Chopper Builders Handbook
Builders Series

How to Make Custom Chopper Saddles

By Gary Weishaupt

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Part I

Seats and Saddles

This is an article I've wanted to do for several years now and in the true tradition of the Chopper Builders Handbook we're going to show the nitty-gritty details on how to get the job done effectively and not just a few pictures of some guy putting together bits of foam and leather.

It's pretty hard to ride a bike without something to sit on so eventually you'll be faced with deciding on whether or not to make a custom saddle or resort to a store-bought thing to sit your ass on. Notice that I said 'saddle' and not 'seat'.

In true Chopper parlance motorcycles don't actually have a 'seat' as such, since those devices are usually only found on bicycles. Two wheeled motor-driven vehicles have 'saddles'. There is huge difference between a 'seat' and a 'saddle' and after a couple thousand miles your back-end will begin to tell you about such differences.

Unfortunately there are dozens of companies and individuals out there who still try to build 'seats' for motorcycles since they don't know the difference between the two objects and such makers generally don't do much real riding. I have noticed that many of these seat makers also make 'saddlebags' but don't make 'seat bags' which seems confusing.

It seems pretty obvious to me that you don't put a 'seat' on a steel pony unless that pony is on some kind of carousel or merry-go-round. If the pony in question is a real motorcycle it needs to be saddled so in this article we're going to be building a 'Saddle' for our steed.

In reality however almost everybody refers to the saddle as a seat so you can call it pretty much anything you like, especially if you make it yourself.

The first real 'paying' job I had in a chopper shop was making saddles for custom bikes. In those days we built these huge camel-humped monsters that were upholstered like car seats with welted seams and diamond pleats but the pans were made the same then as they are today. When something works well it tends not to change over time and the old standard metal saddle pan is one of those things that works really well.

In my opinion fiberglass pans are a pain in the ass to make. They take a lot of time, look crappy, cheap and unsubstantial and just seem out of place on an Iron Horse. If you like plastic and flimsy staples instead of steel and rivets I guess they're okay. I'm probably prejudiced but I'd rather ride on bare rails than on plastic and that might explain why some folks call me a pretty hard-assed bastard. I just hate cheap half-assed shit in general.

Tools

You don't really need many specialized tools to do saddle work but this is what I find helps me out and makes the job easier.

Figure 1

Beginning in the upper left hand corner of the picture we have the old tried and true 3M super 77 spray adhesive. Next to the can are two body dollies for doing pan shaping. Below are tin snips and a pop-rivet gun. Following in line from left to right are an awl, metal scribe, Xacto knife, center punch, bread-knife, three lobed de-burr tool, Sharpie markers, scissors, Surform rasp, drill, sheet metal shears and mallet. Down below are a pair of parallel smooth-jaw pliers, sandpaper and 'pincher pliers', sometimes called 'grippers'. On the top row we have a metal yardstick, ruler and some 80-grit emery or crocus cloth.

We'll list other tools as we go through the process of making the pan and covering.

Pattern Making

To get started on our own real steel saddle pan we need some poster board, thin cardboard or even just a few manila file folders to use as pattern making material. In this example project we're going to be using file folders since we already had them in hand so it saved a trip down to the office supply store to buy some fancy poster board.

For this application I just used two file folders, laid out flat, and taped together at the joining edges to make a master for our saddle pan template. I know that poster board would have looked way spiffier and even some bright red or blue file folders would have given this article a big boost but the regular old manila versions were all that we happened to have laying around.

Actually almost any large piece of relatively stiff paper will do the job. Back in the day we'd use old grocery bags taped together but I have to admit that the file folders are better for the task at hand and don't smell like rotten lettuce.

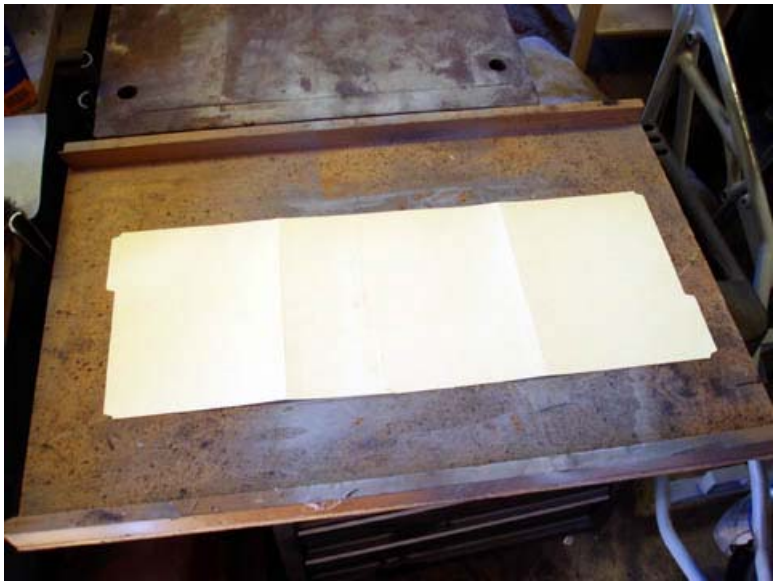

Figure 2

Here's what we start with, a big piece of stiff cardboard or paper that's larger in all dimensions that the saddle pan we're interested in making. It also helps if we have a scooter frame to begin with but you'd be amazed at the amount of mail I get about seat making from guys who don't even have a bike to work on.

Before you make the pattern however it's important to have the rear fender properly positioned and I like to loosen the axle nuts and slide the wheel and fender to full forward and the full aft position to find a good compromise point to start from. There is no sense in making a saddle pan that won't fit when a new chain is installed or when an old one is fully stretched to the maximum.

To create the blank pattern we just tape a few folders together to get the length we might need and then scribe a centerline with felt pen down the middle. Make corresponding centerline marks on your frame backbone and fender so you can align the pattern template with the frame.

Lay the blank template on the frame rails. You can use a piece of tubing as a weight to help the cardboard hold a shape as it starts to curve up the rear fender, or bare tire if you're really a hardcore builder.

Figure 3

Using a felt tipped pen trace the outline of the frame rails from the underside of the cardboard. Try to keep the pen perfectly perpendicular to the rails as you trace. What we want is a fairly accurate tracing of the outside edge of the frame and fender.

It helps keep the blank template flat if you place a stiff piece of thick cardboard (the white object in Figure 4) or even thin plywood on the upper side as you're tracing from below.

This seems like a simple task at first glance but you'd be amazed how many people just can't seem to find the time to make a half way accurate tracing of their own frame rails.

Believe it or not I once corresponded with a guy via email for weeks that was trying to use a pattern for his own bike project but somebody else made the pattern from a completely different bike but it was supposed to be a 'name' bike so I guess he thought that the pattern was something special and he was determined to use it. He couldn't figure out why it wouldn't fit his frame since it was a trace from a 'professionally' made chassis.

Custom saddles in almost all cases are completely unique to a specific frame and can't be 'exchanged' like a stock seat might be.

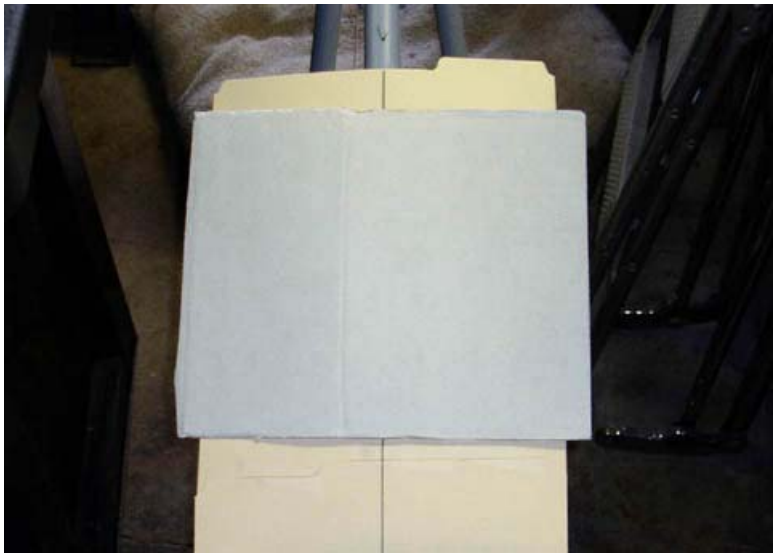

Figure 4

The outline of the rails should include portions of the rear fender, or the rear tire, but at this point great accuracy isn't the goal. All we're looking for is a rough trace of the perimeter rails and fender outlines.

The resulting trace might look as simple as that shown below.

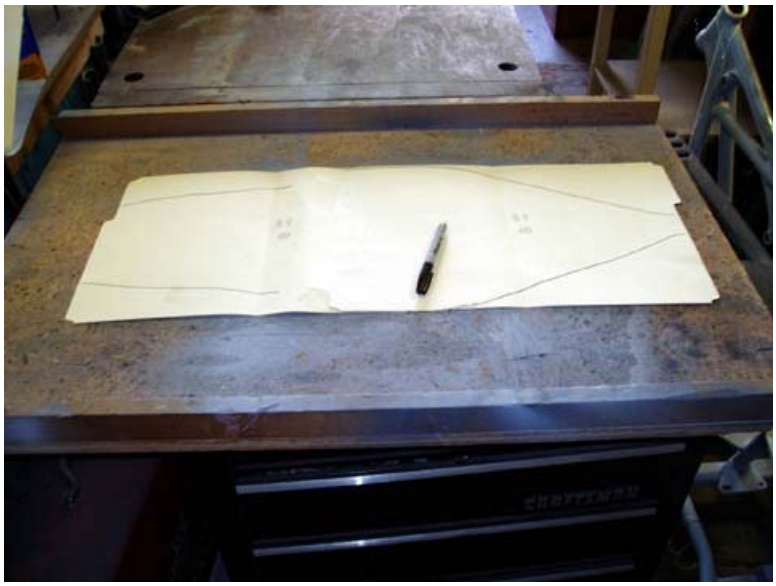

Figure 5

Using this rough outline trace we can cut away all of the extra template material and get down to something we can refine in detail.

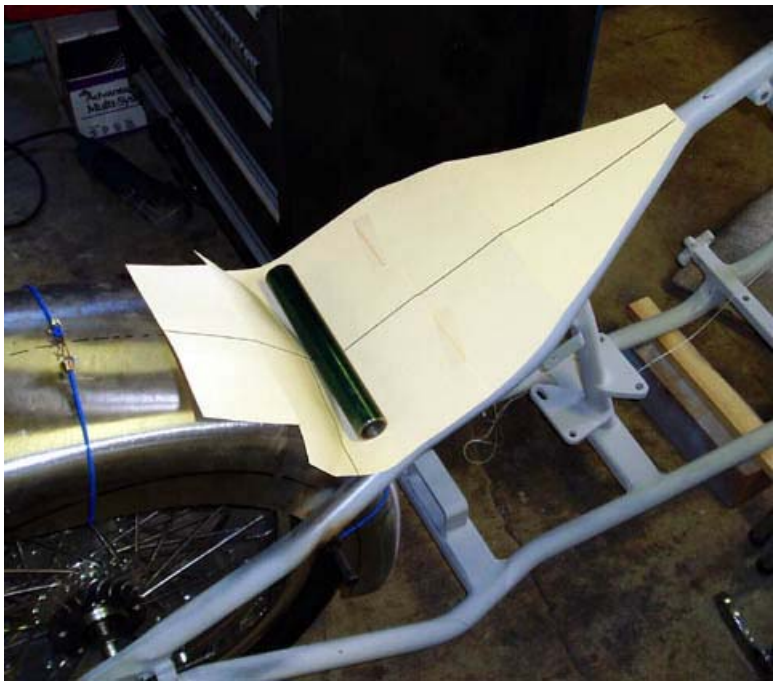

Figure 6

Now we've got something we can do some serious work with. I call this a 'proto-pattern' meaning it's just the shell we'll use to develop the final cutting pattern or patterns.

That piece of tubing on top of the cardboard is just a weight to help hold the pattern in position during the working stage.

What we need to do next is to chop that rough pattern down to follow the centerline of the frame rails and to blend into whatever fender contour we happen to have. Remember that the pan is the structure of the saddle so it has to bear on the frame rails and fender for support. If we cut it to large we'll have a finished product that looks too large for the frame. If we cut it to small the pan will start to droop since it's not getting support from the rails.

At this point I usually transfer the outline of the first rough-cut template to a new layout of poster board or folders so I don't end up destroying the master copy and then do all subsequent work on a copy of the original rough pattern. This is a good practice to establish since if you make a mistake and cut away too much material you can always go back to the previous template.

Since our tracing represents the outside edges of the frame and fender the first thing we need to do to refine the rough pattern is to cut it back to follow the centerline of the frame rails.

Most chopper saddles look best when about half of the rail shows along the sides but some makers prefer to see the entire rail while others like the pan to completely conceal the rails altogether. It's a personal choice and I just prefer about half of the rail exposed.

Figure 7

Since I've traced the frame rail outline to the pattern board I have some guidelines to work from. This particular frame is made from 1.25" tubes so I know that if I offset the perimeter traces by .625 inch I have a line that represents the tube centerlines. Using a section of 5/8" bar stock as a straightedge to lay down some new offset cut lines with a felt tipped pen is the easy way to do this.

To radius the end points and corners I use whatever round objects I have nearby in the shop. When I took these pictures I had a dog food can and an old coffee can handy, which were good enough for the curves I was looking for. Paint cans, oil cans, coffee cups and almost anything round can be used as curve templates. Remember that it's a lot easier to make an upholstery cover lay smooth if it follows long gentle curves instead of sharp bends.

You can get fancy and break out a compass but the end result will be the same.

You can see in this picture that I'm refining only the outline of the front portion of the pan. The sides and rear section will come a little later.

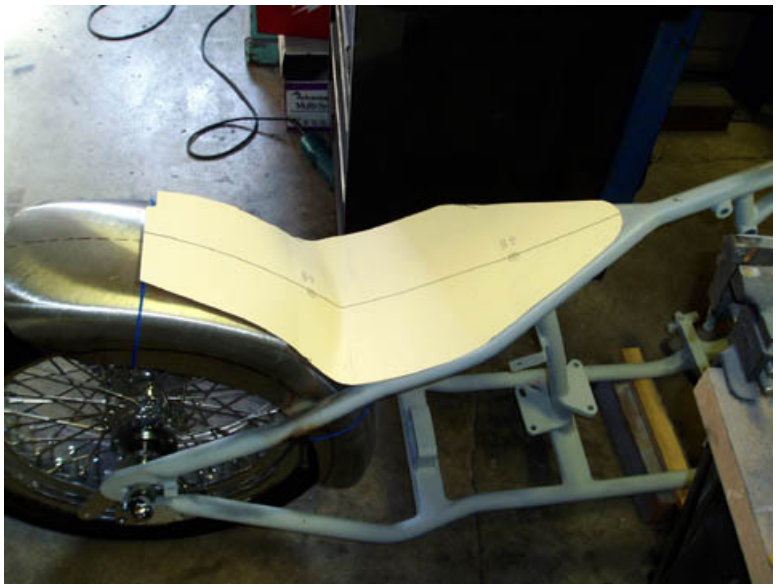

Figure 8

We're getting a little closer to having a good pan template to work with. In this snapshot you can see that we need to radius the corners a little more and bring the edges in about another eighth of an inch. We also need to determine how we want the rear portion of the pan to interface with the fender.

In this situation we can't have a nice smooth and contoured fit to the fender because the fender will have about one inch of possible adjustment movement fore and aft. It's also not a very elegant fender to begin with so highlighting it's shape with a fitted seat will only serve to draw attention to an area we don't want to emphasize.

