

Hauler Body Design Considerations



2024 HDT Rally
October 2024



Jack Mayer

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Introduction

- The scope of this presentation is focused on to how to create a Hauler Bed design and build process.
- The process is not unlike how RVH Lifestyles creates a new bed design.
- Given the time we have today, we will not get into deep discussion about all the specific details but rather provide an overview and directional guidance for design considerations and where to start.



Hauler Body Design Process

Step 1 Determine the mission profile - features

Step 2 Engineer the Design Features
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Step 3 Choose Fabrication Vendor(s)
--

Step 4 Build Phase Considerations



No "Bed" - Dressed Up Rear







**Also
No "Bed"
—
Dressed Up
Rear**



Simple Bed



Simple Bed



Simple Bed



Moderately Complex Bed



Moderately Complex Bed

Body by Jesse Hall



Complex Bed - The *Process* is all the same



Complex Bed - The *Process* is all the same



Step 1: Design Considerations

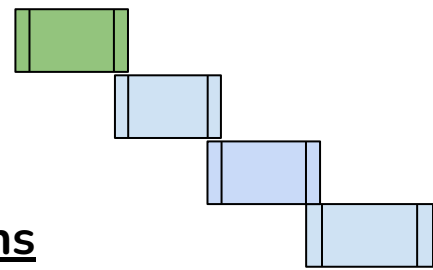
What Features Will You Implement

Practical Usage Requirements

- What type of trailer will you pull?
Bumper, 5th, semi
- Configuration: Multi mission profile, bumper vs pin vs ball, etc.
- Carrying a car or quad, motorcycle, Stacked equipment, etc.
- Storage considerations; Dry, Wet. Size, Door opening
- DRUM Mounting, Bed Access, Tie Down placements, etc
- Systems & Utilities to include; Gen/APU, AC, Air, tanks, accessories, etc.

Other Considerations

- Road protection; wheel wells, mud flap mounting systems, ground clearances
- Overall aesthetics and proportions; integration with the RV Hauler, Fairings transitions, overall goals for looks
- Final finish; primer & paint, powder coated, color matching requirements
- Lighting; accent lighting, utility lighting
- Hitch type and design; Between the rails, above the rails. Tunnel or plate.
- Legal Requirements; width, length, lighting.



Step 1: Mission Profile - Design Features



Step 1: Mission Profile - Design Features

The First smart Bed - circa 2005



Step 1: Mission Profile - Design Features

Headache
Rack and
Drom



Step 1: Mission Profile - Design Features

Lighting



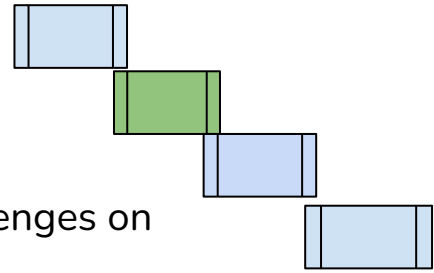
Step 1: Mission Profile - Design Features



Step 2: Engineering

Better to start with a plan than no plan at all

- Draw out the idea (CAD, Paper, mock up). Tackle Engineering challenges on paper
- Trailer articulation above and behind the deck. Pay attention to the little things that could conflict
- Weight and Balance - overloading axles, pin position, deck cargo
- Electrical: wiring harness design and connections housing, integrated wire runs
- Consider material thicknesses requirements and weight
- Carcass or Skeleton design of the hauler body understructure
- Door design; open down, left, right, up? Or, slide out?
- Door jamb design, how will it seal and keep inside dry?
- Hardware type: hinges (strap or hidden), latches, Rust proof
- How will parts and openings be cut, Plasma, Laser, Water Jet, by hand/grinder
- Gap tolerances: Will finished products be powder coated and/or liquid painted
- Manufacturing engineering; how will it go together and where will welds or mechanical fasteners be placed.

