



Manitoba's Climate & Green Plan
Construction, Renovation & Demolition Waste Task Force – Towards a circular economy

PROPOSAL

It is proposed that Manitoba, the Winnipeg Metropolitan Region (WMR) and the Manitoba Heavy Construction Association (MHCA), partner to facilitate the development of a consistent direction for the diversion of construction, renovation and demolition (CRD) waste materials that could be used to support a provincial public policy which addresses the management and recycling of CRD waste by provincial and municipal authorities, and the private sector.

This initiative would further develop Manitoba's recycling policy framework and inform its comprehensive review of waste management and recycling in the province launched in January 2021, as well as support the move toward a circular economy.

In addition to generating new economic opportunities, its benefits will include diverting CRD materials from the waste stream; preservation of finite natural resources; and reduction of GHG emissions.

These objectives align with the WMR's Plan20-50 which will establish a regional approach supporting waste minimization, diversion and recycling, and are consistent with Manitoba's Climate & Green Plan, the objectives of which include making Manitoba Canada's cleanest, greenest, and most climate-resilient province.

TASK FORCE

It is submitted that Manitoba, WMR and MHCA jointly name a volunteer task force to develop recommendations for a provincial legislative and regulatory framework which mandates, guides, supports and encourages the recycling of CRD waste in public and private procurement practices - *see attached background*.

Areas for its consideration include:

- Recycling of CRD waste as part of a sustainable resource-management principle in procurement by the provincial and municipal governments, Crown corporations, public bodies and agencies;
- Legislative and regulatory direction to promote the inclusion of CRD recycling targets in provincial and municipal procurement, regional plans, municipal development plans, and municipal bylaws, development agreements and permits;
- Align financial incentives: User fees and charges to encourage waste reduction and diversion, such as through differential tipping fees or virgin materials levies;
- Limit materials disposed, through waste disposal or transportation restrictions;
- Increase the resource efficiency of construction, renovation and demolition activities, such as through building certification and deconstruction standards; and
- Linking the above towards a more circular economy and encouraging new market opportunities.

CHAIR, MEMBERSHIP, RESEARCH & TIME FRAME

Manitoba, WMR and MHCA select the chair and volunteers from key stakeholders including WMR, AMM, MHCA, MEIA and WCA. Manitoba's support would include designating a Deputy Minister for direct government liaison and senior policy analyst to conduct related research and writing. Affected provincial departments will name representatives to participate on the task force. Decisions shall be consensus driven. The task force will be requested to submit its report to Manitoba within nine months of its first meeting.

Respectfully submitted,

Winnipeg Metropolitan Region (WMR)



Per:

Colleen Sklar
Executive Director

Manitoba Heavy Construction Association (MHCA)



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President

May 17, 2021

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BACKGROUND

The construction, renovation and demolition (CRD) sector is one of the largest resource consumers and waste producers in society, using up to 40% of the total raw materials extracted globally and generating about 35% of the world's waste¹.

The recycling and reprocessing of CRD waste materials is therefore a rapidly developing area of global public policy, as governments work to divert waste from landfills, reduce GHG emissions and therefore their carbon footprints.

Discussion

Internationally, in response to various pressures, including finite or scarce natural resources, and the need to reduce the carbon footprint, sustainable waste-management strategies have become a priority:

- The EU in 2008 set a target for average 70% recycling rate by 2020²;
 - Belgium, Switzerland and Austria reached the 70% target in 2013;
 - Some EU jurisdictions had a 90% average recycling rate in 2010; The Netherlands reached 97% recycled rate in 2018;
- In the United States, in 2018, almost 456 million tons of construction and demolition waste was recycled, the bulk of which was concrete (334 million)³; and
- Japan passed its Construction Waste Act (2000), mandating recycling of concrete and wood. More than 93% of regulated construction waste (98% asphalt concrete) is recycled.⁴

The recycling rate of CRD materials in Canada is just 16%⁵. However, some jurisdictions have moved to adopt policies and practices for reclaiming and reusing construction and demolition waste such as reclaimed asphalt pavement (RAP) and recycled concrete aggregates (RCA).⁶

Edmonton, for example, has used RCA since 1978, having developed an aggressive policy for recycling waste construction materials. The city actively encourages households to bring concrete removed during construction or renovations to its civic construction-materials recycling plant. In the past three years, Edmonton has produced a total of 642,753 tonnes of recycled aggregate, used mainly for all the road base construction on city projects.

