

# **Int. Alameda Rd & Jefferson, Pocatello Concept Report**

**ITD Project No. A011(657), Key No. 11657**

*Prepared for*

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## CERTIFICATION

The technical material and data contained in this document were prepared under the supervision and direction of the undersigned, whose seal, as a professional engineer licensed to practice as such, is affixed below.



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Prepared by Jeremy Robbins, PE

A handwritten signature in blue ink, appearing to read "Doug Camenisch", written over a horizontal line.

Checked by Doug Camenisch, PE

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## **ACRONYMS**

- ADT – Average Daily Traffic
- BTPO – Bannock Transportation Planning Organization
- FIS – Flood Insurance Study
- ITD – Idaho Transportation Department
- LOS – Level of Service
- NHS – National Highway System
- NEPA – National Environmental Policy Act

# Concept Approval Idaho Transportation Department



Key Number <b>11657</b>	Project Number <b>A011(657)</b>		
Highway Route <b>I-15B</b>	Beginning Mile Post <b>4.983</b>	Ending Mile Post <b>4.983</b>	Federal Aid Route <b>SMA 7101</b>
Project Title <b>Int. Alameda Rd &amp; Jefferson, Pocatello</b>			Program Number

Revisions or additions to these established project concept and design standards shall require appropriate supporting data and Idaho Transportation Department approval.

Recommended By (Local Sponsor) 	Date <b>12-17-2010</b>
Recommended By (LHTAC Federal Aid Manager)	Date
Approved By/Reviewed By (District Engineer) 	Date <b>1/14/11</b>
Reviewed By (Roadway Design Engineer)	Date
Approved By (Assistant Chief Engineer, Development)	Date

### Design Exception Approval

<input type="checkbox"/> Non-NHS – Approved by District Engineer Date (From Corresponding ITD 0758)	<input type="checkbox"/> Non-NHS – Approved by Committee Date (From Corresponding ITD 0758)
<input type="checkbox"/> NHS – Approved by District Engineer and FHWA Date (From Corresponding ITD 0758)	<input type="checkbox"/> NHS – Approved by Committee and FHWA Date (From Corresponding ITD 0758)

# 1. BACKGROUND

The Alameda Road and Jefferson Avenue intersection is a skewed four leg signalized intersection in Pocatello, Idaho (Figure 1). Due to the location and skew, the intersection actually is the intersecting point of four streets; Alameda Road on the west leg, Pocatello Creek Road on the east leg, Jefferson Avenue on the south leg, and Hiline Road on the north leg. For clarity, this intersection will be referred to as the Alameda/Jefferson intersection in this report. In addition to being key local arterials, Alameda Road and Pocatello Creek Road serve as part of the Interstate 15 (I-15) business loop, but are not part of the National Highway System. Adjacent to the Alameda/Jefferson intersection are the Jefferson/E. Alameda and Pocatello Creek/Deon intersections. Both of these intersections are three leg intersections, stop controlled on the local road and located within the influence area of the Alameda/Jefferson intersection.

Today, vehicles traveling through the Alameda/Jefferson intersection experience significant delay from heavy traffic volumes and closely spaced adjacent intersections. A total of 43 vehicle collisions have occurred at intersections in the study area between January 2004 and December 2008. Because of these conditions, the City of Pocatello is exploring options to improve safety and mobility in the study area. The City of Pocatello and the Bannock Transportation Planning Organization (BTPO) have identified this intersection (Alameda/Jefferson) as their top priority for improvement.

The **purpose** of this project is to improve the safety and mobility for vehicles, pedestrians, and bicyclists. The **need** of this project is to provide additional capacity for the intersections, implement access management, and add pedestrian and bicycle facilities.

# 2. EXISTING CONDITIONS

The intersections included in the study area are (Figure 2):

- Alameda Road/Jefferson Avenue (signalized)
- Jefferson Avenue/E. Alameda Road (approximately 200 feet south of Alameda/Jefferson; stop controlled on E. Alameda Road)
- Pocatello Creek Road/Deon Drive (approximately 350 feet east of Alameda/Jefferson; stop controlled on Deon Drive)

## *Land Use*

The project area is surrounded by commercial and residential development, as well as the Tendoy Elementary School located at the Jefferson/E. Alameda intersection. Commercial development includes a Maverick gas station on the southwest corner, an Exxon Mobil gas station with a small strip mall on the northwest corner, a shopping center with various businesses (including Winco) on the northeast corner, and an LDS Church on the southeast corner across from the elementary school.

Some of the business access points are very close to the Alameda/Jefferson intersection, which often cause conflicts with the through traffic. Some access management measures have been implemented, including installation of a raised concrete median on Alameda Road just west of Jefferson Avenue that limits access to a right-in/right-out movement at Alameda and Randolph. However, there are still considerable access issues in the study area. The area is generally developed with the exception of vacant lots on the west side of the church, which was formerly a gas station, and the south side of the Maverick gas station. It is reasonable to expect some commercial redevelopment may occur over the next twenty years.

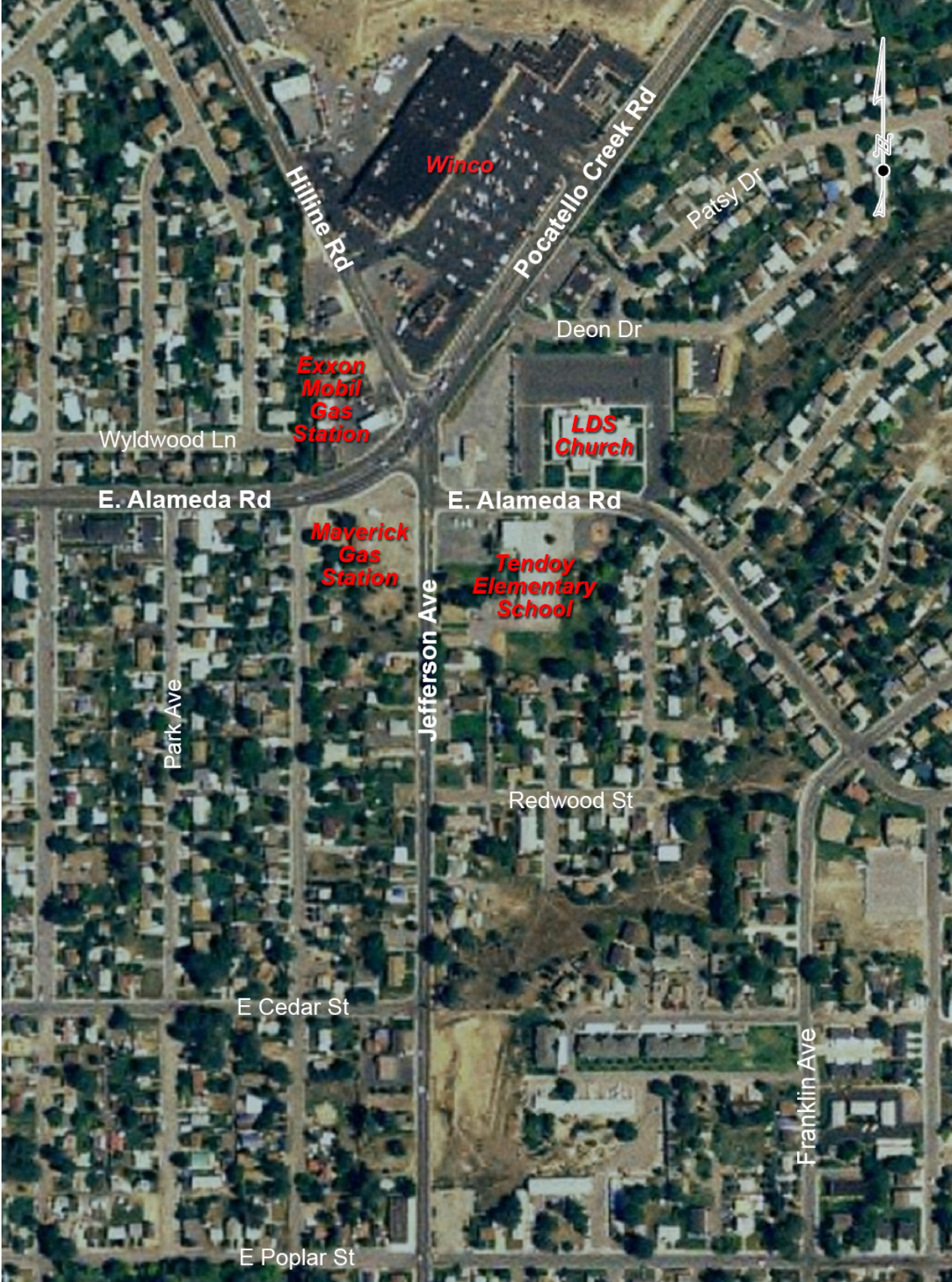


Figure 1. Project Vicinity

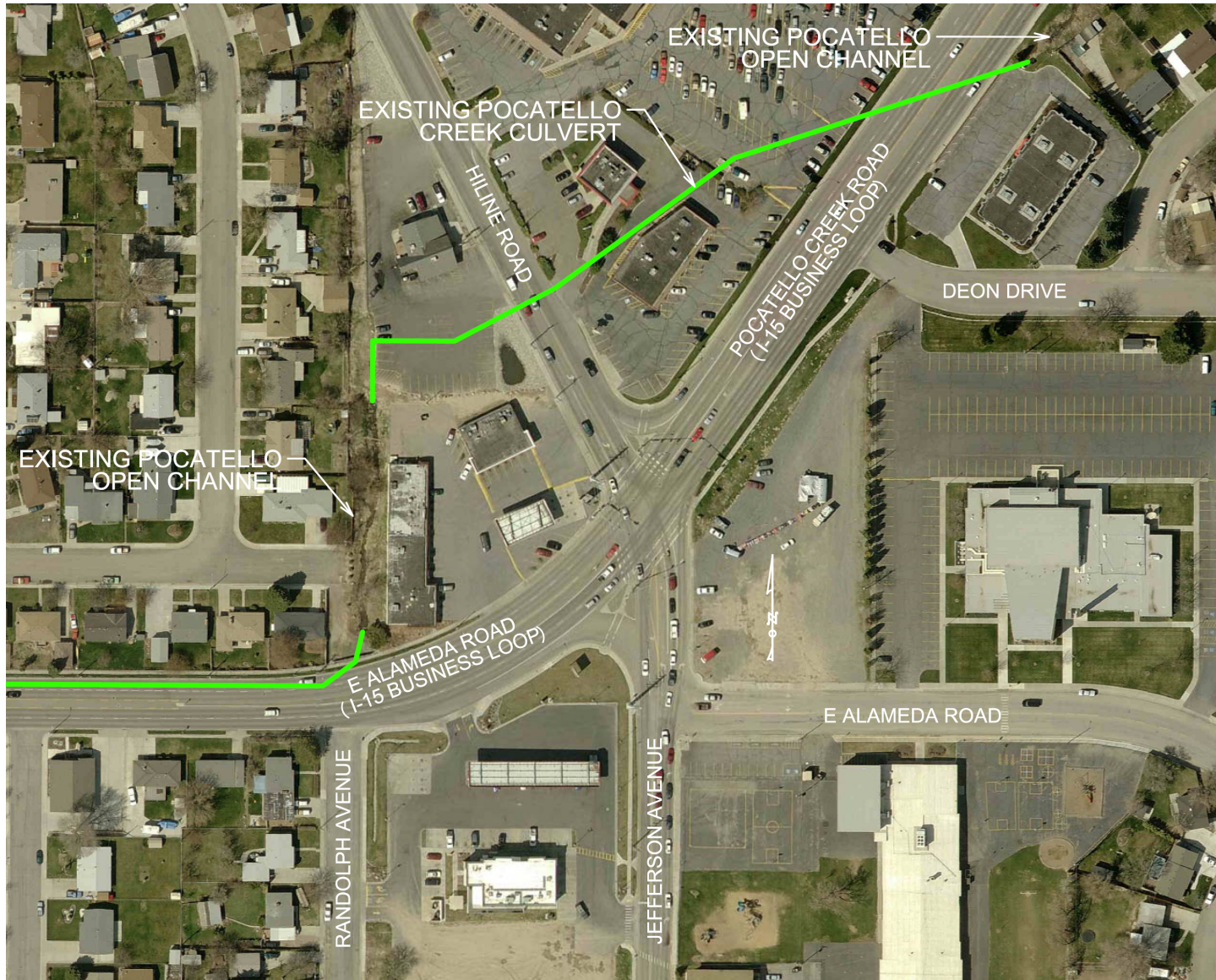


Figure 2. Project Study Area



### ***Utilities***

Several utilities are located within the project limits, including underground gas lines, city water, sewer, and drainage facilities, overhead and underground phone lines, and overhead and underground power lines. Idaho Power has a large transmission line that runs north and south along Jefferson Avenue and Hiline Road. The transmission line is located within a private Idaho Power easement. There are two very large steel power poles located at the northwest and southwest corners of the Alameda/Jefferson intersection.

### ***Environmental***

An environmental scan was prepared to identify any constraints within the project vicinity for the natural and built environment. The report analyzed socioeconomics, parks and recreation areas, historic resources, geology & soils, hazardous materials, threatened and endangered species, air quality, and wetlands within the study area. None of the elements were found to have significant concerns. However, Pocatello Creek, which runs underground below the intersection, is considered a “waters of the US” under Section 404 of the Clean Water Act by the US Army Corps of Engineers because of its connection to the Portneuf River. Any modifications to Pocatello Creek, including culvert replacement, will require permits from the US Army Corps of Engineers and Idaho Department of Water Resources. In addition, a more detailed analysis of the environmental elements will be necessary prior to final design and construction. If federal funds are planned to be used for construction, the evaluation of environmental impacts must be conducted in accordance with the National Environmental Policy Act. The environmental scan is included in Appendix L.

### ***Pocatello Creek***

Pocatello Creek, an open channel northeast of the project, drains into a large culvert that crosses both Pocatello Creek Road (into the Winco parking lot) and Hiline Road (approximately 200 feet north of the Alameda/Jefferson intersection). The culvert drains into an open channel that runs behind the Exxon Mobil Gas Station. The Flood Insurance Study (FIS) for Pocatello Creek has a mapped floodplain that covers the majority of the Alameda/Jefferson and Pocatello Creek/Deon intersections. Refer to figure 2 for location of Pocatello Creek.

### ***Traffic Operations***

In order to analyze the existing and future conditions, a traffic study was conducted. The study included an evaluation of current (2010) and projected (2035) traffic conditions with no improvements to the intersections (“no-build” scenario). Traffic data was provided by the Bannock Transportation Planning Organization (BTPO) including turning movements, average daily traffic (ADT), and collision history data. A signed and sealed Traffic Study Report is included in Appendix B.

The purpose of the traffic analysis was to identify capacity and safety issues that could be contributing to congestion and crashes in the project area. ITD’s standard for an intersection on a principal arterial, non-National Highway System (NHS), is Level of Service (LOS) ‘D’. The BTPO has developed LOS standards for the cities of Pocatello and Chubbuck, but have not been adopted by ITD. The three intersections in the study area have been assigned a minimum standard LOS ‘D’ by BTPO. Additional information on the BTPO LOS standards is included in Appendix E of the attached Traffic Study Report..

The Alameda/Jefferson intersection currently operates at LOS ‘D’ and is projected to continue to operate at LOS ‘D’ in 2035. The critical movements impacting LOS for this intersection are:

- Left turn movement from Pocatello Creek Road to Jefferson Avenue.
- Right turn movement from Jefferson Avenue to Pocatello Creek Road.
- Left turn movement from Jefferson Avenue to Alameda Road

In addition to the critical lane movements analyzed, the free running right turn movement from Alameda to southbound Jefferson is a safety and mobility concern since some of these movements turn left onto E. Alameda. This movement was not analyzed as a critical lane movement since existing traffic data is not available to quantify the turning volume and its impact to intersection operations. It is reasonable to assume that this movement adds to the delay calculated in the traffic analysis.

The Jefferson/E. Alameda and Pocatello Creek/Deon intersections currently operate at LOS 'F' and LOS 'D', respectively. Projections for 2035 show both intersections will operate at LOS 'F'. The low level of service is primarily due to the impact of vehicle queues extending from the Alameda/Jefferson intersection into the functional intersection area for the Jefferson/E. Alameda and Pocatello Creek/Deon intersections.

Based on the results of the existing traffic conditions and projected (no build) conditions, the Alameda/Jefferson intersection does not warrant the need for improvements. However, the Jefferson/E. Alameda intersection warrants improvements based on existing conditions, and the Pocatello Creek/Deon Drive intersection will warrant improvements based on projected 2035 conditions.

**Table 1. 2010 Existing Peak Hour**

Intersection	ITD Standard (non- NHS)	BTPO Standard	Intersection Control Type	Modeled LOS	Intersection Delay (seconds)
Alameda/Jefferson	D	D	Signal	D	36.0
Jefferson/E. Alameda	N/A	D	Stop Sign	F	74.6
Pocatello Creek/Deon	N/A	D	Stop Sign	D	26.7

***Traffic Safety***

Crash data was provided between the period January 2004 and December 2008 for the three identified intersections. A total of 43 accidents occurred between all three intersections with only two accidents occurring at the Pocatello Creek/Deon intersection. The remaining accidents were split evenly between the other two intersections. The crash data indicates a considerable amount of angle turning collisions which is usually an indication that drivers are getting impatient and driving aggressively in and out of these intersections. This data is also an indication of the impact of vehicle queues extending into adjacent intersections.

Since only two accidents occurred at the Pocatello Creek/Deon intersection, an evaluation of the crash data was not performed for this intersection. Evaluation of the crash data for the other two intersections included evaluating the type of accidents that occurred, where they occurred, and why they occurred. The evaluation also included completing the ITD Safety Evaluation Form (ITD-2658). The form uses traffic volumes to calculate a predicted base rate of crashes likely to occur at an intersection. This value is compared to recorded crash data and traffic volumes. If the ITD predicted rate is higher than the observed rate, then an intersection does not require safety improvements solely based on crash data. Table 2 contains the results of the crash analysis.

**Table 2. Crash Analysis Results**

<b>Intersection</b>	<b>Base Crash Rate</b>	<b>Observed Crash Rate</b>
Alameda/Jefferson	0.58	0.34
Jefferson/E. Alameda	0.58	0.51

The signalized intersection, Alameda/Jefferson, has a very low observed crash rate does not warrant the need to improve the intersection. The non-signalized intersection, Jefferson/E. Alameda, has an observed crash rate that is relatively close to the base rate. Currently, this intersection does not warrant the need for improvement based on historical crash data. However, as traffic volumes increase and traffic conditions deteriorate, the observed crash rate is likely to rise above the base rate. The completed ITD-2658 is included in the Traffic Study Report (Appendix B).

### **3. OUTREACH**

Several opportunities were provided to obtain input on the project from both the public and key stakeholders (adjacent property owners, ITD District 5, the City of Pocatello, and the Bannock Transportation Planning Organization). The City of Pocatello met with the Pocatello Chubbuck School District 25 and the LDS Church to discuss the project and obtain their comments and/or concerns. A public involvement meeting was held at the City of Pocatello’s Council Chamber room on September 1, 2010.

#### ***Stakeholder Meetings***

The school district officials for Pocatello Chubbuck School District 25, which has jurisdiction over the Tendoy Elementary School, did not express any concerns regarding the project. In response to the meeting, the school district provided a letter in support of Alternative 10 (Appendix I).

Officials from the LDS Church expressed concern about the by-pass route being located so close to their building. They believe the location would be both a safety and noise concern, since most of the church offices are located on the east side of the church. In response to the meeting, church officials developed a letter in support of Alternative 1C (Appendix I).

#### ***Public Involvement Meeting***

Approximately 50-60 people attended the September 2010 public meeting. Three ultimate build alternatives (alternatives 1A, 1C, and 10) and corresponding initial build phases were presented at the meeting. Diagrams of alternatives that were not carried forward were also made available for review at the meeting. Forty comments were submitted, 29 of which indicated a preferred alternative. Alternative 10 was most favored with 12 positive comments, Alternative 1C was second with ten positive comments, and Alternative 1A was least favored with seven positive comments.

All 40 comment sheets provided a variety of feedback on the project and alternatives. A summary of the comments follows, and a compiled list is attached in Appendix G.

- A large percentage of the attendees would like to close the existing Jefferson/E. Alameda and Pocatello Creek/Deon intersections.

- There was a mixed reaction of having a by-pass route through the LDS Church parking lot or a frontage road in front of Tendoy Elementary School. Some citizens felt that the by-pass route was too close to the LDS Church. Others felt that the frontage road would have too much traffic going by the school during peak periods.
- Several people commented that the access points for the Exxon Mobil gas station are too close to the intersection. The comments stated that drivers who utilize these access points sometimes block the roadway, causing accidents to occur.
- There was a general concern about pedestrian safety, primarily children getting to and from Tendoy Elementary School. The location of cross-walks was a significant concern, especially the crossing on Jefferson Avenue where the two southbound lanes merge to a single lane.

## 4. INITIAL ALTERNATIVES

Due to the complex nature of this project, close coordination efforts with the City of Pocatello, ITD District 5, and BTPO were held throughout development of the alternatives. This coordination was a key component in developing and screening alternatives.

The project kick-off meeting identified the project goals and potential challenges. The City of Pocatello identified critical goals of the project; improve capacity for the study area intersections, implement access management, and minimize impacts to commercial and/or residential structures.

The initial project alternatives for the Alameda/Jefferson intersection were intended to meet a LOS 'C' to minimize delay. Though the goal was to achieve that using a conventional intersection design, a LOS 'C' could not be achieved based on the critical lane movements experienced at the intersection. To address those movements, alternative intersection designs were considered. Each of the initial alternatives are listed below, and intersection layouts for each are included in Appendix C.

- **Alternative 1 – Conventional Intersection:** In order to achieve LOS 'C,' the Alameda/Jefferson intersection footprint would be very large and have significant impacts to surrounding businesses and properties, including the Tendoy Elementary School. Due to the significant property impacts, the project team determined that achieving LOS 'C' was not feasible for this project with a conventional intersection configuration. The project team agreed to develop a conventional intersection alternative based on the LOS 'D' criteria, which resulted in Alternative 1.

Alternative 1 is a standard intersection layout for the Alameda/Jefferson intersection that includes dual left turns from Pocatello Creek Road to Jefferson Avenue. The Jefferson/E. Alameda and Pocatello Creek/Deon intersections would be converted to right-in/right-out movements only. On Jefferson Avenue, a median curb would be constructed to prevent left turn movement from Jefferson Avenue onto E. Alameda Road and prevent left turn movement from E. Alameda Road onto Jefferson Avenue, which are where a high concentration of angle collision accidents have occurred. A by-pass route would be constructed between E. Alameda Road and Deon Drive to route traffic to either Redwood Street or Cedar Street via E. Alameda Road.

As stated previously, due to the projected LOS, the Jefferson/E. Alameda and Pocatello Creek/Deon intersections warrant improvements. By restricting the intersections to right-in/right-out movements, the operations for both intersections would be improved.

- **Alternative 2 – Jug Handle:** The purpose of the jug handle is to remove critical lane movements (primarily left turn movements) which impact the delay at the intersection. This alternative has a jug handle located in the northeast corner (Winco parking lot) that would remove the left turn movements from Pocatello Creek Road to Jefferson Avenue and the left turn movements from Jefferson Avenue to Alameda Road (westbound). As depicted in the design layout drawing, vehicles traveling westbound on Pocatello Creek Road and needing to go southbound on Jefferson Avenue

would turn right at the eastern end of the jug handle, traverse through the jug handle to Hiline Road, turn left onto Hiline Road, and continue straight through the Alameda/Jefferson intersection to Jefferson Avenue. Vehicles traveling northbound on Jefferson Avenue needing to go westbound on Alameda Road would continue northbound through the Alameda/Jefferson intersection onto Hiline Road, turn right onto the jug handle, traverse through the jug handle to Pocatello Creek Road, turn right onto Pocatello Creek Road, and continue through the Alameda/Jefferson intersection to Alameda Road. This alternative also includes implementing right-in/right-out access control for the Jefferson/E. Alameda and Pocatello Creek/Deon intersections with a by-pass route between E. Alameda Road and Deon Drive.

- **Alternative 3 – Modified Jug Handle:** This alternative is almost identical to Alternative 2 with the exception of a roundabout on Hiline Road. The modification would impact vehicles traveling northbound on Jefferson Avenue that need to go westbound on Alameda Road. As depicted in the design layout drawing, vehicles traveling northbound on Jefferson Avenue who need to go westbound on Alameda Road would continue through the main intersection onto Hiline Road, utilize the roundabout to go southbound on Hiline Road then turn right onto Alameda Road. Compared to Alternative 2, this movement eliminates the need for northbound to westbound vehicles to use the jug handle.
- **Alternative 4 – Full Bowtie:** This option consists of locating two roundabouts north and south of the Alameda/Jefferson intersection to remove critical turning movements from the Alameda/Jefferson intersection and implement driveway access management. For this alternative, roundabouts would be constructed on Hiline Road and at the intersection of Jefferson Avenue and Redwood Street. The roundabout on Hiline Road would eliminate the left turn movements from Jefferson Avenue to Alameda Road (westbound). The roundabout at the intersection of Jefferson Avenue and Redwood Street would allow the Jefferson/E. Alameda and Pocatello Creek/Deon intersections to operate as right-in/right-out movements. Left turn movements from Hiline Road to Pocatello Creek Road would also be eliminated since this movement would be accommodated by the roundabout. As depicted in the design layout drawing, vehicles traveling westbound on Pocatello Creek Road or southbound on Hiline Road would need to utilize the roundabout at Jefferson/Redwood to gain access to Alameda Road off of Jefferson Avenue and Deon Drive off of Pocatello Creek Road.
- **Alternative 5 – Half Bowtie:** This alternative is very similar to Alternative 4, but uses one roundabout on Hiline Road. This roundabout would remove left turn movements from Jefferson Avenue to Alameda Road. Unlike the full bowtie alternative described above, this alternative does not allow vehicles to utilize the roundabout to access Deon and E. Alameda. Access to Alameda Road and Deon Drive would be identical to the by-pass route as indicated in Alternative 1.
- **Alternative 6 – 260' Diameter Roundabout:** This alternative consists of a very large dual lane roundabout that realigns the approaches for Hiline Road and Jefferson Avenue. A typical dual lane roundabout ranges from 180 feet to 220 feet. Due to the existing skew of the four approach roads, a larger diameter roundabout would have to be constructed to provide the necessary deflections at each approach and to allow trucks to maneuver through the roundabout. The splitter islands along Jefferson Avenue and Pocatello Creek Road would be constructed long enough to provide right-in/right-out access management at E. Alameda Road and Deon Drive.

On April 9, 2010, a project team meeting with the City of Pocatello, ITD District 5, and BTPO staff was held to conduct a high level screening of the initial alternatives, and to identify alternatives for further analysis. Results of the initial screening were:

- **Alternative 1 – Conventional Intersection:** The intersection would operate at a level of service 'D' in 2035, and would be acceptable with a design exception through ITD based on BTPO's criteria. This alternative does improve the operations of the two other intersections with right-in/right-out movements. This alternative was selected to be carried forward.

- **Alternative 2 – Jug Handle:** This alternative would severely impact the Winco parking lot. Topographic constraints (a large hillside) prohibit the jug handle being located behind the Winco building, and therefore this alternative was not carried forward.
- **Alternative 3 – Modified Jug Handle:** This alternative had similar concerns as Alternative 2, with the addition that local drivers may get confused with the roundabout on Hiline Road. This alternative was not carried forward.
- **Alternative 4 – Full Bowtie:** It was determined that this alternative could be confusing to local drivers. This alternative does not require the by-pass route between Alameda Road and Deon Drive; however this alternative was not carried forward due to the complex nature of the design.
- **Alternative 5 – Half Bowtie:** This alternative generated similar responses as Alternative 4 and was therefore not carried forward.
- **Alternative 6 – 260' Diameter Roundabout:** This alternative generated some interest, but due to the size of the roundabout and impacts to the school, Exxon Mobil gas station, and the limited ability to phase construction, the alternative was not carried forward.

The biggest concern generated after reviewing the proposed alternatives was how to redirect traffic once access control is implemented at the Jefferson/E. Alameda and Pocatello Creek/Deon intersections. Constructing a by-pass between E. Alameda Road and Deon Drive would allow Deon Drive to be closed off from Pocatello Creek Road and allow E. Alameda Road to be closed off from Jefferson Avenue. However, if one or both of these options were utilized, traffic may be redirected to another access point. Listed below are some of the ideas that were considered.

- **Extend Redwood Street to Franklin Road** – Redwood Street connects to Jefferson Avenue at a T-intersection approximately 0.15 miles south of the Alameda/Jefferson intersection. Redwood Street is classified as a local road and is wide enough for on-street parking and two-way traffic. It dead ends into a neighborhood east of Jefferson Avenue. It is possible to extend Redwood Street to the east and connect into Franklin Road and E. Alameda Road. The advantage to extending Redwood Street to Franklin Road is that it would allow Deon Drive and Alameda Road to be closed off and allow a new access point off of Redwood Street. The disadvantages to this option are that it would likely require Redwood Street to be widened to meet the requirements of a collector, would have a significant grade and could impact residential properties. A map has been included in Appendix N that shows the contours within the area of the proposed extension of Redwood Street. There is a very narrow local road (Linda Avenue) that currently connects Redwood Street to E. Alameda Road. It is likely that traffic would not utilize the new route through Franklin Road and the Redwood Street extension, but instead cut across Linda Avenue to Redwood Street. This would have a significant impact on the neighborhood along Linda Avenue.
- **Develop New Access Point at Jefferson Avenue and Poplar Street** – Another option that could be utilized is redirecting traffic east on E. Alameda Road to Franklin Road, then continuing south to Poplar Street, connecting to Jefferson Avenue approximately 0.25 miles south of the Alameda/Jefferson intersection as seen in Figure 1. The advantage of this option is that it would allow Deon Drive and Alameda Road to be closed off, and does not require widening. The only construction required would be adding a traffic signal at Poplar Street and Jefferson Avenue. The disadvantage to this option is that drivers would extend their route to get access to Jefferson Avenue and Pocatello Creek Road and likely cut across Linda Avenue to Redwood Street.

It was determined by both the City of Pocatello and ITD that redirecting traffic to Redwood Street or Poplar Street was not favorable due to the impacts to Linda Avenue and adjacent neighborhoods. These options were not analyzed further. The conventional intersection (Alternative 1) was selected to move forward with minor modifications. It was decided that additional alternatives should be developed for the by-pass route between Alameda Road and Deon Drive that would extend to Pocatello Creek Road

with a traffic signal and a roundabout as two options. The group also identified a third option to analyze a frontage road that would not impact the LDS Church parking lot and connect into Pocatello Creek Road with a traffic signal.

## 5. MODIFIED ALTERNATIVES

Based on the decision of the project team stated above, a new set of alternatives was developed. These alternatives were submitted to the project team for approval prior to completing the traffic evaluation. The modified alternatives are:

- **Alternative 1C** – Conventional intersection with a frontage road around the LDS Church property and connecting into Pocatello Creek Road with a traffic signal. This alternative would close off E. Alameda Road to Jefferson Avenue and Deon Drive to Pocatello Creek Road.
- **Alternative 7A** – Conventional intersection with a by-pass route between E. Alameda Road and Deon Drive extending to Pocatello Creek Road with a traffic signal. This alternative would close off E. Alameda Road to Jefferson Avenue and Deon Drive to Pocatello Creek Road with cul-de-sacs.
- **Alternative 7B** – Conventional intersection with a by-pass route between E. Alameda Road and Deon Drive extending to Pocatello Creek Road with a roundabout. This alternative would close off E. Alameda Road to Jefferson Avenue and Deon Drive to Pocatello Creek Road with cul-de-sacs.

The City of Pocatello and ITD reviewed the modified alternatives and made decisions that generated a new set of modified alternatives:

- **Alternative 1C** – The alternative was selected to move forward.
- **Alternative 7A** – The cul-de-sac on Deon Drive was removed, and the alternative was selected to move forward.
- **Alternative 7B** – The roundabout on Pocatello Creek Road was removed from further consideration due to potential operational and capacity issues.
- **New Alternative: Alternative 8-Five Legged Intersection** - The City of Pocatello was interested in evaluating an intersection layout similar to an intersection in Boise. (Capital Boulevard/University drive/Boise Avenue located near Boise State University).
- **New Alternative: Alternative 10-Squared Intersection** – The City of Pocatello requested a concept to remove the skew in the Alameda/Jefferson intersection.

The engineering and modifications to alternatives 1C, 7A, 8, and 10 was completed to create a revised set of alternatives, as described below:

- **Alternative 1C** – Conventional intersection with a Frontage Road around the LDS Church property and connecting into Pocatello Creek Road with a traffic signal. This alternative would close off E. Alameda Road to Jefferson Avenue and Deon Drive to Pocatello Creek Road
- **Alternative 7A** – Conventional intersection with a by-pass route between E. Alameda Road and Deon Drive extending to Pocatello Creek Road with a traffic signal. This alternative would close off E. Alameda Road to Jefferson Avenue with a cul-de-sac. This alternative was renamed as Alternative 1A.
- **Alternative 8** – Five legged intersection with E. Alameda Road as the fifth leg, removing the E. Alameda Road connection to Jefferson Avenue. Some of the disadvantages to this option include increased delay time due to the additional fifth leg, increased pavement surface area in the middle of the intersection, and a very complex configuration that may confuse local drivers and increase

crashes. See Appendix D for the design layout drawing of Alternative 8. This alternative was dropped due to the complex nature of the layout.

- **Alternative 10** – Square four-legged intersection, with three of the four approaches requiring ‘S’ curves (Pocatello Creek Road, Hiline Road, and Jefferson Avenue). As seen in the design layout drawing in Appendix I, the intersection shifted slightly to the east. The advantages to this option are that it squares up the intersection and removes the free running right turn movement from the southwest corner and reduces the length of cross-walks. The disadvantages to this option are the additional required right-of-way, the relocation of the Exxon Mobil Gas Station on the northwest corner, and the impacts to the Tendoy Elementary School.

**Traffic Evaluation**

After the modifications were complete and the alternatives refined, a traffic analysis for 2035 traffic conditions was conducted. Three of the four alternatives (1A, 1C, and 10) were included in the traffic evaluation. Though a traffic analysis for Alternative 8 was not included in the traffic study report, a Synchro analysis was performed. The results of that analysis confirmed that Alternative 8 would operate at LOS ‘F’ in the projected year 2035, with a delay of approximately 84.1 seconds.

The remaining three alternatives included a second traffic signal located on Pocatello Creek Road, relatively close to the Alameda/Jefferson intersection. The initial evaluation involved analyzing each individual intersection for each alternative, using Synchro. The Synchro analysis did not evaluate the multiple intersections as a network. There was a concern with the close spacing of the second intersection to the Alameda/Jefferson intersection and the potential for queues to extend from one intersection into the adjacent intersection, impacting operations. Therefore, a VISSIM traffic simulation was performed to analyze the intersection network. Details of the evaluations are included in the Traffic Study Report (Appendix B). Table 3 summarizes the results of the VISSIM evaluation for each of the alternatives.

**Table 3. VISSIM Analysis - 2035 Peak Hour**

Intersection	BTPO Standard	No Build		Option 1A/1C		Option 10	
		LOS	Delay	LOS	Delay	LOS	Delay
Alameda/Jefferson Avenue	D	D	48.3	D	40.1	D	41.1
*Pocatello Creek/Deon	D	F	77.4	A	9.8	A	9.8
Jefferson/E Alameda	D	F	74.9	**N/A	**N/A	**N/A	**N/A

\* The Pocatello Creek Road and Deon Drive intersection is the new traffic signal along Pocatello Creek Road that connects the new by-pass route.

\*\* The Jefferson Avenue and E. Alameda Road intersection is closed off in each of the three alternatives.

Based on the results above, the Alameda/Jefferson intersection will operate at a LOS ‘D’ for all three alternatives. The one second difference in delay between each alternative is not significant enough to develop a recommendation from a traffic capacity and operations perspective. The evaluation also indicated that the two traffic signals can operate effectively without queuing back into one another. A more detailed description of the evaluation and results is listed in the Traffic Study Report (Appendix B).



## 6. ALTERNATIVE PHASING

Due to funding constraints, the project team requested that each alternative be broken into phases based on funding packages of two million dollars. Design phasing plans for phase 2 and 3 for each alternative are included in Appendix E.

- **Alternative 1A**

- **Phase 1** – Right-of-way acquisition for all residential and commercial property, relocation of all commercial and residential homes, and major utilities.
- **Phase 2** – Construction of the by-pass route between E. Alameda Road and Deon Drive and connection to Pocatello Creek Road with a traffic signal. Existing access for Winco would be relocated to the new signal and the parking lot would be reconfigured. Access to Deon Drive from Pocatello Creek Road and access to E. Alameda Road from Jefferson Avenue would be closed.
- **Phase 3** – Reconstruction of the Alameda/Jefferson intersection with improvements to Hiline Road, Pocatello Creek Road, Jefferson Avenue, and Alameda Road

- **Alternative 1C**

- **Phase 1** – Right-of-way acquisition for all residential and commercial property, relocation of all residential homes, and major utilities.
- **Phase 2** – Relocation of all commercial property, construction of the frontage road and connection to Pocatello Creek Road with a traffic signal. Existing access for Winco would be relocated to the new signal and the parking lot would be reconfigured. Access to Deon Drive from Pocatello Creek Road and access to E. Alameda Road from Jefferson Avenue would be closed.
- **Phase 3** – Reconstruction of the Alameda/Jefferson intersection with improvements to Hiline Road, Pocatello Creek Road, Jefferson Avenue, and Alameda Road

- **Alternative 10**

- **Phase 1** – Right-of-way acquisition and relocations of all residential property, and right-of-way acquisition for all undeveloped commercial property.
- **Phase 2** – Right-of-way acquisition and relocation of all commercial property. Construction of by-pass route between E. Alameda Road and Deon Drive and connection to Pocatello Creek Road with a traffic signal. Existing access for Winco would be relocated to the new signal and the parking lot would be reconfigured. Access to Deon Drive from Pocatello Creek Road and access to E. Alameda Road from Jefferson Avenue would be closed.
- **Phase 3** – Reconstruction of the Alameda/Jefferson intersection with improvements to Hiline Road, Pocatello Creek Road, Jefferson Avenue, and Alameda Road

## 7. FINAL ALTERNATIVES

In the summer of 2010, a project team meeting was held with personnel from the City of Pocatello and ITD District 5 to discuss the results of the Traffic Study Report, and impacts based on right-of-way, construction costs, phasing and environmental constraints. Alternatives 1A, 1C, and 10 were presented and discussed. The phasing plan for each alternative was also discussed with the team, including right-of-way impacts, residential and commercial property relocations, and construction sequencing.

The project team requested an initial build option for constructing either the by-pass route or the frontage road initially and only acquiring right-of-way necessary for the initial construction. The initial build option is a modification to the phasing plans indicated in section 6. This option will meet the BTPO's minimum LOS requirements, since the Alameda/Jefferson intersection will operate at LOS 'D' through 2035.

- **Advantages to Initial Build** – Impacts to the school property and the commercial businesses on the northwest corner could be avoided. The school building is fairly old and in approximately 10 to 20 years, the school district may decide to relocate the school to another location. Traffic projections may change in the next 20 years which may or may not require the Alameda/Jefferson intersection to be reconstructed.
- **Disadvantages to Initial Build** – Funding may not be available in the next 20 years when the intersection warrants improvement. Right-of-way costs to purchase residential and commercial property may increase significantly in the next 20 years.

The project team also discussed amenities such as entrance signs, landscaping, lighting, etc., which appeared to be most appropriate for Alternative 10. However, this could increase the amount of right-of-way needed. It was decided that these amenities should not be included in the alternative concepts but could be added in the future during the design development process.

The City of Pocatello and ITD District 5 requested some minor changes to the alternatives which included placing the cul-de-sac in Alternative 1A in the same location as in Alternative 10, adding bicycle lanes to Pocatello Creek Road as indicated in the BTPO Master Bicycle Plan (Appendix F), reducing the width of the bypass route and frontage road to the City's minimum, reducing the curb return radii on all local roads to minimize impacts to residential homes, including right-of-way for the new access into the Winco parking to allow the City to maintain the signalized access, and adding a third lane on Pocatello Creek Road that would become a designated right turn lane at the Alameda/Jefferson intersection.

## 8. PEDESTRIAN & BICYCLE FACILITIES

The City of Pocatello has a Master Bicycle Plan which includes various existing and planned trails, shared use pathways, and bicycle routes within the City. BPTO also has a Master Bicycle Plan, which includes regional bicycle facilities in addition to those within the city. The proposed improvements for the main intersection include sixteen foot shared lanes on both sides of Pocatello Creek Road and Hilene Road, and a six foot sidewalk terminating at Jefferson Avenue. A landscape buffer between the proposed curb and gutter and sidewalk may also be added to improve safety. All proposed improvements include ADA compliant pedestrian ramps and sidewalks.

## 9. RECOMMENDATION

A matrix (Appendix J) was created to evaluate the identified alternatives, as well as a no-build option. Each of the criteria used in the evaluation matrix is described below.

- **Land Use** - Total right-of-way impacts required for the improvements as well as specific impacts to residential, commercial, church/school properties.
- **Transportation** - Number of access points near the intersection and improvement to traffic operations (LOS).
- **Cost** - Cost to relocate major utilities (including relocating the two steel power poles on the northwest and southwest corners of the main intersection) and total project construction cost.

- **Public Involvement** - Feedback from the public meeting and stakeholders (Appendix G).
- **Safety** – Possible reduction in accidents, improvement to crosswalks, and improvements pedestrian and bicycle use.

The matrix was used to evaluate the different alternatives and determine a preferred alternative. A color scheme (green, yellow, and red) was used to rate the alternatives for each of the criterion. Each color represented a value (green =3, yellow =2, red=1) which was summed to provide each alternative with a total score. The scoring results are displayed in Table 4.

**Table 4. Evaluation Matrix Grading Results**

Alternative	Land Use	Transportation	Cost	PIM	Safety	Total
1A	5	6	3	1	5	<b>20</b>
1C	6	5	3	2	5	<b>21</b>
10	4	6	3	3	9	<b>25</b>

Based on the five factors of the evaluation matrix, Alternative 10 was the recommended option for transportation, public involvement, and safety. The Consultant recommendation for the ultimate build, based on the evaluation matrix, is Alternative 10. The Consultant does recommend implementing the initial build for Alternative 10 as the most prudent option for improving the intersection at this time. The preferred option will need to be determined through the NEPA process with an Environmental Assessment.

## 10. CONCLUSION

The Alameda/Jefferson intersection is currently experiencing operational issues and there is a desire to improve safety. There are currently two T-intersections that are relatively close to the main intersection that are experiencing high delay and a history of accidents. The project area currently has poor access management, which is contributing to accident frequency and reduced mobility. The City of Pocatello would like to make improvements to this area, including implementing access management, improving the operations of the intersections, and improving safety.

The project team went through an extensive process to develop practical alternatives. Key stakeholders such as the City of Pocatello, ITD District 5, and BTPO played a major role in the development of these alternatives. Other key stakeholders such as the LDS Church and the Pocatello Chubbuck School District 25 were involved in the discussions throughout the project. After several iterations, the alternatives were narrowed down to three that could be taken to the public for comments. The LDS Church and the school district are split on which alternative they prefer, which is largely due to the impacts to the LDS property and student safety.

Based on the traffic evaluation, it was determined that all three proposed alternatives would operate at LOS ‘D’ in 2035, which meets the minimum LOS requirements set by ITD and BTPO. The Jefferson/E. Alameda and Pocatello Creek/Deon intersections are operating at LOS ‘F’ and ‘D’ under existing conditions and it is projected that they would both operate at LOS ‘F’ in 2035 for the no-build condition. Projected traffic volumes are anticipated to increase and cause vehicles stacking up from the main intersection and prohibiting movement. It is anticipated that as these two intersections deteriorate, the chances of accidents occurring will increase.

The recommended alternative was determined to be Alternative 10 based on the evaluation criteria and analysis, but a preferred option will need to be determined through the NEPA process with an Environmental Assessment.

## **APPENDIX A**

**ITD Forms 757, 2708, and 280**



Turning Lanes
Climbing Lanes
Slow Moving Vehicle Lanes

**Intersections (Including Turn Bays, Signals, Lighting, Dividers, Etc.)**

Locations	Recommendations

**2. Other Improvement Recommendations**

	Location(s)	Quantity
Guardrail/Hazard Removal		
Guardrail End Treatments		
Curb/Gutter		
Sidewalk		
Facilities		
Seeding		

**3. Type of Surfacing**

Existing Asphalt Pavement	Existing Width Varies
Proposed Asphalt Pavement	Width Varies
<input checked="" type="checkbox"/> Reconstruction <input type="checkbox"/> Rehabilitation    Materials Source <input type="checkbox"/> State <input type="checkbox"/> Commercial	

**4. Structure Improvements (Check Sufficiency Rating & Inspection Report)**

	Location(s)	Size and Type
Replacement		
Deck Repair		
Widening		
Rail and/or Curb		

## 5. Drainage Improvements

Location(s)	Recommendations

## 6. Miscellaneous

Signing Requirements
Utility Adjustments (Kind and Location) Idaho Power, Qwest Phone Lines, Intermountain Gas
Irrigation Facilities (Kind and Location) N/A
R/R Crossing Work N/A
Construction Traffic Control
Detours
Problems Identified Through Contact With Local Maintenance
List any future plans for the area that would affect this or connecting Roadways.
Project Designation    Simple <input checked="" type="checkbox"/> Complex <input type="checkbox"/>
Special Problems Not Identified Above
Work Needing a Consultant
Additional Comments
Stakeholders City of Pocatello, ITD, BTPO, Pocatello/Chubbuck School Dist. 25, LDS Church

## 7. Environmental - Include Draft ITD 0280 – Feasibility Study

# Design Standards



## Project Identification

Key Number 11657	Project Number Ao11(657)	Project Title Int. Alameda Rd & Jefferson, Pocatello			Date
County Bannock	Terrain Type Level	Highway Number I-15B	Milepost 4.983	to Milepost 4.983	Functional Class Urban Arterial

## Project Type

Project Standards	<input checked="" type="checkbox"/> AASHTO	<input type="checkbox"/> 3R	<input type="checkbox"/> 1R	<input type="checkbox"/> State	<input type="checkbox"/> PM	<input type="checkbox"/> Other
Oversight	<input type="checkbox"/> Full	<input checked="" type="checkbox"/> Exempt				

## General Project Description

This project will consist of reconstructing the main intersection of Pocatello Creek Rd/Hiline Rd/Alameda Rd/Jefferson Ave and constructing either a by-pass route between Alameda Road and Deon Drive and extending north and connecting into Pocatello Creek Rd with a traffic signal or a frontage road that curves around the LDS church and connects into Pocatello Creek Road with a traffic signal. Access control will be implemented by closing off Alameda Road from Jefferson Avenue and closing off Deon Drive from Pocatello Creek Road.

## Standards for Pavement Width

AASHTO Standard Width 12 ft/lane	3R Standard Width	State Standard Width	ITD Standard Width * <i>Corridor Plan</i>	Other Standard Width
-------------------------------------	-------------------	----------------------	---	----------------------

## Roadway Widths (Attach existing and proposed typical sections)

Milepost to	Milepost	Existing Pavement Width	Proposed Pavement Width	<input type="checkbox"/> Proposed width includes a 2-foot shoe for each side (AASHTO Standards Only)
4.9	5.1	51' to 79'	Varies	
1.0	1.4	35' to 38'	Varies	

## Proposed Maximum Superelevation

N/A %

## Proposed Design Vehicle

WB-67

## Design Year

2035

## Traffic ADT

Present 38,400      Future 50,200

## Traffic DHV

Present      Future

## Posted Speed

35

## Design Speed

35

## Minimum Level of Service (Attach capacity analysis)

## Access Control

Milepost to	Milepost	Existing	Proposed	Milepost to	Milepost	Existing	Proposed
4.983	4.983	D	D	1.047	1.047	None	Rt in - Rt out
1.047	1.047	F	F	5.137	5.137	None	Rt in - Rt out
5.137	5.137	D	F				

## Maximum Grade

Existing 0 %      Proposed 0 %

## Minimum Curve Radius

Existing R    N/A      Proposed R    N/A

## Proposed Structures (Attach typical sections)

Deck Width (C-C) N/A	(0-0) N/A	Vertical Clearance (Roadway/Q <sub>50</sub> ) N/A	Design Load N/A
Existing Bridge Sufficiency Rating N/A	Rail Type N/A	Clear Zone Cut N/A	Fill N/A



**Proposed Work (Mark appropriate items)**

<input checked="" type="checkbox"/> Excavation	<input checked="" type="checkbox"/> Bicycle Lanes	<input checked="" type="checkbox"/> Curb and Gutter	<input checked="" type="checkbox"/> Lighting	<input type="checkbox"/> ITS
<input checked="" type="checkbox"/> Drainage	<input type="checkbox"/> Separated Pathway	<input checked="" type="checkbox"/> Utilities	<input checked="" type="checkbox"/> Sidewalk	<input type="checkbox"/> Other
<input checked="" type="checkbox"/> Base	<input checked="" type="checkbox"/> Traffic Signal	<input type="checkbox"/> Bridge(s)	<input type="checkbox"/> Seal Coat	
<input type="checkbox"/> Surfacing	<input checked="" type="checkbox"/> Erosion Control	<input type="checkbox"/> Guard Rail	<input type="checkbox"/> Detour	

**Traffic Signals**

Existing Location (Milepost)	Type of Controller	Proposed Location (Milepost)	Type of Warrant
4.983		4.983	
		5.4	

**Railroad Crossing Protection**

Existing Location (Milepost)	Type of Protection	Proposed Location (Milepost)	Type of Protection

**Accident History**

Accident Base Rate (ACC/MV) 0.58	Existing Accident Rate within Project Limits (ACC/MV) 0.51
Spot Locations within Project Limits that exceed the Base Rate (list Milepost) _____	

**Proposed Improvements to Reduce Accidents** \*Attach worksheet for accident reduction, if necessary.

Milepost	Type of Improvements	Estimated Accident Reduction

**Environmental**

Feasibility Study (ITD 0280) Complete	<input type="checkbox"/> Yes – Attach a copy to this form.	<input type="checkbox"/> No – Explain below
Environmental Concerns		

# Feasibility Study



Key Number 11657	Location A011(657)	General Description Intersection Improvements			Route 1-15B
Beginning Milepost 4.983	Ending Milepost 4.983	Length in Miles 0	County Bannack	City Pocatello	District 5
The project is located on a Connecting Idaho Corridor <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No			The Purpose and Needs was originally identified in a Corridor Plan <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		

## Purpose and Needs Report

### Project Purpose/Benefits

**Mark (xx)** the one item that best describes the Primary Reason for Proposing this Project

**Mark (+)** all Other Relevant Items

- |   |       |   |
|---|-------|---|
| <u>xx</u> Maintain/Improve User Operating Conditions                                  | _____ | Enhance Accessibility for the Disabled/Safety   |
| <u>xx</u> Maintain/Improve Traffic Flow   | _____ | <u>+</u> Enhance Pedestrian Safety and/or Capacity                                    |
| _____ Time Savings  | _____ | <u>+</u> Enhance Bicycle Safety and/or Capacity                                       |
| _____ Increase Capacity   | _____ | _____ Traffic Composition Enhancement (e.g., Truck Route, HOV Lane, Climbing Lane)    |
| <u>xx</u> Reduce Congestion   | _____ | _____ Visual/Cultural Enhancement (e.g., Landscaping, Historic Preservation)          |
| _____ Hazard Reduction/Safety   | _____ | _____ Environmental Enhancement (e.g., Air Quality, Noise Attenuation, Water Quality) |
| _____ Reduce Highway User Operating Costs   | _____ | _____ Economic Prudence (e.g., Repair Less Expensive than Replacement, B/C Ratio)     |
| _____ Other, List (e.g., Driver Convenience and Comfort Regarding Rest Area Projects) |       |   |

Describe design elements needed to accomplish the purpose of this proposal as they relate to the current deficiencies.

Reconstruct intersection of Pocatello Creek Rd/Hiline Rd/Alameda Rd/Jefferson Ave with reconfigured lane uses per approach. This project will also include constructing either a by-pass route between Alameda Road and Deon Drive that will extend to the north to Pocatello Creek Road traffic signal or a frontage road that will curve around the LDS Church and connect into Pocatello Creek Road with a traffic signal. The project will also implement access control that will close off Alameda Road to Jefferson Avenue and close off Deon Drive to Pocatello Creek Road.

## Proposed Improvements (See ITD 2708 and ITD 1150)

Roadway: \_\_\_\_\_

Intersections: Reconfigure existing intersection and construct new one on Pocatello Creek Road

Drainage: \_\_\_\_\_

Structures: \_\_\_\_\_

Railroad Crossings: \_\_\_\_\_

Traffic Items: \_\_\_\_\_

Traffic Control: \_\_\_\_\_

Other Items: \_\_\_\_\_

Utilities: Relocate two very large steel power poles

**Environmental** (Check any of the following that are likely impacted by the proposal.)

- |   |                                     |  |                                     |
|---|-------------------------------------|--|-------------------------------------|
| 1. Noise Criteria Impacts   | <input type="checkbox"/>            | 18. Air Quality Impacts  | <input type="checkbox"/>            |
| 2. Change in Access or Access Control                             | <input checked="" type="checkbox"/> | 19. Inconsistent With Air Quality Plan   | <input type="checkbox"/>            |
| 3. Change in Travel Patterns                                      | <input checked="" type="checkbox"/> | <input type="checkbox"/> SIP <input type="checkbox"/> TIP  |                                     |
| 4. Neighborhood or Service Impacts                                | <input checked="" type="checkbox"/> | 20. Stream Alteration/Encroachment   | <input type="checkbox"/>            |
| 5. Economic Disruption  | <input type="checkbox"/>            | <input type="checkbox"/> IWDR <input type="checkbox"/> F&G <input type="checkbox"/> COE (404)                  |                                     |
| 6. Inconsistent W/Local or State Planning                         | <input type="checkbox"/>            | 21. Flood Plain Encroachment   | <input type="checkbox"/>            |
| 7. Environmental Justice  | <input type="checkbox"/>            | <input type="checkbox"/> Longitudinal <input type="checkbox"/> Transverse                                      |                                     |
| 8. Displacements  | <input checked="" type="checkbox"/> | 22. Regulatory Floodway  | <input type="checkbox"/>            |
| 9. Section 4(f) Lands-DOT Act 1966                                | <input type="checkbox"/>            | <input type="checkbox"/> PE Cert. & FEMA Approval <input type="checkbox"/> Revision                            |                                     |
| 10. LWCF Recreation Areas/6(f) Lands                              | <input type="checkbox"/>            | 23. Navigable Waters   | <input type="checkbox"/>            |
| 11. Section 106-Nat. Historical Preservation Act                  | <input type="checkbox"/>            | <input type="checkbox"/> CG (Sec 9) <input type="checkbox"/> COE (Sec 10) <input type="checkbox"/> Dept. Lands |                                     |
| 12. FAA Airspace Intrusion  | <input type="checkbox"/>            | 24. Wetlands   | <input type="checkbox"/>            |
| 13. Visual Impacts  | <input type="checkbox"/>            | <input type="checkbox"/> Jurisdictional (404) <input type="checkbox"/> Non-Jurisdictional                      |                                     |
| 14. Prime Farmland, Parcel Splits                                 | <input type="checkbox"/>            | 25. Sole Source Aquifer  | <input type="checkbox"/>            |
| 15. Known/Suspected "Hazmat" Risks                                | <input checked="" type="checkbox"/> | <input type="checkbox"/> Exempt Project <input type="checkbox"/> Non-Exempt                                    |                                     |
| 16. Wildlife/Fish Resources/Habitat                               | <input type="checkbox"/>            | 26. Water Quality, Runoff Impacts  | <input type="checkbox"/>            |
| 17. Threatened/Endangered Species                                 | <input type="checkbox"/>            | 27. NPDES – General Permit   | <input checked="" type="checkbox"/> |
| <input type="checkbox"/> Listed <input type="checkbox"/> Proposed |                                     | 28. Sediment – Erosion Control Plan  | <input type="checkbox"/>            |

**Anticipated Environmental Document/Decision**  EE/Cat Ex  EA/FONSI  EIS/ROD

**Right of Way** (See ITD 2839)

Direct Acquisition Costs ..... \$ 1,704,029

Indirect Acquisition Costs ..... \$ 0

Incidentals ..... \$ 170,403

**Total \$ 1,874,432**

Number of Parcels Requiring Acquisition 38

Number of Parcels Requiring Relocation 5

**Preliminary Project Costs** (See ITD 1150)

Development (Planning/Engineering/Environmental) ... \$ 354,000

Construction (CN/CE) ..... \$ 3,257,892

Utilities ..... \$ 200,000

Right of Way ..... \$ 1,874,432

**Total \$ 5,686,324**

**Financial Plan**

List possible funding sources/programs (Preservation, Bridge, Safety, Mobility, Enhancement, CMAQ, etc.) Safety

Will total funding be within available District source/program levels?  Yes  No

If no, what additional funding sources are identified? \_\_\_\_\_

Is any planning funding needed to prepare the project for a five year program?  Yes  No

When could full funding be available? \_\_\_\_\_

Recommended By:	Environmental Planner	Project Development Engineer	District Engineer
Approved By Transportation Planning Administrator	Date	Approved By Chief Engineer	Date

## **APPENDIX B**

### **Traffic Report**

# Alameda Road & Jefferson Avenue Intersection Improvements - Traffic Study Report

*Prepared for*

**City of Pocatello**  
P.O. Box 4169  
Pocatello, ID 83205-4169



*Prepared by*

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## CITATION

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## **APPENDICES**

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**APPENDIX D – CRASH HISTORY AND ANALYSIS DATA**

**APPENDIX E – BTPO LEVEL OF SERVICE STANDARDS VARIABLE  
APPROACH**



## **ACRONYMS**

ADT	Average Daily Traffic
BTPO	Bannock Transportation Planning Organization
ITD	Idaho Transportation Department
LOS	Level of Service

## EXECUTIVE SUMMARY

The purpose of this study is to evaluate the transportation and traffic operations for proposed roadway improvements in Pocatello, Idaho. The City of Pocatello is considering improvements to the traffic operating conditions of the E Alameda Rd - Pocatello Creek Rd and Jefferson Ave – Hiline Rd (Pocatello Creek / Jefferson Ave) intersection. This intersection is located along the designated I-15 business loop and provides access to I-15 to the north.

