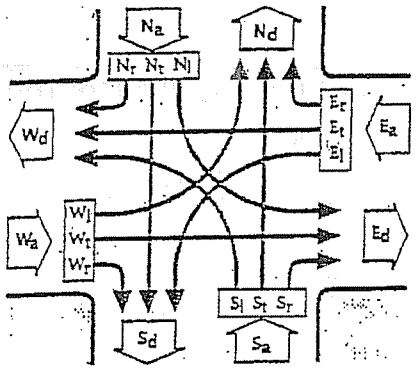
APPENDIX G

Furness Description and Output Sheets

Relationship of Approach and Departure Volumes Forecast by the Model to Actual Counts of Turning Movements at the Intersection



$N_{a,d}$

Forecast Peak Hour Approach or Departure Volumes (Adjusted Model Output)

W = *West approach*
E = *East approach*
N = *North approach*
S = *South approach*
a = *approach*
d = *departure*

$N_r \; N_t \; N_l$

Existing Turning Movements (Actual 1990 Counts)

E, W, N, S = *Direction*
r = *Right-turn volume*
t = *Through traffic volume*
l = *Left-turn volume*

"Seeding" Technique
Observed turning movements are used in the initial matrix of turning movements as the starting point for developing adjusted turning movement forecasts.

iterative adjustment

$$\begin{bmatrix} - & N_t & W_r & E_l \\ S_t & - & W_l & E_r \\ S_l & N_r & - & E_t \\ S_r & N_l & W_t & - \end{bmatrix} \begin{matrix} = \\ = \\ = \\ = \end{matrix} \begin{bmatrix} N_d \\ S_d \\ E_d \\ W_d \end{bmatrix}$$

Ratio of turning movements to forecast volumes

$$\begin{bmatrix} N_d \\ S_d \\ E_d \\ W_d \end{bmatrix}$$

Balancing Technique
The ratio of the sum of observed turning volumes to forecast approach and departure volumes is used to adjust the turning movement matrix. The forecast approach volumes (columns) and the forecast departure volumes (rows) are adjusted iteratively until the matrix closes.

iterative adjustment

$$\begin{matrix} \| & \| & \| & \| \end{matrix}$$

$$\begin{bmatrix} N_a & S_a & E_a & W_a \end{bmatrix}$$

Ratio of turning movements to forecast volumes

$$\begin{bmatrix} N_a & S_a & E_a & W_a \end{bmatrix}$$

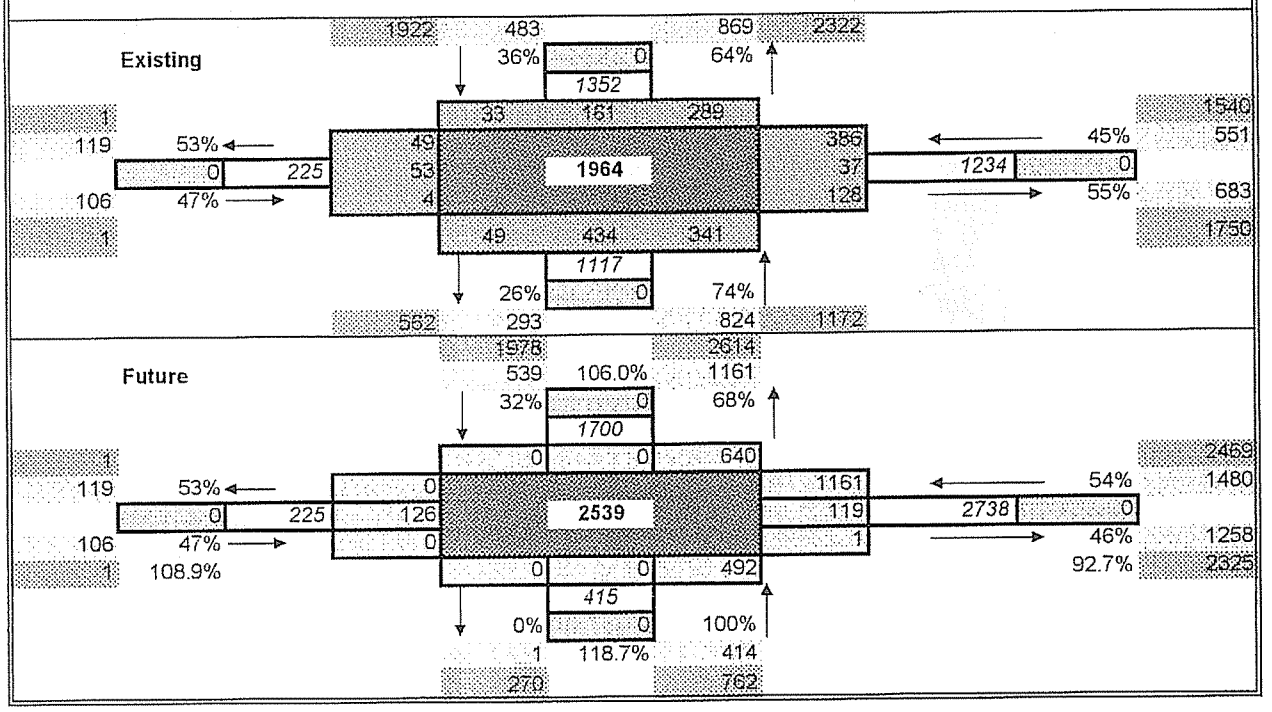
Reasonableness Check
An intersection-by-intersection comparison of the adjusted turn volume output to existing counts and the unadjusted turn volume forecasts is necessary to check for potential anomalies.

Adjusted ("Furnessed") Peak-Hour Intersection Turning Volume Projections

Figure 2
Intersection Turning Movement Adjustment Process (The "Furness" Method)

