

SHORE DESIGN GUIDE



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COMPASS
IRONWORKS

Elegance and Integrity

At Compass Ironworks, we carry into the 21st century the Amish traditions that forged our artistic sensibilities: honesty, integrity, and dedication to family, community, and craft. We do no mass production here; every installation reflects your unique needs. We are master craftsmen who work with both traditional and 21st century tools. At the end of the day, we close the doors and leave our tools at the shop, not to be touched until the next workday begins.

For more information about Compass Ironworks, please contact us Monday through Friday at (717) 442-4500.

WELCOME

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Please use this guide as a tool for selecting the design, style and finish that best suits your property, lifestyle and needs. Most of the work we do for our clients is custom. Should you have an idea that is not in this guide, we will work together to custom craft the appropriate design for your property. Things to consider prior to our next meeting: Design, finish, details and your ideas.

The Craftsmen

The craftsmen at Compass Ironworks are experienced craftsmen from Lancaster County, dedicated to creating works of art out of metal elements. Every craftsman works directly with the client, architect or designer to make sure the client's vision is captured for the project. And at the end of the project, another person has become a satisfied client.

These craftsmen can provide guidance through the entire process. Starting at the inspiration stage, they can provide various examples of past work. If you need a custom design, they can provide design drawings for a small fee, then assist you in the design phase. The following stage would be a pre-fabrication meeting for the design stage, to evaluate all structural, anchoring and code requirements involved, making sure all bases are covered. Then comes the crucial step of actually crafting the project, which is commenced by many onsite measurements and sometimes even building templates. The actual forging, welding and fabrication is followed by extensive clean-up. Next is the in-house pretreatment and the baked-on powder-coat finish. Finally the entire delivery and installation is coordinated and managed by the craftsman that built the project, which makes for a smoother transaction.

The Material

Classic wrought iron has been the choice material to express the taste and character of elegant homes for hundreds of years. Many beautiful homes reside on waterfront properties, though. These homes are exposed to harsh weather conditions, especially from the salty atmosphere, which causes the wrought iron element to corrode.

The ingenious craftsmen at Compass Ironworks have developed a solution to this challenge, keeping the classic beauty of the wrought iron look and feel intact. Using solid welded aluminum and special coatings, Compass Ironworks is able to craft one-of-a-kind, customized works of art for beautiful, maintenance-free, lasting impressions. The final product—whether gates, railings, fences or décor—handcrafted from solid aluminum, exude the same classic elegance of welded wrought iron, without the danger of rusting. The refinement of the material and design, coupled with the durability of the metal transcends time and creates stunning enhancements on today's exquisite homes.

THE WATERFRONT HOMES

For centuries, waterfront living has provided access to breathtaking views of the sea with its white-capped waves and glistening surfaces. Waterfront properties, although beautiful, are often high maintenance. So how does a waterfront homeowner add to the beauty and functionality of their home without added upkeep? Compass Ironworks is committed to using the earth's elements to make these waterfront homes as beautiful as their natural surroundings.

And to keep them attractive and safe for decades to come, they craft their works of art out of aluminum that never rusts. Even when the salty mist from the ocean laps at your outdoor railings, gates, fences or aesthetic décor, you can be assured that their product will withstand the elements of the harsh sea air. Compass Ironworks wants their clients' homes to reach their full, stunning potential with beautiful, handcrafted décor that will withstand the test of time.



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RAILING OPTIONS



Fairweather

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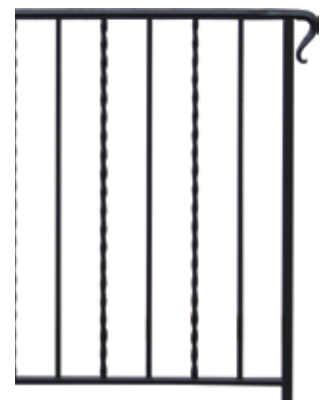
Cheshire Belly



Cheshire Belly (side view)



Cheshire Straight



Gladwyne

Railing Options

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Hampshire Belly



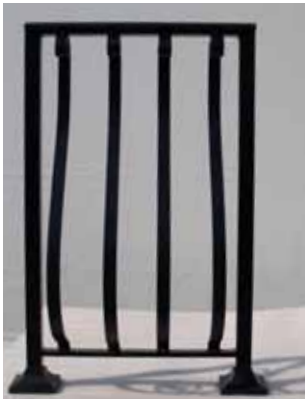
Hampshire Belly (side view)