Although the ITD Design Manual identifies a LOS C as the acceptable threshold the BTPO developed a LOS Standards Variable Approach for use on roadways and intersections within their jurisdictional boundary. According to this document, and corresponding figure (Appendix E), the study intersections will be allowed to operate at LOS D. ITD has not approved this document however it has been allowed for use in this analysis per direction from ITD.

This study proposed three options with varying roadway and signal improvements. Due to the complexity of closely spaced intersections Parametrix recommended the City of Pocatello verify the Synchro results using a tool capable of assessing the finer details of traffic operations. The selected tool was VISSIM. VISSIM is a microsimulation software tool ideal for evaluating many traffic and pedestrian mobility issues in complex environments, such as closely spaced intersections where queuing can affect upstream intersection operations.

Observation of study area intersections revealed that existing intersection geometry and proximity of the Jefferson Ave / E Alameda Rd T-intersection can cause significant queuing and delay. Also, a review of historical accident data from 2004 to 2008 showed a total of 43 vehicle collisions in the study area.

Three options were developed for the 2035 design year in order to obtain acceptable LOS conditions for the Pocatello Creek Rd / Jefferson Ave and Jefferson Ave / E Alameda Rd intersections. The three build options included the following:

- Option 1A: Proposes closing E Alameda Rd / Jefferson Ave T-intersection, signaling and relocating the Pocatello Creek Rd / Deon Rd intersection, study area local road geometric improvements and signal timing optimization.
- Option 1C: Similar to Option 1A with slight modification to local road connections between E Alameda Rd and Deon Rd.
- Option 10: Similar to Option 1A but with additional geometric modifications at the Pocatello Creek Rd / Jefferson Ave intersection, including eliminating the westbound free-flow right-turn lane and reconfiguration of the northbound approach.

The No Build option demonstrated vehicle delay occurring at LOS D for the Pocatello Creek Rd / Jefferson Ave intersection. This delay increases over the existing delay experienced by drivers traveling through this area. The Pocatello Creek Rd / Deon Rd and Jefferson Ave / E Alameda Rd intersections are predicted to operate at LOS F under the No Build alternative. Intersection delay to drivers is due to the existing intersection geometry, closely spaced intersections, and the high traffic volume demand on E Alameda Rd. The No Build option intersection delay is acceptable for the Pocatello Creek Rd / Jefferson Ave under the No Build option. The Pocatello Creek Rd / Deon Drive and Jefferson Ave / E Alameda Rd intersections are anticipated to be well beyond acceptable LOS thresholds as outlined by the BTPO.

The proposed build Options evaluated closing access from E Alameda Rd to Jefferson Ave and installing a signal at the existing Pocatello Creek / Deon Dr intersection. Local traffic would use routes through the neighborhood, as illustrated in Figures 3-5. The impact of the local traffic on adjacent intersections shows a delay of LOS D at the Pocatello Creek Rd / Jefferson Ave intersection and an acceptable delay of LOS A at the proposed Pocatello Creek Rd / Deon Dr intersection.

The traffic analysis shows the capacity and LOS for Option 1A, Option 1C and Option 10 are sufficient, at LOS D, and that they mitigate the anticipated vehicle delay at the Pocatello Creek Rd / Jefferson Ave and Pocatello Creek Rd / Deon Dr intersections.

It is recommended that the process for selecting a preferred alternative be informed with additional development criteria. Criteria should include residential and commercial property displacements, right-of-way costs, opinions of probable construction and engineering costs, and other environmental and social considerations.

This study also recommends utilizing the LOS criteria outlined in the BTPO LOS Standards Variable Approach. According to the BTPO document, the study intersections of Pocatello Creek / Jefferson Ave, Pocatello Creek Rd / Deon Rd and Jefferson Ave / E Alameda Rd are allowed to operate at LOS D.

# 1. BACKGROUND

Today, vehicles traveling through the E Alameda Rd - Pocatello Creek Rd and Jefferson Ave – Hilene Rd (Pocatello Creek Rd / Jefferson Ave) intersection experience significant vehicle delay from heavy traffic volumes and closely spaced intersections. Also, a total of 43 vehicle collisions have occurred at intersections in the immediate vicinity between January 2004 and December 2008. The City of Pocatello has taken the initiative to explore options to improve the drivers experience and safety through this area, which is summarized in this report.

The Pocatello Creek Rd / Jefferson Ave intersection is a non-traditional (skewed) 4-leg intersection in Pocatello, Idaho. Figure 1 provides an aerial image of the intersection. Alameda Rd serves as the Interstate-15 (I-15) business loop connecting to Pocatello Creek Rd. The intersection of Pocatello Creek Rd / Jefferson Ave is signalized. The Jefferson Ave / E Alameda Rd T-intersection is oriented approximately 200 feet to the south of the Pocatello Creek Rd / Jefferson Ave intersection and has a westbound leg stop controlled. The intersection of Pocatello Creek Rd / Deon Dr is approximately 350 feet northwest of the signalized intersection. The intersection is a stop controlled T-intersection with westbound leg stop controlled.

The purpose of this study is to evaluate ways to improve traffic operations and safety in the area of the Pocatello Creek Rd / Jefferson Ave intersection. The evaluation was completed by performing a traffic modeling analysis of 2010 existing traffic conditions and forecasted conditions for 2035. Three options were developed, as well as a No Build option, for the 2035 traffic volumes to improve traffic operations. Improvements to the roadways included signal timing adjustments, intersection reconfiguration, roadway widening, and changes to local road network.



Figure 1 –Site Layout

## 2. 2010 EXISTING CONDITIONS

This section summarizes the traffic operations analysis performed for the existing conditions, which provides a base of comparison for future conditions. The intersections included in the study area are as follows (see Figure 2 for a Study Area map):

- Alameda Rd – Pocatello Creek Rd / Jefferson Ave – Hiline Rd (Pocatello Creek Rd / Jefferson Ave)
- Pocatello Creek Rd /Deon Dr
- Jefferson Ave / Alameda Rd.

Existing traffic turning movements, average daily traffic (ADT), and collision history data for the identified intersections were provided by the Bannock Transportation Planning Organization (BTPO). Existing signal timing was provided by ITD District 5 through the City of Pocatello for Pocatello Creek Rd / Jefferson Ave intersection. The intersection of Pocatello Creek Rd / Jefferson Ave is a signalized intersection with protected left turns on all movements. Turning movement counts for the existing p.m. peak period, from 4 p.m. to 6 p.m., were collected in July, 2009 – the p.m. peak hour (hour of highest traffic volume) was calculated as 4:30 p.m. to 5:30 p.m. Estimated truck volumes on Pocatello Creek Rd and Alameda Rd were observed as approximately 3 percent. The estimated truck volume along Hiline Rd and Jefferson Ave is approximately 2 percent.

The Alameda Rd / Jefferson Ave intersection is a stop controlled T-intersection with stop-control for the Alameda Rd approach. The existing p.m. peak turning movement counts were collected in January, 2010. Estimated truck volume along Alameda Rd is approximately 1%.

The intersection of Pocatello Creek Rd and Deon Dr is a stop controlled T-intersection with stop-control for the Deon Dr approach. A partial existing p.m. peak turning movement count was collected in January, 2010. Estimated truck volume along Deon Rd is approximately 1 percent. Refer to Appendix B for all traffic data provided by BTPO.

Using the information discussed above as well as details about the existing roadway geometry such as lane widths, curve radii, turn bay lengths, a VISSIM microsimulation model was created. VISSIM is a software tool ideal for evaluating many traffic and pedestrian mobility issues in complex environments, such as closely spaced intersections where queuing can affect upstream intersection operations.

### 2.1 CALIBRATION OF THE VISSIM MODEL

Microsimulation models, such as VISSIM, are developed to simulate existing traffic conditions. The ability and accuracy of these models to simulate existing and proposed traffic conditions can be assessed by comparing outputs of the model to prevailing conditions. A statistical process called the Geoff E. Havers (GEH) statistic, was used for this study. This statistical formula evaluates how close modeled results are to observed datum. Guidelines from the Federal Highway Administration (FHWA) state a microsimulation model is considered calibrated to observed volumes if the GEH value is less than 5.00 for 85 percent or more of the model links and less than 4.00 for the sum of all link counts. The model used in this studies analysis is considered to be calibrated per FHWA guidelines as 100 percent of the individual links were below 4.00 (maximum observed VISSIM value of 2.43) and the GEH for the sum of all link counts was 0.01. These results indicate a strong degree of calibration and that the model is appropriate to assess existing conditions as well as alternative roadway improvements.

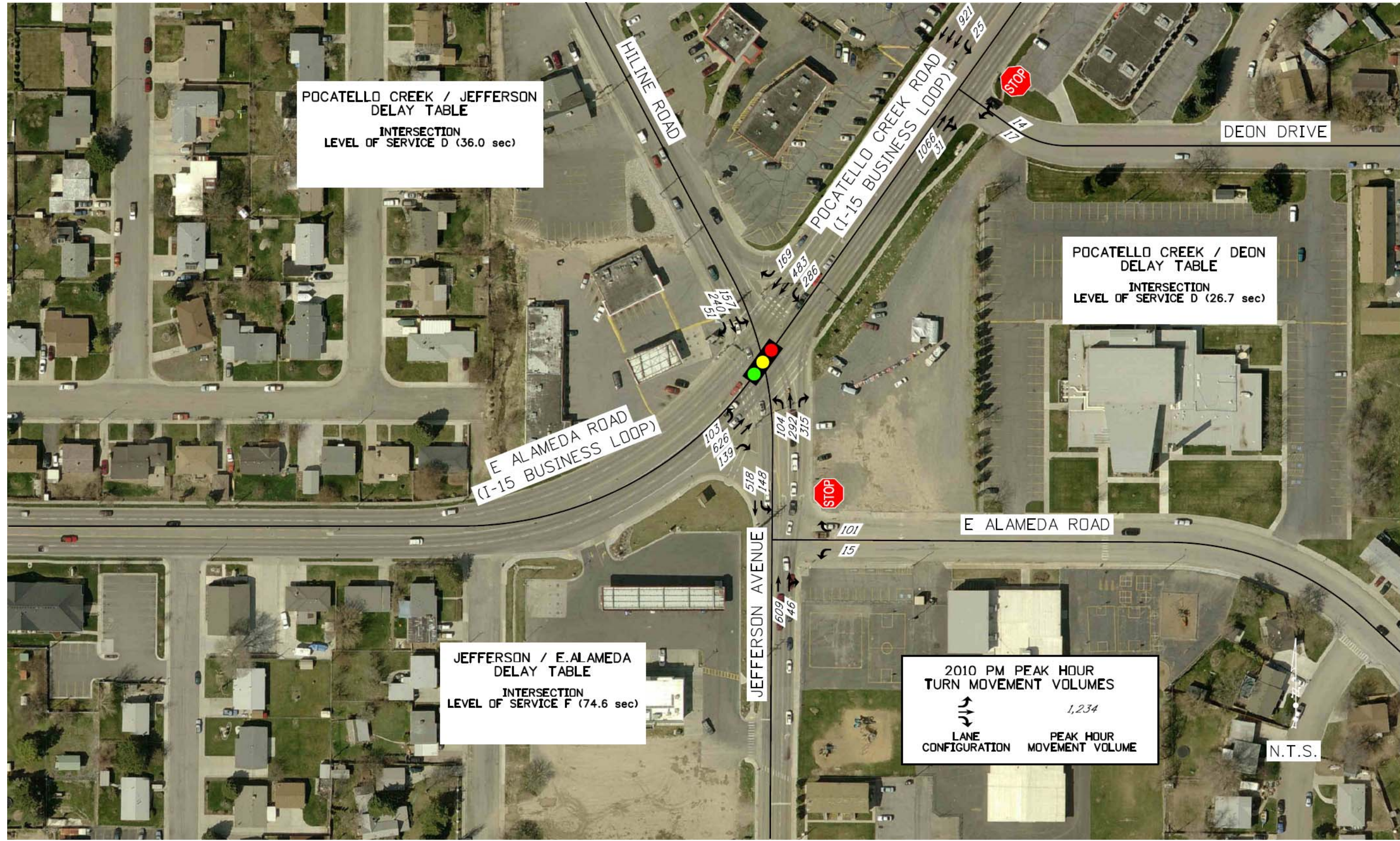


Figure 2 – 2010 PM Peak Hour Existing Condition

## 2.2 2010 OPERATIONAL ANALYSIS

Two common measurements of traffic performance and operation are reported for the scenarios analyzed and are summarized below—this includes the LOS, which is represented by a letter A through F, and vehicle queuing. The significance of these two measurements is they represent the average delay vehicles experience when passing through an intersection (except for at stop controlled intersection where the worst approach is reported) and the approximate distance vehicles spillback (i.e. queue) from the intersection during peak operation conditions. As conditions degrade and congestion increases, the scale slides towards F, which generally represents stop-and-go or heavily congested conditions and the length of vehicle queues increase.

According to BTPO Standards, the allowable intersection operating condition is LOS of D (see Table 1). There is no standard for vehicle queue length and for purposes of analysis, the modeled queue length is compared to available storage length of existing turn pockets.

### 2.2.1 Intersection Level of Service Analysis (SYNCHRO)

The existing 2010 p.m. peak hour analysis for existing vehicle delay and LOS for the identified intersections are summarized in Figure 2 and in Table 1. In addition, the current BTPO standards for intersection LOS are summarized in Table 1.

**Table 1. Existing 2010 PM Peak Hour LOS Summary**

Intersection	BTPO Standard	Intersection Control Type	Modeled LOS	Intersection Delay (seconds)
Pocatello Creek Rd/Jefferson Ave	D	Signal	D	36.0
Pocatello Creek Rd/Deon Dr	D	Stop Sign	D	26.7
Jefferson Ave/E Alameda Rd	D	Stop Sign	F	74.6

As summarized in Table 1, the Pocatello Creek Rd / Jefferson Ave intersection currently operates at a LOS D with an average intersection delay of 36.0 seconds. The Pocatello Creek Rd / Deon Dr intersection currently operates at a LOS D with an average intersection delay of 26.7 seconds—because this intersection is a stop-controlled intersection, the delay is reported for the westbound Deon Dr movement. Vehicles would experience little to no delay traveling through this intersection on Pocatello Creek Rd. The Jefferson Ave / E Alameda Rd stop-controlled intersection currently operates at a LOS F with an average intersection delay of 74.6 seconds, which is due to the westbound left turning traffic.

The Pocatello Creek Rd / Jefferson Ave and Pocatello Creek Rd / Deon Dr intersection are operating at the current BTPO threshold limit at LOS D. The intersection of Jefferson Ave / E Alameda Rd is operating at an unacceptable LOS F compared to a threshold of LOS D.

## 2.2.2 Vehicle Queuing Analysis (VISSIM)

The existing 2010 p.m. peak hour results for the existing vehicle queuing for study area intersections are summarized in Table 2. The results of the vehicle queuing analysis are summarized in Table 2.

**Table 2. Existing 2010 PM Peak Hour Queuing Summary**

Intersection and Movement	Existing Turn Pocket Storage Length 1	Queue Length (feet)		Maximum Exceeds Available Storage Length
		Average	Maximum	
<b>Pocatello Creek Rd/Jefferson Ave</b>				
Northbound left-turn	80	36	<b>213</b>	✓
Shared northbound through/right-turn	150	66	<b>202</b>	✓
Westbound left-turn	210	61	<b>370</b>	✓
Westbound through	300	41	256	
Southbound through/right-turn	--	42	276	--
Southbound left-turn	125	33	<b>251</b>	✓
Eastbound left-turn	160	22	<b>168</b>	✓
Eastbound through	--	65	300	--
Eastbound right-turn	200	2	92	
<b>Pocatello Creek Rd/Deon Dr</b>				
Westbound movements	--	1	46	--
Southbound left-turn	125	1	23	
<b>Jefferson Ave/E Alameda Rd</b>				
Westbound movements	--	3	102	--
Southbound left-turn	50	6	<b>107</b>	✓
Northbound movements	--	12	201	--

Note: Bold queue lengths indicate exceedance in available storage.

<sup>1</sup> Available storage or distance to upstream intersection; a "--" indicates a lane where storage length is not applicable.

As shown in Table 2, none of the modeled average queues lengths exceed available storage. However, some of the maximum queues exceed available storage length. At the Pocatello Creek Rd/Jefferson Ave intersection, the northbound maximum queues extend south of E Alameda Rd, which impacts this intersection. The extension of this queue length impedes the movement of southbound vehicles turning left onto E Alameda Rd and westbound vehicles turning from E Alameda Rd to Jefferson Ave. Left turn maximum queues on westbound Pocatello Creek Rd and southbound Hilina Rd also extend beyond the available storage. These long queues can sometimes block one of the through movements and vehicles can only proceed through the intersection using one of the two available lanes. At the Jefferson Ave/E Alameda Rd intersection, the southbound left turn has a maximum queue can extend to the north and has the potential to cause intersection blockages at the Pocatello Creek Rd / Jefferson Ave intersection. The queue conditions reduce the ability of the intersection to efficiently and safely allow vehicles to pass through the area and result in increased vehicle delay and increased potential for collisions to occur.



### 3. ROADWAY CAPACITY ANALYSIS

This section discusses the analysis for evaluating whether roadways have sufficient capacity, enough space in the travel lanes to accommodate the number of vehicles wanting to travel on them, for 2010 and 2035. Roadway capacity is a term used to describe the total number of vehicles that could theoretically travel on a segment of roadway for some time period. The methodology for this analysis was developed by the Florida Department of Transportation (FDOT), is used regularly throughout the United States, and is an approved methodology for this study in assessing roadway link capacities. This methodology is referred to as the FDOT Planning Level Roadway Link Volume Thresholds and is incorporated into this document as directed by the City of Pocatello and the ITD.

This analysis informs the decision-making process by providing a planning-level assessment about a roadways ability to accommodate future traffic growth.

#### 3.1 2010 ROADWAY CAPACITY ANALYSIS

The 2010 roadway capacity analysis was conducted using data provided by the BTPO. This data was used to evaluate the existing link volumes for the roadway segments in the study area and is summarized in Table 3. This analysis was not conducted for Deon Dr or Alameda Rd east of Jefferson Ave as an evaluation of the existing and future volumes showed they are well below any planning level thresholds that would require improvements—For example, the ADT on Deon Drive is 1,300 vehicles and 4,800 on Alameda Rd.

**Table 3. Existing 2010 Roadway Capacity Analysis**

Segment	No. of Through Lanes	Exclusive Left Lanes	LOS D Threshold	LOS D Adjusted	Existing Traffic Two Way Total	Sufficient Capacity
Pocatello Creek (North of Deon)	4	YES	36,700	40,370	24,350	YES
Pocatello Creek (South of Deon)	4	YES	36,700	40,370	24,050	YES
Jefferson Avenue (North of Alameda)	2	YES	16,500	14,025	18,350	NO
Jefferson Avenue (South of Alameda)	2	NO	16,500	17,325	13,950	YES
Alameda Road (West of Hiline/Jefferson)	4	YES	36,700	40,370	19,600	YES
Hiline Road (North of Alameda/Pocatello Creek)	2	YES	16,500	14,025	14,800	NO

Table 3 shows that Jefferson Ave, north of Alameda and Hiline Rd, north of Pocatello Creek do not have sufficient capacity in 2010. This conclusion is reached by comparing the FDOT LOS D Adjusted vehicle volumes to the Existing Traffic Two-Way Total volumes. Not having sufficient capacity indicates there is congestion on the roadway.

#### 3.2 2035 ROADWAY CAPACITY SENSITIVITY ANALYSIS

A 2035 roadway capacity sensitivity analysis was conducted using two different operational criteria—a LOS C and LOS D criteria. Both operational criteria were evaluated to provide a sensitivity analysis of the anticipated future conditions. This informs the decision-making process for the adjustment of acceptable standards for roadway capacity. This sensitivity analysis is also used to determine how much roadway widening may be necessary to achieve an acceptable future roadway capacity based on the LOS threshold.

Because the improvement options recommended in this study (Option 1A, 1C, and 10) propose changes to roadway network, there are some differences in the segments reported in the 2035 analysis. The elimination of access from E Alameda to Jefferson Ave removes the Jefferson Ave, north of Alameda Rd segment—this segment is now included as part of Jefferson Ave, south of Pocatello Creek Rd. Also,

the proposed signal installation at the Pocatello Creek / Deon Dr intersection changes the facility type from a Class I facility to a Class II facility per the FDOT methodology (this applies different adjustment factors to the facility for 2035 than what was used in 2010).

The 2035 roadway capacity analysis was conducted using the 2010 and 2030 data provided by the BTPO, which was factored to 2035 using growth projections also provided by BTPO. The project future volumes are used to evaluate roadway capacity per the FDOT methodology described above.

### 3.2.1 Using the LOS D Criteria

A LOS D criteria was evaluated for study area roadway to determine if they had sufficient capacity based on this analysis. The LOS D criteria was utilized based on the BTPO LOS Standards Variable Approach document. As shown in Table 4, the Hiline Rd (north of Pocatello Creek) segment is the only roadway that does not have sufficient roadway capacity using the LOS D Criteria. A LOS D represents conditions where vehicle speeds begin to decline below the posted speed limit.

**Table 4. 2035 Roadway Capacity Analysis – LOS D Criteria**

Segment	No. of Through Lanes	Exclusive Left Lanes	LOS D Threshold	LOS D Adjusted	Predicted Traffic Two Way Total	Sufficient Capacity
Pocatello Creek (North of Deon)	4	YES	33,200	36,520	32,700	YES
Pocatello Creek (South of Deon)	4	YES	33,200	36,520	32,900	YES
Jefferson Avenue (South of Pocatello Creek)	2	YES	15,200	15,200	14,950	YES
Alameda Road (West of Hiline/Jefferson)	4	YES	33,200	36,520	26,750	YES
Hiline Road (North of Alameda/Pocatello Creek)	2	YES	15,200	12,920	15,650	NO

### 3.2.2 Additional Roadway Capacity Assessment

Utilizing the LOS D reveals the only roadway requiring mitigation to achieve this standard is Hiline Road. A sensitivity analysis was performed to determine the additional roadway geometric modifications or widening required to achieve an acceptable LOS D on Hiline Road. Adding another travel lane that extends north on Hiline Rd from the Pocatello Creek Rd / Jefferson Ave intersection for southbound traffic brings this roadway section into the LOS D threshold. This mitigation was not included as part of the Build Options discussed below as the priority of the Build Option was to achieve acceptable LOS standards at the intersection, as required.

## 4. PROPOSED IMPROVEMENT PACKAGES AND FUTURE TRAFFIC VOLUMES

This section describes the three build improvement scenarios developed to improve traffic operations in the study area. These build alternatives were developed in coordination with the City of Pocatello. In addition, this section describes how proposed improvements would likely change the way people travel through the study area to reach destinations based on intersection modifications.

The future 2030 projected volumes were provided by the BTPO and utilized to determine an associated 2035 volume. The BTPO developed these volumes using their travel demand model for the area, which factors how employment, population and land use changes in the area effects how and where people travel. This model produced an annual growth rate on E Alameda Rd and Pocatello Creek Rd ranging from 1.1 percent to 1.4 percent. The 2035 volumes are then calculated by applying these annual growth rates to existing volumes provided by BTPO for use in this study. These volumes required adjustments based on modifications to the roadway configuration in the proposed options, which are described below. Because traffic could no longer access E Alameda Rd from Jefferson Ave for all options, this traffic was rerouted through the network (see Option 1A). The total volume in the study area did not change, but volume on some of roadways is different when compared to No Build.

### 4.1 OPTION 1A

The objective of Option 1A is to improve vehicle operations, safety, and business access in the study area. Refer to Figure 3 for an illustration of proposed roadway and signal modification improvements and projected 2035 volumes.

#### **Pocatello Creek and Jefferson Avenue Intersection**

This option modifies the channelization of the southwest Pocatello Creek Rd approach to include two left turn pockets, one through only lane, and one shared through-right lane.

#### **Jefferson Avenue and E Alameda Drive**

This option proposes to close the access provided at this intersection. E Alameda Drive would provide a cul-de-sac to permit vehicles to turnaround. Because this roadway is closed, vehicles traveling westbound on Alameda Dr would divert to the proposed signal at the Pocatello Creek Rd / Deon Dr intersection. Vehicles that previously accessed E Alameda Dr from Jefferson Ave would now use Deon Dr. Also, vehicles traveling north on Jefferson Ave to E Alameda Dr use local roadways, such as E Poplar St and Redwood St, prior to entering the study area.

#### **Pocatello Creek and Deon Drive Intersection**

This option proposes to modify channelization on Pocatello Creek to provide a northbound left-turn pocket, northbound through lane, shared northbound through-right lane, southbound left-turn pocket, two southbound through lanes, and a southbound right turn lane. The Deon Dr approaches would provide one shared lane for all movements. A new signal would also be installed at this intersection.

### 4.2 OPTION 1C

The objective of Option 1C is similar to Option 1A with improving vehicle operations, safety, and business access in the study area but also proposes additional local roadway circulation. Refer to Figure 4 for an illustration of proposed roadway and signal modification as well as anticipated 2035 volumes.

The modifications to the study area intersections are the same as those described above in Option 1A. The differences between Options 1A and 1C are in the connections and configurations of the local

access road network, specifically Deon Dr, E Alameda Rd, and the new Deon-Alameda connector. These modifications would not change the traffic diversion identified in Option 1A.

### **4.3 OPTION 10**

The objective of Option 10 is to provide slightly different intersection and roadway configurations to Option 1A and Option 1C, while attempting to improve vehicle operations, safety, and business access. Refer to Figure 5 for an illustration of proposed roadway and signal modification as well as anticipated 2035 volumes. Vehicle volumes would divert their trips the same in Option 10 as they would in Option 1A and Option 1C with the closure of the Jefferson Ave/E Alameda Rd intersection.

The local access road network for Option 10 is the same as Option 1A.

#### **Pocatello Creek and Jefferson Avenue Intersection**

This option proposes to remove the dedicated eastbound right-turn lane on Pocatello Creek Rd. Also, it modifies the northbound approach by converting the northbound left-turn pocket to a left-turn lane and the right-turn lane to a right-turn pocket. This modification would provide additional left-turn queue storage and diminish right-turn queue storage. The elimination of a free running right from an operational standpoint will slightly increase intersection delay but is a safe way to allow vehicles to turn right.

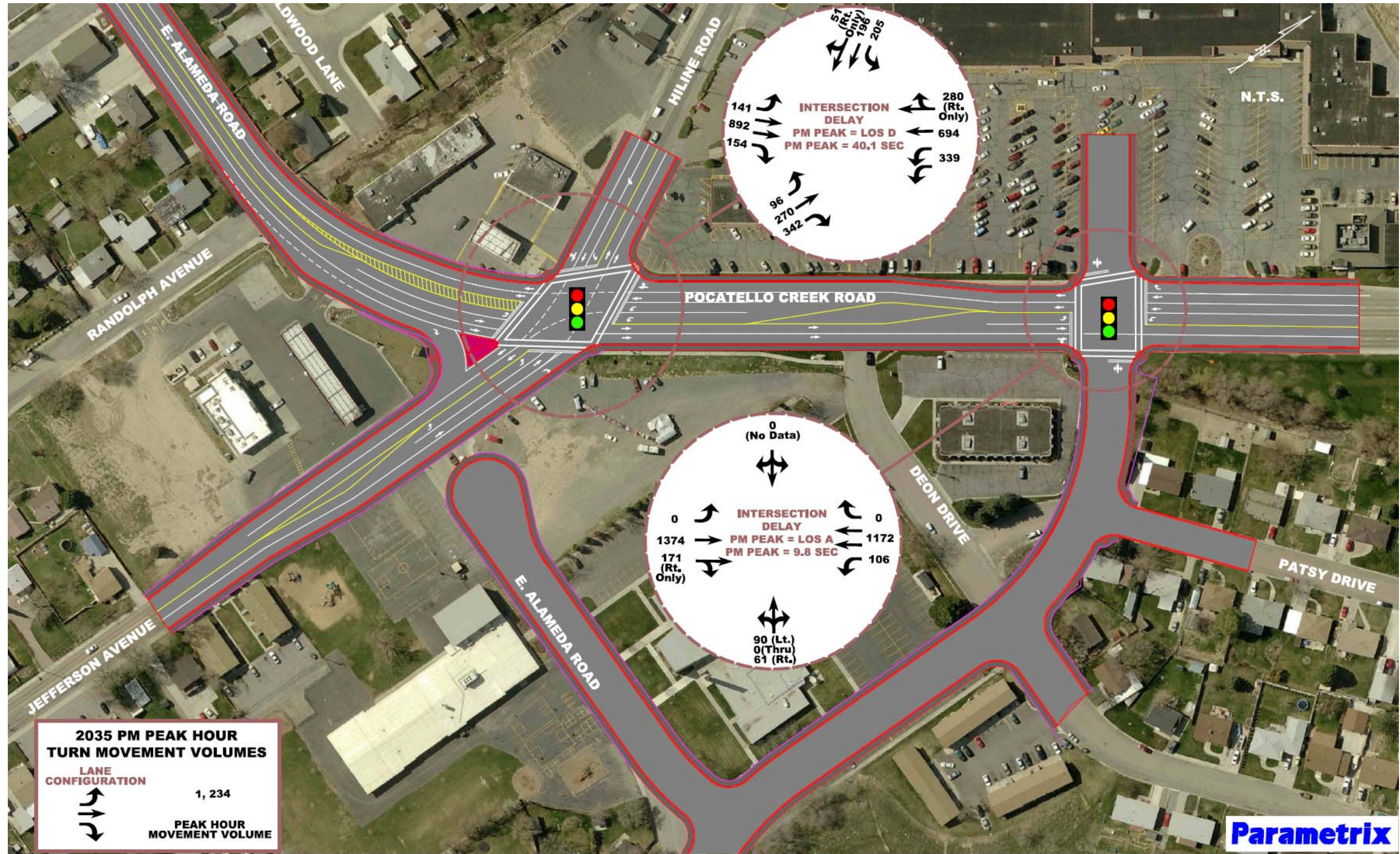


Figure 3 - Option 1A Channelization

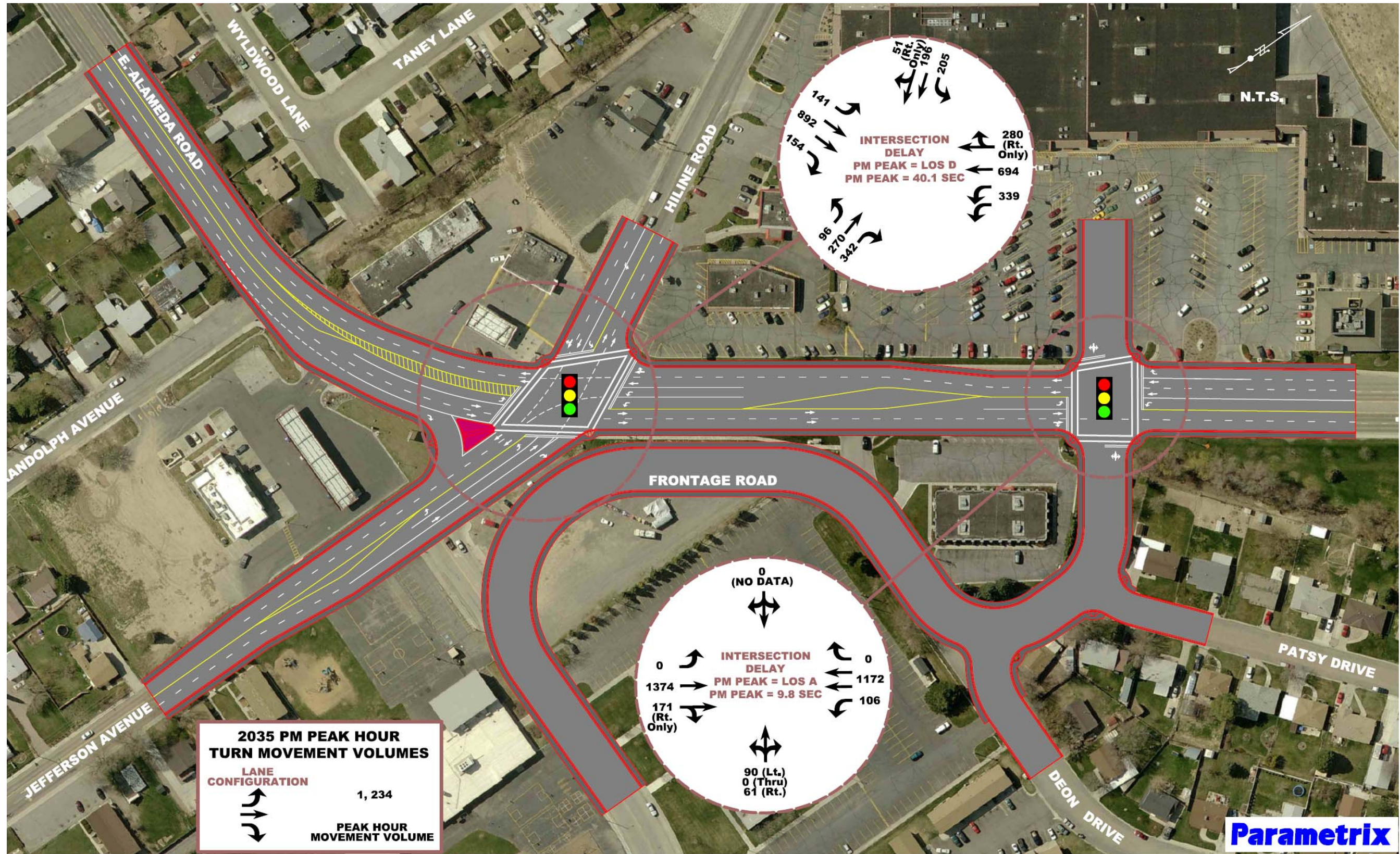


Figure 4 - Option 1C Channelization

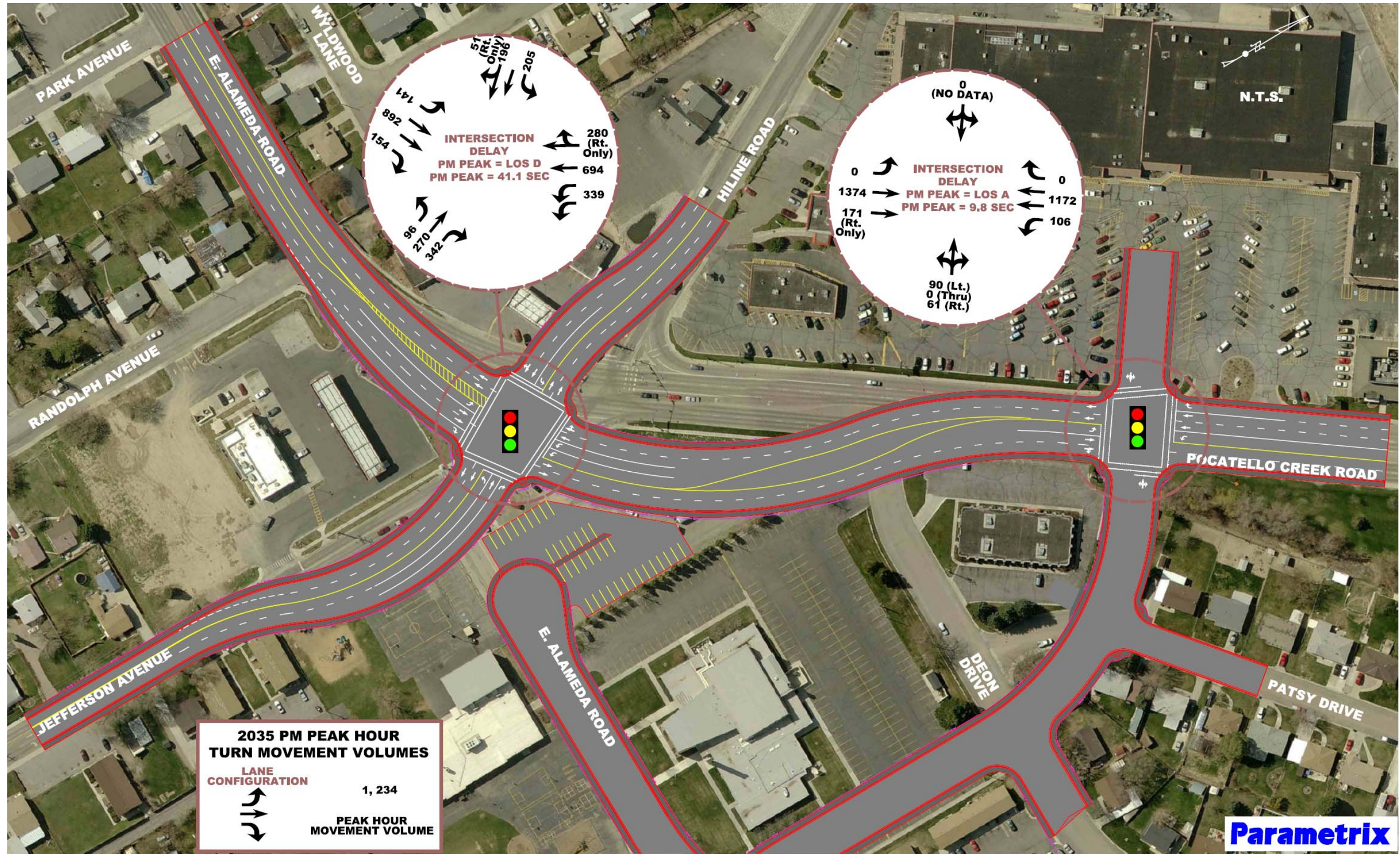


Figure 5 - Option 10 Channelization

## 5. 2035 TRAFFIC OPERATIONS ANALYSIS

This section summarizes the 2035 traffic operations analysis using both the Synchro and VISSIM traffic modeling software tools to evaluate how the proposed build options and their respective roadway and intersection improvements influence traffic operations in the study area. The Synchro software was used to evaluate intersection delay in the study area and develop signal timing plans for a coordinated system. Due to the complexity of closely spaced intersections, VISSIM was used to evaluate how all of the study area intersections operated as a system—this was due to limitations of the Synchro model in assessing impacts due to excessive queuing and congested conditions.

### 5.1 INTERSECTION LEVEL OF SERVICE ANALYSIS (SYNCHRO)

Study area intersection delay and the resulting LOS were calculated using Synchro (version 7, build 773, Revision 8) software. A summary of results for the No Build and Build Options is provided. Table 5 summarizes the results of the intersection LOS analysis for year 2035.

#### 5.1.1 No Build

Increases in future traffic volumes without improvements would degrade the existing LOS to levels beyond the current acceptable standards outlined by the BTPO. The intersection of Pocatello Creek Rd / Jefferson Ave is operating at an acceptable LOS D according to the BTPO LOS Standards Variable Approach. Refer to Figure 2 for the existing lane configuration utilized for this alternative. The delay at all intersections in the study area is expected to increase as a result of increased traffic volumes, and is shown in Table 5. When compared to 2010 existing conditions (see Table 1, above), the LOS at two of the study intersections would also degrade and the Jefferson Ave / E Alameda Rd intersection would operate unacceptably below its LOS standard.

**Table 5. 2035 PM Peak Hour LOS Summary**

Intersection	BTPO Standard	No Build		Option 1A/1C		Option 10	
		LOS	Delay	LOS	Delay	LOS	Delay
Pocatello Creek Rd/Jefferson Ave	D	D	48.3	D	40.1	D	41.1
Pocatello Creek Rd/Deon Rd	D	F	77.4	A	9.8	A	9.8
Jefferson Ave/E Alameda Rd	D	F	74.9	NA <sup>1</sup>	NA <sup>1</sup>	NA <sup>1</sup>	NA <sup>1</sup>

Note: Bold LOS and delay text indicates operations worse than LOS standard.

<sup>1</sup> Under the Build options, this intersection is closed with a cul-de-sac.

#### 5.1.2 Option 1A and Option 1C

Option 1A and Option 1C analysis results are summarized together as they proposes the same intersection modifications—the only difference between these options is the configuration of the local connections between E Alameda Rd and Deon Dr, which does not impact the intersection LOS analysis. Both of these Options improve the intersection operating conditions at the Pocatello Creek Rd / Jefferson Ave intersection compared to doing nothing (refer to Table 5). Results were not calculated for the Jefferson Ave / E Alameda Rd intersection since it is closed under these options.

Because the Pocatello Creek Rd / Deon Dr intersection is being signalized, the LOS comparison between existing and future conditions is slightly different. The LOS reported in existing conditions



pertains to the stop-controlled approach. Although adding a signal at the Pocatello Creek Rd / Deon Dr intersection could increase Pocatello Creek Rd through movement delays, the intersection is anticipated to perform at a LOS A, which meets acceptable LOS thresholds per BTPO guidelines. Also, a signal could provide additional protection for left-turn movements off of Pocatello Creek Rd. Improvements proposed at the Pocatello Creek Rd / Deon Dr intersection will improve access to businesses located north of Pocatello Creek Rd.

### 5.1.3 Option 10

The difference in intersection delay between Option 1A and Option 1C with Option 10 is approximately one second (see Table 5). This minimal difference in delay demonstrates there is little discernable difference in performance between the proposed Options, from a LOS perspective. This increase in delay is associated with the elimination of the free running right turn lane for the eastbound right turning traffic from E Alameda Rd to Jefferson Ave.

## 5.2 VEHICLE QUEUING ANALYSIS (VISSIM)

To provide additional detail on the operating performance of the Build Options, a microsimulation software tool, VISSIM (version 5.10), was used to evaluate maximum anticipated queues at study area intersections for the p.m. peak hour in 2035. The signal timings used for this analysis were imported from the Synchro analysis to maintain consistency in intersection operating conditions.

Storage bays at intersections are typically designed to the 95th percentile queue length. This 95th percentile queue length represents a distance that, 95 percent of the time, would sufficiently handle the queues for the movement in question. The other 5 percent of the time, the queues from the intersection extend some unknown distance beyond that point. The VISSIM model provides a unique perspective to inform design considerations for storage bays as it captures the queue length encountered by every vehicle with the modeled timeframe is a capable of producing a number of statistics to describe queuing, such as the average and maximum queue lengths.

The maximum queue length calculated using the VISSIM model also provides additional insight on the impact of intersection within close proximity to one another with a high degree of confidence. For example, one can conclude that if the maximum queue length reported from VISSIM does not extend from one intersection through a downstream intersection, queuing is not likely impacting the performance of adjacent intersection. This provides further assurance that intersection LOS assessments using Synchro are valid and not understating congestion at intersections due to excessive queuing.

### 5.2.1 No Build

As shown in Table 6, the future 2035 traffic conditions (No Build) have a number of movements in the study area with long queue lengths, some of which exceed available turn lane storage capacity and extend into nearby intersections. This extensive queuing spilling back into downstream intersections can cause blockages, which significantly degrades intersection operations. This type of impact may not be captured in a Synchro intersection LOS analysis adequately. As summarized in Table 6 queues from the Pocatello Creek Rd / Jefferson Ave intersection impact the Jefferson Ave / E Alameda Rd intersection and the Jefferson Ave / E Alameda Rd intersection.

### 5.2.2 Option 1A and Option 1C

Option 1A and Option 1C analysis results are summarized together as they proposes the same intersection modifications—the only difference between these options is the configuration of the local connections between E Alameda Rd and Deon Dr, which does not impact the queuing analysis.

Improvements to the Pocatello Creek Rd / Jefferson Ave intersection significantly reduce the average and maximum queue lengths anticipated in the 2035 p.m. peak hour, as summarized in Table 6.

Although a number of the movements exceed available storage in these build options, the queues no longer spill back and interfere with downstream intersections.

**Table 6. No Build and Build 2035 PM Peak Hour Queuing Summary (VISSIM)**

Intersection and Movement	Storage (Existing / Proposed) <sup>1</sup>	No Build		Option 1A/1C		Option 10	
		Avg	Max	Avg	Max	Avg	Max
<b>Pocatello Creek Rd/Jefferson Ave</b>							
Northbound left-turn	80/--	94	<b>205</b>	25	<b>142</b>	57	<b>238</b>
Shared northbound through/right-turn	150/--	113	208	56	<b>276</b>	21	<b>220</b>
Westbound left-turn	210/350	248	<b>908</b>	61	234	65	256
Westbound through	300/580	75	<b>654</b>	86	453	90	484
Southbound through/right-turn	--/580	115	<b>722</b>	37	212	39	209
Southbound left-turn	125	81	<b>539</b>	80	<b>435</b>	76	<b>492</b>
Eastbound left-turn	160	45	<b>304</b>	43	<b>230</b>	45	<b>315</b>
Eastbound through	--	118	515	71	312	72	336
Eastbound right-turn	200/--	7	95	2	72	3	77
<b>Pocatello Creek Rd/Deon Dr</b>							
Westbound	--	5	69	25	149	27	148
Eastbound	--	NA	NA	0	0	0	0
Northbound left-turn	170	NA	NA	0	0	0	0
Northbound through	575	NA	NA	25	216	26	237
Southbound left-turn	125/200	3	44	26	146	25	146
Southbound through	--	NA	NA	9	226	9	226
<b>Jefferson Ave/E Alameda Rd</b>							
Westbound	--	47	304	Intersection is closed as part of these build Options			
Southbound left-turn	50	21	<b>194</b>				
Northbound	--	55	428				

Note: Bold queue lengths indicate queue storage lengths have been exceeded.

<sup>1</sup> Available storage or distance to upstream intersection; a "--" indicates a lane where storage length is not applicable. Movements with more than one available storage length indicate further improvements where the storage length was changed.

<sup>2</sup> Under the Build options, this intersection is closed with a cul-de-sac.

### 5.2.3 Option 10

As summarized in Table 6, the anticipated queue length are significantly improved over 2035 No Build conditions and queue spillback does not impact adjacent intersections. When comparing queue lengths between Option 1A and Option 1C with Option 10, the queue lengths are generally slightly longer with Option 10 for most movements.

## 6. VEHICLE COLLISION HISTORY

This section summarizes the vehicle collision data for study area intersections, which was performed to see if there are prevailing safety issues at study area intersections. Collision data provided summarized incidents occurring between January 2004 and December 2008. During this time frame a total of 43 accidents occurred in the study area. Crash rate for each of the study area intersection as assessed using the ITD Safety Evaluation Form, known as ITD-2658. This form uses provided collision history data to calculate a predicted base rate of accidents likely to occur to an intersection. This value is compared to observed accident data and vehicle volumes, based on roadway segment type. If the ITD predicted rate is higher than the observed rate, than an intersection does not require safety improvements. Completed ITD-2658 for study area intersection can be found in Appendix D.

### **Pocatello Creek Road and Jefferson Avenue Intersection**

Twenty-four collisions occurred in the vicinity of the Pocatello Creek / Jefferson Ave intersection. The ITD Safety Evaluation Form predicted a base rate of accidents occurring at the Pocatello Creek Rd / Jefferson Ave intersection to be 0.58 accidents per million vehicle miles travelled. The calculated rate of accidents occurring at this intersection, based on 2004 to 2008 data, was 0.34 accidents per million vehicles miles travelled. Because the base rate (ITD Safety Evaluation Form results) is higher than the actual rate, this intersection does not require safety improvements.

### **E Alameda Road and Jefferson Avenue Intersection**

Seventeen collisions occurred in the vicinity of the E Alameda Rd / Jefferson Ave intersection. Collisions at this intersection are most likely the result of undesirable access management and vehicles queuing into the intersection. This condition results in aggressive driving and aggressive maneuvering, which can increase the likelihood of collisions.

The ITD Safety Evaluation Form predicted a base rate of 0.58 accidents per million vehicle miles travelled for this intersection. The calculated rate of accidents occurring at this intersection, based on 2004 to 2008 data, was 0.51 accidents per million vehicle miles travelled. Because the base rate is higher than the actual rate, this intersection does not require safety improvements.

### **Pocatello Creek Road and Deon Drive Intersection**

Two collisions occurred in the vicinity of the Pocatello Creek Rd / Deon Dr intersection. An accident rate was not calculated for this intersection as there was not sufficient information to determine a base or calculated accident rate utilizing the ITD Safety Evaluation Form.

## 7. CONCLUSIONS

Drivers passing through the study area can experience significant congestion and travel delay today during the morning and evening commute period. The curve of Pocatello Rd through its intersection with Jefferson Ave and the close proximity of adjacent intersection can cause additional congestion in the area. These existing conditions are characterized by the City of Pocatello and ITD as being unacceptable as intersections are operating outside of recommended conditions. These conditions will continue to degrade in the future as the City of Pocatello and surrounding areas continue to develop, resulting in additional vehicle demand on these roadways.

This study assessed three Build Options to determine the level of improvement that could be required to bring intersections in the study area back to recommended BTPO operating conditions. The Build Options proposed improvements to improve access to local roadway circulation, business access north of Pocatello Creek Rd, and safety.

The following conclusions are based on the findings of this study:

- With the anticipated growth in vehicle volumes and no improvements to existing roadways in the future (No Build), significant delay will occur at study area intersections. The intersection of Pocatello Creek Rd / Jefferson Ave operates at an LOS D under the No Build scenario, which is acceptable according to the BTPO. Conversely, the intersection delays for the Pocatello Creek Rd / Deon Dr and Jefferson Dr / E Alameda Rd are anticipated to be well beyond acceptable LOS thresholds outlined by the BTPO.
- The combination of roadway geometric improvements, signal improvements, and the closure of the E Alameda Rd / Jefferson Ave intersection significantly improves vehicle operations in the study area for the 2035 p.m. peak hour. For the three Build Options, the Pocatello Creek Rd / Jefferson Ave intersection is anticipated to operate at a LOS D (a reduction of approximately 8 seconds in delay) and the proposed Pocatello Creek Rd / Deon Dr intersection at a LOS A.
- The proposed Build Options significantly reduce the intersection queue lengths in the study area. Although some of the proposed modifications to storage lengths are successful in accommodating the modeled maximum queue lengths, some are still exceeded. None of the queue lengths are expected to spillback and block nearby intersections under normal operating conditions.
- With the proposed improvements in the build options, the Pocatello Creek Rd / Jefferson Ave intersection is operating at LOS D, which is acceptable according to the BTPO LOS Standards Variable Approach document.
- The number of collisions occurring at study area intersections does not exceed the ITD Safety Evaluation calculated rates. Therefore, none of the intersections require modification based on accident history.
- A planning-level roadway capacity sensitivity analysis performed for roadways in the study area indicates that all roadways meet a LOS D threshold with anticipated 2035 volumes, except Hiline Rd. However, only Alameda Rd west of Jefferson Ave met a LOS C threshold.

## **8. RECOMMENDATIONS**

It is recommended that the City of Pocatello explore options for providing an additional southbound travel lane on Hiline Rd leading up to the Pocatello Creek Rd / Jefferson Ave intersection. This additional lane would sufficiently mitigate link capacity shortages in 2035 based solely on the FDOT planning-level thresholds.

Because the intersection operation and queuing analysis resulted in similar operating conditions for the three Build Options, it is recommended that additional criteria be considered in selecting the final Build Option. Additional considerations could include residential and commercial property displacements, right-of-way costs, opinions of probable construction and engineering costs, and other environmental and social considerations.

**APPENDIX A – FDOT PLANNING LEVEL THRESHOLDS**

**TABLE 1**

**Generalized Annual Average Daily Volumes for Florida's Urbanized Areas<sup>1</sup>**

9/4/09

STATE SIGNALIZED ARTERIALS						FREEWAYS					
<b>Class I</b> (>0.00 to 1.99 signalized intersections per mile)						Lanes	B	C	D	E	
Lanes	Median	B	C	D	E	4	43,500	59,800	73,600	79,400	
2	Undivided	9,600	15,400	16,500	***	6	65,300	90,500	110,300	122,700	
4	Divided	29,300	35,500	36,700	***	8	87,000	120,100	146,500	166,000	
6	Divided	45,000	53,700	55,300	***	10	108,700	151,700	184,000	209,200	
8	Divided	60,800	71,800	73,800	***	12	149,300	202,100	238,600	252,500	
<b>Class II</b> (2.00 to 4.50 signalized intersections per mile)						<b>Freeway Adjustments</b>					
Lanes	Median	B	C	D	E	Auxiliary Lanes	Ramp Metering	Oversaturated Conditions*			
2	Undivided	**	10,500	15,200	16,200	+ 20,000	+ 5%	-10% of E			
4	Divided	**	25,000	33,200	35,100						
6	Divided	**	39,000	50,300	53,100						
8	Divided	**	53,100	67,300	70,900						
<b>Class III/IV</b> (more than 4.5 signalized intersections per mile)						<b>UNINTERRUPTED FLOW HIGHWAYS</b>					
Lanes	Median	B	C	D	E	Lanes	Median	B	C	D	E
2	Undivided	**	5,100	11,900	14,900	2	Undivided	7,800	15,600	22,200	27,900
4	Divided	**	12,600	28,200	31,900	4	Divided	34,300	49,600	64,300	72,800
6	Divided	**	19,700	43,700	48,200	6	Divided	51,500	74,400	96,400	109,400
8	Divided	**	27,000	59,500	64,700	<b>Uninterrupted Flow Highway Adjustments</b>					
						Lanes	Median	Exclusive left lanes	Adjustment factors		
						2	Divided	Yes	+5%		
						Multi	Undivided	Yes	-5%		
						Multi	Undivided	No	-25%		
<b>Non-State Signalized Roadway Adjustments</b> (Alter corresponding state volumes by the indicated percent.)						<b>BICYCLE MODE<sup>2</sup></b> (Multiply motorized vehicle volumes shown below by number of directional roadway lanes to determine two-way maximum service volumes.)					
Major City/County Roadways - 10%						Paved Shoulder/ Bicycle Lane					
Other Signalized Roadways - 35%						Coverage	B	C	D	E	
						0-49%	**	3,200	12,100	>12,100	
						50-84%	2,400	3,700	>3,700	***	
						85-100%	6,300	>6,300	***	***	
<b>State &amp; Non-State Signalized Roadway Adjustments</b> (Alter corresponding state volumes by the indicated percent.)						<b>PEDESTRIAN MODE<sup>2</sup></b> (Multiply motorized vehicle volumes shown below by number of directional roadway lanes to determine two-way maximum service volumes.)					
<b>Divided/Undivided &amp; Turn Lane Adjustments</b>						Sidewalk Coverage					
Lanes	Median	Exclusive Left Lanes	Exclusive Right Lanes	Adjustment Factors		0-49%	**	**	5,000	14,400	
2	Divided	Yes	No	+5%		50-84%	**	**	11,300	18,800	
2	Undivided	No	No	-20%		85-100%	**	11,400	18,800	>18,800	
Multi	Undivided	Yes	No	-5%		<b>BUS MODE (Scheduled Fixed Route)<sup>3</sup></b> (Buses in peak hour in peak direction)					
Multi	Undivided	No	No	-25%		Sidewalk Coverage	B	C	D	E	
-	-	-	Yes	+ 15%		0-84%	>5	≥4	≥3	≥2	
<b>One-Way Facility Adjustment</b> Multiply the corresponding two-directional volumes in this table by 0.6.						85-100%	>4	≥3	≥2	≥1	

<sup>1</sup> Values shown are presented as two-way annual average daily volumes for levels of service and are for the automobile/truck modes unless specifically stated. Although presented as daily volumes, they actually represent peak hour direction conditions with applicable K and D factors applied. This table does not constitute a standard and should be used only for general planning applications. The computer models from which this table is derived should be used for more specific planning applications. The table and deriving computer models should not be used for corridor or intersection design, where more refined techniques exist. Calculations are based on planning applications of the Highway Capacity Manual, Bicycle LOS Model, Pedestrian LOS Model and Transit Capacity and Quality of Service Manual, respectively for the automobile/truck, bicycle, pedestrian and bus modes.

