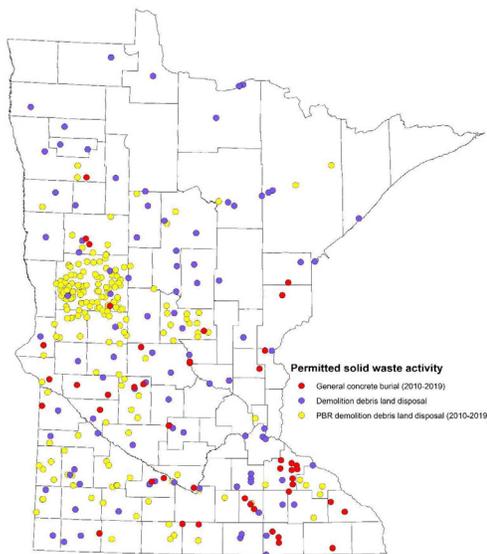


Chapter 6 | Construction and demolition waste



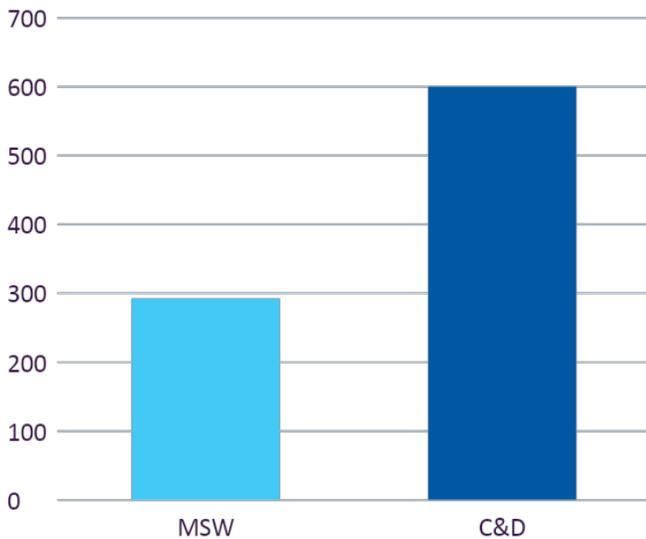
Construction and demolition waste (C&D) is generated during the construction, renovation, and demolition of buildings, roads, or structures and includes materials such as asphalt, carpet, concrete, drywall, lighting and plumbing fixtures, metals, and wood. C&D waste is not included in municipal solid waste (MSW) and C&D waste facilities and landfills are managed separately from MSW. Figure 1 shows where C&D waste management facilities are located across Minnesota.

Included in this chapter

- Why is there so much C&D waste?
- Hazardous materials in demolition projects
- Hazardous waste disposal
- Deconstruction
- Recycling C&D materials
- Communicate reuse and recycling goals
- Close the loop: incorporate used building materials
- What can CRAs do?

The EPA estimates that 600 million tons of C&D waste was generated in the United States in 2018, more than twice the amount of household trash. While C&D waste includes waste from both the construction and demolition of buildings, demolition represents more than 90% of total C&D waste generation, while construction represents less than 10%. On average, about 70% of materials from a demolition project go to a C&D landfill.

2018 Municipal Solid Waste vs. Construction and Demolition Waste Generation in United States (in millions of tons)



Why is there so much C&D waste?



A major contributor to C&D waste is development – when a new building is constructed, it often means that an older building needs to be demolished to clear space for the new build. This is especially true in urban areas where there is more limited space. Additionally, C&D waste is big and bulky by nature and

includes materials like concrete and lumber that take up more space in landfills. Finally, some end markets for C&D materials are challenging, making it difficult to find ways to recycle C&D waste. For example, carpet is made up of many different types of materials which are held together with adhesives and are challenging to separate and process for recycling.

Many building materials have the potential to be salvaged and reused or recycled. In fact, about 90 percent of the materials in a typical demolition project could be salvaged and kept out of landfills. It is important to reuse and recycle C&D waste to prevent usable material from going to the landfill, making used building materials available to the community, and preserving historical building materials.

Hazardous materials in demolition projects



Construction, demolition, and renovation projects can reveal hazardous materials, such as asbestos, electronics, paint, pesticides, and items containing mercury or lead like fluorescent light bulbs and batteries. Managing these types of hazardous wastes properly is important in protecting public health and the environment and is required by law.

The following materials need to be removed at least two days prior to demolition or certain renovation projects per Hennepin County Ordinance 7 and State of Minnesota Rules.

