Catalog of Custom Dimensional Wood & HDU Signs & Plaques

2.5-D HDU
3-D HDU
WOOD
GALLERY
by-the-Sea
A Shore Thing
Walnut Cr
Sportsmen's
Porta del Mar
Community Center
1601
OTTER HAVEN
Est. 1975
WELCOME
Bay Flower
the COOK'S
ALPINE
VILLAGE
APARTMENTS
Norman's
Nursery
DOVE
COUR
Weddings an
DWH Sales
Men's Apparel
and Furnishings
CROSS
HARES
PUBLIC HOUSE
TAVERN
M. Morrissey
PROPRIETOR
Welcome to the
WRIGLEY MEMORIAL &
BOTANIC GARDEN
of the Catalina Island Conservancy
Channel Islands Native Plants
Ada Wrigley's Collection
Garden-to-Sky Hike
Tribute to William Wrigley Jr.
PLEASE ENJOY THIS SPECIAL PLACE
Hale a Aloha
Ranch
CEREUS

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Dimensional Signs, All Shapes, All Sizes

Overview

This catalog describes custom made-to-order carved dimensional signs and plaques of all sizes (from 6 inches to 25 feet) and shapes, ranging from 2.5-D multi-level raised text and border High-Density-Urethane (HDU) signs to elaborate 3-D artist-painted HDU and Mahogany plaques for both outside and inside locations,

Guaranteed Quality. All signs are made of the highest qualty materials available, have a 2 year warranty, and will last from 10 to 30 years with proper maintenance We guarantee and stand behind our our products; if there is a problem with an product, we will cheerfully fix it or replace it at not cost to you.

Prices. We make these signs and plaques for commercial, government, military, and residential customers. Orders can vary from 1 to 1000 signs or plaques. We have very competitive prices because of production efficiency and volume.

Outstanding Customer Service. We have the best design and management customer service in the industry; we assign one of our 3 project managers to work directly with you during the design, manufacturing and shipping process at no cost to you. They will provide status and resolve any issues with your order.

Design Support. We have over 15,000 designs, the largest selection in the US; or we will create a new original design for you at no cost; or we can duplicate or modify another sign design, or build-to-print your design. We have 5 designers who can support you.

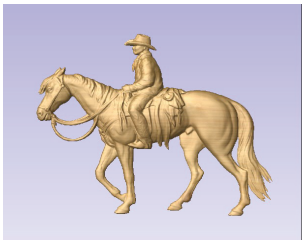
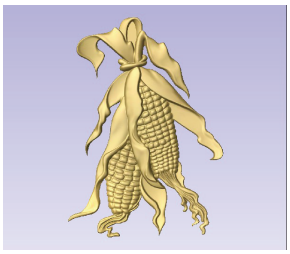
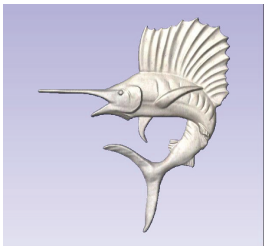
Efficient and Precision Manufacturing. We use advanced 3-D software for design, computer-controlled carving, laser engraving, and water jet cutting; sandblasting; hand sanding and polishing; paint spray booths; and artist-brush and air-brush painting. We have 4 week turnaround after an order is placed and a design is approved.

Premium Long-Lasting Materials. We make our sign and plaque substrates from High-Density-Urethane (HDU) (20 lb/ft3 premium Precision Board); wood (Redwood, Cedar, Mahogany, Maple, Walnut, Red Oak); High-Density Color Core Polyethelene (HDPE); acrylic, and aluminum. We use multiple coats of Matthews MAP and 1-Shot paints, and MinWax stains. Every sign is sprayed twice with Matthews MAP clear-coat for additional UV & graffiti protection and increasing lifetime. Metal coatings include bronze, brass, copper, aluminum cold-cast plating; and gold, silver, & copper leaf gilding.

Crating & Shipping. We make all our products in the USA from American materials, and deliver them safely in the USA, Canada, and most overseas locations.All products are insured for full value, and we will replace/repair any sign damaged by the shipper.

What's New

Wider Selection and Lower Price 3D Models. We have recently arranged fto acquire at much lower cost custom 3-D geometric models of objects and scenes for our carved 3-D bas-relief appliqurs and plaques. See pp 26 and 35..

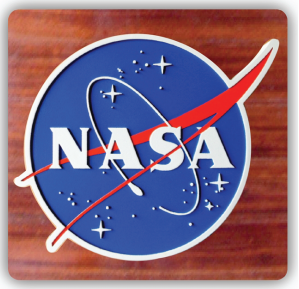
More Hardwood Species. We have made signs and plaques from Cedar and Redwood for over 15 years, but because of demand, we also make plaques and small lindoor signs from Mahogany, Walnut, American Cherry, Maple, Teak, and Red and White Oak. Hardwoods carve well and stain uniformly. See page 30.

Beautiful Artist-Painting. We have improved the artistic quality of our detailed 3D painted plaques and signs, by bringing on board an experienced fine artist. He uses 1-Shot sign enamels to make beautiful and dramatic colorful hues and shades with artist-brushes and airbrushes. See page 29.

Brighter, Gold-Like Brass-Plating. We have recently modified our brass-plating metal composition to produce a more shiny. gold-like appearance. See page 39.

What's New (continued)

Low-Price Giclee Mahogany and Acrylic Plaques. We have introduced a new low-price product line, giclee printed vinyl appliques adhered to acrylic or Mahogany substrates. The giclee images can be photos supplied by the customer, photos of one of our 3-D carved plaques, or a detailed drawing/illustration. These look great and are 20% of the cost of a carved artist-painted plaque. See pages 29 and 46.



Custom Steel Perimeter Sign Frames and Supports. We make custom steel or aluminum hardware to support panel-and-post, wall, or hanging signs. These are installed on the signs when they are shipped to allow easy installation. These include custom perimeter frames made of steel flat bar, which adhere closely to the edges of the sign with screws and epoxy, eye hooks or struts welded to the top of the perimeter frame, and flat bar steel side brackets which extend below and above the sides of the sign so they can be screwed into wood or aluminum posts. We also make custom scroll brackets and lateral beam supports. See pages 49 and 50.

Custom Steel Perimeter Sign Frames and Supports. We make custom perimeter frames and steel flat bar back supports welded together in a lattice and welded to the perimeter frame and/or side brackets. We also make sheet aluminum back panels, and internal steel square tube frames sandwiched between two HDU panels. See page 51.

Pricing & Ordering

Our pricing and ordering process is simple, with a minimum of formality. Our process emphasizes responsive, timely, and frequent communications with our customers throughout the inquiry, quoting, ordering, design, production and shipping process. Every order stands alone; there are no fees or pressure to purchase future products.

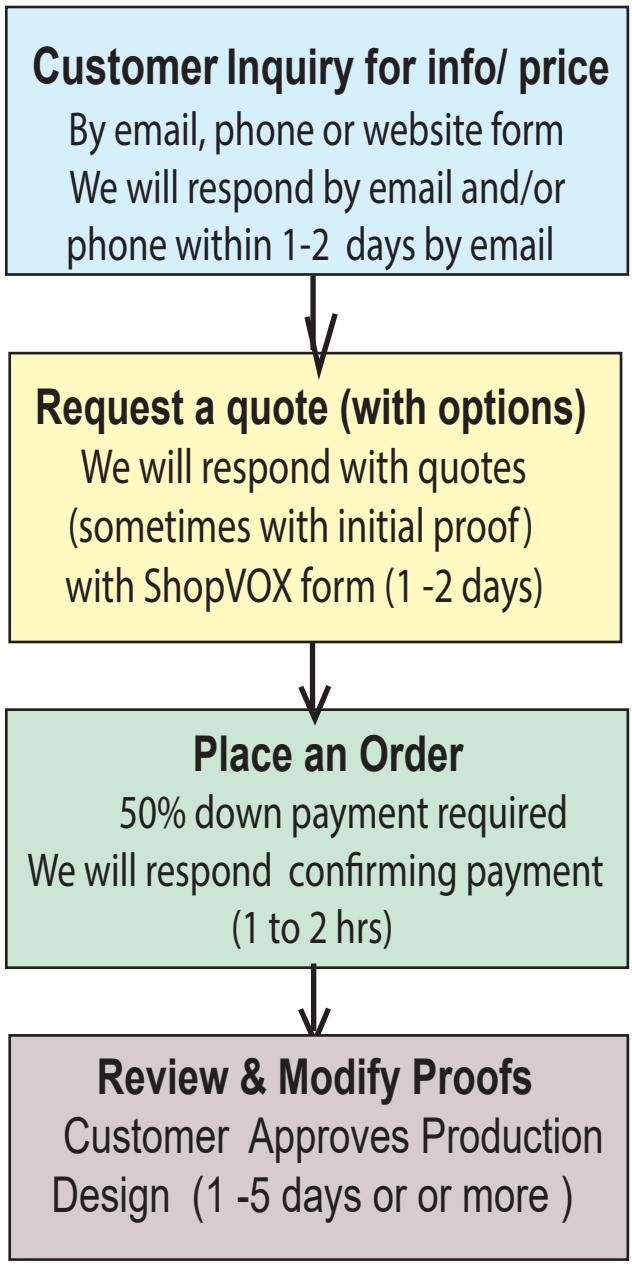
We use a very capable integrated ERP ShopVOX software package to process and record all of our financial, design approval, production status and shipping transactions. We also send you emails, answer your phone calls, send you detailed proof drawings, specifications, and photos in-process and final photos of your sign before shipping. .

Customer Inquiries. We welcome casual inquiries requesting information on our products, prices, delivery times and whether we will bid a job. These inquiries are usually by email, phone or website form (see Fig (A) on page 9. page 9)

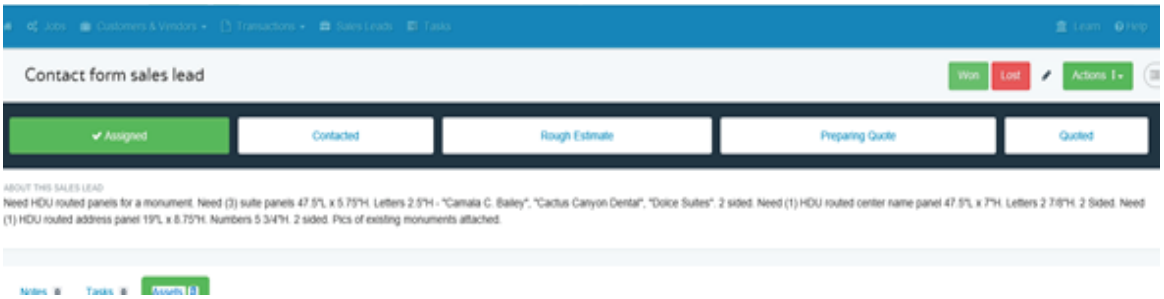
Pricing and Quotes. Our approximate prices are given on the enclosed price sheet. If you wish to request a firm quote, we need to know sign sizes, material type , single or double-faced, relief type (2,5-D or 3-D), number of colors, any special features, and any mounting hardware.We can send you an initial proof. See the quote form we send, Fig (B) on page 9. We have 3 full-time customer service representatives to process quotes and orders,

Place an Order. If want us to make the sign, we will place your order in our our production line and confirm your order with an email and an invoice Placing an order usually requires a 50% deposit.

