Background
The Mount Vernon library asked L&I for ergonomics help after workers experienced strains and sprains while emptying the external book drop bins. Library staff hoped for a few quick fixes so everyone could manage the task and work comfortably.

Issues Found
Several issues added duration and force to the librarians’ everyday exposures of lifting, bending, and pushing. This made the tasks more difficult and took a toll on the staff.

- Warped doors meant workers had to lift the heavy doors while simultaneously closing and latching them. Shorter workers had to stand on tip-toe.
- A high entrance door threshold forced librarians to lift heavily loaded carts while pulling them over the lip.
- The ground sloped downhill from the book drops so librarians had to chase run-away carts. Wheel chocks were hidden or hard to reach.
- The plywood liner of the book drop floor caught the front wheel of the spring-loaded bin. Workers had to lean on the bin to “tip” it up or lift it over the lip. This took momentum and force, as well as some skill. In addition, it caused wear and tear on the plywood.
### Recommendations and Implementation

<table>
<thead>
<tr>
<th>Before</th>
<th>After</th>
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<tbody>
<tr>
<td><img src="Image" alt="Awkward postures with forceful lifting and pushing to line up the latch and lock" /></td>
<td><img src="Image" alt="Install longer, lower handles." />Workers can now find a comfortable grip at a level that works best for them.  <img src="Image" alt="Install better wheels. New metal wheels roll more smoothly on the concrete." /></td>
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<tr>
<td><img src="Image" alt="Awkward postures with forceful lifting and pushing to line up the latch and lock" /></td>
<td><img src="Image" alt="Gradual threshold ramp at front entrance. A lower threshold section removed the barrier. Library carts and patrons with strollers, walkers, or wheelchairs can now roll right over." /></td>
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<tr>
<td><img src="Image" alt="Librarians lift carts over the old threshold" /></td>
<td><img src="Image" alt="Arrow shows difference between old threshold and new, lower threshold" /></td>
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### Before

**Awkward reach to chock while dealing with a roll-away cart**

- Improve access to wheel chocks. Ropes on the chocks and hooks inside the book drops reduce bending. Librarians can quickly access chocks before bins and carts start to roll away.

### After

**Relocate book drops.**

- Doors open toward the back and uphill, so library carts don’t roll away.
- The straight shot to the front doors reduces the need to steer heavy carts around corners.
- More room to open the book bin doors.
- Improved worker safety - Librarians can now face any patrons that loiter near the door.

**Library staff idea!**

- Right side of front door; Parallel to the entrance; Book drops situated side by side
The plywood lip created a barrier for the central wheel of the spring-loaded bin; the wheel wore out the plywood.

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<td><img src="image1" alt="Before Image" /></td>
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- Install a metal threshold ramp on each book drop. A metal stabilizer, welded to the book drop framework, keeps the frame square.
  - Doors open and close easily.
  - Latches align correctly.
  - Spring-loaded bins roll smoothly over the metal stabilizer.

Follow up
The participation of the library staff contributed greatly to the success of this project. Workers generated excellent ideas during the ergonomics consult, and continued to brainstorm afterwards. They willingly tried out proposed solutions, and continue to keep refining them.

The library staff appreciate the ergonomics changes. Comments include: “It’s much easier to open and close the drop box doors using the long handle.” “The lower profile door sill is great; it’s just fine coming in now with a full cart”. An added bonus for the employer, as well as the staff, is a greater awareness of injury prevention. The staff now divide and conquer—they make sure to rotate the task of emptying the book drops among the scheduled staff each day.

Mount Vernon Library’s long term plan will increase worker safety and eliminate the problems caused by heavy doors, finicky locks, and roll-away carts. They plan to create access for book drops through the exterior wall of the building. The spring-loaded bins that came with the book drop units will still be used, but indoors, out of the rain, and on a level surface.