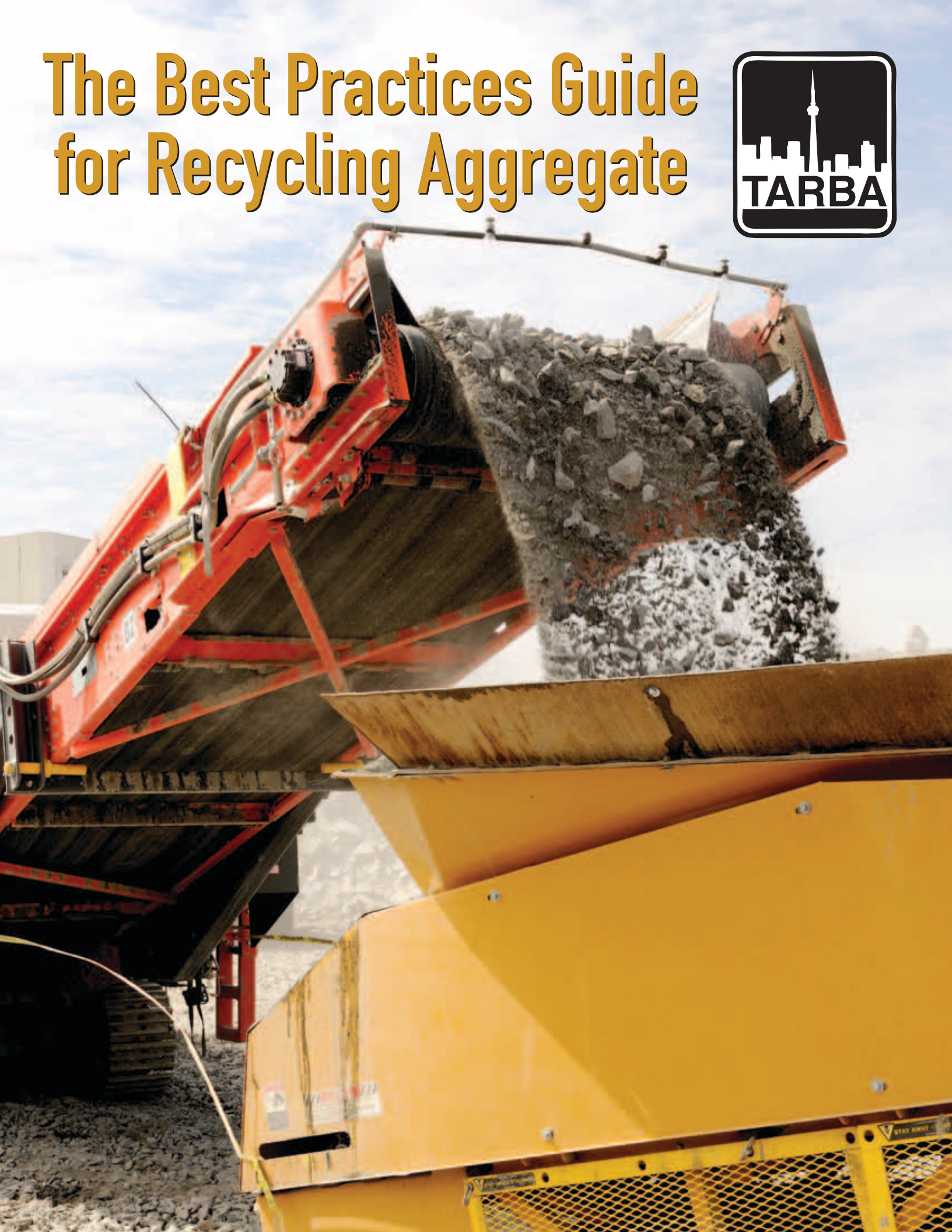
The Best Practices Guide for Recycling Aggregate

TARBA



Recycled Aggregate Best Practices Guide

The Recycled Aggregate Best Practices Guide provides guidelines and standards for producing quality recycled aggregates for road and sidewalk bases, trench backfill, engineered fill, access roads, trails, and other construction applications.

The guide includes measures needed to meet Ontario Provincial Standard Specifications and Ministry of Labour and Ministry of Environment standards.

Safety

Safety during loading and production is paramount. The receiving yard is responsible for the safety of both on-site personnel (loader operators, yardmen and scale house personnel) and the delivery truck drivers entering the facility.

- All drivers must wear a hard hat, safety vest and boots in accordance with the Ministry of Labour's requirements when exiting their vehicles.
- All trucks must have a properly operating backup alarm, brakes and horn.
- All drivers must report to the loader operator or scale house before dumping and must follow instructions at all times.
- Loaders have the right of way in the yard.
- Drivers must follow all individual yard rules.

Drivers who do not comply with any of these requirements will be barred from the facility and will lose future dumping privileges.

Raw Material Quality

Advanced Notice

A company disposing of broken concrete and/or asphalt must:

- Notify the scale house in advance of its intention to send material to be recycled.
- Specify the location of the site from which the material is being shipped.
- Advise the scale house of the quantity and type of materials being delivered.

