

## Natural Asbestos Tamed On Interstate Project



In order to limit the release of asbestos from rocks and soil, protocols on the I-11 project in Southern Nevada included [water spraying](#) in work areas.

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Orchestrating an efficient asbestos mitigation plan, contractors in Southern Nevada are building the first new interstate highway in decades with Phase 1 nearly complete and Phase 2 well underway.

After being challenged by the potentially deadly, naturally occurring asbestos found in vast areas of the Southwest, planners monitored air levels, controlled dust and will not move any excavated soils from the site.

Additionally, equipment and vehicles are cleaned before leaving the Interstate 11 project site.

“What the data shows is, our plan works,” says Gary Pons, an industrial hydrologist with SCS Engineers.

Out of the more than 14,000 air samples taken in and around the project area, none have exceeded mandated levels.

But the naturally occurring mineral, which the Environmental Protection Agency declared a cancer-causing substance in 1971, was not the only natural item contractors were tasked with mitigating.

The desert tortoise also calls the area home, requiring specialized staff, training and plans for workers encountering the land-dwelling reptile.

## **First Step Into Natural Asbestos**

Phoenix and Las Vegas are the two largest U.S. cities not currently linked by an interstate highway. The two phases of I-11 now under construction will create the first 15 miles of the 300-mile trip from Las Vegas to Phoenix.

At project completion, travelers will cut 30 minutes from their drive from the Hoover Dam bypass east of Boulder City, Nev., to Las Vegas. The 2.5 mile, \$83-million Phase 1 is managed by Nevada Dept. of Transportation, along with general contractor Fisher Sand & Gravel. Phase 2 is managed by the Regional Transportation Commission of Southern Nevada, with Las Vegas Paving as general contractor on the \$235-million, 12.5-mile section.

Also known as the Boulder City bypass, the first leg of I-11 will allow approximately 34,000 vehicles a day to skip the U.S. Highway 93 route through Boulder City. Of the \$318-million total project cost, \$249 million is federal funding. The state of Nevada is contributing \$5 million to Phase 1 and the RTC is supplying \$63.8 million to both phases.

“Construction of I-11 is critical to the continued economic vitality of Nevada,” said Gov. Brian Sandoval, who chairs the state Transportation Board. “By improving traffic flow between Las Vegas and Phoenix and providing relief to congested north-south highways like I-5 and I-15, the new I-11 will spur increased trade and commerce, advancing our economic development initiatives and ensuring we remain globally competitive.”

The four-lane, access-controlled freeway includes 11 bridges, a scenic-view parking area overlooking Lake Mead, drainage culverts and dedicated crossings for off-road traffic and wildlife. A portion of the project skirts nearby Lake Mead with some construction through a ridge of the El Dorado Mountains.

Plans for I-11 had been simmering for years in the Arizona and Nevada state houses. While the Grand Canyon state has work on I-11 on long-range forecasts, Nevada moved ahead with plans to begin construction in 2014, but site sampling revealed naturally occurring asbestos in November 2013, which halted all construction progress until the following November while additional testing was conducted.

### **Testing Impacts Planning**

Because naturally occurring asbestos had never before impacted a project in Nevada, the Federal Highway Administration established an expert panel to execute sampling and testing efforts while mitigation measures and contract specifications were developed. Nearly 20 agencies and firms are on the panel. The testing team featured work by Kleinfelder, Tetra Tech, EMSL Analytical Laboratory and Asbestos TEM Laboratories.

More than 600 soil samples were taken in preconstruction, 300 specifically under asbestos protocols. Naturally occurring asbestos was found along the entire alignment, most frequently in the Eldorado Mountains and the Railroad Pass area.

The highest concentration of asbestos was 6% in Eldorado Mountains samples. All of the samples from Phase 1 yielded concentrations of less than 0.25% actinolite asbestos.

The Occupational Safety and Health Administration and the Environmental Protection Agency regulate work where asbestos levels of more than 1% are present. Since naturally occurring asbestos is a common factor in road construction in California, the California Dept. of Transportation was also part of the panel assembled by the FHWA and provided their construction guidelines to guide mitigation on I-11.

Everything is washed before it is taken off the site, with all trucks and equipment having to pass through wash-down stations at construction area exits. In the early stages of the project, workers were also required to keep their work clothes in lockers on site and wear protective clothing.

During work, all areas and unpaved road surfaces were repeatedly wetted, supplemented by reduced driving speeds in the work area. Excavation and drilling were also limited to low-wind days and undertaken at a pace slower than normal.

