Hemlock Cliffs

Sustaining a Priority Hoosier Landmark

Hoosier National Forest | Great American Outdoors Act | Trail No. 112.10

Approaching the new bridge from the western trailhead.

The Project: Abridged

In mid-2020, bridge inspectors with the Hoosier National Forest noticed a problem. Steel supports under one of three bridges on the Hemlock Cliffs Trail were beginning to show signs of surface rust. While not structurally compromised, this early sign of wear indicated that the bridge would eventually need replaced.

The height and length of the existing bridge posed an additional problem. The base sat only a few feet above the streambed. Though infrequent, flooding waters through the stream could reach or even overtake the bridge's walking surface. To solve this, engineering staff from the Eastern Regional Office proposed a new design. The replacement bridge has a higher clearance to allow water or debris to safely pass below it. The new bridge is longer to accommodate the clearance, with sturdy stone abutments included in the new construction.

A New Bridge

The new trail bridge at Hemlock Cliffs is longer, taller, and more robust. Steel beams were replaced with a stronger, longer lasting glulam support structure.

Glulam?

Glulam is a unique material composed of wood laminations bonded with strong, moisture resistant adhesive. This material is well suited for a bridge over an intermittent stream.

Stronger than Steel

Pound for pound, glulam is stronger than conventional lumber. It can even be stronger than steel. The original bridge had a little "spring" to it when visitors crossed. This bridge is more solid, meant to last many years.

Getting to the Site:

Moving large amounts of material to the existing bridge required careful collaboration between contracted personnel and their equipment. Beams, some longer than 20 feet had to be carried between two machines working in total unison.

To accommodate the move, existing stairs were removed at the start of the project. They were reconstructed with new materials after the bridge was completed. The stairs were filled with new aggregate to provide a solid walking surface. Some of the old wood was recycled; incorporated into drainage structures where possible.

Above: An area where stairs were removed to accommodate equipment travel. Below: New stairs still under construction in an incised section of trail.

Newly constructed stairs filled with new aggregate to match the rehabilitated trail tread.

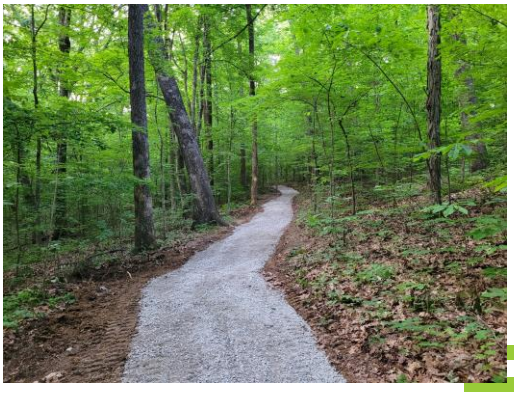
Not only were existing stairs reconstructed--a new flight of stairs was added in an area of trail heavily incised from erosion and visitor use. When a trail is incised, water cannot exit to the adjacent hillside. over time, this type of trail begins to act like a funnel. When water cannot escape, it flows directly down the trail causing further erosion and damage. Hikers would have difficulty navigating this area unless conditions were completely dry.

Any project of this scope requires additional finishing touches. The access route for equipment and personnel included over 2000' of the western trail.

On their way out, contractors installed or reestablished nearly fifty drainage structures along the trail. These reverse-gradient-dips or "dips" for short are small mounds built into the tread to slow water as it moves down the trail. Installed in a series, and paired with outlets to redirect the water, these "dips" allow the trail to shed water after intense rains. With tall trees throughout the area, sunlight alone is not enough to keep the trail dry.

Limestone Crush: Many years and many thousands of visitors have gradually widened the trail at Hemlock Cliffs. What was once a three-foot-wide trail has now become six or seven feet in some areas. Contractors added 200 tons of crushed limestone aggregate to provide a durable, more sustainable hiking surface. Now only three to four feet wide, the trail still provides plenty of space to walk two to three people across. Contractors seeded the extra width of the corridor to allow native vegetation to reclaim the exposed soil.

Above and below: Sections of the existing trail with newly placed aggregate. The trail now has more defined edges which should help prevent widening over time.



The Great American Outdoors Act:

The Great American Outdoors Act (G.A.O.A) is an historic investment in the protection and sustainment of our great shared public lands. Funding from this act allows land management agencies like the Hoosier National Forest to address a backlog of deferred maintenance across trails, recreation areas, shared resources, and historic locations. Hemlock Cliffs is a priority recreation area. It features a moderately challenging hiking trail through historical, cultural, geographical, and ecologically important features. The Hoosier National Forest is proud to have completed this project with assistance through G.A.O.A. on this iconic Hoosier landmark.

GREAT AMERICAN OUTDOORS ACT