PAST-PRESENT-FUTURE OF THE TRANS-CANADA HIGHWAY IN BC FROM KAMLOOPS TO THE ALBERTA BORDER

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Abstract

For many Canadians, the Trans-Canada Highway (TCH) is familiar and is understood as a transportation network that connects our coastlines. The historical importance of the highway is best described in the words of our past Prime Minister John Diefenbaker. On the official opening day of the TCH in Rogers Pass on September 3, 1962, he stated:

"This highway, may it serve to bring Canadians closer together, may it bring to all Canadians a renewed determination to individually do their part to make this nation greater and greater still … I express the hope and the prayer today that this highway will always serve the cause of peace, that it will never hear the marching tramp of warlike feet."

The opening of the TCH in Rogers Pass, between Revelstoke and Golden in British Columbia, was no mistake. It may have been logical to host the official opening at either coast, but the opening at Rogers Pass was a tribute to the engineering feat to complete the section of highway between Kamloops and the Alberta Border.

The unique issues and constraints that contribute to past, present and future design and construction challenges revolve around the impressive mountain ranges and river valleys and adjacent railways. These translate into design considerations such as avalanches, slope stability, floods, the environment and stakeholders.

The collision and unplanned closures statistics speak to the fact that this stretch of highway is arguably the hardest to build. Using 2005 – 2012 data, there were an average of 522 collisions and 64 unplanned closures per year. The BC Government has an initiative to 4-lane the TCH from Kamloops to the Alberta Border. An investment of $700 Million has been undertaken towards this initiative from 2001 – 2012; after this investment there are still more kilometres of 2-lane highway between the Kamloops Alberta Border than there is between the BC/Alberta Border and Ontario. Improvements are necessary to aid our nation's economy in the movement of people and goods. Over the next 10 years an additional $650 Million investment is planned for this segment of the TCH.

In the context of the conference theme, this paper focuses on the "Past, Present and Future" of the TCH between Kamloops and the Alberta Border. It will recap the history of the TCH and the drivers to improve safety, mobility, and reliability. The paper will highlight the engineering achievements from the past, and provide an outlook into future designs and associated engineering challenges.

Trans-Canada Highway Overview

Location

The Trans-Canada Highway (TCH) is a transportation corridor named to represent its location; a highway across Canada. The below map shows the path of the highway across all ten provinces of Canada from west coast (Pacific Ocean) to east coast (Atlantic Ocean). The highway primarily runs east and west along the southern portion of each province.

The TCH extends from Victoria, British Columbia to St. Johns, Newfoundland and Labrador, and connects Canada's major cities along its path. Two ferries complete the transportation corridor to connect Vancouver Island and Newfoundland to the mainland. The Trans-Canada Highway is not a single highway, but is a combination of many highways. In the western provinces (British Columbia to Manitoba) the 'main' highway, also known as Highway 1, is the shortest practical east-west route; the 'second' highway, also known as Highway 16, veers off Highway 1 west of Winnipeg and connects Canada's more northern cities.

Canada's Pacific Gateway

The TCH provides access through Canada's population belt to Canada's Pacific Gateway, an "integrated, secure, reliable transportation network that includes world-class airports, seaports, railways, roadways and border crossings, bringing Canada and the North American market to Asia and the world."[1] The gateway is a transportation network that allows the import and export of goods between North America and Asia. Canada's Pacific Gateway is shown in the map below.

The Trans-Canada Highway is the majority of the overland portion of Canada's Pacific Gateway. The TCH allows the movement of people and goods across Canada and to the United States and Asia.

[1] (Invest in Thompson-Nicola British Columbia, Canada, 2014)

Canada's connection to Asia is primarily through the ports. "British Columbia's ports in Prince Rupert, Kitimat, Stewart, and Vancouver are Asia's closest ports of entry on the west coast of North America, up to 58 hours closer than the ports of Los Angeles and Long Beach."[2]

TCH Historical Importance Coast to Coast
Prior to the Trans-Canada Highway construction, the major Canadian engineering achievement was the Canadian Pacific Railway (CPR) which completed construction in the 1880's. The CPR was originally built with the same objective to connect Canada's coastlines; however, it only connects the ports in Quebec and British Columbia, the railway does not extend to the Canadian Maritimes.

CPR construction was completed prior to the world wars whereas the TCH construction began following World War II. The announcement by the federal parliament in 1949 to undertake the TCH project was a glimmer of hope for the Canadian economy. The undertaking created countless jobs and boosted the country's economy by connecting the provinces with a secondary mode of transportation.

