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Project Report:
**Kicking Horse Canyon
Project – Phase 4**
May 2021

Purpose of this Report

The purpose of this report is to provide key information to the public about the Kicking Horse Canyon Project – Phase 4 (the Project). This report describes the need for the Project and how it will be delivered. The report also explains how different procurement delivery methods were analyzed, and how project benefits and innovations are expected to be achieved. A summary of the key aspects of the design-build agreement (the Design-Build Agreement) is also provided.

The Province of BC is committed to a high standard of disclosure as part of its accountability for the delivery of public projects. Ministries, Crown Corporations and other government agencies are publicly accountable for projects through regular budgeting, auditing and reporting processes.

The Ministry of Transportation and Infrastructure (MoTI), Transportation Investment Corporation (TI Corp), and Infrastructure BC are accountable for the contents of this report.

Abbreviations

Capitalized terms are defined in the glossary at the end of this report.

Abbreviations are defined in the table below:

TABLE 1: ABBREVIATIONS

BCIB	British Columbia Infrastructure Benefits
BCTFA	B.C. Transportation Finance Authority
CBA	Community Benefits Agreement
DB	Design-Build
DBB	Design-Bid-Build
DBF	Design-Build-Finance
DBFO	Design-Build-Finance-Operate
MOTI	Ministry of Transportation and Infrastructure
RFP	Request for Proposals
RFQ	Request for Qualifications
TI Corp	Transportation Investment Corporation

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1. Executive Summary

The Kicking Horse Canyon, just east of Golden, BC (see Figure 1 below) is one of the most rugged and scenic sections found along the Trans-Canada Highway (Highway 1). The Kicking Horse Canyon Project – Phase 4 (the Project), extends from the West Portal to Yoho Bridge. The Trans-Canada Highway through the Kicking Horse Canyon is a 26-kilometre section of highway (the KHC Highway) located between Golden, BC and Yoho National Park. It is a key section of the Trans-Canada Highway network and plays an important role in interprovincial and international trade and tourism.

The Project represents the last section of the KHC Highway to be upgraded to four lanes of travel and current design standards, and will provide:

- an upgrade of 4.8 kilometres to a 4 lane divided highway, with a design speed of 100km/h;
- improvements to safety and travel reliability by including infrastructure to address rock fall, avalanche, debris flow hazards and accidents; and
- construction of a wildlife exclusion system that will result in further reductions of vehicle collisions with wildlife.

FIGURE 1: KICKING HORSE CANYON



The Project is scheduled to be in service by winter 2023/2024.

The Project budget is \$601 million, funded jointly by the Province of British Columbia (the Province) and the federal government with contributions of \$386 million and \$215 million respectively. Transportation Investment Corporation (TI Corp) is responsible for managing the delivery of the Project. TI Corp is a Provincial Crown Corporation with a mandate to provide procurement, delivery and commercial oversight of major capital transportation projects. Major transportation projects currently assigned to TI Corp are the Pattullo Bridge Replacement, the Broadway Subway, and the Kicking Horse Canyon – Phase 4. Once the Project is completed MOTI will be responsible for operating and maintaining the upgraded highway.

The Project will be delivered under the Community Benefits Agreement (CBA). BC Infrastructure Benefits Inc. (BCIB) is the provincial Crown Corporation responsible for implementing the terms and conditions of the CBA, as the progressive employer of the qualified and diverse workforce on select public infrastructure projects.

The CBA prioritizes hiring of local workers, including Indigenous Peoples, women, people with disabilities and other underrepresented groups who are qualified to do the relevant work in a safe, welcoming work environment. The Project will help diversify and grow B.C.'s skilled workforce by providing opportunities for Red Seal apprentices to work on site and gain the experience they need to launch good careers in the trades.

The decision to procure the Project using a Design-Build (DB) delivery model was based on a thorough analysis of procurement options, including Design-Build-Finance (DBF), Design-Bid-Build (DBB), and Design-Build-Finance-Operate (DBFO) models. A DB model was chosen as it best meets the procurement objectives and provides cost-effective risk transfer related to scope and schedule, as well as opportunities for innovation.

The Project's Request for Proposals (RFP) included an affordability requirement, which reflected the maximum budget available for proponents to deliver the scope of the Project. The competitive selection process resulted in a fixed-price, fixed-schedule commitment from the preferred proponent to deliver the Project scope within the approved Project budget.

In November 2020, the Province entered into a performance-based, fixed-price contract (the Design-Build Agreement), with the successful proponent, Kicking Horse Canyon Constructors. Kicking Horse Canyon Constructors formed a legal entity, Kicking Horse Canyon Constructors (GP) (KHCC), to enter into the Design-Build Agreement to design and build the Project. The term of the contract is approximately 3.6 years, with a fixed-price of \$440.6 million representing savings of approximately \$21.4 million from the affordability requirement of \$462 million set out in the Project's Request for Proposals (RFP). The savings will be kept in the Project budget during implementation to help manage any Province-held risks that may materialize. The balance of the \$601 million is budgeted for the Province's project management costs including engineering, site supervision, and Indigenous consultation.

At the time the Design-Build Agreement was signed, KHCC also entered into a BCIB-Contractor Agreement with BCIB for the supply of the construction workforce for the Project.

The Design-Build Agreement includes a range of performance measures which target delivering the Project on budget and on schedule, including performance measures related to traffic management and environmental protection.