- Aerosols, compressed gas cylinders, fire extinguishers
- Appliances
- Asbestos-containing material
- CFC-containing items (fire extinguishers, refrigerators, freezers)
- Electronics
- Hazardous wastes such as flammable liquids, pesticides, herbicides, solvents, cleaners, paints, adhesives, acid and caustics.
- PCB-containing items (transformers, light ballasts)
- Lead-containing items (lead paint unattached to substrate, lead-acid batteries)
- Material trapped in sumps and traps
- Mercury-containing items (batteries from smoke detectors, fluorescent lights, thermostats)
- Oils including used oil

Hennepin County staff conduct pre-demolition inspections of residential and commercial properties to help ensure regulated materials are removed prior to demolition. Hennepin County recommends that residents contact the city where the work is taking place for any additional requirements. Information about pre-demolition inspections and scheduling can be found by visiting hennepin.us/demolition or emailing demo@hennepin.us.

Hazardous waste disposal

Once hazardous materials are removed from a property, they need to be properly managed through reuse, recycling, or disposal at a hazardous waste facility. Refer to the list of Hazardous and Universal Waste Disposal Companies for C&D Sites found on hennepin.us/demolition for companies that accept this type of waste.

Household hazardous waste can be brought to a Hennepin County drop-off facility by residents only. Read more about household hazardous waste in Chapter 7.

PaintCare sites accept old paints, primers, sealers and clear-coats from businesses and households free of charge, with some restrictions. For eligibility and restrictions, and participating collection sites, visit paintcare.org.

Asbestos in demolitions or renovations

Asbestos-containing materials are required to be removed prior to demolition or renovation per Hennepin County Ordinance 7 and State of Minnesota law. Learn more about requirements for proper identification, management, and disposal of asbestos in demolition and renovations:

- Minnesota Department of Health (651-201-4620), health.state.mn.us/communities/environment/asbestos/homeowner/index.html
 - Minnesota Pollution Control Agency (507-206-2644), pca.state.mn.us/business-with-us/asbestos-in-demolition-or-renovations
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Deconstruction



Deconstruction is the careful dismantling of a building structure to preserve building materials so they can be reused. Compared to mechanical demolition, which uses equipment like bulldozers and wrecking balls to tear down a building, deconstruction involves taking a building apart with mostly hand tools, and materials are sorted into categories for efficient recycling and reuse. Through deconstruction, up to 25% of the materials in a typical home can be reused and up to 70% of the materials can be recycled.



In a full building removal project, a crew typically starts by removing interior fixtures, such as cabinets, lighting, and wood flooring by hand. Next, the structural deconstruction begins at the very top of the building, removing materials from the roof and attic, including dimensional lumber. As building materials are removed from the structure, they are sorted into categories by material type for reuse and recycling. In a full deconstruction project, the crew will remove materials until only the foundation is remaining, which is typically made up of concrete or brick and can be recycled.

Benefits to deconstruction include:

- Preventing usable materials from going to the landfill
- Making used building materials available to the community
- Providing additional jobs
- Supporting local reuse retailers
- Reducing dust from job site compared to mechanical demolition
- Potentially preserving historical building materials

Many building materials can be salvaged for reuse. Reuse is environmentally preferred over recycling or trash disposal because it avoids energy use and costs associated with manufacturing new products and diverts materials from landfills. There are several for-profit and nonprofit companies that accept usable building materials, including:

- Appliances
- Cabinets
- Doors
- Hot water radiators
- Light fixtures
- Windows
- Wood flooring and trim

Building materials can also be given away on platforms such as Craigslist or Facebook Marketplace or incorporated back into the new project. You can find a list of organizations that accept building materials for reuse at hennepin.us/salvage.

It is important to plan when considering deconstruction because the project could take longer to complete and could have increased labor costs. Hennepin County has resources available to assist property owners in deconstruction, including grant funds to offset additional costs. Learn more at hennepin.us/deconstruction.

Recycling C&D materials



Some buildings materials that can't be salvaged for reuse can be recycled. Planning ahead for what materials will be recycled and how much space will be needed to separate those materials for recycling is important. Finding enough space for the recyclable materials can be a challenge on some properties but planning should help maximize the success of recycling. Many processors accept mixed loads of materials for recycling but separating materials from the start of the project can increase waste diversion.

There are construction and demolition waste processing facilities in the Twin Cities that recycle materials such as asphalt, metals, and wood by sorting mixed loads of material, similar to a MRF. C&D recycling facilities can recover about half of materials for recycling, putting C&D materials to better use than if they were all sent straight to a landfill. They can also provide roll-off boxes to keep onsite to collect materials throughout the project at a comparable price to sending these materials to a landfill.

There should be a recycling plan in place before the project begins. Visit hennepin.us/salvage for a list of companies listed that accept loads of construction and demolition materials from residents and contractors.



