\[
\begin{align*}
\text{Performance Metric} &\rightarrow \text{Density} \\
\text{Loss for Multi-lane Highway Systems:} &\rightarrow \text{Exam 2: Thursday}
\end{align*}
\]
Example 6.4

2.5 \times \frac{2}{10} = 0.5

FS = BFSS - \nu - f_{dc} - f_{m} - f_{w}

f_{a} = 0.5 \text{ (From 6.15)}

f_{w} = 6.6 \text{ mi/hv}

BFSS = 55 - 5 = 60 \text{ mph}

60 - 5 - 0.9 - 0.5 = 52 \text{ mi/hr}
\[ t_i = 0.874 \]

\[ f_i = \frac{1 + R_t (F_t - 1)}{R_t} + R_t (F_t - 1) \]

\[ \begin{cases} 
    F_t = 2.0 \rightarrow T_{acc} 6.7 \\
    F_f = 2.5 \\
    s_f = 0.95 \\
    N = 3 \\
    PFP = 0.80 \\
    V = 3000 \text{ vol/hv} \\
\end{cases} \]

\[ Vp = \frac{PFP \times N \times f_i \times f_n}{V} \]
\[ \Phi_f = 0.80 \]

\[ \text{FES} = \frac{52 \text{ m/hr}}{65} \]

\[ 2040 \text{ pcf/hr} \]

\[ \text{CLOS} \]

\[ d = \frac{52}{1500.3} \]

\[ d = \frac{48 \times 3 \times 0.877 \times 0.975}{3000} \]

\[ v_p = \frac{1500.3 \text{ pcf/hr}}{} \]
\[ V_\text{f} = 4.92 \text{ kN} \]

\[ V_p = 2.04 \text{ kN/m} \]

\[ V = \frac{3\text{ kN/m}}{9} \]

\[ 1 + \frac{2.04}{(\frac{\sqrt{V + \sqrt{V^2 + 4(1.5)(2.2)}}}{2})} \left[ \frac{5}{6} \right] \]

\[ \therefore \text{N} \times \text{PHF} = 3 \]

\[ P_{\text{f}} = \left( \frac{\sqrt{V} + V}{4} \right) \]
Exercise 6.16

FFS = BFFS - fW - fC - fM - fA

fA = 2.5 (Table 6.15)
fM = 1.6 (Table 6.14)
fC = 0.9 (Tc = 8 ft)
fW = 1.9 (Tmax 6.3)

BFFS = 55 + 5 = 60 mL/hr
\[ P_{HF} = 0.9 \]

\[ P = 0.8 \]

\[ N = 2 \]

\[ f_p = 0.962 \]

\[ f_H^v = \frac{1 + 0.08(0.5)}{1} = 1.04 \]

\[ f_p = 1.5 \text{ (Table 6.4)} \]

\[ P_f = 0.08 \]

\[ P = 0 \]
Chapter 3: Highway Design

* Vertical Alignment
  * High/LOW
  * Point on Curve

2000 2400

\[ v = \frac{2000 \times 0.8 \times 0.962 \times 2 \times 0.9}{15} \]

\[ v = 2200 \text{ mph/hr} \]
- Stoppie Diarrhea
- Discrepant Radii of Curve
- Design Radii of Curve
- Centerpoint forces have to be handled

3 Hospital Curve Dealing:
- Fach Curves
- Gehrt Curves
- Perceptual
- Speed-Density Relationship (Linear)

Basic Traffic Flow Model:

Flow = Speed \times Density

Fundamental Eq. of Traffic Flow

Density

Flow

\text{Chapter 5: Speed - Time MS}
- Models of Traffic Flow
  - Poisson Model
  - Limitations of Poisson Model

- Queueing Models
  - Cum Vehicle - Time Diagram $\rightarrow$ Queue Length $\rightarrow$ Average Delay

- $M|M|1$
- $D|D|1$
- $M|D|1$
And Multivariate Analysis

Los for Frequent Systems

Chapter 6: Los A, B, C, D, E, F