



BRING

reduce | reuse | recycle | rethink

CMRR FY21-22 Q1 CASE STUDY: UO WALTON DORM COMPLEX

Background:

The Construction Material Recovery and Reuse (CMRR) Program is a service of BRING, co-funded by Lane County and the City of Eugene, tasked with promoting sustainability within the local builder community. The CMRR Program consults and assists construction projects at all phases of the process but with a special focus on recovering materials from its path to the landfill and facilitating the reuse of these materials in an effort to mitigate the environmental impact of construction and demolition.

This past summer, CMRR was contacted by the University of Oregon's Office of Sustainability to help decrease the impact of the demolition of the Walton Dormitory Complex. The rebuilding of Walton Complex is Phase 2 of the larger effort to upgrade under-graduate housing on campus, and the new Walton Hall will closely mirror the brand-new Unthank Hall, located just across Agate Street.

Scope of Project:

Recovery efforts were quickly folded into the demolition timeline. CMRR strove to make the largest impact on the project within the confines of a tight timeline. Perhaps the biggest obstacle to the recovery effort was the presence of asbestos throughout the building, which is a common and difficult hazard present in many mid-century era structures like the Walton Complex. Based on an assessment by the UO Environmental Health and Safety Department, and considering the other constrictions, it was determined that the safest and most prudent efforts should be to target the wood materials in the building that had not been contaminated by asbestos. These materials included the solid wood bunks, bookshelves and cabinets found in each residence unit.

Results:

Over a three week period, CMRR was able to deconstruct, remove and recover more than 14 tons of dimensional lumber. This included more than 400 plywood sheets, 700 2x4 cross beams and 500 4x4 bed posts. Additionally, 1.25 tons of metal was recovered in the effort, mostly comprising of outdoor benches, towel racks and bike racks. Recovered materials were sold to the community at the BRING Store. Given the recent surge in lumber prices and the high quality of the recovered material, supplies sold out fast.

Opportunity Costs:

One of the objectives of the CMRR Program is to show the savings that can be realized when materials are recovered for reuse instead of conventional disposal in the landfill. Based on the current tipping fee rates in Lane County, it is estimated that \$1337.46 was saved by the CMRR efforts on this project. However, this does not include the cost of container rental, drop fees, or hauling costs associated with the project.

Data collected by the CMRR Program continues to show that reuse of construction materials is vastly more efficient than the alternatives including recycling and landfill disposal. Using the City of Portland's Life Cycle Analysis Impact Data for Deconstruction tool we are able to compare the impact of recovering materials for reuse from this project with the alternate impact of conventional disposal via recycling.

Table 1: Recovery and Reuse

Material Type	Weight Recovered	CO2Equivalency Coefficient	kg CO2e
Dimensional Lumber	17800lbs (8073.944kg)	1.855	14977.167
Plywood	10900lbs (4944.157kg)	2.0839	10303.129
Steel	2440lbs (1106.765kg)	3.3751	3735.443
			29015.739

Table 2: Recycling Only

Material Type	Weight Recovered	CO2Equivalency Coefficient	kg CO2e
Dimensional Lumber	17800lbs (8073.944kg)	0.0187065	151.035
Plywood	10900lbs (4944.157kg)	1.7455	8630.026
Steel	2440lbs (1106.765kg)	2.0012	2214.858
			10995.919

Table 1 above shows the materials recovered from the Walton Dorm Complex, the weight of the materials recovered, the coefficient used to determine CO2 equivalency for the specific material recovered and the (estimated) amount of CO2 equivalency embedded in the recovered materials. All told, we estimate that the recovery effort on the Walton Dorm Complex prevented the emission of 25,015.739 kg of carbon dioxide equivalence. Table 2 shows the same recovered material data but instead calculates the (estimated) amount of CO2e prevented by the conventional disposal method of recycling. Recycling the same materials that were recovered would have prevented the emission of 10,995.919 kg of CO2e. When we compare these figures, it can be determined that conventional recycling is only 37.896% as efficient as material recovery and reuse.

Challenges:

As mentioned previously, the most obvious obstacle to material recovery on this project was the overwhelming presence of asbestos in many of the materials used to originally build the dormitory. Asbestos is a very toxic material that must be managed properly during demolition and any materials that were in contact with other materials that were hot with asbestos were not available for recovery.

Another major challenge was establishing a reasonable scope of project given relatively tight demolition timelines. The CMRR Program was initially given access to the buildings for only two weeks prior to demolition and asbestos abatement. CMRR was granted another one week of access after the demolition/abatement began as we were able to safely access the side of the complex where work had not yet begun. Three weeks seems like a lot of time, but given the size of the buildings, a lot of material was left behind that we weren't able to recover. Labor/staffing shortages that have been experienced industry-wide were also another barrier that prevented maximum recovery. CMRR was able to field a team of three workers several times during the project but most days there was only one or two workers available for this recovery project. With either a larger work force or a longer project timeline, much more material could have been recovered for reuse.

Future Opportunities

The CMRR Program is very grateful for the strong working relationship that was developed between BRING and the UO Housing Department. This connection has resulted in CMRR involvement in Phase Three of the UO Housing Redevelopment which includes the demolition of Hamilton Hall. Hamilton Hall was built in the early 1960's and is located across the street from Walton Complex. CMRR has already been included in the two year effort to recover materials from Hamilton Hall, which will be taken down to make way for new greenspace. This project will begin in the summer of 2023.