<sup>2</sup> Level of service for the bicycle and pedestrian modes in this table is based on number of motorized vehicles, not number of bicyclists or pedestrians using the facility.

<sup>3</sup> Buses per hour shown are only for the peak hour in the single direction of the higher traffic flow.

\* For oversaturated conditions during peak hour, subtract 10% from the LOS E (capacity volumes). This number becomes the new maximum service volume for LOS D, and LOS E cannot be achieved.

\*\* Cannot be achieved using table input value defaults.

\*\*\* Not applicable for that level of service letter grade. For the automobile mode, volumes greater than level of service D become F because intersection capacities have been reached. For the bicycle mode, the level of service letter grade (including F) is not achievable because there is no maximum vehicle volume threshold using table input value defaults.

*Source:*  
Florida Department of Transportation  
Systems Planning Office  
605 Suwannee Street, MS 19  
Tallahassee, FL 32399-0450

Intersection considered to be Class I facility for 2010 Existing Condition

Segment	No. of Through Lanes	Exclusive Left Lanes	Left Lane Adjustment Factor	Exclusive Right Lanes	Right Lane Adjustment Factor	Non-State Signalized Roadway Adjustment	Net Adjustment Factor	FDOT LOS C Threshold	FDOT LOS C Adjusted	Existing Traffic Two Way Total	Sufficient Capacity
Pocatello Creek (North of Deon)	4	YES	-5%	YES	15%	0%	10%	35,500	39,050	24,350	YES
Pocatello Creek (South of Deon)	4	YES	-5%	YES	15%	0%	10%	35,500	39,050	24,050	YES
Jefferson Avenue (North of Alameda)	2	YES	-5%	NO	0%	-10%	-15%	15,400	13,090	18,350	NO
Jefferson Avenue (South of Alameda)	2	NO	0%	YES	15%	-10%	5%	15,400	16,170	13,950	YES
Alameda Road (West of Hiline/Jefferson)	4	YES	-5%	YES	15%	0%	10%	35,500	39,050	19,600	YES
Hiline Road (North of Alameda/Pocatello Creek)	2	YES	-5%	NO	0%	-10%	-15%	15,400	13,090	14,800	NO

Intersection considered to be Class II facility for 2035 Future Condition - Addition of Deon Drive Signal = 2.00 signalized intersections per mile

Segment	No. of Through Lanes	Exclusive Left Lanes	Left Lane Adjustment Factor	Exclusive Right Lanes	Right Lane Adjustment Factor	Non-State Signalized Roadway Adjustment	Net Adjustment Factor	FDOT LOS C Threshold	FDOT LOS C Adjusted	Predicted Traffic Two Way Total	Sufficient Capacity
Pocatello Creek (North of Deon)	4	YES	-5%	YES	15%	0%	10%	25,000	27,500	32,700	NO
Pocatello Creek (South of Deon)	4	YES	-5%	YES	15%	0%	10%	25,000	27,500	32,900	NO
Jefferson Avenue (South of Pocatello Creek)	2	YES	-5%	YES	15%	-10%	0%	10,500	10,500	14,950	NO
Alameda Road (West of Hiline/Jefferson)	4	YES	-5%	YES	15%	0%	10%	25,000	27,500	26,750	YES
Hiline Road (North of Alameda/Pocatello Creek)	2	YES	-5%	NO	0%	-10%	-15%	10,500	8,925	15,650	NO

Segment	No. of Through Lanes	Exclusive Left Lanes	Left Lane Adjustment Factor	Exclusive Right Lanes	Right Lane Adjustment Factor	Non-State Signalized Roadway Adjustment	Net Adjustment Factor	FDOT LOS D Threshold	FDOT LOS D Adjusted	Predicted Traffic Two Way Total	Sufficient Capacity
Pocatello Creek (North of Deon)	4	YES	-5%	YES	15%	0%	10%	33,200	36,520	32,700	YES
Pocatello Creek (South of Deon)	4	YES	-5%	YES	15%	0%	10%	33,200	36,520	32,900	YES
Jefferson Avenue (South of Pocatello Creek)	2	YES	-5%	YES	15%	-10%	0%	15,200	15,200	14,950	YES
Alameda Road (West of Hiline/Jefferson)	4	YES	-5%	YES	15%	0%	10%	33,200	36,520	26,750	YES
Hiline Road (North of Alameda/Pocatello Creek)	2	YES	-5%	NO	0%	-10%	-15%	15,200	12,920	15,650	NO



## **APPENDIX B – BTPO VOLUME DATA**

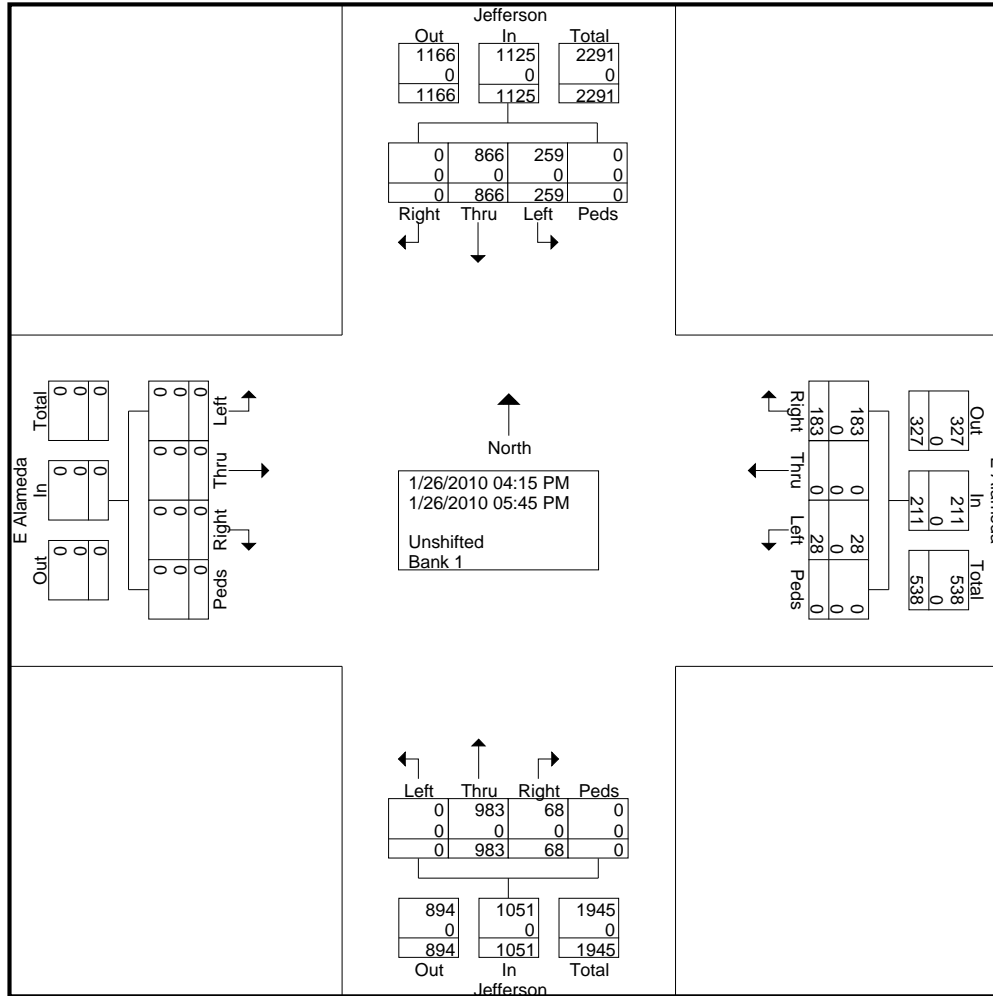


# Bannock Transportation Planning Organization

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Pocatello, Idaho 83205-6129

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Site Code : 00000561  
Start Date : 1/26/2010  
Page No : 2



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Groups Printed- Unshifted - Bank 1

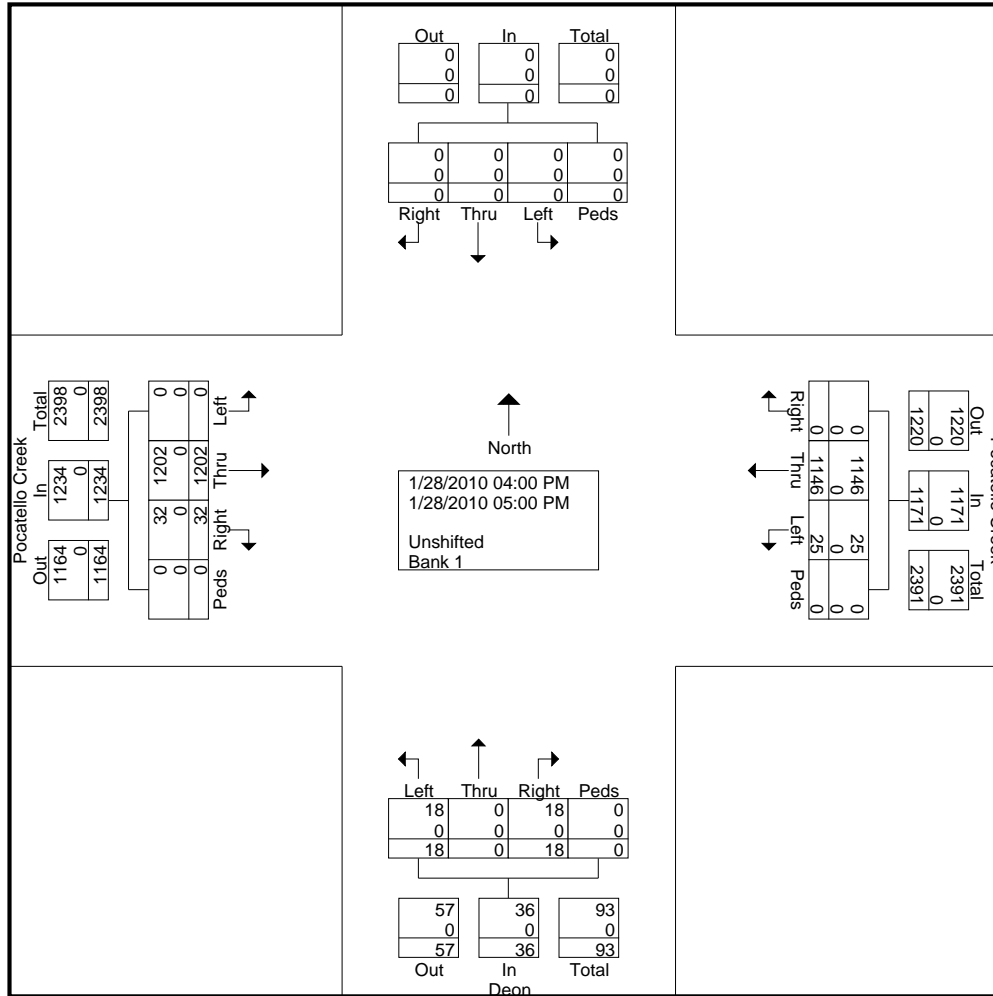
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04:00 PM	0	0	0	0	0	0	225	0	0	225	4	0	1	0	5	4	239	0	0	243	473
04:15 PM	0	0	0	0	0	0	223	4	0	227	3	0	4	0	7	4	232	0	0	236	470
04:30 PM	0	0	0	0	0	0	211	4	0	215	2	0	4	0	6	6	217	0	0	223	444
04:45 PM	0	0	0	0	0	0	244	7	0	251	6	0	7	0	13	6	245	0	0	251	515
Total	0	0	0	0	0	0	903	15	0	918	15	0	16	0	31	20	933	0	0	953	1902
05:00 PM	0	0	0	0	0	0	243	10	0	253	3	0	2	0	5	12	269	0	0	281	539
Grand Total	0	0	0	0	0	0	1146	25	0	1171	18	0	18	0	36	32	1202	0	0	1234	2441
Apprch %	0	0	0	0	0	0	97.9	2.1	0	100	50	0	50	0	100	2.6	97.4	0	0	100	
Total %	0	0	0	0	0	0	46.9	1	0	48	0.7	0	0.7	0	1.5	1.3	49.2	0	0	50.6	
Unshifted	0	0	0	0	0	0	1146	25	0	1171	18	0	18	0	36	32	1202	0	0	1234	2441
% Unshifted	0	0	0	0	0	0	100	100	0	100	100	0	100	0	100	100	100	0	0	100	100
Bank 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bank 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

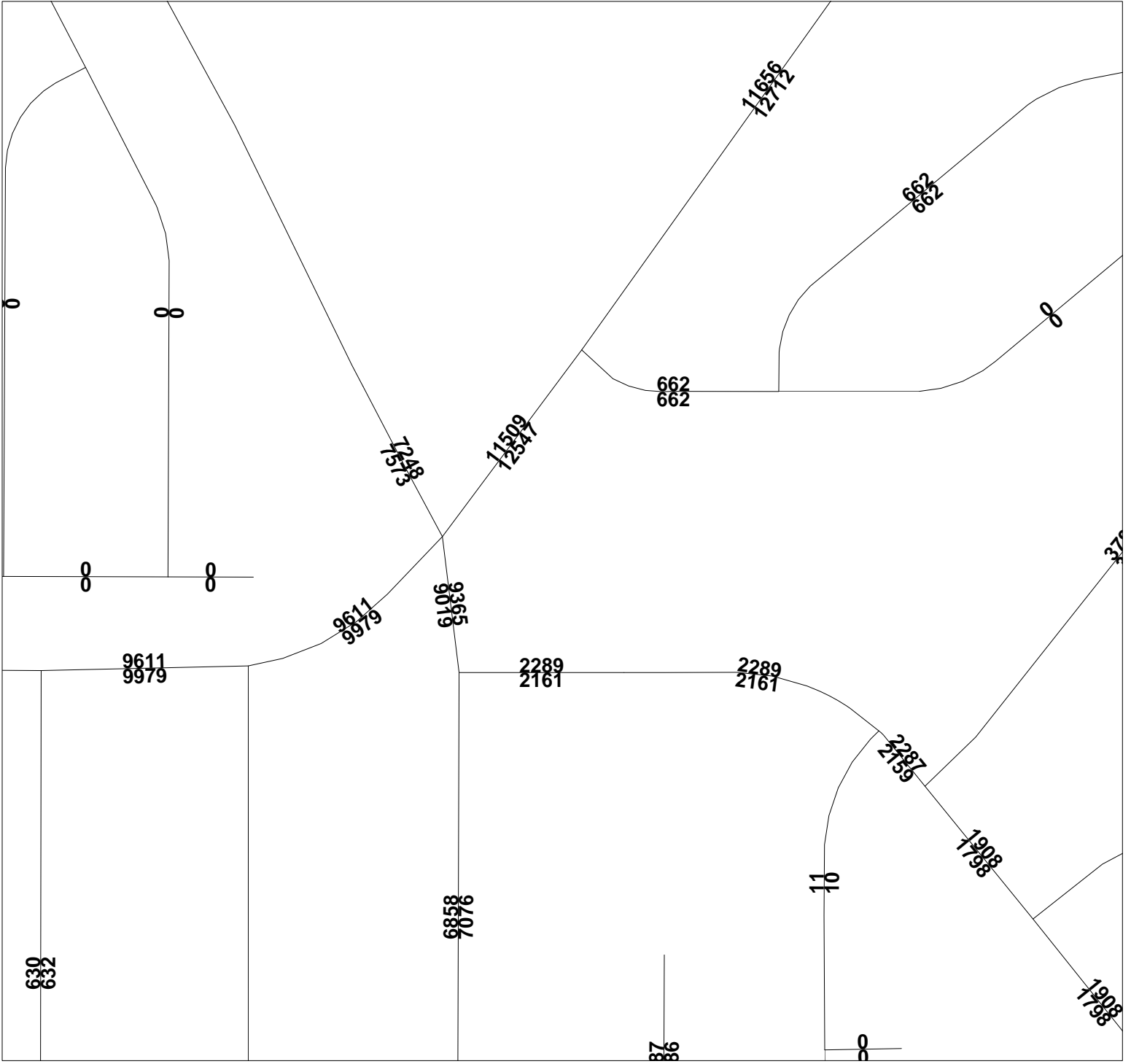
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Start Date : 1/28/2010  
Page No : 2





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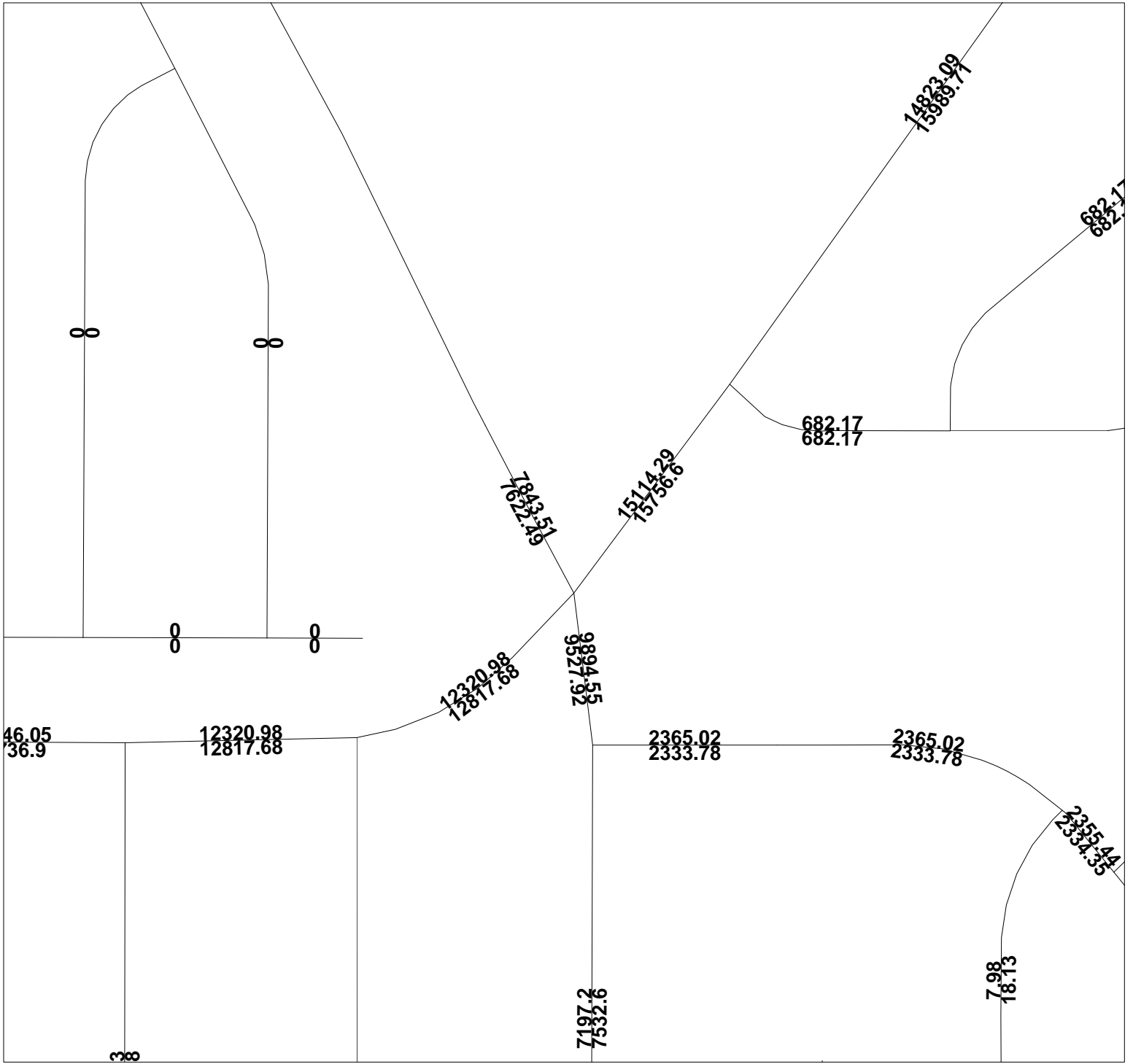
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## **APPENDIX C – SYNCHRO OUTPUT DATA**



Existing 2010 PM Conditions  
1: Deon Dr & Pocatello Creek Rd

7/1/2010

Movement	WBL	WBR	NET	NER	SWL	SWT	
Lane Configurations							
Volume (veh/h)	17	14	1066	31	25	921	
Sign Control	Stop		Free		Free		
Grade	0%						
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	
Hourly flow rate (vph)	19	15	1171	34	27	1012	
Pedestrians							
Lane Width (ft)							
Walking Speed (ft/s)							
Percent Blockage							
Right turn flare (veh)							
Median type	None		None				
Median storage (veh)							
Upstream signal (ft)	365						
pX, platoon unblocked	0.83	0.83	0.83				
vC, conflicting volume	1581	603	1205				
vC1, stage 1 conf vol							
vC2, stage 2 conf vol							
vCu, unblocked vol	1290	111	837				
tC, single (s)	6.8	6.9	4.2				
tC, 2 stage (s)							
tF (s)	3.5	3.3	2.2				
p0 queue free %	85	98	96				
cM capacity (veh/h)	124	767	652				
Direction, Lane #	WB 1	NE 1	NE 2	SW 1	SW 2	SW 3	SW 4
Volume Total	34	781	425	27	337	337	337
Volume Left	19	0	0	27	0	0	0
Volume Right	15	0	34	0	0	0	0
cSH	200	1700	1700	652	1700	1700	1700
Volume to Capacity	0.17	0.46	0.25	0.04	0.20	0.20	0.20
Queue Length 95th (ft)	15	0	0	3	0	0	0
Control Delay (s)	26.6	0.0	0.0	10.8	0.0	0.0	0.0
Lane LOS	D			B			
Approach Delay (s)	26.6	0.0	0.3				
Approach LOS	D						
Intersection Summary							
Average Delay	0.5						
Intersection Capacity Utilization	40.5%		ICU Level of Service			A	
Analysis Period (min)	15						

Existing 2010 PM Conditions  
2: Jefferson Ave & Pocatello Creek Rd

7/1/2010

Movement	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR	
Lane Configurations													
Volume (vph)	104	292	315	157	240	51	103	626	139	286	483	169	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Lane Width	12	12	12	12	12	12	12	12	12	16	12	12	
Total Lost time (s)	4.0	5.7	5.5	5.2	5.7		6.2	5.7	4.0	5.5	5.8	5.8	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	0.95	1.00	1.00	0.95	1.00	
Frt	1.00	1.00	0.85	1.00	0.97		1.00	1.00	0.85	1.00	1.00	0.85	
Fit Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	1770	1863	1583	1770	1813		1752	3505	1777	1752	3505	1568	
Fit Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	
Satd. Flow (perm)	1770	1863	1583	1770	1813		1752	3505	1777	1752	3505	1568	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	
Adj. Flow (vph)	107	301	325	162	247	53	106	645	143	295	498	174	
RTOR Reduction (vph)	0	0	110	0	6	0	0	0	0	0	0	119	
Lane Group Flow (vph)	107	301	215	162	294	0	106	645	143	295	498	55	
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	3%	3%	3%	3%	3%	3%	
Turn Type	Prot	pm+ov		Prot	Prot			Free	Prot	Perm			
Protected Phases	5	2	3	1	6		7	4		3	8		
Permitted Phases	2							Free					
Actuated Green, G (s)	11.9	20.7	42.2	14.2	24.2		11.9	23.5	102.0	21.5	32.3	32.3	
Effective Green, g (s)	11.9	20.7	42.2	14.2	24.2		11.9	23.5	102.0	21.5	32.3	32.3	
Actuated g/C Ratio	0.12	0.20	0.41	0.14	0.24		0.12	0.23	1.00	0.21	0.32	0.32	
Clearance Time (s)	4.0	5.7	5.5	5.2	5.7		6.2	5.7		5.5	5.8	5.8	
Vehicle Extension (s)	3.0	2.0	2.0	2.0	2.0		3.0	2.0		2.0	2.0	2.0	
Lane Grp Cap (vph)	207	378	655	246	430		204	808	1777	369	1110	497	
v/s Ratio Prot	0.06	c0.16	0.07	c0.09	c0.16		0.06	c0.18		c0.17	0.14		
v/s Ratio Perm	0.07									0.08	0.04		
v/c Ratio	0.52	0.80	0.33	0.66	0.68		0.52	0.80	0.08	0.80	0.45	0.11	
Uniform Delay, d1	42.3	38.6	20.3	41.6	35.4		42.4	37.0	0.0	38.2	27.8	24.7	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	2.2	10.4	0.1	4.8	3.6		2.2	5.2	0.1	10.8	0.1	0.0	
Delay (s)	44.5	49.0	20.4	46.4	39.0		44.6	42.2	0.1	49.0	27.9	24.7	
Level of Service	D	D	C	D	D		D	D	A	D	C	C	
Approach Delay (s)	35.7		41.6			35.7			33.7				
Approach LOS	D		D			D			C				
Intersection Summary													
HCM Average Control Delay	36.0		HCM Level of Service					D					
HCM Volume to Capacity ratio	0.83												
Actuated Cycle Length (s)	102.0					Sum of lost time (s)			27.8				
Intersection Capacity Utilization	75.6%		ICU Level of Service			D							
Analysis Period (min)	15												
c Critical Lane Group													

Existing 2010 PM Conditions  
3: E Alameda Rd & Jefferson Ave

7/1/2010



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔	↔	↕↔		↔	↕
Volume (veh/h)	15	101	609	46	148	518
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	17	112	677	51	164	576
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage (veh)						
Upstream signal (ft)						198
pX, platoon unblocked	0.88					
vC, conflicting volume	1607	364			728	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1621	364			728	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	75	82			81	
cM capacity (veh/h)	68	636			872	

Direction, Lane #	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2
Volume Total	17	112	451	277	164	576
Volume Left	17	0	0	0	164	0
Volume Right	0	112	0	51	0	0
cSH	68	636	1700	1700	872	1700
Volume to Capacity	0.25	0.18	0.27	0.16	0.19	0.34
Queue Length 95th (ft)	22	16	0	0	17	0
Control Delay (s)	74.5	11.9	0.0	0.0	10.1	0.0
Lane LOS	F	B			B	
Approach Delay (s)	20.0		0.0		2.2	
Approach LOS	C					

Intersection Summary			
Average Delay		2.7	
Intersection Capacity Utilization	39.8%	ICU Level of Service	A
Analysis Period (min)	15		

No Build 2035 PM Conditions  
1: Deon Dr & Pocatello Creek Rd

7/1/2010

Movement	WBL	WBR	NET	NER	SWL	SWT	
Lane Configurations	[Diagram: WBL, WBR, NET, NER, SWL, SWT with arrows]						
Volume (veh/h)	18	15	1417	41	34	1244	
Sign Control	Stop		Free		Free		
Grade	0%						
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	
Hourly flow rate (vph)	20	16	1557	45	37	1367	
Pedestrians							
Lane Width (ft)							
Walking Speed (ft/s)							
Percent Blockage							
Right turn flare (veh)							
Median type	None		None				
Median storage (veh)							
Upstream signal (ft)	365						
pX, platoon unblocked	0.75	0.75	0.75				
vC, conflicting volume	2110	801	1602				
vC1, stage 1 conf vol							
vC2, stage 2 conf vol							
vCu, unblocked vol	1820	84	1146				
tC, single (s)	6.8	6.9	4.2				
tC, 2 stage (s)							
tF (s)	3.5	3.3	2.2				
p0 queue free %	59	98	92				
cM capacity (veh/h)	48	725	452				
<b>Direction, Lane #</b>	<b>WB 1</b>	<b>NE 1</b>	<b>NE 2</b>	<b>SW 1</b>	<b>SW 2</b>	<b>SW 3</b>	<b>SW 4</b>
Volume Total	36	1038	564	37	456	456	456
Volume Left	20	0	0	37	0	0	0
Volume Right	16	0	45	0	0	0	0
cSH	84	1700	1700	452	1700	1700	1700
Volume to Capacity	0.43	0.61	0.33	0.08	0.27	0.27	0.27
Queue Length 95th (ft)	44	0	0	7	0	0	0
Control Delay (s)	77.4	0.0	0.0	13.7	0.0	0.0	0.0
Lane LOS	F			B			
Approach Delay (s)	77.4	0.0	0.4				
Approach LOS	F						
<b>Intersection Summary</b>							
Average Delay	1.1						
Intersection Capacity Utilization	50.5%		ICU Level of Service		A		
Analysis Period (min)	15						

No Build 2035 PM Conditions  
2: Jefferson Ave & Pocatello Creek Rd

7/1/2010

Movement	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations	[Diagram: NBL, NBT, NBR, SBL, SBT, SBR, NEL, NET, NER, SWL, SWT, SWR with arrows]											
Volume (vph)	111	313	337	158	242	51	141	856	190	402	679	238
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	16	12	12
Total Lost time (s)	4.0	5.7	5.5	5.2	5.7		6.2	5.7	4.0	5.5	5.8	5.8
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	0.95	1.00	1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	0.97		1.00	1.00	0.85	1.00	1.00	0.85
Fit Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	1863	1583	1770	1814		1752	3505	1777	1752	3505	1568
Fit Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	1863	1583	1770	1814		1752	3505	1777	1752	3505	1568
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	114	323	347	163	249	53	145	882	196	414	700	245
RTOR Reduction (vph)	0	0	23	0	6	0	0	0	0	0	0	150
Lane Group Flow (vph)	114	323	324	163	296	0	145	882	196	414	700	95
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	3%	3%	3%	3%	3%	3%
<b>Turn Type</b>	<b>Prot</b>	<b>pm+ov</b>	<b>Prot</b>	<b>Prot</b>	<b>Prot</b>	<b>Free</b>	<b>Prot</b>	<b>Free</b>	<b>Prot</b>	<b>Prot</b>	<b>Perm</b>	<b>Perm</b>
Protected Phases	5	2	3	1	6		7	4		3	8	
Permitted Phases	2						Free					
Actuated Green, G (s)	10.5	23.3	53.5	12.6	26.6		14.8	32.3	120.5	30.2	46.9	46.9
Effective Green, g (s)	10.5	23.3	53.5	12.6	26.6		14.8	32.3	120.5	30.2	46.9	46.9
Actuated g/C Ratio	0.09	0.19	0.44	0.10	0.22		0.12	0.27	1.00	0.25	0.39	0.39
Clearance Time (s)	4.0	5.7	5.5	5.2	5.7		6.2	5.7		5.5	5.8	5.8
Vehicle Extension (s)	3.0	2.0	2.0	2.0	2.0		3.0	2.0		2.0	2.0	2.0
Lane Grp Cap (vph)	154	360	703	185	400		215	940	1777	439	1364	610
v/s Ratio Prot	0.06	c0.17	0.12	c0.09	c0.16		0.08	c0.25		c0.24	0.20	
v/s Ratio Perm	0.09						0.11					
v/c Ratio	0.74	0.90	0.46	0.88	0.74		0.67	0.94	0.11	0.94	0.51	0.16
Uniform Delay, d1	53.7	47.4	23.4	53.2	43.7		50.5	43.1	0.0	44.3	28.1	23.9
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	17.3	23.3	0.2	34.4	6.1		8.1	16.1	0.1	28.6	0.1	0.0
Delay (s)	71.0	70.7	23.6	87.6	49.8		58.6	59.2	0.1	72.9	28.2	24.0
Level of Service	E	E	C	F	D		E	E	A	E	C	C
Approach Delay (s)	49.9		63.1		49.7		41.1					
Approach LOS	D		E		D		D					
<b>Intersection Summary</b>												
HCM Average Control Delay	48.3			HCM Level of Service			D					
HCM Volume to Capacity ratio	0.98											
Actuated Cycle Length (s)	120.5			Sum of lost time (s)			27.8					
Intersection Capacity Utilization	89.6%			ICU Level of Service			E					
Analysis Period (min)	15											
c Critical Lane Group												

No Build 2035 PM Conditions  
 3: E Alameda Rd & Jefferson Ave

7/1/2010



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔	↔	↑	↔	↔	↑
Volume (veh/h)	16	105	658	50	159	555
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	18	117	731	56	177	617
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type						
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked	0.89					198
vC, conflicting volume	1701	731			787	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1726	731			787	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	74	72			79	
cM capacity (veh/h)	69	423			832	
<b>Direction, Lane #</b>						
	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2
Volume Total	18	117	731	56	177	617
Volume Left	18	0	0	0	177	0
Volume Right	0	117	0	56	0	0
cSH	69	423	1700	1700	832	1700
Volume to Capacity	0.26	0.28	0.43	0.03	0.21	0.36
Queue Length 95th (ft)	23	28	0	0	20	0
Control Delay (s)	74.9	16.7	0.0	0.0	10.5	0.0
Lane LOS	F	C			B	
Approach Delay (s)	24.4		0.0		2.3	
Approach LOS	C					
<b>Intersection Summary</b>						
Average Delay			3.0			
Intersection Capacity Utilization			56.8%		ICU Level of Service	B
Analysis Period (min)			15			

Build Option 1A/1C 2035 PM Conditions

1: Deon Dr & Pocatello Creek Rd

7/1/2010



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	90	0	61	0	1374	171	106	1172	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0						4.0					
Lane Util. Factor	1.00						0.95					
Flt	0.95						0.98					
Flt Protected	0.97						1.00					
Satd. Flow (prot)	1727						3447					
Flt Permitted	0.82						1.00					
Satd. Flow (perm)	1453						3447					
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	0	0	0	93	0	63	0	1416	176	109	1208	0
RTOR Reduction (vph)	0	0	0	0	26	0	0	8	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	130	0	0	1584	0	109	1208	0
Heavy Vehicles (%)	2%	2%	2%	1%	2%	1%	2%	3%	3%	3%	3%	2%
Turn Type	Perm			Perm			Prot			Prot		
Protected Phases	4			8			5			2		
Permitted Phases	4			8			5			2		
Actuated Green, G (s)				13.5			63.8			10.7		
Effective Green, g (s)				13.5			63.8			10.7		
Actuated g/C Ratio				0.14			0.64			0.11		
Clearance Time (s)				4.0			4.0			4.0		
Vehicle Extension (s)				3.0			3.0			3.0		
Lane Grp Cap (vph)				196			2199			187		
v/s Ratio Prot				c0.09			c0.46			c0.06		
v/s Ratio Perm				0.66			0.72			0.58		
v/c Ratio				41.1			12.1			42.5		
Uniform Delay, d1				1.00			0.52			1.00		
Progression Factor				8.2			1.4			4.6		
Incremental Delay, d2				49.3			7.7			47.1		
Delay (s)				D			A			D		
Level of Service				A			D			A		
Approach Delay (s)	0.0			49.3			7.7			7.6		
Approach LOS	A			D			A			A		

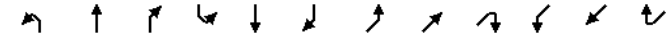
Intersection Summary		
HCM Average Control Delay	9.8	HCM Level of Service
HCM Volume to Capacity ratio	0.69	A
Actuated Cycle Length (s)	100.0	Sum of lost time (s)
Intersection Capacity Utilization	68.0%	12.0
Analysis Period (min)	15	ICU Level of Service
		C

c Critical Lane Group

Build Option 1A/1C 2035 PM Conditions

2: Jefferson Ave & Pocatello Creek Rd

7/1/2010



Movement	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	96	270	342	205	196	51	141	892	154	339	694	280
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12			12			12			12		
Total Lost time (s)	4.0			5.7			5.5			5.2		
Lane Util. Factor	1.00			1.00			1.00			1.00		
Flt	1.00			1.00			0.97			0.95		
Flt Protected	0.95			1.00			0.95			1.00		
Satd. Flow (prot)	1770			1863			1583			1770		
Flt Permitted	0.95			1.00			0.95			1.00		
Satd. Flow (perm)	1770			1863			1583			1770		
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	99	278	353	211	202	53	145	920	159	349	715	289
RTOR Reduction (vph)	0	0	38	0	10	0	0	0	0	0	41	0
Lane Group Flow (vph)	99	278	315	211	245	0	145	920	159	349	963	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	3%	3%	3%	3%	3%	3%
Turn Type	Prot		pm+ov		Prot		Prot		Free		Prot	
Protected Phases	5		2		3		1		6		7	
Permitted Phases	5		2		3		1		6		7	
Actuated Green, G (s)	8.8		18.8		30.3		13.7		24.9		9.4	
Effective Green, g (s)	8.8		18.8		30.3		13.7		24.9		9.4	
Actuated g/C Ratio	0.09		0.19		0.30		0.14		0.25		0.09	
Clearance Time (s)	4.0		5.7		5.5		5.2		5.7		6.2	
Vehicle Extension (s)	3.0		2.0		2.0		2.0		2.0		3.0	
Lane Grp Cap (vph)	156		350		480		242		449		165	
v/s Ratio Prot	0.06		c0.15		0.08		c0.12		0.14		0.08	
v/s Ratio Perm			0.12						0.09			
v/c Ratio	0.63		0.79		0.66		0.87		0.55		0.88	
Uniform Delay, d1	44.0		38.8		30.3		42.3		32.6		44.7	
Progression Factor	1.00		1.00		1.00		1.00		1.00		1.00	
Incremental Delay, d2	8.2		11.0		2.5		26.6		0.7		37.2	
Delay (s)	52.2		49.8		32.8		68.8		33.4		82.0	
Level of Service	D		D		C		E		C		F	
Approach Delay (s)	41.9						49.4				35.7	
Approach LOS	D						D				D	

Intersection Summary		
HCM Average Control Delay	40.1	HCM Level of Service
HCM Volume to Capacity ratio	0.78	D
Actuated Cycle Length (s)	100.0	Sum of lost time (s)
Intersection Capacity Utilization	80.6%	16.7
Analysis Period (min)	15	ICU Level of Service
		D

c Critical Lane Group

Build Option 10 2035 PM Conditions  
1: Deon Dr & Pocatello Creek Rd

7/1/2010

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations	↔↔			↔↔			↔↔		↔↔		↔↔		
Volume (vph)	0	0	0	90	0	61	0	1374	171	106	1172	0	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)				4.0			4.0		4.0		4.0		
Lane Util. Factor				1.00			0.95		1.00		0.95		
Frt				0.95			0.98		1.00		1.00		
Flt Protected				0.97			1.00		0.95		1.00		
Satd. Flow (prot)				1727			3447		1752		3505		
Flt Permitted				0.82			1.00		0.95		1.00		
Satd. Flow (perm)				1453			3447		1752		3505		
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	
Adj. Flow (vph)	0	0	0	93	0	63	0	1416	176	109	1208	0	
RTOR Reduction (vph)	0	0	0	0	26	0	0	8	0	0	0	0	
Lane Group Flow (vph)	0			130			0		1584		109		
Heavy Vehicles (%)	2%	2%	2%	1%	2%	1%	2%	3%	3%	3%	3%	2%	
Turn Type	Perm		Perm		Prot		Prot		Perm		Perm		
Protected Phases	4		8		5		2		1		6		
Permitted Phases	4		8		5		2		1		6		
Actuated Green, G (s)				13.5			63.8		10.7		78.5		
Effective Green, g (s)				13.5			63.8		10.7		78.5		
Actuated g/C Ratio				0.14			0.64		0.11		0.78		
Clearance Time (s)				4.0			4.0		4.0		4.0		
Vehicle Extension (s)				3.0			3.0		3.0		3.0		
Lane Grp Cap (vph)				196			2199		187		2751		
v/s Ratio Prot				c0.09		c0.46		c0.06		0.34			
v/s Ratio Perm				c0.09		c0.46		c0.06		0.34			
v/c Ratio				0.66		0.72		0.58		0.44			
Uniform Delay, d1				41.1		12.1		42.5		3.5			
Progression Factor				1.00		0.52		1.00		1.00			
Incremental Delay, d2				8.2		1.4		4.6		0.5			
Delay (s)				49.3		7.7		47.1		4.0			
Level of Service				D		A		D		A			
Approach Delay (s)	0.0				49.3		7.7		7.6				
Approach LOS	A				D		A		A				
<b>Intersection Summary</b>													
HCM Average Control Delay				9.8		HCM Level of Service				A			
HCM Volume to Capacity ratio				0.69									
Actuated Cycle Length (s)				100.0		Sum of lost time (s)				12.0			
Intersection Capacity Utilization				68.0%		ICU Level of Service				C			
Analysis Period (min)				15									
c Critical Lane Group													

Build Option 10 2035 PM Conditions  
2: Jefferson Ave & Pocatello Creek Rd

7/1/2010

Movement	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations	↔↔↔			↔↔↔			↔↔↔		↔↔↔		↔↔↔	
Volume (vph)	96	270	342	205	196	51	141	892	154	339	694	280
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)	4.0	5.7	5.5	5.2	5.7		6.2	5.7	5.7	5.5	5.8	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	0.95	1.00	0.97	0.95	
Frt	1.00	1.00	0.85	1.00	0.97		1.00	1.00	0.85	1.00	0.96	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	1863	1583	1770	1805		1752	3505	1777	3400	3354	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1770	1863	1583	1770	1805		1752	3505	1777	3400	3354	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	99	278	353	211	202	53	145	920	159	349	715	289
RTOR Reduction (vph)	0	0	38	0	10	0	0	0	100	0	41	0
Lane Group Flow (vph)	99	278	315	211	245	0	145	920	59	349	963	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	3%	3%	3%	3%	3%	3%
Turn Type	Prot		pm+ov		Prot		Prot		Perm		Prot	
Protected Phases	5		2		3		1		6		7	
Permitted Phases	5		2		3		1		6		7	
Actuated Green, G (s)	8.8		18.8		30.3		13.7		24.9		9.4	
Effective Green, g (s)	8.8		18.8		30.3		13.7		24.9		9.4	
Actuated g/C Ratio	0.09		0.19		0.30		0.14		0.25		0.09	
Clearance Time (s)	4.0		5.7		5.5		5.2		5.7		6.2	
Vehicle Extension (s)	3.0		2.0		2.0		2.0		2.0		3.0	
Lane Grp Cap (vph)	156		350		480		242		449		165	
v/s Ratio Prot	0.06		c0.15		0.08		c0.12		0.14		0.08	
v/s Ratio Perm	0.06		c0.15		0.08		c0.12		0.14		0.08	
v/c Ratio	0.63		0.79		0.66		0.87		0.55		0.88	
Uniform Delay, d1	44.0		38.8		30.3		42.3		32.6		44.7	
Progression Factor	1.00		1.00		1.00		1.00		1.00		1.00	
Incremental Delay, d2	8.2		11.0		2.5		26.6		0.7		37.2	
Delay (s)	52.2		49.8		32.8		68.8		33.4		82.0	
Level of Service	D		D		C		E		C		F	
Approach Delay (s)	41.9						49.4				38.7	
Approach LOS	D						D				D	
<b>Intersection Summary</b>												
HCM Average Control Delay			41.1		HCM Level of Service						D	
HCM Volume to Capacity ratio			0.78									
Actuated Cycle Length (s)			100.0		Sum of lost time (s)						16.7	
Intersection Capacity Utilization			80.6%		ICU Level of Service						D	
Analysis Period (min)			15									
c Critical Lane Group												

## **APPENDIX D – CRASH HISTORY AND ANALYSIS DATA**

# SAFETY EVALUATION



## I. PROJECT DATA

EXIST. RDWY	DISTRICT	ROUTE	SEG CODE	B.M.P.	E.M.P.	LENGTH	AADT	TYPE RDWY	
5	SMA-7331	3250	1.00	1.04	SPOT	18.3	6		
LOCATION	Jefferson Avenue & Alameda Road					PROPOSED IMPROVEMENT			
						LIFE	COST (1000)		
IMPROVEMENT	Prohibit Turning Movements (XIIC)						10	CONST	R/W
									0

## II. ACCIDENT SUMMARY - SIGNIFICANCE

MO.	YR.	TOTAL	FATAL	INJURY	I + F	PDO	SV	MV	WET	DRY		
12	2004	4		2	2	2		4	1	3		
12	2005	5		0	0	5	1	4		5		
12	2006	4		0	0	4		4		4		
12	2007	1		1	1			1		1		
12	2008	3		1	1	2		3		3		
TOTAL-----		17	0	4	4						0	0
AVE. SEVERITY % FOR THIS ROAD TYPE-----					28.9	71.1						
EXPECTED I+F AND PDO ACCIDENTS-----					4.9	12.1						
DIFFERENCE (DEVIATION FROM EXPECTED)---					-0.9							
STATISTICALLY SIGNIFICANT?-----					NO							
CONFIDENCE LEVEL-----					-							

SPOT INTERSECTION (INCLUDE X STREET)  
 SPOT NON-INTERSECTION  
 SEGMENT (ALL ACCIDENTS)

## III. TRAFFIC DATA

1	2	3	4	5	6	7	8	9	10	11	12
AADT (1000)					TOTAL NO. OF			TOTAL TRAVEL			
			CROSS STREET	VCF (3÷1)			ACC/YR	MV/YR	MVM/YR	ACC/MV	ACC/MVM
PRES.	FUT.	AVE.			YEARS	ACC.	(7 ÷ 6)	.365(1+4)	(9 x MI.)	(8 ÷ 9)	(8 ÷ 10)
18.3	50.2	34.25		1.87	5	17	3.40	6.68	-	0.51	-

## IV. REDUCTION FACTOR

1	2	3	4	5	6
				BASE RATE	EXPECTED
ACC/MVM		R.F.		ACC/MV(M)	ACC/MV(M)
				1-(>3 OR 4)	
0.51		0.4		0.58	
				*	
				*	

## V. SAFETY INDEX CALCULATION (METHOD I)

1	2		3	4	5	6	7	8	9	10	11
	ACC.		BEFORE ACC. COST (\$1000)								
	TYPE	NO.	COST	TOTAL							
	I+F				\$/ACC.	ACC.YR	VCF	LIFE	1.00-CRF	\$ BEFORE	\$ AFTER
YES(+)											
YES(-)											
NO			16.363		3.4	1.87	10	#VALUE!	1041.24	#VALUE!	
SAFETY INDEX = (BOX 10 - BOX 11) ÷ TOTAL COST = #VALUE! ÷ #VALUE! = 0											
ANNUAL SAFETY BENEFIT = (BOX 10 - BOX 11) ÷ (BOX 8) = #VALUE! ÷ #VALUE! = #VALUE!											

COMPUTED BY: Jeremy Robbins      DATE: 06/29/10      PROJECT NO.: \_\_\_\_\_  
 CHECKED BY: \_\_\_\_\_      DATE: \_\_\_\_\_      KEY NUMBER: \_\_\_\_\_





# SAFETY EVALUATION



## I. PROJECT DATA

	DISTRICT	ROUTE	SEG CODE	B.M.P.	E.M.P.	LENGTH	AADT	TYPE RDWY
EXIST. RDWY	5	7101/7161	3190/3180	4.90	4.90	SPOT	38.4	33
LOCATION	Alameda/Pocatello Creek Rd/Jefferson Ave				PROPOSED IMPROVEMENT			
					LIFE	COST (1000)		
IMPROVEMENT	Reconstruct Intersection (VIF2)					20	CONST	R/W
								0

## II. ACCIDENT SUMMARY - SIGNIFICANCE

MO.	YR.	TOTAL	FATAL	INJURY	I + F	PDO	SV	MV	WET	DRY		
12	2004	3	0	1	1	2		3	1	2		
12	2005	6	0	1	1	5		6	1	5		
12	2006	4	0	1	1	3	1	3		4		
12	2007	8	0	2	2	6		8	2	6		
12	2008	3	0	1	1	2		3		3		
TOTAL-----		24	0	6	6	18	1	23	4	20	0	0
AVE. SEVERITY % FOR THIS ROAD TYPE-----					34.2	65.8						
EXPECTED I+F AND PDO ACCIDENTS-----					8.2	15.8						
DIFFERENCE (DEVIATION FROM EXPECTED)---					-2.2							
STATISTICALLY SIGNIFICANT?-----					NO							
CONFIDENCE LEVEL-----					-							

SPOT INTERSECTION (INCLUDE X STREET)  
 SPOT NON-INTERSECTION  
 SEGMENT (ALL ACCIDENTS)

## III. TRAFFIC DATA

1	2	3	4	5	6	7	8	9	10	11	12
AADT (1000)					TOTAL NO. OF			TOTAL TRAVEL			
			CROSS STREET	VCF (3÷1)			ACC/YR	MV/YR	MVM/YR	ACC/MV	ACC/MVM
PRES.	FUT.	AVE.			YEARS	ACC.	(7 ÷ 6)	.365(1+4)	(9 x MI.)	(8 ÷ 9)	(8 ÷ 10)
38.4	50.2	44.30		1.15	5	24	4.80	14.02	-	0.34	-

## IV. REDUCTION FACTOR

1	2	3	4	5	6
		BASE RATE	EXPECTED	D.R.	CALC.
ACC/MVM	R.F.	ACC/MV(M)	ACC/MV(M)	MV(M)	R.F.
				1-(>3 OR 4)	(5 ÷ 1)
0.34	0.4	0.58	*	*	*

## V. SAFETY INDEX CALCULATION (METHOD I)

1	2		3	4	5	6	7	8	9	10	11
	ACC.		BEFORE ACC. COST (\$1000)								
	TYPE	NO.	COST	TOTAL							
	I+F				\$/ACC.	ACC.YR	VCF	LIFE	1.00-CRF	\$ BEFORE	\$ AFTER
YES(+)											
YES(-)											
NO			16.363		4.8	1.15	20	#VALUE!	1812.2	#VALUE!	
SAFETY INDEX = (BOX 10 - BOX 11) ÷ TOTAL COST = #VALUE! ÷ #VALUE! = 0											
ANNUAL SAFETY BENEFIT = (BOX 10 - BOX 11) ÷ (BOX 8) = #VALUE! ÷ #VALUE! = #VALUE!											

