

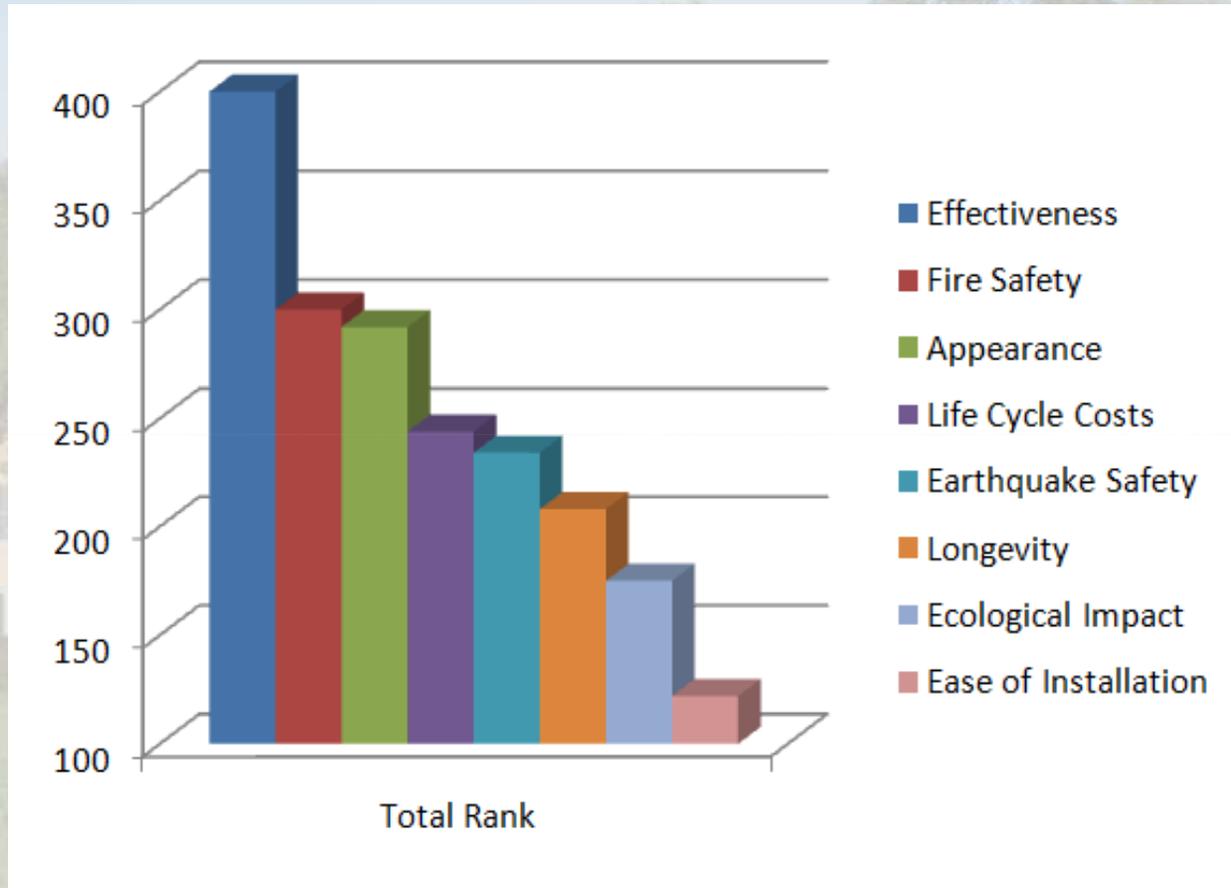
An aerial photograph of a residential campus. The central focus is a large, light-colored building with a dark roof, surrounded by a swimming pool and landscaped grounds. The campus is densely packed with similar residential buildings, interspersed with palm trees and other greenery. In the background, a large, multi-story apartment building is visible. The foreground shows a large, open, brownish field.

Roofing Options Survey Results

West Campus Point
December 5, 2008

Part 1. Criteria

1. Rank the importance of the following criteria on a scale of 1 - 8.



Comments: Effectiveness at preventing leaks was ranked the highest. Fire safety was second. However, both roofing options have high fire-safety ratings so this criterion does not have a significant impact on our decision. Therefore the three most important criteria are **effectiveness**, **appearance**, and **life cycle costs**.

Part 1. Criteria

The following installation cost comparison was supplied by Hal Fremer.

Comparative Analysis: Refer to C.P. O'Halloran 7/30/08 Pre-Design Budget

a) Concrete Tile System

Asphalt Shingles:	102 SF = \$367
Concrete Tile:	853 SF = \$5289
Low Slope (modified bitumen):	165 SF = \$957
Total:	1120 SF = \$6613
Cost/ SF:	\$5.90/SF

Alternate:

b) Single Ply Membrane (Following costs are in addition to cost of concrete tile system).