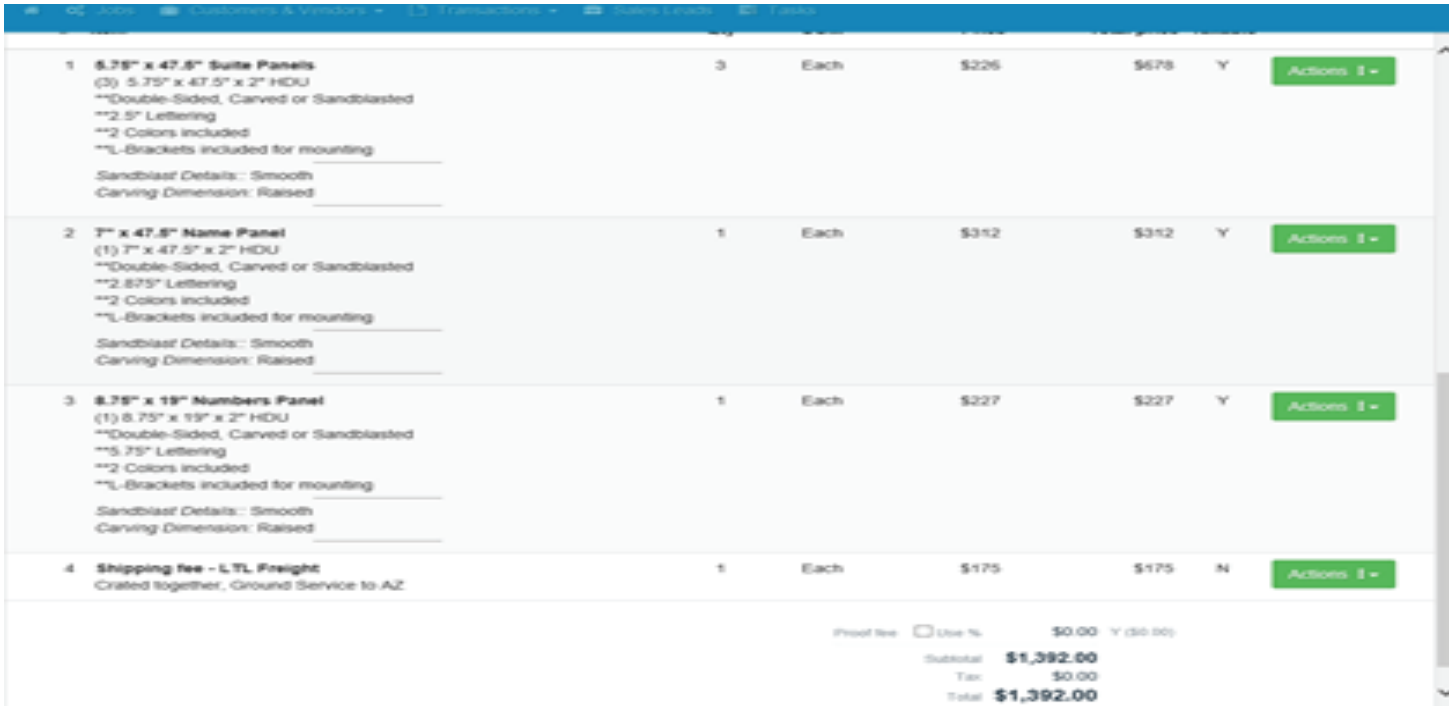
Design Proof Approval & Production Initiation. We will then begin the detailed design process, and we will send you up to 5 iterative proofs for your review & changes. See Fig.(C) on page 9. After you approve a final proof for production, we will begin fabrication of the sign or plaque, See pages 12 and 20.



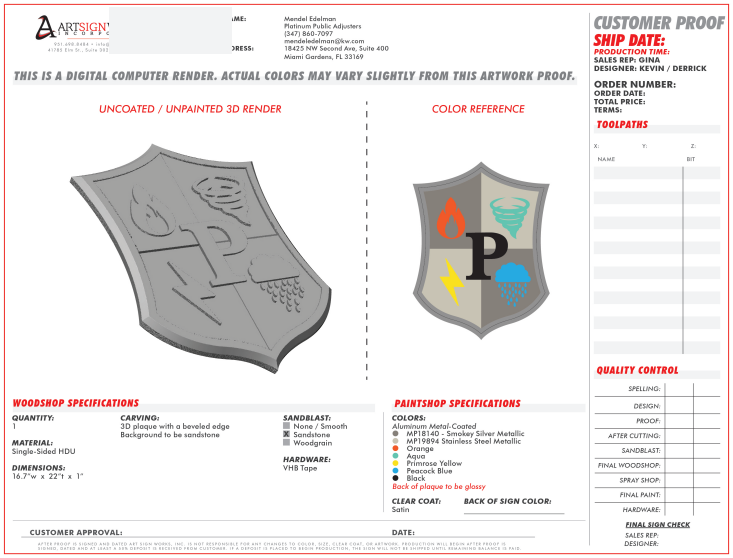
Pricing & Ordering (Examples from ShopVOX)



(A) Customer Inquiry and Request for Quote

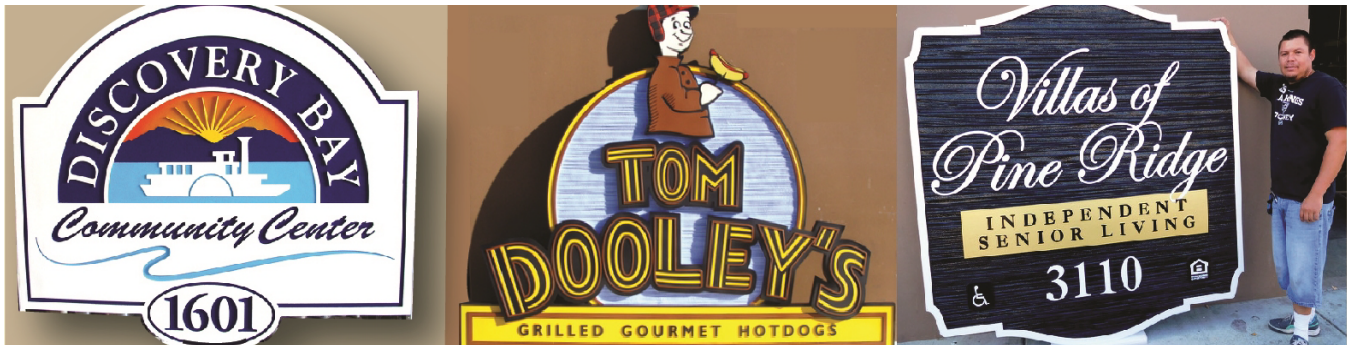


(B) Quote Sent in Response to a Inquiry



(C) Typical Design Proofs for Customer Review

Sign & Plaque Products



Carved 2.5-D HDU Multi-Level Raised Text & Art (page 22)

Carved 3-D Bas-Relief HDU (page 26)

Carved 2.5-D Wood Multi-Level Raised or Engraved (pages 32 & 36)

Carved 3-D Bas-Relief Wood (page 35)

Signs and Plaque Products (continued)

Metal-Plated 3-D & 2.5-D Signs & Plaques (page 37)

Giclee 2-D Plaques on Acrylic & Mahogany Bases (page 46)

Steel & Aluminum Posts and Sign Supports (page 48)

Design Process - The Iterative Proof Process

We develop and control the design and manufacturing of all signs & plaques using proofs, starting with preliminary initial 2-D colored proofs the customer can review, select, and request to be modified. Adobe Illustrator is used intially to prepare 2-D colored proofs which the customer can review and approve. Sometimes a photo of a similar previously made sign is shown on the proof as shown below.

This proof may be modified up to five times. Finally, after the customer is satisfied with the design, the proof is designated as a Factory Proof. No changes can be made in the sign's design after this time, because it is used as the template to carve the sign or plaque. Our QA personnel, our designer, and the customer must sign off on this final Factory proof, certifying that the size, thickness, material, relief type (2.5-D, 3-D, engraved, sandblasting type, spelling, text and art layout, details of art and colors, and hardware are correct and what the customer wants.

Typical Factory Proof

Design Approach and Proofs

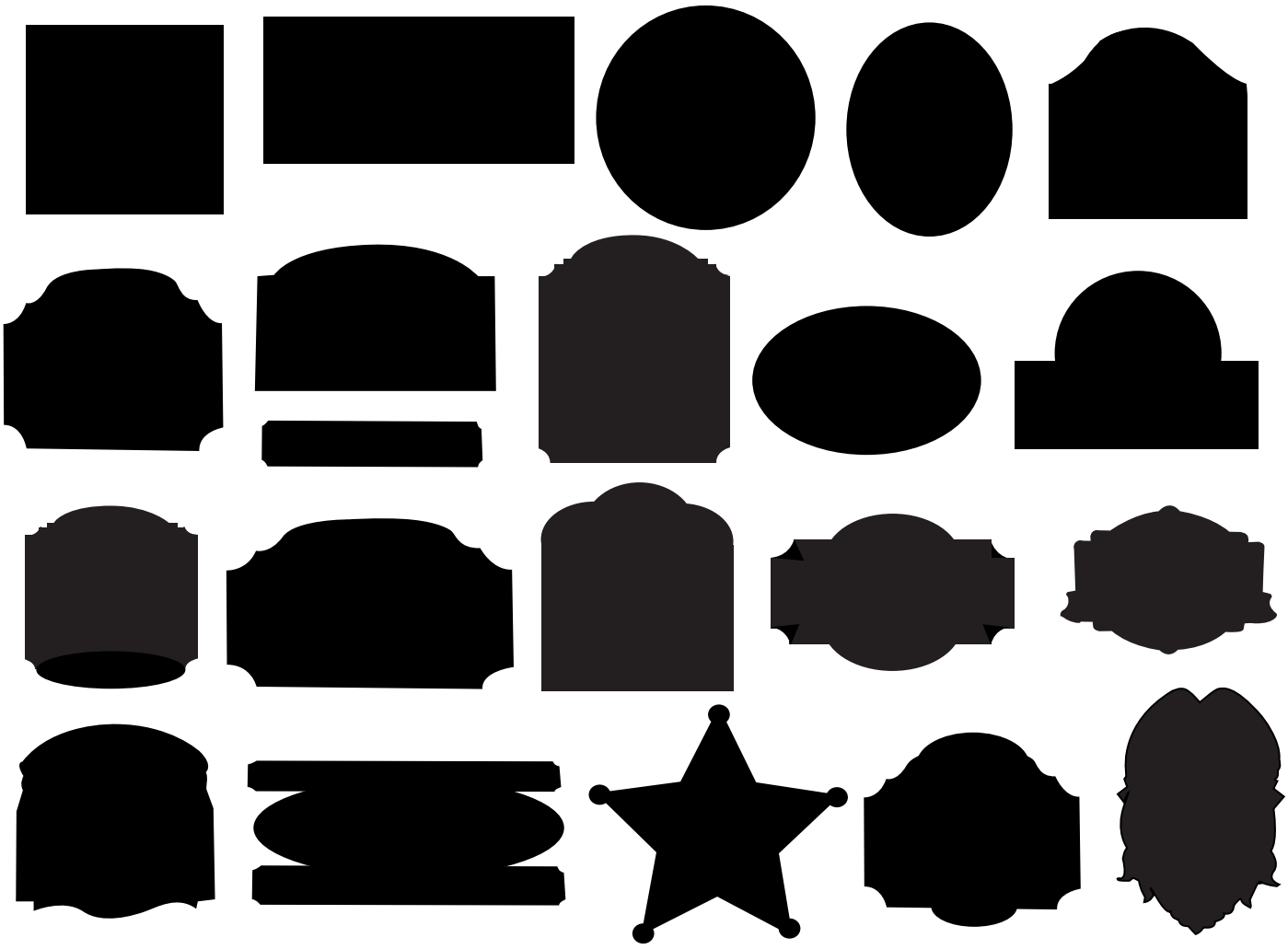
We carve all of our signs and plaques on 3-D Computer-Numerically-Controlled (CNC)) Carver / Routers. We have 5 large-table 3-D CNC routers, the largest having a table 5 ft x 12 ft, but this can be extended to 20 ft. Our smallest, most precise router, used for 3-D plaques, has a 4 ft x 4 ft table, These are very precise machines, which can carve HDU or wood to an accuracy of 1/32 of an inch, about 4 times the diameter of a human hair. They are controlled by computer programs, which we configure to carve out the size, shape and depth of the 2.5-D multi-level, engraved and 3-D signs and plaques.

