



Committee of the Whole Report For the Meeting of August 8th 2019

To: Committee of the Whole **Date:** August 2, 2019
From: Fraser Work, Director of Engineering and Public Works
Subject: Acceleration of Dallas Road Balustrade Replacement

RECOMMENDATION

That Council:

- 1) Endorse 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) Direct 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.

EXECUTIVE SUMMARY

The CRD Wastewater Treatment Project is introducing new sanitary sewer infrastructure along Dallas Road, including new cycle path, sidewalk, curb and parking between Dock Street and Lewis Street. City staff had originally planned for the replacement of the current concrete balustrade to be coordinated with the final stages of the CRD work, in 2020. This section of the CRD project is now planned for early completion in fall 2019 (vs mid 2020), which has provided the City with an opportunity to accelerate balustrade replacement planning, design, tendering and construction in 2019 to minimize mobilization/demobilization costs and remove the requirement for any further construction in 2020.

The balustrade is beyond the end of its useful service life and requires significant and extensive repairs and/or replacement. The most recent CRD project schedule estimates suggest that a rapid design/planning process can be integrated into the Dallas Road works, in order to streamline the balustrade replacement in 2019. The accelerated program would require a reduced project design and contract timeline, which could be accomplished by using a proven railing design and by using project planning resources already in place with the CRD teams.

Staff recommend a full replacement of the balustrade with a new steel stanchion and wire cable design to reduce maintenance and replacement costs, while improving public realm aesthetics. This steel stanchion and wire cable design is consistent with the treatments along Ogden Point Breakwater and other pathways along the city's waterfront.

Acceleration of the balustrade replacement is an attractive option, since it shows a strong potential to minimize overall cost and reduce construction disruption along Dallas Road. This option does have its risks and uncertainty, however; due to reduced design and construction timeline targets, which can impose a risk of additional market cost premiums. With Council's approval of design, City staff can progress detailed design and planning works with CRD project staff, with the intent to minimize overall project costs AND construction duration. Staff will report back to Council with additional cost and planning considerations associated with this design, to recommend the highest value for money option for the balustrade replacement.

PURPOSE

The purpose of this report is to seek Council's approval and funds to accelerate the full replacement of the Dallas Road balustrade with a new, modern steel stanchion and wire cable design, consistent with the treatments along Ogden Point Breakwater and other waterfront pathway locations throughout Victoria.

This report seeks approval to continue advancing the detailed design to allow this work to be undertaken as early as 2019, only if cost and construction time savings can be realized in coordination with the early completion of the CRD Wastewater Treatment Project.

BACKGROUND

The CRD Wastewater Treatment Project construction is underway along the west side of Dallas Road. The sewage pipe construction also delivers a new cycle path, sidewalk, curb and parking between Dock Street and Lewis Street.

The balustrade provides a safety railing assembly along the concrete sea wall on Dallas Road between the Ogden Point breakwater and Lewis Street. The City's archival information indicates that the structure has been replaced a number of times at this location, with the latest structure erected nearly 70 years ago. The wall is not on the City's Heritage Register or part of any heritage inventory or formally identified as significant.

Recently, the City completed a four year restoration program on the vertical seawall along this section of Dallas Road, which introduced repairs and a new structural facing to the entire wall, and upgrades to the adjacent stairs and pathways. The balustrade had been slated as the final restoration works along this waterfront sidewalk, and was intended for design and completion in 2020, in conjunction with CRDs work along Dallas Road.

The 2019 financial plan allocated budget to complete the detailed balustrade design, which was to inform the 2020 budget cycle and project delivery. This section of the CRD project on Dallas Road has now advanced ahead of schedule. This new schedule has compelled the City to consider accelerating its own planning for design and replacement of the balustrade. The new project schedule presents an opportunity for the City to start or even complete railing replacement in 2019, which could potentially reduce overall project costs, remove any requirement to commence new and disruptive construction activities in 2020, and ensure a co-ordinated design and reduced disruption.

ISSUES & ANALYSIS

The balustrade is currently beyond the end of its useful service life, and requires significant repairs, replacement of sections, or full replacement. The concrete is delaminating and spalling and the steel reinforcement is actively corroding along the structure. Internal corrosion of the structural

steel can be seen along the balustrade surfaces with significant and pronounced rust stains, and degradation of concrete sections require replacement. Deterioration has progressed to a point where areas of the structure have been mechanically supported with steel strapping to secure panels to the piers, in order to maintain the guardrail safety. A previous condition assessment and structural analysis undertaken by consulting engineers from RJC (Read Jones Christofferson) indicated that the current assembly is unable to meet the required safety standards for guard loads, required for a parking area vehicle stop or for guard height and climb-ability and would need to be reengineered and redesigned given the extent and severity of the deterioration.

