GREEN BADGER

ULTIMATE GUIDE TO LEED V4 & V4.1

MRc5: Construction Waste Management

A Resource Guide for General Contractors

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Earning MRc5 Construction Waste Management in LEED v4.1

Don't let these 2 points go to waste!

Construction waste management is pursued on nearly every LEED project, and for good reason. With proper planning, two points are achievable.

The updates to v4.1 make credit achievement for 1 point straightforward by eliminating the material streams requirement. Additional points are available by *actually* minimizing waste rather than just recycling or diverting from landfills. The prerequisite was removed altogether and incorporated into credit compliance here.

But can project teams really hit the waste reduction goals? If your project has a ton of demolition it will make earning more than 1 point a challenge. For this reason, we're providing you guidance for both LEED v4 and v4.1 because if your project hasn't registered specifically under v4.1 then you have the option to choose. This might be one of the instances where staying with LEED v4 gives you a better chance at earning more points.

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REQUIREMENTS

Requirements for MRc5 in LEED v4.1

Develop and implement a construction and demolition waste management plan and achieve points through waste prevention and/or diversion.

Waste Management Plan and Report: All projects must develop and implement a construction and demolition waste management plan:

- Identify strategies to reduce the generation of waste during project design and construction.
- Establish waste diversion goals for the project by identifying the materials (both structural and nonstructural) targeted for diversion.
- Describe the diversion strategies planned for the project. Describe where materials will be taken including expected diversion rates for each material.

Provide a final waste management report detailing all waste generated, including disposal and diversion rates for the project. Calculations can be by weight or volume, but they must be consistent throughout.

With proper planning, 2 Points are achievable. Photo via Canva.

Exclude excavated soil and land-clearing debris from calculations. Include materials destined for alternative daily cover (ADC) in the calculations as waste (not diversion).

Any materials sent to a commingled recycling facility for processing must take the facility average recycling rate and must include any ADC as waste (not diversion).

Requirements for LEED v4.1

1 Point

Divert at least 50% of the total construction and demolition materials from landfills and incineration facilities.

OR

1 Point

Generate less than 15 lbs./ft2 for BD+C or 10 lb/ft2 for ID+C

2 Points

Generate less than 10 lbs./ft2 for BD+C or 7.5 lbs./ft2 for ID+C

Requirements for MRc5 in LEED v4.1, Cont.

Earning 1 point is pretty easy for LEED v4.1 – 50% diversion rates are common, and you don't have to bother with all the material stream requirements in LEED v4 or worry about RCI certified facilities.

The kicker comes in the wording of the commingled recycling facilities: you must take the facility average which may be significantly lower than your actual rate. That said, as long as you find a facility with an average rate of greater than 50%, your work here is done. One point is in the bag.

Earning additional points may be more challenging. You're either going to be under 15 lbs per sf or you're not.

This requires tracking all materials generated by the project from start of construction through project completion to determine the project's total waste generation, and includes all waste and diverted materials including demolition waste.

The only thing you don't include are hazardous materials and land-clearing debris.

Requirements for LEED v4

1 Point

Divert 50% and Three Material Streams

OR

2 Points

Divert 75% and Four Material Streams

Requirements for MRc5 in LEED v4

Let's start with a definition: what is a material stream?

The USGBC Reference Guide defines a material stream as flows of materials coming from a job site into markets for building materials. To get the LEED gibberish out of the way, let's restate - what's the material, and where does it go? Typically, it is one material going to one end use or facility.

If you have a metals dumpster on-site and it all goes to one metal recycling company, that counts as one material stream. That is the most straightforward example. However, a single material may count as two material streams.

Example: One Materials can Count as Two Materials Streams

Let's say you're deconstructing a building and salvaging the brick. Some of the brick is in great shape and you're able to either reuse it yourself or send it to a reclaimed materials company for resale. That's one material stream.

The rest of the brick wasn't in great shape, so it got tossed in the masonry dumpster to be recycled as aggregate. That is a second material stream for brick.

