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**The mission of Iowa's LTAP:**

To foster a safe, efficient, environmentally sound transportation system by improving skills and knowledge of local transportation providers through training, technical assistance, and technology transfer, thus improving the quality of life for Iowans.

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## Installing soil nails

Following is a general description of the soil nailing process. (Begin at the top of the wall and work down.)

1. Excavate a bench 4–6 feet high. Because soil can collapse after excavating the bench, excavate only as much as you can complete within the same work shift.
2. Drill holes (the number of holes and their distance apart depend on the site) measuring 6–8 inches in diameter in soil or 3–4 inches in rock, angled 15 degrees below the horizon.
3. Fill holes with ready-mixed grout soon after drilling.
4. Insert nails immediately after grouting. Nails should be equipped with centralizers and long enough to penetrate the excavation failure plane.
5. Install horizontal and vertical drain strips on the facing to control seepage and eliminate hydrostatic pressure buildup.
6. Cover face with reinforced steel.
7. Apply shotcrete (concrete applied with a hydraulic hose) to the face.
8. Fit steel plate and anchor nut on protruding nails before the shotcrete sets.
9. Repeat steps 1–8 through the height and length of wall.
10. Apply final facing.

For more detailed information, contact Curtis Monk, division bridge engineer with FHWA, Iowa Division, 515-233-7320, [curtis.monk@fhwa.dot.gov](mailto:curtis.monk@fhwa.dot.gov).



Photos (including cover photo) courtesy of Curtis Monk, FHWA Iowa Division

