

GREEN BUILDING PROGRAM

Technical Update: 2017-07-11

**Construction, Renovation and Demolition Waste
Management Guideline**



GREEN BUILDING PROGRAM GUIDELINES

The Green Building Program (GBP) Construction, Renovation and Demolition Waste Guidelines were developed by the Green Building Co-ordination Team (GBCT) with assistance from Green Manitoba Environmental Solutions, The Partnership of the Manitoba Capital Region, Manitoba Environmental Industries Association, The Winnipeg Construction Association, The Construction Association of Rural Manitoba and Stantec Consulting with contributions and participation from City of Winnipeg Water and Waste Department, Manitoba Conservation and Manitoba's waste and construction industry stakeholders.

The guideline is intended to assist building owners, government organizations and project teams interpret and apply the green building program criteria.

The guideline supplements other resources and should not be considered the primary source of information on the subject. Information in the guideline is only intended to provide background, resource and guidance to support implementation of the Green Building Program criteria.

CONSTRUCTION, RENOVATION AND DEMOLITION (CR&D) WASTE MANAGEMENT

Why manage waste?

Construction, renovation and demolition (CR&D) waste is major contributor to our landfills. Unless this waste stream is addressed, landfills will soon reach, or exceed their capacity. By diverting CR&D waste materials from landfills (i.e. recycle, reuse or salvage), we help to improve the overall health of our air quality, land and water supply. In addition to reducing environmental impacts resulting from landfill disposal, there are several other important motivators to divert CR&D waste:

- **Compliance requirements** (CR&D waste management regulations, policies, by-laws & guidelines),
- **Certification requirements** (green building certification rating systems such as LEED®, Green Globes®, etc.),
- **Financial & economic factors** (maximize cost recovery by diverting CR&D materials; reduce waste & reduce costs; create business opportunities for green building products & services),
- **Corporate responsibility** (promote industry standards of practise; enhance corporate reputation).

What is in CR&D waste?

Construction, renovation and demolition (CR&D) waste refers to non-hazardous waste that is generated by building projects during construction, renovation and demolition. Commonly generated materials include wood, concrete, steel, drywall, asphalt roofing, plumbing & electrical fixtures, bricks & mortar and window glass. For the purposes of this Guideline, “CR&D waste” refers only to building CR&D materials and excludes hazardous, household, industrial or other municipal waste streams.

Hazardous CR&D Waste:

All hazardous CR&D waste materials (e.g. asbestos, paints, lighting ballasts, florescent tubes, thermostats, chemicals, degreasers, etc.) that are generated during building construction, renovation, deconstruction and demolition must follow provincial guidelines, regulation and permit requirements for their safe use, storage, handling, removal, transportation and disposal.

It is important that any potentially hazardous CR&D waste materials that may be generated during a building construction, renovation, deconstruction and demolition project be identified before the project proceeds. Please refer to the “Resources” (listed below) for information regarding the guidelines, regulations, licensing and permit requirements, along with other related inquiries regarding hazardous materials.

Resources:

Manitoba - Workplace Safety & Health Branch: www.manitoba.ca/labour/safety/

Manitoba - Environmental Approvals Branch:

Compliance and Enforcement - www.manitoba.ca/conservation/ece/

Solid Waste Management Program: e-mail: solidwaste@gov.mb.ca

What is CR&D Waste Management?

In order to maximize the amount of CR&D waste that is reused, recycled and salvaged in a project, it is important to conduct effective CR&D waste management. CR&D Waste Management is a process that involves auditing, planning, tracking and reporting on the diversion of CR&D waste generated from a project.

There are many on-line tools (spreadsheets, tracking & monitoring documents, etc.) and specialized services available commercially that offer support in all aspects of CR&D waste management.

The following describes the basic steps of CR&D Waste Management and provides information to assist building owners; contractors, project managers and other members of the project team in understanding the various aspects of this process:

STEP 1: Initial CR&D Waste Audit

STEP 2: CR&D Waste Management Plan

STEP 3: CR&D Waste Management Report

STEP 1: Initial CR&D Waste Audit

The purpose of an initial audit establishes a waste management baseline for the project before work begins. From that baseline, a CR&D Waste Management Plan and diversion targets can be determined for the project.

