# Chase Kramer

*Mechanical Engineering Student | Manufacturing & Process Design | Founder, AEGIS*

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## Summary

Manufacturing and mechanical engineering student at Grand Rapids Community College, transferring to Grand Valley State University to complete a BSME. Focused on manufacturing flow, automation, process optimization, fixture design, and PLC logic. Experience spans plant layout, CAD/fixture design, lean process improvement, and thermal/fluid system modeling, developed through internships at Knape & Vogt Manufacturing and Challenge Manufacturing, contract engineering work for Waste2Nano, and hands-on personal projects.

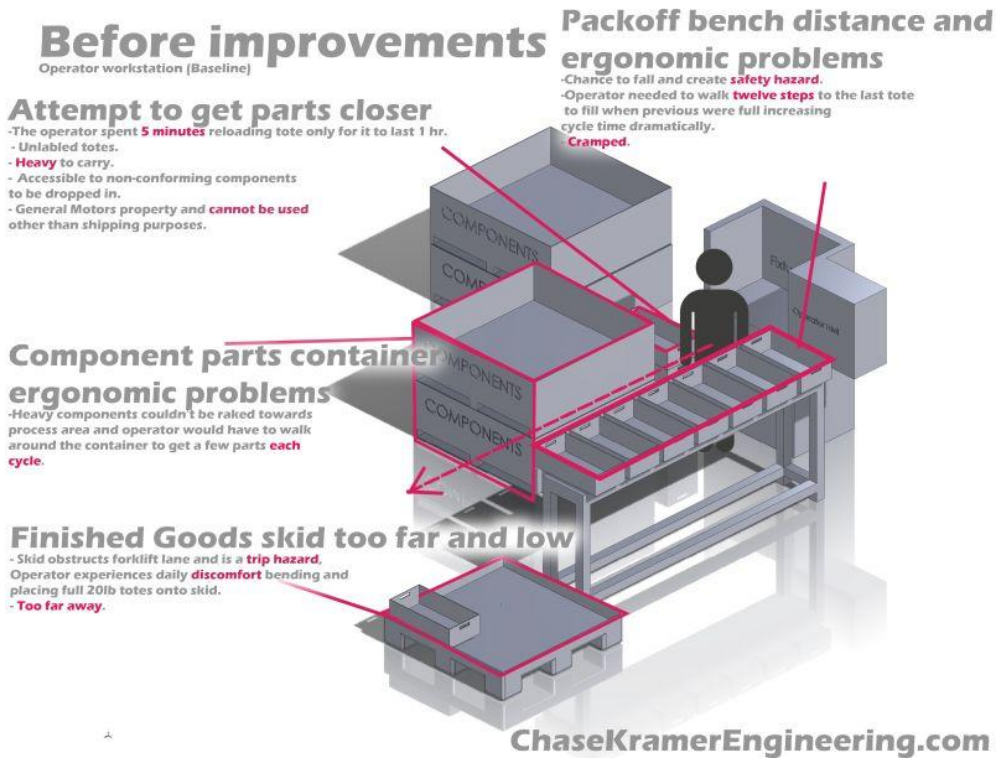
## Project Highlights

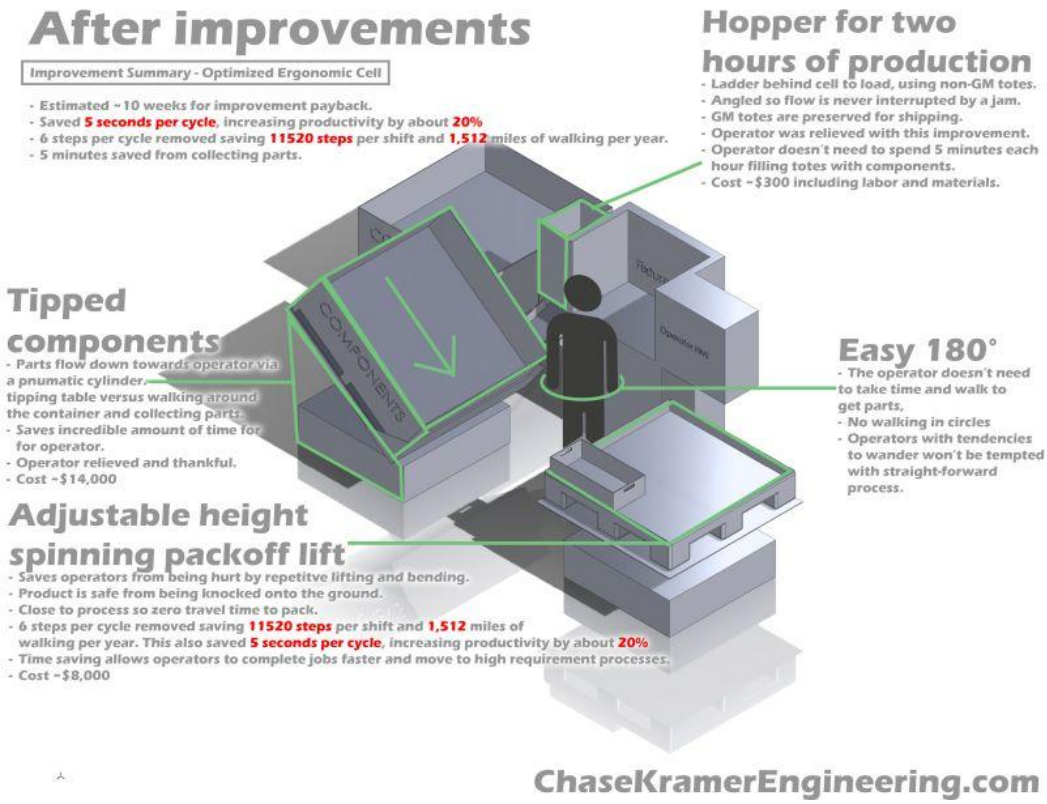
### Workstation Ergonomics & Assembly Optimization

*Challenge Manufacturing — Manufacturing Engineering Intern*

Led a redesign of a high-volume automotive assembly workstation to eliminate unnecessary operator movement. Removed a problematic inventory system and installed component hoppers with tilt decks to streamline material delivery, rethinking ergonomics, part flow, and component access from the ground up.

- Eliminated 6 operator steps per cycle, saving over 11,500 steps per shift — the equivalent of 1.5 miles of walking eliminated every day (1,500+ miles/operator/year).
- Boosted station productivity by approximately 20%, with a 10-week payback period on the redesign.
- Freed personnel capacity for other production requirements without adding headcount.






## SolidWorks Handrail Replacement — Shipping Dock

*Knape & Vogt Manufacturing Company — Manufacturing Engineering Intern*

Designed a replacement shipping-dock handrail in SolidWorks to bring the structure into compliance with OSHA 1910.29 fall-protection requirements. Optimized ASTM A500 Grade B stock lengths to minimize material waste, then coordinated in-house design and fabrication rather than outsourcing the job.

- Brought guarding into OSHA 1910.29 compliance with a fully in-house design and fabrication effort.
- Optimized structural steel (ASTM A500 Grade B) stock lengths to reduce drop and material cost.
- In-house design/fab saved $9,000 versus outsourcing the project.

