State Route 99/State Route 219 Kiernan Avenue Interchange Reconstruction

December 2015

Still on Schedule!

The State Route 99/State Route 219 Kiernan Avenue Interchange Reconstruction continues to move forward—on schedule! As a reminder, the project includes the following primary improvements:

- Replacing the bridge and on- and off-ramps,
- Constructing new auxiliary lanes on SR-99 from Kiernan Avenue to Pelandale Avenue,
- Adding a lane in each direction on Kiernan Avenue,
- Providing improved operations for turning movements to and from SR-99,
- Constructing associated local road improvements at Sisk Road and Salida Boulevard, and
- Constructing a storm drain pump station and collection system.

The Project Team

The project team includes Stanislaus County, California Department of Transportation (Caltrans), Stanislaus Council of Governments (StanCOG), Rajappan & Meyer Consulting Engineers, Inc. (project design), O.C.Jones & Sons, Inc. (contractor), and NV5 (construction management).

Four Stages

Stage 1 – North (Completed)

The first stage constructed a new storm drain pump station in a 40' deep pit and underground storage facility that includes a box culvert 150' long x 10' wide x 8' high that allows water to flow under a road or similar obstruction, and a 200' section of 8' diameter concrete pipe. Construction crews also demolished and removed a 10' wide north section of the old bridge which allowed construction of the first of three new bridge sections that are being joined to form the new 140' wide interchange bridge. This first (north) section of the new bridge, completed in Stage 1, now carries the westbound SR219 (Kiernan) traffic across the bridge. Eastbound traffic traveled on what remained of the old bridge, until Stage 2 was completed Summer 2015.

Other tasks that were completed are construction of the south- and north-bound auxiliary lanes; installation of K-rail; removing and replacing sidewalks on Kiernan Avenue and Sisk Road; building retaining walls; southbound on- and off-ramps; northbound on- and off-ramps; and a drainage pond. Adjoining local street surfaces have been improved, and widening Kiernan Avenue in each direction has started. Construction of the northbound and southbound on- and off-ramps was accomplished early, and traffic signalization improvements are well on their way at four locations. Originally scheduled for Stages 1, 2 and 3, construction crews completed the majority of all on- and off-ramp improvements ahead of schedule.

Stage 2 – South (Completed)

The second stage required about six to eight months of work, as crews built the foundation and pilings for Stage 2 of the bridge. This stage also required demolishing portions of the old bridge, so that the south section of the new bridge deck could be built. This stage was also completed on time, allowing vehicles to travel eastbound and westbound at the raised finished grade of the new bridge.

Stage 2: Bridge Completed Deck Pour

In This Issue

Four Stages (continued)

Stage 3 – Mid-section (Summer 2015 – Spring 2016)

In this third stage, the middle section of the old, existing bridge was demolished and removed and is now being replaced. Piles have been placed. Construction of the abutments and center bent (middle part with columns) has also been completed, and girders (beams) will soon be set. Then, the deck will be placed. As Steve Walters, Assistant Resident Engineer, NV5, stated, "It's building three separate bridges and then connecting them." This has occasionally necessitated night closures to allow a giant crane to temporarily park on one of the new bridges. The crane is used during construction of the 70-foot deep concrete foundation piles below in the SR99 median. It is used to support and guide a long concrete pumping tube that pumps concrete from a delivery truck and pumper to the piles below.