If we could afford a nice contoured fender from Exile we'd be doing something pretty fancy on the rear of the pan but that wasn't the case in this situation.

You might have noticed by now that you can see the light penned outline of my proposed trim line around the skirt of the fender in a few of these snapshots. I usually try to work on the rear fender, the oil bag and seat pan all at the same time during the fabrication of a new bike since the position of all three items and even the mounts are closely interrelated.

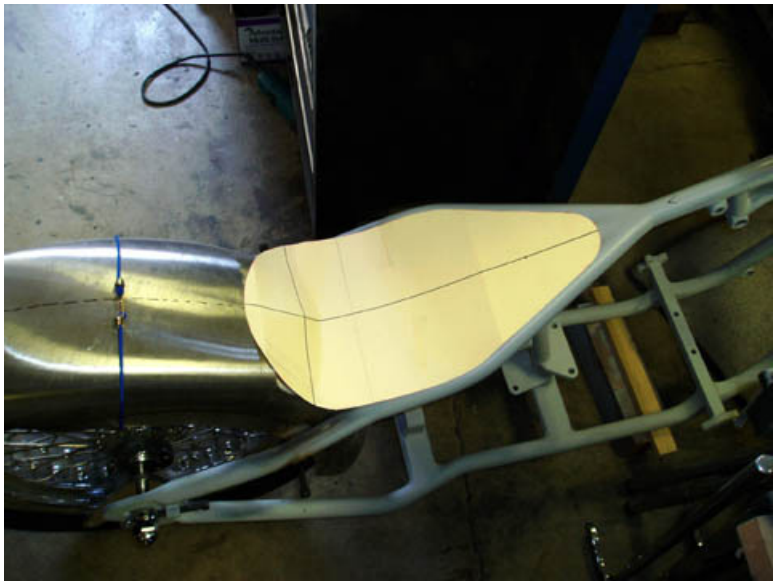

Figure 9

On the first go round I simply cut a long smooth curve along the back of the pan template but I wanted to look at other alternatives so I used this pattern to create another one to experiment with.

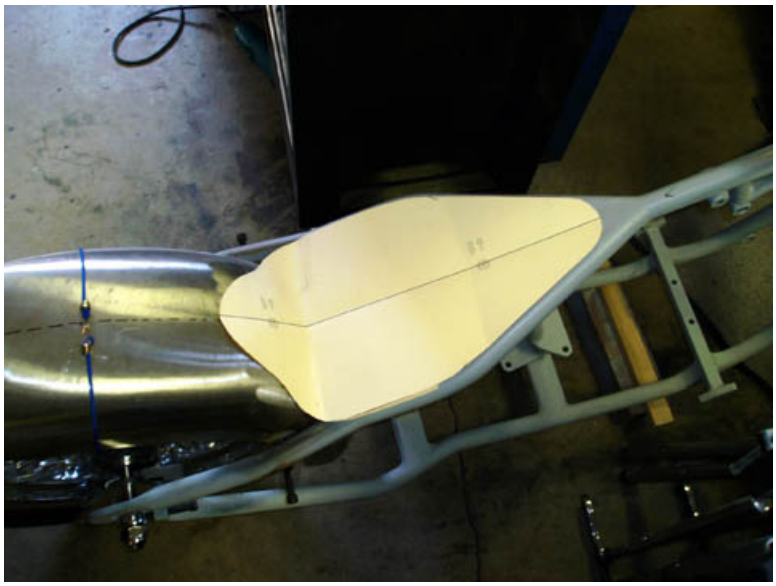

Figure 10

On this template I contoured the back a little more to reduce the bulky look of the first pattern. It stills needs to be refined a little but I did like the look a lot better and this is the design we chose to use.

A third alternative was to build a ‘composite’ saddle pan. What I call a composite pan consists of two or more parts welded together, and hammered, in such a fashion as to

follow complex contours. This isn't the type of pan to cut your teeth on and this particular frame-fender combination didn't warranty this level of work but we'll be doing another article on fancy pans later on down the line.

Once the pattern is finalized it's time to lay down the lines on the actual piece of steel we're going to use for the saddle pan. In this case we're using 16 gauge cold rolled steel sheet than can be found in almost all hardware stores or builder supply outlets. The size of the sheet pictured here is 18"x24" and works out just fine for almost all types of bikes.

Keep in mind that the pan edging and final leather cover will add about an extra eighth of an inch all around to the overall dimensions of the saddle so cut the pan an eighth smaller to get a perfect final fit.

Pan Material

I personally think that 16 gauge steel is a little to flimsy for pans and prefer to use 14 or even 12 gauge stock but it's much harder to find in small segments. Some makers use 10-gauge material so there are no hard and fast rules that you have to adhere to. If your particular design calls for heavier material you can build up a pan from two pieces of thin gauge material bonded together with rosette welds or even pop-rivets. Some makers prefer to use one-eighth inch aluminum but again this is pretty flimsy stuff.

If you need to stiffen a pan you can weld or rivet localized reinforcement plates or strips in areas where the pan wants to flex and it should go without saying that you always need to add backing plates anywhere you intend to install hardware.

Some makers stiffen up a pan by adding a one-inch layer of what's called rigid structural foam. In reality most of this stuff is just the 'expanding' urethane foam sold in home supply centers for insulating around pipe penetrations. To use it, build up a crude form from cardboard around the sides of pan and spray it in. Shape it with a 'Surform' rasp or disk sander. If the cured chunk wants to separate from the pan secure it in place with 3M spray adhesive or weather-strip glue if necessary. Since the urethane cures with a smooth 'skin' on it the glue holds better if you rough up the foam with course grit paper.

If you plan on running an un-upholstered type of pan you need to use 10-gauge material at the very least and this is one area where stainless steel would be a good choice.

Figure 11

To transfer the pattern onto the pan I usually start out by setting one edge of the steel sheet as my control line and then draw a centerline and an opposite control line. In this case the pan needed to be 10 inches wide to align with the frame centerlines so this is where we start, five inches to center and another five inches to the opposite side.

Place the cardboard template on the steel sheet and trace the outline with a felt pen.

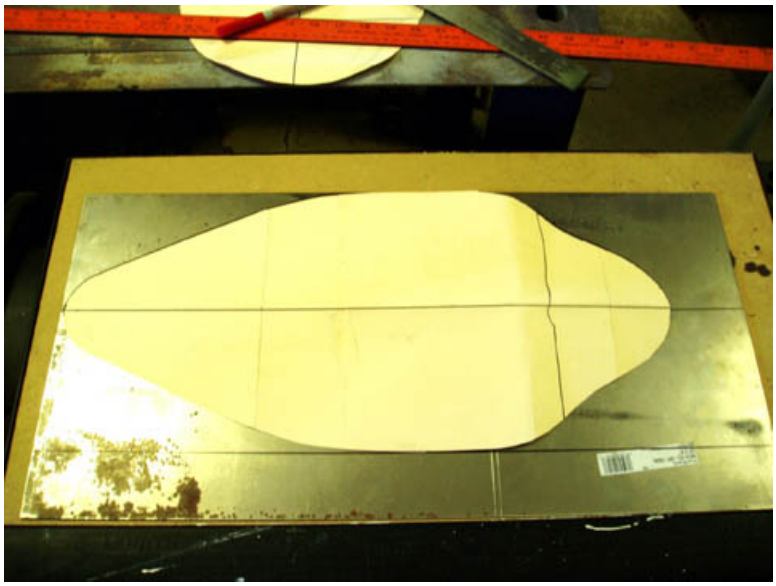

Figure 12

If you've knarled up the template by bending it into all kinds of shapes try taping it down to the steel plate. It isn't critical, but it's fairly important that the trace be as accurate and smooth as you can get it since it saves time dressing down the steel later on.

Figure 13

Now we're getting to the fun part where we can finally start working with steel but don't trash those paper templates.

I save all of my paper templates and label each one with the name of the owner, the bikes name, frame type, fender type and dates. They always seem to come in handy years down the road.

You can cut out the pan using almost anything or any method that cuts steel without warping it. The thin stuff can be cut with snips but the edges tend to get a pretty bad curl so I don't recommend doing it. If you've got a band saw that's great. A pneumatic sheet metal nibbler as shown below also works but most folks end up using a regular old saber saw with a fine-toothed bimetal blade.

Keep moving the sheet as you're cutting to keep the point of the blades path close to the edge of your worktop to prevent the sheet from flopping around like a dead fish.

I strongly suggest that you wear gloves while doing this since the raw edges of that plate will be very sharp. If you've got kids or pets around the house it's also a good idea to bend over the pointed ends of the sheet material that's left over after the pan is cut out.

Figure 14

We'll we've finally got a nice little metal saddle pan to play with but before we start bending it into shape it's time to drill some holes for the rivets that'll hold the upholstery skirt in place. You can do this after the pan is shaped but it's a lot easier and faster to do it now while the plate is laid out flat.

Figure 15

Once you've finished cutting out the pan you'll have to fair in all the little inconsistencies found along the perimeter of the cut edge.

The best way to spot where the hills and valleys lay is to tip the pan up on edge and slowly rotate it around as you sight down the sharp edges. You just can't see any but the major dips or peaks if you look at the pan as it lays down flat on the worktable. Tipped on edge however ever little dip, crevice, bump and bend will show up extremely well.

Mark the bad spots with a felt pen and use a belt sander to blend and fair the perimeter until it is a smooth flowing line from start to finish. If you don't have a sander use a long file or even a long sanding block and some elbow grease to smooth the contour of the edge cut. Even the best upholstery job in the world can't hide a poorly contoured pan.

At the same time it's a good idea to dull the raw edge by rounding it over with the sander or file until it's so smooth you can run the edge across your cheek without a worry about getting nicked or cut. If this edge isn't baby-butt smooth it'll eventually cut through the edge binding and your upholstery. You can use some crocus cloth in shoeshine fashion to really dull down those edges in short order.

Figure 16

You can see in this snapshot three major places where we need to fair the edge into the overall contour of the pan.

If you plan on using some type of upholstery or leather covering over the pan you'll have to drill some holes for pop rivets and these are typically placed along a line that runs parallel, but inset one inch, to the pan perimeter.

Different makers will use a different offset. Some might prefer three quarters of an inch while others might use one and a half inches. This is a matter for individual judgment. In general you can keep the holes closer to the pan edge if you're using naugahyde for a covering instead of leather.

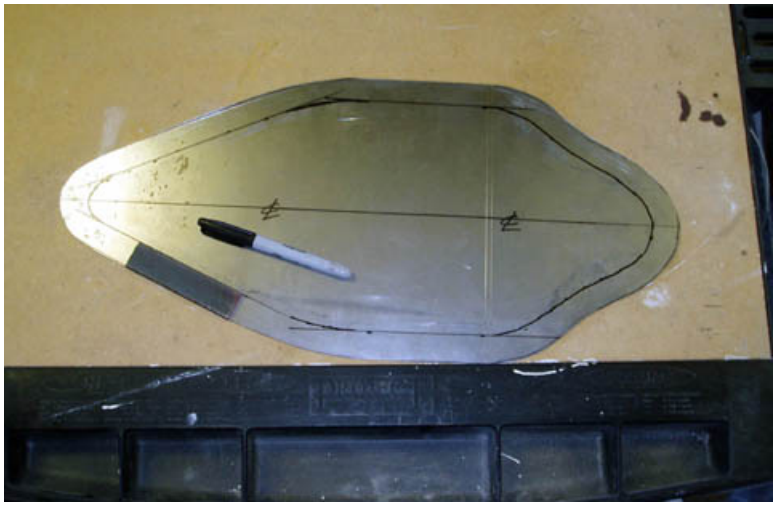

Figure 17

A quick and easy way to lay out a control line around the perimeter consists of using a small segment of one-inch steel strap as a guide. You just eyeball the areas where the curves occur as seen in figure 17.

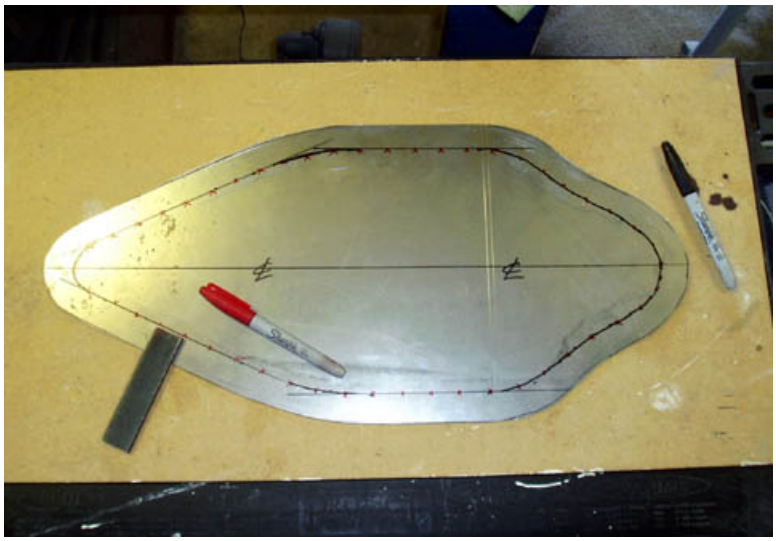

Figure 18

When you've got the control line marked around the perimeter you can begin locating the position of the individual rivet holes.

Again these are typically laid out on one-inch centers around the perimeter of the pan. I use the same piece of one-inch steel strap as a gauge to mark their locations, shown by the small red x-marks in figure 18.

You'll eventually learn from experience that certain 'coverings' need more or less 'tucks' at the curves, which means that you might have to narrow the rivet hole spacing along the areas where the pan has tighter curves. There is no hard and fast rule about this so I'm

sorry I can't give more specifics. If you do have to make holes closer together try to stagger them by about one quarter inch or you'll weaken the pan.

It is fairly typical to space the rivets closer if you're covering with a synthetic like naugahyde. Five eighths inch spacing might be a good starting point compared to one inch for leather.

Most saddles will use rivets having a shank diameter of .125 inches so the holes we need to drill in the pan should be made with a 9/64 inch drill bit. Try to find the so-called 'self-starting' or 'self-centering' bits so you don't have to center punch each rivet hole location.

De-burr the holes very slightly using a handheld reamer or countersink. The material in the pan is way to thin to risk thinning it even more at the rivet hole locations by using a powered countersink.

After the holes are drilled I sand the whole pan down with 100-grit sandpaper in a palm sander to knock down the surface ridges that occur at the rivet holes. This also gets rid of any mill scale or nicks in the sheet.

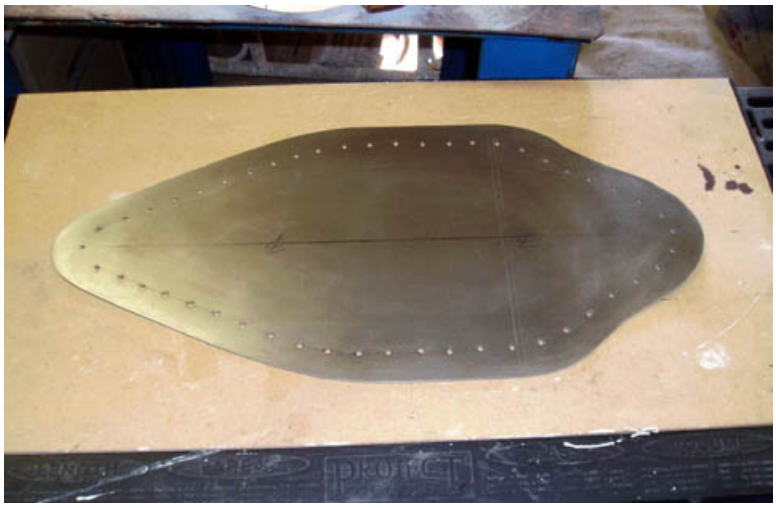

Figure 19

You'll thank yourself down the line if you take a moment to scribe the centerline in place on both sides of the pan before you start to bend it into shape. Once it's bent and in primer you'll have hell to pay trying to figure out where the center lays when it's time to attach hardware.

