Sultan Hamud Pedestrian Bridge
Crossing the Nzeveni River, Kenya
By: United Engineers for a Sustainable World (UESW)
Presented By: Garrett Miller
Professor: Jerome O’Connor P.E.
University at Buffalo
CIE 416 Civil Engineering Capstone Design

Project Description
The University at Buffalo’s Civil Engineering Capstone Design students, with the guidance of Bridging the Gap Africa (BtGA), undertook the design and preparation of contract documents for construction of a suspension footbridge across the Nzeveni River, in the area of Sultan Hamud Eastern Province, Kenya.

Geological & Hydrology Report

Geological- Little information is available regarding the geology of Kenya. There are two physiographic regions in Sultan Humad: the flat plains and the hills surrounding the area. The highest point in the area is the Emali trigonometrical beacon, which rises to 5,953 feet. The lowest point is roughly 4,000 feet forming part of an old river terrace.

Hydrology- For future consideration when investigating potential locations for bridges the use of a checklist was proposed to BtGA.

Environmental Assessment

Legal Notice No. 19
The Environmental Management and Co-Ordination (Wetlands, River Banks, Lake Shores and Sea Shore Management) Regulations, 2009

Legal Notice No. 120
Environmental Management and Co-Ordination (Water Quality) Regulations, 2006 Arrangements of Regulations

Design Results

Construction of hanger section and flooring system. The bridge design will consist of 36 of these hangers.

Design Approach

Quantity Takeoff

This Quantity Takeoff can be quickly used to find a Cost Estimate once the cost of materials in Africa is known.

Training and Maintenance Plan

UESW’s worker Training Program accounts for limited worker knowledge and includes a two-part training program:
- Part 1- Introduction video in a classroom setting
- Part 2- Hands on field training

Risk Assessment

Our Risk Management strategy includes risk management planning, risk identification, risk analysis, risk mitigation, and risk monitoring and control.