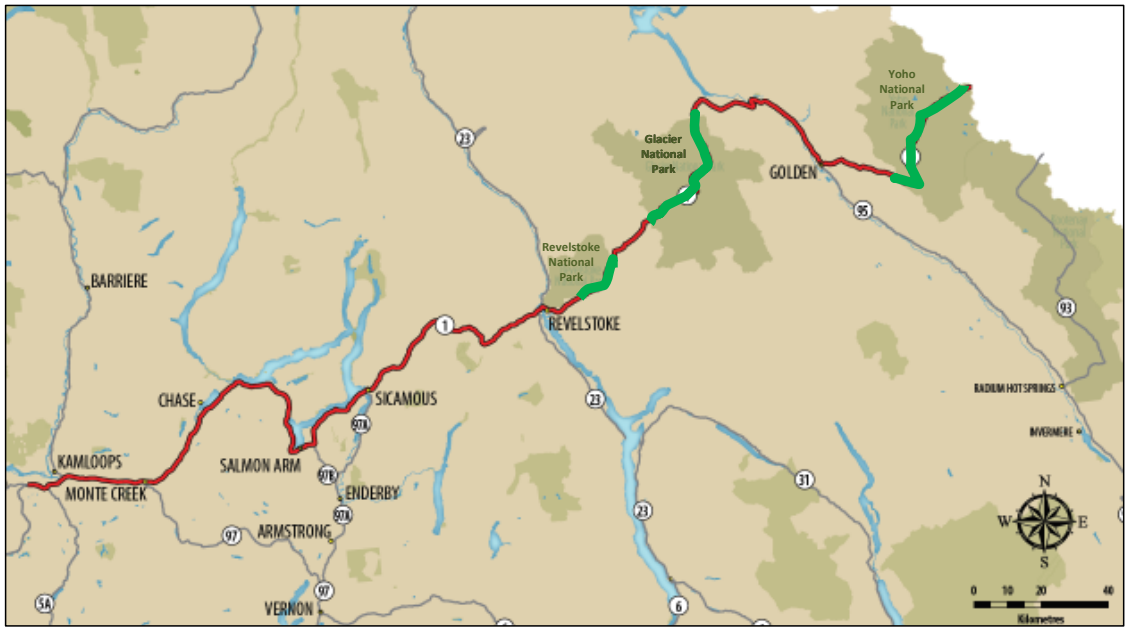
TCH Current Importance Coast to Coast
Today the Trans-Canada Highway remains the only roadway to connect Canada's provinces from coast to coast. It is the primary route chosen for the movement of people and goods and is a fundamental backbone to our nation's economy.

Similar to the history of the TCH, the Canadian economy thrives in-part from jobs created as a result of TCH improvement efforts being undertaken across the country. Improvement efforts include ongoing maintenance upgrades and larger re-design projects. TCH needs have evolved over the last 50 years spurring large re-design projects. A re-design example from each side of the country is the Kamloops to Alberta Four-Laning Initiative, the focus of this paper, and the Prince Edward Island Churchill realignment.

TCH Kamloops to Alberta Overview

Location
In British Columbia, the TCH runs from the western limit on Vancouver Island through to Vancouver and the Fraser Valley communities, continuing east to Alberta. Outside the Lower Mainland the next largest city is Kamloops, approximately a four-hour drive east of Vancouver. From Kamloops to Alberta the Trans-Canada Highway meanders through mountains, across rivers, and through many small communities. The below map shows the TCH from Kamloops to Alberta and the communities it passes along the way.

[2] (Invest in Thompson-Nicola British Columbia, Canada, 2014)



"Kamloops, with 70,000 residents, is a major forestry and food processing hub in the Interior of BC as the largest area city on the Trans-Canada and at the junction of area roads, rail lines and waterways."[3]

Chase, Salmon Arm, and Sicamous are communities in the Shuswap Lake region, with 2,600 residents, 17,7000 residents, and 3,100 residents respectively. During summer months each of these towns see large influxes in population as they are popular vacation spots best known for renting of houseboats on Shuswap Lake.

Revelstoke, with 8,000 residents, is a central forestry and transportation maintenance and management hub, accounting for 21% and 9% of the workforce respectively. Revelstoke's economic history has included acting as the hub epicenter for construction of mining and major transportation projects, including CP Rail and Trans-Canada Highway (both have main operations offices in Revelstoke). Following TCH completion the area opened itself to tourism. In the mid 1960's three hydroelectric dam mega projects were undertaken. These fortified the economy of the community, but the reservoirs flooded forest and agricultural lands.

