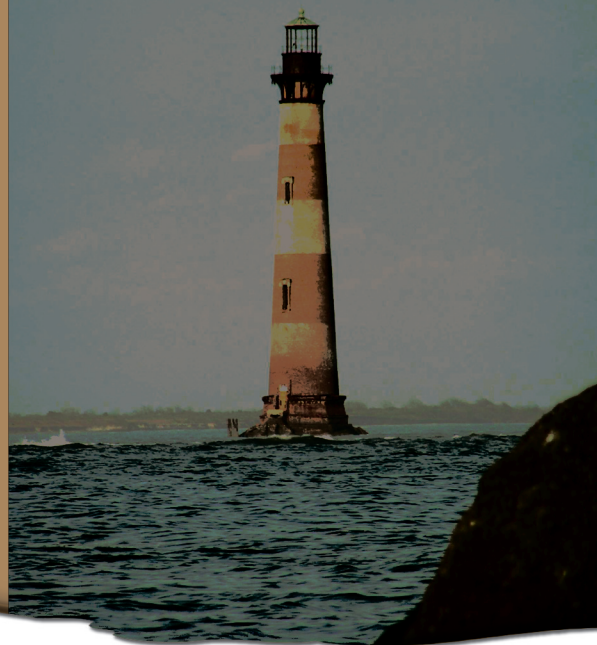


# CONSIDERATIONS FOR **COASTAL COATINGS**

## PART III OF III



By Joseph “Cris” Crissinger, CCS, CCCA

### INTRODUCTION

This article is presented in three parts. Part I, published in March, provided an analysis of types of paints and coatings. In Part II, published in June, surface preparation and application were discussed. This, Part III of the series, will conclude the discussion on recommended coating systems and application procedures for a coastal environment.

### APPLICATION

If the coating is not applied properly by skilled applicators, all the efforts in selecting the coating and preparing the surfaces are wasted. Successful application includes the following:

- Proper tools.
- Proper curing.
- Back priming.
- Proper thickness.
- Stripe inside outside corners, welds.
- Proper conditions (temperature, humidity, moisture, wind).
- Proper training and familiarity with the coatings to be applied.

### TOOLS

The most frequently used tools are brushes, rollers, and sprays. Since each method produces different coating thicknesses and finishes, except for extenuating circumstances, the methods should not be mixed on the same surface.

### Brushes

Brushes allow for the most control of coating application with the least amount of waste and mess. A brush usually produces the thinnest film build per coat. Actually, it may be difficult to achieve the listed wet-film thickness per coat with a brush, especially if a high-build coating is being applied.

The same type of brush cannot be used for all coatings, and the manufacturer's recommendations for brushes should be followed. Always select the type of brush recommended (natural bristle, synthetic bristle, etc.) and of the best quality, as the difference in brush quality can easily be seen and felt. Premium quality brushes can be cleaned repeatedly, while economy brushes are considered disposable. Brushes tend to leave stroke marks and streaks and are more likely to leave thin spots or “holidays.” However, premium brushes tend to leave fewer noticeable marks. When doing furniture refinishing, premium brushes were used to apply varnishes, and when the brushes were no longer suitable for varnish, they were relegated to painting.

### Rollers

Rollers allow the coating to cover a larger area faster and the application of the coating to a thicker film build than a brush. Normally, coatings formulated for spray

application can also be applied by brush or roller, but film build will be significantly less and may not be as smooth as when applied by spray. However, always ensure that the coating can be applied with a roller, as there are some coatings that are made for spray application. Usually, brushes can apply



*Figure 3-1 – Wood columns painted with an oil-base system and ravaged by years of weathering. The wood in the background is somewhat protected and does not seem to be experiencing the weathering as in the foreground. Photo by Nick Galizia.*

**MATCH THE COATING SYSTEM  
WITH THE AMBIENT CONDITIONS  
AND SELECT THE  
BEST COATING SYSTEM  
THE BUDGET CAN AFFORD.**

coatings more accurately than a spray or roller. Depending on nap size and length, rollers tend to leave an orange-peel appearance, and do not cover corners well. Coatings that contain strong solvents can literally dissolve economy rollers and leave residue from the dissolved rollers in the roller pans and on surfaces.

Roller covers come in different nap thicknesses that can be matched to the surface being coated and the desired finish.

