

689 Main Street  
Buffalo, NY 14203  
P 716 656-1900  
F 716 656-1987  
[www.didonato.cc](http://www.didonato.cc)

**Client:**  
Hockey Western New York, LLC

**Client Contact:**  
Mr. Stan Makowski, Jr., Director  
of Arena Operations  
(716) 855-4100

**Completion Date:**  
2008

**Construction Value:**  
\$290,469

**Key Personnel:**  
John DiDonato, PE  
James Frick, PE



DiDonato Associates conducted a field condition survey of the structural pre-cast concrete elements for scaling, cracking, spalling and other deterioration that affects both the aesthetics and structural capacity of the HSBC Parking Ramp. Condition survey of ancillary items relative to the pre-cast concrete elements included field welded connections (where accessible), control and expansion joints, deck drains and related piping. We also performed a ground-based visual inspection of the façade to identify areas for future study as necessary. Data was collected and was superimposed on record drawings wherever possible.

After the survey, DiDonato provided a technical narrative describing the deterioration found, potential causes and recommended remediation methods. Types and amounts of deterioration were quantified and an estimate of repair costs generated. A prioritized list of recommended repairs was provided for use in programming future work.

Phases 1 and 2 of the repairs included:

- Spalling of the Double Tee Stems. Remove unsound concrete, clean exposed reinforcing and prestressing tendons, coat reinforcing and prestressing tendons with epoxy, apply a epoxy-cement bonding agent and fill the void with a polymer-modified, shrinkage compensated repair mortar.
- Damaged or missing bearing pads were replaced with new elastomeric bearing pads by jacking and setting new pads.
- Failed flange to flange diaphragm connections were repaired by installing a steel retrofit plate epoxy anchored into place.
- Spalled concrete areas were repaired with a polymer-modified, shrinkage compensated repair mortar utilizing an epoxy-cement bonding agent. Exposed steel reinforcing should be cleaned of rust and coated with same epoxy-cement bonding agent used for the mortar repair.
- Structural cracks in concrete members and precast double tees were repaired with epoxy injection.
- All expansion joints on level 2 through 5 were retrofit with joint covers to eliminate the pedestrian tripping hazard.
- Heavily to severely scaled areas of concrete were re-profiled with a repair mortar including stair treads, landings and top surfaces of precast double tee sections.
- Stair treads and landings were protected with a slip-resistant elastomeric traffic coating as these areas will continue to receive extensive wear and treatment with de-icing chemicals.

Phase 3 - Included miscellaneous concrete repairs, modifications of existing expansion joints and installation of pedestrian traffic coating in two stair towers.