

and construction rework.

Engineering and Planning staff have worked together to ensure that the aesthetics and public interface of the new railing are considered in tandem with the technical design requirements. Value engineering was undertaken within the design process through liaison with contractor and railing fabricator, to reduce manufacturing, installation and maintenance complexity. The pricing received from the contractor in February reflects a total balustrade removal, new railing installation and associated road works with a construction cost estimate of \$2.44 million. Including Contingencies and project administration costs the total project cost estimate is \$3,850,000.

If approved, construction would begin in Spring and complete in the Fall of 2020. Replacement of the balustrade as part of the current CRD wastewater project provides the good value for money, decreases disruption to the public, reduces risks to the City, minimizes overall construction timeline and accelerates replacement of this important waterfront asset.

PURPOSE

The purpose of this report is to seek Council's approval for project funding to allow the full replacement of the 500m long Dallas Road balustrade with a new stanchion and wire cable railing consistent with the design and aesthetics of the adjacent Ogden Point Breakwater.

Replacement of the balustrade would be undertaken in 2020 allowing cost, construction time and staff resource savings in coordination with the CRD Wastewater Treatment Project.

BACKGROUND

The balustrade provides a safety railing along the concrete Dallas Road seawall between Ogden Point and Lewis Street. The current balustrade was constructed in 1957 and is currently beyond the end of its useful service life. The concrete is delaminating and spalling, and the structural steel is corroded. Corrosion can be observed along the balustrade surfaces with pronounced rust stains and subsequent degradation of concrete sections. Deterioration has progressed to a point where areas of the structure are being mechanically supported with steel strapping in order to maintain the guardrail safety.



Figure 1. Dallas Road Balustrade current condition. Ogden Point Breakwater in the distance

In 2018, the City completed a four-year structural restoration program on the vertical seawall along this section of Dallas Road, which included upgrades to the adjacent stairs and pathways. The balustrade had been identified in 2016 as the final restoration work required along this section of the waterfront and is now ready to be completed.

The installation of the sewer force main is now complete between Clover Point and St. Lawrence Street, with road restoration activities underway. As part of the sewage pipe construction a new cycle path, sidewalk, crosswalk improvements, road paving, landscaped areas and angled parking are to be constructed between Dock Street and Lewis Street. In coordination with the project, the City is completing adjacent capital improvements such as paving, curb reconstruction, sidewalk widening and curb ramp replacements. The integrated design work allows road, sidewalk and balustrade configurations to be considered and optimized to achieve the necessary construction phasing, and infrastructure performance, including water management across the sites.

In August 2019, City Council:

1. Endorsed the replacement of the existing balustrade along Dallas Road seawall with the steel stanchion and wire cable design (like other waterfront railing designs along city waterfront locations), as recommended in this report; and;
2. Directed staff to amend the 2019 Financial Plan by adding \$150,000 in project funding to allow for detailed design and contract preparation for the replacement balustrade, funded from the Buildings and Infrastructure Reserve.

Within the report, staff also committed to report back to Council following completion of the detailed design to seek approval of construction funding.

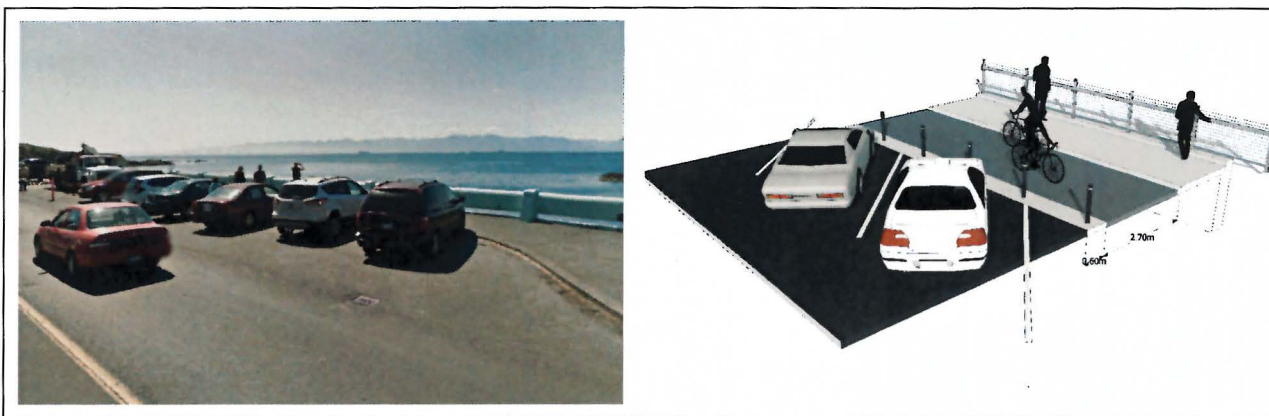
ISSUES & ANALYSIS

The scheduled replacement of the balustrade is on track for 2020 completion, with Council's approval of construction funding. The endorsed design and plan address a few main issues/challenges:

1. **Integrated design:** Ensuring the new railing system is designed and constructed in an integrated manner with the sidewalk, seawall, parking and cycle track configuration.
2. **Timeline Risks:** Reduced costs, disruption, and rework are possible if the City aligns the balustrade replacement with final CRD construction program.
3. **Final Railing Design:** Design of a railing system similar to the Ogden Point Breakwater.

