stakeholders to develop and refine RTD policy, goals and objectives for TOD.
• Oversees and presents research on TOD best practices to RTD staff, the RTD Board and other interested stakeholders.
• Manages RTD’s monitoring TOD-related activity in Metropolitan Denver and elsewhere through the development and maintenance of a comprehensive project database.
• Oversees the development of an annual report on TOD activity and trends in Metropolitan Denver.
• Assists the preparation of FTA New Starts Reports required for federal funding of these transit capital improvements.
• Participates in land-use and development planning for the District including input to local TOD plans/projects and transit station and park-n-Ride development.
• Analyzes site plans for future development and identifies appropriate types of land uses and infrastructure improvements to achieve transit oriented development.
• Conducts extensive dialogue/negotiation with potential stakeholders including property owners, developers, local jurisdictions and others on TOD and joint development opportunities.

• Assists in the negotiation of leases and/or purchases with public and private entities to facilitate the development and implementation of joint development opportunities in accordance with Board Policy and General Manager Directives.

• Prepares, monitors, and updates reports and schedules for assigned projects.

• Prepares and makes presentations to the RTD Board of Directors, Board Committees, local government agencies, citizen and private interest groups, and others as required.

• Participates in the management of multiple consultants providing support for RTD’s TOD program in the areas of real estate, financial, land use, and transportation analysis. This includes scope development, budget and schedule management, and contract negotiation.

• Coordinates and integrates RTD's TOD goals with RTD's systems planning efforts, including coordination with feasibility studies and Environmental Impact Statements (EIS).

3.2.9 Planning Project Managers (Specific Project)

The Planning Project Managers report to either the Planning Technical Services Manager or the Manager of TOD and Planning Coordination, and serve in this capacity as an assigned role in addition to other functional responsibilities. As Project Managers, they lead their assigned project through the FEIS, EA, or EE phase with support from a Deputy Project Manager from Engineering. Upon obtaining a Record of Decision, FONSI, or Board approved Environmental Evaluation, they transfer project management responsibility to the Engineering lead and assume a support role throughout the life of the project. Responsibilities include:

• RFP development and selection of consultants
• Oversight of consultants and final acceptance of contract deliverables
• Adherence to budget, schedule, and other project requirements
• Community meetings
• Presentations to RTD management and Board of Directors
• Coordination with stakeholders
• Coordination with other members of the RTD management team

3.2.10 Assistant General Manager (AGM), Capital Programs

The AGM of Capital Programs reports directly to the RTD General Manager. Responsibilities include:

• Provides leadership and direction to all RTD capital projects and programs including the FasTracks program.
• Delivery of FasTracks program within budget and on schedule.
- Determines and implements short and long-term strategies needed to support District goals and plans.
- Provides direction to assigned staff through objectives and programs in conjunction with goals set by the General Manager and Board of Directors.
- Manages assigned staff to ensure adherence to organizational policies, procedures, and standards.
- Provides direction in the development and implementation of District administrative policies and organizational structures.
- Coordinates the development of the annual budget for the department.
- Performs as an integral member of the Senior Leadership Team to ensure effective interfaces and integration of activities with other organizational units.
- Provides for an environment where subordinates are nurtured and learn in every area of discipline.

3.2.11 Senior Manager, Program Management

The Senior Manager of Program Management reports to the AGM of Capital Programs. Responsibilities include:

- Oversees the development of an implementation plan for each fixed guideway corridor to include:
  - Schedule
  - Budget
  - Quality Control/Accurance plan
  - Contract Packaging plan for design and construction
  - Scope/plan for consultants to support the program
  - Corridor staffing plan (RTD and Consultant staff)
  - Construction Safety program
- Establishes all procedures and processes for the successful oversight, management and monitoring of all planning, design and construction activities.
- Provides day to day management and supervision of all field and office staff assigned to the corridor teams.
- Provides day to day administration and management of all FasTracks design and construction contracts related to the build out of the corridors.
- Ensures the program meets budget, schedule and quality.
- Interfaces and coordinates on a continuing basis with the FasTracks management team on matters pertaining to systems integration, engineering, system planning, quality assurance, program finance/controls and support services.
- Meets with the senior management on a daily basis to provide updates on issues, problems and overall status of the program.
• Interfaces with outside stakeholders and community leaders as requested.
• Provides a monthly report and briefing to the department head and the General Manager. Makes or supports presentations to the RTD Board as requested.

3.2.12 **Director of Quality Assurance**
The Director of Quality Assurance reports to the Senior Manager of Program Management. Responsibilities include:

• Provides oversight of all quality aspects for the FasTracks Program.
• Develops, coordinates, and participates in development and implementation of the FasTracks QA Program.
• Leads the project quality auditing functions, including overseeing staff audits of the contractors.
• Participates in periodic on-site inspections.
• Serves as point-of-interface with the FTA and the PMOC related to quality issues

3.2.13 **Eagle Project Director**
The Eagle Project Director reports to the Senior Manager of Program Management. The position is the senior point of contact for the Concessionaire and oversees each of the Project Managers assigned to the Eagle Project (refer to the Eagle PMP for additional information). Responsibilities include:

• Ensures terms and conditions of the Concession Agreement are met by RTD and the Concessionaire.
• Manages the contractual and financial aspects of the Eagle Project.
• Ensures that the Project Managers have the appropriate staffing resources to provide oversight of the design and construction of the corridors and projects.
• Oversees administration of the Federal Transit Administration (FTA) Full-Funding Grant.
• Manages the Eagle project to ensure schedule is met and FTA submissions occur in a timely manner.
• Makes presentations to stakeholders and the RTD Board on the Eagle Project.

3.2.14 **Engineering Project Manager(s)**
The Engineering Project Managers report to the Senior Manager of Program Management and Eagle Project Director as appropriate. Responsibilities include:

• Performs as an integral member of the FasTracks Management team to ensure effective interfaces and integration of activities with other organizational units.
• Delivers project within established budget, schedule, and quality parameters.
• Directs through subordinate task managers an engineering team to support the environmental process for a transit corridor.
• Directs through subordinate task managers an engineering team engaged in monitoring and controlling the management, engineering, construction, procurement and cost, schedule and closeout of the assigned corridor.

• Negotiates major contracts and changes with corridor consultants and construction contractors.

• Assist in overseeing all aspects of project implementation, including development of EIS/design/construction, testing, RFQ/RFP, selection of and award of Consultant/Contract.

• Negotiates Intergovernmental Agreements (IGA) with local governments and stakeholders.

• Establishes and maintains effective internal and external communication and coordination with all participants of the project, including government officials and neighborhood groups regarding their interests and requirements in support of the project.

• Implement RTD Board policies regarding the Corridor. Provide support to the Board, other regional governing bodies and the media as necessary.

• Provides technical advice and direction to the corridor project team.

3.2.15 **Senior Manager of Systems Engineering and Construction**

The Senior Manager of Systems Engineering and Construction reports to the AGM, Capital Programs. Responsibilities include:

• Develops and implements goals and policies for systems engineering programs and submits recommendations for approval.

• Administers reviews, evaluates and coordinates activities of consultants related to assigned project(s).

• Develops and monitors budgets and takes actions to correct variances and administers and monitors construction contracts.

• Ensures systems engineering design specifications and construction drawings for LRT and commuter rail systems conform to industry standards and RTD’s design criteria.

• Serves as RTD’s point of contact for local government, businesses and property owners in coordination of design and construction impacts.

3.2.16 **Manager of Systems Engineering**

The Manager of Systems Engineering reports to the Senior Manager of Systems Engineering and Construction. Responsibilities include:

• Supports the Project Manager in the testing and activation of commuter and light rail systems. Participates in the overall activation of the project.

• Serves as liaison between systems engineering and administration department (legal, contracts, and accounting) in matters of project controls.
• Oversees administration of the systems procurement and installation contracts. Supports Systems Engineering Project Managers in monitoring construction activities, assures contractual compliance, and negotiates pricing issues with the systems contractors and consultants.

• Participates in the development and implementation of the Division/Project goals and objectives, and strives to achieve the RTD goals for diversity and disadvantaged business enterprise participation.

• Utilizes advanced engineering principles and techniques to manage and resolve normal and problematic design/construction issues related to transit development projects.

• Coordinates projects with local, state, regional and federal agencies to ensure compliance with applicable standards.

• Directs the activities of non-employee consultants and contractors for all work related to traction power and electrification systems.

3.2.17 Project Manager, System Integration and Project Activation

The Project Manager of Systems Integration and Project Activation reports to the Manager of Systems Engineering. Responsibilities include:

• Responsible for and oversees the activation and integration processes for light rail, commuter rail, and bus capital projects.

• Leads all systems integration/integrated testing efforts.

• Develops and monitors budget and schedule for capital projects in Systems Engineering as they relate to systems integration and project activation.

• Serves as liaison between Engineering, Operations and Planning in matters of implementation of rail and bus capital projects.

• Coordinates integration and activation processes with local, state, regional and federal agencies to ensure compliance with applicable standards.

• Directs the activities of non-employee consultants and contractors for all work related to RTD’s systems integration and activation program.

3.2.18 Senior Manager Engineering/Chief Engineer

The Senior Manager Engineering/Chief Engineer reports directly to the AGM of Capital Programs. Responsibilities include:

• Supervises and coordinates the Engineering Division staff.

• Develops and implements all systems and procedures for effective staff organization and utilization.

• Maintains strict compliance with program control policies related to schedule, cost, and document control.

• Provides technical direction and engineering expertise for FasTracks LRT, BRT and commuter rail projects, pnRs, and bus transfer facilities.
Establishes design concepts and criteria for all FasTracks projects.
Provides engineering support during the construction of FasTracks Program.
Develops working policies, technical procedures and engineering standards for FasTracks projects.
Manages selection and hiring of engineering consultants.
Oversees the consultants’ activities to ensure solutions consider budget constraints, operational feasibility, and maintainability.
Develops and adheres to methods developed for monitoring and tracking engineering efforts, costs, schedules and for reporting progress.
Assists in establishing transportation and maintenance procedures.
Assists the Senior Manager, Systems Integration in civil/systems integration and system start-up for FasTracks projects.
Negotiates and works closely with private and public agencies to obtain necessary approval, agreements, permits, and rights-of-way.
Resolves design/construction issues related to major corridor and building projects.
Participates in the development of the annual budget, the RTD Transit Development Plan (TDP), and the Transportation Improvement Program (TIP).
Prepares and makes presentations to the RTD Board of Directors, Senior Management Committees, Board Committees, citizens and private interest groups, and others as required.

3.2.19 Engineering Technical Services Manager

The Engineering Technical Services Manager reports to the Senior Manager of Engineering/Chief Engineer. Responsibilities include:

- Supervises and coordinates the activities of the technical engineering staff, which includes hiring, training, scheduling and assigning work, and conducting performance management duties. Develops and implements all systems and procedures for efficient staff organization and utilization.
- Develops and maintains a strict compliance to monitoring and tracking engineering efforts as well as to the program control policies for schedule, cost, document control, and progress reporting for all projects.
- Provides technical direction and engineering expertise in the area of major and minor capital improvement projects outlined in the RTD’s Transit Development Plan. Provides engineering support for each phase of the FasTracks corridor’s development. Review all FasTracks design submittals for consistency and sound engineering design. Supports all corridors and DUS design needs.
- Insures that the designs for all the FasTracks corridors are constructible and can be easily operated and maintained.
- Establishes design concepts and criteria for all major capital improvement projects.
• Provides engineering support during the construction phase of the major capital improvement projects and the FasTracks program.

• Develops technical procedures and engineering standards for all work associated with the implementation and operation of capital improvements projects.

• Provides input into the selection and hiring of engineering consultants, and oversees the consultant’s design activities to ensure adequacy, completeness, economy, operational feasibility, and maintainability of design associated with the major capital improvement projects.

• Assists the Operations Departments in establishment of transportation and maintenance procedures as well as integration and system start-up for major capital improvement projects.

• Manages the integration of long and short-range capital improvement plans with other applicable functional areas and/or departments within the RTD.

• Provides technical assistance and participates in negotiations, working closely with private and public agencies, to obtain necessary approval, agreements, permits, and rights-of-way. Interfaces with neighborhood groups and citizens on such issues.

• Takes the engineering lead in the negotiations and works closely with the Class I railroads (BNSF, UPRR and Amtrak) to obtain necessary approval, agreements, permits, and rights-of-way for the FasTracks corridors. This includes meetings and presentations of RTD’s plans and proposals to railroad upper management at their respective headquarter cities. Coordinates and participates on RR/RTD working groups to develop methodologies to insure compliance with their operations and their ROW constraints.

• Manages the workgroup to provide civil design for Class I railroad relocation (track, drainage and dirt work), utility coordination/relocation, replacement structure design and operational analysis.

• Reviews all existing railroad agreements in order to determine the impacts to RTD’s budget and schedule. Reviews and comment on the new railroad property transfer and relocation agreements between the railroads and RTD.

• Works with the railroads to develop the exhibits for all property transactions.

• Acts as the railroad liaison for RTD and all of the FasTracks corridors. Supports RTD and the project managers with their needed railroad interfaces.

• Facilitates meetings, provides technical support and coordinates any required railroad interface for The Colorado Public Utilities Commission requirements for public crossings.

• Makes presentations of RTD’s plans and proposals to FRA headquarters staff including the Administrator in Washington DC. Coordinates and participates on FRA/RTD working groups to develop methodologies to insure compliance with FRA’s regulatory/technical concerns.

• Provides CDOT, CCD and other local agencies/cities support on railroad/RTD rail issues. This includes participating in studies and EIS’s that include rail related options/solutions.
• Provides engineering peer review support to other transit agencies as requested. Provide design, operations and construction review of agency plans.
• Manages and resolves normal and problematic design/construction issues related to major corridor and building projects using advanced engineering principles and techniques.
• Prepares, reviews, and evaluates engineering design, specifications and IFB, RFQ, and RFP documents for the FasTracks Program.
• Participates in the development of the Planning and Development Department’s annual budget, the RTD Transit Development Plan (TDP), and the Transportation Improvement Program (TIP).
• Prepares and makes presentations to the RTD Board of Directors, Board Committees, neighborhood/private interest groups, citizens, and others as required.
• Provides technical advice and direction on issues related to the design and operation of transit corridors for both commuter rail and light rail.

3.2.20 Engineering Project Manager (Civil)
The Engineering Project Manager (Civil) reports to the Senior Manager of Engineering/Chief Engineer.
Responsibilities for this position are the same as those for the Engineering Project Managers on the corridors, DUS, and maintenance facilities; however, in addition to overseeing projects not assigned to a corridor, this position also manages all non-FasTracks projects.

3.2.21 CAD Designer/Supervisor
The CAD Designer/Supervisor reports to the Senior Manager of Engineering/Chief Engineer. Responsibilities include:
• Prepares engineering drawings using AutoCAD and/or MicroStation Computer-Aided Drafting and InRoads design software.
• Assists in the civil design and preparation of railroad, light rail transit, roadway, traffic control, drainage, utility, landscape, structural, construction phasing plans, and other disciplines as needed.
• Develops preliminary and final design drawings into construction bid sets for capital improvement projects.
• Installs and upgrades design package software, ensuring compatibility and functionality with the computer system.
• Supports Engineering staff in a technical capacity.
• Assists in establishing and maintaining QA/QC procedures for project design documentation and CAD work.
• Generates existing ground models and existing topography from survey data.
• Performs quantity takeoffs.
• Manages CAD system.
Supervises staff of CAD Operators including hiring, scheduling of work assignments, and performance management.

 Coordinates CAD work by consultants to ensure project consistency.

 Manages multiple computer files and directories in Windows environment, controlling file access and protection.

 Archives construction drawings and specifications at prescribed intervals to prevent loss of computer data.

### 3.2.22 Engineering Discipline Leads

Reporting to the Engineering Technical Services Manager, the Engineering Project Manager (Civil), or the Systems Engineering Manager, RTD has appointed lead engineers for the following disciplines: Trackwork, Structural, Utilities, Architectural/Urban Design, Traction Electrification, and Communication. Within their respective disciplines, these leads are responsible for establishing design criteria, reviewing variances, reviewing design submittals, and leading internal design efforts for multiple projects.

### 3.2.23 Real Property Manager

The Real Property Manager reports to the AGM of Capital Programs. Responsibilities include:

- Develops and manages the Property Management budget.
- Oversees the legal documents required for land acquisition, property leasing, and joint development agreements, complex real estate acquisition, and disposition strategy recommendations.
- Manages real estate negotiations and acquisition and disposition of property.
- Participates in condemnation settlement strategies.
- Manages contracted real estate services, including appraisers, attorneys, title companies and relocation specialists.
- Forecasts project costs for long-range planning and implementation of land transactions.
- Manages condemnation settlement strategies.
- Manages all RTD real property interests.

### 3.2.24 Manager of FasTracks Program Controls

The Manager of FasTracks Program Controls reports to the AGM of Finance and the AGM of Capital Programs. Responsibilities include:

- Models cash flow for long-term planning analysis (FasTracks TDP).
- Develops and maintains cost and schedule Work Breakdown Structure (WBS) controls for the program so that all cost and schedule activities are accounted for.
- Develops, maintains, and updates the FasTracks Financial Plan.
- Manages the preparation and maintenance of the Project Master Schedule and project budget functions for the FasTracks Program.
FasTracks Program Management Plan

- Prepares RTD budget and expenditure plan for the FasTracks Program.
- Develops reporting information for cost and schedule functions that include approved budgets, current forecasted amounts, variance data, cash flow forecasts, schedule status, percent complete, correspondence, submittal, and project Requests for Information (RFI) status reports for Colorado Department of Transportation (CDOT), DRCOG, RTD, and FTA management.
- Compiles and prepares monthly progress report for the FasTracks Program.
- Participates as a member of the FasTracks Management Team, providing input to major decisions.
- Provides oversight in the payment of invoices for the FasTracks Program to ensure that all payments made are in accordance with the contract documents. Reviews invoices for accuracy and consistency with the contract.
- Provides financial input on the development of IGAs between CDOT, RTD, and the local government agencies involved in the FasTracks Program.
- Supervises and directs the activities of staff, including interviewing and hiring, scheduling, performance appraisal, and performance management.
- Oversees the generation of independent estimates at key project thresholds to ensure budget adherence.
- Provides estimating support and oversight during change order/contract amendment negotiations.
- Provides assistance to Finance for the FasTracks Program, including support in developing the cost allocation plan and preparation of information for FTA and the PMO reviews.
- Prepares and makes presentations to various groups, including the RTD Senior Management, FTA/PMO, RTD Board of Directors, Board committees, Public Utility Commission, and citizens and private interest groups, as required.
- Participates equitably in the development and implementation of the Department goals and objectives.
- Reviews Board Reports for corridor-related projects.

3.2.25 Project Controls Manager

The Project Controls Manager reports to the Manager of FasTracks Program Controls. Responsibilities include:

- Plans, organizes, staffs, and manages the quality and timeliness of all Project Controls functions.
- Develops, monitors, and reports the costs, schedule, and budget for the FasTracks Program.
- Develops and enforces Project Controls methods and procedures through the chain of command.
• Monitors and assesses FasTracks project performance against planned objectives.
• Provides Project Managers and the Senior Management Team project cost and schedule performance reports as needed.

3.2.26  Supervisor of Contracts and Budget

The Supervisor of Contracts and Budget reports to the Manager of FasTracks Program Controls. Responsibilities include:

• Evaluates pay applications for accuracy and appropriateness. Assures supporting documentation is adequate. Tracks payment through signature process to assure prompt approval.
• Initiates in Oracle all change orders, amendments and required supporting documentation. Sends out notifications.
• Initiates funding documentation, budget transfers and funding reallocations.
• Creates contract tracking reports.
• Manages preparation of annual budget. Gathers input from managers, guides collection and evaluation of data. Assures proper budget assignment of projects. Prepares documentation to support budget requests.
• Prepares presentation and materials and makes the department budget presentation to senior staff.
• Creates approved budget in Oracle budget system. Oversees amendments to budget and other budget transfers.
• Administers department’s budget variance tracking. Investigates variances and makes needed adjustments.
• Advises management on budget policies and procedures, trouble shoots as needed.
• Creates budget reports tailored to the needs of division managers. Creates ad-hoc budget review reports.
• Tracks and administers grant project budgets. Initiates changes, transfers, and scope changes.
• Creates and tracks FasTracks annual capital and expense budget. Provides financial estimates for the periodic updating of the financial plan.
• Supervises staff including hiring, assigning and reviewing work, training, performance evaluation, and performance management.
• Develops and analyzes capital project requests, consults with affected managers, prepares and adjusts TDP to maintain financial viability. Conducts presentations to senior staff and RTD Board for approval.
• Provides financial estimates for the periodic updating of the 20 Year Needs Assessment. Analyzes replacement schedule for RTD capital assets, reconciles 20 Year Needs Assessment with the TDP and makes infrastructure investment recommendations.
• Analyzes capital program to provide staffing and manpower estimates and recommendations to support the TDP and the 20 Year Needs Assessment.
• Provides support for implementation and troubleshooting of Oracle systems.
• Assures that systems for budget and contract monitoring and control are developed and maintained in accordance with departmental objectives, District policy and procedure requirements, and agreements with outside agencies.
• Oversees and performs document control function for financial administration aspects of all contracts. Sends notices to contractors.

3.2.27 Document Control Manager

The Document Control Manager reports to the Manager of FasTracks Program Controls. Responsibilities include:

• Develops and implements policies, business processes, and procedures for all aspects of document control related to the FasTracks program, including, but not limited to, project document control, baseline configuration management, design review distribution, drawing management.
• Participates in implementation of the District’s a comprehensive Enterprise Content Management (ECM) system and upgrades, related to the FasTracks program, including developing business requirements, testing and training as appropriate.
• Develops training curriculum and standard business practices for FasTracks staff and consultants to achieve compliance with FasTracks document control policies, and trains staff in their application.
• Supervises staff including interviewing and hiring, assigning and monitoring tasks, performance management and performance appraisal.
• Assigns and oversees work of contracted staff.
• Determines space, equipment, storage, supply, IT and staffing needs. Prepares cost estimates and budgets as required. Coordinates with RTD FasTracks team staff to obtain the resources.
• Ensures records are disposed of or archived according to RTD records retention policy and requirements, including physical removal of records as required.
• Ensures all aspects of FasTracks document control comply with RTD policies, relevant legislation (e.g. open records), legal guidelines, Federal Transit Administration (FTA) policies and applicable retention schedules.
• Participates in development and implementation of disaster recovery plans to ensure that the FasTracks program has the necessary information to continue functioning in the event of a major disaster.
• Reviews, analyzes and optimizes FasTracks information/document flow to provide for the most efficient and cost-effective use of resources.
• Initiates and conducts detailed audits of FasTracks and contractor hard copy and electronic files, databases and records management system in coordination with program QA staff.
3.2.28 Coordinator of Grant and IGA Reporting

The Coordinator of Grant and IGA Reporting reports to the Manager of FasTracks Program Controls. Responsibilities include:

- Prepares necessary information to support FasTracks grant applications and works with the grants and capital budget staff to obtain funding approvals.
- Reviews federal regulations and guidelines for grant applications and advises as to new federal requirements.
- Facilitates preparation of quarterly grant progress reports for FTA, including project and funding analyses.
- Oversees preparation of monthly progress reports required under the FTA New Starts Program.
- Facilitates review of FTA funded third party contracts to ensure compliance with FTA and RTD requirements.
- Provides proper documentation to revenue accounting staff to ensure all intergovernmental agreements entered into by RTD as a result of the FasTracks program are properly billed and collected.
- Provides proper documentation to revenue accounting staff to ensure proper accounting for all intergovernmental agreements entered into by RTD as a result of the FasTracks program.
- Prepares regular reports on the status of intergovernmental agreements for FasTracks project managers, FasTracks senior management, and the Board of Directors.
- Prepares necessary information to support FasTracks grant revisions, amendments and closeouts.
- Provides assistance to FasTracks project controls staff, project managers, and senior management in the analysis of grant and IGA project performance and in the development of corrective measures as required. Independently conducts grant and IGA analyses to assist FasTracks project controls staff and project managers.
- Researches and identifies potential problem areas, conducts appropriate analysis and recommends potential solutions.
- Monitors and verifies IGA deliverables and compliance.
- Prepares ad hoc reports as requested.
- Supervises staff including hiring, assigning and reviewing work, training, performance evaluation, and performance management.

3.2.29 FasTracks Public Information Manager

The FasTracks Public Information Manager reports directly to the AGM of Communications and indirectly to the AGMs of Capital Programs and Planning. Responsibilities include:

- Manages combined team of RTD staff and public information consultant staff.
- Sets strategic vision and direction for RTD FasTracks Public Information Team.
Develops annual scope of work for the Public Information Consultant (PIC) and manages PIC contract.

Establishes an annual public information plan that outlines the communications and outreach activities for the FasTracks program and each of the FasTracks projects.

Oversees each project contractor’s Public Information Plan.

Advises RTD Board members and executive staff on addressing emerging issues.

Keeps RTD Board and Senior Leadership Team updated in a timely manner on FasTracks communications activities and matters.

Ensures elected officials and key stakeholders are informed in a timely and proactive manner.

Ensures relevant inquiries or concerns are responded to in a timely manner.

Serves as primary FasTracks spokesperson.

Manages media relations for FasTracks and ensures that media requests are answered in a timely and proactive manner.

Guides development of program and project communications efforts, such as newsletters, fact sheets, brochures, key messages, public education campaigns, public meetings, telephone town hall meetings, public opinion surveys and special events.

Oversees FasTracks speakers’ bureau and development of community presentations.

Leads communications and media training for internal team members.

Oversees maintenance and updating of the FasTracks web site and social media channels.

3.2.30 Senior Manager of Civil Rights

The Senior Manager of Civil Rights reports to the General Manager, but supports the FasTracks Program in Administering the DBE, SBE, and WIN programs.

3.2.31 Senior Manager of Materials Management

The Senior Manager of Materials Management reports directly to the General Manager, but supports the FasTracks Program through RFP development, solicitations, contract negotiations, contract award, and contract change management.

3.2.32 Assistance General Manager of Rail Operations

The Assistant General Manager (AGM) of Rail Operations reports directly to the RTD General Manager, but assists the FasTracks program with general advice on design and construction as they relate to operations and maintenance of the system.

3.2.33 Assistant General Manager of Safety, Security, and Facilities

The Assistant General Manager (AGM) of Safety, Security, and Facilities reports directly to the RTD General Manager, but assists the FasTracks program with general advice on system safety and security, hazardous materials management, and facilities maintenance. Additional
advice and support is provided by the Environmental Project Manager, System Safety and Security Manager, and Facilities Maintenance Manager(s).

3.2.34 General Counsel

The General Counsel reports directly to the RTD General Manager, but supports the FasTracks program through contract review, intergovernmental agreement development, railroad negotiations, and ROW litigation. Additionally, the General Counsel represents RTD as a member on the Denver Union Station Project Authority (DUSPA) Board.

3.3 CONSULTANT SUPPORT TEAMS

Management and Support Consultants serve as extensions of RTD staff. RTD staff provides overall management and control of the FasTracks program and administration of the respective consulting contracts. The Consultant provides key personnel to a number of tasks. These assignments provide:

- Areas of specialized expertise or experience
- Part-time assignments
- Shorter duration efforts
- Positions that are difficult for RTD to fill

Each position in the FasTracks organization is evaluated individually to determine whether that position falls within the above criteria for using a consultant. In addition, before a consultant is actually brought into the FasTracks program, an assessment is made as to whether the position is still needed, and an interview is conducted with the appropriate RTD manager(s).

3.3.1 Program Support Consultant (Jacobs)

The Program Support Consultant (PSC) provides program management support, with both staff resources and professional services that address RTD’s long- or short-term needs. Services provided by the PSC include:

- Program Management and Administration
- Project Controls Support
- Planning and NEPA Technical Assistance
- Other Planning Support
- Project Management Assistance
- Engineering Support / Design Management
- ROW Support
- Systems Integration
- FTA Coordination Support
- Transit Oriented Development Support
- DBE/SBE Program Management
3.3.2 Quality Management Consultant (Delcan)

The Quality Management Consultant (QMC) assists with development of the FasTracks Quality Oversight Program. The QMC is an extension of RTD staff and operates under the direction of RTD’s Director of Quality Assurance. Refer to section 4.3 for more information. The QMC provides support in the following areas:

- **Quality Oversight Program for Contracted Work** consists of documented procedures, tools, a database, and training for FasTracks Team members so they can access the deliverables produced under the planning, design, construction, and procurement contracts. In addition to providing the tools for technical assessments of contracted work products, the QMC conducts quality audits of contractor management processes and procedures.

- **Internal Audit Program** of project management processes focuses on the FasTracks Team’s implementation of this Program Management Plan, and other program plans and procedures. Feedback from these audits assists the team in continuous improvement.

- **Quality of Life Measurement Program** assists RTD in measuring its impacts on the community. Actual data collection and analysis of the data are conducted by other consultants or RTD staff. The QMC assists in establishing metrics for monitoring Quality of Life and maintains a database to manage the data.

3.3.3 Construction Materials Testing and Special Inspections Consultant (Kumar)

On larger projects, RTD requires the construction contractor to perform all materials testing and inspection required by the specifications, but verifies the results on a sampling basis through its own testing and inspection consultant. This is typically done through split sampling, supplemented by audits of the contractor’s testing agency.

On smaller projects, RTD may opt to conduct the acceptance testing through its own consultant. In these cases, the contractor is still required to inspect the work and conduct all in-process testing, under the oversight of RTD. Refer to section 4.3 for more information.

3.3.4 Public Information Consultant (Virtegic Group, Inc.)

The Public Information Consultant (PIC) provides support for the Public Information Manager and works as an extension of staff in the day-to-day management and implementation of the FasTracks Public Information (PI) Program. Each year, the FasTracks PI Manager assesses the public information and outreach needs of the FasTracks program and develops the PIC scope of work to reflect the necessary work effort. As is the case with the other consultant contracts, the services needed through this contract may be reduced or embellished from year to year depending on the future financial situation and changing needs of the FasTracks program. The PIC supports the RTD PI staff implement the PI program through the following functional areas:

- **Internal Relations** – A program focused on ensuring that all staff, consultants, and project partners remain informed and engaged in the FasTracks Program through
internal channels that allow for consistent, convenient information flow throughout the organization.

- **Public Involvement Program** – A program focused on facilitating two-way communication between the public and the FasTracks Team to elicit input, feedback, and participation throughout the Program.

- **Public Outreach Program** – A program focused on connecting with various communities and stakeholders to provide information and create an informed, educated public.

- **Government Relations Program** – A program focused on establishing and maintaining positive relationships with government stakeholders and partners.

- **Media Relations Program** – A program focused on establishing and maintaining positive relationships with trade, community, local, regional and national media organizations.

- **Crisis Communications** – Established procedures designed to guide the FasTracks Team in coordinated communication with the public, news media, government agencies, employees, project partners, and other affected parties in the event of a crisis situation.

Refer to section 4.8 for more information.

### 3.3.5 EIS/EA/PE Consultants

Each corridor requires the preparation of an Environmental Impact Statement, Environmental Assessment, or Environmental Evaluation, depending on the significance of the associated environmental impacts. The outcome of the environmental analysis is a Record of Decision (ROD) or Finding of No Significant Impact (FONSI), and whether the corridor has been identified as a candidate for federal funding. Basic Engineering and Preliminary Engineering are also included in the environmental stage. Refer to section 4.5 for more information.

### 3.3.6 Environmental/HazMat Consultants

For each corridor, a Phase 1 Environmental Site Assessment is completed to determine the level of severity of any known, unknown, or expected hazardous materials issues.

A Phase 2 Environmental Site Assessment may be prepared based on the results of the Phase 1 evaluation and recommendations. These assessments may be performed by the EIS/EA/PE consultants or may be contracted by RTD to specialty consultants. Refer to paragraph 4.9.4 for more information.

