



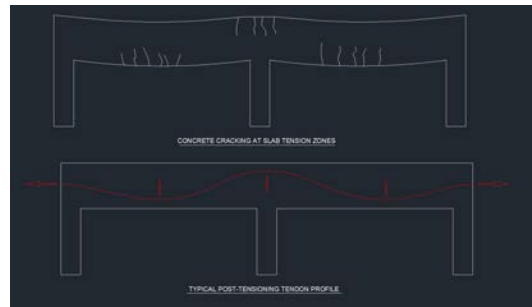
**105 Gordon Baker Drive
Toronto, Ontario**

**A Case Study of Methods For
Successful Post-Tensioned Cable
Repairs in Occupied Buildings**



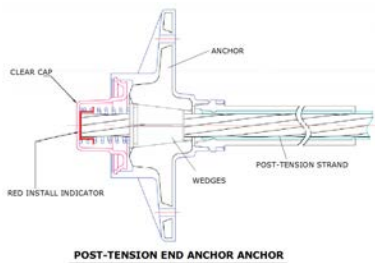
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Post-Tensioned Background



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Post-Tensioned Background



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Common Cable Deficiencies

Introduction of Moisture to Cable Environment (Corrosion)

- Anchor end not encapsulated
- Cable sheathing compromised
- Cables improperly stored outside during construction

Damage to Cable Due to Impact

- Impacted during concrete repairs
- Cored/drilled into



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Moisture Infiltration



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Moisture Infiltration



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Moisture Infiltration



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Cable Impact



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105 Gordon Baker Dr, Toronto



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Project Details

- 46 cable replacements over 7 levels
- 4 month construction schedule
- All noisy work was to be done during off hours as building was fully occupied
- Entire cables to be replaced and stressed from the building slab edge
- Access to slab edge via swing stage
- Removal of existing windows required
- Cable extraction and insertion into existing sheathing was to be done from the building exterior



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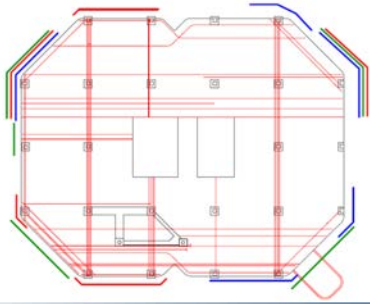


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Swing Stage Phasing



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Unexpected Conditions

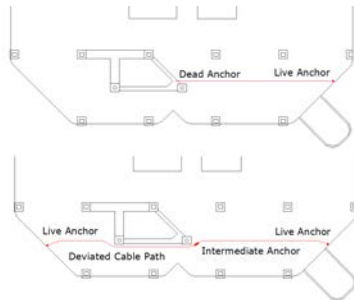
- PT Cables did not run straight
- Cables had section on bonded cable
- Some cables had intermediate stressing anchors
- Investigation was required to identify cable run patterns



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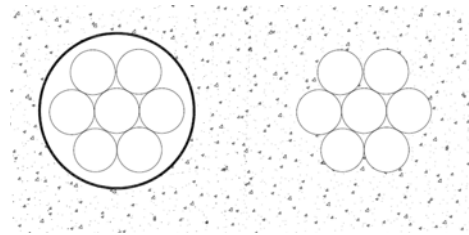
Unexpected Conditions



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Unexpected Conditions



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Scope of Work Change

- All tools and equipment needed to be stored in separate staging area
- All work zones required extensive set up and clean up
- Increase concrete removals required to allow installation of stressing couplers
- End anchorages had to be cast outside of the compression zone of adjacent live cables
- All interior finishes had to be restored (Carpet, Tiles, Drywall, etc)



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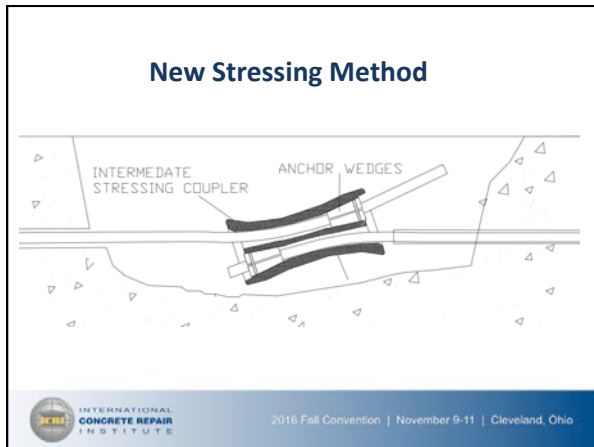
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Final Project Details

- 46 cable replacements over 7 levels
- About 15 month total construction schedules
- Each work area had to be thoroughly cleaned at the end of each shift
- All personnel was accompanied by security guards to provide access to different units
- Entire cables were replaced and stressed from the building interior
- Vector subcontract nearly tripled in value.



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Things To Take Away

- Encapsulated PT systems eliminate moisture issues
- Identify which hazards are present in any given PT structure and implement a plan to mitigate losses
- If confidence in structural drawings is not strong, an independent investigation should be conducted.
- Carry a healthy contingency
- Keep good As Built drawings



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Thank You!



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