Assume actual cost of alternative single ply roof system without burdens:	\$12,200
Additional cost/ SF: (Note: Costs are for 80mil single ply membrane system)	+ \$10.89/ SF
<i>*or</i> for 60mil single ply system assume:	+ \$8.25/ SF

Comments: The concrete tile system will have single-ply membrane on the low slope portion of the roofs, not modified bitumen. Applying the \$8.25/SF cost of a 60mil membrane to the 165 SF of low slope roof increases the cost of this roofing element by \$404, raising the average cost/SF of the concrete tile system from \$5.90 to \$6.26 and reducing the difference between the two systems from \$8.25/SF to \$7.89/SF.

Part 1. Criteria

Cost Evaluation

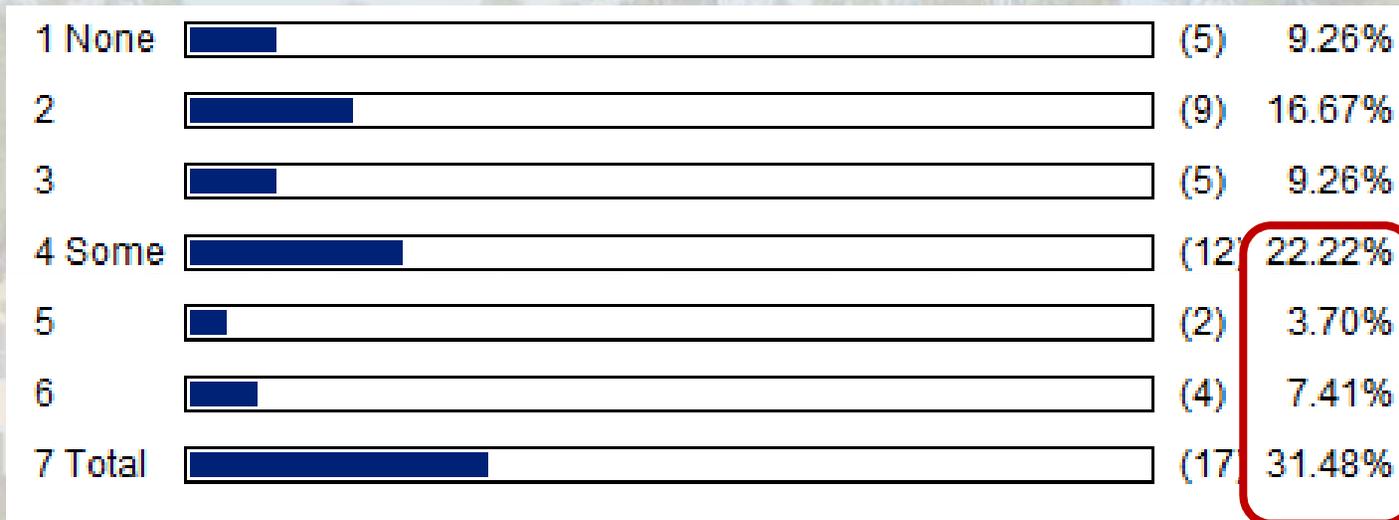
	Fremer Estimate (Adjusted)		Burdened (factor: 1.56)
	Per SF	Total per Unit	Total per Unit
Concrete Tile System	\$6.26	\$7,011	\$10,937
Single Ply Membrane			
Additional costs +	\$7.89	\$8,837	\$13,785
Total costs	\$14.15	\$15,848	\$24,723

Comments: Applying the adjusted costs yields \$7,011 per unit for the concrete tile system and \$15,848 for single ply membrane. “Burdens” (overhead and profit) are not included in these figures. Applying a burden factor of \$1.56 yields a cost differential of \$13,785 per unit, for a total cost of \$24,723 per unit for single ply membrane. For 65 units, the total cost of single ply membrane would be approximately \$896,000 more than cement tile.

It is difficult to obtain reliable total life cycle costs for different roofing options. Installation costs are a significant issue because (a) they will impact the total Leak Remediation Project costs, which will be high, and (b) the WCP HOA will be responsible for replacing our roofs in at the end of their useful lifetime in 25 – 30 years.

