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DECONSTRUCTION AND SALVAGE TOOLKIT

This toolkit will assist you in planning, preparing, and financing deconstruction and salvage projects in Minnesota and includes need-to-knows of deconstruction and recommendations for community-based salvage initiatives.

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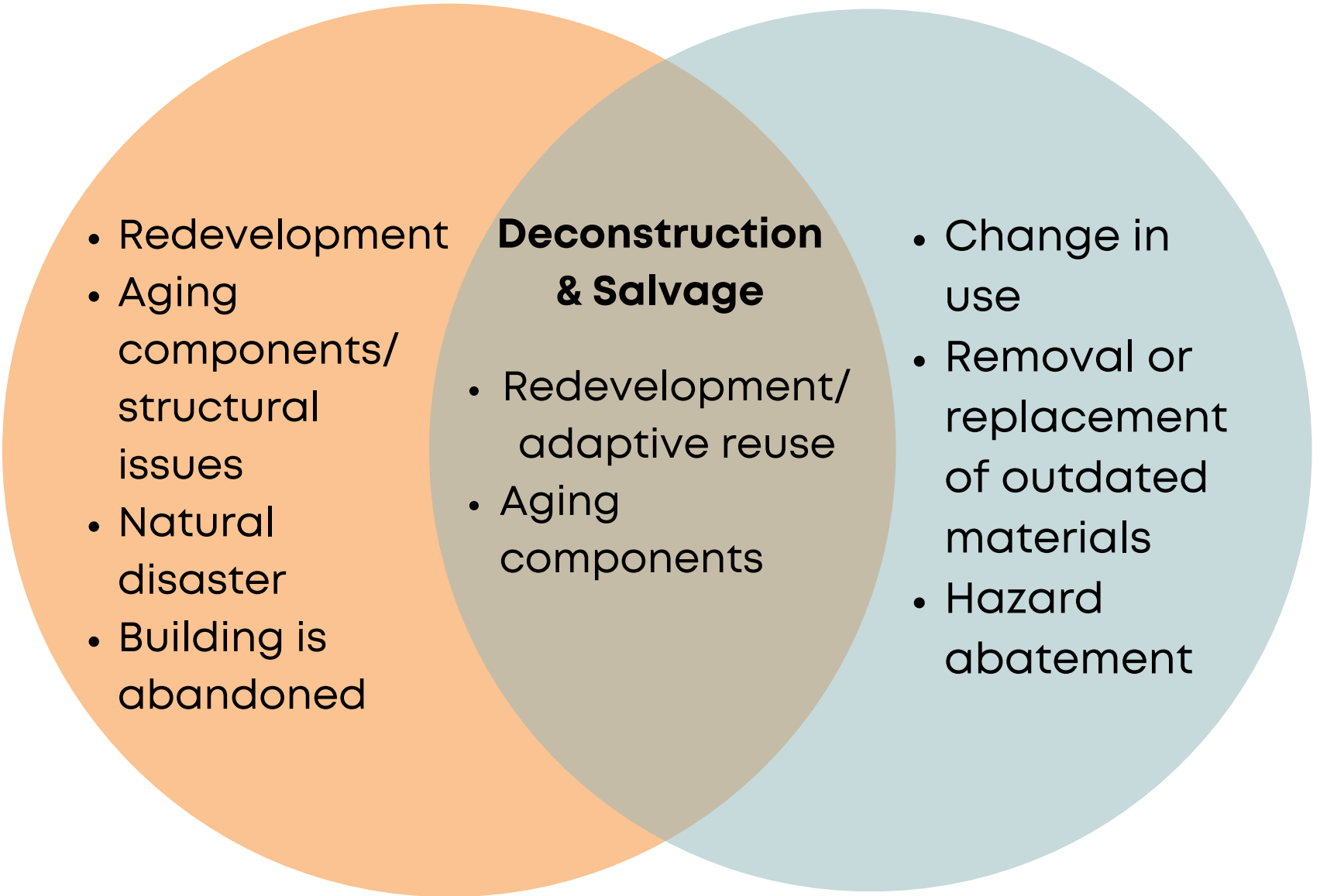
Introduction to Deconstruction and Salvage

- Deconstruction is the disassembly of a building so the materials, structural and non-structural, can be reused.
- Experts from Hennepin county estimate that up to 90% of materials from deconstruction projects can be reused or recycled, effectively diverting vast amounts of materials out of the waste stream.
- Salvage= the reclaiming of high value materials like appliances, cabinetry, doors, windows, lighting fixtures
- Structural deconstruction= the disassembly of the building including framing lumber, hardwood floors, trim, bricks
- Deconstruction is good for economic and environmental health of a community and keep its history and culture in tact

Why are buildings taken down?



