



CITY OF LAREDO DOWNTOWN SIGNALIZATION STUDY



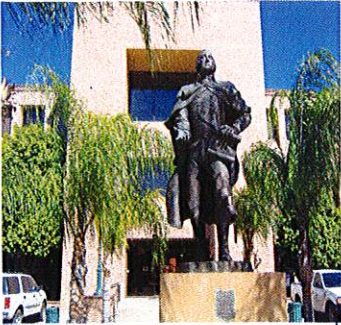
Laredo Urban Transportation Study
Technical Committee

January 17, 2008



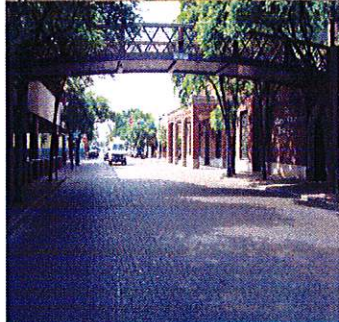
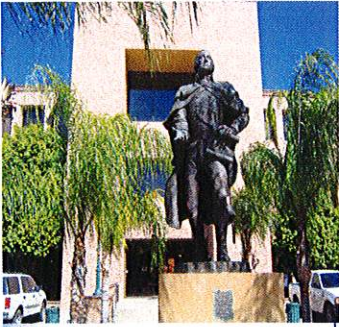
Agenda

- Objectives
- Roadway Network Description
- Existing Conditions
 - Operations
 - Signal Warrant Analysis
- Future Conditions
 - Operations
 - Analysis Results
- Mitigation Measures
- Conclusions

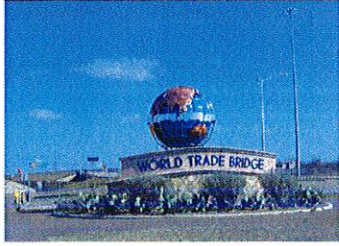
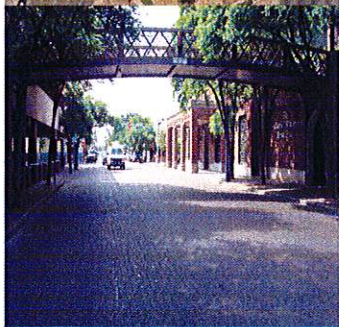
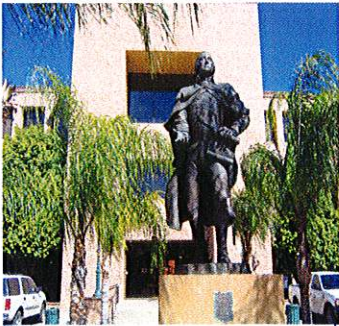


Objectives

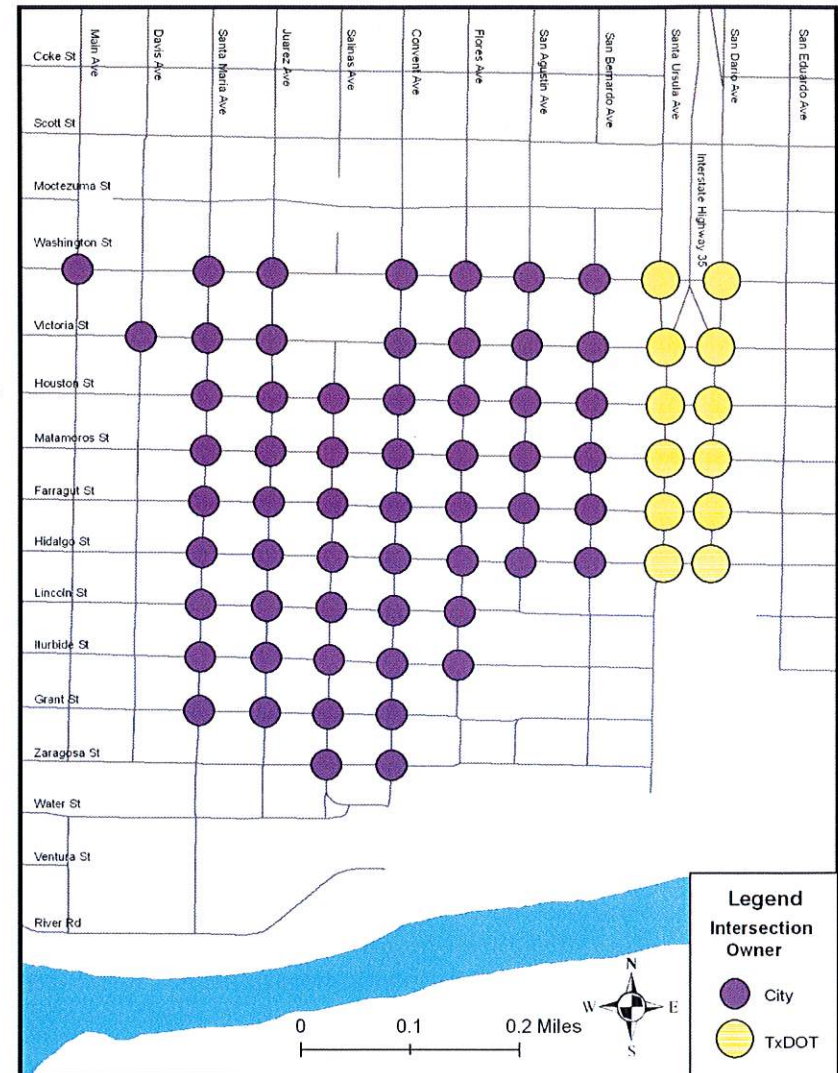
- Establish existing conditions
- Conduct signal warrant analysis
- Determine future network traffic volumes
- Develop coordinated signal timing plans for Downtown Laredo
- Recommend capacity-related intersection improvements



Roadway Network

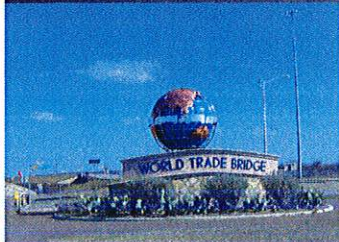
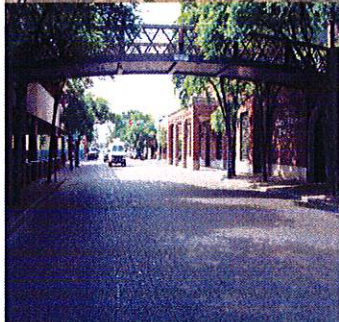
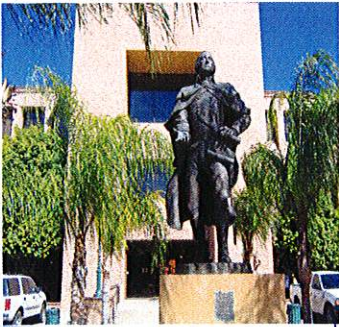


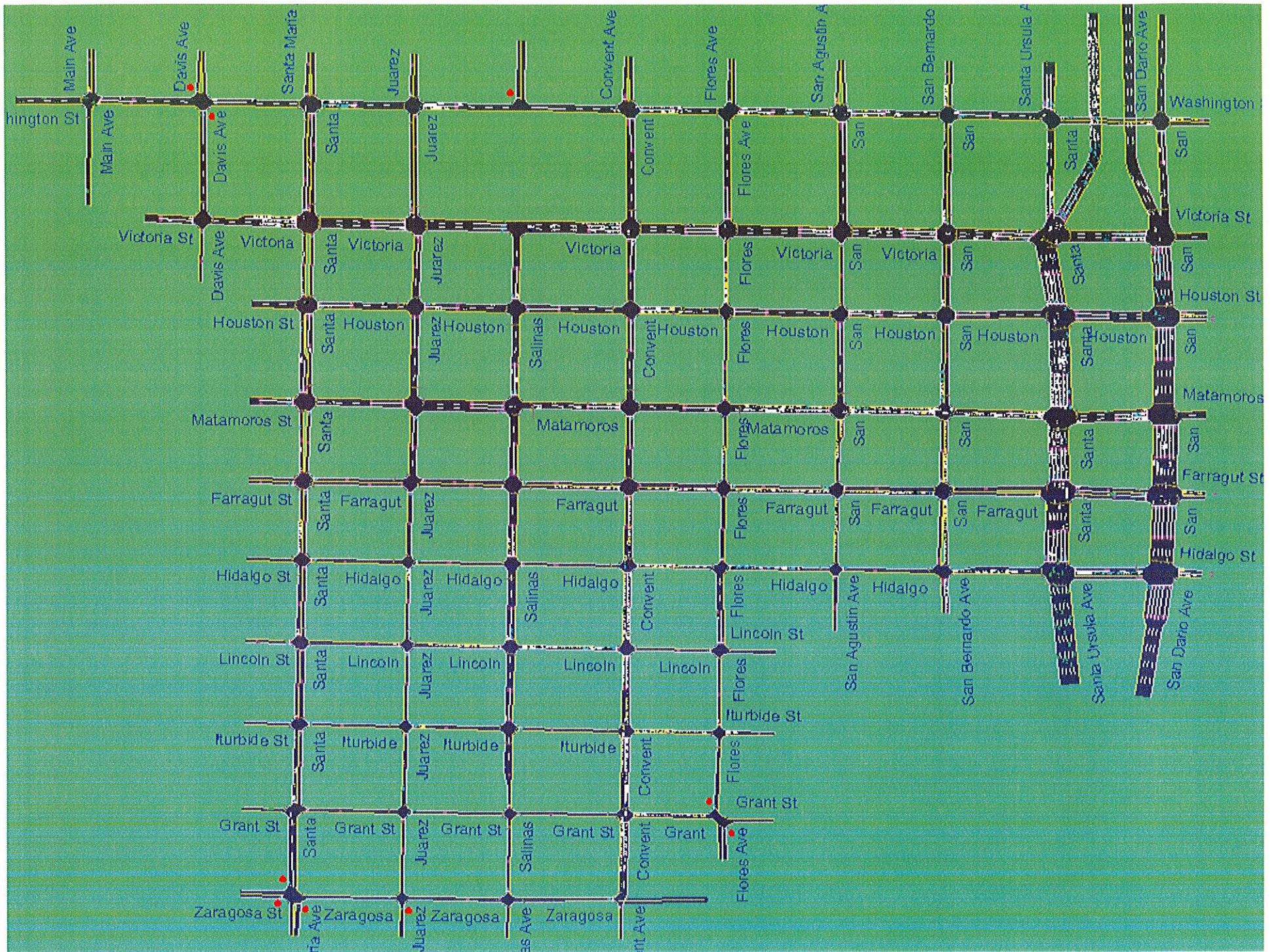
- Study Area Limits
 - North: Washington St.
 - South: Zaragosa St.
 - East: San Dario Ave.
 - West: Santa Maria Ave.
- 21 Corridors
 - 11 North-South
 - 10 East-West
- 70 Intersections
 - 58 City
 - 12 TxDOT