In Manitoba, recycling of construction materials is minimal and largely the result of industry initiative in business development and environmental stewardship. For example, the use of recycled concrete aggregate on public works projects – primarily within the City of Winnipeg which influenced practices and design specifications within the Capital Region – was introduced in the late 1990s by the heavy construction industry. It saw value in re-processing

¹ Deloitte (2017) Study on Resource Efficient Use of Mixed Wastes, Improving management of construction and demolition waste – Final Report. Prepared for the European Commission, DG ENV.

² https://link.springer.com/chapter/10.1007/978-3-319-66981-6_24, Designing Sustainable Technologies, Products and Policies, (pp. 211-221)

³ https://www.epa.gov/sites/production/files/2021-01/documents/2018_ff_fact_sheet_dec_2020_fnl_508.pdf U.S. Environmental Protection Agency, Office of Land and Emergency Management, December 2020

⁴ <https://www.env.go.jp/en/recycle/smcs/attach/hcswm.pdf> Ministry of the Environment Minister's Secretariat, Waste Management and Recycling Department, 2014

⁵ https://www.ccme.ca/files/Resources/waste/wst_mgmt/CRD%20Guidance%20-%20secured.pdf, 2019, CCME Guide for identifying, evaluating and selecting policies for influencing construction, renovation and demolition waste management

⁶ *Reclaimed asphalt pavement (RAP)* refers to removed and/or reprocessed pavement materials containing asphalt and aggregates generated when asphalt pavements are removed for reconstruction or resurfacing. Milled or crushed RAP can be used in several highway construction applications including as aggregate substitute and asphalt cement supplement in recycled asphalt paving (hot mix or cold mix); as a granular base or subbase, stabilized base aggregate; or as an embankment or fill material. *Recycled concrete aggregates (RCA)* refers to the use of rubble from demolished concrete structures including roads, structures and buildings. Properly crushed rubble can be recycled in applications including road base material gravel, retaining walls, landscaping gravel or raw materials for new concrete

and repurposing the base and sub-base materials (aggregates) torn up in street rehab and reconstruction projects. Similarly, the recycling of asphalt, including asphalt shingles, has been industry led.

The City of Winnipeg permits (Specification CW 3410-R12) 10% of recycled asphalt product in pavement and 3% of “RAS” – the end-product of re-processed asphalt shingles.

Since the late 1990s, RCAs have been used within City of Winnipeg street renewal program. However, as of 2020 the City of Winnipeg Public Works department has applied new road-building specifications (CW3110-21) with new requirements for road base and sub-base, significantly limiting the opportunity to use recycled aggregate materials. (The heavy construction, development and engineering sectors are discussing these challenges with the City, at present.)

Of significant import, the WMR is leading a review of waste mitigation and reduction strategies for the capital region. The WMR, along with its partners from the Centre for Indigenous Environmental Resource (CIER), are facilitating discussions between municipalities and First Nation communities of the Capital Region through its Waste Quadrant Working Group (WQWG) initiative. The WQWGs provide the forum to discuss common waste management issues and work toward collaborative solutions. The WQWG have identified CRD waste management as a common issue and members are looking for solutions for its diversion.

The reuse of RCAs is a pressing concern and presents an immediate economic opportunity. It is estimated that hundreds of thousands of tonnes of rubblized concrete is pulled up from public and private-sector infrastructure works in Winnipeg and the immediate Capital Region annually. Absent is a progressive public policy that mandates and supports the use of RCAs; their diversion to landfills grossly conflicts with sustainable finite resource management.

A sub-industry has grown up around the production of RCA, drawing investment from within the industry and, thereby, jobs for Manitobans. Further, importantly, the recycling and reuse is an issue of environmental stewardship.

