



Transportation

Highways and Bridges

Client

Nevada Department of
Transportation

Location

North Las Vegas, Nevada

"Not only did NCC deliver an enormously successful design-build project that is a source of professional pride for all involved, but NCC also set the standard for design-build and created the model for the future of design-build in the State of Nevada..."

Susan Martinovich, PE,
Director, NDOT

I-15 North Corridor Design-Build Project

Project Highlights



- First design-build contract for Nevada Department of Transportation
- Widening of a 5.8-mile section of I-15 carrying 175,000 vehicles per day, completed within budget and 7.5 months ahead of schedule, while minimizing motorist incidents within the work zone and recording zero lost time injuries after 1.3 million hours worked
- Fully integrated design and construction professionals teamed for success in meeting and exceeding project goals for safety, maintenance of traffic, quality, environmental, cost, schedule, public involvement, stakeholder interaction, and aesthetics
- Multiple industry award winner

The I-15 North Corridor Design-Build Project was completed by North Corridor Constructors (NCC), a 50/50 joint-venture of CH2M HILL and Las Vegas Paving Corporation. The project, the first design-build contract for the Nevada Department of Transportation (NDOT), widened a 5.8-mile section of I-15 from the US 95 Interchange north to Craig Road, north of downtown Las Vegas. Goals for the project were to:

- Complete early, a safer, better operating highway
- Ensure a high quality, maintainable, durable, and aesthetically pleasing project
- Minimize impacts to the traveling and adjacent public during construction
- Efficiently meet or beat financial objectives
- Deliver a successful design-build project that will serve as a source of professional pride and as a model for the future

The project scope of work included road widening and additional auxiliary lanes, 14 bridges and two bridge widenings, 17 miles of concrete barrier rail, 225,000 square feet of retaining walls, 406,000 tons of new asphalt pavement, 29,126 feet of storm drainage system, high mast lighting, signals and surface street improvements. NCC came into the project with an aggressive target delivery date and using design-build delivery, shortened the project duration through innovation and close collaboration with NDOT.

The design was completed in the first 17 months with an overlapping 22-month construction duration, for a total project duration of just 28 months, a full 7.5 months ahead of schedule. Using conventional project delivery, the project would have taken approximately 5.5 years to complete. Other project successes included zero lost time injuries after 1.3 million hours worked, resulting in NCC being named Safest Contractor of the Year for 2009 by the Nevada Contractor Association. NCC also earned more than \$860,000 in quality control incentives.



Unlike traditional design-build teams, NCC offered a well-established, local, experienced, and fully integrated design-build organization, with designers and constructors working together, and fully vested and motivated to find innovative solutions for the project. Because this was the first design-build project for NDOT, it was critical to have a team with extensive experience to provide NDOT with the tools and knowledge necessary to ensure design-build success. As an integrated team, NCC also brought built-in quality to both design and construction processes, and every person on the team, no matter the role or responsibility, was fully accountable for delivering a high-quality project which met all of the project goals.

NCC's integrated design and construction teams worked closely together to add value to NDOT's investment and, during the proposal phase, introduced innovative ideas that achieved project goals and reduced construction-related user impacts and overall project costs. These included:

- Complete redesign of the Lake Mead Boulevard Interchange, a concept that provided significant cost savings, simplified constructibility, improved quality, and improved mainline operations on southbound I-15 both during construction as well as in the final configuration.
- Demolition and complete replacement of three delta frame bridges to simplify construction phasing and traffic control, reduce traffic issues and long-term risk and maintenance costs to NDOT, and significantly improve service life.
- Optimized roadway alignments and profiles to not only meet design requirements, but also to increase value and operational benefits to the public and NDOT while reducing costs, improving traffic flow during construction, minimizing delays, supporting expedited construction, and reducing local access, mobility and community impacts.
- Asphalt pavement solution that reduced cost of construction and simplified long-term maintenance, providing NDOT a highly durable, cost-effective roadway; the 35-year pavement design also incorporated the existing pavement into the final design.

Innovations during the project delivery phase led to the development of a two-phase versus three-phase construction approach to increase safety, provide better access, and reduce construction costs and duration. As part of this approach, NCC developed and implemented an Incident Management Plan (since adopted as a standard by NDOT for its future projects), and worked with the city to optimize traffic signal timing on surface streets to relieve traffic congestion on the I-15 mainline.

Other project delivery innovations included the use of pre-cast bulb T girder bridge construction and associated maintenance of traffic modifications that effectively provided a safer environment for workers and safer access for motorists while delivering a higher quality product earlier and at lower cost.