2. Project Background, Scope and Goals

The Trans-Canada Highway is the most important highway in Canada's National Highway System¹. It links the ten provinces, facilitates east-west trade and commerce, and is the backbone for most north-south provincial highways. British Columbia's long-term strategy is to upgrade the Trans-Canada Highway between Kamloops and Yoho National Park to four lanes. Nowhere is this more challenging than in the Kicking Horse Canyon located east of the Highway 95 junction at Golden and west of Yoho National Park near the Alberta border. Here the remaining section of the KHC is a narrow, winding two-lane highway with steep rock faces on one side, and a drop-off to the CP Railway main line and the Kicking Horse River on the other. Average daily traffic is well over 5,000 vehicles per day with commercial carriers making up nearly 25% of this traffic. It is also the favoured route for tourists with traffic averaging over 10,000 vehicles per day during the peak summer period.

Posing significant construction, maintenance, and operational challenges, it has had no major upgrading since it was built in the 1950s. To revitalize this critical corridor and to move traffic more safely and efficiently, improvements started in 2000 with work on the Yoho Bridge and approaches, funded through partnership funding agreements between the Provincial and Federal governments.

As part of the multi-phased Kicking Horse Canyon Project, this section of the highway is being improved to a modern four-lane standard with a design speed of 100 km/h to move traffic more safely and efficiently. Sharp curves and steep grades are being reduced and narrow bridges are being replaced to increase capacity, include safer cycling facilities, and will improve traffic operations and reduce hazards. The Project will be the final phase of upgrading the 26-kilometre Kicking Horse Canyon corridor from two lanes to four lanes.

FIGURE 2 – EXISTING KHC HIGHWAY AT PHASE 4



¹ <https://tc.canada.ca/en/corporate-services/policies/national-highway-system?pedisable=true>

Due to the cost, complexity, and physical scale of upgrading the KHC Highway, the necessary improvements were split into four phases as indicated in Figure 2 and described as follows:

- Phase 1 comprises the Yoho Bridge Replacement and approaches.
- Phase 2 comprises the Park Bridge replacement and approaches (approx. 5.8-kilometres).
- Phase 3 comprises approximately 4-kilometres between Hwy 95 and Phase 4 (Phase 3 West) and approximately 9-kilometres between Brake Check and Yoho (Phase 3 East).
- Phase 4 (the Project), the final phase, comprises 4.8 kilometres through the most challenging section of the Kicking Horse Canyon (West Portal to Yoho Bridge).

A number of design and construction alternatives were developed and considered by the Project team including variations in the number of lanes, sightline standards, the use of tunnels and hazard protective sheds, and wildlife mitigation. The preferred alternative, referred to as the Reference

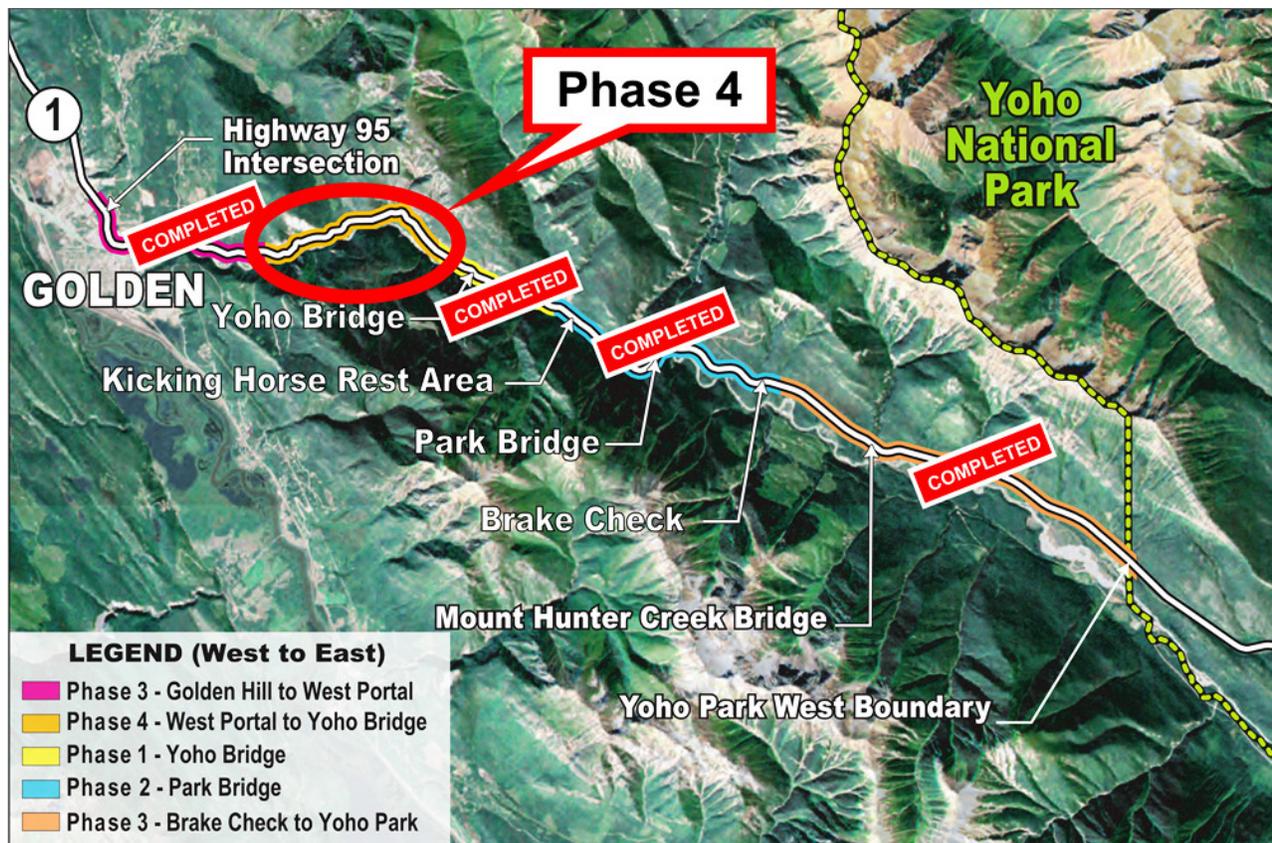
Concept, achieves the upgrading of the highway to four-lanes, satisfies the Province's 100 km/h design requirements, and minimizes the impacts on adjacent lands.

