Appendix D: Regional Roadway Network Analysis

Farmington Master Transportation Plan Update

PHASE II SUMMARY

July 15, 2008

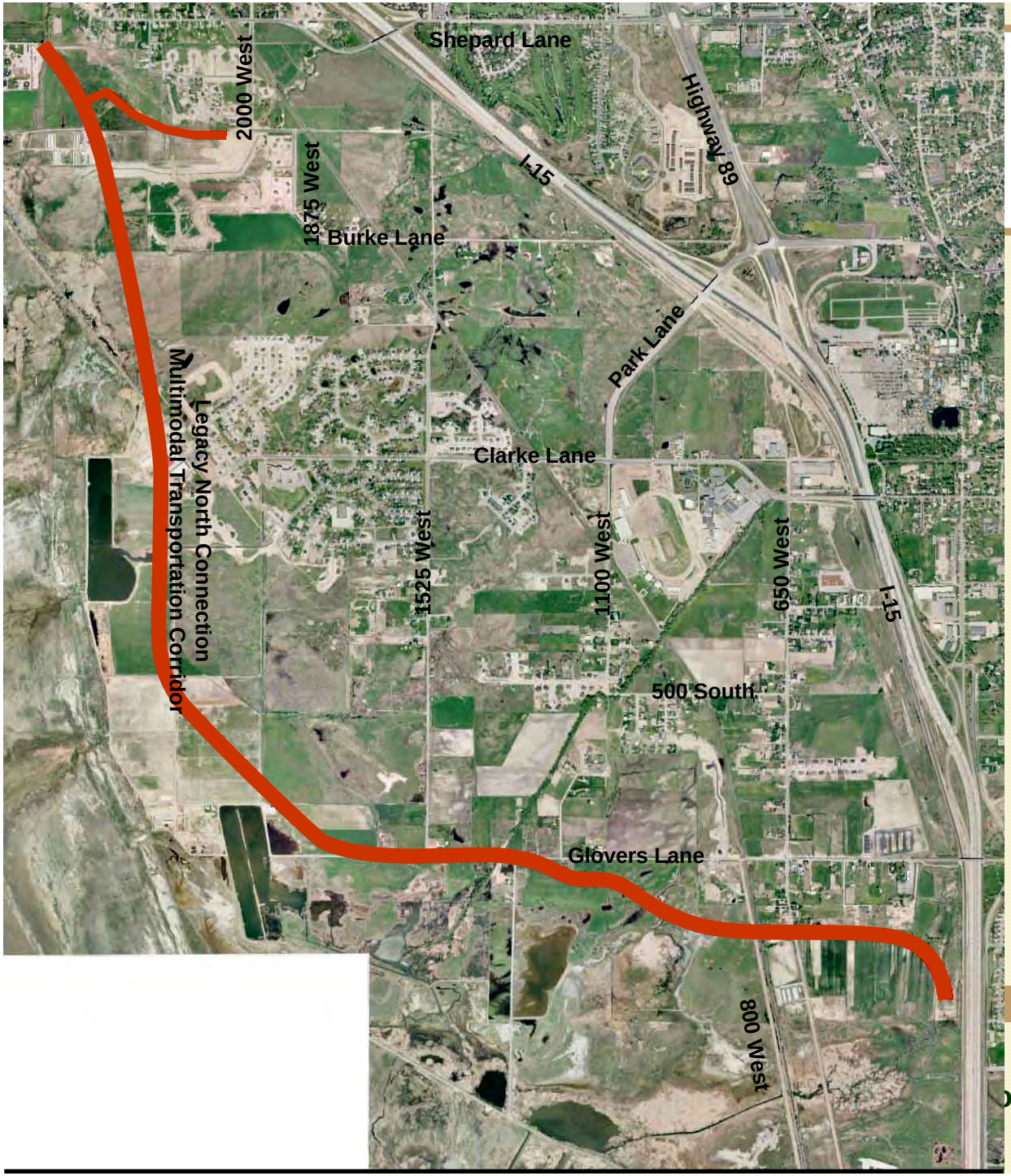
Background

PHASE 1: Localized Master Transportation Plan Analysis

- **Task 1: Existing Transportation Network Issues and Conditions**
- **Task 2: Land Use Determination, Trip Generation, Distribution and Assignment**
- **Task 3: Traffic Operations Analysis**
- **Task 4: Key Issues and Local Mitigation**
- **Task 5: Legislative Issues**

Phase I Key Issues/ Study Findings

- Re-striping of Park Lane with the opening of Legacy Highway will provide a substantial capacity improvement (September).
- Station Park Development/ Commuter Rail Traffic will utilize a significant proportion of the available Park Lane capacity.
- A secondary signalized access to Park Lane south of the Station Park access is crucial to accommodating proposed development(s) North of Park Lane.
- The realignment of Park Lane/ Clarke Lane is necessary to accommodate an additional signalized access on Park Lane.
- Timing of potential Park Lane improvements is a key factor.
- Timing of development is a key factor. Analysis represents full buildout/ occupancy.
- The existing transportation network cannot support full buildout based on existing zoning/ development plans.



Farmington Alignment

- **Planning Commission and City Council expressed preference for a western alignment**

on

July 15, 2008

Key Legislative Issues

Senate Bill 208

- UDOT to designate High Priority Transportation Corridors
- UDOT to notify local entities
- UDOT able to acquire rights-of-way from willing sellers
- Local entity required to notify UDOT when development applications are received from developments within the high priority corridor
- 30 day waiting period for building permit applications
- 45 day waiting period for land use applications
- After waiting period, cannot deny development solely based on the corridor designation

UDOT Issues

Environmental Impact Statement (EIS) Funded

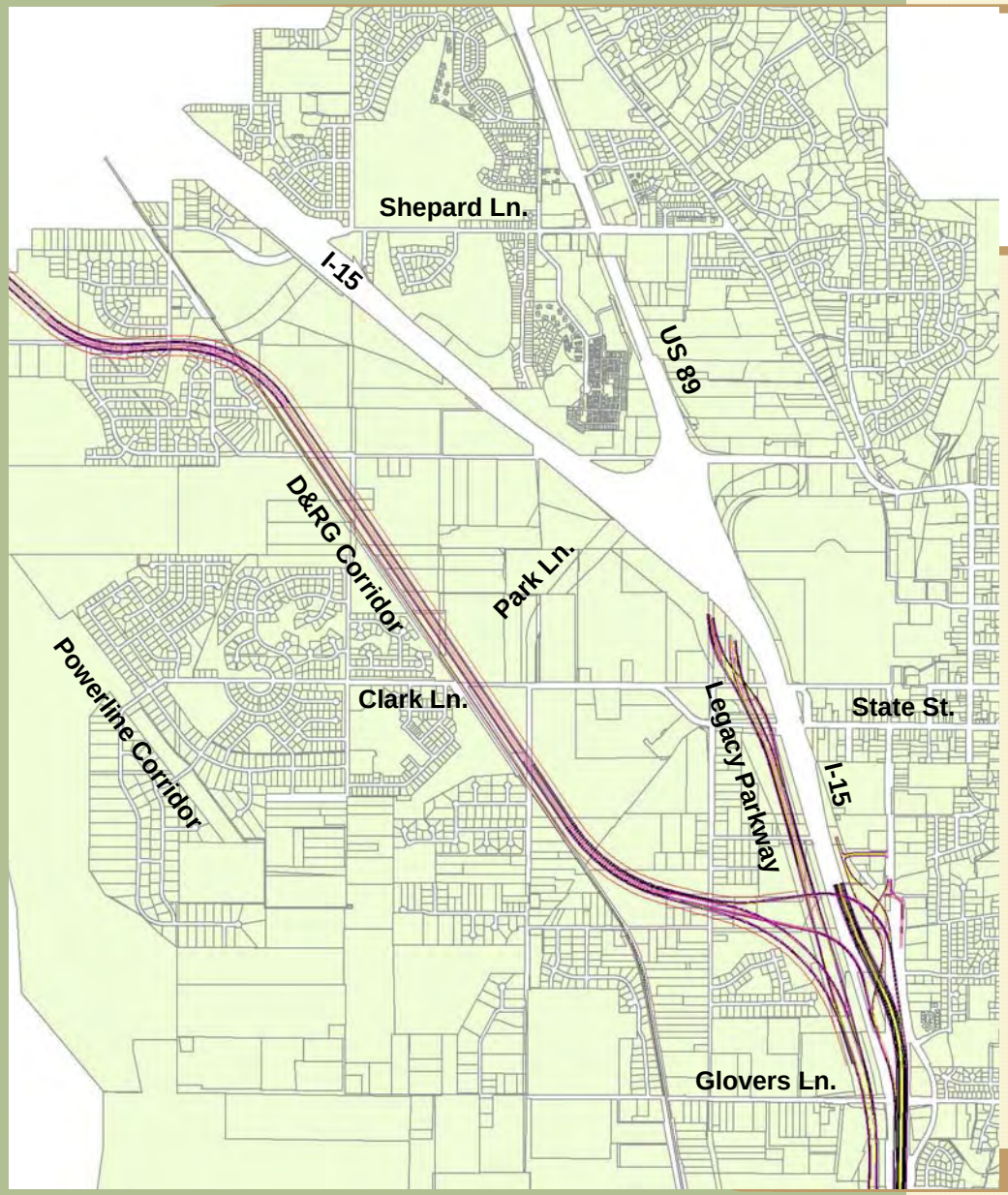
- UDOT Transportation Commission allocated $20M towards Legacy North EIS at their May 21, 2008 meeting
- UDOT expects to be underway this year
- UDOT still questions permitabilty of the corridor due to wetlands & current non-transportation status

UDOT's Preferred Alignment

- UDOT continues to move forward with efforts to acquire property from willing sellers within their preferred alignment (UDOT Option #3)

UDOT Option 3

D&RG South Interchanges



Farmington Master Transportation Plan Update – Phase II

July 15, 2008

Background (Cont)

PHASE 1: Localized Master Transportation Plan Analysis

- Task 1: Existing Transportation Network Issues and Conditions
- Task 2: Land Use Determination, Trip Generation, Distribution and Assignment
- Task 3: Traffic Operations Analysis
- Task 4: Key Issues and Local Mitigation
- Task 5: Legislative Issues

PHASE 2: Regional Master Transportation Plan Analysis

- Task 1: Regional Mitigation
- Task 2: Preliminary Design
- Task 3: Master Plan Documentation

Regional Mitigation

Analysis Effort

1) Regional Modeling
   - Wasatch Front Regional Council Model
   - Updated to reflect Phase I recommendations & land use assumptions
   - Daily and Peak Hour Traffic Conditions

2) Afternoon Peak Hour Park Lane Corridor Analysis

Analysis Scenarios

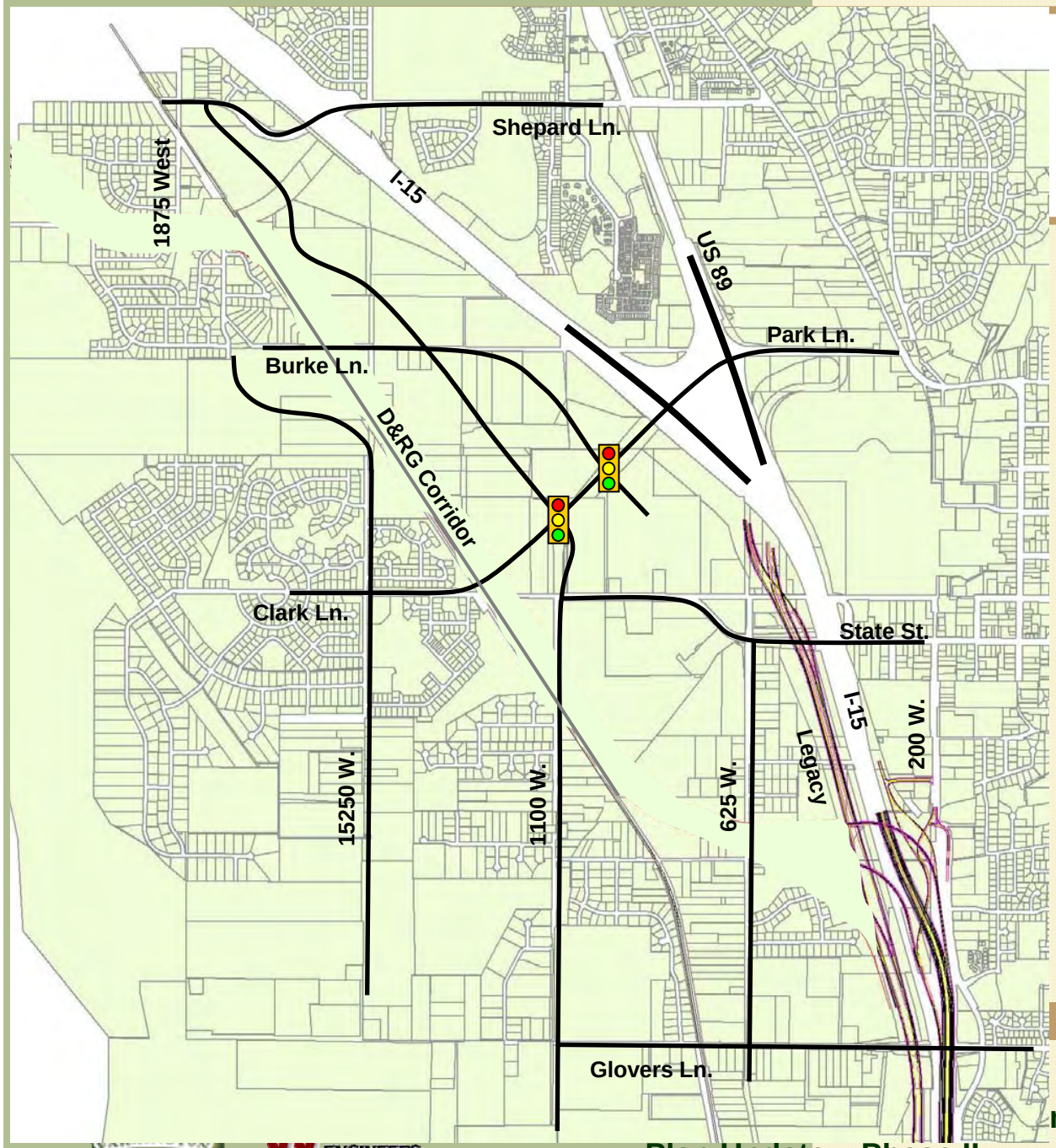
Base Condition

Scenario 1: Local Access Interchange at Shepard Lane

Scenario 2: UDOT Preferred Alignment

Scenario 3: Farmington Alignment

Scenario 4: Farmington Alignment with Interchange at Shepard Lane



Base Scenario

Incorporates Phase I Recommendations

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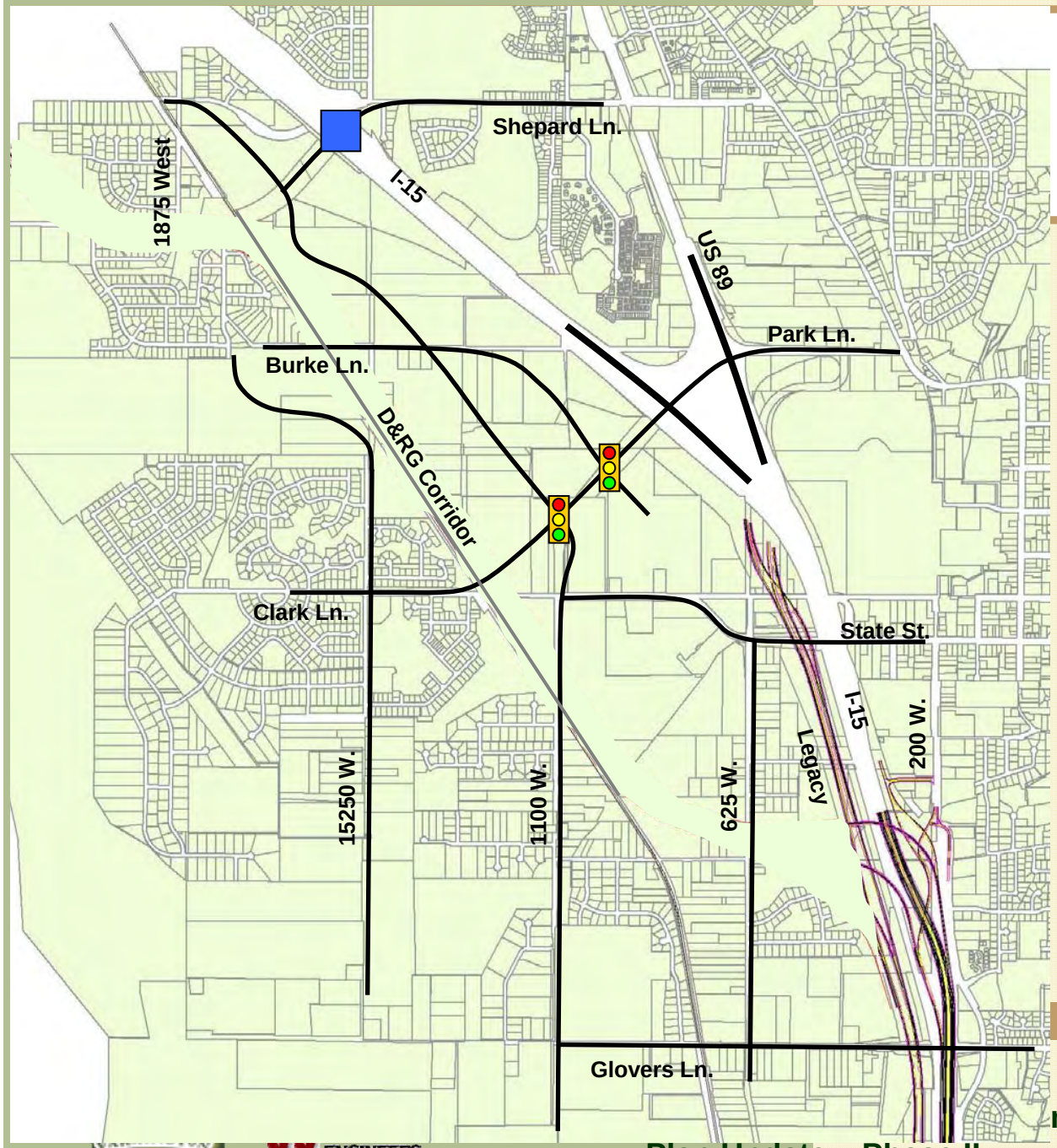
Scenario I

Local Access Interchange at Shepard Lane



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ENGINEERS

Plan Update – Phase II

July 15, 2008

Scenario II

UDOT Preferred Alignment

July 15, 2008

Scenario III

Farmington Alignment

July 15, 2008

Scenario IV

Farmington Alignment with Shepard Lane Local Access Interchange

July 15, 2008

Key Questions

- **How does a local access interchange at Shepard Lane affect traffic on Park Lane and Shepard Lane (east of I-15)?**
- **What can we expect in terms of peak hour traffic operations on Park lane with each scenario?**
- **What is the difference in daily traffic volumes on the Legacy North Connection between UDOT's Preferred Alignment and Farmington's Alignment?**

Key Questions

How does a local access interchange at Shepard Lane affect traffic on Park Lane and Shepard Lane (east of I-15)?

Scenario	2-Way Daily Volume	
	Park Lane between I-15 and Station Park Access (2020 / 2040)	Shepard Lane mid way between Hwy 89 and I-15 (2020 / 2040)
Base	30,500 / 34,100	8,900 / 16,700
I	21,900 / 26,100	2,700 / 4,700
II	20,200 / 25,600	6,200 / 9,800
III	23,800 / 29,500	7,400 / 11,000
IV	20,200 / 22,300	3,100 / 4,200

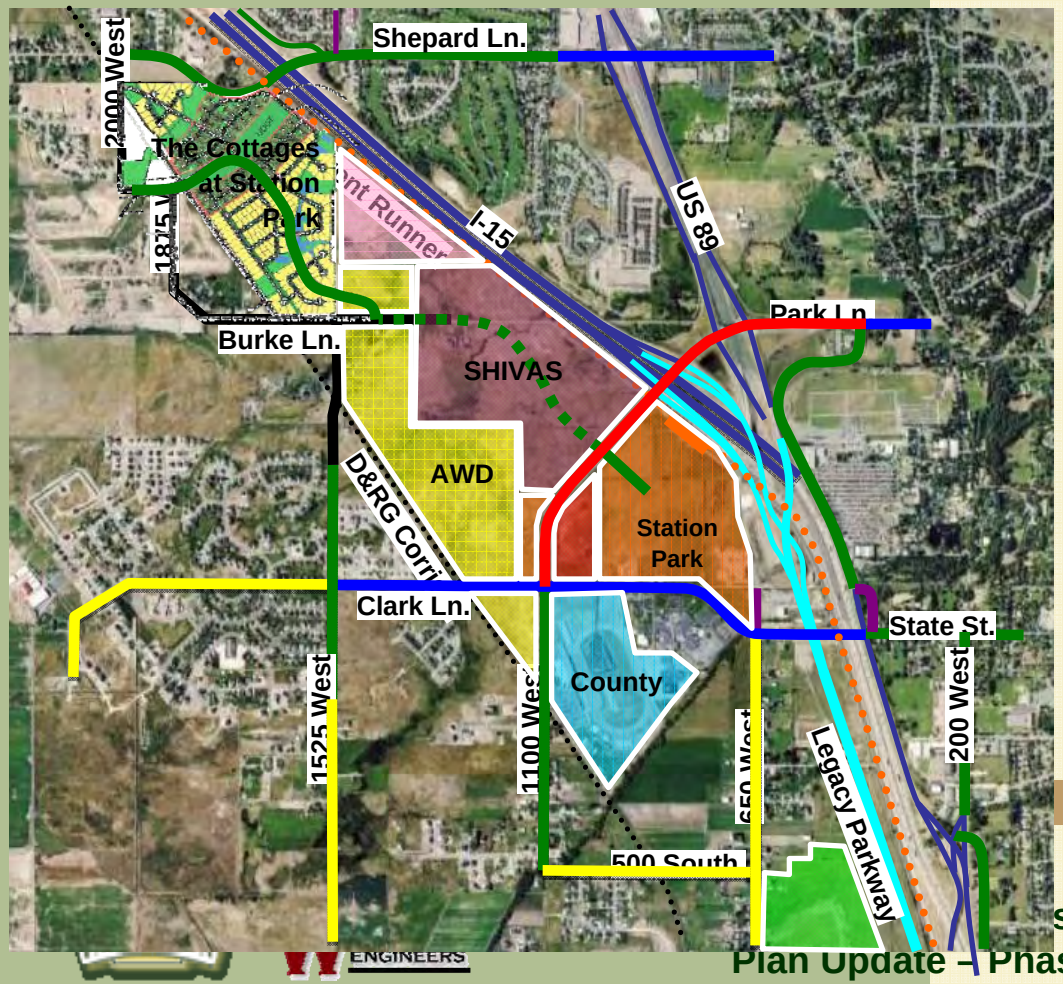
Key Questions

What can we expect in terms of peak hour traffic operations on Park lane with each scenario?

Scenario	Park Lane Corridor Afternoon Peak Hour Traffic Operations	
	Year 2020 Level of Service	Year 2040 LOS Level of Service
Base	F	F
I	C/D	E/F
II	B/C	C/D
III	C	E/F
IV	B/C	C

Key Questions

What can we expect in terms of peak hour traffic operations on Park lane with each scenario?



