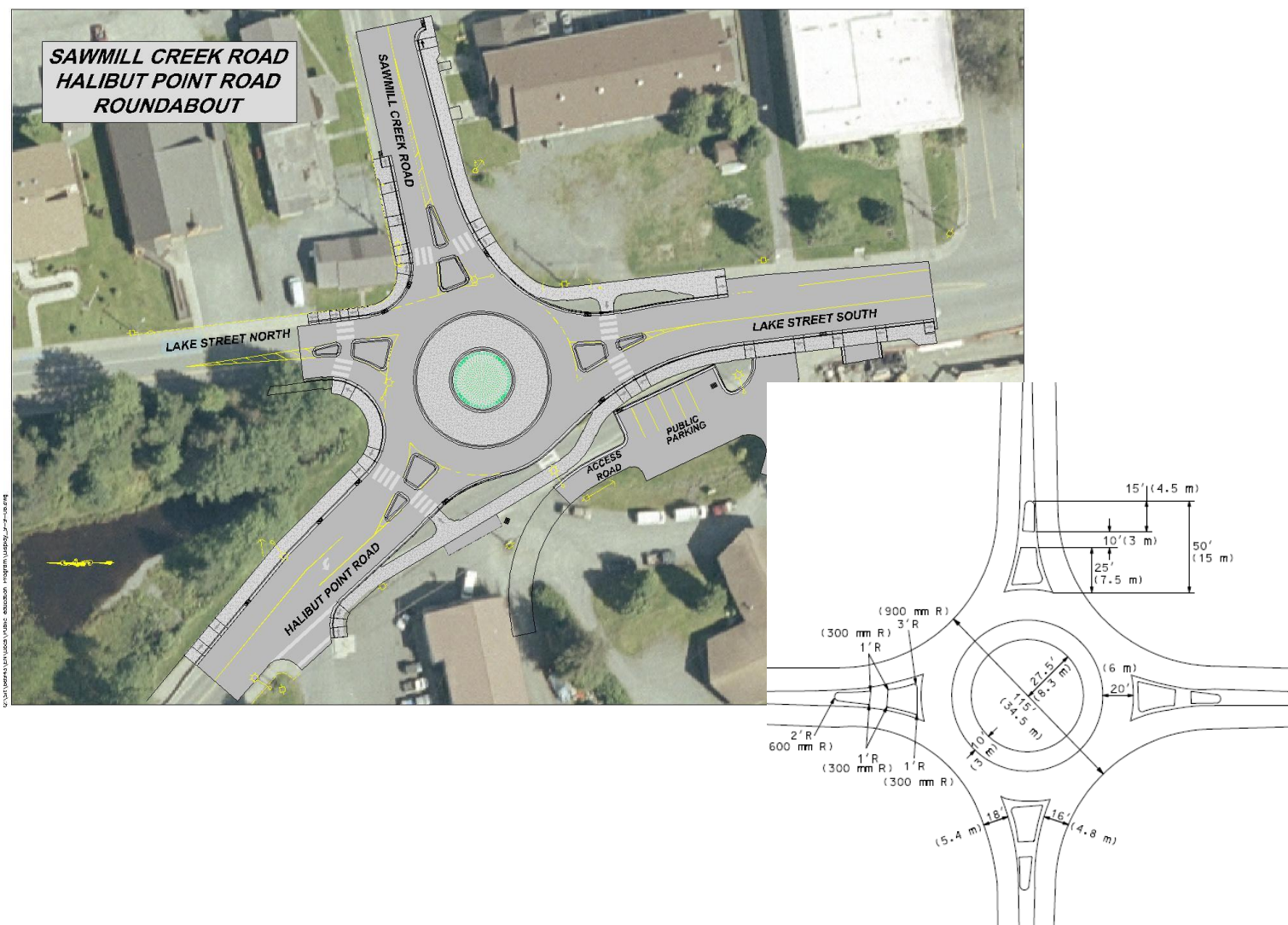


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Place-based Problem #3  
 Circles  
 Preparing students for unit circle

According to the Alaska Department of Transportation, the Sitka roundabout is the busiest intersection in Sitka. What is the distance a car travel 360 degrees in the roundabout? The AKDOT website states that approximately 11,000 vehicles used the intersection daily. If the average vehicle traveled 180 degrees around the roundabout what would the total distance be for all 11,000 vehicles. Information found at [sitkaroundabout.dot.alaska.gov](http://sitkaroundabout.dot.alaska.gov)



### Sample of Work

First I need to decide what dimension I will use. The inner circle is 27.5 feet and the buffer is another 10 feet for a total of 37.5 feet. From the outer edge the diameter is 115 feet (radius of 57.5 ft). The outer circle is then 20 feet wide (57.5ft-37.5ft=20ft). If you drove on the very inner most edge you would travel  $C = 2\pi r$  or  $C = 2\pi 37.5ft$   $C = 235.62$  feet The circumference to the outer edge is  $C = \pi d$  or  $C = \pi 115ft$   $C = 361.28$  feet . Knowing that the cars drive in the middle estimate the distance a car would need to travel around the roundabout would be  $\approx \frac{235.62ft+361.28ft}{2} = 298.45ft$ . |

If a car drove 180 degrees it would be  $\frac{298.45ft}{2} = 149.23$  feet

Total for daily cars -  $11,000(149.23ft) = 1,641, 483.68$  ft