Existing Conditions Operations

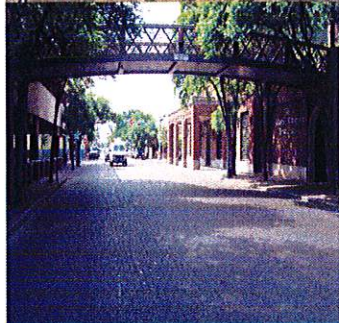
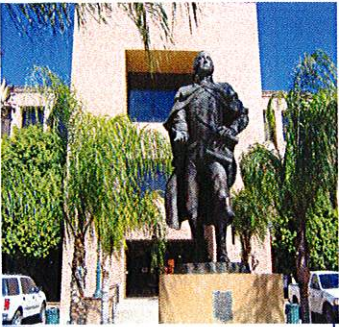
- Measures of Effectiveness
 - Travel Time (min)
 - Average Speed (mph)
 - Level of Service (LOS)
- Free Flow Speed Less Than 20 mph
- Intersection with Unacceptable LOS
 - Victoria Street/Santa Ursula Avenue
- Corridors with Unacceptable LOS
 - AM Peak: 6 corridors
 - PM Peak: 8 corridors





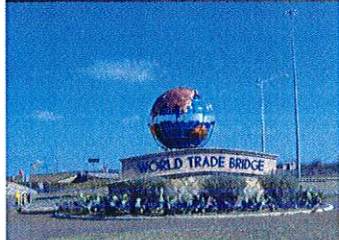
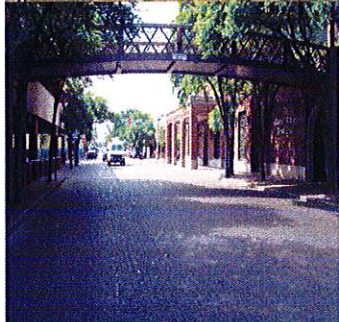
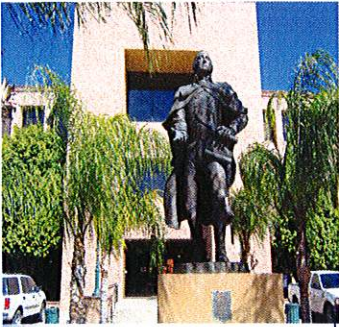
Traffic Signal Warrants

- Applicable Texas MUTCD Signal Warrants
 - Four-Hour Vehicular Volume
 - Peak-Hour Volume
 - Pedestrian Volume
 - Crash Experience
 - Roadway Network



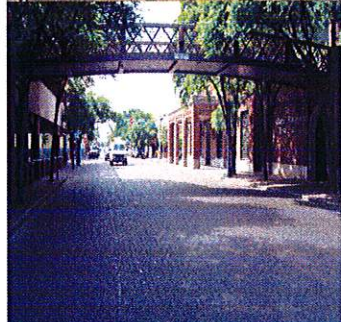
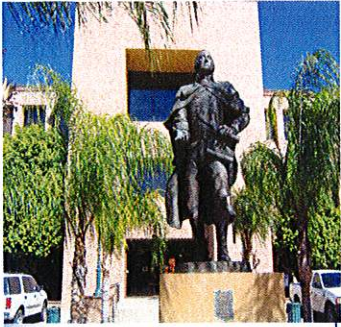
Signal Warrants Results

- Majority of Intersections Meet at Least One Warrant
- Victoria St/Davis Ave
 - Remove signal (Fails all warrants)
 - Install Stop Control
 - Northbound approach:
 - STOP sign
 - Eastbound approach:
 - Uncontrolled



Future Conditions

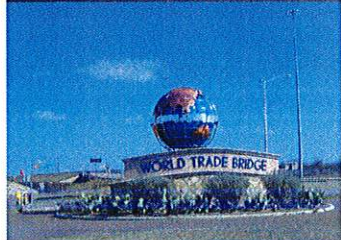
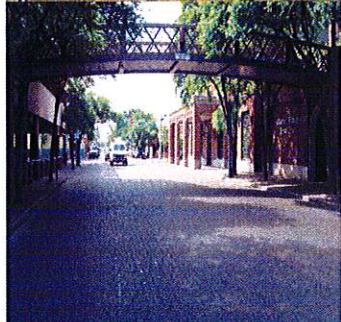
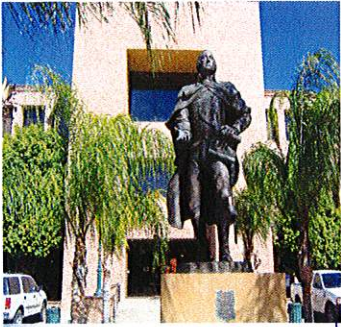
- Future Forecast Year: 2012
- Traffic Growth Rate: 2%
- Identified Major Trip Generators with Expansion Plans
 - El Portal Center
 - Laredo Community College
- Distributed New Trips to Downtown Corridors



