Shortest Path - Calculations In this document we present our calculation of speed limit, ideal time, and difference for each traffic condition for modeling, and we also present our calculation of residual sum of squares for each traffic condition.

1 Green.

1. $\mathcal{D} = 3168$ ft
$\mathcal{S} = 35$ mph $= 3080$ ft/min
$\mathcal{I} = \frac{3168ft}{3080ft/min} = 1.02857$ min
$\mathcal{F} = 4 - 1.02857$ min $= 2.9714$ min

2. $\mathcal{D} = 5808$ ft
$\mathcal{S} = 25$ mph $= 2200$ ft/min
$\mathcal{I} = \frac{5808ft}{2200ft/min} = 2.64$ min
$\mathcal{F} = 5 - 2.64$ min $= 2.36$ min

3. $\mathcal{D} = 2640$ ft
$\mathcal{S} = 35$ mph $= 3080$ ft/min
$\mathcal{I} = \frac{2640ft}{3080ft/min} = .85714$ min
$\mathcal{F} = 3 - .85714$ min $= 2.1429$ min

4. $\mathcal{D} = 11088$ ft
$\mathcal{S} = 45$ mph $= 3960$ ft/min
$\mathcal{I} = \frac{11088ft}{3960ft/min} = 2.8$ min
$\mathcal{F} = 4 - 2.8$ min $= 1.2$ min

5. $\mathcal{D} = 3996$ ft
$\mathcal{S} = 30$ mph $= 2640$ ft/min
$\mathcal{I} = \frac{3996ft}{2640ft/min} = 1.5136364$ min
$\mathcal{F} = 3 - 1.5136364$ min $= 1.4863636$ min

6. $\mathcal{D} = 2640$ ft
$\mathcal{S} = 35$ mph $= 3080$ ft/min
$\mathcal{I} = \frac{2640ft}{3080ft/min} = .85714$ min
$\mathcal{F} = 2 - .85714$ min $= 1.1429$ min

7. $\mathcal{D} = 2112$ ft
$\mathcal{S} = 25$ mph $= 2200$ ft/min
$\mathcal{I} = \frac{2112ft}{2200ft/min} = .96$ min

$\mathcal{F} = 2 - .96 \text{ min} = 1.04 \text{ min}$

8. $\mathcal{D} = 2112$ ft
$\mathcal{S} = 20$ mph $= 1760$ ft/min
$\mathcal{I} = \frac{2112ft}{1760ft/min} = 1.2$ min
$\mathcal{F} = 2 - 1.2 \text{ min} = .8 \text{ min}$

9. $\mathcal{D} = 3168$ ft
$\mathcal{S} = 20$ mph $= 1760$ ft/min
$\mathcal{I} = \frac{3168ft}{1760ft/min} = 1.8$ min
$\mathcal{F} = 3 - 1.8 \text{ min} = 1.2 \text{ min}$

10. $\mathcal{D} = 5808$ ft
$\mathcal{S} = 35$ mph $= 3080$ ft/min
$\mathcal{I} = \frac{5808ft}{3080ft/min} = 1.885714$ min
$\mathcal{F} = 3 - 1.885714 \text{ min} = 1.1142857 \text{ min}$

11. $\mathcal{D} = 70752$ ft
$\mathcal{S} = 65$ mph $= 5720$ ft/min
$\mathcal{I} = \frac{70752ft}{5720ft/min} = 12.36923$ min
$\mathcal{F} = 15 - 12.36923 \text{ min} = 2.630769 \text{ min}$

12. $\mathcal{D} = 28512$ ft
$\mathcal{S} = 65$ mph $= 5720$ ft/min
$\mathcal{I} = \frac{28512ft}{5720ft/min} = 4.984615$ min
$\mathcal{F} = 6 - 4.984615 \text{ min} = 1.015385 \text{ min}$

13. $\mathcal{D} = 17424$ ft
$\mathcal{S} = 65$ mph $= 5720$ ft/min
$\mathcal{I} = \frac{17424ft}{5720ft/min} = 3.04615$ min
$\mathcal{F} = 4 - 3.04615 \text{ min} = .95385 \text{ min}$

14. $\mathcal{D} = 31680$ ft
$\mathcal{S} = 55$ mph $= 4840$ ft/min
$\mathcal{I} = \frac{31680ft}{4840ft/min} = 6.5454545$ min
$\mathcal{F} = 7 - 6.5454545 \text{ min} = .45454545 \text{ min}$

15. $\mathcal{D} = 12144$ ft
$\mathcal{S} = 55$ mph $= 4840$ ft/min
$\mathcal{I} = \frac{12144ft}{4840ft/min} = 2.5090909$ min
$\mathcal{F} = 3 - 2.5090909 \text{ min} = .490909090 \text{ min}$