Part 1. Criteria

2. How much change in the look of our roofs would you be willing to accept in order to solve the leak problems?

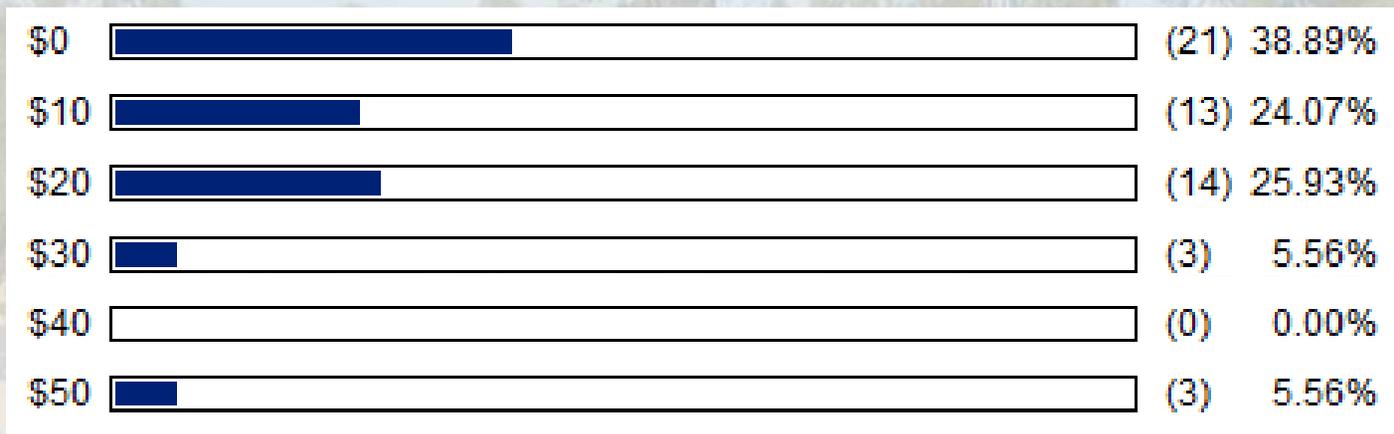


65%

Comments: The majority of WCP homeowners are willing to accept significant changes in appearance in order to solve the leak problems.

Part 1. Criteria

3. Imagine that one solution is significantly **more visually attractive** than the other but is also more expensive. What is the maximum increase in monthly dues (total lifetime cost per unit amortized on a monthly basis) that you would be willing to pay for the more attractive solution?

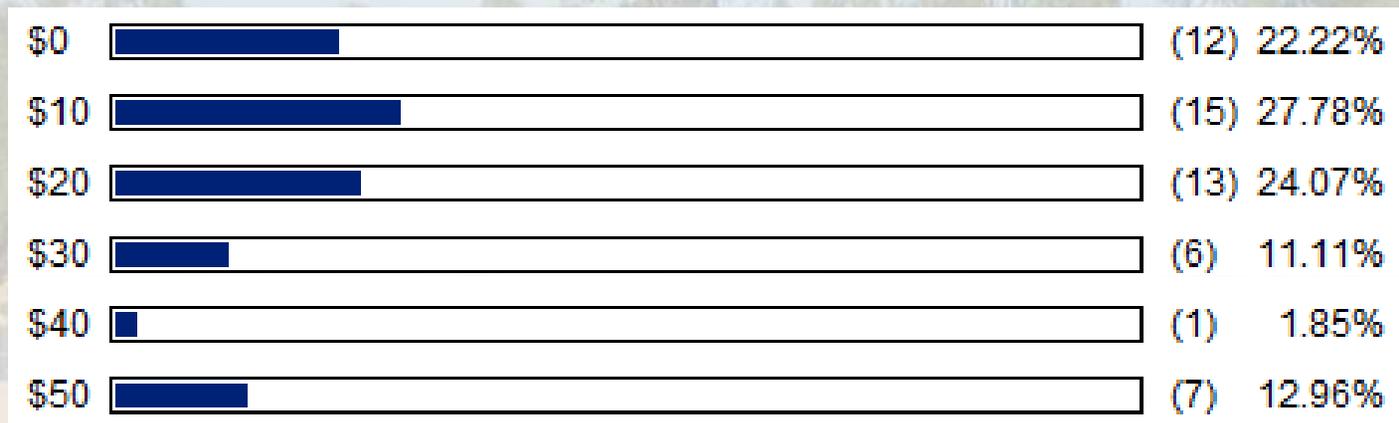


Total = \$650

Comments: The “Total” value was computed as a way of comparing the relative value that WCP homeowners place on visual attractiveness to the next criterion, effectiveness at preventing leaks.

Part 1. Criteria

4. Imagine that one solution is significantly more effective at **preventing leaks** than the other but is also more expensive. What is the maximum increase in monthly dues (total lifetime cost per unit amortized on a monthly basis) that you would be willing to pay for the more effective solution?



Total = \$980

Comments: WCP homeowners place on significantly higher value on effectiveness at preventing leaks (\$980) than on visual attractiveness (\$650).

Part 2. Sarnafil vs. Concrete Tile

1. Please rate your **confidence that you understand** each of the alternatives on a scale where 0 indicates no confidence at all and 100 indicates complete confidence.

	Average
Sarnafil	82
Tile	83

Comments: WCP homeowners are equally confident that they understand both options.

Part 2. Sarnafil vs. Concrete Tile

2. Based on your current understanding, please rate the **visual acceptability** of the two options using a scale where 0 indicates completely unacceptable and 100 indicates completely acceptable.

	Average
Sarnafil	55
Tile	90

Comments: WCP homeowners rate a cement tile system as far more visually acceptable than Sarnafil.

Part 2. Sarnafil vs. Concrete Tile

4. Based on your current understanding of effectiveness, cost, appearance, and the other evaluation criteria, how much do you prefer one alternative over the other?

Value	Count	Total	Percent
Tile - 1	19		
2	6		
3	6	31	65%
4	6		
5	1		
6	7		
Sarnafil - 7	9	17	35%
Totals	54	48	100%

Comments: More than twice as many WCP homeowners have a strong preference for a cement tile system over Sarnafil. Two-thirds of the WCP homeowners who expressed a preference prefer a cement tile system over Sarnafil.