



## Raleigh-Durham International Airport—PG-1 Structural Modifications

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| <b>Location:</b>     | RDU Airport, NC   |
| <b>Submitted by:</b> | Walker Parking Consultants/Walker Restoration Consultants |
| <b>Owner:</b>        | Raleigh Durham Airport Authority                          |
| <b>Architect(s):</b> | Walker Parking Consultants/Walker Restoration Consultants |
| <b>Engineer(s):</b>  | Walker Parking Consultants/Walker Restoration Consultants |
| <b>Contractor:</b>   | Archer Western Contractors                                |
| <b>PT Supplier:</b>  | DYWIDAG-Systems International USA, Inc.                   |

### Project Overview:

This project involved removing a significant portion of an existing post-tensioned airport parking structure to allow the airport owner to move a roadway closer to the parking structure. This would allow expansion of a terminal building that was landlocked by runway offsets and roadways.

The portion of the structure removed was an 8 ft wide by 555 ft long cantilever. The project involved cutting through all 22 main post-tensioned (PT) beams, each of which had 11 unbonded PT tendons that had to be detensioned safely, repositioned to allow new anchorage, and restressed while keeping as much of the existing parking structure in operation as possible.

With this strategy, the remainder of the parking structure could be saved and continue in service, thus producing the most environmentally responsible solution for the owner. The alternative was to tear down the entire existing parking structure and rebuild a new, somewhat smaller structure—a much more costly, wasteful option.

The initial discussions about the project included some typical misconceptions (myths) about PT structures. Some of the parties had serious doubts about successfully removing a significant portion of a PT structure while leaving the remaining portion intact.

The engineering firm for the project battled this misconception by laying out a methodical plan to determine the most cost-effective yet practical method to use. In addition to all of the technical challenges and the important environmental impact of the project, the overall success of this project is a shining example of how the common myths concerning the impossibility of structurally modifying PT structures are unfounded. This project debunked these myths and will continue to increase the acceptance and use of PT structures in future projects.

### Jury Comments:

- Design/construction team used a variety of post-tensioning repair techniques to provide the most environmentally responsible solution to the owner.
- In the process, they had to overcome many misconceptions regarding PT repair, which they did in a methodical and professional manner.
- The overall success of this project is a shining example of how the common myths of the impossibility of structurally modifying PT structures are unfounded.