

Descriptions

Pier—a structure comprised of stone, concrete, brick, steel, or wood that supports the ends of the spans of a multi-span superstructure at an intermediate location between abutments.

Abutment—a substructure supporting the end of a single span, or the extreme end of a multi-span super-structure and, in general, retaining or supporting the bridge approach fill.

Revetment—A reinforced embankment, for instance with: rocks, wood, plants, steel mesh or concrete. The Blue Bridge project will install rock revetment.

A diagram of basic bridge parts is posted on the project Web page.



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2. Register on the project page to receive e-mail notices when information is updated.
3. E-mail questions and comments to transportation@snoco.org.
4. Call Tina Hokanson, Public Works Communications, 425-388-3789.



West pier looking east during 2006 flooding

Retrofit Project will Repair and Protect Blue Bridge #538

Blue Bridge #538 crosses the South Fork Stillaguamish River on the Mountain Loop Highway 12.06 miles outside of Granite Falls. It is a two-lane, 160-foot long structure built in 1954 consisting of three spans: a 160-foot long steel through-truss main span and two 24-foot cast-in-place concrete approach spans. The spans are supported on two concrete piers and two concrete abutments, all founded on concrete spread footings.

A major flood event in 2006 on the South Fork of the Stillaguamish River eroded approximately 150 feet of the left bank upstream from the east pier, causing the bank to recede approximately 25 feet. The flood also washed away the soil fill between the west pier and west abutment at the bridge.

Since 2006, both ends of the bridge have required extensive hydraulic, structural and environmental planning to address the repairs. An east side bank stabilization project was completed during 2010. The west side retrofit is scheduled for construction in 2012 or 2013.

Snohomish County is proposing a retrofit project that will include installing new deep-drilled piers at the west end of the bridge and protecting the west side roadway with an engineered revetment to provide long term stability of the embankment.

The shafts for the retrofitted pier will extend approximately 100 feet below the river channel and will provide additional support for the bridge during large flood events.



West approach looking east



Looking west toward pier



2006 washout behind west abutment

The shafts will be 9-feet in diameter and will be constructed of steel reinforced concrete. These will be connected to the existing concrete foundation via a cast-in-place steel reinforced concrete jacket and pier wall.

An engineered logjam will be installed upstream of the west abutment. It will be anchored with large boulders and work with the revetment to prevent large woody debris from getting caught at the west pier. The engineered logjam will also help prevent erosion near the roadway during large flood events and provide fish habitat.

Steel-reinforced concrete “wingwalls” will be constructed perpendicular to the retrofitted foundation and extend 40 feet west from the pier, above the engineered revetment. These wingwalls will be parallel to Mountain Loop Highway on both the upstream and downstream sides of the bridge approach. The wingwalls will help secure and protect the west roadway approach and abutment in the event that the river scours the area west of the bridge.

While engineering is nearly complete, environmental permitting, assessment of floodway impacts and right-of-way acquisition must be concluded prior to construction of the project. Construction could occur during 2012 but is more likely during summer 2013.



Erosion of upstream bank on east side