2026 Ontario Paving Report

Published August-2026

Amin Mneina, MSc., P.Eng.
Senior Specialist, Technical Programs & Research, Good Roads

James Smith, PhD.
Manager, Technical Programs & Research, Good Roads

Everything roads
since 1894.

Good Roads

Table of Contents

Section 1.0
Background

1.1 Message from stakeholders

Good Roads recognized the need to obtain accurate and current data on paving practices, trends, and quantities of materials used in municipal asphalt paving to be able to better monitor and assess the impact of current practices and specifications on the consumption of paving materials, including RAP. This report captures the dedicated collaboration among stakeholders in the road and infrastructure sector. The initiative leading to this report started in 2019 with RAP quantity estimation from satellite images by Good Roads, then evolved to be an ongoing study by Good Roads **GR**, with support from the Ontario Asphalt Pavement Council (**OAPC** – a Council of Ontario Road Builders' Association, **ORBA**), and the Municipal Engineers Association (**MEA**), to highlight RAP and paving metrics and quantities, and to identify best practices of RAP stockpiling in Ontario. In this report, Ontario is divided into four geographical zones (Northern, Southeast, Southwest, and Central) as presented in **Figure 1**.

1.2 Report Objectives

- Report annual municipal HMA paving tonnage to facilitate strategic planning.
- Document material availability of RAP compared to municipal paving needs across Ontario.
- Document the historical background of RAP use in Ontario.
- Report vital metrics on RAP stockpiling inventory in Ontario.
- Present an Ontario state of the practice on municipal paving.
- Synthesize information on best practices for RAP processing, stockpile management and identify the most relevant documents for further details.

1.3 History of RAP in Ontario

The earliest efforts in recycling asphalt concrete into new pavement constructions consisted of pulverizing existing pavements to use in new subbase layers. Earliest records of this recycling practice date back to the 1960s in Nevada and Ontario, and 1975 in Texas (Clark et al., 1978; McLuckie et al., 1987). Since then, the use of recycled hot mix asphalt has gained widespread acceptance in the infrastructure industry in North America. In 1979, the Ministry of Transportation Ontario (MTO) implemented its first efforts to adopt recycled hot mix asphalt as a standard pavement recycling alternative (McLuckie et al., 1987). The rapidly increasing prices of crude oils in the 1970s were the main driving force behind reusing the existing asphalt binder in aged flexible pavements

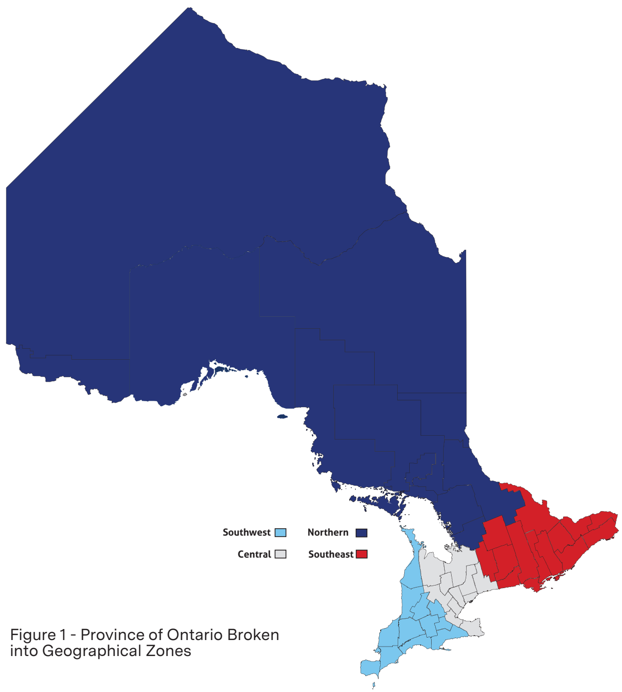

Figure 1 - Province of Ontario Broken into Geographical Zones

Good Roads

(Copeland, 2011). According to The Ontario Aggregate Resource Corporation (2014), approximately 153 million tonnes of aggregates are produced each year in Ontario, out of which 50% is used in the maintenance and construction of infrastructure in Ontario. This gives RAP the potential to be a significant contributor to aggregate sustainability. In addition to saving valuable diminishing aggregate resources, using RAP in infrastructure contributes to the following:

- Recovering non-renewable petrochemical resources
- Reducing road building costs
- Diverting a large amount of solid waste from landfills
- Reducing greenhouse gas emissions

1.4 Municipal Paving Forecast Survey

The Municipal Paving Forecast is a longstanding initiative spearheaded by Good Roads with the first round of the Forecast going back to[JS2.1] 2016. Working in partnership with the Ontario Asphalt Pavement Council (**OAPC** – a Council of Ontario Road Builders' Association, **ORBA**) through the GR/OAPC Municipal HMA Liaison Committee. The survey collects information from Municipalities on projected paving tonnage, RAP usage, and other road building practice matters. The results of the survey are subjected to thorough scrutiny, ensuring reliability and precision in the data collected. Through this collaborative effort, the Municipal Paving Forecast serves as a vital resource for informed decision-making and strategic planning in Ontario's municipal road construction and maintenance.