Communicate reuse and recycling goals

It is important for residents to communicate their building material salvage and recycling plans with the contractor(s) when planning a home remodeling, construction, or demolition project. Use the tips below to get started.

Set clear goals

Decide on salvage and recycling goals from the start of the project to help you choose the right contractor to meet your needs.

Ask contractors how they manage waste

When searching for a contractor, inquire about how the company manages waste. Do they incorporate salvage or deconstruction into their projects? Do they bring debris to a construction and demolition recycling processing facility? If not, are they willing to try it out for your project?

Communicate throughout the project

Discussing your salvage and recycling plans throughout the entire project can help ensure materials are handled

properly. Consider writing a contract describing your waste management goals and requirements. Routine check-ins may also help confirm the project is going as planned.

Follow up

After project completion, ask the contractor for documentation verifying salvage and recycling goals were met. Documentation may include scale tickets from recycling processors or receipts from building material salvage organizations.

Green Building Practices

Green remodeling means thinking about your project with an eye toward its impact on the environment. Waste reduction and recycling, energy efficiency, and using sustainable materials are all important planning considerations.



The best approach is to focus on making green decisions from the very start. This way, they aren't viewed as separate but are integrated into your overall design and plan. Proper

and early planning reduces the potential for costly design changes later that can create more waste. Hiring architects and contractors that have experience with and interest in green building can enhance your project's success.

Larger building projects may be candidates for green building certification programs like Leadership in Energy and Environmental Design (LEED). LEED is a set of voluntary, national standards developed by the U.S. Green Building Council for both commercial and residential projects. Learn more at [usgbc.org/leed](https://www.usgbc.org/leed).

Minnesota B3 Guidelines can be applied to the design of new buildings or renovations to meet sustainability goals for site, water, energy, indoor environment, materials and waste. The B3 Guidelines are required on all projects that receive general obligation bond funding from the State of Minnesota. More information can be found at [b3mn.org](https://www.b3mn.org).

Close the loop: incorporate used building materials

Consumers are an important part in making recycling work because purchases send a message that salvaged products are valued. When out shopping for building supplies, help close the recycling loop by purchasing items made from reused or salvaged materials. Many stores in the Twin Cities sell salvaged building materials, such as doors, windows, light fixtures, cabinets, hardwood flooring and hardware. These materials lend authenticity to a remodel in an older home or interest and style to any construction project. Find a list of the salvage businesses and reuse retailers that offer a variety of home building materials at hennepin.us/salvage.

Reusing building materials preserves what is referred to as the "embodied energy" of the materials. Embodied energy is the energy consumed by all the processes involved in producing a material, from getting the natural resources to manufacturing to product delivery. Reusing materials helps reduce the solid and hazardous waste produced in the manufacturing of new building materials.

A good reuse strategy in remodeling projects is trying to reuse some or all of the original materials or fixtures. For example, refacing cabinets is a cost-effective way to give a kitchen a new look while minimizing waste. You can also find many materials made with recycled content, including glass tile, carpet, and latex paint. Plus, looking for locally produced materials produced reduce your environmental impact by reducing transportation emissions.

What can CRAs do?

CRAs can play an important role in the sustainable building sector by talking to their networks about reducing C&D waste and incorporating salvaging building materials and green building practices into projects. Perhaps your neighbor is in the planning stages of a home remodel and you help them choose deconstruction to salvage materials that would have otherwise gone in the trash. Or maybe your friend is looking to refresh their space and you connect them to unique, salvaged pieces that add character to their project. CRAs can also support the sustainable building sector by choosing to shop for home improvement products at local building-material reuse retailers instead of big box stores and encouraging others to do the same.

Resources

- Hennepin County deconstruction grants:
hennepin.us/deconstruction
- Hennepin County deconstruction video:
youtube.com/watch?v=gRv-hr0iFeM
- Building material salvage guide for homeowners (PDF):
hennepin.us/-/media/hennepinus/residents/recycling/documents/building-material-salvage-guide-homeowners.pdf
- MPCA building material reuse and recycling website:
pca.state.mn.us/business-with-us/building-material-reuse-and-recycling
- There are a variety of certifications that can help you identify potential contractors for your green remodeling project, including:
 - Certified Green Professional designation from the National Association of Home Builders recognizes builders and remodelers who incorporate green and sustainable building practices into homes.
 - Green Advantage Personnel Certification credentials people who build high-performance, healthy buildings.
 - The North American Board of Certified Energy Professionals PV Certifications is for people working in the renewable energy field such as solar.
 - Certified Green Building Professional from Build it Green teaches the principles of green building and a systems approach to the design, construction, and operation of residential buildings