Bristol Motor Speedway


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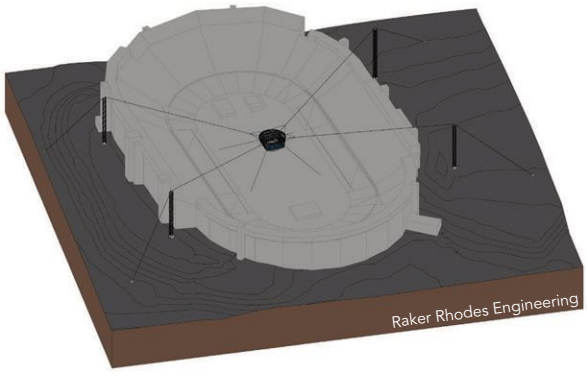
Raker Rhodes Engineering


Bristol Motor Speedway

The towers were shop-fabricated in 42-ft sections and spliced together in the field. Once the towers were erected, the backstay cables were installed and pretensioned to adequately reduce cable sag. This pretensioning pulled the tops of the towers back several inches in preparation to support the massive center-hung halo. Due to the length and weight of the main suspension cables, and because they had to be erected over existing infrastructure (skyboxes, lights, bleachers, fencing, etc.), the erector devised a strategy to temporarily hang the cables in position prior to the halo being lifted into place. The solution was to string temporary messenger cables from tower to tower in both directions. A tensioning wench was placed at the base of each tower so the messenger cable could travel up and over a tower and span approximately 1,200 ft to 1,300 ft to the top of the diagonal tower and down to the wench at the tower base. The main structural strand cables could then be lifted and temporarily hung in preparation to support the halo.

To facilitate shipping and galvanization of the large diameter halo, it was shop-fabricated in six arc sections, transported to a hot-dip galvanizer, delivered to the speedway and spliced together with bolted connections on the ground directly below the intersecting messenger cables. After hanging the structural strand cables, two lattice boom cranes could then lift the halo a vertical distance of 160 ft to where the final cable connections could be made. The messenger cables and cranes then transferred the halo onto the suspension cables, towers and backstay cables, and cable tensions and lateral tower deflections were monitored throughout erection to verify the system's load-distribution behavior and specified design limits.

Following halo erection, the four-sided gondola structure was assembled on the infield. The gondola assembly took place a safe distance away from the overhead halo and suspension cables to eliminate potential conflicts with cranes working to assemble the gondola. Once assembled, a slide-beam system was used to move the 75-ton gondola into position directly below the halo. Again, the towers were pulled back several inches by tensioning the backstay cables in preparation to support the massive gondola. Seven cranes then worked to lift and connect the gondola to the halo with heavy pin connections. Once pinned, the cranes then transferred the gondola load to the suspension system. The center-hung system was then levelled using adjustable cable sockets provided at the halo connections. Finally, the videoboard screens and tethering cables were installed.