



BIKE TRAILER

FROM THE TRAILER PARK BOYS

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Background:

SCRAP Humboldt is a non-profit organization that strives to educate the local community about effective and imaginative reuse of waste materials through projects, as well as provide easy access to reclaimed materials. Being one of five creative reuse centers that are a part of the program SCRAP USA, SCRAP Humboldt opened their doors on April, 12, 2013 for the beginning of Humboldt County's first creative reuse center. The inventory for the store utilizes donations from the community and is sold to customers for affordable prices. SCRAP Humboldt has asked our group to build a bike trailer so they can pick up materials around the Arcata area.

Objective:

The objective is to create a bike trailer for SCRAP Humboldt out of locally sourced reused materials. The goal is to build a functional trailer that can fit through an ADA standard door of 32 inches and carry up to 100 pounds of material.

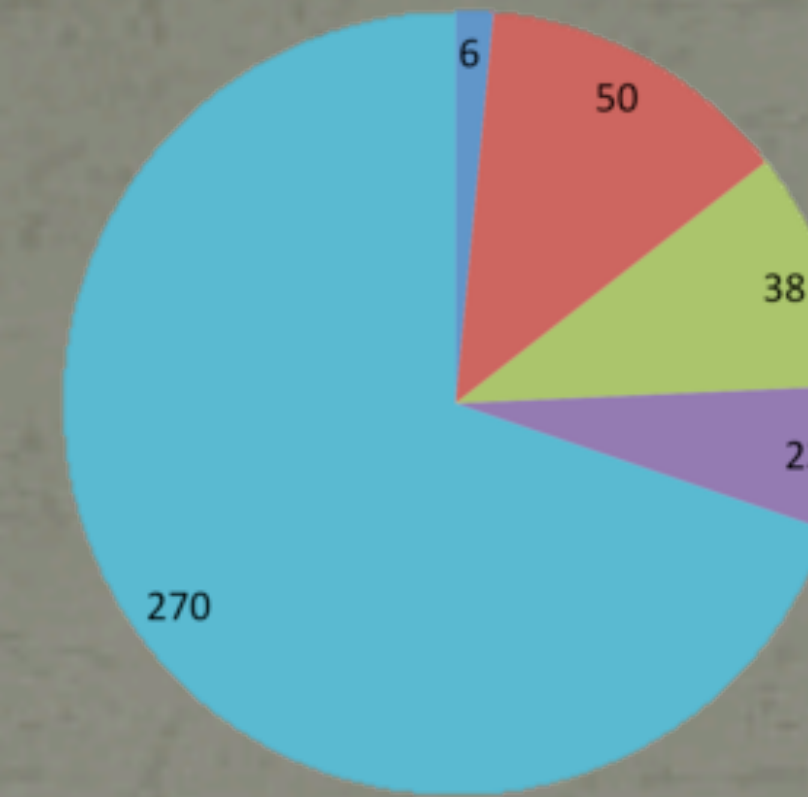
Description:

"The Trailer Park Boys" used creative reuse to build a bike trailer consisting of a broken wheel chair and metal conduit (E.M.T.) salvaged from the waste stream. Axles and wheels were taken from the wheelchair to fit into bent E.M.T. Two street signs (legally) obtained bent to make a tub to fit inside the E.M.T. frame.



Testing weight and structural integrity. (Trained professionals do not try and recreate this stunt)

Hours Invested



- Phase I - Problem Formulation
- Phase II - Problem Analysis & Literature Review
- Phase III - Alternate Solution
- Phase IV - Final Decision
- Phase V - Specification of Solution