Any major rehabilitation of the current structure triggers a design review to ensure that any replacement meets current safety best practice. There are no specific code requirements for a balustrade system of this kind. However staff assess that current safety standards that align with the BC Building Code and Bridge Code, and transportation standards are all applicable guides. These standards require a railing of at least 1 metres. Recent waterfront railings built in the City, including Reeson Park and the Westsong Pathway have railing heights of 1.10m. The Johnson Street Bridge has a railing height of 1.10m on the Pedestrian Pathway and 1.40m on the multi-use deck, as it is along a bike pathway.

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 new design and configuration of this Dallas Road segment includes a separated vehicle and bike travel lanes, angled parking, bollards and sidewalk grade differential. 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. In this light, a more modern, pedestrian focussed, less obtrusive, and more visually appealing design is appropriate for the new configuration of Dallas Road.

OPTIONS & CONSIDERATIONS

Various refurbishment and replacement options have been assessed, as follows:

Option 1: Retention of the existing concrete structure with repairs and refurbishment

This option would require removal and replacement of damaged or spalled concrete and associated corroded steel reinforcing. This approach would increase the life of the balustrade by approximately 10-15 years but only so much could be done at significant cost to extend the life of the structure and complete replacement will eventually be required.

- a. **Costs:** An engineering consultant assessment completed in 2005 showed this to be the most expensive option at approximately 2.5 times the cost of replacement with a steel stanchion and horizontal wire balustrade. This option would also have the shortest lifespan and highest annual maintenance costs.
- b. **Safety:** The top railing panel is currently 0.83 metres above the mean grade of the sidewalk, which falls short of the minimum recommended height for railings of 1.10 metres.
- c. **Functionality and Aesthetics:** The existing pre-cast structure comprised of concrete railing panels and piers is bulky and requires more space than modern designs, which takes right-of-way from pedestrians. The design of the structure blocks views to the ocean.
- d. **Timelines:** The design, engineering and implementation of this option would be more time consuming than replacement, and would likely not be possible within the CRD project schedules, thereby imposing delays to overall construction timelines and additional costs to the City.

Option 2: Balustrade Replica Replacement (Pre-Cast Concrete)

This option would provide an approximate replica of the existing structure and would include the complete removal and replacement of the existing concrete structure.

- a. **Costs:** Previous engineering consultant estimates of a replacement with a similar precast concrete structure would cost approximately 1.5 times more than a steel replacement balustrade.
- b. **Safety:** It is recommended that a new concrete railing would be built to 1.10m to meet guard height requirements identified in the BC Building Code and CSA for pedestrians.
- c. **Functionality and Aesthetics:** A replica of the existing structure would continue to occupy a significant amount of sidewalk space, and limit views of the ocean and coast, along its path. The balustrade would also be ~20% higher than the existing structure to achieve safety standards.
- d. **Timelines:** This option would likely require additional complicated formwork and fabrication time to deliver a replica, which is assessed as not be probable within the CRD project schedules, resulting in additional construction and disruption to the City.

Option 3: Replacement of the balustrade with Steel Stanchion/Cable Design (**Recommended**)

- a. **Costs:** Detailed cost estimates are being developed for the design, removal, and replacement of the balustrade, and are currently estimated at over \$1 million for removal/replacement/fabrication/installation, not including contingencies. Hazmat and archaeological risks are being assessed and costed now. Costs will be compared to most recent railing installations, including Johnson Street Bridge and Reeson Park.
- b. **Safety:** This option meets recommended guard heights identified in the BC Building Code and CSA for pedestrians.
- c. **Functionality and Aesthetics:** This modern design would expand pedestrian realm by adding 0.5 metres of sidewalk space, when compared to the current design. This design aligns with aesthetics and materials used along city waterfront pathways, at the Johnson Street Bridge and West Songhees Walkway and at the adjacent Ogden Point. This design improves pedestrian and residential ocean and coastal views.
- d. **Timelines:** This option shows strong potential to be achieved within very short project timelines, if designs are completed in the coming weeks, to align with the CRD's new project schedules.



