Rowtek Decision Framework – LATAM

A Practical Criterion for Physical Protection of Buried Assets

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1. Purpose of the Framework

In many Latin American markets, physical protection of buried assets (e.g., concrete slabs, encasement, overpipe systems) has been adopted reactively to address excavation damage events. While these solutions can be effective, their application has often lacked a **consistent decision framework** to determine *when* physical protection is warranted, *why* it is justified, and *how* it should be documented.

The purpose of the Rowtek Decision Framework is **not to introduce a new product**, but to provide a **structured, defensible criterion** that helps owners, engineers, and operators decide: - when physical protection is reasonable and proportionate, - when it is unnecessary, and - how its use should be technically justified.

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2. The Core Problem in LATAM

Across LATAM, excavation damage prevention typically relies on a combination of: - minimum depth-of-cover requirements, - signage and marking, - procedural controls during construction and maintenance.

However, physical protection is frequently applied: - after incidents have occurred, - based on precedent rather than risk classification, or - as a generalized response without clear documentation of residual risk.

This leads to inconsistency, overuse in some areas, underuse in others, and limited defensibility during audits or post-incident reviews.

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3. Rowtek’s Conceptual Shift

Rowtek reframes physical protection as a **risk-based decision**, not a default construction element.

The framework introduces a simple but critical question:

> *Is there foreseeable residual excavation risk that remains unacceptable after procedural controls are applied?*

Only when the answer is yes does physical protection become a reasonable preventive measure.

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4. Decision Criteria for Physical Protection

Physical protection should be considered when **multiple** of the following conditions are present:

4.1 Excavation Exposure

- Recurrent third-party excavation activity
- Urban or peri-urban environments
- Rights-of-way with repeated disturbance

4.2 Consequence of Damage

- Safety impact (gas release, explosion risk)
- Service interruption affecting critical users
- Environmental or reputational consequences

4.3 Depth and Asset Vulnerability

- Shallow or variable depth of cover
- Legacy installations
- Crossings, transitions, or congested corridors

4.4 Limitations of Procedural Controls

- Reliance on human behavior as the final barrier
- Conditions where compliance does not eliminate mechanical interaction

When these factors converge, physical protection may be justified as a **reasonable mitigation of residual risk**.

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5. Where Physical Protection Is Not Warranted

To preserve proportionality and credibility, the framework explicitly defines where physical protection should *not* be applied: - Low-consequence rural areas - Deeply buried assets with stable cover - Greenfield projects with controlled access - Locations where structural protection already exists

This selectivity prevents overengineering and maintains trust in the framework.

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6. Documentation and Defensibility

When physical protection is applied, the framework recommends documenting: - the specific residual risk being mitigated, - the decision rationale, - why alternative controls were insufficient, and - the intended role of physical protection.

This documentation supports: - internal technical reviews, - regulatory discussions, - post-incident defensibility.

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7. Key Outcome

The Rowtek Decision Framework does not standardize *products*.

It standardizes **thinking**.

By separating the decision to protect from the choice of how to protect, the framework enables more consistent, defensible, and effective use of physical protection across LATAM infrastructure projects.
