Skyscraping Business Hotel

Group: Skyscraper High Life Co.

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Problem

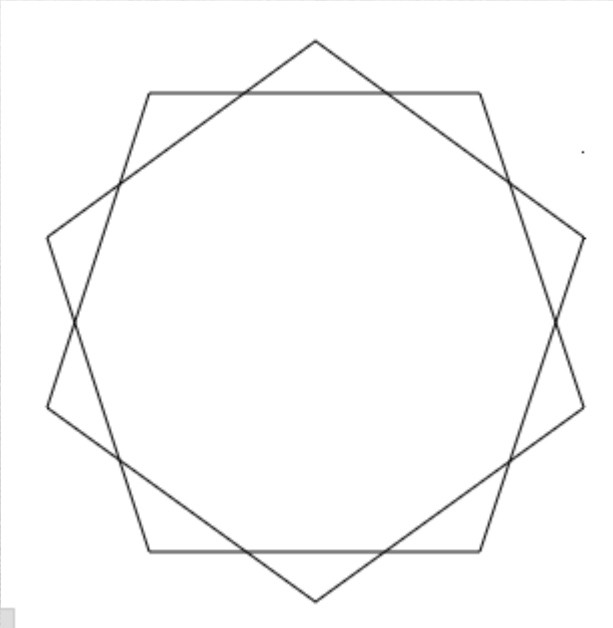
- Problem Statement: We are designing a skyscraper based on our research on how to construct a sustainable building and we have to know the ideal area, volume, and surface area calculations for the skyscraper and how it will affect the total cost.
- Strand Focus: Sustainability
- Challenges: Choosing the best location for the building

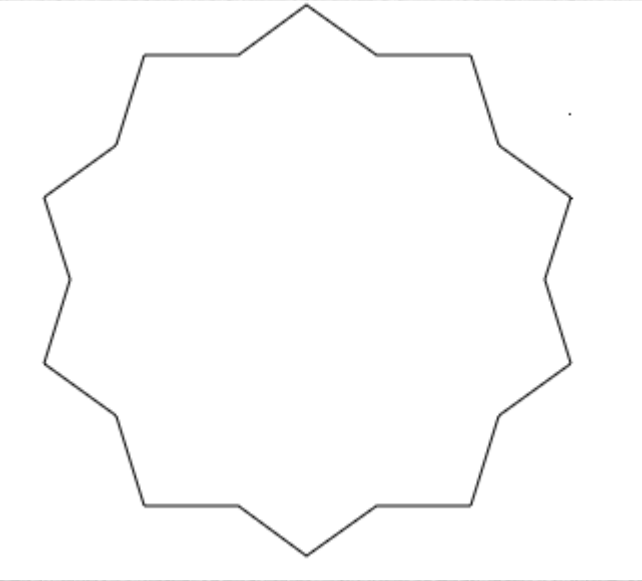
Problem Solving Strategies

- Research
- Draw design footprint
- Create design on Autocad360
- Take measurements
- Calculate area,volume, & surface area