16. $\mathcal{D} = 5280$ ft
$\mathcal{S} = 35$ mph $= 3080$ ft/min
$\mathcal{I} = \frac{5280ft}{3080ft/min} = 1.714286$ min

$\mathcal{F} = 3 - 1.714286 \text{ min} = 1.285714 \text{ min}$

17. $\mathcal{D} = 7392$ ft
$\mathcal{D}_1 = 2640$ ft
$\mathcal{S}_1 = 35$ mph $= 3080$ ft/min
$\mathcal{I}_1 = \frac{2640ft}{3080ft/min} = .85714$ min
$\mathcal{D}_2 = 4752$ ft
$\mathcal{S}_2 = 45$ mph $= 3960$ ft/min
$\mathcal{I}_2 = \frac{4752ft}{3960ft/min} = 1.2$ min
$\mathcal{I} = \mathcal{I}_1 + \mathcal{I}_2 = 2.05714$ min $\mathcal{F} = 3 - 2.05714$ min $= .94286$ min

18. $\mathcal{D} = 23760$ ft
$\mathcal{D}_1 = 6864$ ft $\mathcal{S}_1 = 45$ mph $= 3960$ ft/min
$\mathcal{I}_1 = \frac{6864ft}{3960ft/min} = 1.7333$ min $\mathcal{D}_2 = 1056$ ft $\mathcal{S}_2 = 35$ mph $= 3080$ ft/min
$\mathcal{I}_2 = \frac{1056ft}{3080ft/min} = .34286$ min $\mathcal{D}_3 = 9504$ ft $\mathcal{S}_3 = 45$ mph $= 3960$ ft/min
$\mathcal{I}_3 = \frac{1056ft}{3960ft/min} = 2.4$ min $\mathcal{D}_4 = 6336$ ft $\mathcal{S}_4 = 55$ mph $= 4840$ ft/min
$\mathcal{I}_4 = \frac{6336ft}{4840ft/min} = 1.30909$ min $\mathcal{I} = \mathcal{I}_1 + \mathcal{I}_2 + \mathcal{I}_3 + \mathcal{I}_4 = 1.733 + .34286 + 2.4 + 1.30909 = 5.7852813$ min
$\mathcal{F} = 6 - 5.7852813$ min $= .214719$ min

19. $\mathcal{D} = 14256$ ft
$\mathcal{S} = 35$ mph $= 3080$ ft/min
$\mathcal{I} = \frac{14256ft}{3080ft/min} = 4.62857$ min
$\mathcal{F} = 5 - 4.62857$ min $= .37142$ min

20. $\mathcal{D} = 27984$ ft
$\mathcal{S} = 55$ mph $= 4840$ ft/min
$\mathcal{I} = \frac{27984ft}{4840ft/min} = 5.7818$ min
$\mathcal{F} = 6 - 5.7818$ min $= .2182$ min

21. $\mathcal{D} = 5280$ ft
$\mathcal{S} = 35$ mph $= 3080$ ft/min
$\mathcal{I} = \frac{5280ft}{3080ft/min} = 1.714286$ min
$\mathcal{F} = 3 - 1.714286$ min $= 1.285714$ min

22. $\mathcal{D} = 5280$ ft
$\mathcal{S} = 25$ mph $= 2200$ ft/min
$\mathcal{I} = \frac{5280ft}{2200ft/min} = 2.4$ min
$\mathcal{F} = 3 - 2.4$ min $= .6$ min

23. $\mathcal{D} = 3168$ ft
$\mathcal{S} = 30$ mph $= 2640$ ft/min
$\mathcal{I} = \frac{3168ft}{2640ft/min} = 1.2$ min
$\mathcal{F} = 2 - 1.2$ min $= .8$ min

24. $\mathcal{D} = 57024$ ft
$\mathcal{S} = 55$ mph $= 4840$ ft/min
$\mathcal{I} = \frac{57024ft}{4840ft/min} = 11.781818$ min
$\mathcal{F} = 12 - 11.781818$ min $= .218182$ min

25. $\mathcal{D} = 2112$ ft
$\mathcal{S} = 25$ mph $= 2200$ ft/min
$\mathcal{I} = \frac{2112ft}{2200ft/min} = .96$ min
$\mathcal{F} = 2 - .96$ min $= .04$ min

26. $\mathcal{D} = 4752$ ft
$\mathcal{S} = 30$ mph $= 2640$ ft/min
$\mathcal{I} = \frac{4752ft}{2640ft/min} = 1.8$ min
$\mathcal{F} = 4 - 1.8$ min $= 2.2$ min

27. $\mathcal{D} = 7920$ ft
$\mathcal{S} = 35$ mph $= 3080$ ft/min
$\mathcal{I} = \frac{7920ft}{3080ft/min} = 2.57143$ min
$\mathcal{F} = 5 - 2.57143$ min $= 2.42857$ min

28. $\mathcal{D} = 4752$ ft
$\mathcal{S} = 35$ mph $= 3080$ ft/min
$\mathcal{I} = \frac{4752ft}{3080ft/min} = 1.5429$ min
$\mathcal{F} = 4 - 1.5429$ min $= 2.4571$ min

29. $\mathcal{D} = 3168$ ft
$\mathcal{S} = 20$ mph $= 1760$ ft/min
$\mathcal{I} = \frac{3168ft}{1760ft/min} = 1.8$ min
$\mathcal{F} = 2 - 1.8$ min $= .2$ min

30. $\mathcal{D} = 7920$ ft
$\mathcal{S} = 35$ mph $= 3080$ ft/min
$\mathcal{I} = \frac{7920ft}{3080ft/min} = 2.5714$ min
$\mathcal{F} = 5 - 2.5714$ min $= 2.4286$ min

31. $\mathcal{D} = 11616$ ft
$\mathcal{S} = 35$ mph $= 3080$ ft/min
$\mathcal{I} = \frac{11616ft}{3080ft/min} = 3.7714$ min
$\mathcal{F} = 8 - 3.7714$ min $= 4.2286$ min

32. $\mathcal{D} = 3696$ ft
$\mathcal{S} = 30$ mph $= 2640$ ft/min
$\mathcal{I} = \frac{3696ft}{2640ft/min} = 1.4$ min
$\mathcal{F} = 3 - 1.4$ min $= 1.6$ min

2 Orange.

1. $\mathcal{D} = 3686$ ft
$\mathcal{S} = 35$ mph $= 3080$ ft/min
$\mathcal{I} = \frac{3686ft}{3080ft/min} = 1.196753$ min
$\mathcal{F} = 5 - 1.196753$ min $= 3.80324675$ min

2. $\mathcal{D} = 1584$ ft
$\mathcal{S} = 30$ mph $= 2640$ ft/min
$\mathcal{I} = \frac{1584ft}{2640ft/min} = 0.6$ min
$\mathcal{F} = 3 - 0.6$ min $= 2.4$ min

3. $\mathcal{D} = 4752$ ft
$\mathcal{S} = 25$ mph $= 2200$ ft/min
$\mathcal{I} = \frac{4752ft}{2200ft/min} = 2.16$ min
$\mathcal{F} = 7 - 2.16$ min $= 4.84$ min

4. $\mathcal{D} = 5280$ ft
$\mathcal{S} = 25$ mph $= 2200$ ft/min
$\mathcal{I} = \frac{5280ft}{2200ft/min} = 2.4$ min
$\mathcal{F} = 5 - 2.4$ min $= 2.6$ min

5. $\mathcal{D} = 2640$ ft
$\mathcal{S} = 20$ mph $= 1760$ ft/min
$\mathcal{I} = \frac{2640ft}{1760ft/min} = 1.5$ min
$\mathcal{F} = 3 - 1.5$ min $= 1.5$ min

6. $\mathcal{D} = 3168$ ft
$\mathcal{S} = 35$ mph $= 3080$ ft/min
$\mathcal{I} = \frac{3168ft}{3080ft/min} = 1.028571$ min
$\mathcal{F} = 3 - 1.028571$ min $= 1.971429$ min

7. $\mathcal{D} = 2112$ ft
$\mathcal{S} = 35$ mph $= 3080$ ft/min
$\mathcal{I} = \frac{2112ft}{3080ft/min} = 0.6857143$ min
$\mathcal{F} = 3 - .6857143$ min $= 2.314286$ min

8. $\mathcal{D} = 2640$ ft
$\mathcal{S} = 20$ mph $= 1760$ ft/min
$\mathcal{I} = \frac{2640ft}{1760ft/min} = 1.5$ min
$\mathcal{F} = 3 - 1.5$ min $= 1.5$ min

9. $\mathcal{D} = 2112$ ft
$\mathcal{S} = 20$ mph $= 1760$ ft/min
$\mathcal{I} = \frac{2112ft}{1760ft/min} = 1.5$ min
$\mathcal{F} = 3 - 1.5$ min $= 1.5$ min

10. $\mathcal{D} = 2112$ ft
$\mathcal{S} = 25$ mph $= 2200$ ft/min
$\mathcal{I} = \frac{2112ft}{2200ft/min} = .96$ min
$\mathcal{F} = 3 - .96$ min $= 2.04$ min

11. $\mathcal{D} = 4224$ ft
$\mathcal{S} = 35$ mph $= 3080$ ft/min
$\mathcal{I} = \frac{4224ft}{3080ft/min} = 1.371$ min
$\mathcal{F} = 3 - 1.371$ min $= 1.629$ min

12. $\mathcal{D} = 4752$ ft
$\mathcal{S} = 35$ mph $= 3080$ ft/min
$\mathcal{I} = \frac{4752ft}{3080ft/min} = 1.54$ min
$\mathcal{F} = 6 - 1.54$ min $= 4.46$ min

13. $\mathcal{D} = 18480$ ft
$\mathcal{S} = 65$ mph $= 5720$ ft/min
$\mathcal{I} = \frac{18480ft}{5720ft/min} = 3.231$ min
$\mathcal{F} = 6 - 3.231$ min $= 2.769$ min

14. $\mathcal{D} = 7392$ ft
$\mathcal{S} = 40$ mph $= 3520$ ft/min
$\mathcal{I} = \frac{7392ft}{3520ft/min} = 2.1$ min
$\mathcal{F} = 7 - 2.1$ min $= 4.9$ min

15. $\mathcal{D} = 5280$ ft
$\mathcal{S} = 35$ mph $= 3080$ ft/min
$\mathcal{I} = \frac{5280ft}{3080ft/min} = 1.71$ min
$\mathcal{F} = 4 - 1.71$ min $= 2.29$ min

16. $\mathcal{D} = 24288$ ft
$\mathcal{S} = 65$ mph $= 5720$ ft/min
$\mathcal{I} = \frac{24288ft}{5720ft/min} = 4.246$ min
$\mathcal{F} = 8 - 4.246$ min $= 3.754$ min

17. $\mathcal{D} = 79100$ ft
$\mathcal{S} = 65$ mph $= 5720$ ft/min
$\mathcal{I} = \frac{79100ft}{5720ft/min} = 13.829$ min
$\mathcal{F} = 24 - 13.829$ min $= 10.171$ min

18. $\mathcal{D} = 7392$ ft
$\mathcal{S} = 40$ mph $= 3520$ ft/min
$\mathcal{I} = \frac{7392ft}{3520ft/min} = 2.1$ min
$\mathcal{F} = 6 - 2.1$ min $= 3.9$ min

19. $\mathcal{D} = 2112$ ft
$\mathcal{S} = 25$ mph $= 3520$ ft/min
$\mathcal{I} = \frac{2112ft}{3520ft/min} = .6$ min
$\mathcal{F} = 3 - .6$ min $= 2.4$ min

20. $\mathcal{D} = 2112$ ft
$\mathcal{S} = 35$ mph $= 3080$ ft/min
$\mathcal{I} = \frac{2112ft}{3080ft/min} = .6857$ min
$\mathcal{F} = 2 - .6857$ min $= 1.314$ min

21. $\mathcal{D} = 3168$ ft
$\mathcal{S} = 25$ mph $= 3520$ ft/min
$\mathcal{I} = \frac{3168ft}{3520ft/min} = 0.9$ min
$\mathcal{F} = 4 - .9$ min $= 3.1$ min

22. $\mathcal{D} = 4224$ ft
$\mathcal{S} = 35$ mph $= 3080$ ft/min
$\mathcal{I} = \frac{4224ft}{3080ft/min} = 1.371$ min
$\mathcal{F} = 6 - 1.371$ min $= 4.629$ min

23. $\mathcal{D} = 2640$ ft
$\mathcal{S} = 20$ mph $= 2200$ ft/min
$\mathcal{I} = \frac{2640ft}{2200ft/min} = 1.2$ min
$\mathcal{F} = 3 - 1.2$ min $= 1.8$ min

24. $\mathcal{D} = 2112$ ft
$\mathcal{S} = 20$ mph $= 1760$ ft/min
$\mathcal{I} = \frac{2112ft}{2200ft/min} = .96$ min
$\mathcal{F} = 2 - .96$ min $= 1.04$ min

25. $\mathcal{D} = 5808$ ft
$\mathcal{S} = 35$ mph $= 3080$ ft/min
$\mathcal{I} = \frac{5808ft}{3080ft/min} = 1.886$ min
$\mathcal{F} = 8 - 1.886$ min $= 6.114$ min

26. $\mathcal{D} = 2640$ ft
$\mathcal{S} = 30$ mph $= 2640$ ft/min
$\mathcal{I} = \frac{2640ft}{2640ft/min} = 1$ min
$\mathcal{F} = 5 - 1$ min $= 4$ min

27. $\mathcal{D} = 2640$ ft
$\mathcal{S} = 25$ mph $= 2200$ ft/min
$\mathcal{I} = \frac{2640ft}{2200ft/min} = 1.2$ min
$\mathcal{F} = 5 - 1.2$ min $= 3.8$ min

28. $\mathcal{D} = 2112$ ft
$\mathcal{S} = 25$ mph $= 2200$ ft/min
$\mathcal{I} = \frac{2112ft}{2200ft/min} = .96$ min
$\mathcal{F} = 5 - .96$ min $= 4.04$ min

29. $\mathcal{D} = 1584$ ft
$\mathcal{S} = 20$ mph $= 1760$ ft/min
$\mathcal{I} = \frac{1584ft}{1760ft/min} = .9$ min
$\mathcal{F} = 2 - .9$ min $= 1.1$ min

30. $\mathcal{D} = 2112$ ft
$\mathcal{S} = 25$ mph $= 2200$ ft/min
$\mathcal{I} = \frac{2112ft}{2200ft/min} = .96$ min
$\mathcal{F} = 2 - .96$ min $= 1.04$ min

3 Red.

1. $\mathcal{D} = 528$ ft
$\mathcal{S} = 35$ mph $= 3080$ ft/min
$\mathcal{I} = \frac{528ft}{3080ft/min} = .1714286$ min
$\mathcal{F} = 2 - .1714286$ min $= 1.82857$ min

2. $\mathcal{D} = 1056$ ft
$\mathcal{S} = 20$ mph $= 1760$ ft/min
$\mathcal{I} = \frac{1056ft}{1760ft/min} = .6$ min
$\mathcal{F} = 2 - .6$ min $= 1.4$ min

3. $\mathcal{D} = 1056$ ft
$\mathcal{S} = 20$ mph $= 1760$ ft/min
$\mathcal{I} = \frac{1056ft}{1760ft/min} = .1714286$ min
$\mathcal{F} = 2 - .6$ min $= 1.4$ min

4. $\mathcal{D} = 1056$ ft
$\mathcal{S} = 25$ mph $= 2200$ ft/min
$\mathcal{I} = \frac{1056ft}{2200ft/min} = .48$ min
$\mathcal{F} = 2 - .48$ min $= 1.52$ min

5. $\mathcal{D} = 13728$ ft
$\mathcal{S} = 65$ mph $= 5720$ ft/min
$\mathcal{I} = \frac{13728ft}{5720ft/min} = 2.4$ min
$\mathcal{F} = 9 - 2.4$ min $= 6.6$ min

6. $\mathcal{D} = 3168$ ft
$\mathcal{S} = 65$ mph $= 5720$ ft/min
$\mathcal{I} = \frac{3168ft}{5720ft/min} = .5538461$ min
$\mathcal{F} = 2 - .5538461$ min $= 1.44615$ min

7. $\mathcal{D} = 2640$ ft
$\mathcal{S} = 65$ mph $= 5720$ ft/min
$\mathcal{I} = \frac{2640ft}{5720ft/min} = .4615384$ min
$\mathcal{F} = 2 - .46153846$ min $= 1.5384615$ min

8. $\mathcal{D} = 6864$ ft
$\mathcal{S} = 65$ mph $= 5720$ ft/min
$\mathcal{I} = \frac{6864ft}{5720ft/min} = 1.2$ min
$\mathcal{F} = 4 - 1.2$ min $= 2.8$ min

9. $\mathcal{D} = 3696$ ft
$\mathcal{S} = 35$ mph $= 3080$ ft/min
$\mathcal{I} = \frac{3696ft}{3080ft/min} = 1.2$ min
$\mathcal{F} = 3 - 1.2$ min $= 1.8$ min

10. $\mathcal{D} = 23760$ ft
$\mathcal{S} = 65$ mph $= 5720$ ft/min
$\mathcal{I} = \frac{23760ft}{5720ft/min} = 4.1538$ min
$\mathcal{F} = 12 - 4.1538$ min $= 7.8462$ min

11. $\mathcal{D} = 17424$ ft
$\mathcal{S} = 65$ mph $= 5720$ ft/min
$\mathcal{I} = \frac{17424ft}{5720ft/min} = 3.0462$ min
$\mathcal{F} = 13 - 3.0462$ min $= 9.9538$ min

12. $\mathcal{D} = 2112$ ft
$\mathcal{S} = 25$ mph $= 2200$ ft/min
$\mathcal{I} = \frac{2112ft}{2200ft/min} = .96$ min
$\mathcal{F} = 2 - .96$ min $= 1.04$ min

13. $\mathcal{D} = 1584$ ft
$\mathcal{S} = 65$ mph $= 5720$ ft/min
$\mathcal{I} = \frac{1584ft}{5720ft/min} = .2769$ min
$\mathcal{F} = 1 - .2769$ min $= .7231$ min

14. $\mathcal{D} = 528$ ft
$\mathcal{S} = 25$ mph $= 2200$ ft/min
$\mathcal{I} = \frac{528ft}{2200ft/min} = .24$ min
$\mathcal{F} = 1 - .24$ min $= .76$ min

15. $\mathcal{D} = 328$ ft
$\mathcal{S} = 25$ mph $= 2200$ ft/min
$\mathcal{I} = \frac{328ft}{2200ft/min} = .1491$ min
$\mathcal{F} = 1 - .1491$ min $= .8509$ min

16. $\mathcal{D} = 528$ ft
$\mathcal{S} = 25$ mph $= 2200$ ft/min
$\mathcal{I} = \frac{528ft}{2200ft/min} = .24$ min
$\mathcal{F} = 2 - .24$ min $= 1.76$ min

17. $\mathcal{D} = 6864$ ft
$\mathcal{S} = 65$ mph $= 5720$ ft/min
$\mathcal{I} = \frac{6864ft}{5720ft/min} = 1.2$ min
$\mathcal{F} = 5 - 1.2$ min $= 3.8$ min

18. $\mathcal{D} = 2112$ ft
$\mathcal{S} = 35$ mph $= 3080$ ft/min
$\mathcal{I} = \frac{2112ft}{3080ft/min} = .686$ min
$\mathcal{F} = 3 - .686$ min $= 2.314$ min

19. $\mathcal{D} = 528$ ft
$\mathcal{S} = 25$ mph $= 2200$ ft/min
$\mathcal{I} = \frac{528ft}{2200ft/min} = .24$ min
$\mathcal{F} = 2 - .24$ min $= 1.76$ min

20. $\mathcal{D} = 3168$ ft
$\mathcal{S} = 65$ mph $= 5720$ ft/min
$\mathcal{I} = \frac{3168ft}{5720ft/min} = .5538$ min
$\mathcal{F} = 2 - .5538$ min $= .4462$ min

21. $\mathcal{D} = 36960$ ft
$\mathcal{S} = 65$ mph $= 5720$ ft/min
$\mathcal{I} = \frac{36960ft}{5720ft/min} = 6.4615$ min
$\mathcal{F} = 18 - 6.4615$ min $= 11.5385$ min

22. $\mathcal{D} = 8448$ ft
$\mathcal{S} = 65$ mph $= 5720$ ft/min
$\mathcal{I} = \frac{8448ft}{5720ft/min} = 1.4769$ min
$\mathcal{F} = 6 - 1.4769$ min $= 4.5231$ min

23. $\mathcal{D} = 5280$ ft
$\mathcal{S} = 55$ mph $= 4840$ ft/min
$\mathcal{I} = \frac{5280ft}{4840ft/min} = 1.0909$ min
$\mathcal{F} = 4 - 1.0909$ min $= 3.9091$ min

24. $\mathcal{D} = 8448$ ft
$\mathcal{S} = 45$ mph $= 3960$ ft/min
$\mathcal{I} = \frac{8448ft}{3960ft/min} = 2.1333$ min
$\mathcal{F} = 6 - 2.1333$ min $= 3.8667$ min

25. $\mathcal{D} = 28512$ ft
$\mathcal{S} = 70$ mph $= 6160$ ft/min
$\mathcal{I} = \frac{28512ft}{6160ft/min} = 4.629$ min
$\mathcal{F} = 19 - 4.629$ min $= 14.371$ min

26. $\mathcal{D} = 7392$ ft
$\mathcal{S} = 55$ mph $= 4840$ ft/min
$\mathcal{I} = \frac{7392ft}{4840ft/min} = 1.5273$ min
$\mathcal{F} = 6 - 1.5273$ min $= 4.4727$ min

27. $\mathcal{D} = 6336$ ft
$\mathcal{D}_1 = 2700$ ft $\mathcal{S}_1 = 45$ mph $= 3960$ ft/min
$\mathcal{I}_1 = \frac{2700ft}{3960ft/min} = .6818$ min $\mathcal{D}_2 = 3636$ ft $\mathcal{S}_2 = 55$ mph $= 4840$ ft/min
$\mathcal{I}_2 = \frac{3636ft}{4840ft/min} = .7512$ min
$\mathcal{I} = \mathcal{I}_1 + \mathcal{I}_2 = .6818 + .7512 = 1.433$ min
$\mathcal{F} = 7 - 1.433$ min $= 5.567$ min

28. $\mathcal{D} = 31152$ ft
$\mathcal{S} = 55$ mph $= 4840$ ft/min
$\mathcal{I} = \frac{31152ft}{4840ft/min} = 6.436$ min
$\mathcal{F} = 21 - 6.436$ min $= 14.564$ min

29. $\mathcal{D} = 5280$ ft
$\mathcal{S} = 55$ mph $= 4840$ ft/min
$\mathcal{I} = \frac{5280ft}{4840ft/min} = 1.0909$ min
$\mathcal{F} = 3 - 1.0909$ min $= 1.9091$ min

30. $\mathcal{D} = 1584$ ft
$\mathcal{S} = 45$ mph $= 3960$ ft/min
$\mathcal{I} = \frac{1584ft}{3960ft/min} = .4$ min
$\mathcal{F} = 2 - .4$ min $= 1.6$ min

4 Brown.

1. $\mathcal{D} = 30624$ ft
$\mathcal{S} = 55$ mph $= 4840$ ft/min
$\mathcal{I} = \frac{30624ft}{4840ft/min} = 6.32737$ min
$\mathcal{F} = 45 - 6.32727$ min $= 38.67272$ min

2. $\mathcal{D} = 8448$ ft
$\mathcal{S} = 55$ mph $= 4840$ ft/min
$\mathcal{I} = \frac{8448ft}{4840ft/min} = 1.745455$ min
$\mathcal{F} = 12 - 1.745455$ min $= 10.254545$ min

3. $\mathcal{D} = 2640$ ft
$\mathcal{S} = 55$ mph $= 4840$ ft/min
$\mathcal{I} = \frac{2640ft}{4840ft/min} = .54545$ min
$\mathcal{F} = 4 - .54545$ min $= 1.45455$ min

4. $\mathcal{D} = 16368$ ft
$\mathcal{S} = 55$ mph $= 4840$ ft/min
$\mathcal{I} = \frac{16368ft}{4840ft/min} = 3.381818$ min
$\mathcal{F} = 27 - 3.381818$ min $= 23.618182$ min

5. $\mathcal{D} = 7392$ ft
$\mathcal{S} = 55$ mph $= 4840$ ft/min
$\mathcal{I} = \frac{7392ft}{4840ft/min} = 1.52727273$ min
$\mathcal{F} = 11 - 1.527272723$ min $= 9.47273$ min

6. $\mathcal{D} = 13728$ ft
$\mathcal{S} = 65$ mph $= 5720$ ft/min
$\mathcal{I} = \frac{13728ft}{5720ft/min} = 2.4$ min
$\mathcal{F} = 25 - 2.4$ min $= 23.6$ min

7. $\mathcal{D} = 377$ ft
$\mathcal{S} = 35$ mph $= 3080$ ft/min
$\mathcal{I} = \frac{377ft}{3080ft/min} = .1224$ min
$\mathcal{F} = 1 - .1224$ min $= .8776$ min

8. $\mathcal{D} = 384$ ft
$\mathcal{S} = 45$ mph $= 3960$ ft/min
$\mathcal{I} = \frac{384ft}{3960ft/min} = .09697$ min
$\mathcal{F} = 1 - .09697$ min $= .90303$ min

9. $\mathcal{D} = 367$ ft
$\mathcal{S} = 45$ mph $= 3960$ ft/min
$\mathcal{I} = \frac{367ft}{3960ft/min} = .0927$ min

$\mathcal{F} = 1 - .0927 \text{ min} = .9073 \text{ min}$

10. $\mathcal{D} = 3696$ ft
$\mathcal{S} = 55$ mph $= 4840$ ft/min
$\mathcal{I} = \frac{3696ft}{4840ft/min} = .7636$ min
$\mathcal{F} = 5 - .7636 \text{ min} = 4.2364 \text{ min}$

11. $\mathcal{D} = 1056$ ft
$\mathcal{S} = 55$ mph $= 4840$ ft/min
$\mathcal{I} = \frac{1056ft}{4840ft/min} = .2182$ min
$\mathcal{F} = 2 - .2182 \text{ min} = 1.7818 \text{ min}$

12. $\mathcal{D} = 2112$ ft
$\mathcal{S} = 55$ mph $= 4840$ ft/min
$\mathcal{I} = \frac{2112ft}{4840ft/min} = .4364$ min
$\mathcal{F} = 3 - .4364 \text{ min} = 2.5636 \text{ min}$

13. $\mathcal{D} = 4224$ ft
$\mathcal{S} = 75$ mph $= 6600$ ft/min
$\mathcal{I} = \frac{4224ft}{6600ft/min} = .64$ min
$\mathcal{F} = 6 - .64 \text{ min} = 5.36 \text{ min}$

14. $\mathcal{D} = 6864$ ft
$\mathcal{S} = 75$ mph $= 6600$ ft/min
$\mathcal{I} = \frac{6864ft}{6600ft/min} = 1.04$ min
$\mathcal{F} = 11 - 1.04 \text{ min} = 9.96 \text{ min}$

15. $\mathcal{D} = 6864$ ft
$\mathcal{S} = 65$ mph $= 5720$ ft/min
$\mathcal{I} = \frac{6864ft}{5720ft/min} = 1.2$ min
$\mathcal{F} = 5 - 1.2 \text{ min} = 3.8 \text{ min}$

16. $\mathcal{D} = 3168$ ft
$\mathcal{S} = 75$ mph $= 6600$ ft/min
$\mathcal{I} = \frac{3168ft}{6600ft/min} = .48$ min
$\mathcal{F} = 5 - .48 \text{ min} = 4.52 \text{ min}$

17. $\mathcal{D} = 3696$ ft
$\mathcal{S} = 55$ mph $= 4840$ ft/min
$\mathcal{I} = \frac{3696ft}{4840ft/min} = .7636$ min
$\mathcal{F} = 6 - .7636 \text{ min} = 5.2364 \text{ min}$

18. $\mathcal{D} = 26928$ ft
$\mathcal{S} = 55$ mph $= 4840$ ft/min
$\mathcal{I} = \frac{26928ft}{4840ft/min} = 5.5636$ min

$\mathcal{F} = 30 - 5.5636 \text{ min} = 24.4364 \text{ min}$

19. $\mathcal{D} = 6336$ ft
$\mathcal{S} = 50$ mph $= 4400$ ft/min
$\mathcal{I} = \frac{6336ft}{4400ft/min} = 1.44$ min
$\mathcal{F} = 11 - 1.44 \text{ min} = 9.56 \text{ min}$

20. $\mathcal{D} = 3168$ ft
$\mathcal{S} = 25$ mph $= 2200$ ft/min
$\mathcal{I} = \frac{3168ft}{2200ft/min} = 1.44$ min
$\mathcal{F} = 8 - 1.44 \text{ min} = 6.56 \text{ min}$

21. $\mathcal{D} = 3168$ ft
$\mathcal{S} = 75$ mph $= 6600$ ft/min
$\mathcal{I} = \frac{3168ft}{6600ft/min} = 0.48$ min
$\mathcal{F} = 5 - .48 \text{ min} = 4.52 \text{ min}$

22. $\mathcal{D} = 213$ ft
$\mathcal{S} = 75$ mph $= 6600$ ft/min
$\mathcal{I} = \frac{213ft}{6600ft/min} = .0323$ min
$\mathcal{F} = 1 - .0323 \text{ min} = .9677 \text{ min}$

23. $\mathcal{D} = 2640$ ft
$\mathcal{S} = 45$ mph $= 3960$ ft/min
$\mathcal{I} = \frac{2640ft}{3960ft/min} = .6667$ min
$\mathcal{F} = 4 - .6667 \text{ min} = 3.3333 \text{ min}$

24. $\mathcal{D} = 9504$ ft
$\mathcal{S} = 55$ mph $= 4840$ ft/min
$\mathcal{I} = \frac{9504ft}{4840ft/min} = 1.9636$ min
$\mathcal{F} = 23 - 1.9636 \text{ min} = 21.0364 \text{ min}$

25. $\mathcal{D} = 11088$ ft
$\mathcal{S} = 55$ mph $= 4840$ ft/min
$\mathcal{I} = \frac{11088ft}{4840ft/min} = 2.2909$ min
$\mathcal{F} = 15 - 2.2909 \text{ min} = 12.7091 \text{ min}$

26. $\mathcal{D} = 3696$ ft
$\mathcal{S} = 60$ mph $= 5280$ ft/min
$\mathcal{I} = \frac{3696ft}{5280ft/min} = .7$ min
$\mathcal{F} = 5 - .7 \text{ min} = 4.3 \text{ min}$

27. $\mathcal{D} = 2640$ ft
$\mathcal{S} = 60$ mph $= 5280$ ft/min
$\mathcal{I} = \frac{2640ft}{5280ft/min} = .5$ min

$\mathcal{F} = 4 - .5 \text{ min} = 3.5 \text{ min}$

28. $\mathcal{D} = 528$ ft
$\mathcal{S} = 60$ mph $= 5280$ ft/min
$\mathcal{I} = \frac{528ft}{5280ft/min} = .1$ min
$\mathcal{F} = 1 - .1 \text{ min} = .9 \text{ min}$

29. $\mathcal{D} = 528$ ft
$\mathcal{S} = 60$ mph $= 5280$ ft/min
$\mathcal{I} = \frac{528ft}{5280ft/min} = .1$ min
$\mathcal{F} = 1 - .1 \text{ min} = .9 \text{ min}$

30. $\mathcal{D} = 7920$ ft
$\mathcal{S} = 45$ mph $= 3960$ ft/min
$\mathcal{I} = \frac{7920ft}{3960ft/min} = 2$ min
$\mathcal{F} = 13 - 2 \text{ min} = 11 \text{ min}$

5 RSS.

We used the following algorithm to calculate RSS for each traffic condition.

Algorithm. *RSS Algorithm (Ideal[length], Actual[length])*

1. Set rssP, rssL, rssE to 0.
2. **For** i in range (length)
   x = Ideal[i], y = Actual[i]
   rssP += (poly(x) - y)^2
   rssL += (lin(x) - y)^2
   rssE += (exp(x) - y)^2
   Note: poly, lin, and exp are the modeled equations discussed in the main paper.
3. Repeat this for each condition.