Appendix M: Deconstruction Materials Reuse and Recycling

During demolition / deconstruction every effort should be made to **reduce embodied carbon emissions** and other environmental impacts above and beyond business as usual. If construction is planned for the site, look for **opportunities for direct re-use of materials from deconstruction**. Sustainable deconstruction involves;

- Adopting an approach of sustainable resource management and waste reduction practices which contribute to positive environmental, health and economic outcomes.
- Minimizing embodied carbon emissions and environmental impacts associated with deconstruction.
- Developing and following a demolition / deconstruction waste diversion and management plan.
- Developing and following a sediment pollution plan.
- Developing and following an air and noise pollution plan.

The diversion rate should represent all activities within the project boundaries and include all materials generated within that boundary. Diversion should be calculated by weight as follows:

$$\text{Diversion Rate} = \frac{\text{Materials diverted from landfill, incineration (waste to energy 'WTE'), and the environment}}{\text{Total volume of waste generation}}$$

Deconstruction: Materials with common re-use and recycling opportunities

Definitions:

- Direct Reuse = Re-purposing materials with little alteration, possibly in a New Construction project on-campus.
- Recycled = Taken off-site for storage, or to a recycling facility to be made into something else.

Examples of how commonly utilized building materials can be reused or recycled can be found in Table 1.

Table 1 Reuse/recycling opportunities for deconstruction waste.

Material.	Examples of use in healthcare facilities.	Examples of reuse/recyclability potential.
Concrete	• Cast concrete; - Footings - Foundation walls - Columns - Beams - Stairs - Ramps - Floors - Roof • Concrete Block Masonry. - Walls - Retaining wall • Field Stone Accents • Sidewalks • Ramps	Cast concrete, concrete blocks and sidewalks can be broken down, on or off site, and could be reused elsewhere. **Direct Reuse:** Crushed concrete can be reused as; - Backfill - Pea gravel - Retaining walls - A foundation material for roads and runways - An aggregate in select applications of concrete **Recycled**: Crushed concrete or concrete block can be used as; - Steppingstones - Backfill - Pea gravel - Retaining walls on site or elsewhere - Foundation material for parking, roads onsite or elsewhere
Metals	• Structural steel • Rebar • Frames; - Windows - Doors - Skylights • Metal cladding • Sliding doors • Metal stud partitions • Guard and rails • Mechanical equipment • Galvanized steel • Stainless steel kitchen equipment; - Walk-in coolers	- Steel can be readily reused and recycled, it is dimensionally stable and does not diminish in strength over time. **Direct Reuse:** - Reuse steel columns and beams in the project if applicable - Stainless steel kitchen equipment (range, walk-in coolers, dishwashers, food preparation tables and sinks and serving trays) could be reused in the project if applicable or elsewhere.

	- Dishwashers - Food preparation tables - Sinks - Serving trays • Refrigeration units for walk-in coolers/walk-in freezers (morgue) • Bike racks • Roof decks • Lockers • Hardware • Aluminum; - Frames - Store front units - Flagpole • Doors • Frames - Windows & skylights • Stainless steel parking bumpers (filled with concrete) • Bike racks • Roof decks • Hardware	- Equipment and furniture can be reused if it's not at the end of its useful life. **Recycled**: - If component reuse of structural steel is not possible, then nearly 100% of steel should be recycled. - Mechanical HVAC equipment can be decommissioned/ taken apart and the steel can be recycled. - Aluminum is highly recyclable and while reusable, the market does not currently support widespread reuse practices.
- **Glass**	• Single panes glass • Store front units • Skylights	Glass is infinitely recyclable, capable of being continually reused without a loss in quality or purity. **Direct Reuse:** - Glazing or glazing with frames can be reused as interior glazing in the project where applicable or elsewhere. **Recycled:** - Glass can be separated from the frame and recycled. - Glass can be crushed and reused as aggregate for road filling.