An initial audit identifies the types and quantities of CR&D waste materials that may be generated during a project. An initial CR&D waste audit is commonly conducted for existing buildings before commencing a project renovation (major or minor), deconstruction (selective disassembly of a building by its structural and non-structural building components), or demolition (partial or full demolition).

An initial audit is usually performed by the building owner's representatives who have on-site waste management responsibility. This may involve the general contractor, project sustainability coordinator, or other member assigned from the project team. The audit may also be conducted by a contracted CR&D waste consultant or company that specializes in CR&D waste management, recycling and salvaging CR&D building site waste.

The information gathered in the initial audit commonly includes:

- A project review to determine the project scope and project stages; building type and size (floor area); and building's condition (this is particularly important in deconstruction & demolition projects).
- An on-site inspection (visual walk-through) to identify the type and estimated quantity of CR&D materials that will be generated during each stage of the project.

Consider:

- the types of CR&D waste streams and waste generation points in the daily operation of the project;
- the type & quantity of quality materials that can be recycled or salvaged. Materials with potentially high salvage value such as flooring, doors, windows, moulding, wiring, nonferrous

metals and suspended ceilings should be catalogued and identified for market resale or re-deployment elsewhere.

- how the materials should be disassembled (by hand, or by crane), removed, sorted/separated, and collected . Maximizing the eligibility and value of CR&D waste materials for salvage may rely on the condition of the salvaged materials or the absence of material contaminants such as cardboard mixed in a plastics bin.

It is also helpful to refer to resources to assist with estimations, such as:

- material purchasing records, demolition practices, engineering estimates;
- records of CR&D waste generation from similar projects;
- waste separation & collection invoices from similar projects.

A summary report that provides a record of the information gathered in the initial waste audit that includes:

- estimations of anticipated CR&D waste generation (quantity & composition)
- records, invoices and other information sources used to calculate estimations
- recycle and salvage opportunities

Note: Hazardous material surveys are typically conducted prior to and separately from this audit.

STEP 2: CR&D Waste Management Plan

A CR&D Waste Management Plan is the key to effective CR&D waste management. It outlines the strategy for waste diversion from the beginning to the end of the project.

The main objectives of a project CR&D Waste Management Plan are to:

- decrease the amount of waste generated;
- increase the amount of material available for reuse, recycling or salvage; and
- decrease the amount of material sent to landfill for disposal.

Not all CR&D waste materials can be practicably diverted. Factors such as the distance and accessibility for hauling and transport, and access to salvage and recycling markets will influence how much and what types of materials can be addressed. Projects in urban areas can typically divert more of their waste than projects in rural or remote areas.

The CR&D Waste Management Plan should be prepared as a written document, and signed by the all parties responsible for the project (i.e. owner, architect, general contractor). Ideally, for new construction, this should occur at least a month or more prior to breaking ground for the project and for renovation, deconstruction or demolition projects, prior to the first day that the project commences.

Developing a CR&D Waste Management Plan:

The following is a checklist of key information that should be included in a CR&D Waste Management Plan (see Figure 1: CR&D Waste Management Plan – Sample Template). When reviewing each item on the checklist, note that not all considerations necessarily apply. Each project will have unique conditions for a Waste Management Plan to address.

- ✔ Person(s) responsible for the project's waste management
 - Designate an on-site CR&D waste manager. Depending on the scope and size of the project, the designated CR&D waste manager may be a contracted, qualified waste specialist or member of the general contractor's team whose is knowledgeable in waste management. The tender documents for the project should include the role of the CR&D waste manager.
 - The CR&D waste manager is responsible for developing and implementing the CR&D Waste Management Plan; and for monitoring, tracking and reporting the plan outcomes. They are also responsible for ensuring that the general contractor, all subcontractors and all other members of the project team are familiar with the details of the plan and expected CR&D waste diversion goals.