2-D Footprints - 1st level

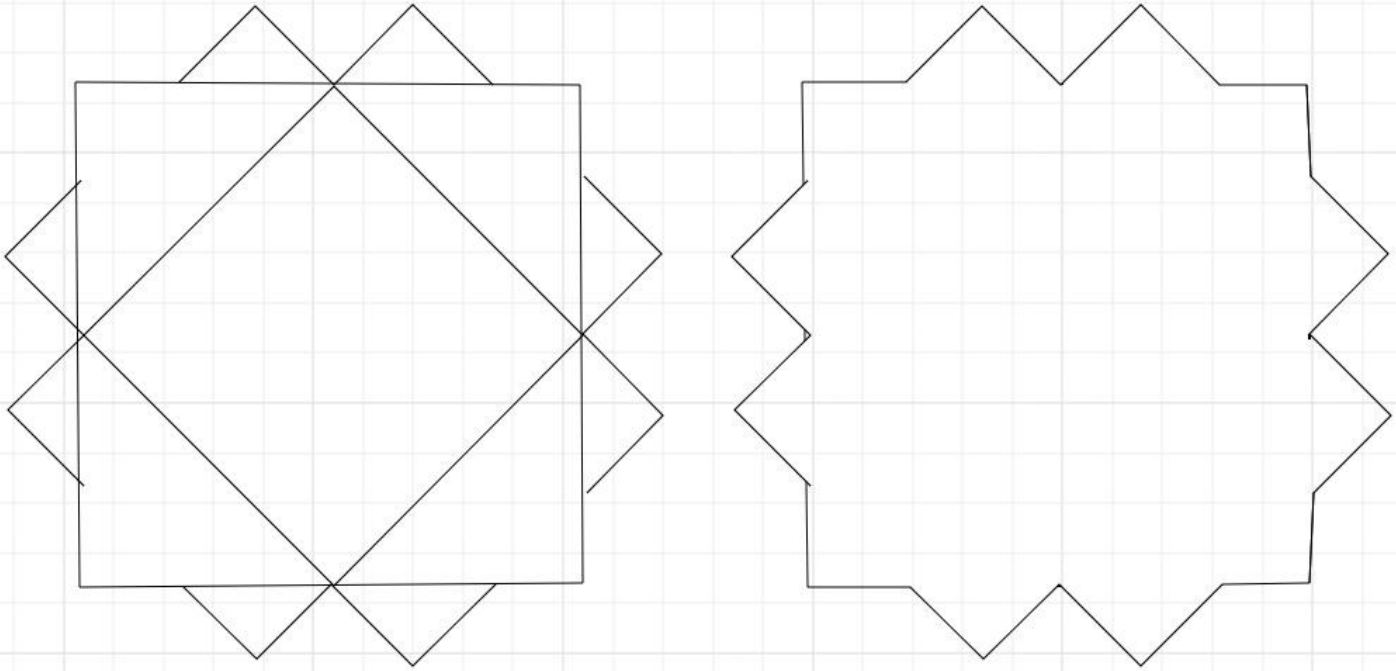
- Shapes used: 2 pentagons (one upside down)
- Total width: 150 ft
- Number of floors in your section: 10





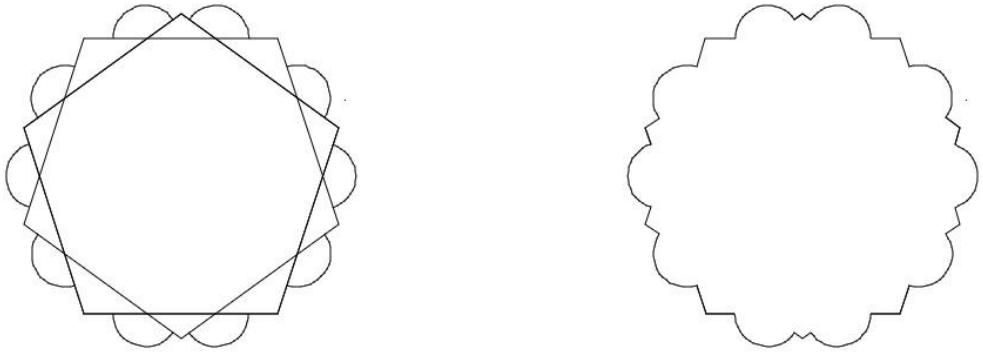
2-D Footprints – 2nd level

- Shapes used: 2 different types of triangles, squares
- Total width: 130 ft
- Number of floors in your section: 10