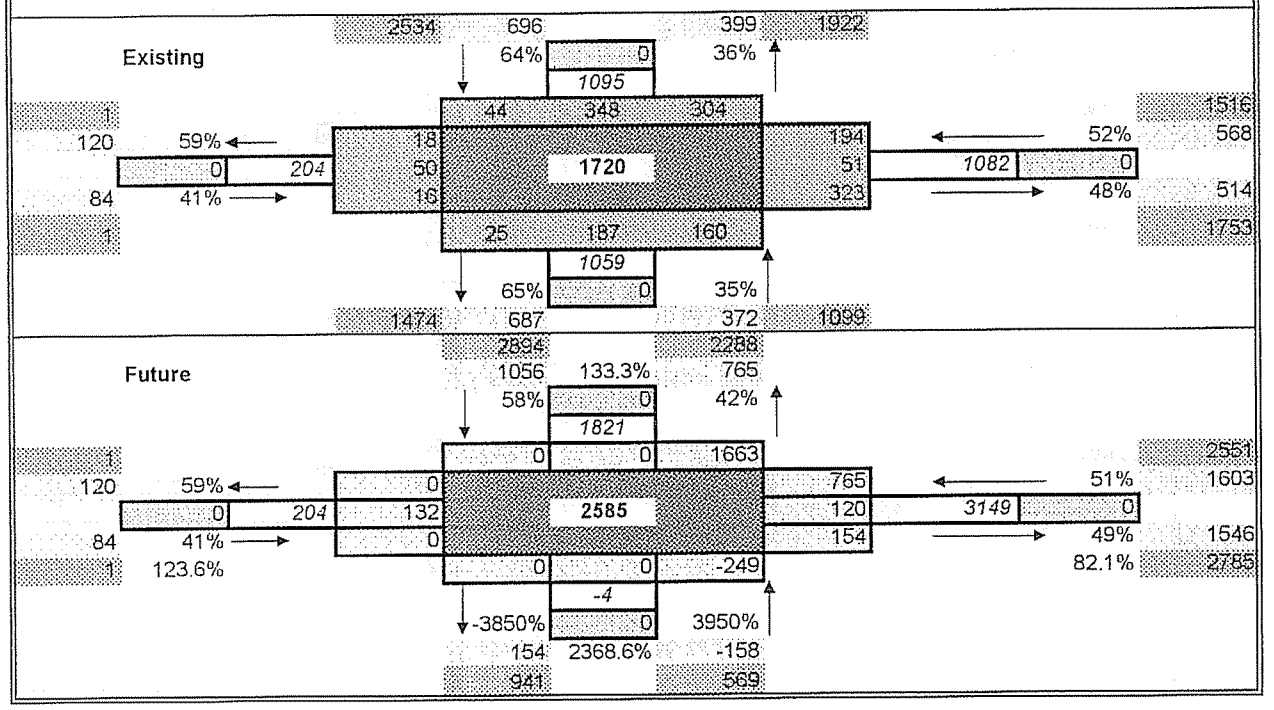
Future Turning Movement Calculation Sheet (2025 Conditions)

N/S Street	Monterey	Time Period	AM
E/W Street	Cochrane	Date	12/10/2004
Project	Cochrane Rd PUD		



Future Turning Movement Calculation Sheet (2025 Conditions)

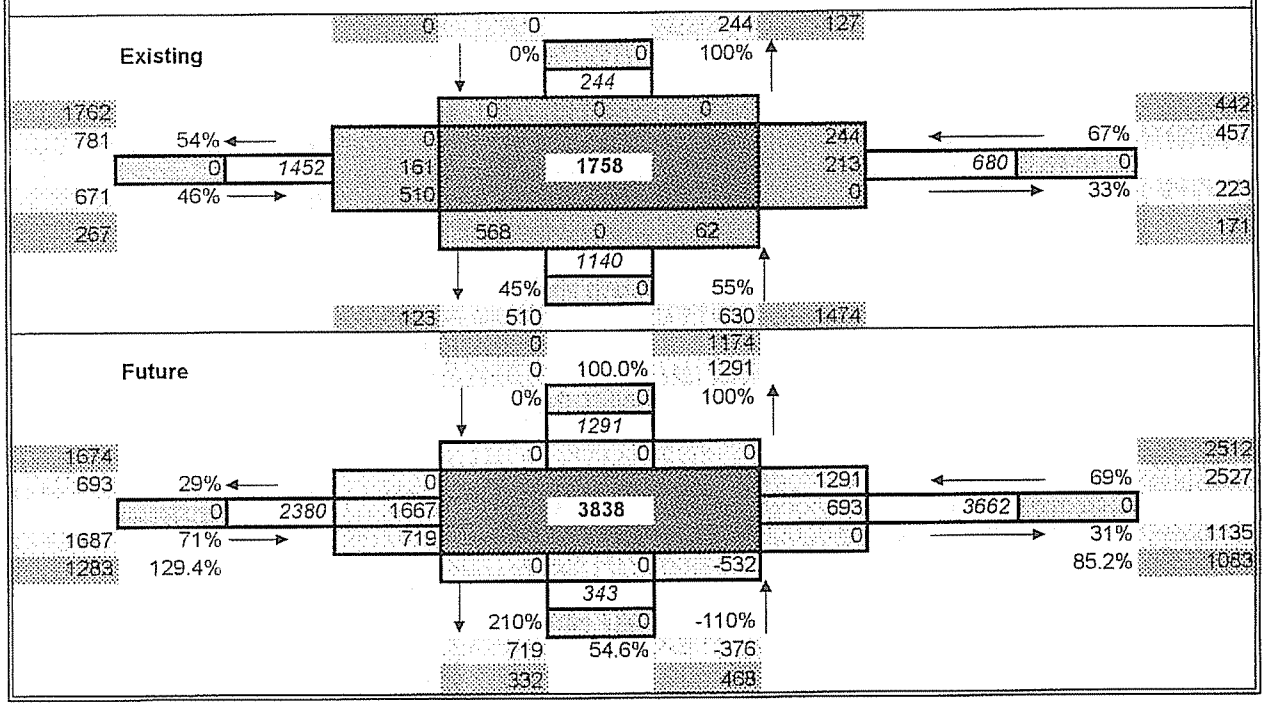
N/S Street	Monterey	Time Period	PM
E/W Street	Cochrane	Date	12/10/2004
Project	Cochrane Rd PUD		



