

Excursion Rear Bumper

(How to spend a HOT Texas summer)

A word of warning: Think twice before launching a project such as I am about to describe. It's a LOT of work!

- After purchasing a 2003 7.3L diesel Ford Excursion in August 2005, there developed a list of shortcomings. Near the head of the list was the considerable space consumed by having the spare tire inside the vehicle. Options were considered. Roof rack or front bumper mount were discarded for various reasons and I zoned in on something at the rear of the vehicle. The factory rear bumper is a poor design. The top width is too narrow to be a seat and too slick to make a secure step. It's so lightweight that any serious towing requires a separate hitch be attached to the bottom of the frame and this reduces ground clearance by several inches. Clearly, there is room for improvement. There is nothing available in the commercial market. No demand I suppose.

After considerable thought, the final design evolved so as to simultaneously solve several problems. The new bumper would be strong enough (3/16-inch steel) to tow 15,000# (2X overkill), wide enough to make a decent seat or table (12 inches), textured enough to make a secure step (diamond plate steel), and would incorporate a swing-away spare tire carrier as well as accommodating the license plate, receiver hitch, trailer electrical connector, and backup sensors. This was far easier said than done, but worth the effort — to me at least.
 - This project started in April. Phase One was the construction of the bumper itself. That done, the vehicle was put back in service and a couple of months passed while other matters claimed my spare time. Then, in July, when it was regularly 100°F, I started Phase Two—the construction of the swingway. I got that welded and in primer and then paused again while I considered what the final finish would be. I rejected Rino coating and powder coating as too expensive and too hard to repair if chipped or otherwise damaged. My choice was a heavy coat of industrial enamel (two quarts). It is quite tough, glossy — like powder coating — and easy to touch up if necessary. Then, choosing a nice warm day (101°F) in August for Phase Three, everything was removed, the parts separated, thoroughly cleaned, and the paint was applied. No problem getting it to dry. Everything was reassembled the following day.
 - All goals were accomplished and with a thick coat of glossy black industrial enamel it looks much like powder coating. The factory bumper and receiver hitch are resting comfortably in my barn and I am resting comfortably in the extra interior space.
 - Here are the main steps in construction:
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This is a typical Excursion bumper. Note the poor design; especially the low-mounted receiver hitch.



Here is what things look like after the factory sheet metal bumper and receiver hitch are removed.



The first step is to make a cardboard mockup of the bumper.



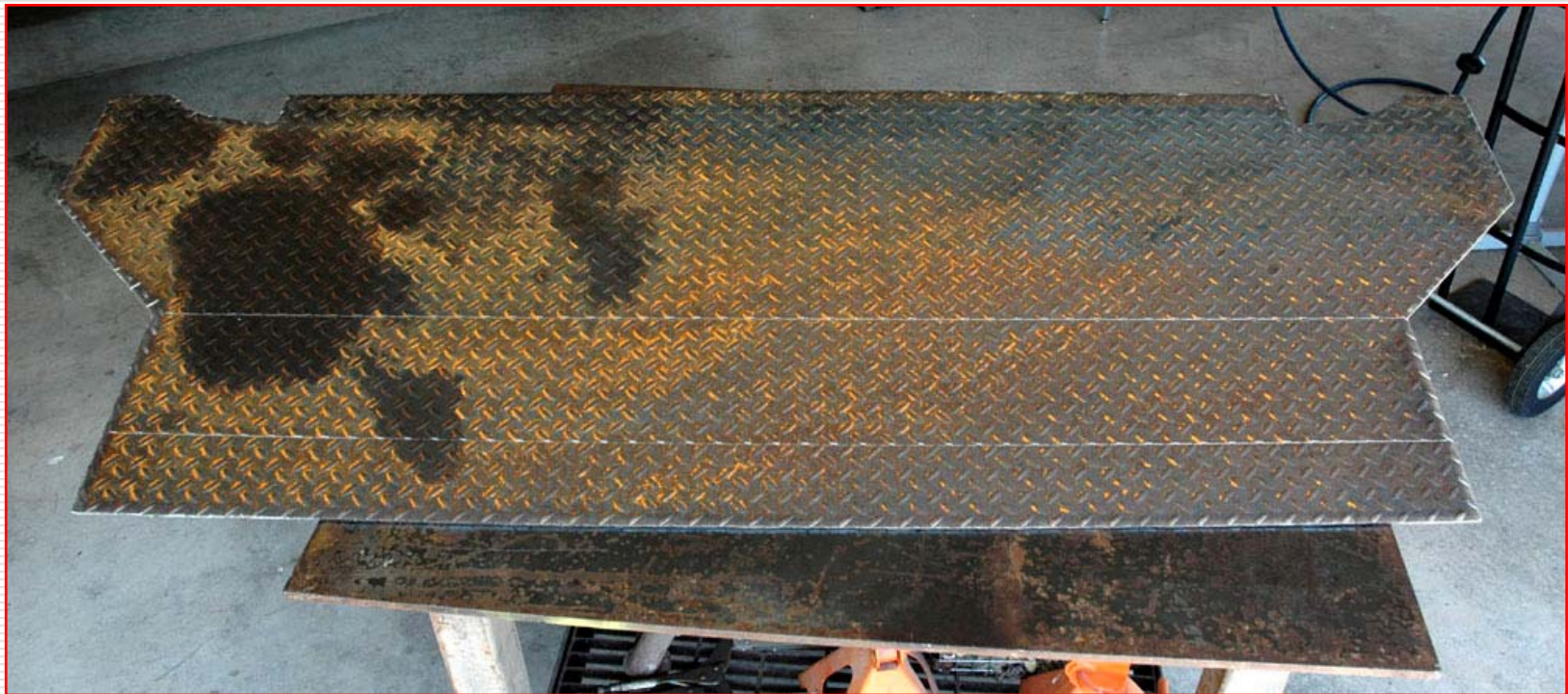
After the mockup is complete a visit to the steel store got me a 4x8 sheet of 3/16-inch diamond plate.