1.5 Ontario RAP Survey

The Ontario RAP Survey initiative started in 2019, where Good Roads conducted a study on RAP quantity estimation using satellite images, which was published in the 2019 TAC Conference proceedings. The initiative then gained momentum and evolved to be a collaboration study between Good Roads **GR**, and the Ontario Asphalt Pavement Council (**OAPC** – a Council of Ontario Road Builders' Association, **ORBA**) to produce current and historical spatial data on RAP stockpile quantities in Ontario. Starting in 2025, Concrete Ontario joined the collaborative effort to include quantification of Recycled Concrete Aggregates (RCA).

Section 2.0

Paving Materials Utilization (Quantitative Analysis)

2.1 Hot Mix Asphalt (HMA)

This section will discuss the trends in HMA production quantities, locations, and municipal paving consumption of HMA.

2.1.1 Total Produced HMA

Table 1 presents a reported summary of the HMA production facilities locations and their annual production in the past years. No data was collected on HMA production quantities for 2025.

2.1.2 Consumed HMA in Municipal Paving

Based on survey responses from 62 municipalities, 2.86M tonnes of HMA is estimated to be used in municipal paving projects for the 2026 construction season. A summary of the HMA paving quantities per year is presented in Table 2 and Figure 3. The quantities are summarized as per geographical zones. It is noted that the Central Zone typically accounts for most of the municipal paving tonnage, with an average annual share of 54% of the total municipal HMA tonnage.

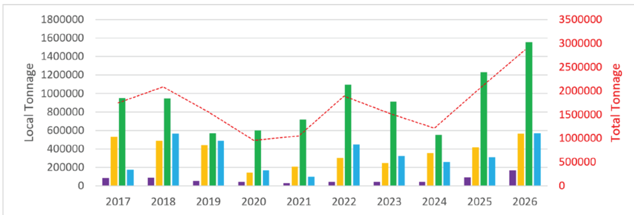

Figure 3 - Annual Reported Municipal HMA Paving Tonnage

Total HMA Production (Tonnes)

Year	Facilities	North	SouthWest	Central	SouthEast	TOTAL
2022	72	459,756 (8%)	1,100,611 (19%)	3,781,868 (66%)	648,700 (11%)	5,690,935
2023	94	171,000 (2%)	1,222,444 (17%)	4,840,826 (66%)	1,110,881 (15%)	7,345,151
2024	109	Data not collected	Data not collected	Data not collected	Data not collected	Data not collected
2025	N/A	Data not collected	Data not collected	Data not collected	Data not collected	Data not collected

Table 1 - Total HMA Production Tonnage in Ontario

Municipal HMA Paving (Tonnes)

Year	Municipalities	North	SouthWest	Central	SouthEast	TOTAL
2017	54	87400 (5%)	531289 (30%)	952400 (55%)	174836 (10%)	1, 745, 925
2018	44	90300 (4%)	487810 (23%)	944905 (45%)	564807 (27%)	2,087,822
2019	58	54446 (4%)	443525 (29%)	569815 (37%)	486765 (31%)	1,554,551
2020	40	44925 (5%)	143680 (15%)	601915 (63%)	169341 (18%)	959,861
2021	43	30100 (3%)	207988 (20%)	718399 (68%)	97453 (9%)	1,053,940
2022	57	44150 (2%)	303530 (16%)	1097509 (58%)	448105 (24%)	1,893,294
2023	64	43010 (3%)	246377 (16%)	913288 (60%)	323486 (21%)	1,526,161
2024	54	45307 (4%)	357245 (29%)	553773 (46%)	260018 (20%)	1,216,343
2025	77	93,270 (5%)	416,269 (20%)	1,231,314 (60%)	311,694 (15%)	2,052,547
2026	62	169,725 (6%)	564,894 (20%)	1,556,182 (54%)	570,256 (20%)	2,861,057

Table 2 - Municipal Hot-Mix Paving Quantities in Ontario

Good Roads

Through an extrapolation from the Municipal Paving Forecast data 2017-2021, it was estimated that Ontario municipalities pave between 4.9M and 5.2M tonnes of HMA in any given year. These estimates counter the popular opinion that MTO is the largest user of HMA at 2.5-3M tonnes/year.

The distributions of HMA tonnage per lane kilometre and paving tonnes per capita are presented in **Figure 4** and **Figure 5**. The Paving Tonnage / Lane Km and Paving Tonnage / Capita metrics provide insights into municipal road maintenance practices and available funding levels. Higher HMA tonnage per lane kilometre may indicate a greater intensity of resurfacing activity or heavier road usage demands. In contrast, higher paving tonnes per capita can reflect a municipality's lower ability to fund paving works through local resources. Together, these metrics can help characterize differences in infrastructure investment strategies across municipalities. Moreover, **Figure-6** presents the Lane km per 1,000 population against the HMA paving tonnage which shows an interesting angle. Smaller population municipalities maintain up to 80 lane km per 1,000 residents versus just 6 (lane km / 1,000 residents) for larger municipalities. Indicating that small and rural municipalities might be managing far more road kilometres per person with far less capacity, which flags an equity/ underfunding potential.

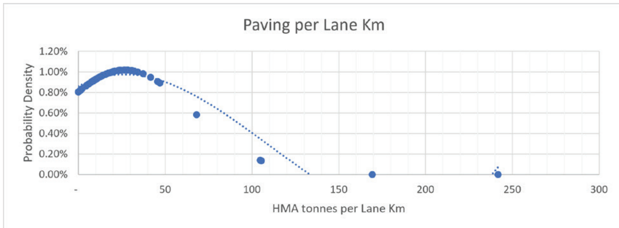

Figure 4 - Statistical Distribution of the HMA Tonnage per Lane Km

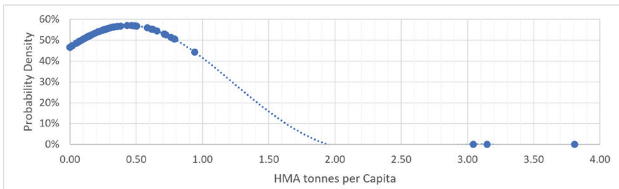

Figure 5 - Statistical Distribution of the Paving Tonnage per Capita

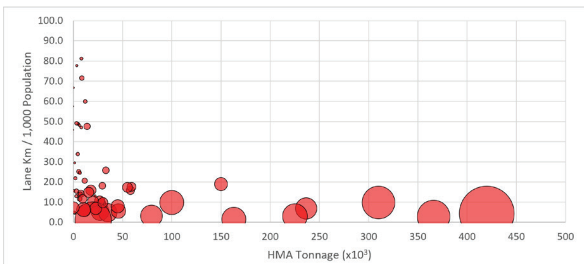

Figure 6 - Effect of network size per population on paving tonnage (Bubble size = population size)

2.2 Reclaimed Asphalt Pavement (RAP) and Recycled Concrete Aggregates (RCA)

2.2.1 Total Available RAP

Table 3 presents a summary of facilities containing RAP in each geographical zone and their total reported unprocessed RAP inventory per year. The RAP quantities in the table do not include RAP that is stockpiled in municipal facilities. It was found that RAP stockpiles in municipal facilities represented only 5% of the total inventory, and therefore, it was not included in the study scope. Notably, satellite imagery was used to investigate 16 of the 109 facilities to estimate RAP and RCA stockpile quantities as per Mneina & Smith, 2019 methodology.
In this study, the quantification effort was expanded to include processed RAP. A total of 802,384 tonnes of processed RAP were recorded, representing 22% of the 3.7 million tonnes of total RAP, which consists of both processed and unprocessed materials. The availability of crushed RAP varies across geographic zones, with the Central zone having the highest proportion at 29% of its total RAP inventory. In comparison, the North, Southwest, and Southeast zones reported crushed RAP at 1%, 2%, and 10% of their respective total RAP inventories.

RAP Inventory in Ontario (Tonnes)

Year	Facilities	North	SouthWest	Central	SouthEast	TOTAL
2019	57	868,418	263,007	1,901,174	1,280,015	**4,312,614**
2020	39	299,000	287,296	1,434,510	260,000	**2,280,806**
2021	60	27,500	370,269	1,815,253	739,899	**2,952,920**
2022	72	229,993	413,435	1,839,396	791,342	**3,274,166**
2023	94	245,000	684,177	1,909,738	836,061	**3,606,461**
2024	109	366,570 (13%)	**157,915** (4%)	**1,787,544** (48%)	**603,242** (16%)	**2,915,270**
2025	N/A	Data not collected	Data not collected	Data not collected	Data not collected	Data not collected

Table 3 - RAP Inventory in Ontario as Reported in the Ontario RAP Survey

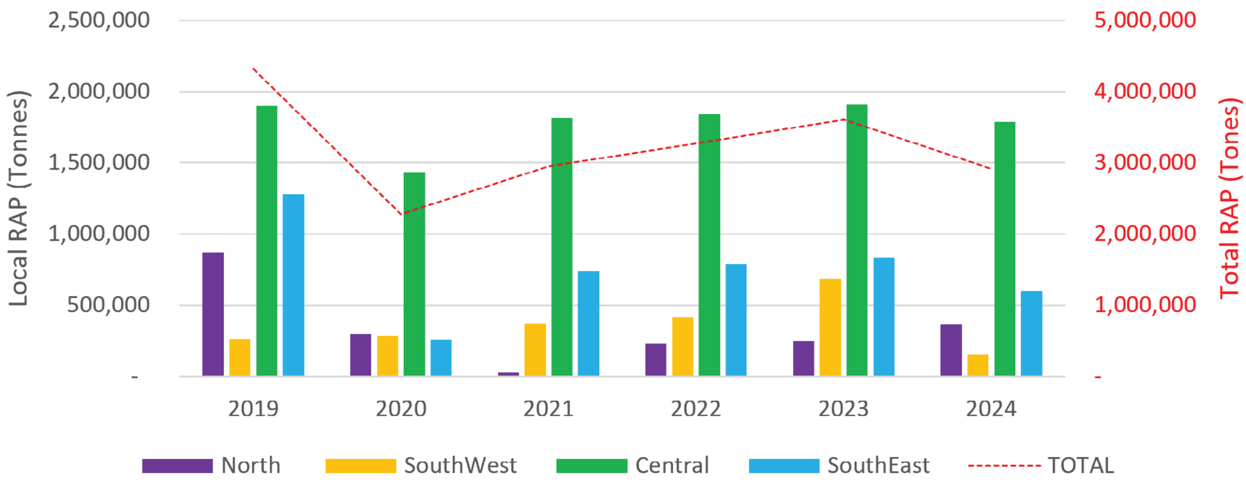

Figure 7 - Annual Reported RAP Quantities

2.2.2 Total Available RCA

RCA (return concrete and demolition RCA) quantities were collected as part of the Ontario RAP survey. 109 facilities were included in the scope, encompassing HMA production, ready mix plants, and aggregate quarries. A total of 2,942,033 Tonnes of RCA were reported, 69% of which is demolition RCA and the remaining 31% comprises of returned concrete.