✔ Waste diversion goals and targets

- The overall CR&D waste diversion (recycling and salvage) target and/or directive to conduct and report on CR&D waste diversion should be established for the project. These objectives should also be incorporated into all of the project's contract documents. Targets can be described as a percentage (example: *"The project is to achieve a minimum CR&D waste diversion target of 50% and incorporated with the owner's project requirements."*).
- Many green building certifications programs such as LEED®, Green Globes®, etc., have prescribed procedures and reporting requirements for CR&D waste management that must be met in order to qualify for certification.
- These measures, as well as any CR&D waste compliance mechanisms (regulation, guideline, etc.) that apply to the project, should be observed in the development and implementation of the CR&D Waste Management Plan.

✔ Types and quantities of CR&D material being generated

- Use estimates determined from the initial CR&D waste audit (if conducted for a renovation, deconstruction or demolition project); or from floor plans/specifications, or other means (new construction).
- List the expected types and estimated quantity (by weight) of each generated material in the CR&D Waste Management Plan.

✔ Diversion method

- Many materials can be diverted from landfill by taking advantage of reuse, recycling and salvage opportunities. Identify methods to divert the CR&D materials such as:
 - processing or re-using materials on-site;
 - donating materials off-site to used building materials centres such as Habitat Re-Store;
 - selling materials for salvage or recycling off-site;
 - recovering salvaged materials for reuse off-site in other off-site projects
- Estimate the type and quantity of materials expected to be recycled or salvaged.

✔ Materials markets


- It is crucial that potential recycling, salvage and other end-user markets be identified and investigated before the project commences. In seeking potential markets for waste diversion, determine:

- The type and condition of materials they accept. Market buyers may specify that CR&D materials be commingled, sorted and separated on-site, or delivered off-site for separation. In general, however, sorting and separating CR&D materials into single streams on-site is less costly than commingling and relying on off-site services to sort. Recyclers, salvagers and processors typically pay more for separated material loads compared to loads that are commingled or mixed with contaminants.
 - Final destination of materials and how they are processed and for what purpose
 - The location of recycler, salvager or processor relative to the project site. The closer materials markets are to a project's geographic location, the lower the cost of hauling.
 - On-site set-up and training required by the recycler, salvager or processor.
 - Recycler or salvager collection options and costs.
 - Payments (cost (\$)/load and payment terms).
 - Documentation methods. Ensure receipts and way-bills, etc. are issued by the recycler, salvager or processor as proof of performance.
 - References, insurance, safety record.
- List the selected/preferred recycling, salvage and processing operators for each material.
 - Include the contact information, location, purchase price, minimum accepted quantities, handling, delivery and shipping requirements and fees. Keep a current list in the project site office for easy access.

Waste material handling and transportation

- CR&D material handling (sorting, separation, storage & collection) and transportation (hauling) are vital components of the CR&D waste management process.
- For CR&D material handling, it is important to:
 - Determine the appropriate type, size and number of the collection containers required for the project. Clearly label each container to indicate what is acceptable or not acceptable (e.g. "recycle – clean wood"). The labels should reflect the material specifications and condition requirements of the receiving salvager, recycler, processor or landfill.
 - Set up and identify accessible, on-site collection areas with recycling and sorting bins. It is helpful to include a site map indicating the location of all project collection areas with the CR&D Waste Management Plan.
 - Provide adequate storage to manage and protect recyclable and salvageable materials until they are removed from the project site.
 - Consider the project sequence when removing CR&D materials for salvage and recycling, particularly projects that involve renovation, deconstruction (disassembly of selected portions of the building) or demolition,
 - Ensure that the condition and integrity of salvageable materials are maintained in accordance with the requirements of the salvager or other end-user.