Material Stream #1:

- *reuse*
- *reclaimed*

Material Stream #2:

- *aggregate recycling*

What about commingled?

Commingled is typically considered one material stream, unless the facility can track and produce documentation of specific materials recycled for your project. If that's the case, then you can count each material as a separate stream (more on that in a bit).

SSp1's intent is to keep contruction dust on site. Photo via Canva.

What amount of material constitutes a stream?

There is no fixed amount for a product to be considered a material stream. USGBC suggests 5% of total waste, but there's definitely wiggle-room. No, you can't recycle 1 soda can and count aluminum as a material stream, but you can be strategic with your efforts and bounds.

What doesn't count as a material stream?

There are a few things you'll never consider as material streams. The most common waste you'll come across is land clearing debris (cleared trees, rocks, stone, etc). They don't help you, but they don't count against you, so exclude them from your calculator altogether.

The same goes for hazardous waste, even if it is from a building being demolished. Dispose of it properly, and account for it in your construction waste management plan, but don't include it in your overall diversion calculations.

What about RCI certified facilities?

If you can use a facility that is Recycling Certification Institute (RCI) certified then, by all means, you should. But there are less than 25 RCI certified facilities in the country, so we'll assume you don't have one next door.

The diversion tends to be the easy part. The challenge is often obtaining the necessary material streams.

STRATEGIES

Strategies for MRc5

Here's the good news: if you're registered under v4, you can track under both metrics and see where you're having more success.

If you're stuck, can only do commingled recycling, and won't get at least 4 waste streams then just take 1 point for Option 1 in v4.1 and call it a day. If getting 4 waste streams isn't an issue, then v4 is probably more reliable. Either way, you can calculate your waste per square foot at the end of the project and see where it shakes out.

Clearly, more advanced planning is now required, especially for v4.1. Figuring out how the design itself may lead to more waste creation will be important and incorporating modular or prefab where possible are also now considerations.

For ID+C projects, v4.1 seems much more achievable than new construction projects. In a spot check sample of projects using Green Badger, a few ID+C projects were under 10 lb/sf. However, on the BD+C side, ratios ran from 20 lbs/sf to 100 lbs/sf - none of which are anywhere near the LEED requirements for additional points.

SSp1's intent is to keep contruction dust on site. Photo via Canva.

Summary of Strategies

Sitework & Foundations:
dedicated concrete dumpster

Building goes vertical:
commingled recycling dumpster

Building goes vertical:
metals dumpster

End of project:
wood pallets, or cardboard as appliances/furniture

With LEED v4, you need 4 different material streams and this is typically quite achievable.

A key point is you don't need 4 separate dumpsters during the entire project. A good strategy is to phase in dumpsters for the timeframe they are needed, so you're not taking up valuable real estate on your jobsite.

When you start sitework and foundations, you'll likely not have any waste except concrete. Having a dedicated concrete dumpster during this timeframe is a no-brainer, and once you're done – boom! 1 (heavy) material stream is already taken care of.

Now it's time for the building to go vertical. This is when your commingled recycling dumpster can take the lion's share of your waste (assuming the hauler/facility is handling it correctly as described below). It is even normal/possible to have a metals dumpster, because there's good value in that scrap! If so, you're already at 3 streams and can kick back and pop a cold one (as long as you recycle the can in the metal dumpster).

If you still need an additional material stream, hyper-focus on another short-term material, like wood pallets, or cardboard as appliances/furniture shows up at the end of the project. Easy peasy, lemon squeezy. ◆

Commingled:
1 material stream

Individual materials:
each counts as a material stream

Alternative Daily Cover (ADC)
If anything was listed here,
it must be counted as waste