According to Pons, construction operations each day used more than 1 million gallons of reclaimed water, which was provided by Boulder City.

“As remote as the project site is, getting water out there was a concern from the beginning,” Pons says.

Steve Ireland, project engineer with Las Vegas Paving, says after the RTC successfully negotiated use of the treated effluent from the city’s water treatment plant—located adjacent to the I-11 project site—the firm began constructing three storage ponds roughly three miles apart. Ireland says the ponds are connected to each other and the water treatment plant by 18-in. high density polyethylene pipes. Combined, the ponds hold more than 5 million gallons of water and self-leveling pumps assure constant supply.

In order to manage testing and mitigation, contractors divided the project into 2,500-ft-long work zones. Pons says a certified dust control manager is required to be on site at all times. All of the dirt excavated will not leave the expanse of the site. Some will be used for landscaping, while other amounts will be used in conjunction with construction on several of the bridges.

In all, Pons and his team have collected 14,000 air samples both on site and from the five monitoring stations in and around Boulder City.

“We have a really small threshold, and we have exceeded that threshold only 1% of the time,” Pons says.

However, Pons says there has not been a single incident of a worker having exceeded OSHA asbestos exposure limits of 0.1 fibers per cu cm over an 8-hour workday. As of May 2017, more than 8 million cu yd of soil was moved on site, the equivalent of 320 average size swimming pools.

While asbestos mitigation was a major issue, it was not the only impact Mother Nature had on the project. A species of desert tortoise has inhabited the area for generations and is endangered. All had to be relocated.

“Basically what it comes down to is if you see a tortoise, don’t touch it,” Pons says.

So far, 62 tortoises have been removed from the 600-ft-wide project site, Ireland says.

Five miles of tortoise fencing was erected early in the project timeline and more than 20,000 cacti were removed and replaced.

Fred Ohene, deputy general manager of engineering and planning for the RTC, says 8-ft fences have also been erected on the roadway perimeter to prevent desert bighorn sheep and other animals from accessing the interstate.

## **A Desert Interstate**

Phase 1 will have a concrete roadway that NDOT says will result in a 75% savings in long-term maintenance costs. Crews have moved more than 1 million cu yd of earth during construction of the phase, including the building of a full diamond interchange and a 600-ft-long, two-lane, cast-in-place flyover bridge.

Other Phase 1 components include creating a 1.5-mile asphalt frontage road linking Henderson with the Railroad Pass interchange, replanting 20,000 cacti, placing decorative rock and installing the tortoise fencing.

A 1,200-ft-long, 28-ft-tall, cast-in-place concrete retaining wall with steel graphics illustrating scenes from the construction of Hoover Dam was erected near the Railroad Pass intersection. The project also reconnects the railroad tracks previously severed by U.S. Highway 93 by building a 360-ft bridge that allows the mainline freeway to pass underneath.

In addition, a prefabricated steel pedestrian bridge is also being erected that connects the River Mountains Loop and Henderson trail systems.

“This infrastructure project allows for the movement of goods and visitors as outlined in the North American Free Trade Agreement and identified in the CANAMEX Corridor,” says NDOT spokesman Tony Illia. “The ultimate goal is to have an uninterrupted interstate link between Mexico, Canada and the U.S.”

In contrast to Phase 1, Phase 2 will have an asphalt surface and runs from Railroad Pass to the Hoover Dam Bypass Bridge with a scenic view parking area overlooking Lake Mead.

There will also be nine bridges on Phase 2 with two tower types of the concrete girder structures. Bridge 1 has a 206-ft span and will have art deco elements designed to match the aesthetics of nearby Hoover Dam. Three 140-ft bridges are aesthetically similar to Bridge 1, absent the metal railings.

Bridge 5, located at the eastern edge of the project, is designed for wildlife traffic only—specifically desert bighorn sheep—and passes over I-11. The wildlife fencing leads to this overpass, which is about 60 ft wide.

The pass through the El Dorado Mountains was the site of most blasting operations. More than 350,000 tons of asphalt will be used to pave the roadway.

Anticipated completion of Phase 1 is expected by January 2018, with Phase 2 completion expected in October 2018. NDOT officials are still examining where the next segment of I-11 should run, according to NDOT. A \$5.3-million traffic study analyzing the Las Vegas Valley’s major freeway corridors—including I-11—is expected to be completed by spring 2018.

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