Fehr Peers Associates

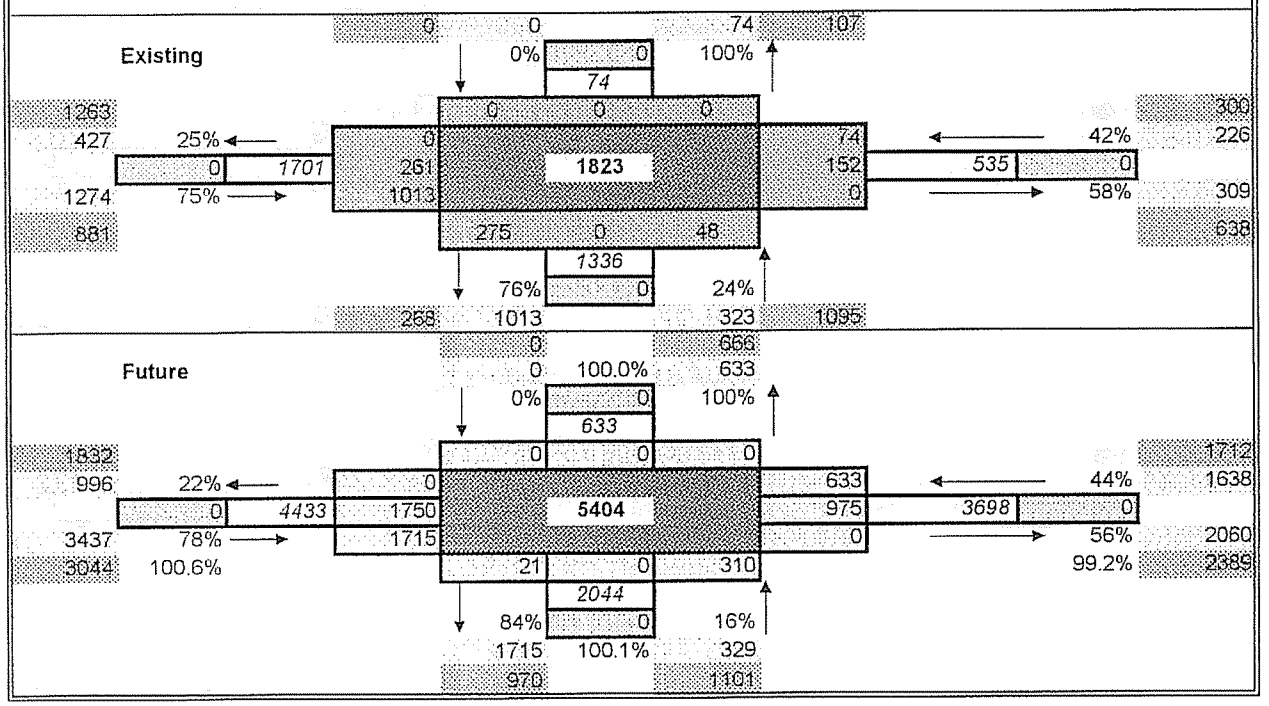
Future Turning Movement Calculation Sheet (2025 Conditions)

N/S Street	NB 101	Time Period	AM
E/W Street	Cochrane	Date	12/10/2004
Project	Cochrane Rd PUD		



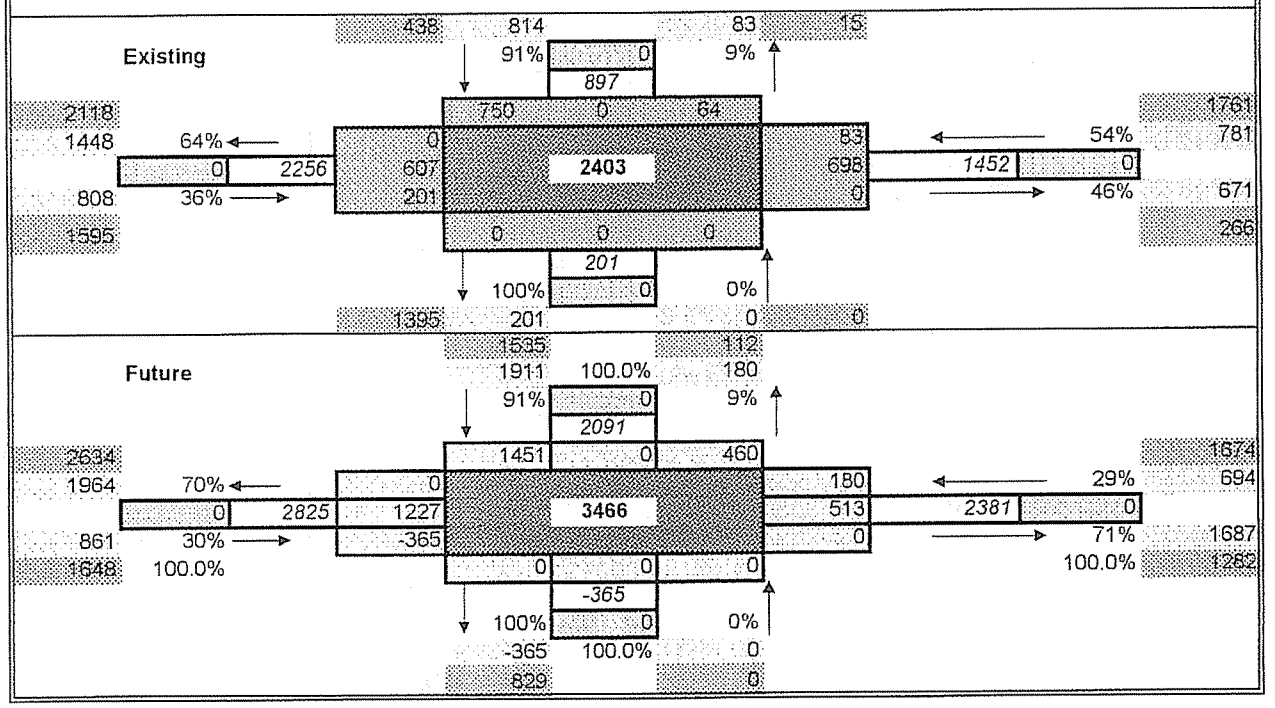
Future Turning Movement Calculation Sheet (2025 Conditions)

N/S Street	NB 101	Time Period	PM
E/W Street	Cochrane	Date	12/10/2004
Project	Cochrane Rd PUD		



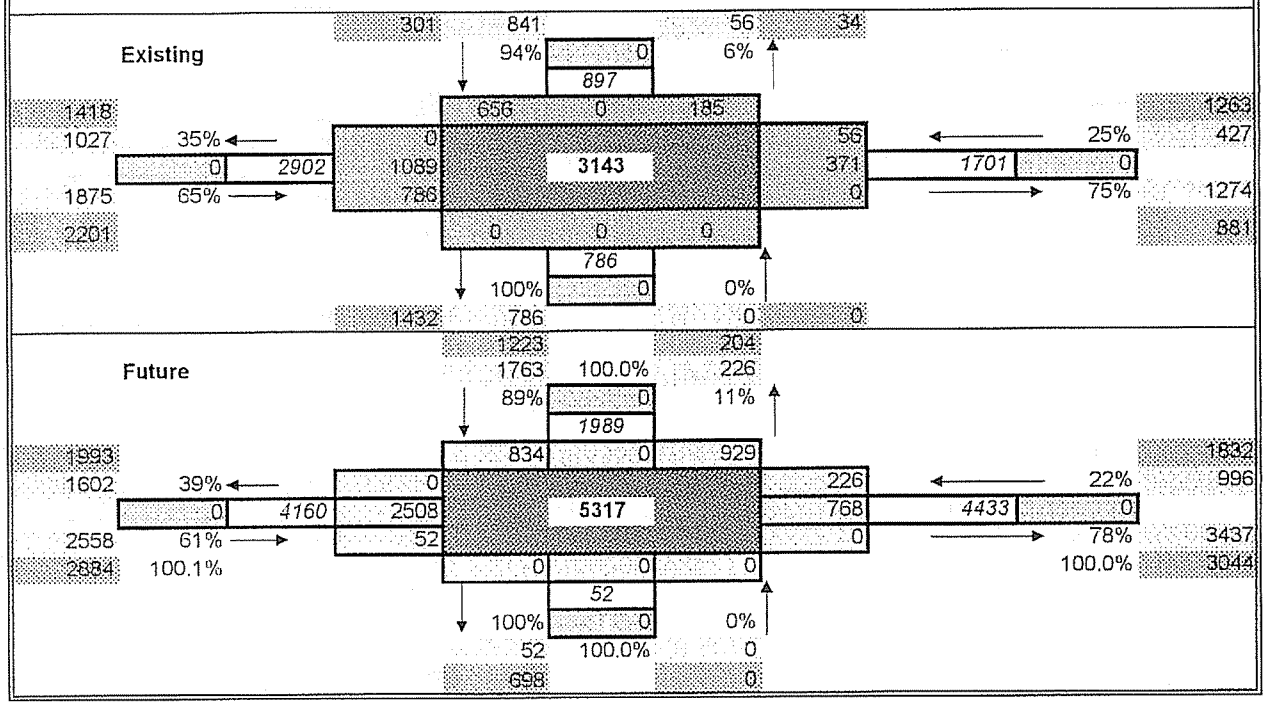
Future Turning Movement Calculation Sheet (2025 Conditions)