Use of Recycled Concrete Aggregates (RCA) (and by extension Recycled Asphalt Pavement (RAP)):

- Avoids land impacts by reducing mining of virgin aggregates (i.e., limestone) from pits and quarries, extending their useful life. Manitoba produces approximately 20 million tonnes of aggregates annually⁷; although the survey is dated, the Capital Region is forecasted to face shortages by 2035 as aggregate reserves are depleted⁸;
- Reduces energy consumption required to produce and transport virgin aggregates to construction sites, reducing carbon footprint and GHG emissions⁹;
- Reduces the tonnage of waste directed to landfill and the associated impacts and costs;
- Allows salvaged metals to be recovered, sold and reused;
- Reduces the overall carbon footprint of public and private infrastructure works; and
- The RCA production process is environmentally safe, as it uses no chemicals or toxic materials.

To its credit, the WMR is leading a review of waste mitigation and reduction strategies for the capital region.

⁷ 2019 <https://mmsd.nrcan-rncan.gc.ca/prod-prod/ann-ann-eng.aspx>

⁸ <https://www.manitoba.ca/iem/info/libmin/OF77-4.pdf>, Aggregate Resources of the Winnipeg Region, UMA, 1976

⁹ *We can't afford to make gravel travel*. If each 30-tonne truck had to travel an additional 150 kilometres (round-trip), it would create an additional 110,000 tonnes of greenhouse gas emissions (CO₂) annually, or the equivalent of putting another 23,000 cars on the road. As well, there would be the additional wear and tear on vehicles – fuel consumption, engine maintenance, fluids and oils, brakes, tires, – and on our highways which would deteriorate faster. Each add unnecessary costs that we all pay for.

Manitoba Infrastructure (MI) employs a different approach to “reuse” in that its highway projects use rubblizers to break and compact the concrete road base, which is left in place and then resurfaced. From 2017-20, approximately 884,000 m² of rubblized concrete pavement was used.

MI permits the use of recycled asphalt pavement but not recycled asphalt shingles in road construction works.

Potential for Recycling of CRDs

Recycling cement from demolished concrete construction materials – from both the horizontal and vertical sectors of the industry – for use in infrastructure projects is practiced in many countries, including with mandates embedded in legislation by national and sub-national governments (see above examples).

Dr. Asia Shvarzman, a University of Manitoba Adjunct Professor of Civil Engineering and lead professor of Engineering and lead of research and innovation at Antex Western/ACM Technologies, notes:

- Recycled glass is used in road-building projects in some provinces, including Ontario and Quebec; glass powder replaces 30-40% of cementitious materials in the production of concrete;
- Recycled plastic is in development around the world as a road-building material, but still in early stages;
- Old carpets are a potential road-building material, in use in the U.S., including in North Dakota.

The successful uptake of CRD waste recycling has occurred in jurisdictions that have adopted a public policy framework that promotes sustainable practices through mandated recycling thresholds, construction specifications and incentives – i.e., landfill tipping fees, tax credits – in an approach toward a “circular economy.”

A circular economy to which Manitoba aspires, is defined in summary as an economic system which supports eliminating waste and the continued use (recycled) of resources to create a closed-loop system.

A circular economy aims to move away from a linear economy focused on the consumption of resources towards a system that designs waste out of the system, keeps products and materials in use, while regenerating natural systems. This minimizes use of finite natural resources, the creation of waste, pollution and carbon emissions. Products used for longer period improve productivity of these resources.

Achieving sustainable resource use and ensuring that the flows of materials are managed in an efficient way through the economic system is critical, not only from an environmental perspective but also from an economic and trade perspective. It helps improve resource productivity, achieve efficiency gains and secure adequate supplies of material resources to the economy, while at the same time limiting the adverse environmental impacts associated with their extraction, processing, use and disposal¹⁰.

¹⁰ <https://www.oecd.org/environment/indicators-modelling-outlooks/MFA-Guide.pdf>, Measuring Materials Flow and Resource Productivity, Volume 1, OECD, 2008