### 3.3.7 Final Design Consultants

Once a corridor / project has completed and obtained environmental clearance, RTD solicits professional services to perform the final design, except when a Design-Build project delivery method is to be used. These services typically include the following, for example:

- Project management.
- Project controls – budget and schedule.
- Civil design.
• Survey and mapping.
• Right-of-way delineation.
• Rezoning, platting and Final Development Plans, as required.
• Drainage design.
• Utility needs and relocation design (wet and dry).
• Traffic design.
• Geotechnical services.
• Track design.
• Stations and pnR design.
• Landscape and irrigation design.
• Structures design.
• Technical specifications.
• Construction cost estimates.
• Permitting.
• Noise and vibration analysis and noise mitigation design.
• Safety and security design.

The final design consultant completes all prescribed services outlined in the final engineering design scope of work. The completion of all deliverables and achievement of major milestones is a key measurement of the professional services. The final design consultant coordinates through the FasTracks Team, other consultants, and local agencies that have a stake in the satisfactory completion of the project deliverables.

For Design-Bid-Build projects, the final design consultant prepares and completes the construction document(s) issued for bid by RTD in accordance with the approved project delivery method adopted for a corridor. Bid and award services followed by design support services during the construction phase are negotiated separately by RTD with the final design consultant.

For Construction Manager / General Contractor (CM/GC) projects, the designer prepares 100% final design plans, specifications and estimates in conjunction with the CM/GC. These construction documents are provided directly to the CM/GC Contractor, and a negotiated contract is awarded to the CM/GC Contractor.

For Design-Build projects, the PE design is advanced beyond the 30% design completion stage to clearly define the scope of work for the Design-Build Proposers. The Design-Build Request for Proposals includes the advanced PE plans and specifications that will be used for preparing the Design-Build proposals that, once a contract is awarded, are the basis for completing the design. The designs are completed by the Design-Build Contractor.

Refer to section 4.5 for more information.
3.3.8 **Systems Engineering Consultant (Front Range Systems Consultant)**

The FasTracks System Engineering Consultant (SEC), under the direction of the Systems Engineering Manager, provides design and support during construction of the system components for each of the corridors. The system components include the following:

- Overhead contact system (OCS).
- Traction power substations (TPSS).
- Signal system.
- Communications/SCADA systems.
- Rail vehicles.
- Systemwide electrical elements.
- Passenger information systems.
- Security systems.
- Fare collection system.

The SEC, working through the FasTracks Team and the civil design consultants, is responsible for system integration to ensure system accuracy, compatibility, and constructability. Close interface and coordination are required between the SEC, the civil design consultant, and other affected parties so that corridor civil, trackwork, and systems elements are compatible in form, function, and operability. The areas requiring close coordination are the following:

- Track alignment.
- Turnouts and crossovers.
- Ductbank locations and routing.
- TPSS location, foundation, and access.
- Safety and security systems and facilities.
- Fencing and right-of-way.
- Manholes, handholds, station platforms.
- Signals and grade crossings.
- Platform conduit stub-up locations.
- Ticket vending machine locations.
- SCADA system interfaces.
- Catenary pole and foundation locations.
- TPSS and signal bungalows.
- Electric/power feed systems.
- Passenger information systems.
- Vehicle messaging systems.
3.3.9 Other Consultants

The Federal Transit Administration has assigned a Project Management Oversight Contractor (PMOC) to the FasTracks Program to oversee all elements of work on those corridors that have been identified as potential candidates for federal funding and are going through the New Starts program. RTD staff interfaces directly with FTA and the PMOC on a regular basis to ensure projects are in compliance with federal requirements.

The FasTracks Program may also identify the need for additional consultant support that cannot be provided by RTD staff. An example is specialized modeling and operation simulations on the corridors for which RTD has contracted professional services under a separate procurement.

Other examples may include consultants or outside agency staff who have no contractual relationship with RTD except through IGAs. These consultants or agency staff may be assigned to a particular corridor to review project deliverables and to ensure compliance with the terms of IGAs between RTD and the local agency. They may also be responsible for preparation of certain design deliverables that are incorporated into overall construction documents issued for bid on a corridor.

3.4 ORGANIZATIONAL INTERFACES

The implementation of each corridor / project is dependent on the successful and timely performance by RTD and outside parties who are unrelated to RTD except by contract or IGA. In order for FasTracks to be implemented successfully, it is essential that proper management interfaces are established. The following interfaces are utilized to encourage smooth communications between organizations:

- Overall policy direction for the project is provided by the Assistant General Manager who reports to the General Manager.
- A Project Manager (PM), with support from the FasTracks Team, has total project management responsibility for each corridor / project through final design, construction and commissioning.
- During Final Design and Construction, the Engineering Project Manager will be supported by a Deputy Project Manager of Design, Construction Project Manager, and Quality Oversight Manager to assist in overseeing the Contract.
- While the Quality Assurance Division is responsible for developing tools and procedures for implementing the Quality Oversight Program, every member of the project team has a role in overseeing the project to ensure that the final product meets RTD’s requirements.
- Each project will be fully staffed in accordance with the project staffing plan. Staffing plans will identify each position and level of commitment by corridor, recognizing that some positions will be less than full time for that project.
- A CDOT employee is assigned as liaison for highway-related issues for FasTracks corridors.
- A City and County of Denver employee is assigned as liaison for corridors/projects issues in Denver.
Property Management supports the Project Manager through right-of-way acquisition. A right-of-way acquisition and relocation schedule listing every parcel to be acquired for the project and tracking dates for key events in the acquisition process is established and maintained in the overall corridor project schedule.

Railroad interfaces are managed through agreements implemented by the legal staff with the affected railroads in each corridor.

All consultants and contractors are required to implement effective QA/QC programs in accordance with RTD’s Quality Philosophy.

Heavy reliance is placed on information management tools that support various project management activities.

Project Controls supports the Project Manager in developing and maintaining all scheduling, cost estimating and tracking, forecasting, reporting, and document control systems.

Public involvement supports the Project Manager through a continuous, participatory process to achieve consensus and a sense of ownership with agency stakeholders and the public.

Work progress, schedule, and budget status is reported regularly in an approved format.

Value Engineering and Risk Assessments are performed at key points in the design development.

Various project delivery methods may be employed for the different projects.
4.0 PROGRAM FUNCTIONS

4.1 PROGRAM/PROJECT MANAGEMENT CONTROLS

The role of Program/Project Management Controls is to assist management in monitoring FasTracks scope, schedules, budgets, cost accounting/estimates, contract changes, document control, project risks and management, plus integration of all program controls software packages through all phases of the FasTracks Capital Program.

The FasTracks Project Controls and Contract Administration procedures cover baseline budget control, pending and approved change control, schedule control, monthly progress reports, and FTA reports. These procedures also discuss claims mitigation and resolution, as well as configuration management.

FasTracks Program and Project Controls, with the approval of the AGM for Capital Programs, control the dissemination of cost and schedule information.

Specifically, Program/Project Controls is responsible for monitoring and reporting the following elements:

- **Scope Controls**
  - Work Breakdown Structure (WBS) for Scope identification
  - Key Delivery and Interface Milestones
  - Program commitments (Program Configuration Controls)
  - Responsibility and Accountability Controls
    - Organization Breakdown Structure (OBS)
    - Resource Breakdown Structure (RBS)

- **Schedule Controls**
  - Enterprise Project Structure (EPS)
  - Baseline Schedule
  - Current Updates
  - Earned Value Reporting
  - Monthly Progress reporting to stakeholders

- **Budget Controls**
  - Baseline Budget
  - Budget at Completion (BAC)

- **Cost Controls**
  - Control Accounts
  - Cost Breakdown Structure (CBS)
  - Period and cumulative actual cost (Actuals)
  - Invoice Verification
  - Forecasting Estimate to Complete (ETC) & Estimate at Completion (EAC)
  - Contingency and management reserve
• Capital Cost Estimating
  o Bottom up Estimating Methodology
  o Quantity Take-offs
  o Pricing
  o Variance Analysis and Negotiations
  o Estimating Software

• Financial Controls
  o RTD and FTA Code of Accounts
  o Invoice Validation & Payment Processing

• Contract/Agreement (IGA) Change Controls (Scope, Schedule and Value/SOV)
  o Schedule of Values (SOV)
  o Contract Milestones
  o Contract Data Requirements List (CDRL)

• Document Controls
  o Document Types
  o Metadata Assignments
  o Document Version/Revision Control
  o Input into the appropriate Project Repository/s
  o Documentation Workflows for review and approval
  o Submittal Distribution
  o Document Control Library
  o Scanned image integrity
  o Internal Quality Audits

• Risk Controls
  o Risk Register
  o Risk Assessments & Tracking
  o Risk Matrix/Reporting

• Configuration Change Controls
4.1.1 Program/Project Scope Controls

4.1.1.1 Work Breakdown Structure (WBS) for Scope identification

A Work Breakdown Structure (WBS) has been developed as a means of organizing all work elements to be completed for the Program. By coding the cost and schedule information to the appropriate WBS element, detailed reports are produced for all levels of reporting. The WBS forms the basis for all scheduling, cost, estimating, document control, and interface with the RTD Enterprise Resource Planning system (ERP).

The development of this structure was based upon the work elements included in the Senate Bill 208 Detailed FasTracks Program estimate and those constructed or procured under separate contracts (i.e., maintenance facility, Light Rail Vehicles (LRVs), fare collection equipment, etc.). This WBS is revised periodically as contract packaging is developed throughout the planning, design and construction lifecycle phases.

The WBS for FasTracks is ‘Asset’ or ‘Program Deliverable’ based and is comprised of 3 fundamental components: Asset Type, Asset Location and Asset Lifecycle Phase.

- Asset Types are primarily ‘hard assets’ (like Guideway, Stations, Systems and Vehicles), but also include ‘soft assets’ (like Environmental Clearances (EIS/ROD), Plans, Designs and Criteria/Standards/O&M Manuals, etc), as well as Professional Services required for Management and Administration of creation of the hard and soft assets.

- Asset Locations are primarily the geographic (named) locations of the major fixed assets (like ‘West Corridor’, ‘Denver Union Station’ or ‘Kipling Bridge’), however for mobile assets (like Vehicles), their location is identified with the Line or Corridor location they support.

- Asset Lifecycle Phases are primarily the ‘Planning’ and ‘Implementation’ phase of the asset’s creation, however, the sub-phases of implementation, are further identified as Final Design, Construction, Testing and Startup, for purposes of cost/schedule control and procurement.

The Program/Project WBS is arranged in hierarchical levels of scope definition, from most general asset/deliverable (like a new Rail Corridor) to most specific work task (usually performed by a single resource).

For the purpose of top-down scope definition, budget allocation, design development and responsibility assignment, the Program WBS only identifies the first 2 levels of each asset type, location and lifecycle phase. These are the elements found in the comprehensive Level 2 Master Schedule.

The Project WBS for each major asset, is then further defined and detailed below level 3 of the WBS hierarchy by the respective Project Manager and Project Team. These more finite and discrete deliverables are essential for the planning, procurement and cost/schedule control of Contracts (Schedule of Values) to create the operationally ready assets for FasTracks.

The figure below shows how Asset Type and Asset Location are combined to identify discrete elements of scope at Level 1 of program deliverable configuration:
Asset Lifecycles (not shown) are a further breakdown of the items depicted in the above matrix, that may be thought of as a third dimension to a 'WBS cube' which contains all the scope of the entire Program, and where the 3 dimensions answer the fundamental questions of What, Where, and When about all the discrete and measurable items of scope.

The next figure shows a sample of Level 2 Asset Type and Asset Location items for a single level 1 element from the figure above.
### SAMPLE Level 2 WBS for:

**Level 1 Asset Type = Sitework (SCC 40) & Level 1 Location = West Corridor (Stations Only)**

<table>
<thead>
<tr>
<th>Level 2 Asset Types (SCC Level 2)</th>
<th>Auraria Station</th>
<th>Federal Blvd Station</th>
<th>Knox Station</th>
<th>Perry Station</th>
<th>Sheridan Station</th>
<th>Lamar Station</th>
<th>Wadsworth Station</th>
<th>Garrison Station</th>
<th>Oak Station</th>
<th>Federal Center Station</th>
<th>Red Rocks Station</th>
<th>Jeffco Station</th>
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<tbody>
<tr>
<td>DEMOLITION &amp; EARTHWORK (40.01)</td>
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<td>Site Utilities (40.02)</td>
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<tr>
<td>Automobiles Infr/Parking Lots (40.07)</td>
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<td>Temp Facilities and Indirects (40.08)</td>
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</tbody>
</table>
Work Breakdown Structure
Identifies the assets/deliverables by type, location, and lifecycle phases

Major Locations
West
East
DUS

Major Asset/Deliverable
Management
Guideway
Systems
Vehicles

Operation Implementation Planning
Major Lifecycle
4.1.1.2 Key Delivery and Interface Milestones

Once all items of Program scope have been identified with a mutually exclusive and collectively exhaustive WBS, these items are arranged in a chronological delivery sequence which is logically driven by ‘first available’ or ‘critical path’ priority in the Master Program Schedule. Then the items with interdependencies between stakeholders (sometimes multiple) or ‘hand-over at completion’ requirements, are given a finite delivery priority date, known as a Milestone Date, and also identified as a Key Delivery or Interface Milestone in the Level 2 Master Program Schedule.

4.1.1.3 Program commitments (Scope Configuration)

Program commitments between Stakeholders, especially with respect to delivery, coordination or funding of FasTracks Assets, are recorded and controlled at the appropriate WBS level, with Milestone Dates and assignments/commitments of responsibilities and accountabilities, usually in the form of a legally executed Contract or Agreement.

The highest level of FasTracks Program commitments (Level 1) are determined, agreed and recorded by the RTD Board of Directors and General Manager for RTD. This forms the basis for an established FasTracks Configuration, and that configuration is controlled through recording further improvement or remediation actions by the RTD Board/GM and amendments to respective contracts/agreements with stakeholders.

The next subordinate level of commitments and configuration (Level 2) are controlled within the Level 1 parameters for scope, schedule and budget, by the AGM for Capital Programs and empowered FasTracks Senior Management Team.

The lowest subordinate level of commitment and configuration control (Level 3) is managed by the respectively assigned Project Managers and their Project Teams.

4.1.1.4 Program/Project Responsibility and Accountability Controls

ORGANIZATION BREAKDOWN STRUCTURE (OBS)

The Organization Breakdown Structure is a hierarchical structure (Organization Chart) of the FasTracks Program’s functional, technical and managerial responsibilities. When combined with elements of the WBS and CBS to form a ‘Control Account’, the OBS element identifies ‘Who’ is responsible for the Scope, Schedule and Budget.

RESOURCE BREAKDOWN STRUCTURE (RBS)

The Resource Breakdown Structure is a hierarchical categorization (catalogue) of assignable resources to be held accountable (within budget and time constraints) for the delivery of the WBS scope.

4.1.2 Program/Project Schedule Controls

Project Controls develops and monitors the schedule and provides progress reporting to the FasTracks Team and various stakeholders. Project Controls uses industry standard scheduling software to manage the schedule.

The FasTracks Team has selected Primavera to provide consistent reporting of the Master Schedule and to schedule all Program elements. Schedules generated by Project Controls and
all Contractors, use the Primavera software for the purpose of maintaining uniformity and compatibility between interrelated project schedules, work calendars and resources. Primavera interfaces with the Program Cost Control software system, allowing data transfer between the schedule and cost databases to maintain the integration of schedule and budget/cost data. The Scheduling Flow Chart is shown in Figure 4-1.

4.1.2.1 Enterprise Project Structure (EPS)

The Enterprise Project Structure (EPS) is a hierarchical structure of projects in the Primavera (Master Program Schedule) database. Program Controls utilizes the EPS to segregate Baseline Schedules from Working/Update Schedules and to control access by Contractors and Consultants to their respective projects within the Master Program Schedule.

4.1.2.2 Baseline Schedule

As a part of the Contract requirements, Consultants and/or Contractors submit a Baseline Schedule for approval by the appropriate FasTracks representative. The Baseline Schedules are used to measure work progress and to provide the FasTracks Team important variance data to assist with the identification of problem areas and to help determine the need for any corrective actions.

4.1.2.3 Current Updates

The current schedule will be progressed and updated on a monthly basis to assess monthly progress versus the approved baseline plan. The current schedule for the first monthly update is based on the approved baseline schedule. For all subsequent updates, the previous month’s approved/accepted updated will be the basis for the current monthly update.

4.1.2.4 Earned Value Reporting

The project’s planned progress, actual costs and percentage of work-completed (earned) to date, will be monitored and reported throughout the life of the project. Earned Value (also called
Budgeted Cost of Work Performed or BCWP) indicates how much of the budget and time should have been spent, with regards to the amount of work actually done to date.

Actual costs and percent complete will be tracked and compared to the plan to determine if the project is ahead or behind schedule, and whether the actual dollars spent are in line with percent complete earned.

4.1.2.5 Monthly Progress reporting

The FasTracks Team generates, publishes, and distributes monthly program reports that summarize cost and schedule information as well as an overall narrative update on all aspects of the project. The report includes an updated master schedule as well as curves similar to the one shown in Figure 4-2. This report is presented to the RTD General Manager monthly. As supporting information for these reports, contractors provide the required schedule reports and performance measurement reports as stipulated by their contract. Upon entering the final design, construction or design-build phase, each corridor (Project Manager) prepares a monthly report for distribution to all affected stakeholders, including the FTA.

Figure 4-2: Master Schedule Update
4.1.3 Program/Project Budget Controls

Project Controls is responsible for monitoring the original project budgets, pending and approved change orders, control budget (approved budget), commitments, actual amount paid, accruals, earned value, estimate to complete, and estimate at completion (forecast).

4.1.3.1 Baseline Budget

The baseline budget or the Performance Measurement Budget (PMB) is an authorized time-phased budget plan, aggregated from the resources required to perform the schedule of work, against which cost and schedule performance is measured through the project lifecycle. The PMB is maintained under formal change control through the Annual Program Evaluation (APE) process.

4.1.3.2 Budget at Completion (BAC)

The Budget at Completion is the sum of all the budget values established for the work to be performed on the program, or the total planned value for the project. The BAC is used for the baseline Planned Value (Budgeted Cost of Work Scheduled or BCWS) by which to measure Earned Value (Budgeted Cost of Work Performed or BCWP).

The BAC will be closely monitored, especially by the cost engineers utilizing the enterprise cost control system, to ensure that the project is completed within the allocated and approved budget. The cost engineer will provide the project team and stakeholders with periodic updates that compares the BAC to the Estimate at Completion (EAC) and report any variances between the two.

4.1.4 Program/Project Cost Controls

The Project Cost Control staff utilizes an enterprise cost control system known as PRISM. This system facilitates the gathering and analysis of program cost information. It collects and forecasts data at the control account and cost element level. The Lead (Program) Cost Engineer is responsible for setting up the system using the Work Breakdown Structure (WBS) as the control point for all data collection within PRISM’s modules and from other interfaced program systems i.e. Oracle, Primavera, etc.

The responsible Program/Project cost engineer will download actual cost and commitments on a periodic basis from Oracle, FasTracks’ Financial System of Record, into PRISM to determine the actual cost of work performed (ACWP). Using the ACWP, the cost engineer will determine the EAC and report any variance as described in the above section.

The Project Cost Control staff’s primary responsibility is to closely monitor the financial/cost performance of the project and take responsibility for addressing cost-related issues as they arise. The project stakeholders need to know all cost variance, whether positive or negative, to understand what is causing these variance and take proactive steps to keep them under control. The Project Cost Control staff must be able to explain the root cause for the variance and recommend whether corrective, remedial or reconciliation actions need to be taken.
4.1.4.1 **Control Accounts**

Identifies discrete WBS elements of work which form the ‘accountability’ basis for project planning, scheduling, budgeting, work authorization, cost accumulation, performance measurement, analysis, and progress reporting as shown in Figure 4-3.

Accountability may be assigned by combining discrete OBS and WBS elements to form Control Accounts.

4.1.4.2 **Cost Breakdown Structure (CBS)**

Cost Breakdown Structure is the breakdown of a project or WBS element into unit cost or lump-sum cost components, such as labor, materials, equipment, and subcontracts/services.

For FasTracks, the highest or top levels of the CBS hierarchy are exactly in line with the Work Breakdown Structure (WBS); indicating where and for what major assets, costs are being allocated. The CBS at the lower levels, is also in line with RTD’s Chart of Accounts (for business and contract expenditures), indicating what resource or permanent materials the costs are for. Depending on specific Project or Contract requirements, costs may be further organized by who is spending the cost, or when (which project phase) costs are being spent, etc.

4.1.4.3 **Period and Cumulative Actual Cost (Actualls)**

Cumulative actual cost or Inception to Date (ITD) is the sum of all the cost that has been paid to date and is imported into the cost control system on a monthly basis after the Oracle monthly closeout process. The period incurred costs are defined as costs incurred in accomplishing the work performed in a given time period.

4.1.4.4 **Invoice Verification**

Invoice Verification is the process where RTD verifies that the contractor’s invoice submission is current and accurate regarding measured units and agreed costs, against correct Schedule of Values and/or WBS items, and therefore can be authorized for payment.
All consultants and contractor invoices are processed in accordance with the RTD standard invoicing requirements established by RTD accounting or in accordance with the contract terms and conditions.

All invoices are accompanied by the required schedule reports and performance measurement reports as stipulated by the Contract Terms and Conditions, and verified by Project Controls personnel for accuracy of quantities in place and Earned Values of SOV items.

4.1.4.5 **Forecasting Estimate to Complete (ETC) & Estimate at Completion (EAC)**

Estimate to Complete (ETC) is the projected, forecast or estimated amount, the remaining work (scope) will cost based on the original and amended scope, and actual unit or ITD costs.

Estimate at Completion (EAC) is the projected, forecast or estimated amount, the entire work (scope) will cost at completion based on the original and amended scope, and unit or ITD costs plus ETC. The EAC can in some cases include potential changes which are most likely to occur, even before they are approved by the Change Control Board (CCB). Estimate at Completion can be calculated using a wide variety of methods and is the primary function of cost engineering and is one of the fundamental purposes of the earned value management method (EVMM). It can be wholly calculated by using EVMM formulas, excel functions (i.e. Trend and Growth), manual estimate input/pricing analysis, or an appropriate combination thereof.

Also note: the Forecast to Complete (FTC) represents the amount of money remaining to be committed or if negative it represents an over commitment. This is not to be confused with Budget to Complete (budget minus actual).

4.1.4.6 **Contingency and Management Reserve**

Contingency and management reserve funding is a fiscal planning tool for managing the risk of cost escalations and covering potential cost estimate shortfalls. Inclusion of a contingency amount in the cost estimate will minimize the impact of cost increases inherent in an overly optimistic estimate and provide for an earlier discussion of how potential circumstances can be addressed.

4.1.5 **Capital Cost Estimating**

4.1.5.1 **Bottom up Estimating Methodology**

The RTD FasTracks Estimating Team is responsible for generating all independent cost estimates (ICE) for the entire RTD FasTracks program. This includes the initial ‘order of magnitude’ estimates generated prior to the 30% design stage as well as detailed “bottoms up estimates (performed beyond 30% design stage used to compare costs with contractor proposals. Depending on the delivery method of the project, cost estimates may be required in conjunction with each milestone design submittal. In addition, any changes initiated by contractors, RTD third party entities must be evaluated and an independent cost estimate prepared. Any value engineering change proposals (VECP’s) also require independent cost estimates to be prepared.

These internal order of magnitude estimates help RTD FasTracks Project Managers establish the individual project budgets. Detailed “bottoms up” estimates help determine the degree of
reasonableness of the contractor’s submitted price proposals. Utilizing these estimates, the Project Managers can negotiate changes on a basis that is fair and equitable to all parties.

The RTD FasTracks Estimating Team utilizes standard estimating practices to prepare an estimate including: scoping, quantity take-offs, pricing, variance analysis and negotiations. To assist the estimating team in their preparation of the estimate, the team uses standard estimating software. Regional labor and equipment rates, along with current material and subcontract prices, are programmed into the estimating software. The programmed pricing is updated on an annual basis to ensure that all estimated costs are at current market value.

**Note:** Systems cost elements are generally estimated by the Systems Engineering group.

### 4.1.5.2 Quantity Take-offs

Perform the detailed quantity takeoff, primarily utilizing the plans, specifications, notes and photos from the site investigation. For an order of magnitude estimate where the design or scope isn’t fully developed, emphasis is placed on the major (“big ticket”) items which typically comprise approximately 80% of the project cost. For a normal rail project, examples of major items of cost include: earthwork, retaining walls, trackwork, stations and structures. For a detailed estimate where the design and scope are fully defined, careful examination of the entire scope of work is required. Examples of more detailed scope items may include: erosion control, traffic control, drainage and utility systems, rebar in walls, rebar at stations, specific general conditions, etc.

Take-offs can be performed manually from hard copy drawings or electronically in Adobe Acrobat utilizing measuring tools. Plan scales should be checked for accuracy before starting any take-off activity whether using hard copy drawings or electronic files. Quantities can be generated by scaling the plans or by calculating them from the dimensions shown on the plans. Listed plan dimensions take precedence over scaled dimensions. Quantities need to be recorded in a manner that can be easily reviewed. The engineer’s plan quantities, if provided, can be used as a “rough check” of the take-off quantities. Provided plan quantities however, shouldn’t be used in lieu of an actual take-off by the estimator unless specifically directed to do so.

### 4.1.5.3 Pricing

To price the work, the team will utilize the estimating software described in Part 4.1.7.5 below to create the bid items that encompass all of the work to be performed. For the majority of the large design estimates, these bid items will closely adhere to FTA’s Standard Cost Categories (SCC codes). The estimating software is preprogrammed with labor, equipment, permanent and construction materials, and subcontracts, which allow the estimator to build the estimate in a standardized manner.

The labor rates are updated yearly when new Davis Bacon decisions are issued by the federal government affecting the Denver Metro area. Likewise, the equipment rates are updated when we receive a new edition of the Rental Rate Blue Book from EquipmentWatch. For the materials and subcontracts, we will call several suppliers of each of these to get the latest pricing. Following the pricing of the various bid items, the project schedule is examined to determine the duration of the project, as well as to view when the major elements of work are accomplished along the timeline. This information helps the estimating staff produce an estimate for the various indirect costs.
4.1.5.4 Variance Analysis and Negotiations

After the detailed pricing is completed in Heavy Bid, then both the unit and total prices are transferred into Excel spreadsheets for comparison to either a consulting engineer’s or the contractor’s proposed prices. Variance columns are added at the right hand side of these spreadsheets to compare both quantities and total costs. The order of magnitude of the differences can be easily determined from these variance columns. Then, the negotiations may proceed with most of the concentration being spent on those items which have the largest quantity and cost discrepancies. Minor items should be considered as well, but generally these disparities will tend to cancel each other out.

Figure 4-4 is a sample of an Excel cost comparison spreadsheet:

![Figure 4-4 Cost Comparison Spreadsheet](image-url)
4.1.5.5 Estimating Software

The estimating staff utilizes “Heavy Bid” by Heavy Construction Systems Specialists, Inc. (HCSS), which is the industry-standard software used by many contractors, engineering firms and owners involved in the highway/heavy/civil/rail industries (considered ‘horizontal’ type capital projects). Figure 4-5 is a sample of an activity (“Place Rail and Ties”) being priced in “Heavy Bid”:

![Figure 4-5 Heavy Bid Pricing](image)

4.1.6 Program/Project Financial Controls

4.1.6.1 RTD and FTA Code of Accounts

For the purpose of aligning all FasTracks Program costs with requirements for Federal grants and funding, RTD has developed the FasTracks WBS+CBS control account coding structures in strict accordance with the FTA’s Standard Cost Categories (SCC).

For special accounting requirements beyond the basic WBS+CBS control account structures (i.e. for reporting to special tax districts or local grant funds management), a ‘special finance’
code is then appended to the Control Accounts in both PRISM (cost/budget control system) and Oracle (enterprise financial system).

4.1.6.2 Invoice Validation & Payment Processing

The Consultants and Contractors submit monthly invoices in conformance with applicable Contract requirements. Typically, Consultant invoices are submitted using the standard RTD process, which requires copies of staff timesheets and receipts for all expenses. Contractors typically submit invoices according to the requirements in the Contract Terms and Conditions.

No invoice is processed until all the required documents are received and validated by FasTracks Team.

4.1.7 Contract/Agreement Change Controls

Project Controls and Contract Administration staff work together to manage schedule and budget (value) tracking, controls, and reports for various Design, Construction and Professional Services contracts, as well as Third Party (IGA & URA) agreements. Typical tasks include establishing baseline values, and monitoring changes that affect the ‘Contract Baseline’ scope, schedule, and value. There are also overall contract administration procedures (See Section 4.4 for information regarding Contract changes and the Contract Control Board (CCB)) to complete the cycle of approving and incorporating all baseline changes, variances, change orders, and contract amendments into baseline documents and budgets.

4.1.7.1 Schedule of Values (SOV)

The Schedule of Values is a fundamental element of every Contract/Agreement for aligning Scope (WBS) with agreed Budget/Cost (value) and is used as a basis for determining progress and payments on a lump sum agreement or any designated lump sum item, as well as for any ‘unit price’ items.

The Schedule of Values is a schedule of cost allocated commitments for specific deliverables or services, equal in total, to the lump sum value of the Contract/Agreement, in such form and sufficient detail to correctly represent a reasonable apportionment of the lump sum. As each item in the Schedule of Values delineates one deliverable within the Contract/Agreement, the cost/value for each SOV item must include all costs (or equivalent value) for the labor, materials, equipment and/or subcontract(s) required to complete the item. Depending on the specific project procurement and delivery method, the respective Project Management Plan will describe the form of SOV itemization and payment method.

Prior to submitting an invoice for payment or reconciliation, the Contractor (or Agreeing Entity) shall have submitted a detailed and updated progress schedule which summarizes Earned Value progress for the Schedule of Values items, to RTD, and have obtained concurrence from RTD.

4.1.7.2 Contract Milestones

Another fundamental element of every Contract/Agreement is a list of Milestones with specific dates or durations from Notice to Proceed, which establish an agreed interim delivery date for identified discrete elements of scope or key interfacing or handover events.
4.1.7.3  **Contract Data Requirements List (CDRL)**

Also known as a Submittal Schedule or Submittal Register, each Contract will contain a contract data requirements list, which identifies all required information/data deliverables (submittal documents/files) with required submittal and response timeframes (where applicable).

4.1.8  **Program/Project Document Controls**

The FasTracks Program has a control document that sets policies for Document Control called the RTD FasTracks *Document Controls Procedures Manual*. The Manual includes guidelines for the development, control, and maintenance of all FasTracks Program level documents as well as project level documents. This procedure defines the responsibilities of all Program staff that originate or receive Program documents.

4.1.8.1  **Document Types**

Program/Project documents include correspondence, drawings, specifications, design criteria, memos, transmittals, contracts, solicitations, reports, submittals, deliverables, publications, and emails originated or received by the Program team. Any incoming documents received through the U.S. Postal Service should be given to a Document Control staff member so that the document can be date stamped, scanned, inputted into the appropriate repository and distributed if necessary.

4.1.8.2  **Metadata Assignments**

Example of metadata are: Project/Corridor ID, Project Deliverable (WBS), Project Phase, Contract Number, Document Subtype and discipline.

4.1.8.3  **Document Version/Revision Control**

Version/Revision Control is accomplished by Aconex and ECMS recognition that the document has been placed in the system previously which will trigger the system to enter a new revision while maintaining a history or the previous revision(s).

4.1.8.4  **Input into the Appropriate Project Repository/s**

Currently FT Document Control maintains four repositories, Aconex, Laserfiche, ProjectWise and ECMS.

- Aconex serves as the Construction Content Management and workflow Software (as of 5/17/10 with Corridors/Projects gradually being brought on to the system)
- Laserfiche houses documentation generated prior to 8/30/2009 (West Corridor) and 9/1/09 for all other corridors.
- ProjectWise is used to store in-house design projects (during the design phase) and Program CAD files.
- ECMS/Documentum acts as the Program Repository of Record (permanent)

4.1.8.5  **Documentation Workflows for review and approval**

Document Control will assist/train designated corridor personnel in developing and implementing electronic work flows through Aconex.
4.1.8.6 *Submittal Distribution (via Aconex)*

The Aconex Submittal Module will be used for distribution of submittals wherever possible. However, the managing of the submittal log may need to be done outside of Aconex. Please see appropriated Document Control staff member for each corridor.

4.1.8.7 *Document Control Library*

Maintain the FasTracks Document Control library (hard copy and electronic) to ensure most current revision is available. Updates to the library logs, and monitoring that checked out documents are returned.

4.1.8.8 *Scanned Image Integrity*

With the Implementation of Aconex most documents are submitted via the system directly from the contractor, thus eliminating a great deal of scanning needed to be done by RTD staff. Images are regularly checked for clarity, orientation, and readability.

4.1.8.9 *Internal Quality Audits*

Departmental audits to ensure documents have the correct metadata, that revision control is happening, and that the documents are retrievable. Document Control also assists the Quality Assurance Division auditor in verifying documents that have been transmitted to Document Control.

4.1.8.10 *CORA (Colorado Open Records Act)*

Document Control will coordinate all CORA requests that pertain to the FasTracks Program overall or any of the Corridors that fall under FasTracks/Capital Programs. The Document Control Manager will receive and respond to the requestor and work with the appropriate staff members to obtain the documents/data that RTD is required to provide under CORA law.

4.1.9 *Program/Project Risk Controls*

4.1.9.1 *Risk Management vs Risk Controls*

**RISK MANAGEMENT**

‘Risk Management’ is responsible for evaluating and identifying property and casualty risks associated with all RTD projects; recommending and implementing various methods and means of dealing with identified exposures to loss; and recommending to the General Manager the plans, procedures, or risk finance programs to mitigate or eliminate risk of loss.

For the FasTracks Program, RTD’s Risk Manager develops, implements and oversees an Owner Controlled Insurance Program (OCIP, see Section 4.4.4 for details). Risk Management prepare RFPs to select both a broker and an insurance carrier to market and provide the required insurance coverage for each project.

Risk Management also develops an assistance program as part of the OCIP to assist DBE/SBEs in obtaining the performance bonds needed to participate in the FasTracks Program.
RISK CONTROLS

For budgeting and cost/schedule control of Program and Project risk-based contingency funds, a separate risk register is kept for maintaining the WBS reference, ROM cost estimate, schedule impact/duration potential, ownership responsibility and status of all Program/Project risks identified through routine and ad-hoc risk assessments. These risks are then systematically tracked, updated and reported by the respective Project Management teams.

4.1.9.2 Risk Register

The FasTracks Program/Project risk register is a centrally maintained catalogue for each identified risk, which includes the WBS reference, ROM cost estimate, potential schedule impact/duration, ownership responsibility and the priority/probability status. Each Project under construction will maintain a more detailed working risk register and update the Program risk register monthly.

4.1.9.3 Risk Assessments & Tracking

Routine and adhoc risk assessments will be conducted with each Project Team and at the Programwide level, to review, amend and append the risk register. Each Project Team is responsible for assessing the adequacy of their remaining contingency funds against the active or unmitigated risks on their register.

4.1.9.4 Risk Matrix/Reporting

As the risk register will include all risks assessed and mitigated during the life of the Program/Project, a separate report of only the active or potential risks with high priority (high cost/schedule impact) and high probability, will be routinely reviewed by the Project Team.

A Risk Matrix (2 x 2) is used as a summary overview report, which graphically categorizes and highlights the risks from most severe/likely (cost/schedule consequence) to least severe/likely.

4.1.10 Configuration Change Controls

The FasTracks Program’s overall Configuration Management procedures will provide methods of control to maintain and ensure all projects remain consistent with RTD’s Design Standards and Criteria, as well as RTD’s Business Planning and Development Criteria.

When establishing new or changing existing FasTracks Program configurations, a Change Control Board (CCB), comprised of the FasTracks Program Implementation Manager and representatives from all relevant functional and technical disciplines (at the appropriate signature authority level) meets to review each change and approve/recommend it’s execution to the RTD General Manager and Board of Directors (when required).

4.2 SYSTEM SAFETY AND SECURITY

This safety and security section of the Program Management Plan defines the conduct and management of the integrated safety and security efforts, and represents system safety and security tasks to satisfy Program requirements. Safety and security are primary concerns that affect all RTD activities and transportation modes. RTD Senior Management has provided the authority, support, and resources to establish and maintain high safety and security standards throughout RTD. To that end, the Assistant General Manager (AGM) Safety, Security &
Facilities is empowered and authorized by the RTD General Manager to develop, distribute, implement, and administer comprehensive safety and security procedures covering FasTracks. The AGM Safety, Security & Facilities, Safety and Security staff and Project Management team provide the FTA with information, coordination and documentation during the FTA’s Safety and Security Readiness Reviews. These reviews are anticipated for all projects.

4.2.1 Integration

The RTD maintains an approved System Safety Program Plan (SSPP) and System Security Plan (SSP) that are the safety and security policy documents for the District. The SSPP and SSP address design, construction, and operation of the RTD facilities, bus and rail systems. These plans establish technical and managerial strategies and procedures for the identification, assessment, prevention, and control of hazards to passengers, employees, and those who may come in contact with the transit system. Additionally a Safety and Security Management Plan (SSMP) may be required for a FasTracks project. If an SSMP is required one will be produced and implemented for the specific project. Currently three SSMPs’ have been written, one for the West Corridor Project, one for the Eagle Project and one for the Denver Union Station Project.

4.2.2 Organizational Safety and Security Function

The organizational safety and security function for FasTracks will be two fold – management responsibility and resource management. First, the RTD Assistant General Manager (AGM) Safety, Security & Facilities and the RTD System Safety and Security Manager will report to and advise the Senior Management Team. Second, the RTD’s AGM Safety, Security & Facilities and the System Safety and Security Project Manager, with assistance from RTD’s FasTracks Engineering staff, monitors contractor and project compliance with the SSPP and SSP throughout the design, construction, testing, and start-up phases of the Project.

4.2.3 Hazard Identification, Analysis and Resolution Management

Threat and vulnerability management will be administered by the AGM Safety, Security & Facilities, the System Safety and Security Manager, the Manager of Security, and the Security Systems Administrator. As part of the FasTracks Program, the various contractors will develop and implement a Hazard Identification, Analysis, and Resolution Process in accordance with industry standards and FTA guidance documents. The purpose of hazard analyses and resolution during the design phase of the Project is several fold:

- To minimize or eliminate potential hazards;
- Support early hazard identification, severity and consequences and define mitigation as appropriate;
- Integrate safe operating procedures into system design and service and
- Provide for constant and continuous safety evaluation and assessment.

The AGM Safety, Security & Facilities and System Safety and Security Manager, with assistance from the RTD Project Engineering staff, monitors the contractor’s Hazard Analysis and Resolution Process for each project. Subsequent to performing the initial hazard analysis, the contractor will recommend resolution or mitigation factors to reduce the classification of identified hazards and reclassify identified hazards considering the recommended resolution.
In applying resolution to identified hazards, the contractor of each FasTracks Project will utilize the following system safety precedence:

- Design for minimum risk;
- Incorporate safety devices;
- Provide warning devices; and
- Develop procedures and training.

The Hazard Identification, Analysis, and Resolution Process will be documented in various documents, which may include:

- Hazard Identification, Analysis, and Resolution Process;
- Preliminary Hazard Analysis (PHA) Report;
- Subsystem Hazard Analysis (SSHA) if required;
- Safety Open Items List (SOILS);
- Safety and Security Certification Verification Report (SSCVR) end of project;

RTD’s Executive Safety and Security Committee (ESSC) is a cross-functional Safety, Security and Operations Committee consisting of RTD Senior Management, Technical Staff, Safety Staff, Operations Staff, and Security Staff. This Committee is the guiding safety and security direction for RTD. The Committee’s main objective is to ensure implementation and compliance with the District’s SSPP and SSP. The Committee reviews and approves rail and bus designs, modifications to approved design, modifications to existing systems and procedures, standard operating procedures, training programs, and monitors the safety certification process. The Committee addresses requested changes that deviate from RTD’s design criteria with regard to safety and security. Specific FasTracks technical personnel are invited to participate and advise the Committee as necessary. RTD’s AGM Safety, Security & Facilities chairs the Committee.

In addition to the RTD committee there are project System Safety Working Group and Fire / Life Safety Committee meetings for each FasTracks Project. The purpose of these groups will be to address safety certification and other system safety and security issues such as hazard identification, analysis and resolution, and concerns of first responder community.

4.2.4 Safety and Security Design Criteria

The RTD Light Rail, Commuter Rail design criteria and Bus Transit Facility Design Guidelines and Criteria each contain a chapter devoted to safety and security. This design criteria addresses system safety and security elements to be designed into the project according to the requirements of the applicable standards listed. Should any standard or requirement conflict, the most stringent standard shall apply. In accordance with RTD’s Design Criteria, RTD’s Executive Safety and Security Committee review all LRT, Bus and Commuter Rail design and any subsequent changes or modifications. The RTD Project Manager and/or consultant shall present design reviews to the RTD Executive Safety and Security Committee for acceptance as design milestones are reached. Additionally, RTD’s Executive Safety and Security Committee must approve deviations from RTD’s design criteria with regard to safety and security.

Standards, specifications, regulations, design handbooks and other sources of design guidance will be reviewed for pertinent safety and security design requirements applicable to the system. The design shall establish criteria derived from all applicable information.
4.2.5 Fire / Life Safety Committee and System Safety Working Group

A Fire/Life Safety Committee (FLSC) and System Safety Working Group (SSWG) will be convened separately for each of the FasTracks projects. The Fire / Life Safety Committees will include fire department, first responder, emergency and police representatives as well as City officials for the specific area of each FasTracks Project. Each SSWG will include representatives from RTD, Colorado Public Utilities Commission (CPUC) and the contractors design and construction representatives. These committees will be established in the design process to ensure that applicable fire/life issues and system safety and security requirement are addressed. These committees will remain active throughout construction and opening of each corridor.

4.2.6 Safety and Security Certification

A major activity required by the SSPP and SSP is the development and implementation of a Safety and Security Certification Program. Safety and Security certification is an integral part of the design and construction of RTD’s Bus, Light Rail and Commuter Rail system in order to ensure safe revenue service. A comprehensive certification program will be conducted for each of the FasTracks projects.

A Safety and Security Certification Statement will be issued by RTD prior to the start of revenue service. The integrity of the statement will be supported by individual certification statements, issued over the signature of those responsible for ensuring compliance with identified safety and security requirements for system elements, and related activities subject to the Safety and Security Certification Process.

The goal of the Safety and Security Certification Program is to provide evidence that the systems are operationally safe to enter revenue service, and to verify that safety and security requirements have been met. Objectives of safety and security certification are to document the following:

- Facilities and equipment have been constructed, manufactured, inspected, and tested in accordance with safety requirements in the design criteria and the Contract specifications;
- Operations and Maintenance Standard Operating Procedures and rules have been developed and implemented;
- Training documents have been developed for RTD personnel and Emergency Response personnel;
- Transportation and Maintenance personnel have been trained and qualified;
- Outside Emergency Response personnel have been prepared to respond to emergency situations; and
- Integration tests have been conducted.

4.2.7 State Safety Oversight

State Safety Oversight is established in Colorado. The Colorado Public Utilities Commission (CPUC) is the designated oversight agency. RTD has an excellent working relationship established with the CPUC, which includes a joint safety and security audit program and CPUC participating in the Project’s Safety and Security Working Group meetings. RTD includes the
CPUC in the planning and design process as rail projects progress. RTD will obtain CPUC approval before commencing construction or demolition at grade crossings. The CPUC will be included in the FasTracks Program beginning in the planning and design phases and continuing throughout construction and revenue operation. This coordination between RTD and the CPUC will facilitate state safety oversight requirements and the CPUC application process. RTD and the CPUC longstanding professional relationship will facilitate compliance with the expanded requirements under MAP 21.

4.2.8 Federal Railroad Administration
The RTD will work closely and coordinate with the FRA throughout the FasTracks Program. The FRA will be included in the planning and design phases to assure their input is considered and regulatory requirements are met. Each corridor will be evaluated to determine the level of participation necessary for the FRA. When FRA regulations apply to an RTD operation, RTD will comply with FRA requirements or obtain a waiver, if applicable. Should waivers be necessary, they will be managed on a corridor specific basis.

4.2.9 Coordination with Department of Homeland Security
RTD has established relationships with the Denver representatives of the U.S. Department of Homeland Security (DHS) and the Transportation Security Administration (TSA). The TSA has conducted a baseline security assessment of RTD light rail operations and has determined that RTD is in compliance with all SSO, DHS and TSA directives, requirements and guidelines. Additionally, RTD’s light rail design criteria are in compliance with TSA rail directives. The same design requirements and operational procedures will be in place for the Commuter Rail projects and the Denver Union Station project.

DHS and TSA representatives have been invited to participate in project FLSC meetings for input into design, construction, and operational readiness.

4.2.10 Continuity of Operations Plan
RTD maintains a Continuity of Business Operations Plan (COOP). The COOP is administered by the Safety, Security and Facilities (SS&F) department. Each RTD department has an established COOP, and the District has a roll-up COOP that is administered by the RTD CEO/General Manager. The COOP plans address a variety of continuity issues including: mission essential functions; alternative locations and facilities; orders of succession; planning and relocation teams; communications; and available resources. The SS&F department provide annual coordination and training if necessary to all RTD departments. The COOP is revised annually or as necessary depending upon organizational changes.

4.3 QUALITY MANAGEMENT

4.3.1 Scope
This Quality Assurance Program encompasses all technical activities relative to the development, acquisition, testing, and start-up of FasTracks projects. A more detailed explanation of RTD’s Quality Assurance Program is included in the FasTracks Quality Assurance Program Plan (QAPP). This section of the Program Management Plan summarizes information contained in the QAPP.
4.3.2 Normative Reference


4.3.3 Quality Management System

4.3.3.1 General Requirements

Satisfying the need for safe, efficient, cost-effective transportation services through the utilization of complex systems requires the implementation of a pro-active, systematic, and authoritative quality assurance program. Early identification of conditions that affect the ability of these systems to perform satisfactorily, and timely corrective actions, are necessary to preclude problems.

4.3.3.2 Documentation Requirements

RTD’s quality management system meets or exceeds U.S. DOT guidelines, and is registered to the international quality standard ISO 9001:2008. RTD develops supplemental procedures, as needed, to ensure adequate oversight of its planning consultants, design consultants, construction contractors, and materials suppliers (collectively referred to as the “Contractors”). In accordance with RTD’s Quality Management Policy, Contractors shall submit a Quality Management Plan for approval by RTD, based on requirements of their respective contracts.

RTD’s document control program is described in Section 4.1. Quality Records shall be collected, stored, and preserved in a manner that precludes damage, loss, or deterioration. The Contractors’ storage requirements shall be in accordance with the contract and project specifications. The Contractors shall be responsible for safeguarding quality records during the project duration. At the conclusion of the contract, quality records shall be turned over to RTD for archival storage.

4.3.4 Management Responsibility

4.3.4.1 Management Commitment

The RTD Board of Directors has established its commitment to the FasTracks Program and established the core goals listed in Section 1. The FasTracks Senior Management Team has also set program management goals which are also included in Section 1. Establishment of a quality management system is mandatory, with agreement to meet or exceed U.S. DOT guidelines.

4.3.4.2 Customer Focus

Executive management will ensure that customer needs and expectations, as determined during each project MIS and EA/EIS, will be met. RTD has a dedicated Public Information team that continually addresses customer concerns, and provides outreach to the various business, community, government, and media interests represented within the region. Refer to Sections 4.5 and 4.8 of this PMP for more information. Additionally, the RTD FasTracks team will establish and monitor Quality of Life metrics to maximize positive impacts on the community, and mitigate negative impacts.
4.3.4.3 Quality Policy

RTD has established a quality policy for delivery of FasTracks. The following is an extract of that policy:

PUBLIC RESPONSIBILITY AND CITIZENSHIP

The RTD FasTracKs Team will contribute to achievement of RTD’s organizational mission statement by delivering safe, clean, reliable, accessible, and cost-effective transportation services that promote improved quality of life within the region. As such, the FasTracKs Program will continuously measure its impact on the community to ensure the entire Program is achieving the positive effects that the Stakeholders desire.

BUILDING QUALITY IN

Within RTD, the introduction of new transportation infrastructure is achieved largely through procurement of outside products and services such as design, construction, and manufacturing. It is the belief of the FasTracKs Management Team that a quality product must be designed and built in, rather than inspected in. Therefore, RTD will ensure that contract requirements, including requirements for contractors to prepare management plans, are developed, communicated, and changed, when necessary, to establish the benchmark for quality. RTD will require that each of its Contractors and Consultants charged with delivering products and services to RTD will implement an effective and comprehensive Quality Management Program. Such programs will be implemented and managed using adequate quality management staffing, commensurate with the complexity of the product being delivered.

MANAGEMENT BY FACT

RTD will implement an effective Quality Management Oversight Program that focuses on providing feedback to project participants to continually improve performance and provide confidence that the project will satisfy its requirements. The RTD FasTracKs Team will strive to achieve objective, requirements-based assessments of processes and products to provide feedback to program participants, promote continuous improvement, and provide RTD with adequate confidence in the products being delivered. To the extent possible, the RTD FasTracKs Team will utilize information management tools that allow staff to capture and globally analyze project information and data in order to make the best decisions possible with respect to project acceptance.

CONTINUOUS IMPROVEMENT

Although not directly involved in product delivery, the RTD FasTracKs Team has a role in attaining a quality product. Therefore, the RTD FasTracKs Team will identify its own key processes, and periodically assess its performance in these areas, identify opportunities for improvement and lessons learned to achieve continuous improvements internally. These assessments will also include feedback from outside sources.

TEAMWORK

Everyone assigned to the FasTracKs Program is part of the Quality Management Oversight team. Therefore, the program will benefit from the diverse skills and experiences of its many team members.
4.3.4.4 **Quality Planning**

In order to meet RTD’s goal to “build a safe, high-quality system,” RTD has established a systematic approach to ensure that all products and services are produced and delivered in a timely and cost effective manner, with the required level of quality. RTD minimizes its detailed involvement in checking the work, by requiring the construction and design Contractors to have effective QA/QC programs. However, RTD retains overall oversight responsibility for the quality program. Contractors shall develop quality plans based on requirements for the respective project. These plans shall be submitted to RTD for review and approval.

4.3.4.5 **Responsibility, Authority, and Communication**

The General Manager provides general guidance and executive level commitment to the RTD FasTracks program management team. The Assistant General Manager for Capital Programs has overall authority to manage the FasTracks program.

Day-to-day direction of individual FasTracks corridors and projects will be provided by a team of experienced project managers reporting to the Deputy AGM for Capital Programs, who share overall responsibility for ensuring program quality requirements are met.

The Director of Quality Assurance, reporting to the Deputy AGM for Capital Programs, is responsible for administration of the overall quality management program. The Director of Quality Assurance, with the support of the RTD Quality Oversight Managers and consultant staff, is delegated the authority and provided complete organizational freedom to investigate quality-related activities in all areas of the FasTracks program; and to identify, evaluate, and ensure resolution of quality problems. Responsibilities include, but are not limited to:

- Reviewing RTD contracts for appropriate QA/QC program requirements
- Providing coordination of the quality oversight program
- Identifying quality trends and issues to management
- Monitoring Contractor quality assurance and quality control programs
- Conducting quality audits as needed
- Developing quality programs and procedures
- Interfacing with FTA and PMOC officials on quality issues
- Interfacing with Contractor QA/QC staff to resolve quality program issues

The remainder of the FasTracks program management team is composed of RTD and other consultant personnel with specific technical specialties. CDOT provides liaison personnel for coordination of joint agency issues. Also, individual city and county liaisons provide coordination to the RTD FasTracks program management team to help ensure local interests are addressed along the corridors. Every member of the RTD FasTracks program management team performs a quality oversight role for their specific function(s).

Contractors have primary responsibility for both quality control and quality assurance. The Contractor, who has primary responsibility for day-to-day project implementation of planning, design, construction, testing, etc. has the greatest impact on overall quality within the scope of their work. Assigning the responsibility for quality assurance to the individual Contractors emphasizes that the Contractor is not only responsible for meeting the contract requirements,
but also for taking measures to provide confidence to RTD that the requirements have been met.

Contractors, sub-contractors, and suppliers will be structured in such a manner that:

- quality is achieved and maintained by those responsible for performance of the work, and
- quality achievement is verified by persons or organizations not directly responsible for performance of the work.

RTD uses internet and intranet tools to communicate vital information both internally and externally. All team members have access to the web site, as well as email and telephone/voice mail. Communication is facilitated by co-locating members of the RTD FasTracks project management team from the various entities involved. The RTD FasTracks Team will utilize a partnering approach to resolve issues at the lowest possible level.

4.3.4.6 Management Review

The adequacy and effectiveness of the quality program is regularly and formally assessed by the Senior Management Team. The RTD Director of Quality Assurance is responsible for the maintenance and updating of this Quality Assurance Program as needed, but at least annually. Contractors must review and update their own quality plans in accordance with their respective contracts, within the provisions of their approved quality plans. Revisions to Contractor quality plans must be submitted to RTD for approval.

4.3.5 Resource Management

4.3.5.1 Provision of Resources

The Assistant General Manager of Capital Programs, in consultation with the Director of Quality Assurance and Program Controls Manager, identifies resource requirements needed for implementation of the Quality Assurance Program during the annual budget cycle.

4.3.5.2 Human Resources

RTD maintains an aggressive recruitment program through establishment of its “Total Rewards” benefits package. Refer to the RTD Salaried Handbook for additional details on recruitment and training. RTD selects the best-qualified candidates based on skills needed for each position. In cases where it may be difficult to attract specialized talent for a limited time, RTD may fill the position through one of its management consultant teams. Assignment of key personnel to the Contractors’ staffs shall be subject to approval by RTD.

4.3.5.3 Infrastructure

Infrastructure requirements are detailed within the various contracts, to be provided by the Contractors, for both the RTD FasTracks project/corridor teams and the Contractor’s staff. RTD FasTracks team members not assigned to a specific project or corridor are centrally based where they can best provide expertise to the overall program.
4.3.5.4 **Work Environment**

The work environment is conducive to positive two-way communication between Contractors and RTD; and within the team itself. It is designed to allow RTD to exercise due diligence in overseeing the work of the Contractors. Specific requirements are included within the contract requirements, to be provided by the Contractors. To the extent possible, co-location will be utilized to facilitate effective communication. Partnering will be used to resolve issues.

4.3.6 **Product Realization**

4.3.6.1 **Planning of Product Realization**

In accordance with Section 4.1 of this PMP, construction and design Contractors shall submit detailed schedules of activities required to meet contractual requirements, based on the Scope of Work provided in the RFP and the WBS. Schedules will also reflect adequate time for QA/QC activities. RTD will review Contractors’ schedules for adequacy prior to accepting them for use on the project. These schedules shall be reviewed at periodic schedule meetings.

4.3.6.2 **Customer Related Processes**

Customer requirements are identified through Planning Studies or Major Investment Studies (MIS) for each corridor, and refined during the environmental clearance process during which a locally preferred alternative is selected from various options. Public input is actively sought through public hearings, announcements, and comment opportunities throughout the studies. Additionally, customers are encouraged to express their wishes through elected representatives governing RTD.

RTD maintains an active public involvement program that collects public input using a variety of mediums. Refer to Section 4.8 for more information.

4.3.6.3 **Design and Development**

Each Planning and/or Design Consultant shall submit a Quality Management Plan (QMP) within 30 calendar days following Notice to Proceed (NTP), for approval by RTD. The QMP is a detailed document which specifies design and development procedures, documentation and forms.

RTD design criteria consist of written guidelines and directives. Additional design inputs will be identified within the contract Scope of Work. The Contractor shall provide high quality engineering documents in accordance with RTD published design criteria, and good engineering practices. Design output documents (as defined within the Contract) will be reviewed for compliance with design input requirements (as defined within the Contract).

Design reviews shall be described in the Contractors’ QMPs, and shall be conducted by the Contractor with RTD participation. Although RTD will participate in an “over-the-shoulder” fashion, these reviews are the Contractors’ responsibility.

RTD will review the design against applicable requirements, as described in the RTD FastTracks Quality Management Oversight Program Manual. In General, RTD will conduct its reviews at appropriated milestones defined within the Contract. Such reviews will compare the consultant or design-builder’s design products to RTD’s requirements, which are held in a database application that RTD uses to capture design review comments, transmit comments to the designer, provide for designer response, and track the comment to satisfactory closure. These
requirements are extracted from design criteria, environmental clearance documents, contract scopes of work, and other reference documents.

Design reviews, checks, alternate calculations, performance tests, and other means used to verify the design shall be performed and documented by personnel other than those who originated the design, but with similar qualifications. Design changes shall be checked, coordinated, documented, and reviewed to the same level as the original design.

4.3.6.4 Purchasing

Numerous regulatory and administrative controls at the federal, state, and local (Board) level govern RTD procurement practices. In addition, the General Manager of RTD issues Administrative Policies/Procedures which may impact the procurement process.

The overall procurement process for RTD generally has three distinct phases:

- Pre-solicitation – Request for Proposal.
- Solicitation-award – Evaluation of proposals, selection of contractor, notice to proceed.
- Post award – Contractor management and oversight.

Refer to Section 4.4 of this PMP for more information. All procurements shall be in accordance with the RTD Procurement Standards Manual.

4.3.6.5 Product and Service Provision

Contractors QMPs shall describe the Contractor’s plan for both QA and QC of its work. Contractors must obtain RTD acceptance of work-related submittals (plans, procedures, reports, shop drawings, etc.) in accordance with the Submittals section of their respective contract.

Contractors shall provide for inspection of their work in accordance with the approved QMP. Inspection of critical work that will be hidden by subsequent construction/installation activities will be documented by the Contractor’s quality control staff. Prior to beginning any definable segment of construction/installation work, Contractors will conduct a preparatory meeting to review contract requirements, approved shop drawings, and other submittal data; and to provide assurance that required quality control testing will be provided, materials and equipment conform to approved shop drawings and submittal data, and all required preliminary work has been completed.

Special processes are those processes that can not be verified by subsequent inspection techniques. These processes must be controlled and accomplished by qualified personnel using approved procedures and/or instructions in accordance with applicable codes, standards or specifications, and contractual requirements. When special processes are in use, Quality Assurance personnel will verify personnel qualifications and the use of approved procedures through personal witness, and through review and audit of documentation.

Contractors will establish and maintain documented procedures for identifying and controlling products delivered for use in construction/installation. Quality Management Plans will describe traceability procedures for materials, parts, equipment, and services important to the function of safety related systems and subsystems.

Construction contractors will establish and maintain written procedures for handling, storage, packaging and delivery of materials, equipment, and other elements of the work that prevent damage or deterioration.
Construction Contractors will document their procedures for identification, control, calibration, and maintenance of inspection, measuring, and test equipment to ensure conformance of equipment with industry standards and other applicable requirements, and require their subcontractors to implement equivalent procedures.

Where test hardware, such as jigs, fixtures, templates, patterns, or test software are used for inspection and testing purposes, they shall be checked to establish they are capable of verifying acceptability, prior to release for use, and rechecked at regular and prescribed intervals, as required. Contractors will establish, in accordance with Good Industry Practices, the extent and frequency of such checks and maintain records as evidence of control.

4.3.7 Measurement, Analysis and Improvement

4.3.7.1 General

Contractors are responsible for checking all work delivered within the scope of the contract. This applies to checking of planning submittals, design checking, construction inspection and testing, and materials inspection and testing. RTD, through its Quality Oversight Program, will conduct verification inspections and testing to provide adequate confidence that the work is acceptable.

4.3.7.2 Monitoring and Measurement

CUSTOMER SATISFACTION

During design and construction, the public information team will utilize strategic research and planning to:

- Track stakeholder opinion
- Assess the effectiveness of communication efforts and tactics
- Track economic impact
- Pre-test messages and materials
- Provide vehicles for constant consumer input

Refer to Section 4.8, Public Information and Involvement, for additional information.

INTERNAL AUDIT

RTD will monitor its key management processes through an internal audit program established with assistance of its Quality Management Consultant (QMC). Results from these audits will be analyzed during program reviews in an effort towards continuous improvement. Contractors will describe their own internal auditing procedures within their QMP for the respective project.

RTD’s internal quality audit process is further defined in detail within the Quality Management Oversight Program Manual. In general, RTD utilizes and independent auditor not involved in the day-to-day management of FasTracks. This auditor follows an annual audit schedule defined by the Director of Quality Assurance. Internal quality audits focus on RTD’s key business practices for areas such as project controls, quality management, engineering, ROW management, safety management, and public involvement. These processes are typically
defined in this Program Management Plan, various Project Management Plans, and other detailed procedures that have been approved by management.

**MONITORING AND MEASUREMENT OF PROCESS**

RTD will monitor its program management processes, primarily through internal audits. Contractors will describe process monitoring tools, including the use of statistical techniques when applicable, within their quality plans.

RTD will also conduct both Process Audits (more frequent reviews focused on a particular process) and Management Audits (less frequent reviews on a management system) against approved contractor management plans. These audits are fully described in the *Quality Management Oversight Program Manual*. In general, RTD will audit such programs as Quality Management, Environmental Management, Safety Management, and Traffic Management.

**MONITORING AND MEASUREMENT OF PRODUCT**

RTD will implement procedures and processes for monitoring the work of its Contractors, based on the scope for that particular contract.

For planning/preliminary engineering/NEPA studies, RTD will require the contractor to implement an effective QA program that covers all aspects of the studies. The RTD FasTracks Team will monitor NEPA processes and methodology in accordance with the *Quality Oversight Program Manual* and the *Environmental Policies and Procedures Manual*.

For design-build contracts (including DBFOM), RTD requires design-build contractors to implement both QC and QA activities covering the full scope of their efforts. As such, RTD’s efforts will be focused on ensuring that these contractors are adequately implementing their management systems, as well as verifying work product acceptability. RTD’s oversight program will consist of design reviews, construction verification inspections, process audits, management systems audits, all of which are described in the *Quality Management Oversight Program Manual*. Additionally, RTD will conduct verification testing of construction materials in accordance with the RTD *Owner’s Verification Testing (OVT) Program Manual*.

For design-only contracts, RTD requires the designer to implement an effective QA program that covers all aspects of Design and Development. Specific requirements will be included in the contract, and will be documented in the contractor’s QMP submitted for approval by RTD. RTD will review design submittals against requirements, in accordance with the *Quality Oversight Program Manual*.

For construction contracts (including CM/GC), RTD requires Contractors to develop a QMP consistent with the FTA QA/QC Guidelines. Depending on the nature of the project, RTD may place responsibility for Final Acceptance testing on the Contractor, or may retain that responsibility. In either case, the Independent Testing firm performing the tests shall be properly accredited in accordance with the Contract Documents. RTD will conduct its own inspections to verify the final product meets RTD requirements.

For small projects (less than $10M), RTD will, as a minimum, require an inspection and test plan. RTD’s role will involve QA inspection and testing activities which verify that the contractors are effectively inspecting their work.