N/S Street	SB 101	Time Period	AM
E/W Street	Cochrane	Date	12/10/2004
Project	Cochrane Rd PUD		



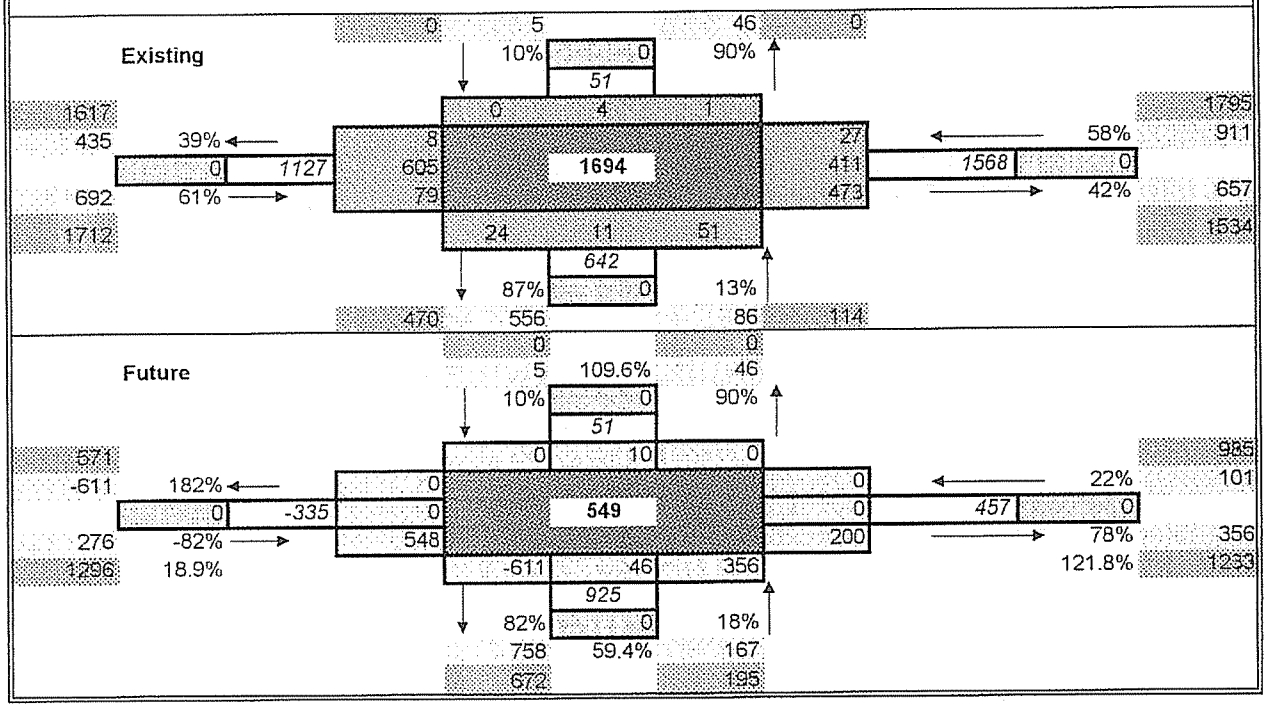
Future Turning Movement Calculation Sheet (2025 Conditions)

N/S Street	SB 101	Time Period	PM
E/W Street	Cochrane	Date	12/10/2004
Project	Cochrane Rd PUD		



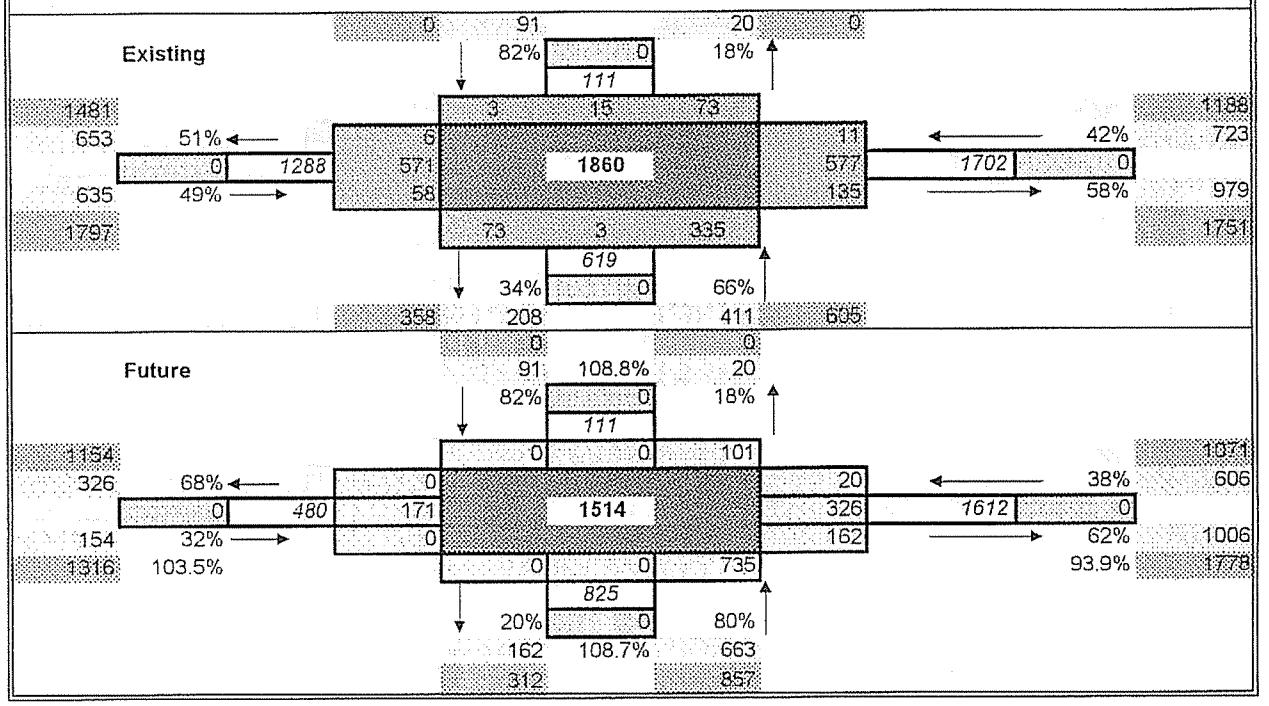
Future Turning Movement Calculation Sheet (2025 Conditions)

N/S Street	Sutter	Time Period	AM
E/W Street	Cochrane	Date	12/10/2004
Project	Cochrane Rd PUD		



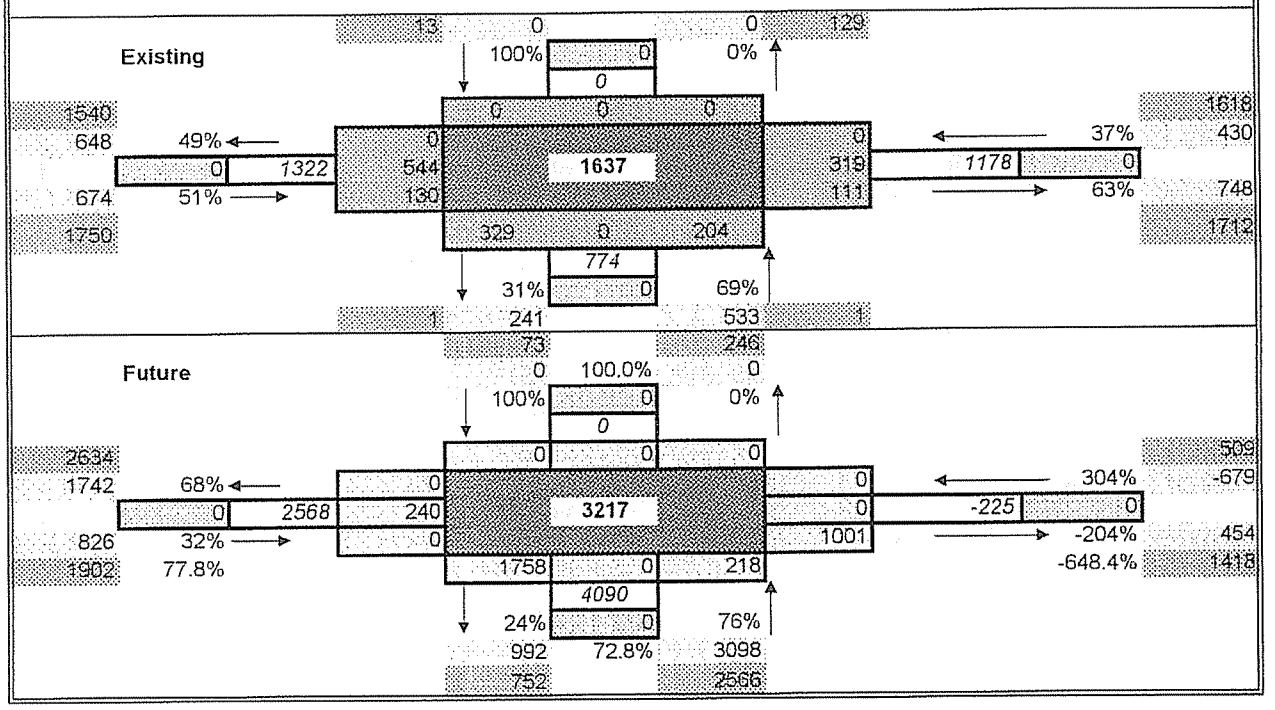
Future Turning Movement Calculation Sheet (2025 Conditions)

N/S Street	Sutter	Time Period	PM
E/W Street	Cochrane	Date	12/10/2004
Project	Cochrane Rd PUD		



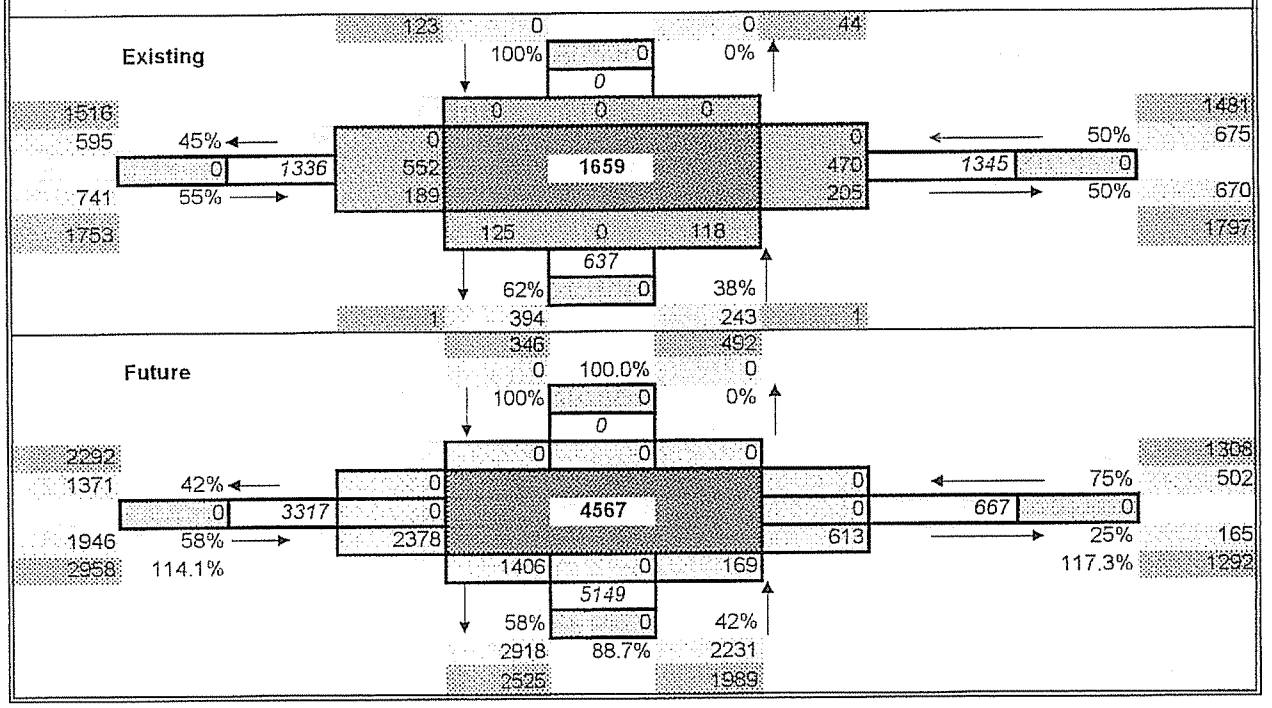
Future Turning Movement Calculation Sheet (2025 Conditions)

N/S Street	Butterfield	Time Period	AM
E/W Street	Cochrane	Date	12/10/2004
Project	Cochrane Rd PUD		



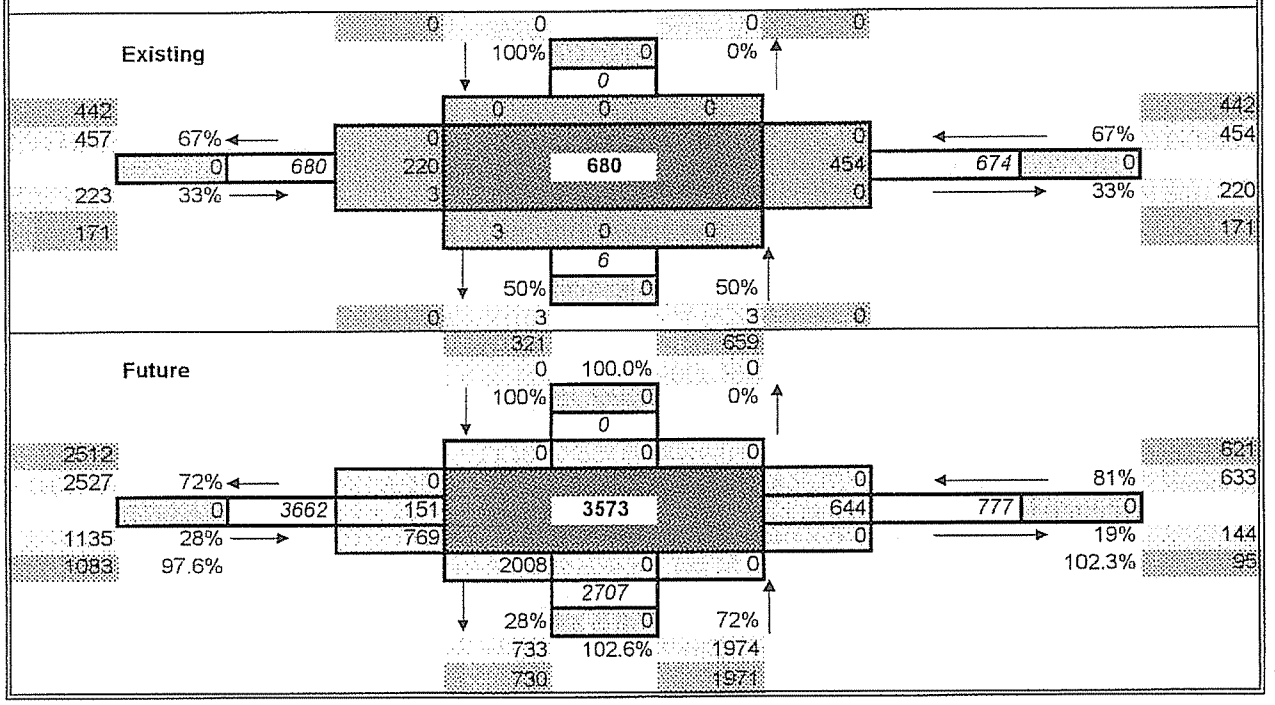
Future Turning Movement Calculation Sheet (2025 Conditions)

N/S Street	Butterfield	Time Period	PM
E/W Street	Cochrane	Date	12/10/2004
Project	Cochrane Rd PUD		



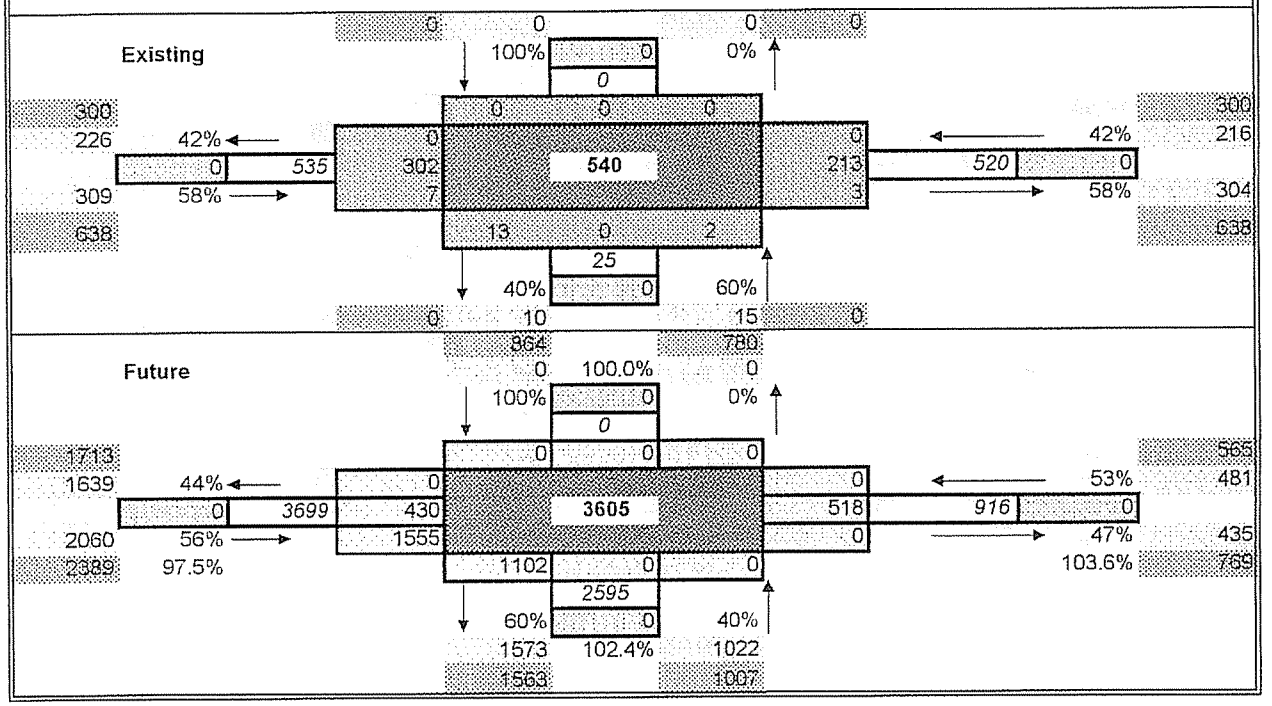
Future Turning Movement Calculation Sheet (2025 Conditions)

