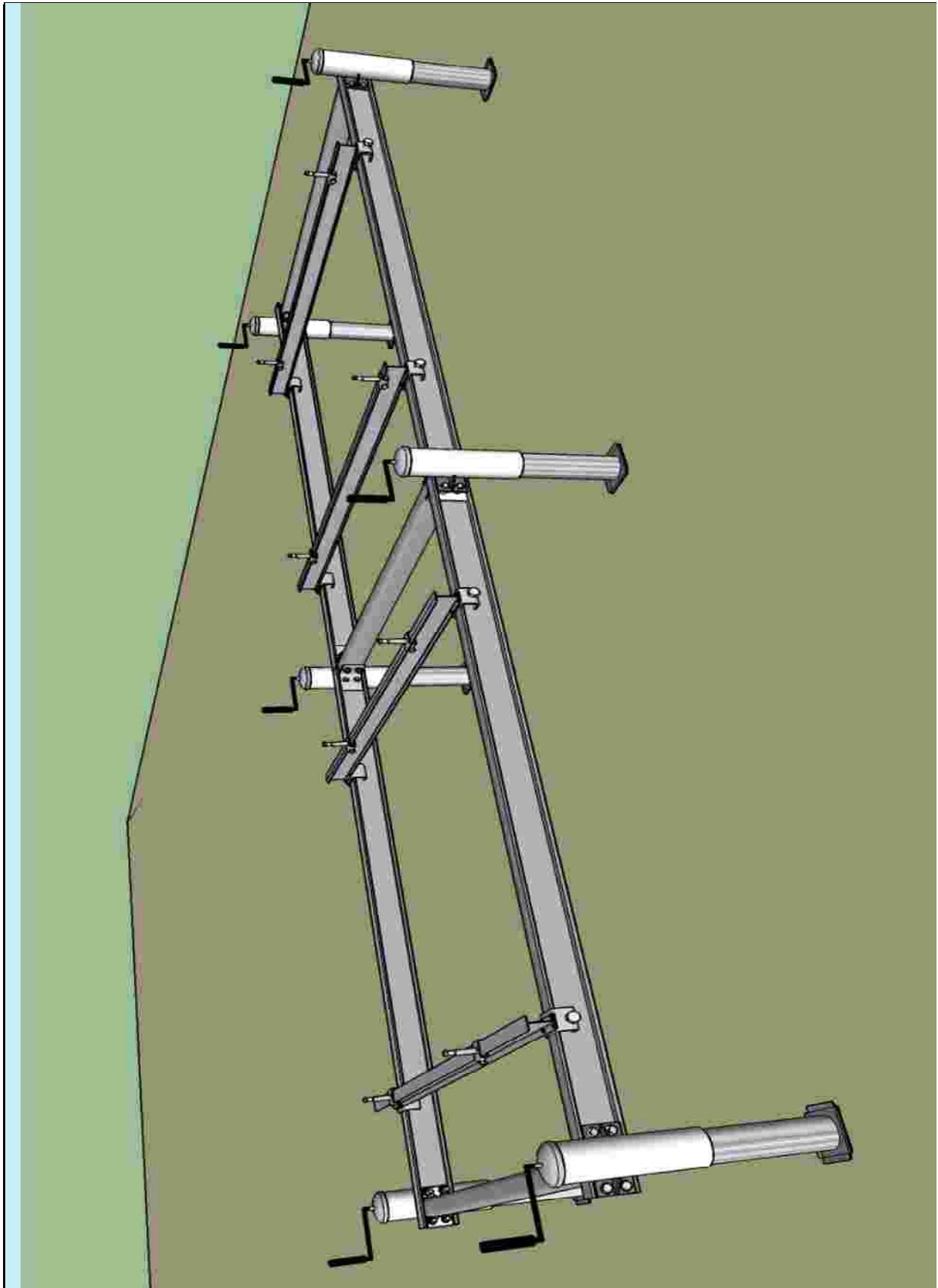


Build Your Own Chassis Jig

A complete step-by-step guide, including parts list, machining details and assembly instructions to erect a 16-foot long, 5-foot wide Chassis Jig to keep your Classic Automobile in alignment during repair or restoration.

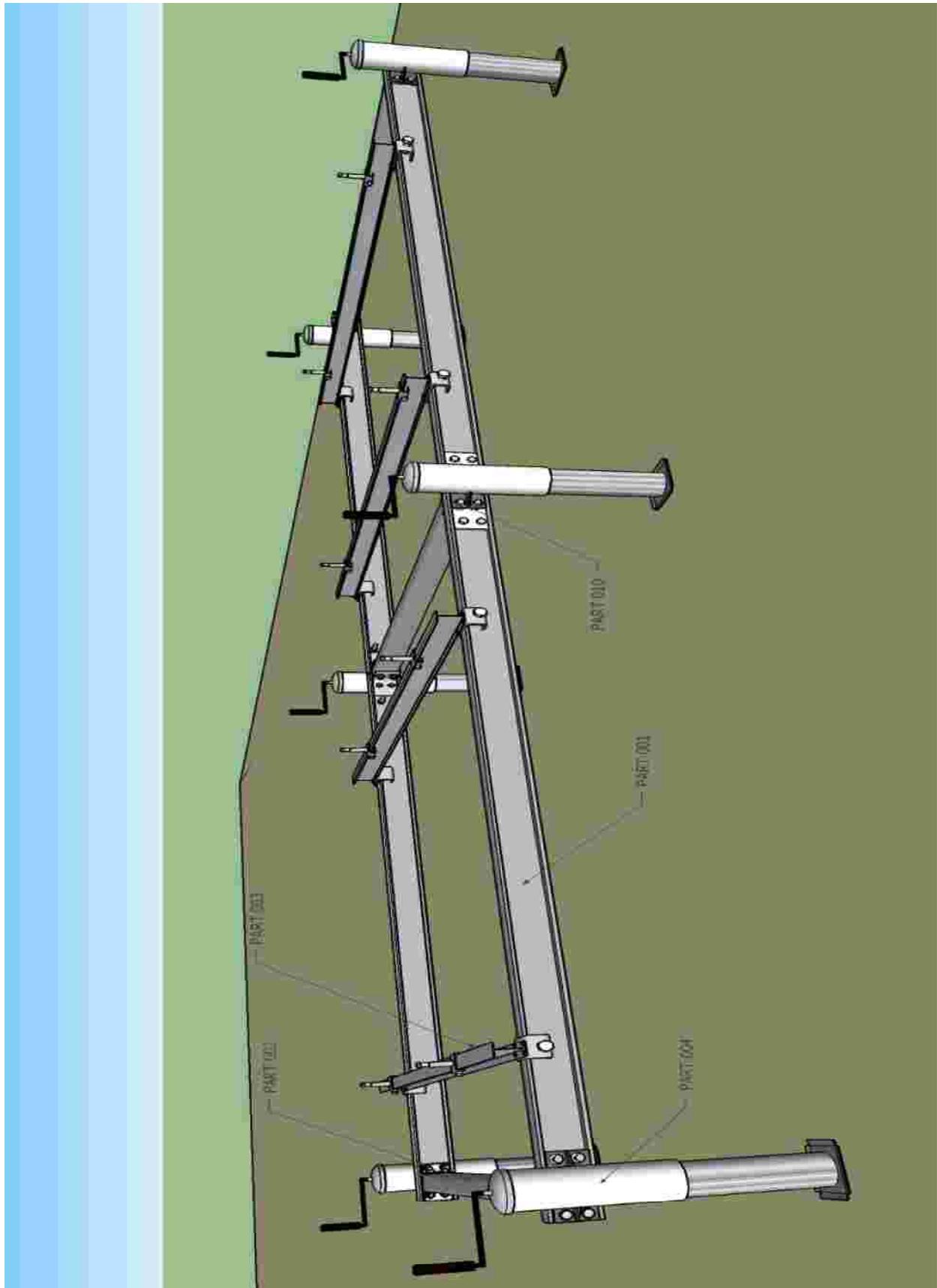
Chassis Jig



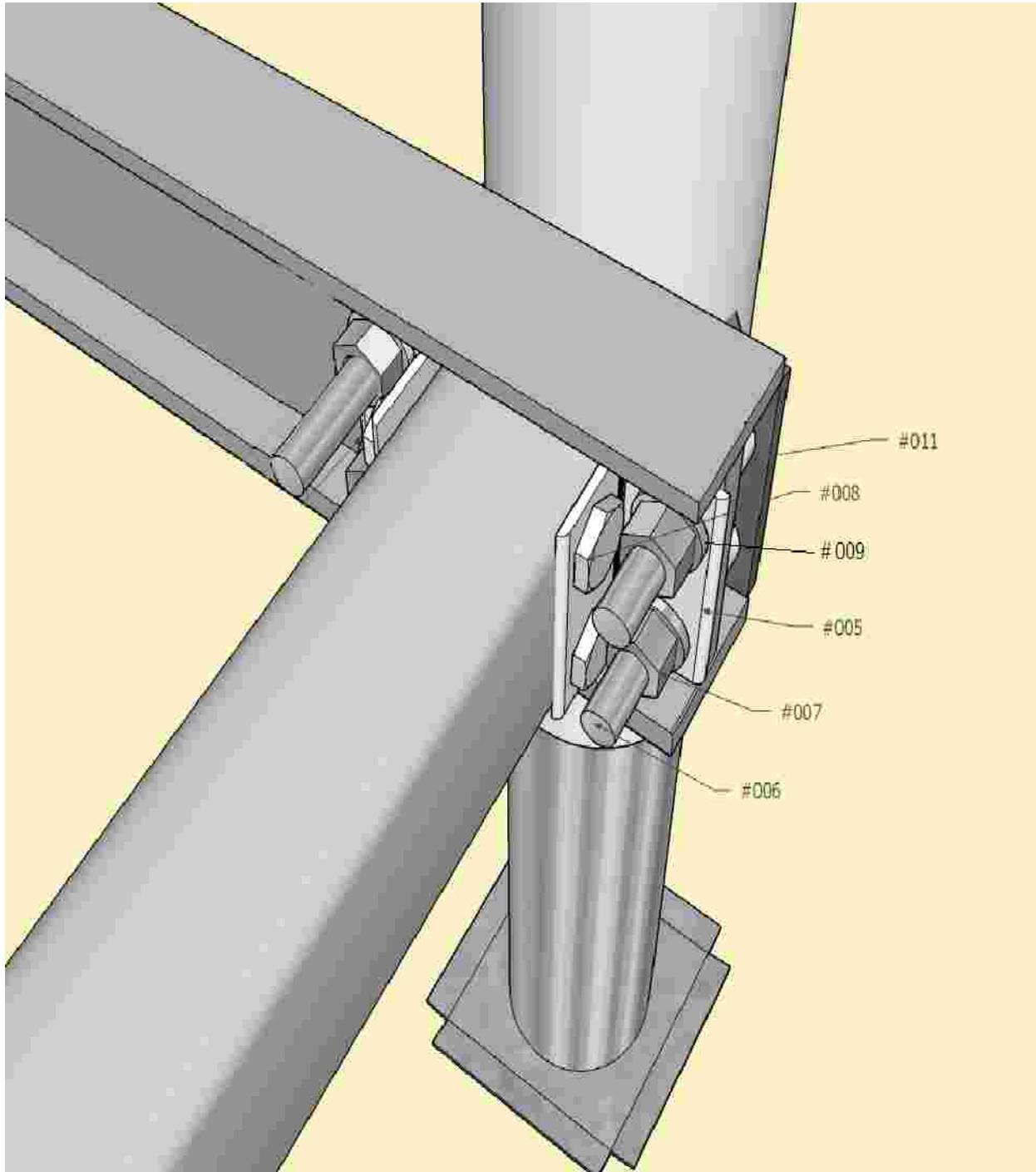
Parts List

Chassis Jig			
PART NO	PART NAME	DESCRIPTION	QTY REQ'D
001	Main Beam	8"L x (6.03" x 4.0" x .230") Structural Steel H-Beam	4
002	Cross Beam	4"L x (4" x 2" x .025") Rectangular Tube Steel	3
003	Cross Bar	5'L x (4" x .193" web x 2.663") Structural Steel I-Beam	4
004	Leveling Jack	Haul-Master - Item#67500	6
005	Angle Bracket	3 1/2" L (1.25 x 1.25 x 3.5" x .250") Steel Angle	16
006	Hex Bolt	3/4"-16 x 3-1/2" Grade 5 Zinc Finish Hex Cap Screw	24
007	Hex Nut	3/4"-16 Zinc Finish Grade 5 Finished Hex Nut	72
008	Hex Bolt	3/4"-16 x 1-1/2" Grade 5 Zinc Finish Hex Cap Screw	32
009	Split Lock Washer	3/4" Zinc Finish Medium Split Lock Washer	56
010	Main Beam Joiner	12"L x 5" x .25" Plate Steel	10
011	Spacer	Spacer 3/4"ID x 2"	24
012	Cross Bar Slide	4"L x (5" x 2" x .025") Rectangular Tube Steel	8
013	Hex Bolt	3/4"-16 x 3" Grade 5 Zinc Finish Hex Cap Screw	8
014	Ferry Cap Screw	1/2"-20 x 1-1/2" 12 Point Flanged Plain Finish Alloy Steel Ferry Cap Screw	32
015	Cross Beam Slide	4"L x (3" x 2" x .025") Rectangular Tube Steel	8
016	Post Sleeve	6"L (1-1/8 OD x .250 wall x .625 ID) Round Tube DOM	8
017	Hex Bolt	3/4"-10 x 6" ASTM A307 Grade A Plain Finish Square Head Bolt	8
018	Hex Bolt	3/4"-16 x 2" Grade 5 Zinc Finish Hex Cap Screw	8
019	Hex Bolt	3/4"-16 x 4" Grade 5 Zinc Finish Full Thread Tap Bolt	4
020	Hex Nut	1/2"-20 Grade 2 Yellow Zinc Finish NTE Steel Jam Nylon Insert Lock Nut	32