Station Park Areas
- 1M sq. ft. Retail/Office
- 300 Res. Units

Shivas Area
- 500K Retail
- 250K Office

AWD Areas
- 1,100 Res. Units
- 440K sq. ft. Retail/Office

Trip Generation

- Phase I – High Estimate
- Regional Model – Low Estimate
- Phase II – Approx 45,000 trips per day considering the overall development potential

Key Questions

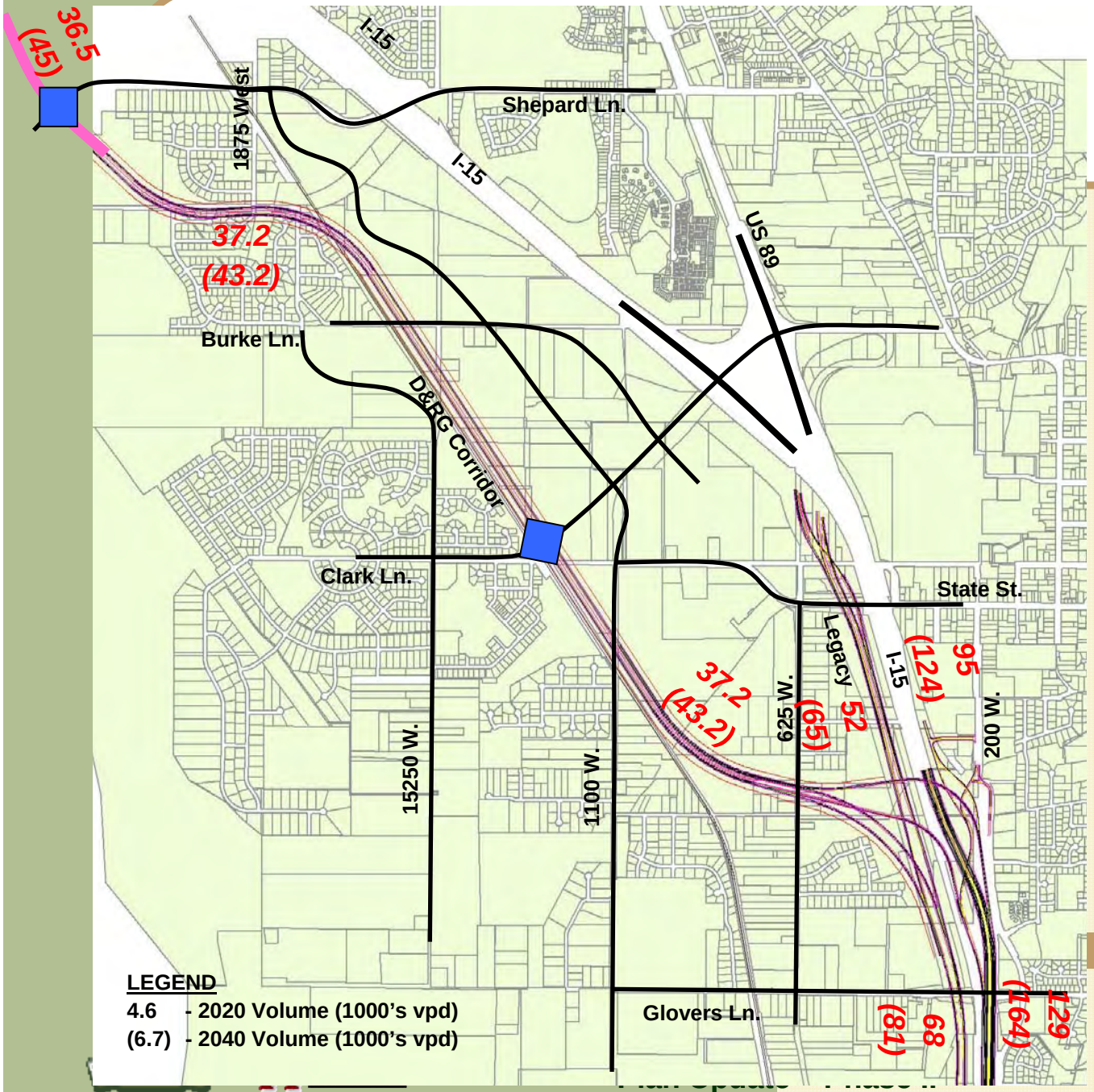
- **What is the difference in daily traffic volumes on the Legacy North Connection between UDOT's Preferred Alignment and Farmington's Alignment?**

  Examples of Existing Daily Traffic Volumes

  - **I-15 (S. of 89) – 140,000 vpd**
  - **I-15 (N. of Park Lane) – 130,000 vpd**
  - **I-15 Kaysville – 100,000 vpd**
  - **Hwy 89 (N. of I-15) – 42,000 vpd**
  - **I-15 (N. of I-215 Merge) – 155,000 vpd**
  - **I-15 (106th South) – 150,000 vpd**
  - **I-15 (I-80 to SR-201) – 250,000 vpd**

Scenario II

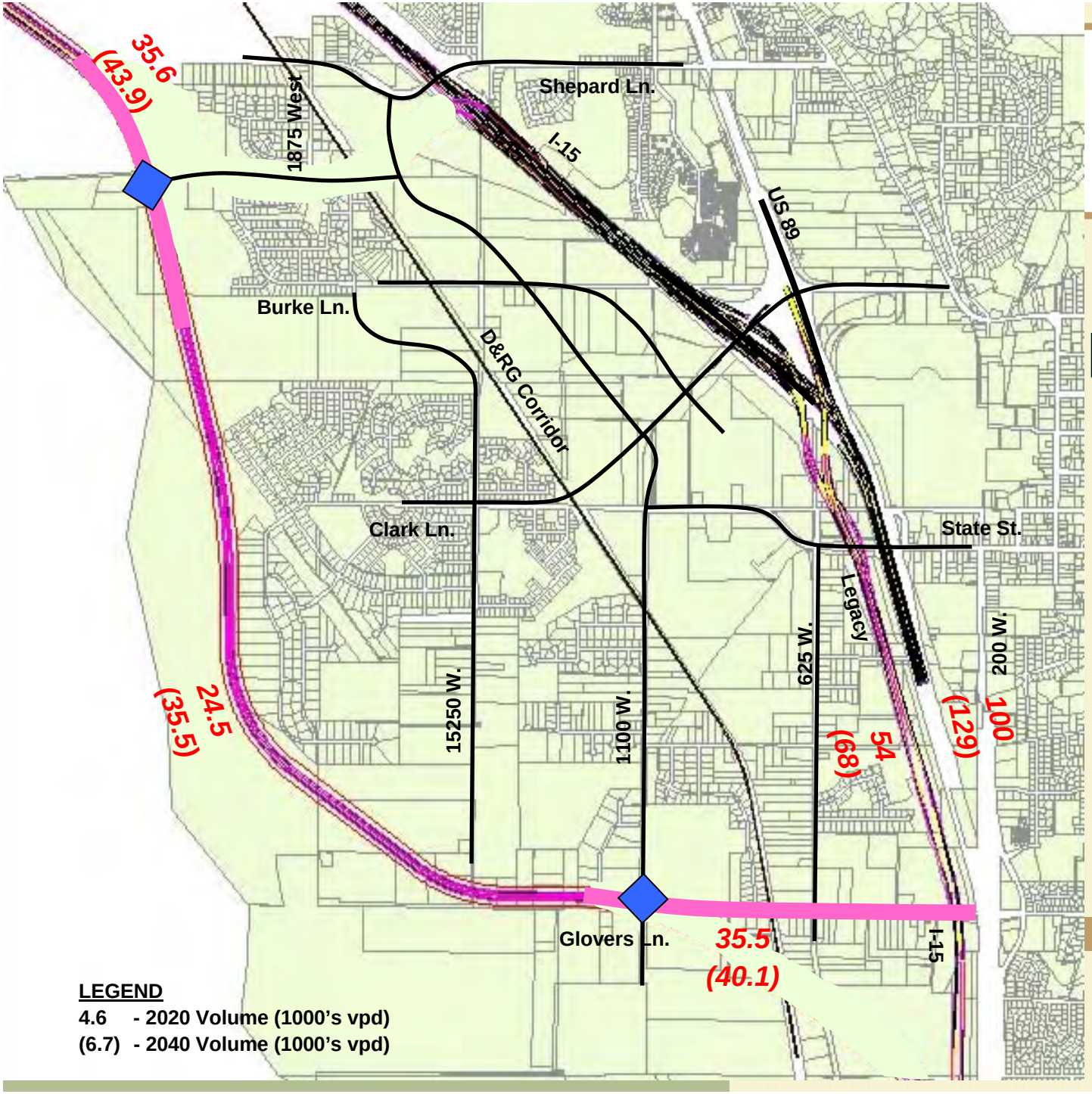
UDOT Preferred Alignment



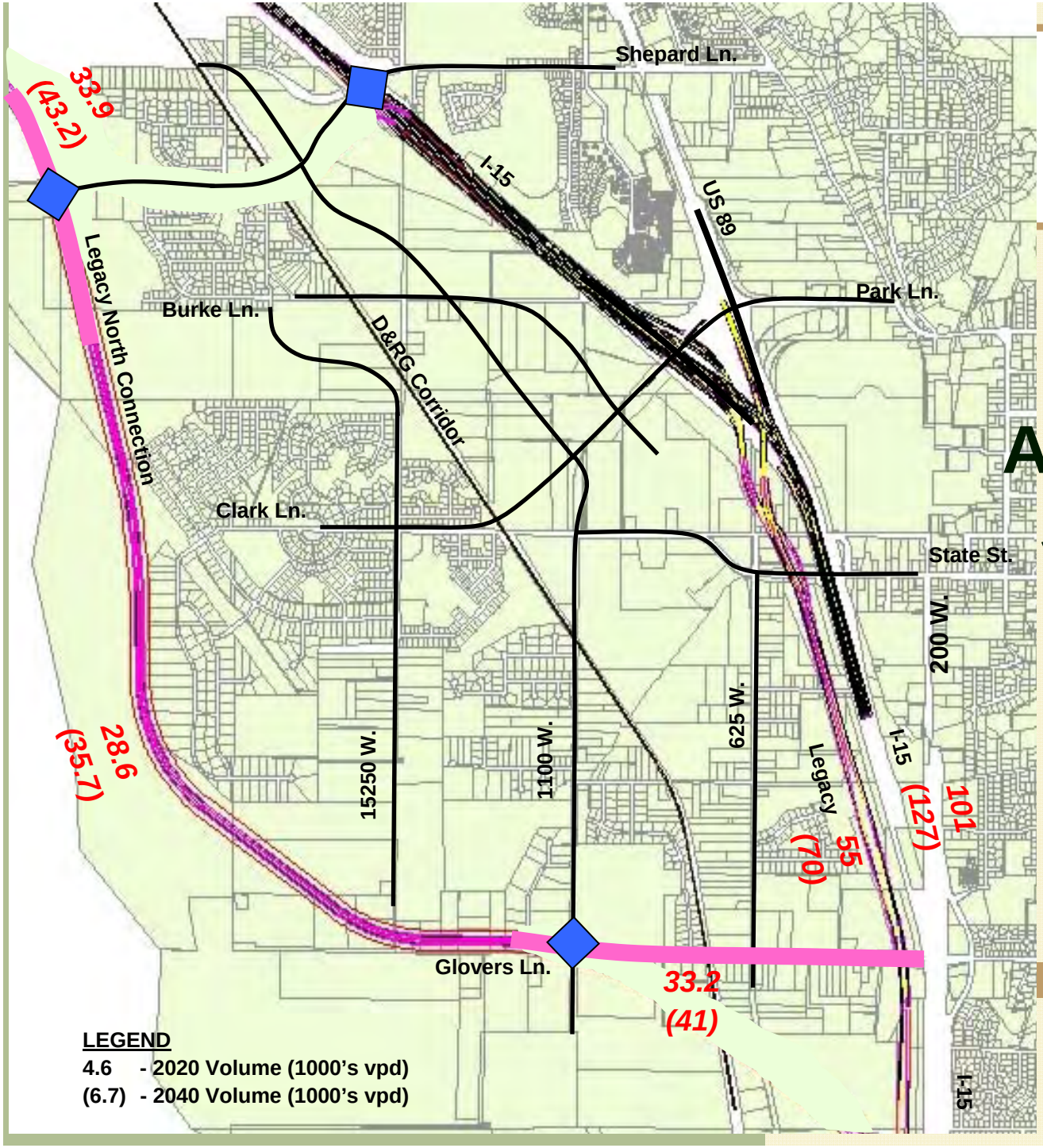
July 15, 2008

Scenario III

Farmington Alignment



July 15, 2008



Scenario IV

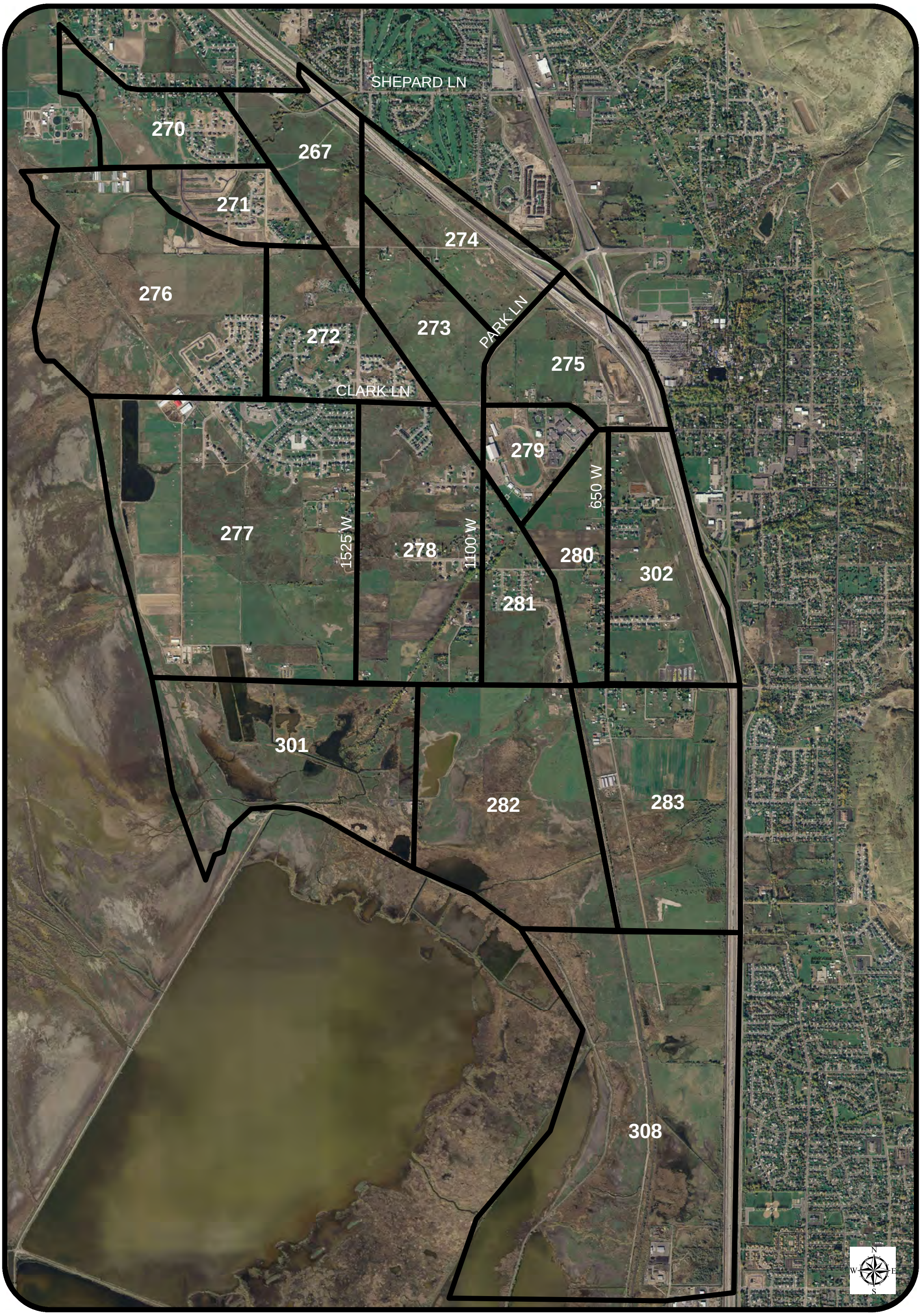
Farmington Alignment with Shepard Lane Local Access Interchange

July 15, 2008

Key Issues/ Study Findings

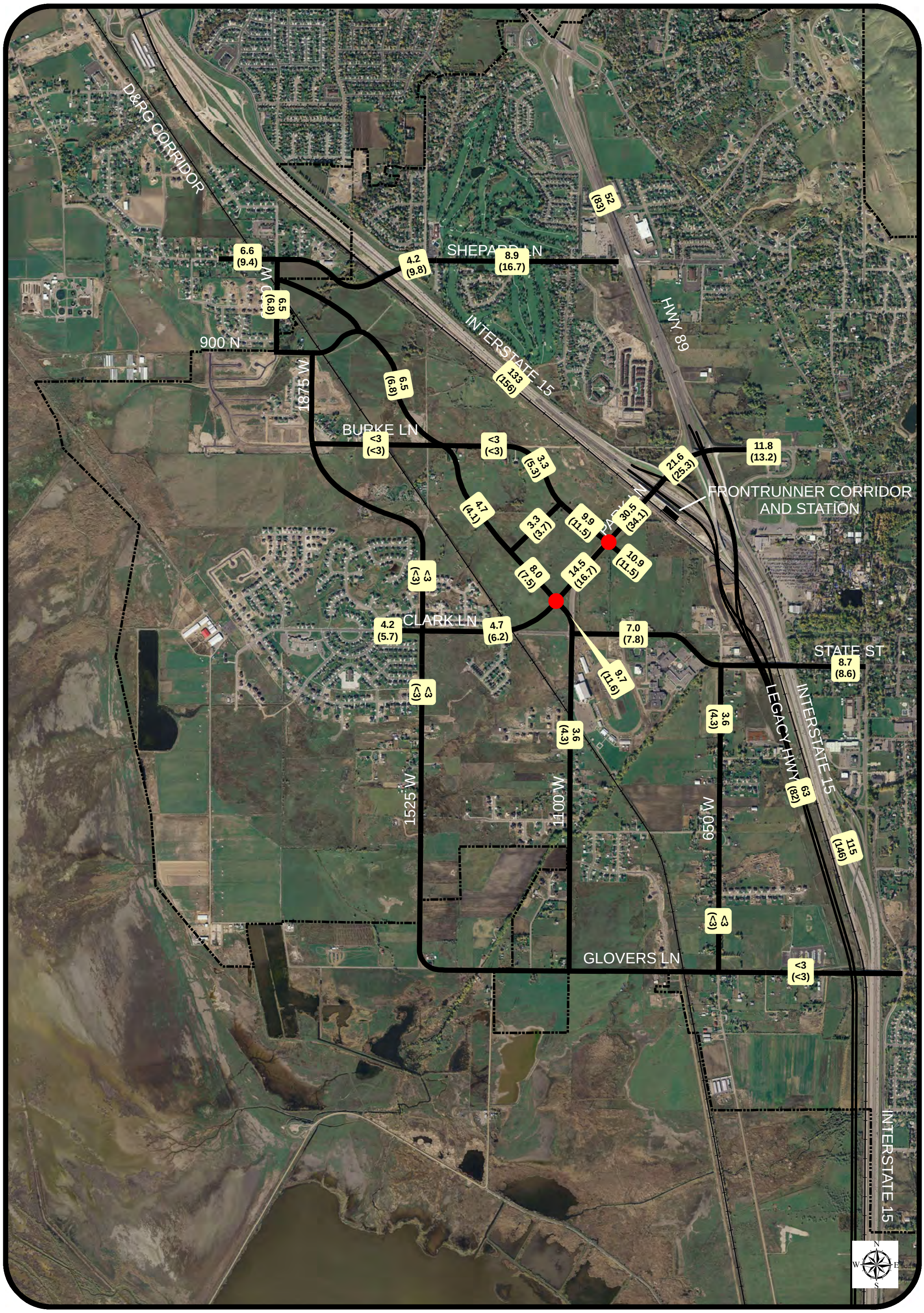
- The Farmington Alignment Scenario needs to include a local access interchange at Shepard Lane in order to provide acceptable traffic operations on Park Lane
- UDOT's Preferred Alignment Scenario results in acceptable traffic operations on Park Lane
- The analysis indicates that there is a need for a North Legacy Connector
- Daily traffic volumes on the North Legacy Connector with the Farmington Alignment are similar to the volumes with UDOT's Preferred Alignment
- As a stand alone improvement, a Local Access Interchange at Shepard Lane/ I-15 improves traffic operations on Park Lane – acceptable through 2020.
- A Local Access Interchange at Shepard Lane/ I-15 is expected to decrease traffic volumes on Shepard Lane between I-15 and 89
- Phase I Roadway Network Improvements are expected to provide acceptable traffic operations to 2020

Table D-1 Future Socio-Economic Data by TAZ						
TAZ	**Population**		**Households**		**Employees**	
	2020	**2040**	**2020**	**2040**	**2020**	**2040**
267	219	219	74	74	365	365
270	242	394	60	101	6	8
271	133	218	33	56	3	5
272	751	799	186	205	7	9
273	3520	3520	1100	1100	562	562
274	238	238	80	80	813	813
275	960	960	300	300	2400	2400
276	646	686	160	176	15	20
277	908	1602	225	411	25	33
278	529	865	131	222	13	18
279	946	946	196	196	105	105
280	1323	1323	274	274	146	146
281	210	343	52	88	5	7
282	79	148	24	46	26	46
283	168	314	51	98	54	98
301	319	546	79	140	9	10
302	2801	2801	580	580	309	309
308	265	498	80	156	86	156
Total	**14,257**	**16,420**	**3,685**	**4,303**	**4,949**	**5,110**



TRAFFIC ANALYSIS ZONE (TAZ) BOUNDARIES

0 600 1,200 2,400 3,600 Feet



BASE SCENARIO: 2020 AND 2040 TRAFFIC VOLUMES

Primary Scenario Roadways

Scenario Traffic Signals

Farmington City Boundary

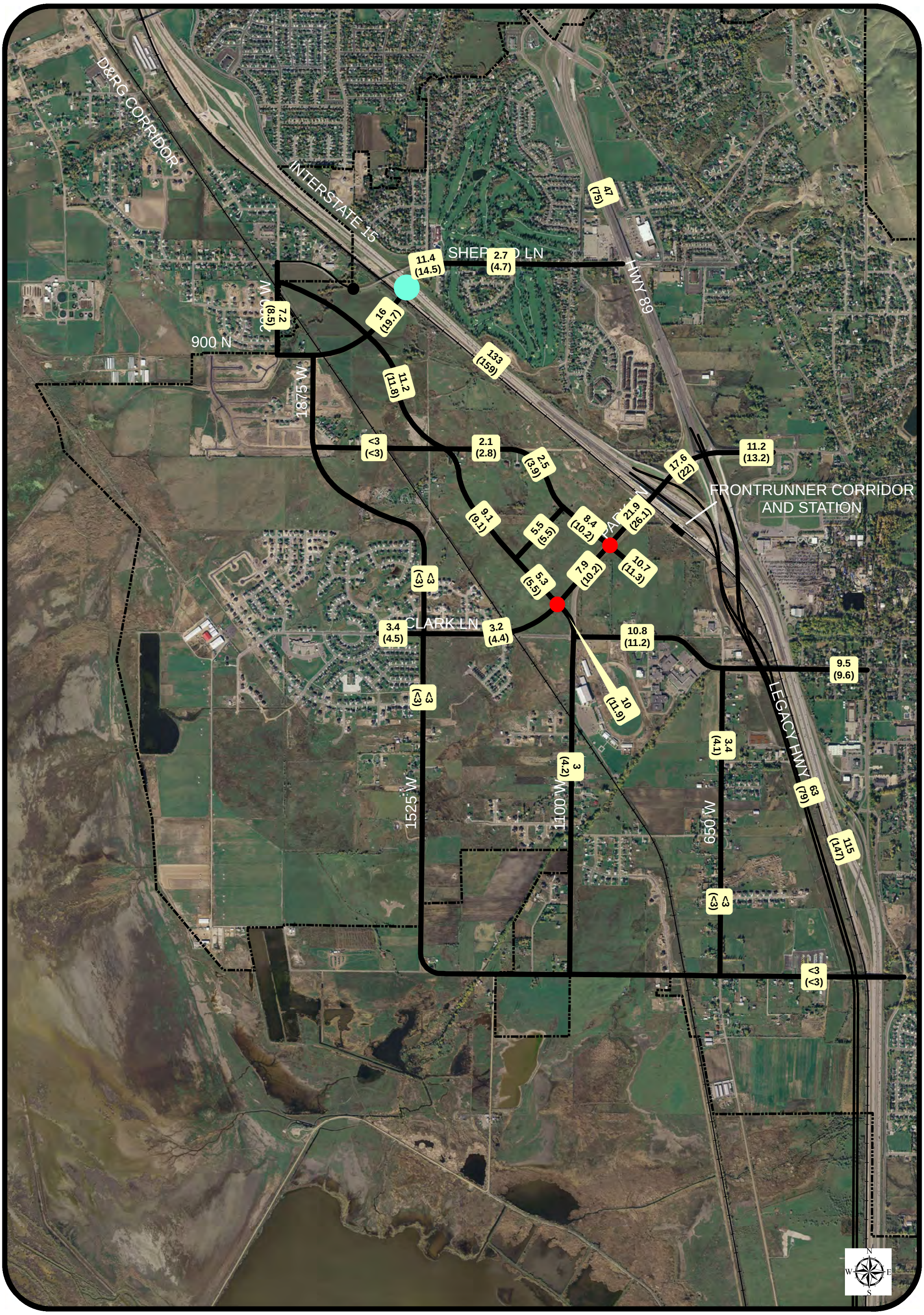
XXX Average 2020 Daily Traffic (1000's of vehicles per day)

(XXX) Average 2040 Daily Traffic (1000's of vehicles per day)

0 500 1,000 2,000 3,000 Feet

FARMINGTON CITY MASTER TRANSPORTATION PLAN ADDENDUM

FIGURE D-2



SCENARIO I: 2020 AND 2040 TRAFFIC VOLUMES

Primary Scenario Roadways

Signalized Intersection

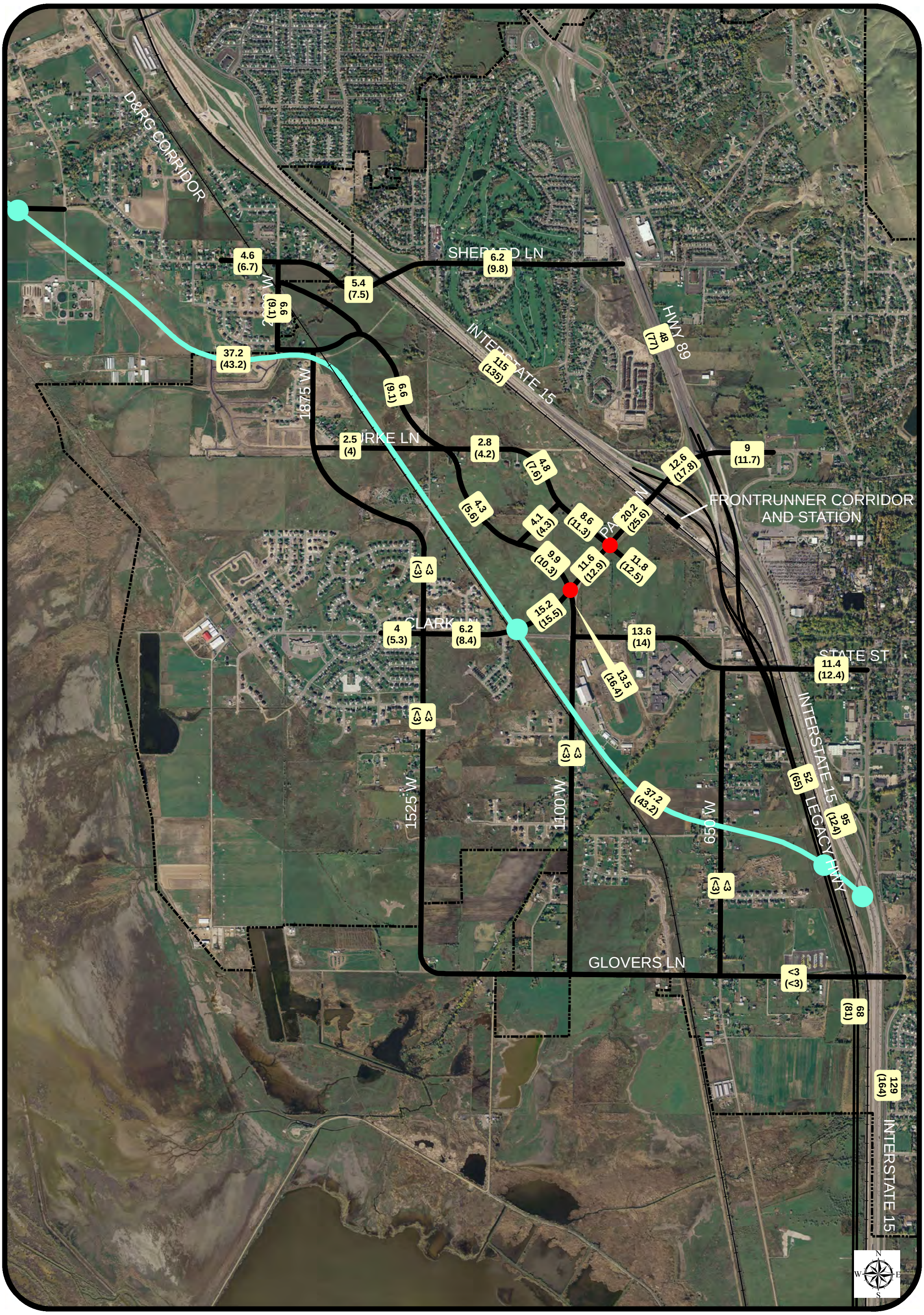
Interchange

Farmington Boundary

XXX Average 2020 Daily Traffic (1000's of vehicles per day)

