

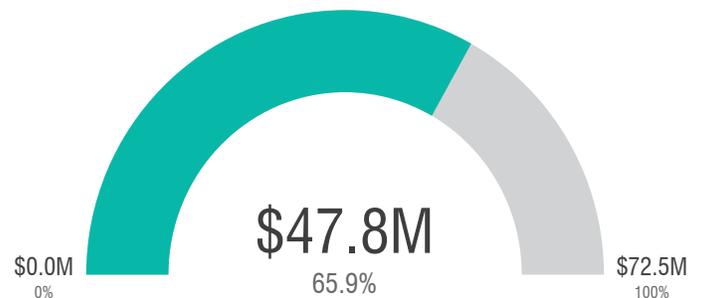
WHAT'S CRACKIN'?

SEPTEMBER 2021

Earthquake Response Executive Summary

SEPTEMBER 2021 OVERVIEW

Well, that sure went fast – another summer has come and gone. Kids are back in school, Costco is already stocking holiday decorations, and yardwork is soon to evolve into driveway, ahem, “maintenance.” With the autumnal equinox right around the corner, this month we transition into the half of the year when we have more hours of darkness than daylight, and we again have cause to pause and reflect. This shift is also when construction season begins wrapping up and preparations for the next are already underway. This fall, we can celebrate the innovation and perseverance characterizing the season past. While no one likes the delays or inconvenience created by infrastructure repairs and improvements, the solutions delivered through science, engineering, and crews committed to overcoming challenges will bring benefits to all for decades to come. With projects as with life, we keep on keeping on, and before we know it, what was once broken is again whole.