Our designers take the sign or plaque 2-D design on the Factory proof, and model a third dimension, depth of carving, using a computer program called Aspire. The geometric model the designer makes is then used to program X-Y-Z tool paths for the CNC routers. 3-D geometric models are significantly more complex than 2.5-D models, which have flat plateau raised areas. The 3-D models have continuous curved surfaces. We use 3-D modeling programs such as Maya and Z-Brush to create these. After the tool path programs are generated and validated by looking at the simulated 3-D sign on the computer screen, the HDU or wood panel is put on the CNC Router table to be carved, which takes from 1/2 an hour for small 2.5-D or engraved signs to as many as 30 hours for large detailed 3-D designs.

Sign & Plaque Sizes and Shapes

Sizes. We make custom made-to-order HDU and wood signs and plaques in any size from 6 inches (apartment unit number plaques) to 25 feet wide. We have no standard sizes, but popular sizes of round plaques range from 12 inches to 48 inches in diameter, and most commercial signs range from 24 to 120 inches wide. The largest single piece HDU sign we can make is 12 ft long and 5 ft high, which is limited both the by the largest sheet of HDU we can buy and by our largest router table, which is 12 x 5 ft. Larger HDU signs, up to 10 ft x 25 ft, can be manufactured by assembling multiple pieces of HDU on an internal and/or perimeter frame (see pages 50 and 51). These are edge butted and epoxied, and can be made to have no visible seams and shippable in a box truck. Wood signs up to 5 ft x 20 ft can be made from a single edge glued panel .

Shapes. We can make any shape sign or plaque, because our CNC routers can be programmed to cut any shape with any edge carving profile. A few of the popular shapes are shown below.



2.5-D Multi-Level, 3-D & Engraved Relief

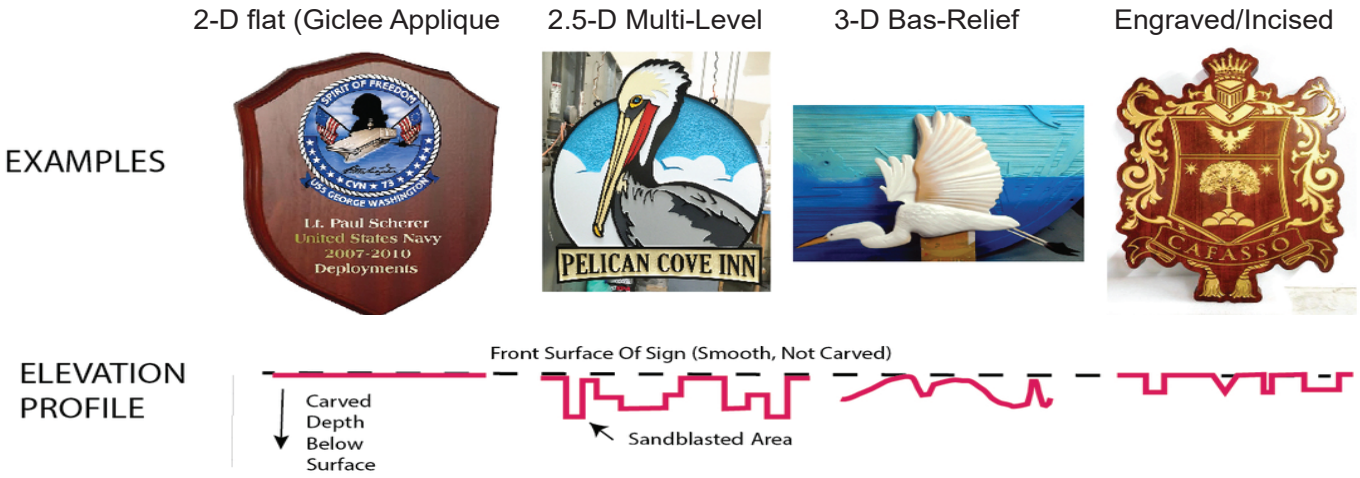
We make signs in four different styles of carved relief (i.e., elevation profile above or below the flat surface of the sign), and often combine these different styles on a single sign or plaque. Because we use precision Computer-Numerically-Controlled (CNC) routers to carve all our signs and plaques, we have great flexibility in how our products are designed. We also use sandblasting, but usually only to give backgrounds or small areas of artwork a texture. Sandblasting alone without CNC carving can only produce very simple signs with raised letters and art. We also occasionally employ flat relief (i.e., no carving) where we use a printed photo on a flat area (see page 46). Three of these styles are illustrated in the figures below.

2-D Flat Relief Art | 2.5-D Multi-Level | 3-D Bas-Relief

2.5-D Multi-Level Relief. This is our least expensive and most popular style, and is commonly used for commercial signs. Backgrounds are often sandblasted with diffrent textures. Both HDU and wood signs can be carved in this style. See pages 22 and 25 for more detail.

3-D Bas-Relief. This style is used for more expensive plaques for governments, courts, military and some commercial signs. We also make small 3-D carved appliques which are epoxied onto 2.5-D signs. See pages 26 and 35 for more details

Engraved / Incised Signs. These signs and plaques have engraved text, borders and art. Engraved text can be v-Carved or u-carved. See pages 28 and 36.

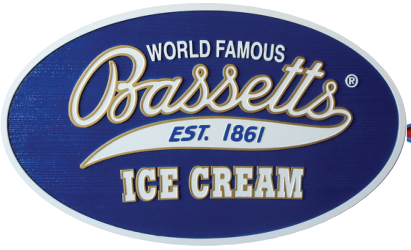


Letter Styles

We offer a wide variety of dimensional letter style, including raised prismatic, raised two-level outline, and engraved, with either V or U-carved (flat bottom) profiles.A few examples are shown below. Raised letters can be carved into the substrate, or carved separately and mounted on the signboard, for greater dimensionality. They can also be elevated above the signboard with studs. We can create letters in any font style, including script and characters from other languages such as Chinese, Japanese, and Arabic, with our CNC routers.The opposite page shows font styles.

Prismatic and other 3-D Letters. We can design and carve wood and HDU 3D letters, including prismatic, old English, antique script, and monograms. These are usually carved separately and mounted on the signboard with epoxy and studs (see photos below) , but are sometimes are carved into the signboard. We also can buy commercially available standard metal or plastic letters and install them on a signboard.

Raised Outlined Letters. We make outlined letters, where the edges of the letters are either higher or lower than the interiors.. These can either be separate letters or carved into the signboard. Examples are given below.



Engraved Letters. We make all styles of engraved letters, from standard fonts to ornate script. We can carve these in either a V-profiles (shown on the left), which is well-suited for gold-leaf gilding, or U-profiles (flat bottoms) , shown on the right .

Font Types

We can carve nearly any font type into HDU or wood substrates if we have a vector file of it, which we usually get from Adobe Illustrator or the internet. Examples are shown below. These can be either raised, with the background carved around it, or engraved. Our CNC routers are limited in carving very small elaborate letters; our smallest bit is a ball-nose bit 1/32 inch in diameter. Wood signs in particular should only use large thick stroke raised letters, because the wood grain can cause the letters to be more susceptible to breakage than HDU.

For small text, especially with thin strokes, we recommend engraved rather than raised text because letters are less likely to break during carving and are more suceptible to damage after installation. We can use a laser engraver to make very small engraved letters.

FONT EXAMPLES

LISTED HERE ARE A FEW EXAMPLES OF OUR MOST POPULAR TYPEFACES FROM A LARGER FONT LIBRARY.

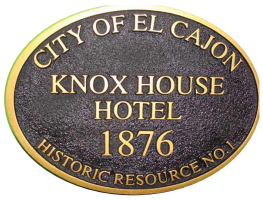
AACHEN
ALDINE
AMERETTO
ANASTASIA
ANDERSON THUNDERBIRDS
ANDROGYNE
ARISTA
ARRUS
AVANT GARDE GOTHIC
BANK GOTHIC
BASKERVILLE
BELWE
BENGUIAT
BERLIN SANS
Bitstream Roundhand
BLUE HIGHWAY
BLUE HIGHWAY CONDENSED
BODONI
BOOK ANTIQUA
BOOKMAN OLDSTYLE
BRITANNIC
CASLON
CENTURY
CENTURY GOTHIC
CLARENDON
COOPER BLACK
COPPERPLATE GOTHIC
Edwardian Script
ERAS
EXOTIC
FOLIO
FRANKLIN GOTHIC
FRIEZE
FRUTIGER
FUTURA
GARAMOND
GEOMETRIC
GEOSLAB
GILL SANS
GOUDY
HELVETICA
HUXLEY
IMPACT
INCISED
KABEL
LITHOS PRO
Lucida Calligraphy
Monotype Corsiva
Murray Hill
OPTIMA
PALANTINO
PLAYBILL
RIO ORO
ROCKWELL
SEAGULL
Souvenir
SQUARE
TIMES NEW ROMAN
TRAJAN PRO
UNIVERSITY ROMAN
WINDSOR

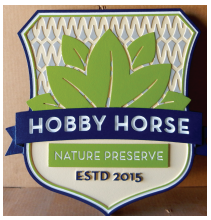
**ABILITY TO CARVE CERTAIN TYPEFACES WILL VARY

Coatings - Paints and Stains

We offer a wide variety of coatings and finishes for signs and plaques. These include vibrant long-lasting paints, stains, and clearcoats; giclee appliques; bronze, brass and aluminum metal plating; and gold and silver leaf gilding. HDU signs can be painted, given a giclee applique, metal-plated or gilded. Wood signs can be painted, stained or gilded. Two or three of these different coatings are often used on the same sign or plaque.This page shows painted and stained signs and plaques; the opposite page shows metal-plated and metal-gilded signs and plaques.