2019		Recycled C&D	Wood	Concrete	ABC	Metal	Cardboard	Drywall	Asphalt	Brick	Dirt/Fines (ADC)	OBW	Total Diverted	Total Residual	Total
January	TN	11.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	11.18	2.27	13.45
February	TN	12.73	0.00	11.25	0.00	1.73	0.00	0.00	0.00	0.00	0.00	0.00	25.71	2.97	28.68
March	TN	26.63	0.00	11.25	0.00	2.23	0.00	0.00	0.00	0.00	0.00	0.00	40.11	4.95	45.06
April	TN	30.16	0.00	0.00	11.25	1.48	0.00	0.00	0.00	0.00	0.00	0.00	42.89	8.73	51.62
May	TN	40.31	1.47	22.50	0.00	5.68	0.00	0.00	0.00	0.00	0.00	0.00	69.96	7.57	77.53
June	TN	61.46	0.00	90.00	0.00	10.78	0.00	0.00	0.00	0.00	0.00	0.00	162.24	11.25	173.49
July	TN	52.25	0.00	22.50	0.00	5.15	0.00	0.00	0.00	0.00	0.00	0.00	79.90	10.68	90.58
August	TN	59.32	0.00	11.25	0.00	6.36	0.00	0.00	0.00	0.00	0.00	0.00	76.93	12.42	89.35
Totals	TN	294.04	1.47	168.75	11.25	33.41	0.00	0.00	0.00	0.00	0.00	0.00	508.92	60.84	569.76
	%	51.61	0.26	29.62	1.97	5.86	0.00	0.00	0.00	0.00	0.00	0.00	89.32	10.68	

One last note on dumpsters:

A material “dumpster” doesn’t mean a 20 yard container hanging out for weeks. A 90 gallon rolloff container counts just as much. Just empty it frequently to keep from overflowing and ending up in the waste pile. These are especially useful on interiors projects.

Important Note on Commingled Recycling

Commingled recycling facilities must be able to provide project-specific diversion rates or an average diversion rate for the facility that is regulated by the local or state authority. Visual inspection is not an acceptable method for evaluating diversion rates.

If the commingled recycling facility can track and produce documentation of specific materials recycled for your project, you can count commingled waste as multiple waste streams. Otherwise, commingled waste that is the average diversion rate for a regulated facility is counted as a single waste stream regardless of how many different materials are included.

The average recycling rate for the facility must exclude alternative daily cover (ADC). Alternative daily cover (ADC) means cover material other than earthen material placed on the surface of the active face of a municipal solid waste landfill at the end of each operating day to control vectors, fires, odors, blowing litter, and scavenging.

SSp1’s intent is to keep contruction dust on site. Photo via Canva.

MORE **BEST PRACTICES**

1. Have a good construction waste management plan.

First of all, its required for the prerequisite under MRp2 under v4: you have to have a plan that identifies what waste is going to be generated for the project, and what means will be implemented to divert from landfills.

You need to identify at least 5 different materials in your plan, even if you only need 4 in implementation to earn the points. More consideration of construction materials/type, and overall building design will impact total quantities of waste generated.

It remains to be seen how USGBC reviewers critique the required "strategies to reduce the generation of waste during project design and construction" and what they find acceptable.

Regardless, working through this plan with your waste haulers will help you identify:

- what the optimum dumpster placement strategy will be,
- where those materials are going to be going, and
- what the estimated totals will be

Doing this early will help the team know they are on course to hit the material streams required under the credit. Not thinking this through, and trying to throw it together at the end of construction can lead to not earning any points and leave everyone frustrated.

For Construction Waste Management

2. Communicate your plan to the team and the subs.

Let everyone know what the recycling strategies are (one dumpster, multiple dumpsters, subs responsible for their own waste, etc.) so there's no confusion and materials aren't getting tossed in the waste dumpster.

Speaking of dumpsters – clearly label them by material! Not a tiny sticker on the side. A big, clearly marked sign for each dumpster. While you're at it, make the signs bi-lingual to ensure everyone can understand what goes where.

3. Track and communicate with the team frequently.

Getting waste reports 6 months after a dumpster pull doesn't help anyone. Neither does keeping your ongoing progress buried 500 emails deep. Track and report at least monthly what the current diversion percentage is, and how many material streams the project has so that there are no surprises at the end.