Signal Coordination

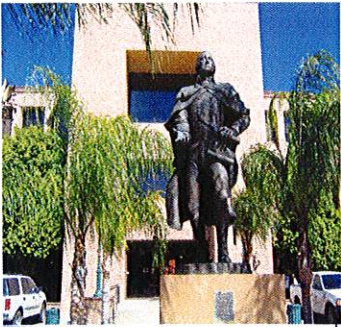
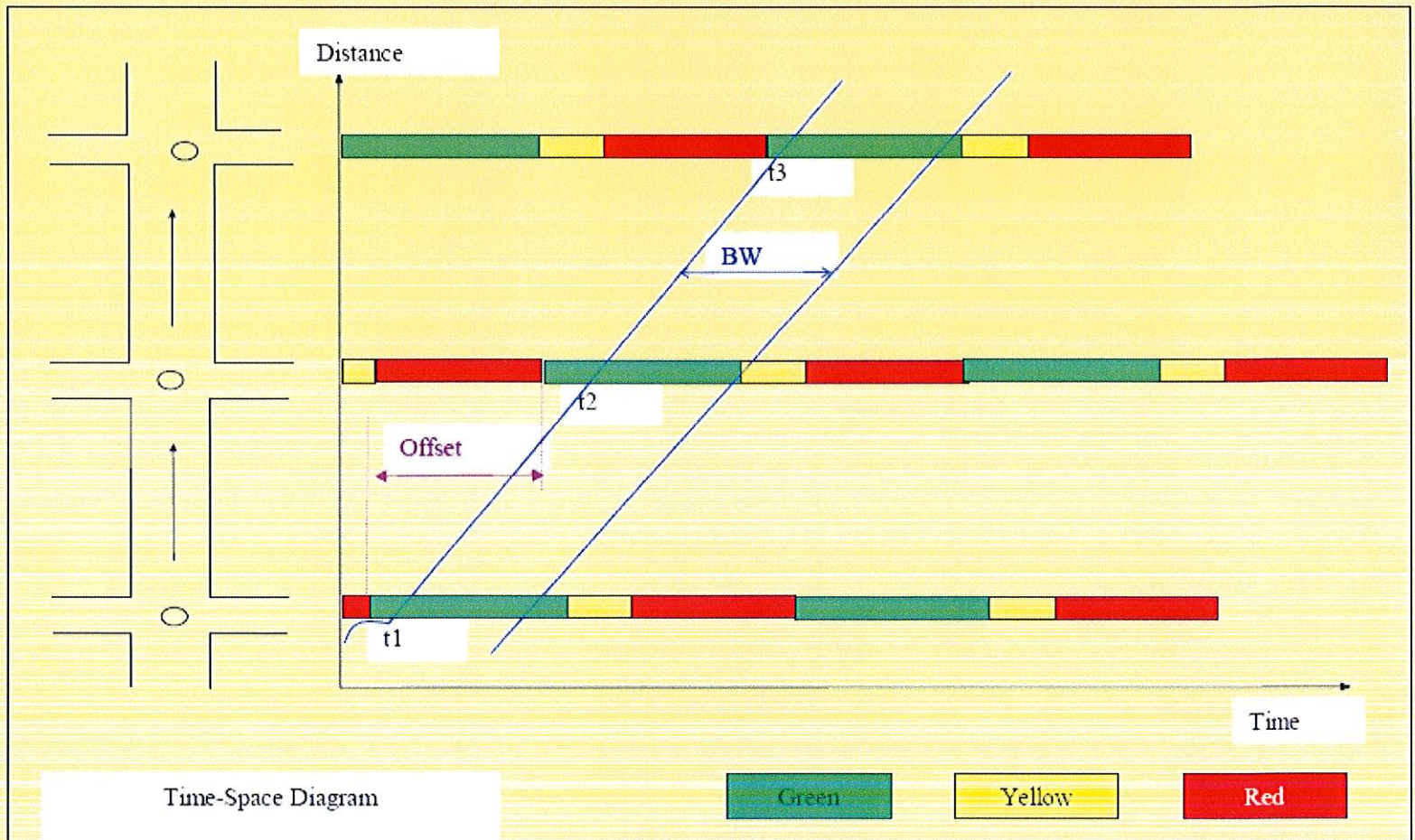
- Prioritized Corridors
- Set Network Cycle Length
- Optimized Phase Splits
- Adjusted Offsets to Maximized 'Green Bands'

#	N-S	E-W
1	Convent	Victoria
2	Salinas	Matamoros
3	Santa Maria	Washington
4	San Bernardo	Houston
5	Juarez	Farragut
6	Flores	Hidalgo
7	San Agustin	

