Bridging Time and Place // Reconstructing Illinois' Mile-Long Bridge // Banking on Precast: The Rodanthe Bridge

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SUMMER 2020
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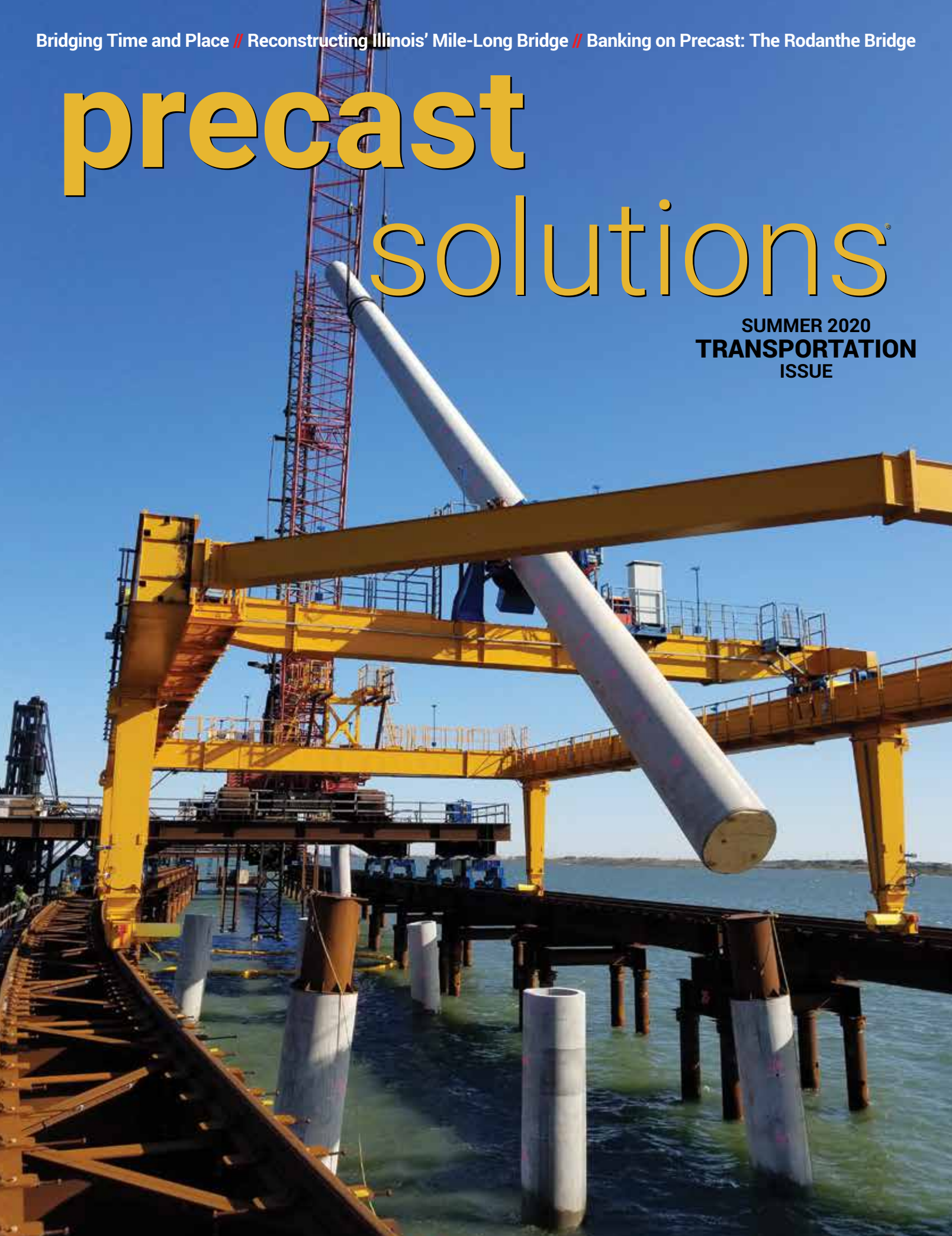

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ON THE COVER:

On the cover: Precast concrete and innovative construction methods were used to construct the Rodanthe Bridge in North Carolina.