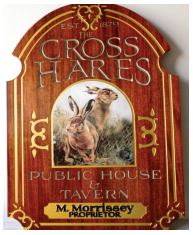
Painted 1-4 Colors. Our paint coating process has five steps; (1) the entire sign is sprayed with a high-fill polyurethane primer in a paint spray booth; (2) one or more background colors is then sprayed on masked off areas of the sign using a automotive-quality paint, Matthews polyurethane acrylic (MPA); (3) the paint iis then cured n a heated drying room (4) using artist-brushes, air-brushes and mini-rollers, our artists then paint text, borders and artwork using 1-Shot Sign enamels; (5) after thorough drying, the sign is sprayed with two clear-coats and is ready for shipping. The signs below were painted with 2 to 4 colors. We can match any Pantone or commercial house paint color (see page 29)





Painted More than 4 Colors. The signs below used many 1-Shot colors mixed by our artists to get the desired artistic efffcts, An airbrush as well as an artist brush was used to paint the the 3 signs on the right.

Stained Wood. We use MinWax for all our stained wood signs (see pages 30 / 31).The wood is pre-stained to improve color uniformity, then the wood is stained by hand-rubbing. It is then lightly sanded, and stained-again. It is clear-coated twice for UV protection. Most wood signs have trim and text painted, and text can be gold leaf gilded .



Metals - Plating, Gilding, Cladding & Substrates

We use metals on over 30% of our signs & plaques, on over 2000 signs each year. We plate both carved and engraved HDU signs with bronze, brass, aluminum, copper and German silver metals. We can gild 24K gold, silver and copper-leaves by hand on the text, artwork and borders of HDU and wood signs & plaques. We can clad raised text, art and borders with cut-to-fit thin aluminum sheet metal. We also make aluminum, DiBond, and Corten aged steel 2-D signs, cutting any shape smoothly with a water-jet

Metal-Plating. We make thousands of metal-plated HDU signs and plaques each year. After the HDU sign is carved on a CNC router, we spray it with a primer in a paint spray booth and then plate it with either bronze, brass, aluminum or copper metal micro-particles embedded in a liquid binder in a proprietary cold-casting proces. After the metal surface is cured, we polish it and burnish high areas to a shine, We may then apply a darker patina or hand rub in paint to enhance contrast. The sign is then sprayed with two clear-coats. See pages 37-41 for details.

Brass-Plated ***Bronze-Plated*** ***Aluminum-Plated***

Gilding and Cladding. We can hand-gild 3-D, 2.5-D multi-level and engraved HDU and wood signs with 24K gold, fine silver, or copper leaf. This process produces shinier surfaces than metal-plating but is more expensive. Usually only text, borders & artwork are gilded; background areas are usually painted dark for contrast. Examples are shown below. The entire sign or plaques is then clear-coated twice. Pages 42 & 43 provide more detail. We also can make aluminum clad letters, border & art for wood or HDU signs; thin aluminum sheet is cut and mounted on raised flat areas of the plaque. (See page 44).

24K Gold-Leaf Gilded **Silver-Leaf Gilded** **Copper-Leaf Gilded** **Aluminum-Clad**

Aluminum , Di-Bond and Corten. We also make aluminum sheet, Di-Bond, and Corten weathering steel 2-D flat signs of any shape. We can cut any shape, including cut-outs, with a CNC water-jet cutter. These signs can be direct printed on a large format UV printer, painted using computer-cut stencils, or printed vinyl can be applied.

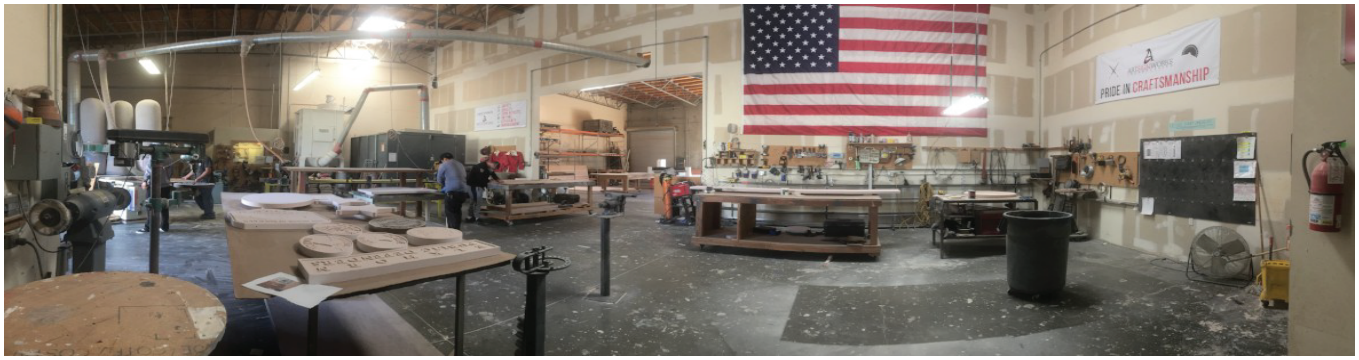
Manufacturing Techniques - Carving & Sanding

Detailed Design. We fabricate our plaques in an 11,000 ft2 factory which uses the latest technology in computer software and computer-controlled machinery. We have 20 craftsmen, designers and customer service reps who work as team to design and fabricate our custom signs and plaques. Although have automated many of our manufacturing processes to improve efficiency and reduce costs, our signs and plaques are primarily hand-crafted by skilled and experienced woodworking and painting artists and artisans who are skilled in Old World craftmanship.

CNC Routing. Our primary carving process utilizes five (5) large table Computer-Numerically-Controlled (CNC) routers, which can precisely carve wood or HDU in any 3-D shape or profile. Our largest router table is 12 x5 ft ; others are 10 ft x 5 ft. We use a variety of high speed rotating bits, as small as 1/32 inch in diameter. It takes the routers from 1/2 hour (small 2.5-D signs) to 24 hours to carve large, detailed 3-D plaques. These routers require detailed computer programs to command the x-y-z tool paths to produce the precision required to produce high quality signs with smooth finishes. We have 5 designers who generate the 3-D geometric models of the shapes and relief profiles for our custom signs & plaques. We have typically carve up to 20 signs per day.

Sandblasting. The next step is to sandblast background areas in either a sandstone (pebble), wood grain or leatherette textures. We use a 20 x 15 enclosed sandblast booth with a suited-up craftsman to do our sandblasting. We protect surfaces that are not to be blasted with a precisely cut rubberized sandblast mask.

Hand Sanding and Carving. The final step in our wood shop is hand sanding to remove any router tool marks and to make all the surfaces very smooth. We may also do hand carving if necessary to produce very fine details in the wood or HDU.



Manufacturing Techniques - Coatings & Finishing

We paint, or stain, or metal-plate and/or gild our signs and plaques in a 2000 ft2 spray paint shop and a separate 2500 ft2 fine paint/finishing shop. We spray, roll, air-brush, artist-brush, hand-rub, gild, polish, and burnish the various coatings on the surfaces of our custom designs and plaques. Our signs and plaques are hand-painted by 6 skilled painters, artisans and artists who use traditional methods of finshing the surfaces of our beautiful and elegant long-lasting signs & plaques.

CNC RoutingSpray Paint Shop. After the HDU signs and plaques are carved and sanded smooth, they are sprayed with a special polyurethane acrylic primer in 20 x 12 ft paint spray booth shown on the right. We spray primer, background color paint and clear coats on HDU signs, primer, metal coats and clear coats on bronze, brass, aluminum and copper-plated signs ; and stain and clear coats on wood signs. A high capacity compressor and precision nozzles assures even coverage and controlled thickness coatings.

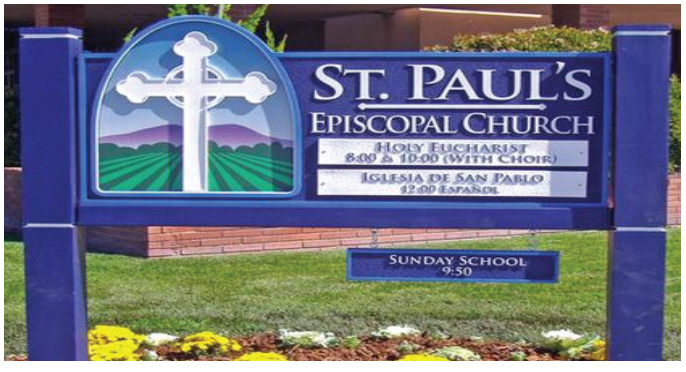
We use only automotive-grade Matthews polyurethane acrylic colors and clearcoats, a proprietary long-lasting metal powder and binder, and MinWax stains. After each coat is sprayed, the sign is placed in a heated drying room to allow the coatings to cure.

Fine Painting and Finishing Shop. Our fine-painters do all our fine painting and finishing in our separate clean fine-painting shop. We paint all the text, borders, and artwork with 1-Shot Famous Sign Enamels, using artist-brushes, specially-built mini-rollers, and air-brushes. We hand-rub two coats of stain on wood, using steel wool between coats to get good color eveness. After polishing metal-plated plaques by machine and then manually by a craftsman, we may dark paint or patina on them to accentuate the contrast between high and low areas. Gold, silver and copper leaves are applied by a a skilled artisan and then burnished to high shine. All signs and plaques are clear-coated twice with Matthews MAP for extra protection against oxidation, UV, mopisture, anf graffiti. See pages 29 (paints), 31(stains), 37 (metal-plating) and 42 (gold-leafing) for more details .

Multi-Level Raised Text & Artwork
2.5-D HDU Signs & Plaques

This style of carved HDU sign has flat top surfaces of text, art and borders, usually at two to six levels of relief (i.e., elevation) whereas 3-D HDU signs have rounded or continuously curved varying top surfaces, like bas-relief sculptures. It is much faster and requires less labor to design, carve and paint 2.5-D signs than 3-D signs, so they are less expensive; however, 2.5-D signs use exactly the same substrate and paint materials as our 3-D signs & plaques. Our 2.5-D HDU signs are our lowest priced dimensional signs (about 30% to 45% lower in price than the 3-D HDU signs), but they can be very beautiful, elegant and striking, as the examples on this and the opposite page show.

Multi-level raised 2.5-D signs and plaques have the backgrounds carved out with a CNC routers at several different levels. Usually the text and borders are at the highest level. However, some areas of the artwork and sometimes interior of large letters can also be carved out with lowered flat surfaces. Text can also be engraved in raised plateau areas (as for the "Apartments" text in the sign below). Multi-level CNC routing offers much more design versatility and more of a dimensional effect than sandblasting alone can achieve, which is usually restricted to one level, and blasting produces only rough surfaces.



Multi-Level Raised Text & Artwork
2.5-D HDU Signs & Plaques

Wood Grain, Sandstone and Leatherette Textures for Sandblasted HDU Signs & Plaques

Sandblasting different areas is a no-cost option for any HDU sign or plaque. Sandblasting adds visual interest because of its dimensional texture, and, when used with a wire frame, can give a HDU sign a wood grain look similar to that of a sandblasted wood sign. Usually sandblasting is performed on some on all or part of the backgrounds,but it can also be performed on the interior of letters or selected areas of the artwork .