Integrated Design

The balustrade acts as a safety system for pedestrians and is believed to have been originally designed to withstand impact from a moving vehicle. The original pathway design did not include a significant curb or grade-change between road and sidewalk, which likely necessitated the additional balustrade massing and strength. The new streetscape design and configuration along this Dallas Road segment includes separated vehicle and bike travel lanes, angled parking, bollards located and designed to provide a physical barrier between the angled parking and cycle path, and a new sidewalk. The new railing will be located more than 8m away from moving vehicle lanes. The greatest likelihood for a vehicle striking the railing is for a driver making an error while parking, which would be contained by the bollard at the end of the parking stall (see figures below).



Figures 3(a and b). Side by side comparison of existing conditions (a) and proposed configuration (b)

The existing balustrade and its footings are integrated into the sidewalk and seawall design. The old balustrade structures must be removed before the sidewalk is replaced to avoid significant rework. The installation of the parking bollards and completion of the parking reconfiguration also need to be completed after the balustrade replacement to ensure construction equipment has access to the edges of the sidewalk.

The configuration and strength of the new bollards situated between the angled parking and cycle path has been set to provide sufficient protections against low speed vehicle strikes due to driver error while parking; thereby removing any requirement for the railing to protect against vehicle movements/impact. The height of the bollards has been set to minimize handlebar conflicts with passing cyclists while ensuring that they are visible to drivers parking their vehicles. The aesthetic and layout of the bollards has been reviewed by planning and engineering to ensure an elegant, visually appealing design while meeting public safety needs.

The design for Dallas Road includes new landscaped areas, pedestrian ramps and crosswalks at the intersections along Dallas Road between Dock and Lewis Streets. These areas have been modified during the detailed design process to improve drainage, provide opportunities for new street furniture including benches and bike racks, and to provide accessible parking stalls at 3 locations along the corridor (Dock Street, San Jose Avenue and Lewis Street). The intersection of Dock Street and Dallas Road was modified with the balustrade removal to improve safety and connectivity at the terminus of 2-way bike path by improving the alignment of the bicycle and pedestrian crossings.

As part of this project, staff and CRD have already improved the pedestrian amenities along Dallas Road, including;

- widening the sidewalk between Dock Street and St. Lawrence from 1.5m to 2.0m,
- construction of new pedestrian bulges and a new crosswalk at Montreal Street, (cost shared with the Greater Victoria Harbour Authority).
- realignment of the curb at the intersection of Douglas street and Dallas Road, and
- upgrading of existing curb ramps on the north side of Dallas Road to the current city standard.

Timeline Risks - Avoiding Disruption, Rework and Costs

The CRD contractor is planning to complete construction work on Dallas Road between Boyd Street and Lewis Street in the Spring/Summer of 2020. The additional balustrade scope will add a few months of additional time to the CRD project, with completion of the balustrade scheduled for Fall 2020, but will avoid any requirement to mobilize again. If the balustrade replacement was deferred

beyond this approval process, additional construction phases would be required to mobilize and restart construction and would damage or require reconstruction of much of the new sidewalks, pathways and parking. Recommencing construction after the CRD project is finalized would incur risks of damaging new pavement surfaces, closures of parking and cycle track, increased costs, staff time/efforts, overall timeline and rework. Construction is ideally scheduled for the Spring and Summer months to minimize weather related construction risks.

Detailed Design of Railing

At the beginning of the design process staff considered several recent railing installation types/configurations, including the Johnson Street Bridge, Westsong Walkway, Reesen Park, Tillicum Bridge and the Ogden Point Breakwater. All the modern railings at these locations employ a stanchion and wire cable design approach, with different details to fit their local context.

Staff in Engineering and Public Works and Sustainable Planning and Community Development Departments considered that a railing along Dallas Road that is consistent with the designs at Ogden Point and along other city waterfront locations would be most appropriate for this location. Railing designs must be safe, withstand waterfront environmental conditions, reduce through life maintenance costs, remain visually appealing, and meet overall affordability targets.

