EARTH RETAINING STRUCTURES (COSTS)

The attached graph depicts relative costs per square foot of wall face area for commonly used types of earth retaining structures. These costs have been developed from actual bid prices accumulated over several years; however, they should not be considered absolute dollar values for the various types of earth retaining structures because many factors affect the actual costs for a specific project. Primarily, this graph aids in the type selection process by identifying the most economic earth retaining structure for the site. Technical feasibility and aesthetics are other factors which must be considered.

In comparing the cost for the Type 1 wall with spread footing and the MSE system, there could be a significant range of wall heights for which it is difficult to predict which system would have the lowest overall cost for a given project. Assuming both the Type 1 wall with spread footing and MSE system are appropriate for a site and a large percentage of the wall has a height less than 25 feet, it is recommended that the Type 1 wall alternative be shown on the contract plans. This is because currently there are three pre-approved proprietary earth retaining systems similar to the MSE system that can be listed as alternatives in the contract special provisions.

To effectively reduce overall project costs, a combination of earth retaining systems may be considered for any given wall. An example would be where the traveled way is to be widened under an existing structure necessitating the removal of a portion of the abutment slope and supporting the remaining cut slope or embankment. For this situation it may be appropriate to use a tiedback wall directly under the existing structure and a Type 1 wall with spread footing on the flanks.

The Bridge Estimating Section will prepare specific cost estimates for planning studies.

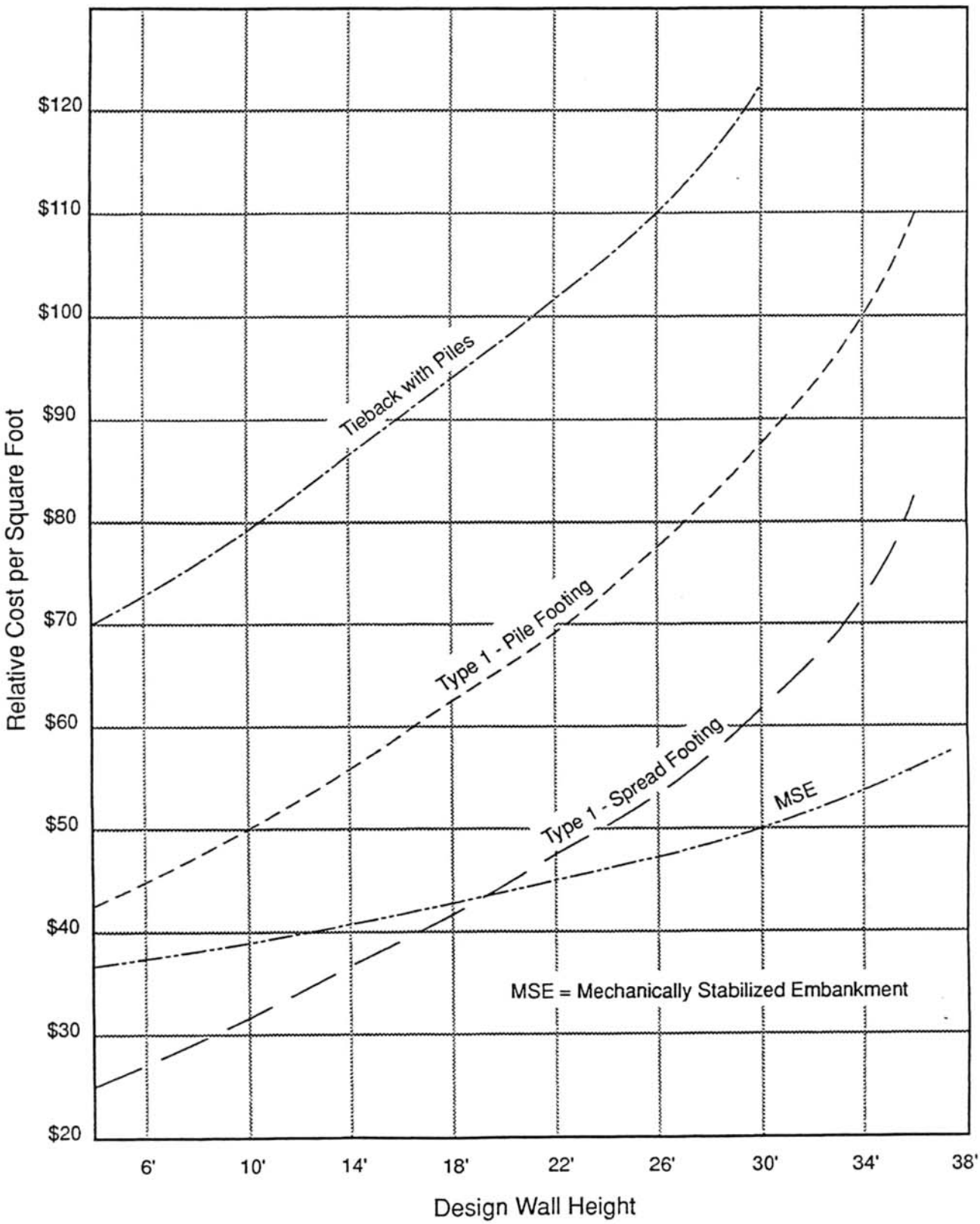
Philip C Warriner

Guy D. Mancarti

JCM:jgf
Attachment

New Memo

Attachment


$120
$110
$100
$90
$80
$70
$60
$50
$40
$30
$20
Relative Cost per Square Foot
Tieback with Piles
Type 1 - Pile Footing
Type 1 - Spread Footing
MSE
MSE = Mechanically Stabilized Embankment
6'
10'
14'
18'
22'
26'
30'
34'
38'
Design Wall Height