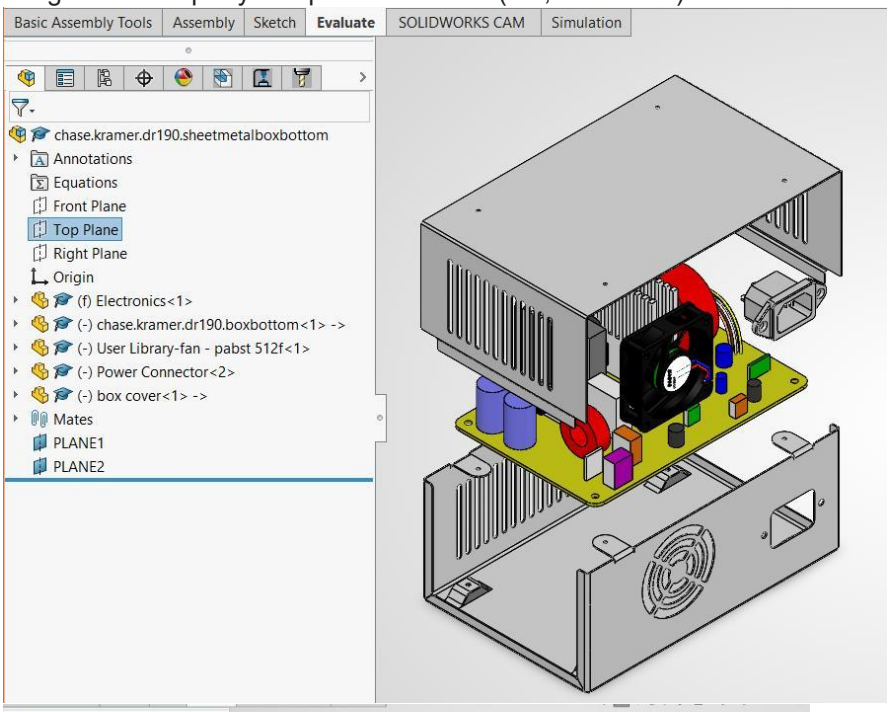


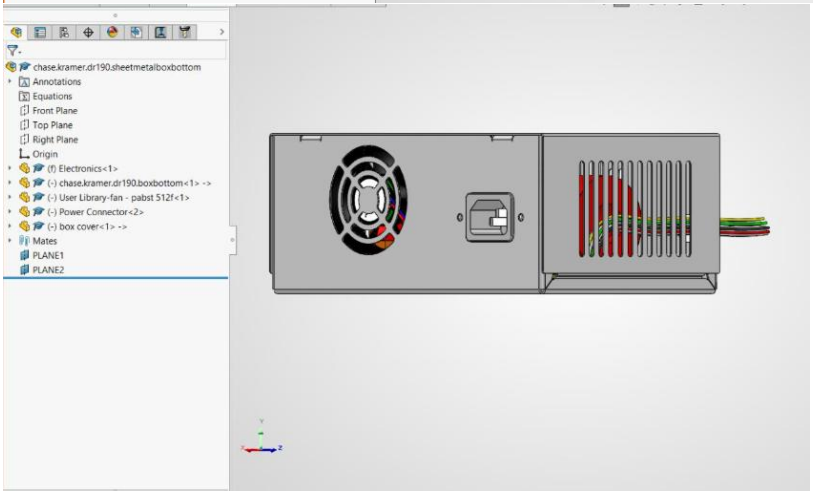
## SolidWorks Power Supply Case & Components

*Personal Project — Grand Rapids Community College*

Designed a practical sheet-metal enclosure for a power supply, integrating library electrical components including a PABST 512F cooling fan and a power connector. The design prioritized airflow and real-world manufacturability over a purely conceptual layout.

- Applied SolidWorks sheet metal design tools to produce a manufacturable enclosure.
- Sized and placed ventilation for realistic thermal airflow around the cooling fan.
- Integrated third-party component libraries (fan, connector) into a cohesive assembly.



