THE KIT: will be installed on an already existing standard wheelbarrow. Adjustable height, ergonomic handles and crossmember.

TEAM GOALS:
1. Determine the failure points of the wheelbarrow when loaded with 450 pounds.
2. Choose the thinnest material that can hold load.
3. Optimize the bending manufacturing of the lever tube component to prevent deformation.

BENDING DIE:

THE KIT is designed to be printed on a large format printer. The placeholders in this template are for you to add text, tables, charts, SmartArt graphics, pictures, or multimedia files. To create bulleted text, just click the Bullets button on the Home tab.

If you need more placeholders for titles, make a copy of what you need and drag it into place. PowerPoint’s Smart Guides will help you align it with everything else.

Want to use your own pictures instead of ours? No problem! Just change the picture. Maintain the proportion of pictures as you resize by dragging a corner.

Product

Proposed Design and Analysis

The design to the left using a winch attached to one end of the base, while the other end is attached to the lever. By applying tension to the fixed lever this will cause the bending of the tube, allowing it to form the shape against the curved die.

STRESS ANALYSIS: We performed a Stress Analysis of the Wheelbarrow with the Kit attached, and of the design to bend the tub.

RESULTS:
• Buckling of 16ga steel tube – added structural support by welding piece onto die
• Hammering in tube to follow the curve

Acknowledgements:
Mark Summers
Austin Talley
Ruben Villareal
Jason Wagner
Ault & Ault Orthodontics

BENDING PROCESS:
• Bent the tube at 135 degrees
• 14- and 16-gauge tubes

14 Gauge

Final Product

16 Gauge

Added Structural Support

Buckling

450 FORCE LOAD ON BEAMS WITH GRAVITY

450 LOAD ON BEAMS WITH GRAVITY & 500 FORCE ON HANDLES TO SHOW DRAGGING

450 FORCE LOAD ON BEAMS WITH GRAVITY & FIXED HANDLES

M2 - Three Wheeled Wheelbarrow Analysis

Cesar Sifuentes, Madisen Weaver, Emily Rice, Isac Giron

Sponsor:
Milton Vaverek

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