CTE 442 – Winter 2024

Assignment 2 (Excavation)

SUBMITTED TO: Ghassan Nimry
SUBMITTED BY: LENIN RAI(113208227)

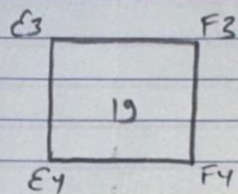| CO-ORDINATE	GRID NUMBERS	CURRENT ELEVATION (m)	PROPOSED ELEVATION (m)	DELTA (m)	AVG CUT/FIL L ELEV	GRID AREA (m2)	VOLUME (m3)	NET VOLUME cubic m
C3	17	103.8	104.1	-0.3	-0.25	100		
D3	17	104.3	104.1	0.2	-0.25	100		
D4	17	104	104.1	-0.1	-0.25	100		
C4	17	103.3	104.1	-0.8	-0.25	100		
							-25	
D3	18	104.3	104.1	0.2	0.50	100		
E3	18	105.3	104.1	1.2	0.5	100		
E4	18	104.8	104.1	0.7	0.5	100		
D4	18	104	104.1	-0.1	0.5	100		
							50	
E3	19	105.3	104.1	1.2	0.44	100		
F3	19	104.4	104.1	0.3	0.44	100		
F4	19	104.2	104.1	0.1	0.44	100		
E4	19	104.25	104.1	0.15	0.44	100		
							43.75	
C4	24	103.3	104.1	-0.8	-0.59	100		
D4	24	104	104.1	-0.1	-0.59	100		
D5	24	103.65	104.1	-0.45	-0.59	100		
C5	24	103.1	104.1	-1	-0.59	100		
							-58.75	
D4	25	104	104.1	-0.1	0.18	100		
E4	25	104.8	104.1	0.7	0.18	100		
E5	25	104.6	104.1	0.5	0.18	100		
D5	25	103.7	104.1	-0.4	0.18	100		
							17.5	
E4	26	103.15	104.1	-0.95	0.49	100		
F4	26	104.2	104.1	0.1	0.99	100		
F5	26	105.3	104.1	1.2	0.99	100		
E5	26	105.7	104.1	1.6	0.99	100		
							48.75	
C5	31	103.05	104.1	-1.05	-0.90	100		
D5	31	103.65	104.1	-0.45	-0.9	100		
D6	31	103.3	104.1	-0.8	-0.9	100		
C6	31	102.8	104.1	-1.3	-0.9	100		
							-90	
D5	32	103.8	104.1	-0.3	-0.16	100		
E5	32	104.45	104.1	0.35	-0.16	100		

E6	32	104.2	104.1	0.1	-0.16	100		
D6	32	103.3	104.1	-0.8	-0.16	100		
							-16.25	
E5	33	104.35	104.1	0.25	0.50	100		
F5	33	105.2	104.1	1.1	0.50	100		
F6	33	104.7	104.1	0.6	0.50	100		
E6	33	104.15	104.1	0.05	0.50	100		
							50	
								TOTAL FILL= - 190
								TOTAL CUT= +210
								TOTAL NET VOLUME = 20

Lenin Rai
Assignment 2   (Question 2)

* Grid 19

E3 ────────── F3
│   │
│   19   │
│   │
E4 ────────── F4

−ve = Fill
+ve = Cut

Points	Current Elev (m)	Proposed Elev (m)	Delta (Δ) m
E3	105.3	104.1	1.2
F3	104.4	104.1	0.3
F4	104.2	104.1	0.1
E4	104.25	104.1	0.15

$$\Sigma \Delta 19 = 1.75$$

$$\Delta \, average = \frac{\Sigma \Delta 19}{4}$$

$$= \frac{1.75}{4} = 0.4375 \, m$$

$$= 0.44 \, m \quad (2 \, decimal \, place)$$

$$\therefore Volume = 10m \times 10m \times (0.4375) \, m$$
$$= 43.75 \, m^3 \Rightarrow (cut)$$

* Grid 32

D5   E5

$$\boxed{32}$$

D6   E6
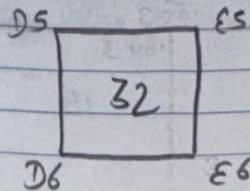
Points	Current Elev (m)	Proposed Elev (m)	Delta (Δ) m
D5	103.8	104.1	-0.3
E5	104.45	104.1	0.35
E6	104.2	104.1	0.1
D6	103.3	104.1	-0.8
			$\Sigma \Delta = -0.65$
			32

$$Avg \Delta = \frac{\Sigma \Delta \ 32}{4}$$

$$= \frac{-0.65}{4}$$

$$= -0.1625 \rightarrow -0.16 \, m$$

∴ Volume = 10m × 10m × (-0.1625) m

$$= -16.25 \rightarrow (Fill)$$

* Assume

	C 103.3	D 104.3	E 105.3	F 104.4

3

104.3	105.3

17   18   19

4 ·   103.3   104   104   104.8   104.25   104.2

24   25   26

5   103.1   103.65 103.4   104.6   105.7   105.3

81   32   33

6   102.8   103.3   104.2   104.7

Summary and findings:

During assignment 2, the provided file illustrates the progression of the contour maps. I conducted various analyses, including determining square numbers, square areas, proposed elevations at each corner of the grid, and estimating existing elevations at each corner of the grid based on the figures. Additionally, I calculated the difference in elevation at each corner of the grid. After obtaining these values, I computed the average fill or cut elevation for each grid box and/or each corner of the grid. Using a spreadsheet, I calculated the net volume, which amounted to 20 cubic meters.