The Project will also provide safer access for local roadway connections and for two Canadian Pacific Railway access points.

Section 4 of the Project's Business Case² includes an in-depth analysis of service delivery options to assess which solution involving new or refurbished infrastructure could best meet the Project objectives. The qualitative and quantitative analysis included a relative evaluation on a number of performance criteria typical for roadway projects including:

- travel time savings;
- highway closure costs;
- vehicle operating costs;
- safety;
- air quality; and
- socio-economic factors.

FIGURE 3: KICKING HORSE CANYON PROJECT



² Available online at <https://www2.gov.bc.ca/assets/gov/kicking-horse-canyon-project/procurement/khcp4-business-case-2016-04-07.pdf>

The preferred option is expected to provide quantified and incremental benefits through savings related to reliability, safety, reduced delays, and vehicle operating costs.

The significant components of the scope for design and construction for the Project include the following:

- (a) realignment and upgrading of 4-kilometres of two-lane and 0.8-kilometres of three-lane undivided highway to a four lane, 100 km/h divided highway;
- (b) rock and soil excavation, including materials management;
- (c) design and construction of bridges, retaining walls, catchment ditches and other structures;
- (d) mitigation of rock fall and avalanche hazards;
- (e) traffic management;
- (f) utility and rail protection and utility relocations;
- (g) design and construction of wildlife exclusion fencing and wildlife passage structures;
- (h) maintaining the designated infrastructure to specified standards during construction (including pavement, structures, drainage maintenance, etc.); and
- (i) meeting quality, health and safety, communications and consultation, and environmental requirements.

The Project is expected to achieve the Project goals established during the planning and public consultation processes set out in Table 2 below.

TABLE 2: PROJECT GOALS

PROJECT GOALS	ACHIEVEMENT OF GOALS
1. Significantly improve safety, operations, capacity, and reliability	<ul style="list-style-type: none"> • Additional lanes with a reduction in grade and curvature. • Highway geometry improved to meet current standards. • Additional median and shoulder widths. • Introduction of a concrete median barrier. • Improved travel safety with a collision reduction of 66% calculated over the 35-year planning horizon. • Safer connections to local roadways and to Canadian Pacific Railway access points. • Reduction in collision closures • Reduction in avalanche closures
2. Revitalizing BC and Canada's economy through a more efficient, cost-effective and competitive transportation system	<ul style="list-style-type: none"> • Overall increased capacity, safety, and reliability • Travel time savings through increased travel speeds for passenger vehicles from approximately 60 km/h to over 90 km/h up to the 100 km/h posted speed. • Heavy vehicle speeds will increase from 50 km/h to 70 km/h.
3. Support BC's vision to expand BC as Canada's trade gateway to the world	<ul style="list-style-type: none"> • Greater availability and reliability of the KHC section of the Trans Canada Highway for interprovincial commercial transport. • Increased competitiveness for domestic and international commercial activity directed to and via the Gateway / Port of Vancouver via the Trans-Canada Highway.
4. Provide a link to remote regions and regional economies of our country	<ul style="list-style-type: none"> • Roadway upgrade is an additional step towards meeting the federal objective of providing Canadians with a four lane 100km/h highway facility across Canada.

3. Project Benefits and Key Features

3.1 Safer and More Efficient Journey for all Travellers

The Project will bring the highway geometry up to current standards with significant reliability, safety, and mobility benefits. These benefits will include a reduction in collision closures due largely to the upgrade to four lanes and inclusion of a concrete median barrier. Travel speeds will also be increased where safe.

3.2 Improving the Trans-Canada Highway for Goods Movement from Alberta Border to West Coast Ports

The Project will enhance national and international commercial goods movements directed to the Port of Vancouver via the Trans-Canada Highway. This will aid Canada and BC in effectively competing with the many US west coast ports fed by four lane highway facilities.

3.3 Improving Reliability by Mitigating Rockfall and Avalanche Hazards

Natural hazards in the area include seven rock-fall/landslide/debris torrent hazard sites (five rated “high” and two rated “moderate to high”) as well as 13 avalanche paths, which, along with the high collision rate, cause poor reliability and frequent closures.

The Project provides for mitigation of these hazards using high energy rockfall attenuation mesh, wide ditches and retaining walls for rockfalls. Although there is little mitigation available where avalanches do occur, a reduction in avalanche closures can be achieved using a combination of bridges, catchment benches, and similar mitigation measures as for rockfall hazards.

3.4 Reduce Wildlife Mortality and Provide Wildlife Passage

Wildlife sensitivity within the area is rated as “moderate” with the number of animals killed on this segment averaging 1 to 2 collisions per kilometre each year. Wildlife fencing provided as a part of the Project will have a significant beneficial effect by reducing animal-vehicle collisions within this section and provide for safe wildlife passage.