Photo courtesy of Flatiron Construction.

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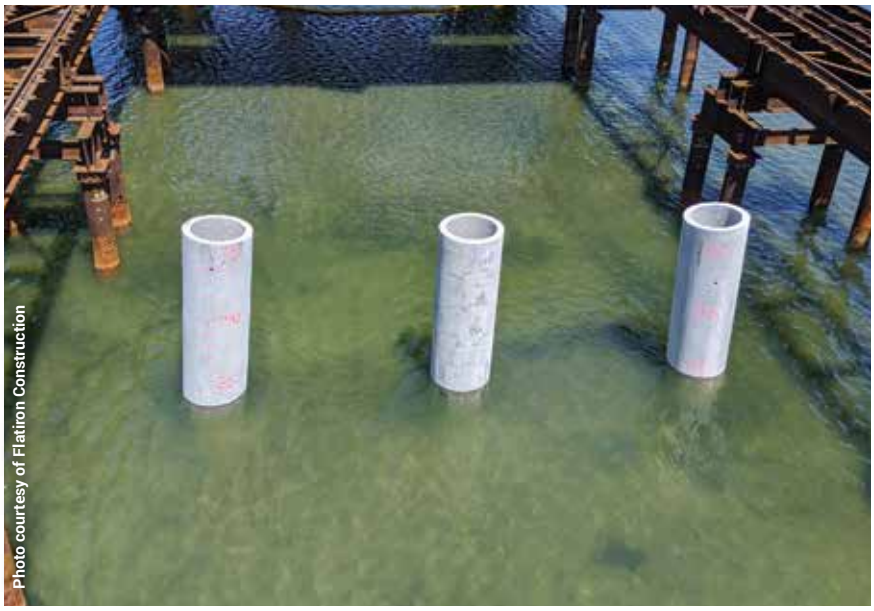

