SURTREAT®

WINDJAMMER CONDOMINIUMS

CASE STUDY

PROBLEM

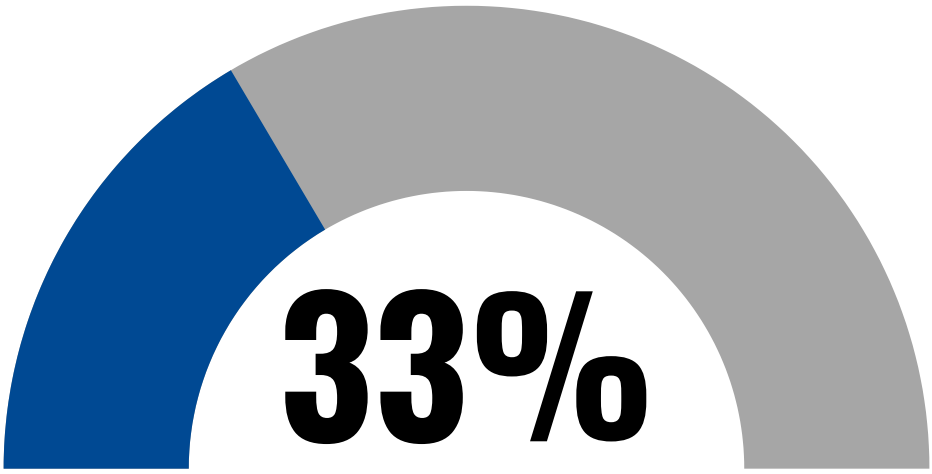
High chloride content and corroding reinforcing steel was causing quick and severe deterioration to the balconies of the Windjammer Condominiums.

STRUCTURE

Windjammer Condominium Balconies

SOLUTION

SURTREAT® TPS II was applied to balconies at the Windjammer Condominium in 1995. Half-cell tests were run on an area of exposed, corroded rebar. The results gave an average measurement of –350mV. Several days after applying **SURTREAT® TPS II** to this area a half-cell reading of –250mV was obtained indicating an immediate reduction in corrosion potential. On February 20, 2000, half-cell tests were repeated on this same balcony. Three one-foot square areas on the balcony were exposed by removing a urethane coating. They were identified as areas I, II, III, and are shown in Figure 1 in relationship to the balcony dimensions. A ground attachment was made to a rebar section in the middle of the balcony and five (5) measurements were made at the corners and middle of each exposed area. Area I is the same spot where the half-cell measurements were made in 1995.



IMMEDIATE REDUCTION IN CORROSION POTENTIAL BY 33%, JUST DAYS AFTER INTIAL APPLICATION OF SURTREAT®.

OUR PROCESS

SURTREAT® is a proprietary, water based, environmentally friendly solution of activators and migratory aids that inhibits rebar corrosion, increases strength and reduces porosity in reinforced concrete. For this use case, it was applied to balconies at the Windjammer Condominium in 1995 at the rate of 75-sq. ft. per gallon. The goal of this application was to help **convert existing rust on the rebar into a inert shell** and to provide **additional preventative protection** for the concrete and rebar against future corrosion.

The **SURTREAT®** process is unique in that our team worked directly with the client on the diagnosis, proposal, initial testing, the product application, and the results verifying testing. This saved the project precious time in delays by using our turn key, comprehensive solution. The specific **SURTREAT®** solution that was used not only helped to convert existing rust and prevent future corrosion of the rebar, but it also helps to increase the compressive strength of the concrete and decrease the permeability of water into the concrete. These two factors, compounded with the treatment of the rebar, will help the balconies last and weather the corrosive environment around it much better than what other sealers, epoxies, urethanes, and coatings products can provide.

All of these benefits were provided **WITHOUT the need for costly demolition or replacement work.** SURTREAT® is the most efficient and cost effective way to protect and restore concrete and thus offer long term protection to concrete surfaces exposed to extreme elements, resulting in significantly reduced ongoing maintenance costs while eliminating future deterioration and corrosion of concrete surfaces.

TESTING

The half-cell was calibrated using a standard electrode and the test areas were dampened with distilled water. The resistance is kilo ohms (kW) and the half-cell potential in milli-volts (mV) were measured and are recorded in **Figure I**. Chloride analysis of drilling dust at 0 to 2 inches is 600 ppm. pH of dust is 7. This is a condition conducive to high level of corrosion. Half-cell measurements show that no corrosion is taking place.

