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Design of the phase two portable rail project track: a new system to minimize site disturbance in specialized forest operations and recreational applications

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Decauville's narrow gauge railroad originated in France, and was influential in forestry globally. Because rail distributes the weight of hauled loads on a track system, the influence of repeated skidding on soil disturbance can be minimized with a lighter weight system designed for short duration, temporary use, particularly when deployed with small log loads and without installation of a permanent, compacted grade. In recent field experiments, we have evaluated the use of a simple, portable rail conveyor coupled with shovel logging using a mini-excavator for small wood utilization on moderate slopes. Recreational uses of the portable rail system as an alternative to off highway vehicle use have also been evaluated. The system is intended as a tool for specialized silvicultural applications, such as woodlot management by small private landowners, forestry in regions where extensive wetland areas and moderate topography limit cable logging, implementing treatments in wilderness or designated roadless areas, and other operational activities where ground disturbance and soil impacts need to be minimized. Following completion of the first of three design phases, phase two project development is focused on 1) providing recreational access for the handicapped and elderly in the woods in remote areas, and 2) improving track installation time. Whereas the 182 meter bolted phase one track was installed in the woods at three locations at a rate of 15 meters feet per hour, the design target for the current, phase 2 track is 150 meters per hour.