Rogers Pass is a location with substantial history – some tragic, some positive, and all memorable. Rogers Pass is situated approximately 55 kilometers east of Revelstoke and 37 km west of Golden. Rogers Pass is the summit of the Trans-Canada Highway in the Selkirk Mountains within Glacier National Park. The pass is a commemorated National Historic Site of Canada and is best known for its mountainous terrain and ever-changing winter weather conditions with many avalanches. The pass had enormous engineering challenges for both CP rail and the TCH. Approximately 30 years following the opening of CP Rail, the Rogers Pass section was such a large maintenance problem, primarily from the avalanches, that CP Rail abandoned the tracks that extended over Rogers Pass and built the Connaught tunnel under the pass.

[3] (Trans Canada Highway, 2014)

Similar to Revelstoke, Golden's historic economy drivers are forestry and transportation infrastructure development and operations. Today they have diversified to include tourism with the Kicking Horse Mountain Resort as the primary feature. Golden's population is 3,700.

Kicking Horse Pass is the mountainous pass between Golden and the Alberta Border. The closet town to the border in Alberta is the beautiful resort town of Lake Louise. Kicking Horse Pass is the highest point on the entire Trans-Canada Highway at an elevation of 1643m approximately 310m higher than Rogers Pass.

TCH Kamloops to Alberta Historical Importance

For many Canadians, the Trans-Canada Highway is familiar and understood as a transportation network that connects our coastlines. The historical importance of the highway is best described in the words of our past Prime Minister John Diefenbaker. On the official opening day of the TCH in Rogers Pass on September 3, 1962, he stated:

"This highway, may it serve to bring Canadians closer together, may it bring to all Canadians a renewed determination to individually do their part to make this nation greater and greater still, worthy of the destiny that the Fathers of Confederation had expected when through their act of faith they made it possible. Above all, I express the hope and the prayer today that this highway will always serve the cause of peace, that it will never hear the marching tramp of warlike feet."[4]

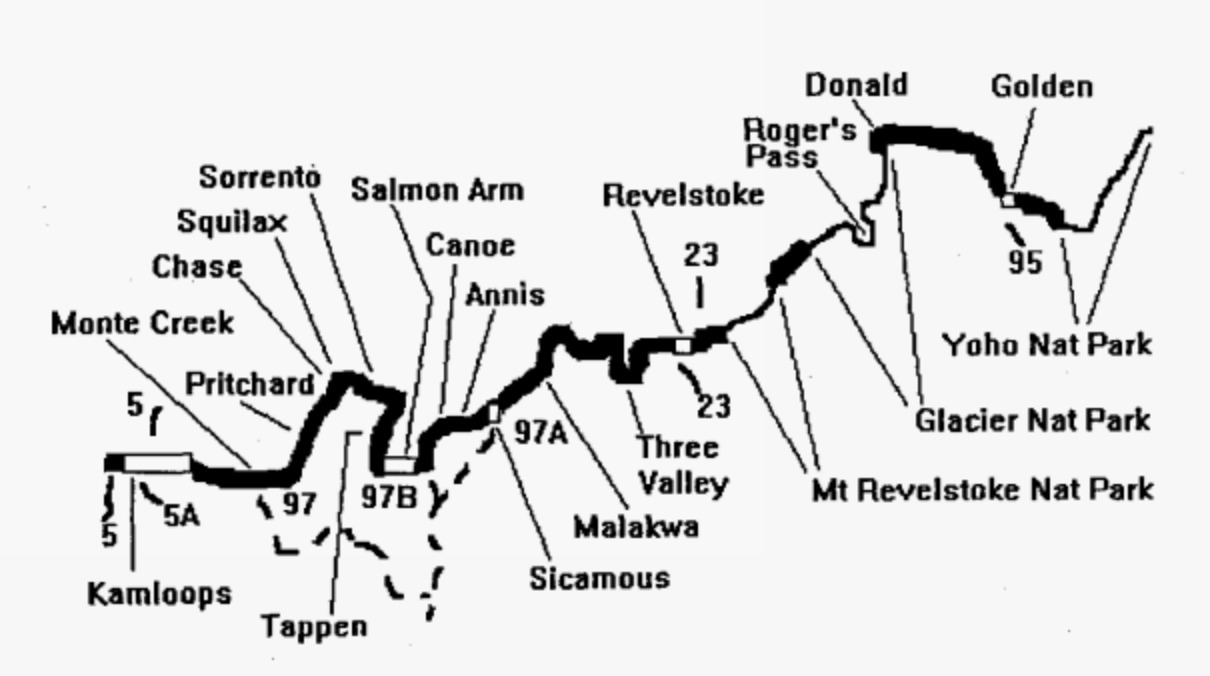
The official opening of the TCH was held in Rogers Pass by no mistake. It may have seemed logical to host the ceremony at either coast, but the opening at Rogers Pass was a tribute to the engineering feat of completing the section of highway between Kamloops and the Alberta Border. As stated by many publications, notably the Globe and Mail and the official Trans-Canada Highway website, "The two sections of greatest difficulty were alongside Lake Superior between Sault Ste Maurie and Wawa, and a 147 km section over the Roger's Pass between Revelstoke and Golden in BC."[5] The TCH through Rogers Pass was the last section of highway to be completed.

