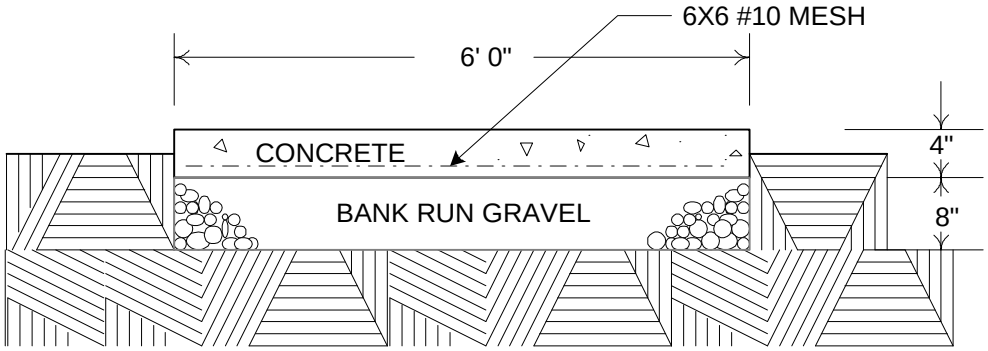
Cost Index Problem

The M-PAVE Construction Co. is a general contractor who does a large amount of concrete paving. M-PAVE wishes to calculate a paving index.

For each of the two methods requested [i.e. (a) & (b)], find the cost index for the year 2000 based on 1982 to which you will assign an arbitrary index value of 100. Use the material and labor cost in Means Building Construction Data in the Construction Laboratory (1340 GGBL). Do not include any adjustments for overhead and profit. Neglect unemployment insurance.

Show all of your work and present it on a computer spreadsheet.

(a) The most common type of paving that M-PAVE does is the sidewalk shown below. Calculate the 2000 index based on the cost of the sidewalk.



Operation	Production/Day	Crew Size
Excavation	40 CY	2 Laborers 1 Equip. Operator (light) 1 Backhoe-loader (3/4 CY)
Place gravel (include material)	2500 SF	Same as excavation
Set side forms (exclude material)	600 LF	1 Laborer 2 Carpenters
Place reinforcing	3000 SF	2 Laborers
Place & finish concrete	12 CY	1 Laborer 1 Carpenter 1 Cement finisher

(b) A list of the items most commonly used by M-PAVE in 1982 is given below.

(1) Calculate the 2000 index based on five (5) items that will give the best indicator of cost changes.

(2) Calculate for three (3) items only.

Bank run sand & gravel		1500	CY
Water washed sand		300	CY
Earth fill	(common borrow)	400	CY
Concrete ready mix	2500 psi	350	CY
	3000 psi	900	CY
	4000 psi	300	CY
Reinforcing steel	6x6x#8 (30#/csf)	2.0	tons
	6x6x#10 (21#/csf)	4.0	tons
	#4 bars (0.67#/lf)	1.0	tons
	#7 bars (2.04#/lf)	0.5	tons
	other steel (use #6)	2.0	tons
Lumber	2x4 S4S stud grade wood	4.0	MFBM
	2x6 S4S stud grade wood	1.0	MFBM
	3/4 in. exterior plywood	2000	SF
	other lumber (use 2x10)	1.0	MFBM
Cement finisher		1200	HR
Carpenter		3000	HR
Laborer		4000	HR
Equipment operator (crane or shovel)		1000	HR
Equipment rental	Backhoe-loader 3/4 CY, rent	600	HR
	Grader 40,000 lb, rent	200	HR
	Other equipment rental	6,000	$
Bonding agent (epoxy resin)		70	Gal

Notes: Use Means Cost Data for labor and materialcosts.
Use the weekly rental rates for equipment (assume 40 hr/week to determine cost per hour).
Use Detroit prices for those item costs specified be geographical area.
Write down your assumptions, if any.

(c) In 1982, M-PAVE Construction constructed 1800 SF of slabs on grade and sidewalks for an office facility at a cost of $20,000. How much is the estimated cost for a similar 2400 SF of paving in 2000? Use the six-tenths rule for the cost capacity exponent.