For manufactured products, third party certifications (such as ISO, AAR, PCI, AISC, SEI, etc.) that require periodic audits by the certification agency will be taken into consideration.
when planning for the use of RTD resources. Fabricators and vendors will be required to submit QMPs appropriate for their scope of work, for approval by RTD. RTD’s role will involve QA inspection activities, as needed, to provide adequate confidence that the vendor is producing and delivering compliant work. Additionally, RTD may perform site visits, audits, first article inspections, and other on site activities as needed to ensure that the vendor is implementing an effective quality management system, and complying with other RTD special requirements such as Buy America.

4.3.7.3 Control of Nonconforming Product

Contractors shall establish and maintain procedures within their QMPs for uniform reporting, controlling and disposition of non-conformances. Procedures shall be established to prevent the inadvertent release or use of nonconforming work.

Through its Quality Oversight Program, RTD may also identify non-conformances to the contract. When this happens, RTD will document the nonconformance though use of a database. A hardcopy of the report will be forwarded to document control for internal recordkeeping, and the original forwarded to the contractor for recommended disposition. RTD retains authority for final acceptance of the recommended disposition.

Construction contractors will develop procedures for correcting non-conformances dispositioned as REJECT or REWORK. Any recommendation for REPAIR or USE AS IS may require concurrence of the Designer of Record. Regardless of the Contractor’s recommendation, final acceptance of nonconforming work is at the sole discretion of RTD. Items dispositioned as REWORK or REPAIR will be inspected and verified by the Contractor’s QA/QC staff, and confirmed by RTD prior to close out.

4.3.7.4 Analysis of Data

RTD will maintain a database of all quality oversight findings that will allow analysis of trends, and verification of closure for all non-conformances. Based on this data, frequency of assessments for various contractor activities may be increased or decreased. Contractors shall describe their own internal analysis procedures within their respective QMPs.

Additionally, as part of its “Quality of Life” initiative, RTD maintains a database of transit performance information collected during “before and after” studies and at other periodic intervals to determine the impacts of new services within the region. RTD analyzes this data annually within a Quality of Life Report.

4.3.7.5 Improvement

RTD will implement corrective and preventive action procedures based on the magnitude of the perceived deficiencies, and level of risk. When opportunities for improvement within RTD’s team are identified through internal audits, 3rd party audits, or other means, RTD will initiate an “Improvement Action”. This will require the responsible party to investigate the matter, and propose a solution. Improvement Actions will require follow-up to determine the effectiveness of the proposed approach.

Contractors must implement corrective actions, as appropriate, when non-conformances are identified. Such action should include an investigation by the contractor to determine what caused the deficiency or nonconformity, and what will be done to prevent its reoccurrence. Root
cause analysis should be used by management to identify trends, based on analysis of non-conformances and audit findings.

If RTD representatives determine that a breakdown has occurred in the contractor's quality management system that could have an adverse impact on product quality, RTD project managers may initiate a Corrective Action Request (CAR), see RTD FasTracks Quality Oversight Program Manual. CARs indicate a negative trend or systemic problem that requires immediate attention by the contractor. The CAR shall be forwarded to the contractor, with copies sent to document control. If the CAR proves ineffective, punitive measures may be invoked in accordance with the contract, up to and including termination of the contract.

Preventive action includes evaluation of the Contractors’ quality programs prior to Approval, regular coordination meetings, quality audits, participation in design reviews, effective inspection & testing programs and appropriate credentials for personnel and subcontractors performing the work. The Consultant shall identify preventive measures within its QMP.

### 4.4 LEGAL AND CONTRACTUAL

The Legal Services Division provides legal advice and representation to RTD and the FasTracks Team in all legal matters, including real estate and construction matters, negotiation and drafting of contracts and IGAs, environmental issues and agency proceedings, labor arbitrations and hearings, finance and tax matters, real estate condemnation and Public Utilities Commission (PUC) litigation, workers’ compensation hearings, employment discrimination claims, personal injury lawsuits, collection and subrogation actions, and miscellaneous legal actions.

#### 4.4.1 Legal Support

RTD Legal Services attorneys and support staff provide RTD and the FasTracks Team legal advice and representation necessary to ensure that all transactional documents intended to bind RTD are in RTD’s best interest; conform to RTD policies and procedures; and meet all requirements of federal, state and local law. Therefore, contracts, IGAs, memoranda of understanding, among multiple other documents, must be routed to the Legal Services Division for signed approval as to legal form for conformance with the following:

- The Regional Transportation District Act, Colorado Revised Statutes, 1973, 32-9-101 et seq.
- RTD Board of Directors Resolutions.
- Colorado Statutory and Case Law.
- Department of Transportation 49 CFR Part 18, Uniform Administrative Requirements for Grants and Cooperative Agreements to State and Local Governments.
- Any Full-Funding Grant Agreement with FTA.
- The Americans with Disabilities Act, as amended.
- Participation by Disadvantaged Business in Department of Transportation Programs, 49 CFR Part 23.
Legal Services Division anticipates involvement with each FasTracks corridor to be real estate acquisition, including condemnation, and development; local agency contribution IGAs; IGAs covering corridor betterments requested by a local jurisdiction; assistance with materials to be submitted to the FTA; utility relocation agreements; PUC application and hearings; licensing of third parties, such as utilities in RTD property; and review and approval of engineering, construction, and other service/supply contracts.

4.4.2 Procurement Management

All acquisitions are in accordance with RTD’s Procurement Standards Manual, as revised January 2009 and all subsequent revisions. The practices, framework, and authority outlined in the manual allow acquisitions within the parameters of federal, state, local, and RTD requirements. RTD's procurement system has been fully FTA certified since May 1984. RTD is “certified to award all third party contracts without prior Federal review.”

The RTD Procurement Standards Manual sets forth the minimum standards for processing third-party contracts. These standards are established to ensure that materials and services are obtained timely, efficiently, and economically within the parameters of good administrative practices and sound business judgment.

Applicable state law and policies governing the procurement practices of the RTD include:

- The Regional Transportation District Act, Colorado Revised Statutes, 1973, 32-9-101 et seq.
- RTD Board of Directors Resolutions.
- Colorado Statutory and Case Law.
- Department of Transportation 49 CFR Part 18, Uniform Administrative Requirements for Grants and Cooperative Agreements to State and Local Governments.
- Participation by Disadvantaged Business in Department of Transportation Programs, 49 CFR Part 23.
- Department of Transportation’s Final Rules on Department of Contractors, Subcontractors Performing Under Grants, 49 CFR Part 29.
- Buy America, 49 CFR Part 661.

The Department of Materials Management is responsible for the acquisition of all project materials and services. Contract Administrators in the Materials Management Department assist Planning and Development Department in accommodating the changing needs and priorities of the work.

4.4.2.1 Procurement Guidelines

All major procurement transactions are conducted in accordance with the latest revisions of FTA’s Circular 4220.1F; RTD’s Procurement Standard Manual; and as a guide, the Federal Acquisition Regulations (FAR), in a manner that provides full and open competition between contractors and suppliers.
In procuring goods, equipment, and services, RTD follows the procedures in the RTD Procurement Standards Manual using either the Simplified Acquisitions chapter for a dollar amount between $2,500 and less than $100,000 or the Sealed Bid Procurement chapter for amounts equal to or greater than $100,000.

Acquisitions more than $100,000 are formally advertised and competitively bid, unless a determination for a non-competitive (sole-source) procurement contract or a negotiated best value contract has been established. Sealed bid procurements are used for acquisition of construction services and most of the materials and equipment. Professional Services procurements will use Competitive Proposal Procurement procedures. Purchases less than $2,500 do not require competitive pricing quotations if the price is determined to be fair and reasonable.

4.4.3 Contract Administration

Specific contract administration procedures are contained in the Contract Terms and Conditions for every project. The roles and responsibilities of RTD and the Contractor related to contract administration vary with the type of project delivery method—Design-Bid-Build; (DBB); Design-Build (DB), Design-Build-Finance-Operate-Maintain (DBFOM); or Construction Manager/General Contractor (CM/GC). Typically, the Terms and Conditions in a project’s bid documents contain most of the procedures and outline what is required of the Contractor, the Contract deliverables, and what action(s) RTD is required to perform in response to each action or deliverable. Examples of the contract administration procedures that are addressed in the Terms and Conditions are:

- Change Control
- Document Control
- Schedule Management
- Invoicing

While the Terms and Conditions outline the legal aspects of the contract administration, relationships, and responsibilities between the RTD and the contractor, internal RTD contract administration follows these general guidelines.

The Contracting Officer is the General Manager or a delegated associate, and as authorized by the RTD Board of Directors, has the responsibility to administer contracts so that their completion is accomplished within contractual requirements. The General Manager may delegate responsibilities to the AGM, Capital Programs, which then may be delegated down to the Project Manager.

All RTD procurements and major projects will have an assigned purchasing agent from Materials Management who may also perform the role of contract administrator (part-time) until one is required full-time and appointed by the AGM Capital Programs. For Professional Services contracts, the technical administration of the contract is the responsibility of the Project Manager, with administrative assistance from the assigned purchasing agent / contract administrator. The Contract Administrator and Project Manager will establish the methods and procedures to be utilized in the performance of the contract. Refer to the RTD Procurement Standards Manual for the duties of the Materials Management Contract Administrator / Purchasing Agent.
Contract administration for construction contracts is generally delegated through a Letter of Delegation to the Construction Project Manager. See Section 5.0 of the RTD Construction Procedures Manual and Section VIII-2 of the RTD Procurement Standards Manual for further details. On large construction contracts, field staff may include an on-site contract administrator to assist in tracking contract changes.

Contract changes will be negotiated within the delegated contracting authority limits as defined in the RTD Procurement Standards Manual and/or the FasTracks Contract Control Procedure, subject to review and approval by the Materials Management Division, and the AGM, Capital Programs. In addition, the FasTracks Program has established a Contract Control Board that meets regularly to review and approve all Contract changes for Contracts that provide programwide support. Once the Corridor work is in construction and the Corridor Project Teams are established, the Contract Control process is moved to the field in accordance with established RTD Board delegation for approvals.

For FasTracks Projects that include Federal Funds the Federal Transit Administration (FTA) and/or its representative will be notified of Contract changes that are grant eligible. The notification will follow the guidelines established in the Project Management Plan (PMP) for the specific project receiving the grant funds.

The Contract closeout procedures will be the responsibility of the Project Manager in close cooperation with the Contract Administrator. Procedures will be followed in accordance with the latest RTD Procurement Standards Manual.

**4.4.4 Insurance**

A Rolling Owner Controlled Insurance Program (ROCIP) is an insurance program in which the owner of the project, RTD, provides the required insurance coverage for all levels of contractors on the project. The insurance coverage includes Workers’ Compensation/ Employers Liability, Commercial General Liability, Excess Liability, Builders Risk, Contractor’s Pollution Liability, and Railroad Protective insurance. Coverage is not included for automobile liability and physical damage, professional liability, contractors’ equipment, or any coverage not described in the Summary of Insurance section.

As part of the ROCIP, RTD contracts for insurance brokerage and administrative services.

The Broker places the coverage and administers the program at the direction of RTD. As part of the Scope of work, the Broker provides a full-time, dedicated ROCIP Administrator for the duration of the project. The Broker also provides a full-time Safety Manager responsible for administering a comprehensive safety management program, including the development of a comprehensive Project Safety Manual. This document must comply with applicable construction and general industry requirements and all other applicable Federal, state, and local requirements.

Other aspects of the ROCIP include policyholder services, claims management, and a risk management information system to collect and maintain all programs and project data. For additional information, refer to the RTD FasTracks Owner Controlled Insurance Program Manual.

In addition to ROCIP, RTD may procure other insurance based on the nature of the project, including:

- Contractor Pollution Liability Insurance
• Builders’ Risk Insurance
• Delay in Start-Up Insurance
• Deductibles and Waiting Period Deductibles
• Railroad Protective Liability Insurance
• Inland and/or Ocean Marine Insurance coverage

RTD may also require the Contractor to provide:

• Professional Liability Insurance
• Automobile Liability Insurance and
• Workers Compensation/Employer’s Liability Insurance and Commercial General Liability Insurance not provided under the ROCIP.

4.4.5 Bonding

RTD follows FTA bonding requirements found in FTA C 4220.1F. These requirements are summarized as follows:

**Bid Guarantee**
When the projects go to bid, the bidder is required to provide a bid guarantee equivalent to 5 percent of its bid price. The “bid guarantee” must consist of a firm commitment such as a bid bond, certified check, or other negotiable instrument accompanying a bid to ensure that the bidder will honor its bid upon acceptance.

**Performance Bond**
The Contractor or Concessionaire is required to obtain a performance bond for 100 percent of the contract price. A “performance bond” is obtained to ensure completion of the obligations under the third party contract.

**Payment Bond**
The Contractor or Concessionaire is required to obtain a standard payment bond for 100 percent of the contract price. A “payment bond” is obtained to ensure that the Contractor will pay all people supplying labor and material for the third party contract as required by law.

FTA, however, has determined that payment bonds in the following amounts are adequate to protect FTA’s interest and will accept a local bonding policy that meets the following minimums:

- < $1 million: Fifty percent of the contract price if the contract price is not more than $1 million.
FTA recognizes that bonding costs can be expensive and reserves the right to approve bonding amounts that do not conform to these minimums if the local bonding policy adequately protects the Federal interest.

RTD has initiated a Board adopted “Subcontractor Performance Self-Insured Program” (SPSP). The purpose of the program is to provide subcontractors with a bonding alternative in order to competitively bid on subcontracts in FasTracks construction projects and still Protect RTD.

Key elements of the program include:

- RTD sets up self-funded risk pool to cover claims that could otherwise have been made against subcontract sureties – failure to pay for materials or failure to perform;
- RTD prohibits contractors from requiring subcontract payment and performance bonds;
- RTD prohibits subcontractors from obtaining bonds unless there is no charge in the bid;
- RTD establishes monitoring requirements for the prime contractor;
- RTD establishes eligibility and monitoring requirements for subcontractors in the program.

All subcontractors with contracts equal to or less than $1 million are required to participate in the Program:

- Whether or not DBE/SBE;
- Whether or not able to bond independently;
- Program would not be affordable if only high risk subcontractors were included.

4.4.6  DBE/SBE Program

RTD has committed to ensuring the broadest possible base of potential Disadvantaged Business Enterprise/Small Business Enterprise (DBE/SBE) consultants and contractors, community organizations/associations, and other stakeholders, both in the Denver region and beyond are given the opportunity to compete in RTD’s FasTracks contracting programs.

The RTD DBE/SBE Management Team consists of RTD’s AGM Administration and RTD’s Business Opportunity & Outreach Officer. The Small Business Opportunity Office (SBOO) works collaboratively with the FasTracks Program Manager.

The SBOO also contracts for assistance in workplace compliance, procedures, systems, monitoring, reporting, program administration, outreach, and certification services.

The DBE/SBE Program consists of implementing various initiatives in order to meet desired program and project goals. The initiatives include, but are not limited, the following:

- Outreach program
- Mass mailings
- Newsletters
- Business opportunity workshops
- Technical assistance workshops
- Technical Assistance Resource Center/Hot Line
- Subconsultant Opportunity Bulletin Board
- Monthly Bulletin of Quarterly Forecasted Opportunities
- Plan Rooms
- Quarterly collaboration/Q&A sessions
- Outreach to primes
- Attendance at meetings and workshops related to DBE/SBE
- Dialogues with minority/women trade associations
- Periodic internal meetings for updates on the DBE/SBE Program
- Monthly/quarterly/Annual Reports

4.4.7 Policy on Labor

RTD includes a copy of the current prevailing wage determination issued by Department of Labor (DOL) in each Contract solicitation and conditions Contract award upon the acceptance of that wage determination. Under 49 U.S.C. Section 5333(a), Davis-Bacon Act prevailing wage protections apply to laborers and mechanics employed on FTA-assisted construction projects. Thus, the Common Grant Rules specify that third-party Contracts at any tier exceeding $2,000 must include provisions requiring compliance with the Davis-Bacon Act, 40 U.S.C. Sections 3141 et seq., and implementing DOL regulations, “Labor Standards Provisions Applicable to Contracts Governing Federally Financed and Assisted Construction,” 29 CFR Part 5. The Davis-Bacon Act requires Contractors to pay wages to laborers and mechanics at a rate not less than the minimum wages specified in a wage determination made by the Secretary of Labor. The Davis-Bacon Act also requires Contractors to pay wages not less than once a week.

4.4.8 WIN Program

RTD’s Workforce Initiative Now (WIN) is an innovative work-training program dedicated to workforce development in the Denver metropolitan region. WIN is a collaborative partnership among RTD, the Community College of Denver, Denver Transit Partners and the Urban League of Metropolitan Denver. WIN leverages existing training providers to identify, assess, train and place community members into careers on transportation and mixed-use development projects. WIN participants develop skills that are transferable into various sectors; in the process, businesses acquire employees who help them grow. WIN creates job opportunities, supports economic growth and strengthens Colorado communities. WIN program requirements are reviewed for all new contracts on FasTracks.

4.4.9 Conflict Resolution

RTD’s approach to conflict resolution is to use Partnering to identify issues at the earliest time possible, identify at what level in the respective organizations issues are being discussed, track them, and resolve at the lowest level in the organization.
In addition to the non-contractual Partnering resolution process, a formal contractual claims resolution process is incorporated into the Terms and Conditions portion of all contracts. Disputes not resolved through the process outlined in the Terms and Conditions are subject to resolution through mediation, arbitration, or formal litigation procedures.

4.5 PLANNING AND ENGINEERING

4.5.1 Project Planning
The FasTracks program planning process has several components: environmental planning, travel demand forecasting, transit operations and service planning, and preparation of applications for federal funding. The FasTracks Team also prepares FasTracks monitoring documents as well as required annual reports to the Denver Regional Council of Governments (DRCOG).

4.5.1.1 Environmental Process
Environmental planning is an integral part of the planning process. Environmental planning addresses requirements of the National Environmental Policy Act (NEPA) of 1969 as amended, conformity regulations related to air quality, and requirements for historical preservation and protection of public lands. The process for complying with NEPA is defined in the joint FHWA/FTA regulation, Environmental Impact and Related Procedures (23 CFR 771) and 49 CFR 622.

Each corridor requires the preparation of an Environmental Impact Statement (EIS), Environmental Assessment (EA), or Environmental Evaluation (EE), depending on the significance of the associated environmental impacts. The end result of the EIS or EA is a Record of Decision (ROD) or a Finding of No Significant Impact (FONSI), which is necessary to purchase right of way and begin construction. Normally, Basic Engineering and Preliminary Engineering are also included in this phase. EEs are similar in scope to EAs, but are performed on projects that do not fall under NEPA. EEs are formally approved by the RTD Board of Directors. Corridor Consultants selected by the FasTracks Team prepare EISs, EAs and EEs.

The Corridor Planning Manager under the direction of the AGM of Planning is responsible for managing the planning project managers (PM), who are responsible for EISs, EAs or EEs on FasTracks transit corridors and projects. During the environmental process, each of the FasTracks Corridors and projects will be led by a Planning PM with support from an Assistant Planning and an Assistant Engineering PM. Once environmental clearance is obtained for the individual corridors and projects, the project leadership will transfer to the Engineering Project Manager.

RTD will review all environmental reports in accordance with the Quality Oversight Program Manual and the Environmental Methodology Manual to ensure compliance with RTD requirements prior to accepting the work.

ENVIRONMENTAL PERMITTING
NEPA requirements and related regulations will be followed for all corridors and FasTracks facilities identified above. In addition, adherence to the Federal Transit Administration (FTA) New Starts planning requirements will be followed and documented for corridors seeking federal funding.
The environmental documents prepared for the FasTracks corridors must adhere to the following applicable environmental laws, regulations, Executive Orders, and guidance:

- The regulation of the Council of Environmental Quality (CEQ), 40 Code of Federal Regulations (CFR) 1500–1508.
- Section 4(f) of the Department of Transportation Act of 1966, as amended, 49 USC § 303.
- Section 6(f)(3) of the Land and Water Conservation Fund Act, 16 USC § 4601-U.
- The Clean Air Act as amended, 42 USC § 7401–7671.
- Section 402 of the Clean Water Act, 33 USC §1342.
- Executive Order 12898, Federal Actions to Address Environmental Justice in Minority and Low Income Populations.
- Executive Order 11990, Protection of Wetlands.
- Executive Order 11988, Floodplain Management.
- All relevant laws and procedures of the State of Colorado.
- The Colorado Department of Transportation’s (CDOT) draft Desired States initiative for joint FTA/FHWA corridors.
- Environmental Stewardship Guidance, CDOT.
- FTA’s New Starts Criteria requirements for New Starts Corridors.
- Relevant MAP-21 provisions.
- FasTracks Environmental Methodology Manuals Volumes I, II and III.

ENVIRONMENTAL IMPACT STATEMENT (EIS), ENVIRONMENTAL ASSESSMENT (EA), CATEGORICAL EXCLUSION (CATEX), AND ENVIRONMENTAL EVALUATION (EE)

The majority of the FasTracks corridors/projects have completed environmental documents. Additional environmental work often occurs during final design and construction due to project changes that occur after the formal NEPA/EE processes. This environmental work can encompass Reevaluations of EIS’s, Reevaluations of EE’s, Supplemental EA’s and EIS’s and Categorical Exclusions (CatEx). Additionally it is a federal requirement, and requirement of the RTD Board in the case of EE’s, that mitigation measures committed to during the environmental process are tracked and completed during final design and construction.

The following is a summary of the status for the environmental review of each corridor/project:
- **Bus Maintenance Facility** – Additional bus maintenance facility capacity is not anticipated until after 2035.

- **Central Corridor Extension** - The Final EE was approved by the RTD Board of Directors in February 2010. An additional planning study is currently underway for this project.

- **Commuter Rail Maintenance Facility (CRMF)** - The environmental process for the CRMF was a Supplemental EA to the Gold Line, North Metro and East Corridor EISs. The Gold Line and East Corridor RODs, which were received in November 2009, which provided the environmental clearance for the CRMF.

- **Denver Union Station (DUS)** – The Final EIS (FEIS) was released in August 2008 and a ROD was issued on October 17, 2008. Construction is close to completion on this project.

- **East Corridor** – The FEIS was released on in September 2009. The ROD from FTA was obtained on November 6, 2009 signifying the completion of the environmental process for the corridor. This corridor is currently 50% complete.

- **Gold Line** - The FEIS was released on August 21, 2009. A ROD from FTA was obtained on November 2, 2009 signifying the completion of the environmental process for the corridor. This corridor is currently under construction.

- **I-255 Corridor** - The RTD Board of Directors adopted the Final EE in October 2009. A CatEx for portions of the alignment that will utilize CDOT right-of-way (ROW) was completed for Segment 1 of the project. This project is currently under construction.

- **Light Rail Maintenance Facility** - This project consists of the expansion of the existing Elati Facility and the Mariposa Facility. Because these are being expanded within the existing footprint, an environmental process is not required. Both were included in the Southeast Corridor FEIS.

- **North Metro** – The Draft EIS (DEIS) was released in November 2009. The FEIS was released and a ROD obtained in April of 2011. A Reevaluation of the EIS and a Revised ROD will be completed since it is anticipated that the project will be completed in phases.

- **Northwest Rail** - A Draft EE was released in February 2010 and a Final EE was obtained in May of 2010. This corridor is currently undergoing an Alternatives Analysis to redefine the project.

- **Southeast Corridor Extension** - The Final EE was approved by the RTD Board of Directors in February 2010. A CatEx for portions of the alignment that will utilize CDOT ROW will also be necessary. The CatEx will be timed so that it is completed prior to the projected construction start date. The corridor is currently undergoing an EA for the project (since federal funding is now anticipated) and a FONSI is expected in 2014.

- **Southwest Corridor Extension** - The Final EE was approved by the RTD Board of Directors in February 2010. A CatEx for portions of the alignment that will utilize CDOT ROW will also be necessary. The CatEx will be timed so that it is completed prior to the projected construction start date.
US 36 BRT - Phase 1 - This project is currently underway and all necessary environmental clearances have been obtained.

US 36 BRT - Phase 2 - The FEIS was released in October 2009. A ROD was obtained in December 2009 signifying the completion of the environmental work for this corridor.

West Corridor - The West Corridor EIS was completed with a ROD issued April 19, 2004. An FFGA was received in January 2009 and a full Notice to Proceed (NTP) was issued in June 2009. This project is currently in operations and environmental mitigations have been completed.

DOCUMENT PREPARATION AND REVIEW PROCEDURES

Environmental documents prepared for the FasTracks corridors and facilities will follow the principles identified in the CDOT-RTD Master Inter-governmental Agreement (IGA) and the FasTracks Environmental Methodology Manual’s Volumes I, II and III guidance.

Processes developed for mitigation tracking during final design and construction can be found in the FasTracks Environmental Methodology Manual Volume III.

TRANSIT-ORIENTED DEVELOPMENT IN THE NEPA PROCESS

DRCOG and the RTD FasTracks Team coordinate with local municipalities concerning transit-oriented development (TOD) opportunities throughout the region. The RTD FasTracks Team TOD Manager works directly with local governments to assist in establishing standards for development. During the NEPA process, the TOD Manager also works with Corridor Consultants to define how coordination will occur with the efforts of DRCOG and the RTD FasTracks Team in their TOD work.

There are two evaluation phases of TOD planning that occur during the NEPA process. The first phase of evaluation identifies opportunities and constraints related to TOD within potential station areas and document the status of station area planning efforts by local jurisdictions and potential new development adjacent to the corridor/station area. TOD work is coordinated with environmental and basic engineering to optimize the potential for compatible development near stations. The second phase of evaluation involves the development of a specific action item list that identifies the next steps required to move the station area planning at high-potential stations further in the development process. This phase of evaluation is conducted jointly with local jurisdictions.

4.5.1.2 Travel Demand Modeling, Transit Operations Analysis and Service Planning

Travel demand modeling, transit operations analysis and coordination with RTD’s Service Planning and Scheduling Division as well as the Rail and Bus Operations Divisions are key components of project planning. The Service and Operations Planning Committee provides a forum for coordinating rail and bus service and operations planning.

TRAVEL DEMAND MODELING

RTD uses the Denver Regional Travel Demand Model developed by DRCOG to develop ridership forecasts for NEPA studies, FTA New Starts submittals, and other RTD internal planning studies such as FasTracks systemwide planning. The outputs of the travel demand model not only provide ridership estimates but are also used to develop bus and rail operating
statistics, which are then used to determine fleet needs and operations and maintenance (O&M) costs. RTD uses outputs from the DRCOG model to calculate user benefits (TSUB values) that are necessary for calculation of the cost effectiveness index (CEI) for New Starts submittals.

**TRANSIT OPERATIONS ANALYSIS**

RTD conducts transit service planning and operations analyses on a project-by-project and systemwide basis, such as FasTracks and bus and rail fleet management plans. For studies of multiple corridors, transit operations plans for corridor studies must be integrated into transit service plans for a system as a whole. However, even for corridor studies, systemwide statistics are developed. Travel model outputs are used to develop bus and rail operating statistics and necessary fleet sizes. The operating statistics are used to develop bus and rail O&M cost estimates, and the fleet sizes are used to develop bus and rail capital cost estimates.

Bus and rail operations plans have been developed for the FasTracks rail system in the long-term, which include additional light rail and commuter rail. It is expected that refinement of bus and rail service plans will be conducted throughout the planning, design, and construction of individual FasTracks corridors and the system as a whole. In addition, it is expected that bus and rail operating statistics models will be developed by the contractor that are compatible with travel demand software in use at that time, and that RTD staff will be involved in the development of and trained in the use of the operating statistics models.

**RAIL SIMULATION**

RTD uses OnTrack software to simulate future rail operations. Rail simulation modeling is effective for the following:

- Comparison of station-to-station travel times of different types of rail technology, including light rail and commuter rail;
- Comparison of operating efficiencies of alternative rail operating plan scenarios, including variations on train consists, routing into and out of downtown, and interlining;
- Understanding of track capacity constraints at junctions due to track geometry, and signal/communications limitations;
- Understanding of rail operations into, out of, and within maintenance facilities;
- Annualized cost/benefit analysis looking at tradeoffs between capital cost value-engineering options and longer-term O&M consequences:
  - Crossovers versus full diamonds (double crossovers) at end-of-lines and other switching locations;
  - Flexibility to make long-term adaptations in the event of ridership changes among corridors, route changes, and interline changes; and
  - Flexibility to respond to short-term or emergency changes, including, but not limited to special events (i.e. at stadia), terrorist threats, accidents, and maintenance activities.

RTD staff manages and coordinates with the consultant who has developed the OnTrack software. This consultant is responsible for simulating and analyzing all rail operations scenarios as needed. A separate FasTracks Systems Engineering consultant will be responsible for all signals, communications, and power specifications and systems design.
Rail operations plans have been developed for the FasTracks rail system in the long term, which will include additional light rail and commuter rail. It will be necessary to simulate individual rail corridors and the system as a whole to determine if operations plans are feasible or if modification is necessary. It is expected that refinement of rail operations models will be conducted throughout the planning, design, and construction of individual FasTracks corridors and the system as a whole.

4.5.1.3 **FTA Requirements**

**NEW STARTS SUBMITTALS/UPDATES**

There are three major milestones to FTA’s New Starts process: entry into Preliminary Engineering (PE), entry into Final Design, and receipt of a Full Funding Grant Agreement (FFGA). Prior to submitting a request to enter into PE, candidate New Starts project sponsors must perform and complete a planning alternatives analysis which evaluates a range of transportation alternatives developed to meet locally-identified transportation problems in a given corridor. The objective of the planning alternatives analysis is the development of reliable estimates of costs, impacts, and benefits of these alternatives sufficient to make an informed decision on a preferred alternative. The sponsor must also develop a justification and financial commitment to support the request to enter into PE.

FTA annually rates candidate New Starts projects based on the project’s performance of New Starts criteria. The rating is based on the submittal of information addressing project justification criteria and local financial commitment. FTA’s project ratings are used as the basis for its decision on advancing proposed projects in the New Starts project development process. A project must receive a “Medium” or higher rating on both project justification and finance to receive approval by FTA to enter PE, final design and to receive an FFGA. Once the project is in PE, the rating is updated annually and included in FTA’s *Annual Report on New Starts*. For the criteria on which proposed projects are rated, see FTA’s *Reporting Instructions for the Section 5309 New Starts Criteria*.

Prior to approval to enter Final Design, FTA requires that project design and cost estimates be solidified, that all NEPA requirements be completed, that the majority of proposed non-New Starts funds be committed, and that the project maintain satisfactory ratings against the New Starts evaluation criteria prior to being allowed to enter Final Design.

**ROLES AND RESPONSIBILITIES REGARDING NEW STARTS**

The Corridor Consultants will prepare portions of the documentation for use by RTD in the event that FTA New Starts funding is pursued for the project. The Corridor Consultants will also develop portions of the required FTA elements to assist in applying for New Starts funding. The FasTracks Team, the Corridor Consultants and the Travel Demand/Operations Consultant will each provide a portion of this information. The RTD FasTracks Team will be responsible for preparing New Starts submittals to FTA.

**BEFORE AND AFTER STUDIES**

The purpose of Before and After (B&A) Studies is to provide FTA the ability to monitor the relative performance of each New Starts corridor. The FasTracks Technical Services Manager will oversee the collection of required data for analysis of individual New Starts projects over a long-term time frame. Data collected from various sources will be analyzed in terms of impacts and benefits to the region generated by the FasTracks corridors, facilities and station areas.
Some portions of the data collected also may be used to improve FasTracks’ procedures and processes, although this is not the primary purpose of the studies.

FTA’s *Final Rule on Major Capital Investment Projects* (December 2000) includes a provision whereby sponsors seeking an FFGA for their New Starts project must submit a plan to FTA for the collection and analysis of information leading to the identification of the impacts of the project and the accuracy of the forecasts which were prepared during project planning and development. As a condition of receiving an FFGA, project sponsors must commit to carrying out the defined elements of the aforementioned plan, resulting in the completion of a B&A Study.