In British Columbia, the Trans-Canada path follows the railway as they both wind through the mountainous topography and river valleys. The Canadian Pacific Railway completed construction on November 7, 1885 in Craigellachie, British Columbia. The significance of the location is interesting as Craigellachie is between Sicamous and Revelstoke just west of Rogers Pass and still between Kamloops and Alberta. Uniquely, the last sections of both the TCH and CPR to be completed were in the Selkirk mountain range in British Columbia and within 115 km of each other.

TCH Kamloops to Alberta Current to Future Importance

The thin black lines on the below line map identify the two jurisdictions that have ownership of the Trans-Canada Highway in British Columbia. The thin lines represent sections that are managed by Parks Canada as they run through national parks, and the remaining sections are governed by the British Columbia Ministry of Transportation (MOTI). Parks Canada jurisdiction is approximately 100 km and MOTI jurisdiction is approximately 350 km.

[4] (Francis, 2006)
[5] (Trans Canada Highway, 2014)



Kamloops to Alberta has been under study by MOTI for many decades. In 1990, the National Highway Policy Steering Committee completed a study identifying the importance of the Trans-Canada Highway and the deficiencies on the highway between Kamloops and Alberta. Those identified deficiencies included:

- Congestion, bottlenecks, and summer traffic choke points
- Operating conditions
- Expected growth in truck traffic
- Access versus mobility conflicts
- Safety hazards

The Federal Government's 2014 Economic Action Plan proposed to allocate $391.5 million dollars over 5 years "to make improvements to highways, bridges and dams located in our national parks and along our historic canals, facilitating better access to these national treasures". Of the six projects currently underway, five are within national parks between Kamloops and Alberta.

The BC Government has an initiative to four-lane the TCH from Kamloops to the Alberta Border. The government states "The Ministry of Transportation and Infrastructure is committed to improving the safety and reliability of, and the movement of people and goods on, the Trans-Canada Highway."[6]

[6] (BC MOTI, 2014)

The four-laning initiatives importance is understood by grasping that there are no reasonably close alternative routes to navigate from Kamloops to Alberta. For example, from Kamloops to Lake Louise (Alberta Border) the available routes are:

- along the Trans-Canada Highway the drive is approximately 5 hours
- along Highway 5, 16, and 93 through Jasper the drive is approximately 8 hours (northern route)
- along Highway 3 and 97 through the Crowsnest Pass and Okanagan communities the drive is approximately 11 hours (southern route)

The decision on which route to take has to be made at Kamloops for eastbound traffic or at Lake Louise for westbound traffic. To take a different route part way through, one would need to backtrack to Kamloops or Lake Louise and begin again on a different route.

All three levels of government – federal, provincial, and municipal – along with the public and commercial/industrial sectors, have realized and agreed that improvements to the TCH are necessary to aid our nation's economy in the movement of people and goods. The provincial government has made substantial investments towards this initiative over the past 10 years and additional investments have been allocated for the next 10 years.

Challenges

The unique issues and constraints that contribute to past, present, and future design and construction challenges revolve around the impressive mountain ranges, river valleys, and adjacent railways. These translate into design considerations for avalanches, slope stability, floods, the environment, and stakeholders. In addition to the physical issues and constraints are the social issues generated from local communities that rely on the Trans-Canada. Directly related to the social issues are geometric and capacity issues associated with the highway cross-section varying from rural to urban through key communities such as Kamloops, Salmon Arm, and Revelstoke. Those three key communities all have signalized intersections on the Trans-Canada which are essential to the local transportation network.

