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FHWA  
Rapid City Area MPO



# I-90 Corridor Exit 61 to Exit 67 Corridor Study

Public Meeting #2

March 6, 2017

BHSU Rapid City Center



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# Introduction

- Welcome
- Housekeeping Items
- Methods of Commenting
  - Comment Card tonight
  - Comment Card later
  - Conversations with project representatives
  - Correspondence after the meeting
- Comments due by March 24



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# Project Contacts

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## Study Advisory Team Entities:

- Federal Highway Administration (FHWA)
- City of Box Elder
- Rapid City Area MPO
- Ellsworth AFB
- Ellsworth Development Authority
- SDDOT Departmental/Local Staff



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# Project Background

- Recommended in BESTPlan as a more focused study of important corridor
- Positioned to:
  - Answer key questions in advance of I-90 rehab/reconstruction (8 yrs. out)
  - Address future of Exit 63
- Collaborative effort among several entities





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## Study Goals:

Complete a list of transportation issues and needs facing the I-90 corridor within the study area

Develop feasible solutions to address those issues and needs that meet current design standards and/or traffic level of service expectations under both the current and predicted future traffic conditions while promoting a livable community that will enhance the economic and social well-being of all users of the corridor.

Two primary areas of need will be investigated in this study.

### 1. I-90 Corridor Capacity

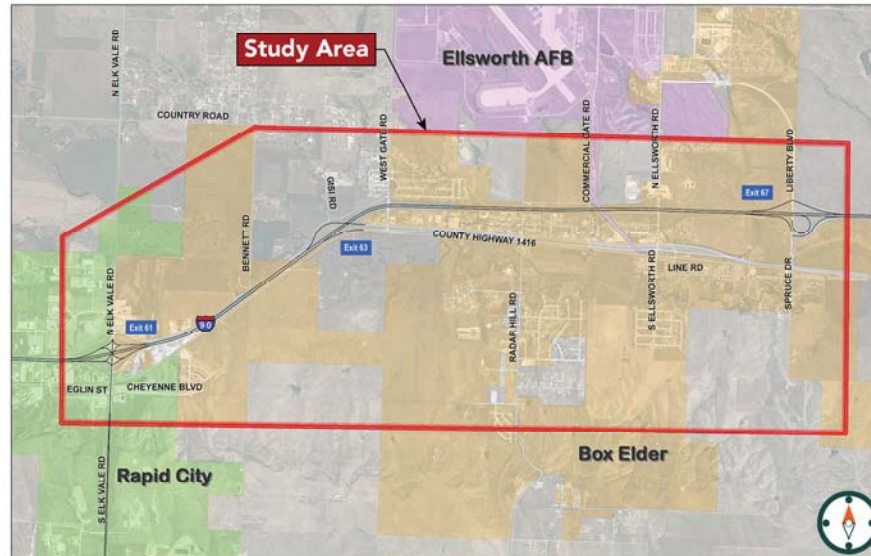
The need for I-90 and the surrounding roadway network to provide acceptable traffic operations and safety now and into the long range future.

Traffic counts, forecasts and analyses may support:

- The need for an additional travel lane along I-90 for all or part of the study corridor
- The need for particular regional roadway network improvements to accommodate vehicle-trips and support I-90
- The need for other multimodal mobility enhancements

### 2. Interchange Access

The current half movement interchange provides only for movements to and from the west, not in compliance with current Federal Highway Administration (FHWA) policy requiring that service interchanges provide for all movements. The study will investigate options to bring Exit 63 into compliance with FHWA policy.





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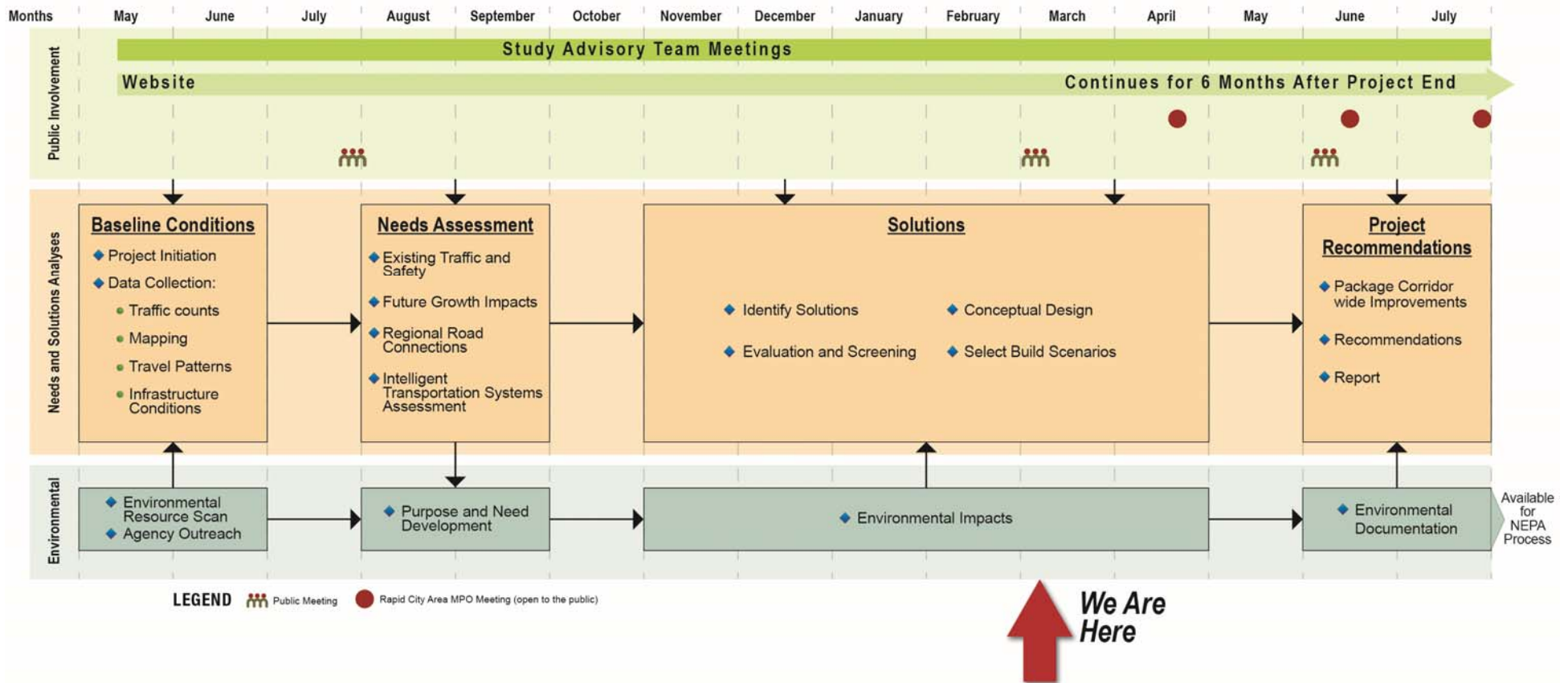
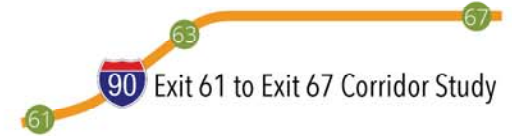


