

Vector®

Post-Tech™ PT Corrosion Solutions
Corrosion Evaluation and Mitigation for Unbonded Post-tensioned Concrete Structures

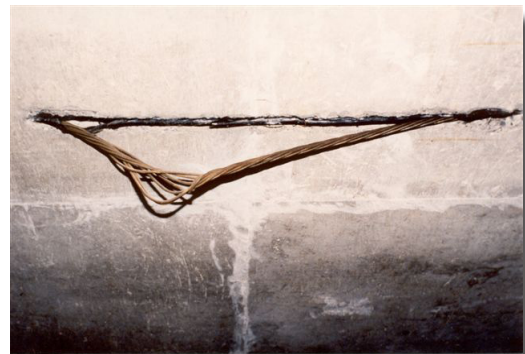
Description

The principal cause of corrosion of unbonded post-tensioned (PT) cables is the presence of moisture (high humidity) and air (oxygen) inside voids along the cable sheaths. Moisture infiltration can occur from numerous sources including initial construction, ground water, roof leakage, and poor quality grout pockets. PT cable corrosion occurs most often in unprotected structures such as parking garages, balconies and roof slabs; however numerous instances of cable wetness, cable corrosion and cable failure have been recorded at interior protected buildings. Left unattended this corrosion can lead to cable failure, serious cable eruptions from concrete floors and costly cable repair and replacement.

Early identification and mitigation of corrosive conditions can significantly reduce the costs of major repairs and the risk of structural failure. Where previously non-destructive tests and methods of corrosion protection were not available, Vector's Post-Tech evaluation, drying, and grease injection systems of testing and protection can now be used. These systems can assist engineers and building owners in the assessment of overall cable conditions to formulate cost-effective repair and preventative maintenance alternatives. When compared to conventional means of evaluation, structural reinforcement or cable replacement, significant cost savings can be achieved.



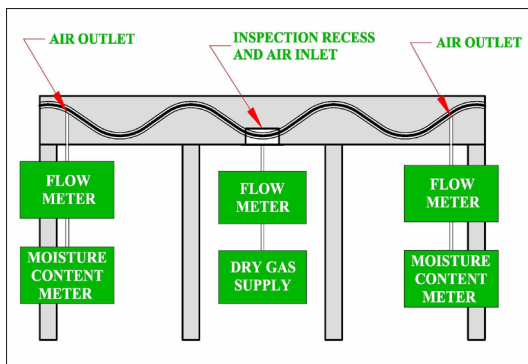
Corroded Cable Within Sheath



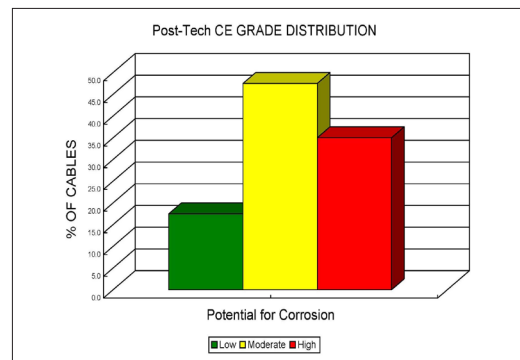
Corroded PT Cable Eruption

Post-Tech PT Corrosion Evaluation - Formerly CPE (Corrosion Potential Evaluation)

- A non-destructive test used to identify heat sealed or push-through cables exposed to a "wet" or potentially corrosive environment.
- Determines the degree of wetness inside a cable sheath by injecting dry gas or air and measuring the moisture content in the exhaust from the venting ports.
- Identifies the probable extent of current or future corrosion deterioration.
- Access areas used as "IN" ports can also allow for visual observation and testing.



Post-Tech PT Schematic of Test Set Up



Post-Tech PT Corrosion Evaluation Results Graph



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Post-Tech™ PT Corrosion Solutions

Post-Tech PT Cable Drying - Formerly GP (Gas Purge)

- An economical corrosion mitigation solution for unbonded post-tensioned cables encased in push-through or heat sealed sheaths.
- PT Cable Drying purges moisture from the cable by cyclically pressurizing a dry, non-corrosive gas such as air or nitrogen into the cable sheath.
- Process ensures that cable conditions are dry at the end of the treatment.
- System can be adapted for temporary or permanent installation depending on severity and situation of cable corrosion.
- Performance can be monitored manually or by means of electronic sensors installed for remote off-site monitoring and control.



Post-Tech PT Corrosion Evaluation of Cables



Post-Tech PT Cable Drying System

Post-Tech PT Grease Injection

- If a risk of future moisture infiltration exists, then the PT Grease Injection process is utilized to fill voids after cable drying.
- After moisture is expelled with the PT Cable Drying process, rust-inhibiting, Post-Tensioning Institute (PTI) specified grease is injected under high pressure through installed ports or exposed cable anchors.
- Grease has been proven to fill the cable voids and to penetrate cracks, defects and porous grout plugs through which moisture can otherwise penetrate.
- Re-packing unbonded post-tensioned cables with corrosion-inhibiting grease provides a cost effective way to prevent or minimize further deterioration.
- Extends the service life and integrity of structures at a fraction of the cost of other repair methods.



Post-Tech PT Grease Injection

The Post-Tech range of PT Corrosion Solutions is utilized as part of an overall strategy for the evaluation, identification and protection of post-tensioned concrete structures. Structural assessments should be conducted by a qualified structural engineer. For corrosion mitigation of metals directly embedded in concrete such as temperature reinforcement and anchors, Vector recommends the use of galvanic corrosion protection systems. For additional information, please contact Vector Corrosion Technologies.

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