

Forest road network design for walking load reduction

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A forest road network plays an important role in improving walking accessibility to destinations inside forestland. The common concepts required for the network design are not also to hold down road construction costs, but also to reduce walking loads. Thus, we present a new network design problem of simultaneously minimizing the road construction costs and the walking loads, which is a generalization of the multiple target access problem with walking activity. In this paper, the walking loads are construed as the total time necessary to travel back and forth between the network and the destinations by foot. The problem is solved by the weighted sum method and the shortest path based heuristic.

Key words: forest road network planning, walking load, optimization, graph theory