The longer the nap, the thicker the coating application and the greater the spatter. The usual nap thicknesses are 1/4-in, 3/8-in, 1/2-in, 3/4-in, and 1 in. Like paint brushes, roller covers come in different quality levels. The best ones can be washed repeatedly. Rollers usually apply coatings to a thicker film than brushes, but they tend to sling paint where it is not wanted, especially when a longer-nap roller is used. Short-nap rollers should be used on smooth sur-

faces or when a smooth finish is desired, while long-nap rollers should be used for rough surfaces or when an orange-peel effect is desired.

**Spray**

Spray is the fastest method of application and requires the most skill and proper equipment to ensure a successful result. Spraying can usually apply coatings to thicker film while producing considerable overspray and waste. Coatings applied by spray tend to be smoother but are prone to runs and sags because of the thicker application. Spraying can produce significant waste, especially when small profiles such as small diameter pipe bar joists and chain-link fences are being painted. Wind, which is common in coastal regions, can carry spray a long way and make for unhappy tourists!

**COSTS**

The following cost estimates are for comparison and include surface preparation, materials, and labor. Where finishes are field-applied, costs are based on primer being shop-applied. Costs may vary according to geographic location, applicator's experience and capabilities, and product availability.

**CMU and Brick**

Costs include primer/filler/finish.

- High-performance acrylic: +25% over unpainted CMU.
- Modified epoxy, self-priming: +25% over acrylic (system is self-priming; requires only two coats).

**Roofing Siding Panels**

Mill-finish Galvalume is base cost.

- Shop-applied silicone polyester finish: +10% over mill finish.
- Shop-applied Kynar, two-coat finish: +18% over mill finish.

**Aluminum Extrusions**

Mill-finish aluminum is base cost.

- Shop-applied clear anodized: +26% over mill finish.
- Shop-applied bronze anodized: +360% over mill finish.
- Shop-applied Kynar, two-coat: +360% over mill finish.
- Shop-applied powder coat, thermoset: +400% over mill finish.



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Figure 3-2 – Steel framing that received inadequate surface preparation. The edges were also not stripped in during painting. Insufficient maintenance painting has taken its toll. Photo by Nick Galizia.



Figure 3-4 – Standing seam roof with fluoropolymer finish over galvanized that is showing excellent performance, color, and gloss retention after prolonged exposure. Photo by Nick Galizia.



Figure 3-3 – Steel support with epoxy primer and polyurethane finish and steel standing seam roof with fluoropolymer finish. In excellent condition after approximately seven years' service.

### Steel, Shop-primed

Fabricator's standard shop primer at 1 - 1.5 mils DFT is base cost.

- One coat of high performance alkyd at 3 mils DFT: +100%.
- One coat of epoxy primer at 3 - 4 mils DFT: +150%
- One coat inorganic zinc primer at 3 mils DFT: +450%.

### Steel, Field-coated

Two coats of field-applied, standard oil paint is base cost.

- Two coats of field-applied, high-build alkyd (base cost): +25%.
- Two coats of field-applied, high-performance acrylic: +50%.
- One coat field-applied, epoxy polyamide and aliphatic polyurethane finish: + 80%.

### SUGGESTED COATING SYSTEMS FOR THE COAST

### DEFINITIONS

The terms and commonly accepted definitions below are often encountered when coating systems are described.

**Substrate:** The base being coated, such as wood, steel, or CMU. It is not the primer or undercoat.

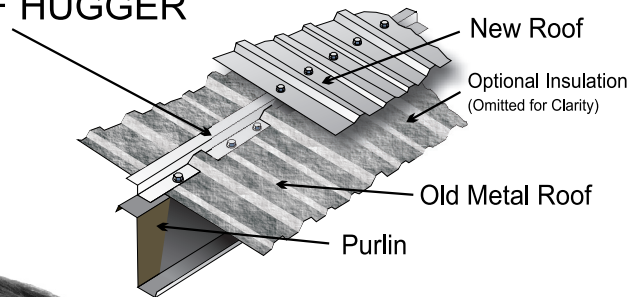
**Coating:** A thick film usually applied at approximately three mils dry film thickness (DFT). Typically has a primary purpose of protection and a secondary purpose of aesthetics.

**Paint:** A thin film usually applied at approximately two mils DFT or less. Normally has a primary purpose of

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Figure 3-5 – Carbon-steel supports coated with epoxy primer and polyurethane finish after approximately seven years' service. Although the steel is under cover, salt-laden moisture can collect in crevices and on flat areas. This system should maintain its appearance for another seven-plus years.

