



## ROADS & INTERCHANGES

### QUICK FACTS

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**AVERAGE  
ANNUAL DAILY  
TRAFFIC:**  
**120,000**

**TOTAL PROJECT  
VALUE:**  
**\$198,000,000**

**CONSTRUCTION  
VALUE:**  
**\$60,000,000**

**PROCUREMENT  
MODEL:**  
**BID BUILD**

**LAFARGE'S ROLE:**  
**PRIME  
CONTRACTOR**

**LANE KILOMETRES  
CONSTRUCTED:**  
**2KM OF 4-LANE**

**COMPLETION  
DATE:**  
**2019**

# HIGHWAY 1 - LOWER LYNN INTERCHANGES

NORTH VANCOUVER, BC

## PROJECT OVERVIEW

As part of the initiative to improve safety and connectivity in North Vancouver, the Mountain Highway Interchange project is a highly complex 4-direction interchange project that will improve traffic through the community. The expansion along Canada's Transcanada Highway improves access to BC Ferries, Squamish and Whistler.

Lafarge's scope consists of the following key components:

- Construction of on/off ramps in all four quadrants
- Signalization at both ends of the new structure to provide the safe movement of traffic on and off Mountain Highway
- Replacement of the existing two-lane Mountain Highway underpass with a new four-lane structure
- Full intersection at Keith Road/Brooksbank Ave/Mountain Highway
- New realigned Mountain Highway

The design will include overall improvements and expansion of facilities for alternate modes of transportation.



## EFFECTIVE LEADERSHIP

### PROJECT MANAGER



JULIE EDGAR

### CIVIL SUPERINTENDENT



NATE ROGERS

### STRUCTURAL SUPERINTENDENT



BLAINE FISHER

## HIGHWAY 1 & LOWER LYNN INTERCHANGES

### CONSTRUCTION MANAGEMENT: A CORE COMPETENCY

Led by a team of experienced construction professionals, the Highway 1 & Lower Lynn Improvements project was managed effectively from start to finish.

Our management collaborated throughout the project to ensure that focus remained on health and safety, high quality performance, and effective, timely problem solving. From the outset, open lines of communication were fostered from leaders through to subcontractors and onwards to local stakeholders.

Relationship building was essential and was created by ensuring that:

- project leaders participated in pre-construction open houses and implemented various channels to communicate with all affected stakeholders;
- the complete development and execution of project-specific health, safety, and environmental plans followed by regularly scheduled audits and reviews;
- schedules were designed sensibly with slack in critical paths, the coordination of specialized trades, and the flexibility to adjust to external constraints;
- project control systems were both effective and easily accessed by all levels of workers, ensuring transparency and meaningful exchange of information; and
- the experience and knowledge of the team helped provide innovative problem solving and adherence to budget, timeline, and specifications.



## QUALITY ACROSS SCOPES

- CUSTOMIZED  
QUALITY  
ASSURANCE  
PROCESSES
- ALIGNMENT OF  
QUALITY  
MANAGEMENT  
PLANS WITH  
ENVIRONMENTAL  
MANAGEMENT  
PLANS
- PROJECT SPECIFIC  
HEALTH AND  
SAFETY PLAN
- ONGOING  
COMMUNICATION  
WITH  
EMERGENCY  
SERVICE  
STAKEHOLDERS

## HIGHWAY 1 & LOWER LYNN INTERCHANGES

### QUALITY AND ENVIRONMENTAL MANAGEMENT

Lafarge has been building road infrastructure in the Lower Mainland for over 108 years, formerly as Columbia Bithulithic and more recently, under the Lafarge name. We have extensive experience in managing construction on site and in active, high-volume highways in urban areas. When undertaking work on the Highway 1 & Lower Lynn Improvements project, we leveraged our experience in building and maintaining over 500 lane kilometres of roads and highways in the Lower Mainland annually.

Our quality management culture covers all aspects of the project - from ensuring that everyone on site goes home safely at the end of each day to providing only the highest quality materials to seizing opportunities to learn from each other. The Quality Control Plan established by Lafarge was fully ISO compliant, and included both record keeping and reporting guidelines, along with specified variables, parameters, and means to conduct meaningful quality control testing.

Being located so close to the highly sensitive Lynn Creek - a spawning ground for salmon - all construction activity at Mountain Highway required conscious planning and consideration of environmental needs to align with the demands of a congested existing roadway. It was essential for all project planning to consider how these elements interacted with each other - from the outset of forecasting, risk acknowledgment and mitigation, through to commissioning and handover, any deviation from planned processes could have impacted scheduling, cost, and aquarian species in the region.





## UNIQUE CHALLENGES:

- ACTIVE ROADWAYS
- HIGH VOLUME URBAN TRAFFIC AREAS
- INTEGRATION OF STAGING AND TRAFFIC FLOWS
- EFFECTIVE CLOSURE TECHNIQUES
- ONGOING PUBLIC ENGAGEMENT
- TRADE CORRIDOR ACCESS

## HIGHWAY 1 & LOWER LYNN INTERCHANGES

### POWERFUL RESOURCE POSITIONING

In order to deliver this Project quickly with the lowest possible lifecycle cost, innovation in design and construction was key. Lafarge has an unparalleled sophisticated multi-modal logistics network within the Lower Mainland. This includes our extensive quarry, ready mix, asphalt, depot and dock network complemented by an owned marine fleet that moves over eight million tonnes of material annually. By leveraging this network, we successfully minimized the amount of truck traffic delivering materials to the job site from distant material sources.



With the Lafarge team onsite throughout the project, with a local understanding of potential delays due to weather or traffic, our skillset allocation maximized scheduling. Our ability to manage and drive processes in-person eliminated delays caused by decision makers located far from site. Throughout the Mountain Highway Interchanges project, the Lafarge professionals applied an understanding of site-specific constraints and, in turn, controlled the associated construction costs.



## UNDERSTANDING CHALLENGES:

- PROTECTION OF FISH AND WILDLIFE HABITAT
- EROSION CONTROL
- MINIMIZING AIR EMISSIONS
- NOISE MITIGATION
- ARCHAEOLOGICAL PROTECTION

## HIGHWAY 1 & LOWER LYNN INTERCHANGES

### ARCHAEOLOGICAL PROTECTIONS & FIRST NATIONS ENGAGEMENT PROCESSES

The region around the Mountain Highway Interchange has a colorful history. The Tsleil-watuth people called the area Kwa-hul-cha, and the archaeological record indicates their presence for thousands of years. With meaningful relationships with over 60 First Nations agreements across Canada, the project was led by an empathetic and responsible corporate approach to the archeologically sensitive area. The team adhered to an Initial Archeological Survey and subsequent Chance Find protocol.



*Prior to commencing the project, an Initial Archeological Survey, leveraging third party experts, was undertaken to identify areas of archeological significance. Following this process, we incorporated the results into the construction plan, again leveraging the expertise of third party stakeholders and First Nations. An integral part of our activity during construction was to ensure a robust Chance Find Protocol was implemented.*



## HIGHWAY 1 & LOWER LYNN IMPROVEMENTS

### PROJECT IMAGES

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