3.5 Employment and Training

The Project is being delivered under the Province’s Community Benefits Agreement, which prioritizes hiring local workers, Indigenous Peoples, women, people with disabilities and other traditionally under represented groups who are qualified to do the work, in a safe, welcoming work environment. The Project will help diversify and grow BC’s skilled workforce by providing opportunities for trainees and Red Seal apprentices to work on site and gain the experience they need to launch good careers in the trades. The overall Project trainee and apprenticeship targets have been combined and set at a range between 9% and 19% for trades working on the Project.

The main construction season generally in this region runs from April to November, depending on weather conditions and traffic management. For much of the construction period, the average number of annual on-site workers to construct the Project is estimated to be between 100 and 300 workers. During the winter season, construction activities will ramp down significantly depending on weather and snow conditions. Jobs directly related to the Project include engineering, project management, operators, labourers, carpenters, teamsters, ironworkers, piledrivers, cement masons, and electrical workers. Indirect jobs, representing those who benefit from the Project within the supply chain, include container truck drivers, hotel employees, restaurant workers, and other local business employees.

4. Project Delivery Procurement Options

The procurement approach for the Project was determined following an extensive procurement options analysis, undertaken by the Province and Infrastructure BC. Infrastructure BC supports the public sector by working with owners to deliver complex public infrastructure. Procurement options are evaluated to identify a method of delivery that delivers value and reduced risks for the taxpayer while ensuring Project goals are met. Project characteristics such as size, complexity, opportunity for innovation and the nature of project risks influence the selection of a preferred procurement model. Refer to the 'Delivery Options Assessment' for a detailed explanation of the analysis.³

4.1 Delivery Options Analyzed

4.1.1 Preliminary Procurement Options Assessment

A total of five procurement models were considered to determine which procurement models would form the basis for more detailed analysis - Design-Bid-Build (DBB), Design-Build (DB), Design-Build-Finance (DBF), Design-Build-Finance-Rehabilitate (DBFR), and Design-Build-Finance-Operate (DBFO).

The preliminary assessment concluded the DBFO and DBFR partnership models were not appropriate for the Project, largely owing to the challenge of attracting new operations and maintenance (O&M) service providers for the short, isolated stretch of highway, as well as the potential challenges of administering multiple contracts among the Province, the O&M provider, and the DBFR entity. The preliminary assessment further concluded that any potential advantages of the traditional DBB model in terms of market attractiveness and responsiveness to stakeholder concerns were outweighed by the reduced cost, schedule certainty, and risk management capabilities of the option. Following this preliminary assessment, the DB and DBF models were taken forward for more detailed analysis.

4.1.2 Detailed Analysis

The detailed procurement analysis compared the following models:

- 1. Design-Build (DB):** The Province engages designers and engineers to develop a concept design for the project. The Province then conducts a competition to select a DB team to undertake the detailed design and construction of the Project, based primarily upon the performance specifications prepared by the Province's technical team. The successful proponent enters into a fixed price contract with payments made by the Province to the contractor at specific progress milestones.

In this model, design and construction risk, including cost and schedule, is transferred to the design builder, while the Province retains life cycle and maintenance risks. The benefits of a DB procurement model include enhanced risk transfer and innovation that comes from integrating design and construction.

- 2. Design Build Finance (DBF):** A DBF model is similar to the DB model, with the addition of private financing for a portion of the capital requirements during construction. The private finance is typically repaid to the contractor at substantial completion.

The DBF option includes enhanced security for achieving the intended risk transfer related to cost and schedule. Performance measures can result in payments owed to the Province as a result of non-conforming performance by the contractor can be set off against progress payments if the issues are not rectified. Consequently, lenders and their advisors maintain a keen interest in the contractor's performance throughout the project. Additional benefits of the DBF model include lender due diligence, enhanced enforceability of the contract terms and a lower likelihood of owner scope changes.

³ Available online at: <https://www.kickinghorsecanyon.ca/app/uploads/sites/632/2020/10/khcp4-delivery-options-assessment-2016-10-13.pdf>

Both the DB and the DBF delivery models are undertaken as two-stage procurements, involving a Request for Qualifications (RFQ) where respondent teams submit qualifications for evaluation. Shortlisted teams are then invited to participate in a RFP. In both models, the preferred proponent is eligible to enter into a contract with the Province to design, build and partially finance (in the case of the DBF) the Project.

4.2 Results of the Delivery Options Assessment

The DB model was determined to best meet the Province's procurement and overall project objectives and allow the Province to best manage and mitigate key project risks to deliver the Project in a cost effective and efficient manner. The estimated additional cost of partial private finance under a DBF model outweighed any potential benefit and therefore the DBF model was not selected.



5. Competitive Selection Process

The timeline of the Project's two-stage competitive selection process is outlined in Table 3 below.⁴

TABLE 3: PROCUREMENT TIMELINE

PROCUREMENT STAGE	TIMING	OUTCOME
Request for Qualifications	September 2019	The Project was marketed locally, provincially, nationally, and internationally. Submissions from three respondents were evaluated and a shortlist of three teams was announced on December 13, 2019.
Request for Proposals	December 2019 to September 2020	Three of the shortlisted teams submitted proposals.
Selection of Preferred Proponent	September 2020	After evaluation of the proposals, Kicking Horse Canyon Constructors was selected as the Preferred Proponent.
Design-Build Agreement Finalization	November 2020	The Design-Build Agreement was signed by the Province, BCTFA and Kicking Horse Canyon Constructors (GP) (established by Aecon Group Inc., Parsons Inc., and Emil Anderson Construction to deliver the Project). At the same time the Design-Build Agreement was signed, BCIB and Kicking Horse Canyon Constructors (GP) entered into the BCIB Contractor Agreement.

