

The software enables the investigation of stress distribution, settlement, and deformation characteristics of the road subgrade under different environmental factors.

These provides valuable insights into the behavior and performance of stabilized clay soil as a road subgrade material which contributes to the optimization of stabilization techniques for road construction projects, aiding in improved design and maintenance strategies.

By providing different thickness of treated subgrade soil within the existing problematic soil and embankment, the stress distribution and settlement is evaluated. From the analysis the vertical displacement value was reduced by increasing the thickness of the treated subgrade layer. For instance, at the higher thickness of treated soil utilized, vertical displacement was reduced from ranging from 11.5% to 17%.

The experimental test of specimen and evaluation of the characteristics of improved subgrade on proposed road cross sections simulating shows that there is significant change in settlement reduction and stability.

Keywords: Stabilized clay soil, Road subgrade, PLAXIS 3D, Fine shredded paper

Human Labor Based Road Construction Practices by the *Limat Budin* (a sub-kebele) in South Ari Woreda.

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The purpose of this paper is to analyse the local practice of human labor-based road construction in South Ari Woreda in order to understand the historical change of road maintenance in Ethiopia. Forty-nine informants were purposely chosen from the three kebeles and interviewed. Secondary data were collected from the kebele and other offices. Besides the various government programs of road development in Ethiopia during each regime, the rationales that initiated the human labor-based road construction in the rural areas of the country were not out of the context then. Different from Highway Program and Road Sector Program, the Road Sector Development Program gave due attention to rural roads under Universal Rural Road Access Program (URRAP). The program aimed to connect all kebeles by roads of a standard that provides all-weather access. However, because URRAP is constructing roads that connect the kebele centers, rural communities who live distantly from the URRAP road have little possibility of using it. To solve this problem *Limat Budins*, a sub-kebele in the study sites, were organized and constructed roads (referred as LB roads) in their respective locations to connect themselves either to the nearby URRAP road or to the kebele centers using their own resources. The collected data revealed; 1) Prior to the LB road construction, the residents of the three kebele had problems that were remarkably comparable (health, agriculture, education, and safety). 2) LB road site selection was done differently at each site: by the Woreda agricultural agent in Ayida kebele, by the *tefases limat* foremen in Shangama Woset kebele, and by the local elders in Shangama Bili kebele. 3) In Ayida & Shangama Woset kebeles male & female equally participated on LB road work, but in Shangama Bili, females were more involved in feeding & entertaining males at the road construction site. 4) The LB Road construction period in Ayida and Shangama Woset kebeles coincided with the *tefases limat* work, which is carried out from December to January and managed by local leaders, however it was not aligned to *tefases limat* work in Shangama Bili. 5) Although the severity was varied, common problems were encountered during the LB road construction in the study sites: opposition to the idea of using human labor to construct roads, reluctance to donate land for the construction of the roads, and the brittleness of construction tools.

Keywords: Limat Budin road, rural community, road history and rural road



Current status of enset local knowledge among households in three kebeles in South Ari Woreda, South Omo Zone, Ethiopia

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Local knowledge is context-specific and embedded in the social, economic, and cultural aspects of communities. In this presentation, I would like to examine the current state of enset local knowledge in light of development efforts, such as roads from the results of my field research conducted from November 2022 to January 2023 in the three kebeles namely Woset, Bili, and Arki in South Ari Woreda, South Omo Zone, Ethiopia.

Data were collected through semi-structured interviews including a questionnaire survey with 107 informants and direct observations. Enset plot size and the distance between the informant's house and the road were measured using GPS. The results included the following: 1) There are gender divisions of labor in the preparation and cultivation of enset seedlings, however, this difference was not significantly recognized in the knowledge base. 2) The methods of propagation of enset suckers were the same in all three kebeles, except for 2 individuals from the Woset kebele. 3) When 40 females and 35 males were interviewed about enset use and landrace identification, females listed 10-22 enset landraces, while males listed 10-17. They distinguished the difference between *kocho* type and *amicho* type. 4) About *kocho* fermentation and its storage period of time; women tend to be more knowledgeable than men. 5) Interview results of the 45 household heads and the enset farm size measured by GPS data revealed that the nearer to the road, the smaller farmland allocated. And also 6) it showed that the households living away from roadsides have rich in enset varieties and are probably more knowledgeable than those living near the roadside. 7) There were 51 enset landraces grown by 45 household heads. 8) The knowledge level of households and their age are positively related.

Keywords: road access, enset, local knowledge