Figure 3-6 – Failure of shop primer before being top coated. The edges of the steel were not stripped to increase primer thickness when the primer was applied. The rust will probably be painted over.  
Photo by Nick Galizia.



aesthetics and a secondary purpose of protection.

**Primer:** The first coat applied to a substrate. Establishes the foundation for additional coats.

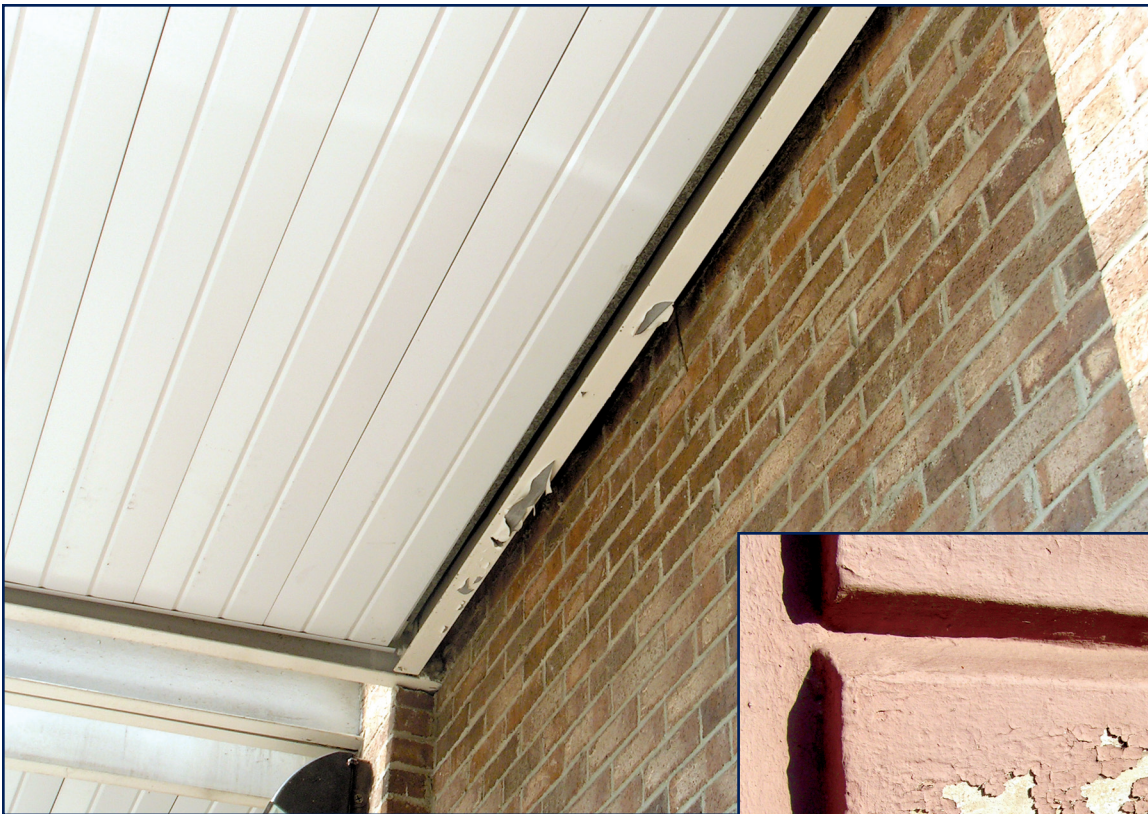
**Intermediate coat:** First coat applied over a primer and under the finish coat. In a four-coat system, the two coats between the primer and finish coats would be intermediate coats.

**Finish coat:** The last coat applied, directly exposed to ambient conditions.

**Top coat:** Same as a finish coat.

**Undercoat:** Coating between the primer and finish coat. The same as an intermediate coat in a three-coat system.

**Tie (barrier) coat:** A coating that can



Below: Figure 3-8 – Precast concrete painted with an oil-based paint. Delamination due to moisture within the concrete.



Figure 3-7 – Good contrast of coating systems. The nice-looking finish on the flat roof panels is Kynar®, while the peeling finish on the steel framing is field-applied oil-based paint. Both are approximately the same age.

be applied directly over an unknown coating without damaging the coating. Will accept most top coats.

**Back priming:** Applying a primer to the back or unexposed side of a substrate.

**Strip coat:** Applying a thin coat to only the inside and outside corners and edges of a substrate prior to coating overall substrate to ensure proper film build.

Figures 3-1 through 3-11 show the effects of various coating systems.