COMPUTED BY: Jeremy Robbins      DATE: 06/29/10      PROJECT NO.: \_\_\_\_\_  
 CHECKED BY: \_\_\_\_\_      DATE: \_\_\_\_\_      KEY NUMBER: \_\_\_\_\_



**Total Accidents: 41**

**Total Fatalities: 0**

**Total Units: 81**

**Total Injuries: 14**

**Total People: 132**

**Report Criteria:**

**Intersection Analysis Report**

**Streets :**

Alameda Rd - Pocatello    **Counties:**Bannock, **Cities:**Pocatello,Chubbuck,  
Jefferson Ave  
Pocatello Creek Rd  
Hiline Rd

Use intersection related accidents

**Data From:** 01/2004 - 12/2008

<b>ON:</b> Jefferson Ave 40.00 F	<b>N REF. STREET:</b> Alameda Rd	<b>LANE:</b> 51	<b>SEGMENT CODE:</b> 003250	<b>MILEPOST:</b> 1.4830	11/21/2008 17:07
<b>SERIAL:</b> 08C216852	<b>LOCAL CODE:</b> 08-P25254	<b>LIGHT:</b> Day	<b>WEATHER:</b> Clear	<b>WET/DRY:</b> Dry	<b>OTHER SURF COND:</b> None
<b>UNITS:</b> 2	<b>FATALITIES:</b> 0	<b>INJURIES:</b> 0	<b>SEVERITY:</b> Property Dmg Report	<b>AGENCY:</b> Pocatello Police Dept	<b>INTERSECTION RELATED:</b> Y
<b>V1:</b> Pickup/Van/Panel/SUV	<b>DIR:</b> N	<b>ACTION:</b> Changing Lanes	<b>EVENT:</b> Side Swipe Same	<b>LOC:</b> Intersection Related	<b>CONTRB:</b> Improper Lane Change
<b>DR1-AGE:</b> 24 M	<b>RES:</b> Idaho	<b>INJURY:</b> None Evident	<b>PROT-DEV:</b> Non-Activated Air Bag- Belts In Use	<b>EJECT:</b> Not Ejected	<b>CIT:</b>
<b>V2:</b> Car	<b>DIR:</b> N	<b>ACTION:</b> Going Straight	<b>EVENT:</b> Side Swipe Same	<b>LOC:</b> Intersection Related	<b>CONTRB:</b>
<b>DR1-AGE:</b> 19 F	<b>RES:</b> Idaho	<b>INJURY:</b> None Evident	<b>PROT-DEV:</b> Non-Activated Air Bag- Belts In Use	<b>EJECT:</b> Not Ejected	<b>CIT:</b>
<a href="#">View Image</a>	<a href="#">View Detail Report</a>				

<b>ON:</b> Jefferson Ave	<b>AND:</b> Alameda Rd	<b>LANE:</b> 51	<b>SEGMENT CODE:</b> 003250	<b>MILEPOST:</b> 1.0470	9/30/2008 15:53
<b>SERIAL:</b> 08C212790	<b>LOCAL CODE:</b> 08-P21424	<b>LIGHT:</b> Day	<b>WEATHER:</b> Clear	<b>WET/DRY:</b> Dry	<b>OTHER SURF COND:</b> None
<b>UNITS:</b> 2	<b>FATALITIES:</b> 0	<b>INJURIES:</b> 0	<b>SEVERITY:</b> Property Dmg Report	<b>AGENCY:</b> Pocatello Police Dept	<b>INTERSECTION RELATED:</b> Y
<b>V1:</b> Pickup/Van/Panel/SUV	<b>DIR:</b> N	<b>ACTION:</b> Going Straight	<b>EVENT:</b> Side Swipe Same	<b>LOC:</b> In Intersection	<b>CONTRB:</b> Improper Lane Change
<b>DR1-AGE:</b> 18 F	<b>RES:</b> Idaho	<b>INJURY:</b> None Evident	<b>PROT-DEV:</b> Non-Activated Air Bag- Belts In Use	<b>EJECT:</b> Not Ejected	<b>CIT:</b> Insurance, failure to provide proof - 49-1232
<b>V2:</b> Truck 3+ Axle	<b>DIR:</b> N	<b>ACTION:</b> Going Straight	<b>EVENT:</b> Side Swipe Same	<b>LOC:</b> In Intersection	<b>CONTRB:</b>
<b>DR1-AGE:</b> 29 M	<b>RES:</b> Idaho	<b>INJURY:</b> None Evident	<b>PROT-DEV:</b> Shoulder And Lap	<b>EJECT:</b> Not Ejected	<b>CIT:</b>
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**ON:** Pocatello Creek Rd 11.00 F  
**SERIAL:** 08C208696  
**UNITS:** 2  
**V1:** Pickup/Van/Panel/SUV  
**DR1-AGE:** 45 F  
**V2:** Motorcycle  
**DR1-AGE:** 69 M  
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**E REF. STREET:** Hiline Rd  
**LOCAL CODE:** 08-P17769  
**FATALITIES:** 0  
**DIR:** W  
**RES:** Idaho  
**INJURIES:** 0  
**ACTION:** Going Straight  
**INJURY:** None Evident  
**INJURY:** Stopped In Traffic  
**INJURY:** None Evident

**LANE:** 49  
**LIGHT:** Day

**SEGMENT CODE:** 001360  
**WEATHER:** Clear  
**SEVERITY:** Property Dmg Report  
**EVENT:** Rear End  
**PROT-DEV:** Shoulder And Lap  
**EVENT:** Rear End  
**PROT-DEV:** Helmet Used

**MILEPOST:** 4.9850  
**WET/DRY:** Dry  
**AGENCY:** Pocatello Police Dept  
**LOC:** Intersection Related  
**EJECT:** Not Ejected  
**EJECT:** Not Ejected

**8/16/2008 18:19**  
**OTHER SURF COND:** None  
**INTERSECTION RELATED:** Y  
**CONTRB:** Inattention  
**CIT:** Following too closely - 49-638  
**CONTRB:**  
**CIT:**

**ON:** Hiline Rd 198.00 F  
**SERIAL:** 08C200910  
**UNITS:** 2  
**V1:** Car  
**DR1-AGE:** 21 M  
**V2:** Car  
**DR1-AGE:** 77 F  
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**N AND:** Parking Lot  
**LOCAL CODE:** 08-P07692  
**FATALITIES:** 0  
**DIR:** W  
**RES:** Idaho  
**INJURIES:** 1  
**ACTION:** Turning Left  
**INJURY:** None Evident  
**ACTION:** Going Straight  
**INJURY:** Possible

**LANE:** 50  
**LIGHT:** Day

**SEGMENT CODE:** 003250  
**WEATHER:** Clear  
**SEVERITY:** C Injury Accident  
**EVENT:** Angle Turning  
**PROT-DEV:** Shoulder And Lap  
**EVENT:** Angle Turning  
**PROT-DEV:** Air Bag Activated-Belts In Use

**MILEPOST:** 1.1040  
**WET/DRY:** Dry  
**AGENCY:** Pocatello Police Dept  
**LOC:** Intersection Related  
**EJECT:** Not Ejected  
**EJECT:** Not Ejected

**4/19/2008 14:30**  
**OTHER SURF COND:** None  
**INTERSECTION RELATED:** Y  
**CONTRB:** Failed To Yield  
**CIT:** Failure to yield, left turn - 49-641  
**CONTRB:**  
**CIT:** Insurance, failure to provide proof - 49-1232

**ON:** Jefferson Ave 33.00 F  
**SERIAL:** 08C200616  
**UNITS:** 2  
**V1:** Car  
**DR1-AGE:** 43 M  
**V2:** Car  
**DR1-AGE:** 33 F  
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**S REF. STREET:** Alameda Rd  
**LOCAL CODE:** 08-P07914  
**FATALITIES:** 0  
**DIR:** N  
**RES:** Idaho  
**INJURIES:** 0  
**ACTION:** Going Straight  
**INJURY:** None Evident  
**ACTION:** Going Straight  
**INJURY:** None Evident

**LANE:** 51  
**LIGHT:** Day

**SEGMENT CODE:** 003250  
**WEATHER:** Clear  
**SEVERITY:** Property Dmg Report  
**EVENT:** Rear End  
**PROT-DEV:** Non-Activated Air Bag- Belts In Use  
**EVENT:** Rear End  
**PROT-DEV:** Non-Activated Air Bag- Belts In Use

**MILEPOST:** 1.0410  
**WET/DRY:** Dry  
**AGENCY:** Pocatello Police Dept  
**LOC:** Intersection Related  
**EJECT:** Not Ejected  
**EJECT:** Not Ejected

**4/22/2008 17:49**  
**OTHER SURF COND:** None  
**INTERSECTION RELATED:** Y  
**CONTRB:** Following Too Close  
**CIT:** Following too closely - 49-638  
**CONTRB:**  
**CIT:**

**ON:** Alameda Rd **AND:** Jefferson Ave **LANE:** 50 **SEGMENT CODE:** 001360 **MILEPOST:** 4.9830 3/3/2005 08:21  
**SERIAL:** 05C096678 **LOCAL CODE:** 2005-P04473 **LIGHT:** Day **WEATHER:** Cloudy **WET/DRY:** Dry **OTHER SURF COND:** None  
**UNITS:** 2 **FATALITIES:** 0 **INJURIES:** 0 **SEVERITY:** Property Dmg Report **AGENCY:** Pocatello Police Dept **INTERSECTION RELATED:** Y  
**V1:** Car **DIR:** W **ACTION:** Turning Left **EVENT:** Angle Turning **LOC:** In Intersection **CONTRB:** Failed To Yield  
**DRI-AGE:** 34 M **RES:** Idaho **INJURY:** None Evident **PROT-DEV:** Non-Activated Air Bag- Belts In Use **EJECT:** Not Ejected **CIT:** Obey Signs  
**V2:** Car **DIR:** S **ACTION:** Turning Left **EVENT:** Angle Turning **LOC:** In Intersection **CONTRB:**  
**DRI-AGE:** 17 M **RES:** Idaho **INJURY:** None Evident **PROT-DEV:** Shoulder And Lap **EJECT:** Not Ejected **CIT:**

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**ON:** Alameda Rd **AND:** Hiline Rd **LANE:** 50 **SEGMENT CODE:** 001360 **MILEPOST:** 4.9830 12/4/2004 14:54  
**SERIAL:** 04C086212 **LOCAL CODE:** 04-P27412 **LIGHT:** Day **WEATHER:** Clear **WET/DRY:** Dry **OTHER SURF COND:** None  
**UNITS:** 2 **FATALITIES:** 0 **INJURIES:** 1 **SEVERITY:** C Injury Accident **AGENCY:** Pocatello Police Dept **INTERSECTION RELATED:** Y  
**V1:** Car **DIR:** S **ACTION:** Going Straight **EVENT:** Angle **LOC:** In Intersection **CONTRB:** Disregarded Signal  
**DRI-AGE:** 26 M **RES:** Montana **INJURY:** None Evident **PROT-DEV:** None **EJECT:** Not Ejected **CIT:**  
**V2:** Car **DIR:** E **ACTION:** Going Straight **EVENT:** Angle **LOC:** In Intersection **CONTRB:**  
**DRI-AGE:** 36 F **RES:** Idaho **INJURY:** None Evident **PROT-DEV:** Non-Activated Air Bag- Belts In Use **EJECT:** Not Ejected **CIT:**

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**ON:** Alameda Rd 10.00 F **W REF. STREET:** Jefferson Ave **LANE:** 49 **SEGMENT CODE:** 001360 **MILEPOST:** 4.9810 11/11/2004 13:38  
**SERIAL:** 04C084503 **LOCAL CODE:** 04-P25689 **LIGHT:** Day **WEATHER:** Cloudy **WET/DRY:** Wet **OTHER SURF COND:** None  
**UNITS:** 2 **FATALITIES:** 0 **INJURIES:** 0 **SEVERITY:** Property Dmg Report **AGENCY:** Pocatello Police Dept **INTERSECTION RELATED:** Y  
**V1:** Pickup/Van/Panel/SUV **DIR:** E **ACTION:** Merging **EVENT:** Rear-End Turning **LOC:** Intersection Related **CONTRB:** Following Too Close  
**DRI-AGE:** 52 M **RES:** Idaho **INJURY:** None Evident **PROT-DEV:** Shoulder And Lap **EJECT:** Not Ejected **CIT:** Prf Of Ins  
**V2:** Car **DIR:** E **ACTION:** Stopped In Traffic **EVENT:** Rear-End Turning **LOC:** Intersection Related **CONTRB:**  
**DRI-AGE:** 24 F **RES:** Idaho **INJURY:** None Evident **PROT-DEV:** Non-Activated Air Bag- Belts In Use **EJECT:** Not Ejected **CIT:**

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**ON:** Jefferson Ave 4.00 F      **N REF. STREET:** Alameda Rd      **LANE:** 51      **SEGMENT CODE:** 003250      **MILEPOST:** 1.0480      11/1/2004 16:02  
**SERIAL:** 04C082991      **LOCAL CODE:** 04-P24889      **LIGHT:** Day      **WEATHER:** Cloudy      **WET/DRY:** Dry      **OTHER SURF COND:** None  
**UNITS:** 2      **FATALITIES:** 0      **INJURIES:** 1      **SEVERITY:** C Injury Accident      **AGENCY:** Pocatello Police Dept      **INTERSECTION RELATED:** Y  
**V1:** Car      **DIR:** N      **ACTION:** Going Straight      **EVENT:** Rear End      **LOC:** Intersection Related      **CONTRB:** ,Following Too Close  
**DRI-AGE:** 80 M      **RES:** Idaho      **INJURY:** None Evident      **PROT-DEV:** Shoulder And Lap      **EJECT:** Not Ejected      **CIT:** Ftc  
**V2:** Car      **DIR:** N      **ACTION:** Stopped In Traffic      **EVENT:** Rear End      **LOC:** Intersection Related      **CONTRB:**  
**DRI-AGE:** 38 F      **RES:** Idaho      **INJURY:** Possible      **PROT-DEV:** Shoulder And Lap      **EJECT:** Not Ejected      **CIT:**

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**ON:** Jefferson Ave      **AND:** Alameda Rd      **LANE:** 50      **SEGMENT CODE:** 003250      **MILEPOST:** 1.0000      10/3/2004 14:10  
**SERIAL:** 04C080495      **LOCAL CODE:** 04-P22539      **LIGHT:** Day      **WEATHER:** Clear      **WET/DRY:** Dry      **OTHER SURF COND:** None  
**UNITS:** 2      **FATALITIES:** 0      **INJURIES:** 0      **SEVERITY:** Property Dmg Report      **AGENCY:** Pocatello Police Dept      **INTERSECTION RELATED:** Y  
**V1:** Car      **DIR:** W      **ACTION:** Turning Left      **EVENT:** Side Swipe Same      **LOC:** In Intersection      **CONTRB:** Failed To Yield  
**DRI-AGE:** 18 F      **RES:** Idaho      **INJURY:** None Evident      **PROT-DEV:** Shoulder And Lap      **EJECT:** Not Ejected      **CIT:** Fty41  
**V2:** Car      **DIR:** S      **ACTION:** Going Straight      **EVENT:** Side Swipe Same      **LOC:** In Intersection      **CONTRB:**  
**DRI-AGE:** 80 M      **RES:** Idaho      **INJURY:** None Evident      **PROT-DEV:** Non-Activated Air Bag- Belts In Use      **EJECT:** Not Ejected      **CIT:**

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**ON:** Alameda Rd      **AND:** Jefferson Ave      **LANE:** 50      **SEGMENT CODE:** 001360      **MILEPOST:** 4.9830      9/1/2004 08:45  
**SERIAL:** 04C077178      **LOCAL CODE:** 04-P19819      **LIGHT:** Day      **WEATHER:** Clear      **WET/DRY:** Dry      **OTHER SURF COND:** None  
**UNITS:** 2      **FATALITIES:** 0      **INJURIES:** 0      **SEVERITY:** Property Dmg Report      **AGENCY:** Pocatello Police Dept      **INTERSECTION RELATED:** Y  
**V1:** Pickup/Van/Panel/SUV      **DIR:** E      **ACTION:** Negotiating Curve      **EVENT:** Angle      **LOC:** In Intersection      **CONTRB:** Inattention  
**DRI-AGE:** 28 F      **RES:** Idaho      **INJURY:** None Evident      **PROT-DEV:** Non-Activated Air Bag- Belts In Use      **EJECT:** Not Ejected      **CIT:**  
**V2:** Car      **DIR:** N      **ACTION:** Going Straight      **EVENT:** Angle      **LOC:** In Intersection      **CONTRB:**  
**DRI-AGE:** 87 M      **RES:** Idaho      **INJURY:** None Evident      **PROT-DEV:** Non-Activated Air Bag- Belts In Use      **EJECT:** Not Ejected      **CIT:**

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**ON:** Jefferson Ave      **AND:** Alameda Rd      **LANE:** 50      **SEGMENT CODE:** 003250      **MILEPOST:** 1.0000      8/2/2004 12:53

**SERIAL:** 04C074830      **LOCAL CODE:** 04-P17127      **LIGHT:** Day      **WEATHER:** Clear      **WET/DRY:** Dry      **OTHER SURF COND:** None  
**UNITS:** 2      **FATALITIES:** 0      **INJURIES:** 1      **SEVERITY:** B Injury Accident      **AGENCY:** Pocatello Police Dept      **INTERSECTION RELATED:** Y  
**V1:** Pickup/Van/Panel/SUV      **DIR:** E      **ACTION:** Turning Left      **EVENT:** Pedalcycle      **LOC:** In Intersection      **CONTRB:** Failed To Yield  
**DRI-AGE:** 68 F      **RES:** Idaho      **INJURY:** None Evident      **PROT-DEV:** Non-Activated Air Bag- Belts In Use      **EJECT:** Not Ejected      **CIT:**  
**V2:** Pedalcycle      **DIR:** N      **ACTION:** Walk/Ride With Traffic No Bike Lane      **EVENT:** Pedalcycle      **LOC:** In Intersection      **CONTRB:**  
**DRI-AGE:** 13 M      **RES:**      **INJURY:** Non-Incapacitating      **PROT-DEV:** None      **EJECT:** Thrown From Cycle/Animal      **CIT:**

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**ON:** Jefferson Ave      **AND:** Alameda Rd      **LANE:** 50      **SEGMENT CODE:** 003250      **MILEPOST:** 1.0470      1/7/2004 16:10  
**SERIAL:** 04C055296      **LOCAL CODE:** 04-P00535      **LIGHT:** Day      **WEATHER:** Cloudy      **WET/DRY:** Wet      **OTHER SURF COND:** None  
**UNITS:** 2      **FATALITIES:** 0      **INJURIES:** 0      **SEVERITY:** Property Dmg Report      **AGENCY:** Pocatello Police Dept      **INTERSECTION RELATED:** Y  
**V1:** Car      **DIR:** W      **ACTION:** Turning Left      **EVENT:** Angle Turning      **LOC:** In Intersection      **CONTRB:** Failed To Yield  
**DRI-AGE:** 17 M      **RES:** Idaho      **INJURY:** None Evident      **PROT-DEV:** Shoulder And Lap      **EJECT:** Not Ejected      **CIT:** Fty41  
**V2:** Pickup/Van/Panel/SUV      **DIR:** S      **ACTION:** Going Straight      **EVENT:** Angle Turning      **LOC:** In Intersection      **CONTRB:**  
**DRI-AGE:** 32 F      **RES:** Idaho      **INJURY:** None Evident      **PROT-DEV:** Shoulder And Lap      **EJECT:** Not Ejected      **CIT:** Prf Of Ins

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**ON:** Jefferson Ave      **AND:** Alameda Rd      **LANE:** 50      **SEGMENT CODE:** 003250      **MILEPOST:** 1.0470      1/15/2008 19:20  
**SERIAL:** 08C191198      **LOCAL CODE:** 08-P00974      **LIGHT:** Dark, Street Lights On      **WEATHER:** Cloudy      **WET/DRY:** Dry      **OTHER SURF COND:** None  
**UNITS:** 2      **FATALITIES:** 0      **INJURIES:** 2      **SEVERITY:** C Injury Accident      **AGENCY:** Pocatello Police Dept      **INTERSECTION RELATED:** Y  
**V1:** Car      **DIR:** S      **ACTION:** Turning Left      **EVENT:** Head-On Turning      **LOC:** In Intersection      **CONTRB:** Failed To Yield  
**DRI-AGE:** 20 M      **RES:** Idaho      **INJURY:** Possible      **PROT-DEV:** Air Bag Activated-Belts In Use      **EJECT:** Not Ejected      **CIT:** Failure to yield, left turn - 49-641  
**V2:** Car      **DIR:** N      **ACTION:** Going Straight      **EVENT:** Head-On Turning      **LOC:** In Intersection      **CONTRB:**  
**DRI-AGE:** 55 F      **RES:** Idaho      **INJURY:** Possible      **PROT-DEV:** Non-Activated Air Bag- Belts In Use      **EJECT:** Not Ejected      **CIT:**

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**ON:** Alameda Rd      **AND:** Hiline Rd      **LANE:** 50      **SEGMENT CODE:** 001360      **MILEPOST:** 4.9830      12/20/2007 21:59  
**SERIAL:** 07C188197      **LOCAL CODE:** 07-P27073      **LIGHT:** Dark, Street Lights On      **WEATHER:** Cloudy      **WET/DRY:** Wet      **OTHER SURF COND:** None



<b>UNITS:</b> 2	<b>FATALITIES:</b> 0	<b>INJURIES:</b> 0	<b>SEVERITY:</b> Property Dmg Report	<b>AGENCY:</b> Pocatello Police Dept	<b>INTERSECTION RELATED:</b> Y
<b>V1:</b> Car	<b>DIR:</b> S	<b>ACTION:</b> Going Straight	<b>EVENT:</b> Angle	<b>LOC:</b> In Intersection	<b>CONTRB:</b> Failed To Yield
<b>DRI-AGE:</b> 16 F	<b>RES:</b> Idaho	<b>INJURY:</b> None Evident	<b>PROT-DEV:</b> Non-Activated Air Bag- Belts In Use	<b>EJECT:</b> Not Ejected	<b>CIT:</b>
<b>V2:</b> Pickup/Van/Panel/SUV	<b>DIR:</b> W	<b>ACTION:</b> Going Straight	<b>EVENT:</b> Angle	<b>LOC:</b> In Intersection	<b>CONTRB:</b>
<b>DRI-AGE:</b> 30 M	<b>RES:</b> Idaho	<b>INJURY:</b> None Evident	<b>PROT-DEV:</b> Non-Activated Air Bag- Belts In Use	<b>EJECT:</b> Not Ejected	<b>CIT:</b>

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<b>ON:</b> Alameda Rd	<b>AND:</b> Hiline Rd	<b>LANE:</b> 52	<b>SEGMENT CODE:</b> 001360	<b>MILEPOST:</b> 4.9830	12/12/2007 19:58
<b>SERIAL:</b> 07C188082	<b>LOCAL CODE:</b> 07-P26500	<b>LIGHT:</b> Dark, Street Lights On	<b>WEATHER:</b> Cloudy	<b>WET/DRY:</b> Dry	<b>OTHER SURF COND:</b> None
<b>UNITS:</b> 2	<b>FATALITIES:</b> 0	<b>INJURIES:</b> 0	<b>SEVERITY:</b> Property Dmg Report	<b>AGENCY:</b> Pocatello Police Dept	<b>INTERSECTION RELATED:</b> Y
<b>V1:</b> Pickup/Van/Panel/SUV	<b>DIR:</b> W	<b>ACTION:</b> Backing	<b>EVENT:</b> Backed Into	<b>LOC:</b> In Intersection	<b>CONTRB:</b> Improper Backing
<b>DRI-AGE:</b> 68 F	<b>RES:</b> Idaho	<b>INJURY:</b> None Evident	<b>PROT-DEV:</b> Shoulder And Lap	<b>EJECT:</b> Not Ejected	<b>CIT:</b> Backing violations - 49-604
<b>V2:</b> Car	<b>DIR:</b> E	<b>ACTION:</b> Turning Left	<b>EVENT:</b> Backed Into	<b>LOC:</b> In Intersection	<b>CONTRB:</b>
<b>DRI-AGE:</b> 55 F	<b>RES:</b> Idaho	<b>INJURY:</b> None Evident	<b>PROT-DEV:</b> Shoulder And Lap	<b>EJECT:</b> Not Ejected	<b>CIT:</b>

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<b>ON:</b> Pocatello Creek Rd 250.00 F	<b>E REF. STREET:</b> Hiline Rd	<b>LANE:</b> 51	<b>SEGMENT CODE:</b> 001360	<b>MILEPOST:</b> 5.0300	11/27/2007 16:06
<b>SERIAL:</b> 07C185565	<b>LOCAL CODE:</b> 07-P25406	<b>LIGHT:</b> Day	<b>WEATHER:</b> Cloudy	<b>WET/DRY:</b> Dry	<b>OTHER SURF COND:</b> None
<b>UNITS:</b> 2	<b>FATALITIES:</b> 0	<b>INJURIES:</b> 2	<b>SEVERITY:</b> C Injury Accident	<b>AGENCY:</b> Pocatello Police Dept	<b>INTERSECTION RELATED:</b> Y
<b>V1:</b> Car	<b>DIR:</b> W	<b>ACTION:</b> Going Straight	<b>EVENT:</b> Rear End	<b>LOC:</b> Intersection Related	<b>CONTRB:</b> Inattention
<b>DRI-AGE:</b> 37 M	<b>RES:</b> Idaho	<b>INJURY:</b> None Evident	<b>PROT-DEV:</b> Non-Activated Air Bag- Belts In Use	<b>EJECT:</b> Not Ejected	<b>CIT:</b> Following too closely - 49-638
<b>V2:</b> Car	<b>DIR:</b> W	<b>ACTION:</b> Stopped In Traffic	<b>EVENT:</b> Rear End	<b>LOC:</b> Intersection Related	<b>CONTRB:</b>
<b>DRI-AGE:</b> 56 M	<b>RES:</b> Idaho	<b>INJURY:</b> Possible	<b>PROT-DEV:</b> Non-Activated Air Bag- Belts In Use	<b>EJECT:</b> Not Ejected	<b>CIT:</b>

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<b>ON:</b> Jefferson Ave	<b>AND:</b> Alameda Rd	<b>LANE:</b> 50	<b>SEGMENT CODE:</b> 003250	<b>MILEPOST:</b> 1.0470	11/21/2007 20:14
<b>SERIAL:</b> 07C184918	<b>LOCAL CODE:</b> 07-P25109	<b>LIGHT:</b> Dark, Street Lights On	<b>WEATHER:</b> Cloudy	<b>WET/DRY:</b> Dry	<b>OTHER SURF COND:</b> None
<b>UNITS:</b> 2	<b>FATALITIES:</b> 0	<b>INJURIES:</b> 2	<b>SEVERITY:</b> A Injury Accident	<b>AGENCY:</b> Pocatello Police Dept	<b>INTERSECTION RELATED:</b> Y

<b>V1:</b> Car	<b>DIR:</b> N	<b>ACTION:</b> Turning Left	<b>EVENT:</b> Head-On Turning	<b>LOC:</b> In Intersection	<b>CONTRB:</b> Disregarded Signal
<b>DRI-AGE:</b> 18 F	<b>RES:</b> Idaho	<b>INJURY:</b> Incapacitating	<b>PROT-DEV:</b> None	<b>EJECT:</b> Not Ejected	<b>CIT:</b> Signaling violations - 49-808
<b>V2:</b> Pickup/Van/Panel/SUV	<b>DIR:</b> S	<b>ACTION:</b> Going Straight	<b>EVENT:</b> Head-On Turning	<b>LOC:</b> In Intersection	<b>CONTRB:</b>
<b>DRI-AGE:</b> 47 M	<b>RES:</b> Idaho	<b>INJURY:</b> None Evident	<b>PROT-DEV:</b> None	<b>EJECT:</b> Not Ejected	<b>CIT:</b> Failure to wear seat belt -- 49-673

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<b>ON:</b> Hiline Rd 250.00 F	<b>N AND:</b> Parking Lot	<b>LANE:</b> 50	<b>SEGMENT CODE:</b> 003250	<b>MILEPOST:</b> 1.1130	10/27/2007 23:25
<b>SERIAL:</b> 07C182832	<b>LOCAL CODE:</b> 07-P23318	<b>LIGHT:</b> Dark, Street Lights On	<b>WEATHER:</b> Clear	<b>WET/DRY:</b> Dry	<b>OTHER SURF COND:</b> None
<b>UNITS:</b> 2	<b>FATALITIES:</b> 0	<b>INJURIES:</b> 0	<b>SEVERITY:</b> Property Dmg Report	<b>AGENCY:</b> Pocatello Police Dept	<b>INTERSECTION RELATED:</b> Y
<b>V1:</b> Pickup/Van/Panel/SUV	<b>DIR:</b> W	<b>ACTION:</b> Turning Left	<b>EVENT:</b> Angle Turning	<b>LOC:</b> In Intersection	<b>CONTRB:</b> Failed To Yield
<b>DRI-AGE:</b> 30 M	<b>RES:</b> Idaho	<b>INJURY:</b> None Evident	<b>PROT-DEV:</b> Non-Activated Air Bag- Belts In Use	<b>EJECT:</b> Not Ejected	<b>CIT:</b> Failure to yield, left turn - 49-641
<b>V2:</b> Car	<b>DIR:</b> N	<b>ACTION:</b> Going Straight	<b>EVENT:</b> Angle Turning	<b>LOC:</b> In Intersection	<b>CONTRB:</b>
<b>DRI-AGE:</b> 20 M	<b>RES:</b> Idaho	<b>INJURY:</b> None Evident	<b>PROT-DEV:</b> Non-Activated Air Bag- Belts In Use	<b>EJECT:</b> Not Ejected	<b>CIT:</b> No valid license - 49-301

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<b>ON:</b> Hiline Rd 125.00 F	<b>N REF. STREET:</b> Pocatello Creek Rd	<b>LANE:</b> 50	<b>SEGMENT CODE:</b> 003250	<b>MILEPOST:</b> 1.0900	9/12/2007 16:45
<b>SERIAL:</b> 07C179284	<b>LOCAL CODE:</b> 07-P19771	<b>LIGHT:</b> Day	<b>WEATHER:</b> Clear	<b>WET/DRY:</b> Dry	<b>OTHER SURF COND:</b> None
<b>UNITS:</b> 2	<b>FATALITIES:</b> 0	<b>INJURIES:</b> 0	<b>SEVERITY:</b> Property Dmg Report	<b>AGENCY:</b> Pocatello Police Dept	<b>INTERSECTION RELATED:</b> Y
<b>V1:</b> Car	<b>DIR:</b> S	<b>ACTION:</b> Going Straight	<b>EVENT:</b> Rear End	<b>LOC:</b> Intersection Related	<b>CONTRB:</b> Inattention
<b>DRI-AGE:</b> 47 F	<b>RES:</b> Idaho	<b>INJURY:</b> None Evident	<b>PROT-DEV:</b> Non-Activated Air Bag- Belts In Use	<b>EJECT:</b> Not Ejected	<b>CIT:</b> Following too closely - 49-638
<b>V2:</b> Car	<b>DIR:</b> S	<b>ACTION:</b> Stopped In Traffic	<b>EVENT:</b> Rear End	<b>LOC:</b> Intersection Related	<b>CONTRB:</b>
<b>DRI-AGE:</b> 17 F	<b>RES:</b> Idaho	<b>INJURY:</b> None Evident	<b>PROT-DEV:</b> Non-Activated Air Bag- Belts In Use	<b>EJECT:</b> Not Ejected	<b>CIT:</b>

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<b>ON:</b> Pocatello Creek Rd 30.00 F	<b>E REF. STREET:</b> Hiline Rd	<b>LANE:</b> 52	<b>SEGMENT CODE:</b> 001360	<b>MILEPOST:</b> 4.9890	2/23/2007 21:34
<b>SERIAL:</b> 07C996161	<b>LOCAL CODE:</b> 07-P03559	<b>LIGHT:</b> Dark, Street Lights On	<b>WEATHER:</b> Snow	<b>WET/DRY:</b> Ice	<b>OTHER SURF COND:</b> None
<b>UNITS:</b> 2	<b>FATALITIES:</b> 0	<b>INJURIES:</b> 0	<b>SEVERITY:</b> Property Dmg Report	<b>AGENCY:</b> Pocatello Police Dept	<b>INTERSECTION RELATED:</b> Y
<b>V1:</b> Car	<b>DIR:</b> W	<b>ACTION:</b> Going Straight	<b>EVENT:</b> Rear End	<b>LOC:</b> Intersection Related	<b>CONTRB:</b> Following Too Close

<b>DRI-AGE:</b> 32 M	<b>RES:</b> Idaho	<b>INJURY:</b> None Evident	<b>PROT-DEV:</b> Non-Activated Air Bag- Belts In Use	<b>EJECT:</b> Not Ejected	<b>CIT:</b> Following too closely - 49-638
<b>V2:</b> Car	<b>DIR:</b> W	<b>ACTION:</b> Stopped In Traffic	<b>EVENT:</b> Rear End	<b>LOC:</b> Intersection Related	<b>CONTRB:</b>
<b>DRI-AGE:</b> 25 M	<b>RES:</b> Idaho	<b>INJURY:</b> None Evident	<b>PROT-DEV:</b> Non-Activated Air Bag- Belts In Use	<b>EJECT:</b> Not Ejected	<b>CIT:</b>

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<b>ON:</b> Alameda Rd	<b>AND:</b> Hiline Rd	<b>LANE:</b> 50	<b>SEGMENT CODE:</b> 001360	<b>MILEPOST:</b> 4.9830	1/25/2007 18:27
<b>SERIAL:</b> 07C160354	<b>LOCAL CODE:</b> 07-P01579	<b>LIGHT:</b> Dark, Street Lights On	<b>WEATHER:</b> Clear	<b>WET/DRY:</b> Dry	<b>OTHER SURF COND:</b> None
<b>UNITS:</b> 2	<b>FATALITIES:</b> 0	<b>INJURIES:</b> 2	<b>SEVERITY:</b> A Injury Accident	<b>AGENCY:</b> Pocatello Police Dept	<b>INTERSECTION RELATED:</b> Y
<b>V1:</b> Car	<b>DIR:</b> E	<b>ACTION:</b> Turning Left	<b>EVENT:</b> Head-On Turning	<b>LOC:</b> In Intersection	<b>CONTRB:</b> ,Inattention
<b>DRI-AGE:</b> 68 F	<b>RES:</b> Idaho	<b>INJURY:</b> Incapacitating	<b>PROT-DEV:</b> None	<b>EJECT:</b> Not Ejected	<b>CIT:</b> Failure to yield, left turn - 49-641
<b>V2:</b> Car	<b>DIR:</b> W	<b>ACTION:</b> Going Straight	<b>EVENT:</b> Head-On Turning	<b>LOC:</b> In Intersection	<b>CONTRB:</b>
<b>DRI-AGE:</b> 35 M	<b>RES:</b> Idaho	<b>INJURY:</b> Non-Incapacitating	<b>PROT-DEV:</b> Air Bag Activated- No Belts In Use	<b>EJECT:</b> Not Ejected	<b>CIT:</b> Failure to wear seat belt -- 49-673

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<b>ON:</b> Alameda Rd 60.00 F	<b>E REF. STREET:</b> Jefferson Ave	<b>LANE:</b> 52	<b>SEGMENT CODE:</b> 001360	<b>MILEPOST:</b> 4.9940	1/10/2007 16:23
<b>SERIAL:</b> 07C158398	<b>LOCAL CODE:</b> 07-P00576	<b>LIGHT:</b> Day	<b>WEATHER:</b> Cloudy	<b>WET/DRY:</b> Dry	<b>OTHER SURF COND:</b> None
<b>UNITS:</b> 2	<b>FATALITIES:</b> 0	<b>INJURIES:</b> 0	<b>SEVERITY:</b> Property Dmg Report	<b>AGENCY:</b> Pocatello Police Dept	<b>INTERSECTION RELATED:</b> Y
<b>V1:</b> Car	<b>DIR:</b> W	<b>ACTION:</b> Changing Lanes	<b>EVENT:</b> Side Swipe Same	<b>LOC:</b> Intersection Related	<b>CONTRB:</b> Improper Lane Change
<b>DRI-AGE:</b> 18 F	<b>RES:</b> Idaho	<b>INJURY:</b> None Evident	<b>PROT-DEV:</b> Non-Activated Air Bag- Belts In Use	<b>EJECT:</b> Not Ejected	<b>CIT:</b>
<b>V2:</b> Pickup/Van/Panel/SUV	<b>DIR:</b> W	<b>ACTION:</b> Going Straight	<b>EVENT:</b> Side Swipe Same	<b>LOC:</b> Intersection Related	<b>CONTRB:</b>
<b>DRI-AGE:</b> 28 F	<b>RES:</b> Idaho	<b>INJURY:</b> None Evident	<b>PROT-DEV:</b> Non-Activated Air Bag- Belts In Use	<b>EJECT:</b> Not Ejected	<b>CIT:</b>

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<b>ON:</b> Jefferson Ave	<b>AND:</b> Alameda Rd	<b>LANE:</b> 50	<b>SEGMENT CODE:</b> 003250	<b>MILEPOST:</b> 1.0000	10/4/2006 17:28
<b>SERIAL:</b> 06C148619	<b>LOCAL CODE:</b> 06-P21682	<b>LIGHT:</b> Day	<b>WEATHER:</b> Clear	<b>WET/DRY:</b> Dry	<b>OTHER SURF COND:</b> None
<b>UNITS:</b> 2	<b>FATALITIES:</b> 0	<b>INJURIES:</b> 0	<b>SEVERITY:</b> Property Dmg Report	<b>AGENCY:</b> Pocatello Police Dept	<b>INTERSECTION RELATED:</b> Y
<b>V1:</b> Car	<b>DIR:</b> S	<b>ACTION:</b> Turning Left	<b>EVENT:</b> Head-On Turning	<b>LOC:</b> In Intersection	<b>CONTRB:</b> Failed To Yield
<b>DRI-AGE:</b> 25 M	<b>RES:</b> Idaho	<b>INJURY:</b> None Evident	<b>PROT-DEV:</b> Shoulder And Lap	<b>EJECT:</b> Not Ejected	<b>CIT:</b> Failure to yield, left turn - 49-641

**V2:** Car **DIR:** N **ACTION:** Going Straight **EVENT:** Head-On Turning **LOC:** In Intersection **CONTRB:**  
**DRI-AGE:** 33 M **RES:** Idaho **INJURY:** None Evident **PROT-DEV:** Shoulder And Lap **EJECT:** Not Ejected **CIT:**  
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**ON:** Jefferson Ave **AND:** Alameda Rd **LANE:** 50 **SEGMENT CODE:** 003250 **MILEPOST:** 1.0000 7/13/2006 17:50  
**SERIAL:** 06C142049 **LOCAL CODE:** 06-P14794 **LIGHT:** Day **WEATHER:** Clear **WET/DRY:** Dry **OTHER SURF COND:** None  
**UNITS:** 2 **FATALITIES:** 0 **INJURIES:** 0 **SEVERITY:** Property Dmg Report **AGENCY:** Pocatello Police Dept **INTERSECTION RELATED:** Y  
**V1:** Pickup/Van/Panel/SUV **DIR:** S **ACTION:** Turning Left **EVENT:** Head-On Turning **LOC:** In Intersection **CONTRB:** Failed To Yield  
**DRI-AGE:** 27 M **RES:** Idaho **INJURY:** None Evident **PROT-DEV:** Non-Activated Air Bag- Belts In Use **EJECT:** Not Ejected **CIT:** Failure to yield, right of way - 49-640  
**V2:** Car **DIR:** N **ACTION:** Going Straight **EVENT:** Head-On Turning **LOC:** In Intersection **CONTRB:**  
**DRI-AGE:** 17 F **RES:** Idaho **INJURY:** None Evident **PROT-DEV:** Shoulder And Lap **EJECT:** Not Ejected **CIT:**  
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**ON:** Jefferson Ave **AND:** Alameda Rd **LANE:** 50 **SEGMENT CODE:** 003250 **MILEPOST:** 1.0470 6/22/2006 14:00  
**SERIAL:** 06C140889 **LOCAL CODE:** 06-P12742 **LIGHT:** Day **WEATHER:** Clear **WET/DRY:** Dry **OTHER SURF COND:** None  
**UNITS:** 2 **FATALITIES:** 0 **INJURIES:** 0 **SEVERITY:** Property Dmg Report **AGENCY:** Pocatello Police Dept **INTERSECTION RELATED:** Y  
**V1:** Car **DIR:** N **ACTION:** Turning Right **EVENT:** Rear-End Turning **LOC:** In Intersection **CONTRB:** Following Too Close  
**DRI-AGE:** 83 M **RES:** Idaho **INJURY:** None Evident **PROT-DEV:** Non-Activated Air Bag- Belts In Use **EJECT:** Not Ejected **CIT:** Following too closely - 49-638  
**V2:** Car **DIR:** N **ACTION:** Stopped In Traffic **EVENT:** Rear-End Turning **LOC:** In Intersection **CONTRB:**  
**DRI-AGE:** 49 M **RES:** Idaho **INJURY:** None Evident **PROT-DEV:** Non-Activated Air Bag- Belts In Use **EJECT:** Not Ejected **CIT:**  
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**ON:** Hiline Rd 50.00 F **N REF. STREET:** Alameda Rd **LANE:** 50 **SEGMENT CODE:** 003250 **MILEPOST:** 1.0750 6/27/2006 13:44  
**SERIAL:** 06C140588 **LOCAL CODE:** 06P13195 **LIGHT:** Day **WEATHER:** Clear **WET/DRY:** Dry **OTHER SURF COND:** None  
**UNITS:** 2 **FATALITIES:** 0 **INJURIES:** 0 **SEVERITY:** Property Dmg Report **AGENCY:** Pocatello Police Dept **INTERSECTION RELATED:** Y  
**V1:** Car **DIR:** N **ACTION:** Going Straight **EVENT:** Rear End **LOC:** Intersection Related **CONTRB:** Following Too Close  
**DRI-AGE:** 62 F **RES:** Idaho **INJURY:** None Evident **PROT-DEV:** Non-Activated Air Bag- Belts In Use **EJECT:** Not Ejected **CIT:** Following too closely - 49-638  
**V2:** Car **DIR:** N **ACTION:** Stopped In Traffic **EVENT:** Rear End **LOC:** Intersection Related **CONTRB:**

**DRI-AGE:** 23 M      **RES:** Idaho      **INJURY:** None Evident      **PROT-DEV:** Shoulder And Lap      **EJECT:** Not Ejected      **CIT:**  
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**ON:**      Pocatello Creek Rd      **AND:** Hiline Rd      **LANE:** 51      **SEGMENT CODE:** 001360      **MILEPOST:**4.9830      6/21/2006 08:37  
**SERIAL:**      06C139747      **LOCAL CODE:** 06-P12625      **LIGHT:** Day      **WEATHER:** Clear      **WET/DRY:** Dry      **OTHER SURF COND:** None  
**UNITS:** 2      **FATALITIES:** 0      **INJURIES:** 0      **SEVERITY:** Property Dmg Report      **AGENCY:** Pocatello Police Dept      **INTERSECTION RELATED:** Y  
**V1:**      Pickup/Van/Panel/SUV      **DIR:** W      **ACTION:** Going Straight      **EVENT:** Rear End      **LOC:** In Intersection      **CONTRB:** Following Too Close  
**DRI-AGE:** 21 M      **RES:** Idaho      **INJURY:** None Evident      **PROT-DEV:** Shoulder And Lap      **EJECT:** Not Ejected      **CIT:** Following too closely - 49-638  
**V2:**      Pickup/Van/Panel/SUV      **DIR:** W      **ACTION:** Slowing In Traffic      **EVENT:** Rear End      **LOC:** In Intersection      **CONTRB:**  
**DRI-AGE:** 58 F      **RES:** Idaho      **INJURY:** None Evident      **PROT-DEV:** Non-Activated Air Bag- Belts In Use      **EJECT:** Not Ejected      **CIT:**  
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**ON:**      Jefferson Ave 75.00 F      **N REF. STREET:** Alameda Rd      **LANE:** 50      **SEGMENT CODE:** 003250      **MILEPOST:**1.0610      6/16/2006 11:38  
**SERIAL:**      06C139227      **LOCAL CODE:** 06-P12218      **LIGHT:** Day      **WEATHER:** Clear      **WET/DRY:** Dry      **OTHER SURF COND:** None  
**UNITS:** 2      **FATALITIES:** 0      **INJURIES:** 0      **SEVERITY:** Property Dmg Report      **AGENCY:** Pocatello Police Dept      **INTERSECTION RELATED:** Y  
**V1:**      Car      **DIR:** N      **ACTION:** Changing Lanes      **EVENT:** Side Swipe Same      **LOC:** Intersection Related      **CONTRB:**  
**DRI-AGE:** 55 F      **RES:** Montana      **INJURY:** None Evident      **PROT-DEV:** Shoulder And Lap      **EJECT:** Not Ejected      **CIT:**  
**V2:**      Car      **DIR:** N      **ACTION:** Going Straight      **EVENT:** Side Swipe Same      **LOC:** Intersection Related      **CONTRB:**  
**DRI-AGE:** 21 F      **RES:** Idaho      **INJURY:** None Evident      **PROT-DEV:** Non-Activated Air Bag- Belts In Use      **EJECT:** Not Ejected      **CIT:**  
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**ON:**      Hiline Rd 190.00 F      **N REF. STREET:** Alameda Rd      **LANE:** 00      **SEGMENT CODE:** 003250      **MILEPOST:**1.1020      6/12/2006 16:55  
**SERIAL:**      06C138926      **LOCAL CODE:** 06-P11914      **LIGHT:** Day      **WEATHER:** Clear      **WET/DRY:** Dry      **OTHER SURF COND:** None  
**UNITS:** 1      **FATALITIES:** 0      **INJURIES:** 1      **SEVERITY:** C Injury Accident      **AGENCY:** Pocatello Police Dept      **INTERSECTION RELATED:** Y  
**V1:**      Pickup/Van/Panel/SUV      **DIR:** N      **ACTION:** Negotiating Curve      **EVENT:** Embankment      **LOC:** Intersection Related      **CONTRB:** ,Other Vehicle Defect  
**DRI-AGE:** 20 M      **RES:** Idaho      **INJURY:** None Evident      **PROT-DEV:** None      **EJECT:** Not Ejected      **CIT:** Insurance, failure to provide proof - 49-1232  
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**ON:** Alameda Rd **AND:** Jefferson Ave **LANE:** 50 **SEGMENT CODE:** 001360 **MILEPOST:** 4.9830 **5/8/2006 14:30**  
**SERIAL:** 06C136169 **LOCAL CODE:** 06-P09131 **LIGHT:** Day **WEATHER:** Clear **WET/DRY:** Dry **OTHER SURF COND:** None  
**UNITS:** 2 **FATALITIES:** 0 **INJURIES:** 0 **SEVERITY:** Property Dmg Report **AGENCY:** Pocatello Police Dept **INTERSECTION RELATED:** Y  
**V1:** Pickup/Van/Panel/SUV **DIR:** S **ACTION:** Turning Left **EVENT:** Head-On Turning **LOC:** In Intersection **CONTRB:** Failed To Yield  
**DRI-AGE:** 20 M **RES:** Idaho **INJURY:** None Evident **PROT-DEV:** Shoulder And Lap **EJECT:** Not Ejected **CIT:** Turning violations - 49-644  
**V2:** Car **DIR:** N **ACTION:** Going Straight **EVENT:** Head-On Turning **LOC:** In Intersection **CONTRB:**  
**DRI-AGE:** 36 F **RES:** Idaho **INJURY:** None Evident **PROT-DEV:** Non-Activated Air Bag- Belts In Use **EJECT:** Not Ejected **CIT:**

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**ON:** Alameda Rd **AND:** Jefferson Ave **LANE:** 51 **SEGMENT CODE:** 001360 **MILEPOST:** 4.9830 **12/20/2005 12:50**  
**SERIAL:** 05C123730 **LOCAL CODE:** 05-P28160 **LIGHT:** Day **WEATHER:** Cloudy **WET/DRY:** Wet **OTHER SURF COND:** None  
**UNITS:** 2 **FATALITIES:** 0 **INJURIES:** 0 **SEVERITY:** Property Dmg Report **AGENCY:** Pocatello Police Dept **INTERSECTION RELATED:** Y  
**V1:** Car **DIR:** W **ACTION:** Turning Left **EVENT:** Angle Turning **LOC:** In Intersection **CONTRB:** Failed To Yield  
**DRI-AGE:** 45 F **RES:** Idaho **INJURY:** None Evident **PROT-DEV:** Non-Activated Air Bag- Belts In Use **EJECT:** Not Ejected **CIT:** Failure to yield, left turn - 49-641  
**V2:** Car **DIR:** N **ACTION:** Going Straight **EVENT:** Angle Turning **LOC:** In Intersection **CONTRB:**  
**DRI-AGE:** 29 F **RES:** Utah **INJURY:** None Evident **PROT-DEV:** Non-Activated Air Bag- Belts In Use **EJECT:** Not Ejected **CIT:** Insurance, failure to provide proof - 49-1232

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**ON:** Jefferson Ave **AND:** Alameda Rd **LANE:** 50 **SEGMENT CODE:** 003250 **MILEPOST:** 1.0000 **11/22/2005 18:02**  
**SERIAL:** 05C120316 **LOCAL CODE:** 05-P26270 **LIGHT:** Dark, Street Lights On **WEATHER:** Clear **WET/DRY:** Dry **OTHER SURF COND:** None  
**UNITS:** 3 **FATALITIES:** 0 **INJURIES:** 0 **SEVERITY:** Property Dmg Report **AGENCY:** Pocatello Police Dept **INTERSECTION RELATED:** Y  
**V1:** Car **DIR:** N **ACTION:** Changing Lanes **EVENT:** Side Swipe Same **LOC:** In Intersection **CONTRB:** Improper Lane Change  
**DRI-AGE:** 50 F **RES:** Idaho **INJURY:** None Evident **PROT-DEV:** Shoulder And Lap **EJECT:** Not Ejected **CIT:** Moving violation - 49-603  
**V2:** Car **DIR:** N **ACTION:** Going Straight **EVENT:** Side Swipe Same **LOC:** Nonjunction **CONTRB:**  
**DRI-AGE:** 29 M **RES:** Idaho **INJURY:** None Evident **PROT-DEV:** Shoulder And Lap **EJECT:** Not Ejected **CIT:**  
**V3:** Pickup/Van/Panel/SUV **DIR:** W **ACTION:** Stopped In Traffic **EVENT:** Head On **LOC:** In Intersection **CONTRB:**  
**DRI-AGE:** 24 M **RES:** Idaho **INJURY:** None Evident **PROT-DEV:** Shoulder And Lap **EJECT:** Not Ejected **CIT:**

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**ON:** Jefferson Ave **AND:** Alameda Rd **LANE:** 00 **SEGMENT CODE:** 003250 **MILEPOST:** 1.0470 10/5/2005 15:31  
**SERIAL:** 05C115799 **LOCAL CODE:** 05-P22706 **LIGHT:** Day **WEATHER:** Cloudy **WET/DRY:** Dry **OTHER SURF COND:** None  
**UNITS:** 1 **FATALITIES:** 0 **INJURIES:** 0 **SEVERITY:** Property Dmg Report **AGENCY:** Pocatello Police Dept **INTERSECTION RELATED:** Y  
**V1:** Tractor 1 Trailer **DIR:** N **ACTION:** Turning Right **EVENT:** Other Fixed Object **LOC:** Intersection Related **CONTRB:** Other  
**DRI-AGE:** 22 M **RES:** Idaho **INJURY:** None Evident **PROT-DEV:** Shoulder And Lap **EJECT:** Not Ejected **CIT:**

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**ON:** Hiline Rd **N REF. STREET:** Alameda Rd **LANE:** 50 **SEGMENT CODE:** 003250 **MILEPOST:** 1.0660 9/30/2005 15:28  
**SERIAL:** 05C115386 **LOCAL CODE:** 05-P22339 **LIGHT:** Day **WEATHER:** Clear **WET/DRY:** Dry **OTHER SURF COND:** None  
**UNITS:** 2 **FATALITIES:** 0 **INJURIES:** 0 **SEVERITY:** Property Dmg Report **AGENCY:** Pocatello Police Dept **INTERSECTION RELATED:** Y  
**V1:** Car **DIR:** N **ACTION:** Changing Lanes **EVENT:** Side Swipe Same **LOC:** Intersection Related **CONTRB:** Following Too Close  
**DRI-AGE:** 65 F **RES:** Idaho **INJURY:** None Evident **PROT-DEV:** Shoulder And Lap **EJECT:** Not Ejected **CIT:** Following too closely - 49-638  
**V2:** Pickup/Van/Panel/SUV **DIR:** N **ACTION:** Slowing In Traffic **EVENT:** Side Swipe Same **LOC:** Intersection Related **CONTRB:**  
**DRI-AGE:** 34 M **RES:** Idaho **INJURY:** None Evident **PROT-DEV:** Shoulder And Lap **EJECT:** Not Ejected **CIT:**

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**ON:** Jefferson Ave **AND:** Alameda Rd **LANE:** 51 **SEGMENT CODE:** 003250 **MILEPOST:** 1.0000 8/29/2005 17:53  
**SERIAL:** 05C113105 **LOCAL CODE:** 05-P19630 **LIGHT:** Day **WEATHER:** Clear **WET/DRY:** Dry **OTHER SURF COND:** None  
**UNITS:** 2 **FATALITIES:** 0 **INJURIES:** 0 **SEVERITY:** Property Dmg Report **AGENCY:** Pocatello Police Dept **INTERSECTION RELATED:** Y  
**V1:** Car **DIR:** W **ACTION:** Turning Left **EVENT:** Angle Turning **LOC:** In Intersection **CONTRB:** Failed To Yield  
**DRI-AGE:** 22 F **RES:** Idaho **INJURY:** None Evident **PROT-DEV:** Non-Activated Air Bag- Belts In Use **EJECT:** Not Ejected **CIT:** Stop/yield sign violations - 49-807  
**V2:** Car **DIR:** N **ACTION:** Going Straight **EVENT:** Angle Turning **LOC:** In Intersection **CONTRB:**  
**DRI-AGE:** 20 M **RES:** Idaho **INJURY:** None Evident **PROT-DEV:** Non-Activated Air Bag- Belts In Use **EJECT:** Not Ejected **CIT:**

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**ON:** Jefferson Ave      **AND:** Alameda Rd      **LANE:** 51      **SEGMENT CODE:** 003250      **MILEPOST:** 1.0000      8/24/2005 17:08  
**SERIAL:** 05C111925      **LOCAL CODE:** 05-P19161      **LIGHT:** Day      **WEATHER:** Clear      **WET/DRY:** Dry      **OTHER SURF COND:** None  
**UNITS:** 2      **FATALITIES:** 0      **INJURIES:** 0      **SEVERITY:** Property Dmg Report      **AGENCY:** Pocatello Police Dept      **INTERSECTION RELATED:** Y  
**V1:** Car      **DIR:** W      **ACTION:** Turning Left      **EVENT:** Angle Turning      **LOC:** In Intersection      **CONTRB:** Failed To Yield  
**DRI-AGE:** 56 F      **RES:** Idaho      **INJURY:** None Evident      **PROT-DEV:** Non-Activated Air Bag- Belts In Use      **EJECT:** Not Ejected      **CIT:** Failure to yield, left turn - 49-641  
**V2:** Car      **DIR:** N      **ACTION:** Going Straight      **EVENT:** Angle Turning      **LOC:** In Intersection      **CONTRB:**  
**DRI-AGE:** 20 F      **RES:** Idaho      **INJURY:** None Evident      **PROT-DEV:** Non-Activated Air Bag- Belts In Use      **EJECT:** Not Ejected      **CIT:**

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**ON:** Hiline Rd      **AND:** Pocatello Creek Rd      **LANE:** 50      **SEGMENT CODE:** 003250      **MILEPOST:** 1.0660      8/6/2005 19:30  
**SERIAL:** 05C110505      **LOCAL CODE:** 05-P17591      **LIGHT:** Day      **WEATHER:** Clear      **WET/DRY:** Dry      **OTHER SURF COND:** None  
**UNITS:** 2      **FATALITIES:** 0      **INJURIES:** 0      **SEVERITY:** Property Dmg Report      **AGENCY:** Pocatello Police Dept      **INTERSECTION RELATED:** Y  
**V1:** Car      **DIR:** W      **ACTION:** Going Straight      **EVENT:** Angle      **LOC:** In Intersection      **CONTRB:** Disregarded Signal  
**DRI-AGE:** 75 F      **RES:** Idaho      **INJURY:** None Evident      **PROT-DEV:** Shoulder And Lap      **EJECT:** Not Ejected      **CIT:** Signaling violations - 49-808  
**V2:** Pickup/Van/Panel/SUV      **DIR:** S      **ACTION:** Going Straight      **EVENT:** Angle      **LOC:** In Intersection      **CONTRB:**  
**DRI-AGE:** 30 M      **RES:** Idaho      **INJURY:** None Evident      **PROT-DEV:** Non-Activated Air Bag- Belts In Use      **EJECT:** Not Ejected      **CIT:**

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**ON:** Pocatello Creek Rd      **AND:** Hiline Rd      **LANE:** 51      **SEGMENT CODE:** 001360      **MILEPOST:** 4.9830      6/19/2005 17:43  
**SERIAL:** 05C106428      **LOCAL CODE:** 05-P13193      **LIGHT:** Day      **WEATHER:** Clear      **WET/DRY:** Dry      **OTHER SURF COND:** None  
**UNITS:** 2      **FATALITIES:** 0      **INJURIES:** 1      **SEVERITY:** B Injury Accident      **AGENCY:** Pocatello Police Dept      **INTERSECTION RELATED:** Y  
**V1:** Car      **DIR:** W      **ACTION:** Going Straight      **EVENT:** Angle Turning      **LOC:** In Intersection      **CONTRB:** Disregarded Signal  
**DRI-AGE:** 69 F      **RES:** Idaho      **INJURY:** None Evident      **PROT-DEV:** Shoulder And Lap      **EJECT:** Not Ejected      **CIT:**  
**V2:** Motorcycle      **DIR:** S      **ACTION:** Turning Left      **EVENT:** Angle Turning      **LOC:** In Intersection      **CONTRB:**  
**DRI-AGE:** 52 M      **RES:** Utah      **INJURY:** Non-Incapacitating      **PROT-DEV:** Helmet Used      **EJECT:** Thrown From Cycle/Animal      **CIT:**

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**ON:** Hiline Rd      **AND:** Alameda Rd      **LANE:** 50      **SEGMENT CODE:** 003250      **MILEPOST:** 1.0470      6/10/2005 15:01



**SERIAL:** 05C105885

**LOCAL CODE:** 05-P012440

**LIGHT:** Day

**WEATHER:** Clear

**WET/DRY:** Dry

**OTHER SURF COND:** None

**UNITS:** 2

**FATALITIES:** 0

**INJURIES:** 0

**SEVERITY:** Property Dmg Report

**AGENCY:** Pocatello Police Dept

**INTERSECTION RELATED:** Y

**V1:** Car

**DIR:** S

**ACTION:** Going Straight

**EVENT:** Angle

**LOC:** In Intersection

**CONTRB:** Disregarded Signal

**DRI-AGE:** 78 F

**RES:** Idaho

**INJURY:** None Evident

**PROT-DEV:** Non-Activated Air Bag- Belts In Use

**EJECT:** Not Ejected

**CIT:**

**V2:** Car

**DIR:** E

**ACTION:** Going Straight

**EVENT:** Angle

**LOC:** In Intersection

**CONTRB:**

**DRI-AGE:** 71 M

**RES:** Maryland

**INJURY:** None Evident

**PROT-DEV:** Non-Activated Air Bag- Belts In Use

**EJECT:** Not Ejected

**CIT:**

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**ON:** Alameda Rd

**REF. STREET:** Hiline Rd

**LANE:** 52

**SEGMENT CODE:** 001360

**MILEPOST:** 4.9830

3/26/2005 15:25

**SERIAL:** 05C099274

**LOCAL CODE:** 05-P06202

**LIGHT:** Day

**WEATHER:** Clear

**WET/DRY:** Dry

**OTHER SURF COND:** None

**UNITS:** 2

**FATALITIES:** 0

**INJURIES:** 0

**SEVERITY:** Property Dmg Report

**AGENCY:** Pocatello Police Dept

**INTERSECTION RELATED:** Y

**V1:** Car

**DIR:** E

**ACTION:** Slowing In Traffic

**EVENT:** Rear End

**LOC:** Intersection Related

**CONTRB:** Following Too Close

**DRI-AGE:** 54 M

**RES:** Idaho

**INJURY:** None Evident

**PROT-DEV:** Shoulder And Lap

**EJECT:** Not Ejected

**CIT:** Following too closely - 49-638

**V2:** Pickup/Van/Panel/SUV

**DIR:** E

**ACTION:** Stopped In Traffic

**EVENT:** Rear End

**LOC:** Intersection Related

**CONTRB:**

**DRI-AGE:** 49 F

**RES:** Idaho

**INJURY:** None Evident

**PROT-DEV:** Shoulder And Lap

**EJECT:** Not Ejected

**CIT:**

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**APPENDIX E – BTPO LEVEL OF SERVICE STANDARDS  
VARIABLE APPROACH**

## Level of Service Standards Variable approach

Bannock Transportation Planning Organization recognizes that the Level of Service (LOS) is an important performance measure in determining the needs for the community. Focus groups on the appropriate LOS measure for the region were held in January 2010. The results of these groups would suggest that the LOS should be moved from LOS C to LOS D or even LOS E. The Policy Board and Technical Advisory Committees had concern with a wholesale change to a lower level of service. Instead they are recommending a tiered approach where the LOS Standard is variable depending upon the design of the roadway. This is consistent with the comments from the focus groups. All focus groups thought that improving alternate routes to assist in removing vehicles from congested routes is a good idea. In having the variable standard improvements to these alternative routes could be identified and plan before the routes reaches LOS D or E, thereby preserving its ability to handle additional vehicles.

The variable in the standard segments and intersections would be allowed to operate at LOS D and LOS E if specific criteria exist. This tiered approach is designed to make improvements where they can affect the LOS while recognizing that some street segments and intersections are at their design maximum. For these sections and intersection corridor plans should be developed to determine the needed improvements for the corridor.

In 2006 a Master Street Plan was completed which identified the Right-of-Way (ROW) and the typical design for Major Arterial, Arterials, and Collectors. Using this report as a guide, segments which are at the design guidelines for number of through lanes, turn lanes, and median treatment will be identified as having a LOS D. To have some consistency entire segments between other collectors and arterials will have the same LOS. The congestion standard for interstates is LOS D. Intersections which have not only right but left turn bays are designated LOS E. Figure 1 identified the LOS standards. Figure 2 shows the LOS by segments and intersections.