2.2.3 Consumed RAP in Municipal Paving

The availability of local information on RAP available quantities and consumption practices is a key resource for the continuous improvement in recycled materials strategies. Year over year, there has been a noticeable uptake in RAP usage in municipal works. However, 2026 recorded the highest tonnage of consumed RAP in municipal paving works.

Municipal RAP consumption was estimated using the Municipal Paving survey results and simplified calculations/ assumptions. The 2026 survey collected information on how much municipal paving projects incorporated RAP in each municipality. Conservative assumptions were made that 15% RAP in HMA was used in projects that incorporated RAP. The estimated consumed RAP was then calculated based on that assumption and based on the known paving tonnage of 61 municipalities. Although this estimate represents only 61 out of 444 municipalities, it is considered a representative estimation as these municipalities represent 91% of the total population of Ontario, which strongly correlates to the road building activity and paved network distribution around the province. The bubble diagram in **Figure 9** presents the 2026 projected RAP consumption locations and quantities alongside the RAP inventory locations and quantities, and Table-4 highlights the year-over-year consumed RAP quantities.

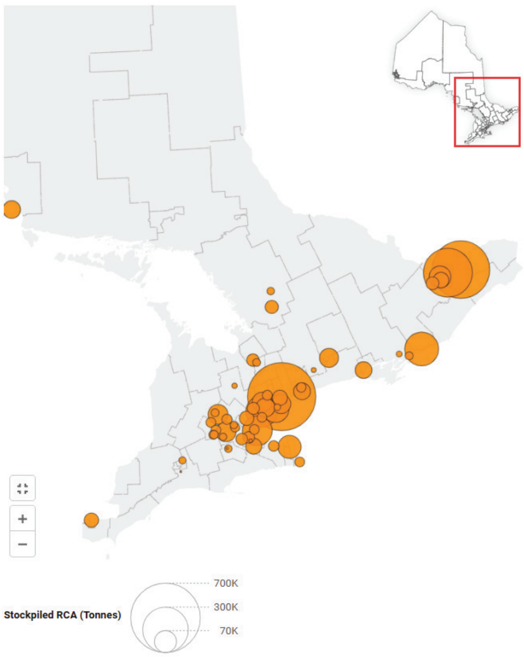

Figure 8 – Available RCA Stockpile Quantities for 2025

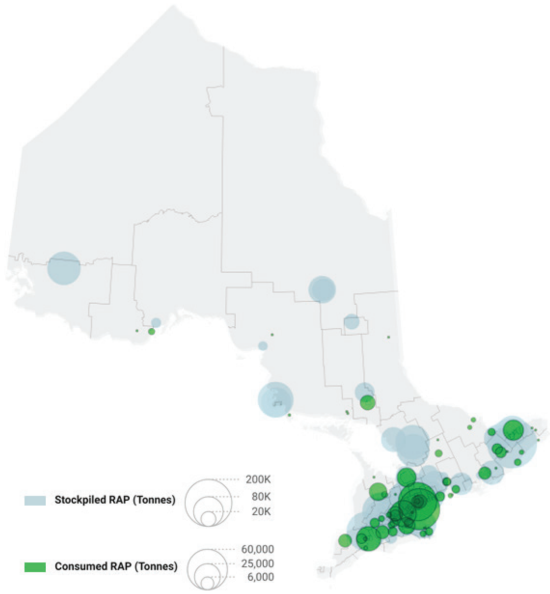

Figure 9 - Available and Consumed RAP in 2026 (not including MTO's consumption)

RCA Inventory in Ontario (Tonnes)

Year	Facilities	North	SouthWest	Central	SouthEast	TOTAL
2024	109	39,031	28,91	1,700,568	1,173,533	**2,942,033**
2025	N/A	Data not collected	Data not collected	Data not collected	Data not collected	Data not collected

Total Municipal RAP Consumption (Tonnes)

Year	Municipalities	North	SouthWest	Central	SouthEast	TOTAL
2023	64	4,000	22,000	104,000	33,000	**163,360**
2024	54	3,468	28,961	65,231	15,504	**113,145**
2025	77	2,475	25,784	132,906	33,114	**194,279**
2026	61	7,568	57,839	188,851	30,142	**284,401**

Table 4- Municipal Consumed RAP

Good Roads

2.3 Warm Mix Asphalt (WMA)

Warm Mix Asphalt (WMA) represents a revolutionary advancement in road construction, offering a more sustainable and environmentally friendly alternative to traditional Hot Mix Asphalt (HMA). WMA technology allows for the production and placement of asphalt mixtures at lower temperatures compared to conventional methods, resulting in reduced energy consumption, lower greenhouse gas emissions, and improved workability. By incorporating additives or technologies that enable mixing and compaction at reduced temperatures, WMA is used to achieve one or a combination of the following benefits:

- Extending the paving season (late season paving)
- Reducing GHG emissions during production
- Reducing energy consumption during production
- Enhancing compaction

In the 2026 paving season in Ontario, an estimated 13% of the municipalities reported use WMA in their paving operations. A breakdown based on geographical zone is presented in **Figure 10**. Out of the 13% that use WMA, a portion of those use it year-round, while others allow it only after a prescribed date. A total of 478,493 tonnes of WMA is projected to be used in the 2026 construction season by Ontario municipalities, a 90K tonne increase from 2025. A breakdown of the total 2026 WMA tonnage is also presented in **Figure 10**.

