

## Background

Current devices on the market for pre-hospital infant transports do not utilize crash-tested rear-facing child restraint systems, therefore young children and infants often go unrestrained in ambulances.

Our goal is to provide a solution to this by creating a universal, sanitary, and NHTSA compliant device that rapidly enables the appropriate securement of an infant in a rear-facing child restraint system to an ambulance's cot.

## Design Objectives & Functions

- Universal application for multiple rear-facing child restraint systems (RF-CRS) to Stryker and Ferno ambulance cots
- Securely attach RF-CRS to ambulance cots for safe travel
- Can be fastened easily, intuitively, and quickly by a member of the EMS
- Stored within the ambulance at all times for anytime the device is needed
- Manufacturable at a minimal cost

## Design Description

- Two sets of straps secure the RF-CRS to the ambulance cot (Fig. 3)
  - One functions as a lap belt providing downward force on the RF-CRS (Fig. 1a) and the other loops around the front of the CRS to prevent tipping (Fig. 1b)
- An aluminum base (Fig. 2) is attached underneath the cot and provides attachment locations for the straps

## Design Description Cont.

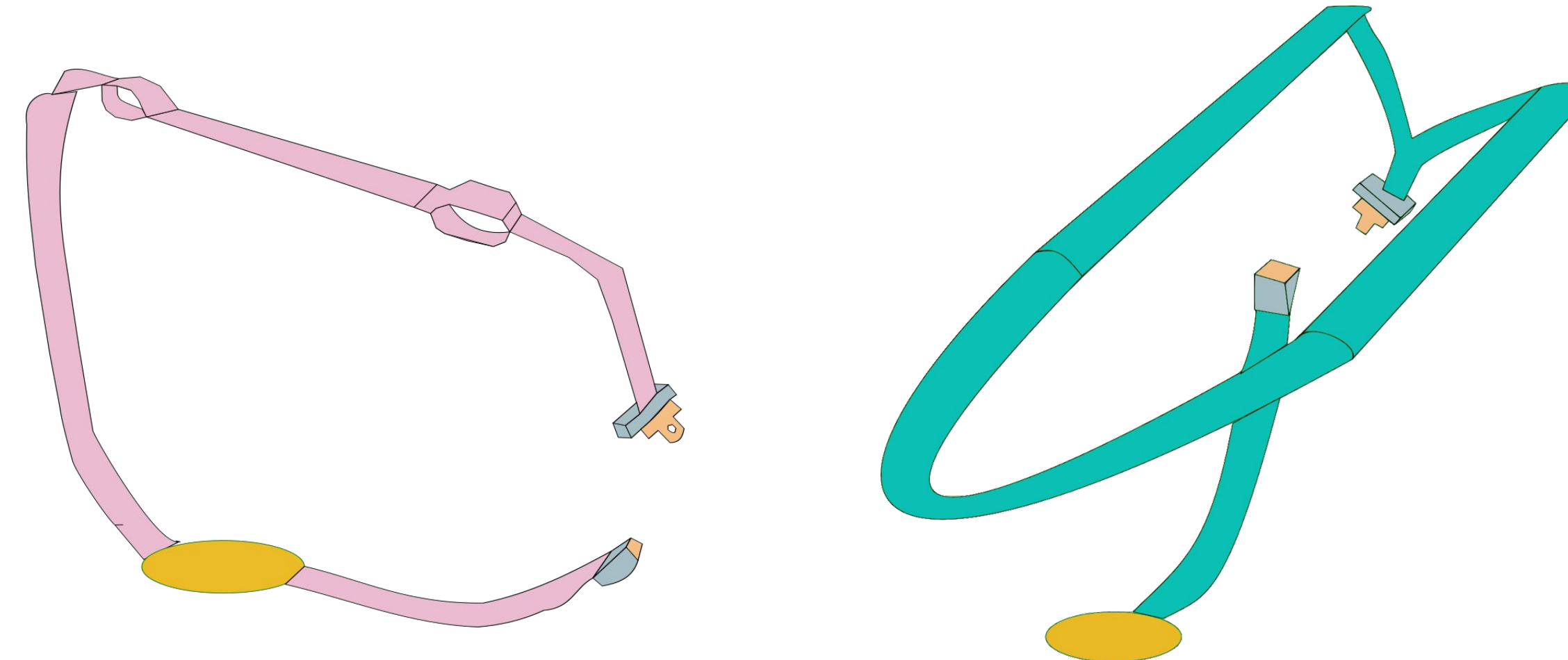


