*Traffic Engineering (CIVIL-349)*
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*Exercise*
# *Bus priority strategy*
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Consider a one lane road with a signalized intersection at its downstream end with the following characteristics: The length of the lane is $250m$, the duration of a green signal is $40s$ (there are only green and red phases), the free flow speed of a vehicle is 36 $km/h$, the capacity of the intersection is $C = 1800$ $veh/h$, and a bus stop is located at $L' = 100m$ from the stop line. Vehicles are arriving regularly with a rate $q = 360$ $veh/h$ at the upstream of the lane from the beginning of the green phase ($t = 0$) except when bus arrives at the upstream. The bus dwell time $d$ at the bus stop follows a uniform distribution in the interval $[10, 20]$ seconds. If the bus enters the road in the beginning of the red phase, identify the bus priority strategy, so that the bus will pass the intersection with zero delay 80% of the times by choosing the red signal duration. Assume that the duration of red signal is longer than $5s$.