2.4 In-Place Recycling (HIR/CIR)

In-place recycling, encompassing Hot In-Place Recycling (HIR) and Cold In-Place Recycling (CIR), represents a sustainable and cost-effective approach to rehabilitating municipal roads while minimizing environmental impact. Both methods offer significant advantages over traditional road rehabilitation techniques, including reduced material consumption, shorter construction times, reduced excess soil generation while improving the structural performance of existing pavements. In-place recycling techniques have gained popularity among municipal authorities seeking efficient and eco-friendly solutions for maintaining and upgrading their road networks.

A total of 419 kilometres of road is expected to be treated with HIR or CIR by municipalities in Ontario during the 2026 construction season (almost half of the amount done in 2025). A breakdown of the number of municipalities using in-place recycling, as well as the breakdown of the total HIR/CIR kilometres, is presented in Figure 11. It is worth noting that 34% of the municipalities responding to the 2026 survey will be using HIR or CIR during the 2026 construction season.

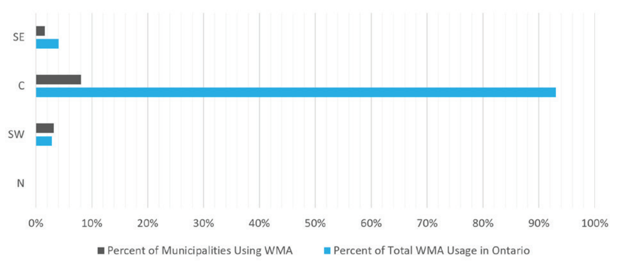

Figure 10 - Geographical Breakdown of Municipalities using WMA and the Total 2025 WMA Tonnage

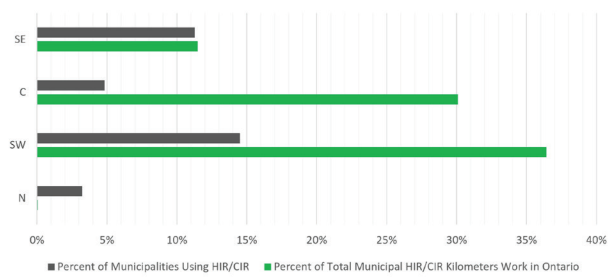

Figure 11 - Geographical Breakdown of Municipalities using HIR/CIR and the Total 2025 HIR/CIR Kilometres

Section 3.0
State of the Practice

3.1 Municipal Paving and Maintenance Trends

According to the Municipal Paving Survey, a total of 630,564 potholes were reported to be fixed in 2025, a 100K more than 2024. About 18% of the municipalities reported that they either do not keep record or that it is managed under a different department. On average, each municipality fixed 11,464 potholes, which is more than double of the previous year's (2024) average. The largest number of fixed potholes reported by a single municipality was 257,477 potholes. When compared to the number of lane kilometers, the average becomes four (4) potholes fixed per lane kilometers. **Figure 12** shows the statistical normal distribution of the potholes per lane kilometers, which is statistically similar to the previous year's results (2024).