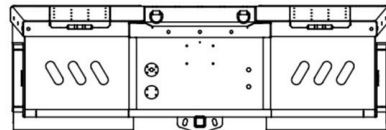
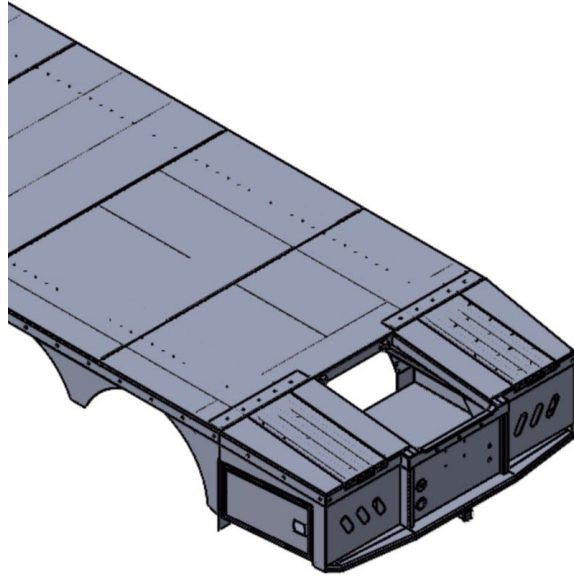




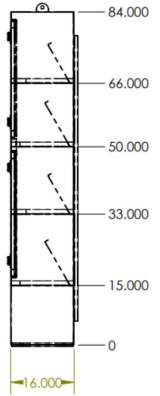
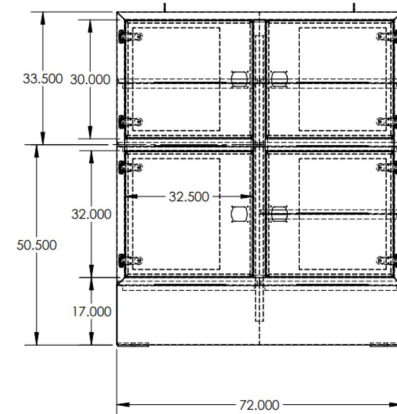
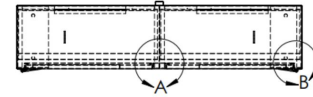
Step 2:
Engineering
the Design
Features

CAD or Paper

Document Your Design



MATERIALS:
DOOR PANEL: STEEL, 14 GA
DOOR REINF: STEEL, 16 GA
BODY: STEEL, 12 GA
SHELF: STEEL, 12 GA
HINGE: STAINLESS STEEL, 1/4" PIN
LATCH: BC, LL9000



