PROJECT PROFILE

Tarrant County College Natatorium

Condition Assessment of Double Tees | Fort Worth, TX

CLIENT

Huckabee & Associates/
Tarrant County Community College

BACKGROUND

The building is located at the Tarrant County Community College (TCCD) Northwest Campus and was constructed in the 1970s. Roof framing consists of prestressed concrete double tees that spanning between steel plate girders. Each end of the double tees contains a steel bearing plate that has been welded to the top flange of the steel girder. The use of the facility as a natatorium introduces elevated levels of moisture and chlorine over its life, increasing the potential for accelerated corrosion in the steel bearing plates, steel girders, and other exposed steel elements.

Concrete cracks, spalls, and corrosion stains were identified during a cursory inspection of the roof's underside in connection with planning for an overall renovation of the facility. The roof was located 30 feet above the pool and ground level viewing was obstructed by HVAC and lighting. As a result, the ability to assess the damage was limited. Concern existed regarding the possibility of concrete debris falling into the pool or adjacent deck. A detailed assessment was needed to help the architect and owner evaluate the feasibility of renovating the facility.

SOLUTION

WJE performed a condition assessment to identify the extent, cause, and significance of distress in the roof double tees in the natatorium. One of the most challenging aspects was difficulty in accessing the bearing area of the double tees, where the majority of the distress was located. Scaffolding was installed over the entire footprint of the swimming pool to provide a working platform from which a detailed close-up, hands on inspection could be performed. At three locations, the distress was found to be structurally significant and in need of immediate remedial measures. At other locations the distress was less severe, but still in need of remedial measures to ensure satisfactory long-term structural performance. The majority of the distress was caused by restrained volume change due to welding of the bearing plates. WJE prepared drawings and specifications for remediating the identified damage. The remediation program included steel saddle assemblies, concrete patching, and corrosion inhibiting coatings.

The assessment determined that the structural damage was prevalent but relatively limited in severity. Conceptual studies were performed to provide an opinion of the cost of repairs. Based on these findings and results of other studies, the owner elected to proceed with a renovation program for the overall building.

WJE ENGINEERS ARCHITECTS MATERIALS SCIENTISTS