

# Fisher Insight

## KEEPING YOUR ROW IN SHAPE

**Steep slopes on utility rights of way (ROWs) can pose significant safety, financial, and environmental risks.**

Maintaining the land in your ROW is a year-round affair requiring planning and consideration of many factors, such as terrain, weather, and appropriate landowner, federal, state, and local approvals. Maintenance concerns intensify when steep slopes are involved. Erosion and slope instability — which go hand-in-hand with steep inclines and soils with high runoff potential — can expose pipelines, equipment, facilities, and assets to the elements. This causes damage or potential safety and environmental risks, and it makes repairs even more challenging and expensive.

But our experience providing a broad range of engineering services to utility companies shows there are several proactive measures that can be taken to stabilize steep slopes, minimize erosion, and reduce the frequency and complexity of long-term maintenance efforts. Let's examine a few approaches and tactics that might benefit your company.

### An Ounce of Prevention

Getting yourself into a preventive mindset goes a long way toward protecting the public, your employees, your assets, the environment, and your bottom line.

For example, do you consider the time of year when planning a construction project? Many companies construct year-round, but may not factor in additional construction costs and delayed schedules when construction is conducted outside the growing season. If it is too wet or cold when construction is completed (say, during the fall or winter), your slope may not be sufficiently stabilized, and you may have a costlier restoration than you bargained for. This could also lead to additional mobilization when conditions are warmer and drier to properly restore the project area.

It is important to also consider steep slopes in the planning phase, prior to construction. What is the best way to establish permanent vegetation once the project is completed? Does the vegetation need short- or long-term temporary or permanent Rolled Erosion Control Products (RECPs) for reinforcement? Could Hydraulic Erosion Control Products (HECPs) be



*Water bar installation to minimize erosion on a steep slope*

used? Should steep slope seed mixtures be specified? Planning and budgeting for the right solution can get you better results sooner.

Additionally, always take your surroundings into account, because what happens on adjacent land can impact your project site. For example, does the grading of adjacent land make runoff and erosion a heightened concern for your ROW? Does an adjacent business or farm have their drainage system set up to flow into your ROW? Qualified engineers can provide a hydrology assessment and recommendations on how to manage stormwater runoff.

The key is to think pre-emptively, because early decisions and investments on how to stabilize slopes will help reduce the risk of a problem in the future. It's a general mindset to adopt, but it also helps to have a basic understanding of some of the tools available to help accomplish this.

### Erosion Control Devices

Proactive measures during construction can support slope stability by protecting a trench, facilities, or the topsoil from the deleterious effects of water intrusion.

Trench plugs (or trench breakers), perhaps the most common example, are perpendicular sandbag walls positioned at regular intervals along a closed pipeline trench. They may be temporary — installed during construction to protect the open trench before pipe is laid into it — or remain permanent fixtures in the buried trench to provide security stop points if water were to make its way along the pipeline trench over time. If there is a natural spring or high ground water, consider adding outlet drainage to prevent blowing out the ground around the trench plug.



*Stormwater channel installation and ROW stabilized with hydromulch application*



*Erosion control blanket installation*

Slope breakers (or water bars) are diagonal earthen berms across a slope's surface that help stave off erosion by diverting downhill water flow off your ROW. Designing them requires adherence to state or federal guidance, which will have recommendations on the proper spacing between them, based on incline percentage and proximity to protected resources.

On top of these methods, you can incorporate simple ground-level solutions like RECPs or HECs installed on the slope surface to provide protection for seeds, roots, and stems; specially designed steep-slope seed mixes that increase viability of vegetation growth; and other types of soil-strengthening plantings to add stability to the soil, which ultimately stands as your front line defense against erosion.

For steep slopes, riprap is a common and effective device that involves covering the side of the slope with stones to mitigate erosion. This tactic appears simple to the casual observer, but to ensure effectiveness, safety, and stability it requires careful calculation of the appropriate size, quantity, placement, and correct installation of rocks depending on the slope's steepness and other factors.

### **Engineered Solutions**

Engineers have a wide array of technical design and material specification options available to take slope stabilization a step further. For example, grading of the ROW plays a crucial role in influencing how water will flow. Designers can install permanent check dams in a swale, or drainage ditch, and slow the flow of water by providing appropriately spaced barriers that cause the water to pool intermittently and trap sediment as it flows downhill.

Constant innovation in the market continues to present the design community with products that solve age-old problems with ultra-modern efficiency. One example we have found success with is the GEOWEB system, which provides an underground honeycomb-like support system made from high-performance plastic and can be used for stabilization purposes.

Our utility clients regularly use soil cement stabilization, which incorporates a finely calibrated mixture of soil, water, and cement product like Calcimet into the slope surface, because it provides stability with great efficiency.

Classic perforated drain tile also is advantageous if installed preemptively on a project site, or refreshed and reinstalled if it already existed, to carry water off the utility's right of way. This is especially the case if springs are present on or near the site.

### **Keep Constant Watch**

With steep slopes in your right of way, your maintenance ethos can never be "set it and forget it." Drastic inclines not only make it more difficult for your team to inspect the land you're responsible to maintain — they also increase the likelihood of damage and mishap to your land and equipment as time goes on.

If your team has drones and licensed pilots as ours does, that can provide a safe and efficient method to check your ROW regularly for slope deterioration or other signs of trouble when your team can't walk the incline to inspect it visually. Incorporating multi-spectral payloads into the drone inspection allows you to check the status of your vegetation, while LiDAR payloads can watch for slope movement. With major transmission or utility lines that are the lifeblood of your business, the value of regular check-ins cannot be understated.

### **How We Can Help**

Your company can mitigate risk and avoid negative impacts with the Fisher Energy Team on your side. Let's talk about how our engineering, survey and design experts can help you keep your land and assets in optimal shape.



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