Figure 20

The trial bends and fitting are looking pretty good. Now that the pan takes a shape we can see a few areas we need to fair down a little more for a smooth line as the edge follows a curve. The contours of the pan after it's shaped may be significantly different than what you expected while working with a flat pattern and this kind of overlaps into the metal shaping craft, which is a completely different story that we don't have space to address in this particular article.

The entire process to this point has taken just a little under an hour. If we had used fiberglass we'd still be masking and building up the seat form prior to laying down the first layer of cloth or matt.

Figure 21

I don't know about other people but to me there is nothing that says 'Chopper' more than a well-formed hand made steel saddle pan. It's an easy thing to make and one of those small items on a bike that any owner can say he made himself from scratch.

The principals of pan construction are identical regardless of the shape or type of design you're planning on making and in fact it's so easy to make a pan I sometimes fabricate three or four different designs for a single bike just so I have something for visual comparison purposes.

Figure 22 shows a traditional type of saddle pan.

Figure 22

Figure 23 gives an indication of what it would look like on the bike if front hinged with rear suspension springs. Being able to compare things side by side in real scale is far more beneficial than looking at magazine pictures, drawings or sketches.

The so-called solo seats like this one really need to be given form by shaping the metal to roll the edges and contour the rear rise around the hip area. They don't look very visually appealing if they're just a rolled flat plate like the one pictured here. Unfortunately that involves some sheet metal work that is more appropriately described in a section about fabrication. We don't have the space to divert into that area at this point in a seat article but there is a wealth of information out there on the net that will provide the basics for simple shaping like a seat requires.

In a similar vein there are dozens of inventive ways to mount this type of seat that involve tradition springs, mini-shocks, air-bags and even polymer cylinders that the reader should try and research before making a commitment to any particular mount method.

Figure 23

Each individual will eventually decide on type of seat that best suits their own unique riding habits, requirements and frame design but I strongly suggest you look into several different options before going down any particular path.

Part II

Seat Mounts

There are literally dozens of ways to mount a saddle to a frame and we simply can't go into each and every method in this small article but we'll cover the basics.

Many custom builders don't even use hardware mounts at all preferring instead to just use some Velcro strips at strategic locations. I've done this myself and it works very well but there is the remote possibility that the saddle could shift out from under you in a hard corner on a rough road.

I got a kick out of the Discovery channel episode where Billy Lane's seat was blown off the bike when he hit a bump and when airborne for a moment.

Another method used by several custom fabricators is the installation of 'spring clips', sometimes called 'tool grips' that are welded or riveted to the pan and just clamp down on the frame rails. You can install adhesive backed felt inside the spring jaws so your paint job doesn't get messed up. I've also used this system but again there is a remote possibility of the saddle shifting sideways.

Figure 24

The shot below gives you an idea of how the clips would be installed on a pan. I just sat these in place, they're not riveted and I couldn't get the front one to stay put but you get the idea.

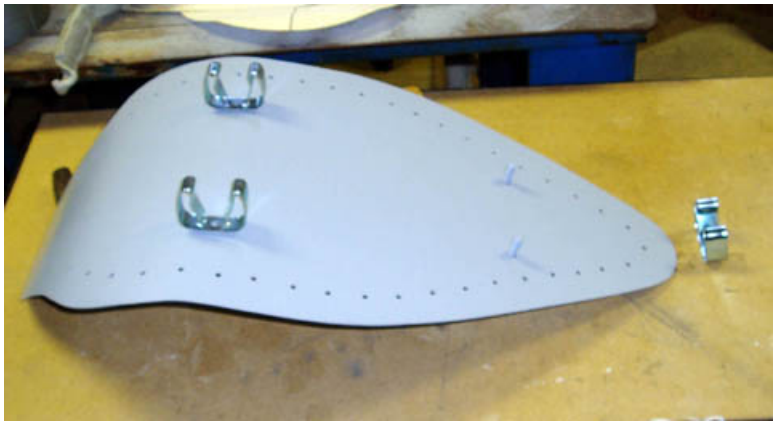

Figure 25

The picture below shows the positions where the clips grab the frame rails. There are many possibilities using this system. It's very light, easy to facilitate, low cost, low tech and works as well or better than many other mounting systems. It kind of has that charming 'garage-industrial' aura about it that unknowing folks might laugh about until they tried it.

Figure 26

You can lessen the force of the spring action by forcing the clip down over a section of tubing that's slightly larger in diameter than your frame so it gets stretched out a little.

You can add some small angle iron legs to the underside of a pan to prevent the saddle from shifting sideways if you use the clip-on mounts or Velcro system. The ones shown below are far too large for the application but they're all I had handy for an illustration.

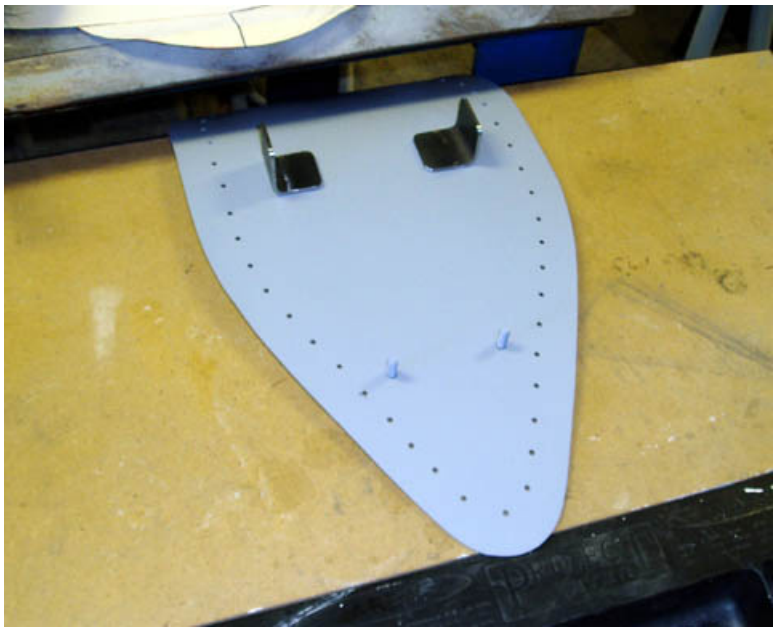

Figure 27

In practice the little angles are installed so they snug up to the inside of the wishbone rails so they prevent any lateral movement of the pan. Again some adhesive backed felt on the legs will protect the frame finish.

A more traditional attachment method involves welding threaded studs or button head cap screws to the pan. These shanks fit into drilled mounting tabs welded to the frame and the saddle is secured with wing nuts or knurled knobs so it's easily removed.

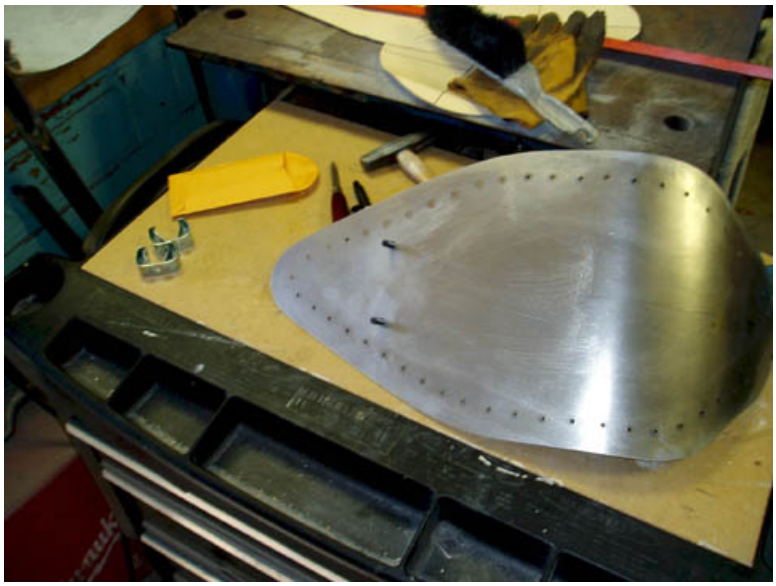

Figure 28

This is a shot of the underside of our pan and you can see the front fasteners protruding from the bottom.

Figure 29

This shot shows the upper side. I'll tack these button head cap screws to the pan so they basically become threaded studs. After they're welded I'll grind the heads down a little and lay down some body filler to act a fairing so you can't feel the heads through the foam padding.

Some saddle makers prefer what's normally called a 'tang' mount at the front of the pan. This tang fits into a corresponding loop on the frame backbone as shown below.

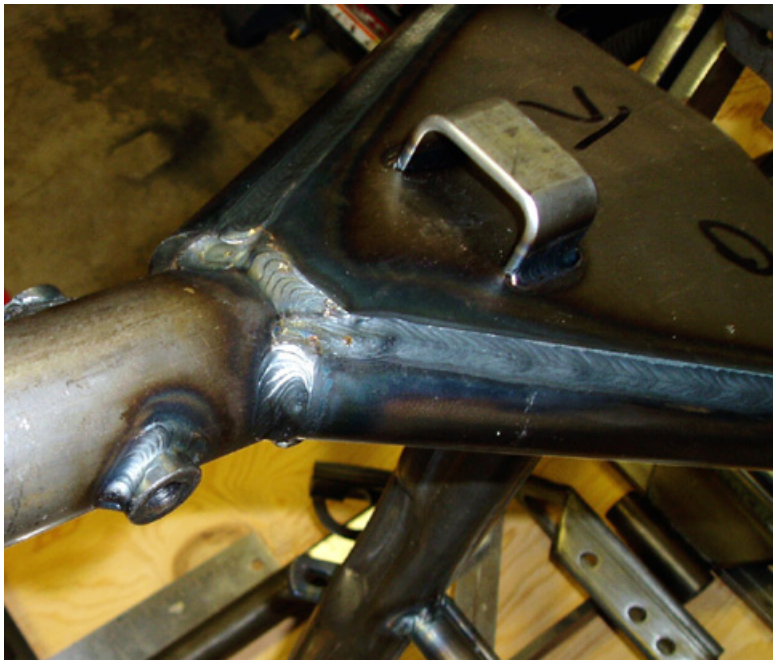

Figure 30

With a tang mount on the front of the saddle the rear is normally held down with a threaded stud or studs into tabs on the frame or rear fender. Spring clips could be used as well.

The classic or traditional mount usually involves having a hinge at the front of the pan so the saddle can be swung upward to give access to the battery and oil bag. If a front hinge is used the rear is normally supported and anchored with locating pins, springs, threaded studs or spring clips.

If you choose to use a front hinge this is one area where you can express a considerable amount of design ingenuity and creativity so don't just slap on some pre-made hinge if you can build something eye catching.

It's worth looking into several parts catalogs to find out what kind of seat mount hardware exists that might suit your particular application but most often you'll end up having to make your own if it's a custom bike you're building.

Protective Finish

Once the mount system has been decided upon and installed its time to put some kind of finish on the bare steel pan to keep it from rusting.

The best finish I've found so far is to treat the pan like any other piece of sheet metal on the bike and to apply an etching primer to the degreased steel. The pan isn't going to be a showpiece so a good durable color finish can be applied out of a spray can and one of the best products I've found is VHT automotive accessory paint, the type used for brake calipers and engine blocks. Appliance paint also works well but takes a long time to dry. The VHT dries in about three hours.

I typically use black but since it doesn't show up to well in photographs I ended up buying something called 'cast aluminum' for this particular project. It's not bad but it's much thinner than the black and runs if you just look sideways at it and I got some really bad runs. Fortunately they are on the inside surface where they won't be seen.

It should be pointed out that many saddle makers don't bother with painting the pan, especially if the bottom is going to be covered with some kind of material but from my experience the unprotected metal will start to rust very rapidly. I strongly suggest that you at least primer the metal with something like Rustoleum Red for instance.

Regardless of what finish you use test it on some scrap metal to be sure that it's compatible with the adhesives your using before you get committed.

Part III

Saddle Design

Before we talk about foam and upholstery we should take a moment to discuss saddle designs in general and one of the best ways to build up comparative data is to simply search the Internet for chopper seats. As I mentioned before pictures by themselves won't give you a good sense of dimensions or proportions however and as a result the most common mistake many people make with their first few pans is to make them to small.

For example when a friend of mine saw our pan for this project his first remark was that it looked too large. When we put it on the frame he was surprised how much different it looked when he saw it in conjunction with the whole frame. He was flabbergasted when I put it up against one of the smaller stock factory seats that was gigantic in comparison.

You have to trust the dimensions of your frame rails for the width of the pan and you should likewise trust the longitudinal frame dimension from tank to fender. These two measurements define the outermost working area. If your pan is much more than 15% smaller than this area your seat is probably to small for comfort.

A small factory stock solo seat is 16” wide and 20” long. Even our rather large chopper saddle is just 10” wide and 18” long.

Figure 31 show our pan in comparison to a very small stocker type solo seat (which happens to be my shop stool).

Figure 31

Figure 32 illustrates our chopper solo pan in comparison to stock dimensions.

Figure 32

Keep in mind that the bare pan will begin to shrink in perceived proportion once you begin building it up three dimensionally with the foam padding. It will ‘appear’ even smaller once it’s upholstered.

The second mistake many first timers make is to under pad the pan trying to keep a sleek somewhat thin profile. I've seen some nice looking saddles that are so thinly padded that you're basically sitting on solid steel. Keep in mind that the upholstery or leather sheath will tend to compress the foam once it's installed by about half an inch. Over time the foam will also tend to loose it's resiliency and be reduced by another half inch. For these reason I usually put on about one more inch of the soft foam on the top layer than I want to have under the leather about a year down the road.

If at all possible try to keep the saddle in proportion to the bike itself. Nothing looks stranger than a small skinny seat on a big fat-tire bike or some huge cruiser saddle on a little Bobber.

Terminology

Bike saddle makers use a terminology all of their own that's a combination of lingo taken from the upholstery industry, western saddle tradition, leather working crafts and the motorcycle and bicycle design and manufacturing trades.

The seat or saddle itself can be broken down into seven basic components or areas. The top of the saddle is called the 'platform'. This is the relatively flat place that you sit on. One a double saddle you'll have a front and a rear platform. The extreme front portion of the platform is called the nose. Quite often the platform will begin to rise as it approaches the nose. The rear portion of the platform is called the 'rise' since most saddles will have a relative high and sometimes wide rise that is intended to sweep up and around the riders lower hip area. On a double seat you'll have a mid rise and a rear rise.
The sides of the saddle, those portions that are relatively vertical or sometimes on a steep slope are called the 'gusset'. On stock seats there's usually a visible line of stitching or welting that separates the platform, the nose and the rise from the gusset. On custom leather seats the gusset is that portion of the saddle below the lacing line.

Sometimes there will be a band of material, usually decorative, that hangs down lower than the gusset around the rear portions of the saddle and this is typically called a skirt or skirting. Its original purpose was to help in hiding the springs under the pan and to block out debris being thrown up from the rear wheel that the fender didn't catch.

This entire assembly of components sits on the saddle pan, which can be steel, aluminum, fiberglass, plastic, Kevlar or composites of several mixed materials.

A fully finished high quality saddle will also have a covering on the bottom of the pan, usually some type of softer fabric material just to cover the staples or rivet heads.