Hampshire Straight



Hammered Basket



Huntingdon Belly



Huntingdon Belly
(side view)



Manchester Belly



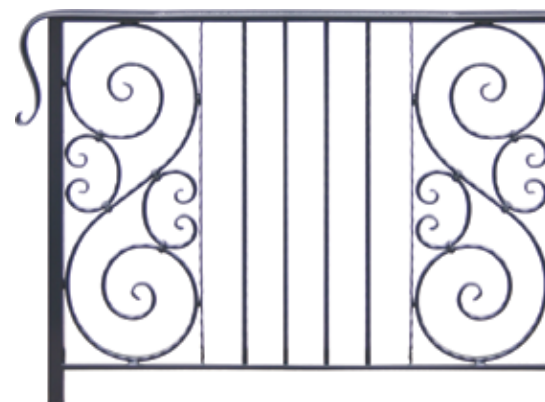
Manchester Straight



Standard 3-Rail



Standard 4-Rail



Sussex

Railing Options

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Tewksbury Straight



Tewksbury Belly



Tewksbury Belly
(side view)



Mainline

Caprail Transition Choices



Lamb's Tongue



Volute



Petite Lamb's Tongue

❖ YARD FENCES



Custom swimming pool fence makes a subtle statement by blending into the environment

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Bryn Mawr



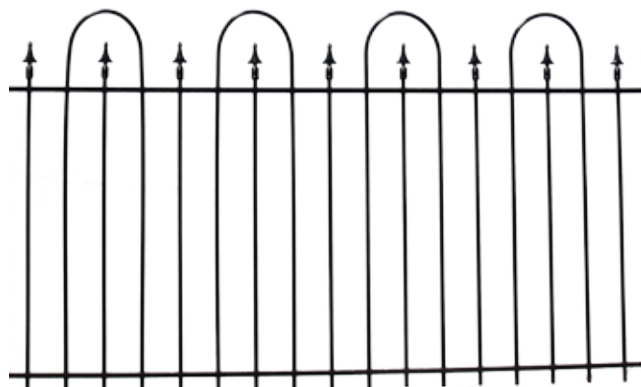
Mainline with Rigibar



Stafford with knuckles



Stafford with Rings



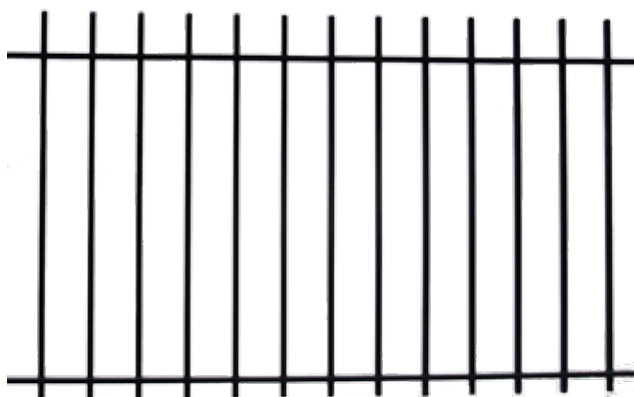
Devonshire



Saratoga 3 Rail with Rigibar



Saratoga with Rigibar



Saratoga with Classic Pickets



SECURITY FENCES



Villanova fence provides security for a private estate

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Detail of Privacy Fence Top (The top portion can be your choice of style to fit your taste)



Finials

These fences are swimming pool code compliant



Stafford with Rings in Solid Aluminum, 5/8" Pickets



Rumson in Solid Aluminum, 3/4" Pickets



Mainline in Solid Aluminum, 5/8" Pickets



Villanova 6 Ft high in Solid Aluminum, 1" Solid Pickets



Manhasset Privacy Fence



Close-up of time tested panel and post connection detail

❧ ESTATE GATES



Montauk

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Red Bank with Beverly Column



Palisades



Mahwah



Allendale



Orange



Vail



Neshanic



Chester

Estate Gates

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Buena



Rumson



Bayshore



Mainline



Pine Beach



Roselle Park

GARDEN & POOL GATES



Canterbury

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Bryn Mawr



Villa



Bayside

POSTS

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Beverly Column



10" Hampton Post
with Base Detail



Linden Post



Hampton Post



Acanthus



FINISHES AND TEXTURES

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By embracing the visual dimension of textures on Ironworks, you can really elevate the character and expression on your project. It gives you the ability to portray design sensitivities and take your project from ordinary to extraordinary.

For instance the Chiseled Center replicates blacksmith hand-hammering with a chisel, creating line in the picket for authenticity, and if you combine another texture as well, you really get the hand-hammered look.

To add even more visual character, if you add a twist to this picket you really transform a standard picket into a 3-dimensional visual experience.

Left: A great example of how twisting transforms the visual experience



#1 Chiseled Center

#2 Chiseled Center in Wood Grain

#3 Wood Grain

#4 Chiseled Center in Italiano

#5 Italiano



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#6 Chisel Line
with Surface
Hammering

#7 Surface
Hammered

#8 Chisel Line
on Tuileres

#9 Tuileres with
Italiano

#10 Tuileres



#12 Chisel Line
on Cadiz



#13 Cadiz



#15 Cadiz and
Italiano



#16 Chiseled
Center on
Chatsworth

#17 Chatsworth

#18 Chiseled
Center on
Chatsworth
& Cadiz

#19 Chatsworth,
Cadiz and
Italiano

#20 Chiseled
Center, Cadiz
and Italiano



#21 Chiseled Center
and Hammered
Corners

#22 Hammered
Corners

#23 Chiseled Center
and Flat Corners

#24 Flat Corners

❧ BEACH HOUSE CASE STUDY

The request was for a distinctive railing and fence that provided class and elegance without obstructing views of the ocean. The ocean held another challenge of salt spray; the project had to withstand the elements of the waterfront. The fence had to meet all building codes and provide security. The designer wanted a custom design incorporated into the gates, fences and railings. And the entire project was on a tight time line in order to get a CO and allow the client to host a special event.

All code requirements were evaluated so that the special design did not violate any requirements. The custom design was then approved by the designer for fabrication. Solid aluminum was used throughout and custom pieces were designed and fabricated. The lab tested, super-durable powder-coat finish was applied. The tight deadline was further strained when an onsite miscommunication was discovered at installation, requiring additional fabrication. But the entire Compass Ironworks team pulled together and made things happen. The project was completed in time for the CO for the client's scheduled event.



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IT'S ALL IN THE DETAILS

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“Breakthrough” in metal finish technology shrugs off harsh salt spray conditions on waterfront homes....



The top piece was finished with the Compass Ironworks method, the bottom piece was coated using an industry standard method. See the difference?! Note that on the top piece the powder-coat was even cut to the substrate before the piece was put into the salt-spray chamber and there is still no delamination of the finish.

Waterfront homes are for enjoyment and relaxation, right? But ask anybody who owns one: the upkeep and maintenance can be anything but relaxing. The harsh salt spray environment corrodes and deteriorates everything that remains exposed. Over the years, builders have struggled and experimented with various aspects of this problem. Many solutions have been promoted, like using vinyl products, and other man-made materials that resist the weathering process. But homeowners who wanted wrought iron on their homes faced a dismal future of constant painting and maintenance to combat rust and corrosion.

Waterfront homeowners wanted the home enhancement and timeless classic appeal provided by wrought iron. But the investment was not sound if they had to constantly maintain it while trying to relax on vacation. It became the accepted norm that wrought iron and waterfront homes don't mix.

All this was very frustrating to us folks at Compass Ironworks, so we set out to find a solid solution.

First we took a hard look at all the solutions tried so far. We also interviewed industry experts to find out why they didn't work.

Along the way we even went to the extra expense of finishing 13 “test” pieces of aluminum and steel, each with a different finish/method or combination of finishes/methods and sent them to a lab where they were subjected to a brutal environmental test known as ASTM B-117 (a salt-fog chamber) for 2750 hours! According to the Architectural Products Manager at Tiger Drylac, this test is similar to 15 years of actual elements.

The results were an amazing eye-opener, giving us a first-hand look at what works best and how we can implement that in our finishing program.

The first change was to eliminate paint in exchange for a “baked on” epoxy powder-coat. This fixed the flaking and peeling problem of paint, but also presented its own problem: the application which is more difficult than paint.



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Diagram of a Compass Ironworks Resilient Powder-Coat Finish cut to substrate that withstood 2750 hours in a Salt-Spray chamber test without delamination.



Then we switched metals from iron to aluminum. Since aluminum is rust free, that fixed the rust problem. But, as shown in our tests, aluminum will still corrode if it's not properly coated.

For quality control, we moved from outsourcing our coating process, to an in-house system where we can manage every detail.

Then we focused on surface preparation of the metal... All aluminum pieces are first sandblasted to remove all mill scale, dirt, grease and welding residue and then washed in a hot water chemical bath and double rinsed to make cleanliness an absolute certainty.