- After materials are sorted and separated, they should be removed from the project site on a regular basis to reduce risk of damage and avoid accumulating material on-site.
- For material transportation services, consider:
 - Load size limitations, scheduling, charges for extra loads, on-call pick-up options, etc.
 - Delivery requirements and options for self-hauling, drop-off and fees.
 - Final destination of materials and how they are processed and for what purpose
 - Documentation methods. Ensure receipts and way-bills are issued by the recycler, salvager, processor, landfill and hauler as proof of performance.
 - References, insurance, safety record
- Collecting and transporting CR&D materials from the project site may involve:
 - using project equipment to haul materials (i.e. self-hauling);
 - requiring subcontractors to haul materials to a recycling, salvage or processing facility as part of their contracts;
 - selecting recyclers and salvagers that collect CR&D materials from the project site;
 - contracting an outside hauling service.
- Procedures should be established to sort, separate, store, collect and transport the CR&D materials for diversion (i.e. reused, recycled and salvaged) and disposal to a landfill.
- Whatever procedures for CR&D material handling and transportation are adopted, it is important that detailed instructions be provided to all members of the project team (including subcontractors). All contracted haulers and their contact information should be listed in the Plan for easy reference.

 **Costs and benefits of CR&D waste diversion**

- It is helpful to conduct a risk assessment and analysis prior to commencement of the project to determine the costs and benefits of CR&D waste diversion.
- Projected costs may include:
 - Handling (sorting and separation) and storage of materials - e.g. bin rentals;
 - On-site and off-site sorting, separation & collection;
 - Transportation costs - e.g. hauling to a recycler, salvager or landfill;
 - Disposal costs – e.g. tipping fees, disposal levies, etc.;
 - Operational costs –labour; education and training;
- Administration and management costs - e.g. documentation; green building certification (LEED® or Green Globes®); third party verification (waste audits); waste service contracts (for consultants, collection, recycling, salvage and disposal).

- Projected benefits include:
 - Anticipated revenue gained from the sale of recycled and salvaged materials
 - Cost savings – reduced building material purchases and materials reuse in new construction
 - Cost savings - avoided disposal levies and tipping fees
- The costs of CR&D waste diversion must be assessed against the cost recovery expected from the sale of recycled and salvaged materials diverted by the project.

Communication and training

- Effective communication and training is vital to the success of the CR&D Waste Management Plan. All members of the project team should be engaged and educated so that they understand the plan's goals and expectations, and how it will be implemented (i.e. what materials are to be diverted, how and where are they sorted and separated, etc.)
 - Responsibilities should be assigned to ensure that those involved in the project are aware of their role in relation to the CR&D Waste Management Plan.
 - All members of the project team should be provided contact information for troubleshooting, should problems arise.
 - All project team and crew members should be given ample opportunity to offer feedback on the plan's execution (eg. daily team meetings, etc.) and make recommendations for improvements.
 - Subcontractors should understand and follow the CR&D Waste Management Plan. The general contractor may be assigned responsibility to communicate this information to subcontractors.

Monitor, track and audit progress

- Monitoring and tracking is an important way to evaluate the progress of CR&D waste diversion over the duration of the project. This ensures that the CR&D Waste Management Plan is being implemented appropriately and waste diversion goals are met.
- Measurement and documentation procedures should be established to monitor and track progress. Excavation or land-clearing debris is not considered construction, demolition or renovation waste and would not require tracking (see Figure 2: CR&D Waste Tracking – Sample Template).
 - Ensure monitoring and tracking procedures meet green building certification requirements (such as LEED®, or other documentation), or requirements for other compliance mechanisms.
 - Collect (signed) weight tickets and receipts from all haulers and receivers (recycler, salvager or landfill). Maintain up-to-date records and address significant discrepancies between the audit material weights and volumes and the actual material weights and volumes.
 - Conduct regular visual inspections of collection and sorting containers to check for misplaced materials and to remove contaminants.
- Establish a schedule to conduct periodic CR&D waste progress reviews throughout the project to evaluate progress.

- Review recycling/salvage processes. Ensure that materials are being handled, sorted, separated and collected properly and make adjustments, if required.
 - Compare “estimated” quantities of CR&D waste materials generated, salvaged and recycled to “actual” quantities; compare diversion rates to the goals/requirements established for the project.
 - Ensure adequate documentation has been collected, compiled and up-to-date (i.e. hauling way bills, recycler’s receipts, etc.)
- Prepare a CR&D waste progress summary after each review and communicate the information to the project team (Figure 3: CR&D Waste Progress Summary). A progress summary not only helps to highlight successes, but also provides an opportunity to identify any problems encountered during the project, and correct them.

Table 1: Common CR&D Recycling and Salvage Materials and Their Uses

CR&D Material	Salvage	Recycle	Uses - examples
Asphalt paving		✓	Road sub-base and aggregate.
Asphalt shingles		✓	Asphalt mixes
Architectural salvage	✓		Doors, door frames, windows, millwork, fixtures, hardware
Brick	✓	✓	Historical restoration projects, aggregate, drainage media and fill.
Concrete		✓	Road base, gill, pavement aggregate, drainage media
Landfill clearing residuals		✓	Compost or mulch.
Metals		✓	Steel, aluminum and copper.
Gypsum wallboard		✓	Cement manufacture, soil amendment, fertilizer and new wallboard.
Wood (clean, untreated)		✓	Flooring, engineered board, jointed lumber.

Considerations for CR&D Waste Management Plan Development

New Construction	Renovation and Demolition	Deconstruction
<p>Develop the CR&D Waste Management Plan directly from project drawings and specifications:</p> <ul style="list-style-type: none"> Assess CR&D waste diversion during the project design. Quantify CR&D waste materials by using floor plans and specifications, and/or by referring to the waste records and plans of other projects that have a similar scope. 	<p>Develop the CR&D Waste Management Plan using the information derived in the initial waste audit.</p>	<p>Develop the CR&D Waste Management Plan to allow selective disassembly of a building's structural and non-structural building components. This can produce a significant amount of valuable reusable building materials.</p>
<p>Typically recycled and/or salvaged CR&D materials include:</p> <ul style="list-style-type: none"> Brick; cement; unpainted drywall; corrugated cardboard & plastic packaging; steel (e.g. ductwork, frames, studs); and wood (including painted, treated or laminated, shipping pallets). 	<p>Typically recycled and/or salvaged CR&D materials include:</p> <ul style="list-style-type: none"> Ceiling tiles; architectural components (e.g. doors, paneling, shelving, wood, stone/marble, lighting fixtures, windows, etc.); surplus paint; carpeting and hardwood flooring. 	<p>Typically recycled and/or salvaged CR&D materials include:</p> <ul style="list-style-type: none"> Ceiling tiles, doors, paneling, shelving, wood, stone/marble, lighting fixtures, windows, surplus paint; carpeting and hardwood flooring.
<p>Reduce the amount of CR&D waste generated through:</p> <ul style="list-style-type: none"> Material procurement and specifications Purchase recycled or reused materials; buy in bulk to minimize packaging waste; purchase pre-cut materials; specify durable, long life products; buy pre-fabricated materials; use suppliers that retrieve their packaging, or offer credit for surplus materials. Conduct effective supply management Plan material needs to avoid unnecessary cut-off waste, specify exact material requirements and accurate measurements. Manage material delivery and on-site storage Deliver materials to the build site as needed and protect materials from weather and on-site equipment to avoid, waste, or replacement “Design for deconstruction” Demolition can be performed with minimal CR&D waste at the end of a building's life cycle by using mechanical fasteners such as screws, nails and clips to join materials; using manufactured components; and selecting materials that can be later recycled. 	<p>Renovation and demolition projects generate large quantities of waste and therefore require more planning than new construction. For these projects consider:</p> <ul style="list-style-type: none"> Waste separation Create processes to separate multiple salvage and recycling streams for CR&D waste diversion both on-site and off-site; establish special procedures for handling potentially hazardous, contaminated materials. Identify building materials that may be disassembled into constituent parts: metal framing, plastic moulding and gypsum wallboard from demountable partitions; include those that do not require further dismantling (e.g. doors, ceiling medallions). Identify valuable materials for recycling and salvage: Wiring metals, structural steel, architectural features, furniture, fixtures, etc. and determine the revenue that can be recovered from the sale of these materials. Store and handle materials for recycling for salvage and recycling. Provide adequate space for both waste management and demolition equipment such as cranes, etc. Ensure on-site storage and handling of materials designated for diversion to maintain the integrity and quality of materials. Scheduling Build CR&D waste management priorities into the overall project schedule and timelines. Ensure timely transfer of salvaged and recycled materials from the site. 	<p>Based on the initial audit, proper deconstruction planning can enable CR&D waste materials to be salvaged in a reusable form. It is important to:</p> <ul style="list-style-type: none"> List all materials that can be recycled or salvaged. Identify building materials that may be disassembled into constituent parts Identify where these materials can be sold or donated for reuse or recycling. Store and handle deconstructed materials for salvage and recycling. Ensure there is adequate on-site storage for materials designated for diversion and that they are handled appropriately to maintain the integrity and quality of materials. Provide adequate space for both waste management and demolition equipment such as cranes, etc. Schedule for the timely transfer of salvaged and recycled materials from the site to prevent material damage. Schedule sufficient time to disassemble building components.