Comfort

Now getting back to basic saddle design again it's important to note that the single most important areas of the saddle that relate to rider comfort are the platform and the rear rise.

Every person's anatomy is different and there are significant differences, especially between the sexes, in the hips, thighs and buttocks. The ideal seat shape should conform to your butt and hips but at the same time permit your thighs to comfortably slope down around the forward portion of the platform so that the circulation to your legs doesn't get pinched off. It's important that the padding doesn't expand into the crotch area as its' mass is displaced by the buttocks.

This seems to be completely contrary to what you see in most seats where the makers try to create a seating area that's dished out for each butt cheek and then peaked in the center crotch area. This design is about as wrong as it can get from an ergonomic standpoint.

If you look back into the evolution of seat designs for performance vehicles, especially back into the twenties and thirties when bike and cycle seat design reached a zenith you'll find many cutting edge saddles weren't even joined along the central ridge. Sometimes this strip was just open air space or solid steel and there were two small pads on either side. The design is emulated in the Crime Scene Choppers Hard-Ass seat design.

These padded areas are design to support your "Ischial Tuberosities' more commonly just called your 'butt bones'. A good seat actually doesn't need padding anywhere else from a comfort standpoint.

It does however require shape and padding that aids in holding you into the ideal riding position.

The saddle should also cradle your backside or haunches so that you're physically held in position by the shape of the padding during acceleration, cornering and braking otherwise you'll find yourself trying to stay in position by using your arms and legs just to hang on to the bike.

This is only part of the picture however. The angle or slope of the platform relative to the horizontal has a significant impact on rider comfort with respect to pressure on your spine. The steeply sloped typical chopper saddle is probably the worse offender in this area and is the primary cause of long distance discomfort.

Platform slope is a posture issue and it's easy to see the difference between most chops and stock bikes just by observing the riding stance of a motor patrolman compared to somebody like Jesse James for instance. The patrolman rides on a relatively flat platform and as a result has a more upright posture with a straight backbone. Guys like Jesse are riding on a radically sloped platform and as a result end up with posture that promotes pretty radical backbone curvature, which not a good thing as far as comfort goes. It does make you look cool however so let's just say that somewhere between looking really cool and being able to ride all day without a backache involves some compromises in platform slope.

If you've looked at a lot of saddle pictures on the net you'll realize that some of the long, thin radically sloped designs actually have a relative flat platform that you don't notice at first glance. The secret involves building up the 'butt' portion of a steeply sloped pan with extra foam to flatten out the profile of the platform. This gives you the best of both worlds. The saddle and pan slopes with the frame for a nice looking line but the seating platform is flatter making it more comfortable. This little trick has the added advantage of letting you put a lot more padding where it counts without making the seat look bulky.

While we're on the subject of rider comfort it should be noted that mid-controls and even mini floorboards on forwards go a long way towards improving your balance and comfort on the bike. It's not to surprising to see a return to 'mids' even on some of the radical chops being built nowadays.

I think we're entering a phase where the popular custom 'Bar-Hoppers' are starting to give way to the traditional Choppers intended for more serious urban riding and long distance trips. As a result we're seeing a return to fuller padded custom leather seats.

Part IV

The Body, Base or Foundation

With the pan finished it's time to install the main ingredients of a good saddle and that's generally just some type of pan edging, foam padding, shaping material or fillers and a sheath of Dacron to encapsulate the body components. As a whole this assembly of materials is typically just called the saddle or seat body or base. Guys in the upholstery business generally refer to it as the 'foundation' since it's everything except the covering.

Edge Banding

All metal pans need some type of edge banding to provide a cushion for the upholstery to bear on as it curls around the edge. Without a soft edge the steel pan would soon wear a slit in whatever covering you applied.

Proponents of fiberglass pans say they don't use any kind of edging but if you've ever seen some of the raw edges glass pan makers produce you'll wonder why they don't.

The very best material to use as an edging is called 'Trim-Lok'. This material is specifically designed for use on raw sheet metal plate. It has a flexible metal core surrounded with a vinyl sheath. You can generally find it stocked at most body shop supply houses or you can buy direct from the manufacturer. It comes in several different sizes and profiles to suit a wide variety of pan thickness.

The next best material is simple vinyl edge banding typically sold as automotive door edge protectors in three foot strips available at almost any parts store. These strips usually

come in lengths of 27 inches; two pieces per package, and an average pan will use up almost all of that 54-inch length.

Figure 33

Here's our pan (Figure 33) with the vinyl door protector installed. This material comes with an integral adhesive so it sticks very tightly to the pan. Fresh out of the package you'll sometimes notice that the adhesive is dried on the ends of the strips so make it a habit to cut off about half an inch of material on each end. Make long diagonal scarf type cuts where you have to make a splice. If the material tends to buckle in tight curves or at splices cut thin strips of duct tape to hold it in place.

Be warned that not all vinyl door edge protectors are flexible. Try to find some that are as soft as rubber and pretty small in profile. You may have to buy several different brands until you find some you like but at three dollars a package it won't bust your bankroll.

The old school method of banding edges consisted of applying several layers of duct tape to the edge of the pan. You start by cutting a thin sliver of tape about one half inch wide. You apply this thin strip, wrapped around the edge of the pan. You apply a second layer that is just slightly wider and several additional layers, each being wider than the last until you've built up a nice rolled edge.

Figure 34

The photo above gives an idea of what I'm talking about with each layer being slightly wider than the previous. This permits the outer edge to build up without creating a thick band that extends into the pan itself. This sounds pretty primitive but believe me you can build up a nice rolled edge pretty quickly and cheaply by doing this.

Some saddle makers like a larger 'roll' or 'bead' at the pan edge and this can be created by first using duct tape as described and then applying a bead made from small diameter rubber fuel hose that's slit down the middle. Wrap a few more layers of tape over the hose to hold it in place. For an even larger rolled edge you could use some small diameter tubular pipe insulation that comes already split down the middle.

Remember even the very best edge banding, including Trim-Lok, will fail over time if the edges of the pan aren't deliberately dulled and blunted.

Figure 35

With the mounting hardware and edging in place we're now ready to find some good quality waterproof upholstery foam to soften the ride.

What we're looking for is called closed cell molded polyurethane foam and it generally comes in three basic densities, or firmnesses as some call it; soft, medium and firm. Some manufacturers make five different density grades. Usually, but not always this material will be blue or black in color. You can buy this material as thin as one eighth of an inch up to entire blocks over a foot thick.

Unlike open cell foams this material will not absorb water and in general is much more resilient. If you cut this material it behaves more like a very lightweight and almost airy putty or clay than the open cell upholstery foam most of us are familiar with.

We've listed some resources for foam at the end of this article but it's important that you do some online research and learn as much as possible about the myriad types of polymer foams that are in the marketplace. There are literally dozens of highly specialized foams intended for specific applications including the 'memory' foams and gels that you should become familiar with. For a low-tech project like our own regular closed cell polyurethane is more than adequate however.

You'll hear all kinds of stories about saddle making where the builder uses a fancy saw to shape the foam material. They'll often recommend an electric carving knife if you can't afford to buy one of slick Bosch foam cutters.

Actually any serrated bread knife does the same job at a fraction of the cost and in reality I've never used anything but a sanding block to shape the saddle foam so I don't know what the big deal is about cutting tools in the first place.

One hundred grit sand paper takes off huge amounts of foam in short order and in my opinion is not only faster but also more accurate than taking out big whacks with a bread knife.

When it comes to shaping the foam I guess it's each to his own and everybody will eventually come to a preferred method. I still do 95% of all my foam shaping with regular old sandpaper, usually by hand.

In true chopper builder fashion we scavenged all the sporting goods stores in town and came up with two sleeping bag pads made from good closed cell foam. At six dollars a piece this fit our budget and saved us some time. I don't recommend doing this as good quality store bought seat foam is better ordered from a supplier in the exact thickness you think you need but you have to do what you have to do and scrounging is half the fun.

I use the original pan template to make an outline on the foam and just cut out several pieces using scissors, sized just slightly larger than the pan.

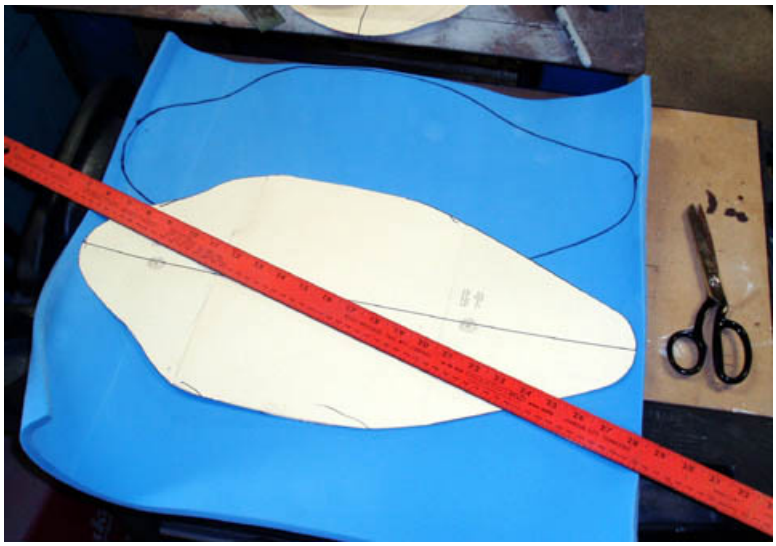

Figure 36

I don't mind laminating thinner sections of foam together. If you're in our same position using thin sections just put them together using '3M super 77' spray adhesive. Coat both the pan and the foam or subsequent layers and wait about one minute for the glue to become tacky before slapping everything together. The whole mess should be dry and workable in about thirty minutes. Make sure you spray the glue on both surfaces to be joined and not just one.

This adhesive is a mess to work with but it sure gets the job done. Unfortunately being an aerosol it will get on everything in your shop so I make a little spray booth from a big cardboard box lined with paper shopping bags. The box seems to contain the over-spray and I change the paper-bag lining between each spray session so the pan or foam doesn't end up getting glued to the box itself.

If you're laminating the foam be warned that you won't get a second chance to position it once the two pieces make even the slightest contact so be sure of your alignment and always cut the pieces larger than you really need so the edges can be trimmed down with scissors if you end up with two layers a little out of line.

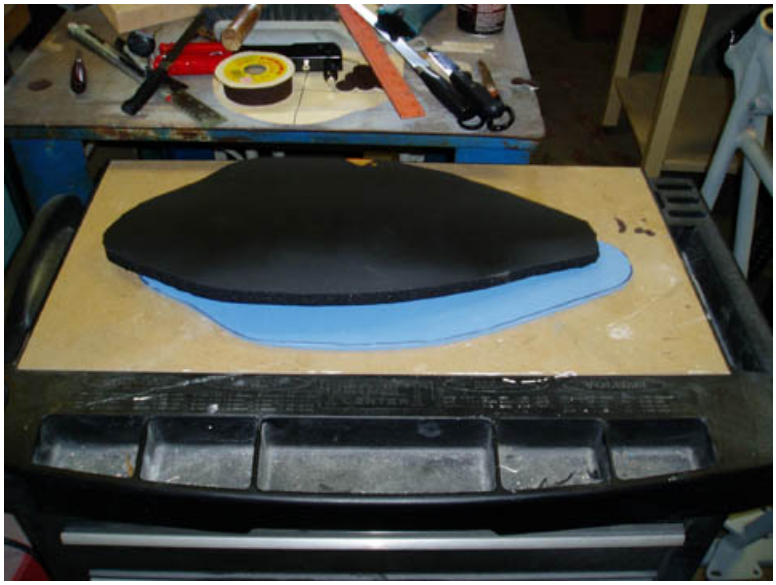

Figure 37

You can mix and match densities of foam in a series of sandwich laminations if you want a softer or firmer feel to the saddle. Don't be afraid to try different combinations like the firmer blue foam in the center of the pan and several layers of the softer black foam in the end areas.

Some makers actually build up a 'donut' of very dense foam that surrounds the perimeter of the pan and then lay in less dense material and gels in the center.

There is tremendous room here for experimentation to get a saddle that no only has a pleasing profile but also provides a nice resilient ride. It's a shame that so many of the so-called custom saddle makers just slap on a single density of foam with a fancy leather cover and then push it off on the unsuspecting customer who has to live with a sore butt after every ride.

Just because they do something on television doesn't mean that it's being done right.

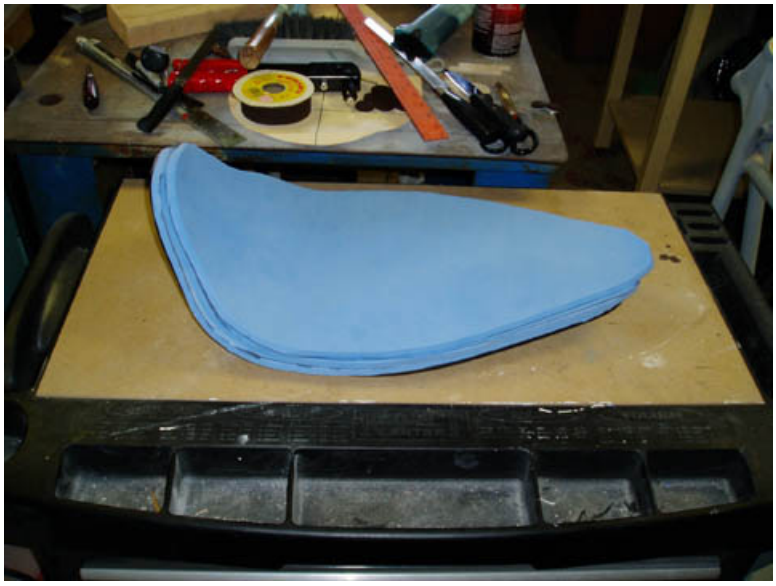

Figure 38

This is a shot of the pan with three layers laminated together for a total thickness of about 1.25 inches. I know it looks pretty rough but we'll soon take care of that.

Figure 39

As I mentioned earlier closed cell foam has a consistency of a lightweight putty or clay so it very easily worked with almost any type of tool. Some makers literally carve it into shape using serrated knives while other go at it using disk sanders.

Beware however that this tuff is extremely soft so the slightest pressure with any tool can remove huge amounts of material. For this reason as mentioned earlier I do almost all of my shaping by hand just using some 100-grit sandpaper.

Figure 40

The photo above shows our saddle after it's initial rough shaping. This operation took less than five minutes once the adhesive had cured.

Figure 41

Working with closed cell foam is a pure joy. You can add appliqués as shown above wherever they might be needed or even dig out large sections to add gel-packs or different densities of foam where they might be needed.

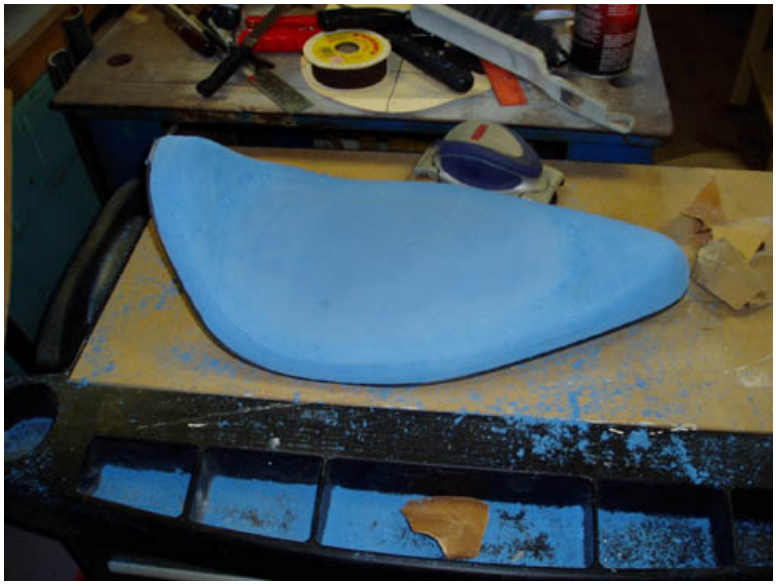

Figure 42

It's very easy to fair in sections of foam that you've glued in place at strategic locations to give the saddle more shape or better contours. We built up the nose and the rear areas on this pan for instance but it's hard to discern in these small pictures.