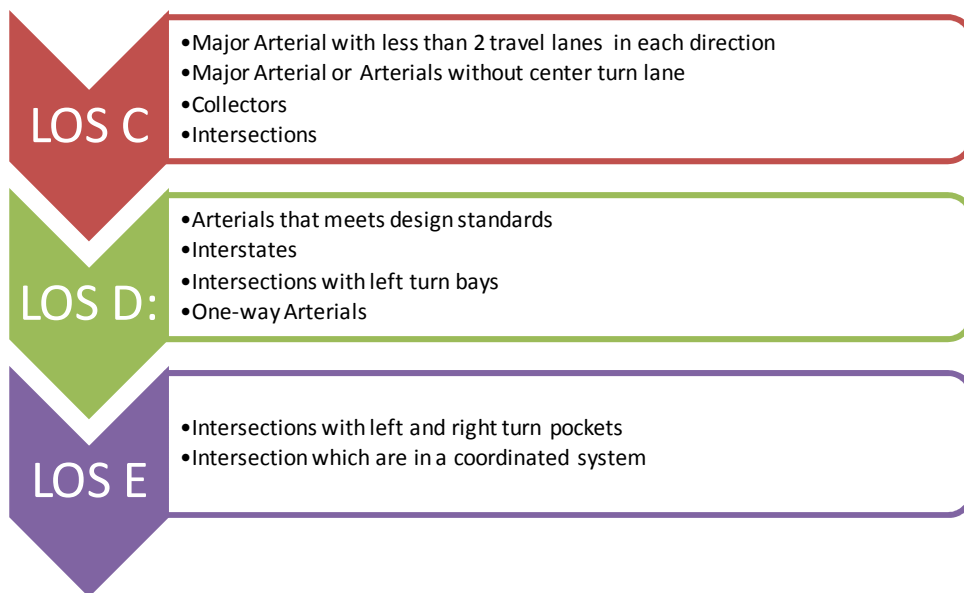


Figure 1: Level of Service Standards

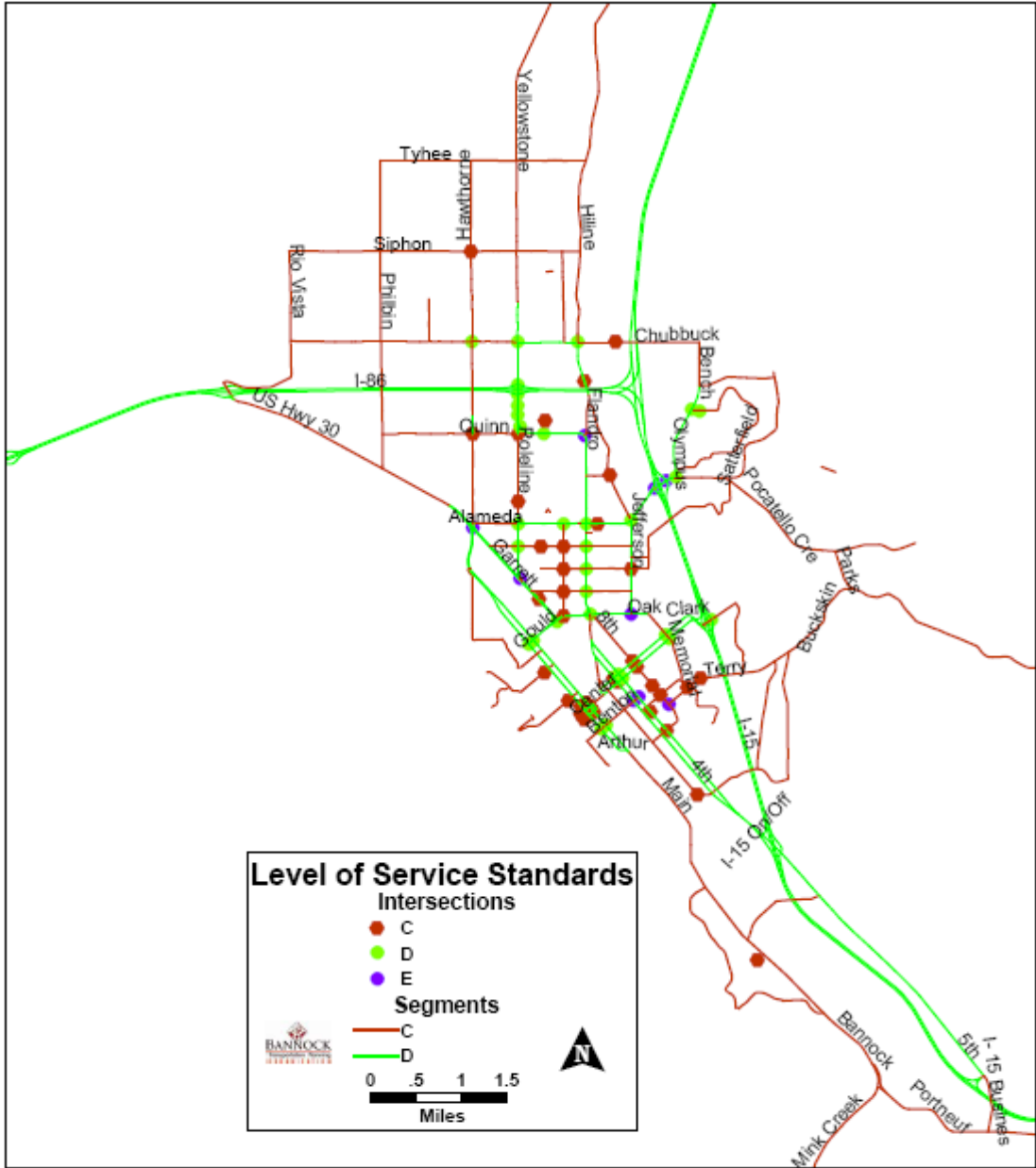
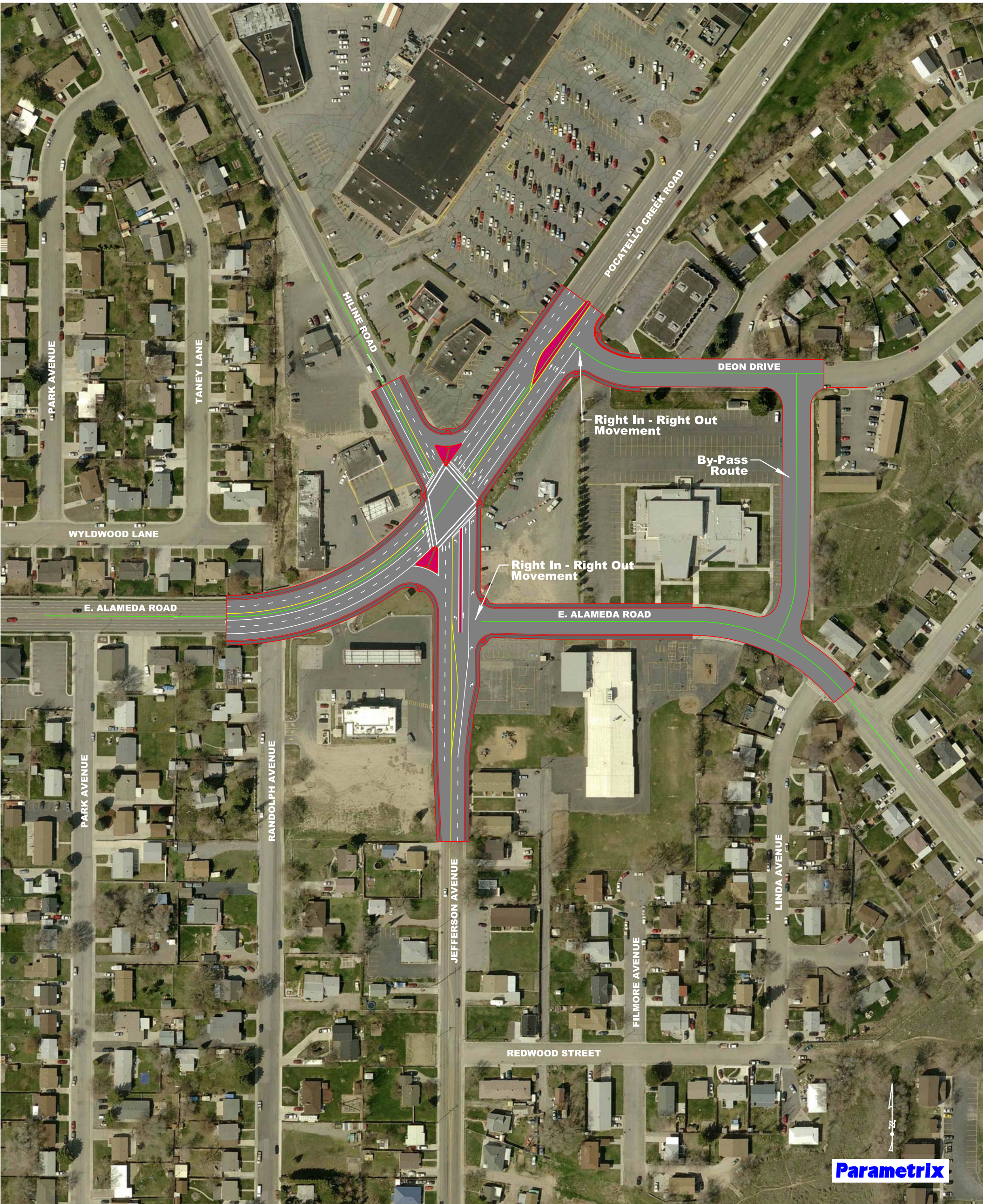
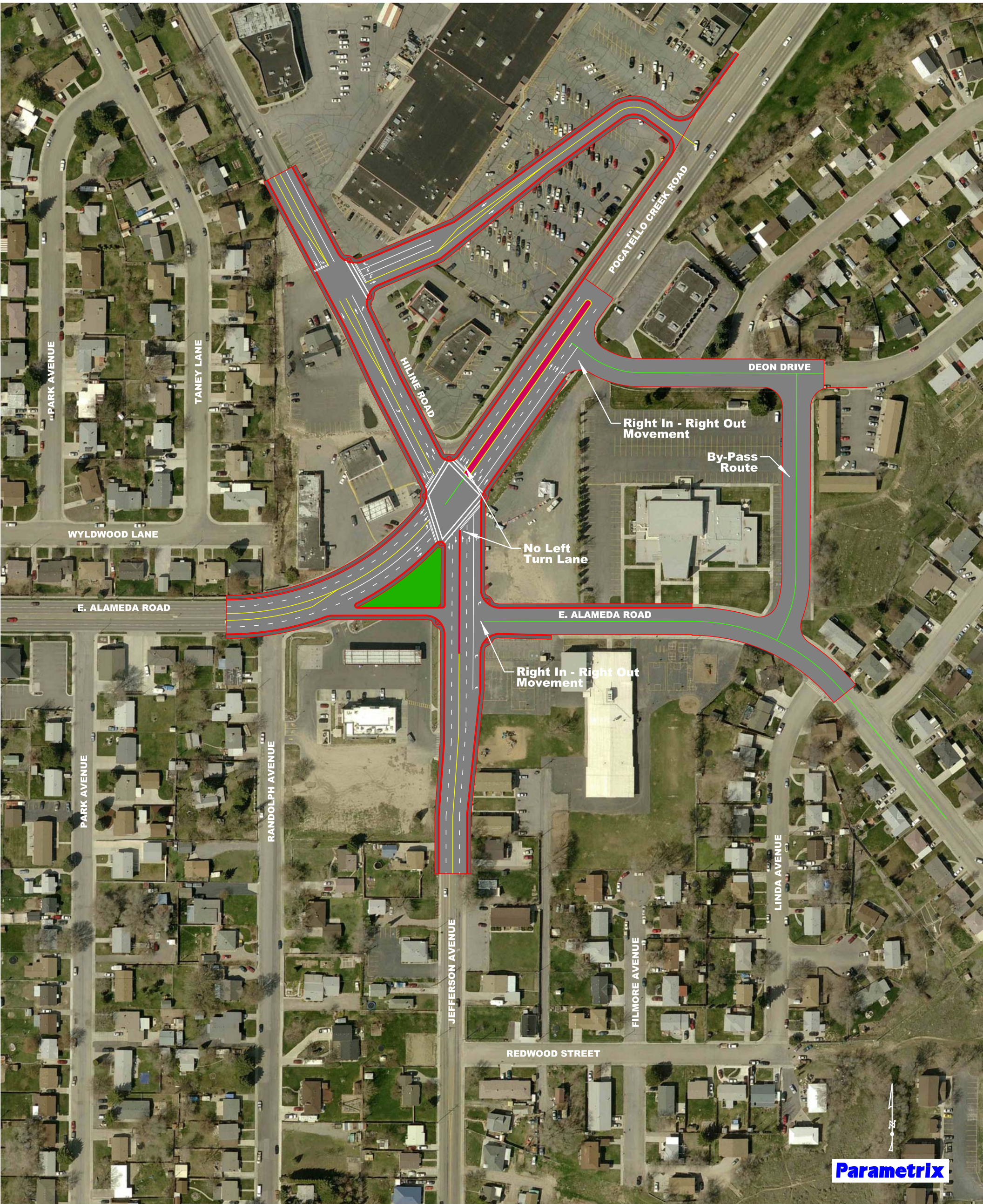