Here, the cardboard bumper is ready to be unfolded and the flattened template used as a guide for cutting the steel.



The steel has been cut and is ready to be sent out for bending.



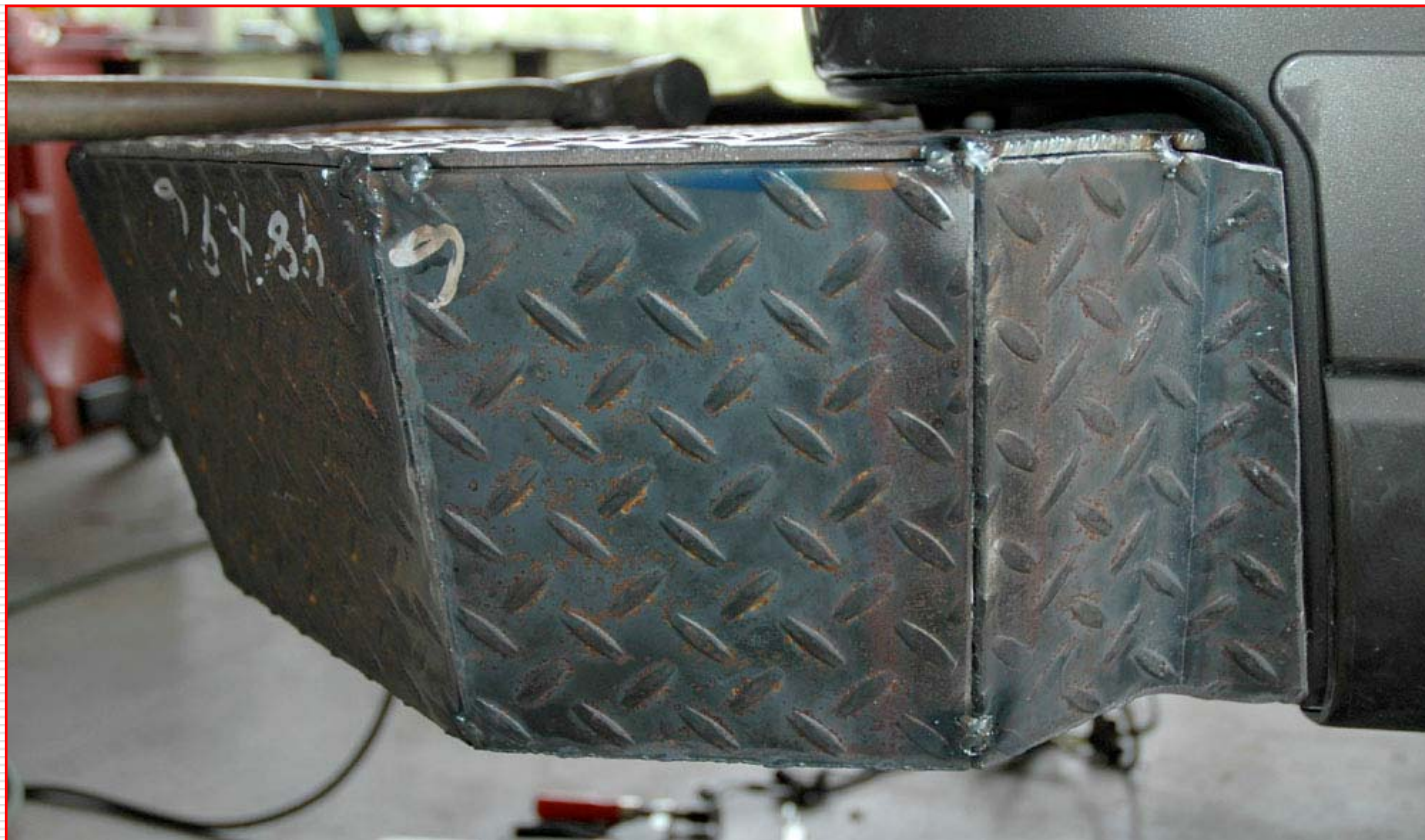
After two bends of 110 degrees and 70 degrees, this is the first of many trial fittings.