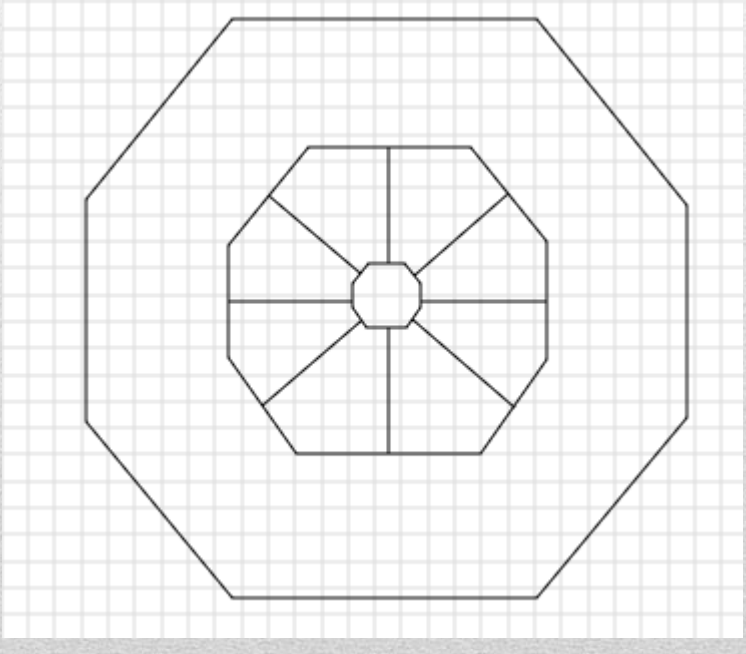
2-D Footprints – 3rd level

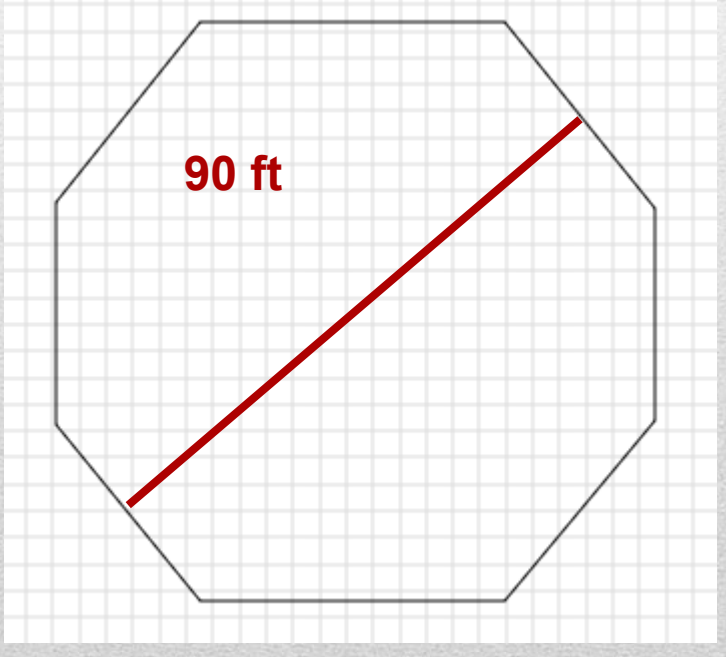
- Shapes used: 2 Pentagons (one is inverted), 10 circles on every angle.
- Total width: 110 ft
- Number of floors in your section: 10



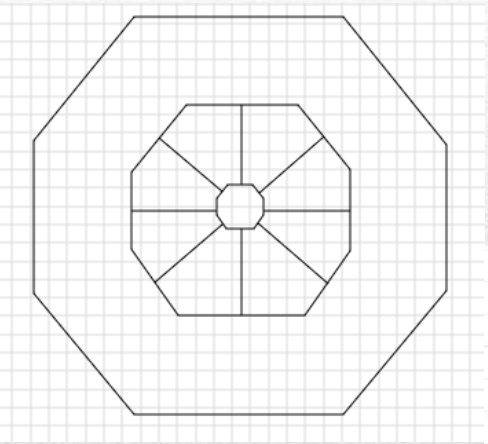
2-D Footprints - 4th level

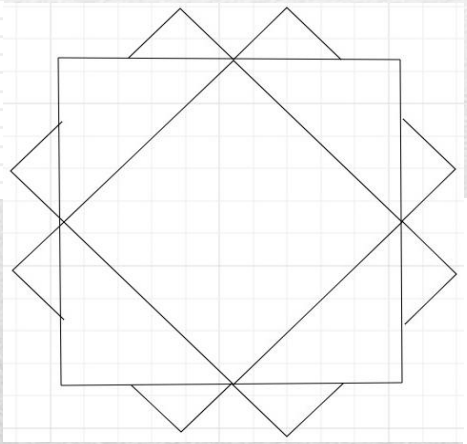
- Shapes used: 3 Octagons, 8 Kites
- Total width: 90 ft
- Number of floors in section: 10 floors