The Study identifies the actual costs of the new project and its impacts on transit service and ridership. The Study isolates these actual costs and impacts by comparing the conditions that prevail after project implementation to the conditions that existed before implementation. To accomplish the second purpose, each Study examines the accuracy of predicted costs and impacts. The Study determines accuracy of the predictions by comparing the conditions that prevail after project implementation to the costs and impacts predicted for the project in each phase of the planning and project development process. For detail on the requirements of the B&A Study, see FTA’s *Guidance on Before and After Studies*.

### 4.5.1.4 Other Planning

#### QUALITY OF LIFE STUDY

The Quality of Life Study (QoL) was initiated to identify, track and measure how the FasTracks Plan is achieving the adopted goals. Additionally, the study is intended to identify and quantify FasTracks’ effects on the region, which means the study measures how the region changes as FasTracks Program elements are planned, constructed and opened for service. The QoL Study is also designed to collect B&A Study information required by FTA for those transit corridors receiving federal New Starts funds.

The QoL Study is a multi-year effort that began with the establishment of a “baseline” condition (pre-FasTracks) and will continue at least two years after the FasTracks Plan has been constructed. The first report, the *Quality of Life Study Baseline Report – 2006*, was published in February 2008 and provides the results of the baseline data collection effort. The baseline report included data for the full set of measures (70+ measures) and provided an inventory of the pre-FasTracks conditions against which future results will be compared.

Some measures can fluctuate substantially from year to year due to external factors, so a relatively large number of data points are needed to identify long-term trends that may otherwise be obscured by year-to-year variations. Thus, data will continue to be collected on all measures throughout the life of the FasTracks program. However, to account for the fact that many measures will not change appreciably on an annual basis, the QoL annual report will consist of the results of ten high level measures which are a subset of the larger set of measures, and a more detailed report will be prepared every three to five years.

#### DRCOG SB 208 ANNUAL UPDATES

Senate Bill (SB) 90-208 restricts RTD Board action relating to the construction of FasTracks corridors (projects) until the system has been approved by DRCOG. In addition, each component part or corridor of the system must be separately approved by DRCOG, including
approval of the method of financing and the technology selected for each project. DRCOG’s approval of the FasTracks program occurred on April 21, 2004.

SB 208 also requires that RTD provide an annual report describing the status of all FasTracks corridors and program elements, including the capital costs and major components such as maintenance facilities, bus service, and TOD. The report must identify any substantial changes that occur between each annual report. Upon submittal of the annual report, DRCOG prepares a Determination Memo to determine if any substantial changes would require further SB 208 action. RTD’s Planning Department is responsible for preparing the SB 208 annual report.

**TDP AND FASTRACKS ANNUAL REPORTS**

RTD also prepares an annual Transit Development Program (TDP) and FasTracks Plan Annual Report each November for the RTD Board of Directors. This report updates the status of the FasTracks Plan implementation, consistent with the District’s six-year operating and capital improvement plan presented in the TDP. The FasTracks TDP is the basis for the RTD’s annual budget and serves as the District’s input to the Transportation Improvement Program (TIP), which is compiled by DRCOG. The FasTracks TDP is also the basis for RTD’s application for federal transit funding through the TIP. The TIP identifies the federally funded transportation projects anticipated for implementation during the succeeding six-year period, sponsored by local jurisdictions, CDOT and RTD.

**4.5.2 Engineering**

The engineering (design) phase of overall project development may coincide with the project planning process. Conceptual alignments and station footprints (for example) are developed during the planning process that will lead directly to engineering design elements. Once the final environmental/planning documentation has been signed off, the design process can be narrowed down. These alternate alignments, stations, etc. have been analyzed and discussed with stakeholders and have been pared down to one location with which to begin actual design. Should it prove necessary, the design process may begin during the environmental/planning documentation phase.

In a typical Design-Bid-Build project, RTD solicits professional services (Consultant) to perform the Basic Engineering (BE) and the final design. However, regardless of the delivery method used and during the initial stages of design, BE, it will be important to ensure that the requirements set forth in and agreed to in the environmental/planning documentation are carefully adhered to. The Consultant or design-build contractor must be able to demonstrate a design management process that encompasses all phases of the project from BE through final design, although BE and final design may be separated into two contracts and/or delivery methods.

Engineering consists primarily of the design of components within the transportation project to attain a desired goal. Engineering documents are developed to address in detail each of the components such as rail, stations, roadway, structures, utilities, drainage, etc. Furthermore, plans are developed in stages or submittal levels for purposes of staged review (submittal level). The Consultant must prove to have the technical capacity and experience to undertake the engineering design. The Consultant shall use all applicable and up to date standards, guidelines, codes, criteria and policies for design.

Within RTD, the design process is organized basically like that of other agencies. The Engineering Project Manager (EPM) coordinates and manages all aspects of the project design
throughout all levels of plan document submittals. The EPM coordinates among the various disciplines within RTD as well as with external stakeholders during the design and review process. The role and level of involvement of the EPM may change slightly based on the project delivery method. The Designer of Record is the person or entity that completes the actual design of the project and will stamp and seal the final design package in preparation for bidding by contractors for construction. This role may be filled by a consultant (designer) or by RTD staff. In addition, RTD technical design reviewers with expertise in specific fields will often be used to provide the EPM with input during the design phase and at each submittal level. These reviewers may have expertise in the following disciplines: track, systems, civil (including roadway), drainage, utilities, structures, stations, safety, etc.

It should be noted that some guidelines will change between federally funded projects and non-federally funded projects. Engineering encompasses all types of RTD projects including, but not limited to, commuter and light rail corridors, rail modernization, bus facilities, train station improvements, maintenance facilities and upgrades as well as other transit projects.

Should the project be federally funded, Federal Transit Administration (FTA) policy is that final design cannot begin prior to NEPA completion as denoted by an FTA Record of Decision (ROD), FONSI, or CE determination.

RTD has developed a set of Engineering Design Guidelines to describe what is expected during the project design phase for both internal RTD staff as well as outside consultants (Consultants). These guidelines are meant to be an aid to designers so that they may be able to submit a quality product to RTD and also to help them track the design review process. The Engineering Design Guidelines provide the designer detailed information on the engineering documents required at each stage of design and engineering document submittal. Design document submittal levels below are not all meant to be used for every delivery method. The submittal levels in accordance with the RTD guidelines are as follows:

- Basic Engineering (BE, see the DEIS process above in Section 4.5.1, Project Planning)
- Advanced Preliminary Engineering (50% Design)
- Final 65% Design
- Final 90% Design
- Final 100% Design

General definitions of each of the design phases are given below. More detailed information on review content for each submittal level can be found in the Engineering Design Guidelines. In addition to these RTD guidelines for plan submittal levels and plan content, if RTD is operating on the ROW or partially on the ROW, of either the BNSF Railway (BNSF) or the Union Pacific Railroad (UPRR), the design and submittal requirements shall also be in accordance with documents such as BNSF/UPRR Guidelines for Railroad Grade Separation Projects. Moreover, if RTD improvements are impacting local highways, streets or other public roads, AASHTO, CDOT and other local jurisdictional design guidelines shall be used during design.

In addition to the different engineering document submittal levels in the project design (engineering) phase, there are different types of project delivery methods. These are defined in some detail in Chapter 2, Section 2.1 Project Delivery Approach. Each project delivery method affects, in some way, the engineering document submittal requirements. Following is a list of the delivery methods currently being considered by RTD:
The Engineering Project Manager (EPM) may determine for each discipline the level of engineering design that best suits the project delivery method.

4.5.2.1 Sustainability program:

RTD’s Sustainability Policy and Guidelines include the formation of a District-wide Inter-Departmental Sustainability Committee comprised of representatives from all of RTD’s departments, and also a FasTracks Sustainability Committee. The Project Manager for each FasTracks Project will prepare and submit annual sustainability goals for his/her project. These goals will be reviewed and evaluated by the Standing Committee and recommendations made to the AGMs of Planning and Capital Programs for approval and implementation. Proposals must include a budget analysis (costs and benefits) section. Up to 1 percent of the overall FasTracks budget will be committed to meeting sustainability objectives. Proposals for use of this budget would be evaluated by the Standing Committee. Senior Management would determine which proposals to accept.

A lead team member and an alternate from each Division will be appointed to represent that Division on the Inter-Departmental Sustainability Standing Committee. The Committee shall meet monthly. The FasTracks Sustainability Committee consists of volunteer staff members from the FasTracks Program. An annual report evaluating progress in achievement of project-specific and overall sustainability goals will be incorporated in the SB208 Annual Report to DRCOG.

4.5.2.2 Basic Engineering (30% Design)

This section discusses the primary components of the first level of engineering design, Basic Engineering, for all delivery approaches in general. The 30% design level is typically the stage at which RTD completes the design efforts for most D-B and DBFOM projects. All design beyond this level is typically completed by the Contractor with these delivery methods.

Basic Engineering (BE) takes the project from a planning stage to a preliminary level of design (approximately 30% of final design) that defines all significant elements and allows a more accurate estimate of project costs and impacts (such as alignment features and Right of Way needs). The technical and financial information gained during the BE process forms the basis for subsequent funding and implementation decisions. The BE portion of the total design effort, when properly conducted, should permit the project to move uninterrupted through final design and into construction with a minimum of design changes or delays.

During BE, significant design issues are identified and resolved, and the development of basic design details necessary to identify and quantify the work are completed. RTD’s Consultants have the following responsibilities during the environmental planning/BE phase:

- Review information from the planning documents and/or corridor scoping phase, agreements with affected agencies (MOAs, MOUs, IGAs, etc.), environmental mitigation requirements, design criteria, standards and directives, fleet requirements, power
studies, operations requirements, maintenance requirements, and communications requirements, along with the basis of design statements.

- Develop a satisfactory basis for a realistic project design schedule and budget for the design deliverables.
- Initiate evaluation and analysis of wetlands, hydrology, traffic, noise, and planning issues to facilitate resolution of community concerns.
- Refine the basic scope of work and design details that affect alignment, station location, right-of-way purchases, technology/equipment selection, and operations planning.
- Analyze community requests and public meeting information for agency response in route planning and station location.
- Define how FasTracks construction affects governmental agencies, railroads, utilities, and other parties.
- Assist RTD staff in Board meetings and with affected agencies and representative groups, as requested to coordinate and finalize the design concepts.
- Perform a value engineering analysis to confirm the most cost-effective design solutions.
- Perform a Risk Assessment and possibly a Peer Review as necessary at or about the 30% design completion stage.

4.5.2.3 Advanced Preliminary Engineering (50% Design)

This section discusses the 50% Design level for all delivery approaches in general.

Advanced Preliminary Engineering design takes the project from the BE phase where, for instance, preliminary alignments have been evaluated, and brings the project closer to a final design. The track/roadway alignment and structure types, for example, have been agreed to and finalized. The Engineering Design Guidelines contain detailed information on specific information to be shown on the plans at this level. This level of design/plan review is not typically used on traditional Design-Bid-Build projects.

In order to avoid delays and substantial added costs that are likely to accompany changes in the detailed final design, the project scope should be decided upon as much as is possible by the completion of the BE prior to initiation of final design. Changes should be discussed among the interested parties and agreed upon for compelling reasons, i.e., substantial economies achieved through value engineering, accommodation of changed conditions in construction, reduction in funds or changes in funding agency criteria, and other reasons for which the consequences of not changing are substantially more adverse than the risk of delay and the increase in design cost.

It is at this point, following the completion of the Basic Engineering design that certain delivery methods, such as D-B and DBFOM may allow for the beginning of construction, provided that adequate Right of Way, easements and utility relocation design have been finalized. In the case of certain delivery methods, provisions should also be available at this point for the early acquisition of long-lead procurements for which specifications are determined and other activities which will provide completion of the project more rapidly and at a reduced cost.
4.5.2.4 **Final 65% Design**

This section discusses 65% Design for all delivery approaches in general. The purpose of the Final Design Phase is to prepare final drawings, technical specifications, design calculations and other contract documents required to obtain construction contract bids. This includes clear statements of testing requirements and acceptance criteria for the safety and functionality of all subsystems. Typically, this phase also includes the preparation of the engineer’s construction estimate and schedule. Final design may extend into the Construction Phase in that portions are being built and/or operated (as in a Design-Build delivery method). Fire and Life Safety reviews should be completed at this level. Specific requirements of the 65% design package are listed in the EDG Manual.

4.5.2.5 **Final 90% Design**

This section discusses 90% Design for all delivery approaches in general. By this stage of the project, all major design issues have been worked out. Final design details will be completed during this stage. Specifications will also be completed. Official stakeholder plan reviews occur at this design level for permitting and land development approvals. Specific requirements of the 90% design package are listed in the EDG Manual.

4.5.2.6 **Final 100% Design**

This section discusses 100% Design for all delivery approaches in general.

This is the last phase of project development prior to construction. All contract documents required to obtain construction contract bids in the traditional Design-Bid-Build delivery method have been completed. Contract documents will also include clear statements of testing requirements and acceptance criteria for the safety, functionality and integration of all subsystems and requirements for warranties. The engineer’s estimate has been finalized and accepted by the oversight entity if applicable. At the 100% design level, all necessary plans, specifications and reports along with supporting calculations have been submitted to and accepted by all involved parties both within RTD and its consultants as well as by outside, third parties. Right of Way acquisition has been completed or nearly completed. The design documents are ready for bidding in a Design-Bid-Build delivery. All plan review comments have been incorporated or addressed. The drawings are stamped and sealed by a Professional Engineer registered in the State of Colorado and marked “Released for Construction” (RFC). Specific requirements of the 100% design package are listed in the EDG Manual.

4.5.2.7 **Reference Documents**

The engineering documents prepared by others for the FasTracks corridors must adhere, at a minimum, to the documents listed under Section 4.5.1.1.1 above. In addition, the engineering documents prepared by others for the FasTracks corridors must adhere to the latest version of the following:

- RTD Light Rail Design Criteria
- RTD Commuter Rail Design Criteria
- RTD Engineering Design Guidelines
- RTD Bus Transit Facility Design Guidelines & Criteria
• AASHTO (relevant publications)
• AREMA – Manual for Railway Engineering
• CDOT (relevant publications and specifications)
• Manual of Uniform Traffic Control Devices (MUTCD)
• Americans With Disabilities Act (ADA) Standards for Accessible Design
• International Building Code (IBC)
• All applicable local, state and Federal rules, statutes, codes and regulations
• Any other applicable stakeholder requirements (i.e. railroads, DRCOG, PUC, etc.)

4.5.2.8 Technical Specifications

RTD has a set of owner-prepared General Requirements (Division 01 Specifications) that cover overall project performance requirements for elements that overlap work sections. These are a mixture of administrative responsibilities, submittal requirements, broad performance specifications and prescriptive specifications that precede the Technical Specifications. Some General Requirements relate more to the concerns of the Construction Manager or owner’s (RTD) contract administrator.

It will be up to the discretion of the Corridor Project Manager when work on developing the General Requirements and the Technical Specifications should begin. It is important that close coordination and cooperation be observed as these two Contract Documents are developed.

The project delivery method chosen will impact the way the General Requirements are written especially in the way contractors are selected and in the way construction is managed. It is recommended that owner-prepared General Requirements (Division 01 Specifications) are used, with close coordination with the Consultant during the creation of the technical specifications, as part of the contract documents. The means by which RTD acquires the construction services (and sometimes including the design services) required to carry out the work has an important impact on the content of the General Requirements.

Rolling stock and all supporting infrastructure will be designed and built to comply in all respects with all applicable design criteria, specifications and laws. The Technical Specifications are generally created and refined by the Consultant staff in the same way regardless of the project delivery method, with one exception covered in Design-Build-Finance-Operate-Maintain (DBFOM) below.

DESIGN-BID-BUILD

In this delivery method, the RTD General Terms and Conditions and General Requirements (with coordination with the Technical Specifications) should be used as they lend themselves to the traditional general contracts form of project delivery. It may still be left to the Consultant to write the Technical Specifications with coordination with the general Requirements. Construction management may be left up to the Owner, or in some cases, assigned to the Contractor.
DESIGN-BUILD
In this delivery method, the RTD General Terms and Conditions may not apply but the General Requirements can still be used with proper coordination with the Contractor’s consultant design staff. In this case, the creation of General Requirements and Technical Specifications must be accelerated early in the project design phase in order to be ready to start early construction, in some cases after the Advanced Preliminary Engineering design phase is complete. The development of the General Requirements must reflect variations on the design-build contracting process. In some cases the design-build firm might provide land acquisition services or construction financing. Bridging may be used in which RTD retains an outside consultant to establish basic project requirements and design criteria before retaining a design-build firm to prepare final design and Construction Documents.

DESIGN-BUILD-FINANCE-OPERATE-MAINTAIN (DBFOM)
In this delivery method, an outside group will be responsible for design, construction operation and maintenance of an entire corridor or facility. Therefore, the General Requirements will have to contain a heavy amount of acceptance, commissioning and performance requirements. The commissioning process is a quality-assurance process for achieving, verifying and documenting that the performance of facility systems and assemblies meets RTDs defined objectives and criteria.

CONSTRUCTION MANAGER/GENERAL CONTRACTOR (CM/GC)
In this delivery method, specific duties and responsibilities for administration must be assigned to the Construction Manager and to RTD. Changes will have to be made to the General Requirements to fit agreed upon sharing of responsibilities. Typically in the General Requirements, within this delivery method, “the Contractor” is synonymous with “the Construction Manager.” The Construction Manager should have input into the development of the General Requirements and the Technical Specifications from an early stage on in order to gain the optimal advantage from this delivery method.

4.5.2.9 Design Management and Oversight
RTD’s roles and responsibilities in regards to design management and oversight will depend on the delivery method used with the project. In the case of D-B projects, RTD will hand over more control of design services to the Contractor since the designer is being retained by the Contractor to form the design-build team. This method tends to minimize the project risk to RTD while speeding up the construction process. However, RTD will still retain some of its role as plan document reviewer and project oversight. RTD may be responsible for:

- Design management, status reporting, and overall design coordination.
- Development and adherence to formally adopted design criteria, standard specifications, standard drawings, directive drawings, and design management procedures.
- Conducting design reviews, peer reviews, constructability reviews, value engineering reviews, and other evaluation design processes to assure tracking and resolution of issues before completion of final design.
- Monitoring and documenting compliance with NEPA.
• Monitoring, if required, necessary studies in accordance with the requirements of Section 106 of the National Historic Preservation Act of 1966, as amended (16 U.S.C. 470), and Section 4(f) of the Department of Transportation Act of 1966 (49 U.S.C. 1653), as well as wetland studies.

• Conducting and participating in public hearings, presentations, and reports as necessary for FasTracks projects, facilities, systems, and services to the community and affected agencies.

• Supporting preparation of agreements with public and private agencies, as required.

• Interfacing with other divisions of RTD and the design consultants.

• Preparing documentation in support of certification of the need for real property interests for the engineering, construction, operations, and maintenance of rail and bus transit systems.

• Providing management direction and technical input to the construction management and design consultants during construction.

• Providing summary reports of project status, as required or as scheduled.

• Producing final design products on certain projects in accordance with the RTD Engineering Design Guidelines Manual.

Specific tasks/roles and responsibilities will change depending upon the delivery method and can be summarized below.

**DESIGN-BID-BUILD**

RTD will have more involvement in design management and oversight when this delivery method is used. RTD will conduct contract document reviews at intervals specified in the Engineering Design Guidelines.

**DESIGN-BUILD PROJECTS**

RTD may be responsible for:

• Design oversight and auditing to ensure compliance with contract requirements

• Review of formal submittals including 100% design package

• Coordination with local stakeholders

• Verification of compatibility with existing systems

NOTE: The Design-Build Contractor is responsible for final design of all elements of the contract.

**DBFOM PROJECTS**

RTD may be responsible for:

• Design oversight and auditing to ensure compliance with contract requirements

• Review of formal submittals

• Coordination with local stakeholders
CM/GC PROJECTS

RTD may be responsible for:

- Design management, status reporting, and overall design coordination.
- Development and adherence to formally adopted design criteria, standard specifications, standard drawings, directive drawings, and design management procedures.
- Conducting design reviews, peer reviews, constructability reviews, value engineering reviews, and other evaluation design processes to assure tracking and resolution of issues before completion of final design.
- Monitoring and documenting compliance with EISs, EAs, and EEIs.
- Monitoring, if required, necessary studies in accordance with the requirements of Section 106 of the National Historic Preservation Act of 1966, as amended (16 U.S.C. 470), and Section 4(f) of the Department of Transportation Act of 1966 (49 U.S.C. 1653), as well as wetland studies.
- Conducting and participating in public hearings, presentations, and reports as necessary for FasTracks projects, facilities, systems, and services to the community and affected agencies.
- Supporting preparation of agreements with public and private agencies, as required.
- Interfacing with other divisions of RTD and the design consultants.
- Preparing documentation in support of certification of the need for real property interests for the engineering, construction, operations, and maintenance of rail and bus transit systems.
- Providing management direction and technical input to the construction management and design consultants during construction.
- Providing summary reports of project status, as required or as scheduled.
- Producing final design products on certain projects in accordance with the RTD Engineering Design Guidelines.
- Specific roles and responsibilities for RTD should be verified in the contract for each individual project.

4.5.2.10 Design Review and Integration

DESIGN REVIEW

RTD requires all of its design consultants to develop and implement and comprehensive quality management program to govern their work. The plan must document all procedures for technical checking and interdisciplinary design reviews. Technical checking involves a qualified designer independently checking the work produced by another designer for errors and omissions. Interdisciplinary design review provides each discipline with an opportunity to review the design work of other discipline for potential conflicts.

During the preliminary and final design phase, consultants will submit their work to RTD at specified milestones. RTD will perform its own design review, in accordance with the Quality
Oversight Program Manual and the Engineering Design Guidelines, to assess the degree to which the design meets RTD’s requirements. These reviews will be documented in RTD’s Quality Management Oversight Database, and reported to the consultant for disposition and resolution. Refer also to Section 4.3.

In most cases, it will be necessary for RTD design reviewers and consultant designers to meet and discuss the design review, in a design comment resolution meeting. During this meeting, RTD and the consultant can clarify design review comments, answer questions about the design intent, and agree to an appropriate resolution of each comment.

Following the comment resolution, the consultant will advance the design, and resolve any design review comments. At the next submittal milestone, RTD reviewers will verify that their comments have been appropriately addressed, close out previous comments if applicable, and provide any additional comments on the updated design. Prior to accepting the final design product, RTD’s design manager and engineering project manager must be satisfied that all appropriate comments for that level of design have been satisfactorily resolved. If the design is at the preliminary engineering stage, and certain comments cannot be addressed until final design, it may be necessary for the design manager and engineering project manager to defer resolution to those comments until the final design stage.

OPERATIONS, MAINTENANCE AND SYSTEMS INTEGRATION REVIEWS

The purpose of systems integration is to ensure compatibility among the various design elements and the RTD transit system as a whole. For design-build type delivery, a systems integration program will be required by contract. For traditional design-bid-build and CM/GC, RTD will ensure that the civil design is reviewed by the systems designer, and vice versa, to ensure compatibility of the civil and systems elements and with a focus on the following:

- Ensuring future construction documents will comply with design criteria and are consistent with operating plans/procedures;
- Ensuring procurement needs are mutually compatible for light rail vehicles (LRVs), commuter rail vehicles (CRVs), installation of transit signals and communications, fare collection equipment, traction power substations, and electrification systems;
- Reviewing and coordinating right-of-way, trackwork, stations, and other facilities that accommodate the systems elements;
- Defining the divisions of work in the documents so that they are coordinated with adjacent and underlying work.

In D-B and in DBFOM delivery methods, the Contractor/Consultant team is responsible for verifying the following:

- Systems design documents comply with the contract design criteria and are consistent with operating plans and procedures;
- Commuter rail vehicles, signaling, traffic signaling interface with train signaling, fare vending, communications, OCS, and vehicle traction power are compatible with each other and with other project elements;
- The right-of-way, trackwork, stations and other permanent facilities will accommodate the systems elements;
A comprehensive Design Interface Program that tracks and documents interfaces between disciplines is maintained;

The development and implementation of a comprehensive Integrated testing program that verifies that all project elements will work as designed in their Project operating environment.

The integration reviews are typically performed at the 65%, 90%, and 100% submittals during final design. Integration review on specific features may be performed prior to completion, in cases where such review would be helpful in design decision-making. During the latter part of final design, the Operations Plan is utilized to guide the start-up and systems/integrated testing and pre-revenue service phases of the project.

4.5.2.11 Value Engineering

Value engineering identifies the function of a product or service and then seeks to provide the function at the lowest ‘overall’ (life-cycle) cost. The lowest possible life-cycle cost considers performance, maintainability, safety, security, and aesthetics.

The FTA C 4220.1 F encourages RTD to use value engineering provisions in contracts for construction projects, and cautions that value engineering can be a prerequisite for some federal assistance awards. RTD realizes that FTA generally will not approve a New Starts grant application for final design funding or a full funding grant agreement until value engineering is complete; therefore, RTD performs value engineering upon completion of the BE phase. RTD notes that some contractual arrangements (for example, design-build contracts) may inherently include value engineering and may encourage value engineering at different phases of the project. When this is the case, RTD addresses this with FTA and possibly suggests that a separate value engineering exercise should not be required.

4.6 THIRD PARTY COORDINATION

The implementation of FasTracks is dependent on successful and timely performance by outside parties, including governmental agencies, utility companies, railroad companies, and others. Collaboration with these parties ensures a smoother and amenable delivery of the Project. The critical parties in the FasTracks program are listed below.

4.6.1 Federal Government

FasTracks is an integral part of a multi-modal system that will be funded in part by the federal government. The FasTracks Plan assumed three corridors that would apply for Full Funding Grant Agreements (FFGA): West Corridor, East Corridor, and Gold Line.

In addition to these Federal Grants, the FasTracks Plan also assumed federal loans from US DOT under the Transportation Infrastructure Finance and Innovation Act (TIFIA).

Since the passing of the original FasTracks Plan, new sources of Federal revenue have been authorized by Congress, which FasTracks projects may be able to qualify for:

- American Recovery and Reinvestment Act (ARRA) grants
- Transportation Investment Generating Economic Recovery (TIGER) grants
- Transit Investment for Greenhouse Gas and Energy Reduction (TIGGER) grants
• Federal Transit Administration Livability grants
  o Bus and Bus Facilities
  o Streetcar and Urban Circulators
• Clean Fuels Program

Given the budget gap described in Chapter 1, RTD FasTracks will pursue grants from all of these sources. As of May 2010, RTD had received or requested over $110M in federal grants, in addition to the New Starts funding for West Corridor, East Corridor and Gold Line.

4.6.1.1 Federal Transit Administration (FTA)

FTA is an agency of the United States Department of Transportation. FTA has the responsibility for granting and overseeing the expenditure of federal funds for mass transit projects. The primary source of these funds is through the New Starts process, a discretionary major capital investment funding program for fixed guideway projects (49 USC 5309). RTD falls within Region VIII, which is headquartered within the District.

During the News Starts phase of the project, leading up to issuance of the FFGA and ROD or FONSI, the Planning Department takes the lead in coordinating with FTA for review of RTD submittals. Following issuance of the FFGA, the Engineering Project Manager takes the lead for preparing monthly project status reports and attending quarterly FTA reviews. Following project completion and initiation of revenue service, the Planning Department again takes a lead role conducting required Before and After Studies. Refer to Section 4.5 for additional information.

4.6.1.2 Federal Railroad Administration (FRA)

The FRA is included in the planning, design, and construction phases to assure FRA regulatory requirements are met. FRA is invited to participate in quarterly meetings between RTD, PMOC, and FTA. During these meetings FRA concerns are addressed and monitored. For the commuter rail components of the FasTracks Program, the following FRA regulations are required to be achieved:

49 CFR 209  Railroad safety enforcement procedures
49 CFR 210  Railroad noise emission compliance regulations
49 CFR 211  Rules of practice
49 CFR 212  State safety Participation regulations
49 CFR 213  Track safety standards
49 CFR 214  Railroad workplace safety
49 CFR 216  Special notice and emergency order procedures: Railroad track, locomotive and equipment
49 CFR 217  Railroad operating rules
49 CFR 218  Railroad operating practices
49 CFR 219  Control of alcohol and drug use
49 CFR 220  Railroad communications
49 CFR 221  Rear end marking device--passenger, commuter and freight trains
49 CFR 223  Safety glazing standards--locomotives, passenger Cars and cabooses
49 CFR 224  Reflectorization of rail freight rolling stock
49 CFR 225  Railroad accidents/incidents: Reports classification, and investigations
49 CFR 229  Railroad locomotive safety standards
49 CFR 231  Railroad safety appliance standards
49 CFR 232  Brake system safety standards for freight and other non-passenger trains and equipment; end-of-train devices
49 CFR 233  Signal systems reporting requirements
49 CFR 234  Grade crossing signal system safety
49 CFR 235  Instructions governing applications for approval of a discontinuance or material modification of a signal system or relief from the requirements of Part 236
49 CFR 236  Rules, standards, and instructions governing the installation, inspection, maintenance, and repair of signal and train control systems, devices, and appliances
49 CFR 238  Passenger equipment safety standards
49 CFR 239  Passenger train emergency preparedness
49 CFR 241  United States locational requirement for dispatching of United States rail operations
FRA      Collision Hazard Analysis Guide: Commuter and Intercity Passenger Rail Service

### 4.6.2 State Government

FasTracks is being constructed in the state of Colorado and is subject to State laws and regulations regarding transportation, safety, health, welfare, and the environment. Since no state general fund financing is required, there are no special requirements for reporting to the state.

RTD and the Colorado Department of Transportation have signed a Master Agreement regarding the design and construction of transportation projects in the Denver metropolitan area. RTD and CDOT are coordinating the mitigation of physical impacts on existing transit or highway facilities to maintain operations and safety and to meet legal regulatory and design standard requirements.

CDOT provides a FasTracks liaison to facilitate coordination of appraisals, permits, and needed expertise on construction of highway crossings.
4.6.2.1 **Colorado Public Utilities Commission**

The PUC is the State Safety Oversight agency in Colorado and regulates light rail safety and security on behalf of the State of Colorado and the FTA. The PUC also regulates all railroad grade crossings and certain railroad rules in Colorado. RTD will file applications for each at-grade roadway crossing, as well as the grade-separated crossings, associated with FasTracks. In addition, RTD will coordinate with PUC regarding the application of PUC statutes and regulations regarding railroads. The PUC annually approves RTD’s System Security Plan (SSP) and System Safety Program Plan (SSPP). The PUC participates in semi-annual audits of RTD light rail operations under the State Safety Oversight program to assure RTD implements the approved SSP and SSPP including safety certification of new light rail projects. The PUC is an active member of the FTA and FRA coordination meetings as well as the Fire/Life Safety Committees.

4.6.3 **Denver Regional Council of Governments**

Prior to proceeding with final design and construction, RTD is required to receive approval from DRCOG pursuant to CRS 32-9-107.7, otherwise known as the Senate Bill 208 (SB 208) process, which was passed by the Colorado State Legislature in 1990). CRS 32-9-107.7 states that:

> “The RTD Board shall take no action relating to the construction of a regional fixed-guideway mass transit system until such system has been approved by the designated Metropolitan Planning Organization (MPO). Each component part or corridor of such system shall be separately approved by the MPO. Such action shall include approval of the method of financing and the technology selected for such projects.”

During planning, design, and construction, DRCOG is kept informed on the status of FasTracks through an annual SB 208 report. Should there be a major impact to alignment or financial plan of the project, DRCOG would be informed. RTD and DRCOG would then follow procedures defined in Senate Bill 208 for addressing the changes in alignment or financial plan.

