

## Low and Slow: Rocky Mountain Rail

A \$5.5-billion mass transit program in Denver regained momentum thanks to ramped-up collaboration.

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[Slide Show](#)

Photo Courtesy RTD  
Design of FasTracks' bridges and stations reflect Denver's mountain scenery.

Recovering from recession, rising costs and reorganization, Denver's FasTracks is heading into a milestone year. Officials with Denver's Regional Transportation District (RTD) anticipate the debut of more than 40 miles of new commuter-rail service and 10.5 miles of new light-rail service as part of its \$5.5-billion, 122-mile program. The progress is the fruit of strengthened alliances with neighborhoods, developers, other transportation agencies and the contracting industry—including the nation's first transit-related public-private partnership.

Perhaps the most iconic symbol of the FasTracks program, which voters approved in 2004, is Denver's downtown Union Station. The \$500-million effort to transform the mostly unused historic train station into a gleaming multimodal transportation and retail hub, completed last year, already has resulted in a boom of real estate development. High-rise residential and office buildings are swiftly growing up around it. A new boutique hotel, trendy restaurants and shops inside the station appeared to be doing brisk business when ENR reporters visited Denver in May as part of its "Low & Slow Across America's Infrastructure" tour.

Three years before the 2004 ballot initiative passed, Cal Marsella, former RTD general manager, initiated the plan to buy 19.1 acres of land in and around Union Station. "Many people thought RTD was crazy," recalls Pauletta Tonilas, until recently the FasTracks spokeswoman.

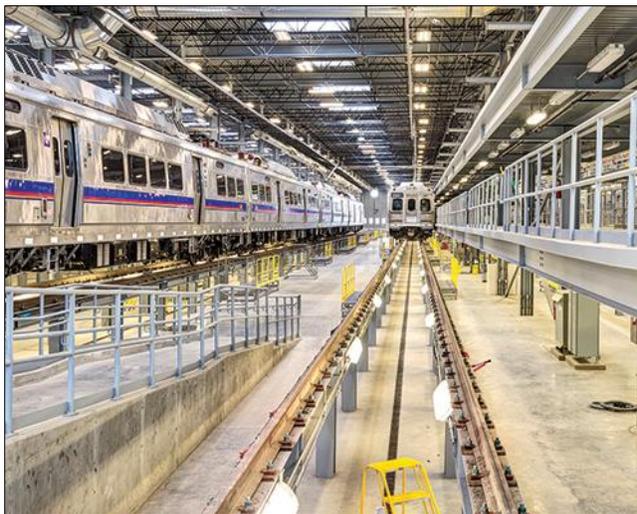
### **Downtown Hub**

The Union Station intermodal hub includes 22 bus bays built along a 1,000-ft-long hall about 25 ft underground. The canopy-sheltered areas above the bus concourse include space for both Amtrak and Colorado Dept. of Transportation services. Newly completed platforms await the new commuter rail lines that will begin operation next year. The station's 10,000 daily users are expected at least to double.

"There were tumbleweeds at Union Station" just a few years ago, notes Rick Clarke, former assistant general manager of capital programs for RTD. Where once RTD had to sell the transit-oriented development concept to regional officials, he adds, "now cities want transit. Boulder and Longmont want us there."

So does the city of Lone Tree, south of Denver. Last year, RTD agreed to a \$207-million, 2.2-mile extension of its existing Southeast light-rail project after local partners contributed \$40 million in funding. The extension will reach a development called RidgeGate. The developer, Coventry Development, will provide land for right-of-way and three new stations at no cost, according to a release from the city of Lone Tree. The extension is expected to lead to a \$700-million increase in assessed property values.

"It's a public-public-private partnership," says Tonilas. "It's an example of the way we have to think moving forward." It is the way FasTracks officials have had to think over the past 10 years, as project costs exceeded expectations while revenue did not.



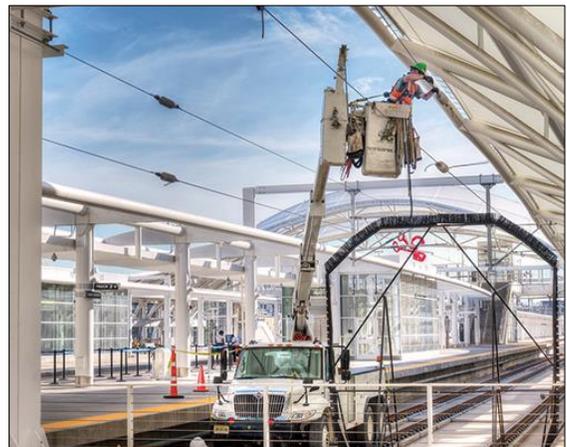
### Lessons Learned

When Phil Washington replaced Marsella as RTD general manager in 2009, the original cost of the \$4.7-billion program had gone up, while tax revenue had dropped significantly during the recession. Residents in Boulder and other communities northwest of Denver were roiling over the lack of progress on the planned Northwest rail line. Washington directed the creation of a transparent "lessons learned" document to guide future transit planning and help to boost team morale at RTD (ENR 1/27/13 p. 48).

award, in 2013, a contract for the first 12.5 miles and six stations of the North Metro Rail Line. Regional Rail Partners, a consortium of Graham Contracting Ltd., Balfour Beatty Inc. and others, is designing and building the commuter-rail line. An additional six miles of rail and two more stations will be built when funds become available.

A Kiewit-led team in 2012 submitted an unsolicited proposal to build a 10.5-mile light-rail line through Aurora along Interstate 225 for \$350 million via a fixed-price contract. Previously, RTD had estimated the I-225 line would cost about \$538 million. Both lines are slated for completion next year.