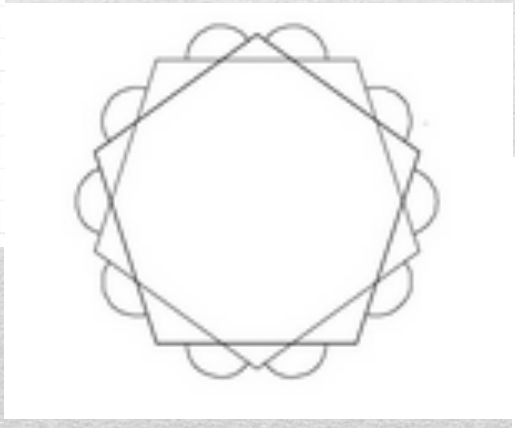


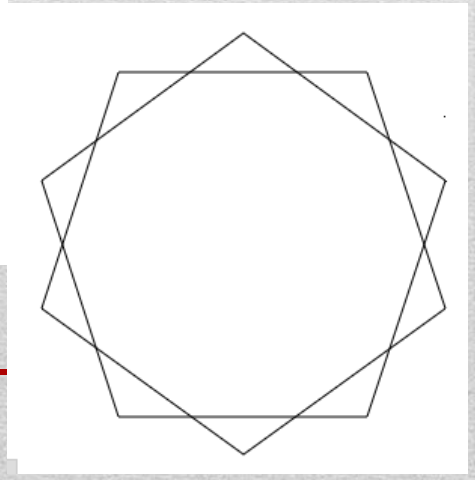


View of All Sections



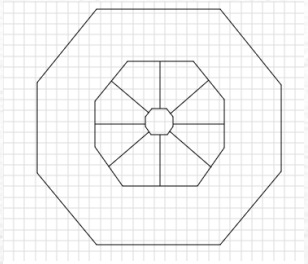




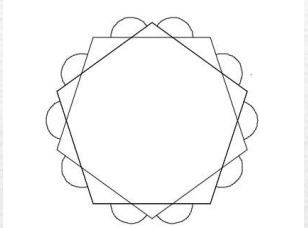


Volume

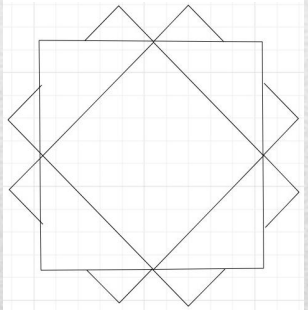
4th Level
V= 616,000 ft³



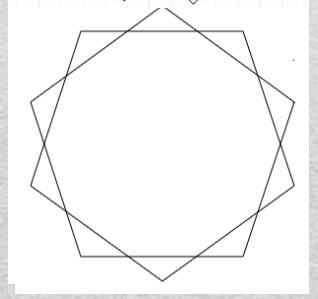
3rd Level
V= 1,305,595.2ft³



2nd Level
V= 1,160,000ft²



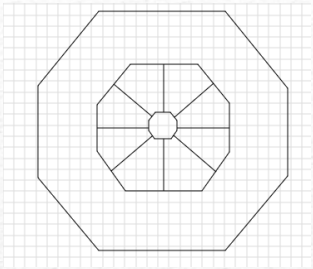
1st Level
V= 1,578,600 ft³



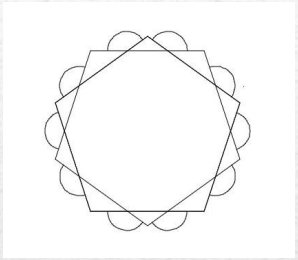
Total Volume of building = 4,660,195.2 ft³

Surface Area

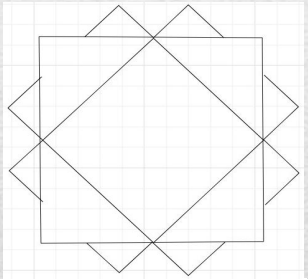
4th Level
T.S.A = 186,900 ft²



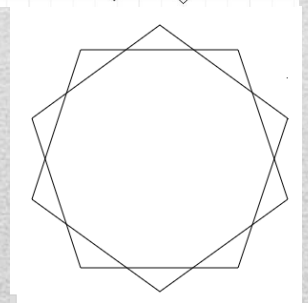
3rd Level
T.S.A = 335,285.72 ft²



2nd Level
T.S.A = 468,720ft²



1st Level
T.S.A = 561,720 ft²



Total Surface Area of building= 1,623,105.72 ft²

Construction Cost

1st level area	157,860 ft²	Cost per ft²
2nd level area	116,000ft²	$720
3rd level area	100,430.4 ft²	
+ 4th level area	61,600 ft²	$720 ← Total Area
Total area of building	435,890.4ft²	x 435,890.4ft² ← Cost Per ft²
		Total Cost of Building ← $313,841,088

Solution

- This proves how we were able to find the area from each section of our building and by researching what the average cost per sq.ft for a sustainable skyscraper is helped us determine our total cost for construction in Hollywood, LA
- We will include a tuned mass damper inside the top floor to reduce vibration