# Cut and Fill Problem

➢ Compute the total cut-and-fill for the following site

➢ The original elevations are:

|   | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| 1 | 105 | 104 | 104 | 103 | 102 |
| 2 | 104 | 104 | 103 | 102 | 101 |
| 3 | 103 | 103 | 102 | 101 | 100 |
| 4 | 103 | 102 | 101 | 100 | 99 |
| 5 | 101 | 100 | 99 | 98 | 97 |

➢ The size of each cell is 25 ft. by 25 ft.

➢ The proposed site is at an elevation of 103 ft.

➢ To compute the cut-and-fill compute the change in elevations (original elevations minus proposed elevations gives).

|   | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| 1 |   |   |   |   |   |
| 2 |   |   |   |   |   |
| 3 |   |   |   |   |   |
| 4 |   |   |   |   |   |
| 5 |   |   |   |   |   |

➢ Positive values indicate cut and negative values indicate fill.

➢ The resulting cut-and-fill volumes for each cell in the entire grid system is:

|   | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| 1 |   |   |   |   |
| 2 |   |   |   |   |
| 3 |   |   |   |   |
| 4 |   |   |   |   |

➢ A sited model with a 5 x 5 grid system contains 4 x 4 cells

➢ The total cut is:

➢ The total fill is:

$$On\,site = \left( \frac{\$2.50}{yd.^3} \right)(cut - fill)$$

$$Off\,site = \left( \frac{\$5.00}{yd.^3} \right)|fill|$$

$$Off\,site = \left( \frac{\$3.00}{yd.^3} \right)cut$$