Working the saddle foam is an art form in it's own right and much more akin to sculpting than what one normally does in the upholstery trade so some people have a hard time making the transition from the automotive area into working on bike platforms. This is one reason that some of the best saddle makers in the industry have an extensive art background. Paul Cox comes immediately to mind in this respect. Many people don't realize that he was a fairly well established artist and sculptor before he gained notoriety for his saddle work.

For most first timers there is a tendency to work with to much restraint and to little foam so the saddle really ends up looking like a big pancake similar to that shown in Figure 41 which is actually only in the intermediary stage of being padded.

Foam is easy to remove and shape so go bigger and thicker than you think you need and work back down to get a pleasing shape and contour. Forget about the covering at this stage and try to concentrate on shape, feel, contour and proportions.

Figure 43

Well it's finally starting to look like a real chopper saddle. From the time we first started up until this point we have about four hours into the project not counting the three hours we waited for the paint to dry.

Here's a better close-up of the almost finished product on its way towards being ready for upholstery. There's still more padding needed but this is a good foundation.

Figure 44

I personally like to 'live' with my work for a few days before I'm completely satisfied with taking it to the next stage. On this particular pan I'm trying to decide whether or not to add a center section of softer low-density foam, roughly positioned as shown below.

Figure 45

The insert of low density foam, the black stuff in the photograph, is very soft and when the covering is applied it'll get compressed down into the depression of the pan which will help give the cover a fuller look and give me a softer place to sit.

As you study the saddle and give it a couple of dozen 'butt tests' you may end up adding even more foam and doing more sculpting until you're 100% satisfied with both the feel and the looks.

During the progression of the foam shaping process a quick and dirty way to check on how the final covering will look is to slip one leg of you wife's pantyhose over the saddle. You can use your own pair if you're into that type of thing or you can borrow a pair from your neighbors' wife, which should be fun.

If you find that you've got some 'air-space' between the surface of the nylon and the foam padding beneath it means you need to add some filler material into those voids otherwise the leather cover will begin to sag and wrinkle on the finished product.

This is the beauty of closed cell foam. You can cut it, shape it, laminate it or do pretty much anything. If you accidentally create a gouge or depression you just glue in a patch and blend it into the whole. It's almost impossible to screw this up even if you try.

If you try to take shortcuts and attempt to make a pan using the wrong foam however you'll create a nightmare for yourself. Take the time to get the good stuff and do the job right the first time. A well-built saddle pan and base padding should last about fifteen years before needing refurbishing.

At this stage some saddle makers will add a very thin, quarter inch, layer of low-density foam over the whole saddle. This aids in blending all of the contours together. Usually this is only necessary if the upholstery is pretty thin material. On top of this layer we'll usually apply what's called 'batting' in the trade.

In the old days batting was made from cotton but in the modern world batting is typically made from some kind of foam and I like to use a product made by Poly-Fil, the same stuff found in sleeping bags and outdoor apparel.

Figure 46

Figure 45 shows some of this stuff just wrapped around the saddle for illustrative purposes. Properly installed it's cut to shape and glued on just like normal foam. The big advantage of using this type of material is that it does not absorb moisture and in fact allows air circulation to keep the saddle body, leather covering and foam under-layment dry and ventilated. That's why it's so popular for sports applications.

Since closed cell foam is basically air and watertight there is tendency for moisture to become trapped between the saddle covering and the foam body and it never has a chance to dry out. Without ventilation, over time you seat cover becomes saturated with that thing we in polite society don't like to talk about. Since we're not polite, that unspeakable thing is good old crotch and butt sweat. To me it doesn't make much sense to have a thousand dollar hand tooled leather saddle that smells so bad nobody can get near it.

The covering has to be ventilated so it can breathe or it just won't hold up very long.

Many makers at this stage will sheath the whole body in a casing of thin Dacron material. This sheath helps to define the smooth contours of the padding and is a tremendous aid in making it easy to slip the finished upholstery or leather covering over the body.

If you find that you need to add some hardware or localized backing plates or reinforcing to the pad after the foam has been applied use #10 self-taping sheet metal screws. Drill a small pilot hole in the pan. Be sure to use a drill stop on the bit. This allows you to grind down the pointed end of the screw. Use screws that are just barely long enough to get three or four threads into the pan, one eighth of an inch at the most.

Part V

Upholstery

Once we're 100% satisfied with the shape of the saddle and all of the hardware is in place and trial fits on the frame have been completed it's time to think about a covering.

You don't have to use leather since there are dozens of synthetic materials out there that can be used and many look so much like some of the exotic leathers that you can't tell the difference unless you look at the underside of the product. In general these synthetic materials, naugahyde for instance, are much easier to work with and far less expensive than the real thing. In addition the synthetics are waterproof which may or may not be important to you.

Unfortunately doing upholstery covering or leatherwork are crafts akin to the welding trade in that you can't really learn how to do it without actually doing it. In other words you'll never learn the skills by reading about it alone. It's just something you need hands-on experience with. For this reason I'm not even going to attempt to tell you how to become an upholsterer or leatherworker in this article. There are literally dozens of good books out there about both crafts and if you're serious about learning this stuff you'll do your own research and study.

If you've finished a pan and it's ready for covering you can always send it out to a shop for the final covering. Many of the top saddle makers actually prefer that the owner send them a finished pan and base to cover instead of having to make one of their own.

This isn't to say that an amateur can't do good work and you'll never know unless you try it. I personally think that it's somewhat easier to learn leatherwork if you're just starting out as compared to learning how to upholster with synthetics so this is what we'll concentrate on.

If you have the desire and patience to really learn the upholstery trade however you'll soon find that the modern synthetics are almost as good as real leather, in some respects they are superior, but you work with them in a completely different fashion than leather.

Figure 47 depicts some random samples of synthetic coverings I picked up today at the local fabric store.

Figure 47

The blue stuff on the left is typical vinyl fabric at about five dollars a yard. It's used for patio furniture and seat covers on boats. Whatever you do don't use it on bike seats.

The tan colored stuff on the right is high quality naugahyde that is typically used for gussets on real leather seats as found in high ticket imported cars. It cost about fifteen dollars a yard and to the untrained eye you can't tell that it's not real leather. Unfortunately in these pictures the grain and texture doesn't show up but believe me this is nice looking stuff.

The fabric in the center is an imitation of some kind of leather, probably from an endangered species, and it is also naugahyde and top quality at around eighteen dollars a yard. I'm tempted to make a vest out of this stuff.

Figure 48

Figure 48 is a close-up of the grain pattern on this particular fabric. The grain in the tan material is to fine to show up which is unfortunate as it's a very nice high quality material.

The point to this diversion is that synthetics do have a place on custom scooters but you really have to know the upholstery craft in order to take advantage of the products and for most of us semi-part-time builder/fabricators it's just easier to use real leather as ironic as this may sound.

I learned how to work with leather the hard way when I was a guest of the state down in Texas once upon a time but I had a very good teacher, a guy who used to be one of the main men with Tony Lama back in the old days when boots were actually handmade.

Believe it or not the state had an extensive vocational-rehabilitation series of classes for the guests that taught leather work from the ground up so we could become shoe repairmen when we were released but in reality we never even saw a pair of shoes or boots as most of the work was on western saddles, belts, car seats, dashboards, wallets, purses, gun cases and pistol holsters for the guards.

I certainly wouldn't recommend this training avenue for newcomers but it worked for me and I soon became hooked on leatherwork. It's probably more addictive than drugs but at least it's a constructive endeavor and you can make some significant cash if you eventually get good at the craft.

That particular experience certainly colored the style that I eventually developed as it was a regional Southwestern-Mexican school of design that I still favor as opposed to what most folks in the chopper scene seem to favor which is a tribal or gothic design theme.

You have to stay true to your roots however and do whatever it is that you enjoy whether other people like it or not.

Just because a person has a good teacher doesn't necessarily guarantee that the student will become a master of the craft. You have to have some natural talent and skill to begin with, combined with certain personality traits demanded by the trade. I had one of the best teachers imaginable but I do not have the patience for this type of work nor the delicate skills required to ever become a professional in this line of work. I kind of rank my own saddle building expertise as being slightly above the average guy who has to make his own bike stuff because he can't afford to pay anyone whose really good to do it for him. In other words even after all of these years of practice I'm still in the amateur ranks. In many ways this actually makes me better qualified to write this material than some guy who is indeed a highly skilled professional.

Leather

Leather is an organic material and as a result you work with it and handle it in a completely different fashion and manner than you would with synthetic materials. In many respects real leather is far easier to work with than synthetics and far more forgiving of minor mistakes or inconsistencies, up to a point.

Leatherworking can be very addictive. It seems to get inside your soul. It's a very therapeutic craft and many people find a deep almost mystical place of 'being' when they're working the material. Many psychiatric clinics use leather working classes as part of primary therapy. I personally think a lot of it has to do with the smell of raw leather and the fact that 98% of work is done exclusively with hand tools. Some have suggested that we all carry in the core of our brains chemical memories from the far distant past when our ancestors relied on leather as a mainstay of daily existence.

No matter what the reasons are it remains a fact that working with leather is relatively easy, enjoyable and sometimes profitable.

Leather is an incredibly strong yet supple material that is extremely durable if properly cared for. Well-made leather items can provide good service for generations over several decades, sometimes centuries of time.

It's the 'real thing' as they say and that's part of the problem. If you want to work leather you have to give the material respect. Some animal's life was ended in order for the worker to have that material and if you can't get in touch with the somewhat spiritual or mystical aspects of using something's skin for your particular project then you're a complete idiot and no doubt you'll end up in a bad way someday from a karmic standpoint. I'm not kidding here. Do you want your hide on some asshole's bike someday?

If you're properly respectful of the material and pure in your intentions the leather will let you work it into beautiful creations. As your fingers are working the hide you're making contact with a part of what used to be a living entity and even though it's now dead there is still a part of that animal that endures in what was left behind. If you're an uncaring hack you'll end up with a handful of crap, which you probably deserve.

Think about all of this as you're waiting on your order of leather to arrive at the doorstep. What do you expect to find in the box and how will you treat it? What you do and what you think will make all the difference in the world in how your project turns out. Trust me, this advice was passed down to me from people who knew their shit and it has never failed me.

I'm really serious about this esoteric stuff and you can doubt it if you want to but believe me it's easier if you eventually become a true believer but for now lets just get some leather and go at it.

Unless you're really lucky and have a tannery nearby you'll be forced into ordering material via the Internet. The stuff you want for a chopper seat is usually called 'vegetable tanned leather'. This is just raw uncolored leather that is relatively supple and easy to mold into various shapes just as you receive it from the supplier.

Leather is sold by the square foot but the thickness is expressed in ounces of weight. I haven't found a handy conversion table provided by any of the suppliers that relates weight to thickness so here's one of our own making for your convenience.

Weight	Thickness
4 oz.	1/16"
5 oz.	5/64"
6 oz.	3/32"
7 oz.	7/64"
8 oz.	1/8"

As you can see one ounce of leather is equal to 1/64" in thickness.

Since leather is an organic material these weights or thickness actually vary throughout a complete hide. As a result a piece of leather sold as, let's say, 5 oz. Will probably vary from as thin as 1/16" to as much as 3/32" in thickness over it's complete expanse. If you expect to do any tooling in the material you need to order at least 5 ounce weight and I personally prefer much thicker stock, as heavy as 7 ounce for the saddle platform.

Leather that weighs in at around 4 ounces is about the same thickness as synthetic naugahyde if this helps to give you some comparison as to relative workability. This is the type of stuff that thin gloves are made from.

Many suppliers list their hides by a range of weights when it can't be definitively pinned down. For instance some typical standard ordering weights might be:

3-4 oz.
4-5 oz.
5-6 oz.
6-7 oz.
7-8 oz.
8-9 oz.

For what you get I personally think that most commercially sold leather is a bargain at around five-dollars per square foot. This is of course about three times the cost of the ultra high quality synthetic naugahyde but you get what you pay for.

With the synthetics however you can buy fractional yardages, just enough to cover a seat. With leathers you usually need to buy whole hides or at least big pieces of a hide so if you only need 2 square feet for a seat you'll have to buy about 8 square feet of leather.

You can visit the Tandy web site to get an idea of the types, quantities and nomenclature of leather cuts and different grades and qualities.

For chopper saddles you need to get the highest quality, blemish free, leather you can find and it'll be worth every penny you pay for it. Double Shoulders are what most makers buy and these typically contain around 12 to 16 square feet of material depending upon the size of the cow that gave it up. This type of order will set you back about a hundred bucks for the ultra good stuff but you can usually get at least one, sometimes two, seats out of it counting the gussets as well. If you make more saddles you can buy an entire 'side' which ranges up to 20 square feet, basically this one half of a complete cowhide. If you look closely at a typical side you'll find that it's thickest up towards the shoulders and starts to thin out as you move down the sides and towards the rear. You can take advantage of this and cut the platforms from the thicker portions and use the thin stuff for the gussets. In the early sixties I could buy whole hides for ten dollars. Today this won't buy enough material for a ladies purse.

If you shop around however you can find top quality 'sides' for fewer than seventy dollars and this usually gives you enough material for about two chopper saddles.

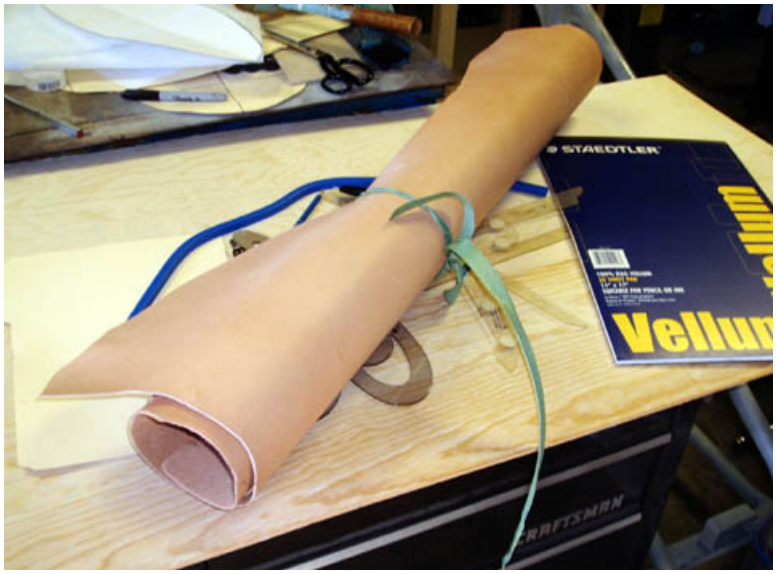

Figure 49

Figure 49 is a picture of a nice new 'side' I bought to illustrate this article, doesn't look like much here yet but this is a lot of leather and it's pretty good stuff even though there are a lot of small range marks and some scratches from warehouse handling.

Figure 50

It does look a little more impressive when it's unrolled however. Unfortunately this is only enough material in this particular side to get two good saddles, maybe three smaller ones. The reason is that all hides, even the highest grades will have blemishes that come from the everyday life of the cow. In the trade they're called 'range marks' but those old cows, just like us humans wear their life on their skin and every time you get a cut it leaves a scar. The blemishes in cow hides usually come about from tic bites, barbed wire, fights, falls, gouges from tree branches, branding irons, steel fence posts and pens and mistreatment by their human handlers. It all takes a toll over time and leaves a mark of that particular event in the life of the animal just as it does on us. Other blemishes occur in the routine handing of the skin at the warehouse or retail outlet. Scratches are very common and are actually more detrimental than range marks.

I personally like to find some 'character' in the hides I use so the so-called 'blemishes' don't really bother me too much unless they get in the way of any tooling work. Other folks find it very offensive and will pay huge sums of money for skins from 'stall' animals, which are usually calfskins.

The ultra high quality skins are typically reserved for areas of the saddle where you're going to be doing tooling as the blemishes distract from the artwork and make cutting harder and in some cases impossible with respect to scared areas of the leather.

There is no rule that says chopper seats have to be tooled and some of the best looking seats are just plain unadorned hand rubbed leather but if you've got a hankering for working leather nothing beats a hand tooled home made saddle.

Remember however that riding on a tooled platform can be very uncomfortable which is why most serious road bikes have smooth saddles. This is just another one of those little things about Choppers where looking cool and being practical don't necessarily coincide.

Leatherwork

As mention earlier working with leather is in many respects much easier to learn than trying to pick up the quirks of the upholstery trade and using synthetic materials. Unlike the vinyls and naugahydes leather is an organic material and as a result it can far more easily take on shapes that have compound curvatures. In fact leather can be molded to follow extremely fine and detailed contours. You'll see this trait exhibited in fine quality custom pistol holsters.

Leather is far stronger than any synthetic, probably ten to twenty times stronger. Leather has a far greater resistance to abrasion than the naugahyde's and being organic it 'breathes' to a certain extent so it's much more comfortable to sit on for long periods of time.

A leather surface can be 'tooled' or 'carved' and made extremely three dimensional with a combination of molding and tooling until it becomes a sculpted piece of art.

Leather is enduring and if properly cared for can last almost indefinitely. A well-made leather object can easily have a useful working lifespan of fifty years and even one hundred years is not uncommon. We happen to have an old antique 'bellows' made around 1790 that has a deerskin leather airbag on it and I use this thing every winter for my fireplace and it still works perfectly. It's over two hundred years old and may last for another century.

As mentioned earlier leatherwork is addictive and once you've had access to this material for any period of time you'll tend to find that your area of interest may expand and go beyond seat making. Many folks go on into making vests, jackets, chaps, saddlebags and tool bags. Some of my friends now do some fancy holster work, make bullwhips and dabble in the western saddle business. You'll never know where you'll end up once you've had a taste.

I'm not a professional motorcycle saddle maker. In fact I haven't made a 'seat' for anything in over twenty years so if I can do this stuff I imagine that almost anybody can pull it off with a little practice.

Most of the 'experts' recommend that you use 5-6 ounce material for the platform and 4-5 ounce material for the gusset but this isn't a hard and fast rule. In fact some makers use leather as thick as 7 oz. for the top, especially if it's tooled even though I've seen good work done on 4 oz. platforms. For the first attempt I'd suggest 4-5 for the top and 3-4 for the gussets since it's easier to mold around the seat form.

If at all possible buy your leather in person even if it means a pretty far drive to find an outlet. Tandy has shops throughout the United States and almost any sizable town will have some type of leather or craft shop, even overseas. If you're there in person you'll have a chance to compare materials and weights first hand and you can see dozens of types and colors of lacing that are hard to judge from a photograph.

I'm in the fortunate position of having one of worlds largest leather wholesalers right here in town and in fact at one time Napa was the leather tanning Mecca of the old west where the first operations were opened in 1860. This is the place where all of the Buffalo hides ended up being processed back in the day of the herd extinctions.

The Hide House is only a few blocks from my home and I must say it's a joy to visit this place where you can examine over 700 different varieties and colors of leathers including metallic and even fluorescents finishes if that's your thing. This is a wholesale operation but they will sell to the public but with a 15% surcharge. We're trying to work something out for members of the site however.

Before you undertake a leather saddle project I strongly advise that you buy some basic leatherworking books, as we'll only cover the basic fundamentals in this article.

Construction

There are two basic schools of thought about leather coverings. Traditionalists generally prefer to build saddles that are completely sheathed having a leather bottom as well as a top. Contemporary makers prefer instead to simply wrap the gusset under the lip of the pan by about an inch or so and secure it in place using pop-rivets. Sometimes a fabric covering the hides raw edges and rivets is glued in place for a more finished appearance. I've used both approaches and don't find much difference between the two as far as skills or techniques are concerned. It's up to you to decide which style you prefer to use.

We've already talked about smooth verses a tooled platform and again this is a personal matter. Be aware that about 90% of the tooled saddles you see in magazines and at shows are not the saddles the owner usually has installed on the bike for daily riding. Some of these creations are pure showpieces and actually wouldn't hold up to well in daily use. This is especially true if the carved saddle has been extensively dyed or painted.

Cutting Patterns

Assuming that we've got our leather and lacing material it's time to make the cutting patterns.

The easiest way to do this is by using thin tracing paper as an overlay on the seat foundation foam. Fold this paper in half to form a centerline and then lay it out flat on the seat. Mark a light pencil line on this paper that follows some pleasing contour around the edge of the foam padding at a height where you want the seam between the platform and gusset to lay. Fold this paper in half in half again to be sure that the pencil line on each half of the paper is symmetrical. This first trace represents the platform, or top, piece of the saddle.

I typically refine this initial rough hand-drawn line by using some French curves, battens, templates, flexible curves or whatever other drafting tools may be necessary to get a nice smooth fair line to follow for cutting. I'll transfer this 'refined' outline to some thin cardboard, poster board or file folders to use as the actual cutting template.

Figure 51

Figure 51 illustrates some of the drafting tools that make pattern work easier. Almost all of these can be found in any large office supply store. Some of the longer curves, called ship curves, might have to be ordered via the Internet. The blue thing at the top of the picture is one of those weird 'flexible' gizmos that can come in pretty handy on complex projects.

There is no magic formula that determines where the transition point between and top and sides occur. This is the area around the saddle where the line of lacing will be running. If you look at pictures you'll soon note that every maker has a different take on this positioning. Some like to keep the lacing low, just slightly above the line of the steel pan itself. Others prefer to have the lace very high on the seat, almost up into the platform area. I try to shoot for a position that places the seam of the lacing exactly in line with the point where the foam on the side starts to curve inward into the top area so that the leather below the line of lace, the gusset material, is oriented more or less vertically and the top leather is of course horizontal.

If you have a saddle that is contoured into a fancy tank and rear fender with a lot of compound curves in it you'll probably end up having to create a line around the seat for the lacing that is called a 'fair' curve. This helps to equalize both the spacing and tension on the covering that will reduce 'puckering' and 'wrinkles' in the leather.

Figure 52 illustrates my initial paper trace for the platform and the cutting pattern made from that trace transferred to an old manila folder. Note that the saddle now has the final layer of soft foam padding installed over the denser blue foam foundation.

Figure 52

Wherever possible I try to use the material that surrounds the leather I cut out for the top piece as the gusset since if everything went smoothly both cut lines will be perfectly aligned. This isn't always possible, especially if you're using a lighter weight material for the sides of the saddle and have to switch to another hide. The lines will not coincide between the top and sides if you're using an 'overlapped' seam in which case you'll have to make another template to define the inside cut line for the gusset.

To start out making a cover for a saddle where we intend on using a butt seam between the top and sidepieces we just transfer the single pattern we made for the top to a side or shoulder of leather and cut out the center portion, which will be the top. From the perimeter of the resulting cutout we make another cut, about five inches away, which will be the extreme outside edge of the gusset. The cut line for the top and the cut line for the bottom are in fact the same lines so this method uses less material for each saddle you plan on making.

Making a cover for a saddle where we want an overlapped seam between the top and bottom is a little more complicated.

In this case we need to make two different cutting patterns. One will be for the top, or platform, portion of the seat and the other will be for the sides, or gussets. For the top piece to overlap the sidepiece it has to be slightly larger than the 'hole' we'll cut in the gusset material. Conversely we can say that the inside perimeter of the gusset pattern has to be slightly small than the perimeter of the top material. Create a three-dimensional picture in your mind of a simple seat using an overlapped seam. The edge of the top has to overlap the edge of the bottom all around the perimeter by about one quarter of an inch.

Over time butt seams tend to open-up exposing the padding beneath. The edges get a little puckered and no longer look smooth. In addition it's impossible to make a saddle with a butt seam waterproof as liquid just runs in through the exposed seam.

Saddles with overlapped seams, especially if slits are used for the lacing instead of holes, can be made waterproof and look much better over long periods of use, sometimes improving with age. Unfortunately such saddles are harder to make which is why most 'wham-bam' custom chopper seat makers use simple butt seams even on thousand dollar seats. It's one of those cases where an uneducated public doesn't know the difference so why should makers, in an extremely competitive market, spend extra time making something special when everybody seems content to buy second tier quality.

Even though the saddle we're building in this article is intended to be a 'bargain' type costing less than fifty dollars in materials I think we still need to cover it properly for long term durability.

For this reason we'll cover the basics of making patterns for overlapped types of seams. Keep in mind that the general principals apply to the simpler butt seam patterns.

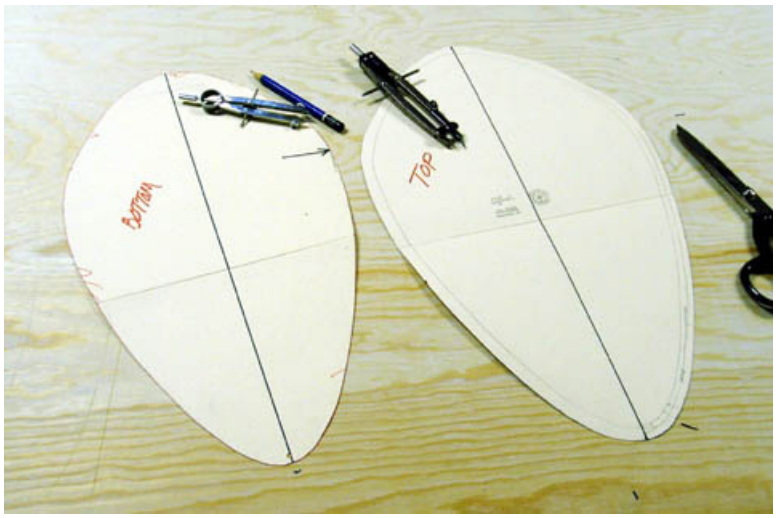

Figure 53

To begin we take the initial pattern for the seat top that we made earlier (see Figure 52) and then make another pattern for the bottom that is one-quarter inch smaller all around the perimeter. In other words the pattern for the sides or gusset will be one half inch shorter and narrower than the pattern for the top as seen in Figure 53. In reality the pattern for the sides or gusset will end up being a template for a 'hole' we'll be cutting in a rather large piece of leather so the sides can wrap around the bottom of the pan.

Figure 54

Figure 54 shows the relative sizes of the cutting templates for the top and bottom of the saddle. Note that the template for the bottom is smaller than the template for the top, which is underneath. This arrangement is only necessary where you want the piece of leather for the top to overlap the leather for the side gussets. For a butt type seam you only need a cutting template for the top as it is also used to cut the hole for the sides.

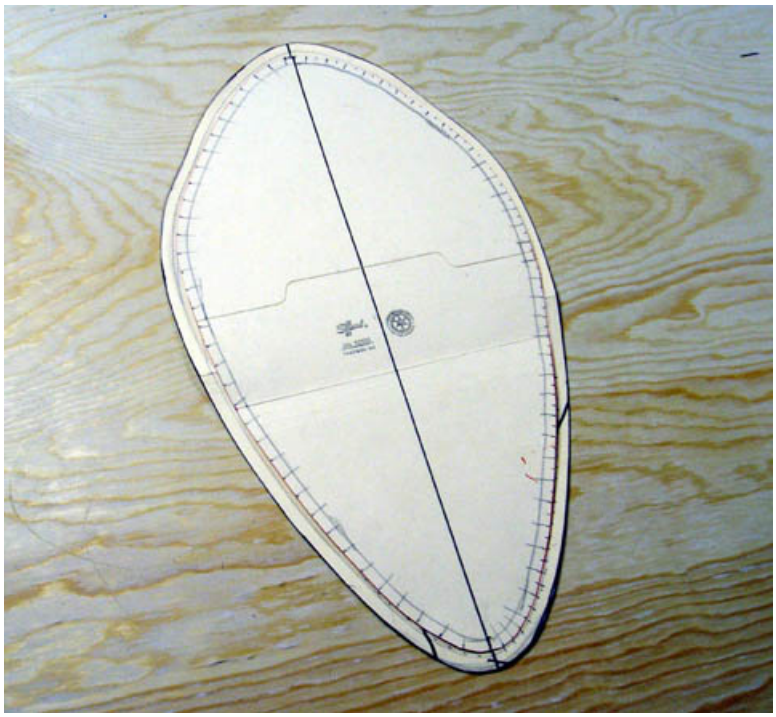

Figure 55

Figure 55 shows the process for laying out the control lines that mark the position for the lacing holes (or slits) around the perimeter of the two cutting templates.
In this case were using holes instead of slits and spacing them one half inch apart and one quarter of an inch in from the edge of the leather. Remember that the holes in the top and bottom pieces must align with one another. To do this requires that the spacing expand in a radial fashion. For instance we've designed this template so that the innermost holes are on exact half inch centers but since we have to have a corresponding hole on the outer piece of leather the spacing there ends up being slightly wider, more like nine-sixteenths of an inch or even five eighths of an inch. It doesn't make any difference if you have an even number of holes or an odd number of holes so long as you have the exact same number of holes in both pieces of leather.

You can buy fancy multi-point thronging chisels and punches but in general the spacing is much to close for most heavy-duty saddle work. I usually punch holes by 'eyeball' using one of the cheap rotary type punches as pictured below.

Figure 56

I've been doing this stuff for a long time but I'm still amazed at how many so-called professional seat makers don't know how to use this handy tool because it 'hurts' their hand. In practice you never squeeze the grips with your fingers but instead just place the tang of the lower grip on a tabletop and depress the upper shank with the palm of your hand in a downward pressing motion. Even with just a little practice you can punch about fifty holes a minute with great accuracy and no hand fatigue.

The tool in this picture was my father's and I imagine that it's around sixty years old at least. It's a little rusty but still sharp as can be.

While we're on the subject of holes I'd like to mention that an old-timer taught me to punch holes one size under the size of the lacing you intend to use, which is totally contrary to what the experts will tell you to do. I think this idea works out very well and you might try it out yourself to see if it works for you. It makes for a much tighter fit-up between the leather and lacing and the holes can more easily be waterproofed with almost any wax leather compound.

Some makers prefer to use slits instead of holes and I think that for ultra high quality work you have to use them but in my experience they tend to tear out if the seat is really used hard over a long period of time. Slits make for a much cleaner and flatter seam line and where appearance is important they can't be beat. I use nippers to cut slits, using the tool almost exactly like the hole-puncher, as it's a lot faster than the multi-prong thonging chisels.

Getting back to the work at hand it's now time to cut out the sides or gusset piece using the template we prepared for what we usually call the 'bottom' of the saddle.

Figure 57 illustrates the piece of leather we're going to use for the sides or gussets of the saddle for this project.