Typically, a coating system consists of the surface preparation, primer, intermediate coat, and finish coat. Surface preparation is included in the system because it varies with the type of substrate, the type of coating, and ambient and environmental conditions.

To keep things simple, the most frequently encountered substrates are listed. These substrates are carbon steel, galvanized steel, wood, concrete block, concrete, brick, coil-coated metal, and aluminum extrusions. The suggested coating systems are for exterior application, are strictly gener-



Figure 3-9 – Precast concrete coated with field-applied, acrylic-modified epoxy. Notice that the color is still vibrant after approximately nine years of weathering.



Figure 3-10 – Exterior brick wall painted with alkali-resistant primer and 100 percent, high-performance acrylic. Finish is still sound with little sign of weathering after years. Photo by Nick Galizia.

ic, and are not representative of any particular products or manufacturers. The listed coating systems also presume that all proper and recommended surface preparations have been performed prior to application. Coating systems for interior situations are not included because, except for industrial situations, interior coating systems are generally the same for coastal and non-coastal conditions. Of course, all coating systems should be confirmed and verified with the respective coating manufacturer's product data sheets. Listings are not in any particular order.

### CONCLUSION

Except for the materials used, coating procedures for coastal areas differ little from those for rural and urban areas. Match the coating system with the ambient conditions and select the best coating system the budget can afford. Ensure that proper surface preparation is addressed and that the materials are applied correctly. Many projects are subjected to "value engineering," and finishes are usually one of the first items to feel the pressure of the budget squeeze. This may be acceptable in some urban and rural areas, but compromising exterior protection



Figure 3-11 – Stamped copper facing that was field painted with an oil-based paint. Paint is faded, curling, and delaminating. Photo by Nick Galizia.

in coastal areas should be discouraged. After all, since your project is the best, it deserves the best! ☑

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## SUGGESTED COATING SYSTEMS

SUBSTRATE	PRIMER	INTERMEDIATE	FINISH
<b>Carbon steel</b>	1 coat inorganic, zinc-rich primer	1 coat epoxy polyamide	1 or 2 coats aliphatic polyurethane
	1 coat epoxy polyamide primer	1 coat epoxy mastic	1 or 2 coats aliphatic polyurethane
	1 coat epoxy polyamide primer	1 coat 100% acrylic high build	1 or 2 coats 100% acrylic high build
	1 coat inorganic, zinc-rich primer	1 coat aluminum mastic epoxy	1 or 2 coats aliphatic polyurethane
	Powder coating		
<b>Galvanized Steel</b>	1 coat epoxy polyamide primer	1 coat epoxy mastic	1 or 2 coats aliphatic polyurethane
	1 coat epoxy polyamide primer	1 coat aluminum mastic epoxy	1 or 2 coats aliphatic polyurethane
	1 coat vinyl wash primer	1 coat 100% acrylic high build	1 or 2 coats 100% acrylic high build
	Powder coating		
<b>Wood</b>	1 coat alkyd, high-build primer	1 coat 100% acrylic	1 or 2 coats 100% acrylic
<b>Concrete Block</b>	1 coat breathable, cementitious, modified epoxy ester	1 coat breathable, cementitious, modified epoxy ester	Not normally necessary
	1 coat alkali-resistive primer	1 coat heavy-duty, breathable, block filler coating	1 or 2 coats 100% acrylic high build
<b>Concrete</b>	1 coat breathable, cementitious, modified epoxy ester coating	1 coat breathable, cementitious, modified epoxy ester coating	Not normally required
	NA	1 coat heavy-duty, breathable, block filler coating	1 or 2 coats 100% acrylic high build
<b>Brick</b>	1 coat alkali-resistive primer	1 coat breathable, cementitious, modified epoxy ester	1 coat breathable, cementitious, modified epoxy ester
	NA	1 coat heavy-duty, breathable block filler	1 or 2 coats 100% acrylic high build
<b>Coil-coated metal</b>	2 or 3 coats 70% fluoropolymer system	NA	NA
<b>Aluminum</b>	Class I clear or color anodized	NA	NA
	Powder coating		

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### ACKNOWLEDGEMENTS

I extend my sincere gratitude to Charlie Martin, AIA, of McMillan Smith & Partners Architects for creating the graphic sketches; to Angela Napolitano of McMillan Smith & Partners Architects for adding computer graphics; and to my wife, Linda, for editorial review. Their time and contributions to this article are truly appreciated.

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