Staff's detailed review of railing systems recommend a vertical aluminum stanchion and stainless-steel cable system with flush-mount footings to integrate into the sidewalk and maximize pedestrian space along the pathway. This design is visually and materially similar to the system used on the Ogden Point Breakwater, which will create a consistent and coherent waterfront aesthetic.



Figure 4. View of the Ogden Point Breakwater railing, looking back towards the Dallas Road seawall.

Using the Ogden Point Breakwater railing as the design template, technical changes have been made to integrate to the top of the Dallas Road Retaining Wall / sidewalk, while reducing complexity and costs for construction and future maintenance. Value engineering was completed through the

design process by working in partnership with the contractor and railing fabricator to minimize overall project costs and construction complexity, without impacting project aesthetics or quality.

The replacement railing is approximately half the width of the existing concrete balustrade which provides an additional 0.3m sidewalk width, compared to maintaining the existing balustrade. As seen in the image below, the new railing will be located next to a 2.0m wide concrete sidewalk, a 0.15m wide sloped curb, a 2.7m wide 2-way asphalt bike path, and a row of bollards physically separating parked vehicles and the bike path.

Project Considerations for Proposed Replacement

The costs for this project are driven mainly by removal and disposal of the existing railing system, the new railing materials, installation of scaffolding for construction and associated construction in the roadway. A 30% contingency has been applied to this project which is in line with the City's contingency policy on large projects. On this project, staff are managing risks related to contaminated materials, archaeology and the removal of 60-year-old concrete structure. Project costs include the following breakdown and contingencies:

Table 1. Cost Breakdown

Cost Breakdown	Amount
Pavement, sidewalk, cycle track and bollards	\$ 1,170,000
Balustrade removal/disposal and environmental management	\$ 610,000
Railing and Structural base manufacture and installation	\$ 1,085,000
Street Furniture	\$ 50,000
Credit - CRD Portion of Paving, Sidewalk, Cycle Track and Bollards	\$ - 475,000
Administration, Engineering and Archeology	\$ 520,000
Project Contingency (30%)	\$ 890,000
Total Project Cost Estimate	\$ 3,850,000

Safety: This option meets recommended guard heights identified in the BC Building Code for pedestrians. Ongoing risks related to the condition of the existing balustrade will be mitigated. The bollards will be installed to withhold parking vehicles from entering the bicycle facility.

Functionality and Aesthetics: The stanchion and wire design would expand the pedestrian realm by adding approximately 0.3 metres of sidewalk space, when compared to the current balustrade. This design aligns with and extends the aesthetics and materials used along the adjacent Ogden Point Breakwater to create a consistent and coherent waterfront experience. This design improves pedestrian and residential ocean and coastal views.

Timelines: The design of the railing is complete, and work would be completed in coordination with the road restoration of Dallas Road. Construction would begin in Spring 2020 and is anticipated to be complete in September 2020.

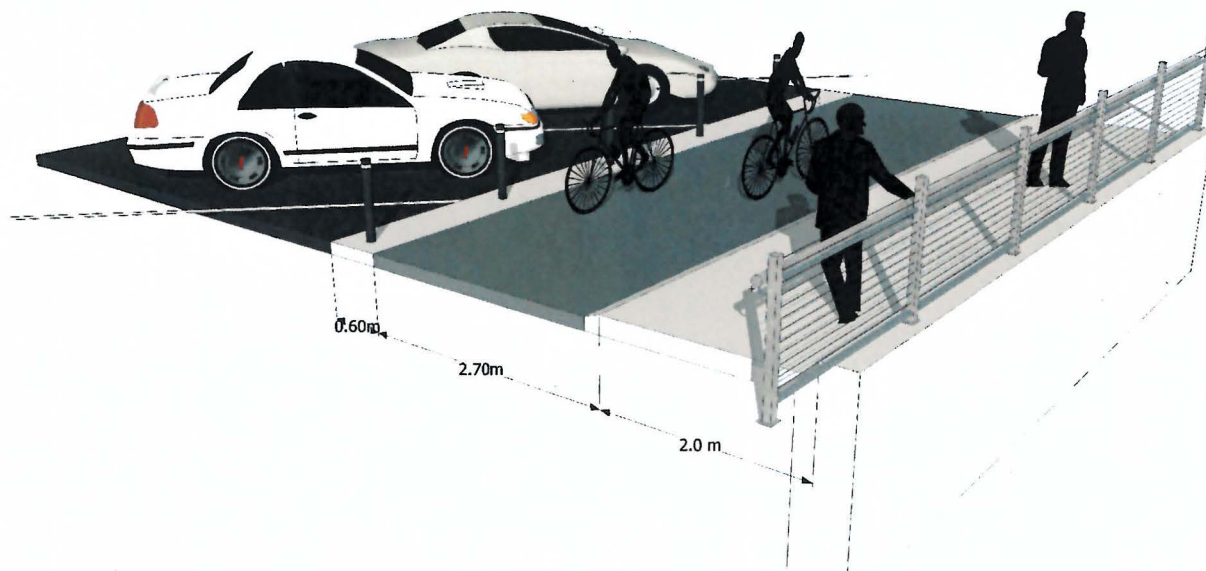


Figure 5. Conceptual drawing of proposed railing design and configuration.