Photo courtesy of Flatiron Construction

WHAT'S INSIDE

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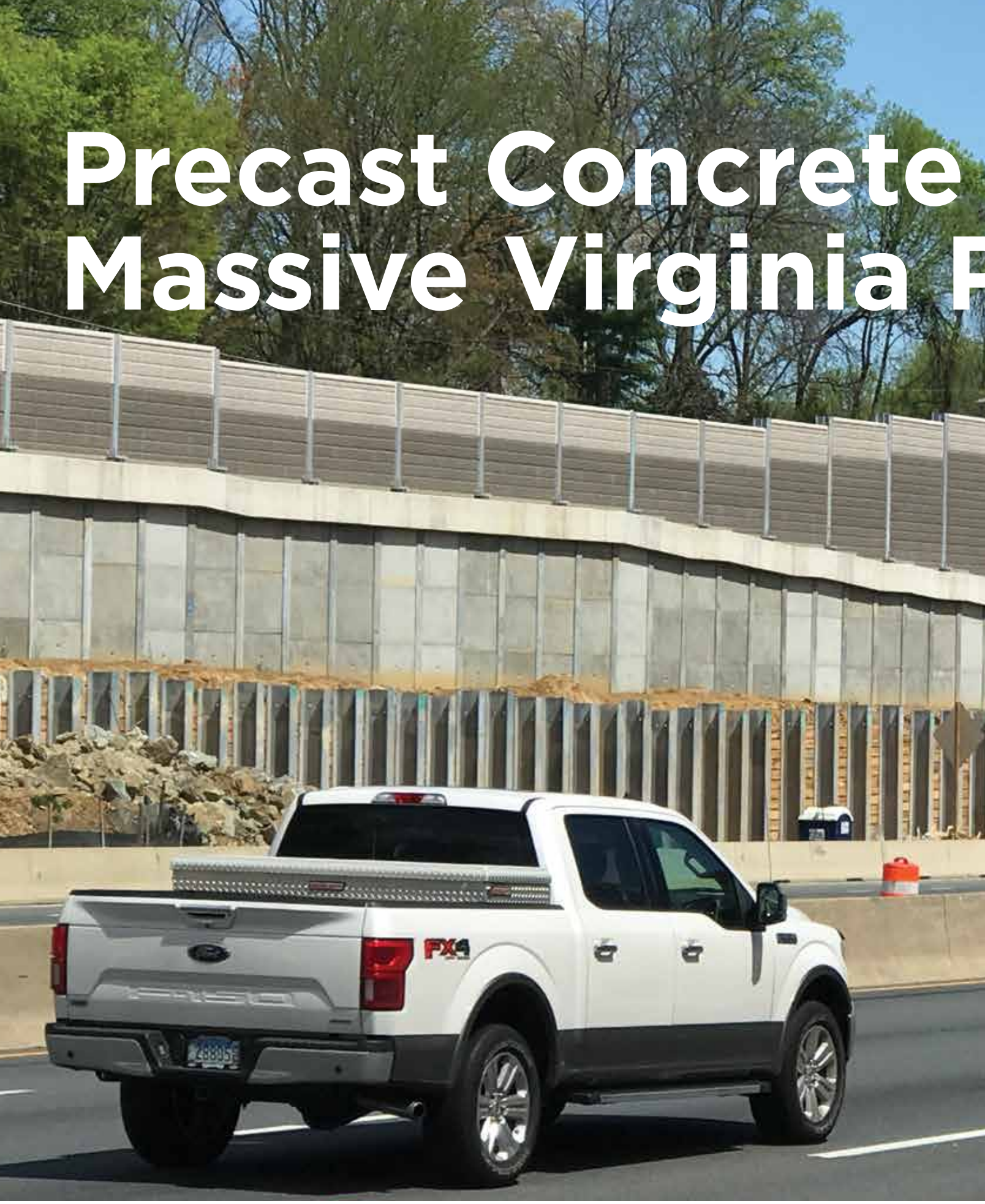
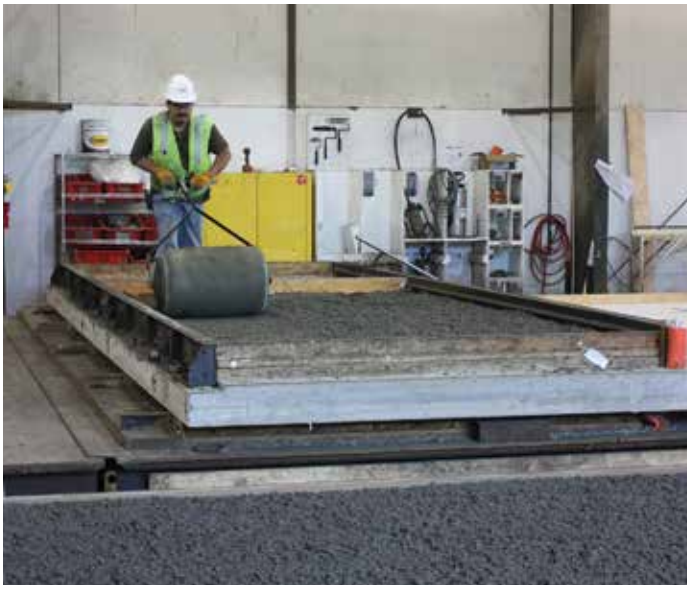


Critical to Project

By Matt Werner
Photos courtesy of Smith-Midland



Planning and coordination are crucial in the construction industry, and one Virginia project that is transforming the Washington, D.C., area is highlighting those efforts between the contractor, precaster and state officials.

As a stretch of more than 22 miles of interstate is being transformed to allow for more cars, buses and other transit options, the need for sound walls is paramount. With timelines to meet and installation needing to go as quickly and smoothly as possible, precast concrete became a key factor in the project.

TRANSFORM 66

Interstate 66 is the only interstate west of Washington, D.C., connecting to northern Virginia, carrying thousands of cars every day as commuters make their way inside the Beltway. With major congestion occurring daily on both the interstate and feeder roads, the state entered a public-private partnership to transform the critical highway.

FAM Construction LLC, a joint venture company of Ferrovial Construction US and Allan Myers, serves as the design-build contractor for the $2.3 billion project, which isn't just expanding interstate but turning it into a multimodal corridor.