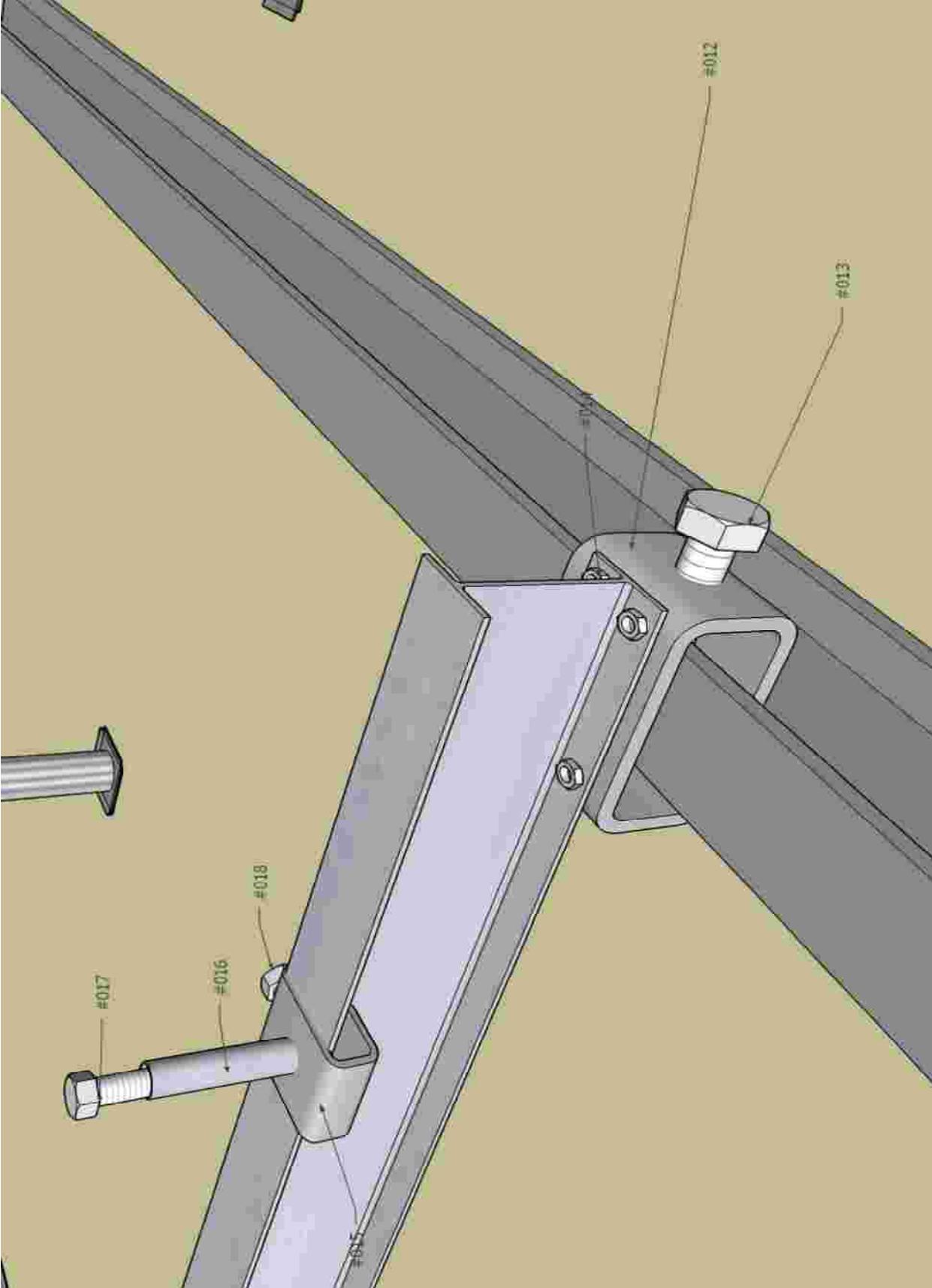
Parts Breakdown - "A"



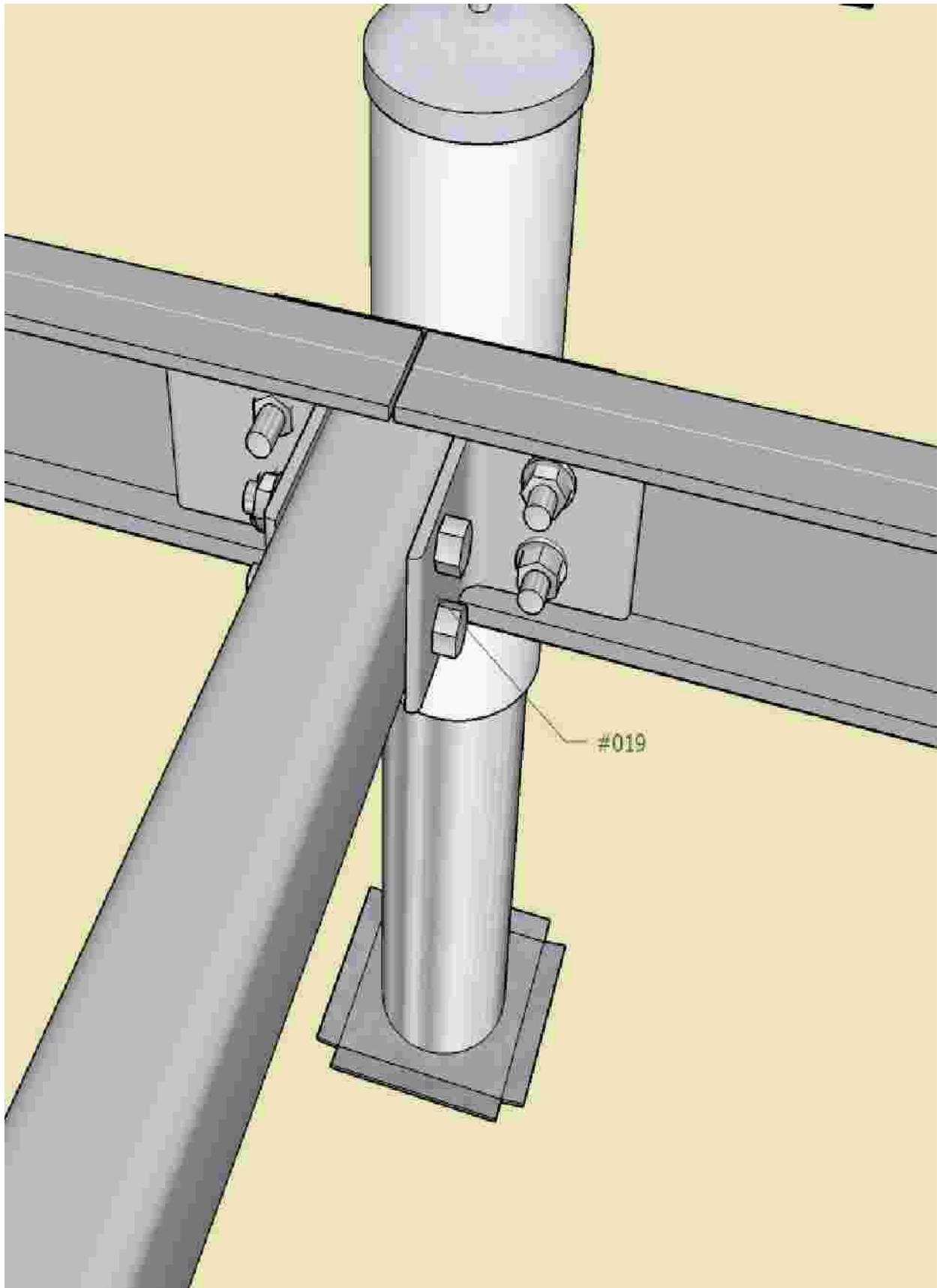
Parts Breakdown - "B"