Figure 2: Level of Service by Segment and Intersection

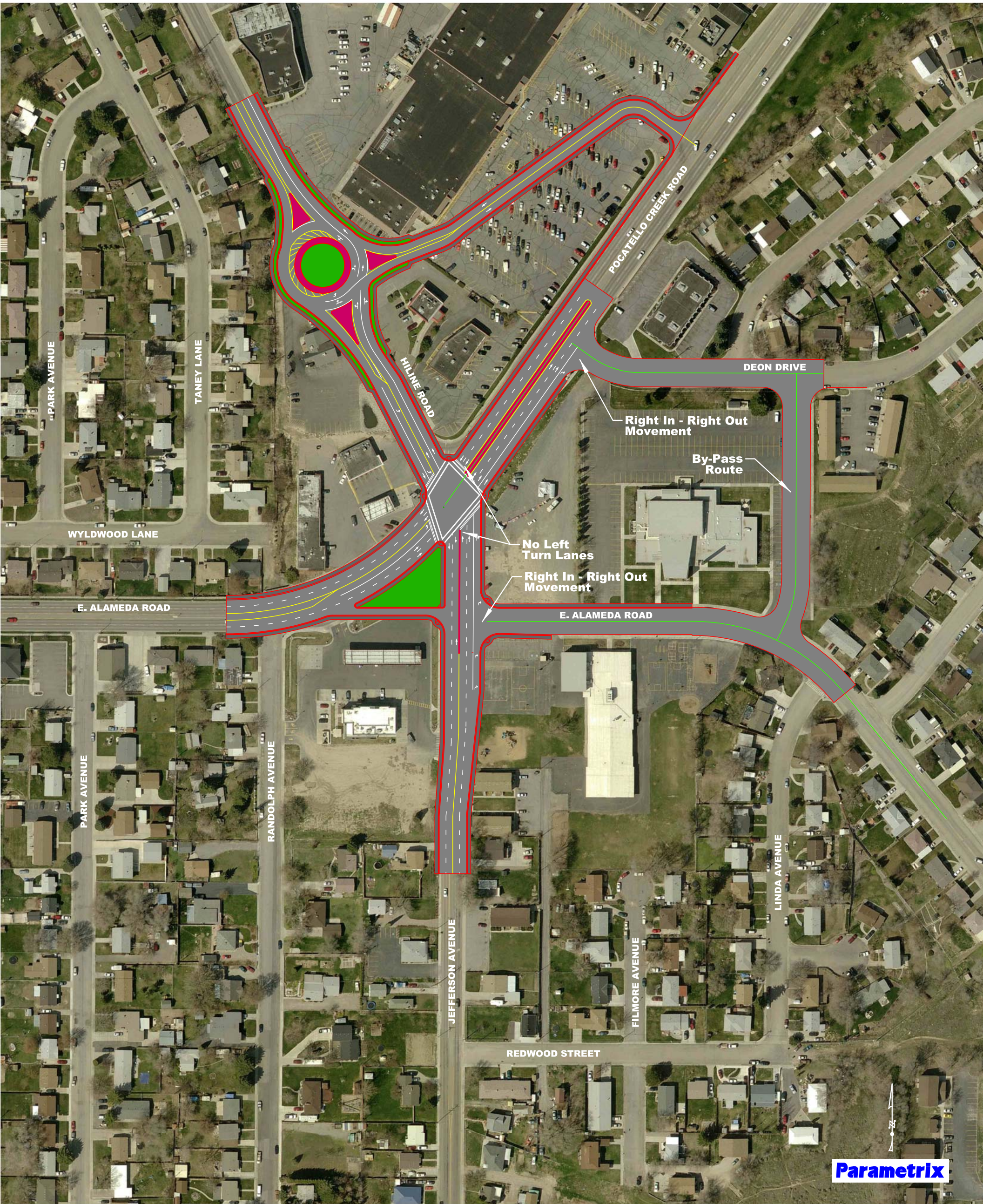
## **APPENDIX C**

### **Initial Intersection Design Layouts**



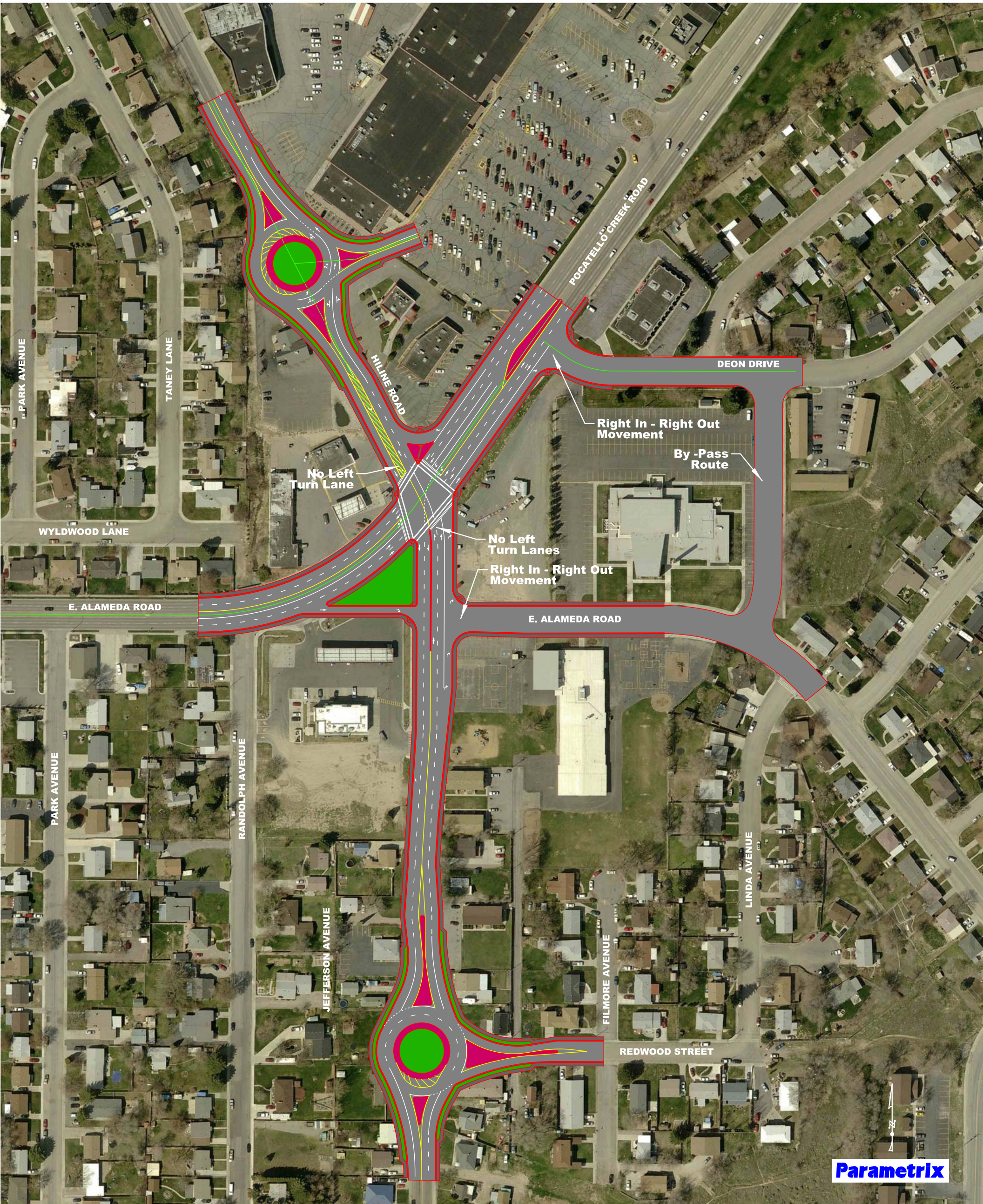


## JUG HANDLE - ALTERNATIVE 2

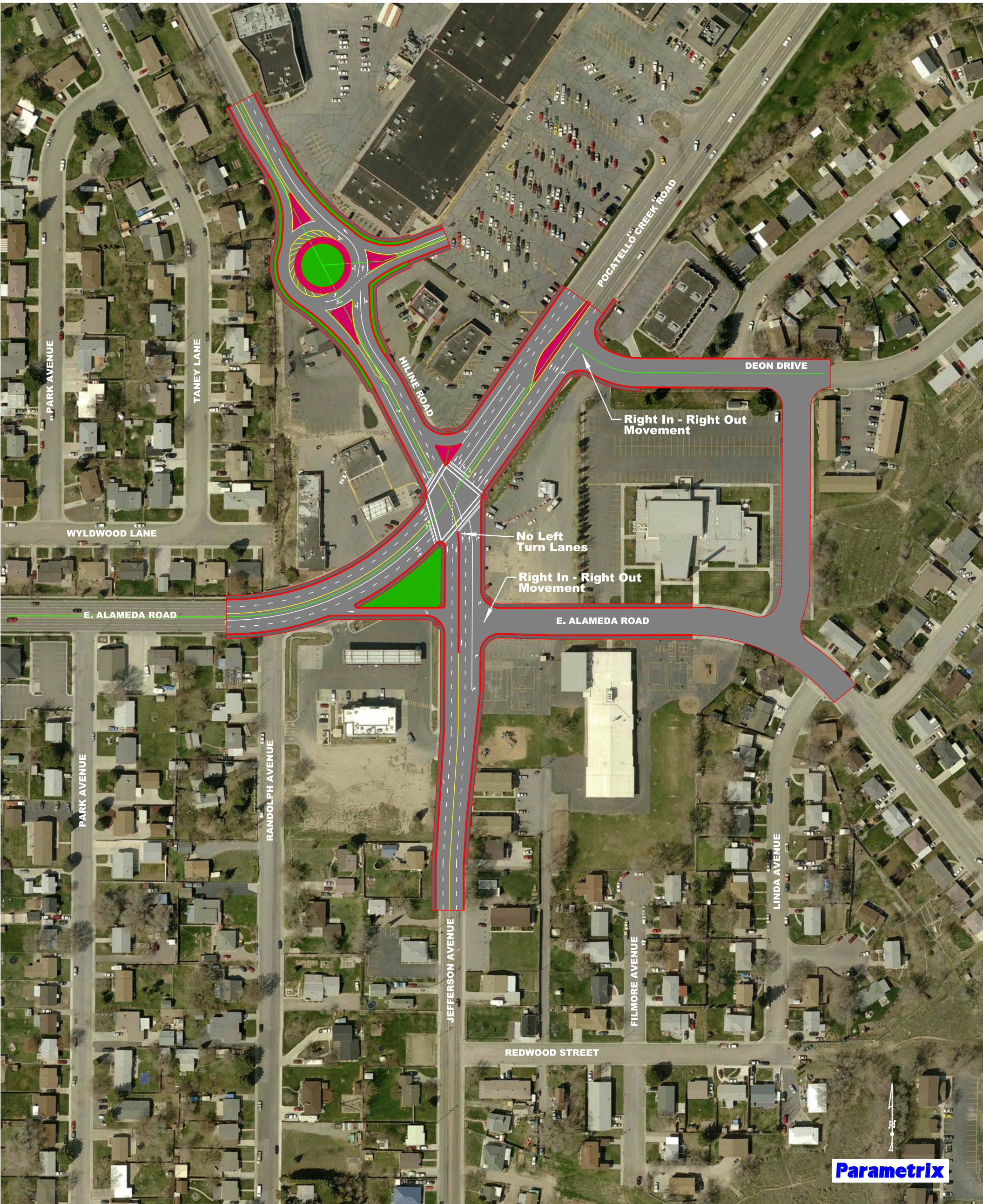


## MODIFIED JUG HANDLE - ALTERNATIVE 3

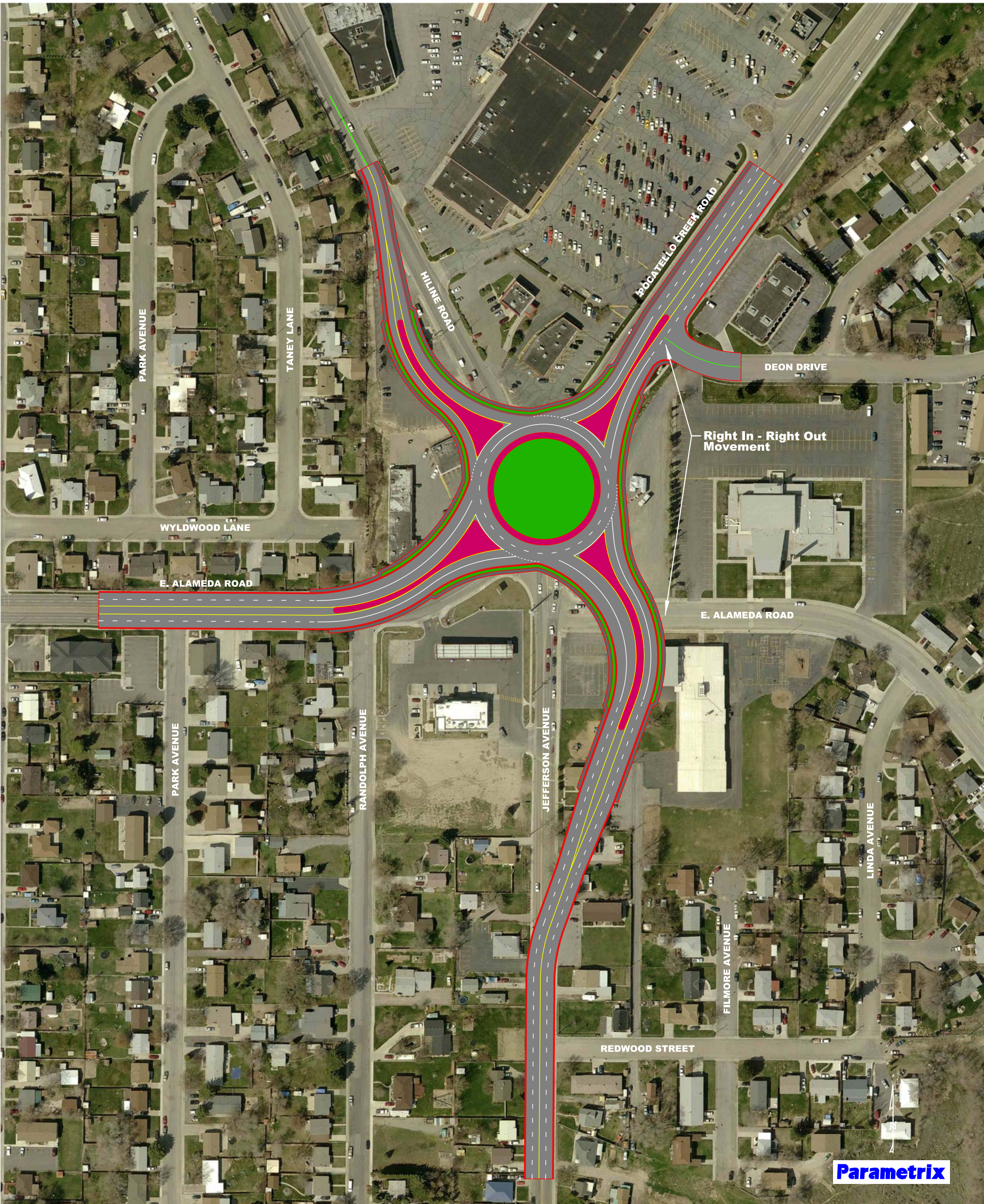




## FULL BOWTIE - ALTERNATIVE 4



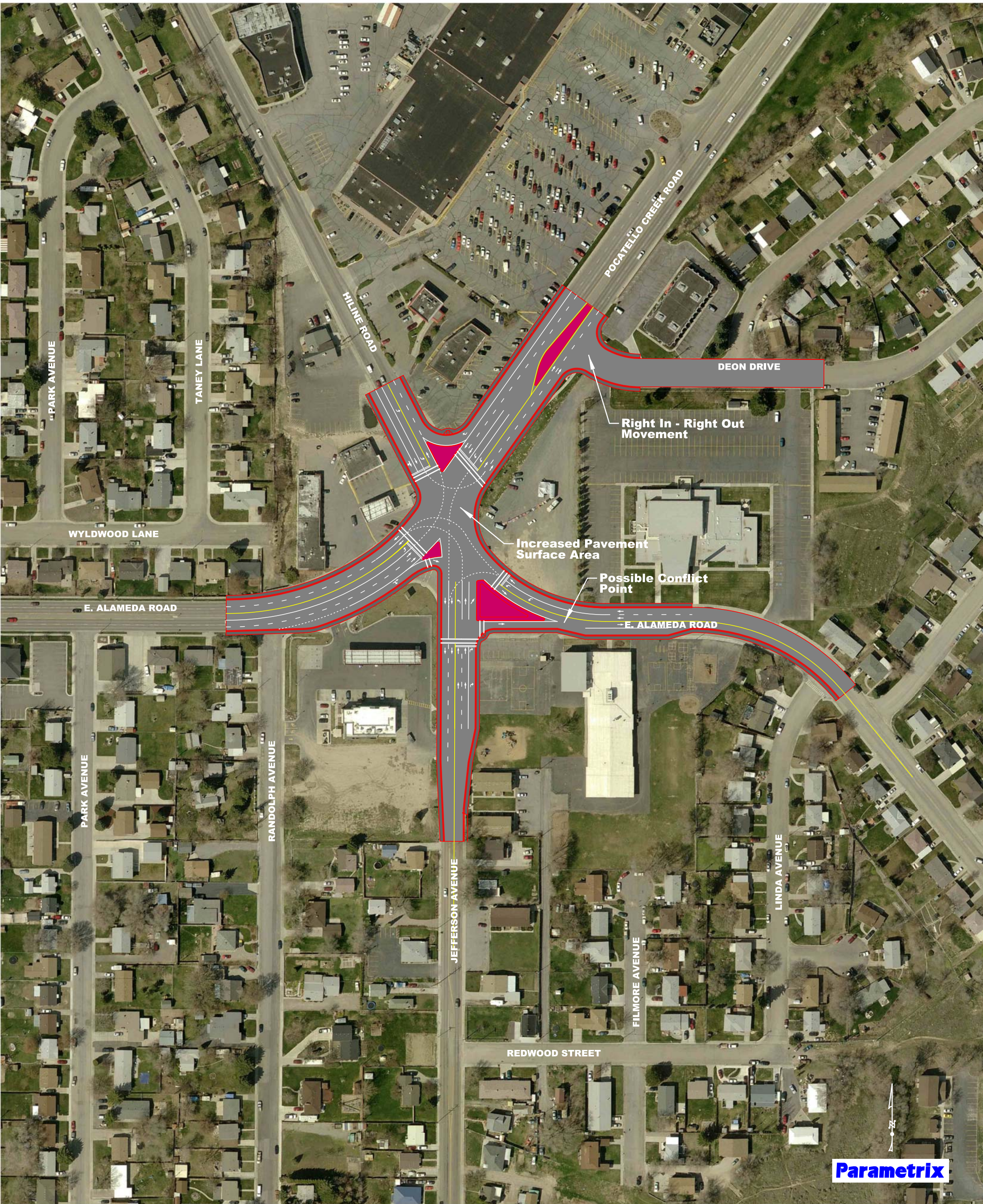
## HALF BOWTIE - ALTERNATIVE 5



## 260' DIAMETER ROUNDABOUT - ALTERNATIVE 6

## **APPENDIX D**

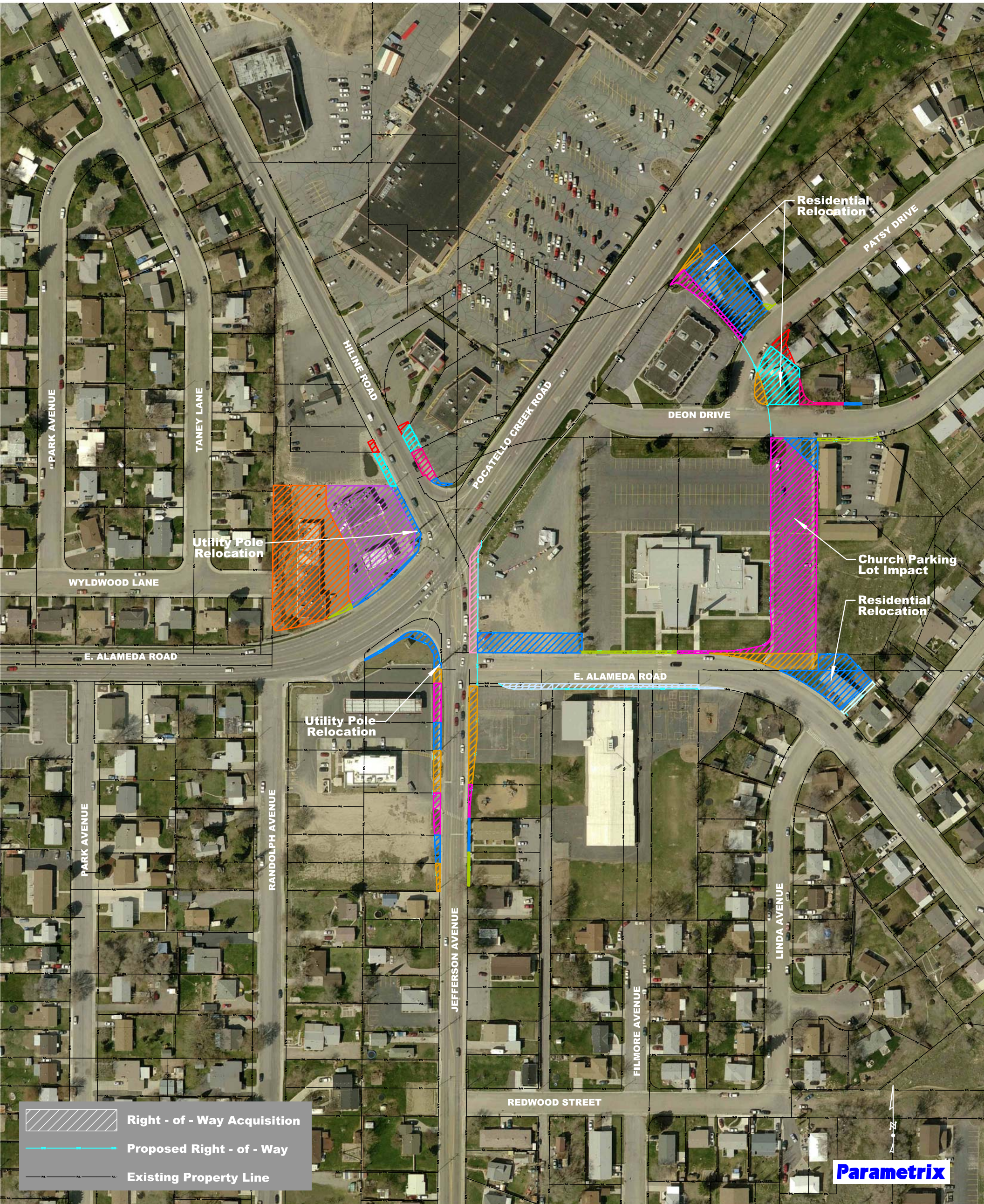
### **Alternative 8**



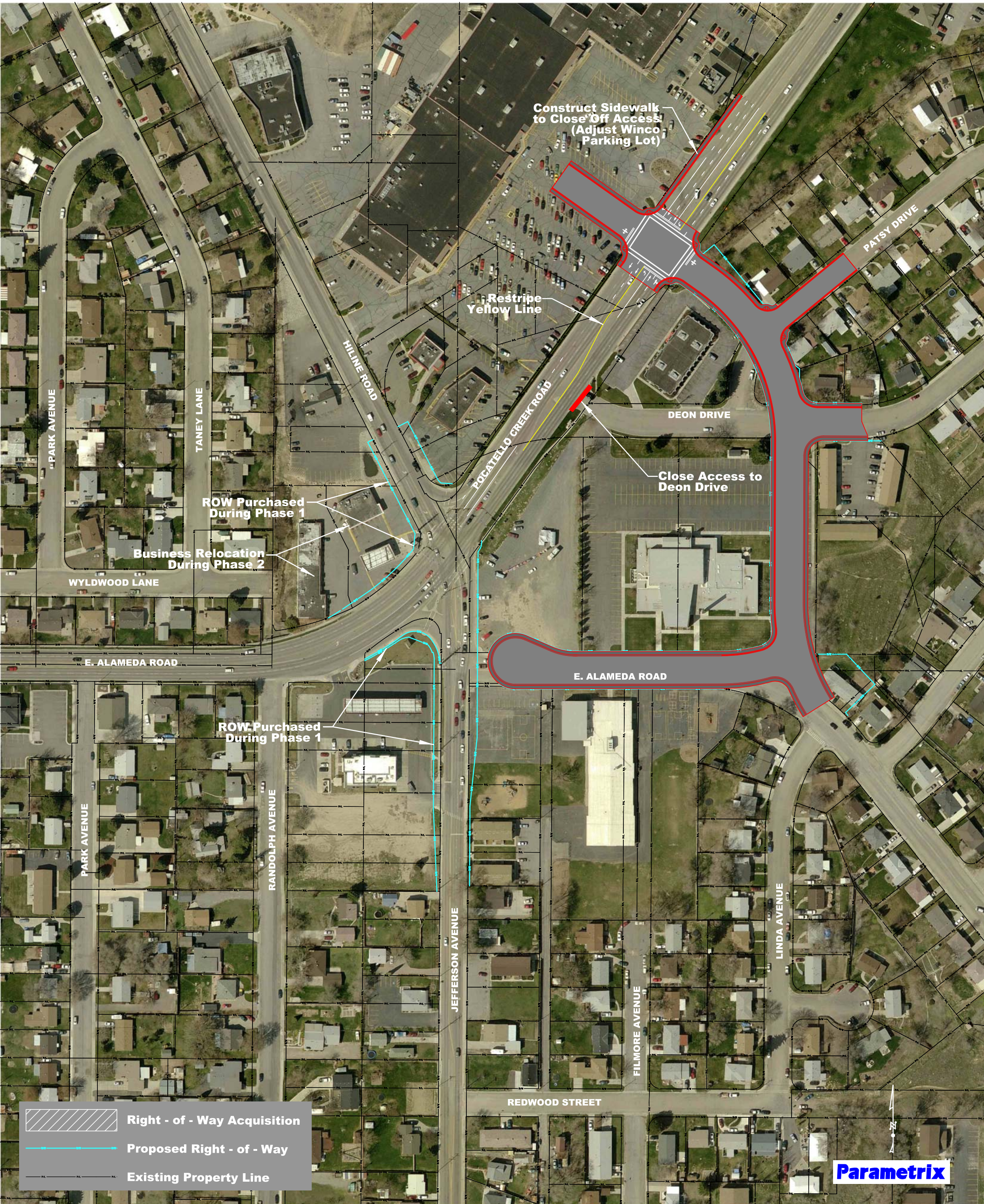
## FIVE LEGGED INTERSECTION - ALTERNATIVE 8

## **APPENDIX E**

### **Phasing Plans**

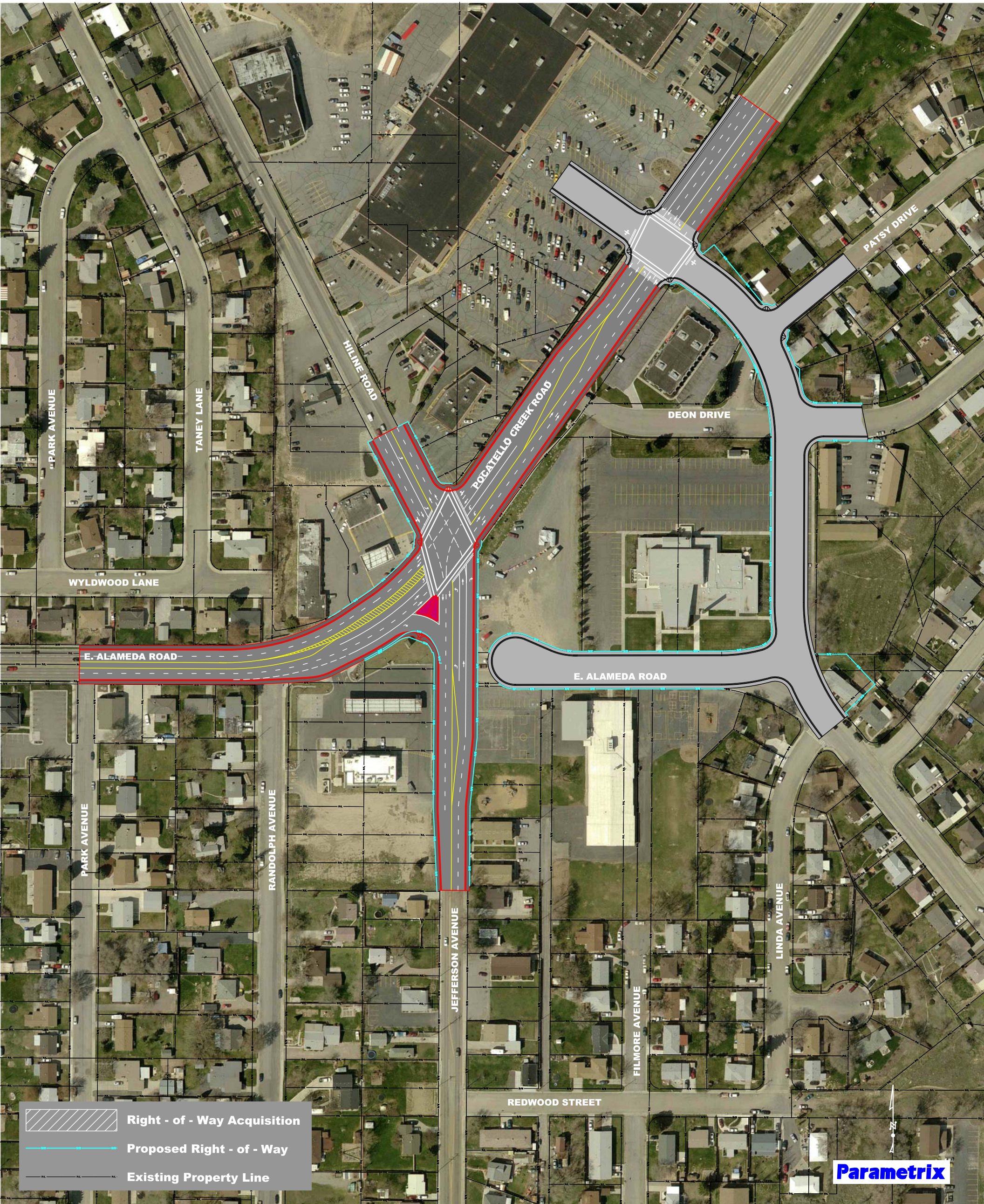


## ALTERNATIVE 1A - PHASE 1

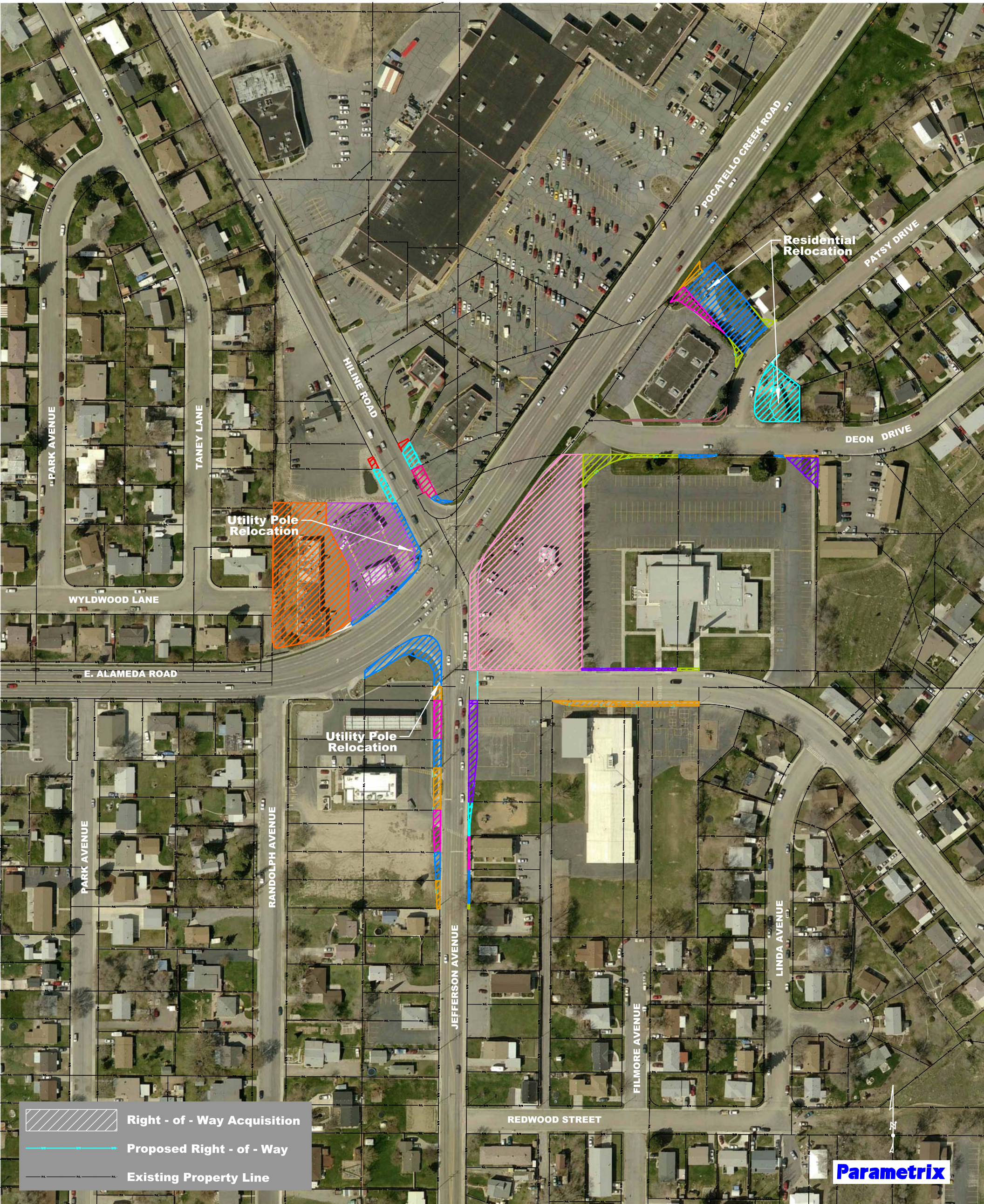


## ALTERNATIVE 1A - PHASE 2

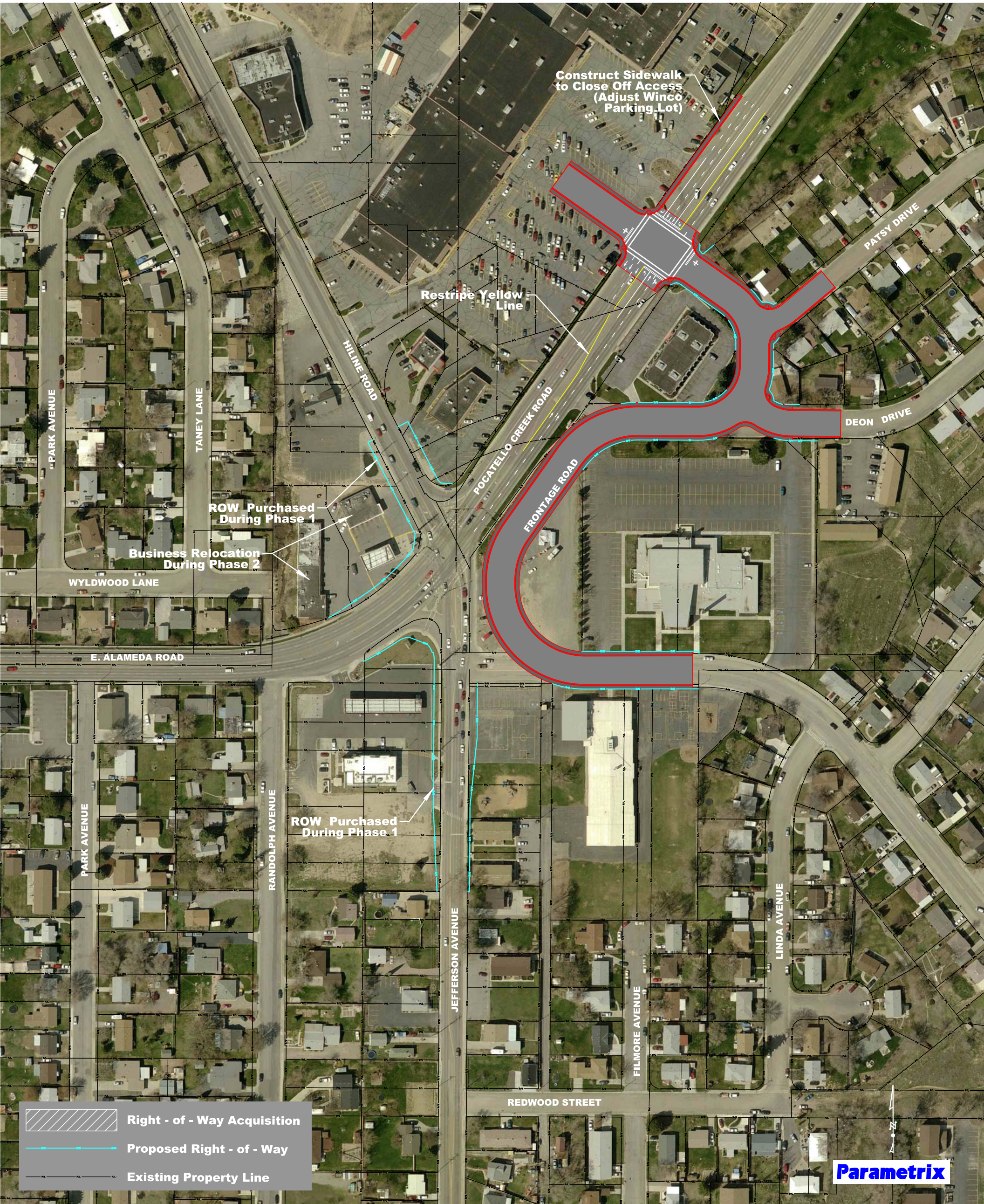




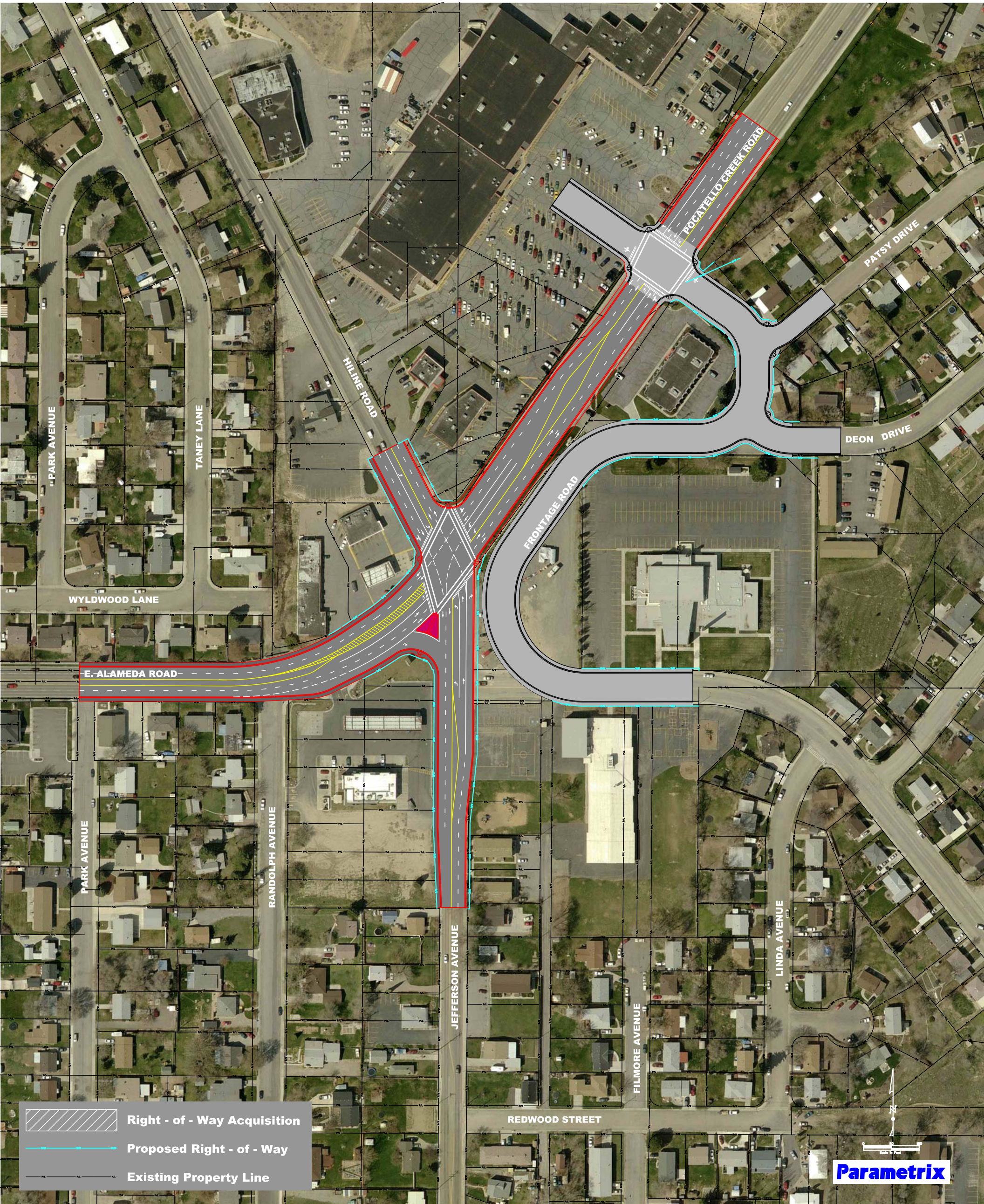
## ALTERNATIVE 1A - PHASE 3



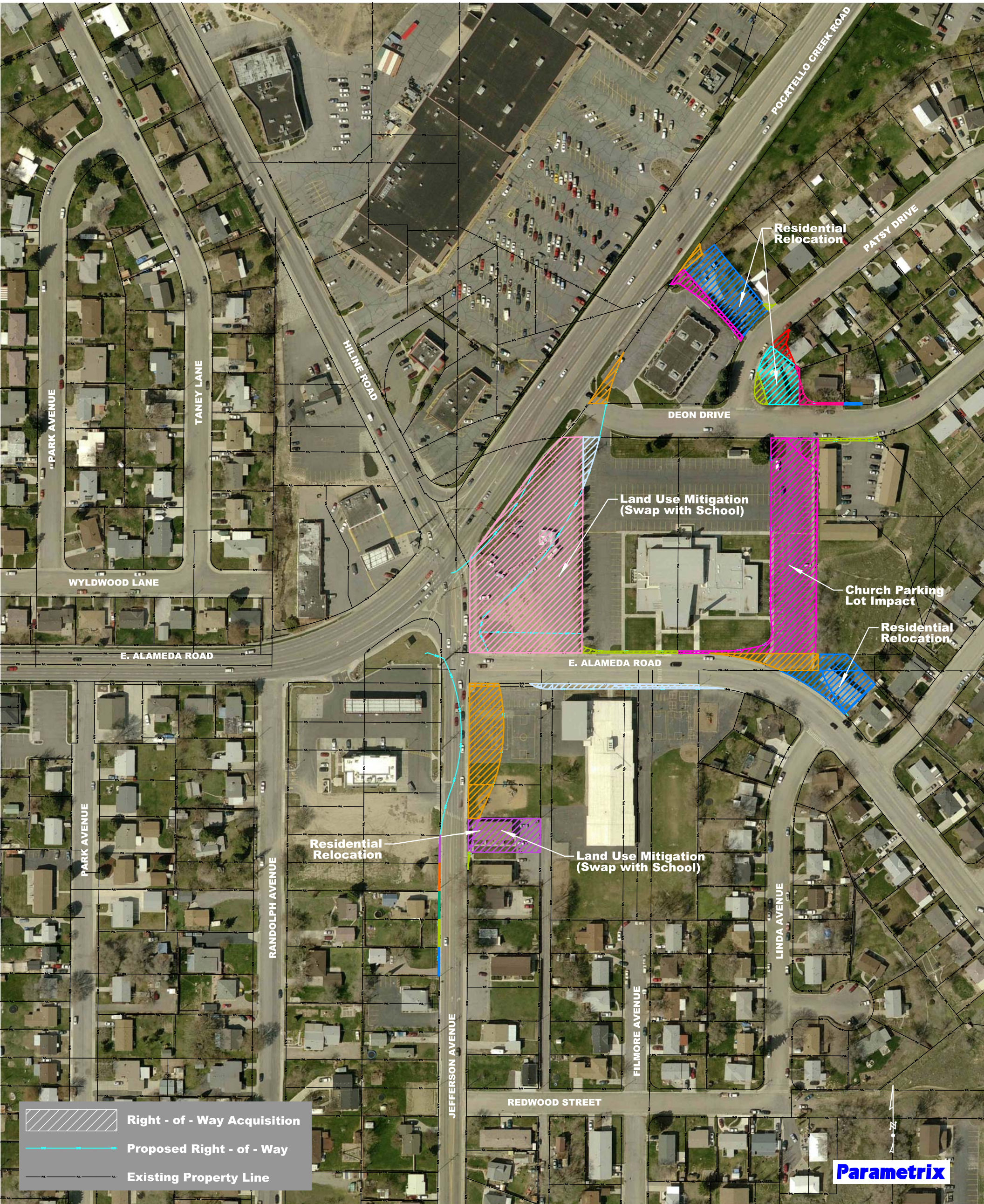
## ALTERNATIVE 1C - PHASE 1



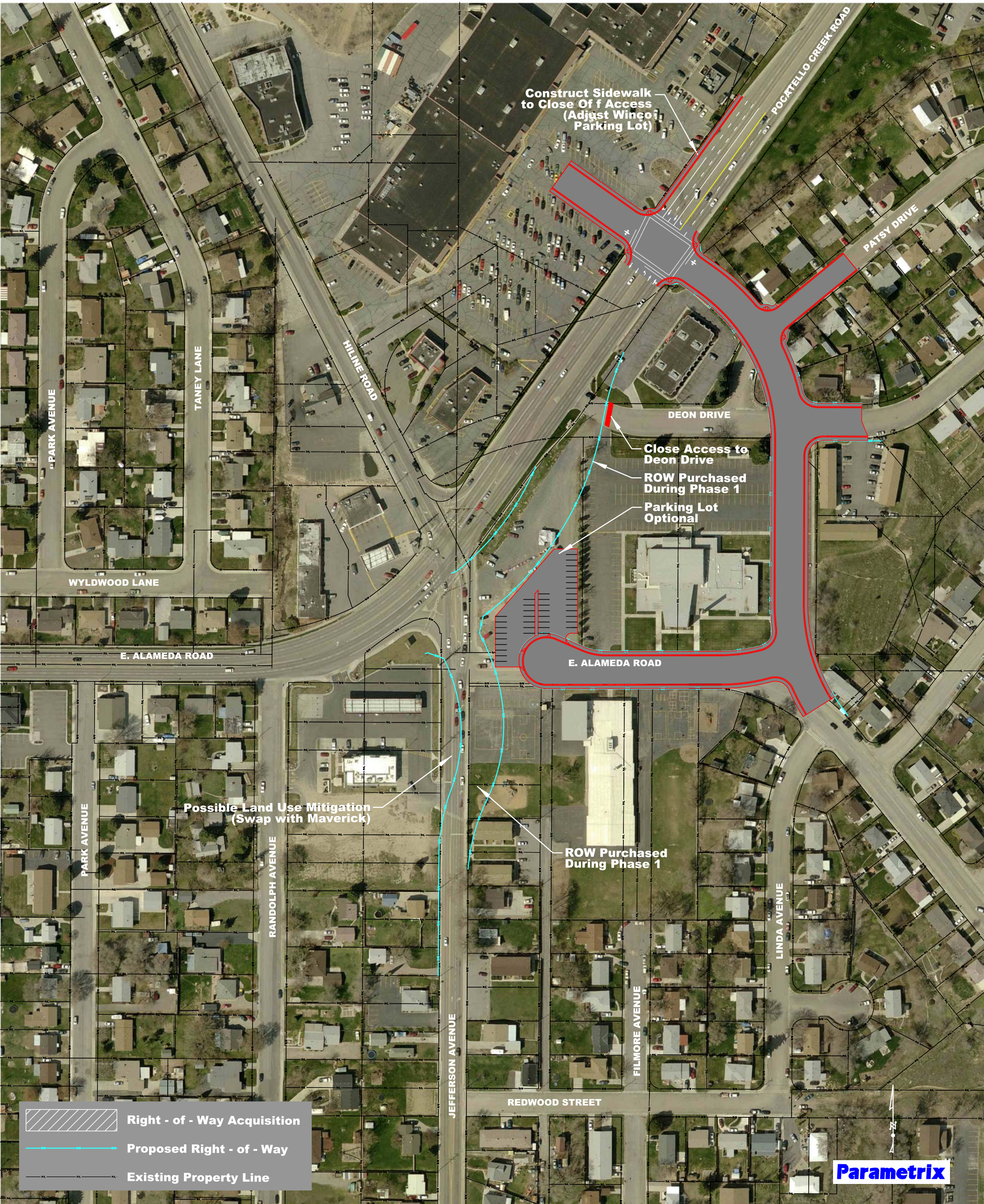
## ALTERNATIVE 1C - PHASE 2



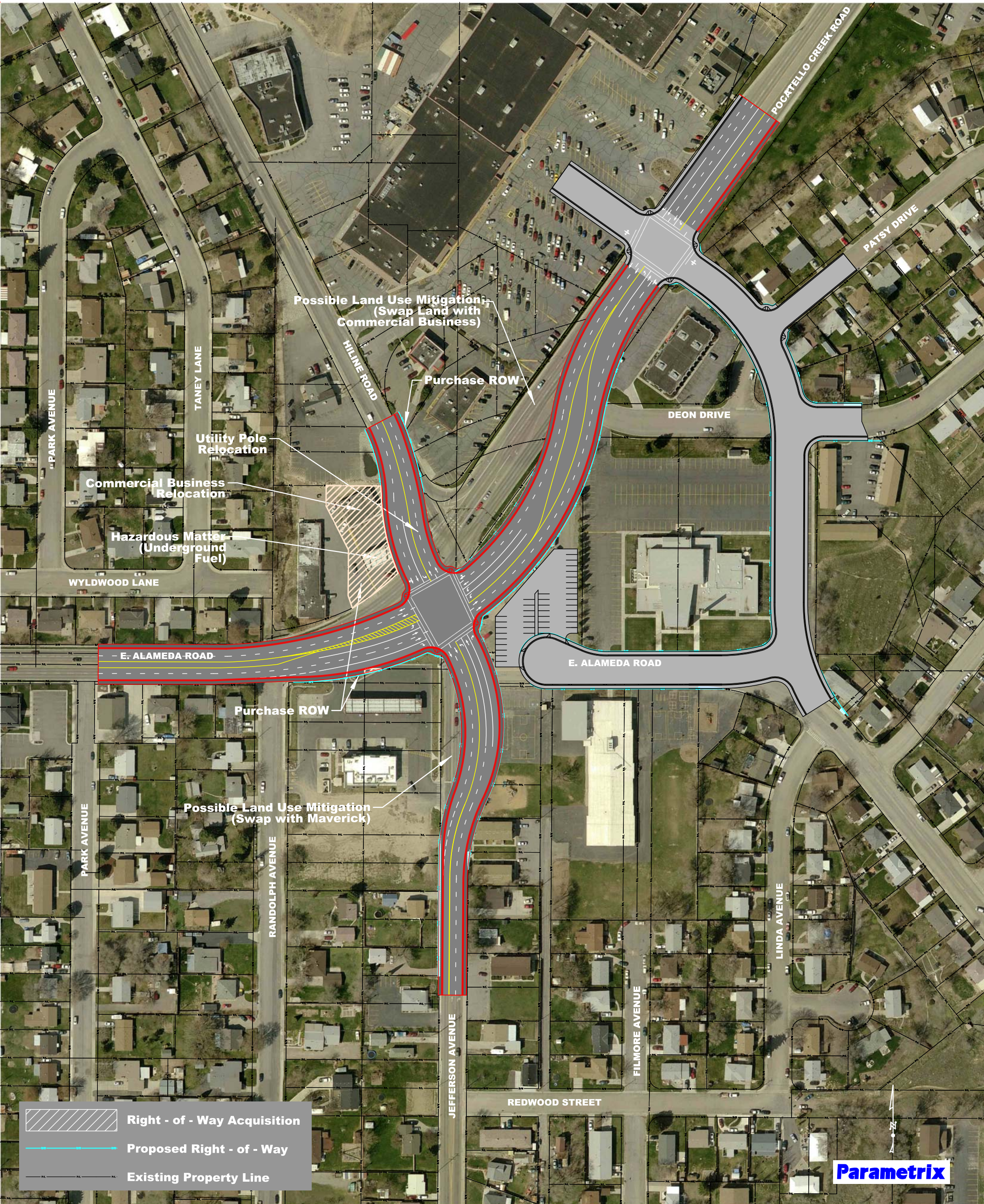
## ALTERNATIVE 1C - PHASE 3



## ALTERNATIVE 10 - PHASE 1



## ALTERNATIVE 10 - PHASE 2

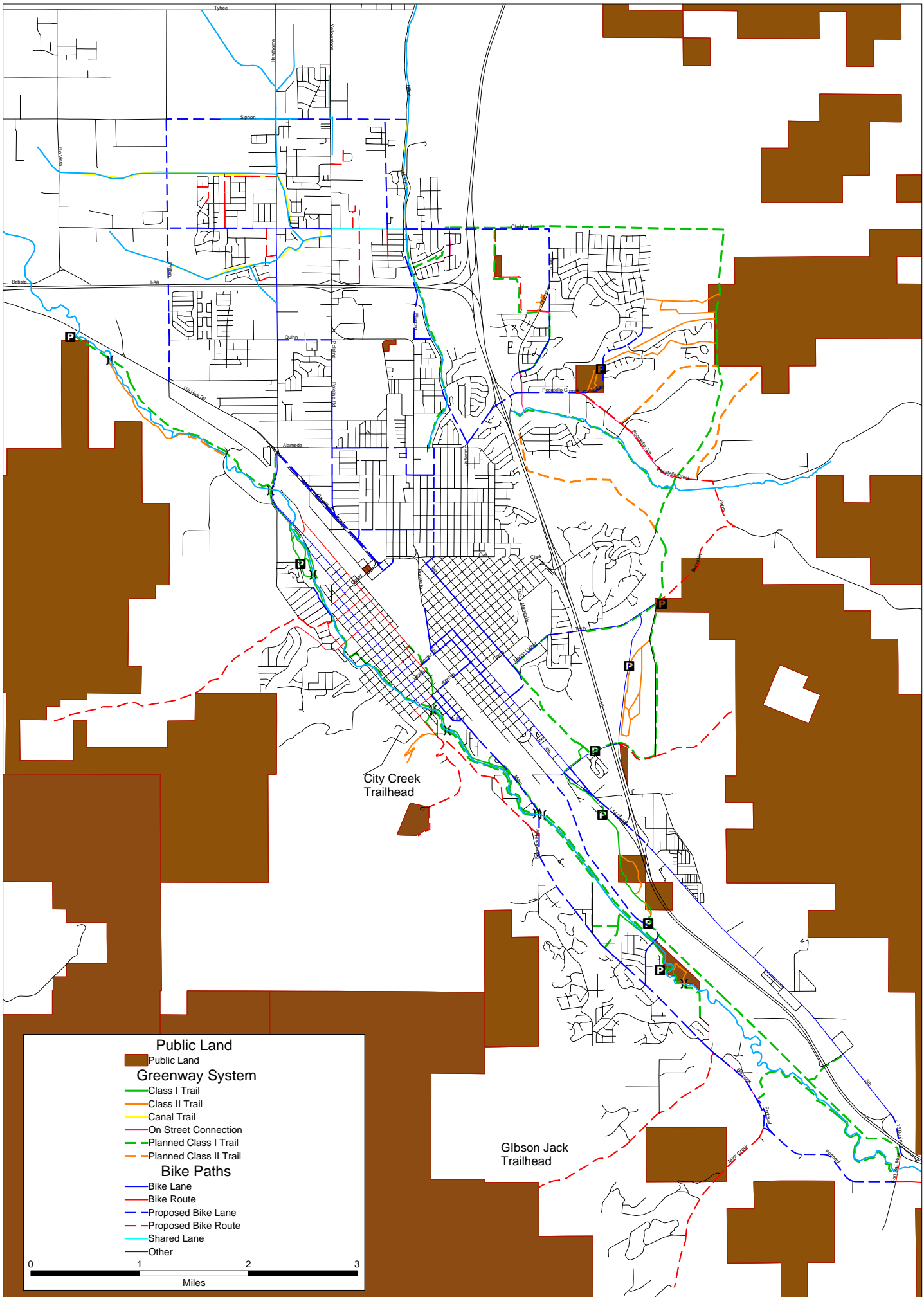


## ALTERNATIVE 10 - PHASE 3

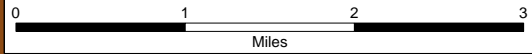
## **APPENDIX F**

### **BTPO Master Bicycle Plan**





- Public Land**
- Public Land
- Greenway System**
- Class I Trail
- Class II Trail
- Canal Trail
- On Street Connection
- Planned Class I Trail
- Planned Class II Trail
- Bike Paths**
- Bike Lane
- Bike Route
- Proposed Bike Lane
- Proposed Bike Route
- Shared Lane
- Other



## **APPENDIX G**

### **Compiled Public Involvement Comments**

**ALAMEDA/JEFFERSON INTERSECTION**  
 COMMENTS FROM OPEN HOUSE PUBLIC MEETING  
 September 1, 2010

<p>Brent L. Frank          220 Palomino St          Pocatello ID 83201</p>	<p>The initial construction alternative 1A is not the solution. No more signals on Pocatello Creek Rd. Close Alameda Rd as proposed. Close Deon Dr as proposed. Build the section of Alameda Rd as proposed thru the east parking of the Church to connect Patsy and Deon to E Alameda. Either extend Redwood St east to connection to Alameda or widen Linda Ave (if needed?). Jefferson and Redwood could then be signalized (if needed). The cost to complete this proposal will be ½ or less of the cost proposed to connect to Pocatello Creek with a new signal is ridiculous. Don't overlook the fact that some of the traffic presently using E Alameda will go to Poplar or Pine Street. Another temporary solution is to prohibit left turns from Jefferson to E Alameda by a median barrier. This will also eliminate left turns from E Alameda to South Jefferson.</p>
<p>Greg Saint-Vincent          P O Box 3001          Pocatello ID 83206          gregaintvincent@yahoo.com</p>	<p>* Close PCR access to Winco – keep traffic flowing from I-15 to Hilline Rd.          * Put signaled access to Winco on Hilline.          * Most of traffic is coming down Monte Vista – extend MV to Redwood or Cedar and put signal there.</p>
<p>Phil &amp; Edythe Joslin          2180 Satterfield Dr          Pocatello ID 83201          phjoslin@cableone.net</p>	<p>We recommend #10 – if you are going to do this, let's do it right.</p>
<p>M. Kelly Cluff          502 E Cedar St          Pocatello ID 83201-3703</p>	<p>1st off – “Don't do anything with intersection.” Heavy traffic on Hilline is due to traffic trying to get around the construction on Yellowstone. The Jefferson traffic are people from ISU area trying to get out of ISU and ON Semiconductor and Farm Bureau. Part of Jefferson traffic is due to people going on to Jefferson to Cedar – then down Cedar to Yellowstone, by-passing traffic and lights at Alameda/Yellowstone area, etc. Instead, put in interstate entrances and exits at Terry St and Monte Vista. These two already have an overpass or underpass in place. Therefore, construction would only consist of road construction. Messing with Alameda, Jefferson, Poc Creek and Hilline intersection constitutes messing with sewer system, electrical lines, water lines, and water run-off lines. Having worked in the construction industry, I am aware of the cost of modifying or re-routing the above. Much cheaper to build entrances and exits. That will do a far better job of relieving the pressure at Alameda and Jefferson. I whole-hearted like the idea of putting a traffic light on Poc Creek at Winco. I recommend a stop sign be installed on Jefferson on the northbound lane at Alameda/Jefferson only. That will free up the intersection so southbound Jefferson traffic can make the left hand turn on to Alameda (up the hill) that plugs up now with people stopping in the intersection. <u>BUT NO DAMN TRAFFIC CIRCLES!</u></p>
<p>Mari'anna Hulet          353 Washington Ave          Pocatello ID 83201          hulemarj@isu.edu</p>	<p>For the long-term, really-solve-this problem intersection, the obvious choice is 10, which squares up the intersection and really removes the problems. This is not great for Deon, Patsy, and the LDS Church, but, really, this is the best long range solution. The frontage road option (1C) will be a mess for the public school when you factor in dropping kids off for school. No place to turn around or pause, carpools blocking traffic twice a day most of the year, with little kids dashing between cars to get to school. A terrible, dangerous mess.</p>
<p>Dan Harelson          1361 Jane St          Pocatello ID 83201          hareidsb@hotmail.com</p>	<p>Alternative 1A seems to work best for me. How are non-motorized users accommodated?</p>

**ALAMEDA/JEFFERSON INTERSECTION**  
**COMMENTS FROM OPEN HOUSE PUBLIC MEETING**

September 1, 2010

Roger Ellis 1265 Monte Vista Dr Pocatello ID 83201 rogerf@cableone.net	I don't care for any of them much. I would prefer 1A of the ones proposed. I think the Monte Vista-Paramount, etc. neighborhoods would be better served if there was another access available, such as Cedar St extended. I like the island Jefferson idea. It was in there previously and quite well for left turns for Jefferson & Alameda East.
Paul Syndergaard 1966 Beth St Pocatello ID 83201 tpsynd@orcom.com	I prefer 1C to keep traffic low near Tendoy and the LDS Church. However, this option does not provide any additional parking for Tendoy School. I propose that the space between the road and the church parking lot be improved into parking for Tendoy.
Mike Gornichec 1411 Paramount St Pocatello ID 83201 gornichec@gmail.com	I don't like the idea of putting a road through the church parking lot – too close to the building and creates a busy road through the Deon Dr neighborhood. I also don't really like the frontage road idea. My favorite idea is creating an intersection for all 5 roads and a dedicated right turn lane from Alameda to Pocatello Creek.
Craig Cooper 799 Jessie Pl Pocatello ID 83201 Craigcooper12@yahoo.com	Plans 10 – 1A will have a huge negative effect on the LDS Church and community. The grade is steep at the intersection and during winter conditions it is extremely difficult to slow down and safely make that turn. The impact on the church and meetings they have - also the safety of the children coming from Patsy and Deon to the school should be considered. One alternative could be to develop the road from Monte Vista to Center St along I-15 to alleviate and move traffic away from the lower Monte Vista area. At the present time the small portion of that road is now Michaud Lane. Extend that road to Center St area.
Melynda Bohney 1128 Fern St Pocatello ID 83201 bohnbert@netscape.com	If possible move school crossing zone to Jefferson & Redwood. Children could then enter school grounds at Filmore entrance. Or, some other alternative to keep children safe with increased lanes on Jefferson.
Jenae' Allen 772 Birch St Pocatello ID 83201	I like the idea to square up the intersection. I would also be ok with the frontage road idea. It seems like the frontage road idea would be less disruptive and probably cost less.
Marjean Waford 3248 Lundburg Ln Pocatello ID 83204 kwaford@cableone.net	I like 1A the best because it closes Alameda off of Jefferson, keeps the school playground and parking lot intact. Staff can then turn off of Hilline onto the Alameda bypass, turn off of Jefferson onto Redwood and Linda or turn on Poplar, up to Franklin, onto Alameda & down the hill. May need a crosswalk light after school to get kids across Jefferson. Or, put in a spiral staircase to go over Jefferson when school is out.
Sally McHargue 1650 Ardella Dr Pocatello ID 83201 snipergoose@cableone.net	P.S. Best friend lives on Ardella, former principal of Tendoy. I would like to see all the children live to be an adult. Alameda Rd needs to be closed for safety!! I am in favor of alternative 1A first – then alternative 1A & 10. It has to be changed. It is way too dangerous as it is!

**ALAMEDA/JEFFERSON INTERSECTION**  
**COMMENTS FROM OPEN HOUSE PUBLIC MEETING**

September 1, 2010

<p>Corey Krantz  910 Samuel St  Pocatello ID 83204  cakrantz@earthlink.net</p>	<p>I prefer alternative 1A &amp; 10 for initial construction. I like the traffic flow &amp; enhanced safety for students. I prefer 1A for the intersection of Jefferson &amp; Pocatello Creek Rd. Reduces impact to school, maintains right turn with yield conditions.</p>
<p>Steve Millward  1385 Chokecherry Dr  Pocatello ID 83204  millwarden@gmail.com</p>	<p>I would like to see Alameda Rd end at Jefferson and the portion of Alameda that currently extends beyond Jefferson renamed something else to avoid confusion.</p>
<p>Lee Dille  1044 Diablo  Pocatello ID 83201  designplace1@qwestoffice.net</p>	<p>Alternative 1A looks like the best option. Because whatever is done it won't happen for several years, a stop sign could be installed on Jefferson just before E Alameda. This would improve the hazardous situation when people try to get across Jefferson to turn into E Alameda.</p>
<p>Frances Lunney  1070 Hilline Ste 370 (work)  Dept of Health &amp; Welfare  Pocatello ID 83201  lunneyf@dhw.idaho.gov</p>	<p>1) Access to turn into Common Cents/Exxon after turning right from Pocatello Creek Rd to Hilline should not be allowed. In winter the right turn is often slick/icy. 2) Striping of Jefferson left turn vs straight/right turn needs to be reconfigured. 3) Staff in 1070-1090 Hilline can't get onto Hilline - a left turn/middle lane or widening of road would be helpful. Traffic backs up this far. 4) Light at Winco is really needed. Department of Health &amp; Welfare has 100-150 employees at 1070-1090 Hilline &amp; we would love to have a chance to meet/discuss with the City what our issues &amp; suggestions are.</p>
<p>Lynn Taylor  609 E Cedar St  Pocatello ID 83201  taylray@isu.edu</p>	<p>I like the idea of squaring up the intersection at Jefferson &amp; Alameda. By eliminating the turn lane off of Jefferson to E Alameda and making 2 lanes merge into one going south, my concern is that motorists will be trying to be first to get into the lane before it merges. In doing so, people turning into Maverick are at risk of being rear-ended. Also, speed will be a major factor since it is a school zone. I am a crossing guard on Jefferson and see how fast motorists travel without having to try to get into a merging lane. Depending on where the merge is, turning left off of Jefferson into the Maverick should not be allowed.</p>
<p>Alene Orr  792 Randolph Ave  Pocatello ID 83201  alene@cableone.net</p>	<p>I think the 3 propositions are all well thought out. My preference is option 10, because it would diminish the traffic near the school. The frontage road would not solve that. I applaud closing off the Alameda Rd/Jefferson access. Same for Deon. Suggest no left turn into Maverick lot (or out of the Maverick lot) from Jefferson.</p>
<p>Jack &amp; Karen Suechting  2798 Kootenai  Pocatello ID 83201</p>	<p>Own property at 664-666-668-631 Franklin Ave &amp; Hyde. All options look viable - but if you only do 1A-10 at least look at putting a stop sign on Jefferson by E Alameda Rd before the school for the northbound traffic.</p>
<p>Donna Boe  226 S 16th Ave  Pocatello ID 83201</p>	<p>In driving north on Jefferson to continue on Hilline, it is necessary to get into the right turn lane in order to go straight! I've learned to stay in the right turn lane - it eventually turns into a lane marked to go straight onto Hilline. The traffic light at Alameda, Jefferson, &amp; Hilline is very confusing - difficult to know which signal allows you to continue north. Flashing lights on Jefferson and on all busy school crossings would alert drivers to slow to 20 mph. The lights should flash only during hours &amp; days when might be crossing. Otherwise, drivers might eventually ignore them.</p>

**ALAMEDA/JEFFERSON INTERSECTION**  
 COMMENTS FROM OPEN HOUSE PUBLIC MEETING  
 September 1, 2010

<p>Dianne Brush 2430 Ada St Pocatello ID 83201 dbrush@pocatello.us</p>	<p>I travel on Pocatello Creek Rd to Jefferson – two times a day – as my route from home to work and back again. I like the elimination of the traffic from in front of the school, as depicted in proposal 1A and 10. Please don't just take the cheapest alternative!!!! Please choose the alternative that is the best for current and future use by citizens. 10 – I like the elimination of problems &amp; I like that it squares up the intersection. I think that alternative 10 will best meet the current and future needs of the City. Thank you for this opportunity to comment and thank you for the explanations.</p>
<p>Mary Kuehler 1317 E Bridger St Pocatello ID 83201 kuehlerfamily@cableone.net</p>	<p>I like proposal #10 because it squares up the intersection. Most important of any option is to make traffic go more smoothly. Closing off part of the access to Exxon-Mobil gas station is a good idea because currently traffic can back up on both sides when people try to use that access. Need to include a dedicated right-hand turn lane on Hiline and Alameda Rd so that people can go straight to Jefferson without having to wait for people to turn. Any plan should include better signals and school crossing lights.</p>
<p>Stephen Vanderkooi 1335 Monte Vista Dr Pocatello ID 83201</p>	<p>I feel the alternative 10 would be best option for this intersection. Thinking of the children in the school and confusion that exists now, this needs to be corrected. The second choice would be 1C.</p>
<p>Matt Hunter 324 S Main St Pocatello ID 83204 mhunter@pocatelloidaho.com</p>	<p>Conventional intersection alternative 10 is the best way to do. As a major intersection it needs to be squared up. Thanks for taking my input.</p>
<p>Cherri Glenn 757 Jefferson Ave Pocatello ID 83201</p>	<p>I like the 1A-10.</p>
<p>John P. Rogers 8222 W Buckskin Rd Pocatello ID 83201 demo6.yrci@idaho.usa.com</p>	<p>Make Jefferson one way south. Make Randolph one way north. Nuff said without too much money!</p>
<p>Dorsey Hill 6275 Fruitwood Ln Pocatello ID 83204 bangs@ida.net</p>	<p>I like option 10 the best because I prefer to see the intersection "squared up." I think it will be safer for pedestrians crossing, especially the children. I also think the change of closing other roads – the new bypass works the best. I also like the traffic light with the strip mall and the bypass. Good work.</p>
<p>Harvey D. Peck 464 Hyde Pocatello ID 83201</p>	<p>I was the one that asked for the big turning signals on Jefferson. They put one to turn right as you first start the 3 lanes and one to turn left. You have got to put more big turning arrows to let both residents &amp; nonresidents so they will know what lane to take. Also before school starts each year, crossings should be sprayed.</p>
<p>Kelly Gehret 868 Linda Ave Pocatello ID 83201 gehrkell@isu.edu</p>	<p>I believe that 1C is the best option for the surrounding neighborhood. 1C seems to be one that will be the least congestive for Linda Ave &amp; Redwood. It may be the midline pricewise but the most beneficial for traffic flow &amp; for social community support. Our overall goal should not only be to "square up" the intersection, but to support our residents &amp; their input/thoughts/requests. That brings us together as a community &amp; city.</p>

**ALAMEDA/JEFFERSON INTERSECTION**  
**COMMENTS FROM OPEN HOUSE PUBLIC MEETING**  
 September 1, 2010

Jacob Egbert 1128 Fern Pocatello ID 83201	I believe if the road is built in the church parking lot that on the way to Tendoy some people would get hurt or more traffic will be going on E Alameda and keep people up at night.
Koltin McKee 1149 Fern St Pocatello ID 83201	I think that the option 1C would be best because it wouldn't completely close off E Alameda Rd on the east side of Jefferson Ave. Also, any options with roundabouts would be inefficient because many people in Pocatello do not fully understand how the roundabouts work.
Kolby McKee 1149 Fern St Pocatello ID 83201	I think that the intersection alternative 1C would be more safe and efficient for the E Alameda St.
Caleb Hensley 633 Brent St Pocatello ID 83201	My opinion on the intersection AND the construction route would be 1C. The construction route going through the church parking lot would cause havoc and disrupt more public than in 1C.
Tyson Olsen 835 Linda Ave Pocatello ID 83201 drummer.boy25@hotmail.com	I think 1C is best because less traffic will be on Linda Ave and Deon. Linda and Deon are very small streets, and traffic will be worse on Linda than on Jefferson.
Stephen Johnson 1011 Deon Dr #13 Pocatello ID 83201 stephenj1996@gmail.com	My opinion is to go with initial construction 1C.
Hannah Sanger 9272 W Charlotte Dr Pocatello ID 83204	I like alternative 10. The main intersection looks safer for motorized AND non-motorized transportation. Additionally, this design provides opportunities for additional storm water friendly landscaping, which will also be traffic calming.
Hal D. Waldram 1008 Deon Dr Pocatello ID 83201 halwaldram@gmail.com	I have reviewed the three proposed plans for this project and have concluded that plan 1C is the only plan that makes sense given the current location of buildings and houses. This plan makes the best use of the vacant lot as well as allows two routes of access to the elementary school. I am also in favor of this plan because it minimizes the impact, the most on Deon and Patsy, while giving the greatest accessibility to those roads. If plan 1A is used then access to the school is hindered and only causes more congestion through the neighborhoods in the area. Plan 1A also fails to use the vacant lot which seems like poor planning. Plan 10 also makes little sense because of the restricted access to the school (good luck getting a fire truck in there) as well as wastes a large portion of what is currently Pocatello Creed Rd. Plan 1A and 10 would take the largest toll on traffic during construction and be a large burden on the area and surrounding businesses. Plan 1C is also the option which impacts my home the least. If a busy road is placed directly next to my property, my children would not be safe and my home would lose a lot of value. I will take legal action against the City should option 1C not be chosen, so that I may protect my home.
The Church of Jesus Christ of Latter-Day Saints P O Box 2042 Pocatello ID 83206-2042	Our preferred alternative is 1C. (See attached letter for additional comments.)

## **APPENDIX H**

### **Stakeholder Letters**





**Pocatello  
Chubbuck  
School District 25**

**Maximizing Learning For All Students  
Through Rigor, Relevancy and Relationships**

***Whatever It Takes!***

September 14, 2010

Greg Lanning, Public Works Director  
City of Pocatello  
Public Works Department  
911 N. 7<sup>th</sup> Avenue  
Pocatello, ID 83201

Dear Mr. Lanning,

Thank you for your time and presentation at our Trustee Work Session regarding the proposed project improvements to the Jefferson Ave - Alameda Road area effecting Tendoy Elementary School. We understand this anticipated project may be a number of years into the future before it would be approved or completed.

In reviewing the three options which were presented, we believe the option Alternative 10, where a cul-de-sac is designed into the plan offers the greatest benefit to Tendoy Elementary. Specifically, thru-traffic would be eliminated directly in front of the school, student safety would increase due to the school being sheltered from everyday traffic not destined for Tendoy Elementary, and the District would be compensated for loss of frontage playground on Jefferson Ave by additional property reclaimed by removal of the apartment complex south of the school.

Additionally, the new Alameda Stake Center parking to the west of the LDS church could provide parking for school activities if the District were to maintain its current agreement with the church. We express our concern that it is important to the District to continue to work cooperatively with the Alameda Stake Center and the LDS Church in maintaining our parking agreements. Without such agreements in place for additional parking, the impact to the surrounding Tendoy neighborhood would be significantly impacted.

We would request the City of Pocatello keep us informed in relation to the plan, design and time line of the identified project. If we can be of assistance or need to be involved to a greater extent, we will make ourselves available.

We appreciate the open and outstanding working relationship we have with the City of Pocatello in the past, and hopefully in the future improvements to our schools and community, and thank you for briefing the Board of Trustees on this planned improvement.

Sincerely,

Mary M. Vagner  
Superintendent

cc. Jesse Schuerman  
Dierdre Castillo  
Board of Trustees  
Bart Reed  
Patti Mortensen  
Janet Nelson

THE CHURCH OF  
**JESUS CHRIST**  
OF LATTER-DAY SAINTS

BANNOCK ID FM GROUP  
3444 Hawthorne Road  
P.O. Box 2042  
Pocatello, Idaho 83206-2042  
Phone: 208-238-2074

Mr. Jesse Schuer  
Engineering Department  
911 N. 7<sup>th</sup> Avenue  
PO Box 4169  
Pocatello, Idaho 83205

Mr. Schuer,

We appreciate the phone conversation with you on August 30, 2010 concerning the proposed changes at the intersection of Jefferson and Alameda Roads.

Our preferred alternative is 1C. This is the proposal that loops Alameda Road around the vacant lot and connects with Deon Drive. The following are some of the reasons we do not want a road going through our parking lot:

- A) A significant portion of our close parking would be eliminated
- B) Most of our main offices are on the east side of the building and little close parking would be available.
- C) Increased traffic noise will disrupt our worship services because traffic will be much closer to our building
- D) More Church members that walk to services would be crossing the busy Alameda Road. This includes a lot of children
- E) We would have inadequate parking if the west parking lot was not expanded completely as shown on your proposals.

Please keep us informed as this proposal moves forward.

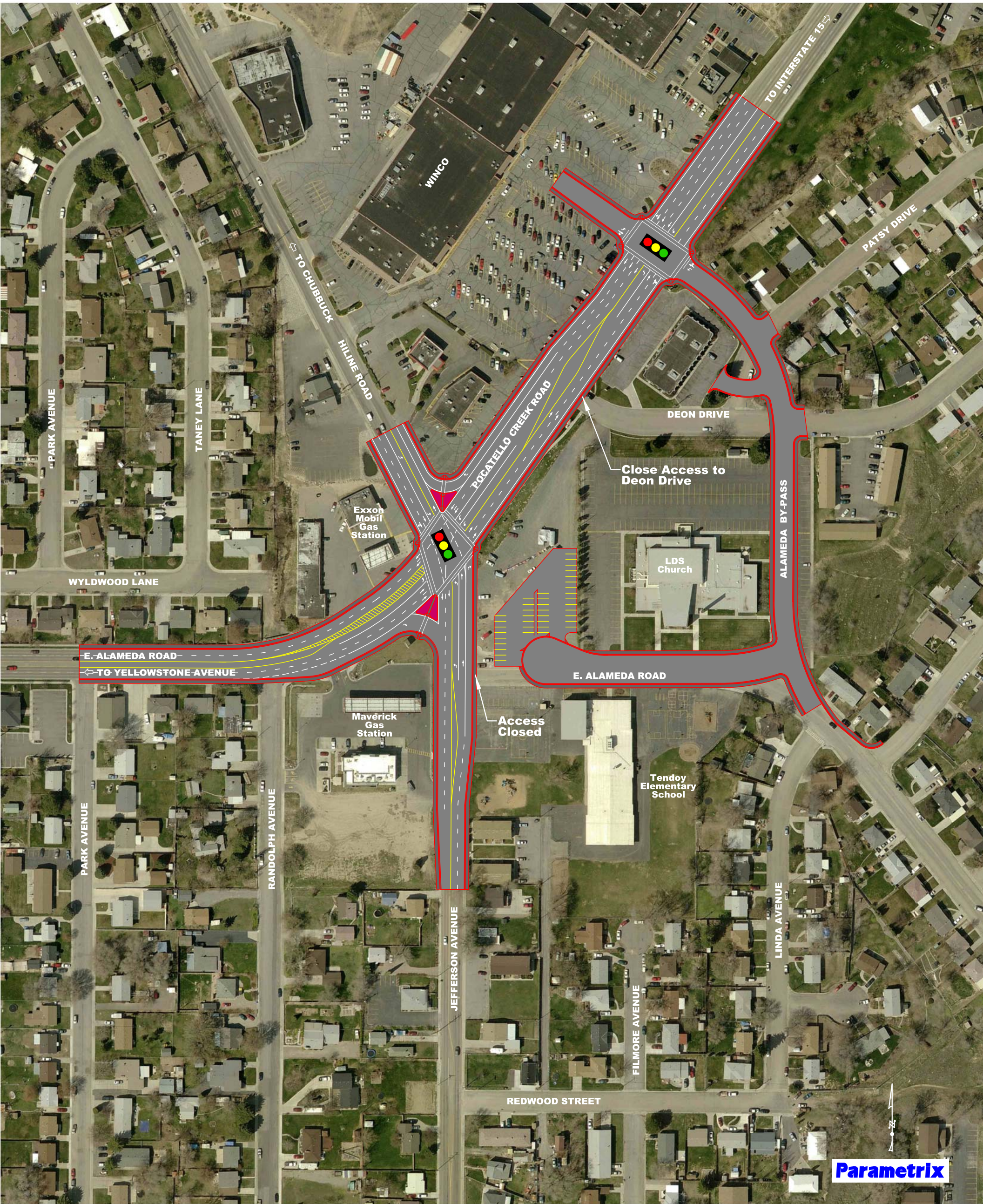
Sincerely,



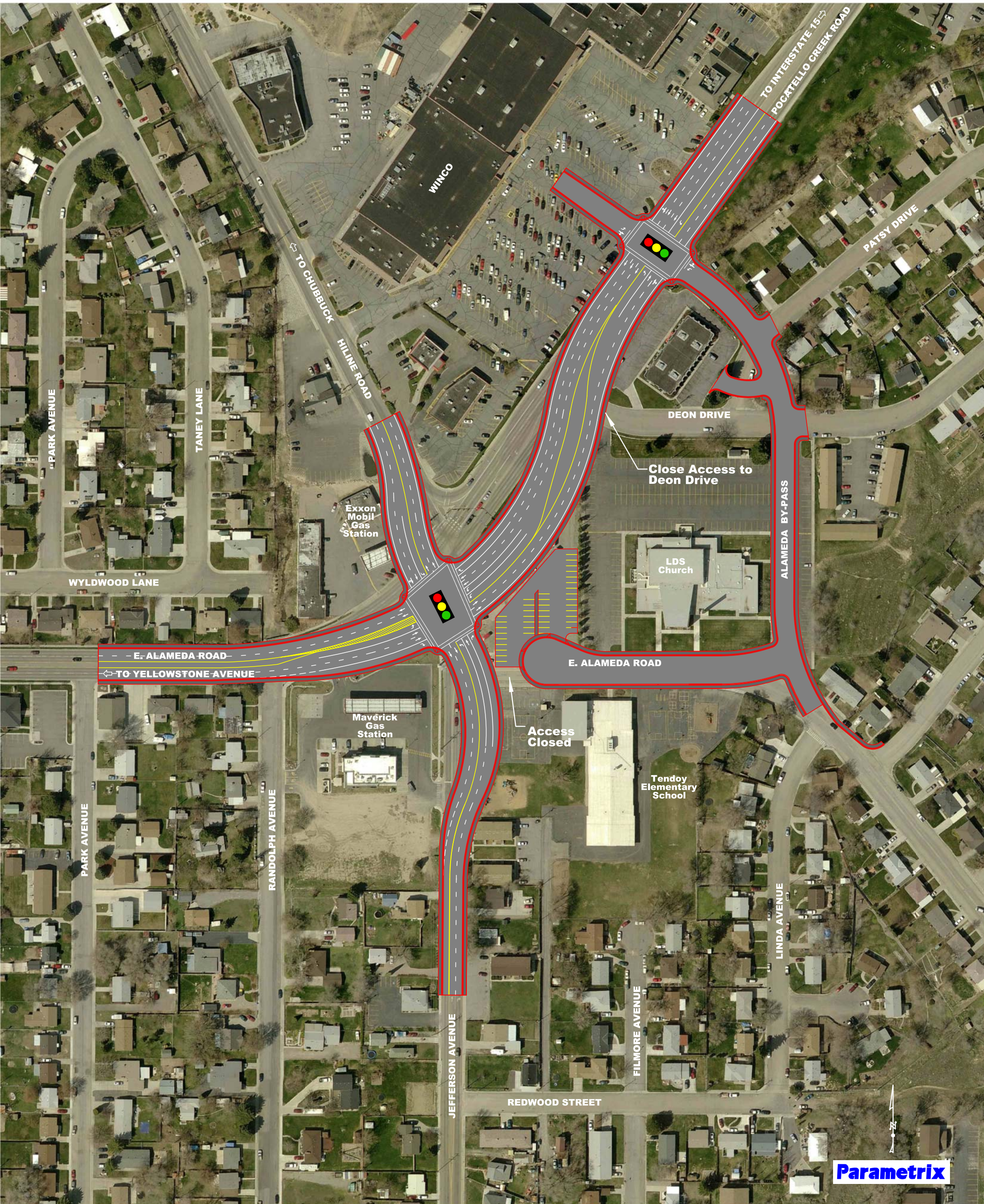
Tom Ranstrom  
Facilities Manager  
Bannock FM Group

## **APPENDIX I**

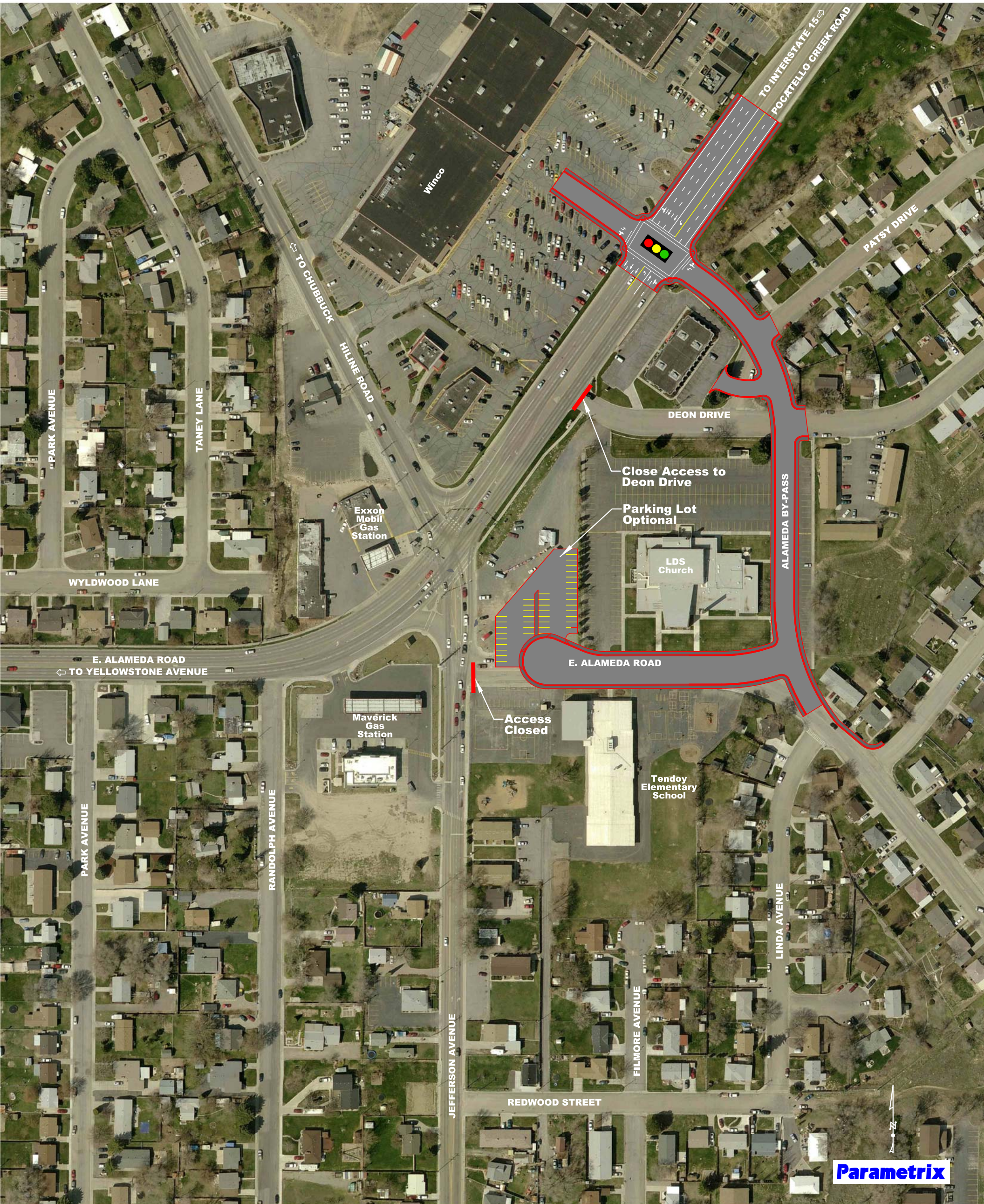
### **Proposed Alternatives**



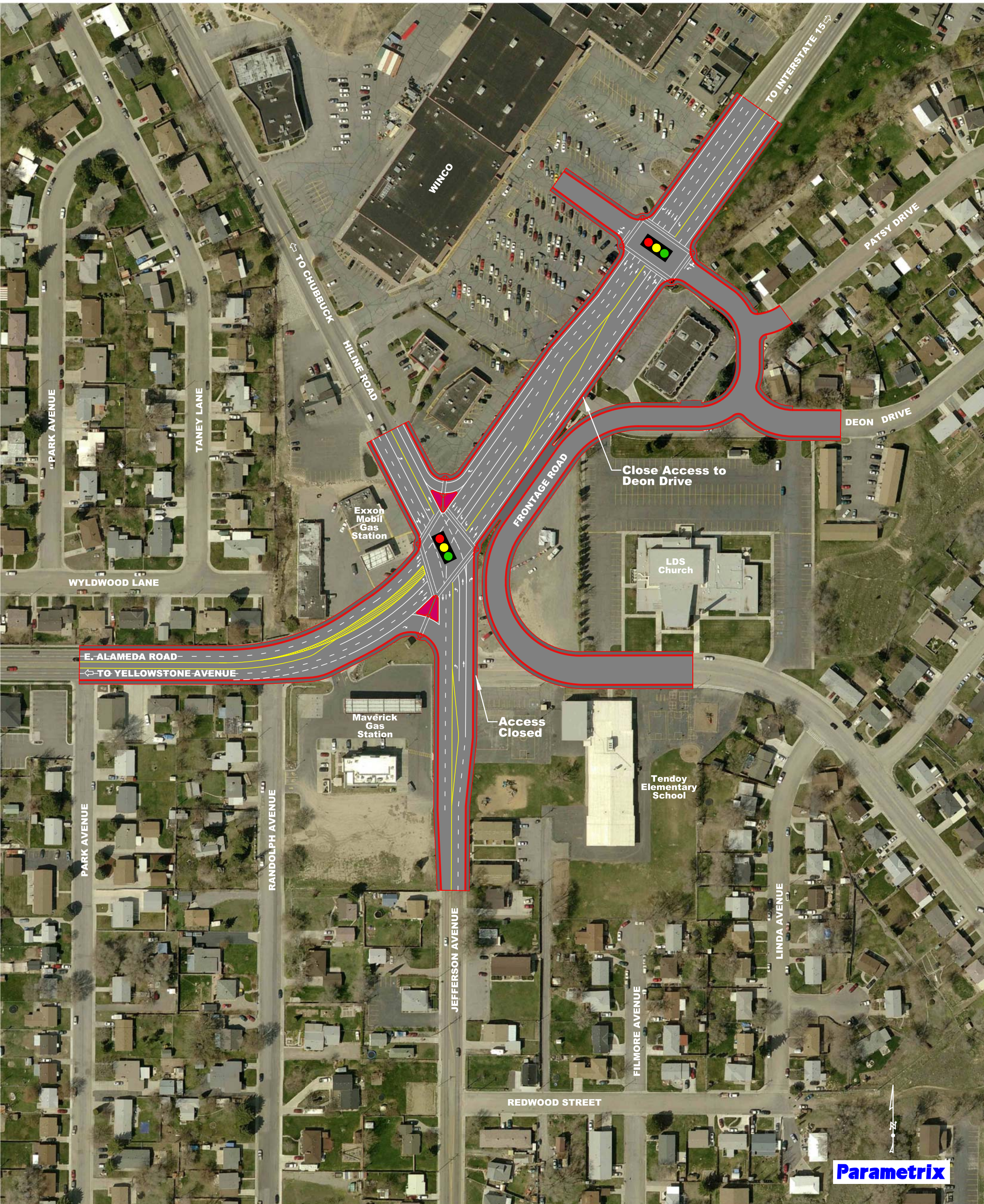
## CONVENTIONAL INTERSECTION - ALTERNATIVE 1A



## CONVENTIONAL INTERSECTION - ALTERNATIVE 10



## INITIAL CONSTRUCTION FOR ALTERNATIVES 1A & 10



## CONVENTIONAL INTERSECTION - ALTERNATIVE 1C



## INITIAL CONSTRUCTION FOR ALTERNATIVE 1C



**APPENDIX J**  
**Evaluation Matrix**

## Evaluation Matrix - Alameda & Jefferson Intersection Improvement

Alternatives	Land Use				Transportation			Cost		Public Involvement	Safety					
	Criterion 1 - Residential Property Impacts		Criterion 2 - Commercial & Industrial Property Impacts		Criterion 3 - School & Church Property Impacts		Criterion 4 - Total Right-of-Way (ROW) Required	Criterion 1 - Safety (access points)	Criterion 2 - Improves Traffic Operations	Criterion 3 - Traffic Operations for School	Criterion 1 - Major Utility Relocations	Criterion 2 - Total Cost (Range - Millions)	Criterion 1 - Stakeholder and General Public Input	Criterion 1 - Possible Reduction in Accidents	Criterion 2 - Improvements to Crosswalks	Criterion 3 - Improvements to Pedestrian and Bicycle Use
	#	Acres	#	Acres	#	Acres	Acres									
<b>No-Build</b>		0		0		0										
<b>Alternative 1A</b>	18	0.648	18	1.600	2	0.960	3.208				\$200,000	\$5.2 - \$6.3	17.5% In Favor			
<b>Alternative 1C</b>	12	0.409	14	*2.863	2	0.186	3.458				\$200,000	\$5.4 - \$6.6	25% In Favor			
<b>Alternative 10</b>	18	0.829	7	*2.142	2	1.207	4.173				\$100,000	\$5.8 - \$7.2	30% In Favor			
Explanation of "low, medium, high" impacts for each criterion.	Residential Impacts (acres)		Low			0 - 0.25	Access Points Open	Low	1 - 2	Stakeholder and Public Preference (% of comments received)	Low	No Cost	Estimated Reduction in Accidents		50% - 100%	
			Medium			0.26 - 1.0		Medium	4 - 6		Medium	Lower Range			20% - 50%	
			High			1.0+		High	7+		High	Highest			0% - 20%	
	Industrial & Commercial Impacts (acres)		Low			0 - 0.5	Level of Service (LOS)		A - C	Received the Highest Amount of Votes		Received the Highest Amount of Votes	Reduction in Cross-walk Length and Locations		Considerable Change	
			Medium			0.55 - 1.0			D			Received the Second Highest Amount of Votes			Minor Change	
			High			1.0+			E+			Received the Least Amount of Votes			No Change	
	School & Church Impacts (acres)		Low			0 - 0.5	Vehicular Traffic mixed with Children		Bus Drop/Pickup only	Received the Second Highest Amount of Votes		Received the Second Highest Amount of Votes	Pedestrian & Bicycle Friendly		Considerable Improvement	
			Medium			0.55 - 1.0			Parent Drop Off			Received the Least Amount of Votes			Minor Improvement	
			High			1.0+			Pass by Traffic			Received the Least Amount of Votes			No improvement	

\* Includes undeveloped Commercial Property Between Jefferson Avenue & LDS Church as Complete Purchase

## **APPENDIX K**

**ITD Form 758, ITD Form 1150, Construction Costs, and ITD Form 2839  
for each Proposed Alternative**

# Alternative 1A

- **ITD Form 758 – Ultimate Build Option**
- **ITD Form 758 – Initial Build Option**
- **ITD Form 1150 – Ultimate Build Option**
- **ITD Form 1150 – Initial Build Option**
- **ITD Form 2839 – Ultimate Build Option**
- **ITD Form 2839 – Initial Build Option**
- **Initial and Ultimate Build Construction Cost Breakdown**

# Alternate Solutions And Costs



Various options and cost comparisons should be analyzed. If appropriate, equivalent uniform annual cost should be computed for the expected life of the proposed options.

Key Number 11657	Project Number A011(657)
Location Int. Alameda & Jefferson, Pocatello	
<b>Description: Initial Construction to Alternative 1A</b> <p>This project will consist of constructing a by-pass route between Alameda Road and Deon Drive that will extend to the north and connect into Pocatello Creek Road with a traffic signal. Deon Drive will be closed off from Pocatello Creek Road by constructing a new curb &amp; gutter with sidewalk the length of the existing entrance. Alameda Road will be closed with an offset cul-de-sac constructed near the intersection. The Winco parking lot will be modified with curb &amp; gutter with sidewalk to designate a new entrance. The existing entrance will be removed by constructing a curb &amp; gutter with sidewalk the length of the existing entrance.</p> <p>Total Construction will range between \$1,351,500 and \$1,651,900, which includes mobilization at 10% and Construction Engineer and Contingencies at 20%.</p> <p>Total Right-of-Way will range between \$882,000 and \$ 1,078,000, which includes three residential homes having to be relocated. Right-of-way will impact 15 parcels.</p> <p>Total project cost will range between \$2,368,500 and \$2,895,000, which includes preliminary engineering costs at 10% of total construction cost.</p>	

## Proposed Design Exceptions

Describe and Justify All Design Exceptions:

District Engineer Approval/Recommended

Date

Design Exception Committee Approval

Title

FHWA Approval (Required for NHS)

Design Exception No.

Date

# Alternate Solutions And Costs



Various options and cost comparisons should be analyzed. If appropriate, equivalent uniform annual cost should be computed for the expected life of the proposed options.

Key Number 11657	Project Number A011(657)
Location Int. Alameda & Jefferson, Pocatello	
<b>Description: Ultimate Construction to Alternate 1A</b> <p>This project will consist of reconstructing the signalized intersection of Pocatello Creek Rd/Hiline Rd/Alameda Rd/Jefferson Ave which will include reconfiguring lane use for each approach. This project will also consist of constructing a by-pass route between Alameda Road and Deon Drive that will extend to the north and connect into Pocatello Creek Road with a traffic signal. Deon Drive will be closed off from Pocatello Creek Road by constructing a new curb &amp; gutter with sidewalk the length of the existing entrance. Alameda Road will be closed with an offset cul-de-sac constructed near the intersection. The Winco parking lot will be modified with curb &amp; gutter with sidewalk to designate a new entrance. The existing entrance will be removed by constructing a curb &amp; gutter with sidewalk the length of the existing entrance.</p> <p>Total Construction will range between \$3,184,300 and \$3,892,000, which includes mobilization at 10% and Construction Engineer and Contingencies at 20%.</p> <p>Total Right-of-Way will range between \$1,686,600 and \$2,061,400, which includes four residential homes and one commercial business having to be relocated. Right-of-way will impact 38 parcels.</p> <p>Total project cost will range between \$5,189,500 and \$6,342,800, which includes preliminary engineering costs at 10% of total construction cost.</p>	

## Proposed Design Exceptions

Describe and Justify All Design Exceptions:

District Engineer Approval/Recommended

Date

Design Exception Committee Approval

Title

FHWA Approval (Required for NHS)

Design Exception No.