Staff turnover has presented continuity challenges. Dave Genova, who took the agency's interim reins from Washington after the latter recently headed to Los Angeles to lead its metro construction program (taking staffers, including Tonilas, with him), says collaboration at every level has been key to FasTracks' new momentum.



"At Union Station, we formed a project authority with the city [of Denver] and CDOT. We had 14 different funding sources," Genova says. A planned \$21-million renovation of the civic-center bus station—located

on the opposite end of the city's 16th Street Pedestrian Mall from Union Station—now includes "meaningful dialogue" with prequalified teams, he adds.\

Changes have been inevitable, says Greg Straight, RTD project director for Eagle P3. Last year, Denver Transit Partners (DTP)—the Fluor-led consortium building the \$2.2-billion Eagle P3 project, which includes the East, Northwest and Gold lines—demolished the 555-ft-long, cast-in-place Jersey Cutoff Bridge just as it was nearing completion. Under the P3 contract, DTP is rebuilding the bridge at its own cost. "We recognized that there were deficiencies on several of the [lines' 35] bridges, but this was one of the more dramatic," says Straight. "We could have dealt with some of the needed retrofits, but those surgical fixes might have taken longer than just rebuilding the structure."

But DTP stepped up, Straight says. "Designers came up with a truly independent team to evaluate every element of the structures," he says. The bridges would not have been unsafe for the public, he notes, but they lacked the structural longevity called for in the Eagle P3 contract.

Other changes to the Eagle P3 contract included adding track and more civil work for a new East-line station. "We had to add 5,800 feet of double-track design, circuitry for signage and rework the track structure," Straight says. The new station, called the Peña Boulevard Station, was added to the line by RTD in partnership with the city, the development community and Denver International Airport (DIA) as a key step in creating a private-sector "aerotropolis" near DIA.

The new FasTracks station at the airport also has had struggles. DIA last year filed an unsuccessful lawsuit against RTD to recover \$53 million in costs for sitework on the new hotel and transit center. "The two programs were not completely in sync with the schedule," says Straight. "The airport was still in the early stages of planning and didn't know the exact location of the hotel or its configuration. There were gaps between expectations, including where and how long the train platform would be."

But the teams are synced up now, he adds. Transit and airport officials met every week for more than a year to establish the sequence of work. The rail connection entailed 1.2 million cu yd of excavation for a 30-ft-deep trench that contains the 800-ft-long train platform. After arriving at the DIA train station, travelers can take an escalator that runs under the hotel and directly into the south end of the airport terminal.

Jackie Rainey, deputy project manager for the DIA hotel and transit-center project, says airport and transit officials worked closely to "future-proof" the infrastructure. "What we can do now with our contractors here, with economy of scale, is to create future non-disruption" from additions, she says. For example, the fourth level of the 15-story hotel and transit center will be reserved for future expansion of security checkpoints. An extension built now can accommodate extra trains for a 25% capacity increase. Space also is set aside for more escalators and a future baggage-handling system near the transit station.



### **Other Multimodal Corridors**

Next year, RTD also will begin 18 miles of bus rapid transit service along the U.S. 36 managed lanes being built by the Colorado Dept. of Transportation. RTD partnered with CDOT on the \$317-million, 11-mile first phase of the U.S. 36 managed-lanes project, completed in July. The project added 12-ft-wide shoulders along the freeway that RTD buses can use when needed to optimize traffic flow, says Mark Gosselin, CDOT project director. The practice, also used in Minnesota, is starting to catch on nationally, he adds. "RTD is a big partner, so its buses must meet certain [schedules]"

to help the managed toll-lane system to function as expected, Gosselin says.

The design-build project also includes an intelligent transportation system, both for drivers using the tolled lanes and riders on the bus rapid transit. The two-phased project also improves bus stations and adds a bike path that runs along most of the corridor alignment.

On the I-225 light-rail line, Kiewit's design-build team, including designer AECOM, jump-started the project with its unsolicited proposal and began construction six months into the 18-month design process. The connection between Aurora, Denver and the airport is expected to spur developments that will attract millennial talent and ridership (ENR Mountain States 8/25/14 p. MT39).

A big change order for Kiewit involved partnering with the city of Aurora on a key upgrade to its storm drainage system by installing 1,000 linear ft of 96-in.-dia. drainage pipe and 1,000 linear ft of 108-in.-dia. pipe, says Chuck Culig, RTD project manager. In 2013, the I-225 light-rail route was redirected by a half mile to avoid train vibrations that might disrupt sensitive instruments on the Anschutz Medical Campus, located near the rail line.

Connectivity on all levels will continue to be key as RTD eyes more work ahead. "We just got authority to award a design-build contract for the Southeast two-mile extension," says Genova, adding that, along with local groups contributing \$25 million, RTD expects to hear back about a federal funding grant of \$92 million by next spring.

Overall, though, "a significant amount is still needed" for FasTracks, says Genova. "We are only building the first six miles of the Northwest rail project. It's very sensitive politically."

The first 12.5 out of 18.5 miles of the North metro line, which includes what will be the longest bridge—at 9,533 ft—in Colorado, is slated to finish in 2018. "We have no funding right now for an extension of six miles and two stations," says Genova.

RTD is also seeking funding for a two-mile downtown light-rail extension, which would hook up with the airport line, and for a future 2.5-mile Southwest light-rail extension. "The job's not finished," says Genova, "but, given the circumstances and economic conditions under which FasTracks started, we've accomplished a great deal."