In the planning study document named "Highway 1 Planning Study 1990"[7] a number of general corridor concerns where identified, including:

- Tight curves around rock bluffs and steep grades
- Operating and maintenance costs
- Capacity of both the highway and intersections
- Access to adjacent properties with a focus on campgrounds, gas stations, and stores
- Interrupted traffic flow caused by signals
- Traffic circulation at activity points caused from the lack of local roads
- Congestion through Kamloops and Salmon Arm
- Unchannalized intersections with no provision for left turns
- Pedestrian movements at activity points (ie. campgrounds, attractions)
- Lack of passing opportunities
- Environmental, aesthetic, economic, and social impacts

[7] (BC MOTH, 2014)

The 1990 planning study determined the Level of Service (LOS) of the Trans-Canada Highway from Kamloops to Revelstoke. The results concluded that all except one of the four-lane sections were operating at a LOS B or better and all other sections were operating at and unacceptable LOS D or E. The existing signalized intersections in Kamloops were operating at a LOS E and F, Salmon Arm a LOS D, and Revelstoke a LOS A and B. To summarize, in 1990 only the four-lane sections and the signalized intersections in Revelstoke were operating at a satisfactory LOS.

The Topography

The environment imposes significant challenges to infrastructure upgrades with the mountainous terrains ever-changing geotechnical conditions. Soil conditions encountered thus far on the TCH upgrade projects include bedrock, soft marshy soils, silt bluffs, and highly porous tufa rock to name a few.

Rock cuts are prevalent throughout the Trans-Canada Highway between Kamloops and Alberta. Design considerations include rock catchment widths, rock back slopes, and uses of the rock after it is blasted/excavated. During design stages, geotechnical engineers investigate to determine specific rock characteristics and often send rock cores to the laboratory for testing. A critical test includes that for acid-generating or metal-leaching rock, often referred to as ML/ARD testing. If high levels of acid-generating rock are found it can make the project a 'no go'. In most cases low levels of metal-leaching can be mitigated by encapsulating the excavated rock and burying it deeper in embankments. The costs associated with acid-generating rock are high and often carry high risk when going to construction.

Construction challenges associated with mountainous terrain include cost, blasting, scaling, and the associated traffic and schedule management concerns. The cost to excavate a cubic metre of rock is approximately three times more than material that can be excavated with common construction equipment. The largest issue is knowing where the rock is; this translates into a design challenge to determine the bedrock horizon. To answer the question "where is the rock" geotechnical engineers complete test holes often along with other investigations such as seismic refraction. Common constraints to undertaking the geotechnical investigation are cost and access versus preferred location; therefore, engineers have to be diligent about where the test holes are completed. In mountainous areas with no access by a track-mounted drill rig test holes are completed using a helicopter drill rig, which can cost the project $50,000 to $100,000 per hole on average.

The mountainous terrain results in long steep downgrades and uphill climbs. In both cases heavy trucks travel at slow speeds. A safety measure for long steep downgrades are runaway lanes, many of which are provided through the mountain passes between Kamloops and Alberta.

The Weather

The mountain passes have ever-changing winter weather conditions triggering avalanches and landslides. Avalanches are a unique consideration for the region and contribute to a large portion of the unplanned closures per year. Two of the most active avalanche locations along the corridor are Three Valley Gap and Rogers Pass. An average of 10m of snow falls in these regions each season. The photo shows MOTI crews working to clear the TCH following an avalanche at Three Valley Gap west of Revelstoke.

MOTI has an entire team of dedicated avalanche specialists to keep the Trans-Canada Highway safe for its travelers. To minimize closures caused by avalanches, five snow sheds have been constructed through Rogers Pass. Snow sheds allow the avalanches sliding snow to pass overtop of traffic, essentially deflecting the snow. MOTI avalanche experts aim to minimize loss by planning closures of the Trans-Canada Highway and purposefully triggering avalanches with explosives to control the snow flow.

Although avalanches cannot always be predicated; news headlines from the winter of 2014 include “RCMP confirm vehicle caught in avalanche near Rogers Pass late Friday night”[8] among other headlines such as:

- Lloydminster, Sask. Man named as the victim in B.C. avalanche
- Experts warn about the dangers of snowshoeing in avalanche terrain
- Avalanche near Golden, B.C. claims life of female skier
- Huge avalanche blocks road in Revelstoke
- Canada’s avalanche army wages war on dangerous snow

The considerations for weather are not solely limited to avalanches, but more often the weather is discussed in terms of the available construction season. The mountainous passes have unpredictable weather conditions that can rapidly change. However, what is predictable is the short construction season, from mid-April to mid-October. The large improvement projects often spill over multiple construction seasons.

