

Winnipeg Airport Powerhouse Structural Concrete Slab Strengthening

STRUCTURE:	Winnipeg Airport Powerhouse Transformer Room Floor Slab
LOCATION:	Winnipeg, Manitoba
PROJECT DATE:	October 1999
JOB DURATION:	4 weeks
CONTRACT AMOUNT:	\$46,000
CLIENT:	Winnipeg Airports Authority
CONTRACTOR:	Vector Construction Group Manitoba Branch



PROJECT DESCRIPTION:

As the power demands for the Winnipeg Airport increased, the decision was made to replace the transformers with larger, more powerful and heavier equipment. Consequently, the design requirements of the concrete slab under the transformers also increased, creating the need for strengthening of the support columns and the concrete slab. Conventional means of reinforcement were not feasible due to the limited working space available under the slab and around the electrical power mains. This was made even more difficult because of the proximity of the power cables, with no allowances for power shutdown.

PROJECT SOLUTION:

The problem was solved using both conventional means of concrete repair for the columns, and a new innovative Sika CarboDur external strengthening system under the slab. Once the electrical cables and equipment were safely enclosed and protected, the columns were reinforced by adding additional concrete, reinforcing steel, and an anchoring system from the top of the slab. The concrete slab was permanently strengthened by using an externally bonded carbon fiber reinforced plastic (CFRP) laminate in a grid pattern on the bottom of the slab.



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