Viaduct demolition: A look at how it all comes down

- The trickiest part will be removing the section that runs along the central waterfront.

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Crews next month will remove a 200-yard section of the south viaduct. The two larger sections, shown here in red, will be demolished later.

Seattleites will get a preview of viaduct demolition next month when crews remove about 200 yards of the southern portion of the Alaskan Way Viaduct.

Demolition officially started in February with removal of part of the northbound First Avenue on-ramp, but the work scheduled for Oct. 21 to 31 will take a much bigger chunk out of the structure.

Matt Preedy, deputy program director at the Washington State Department of Transportation, said removing the ramp was fairly straightforward, except crews had to get a replacement ramp open quickly.

Removing the ramp and the 200-yard section are part of a $114.6 million project to replace the viaduct’s southern mile with a new side-by-side roadway between South King and Holgate streets. Skanska USA Civil is the general contractor.

The replacement ramp will connect the central viaduct to the detour roadway until the entire viaduct closes for good. The ramp will then be removed along with the viaduct.
The southern portal for the 57-foot-diameter deep-bore tunnel that will replace the viaduct will be near South King Street.

Preedy said Skanska is six months ahead of schedule and should finish by mid-2013, if not earlier.

The trickiest part of the viaduct demolition will be taking down the section that runs along the city’s central waterfront. That mile-long span is close to a lot of buildings. Preedy said it won’t come down until the 1.7-mile-long tunnel is finished in late 2015. He said it could be early in 2016 before a contract is awarded to demolish the central section.

Preedy said it could take nine months to remove the central section, but the project hasn’t been designed so that’s a rough guess. The schedule could be affected by the need to maintain traffic along Alaskan Way, noise restrictions for nearby offices and condos, and providing access to businesses.

WSDOT estimates demolition will cost $20 million.

Bryan DiLoreto, senior vice president of NCM Contracting Group, said he didn’t know how much it would cost to remove the central viaduct, but it would get more expensive the more technical it gets.

NCM is one of the world’s largest demolition companies, combining the former Nuprecon, CST Environmental and Marcor Remediation. It is based in Brea, Calif., and has a local office in Snoqualmie.

DiLoreto said the first priority should be safety. Whoever removes the central viaduct must first evaluate the hazards and how to mitigate them. He said the contractor must figure out how the viaduct will react to demolition. “It needs a technical solution; that’s the unique piece.”

Each part of the viaduct must be evaluated separately, according to DiLoreto, along with the hazards and adjacent structures.

DiLoreto said removal will likely involve several demolition methods. He said one part may require selective demolition, while another could be taken down with heavy machinery. Robotic equipment could be used in hazardous areas.

Preedy said a number of buildings will present some issues during demolition of the central section.

The 16,200-square-foot Integrus Architecture Building is actually under the viaduct at the Pike Street Hill Climb. Preedy said WSDOT bought the four-story building a few years ago and is using it for storage. It could be used for construction offices during demolition, but what happens after that hasn’t been determined.

Another building near the Battery Street Tunnel protrudes into the roadway. Preedy said part of the road barrier has a notch in it to accommodate the building. “If a car were to hit the barrier at the right spot,” he said, “it would hit the building instead of the barrier.”
There is also a parking garage about 3 feet from the viaduct on the west side of Western Avenue, between Pike and Pine streets.

Preedy said the viaduct’s proximity to structures will likely determine what type of demolition is used. In some spots, crews might have to drill holes into the deck and girders, and then cut out pieces with industrial saws. The pieces would be attached to crane riggings and lifted out.

How the viaduct is demolished ultimately will be up to the contractor, he said.

Preedy said there could be restrictions on demolition activities in some areas, such as tourist spots. There also are weight limits on the viaduct. An engineer would have to evaluate heavy loads and submit the findings to WSDOT.

Preedy said there have been a few viaducts demolished around the country but he has never seen one like this. “It’s safe to say in the state of Washington, this would be a first.”

DiLoreto said NCM has done projects with similar conditions. For example, it demolished a four-story garage that was one foot away from an occupied building at Southern California’s John Wayne Airport. It also removed the top four floors of the 15-story Meier & Frank Building in Portland while lower floors were occupied.

“All risks can be mitigated,” he said.

Taking down the southern mile of the viaduct should be easier because there are no buildings nearby, Preedy said.

Rhine Demolition of Tacoma was Skanska’s subcontractor for the ramp project and will remove the 200-yard section on the southern mile next month.

Preedy said Rhine will take the viaduct down to the foundation because it’s in the way of the detour road that will connect to the new southbound bridge. He said the contractors want to get the upper deck off the viaduct all the way down to South Holgate Street, leaving only the lower deck south of South Atlantic Street.

“I’m optimistic that they will get as much of it removed as they plan to,” Preedy said.

Rhine is expected to keep backup equipment on-site in case of any breakdowns. “The equipment they use takes a lot of abuse,” Preedy said.

More viaduct demolition will start in November north of where Skanska is working. Seattle Tunnel Partners, the joint venture building the tunnel, is in charge of that 1,100-foot-long section, which is between the southern portion and the central portion.

Preedy said he didn’t know how long that work would take, what demolition method would be used or if Seattle Tunnel Partners will use a subcontractor.

Once the central viaduct is down, there may be opportunities to redevelop spaces where the viaduct ramps are today. Preedy said it is WSDOT’s responsibility to decommission the viaduct and ramps, but it will be up to the city what to do with the ramp spaces at Columbia Street, Seneca Street and Western Avenue.
He said Columbia could be widened to a full road when the ramp is gone, but its fate will likely be determined as part of the central waterfront planning process.

At Seneca the grade is too steep for a road, so WSDOT could tear down the ramp or leave part of it for a viewpoint or some other use, Preedy said.

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