



ROADS & INTERCHANGES

QUICK FACTS

**AVERAGE ANNUAL
DAILY TRAFFIC:**
50,000

**BRIDGE
STRUCTURES:**
1,200 m²

TOTAL PROJECT VALUE:
\$102,000,000

**CONSTRUCTION
VALUE:**
\$80,000,000

**PROCUREMENT
MODEL:**
BID-BUILD

LAFARGE'S ROLE:
JOINT VENTURE
PARTNER,
ROADWORKS
CONTRACTOR

**LANE-KILOMETRES
CONSTRUCTED:**
6 LANE-KILOMETRES

**COMPLETION
DATE:**
2015

LOW LEVEL ROAD

VANCOUVER, BC

PROJECT OVERVIEW

Lafarge's scope involved the realignment and elevation of approximately three (3) kilometres of the Low Level Road, providing space for two new rail tracks to improve rail switching efficiency and capacity. The project also eliminated three at-grade rail crossings and provided grade separated access to port terminals. Works also addressed safety, recreation, and noise challenges plus the reconfiguration of three intersections and cyclist lanes.

With a unique set of challenges, the Low Level Road project included:

- working across and adjacent to active rail lines, including multiple at-grade crossings and a rail overpass
- developing a traffic management plan (TMP) to accommodate a high density of traffic for the road system size
- continual open and two-way communication with multiple stakeholders from utility companies, rail operators, port operators, the travelling public and municipal and provincial government
- managing efficient access and egress through the trade corridor via detailed planning and staging



EFFECTIVE LEADERSHIP

PROJECT MANAGER



GORD BIRD

PAVING SUPERINTENDENT



BRIAN HENDRICKS

LOW LEVEL ROAD

CONSTRUCTION MANAGEMENT - A CORE COMPETENCY

Led by a team of experienced construction professionals, the Low Level Road 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

QUALITY DRIVING HEALTH & SAFETY

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 at Low Level Road, 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 water, all construction activity at Low Level Road required conscious planning and consideration of environment, traffic, health and safety, and trade corridor requirements. Failure to accommodate any of these details would have derailed the timelines and affected quality performance. 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 and cost.



UNIQUE CHALLENGES:

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

TRAFFIC MANAGEMENT

Accommodating the existing heavy traffic required incorporating a number of temporal and spatial constraints into the traffic management plan. We analyzed existing travel flow and integrated traffic characteristics with lane configurations, queue lengths at choke points, and the level of service expected by stakeholders. Impacts were reduced through the use of:

- coordinating tools - integration of construction staging and maintenance of traffic using multidisciplinary reviews;
- closure techniques - detours, crossovers, directional closures, lane width reduction, and temporary widening within existing trade corridor right-of-ways; and
- travel flow characteristics - integrating traffic volumes with lane configurations, queue lengths at main choke points, and level of service expected by stakeholders.

In dealing with the close proximity to active rail lines, we established a strong working relationship with the railways. We established a change management process in place to ensure constructability was balanced with project needs. A comprehensive rail management plan was developed which included certification of crews by the rail operators for working on rail lines, monitoring programmes to mitigate risks of worker/rail conflicts, and dynamic scheduling to accommodate schedules.

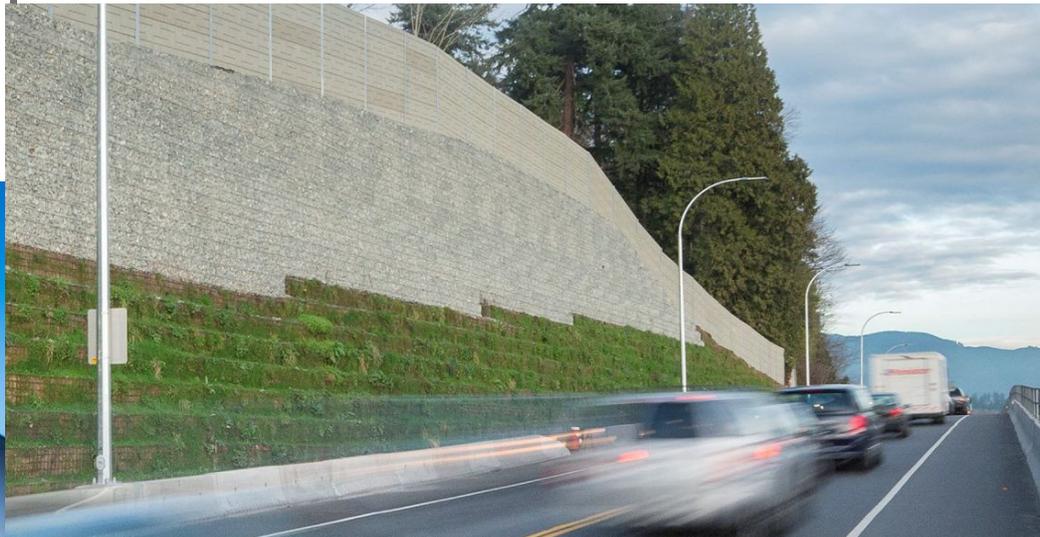


UNDERSTANDING CHALLENGES:

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

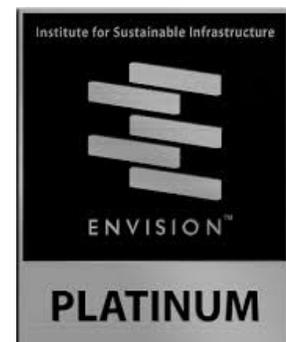
INTEGRATION OF ENVIRONMENTAL PROTECTION

A key component of the environmental planning for the project included protocols for identifying unexpected hazardous or industrial waste that could negatively impact the local habitat. On the LLR project, this included the chance find of a bunker oil tank and contaminated industrial waste. We responded by enacting responses that included ceasing work in the area, and engaged the project owner and regulatory authorities to agree on the right solution.



Another integral aspect included project controls, such as daily monitoring, a pre-construction checklist, and an environmental post-construction checklist.

Thanks to the exceptional environmental management, the Low Level Road project won the Platinum Envision Award for Transportation - the highest possible level of accreditation via the Institute for Sustainable Infrastructure.



PROJECT IMAGES