During the RFQ stage, respondents were asked to present their qualifications for the Project. Three teams responded to the RFQ. Respondents were evaluated for their strength and demonstrated experience and capability in managing, designing and constructing similar large, complex Design Build projects. Respondents were also required to demonstrate their experience and capability working with Indigenous groups to provide both contracting and employment opportunities.

⁴ The RFQ and RFP procurement documents are publicly available at: <https://www2.gov.bc.ca/gov/content/kicking-horse-canyon-project/kicking-horse-canyon-procurement>

Three teams were shortlisted and invited to participate in the RFP stage. The proponent teams are described in Table 4 below.

TABLE 4: PROPONENT TEAMS

PROPONENT	TEAM MEMBERS
Kiewit Infrastructure BC ULC	<ul style="list-style-type: none"> • Kiewit Infrastructure BC ULC • McElhanney Engineering Services • Mott MacDonald Canada Ltd. • Thurber Engineering Ltd. • Peter Kiewit Sons ULC
Flatiron-Vinci Joint Venture	<ul style="list-style-type: none"> • Flatiron Constructors Canada Ltd. • Vinci Infrastructure Canada Ltd. • Janin Atlas Inc. • Dodin Quebec Inc. • COWI North America Ltd. • Urban Systems Ltd. • Tetra Tech Canada Inc. • Brybil Projects Ltd. • Wyllie & Norrish Rock Engineers Ltd. • Dynamic Avalanche Consulting Ltd. • 6 Point Engineering and Avalanche Consulting Ltd.
Kicking Horse Canyon Constructors	<ul style="list-style-type: none"> • Aecon Constructors, a division of Aecon Construction Group Inc. • Parsons Inc. • Emil Anderson Construction (EAC) Inc. • EXP Services Inc.

During the RFP stage, workshops and topic meetings were conducted providing each proponent team an opportunity to discuss issues or concerns related to commercial, legal, design, and construction matters. Additionally, a series of workshops with BCIB were included to discuss the BCIB-Contractor Agreement and the Project workforce provisions. These workshops allowed proponents to identify and discuss opportunities with BCIB to amend the agreement for the mutual benefit of all parties.

The RFP also encouraged proponents to explore contracting and employment opportunities with Identified Indigenous Groups. In addition to a general business-to-business networking event, the Province hosted a business-to-business event in February 2020 for Identified Indigenous Groups to facilitate introduction of the proponents and the Identified Indigenous Groups. The Project Agreement includes an Indigenous Requirements schedule, which is discussed in Section 6.2.

5.1 Evaluation of Proposals

The overall objective of the RFP evaluation was to select the highest ranked proposal that:

- met the technical evaluation criteria;
- included a contract price proposal at, or below, the affordability requirement (\$462 million) set out in the RFP; and
- delivered a plan to achieve substantial completion of the Project that corresponded with the earliest substantial completion date.

If all of the above criteria were met by all proponents, the highest ranked proposal would be the one offering the lowest contract price.

In order for a proposal to be ranked, a proponent must have met the following technical evaluation criteria in its technical submittal:

- substantially satisfied the requirements of the RFP and the definitive Design-Build Agreement;
- demonstrated to the satisfaction of the Province that the proponent would be capable of performing the obligations and responsibilities of the contractor and deliver the Project in accordance with the Design-Build Agreement; and
- demonstrated a good understanding of the Project and the work.

Once these criteria were deemed to be satisfied, financial submittals were evaluated and proposals were ranked. In the ranking process, as long as a price proposal was below the affordability requirement, the ability of a proponent to meet the schedule requirement was considered before comparing prices. If more than one proposal met the schedule requirement, the lowest price proposal was ranked the highest. Proponents were therefore incentivized to maximize schedule efficiency within the affordability requirement.

The Province appointed an evaluation committee to evaluate the proposals based on the criteria and the ranking process set out in the RFP, and to recommend a preferred proponent. The evaluation committee made its recommendation to the TI Corp board (the governing body that provides guidance and oversight for the implementation of the Project) in accordance with both its mandate and the provisions of the RFP. Based on that recommendation, Kicking Horse Canyon Constructors was identified as the preferred proponent for the Project.

Kicking Horse Canyon Constructor's contract price proposal was lower than the affordability requirement, and its substantial completion milestone is scheduled to be complete by the substantial completion target date of November 30, 2023. At contract execution, the signed contract value was \$440.6 million.

Ultimately, the competitive selection process was successful resulting in Kicking Horse Canyon Constructors (GP) (KHCC) (the general partnership created by Kicking Horse Canyon Constructors to deliver the Project) committing to a fixed-price, fixed-schedule delivery of the Project scope within the approved Project budget and within the Province's schedule requirements.

5.2 Fairness Reviewer

Jane Shackell, Q.C. of Miller Thomson LLP, was engaged as the Fairness Reviewer throughout the competitive selection process. The Fairness Reviewer's responsibility was to assess whether the selection process was carried out fairly and in accordance with the RFQ and RFP. The Fairness Reviewer was provided access to all documents, meetings and information related to the evaluation processes throughout both the RFQ and RFP stages. The Fairness Reviewer issued reports for both the RFQ and the RFP stages of the competitive selection process.⁵

In her report on the RFP stage, the Fairness Reviewer stated: *"...I am satisfied that the procurement process as described in the RFP was fair and reasonable, and that the project team fairly and reasonably implemented and complied with that process."*

5.3 Competitive Selection Process Costs

The total competitive selection cost for the Project from approval of the Business Case to Contract Execution is \$6.2 million (including \$4 million for stipends paid to unsuccessful proponents that met the eligibility criteria). The decision to offer a stipend is made on a case-by-case basis and can be used to:

- encourage competition;
- ensure the quality of proposals submitted;
- secure access to intellectual property; and
- mitigate costs incurred by proponents in developing their proposals.