STEP 3: CR&D Waste Management Report

The CR&D Waste Management Report documents the success of the CR&D waste diversion goals and procedures set out in a project’s CR&D Waste Management Plan. Many green building certification programs such as LEED®, BOMA BEST®, etc., have stringent CR&D waste management reporting requirements to qualify for certification.

A “CR&D Waste Management Report” sample template is provided in Figure 4 for reference. The report template includes the following information:

- Type and quantity (by weight*) of each CR&D materials generated by the project
- Type and quantity (by weight*) of each CR&D materials recycled, salvaged and disposed
- Destination of each CR&D material recycled, salvaged and disposed
- Total CR&D material recycled, salvaged and disposed for the project (by weight*)
- Contractors used for waste collection (i.e. hauling), recycling, salvage and disposal
- Recycling rate achieved by the project (by percentage of the total CR&D material generated)
- Salvage rate achieved by the project (by percentage of the total CR&D material generated)

*Waste diversion can be expressed in units of volume or weight; however, it is important that only one unit of measure is used when reporting. To convert the measurement of materials from volume to weight, see *Table 2: Volume to Weight Conversions for CR&D Waste Materials*.

Table 2: Volume to Weight Conversions for CR&D Waste Materials

Source: Natural Resources Canada (NRCan), Government of Canada.

Volume and Weight Conversions	Estimated Densities - Common CR&D Materials	
	Material	Density (kg/m3)
1 cubic foot (ft3) = 0.028 cubic meters (m3)	Aggregate (rock, gravel)	592.7
1 cubic yard (yd3) = 0.765 cubic metres (m3)	Asphalt	458.6
1 cubic litre = 0.001 cubic meter (m3)	Asphalt (milled, ripped, crushed)	40.0
1 cubic meter (m3) = 1 cubic meter (m3)	Carpet/Carpet Padding	62.3
	Cardboard/Corrugated Containers	62.9
1 pound (lb) = 0.454 kilogram (kg)	Concrete, brick & block	2,370.0
1 ton (2000 lbs) = 907 kilograms (kg)	Glass	225.4
1 tonne (T) = 1000 kilograms (kg)	Drywall	277.1
	Metals (ferrous/non-ferrous)	133.5
1,000 kilograms (kg) = 1 tonne (T)	Roofing (composition/asphalt)	433.7
1 ton (2000 lbs) = 0.907 tonnes (T)	Wood (clean dimensional lumber)	100.3
	Wood (clean engineered wood)	159.0
	Wood (painted/stained/treated)	100.3
	Wood (pallets)	170.0
	Wood (chips)	300.0

Basic Formulas for Determining the Weight of a CR&D Material

$$\text{Volume of CR\&D material} = \left(\frac{\text{number of containers}}{\text{containers}} \right) \times \left(\frac{\text{volume per container}}{\text{container}} \right) \times \left(\frac{\text{number of times containers emptied during the project period}}{\text{the project period}} \right) \times \left(\frac{\text{average \% container filled}}{\text{container filled}} \right)$$

$$\text{Weight of CR\&D material} = \left(\frac{\text{volume of CRD material}}{\text{CRD material}} \right) \times \left(\frac{\text{material}}{\text{density}} \right)$$

Example calculation:

Five, 10 cubic yard (yd³) dumpsters of wood pallets are collected twenty times during a project. The containers are 80% full at the time of collection.