Date



## Project Cost Summary Sheet



Round Estimates to Nearest \$1,000

Date	Project Number A011(657)		Key Number 11657
Location Intersection Alameda Road and Pocatello Creek Rd, Pocatello			District 5
Segment Code 3190	Begin Mile Post 4.983	End Mile Post 4.3983	Length in Miles

Alternative 1A - Initial Build	Previous ITD 1150	Initial or Revise To
1. Preliminary Engineering		\$150,000
2. Right-of-Way: Number of Parcels 15      Number of Relocations 3		\$980,000
3. Utility Adjustments: <input type="checkbox"/> Work <input type="checkbox"/> Materials <input type="checkbox"/> By State <input type="checkbox"/> By Others		
4. Earthwork		\$331,000
5. Drainage and Minor Structures		\$91,000
6. Pavement and Base		\$378,000
7. Railroad Crossing: Grade/Separation Structure _____ At-Grade Signals <input type="checkbox"/> Yes <input type="checkbox"/> No		
8. Bridges/Grade Separation Structures: <input type="checkbox"/> New Structure Location _____ Length/Width _____ <input type="checkbox"/> Repair/Widening/Rehabilitation Location _____ Length/Width _____		
9. Traffic Items (Delineators, Signing, Channelization, Lighting, and Signals)		\$135,000
10. Construction Traffic Control (Sign, Pavement Markings, Flagging, and Traffic Separation)		\$10,000
11. Detours		
12. Landscaping		
13. Mitigation Measures		
14. Other Items (Roadside Development, Guardrail, Fencing, Sidewalks, Curb and Gutter, C.S.S. Items)		\$192,700
15. Cost of Constructions (Items 3 through 14)		\$1,137,700
16. Mobilization 10 % of Item 15		\$114,000
17. Construction Engineer and Contingencies 20 % of Items 15 and 16		\$250,000
18. Total Construction Cost (15 + 16 + 17)		\$1,501,700
19. Total Project Cost ( 1 + 2 + 18)		\$2,631,700
20. Project Cost Per Mile		
Prepared By: Jeremy Robbins, PE		

# Project Cost Summary Sheet



Round Estimates to Nearest \$1,000

Date	Project Number A011(657)		Key Number 11657
Location Intersection Alameda Road and Pocatello Creek Rd, Pocatello			District 5
Segment Code 3190	Begin Mile Post 4.983	End Mile Post 4.3983	Length in Miles

Alternative 1A - Ultimate Build	Previous ITD 1150	Initial or Revise To
1. Preliminary Engineering		\$354,000
2. Right-of-Way: Number of Parcels 38      Number of Relocations 5		\$1,874,000
3. Utility Adjustments: <input type="checkbox"/> Work <input type="checkbox"/> Materials <input checked="" type="checkbox"/> By State <input type="checkbox"/> By Others		\$200,000
4. Earthwork		\$615,000
5. Drainage and Minor Structures		\$186,000
6. Pavement and Base		\$971,000
7. Railroad Crossing: Grade/Separation Structure _____ At-Grade Signals <input type="checkbox"/> Yes <input type="checkbox"/> No		
8. Bridges/Grade Separation Structures: <input type="checkbox"/> New Structure Location _____ Length/Width _____ <input type="checkbox"/> Repair/Widening/Rehabilitation Location _____ Length/Width _____		
9. Traffic Items (Delineators, Signing, Channelization, Lighting, and Signals)		\$335,000
10. Construction Traffic Control (Sign, Pavement Markings, Flagging, and Traffic Separation)		\$34,000
11. Detours		
12. Landscaping		
13. Mitigation Measures		
14. Other Items (Roadside Development, Guardrail, Fencing, Sidewalks, Curb and Gutter, C.S.S. Items)		\$339,100
15. Cost of Constructions (Items 3 through 14)		\$2,680,100
16. Mobilization 10 % of Item 15		\$268,000
17. Construction Engineer and Contingencies 20 % of Items 15 and 16		\$590,000
18. Total Construction Cost (15 + 16 + 17)		\$3,538,100
19. Total Project Cost ( 1 + 2 + 18)		\$5,766,100
20. Project Cost Per Mile		

Prepared By:

Jeremy Robbins, PE



# Right of Way Cost Estimate

Date: October 6, 2010

Key No: 11657  
 Project No: A011(657)  
 Project Name: Int. Alameda & Jefferson, Pocatello (Alt 1A-Ult.)

No. of parcels requiring acquisitions: <u>38</u>	Number of parcels requiring relocations: <u>5</u>
New Alignment: <u>0.60</u> miles	Basic R/W Width: _____ ft.
Existing Alignment: <u>0.00</u> miles	Additional R/W Width: <u>68 - 100</u> ft.

**DIRECT ACQUISITION COSTS:**

**A. Land only**

Agriculture	Irrigated	<u>0.00</u>	acres @	<u>\$0</u>	/acre	=	<u>\$0</u>	
	Dry	<u>0.00</u>	acres @	<u>\$0</u>	/acre	=	<u>\$0</u>	
	n/a	<u>0.00</u>	acres @	<u>\$0</u>	/acre	=	<u>\$0</u>	
Graze	Irrigated	<u>0.00</u>	acres @	<u>\$0</u>	/acre	=	<u>\$0</u>	
	Dry	<u>0.00</u>	acres @	<u>\$0</u>	/acre	=	<u>\$0</u>	
		<u>0.00</u>	acres @	<u>\$0</u>	/acre	=	<u>\$0</u>	
Timber	Income Producing	<u>0.00</u>	acres @	<u>\$0</u>	/acre	=	<u>\$0</u>	
	Harvestable	<u>0.00</u>	acres @	<u>\$0</u>	/acre	=	<u>\$0</u>	
	Non-Harvestable	<u>0.00</u>	acres @	<u>\$0</u>	/acre	=	<u>\$0</u>	
Residential	Developed	<u>0.65</u>	acres @	<u>\$217,814</u>	/acre	=	<u>\$141,100</u>	
	Undeveloped	<u>0.00</u>	acres @	<u>\$0</u>	/acre	=	<u>\$0</u>	
Commercial/Industria	Developed	<u>2.39</u>	acres @	<u>\$366,046</u>	/acre	=	<u>\$874,850</u>	
	Undeveloped	<u>0.17</u>	acres @	<u>\$522,723</u>	/acre	=	<u>\$88,079</u>	
Damages Anticipated							=	
Miscellaneous							=	

**B. Site Improvements**

Agriculture	No. of Structures	<u>0</u>	@	<u>\$0</u>	(average)	=	<u>\$0</u>	
Residential	No. of Structures	<u>0</u>	@	<u>\$0</u>	(average)	=	<u>\$0</u>	
Commercial/Industria	No. of Structures	<u>0</u>	@	<u>\$0</u>	(average)	=	<u>\$0</u>	
Damages Anticipated							=	
Miscellaneous							=	

**C. Relocation**

Developed Agriculture	No. Expected	<u>0</u>	@	<u>\$0</u>	(average)	=	<u>\$0</u>	
Developed Residential								
Single Family	No. Expected	<u>3</u>	@	<u>\$100,000</u>	(average)	=	<u>\$300,000</u>	
Multi-Family	No. Expected	<u>0</u>	@	<u>\$0</u>	(average)	=	<u>\$0</u>	
Developed Comm/Inc	No. Expected	<u>2</u>	@	<u>\$150,000</u>	(average)	=	<u>\$300,000</u>	
Miscellaneous							=	

**INDIRECT ACQUISITION COSTS:**

Appra./Imp. Agri.	No. Expected	<u>0</u>	@	<u>\$0</u>	(average)	=	<u>\$0</u>	
Appra./Imp. Resid.								
2685	No. Expected	<u>0</u>	@	<u>\$0</u>	(average)	=	<u>\$0</u>	
2288	No. Expected	<u>0</u>	@	<u>\$0</u>	(average)	=	<u>\$0</u>	
B & A	No. Expected	<u>0</u>	@	<u>\$0</u>	(average)	=	<u>\$0</u>	
Appra./Imp. Com.-Ind	No. Expected	<u>0</u>	@	<u>\$0</u>	(average)	=	<u>\$0</u>	
Appraisals/Land	No. Expected	<u>0</u>	@	<u>\$0</u>	(average)	=	<u>\$0</u>	
Negotiations	No. Expected	<u>0</u>	@	<u>\$0</u>	(average)	=	<u>\$0</u>	
Demolitions	No. Expected	<u>0</u>	@	<u>\$0</u>	(average)	=	<u>\$0</u>	
Sub-Total							=	<u>\$1,704,029</u>

**INCIDENTALS:**

Estimated as a percentage of overall costs. 10.00 % \$170,403

(Includes Title Costs, Admin. Settle., Legal Settle., Attorney & Court Costs, Property Mngmnt. & Misc.)

**Total Estimated Project R/W Costs: \$1,874,432**

Proposed R/W Plans Approval Date	Projected R/W Expenditure Years	Construction Year(s)

Estimtd. By: Jeremy Robbins, PE Title: PM Date: 10/5/2010

**Alameda/Jefferson  
City of Pocatello  
Alternate 1A  
Preliminary Cost Estimate  
10/6/2010**

Summary Of Costs	Initial	Ultimate
Earthwork/Removal	\$331,000	\$614,600
Pavement/Base	\$377,600	\$971,000
Drainage	\$91,200	\$186,200
Erosion Control	\$18,700	\$37,490
Concrete	\$174,000	\$339,100
Traffic	\$135,000	\$335,000
Construction Traffic Control	\$10,100	\$34,390
<b>Construction Subtotal</b>	<b>\$1,137,600</b>	<b>\$2,517,780</b>

**Initial Construction**

Item #	Item	Quantity	UNIT	Unit Price	Cost
<b>Earthwork/Removal</b>					
203-005A	Rem of Obstructions	1	LS	\$10,000.00	\$10,000.00
203-015A	Rem of Bituminous Surf	8000	SY	\$2.50	\$20,000.00
203-060A	Rem of Conc Sidewalk	1200	SY	\$6.00	\$7,200.00
203-070A	Rem of Curb & Gutter	1400	FT	\$4.50	\$6,300.00
205-005A	Excavation	13100	CY	\$15.00	\$196,500.00
S203-05A	Demolition	1	LS	\$90,000.00	\$90,000.00
S203-45A	Rem of Existing Signs	10	EACH	\$100.00	\$1,000.00
<b>Subtotal</b>					<b>\$331,000.00</b>
<b>Pavement/Base</b>					
303-021A	3/4" Aggr TY A for Base	5300	TON	\$22.00	\$116,600.00
301-005A	Granular Subbase	4250	TON	\$13.00	\$55,250.00
S405-20A	Superpave HMA Pav CL SP-	2250	TON	\$90.00	\$202,500.00
S405-41A	Approach	5	EACH	\$650.00	\$3,250.00
<b>Subtotal</b>					<b>\$377,600.00</b>
<b>Drainage</b>					
605-500A	Catch Basin	15	EACH	\$1,300.00	\$19,500.00
605-600A	Inlet	15	EACH	\$2,101.00	\$31,515.00
605-025A	12" Storm Sewer Pipe	950	FT	\$36.00	\$34,200.00
605-450A	Manhole	3	EACH	\$2,000.00	\$6,000.00
<b>Subtotal</b>					<b>\$91,215.00</b>
<b>Erosion Control</b>					
205-060A	Water for Dust Abatement	20	MG	\$34.00	\$680.00
212-095A	Inlet Protection	10	EACH	\$11.50	\$115.00
212-020A	Silt Fence	1500	FT	\$4.50	\$6,750.00
212-060A	Stabilized Construction Entrance	2	EACH	\$2,600.00	\$5,200.00
S212-05A	Fiber Wattles	1500	FT	\$4.00	\$6,000.00
<b>Subtotal</b>					<b>\$18,745.00</b>
<b>Concrete</b>					
613-005A	Conc Sidewalk	2600	SY	\$27.00	\$70,200.00
614-005A	Urban Approaches	10	EACH	\$800.00	\$8,000.00
614-010A	Conc For Urban Approaches	40	CY	\$200.00	\$8,000.00
615-430A	Comb Curb & Gutter Ty A or C2	4400	FT	\$20.00	\$88,000.00
<b>Subtotal</b>					<b>\$174,200.00</b>

**Alameda/Jefferson**  
**City of Pocatello**  
**Alternate 1A**  
**Preliminary Cost Estimate**  
**10/6/2010**

Traffic					
616-010A	Sign Type B	200	SF	\$18.00	\$3,600.00
656-005A	Traffic Signal installation	1	LS	\$120,000.00	\$120,000.00
S900-60A	Pavement Markings	4000	FT	\$0.25	\$1,000.00
S900-62A	Pav Marking Thermoplastic	1000	SF	\$10.00	\$10,000.00
				<b>Subtotal</b>	<b>\$134,600.00</b>

Construction Traffic Control					
626-010A	Rent Const. Sign Class B	200	SF	\$7.00	\$1,400.00
626-040A	Rent Const. Barricades Type III	5	EACH	\$80.00	\$400.00
626-050A	Rent Drums Class B	30	EACH	\$25.00	\$750.00
626-105A	Traffic Contol Maintenance	100	MNHR	\$42.00	\$4,200.00
630-005A	Flagging	80	HR	\$37.00	\$2,960.00
626-115A	Rent Portable Tubular Markers	50	EACH	\$8.50	\$425.00
				<b>Subtotal</b>	<b>\$10,135.00</b>

Alameda/Jefferson  
 Alternate 1A  
 City of Pocatello  
 Preliminary Cost Estimate  
 10/6/2010

**Ultimate Construction**

Item #	Item	Quantity	UNIT	Unit Price	Cost
<b>Earthwork/Removal</b>					
203-005A	Rem of Obstructions	1	LS	\$20,000.00	\$20,000.00
203-015A	Rem of Bituminous Surf	23250	SY	\$2.50	\$58,125.00
203-060A	Rem of Conc Sidewalk	3700	SY	\$6.00	\$22,200.00
203-070A	Rem of Curb & Gutter	4500	FT	\$4.50	\$20,250.00
205-005A	Excavation	26800	CY	\$15.00	\$402,000.00
S203-05A	Demolition	1	LS	\$90,000.00	\$90,000.00
S203-45A	Rem of Existing Signs	20	EACH	\$100.00	\$2,000.00
<b>Subtotal</b>					<b>\$614,575.00</b>
<b>Pavement/Base</b>					
303-021A	3/4" Aggr TY A for Base	13650	TON	\$22.00	\$300,300.00
301-005A	Granular Subbase	5350	TON	\$13.00	\$69,550.00
S405-20A	Superpave HMA Pav CL SP-	6600	TON	\$90.00	\$594,000.00
S405-41A	Approach	11	EACH	\$650.00	\$7,150.00
<b>Subtotal</b>					<b>\$971,000.00</b>
<b>Drainage</b>					
605-500A	Catch Basin	23	EACH	\$1,300.00	\$29,900.00
605-600A	Inlet	23	EACH	\$2,101.00	\$48,323.00
605-025A	12" Storm Sewer Pipe	2500	FT	\$36.00	\$90,000.00
605-450A	Manhole	9	EACH	\$2,000.00	\$18,000.00
<b>Subtotal</b>					<b>\$186,223.00</b>
<b>Erosion Control</b>					
205-060A	Water for Dust Abatement	40	MG	\$34.00	\$1,360.00
212-095A	Inlet Protection	20	EACH	\$11.50	\$230.00
212-020A	Silt Fence	3000	FT	\$4.50	\$13,500.00
212-060A	Stabilized Construction Entrance	4	EACH	\$2,600.00	\$10,400.00
S212-05A	Fiber Wattles	3000	FT	\$4.00	\$12,000.00
<b>Subtotal</b>					<b>\$37,490.00</b>
<b>Concrete</b>					
613-005A	Conc Sidewalk	5150	d1	\$27.00	\$139,050.00
614-005A	Urban Approaches	20	EACH	\$800.00	\$16,000.00
614-010A	Conc For Urban Approaches	80	CY	\$200.00	\$16,000.00
615-430A	Comb Curb & Gutter Ty A or C2	8400	FT	\$20.00	\$168,000.00
<b>Subtotal</b>					<b>\$339,050.00</b>
<b>Traffic</b>					
616-010A	Sign Type B	400	SF	\$18.00	\$7,200.00
656-005A	Traffic Signal installation	1	LS	\$295,000.00	\$295,000.00
S900-60A	Pavement Markings	11000	FT	\$0.25	\$2,750.00
S900-62A	Pav Marking Thermoplastic	3000	SF	\$10.00	\$30,000.00
<b>Subtotal</b>					<b>\$334,950.00</b>

**Alameda/Jefferson  
Alternate 1A  
City of Pocatello  
Preliminary Cost Estimate  
10/6/2010**

Construction Traffic Control					
626-010A	Rent Const. Sign Class B	400	SF	\$7.00	\$2,800.00
626-040A	Rent Const. Barricades Type III	10	EACH	\$80.00	\$800.00
626-050A	Rent Drums Class B	60	EACH	\$25.00	\$1,500.00
626-105A	Traffic Control Maintenance	400	MNHR	\$42.00	\$16,800.00
630-005A	Flagging	280	HR	\$37.00	\$10,360.00
626-115A	Rent Portable Tubular Markers	250	EACH	\$8.50	\$2,125.00
				<b>Subtotal</b>	<b>\$34,385.00</b>



# Alternative 1C

- **ITD Form 758 – Ultimate Build Option**
- **ITD Form 758 – Initial Build Option**
- **ITD Form 1150 – Ultimate Build Option**
- **ITD Form 1150 – Initial Build Option**
- **ITD Form 2839 – Ultimate Build Option**
- **ITD Form 2839 – Initial Build Option**
- **Initial and Ultimate Build Construction Cost Breakdown**

# Alternate Solutions And Costs



Various options and cost comparisons should be analyzed. If appropriate, equivalent uniform annual cost should be computed for the expected life of the proposed options.

Key Number 11657	Project Number A011(657)
Location Int. Alameda & Jefferson, Pocatello	
<b>Description: Initial Construction to Alternate 1C</b> <p>This project will consist of constructing a frontage road that will originate from Alameda Road by Tendoy Elementary School and continue west and circle around the LDS Church property and then head east Deon Drive then head north connecting into Pocatello Creek Road with a traffic signal. Deon Drive will be closed off from Pocatello Creek Road by constructing a new curb &amp; gutter with sidewalk the length of the existing entrance. Alameda Road will be closed off from Jefferson Avenue by constructing a new curb &amp; gutter with sidewalk the length of the existing entrance. The Winco parking lot will be modified with curb &amp; gutter with sidewalk to designate a new entrance. The existing entrance will be removed by constructing a new curb &amp; gutter with sidewalk the length of the existing entrance.</p> <p>Right-of-way acquisition will be required with two homes required to be relocated.</p> <p>Total Construction will range between \$1,311,000 and \$1,602,400, which includes mobilization at 10% and Construction Engineer and Contingencies at 20%.</p> <p>Total Right-of-Way will range between \$1,042,200 and \$1,273,800, which includes two residential homes having to be relocated. Right-of-way will impact 10 parcels.</p> <p>Total project cost will range between \$2,483,700 and \$3,035,700, which includes preliminary engineering costs at 10% of total construction cost.</p>	

## Proposed Design Exceptions

Describe and Justify All Design Exceptions:

District Engineer Approval/Recommended

Date

Design Exception Committee Approval

Title

FHWA Approval (Required for NHS)

Design Exception No.

Date

# Alternate Solutions And Costs



Various options and cost comparisons should be analyzed. If appropriate, equivalent uniform annual cost should be computed for the expected life of the proposed options.

Key Number 11657	Project Number A011(657)
Location Int. Alameda & Jefferson, Pocatello	
<b>Description: Ultimate Construction to Alternate 1C</b> The project will consist of reconstructing the signalized intersection of Pocatello Creek Rd/Hiline Rd/Alameda Rd/Jefferson Ave which will include reconfiguring lane use for each approach. This project will also consist of constructing a frontage road that will originate from Alameda Road by Tendoy Elementary School and continue west and circle around the LDS Church property and then head east Deon Drive then head north connecting into Pocatello Creek Road with a traffic signal. Deon Drive will be closed off from Pocatello Creek Road by constructing a curb & gutter with sidewalk the length of the existing entrance. Alameda Road will be closed off from Jefferson Avenue by constructing a curb & gutter with sidewalk the length of the existing entrance. The Winco parking lot will be modified with curb & gutter with sidewalk to designate a new entrance. The existing entrance will be removed by constructing a curb & gutter with sidewalk the length of the existing entrance. Total Construction will range between \$3,186,800 and \$3,895,000 which includes mobilization at 10% and Construction Engineer and Contingencies at 20%. Total Right-of-Way will range between \$1,904,400 and \$2,327,600 which includes two residential homes and two commercial businesses having to be relocated. Right-of-way will impact 28 parcels. Total project cost will range between \$5,409,800 and \$6,612,000 which includes preliminary engineering costs at 10% of total construction cost.	

## Proposed Design Exceptions

Describe and Justify All Design Exceptions:

District Engineer Approval/Recommended	Date	
Design Exception Committee Approval	Title	
FHWA Approval (Required for NHS)	Design Exception No.	Date

# Project Cost Summary Sheet



Round Estimates to Nearest \$1,000

Date	Project Number A011(657)		Key Number 11657
Location Intersection Alameda Road and Pocatello Creek Rd, Pocatello			District 5
Segment Code 3190	Begin Mile Post 4.983	End Mile Post 4.3983	Length in Miles

Alternative 1C - Initial Build	Previous ITD 1150	Initial or Revise To
1. Preliminary Engineering		\$145,000
2. Right-of-Way: Number of Parcels 10      Number of Relocations 2		\$1,158,000
3. Utility Adjustments: <input type="checkbox"/> Work <input type="checkbox"/> Materials <input type="checkbox"/> By State <input type="checkbox"/> By Others		
4. Earthwork		\$303,000
5. Drainage and Minor Structures		\$111,000
6. Pavement and Base		\$357,000
7. Railroad Crossing: Grade/Separation Structure _____ At-Grade Signals <input type="checkbox"/> Yes <input type="checkbox"/> No		
8. Bridges/Grade Separation Structures: <input type="checkbox"/> New Structure Location _____ Length/Width _____ <input type="checkbox"/> Repair/Widening/Rehabilitation Location _____ Length/Width _____		
9. Traffic Items (Delineators, Signing, Channelization, Lighting, and Signals)		\$136,000
10. Construction Traffic Control (Sign, Pavement Markings, Flagging, and Traffic Separation)		\$10,000
11. Detours		
12. Landscaping		
13. Mitigation Measures		
14. Other Items (Roadside Development, Guardrail, Fencing, Sidewalks, Curb and Gutter, C.S.S. Items)		\$186,700
15. Cost of Constructions (Items 3 through 14)		\$1,103,700
16. Mobilization 10 % of Item 15		\$110,000
17. Construction Engineer and Contingencies 20 % of Items 15 and 16		\$243,000
18. Total Construction Cost (15 + 16 + 17)		\$1,456,700
19. Total Project Cost ( 1 + 2 + 18)		\$2,759,700
20. Project Cost Per Mile		

Prepared By:

Jeremy Robbins, PE

# Project Cost Summary Sheet



Round Estimates to Nearest \$1,000

Date	Project Number A011(657)		Key Number 11657
Location Intersection Alameda Road and Pocatello Creek Rd, Pocatello			District 5
Segment Code 3190	Begin Mile Post 4.983	End Mile Post 4.3983	Length in Miles

Alternative 1C - Ultimate Build	Previous ITD 1150	Initial or Revise To
1. Preliminary Engineering		\$354,000
2. Right-of-Way: Number of Parcels 28      Number of Relocations 4		\$2,116,000
3. Utility Adjustments: <input type="checkbox"/> Work <input type="checkbox"/> Materials <input type="checkbox"/> By State <input checked="" type="checkbox"/> By Others		\$200,000
4. Earthwork		\$587,000
5. Drainage and Minor Structures		\$206,000
6. Pavement and Base		\$950,000
7. Railroad Crossing: Grade/Separation Structure _____ At-Grade Signals <input type="checkbox"/> Yes <input type="checkbox"/> No		
8. Bridges/Grade Separation Structures: <input type="checkbox"/> New Structure Location _____ Length/Width _____ <input type="checkbox"/> Repair/Widening/Rehabilitation Location _____ Length/Width _____		
9. Traffic Items (Delineators, Signing, Channelization, Lighting, and Signals)		\$336,000
10. Construction Traffic Control (Sign, Pavement Markings, Flagging, and Traffic Separation)		\$34,000
11. Detours		
12. Landscaping		
13. Mitigation Measures		
14. Other Items (Roadside Development, Guardrail, Fencing, Sidewalks, Curb and Gutter, C.S.S. Items)		\$369,890
15. Cost of Constructions (Items 3 through 14)		\$2,682,890
16. Mobilization 10 % of Item 15		\$268,000
17. Construction Engineer and Contingencies 20 % of Items 15 and 16		\$590,000
18. Total Construction Cost (15 + 16 + 17)		\$3,540,890
19. Total Project Cost ( 1 + 2 + 18)		\$6,010,890
20. Project Cost Per Mile		

Prepared By:

Jeremy Robbins, PE





# Right of Way Cost Estimate

Date: October 6, 2010

Key No: 11657  
 Project No: A011(657)  
 Project Name: Int. Alameda & Jefferson, Pocatello (Alt 1C-Ult.)

No. of parcels requiring acquisitions: <u>28</u>	Number of parcels requiring relocations: <u>4</u>
New Alignment: <u>0.60</u> miles	Basic R/W Width: _____ ft.
Existing Alignment: <u>0.00</u> miles	Additional R/W Width: <u>68 - 100</u> ft.

**DIRECT ACQUISITION COSTS:**

**A. Land only**

Agriculture	Irrigated	0.00	acres @	\$0	/acre	=	\$0
	Dry	0.00	acres @	\$0	/acre	=	\$0
	n/a	0.00	acres @	\$0	/acre	=	\$0
Graze	Irrigated	0.00	acres @	\$0	/acre	=	\$0
	Dry	0.00	acres @	\$0	/acre	=	\$0
		0.00	acres @	\$0	/acre	=	\$0
Timber	Income Producing	0.00	acres @	\$0	/acre	=	\$0
	Harvestable	0.00	acres @	\$0	/acre	=	\$0
	Non-Harvestable	0.00	acres @	\$0	/acre	=	\$0
Residential	Developed	0.41	acres @	\$217,814	/acre	=	\$89,125
	Undeveloped	0.00	acres @	\$0	/acre	=	\$0
Commercial/Industria	Developed	1.63	acres @	\$366,046	/acre	=	\$597,643
	Undeveloped	1.41	acres @	\$522,723	/acre	=	\$737,039
Damages Anticipated						=	
Miscellaneous						=	

**B. Site Improvements**

Agriculture	No. of Structures	0	@	\$0	(average)	=	\$0
Residential	No. of Structures	0	@	\$0	(average)	=	\$0
Commercial/Industria	No. of Structures	0	@	\$0	(average)	=	\$0
Damages Anticipated						=	
Miscellaneous						=	

**C. Relocation**

Developed Agriculture	No. Expected	0	@	\$0	(average)	=	\$0
Developed Residential							
Single Family	No. Expected	2	@	\$100,000	(average)	=	\$200,000
Multi-Family	No. Expected	0	@	\$0	(average)	=	\$0
Developed Comm/Inc	No. Expected	2	@	\$150,000	(average)	=	\$300,000
Miscellaneous						=	

**INDIRECT ACQUISITION COSTS:**

Appra./Imp.Agri.	No. Expected	0	@	\$0	(average)	=	\$0
Appra./Imp.Resid.							
2685	No. Expected	0	@	\$0	(average)	=	\$0
2288	No. Expected	0	@	\$0	(average)	=	\$0
B & A	No. Expected	0	@	\$0	(average)	=	\$0
Appra./Imp.Com.-Ind	No. Expected	0	@	\$0	(average)	=	\$0
Appraisals/Land	No. Expected	0	@	\$0	(average)	=	\$0
Negotiations	No. Expected	0	@	\$0	(average)	=	\$0
Demolitions	No. Expected	0	@	\$0	(average)	=	\$0
					Sub-Total	=	<u>\$1,923,808</u>

**INCIDENTALS:**

Estimated as a percentage of overall costs. 10.00 % \$192,381

(Includes Title Costs, Admin. Settle., Legal Settle., Attorney & Court Costs, Property Mngmnt. & Misc.)

**Total Estimated Project R/W Costs: \$2,116,189**

Proposed R/W Plans Approval Date	Projected R/W Expenditure Years	Construction Year(s)

Estimtd. By: Jeremy Robbins, PE Title: PM Date: 10/5/2010

**Alameda/Jefferson  
City of Pocatello  
Alternate 1C  
Preliminary Cost Estimate  
10/6/2010**

<b>Summary Of Costs</b>	<b>Initial</b>	<b>Ultimate</b>
Earthwork/Removal	\$303,100	\$586,700
Pavement/Base	\$356,800	\$950,200
Drainage	\$111,000	\$206,000
Erosion Control	\$18,700	\$37,490
Concrete	\$168,000	\$332,400
Traffic	\$136,000	\$336,000
Construction Traffic Control	\$10,100	\$34,390
<b>Construction Subtotal</b>	<b>\$1,103,700</b>	<b>\$2,483,180</b>

Alameda/Jefferson  
City of Pocatello  
Alternate 1C  
Preliminary Cost Estimate  
10/6/2010

**Initial Construction**

Item #	Item	Quantity	UNIT	Unit Price	Cost
<b>Earthwork/Removal</b>					
203-005A	Rem of Obstructions	1	LS	\$10,000.00	\$10,000.00
203-015A	Rem of Bituminous Surf	13700	SY	\$2.50	\$34,250.00
203-060A	Rem of Conc Sidewalk	1350	SY	\$6.00	\$8,100.00
203-070A	Rem of Curb & Gutter	3000	FT	\$4.50	\$13,500.00
205-005A	Excavation	11750	CY	\$15.00	\$176,250.00
S203-05A	Demolition	1	LS	\$60,000.00	\$60,000.00
S203-45A	Rem of Existing Signs	10	EACH	\$100.00	\$1,000.00
<b>Subtotal</b>					<b>\$303,100.00</b>
<b>Pavement/Base</b>					
303-021A	3/4" Aggr TY A for Base	5000	TON	\$22.00	\$110,000.00
301-005A	Granular Subbase	4000	TON	\$13.00	\$52,000.00
S405-20A	Superpave HMA Pav CL SP-	2150	TON	\$90.00	\$193,500.00
S405-41A	Approach	2	EACH	\$650.00	\$1,300.00
<b>Subtotal</b>					<b>\$356,800.00</b>
<b>Drainage</b>					
605-500A	Catch Basin	15	EACH	\$1,300.00	\$19,500.00
605-600A	Inlet	15	EACH	\$2,101.00	\$31,515.00
605-025A	12" Storm Sewer Pipe	1500	FT	\$36.00	\$54,000.00
605-450A	Manhole	3	EACH	\$2,000.00	\$6,000.00
<b>Subtotal</b>					<b>\$111,015.00</b>
<b>Erosion Control</b>					
205-060A	Water for Dust Abatement	20	MG	\$34.00	\$680.00
212-095A	Inlet Protection	10	EACH	\$11.50	\$115.00
212-020A	Silt Fence	1500	FT	\$4.50	\$6,750.00
212-060A	Stabilized Construction Entrance	2	EACH	\$2,600.00	\$5,200.00
S212-05A	Fiber Wattles	1500	FT	\$4.00	\$6,000.00
<b>Subtotal</b>					<b>\$18,745.00</b>
<b>Concrete</b>					
613-005A	Conc Sidewalk	2500	SY	\$27.00	\$67,500.00
614-005A	Urban Approaches	10	EACH	\$800.00	\$8,000.00
614-010A	Conc For Urban Approaches	40	CY	\$200.00	\$8,000.00
615-430A	Comb Curb & Gutter Ty A or C2	4200	FT	\$20.00	\$84,000.00
<b>Subtotal</b>					<b>\$167,500.00</b>
<b>Traffic</b>					
616-010A	Sign Type B	200	SF	\$18.00	\$3,600.00
656-005A	Traffic Signal installation	1	LS	\$120,000.00	\$120,000.00
S900-60A	Pavement Markings	8000	FT	\$0.25	\$2,000.00
S900-62A	Pav Marking Thermoplastic	1000	SF	\$10.00	\$10,000.00
<b>Subtotal</b>					<b>\$135,600.00</b>

**Alameda/Jefferson  
City of Pocatello  
Alternate 1C  
Preliminary Cost Estimate  
10/6/2010**

Construction Traffic Control					
626-010A	Rent Const. Sign Class B	200	SF	\$7.00	\$1,400.00
626-040A	Rent Const. Barricades Type III	5	EACH	\$80.00	\$400.00
626-050A	Rent Drums Class B	30	EACH	\$25.00	\$750.00
626-105A	Traffic Control Maintenance	100	MNHR	\$42.00	\$4,200.00
630-005A	Flagging	80	HR	\$37.00	\$2,960.00
626-115A	Rent Portable Tubular Markers	50	EACH	\$8.50	\$425.00
				<b>Subtotal</b>	<b>\$10,135.00</b>

Alameda/Jefferson  
 Alternate 1C  
 City of Pocatello  
 Preliminary Cost Estimate  
 10/6/2010

**Ultimate Construction**

Item #	Item	Quantity	UNIT	Unit Price	Cost
<b>Earthwork/Removal</b>					
203-005A	Rem of Obstructions	1	LS	\$20,000.00	\$20,000.00
203-015A	Rem of Bituminous Surf	28950	SY	\$2.50	\$72,375.00
203-060A	Rem of Conc Sidewalk	3850	SY	\$6.00	\$23,100.00
203-070A	Rem of Curb & Gutter	6100	FT	\$4.50	\$27,450.00
205-005A	Excavation	25450	CY	\$15.00	\$381,750.00
S203-05A	Demolition	1	LS	\$60,000.00	\$60,000.00
S203-45A	Rem of Existing Signs	20	EACH	\$100.00	\$2,000.00
				<b>Subtotal</b>	<b>\$586,675.00</b>
<b>Pavement/Base</b>					
303-021A	3/4" Aggr TY A for Base	13350	TON	\$22.00	\$293,700.00
301-005A	Granular Subbase	5100	TON	\$13.00	\$66,300.00
S405-20A	Superpave HMA Pav CL SP-	6500	TON	\$90.00	\$585,000.00
S405-41A	Approach	8	EACH	\$650.00	\$5,200.00
				<b>Subtotal</b>	<b>\$950,200.00</b>
<b>Drainage</b>					
605-500A	Catch Basin	23	EACH	\$1,300.00	\$29,900.00
605-600A	Inlet	23	EACH	\$2,101.00	\$48,323.00
605-025A	12" Storm Sewer Pipe	3050	FT	\$36.00	\$109,800.00
605-450A	Manhole	9	EACH	\$2,000.00	\$18,000.00
				<b>Subtotal</b>	<b>\$206,023.00</b>
<b>Erosion Control</b>					
205-060A	Water for Dust Abatement	40	MG	\$34.00	\$1,360.00
212-095A	Inlet Protection	20	EACH	\$11.50	\$230.00
212-020A	Silt Fence	3000	FT	\$4.50	\$13,500.00
212-060A	Stabilized Construction Entrance	4	EACH	\$2,600.00	\$10,400.00
S212-05A	Fiber Wattles	3000	FT	\$4.00	\$12,000.00
				<b>Subtotal</b>	<b>\$37,490.00</b>
<b>Concrete</b>					
613-005A	Conc Sidewalk	5050	d1	\$27.00	\$136,350.00
614-005A	Urban Approaches	20	EACH	\$800.00	\$16,000.00
614-010A	Conc For Urban Approaches	80	CY	\$200.00	\$16,000.00
615-430A	Comb Curb & Gutter Ty A or C2	8200	FT	\$20.00	\$164,000.00
				<b>Subtotal</b>	<b>\$332,350.00</b>
<b>Traffic</b>					
616-010A	Sign Type B	400	SF	\$18.00	\$7,200.00
656-005A	Traffic Signal installation	1	LS	\$295,000.00	\$295,000.00
S900-60A	Pavement Markings	15000	FT	\$0.25	\$3,750.00
S900-62A	Pav Marking Thermoplastic	3000	SF	\$10.00	\$30,000.00
				<b>Subtotal</b>	<b>\$335,950.00</b>

**Alameda/Jefferson  
Alternate 1C  
City of Pocatello  
Preliminary Cost Estimate  
10/6/2010**

Construction Traffic Control					
626-010A	Rent Const. Sign Class B	400	SF	\$7.00	\$2,800.00
626-040A	Rent Const. Barricades Type III	10	EACH	\$80.00	\$800.00
626-050A	Rent Drums Class B	60	EACH	\$25.00	\$1,500.00
626-105A	Traffic Control Maintenance	400	MNHR	\$42.00	\$16,800.00
630-005A	Flagging	280	HR	\$37.00	\$10,360.00
626-115A	Rent Portable Tubular Markers	250	EACH	\$8.50	\$2,125.00
				<b>Subtotal</b>	<b>\$34,385.00</b>

# Alternative 10

- **ITD Form 758 – Ultimate Build Option**
- **ITD Form 758 – Initial Build Option**
- **ITD Form 1150 – Ultimate Build Option**
- **ITD Form 1150 – Initial Build Option**
- **ITD Form 2839 – Ultimate Build Option**
- **ITD Form 2839 – Initial Build Option**
- **Initial and Ultimate Build Construction Cost Breakdown**

# Alternate Solutions And Costs



Various options and cost comparisons should be analyzed. If appropriate, equivalent uniform annual cost should be computed for the expected life of the proposed options.

Key Number 11657	Project Number A011(657)
Location Int. Alameda & Jefferson, Pocatello	
<b>Description: Initial Construction to Alternative 10</b> <p>This project will consist of constructing a by-pass route between Alameda Road and Deon Drive that will extend to the north and connect into Pocatello Creek Road with a traffic signal. Deon Drive will be closed off from Pocatello Creek Road by constructing a new curb &amp; gutter with sidewalk the length of the existing entrance. Alameda Road will be closed with an offset cul-de-sac constructed near the intersection. The Winco parking lot will be modified with curb &amp; gutter with sidewalk to designate a new entrance. The existing entrance will be removed by constructing a curb &amp; gutter with sidewalk the length of the existing entrance.</p> <p>Total Construction will range between \$1,351,500 and \$1,651,900, which includes mobilization at 10% and Construction Engineer and Contingencies at 20%.</p> <p>Total Right-of-Way will range between \$882,000 and \$ 1,078,000, which includes three residential homes having to be relocated. Right-of-way will impact 15 parcels.</p> <p>Total project cost will range between \$2,368,500 and \$2,895,000, which includes preliminary engineering costs at 10% of total construction cost.</p>	



## Proposed Design Exceptions

Describe and Justify All Design Exceptions:

District Engineer Approval/Recommended

Date

Design Exception Committee Approval

Title

FHWA Approval (Required for NHS)

Design Exception No.

Date

# Alternate Solutions And Costs



Various options and cost comparisons should be analyzed. If appropriate, equivalent uniform annual cost should be computed for the expected life of the proposed options.

Key Number 11657	Project Number A011(657)
Location Int. Alameda & Jefferson, Pocatello	
<b>Description: Ultimate Construction to Alternative 10</b> <p>This project will consist of reconstructing the intersection of Pocatello Creek Rd/Hiline Rd/Alameda Rd/Jefferson Avenue and reconfiguring all four approaches so that the intersection is square. The intersection will shift slightly to the east with Pocatello Creek Road, Hiline Road, and Jefferson Avenue having 'S' curves constructed in the approaches to allow the intersection to be squared up. This project will also consist of constructing a by-pass route between Alameda Road and Deon Drive that will extend to the north and connect into Pocatello Creek Road with a traffic signal. Deon Drive will be closed off from Pocatello Creek Road by constructing a new curb &amp; gutter with sidewalk the length of the existing entrance. Alameda Road will be closed with an offset cul-de-sac constructed near the intersection. The Winco parking lot will be modified with curb &amp; gutter with sidewalk to designate a new entrance. The existing entrance will be removed by constructing a curb &amp; gutter with sidewalk the length of the existing entrance.</p> <p>Total Construction will range between \$3,394,500 and \$4,149,000, which includes mobilization at 10% and Construction Engineer and Contingencies at 20%.</p> <p>Total Right-of-Way will range between \$2,149,200 and \$ 2,626,800, which includes four residential homes and one commercial business having to be relocated. Right-of-way will impact 27 parcels.</p> <p>Total project cost will range between \$5,883,000 and \$7,190,500, which includes preliminary engineering costs at 10% of total construction cost.</p>	

## Proposed Design Exceptions

Describe and Justify All Design Exceptions:

District Engineer Approval/Recommended

Date

Design Exception Committee Approval

Title

FHWA Approval (Required for NHS)

Design Exception No.

Date

# Project Cost Summary Sheet



Round Estimates to Nearest \$1,000

Date	Project Number A011(657)		Key Number 11657
Location Intersection Alameda Road and Pocatello Creek Rd, Pocatello			District 5
Segment Code 3190	Begin Mile Post 4.983	End Mile Post 4.3983	Length in Miles

Alternative 10 - Initial Build	Previous ITD 1150	Initial or Revise To
1. Preliminary Engineering		\$150,000
2. Right-of-Way: Number of Parcels 15      Number of Relocations 3		\$980,000
3. Utility Adjustments: <input type="checkbox"/> Work <input type="checkbox"/> Materials <input type="checkbox"/> By State <input type="checkbox"/> By Others		
4. Earthwork		\$331,000
5. Drainage and Minor Structures		\$91,000
6. Pavement and Base		\$378,000
7. Railroad Crossing: Grade/Separation Structure _____ At-Grade Signals <input type="checkbox"/> Yes <input type="checkbox"/> No		
8. Bridges/Grade Separation Structures: <input type="checkbox"/> New Structure Location _____ Length/Width _____ <input type="checkbox"/> Repair/Widening/Rehabilitation Location _____ Length/Width _____		
9. Traffic Items (Delineators, Signing, Channelization, Lighting, and Signals)		\$135,000
10. Construction Traffic Control (Sign, Pavement Markings, Flagging, and Traffic Separation)		\$10,000
11. Detours		
12. Landscaping		
13. Mitigation Measures		
14. Other Items (Roadside Development, Guardrail, Fencing, Sidewalks, Curb and Gutter, C.S.S. Items)		\$192,700
15. Cost of Constructions (Items 3 through 14)		\$1,137,700
16. Mobilization 10 % of Item 15		\$114,000
17. Construction Engineer and Contingencies 20 % of Items 15 and 16		\$250,000
18. Total Construction Cost (15 + 16 + 17)		\$1,501,700
19. Total Project Cost ( 1 + 2 + 18)		\$2,631,700
20. Project Cost Per Mile		

Prepared By:

Jeremy Robbins, PE

## Project Cost Summary Sheet



Round Estimates to Nearest \$1,000

Date	Project Number A011(657)		Key Number 11657
Location Intersection Alameda Road and Pocatello Creek Rd, Pocatello			District 5
Segment Code 3190	Begin Mile Post 4.983	End Mile Post 4.3983	Length in Miles

Alternative 10 - Ultimate Build	Previous ITD 1150	Initial or Revise To
1. Preliminary Engineering		\$377,000
2. Right-of-Way: Number of Parcels 27      Number of Relocations 5		\$2,388,000
3. Utility Adjustments: <input type="checkbox"/> Work <input type="checkbox"/> Materials <input type="checkbox"/> By State <input checked="" type="checkbox"/> By Others		\$100,000
4. Earthwork		\$779,000
5. Drainage and Minor Structures		\$185,000
6. Pavement and Base		\$1,003,000
7. Railroad Crossing: Grade/Separation Structure _____ At-Grade Signals <input type="checkbox"/> Yes <input type="checkbox"/> No		
8. Bridges/Grade Separation Structures: <input type="checkbox"/> New Structure Location _____ Length/Width _____ <input type="checkbox"/> Repair/Widening/Rehabilitation Location _____ Length/Width _____		
9. Traffic Items (Delineators, Signing, Channelization, Lighting, and Signals)		\$327,000
10. Construction Traffic Control (Sign, Pavement Markings, Flagging, and Traffic Separation)		\$34,000
11. Detours		
12. Landscaping		
13. Mitigation Measures		
14. Other Items (Roadside Development, Guardrail, Fencing, Sidewalks, Curb and Gutter, C.S.S. Items)		\$428,690
15. Cost of Constructions (Items 3 through 14)		\$2,856,690
16. Mobilization 10 % of Item 15		\$286,000
17. Construction Engineer and Contingencies 20 % of Items 15 and 16		\$629,000
18. Total Construction Cost (15 + 16 + 17)		\$3,771,690
19. Total Project Cost ( 1 + 2 + 18)		\$6,536,690
20. Project Cost Per Mile		
Prepared By: Jeremy Robbins, PE		

# Right of Way Cost Estimate

Date: October 6, 2010

Key No: 11657  
 Project No: A011(657)  
 Project Name: Int. Alameda & Jefferson, Pocatello (Alt 10-Int.)

No. of parcels requiring acquisitions: 15      Number of parcels requiring relocations: 3  
 New Alignment: 0.20 miles      Basic R/W Width: \_\_\_\_\_ ft.  
 Existing Alignment: 0.00 miles      Additional R/W Width: 68.00 ft.

**DIRECT ACQUISITION COSTS:**

**A. Land only**

Agriculture	Irrigated	<u>0.00</u> acres @	<u>\$0</u>	/acre	=	<u>\$0</u>
	Dry	<u>0.00</u> acres @	<u>\$0</u>	/acre	=	<u>\$0</u>
	n/a	<u>0.00</u> acres @	<u>\$0</u>	/acre	=	<u>\$0</u>
Graze	Irrigated	<u>0.00</u> acres @	<u>\$0</u>	/acre	=	<u>\$0</u>
	Dry	<u>0.00</u> acres @	<u>\$0</u>	/acre	=	<u>\$0</u>
		<u>0.00</u> acres @	<u>\$0</u>	/acre	=	<u>\$0</u>
Timber	Income Producing	<u>0.00</u> acres @	<u>\$0</u>	/acre	=	<u>\$0</u>
	Harvestable	<u>0.00</u> acres @	<u>\$0</u>	/acre	=	<u>\$0</u>
	Non-Harvestable	<u>0.00</u> acres @	<u>\$0</u>	/acre	=	<u>\$0</u>
Residential	Developed	<u>0.68</u> acres @	<u>\$217,814</u>	/acre	=	<u>\$147,460</u>
	Undeveloped	<u>0.00</u> acres @	<u>\$0</u>	/acre	=	<u>\$0</u>
Commercial/Industria	Developed	<u>0.93</u> acres @	<u>\$392,042</u>	/acre	=	<u>\$364,991</u>
	Undeveloped	<u>0.15</u> acres @	<u>\$522,723</u>	/acre	=	<u>\$78,461</u>
Damages Anticipated					=	
Miscellaneous					=	

**B. Site Improvements**

Agriculture	No. of Structures	<u>0</u> @	<u>\$0</u>	(average)	=	<u>\$0</u>
Residential	No. of Structures	<u>0</u> @	<u>\$0</u>	(average)	=	<u>\$0</u>
Commercial/Industria	No. of Structures	<u>0</u> @	<u>\$0</u>	(average)	=	<u>\$0</u>
Damages Anticipated					=	
Miscellaneous					=	

**C. Relocation**

Developed Agriculture	No. Expected	<u>0</u> @	<u>\$0</u>	(average)	=	<u>\$0</u>
Developed Residential					=	
Single Family	No. Expected	<u>3</u> @	<u>\$100,000</u>	(average)	=	<u>\$300,000</u>
Multi-Family	No. Expected	<u>0</u> @	<u>\$0</u>	(average)	=	<u>\$0</u>
Developed Comm/Inc	No. Expected	<u>0</u> @	<u>\$150,000</u>	(average)	=	<u>\$0</u>
Miscellaneous					=	

**INDIRECT ACQUISITION COSTS:**

Appra./Imp.Agri.	No. Expected	<u>0</u> @	<u>\$0</u>	(average)	=	<u>\$0</u>
Appra./Imp.Resid.					=	
2685	No. Expected	<u>0</u> @	<u>\$0</u>	(average)	=	<u>\$0</u>
2288	No. Expected	<u>0</u> @	<u>\$0</u>	(average)	=	<u>\$0</u>
B & A	No. Expected	<u>0</u> @	<u>\$0</u>	(average)	=	<u>\$0</u>
Appra./Imp.Com.-Ind	No. Expected	<u>0</u> @	<u>\$0</u>	(average)	=	<u>\$0</u>
Appraisals/Land	No. Expected	<u>0</u> @	<u>\$0</u>	(average)	=	<u>\$0</u>
Negotiations	No. Expected	<u>0</u> @	<u>\$0</u>	(average)	=	<u>\$0</u>
Demolitions	No. Expected	<u>0</u> @	<u>\$0</u>	(average)	=	<u>\$0</u>
				Sub-Total	=	<u>\$890,912</u>

**INCIDENTALS:**

Estimated as a percentage of overall costs. 10.00 %      \$89,091

(Includes Title Costs, Admin. Settle., Legal Settle., Attorney & Court Costs, Property Mngmnt. & Misc.)

**Total Estimated Project R/W Costs: \$980,003**

Proposed R/W Plans Approval Date:       Projected R/W Expenditure Years:       Contruction Year(s):

Estimtd. By: Jeremy Robbins, PE      Title: PM      Date: 10/5/2010



**Alameda/Jefferson  
City of Pocatello  
Alternate 10  
Preliminary Cost Estimate  
10/6/2010**

<b>Summary Of Costs</b>	<b>Initial</b>	<b>Ultimate</b>
Earthwork/Removal	\$331,000	\$778,800
Pavement/Base	\$377,600	\$1,003,000
Drainage	\$91,200	\$184,800
Erosion Control	\$18,700	\$37,490
Concrete	\$174,000	\$361,200
Traffic	\$135,000	\$327,000
Construction Traffic Control	\$10,100	\$34,390
<b>Construction Subtotal</b>	<b>\$1,137,600</b>	<b>\$2,726,680</b>



Alameda/Jefferson  
City of Pocatello  
Alternate 10  
Preliminary Cost Estimate  
10/6/2010

**Initial Construction**

Item #	Item	Quantity	UNIT	Unit Price	Cost
<b>Earthwork/Removal</b>					
203-005A	Rem of Obstructions	1	LS	\$10,000.00	\$10,000.00
203-015A	Rem of Bituminous Surf	8000	SY	\$2.50	\$20,000.00
203-060A	Rem of Conc Sidewalk	1200	SY	\$6.00	\$7,200.00
203-070A	Rem of Curb & Gutter	1400	FT	\$4.50	\$6,300.00
205-005A	Excavation	13100	CY	\$15.00	\$196,500.00
S203-05A	Demolition	1	LS	\$90,000.00	\$90,000.00
S203-45A	Rem of Existing Signs	10	EACH	\$100.00	\$1,000.00
<b>Subtotal</b>					<b>\$331,000.00</b>
<b>Pavement/Base</b>					
303-021A	3/4" Aggr TY A for Base	5300	TON	\$22.00	\$116,600.00
301-005A	Granular Subbase	4250	TON	\$13.00	\$55,250.00
S405-20A	Superpave HMA Pav CL SP-	2250	TON	\$90.00	\$202,500.00
S405-41A	Approach	5	EACH	\$650.00	\$3,250.00
<b>Subtotal</b>					<b>\$377,600.00</b>
<b>Drainage</b>					
605-500A	Catch Basin	15	EACH	\$1,300.00	\$19,500.00
605-600A	Inlet	15	EACH	\$2,101.00	\$31,515.00
605-025A	12" Storm Sewer Pipe	950	FT	\$36.00	\$34,200.00
605-450A	Manhole	3	EACH	\$2,000.00	\$6,000.00
<b>Subtotal</b>					<b>\$91,215.00</b>
<b>Erosion Control</b>					
205-060A	Water for Dust Abatement	20	MG	\$34.00	\$680.00
212-095A	Inlet Protection	10	EACH	\$11.50	\$115.00
212-020A	Silt Fence	1500	FT	\$4.50	\$6,750.00
212-060A	Stabilized Construction Entrance	2	EACH	\$2,600.00	\$5,200.00
S212-05A	Fiber Wattles	1500	FT	\$4.00	\$6,000.00
<b>Subtotal</b>					<b>\$18,745.00</b>
<b>Concrete</b>					
613-005A	Conc Sidewalk	2600	SY	\$27.00	\$70,200.00
614-005A	Urban Approaches	10	EACH	\$800.00	\$8,000.00
614-010A	Conc For Urban Approaches	40	CY	\$200.00	\$8,000.00
615-430A	Comb Curb & Gutter Ty A or C2	4400	FT	\$20.00	\$88,000.00
<b>Subtotal</b>					<b>\$174,200.00</b>
<b>Traffic</b>					
616-010A	Sign Type B	200	SF	\$18.00	\$3,600.00
656-005A	Traffic Signal installation	1	LS	\$120,000.00	\$120,000.00
S900-60A	Pavement Markings	4000	FT	\$0.25	\$1,000.00
S900-62A	Pav Marking Thermoplastic	1000	SF	\$10.00	\$10,000.00
<b>Subtotal</b>					<b>\$134,600.00</b>

**Alameda/Jefferson  
City of Pocatello  
Alternate 10  
Preliminary Cost Estimate  
10/6/2010**

Construction Traffic Control					
626-010A	Rent Const. Sign Class B	200	SF	\$7.00	\$1,400.00
626-040A	Rent Const. Barricades Type III	5	EACH	\$80.00	\$400.00
626-050A	Rent Drums Class B	30	EACH	\$25.00	\$750.00
626-105A	Traffic Contol Maintenance	100	MNHR	\$42.00	\$4,200.00
630-005A	Flagging	80	HR	\$37.00	\$2,960.00
626-115A	Rent Portable Tubular Markers	50	EACH	\$8.50	\$425.00
				<b>Subtotal</b>	<b>\$10,135.00</b>

Alameda/Jefferson  
City of Pocatello  
Alternate 10  
Preliminary Cost Estimate  
10/6/2010

**Ultimate Construction**

Item #	Item	Quantity	UNIT	Unit Price	Cost
<b>Earthwork/Removal</b>					
203-005A	Rem of Obstructions	1	LS	\$20,000.00	\$20,000.00
203-015A	Rem of Bituminous Surf	23250	SY	\$2.50	\$58,125.00
203-060A	Rem of Conc Sidewalk	3700	SY	\$6.00	\$22,200.00
203-070A	Rem of Curb & Gutter	4500	FT	\$4.50	\$20,250.00
205-005A	Excavation	27750	CY	\$15.00	\$416,250.00
S203-05A	Demolition	2	LS	\$120,000.00	\$240,000.00
S203-45A	Rem of Existing Signs	20	EACH	\$100.00	\$2,000.00
<b>Subtotal</b>					<b>\$778,825.00</b>
<b>Pavement/Base</b>					
303-021A	3/4" Aggr TY A for Base	14175	TON	\$22.00	\$311,850.00
301-005A	Granular Subbase	5500	TON	\$13.00	\$71,500.00
S405-20A	Superpave HMA Pav CL SP-	6800	TON	\$90.00	\$612,000.00
S405-41A	Approach	11	EACH	\$650.00	\$7,150.00
<b>Subtotal</b>					<b>\$1,002,500.00</b>
<b>Drainage</b>					
605-500A	Catch Basin	23	EACH	\$1,300.00	\$29,900.00
605-600A	Inlet	23	EACH	\$2,101.00	\$48,323.00
605-025A	12" Storm Sewer Pipe	2350	FT	\$36.00	\$84,600.00
605-450A	Manhole	11	EACH	\$2,000.00	\$22,000.00
<b>Subtotal</b>					<b>\$184,823.00</b>
<b>Erosion Control</b>					
205-060A	Water for Dust Abatement	40	MG	\$34.00	\$1,360.00
212-095A	Inlet Protection	20	EACH	\$11.50	\$230.00
212-020A	Silt Fence	3000	FT	\$4.50	\$13,500.00
212-060A	Stabilized Construction Entrance	4	EACH	\$2,600.00	\$10,400.00
S212-05A	Fiber Wattles	3000	FT	\$4.00	\$12,000.00
<b>Subtotal</b>					<b>\$37,490.00</b>
<b>Concrete</b>					
613-005A	Conc Sidewalk	5600	SY	\$27.00	\$151,200.00
614-005A	Urban Approaches	20	EACH	\$800.00	\$16,000.00
614-010A	Conc For Urban Approaches	80	CY	\$200.00	\$16,000.00
615-430A	Comb Curb & Gutter Ty A or C2	8900	FT	\$20.00	\$178,000.00
<b>Subtotal</b>					<b>\$361,200.00</b>
<b>Traffic</b>					
616-010A	Sign Type B	400	SF	\$18.00	\$7,200.00
656-005A	Traffic Signal installation	1	LS	\$295,000.00	\$295,000.00
S900-60A	Pavement Markings	11000	FT	\$0.25	\$2,750.00
S900-62A	Pav Marking Thermoplastic	2200	SF	\$10.00	\$22,000.00
<b>Subtotal</b>					<b>\$326,950.00</b>

**Alameda/Jefferson  
City of Pocatello  
Alternate 10  
Preliminary Cost Estimate  
10/6/2010**

Construction Traffic Control					
626-010A	Rent Const. Sign Class B	400	SF	\$7.00	\$2,800.00
626-040A	Rent Const. Barricades Type III	10	EACH	\$80.00	\$800.00
626-050A	Rent Drums Class B	60	EACH	\$25.00	\$1,500.00
626-105A	Traffic Contol Maintenance	400	MNHR	\$42.00	\$16,800.00
630-005A	Flagging	280	HR	\$37.00	\$10,360.00
626-115A	Rent Portable Tubular Markers	250	EACH	\$8.50	\$2,125.00
				<b>Subtotal</b>	<b>\$34,385.00</b>

**APPENDIX L**  
**Environmental Scan**

7761 W RIVERSIDE DRIVE, SUITE 201  
BOISE, ID 83714-5044  
T. 208.898.0012 F. 208.947.1655  
www.parametrix.com

## TECHNICAL MEMORANDUM

Date: January 22, 2010  
To: Jesse Schuerman, Project Manager  
City of Pocatello  
From: Kristen Levandusky  
Subject: Environmental Scan  
cc: PMX Project File  
Project Number: A011(657), Key No. 11657  
Project Name: Alameda Road & Jefferson Avenue Intersection Improvements

---

### INTRODUCTION

The Alameda Road & Jefferson Avenue Intersection is located in the city of Pocatello in Bannock County, ID. The intersection is a very complex, non-traditional intersection and has been identified by the City for improvements to upgrade the capacity and safety for passenger vehicles, trucks, and pedestrians.