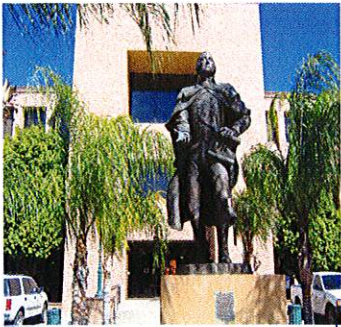


One-Way Progression

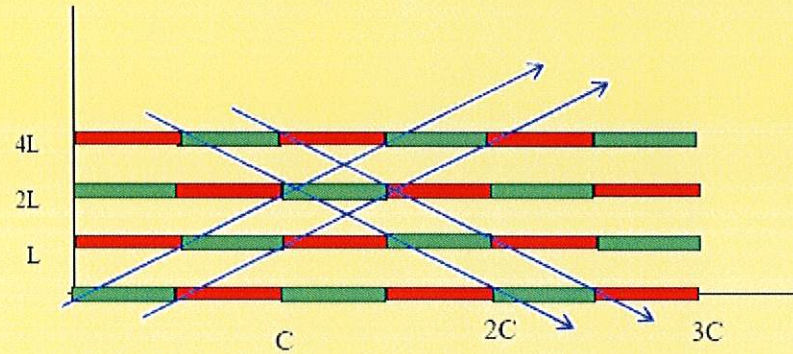
Bandwidth System



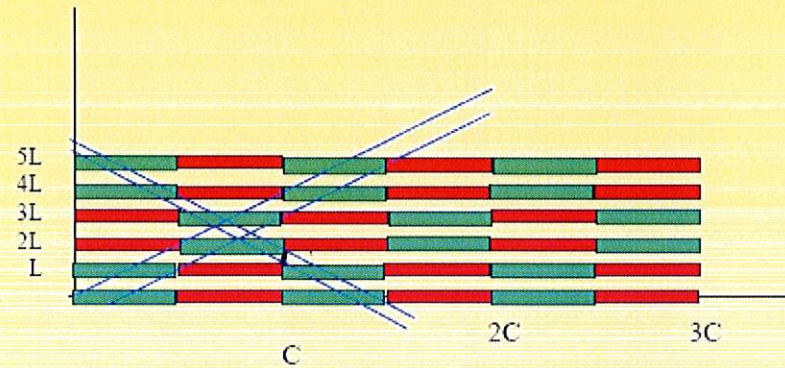
Two-Way Progression



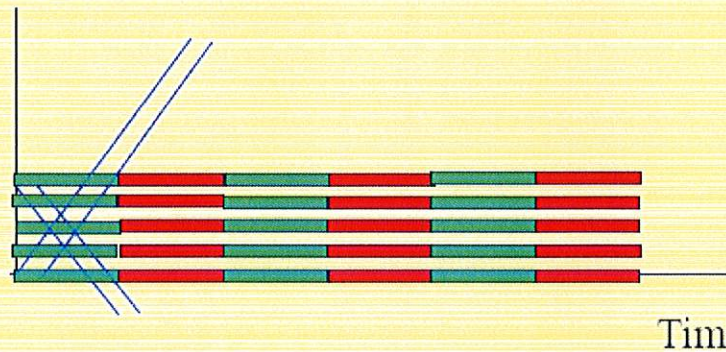
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Alternate System



