

Unit Price Problem

A pavement replacement project has the pay items and engineer's estimate of quantities shown in Table 1. The contractor's costs for his cost items are given in Table 2. A network for the work is shown below.

1. Calculate the unit prices of the pay items for the construction contract. Assume that the cost items, which are not pay items, will have their cost allocated to the pay items with which they are associated. Overhead and profit, however, will be allocated evenly over all dollars of direct cost.
2. Determine the effect on gross income, particularly on fixed cost recovery, if the new pavement width increases by 10%. This affects base, topping and duration (no changes in unit prices during construction, after contract is signed)

Table 1:

Pay Items	Quantity	Unit
Detour	1	LS
Remove Pavement	24,000	SY
Install Base	8,000	CY
Barricades	5,000	LF
Topping	36,000	SY
Signs	1	LS
Lights	1	LS
Culverts	3	EA
Landscape	150,000	SY

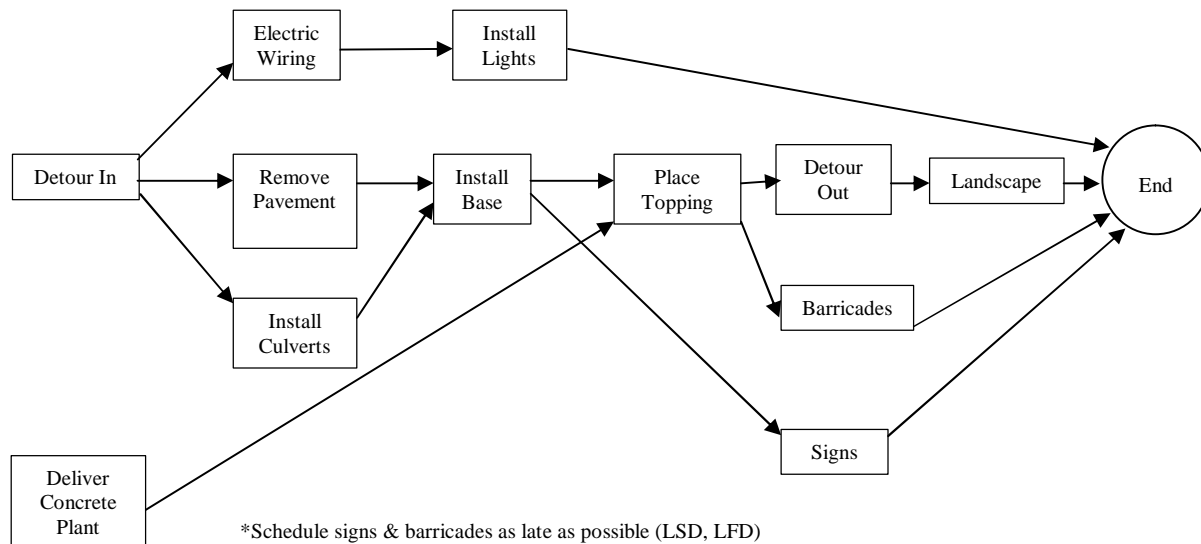


Table 2:

Cost Item	Quantity	Unit	Unit Cost = \$/Unit				Duration (work days)
			Material	Equip.	Labor	Sub	
Detour	1	EA	\$14,000	\$24,000	\$16,000		15 Install
Concrete plant (for topping)	1	EA		\$60,000			10 Remove
Culverts	3	EA				\$40,000	20 Delivery
Break pavement	24,000	SY		\$4.20	\$3.60		10 Each
Remove pavement	3,300	CY		\$5.60	\$4.50		50
Install base	12,000	CY	\$14	\$15	\$13		30
Concrete topping	8,000	CY	\$60	\$25	\$34		30
Install wiring	14,000	LF				\$5.00	30
Install lights	30	EA				\$3,600	20
Install signs	40	EA				\$2,400	20
Install barricades	5,000	LF	\$10		\$15		30
Landscape	150,000	SY	\$0.60	\$0.90	\$0.50		40
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						

Schedule signs and barricades as late as possible (at LSD and LFD).