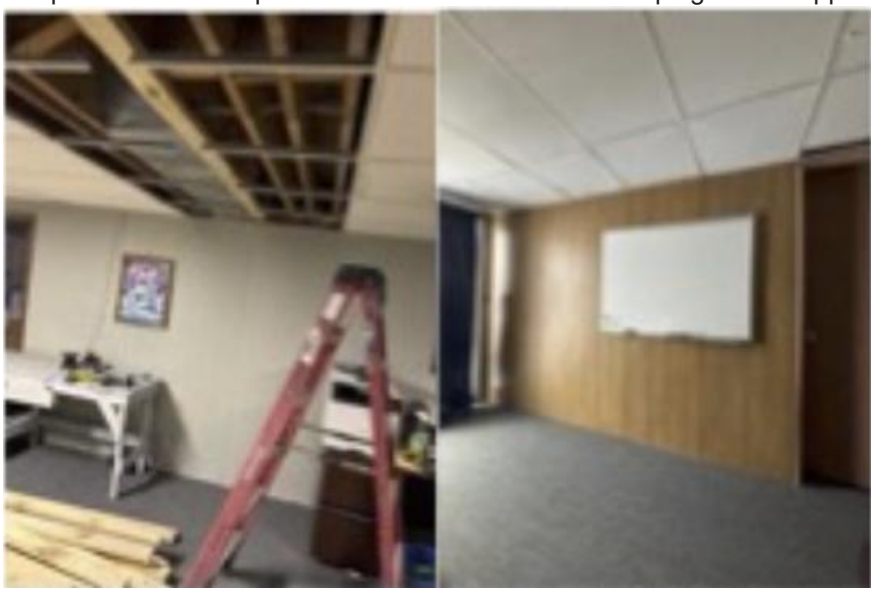



## Residential Construction — Basement Bedroom Wall

*Personal Project*

Built a 14' x 7' non-load-bearing basement wall using stick-frame construction methods to create a code-compliant bedroom. Worked through real-world build issues rather than a clean textbook install.

- Framed and finished the wall to meet code requirements for a legal bedroom.
- Resolved an electrical circuit issue that required licensed inspection before sign-off.
- Adapted the build sequence to account for material warping in the supplied lumber.

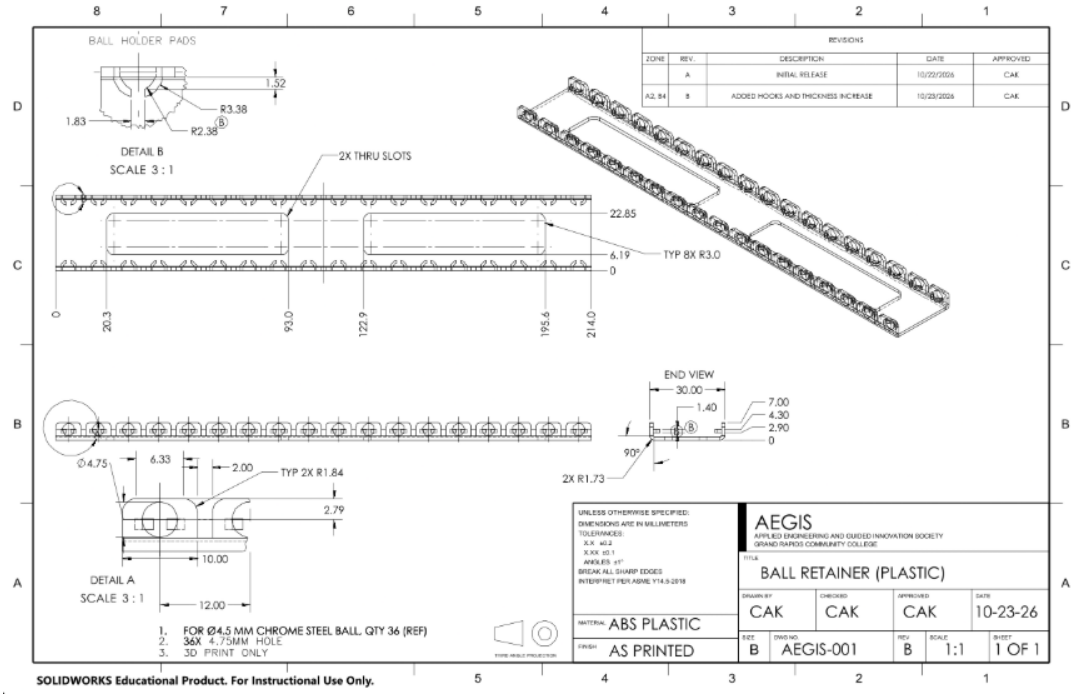


## Ball Bearing Retainer (AEGIS-001)

*AEGIS Engineering Society — Grand Rapids Community College | Oct 2026 – Present*

Reverse-engineered a ball bearing retainer for AEGIS mechanism testing. Took caliper measurements of the physical part, modeled it in SolidWorks, and released a fully dimensioned production drawing for a 3D-printed ABS version.