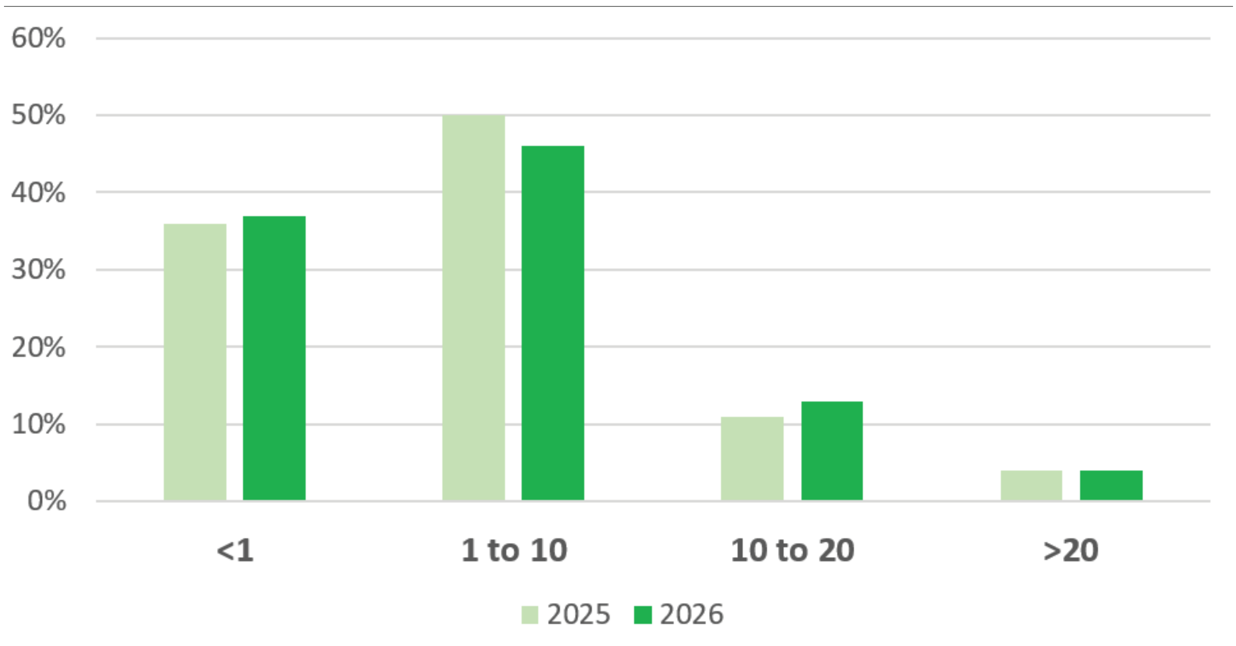

Figure 12 - Potholes per Lane Kilometres

3.2 Municipal RAP Specifications

Through the GR/OAPC Municipal Paving Forecast survey, a total of 148 municipalities' responses were analyzed and resulted in a better understanding of municipal specifications of RAP across Ontario. According to our data, 79% of the municipalities have indicated that their specifications allow the use of RAP in the HMA layers in their paving projects. The geographical breakdown of this data is presented in **Figure 13**, showing that RAP intake is equally popular across Ontario except the North geo-zone. The collected data also showed that at least 15 municipalities have moved from not allowing RAP to allowing the use of RAP in their specification language in the past five years. **Figure 14** demonstrates the distribution of pavement recycling technologies implementation in Ontario municipalities.

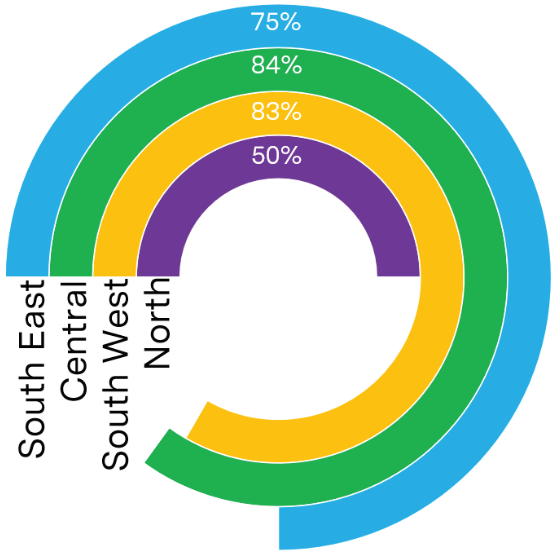

Figure 13 - Municipal Specs on RAP Use in Ontario (Percentage refers to municipalities that allow the use of RAP in their specifications).

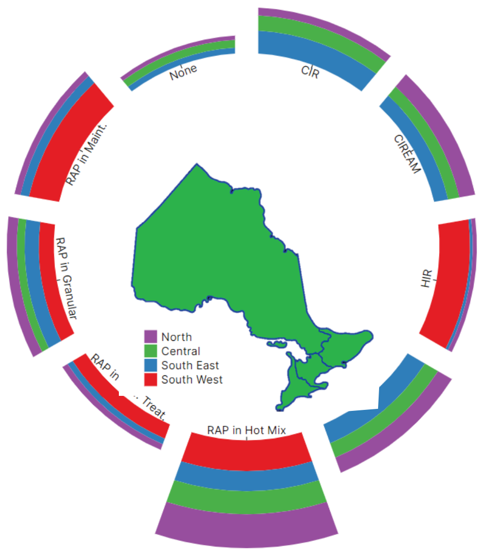

Figure 14- RAP and Pavement Recycling Technologies Implementation in Ontario

3.3 RAP Stockpile Management (Industry and Municipalities)

It is common knowledge that the most significant reason behind limiting the use of RAP in new asphalt concrete mixes is material variability (variability in RAP aggregate gradation and characteristics, as well as variability in RAP asphalt content and characteristics). Since RAP is usually reclaimed from different sources with different material characteristics and reclamation methods, it is vital to focus on achieving homogeneous stockpiles by applying best practices in managing and processing. The following paragraphs present information on the current state of practice with RAP management, which was collected as part of the 2021 Ontario RAP Survey, conducted by GR, OAPC, and MEA.

Decisions made at the beginning of the RAP stockpiling and processing activity play a significant role in creating a quality homogeneous RAP product for use in HMA for road construction. **Figure 15** shows how facilities manage their stockpiles and whether they put all incoming RAP materials in one pile or create separate stockpiles for RAP coming from different sources. It is found that most municipalities use a single stockpile for their collected RAP. The reason is that these municipalities only collect RAP millings from their own roads or millings from adjacent provincial roadways. The similarity in material justifies the decision to hold only single stockpiles for all collected RAP in this situation. Multiple factors are considered when deciding on whether to collect RAP in single or multiple stockpiles. **Table 5** provides a description of these decision factors. It is common practice for Ontario contractors/ HMA producers to inspect incoming RAP for potential contamination, as shown in **Figure 16**. Another common way to guarantee clean RAP is accepting incoming RAP based on pre-approved contractors, given that the contractor has clear instructions on the expected quality of collected RAP.

