



MORRISON HERSHFIELD

December 23, 2023

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Dear Allen:

Re: Metro Vancouver Solid Waste Management Plan – Concrete and Asphalt Recycling Opportunities Review

Morrison Hershfield (MH) submitted a Proposal on February 16, 2023, in response to REQUEST FOR PROPOSAL (RFP) No. 23-013 Consulting Services for Solid Waste Management Plan Update. The contract between MH and Metro Vancouver was finalized on April 24, 2023, and includes a revised project budget dated March 16, 2023.

It is understood that the scope of the technical work is evolving to meet Metro Vancouver's needs and to address considerations emerging from the engagement work. MH and Metro Vancouver have agreed that MH will develop proposals for distinct pieces of work for Metro Vancouver's consideration / approval.

This proposal is developed based on a request from Metro Vancouver for a review of concrete and asphalt recycling opportunities. The request was formalized in an email on November 15, 2023.

Background

As part of updating Metro Vancouver's solid waste management plan, Metro Vancouver has identified the need to review opportunities and challenges for concrete and asphalt recycling.

The 2011 Integrated Solid Waste and Resource Management Plan, strategy 2.4 states that "the DLC sector has very high recycling rates due to high levels of concrete and asphalt recycling." Metro Vancouver estimates that 1.16 million tonnes of asphalt and concrete were recycled in the region in 2021. The recycled concrete and asphalt made up almost 50% of all recycled material in 2021 which highlights an opportunity for innovative solutions for recycling of a material stream that is in steady supply.

Production of concrete and asphalt is an energy-intensive process. Hence, recycling the materials can result in significant financial and environmental benefits through avoided greenhouse gas emissions, minimized landfill consumption, and offsetting the need for use of virgin materials.

Metro Vancouver is looking to identify and assess potential new opportunities for concrete and asphalt recycling in support of efforts to maximize waste diversion and development of the new solid waste management plan. In evaluating new opportunities for recycled aggregate concrete (RAC) and recycled asphalt pavement (RAP), Metro Vancouver has noted the importance of identifying current best practices and leading-edge examples, the financial and environmental

business case for each opportunity, and related risks. Metro Vancouver has also noted the importance of identifying opportunities and options to reduce barriers for increased diversion and recycling of concrete and asphalt in the region.

Scope of Work

The following outline describes Tasks 1-8 requested by Metro Vancouver relating to concrete and asphalt recycling opportunities. The tasks include:

- Task 1: Scope Development
- Task 2: Literature Review: Local Regulatory & Contractual Framework
- Task 3: Review Current Status of Concrete and Asphalt Recycling in Metro Vancouver
- Task 4: Identify Best Practices & Experience in Other Jurisdictions
- Task 5: Workshop on Opportunities Identified
- Task 6: Develop a Business Case for Identified Opportunities
- Task 7: Communication and Reporting
- Task 8: Project Management

The tasks are outlined in detail below. One of the tasks involves interviews and another involves a workshop. Time has been assumed to develop, coordinate, undertake, transcribe, analyze, and report on these.

A table of contents for the reporting template will be developed at the outset of the work. This will be done in collaboration with Metro Vancouver staff. The findings under each task described below will be added to the reporting template and issued to Metro Vancouver for review for each reporting update. We have assumed that two iterations of each reporting stage will be required.

Task 1 – Scope Development

MH will prepare a short PowerPoint presentation and present the draft scope of work and approach for developing the scope to four stakeholder groups. During these presentations, MH will look for feedback in the following three areas:

1. What's important to your organization when considering new opportunities and current challenges for concrete and asphalt recycling?
2. What data do you have access to that can inform this project?
3. Are there specific applications of concrete and asphalt recycling that we should consider?

Stakeholder Presentations:

- Regional Engineers Advisory Committee Solid Waste Subcommittee (REAC-SW)
- Solid Waste Management Public / Technical Advisory Committee (PTAC)
- Solid Waste and Recycling Industry Advisory Committee (IAC)
- Regional Engineers Advisory Committee (REAC)

We assume that Metro Vancouver will take formal notes during the committee meetings. MH will take informal meeting notes on stakeholder feedback and these notes will be reviewed to inform the development of the following tasks. MH will also allow stakeholders to provide written feedback on the scope for a duration of five (5) working days after each meeting. Any necessary changes to the scope of work will be made accordingly and the final scope of work will be sent to Metro Vancouver for approval.

Task 2 – Literature Review: Local Regulatory & Contractual Framework

MH will conduct a comprehensive literature review of the local regulatory and contractual frameworks and best practices and experiences in other jurisdictions, with particular focus on those, who track and publish the quantity of recycled material used in road construction or project development. For this, MH will:

1. Review the regulatory and contractual framework of all member municipalities and, for each:
 - Identify gaps in the frameworks such as local bylaws, MMCD design guidelines, design handbooks, member jurisdiction subdivision servicing guidelines, Transportation Association of Canada (TAC) Best Practices Guide, and Ministry of Transportation (MOT) Standard Specifications for Highway Construction.
 - Identify opportunities and challenges for expanded and accepted concrete and asphalt recycling within each member municipality.
2. Research and identify best practices globally for concrete and asphalt waste management and recycling to understand opportunities and barriers. To do this, MH will:
 - Conduct a literature review on four to five regional districts that have implemented concrete and asphalt recycling plans incorporating the use of concrete and asphalt in road construction and project development. This will encompass an examination of initiatives both within Canada and internationally.