ANALYSIS

There was a significant decrease in the half-cell potential measurements from 1995. They averaged about +65mV in comparison to an original measurement of –350mV. The resistance measurements in Sections I and III were very low, indicating good conductivity and high chloride and moisture content in the concrete. The **significant drop in half-cell readings and the fact that it went into the positive range shows that a high level of corrosion inhibition was obtained** on the rebar surface due to the penetration and reaction of **TPS II**.

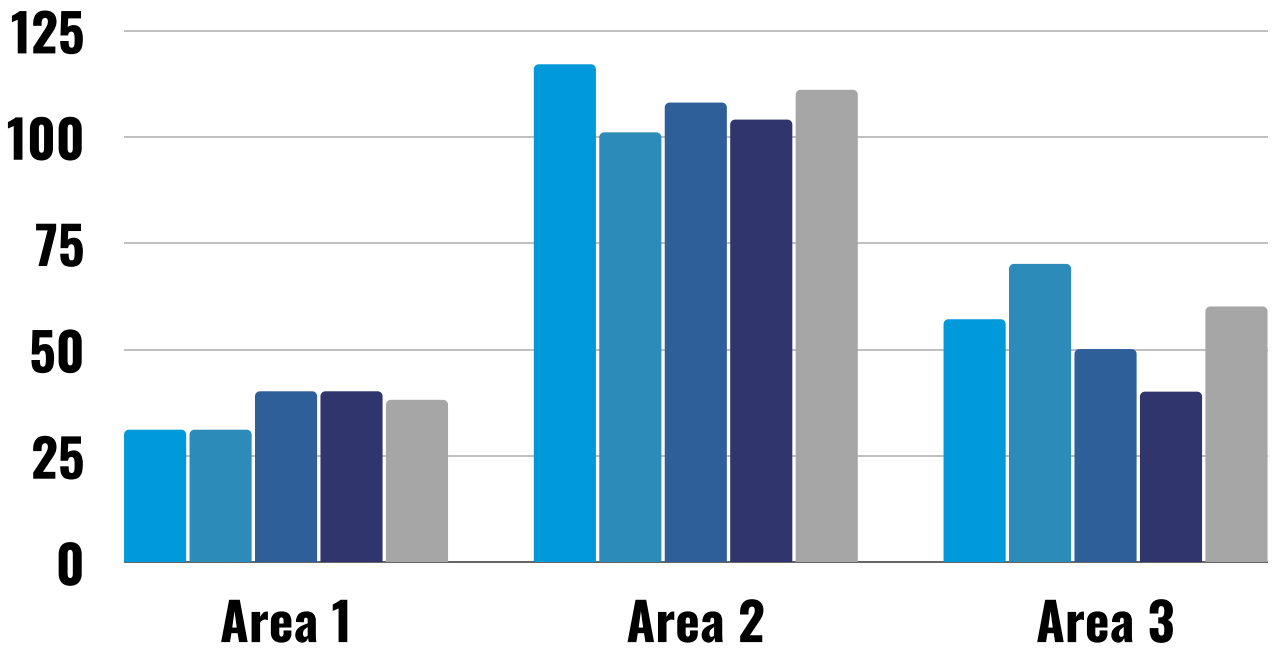
CONCLUSION

A concrete sample was taken and measured for chloride content and pH which were 600 PPM and 5 respectively. This cement condition would be conducive to a high rate of rebar corrosion in the absence of a powerful corrosion inhibitor like TPS II. In addition to these impressive half-cell readings, there are no symptoms of rebar corrosion on any of the balconies. Other condominium balconies repaired by conventional methods in the Cocoa Beach area in 1995 (without using corrosion inhibitors) are now exhibiting symptoms of rebar corrosion in the form of concrete spalling. See **Graph 1** for more.

FIGURE 1

Area	Units	A	B	C	D	Mid-Point
I	+MV	31	31	40	40	38
	Kohm	1.8	1.8	1.0	1.0	2.0
II	+MV	117	101	108	104	111
	Kohm	69	36	33	29	29
III	+MV	57	70	50	40	60
	Kohm	0.6	3.5	1.5	0.6	1.2
Baseline I 5 years	-MV	-	-	-	-	350
	Kohm	-	-	-	-	2.0

GRAPH 1



We invite your comments, questions, and inquiries. Reach us at one of the below.

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