Factor	Comments
Availability of space	Based on the Ontario RAP Survey, RAP stockpiles take an average space of 600m² in Municipal yards and 4000m² in contractors/HMA production facility.
Municipal QA Specs	Facilities serving multiple Municipalities may need to have multiple stockpiles if one or more Municipalities require that RAP be from Classified or Captive stockpiles to be accepted in their projects, which may be challenging with limited space, especially in the Greater Toronto Area.
Contaminated RAP	In the event that a facility accepted RAP that was likely to be contaminated (soil, vegetation, geosynthetics), it is common practice that contaminated RAP be kept in a separate stockpile and used only in road bases or shoulders. Contaminated RAP is not fit to be included in new asphalt mix production.
Consistency of Source	If large quantities of RAP are being brought from a single project or jurisdiction (especially if it is reclaimed through milling), it is most cost-effective to store the material in a separate stockpile. This approach minimizes processing efforts, as the material is likely to be highly consistent in quality and composition.

Table 5 - Decision Factors on Number of RAP Stockpiles in a Facility

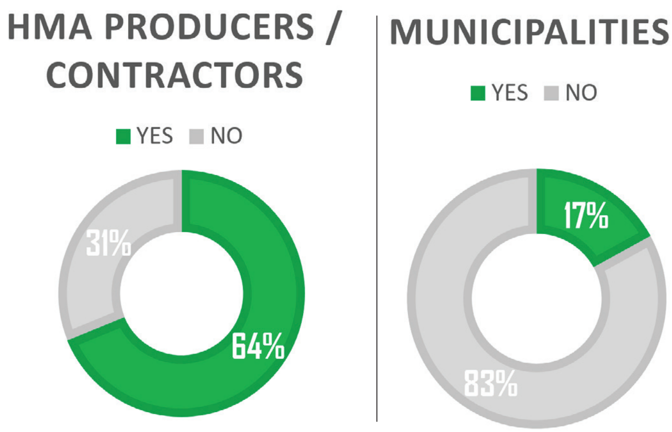

Figure 15 - 2020 Ontario RAP Survey - Do you Separate RAP Based on Source?

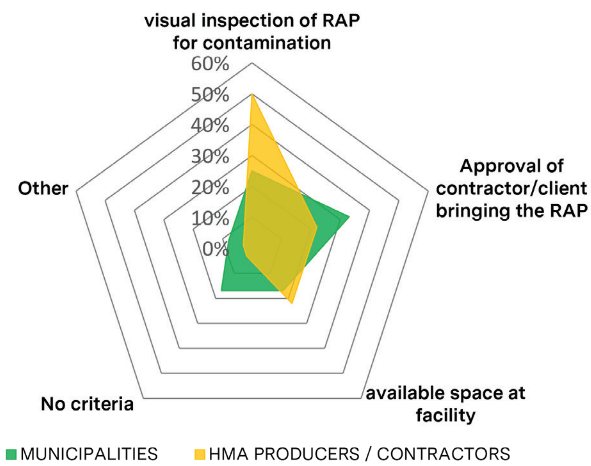

Figure 16 - Incoming RAP Quality Inspection at Municipal and HMA Producers / Contractors Facilities

Good Roads

3.4 RAP Processing (Industry and Municipalities)

RAP is usually reclaimed from different sources with different material characteristics. The main objective of processing RAP is to limit variability and create a uniform and homogeneous stockpile through breaking apart agglomeration of RAP particles, reducing maximum aggregate size as desired, and screening RAP piles into different sizes for more controlled mix design.

During the processing operation, key precautions can significantly affect the quality of the RAP. Figure 17 provides a bigger picture of the precautions taken by Ontario municipalities and private sector facilities when processing RAP. The only two municipal responses were "Stockpiling unprocessed RAP into layers" and "N/A". This can be explained by the fact that RAP in most municipal yards is collected through millings from road projects built by the same municipality under similar material specifications; therefore, it requires less separation of stockpiles (Figure 10) and less processing efforts.

To reduce material variability and achieve the main objectives of the RAP processing operation, multiple options are available in the industry. RAP processing can be achieved through crushing, mixing, screening, or fractionation. Figure 18 shows the Ontario state of the practice in RAP processing as collected from the 2020 Ontario RAP Survey. One observation that can be concluded by looking at the Municipal data in Figure 18 is that RAP collected by Municipalities is usually pavement millings that come from consistent projects constructed under similar specifications, and therefore it would require minimum processing and stockpile separation efforts to maintain minimum material variability. Choosing the appropriate one or combination of processing methods depends on the following factors:

- Availability of tools and equipment
- Type of RAP available at a particular facility (milling, demolished pavement, Unknown Composition stockpiles).
- Agency specifications.
- Desired RAP gradation properties.