4.6.4 **Intergovernmental Agreements (IGA)**

4.6.4.1 **IGA – Definition**

Intergovernmental agreements, commonly referred to as IGAs, are contracts between government bodies. They describe relationships, define authority, and seek to achieve efficiencies through mutual cooperation.

4.6.4.2 **Colorado Authority for IGAs**

The use of IGAs is contemplated by the Colorado Constitution: *Nothing in this constitution shall be construed to prohibit the state or any of its political subdivisions from cooperating or contracting with one another or with the government of the United States to provide any function, service or facility lawfully authorized to each of the cooperating or contracting units, including the sharing of costs, the imposition of taxes, or the incurring of debt (Article XIV, Section 18(2)(a)).*

Local governments are expressly given the authority to cooperate with each other through IGAs in the Local Government Land Use Control Enabling Act which reads, in part:
Local governments are authorized and encouraged to cooperate or contract with other units of government... for the purposes of planning or regulating the development of land including, but not limited to, the joint exercise of planning, zoning, subdividing building, and related regulations. (CRS 29-20-105(1)) and,

Without limiting the ability of local governments to cooperate or contract with each other... local governments may provide through intergovernmental agreements for the joint adoption by the governing bodies, after notice and hearing, of mutually binding and enforceable comprehensive development plans for areas within their jurisdictions (CRS 29-20-105(2)(a)).

An IGA documents the interests and mutual benefits of all stakeholders. Initial or draft versions of IGAs are developed and maintained by the Project Manager or personnel associated with the specific corridor or project. IGAs can address various phases of a project including Environmental and Planning, Final Design, Construction, and Maintenance and Operations. IGAs providing for local agency contribution (2.5% local jurisdictional match) are drafted during the design phase of the project preferably by 65% plan completion. Draft Example Copies of IGAs can be found in eRoom under IGAs.

A Draft Agreement is transmitted to Project Controls and other RTD staff for review and comment as determined by the Project Manager. Project Controls utilizes the Contract Module of PRISM to establish a tracking system for financial commitments. (Note: Project Controls and other RTD staff are evaluating Oracle Business Intelligence Enterprise Edition (OBIEE) software to potentially replace PRISM as the IGA tracking and reporting system for financial commitments.) Local agency contribution commitments (2.5% local match) of stakeholders require identifying, monitoring, tracking and reconciling annually.

FasTracks Project Managers are responsible for reviewing and tracking all IGA provisions on an annual basis (monthly analysis is recommended). Examples of potential IGA provisions include: financial reporting analysis including current revenues and expenditures, and future projections; grant funding analysis including grant draw-down funding amounts and remaining balances; grant timeline analysis; required document collection and exchange analysis; and property title transfers statuses.

RTD’s General Counsel is closely involved in the development and negotiations of Agreements. Prior to formal execution by either party, RTD General Counsel or their designee must sign the agreement approving it as to legal form. When an Agreement has reached final form, a Board report is prepared and authorization for the General Manager to execute is requested. After General Counsel has approved the IGA as to legal format, the Project Manager forwards two copies, at a minimum, of the Agreement to the other party or parties for execution. Once all parties other than RTD have executed the Agreement, the Project Manager obtains RTD’s signature from the General Manager.

The Project Manager then transmits the fully executed Agreement to Document Control and Project Controls, with a copy to approving Counsel. IGAs shall reside in their respective eRoom and Master Agreements shall reside in the Configuration Management eRoom. Document Control provides an original of the Executed Agreement to Materials Management.

If the IGA requires payment by RTD to the other party, Project Controls transmits an approved Purchase Requisition (PR) with a copy of the executed Agreement and other pertinent
information to Materials Management. Materials Management converts the PR to a Purchase Order (PO) in Oracle and transmits PO and IGA to Accounts Payable.

IGAs require stakeholders to provide an annual reconciliation of Agreement commitments by the end of the calendar year. In addition, IGAs that include a local match specify that Project Controls will verify the data against the data contained in PRISM and provide a detailed accounting of any variances to the Project Manager. The Project Manager or his designee will resolve variances with stakeholder and document resolution. Project Controls will update PRISM to account for resolution.

Upon meeting all commitments in the Agreement, stakeholder(s) and the Project Manager can issue final acceptance of the project and Agreement commitments.

Copies of the Intergovernmental Agreement (IGA) Completion Report shall be transmitted to Document Control. The IGA completion report includes a letter from the other agencies stating that the agreement is completed and a letter from the Project Manager stating the IGA is completed.

4.6.5 Utilities

Master Utility Relocation Agreements (URAs) were developed with RTD’s legal counsel and RTD is in the process of executing said URAs with each utility owner who has the potential of being impacted by the FasTracks program. The URAs are a process document that states how RTD and the utility owners will work together to relocate utilities for the project. The URA’s require the “Buy America” Act applicable to federally funded projects incorporated at 49 USC 5323(j) and 49 C.F. R. part 661 for FTA funding and 23 USC 313 and 23 C.F.R. §635.410 for DOT funding.

A utility matrix has been developed for tracking all utility facilities that may be impacted by the project. The Utility Matrix documents the existing condition for each utility (type, size, material, etc.) and the proposed action to resolve potential conflicts. The Utility Matrix also documents, for each utility, the existing property interest, cost responsibility for relocation, design and construction responsibility (utility owner, RTD, contractor, design-builder or the Concessionaire), the design and construction schedule, any seasonal work, and any environmental issues related to each potential relocation. The Utility Matrix is also used to develop and track approximate cost estimates for all utility work. The Utility Matrix and URAs are in the FasTracks Document Control System. The Utility Matrix will be updated by the concessionaire as the project progresses.

A utility base drawing has been developed that shows the existing utilities and indicates the proposed relocations as agreed to between RTD and the Utility owners for each impacted utility. The relocations shown on the drawings match the information shown on the Utility Matrix. The utility drawings are continually updated by the concessionaire as design progresses and changes are coordinated with the utility owner.

A manhole and pothole log showing coordinate information gathered by RTD during the preliminary stages of the project has been developed and will be updated by the concessionaire as the project progresses.

RTD pursued legislation requiring the timely coordination and relocation of utilities for the FasTracks program. The legislation was signed into law in May 2007. The legislation allows RTD and the utility companies to enter into URAs for the performance of all services required to assure timely relocation of utilities. The legislation requires RTD to give advanced notice of one
year to any utility owner having facilities requiring relocation and 18 months advance notice for major electrical facilities requiring relocation.

4.6.5.1 Utilities Interface (Design Phase)
The following activities are typically conducted by the RTD Utility Group and/or Contractor (design-builder or Concessionaire):

- Identification of all utility owners that have utilities within the corridor or that may be affected by the project;
- Obtain utility maps from all utility owners within the project area or that may be affected by the project (Subsurface Utility Engineering (SUE) Level D);
- Hold a utility owner orientation and kickoff meeting;
- Obtain railroad agreements and right of occupancy agreements for existing utilities within the project area or that may be affected by the project;
- Perform field designation (SUE Level B & C) on all utilities and surveys;
- Develop utility base drawing;
- Hold one-on-one meetings with all utility owners to discuss a specific action plan for each utility facility within the project area or that may be affected by the project;
- Identify existing property rights for each utility facility and any proposed right-of-way needs related to potential utility relocations. This information is coordinated with the Real Property group;
- Identify environmental issues related to potential utility relocations. This information is coordinated with the Safety, Security, and Facilities Department;
- Pothole and survey (SUE Level A);
- Schedule work order negotiating meetings and execute work orders for each relocation that will be performed prior to the Contractor being issued the NTP. For each potential conflict, RTD and the utility owner will try to avoid or minimize relocations.

The RTD utility group interfaces with the RTD Design Oversight Team and the Contractor to facilitate the following project design activities:

- Verify that proposed relocation designs address:
  - RTD and utility owner design criteria;
  - Corrosion control and stray current criteria;
  - Coordination with other RTD disciplines to ensure designs for relocations are compatible with other project elements;
  - Design schedule
  - Cooperation between the contractor and the utility owner.
- For each required relocation, as it relates to design, RTD performs the following duties:
  - Participation in work order negotiating meetings with the utility owners and the contractor as it relates to design of relocations;
4.6.5.2 Utilities Interface (Construction Phase)

The RTD Utility Group interfaces with the RTD Construction Oversight Team and the contractor, and is responsible for the performance of the following project construction activities:

- Participation in work order negotiating meetings with the utility owners and the Contractor as it relates to construction of relocations;
- Review the accuracy and completeness of all work orders, including all required exhibits, then sign the work orders for RTD to be executed and issued by the Contractor;
- Coordination with other RTD groups to ensure that construction for relocations is compatible with other project activity;
- Provide RTD Real Property group with the utility relocation as build drawings for Real Property to file with the RTD License Agreements for all utility work within the RTD ROW;
- Provide information for utility relocation schedules, monitor construction schedule, and facilitating cooperation between the Contractor and the utility owner.
- Provide RTD project controls representatives with utility related schedule updates for updating the project schedule;
- Monitor and process invoices and payments for all utility construction relocation work with utility owners and the Contractor. This will include evaluating percent completed for relocations. All budget information is provided to Project Controls.
- Performing construction audits for Contractor compliance with the contract;
- Coordinate as-built plans with utility owner, RTD and the Contractor.

4.6.6 Railroad Agreements

The FasTracks Program relies heavily on the ability to operate on or close to railroad right-of-way and in some cases on shared track. Agreements between the railroads and RTD will be in place before completion of the final design phase. The RTD FasTracks Team is working with both Burlington Northern Santa Fe (BNSF) Railway and Union Pacific Railroad (UPRR) in order to understand their current and future operational needs, their flexibility to permit Commuter Rail operations in their rights-of-way and to determine if there are any fatal flaws associated with the FasTracks corridors assumptions (no fatal flaws have been encountered to date). RTD has worked with both Class I railroads over the years on multiple projects and has brought on
consultant support for the FasTracks railroad negotiations. RTD has entered into an agreement with BNSF (3-31-10) that covers the ROW requirements and the BNSF relocation for the Electrified Segment of the Northwest Rail Corridor, Gold Line and the modifications to the BNSF 23rd Street Yard for DUS and North Metro. RTD has also entered into an Agreement with UPRR that provides the UPRR required ROW for the North Metro Line and the framework for the West Corridor, Gold Line and East Corridor. These agreements were finalized in 2010.

Additionally, the aforementioned railroad agreements require that RTD and the railroads meet all pertinent Buy America requirements, as dictated by USDOT and FTA.

4.6.6.1 BNSF Agreement

The FasTracks corridors that require BNSF right-of-way and/or have the potential of impacting BNSF operations are listed below:

- **North West Rail**: DUS to Pecos Station north through Utah Junction, then North on the Front Range Subdivision to Longmont.
- **North Metro**: DUS parallel to BNSF Brush Subdivision north to Brighton/York intersection, flying up and over the BNSF cross-country, parallel to the O’Brien Canal, then tying into the Boulder Industrial Lead near 70th Avenue and north to 162nd Avenue.
- **Gold Line**: Starting at Pecos, on UPRR until C & S Junction, at this point transfers back to the BNSF.
- **West Corridor**: interface with the CML.
- **DUS**: interface with the CML and BNSF Fueling Yard.

RTD and BNSF Railway signed a master Purchase and Sale Agreement to transfer ROW and property rights to RTD for the FasTracks program on 3/31/2010. The property interests outlined in the MOU Agreement extend from DUS to approximately 72nd Street in Westminster, to be used for the Northwest Rail Corridor and Gold Line along BNSF’s Front Range Subdivision, and for the Gold Line on BNSF’s Golden Subdivision. This agreement preserves the Gold Line Corridor right-of-way into downtown Golden. Along with the Purchase and Sale Agreements, RTD entered into a Joint Corridor Use Agreement that defines the roles and responsibilities of both organizations within the Corridors. Also both parties entered a Relocation and Construction Agreement which outlines RTD’s responsibilities in order to make BNSF operations whole, thus providing surplus ROW to RTD for its corridor requirements.

4.6.6.2 UPRR Agreement

The RTD FasTracks corridors that require UPRR right-of-way and/or have the potential of impacting UPRR operations are listed below:

- **East Corridor**: Denver Union Station (DUS) to Airport Boulevard/40th Avenue.
- **North Metro**: DUS parallel to BNSF Brush Subdivision north to Brighton/York intersection, flying up and over the BNSF cross-country, parallel to the O’Brien Canal, then tying into the Boulder Industrial Lead near 70th Avenue and north to 162nd Avenue.
- **Gold Line**: Starting at Pecos on UPRR until east of Ralston Road, where the remainder is on BNSF right-of-way.
- **West Corridor**: interface with the Burnham Yard and the North Lead.
- **DUS**: interface with the CML and UPRR Yard Tracks.

RTD has a Master Agreement with UPRR that defines the points of interface between each of the rail corridors and UPRR right-of-way. The North Metro Master Agreement includes aerial right-of-way and shared use agreement for the Boulder Industrial Lead.

### 4.6.7 Transit Oriented Development

RTD is an active participant in the TOD process. RTD’s role in the TOD process may vary depending upon the situation. In most instances, the RTD will play a secondary role to the local jurisdictions or TOD developers in the TOD process. These entities are typically in the lead with regard to the establishment of the regulatory framework and the actual implementation of development. The following describes alternate roles that the RTD may take on for a potential TOD project:

- **Adjacent Property Owner**—RTD in some instances is a property owner that may be adjacent to a TOD. In this case, RTD may cooperate with local jurisdictions and developers to try to maximize station access and ridership.

- **Planning Partner**—RTD may be a partner with local jurisdictions, property owners, or developers on station area planning efforts. In this role, RTD may provide resources to support the development of station area plans and TOD implementation strategies.

- **Seller or Leaser of Property**—RTD may sell or lease its property for TOD. In this capacity, RTD would evaluate the opportunity to sell or lease property on a case-by-case basis to determine the deal structure that best meets RTD’s objectives. These objectives may vary depending upon the location and function of the station in RTD’s system.

- **TOD Advocate**—RTD may serve as an advocate for TOD and would support both local and regional initiatives to encourage TOD, such as rezoning efforts.

- **Equity Development Partner**—RTD may be an equity partner in a development, whereby it participates in the profits of the development. In this instance, RTD would likely provide land and transportation assets as part of its contribution to the development. This role would occur only in isolated instances, similar to the development of DUS, and would be structured to minimize RTD’s exposure to risk.

The TOD process is a dynamic process that can involve many participants. The Project Manager is ultimately responsible for delivering the project scope on schedule and budget. The TOD Manager is responsible to the Project Manager to achieving TODs that allow for completing the project on schedule and budget. Agreements and land leases with developers specifically advise that project goals must be met or RTD will pursue other means to ensure the project meets these goals. The TOD manager monitors and reports TOD status to the Project Manager no less than on a monthly basis, and agreements with developers have milestones that must be met to meet the project goals.

RTD will not use its eminent domain powers for the specific purpose of condemning land for TOD.

### 4.6.7.1 RTD Staff Responsibilities

The Manager of Transit Oriented Development and other TOD staff serve as the main points of contact for the interface between TOD developers and local jurisdictions conducting station area
planning and TOD implementation efforts. TOD staff coordinate with other departments within RTD to facilitate the review and evaluation of TOD projects and opportunities. TOD staff take the lead in the development and communication of RTD TOD policy and guidance.

RTD developed the Strategic Plan for TOD through the collaboration of multiple RTD departments and input from partner agencies. The Plan outlines RTD’s comprehensive TOD policy and establishes the goals and objectives of its TOD program. The following issues are addressed in the Strategic Plan for TOD:

- RTD TOD policy
- Goals & Objectives for TOD
- Goals & Objectives for Joint Development
- Roles in TOD Process (all entities)
- Priorities for TOD
- Station Area Planning Process
- TOD Benchmarking/Tracking Process

The Plan also sets forth a framework for joint development, which TOD and Real Property staff play a key role in screening and shaping prior to review with the RTD Transit Access Committee. TOD staff focus on coordination with the developer, possible impacts to RTD transit operations, and planning aspects of the proposal. Real property staff focus on real estate transactions, deal points, and impacts to RTD-owned property(ies) as related to the joint development proposal.

RTD’s Transit Access Committee provides inter-disciplinary coordination and recommendations for any access-related design changes. The Committee is an important player in the joint development review process and was developed to be the primary group that coordinates with external parties on TOD issues.

RTD Transit Access Guidelines were completed by the Transit Access Committee in 2009 and established the rationale and guidelines for multimodal transit access in station design. The guidelines supplement RTD light rail, commuter rail, and bus facilities design guidelines and are intended to be used by RTD planners, designers, engineers, RTD contractors, or other public or private entities proposing development that may impact existing or planned RTD facilities.

### 4.7 REAL ESTATE MANAGEMENT AND ACQUISITION

#### 4.7.1 Real Estate Management Approach

Property acquisition and management is the responsibility of RTD’s Real Property Division of the Capital Programs Department. The Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended, including 49 Code of Federal Regulations (CFR) Part 24, dated January 24, 2005, ensures that owners of real property acquired for federal, federally assisted, and local projects are treated fairly and consistently; that persons and businesses displaced be treated fairly, consistently, and equitably; and that the regulations be implemented in a manner that is efficient and cost-effective. Acquisition of real property and relocation activities necessary to secure property for RTD projects are also governed by FTA

The RTD Board is responsible for the policy direction of RTD’s property acquisition and relocation program. By adopting the procedures, the RTD Board established the acceptable terms and conditions for property acquisitions by the agency. The Board has responsibility for approving the acquisition of property by condemnation.

4.7.1.1 Contracts for Services

To prevent unnecessary expenses and delays, and to promote uniform and effective administration of the property acquisition program, RTD may enter into contracts with any individual, firm, association, local public agency, or state agency for services in connection with the procedures.

4.7.1.2 Notices and Record-Keeping

Communications and documentation are integral to the acquisition of real estate and right-of-way. In addition to the normal records of agreements and real estate transactions, notices and records pertaining to displacement and compensation arrangements are retained.

Notices must be written in plain, understandable language. Persons unable to read and understand a notice are provided with appropriate translation and counseling. Each notice indicates the name and telephone number of a person who may be contacted for answers to questions or other needed help. Notices may be served personally or sent by registered or certified first-class mail, return receipt requested, and documented in RTD’s files.

RTD maintains records of acquisition and displacement activities in sufficient detail to demonstrate compliance with the procedures and applicable law. Such records must be maintained for at least three years after each owner of a property and each person displaced from a property receives the final payment to which the person is entitled under the procedures or in accordance with federal funding requirements, whichever is later. Such records are confidential regarding their use as public information, unless applicable law provides otherwise.

4.7.2 Real Property Acquisition Procedures

The general process used to identify and acquire the properties and rights-of-way needed for construction and operation of FasTracks projects includes activities summarized in this section.

4.7.2.1 Planning

The Engineering Division of Capital Programs identifies general property requirements during the planning and conceptual design phase. Specific properties to be acquired are identified after route and site location alternatives have been assessed and a locally preferred alternative is identified.

4.7.2.1 Environmental Site Assessments

All Phase I and Phase II ESAs are the responsibility of the Safety, Security and Facilities Department of RTD. A Phase I Environmental Site Assessment (ESA) is completed for the entire project or corridor concurrently with the NEPA process, in accordance with federal regulations and to identify and assess any potential contamination. Phase II investigations are completed when necessary to confirm the nature and extent of any potential contamination.
identified during the Phase I ESA, and to determine remediation requirements and costs. The Real Property Division may obtain the necessary approvals from property owners prior to each ESA.

4.7.2.1 Right-of-Way Engineering


The right-of-way plans depict the location of proposed trackway, traction power substations, station sites, park-n-Rides, access roads, utility easements, drainage requirements, and other property-related information. The right-of-way plan preparation includes appropriate survey activity, title commitments for all impacted properties, and legal descriptions of all required parcels. The Real Property Division will provide input during the plan preparation process for establishing type of interest and logical right-of-way boundaries. This input will consider such factors as uneconomic remnants, proposed use, and construction features (retaining wall, slopes, and access). As completed, the Project Design Managers will certify that the parcels as depicted on the plans are required for the project, and may be acquired.

4.7.2.2 Certification

The Project Managers identify general property requirements for a project during the planning and conceptual design phase of a project. For all acquisitions, including partial takes and easement acquisitions, the survey consultant in conjunction with RTD’s Real Property Division has caused for preparation the right-of-way plans depicting the proposed property acquisitions.

The survey consultant is responsible for legal descriptions supported by 8.5 x 11 inch parcel maps showing metes and bounds, bearings and distances, or other references as needed. All maps include screened topographic and utility information, metes and bounds, coordinates, acquisition boundaries, and parcel numbers.

It should be noted that all temporary easements required are the responsibility of contractor.

4.7.2.3 Title Search

After certification of properties to be acquired, the Real Property Division will initiate through title companies and consultants, under contract, title searches and commitments. The title search will be used to (a) establish ownership; (b) identify encumbrances; (c) identify any additional legal work needed to be obtained to clear title during acquisition; and (d) obtain additional information regarding utilities, etc.

Title reports will be provided to the appraiser upon assignment of parcel for valuation. Title research and title review will be ongoing, and can start independent of any other design or acquisition activity.

Title commitments have been prepared on all parcels that as part of each project.

4.7.2.3 Appraisals

Appraisals and appraisal reviews will be conducted by licensed appraisers under contract with the Regional Transportation District and are the responsibility of the Real Property Division. Appraisals and appraisal reviews will be done by appraisers experienced with State of Colorado
and Federal laws for valuing properties acquired for a public purpose under the threat of eminent domain. All appraisals and appraisal reviews will be prepared and reviewed in accordance with the Uniform Relocation Assistance and Real Property Acquisitions Policies Act of 1970, as amended, 49 CFR Part 24, Section 24.103(a) and Section 24.104, including compliance with the Scope of Work (defining the appraisal requirements), and, as appropriate a realty/personalty report and with Standard 3 of the Uniform Standards of Professional Appraisal Practice (USPAP). Chapter 3 of the Colorado Department of Transportation’s ROW Manual – Appraisals is also incorporated by reference into the documents guiding the appraisal and appraisal review process.

In accordance to 49 CFR Part 24 §24.102(b), RTD shall notify the owner of RTD’s interest in acquiring the real property and the basic protections provided to the owner by law.

Appraisers are provided with title commitments and are required to inspect each property, offering the Owner the chance to tour the property with the appraiser. State Certified Real Property Appraisers will complete all appraisals and reviews.

Prior to the initiation of any appraisal assignment, the Manager of Appraisals will be responsible for providing a request for proposal to one or more contracted appraisers in order to engage them on any appraisal assignment. The request will include a short summary of the appraisal problem, and, in response, the appraiser will be responsible for providing a scope of work for the assignment meeting the requirements of the documents referenced above and including identification of the intended use and intended user, definition of market value; statement of assumptions and limiting conditions; and certifications.

The Scope of Work for real estate appraisals must include that the appraiser will, at a minimum:

1. Provide an appraisal meeting the agency’s definition of an appraisal, or at a minimum, the definition must be compatible with the definition found at 49 CFR Part 24 §24.2(a)(3).
2. Afford the property Owner or the Owner’s designated representative the opportunity to accompany the appraiser on the inspection of the property.
3. Perform an inspection of the property.
4. Include drawings or legal descriptions with dimensions including dimensions of improvements.
5. Additionally, the Scope of Work should identify that the appraisal report shall include the property rights to be acquired, the value being appraised (fair market value), and its definition, appraised as if free and clear of contamination (or as specified), the date of the appraisal report and the date of valuation, known and observed encumbrances, title information, location, zoning, present use and at least a 5-year sales history of the property.

The scope of work must be accepted by the Manager of Appraisals and approved by the Manager, Real Property before the assignment is begun.

Appraisers are provided with title commitments and are required to inspect each property, offering the Owner the chance to tour the property with the appraiser. If the property contains improvements or personal property, the relocation agent assigned to the property will also attend the inspection in order to develop an inventory of personal property and improvements to the real estate. The addenda to any appraisal report that includes the value of improvements to
the real property as part of the estimate of compensation will include a copy of the *Certified Inventory of Real and Personal Property* developed by the relocation agent. The appraiser will collaborate with the relocation agent in listing on this form any items outside of normal practice that are included in the valuation. Key personal property excluded from the valuation should be noted. If tenant owned improvements are included, the relocation agent must attempt to have both the land owner and tenant sign the inventory prior to its inclusion in the appraisal report.

If a property to be appraised has recognized environmental issues, a hypothetical assumption will not be made to appraise the property as clean. Instead, the appraiser is responsible for indicating whether the environmental issues would affect the value of the property.

RTD currently has six appraisers and/or appraisal firms under contract as a result of solicitation for professional services. Contracts for appraisal services have been awarded to Joel C. Griffin; Civil Technology, Inc.; Bonnie Roerig & Associates; Associated Value Consultants, Inc.; Hegarty & Gerken, Inc.; and the Rothweiler Group, Inc.

Appraisal and appraisal review will be ongoing. Certification for acquisition and title research and review, and Phase I ESA must be completed to allow commencement of the appraisal phase.

### 4.7.2.4 Offers, Negotiations, and Acquisition

Prior FTA concurrence is required when just compensation exceeds $500,000. Just compensation is the amount determined as the fair market value of a property plus any damages or other compensation required by law. The Review Appraiser recommends the amount of just compensation and must amend appraisal reports and provide supporting information, as necessary, should he/she disagree with the appraiser’s determination of value. The Manager, Real Property and the Assistant General Manager, Capital Programs will approve the just compensation amount.

The Real Property Division is responsible for negotiating the purchase of all properties for the implementation of the FasTracks Program. Consultants or the contractor may be used in the acquisition process.

Each offer must be approved by the Manager, Real Property, presented in writing and include a summary for the basis of just compensation. Expedited negotiations require approximately 60 to 90 days to complete, while acquisition via eminent domain requires additional time.

The Right-of-Way Agent will establish a log to be rigorously maintained during the course of the acquisition. In addition, a summary status of all property acquisition will be maintained.

A Right-of-Way Agent will contact the property owner, present the offer to purchase in person, if possible, and provide the owner with a copy of the appraisal.

Any subsequent counter offer beyond the authorized acquisition amount requires approval. The right-of-way agent will consider material which the owner believes is relevant to determine the value of the property and suggested modification in the proposed terms and conditions of the purchase. The right-of-way agent will then draft a summary of the counter offer with justification, as provided by the property owner, and present the information to the Manager, Real Property, for review.

Every effort will be made to acquire real property through negotiation and purchase. However, in the event that an agreement cannot be reached through negotiation, the RTD shall initiate eminent domain proceedings in accordance with Colorado law.
The purchase price for a property may exceed the amount offered as just compensation when reasonable efforts to negotiate an agreement at that amount have failed and an authorized RTD official approves such administrative settlement as being reasonable, prudent and in the public interest. A written justification shall be prepared, which states what available information, including trial risks, supports such a settlement. The administrative settlement is an alternative to judicial resolution of a difference of opinion of on the value of a property, in order to avoid unnecessary litigation and congestion in the courts.

An administrative settlement is any settlement reached prior to filing a parcel for a condemnation proceeding and a legal settlement is any settlement reached after the filing of a condemnation proceeding. An administrative settlement is recommended by the Real Property Specialist/Right-of-Way Agent and a legal settlement is recommended by the assigned attorney. Any settlement in excess of RTD’s approved estimate of compensation (FMV) must be authorized by the responsible RTD official.

Administrative and legal settlements must be consistent with FTA Circular 5010.1D, Chapter IV, Section 2.e.(6). FTA must give prior concurrence of administrative settlements greater than $50,000 over the established just compensation amount.

Real Property Specialists will be responsible for working with the title companies and RTD legal counsel to ensure successful closings by reviewing title commitments and closing documents and working with Project Controls, Budget and Finance, to ensure adequate funds are available for closing either by wire or check.

4.7.2.5 Acquisition by Eminent Domain

Within 90 days of start of negotiation, RTD may determine the need to file a condemnation action in order to acquire a property in a timely manner. When it is deemed necessary to implement eminent domain, RTD will do so in accordance with all applicable laws. Negotiations with the seller may continue in an effort to reach mutual agreement at any time prior to trial. All property negotiations and acquisition activities are the responsibility of the Real Property Division, with assistance from the Legal Department and contracted outside legal counsel. FTA concurrence will be requested prior to filing for condemnation in accordance with established procedures, or limits to be requested by the RTD and approved by the FTA.

4.7.2.6 Relocation

The Real Property Division has caused to be prepared by consultant a Relocation Plan including conceptual studies followed by advance planning adequate to legally relocate occupants and personal property from the property needed for the FasTracks Projects.

Relocation needs of displaced businesses and residents are identified as part of the appraisal and negotiation processes. Businesses that require a significant amount of time to relocate and reestablish their operations will be identified early. RTD will follow the relocation provisions included in the Uniform Relocation Assistance and Real Property Acquisitions Act of 1970, as amended, 49 CFR Part 24 and the FTA guidelines outlined in FTA Circular 5010.1D.

RTD will follow all applicable statutes regarding relocation of property owners, tenants and businesses. Relocation assistance is the responsibility of the Real Property Division.

Actions required in 49 CFR Part 24 include:
• Written explanations of acquisition and relocation assistance services shall be provided in a timely manner.

• No individual, family, partnership, corporation, or association will be required to move without at least 90 days advance written notice.

• In the case of residential displacement, the 90-day notice must also include the availability of at least one comparable replacement dwelling. Rental assistance and replacement housing payments are provided to make the dwellings affordable.

• All those displaced, both business and residential, are reimbursed for certain moving expenses.

• There must be as many residential dwellings available as there are families displaced. The dwellings must be comparable to the ones from which the persons are displaced. In addition, the comparable replacement dwellings must be decent, safe and sanitary; located in areas generally not less desirable in regard to public utilities and public and commercial facilities.

• Replacement housing must be open to all persons regardless of race, color, religion, sex, or national origin.

The summary above should not be construed as being complete. The Uniform Act should be referred to for complete information.

RTD will promptly review appeals in accordance with the requirements of applicable law and the procedures.

4.7.2.7 Property Acquisition Schedule

Many factors can determine the length of time and schedule necessary for the acquisition of the properties needed for a project, including whether an acquisition can be negotiated or whether an action for condemnation is required.

The primary determinant of property acquisition and relocation activities is the project schedule. The Engineering Division must advance the final design process sufficiently to certify that the properties identified during preliminary design are needed for the project. Scheduling for the acquisition program is then derived primarily from the priorities established for various parcels or classes of parcels, such as total acquisitions of commercial properties involving business relocations. The start date for negotiation is dictated by completion of the appraisal and the appraisal review process.

The property acquisition schedule is integrated into the baseline project schedule and must be flexible enough to meet project modifications and assure possession of all necessary interests prior to start of construction.

4.7.2.8 Property Acquisition Budget

Each FasTracks corridor budget contains line items for purchase and lease of real estate and for relocation of existing households and businesses. These budgets are established during the environmental and planning stages using conservative estimates of land values along a project corridor. As alignments are better defined, cost estimates continue to be updated. This process continues during the final design phase as final right-of-way plans and certifications are completed. Costs and progress are tracked by the Project Controls Group. Updated information
regarding Fair Market Value determinations, relocation determinations, closings, administrative settlements and court awards are provided to Project Controls on a monthly basis. Copies of the contracts for personal services (appraisal and acquisition/relocation functions) and subsequent task orders are also provided to Project Controls. Monthly billings are forwarded to Project Controls for payment and tracking.

A monthly report is issued in a spreadsheet format where updates are noted and returned to Project Controls. The Project Manager has responsibility for corridor budget, and Real Property has responsibility to the Project Manager for land acquisition.

4.7.3 Property Management

All properties for the each FasTracks Project will be managed until needed for construction or otherwise by the Real Property Division or by a designated consultant providing professional property management services.