In the case of the Project's competitive selection process, the conditions to be eligible for a stipend were set out in the Proponent Agreement, released publicly with the RFQ.

⁵ The Fairness Reviewer's reports are publicly available at: <https://www.kickinghorsecanyon.ca/document-library/#procurement>

6. The Final Design-Build Agreement

TABLE 5: DESIGN BUILD AGREEMENT QUICK FACTS

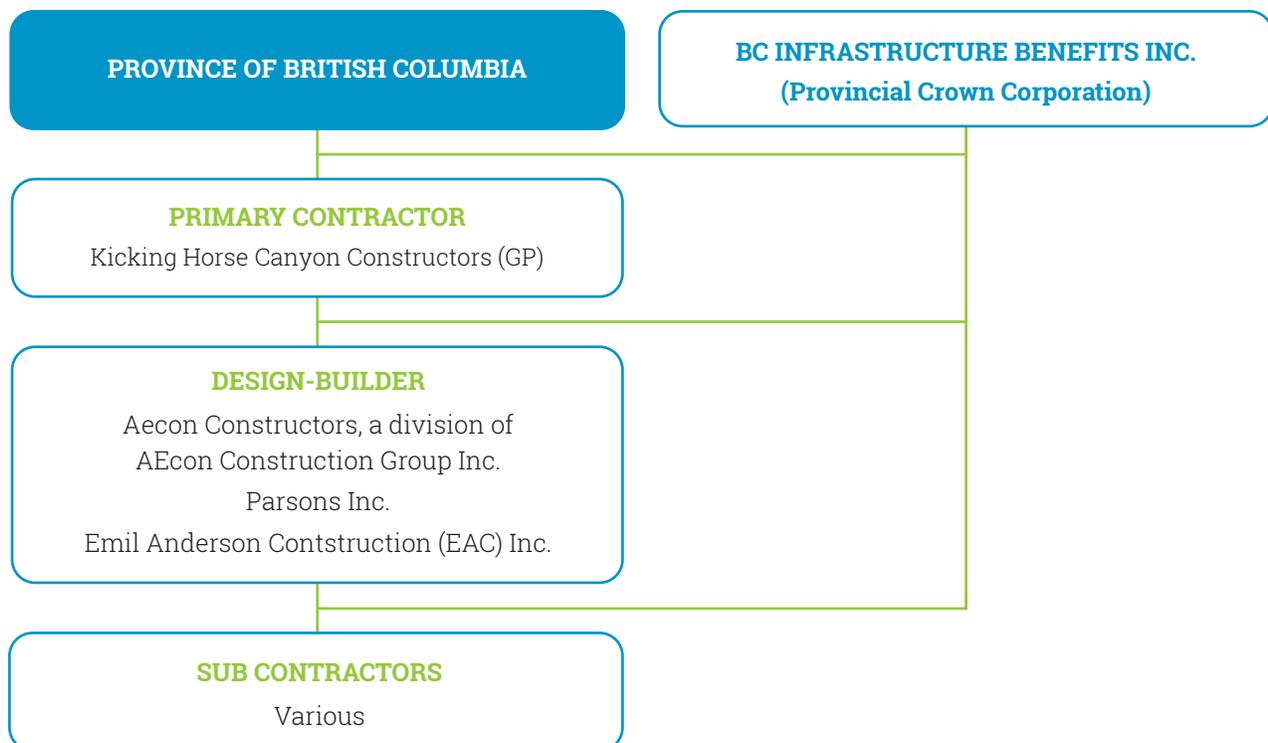
QUICK FACTS	
Private Partner	Kicking Horse Canyon Constructors (GP)
Public partner	Province of British Columbia and the BC Transportation Financing Authority (BCTFA)
	Delivered by Transportation Investment Corporation, Ministry of Transportation and Infrastructure
Facility owner	BC Transportation Financing Authority (BCTFA)
Design-Build Agreement Execution Date	November 6, 2020
Construction of the Kicking Horse Canyon Project – Phase 4 complete (main components and open to traffic)	2023
Total Completion	2024

6.1 Profile of the Private Sector Partner

The Private Partner for the Project is Kicking Horse Canyon Constructors (GP), a general partnership between Aecon Constructors (50%), Parsons Inc. (30%) and Emil Anderson Construction (EAC) Inc. (20%).

KHCC will deliver the Project through a series of subcontracts, with key aspects of the Project being either delivered by specialist providers or self-performed by the partners. The contractual structure is illustrated in Figure 4 below.

FIGURE 4: CONTRACTUAL RELATIONSHIP BETWEEN THE PROVINCE AND KICKING HORSE CANYON CONSTRUCTORS (GP)



6.2 Key Terms of the Design-Build Agreement

Under the terms of the Design-Build Agreement, KHCC has an obligation to design and construct the Project in accordance with the requirements set out in the agreement.