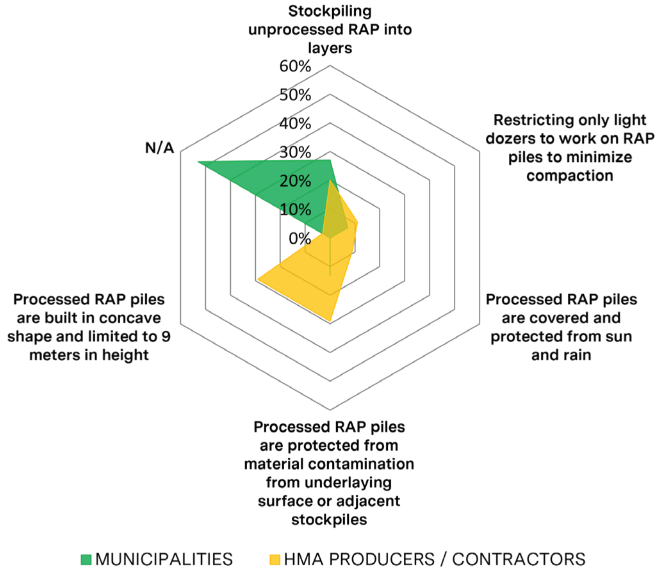

Figure 17 – RAP Processing Operational Precautions in Ontario

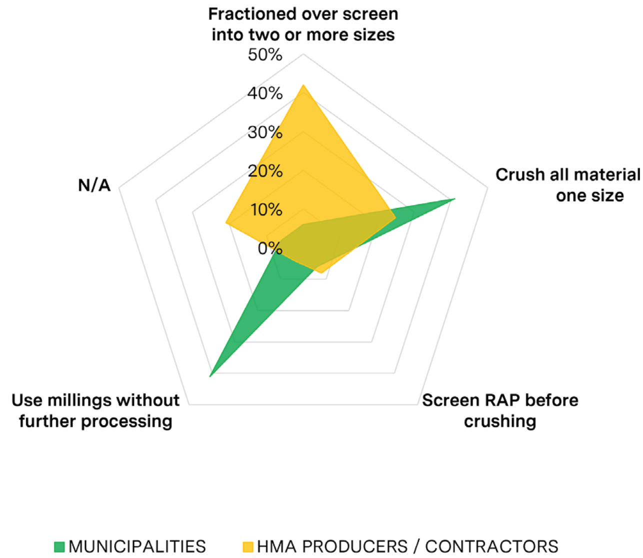

Figure 18- RAP Processing Methods in Ontario

Proper management of RAP is essential to achieving consistent mix quality when incorporating RAP into HMA. For guidance on RAP stockpiling, processing, and testing best practices, refer to the RAP Source Best Practices Guide.

Section 4.0
Reference

Mneina, Amin. "Ontario Municipal Paving Forecast." OGRA Milestones Magazine, Volume-22, No. 2. May 2021, pp.9. URL: https://online.fliphtml5.com/jgfei/djqz/

Mneina & Smith, Promoting Sustainability in Infrastructure Through Quantifying Reclaimed Asphalt Pavement – An Ontario Municipal Case Study, Transportation Association of Canada, Halifax, NS, 2019.

Clark, W. A. V, Angeles, L., Conti, E. A., Transportation, S., Dot, N. C., Hammond, P. J., & Dot, W. S. (1978). Recycling Materials for Highways, National Cooperative Highway Research Program Synthesis of Highway Practice No. 54. Washington, DC.

McLuckie, R. F., Korgemagi, P., & Villneff, H. C. (1987). Performance of High Ratio Recycled Pavements in Northern Ontario. In 32nd Annual Conference of the Canadian Technical Asphalt Association (pp. 42–72). POLYSCIENCE PUBLICATIONS INC.

EBA Engineering Consultants Ltd. (2013). Aggregate Supply and Demand Analysis. Report No. K23103029-01-001

Williams, B. A., Copeland, A., & Ross, T. C. (2018). Asphalt Pavement Industry Survey on Recycled Materials and Warm-Mix Asphalt Usage: Information Series 138-NAPA, 46. https://doi.org/10.1016/j.ydbio.2005.08.010

Ministry of Natural Resources Ontario. (2010). State of the Aggregate Resource in Ontario Study.

Copeland A 2011 "Reclaimed Asphalt Pavement in Asphalt Mixtures: State of the Practice," Fed. Hwy. Adm., no. FHWA-HRt-11-021

Tavassoti-Kheiry, P., Solaimanian, M., & Qiu, T. (2016). Characterization of high RAP/RAS asphalt mixtures using resonant column tests. Journal of Materials in Civil Engineering, 28(11), 04016143.

Rathore, M., Haritonovs, V., & Zaumanis, M. (2021, November). A Critical Review on Mixing Parameters For High Content Reclaimed Asphalt Mixtures. In IOP Conference Series: Materials Science and Engineering (Vol. 1202, No. 1, p. 012025). IOP Publishing.

Saliani, S. S., Carter, A., Baaj, H., & Tavassoti, P. (2019). Characterization of asphalt mixtures produced with coarse and fine recycled asphalt particles. Infrastructures, 4(4), 67.

National Academies of Sciences, Engineering, and Medicine 2013. Improved Mix Design, Evaluation, and Materials Management Practices for Hot Mix Asphalt with High Reclaimed Asphalt Pavement Content. Washington, DC: The National Academies Press. https://doi.org/10.17226/22554.

Jerry Nohl, B. D. (2000). Technical Paper T-551 Stockpile Segregation. Morris, MN: Superior Industries.

J. Don Brock, N. F. (2007). Technical Paper T-126 Productivity. Chattanooga, TN: ASTEC Inc.

Simmons, G. H. (1996). Technical Paper T-129 Stockpiles. Chattanooga, TN: ASTEC Inc.

A special thank you to all private sector companies that provided feedback and valuable input in the data collection and creation of this report

Municipalities Consistently Supporting the Municipal Paving Forecast for the Past 5 Years