

Fact Sheet: Colorado River Impacts

February 2016 - December 2018



Grand Avenue Bridge

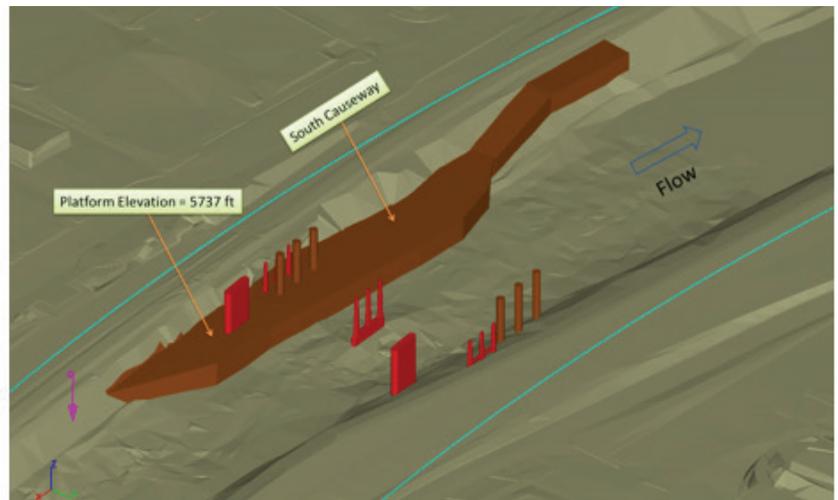
Overview

The Grand Avenue Bridge project requires two causeways to be constructed to provide access to the south and north piers of both the traffic bridge and pedestrian bridge. The causeways will be used as a platform for heavy equipment such as a crane and drilling rigs.

The causeways were designed with river safety as a top priority. Designers considered the river impacts for average off-peak flows of 1,400 cfs to a 10-year flood to determine size and placement of causeway rock material. The south causeway and north causeway will not be built at the same time, but will be in the river at the same time in fall of 2017. The contractor is constructing a temporary wire wall on the North Bank of the Colorado River (River Right) to use as support for bridge construction. This is being constructed in-lieu of constructing the North Causeway this winter. The wire wall will start construction just above the OHWM on the Colorado River and will extend vertically to provide a work platform for the contractor to work off of the edge of I-70.

South Causeway

The south causeway is approximately 500 ft. long with a 30 to 50 ft. wide top platform and a 1:1.25 side slope. The south causeway will extend 30 -70 feet into the river. The center pier of the existing traffic bridge will be in close proximity to the south causeway.



3D View of South Causeway Option

Image: **AECOM**

Upstream and Downstream Study Area

Hydraulic models created by AECOM provide an overview of anticipated change in flow velocity and waves generated due to river contraction. The study area for the project is 530 ft. upstream of the Grand Avenue Bridge and 1,320 ft. downstream and all flow and wave changes due to causeway construction are included in this reach.



Plan View of CFD Model Domain

Image: **AECOM**



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Updates & Alerts:
grandavebridge.codot.gov