In addition, an etching and sealing chemical is then applied to promote adhesion of the surface coating.

Actual coating starts with a first coat of zinc-free primer, and a pass through the curing oven. Then, while the pieces are still hot, a second finish coat is applied. A super-durable powder-coat, specially formulated for coastal areas, is used. Spraying while hot is the "key" to total coverage of all corners, nooks and crannies with forged scrolls, etc.

Finally a third pass through the spray chamber for another finish coat and a long slow passage through the curing oven to cure and harden.

The result is a finished product that will provide decades of maintenance-free beauty.

The bottom line lesson here is that a step-by-step, no cutting corners policy, combined with modern technological advancements, is the breakthrough we were seeking. You can now buy with confidence, knowing that Compass Ironworks is the leader in finish integrity.

Don't just take our word for it. Our clients are our friends and they will be happy to tell you how much their Compass Ironworks creations mean to them. Call today to arrange a meeting for your project and see for yourself!





In the interest of continuous improvement so that we could be assured of providing our clients with the best value possible. We built this salt spray chamber to ASTM B-117 standards at 5% salinity, as compared to ocean water which is 3.5-3.9% salinity. We also added UV exposure and variable temperate to really test the pretreatment and finish.

Online sources equate 100 hours of salt spray to 1 year of beach life, we felt that is too lenient, so we have factored 200 hours to equate to 1 year of beach life. We currently have 8,000 hours of data, which is equivalent to 40 years at the beach!

Our results have reinforced what we had already known; sandblasting is absolutely crucial. Test pieces with no blast flaked off at 1091 hours vs. a comparable piece with blast is still holding up at 8228 hours. We also verified the importance of the robust 3 coat system that we utilize. A single coat of powder has microscopic pores throughout it, which allows moisture to seep through and compromise the finish. Having the second coat greatly reduces this as these microscopic holes align very rarely. However, adding a 3rd layer of powder completely eliminates that problem. In the tests, a single coat test piece failed at 1861 hours. We also confirmed the validity of using the more expensive marine grade castings. Industry standard aluminum castings are poured with a mixture of copper, zinc and aluminum, this mixture has a lower melting point

and is significantly more cost effective, however, when exposed to the ocean air, these metals have a galvanic reaction similar to a car battery terminal. By removing the copper and zinc and alloying the aluminum with magnesium, we achieve castings that are impervious to the salt air elements. Coincidentally this alloy is also used by the U.S. Navy. In the salt spray chamber, the industry standard piece failed at 2103 hours, versus the Marine Grade aluminum piece being pristine after 8228 hours. In addition to confirming our knowledge this test chamber has also given us insight into possible improvements that we can incorporate into our pretreatment and finish process.

| Hours | Name | 251 | 363 | 485 | 641 | 812 | 1032 | 1317 | 1776 | 2001 | 2253 | 2484 | 2730 | 2990 | 3236 | 3499 | 3816 | 4079 | 4319 | 4591 | 4830 | 5060 | 5301 | 5567 | |
|-------|--|------------|-----|-----|-----|-----|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|--|
| | | Rate at hr | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | Sandblast Primer 2 Top coats | 941 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | |
| 2 | Sandblast Wash Sealer Primer 2 top coats | 941 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | |
| 3 | Sandblast Wash Prime 1 top coat | 941 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | |
| 4 | Pickn-channel Sandblast Wash Prime 2 coats | 941 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | |
| 5 | Dugan Sandblast Prime 2 top coats | 941 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | |
| 6 | Dugan Sandblast Wash Prime 2 top coats | 941 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | |
| 7 | Uncoated Sandblast/Wash Prime 2 top coats | 941 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | |
| 8 | Sandblast Wash Prime 2 top coats | 941 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | |
| 9 | Sandblast Wash Prime 2 top coats | 941 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | |
| 10 | Sandblast Wash Prime 2 top coats no phosphite | 941 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | |
| 11 | Sandblast Wash Prime 2 top coats phosphite | 941 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | |
| 12 | Line Dragon Sandblast Wash Prime 2 top coats | 941 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | |
| 13 | Wash Primer 2 Top coats | 941 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | |
| 14 | Primer 2 top coats | 941 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | |
| 15 | Sandblast Wash 1 top coat | 941 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | |
| 16 | Al Stevens Sandblast Wash Original Prime 2 coat | 941 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | |
| 17 | Al Stevens Sandblast Wash Prime 2 coats no notch | 941 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | |



SHORE INSPIRATION IDEAS



Hurricane resistant railings are the perfect fit for this well built shore property.

