



Design Without Doubt

when your technical design considerations are solved with Concrete Protection Liner.



TITAN

BUILD YOUR LEGEND

DESIGN CHALLENGE

1

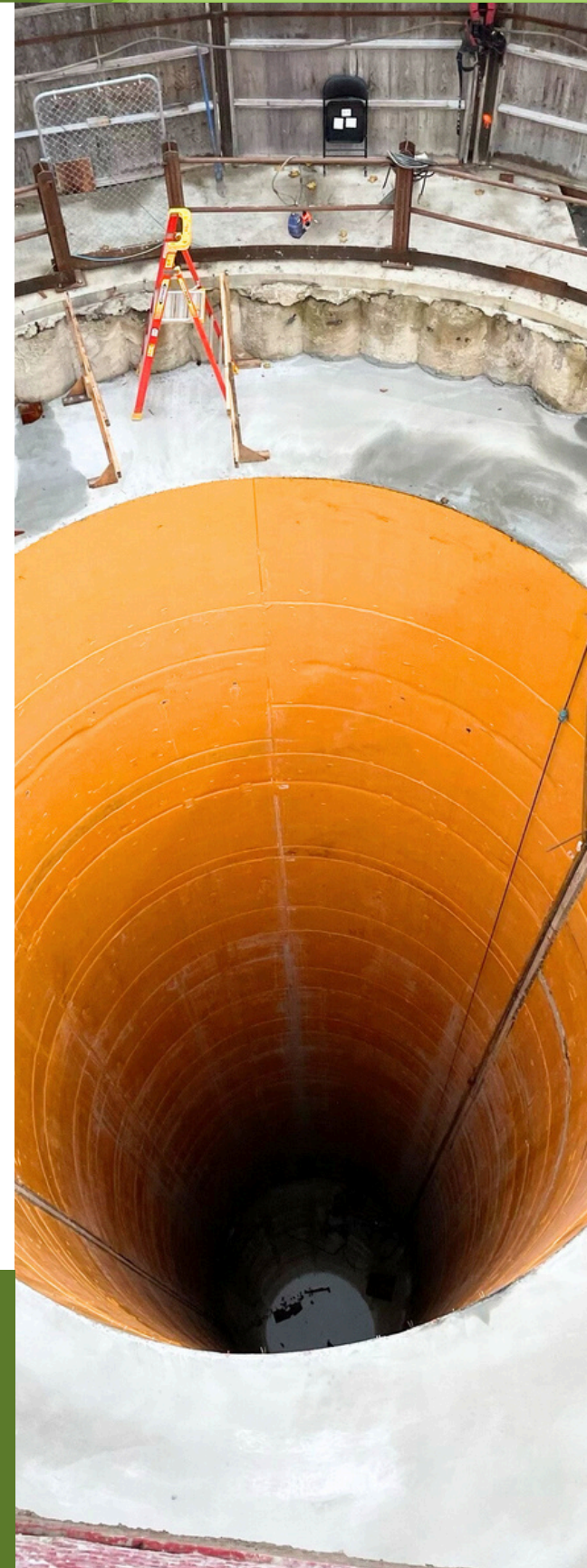
Backpressure Resistance

Backpressure can force liners to detach from concrete, compromising both containment and structure. Unlike spray coatings, CPL's anchored HDPE grid forms a mechanical bond that physically ties the liner to the concrete matrix.

CRITICAL DATA: True backpressure testing should account for long-term hydraulic loading (at least 1,000 hours under SKZ methodology), as pull-out tests only measure short-term or instantaneous force and ignore long-term plastic "creep." Creep is a key failure risk and can only be assessed via real duration testing, not by mathematical conversion from pull-out force

DESIGN DETAIL: Anchors on the back of CPL are positioned to form a grid pattern, allowing water to divert around the anchors without pushing the liner out of the concrete. Proper CPL thickness (typically 3mm-5mm) is selected based on structure depth and maximum expected groundwater load, directly impacting long-term backpressure resistance.

STANDARDS: CPL is recognized by SKZ and ASTM standards. However, our team recommends the SKZ test as it has five points of contact and is a long-term test that accounts for creep.



DEFEAT BACKPRESSURE

CPL anchored grid is designed to prevent liner blowout.

DESIGN CHALLENGE

2

Abrasion Resistance

CPL's HDPE construction offers exceptional abrasion resistance, surpassing both unlined concrete and typical coatings. This protects critical infrastructure from high-velocity flows and suspended solids.

CRITICAL DATA: A study published in Wear journal by Duarte et al. (2019), evaluated HDPE resistance to abrasive wear and corrosion. The research showed that HDPE resists abrasive wear three times higher than carbon steel. Another test used setups with 7% and 14% volume quartz sand and water mixtures at 7 m/s, where the result was that wear resistance in HDPE was four times better than steel.

DESIGN DETAIL: The long-chain polymer structure of high-density polyethylene (HDPE) imparts high molecular toughness and elasticity, allowing the liner to absorb repeated mechanical shocks and resist cutting and gouging from sediment and debris movements.

STANDARDS: Industry standards recognize HDPE as one of the lowest-abrasion materials for protective performance.

DEFEAT ABRASION

Even after prolonged exposure in harsh conditions, CPL shields concrete from the toughest abrasive flows.



DESIGN CHALLENGE

3

Chemical Compatibility

Concrete infrastructure faces relentless exposure to aggressive chemicals and attacks from gases in wastewater environments. Chemical attack rapidly degrades unprotected or superficially coated concrete, leading to loss of alkalinity, corrosion of embedded steel, loss of strength, and ultimately catastrophic failure.

CRITICAL DATA: HDPE-based CPL demonstrates exceptional resistance to a wide variety of corrosive chemicals—industrially tested against the corrosives commonly found in wastewater.

DESIGN DETAIL: Unlike coatings that can wear down or peel over time, HDPE is inherently stable—it doesn't need to be reapplied and won't degrade, chalk, or flake when exposed to sunlight or harsh chemicals.

STANDARDS: HDPE CPL systems consistently outperform traditional coatings per industry standards for permeability, resistance, and long-term mechanical stability.

DEFEAT CHEMICALS

CPL makes chemical compatibility headaches disappear.



Build Infrastructure That Lasts

CPL is designed to last the life of the structure—no reapplications, no unexpected shutdowns, no compromises.

**Protect your investment. Safeguard your infrastructure.
Trust Titan's CPL for long-term performance.**

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