Alternative Design #1

Bed Railing Device (BRD)

Team #4
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The first design for the bed railing device (BRD) is a bed rail that runs the length of the bed frame and has access stairs so Sean can easily transfer in and out of bed. The railing of the BRD will be constructed out of steel or aluminum and be raised and lowered by motors. The stairs will be made out of wood and will have a non-slip surface. The railing can be seen in Figure one and the stairs can be seen in Figure two.

![Figure 1. Railing design for the BRD.](image1)

![Figure 2. Stair design for the BRD.](image2)

1.1. Railing:

The railing will consist of two horizontal pieces that are supported by four cross pieces. The base of the railing will be rectangular for structural rigidity, and support pieces will be spread out evenly across the frame and will be wrapped in a protective foam. The top railing will be cylindrical to easily grasp onto, and to be safer for the user. Since the BRD needs to be
constructed with Sean’s growth in mind, a durable design will be utilized.

1.2 Stairs:

The stairs will consist of a slotted base that will allow the platform and the step to be adjusted as Sean ages. The stairs will deploy underneath the railing, and allow Sean to easily climb up to his mattress and down to the floor.

1.3 Deployment:

The railing will be raised and lowered by a set of two motors on either end of the bed. The railing will be able to move directly up and down with a button activated switch, and the stairs will interface with the railing to prevent difficulties with deployment. The stairs will be deployed on a rolling track out into the middle of the room before the railing lowers, and will retract after the railing has safely been raised. This method of deployment will allow both railing and stairs to move without conflict with one another.