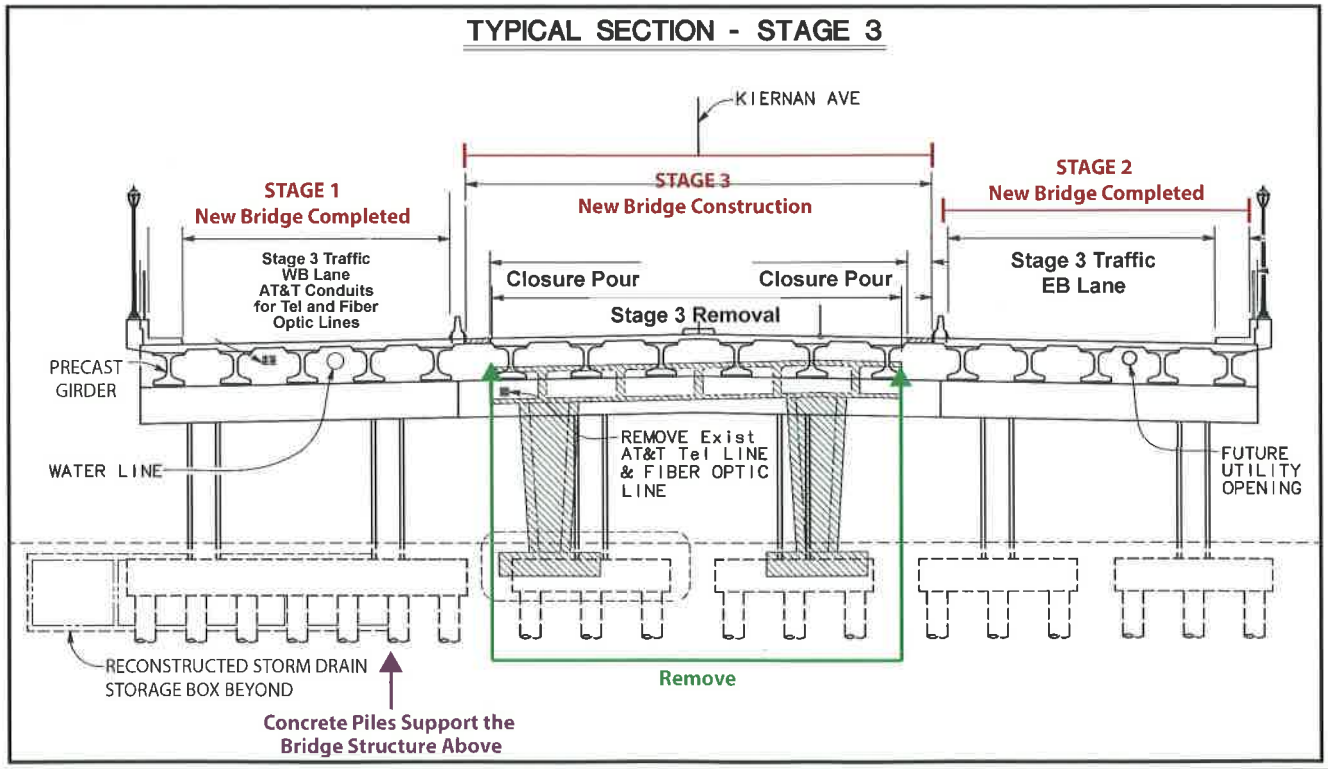
Stage 4 – Finish Bridge and other Improvements (Spring - Summer 2016)

In this final stage of the project, the three sections of the new bridge will be joined together with closure pours. Other finishing touches— final paving and striping, etc.—will be made to the ramps and bridge and surrounding local roadways, SR99 and SR219. Traffic will then flow smoothly in both directions at a higher elevation than on the old Kiernan bridge, and will include four lanes in each direction, two more than the original six-lane bridge. Finishing touches will also include landscaping, a new median island configuration on Kiernan Avenue, final paving, local street work, and other details to complete the project.

Stage 3: Demolition

Stage 3: Start of Abutment 1 Construction and Pile Foundation

Stage 3: Abutment 1 Start Piles



Who Are the People Who Make It Happen?

An earlier newsletter featured an interview with the contractor's representative discussing sustainability and the reuse of pulverized roadway concrete/asphalt. Following are interviews with construction management team members.

Brad Riel

Brad Riel has a dual role on this project: (1) He is Project Manager for NV5, Stanislaus County's construction management firm for the project. Brad works to ensure that his team is meeting the needs of Stanislaus County and Caltrans, the project owners, and is building a good project efficiently and effectively. (2) Brad is also the Structures Representative. As such, he works to ensure that all the project structures—bridge, retaining walls, pump station, underground structures—are constructed safely and up to code.

Brad graduated in civil engineering from University of California, Berkeley. He then worked for Caltrans' Division of Structures Construction, where his first project was a "giant realignment" of Highway 101 north of Cloverdale. Then, after a year in Structures Design with Caltrans, he spent 11 years in Structured Maintenance Investigation. (Every bridge in California must be examined and evaluated every two years to determine its structural integrity and provide a rating of acceptable traffic.) Then, Brad returned to bridge construction, mostly in the Bay area.

Brad's work with Caltrans was followed by work with Nolte/NV5, where he has been for 17 years as a Structures Representative on a variety of projects, such as, bridges over the San Joaquin River, Sacramento Railyards, Antioch rail station, and other light rail viaduct work. In the private sector, Brad soon expanded beyond engineering to practice client development, management, budgeting, staff training, and strategic planning.

Brad was the first in his family to become an engineer after counselors and others suggested he would be well suited to engineering. He has always enjoyed the problem solving in the laws of physics and nature, and trying to find solutions. He has worked on about 70 bridges in his career.