(XXX) Average 2040 Daily Traffic (1000's of vehicles per day)

0 500 1,000 2,000 3,000 Feet

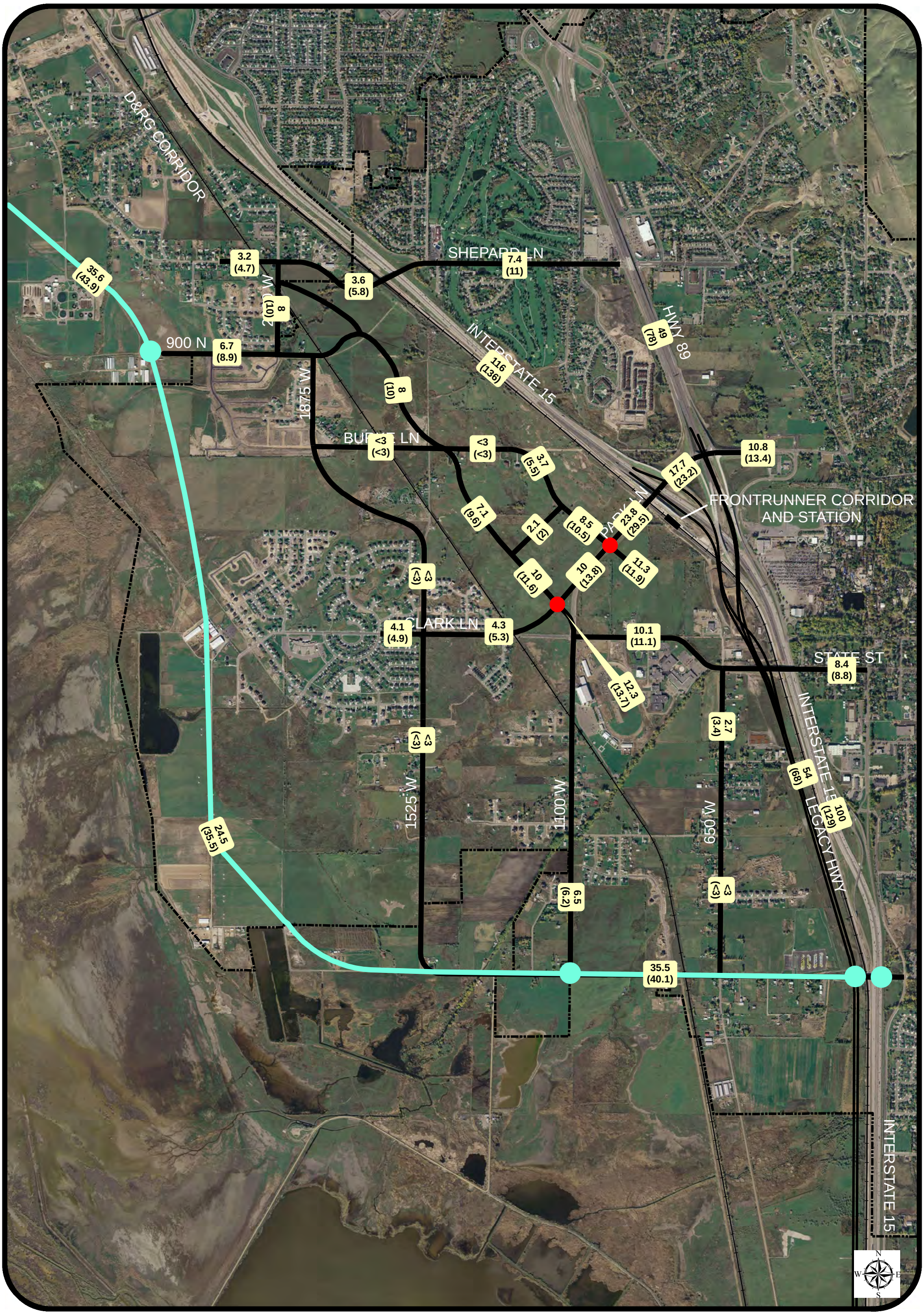


SCENARIO II: 2020 AND 2040 TRAFFIC VOLUMES

- Primary Scenario Roadways
- Scenario Traffic Signals
- Interchange
- Proposed North Legacy Connector
- Farmington City Boundary
- xxx Average 2020 Daily Traffic (1000's of vehicles per day)
- (xxx) Average 2040 Daily Traffic (1000's of vehicles per day)

0 500 1,000 2,000 3,000 Feet

FARMINGTON CITY MASTER TRANSPORTATION PLAN ADDENDUM **FIGURE D-4**



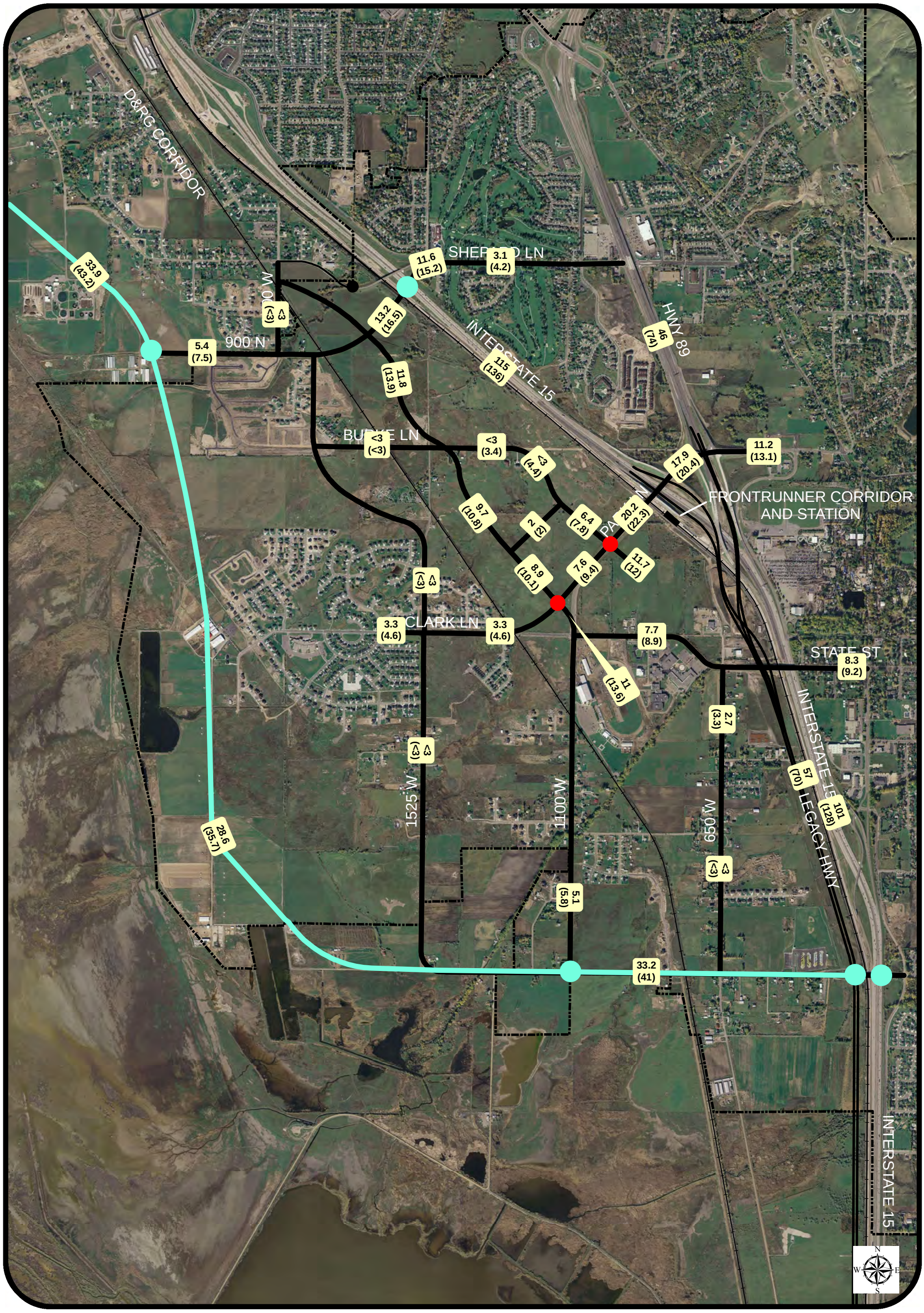
SCENARIO III: 2020 AND 2040 TRAFFIC VOLUMES

- Primary Scenario Roadways
- Scenario Traffic Signals
- Interchange
- Farmington's Proposed North Legacy Connector
- Farmington City Boundary
- xxx Average 2020 Daily Traffic (1000's of vehicles per day)
- (xxx) Average 2040 Daily Traffic (1000's of vehicles per day)

0 500 1,000 2,000 3,000 Feet

FARMINGTON CITY MASTER TRANSPORTATION PLAN ADDENDUM

FIGURE D-5



SCENARIO IV: 2020 AND 2040 TRAFFIC VOLUMES

- Primary Scenario Roadways
- Scenario Traffic Signals
- Interchange
- Farmington's Proposed North Legacy Connector
- Farmington City Boundary
- XXX Average 2020 Daily Traffic (1000's of vehicles per day)
- (XXX) Average 2040 Daily Traffic (1000's of vehicles per day)

0 500 1,000 2,000 3,000 Feet

FARMINGTON CITY MASTER TRANSPORTATION PLAN ADDENDUM

FIGURE D-6

Appendix E: Farmington Shivas Property Traffic Impact Study

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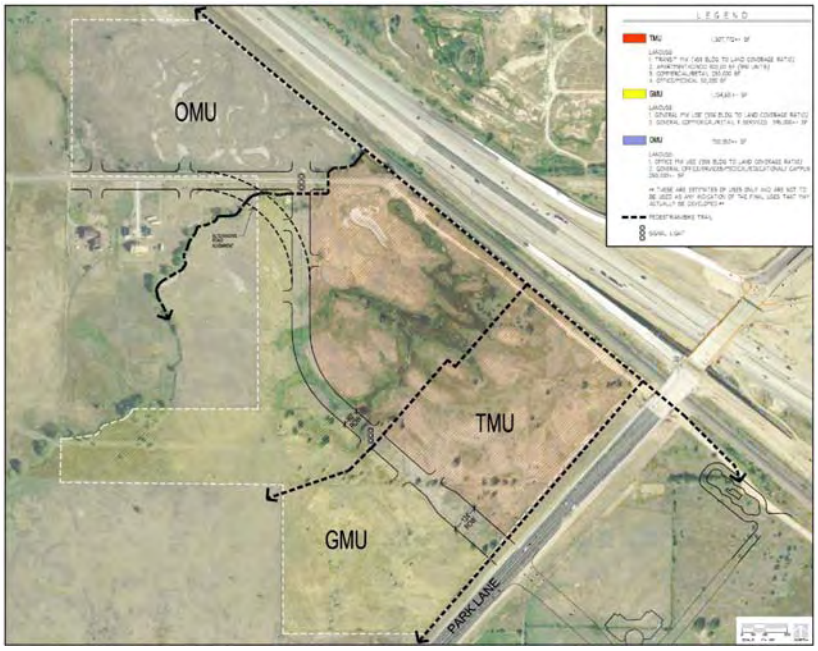
Farmington - Shivas Property

Traffic Impact Study



Farmington, Utah

December 1, 2008

UT08-155

179 North 1200 East, Ste. 103 Lehi, Utah 84043 p. 801/ 766.4343
www.halesengineering.com

EXECUTIVE SUMMARY

This study addresses the traffic impacts associated with the proposed development of land, referred to herein as the "Shivas Property", located on the north side of Park Lane immediately west of I-15 in Farmington, Utah. The proposed development will be a mixed-use development.

Included within the analyses for this study are the traffic operations and recommended mitigations for existing conditions and plus project conditions (conditions after development of the proposed project) at key intersections and roadways in the vicinity of the site. Future 2020 and 2040 conditions are also analyzed.

TRAFFIC ANALYSIS

The following is an outline of the traffic analysis performed by Hales Engineering for the respective traffic conditions of this project.

Existing (2008) Background Conditions Analysis

Hales Engineering performed weekday p.m. peak period traffic counts at the following intersection(s):

- Northbound US-89 / Park Lane
- Southbound US-89 / Park Lane
- Northbound I-15 / Park Lane
- Southbound I-15 / Park Lane
- Clark Lane / Park Lane
- Clark Lane / 1525 West

These counts were performed on Tuesday, February 26, 2008, Wednesday, February 27, 2008, Tuesday, May 6, 2008, and Tuesday, July 15, 2008. The p.m. peak hour was determined to be between 4:45 and 5:45 p.m., with an observed peak hour factor (PHF) of 0.92. Based on the combination of current (2008) intersection volumes and traffic generated by the site, the weekday p.m. peak hour was the critical time period identified for analysis. Detailed count data is included in Appendix A.

Additionally, estimated traffic from the Station Park and America West Developments were also included in the 2008 background conditions analysis.

As shown in Table ES-1, all of the study intersections experience acceptable levels of delay with the exception of the 1100 West / Clark Lane intersection.

Project Conditions Analysis

The proposed land use for the project is as follows:

- Retail 625,000 Sq. Ft. Gross Floor Area
- Office 300,000 Sq. Ft. Gross Floor Area
- Condominium 390 Dwelling Units

The projected gross trip generation for the development is as follows:

- Daily Trips 33,780 vehicles per day
- Morning Peak Hour Trips: 1,295 vehicles per hour
- Evening Peak Hour Trips: 3,312 vehicles per hour
- Saturday Trips: 40,120 vehicles per day
- Saturday Peak Trips: 3,880 vehicles per hour

However, transit reductions and internal capture reductions were also taken and are discussed in the main body of the report.

Weekday p.m. peak hour project generated trips were assigned to study intersections to assess impacts of the project as this combination created the "worst case" scenario.

Existing (2008) Plus Project Conditions Analysis

As shown in Table ES-1, several study intersections have unacceptable levels of service.

Future (2020) Background Conditions Analysis

As shown in Table ES-1, all study intersections have acceptable levels of service.

Future (2020) Plus Project Conditions Analysis

As shown in Table ES-1, all study intersections have acceptable levels of service.

Future (2040) Background Conditions Analysis

As shown in Table ES-1, all study intersections have acceptable levels of service.

Future (2040) Plus Project Conditions Analysis

As shown in Table ES-1, most study intersections have acceptable levels of service.

RECOMMENDATIONS

The following mitigations are recommended:

Existing (2008) Background Conditions Analysis

The following mitigation is recommended:

1100 West / Clark Lane:

- Convert intersection into a roundabout

Existing (2008) Plus Project Conditions Analysis

Traffic movements along the Park Lane corridor between the new developments and the interchange experience high levels of delay. However, some mitigations exist that can alleviate this delay in the short term by implementing the following improvements:

Park Lane:

- Widen from 5 lanes to 7 lanes between 1100 West and the southbound I-15 / Legacy Ramps

Station Park Access / Park Lane:

- Add additional northwest right turn lane (150 feet long)
- Convert middle lane that was a shared through/right lane to a through lane only
- The new configuration on the northwest approach will include a left turn pocket, a through lane, a trap right turn lane, and a right turn pocket

Park Lane / Southbound I-15 & Legacy Parkway Ramps

- Seven lane cross section in northeast direction ends in a trap right turn lane onto southbound Legacy Parkway
- Change current one lane off-ramp (southbound I-15) to two lane off-ramp
- Create free-right and add-a-lane for outer off-ramp lane onto Park Lane

Shivas Access to Frontrunner Station

- The access road connecting the Shivas Development to the Frontrunner station (parallel to I-15 and under Park Lane) should be used primarily for

pedestrian access to/from the office park development north of Park Lane. If the width of this corridor is sufficient to allow both pedestrian and vehicular access, the vehicles should be restricted to one way southbound flows towards the Frontrunner station.

All of the mitigations with the exception of those associated with the widening of Park Lane were assumed to be completed for future 2020 and 2040 analyses. The widening mitigation was only included in this scenario to show that improvements to Park Lane can be made if the congestion becomes intolerable

Future (2020) Background Conditions Analysis

No mitigations are recommended.

Future (2020) Plus Project Conditions Analysis

No mitigations are recommended.

Future (2040) Background Conditions Analysis

No mitigations are recommended.

Future (2040) Plus Project Conditions Analysis

The following mitigations are recommended:

Station Park & Shivas Access / Park Lane:

- Provide dual left turn lanes for northeast left turn movement

TABLE ES-1
p.m. Peak Hour Conditions
Farmington - Shivas Property TIS

Intersection	Existing 2008 Background	Existing 2008 Background	Existing 2008 Plus Project	Existing 2008 Plus Project - Mitigated	Future 2020 Background	Future 2020 Plus Project	Future 2040 Background	Future 2040 Plus Project	Future 2040 Plus Project - Mitigated
Description	LOS (Sec/Veh[1])	LOS (Sec/Veh[1])	LOS (Sec/Veh[1])	LOS (Sec/Veh[1])	LOS (Sec/Veh[1])	LOS (Sec/Veh1)	LOS (Sec/Veh[1])	LOS (Sec/Veh1)	LOS (Sec/Veh[1])
US-89 Northbound Ramps / Park Lane	**C (20.4)**	**C (20.5)**	**C (28.3)**	**C (30.4)**	**B (13.8)**	**B (18.7)**	**B (10.8)**	**B (15.2)**	**B (15.2)**
US-89 Southbound Ramps / Park Lane	**C (23.4)**	**C (22.7)**	**D (40.4)**	**C (21.1)**	**B (12.8)**	**B (11.0)**	**B (10.1)**	**B (10.7)**	**B (10.5)**
I-15 Northbound Ramps / Park Lane	**B (19.8)**	**B (19.2)**	**D (39.3)**	**C (23.0)**	**B (14.2)**	**B (17.9)**	**B (12.2)**	**B (19.0)**	**B (19.2)**
I-15 Southbound Ramps / Park Lane	**C (28.9)**	**C 928.5)**	**E (75.5)**	**B (17.2)**	**B (16.1)**	**C (20.4)**	**B (18.0)**	**D (40.7)**	**D (40.0)**
Station Park & Shivas Access / Park Lane	**D (36.4)**	**D (36.3)**	**F (>80.0)**	**E (76.8)**	**C (24.0)**	**D (54.6)**	**C (23.4)**	**D (49.3)**	**D (53.3)**
Park Lane / 1150 West (Realigned)	**D (40.5)**	**D (40.1)**	**F (>80.0)**	**C (27.3)**	**D (37.3)**	**C (30.4)**	**D (44.6)**	**E (67.1)**	**E (56.7)**
1150 West / Clark Lane	**F (>50.0)**	**B (13.5)**	**B (10.8)**	**A (9.2)**	**A (7.7)**	**A (8.9)**	**A (8.1)**	**A (8.1)**	**B (11.6)**
Clark Lane / Park Lane	**A (1.7)**	**A (1.7)**	**E (44.5)**	**A (1.9)**	**A (1.9)**	**A (1.7)**	**A (1.8)**	**A (1.7)**	**A (1.8)**
Park Lane (& Clark Lane) / 1525 West	**A (7.6)**	**A (7.6)**	**A (7.9)**	**A (7.6)**	**A (7.5)**	**A (7.3)**	**A (6.9)**	**A (7.3)**	**A (7.1)**
Project Access (RIRO) / Park Lane[2]	-	-	-	-	-	**A (4.3)**	-	**A (4.9)**	**A (9.8)**

1. Intersection LOS and delay (seconds/vehicle) values represent the overall intersection average. LOS and Delay details for the worst movement of unsignalized intersections are reported in the main body of the report.
2. This intersection is a project access and was only analyzed in future (2020 & 2040) "plus project" scenarios.

Source: Hales Engineering, November 2008

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TABLE OF CONTENTS

LIST OF TABLES

I. INTRODUCTION

A. Purpose

This study addresses the traffic impacts associated with the proposed development of land, referred to herein as the "Shivas Property", located on the north side of Park Lane immediately west of I-15 in Farmington, Utah. The proposed development will be a mixed-use development.

Included within the analyses for this study are the traffic operations and recommended mitigations for existing conditions and plus project conditions (conditions after development of the proposed project) at key intersections and roadways in the vicinity of the site. Future 2020 and 2040 conditions are also analyzed.

B. Scope

The study area was defined based on conversations with the Farmington City engineering staff. This study was scoped to evaluate the traffic operational performance impacts of the project on the following intersections:

- Northbound US-89 & Northbound I-15 / Park Lane
- Southbound US-89 & Southbound I-15 / Park Lane
- Northbound I-15 & Northbound Legacy Parkway / Park Lane
- Southbound I-15 & Southbound Legacy Parkway / Park Lane
- Station Park Access & Proposed Shivas Access / Park Lane
- 1150 West / Park Lane (Proposed realigned 1150 West / Park Lane intersection)
- 1150 West / Clark Lane
- Clark Lane / Park Lane (Proposed connection of 1150 West to realigned Park Lane)
- Park Lane (Clark Lane) / 1525 West
- Proposed RIRO Hawes Access / Park Lane

C. Analysis Methodology

Level of service (LOS) is a term that describes the operating performance of an intersection or roadway. LOS is measured quantitatively and reported on a scale from A to F, with A representing the best performance and F the worst. Table 1 provides a brief description of each LOS letter designation and an accompanying average delay per vehicle for both signalized and unsignalized intersections.

Table 1

Level of Service Descriptions

Level of Service	Description of Traffic Conditions	Average Delay (seconds / vehicle)
SIGNALIZED INTERSECTIONS[1]		
A	Extremely favorable progression and a very low level of control delay. Individual users are virtually unaffected by others in the traffic stream.	0 ≤ 10.0
B	Good progression and a low level of control delay. The presence of other users in the traffic stream becomes noticeable.	> 10.0 and ≤ 20.0
C	Fair progression and a moderate level of control delay. The operation of individual users becomes somewhat affected by interactions with others in the traffic stream.	>20.0 and ≤ 35.0
D	Marginal progression with relatively high levels of control delay. Operating conditions are noticeably more constrained.	> 35.0 and ≤ 55.0
E	Poor progression with unacceptably high levels of control delay. Operating conditions are at or near capacity.	> 55.0 and ≤ 80.0
F	Unacceptable progression with forced or breakdown operating conditions.	> 80.0
UNSIGNALIZED INTERSECTIONS[2]		**Worst Approach Delay (seconds / vehicle)**
A	Free Flow / Insignificant Delay	0 ≤ 10.0
B	Stable Operations / Minimum Delays	>10.0 and ≤ 15.0
C	Stable Operations / Acceptable Delays	>15.0 and ≤ 25.0
D	Approaching Unstable Flows / Tolerable Delays	>25.0 and ≤ 35.0
E	Unstable Operations / Significant Delays Can Occur	>35.0 and ≤ 50.0
F	Forced Flows / Unpredictable Flows / Excessive Delays Occur	> 50.0

Source:

1. Hales Engineering Descriptions, based on *Highway Capacity Manual, 2000 Methodology* (Transportation Research Board, 2000).
2. Hales Engineering Descriptions, based on *Highway Capacity Manual, 2000 Methodology* (Transportation Research Board, 2000).

The Highway Capacity Manual 2000 (HCM 2000) methodology was used in this study to remain consistent with "state-of-the-practice" professional standards. This methodology has different quantitative evaluations for signalized and unsignalized intersections. For signalized and all-way stop intersections, the LOS is provided for the overall intersection

(weighted average of all approach delays). For all other unsignalized intersections LOS is reported based on the worst approach. Hales Engineering has also calculated overall delay values for unsignalized intersections, which provides additional information and represents the overall intersection conditions rather than just the worst approach.

D. Level of Service Standards

For the purposes of this study, a minimum overall intersection performance for each of the study intersections was set at LOS D. However, if LOS E or F conditions exist, explanation and/or mitigation measures will be presented. An LOS D threshold is consistent with “state-of-the-practice” traffic engineering principles.

