Mechanically Stabilized Earth Wall (MSEW)

Written By:

Eng. Adeeb Mahmood (11819508)

Eng. Shaher Jarrar (11819158)

Eng. Mona Yahya (11716220)

Eng. Isam Awad (11611656)

Supervisor: Dr. Isam Jardaneh



Introduction

•(MSEW)



•(Cantilever retaining wall)



Mechanically Stabilized Earth Wall

- design (MSEW) at H = 5m
- internal stability
 - SV = 0.5 m
 - SH = 1 m
 - t = 5 mm
 - W = 75 mm

L = 12 m

• external stability $FS_{(\text{overturning})} = 37.39 > 3$ $FS_{(sliding)} = 4.51 > 3$ $FS_{(bearing capacity)} = 24.2 > 5$



Mechanically Stabilized Earth Wall

- design (MSEW) at H = 10m
- internal stability
 - SV = 0.6 m
 - SH = 1 m
 - t = 9 mm
 - W = 75 mm

L = 16 m

• external stability $FS_{(\text{overturning})} = 25.26 > 3$ $FS_{(sliding)} = 3.83 > 3$ $FS_{(bearing capacity)} = 13.7 > 5$



Mechanically Stabilized Earth Wall

- design (MSEW) at H = 15m
- internal stability
 - SV = 0.6 m
 - SH = 1 m
 - t = 11 mm
 - W = 75 mm

L = 18 m

• external stability $FS_{(\text{overturning})} = 11.55 > 3$ $FS_{(sliding)} = 6.54 > 3$ $FS_{(bearing capacity)} = 11.56 > 5$



1)designed a wall cantilever at height 5 meters manually

2)design a wall cantilever using the program prokon at height (5,10,15)



• design cantilever wall at H = 5m manually

 $F.S_{overturning} = 2.96$ $F.S_{sliding} = 1.35$ $q_{MAX} = 127.79 \ KN/m^2$



• at 10 meterat height





• at 15 meterat height

Design code: ACI 318 - 2011



Conclusion

	Cantilever retaining wall	(MSEW)	% of saving
5	3139.2 NIS/m		No Saving
10			
15			

On the other hand of savings on labor cost, in traditional way the percentage of labor cost

(40%-60%)

in contrast using design by (MSEW) percentage of labor cost

(20%-30%).

Conclusion

☐ more important than the technology and performance advantages, the primary reason for the acceptance of MSEW is

- Economical.
- and rapid, predictable construction pace are the basis for the current extensive usage.