The Waterways

The Trans-Canada Highway has many watercourse crossings and often is in close proximity to a water body. During the design phase engineers aim to minimize impacts to water bodies, particularly high value water bodies, such as Shuswap Lake, South Thompson River, and Eagle River.

[8] (Judd, 2014)

MOTI has undertaken multiple planning studies between Pritchard and Tappen, where the highway runs alongside Shuswap Lake. The planning studies consider a large scale relocation to mitigate impact to the lake. Engineers design with the watercourses in mind and take every reasonable opportunity to reduce or mitigate impacts.

The Environment

British Columbia is known for its spectacular environment and breathtaking sceneries. For infrastructure projects environmental impacts are always a consideration. Environmental impacts can include in-stream or in-watercourse impacts, riparian impacts, and habitat impact for protected species whether mammal or plant. Biologists or environmental specialists are involved on the TCH improvement projects to perform an assessment of the potential impacts. If features of value are found, the environmental team will perform an impact assessment and if necessary develop a mitigation strategy.

Another side of environmental consideration is prevention of wildlife related motor vehicle collisions. MOTI administers a Wildlife Accident Reporting System (WARS)[9]. The WARS system is designed to analyze wildlife accident data collected by MOTI Maintenance Contractors on numbered highways in British Columbia. The Ministry of Environment (MoE) uses the WARS data to assess provincial wildlife population trends. In collaboration, MOTI, MoE and ICBC (Insurance Corporation of British Columbia) use the data to identify high incident locations for mitigation strategies. Mitigation measures can be exclusion fencing, warning reflectors, infrared camera detection systems, and wildlife passages.

The Stakeholders

The Trans-Canada Highway has numerous stakeholders with a genuine interest in the corridor from Kamloops to Alberta. Stakeholders include:

- CP Rail
- Third party utilities
- Local communities
- First nation bands
- Local businesses
- Tourist attractions
- Governmental agencies

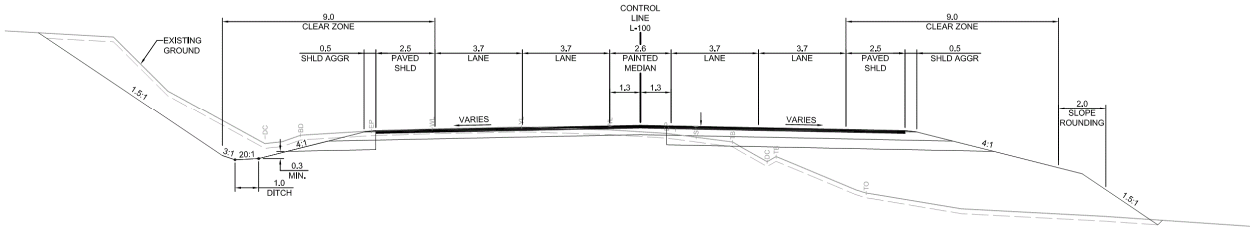
Each stakeholder has a unique interest relative to their needs or investment. For CP Rail and the utility companies their interests are specific to their infrastructure. For governmental agencies it includes impacts caused to their interests by maintenance or construction along the highway (ie. Department of Fisheries and Ocean for works in fish bearing watercourses). First nations and local communities have social interests on the functionality of the highway during construction and following construction. The local businesses and tourist attractions are dependent on the Trans-Canada to provide access to their business. Stakeholder consultation is undertaken to ensure the needs of each individual stakeholder is being managed appropriately. MOTI completed public consultation sessions at communities along the TCH in early 2013 for the seven projects currently under development.

[9] (MOTI, 2014)

Solutions

Design Criteria

Idealistically, the Trans-Canada will be upgraded to a four-lane 100 km/hr rural divided highway. The target cross-section has 3.7m travel lanes, a minimum 2.6m flush median, a minimum 2.5m shoulders, and a clearzone 4:1 slope of 9m.



Materials

As identified in the typical section above, a number of four-laning projects are proposing to reuse existing pavement structure to the extent possible. Often strategies include pulverization and milling to minimize the amount of new material required and maximize the value of the existing materials. For example, the asphalt content in the existing pavement is best integrated in the new asphalt mix design, which happens by milling the existing asphalt and using the millings in place of some of the new asphalt aggregate. On Trans-Canada projects, MOTI is aiming for a 15% Recycled Asphalt Pavement (RAP) mix design which translates to an overall cost savings of approximately 15% for the paving operation.