II. EXISTING (2008) BACKGROUND CONDITIONS

A. Purpose

The purpose of the existing (2008) background analysis is to study the intersections and roadways during the peak travel periods of the day with background traffic and geometric conditions. Through this analysis, background traffic operational deficiencies can be identified and potential mitigation measures can be recommended. This analysis will provide a baseline condition that may be compared to the build conditions to identify the impacts of the development.

B. Roadway System

The primary roadways that will provide access to the project site are described below:

Park Lane – is a UDOT facility classified by Farmington City as an arterial street. This roadway is currently composed of a five-lane cross section from Lagoon Drive to Clark Lane. The five-lane cross section includes two travel lanes in each direction and a center two way left turn lane (TWLTL).

Clark Lane (100 North) – is a city facility classified by Farmington City as a minor arterial from Park Lane to I-15, as a major collector street from Park Lane to 1525 West, and as a minor collector to the west of 1525 West. This roadway is currently composed of a three-lane cross section including one travel lane in the east- and westbound directions of travel and a center TWLTL from I-15 to 1525 West and a two-lane cross section including one travel lane in the east- and westbound directions of travel to the west of 1525 West.

Several roadway improvements were included in the 2008 background conditions. These include proposed roadway realignments near the project as well as mitigations previously recommended by Hales Engineering for other developments near the Shivas Property. Farmington City is currently working on updating the master plan to include the following geometric changes:

Realigned Park Lane / Relocated Clark Lane Signalized Intersection:

- Park Lane will be realigned to head west and intersect Clark Lane at the abandoned railroad tracks instead of intersecting 1100 West at the signalized intersection.
- 1100 West will continue north and realign to intersect the relocated Park Lane alignment and the Park Lane / West State Street (Clark Lane) traffic signal will be

relocated to this intersection (approximately 1150 West). 1100 West will then continue to the north to Shepard Lane.

- The new intersection was configured as follows:
  - Dual left turn lanes in all directions
  - Right turn pockets in all directions
  - All turn pockets 250 feet long
  - Protected phasing for all left turn movements
- The extension of 1100 West to the north of Park Lane was assumed to have a five-lane cross section.
- 1100 West was assumed to have a five lane cross section between Park Lane and West State Street (Clark Lane).

Clark Lane / Park Lane:

- Clark Lane west of 1100 West will realigned to intersect with the realigned Park Lane
- The new intersection configured as follows:
  - 100 foot eastbound right turn pocket (Park Lane)
  - 100 foot westbound left turn pocket (Park Lane)
  - 100 foot northbound left turn pocket (Clark Lane)

Park Lane / I-15 Northbound on-Ramps:

- Provide dual eastbound to northbound left turn lanes onto northbound I-15 ramps
- Provide protected phasing for this movement

C. Traffic Volumes

Hales Engineering performed weekday p.m. peak period traffic counts at the following intersection(s):

- Northbound US-89 / Park Lane
- Southbound US-89 / Park Lane
- Northbound I-15 / Park Lane
- Southbound I-15 / Park Lane
- Clark Lane / Park Lane
- Clark Lane / 1525 West

These counts were performed on Tuesday, February 26, 2008, Wednesday, February 27, 2008, Tuesday, May 6, 2008, and Tuesday, July 15, 2008. The p.m. peak hour was determined to be between 4:45 and 5:45 p.m., with an observed peak hour factor (PHF) of 0.92.

A UDOT-controlled Automated Traffic Recorder (ATR) in the vicinity of the project provided seasonal adjustment factors for all data collected. Based on the combination of current (2008) intersection volumes and traffic generated by the site, the weekday p.m. peak hour was the critical time period identified for analysis. Detailed count data is included in Appendix A.

In addition to the existing traffic on the roadway network, some developments were also included in the background analysis including the following:

- Station Park Development
- America West Development

D. Level of Service Analysis

Using Synchro/SimTraffic, which follow the Highway Capacity Manual (HCM) 2000 methodology introduced in Chapter I, the p.m. peak hour LOS was computed for each study intersection. The results of this analysis are reported in Table 2 (see Appendix B for the detailed LOS reports). Multiple runs of SimTraffic were used to provide a statistical evaluation of the interaction between the intersections. These results serve as a baseline condition for the impact analysis of the proposed development during existing (2008) conditions. As shown in Table 2, based on overall intersection averages, all intersections have acceptable levels of delay with the exception of Clark Lane / 1100 West intersection.

E. Mitigation Measures

The following mitigation is recommended:

<u>1100 West / Clark Lane:</u>

- Convert intersection into a roundabout

Table 3 shows the SimTraffic results after implementing the roundabout. As is shown in Table 3, the delay at 1100 West / Clark Lane is significantly reduced. It should be noted that the roundabout would need to be a multi-lane roundabout, therefore, additional analysis, beyond the SimTraffic analysis, may be needed to verify the viability of a roundabout at this location.

Another option to mitigate delay at this intersection would be to align West State Street (Clark Lane), instead of 1100 West, with Park Lane. This would mitigate much of the delay because the majority of the traffic in this intersection is traveling between the northern and eastern legs, making that movement the dominant movement. However, at this time, it is understood that Farmington City wants to avoid making this direct

connection. Therefore, a roundabout may be the best alternative to alleviate congestion at this intersection.

Table 2

Existing (2008) Background
p.m. Peak Hour Level of Service

Intersection		Worst Approach			Overall Intersection	
Description	**Control**	**Approach[1, 3]**	**Aver. Delay (Sec / Veh)[1]**	**LOS[1]**	**Aver. Delay (Sec / Veh)[2]**	**LOS[2]**
Park Lane / US-89 NB On-Ramp & I-15 NB Off-ramp	Signal	-	-	-	20.4	C
Park Lane / US-89 SB Off-Ramp & I-15 SB On-ramp	Signal	-	-	-	23.4	C
Park Lane / Legacy SB On-Ramp & I-15 SB Off-ramp	Signal	-	-	-	19.8	B
Park Lane / Legacy SB On-Ramp & I-15 SB Off-ramp	Signal	-	-	-	28.9	C
Station Park Access / Park Lane	Signal	-	-	-	36.4	D
1150 West / Park Lane	Signal	-	-	-	40.5	D
Clark Lane / 1100 West	EB/WB stop	WB	>50.0	F	>50.0	F
Clark Lane / Park Lane	NB Stop	NB	2.1	A	1.7	A
Clark Lane / 1525 West	All-Way Stop	-	-	-	7.6	A

1. This represents the worst approach LOS and delay (seconds / vehicle) and is only reported for non-all-way-stop unsignalized intersections.
2. This represents the overall intersection LOS and delay (seconds / vehicle).
3. SB = Southbound approach, etc.

Source: Hales Engineering, November 2008

Table 3

Existing (2008) Background - Mitigated
p.m. Peak Hour Level of Service

Intersection		Worst Approach			Overall Intersection	
Description	**Control**	**Approach[1, 3]**	**Aver. Delay (Sec / Veh)[1]**	**LOS[1]**	**Aver. Delay (Sec / Veh)[2]**	**LOS[2]**
Park Lane / US-89 NB On-Ramp & I-15 NB Off-ramp	Signal	-	-	-	20.5	C
Park Lane / US-89 SB Off-Ramp & I-15 SB On-ramp	Signal	-	-	-	22.7	C
Park Lane / Legacy SB On-Ramp & I-15 SB Off-ramp	Signal	-	-	-	19.2	B
Park Lane / Legacy SB On-Ramp & I-15 SB Off-ramp	Signal	-	-	-	28.5	C
Station Park Access / Park Lane	Signal	-	-	-	36.3	D
1150 West / Park Lane	Signal	-	-	-	40.1	D
Clark Lane / 1100 West	Roundabout	-	-	-	13.5	B
Clark Lane / Park Lane	NB Stop	NB	2.7	A	1.7	A
Clark Lane / 1525 West	All-Way Stop	-	-	-	7.6	A

1. This represents the worst approach LOS and delay (seconds / vehicle) and is only reported for non-all-way-stop unsignalized intersections.
2. This represents the overall intersection LOS and delay (seconds / vehicle).
3. SB = Southbound approach, etc.

Source: Hales Engineering, November 2008

III. PROJECT CONDITIONS

A. Purpose

The project conditions analysis explains the type and intensity of development. This provides the basis for trip generation, distribution, and assignment of project trips to the surrounding study intersections defined in the Introduction.

B. Project Description

This study addresses the traffic impacts associated with the proposed development of land located on the north side of Park Lane in Farmington, Utah, directly west of I-15. A site plan for the proposed development has been included in Appendix C.

The development is composed of three sections with the following land uses:

Transit Mixed Use (TMU):

- Retail: 230,000 square feet
- Office: 50,000 square feet
- Condominiums: 390 dwelling units

General Mixed Use (GMU):

- Retail: 395,000 square feet

Office Mixed Use (OMU):

- Office: 250,000 square feet

Based on a conversation with the developer, it was assumed that the TMU would be constructed first, and was therefore included in the 2008 “plus project” analysis. The GMU and OMU were assumed to be completed by 2020 and were therefore both included in the 2020 and 2040 “plus project” analyses.

C. Trip Generation

Trip generation for all land uses were calculated using trip generation rates published in the Institute of Transportation Engineers (ITE) *Trip Generation, 7th Edition, 2003*. Trips were generated using the land use intensity previously described and are summarized in Table 4 for the proposed project.

Because of the close proximity to the new Commuter Rail station, the following transit reductions were taken, depending on the land use:

- Office: 20% reduction
- Residential: 15% reduction
- Retail: No reduction

The ITE trip generation rates identify gross trips to and from a facility as if it were a stand-alone activity. Gross ITE trip generation rates do not account for trips already on adjacent roadways or for internal capture. Hales Engineering adjusted the gross trip generation to account for internal capture trips between the residential, office, and retail land uses. No pass-by trip reductions were taken because the specific nature of the retail land use is not yet known and residential and office land uses do not typically have significant pass-by reductions. The overall internal reduction taken for the 2008 phases was 11 percent. For the full build-out scenarios (2020 and 2040), the overall internal capture was 7 percent.

D. Trip Distribution and Assignment

Project traffic was assigned to the roadway network based on the type of trip and the proximity of project access points to major streets, high population densities, and regional trip attractions. Existing travel patterns observed during data collection also provided guidance in establishing these distribution percentages, especially in close proximity to the site. Due to the anticipated changes to the future roadway network, two distribution patterns were evaluated, existing and future conditions. The resulting overall distribution of project generated trips, for the existing conditions, is as follows:

- North
  - 1150 West 5%
  - I-15 18%
  - US-89 13%
- South
  - Station Park Development 5%
  - 1100 West 3%
  - I-15 14%
  - Legacy Parkway 4%
- East
  - Park Lane 13%
  - Clark Lane 13%
- West
  - America West Development 5%
  - Clark Lane 7%

These trip distribution assumptions were used to assign the p.m. peak hour generated trips at the study intersections to create a trip assignment for the initial stage of the proposed development.

For the future 2020 and 2040 trip distribution, Hales Engineering calculated different trip distributions because of the Legacy Connector freeway and proposed Shepard Lane interchange. The future year distributions were based on modeling preformed for the Farmington Transportation Master Plan Update and are as follows:

- North
  - 1150 West 36%
  - I-15 5%
  - US-89 4%
- South
  - Station Park Development 5%
  - 1100 West 18%
  - I-15 9%
  - Legacy Parkway 5%
- East
  - Park Lane 4%
  - Clark Lane 4%
- West
  - America West Development 5%
  - Clark Lane 5%

The most significant changes in the future (2020 and 2040) trip distributions are the increase in traffic on 1150 West, which will provide access to the Shepard Lane interchange, and the increase in traffic on 1100 West, which will provide access to the Legacy Connector.

Specific trip assignment for each analysis time period is shown in Appendix D.

Table 4
Shivas Property TIS
Trip Generation

	Land Use[1]	Number of Units	Unit Type	Daily Trip Generation	% Entering	% Exiting	Trips Entering	Trips Exiting	**Total Daily Trips**
TMU1	Shopping Center (820)	230	1,000 Sq. Ft. GLA	11,670	50%	50%	5,835	5,835	**11,670**
TMU2	General Office Building (710)	50	1,000 Sq. Ft. GFA	782	50%	50%	391	391	**782**
TMU3	Residential Condominium/Townhouse (230)	390	Dwelling Units	2,041	50%	50%	1,021	1,021	**2,041**
GMU	Shopping Center (820)	395	1,000 Sq. Ft. GLA	16,585	50%	50%	8,293	8,293	**16,585**
OMU	General Office Building (710)	250	1,000 Sq. Ft. GFA	2,701	50%	50%	1,351	1,351	**2,701**
	Project Total Daily Trips						**16,890**	**16,890**	**33,780**
	Land Use[1]	Number of Units	Unit Type	a.m. Peak Hour Trip Generation	% Entering	% Exiting	Trips Entering	Trips Exiting	**Total a.m. Trips**
TMU1	Shopping Center (820)	230	1,000 Sq. Ft. GLA	237	61%	39%	145	92	**237**
TMU2	General Office Building (710)	50	1,000 Sq. Ft. GFA	108	88%	12%	95	13	**108**
TMU3	Residential Condominium/Townhouse (230)	390	Dwelling Units	153	17%	83%	26	127	**153**
GMU	Shopping Center (820)	395	1,000 Sq. Ft. GLA	407	61%	39%	248	159	**407**
OMU	General Office Building (710)	250	1,000 Sq. Ft. GFA	390	88%	12%	344	47	**390**
	Project Total a.m. Peak Hour Trips						**857**	**438**	**1,295**
	Land Use[1]	Number of Units	Unit Type	p.m. Peak Hour Trip Generation	% Entering	% Exiting	Trips Entering	Trips Exiting	**Total p.m. Trips**
TMU1	Shopping Center (820)	230	1,000 Sq. Ft. GLA	1,085	48%	52%	484	525	**1,009**
TMU2	General Office Building (710)	50	1,000 Sq. Ft. GFA	135	17%	83%	17	83	**100**
TMU3	Residential Condominium/Townhouse (230)	390	Dwelling Units	184	67%	33%	97	48	**145**
GMU	Shopping Center (820)	395	1,000 Sq. Ft. GLA	1,550	48%	52%	692	750	**1,442**
OMU	General Office Building (710)	250	1,000 Sq. Ft. GFA	359	17%	83%	45	222	**267**
	Project Total p.m. Peak Hour Trips (Net of transit and internal capture reductions[2])						**1,336**	**1,627**	**2,963**
	Land Use[1]	Number of Units	Unit Type	Saturday Daily Trip Generation	% Entering	% Exiting	Trips Entering	Trips Exiting	**Total Sat. Daily Trips**
TMU1	Shopping Center (820)	230	1,000 Sq. Ft. GLA	15,615	50%	50%	7,808	7,808	**15,615**
TMU2	General Office Building (710)	50	1,000 Sq. Ft. GFA	119	50%	50%	59	59	**119**
TMU3	Residential Condominium/Townhouse (230)	390	Dwelling Units	1,840	50%	50%	920	920	**1,840**
GMU	Shopping Center (820)	395	1,000 Sq. Ft. GLA	21,954	50%	50%	10,977	10,977	**21,954**
OMU	General Office Building (710)	250	1,000 Sq. Ft. GFA	593	50%	50%	296	296	**593**
	Project Total Saturday Trips						**20,060**	**20,060**	**40,120**
	Land Use[1]	Number of Units	Unit Type	Sat Peak Hour Trip Generation	% Entering	% Exiting	Trips Entering	Trips Exiting	**Total Sat Pk Hr Trips**
TMU1	Shopping Center (820)	230	1,000 Sq. Ft. GLA	1,487	52%	48%	773	714	**1,487**
TMU2	General Office Building (710)	50	1,000 Sq. Ft. GFA	21	54%	46%	11	9	**21**
TMU3	Residential Condominium/Townhouse (230)	390	Dwelling Units	156	54%	46%	84	72	**156**
GMU	Shopping Center (820)	395	1,000 Sq. Ft. GLA	2,114	52%	48%	1,099	1,015	**2,114**
OMU	General Office Building (710)	250	1,000 Sq. Ft. GFA	103	54%	46%	55	47	**103**
	Project Total Saturday Peak Hour Trips						**2,023**	**1,857**	**3,880**

1. Land Use Code from the Institute of Transportation Engineers - 7th Edition Trip Generation Manual (ITE Manual)
2. Internal capture during the pm peak period was calculated to be 7%. Transit reduction for office was 20%. Transit reduction for residential was 15%. Transit reduction for retail was 0%.

SOURCE: Hales Engineering, November 2008

IV. EXISTING (2008) PLUS PROJECT CONDITIONS

A. Purpose

This section of the report examines the traffic impacts of the proposed project at each of the study intersections. The trips generated by the proposed development were combined with the existing background traffic volumes to create the existing plus project conditions. This scenario provides valuable insight into the potential impacts of the proposed project on background traffic conditions.

B. Background Geometric Changes

Some changes to the geometric conditions were assumed as part of the development. Thos changes are outlined as follows:

Shivas Access Road:

- This road was assumed to have a five-lane cross section with two lanes in each direction and a center TWLTL.

Station Park & Shivas Access / Park Lane:

- Dual southeast-bound left turn lanes (300 feet)
- Northeast left turn pocket (150 feet)
- Southwest right turn pocket (150 feet)
- Convert one of the northwest-bound right turn lanes to a shared through/right lane

C. Traffic Volumes

Project trips were assigned to the study intersections based on the trip distribution percentages discussed in Chapter III and permitted intersection turning movements.

The existing (2008) plus project p.m. peak hour volumes were generated for the study intersections and are shown in Appendix D.

D. Level of Service Analysis

Using Synchro/SimTraffic, which follow the Highway Capacity Manual (HCM) 2000 methodology introduced in Chapter I, the p.m. peak hour LOS was computed for each study intersection. The results of this analysis are reported in Table 5 (see Appendix B for the detailed LOS reports). Multiple runs of SimTraffic were used to provide a

statistical evaluation of the interaction between the intersections. As shown in Table 5, several study intersections experience unacceptable levels of delay.

Table 5

Existing (2008) Plus Project
p.m. Peak Hour Level of Service

Intersection		Worst Approach			Overall Intersection	
Description	**Control**	**Approach[1, 3]**	**Aver. Delay (Sec / Veh)[1]**	**LOS[1]**	**Aver. Delay (Sec / Veh)[2]**	**LOS[2]**
Park Lane / US-89 NB On-Ramp & I-15 NB Off-ramp	Signal	-	-	-	28.3	C
Park Lane / US-89 SB Off-Ramp & I-15 SB On-ramp	Signal	-	-	-	40.4	D
Park Lane / Legacy SB On-Ramp & I-15 SB Off-ramp	Signal	-	-	-	39.3	D
Park Lane / Legacy SB On-Ramp & I-15 SB Off-ramp	Signal	-	-	-	75.5	E
Station Park & Shivas Access / Park Lane	Signal	-	-	-	>80.0	F
1150 West / Park Lane	Signal	-	-	-	>80.0	F
Clark Lane / 1100 West	Roundabout	-	-	-	10.8	B
Clark Lane / Park Lane	NB Stop	NB	41.0	E	44.5	E
Clark Lane / 1525 West	All-Way Stop	-	-	-	7.9	A

1. This represents the worst approach LOS and delay (seconds / vehicle) and is only reported for non-all-way-stop unsignalized intersections.
2. This represents the overall intersection LOS and delay (seconds / vehicle).
3. SB = Southbound approach, etc.

Source: Hales Engineering, November 2008

E. Mitigation Measures

Delay along the Park Lane corridor between the new developments and the interchange experience high levels of delay, however, with the completion of the Legacy Connector as well as a new interchange at Shepard Lane, conditions will likely improve in the future. However, some mitigations exist that can alleviate this delay in the short term. Possible mitigations include the following:

Park Lane:

- Widen from 5 lanes to 7 lanes between 1100 West and the southbound I-15 & Legacy Ramps

Station Park Access / Park Lane:

- Add additional northwest right turn lane (150 feet long)
- Convert middle lane that was a shared through/right lane to a through lane only
- The new northwest bound approach is composed of a left turn pocket, a through lane, a trap right turn lane, and a right turn pocket

Park Lane / Southbound I-15 & Legacy Parkway Ramps

- Seven lane cross section in northeast direction ends in a trap right turn lane onto southbound Legacy Parkway
- Change current one lane off-ramp (southbound I-15) to two lane off-ramp
- Create free-right and add-a-lane for outer off-ramp lane onto Park Lane

Table 6 shows the SimTraffic results after implementing the above listed mitigations. All intersections improve to acceptable conditions with the exception of the Station Park & Shivas Access / Park Lane intersection, which has LOS E.

All of the mitigations, except the widening of Park Lane were assumed to be completed before future 2020 and 2040 analyses. Due to the geometric limitations of the Park Lane overpasses not being wide enough for an additional through lane in each direction, this widening was only evaluated for the existing conditions scenario, for comparison purposes.

Table 6

Existing (2008) Plus Project - Mitigated
p.m. Peak Hour Level of Service

Intersection		Worst Approach			Overall Intersection	
Description	**Control**	**Approach[1, 3]**	**Aver. Delay (Sec / Veh)[1]**	**LOS[1]**	**Aver. Delay (Sec / Veh)[2]**	**LOS[2]**
Park Lane / US-89 NB On-Ramp & I-15 NB Off-ramp	Signal	-	-	-	30.4	C
Park Lane / US-89 SB Off-Ramp & I-15 SB On-ramp	Signal	-	-	-	21.1	C
Park Lane / Legacy SB On-Ramp & I-15 SB Off-ramp	Signal	-	-	-	23.0	C
Park Lane / Legacy SB On-Ramp & I-15 SB Off-ramp	Signal	-	-	-	17.2	B
Station Park & Shivas Access / Park Lane	Signal	-	-	-	76.8	E
1150 West / Park Lane	Signal	-	-	-	27.3	C
Clark Lane / 1100 West	Roundabout	-	-	-	9.2	A
Clark Lane / Park Lane	NB Stop	NB	2.0	A	1.9	A
Clark Lane / 1525 West	All-Way Stop	-	-	-	7.6	A

1. This represents the worst approach LOS and delay (seconds / vehicle) and is only reported for non-all-way-stop unsignalized intersections.
2. This represents the overall intersection LOS and delay (seconds / vehicle).
3. SB = Southbound approach, etc.

Source: Hales Engineering, November 2008

V. FUTURE (2020) BACKGROUND CONDITIONS

A. Purpose

The purpose of the future (2020) background analysis is to study the intersections and roadways during the peak travel periods of the day for future background traffic and geometric conditions. Through this analysis, future background traffic operational deficiencies can be identified and potential mitigation measures recommended.

B. Background Geometric Changes

For the 2020 conditions, it was assumed that the Legacy Connector would be in place and that it would be located out to the west of Farmington. Additionally, the Shepard Lane / I-15 interchange was also assumed to be completed by 2020.

C. Traffic Volumes

Traffic volumes for the future year 2020 were projected using growth estimates from the Transportation Master Plan Update completed by WCEC. The resulting future 2020 p.m. peak hour traffic volumes are shown in Appendix D, and include the "Triangle Parcel" at the intersection of Clark Lane and Park Lane, the Station Park development, the America West Development, and other background growth already accounted for in the travel demand model (TDM).

D. Level of Service Analysis

Using Synchro/SimTraffic which follow the Highway Capacity Manual (HCM) 2000 methodology introduced in Chapter I, the p.m. peak hour LOS was computed for each study intersection. The results of this analysis are reported in Table 7 (see Appendix B for the detailed LOS reports). Multiple runs of SimTraffic were used to provide a statistical evaluation of the interaction between the intersections. These results serve as a baseline condition for the impact analysis of the proposed development during future (2020) conditions. As shown in Table 7, all of the intersections have acceptable levels of delay.

E. Mitigation Measures

No mitigations are recommended.

Table 7

Future (2020) Background
p.m. Peak Hour Level of Service

Intersection		Worst Approach			Overall Intersection	
Description	**Control**	**Approach[1, 3]**	**Aver. Delay (Sec / Veh)[1]**	**LOS[1]**	**Aver. Delay (Sec / Veh)[2]**	**LOS[2]**
Park Lane / US-89 NB On-Ramp & I-15 NB Off-ramp	Signal	-	-	-	13.8	B
Park Lane / US-89 SB Off-Ramp & I-15 SB On-ramp	Signal	-	-	-	12.8	B
Park Lane / Legacy SB On-Ramp & I-15 SB Off-ramp	Signal	-	-	-	14.2	B
Park Lane / Legacy SB On-Ramp & I-15 SB Off-ramp	Signal	-	-	-	16.1	B
Station Park Access / Park Lane	Signal	-	-	-	24.0	C
1150 West / Park Lane	Signal	-	-	-	37.3	D
Clark Lane / 1100 West	Roundabout	-	-	-	7.7	A
Clark Lane / Park Lane	NB Stop	NB	2.6	A	1.9	A
Clark Lane / 1525 West	All-Way Stop	-	-	-	7.5	A

1. This represents the worst approach LOS and delay (seconds / vehicle) and is only reported for non-all-way-stop unsignalized intersections.
2. This represents the overall intersection LOS and delay (seconds / vehicle).
3. SB = Southbound approach, etc.

Source: Hales Engineering, November 2008

VI. FUTURE (2020) PLUS PROJECT CONDITIONS

A. Purpose

This section of the report examines the traffic impacts of the proposed project at each of the study intersections during future 2020 conditions. The trips generated by the proposed development were combined with the future background traffic volumes to create the future plus project time period conditions. The future plus project scenario evaluates the impacts of the project traffic on the surrounding roadway network assuming full build out of the project. This scenario provides valuable insight into the potential impacts of the proposed project on future background traffic conditions.

All of the 2008 “plus project” mitigations were assumed to be completed with the exception of the widening of Park Lane from 1100 West to the interchange. As was previously discussed, this mitigation would only really be required for the short term. After the construction of the Shepard Lane interchange, the volumes on Park Lane reduce significantly.