The sign or plaque is carved first with a CNC router, where 1/2 to 3/4 inch of the substrate is removed. The areas that will not be sandblasted are covered and protected with a sandblast mask cut to shape using the digital design file. Typically text, borders and most or all of the artwork are masked off, because it is usually desired that these areas have smooth surfaces. The sign is then blasted in a large enclosed sandblast booth using special nozzles and controlled air pressure from a high capacity compressor.

Three types of sandblasted textures can be selected (1) wood grain (horizontal or vertical ridges, created by using wire frames with various spacings to block the abrasive particles from eroding lines of the substrate; (2) sandstone (sometimes called pebble) texture which has tiny raised bumps in the substrate;(3) leatherette, same as (2) except the bumps are lightly hand sanded giving the area a leather look.

The example sign on the right shows the sandblasted textures for wood grain (the green area behind “SIGNS”) and sandstone (the green area behind “SANDBLASTED”) . The other areas of the sign are not blasted and are left smooth,and are finished by fine sanding. Special custom textures can also be carved into backgrounds using the CNC routers rather than by sandblasting.

Sandstone Texture Background

Wood Grain Texture Background

Wood Grain and Sandstone Textures for Sandblasted HDU Signs & Plaques

Horizontal Wood Grain (Letters)

Vertical Wood Grain (Green Background)

Wood Grain (Blue Background)

Sandstone Texture (White Background)

Horizontal Wood Grain (Brown Background)

Carved Signs & Plaques with 3-D Bas-Relief Artwork

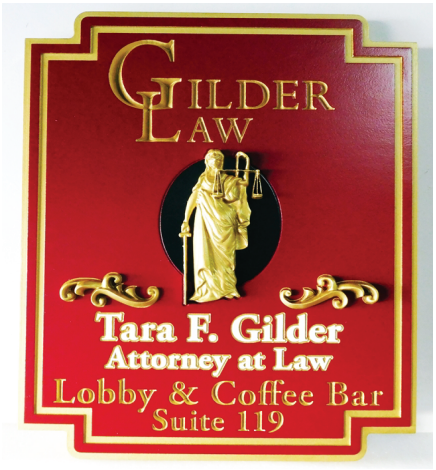
This style of carved sign or plaque has artwork carved with curved top surfaces.This type of carving is referred to as bas-relief (French term, originally from Latin, meaning low-relief), and refers to artwork that is carved with curved surfaces in a way so that the artwork protrudes only a moderate amount from the sign's flat surface, with no undercuts.

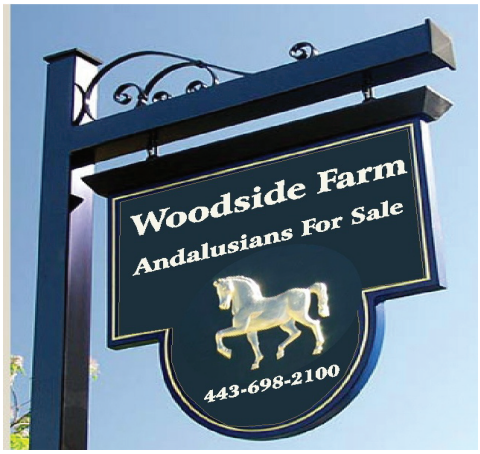
Custom 3-D plaques or signs may require an additional artwork fee to develop 3-D CNC router tool path files if a file for that artwork has not previously been developed, or it is not commercially available. However, most 3-D plaques or signs can use one of the 5000 3-D files in our library. Any 3-D sign or plaque shown on the websites has an existing 3-D file. Existing 3-D files can be scaled to any size or any relief depth with no artwork fee.. Usually text and borders for 3-D plaques or signs is carved with flat surfaces (2.5-D); however, these can also be carved in 3-D relief.

3-D artwork takes 5 to 20 times as long to carve on CNC routers as 2.5-D artwork, because rounded surfaces require much finer diameter ball-nose CNC router bits (as small as 1/32 inch diameter), instead of larger straight bits, which can only cut flat surfaces. Very fine details can be carved for 3-D artwork for plaques or signs as small as 6 inches.

3-D artwork requires painting with an artist-brush or airbrush; mini-rollers, which are used for 2.5-D signs, cannot be used on curved surfaces. Because of the additional labor for carving and painting, 3-D signs and plaques with extensive 3-D artwork have prices 40% to 60% more than 2.5-D plaques. However, 2.5-D signs often have small 3-D appliques mounted on the sign; the additional price for this is minimal.

Carved Signs & Plaques with 3-D Bas-Relief Artwork





Engraved / Incised HDU Signs & Plaques

Engraved carvings are sometimes called recessed carvings or incised carvings. This style of carved sign or plaque has text, borders and artwork carved into the smooth HDU substrate, rather than raised above it as in 2.5-D multi-level signs and plaques, where the backgrounds are carved out and the text, borders and artwork are elevated. They are less susceptible to damage because the recessed areas are protected by the elevated backgrounds. Engraved carvings can be 2.5-D at a single level, or 2.5-D at multiple levels, or even carved 3-D in bas-relief where the highest area of relief is below the front surface. Text and borders can be engraved by V-carving or U-carving. Artwork may have only outlines carved, with the area inside the outline at the front surface level, or the artwork area can be recessed into the front surface, such as the trees in Sutter Pines sign below.

Engraved signs take less carving time and painting labor than raised relief signs. They can be quite elegant and have just as detailed artwork as 2.5-D raised or 3-D signs. Engraved text or art are often combined with 2.5-D or 3-D raised text or art on the same sign or plaque.

Engraved Text and Recessed Area Artwork

Engraved Outline Artwork Signs & Plaques

Artist-Painted Signs & Plaques

Paints. All our painted HDU signs and plaques are prime coated with a special high-fill polyurethane primer to ensure smooth surfaces. The sign backgrounds are then coated with Matthews base color coats in a paint spray booth. Matthews paints are mixed by formulas to match any Pantone or commercial house paint color. The sign or plaque is then moved to our fine paint shop, where artists use artist-brushes, mini-rollers, and airbrushes to paint the text, borders and any artwork using 1-Shot sign enamels. These enamels can be mixed to make any color, and are brilliant and long-lasting (see the color chart below). After the sign or plaque is painted, it is moved back to the spray shop where it is sprayed with two coats of long-lasting, UV and graffiti- protecting Matthews polyurethane acrylic clear.

***Additional Color choices can be viewed at www.pantone-colours.com

MAROON	BRIGHT RED	FIRE RED	MEDIUM BROWN	DARK BROWN
TAN	CHAMOIS	IVORY	ORANGE	CHROME YELLOW
PRIMROSE YELLOW	EMERALD GREEN	MEDIUM GREEN	DARK GREEN	AQUA
ROBIN EGG BLUE	LIGHT BLUE	PEACOCK BLUE	REFLEX BLUE	KANSAS CITY TEAL
DARK BLUE	PROPER PURPLE	PURPLE	MAGENTA	DARK MAGENTA
SALMON PINK	IMITATION GOLD	WHITE	MEDIUM GRAY	BLACK
METALLIC SILVER	METALLIC GOLD	METALLIC BRASS	METALLIC COPPER	

Standard 1-Shot Enamel Colors, mixed to give any Hue or Shade.

Giclee Printed Vinyl Appliques. When artwork is too detailed to carve and paint, digitally printed giclee appliques are printed on long-lasting 7 yr cast vinyl on a high-end ink-jet printer. These appliques are usually of photos or very detailed drawings.These are usually placed on a carved raised pedestal The appliques are used for artwork only; borders, text and simpler art are carved and artist-brush painted.

Carved HDU Plaques with Printed Giclee Appliques

Wood Species for Signs and Plaques

Wood signs and plaques can be made of a variety of different wood species, including both softwoods and hardwoods. Some of the species used for our signs and plaques are shown below. All wood used is kiln-dried, premium grade heartwood (where applicable) with no knots. Only the highest grade wood is used . The wood is usually purchased from a large lumber mill, Forest Plywood and Lumber Products Company, that specializes in both hardwoods and softwoods. They fabricate large smooth rectangular signboard blanks with an edge-gluing technique that uses high pressures to ensure a tight long-lasting bond that is watertight. These signboard blanks can be made as long as 24 feet and as wide as 8 wide, although most sign signboards are typically 4 to 8 ft ong and 2 to 3 ft wide. Wood plaques are typically 2 or 3 ft wide. All signboards are planed on both sides when they come from the Lumber yard, and are then fine sanded before they are placed on a CNC router to be cut to shape and carved in relief.

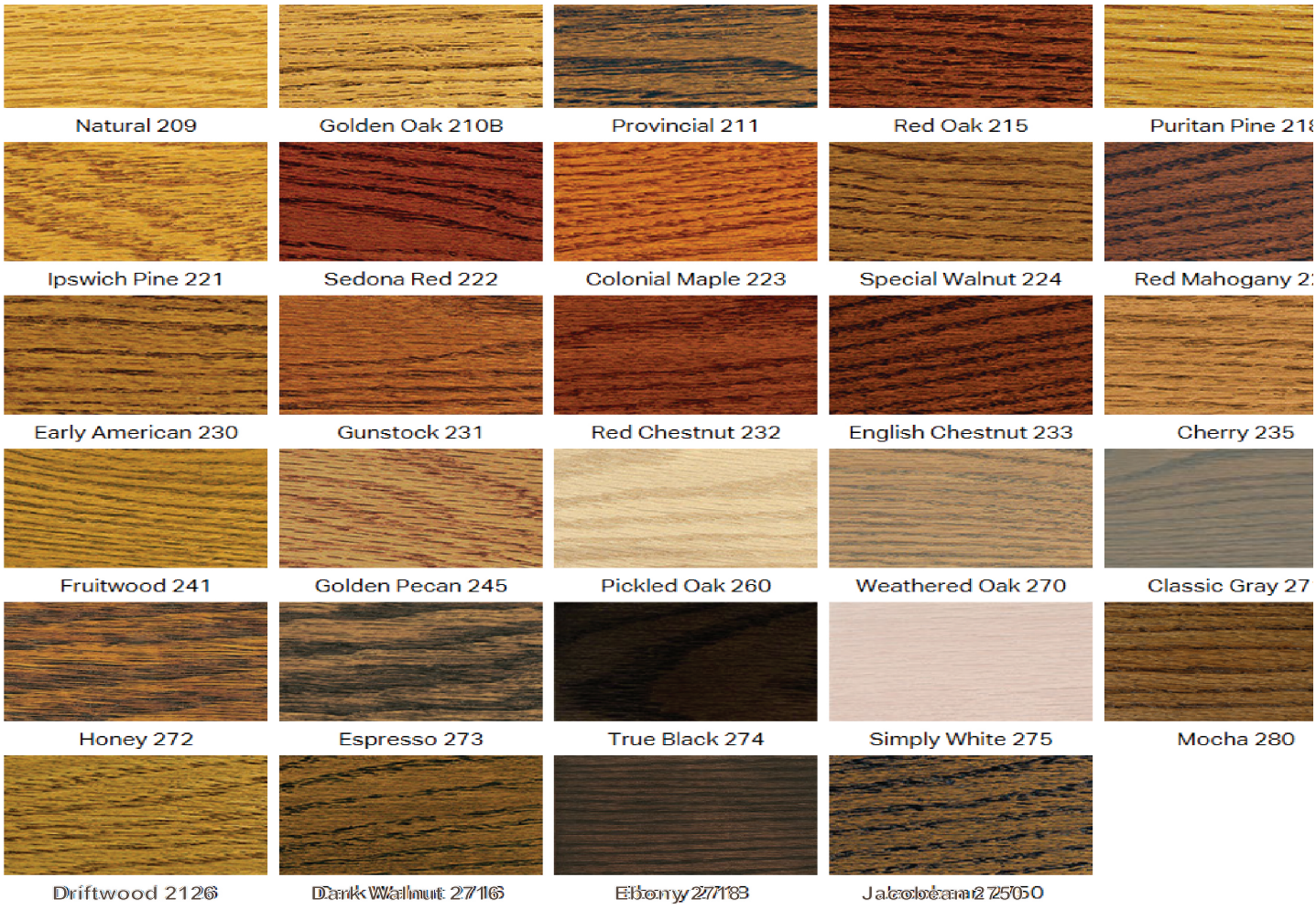
Outdoor signs exposed to the weather are usually made of Redwood or Western Red Cedar. These can either be painted or stained. If they will be painted, HDU is a better choice than wood because it carves cleaner, lasts longer, has lower maintence, and holds up better in maritime, tropical , rainy, and cold climates. It is also a less expensive material. We generally recommend HDU instead of wood for outdoor signs that are painted. Stained wood (Redwood, Cedar or African mahogany) is used for outdoor signs that are required to have a natural look, must must be maintained aannually. Wood does have an advantage over HDU for large outdoor signs; it is stronger and tougher (e.g., the National Park Signs are made of Cedar)