Key features of the Design-Build Agreement include:

- the design and construction of the contract scope will be completed for a fixed price of \$440.6 million, excluding GST and any potential costs associated with risks retained by the Province.
- a payment regime in which:
 - the Province will pay the monthly progress amounts, plus applicable specified cost items, minus a holdback amount equaling 3% of these payments.
 - the Province will pay a holdback amount for the month when substantial completion occurs minus a deficiency holdback amount and warranty holdback amount; which will be paid at the Project's total completion and at the end of the warranty period respectively.
- a performance mechanism, including payments from KHCC to the Province, if KHCC fails to meet performance requirements in the Design-Build Agreement, such as requirements to effectively manage traffic during construction or meet environmental requirements.
- requirements for KHCC to providing meaningful employment and contracting opportunities for Identified Indigenous Groups and report progress on a monthly basis to the Province.

Once the Project is complete, the Province will be responsible for KHC Highway maintenance as part of the broader Provincial road and highway network.

6.3 Key Features of the BCIB Contractor Agreement

BCIB, under an agreement with the MOTI and the BCTFA, will be the progressive employer for the majority of the skilled workforce for the Project. The terms and conditions of the provision of workforce will be in accordance with the CBA and apply to KHCC and all subcontractors who will perform work or provide services in respect of the Project. The Design-Build Agreement requires each of KHCC and its subcontractors engaged on the Project to enter into an agreement directly with BCIB for the provision of the labour force. BCIB employees will be dispatched to the Project based on the needs and requests from KHCC and its subcontractors, in accordance with the hiring process and priority hiring regimes set out in the CBA. BCIB provides an on-site presence to support contractors and employees in the implementation of CBA objectives. Site representatives address employee issues, assist with payroll questions, and manage possible grievances.

6.4 Key Features of Kicking Horse Canyon Constructors' Proposal

Kicking Horse Canyon Constructors submitted a strong technical proposal that met the requirements of the Request for Proposals, including the requirements of the Design-Build Agreement. The proposal demonstrated that the general partnership has the expertise and capacity to perform the obligations and assume the responsibilities as set out in the Design-Build Agreement and has a good understanding of the Project. In summary, the Kicking Horse Canyon Constructors proposal is an optimization of the Reference Concept based on a minimization of risk and cost.

6.5 Risk Allocation Summary

The Design-Build Agreement includes detailed risk allocation provisions. The approach transfers key risks to the contractor – such as construction, cost and schedule – and adds value through design and construction integration and private sector innovation.

The Project presented a number of challenges given the terrain and geotechnical conditions, frequent road closures due to avalanches and rockfall, its close proximity to CP Railway operations, the environmental and cultural sensitivity of the adjacent habitat as well as the archaeological significance of the area.

Key project risks and their allocation in the Project Agreement are summarized in Table 6 below.

TABLE 6: RISK ALLOCATION BETWEEN THE PROVINCE AND KICKING HORSE CANYON CONSTRUCTORS (GP)

RISK	TRANSFERRED TO KHCC	RETAINED BY THE PROVINCE
Design	✓	
Construction	✓	
Availability and performance of labour	✓	✓
Ground conditions	✓	✓
Traffic management	✓	
Archaeology	✓	✓
Contamination	✓	✓
Operations and maintenance associated with the Project site during construction	✓	✓
Operations and maintenance once the Project is complete		✓
Property acquisition		✓
Province scope changes		✓
Compensation Events		✓
Force Majeure/Relief Events	✓	✓
Schedule	✓	

The risk allocation is supported by the following provisions in the Design-Build Agreement:

- A holdback amount will be paid only once specified completion criteria have been satisfied. The Design-Build Agreement entered into by KHCC includes liquidated damages for delayed completion, providing a strong incentive to complete the Project on time; and
- Provisions are in place for payment from KHCC to the Province to ensure the Project meets the performance standards in the Design-Build Agreement.

6.6 Financial Summary

The Design-Build Agreement between the Province, BCTFA and KHCC includes a fixed price of \$440.6 million. A schedule of payments by the Province can be found in the redacted Design-Build Agreement⁶.

6.7 Project Capital Costs

BC's Office of the Comptroller General, responsible for the overall quality and integrity of the government's financial management and control systems, has established accounting guidelines for capital asset projects. Based on accounting guidelines, the capital cost, for accounting purposes, for the construction of the Kicking Horse Canyon Project – Phase 4 is expected to be \$601 million.

TABLE 7: TOTAL PROJECT BUDGET (\$ MILLIONS)

PROJECT BUDGET	
Province's Costs (including Contingencies and Risk)	\$144
Contract with KHCC	\$441
Interest During Construction on Provincial Funding	\$16
Total Project Budget	\$601

⁶ Add URL when available.

7. Design-Build Agreement and Performance Monitoring

The Design-Build Agreement with KHCC includes specific provisions to ensure project delivery, performance and quality standards are met. Monitoring spans every phase of the Project, from contract execution through design and construction to total completion.

7.1 Design and Construction Phase

The Design-Build Agreement stipulates that both the Province and KHCC must appoint design and construction representatives. The Province has also appointed an Independent Engineer to review and confirm construction activities and certify payments in accordance with the Design-Build Agreement.

In addition to monitoring under the Design-Build Agreement, the Project Team will use the performance measurement framework to assess how well the Project's goals are being met. The Project has developed a framework for evaluation that includes specific performance measures for each project criteria and objective as shown in the table below. Project team activities will include baseline data collection for operations phase performance measures. This reporting will result in the development of a performance measurement report following the Project's completion. Baselines and performance measures are fundamental to the monitoring and accountability of the Project when assessing whether goals and objectives are being achieved. Following issuance of the Performance Measurement Report, MOTI will continue to collect data on operations phase performance measures.