B. Traffic Volumes

Trips were assigned to the study intersections based on the trip distribution percentages discussed in Chapter III and permitted intersection turning movements.

The future (2020) plus project p.m. peak hour volumes were generated for the study intersections and are shown in Appendix D.

C. Level of Service Analysis

Using the Synchro/SimTraffic Software which follow the Highway Capacity Manual (HCM) 2000 methodology introduced in Chapter I, the future 2020 plus project p.m. peak hour LOS was computed for each study intersection. The results of this analysis are reported in Table 8 (see Appendix B for the detailed LOS reports). Multiple runs of SimTraffic were used for the analyses to provide a statistical evaluation of the interaction between the intersections. As shown in Table 8, all of the study intersections experience acceptable levels of delay.

D. Mitigation Measures

No mitigations are recommended.

Table 8

Future (2020) Plus Project
p.m. Peak Hour Level of Service

Intersection		Worst Approach			Overall Intersection	
Description	**Control**	**Approach[1, 3]**	**Aver. Delay (Sec / Veh)[1]**	**LOS[1]**	**Aver. Delay (Sec / Veh)[2]**	**LOS[2]**
Park Lane / US-89 NB On-Ramp & I-15 NB Off-ramp	Signal	-	-	-	18.7	B
Park Lane / US-89 SB Off-Ramp & I-15 SB On-ramp	Signal	-	-	-	11.0	B
Park Lane / Legacy SB On-Ramp & I-15 SB Off-ramp	Signal	-	-	-	17.9	B
Park Lane / Legacy SB On-Ramp & I-15 SB Off-ramp	Signal	-	-	-	20.4	C
Station Park Access & Shivas Access / Park Lane	Signal	-	-	-	54.6	D
1150 West / Park Lane	Signal	-	-	-	30.4	C
Clark Lane / 1100 West	Roundabout	-	-	-	8.9	A
Clark Lane / Park Lane	NB Stop	NB	2.5	A	1.7	A
Clark Lane / 1525 West	All-Way Stop	-	-	-	7.3	A
Shivas RIRO Access / Park Lane	SB Stop	SB	11.9	B	4.3	A

1. This represents the worst approach LOS and delay (seconds / vehicle) and is only reported for non-all-way-stop unsignalized intersections.
2. This represents the overall intersection LOS and delay (seconds / vehicle).
3. SB = Southbound approach, etc.

Source: Hales Engineering, November 2008

VII. FUTURE (2040) BACKGROUND CONDITIONS

A. Purpose

The purpose of the future (2040) background analysis is to study the intersections and roadways during the peak travel periods of the day for future background traffic and geometric conditions. Through this analysis, future background traffic operational deficiencies can be identified and potential mitigation measures recommended.

B. Traffic Volumes

Traffic volumes for the future year 2040 were projected using growth estimates from the Transportation Master Plan Update completed by WCEC. The resulting future 2040 p.m. peak hour traffic volumes are shown in Appendix D, and include the "Triangle Parcel" at the intersection of Clark Lane and Park Lane, the Station Park development, the full build-out of America West Development, and other background growth already accounted for in the travel demand model (TDM).

The resulting future 2040 p.m. peak hour traffic volumes are shown in Appendix D.

C. Level of Service Analysis

Using Synchro/SimTraffic which follow the Highway Capacity Manual (HCM) 2000 methodology introduced in Chapter I, the p.m. peak hour LOS was computed for each study intersection. The results of this analysis are reported in Table 9 (see Appendix B for the detailed LOS reports). Multiple runs of SimTraffic were used to provide a statistical evaluation of the interaction between the intersections. These results serve as a baseline condition for the impact analysis of the proposed development during future (2040) conditions. As shown in Table 9, all of the study intersections experience acceptable levels of delay.

D. Mitigation Measures

No mitigations are recommended.

Table 9

Future (2040) Background
p.m. Peak Hour Level of Service

Intersection		Worst Approach			Overall Intersection	
Description	**Control**	**Approach[1, 3]**	**Aver. Delay (Sec / Veh)[1]**	**LOS[1]**	**Aver. Delay (Sec / Veh)[2]**	**LOS[2]**
Park Lane / US-89 NB On-Ramp & I-15 NB Off-ramp	Signal	-	-	-	10.8	B
Park Lane / US-89 SB Off-Ramp & I-15 SB On-ramp	Signal	-	-	-	10.1	B
Park Lane / Legacy SB On-Ramp & I-15 SB Off-ramp	Signal	-	-	-	12.2	B
Park Lane / Legacy SB On-Ramp & I-15 SB Off-ramp	Signal	-	-	-	18.0	B
Station Park Access / Park Lane	Signal	-	-	-	23.4	C
1150 West / Park Lane	Signal	-	-	-	44.6	D
Clark Lane / 1100 West	Roundabout	-	-	-	8.1	A
Clark Lane / Park Lane	NB Stop	NB	2.6	A	1.8	A
Clark Lane / 1525 West	All-Way Stop	-	-	-	6.9	A

1. This represents the worst approach LOS and delay (seconds / vehicle) and is only reported for non-all-way-stop unsignalized intersections.
2. This represents the overall intersection LOS and delay (seconds / vehicle).
3. SB = Southbound approach, etc.

Source: Hales Engineering, November 2008

VIII. FUTURE (2040) PLUS PROJECT CONDITIONS

A. Purpose

This section of the report examines the traffic impacts of the proposed project at each of the study intersections during future 2040 conditions. The trips generated by the proposed development were combined with the future background traffic volumes to create the future plus project conditions. The future plus project scenario evaluates the impacts of the project traffic on the surrounding roadway network assuming full build out of the project. This scenario provides valuable insight into the potential impacts of the proposed project on future background traffic conditions.

B. Traffic Volumes

Trips were assigned to the study intersections based on the trip distribution percentages discussed in Chapter III and permitted intersection turning movements.

The future (2040) plus project p.m. peak hour volumes were generated for the study intersections and are shown in Appendix D.

C. Level of Service Analysis

Using the Synchro/SimTraffic Software which follow the Highway Capacity Manual (HCM) 2000 methodology introduced in Chapter I, the future 2040 plus project p.m. peak hour LOS was computed for each study intersection. The results of this analysis are reported in Table 10 (see Appendix B for the detailed LOS reports). Multiple runs of SimTraffic were used for the analyses to provide a statistical evaluation of the interaction between the intersections. As shown in Table 10, most of the study intersections experience acceptable levels of delay.

D. Mitigation Measures

The following mitigations are recommended:

<u>Station Park & Shivas Access / Park Lane:</u>

- Provide dual left turn lanes for northeast left turn movement

Table 10

Future (2040) Plus Project
p.m. Peak Hour Level of Service

Intersection		Worst Approach			Overall Intersection	
Description	**Control**	**Approach[1, 3]**	**Aver. Delay (Sec / Veh)[1]**	**LOS[1]**	**Aver. Delay (Sec / Veh)[2]**	**LOS[2]**
Park Lane / US-89 NB On-Ramp & I-15 NB Off-ramp	Signal	-	-	-	15.2	B
Park Lane / US-89 SB Off-Ramp & I-15 SB On-ramp	Signal	-	-	-	10.7	B
Park Lane / Legacy SB On-Ramp & I-15 SB Off-ramp	Signal	-	-	-	19.0	B
Park Lane / Legacy SB On-Ramp & I-15 SB Off-ramp	Signal	-	-	-	40.7	D
Station Park Access & Shivas Access / Park Lane	Signal	-	-	-	49.3	D
1150 West / Park Lane	Signal	-	-	-	67.1	E
Clark Lane / 1100 West	Roundabout	-	-	-	8.1	A
Clark Lane / Park Lane	NB Stop	NB	2.5	A	1.7	A
Clark Lane / 1525 West	All-Way Stop	-	-	-	7.3	A
Shivas RIRO Access / Park Lane	SB Stop	SB	10.6	B	4.9	A

1. This represents the worst approach LOS and delay (seconds / vehicle) and is only reported for non-all-way-stop unsignalized intersections.
2. This represents the overall intersection LOS and delay (seconds / vehicle).
3. SB = Southbound approach, etc.

Source: Hales Engineering, November 2008

Table 11 shows the SimTraffic results after implementing the above listed mitigations. The 1150 West / Park Lane intersection still has LOS E conditions. However the 95th percentile queue lengths for the left turn movements at the 1150 West / Park Lane intersection are all less than 250 feet which means that queuing will not spill into the through movements at this intersection. Although there will be slightly higher than acceptable delays at this intersection, this congestion will not adversely effect other surrounding intersections.

Table 11

Future (2040) Plus Project - Mitigated
p.m. Peak Hour Level of Service

Intersection		Worst Approach			Overall Intersection	
Description	**Control**	**Approach[1, 3]**	**Aver. Delay (Sec / Veh)[1]**	**LOS[1]**	**Aver. Delay (Sec / Veh)[2]**	**LOS[2]**
Park Lane / US-89 NB On-Ramp & I-15 NB Off-ramp	Signal	-	-	-	15.2	B
Park Lane / US-89 SB Off-Ramp & I-15 SB On-ramp	Signal	-	-	-	10.5	B
Park Lane / Legacy SB On-Ramp & I-15 SB Off-ramp	Signal	-	-	-	19.2	B
Park Lane / Legacy SB On-Ramp & I-15 SB Off-ramp	Signal	-	-	-	40.0	D
Station Park Access & Shivas Access / Park Lane	Signal	-	-	-	53.3	D
1150 West / Park Lane	Signal	-	-	-	56.7	E
Clark Lane / 1100 West	Roundabout	-	-	-	11.6	B
Clark Lane / Park Lane	NB Stop	NB	2.6	A	1.8	A
Clark Lane / 1525 West	All-Way Stop	-	-	-	7.1	A
Shivas RIRO Access / Park Lane	SB Stop	SB	15.2	C	9.8	A

1. This represents the worst approach LOS and delay (seconds / vehicle) and is only reported for non-all-way-stop unsignalized intersections.
2. This represents the overall intersection LOS and delay (seconds / vehicle).
3. SB = Southbound approach, etc.

Source: Hales Engineering, November 2008

HALES ENGINEERING
innovative transportation solutions

APPENDIX A

Turning Movement Counts

HALES ENGINEERING
innovative transportation solutions

SimTraffic LOS Report

Project: Farmington Haws TIS
Analysis Period: *Existing (2008) Background - Mitigated*
Time Period: *PM Peak Hour* **Project #:** *UT08-155*

Intersection: Park Lane & US-89 Northbound Ramps
Type: Signalized

Approach	Movement	Demand Volume	Volume Served		Delay/Veh (sec)	
			Avg	%	Avg	LOS
NB	L	378	376	99	44.1	*D*
	R	25	26	105	13.9	*B*
	Subtotal	403	402	100	42.1	*D*
EB	L	592	585	99	27.6	*C*
	T	641	631	98	6.0	*A*
	Subtotal	1,233	1,216	99	16.4	*B*
WB	T	623	619	99	27.8	*C*
	R	443	432	98	1.3	*A*
	Subtotal	1,066	1,051	99	16.9	*B*
Total		2,702	2,669	99	20.5	*C*

Intersection: Park Lane & US-89 Southbound Ramps
Type: Signalized

Approach	Movement	Demand Volume	Volume Served		Delay/Veh (sec)	
			Avg	%	Avg	LOS
SB	L	144	140	97	33.9	*C*
	T	311	306	98	41.8	*D*
	R	441	448	102	32.0	*C*
	Subtotal	896	894	100	35.7	*D*
EB	T	1,092	1,081	99	26.1	*C*
	R	394	392	99	5.1	*A*
	Subtotal	1,486	1,473	99	20.5	*C*
WB	L	42	38	91	30.3	*C*
	T	970	964	99	13.9	*B*
	Subtotal	1,012	1,002	99	14.5	*B*
Total		3,394	3,369	99	22.7	*C*

TrafficCounts

2364 North 1450 East
Lehi, UT 84043
801.636.0891

Intersection Turning Movement Summary

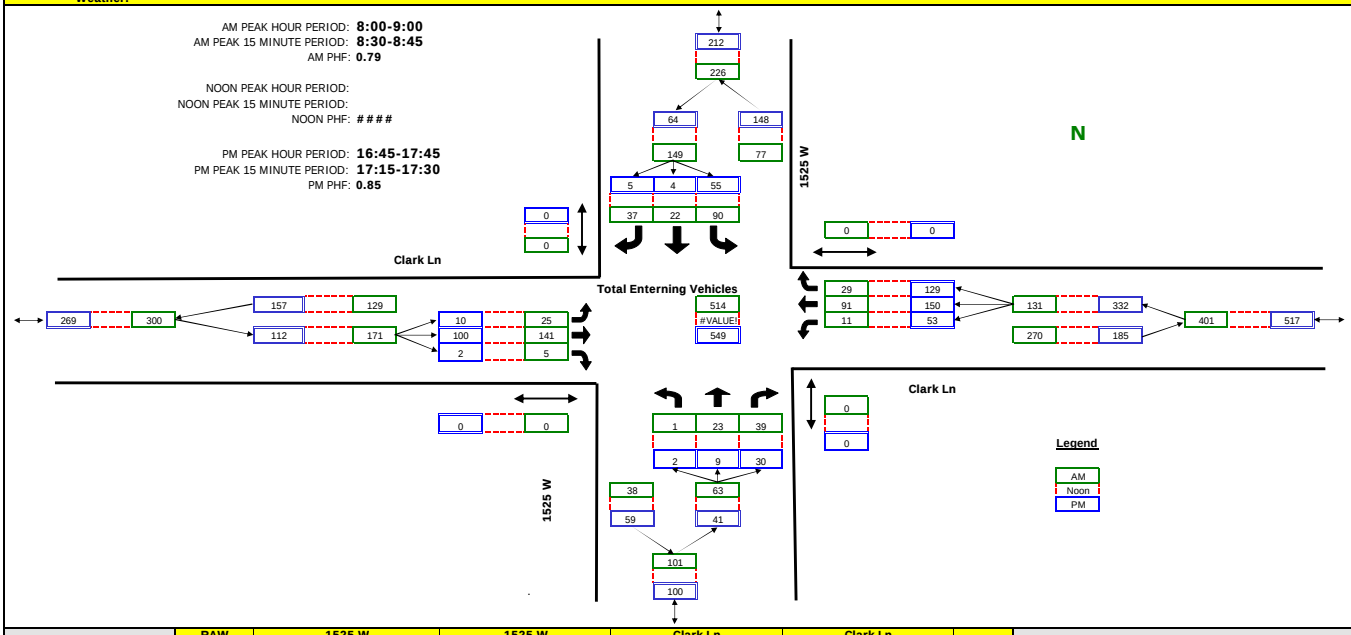
Intersection: 1525 W / Clark Ln
North/South: 1525 W
East/West: Clark Ln
Jurisdiction: Farmington UT
Project Title:
Project No: P225
Weather:

Date: 2-27-08, Wed
Day of Week Adjustment: 100.0%
Month of Year Adjustment: 92.7%
Adjustment Station #: 316
Growth Rate: 0.0%
Number of Years: 0

AM PEAK HOUR PERIOD: **8:00-9:00**
AM PEAK 15 MINUTE PERIOD: **8:30-8:45**
AM PHF: **0.79**

NOON PEAK HOUR PERIOD:
NOON PEAK 15 MINUTE PERIOD:
NOON PHF: ####

PM PEAK HOUR PERIOD: **16:45-17:45**
PM PEAK 15 MINUTE PERIOD: **17:15-17:30**
PM PHF: **0.85**



RAW COUNT SUMMARIES	1525 W Northbound				1525 W Southbound				Clark Ln Eastbound				Clark Ln Westbound				
	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	

AM PERIOD COUNTS

Period	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	TOTAL
7:00-7:15	0	2.1575	7.5512	0	38.835	3.2362	2.1575	0	0	30.205	0	0	2.1575	20.496	5.3937	0	112.1899
7:15-7:30	2.1575	4.31499	9.7087	0	48.544	0	6.4725	0	2.1575	31.284	0	0	2.1575	26.969	5.3937	0	139.1586
7:30-7:45	1.07875	0	8.63	0	42.071	0	6.4725	0	1.0787	36.677	1.0787	0	2.1575	14.024	5.3937	0	118.6624
7:45-8:00	0	1.07875	9.7087	0	25.89	0	5.3937	0	1.0787	22.654	0	0	1.0787	12.945	11.866	0	91.69364
8:00-8:15	0	0	9.7087	0	17.26	0	2.1575	0	3.2362	23.732	0	0	5.3937	16.181	7.5512	0	85.22114
8:15-8:30	0	3.23625	10.787	0	30.205	0	6.4725	0	4.315	31.284	0	0	1.0787	20.496	4.315	0	112.1899
8:30-8:45	0	3.23625	11.866	0	8.63	0	23.732	0	9.7087	59.331	4.315	0	1.0787	32.362	7.5512	0	161.8123
8:45-9:00	1.07875	16.1812	6.4725	0	33.441	21.575	4.315	0	7.5512	26.969	1.0787	0	3.2362	21.575	9.7087	0	153.1823

NOON PERIOD COUNTS

Period	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	TOTAL
11:00-11:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:15-11:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:30-11:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45-12:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:00-12:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15-12:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:30-12:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45-13:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

PM PERIOD COUNTS

Period	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	TOTAL
16:00-16:15	0	2	1	0	10	2	1	0	2	29	2	0	8	27	13	0	97
16:15-16:30	0	3	5	0	19	1	5	0	3	27	1	0	11	30	16	0	121
16:30-16:45	0	3	4	0	14	3	0	0	10	24	0	0	9	31	26	0	124
16:45-17:00	1	2	6	0	12	1	2	0	4	18	0	0	10	33	36	0	125
17:00-17:15	1	2	6	0	12	0	1	0	3	30	1	0	11	30	31	0	128
17:15-17:30	0	2	10	0	19	2	0	0	1	26	1	0	19	50	32	0	162
17:30-17:45	0	3	8	0	12	1	2	0	2	26	0	0	13	37	30	0	134
17:45-18:00	0	1	6	0	8	5	2	0	0	10	0	0	18	40	23	0	113

TrafficCounts

2364 North 1450 East
Lehi, UT 84043
801.636.0891

Intersection Turning Movement Summary

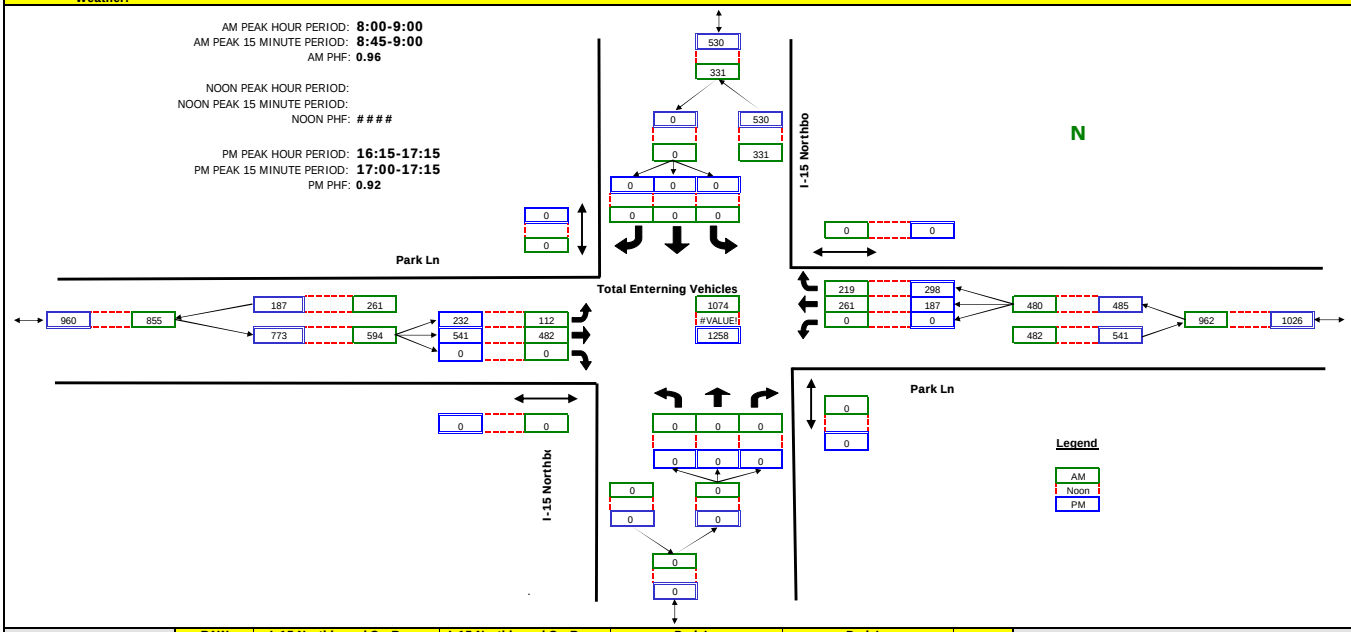
Intersection: I-15 Northbound On-Ramp / Park Ln
North/South: I-15 Northbound On-Ramp
East/West: Park Ln
Jurisdiction: Farmington UT
Project Title:
Project No: P225
Weather:

Date: 2-26-08, Tue
Day of Week Adjustment: 100.0%
Month of Year Adjustment: 92.7%
Adjustment Station #: 316
Growth Rate: 0.0%
Number of Years: 0

AM PEAK HOUR PERIOD: **8:00-9:00**
AM PEAK 15 MINUTE PERIOD: **8:45-9:00**
AM PHF: **0.96**

NOON PEAK HOUR PERIOD:
NOON PEAK 15 MINUTE PERIOD:
NOON PHF: ####

PM PEAK HOUR PERIOD: **16:15-17:15**
PM PEAK 15 MINUTE PERIOD: **17:00-17:15**
PM PHF: **0.92**



RAW COUNT SUMMARIES	I-15 Northbound On-Ramp Northbound				I-15 Northbound On-Ramp Southbound				Park Ln Eastbound				Park Ln Westbound				
	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	

AM PERIOD COUNTS

Period	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	TOTAL
7:00-7:15	0	0	0	0	0	0	0	0	18.339	36.677	0	0	0	62.567	36.677	0	154.2611
7:15-7:30	0	0	0	0	0	0	0	0	24.811	43.15	0	0	0	88.457	29.126	0	185.5448
7:30-7:45	0	0	0	0	0	0	0	0	24.811	59.331	0	0	0	130.53	42.071	0	256.7422
7:45-8:00	0	0	0	0	0	0	0	0	24.811	97.087	0	0	0	100.32	49.622	0	271.8447
8:00-8:15	0	0	0	0	0	0	0	0	17.26	119.74	0	0	0	67.961	55.016	0	259.9784
8:15-8:30	0	0	0	0	0	0	0	0	23.732	121.9	0	0	0	57.174	53.937	0	256.7422
8:30-8:45	0	0	0	0	0	0	0	0	34.52	121.9	0	0	0	61.489	59.331	0	277.2384
8:45-9:00	0	0	0	0	0	0	0	0	36.677	118.66	0	0	0	74.434	50.701	0	280.4746

NOON PERIOD COUNTS

Period	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	TOTAL
11:00-11:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:15-11:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:30-11:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45-12:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:00-12:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15-12:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:30-12:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45-13:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

PM PERIOD COUNTS

Period	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	TOTAL
16:00-16:15	0	0	0	0	0	0	0	0	58	119	0	0	0	59	60	0	296
16:15-16:30	0	0	0	0	0	0	0	0	65	124	0	0	0	56	59	0	304
16:30-16:45	0	0	0	0	0	0	0	0	56	134	0	0	0	47	87	0	324
16:45-17:00	0	0	0	0	0	0	0	0	58	127	0	0	0	39	65	0	289
17:00-17:15	0	0	0	0	0	0	0	0	53	156	0	0	0	45	87	0	341
17:15-17:30	0	0	0	0	0	0	0	0	50	104	0	0	0	45	59	0	258
17:30-17:45	0	0	0	0	0	0	0	0	42	104	0	0	0	39	68	0	253
17:45-18:00	0	0	0	0	0	0	0	0	27	93	0	0	0	55	69	0	244

TrafficCounts

2364 North 1450 East
Lehi, UT 84043
801.636.0891

Intersection Turning Movement Summary

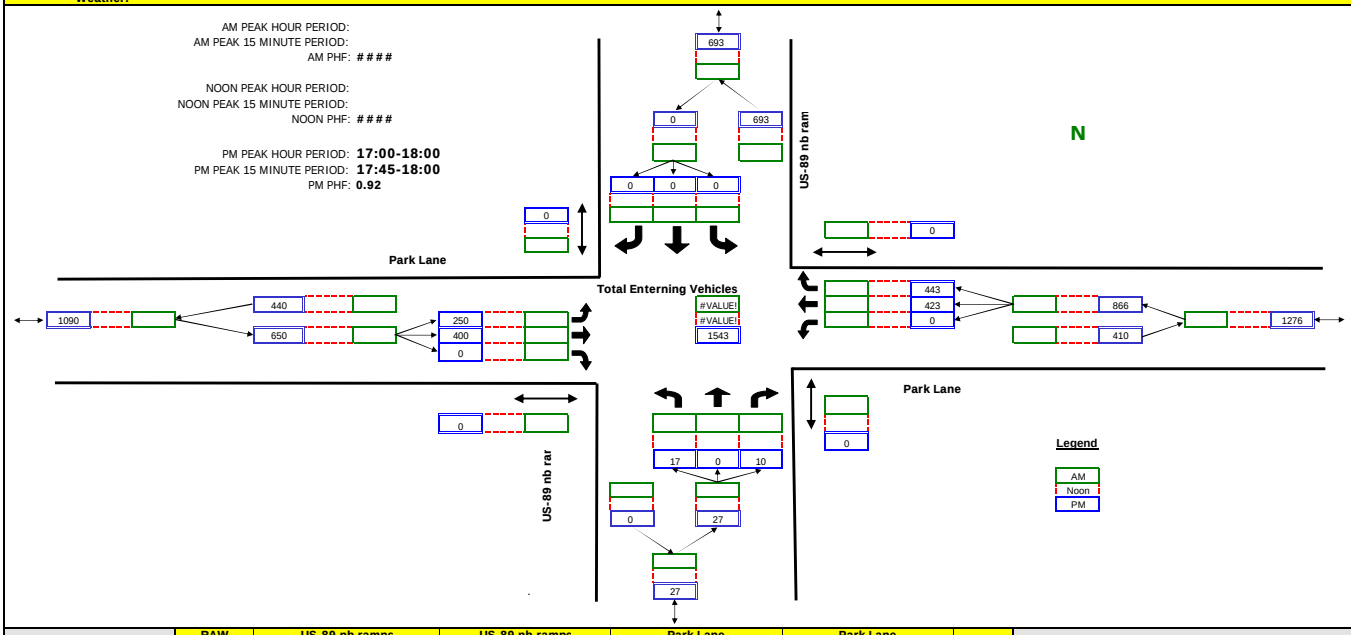
Intersection: US-89 nb ramps / Park Lane
North/South: US-89 nb ramps
East/West: Park Lane
Jurisdiction: Farmington, Utah
Project Title:
Project No: P248
Weather:

Date: 7-15-08, Tue
Day of Week Adjustment: 100.0%
Month of Year Adjustment: 107.5%
Adjustment Station #: 316
Growth Rate: 0.0%
Number of Years: 0

AM PEAK HOUR PERIOD:
AM PEAK 15 MINUTE PERIOD:
AM PHF: ####

NOON PEAK HOUR PERIOD:
NOON PEAK 15 MINUTE PERIOD:
NOON PHF: ####

PM PEAK HOUR PERIOD: **17:00-18:00**
PM PEAK 15 MINUTE PERIOD: **17:45-18:00**
PM PHF: **0.92**



RAW COUNT SUMMARIES	US-89 nb ramps Northbound				US-89 nb ramps Southbound				Park Lane Eastbound				Park Lane Westbound				
	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	

AM PERIOD COUNTS

Period	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	TOTAL
7:00-7:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15-7:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30-7:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45-8:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00-8:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15-8:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30-8:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45-9:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

NOON PERIOD COUNTS

Period	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	TOTAL
11:00-11:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:15-11:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:30-11:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45-12:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:00-12:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15-12:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:30-12:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45-13:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

PM PERIOD COUNTS

Period	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	TOTAL
16:00-16:15	5	0	6	0	0	0	0	0	39	85	0	0	0	87	100	0	322
16:15-16:30	6	0	5	0	0	0	0	0	28	64	0	0	0	94	90	0	287
16:30-16:45	9	2	3	0	0	0	0	0	44	82	0	0	0	100	111	0	351
16:45-17:00	4	0	2	0	0	0	0	0	36	91	0	0	0	124	99	0	356
17:00-17:15	1	0	4	0	0	0	0	0	55	95	0	0	0	105	117	0	377
17:15-17:30	3	0	2	0	0	0	0	0	51	88	0	0	0	113	87	0	344
17:30-17:45	6	0	2	0	0	0	0	0	72	107	0	0	0	103	112	0	402
17:45-18:00	7	0	2	0	0	0	0	0	72	110	0	0	0	102	127	0	420

TrafficCounts

2364 North 1450 East
Lehi, UT 84043
801.636.0891

Intersection Turning Movement Summary

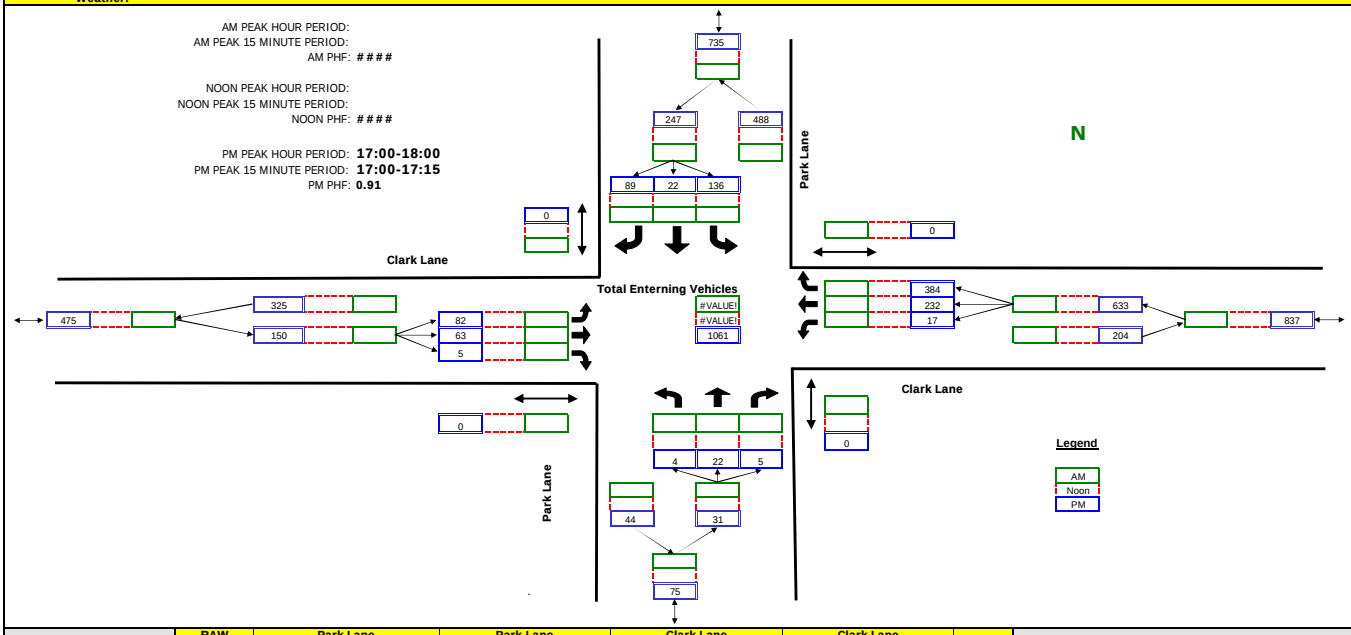
Intersection: Park Lane / Clark Lane
North/South: Park Lane
East/West: Clark Lane
Jurisdiction: Farmington, Utah
Project Title:
Project No: P248
Weather:

Date: 7-15-08, Tue
Day of Week Adjustment: 100.0%
Month of Year Adjustment: 107.5%
Adjustment Station #: 316
Growth Rate: 0.0%
Number of Years: 0

AM PEAK HOUR PERIOD:
AM PEAK 15 MINUTE PERIOD:
AM PHF: ####

NOON PEAK HOUR PERIOD:
NOON PEAK 15 MINUTE PERIOD:
NOON PHF: ####

PM PEAK HOUR PERIOD: **17:00-18:00**
PM PEAK 15 MINUTE PERIOD: **17:00-17:15**
PM PHF: **0.91**



RAW COUNT SUMMARIES

	Park Lane Northbound				Park Lane Southbound				Clark Lane Eastbound				Clark Lane Westbound				
	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	

AM PERIOD COUNTS

Period	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	TOTAL
7:00-7:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15-7:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30-7:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45-8:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00-8:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15-8:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30-8:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45-9:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

NOON PERIOD COUNTS

Period	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	TOTAL
11:00-11:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:15-11:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:30-11:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45-12:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:00-12:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15-12:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:30-12:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45-13:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

PM PERIOD COUNTS

Period	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	TOTAL
16:00-16:15	1	5	1	0	45	4	15	0	22	11	0	0	5	29	67	0	205
16:15-16:30	1	4	3	0	24	3	19	0	18	13	0	0	3	36	60	0	184
16:30-16:45	0	2	2	0	33	14	22	0	20	11	0	0	2	40	72	0	218
16:45-17:00	1	10	3	0	28	7	21	0	19	11	2	0	2	46	72	0	222
17:00-17:15	0	7	1	0	29	7	17	0	19	10	1	0	5	63	131	0	290
17:15-17:30	1	3	0	0	31	4	31	0	28	19	1	0	2	58	71	0	249
17:30-17:45	1	7	2	0	34	7	22	0	17	16	1	0	6	51	109	0	273
17:45-18:00	2	5	2	0	42	4	19	0	18	18	2	0	4	60	73	0	249

TrafficCounts

2364 North 1450 East
Lehi, UT 84043
801.636.0891

Intersection Turning Movement Summary

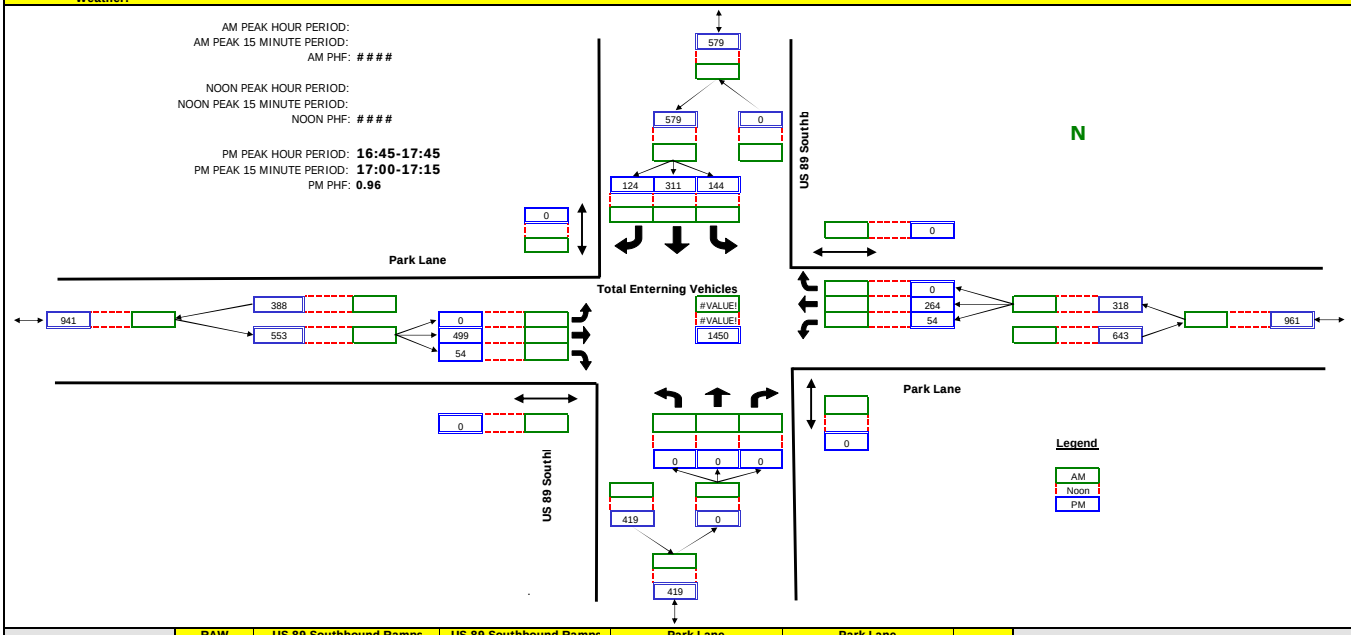
Intersection: US 89 Southbound Ramps / Park Lane
North/South: US 89 Southbound Ramps
East/West: Park Lane
Jurisdiction: Farmington UT
Project Title:
Project No: P238
Weather:

Date: 5-6-08, Tue
Day of Week Adjustment: 100.0%
Month of Year Adjustment: 102.4%
Adjustment Station #: 316
Growth Rate: 0.0%
Number of Years: 0

AM PEAK HOUR PERIOD:
AM PEAK 15 MINUTE PERIOD:
AM PHF: ####

NOON PEAK HOUR PERIOD:
NOON PEAK 15 MINUTE PERIOD:
NOON PHF: ####

PM PEAK HOUR PERIOD: **16:45-17:45**
PM PEAK 15 MINUTE PERIOD: **17:00-17:15**
PM PHF: **0.96**



RAW COUNT SUMMARIES	US 89 Southbound Ramps Northbound				US 89 Southbound Ramps Southbound				Park Lane Eastbound				Park Lane Westbound				
	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	

AM PERIOD COUNTS

Period	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	TOTAL
7:00-7:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15-7:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30-7:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45-8:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00-8:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15-8:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30-8:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45-9:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

NOON PERIOD COUNTS

Period	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	TOTAL
11:00-11:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:15-11:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:30-11:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45-12:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:00-12:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15-12:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:30-12:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45-13:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

PM PERIOD COUNTS

Period	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	TOTAL
16:00-16:15	0	0	0	0	36	70	41	0	0	102	21	0	11	70	0	0	351
16:15-16:30	0	0	0	0	28	68	39	0	0	88	24	0	6	62	0	0	315
16:30-16:45	0	0	0	0	27	53	47	0	0	92	16	0	14	78	0	0	327
16:45-17:00	0	0	0	0	36	74	37	0	0	97	15	0	9	73	0	0	341
17:00-17:15	0	0	0	0	36	74	29	0	0	149	9	0	15	66	0	0	378
17:15-17:30	0	0	0	0	42	81	27	0	0	110	12	0	18	65	0	0	355
17:30-17:45	0	0	0	0	30	82	31	0	0	143	18	0	12	60	0	0	376
17:45-18:00	0	0	0	0	23	74	55	0	0	89	17	0	8	52	0	0	318

TrafficCounts

2364 North 1450 East
Lehi, UT 84043
801.636.0891

Intersection Turning Movement Summary

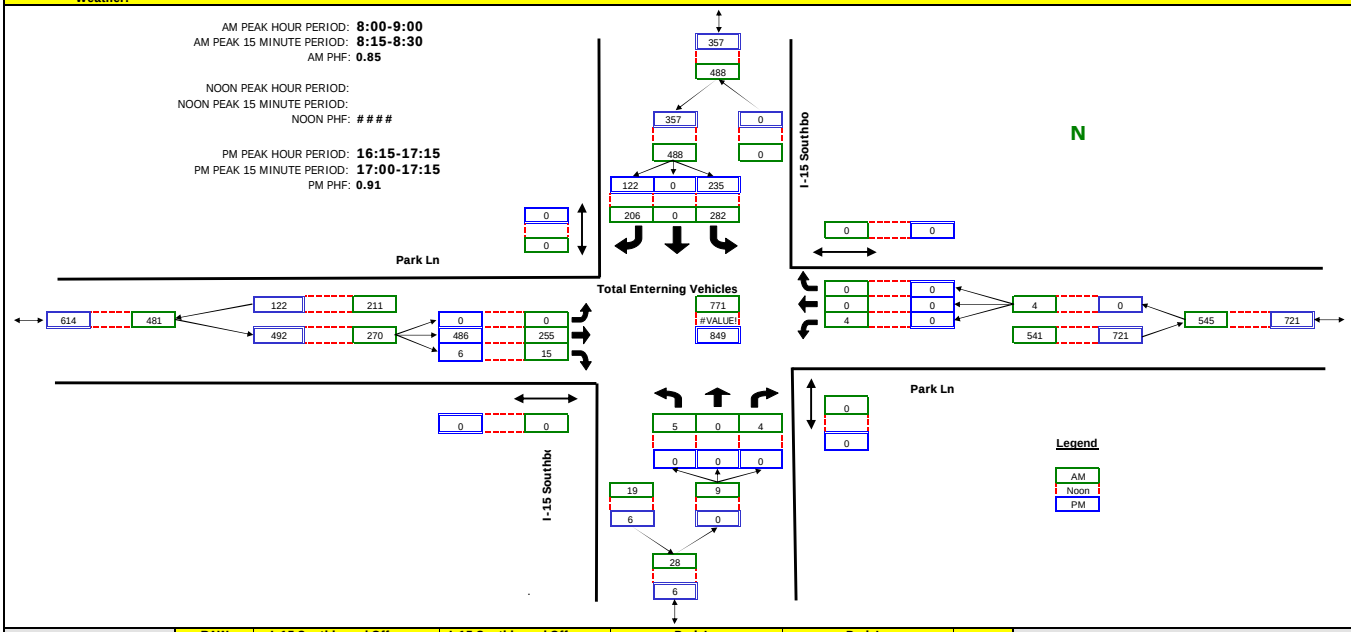
Intersection: I-15 Southbound Off-ramp / Park Ln
North/South: I-15 Southbound Off-ramp
East/West: Park Ln
Jurisdiction: Farmington UT
Project Title:
Project No: P225
Weather:

Date: 2-26-08, Tue
Day of Week Adjustment: 100.0%
Month of Year Adjustment: 92.7%
Adjustment Station #: 316
Growth Rate: 0.0%
Number of Years: 0

AM PEAK HOUR PERIOD: **8:00-9:00**
AM PEAK 15 MINUTE PERIOD: **8:15-8:30**
AM PHF: **0.85**

NOON PEAK HOUR PERIOD:
NOON PEAK 15 MINUTE PERIOD:
NOON PHF: ####

PM PEAK HOUR PERIOD: **16:15-17:15**
PM PEAK 15 MINUTE PERIOD: **17:00-17:15**
PM PHF: **0.91**



RAW COUNT SUMMARIES	I-15 Southbound Off-ramp Northbound Left	Thru	Right	Peds	I-15 Southbound Off-ramp Southbound Left	Thru	Right	Peds	Park Ln Eastbound Left	Thru	Right	Peds	Park Ln Westbound Left	Thru	Right	Peds	

AM PERIOD COUNTS

Period	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	TOTAL
7:00-7:15	3.23625	0	2.1575	0	14.024	1.0787	20.496	0	0	38.835	2.1575	0	5.3937	0	0	0	87.37864
7:15-7:30	3.23625	0	1.0787	0	26.969	0	43.15	0	0	36.677	4.315	0	2.1575	0	0	0	117.5836
7:30-7:45	1.07875	0	0	0	30.205	0	33.441	0	0	51.78	1.0787	0	0	0	0	0	117.5836
7:45-8:00	4.31499	0	2.1575	0	64.725	0	65.804	0	0	50.701	1.0787	0	0	0	0	0	188.781
8:00-8:15	2.1575	0	2.1575	0	87.379	0	46.386	0	0	39.914	3.2362	0	2.1575	0	0	0	183.3873
8:15-8:30	2.1575	0	1.0787	0	83.064	0	85.221	0	0	47.465	7.5512	0	0	0	0	0	226.5372
8:30-8:45	1.07875	0	1.0787	0	55.016	0	30.205	0	0	75.512	2.1575	0	2.1575	0	0	0	167.206
8:45-9:00	0	0	0	0	56.095	0	44.229	0	0	91.694	2.1575	0	0	0	0	0	194.1748

NOON PERIOD COUNTS

Period	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	TOTAL
11:00-11:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:15-11:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:30-11:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45-12:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:00-12:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15-12:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:30-12:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45-13:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

PM PERIOD COUNTS

Period	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	TOTAL
16:00-16:15	0	0	0	0	43	0	42	0	0	123	3	0	0	0	0	0	211
16:15-16:30	0	0	0	0	69	0	30	0	0	120	2	0	0	0	0	0	221
16:30-16:45	0	0	0	0	52	0	26	0	0	131	1	0	0	0	0	0	210
16:45-17:00	0	0	0	0	54	0	31	0	0	96	3	0	0	0	0	0	184
17:00-17:15	0	0	0	0	60	0	35	0	0	139	0	0	0	0	0	0	234
17:15-17:30	0	0	0	0	40	0	54	0	0	91	1	0	0	0	0	0	186
17:30-17:45	0	0	0	0	44	0	42	0	0	85	0	0	0	0	0	0	171
17:45-18:00	0	0	0	0	38	0	28	0	0	68	0	0	0	0	0	0	134

HALES ENGINEERING
innovative transportation solutions

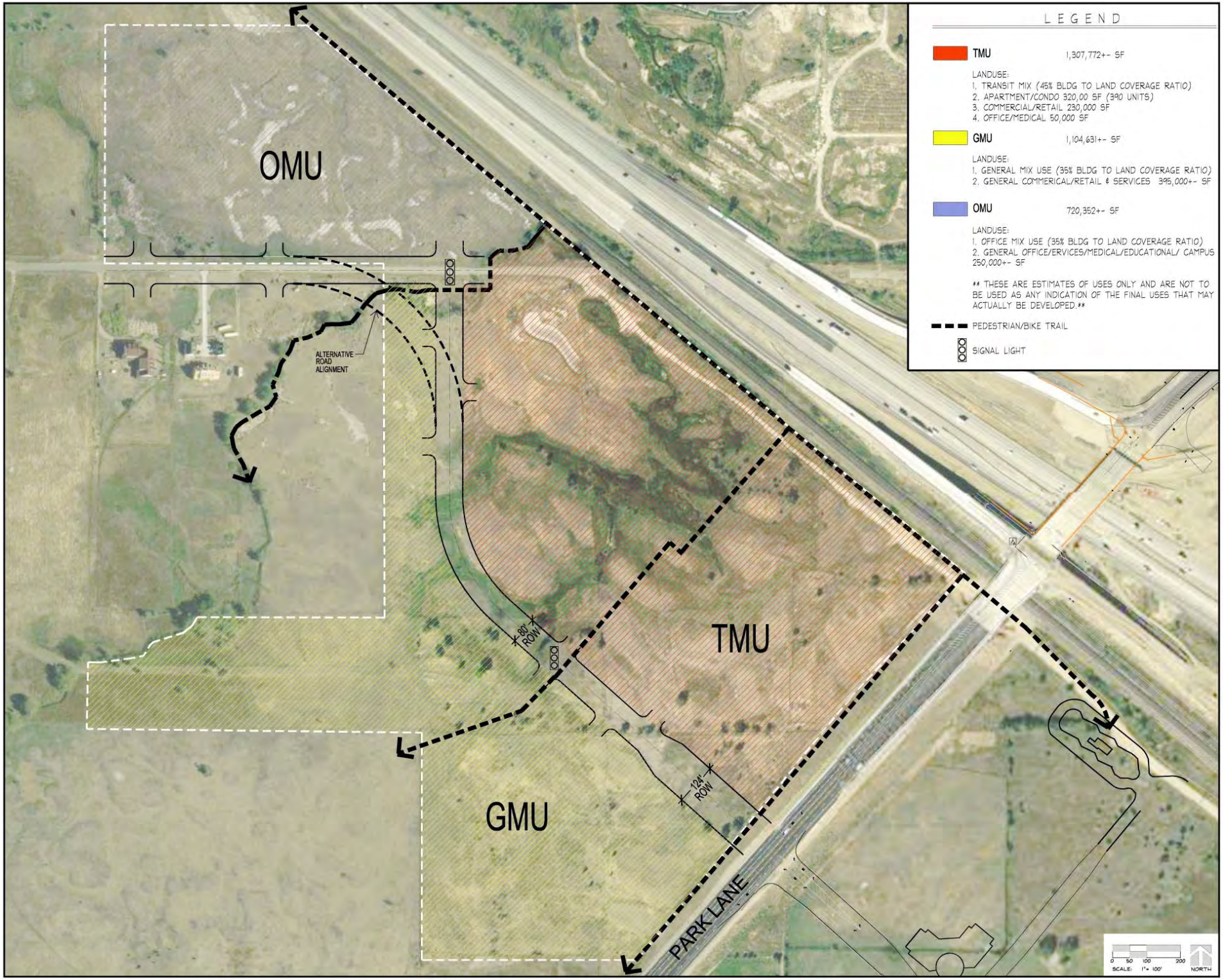
APPENDIX B

LOS Results

HALES ENGINEERING
innovative transportation solutions

APPENDIX C

Site Plan



ArcSitio Design, Inc
Landscape Architecture & Architectural Site Design
1058 East 2100 South
Salt Lake City, Utah 84106
office 801 . 487 . 4923
fax 801 . 466 . 3046
www.arcsitiodesign.com

developer:

Shivas PARTNERS
Real Estate Financing & Development Services
8 East Broadway, Ste. 700
Salt Lake City, UT 84111

consultant:

project
Farmington Square
Farmington, UT

date
23 Sept. 2008

revisions

data
acd project no: 07057

title
MASTER PLAN FOR REVIEW

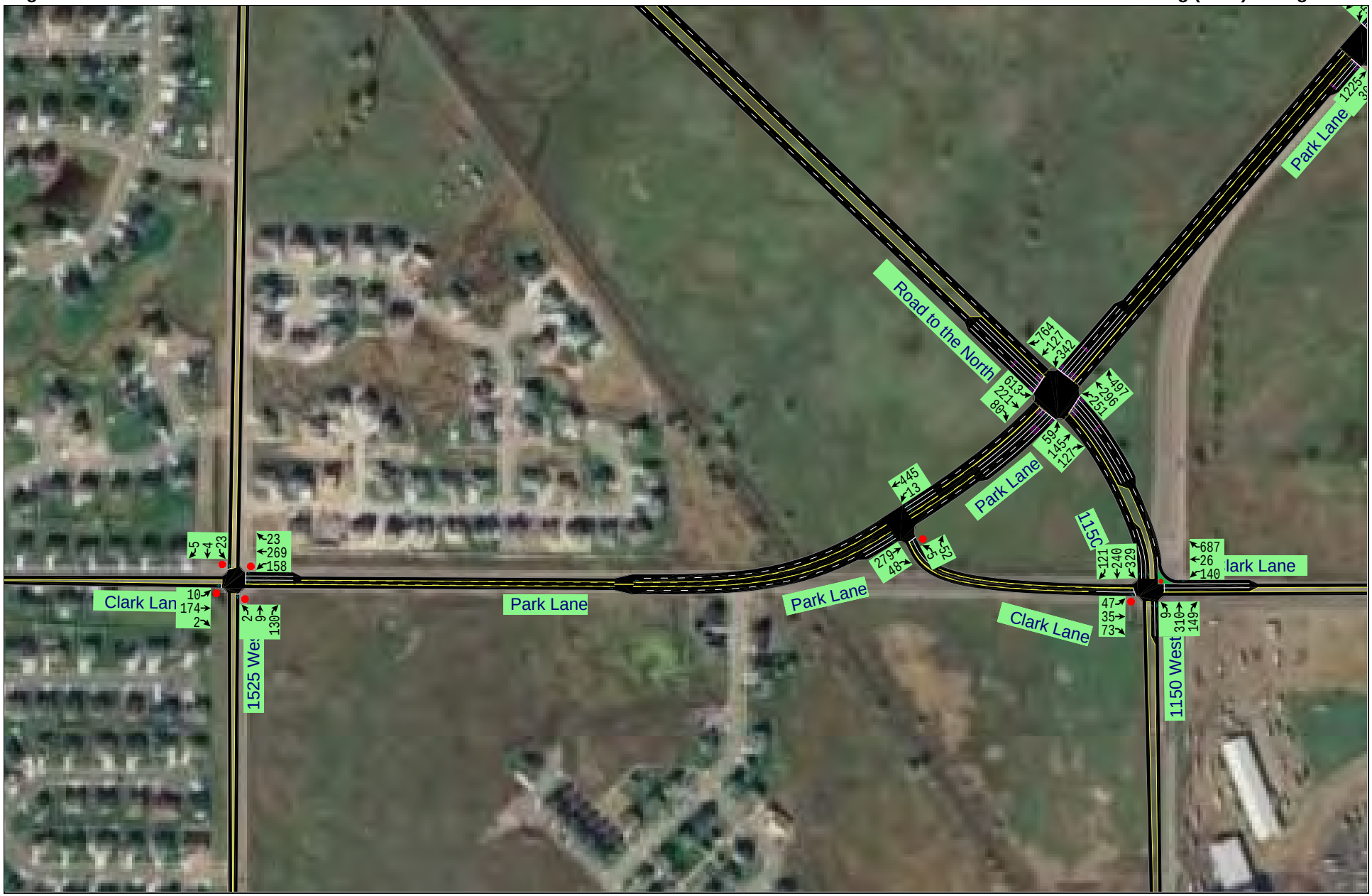
sheet
C - 01

File: E:\07057_Station Park North MP\Dwgs\Drawings\07057_Road Layout.DWG Oct 07, 2008 - 4:35pm

HALES ENGINEERING
innovative transportation solutions

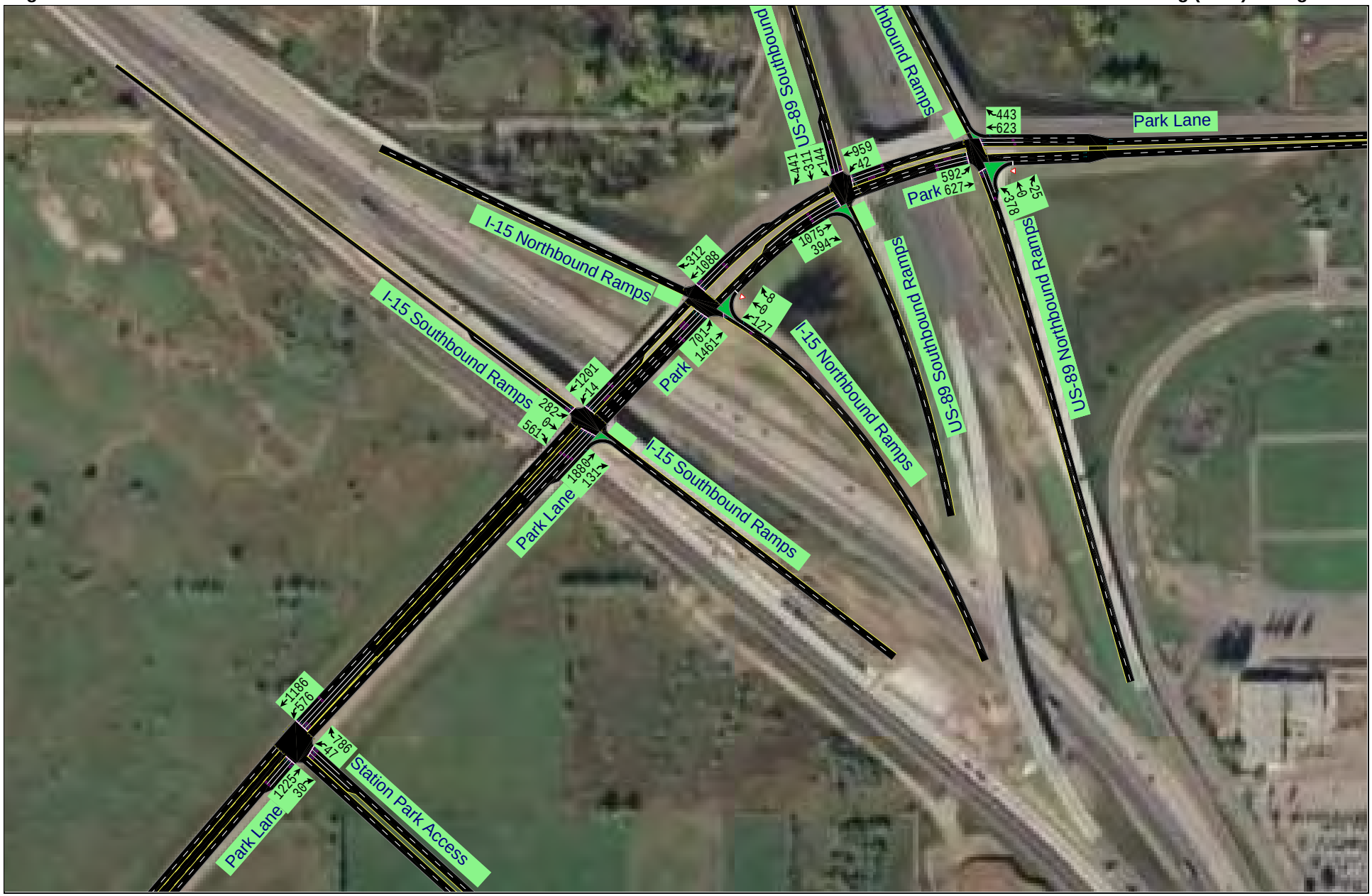
APPENDIX D

Figures


Road to the North
Park Lane
Park Lane
Park Lane
Park Lane
Clark Lane
Clark Lane
1525 West
1150 West
1150
764
127
342
613
221
80
497
296
251
59
145
127
445
13
279
48
51
52
121
240
329
687
26
140
47
35
73
9
310
149
5
4
23
23
269
158
10
174
2
2
9
130

Farmington
Figure 1b

Haws Property TIS
Existing (2008) Background

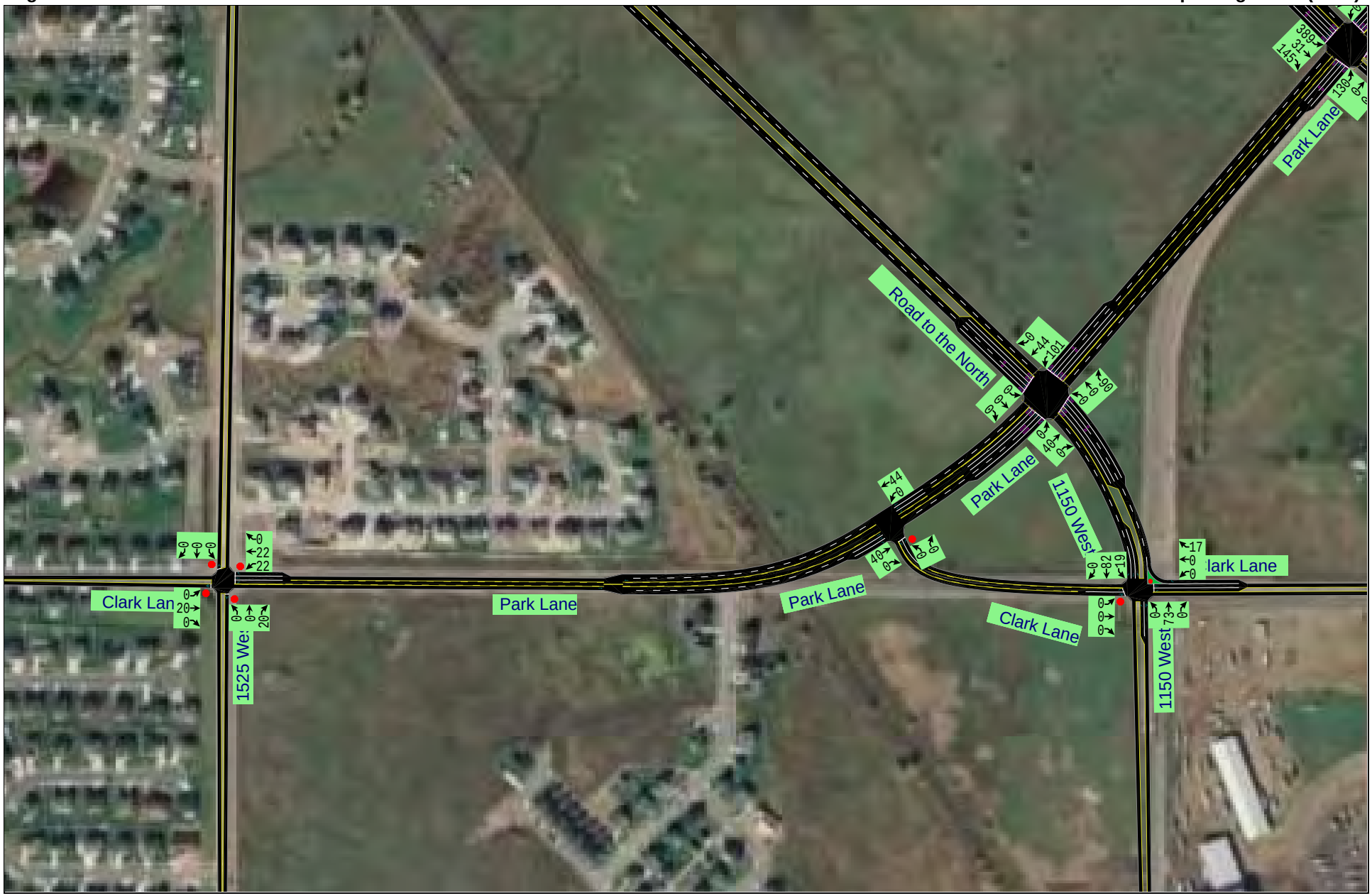


Hales Engineering
179 N 1200 E, Ste. 103, Lehi, UT 84043

801.766.4343
10/31/2008

Farmington
Figure 2a

Haws Property TIS
Trip Assignment (2008)



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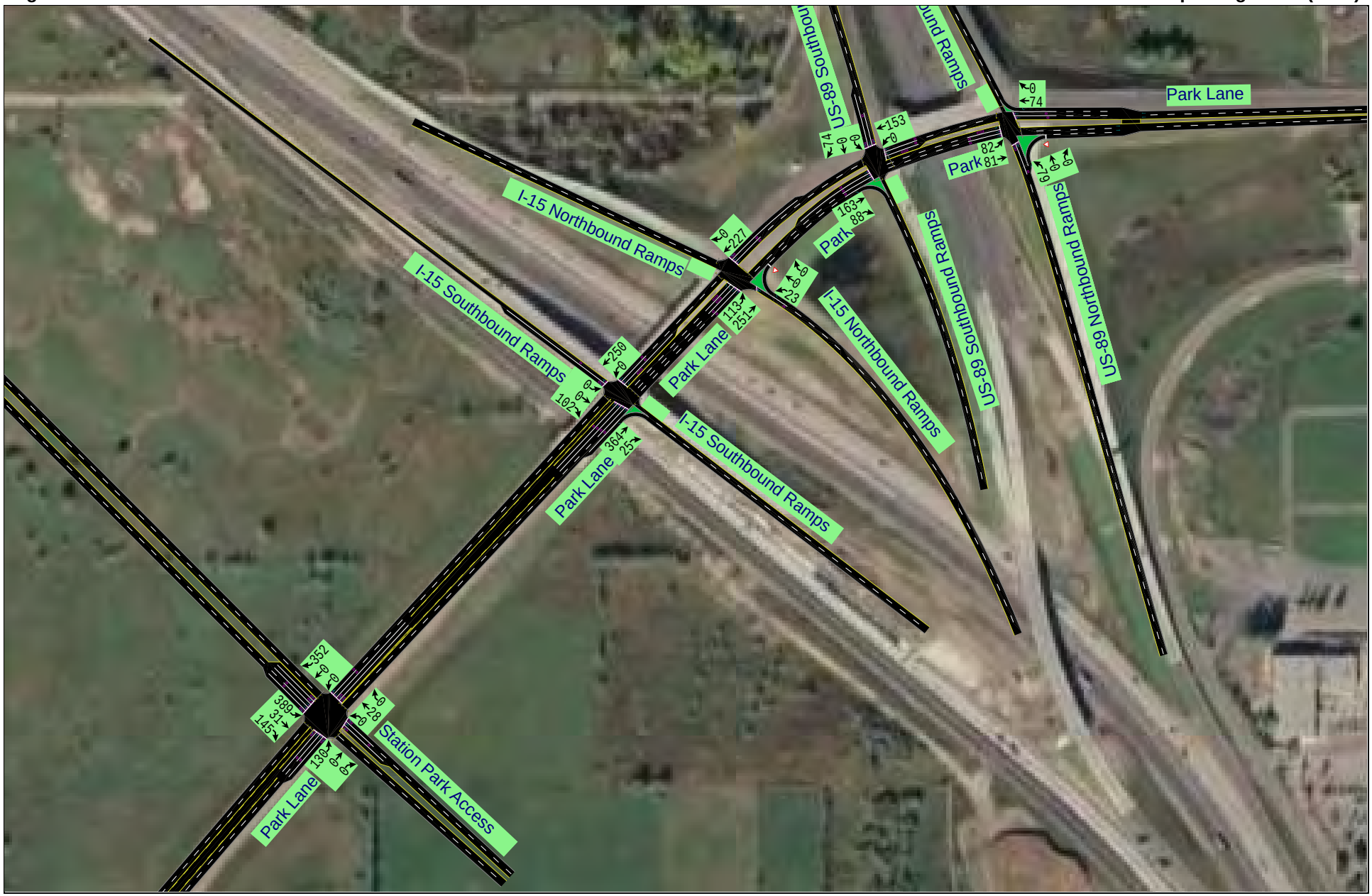
801.766.4343
10/31/2008

Farmington
Figure 2b

Haws Property TIS
Trip Assignment (2008)



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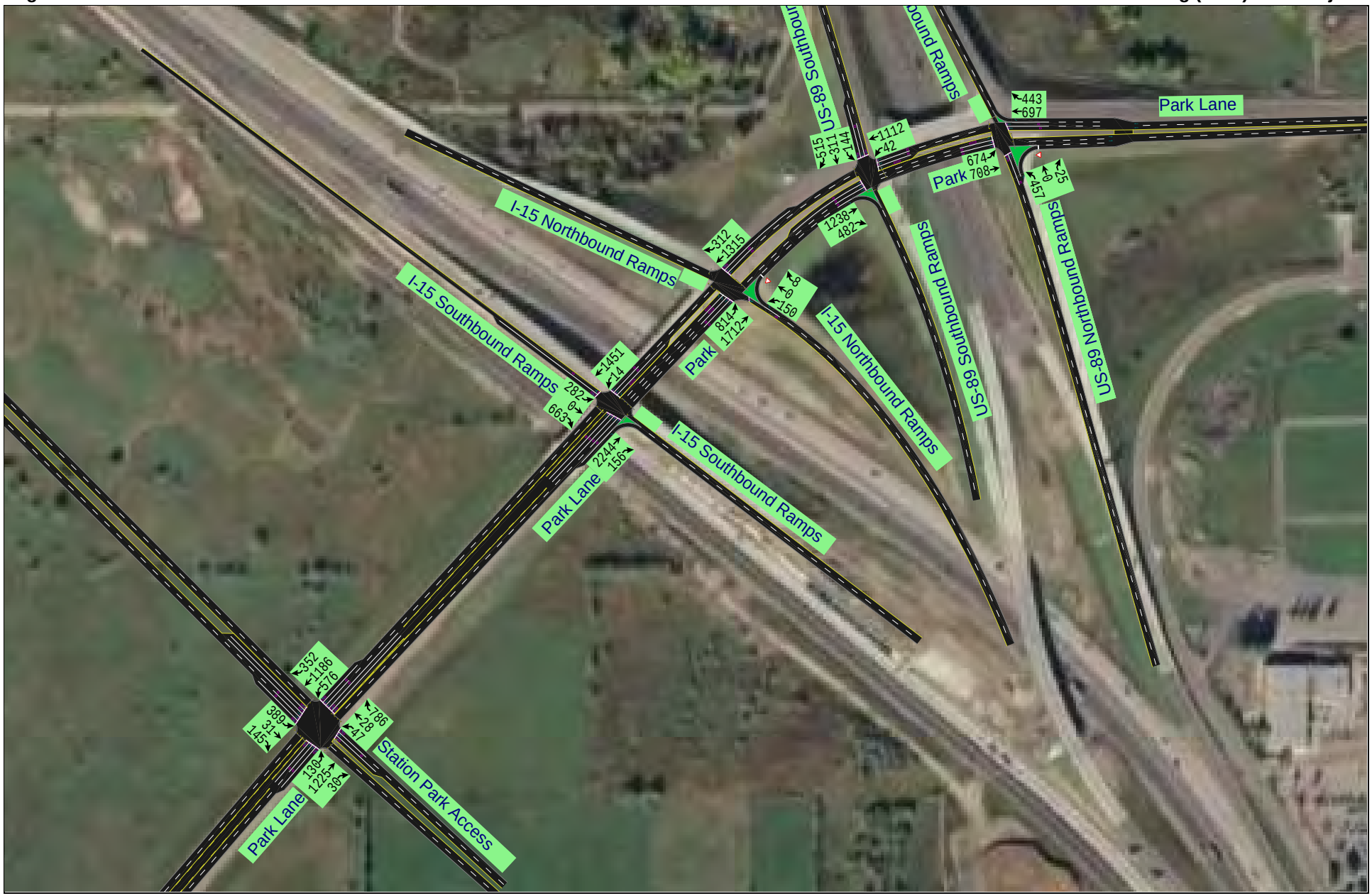
Road to the North
Park Lane
Park Lane
Park Lane
Clark Lane
Station Park Access
1525 We
1150 We
764
171
443
613
221
80
587
296
251
59
185
127
489
13
319
48
52
5
704
26
140
47
35
73
352
1186
576
389
31
145
786
28
47
130
1225
30
23
291
180
5
4
23
10
194
2
2
9
150
1150
121
322
348
9
383
149

Farmington
Figure 3b

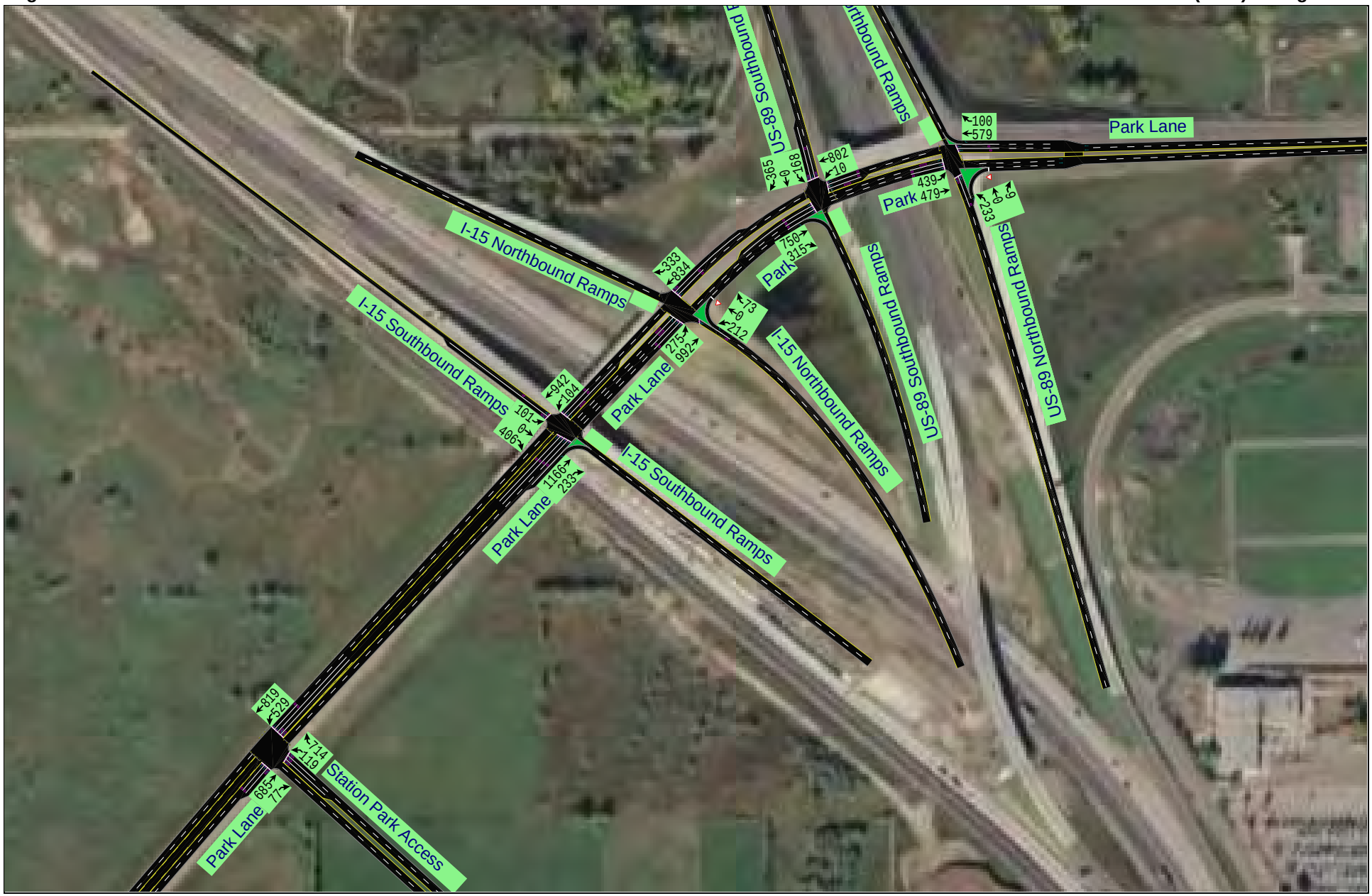
Haws Property TIS
Existing (2008) Plus Project



Hales Engineering
179 N 1200 E, Ste. 103, Lehi, UT 84043

801.766.4343
10/31/2008


Road to the
Road to the North
Park Lane
Park Lane
Park Lane
Clark Lane
Clark Lane
1525 We
1150 We
819
329
714
119
685
77
455
98
385
520
382
68
188
494
141
64
54
144
297
13
171
23
51
191
1150
121
325
385
575
26
153
24
17
37
49
231
22
23
135
10
10
17
22
47
35
73
9
204
162


US-89 Southbound Ramps
Northbound Ramps
Park Lane
I-15 Northbound Ramps
I-15 Southbound Ramps
US-89 Southbound Ramps
US-89 Northbound Ramps
Park Lane
I-15 Northbound Ramps
I-15 Southbound Ramps
Park Lane
Park Lane
Station Park Access
100
579
802
10
439
Park 479
0
6
233
750
Park 315
333
834
73
0
212
275
992
942
104
101
0
406
1166
233
819
329
714
119
685
77

Farmington
Figure 5a

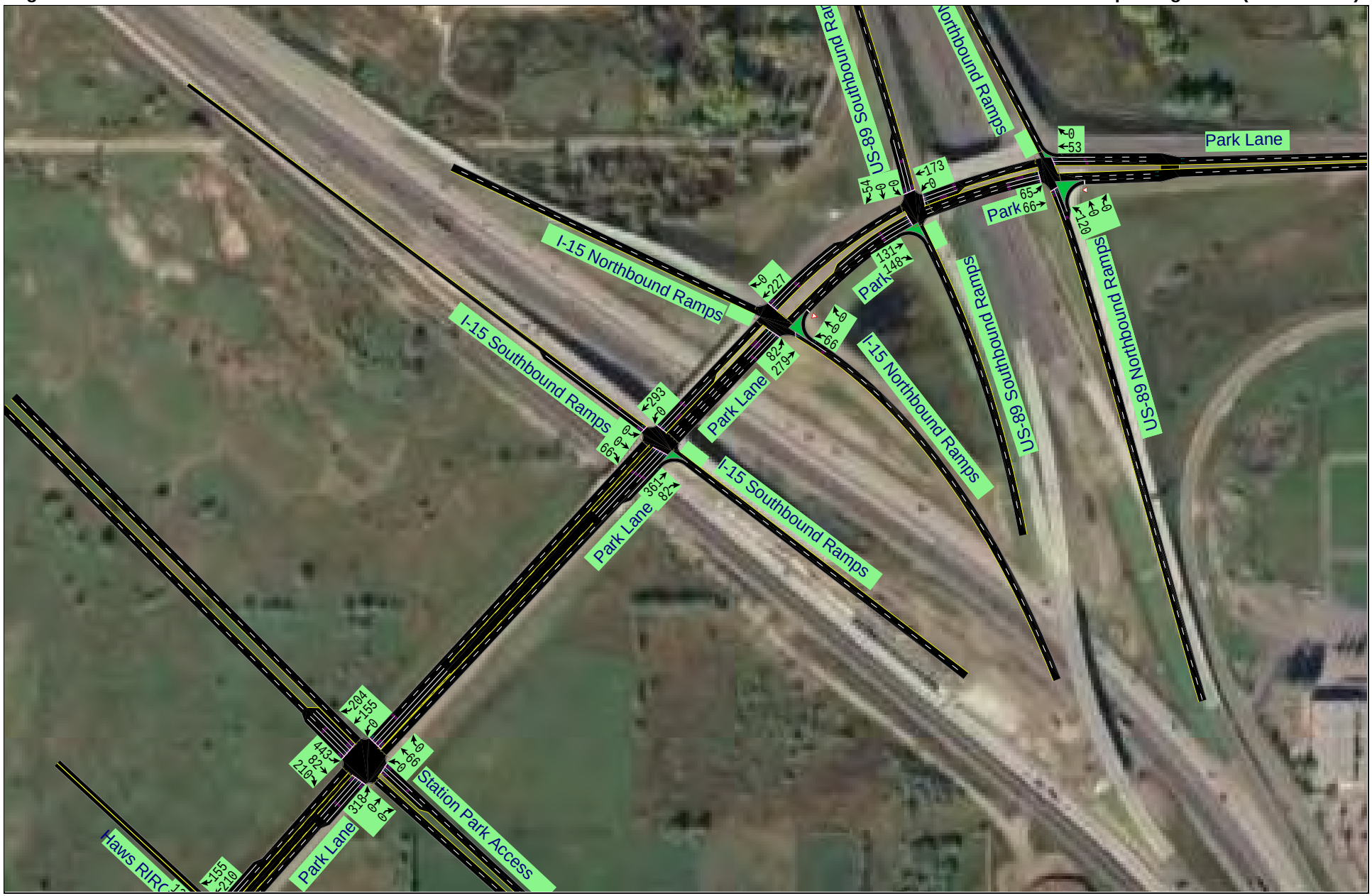
Haws Property TIS
Trip Assignment (2020 & 2040)