Indoor signs and plaques are usually made from hardwoods including African Mahogany, Maple, Cherry, Red Oak, or Walnut. For a more rustic look, some larger plaques such as Military CommandBoards are made of Western Red Cedar. Hardwoods carve cleaner and have fewer problems that softwoods when intricate detail carving is done. Because they are harder, they take longer to carve and are generally more expensive.

MINWAX Stain Colors for Wood Signs & Plaques

Most wood signs and plaques are stained, rather than painted. If a painted sign or plaque is required, it is recommended that HDU, rather than wood, be selected as the substrate because it carves cleaner and more precisely, lasts longer, requires less maintenace, is lighter, and costs considerably less. However, carved wood signs, either left natural (clear-coated only) or stained, can be very beautiful.

Stained wood signs and plaques, after carving, are first sanded by hand with fine grit sandpaper, cleaned with compressed air to remove all dust, and then stained using one of the MINWAX color stains below, either by hand or using a spray gun. After the stain is wiped off and dried, the sign or plaque is then lightly sanded with steel wool, and a second coat of stain is applied and wiped off. After thorough drying and inspection to ensure the color is even, the sign or plaque is clear-coated twice with a Matthews MAP polyurethane acrylic clear for protection and beauty. Either a satin, semi-gloss, or gloss sheen can be selected. This process results in beautiful, furniture-grade finishes. The most common stains used for our wood signs and plaques are Red Mahogany, Gun-stock, Dark Walnut, and Golden Oak, shown below, but any can be selected.



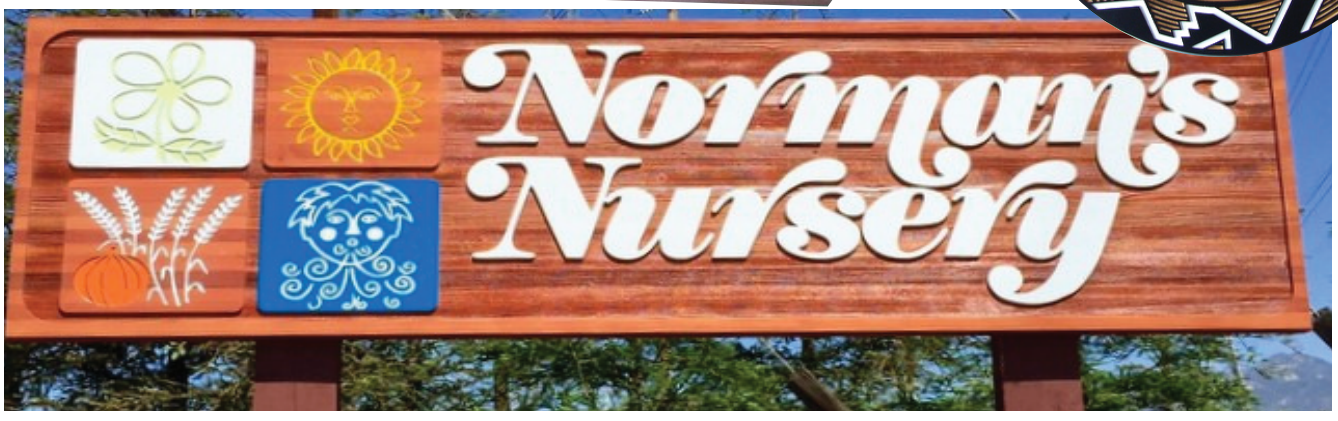
Multi-Level Raised Text & Artwork
2.5- D Wood Signs & Plaques

The 2.5-D style of wood sign has flat top surfaces of text, artwork and borders, usually carved at two to five levels of relief or raised elevation, whereas 3-D wood signs and plaques have rounded or curved top surfaces like bas-relief sculptures. It is much faster and requires less labor to design and carve 2.5-D signs than 3-D signs, so they have lower prices. 2.5-D signs use exactly the same wood species, and stain (or paints) as 3-D wood signs & plaques. Most wood signs are carved in 2.5-D raised relief; fewer are engraved, described on page 36.

Multi-level 2.5-D signs and plaques have the backgrounds removed by carving out the wood with one of the CNC routers at one or more different levels. Usually the text and borders are at the highest level, and some areas of the artwork are carved out with lower elevation relief flat surfaces. Multi-level CNC routing offers more design versatility and an enhanced dimensional effect compared to sandblasting alone, which can produce only rough lowered surfaces, whereas CNC routing can produce smooth carved surfaces. After the sign has been carved with a router, some areas of the sign can be sandblasted, as discussed on page 34.

Most outdoor painted 2.5-D signs are made of HDU instead of wood, because, unlike wood, outdoor HDU signs will not crack or rot, because they do not absorb water like wood. However, wood is tougher and stronger than HDU; for example, the National Park Service requires all outdoor painted signs be made of Cedar wood, rather than HDU. Wood signs or plaques are most suitable for indoor or sheltered locations, or where a stained wood look is required for outdoor locations.

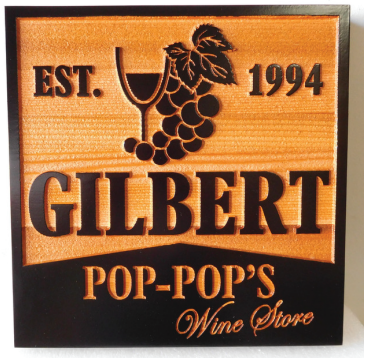
Multi-Level Raised Text & Artwork
2.5- D Wood Signs & Plaques



Sandblasted Wood Signs & Plaques

Sandblasting different areas is an no-cost option for any wood sign or plaque. It can add dimensionality and an interesting texture for more formal signs, or an aged look for rustic signs. It is most dramatic for softwood wood species with pronounced grain structures such as Redwood or Western Red Cedar, but can be used for hardwoods as well. Usually sandblasting is performed on some on all or part of the backgrounds, but it can also be done on the interior of letters or some areas of the artwork

The wood sign or plaque is always carved first with a CNC router, where 1/2 to 3/4 inch of the wood substrate is removed. The areas that will not be sandblasted are then covered and protected with a sandblast mask which is cut to shape using the digital design file.Typically text, borders and most or all of the artwork are masked off, because it is usually desired for these areas to have smooth surfaces. The sign is then blasted in a sandblast booth using special nozzles and controlled pressure from a high capacity compressor. The texture that results from blasting has an appearance that depends on the grain structure of the wood species, the blast pressure and the amount of time spent on blasting, we do not use wire frames for sandblasting wood, only for HDU, because the natural wood grain provides the texture. The other areas of the sign that are not blasted are smooth, and are finished by fine sanding. Special custom textures can also be carved into backgrounds using the CNC routers rather than by sandblasting.



Carved 3-D Wood Signs & Plaques

This style of carved wood sign or plaque has artwork carved with curved top surfaces .This type of carving is referred to as bas-relief (French term, originally from Latin, meaning low-relief) ,and refers to artwork that is carved with curved surfaces in a way so that the artwork protrudes only a moderate amount from the sign's flat surface, with no undercuts.

Custom 3-D wood plaques or signs may require an additional artwork fee to develop 3-D CNC router tool path files if a file for that artwork has not previously been developed, or it is not commercially available. However, most wood 3D plaques or signs can use one of the 5000 3-D files in our library. Any 3-D sign or plaque shown onthe websites has an existing 3-D file. Existing 3-D files can be scaled to any size or any relief depth with no artwork fee.

3-D wood plaques are usually placed indoors, and are normally stained to show the wood grain rather than painted. If it is to be painted, it is preferable than it be carved from HDU rather than wood, because HDU carves cleaner, lasts longer, and has a significantly lower price than wood. Most 3-D plaques are made from hardwoods such as African Mahogany, American Cherry and Black Walnut, They carve cleaner and have a more refined look than softwoods such as Western Red Cedar or Redwood.

Engraved Wood Signs & Plaques

Engraved (sometimes called recessed or incised) carvings have text, borders and artwork carved into the smooth wood substrate, rather than raised above it as in 2.5-D multi-level signs and plaques, where the backgrounds are carved out and the text, borders and artwork are elevated. Engraved signs are less susceptible to damage because the recessed areas are protected by the elevated backgrounds. However, text can be less readable from side views.

Engraved carvings can be in 2.5-D relief at a single level, or 2.5-D relief at multiple levels, or carved in 3-D bas-relief where the highest area of relief is below the front surface. Text and borders can be engraved by V-carving or U-carving, and artwork can have only the outlines carved, with the areas un-carved, or the artwork area can be recessed into the front surface, such as the horses in the barn sign below.

Engraved signs take less carving time than raised relief signs. They can be elegant or rustic and can have just as detailed artwork as 2.5-D raised or 3-D signs. Engraved text or art are often combined with 2.5-D or 3-D raised text or art on the same sign or plaque.