1. Determine the volume of wood pallets generated and collected during the project:

$$5 \text{ dumpsters} \times 10 \text{ yd}^3 \times 20 \text{ collections} \times 80\% = 800 \text{ yd}^3$$

To convert to cubic metres (m³), multiply yd³ by the volume conversion for m³:

$$800 \text{ yd}^3 \times 0.765 = 612 \text{ m}^3$$

2. Determine the weight of wood pallets generated and collected during the project:

Multiply the volume of wood pallets by the density of wood pallets (170 kilograms/ m³):

$$612 \text{ m}^3 \times 170 \text{ kg/ m}^3 = 104,040 \text{ kg (or 104 tonnes)}$$

Resources:

- “A Guide to Waste Audits and Waste Reduction Work Plans for Construction & Demolition Projects, As Required under Ontario Regulation 102/94”, Ontario Ministry of Environment and Energy
- “Waste Reduction and Recycling Support (WRARS) Program Guide, Version 1.2 (November 23, 2010)”, Green Manitoba Eco Solutions
- “The Environmentally Responsible Construction and Renovation Handbook, Second Edition, Table 9.1: Construction, Demolition and Renovation Waste Management Cost Benefit Analysis”, Public Works and Government Services Canada
- For a directory of Manitoba-based green building products and services, please visit the Manitoba Green Building Products and Services Directory website.

Figure 2: CR&D Waste Tracking - Sample Template
(Excel format templates available at Manitoba Green Building Program website)

CR&D Waste Tracking - Sample Template										
Load #	Date (dd/mm/yyyy)	Time	Hauler (Company Name)	Waybill #	Bin Size	Material(s) Type	Recycling (tonnes or volume)	Salvage (tonnes or volume)	Landfill (tonnes or volume)	Destination Facility
1										
2										
3										
4										
5										
6										
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Figure 3: CR&D Waste Progress Summary - Sample Template
 (Excel format templates available at Manitoba Green Building Program website)

CR&D WASTE PROGRESS SUMMARY - SAMPLE TEMPLATE

Audit Date: / / (dd/mm/yyyy)

COMPANY NAME:				CONTACT <i>(Designated CR&D Project Waste Manager - i.e. person responsible for CR&D Waste Management Plan):</i>					
PROJECT NAME:				Telephone No.: () Cell No.: ()					
PROJECT SITE/LOCATION:									
TOTAL AREA (sq. ft./sq. m.):				Project Start Date: / / (dd/mm/yyyy)					
				Project Completion Date: / / (dd/mm/yyyy)					
				PROJECT TYPE:				BUILDING TYPE:	
<input type="checkbox"/> New Construction		<input type="checkbox"/> Deconstruction (full)		<input type="checkbox"/> Office		<input type="checkbox"/> Arena		<input type="checkbox"/> Personal Care Home	
<input type="checkbox"/> Major Renovation		<input type="checkbox"/> Deconstruction (partial)		<input type="checkbox"/> School		<input type="checkbox"/> Hospital		<input type="checkbox"/> Recreation Centre	
<input type="checkbox"/> Addition/Expansion		<input type="checkbox"/> Demolition		<input type="checkbox"/> Other (please specify):					
PROJECT PROGRESS SUMMARY									
For period: to									
(dd/mm/yyyy) (dd/mm/yyyy)									
CR&D Waste Material Type	Amount Generated weight (tonnes)	Amount Recycled weight (tonnes)	% Recycled	Amount Salvaged weight (tonnes)	% Salvaged	Amount Disposed weight (tonnes)	% Disposed	CR&D Waste Material End-Destination	
TOTAL	Amount Generated	Amount Recycled	% Recycled	Amount Salvaged	% Salvaged	Amount Disposed	% Disposed		
NOTE: Total Generated = Total (Recycled + Salvaged + Disposed)									
Explanatory Notes:									
Column 1 ["Material"] - enter each type of CR&D material that has been generated, and then recycled, salvaged and disposed to a landfill during the project audit period (e.g. concrete, drywall, wood, etc).									
Column 2 ["Amount Generated"] - enter actual weight (metric tonnes) of each CR&D material generated during the project audit period.									
Column 3 ["Amount Recycled"] - enter actual weight (metric tonnes) of each CR&D material recycled during the project audit period.									
Column 4 ["% Recycled"] - enter percentage of each CR&D material recycled [i.e. amount recycled divided by amount generated x 100] during the audit period.									
Column 5 ["Amount Salvaged"] - enter actual weight (metric tonnes) of each CR&D material salvaged during the project audit period.									
Column 6 ["% Salvaged"] - enter percentage of each CR&D material salvaged [i.e. amount salvaged divided by amount generated x 100] during the audit period.									
Column 7 ["Amount Disposed"] - enter actual weight (metric tonnes) of each CR&D material disposed during the project audit period.									
Column 8 ["% Disposed"] - enter percentage of each CR&D material disposed [i.e. amount disposed divided by amount generated x 100] during the audit period.									
Column 9 ["CR&D Material End-Destination"] - enter end-destination of each material recycled, salvaged and disposed during the project audit period.									
I hereby certify that the above-noted CR&D Waste Progress Summary is complete and correct.									
Name of Designated CR&D Waste Manager:					Signature of Designated CR&D Waste Manager:				
					Date: / / (dd/mm/yyyy)				