We asked what is unique about this project. His prompt reply? The pump station, because the freeway dips lower than the existing roadways—down about 30' below Kiernan Avenue (SR219). Groundwater is located about 5' below SR99. The pump station was essentially constructed under water—a unique situation, more like that of a wet environment in the Bay Area. The pump station is almost as tall as a four-story building but built underground.

This project has also been unique in that the footprint of the job is the only place in which to operate. There is no storage, no place for materials. The night-time work requires contingency plans. If anything does go wrong, a contingency plan must be in place to continue or to stop and get the roadway open in a timely manner for the public.

Communication on a job site like this one is complex, due to the number of people, agencies, and utilities. Years of strategic planning are required. It requires foresight. Specialists must work to find the funding opportunities and go through the planning, design, and utility relocation stages. The processes become more complex every year. Examples of constraints include State Water Pollution Prevention requirements, contractual law, ever-changing building and construction codes, and seismic requirements.

Day-to-day communications with the contractor for legal and contractual reasons include letter-writing, meetings, reviewing submittals, and interpreting plans and specifications. Timely communication with the third-party agencies that are involved is required, so that all understand the schedule, the current work, and everyone's needs and concerns.

Brad also mentioned the importance of communicating with the public about night closures and traffic switches by newsletters, news releases to broadcast and print media, hotlines, web pages, contacting local business owners who may be affected by access issues and customer safety, and electric changeable message signs through the project area. He emphasized the importance of recognizing that the construction work may impact others who may be traveling.

The great thing about his job? "When we're done, we have something to show for the work. You feel the benefit of it."

Thank You

The project team acknowledges and thanks the Salida Fire Department and the project neighborhood for their cooperation and assistance during the project.

Who Are the People Who Make It Happen?

Titus Thomas

Titus Thomas, who works for NV5 as the Structural Inspector, graduated in civil engineering from California State University, Sacramento, 23 years ago and from the Caltrans Bridge Academy. Titus enjoys building bridges. His first project out of university was a bridge project north of Redding, where a more seasoned professional with years of experience became his mentor: "You want to learn about bridges? I'll teach you!" And he did. Titus commented that he was a "real, good man! A great bridge guy!" He knew structures. He knew how to teach bridge building.

A second mentor was Alice, a construction manager with whom he worked in East Oakland in 1995. She taught him that the inspector's role is never to be adversarial, but rather to work with the contractors to check the project and produce good work.

Daily, Titus inspects all structures on the project from the foundation substructure (underground) to the superstructure (bridge deck). This entire bridge structure rests on two sizes of Cast in Drill Hole piling—24-inch at the abutments and 30-inch at the bents in the median at elevations that range from 60 feet to 75 feet deep below the surface.

Titus explained piles and bents: Piles are long, slender columns of steel or reinforced concrete driven or drilled and pinned into the ground to carry a vertical load. Bents are the building blocks which define the overall shape and character of the structure. They provide the structural framework of the structure and are designed to carry lateral as well as vertical loads.

On this project, Titus said, groundwater was encountered while drilling holes for some of the 70-feet deep piles. Thickened slurries are then used to stabilize the walls of the hole and serve to hold their circular shape, so that concrete can be poured and sand does not re-enter. Engineers must test the slurry daily for ph, weight, and viscosity to ensure the correct range. Then, when concrete is poured into the holes, water is forced out, ensuring the density and the strength of the piles. Then, the slurry water can be cleaned and recycled. Because this stage of the project is taking place in the highway median, the process is slow. The larger diameter 30-inch piles for the columns and bents in the median typically take one full working day to complete. At the abutments, two of the smaller diameter 24-inch piles can be completed in a day.

The greatest thing about his job? "Problem solving!"

Project Benefits

When complete, the reconstructed interchange will help meet future traffic demands, alleviate traffic congestion, and improve the overall operation of the busy interchange. Increased efficiency will also encourage the free flow of goods and services for the region and state.

Obey Posted Speed Limits

Please help create a safe environment for other drivers and the construction crew by s..l..o..w..i..n..g down while driving through the construction zone.

Questions? Comments? Suggestions?

Call Judith Buethe, Public Information Coordinator, at (209) 464-8707, Ext. 1. Or, send email to hotline@buethecommunications.com. Visit the project website at www.stancounty.com/publicworks/kh99-main.shtm. Your questions, comments, and suggestions will be shared with the entire project team.

Stage 3: Demolition

Kiernan intersections were raised to the new bridge elevation at the completion of Stage 2.