Figure 1a (left) and 1b (right). Proposed strapping patterns and connections

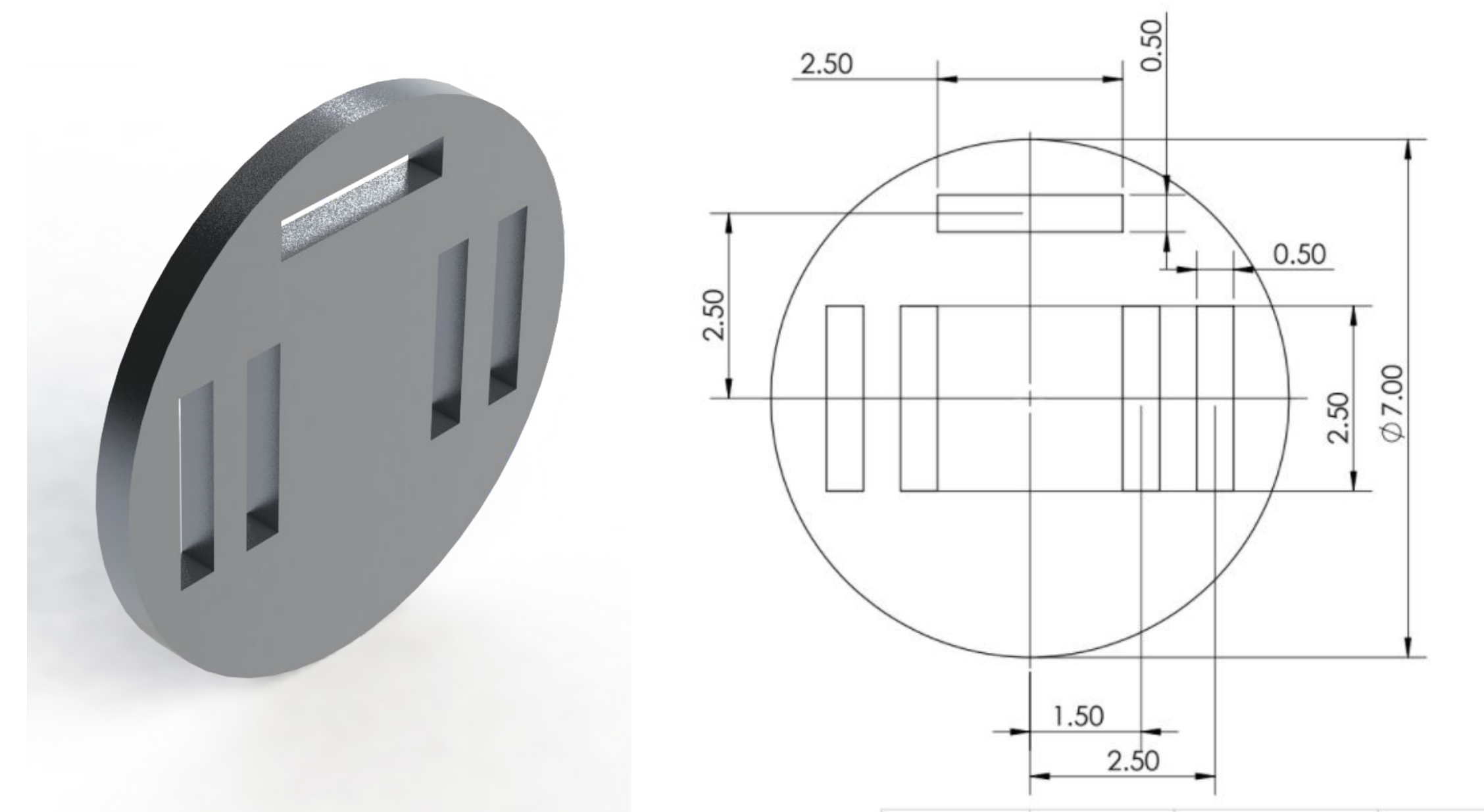


Figure 2. Solidworks Model and Drawing of Proposed Base Design located underneath cot



Figure 3. Complete Assembly Schematic

## Design Evaluation

- Perform the 1-inch movement test, used for CRS installment in motor vehicles, on the CRS when secured onto the cot
- Complete simulated crash tests with the CRS attached to the aluminum cot via the device and measure overall movement
- The second evaluation test would be to secure the CRS to a cot in the car and monitor how secure the device keeps the CRS

## Discussion & Next Steps

- At this point in our project, we have successfully modeled a design for a device that will enable the transport of an infant in an ambulance using rear facing child restraint system
- We have begun phase two of prototyping for this design and will have a high fidelity model to perform concept evaluations on
- In the coming weeks we will begin to determine the following parameters and ensure that they satisfy the initial customer requirements:
  - Child safety
  - Estimated price per unit
  - Size
  - Implementation time
  - Disassembly time

## Acknowledgements

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