The amount of C & D waste produced annually is equivalent to 150 miles of waste stacked on top of a football field!

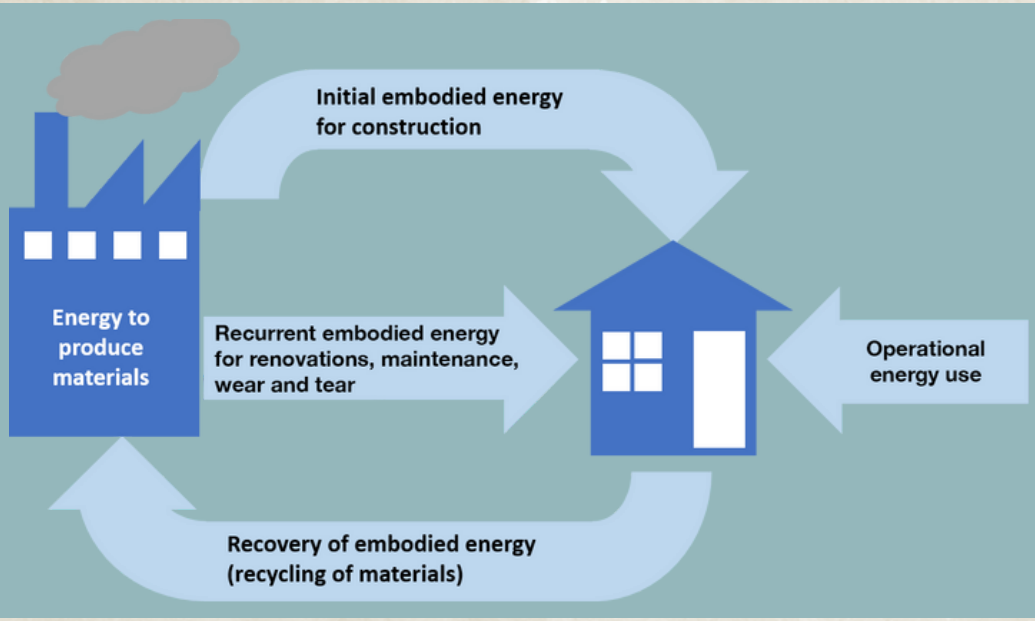
Sustainability

- Construction and demolition (C&D) waste is the largest waste stream in the world
- Reusable, durable, and historically unique building materials are filling up our finite landfills in MN
- Decon + salvage reduces demand for new materials
  - Negates risk of air, soil, and water pollution from resource extraction and material production
- Keeps materials local!

Embodied energy

is the total expenditure of energy involved in the creation of a building and its constituent materials. Demotion wastes the embodied energy of a building.

Photo Credit: MPCA



Like any waste, C&D materials produce GHG emissions. Deconstruction and salvage is climate action!

Benefits of Deconstruction and Salvage

Economic

- Creation of jobs
- Supporting local reuse & recycling businesses
- Reclaiming value of local materials

Environmental

- Less waste for landfill or incineration
- Retaining embodied energy
- Reduce need for new materials

Social

- Job and skill training
- Workforce development
- Preserving local building stock
- Affordable building materials

Grants

Four counties are currently offering grants for deconstruction and salvage efforts:

- Hennepin
- Ramsey
- Washington
- Carver

Photo Credit: MPCA

Finances

Deconstruction efforts can be costly. Luckily there are some resources available to offset costs that may be burdensome.