OPTIONS & IMPACTS

Following the detailed design phase completed since August 2019, 2 options remain available to Council as follows:

Option 1: Installation of proposed railing in coordination with Wastewater Project (Recommended)

This option would require funding approval from council with immediate direction to the CRD to include the works as part of their contract. This approach would coordinate the balustrade replacement with the other works already occurring on Dallas Road including the construction of the new sidewalk bike path and angled parking.

Option 2: Installation of proposed or alternate railing design following the completion of Wastewater Project

This option would utilize a design similar to Option 1, however, the City would wait for future years to complete the replacement.

- a. **Costs:** Increased costs would be incurred to remobilize and rework sections of the rights of way.
- b. **Safety:** Increased operating and maintenance would be required.
- c. **Functionality / Aesthetics:** Reduced quality or temporary road / pathway surfaces may be required to avoid heavy rework costs.
- d. **Timelines:** Overall project completion would be delayed into 2021 or other project delays would be incurred.

Impacts to Financial Plan

\$3,850,000 in project funding for the replacement of the Dallas Road Balustrade would be funded from the Buildings and Infrastructure Reserve. This reserve has an unallocated balance of \$18 million.

Accessibility Statement

Accessibility is an important factor informing the design of the balustrade with specific attention being given to expand the public sidewalk and provide visual sight lines for those at all heights. In

addition to the balustrade design, several changes have been made to improve accessibility as part of the design revision for the balustrade replacement:

- Inclusion of accessible parking stalls at Dock Street, San Jose Avenue and Lewis Street;
- Replacement of existing sub-standard curb ramps on the north side of Dallas Road within the project area;
- Addition of benches along the balustrade for people to rest; and;
- Widening of the sidewalk and a reduction in the crossfall on the sidewalk where possible.

2019-2022 Strategic Plan

This project supports the broad strategic objectives in the Sustainable Transportation, public safety and Health, Well Being and a Welcoming City.

Official Community Plan Consistency Statement

This initiative supports the *Official Community Plan* under Section 8: Placemaking, specifically policies:

8.13 Encourage urban design that enhances the Harbour as a marine gateway.

8.14 Enable continuous public access along the waterfront...with special consideration to urban design features for pedestrian enjoyment and comfort.

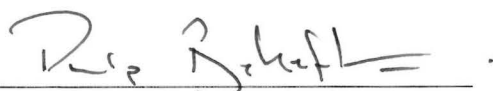
and Section 11: Infrastructure:

11.5 Coordinate with Capital Regional District plans and works undertaken.

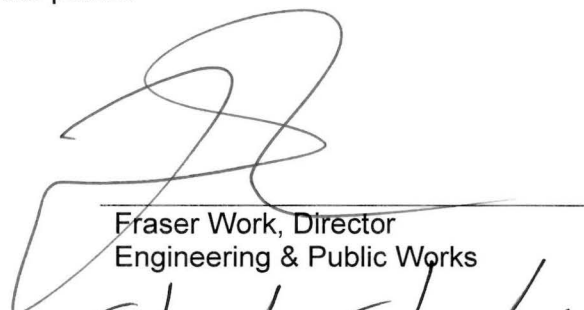
CONCLUSIONS

The CRD Wastewater Treatment project is on schedule and provides an opportunity for completion of the Dallas Road balustrade replacement in 2020. Staff recommend replacement this year with a new, aluminium stanchion and wire cable consistent with the treatments along the neighbouring Ogden Point Breakwater. A new railing design will improve the public realm, coincide with the CRD project and remove the requirement for additional, disruptive and costly project construction at a later date. The design of the balustrade replacement has been completed and the CRD contractor is ready to complete construction in 2020. A delay of this project would push it to a future capital program at a higher cost and construction impact to the public.

Respectfully submitted,



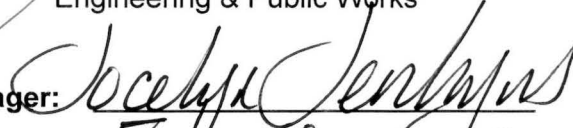
Philip Bellefontaine, Assistant
Director, Transportation



Fraser Work, Director
Engineering & Public Works

Report accepted and recommended by the City Manager:

Date:


Feb 28, 2020