Client Criteria

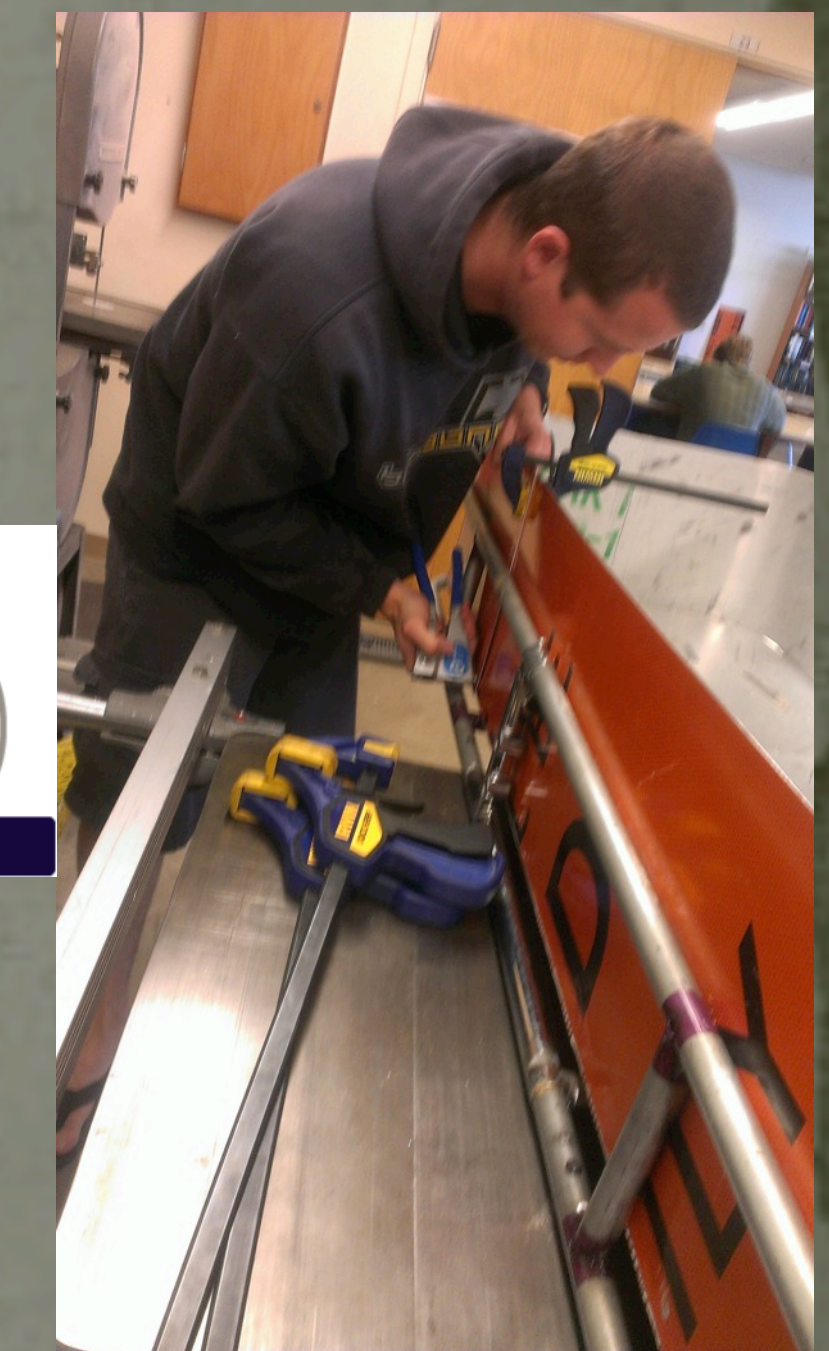
Criteria	Weight	Constraint
Safety	10	Must be visible at night, no sharp edges.
Usability	10	Easily and simplistically detachable.
Durability	9	3 year lifespan with appropriate maintenance
Useful Load	8	A minimum load capacity of one hundred pounds.
Size	8	The width cannot exceed thirty two inches, or the length cannot exceed 80 inches
Cost	7	Not to exceed three hundred dollars.
Environmental Justice	6	Greater than thirty five percent recovered materials by weight.
Aesthetics	5	More than four colors, and maintain a modular appearance.
Maintenance	5	Less than one hour of maintenance per 15 days of use.

Materials

Item	Quantity	Retail price per item (\$)	Total	Team price per item (\$)	Total
Wheel Chair	1	120.00	120.00	30.00	30.00
10" Galvanized E.M.T. 3/4"	10	11.00	110.00	0.00	0.00
10' Water Pipe	1	20.00	20.00	0.00	0.00
Road Sign 4'x5'x3/16"	1	28.50	28.50	28.50	28.50
Kokatat Cover	1	300.00	300.00	0.00	0.00
1/4" Bolts & Nuts	8	8.00	8.00	8.00	8.00
Pop Rivets	30	0.13	3.75	0.13	3.75
Heim Joint	1	15.00	15.00	15.00	15.00
Total Cost			\$605.25		\$85.25



Lined with felt to minimize noise from loose goods



Ben pop riveting the sign to fit the frame of the trailer

Results:

The bicycle trailer can carry 100 lbs. safely while maximizing load capacity by using wheelchair axles and wheels so that the trailer can fit through a ADA standard door or 32".



Broken wheelchair



Michael bending E.M.T.



E.M.T. Frame with wheelchair axles



Lukas with the help of Marty Reed cutting a road sign to fit inside the trailer frame



Corey bending a road sign