CASE STUDY

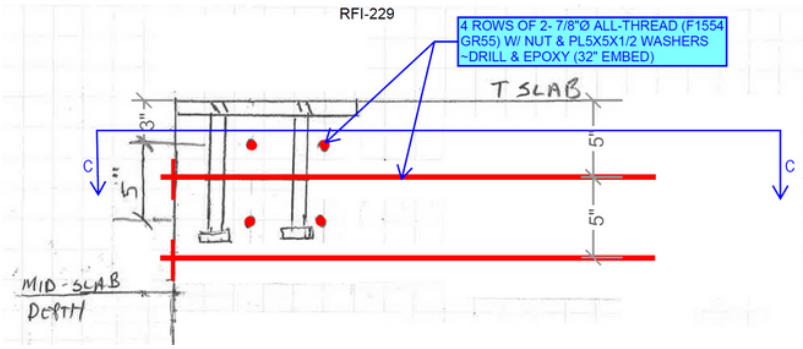
STRUCTURAL REINFORCEMENT SOLUTIONS

CONCRETE SLAB EMBED PULLOUT STRENGTHENING WITH CARBON FIBER

DENVER, CO, USA

The contractor on a high rise condo building in Denver Colorado reached out to Structural Reinforcement Solutions after cracking was discovered around the embeds on the edge of a 27” thick structural, post-tensioned slab.

Engineers on the project came up with a solution to drill and grout in a pattern of 4 each 2 – 7/8” threaded rods on each face and use plate washers on the surface to provide the necessary confinement.



The concern was raised when some cracking around the embeds was noticed. It was thought that this could have been attributed to the heat generated when welding the steel columns onto the plates but upon further investigation, they were unable to verify that there was any rebar directly under the embedded plates to provide confinement for nelson studs.

CARBON FIBER STRENGTHENING SYSTEMS

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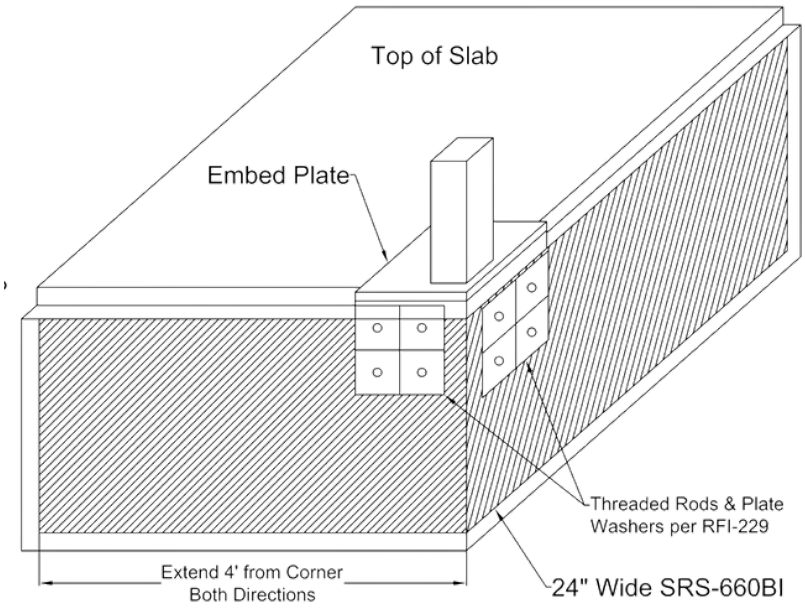
These embedded rods proved difficult to drill and miss the reinforcing steel further back in the slab. The amount of cracking also increased as these anchors were drilled. Structural Reinforcement Solutions worked with the contractor and their engineers to come up with a solution to confine these areas and provide crack control.



The anchors were still going to be needed but the SRS-660BI was to be installed to confine the areas and then once cured, the anchors could be drilled without worry of further cracking.

This also provided some factor of safety in case rebar was hit and a the holes had to be re-drilled. Once cured, a diamond tipped hole saw can be used to create a clean cut in the CFRP to facilitate the anchor installation.

This issue was brought to Structural Reinforcement Solutions toward the end of a week. SRS was able to get the solution approved, send the material out overnight, and have one of our contractors (Pinnacle Structural Services) on site and installing the repairs the first part of the following week.