Ogden Point Breakwater



West Song Pathway



Johnson Street Bridge

Option 4: Continue to Maintain the Current Structure

- a. **Costs:** This is the least expensive near-term option, but likely the most expensive through-life option. There would be no immediate replacement or refurbishment costs, but ongoing maintenance would continue to increase. Deferral of major repairs to future years will likely add total ownership costs, due to market trends, inflation and material costs.
- b. **Safety:** Ongoing safety fixes would be required to maintain the current structure. Major repairs are required which would trigger more significant financial and planning investment starting in 2020, as described in above options.
- c. **Functionality and Aesthetics:** This option requires a significant amount of sidewalk space and blocks views of the ocean. Aesthetic performance of the current railing will continue to degrade.
- d. **Timelines:** Not applicable.

Option 5: Replacement with another railing design (not assessed).

Recommendation

Assessment of the above options suggests that a new railing system is the most favourable (Option 3), as it would more easily meet modern safety requirements, reduce through-life costs, and align with the aesthetic of the city's waterfront and public realm standards. Near term replacement also demonstrates a potential for cost savings and strong synergies with the current CRD projects to reduce the overall duration of construction activity.

This option does have uncertainties associated with risks of costs required to meet short project timelines, which must be defined and considered. Staff will continue to assess best value for money designs, engineering methodology and construction plans, and will report back to Council with final recommendations and cost details, for either a 2019 or 2020 construction commencement. In the event that short project design and implementation timelines add costs that outweigh the benefits, staff will maintain the option to defer to original 2020 timelines, in order to achieve the highest value for money option available to the City.

Impacts to Financial Plan

The design, replacement and installation of the new railing will represent a significant cost given the scope and complexity of the project. In addition, lead paint must be carefully managed when removing and disposing of the existing balustrade and could represent an additional significant project cost which detailed design and planning will establish.

Value Engineering and Cost Savings: The condensed planning timelines and lack of permissions means that detailed and comprehensive construction estimates for the replacement of the balustrade have yet to be completed. Staff will undertake additional value engineering on the detailed design and fabrication of the replacement balustrade and pursue competitive pricing in order to reduce overall project costs while seeking to take full opportunity of aligning the replacement of the balustrade with the Fall 2019 CRD project timelines. If in the course of this project, the City determines that the project costs for a 2019 completion exceed the potential savings from a 2020 completion, the City will defer completion of the balustrade to a later date to ensure the highest possible value for money.

Continued advancement of this project will require an amendment to the 2019 Financial Plan by adding \$150,000 funded from the Buildings and Infrastructure Reserve to support detailed project planning and design work. If detailed project design and market responses indicate that the least risks and highest value would be achieved via a deferred construction timeline staff would report back to council with updated delivery strategies.

The request for construction funding would be brought to Council once the planning and design work is complete.

Accessibility Statement

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

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.

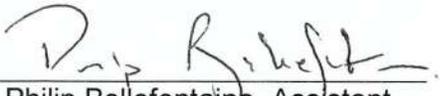
and Section 11: Infrastructure:

11.5 Coordinate with Capital Regional District plans and works undertaken.

CONCLUSIONS

Completion of the CRD Wastewater Treatment project is ahead of schedule, and provides an opportunity for early completion of Dallas Road balustrade replacement, even as early as 2019. Staff recommend replacement with a new, modern steel stanchion and wire cable consistent with the treatments along Ogden Point Breakwater and other pathways along the waterfront in the downtown and elsewhere. A new railing design will improve the public realm, pedestrian safety and coincide with the CRD advanced project schedules, and remove the requirement for additional, disruptive and costly project construction, unless approvals are gained to accelerate project schedules. Staff are able to quickly advance detailed design and planning activities, and will report back with additional information pertaining to project cost and planning considerations, to support earliest completion and reduced construction costs and disruption.

Respectfully submitted,



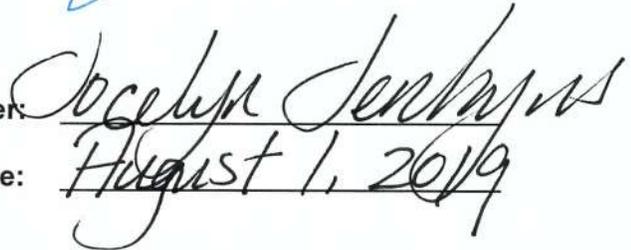
Philip Bellefontaine, Assistant
Director - Transportation



Fraser Work, Director
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Report accepted and recommended by the City Manager:

Date:



August 1, 2019