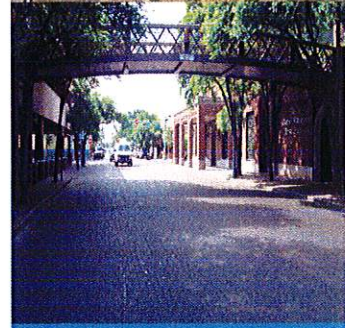
Double Alternate System



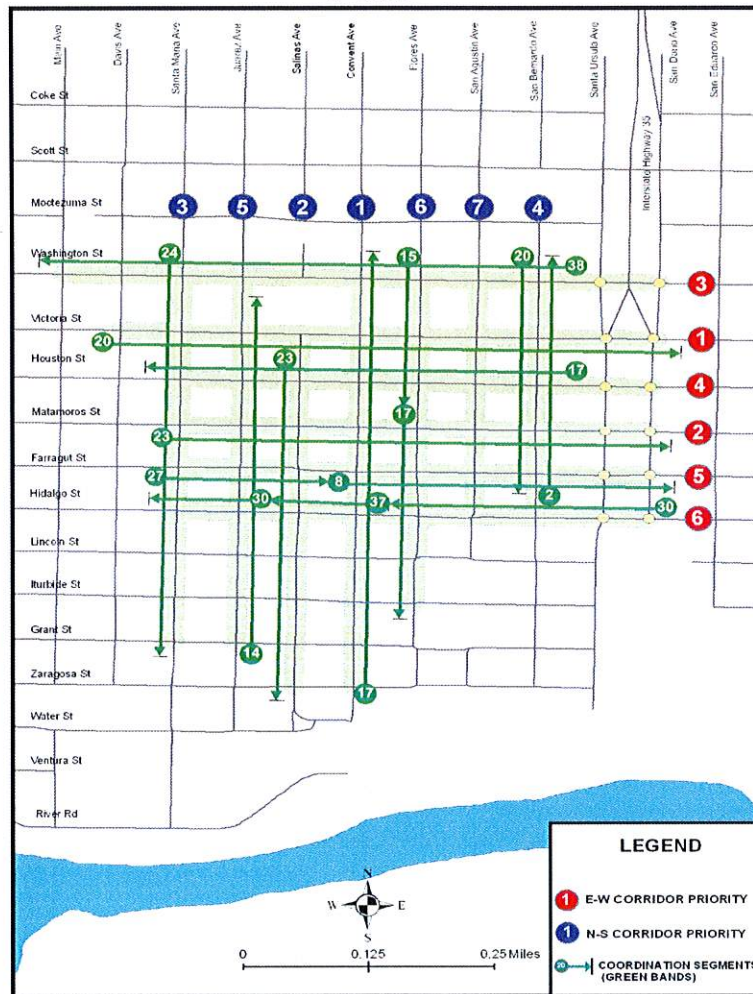
Simultaneous System

Time

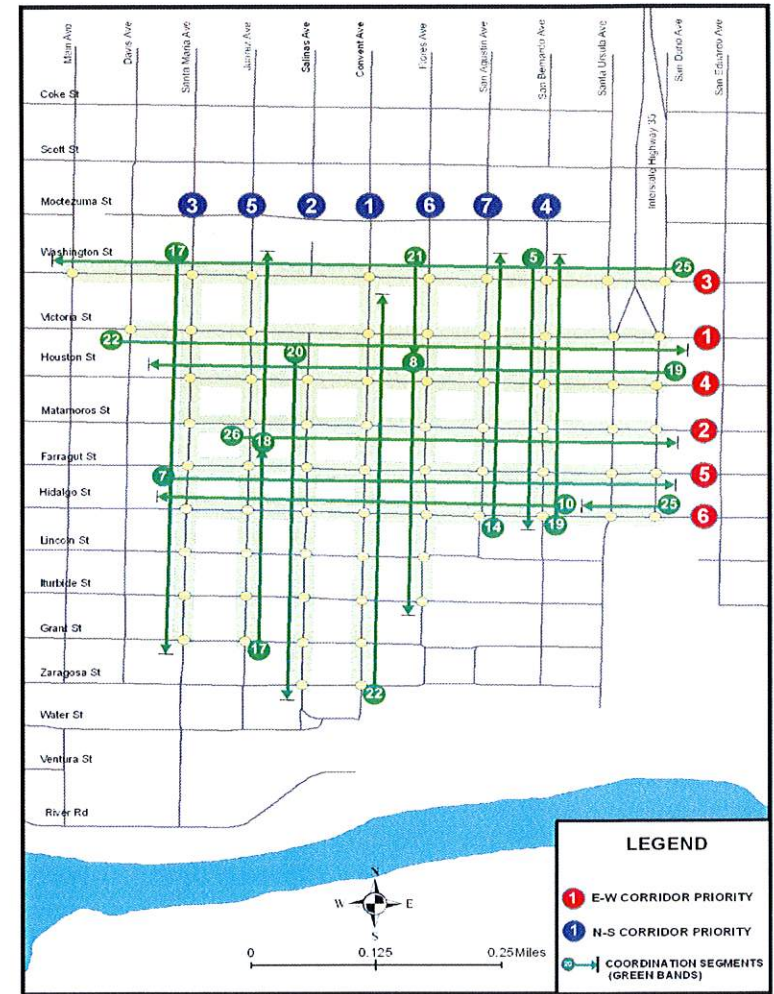
AM & PM Green Band Progression



AM



PM



Analysis Results

N-S Corridors

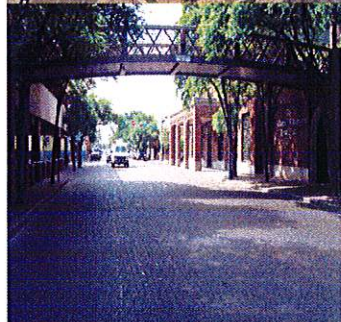
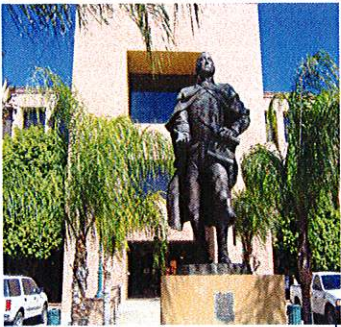
- Reduced travel time by 18% AM, 13% PM
- Increased speed by 21% AM, 26% PM
- All improved to LOS D or better

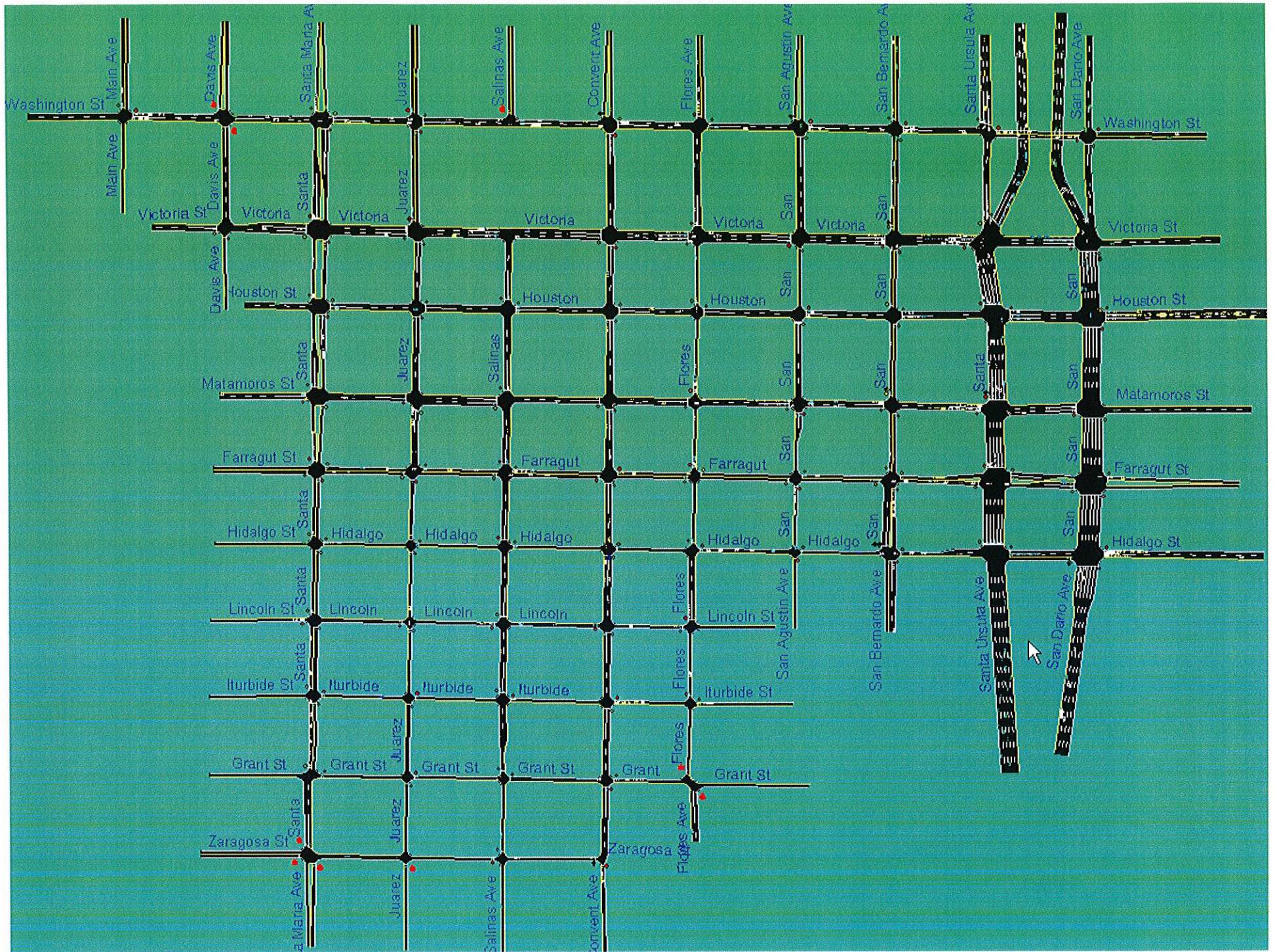
E-W Corridors

- Reduced travel time by 24% AM, 27% PM
- Increased speed by 46% AM, 54% PM
- All improved to LOS D or better

Intersections

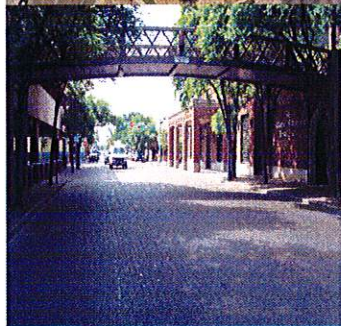
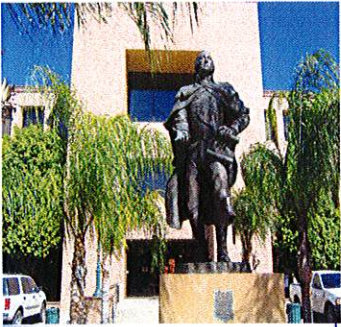
- Santa Ursula/Victoria at LOS F
- All others at LOS D or better

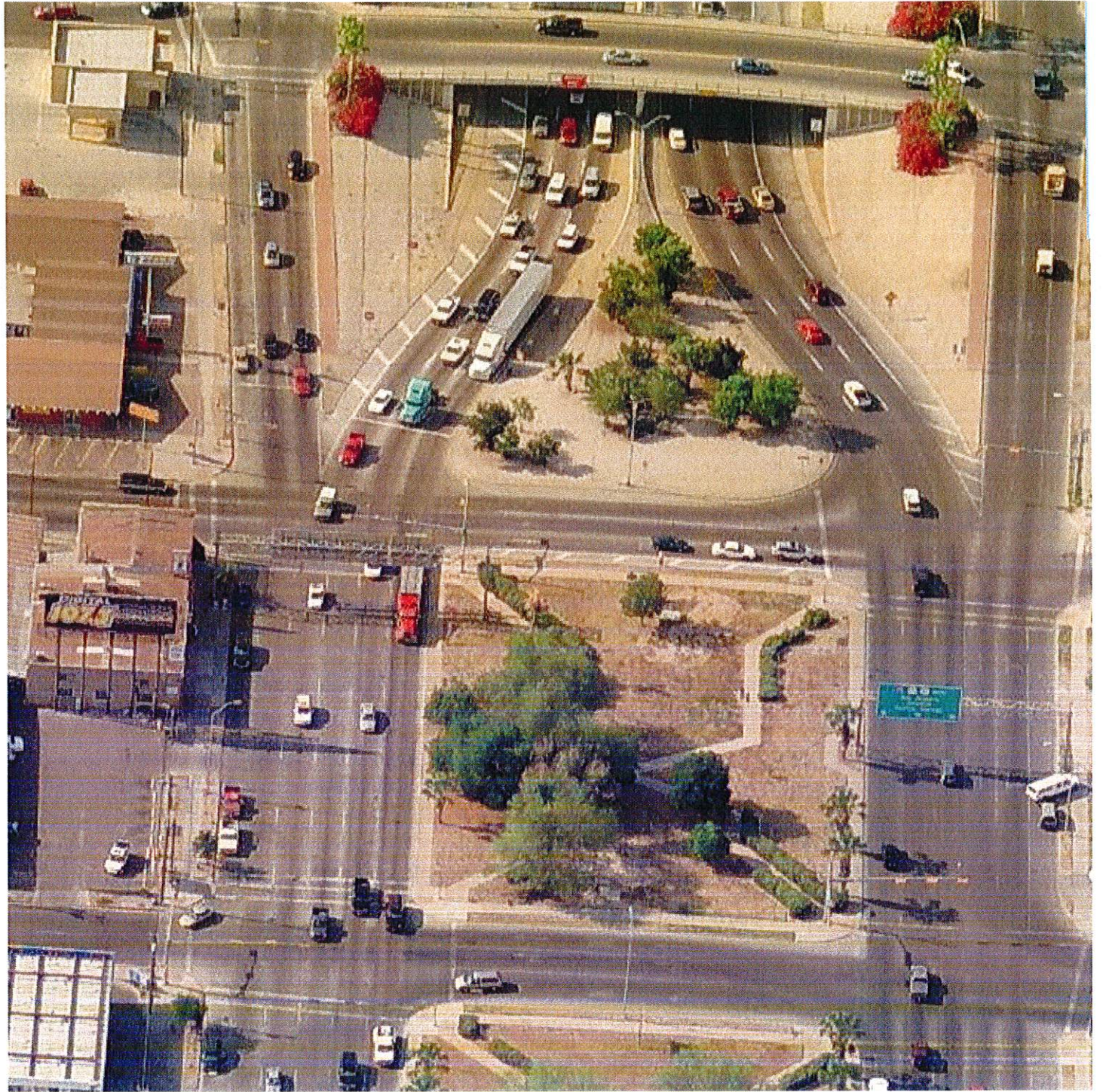
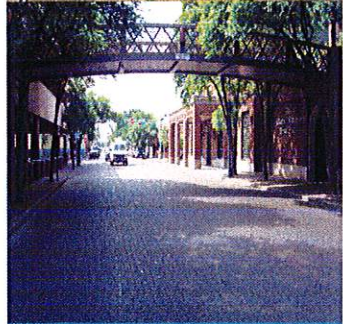
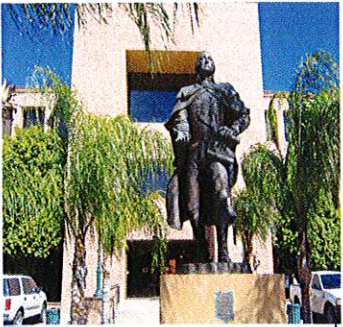


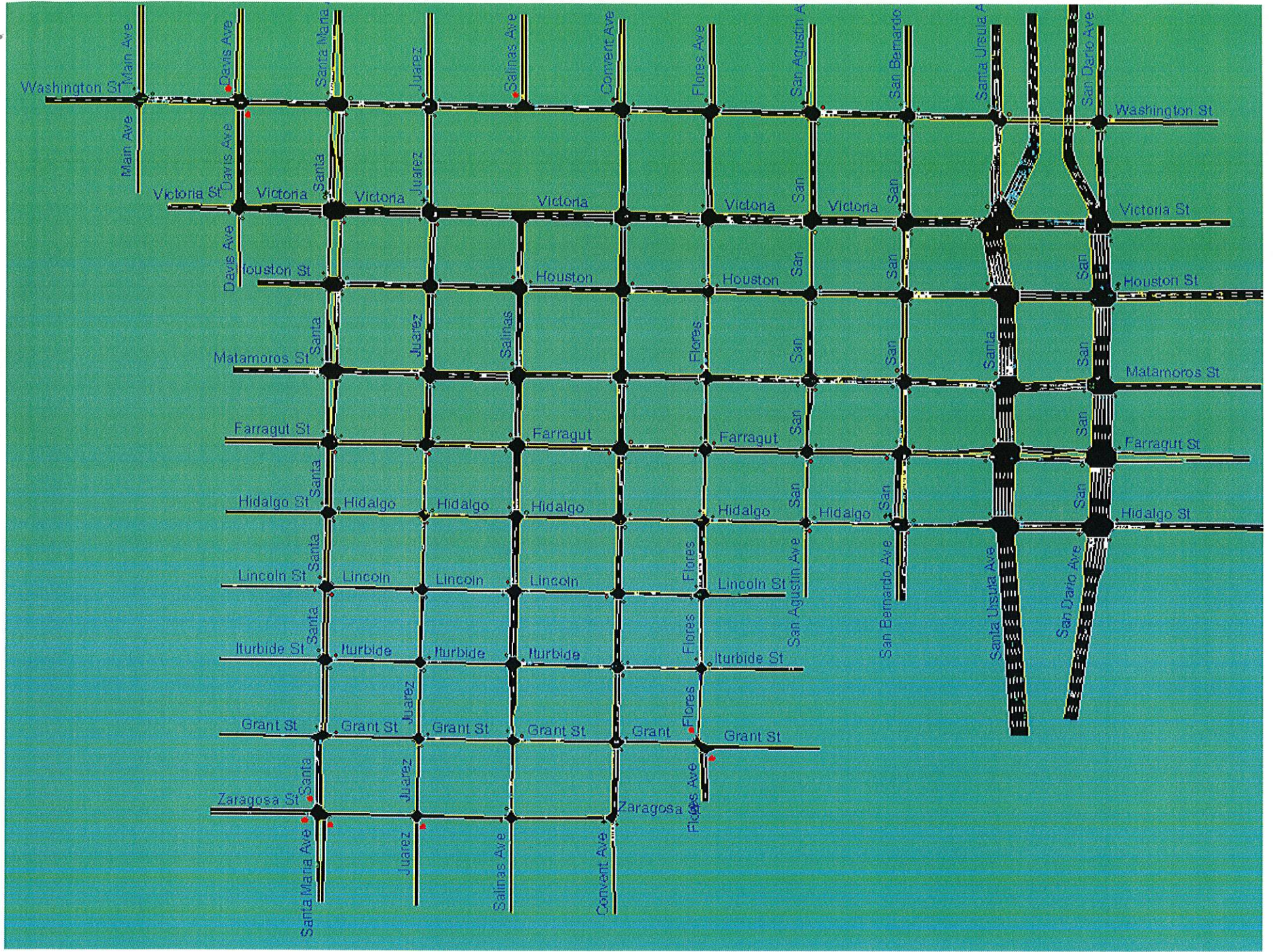


Mitigation Measures

- Re-stripe I-35 to add fourth lane
- Remove Parking on Santa Ursula between Victoria & Washington
- Remove Parking and Use as Right-Turn Only Lane between Victoria & Houston
- Improves Santa Ursula/Victoria to LOS D or better







Conclusions

Existing Conditions

- Most intersections at LOS D or better
- 6 (8 in PM) Corridors at LOS E/F
- Many corridors too narrow for high speed

Future Conditions

- 10 corridors at LOS E/F

Future Optimized Conditions

- Reduces travel time on highest priority corridors
- Improves average speed
- All corridors at LOS D or better
- Victoria/Santa Ursula improves to LOS D or better with mitigation

