Signalization Plan for an urban intersection

Subject : Roads

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Given data:

The neptun code is GJOPB2, according to this datas are:

1. O-D matrix -2

2. Traffic development factor – 1.10

3. Bus stop location – B-D, after

4. Tram track location- A, terminal

5. Pedestrian crossing locations – A-C+B-D

1) O-D matrix with the a multiplier of traffic development will be:

Orig\Dest	A	B	C	D	Total
A	-	-	660	165	825
B	330	-	165	1100	1595
C	880	110	-	-	990
D	165	1210	330	-	1705
Total	1375	1320	1155	1265	5115

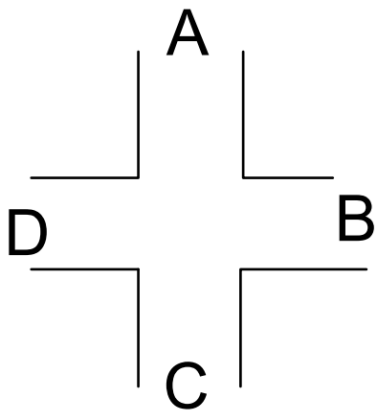


Figure1. Legs of the intersection

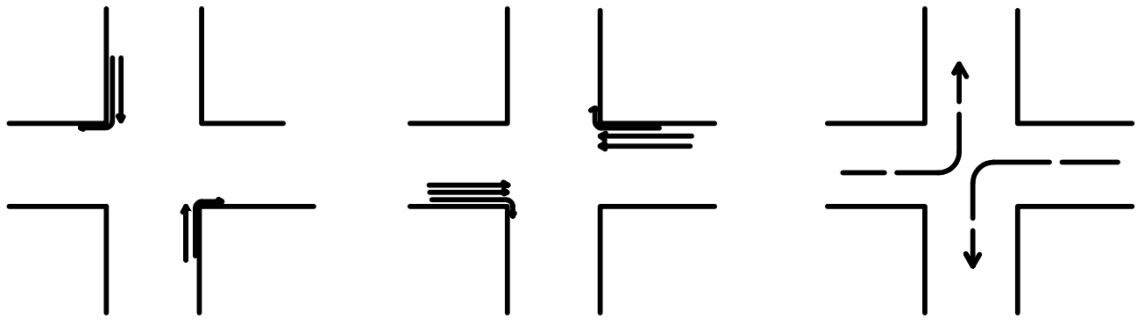


Figure2. Order of the phases.

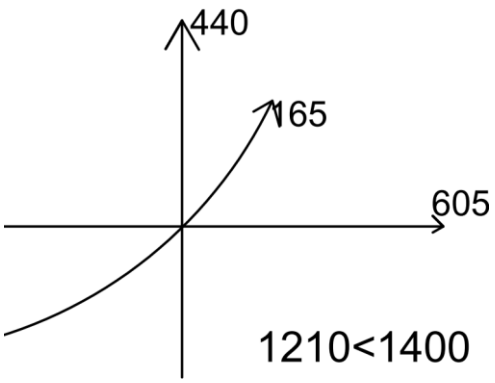
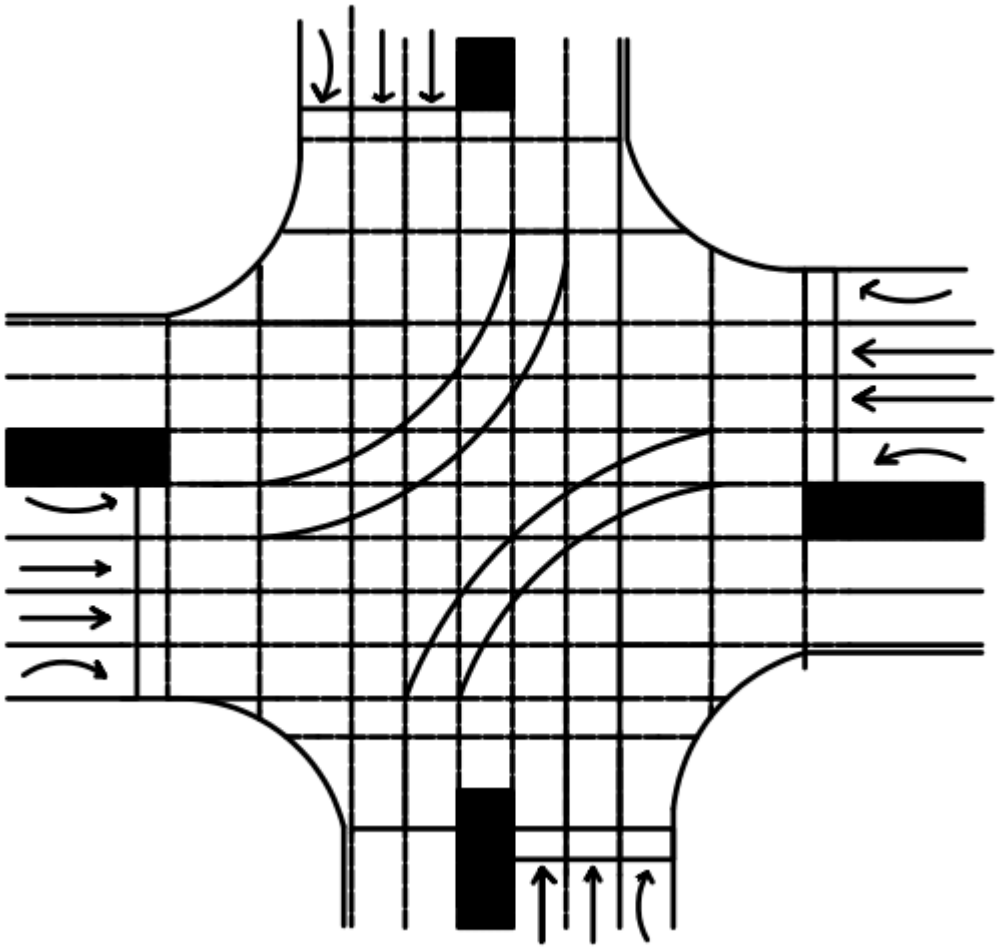