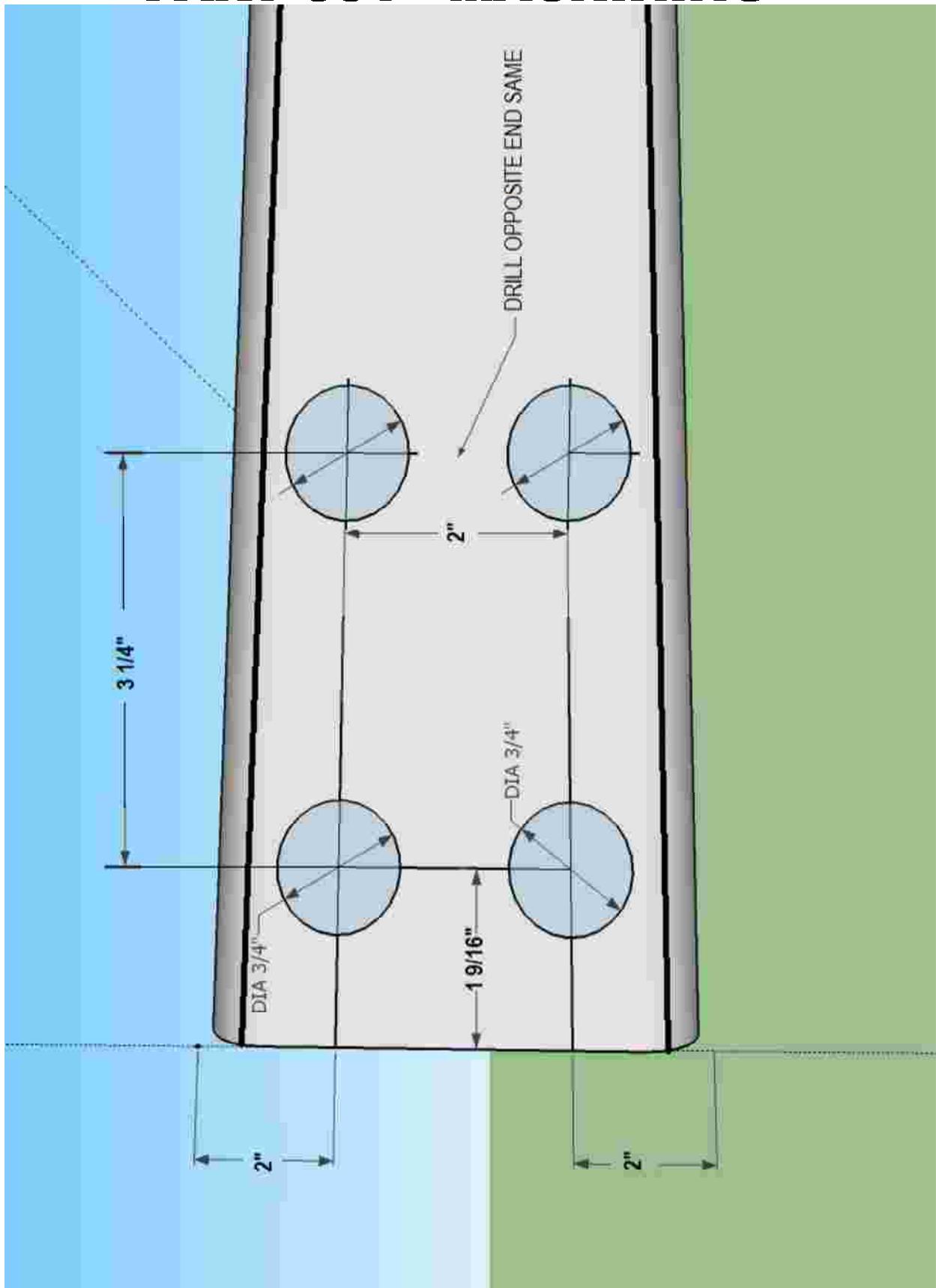
Parts Breakdown "C"



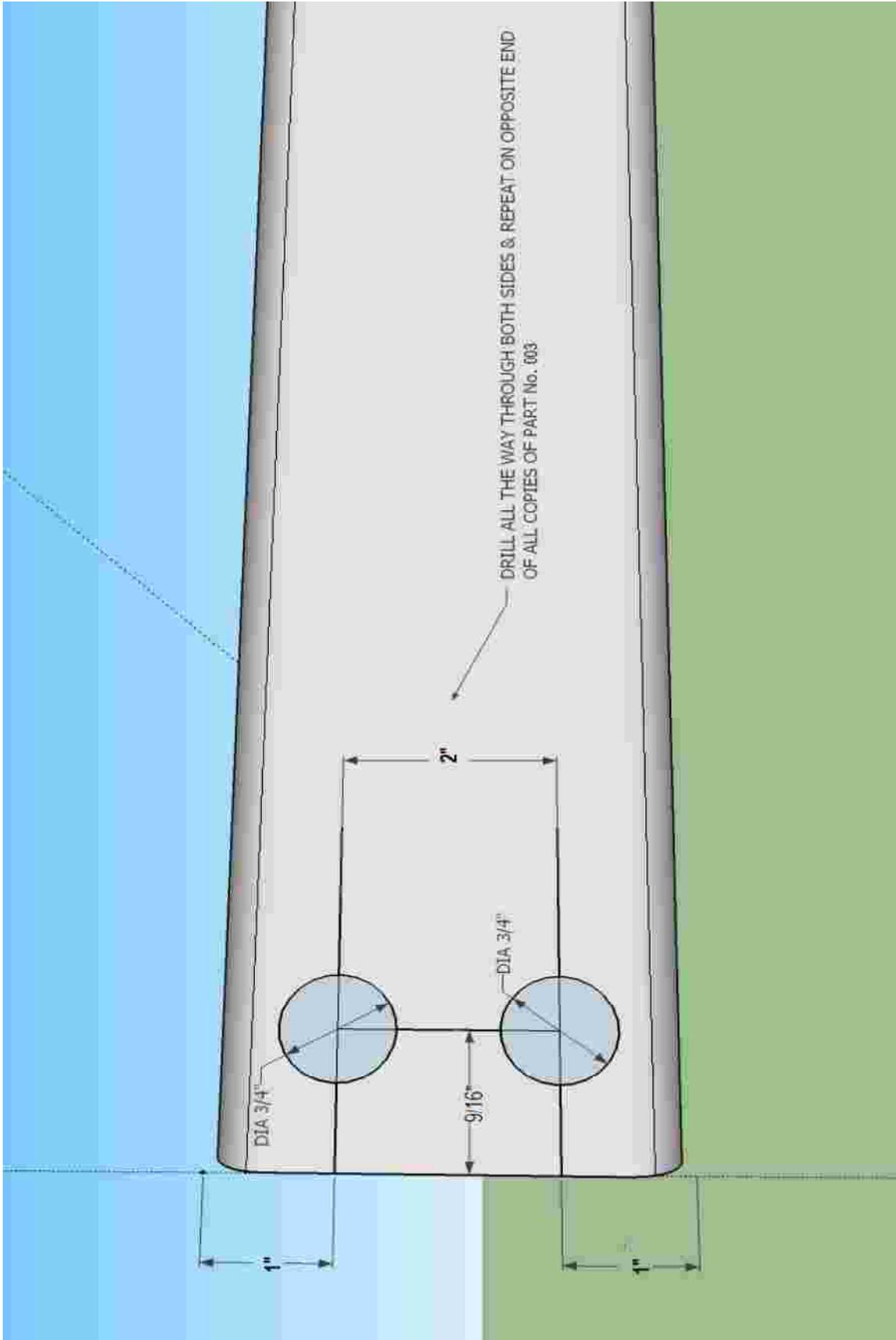
Parts Breakdown - "D"



