

# Traffic Flow Evaluations

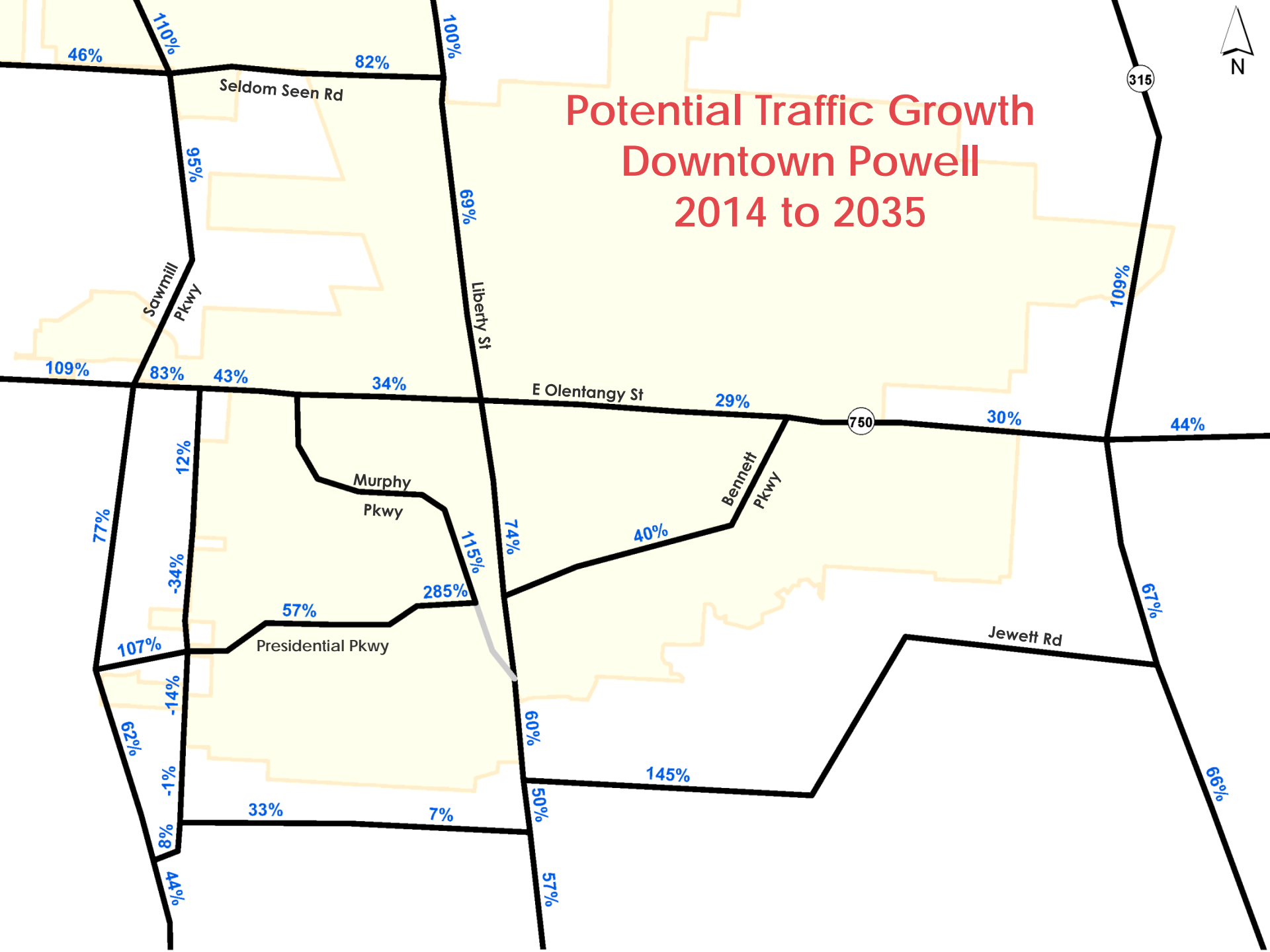
## Downtown Powell



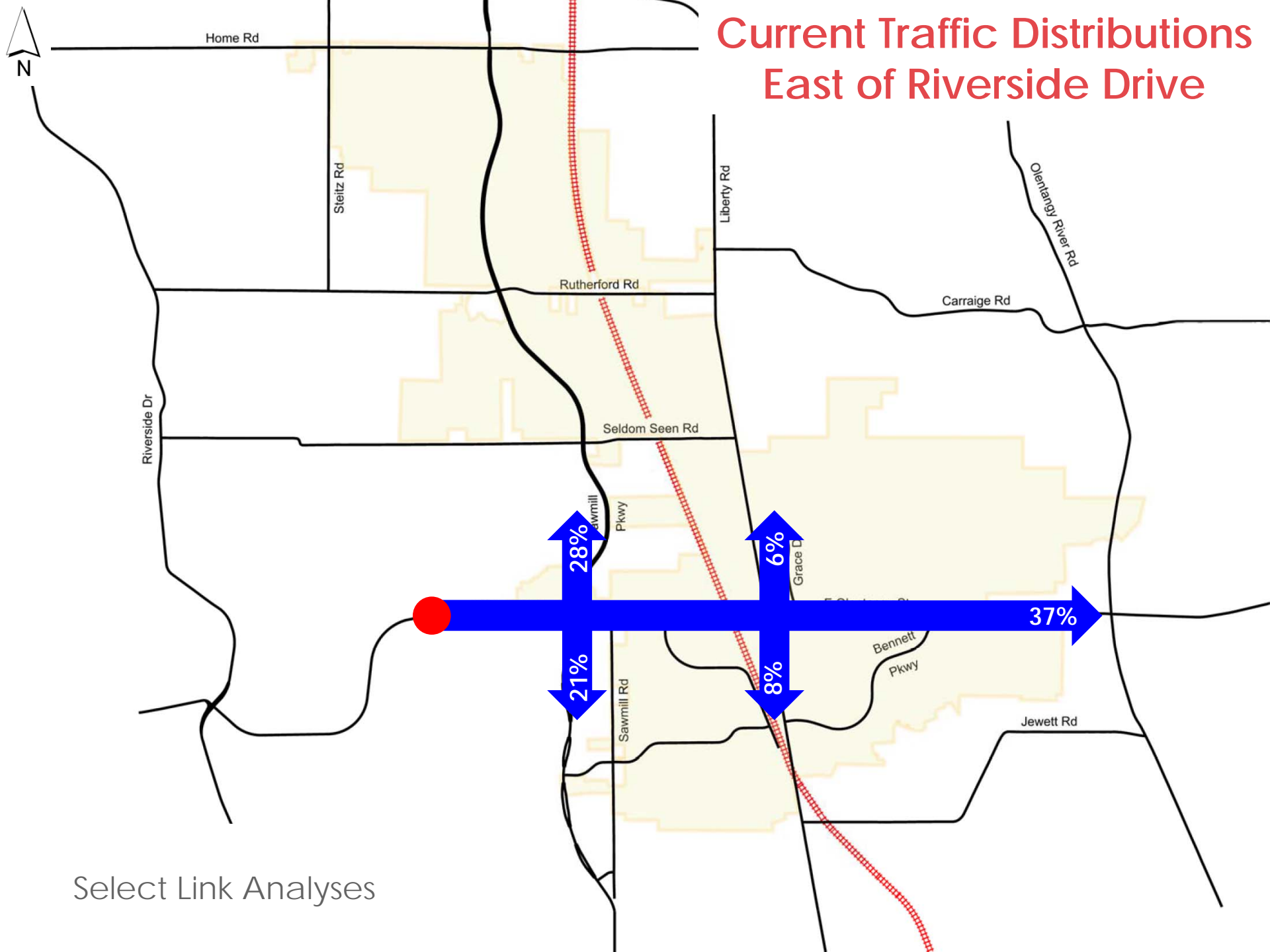
City Council Worksession

May 5, 2015

# Potential Traffic Growth Downtown Powell 2014 to 2035

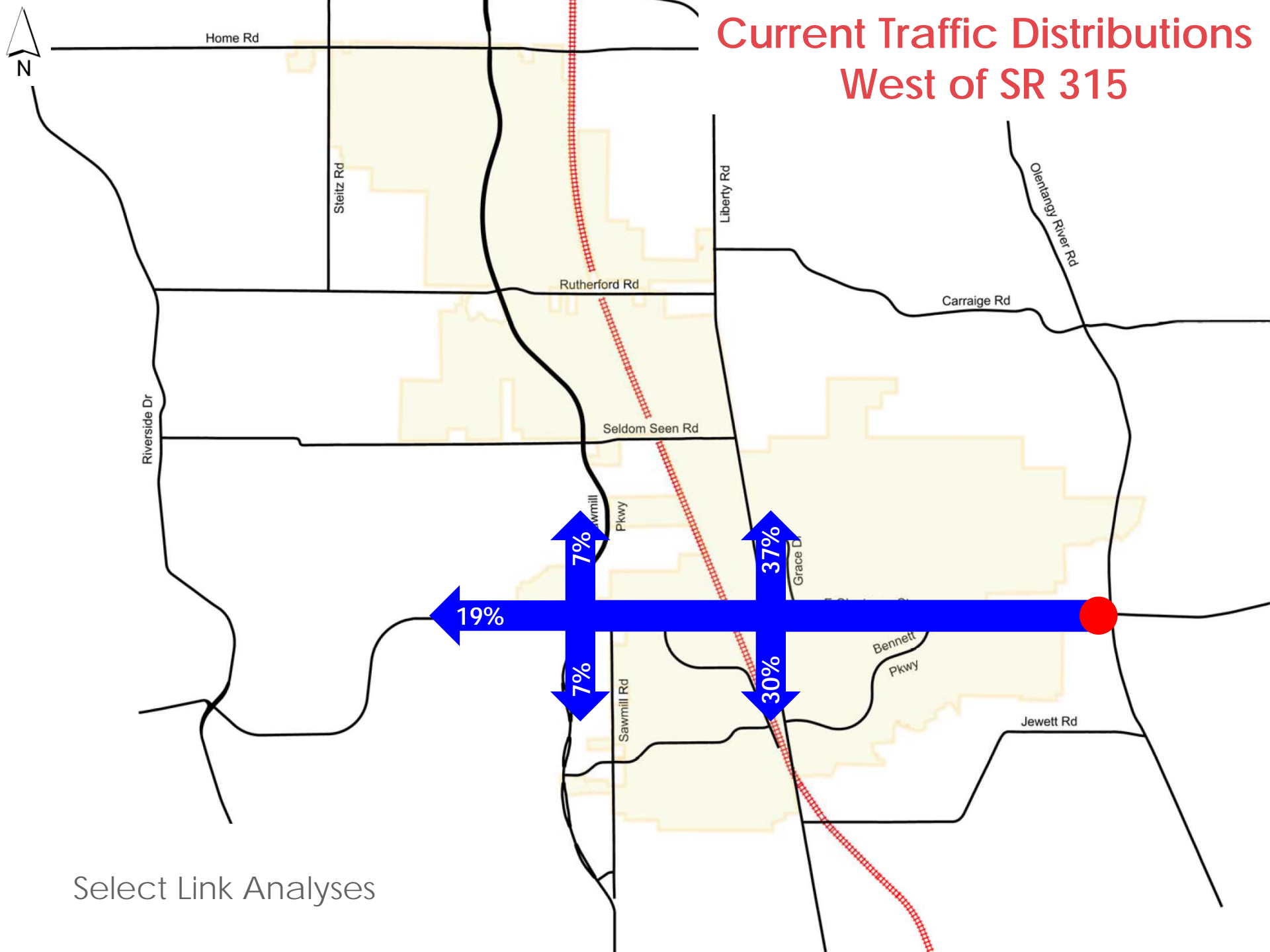


# Current Traffic Distributions East of Riverside Drive



Select Link Analyses

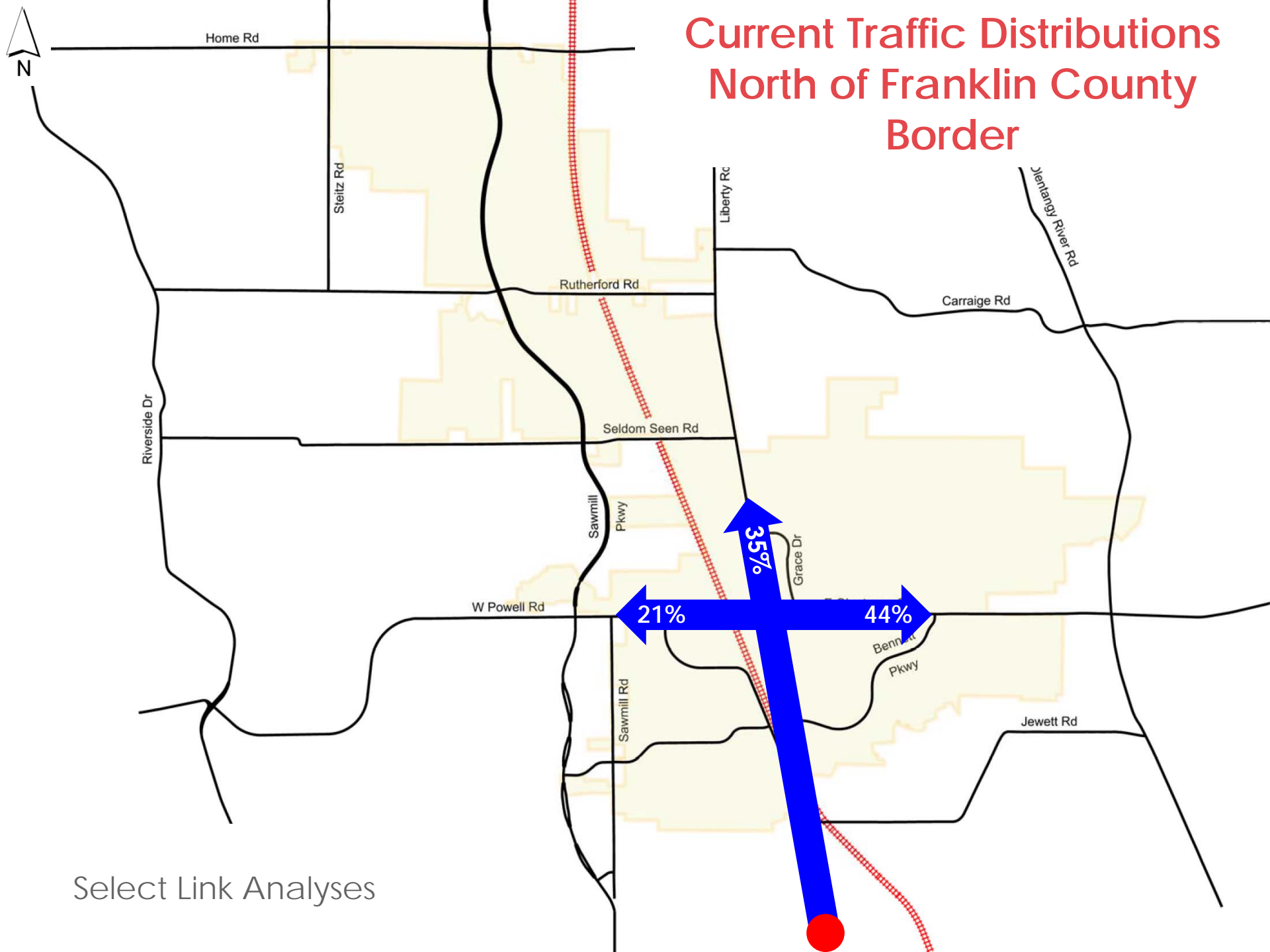
# Current Traffic Distributions West of SR 315



Select Link Analyses

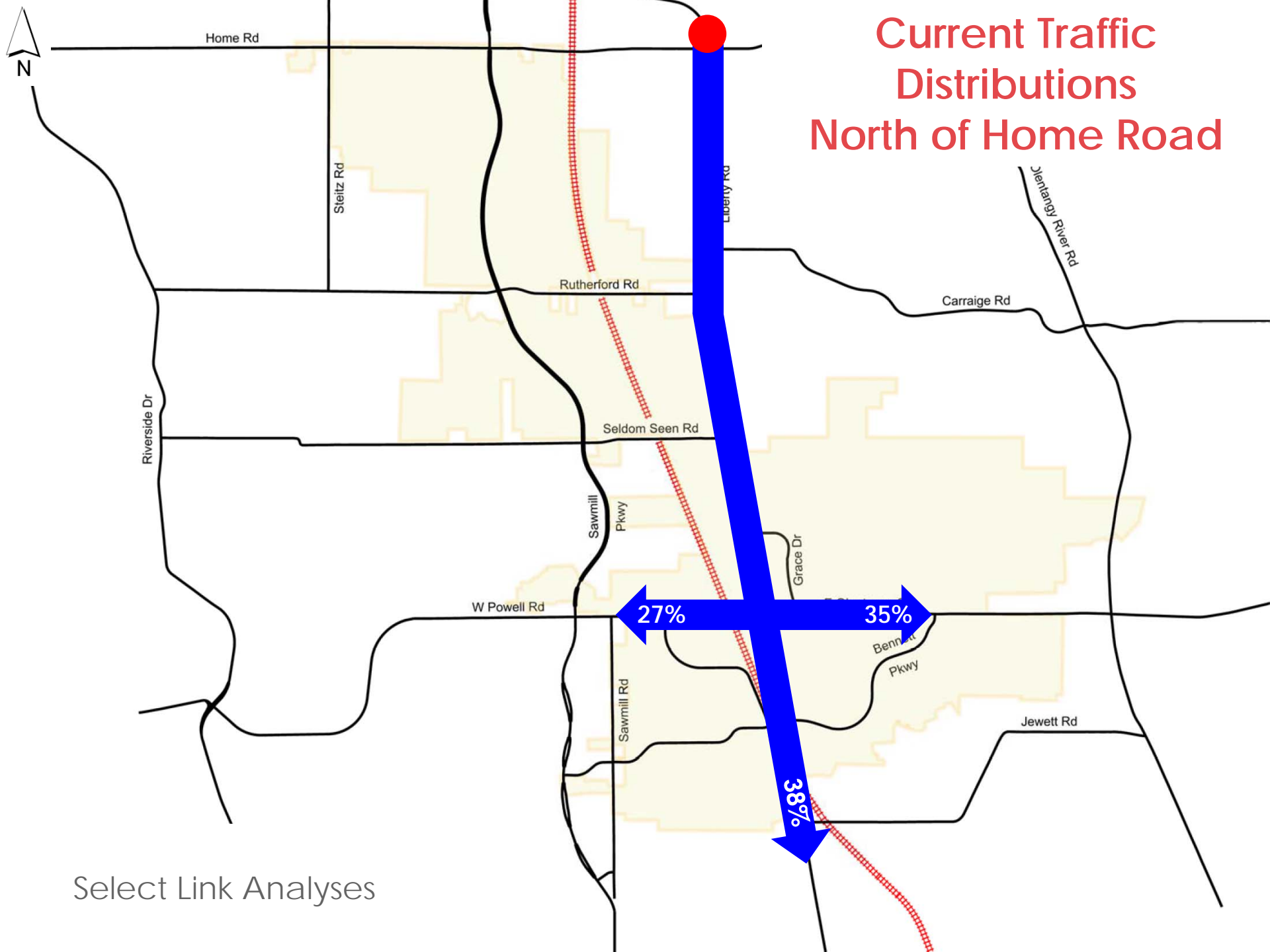


# Current Traffic Distributions North of Franklin County Border



Select Link Analyses

# Current Traffic Distributions North of Home Road

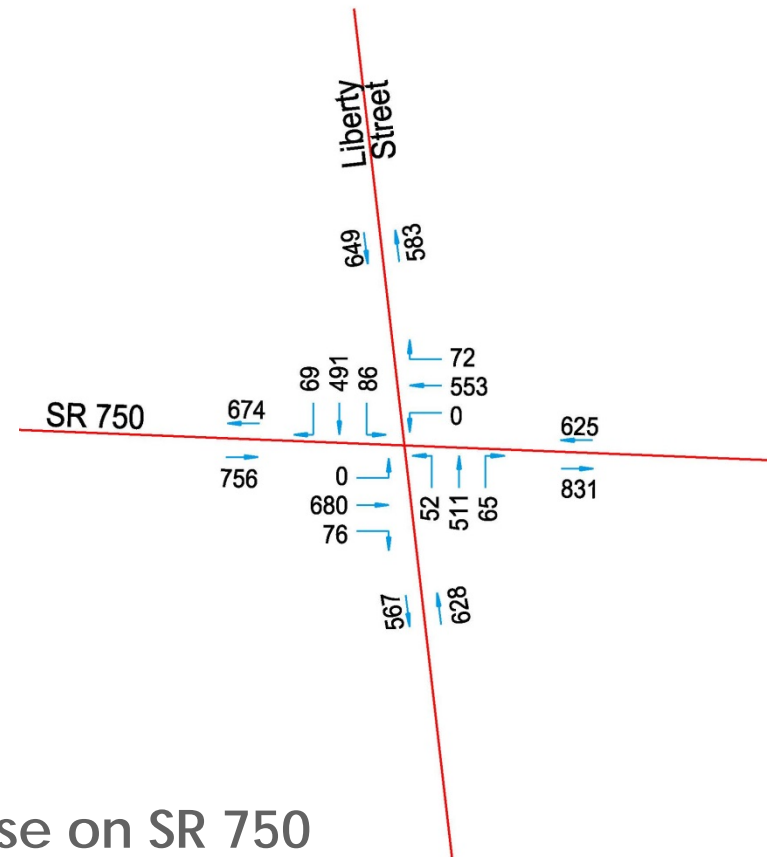
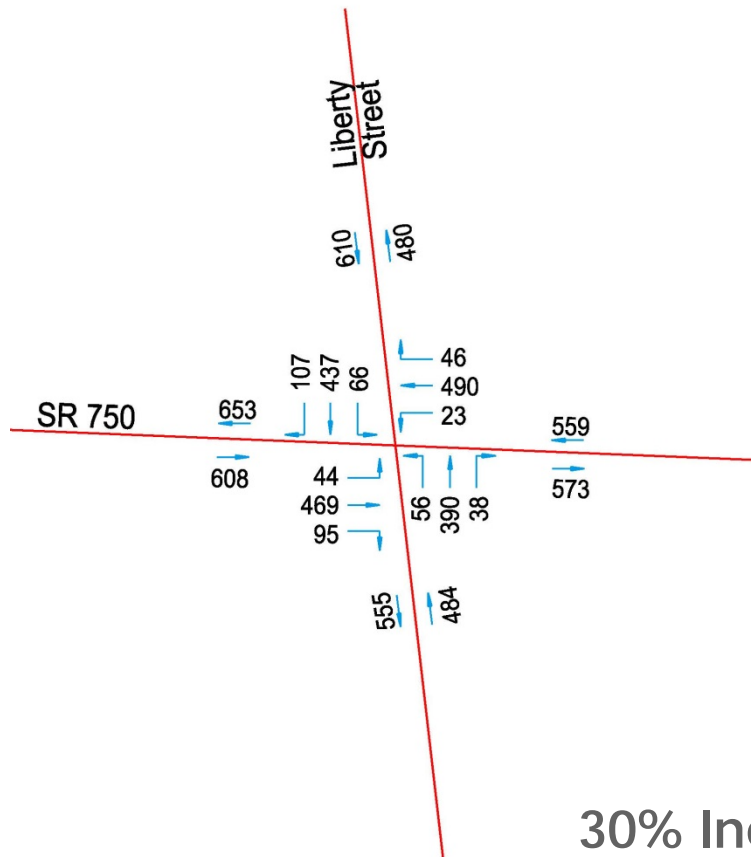


Select Link Analyses

# Projected (2035) Four Corners Intersection Volumes

AM Peak Hour (7:15 – 8:15 AM)  
Current Turn Restrictions

PM Peak Hour (5:00 – 6:00 PM)  
Current Turn Restrictions



30% Increase on SR 750  
75% Increase on Liberty Street

# Intersection Capacity Utilization (ICU) Criteria

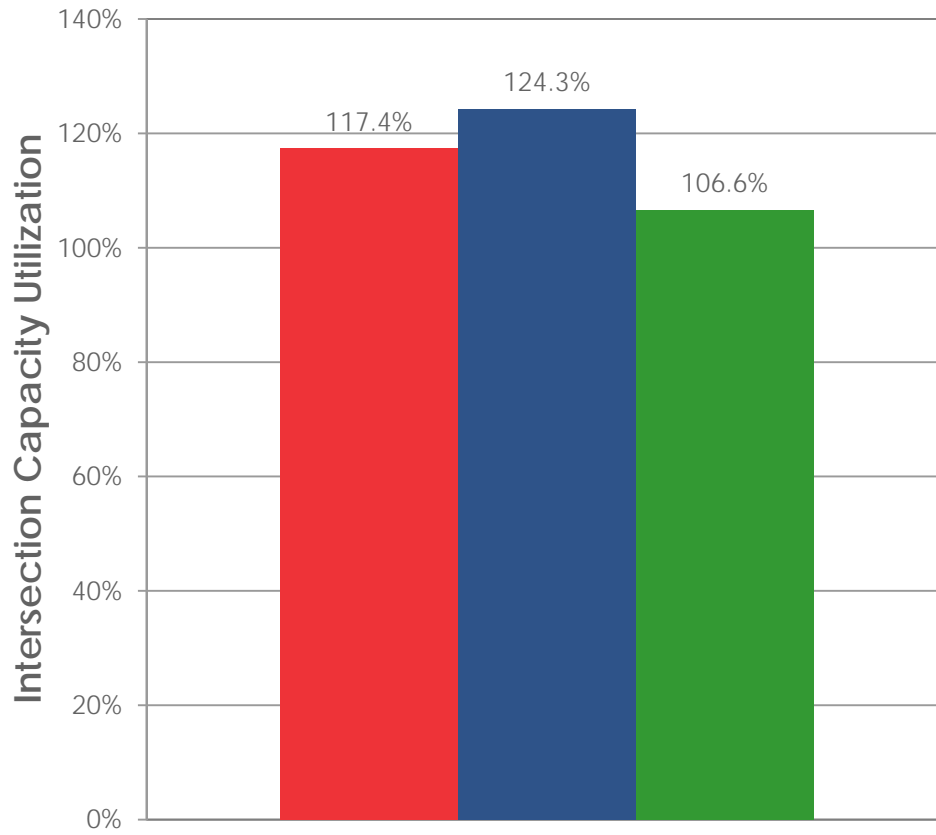
ICU Ranges	Intersection Operation
Less than or equal to 55%	Intersection has no congestion
Greater than 55% but less than 64%	Intersection has very little congestion
Greater than 64% but less than 73%	Intersection has no major congestion
Greater than 73% but less than 82%	Intersection normally has no congestion
Greater than 82% but less than 91%	Intersection is on the verge of congested conditions
Greater than 91% but less than 100%	Intersection is over capacity and likely experiences congestion periods of 15 to 60 consecutive minutes
Greater than 100% but less than 109%	Intersection is 9% over capacity and experiences congestion periods of 60 to 120 consecutive minutes
Greater than 109%	The intersection is 9% or greater over capacity and could experience congestion periods of over 120 minutes per day



# Four Corners Intersection Capacity Utilization

Left Turn Lanes Added to SR 750

Existing Restrictions vs. Allowing Left Turns

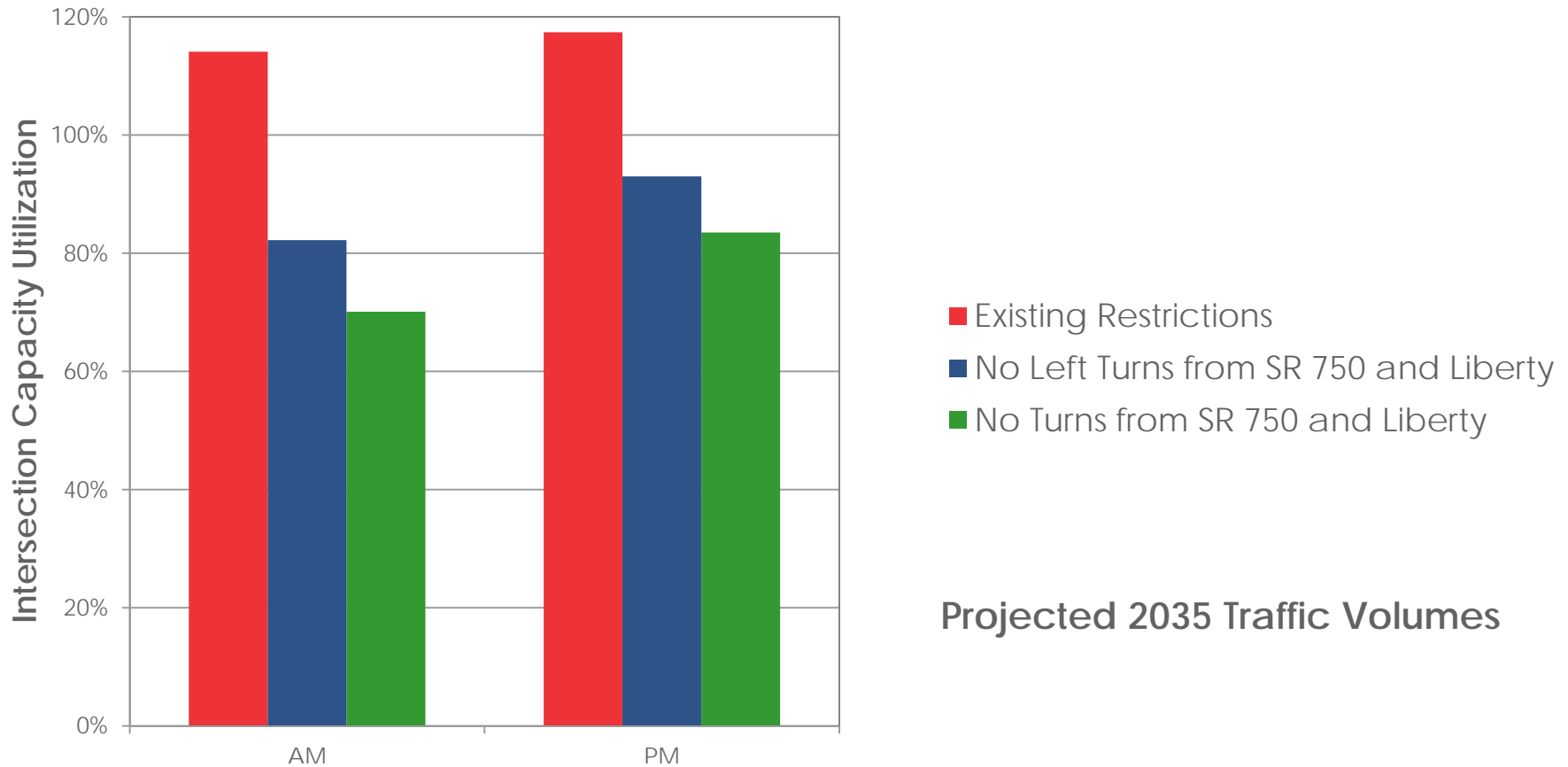


- Existing Restrictions, Three Lanes SR 750
- Allow Left Turns, Three Lanes SR 750
- Allow Left Turns, Five Lanes SR 750

