William Rossell

CE 417

Homework 40 (Flood Resilience)

Due Date: 04-02-2018

**Value Engineering Problem for a Flood Resilient Construction Project**

Building Area = 48’ x 72’ (SLAB) *i* = 10% n = 30 years

To calculate reconstruction costs:

A. B.

C. D.

To calculate present maintenance costs:

A. B.

C. D.

To calculate present repair cost after 10 years:

A.

To calculate present repair cost after 20 years:

A.

To calculate benefit (as directed by Dr. Uddin in class on 03/28):

A.

B.

C.

D.

To calculate total costs:

A.

B.

C.

D.



a. Calculate the life cycle present worth cost of each alternative.

**Final Solution a.:** Presented in the preceding calculations and table.

b. Rank the four alternatives by the least total present worth cost.

**Final Solution b.:** B, A, D, C

c. Rank the four alternatives by the present worth benefit to cost ratio(Presented greatest to least).

**Final Solution c.:** C, D, B, A

(--if considering the assignment email when Benefit was specified as being the Resale Value, this ranking would remain the same with the following B/C Ratios:

C = 2.98, D = 2.97, B = 0.99, A = 0.43

--if considering the present worth of the future resale value using the same coefficient as the present cost of repairs, the ranking still remains the same with the following B/C Ratios: C = 0.171, D = 0.170, B = 0.056, A = 0.024)

d. What is the total intial cost of the entire community reconstruction project based on the recommended top ranked alternative in (b.)?

**Final Solution d.:** With the recommended top ranked alternative in (b.) considered to be construction alternative B, the initial cost per house is $138,240.00. Therefore, to construct the entire community of 100 low-income housing units the cost would be: