**CE 34500: Transportation Engineering**

**Homework 3 Solution**

**Due: Monday, April 1, 2019**

1. Determine Level of Service an urban freeway section, if the BFFS = 70 mph. The data are as follows:

Number of lanes: 4 (one direction)

Lane width = 12 ft.

Lateral clearance =5 ft. (right side)

Interchange density = 1 per mile

Percent trucks = 14

Percent RVs = 4

PHF = 0.95

Commuter traffic

|  |  |
| --- | --- |
| = 66.58  = 1135 < 1400 at BP-65  Density, =17.04  LOS B (Page 454, Section 9.1.2) | Given,  mph  Lane width = 12 ft.  Lateral clearance = 5 ft. (right side)  Interchange density,TRD = 1 per mile  pc/h  From tables and figures:  (see Table 9.1)  (see Table 9.2) |

1. Determine Level of Service a two-lane two-way highway for a 2 mile segment if the BFFS = 60 mph. The data are as follows:

Volume = 1600 veh/h (two-way)

Percent trucks = 5

Percent RVs = 1

Peak hour factor = 0.95

Percent directional split = 50-50

Percent no-passing zones = 50

Lane width = 12 ft.

Shoulder width = 4 ft.

Access points per mile = 20

Highway: Class I

Terrain: Rolling

Solution:

Calculate adjusted demand for ATS:

|  |  |
| --- | --- |
| = 0.98  = 868 pc/h  = 53.7 mph   * 53.7-0.00776(868+868)-0.7=39.5 mph | From tables and figures:  (see Table 9.16)  (see Table 9.14)  = 0.7 (see Table 9.20)  (see Table 9.9)  (see Table 9.10) |

Calculate adjusted demand for PTSF:

|  |  |
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| = 1  = 842pc/h | Given,  veh/hour  mph  From tables and figures:  (see Table 9.23)  (see Table 9.21)  (see Table 9.25) |

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