Projected 2035 Traffic Volumes  
PM Peak Hour

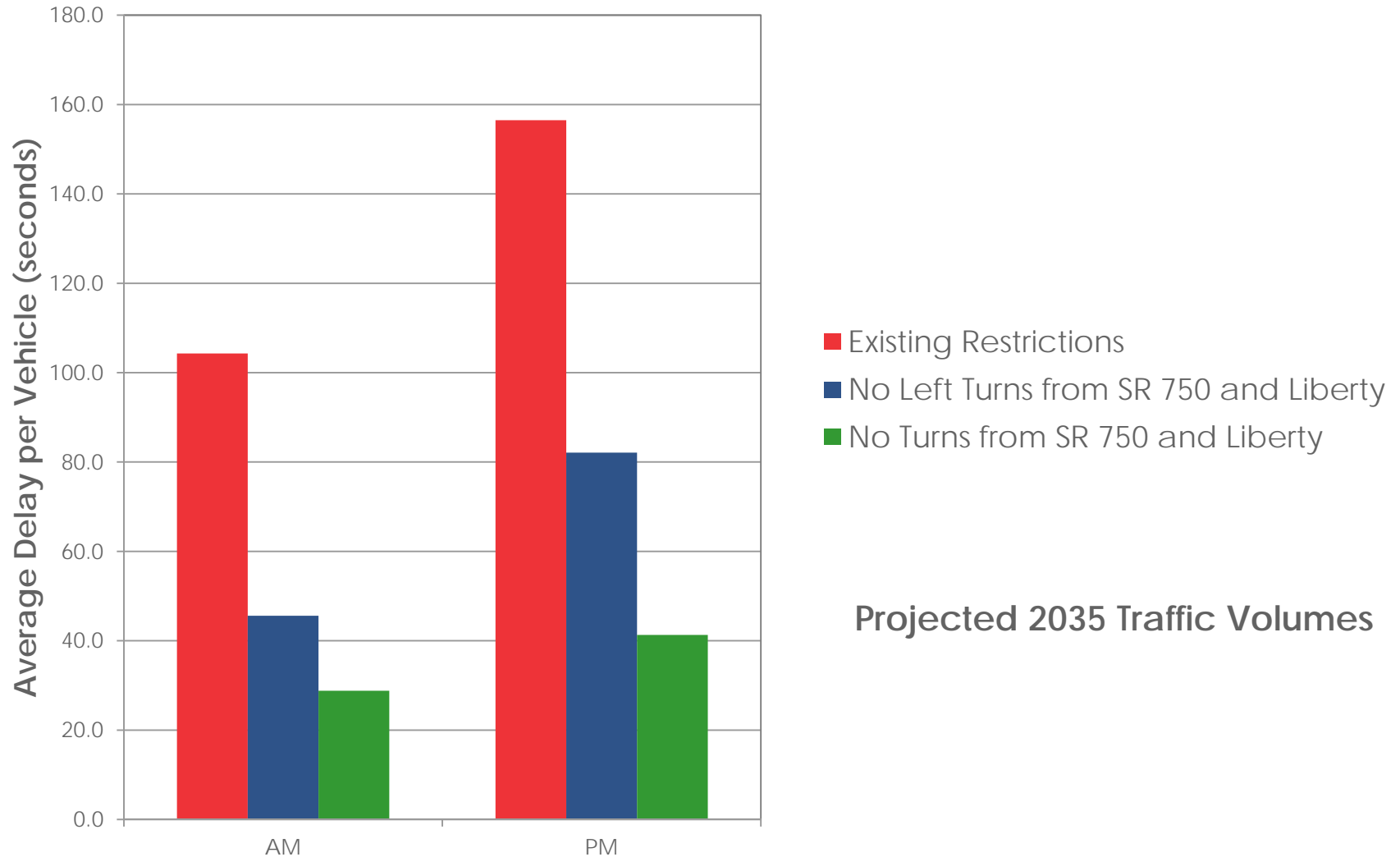
# Four Corners Intersection Capacity Utilization

## Alternative Conditions



# Four Corners Intersection Delay, HCM 2010

## Alternative Conditions



# Average Eastbound Queue Length 2035 AM Peak Hour



## Legend

- Existing Restrictions
- No Turns from SR 750 and Liberty



# Average Westbound Queue Length 2035 AM Peak Hour



Four Corners  
Intersection

Grace Drive

Restricting All Turns  
= 71% Reduction

Bartholomew  
Boulevard

SR 750

Legend



Existing Restrictions



No Turns from SR 750 and Liberty



# Average Eastbound Queue Length 2035 PM Peak Hour





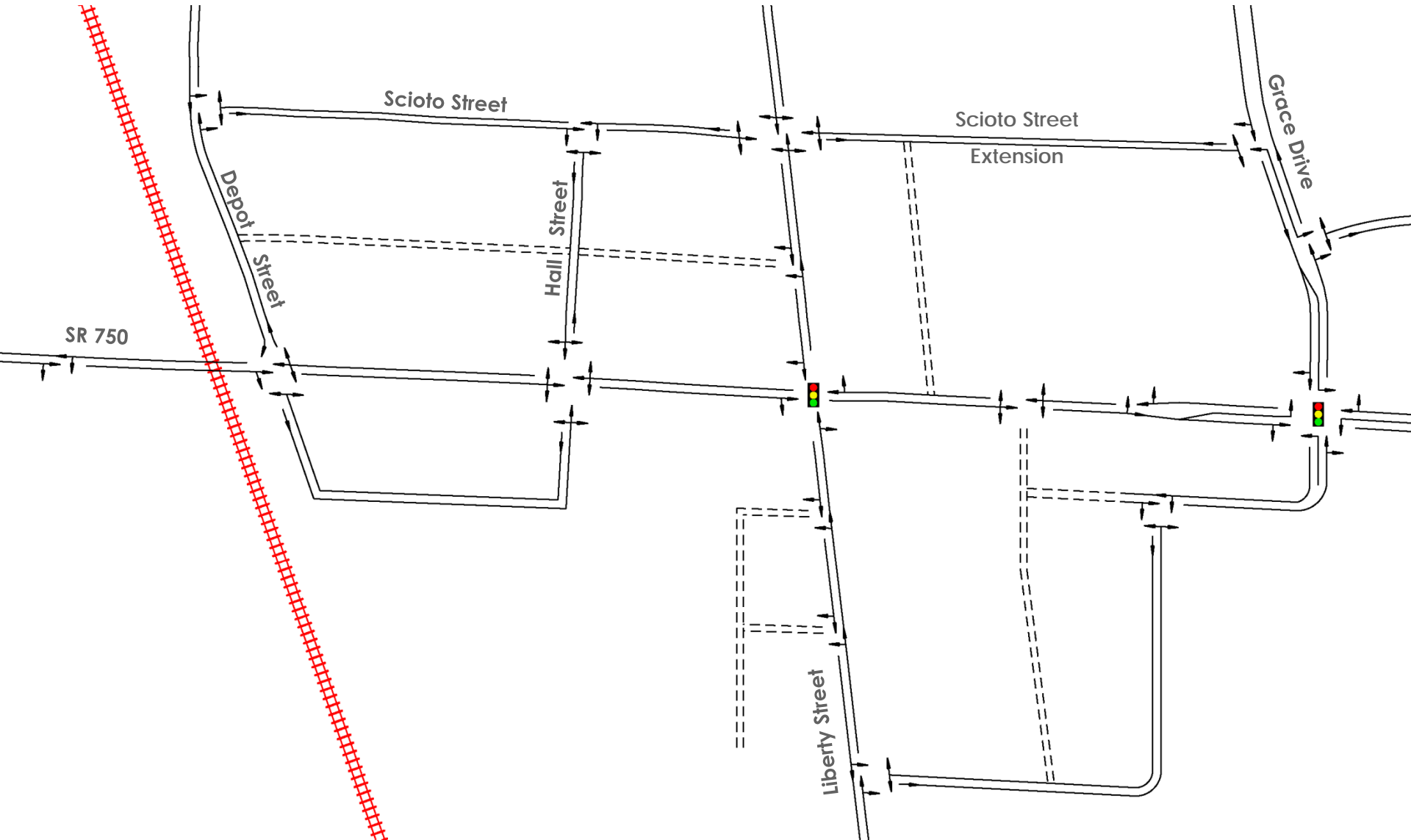
# Average Westbound Queue Length 2035 PM Peak Hour



# Downtown Powell Concept Road Network



# Downtown Powell Concept No Widening







# OLENTANGY STREET (Looking West)

Existing Conditions





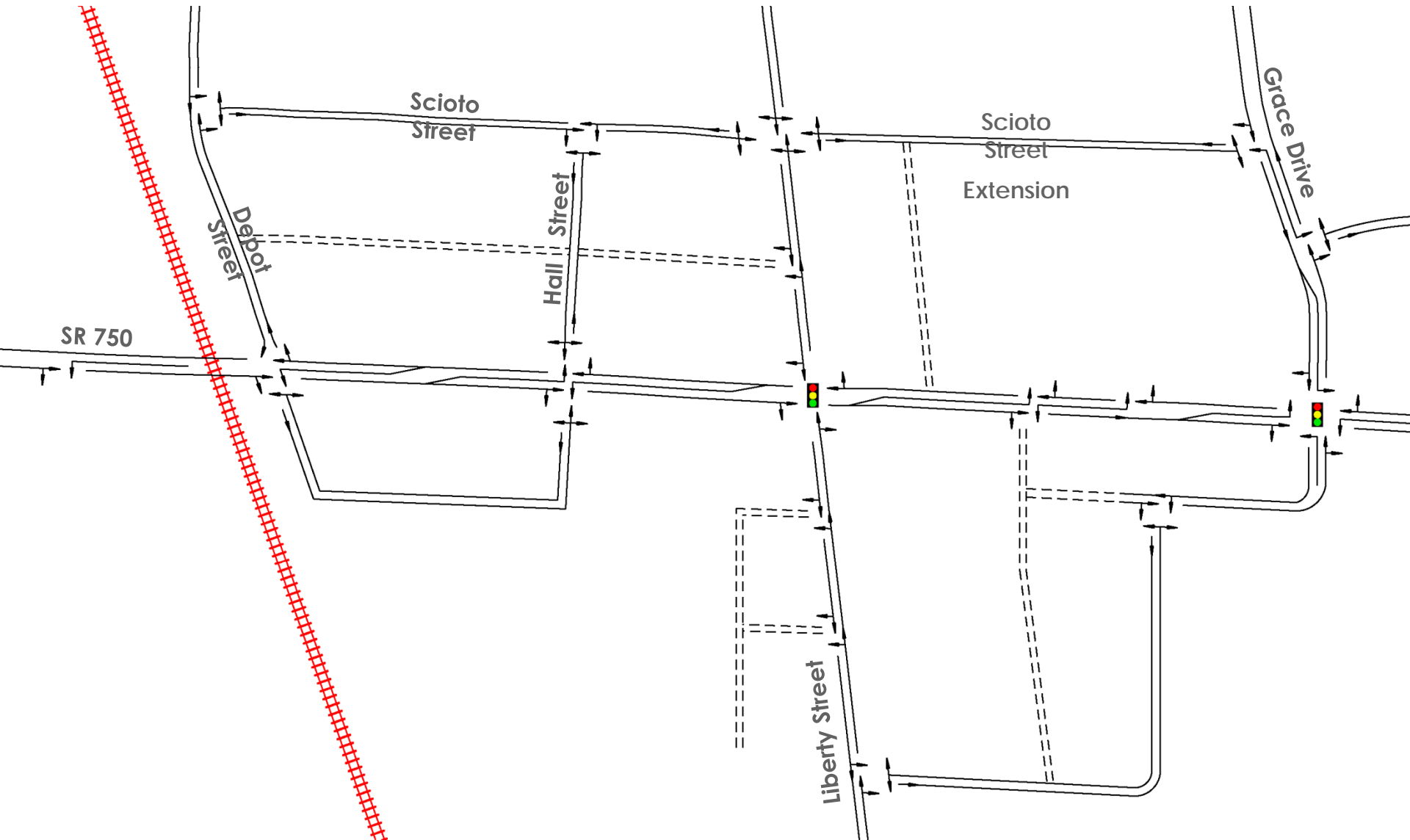


# LIBERTY STREET (Looking North)

Existing Conditions

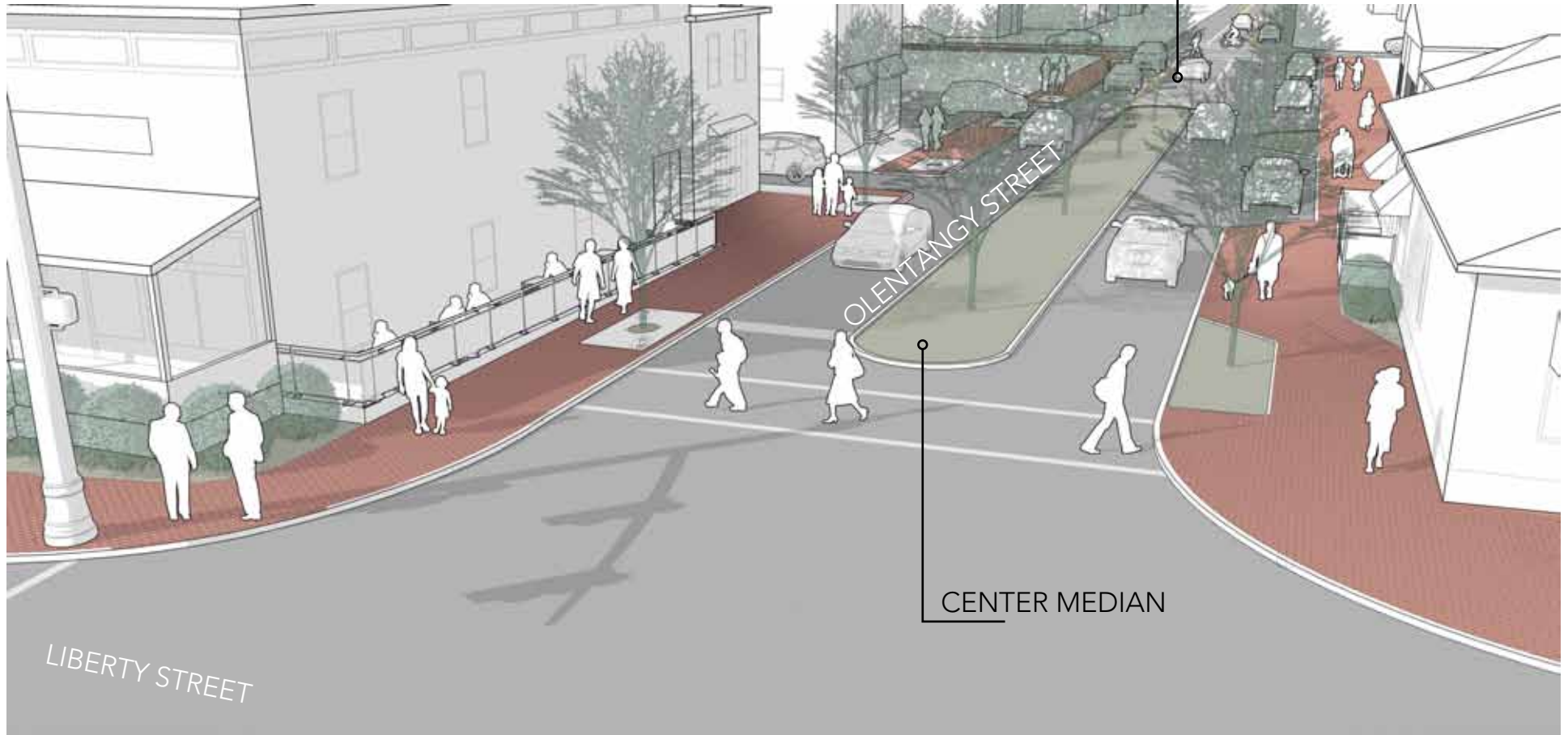


# Downtown Powell Concept Widening on SR 750 Only

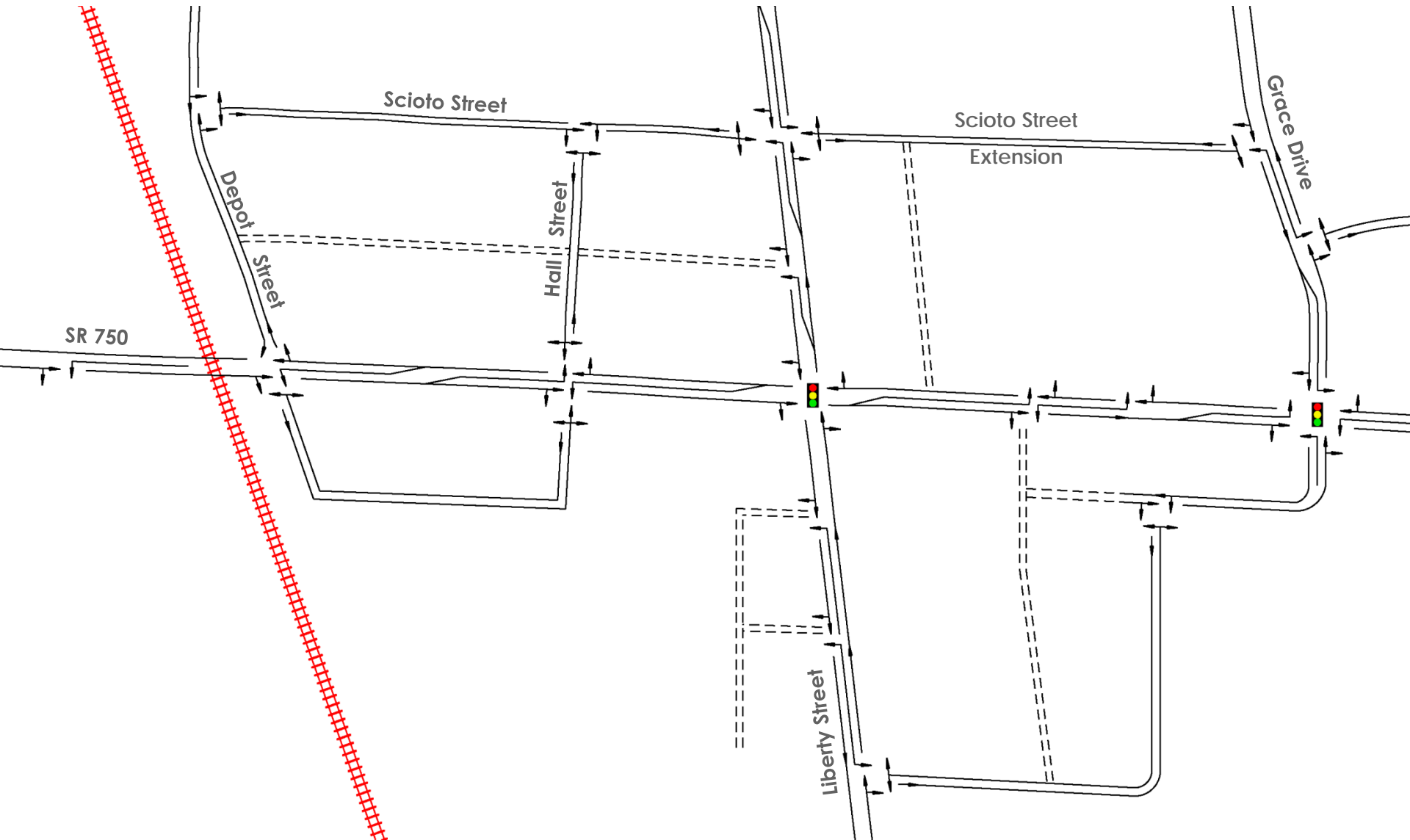


# OLENTANGY STREET (Looking West)

Widened with Center Median & Turn Lane



# Downtown Powell Concept Widening on SR 750 and Liberty Street





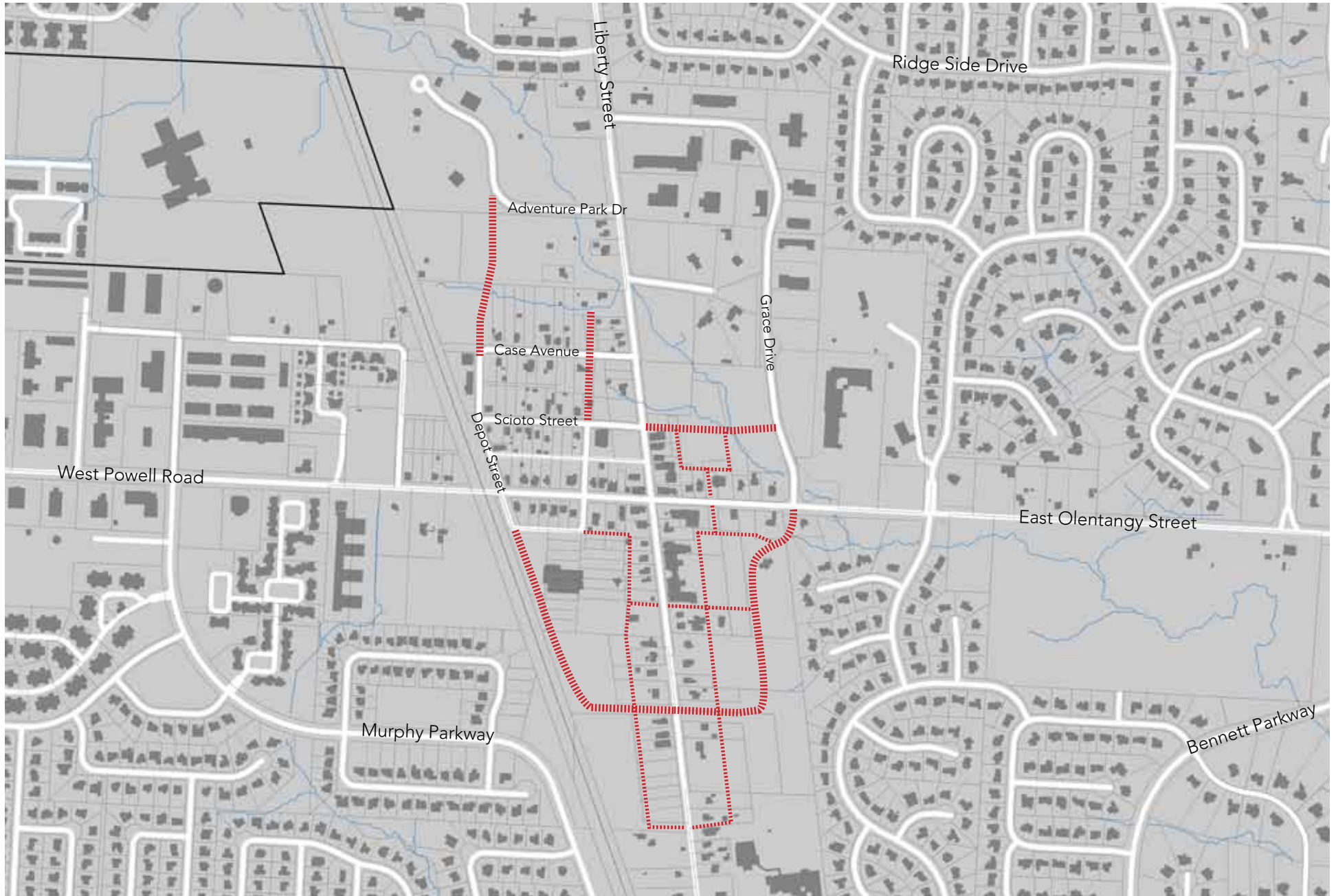
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Widened with Center Median & Turn Lane

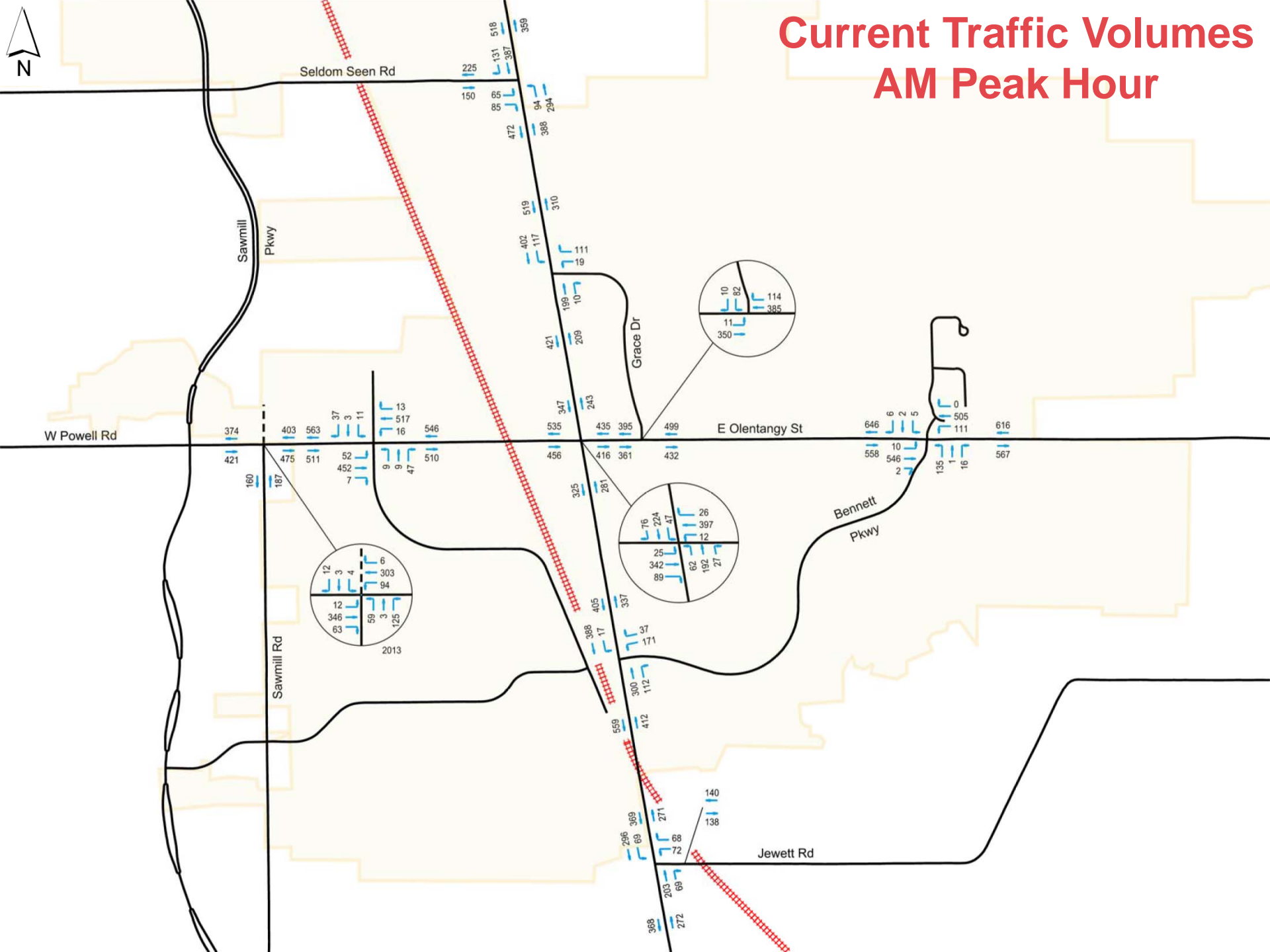




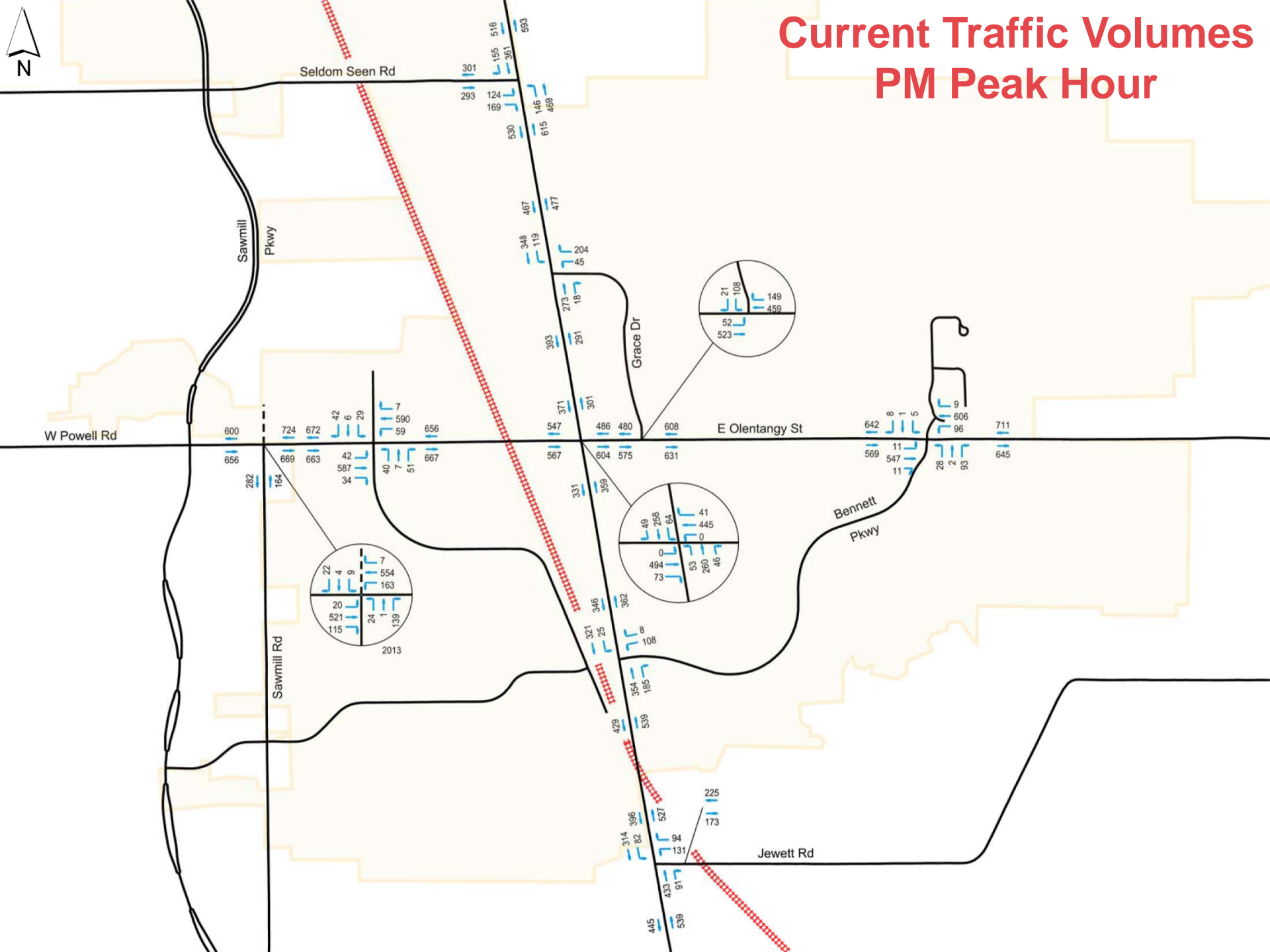
# Downtown Powell Concept Road Network



# Current Traffic Volumes AM Peak Hour



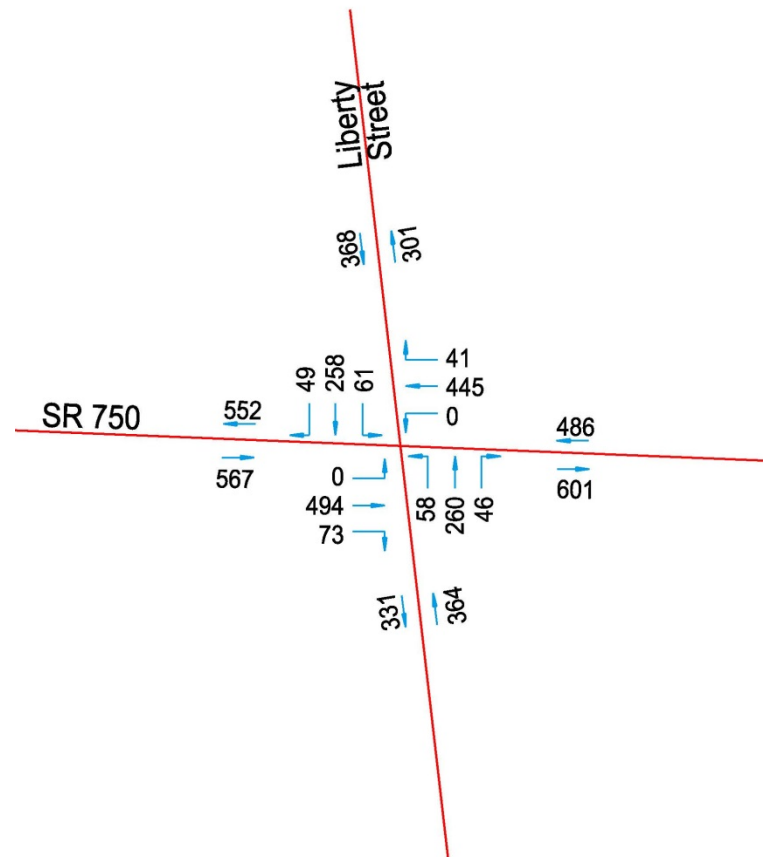
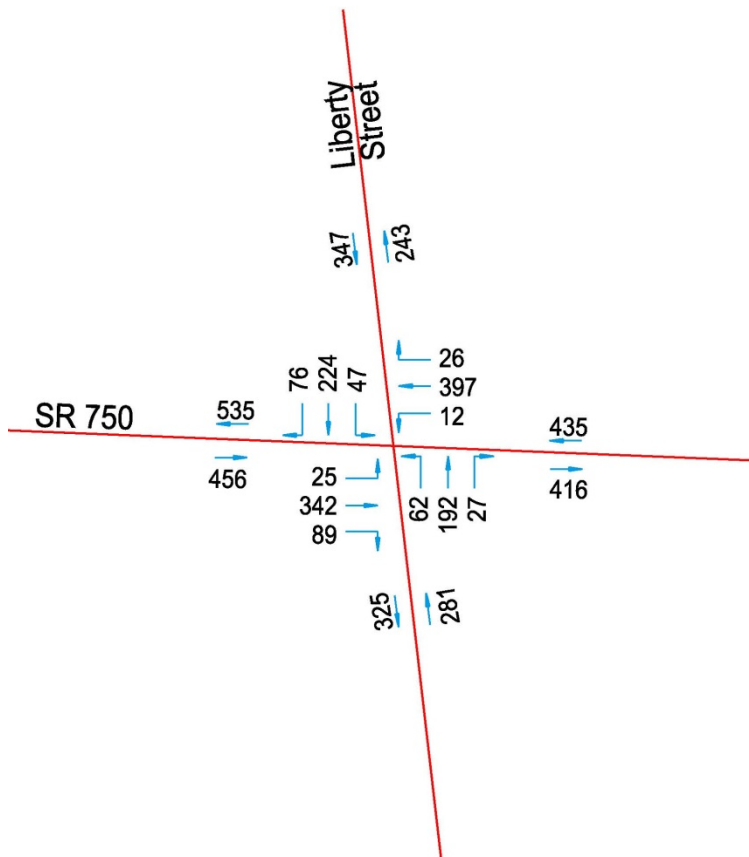
# Current Traffic Volumes PM Peak Hour



# Current (2015) Four Corners Intersection Volumes

AM Peak Hour (7:15 – 8:15 AM)  
Current Turn Restrictions

PM Peak Hour (5:00 – 6:00 PM)  
Current Turn Restrictions



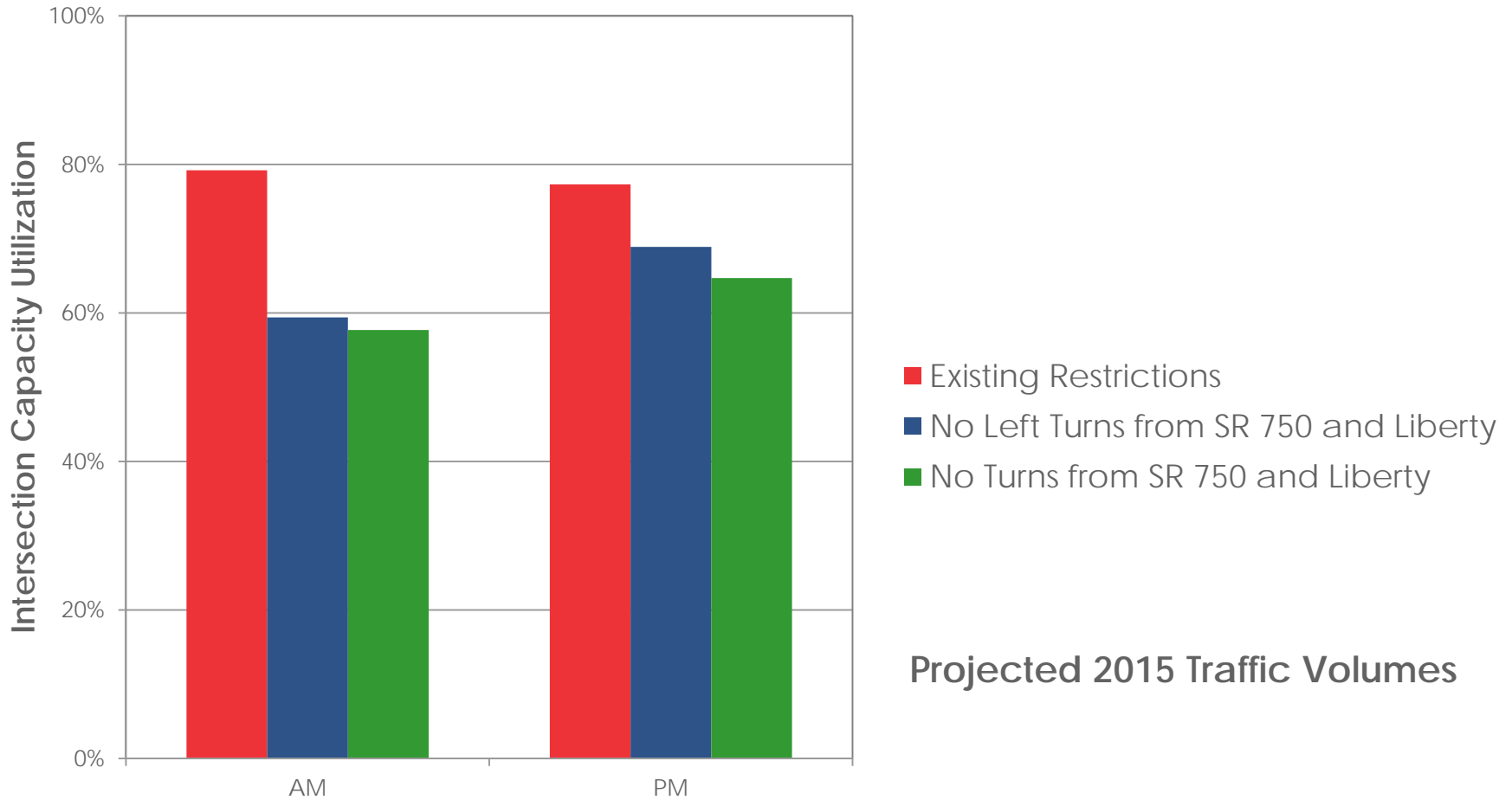
# Contributing Factors to Congestion in Downtown Powell

- SR 750 as an east-west arterial
- Turning traffic at Four Corners intersection
- Railroad Crossing
  - Frequency of trains (~15 trains per day)
  - Delay of each train
- Left turn blocking at driveways and intersecting streets
- Curb parking
- Small corner radii at Four Corners
- Slow travel speeds



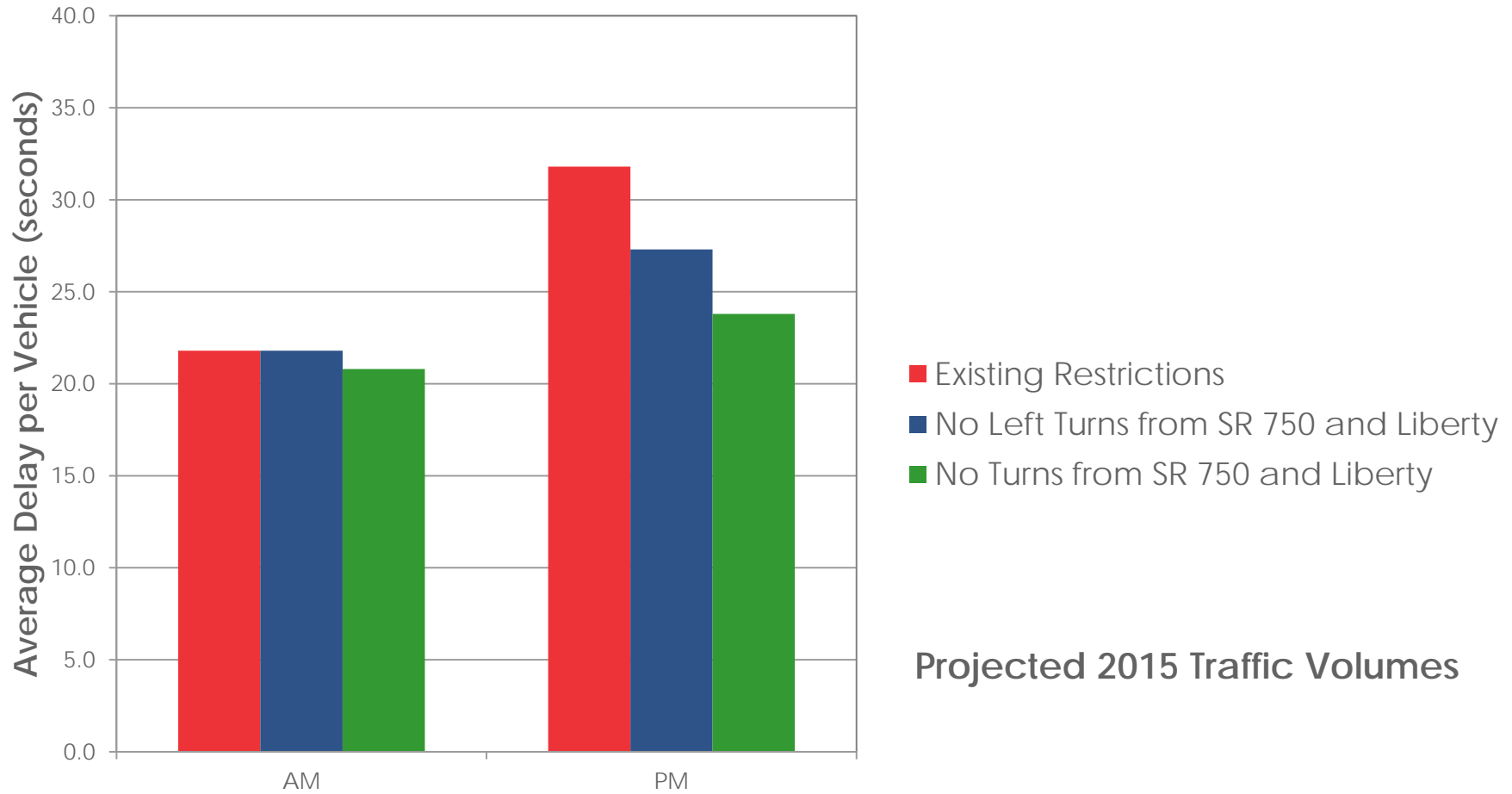
# Four Corners Intersection Capacity Utilization

## Alternative Conditions



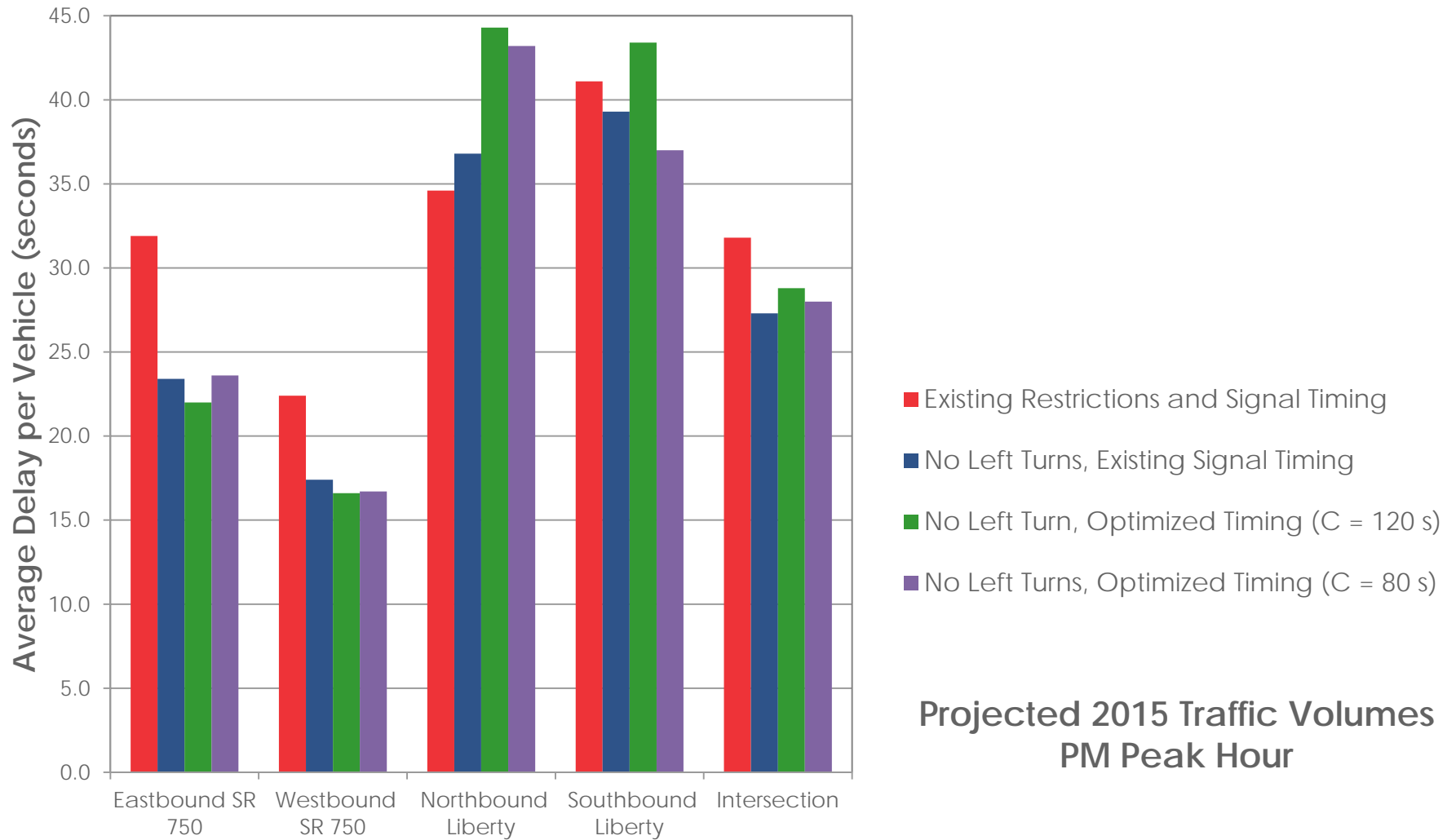
# Four Corners Intersection Delay, HCM 2010

## Alternative Conditions



# Four Corners Intersection Delay, HCM 2010

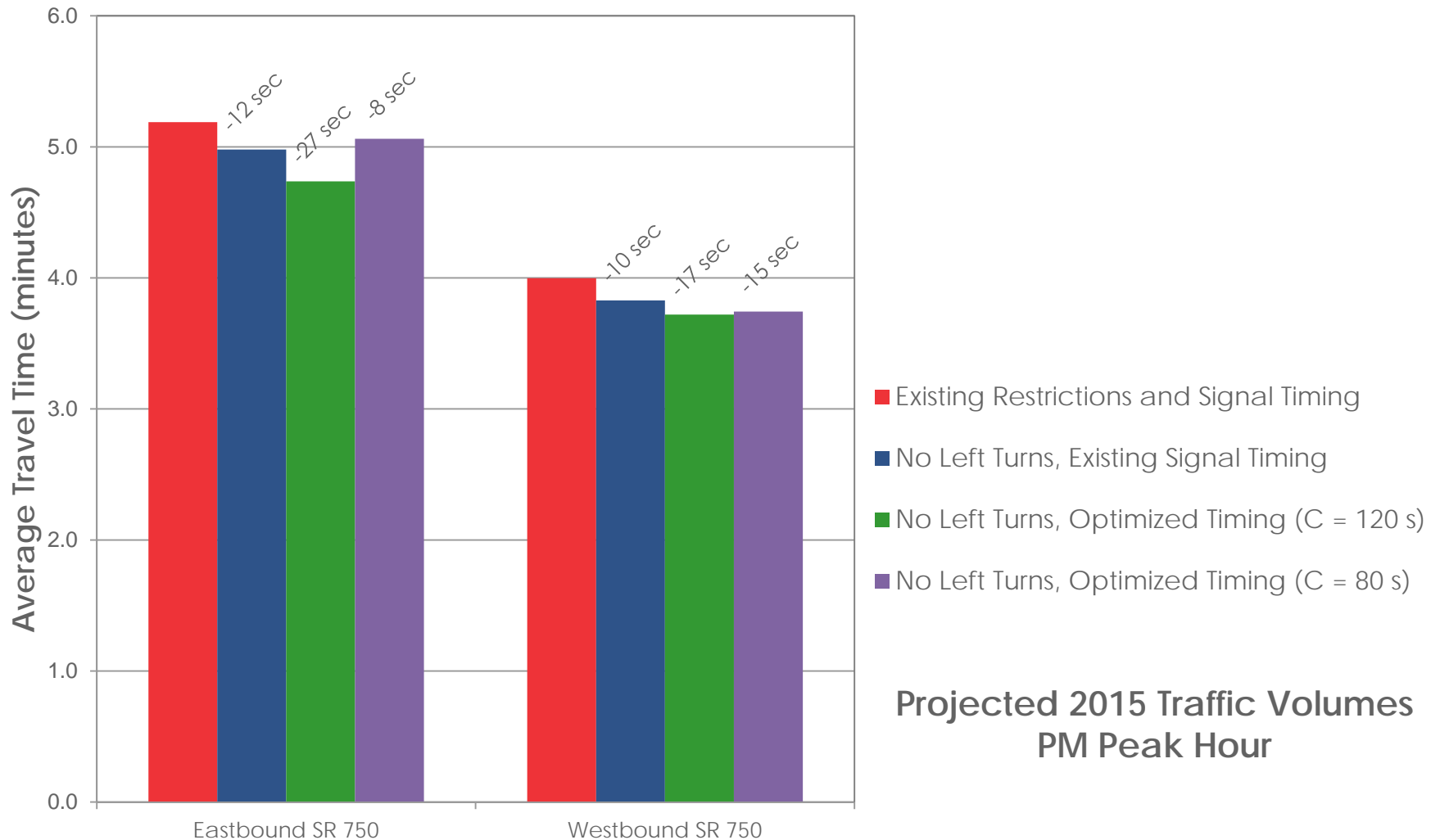
## Signal Timing Alternatives



# Average Travel Time

## SR 750 Between Murphy Parkway and Bennett Parkway

### Signal Timing Alternatives



Projected 2015 Traffic Volumes  
PM Peak Hour

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