Due to the remote locations of this section of the Trans-Canada, the costs associated with shipping construction materials are not always feasible. It is common for a project or series of projects to develop on-site asphalt and gravel production plants to generate material required for the project.

Capacity

Two-lane sections of the TCH are operating at an unacceptable level of service as identified in the 1990 Planning Study. In addition, concerns include lack of passing opportunities, no provision for left turn movements, and intersections that are operating and an unacceptable level of service. MOTI has used a few geometric strategies to address the intersection and left-turn movement concerns; including:

- Grade-separated intersections (ie. underpasses and overpasses)
- Intersection widening
- Protected T intersections

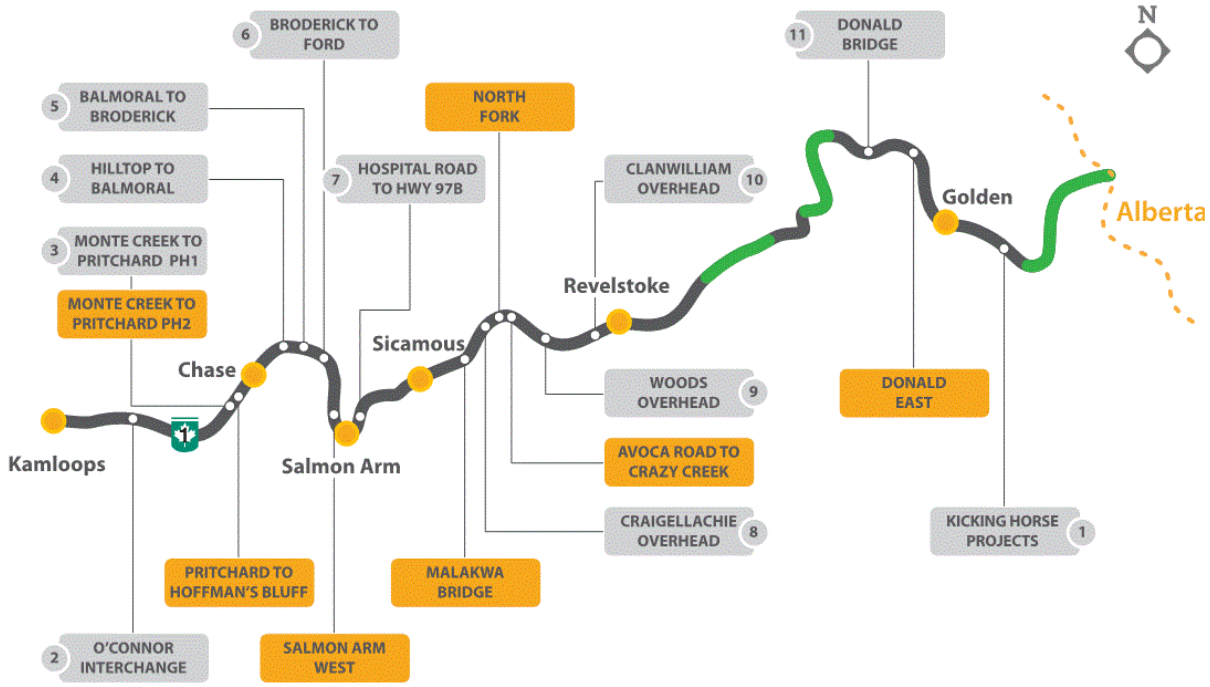
Grade separated intersections and widening of intersections are common strategies used across Canada to increase capacity. Somewhat unique to British Columbia is the use of Protected T intersections.

The Protected T intersection is often a more cost effective alternative to a grade-separated intersection while still providing protection for left-turn movements. The diverge and merge to the left-turn deceleration and acceleration lanes are off the fast lane of the highway (ie. right hand merge).

Where MOTI has used this improvement strategy, public consultation has been used as an opportunity to educate the public on how to properly use the intersection.

BC MOTI Four-Laning Strategy

The BC Government initiative to four-lane the TCH from Kamloops to the Alberta Border has been in process for a few decades with the first major projects breaking ground in 2001. An investment of $700 Million has been undertaken towards this initiative from 2001 – 2012. Eleven projects were completed during 2001 -2012 and are identified in grey below.