"The project will result in two new express lanes alongside three general purpose lanes in each direction, auxiliary lanes, major interchange improvements, new and expanded park-and-ride lots and multiple segments of a corridor-wide shared use path," said Nancy Smith, spokeswoman for FAM. "The project also will preserve the median for future mass transit expansion."

The project's success depended on the ability to produce 1 million square feet of precast concrete sound walls quickly and efficiently, and NPCA member Smith-Midland was able to meet the challenge.

Smith-Midland is manufacturing more than 1 million square feet of sound walls and retaining walls for the Transform 66 project near Washington, D.C.

TRANSFORM 66 OUTSIDE THE BELTWAY

The following firms were involved as part of the public-private partnership:

- Virginia Department of Transportation
- Department of Rail and Public Transportation
- I-66 Mobility Partners:
  - o Cintra
  - o Meridiam
  - o John Laing
  - o APG

LEAN MANUFACTURING TESTED

For Smith-Midland, a typical sound wall project is around 30,000 square feet, making this more than 3,200% percent larger than what they typically do.

"We may have 100 bays and 200 to 300 panels for a typical project," said Alex Burkhart, Smith-Midland's project manager. "With this we're talking over 50 different sound walls and thousands of panels."

Luckily, Smith-Midland was brought on early and had several preliminary conversations with FAM about when panels would be needed. Those conversations were critical for a company that prides itself on lean manufacturing techniques.

"We had about 1,000 of the 'typical' panels in production before everything really kicked off," Burkhart noted. "We knew that we were going to have a set amount of the 'typical' panels, so we went ahead and started making those to get ahead of the curve."

Being able to get a jump on production was a big benefit of using precast for the project.

"Using precast panels allowed material production to begin while the project was still in design, which helps to save time, particularly on a project of this scale," Smith said. "Additionally, using precast panels allows for better control of the finish, for adherence to the project's aesthetic plan."

Panel sizes for the project range. The typical panel is 23 feet wide and 8 feet tall, and they get as tall as 12 feet. Most panels have a vertical rib pattern finish, but some have an ashlar dry stack finish.

"In the dry stack wall, there's a sequence to it where there's 15 dry stack panels and then five panels in a row that have a dogwood flower pattern at the top," Burkhart explained. "We've done that on other projects to give a little more visual aspect to it."

In addition to the sound walls, Smith-Midland is manufacturing more than 200,000 square feet of retaining walls. The retaining wall panels exposed to public view have either a smooth or bush hammer finish to create more aesthetics.

Installation and manufacturing of the panels continues, and the project is scheduled to be complete in 2022.

PRODUCTION, STORAGE BOUNDARIES PUSHED

Production of the sound wall panels is ongoing with Smith-Midland manufacturing 16 panels per day, but it took some time to get to that point.

"There's always a learning curve with it," Burkhart said. "You can't just throw on the switch and start making 16 panels a day. We started slow with about four per day, then went to eight and in the span of about three weeks we had it up and running."

As the company was finishing up another large sound wall project, Burkhart said they worked to get as much optimized between the two to make production for both easier. Things like reinforcement design were matched between the two to promote lean manufacturing.

With such a large project, production space and storage space at the yard was at a premium, resulting in a five-acre expansion to Smith-Midland's yard and property.

"The expansion to the property and yard had been in the long-term plan," Burkhart noted. "This contract definitely put a little bit of feet to the fire in getting it done."

Burkhart said the shop arrangement changed regularly to accommodate casting new panels and production, but it was not anything out of the ordinary.

INSTALLATION CONTINUES

Production on the sound wall panels began in late 2018, and product still is being shipped and installed. The target completion date for the entire project is 2022.

The job site is only about 30 minutes away from the plant, so Burkhart heads out three or four days a week at times to make sure things are going smoothly on site. Smith said the installation has been going well, and they are happy with how the project is progressing.

Once complete, the project will provide faster, more reliable travel and move 2,000 to 4,000 more people per hour. Safety will also be improved throughout the corridor, and the project sets up future transit expansion with additional bus routes, as well as 4,000 additional park-and-ride spaces. **PS**

Matt Werner is the managing editor of Precast Solutions magazine and is NPCA's communication manager.

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