- Measured the original retainer with calipers and rebuilt it as a SolidWorks part.
- Detailed the drawing with section details, an end view, and ASME Y14.5 tolerancing; sized to hold 36 Ø4.5 mm chrome steel balls.
- Issued Rev B to add retention hooks and increase wall thickness after the initial release.

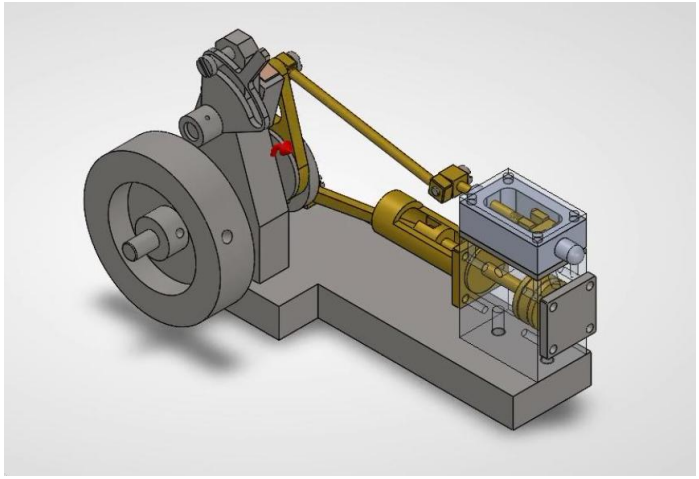


## Elmer Verburg's #43 Model Steam Engine

*SolidWorks Beginners Course — Grand Rapids Community College*

Recreated Elmer Verburg's #43 model steam engine in SolidWorks from the supplied prints, assembled every component, and built a motion study of the running mechanism.

- Modeled all parts of the engine from prints and mated them into a complete assembly.
- Built a motion study of the crank, connecting rod, and valve train that runs without errors.
- Traced a timing-handle problem back to incorrect dimensions, a lesson in how small print errors carry through an assembly.

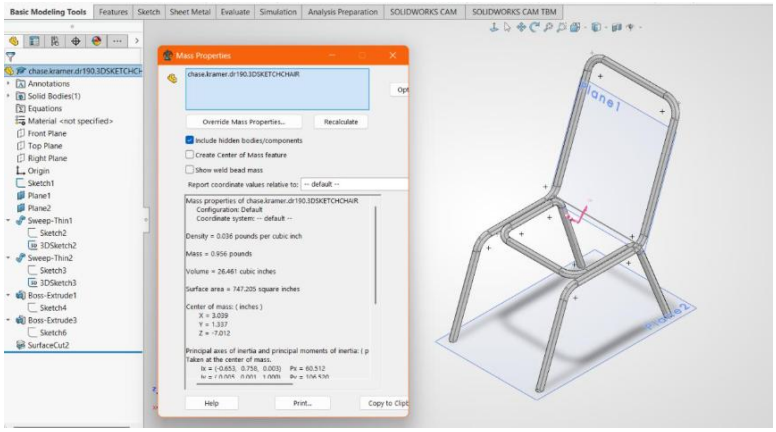


## .075" Tube Chair

*SolidWorks Course — Grand Rapids Community College*

Modeled a tubular chair frame by sketching the chair profile and sweeping a .075" circular profile along it, without using the SolidWorks weldments menu.

- Drew the frame path on-axis with 3D sketches.
- Created angled reference planes relative to an origin line segment and the front plane.
- Used thin-feature sweeps to form the tube walls along the path.