MH will include the findings in the report template and issue to Metro Vancouver for review and comment.

Task 3 - Review Current Status of Concrete and Asphalt Recycling in Metro Vancouver

MH will analyze the current status of existing management practices for concrete and asphalt recycling within Metro Vancouver to obtain a comprehensive understanding of the existing practices. MH will:

1. Review of reference documents, current policies, and the region's waste quantities to define the current status of concrete and asphalt recycling and to establish a baseline. In this review, MH will identify:
 - Challenges, opportunities, and current gaps.
2. MH will interview up to 20 interested parties. This may include leading experts such as: the BC Roadbuilders and Heavy Construction Association; member jurisdiction staff; processors; equipment suppliers; construction contractors; consultants; and leading jurisdictions. We envision one interview per interested party to complete Task 3. MH will develop a list of contacts for Metro Vancouver's review, comment, and approval prior to starting the interview process. We will arrange and conduct interviews with interested parties.

MH will include the findings in the report template and issue to Metro Vancouver for review and comment.

Task 4 – Identify Best Practices & Experience in Other Jurisdictions

MH will conduct a comprehensive review of the best practices and experiences in other jurisdictions, with particular focus on those, if any, who track and publish the quantity of recycled material used in road construction or project development. For this, MH will:

1. Assess applicability by looking into benefits, drawbacks, and challenges of identified best practices. To do this,
 - MH will connect with MH internal structural, geotechnical and transportation engineering departments for further insight of the uses in concrete and asphalt recycling.
2. Using information collected in Task 2 and Task 3, assess current practices in Metro Vancouver that were identified in Task 3 to determine ways that they can be improved, if possible. Identify specific ideas that could be implemented in Metro Vancouver.
3. Compile a list of possible opportunities to be considered based on research done in Tasks 2-4 to be presented at the workshop.

MH will include the findings in the report template and issue to Metro Vancouver for review and comment.

Task 5 – Workshop on Opportunities Identified

MH and Engage Delaney will conduct a workshop to present and review the opportunities, preliminary business case, that have been identified in Tasks 2-4 and discuss how these may be used in the Metro Vancouver region. The purpose of this workshop is to identify which opportunities are feasible, what barriers/challenges are present, and how to overcome those. This may also include new opportunities being identified through discussion. By discussing these opportunities, this workshop will also play a role in helping generate conversation around understanding that recycled concrete and asphalt, in certain applications, is an acceptable material for construction. MH will partner with Engage Delaney to plan and conduct the workshop. For this, MH and Engage Delaney will:

1. Identify and invite, with Metro Vancouver, a list of participants. This will include a maximum of 40-50 representatives from industry, committees, and member municipalities.
2. Develop a 2-page summary document outlining the findings in Tasks 2-4. This will be sent out one week in advance to all participants. The purpose of this document is to ensure all participants enter the workshop with background knowledge and have time to process the information beforehand. This will equip them to better participate in the workshop.
3. Develop a short PowerPoint presentation on the findings in Tasks 2-4. This will be used to open the workshop.
4. Develop a workshop agenda. This will be sent to Metro Vancouver in advance for approval.
5. Facilitate the workshop. This is expected to be 2 hours and we anticipate it will include:
 - A 20-minute presentation.
 - A question period following the presentation.

- A facilitated discussion among participants to work through questions and/or problems together, with the goal of identifying which opportunities are feasible in Metro Vancouver.
6. Compile a final list of opportunities based on data collected in Tasks 2-4 and in the workshop. This may include new opportunities and enhancing current practices.

MH will include the findings in the report template and issue to Metro Vancouver for review and comment.

Task 6 – Develop a Business Case for Identified Opportunities

MH will develop a business case for concrete and asphalt recycling in Metro Vancouver. We anticipate no more than five opportunities will be assessed. To do this, MH will:

1. Assess the financial and environmental impacts of concrete and asphalt recycling for each opportunity identified in the memo from Task 5. This may, for example, include financial benefits of using recycled instead of virgin materials and offsetting greenhouse gas emissions.
2. Assess the risks of concrete and asphalt recycling for each opportunity identified in the memo from Task 5. This will include identifying the level of risk for each opportunity. For high-risk opportunities, potential mitigation strategies will be included.
3. Develop a business case for concrete and asphalt recycling based on the findings from steps 1 and 2 of Task 6 that may include:
 - Identifying opportunities for Metro Vancouver to work with member municipalities and applicable bylaws and strategies for each opportunity.
 - A list of opportunities that may enhance current practices.

Task 7 – Communication and Reporting

MH will develop a final report including all findings and recommendations following the completion of Task 6. The final report will also include an executive summary and appendices (as needed). The communication and reporting task includes four (4) in-person presentations for the stakeholder groups on the findings from all tasks. The stakeholder groups include:

- Regional Engineers Advisory Committee Solid Waste Subcommittee (REAC-SW)
- Solid Waste Management Public / Technical Advisory Committee (PTAC)
- Solid Waste and Recycling Industry Advisory Committee (IAC)
- Regional Engineers Advisory Committee (REAC)

Task 8 – Project Management

Following the scope development meetings (Task 1), MH will coordinate bi-weekly meetings with Metro Vancouver staff during the study and these will act as check-in periods.

The project management task will be undertaken throughout the completion of the technical work and will include: