



# Highway 63:11: Seven Kilometer Expansion





# 1. Confirmation Receipt





## 2. Entry Consent Form



# 3. Full Project Description





# Introduction

Highway 63 is the only road connecting northern Fort McMurray with the rest of the province. As the gateway to major plants in the oil sands industry, Highway 63 moves more than people and products. It helps keep the economic engine of Alberta, and in turn, Canada, running and is the focus of Alberta Transportation's (AT) current construction program.

In 2005, the stretch of highway through Fort McMurray from Morrison Street to north of Confederation Way had grown very congested with semis, buses, pickups, and cars. As one of the busiest pieces of highway in its network, AT realized it needed to act or the gridlock would spread.

Stantec, as part of a larger team including AT, AECOM, CH2MHill, Thurber Engineering, South Rock Construction, Graham Construction, Flatiron Construction, and Innovative Civil Constructors, delivered a \$400 million project to upgrade the highway. The project included expanding the existing four lane road to anywhere from six to ten lanes, building Alberta's largest bridge which stretches five lanes wide and 460 meters long across the Athabasca River, widening an adjacent existing river bridge, and rebuilding a third river bridge on a new vertical profile. Upgrades also included replacing two signalized intersections with free-flow

interchanges as well as providing a free-flow connection to Franklin Avenue to provide more efficient access in and out of Fort McMurray's downtown.

Geotechnical, environmental, utility, and right-of-way constraints made a simple widening of the road impossible. We designed nearly two kilometers of retaining wall, up to nine meters high in places, to accommodate the expanded roadway. To take advantage of an evolving funding environment, a design-bid-build approach was selected. This also encouraged contractor flexibility and spurred innovation in design, delivery, and construction.

Work ran from 2007 to 2014. When the project was completed, 60,000 vehicles a day enjoyed improved mobility, shorter travel times, and increased reliability for the movement of people and goods. This project will help secure years of future prosperity for the region.

Stantec is proud to contribute to AT's vision of an effective network of roads and highways that fosters safe, efficient movement of people and goods to contribute to Alberta economy. Highway 63's upgrades are a leading example of how creative design and delivery can move a project—and a community—from "good" to "great."









# 60,000

Vehicles/Day travel on the improved Highway 63

## Innovation

This portion of Highway 63 threads between an unstable slope and the downtown area, over the mighty Athabasca River, and between the river valley and an unstable cliff. Due to these constraints, a simple widening of the already-busy road was not an option. Additionally, the planned improvements would be further complicated as there were no alternative routes linking the area's biggest employers to Fort McMurray, making it vital the road stay open during construction.

To accommodate up to 60,000 vehicles per day, near daily shipment of oversized loads, as well as occasional cyclists and pedestrians, we took an unconventional management approach with our contractors during construction, distinguishing Highway 63 from similar projects of this type.

Adjacent commercial development, major utility relocation requirements across and along the project corridor, and seven different contractors working on overlapping tasks over seven kilometers of road, required major coordination to avoid a domino effect of disaster. Implementing a design-bid-build method, we were able to mitigate numerous logistical hurdles as well as establish logical contract limits which we could then modify when necessary. With these parameters in place, we

coordinated AT's roadway and bridge contractors, several utility companies doing simultaneous relocation work, stakeholders with multiple existing and new development project access and utility needs, and the Regional Municipality of Wood Buffalo (RMWB)—who had their own utility and road works ongoing in the area.

Our design-bid-build approach allowed us to be flexible and adapt to last minute changes to plan. When bus companies needed interim improvements to meet their tight schedules for transporting workers to and from the plants, we changed the design to respond. When stakeholder needs changed and a roundabout and bus lanes were added after construction was well underway, we were able to accommodate.

This approach also saved AT money and time by allowing three different contractors to work on three adjacent bridges, two simultaneously, using a range of creative construction techniques. Packaging work in this way also let the team adapt to evolving funding opportunities to secure the maximum possible support, at the Federal level, without creating potentially onerous approval processes.







# Complexity

Highway 63 is not a typical roadway. High traffic volumes, heavy use by industrial vehicles, bitterly cold winters, the route's critical role in the local economy, challenging geotechnical conditions, cramped construction conditions, and plenty of critical, buried infrastructure combine to make the process of upgrading it a complicated task.

Staged construction and kilometers of tangent and secant pile walls, up to nine meters high, were designed to address geotechnical issues. Bridge designs were prepared, accommodating a range of construction methodologies and winter construction constraints. Techniques, such as launching girders, working from existing structures, and constructing off the river ice in the winter, were all used to keep the river navigable and

minimize impacts on aquatic life. We even accommodated snowmobile use when the river was frozen. For one of the bridges, we reused the existing 50 year old piers by lowering them so a completely different roadway profile could be created. All done without entering the water.

As a northern, heavily urbanized area, topsoil is in short supply. What is available is also of relatively poor quality. This needed to be addressed or the area's ground and vegetation would erode away. But importing new topsoil was potentially cost prohibitive. So we sourced a new soil modification process, on a trial basis, for a quadrant of the Confederation Way interchange. The process addressed the shortage through the breakdown of clay soil by adding sand and special products to grow grass and keep the border of the road stable and aesthetically pleasing.



## 60,000

Vehicles/Day travel on the improved Highway 63





# Social & Economic Benefits

Highway 63 is known for its challenging road conditions and frequent vehicle collisions even through Fort McMurray itself. AT's priorities were to reduce accidents and help keep travelers and locals impacted by the highway safe. Beyond the traditional interchanges, street lighting, and barriers, we incorporated special highly-visible paint lines that are more reflective in wet conditions than regular line paint. Fixed anti-icing spray technology was built into all three river bridges as well as the three new interchanges. To reduce future maintenance needs and delays to traffic during maintenance works, perpetual pavement was used to extend the life of the pavement structure. We also improved how cyclists and pedestrians were accommodated providing a safer route across the river.

Highway 63 is the only roadway through Fort McMurray, up to 60,000 vehicles travel the roadway per day. It connects the rest of the province to one of the economic drivers of Canada. Consequently, improving the movement of workers, equipment and supplies was an economic priority. The new expansion of Highway 63 eliminated two major signalized intersections that used to line the roadway and, in their place, created free flow lanes to reduce traffic congestion. The added bus lanes will improve reliability of service, which, in turn, saves companies money as they typically pay workers through the duration of their travel.



An aerial photograph showing a complex highway interchange with multiple lanes and overpasses. A river flows alongside the road, and the surrounding area is covered in dense green forest. A semi-transparent orange circle is overlaid on the upper left portion of the image, containing white text.

**Stantec  
completed the  
project six  
months early**



# Environmental Benefits

The Athabasca River drains into one of Alberta's major watersheds. It teems with both fish and sportsmen year-round and is an important Aboriginal waterway. While planning and managing Highway 63's expansion, we were highly conscious of the need to preserve and protect this important river and its surroundings.

The Department of Fisheries and Oceans and Alberta Environment/Alberta Environment and Sustainable Resource Development imposed a number of conditions on bridge and roadway construction. AT had further safeguards and required Environmental Construction Operations plans. These requirements provided a minimum expectation for environmental protection. We created bridge designs that could be done with minimal or no in-stream work. Each bridge was constructed using a different, cost effective measure minimizing or completely eliminating in-stream work.

Though it wasn't an environmental approval requirement, we designed proactive water quality enhancement ponds for all four quadrants of the Athabasca River crossings. These ponds allow sediments to settle and have isolation chambers that can be used to stop dangerous goods from entering the river. Similarly, building fixed anti-spray technology, which uses an environmentally friendly, liquid, salt substitute, into the river crossings reduces environmental impacts on the river.

Sustainability and longer term environmental benefits were regularly considered. Perpetual pavement was used, which minimizes the use of natural materials in the future. During construction, we worked with contractors to find ways to use waste materials on-site. Particularly, to reuse aggregate placed on an interim basis for detour and temporary connections and preserved a limited resource in the Fort McMurray area.

# Meeting Client's Needs

AT knew any delays to Highway 63's expansion would have significant costs; as a result, the client's top priority was completing the project as quickly as possible. We worked with all stakeholders to get the major components of the project executed on time and managed to complete the project six months ahead of schedule.

Along with no delays to schedule, minimal disruption to traffic was critical as Highway 63 was the only route through Fort McMurray from the south. Closing it for any length of time would be catastrophic as it would cut a major economic center off from the rest of the province. Keeping this in mind, we successfully managed seven years of design and construction while never closing the highway once.

As we navigated the first couple of years of this project, an increasing number of stakeholders, such as multiple utility companies and the RMWB, approached AT with their own project requirements. Given the change in scope, AT needed us to provide a high level of flexibility in our planning to collaborate with and accommodate these entities and their important interests. We responded to this challenge with contract packages which allowed us to offer contractors more autonomy while simultaneously creating an adaptable environment that efficiently accommodated various last minute changes to plan.