N/S Street	De Paul	Time Period	AM
E/W Street	Cochrane	Date	12/10/2004
Project	Cochrane Rd PUD		



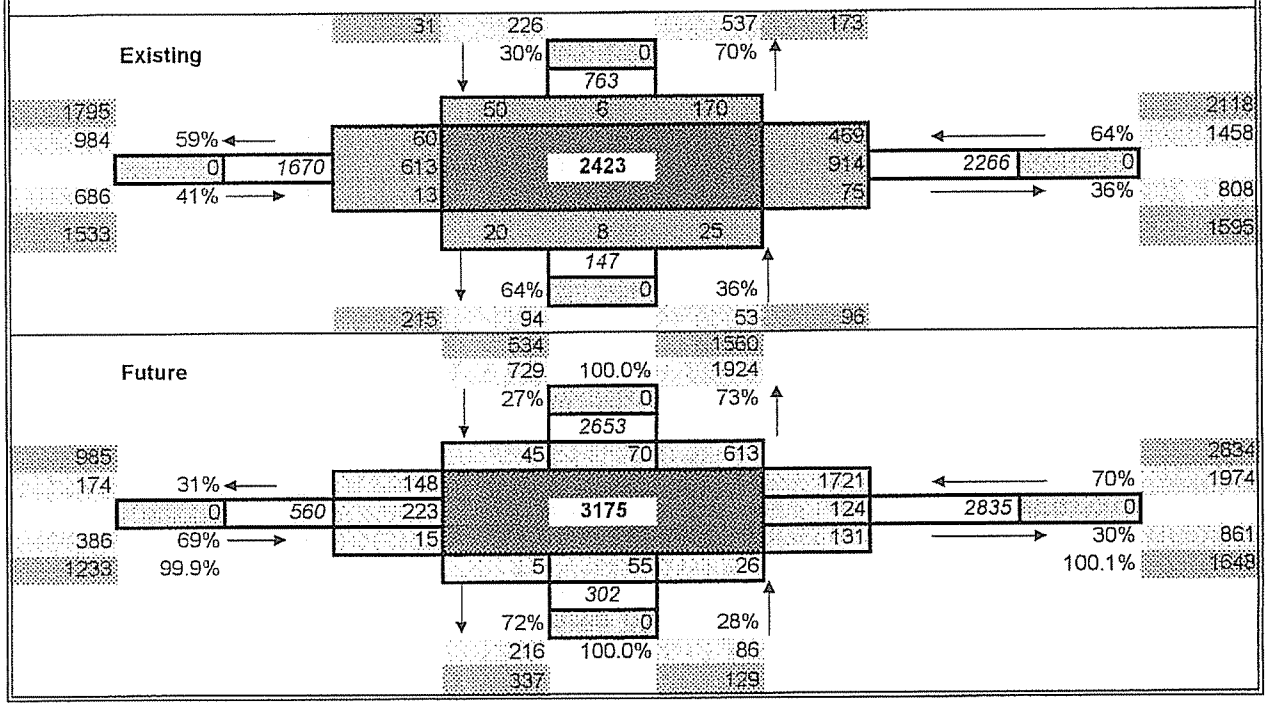
Future Turning Movement Calculation Sheet (2025 Conditions)

N/S Street	De Paul	Time Period	PM
E/W Street	Cochrane	Date	12/10/2004
Project	Cochrane Rd PUD		



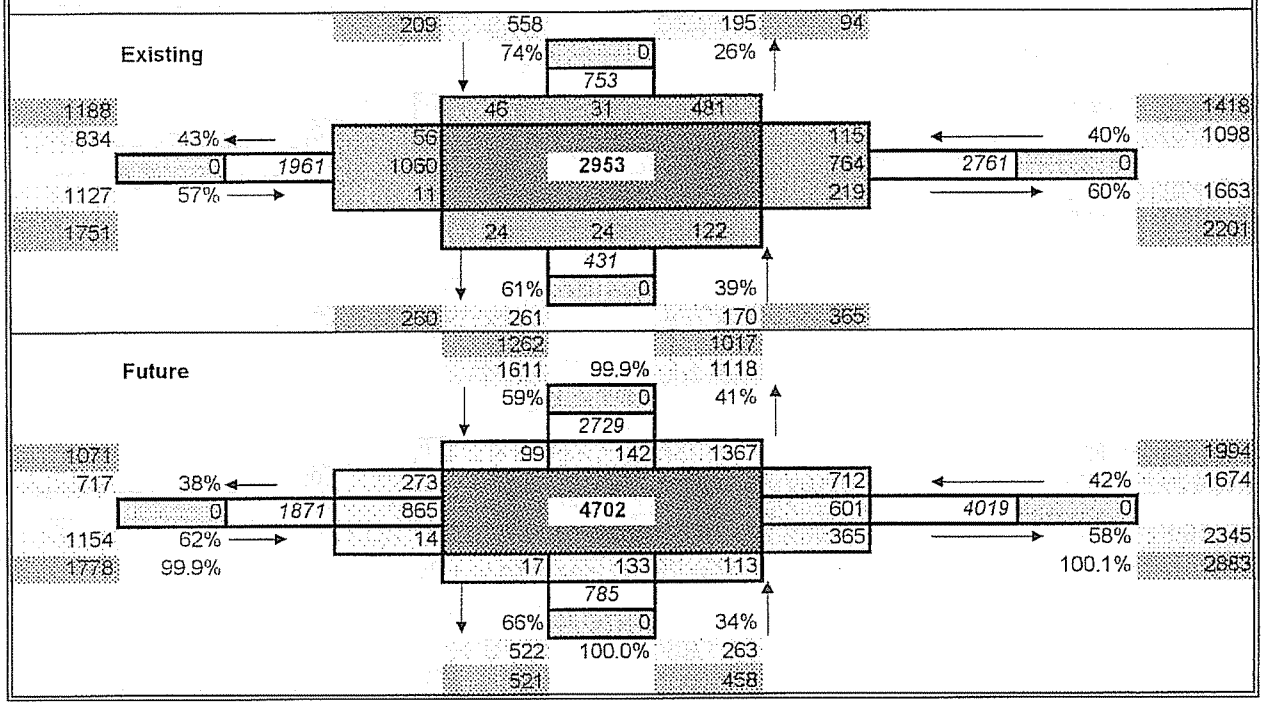
Future Turning Movement Calculation Sheet (2025 Conditions)