Looking in the end at the main support: 8-inch channel.



Now the several little pieces are cut and tacked in place.



The seams are roughly ground (a better finish came later).



Now the various holes and pockets are cut and it is beginning to look like a bumper. The swingaway pivot is tacked in place at left.



The swingaway pivot assembly is machined from 2-inch cold-rolled steel.



Detail of inside support for swingaway pivot.



View of the backside/inside. A bit more bracing was installed later.



Detail view of the main supports. The center tubing ties in to the receiver hitch.

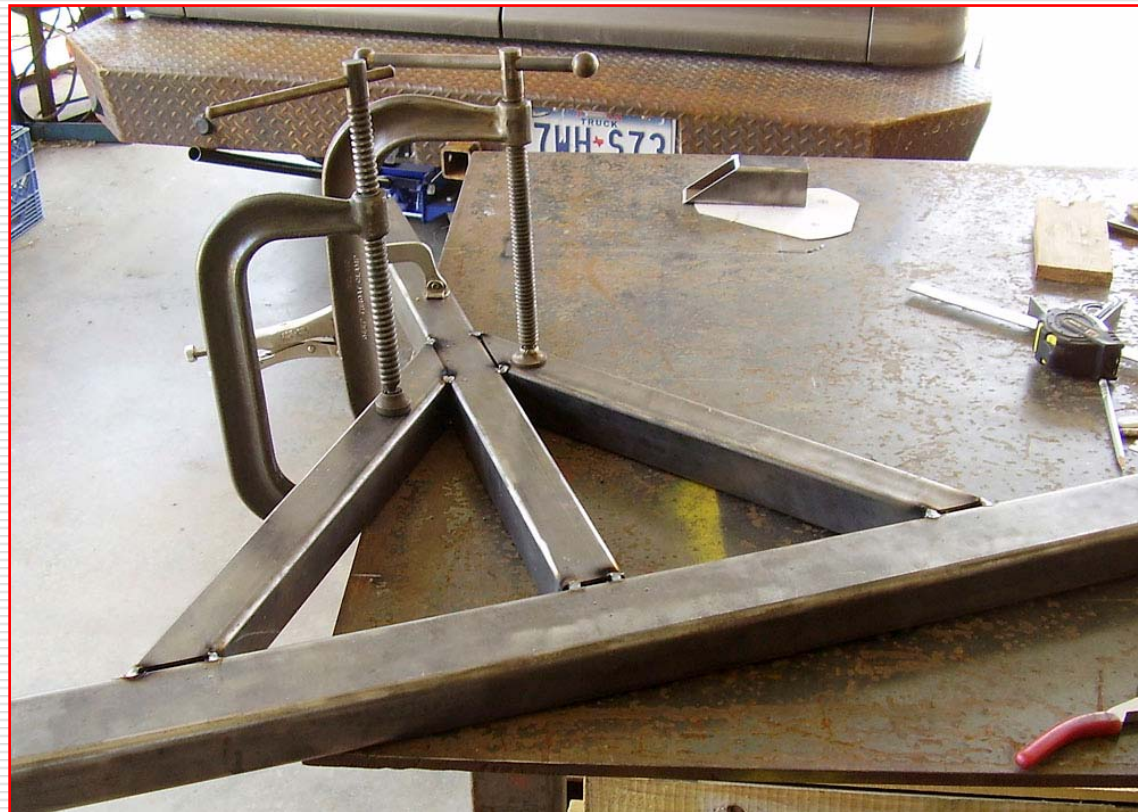


Final position is carefully determined and the bumper is tacked to the channel.



Phase Two:

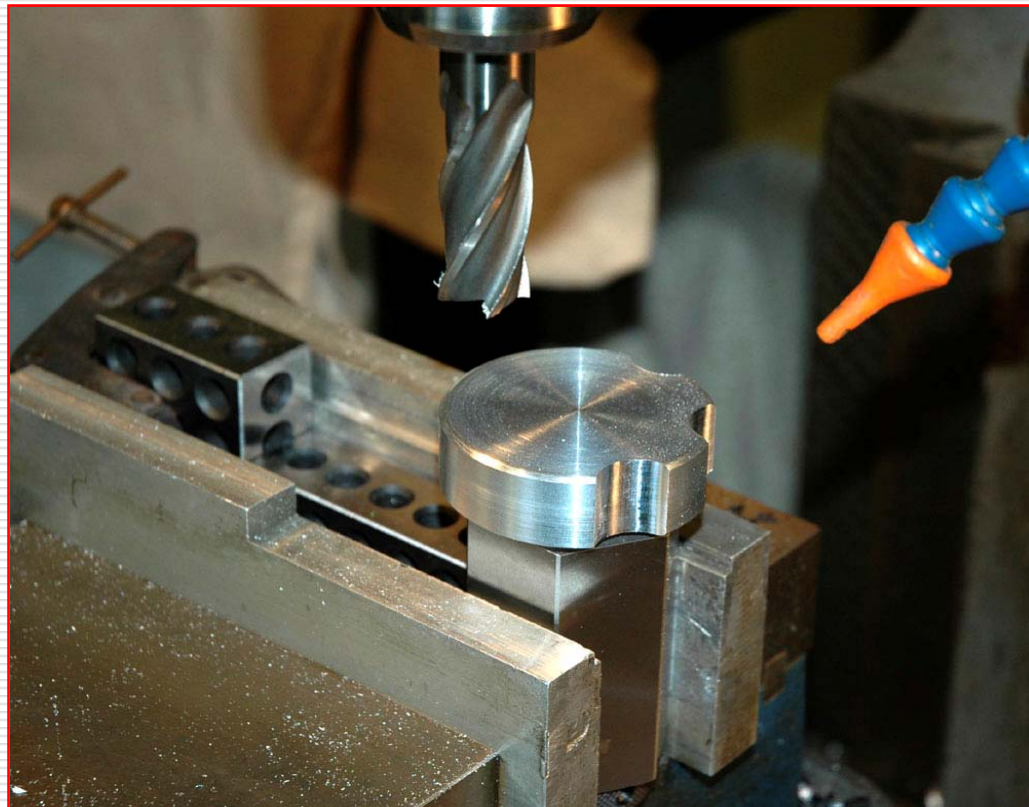
With the bumper on, the vehicle is back in service. Time passed and eventually construction began on the swingaway tire carrier.



Here, the swingaway is well along and we are ready to invent the latch/hold-down device.



A knob is machined from a piece of aluminum. Six flutes are cut with the aid of a hexagonal collet block.



Latch detail. Knob is pinned to a 1/2-inch bolt passing through a guide tube. A scrap of half-inch plate is welded under the bumper and is drilled and threaded at the matching angle. The thickness of the nylon block screwed to the bottom of the pivot arm is carefully adjusted to clear the bumper until the bolt is tightened.



Here, the swingaway assembly is completed and primed at the end of Phase Two.



After another pause, it was deemed hot enough for painting. Everything was disassembled and degreased before painting. Here is the side view of the completed project.



Rear view of finished project sporting a 285-75 x 16 tire.