Engraved Text and Recessed Area Artwork

Engraved Text and Outline Artwork Signs & Plaques

Metal-Plated, Gilded, & Metal-Clad Signs & Plaques

There are several techniques of making signs and plaques with metal surfaces. The most popular and least expensive is to metal-plate a carved HDU plaque or sign , usually 3-D, but sometimes in 2.5-D multi-level or engraved. The carved plaque is then sanded smooth, prime-coated and sprayed with real metal plating, which can be bronze, brass, copper, aluminum or nickel-silver (i.e., German silver). This metal plating is then polished in elevated areas so it is shiny . The background can be coated with a dark patina, or painted by brush or hand-rubbing black or dark brown colors to provide contrast with the elevated polished areas. The entire plaque is then clear-coated with Matthews MAP to prevent oxidation. Figure (A) shows examples of 4 metal-plated plaques, bronze, brass, nickel-silver, and copper. These are described on pages 38-40.

(A) Bronze, Brass, Copper and German Silver Plated Plaques

There are three other techniques we use to make a metal surface (1) gilding by hand the surface of the sign or plaque with 24K gold, fine silver, or copper leaf; (2) cladding, cutting a thin sheet of aluminum in the shape of text, borders and artwork, and epoxying it to raised carved substrate surfaces, usually on a wood plaque; and (3) casting molten bronze or aluminum metal in sand molds. For (3), the actual casting is done by a foundry. These techniques are shown in (B) below (see pages 42-44 for more details.).

(B) Gold & Silver Leaf Gilding; Aluminum Cladding & Cast Bronze Plaques

Bronze-Plated Signs & Plaques

Bronze-plated plaques or signs cost about 1/3 as much a cast bronze, weigh about 1/10 as much, are visibly indistinguishable from cast bronze, and will last just as long indoors. They are very beautiful and have a stately elegance that painted plaques do not have. Bronze is an alloy of copper and tin, and has been used to make works of art, weapons, and containers for over 5,000 years, starting in the Bronze age.

These plaques are made by plating a carved HDU substrate with a thin veneer of real bronze metal, which is sprayed onto the substrate using a cold casting process. The substrate can be carved in 3-D bas-relief, 2.5 multi-level raised relief, or engraved relief, very similar to other carved HDU signs & plaques. The background areas on the substrate can be sandblasted. After the HDU substrate has been carved on a CNC router, it is hand-sanded and sprayed with a special primer. The plaque is then sprayed with a liquid solution of bronze metal particles suspended in a proprietary binder. After curing for several days, the metal surface is polished by machine and then by hand, primarily in elevated areas, until it becomes shiny. To enhance contrast of high relief areas, the background areas can darkened by applying a dark bronze patina, or they can be painted by hand-rubbing, usually with dark metallic bronze or black paint The last step is to clear-coat the surface to minimize oxidation.

Plaques Carved in 3-D Bas-relief

Plaques Carved in 2.5-D or Engraved Relief

Brass-Plated Signs & Plaques

Brass-plated plaques or signs cost about 1/3 as much a cast brass, weigh about 1/10 as much, are visibly indistinguishable from cast brass, and will last just as long indoors. They are very beautiful with a gold-like appearance, whereas bronze is darker and browner. Brass is an alloy of copper and zinc.

These plaques are made by plating a carved HDU substrate with a thin veneer of real brass metal, which is sprayed onto the substrate using a cold casting process. The substrate can be carved in 3-D bas-relief, 2.5 multi-level raised relief, or engraved relief, very similar to other carved HDU signs & plaques. After the HDU substrate has been carved on a CNC router, it is hand-sanded and sprayed with a special primer. The plaque is then sprayed with a liquid solution of brass metal particles suspended in a proprietary binder. After drying for several days, the metal surface is polished by machine and then by hand, primarily in elevated areas, until it becomes shiny. The background areas can darkened by applying a bronze patina, or it can be painted, usually with light bronze or black paint. The last step is to clear-coat the surface to minimize oxidation.

Brass-Plated Plaques without Background Patina

Brass-Plated Plaques with Background Patina / Hand-Rubbed Paint

Aluminum & German-Silver Plated Signs & Plaques

Aluminum and German silver-plated plaques or signs cost about 1/3 as much as cast aluminum plaques, weigh about 1/5 as much, are visibly indistinguishable from cast plaques, and will last just as long indoors. Aluminum has a brighter, shinier finish, and polishes well, whereas German silver (i.e., nickel-silver) has a richer looking, less reflective surface. These plaques or signs can be made in sizes up to 10 feet.

These plaques or signs are made by plating a carved HDU substrate with a thin veneer of real metal, which is sprayed onto the substrate using a cold casting process. The substrate can be carved in 3-D bas-relief, 2.5 multi-level raised relief, or engraved relief, very similar to other carved HDU signs & plaques. After the HDU substrate has been carved on a CNC router, it is hand-sanded and sprayed with a special primer. The plaque is then sprayed with a liquid solution of either aluminum or nickel-silver metal particles suspended in a proprietary binder. After drying for several days, the metal surface is polished by machine and then by hand, primarily in elevated areas, until it becomes shiny. The background areas can be darkened by applying a gray patina, or it can be painted by hand-rubbing , usually with black or dark gray paint, to enhance the contrast of higher areas. The surface is then clear-coated to minimize oxidation.

Aluminum-Plated Plaques

German Silver-Plated Plaques

Copper-Plated Signs & Plaques

Copper-plated plaques or signs, with their reddish-brown color, have a unique beauty and warmth that other metals do not. Cast copper plaques, especially 3-D ones, are generally not available in the US because of the limited market for them. Hower, we make copper-plated signs and plaques in sizes from 6 inches up to 10 feet.

These plaques or signs are made by plating a carved HDU substrate with a thin coating of real copper metal, which is sprayed onto the substrate using a cold casting process.

The substrate can be carved in 3-D bas-relief, 2.5 multi-level raised relief, or engraved relief, very similar to other carved HDU signs & plaques. After the HDU substrate has been carved on a CNC router, it is hand-sanded and sprayed with a special primer. The plaque is then sprayed with a liquid solution of copper metal particles suspended in a proprietary binder. After drying for several days, the metal surface is polished by machine and then by hand, primarily in elevated areas, until it becomes shiny.

The background areas can be darkened by applying a bronze patina, or they can be painted by hand-rubbing paint, usually black or dark bronze , to enhance the contrast of higher areas. A green copper patina can also be applied. The surface is then clear-coated to minimize oxidation. If it desired for the copper to naturally age over many years so that it acquires a greenish copper color, no clear-coat is applied.

Copper-Plated Plaques

Gold-Leaf Gilded Signs & Plaques

Gold-leaf gilding of plaques and signs makes them unique and special, and puts them in a class above other carved plaques. Gilding is an ancient art going back to the Egyptians in 2000 BC and is being practiced today by only a few skilled artisans. Gold leaf gilding can be used to enhance artwork, text and borders on both our HDU and wood plaques and signs. Gold leaf will never tarnish, and retains its yellow brillance for centuries, even outdoors, because it is chemically inert and does not oxidize.

Our plaques and signs are gilded by hand using only pure 24K gold leaf from the premier supplier of gold leaf in the US. Gold leaf can be applied to virtually any area of carved 3-D, 2.5-D multi-level, or engraved carved signs or plaques, but is usually applied to text, borders, and artwork. A few examples are shown below. It can be combined on a single plaque with painting (including metallic gold or silver paint), stained wood, or metal-plating, described in previous sections. After the HDU or wood substrate is carved on a CNC router, it is sanded by hand very smooth and sprayed with a special primer. The plaque is then gilded by an skilled and experienced artisan using hundreds or sometimes thousands of individual thin gold leaves pressed by hand to fit the contours of relief of the plaque. Thin gold leaf is very malleable and adheres closely to the substrate using a special glue. Excess leaf is trimmed, the surfaces are cleaned and burnished with a small soft brush to give a high shine, and the leaf is then clear-coated twice to protect against dust and wind.

Gold-Leaf Gilded Plaques Carved in 3-D Bas-relief

Plaques Carved in 2.5-D Multi-Level Raised or Engraved Relief

Silver and Copper-Leaf Gilded Signs & Plaques

Silver and copper-leaf gilding of plaques and signs adds visual interest and elegance to plaques and signs. Silver or copper leaf gilding can be used to enhance artwork, text and borders on both our HDU and wood plaques and signs. Although silver and copper leaf gilding is less popular than 24K gold leaf gilding, they can make a sign or plaque stand out from painted signs.

Our plaques and signs are gilded by hand using only pure (0.99 fine) silver leaf or high-quality copper leaf, supplied by from the premier supplier of metal leaf in the US. Silver or copper leaf can be applied to virtually any area of carved 3-D, 2.5-D multi-level, or engraved carved signs or plaques, but is usually applied to text, borders and art. A few examples are shown below. It can be combined on a single plaque with gold leaf, painting (including metallic gold or silver paint), stained wood, or metal-plating, described in previous sections.

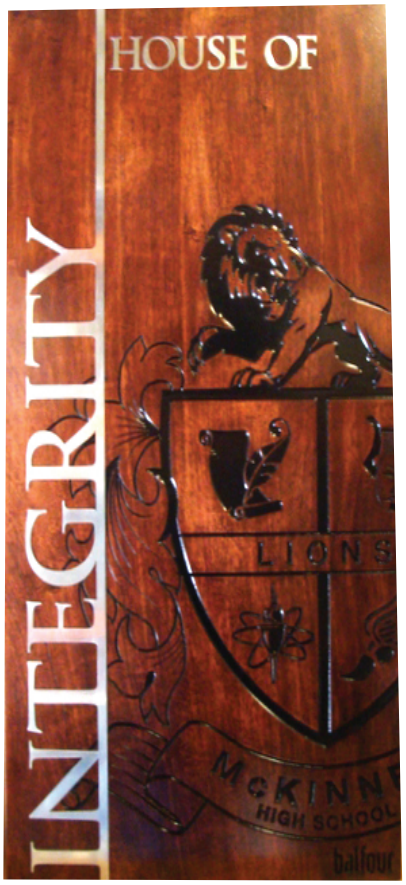
After the HDU or wood substrate is carved on a CNC router, it is sanded by hand very smooth and sprayed with a special primer. The plaque is then gilded by an skilled and experienced artisan using hundreds or sometimes thousands of individual thin silver or copper leaves pressed by hand to fit the contours of relief of the plaque. Thin metal leaf is very malleable and adheres closely to the substrate using a special glue. Excess leaf is trimmed, the surfaces are cleaned and then burnished with a small soft brush to give a high shine. The leaf is then clear-coated twice to protect against oxidation.

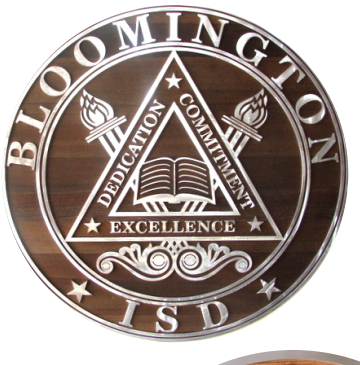
Silver-Leaf and Copper-Leaf (bottom right) Gilded Sign & Plaques

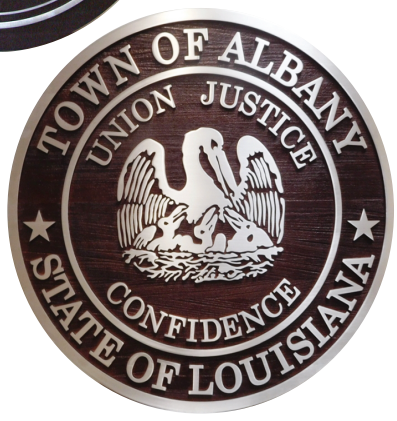
Aluminum Cladding on Wood

An interesting and dramatic feature for wood plaques, and some signs, is the use of aluminum cladding on raised areas of carved wood. This is used for 2.5-D multi-level raised relief carved signs, where the text, borders, and art-work is carved in a flat plateau above the background areas. A thin sheet of aluminum is precisely cut with our CNC router in a pattern matching the carved areas of the wood, so that it fits over and covers the plateaus, where it is epoxied to those surfaces. The aluminum is flat and polished, and contrasts with the rougher darker stained background of the wood.

Any wood substrate can be used, including Western Red Cedar, Redwood, and Mahogany. The backgrounds can be sandblasted, but the plateaus aret be smooth. After the aluminum cladding is installed on the plaque or sign , it is clear-coated twice. Aluminum cladding is only suitable for indoor plaques or signs.







Separate Cut-out Letters and Artwork

Separate cut-out letters and artwork mounted on signboards provide attention-getting and interesting design features for signs and plaques. These are carved in 3-D, or 2.5-D multi-level raised relief from HDU or wood, and can be painted, stained (for wood) or metal-plated. They can also be gilded with gold, silver or copper leaf.These are usually made with several threaded studs imbedded in the back of each letter or art piece, which are inserted and epoxied into holes in the signboard.

These letters or art pieces can be as small as 2 or 3 inches for small signs or plaques or as large as 5 feet for large signs, and every size in between. These are all custom design and manufactured in our factory. However, when appropriate and cost-effective, we also purchase standard metal letters from Gemini or other suppliers to mount on our signboards.

Letters can have any dimensional design or font style. Popular styles are outlined letters where the outlines of the letters are higher or lower than the interior of the letters, as in the top three signs below, Other popular styles include 3-D carved prismatic letters, shown in the bottom two signs. Custom art pieces are generally carved in 3-D relief, like the seashell in the World Cafe sign below. These can be carved from HDU, and they can be mounted on either an HDU or a wood signboard.

High-Density Polyethelyne (HDPE) Signs & Giclee Plaques

HDPE Signs. Signs made from HDPE are strong and tough, and are an excellent choice where signs may take abuse from impacts, graffitti, or rough handling. They are suitable for parks, playgrounds, street signs, golf courses, parking lots, and other public areas where people can touch the signs.

They can be made quite attractive, but cannot be carved in 3-D or 2.5-multi-level relief. Text in any font style can be engraved using a CNC router which carves a u-profile. Art can be incised to a depth of 1/8 to 1/4 inch. HDPE signs cannot be painted , but the sheets come in many different colors and text and art can be filled in engraved areas with several colored epoxies. HDPE signs are about half the cost of HDU signs, and will last longer than HDU or wood without the need for repainting every 5 to 10 years. Our HDPE signs use 1/4 to 1/2 inch thick King Color-Core , which uses a sandwich construction with the middle layer that is a different color than the outer layers.

Acrylic and Mahogany Giclee Plaques. We also make smaller (8 to 24 inches) custom 2-D flat (no carved surfaces) acrylic and Mahogany plaques where the text and artwork are digitally printed on long-lasting vinyl appliques. In addition to vector drawings, we can use hi-res photos of any of our previously made 3-D carved HDU, wood and metal-plated plaques.The giclee applique completely covers the acrylic plaques. The Mahogany plaques show a stained Mahogany border. These plaques are 20% to 30% the price of carved plaques, and look very similar to them from a distance.

Examples of HDPE Signs

Examples of Giclee Plaques

Wood Posts and Sign Supports

Wood posts and horizontal beams are a traditional way of supporting post-and-panel and free-standing hanging signs mounted on a post. Wood posts are usually square, typically 4 x 4 or 6 x 6 Douglas Fir or Cedar, but they can also be round, 6 to 8 inches in diameter.

Post-and-panel signs usually have a post on either side, which is required for double-faced signs. Single faced signs have the option of 2 or 3 posts in back of the sign,which provide stronger support than side posts. Post-and-panel signs wider than 6 or 8 ft, especially HDU, may require a bottom horizontal beam, typically a 4 x 4, attached to the two posts with steel brackets, to support the sign. Thick (2 or 3 inches) wood signs may not require this beam. Sometimes a top beam is also put on top of a post-and-panel sign for decorative effect, rather than structural reasons, unless the sign is hung from the top beam, as shown below.

Large signs hanging from posts usually require a 6 x 6 wood post and either a 2 x 4 or 4 x 4 lateral beam or a steel scroill bracket, with examples shown below. Because of the cantilivered load, any lateral beam must be attached at its end with a diagonal brace of some kind, whether it be a steel scroll, a diagonal wood brace, or occasionally a steel cable.

We make custom decorative wood posts , lateral beams and scroll brackets for any type of of post-and-panel or hanging sign. These come in kits with all hardware included ready to install, with instructions.

We also make single Cedar and Redwood posts with numbers and logos engraved, topped by carved finials for trail markers and campsite markers.

Metal Posts, Scroll, and Sign Mounting Brackets

Steel and aluminum hardware is almost always required to mount wall-mounted, post-and-panel, and hanging signs and plaques. For post-and-panel signs, hardware may include posts, horizontal bars or scroll brackets, and side-brackets. For wall signs or plaques hardware may include threaded imbedded studs, Z-clips, and screws and bolts. For hanging signs, hardware can include posts, post bases and finials, scroll brackets, perimeter frames, eyehooks, snaplinks and chains. Much of this hardware can be purchased off-the-shelf, but some of it, such as perimeter frames, side brackets, and imbedded studs must be custom fabricated and installed on the sign. We make this hardware, which should be ordered at the same time as the sign or plaque. This makes the sign much easier to install. our signs in shipped form with instructions and templates. All hardware s primed coated and painted in your choice of colors.

Post and Panel Signs. Side brackets , made of 1 to 2 inch wide flat bar steel, make it much easier to install a sign between two square wood or steel posts using only screws. These extend above and below the sign, and are installed on the sign before shipping. “The Courts” and the “Colonial Sign below show these. These can be combined with a custom-fitted flat bar perimeter frame to give extra strength to larger HDU signs.

Hanging Signs. We can provide square or round steel or aluminum posts and scroll brackets, custom fitted to a sign. For additional strength, a custom fitted perimeter or top side steel flat bar frame can be made with welded eyehooks or struts. All of the HDU signs below have perimeter frames.

Steel Post , Scroll Brackets , Frames and Brackets Installed on Signs

Large Signs Wall & Post-and-Panel Signs

We make large HDU or wood signs, as wide as 25 feet and as high as 10 feet. We design and fabricate large wall signs, monument panel signs, roof signs, and post-and-panel signs. We also make large inside and outside wall plaques up to 10 ft in diameter. We prefer making large signs and plaques in a single piece, with a steel or aluminum internal structure, back plate, or perimeter frame. However, very large signs may have to be shipped in two or more pieces and assembled on site, because of size limitations in shipping on freight box trucks. The largest sign height for single-piece box truck shipping is about 8 feet, otherwise the sign must be shipped on a more expensive flat bed truck. Sign width can be up to 30 feet for a box or flatbed truck.

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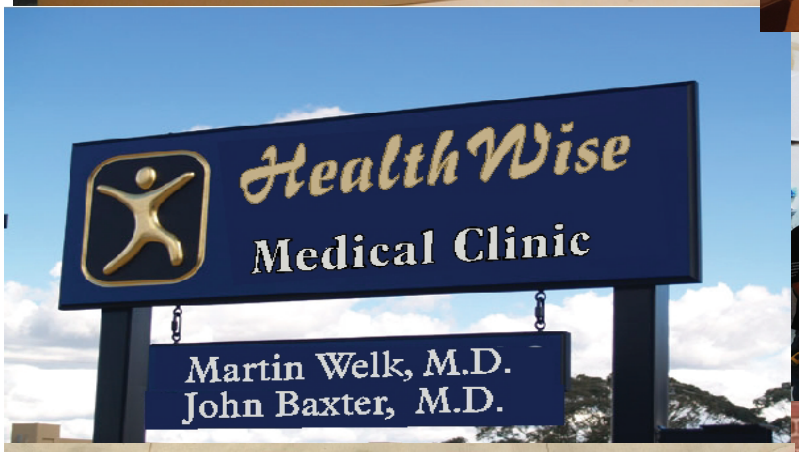
Maximum sign size depends on the material. The maximum HDU sheets available are 10 ft x 5 ft and 5 inches thick, and our maximum router table size is 12 ft x 5 ft. HDU signs larger than this have to use pieces of multiple HDU sheets bonded together and strengthened with either an internal steel frame, an aluminum backer plate, or a steel perimeter flat-bar frame with a lattice back. Wood signs 4 inches inches thick can be as long as 18 feet and 5 ft high without requiring additional steel or aluminum support structure. Wood signs are made of strips of wood which are edge-glued under high pressure,

HDPE signs are usually limited to a single sheet of ColorCore HDPE 8 ft x 4 ft. Multiple HDPE sheets can be joined and held together by a steel perimeter frame, but seams will show, unlike HDU or wood, where the seams where the panels which are joined are not visible because of edge butting and sanding.

Large Post-and-Panel, Monument and Wall Signs

Large Wall and Post-and-Panel Signs (continued)



Large Sign Steel and Aluminum Structural Supports

We design and fabricate custom steel and aluminum structures to support and strengthen large HDU and wood post-and-panel and wall signs and plaques. HDU signs require more support than wood signs, and post-and-panel signs require more support than wall signs and plaques. Steel or aluminum supporting structures are typically required for HDU signs larger than 6 ft in width, and wood signs longer than 10 feet, but the need for steel or aluminum supports, and the type of support, depends on the material (wood or HDU), sign thickness, how the sign is mounted, and if separate panels of HDU or wood have to be joined together to make a signboard.

Post-and-panel signs can use three types of supports. Single-faced signs can be supported by (1) an aluminum sheet back plate, cut to the shape of the sign, or alternatively (2) a steel flat-bar or square tube perimeter frame, shaped fit closely to the edges of the sign, This method can utilize horizontal or vertical steel flat bars or square tubes on the back side of the sign, which can be welded in a lattice pattern to the perimeter frame and steel posts in multiple places. The photo below right shows this type of support for a National Park sign. .

Method (3) , an internal square tube welded frame embedded and epoxied between two sheets of HDU (see photos below left), is used for **double-faced signs** since the structure is not visible from either side. It can also be used for single-faced post-and-panel and large wall signs or plaques. This method is often used for large wall plaques because threaded mounting studs inserted into the wall can be welded to the internal frame in multiple places, rather than imbedded in the HDU. Usually large HDU wall signs and plaques require significant steel supports and thickness because of the risk of damage during shipping and installation. Thick (2 -3 inches) wood signs require less support.

Internal Steel Frames (left 2 photos) and Steel Back Support (right)

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