- Hennepin County Building Reuse Grants
- Ramsey and Washington Building
- Resource

Remember:

- Demolition and dumping fees are expensive
  - Salvaging materials saves money
- Sweat equity goes a long way
- Costs go into labor instead of fees and demolition

You are responsible for:

- **Following local/state guidelines for deconstruction and demolition including permits, fees, and processes**
- **Proper disposal of all household hazardous waste (see pg. X)**
- **Ensuring there is no lead or asbestos on the materials being salvaged**
- **Coordination for the recycling of materials that cannot be salvaged for reuse and coordinating with waste haulers for materials that cannot be recycled.**

Regulations

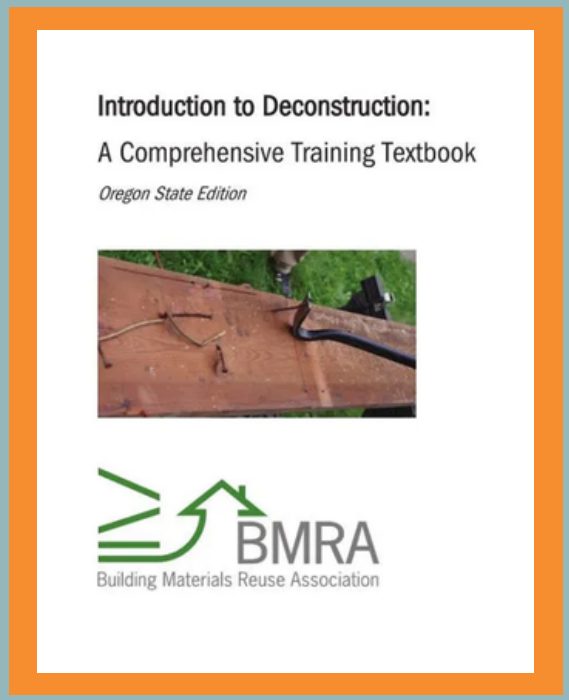
*Deconstruction/demotion regulation varies by county. Always check your local and state government's resources to determine how building material management is regulated.

Deconstruction & Salvage Timeline

Site Assessment & Materials Audit

Budget/ Bidding

Detailed Project Plan



Remember to start planning early!

*This process is recommended by *Introduction to Deconstruction: A Comprehensive Training Textbook, Oregon State Edition*

Close-Out

Implementation

1. Site Assessment & Materials Audit

- Identify project scope, goals, and schedule
- Determine reuse and recycling opportunities and values and quantify salvage volumes
- Plan for the proper deconstruction methods, schedule of operations and interactions with onsite activities
- Assess building for hazards and restrictions
- Consider egress routes, storage and staging areas, logistics, etc

Tools to Value Materials

Salvage potential is the likelihood a material can be salvaged quickly and efficiently with little damage or need for repair. Use the salvage potential and expected market value to determine what materials should be prioritized for salvage and reuse.

- TC Habitat ReStore **guide** to valuing donations
- Resource
- Resource

Photo Credit: MPCA

Donations & Deductions

You can divert demolition waste and save money on dumping fees by donating deconstructed materials to a tax-exempt organization.

After an accredited appraisal, you will work with the nonprofit to receive the information you will need to complete your tax deduction.

*For donations exceeding $5,000 in value, the materials must be appraised by an accredited IRS appraiser.

The Green Mission has a lot of information and expertise in this area of planning.

Tax Tip

The donations must be itemized and you will be required to fill out a 1040 Schedule A form. The IRS has a non-profit search tool to help connect you with organizations accepting reusable building material donations.

Remember to use salvage potential and salvage value to shape decision-making for project budget.

If project time or funds are limited: stick to the salvage basics:

- Cabinets
- Doors
- Windows
- Materials with high salvage value:
  - Wood beams, hardwood flooring, metals (wiring, copper pipe)

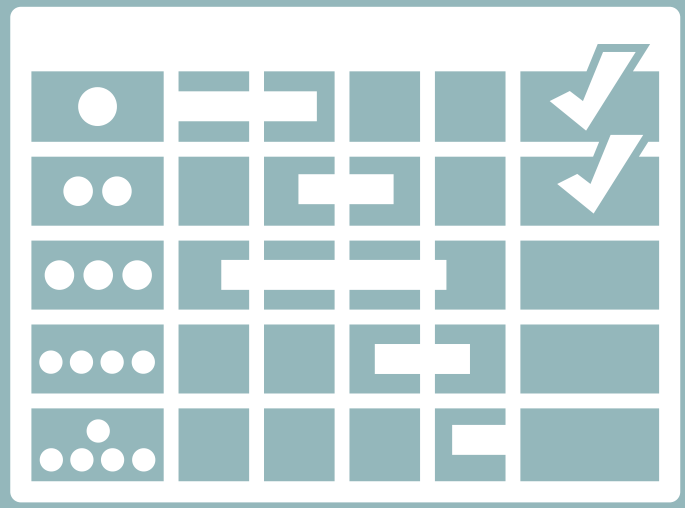
2. Budget/Bidding

- **Scope- full/partial deconstruction**
- **Site layout and characteristics**
- **Required labor**
- **Equipment**
- **Timeline/schedule**