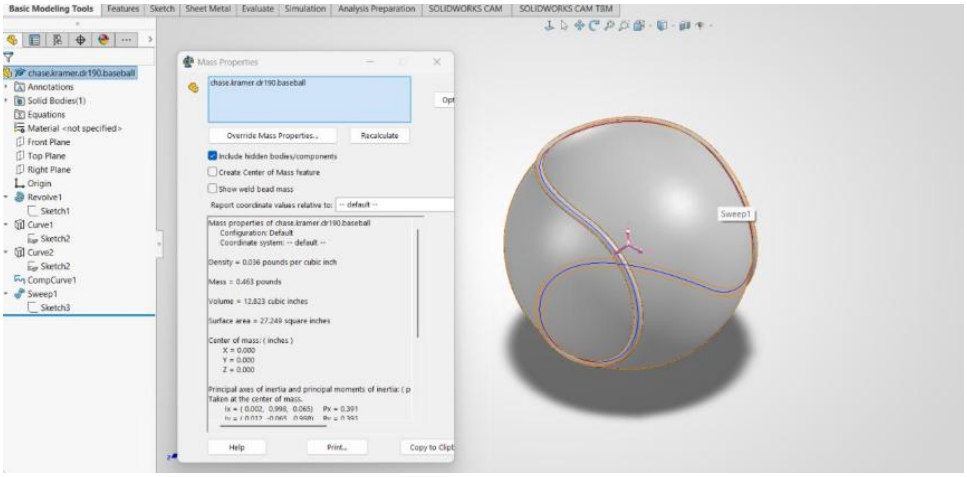


## SolidWorks Baseball

*SolidWorks Course — Grand Rapids Community College*

Modeled a baseball by projecting a compound curve across a sphere to simulate the stitching path.

- Revolved the base sphere and projected curves onto its surface.
- Joined the projected curves into a composite curve and swept the seam along it.

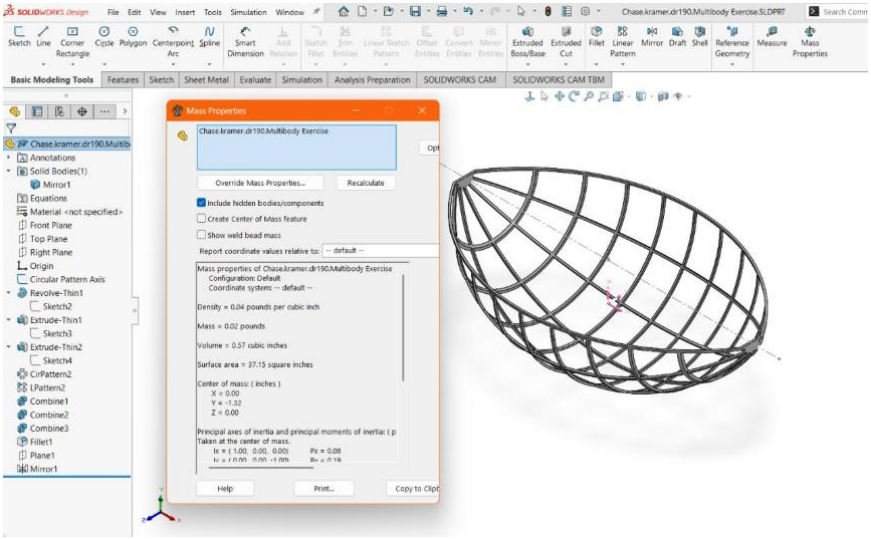



## SolidWorks Basket

*SolidWorks Course — Grand Rapids Community College*

Created a woven basket with multibody modeling: an oval body intersected by several thin bodies, then combined with the subtract command to produce the final 3D model.

- Built thin revolve and extrude bodies and patterned them to form the weave.
- Used Combine (subtract) to cut the intersecting bodies into the finished basket.




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Full resume, engineering guides, and additional detail available at chasekramerengineering.com