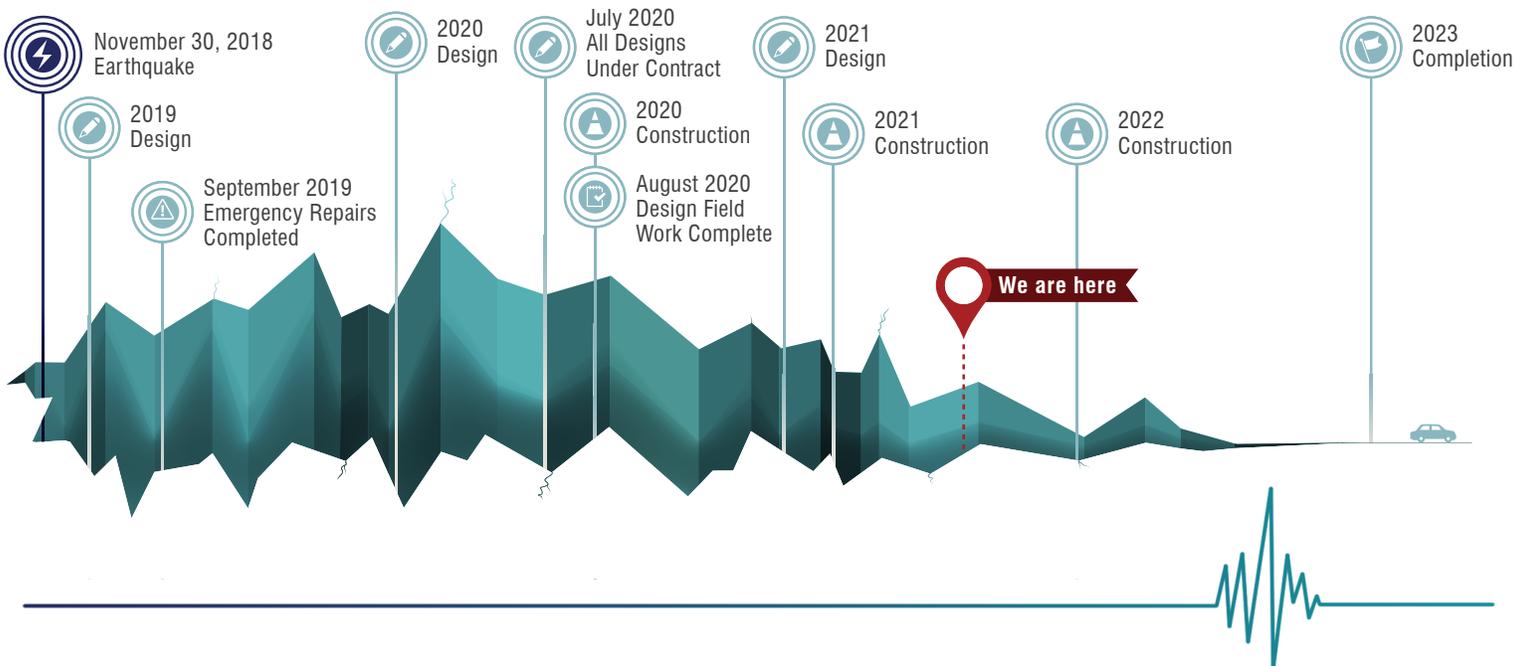
ADMINISTRATIVE EXPENDITURES VS BUDGET

This graphic portrays the administrative costs for FHWA and FEMA Category Z expenses. Dollars actually spent by DOT&PF to date are shown in contrast to budgeted costs. Expenditures are typically reported two months after the work is performed.

FUNDED VS TO BE FUNDED

The Future Obligation Status Report (FOSR) is an estimate of anticipated funding requests for design, utility agreements, right-of-way, and construction for highway projects. Estimates are updated monthly to reflect project scope and schedule changes.

PROJECT TIMELINE



PROJECT HIGHLIGHT



Glenn Highway at Mirror Lake Take 2 - Construction

The 7.1 magnitude earthquake that struck southcentral Alaska on November 30, 2018, caused soil liquefaction at the toe of the roadway embankment supporting the Glenn Highway near Mirror Lake. When the soils liquified, they lost their strength and stiffness, and the embankment gave way triggering a massive roadway failure. DOT&PF acted quickly to restore the serviceability of the Glenn Highway immediately after the earthquake with a temporary repair, however, a more robust and permanent repair was needed to address the soft soil conditions supporting the Glenn Highway at the site.

A team led by John Thornley, PhD, PE of Golder Associates, developed an innovative design to restore the roadway durability to its pre-earthquake conditions using aggregate columns. This construction design includes over 1,500 auger-excavated holes, placed in a grid-like pattern, that are backfilled with gravel. After placement, the gravel is compacted, creating vertical columns that strengthen the roadway embankment. In the event of another significant earthquake, the aggregate columns will drain excess water from the soft soils, preventing liquification and the resulting failure.

EMPLOYEE HIGHLIGHT | Chris Blitz, Stantec



Chris Blitz is an LSIT in Stantec's Geomatics Department. Since joining Stantec's Anchorage office four years ago, he's taken a leading role in field work planning and coordination, office reductions, and most survey related deliverables for internal and external clients. Chris began work on the Earthquake Response (EQ) program in May 2019 as Stantec began conducting ground monitor surveys across various Anchorage locations. Many of those sites developed into full design projects and Chris has supported the EQ program with a wide range of tasks, including designing ground monitor surveys, collecting field data, data processing, and reduction and drafting. A lifelong Alaskan, Chris graduated from UAA in 2017 with a B.S. in Geomatics, and he is working towards earning his Professional Land Surveyor license. In his free time, Chris enjoys exploring the great outdoors with his family and dog, Kusko.

FUN FACT | Do small earthquakes prevent big ones?

Have you ever thought, after experiencing a cluster of little earthquakes, "these must be doing whatever adjustments the earth needs to make so that a bigger and more destructive earthquake is less likely?" Unfortunately, geology doesn't work like that and small earthquakes do not actually prevent big ones. The Richter scale measures an earthquake's magnitude or intensity, and each point on the scale (0 through 9) represents an approximate magnitude increase by a factor of 30. That means a 3.0 earthquake (often a barely noticeable tremor) releases one thirtieth of the energy contained in a 4.0 earthquake, one nine hundredth of the energy in a 5.0 earthquake, and so on. The November 2018 event released almost 1 million times more energy than a 3.0 tremor! While less intense earthquakes do ease accumulated stress along geologic fault lines, they do not rule out the possibility of a larger shaker occurring soon.

