Wind Study is intended for grades 5-8 and 8-11 Questions posted on: Monday Answers posted on: Friday Find downloadable one pagers at www.oneenergy.com/one-energy-feed

2020A1

(2D GEOMETRY, 3D GEOMETRY)

Level 1:

Volume * Weight per cubic yard = Total Weight

 $300yd^3 * 4,050 \frac{lb}{yd^3} = Total Weight (lb)$

 $\frac{yd^3}{yd^3} * \frac{lb}{yd^3} = Total Weight (lb)$

 $300 * 4,050 \ lb = 1,215,000 \ lb$

Level 2:

Height * *Area* = *Volume*

Height = 4 ft

Area of regular octagon = $2(1 + \sqrt{2})x^2$ where x is the length of one side

Volume = 300 yd^3

Converting height to yards:

Height = 4 ft = 4/3 yd

Plugging variables into volume equation:

$$\frac{4}{3} yd * 2(1+\sqrt{2})x^2 = 300 yd^3$$

Solving for x:

$$2(1 + \sqrt{2})x^{2} = 225 yd^{2}$$
$$(1 + \sqrt{2})x^{2} = 112.5 yd^{2}$$
$$x^{2} = 46.60 yd^{2}$$
$$x = 6.83 yd = 20.48 ft$$

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See below for a photo of One Energy pouring a foundation – the dimensions of the foundation in the question were simplified for calculation purposes. In reality, it is a 16-sided shape with a tapered top.