All properties will be maintained to provide safe and sanitary conditions to occupants during the relocation process. Vacant land and unoccupied structures will be maintained in a manner that will minimize vandalism and vagrancy. This will be done in conjunction with the Facilities Maintenance Division. In some cases, RTD may lease property until such time as needed for the project. In these cases, a Fair Market Value Rent determination will be established on appraisal or other information available to the Real Property Division. RTD will establish landlord/tenant relationships with all parties during the interim period to assure the property interest is protected and the rights of the tenants are met. Management of acquired property is the responsibility of the Real Property Division, Planning and Development Department.

Property Management may include:

- Interim or short-term leases [in accordance to 49 CFR Part 24 §24.102(m)] for continued use of a building or facility;
- Fencing and securing of vacant parcels or structures;
- Maintenance of land or structures per health, safety and local code requirements; and/or
- Coordination with contractors who might use acquired properties and structures as field offices or materials storage sites.

When each property is vacated, it will be inspected and arrangements will be made to disconnect utilities and secure the property.

Improvements to be demolished in order for the property to be prepared for the start of construction are the responsibility of the Engineering Division, Capital Programs Department and/or the respective contractors. In the event that site remediation is necessary prior to construction and all or part of the demolition or removal or improvements is required by the remediation effort, the demolition, removal or improvements

4.7.3.1 Demolition

Improvements to be demolished to prepare the property for the start of construction are the responsibility of the Engineering Division, Capital Programs Department. In the event that site remediation is necessary prior to construction and all or part of the demolition and removal of improvements is required by the remediation effort, the demolition, removal or improvements

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are the responsibility of the Engineering Division, Capital Programs Department in conjunction with the Safety, Security and Facilities Department and/or the respective contractors.

4.7.4 Disposal of Surplus Property

Acquisition of property may result in the acquisition of some uneconomic remnants. RTD, by state eminent domain law, is precluded from acquiring any property that is not necessary for mass transit purposes. As a result, excess property acquired is a result of acquisition of uneconomic remnants or taking of access.

At the conclusion of the construction and when real property acquired for the project can be determined to be excess and no longer needed, it will be disposed of in accordance with FTA Circular 5010.1D and RTD property disposition policies. The Real Property Division shall prepare and keep up to date an excess property inventory and utilization plan for all property that is no longer needed to carry out any transit purpose. This plan will be available upon FTA request during the triennial review process. The plan will also identify and explain the reason for excess property as follows:

1. The parcel, when purchased, exceeded the grantee’s need (uneconomic remnant, purchased to logical boundary, part of administrative settlement, etc.);
2. Property purchased for construction staging purposes such as access and/or storage; and construction is complete;
3. The intended use of the parcel is no longer possible because of system changes, such as alignment, or amendments to the project Grant Agreement;
4. Improvements to real property were damaged or destroyed, and therefore the property is not being used for project purposes, but it is still needed for the project;
5. A portion of the parcel remains unused, will not be used for project purposes in the foreseeable future, and can be sold or otherwise disposed.
6. Use and disposal of acquired properties will be examined in conjunction with station area development and joint development efforts on the Project to determine whether there are opportunities for use of RTD property in a development project.

If it is determined that real property is no longer needed for transit purposes, the property will be valued for disposal using the valuation requirements of 49 CFR Part 24 and prior concurrence in the disposition of this property will be sought from FTA. In those situations where the real property is no longer needed and is to be disposed of, a determination by FTA will be made if grant funds will be allowed to be used to acquire replacement real property under the same program and whether the proceeds from the disposition will be used as an offset to the cost.

Following are allowable options for disposal of property:

1. Competitively market and sell the property and pay FTA the greater of its share of the fair market value of the property or the straight line depreciated value of the improvements plus land value.
2. Sell property and apply the net proceeds from the sale to the cost of replacement property under the same program. Return any excess proceeds to FTA in accordance with 49 CFR 18.31.
3. Sell property and use the proceeds to reduce the gross project cost of another FTA eligible capital transit project.

4. Sell excess property and apply the proceeds to the original cost of the total real property purchased for that project.

5. Follow procedures for publication in Federal Register to transfer property (land or equipment) to a public agency with no repayment to FTA.

6. Transfer property to another FTA eligible project. The Federal interest continues.

7. Compensate FTA by computing percentage of FTA participation in the original cost.

8. Sales procedures shall be followed that provide for competition to the extent practicable and result in the highest possible return or at least payment of appraised fair market value.

9. A transfer that meets the tests for joint development is not a disposition, and the proceeds are deemed program income. For additional information on use and eligibility of joint development projects, see FTA Guidance (72 FR 5788, Feb. 7, 2007) as the final agency guidance on the “Eligibility of Joint Development Improvements Under Federal Transit Law.”

### 4.8 PUBLIC INFORMATION AND INVOLVEMENT

#### 4.8.1 Public Information and Involvement Approach

The FasTracks Public Information (PI) Program establishes and maintains a high level of communication and outreach to various stakeholders throughout the implementation of the FasTracks Program. The public information and communications function is an essential part of keeping communities connected and engaged throughout the FasTracks process, ensuring public confidence, identifying and resolving issues and concerns, and promoting the program’s success and progress.

The PI Program is structured at two levels: a program team to establish and implement public information, involvement and outreach activities at the program level and project teams to facilitate the specific day-to-day corridor-level communication efforts and outreach with the project stakeholders. Corridor public involvement teams carried out most of the PI duties during the environmental processes with RTD PI staff overseeing the contractor’s efforts. During the construction phase, RTD PI staff lead most of the public information activities with the construction contractors’ teams playing a support role in the overall effort, but leading construction-related PI activities.

As FasTracks evolves, the public’s participation evolves as well. During the planning phase, the PI Program provides opportunities for the public to provide input to help shape the project that will integrate into their community. As the program moves into the construction phase, the PI Program is designed to inform and educate the public. The goal is to establish a PI Program that honors the public desire for participation and information while ensuring that the individual projects move forward on schedule.

At all times the RTD PI Team and Project PI Teams work collaboratively to provide stakeholders, the media and the public with clear, consistent, timely information.
4.8.1.1 Mission

The mission of the FasTracks Public Information Program is to support the implementation of the FasTracks Program by creating and maintaining a comprehensive communications program that provides consistent, accurate, reliable internal and external communications that support the RTD FasTracks team vision to provide an enhanced region-wide, reliable and safe transit system that responds to the growing transportation needs of the Regional Transportation District.

4.8.1.2 Goals

The goals are:

- To use a variety of communications methods to keep all stakeholder groups highly informed about and engaged in the FasTracks Program.
- To enhance communication about the FasTracks program and its individual transit expansion projects through education, awareness building and information-sharing.
- To be responsive, accessible, proactive, honest, and forthright to stakeholder groups in all communications about FasTracks.
- To create, maintain and promote FasTracks as an industry model among national, regional and local markets.
- To create and maintain positive relationships with regional constituents.
- To maintain and promote the cooperative spirit of regionalism upon which the FasTracks Program relies for its success.
- To continue to establish innovative and cost-effective communications methods.
- To present a positive image for FasTracks, its component transit expansion projects, and RTD.
- To establish avenues for stakeholders to provide feedback and become involved with the FasTracks Program.
- To identify, analyze, and respond to issues, inquiries, and input quickly and accurately.

4.8.2 Public Information Program Organization

4.8.2.1 FasTracks Public Information Manager

The RTD FasTracks Public Information Manager oversees a comprehensive communications program, which includes an array of public outreach, public involvement, media relations, government relations, graphics arts, special events, informational materials, market research and other public information-related elements at the program level and project level. The Public Information Manager serves as a member of the FasTracks Senior Management Team, sets the strategic vision for the PI program, develops the annual scope of work for the Program Public Information Consultant (PIC), guides the annual public information plan and oversees the orchestration of all PI activities by the program PI team, comprised of RTD staff and consultant staff. The Public Information Manager also oversees the development of the individual project public information/involvement plans and the orchestration of those plans. The PI Manager also serves as the primary spokesperson for the FasTracks program.
4.8.2.2 *FasTracks Public Information Consultant (PIC)*

The PIC works with the FasTracks Public Information Manager to oversee and execute communications and outreach associated with FasTracks at the program level. The PIC carries out public information, communications and outreach activities as determined through the consultant’s annual scope of work depending on the needs of the FasTracks program. This includes assisting with development of the annual public information plan, serving as public information liaisons at the project level; collaborating on strategies to address program and project-related issues; communicating with local communities, elected officials, neighborhood and community groups, minority groups, local businesses, and media outlets; assisting with maintenance of the FasTracks Web site and social media outlets; coordinating production of FasTracks collateral materials; and planning and orchestrating FasTracks special events and activities.

4.8.3 **Communications Structure**

4.8.3.1 *Phases of FasTracks*

The FasTracks Public Information/Involvement Team approaches the communication program in four primary phases of the FasTracks Program:

- **Planning (EIS/EA)**
- **Design**
- **Construction**
- **System Testing and Start-up**

Each phase and each corridor requires unique approaches, methods, and strategies for communicating with stakeholders and engaging the public in the FasTracks program.

4.8.3.2 **Communication Programs**

The RTD FasTracks PI Team has six strategic functional areas through which the FasTracks Public Information Program is implemented.

- **Internal Relations** — A program focused on ensuring that all staff, consultants and project partners remain informed and engaged in the FasTracks Program through internal channels that allow for consistent, convenient information flow throughout the organization.

- **Public Involvement** — A program focused on facilitating two-way communication between the public and the FasTracks Team to elicit input, feedback, and participation throughout the Program.

- **Public Outreach** — A program focused on connecting with various communities and stakeholders to provide information and create an informed, educated public.

- **Government Relations** — A program focused on establishing and maintaining positive relationships with government stakeholders and partners.

- **Media Relations** — A program focused on establishing and maintaining positive relationships with trade, community, local, regional, and national media organizations.
- **Crisis Communications** — Established procedures designed to guide the FasTracks Team in coordinated communication with the public, news media, government agencies, employees, project partners, and other affected parties in the event of a crisis situation.

### 4.8.3.3 Public Information/Involvement Plans

The RTD FasTracks Public Information Manager and the Public Information Consultant Project Manager have developed a general Strategic Public Information Plan that serves as the overarching approach to program public information and involvement. Periodically, the PI Manager and Project Manager update and revise the Strategic PI Plan as necessary. Each year during the fourth quarter, the PI Team develops an Annual Public Information Plan to define the anticipated tasks and approach at the program level necessary for the coming year. Then each quarter, the team further fine-tunes the work plan into a Quarterly PI Plan of specific tasks and activities for the upcoming quarter. The Quarterly Plan also includes a report of work from the previous quarter.

### 4.8.3.4 Corridor/Project PI Liaisons

Members of the FasTracks Program PI Team are assigned to serve as PI Liaisons to specific FasTracks projects. These liaisons are the consistent link between the FasTracks PI Team and the project-specific PI teams throughout the implementation process.

Establishing PI Liaisons for each project ensures a convenient and streamlined flow of communication between the FasTracks PI Team and the project/corridor PI teams. The PI Liaisons are an active part of the project team, attend project team meetings, plan and orchestrate project community meetings and special events, develop project messaging, coordinate project messaging with FasTracks program messaging, prepare and deliver project community presentations, coordinate review and distribution of all project informational materials, and respond to project media inquiries.

### 4.8.3.5 Project Public Information/Involvement Teams

As FasTracks progresses through the various stages of planning and development, project/corridor public information/involvement teams are subcontracted through the project prime contractor to help the RTD PI Team carry out the project-specific public information and involvement duties. The project teams work with the FasTracks PI Team to develop project PI plans and to define the various tasks and responsibilities of the two teams. The FasTracks PI Team and the project/corridor PI teams work closely to ensure that the key issues and messages for the FasTracks program are incorporated into the project-specific plans, and that the corridor issues and messages are communicated to the various stakeholder groups.

The FasTracks PI Team takes the lead on general project information and is responsible for communication and media relations related to all project information and issues. The Contractor’s PI Manager will take the lead on compiling any construction-related or coping information to share with the FasTracks PI Team for development. The Contractor’s PI Manager will also take the lead on media inquiries about construction activities, construction impacts and construction incidents.

The Contractor’s PI manager will coordinate the Contractor’s construction information with the RTD Project PI Manager. The RTD PI Team and Contractor’s PI Team will work collaboratively to ensure that construction information and project progress are provided in a timely and proactive manner. The RTD PI Manager will provide direction on priorities as needed.
The RTD PI Manager will take the lead in the planning and orchestration of project community outreach and events, coordinate messaging with the FasTracks PI Team, and coordinate development, review and dissemination of project informational materials. The Contractor’s PI Manager will take the lead on development and distribution of door hangers/notifications to impacted properties prior to the start of construction activities.

The RTD PI Team and the Contractor PI Team will work together to develop an internal communications and teambuilding plan to keep the RTD and Contractor Project Teams updated, informed and engaged in the project with consistent messages and activities to foster team unity and camaraderie.

Table 4-1 is an outline of the roles of the RTD FasTracks PI Team and Project Contractor PI Teams, as defined in the established roles and responsibilities matrix.

<table>
<thead>
<tr>
<th>AREA/TASK</th>
<th>ROLE OF EACH TEAM</th>
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<tbody>
<tr>
<td>Contractor PI Process</td>
<td>Assign Contractor PI Manager to represent Contractor</td>
</tr>
<tr>
<td></td>
<td>Develop Internal Communications Coordination Plan</td>
</tr>
<tr>
<td></td>
<td>Implement Internal Communications Coordination Plan</td>
</tr>
<tr>
<td></td>
<td>Assist in implementing PI Plan</td>
</tr>
<tr>
<td>Issues Tracking</td>
<td>Track construction issues and resolutions via RTD’s web-based comment tracking database</td>
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<tr>
<td></td>
<td>Work with RTD PI Team on resolving project issues</td>
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<tr>
<td>Crisis Communications</td>
<td>Follow the structure of the FasTracks Crisis Communications Plan to</td>
</tr>
<tr>
<td></td>
<td>Provide overarching FasTracks Crisis Communications Plan</td>
</tr>
<tr>
<td>AREA/TASK</td>
<td>ROLE OF EACH TEAM</td>
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<td>-------------------</td>
<td>------------------------------------------------------------------------------------</td>
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<td></td>
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</tr>
<tr>
<td>Government Relations</td>
<td>Assist RTD PI Team on communications with government officials</td>
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<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Media Relations</td>
<td>Follow FasTracks Program Media Guidelines and Procedures</td>
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<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Public Outreach Meetings</td>
<td>Assist RTD PI Team in preparation for project public outreach meetings; attend meetings and assist with set-up/clean-up.</td>
</tr>
<tr>
<td>Website</td>
<td>Maintain construction-related web content and updates on project sections of</td>
</tr>
<tr>
<td>AREA/TASK</td>
<td>ROLE OF EACH TEAM</td>
</tr>
<tr>
<td>-----------</td>
<td>------------------</td>
</tr>
<tr>
<td>Contractor PI Specialist</td>
<td>RTD PI Team</td>
</tr>
<tr>
<td><strong>FasTracks website including upcoming construction, impacts to traffic, residents and businesses; posting of a look-ahead construction schedule.</strong></td>
<td><strong>Update general project information on project section of website</strong></td>
</tr>
<tr>
<td>Field and answer construction questions and comments submitted through the project section of FasTracks website.</td>
<td></td>
</tr>
<tr>
<td><strong>Key Messages</strong></td>
<td><strong>Develop construction-related project messages</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Develop program key messages and general project key messages</strong></td>
</tr>
<tr>
<td><strong>Graphic Design</strong></td>
<td><strong>Provide graphic design services for general project and construction-related informational materials</strong></td>
</tr>
<tr>
<td><strong>Collateral Development</strong></td>
<td><strong>Provide construction information for inclusion in project informational materials</strong></td>
</tr>
<tr>
<td><strong>Photography/Videography</strong></td>
<td><strong>Documents contractor-specific activity for archive purposes</strong></td>
</tr>
<tr>
<td><strong>Door Hanger Distribution</strong></td>
<td><strong>Develop door hangers/notifications and distribute door hangers and flyers of construction activities and information according to specifications</strong></td>
</tr>
<tr>
<td><strong>Stakeholder lists</strong></td>
<td><strong>Maintain project stakeholder lists</strong></td>
</tr>
</tbody>
</table>
Table 4-1. PI Teams Roles and Responsibilities

<table>
<thead>
<tr>
<th>AREA/TASK</th>
<th>ROLE OF EACH TEAM</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Contractor PI Specialist</td>
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<tr>
<td>Speakers Bureau</td>
<td>Coordinate with RTD PI Team on development and delivery of presentations to</td>
</tr>
<tr>
<td></td>
<td>community or stakeholder groups</td>
</tr>
<tr>
<td>Spanish Language</td>
<td>Provide written and verbal Spanish-language translation services and transit</td>
</tr>
<tr>
<td>Translation</td>
<td>nomenclature</td>
</tr>
<tr>
<td>Contractor Phone Line</td>
<td>Provide a 24/7 project phone number to share construction information with the</td>
</tr>
<tr>
<td></td>
<td>ability for the public to leave a message.</td>
</tr>
<tr>
<td>Information line</td>
<td>Provide FasTracks Information Line architecture and hosting</td>
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<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Special Events &amp; Tours</td>
<td>Assist RTD PI Team in planning and orchestration of project special events and</td>
</tr>
<tr>
<td></td>
<td>tours as needed.</td>
</tr>
</tbody>
</table>

4.8.4 Citizens Advisory Committee

One of the primary and long-term elements of public involvement is the FasTracks Citizens Advisory Committee. Facilitation of the committee is a function of the RTD Public Information Team and is designed to continue throughout the implementation of FasTracks program.

The FasTracks Citizens Advisory Committee is a committee of appointed community members from across the District who serves voluntarily in an advisory capacity to the RTD Board of Directors and FasTracks Team regarding the implementation of the FasTracks Program. The Citizens Advisory Committee has 17 members who apply for membership and are subsequently approved and appointed by the RTD Board. The committee hosts quarterly public outreach meetings around the district to seek public input on matters related to FasTracks, and convenes during the other months throughout the year for work sessions.

The committee has four main functions:

- To receive staff reports on the progress of the project in relationship to established schedules, budget allocations, DBE/SBE goals, and quality management guidelines.
To provide region-oriented advice to the Board of Directors on issues related to the implementation of FasTracks.

To review and provide comment on the DRCOG Annual FasTracks Review Report.

To promote public awareness and understanding of the FasTracks Program and its implementation.

4.9 CONSTRUCTION OVERSIGHT

The primary goal of the construction oversight is to complete the construction work on schedule, within the approved budget, without litigation, and in compliance with RTD’s safety, quality, and other program requirements.

4.9.1 Construction Management

The construction management program is administered by the Construction Project Managers, reporting to the Engineering Project Managers who, in turn, report either to the Deputy Assistant General Manager of Capital Programs, Eagle Project Director or the Senior Manager of Engineering/Chief Engineer, depending on the project. The construction operations, administration, and management for FasTracks conform to all appropriate state and federal regulations.

To achieve this, RTD will ensure the following:

- Contract documents clearly define the scope of work with an adequate budget and realistic schedule; terms and conditions that establish the relationship between the Contractor and the agency; and special provisions that embrace the commitments RTD established with the project partners and stakeholders.

- An integrated construction management team of RTD and consultant staff who understand and fulfill clearly defined roles and responsibilities.

- An integrated construction management program that allows RTD to monitor, track, and report scope, schedule, quality, and cost activities for the contracts.

- Well-organized, usable, and thorough construction procedures that contain clear instructions and uniform processes, citing baseline and other governing documents as appropriate. For design-bid-build projects, these procedures are defined in the RTD Construction Procedures Manual. For CM/GC, design-build, or design-build-finance-operate-maintain type projects, these procedures are defined in the RTD FasTracks Quality Oversight Program Manual and Project Controls Manual.

- A true “partnership” with contractors that recognizes the mutual goals and objectives of all the parties directly involved in or affected by construction.

- An outreach program, including a strategic communication plan that targets business and residential interests in a proactive and meaningful manner.

Each major project has a specific Project Management Plan. The Project Management Plan provides details of construction management for that project. This can change based on the project delivery method and the manner in which the risk is allocated.
4.9.1.1 **Pre-construction Phase**

Pre-construction involves the following principal activities:

- Finalize and correlate supporting baseline documents.
- Assemble design products, including estimates and schedules.
- Establish support requirements and coordinate resources to meet them.
- Perform design constructability reviews.
- Prepare independent cost estimates.
- Proceed with right-of-way acquisition and permit application process.
- Prepare and issue construction contracts.
- Negotiate with third parties as needed.

For each of these activities, the Engineering Project Manager and Construction Project Manager coordinate with other RTD departments/divisions as appropriate to solicit input into the contract solicitation. This should include, for example, Project Controls, Quality Assurance, Public Information, Systems Planning, Operations, Facilities Maintenance, Legal, and DBE. Although RTD Materials Management Division bears the primary responsibility for preparing and issuing contracts, the Engineering Project Manager and Construction Project Manager participate in the evaluation of construction bids or in evaluating proposals / negotiating construction contracts. The Engineering Project Manager and Construction Project Manager also participate in pre-construction meetings, kickoff meetings and partnering meetings once the Contractor(s) receive Notice to Proceed (NTP).

4.9.1.2 **Construction Phase**

The construction phase begins once the contractor receives NTP. Letters of Delegation are prepared from Procurement to the Engineering Project Manager and/or Construction Project Manager for exercising control and direction of the Contractor. The EPM/CPM coordinates the contract start-up activities/requirements with Project Controls, Quality Assurance, Engineering, Systems Integration, Materials Management, Finance, Legal, Safety and Security, and Property Management, which all have a role in supporting construction management. The Project Managers provide oversight, agency coordination, design support and submittal review, as required. The principal activities of the Construction Project Manager and his / her staff in this phase include the following:

- Oversee the various construction contractors’ activities.
- Ensure that submittals are reviewed adequately and promptly.
- Coordinate responses to RFIs.
- Coordinate shop drawing review and approval.
- Ensure inspection of the Work against RTD requirements. All construction contractors are required to develop a comprehensive Quality Management Plan for RTD approval, which includes procedures for inspecting and testing their work. RTD staff will conduct verification inspections in accordance with the *Construction Procedures Manual* or the *Quality Oversight Program Manual*, as appropriate based on project delivery method, to
ensure adequate confidence that the Work is acceptable. RTD may also conduct acceptance testing of construction materials, or place that responsibility on the contractor with an appropriate level of verification testing by RTD’s consultant. (See Section 4.3 for more information.)

- Ensure compliance with Buy America and all other federal, state and local provisions of the contract, as appropriate.
- Participate in the change process through review, advice, and approval, as prescribed by the FasTracks Change Control procedures, RTD’s Procurement Regulations, and contractual requirements.
- Oversee the Contractor’s Safety Program.
- Provide updates to the RTD Board of Directors and third parties as needed.
- Report program status and contribute, through Project Controls, to the monthly financial reports.
- Respond to construction site emergencies.
- Interface with the FTA and PMOC as required.
- Monitor and approve progress payment requests.

4.9.1.3 Completion and Acceptance

Substantial Completion is defined as the state of completion whereby the project may be used for its intended purpose and does not delay the commencement of work by any follow-on Contractor(s). A partial Substantial Completion for a portion of the project may also be issued. Upon Substantial Completion, RTD may initiate beneficial occupancy of portions of the work site as spelled out in the Contract Terms and Conditions.

When the Contractor believes the work, or portions thereof, are substantially complete, it must request in writing that the Construction Project Manager conduct a Preliminary Final Inspection. Following receipt of the Contractor’s written request for a Preliminary Final Inspection, the Construction Project Manager schedules the inspection with the Contractor and RTD inspection team, providing at least five days advanced notice. The inspection team makeup depends on the nature of the work being inspected, but normally will include the Construction Project Manager, Engineering Project Manager, RTD Rail Operations; RTD Facilities Management; technical representatives from the FasTracks Team; and possibly utilities, public agencies, and railroad representatives, as appropriate.

The Construction Project Manager is responsible for guiding the inspection team and recording discrepancies. All discrepancies noted for corrective action must be limited to the work required under the Contract. If, after such inspection, the work, or designated area of work, is determined to be substantially complete, the Construction Project Manager promptly prepares a Notice of Substantial Completion for approval and acceptance by RTD, attaching a Punch List of all items to be completed or corrected. The Construction Project Manager forwards this certificate with all required closeout documentation to the Engineering Project Manager. Punch List items must be completed by the Contractor prior to final acceptance.
4.9.1.4 Final Inspection

When the Contractor considers that all or a portion of work has been completed, including correction of Punch List items from the Preliminary Final Inspection, the Contractor notifies the Construction Project Manager in writing and requests a Final Inspection. The Construction Project Manager verifies full completion and, if satisfied, arranges for and conducts Final Inspection accompanied by representatives of the Contractor and all parties who participated in the Preliminary Final Inspection.

4.9.2 Final Acceptance and Closeout

Before the Final Acceptance can be processed, all changes must be negotiated and finalized by Change Orders. All outstanding claims must either be resolved by Change Order or withdrawn. A release of liens or lien waiver form must be executed prior to final payment. The Engineering Project Manager is responsible for verifying that the accounts between RTD and the Contractor are in order.

The Construction Project Manager ensures the Contractor meets the contract requirements for submittal of record documents that reflect as-built conditions. Before Final Acceptance of the contract, RTD and the Construction Project Manager ensure that:

- All required warranties and guarantees are received.
- Project record documents are completed.
- All operations and maintenance requirements satisfy contract requirements.
- Certificates of acceptance are received for work performed for others.
- Work is inspected and accepted by local jurisdictions as complying with applicable local codes, rules, and regulations.
- All required Certificates of Occupancy have been received.
- The Contractor submits an affidavit releasing RTD from all claims and liens arising from the contract.
- All nonconformances and punchlist items are closed.
- System Safety Certification is complete.

4.9.3 Construction Safety and Security

Construction Safety Management will be provided through the RTD FasTracks Construction Safety Manager under the direction of RTD Risk Management. This position will develop construction safety contract specifications and monitor/audit contractor compliance with all applicable safety items during the construction of the Project.

The requirements of this Section shall apply to the Contractor, all who work under the Contractor at any tier, and all who are associated with the performance of this Contract. This Section shall expand the general provisions of the Contractor to better achieve the RTD’s safety goal of Zero Lost Time Accidents on all of its construction projects.

By law, employers are required to make every attempt to provide a safe workplace for their workers. RTD is committed to protecting the health and safety of its employees and all those
performing work on the site. The RTD shall require the same commitment from the Contractor and its employees, and all parties having access to the project work areas.

It shall be the Contractor’s responsibility to provide and develop a safe and healthful work environment during the performance of the Contract. The Contractor is required to develop their own security means and measures while still maintaining their full responsibility for the security of their work. Compliance with the safety and security requirements shall be implemented in the course of construction, testing and final revenue service at project completion.

All costs related to the required safety and security program shall be included in the Contract price. Costs provided to administer, and maintain the Safety Program shall be complete and shall include such costs for all required personnel, supervision, compliance, activities, facilities, media, materials, tools, drug testing, and any specialty equipment or services, required to ensure a comprehensive qualified Safety Program. In estimating the work, RTD will require the Contractor to make itself familiar with all existing and limiting conditions that shall bear on the performance of the Contract with regard to safety and security.

The Contractor shall perform work in strict accordance with and comply with the following:

- The Scope of Contract
- The Project Safety Program
- The FasTracks Rolling Owner Controlled Insurance Program Manual(s) (by project)
- RTD FasTracks Construction Safety Guidelines
- The Project Schedule
- The 6ft Fall Protection Program
- Substance Abuse and Drug Testing Program
- Return to Work/ Modified Duty Program
- Formula for Changes
- All applicable OSHA, Federal, State, Local, or Municipal safety standards.
- Insurance and Rolling Owner Controlled Insurance Program (ROCIP) safety guidelines, policies and procedures
- ROCIP application and enrollment process, as set by the RTD’s insurance carrier.
- Contractor’s Project Safety Handbook / Guidelines.
- Safety Guidelines and Practices of RTD and any other special provisions.
- Other reasonable safety rules and practices established by the RTD prior to, or during the work of the contract.

4.9.3.1 Safety Program

The Contractor shall establish and maintain a written Safety Program conforming to, but not limited to the requirements of the RTD- FasTracks Construction Safety Guidelines. The Safety
Program shall be submitted for review to the RTD Loss Control- Safety Manager prior to starting work.

Safety and Insurance of RTD- FasTracks shall utilize an ROCIP; “Wrap up” Insurance program for all project. All Contractors shall agree to abide by the policies, procedures and guidelines contained within the RTD - FasTracks Construction Safety Guidelines.

At a minimum the Contractors established policies, safety documents, distribution and recording procedures shall include general and specific safety guidelines for each trade and shall be made available by the Contractor. The following standard practices may be included but shall not constitute the requirements of a complete comprehensive policy or Safety Program:

- A training program for instructing all personnel to recognize and avoid unsafe conditions and to apply good safety and health practices; including proper work attire and Personal Protective Equipment (PPE).
- A program to enforce the proper use of personal protective equipment (PPE) in accordance to Federal OSHA regulations, applicable state and local laws, and the ROCIP Project Safety Program requirements (hard hats, safety glasses, work boots, reflective vest, long pants and short sleeve shirts, at a minimum).
- An orientation and training program for instructing all visitors and personnel having access to the site to recognize and avoid unsafe conditions along with applying good safety and health practices. Acknowledgement and signing of Visitor Waiver Release form is mandatory.
- A system to communicate revisions in safety regulations, policies and procedures to all personnel and shall submit ongoing documents to both the RTD and all governing agencies as required.
- Procedures shall provide a means to verify attendance to insure communication and distribution of all rules, regulations, procedures, and policies.
- A system to insure continuous compliance with all established safety policies, procedures, rules, codes, regulations, and safety or security related policies and standards.
- Guidelines that provide authority for safety personnel to stop the Contractor's operations in the event of non-compliance to policies or procedures by either the Contractor, supervision, trades, subcontractors, visitors or suppliers.
- A formal procedure for issuing Safety Violations Notices to persons or Contractors found to be in violation of established regulations, inspection or maintenance procedures while working onsite.
- Safety violation documents issued to the responsible party that indicate hazards, conditions, and reasons for non-compliance to the established policy, rules, procedures or regulations. The documents must also establish necessary actions to correct the violation and establish follow-up procedures to immediately eliminate the hazard or violation.
- Comprehensive procedures and policies which establish guidelines for communication and rapid medical response in the event of any accident or injury situations.
No work shall commence prior to the Contractor’s receipt of acceptance and approval of the Safety Program by the RTD Loss Control- Safety Manager and the RTD Engineer.

Acceptance of the Safety Program by the RTD Loss Control- Safety Manager shall not impose any liability upon the above mentioned, nor shall any such review relieve the Contractor of any responsibilities under the Contract, or applicable local, State or Federal safety statutes and regulations.

4.9.3.2 Safety Manager

The Site Safety Manager is responsible for performing and controlling the overall jobsite safety for the Contractor and all personnel performing work. There shall be one full time Site Safety Manager-Leader appointed for each shift of operation.

The Contractor shall provide a “Safety Coordinator” for the duration of their contract. The Safety Coordinator shall be the designated point of contact person for any safety related matters on the project and shall have the authority to coordinate, correct and implement jobsite safety. Each company under the Contractor shall be responsible in providing a full time, designated on site Safety Manager when their personnel reaches 50 employees, or greater.

The number of safety professionals shall be dependent on the size and complexity of the program. If during the performance of this Contract, it is determined that the Site Safety Manager’s performance is not accomplishing the zero incident mission, additional safety personnel must be required.

