

Crystal Water Park

Precast concrete panels were used effectively to build a majestic waterfall structure and surrounding plaza.

Crystal Water Park serves as a precast concrete pedestrian oasis surrounded by high rise buildings, a major rail corridor and one of the world's busiest airports. The water park features a spectacular fountain and waterfall on 1½ acres (0.61 ha) in Crystal City, Virginia.

This beautifully crafted park, which works well with or without water, provides area residents with a lively and exciting gathering place.

Architectural precast concrete is the primary material used in the construction of the park. More than 40 different molds were required to cast the 290 panels involved in the project. The largest panel weighed 10,850 lbs (4922 kg), while the smallest panels weighed about 90 lbs (41 kg).

The use and design of the 290 precast concrete panels resulted in the following special features:

- Serpentine wall
- Stone medallion spouts

- Tiered water pools
- Grassy islands
- Large oval island and surrounding fountains

The main water structure, which circulates 5600 gallons (21 m³) of water each minute, is 260 ft (79 m) in length. Water cascades 14 ft (4.2 m) from a 120 ft (37 m) long serpentine waterfall located in the center of the main structure. The waterfall is flanked by perimeter walls featuring 78 water spouts which feed a series of tiered water pools.

In front of the main structure is a grassy oval island with fountains used as a platform for afternoon and even-



Fig. 1. Aerial view.

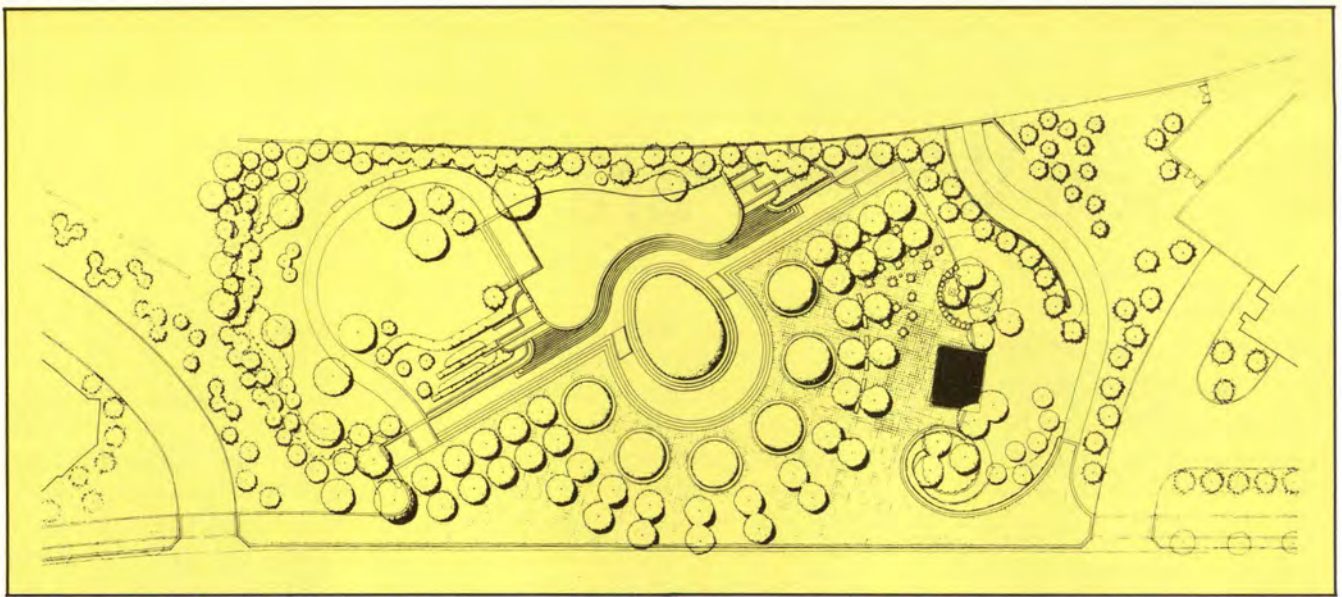


Fig. 2. Site plan.

ing concerts. The entire structure is surrounded by a plaza with symmetrically placed grassy islands and planters as well as an upscale concession stand, and wrought iron tables and benches to provide seating for those visiting the water park.

Because of the intricate design of the project, several different radii, ranging from 12 to 56 ft (4 to 17 m) were required to accurately produce the precast panels. The nature of the waterfall itself required that the joints of the serpentine wall fit together precisely so that the water would flow smoothly and evenly over the granite capstones. In order to accomplish this task, seven different radii [14.3, 30, 19.8, 24.4, 27.5, 46, and 56 ft (4.4, 9.1, 6.0, 7.4, 8.4, 14.0, and 17.1 m)] were used in the casting process of this single structure.

Three different mixes were used to finish the panels. A finish of retarded exposed aggregate was used for the serpentine waterfall. To create a "splash" effect in the water and to add life to the falls, a maximum size aggregate, 1½ in. (38 mm), was used. When illuminated, the exposed aggregate finish creates a unique shadow effect on the fountain and waterfall so that the water appears crystalline.

The perimeter walls were finished with the same mix using smaller stones. The third finish was accomplished by sandblasting to give the stone its light color, which serves to



Fig. 3. Detail of steps (south end).



Fig. 4. View of waterfall (north end).



Fig. 5. View of waterfall (south end).



Fig. 6. View from the west.



Fig. 7. View of north end.



Fig. 8. View of lower pool/perimeter wall (north end).



Fig. 9. View of south end.



Fig. 10. View from the west.



Fig. 11. Evening shot of illuminated waterfall.

further emphasize the exposed finishes. This mix is used around the grassy islands and the perimeter walls, where rows of cast stone medallion water spouts accent bands of light precast concrete.

The large egg-shaped island in front of the waterfall is also constructed of precast concrete with the sandblast finish. Steps leading down from the island to a horseshoe-shaped water pool provide extra seating for visitors. Underwater stainless steel fountains surrounding the island are worked into the precast concrete of the structure.

The park is completed with a plaza constructed of textured precast con-

crete highlighted by herringbone patterned, rose-colored brick pavers. Landscaping consists of an abundance of greenery. Over 140 trees in 18 varieties, 475 shrubs in 11 varieties, and 1700 annual and perennial flowers are arranged about the site. At night, intermittent trees are uplighted for the pleasure of park visitors.

The precast concrete budget came to \$185,000, with \$110,000 for erection and \$7500 for hauling. The project was completed in May 1988. Since completion, Crystal Water Park is being enjoyed by the public and is a tourist attraction. The park has also become a distinguished city landmark.

Credits

Owner: Charles E. Smith Companies, Crystal City, Virginia.

Landscape Architect: Hunter Reynolds Jewell, Raleigh, North Carolina.

Architect: The Weihe Partnership, Washington, D.C.

Civil Engineer: DeLashmutt Associates, Arlington, Virginia.

Structural Engineer: Semislova Kehnemui & Associates, Rockville, Maryland.

General Contractor: Charles E. Smith Companies, Crystal City, Virginia.

Precast Concrete Manufacturer: Exposaic Industries Inc., Fredericksburg, Virginia.



Fig. 12. View of fountains.