N/S Street	Madrone	Time Period	AM
E/W Street	Cochrane	Date	12/10/2004
Project	Cochrane Rd PUD		



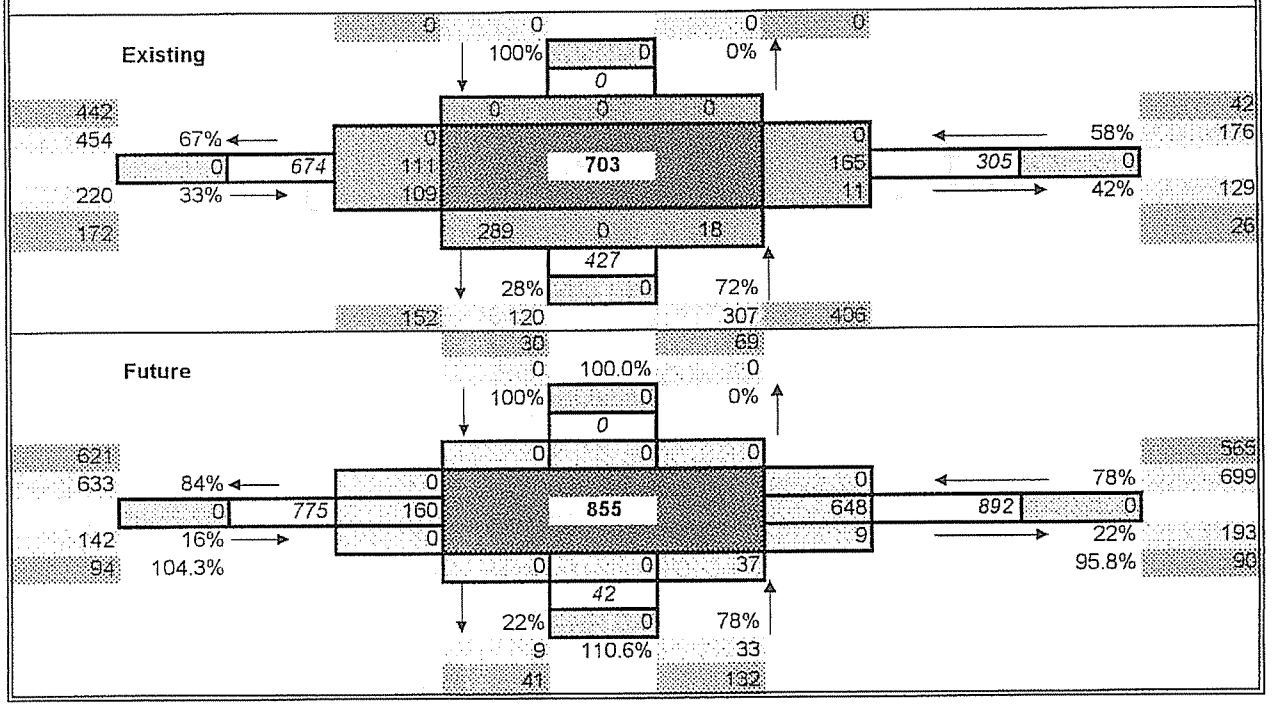
Future Turning Movement Calculation Sheet (2025 Conditions)

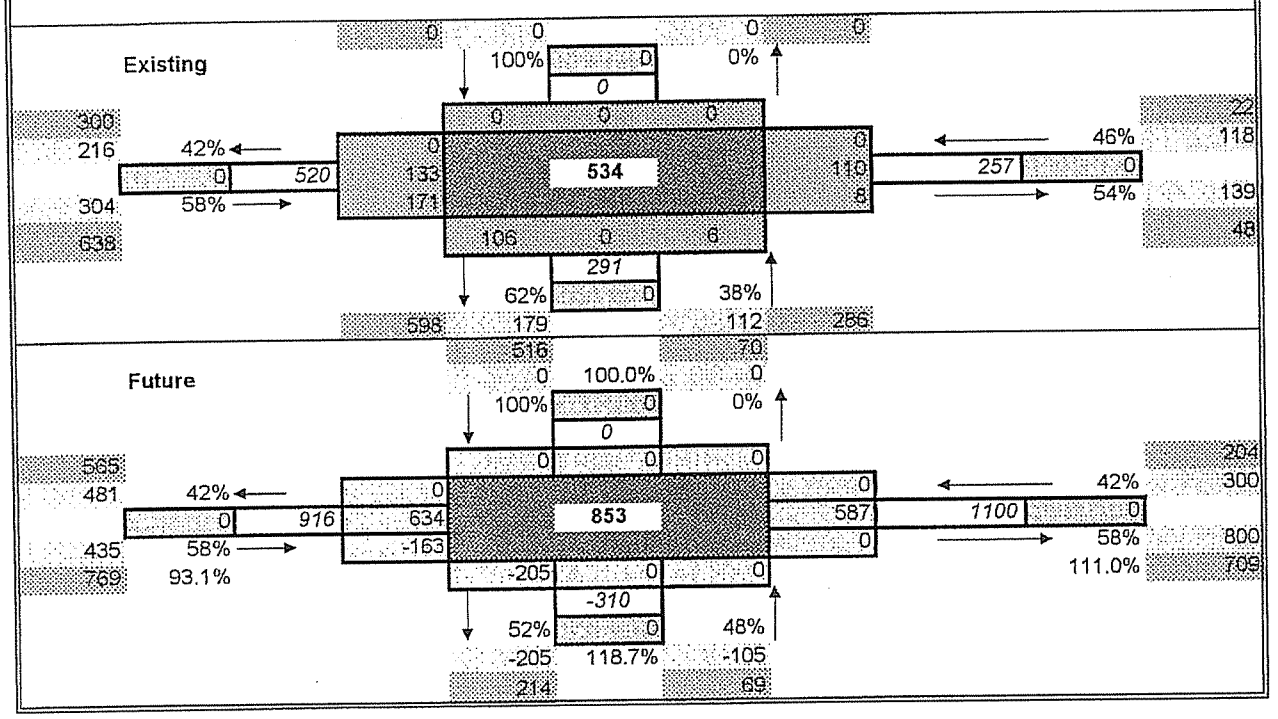
N/S Street	Madrone	Time Period	PM
E/W Street	Cochrane	Date	12/10/2004
Project	Cochrane Rd PUD		



Future Turning Movement Calculation Sheet (2025 Conditions)

N/S Street	Mission View	Time Period	AM
E/W Street	Cochrane	Date	12/10/2004
Project	Cochrane Rd PUD		



Future Turning Movement Calculation Sheet (2025 Conditions)

N/S Street	Mission View	Time Period	PM
E/W Street	Cochrane	Date	12/10/2004
Project	Cochrane Rd PUD