Offset Single Point Interchange
I-25 at Rio Bravo Boulevard
Albuquerque, New Mexico

INSTITUTE OF TRANSPORTATION ENGINEERS
2016 WESTERN DISTRICT MEETING
JULY 11, 2016
Background

- Existing Interchange constructed in 1960’s
- Rio Bravo Blvd. provides key crossing of Rio Grande in south Metro Area
- Significant growth ongoing and forecast for Albuquerque’s SW Mesa and Mesa del Sol
- Mesa del Sol Traffic Significant
  - 2040 Population Forecast 80,000 residents
  - Internal Capture Rate?
- Includes RR Spur Track and Canal Crossings
Impact of Mesa del Sol
Existing Conditions (to East)
Existing Conditions (to West)
Project Needs and Purpose

- **Physical Deficiencies**
  - Existing Interchange constructed in 1969

- **Roadway Capacity**
  - Poor Levels of Service with current traffic volumes
  - No available capacity for traffic growth

- **Safety**
  - Numerous crashes related to congested roadways
    (rear-end and angle / left turn crashes)

- **Multi-Modal Connections**
  - No Bike or Pedestrian facilities through the Interchange
Opportunities and Constraints

- ‘Hard to Predict’ Traffic Growth associated with Mesa del Sol Planned Community
- Heavy Truck Traffic (7%)
- Rolling Terrain with Steep Grades (6-7%)
- Adjacent Airport & Runway
- Close Spacing of Existing Intersections
- Utilities (Transmission Lines, Cell Tower)
- Governor’s Top Priority List
- Project Funded for Conventional Solution
Opportunities and Constraints

- Alternatives Considered and Eliminated
  - Diverging Diamond, Roundabout Diamond, etc.
- Requests from Public for ‘Something Better’
- NMDOT Interested in Innovative Solutions
- Available Right of Way—asymmetrical width, 450 ft. west of CL, 150 ft. east of CL
- Opportunity to Improve Intersection Spacing (820 ft. to 1280 ft.)
- Located in Urbanizing Area
Interchange Alternatives Evaluated

Typical Diamond

Single Point Diamond
Interchange Alternatives Evaluated

Offset Single Point At-Grade

Offset Single Point Grade Separated
2040 DESIGN HOUR VOLUMES

Eastbound Rio Bravo: 75% to I-25, 25% to University
Northbound University to Northbound I-25
Low Demand on Ramps to/from South
2040 DESIGN HOUR VOLUMES

**Eastbound Rio Bravo:** 70% to I-25, 30% to University

**Southbound I-25 to Southbound University**

**Low Demand on Ramps to/from South**
### Traffic Performance Comparison

<table>
<thead>
<tr>
<th>Interchange Alternative</th>
<th>AM PEAK</th>
<th>PM PEAK</th>
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<tbody>
<tr>
<td></td>
<td>Intersection</td>
<td></td>
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<tr>
<td></td>
<td>Delay</td>
<td>Max V/C</td>
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<tr>
<td>Standard Diamond (both terminals)</td>
<td>38</td>
<td>1.00</td>
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<tr>
<td>Single Point Diamond</td>
<td>18</td>
<td>0.92</td>
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<tr>
<td>Offset Single Point, At-Grade</td>
<td>15</td>
<td>0.91</td>
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<tr>
<td>Offset Single Point, Grade Sep.</td>
<td>9</td>
<td>0.79</td>
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- Results for Both Sides of Interchange
- Wanted ‘Something Better’
- Grade-separated Option Clearly Best
Dilemma and Innovation

Grade Separated Option Unaffordable

How Can the OSP At-Grade Option be modified to improve traffic performance?

Focus on Eastbound Rio Bravo

1. Bike Crossing of EB-to-NB movement (cycle track?)
2. Lane Utilization
   † Unequal distribution of traffic among the multiple lanes of a lane group
Unbalanced use of lane and signal capacity

Applied the High “T” intersection concept

Channelized traffic destined to NB I-25

Allows Simultaneous Signal Phases
Channelized Offset Single Point
Offset Single Point Signal Phasing

### Sequential Phasing

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<thead>
<tr>
<th></th>
<th>Phase 1</th>
<th>Phase 2</th>
<th>Phase 3</th>
<th>Phase 4</th>
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<tbody>
<tr>
<td><strong>Vehicles</strong></td>
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<tr>
<td>6</td>
<td>6</td>
<td>5</td>
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<td>8</td>
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<td>1</td>
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<td>2</td>
<td>7</td>
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<tr>
<td><strong>Peds</strong></td>
<td>No Ped Phase</td>
<td>A and B</td>
<td>A and B</td>
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Unsignalized Crossing
# Traffic Performance Comparison

## Rio Bravo Blvd @ Offset Single Point

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<td>OSP At-Grade</td>
<td>120</td>
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<td>R</td>
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<tr>
<td>OSP Grade-Sep Loop Ramp</td>
<td>120</td>
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Pedestrians and Bicyclists

- Shoulder for Avid Cyclists
- Signed for Westbound Cyclists to use Multi-Use Trail at University Blvd Intersection
- Buffered On-Street Bike Lane
- Signalized Ped/Bike Crossing to Multi-Use Trail and One-Way Buffered Bike Lane
- Multi-Use Trail Follows Rio Bravo Profile Grade
Northbound I-25 Entrance Ramps

- 2040 Design Year Traffic High for Both On-Ramps
- On-Ramp demand distributed better with less delay
- Better Accommodation of Heavy Trucks; Eastbound and Westbound
Simulation Looking Southeast
Simulation Looking East
Simulation Looking North
Simulation Looking West
Other Issues / Concerns

- **Budget / Estimate**
  - $50M Total Project Cost—Higher Cost than originally budgeted ($36M)

- **Construction Phasing**
  - Complex—6 Phases, Regional Detours & Closures

- **Railroad Crossing Coordination**
  - Owned by USAF
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Project Website

- Project website address: http://www.i25riobravo.com
- Drive-thru Simulation

QUESTIONS / COMMENTS