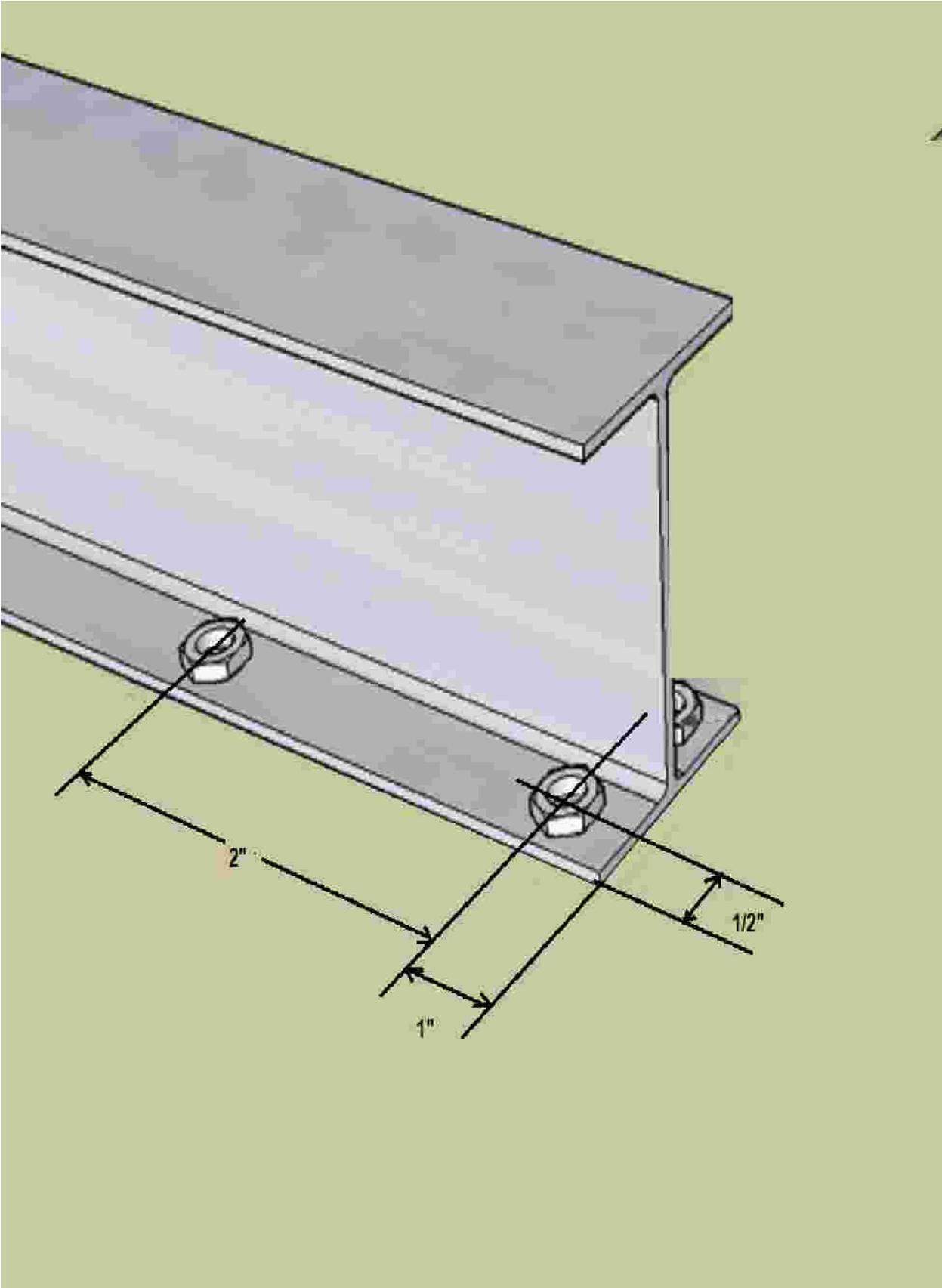
PART 001 - MACHINING



PART 002 - MACHINING

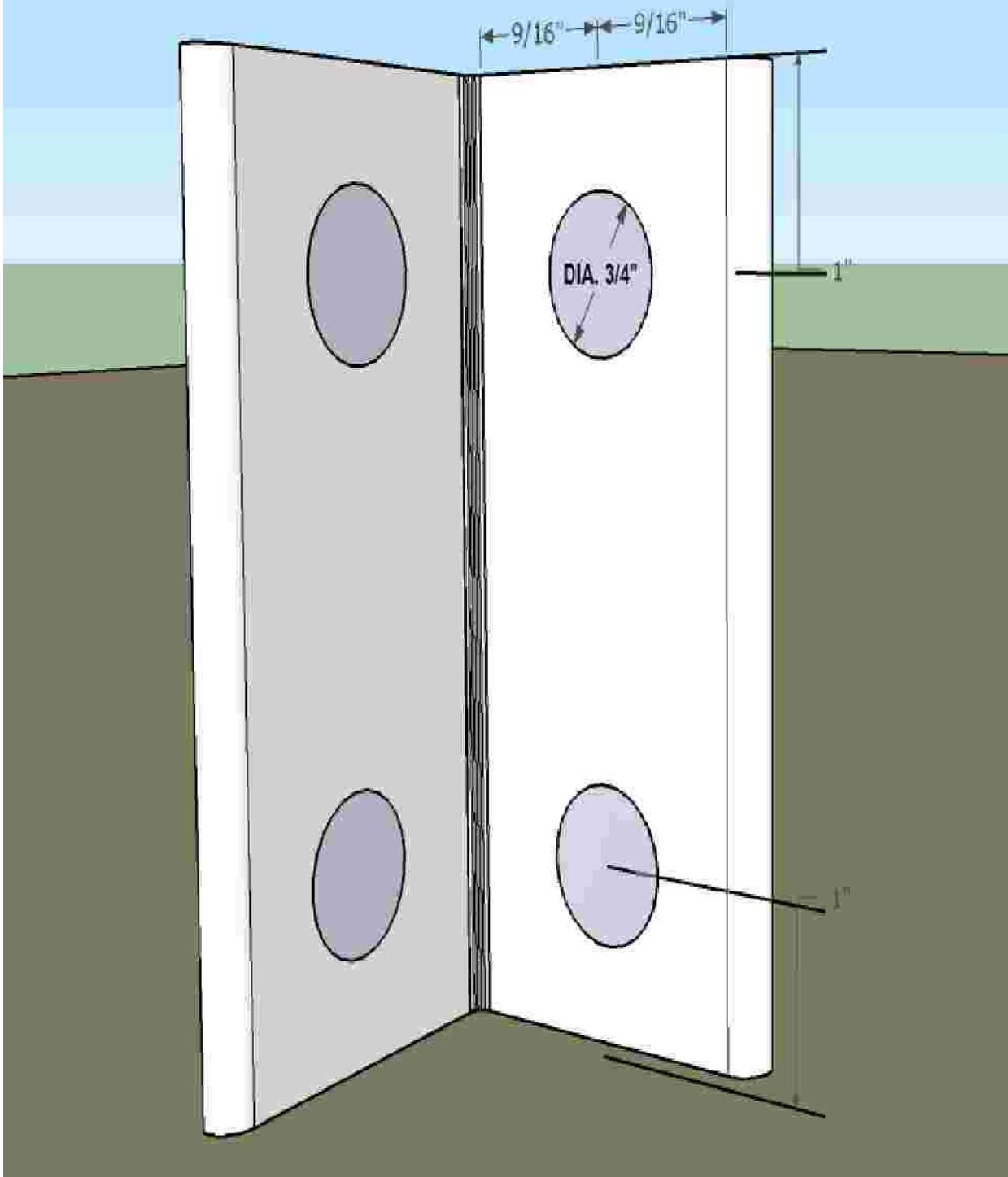


PART 004 - MACHINING

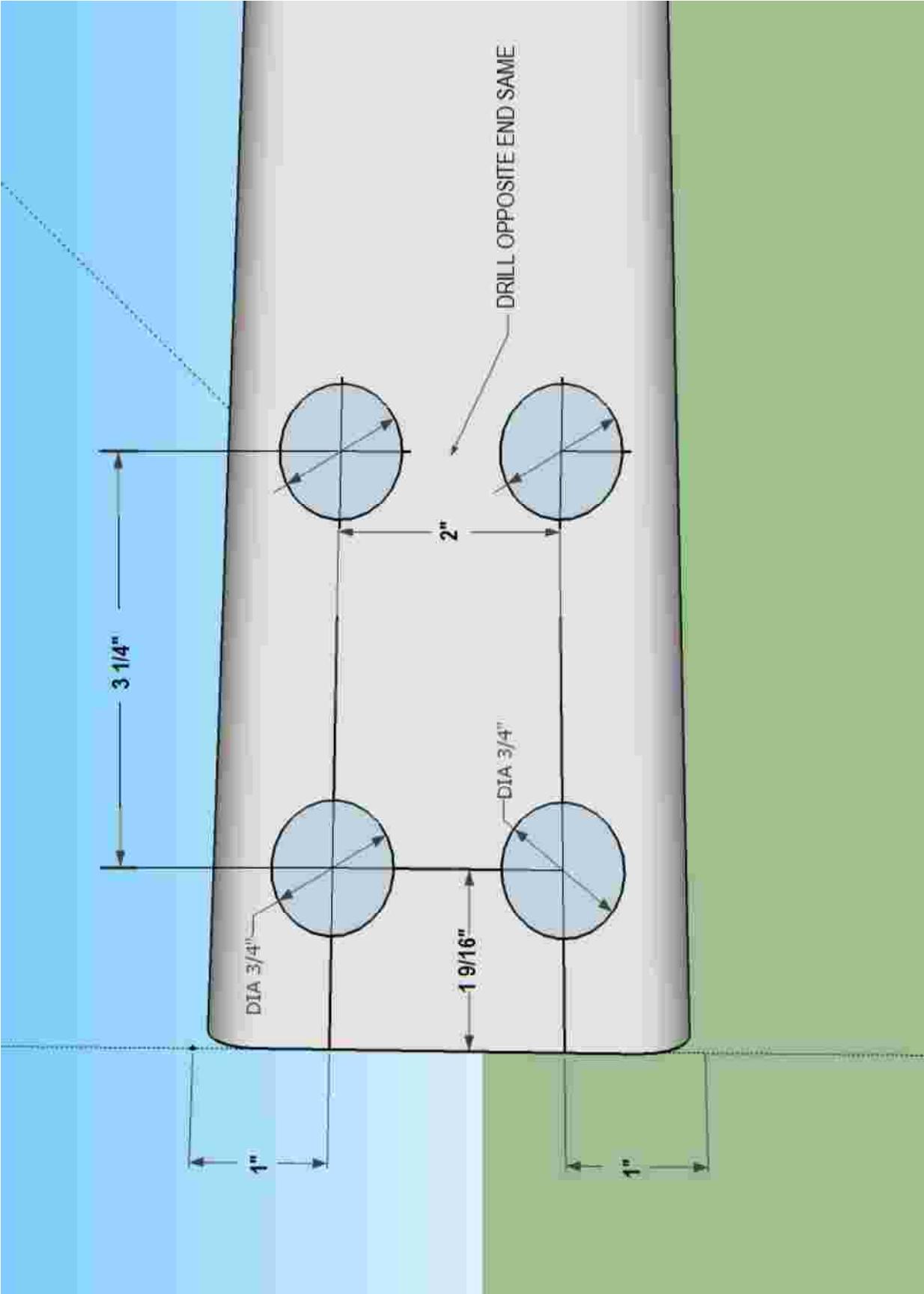


PART 005 - MACHINING

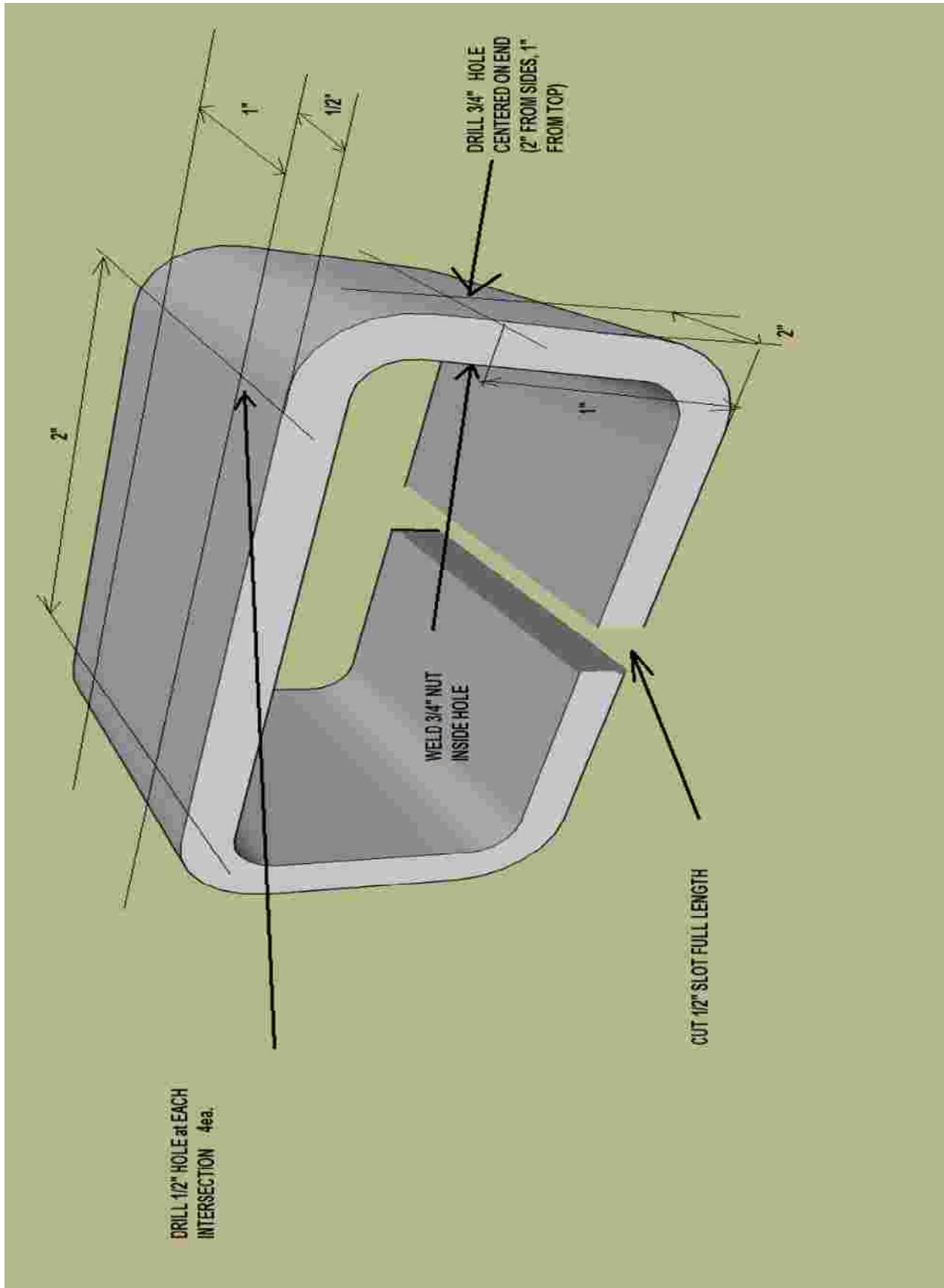
Drill both sides as shown on right.



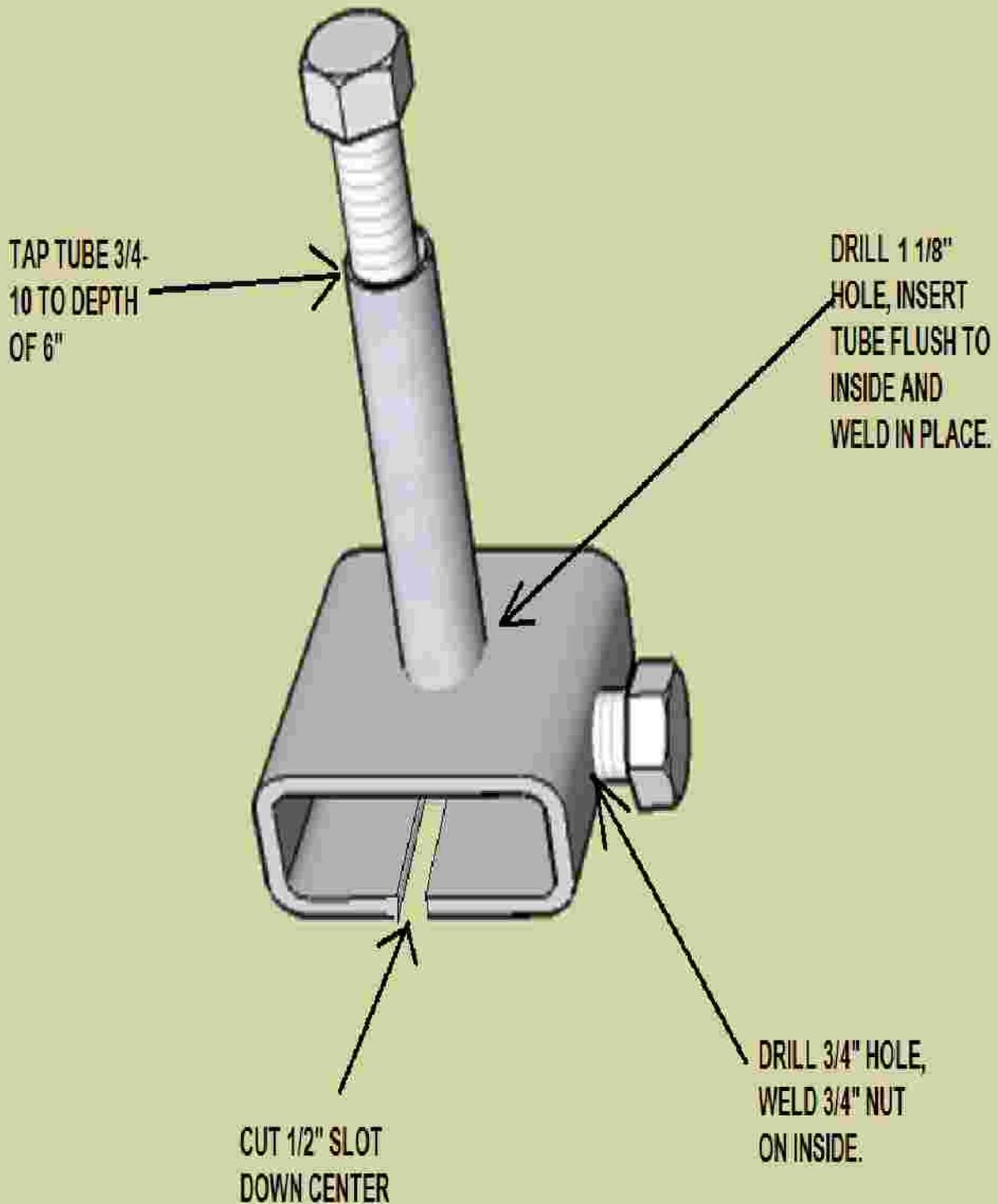
PART 010 - MACHINING



PART 012 - MACHINING



PART 015 - MACHINING



Let's start off with the "legal stuff". I make no claim as to the merchantability or fitness of the finished product. No structural engineering was employed in the design nor has a prototype been tested. This is simply a set of plans for a DIY project using readily available materials from your local metals dealer or on-line outlet. The sole liability for use of these plans lies with the erector.

Now, with that out of the way, here is my story. I ended up disabled with one too many projects, a 1965 Ford Mustang Hardtop that needs considerable repair to return it to a roadworthy status. Since I have been trying to finish my 1966 Mustang 2+2, I asked a good friend if he'd like to take on the project.

Being the helpful soul that I am, I figured I'd whip out a design for a Chassis Jig he could bolt together in his "Garage-Mahal" to get the little hardtop securely nailed down so that when large chunks of sheet metal structure start coming off that it doesn't simply fold in half and crumble on the floor. The result is what you see in this booklet.