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Traditional blacksmithing techniques provided in aircraft grade aluminum.



Terrace railings and posts have a cohesive effect on this shore home.

Beautiful railing
overlooks bay waters





Beautiful entry way with radiused railing for visual optimization.



Detail of forged medallions.



Solid aluminum provides classic rigidity without obstructing the views of the pool.



Entire house has beautiful belly style railings

Three floors of custom railing accentuate the architecture of this shore home





Modern railing style provides safety for this dockside terrace.



Solid aluminum is indistinguishable from Iron, yet withstands the elements.



Panoramic view of 3 levels of curved terraces.



The Manchester style railing adds excellent design taste.



Center icon adds personality without violating building codes.



Aircraft Grade aluminum railing in statuary bronze.



Shore home gets phenomenal facelift with the inclusion of custom railing.





Hand forged railing provides beauty to this bayside stair.



Marine Grade castings are a great way to integrate post character without jeopardizing our planet's resources.



Panoramic view of a spectacular shore home.

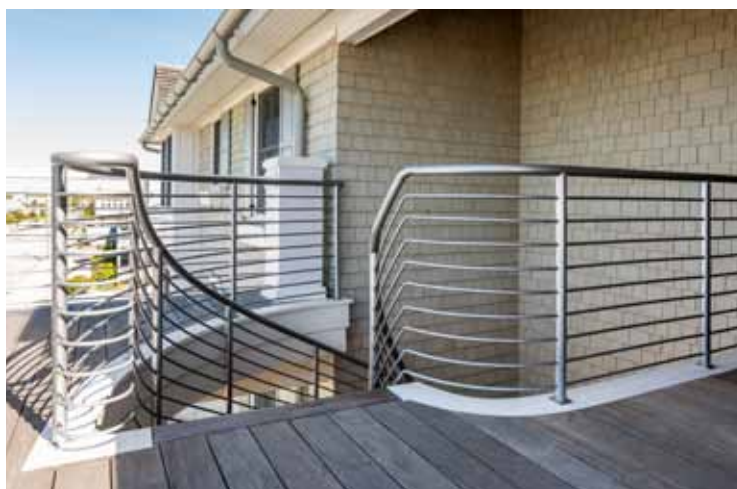
Ipe deck and
Statuary Bronze
railing have a
tranquil and
cohesive effect.





2 Levels of suspended radial stairs

Contemporary stair railing has graceful level to stair transition



Shore Inspiration Ideas



Contemporary railing design for front stairs on water front home



Contemporary solid aluminum railings

Bronze metal railing and terrace railing accentuate a beautiful pool area





Powder-coated solid aircraft grade aluminum pool fence

Bronze handrail and front wall grill design in a geometric layout





Beautiful solid bronze grills add beauty to the landscape



Solid bronze
handrails meets
code for stair railing



Flared stair railings add beauty to the surroundings of this exterior stair



Awesome terrace railing using special components for the shore environment



Forged aluminum
pool gate



Forged exterior
aluminum railing



Sweeping exterior staircase railing on a shore home

Solid aircraft grade
forged aluminum
balcony railing





Multiple levels of terrace railings for panoramic views



Terrace railings overlooking the bay



Spiral stairs with custom railing to match all terraces



Custom railing anchored into brick will provide rigidity, safety, and beauty for years to come.



OCEANFRONT CASE STUDY



Close-up detail of custom belly picket



Custom aluminum Nantucket post

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A client was building a shore home on Absecon Island. The couple and the designer agreed on the same railing design, however, the homeowner wanted a belly railing for added visual dimension. The designer felt that the standard 8" belly style clashed with the overall aesthetics of the house; he wanted to use straight pickets. The solution we provided was a subtle 3" belly that added the elegance the client desired, yet did not break the harmony in design.

We created the picket, starting with a plain square bar, giving it the hammered texture, custom machining the collars, and then slipping them over the picket. After that process, custom forging dies and belly dies were made. The entire picket was then put into the forge and heated to forging temperature. First the pickets were forged out and then the belly design was created.

The architect specified a Nantucket style post, but the client and the designer did not want wood or vinyl. We used raw aluminum extrusions to create the desired post structure and then capped it with a custom marine-grade casting.

The final challenge was to get a powder-coat that withstood the elements and was in alignment with the color scheme. Standard colors were either too dark or too light. We provided the solution of custom blending powder to match the client's color preference.



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Belly railing and Nantucket posts overlook the beach



Custom spiral stair matches terrace railing