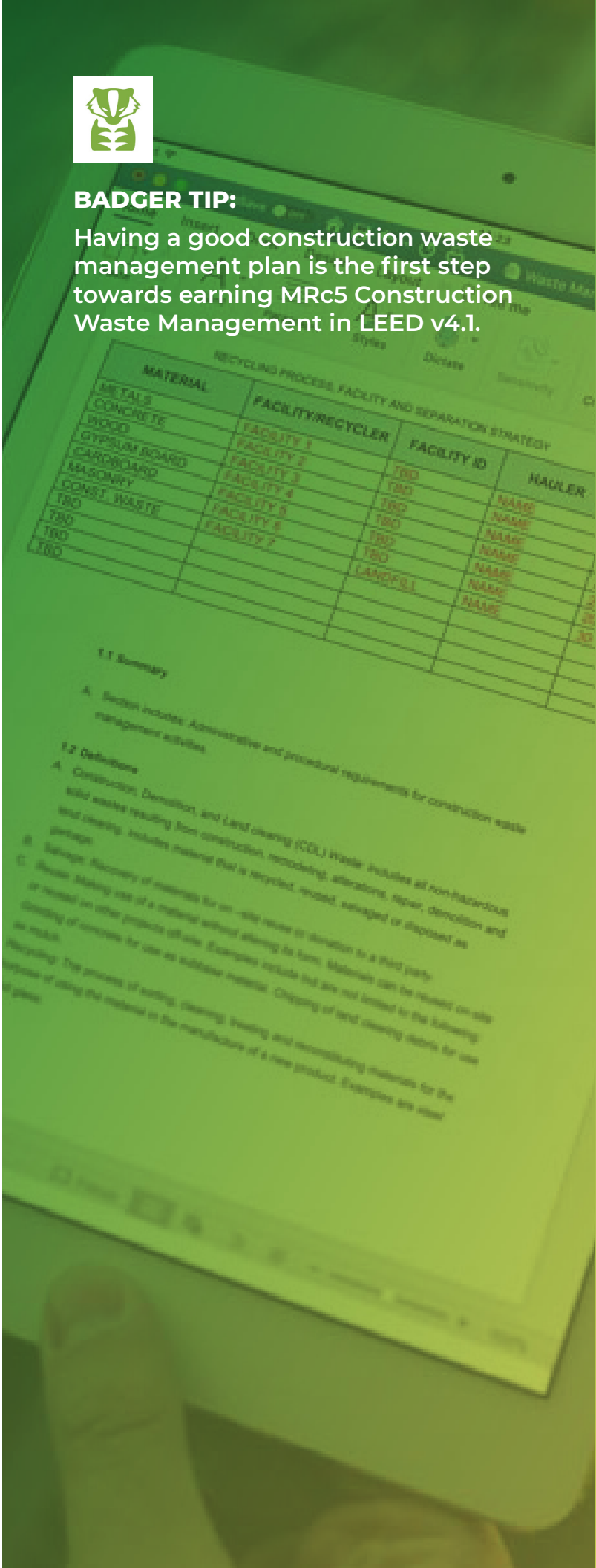
You don't want to get that last dumpster pull and find out you're at 74% because the team got careless. Monitor, report and communicate your waste diversion results so the team can change course if things start to look out of whack.

Summary for MRc5

Recaping how to earn 2 points:

- 1 point is a breeze under v4.1 - 50% reduction, and no material streams
- 2 points are achievable, with 4 material streams and 75% diversion under v4. ID+C projects may easily qualify for the 2nd point under v4.1
- If necessary, phase in dumpsters, with concrete early, then commingle, and finalize with wood/ cardboard/etc
- Develop your plan with your hauler early
- Communicate frequently!

SUMMARY



BADGER TIP:

Having a good construction waste management plan is the first step towards earning MRc5 Construction Waste Management in LEED v4.1.