The Contractor shall submit resumes of each safety personnel for approval. The RTD reserves the right not to accept or discharge any safety person who has been determined to be unresponsive, incompetent, or not performing to the RTD standards. The Project Safety Manager shall report directly to his Management and work in conjunction with the Superintendent and the RTD Loss Control- Safety-Manager.

The qualifications of personnel that shall provide site safety must meet the following criteria:

- Five (5) years of progressively responsible experience as the primary safety officer for field construction projects with current completion of safety related training courses related to construction safety.
- An Extensive Knowledge of Federal, State, and local occupational health and safety regulations (OSHA, 29 CFR, Safety and fire codes) an extensive knowledge of content, development and implementation of occupational health and safety programs for the construction industry and ROCIP programs.
- Current Certification in first aid and cardiopulmonary resuscitation (CPR).

The Site Safety Manager will be responsible for performing at least the following:

- **Contractor Pre-Job Safety Meeting.** A pre-construction safety meeting, setup by the Contractor, shall be required for all personnel coming on site.
- **Pre-Task and Job Hazard Analyses.** The Site Safety Manager shall interview all Contractor personnel for compliance with the Pre-Task and Job Hazard Analyses and maintain a file of Pre-Task and Job Hazard Analyses. The Site Safety Manager is to ensure that all who work with the Contractor comply with this requirement and stop any
job that is in violation. Any violation shall be corrected immediately and a safety review in the form of a toolbox talk be conducted prior to resuming work.

- **New Hire-Employee Safety Orientation Program**, for all onsite employees and visitors. Prior to commencing work onsite, all Contractor employees must attend the Contractor’s jobsite safety orientation and the RTD On-track Safety Orientation. Periodic audits of workers onsite shall be conducted to ensure they have proper badge or wallet card, indicating that they have attended the safety orientation within the current year. The Site Safety Manager shall enforce the disciplinary plan as outlined in the jobsite safety orientation.

- **Accident-Incident Investigation** of injuries and near misses must be tracked to identify hazards and to ensure proper medical attention and corrective action. Contractors are required to track lost time accidents, complete an Accident/Incident Investigation Form and submit to the RTD Loss Control- Safety Manager, within 24 hours of the incident. The Site Safety Manager shall track recordable injuries, lost time and near misses and submit this data to the RTD Loss Control- Safety Manager on a monthly basis. The Site Safety Manager shall develop statistical reports regarding injuries, accidents, incidents and man-hours worked without lost time injuries. Reports are distributed to Contractors, the RTD, and the RTD Loss Control- Safety Manager. Follow-up actions resulting from reports must be forwarded to the same distribution.

- **Daily Jobsite Audits**. The day-to-day safety performance of Contractors must be monitored and infractions must be addressed immediately. The Site Safety Manager shall conduct and document daily inspections of all on site Contractor’s work areas, accompanied by the Superintendent. Specifics of each inspection shall ensure compliance, or deficiencies with corrective action and documentation of these inspections shall be retained for the duration of the program. Individual Contractor’s safety audits are to be forwarded to the Site Safety Manager where they shall be tracked and published weekly. The Site Safety Manager shall document and communicate all violations, or lack thereof.

- **Monitor Daily Manpower Reports**. Actual man hours shall be recorded to calculate required safety frequency rates. The Site Safety Manager shall ensure that Contractor’s submit reports listing number of employees on site, man hours worked and location of workers. Reports are to be submitted on a weekly basis.

- **Weekly Safety Toolbox Talks**. All employees, including subcontractor and Supplier employees, at any tier, are required to conduct weekly Safety Toolbox Talks. Minutes of these talks must be recorded and retained on site. Meetings are required on a weekly basis during non-downtimes and daily during all shift downtimes. The Site Safety Manager shall keep a matrix of all Contractors on site and their Toolbox Talk compliance. Any Contractor behind in their documentation shall have their jobs stopped until these documents are produced. The Site Safety Manager shall ensure that weekly Safety Toolbox Talks take place and that these meetings get documented. The Site Safety Manager retains a copy of the agenda and sign-in sheets.

- **Hot Work Permits**. The Site Safety Manager shall work in conjunction with the Contractors to monitor the work area and posting of Hot Work permits. The Contractor shall be responsible for issuing and monitoring all Hot Work permits and activity.
Excavation Permits. Excavation permits are prepared by the Contractor performing the work and signed off by the Site Safety Manager. Contractor shall retain a copy of all permits and ensure the work meets the requirements. All excavation permits must include sketches of the affected area along with a detailed description of the work being done.

Weekly committee meetings. These shall be held with the project safety committee comprised of Contractor’s personnel and/or the project’s designated safety point of contact person.

Safety and Management Level Meetings. The Site Safety Manager shall chair weekly Contractor safety meetings for all Contractor team personnel working onsite. Attendees shall include the Site Safety Manager, the designated safety point of contact for each trade under the Contractor and/or the Superintendent. These meetings are required to keep everyone informed of jobsite safety, scheduling, safety concerns and accidents, incidents or near misses. The Site Safety Manager shall record and retain minutes of these weekly meetings. In addition, the Site Safety Manager shall attend the monthly project review meetings and address safety matters and provide related safety information, data and reports. Safety shall be the first topic on the agenda of every meeting.

Communication of Potential Hazards. When changes in planned schedule, processes or procedures are initiated with potential to affect the Contractor or RTD personnel, the Site Safety Manager shall be notified. The Site Safety Manager shall be responsible in conveying to all affected or potential hazards and initiate steps to maintain a safe work environment.

4.9.3.3 General Safety Requirements

Health and safety are the sole responsibility of the Contractor. The Contractor shall perform all work required by the Contract in a safe and environmentally acceptable manner and within the guidelines of their site specific safety program, all applicable regulations and the RTD-FasTracks Construction Safety Guidelines.

The Contractor shall obtain and maintain current copies of all safety codes on site for the duration of the contract. The Contractor shall maintain and post all required postings, Federal, State, and Local as required. The Contractor shall maintain and post a list of current local emergency numbers: Fire, Police, Ambulance, Hospital, Rescue, Security and Safety.

The Contractor is responsible for monitoring and ensuring that mandatory documentation is posted at the job site. A copy of applicable Material Safety and Data Sheets (MSDS), emergency phone numbers, all written safety rules and the applicable Federal and State Labor Law posters are to be displayed at each job site. The Contractor and its personnel shall post signage where conspicuous to indicate the Contractor's name and phone numbers.

The RTD has the right to monitor the Contractor’s operations for safety performance, workmanship, security and protection of operations, work progress, housekeeping, and compliance to design specifications. It is standard practice that RTD work through the Contractor’s supervision and not directly with the Contractor’s employee. However, actions that jeopardize personnel safety, company property, or security, may be dealt with directly...
and can result in disciplinary action up to and including termination of the Contractor and/or the Contract itself.

4.9.3.4 Drug Testing

Contractors shall be responsible for all costs associated with the projects pre-employment drug testing only. RTD shall be responsible for all costs associated with the project drug/alcohol testing for post accident/incident, random, suspicion, as mandated by the ROCIP-RTD FasTracks Safety Guidelines and ROCIP Project Safety Program.

Drug testing is to be a 9 panel drug screen. All Personnel who may be performing work in designated construction areas (trades people, engineers, company officers, are required to be drug tested prior to coming on site. Once a successful test result is obtained, the employee’s work clearance shall be valid for 1 year. Visitors to the site (not going into construction area/s) or during non-construction times, are not required to be drug tested, but do require general visitor safety orientation.

If a drug test is needed, "An employee shall be signed up for employment for a probationary period, pending results of the initial drug screening". RTD defines ‘probationary period” as 72 hours after the drug test has occurred.

- Test results must be either negative or positive. A returned positive test result or diluted return shall be reviewed with the medical review officer and the employee, prior to the employee returning to work. A second sample may be required.
- If the results and discussion with the medical review officer requires a second test, with the consent of the employee and the employer, there is no probationary period while waiting for the results of the second test.
- The employee awaiting the results of the second test shall not work on RTD sites until the testing is returned "negative".
- There shall be no instant result testing of employees at the job site to ensure confidentiality and accuracy of standard testing procedures.
- If no results have been returned even after 72 hours, the employee shall not work at the site and must wait until the results are obtained.

4.9.3.5 Safety Precautions

The Contractor shall, at its sole cost, protect and guard the Work and shall be responsible for planning, initiating, maintaining, supervising, and enforcing all measures, procedures, precautions, and programs for the greatest safety and protection of the Work, for any and all persons, and for any and all property in accordance with applicable Federal, State, and local laws, rules, regulations and codes, including those requirements of the RTD Safety Program. The safety of the Contractor’s personnel shall be the Contractor’s responsibility.

The Contractor shall, as applicable to its division of Work and at its sole cost:

- Guard, secure, and protect the Work, all equipment and all materials, whether incorporated into the Work or in storage on or off the site, against damages from any cause whatsoever.
- Place and maintain barricades, lights, warning signs, and any and all other protective devices necessary for the prevention of injuries and damages and for the protection of the Work, persons and property.

- Comply with all applicable laws, ordinances, rules, regulations, and orders of any public authority and codes relative to protection and safety of the Work, persons and property. Comply with all railroad safety regulations and requirements.

- Protect, prevent and guard against injuries, damages, losses, or delays, due to, or contributed to, by weather.

- Provide the means, procedures and equipment; prevent or control water from entering of collecting on site; lawfully dispose of water in such a manner as to cause no damage or injury to any portion of the Work or to other property of the RTD or to adjoining properties.

- Provide construction ladders, ramps, walkways, stairs and access, in accordance with applicable safety regulations.

- Assure that all persons on the construction site wear required PPE, which at a minimum shall include hardhats, orange vests, eye protection and steel toed safety boots, at all times.

- Take appropriate precautions against the risk of fire.

- Permit no fires to be built in or about any part of the construction site.

- Use only heating devices operating on electricity or fuel oil and bearing the appropriate Underwriters Laboratory label; continuously supervise the use of such devices; and prohibit the use of stoves, salamanders, tar pots or any other liquid petroleum, gas, gasoline, coal, or wood-burning devices.

- Prohibit the storage of and promptly remove all rubbish, debris, waste lumber or other flammable material from the site.

- Notify the Project Manager before performing any cutting, welding, or hot work operations and prohibit any such operations objected to by the Project Manager.

- Place tanks for gas, welding, or cutting work at such distance from the Work as is necessary for safety and securely fasten and maintain them in an upright position. Such tanks shall be stored away from any combustible material and free from exposure to the rays of the sun and high temperatures.

- Prohibit the storage and preparation of paint, varnish, gasoline, volatile substances, or other matter having low flash points on the job site, except in accordance with applicable safety procedures and fire codes.

- Prohibit the use or storage of explosive devices on or near the job site.

- Provide and maintain adequate protection for all adjacent properties, whether or not utilized by the Contractor, which may be affected by the Work contemplated by the Contract Documents.

- Maintain all public ways within or adjacent to the job site in such condition that they may be used freely and safely by the public.
4.9.3.6 **Noncompliance**

The RTD Loss Control- Safety Manager and/or Project Manager may order the Contractor either verbally, followed by written notification, or in writing, to suspend, delay or stop all work immediately in the event of Contractor’s noncompliance with safety codes and regulations. All costs and expenses incurred as a result of such work interruptions shall be borne by the Contractor.

The RTD Loss Control- Safety Manager or Project Manager shall notify the Contractor of any noncompliance with these requirements and of the need for corrective action. The “Notice of Noncompliance”, when delivered to the Contractor or the Contractor’s representative at the site of the work, shall be deemed sufficient notice of the noncompliance and need for corrective action. Such notice may be given verbally followed by written notification.

After receipt of notice, the Contractor shall immediately take corrective action. If the Contractor fails or refuses to take corrective action promptly, the RTD Loss Control- Safety Manager and or Project Manager, may issue an order stopping all or part of the Work until satisfactory corrective action has been taken. The Contractor shall not base any claim or request for equitable adjustment for additional time or money on any stop order issued under these circumstances.

The Contractor shall ensure that all subcontractors are compliant with this Section.

4.9.3.7 **Emergencies**

In the event of any emergency affecting the safety of persons or property, the Contractor shall act at its discretion to prevent damage, injury or loss. An outline of the emergency response is to be included as part of the Contractor’s safety program and jobsite safety orientation.

4.9.3.8 **Accident Reports**

The Contractor shall provide a written report to the RTD Loss Control- Safety Manager of any and all accidents and incidents whatsoever arising out of, or in connection with the performance of the Work, whether on or adjacent to the site, which causes death, personal injury or property damage. Notification, by telephone, to the RTD Loss Control- Safety Manager and Project Manager shall be immediate. The report shall be furnished to the RTD’s Safety Manager and Project Manager, within 24 hours of the occurrence.

4.9.3.9 **Return to Work Program**

RTD requires all Contractors to provide traditional modified/ light work duty to keep workers gainfully employed during the recovery process.

As a condition of the project safety program, all are required to participate in the project’s “Return to Work Program.” All are required to make every effort to return injured workers back to work, as soon as possible through modified- light work duty. Work task/s shall meet the work restrictions, as set forth by the primary treating care physician.

In order to comply, the Contractor is required to meet the following conditions:

- Contractor and all his personnel must be committed to cooperate with the project’s “Return to Work Program.”
Should any injury occur and the primary health care provider allows modified-light work
duty, the Contractor shall agree to evaluate overall work task/s available and assign the
injured worker to those task/s, to accommodate the outlined work restrictions.

If work is not available on site, then work may be performed off the project site (such as
the company warehouse/yard or office)

All Contractors shall assist in identifying reasonable modified duty tasks.

4.9.3.10 Restoration of Property

The Contractor shall restore all property which may be disturbed in the execution of the Work to
its former condition and to the reasonable satisfaction of any property owners or any
governmental authority affected thereby.

4.9.3.11 Working Conditions

All Work under this Contract shall comply with the requirements and standards specified by the
Law 91-596, as well as other applicable Federal, State, and local laws.

The Contractor shall not require any laborer or mechanic to work in surroundings or under
working conditions which are unsanitary, hazardous, or dangerous to his/her health and safety
as determined under construction safety and health standards promulgated by the U.S.
Secretary of Labor.

4.9.3.12 Construction Security

Construction site security is the responsibility of each prime contractor. Before construction
starts, Contractors are required by the Construction Safety Manual to submit a written Safety
and Security Plan for each site. The plan is reviewed for compliance by the Construction Project
Manager and the RTD Safety Officer. Modifications to approved submittals require the same
level of review as the original plan. The plan addresses site, equipment, and material security,
including the following:

- Physical barriers, such as fencing and barricades
- On-site security guard service
- Lighting
- Alarm systems
- Law enforcement surveillance
- Inventory control and material identification
- Community involvement
- Site visitor protocol

If circumstances arise where it would be appropriate, RTD may elect to permit properly licensed
and qualified armed security on construction sites. Each site has a Contractor safety
representative on duty during all hours of work. RTD monitors a Contractor’s on-site security to
verify adequacy and compliance, and RTD may take over the work if a Contractor’s security
measures prove ineffective. After RTD takes title to the site, but before the property is turned over to the Contractor's control, RTD Property Management will arrange for site security.

4.9.4 Environmental Management

Construction contractors are required by their contracts to comply with applicable local, state, and federal environmental regulations, as well as requirements included in environmental permits. Particular sections of the Contract Specifications deal with environmental contamination uncovered during construction, underground storage tanks discovered by Contractors, stormwater runoff control and reporting, protection of waterways, air quality, and noise control, among other issues. Site environmental management requirements may also be included in the Environmental Mitigation Program established for an individual project. The Construction Project Manager is responsible for enforcing site environmental protection and compliance.

For FasTracks projects, RTD has procured the services of environmental management firms who will assist RTD in removing and disposing of hazardous or contaminated materials. The Environmental Project Manager will direct their work through work orders, but the Contractor must notify RTD when suspect materials are found, and take action to protect the safety of the workforce and public.

4.9.5 FTA Buy America Requirements.

In accordance with the requirements of 49 CFR Part 661 and 49 CFR Part 663, when procuring or overhauling rolling stock with Federal Transit Administration (FTA) funding, the cost of the components and subcomponents produced in the United States must be at least sixty (60) percent of the cost of all components of the rolling stock, and final assembly of the rolling stock must occur in the United States. To ensure compliance with this rule, FTA requires that the recipient Authority purchasing rolling stock conduct Pre-Award and Post-Delivery audits of contractor compliance with Buy America requirements. If the FTA determines that the recipient Authority is not in compliance with these rules, the FTA funding for the rolling stock procurement may be jeopardized.

4.9.5.1 Pre-award Requirements

The Pre-Award Audit is required before a recipient of FTA funding (“RTD”) enters into a formal contract with a supplier. The Audit requires RTD to complete two certifications - the Buy America Certification and the Purchaser’s Requirement Certification. Both certifications will be kept in RTD's files for future FTA audits.

4.9.5.2 Pre-Award Buy America Certification

For the Pre-Award Buy America Certification process, RTD must either:

- Verify that (1) rail vehicles will contain a minimum of 60% domestic products, by cost, and (2) final assembly of rail vehicles will take place in the US;
Or:

- Obtain, from the FTA, a copy of the waiver letter exempting rail vehicles from the Buy America requirements.

The manufacturer generally provides the following information in support of an RTD Pre-award Audit:

- A listing of rail vehicle components and subcomponents that will be used to calculate the percent domestic content;
- The final assembly location;
- Activities that will take place during final assembly;
- The proposed total cost of final assembly.

For each component and subcomponent listed, the manufacturer, country of origin, and cost must be identified such that the total vehicle domestic cost can be calculated in accordance with Federal requirements. Further, RTD must verify that the final assembly will be within the United States by verifying the address of the manufacturer’s final assembly location and reviewing the list of final assembly activities to ensure it complies with Federal requirements.

Upon completion of the above steps RTD must complete a pre-award Buy America compliance certificate (as contained in 49 CFR Part 663) and retain both the certificate and relevant supporting documentation on file for future FTA audits.

### 4.9.5.3 Pre-Award Purchaser’s Requirements Certification

For the Pre-Award Purchaser’s Requirements Certification process, RTD must verify that:

- The manufacturer’s bid specifications are in compliance with RTD's solicitation specifications;

And:

- The proposed manufacturer is responsible and capable of building the rail vehicle to RTD’s solicitation specifications.

The purpose of this audit is to eliminate those manufacturers that appear irresponsible and/or incapable of complying with RTD’s solicitation specifications. To ensure compliance with these requirements, RTD will review the solicitation specifications, the bid specifications, and RTD’s approval of any approved equals. In addition, RTD will review the manufacturer’s qualifications such as quality control measures, interview previous customers, and review other such qualification documents.

Upon completion of the above steps, RTD will complete a pre-award purchaser’s requirements certificate (as contained in 49 CFR Part 663) and retain both the certificate and relevant supporting documentation on file for future FTA audits.

### 4.9.5.4 Post-Delivery Requirements

In accordance with the requirements of 49 CFR Part 661 and 49 CFR Part 663, a Post-Delivery Review must be completed before title to the rolling stock is transferred to RTD, or before rolling stock is placed into revenue service, whichever is first. The review period begins when RTD
signs a formal contract with the selected manufacturer and ends before title transfer or use in revenue service.

As with the Pre-Award Review, RTD must complete two certifications—the Buy America certification, and the Purchaser’s Requirements certification. Both certifications must be kept in RTD’s files for future FTA reviews.

4.9.5.5 Post Delivery Buy America Certification

The Post Delivery Buy America certification process is similar to that completed during the Pre-award Audit, with the exception that the review now reflects information based on the actual rolling stock versus the proposed rolling stock. For the Post Delivery Buy America certification process, RTD must:

- either
  - Verify that (1) the rolling stock contain a minimum of 60 percent domestic products, by cost, and (2) final assembly of the rolling stock took place in the United States;

- or
  - Obtain, from the FTA, a copy of the waiver letter exempting the rolling stock from the Buy America requirements.

The manufacturer generally provides the following information in support of an RTD Post Delivery Audit:

- Purchase orders;
- Subcontracts for suppliers and subcontractors;
- Payment verifications;
- Manufacturer unit and total cost summaries by component or subcomponent;
- Buy America compliance certificates for all domestic suppliers;
- Description and cost of final assembly activities.

For each component and subcomponent listed, the manufacturer, country of origin, and cost must be identified such that the total vehicle domestic cost can be calculated in accordance with Federal requirements. Further, RTD must verify that final assembly occurred within the United States by verifying the address of the manufacturer’s final assembly location and reviewing the list of final assembly activities to ensure it complies with Federal requirements.

Upon completion of the above steps RTD must complete a Post Delivery Buy America compliance certificate (as contained in 49 CFR Part 663) and retain both the certificate and relevant supporting documentation on file for future FTA audits.

4.9.5.6 Post Delivery Purchaser’s Requirements Certification

The Post-Delivery Purchaser's Requirements certification process is different from the Pre-Award Purchaser’s Requirements certification process. For the Purchaser’s Requirements certification, RTD must:
Complete visual inspections and performance tests to demonstrate that the rolling stock meet the contract specifications;

and:

Send a resident inspector to the manufacturer's production facility during the final assembly period to (1) monitor the final assembly process and (2) complete a final report describing the construction activities and explaining how the construction and operation of the rolling stock fulfill the contract specifications.

Upon completion of the above steps, RTD will complete a Post Delivery Purchaser's Requirements Certificate (as contained in 49 CFR Part 663) and retain both the certificate and relevant supporting documentation on file for future FTA audits.

4.10 OPERATIONS AND MAINTENANCE PLANNING AND START-UP

Safe and efficient operations of the rail systems require comprehensive Operating and Maintenance Plans. The method of developing the Operating Plans for each of the FasTracks corridors depends on the project delivery approach. In the case of Design-Bid-Build, CM/GC or Design Build, RTD develops the Operations and Maintenance Plans. In the case of Design-Build-Operate-Maintain, the Contractor/Concessionaire develops the plans and RTD oversees them. Refer to the appropriate Project Management Plan for the specifics of a particular project.

The components of these plans are illustrated graphically in Figure 4-6.

4.10.1 Operations Planning

Corridor operating plans describes how rail components will be scheduled, operated, maintained, and staffed. At a minimum the Operating Plan will address the following:

- General and Administrative Requirements
- Service Schedule
- Operating and Maintenance Costs
- Rolling Stock Operations
- Control Center Operations
- Emergency Operations
- Abnormal Operations
- Service and Schedule Recovery Procedures
- Required Safety Testing Standards
- Security
- Fare Collection and Verification

The Operating Plan must be consistent with the APTA Manual of Standards and Recommended Practices for Rail Transit Systems (the APTA Manual).
Figure 4-6  Operations and Maintenance Plans

- O&M Plans
  - Operating Plan
    - APTA Manual
    - Service Plan
    - Rule Book
    - Operating Procedures Books
  - Management & Administration Plan
    - Human Resources Plan
  - Rolling Stock, Facility & Infrastructure Maintenance Plan
    - Quality Management Programs
      - Rolling Stock Maintenance Plan
      - Facility Maintenance Plan
      - Infrastructure Maintenance Plan
        - Snow & Ice Management Plan
    - System Security Plan (O&M)
      - System Safety Program Plan (O&M)
      - Fare Inspection Program
      - Security Staffing Plan
4.10.2 Maintenance Planning

RTD has established a program to inspect, service, clean, repair, upgrade and maintain all facilities in accordance with or exceeding Original Equipment Manufacturer (OEM) maintenance and warranty standards, directives of the FRA or other Relevant Authorities, and the prevailing industry best practices as defined by the APTA Manual or any successor to APTA.

4.10.2.1 Rolling Stock, Facility, and Infrastructure Maintenance Plan

Facilities, infrastructure, and rolling stock are maintained in accordance with RTD plans and Standard Operating Procedures. RTD plans and procedures address the following:

- Reliability and Maintainability Requirements for the Fleet and Fixed Assets
- The Maintenance, Training and Inspection Functions and Frequencies
- The Personnel or Subcontractors that Perform Those Functions
- The Quality Control and Monitoring System

4.10.3 Maintenance Information Plan

A Maintenance Information Plan (MIP) includes a database system which monitors and manages inspection and maintenance of all operational components, infrastructure and major assets.

4.10.4 Start-Up and Testing

Start-up and Testing has several components and which cover a period of time that occurs between substantial completion of an element up to Revenue Service. Start-up occurs in parallel to the testing phase in order to have ample time so that all of the RTD departments are prepared for the addition of a new segment or corridor. The testing portion includes Material Certification, Acceptance and Systems Integration Testing, Pre-Revenue Testing which all need to be complete in order for Start-Up to be completed and for Revenue Service started.

4.10.4.1 Start-Up

Start-up of a new corridor or segment is a major endeavor affecting every department at RTD. Start Up begins during the Systems testing phase of the construction project as deemed appropriate by the FasTracks Team. To facilitate this phase of the project, the Project Manager of System Integration and Project Activation will manage the start-up program. Depending on the size and complexity of the corridor or segment, start-up testing can begin years before revenue service. The Project Activation team reviews all of the elements that go into opening a new segment in order to evaluate that all of the necessary services are ready for implementation. The activation team evaluates all elements in order to identify problems or issues that may hamper the new service. Typical items considered during start-up include:

- **Project Team**—Reports project progress including schedule, changes in the project, and outstanding issues that may impact start-up.
- **Service Planning**—Develops the coordinated train and bus schedules and takes the lead on public meetings to present the proposed operating plans.
• **Marketing**—Develops marketing programs for the new services and plans opening day events and celebrations.

• **Operating departments (including contract services)**—Support integrated and pre-revenue testing and prepare for revenue operations; hires and trains personnel for the new corridors and routes.

• **Finance**—Monitors and implements budgets for the new operation.

• **Contracts**—Supports execution of new contracts.

• **Facilities Maintenance**—Prepares for acceptance of new facilities to be maintained.

• **Safety and Security**—Prepares for safety and security issues, staffing, and equipment; reports and monitors safety certification efforts

The Project Manager of Systems Integration and Project Activation, also known as the Activation Manager in this role, holds regular meetings with critical RTD representatives to discuss findings and rectify problems. The Activation Manager is also responsible for managing the schedule. Senior RTD management, including the General Manager, may get involved to ensure timely progress towards start-up and revenue service.

### 4.10.4.2 Materials Certification

The construction contract for each FasTracks project will identify the materials that need inspection and certification. These certifications will ensure material strength, chemical composition, durability, temperature ranges, or other characteristics related to the quality and longevity. These certifications are important to prevent failure, reliability, and future maintenance costs. RTD will maintain and keep in a secure location all certifications.

### 4.10.4.3 Acceptance Tests

Acceptance testing is all of the necessary tests that are required to ensure proper functionality of a subsystem element. These test range from component tests to subsystem Factory Acceptance Test of to subsystems field tests (e.g. Traction Power Substation). Acceptance testing verifies that a component or a subsystem element meets the performance requirements that are established in the contract documents. Examples of these types of tests are waterproofing test for traction power substations, voltage tests (meggering) of various electrical components, loop resistance tests, and hi-pot (high potential) tests of the overhead contact system and factory functional testing of the traction power substation or signals relay house.

Generally, the construction contract documents define the testing requirements based on transit industry standards, RTD experience, and risk. The contract also defines the process for conducting these tests, including documentation. RTD maintains records of all acceptance tests.

Tests are generally performed by a Contractor with oversight and observation by RTD staff. The level of oversight depends on a number of factors, including risk, complexity, previous experience with a supplier, and value of the component or element. For major components or elements, such as vehicles, RTD gives strong consideration to assigning full-time inspectors for the manufacturing process. In addition, RTD attempts to maximize the witnessing of First Article Inspections (FAI), Factory Acceptance Testing (FAT), and any other acceptance tests.
4.10.4.4 Integrated Tests

Integrated tests are tests that consist of two or more subsystem elements. Integrated testing is performed after the acceptance testing has been successfully completed for all of the elements in the integrated test. It verifies that the system performs as required by the contract documents in the intended operating environment. Examples include clearance tests, safe braking tests, simultaneous start tests, and various communications tests. Prior to integration testing, an Integrated Test Plan (ITP) is developed. The ITP describes each test, the procedure for conducting the test, resources needed, and criteria for successful completion. Roles and responsibilities for RTD staff during the integration testing vary dependent on the procurement type used for the corridor. The Project Manager of Systems Integration and Project Activation will manage and oversee the integration testing processes for all LRT and CRT projects. The level of management will depend on whether project contractor will perform the integration tests or if RTD staff performs the tests. The Project Manager of Systems Integration and Project Activation may manage access to the project Right-of-Way during the integration testing process.

Integrated testing is an important element of the safety certification program. The project will not proceed into pre-revenue testing until outstanding items from the integrated test program are corrected or appropriate restrictions are implemented and approved by the LRT/CRT Operations Department and the RTD Safety Division.

4.10.4.5 Pre-Revenue Tests

Upon completion of integrated testing, a corridor or segment is turned over to the appropriate RTD department for pre-revenue testing. On commuter rail corridors, the system is turned over to either RTD operations or the contract operator, depending on the contracting terms defined during procurement. Pre-revenue testing measures the performance of a corridor or segment in conditions related to the ultimate operating environment. The emphasis during this stage of testing is on operational needs such as training, familiarization, and safety.

The planned operating schedule is tested, including run times. A full simulation of the operating schedule is often conducted. Operating personnel become qualified to operate during pre-revenue testing. Appropriate training and operations and maintenance manuals are provided as required by contracts, prior to pre-revenue testing.

Pre-revenue testing often identifies defects that may not have been apparent during earlier testing phases. Therefore, key support from project management and appropriate contractors are made available during this phase to address any problems.

An important part of pre-revenue testing is emergency drills. These are conducted by the RTD Safety Division in conjunction with LRT Operations, the FasTracks Team, and local emergency response agencies. They serve as training exercises for the joint emergency response plans for the corridor or segment. Examples are simulations of accidents, emergency evacuations along the right-of-way or at stations, chemical incidents, etc. A debriefing of drill participants is held after the drill, and procedures are adjusted accordingly.

The System Safety Certification Review Team reviews all test results for consideration of certification for revenue service. In some cases, tests may need to performed again or appropriate restrictions put in place. The safety certification process is integrally related to the testing program.
APPENDIX A

Reference List of Policies and Procedure Manuals

- Bus Fleet Management Plan – West Corridor
- Construction Contract Administrative Manual
- Document Control Procedures Manual
- Denver Union Station Project Management Plan (DUS PMP)
- Eagle Project Management Plan (Eagle PMP)
- Eagle Safety and Security Management Plan (EG SSMP)
- Engineering Design Guidelines Manual (EDGM)
- Environmental Policies and Procedures Manual – Volumes 1, 2 and 3 (FERG)
- Facility Maintenance Criteria/Equipment Manual
- I225 Project Management Plan (I225 PMP)
- Intergovernmental Agreements, Memorandum of Agreement (MOA) and Memorandum of Understanding (MOU) Procedures
- Owners Verification Testing Program Manual (OVT)
- Program Crisis Communication Plan
- Program Key Messages
- Program Management Plan (PMP)
- Project Controls Procedures
- Quality Assurance Program Plan (QAPP)
- Quality Management Oversight Program Manual (QMOPM)
- Rail Fleet Management Plan – Light Rail System
- RTD Bus Transit Facility Design Guidelines and Criteria
- RTD CADD Standards Manual
- RTD Commuter Rail Design Criteria
- RTD FasTracks Owner Controlled Insurance Program Manual – Eagle Project
- RTD Light Rail Design Criteria
- Strategic Plan for Transit Oriented (TOD)
- Strategic Public Information and Involvement Plan
- West Corridor Construction Project Management Plan
- West Corridor Project Management Plan (WC PMP)
- West Corridor Rail Fleet Management Plan
- West Corridor Real Estate Acquisition and Management Plan (WC RAMP)
- West Corridor Safety and Security Management Plan (WC SSMP)