Figure 4: CR&D Waste Management Report - GBP Template
(Excel format templates available at Manitoba Green Building Program website)



CR&D WASTE MANAGEMENT REPORT							
INSTRUCTIONS: Please provide the information in the table below. For reference, detailed instructions are included under the heading "EXPLANATORY NOTES".							
CR&D Waste Management Report:							
Material Type ¹	Generated ² (tonnes)	Recycled ³ (tonnes)	Salvaged ⁴ (tonnes)	Disposed ⁵ (tonnes)	Final End-Destination ⁶	Final End-Destination ⁶	Final End-Destination ⁶
TOTAL:					NOTE: Total Generated = Total (Recycled + Salvaged + Disposed)		
	Generated	Recycled	Salvaged	Disposed			
EXPLANATORY NOTES:							
¹ MATERIAL TYPE: Enter the specific categories of CR&D materials that were generated by the building project. For example: Asphalt (paving) Asphalt (roofing) Brick and Masonry Building Materials e.g. carpeting, flooring, ceiling tile, insulation Concrete Drywall/Gypsum Fixtures e.g. plumbing, light, door and window assemblies Glass Metal (ferrous) e.g. structural and reinforcing steel Metal (nonferrous) e.g. wiring and conduit, copper piping Packaging e.g. cardboard, boxboard, paper Plastics e.g. PVC products, polyethylene, high density polyethylene (HDPE) Rubble e.g. land clearing & associated mix materials Wood (clean) e.g. dimensional lumber, millwork, scrap, pallets Wood (dirty) e.g. pressure treated, plywood, painted, composite Mixed CR&D Other (specify)							
² AMOUNT GENERATED: enter actual weight (metric tonnes) of each CR&D material that was generated during the project period (e.g. concrete, drywall, wood, etc.). ³ AMOUNT RECYCLED: enter actual weight (metric tonnes) of each CR&D material that was recycled during the project period. ⁴ AMOUNT SALVAGED: enter the actual weight (metric tonnes) of each CR&D material that was salvaged during the project period. ⁵ AMOUNT DISPOSED: enter the actual weight (metric tonnes) of each CR&D material that disposed to a landfill during the project period. ⁶ FINAL MATERIAL DESTINATION: enter the end-destination (i.e. recycler, salvager, processor, or landfill) of each CR&D material that was recycled, salvaged and disposed during the project period. If there is more than one final destination type for a material (e.g. recycler & salvager), or multiple entries for the same destination (e.g. ABC recycler & XYZ recycler), list all.							
Signatures:							
PROJECT NAME:				PROJECT LOCATION:		DATE (dd/mm/yyyy)	
Name of DESIGNATED CR&D WASTE MANAGER (PRINT):				Phone:		Cell:	
Signature of DESIGNATED CR&D WASTE MANAGER:				Email:			
Name of BUILDING OWNER or REPRESENTATIVE (PRINT):				Phone:		Cell:	
Signature of BUILDING OWNER or REPRESENTATIVE:				Email:			