Hales Engineering
179 N 1200 E, Ste. 103, Lehi, UT 84043

801.766.4343
10/31/2008

Farmington
Figure 5b

Haws Property TIS
Trip Assignment (2020 & 2040)



Hales Engineering
179 N 1200 E, Ste. 103, Lehi, UT 84043

801.766.4343
10/31/2008

Farmington
Figure 6a

Haws Property TIS
Future (2020) Plus Project

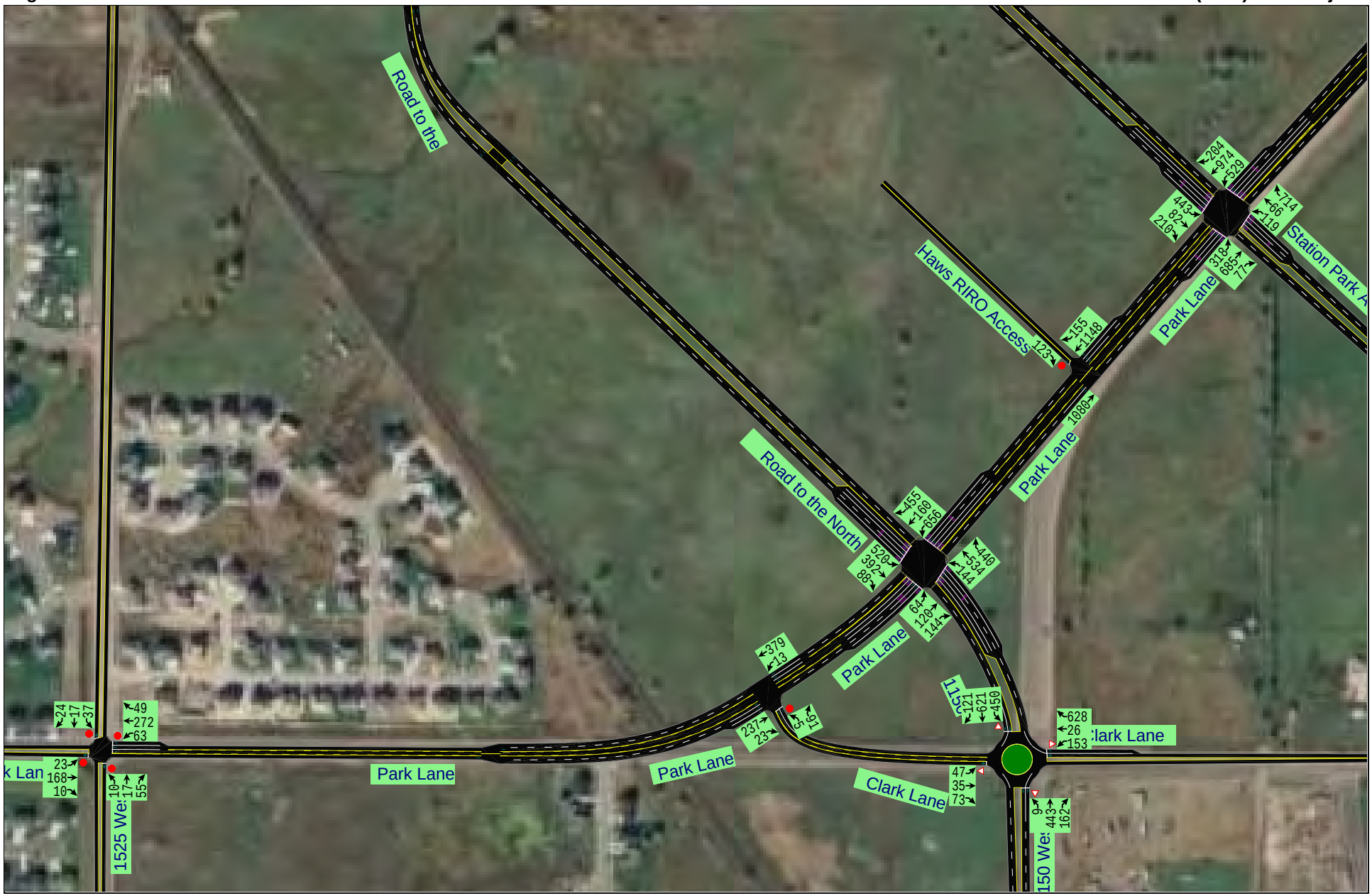


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Figure 6b

Haws Property TIS
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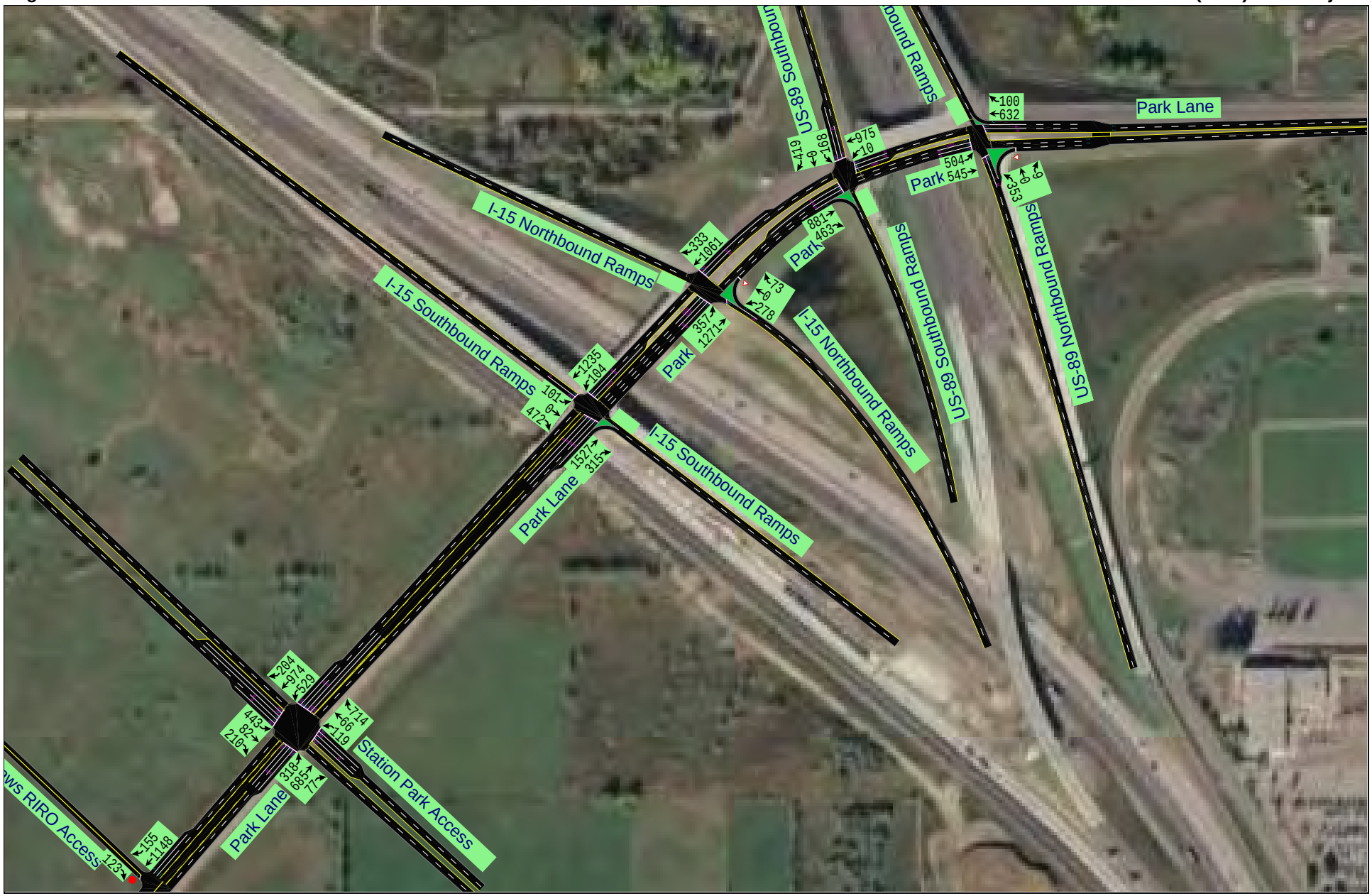

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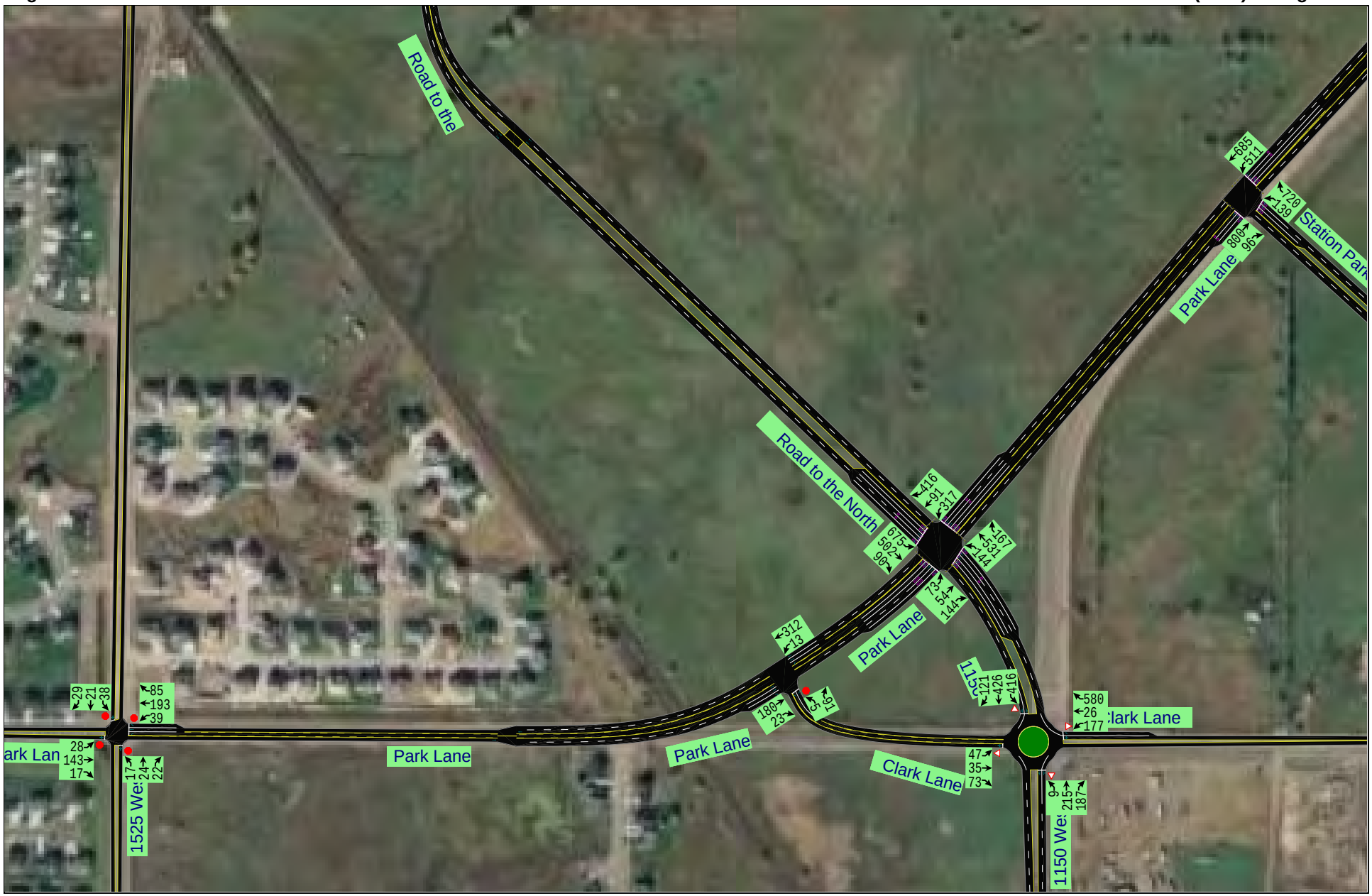
Figure 7a

Haws Property TIS
Future (2040) Background



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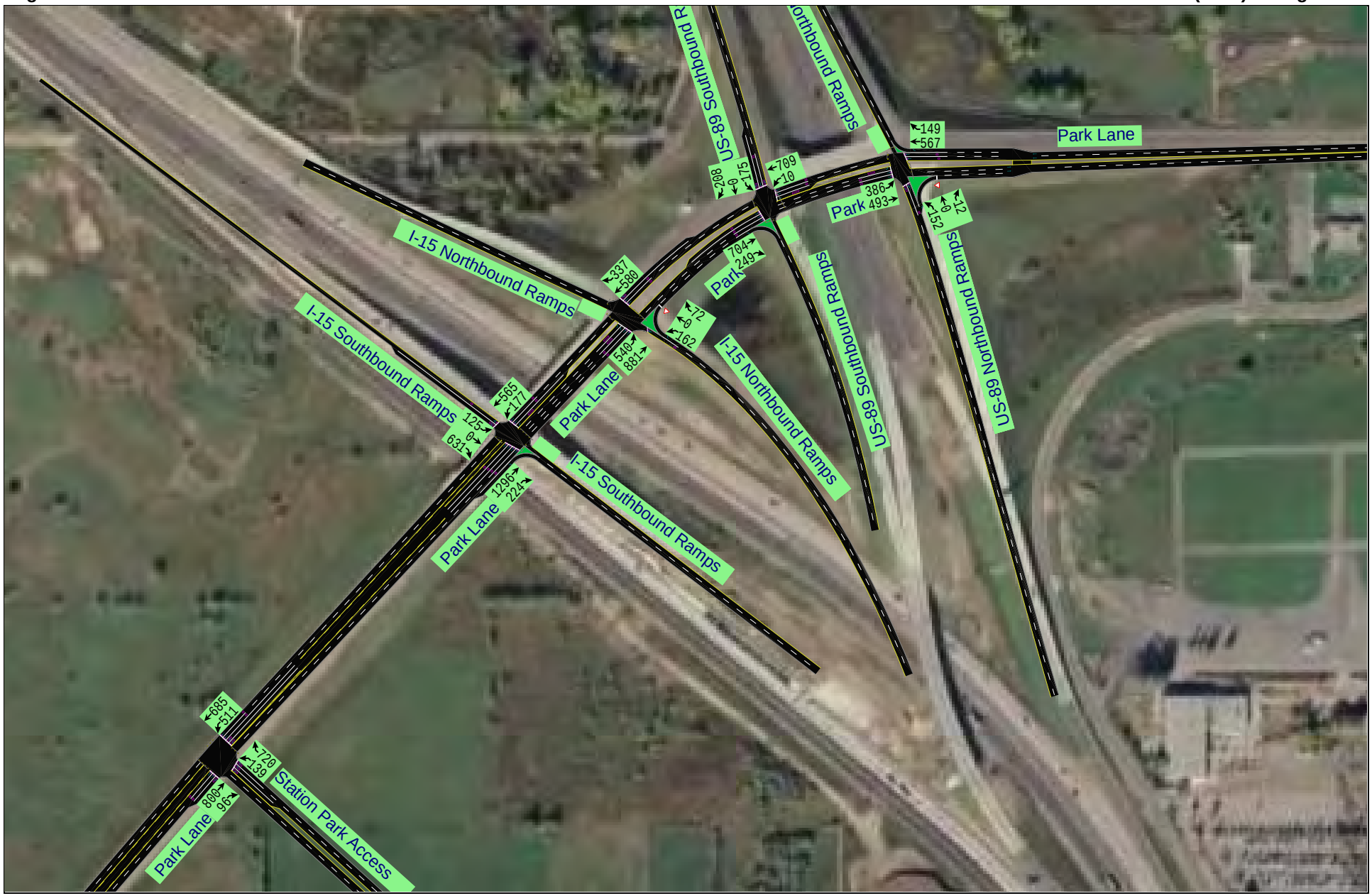
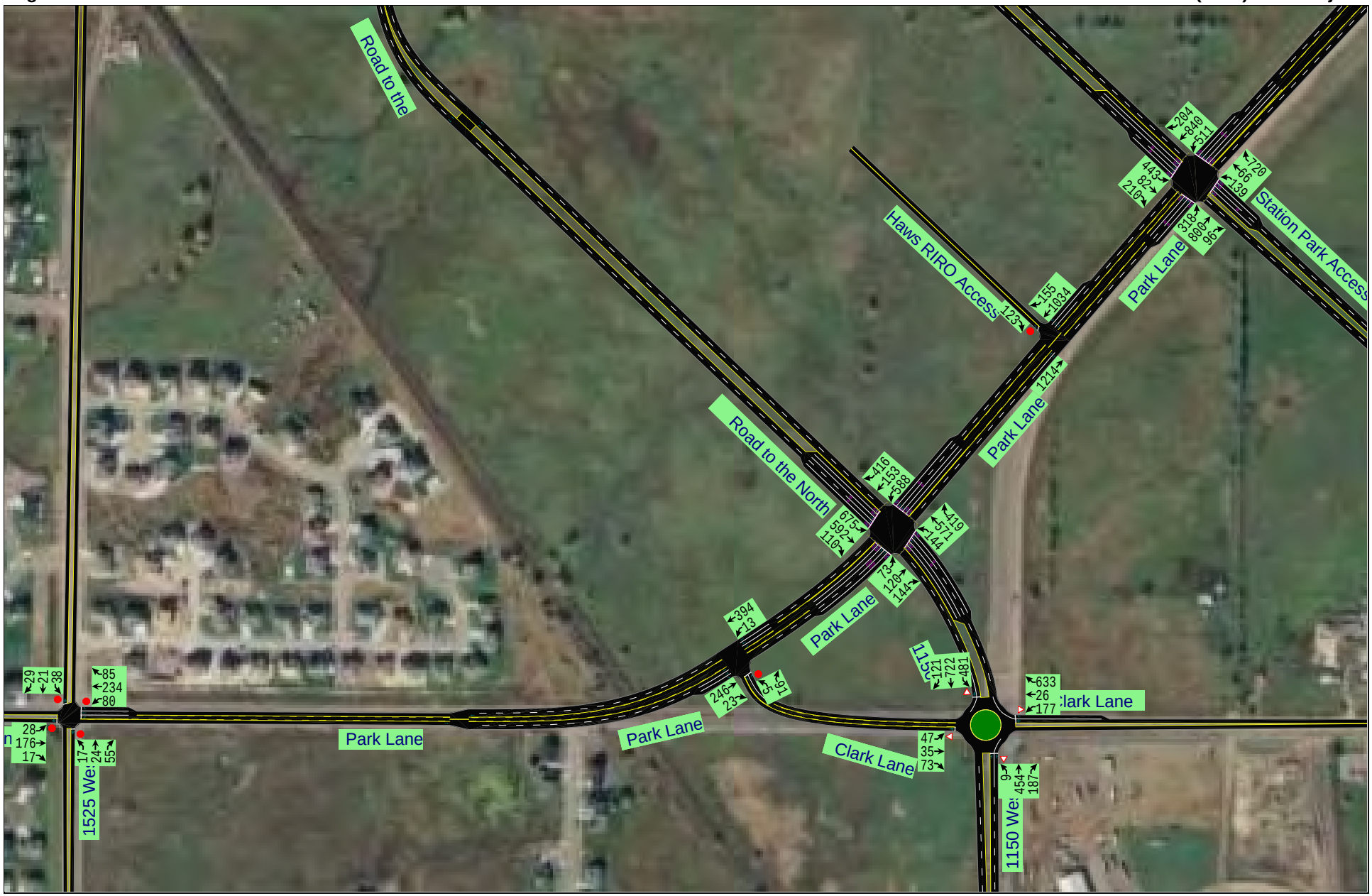

US-89 Southbound R
Northbound Ramps
149
567
Park Lane
709
10
175
208
0
386
Park 493
12
0
152
US-89 Northbound Ramps
I-15 Northbound Ramps
704
Park 249
337
580
72
0
162
I-15 Southbound Ramps
US-89 Southbound Ramps
I-15 Northbound Ramps
540
881
Park Lane
565
177
125
0
637
I-15 Southbound Ramps
1296
224
Park Lane
685
511
720
139
809
95
Park Lane
Station Park Access

Farmington
Figure 8a

Haws Property TIS
Future (2040) Plus Project



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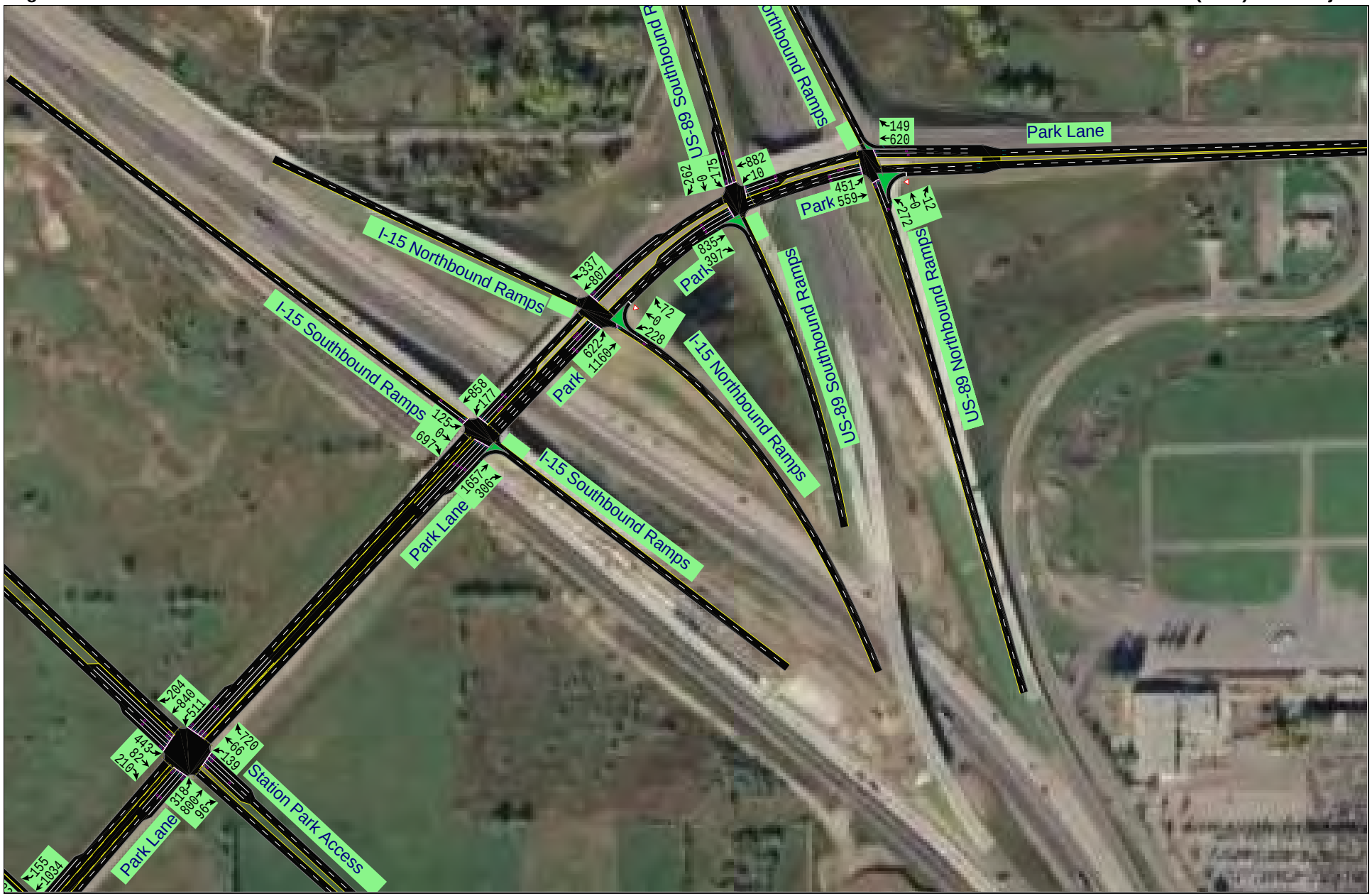
Farmington
Figure 8b

Haws Property TIS
Future (2040) Plus Project



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