Comments/Concerns/Questions:
info@grandavenuebridge.com

Call or Text Hotline:
970-618-9897

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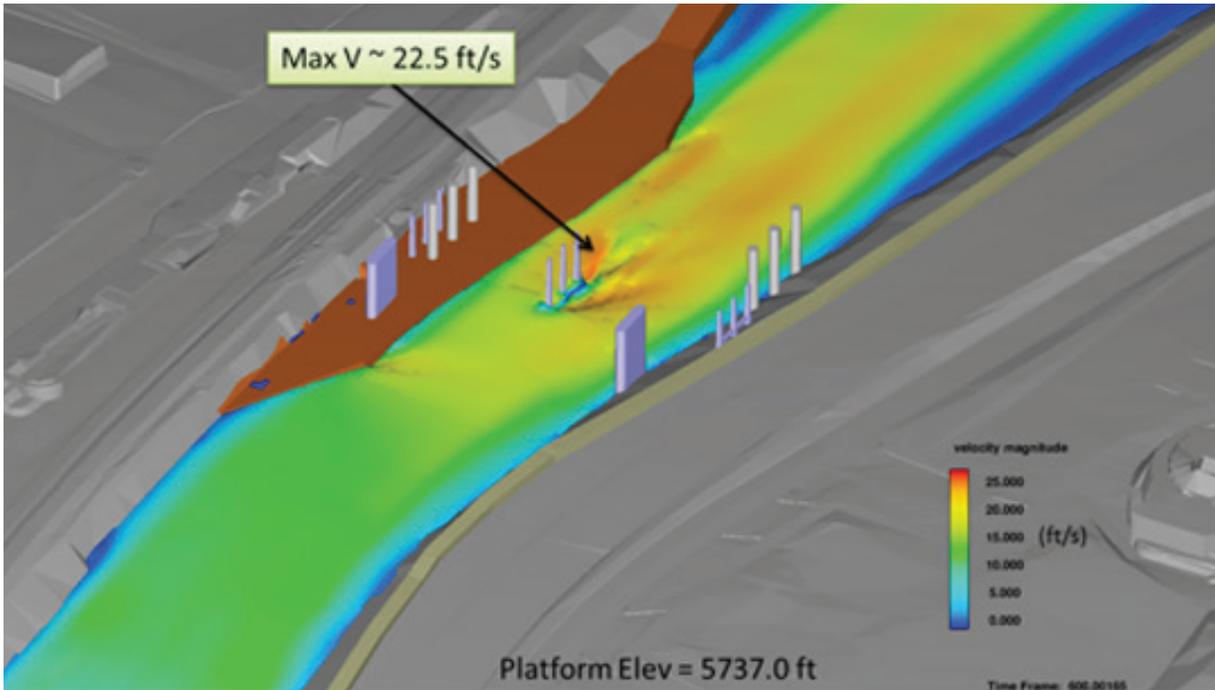
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**Grand Avenue
Bridge**

Designed to meet 21,500 cfs / 10-year flood

Flow Rate / Cubic Feet Per Second



3D View of Simulated Surface Flow Velocity

Image: **AECOM**

Flow Rate: Flow rate is volume of water passing a point in a fixed period of time. Flow rate is measured in cubic feet per second (cfs). The flow rate in a river is determined by multiplying water velocity by the area. $\text{Flow Rate} = \text{Velocity} \times \text{Area}$

The causeways have been designed for flows up to the 10-year event of 21,500 cfs, which has only occurred once in the over 60 years of recorded data.

River Users will experience increased flow rates in this area. The causeway is constructed to meet the 10-year flood rate.



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SAFETY MESSAGE

Rivers users should stay river right of the existing center pier but avoid river banks approaching the Grand Avenue Bridge.

River users should know if the river will be closed before launching vessel. Periodic closures will be necessary during the construction of both the pedestrian bridge and traffic bridge for river user safety.

What River Users Expect

Upstream of Pedestrian Bridge

As river users approach the Grand Avenue Bridge, the river will slow down and then accelerate approaching the causeway. At the beginning of the south causeway approximately 500 ft. before the bridge, river users will experience a “drop-in” and river velocities will increase. The south causeway will be noticeable and the distance between the center piers and south riverbank will appear closer.

Waves will develop to the right and left of the center pier. Rapids (water jumps) will be just south of the center pier. Easier water will be on the right side of the center pier. The calculated velocity of the flows with the southern causeway in this area are 3-4 ft. per second more than the current velocity.

Downstream of Pedestrian Bridge

Once through the causeway area, flows will return to normal approximately 1,300 feet downstream from the existing bridge.

The construction activity at the Grand Avenue Bridge requires periodic river closures at the Grand Avenue Bridge for overhead construction work such as setting steel girders and pier construction. These closures will be communicated in advance.

2016 Anticipated River Closures

PERIOD	TYPE	DURATION	ACTIVITY
Feb - March	Full Closure	2 Weeks	Deconstruct Pedestrian Bridge
Early June	Periodic Closures	2 Weeks	Erection of Girders New Pedestrian Bridge
Mid August - September	Periodic Closures	4 Weeks	New Pedestrian Bridge Overhead Work

2017 Anticipated River Closures

PERIOD	TYPE	DURATION	ACTIVITY
TBD	TBD	TBD	TBD
DETOUR PHASE August - December 2017	Periodic Closures	2 Months	Erection of Traffic Bridge



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Grand Avenue Bridge



Image of causeways in the Colorado River with new traffic and pedestrian bridge overlay. Causeways will be removed by March 1, 2018

Model Provided by: **AECOM**



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