



# Lakeland Park Trail Design: A Safe And Functional Approach

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## Introduction

### Project Summary:

As part of a community restoration project at Lakeland Park that aims to increase community access to and use of the park's forested natural area, we are creating a new trail system. The next phase of the trail building requires the construction of several steps along a steep slope.

### Materials:

We prefer to keep the steps natural to fit into the park setting. We are envisioning that they'll be constructed of wood from Camp Small, Baltimore City's urban wood recycling facility. Steps should be approximately 4-5' wide with a consistent rise of approximately 6-8". The steps should be stable and durable.

### Challenges:

Water management along the steep slope presents future challenges related to erosion and trail washouts. Water management systems may need to be implemented such as drainage swales or water bars. The trail has limited equipment access meaning tools and materials will need to be carried onsite. The soil along the slope is moderately compacted which could make excavation of the hillside difficult. The grade of the hillside could make it challenging to keep the steps evenly spaced apart.

## Our Solution

The proposed structure spans a 40-foot-long, 19-foot-high slope and consists of 33 steps. Each step is constructed using wooden slabs that act as risers and are reinforced with stakes for added structural stability. The stakes are partially buried to secure the slabs while avoiding any tripping hazards for users. A tread depth of 14.5 inches provides sufficient footing for comfortable use. The staircase is designed with a width of 54 inches, allowing multiple people to use the trail simultaneously.

To manage stormwater and reduce erosion, the design incorporates a swale running parallel to the staircase. This swale is filled with rocks found on-site, promoting sustainability while improving drainage. At the top of the hill, a small diversion ditch directs water into the swale, preventing runoff from flowing down the steps. Each step is slightly sloped to guide water laterally into the drainage system.

Wood chips are added to the tread surface to enhance grip and reduce muddy conditions during wet weather. The design uses only slabs, stakes, and wood chips, all of which are available locally at Camp Small, minimizing project costs. This limited material palette also supports a natural aesthetic that blends with the surrounding environment. Construction is simple and can be completed with basic tools and volunteer labor, making the project highly feasible. By prioritizing durability, accessibility, and environmental sensitivity, the design creates a safe and inviting trail feature.

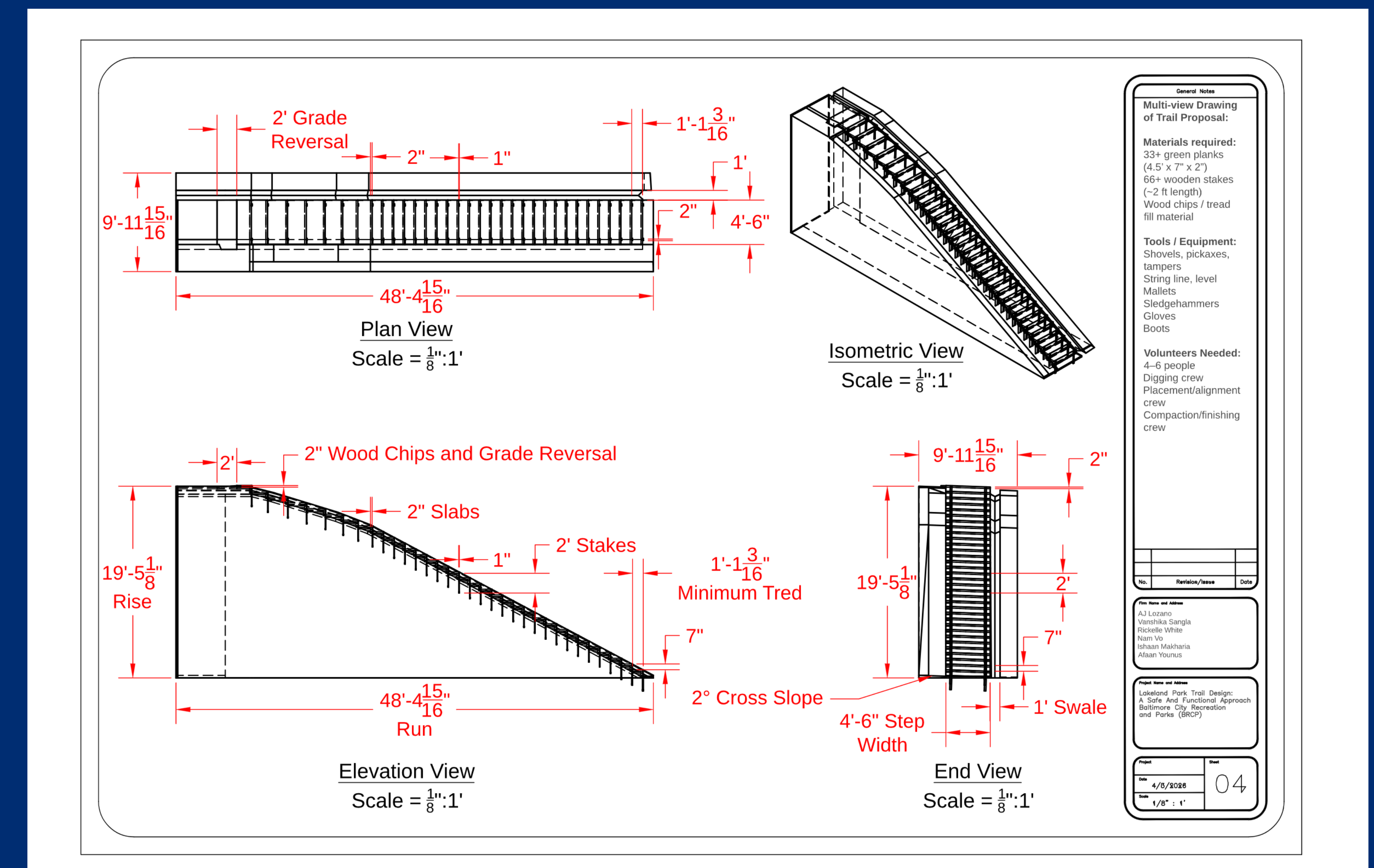


Figure 1: Autocad Multiview Drawing of Final Design



Figure 2: Staircase showing wooden steps, supporting stakes, woodchip treads, and a drainage swale along the hillside.

Table 1: Cost Estimate

Item	Unit	Quantity	Unit Price	Total
Green Slabs	Board Foot	173.25	\$2.00	\$348.00
2' Pine Grade Stakes *	Pack (12 stakes per pack)	6	\$8.98	\$55.00
Arborist Chips	Cubic Yard	1.66	\$10.00	\$17.00
<b>Material Transportation</b>				
Log Truck Delivery	Truck Load	1	\$100.00	\$100.00
Dump Truck Delivery	Truck Load	1	\$50.00	\$50.00
<b>Total Cost:</b>				<b>\$570</b>

\*Source: Home Depot