## Cost Control Problem

Calculate contractor cost variances and gross income variances for Install Base and Topping for the second and third weeks of month 3 (at end of day 50 and day 55) of the pavement project used in the previous homework (Earned Value Problem). (Note: The actual start and finish dates of Place Topping has been changed from the previous problem, so it overlaps with Install Base.) Use the unit prices and budgeted labor hours given in Table 1 below. The actual performance data is given in Table 3. The contractor's cost control data is shown in the attached Table 4.

Table 1 - Unit prices:

| Pay Items | Quantity | Unit | \$/Unit | Labor hr |
| :--- | ---: | :---: | :---: | :---: |
| Detour | 1 | LS | 62,000 |  |
| Install Base | 8,000 | CY | 79.00 | 5,000 |
| Topping | 36,000 | SY | 35.00 | 9,000 |

Table 2 - Estimated costs:

| Cost Item | Quantity | Unit | Material | Equip. | Labor | Sub | Duration |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Detour | 1 | EA | \$14,000 | \$24,000 | \$16,000 |  | (work days) |
|  |  |  |  |  |  |  | 15 Install |
|  |  |  |  |  |  |  | 10 Remove |
| Concrete plant (for topping) | 1 | EA |  | \$60,000 |  |  | 20 Deliver |
| Install base | 12,000 | CY@ | \$14 | \$15 | \$13 |  | 30 |
| Concrete topping | 8,000 | CY@ | \$60 | \$25 | \$34 |  | 30 |
| Quality control ( $1 / 2$ for base and $1 / 2$ for topping) | 1 | EA |  |  |  | \$40,000 |  |
| Variable overhead (\$/day) |  |  | \$120 | \$250 | \$280 |  |  |
| Fixed overhead | \$250,000 |  |  |  |  |  |  |
| Profit markup | \$150,000 |  |  |  |  |  |  |

Table 3: Actual performance on project. Month $=20$ working days.
Day refers to 6:00 pm (end of day)
Detour in $\quad$ Started day 3, finished day 16
Detour out
Concrete plant
Install base
Place topping
Started day 94, finished day 98
Delivered day 19
Started day 23, finished day 59
Started day 44, finished day 78

## Change Orders:

Install base $\quad$ Change order $=+\$ 2.00 / \mathrm{CY}$ and $U_{p}=+500 \mathrm{CY}$ (during $2^{\text {nd }}$ month)
Place topping Increase thickness by 2 inches and change order $=+\$ 4.00 / \mathrm{SY}$ (during $2^{\text {nd }}$ month)