Ck

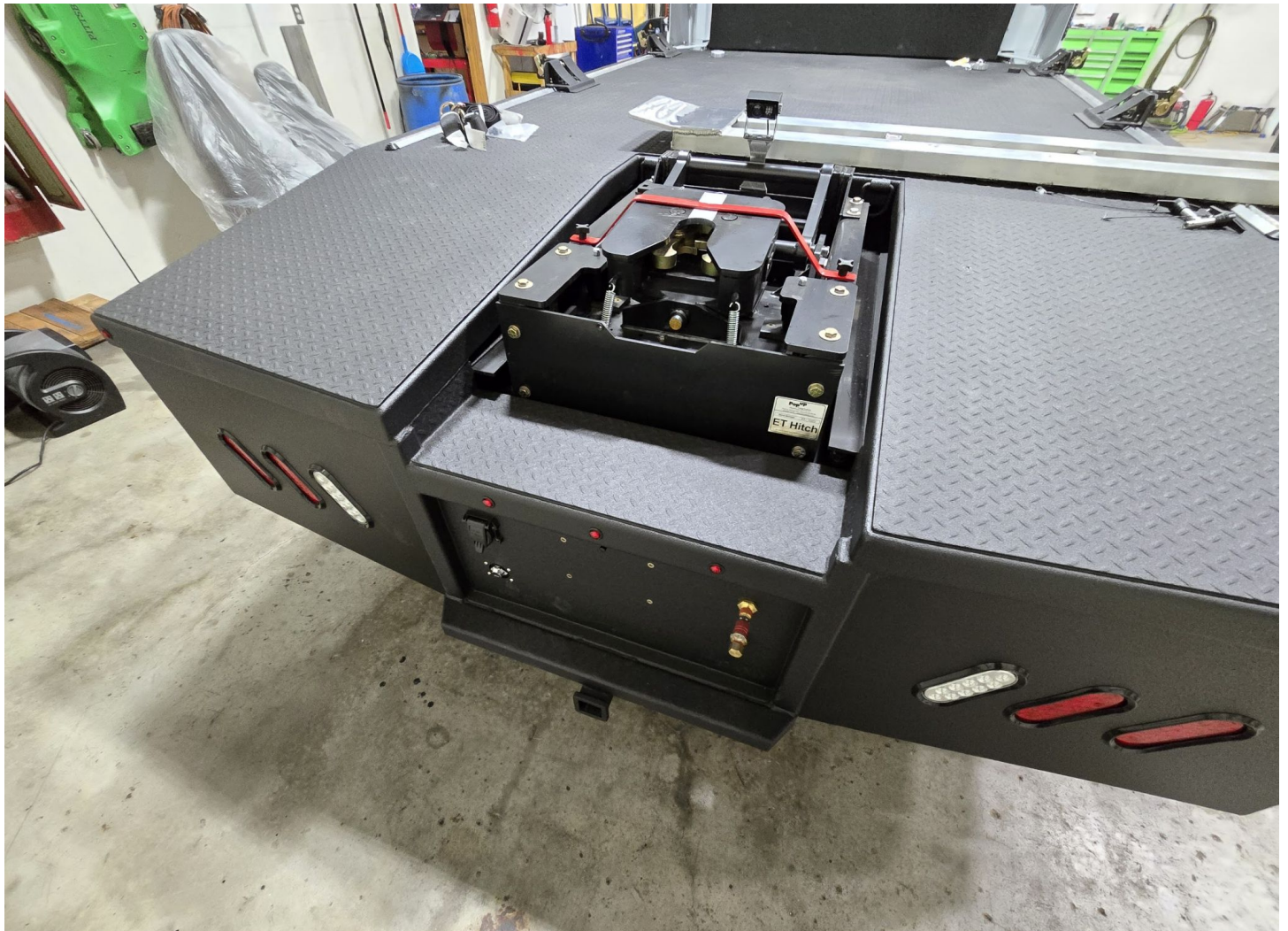
Hitch Location



Hitch Location



Hitch Location



Hitch Location



Hitch Location

- On top of Frame rails - or between frame rails?
- Finished plate height - 48/49" or some other ?
- Over axle(s) or behind axle?
- Hitch type - Kingpin or Gooseneck? Both?

Hitch Considerations Are Critical

Weight and Balance

The most
important
aspect of
your
design



Articulation

TIGHT, but
WORKS



Articulation

FAIL



TOO TIGHT



The Mock Up





The Carcass Design

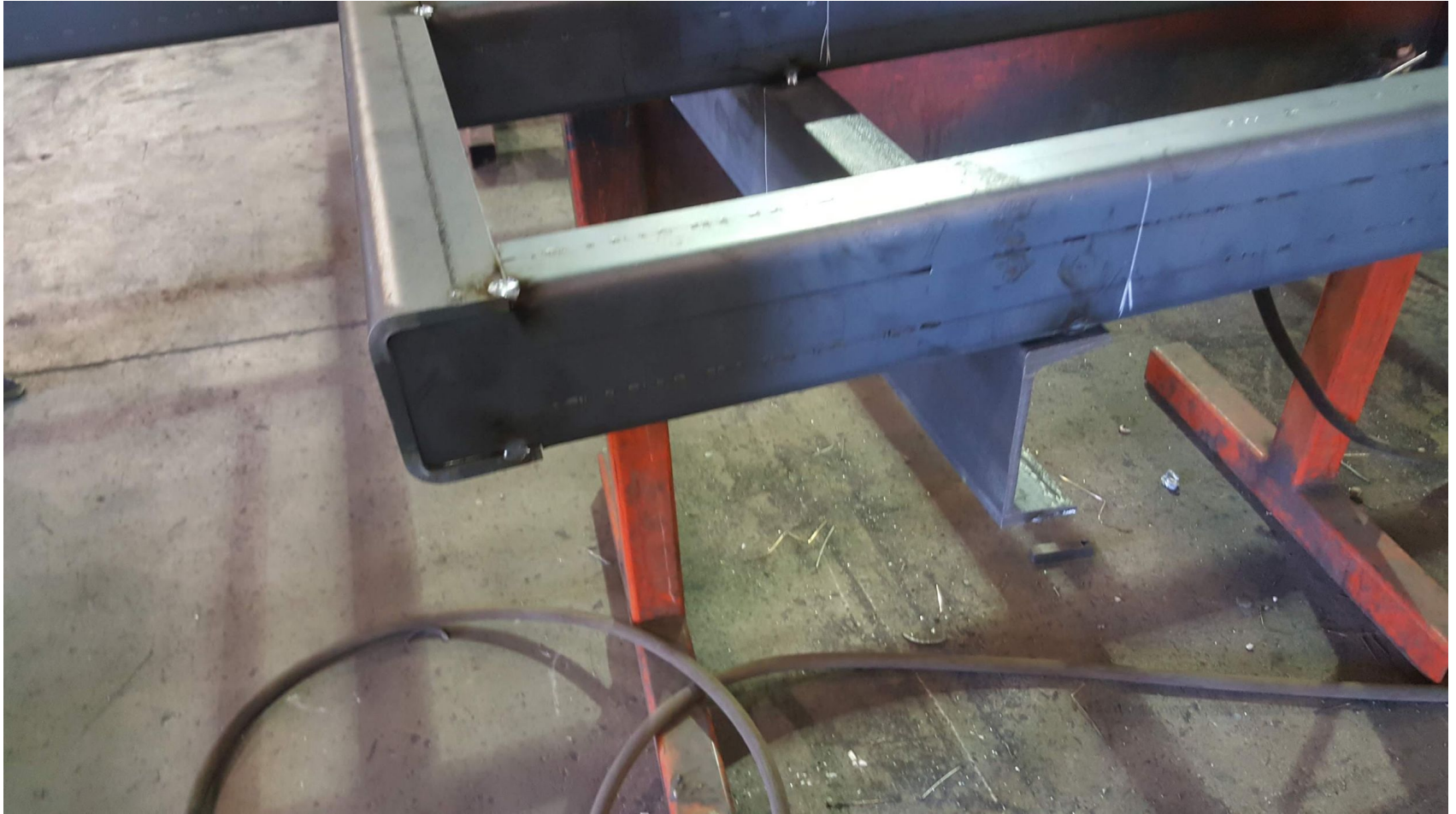
Design Complexity



Design Simplicity

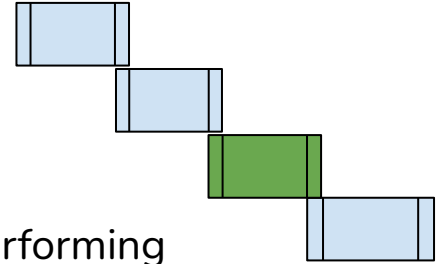


Utilize the Tools at Your Disposal





Assembly Sequence



Step 3: Choosing Your Fabricator

- Choose a shop with a demonstrated track record of performing creative fabrication and that is willing to stick with you to the end.
- Does the facility have the capability to safely handle the hauler bed?
- Do they have paint or powder coat capability on site? Where is the finishing facility and how will you transport the bed?
- The most value is not always the cheapest bid or estimate.
- Check references and look at their previous work, not only newly completed but also units that have been in use for a while.

Problems with the design, engineering and quality show up over time

Step 3: Where to Fabricate?



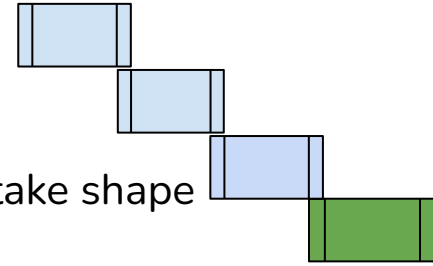


Step 3: Where to Fabricate

**What
Equipment is
Available?**



Step 4: Build Phase



- The build phase should be exciting, your ideas begin to take shape and your planning begins to show results
- Allow for better ideas to creep in as you encounter unexpected fabrication challenges, which will occur.
- Agree with your fabricator on how you will stay involved during the build. It is best to have regular progress updates, either in person if allowed or at a minimum via photos or videos.
- Plan for a final “punch list” to take care of some minor things at the end.
- Be prepared for timeline creep

Step 4:

**The
Build
Phase**





Questions