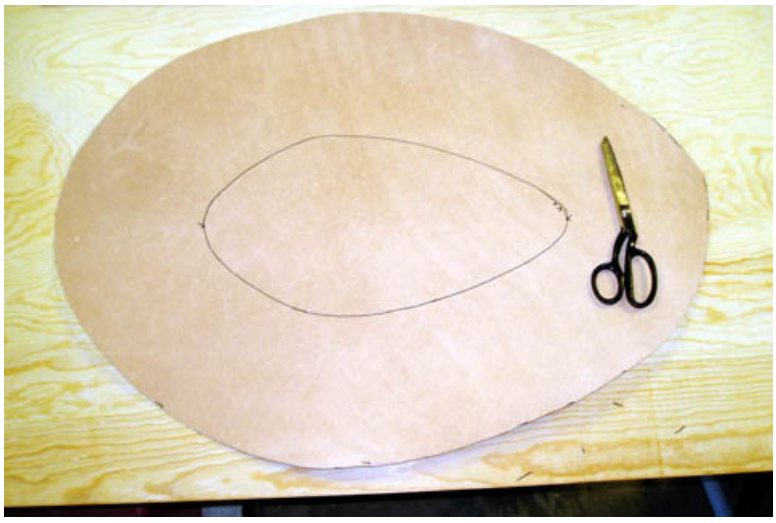

Figure 57

As you can see it's an incredibly large piece of material being about 30" long and 24" wide, about twice the size of the seat pan itself.

The exact width of the gusset material is dependent on the size and thickness of your particular seat as well as where the lacing line is situated in relation to the pan. On some seats the gusset will only be two inches wide. You only need enough width so that the sides can be turned under the pan and riveted or sewn down the center if using a fully upholstered type of saddle covering.

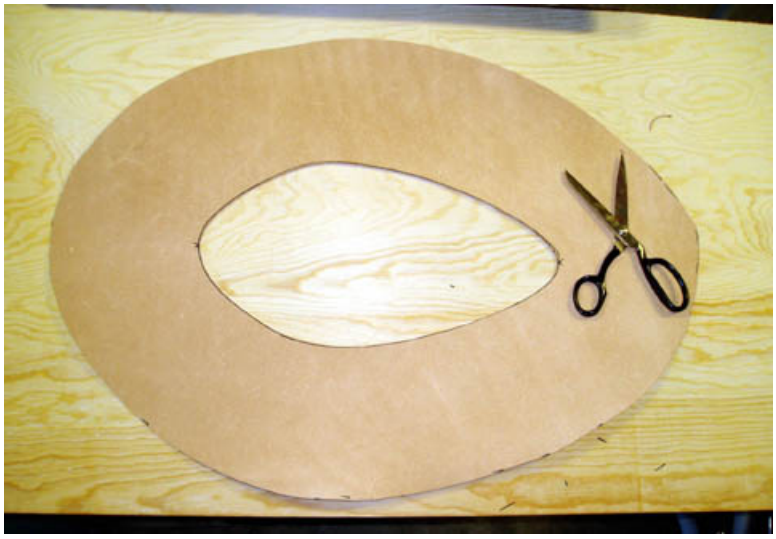

Figure 58

In Figure 58 we've cut away the hole in that portion of the gusset that the saddle top will eventually lace to. The surrounding band of material will wrap around the sides of the pan and be secured with rivets.

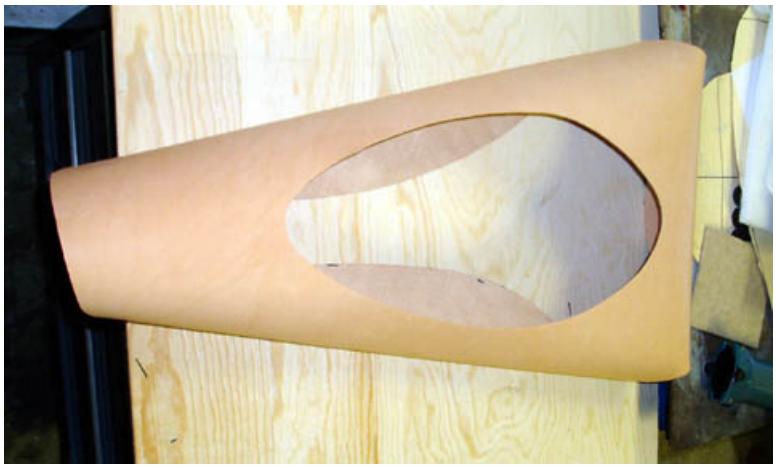

Figure 59

Figure 59 gives you some idea of how and why we cut the gusset in the way that we did. As you can see the 'hole' is the top of the gusset where the top piece of saddle leather will be sewn or laced. The sides of the gusset will wrap around the foam padding and steel pan. Since this leather is still dry and stiff all I could do was just 'tuck' the edges under slightly to give an indication of what's going to be happening.

It should be pointed out here that you can make better use of material if you cut the gusset from two or more pieces of leather which you'll eventually lace together as it's fitted to the saddle. It's not uncommon to have a back gusset and two side gussets.

In Figure 59 we have the main portion of the platform leather cut and punched for lacing

Figure 60

The irregularity of the edge seen in this snapshot is not because the piece was cut crudely but rather due to the fact that once you begin working with leather it starts moving and distorting. In this case punching the lace holes caused the edge to pucker slightly so that

it no longer lays flat on the table. This is a natural phenomenon of the material and nothing to be concerned with. If you put a piece of glass over the sample you'd find that the edge is still nice and fair viewed face on.

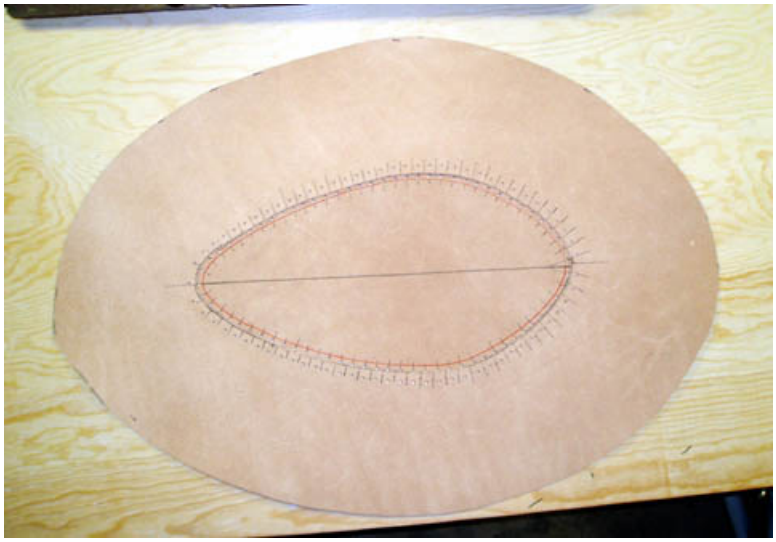

Figure 61

Figure 61 shows the underside (flesh side) of the two pieces as we transferred over the control lines for punching the lacing holes.

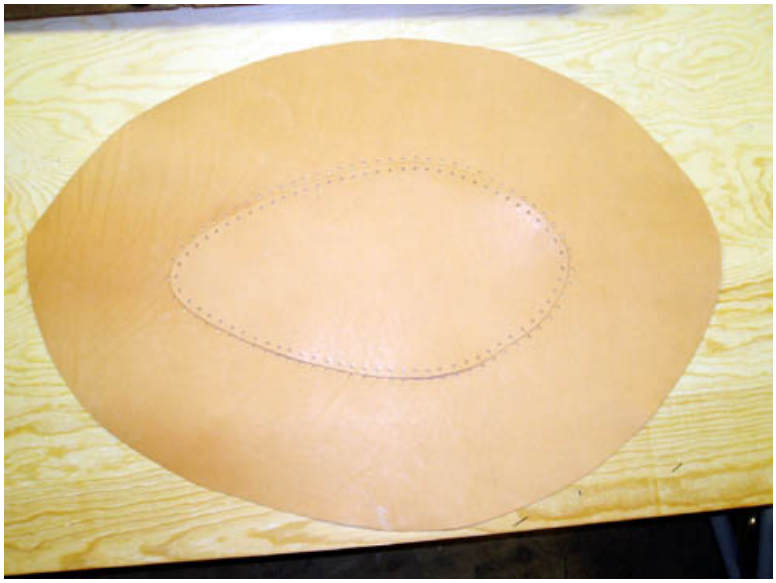

Figure 62

Figure 62 is a few of the top side (grain side) of the two pieces after being punched with the lacing holes. Keep in mind that we may end up cutting the gusset into three pieces in order to fit it to the pan and if so then additional holes will be needed for lacing the gussets together.

Lacing

At this point it's a good time to talk about lacing and punching in general as there are several different routes that can be followed.

As mentioned earlier you can buy a variety of tools or punches to cut both 'slits' and 'holes' for laces. These tools typically cut slits or holes that are either 1/16", 1/8" or 3/32" wide or round. Likewise lace is sold in corresponding widths.

Figure 63 depicts some of the typical thronging chisels that can be purchased. Punches are also available in the same styles.

Figure 63

The problem with these types of tools is that they cut slits or holes that are spaced to closely together for most cycle saddle work. For the 1/8" sized tools the lacing holes are only 1/8" apart and on a seat given some rough treatment these holes have a tendency to tear out over time. This is the reason some makers punch each hole or thong slit individually using a single punch or rotary tool as pictured earlier.

There is no hard and fast rule about hole spacing for saddles but I've found that one half inch spacing seems to work satisfactorily for most applications, assuming that you use 1/8" or even 3/16" thong or lace. I personally think that on saddles with some significant shape or contour changes that the lace hole spacing looks best if it's proportionally applied rather than set up on a mathematically perfect spacing scheme. The holes are closer where the curves are tighter and expand in distance between centers on the straight sections.

Keep in mind that the lacing will look best if the spacing between the holes is identical both horizontally and vertically. In other words the holes will be set one quarter inch in from the raw edge of each piece to be connected so the distance total distance between holes is one half inch. Don't forget to add in any distance used for overlapping seams.

The lacing itself comes in several varieties and different colors including natural un-dyed leather. The best lacing is made from Kangaroo skin but it's also outlandishly expensive running about fifty dollars for a 25-yard spool. Next down the line is Calfskin at about thirty dollars for a 50-yard spool. You can generally go down two more grades and eventually get into the synthetics, which aren't even worth mentioning. I do however use a product sold by Tandy called Pro-Lace which is a semi synthetic material on practice pieces or when I'm trying to learn a new lacing style. It's very affordable at twelve dollars for a 50-yard spool but not very enjoyable to handle. Don't use it on something you'll actually use. If you can afford it the Kangaroo lace is the only material that should be used on a chopper Saddle but if you're on a tight budget regular calf leather lace will give you years of service.

There are perhaps a dozen or so lacing patterns or techniques that are commonly used to join two pieces of leather together. Tandy sells several pamphlets that describe how these patterns are done and I'd buy all of their lacing booklets since some have better illustrations than others.

Many of the patterns used in the trade are not necessarily suitable for cycle saddles and are intended for projects that are smaller in scale and exposed to less rigorous duty. Some of the patterns tend to build up to thickly so that a slight ridge is formed along the lacing line and this can be very uncomfortable for a rider. Some of the patterns, while looking very good are usually just too hard to learn for many amateurs like myself and they consume a huge amount of material.

In my opinion the lacing pattern for a saddle should be simple yet strong and not use up to much lace in the making. There are two patterns that meet this criterion. One is called the 'Single Whip Stitch' and the other is the 'Double Whip Stitch'.

These also just happen to be the two most elementary types of stitches used in leatherwork and are typically the first stitches used by beginners.

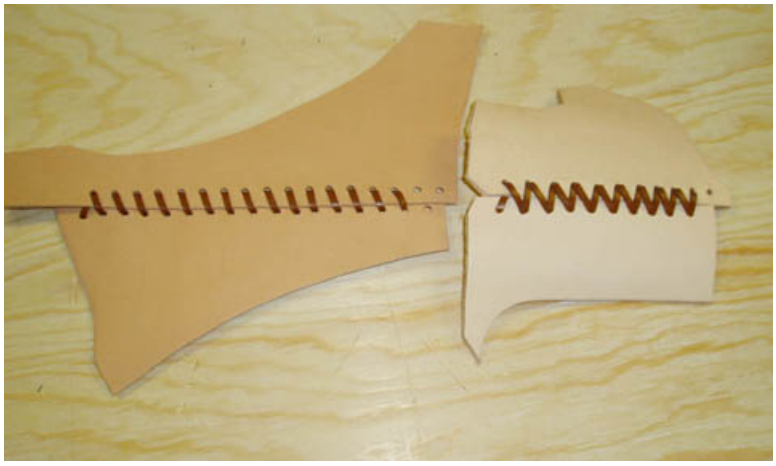

Figure 64

Figure 64 illustrates the two stitches. On the left is the single whip and on the right is the double whip. The symmetry of these simple stitches can be made perfect if one takes care in laying out the lacing holes. On these examples we just punched by eyeball and the lacing material used here is the cheap synthetic material so don't judge the 'looks' of these patterns from the poor quality of the examples we've shown.

Another very popular stitch pattern is called the 'Cross Whip' and you'll see this used on some of the top quality seats. It is also a very easy stitch to learn.

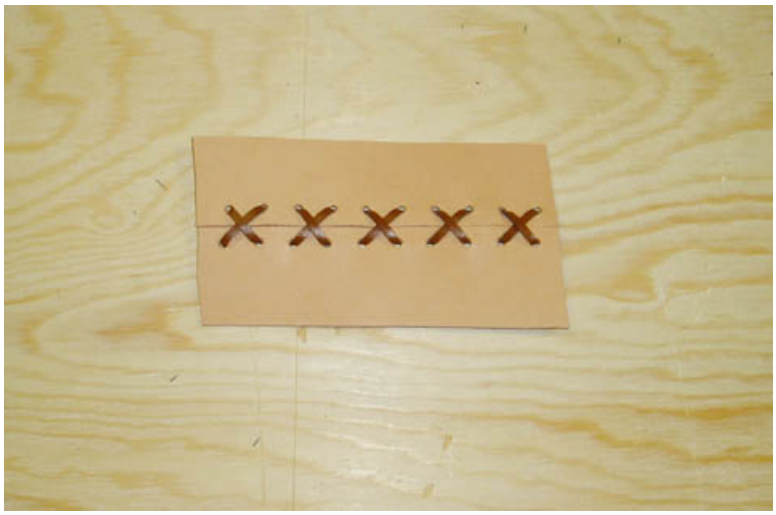

Figure 65

There are variations on almost all lace patterns and we've only shown the most basic designs here so the reader needs to find some good source material to research the variations that best suit a particular project.

Of the three patterns shown the Double Whip is the strongest as you go through each hole twice with the lacing so you end up with a fairly substantial amount of material both over the seam and behind it.

Be advised that the popular cross whip stitch and its variations are not very strong lacing methods even thought they look appealing and when used, the maker will typically have to glue the seat top and gussets together so the lacing becomes more or less decorative. Sometimes what you see at the shows and on the Internet is 'just for looks' and isn't really a 'structural' element as some stitches are known in the leather trade.

The visual appearance of any stitch pattern can be altered very easily just by trying different combinations of hole spacing and this is much more practical to do than trying to incorporate some fancy and complicated stitch which really isn't needed for strength.

I personally like to use the double whip (Figure 64) with symmetrical half-inch spacing and 1/8" lace on most seats. It's very fast and easy to do, very strong and doesn't use up a tremendous amount of material.

