

Assignment No 4**Highway Engineering**

- 1) An intersection has a three-phase signal with the movements allowed in each phase and corresponding analysis and saturation flow rates shown in Table below. Calculate the sum of the flow ratios for the critical lane groups then
- calculate the minimum cycle length and the effective green time for each phase (balancing v/c for the critical lane groups)
 - calculate the optimal cycle length (Webster's formulation) with the corresponding effective green times (based on lane group v/c equalization).

Assume lost time is 4 seconds per phase. Assume the lost time is 4 seconds per phase and a critical intersection v/c of 0.90 is desired

Phase	1	2	3	
Allowed movements	NB L, SB L	NB T/R, SB T/R	EB L, WB L	EB T/R, WB T/R
Analysis flow rate	330, 365 veh/h	1125, 1075 veh/h	110, 80 veh/h	250, 285 veh/h
Saturation flow rate	1700, 1750 veh/h	3400, 3300 veh/h	650, 600 veh/h	1750, 1800 veh/h

- 2) A signalized intersection has an upgrade of 4%. The total width of the cross street at this intersection is 60 feet. The average vehicle length of approaching traffic is 16 feet. The speed of approaching traffic is 40 mi/h. Determine the sum of the minimum necessary change and clearance intervals.