I'm fortunate enough to have a great scrap (and new) metal dealer in my neighboring town who I always have do the rough part of my fabrication projects. They give a good price and they're great about doing stuff like cutting down pieces into sections, like the spacers I have listed on the parts list...all I need to ask is if they'll take a 4 foot piece of tube and whack it into 2" pieces and, voila! Most places are pretty accommodating so ASK your local metals dealer if they can help out.

I tried to design this jig to require an absolute bare minimum of fabrication. Aside from drilling some holes and slicing some slots in some pieces of rectangular tube, there is a minimum of welding required which can be easily done with a stick or MIG welder capable of getting some penetration on 1/4" steel. The bulk of the actual welding is tacking some nuts to the back-sides of holes to secure the "stop bolts" that keep the slides in place, and to secure the 8 "risers" that hold the screw bolts that are typically welded to the chassis of the auto. Alternately, feel free to use some of the suggestions at the end of this booklet for other methods of support.

Alright, down to the nitty-gritty.

This Chassis Jig consists of a BASE consisting of four 8-foot (or 10-foot if you want it longer) sections of "H-BEAM" structural steel that is a tad over 6 inches high and 4 inches wide. Those pieces are listed as "PART 001". I designed them to be drilled the same on each end so that the pieces would be interchangeable and there would be no need to remember which ones went where. Two each are connected together using a joiner plate of 1/4" thick steel and eight 3/4-16 bolts, lock washers and nuts, one plate on the outside of the "H-BEAM", so 2 plates are used altogether. Alternately, if transportation and storage is not an issue, single sixteen-foot sections of "H-BEAM" can be used.

There are three 4-foot Crossbeams (PART 002) that connect the 2 BASE sections together, one on each end and one in the center. These pieces are 1/4" wall rectangular tube steel 4" x 2" in dimension and are attached at each end to the BASE sections using 1 1/2" x 1 1/2" angle iron cut in 3 1/2" long sections. One angle iron BRACKET (PART 005) on either side of the

Crossbeam, so two on each end connected to the BASE sections. Six, wheeled trailer jacks (PART 004) are used at each end and in the center to level the fixture to your floor. I recommend using a minimum of a 4-foot level to plumb the jig. I initially selected a particular jack and had designed a mounting plate for it, but there are so many different jacks available and some folks may wish to use removable feet and/or wheels so pick the ones that work best for you. Just bear in mind the dimensions of the BASE to get the right attaching hardware. Most jacks attach with square-end U-bolts so you need a U-bolt that will clamp around a 6.03" beam or use an alternate fabrication method. If you find a jack that you like and wish to send me its mounting pattern I'll be happy to return a diagram of what I think would be the best method for attachment.

Anyhow, now you have a secure, square BASE constructed. I specify 3/4-16 (fine thread) Grade 5 hardware to bolt this together and recommend you use a heavy duty pneumatic impact wrench of a 1/2" drive ratchet or breaker bar with a pipe "cheater" to get it nice and snug.

Attached next are the four 5-foot long I-beam Cross Bars (PART 003). These are attached to two slotted sections of .025" wall 5" x 2" rectangular tube steel that has been slotted down one side, lengthwise, and machined to accept a "stop bolt". These are called "Cross Bar Slides" (PART 012) and they slide in from the ends of the BASE sections, so they can be placed most anywhere along the 16-foot length of the jig and the 3/4" bolt run in against the BASE beam to lock the slide in place.

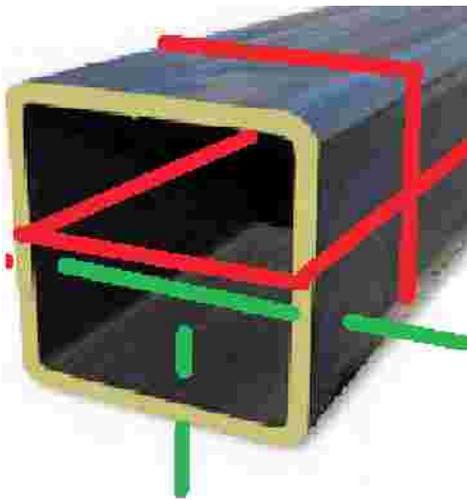
Attached to each Cross Bar, from the ends, are another set of slides called "Cross Beam Slides" (PART 015) which are drilled to accept both a "stop bolt" and a riser called a "Post Sleeve" (PART 016), which is a section of 1 1/8" OD, .625" ID DOM Tube Steel tapped along its length to 3/4-10 to accept a 6" long 3/4-10 bolt or other fixture as you desire to attach to the chassis of the vehicle.

These slides give you the flexibility to use various attachment points on the chassis, although asymmetrically, such as spring eye bolt holes, control arm mounting holes, crossmember holes, factory alignment holes, direct weld to pinch welds or rocker panels, etc.

A vehicle can be loaded onto the Chassis Jig in a number of different ways. The jig can be lowered as much as possible and rolled in underneath a vehicle already on a hoist or lift, or if the axles are still in place, it can be rolled up ramps from either end, and down sixteen-foot "two-by" planks with cribbing or other supports placed mid-way between the end and center Crossbeams. Once attached to the jig just slide the planks out, raise and level the jacks.

I hope you enjoy building your Chassis Jig. I heartily recommend using Picklex20® to remove the mill scale from the metal and prepare it for coating, and a base coat of two-part epoxy...brushed on is just fine....to protect your project from the elements.

Other Chassis Attachment Methods

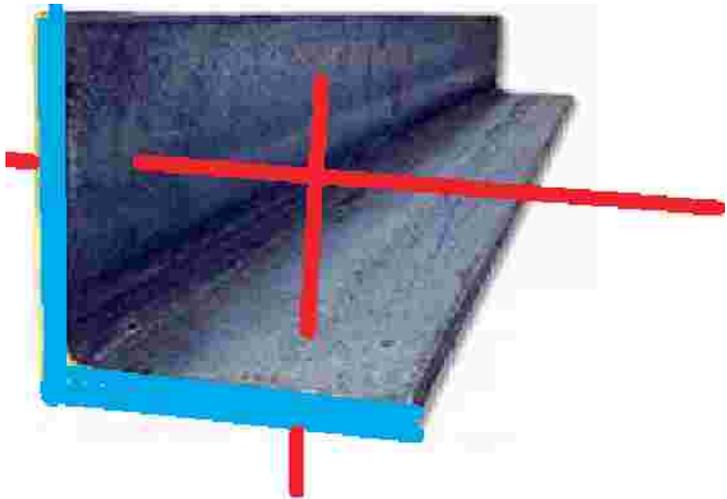


Square tube steel, sliced in half length-wise, of the right dimension can be drilled in two directions to bolt to the "risers" using the adjustable 6" bolt with a nut on the underside, then cross-bolted to a subframe rail, spring eye, etc.

The RED lines show the cuts, the GREEN lines where holes could be drilled. A 2-foot section of tube would yield eight 6-inch long brackets.

Short sections of Angle Iron can be drilled and bolted to the "risers" using the adjustable 6" bolt with a nut below, and welded directly to a rocker panel or drilled perpendicular and bolted to part of the chassis.

The RED lines suggest how this could be done.



This is a commercially available "Pinch Weld Clamp" which clamps to a rocker panel or other pinch weld and can then be bolted to the Chassis Jig or used to pull part of the vehicle into alignment.