

COMPACTION USING EQUIPMENT VERSUS WRAPPING SOIL WITH BAGS

Without any equipment for compaction, is it possible to build a base course to bear the traffic load simply using the in situ soil reinforced by being placed in "Do-nou" bags? The effect of such reinforcement has been confirmed through full-size driving tests (Figure 3 and 4). When a vehicle drove on the base course without "Do-nou", consist of only gravel compacted by tamper, the depth of the rut ultimately formed by the vehicle passing 10 times exceeded 15 cm; at that point, the vehicle could not drive along it anymore because the bottom of the car collided with the road. However, on the base course reinforced with "Do-nou" manually compacted, the depth of the rut formed by the vehicle passing 10 times was reduced to 33% of that without "Do-nou"; the settlement showed convergent behavior. Even after 200 passes at the end of the test, the road still maintained trafficability.

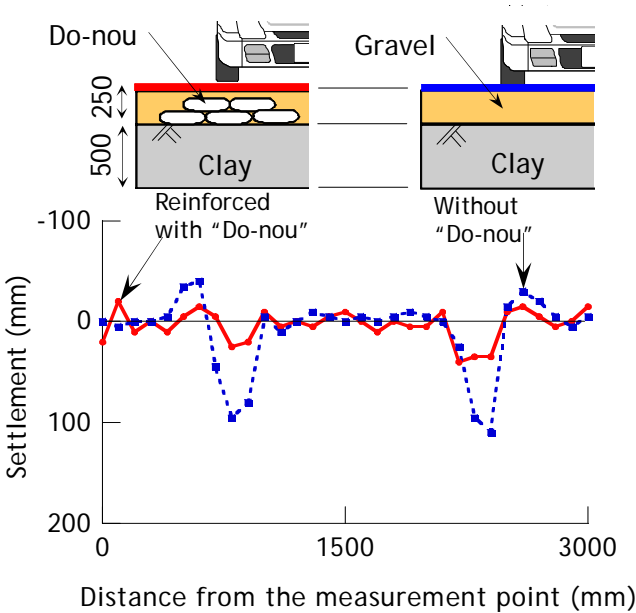


Figure 3. The settling of the road surface after a vehicle passes 10 times.

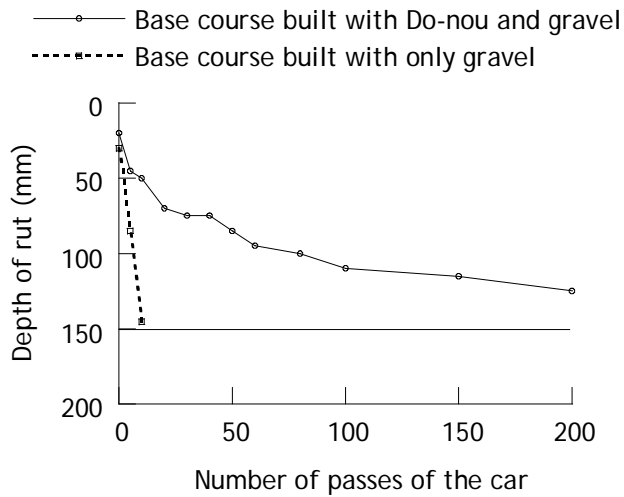


Figure 4. Relationship between the rut depth and number of car passes.

The effect of “Do-nou” as a reinforcement mechanism is easily understood by people engaged in the work during the demonstration (Figure 5 and 6). Therefore, the participants could understand the reason why soil is put in “Do-nou” bags and the concomitant importance of manual compaction on “Do-nou”.



Figure 5. Kenyan farmers assessing the hardness of “Do-nou” after compaction.



Figure 6. “Do-nou” bears the load of a heavy tractor during construction (Kenya)