Figure 3. Demand calculation

I calculated demand using O-D matrix with multiplier table. Straight and turning one line each in case of the A leg, then B and C legs have each two straight, two turning to left and right direction. In the C leg, I have one line straight moving then right turning as you can see in the conflict map below. Demand didn't exceed the limit capacity which is 1400 V/h.

2. Conflict map



3. Intergreen times

$$t_{ki} = t_{á} + t_{üi} - t_{bi}$$

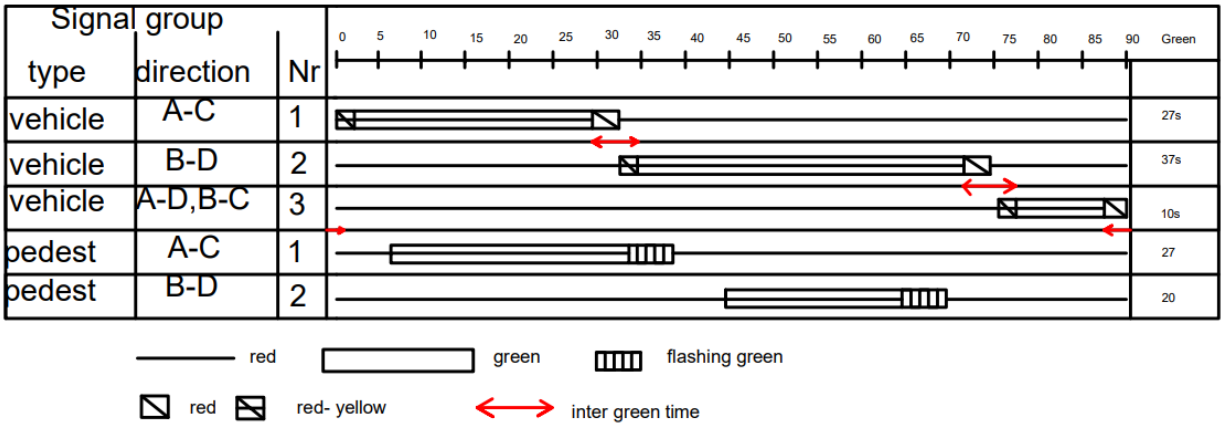
This formula is used in the calculation. Then the calculation intergreen times were t_{k1}=5.0s, t_{k2}=6.0s, t_{k3}=5.0s after adding them up $\sum t_{ki}$=16.0s.

3.1 Cycle time and green times

$$t_{zi} = (P - \Sigma t_k) \cdot {}^{Fi}/_{\Sigma F}$$

To calculate green times, I subtracted 16.0s from the given value 90s to obtain total green time. In this case it is 77s. Using the figure 3. I divided proportionally, then It gives t_{z1}=27s, t_{z2}=37s, t_{z3}=10s.

4. Signal plan



5. Capacity usage

$$K_{lane} = \frac{t_{zi}}{h} \times \frac{3600}{P} \text{ [E/h]}$$

K_{l1}=540 V/h(reserve 12%)

K_{l2}=740 V/h(reserve 12%)

K_{l3}=200V/h (reserve 12%)