Types of Materials

The recycling yard will accept concrete and asphalt that meet the following conditions:

- Concrete and asphalt must be separated at the job site. Well bonded asphalt to concrete composite pavement is the only exception.
- Concrete and asphalt must be free of deleterious material such as wood, plastic, and organics. No exceptions are permitted and any violations are subject to zero tolerance.
- Cinder blocks, bricks, tiles or any clay-based materials are not allowed.
- Concrete containing reinforcing bars or wire mesh must be pre-approved for delivery to the receiving yard. All incoming loads will be inspected and subject to rejection.
- Solid concrete demolition materials such as footings, floor slabs and poured concrete walls must be pre-approved. The receiving facility's personnel will inspect the originating site before delivery to the recycling yard is scheduled.

A reloading and rehandling charge will apply to any load that contravenes the above conditions. Companies that do not conform to the rules will lose all dumping privileges.

Quality Control

General

- The recycling yard must have strict controls and monitoring protocols in place during production and shipping to produce a consistent quality aggregate.
- Materials delivered to the crushing facility should be sorted into properly identified stockpiles – typically asphalt only, concrete only, and concrete and well bonded asphalt.
- Production control gradations, including the percentage of asphalt cement coated particles, are to be conducted every 1,000 tonnes of production. The producer will record the results in a control chart logbook and provide the results to pavement owners and their agents upon request.
- Physical aggregate testing including petrographic analysis, micro deval abrasion and % crushed count, will be performed every 25,000 tonnes of production and compared to Ontario Provincial Standard Specification #1010.
- Canadian Council of Independent Laboratories' sampling procedures will be used to take representative samples.
- Samples must be tested in CCIL certified labs.

Job Site Quality Control

The producer will provide documentation at the production facility outlining gradation and the physical properties of the product as outlined above.

Prior to the start-up of any new project, owners are encouraged to test materials at the point of production in conjunction with the producer's quality control personnel.

If issues arise when material is placed in the field, the producer's quality control personnel will investigate and monitor as soon as possible. The producer's quality control personnel will issue a field investigation report highlighting any inconsistencies found between the field and production testing and the reasons why those inconsistencies have occurred.

Production

- Crushing units must meet Ministry of Labour standards for safety and have a valid Ministry of Environment Certificate of Approval.
- Primary and secondary crushers must be equipped with magnets to remove any rebar and extraneous metals.
- The producer must use mist sprayers and/or other dust suppressers during the crushing operation to prevent dust particles from migrating and becoming airborne.
- Up to date stackers and efficient rehandling equipment (such as loaders and bulldozers) must be used to ensure consistent stockpiling of crushed finished products and to eliminate potential sources of segregation.

Loading and Weight Out

- The shipping face of a stockpile must be re-blended continuously during the loading operation. The load-out operation should take place across the base of the stockpile to ensure that finished product is not segregated.
- The producer will monitor loading to ensure the weight of the load is within the legal limits allowed by the individual Commercial Vehicle Operator's Registration certificate and that the weight of the load is uniformly distributed in the truck box as per Ministry of Transportation of Ontario requirements.
- A government certified scale must be used during the weigh out operation. Scale tickets can be bar coded for the convenience of the receiving agency's tally sheets if required.

Environmental Compliance

The recycling facility will provide MSDS sheets for all recycled aggregates.

Leachate testing under O. Reg. 558 is not required for recycled aggregates used in construction since the Ministry of Environment defines these materials as a "product" and not a waste. The Toronto Area Road Builders Association can provide representative leachate test results of recycled aggregates upon request.

Specifications

Ontario Provincial Standard Specification 1010 covers the use of aggregates for base, subbase and backfill.

It is the responsibility of the contractor supplying and using recycled aggregates to meet OPSS 1010 requirements when it is included as a job specification.

OPSS 1010 includes details on submission and design requirements, materials, production, quality control and quality assurance. It also addresses the use of reclaimed and recycled materials.

"All aggregate source materials shall be clean hard durable particles free of earth, humus, and clay, e.g., coatings, lumps, and fragments. Where reclaimed materials are permitted, they shall be homogeneously blended. Where RCM (recycled concrete material) is permitted, RCM shall not contain loose reinforcing materials." [1010.05.01]

"Granular A and Granular M may contain up to 100% RCM but shall not contain more than 30% by mass of asphalt coated particles and not more than a combined total of 15% by mass of glass and ceramic material. The combined amount of deleterious material shall not exceed a total of 1% by mass.." [1010.05.02]

"Granular B Type I may contain up to 100% RCM but shall not contain more than 30% by mass of asphalt coated particles." [1010.05.03.02]

Further information on recycled aggregates is available from the Ontario Hot Mix Producers Association. Go to www.ohmpa.org and click on the Education/Training Resources tab, followed by the OHMPA Publications Tab, to the listing of OHMPA's ABC Series and download the ABCs of Recycled Aggregates.

The Recycled Aggregates Best Practices Guide has been produced by the Toronto Area Road Builders Association. It outlines best practices associated with the production of recycled aggregates. It is not a design manual and producers should verify with independent certified laboratories and consulting engineers to ensure that their practices meet all legislative rules and regulations. TARBA does not provide any warrantees or guarantees associated with the production of recycled aggregates, the quality of recycled materials or their suitability for use in construction applications.

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