TABLE 8: PERFORMANCE MEASUREMENTS

PROJECT GOAL	PROJECT OBJECTIVE	STRATEGIES	PERFORMANCE MEASURE
Deliver the project within the approved scope, schedule and budget	Project is delivered according to the approved scope.	Project scope defined in the DBA	Compliance with DBA Criteria
		Implement scope management, as included in the Project Management Plan and Change Management Plan	Planned scope vs. actual scope, as measured by Change Management Plan
	Deliver the project within the approved schedule.	Schedule is set in the Design-Build contract. Daily liquidated damages cost to Design-Builder for schedule overruns due to Design-Builder delay provides incentive for schedule compliance.	Measures for Schedule management included in the Project Management Plan and Change Management Plan

Table 8 continued on page 17

Table 8 continued from page 17

TABLE 8: PERFORMANCE MEASUREMENTS

PROJECT GOAL	PROJECT OBJECTIVE	STRATEGIES	PERFORMANCE MEASURE
Improve highway safety, capacity, and reliability of the project corridor realizing the benefits of improvements from earlier phases.	Reduction in serious collisions in the KHCP4 corridor	Infrastructure built to current standards, safety design criteria included in DBA, including highway divider, straightening curves, widening shoulders, and including rock falls and avalanche prevention.	Decrease serious collisions, as measured by collision frequency pre-project and post-project using collision prediction model and empirical bayes methodology.
	Increase reliability	Increase reliability of goods movement by reducing the number of full highway closures per year.	Reduce number of full highway closures per year, measured by concessionaire's reports tracking actual closures
	Increase capacity	Increase capacity of the highway from 2 and 3 lanes to 4 lanes.	Confirmation that the highway is widened to four lanes post construction with completion certificate, and as-built drawings.
Reduce wildlife collision rates and minimize impacts on future wildlife movements.	Decrease wildlife collisions	Meet DBA commitments for contiguous wildlife fencing.	Confirmation that the highway has contiguous wildlife fencing, and decreased wildlife/vehicle interactions, as measured by analysis of ICBC's Claims database pre-project and post-project.
	Allow wildlife to move safely below the highway	Meet DBA requirements for three wildlife underpasses	Confirmation that the highway construction has incorporated three wildlife underpasses.
Support the growth of the local and regional economy by facilitating the efficient movement of people and goods along the project corridor.	Increased efficiency of movement of goods	Design to 100km/h standard.	Design and construct highway to a 100km/hr standard, measured by post-construction road safety audit
	Improve safety for cyclists and pedestrians through the project corridor.	Meet DBA requirement for 2.5m wide outside shoulders to facilitate cycling and pedestrian access, as well as fencing to protect cyclists from a vertical drop of >.5m	Confirmation that the highway shoulders and fencing has been constructed in accordance with the DBA
Engage with Indigenous Communities, local community, and key stakeholders to identify opportunities, issues, and information pathways that will inform the delivery of the project.	Provide meaningful opportunities for Indigenous Communities on the project.	Ratification of Indigenous Accommodation Agreements	Signed and implemented Indigenous Accommodation Agreements.
		Meet the DBA requirements for training, contracting and employment opportunities for Indigenous groups	Meet requirements of Schedule 22 of the DBA (Indigenous participation) in terms of training, contracting and employment hours
	Optimize opportunities for community involvement during the delivery of the project.	Maintain a Community Liaison Committee throughout the project planning, procurement and construction	Meet actions and activities set out in Communication and Engagement Plan
	Implement Communication and Engagement Plan		

7.2 Quality Management

The Design-Build Agreement is designed to incentivize KHCC to ensure delivery, performance, and high standards of quality. KHCC is required to implement a quality management system that complies with the requirements and principles of ISO 9001:2015 standard, as well as other specified standards. Contractual performance measures require the achievement of a range of quality related requirements. The Project team will conduct quality audits as construction progresses to provide assurance to the Province that quality requirements are being met.

7.3 Project Governance

Through TI Corp, the Province has assembled an integrated project management team that will be responsible for implementing the Project through design and construction. The Project team reports through the executive project director to the TI Corp Board.

8. Glossary of Terms

Business Case: Document prepared in British Columbia by a project owner demonstrating the needs costs, and benefits of a project. Additionally, the Business Case is supported by a procurement method and provides an overview of the accounting impacts that a project may have.

Contract Execution: The point in the procurement process where negotiations with a preferred proponent are finalized and a Design-Build Agreement is executed, allowing construction to begin.

Design-Build Agreement: Sets out the requirements for the delivery of an asset under a partnership delivery model in terms of cost, schedule and performance that typically governs the performance-based payment to a private partner.

Independent Engineer: Independent, third-party certifier engaged by the owner to verify and certify whether various conditions of the Design-Build Agreement have been satisfied to allow progress payments to be made.

Identified Indigenous Groups: The Ktunaxa Nation Council, the Shuswap Indian Band and the four Secwepemc Bands (Adams Lake Indian Band, Little Shuswap Lake Indian Band, Neskonlith Indian Band, and Splatsin).

Preferred Proponent: A proponent selected from a shortlist of bidders to enter into negotiations with a project owner to reach Contract Execution and deliver a project.

Private Partner: The private sector proponent selected to deliver a project.

Province: The Province means the Province of British Columbia.

Request for Proposals (RFP): Document issued by an owner for qualified proponents to submit formal proposals to deliver a project.

Request for Qualifications (RFQ): Document issued by an owner inviting parties interested in participating in an RFP, to submit their qualifications for delivering a project.



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