Photo Credit: MPCA

3. Detailed Project Plan

- Obtain all necessary permitting
- Building during the deconstruction
  - Disconnect water, power, gas, sewer, etc
  - Perform a Pre-Demolition Inspection and coordinate removal of hazards
  - Coordinate temporary power, potable water, and restrooms
- Create work plan with specific tasks and procedures, personnel assignments and required equipment



Additional Planning

- Schedule with milestones
- Materials Management Plan-how they will be reused, recycled, or discarded after salvage
- Plan for storage, transportation, loading
- Safety plan

Pre-Demolition Inspection

***Always check with the county and state regulations for pre-demolition requirements to ensure proper compliance.**

Removal of hazardous materials is required for all demolition and deconstruction effort.

1. Bring household hazardous waste (paint, fluorescent bulbs, mercury thermostats, etc) to a designated drop-off facility
2. Complete an asbestos survey and identify lead containing materials
   a. Asbestos must be professionally abated
   b. Lead paint can be
3. Schedule and carry out a county inspection (if applicable).

The hazardous materials include:

- Aerosols, compressed gas cylinders, fire extinguishers
- Appliances
- Asbestos-containing materials
- CFC-containing items (fire extinguishers, refrigerators, freezers)
- Electronics
- Flammable liquids, pesticides, herbicides, solvents, cleaners, paints, adhesives, acid, and caustics
- PCB-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

- Minnesota Pre-Demolition Rules
- Recycling, Salvage, and Disposal Vendors

Photo Credit: MPCA

Photo Credit: MPCA

4. Implementation

- Secure equipment and resources
- Prepare the site
- Follow the project work plan
- Follow through with materials management
- Issue identification and troubleshooting (ongoing)
- Tracking progress and recordkeeping

5. Close-Out

- Project completion and verification with building owner
- Reporting and completion paperwork
- Budget close-out, invoicing, budget reconciliation

Photo Credit: MPCA

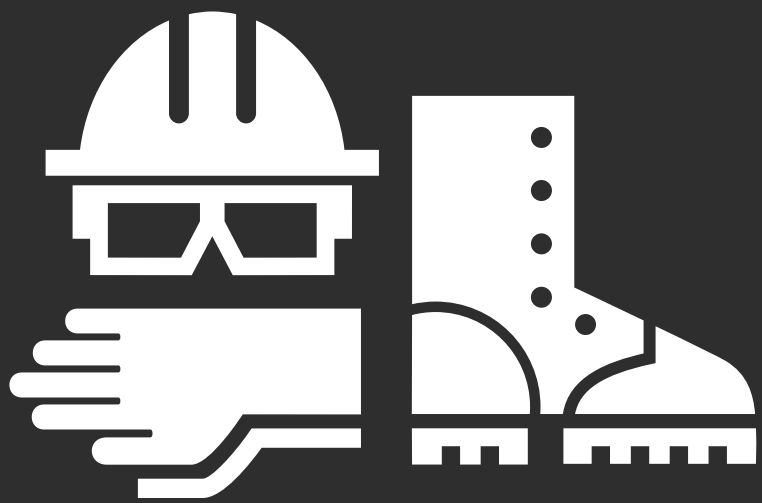
Track and Report Your Success

- Document your process taking note of key metrics such as pounds of material salvaged, recycled, and discarded.
- Reflect on successes and challenges and any unexpected changes that shaped the project.
- Share your success and lessons learned with various networks, including organizations with a focus in sustainability and the built environment.

Tools

When it comes to using tools for deconstruction, always think about safety first. Having the proper tools for salvaging materials is essential to ensure safety and maintain the quality of the salvaged materials.

Personal Protective Equipment (PPE): everybody on-site salvaging materials should be equipped with gloves, a respirator, and safety glasses.