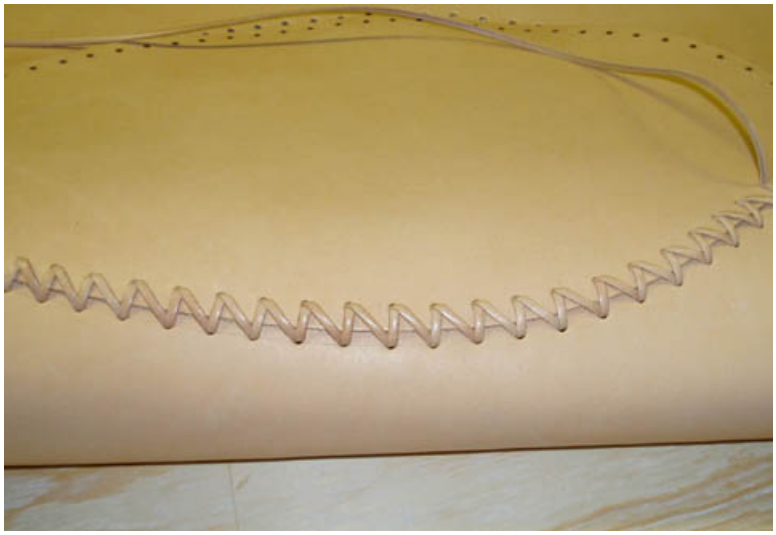

Figure 66

On a fancy seat you'd want to use closer hole spacing that we've shown here so more of the seam is covered but this gives you an idea of the general appearance of the double whip at half inch punching. Quarter inch spacing gives you an almost solid band of extremely strong lacing.

One of the problems most first-timers make is not pulling the stitches tight, I mean really tight. You should pull the lacing so tight that the underlying material just barely starts to 'pucker'. Once the lacing is oiled it will 'relax' to a remarkable degree so it needs to be extremely tight when first applied or you'll end up with a 'baggy' seam.

Before we go much further I should point out that you really do need a clean work area if you want to do cycle saddle work. I've put more scars in the material I bought for this project just by trying to use the makeshift plywood table over my welding bench than the hide got during the entire life of the cow. The weld spatter and grinding dust doesn't help much either.

Figure 67

Ideally if I did more of this work I'd like to have one worktable about 2'x4' with a thin carpeted surface for handling and cutting and another butcher block top table about the same size for punching and tooling.

Might also mention at this point that you really do need a good pair of leather shears for cutting. You can try using X-Acto knives or regular scissors but the shears are the way to go if you want nice crisp, smooth and straight edges on your material.

Figure 68 illustrates our saddle parts arranged to begin the lacing.

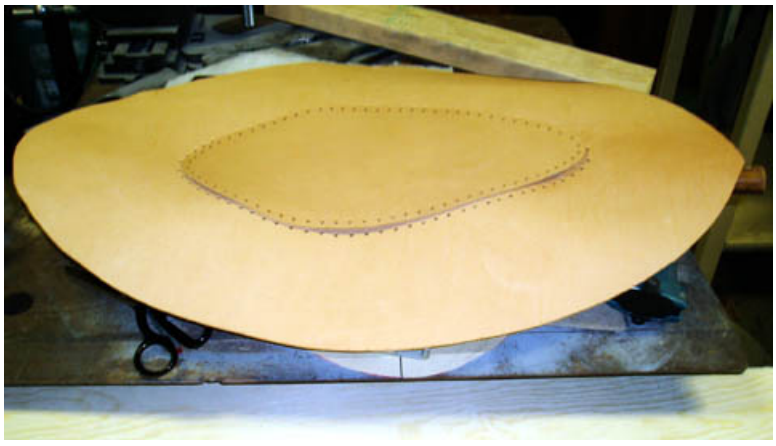

Figure 68

Figure 69 shows the platform and gusset laced together.

This may look like a lot of material but on this particular seat the lacing itself ran in about 1.5 inches from the perimeter, the foam was 2 inches thick (2.5 in places) and I wanted to wrap the gusset at least 2 inches under the perimeter of the pan so I needed at least 5.5 inches of material as shown.

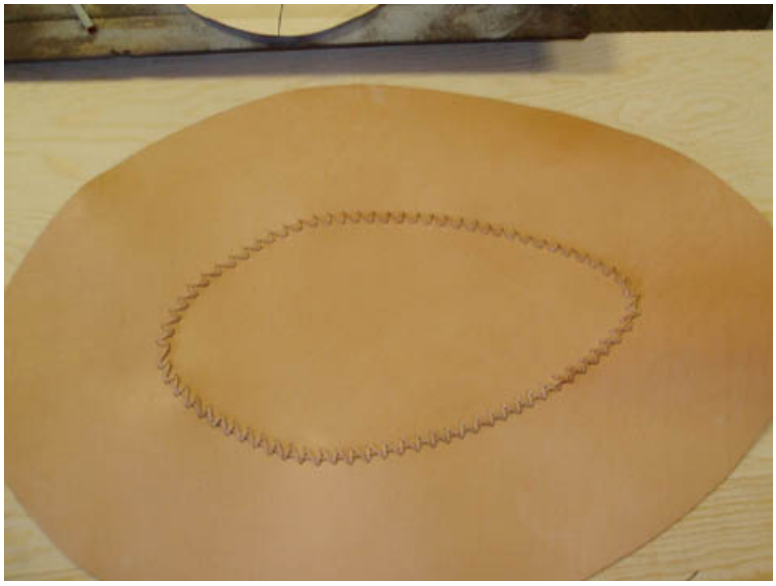

Figure 69

For a seat with thinner padding and/or the lacing running more towards the edges of the pan the gusset width would be considerably narrower than what we show here. Be warned however that too much material is far better than too little material and if in doubt cut the gusset extra wide as it can always be trimmed back later.

So far we've made the cutting patterns, cut the material, punched the lacing holes and looked at lacing patterns. Now it's time to talk about material preparation prior to covering.

At this point in the work different makers will take different approaches in handling their materials. For instance if you're going to dye the leather this is the point where you'd want to do that operation. If you were going to do any tooling it also occurs at this stage.

Tooling and dye work are both specialized areas of the craft and I suggest that the reader buy as much material as possible on each subject as they are to lengthy to discuss in this small article.

I'm not a big fan of dyes. To me any coloring just hides the natural beauty of real leather and tends to make it stiff and somewhat brittle. Native leather, when waterproofed with oils or wax will begin to mellow, soften and darken considerably with age and wear until it takes on the patina of what's called hand-rubbed leather. Throughout history the

highest quality seats and saddles have always been of a natural finish and I don't personally see any reason to change that situation but to each his own.

Cover Fitting

Various makers will also have different ways of fitting the cover to the foundation. Some will do almost all of the lacing while the pieces are laid out flat on the bench while others will do the lacing with the platform and gussets partially mounted over the foam padding.

Some people prefer to work with the covering and do the lacing and fitting with the leather 'cased' (moistened) while some prefer to do it dry.

A few makers prefer to actually glue the platform to the foam foundation and then lace in the gussets. If you do this be sure the perimeter isn't glued down or you won't be able to do any lacing. If you decide to try the glue down method the platform has to be dry in order for the adhesive to bond. I personally don't think this a good method but that's all I'll say about it. Paul Cox seems to have popularized this procedure, for what reason I'll never understand as it's almost completely contrary to all good upholstery practices but it seems to have gained a following so try it if you like.

Some makers will case the material and do a significant amount of molding and shaping with the gusset as it wraps around the pan while others will cut, seam and lace the gussets in sectional pieces in order to get a good fit.

The departure here seems to be between guys who came up from the regular upholstery schools and those who have come up through the leatherworking and western saddle schools. The upholstery guys prefer 'seamed' fitting and the saddle guys like 'molding'.

To some extents the techniques and methods used to fit the cover and gussets will be determined by the shape, contours and configuration of the seat style itself. A complex form may require a combination of methods to insure a good tight fit and a tight fit is the objective. Nothing looks worse than a baggy, saggy or wrinkled saddle cover. A nice fitting covering goes back to the initial shaping of the foam foundation since the contour of the padding must have curves that the leather can follow without buckling, wrinkling or puckering.

Fitting is something that's learned through experience and if you're just starting out it is probably a good idea to buy some cheap leather and lace and try a few trial runs on a 'test' seat before you move on to the real thing. In comparison to the money we spend on bike hardware some extra seat materials for experimentation looks pretty cheap.

Figure 70 shows our project saddle drying after the initial fitting of the gusset, which was done while the leather was moistened.

Figure 70

The almost finished product is shown in Figure 71 below from the opposite side. The leather has dried and as it dries it shrinks and becomes taunt pulling out some of the wrinkles and puckers around the edges and in the gussets.

Figure 71

Those depressions in the middle of the platform are the imprints of my knuckles in the wet leather when I did a trial fit onto the frame and tried to push the seat down so I could get the retaining nuts onto the mounting studs. This was a big booboo and to be honest I have no idea what I was thinking of when I did it since I know only too well that leather has a ‘memory’ and an impression is always retained. Over time they will eventually disappear as the oil starts to work but it was a stupid mistake I certainly won’t make again.

Shaping and molding leather is not a ‘one-time’ thing as you can moisten and stretch the material in several stages and it gets progressively tighter each time. Small wrinkles

around the edges of the pan can actually be ‘pounded’ out with your tooling mallet when the material is wet. On this particular seat we saturated the covering and stretched the gusset three times before it was riveted. This was a rather unusual situation only because we were using five-ounce material for the gusset, the same as the platform leather, where it is more customary to use thin three-ounce stock for the sides, which is worked much easier.

I usually don’t rivet the gusset to the pan until I’m completely satisfied with the way it lays and during the interim stages of stretching the covering I use some special tools made from ‘plate-hangers’ that you can buy in any hardware store.

In practice you cut the hangers into separate small ‘legs’ and sharpen the points of the hooks so that they will take a bite into the leather and not slip out under tension.

Figure 72

These little hooks act as that third hand you wished you had when you’re fitting the seat and stretching the gusset. Old schools guys used to pull the gusset taunt with a spider web assemblage of nylon string.

I doubt that my work will give the professionals much competition but it’s certainly good enough for a cheap, fast and easy chopper cushion for an average home-built bike like mine and over time I’ll get better with practice and experience.

That’s what it’s really all about in the first place. You learn through experience and to experience something you have to actually be doing something with your hands and not just thinking about it by posting on discussion boards looking for ‘virtual’ support and reinforcement for your particular endeavor.

It may seem hard to understand but ‘virtual’ training is akin to no training at all since the human entity only learns through actual experience. If you want to learn how to make

seats then you just have to really ‘do it’ first hand with your ‘own hands’ and with ‘real’ materials.

Waterproofing and Finishing

In order for the leather to be weather resistant it has to be coated with some type of oil or wax. In the old days the only preservative used was ‘Neatsfoot’ oil. This stuff is still around today and it works incredibly well but it tends to darken the leather rather radically. It also has a tendency to bleed back up to the surface and become somewhat tacky and greasy after a few years of use. Lexol makes a product called Lexol-NF that’s an improved Neatsfoot oil that doesn’t darken quite as much and isn’t as oily feeling.

Fiebing’s markets a ‘Mink Oil’ that’s also thinner than Neatsfoot oil and some people swear by it.

Some riders claim that Picard’s Leather Dressing is the ultimate finishing compound but it’s also just some kind of oil/wax combination

There are also products combining glycerin and silicone with some natural oils and waxes that are applied like a shoe polish and can be buffed out to a dull sheen if desired.

The only way to decide if you personally like any of these products is to buy some and try them out on some scrap pieces before ruining your good work.

Keep in mind that all products, even regular neutral shoe polish, will darken natural vegetable tanned leather significantly. If you like the light, almost whitish color of the raw material you’ll actually have to dye it before it’s treated.

Regardless of what material you end up using you’ll have to reapply the product periodically over time in order to keep the leather soft and supple.

Remember that any type of wax, silicone or glycerin products will prevent the absorption of oils so don’t use them if you intended on making a seat having a hand rubbed oil finish and if you do use oils, like Mink oil or Neatsfoot oil it generally takes one application per ounce thickness of leather to completely treat the material. Once the leather is saturated the oil will no longer soak in and the final coat will need to be wiped off and buffed down.

When you’re using oils you have to allow time for the solution to work its way down thru the grain into the core and finally settle in the flesh (rough side) of the leather. This process can take from an hour to as long as three hours depending upon the thickness of the material you’re using. I usually try to apply one coat of oil every three hours even on relatively thin material if I’m in a hurry. If I have time I try to apply one coat per day for about a week. This gives time for the solvents to completely evaporate between coats.

You'll need to use a small brush to apply the oil, in and around, the seams and lacing but it can be applied with a lint free rag in the large expanses. Thinner areas in the material, especially the thin lacing will dry slightly darker than the large areas. Scars, scratches and other types of range marks will also dry darker and many people are appalled at the number of small imperfections that show up in the leather when the oil is first applied. This is just the nature of the material and many of these blemishes won't be obvious after a few months of riding and re-oiling as the material becomes more amalgamated.

In my personal opinion oils are about 100% better and much longer lasting than any waxes or synthetics and they do not degrade the leather over time so oil treated material will last virtually indefinitely if maintained properly. Waxes and synthetics eventually build up a surface and will become somewhat brittle, even within the body of the fleshy part of the leather, causing it to slowly break down with use.
Leather care products are pretty much like everything else in life. The space-age stuff makes the inventors a lot of money and the treatments work okay up to a point but it's the old traditional products that endure over decades and even centuries, long after the so-called 'new and improved' stuff is long dead.

The biggest disadvantage to oil treatments however is that being 'oil', they never really dry and as a result the surface of the leather will tend to attract and collect microscopic bits of dirt and grit. This dirty-gritty surface of contaminants will erode the grain surface of the leather if not cleaned off periodically and this is what Saddle Soap is intended for. Notice that it's called 'Saddle' and not 'Seat' Soap.

A secondary problem is that since oils never dry they can stain your clothing and if you insist on wearing light colored pants, like whites or pinks for instance, you may end up with a nasty light-brownish stain on your butt when you disembark after a long trip. This can be a very embarrassing situation but probably not as embarrassing as wearing the pink tights to a rally in the first place. If you've got an oiled leather seat, especially if it's an old seat, it's just a good idea to wear dark pants wherever you go.

Summation

I sincerely hope that this little booklet helps the reader get on the road towards making custom saddles for Choppers and other types of bikes. Every individual will eventually develop their own unique methods, techniques and style but if you're just starting out the basic fundamentals as outlined herein at least provide a solid foundation of information to build upon.

Internet Sites of Interest:

Duane Ballard: http://www.dbcustomleather.com/pics7.html

Roberti Customs: http://www.robertiustoms.com/

Paul Cox: http://www.paulcoxleather.com/home.shtml

Smith Seats: http://www.smithseats.com/

Gremlin's Custom Leather: http://www.gremsgear.com/

Asorson's Leather: http://www.asorsonleather.com/

Xian Leather: http://www.xianleather.com/

Materials Resources:

These are just a few of the places we do business with. A quick search on the Internet will return literally hundreds of additional resources but we've had excellent results doing business the outfits listed below.

The Hide House
www.hidehouse.com

Tandy Leather Company:
www.tandyleather.com

Hide Crafter Leather Company:
www.hidecrafter.com

Evco Rivets:
www.rivetsinstock.com/

Trim-Lok:
www.trimlok.com

Foam:
Gary's Upholstery Products
www.garysupholstery.com/upholstery-foam.html

Foam Order.com
www.foamorder.com/index.html