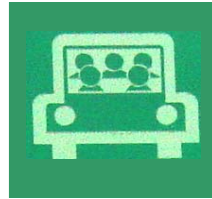


NORTH I-25  
EIS



information. cooperation. transportation.



# Carpool Lot Field Survey Report

October 2006

Prepared by:

**JACOBS**<sup>™</sup>

## Introduction

The North I-25 project is evaluating highway improvements from E-470 to SH-1. Three field surveys were conducted to perceive the utilization of the carpool lots. First survey was conducted by FHU in mid summer 2003. The second and third surveys were conducted by Carter & Burgess in spring 2004 (April 22<sup>nd</sup> 2004, Thursday between 9:30AM and 2:30PM) and summer 2006 (August 29<sup>th</sup> 2006, Tuesday between 10:00AM and 2:00PM).

Lots surveyed were located at I-25 and:

1. State Highway 7
2. State Highway 52
3. State Highway 119
4. State Highway 66
5. State Highway 56
6. State Highway 60
7. State Highway 402
8. US Highway 34
9. State Highway 392
10. State Highway 68

Below are the interchanges without carpool lots I-25 and:

1. WCR-8
2. WCR-34
3. LCR-16 (Johnson's Corner)
4. Crossroads
5. Prospect
6. SH-14
7. Mountain Vista
8. SH-1

## Methods

Visual spot checks were conducted. Data were collected on lighting, signage, number of spaces, number of cars parked and paved/unpaved conditions of the parking lots.

## Results

A summary of the data collected is shown in **Table 1**. Nine of the ten carpool lots are paved. 40 percent of the lots do not have any visible signage indicating they are carpool lots. Nine of the ten lots have two or more lights in the parking lot area. In most of the lots the lines are faded and there is no landscaping.

**Table-1**  
**Utilization Results of Three Field Surveys**

Location I-25 &	Spaces (including Handicap)			Cars Parked			Utilization		
	Mid Summer 2003 <sup>1</sup>	Spring 2004 <sup>2</sup>	Summer 2006 <sup>3</sup>	Mid Summer 2003 <sup>1</sup>	Spring 2004 <sup>2</sup>	Summer 2006 <sup>3</sup>	Mid Summer 2003 <sup>1</sup>	Spring 2004 <sup>2</sup>	Summer 2006 <sup>3</sup>
SH-7 East	30	15		16	8		53%	53%	
SH-7 West		75			19			25%	
SH-52	94	94	94	26	15	36	28%	16%	38%
SH-119	102	102	102	27	35	36	26%	34%	35%
SH-66	52	55	53	18	20	27	35%	36%	51%
SH-56	46	46	48	13	7	14	28%	15%	29%
SH-60	32	32	32	26	22	30	81%	69%	94%
SH-402	70	70	71	48	40	52	69%	57%	73%
US-34	116	106	108	105	82	91	91%	77%	84%
SH-392	36	32	38	36	36	36	100%	113%	95%
SH-68	257	248	248	90	76	175	35%	31%	71%

NOTE:

1. Visual survey on lots conducted by FHU, mid summer 2003
2. Visual survey on lots conducted by Carter and Burgess, Inc on 04/22/2004 (Thursday)
3. Visual survey on lots conducted by Carter and Burgess, Inc on 08/29/2006 (Tuesday)

# Car Pool Lot Location: I-25 & SH-7



<b>Quadrant</b>	<b>SE/SW</b>
<b>Ownership</b>	CDOT
<b>Lights</b>	NONE
<b>Shelter</b>	NONE
<b>Landscape &amp; Trash Cans</b>	NONE
<b>Bike Racks</b>	NONE
<b>Lockers</b>	NONE
<b>Transportation Uses</b>	Carpool Lot
<b>Surface</b>	Dirt

Summer 2006: Lots have been removed. Some construction activity is going on

Survey	Car Spaces	Spaces Occupied	Utilization %
Summer 2003	30	16	53%
Spring 2004	90	27	30%
Summer 2006	No spaces	none	zero

Source: Photos taken during spring 2004 survey



## Car Pool Lot Location: I-25 & SH-52



<b>Quadrant</b>	<b>NW</b>
<b>Ownership</b>	CDOT
<b>Lights</b>	PROVIDED
<b>Shelter</b>	NONE
<b>Landscape &amp; Trash Cans</b>	NONE
<b>Bike Racks</b>	NONE
<b>Lockers</b>	NONE
<b>Transportation Uses</b>	Carpool Lot
<b>Surface</b>	Asphalt

<b>Survey</b>	<b>Car Spaces</b>	<b>Spaces Occupied</b>	<b>Utilization %</b>
Summer 2003	94	26	28%
Spring 2004	94	15	16%
Summer 2006	94	36	38%

Source: Photos taken during spring 2004 survey

# Car Pool Lot Location: I-25 & SH-119



<b>Quadrant</b>	SE
<b>Ownership</b>	CDOT
<b>Lights</b>	PROVIDED
<b>Shelter</b>	NONE
<b>Landscape &amp; Trash Cans</b>	NONE
<b>Bike Racks</b>	NONE
<b>Lockers</b>	NONE
<b>Transportation Uses</b>	Carpool Lot
<b>Surface</b>	Asphalt

<b>Survey</b>	<b>Car Spaces</b>	<b>Spaces Occupied</b>	<b>Utilization %</b>
Summer 2003	102	27	26%
Spring 2004	102	35	34%
Summer 2006	102	36	35%

Source: Photos taken during spring 2004 survey



# Car Pool Lot Location: I-25 & SH-66



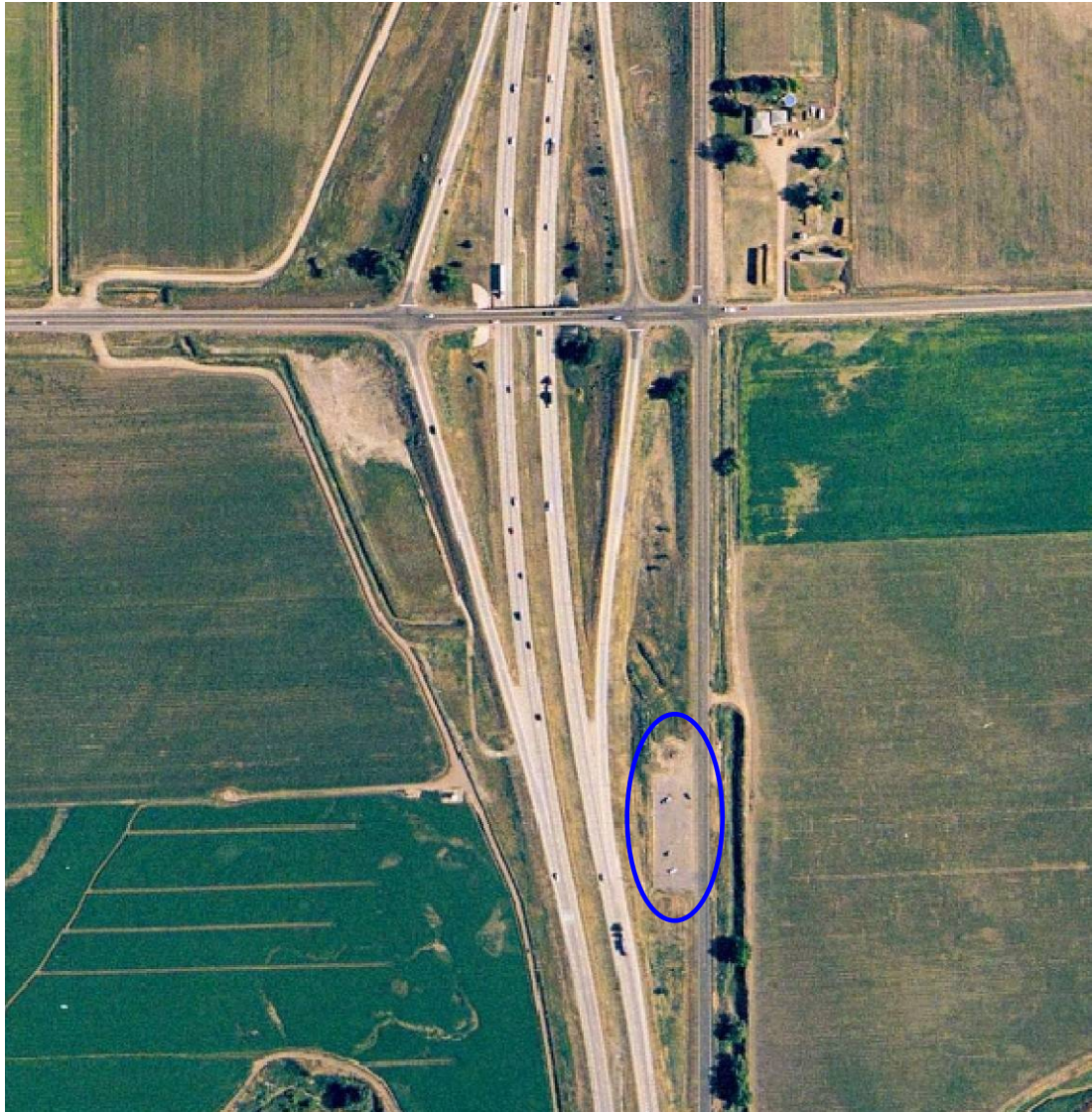
<b>Quadrant</b>	<b>SW</b>
<b>Ownership</b>	CDOT
<b>Lights</b>	PROVIDED
<b>Shelter</b>	NONE
<b>Landscape &amp; Trash Cans</b>	NONE
<b>Bike Racks</b>	NONE
<b>Lockers</b>	NONE
<b>Transportation Uses</b>	Carpool Lot
<b>Surface</b>	Asphalt

<b>Survey</b>	<b>Car Spaces</b>	<b>Spaces Occupied</b>	<b>Utilization %</b>
Summer 2003	52	18	35%
Spring 2004	55	20	36%
Summer 2006	53	24	51%

Source: Photos taken during spring 2004 survey



# Car Pool Lot Location: I-25 & SH-56

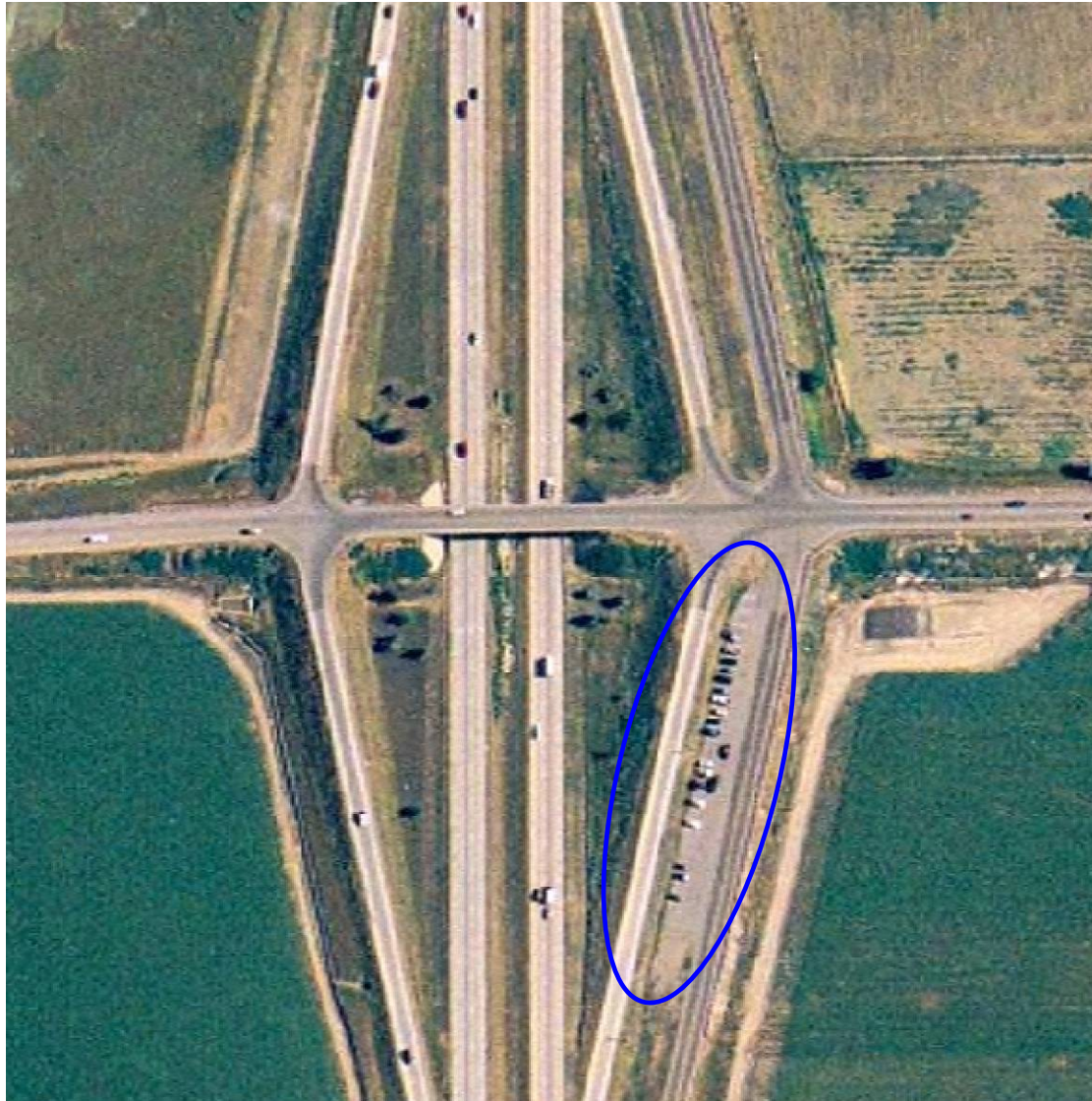


<b>Quadrant</b>	SE
<b>Ownership</b>	CDOT
<b>Lights</b>	PROVIDED
<b>Shelter</b>	NONE
<b>Landscape &amp; Trash Cans</b>	NONE
<b>Bike Racks</b>	NONE
<b>Lockers</b>	NONE
<b>Transportation Uses</b>	Carpool Lot
<b>Surface</b>	Asphalt

<b>Survey</b>	<b>Car Spaces</b>	<b>Spaces Occupied</b>	<b>Utilization %</b>
Summer 2003	46	13	28%
Spring 2004	46	7	15%
Summer 2006	48	14	29%

Source: Photos taken during spring 2004 survey

## Car Pool Lot Location: I-25 & SH-60



<b>Quadrant</b>	SE
<b>Ownership</b>	CDOT
<b>Lights</b>	PROVIDED
<b>Shelter</b>	NONE
<b>Landscape &amp; Trash Cans</b>	NONE
<b>Bike Racks</b>	NONE
<b>Lockers</b>	NONE
<b>Transportation Uses</b>	Carpool Lot
<b>Surface</b>	Asphalt

<b>Survey</b>	<b>Car Spaces</b>	<b>Spaces Occupied</b>	<b>Utilization %</b>
Summer 2003	32	26	81%
Spring 2004	32	22	69%
Summer 2006	32	30	94%

Source: Photos taken during spring 2004 survey



## Car Pool Lot Location: I-25 & SH-402



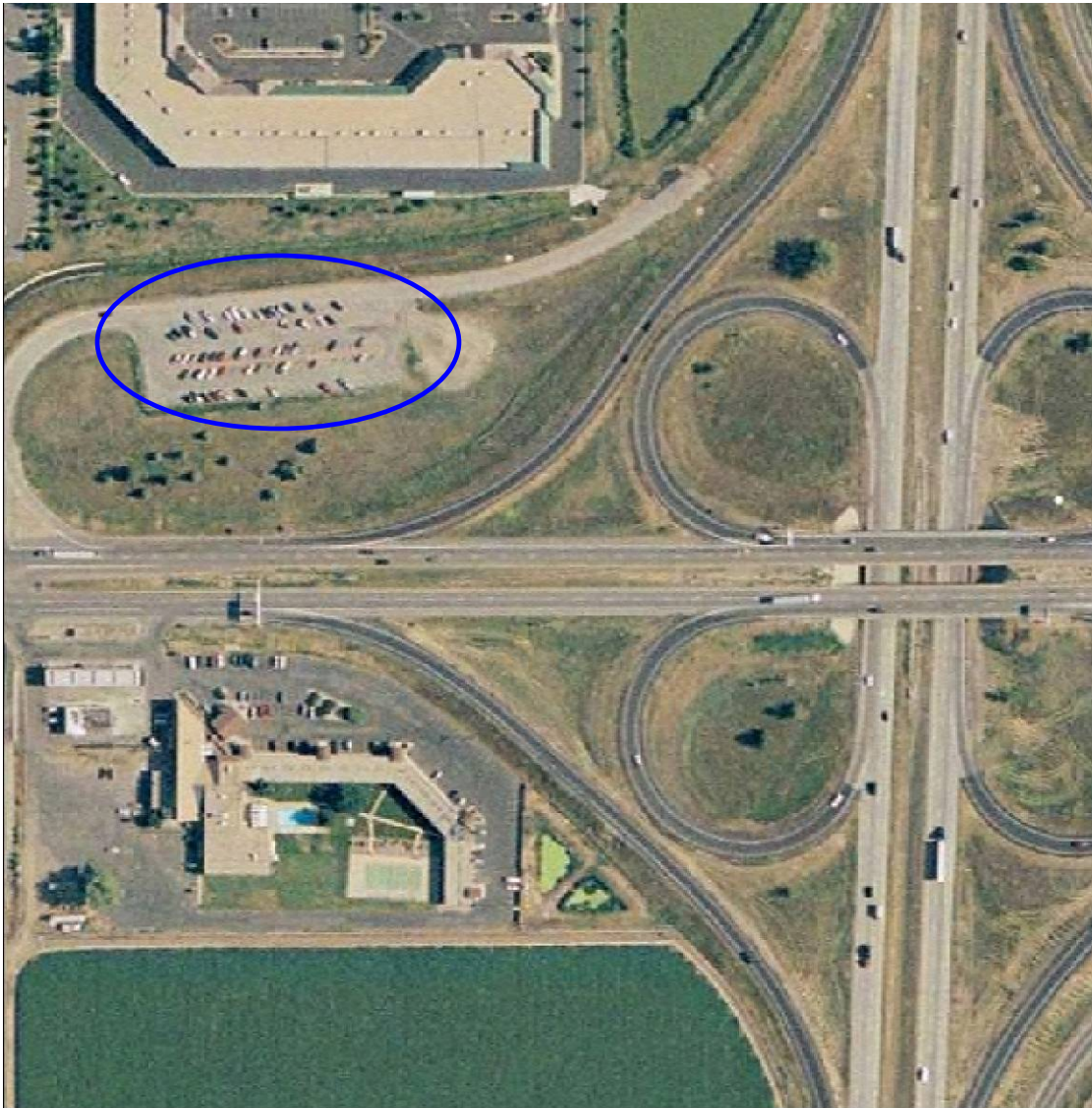
<b>Quadrant</b>	<b>SW</b>
<b>Ownership</b>	CDOT
<b>Lights</b>	PROVIDED
<b>Shelter</b>	NONE
<b>Landscape &amp; Trash Cans</b>	NONE
<b>Bike Racks</b>	NONE
<b>Lockers</b>	NONE
<b>Transportation Uses</b>	Carpool Lot
<b>Surface</b>	Asphalt

<b>Survey</b>	<b>Car Spaces</b>	<b>Spaces Occupied</b>	<b>Utilization %</b>
Summer 2003	70	48	69%
Spring 2004	70	40	57%
Summer 2006	71	52	73%

Source: Photos taken during spring 2004 survey



## Car Pool Lot Location: I-25 & US-34

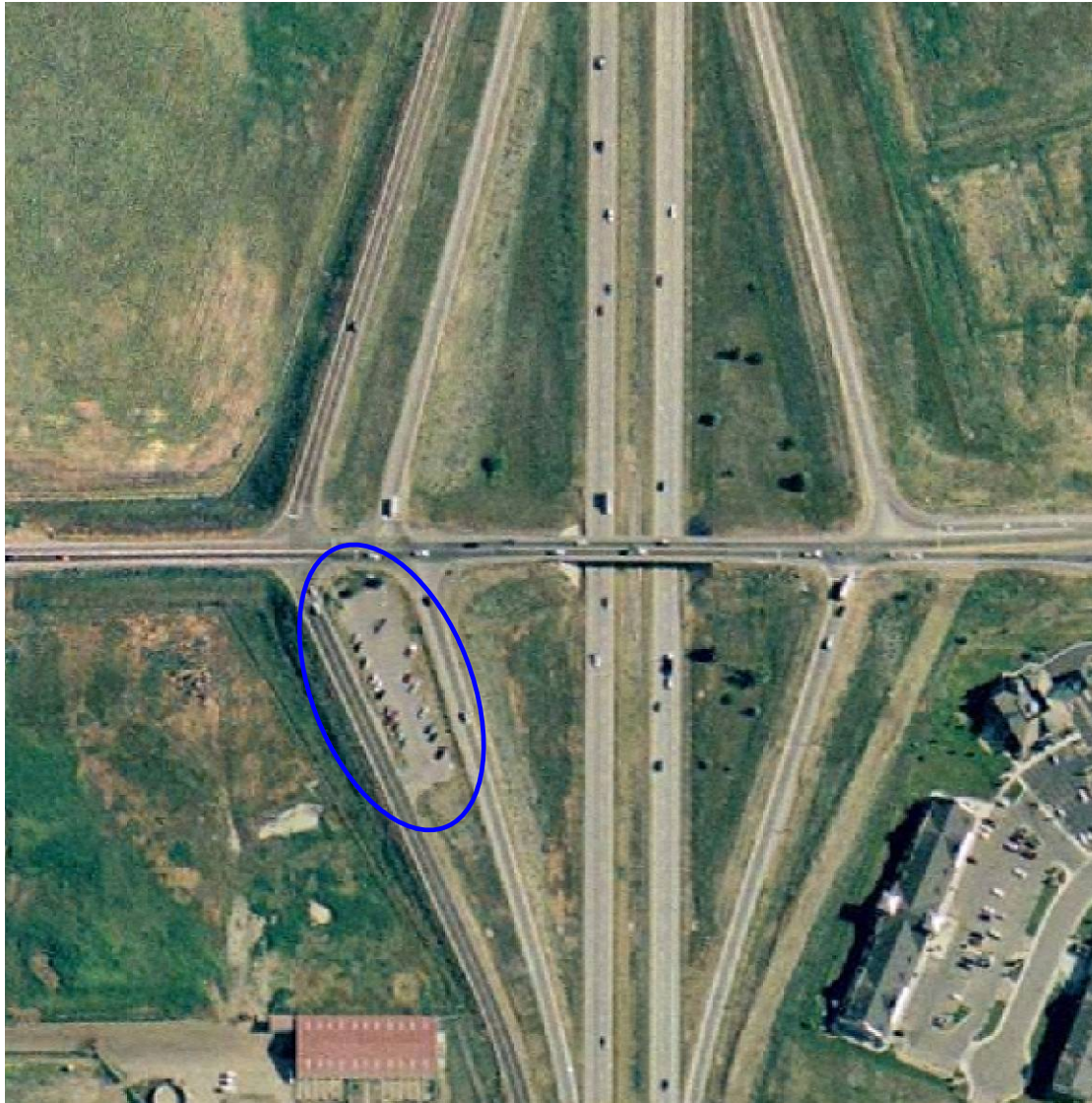


<b>Quadrant</b>	NW
<b>Ownership</b>	CDOT
<b>Lights</b>	PROVIDED
<b>Shelter</b>	NONE
<b>Landscape &amp; Trash Cans</b>	NONE
<b>Bike Racks</b>	NONE
<b>Lockers</b>	NONE
<b>Transportation Uses</b>	Carpool Lot
<b>Surface</b>	Asphalt

<b>Survey</b>	<b>Car Spaces</b>	<b>Spaces Occupied</b>	<b>Utilization %</b>
Summer 2003	116	105	91%
Spring 2004	106	82	77%
Summer 2006	108	91	84%

Source: Photos taken during spring 2004 survey

# Car Pool Lot Location: I-25 & SH-392



<b>Quadrant</b>	<b>SW</b>
<b>Ownership</b>	CDOT
<b>Lights</b>	PROVIDED
<b>Shelter</b>	NONE
<b>Landscape &amp; Trash Cans</b>	NONE
<b>Bike Racks</b>	NONE
<b>Lockers</b>	NONE
<b>Transportation Uses</b>	Carpool Lot
<b>Surface</b>	Asphalt

<b>Survey</b>	<b>Car Spaces</b>	<b>Spaces Occupied</b>	<b>Utilization %</b>
Summer 2003	36	36	100%
Spring 2004	32	36	113%
Summer 2006	38	36	95%

Source: Photos taken during spring 2004 survey



## Car Pool Lot Location: I-25 & SH-68



<b>Quadrant</b>	<b>NW</b>
<b>Ownership</b>	Fort Collins
<b>Lights</b>	PROVIDED
<b>Shelter</b>	PROVIDED
<b>Landscape &amp; Trash Cans</b>	PROVIDED
<b>Bike Racks</b>	PROVIDED
<b>Lockers</b>	PROVIDED
<b>Transportation Uses</b>	Carpool Lot & park-n-Ride
<b>Surface</b>	Asphalt

<b>Survey</b>	<b>Car Spaces</b>	<b>Spaces Occupied</b>	<b>Utilization %</b>
Summer 2003	257	90	35%
Spring 2004	248	76	31%
Summer 2006	248	175	71%

Source: Photos taken during spring 2004 survey



# Technical Memorandum - Carpool Lot Location For DEIS Purposes

**Date:** January 15, 2007  
**By:** Jessica Slaton  
**Subject:** Carpool Sites – Lot Location Strategy for DEIS

A matrix evaluation was conducted to determine the physical placement of the carpool lot at each interchange. The matrix evaluation analyzed impacts to specific resources (see Appendix A). The carpool lots were placed based upon environmental, transportation, and community considerations. An explanation of the rating system is also included in Appendix A.

A brief description of location and characteristics of each carpool lot for both Package A and Package B are listed below. The proposed carpool lot capacities are documented in the *DEIS Parking Demand Study* conducted by Carter & Burgess, November 2006.

## **PACKAGE A**

### ***SH – 1***

- Located in the SW quadrant of the interchange
- New carpool site
- 80 proposed spaces
- Approximately 36,450 SF with an approximately a 5,660 SF water quality pond

### ***SH – 14***

- Located in the NE quadrant of the interchange
- New carpool site
- 150 proposed spaces
- Approximately 56,630 SF with an approximately 11,560 SF water quality pond

### ***Prospect Road***

- Located in the NW quadrant of the interchange
- New carpool site
- 130 proposed spaces
- Approximately 67,800 SF with an approximately 11,560 SF water quality pond

### ***Harmony Road***

- Located in the NW quadrant of the interchange (use existing site with expansion)
- Existing carpool site with expansion
- 300 proposed spaces (existing site has 268 spaces, need to expand site by 32 spaces)
- Approximately 122,590 SF with an approximately 26,060 SF water quality pond

**SH – 392**

- Located in the SW quadrant of the interchange
- New carpool site
- 90 proposed spaces
- Approximately 126,270 SF with an approximately 8,060 SF water quality pond

**SH – 402**

- 2 options carried forward to DEIS
- New carpool site
- Located in the SW and SE quadrants of the interchange
- 340 proposed spaces
- Approximately 144,000 SF with an approximately 19,460 SF water quality pond

**SH – 60**

- Located in the SE quadrant of the interchange
- New carpool site
- 80 proposed spaces
- Approximately 43,650 SF with an approximately 11,560 SF water quality pond

**SH – 56**

- Located in the NW quadrant of the interchange
- New carpool site
- 30 proposed spaces
- Approximately 17,680 SF with an approximately 5,660 SF water quality pond

**SH – 66**

- Located west of the interchange in the SW quadrant
- New carpool site
- 70 proposed spaces
- Approximately 33,450 SF with an approximately 5,660 SF water quality pond

**SH – 119**

- Located in the SE quadrant of the interchange (use existing site)
- Existing carpool site
- 90 proposed spaces (existing site has 102 spaces)
- Approximately 47,750 SF, use existing water quality feature

**SH – 52**

- Located in the NW quadrant of the interchange (use existing site)
- Existing carpool site
- 80 proposed spaces (existing site has 92 spaces)
- Approximately 42,390 SF, use existing water quality feature

#### ***SH – 7***

- Located west of the interchange in the SW quadrant
- New carpool site
- 180 proposed spaces
- Approximately 72,600 SF with an approximately 11,560 SF water quality pond

#### **PACKAGE B**

#### ***SH – 1***

- Located in the SW quadrant of the interchange
- New carpool site
- 80 proposed spaces
- Approximately 36,450 SF with an approximately a 5,660 SF water quality pond

#### ***SH – 14***

- Located in the NE quadrant of the interchange
- New carpool site
- 170 proposed spaces
- Approximately 60,590 SF with an approximately 11,560 SF water quality pond

#### ***Prospect Road***

- Located in the NW quadrant of the interchange
- New carpool site
- 140 proposed spaces
- Approximately 72,250 SF with an approximately 11,560 SF water quality pond

#### ***Harmony Road***

Spaces proposed for carpool site accommodated in the BRT park-and-ride site at this location.

#### ***SH – 392***

Spaces proposed for carpool site accommodated in the BRT park-and-ride site at this location.

#### ***SH – 402***

- 2 options carried forward to DEIS
- New carpool site



- Located in the SW and SE quadrants of the interchange
- 360 proposed spaces
- Approximately 144,000 SF with an approximately 19,460 SF water quality pond

**SH – 60**

- Located in the SE quadrant of the interchange
- New carpool site
- 80 proposed spaces
- Approximately 43,650 SF with an approximately 11,560 SF water quality pond

**SH – 56**

- Located in the NW quadrant of the interchange
- New carpool site
- 40 proposed spaces
- Approximately 15,980 SF with an approximately 5,660 SF water quality pond

**SH – 66**

- Located west of the interchange in the SW quadrant
- New carpool site
- 70 proposed spaces
- Approximately 33,450 SF with an approximately 5,660 SF water quality pond

**SH – 119**

Spaces proposed for carpool site accommodated in the BRT park-and-ride site at this location.

**SH – 52**

Spaces proposed for carpool site accommodated in the BRT park-and-ride site at this location.

**SH – 7**

Spaces proposed for carpool site accommodated in the BRT park-and-ride site at this location.

**Additional Information**

- See Parking Results Study
- Designs for each facility have been included in the I-25 DEIS design plans

Technical Memorandum -  
Carpool Lot Location  
For DEIS Purposes

---



---

## Appendix

## Station Site Evaluation

### Parks

- 0 No parks located on site
- Parks are located on site

### Wetland

- + The carpool / station site has no wetland impacts
- 0 20% of the carpool / station site may be impacted by wetlands
- >20% of the carpool / station site may be impacted by wetlands

### Environmental Justice

- + The carpool / station site provides access to 10+ EJ homes
- 0 The carpool / station site provides access to 0-9 EJ homes

### Historic Property

- 0 There are no historical properties on the carpool / station site
- Historical properties may impact more than 20% of the carpool / station site

### Hazmat

- + The carpool / station site has no hazmat impacts
- 0 The carpool / station site has potential **minor** hazmat impacts
- The carpool / station site has potential **major** hazmat impacts

### Threatened/ Endangered Species

- + The carpool / station site has no threatened/endangered species
- 0 The carpool / station site may impact threatened/endangered species considered not high quality
- The carpool / station site may impact threatened/endangered species considered high quality

### Existing or Committed Infrastructure

- + There is an existing or planned park and ride
- 0 There is no existing park and ride

### Site Access

- + Existing access to carpool / station site
- 0 Infrastructure is required to serve carpool / station site
- Infrastructure and acquisition of more than one property are required

### Traffic Impact

- + Carpool / station site is located at interchange
- 0 Carpool / station site is located on an arterial or frontage road
- Carpool / station site is located on a local road

### Access to Bus Routes



- + Carpool / station site is directly served by existing bus service
- 0 Carpool / station site is served by existing bus service
- There is no bus service

#### **Pedestrian and Bicycle Connectivity**

- + Carpool / station site is located within 2 blocks of existing or proposed trail
- 0 Carpool / station site is located further than 2 blocks from existing or proposed trail

#### **Zoning**

- + Zoning is commercial/business
- 0 Zoning is industrial
- Zoning is residential

#### **Adjacent Land Use**

- + Adjacent land use is complimentary to a carpool / station- commercial business, residential
- 0 Adjacent land use does not compliment a carpool / station- industrial

#### **Compatible with Plans**

- + Plans (municipal plan or vocalized plan or developer) are in place that identify a transit / carpool station
- 0 Plans (municipal plan or vocalized plan or developer) do not conflict with proposed carpool / station site
- Plans (municipal plan or vocalized plan or developer) conflict with proposed carpool / station site

#### **Access to destinations/ origins**

- + Carpool / station site is located near a destination/ origin. A destination/origin is classified as a recreational facility, shopping mall, municipal buildings, recreation zone and downtown.
- 0 Carpool / station site does not provide access to a destination/ origin

#### **Proximity Residential**

- + Carpool / station site is located within 2 blocks of residential housing
- 0 Carpool / station site is located further than 2 blocks from a carpool / station site

#### **Number of Parcels Impacted**

- + 1-4 parcels are impacted for carpool / station site
- 0 5-10 parcels are impacted for carpool / station site
- 10+ parcels are impacted for carpool / station site

#### **Parcel Availability**

- + Parcel is not developed or planned for development
- 0 Parcel is built on
- Parcel is planned to be built on

#### **Visual Impact**

- + Carpool / station site does not have visual impacts
- 0 Carpool / station site has minor visual impacts
- Carpool / station site has major visual impacts

#### **Expansion Opportunity**

- + The carpool / station site is large enough to allow for expansion or there are undeveloped adjacent sites
- 0 Carpool / station site is large enough to accommodate additional spaces but is landlocked
- The carpool / station site is only large enough to serve the required program and the station site is landlocked

#### **Stakeholder Support**

- + Support for a carpool / station site has been identified through the Transit Station Working Group
- 0 No supportive comments have been identified

#### **Joint Development Opportunities**

- + Carpool / station site is located near a compatible land use with potential for shared parking or enhanced retail
- 0 Existing land use is not compatible with carpool / station site

**DEIS Alternatives - Carpool Site Evaluation on I-25\***

	Parks	Zoning	Existing or Committed Infrastructure	Access to Bus Routes	Traffic Impact	Adjacent Land Use	Compatible with Plans	Access to Destination/Origins	Proximity to Residential	Pedestrian and Bicycle Connectivity	Wetlands	EJ	Historic Property	Hazmat	Threatened/Endangered Species	Parcels Impacted	Visual Impact	Expansion	Joint Development Opportunity	Traffic Movements	Engineering	Comments	Site Recommendations
<b>SH 1 and I-25</b>																							
SH 1 and I-25 - NW quadrant	0	+	0	n/a	0	+	n/a	0	+	0	+	0	n/a	+	+	n/a	n/a	-	0	0	-		8
SH 1 and I-25 - NE quadrant	0	-	0	n/a	0	+	n/a	0	+	0	+	0	n/a	+	+	n/a	n/a	0	0	-	+		8
SH 1 and I-25 - SW quadrant	0	+	0	n/a	0	+	n/a	0	+	0	+	0	n/a	+	+	n/a	n/a	+	0	-	+		14
SH 1 and I-25 - SE quadrant	0	-	0	n/a	0	+	n/a	0	+	0	+	0	n/a	+	+	n/a	n/a	+	0	0	+		12
<b>SH 14 and I-25</b>																							
SH 14 and I-25 - NW quadrant	0	+	0	n/a	0	+	n/a	0	0	0	+	0	n/a	+	0	n/a	n/a	+	+	0	0		12
SH 14 and I-25 - NE quadrant	0	+	0	n/a	0	+	n/a	0	0	0	+	0	n/a	+	0	n/a	n/a	+	+	-	0		12
SH 14 and I-25 - SW quadrant	0	+	0	n/a	-	+	n/a	0	0	0	+	0	n/a	+	0	n/a	n/a	+	+	-	0		8
SH 14 and I-25 - SE quadrant	0	+	0	n/a	-	+	n/a	0	0	0	+	0	n/a	+	0	n/a	n/a	-	0	0	-		2
<b>Prospect and I-25</b>																							
Prospect and I-25 - NW quadrant	0	+	0	n/a	0	+	n/a	0	+	0	+	0	n/a	+	0	n/a	n/a	+	+	0	0		14
Prospect and I-25 - NE quadrant	0	+	0	n/a	0	+	n/a	0	+	0	+	0	n/a	+	0	n/a	n/a	+	+	-	0		12
Prospect and I-25 - SW quadrant	0	+	0	n/a	0	+	n/a	0	+	0	+	0	n/a	+	0	n/a	n/a	+	+	-	0		12
Prospect and I-25 - SE quadrant	0	+	0	n/a	0	0	n/a	0	+	0	+	0	n/a	+	0	n/a	n/a	+	+	0	0		12
<b>Harmony Road and I-25</b>																							
I-25 and Harmony Rd - NW quadrant	0	+	+	-	+	0	0	0	0	+	+	0	0	0	+	+	0	+	0		+		18
I-25 and Harmony Rd - NE quadrant	0	+	0	-	+	+	0	0	0	+	+	0	0	-	+	+	0	+	0		+	Hazmat	16
I-25 and Harmony Rd - SW quadrant	-	-	0	-	+	+	+	0	0	+	0	0	0	+	+	+	0	+	0		+	Possible CDOT agreement with FC	14
I-25 and Harmony Rd - SE quadrant	-	-	0	-	+	+	+	0	0	+	-	0	0	+	0	+	0	+	0		+	Possible CDOT agreement with FC	8
<b>Windsor- SH 392 and I-25</b>																							
I-25 and SH 392 -A	0	+	0	-	0	0	0	+	0	+	+	0	0	+	-	+	+	+	0		+	Fatal Flaw T/E	FF
I-25 and SH 392 -B	0	+	0	-	0	0	0	+	0	+	+	0	0	+	-	+	+	+	0		+	Fatal Flaw T/E	FF
I-25 and SH 392 -C	0	+	0	-	0	0	0	+	0	+	+	0	0	-	-	+	+	-	0		-	Hazmat/ Fatal Flaw T/E	FF
I-25 and SH 392 -D	0	+	0	-	+	0	0	+	0	+	+	0	0	-	-	+	+	-	0		0	Hazmat/ Fatal Flaw T/E	FF
I-25 and SH 392 -E	0	0	0	-	+	0	0	0	0	+	-	0	0	+	-	+	+	+	0		0	No Wetlands/T/E impacts with carpool	6
I-25 and SH 392 -F	0	0	0	-	0	0	0	0	0	0	+	0	0	+	0	+	+	+	0		-	Can be located to mitigate impacts to Bald Eagle	6
I-25 and SH 392 -G	0	0	0	-	0	0	0	0	0	0	+	0	0	+	+	+	+	+	0		+		12
I-25 and SH 392 -H	0	+	0	-	-	0	0	0	0	0	+	0	0	+	0	+	+	+	0		+	Can be located to mitigate impacts to Bald Eagle	8
I-25 and SH 392 -I	0	+	0	-	-	0	0	0	0	0	0	0	0	+	0	+	+	+	0		-	Can be located to mitigate impacts to Bald Eagle	0
I-25 and SH 392 -J	0	+	0	-	+	0	0	0	0	0	0	0	0	0	0	0	+	0	0		0	Can be loc. to mitigate impacts to Bald Eagle 2% grade	4

	Parks	Zoning	Existing or Committed Infrastructure	Access to Bus Routes	Traffic Impact	Adjacent Land Use	Compatible with Plans	Access to Destination/Origins	Proximity to Residential	Pedestrian and Bicycle Connectivity	Wetlands	EJ	Historic Property	Hazmat	Threatened/Endangered Species	Parcels Impacted	Visual Impact	Expansion	Joint Development Opportunity	Traffic Movements	Engineering	Comments	Site Recommendations
I-25 and SH 392 -K	0	+	0	-	+	+	0	0	+	0	+	0	0	+	+	-	+	0	0		0	Location developed	12
I-25 and SH 392 -L	0	0	0	-	0	+	0	0	+	0	+	0	0	+	0	+	+	0	0		-	Can be located to mitigate impacts to Bald Eagle	8
I-25 and SH 392 -M	0	0	0	-	0	+	0	0	+	0	+	0	0	+	0	+	+	+	0		+	Can be located to mitigate impacts to Bald Eagle	14
I-25 and SH 392 -N	0	0	0	-	0	+	0	0	+	0	+	0	0	0	+	+	+	+	0		+	Property owner does not want	14
<b>SH 402 and I-25</b>																							
I-25 and SH 402 - NW quadrant	0	-	0	n/a	0	+	n/a	0	+	0	+	0	n/a	+	0	n/a	n/a	+	+	0	-		8
I-25 and SH 402 - NE quadrant	0	+	0	n/a	0	+	n/a	0	0	0	+	0	n/a	+	0	n/a	n/a	+	+	-	0		10
I-25 and SH 402 - SW quadrant	0	+	0	n/a	+	+	n/a	0	+	0	+	0	n/a	+	0	n/a	n/a	+	+	-	0		14
I-25 and SH 402 - SE quadrant	0	+	0	n/a	0	+	n/a	0	0	0	+	0	n/a	+	0	n/a	n/a	+	+	0	0		12
<b>State Highway 56/60 and I-25</b>																							
I-25 and SH 56/60 -A	0	0	0	-	+	+	0	0	0	0	+	0	0	+	+	+	-	+	+		0		14
I-25 and SH 56/60 -B	0	0	0	-	-	+	0	0	0	0	+	0	0	+	+	+	-	+	0		-		0
I-25 and SH 56/60 -C	0	0	0	-	-	0	0	0	0	0	+	0	0	+	+	+	-	+	0		0	Over 2% grade	0
I-25 and SH 56/60 -D	0	0	+	-	-	0	0	0	0	0	+	0	0	+	+	+	-	+	0		+	Access to ped circ/ compromise of comm.	8
I-25 and SH 56/60 -E	0	0	+	-	-	0	0	0	0	0	+	0	0	+	+	+	-	+	0		0	Access ped circ over 2%	6
I-25 and SH 56/60 -F	0	0	0	-	+	0	0	0	0	0	+	0	0	+	+	+	-	+	0		0		10
I-25 and SH 56/60 -G	0	0	0	-	0	0	0	0	0	0	-	0	0	+	+	+	-	+	0		-	Wetlands	-4
I-25 and SH 56/60 -H	0	0	0	-	0	0	0	0	0	0	-	0	0	+	+	+	-	+	0		0	Wetlands/ Over 2% grade	-2
I-25 and SH56/ 60 -I	0	0	+	-	0	0	0	0	0	0	-	0	0	+	+	+	-	+	0		+	Wetlands/ Access to ped circulation	6
I-25 and SH 56/60 -J	0	0	+	-	0	0	0	0	0	0	-	0	0	+	+	+	-	+	0		0	Wetlands/ Access ped circ over 2%	4
I-25 and SH 56/60 -K	0	0	0	-	-	0	0	0	0	0	-	0	0	+	+	+	-	+	0		+	Wetlands	-2
I-25 and SH 56/60 -L	0	0	0	-	-	+	+	0	0	0	-	0	0	+	+	+	-	+	0		-	Berthoud support/ Wetlands	0
I-25 and SH 56/60 -M	0	0	0	-	+	+	+	0	0	0	-	0	0	+	+	+	-	+	+		0	Berthoud and Johnstown support/ Wetlands	12
I-25 and SH 56/60 -N	0	0	0	-	0	0	0	0	0	0	-	0	0	+	+	+	-	+	0		+	Wetlands	0
I-25 and SH 56/60 -O	0	0	0	-	0	0	0	0	0	0	-	0	0	+	+	+	-	+	0		-	Wetlands	-2
I-25 and SH 56/60 -P	0	0	0	-	+	0	0	0	0	0	-	0	0	+	+	+	-	+	0		0	Wetlands	4
<b>SH 66 and I-25</b>																							
I-25 and SH 66 - NW quadrant	0	-	0	n/a	+	+	n/a	0	+	+	+	0	n/a	0	+	n/a	n/a	+	+	0	-		12
I-25 and SH 66 - NE quadrant	0	0	0	n/a	-	+	n/a	0	0	+	+	0	n/a	+	+	n/a	n/a	-	-	-	-		0
I-25 and SH 66 - SW quadrant	0	+	0	n/a	-	+	n/a	0	+	+	+	0	n/a	+	+	n/a	n/a	+	+	-	+		16
I-25 and SH 66 - SE quadrant	0	+	0	n/a	-	+	n/a	0	0	+	+	0	n/a	+	+	n/a	n/a	+	+	0	+		16



	Parks	Zoning	Existing or Committed Infrastructure	Access to Bus Routes	Traffic Impact	Adjacent Land Use	Compatible with Plans	Access to Destination/Origins	Proximity to Residential	Pedestrian and Bicycle Connectivity	Wetlands	EJ	Historic Property	Hazmat	Threatened/Endangered Species	Parcels Impacted	Visual Impact	Expansion	Joint Development Opportunity	Traffic Movements	Engineering	Comments	Site Recommendations
<b>State Highway 119 and I-25</b>																							
I-25 and SH 119 -A	-	+	0	0	+	0	0	0	0	0	0	0	0	-	+	0	+	0	0		0	Hazmat	4
I-25 and SH 119 -B	0	-	0	0	+	0	0	0	0	0	+	0	0	-	+	-	+	0	0		0	Hazmat	2
I-25 and SH 119 -C	0	-	0	0	-	0	0	0	0	0	+	0	0	-	+	-	+	0	0		-	Hazmat	-10
I-25 and SH 119 -D	0	0	0	0	-	0	0	0	0	0	0	0	0	+	+	+	+	+	0		+		6
I-25 and SH 119 -E	0	+	0	0	0	+	0	+	0	0	0	0	0	+	+	0	+	+	0		-	Too close to intersection	14
I-25 and SH 119 -F	0	+	0	0	0	0	0	0	0	0	0	0	0	+	+	0	+	+	0		-	Too close to intersection	10
I-25 and SH 119 -G	0	+	0	0	+	0	0	0	0	0	+	0	0	-	+	0	+	0	0		0	Hazmat/ Del Camino Business Park	8
I-25 and SH 119 -H	0	+	+	0	+	0	+	0	0	0	+	0	0	+	+	+	+	0	0		0		18
I-25 and SH 119 -I	0	0	0	0	0	0	0	0	0	0	+	0	0	+	+	+	+	+	0		-	American Furniture Warehouse	8
I-25 and SH 119 -J	0	0	0	0	0	0	0	0	0	0	+	0	0	+	+	+	+	+	0		+	Potentially conflicts with AFW	14
<b>Frederick/Dacono State Highway 52 and I-25</b>																							
I-25 and SH 52 -A	0	-	0	0	0	+	0	0	+	0	+	0	0	+	+	+	+	+	0		+		16
I-25 and SH 52 -B	0	-	0	0	0	0	-	0	0	0	+	0	0	+	+	+	+	+	0		-	Platted for Wyndham Hills	6
I-25 and SH 52 -C	0	+	0	+	+	0	0	0	+	0	+	0	0	+	+	+	+	+	0		-	FF-SH 52 not being rebuilt	FF
I-25 and SH 52 -D	0	+	+	+	+	0	0	0	+	0	+	0	0	+	+	+	+	0	0		-	FF- SH 52 not being rebuilt	FF
I-25 and SH 52 -E	0	+	0	+	+	0	0	0	0	0	+	0	0	+	+	-	+	+	0		0	FF-SH 52 not being rebuilt	FF
I-25 and SH 52 -F	0	+	0	0	-	0	0	0	0	0	+	0	0	0	+	-	+	+	0		-		0
I-25 and SH 52 -G	0	+	0	0	-	0	0	0	0	0	+	0	0	+	+	+	+	+	0		+		10
I-25 and SH 52 -H	0	+	0	0	0	0	0	0	0	0	+	0	0	+	+	+	+	+	0		0		8
I-25 and SH 52 -I	0	+	0	0	0	0	0	0	0	0	+	0	0	+	+	+	+	+	0		-		10
I-25 and SH 52 -J	0	+	0	0	0	0	0	0	0	0	+	0	0	+	+	+	+	+	0		-		6
I-25 and SH 52 -K	0	+	0	0	+	0	0	0	0	0	0	0	0	+	+	+	+	0	0		0	FF- SH 52 not being rebuilt	FF
I-25 and SH 52 -L	0	+	0	0	+	0	0	0	0	0	0	0	0	+	+	0	+	0	0		0	FF- SH 52 not being rebuilt	FF
I-25 and SH 52 -M	0	0	0	0	0	+	0	0	+	0	0	0	0	+	-	+	+	+	0		-	Fatal Flaw T/E	FF
I-25 and SH 52 -N	0	-	0	0	0	0	-	0	0	0	+	0	0	+	-	+	+	+	0		+	FF T/E Platted for Silver Peaks	FF
<b>State Highway 7 and I-25</b>																							
I-25 and SH 7 -A	0	+	0	0	0	0	0	0	0	0	+	0	0	+	+	+	+	+	0		+	Issue with ditch	16
I-25 and SH 7 -B	0	+	0	0	+	0	0	0	0	0	+	0	0	+	0	+	+	+	0		0	Issues with ditch	14

	Parks	Zoning	Existing or Committed Infrastructure	Access to Bus Routes	Traffic Impact	Adjacent Land Use	Compatible with Plans	Access to Destination/Origins	Proximity to Residential	Pedestrian and Bicycle Connectivity	Wetlands	EJ	Historic Property	Hazmat	Threatened/Endangered Species	Parcels Impacted	Visual Impact	Expansion	Joint Development Opportunity	Traffic Movements	Engineering	Comments	Site Recommendations
I-25 and SH 7 -C	0	+	0	0	+	0	+	0	0	0	+	0	0	+	+	+	+	+	0		0	Broomfield TOD site- concerned with walk dist.	20
I-25 and SH 7 -D	0	+	0	0	-	0	0	0	0	0	+	0	0	+	+	+	+	+	0		-		8
I-25 and SH 7 -E	0	+	0	0	0	0	0	0	0	0	+	0	0	+	+	+	+	+	0		+		16
I-25 and SH 7 -F	0	+	0	0	+	0	0	0	0	0	+	0	0	+	+	+	+	+	0		0	Issue with ditch and reconstruction of interchange	18
I-25 and SH 7 -G	0	+	0	0	+	0	-	0	0	0	+	0	0	+	+	+	+	0	+		0	<b>Fatal Flaw</b> Larkridge being built	FF
I-25 and SH 7 -H	0	+	0	0	-	0	-	0	0	0	+	0	0	+	+	+	+	0	+		-	<b>Fatal Flaw</b> Larkridge being built	FF
I-25 and SH 7 -I	0	+	0	0	-	0	-	0	0	0	+	0	0	+	+	+	+	0	+		+	<b>Fatal Flaw</b> Larkridge being built	FF
I-25 and SH 7 -J	0	+	0	0	-	+	0	+	0	0	+	0	0	+	+	+	+	0	+		+	<b>FF</b> Conflict with E-470 Engineering	FF

\*Please reference Station Alternatives maps to identify all areas called out as a letter



information. cooperation. transportation.

## DEIS Parking Demand

Prepared by:

**Carter**  **Burgess**

707 17<sup>th</sup> Street, Suite 2300  
Denver, CO 80202

November 2006

## Table of Contents

<b>Carpool Lot Parking Needs Analysis .....</b>	<b>1</b>
Introduction .....	1
Existing Conditions .....	2
Carpool Parking Scenarios.....	3
Baseline for New Carpool Lots .....	3
Parking Lot Grouping Methodology:.....	5
Parking Demand Based on Traffic Demand.....	5
HOV Lane User Adjustment.....	7
Summary .....	8
<b>Transit Parking Needs Analysis.....</b>	<b>10</b>
Step 1. Number of Spaces for Each Corridor Route.....	10
Step 2. Distribution Among Corridor Stations .....	12
Package A Commuter Rail.....	13
Package A Commuter Bus.....	14
Package B BRT.....	14
<b>Summary of Parking Space, Demand Projections.....</b>	<b>16</b>
Carpool Lots .....	16
Transit park-and-rides.....	17
Combined Results.....	19

## List of Figures

Figure 1: Carpool Lot Grouping .....	4
Figure 2: Carpool Growth Percentages .....	6

## List of Tables

Table 1: Carpool Lot Field Observations.....	2
Table 2: Change in HOV Traffic along I-25.....	7
Table 3: Carpool Lot Capacity Projection Results .....	8
Table 4: Total Corridor Parking Spaces and Ridership .....	11
Table 5: Package A Commuter Rail on BNSF .....	13
Table 6: Package A Commuter Bus on US-85.....	14
Table 7: Package B Bus-Rapid-Transit .....	15
Table 8: Carpool Lot Parking Spaces by Interchange .....	16
Table 9: Package A Commuter Rail Park-and-ride Parking Spaces by Station .....	17
Table 10: Package A Commuter Bus Park-and-ride Parking Spaces by Station.....	18
Table 11: Package B Bus Rapid Transit Park-and-ride Parking Spaces by Station .....	18
Table 12: Package B BRT and Carpool Lot Parking Spaces by Station and/or Interchange.....	19



## CARPOOL LOT PARKING NEEDS ANALYSIS

### Introduction

This documents the forecasting process used to estimate future parking demand at each of the proposed carpool lots identified by the North I-25 EIS study. *Note: Parking estimation for the transit park-n-ride facilities is an independent process. Though carpool and transit parking uses may occupy the same space, the travel markets served are different; therefore, the analysis was performed separately.*

Carpool lots provide added convenience for travelers who wish to share rides with other travelers in the region. Carpooling increases efficiency of the roadway system by increasing the number of people per vehicle and reducing the number of vehicles. Therefore, providing convenient and sufficient carpool parking is part of the overall congestion management strategies for this project. The congestion management plan included a screening process. Criteria for this screening includes<sup>1</sup>:

- ▶ Potential for undeveloped land;
- ▶ Regional connectivity (connections to communities either on the east or west sides of the corridor)
- ▶ Traffic access (access points from frontage roads)
- ▶ Potential for environmental impact
- ▶ Practicability, as defined by the cost effectiveness (demand versus the construction cost)

The results of the screening process left the following carpool lots as part of the North I-25 EIS project.

- ▶ SH-7
- ▶ SH-52
- ▶ SH-119
- ▶ SH-66
- ▶ SH-56
- ▶ SH-60
- ▶ SH-402

---

<sup>1</sup> Refer to the *Carpool Lot Location Technical Memorandum* for details.

- ▶ SH-392
- ▶ SH-68
- ▶ Prospect
- ▶ SH-14
- ▶ SH-1

## Existing Conditions

An inventory of the existing carpool lot parking utilization was performed by the project team on August 29, 2006<sup>2</sup>. These results were compared against previous inventories performed over the previous two years. From these observations, the number of utilized spaces and the parking lot supply were determined. **Table 1** shows a summary of this information.

Table 1:  
Carpool Lot Field Observations

Parking Lot Location	Existing Conditions		
	# of Spaces Available	# of Spaces Utilized	% Utilized
<b>SH 7 East</b>	<b>30</b>	<b>16</b>	<b>53%</b>
<b>SH 7 West</b>	<b>75</b>	<b>19</b>	<b>25%</b>
SH 52	94	36	38%
SH 119	102	36	35%
SH 66	53	27	51%
SH 56	48	14	29%
SH 60	32	30	94%
SH 402	71	52	73%
US 34	108	105	91%
SH 392	38	36	95%
Harmony	248	175	71%
<b>Total</b>	<b>899</b>	<b>546</b>	<b>61%</b>
Source: Field counts performed 8/29/2006			
<b>Bold Italic</b> is data based on previous counts performed 4/22/2004			

<sup>2</sup> See Carpool Summary Report for detailed information related to parking survey. October 2006.

## Carpool Parking Scenarios

Carpool parking demand at each of the carpool parking lots was forecasted under the following scenarios:

- 1) 2030 No-Action<sup>3</sup>
- 2) 2030 Package A (6 GP + WCR + CB85)<sup>4</sup>
- 3) 2030 Package B (Express Lanes + BRT)<sup>5</sup>

Travel behavior and carpool characteristics are expected to differ with each of the above mentioned scenarios. The following forecasting technique accounts for this expected change in carpool demand.

## Baseline for New Carpool Lots

For those proposed carpool parking locations that do not have current parking facilities, a baseline was established. This was established by spreading the demand amongst neighboring facilities. For example, the current carpool lot users that use the existing Harmony lot were grouped with lots at SH-1, CR-50, SH-14, and Prospect. Refer to **Figure 1**, for grouping and total parking demand within each of the groups.

The group demand was then spread amongst the individual lots based on the adjacent interchange traffic volumes. For example, the existing daily interchange volume for the Harmony Group is as follows:

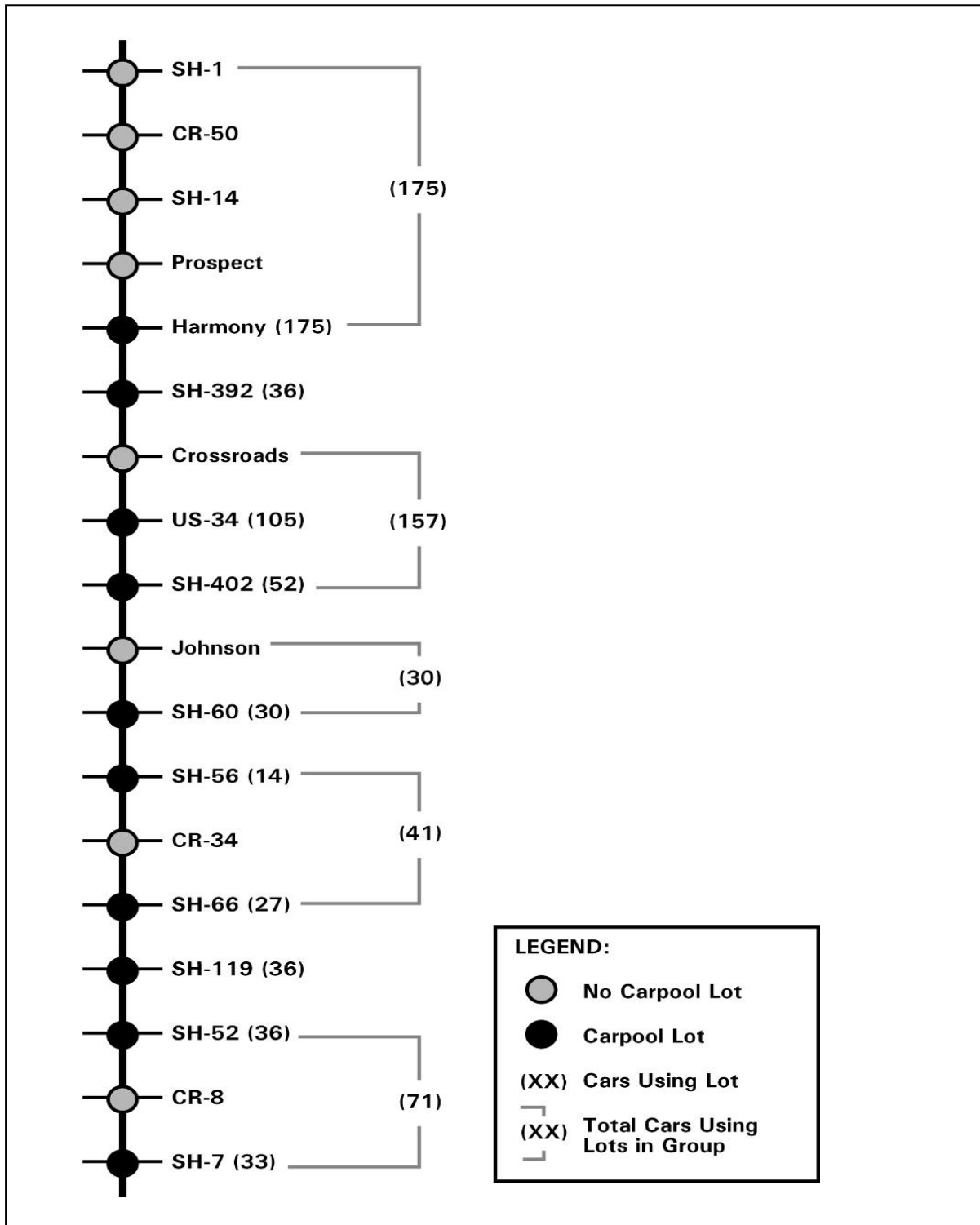
- ▶ Harmony: 32,776 vehicles per day or 45.6%
- ▶ Prospect: 14,007 vehicles per day or 19.5%
- ▶ SH-14: 16,625 vehicles per day or 23.1%
- ▶ SH-1: 8,494 vehicles per day or 11.8%

<sup>3</sup> 2030 No-Action Model Run E July 25 2006

<sup>4</sup> 2030 Package A Model Run E August 18 2006

<sup>5</sup> 2030 Package B Toll Model Run H August 25 2006





**LEGEND:**

- No Carpool Lot
- Carpool Lot
- (XX) Cars Using Lot
- ┌ Total Cars Using  
└ Lots in Group

Figure 1:  
Carpool Lot Grouping

The above traffic volumes utilized 2001 raw daily traffic projections from the travel model. To determine growth rates, raw future 2030 daily volumes are used.

Using the grouping demand of 175, this equates to (rounded to whole stall):

- ▶ Harmony: 80 existing carpoolers or 45.6%
- ▶ Prospect: 35 existing carpoolers or 19.5%
- ▶ SH-14: 41 existing carpoolers or 23.1%
- ▶ SH-1: 21 existing carpoolers or 11.8%

These baseline numbers were then used as the baseline to project from.

### Parking Lot Grouping Methodology:

Grouping of the lots was based on geographic proximity and perceived shared travel markets. Aerials, knowledge of the corridor, and available lands for development were all considered during the grouping process.

### Parking Demand Based on Traffic Demand

The first step in the forecasting process is to correlate parking trends with trends in traffic demand. For the purposes of this analysis, the correlation is based on the year 2030 No Action Alternative. The No Action Alternative accounts for regional land use development for each of the future scenarios.

Currently along the I-25 corridor some of the interchanges are approaching capacity and others have excess capacity. To account for this, the same interchange grouping used above was used to better reflect growth patterns. This 'averages' high growth at one interchange with that of the adjacent interchange, which might be much lower. Refer to **Figure 2** for growth rates.

This method accounts for travel growth near each of the carpool parking locations; however, additional analysis is needed to accurately account for the affect of High Occupancy Vehicle (HOV) lanes in some of the future build scenarios.

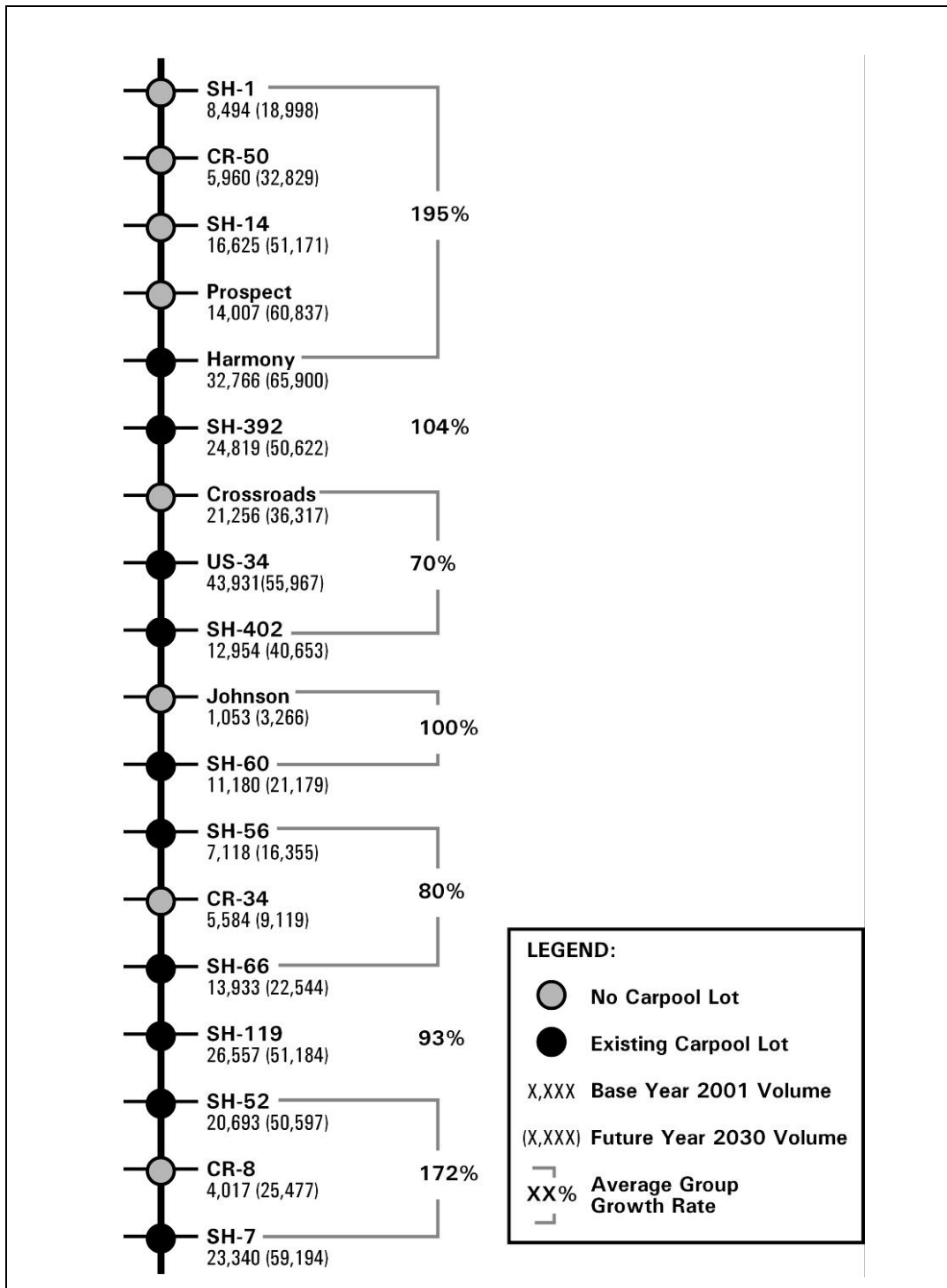


Figure 2:  
Carpool Growth Percentages



## HOV Lane User Adjustment

To account for changes in HOV usage under each of the build scenarios, two model runs<sup>6</sup> that isolated the amount of HOV traffic on general purpose lanes were compared. The 2030 No-Action and 2030 Non-HOV Alternative model runs included a representative segment of I-25 south of SH 52 that tracked HOV trips on I-25.

These HOV lane use volumes were used to calculate the affect of capacity increases on carpooling – and therefore carpool lot utilization. **Table 2** shows the volumes on the HOV links for each test run<sup>7</sup>. In addition to the No-Action Alternative, the test runs include the Non-HOV *Alternative* to identify the effect of capacity increases in the form of general purpose lanes, and the *HOV Alternative* to identify the effect of HOV lanes.

**Table 2:**  
Change in HOV Traffic along I-25

		Daily Volume	
		HOV	GP
No-Action (P 20)	Southbound	HOV	3,800
		GP	66,300
	Northbound	HOV	3,800
		GP	63,400
Non-HOV Alternative	Southbound	HOV	4,200
		GP	72,200
	Northbound	HOV	4,200
		GP	69,200
	<b>HOV Change from No-Action</b>		<b>9.4%</b>
	<b>Total Change from No-Action</b>		<b>8.9%</b>
HOV Alternative	Southbound	HOV	4,500
		GP	68,200
	Northbound	HOV	4,500
		GP	65,700
	<b>HOV Change from No-Action</b>		<b>17.6%</b>
	<b>Total Change from No-Action</b>		<b>4.0%</b>

<sup>6</sup> Package 20 (Level 3 2030 No-Action), Package 19 (Level 3 2030 Package 1), both with addition of short HOV only segment to isolate HOV traffic south of SH 52.

<sup>7</sup> Test runs were performed during the Level 3 screening process.

## Summary

By combining the results from the interchange growth and HOV analyses, increases in demographic growth (traffic growth) and the affect of adding transportation facilities that encourage carpooling are realized. This cumulative analysis is summarized by the equation below:

$$FPD = ( BU * ( 1 + IG ) * ( 1 + HOV ) ) * ( 1 + CC )$$

Where:

- FPD – Future Parking Demand
- BU – Base Utilization
- IG – Interchange Growth Percentage
- HOV – HOV Lane Usage Adjustment
- CC – Capacity Contingency of 15%

A capacity contingency is provided to account for expected variations in parking demand during special events or peak periods. It also provides additional spaces to accommodate efficient parking turn-over.

The results of the recommended method are shown in **Table 3**.

**Table 3:  
Carpool Lot Capacity Projection Results**

Parking Lot Location	2030 No-Action		Package A		Package B	
	Estimated Demand	Projected Spaces*	Estimated Demand	Projected Spaces*	Estimated Demand	Projected Spaces*
SH 7 East	69	80	75	87	81	94
SH 7 West	69	80	75	87	81	94
SH 52	60	69	66	76	71	82
SH 119	70	81	76	88	82	95
SH 66	51	59	56	65	60	69
SH 56	26	60	28	33	30	35
SH 60	60	69	66	76	71	82
SH 402	268	309	293	337	315	363
SH 392	74	86	81	94	87	101
Harmony	237	273	259	298	278	320
Prospect	104	120	113	130	122	141

Table 3 (continued):  
Carpool Lot Capacity Projection Results

Parking Lot Location	2030 No-Action		Package A		Package B	
	Estimated Demand	Projected Spaces*	Estimated Demand	Projected Spaces*	Estimated Demand	Projected Spaces*
SH-14	121	140	133	153	143	165
SH-1	62	72	68	79	73	84
<b>Total</b>	<b>1,271</b>	<b>1,468</b>	<b>1,389</b>	<b>1,603</b>	<b>1,494</b>	<b>1,725</b>
<p>*Added a 15% contingency capacity  ** Used package A interchange forecast (instead of No Action) to account for planning improvements.</p>						

Final recommendations for lot sizes will be combined with needs for park-n-rides to support proposed transit stations. Further evaluation during design may result in lot sizes being adjusted to fit terrain or being re-allocated to reduce impacts.



## TRANSIT PARKING NEEDS ANALYSIS

The following is an outline of the procedure used to estimate needed parking spaces at proposed transit stations for the North I-25 DEIS Package A and Package B transit alternatives. Note, the estimated number of needed parking spaces at carpool lots along I-25 is estimated separately, and a memorandum that combines the results will be prepared.

The North I-25 travel model does not directly produce transit parking spaces as an output. The estimation procedure uses travel model output data together with observed field data to calculate a needed number of park-n-Ride spaces. The results of the procedure are presented and a comparison to other corridors in Denver and other cities is also provided.

### Step 1. Number of Spaces for Each Corridor Route

First, the total number of spaces needed for each route was estimated.

- ▶ Summed the 2030 regional travel model drive person-trips to/from corridor park-n-Rides for each major transit route – Commuter Rail on the BNSF line and Commuter Bus on US-85 in Package A and Bus-Rapid-Transit (BRT) on Harmony Road, US-34, and I-25 in Package B.<sup>8</sup> Additional demand is likely to occur at each station for other transit activity; however, for the North I-25 EIS, it has been determined that parking will only be provided for the major transit routes.
- ▶ Noted that the DEIS travel models result in the following percentages of drive-access trips for each corridor:
  - Package A Commuter Rail: 45 percent
    - Similar commuter rail systems have been observed to attract higher drive access percentages of between 53 and 84 percent<sup>9</sup>; as a conservative measure, therefore, the drive access percentage for the North I-25 Commuter Rail system was adjusted to **55 percent**.<sup>10</sup>
  - Package A Commuter Bus: **75 percent**
  - Package B BRT: 69 percent

<sup>8</sup> North I-25 EIS Travel Demand Model Runs Package A and Package B, September 2006

<sup>9</sup> Passenger Origin Mode Choice Summary Supplemental Information for Existing Commuter Rail System, Carter & Burgess, January 2006

<sup>10</sup> The North I-25 travel model is calibrated to current RTD conditions. The rail mode is therefore based on observed patterns for Light Rail. Since commuter rail attracts fewer local trips, the drive access percentage was adjusted to better reflect empirical data for other commuter rail systems.

- Adjustments to the modeled drive access percentage where model projections were low, using professional judgment based on other systems – at the Fort Collins South Transit Center (from 34 percent to 40 percent), Harmony & Timberline (from 33 percent to 40 percent), and Crossroads (from 14 percent to 50 percent) stations -- result in an overall corridor drive access percentage of **74 percent**.
- ▶ Converted the total model drive person trips<sup>11</sup> to parking spaces, by using observed field data from RTD.
- ▶ The average ratio of drive access person trips per utilized parking space at existing RTD park-n-Rides (that share long regional travel characteristics as expected to occur in the North Front Range) results in a divisor of 2.712. This factor converts a trip into and out of a park-n-Ride (which the model counts as two trips) to one total person-trip, accounts for auto-occupancy and parking turnover rates, and provides for 15% additional capacity for circulation and turnover during peak occupancy.
- ▶ Calculated a proposed number of total parking spaces for each major route.
- ▶ Calculated the ratio of total parking spaces for the corridor to total daily ridership, and compared the results with other areas. The results are presented in the table below.

**Table 4:  
Total Corridor Parking Spaces and Ridership<sup>13</sup>**

	Year	Proposed Spaces	Estimated Ridership	Riders per Parking Space
<i>North I-25 Transit Alternatives</i>				
<b>Package A Commuter Rail</b>	2030	830	4,300 <sup>14</sup>	5.2
<b>Package A Commuter Bus</b>	2030	360	1,525	4.2
<b>Package B BRT</b>	2030	1,400	5,850	4.2

<sup>11</sup> Drive person trips is the modeled two-way person trip total in and out of park-n-Rides.

<sup>12</sup> Divisor of 2.7 based on an analysis of current utilization at selected RTD park-n-Rides that generally serve long-haul regional routes as compared to 2005 Model person trips to these park-n-Rides. As a comparison, the divisor for system-wide park-n-Rides is 3.1. Selected park-n-Rides: Commerce City, Franktown, Pinery, C-470/University, Superior/Louisville, Highlands Ranch Town Center, Flatirons/US-36, Parker, Lincoln/Jordan, US-85/Bridge, Broomfield, Longmont Depot, Niwot, Table Mesa, Wagon Road, Littleton Mineral.

<sup>13</sup> Ridership is daily boardings on the rail line.

<sup>14</sup> Sum of inbound ons and outbound offs

**Table 4 (continued):  
Total Corridor Parking Spaces and Ridership<sup>15</sup>**

	Year	Proposed Spaces	Estimated Ridership	Riders per Parking Space
<i>FasTracks Comparisons</i>				
West	2025	5,700	31,100	5.5
Southwest/Central	2003	4,289*	36,904*	8.6
Southeast	2025	9,482	55,450	5.8
East	2030	7,100	37,000	5.2
<i>National Commuter Rail Comparisons</i>				
Altamont Commuter Express (ACE)	2002	1,670*	3,189*	1.9
Coaster	2003	1,805*	5,802*	3.2
Souder	2004	2,536*	3,452*	1.4

\*Observed data. Data for national comparisons were tabulated from a variety of disparate sources, and therefore may not be as comparable.

In the above table, the ratios of riders per space for the North I-25 transit alternatives fall at or below RTD corridors, but are higher than corridors in San Jose, San Diego, and Seattle that have been identified as peer rail systems. However, it should be noted that a riders per space ratio of less than two is not reasonable, as a round-trip transit user is counted as two riders, but can only park once. Still, the low riders per space ratios for those corridors may also be a result of high drive access percentages and lack of turnover, which is a result of schedules that are designed for peak hour-peak direction travel only. Also, note that it is known that the RTD Southwest/Central corridor has insufficient spaces for park-n-Ride demand, and therefore its riders per space ratio is relatively high.

## Step 2. Distribution Among Corridor Stations

- ▶ Tabulated the 2030 regional travel model distribution by station of drive access transit boardings for each transit alternative.
- ▶ The distribution of parking spaces among stations was adjusted to account for projected future conditions at some station sites and known characteristics of the travel model. Reasons for making substantial changes to the model's parking distribution are described below.

<sup>15</sup> Ridership is daily boardings on the rail line.

## Package A Commuter Rail

- **Fort Collins North Transit Center** – historically, the DRCOG/RTD model has underestimated drive access demand at end-of-line stations like the North Transit Center. For this reason, the percentage of corridor drive access boardings here was increased slightly, while others were adjusted slightly down in compensation.
- **Loveland – 29th St. and US-34; Berthoud – SH-56** – the US-34 station is envisioned as a downtown station with limited space available. Therefore, demand for this station is shifted to the 29th St. station and the Berthoud station.
- **Longmont – Sugar Mill** – the portion of spaces was increased at this station, as it will serve two rail lines – the North I-25 Commuter Rail as well as the North I-25 project’s extension of RTD’s Northwest Commuter Rail – and will likely serve as a major regional hub for transit users.
- **Erie – CR-8** – the portion of spaces was reduced at this station to compensate for demand shifted to the Sugar Mill station and because the model tends to assign too many park-n-Ride trips to stations that are closer to final destinations. For example, some travelers that the model assigns to the Erie park-n-Ride would more likely park at a station that is closer to their origin, like the Sugar Mill station.

Table 5:  
Package A Commuter Rail on BNSF

Station	Modeled Total Boardings (Drive, Walk and Transit Access)	Travel Demand Model Estimate of 2030 Parking Demand		North I-25 DEIS Proposed Spaces	
		Distribution	Parking Demand	Distribution	Number of Spaces
Fort Collins North Transit Center	307	9%	72	11%	100
CSU Station (no park-n-Ride)	174	0%	0	0%	0
Fort Collins South Transit Center	550	14%	110	12%	110
Loveland - 29th Street	469	13%	108	17%	140
Loveland - US-34	612	11%	97	5%	40
Berthoud	321	6%	58	8%	70
Longmont - SH-66	148	4%	27	4%	30
Longmont - Sugar Mill	405	14%	92	18%	150
Erie - I-25 & CR-8	1,110	30%	288	25%	210
<b>Total</b>	<b>4,096<sup>16</sup></b>	<b>100%</b>	<b>851</b>	<b>100%</b>	<b>850</b>

<sup>16</sup> Total boardings by station



## Package A Commuter Bus

- **Greeley North and Greeley South** – spaces at these stations were re-allocated to provide more parking at the end-of-line Greeley North station for the same reasons stated above.

**Table 6:  
Package A Commuter Bus on US-85**

Station	Modeled Total Boardings (Drive, Walk and Transit Access)	Travel Demand Model Estimate of 2030 Parking Demand		North I-25 DEIS Proposed Spaces	
		Distribution	Parking Demand	Distribution	Number of Spaces
Greeley North	119	7%	23	10%	40
Greeley South	372	25%	87	22%	80
Evans - 37th Street	293	21%	75	21%	70
Platteville - SH-66	182	16%	57	16%	60
Ft. Lupton - SH-52	307	31%	109	31%	110
<b>Total</b>	<b>1,273</b>	<b>100%</b>	<b>351</b>	<b>100%</b>	<b>360</b>

## Package B BRT

- **Crossroads and SH-56 / 60** – spaces at these stations were re-allocated because the output data from the model at Crossroads seemed low based on professional judgment. In this case, there is little connectivity in the model network at the Crossroads station, and it is possible that due to this network characteristic the model is assigning most drive access trips from the US-34 corridor to the SH-56 / 60 station, whereas a fair number of these travelers would reasonably be expected to park at the Crossroads station.
- **SH-119 and SH-52** – spaces at these stations were re-allocated as a more equitable distribution is expected at these stations that serve the Weld and East Boulder County areas.
- **US-34 & 83rd and US-34 & SH-257** – spaces were re-allocated to be more equal at these stations, based on professional judgment.

**Table 7:  
Package B Bus-Rapid-Transit**

Station	Modeled Total Boardings (Drive, Walk and Transit Access)	Travel Demand Model Estimate of 2030 Parking Demand		North I-25 DEIS Proposed Spaces	
		Distribution	Parking Demand	Distribution	Number of Spaces
Fort Collins South Transit Center	481	5%	71	5%	70
Fort Collins - Harmony & Timberline	256	3%	38	3%	40
Fort Collins - I-25 & SH-68	118	2%	24	2%	30
SH 392	124	3%	38	3%	40
Crossroads	137	1%	25	6%	80
SH 56/60	607	15%	211	11%	160
SH 119	1,503	34%	484	25%	350
SH 52	643	8%	121	15%	210
SH 7	881	18%	258	20%	280
US 34 & 83rd	363	9%	129	7%	100
US 34 & SH 257	70	1%	13	3%	40
<b>Total</b>	<b>5,183</b>	<b>100%</b>	<b>1,413</b>	<b>100%</b>	<b>1,400</b>

## SUMMARY OF PARKING SPACE, DEMAND PROJECTIONS

Estimates of the 2030 demand for parking spaces have been developed for the DEIS Package A and Package B alternatives. There are proposed carpool lots near select interchanges along I-25, and future transit stations with parking lots (park-and-rides) throughout the study area. At locations where the carpool lot and transit park-and-ride are in the same vicinity, the carpool lot and park-and-ride are combined into one facility.

This summary briefly describes methods used to develop the parking estimates (defined in detail in prior sections of this document).

### Carpool Lots

The 2030 travel demand model does not produce direct data regarding carpool lot sizes. A variety of model outputs were utilized to forecast carpool lot demand. The selected method uses the growth in ramp volume traffic (between 2001 and the 2030 No-action) applied to the current observed utilization of the carpool lots<sup>17</sup>, grouped by interchange location. Based on model test runs that gauged the amount of additional HOV traffic attracted to non-HOV and HOV build alternatives on I-25 over the no-action case, factors were applied to the initial amount of spaces for the 2030 No-action case to respectively estimate the number of spaces for Package A and Package B. Finally, a 15% contingency was added to produce a final estimate.

Complete details of the carpool lot demand method is documented in a separate report "Carpool Lot Capacity Projections"<sup>18</sup>. The results of this effort are shown in **Table 8**. It should be noted a separate analysis was conducted to determine the location of the carpool lots<sup>19</sup>.

**Table 8:**  
**Carpool Lot**  
**Parking Spaces by Interchange**

I-25 Interchange	Carpool Spaces	
	Package A	Package B
SH-1	80	80
SH-14	150	170
Prospect Road	130	140
Harmony Road	300	320

<sup>17</sup> "Carpool Lot Field Survey Report", October 2006, North I-25 EIS

<sup>18</sup> "Carpool Lot Capacity Projections", October 2006, North I-25 EIS.

<sup>19</sup> "Congestion Management Development", November 2006

**Table 8 (continued):  
Carpool Lot  
Parking Spaces by Interchange**

I-25 Interchange	Carpool Spaces	
	Package A	Package B
SH-392	90	100
SH-402	340	360
SH-60	80	80
SH-56	30	40
SH-66	70	70
SH-119	90	100
SH-52	80	80
SH-7	180	180
<b>TOTAL</b>	<b>1,620</b>	<b>1,720</b>

## Transit park-and-rides

The 2030 travel model transit ridership results were used to prepare estimates of the required number of parking spaces at park-and-ride stations. The analysis method involved converting model drive-access corridor transit patrons to demand for parking spaces. The ratio of corridor patrons to parking spaces is based on RTD park-and-ride observed field data and model drive access transit results. The allocation of parking spaces to specific stations was developed using model output data together with knowledge of site constraints and other characteristics that are not reflected in the model. Finally, a 15% contingency was added to produce a final estimate.

Complete details of the transit park-and-ride demand method is documented in a separate report "DEIS Transit Parking Needs"<sup>20</sup>. The results of this effort are shown in **Tables 10, 11 and 12**.

**Table 9:  
Package A Commuter Rail  
Park-and-ride Parking Spaces by Station**

Station	Park-and-ride Spaces
Fort Collins North Transit Center	100
Fort Collins CSU	0
Fort Collins South Transit Center	110
Loveland 29 <sup>th</sup> Street	140
Loveland 4 <sup>th</sup> Street	40

<sup>20</sup> "DEIS Transit Parking Needs", October 2006, North I-25 EIS.



**Table 9 (continued):  
Package A Commuter Rail  
Park-and-ride Parking Spaces by Station**

Station	Park-and-ride Spaces
Berthoud SH-56	70
Longmont SH-66	30
Longmont Sugar Mill	150
Erie CR-8	210
<b>TOTAL</b>	<b>850</b>

**Table 10:  
Package A Commuter Bus  
Park-and-ride Parking Spaces by Station**

Station	Park-and-ride Spaces
Greeley US-85 & D Street	40
Greeley 19 <sup>th</sup> Street	80
Evans – 37 <sup>th</sup> Street	70
Platteville	60
Fort Lupton	110
<b>TOTAL</b>	<b>360</b>

**Table 11:  
Package B Bus Rapid Transit  
Park-and-ride Parking Spaces by Station**

Station	Park-and-ride Spaces
Fort Collins South Transit Center	70
Fort Collins Harmony & Timberline	40
Harmony Road and I-25	30
SH-392 and I-25	40
Crossroads and I-25	80
US-34 and 83 <sup>rd</sup> Street	100
US-34 and SH-257	40
SH-56/60 and I-25	160
SH-119 and I-25	350
SH-52 and I-25	210
SH-7 and I-25	280
<b>TOTAL</b>	<b>1,400</b>

## Combined Results

For Package B, combined facilities are planned at locations on the I-25 corridor where the carpool lot and transit park-and-ride are in the same vicinity. Note carpoolers form a different travel market than transit users, and so the carpool lot sizes are not affected because of BRT. Data from the model indicated that the presence of BRT did not significantly affect the HOV demand. The final results for Package B are displayed in **Table 12**.

**Table 12:**  
**Package B BRT and Carpool Lot**  
**Parking Spaces by Station and/or Interchange**

Station/Interchange	BRT park-and-ride Spaces	Carpool Lot Spaces	Combined Total Spaces for BRT park-and-ride and I-25 Carpool Lot
SH-1 and I-25		80	80
SH-14 and I-25		170	170
Prospect and I-25		140	140
Fort Collins South Transit Center	70		70
Fort Collins Harmony & Timberline	40		40
Harmony Road and I-25	30	320	350
SH-392 and I-25	40	100	140
Crossroads and I-25	80		80
US-34 and 83 <sup>rd</sup> Street	100		100
US-34 and SH-257	40		40
SH-402 and I-25		360	360
SH-60		80	80
SH-56/60 and I-25	160		160
SH-56		40	40
SH-66		70	70
SH-119 and I-25	350	100	450
SH-52 and I-25	210	80	290
SH-7 and I-25	280	180	460
TOTAL	1,400	1,720	3,120

R:\\_transportation\071609\DEIS\Results\Parking\Carpool Lot\_tranist\_combined.doc