# Project Update

- Public Meeting last July attended by 50 people, input included:
  - Safety concerns, particularly weather-related and Highway 1416 intersections
  - Try to minimize vulnerability to poor winter road conditions, when 27% of crashes occur
  - Some favor for interchange at Radar Hill Road vs other options
- Team meetings to discuss key components
  - Alternatives workshop to brainstorm options at Exit 63
  - ITS Stakeholder meeting to discuss technology solutions
- Work has focused on:
  - Exit 63 drawings
  - Analysis of traffic forecasts



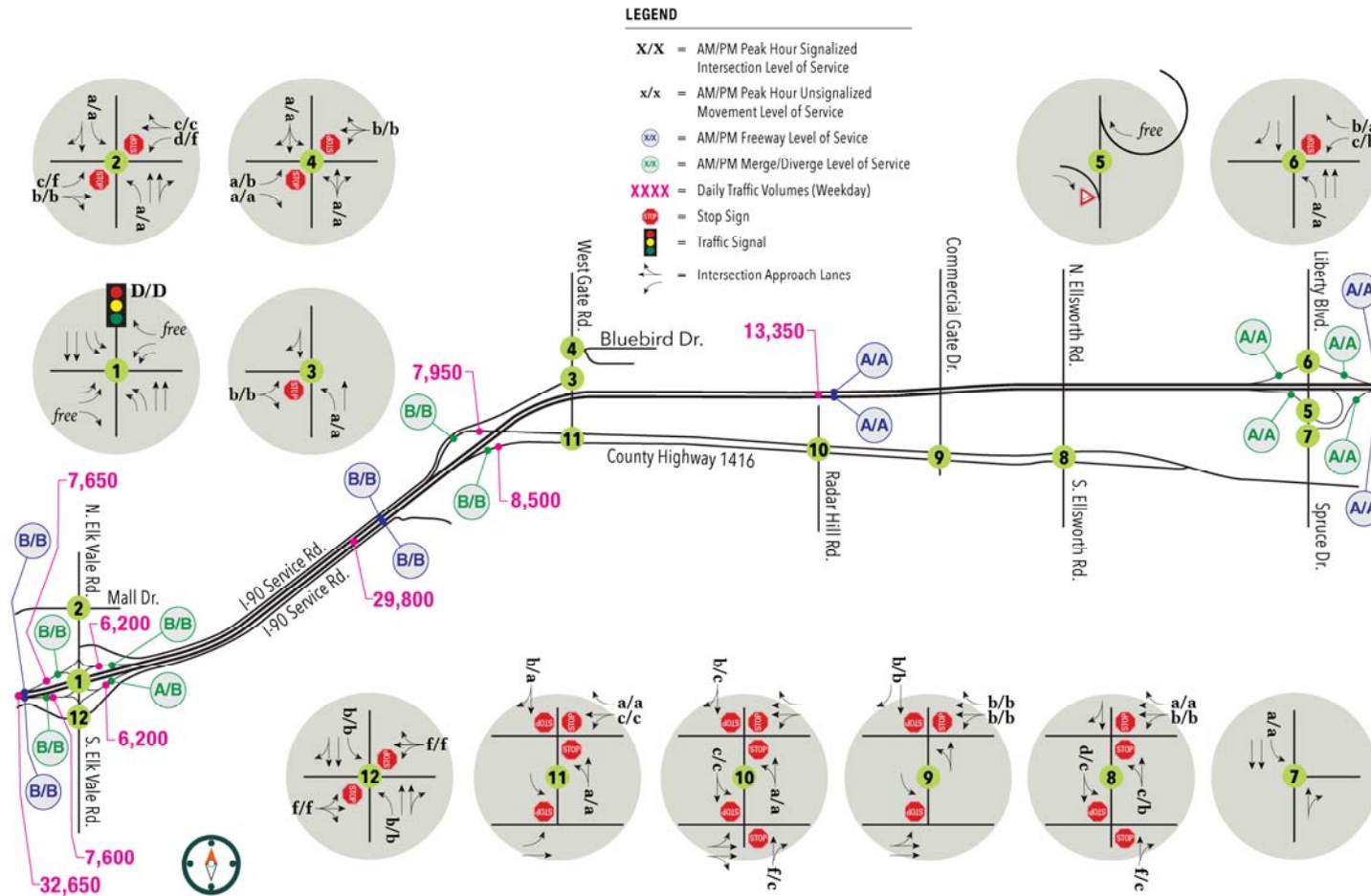
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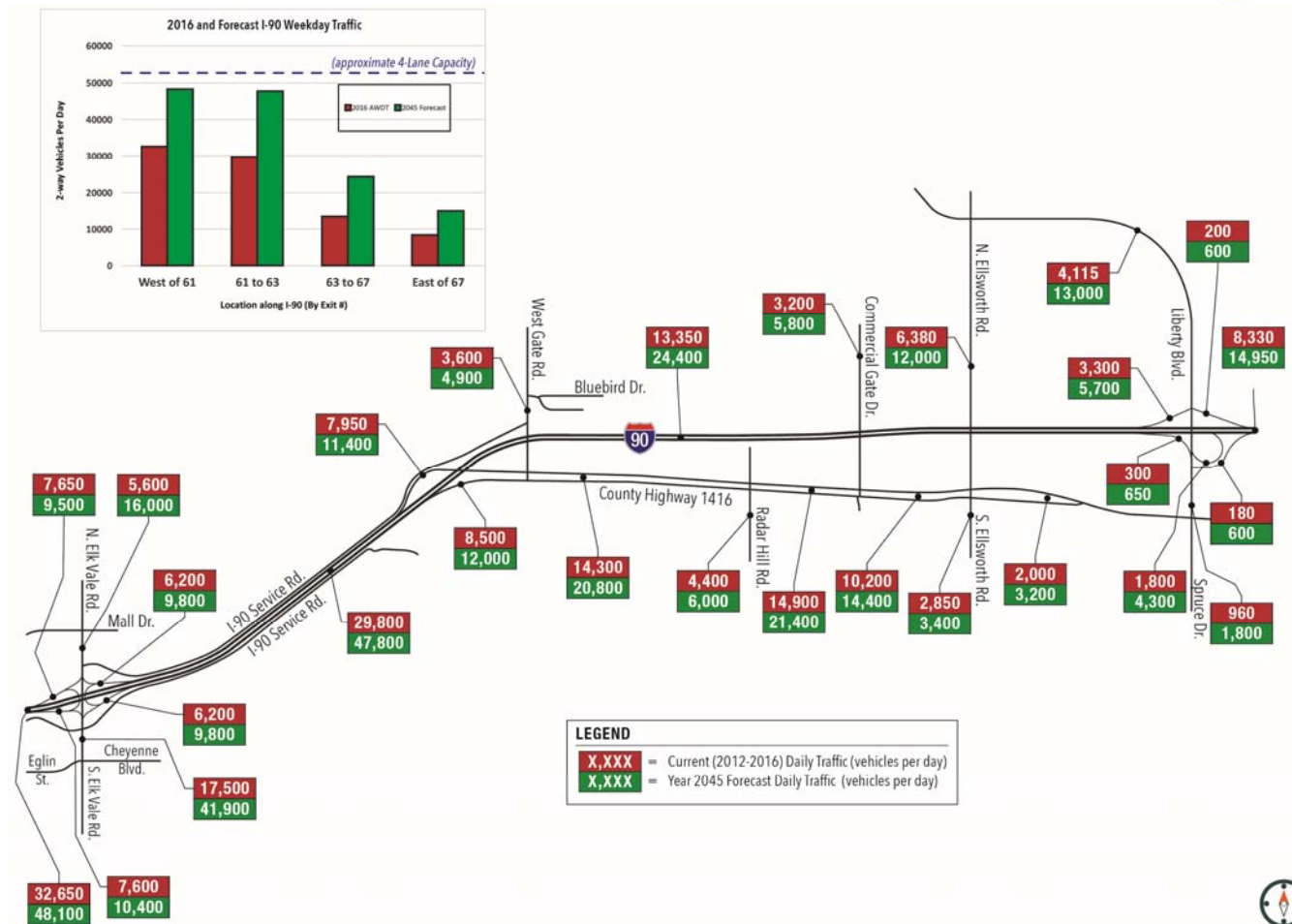
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# Current Traffic Volumes and Levels of Service





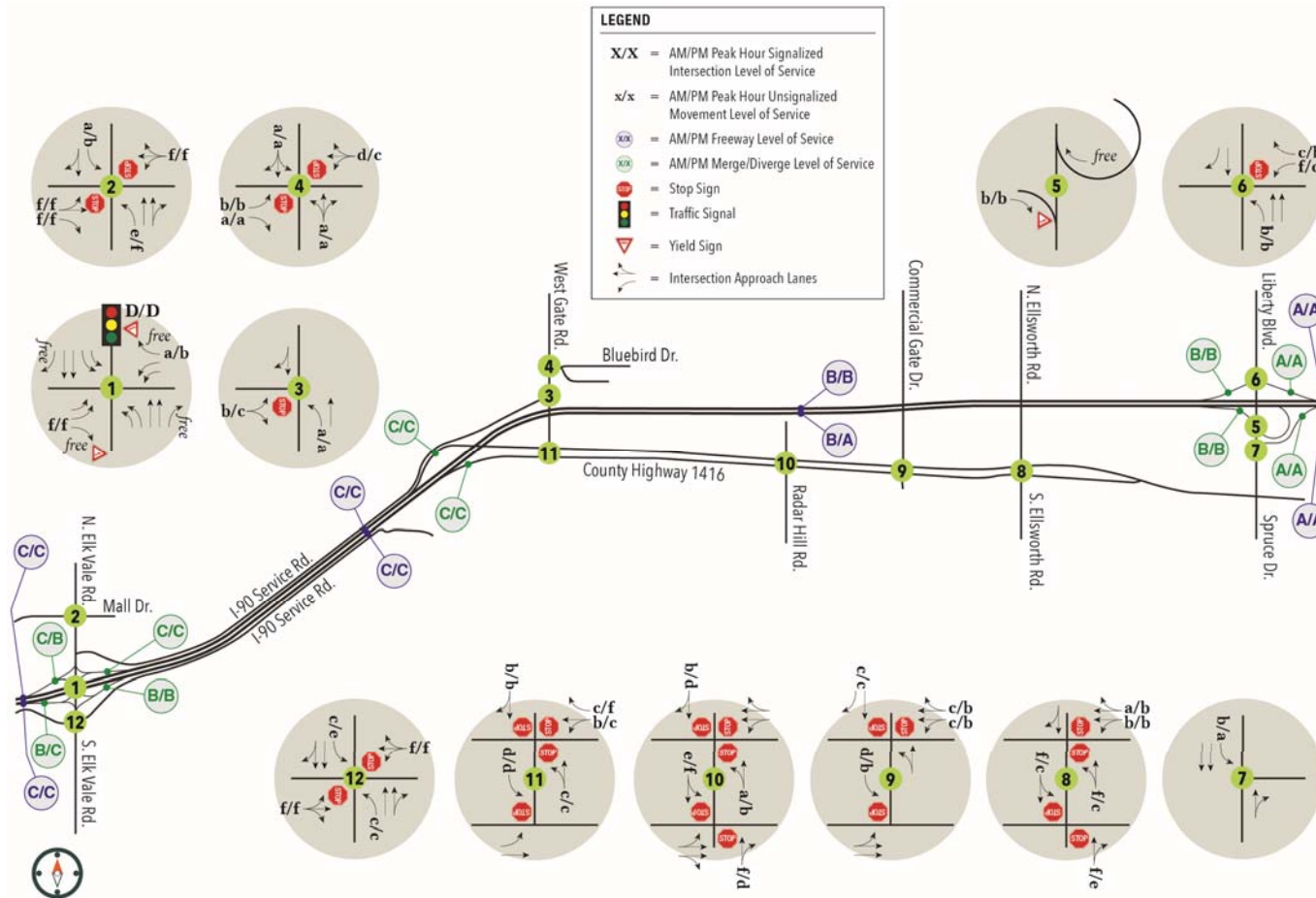
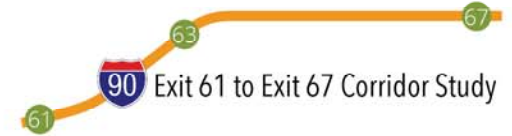
## Daily Traffic Forecasts





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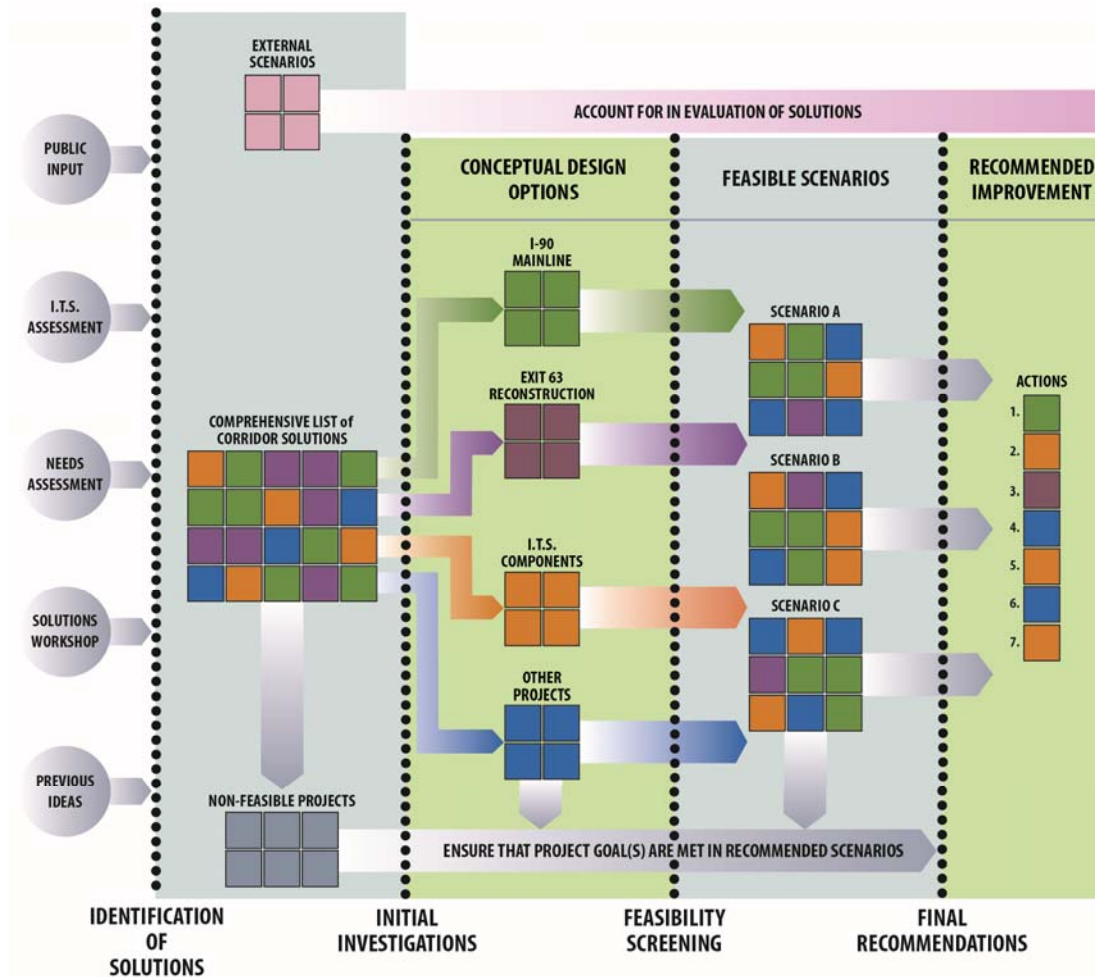
## 2045 Level of Service-No Action





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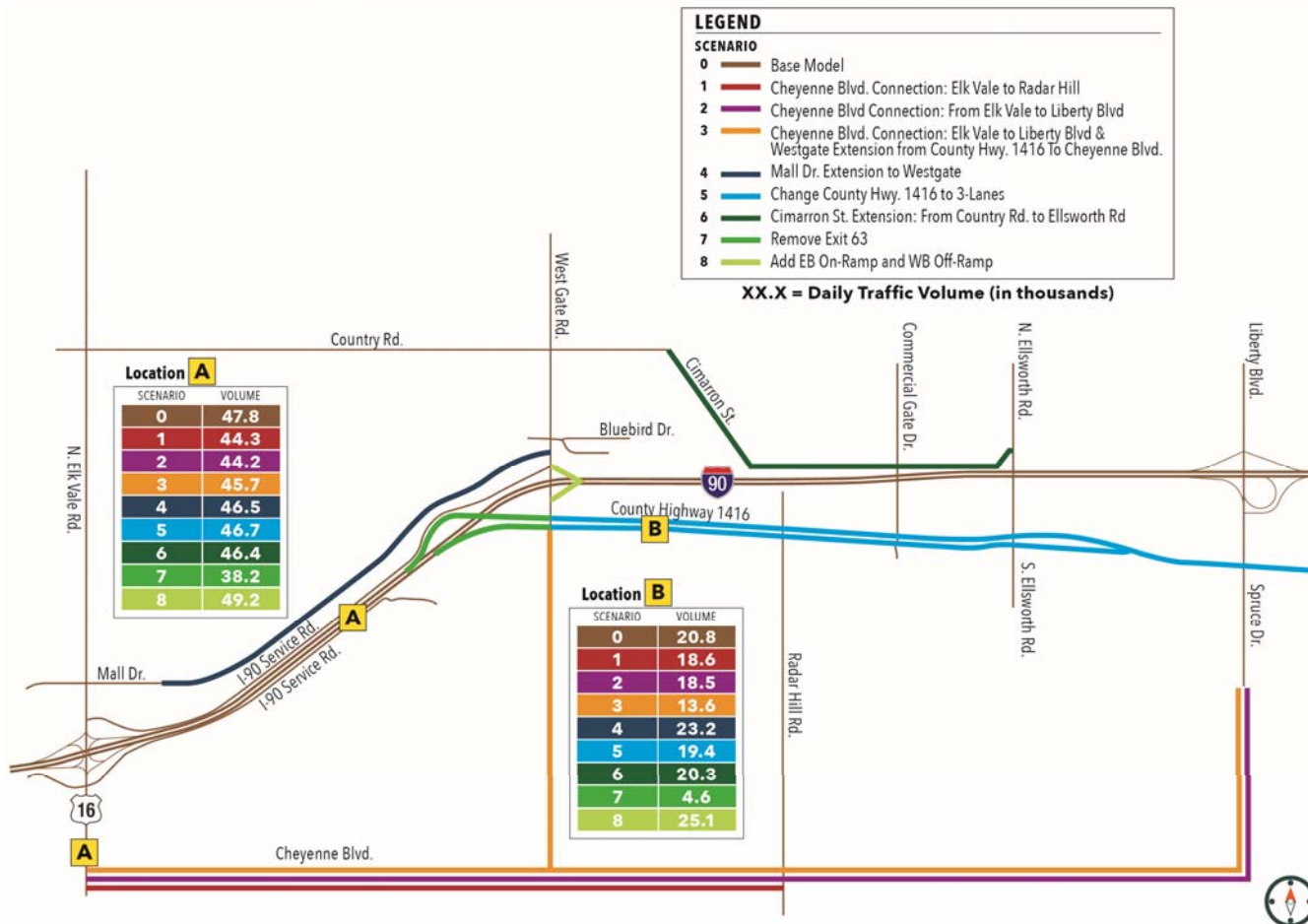
## Solutions Process



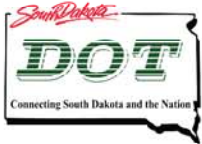


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# Impact of External Roadway Connections







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## Intelligent Transportation Systems



### Current ITS Devices





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## Intelligent Transportation Systems



### Potential I-90 Corridor ITS Solutions and Benefits

ITS Solution		Description	Goal/Potential Benefits
1	Roadway condition warning/anti-icing for existing WB Exit 63 on- ramp to I-90	Uses sensors and signs and/or sprayers to reduce crash risk	Improve safety
2	Intersection conflict warning for County Highway 1416 intersections	Uses detection and flashers to alert drivers approaching conflicting traffic	Improve safety
3	Remotely operated "intelligent" gates	Allows current manual closure gates to be operated remotely	Improve safety and staff efficiency
4	Additional vehicle detection and surveillance on I-90	Allows data collection and monitoring of "trouble" spots, reducing response time and improving awareness	Improve mobility and efficiency
5	Fiber optic "trunk" along I-90 to connect devices to unify communications	Enables reliable communications and full-motion video. Places all devices on one high performance network	Improve mobility and efficiency
6	Control software to unify DMS, CCTV, detection and other operations	Enables monitoring, data collection and control from a single interface. Reduces training time and IT workload	Improve efficiency
7	Variable speed limit signs (VSL)	Uses active signs to display speed limits that vary based on conditions	Improves safety



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## Exit 63 Alternatives

- Goal of alternatives is to provide full movements at Exit 63, not necessarily at the current interchange location
- 12 alternatives have been developed, including the no action and removal of Exit 63
- Conceptual designs address basic layout and key design implications of options, including grades, property impacts and control of access
- Locations of alternatives fall into two categories: west (near current Exit 63) and east (vicinity of Radar Hill Road)
- Further analyses to be performed for alternatives carried forward



## Alternative 1: Interchange at West Gate

- Carry Forward: **YES**
- Fewer Property Impacts
- Simplicity of Configuration

NORTH SERVICE ROAD MUST BE CLOSED DUE TO CONTROL OF ACCESS

MAINTAIN FOR GISI ROAD ACCESS

NORTH SERVICE RD

WEST GATE RD

BOX ELDER RD

COUNTY HWY 1416

RAILROAD

BOX ELDER RD MUST BE CLOSED DUE TO CONTROL OF ACCESS

RAILROAD CROSSING REQUIRED

SOUTH TO CHEYENNE BLVD

NOTE: PARCEL IMPACT DEFINED AS A LOSS OF EXISTING ACCESS OR LAND NEEDED FOR NEW INFRASTRUCTURE

PARCEL IMPACT  
REMOVAL  
PROPERTY LINE  
ACCESS TO BE CLOSED  
WALL

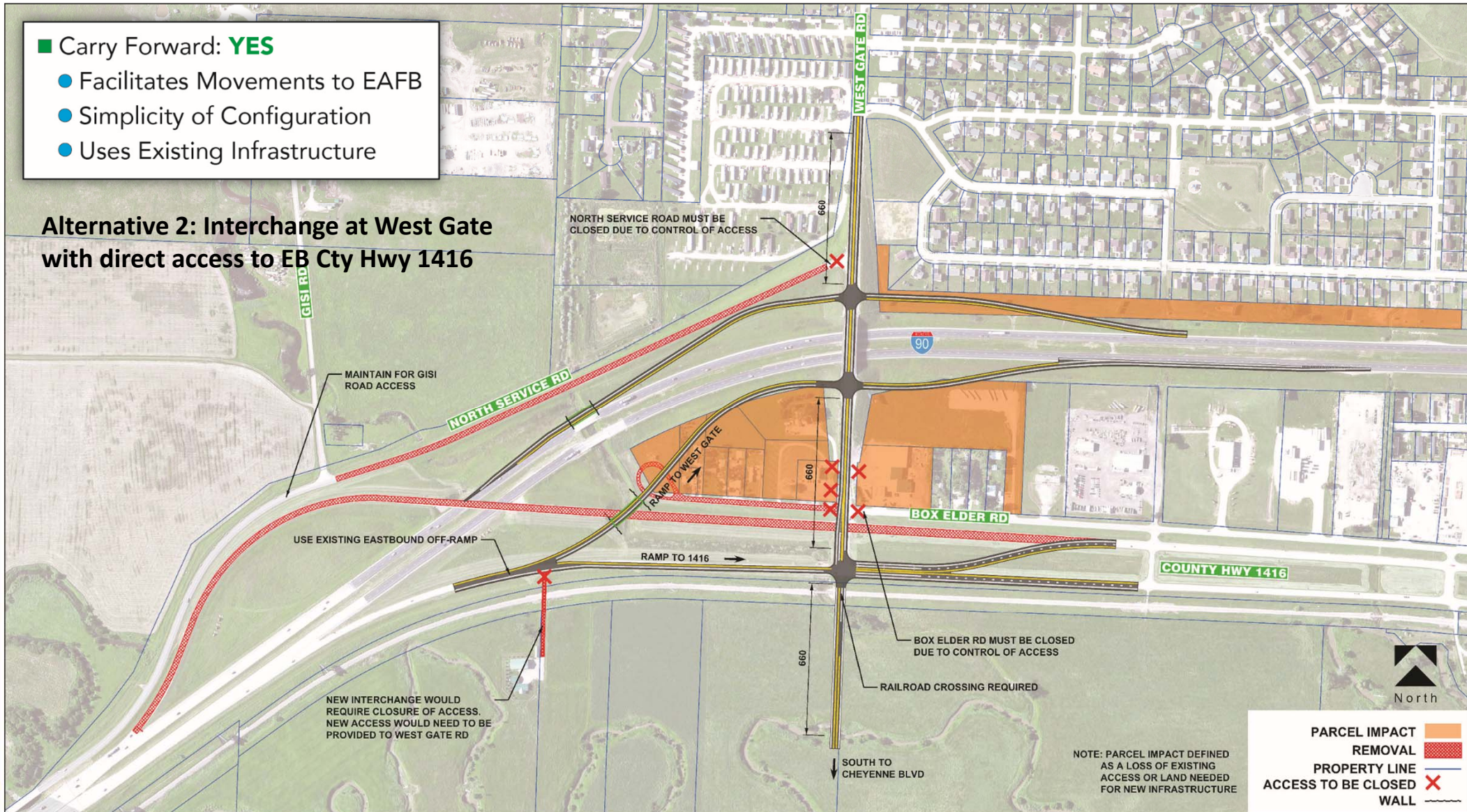




■ Carry Forward: **YES**

- Facilitates Movements to EAFB
- Simplicity of Configuration
- Uses Existing Infrastructure

**Alternative 2: Interchange at West Gate  
with direct access to EB Cty Hwy 1416**

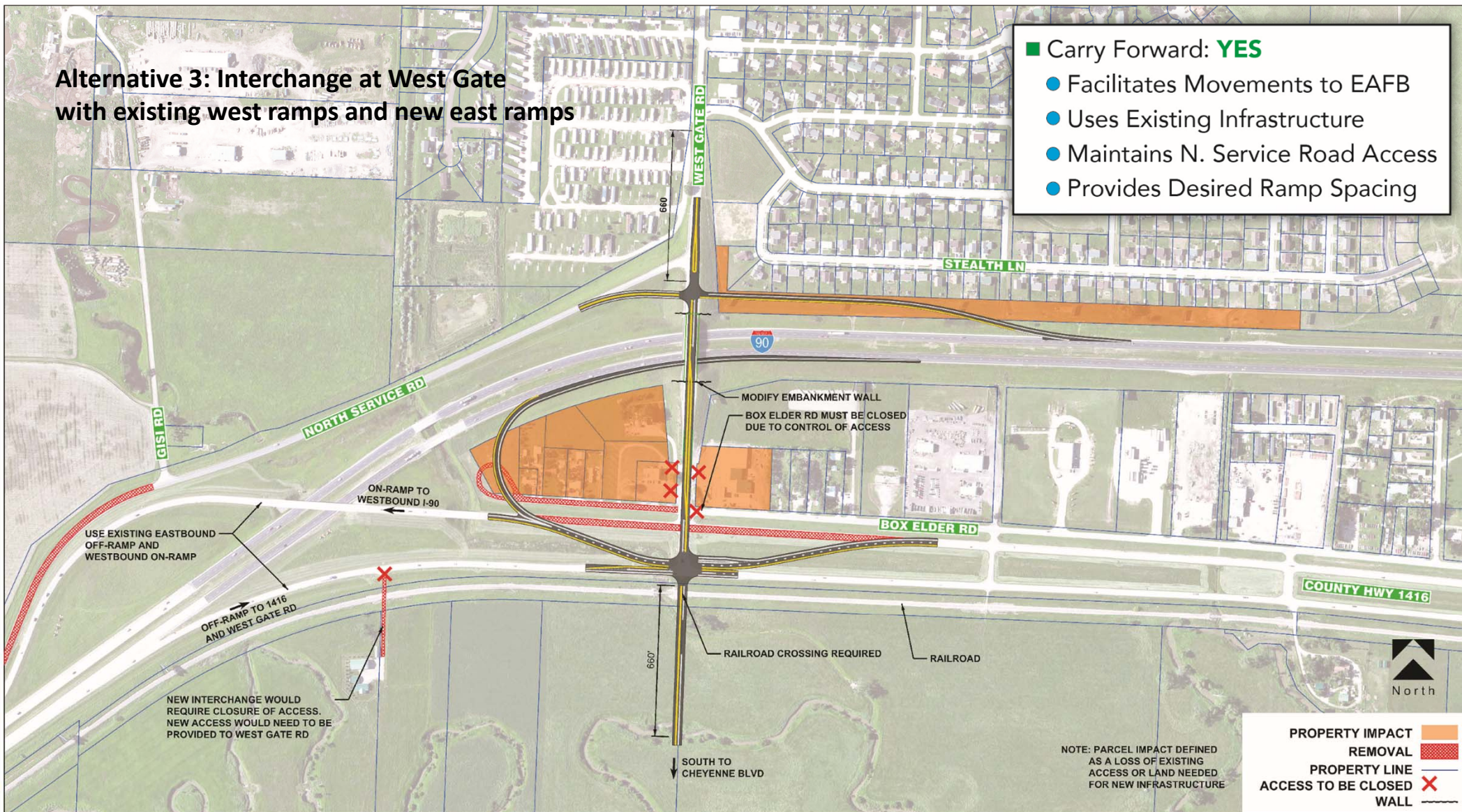




### Alternative 3: Interchange at West Gate with existing west ramps and new east ramps

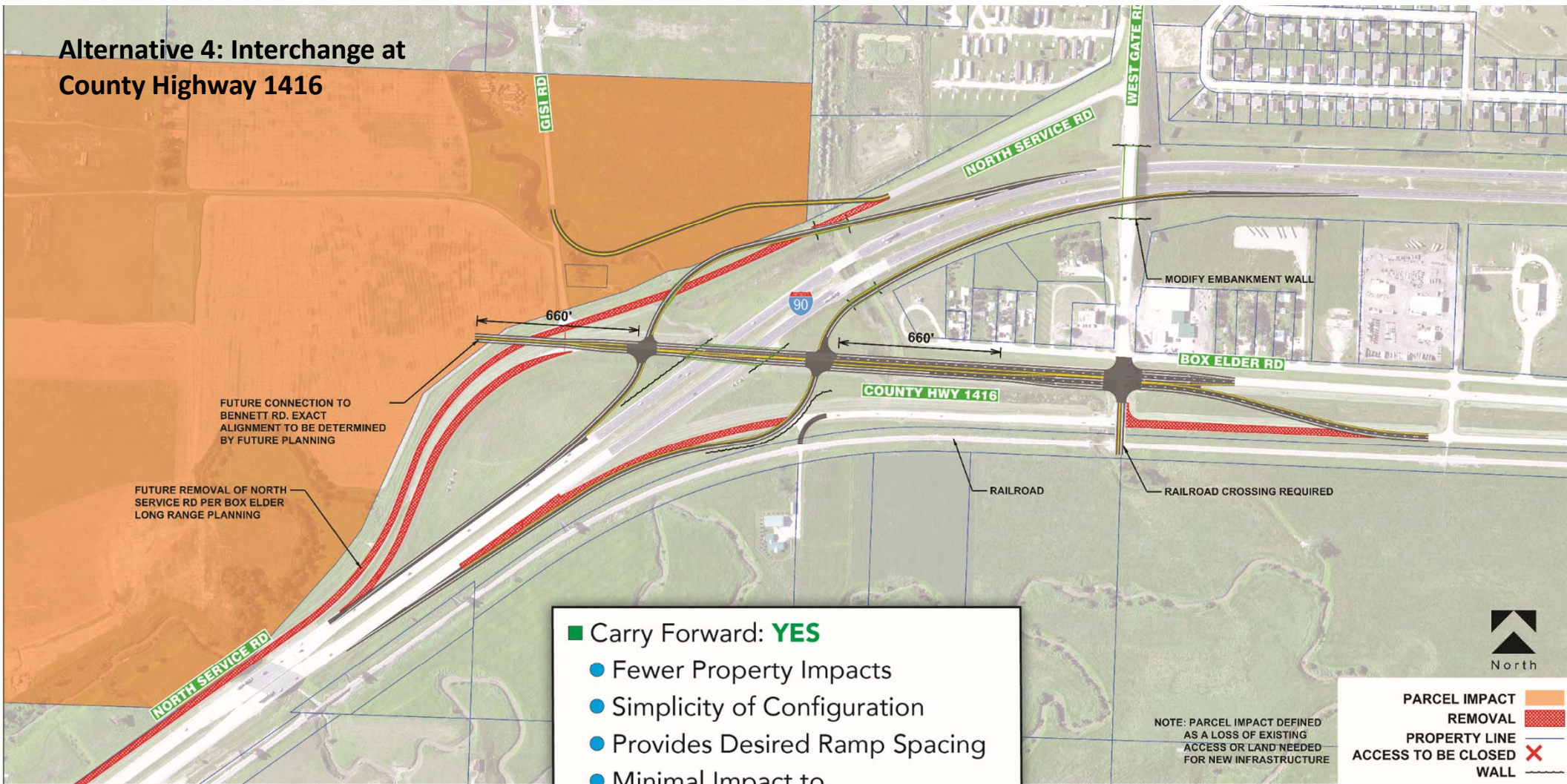
#### ■ Carry Forward: **YES**

- Facilitates Movements to EAFB
- Uses Existing Infrastructure
- Maintains N. Service Road Access
- Provides Desired Ramp Spacing





## Alternative 4: Interchange at County Highway 1416





## Alternative 5: Interchange at Radar Hill Road

- Carry Forward: **NO**
- Property Impacts
- Environmental Impacts
- Access Impacts

ELLSWORTH AFB  
PROPERTY LINE

660

MEADOW RD

MOCKINGBIRD DR

DOUGLAS RD

DOUGLAS RD CLOSED DUE  
TO CONTROL OF ACCESS

APPROXIMATE LOCATION WHERE  
RADAR HILL RD TIES INTO EXISTING GROUND  
(ASSUMED 6%)

COUNTY HWY 1416

BOX ELDER RD

COMMERCIAL GATE DR

RADAR HILL RD



NOTE: PARCEL IMPACT DEFINED  
AS A LOSS OF EXISTING  
ACCESS OR LAND NEEDED  
FOR NEW INFRASTRUCTURE

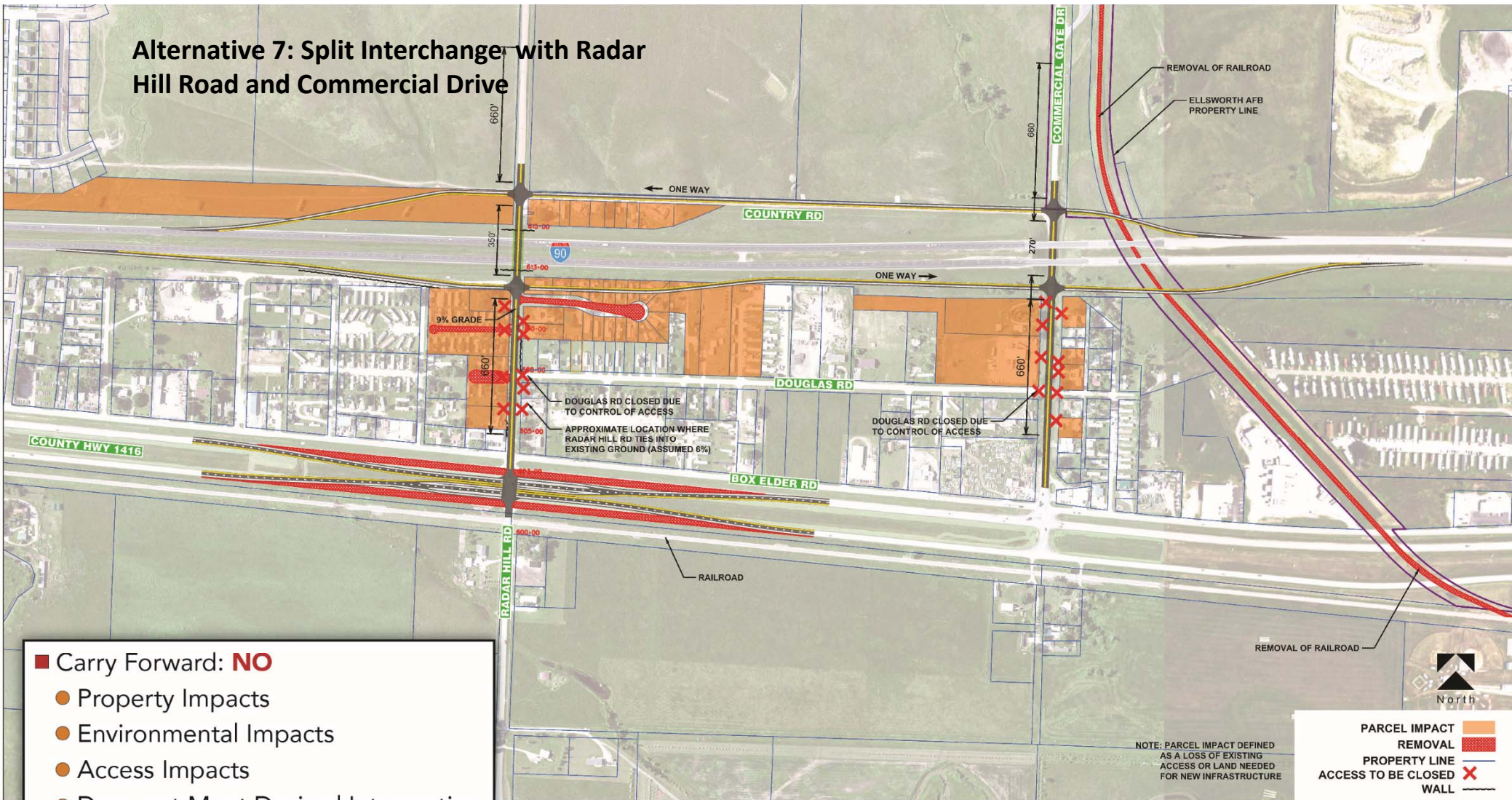
PARCEL IMPACT  
REMOVAL  
PROPERTY LINE  
ACCESS TO BE CLOSED  
WALL







## Alternative 7: Split Interchange with Radar Hill Road and Commercial Drive



### ■ Carry Forward: **NO**

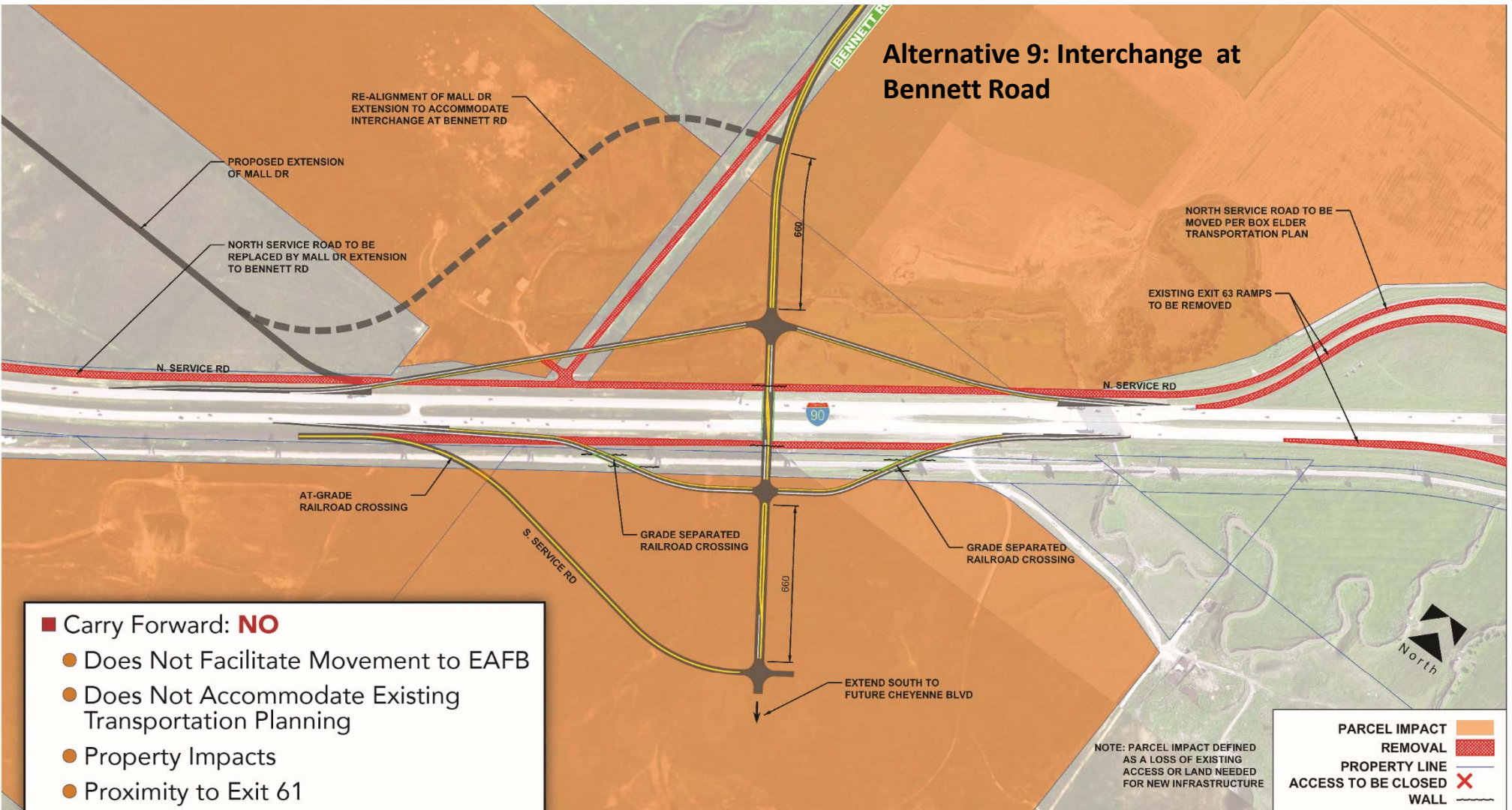
- Property Impacts
- Environmental Impacts
- Access Impacts
- Does not Meet Desired Intersection for Intersection Ramp Spacing







## Alternative 9: Interchange at Bennett Road

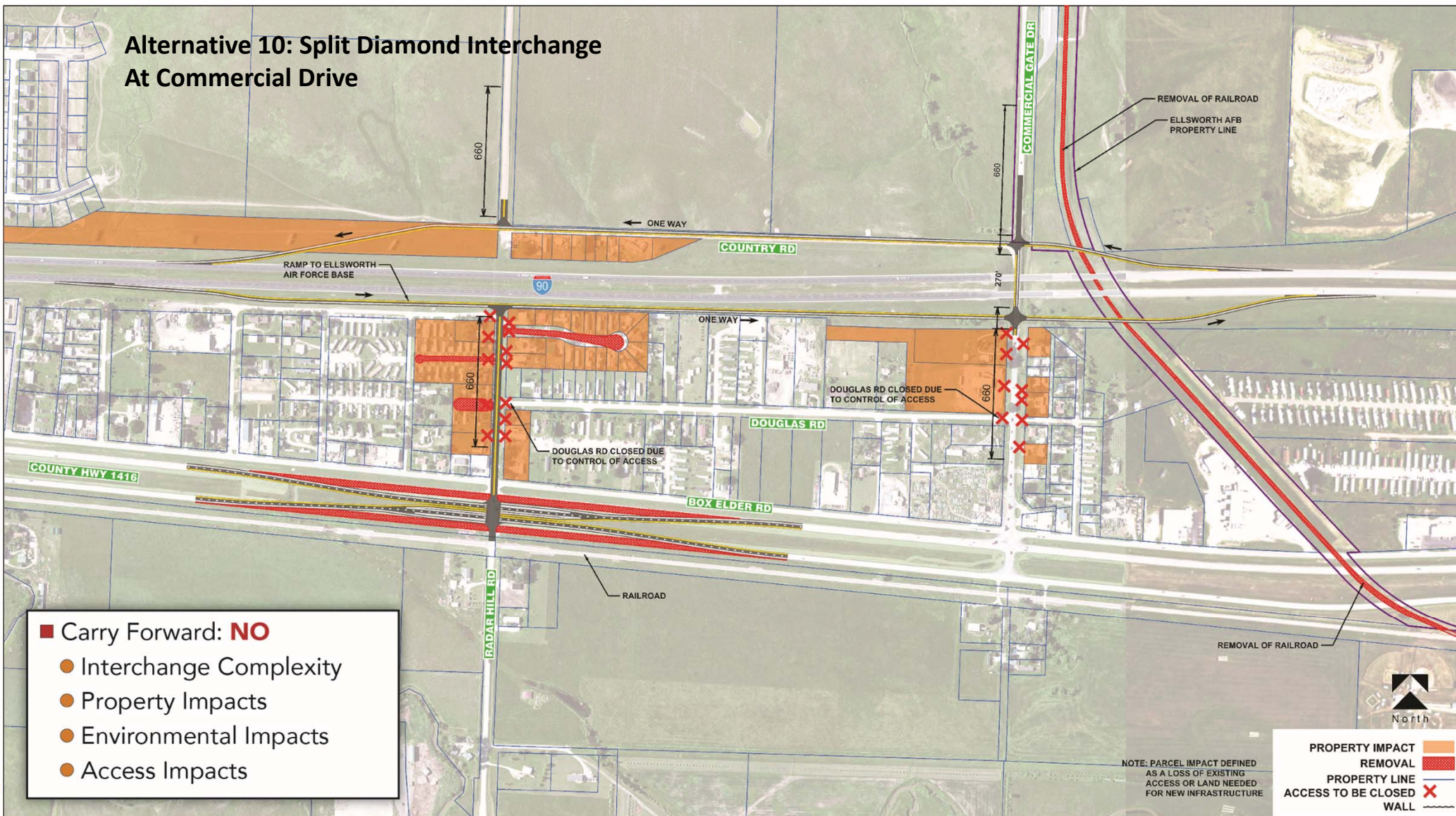


### ■ Carry Forward: **NO**

- Does Not Facilitate Movement to EAFB
- Does Not Accommodate Existing Transportation Planning
- Property Impacts
- Proximity to Exit 61
- Lack of Connectivity to Existing Transportation Network



## Alternative 10: Split Diamond Interchange At Commercial Drive





## Alternative 11: Remove Exit 63 Interchange

- Carry Forward: **YES**
- No Property Impacts
- Low Construction Cost
- Maintains N. Service Road Access

FUTURE CLOSURE OF NORTH SERVICE RD PER NOX ELDER LONG-RANGE PLANNING

NORTH SERVICE RD

WEST GATE RD

90

BOX ELDER RD

COUNTY HWY 1416

RAILROAD

RAILROAD CROSSING REQUIRED



NOTE: PARCEL IMPACT DEFINED AS A LOSS OF EXISTING ACCESS OR LAND NEEDED FOR NEW INFRASTRUCTURE

PARCEL IMPACT REMOVAL  
PROPERTY LINE  
ACCESS TO BE CLOSED  
WALL





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# Feasibility Screening Matrix



Has the fewest impacts to property

Best accommodates current Long-Range planning efforts

Alternatives at Westgate are most compatible with EAFB and Box Elder Land Planning

Best utilizes existing infrastructure

EXIST 63 INTERCHANGE RECONSTRUCTION ALTERNATIVES	ADDRESS THE NEED FOR THE PROJECT	APZ CONFLICTS	ENVIRONMENTAL IMPACTS	PRIVATE PROPERTY AND ROW	FACILITATES MOVEMENTS TO AND FROM EAFB	ACCOMMODATES TRANSPORTATION APPROVED PLANS	CONSTRUCT-ABILITY	CONSTRUCTION COSTS	COMPATIBILITY WITH JULUS	CONNECTIVITY WITH EXISTING ROAD NETWORK	SIMPLICITY OF INTERCHANGE CONFIGURATION	DESIGN CRITERIA	CONTROL OF ACCESS	Carry Forward?
	1	2	3	4	5	6	7	8	9	10	11	12	13	
The No Action Alternative	↓	↑	↑	↑	↑	↓	↑	↑	↑	→	→	→	↑	●
Alternative 1 - Interchange at Westgate	↑	↑	→	→	→	→	→	→	↑	→	↑	→	→	●
Alternative 2 - Interchange at Westgate with Direct Access to EB 1416	↑	↑	→	→	→	→	→	→	↑	→	→	→	→	●
Alternative 3 - Interchange at Westgate Rd. with Existing West Ramps and New East Ramps	↑	↑	→	→	↑	↑	→	→	↑	↑	→	→	→	●
Alternative 4 - Interchange at Highway 1416	↑	↑	→	↑	→	→	→	→	↑	→	↑	↑	↑	●
Alternative 5 - Interchange at Radar Hill Road	↑	↑	↓	↓	→	→	→	↓	→	→	↑	↑	↓	●
Alternative 6 - Interchange at Radar Hill Rd. with Braided Ramps to Commercial Dr.	↑	↑	↓	↓	↑	→	→	↓	→	→	→	↑	↓	●
Alternative 7 - Split Interchange with Radar Hill Rd. and Commercial Dr.	↑	→	↓	→	↑	→	→	↓	→	→	→	↓	↓	●
Alternative 8 - Split Diamond with Radar Hill Rd. and Commercial Dr. with Exclusive EAFB Ramps	↑	→	↓	↓	↑	→	→	↓	→	→	→	→	→	●
Alternative 9 - Interchange at Bennett Road	↑	↑	→	→	↓	↓	→	→	↑	→	↑	↑	↑	●
Alternative 10 - Split Diamond Interchange at Commercial Dr.	↑	→	→	→	→	→	→	→	→	→	→	→	↓	●
Alternative 11 - Remove Exit 63 Interchange	→	↑	↑	↑	↓	↓	↑	↑	↑	↓	→	↑	↑	●

**LEGEND**  
 ↓ Point Value = 0 *Least meets criterion*  
 → Point Value = 1  
 → Point Value = 2  
 → Point Value = 3  
 ↑ Point Value = 4 *Best meets criterion*

Alternatives have most impacts on low income and minority populations

Alternatives at Radar Hill Road have highest construction costs



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# I-90 Corridor Exit 61 to Exit 67 Corridor Study Open House Portion