After the $700 Million investment there are still more kilometres of two-lane highway between the Kamloops Alberta Border than there are between the BC/Alberta Border and Ontario. The projects in orange are currently under development and are part of the 2012-2022 program. The below table shows the collision and unplanned closure statistics and the remaining kilometres of two-lane highway following the 2001-2012 four-laning projects.

Segment	Total kms in Segment	Total kms of 2 lanes	Number of Bridges (>50 yrs)	Average number of Crashes per year (2007-2011)	Average Number of Unplanned Closures per year (2005-2012)
Kamloops to Monte Creek	38	0	0	40	0.5
Monte Creek to Salmon Arm	85	39	3	113	8
Salmon Arm to Revelstoke	98	67	9	119	13.5
Revelstoke to Golden	92	53	5	171	37
Golden to the Alberta border	26	4	0	79	5
Total	339	162	17	522	64

*Note statistics are following completion of the seven projects under development.

Following suit to the history of the Trans-Canada Highway the collision and unplanned closure statistics speak to the fact that this stretch of highway is arguably the hardest to build. Using 2005 – 2012 data, there were an average of 522 collisions and 64 unplanned closures per year.

Project Selection

The Trans-Canada Highway improvement projects are determined on a "needs based" selection process. MOTI has split the Kamloops to Alberta portion into three general zones:

- Kamloops to Salmon Arm
- Salmon Arm to Golden
- East of Golden (Kicking Horse)

In general terms, the objectives and project triggers for each zone are slightly different.

<u>Kamloops to Salmon Arm</u>

The Kamloops to Salmon Arm zone is essentially the Monte Creek to Salmon Arm zone as the Trans-Canada is four-lanes between Kamloops and Monte Creek. Large sections of the highway are already four lanes between Monte Creek and Salmon Arm. The objective is to improve the highway to a continuous four-lane cross-section to Salmon Arm.

A primary safety concern in this zone is Hoffmans Bluff which is just west of Chase. A large $61.6M project is underway to improve a 6 km portion of the Trans-Canada Highway leading up to Hoffmans Bluff. The bluff is constrained on all sides by the existing highway, large rock cuts, the railway, and river. Consultations and considerations for First Nations are also prevalent. The safety concern revolves around sharp horizontal curves with a combination of steep grades as the highway meanders the banks of Shuswap Lake.

Salmon Arm to Golden

The Salmon Arm to Golden zone is where the majority of unplanned closures occur each year as the highway maneuvers through the mountain passes and river valleys. The project selection within this zone is primarily triggered by the remaining lifespan of existing infrastructure (ie. steel truss bridges).

MOTI has strategically incorporated corridor upgrades with the infrastructure replacements. An example of this strategy is the North Fork Four-Laning Project which was triggered by the existing bridge over Perry River requiring replacement. In addition to the infrastructure condition, reliability and collision statistics are incorporated in the project priority list. The projects in this zone are often 2.5 km to 4 km in length which provide summer passing opportunities and winter ponding areas during closure (ie. vehicle storage during avalanche closures).

East of Golden (Kicking Horse)

Kicking Horse is an icon on the Trans-Canada Highway just east of Golden. MOTI has undertaken a significant investment in the past decade to improve this zone on the Trans-Canada Highway. The four-laning objective has been divided into four phases; phases 1, 2, and 3 have been completed and phase 4 which tackles the difficult canyon section along with the Highway 95 intersection in Golden is currently in the design phase. The total cost of the Kicking Horse Project is estimated over $958 million with the Park Bridge as the focal point of the improvements to date.

Project Procurement Strategies
MOTI has utilized a combination of procurement strategies for both design and construction. Large-scale projects typically follow a design-build procurement strategy or a funding partnership. The smaller to medium-scale projects are procured through more traditional design-tender-build process.

MOTI completes some design work in-house; however, the majority of the design effort is outsourced to qualified consulting firms. MOTI has two methods to procure design consultants: E-RISP or BC Bid. E-RISP is an online system where all consultants are pre-adjudicated on a qualification based system. Projects procured through E-RISP have a fee upset limit of $999,999. BC Bid is a system open to companies that have registered with the system and includes procurement for design projects and traditional construction projects. Design projects procured through the BC Bid system typically exceed $1 million in design fees.

Future Work and Projects

Over the next 10 years (2012 – 2022) an additional $650 Million investment is planned by the BC provincial government for the upgrading of the Kamloops to Alberta segment of the TCH. The seven projects under development as discussed above are targeted to use a portion of that allocation.

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