The right tools will vary based on what you are salvaging. Some recommended tools are:

- Cutting tools (utility knife, 5-in-1 tool)
- Saws (handsaws, hacksaw, reciprocating, circular, chainsaw)
- Mini-router and Oscillating Multi-tool)
- Prying tools (flatbars, crowbars, Cat's paw type prybars, roofing shovel)
- Various wedges and chisels
- Nail nippers, Nail Jack®, and NailKicker®
- Common tools (hammers, screwdrivers, pliers, wrenches, drills)
- Extension cord, portable generator

Minnesota Tool Library

has a wide variety of tools that can be rented to indviduals with memberships. Check them out for the tools you need for you salvage project.

If you are tasked with moving the salvaged materials, make sure you have the necessary tools to efficiently transport the materials:

- Sawhorses
- Banding tools
- Ratchet straps and rope
- Shrink wrap
- Pallets
- Carts/pallet jack/forklifts

Safety Tip!

Dust, especially at job sites with toxic materials, is best managed with water and HEPA vacuums and air filters. Having the proper equipment for cleanup is essential at any jobsite.

Photo Credit: MPCA

Volunteer Coordination and Mobilization

For community-based initiatives, utilize your network to find and engage volunteers to help with planning, project management, and salvaging. Some engagement strategies to include are:

- Allowing volunteers to take salvaged materials
- Targeting mission-driven individuals/groups
  - Historic preservation, environmental, vintage and antique collectors
- Focus on why the work matters

Volunteer Resources

- VolunteerMatch
- HandsOn Twin Cities
- Local Habitat for Humanity
  - Deconstruction and volunteering programming may vary

All for Reuse Map

Interactive map of the United States representing different reuse organizations, businesses, and resources.

Rethos Deconstruction Map

Interactive map featuring deconstruction info, resources, contacts, and stories throughout Minnesota.

Deconstruction Coalition

Sign up for the MN Built Environment newsletter and hear about plans, policies, and stay up to date on deconstruction in MN!

Twin Cities Salvage Market

The best way to support deconstruction and salvage is to buy second-hand. Here are some great places to support the Twin Cities circular economy.

- MN Materials Exchange
- Better Futures MN
- Bauer Brothers Salvage
- Scrapbox Salvage
- Architectural Antiques
- TC Habitat ReStore
- Guilded Salvage Antiques
- City Salvage & many more

Great River Children's Museum

Located in downtown St. Cloud, this old bank was deconstructed and is being repurposed to be a children's museum in central Minnesota.

The deconstruction initiative was volunteer-led with David Mohs as the primary coordinator. The salvage project was a result of the effort to reduce building material waste from the remodel.

The Great River Children's Museum will feature eight core exhibits and utilize "large-scale, physical settings that engage children and adults in interactive, self-directed, shared learning experiences."

To learn more, stay updated, and support visit the GRCM's website.

Great River Children's Museum

The Process:

1. **Turned off unnecessary utilities** to save of monthly cost during the deconstruction.
2. **Creation of an inventory** of all the materials available to be salvaged.
3. **Hazardous waste inspection/removal** prior to opening the salvage projects to the public
4. **Incremental invites to salvagers in the community.** Individuals/groups salvaging were responsible for on-site deconstruction of selected items and were required to sign a liability waiver.
5. **Removed electrical** and other building components before remaining demolition
6. **Demolition permits and demolition** for what couldn't be repurposed.

The deconstruction project was the culmination of collaborations with museum consultants, designers, and architects.

The initiative occurred during the COVID-19 pandemic, presenting a few barriers such as delays, miscommunication, and general weariness of the concept of reuse. Despite the challengers, the effort successfully diverted ***36,258.8 pounds*** of material from the waste stream. All the materials were available for free, with some exceptions of some valuable metals. All types of salvagers were involved and helped make this deconstruction and reuse project so successful.

Great River Children's Museum

Key Takeaways:

- Construction field needs more education regarding sustainable materials management
- Building material reuse is somewhat difficult in rural/central MN
- Deconstruction saved money by requiring less demolition permits, demolition labor, and dumping
    - It also engaged the community and mobilized volunteers!
- Resources are important but skill and persistence are more important
- Good to have someone familiar with construction/the built environment on board

Additional Resources