

# Embankment Fill

## Summary

- Rate of Placement:  $\leq$  10 feet deep
- Rubber Type: Shredded
- Tires Used: 50 tires per cubic yard (based on unit weight of compacted tires of approximately 38 pcf)
  - Example: For a one-foot deep embankment under a one-mile section of two-lane road, 235,000 scrap tires could be used
- Advantages
  - Can be used where lightweight fill is required
  - Lower cost than other lightweight fill
  - Beneficially utilizes many waste tires
- Disadvantages
  - Lack of awareness (general public, contractors, and public officials)
  - Lack of access to specifications
  - Higher cost than regular-weight fill



An embankment is a mound, typically constructed of fill dirt or stone, built to hold back water or to support a roadway. In some instances, the ground upon which the embankment is to be built is too weak to support such heavy materials. In these cases, lightweight fill material is used to construct the embankment. Conventional lightweight fill materials are usually much more expensive

than regular-weight fill materials like dirt or stone.



Shredded scrap tires may be used as an alternative fill material in circumstances where lightweight fill is required. Although shredded tires are also more expensive than regular-weight fill materials, they are considerably less expensive than conventional lightweight fill materials. When used as embankment fill, scrap tires can be used at a rate of approximately 50 tires per cubic yard of fill.

- Sources
  - A Laboratory and Field Evaluation of the Use of Waste Materials in Highway Construction (S.N. Amirkhanian, 1999)
  - A Feasibility Study of the Use of Waste Materials in Highway Construction (S.N. Amirkhanian and D.M. Manugian, 1994)
  - User Guidelines for Waste and Byproduct Materials in Pavement Construction (Turner-Fairbank Highway Research Center, FHWA, [www.tfhrcc.gov/hnr20/recycle/waste/index.htm](http://www.tfhrcc.gov/hnr20/recycle/waste/index.htm))
  - US Environmental Protection Agency ([www.epa.gov/epaoswer/non-hw/muncpl/tires/civil\\_eng.htm](http://www.epa.gov/epaoswer/non-hw/muncpl/tires/civil_eng.htm))