This Environmental Scan was prepared to identify the environmental concerns within the project study area. This information will be critical as the project moves into the subsequent phases in order to identify the magnitude of the environmental scope that will be necessary. This report describes the built and natural environmental resources known to occur, or have the potential to exist in the study area. Identification of the elements is critical to transportation planning at this intersection. Key elements identified in the report include socioeconomics, parks, recreation areas, historic resources, geology & soils, hazardous material, threatened and endangered species, air quality, and wetlands.

If federal funds are planned to be used for construction of this project, the evaluation of environmental impacts must be conducted in accordance with the National Environmental Policy Act.

### ENVIRONMENTAL SUMMARY

#### Socioeconomics & Land Use

The City of Pocatello is located in southeast Idaho, in Bannock County. Table 1 shows the 2000 Census population characteristics for the City of Pocatello. The population is primarily white, with approximately 15% of the City population below the government poverty thresholds.

**Table 1. Population Characteristics**

Demographic Characteristic	City of Pocatello	State of Idaho
Total Population, 2000	51,466	1,293,953

Total Population, 2006 (Estimate)	53,932	1,466,465
Housing units, 2000	20,627	527,824
Persons per household, 2000	2.58	2.69

Source- US Census Bureau- <http://quickfacts.census.gov/qfd/states/16/1664090.html>, Accessed January 20, 2010

Based on the windshield survey, there does not appear to be a disproportionate minority or low income population in the immediate project area.

**Parks, Recreation Areas, and Historic Resources**

A review of the City of Pocatello public park maps, and a windshield survey indicated that there are no existing public parks in the study area.

A research of the National Register of Historic Places in Idaho from the State Historic Preservation Office (SHPO) indicated that there are no listed historic places in the study area. In addition, a viewshed analysis was completed, and no structures appeared to be potentially eligible sites. However, the SHPO office was contacted, but information had not been gathered at the time this technical memo was prepared.

**Geology & Soils**

An online web soil survey was conducted through the US Department of Agriculture. The survey found that the soil in the study area is Urban land-Bahem-Broxon complex, with a slope of 3 to 6 percent. The water table, and the nearest restrictive feature appear to be at least 80 inches below the surface.

**Hazardous Material**

According to the US Environmental Protection Agency Environmapper web-based mapping application, there are no facilities identified as Superfund cleanup sites, nor any active leaking underground storage tanks in the study area.

**Threatened/Endangered Species**

The US Fish and Wildlife Service (USFWS) has identified federally protected, proposed for protection, and candidate species of plants and wildlife in Bannock County. Table 2 identifies their status.

**Table 2. Threatened and Endangered Species**

Species	Status
Utah Valvata Snail ( <i>Valvata utahensis</i> )	Listed Endangered
Yellow-billed cuckoo ( <i>Coccyzus americanus</i> )	Candidate

Source: US Fish and Wildlife Service- <http://fws.gov/idaohoes/County>, Accessed January 20, 2010

The Utah Valvata Snail was listed as an endangered species, under the Federal Endangered Species Act in 1992. Since that time, it has been determined that the Valvata Snail is not limited to areas of cold-water springs or spring outflows, as was believed in 1992. Rather, it exists in a variety of aquatic habitats, including cold-water springs, spring creeks and tributaries, the mainstem Snake River and associated tributary stream habitats, and reservoirs influenced by dam operations. Because of this information, the species no longer meets the requirements set forth by the Federal Endangered Species Act. A recommendation was made in July 2009 for the Utah Valvata Snail to be delisted from the US Fish & Wildlife Services’ endangered species list.

## **Air Quality**

Under the authority of the Clean Air Act (CAA), the U.S. Environmental Protection Agency (EPA) has developed air quality standards that limit the maximum levels of certain pollutants in outdoor air. The Idaho Department of Environmental Quality is governing authority for air quality issues and enforces the regulations throughout the entire state of Idaho, including Bannock County and the City of Pocatello.

In 1990, the Portneuf Valley, which includes portions of Power and Bannock Counties, including the City of Pocatello, were designated a moderate nonattainment area for PM-10 by operation of law upon enactment of the Clean Air Act Amendments of 1990. However, on July 13, 2006, EPA approved a maintenance plan submitted for the Pocatello area, and granted the re-designation of the Portneuf Valley to attainment for PM-10. Attainment areas are geographic areas where the criteria pollutants, as established by the EPA, meet or are below the National Ambient Air Quality Standards.

## **Wetlands**

A review of the National Wetland Inventory maps did not indicate any wetlands in the project area. The Pocatello Creek, which runs underground directly below the intersection, is likely to be considered a “waters of the US” under Section 404 of the Clean Water Act by the US Army Corps of Engineers because of its likely connection to the Portneuf River.

## **Permitting**

### ***NPDES General Permit for Storm Water Discharges from Construction Activity***

If ground-disturbing activities are greater than 1 acre to improve the Alameda Road & Jefferson Avenue intersection, under the National Pollutant Discharge Elimination System (NPDES), authorization to discharge stormwater under and NPDES construction stormwater permit would be required.

Construction activities in Idaho are covered by a general permit for stormwater discharges from construction sites. This permit outlines a set of provisions construction operators must follow to comply with the requirements of the NPDES stormwater regulations. This permit covers any site 1 acre and above, including smaller sites that are part of a larger common plan of development or sale. In order to be covered under the construction general permit, a site-specific stormwater pollution prevention plan must be developed. The construction manager must document the erosion, sediment, and pollution controls she intends to use, inspect the controls periodically, and maintain the controls throughout the life of the project.

A Notice of Intent would need to be filed with the US Environmental Protection Agency for coverage under this general permit to ensure storm water discharges from construction do not adversely affect nearby receiving waters. The Idaho Department of Environmental Quality’s “Catalog of Stormwater Best Management Practices for Idaho Cities and Counties” should be consulted on the best ways to manage storm water runoff if a project is constructed.

### ***Joint Application for Permits***

If waters of the US, including wetlands and irrigation canals, would be dredged and/or filled by proposed construction activity, a joint application for permits would need to be prepared and submitted to the US Army Corps of Engineers for review to obtain permission for such activity.



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**APPENDIX M**  
**Geotechnical Reports**

**Final Abbreviated Phase I Materials Report,  
Geological Reconnaissance and  
Life-Cycle Cost Analysis**

Alameda / Jefferson Intersection  
ITD Project No. A0011(657);Key No. 11657  
Pocatello, Idaho

*for*  
**Parametrix, Inc.**

June 16, 2010



1525 South David Lane  
Boise, Idaho 83705  
208.433.8098

**Final Abbreviated Phase I Materials  
Report,  
Geological Reconnaissance and  
Life-Cycle Cost Analysis**

**Alameda / Jefferson Intersection  
ITD Project No. A0011(657);Key No. 11657  
Pocatello, Idaho**

**File No. 4420-059-00**

**June 16, 2010**

Prepared for:

Parametrix, Inc.  
7761 West Riverside Drive, Suite 201  
Boise, Idaho 83714

Attention: Todd Johnson, PE

Prepared by:

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SP0:BRM:PEW:mlh  
[http://projects/sites/0442005900/Finals/Alameda Jefferson Phase I Report.docx](http://projects/sites/0442005900/Finals/Alameda%20Jefferson%20Phase%20I%20Report.docx)

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- Appendix B. Logs of Borings
- Appendix C. Pavement Design and Life-Cycle Cost Analysis
- Appendix D. Laboratory Testing Results

## 220.1 INTRODUCTION

This Abbreviated Phase I Geological Reconnaissance Report was prepared to evaluate the geologic setting for the improvement of the intersection of East Alameda Road, Pocatello Creek Road, Jefferson Avenue, and Hiline Road, in Pocatello Idaho. The objective of the abbreviated Phase I investigation is to identify geologic conditions and constraints that may affect reconstruction activities and determine a pavement type. The project location is shown on Figure 1, Vicinity Map in Appendix A.

The existing East Alameda Road, east of Jefferson Avenue, consists of a two-lane minor side street with a left turn pocket at Tendoy Elementary School. The existing Jefferson Avenue is a three-lane road, one south bound and two north bound lanes that split into three directional lanes at the intersection with East Alameda Road/Pocatello Creek Road. The existing Hiline Road is also a three-lane road with one south bound lane, two north bound lanes and a left turn lane. The exiting Pocatello Creek Road consists of a four-lane arterial road with a left turn lane and a right turn lane west bound. Pocatello Creek Road becomes East Alameda Road west of the intersection of Hiline Road/Jefferson Avenue. Pocatello Creek Road/East Alameda Road are also referenced by ITD as the I-15 Business Loop (I-15B), but are not on the NHS. The roadways are shown on Figure 2 in Appendix A.

The project consists of approximately 800 lineal feet of reconstruction/widening along the existing Hiline Road/Jefferson Avenue, and approximately 850 lineal feet of reconstruction/widening along the existing East Alameda Road/Pocatello Creek Road. Also included is the realignment/reconstruction of East Alameda Road east of Jefferson Avenue with a new alignment connecting Deon Drive and East Alameda Road. Multiple design alternatives are being considered for the intersection, East Alameda Road east of Jefferson Avenue and the new alignment connecting Deon Drive and East Alameda Road.

Surface geologic conditions within approximately ½ mile of the intersection were observed for this report. The pavement at the existing intersection showed low severity potholes, moderate to high severity longitudinal cracking in the wheel paths, moderate block cracking in the northeast corner of the intersection (on Pocatello Creek Road), and high severity edge cracking and raveling on the west corner of the intersection between Hiline Road and East Alameda Road.

Kleinfelder's geologic site reconnaissance was conducted on March 15, 2010, and Kleinfelder's subsurface investigation was performed on March 26, 2010.

## 220.2 CONCLUSIONS

Based on the results of this survey, no geologic conditions were observed that would negatively affect the reconstruction or realignment of the proposed roadway project. It should be noted that the intersection is in an urban location; alternative locations for the intersection are not feasible.

Specific areas of investigation are described in detail in the following sections. A summary of findings for consideration by the design engineer includes the following:

- Although no frost heave damage was observed, the limited subsurface investigation encountered layers of silt and silty clay which could cause frost heave. In addition, proper drainage will be required in areas of silt and silty clay subgrade to maintain consistent support characteristics. Section 220.3.4 *Soils and Vegetation* discusses this issue in greater detail.
- Groundwater in the area is considered deep [ $>6$  feet below ground surface (bgs) (USDA Soil Survey & IDWR)]. Limited subsurface investigation (to 9 feet bgs) did not encounter groundwater. Based on the subsurface investigation, groundwater is not expected to impact construction of the project.
- Reconstruction options were compared using Life-Cycle Cost Analysis (LCCA). A flexible pavement section appears to be the best option for this intersection, based on the LCCA comparison. The comparison of flexible to rigid pavement reconstruction options is discussed in the Life-Cycle Cost Report Summary included as part of this report.

## 220.3 TOPOGRAPHY AND GEOLOGY

### 220.3.1 Topography

The project is located between the eastern Portneuf River Valley and the western slope of the Pocatello Range known as the Pocatello Bench. The project intersection is located at approximately Elevation 4,530 feet above Mean Sea Level (MSL). The project intersection is relatively flat, sloping slightly downward toward the southwest. Beyond the intersection to the north, east and southeast the ground increases from Elevation 4,610 to Elevation 4,710 feet MSL.

### 220.3.2 Geomorphology and Stratigraphy

The existing intersection is comprised of alluvial-fan and flow deposits derived from infrequent flash floods and debris flows from tributary stream valleys and canyons. Deposits of the Quaternary alluvial-fan and debris flow include a mix of muddy sand, with clasts from pebbles up to boulders and lamination of silty redeposited loess (Othberg 2002). There were no exposed rock outcrops in the project area.

A conglomerate unit is located approximately 800 feet north of the intersection. The unit consists of clast-supported cobble conglomerate (up to 8 inches) with orange to red-brown sand and tuff matrix. Approximately 1,000 feet north and 1,000 to 1,400 feet east to southeast of the intersection is Loess-mantled alluvial-fan gravel of the ancestral Pocatello Creek. This unit consists of roughly stratified clay and fine-grained sand with fine subrounded to rounded gravel and cobbles mantled with loess.

### 220.3.3 Geologic Structure

Rock outcrops were present approximately 800 to 1,000 feet north of project intersection. Based on geologic data presented by Othberg (2002) the intersection does not encounter surficial or buried geologic structures. A normal fault (Othberg) is located approximately 900 feet north of the intersection. The fault is within the conglomerate unit and the loess-mantled alluvial-fan. The fault presented is approximately 500 feet long. R. Breckenridge (2003) documents two normal faults approximately 15 miles east and 8 miles west of the intersection described in Section 220.6.2 *Faults* of this report.

Bedding, joint, fracture or fold orientations were not noted by Othberg (2002). The principal structural grain in the region is one of north-trending normal faults defining the eastern margin of the Portneuf River Valley, typical of the northern Basin and Range Physiographic Province.

#### **220.3.4 Soils and Vegetation**

There is one surficial soil type within the intersection (USDA Soil Number 90) as described in the Soil Conservation Service (SCS) September 1987 Soil Survey (USDA, 1987). This soil is the Urban Land Bahem-Broxon Complex and is described below based on the United States Department of Agriculture (USDA), Unified Soil Classification System (USCS) and the American Association of State Highway and Transportation Officials (AASHTO) System. The soil classification, as presented by the USDA (1987), represents the soil type to a depth of approximately 60 inches. A description of the soil type is presented below.

##### ***Urban land Bahem-Broxon complex***

The Bahem-Broxon complex (0 to 3 percent slopes) occurs along the entire intersection. The Bahem-Broxon silt loam forms in silty alluvium and is very deep and well drained. Surface runoff is slow and the hazard of erosion is slight. According to the soil survey, Bahem-Broxon silt loam soils typically have an ML or CL-ML classification based on the USCS or an A-4 classification based on the AASHTO system in the upper 49 inches. From 49 to 60 inches the Bahem-Broxon is an extremely cobbly and stony sand typically classified as GP, GP-GM according to USCS, and A-1 based on the AASHTO classification. Depth to bedrock in this soil unit is typically greater than five feet.

A limited subsurface exploration program was completed for preliminary pavement recommendations. The exploration consisted of four borings (10-KLF-B1 through 10-KLF-B4) to a maximum depth of 9 feet below the existing ground surface. Borings 10-KLF-B1 and 10-KLF-B2, on Pocatello Creek Road and Hiline Road, respectively, indicate that the existing pavement section consists of approximately 4 to 5 inches of asphalt underlain by about 9 inches of aggregate base. Dense to very dense sand and gravel with various amounts of silt and clay (silty sand with gravel and silty clayey gravel with sand) supported the pavement structure to the maximum depth explored (about 6½ feet below the existing ground surface). Borings 10-KLF-B3 and 10-KLF-B4, on Jefferson Avenue and East Alameda Road (east of Jefferson Avenue), respectively, indicate that the existing pavement section consists of approximately 3 to 3½ inches of asphalt underlain by about 2½ to 6 inches of aggregate base. A geotextile fabric appears to have been placed between the pavement section and the native soils at the location of boring 10-KLF-B4. Supporting the pavement structure was medium stiff silt with sand and silty clay to the maximum depth explored (about 9 feet below the existing ground surface). Groundwater was not encountered during the field exploration. The exploration logs are included in Appendix C, and the approximate locations of the borings are shown on Figure 2, Boring Location Map in Appendix A.

The sand and gravel with silt and clay encountered in borings 10-KLF-B1 and 10-KLF-B2 are expected to provide relatively uniform support of the pavement sections. The silt and silty clay encountered in borings 10-KLF-B3 and 10-KLF-B4 will be susceptible to frost heave and will also be susceptible to changing support characteristics with changes in moisture content.



The intersection is located in urban Pocatello; vegetation consisted of landscape grass, bushes, and trees.

## 220.4 SURFACE WATER

One perennial surface water body, Pocatello Creek, is conveyed within an aqueduct through the project. The Pocatello Creek aqueduct parallels the south side of Pocatello Creek Road until it nears the intersection with Deon Drive, where it crosses to the north side of Pocatello Creek Road. The aqueduct crosses Hiline Road near the north end of the project and continues south, intersecting Alameda Road near the intersection of Randolph Avenue, and turns to parallel the north side of Alameda Road.

There are no other natural surface water features at the project location. All four roadways include curb and gutter within 1,000 feet of the intersection, with any surface runoff directed to drop inlets.

According to the FEMA Flood Insurance Rate Map for this area (FEMA, 2009), the intersection is located within Zones AO and X. Zone AO has an average of one to three feet of flood depth, usually street flow on sloped terrain. Hiline Road is in Zone X, an area of 0.2 percent annual chance of flooding, with an average of less than one foot of flood depth.

## 220.5 GROUNDWATER

According to the USDA Soil Survey (1987), groundwater in the area of the existing alignment is considered relatively deep (greater than six feet below the existing ground surface). According to the Idaho Department of Water Resources the static groundwater depth of wells in the area is 70 feet below the existing ground surface. Groundwater was not encountered during the field investigation to depths of about nine feet below the existing ground surface.

As mentioned in Section 220.4 *Surface Water* of this report, the Pocatello Creek aqueduct traverses the project limits. The Pocatello Creek Aqueduct is a concrete pipe approximately seven (7) feet in diameter which routes Pocatello Creek through the City of Pocatello to the Portneuf River. During the periods when water is flowing in the aqueduct, there is a potential for leakage from the pipe, which may result in localized saturation of the subgrade soils.

## 220.6 GEOLOGIC CONSTRAINTS

### 220.6.1 Seismic Risk

Past seismic activity data was obtained from Stover, Reagor, and Algermissen (1991). According to this source, no earthquake epicenters were mapped within 20 miles of the project. The nearest recorded epicenter is a Modified Mercalli Magnitude II event, located approximately 24 miles east of Pocatello.

The project is located in relatively close proximity to three active earthquake zones, the Lost River Fault System located approximately 80 miles to the north, the northern portion of the Wasatch Fault Zone located approximately 90 miles to the south, and the Greater Yellowstone area located

approximately 150 miles to the northeast. These areas have experienced earthquakes ranging in magnitude from 6.5 to 7.9 within the past 60 years.

Historic seismic intensity information was reviewed in Sprenke and Breckenridge (1992). Maximum seismic intensity data was summarized in 10-year time intervals covering the period from 1880 to 1989. Maximum observed earthquake-induced ground shaking in the region reached magnitude V on the Modified Mercalli Intensity Scale during four decades: the 1910's, 1930's, 1950's and the 1980's (Sprenke and Breckenridge, 1992), as detailed below.

- The 1910's rating is attributed to the Modified Mercalli Intensity VII earthquake near Montpelier, Idaho on May 13, 1914;
- The 1930's rating is attributed to the Richter Magnitude 6.6 earthquake in Hansel Valley, Utah in 1934 and Modified Mercalli Intensity VI earthquake near Montpelier, Idaho on June 12, 1930;
- The 1950's rating is attributed to the Richter Magnitude 7.5 earthquake near Hebgen Lake, Montana in 1959, and
- The 1980's rating is attributed to the Richter Magnitude 7.3 (Modified Mercalli Intensity IX) Borah Peak earthquake on October 28, 1983.

Probable ground shaking intensity for future seismic events is presented in two scenarios; one for structures located on bedrock, and the second for structures located on soil. For structures on bedrock, Sprenke and Breckenridge (1992) predict a 90 percent probability that a Mercalli Magnitude VII will not be exceeded in the next 50 years. For structures on soil, they predict a 90 percent probability that a Mercalli Magnitude V will not be exceeded in the next 50 years.

Based on the limited subsurface data, groundwater levels, soil classification, and soil densities there is low potential for seismically induced liquefaction and settlement. However, more detailed subsurface data will be required to adequately determine seismically induced liquefaction and settlement potential. The Pocatello Creek aqueduct is the only existing structure, and no additional structures are planned for this project, so potential seismic damage would be limited to the aqueduct.

According to the 2008 Interim Revisions of the AASHTO LRFD Bridge Design Specification, the site has a peak horizontal ground acceleration coefficient (PGA) of 0.15g (Figure 3.10.2.1-7), a horizontal spectral acceleration coefficient (S<sub>s</sub>) of 0.35 (Figure 3.10.2.1-8), and a horizontal spectral acceleration coefficient (S<sub>1</sub>) of 0.11 (Figure 3.10.2.1-9).

The presence of active faults in the area is discussed in Section 220.6.2 *Faults* of this report. Figures 16-250.5.8.1 and 16-250.5.8.2, from the ITD Materials Manual, do not indicate the presence of active faults within a 30-mile radius of the project.

## 220.6.2 Faults

A normal fault is located approximately 900 feet north of the intersection (Othberg 2002). The fault is within the conglomerate unit and the loess-mantled alluvial-fan. The fault presented is approximately 500 feet long. According to R. Breckenridge (2003) there are two normal faults approximately 15 miles east and 8 miles west of the intersection. Both are approximately 8 miles

long and are of the lesser Tertiary in age and have last moved in the past 16 million years. The fault east of the intersection trends north to south, and the fault west of the intersection trends north to south then turns to the east toward Pocatello. A discussion of earthquake effects on the project is included in Section 220.6.1 *Seismic Risks* of this report.

### **220.6.3 Landslides**

The closest landslides mapped by Adams, Breckenridge and Othberg (1991), occur approximately 6 miles southeast of the project intersection. The site is relatively flat, and as a result, landslides are not expected to impact the project design and construction.

### **220.6.4 Water**

During Kleinfelder's site reconnaissance, areas of standing water were observed along Jefferson Avenue, between East Alameda Road and the intersection to the north, and damp areas were observed along Hiline Road. However, periodic and intermittent standing water appears to accumulate in the gutters along Jefferson Avenue, Hiline Road, and the north side of East Alameda Road due to rainfall and snowmelt accumulation. The fine-grained subgrade soils (silty clay and silt) are moisture sensitive materials and allowing water to infiltrate and/or saturate these soils may cause loss of subgrade support.

The project area is located in mapped flood zones, as designated in the FEMA Flood Insurance Rate Maps (FEMA, 2009). The project intersection is identified as Zones AO and X. Zone AO is reported to have one to three feet of flooding and Zone X is reported as an area of minimal flooding (FEMA, 2009). FEMA Flood Zone designations are discussed in Section 220.4 *Surface Water* of this report.

The roadway should be designed with adequate drainage to prevent water ponding and infiltration. Drainage is expected to include curb and gutter and drop inlets to transport surface water away from the project. Due to the moisture sensitive subgrade soils, it is important that the surface water not be allowed to saturate the subgrade soils.

Project construction is not anticipated to have significant effects on groundwater flow.

### **220.6.5 Settlement and Embankment Foundations**

Based on the geologic review of the project site, no geologic conditions are present which will require special treatment of embankment foundations.

The intersection is not expected to require significant changes in grade. The amount of settlement will depend on the thickness of the existing soil layers, the height of the embankment fill, and the types of earth materials underlying the embankments.

### **220.6.6 Geologic Structure**

Due to the lack of bedrock outcrops, little is known of the geologic structure at the intersection. Since the soil strata below the project alignment are relatively deep and no significant cuts are planned, the geologic structure (jointing, bedding, etc.) is not expected to affect the project design or construction.

### 220.6.7 Highway Construction Materials

Approved Contractor Furnished Sources will be used for imported material on this project.

## 220.7 RECOMMENDATIONS

### 220.7.1 Slopes and Embankments

Slopes within the project limits do not exceed one percent. Little change in vertical grade is expected at the intersection as a result of the project. For minor cuts in the native soils and fill slopes constructed of imported granular borrow or subbase, slopes are expected to be stable at 2H:1V (Horizontal to Vertical). These slopes will be susceptible to sloughing and erosion with exposure, and vegetation will need to be established for long term stability. Embankment settlements cannot be predicted without knowing exact embankment heights, and detailed subsurface information. However, based on the borings performed for the site, it is expected that settlements will be up to approximately 4 percent of the embankment height. The majority of the settlement is expected to take place during construction of the embankment.

### 220.7.2 Structures

No structures are planned within the project limits.

The drainage at the site consists of curb and gutter with drop inlets. A survey of the drainage culverts at the site was not performed.

### 220.7.3 Drainage

There are no established surface water drainages within the project limits. As discussed in Section 220.4 *Surface Water*, the Pocatello Creek Aqueduct is located within the project limits and consists of a large concrete pipe culvert. Surface water will be generated from precipitation events, but it is expected that curb and gutter with drop inlets will be used to transport water away from the project.

### 220.7.4 Shrink/Swell

The following shrinkage/swell factors are estimated for preliminary materials estimation purposes:

Material	Approximate Shrink/Swell
Silty Sand with Gravel/Silty Clayey Gravel	-10 percent
Silt/Silty Clay	-15 percent

Shrink/swell, as shown above, refers to the volume change from “bank” to “fill.”

### 220.7.5 Tentative Ballast

The tentative ballast sections for the pavement are presented in Table 1. The tentative ballast sections are based on R-values of subgrade soils taken from the roadway alignments, the Equivalent Single Axle Loads (ESAL) values provided by the ITD, and commercial Average Daily Traffic (ADT) provided by the City of Pocatello. The R-values ranged from 48 to 69, and are

presented on the laboratory test reports in Appendix C. A summary of the design values used to calculate the pavement sections is presented in the Design Criteria Section of the Life-Cycle Cost Analysis Report Summary. The pavement calculations are included in Appendix C.

**TABLE 1. TENTATIVE BALLAST SECTIONS**

Roadway	Layer	Depth (feet)
East Alameda Road/Pocatello Creek Road	Asphalt Concrete	0.45
	Three-quarter-inch (3/4 ") Aggregate Base	0.75
	Granular Subbase	---
Hiline Road/Jefferson Avenue	Asphalt Concrete	0.35
	Three-quarter-inch (3/4 ") Aggregate Base	0.50
	Granular Subbase	0.40
East Alameda Road (East of Jefferson Avenue)/New Alignment	Asphalt Concrete	0.25
	Three-quarter-inch (3/4 ") Aggregate Base	0.50
	Granular Subbase	0.40

Drainable pavement construction (edge drains or rock cap) does not appear to be necessary for the roadway alignments.

### 220.7.6 Tentative Material Sources

All material for the project should be Contractor furnished.

### 220.8 REFERENCES

Adams, W.C., and Breckenridge, R.M., 1991, Landslides in Idaho, Idaho Geologic Survey, Surficial Geology Map Series, scale 1:500,000.

Flood Insurance Rate Map, Pocatello City/Bannock County, Idaho, No. 16005C0239D, 2009, Federal Emergency Management Agency.

Idaho Department of Transportation, 2010 Materials Manual, State of Idaho.

Idaho Department of Water Resource, website, [www.idwr.gov](http://www.idwr.gov), Reviewed on March 16, 2010.

Kellogg, K.S., Rodgers, D.W., Hladky, F.R., Kiessling, M.A., and Riesterer, J.W., 1999, The Putnam Thrust Plate, Idaho – Dismemberment and Tilting by Tertiary Normal Faults, in Guidebook to the Geology of Eastern Idaho, Idaho Museum of Natural History and ISU Press, Hughes S.S., and Thackray, G.D., editors.

Marker, B., and Rush, A., Phase I Material Report Geological Reconnaissance and Life-Cycle Cost Analysis Alameda Bike Lanes, Project No. STP-7011(102), Key No. 8126, April 2004.

McGrath, C.L., 1987, Soil Survey of Bannock County Area, Idaho, U.S. Department of Agriculture, Soil Conservation Service.

Othberg, K.L., 2002, Surficial Geologic Map of the Michaud and Pocatello North Quadrangles, Bannock and Power Counties, Idaho.

Sprenke, K.F., and Breckenridge, R.M., 1992, Seismic Intensities in Idaho, Idaho Geologic Survey, Information Circular 50.

Stover, C.W., Reagor, B.G., and Algermissen, S.T., 1991, Seismicity Map of the State of Idaho, U.S. Geological Survey, Miscellaneous Field Studies Map MF-1857, scale 1:1,000,000.

U.S. Geological Survey, 7.5-Minute Topographic Map, Pocatello North, Idaho Quadrangle, 1971.

## LIFE-CYCLE COST ANALYSIS REPORT SUMMARY

### Introduction

This preliminary pavement design and life-cycle cost analysis (LCCA) was performed for the improvement of the intersection of East Alameda Road, Jefferson Avenue, Pocatello Creek Road, and Hiline Road, in Pocatello, Idaho. The objective of this analysis is to compare pavement alternatives for the intersection. The pavement analysis was separated into three segments: 1. East Alameda Road/Pocatello Creek Road; 2. Hiline Road/Jefferson Avenue, and 3. East Alameda Road (east of Jefferson Avenue) and the potential new alignment connecting East Alameda Road and Deon Drive. The alignments were separated based on differences in traffic loading. Since this project consists of a planned reconstruction or realignment, only flexible pavement and rigid pavement alternatives were evaluated for this project.

### Design Criteria

We used the ITD Gravel Equivalence (GE) Method to design the flexible pavement alternative, and the AASHTO Method to design the rigid pavement alternative. The design criteria used to calculate the thicknesses of the roadways are presented in Tables 2 and 3, below.

**TABLE 2. ASPHALT CONCRETE PAVEMENT DESIGN CRITERIA**

Roadway Classification and Designation	Design Criteria		
	Traffic Index (TI)	R-value	Substitution Ratios
East Alameda Road/Pocatello Creek Road	10.8 (20 Years)	R-value = 60	1.6:1.0
Hiline Road/Jefferson Avenue	8.3 (20 Years)	R-value = 48	1.8:1.0
East Alameda Road (East of Jefferson Avenue)/New Alignment	7.5 (20 Years)	R-value = 48	2.0:1.0
Base		R-value = 80	1.0:1.0
Subbase		R-value = 60	0.85:1.0

**TABLE 3. RIGID PAVEMENT DESIGN CRITERIA**

Design Item	Design Criteria
Traffic	ESALS
East Alameda Road/Pocatello Creek Road	22813000 (ESALS 40 Years)
Hiline Road/Jefferson Avenue	1521000 (ESALS 40 Years)
Modulus of Subgrade Reaction	
East Alameda Road/Pocatello Creek Road	k = 220 pci
Hiline Road/Jefferson Avenue	k = 190 pci
Reliability	85 percent
Standard Deviation	0.34
Design Serviceability Loss	2

Design Item	Design Criteria
Terminal Serviceability	2.5
Concrete Elastic Modulus	4200000 psi
Concrete Modulus of Rupture	700 psi
Load Transfer Coefficient	2.9
Drainage Coefficient	
East Alameda Road/Pocatello Creek Road	1.0
Hiline Road/Jefferson Avenue	0.5

The subgrade soils in the area generally consist of sand and gravel with silt, silt with sand, and silty clay. Three R-value samples were taken from the area, and the laboratory R-values were estimated to be 48 (East Alameda Road east of Jefferson Avenue), 48 (Jefferson Avenue), and 69 (Pocatello Creek Road). A minimum design R-value of 60 was used for East Alameda Road/Pocatello Creek Road; and an minimum design R-value of 48 was used for Hiline Road/Jefferson Avenue, East Alameda Road (east of Jefferson Avenue) and the potential new alignment connecting East Alameda Road and Deon Drive. The Traffic Index or ESAL predictions used for the design of the roadways are based on two-way traffic (50 percent each direction). The pavement sections are based on a 20-year design life for asphalt concrete pavement, and a 40-year design life for Portland cement concrete pavement.

For more detailed information on the design criteria, the ITD GE Method information and the AASHTO Method information please refer to Appendix B of this report.

### Alternatives

Two alternatives, flexible and rigid pavement, were selected for evaluation in the LCCA for East Alameda Road/Pocatello Creek Road, and Hiline Road/Jefferson Avenue. A LCCA was not performed for East Alameda Road (east of Jefferson Avenue) and the potential new alignment connecting East Alameda Road and Deon Drive because of the low traffic volume on the roadway. The alternative ballast sections are presented in Table 4.



**TABLE 4. ALTERNATIVE BALLAST SECTIONS**

Alternative No. 1	<u>Flexible Pavement for East Alameda Road/Pocatello Creek Road</u> 0.45 feet Asphalt Concrete 0.75 feet Aggregate Base
	<u>Flexible Pavement for Hiline Road/Jefferson Avenue</u> 0.35 feet Asphalt Concrete 0.50 feet Aggregate Base 0.40 feet Granular Subbase
Alternative No. 2	<u>Rigid Pavement for East Alameda Road/Pocatello Creek Road</u> 0.83 feet (10 inches) Portland Cement Concrete 1.00 feet Aggregate Base
	<u>Rigid Pavement for Hiline Road/Jefferson Avenue</u> 0.75 feet (9 inches) Portland Cement Concrete 0.50 feet Aggregate Base

### Conclusions

The LCCA for each alternative included total initial cost, total cost over the design life, equivalent uniform annual cost (EUAC), and total net present worth at 4.0 percent interest rate for the project. Comparative costs for the two alternatives are summarized in Table 5 below.

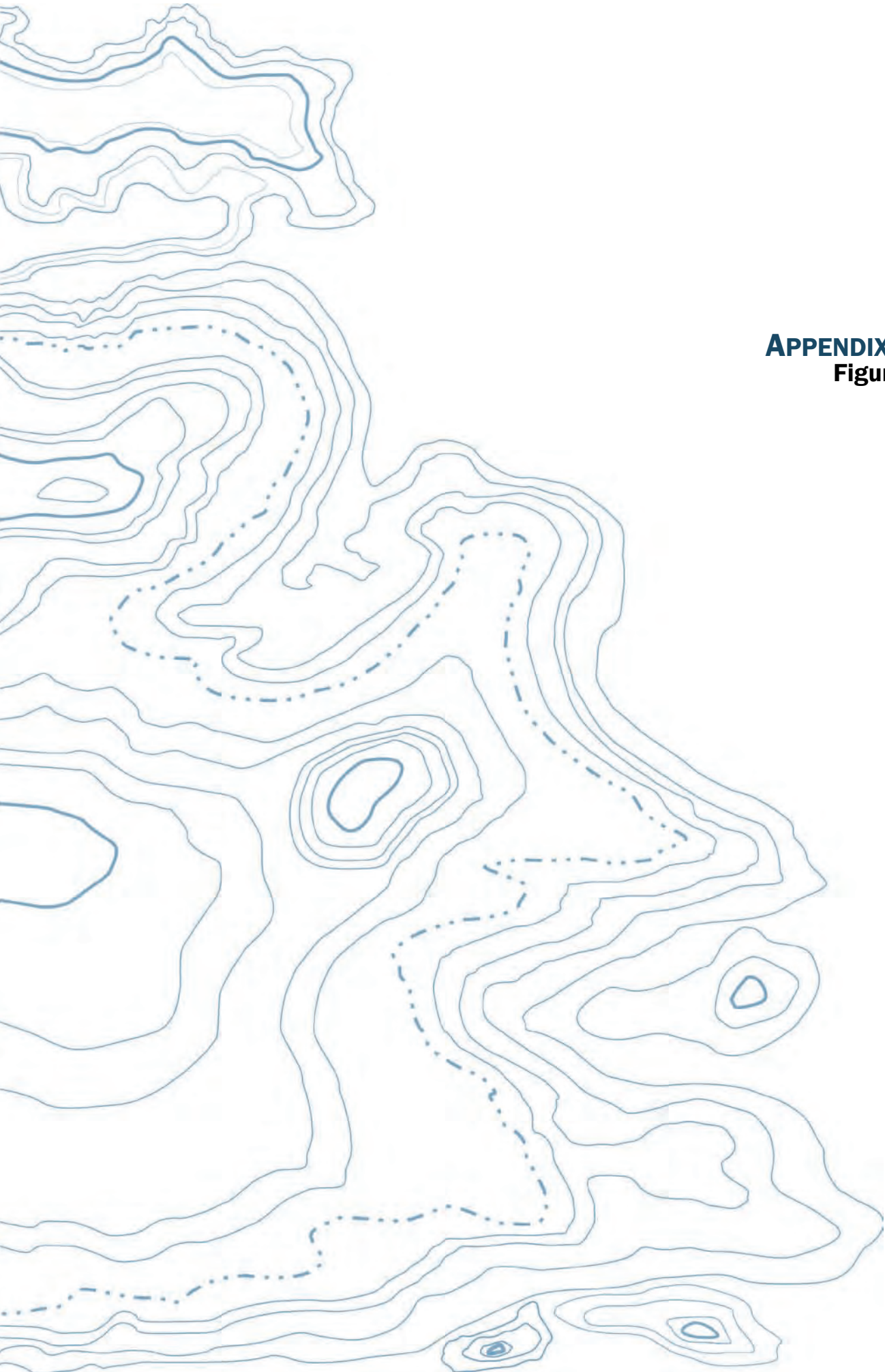
The LCCA determined that the Total Initial Cost, EUAC, and Total Net Present Worth for the flexible pavement alternative are lower than the rigid pavement alternative for both roadway locations. However, the analysis indicates that the rigid pavement alternative provides a lower Total Cost Over the Design Life. The flexible pavement alternative will allow for a continuous pavement type between the new intersection and the existing roadways. Based on the LCCA of the pavement alternatives, Alternative No. 1, the flexible pavement, should be used for this project.

**TABLE 5. ALTERNATIVE COST SUMMARY**

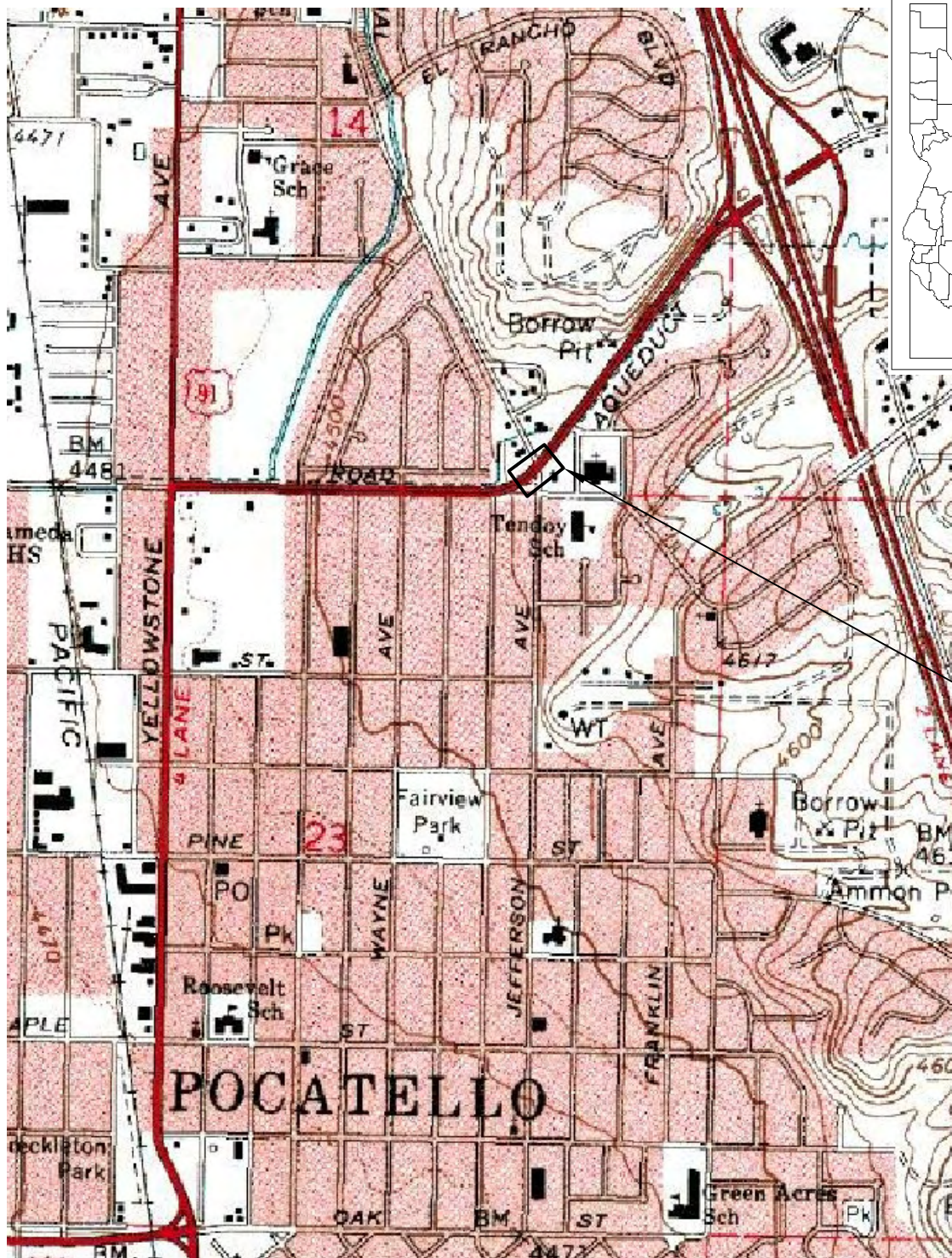
Alternative	Pavement Type and Location	Total Initial Cost*	Total Cost Over Design Life*	EUAC	Total Net Present Worth at 4 percent
1	Flexible Pavement - East Alameda Road/Pocatello Creek Road	\$218,300	\$461,600	\$17,700	\$334,600
	Flexible Pavement - Hiline Road/Jefferson Avenue	\$171,900	\$400,900	\$14,900	\$281,700
2	Rigid Pavement - East Alameda Road/Pocatello Creek Road	\$494,700	\$361,179	\$25,600	\$484,000
	Rigid Pavement - Hiline Road/Jefferson Avenue	\$400,300	\$305,271	\$21,000	\$397,100

Notes:

\*Costs do not include costs common to all alternatives.



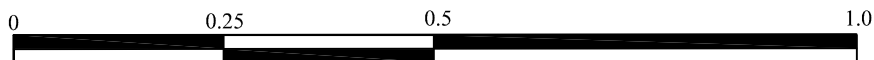
**APPENDIX A**  
**Figures**



APPROXIMATE PROJECT LOCATION

LOCATION OF ALAMEDA INTERSECTION

SOURCE: USGS



Approximate Scale in Miles

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BOISE, ID



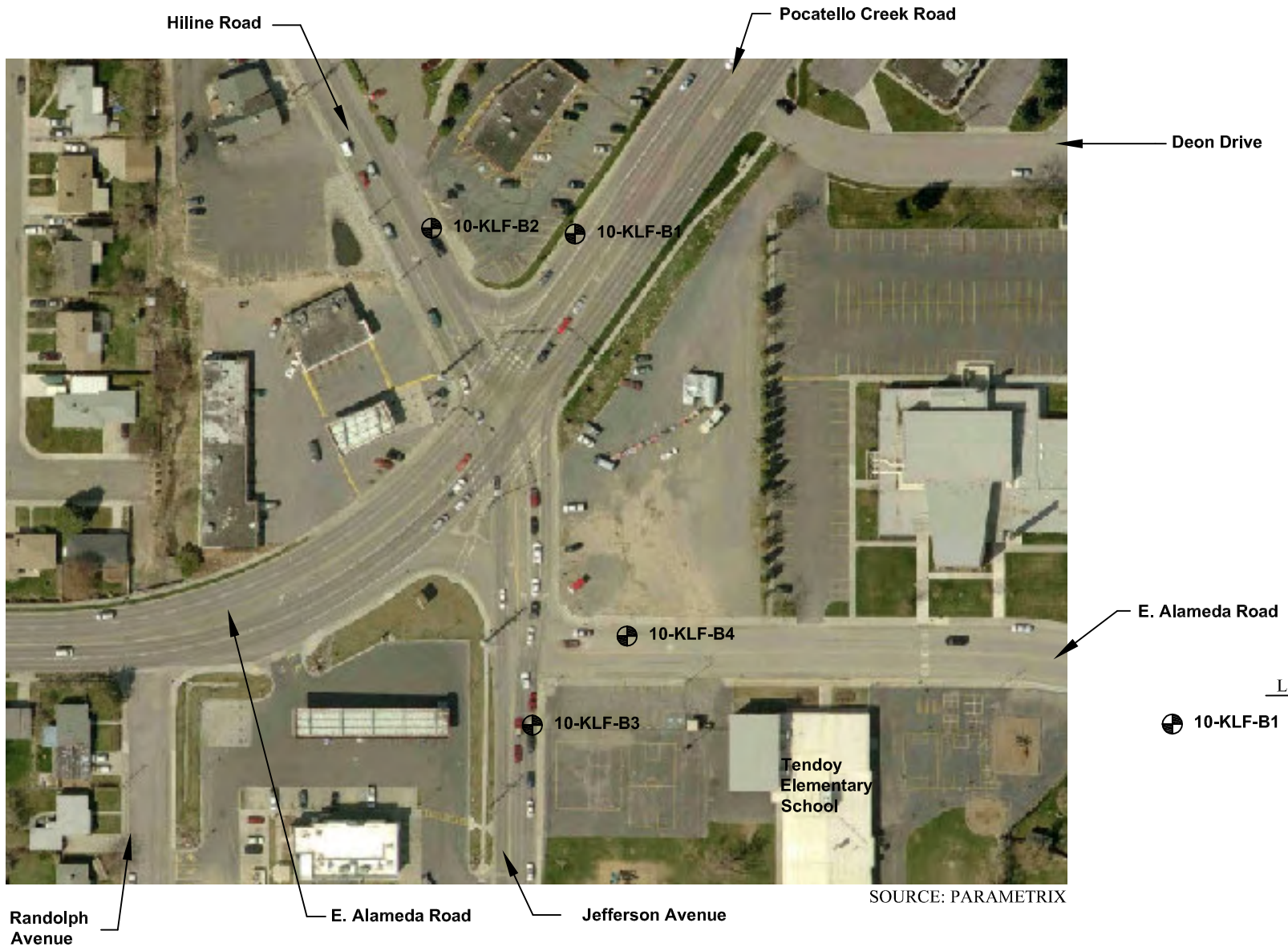
PROJECT NO. 110148  
 DRAWN: MARCH 2010  
 DRAWN BY: SPO  
 CHECKED BY: BM  
 FILE NAME: 110148\_FIG1.dwg

**VICINITY MAP  
 ALAMEDA INTERSECTION**

Alameda Intersection  
 Bannock County, Idaho  
 ITD Project No. A0011(657)  
 Key No. 11657

FIGURE

**1**



NOT TO SCALE

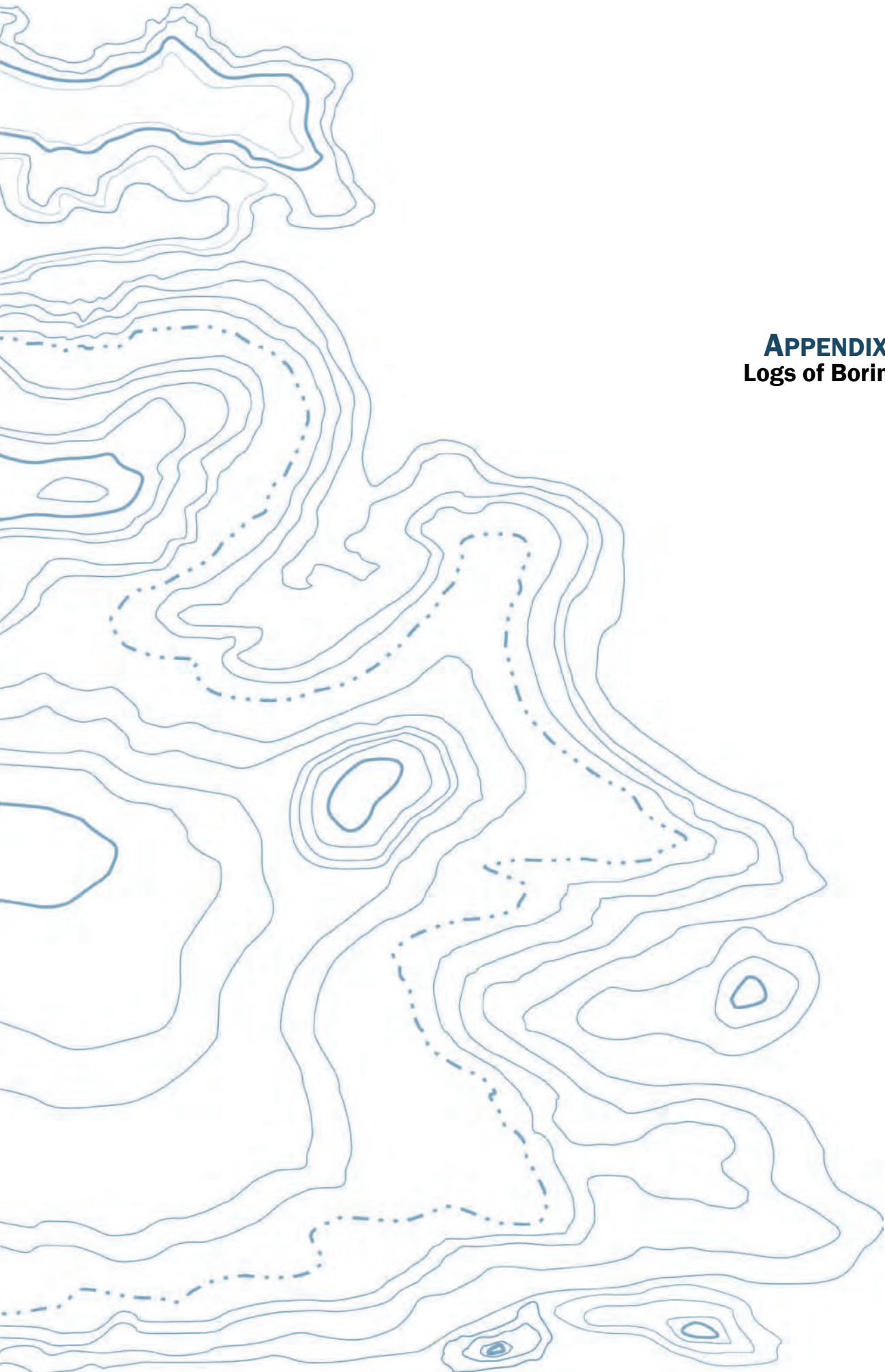
Legend  
 ⊕ 10-KLF-B1 Boring Designation and Approximate Location

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PROJECT NO.	110148
DRAWN:	MAR 2010
DRAWN BY:	SPO
CHECKED BY:	BM
FILE NAME:	110148 FIG2.dwg

<b>BORING LOCATION MAP</b>	
Alameda Intersection ITD Project No. A0011(657) ITD Key No. 11657 Bannock County, Idaho	

FIGURE  
**2**



**APPENDIX B**  
**Logs of Borings**

**PROJECT:** Alameda Road Intersection  
**LOCATION:** Pocatello, ID  
**BORING LOCATION:** Pocatello Creek - WB right turn lane  
**LATITUDE:** 42.89254      **LONGITUDE:** -112.44129

**BORING LOG NO.** 10-KLF-B1  
**SHEET** 1 of 1

**ITD PROJECT NO.** A0011(11657)  
**KEY NO.** 11657

**DRILLING CONTRACTOR:** Haz-Tech Drilling Inc.  
**DRILLING EQUIPMENT:** BK-51  
**DRILLING METHOD:** Hollow Stem Auger



**LOGGED BY:** Seth Olsen, E.I.T.  
**DATE OF BORING:** 3-26-10  
**WATER LEVEL(S)/DATE(S):** None observed on 3-26-10.

**KLF PROJECT NO.** 110148

DEPTH (meters) (feet)	SAMPLE			GRAPHIC SYMBOL	DESCRIPTION	REMARKS
	TYPE - NUMBER	RECOVERY (in.)	SPT RESULTS blows/6 in.			
0					5" Asphalt	Stratification lines on this log are based on sampling observations and represent approximate boundaries between soil and rock. In-situ, the transition between soil types may be gradual.  Lab Test Data at 1.5 ft: Gravel: 21.0% Sand: 32.8% Fines: 46.2% LL=NV, PL=NP, PI=NP R-Value: 69
0.4	BK-3				9" Road Base (Poorly Graded Gravel with Sand - GP) : brown, moist, dense.	
0.8					Silty Sand with Gravel (SM): brown, moist, dense.	
1.2	BK-4 SS-1	13	7-13-30		increasing coarse gravel	
1.6					very dense below 5 ft	
2.0	SS-2	7	19-50/6"			
2.4					Boring Terminated at 6 ft.	
2.8						
3.2						
3.6						

**PROJECT:** Alameda Road Intersection  
**LOCATION:** Pocatello, ID  
**BORING LOCATION:** Hiline Rd - NB right turn lane  
**LATITUDE:** 42.89234      **LONGITUDE:** -112.44177

**BORING LOG NO.** 10-KLF-B2  
**SHEET** 1 of 1

**ITD PROJECT NO.** A0011(11657)  
**KEY NO.** 11657

**DRILLING CONTRACTOR:** Haz-Tech Drilling Inc.  
**DRILLING EQUIPMENT:** BK-51  
**DRILLING METHOD:** Hollow Stem Auger



**LOGGED BY:** Seth Olsen, E.I.T.  
**DATE OF BORING:** 3-26-10  
**WATER LEVEL(S)/DATE(S):** None observed on 3-26-10.

**KLF PROJECT NO.** 110148

DEPTH (meters) (feet)	SAMPLE			GRAPHIC SYMBOL	DESCRIPTION	REMARKS
	TYPE - NUMBER	RECOVERY (in.)	SPT RESULTS blows/6 in.			
0					4" Asphalt	Stratification lines on this log are based on sampling observations and represent approximate boundaries between soil and rock. In-situ, the transition between soil types may be gradual.  rock found in shoe of split-spoon sampler  Lab Test Data at 2.5 ft: Gravel: 54.0% Sand: 29.0% Fines: 17.0% LL=22, PL=18, PI=4
0.4	BK-1				9" Road Base (Poorly Graded Gravel with Sand - GP) : brown, moist, dense.	
1					Silty Clayey Gravel with Sand (GC-GM): brown, dry, very dense, coarse gravel.	
1.2	SS-2	1	40-27-25			
1.6	BK-4					
2	SS-3	13	29-24-31			
2.4					Boring Terminated at 6.5 ft.	
2.8						
3.2						
3.6						

**PROJECT:** Alameda Road Intersection  
**LOCATION:** Pocatello, ID  
**BORING LOCATION:** Jefferson Ave - NB right turn lane  
**LATITUDE:** 42.89120      **LONGITUDE:** -112.44151

**BORING LOG NO.** 10-KLF-B3  
**SHEET** 1 of 1

**ITD PROJECT NO.** A0011(11657)  
**KEY NO.** 11657

**DRILLING CONTRACTOR:** Haz-Tech Drilling Inc.  
**DRILLING EQUIPMENT:** BK-51  
**DRILLING METHOD:** Hollow Stem Auger



**LOGGED BY:** Seth Olsen, E.I.T.  
**DATE OF BORING:** 3-26-10  
**WATER LEVEL(S)/DATE(S):** None observed on 3-26-10.

**KLF PROJECT NO.** 110148

DEPTH (meters) (feet)	SAMPLE			GRAPHIC SYMBOL	DESCRIPTION	REMARKS
	TYPE - NUMBER	RECOVERY (in.)	SPT RESULTS blows/6 in.			
0					3" Asphalt	Stratification lines on this log are based on sampling observations and represent approximate boundaries between soil and rock. In-situ, the transition between soil types may be gradual.  Lab Test Data at 2 ft: Gravel: 11.0% Sand: 16.4% Fines: 72.6% Moisture Content: 11.4% LL=22, PL=19, PI=3 R-Value: 48
0.4	BK-1				6" Road Base (Poorly Graded Gravel with Sand - GP) : brown, moist, dense.	
0.8					Silt with Sand (ML): brown, moist, medium stiff, fine sand.	
1.2	SS-2	8	2-3-4			
1.6	BK-5					
2.0						
2.4	SS-3	3	1-2-2			
2.8						
3.2	SS-4	8	2-2-2			
3.6					Boring Terminated at 9 ft.	



**PROJECT:** Alameda Road Intersection  
**LOCATION:** Pocatello, ID  
**BORING LOCATION:** E. Alameda Rd - WB right turn lane  
**LATITUDE:** 42.89145      **LONGITUDE:** -112.44114

**BORING LOG NO.** 10-KLF-B4  
**SHEET** 1 of 1

**ITD PROJECT NO.** A0011(11657)  
**KEY NO.** 11657

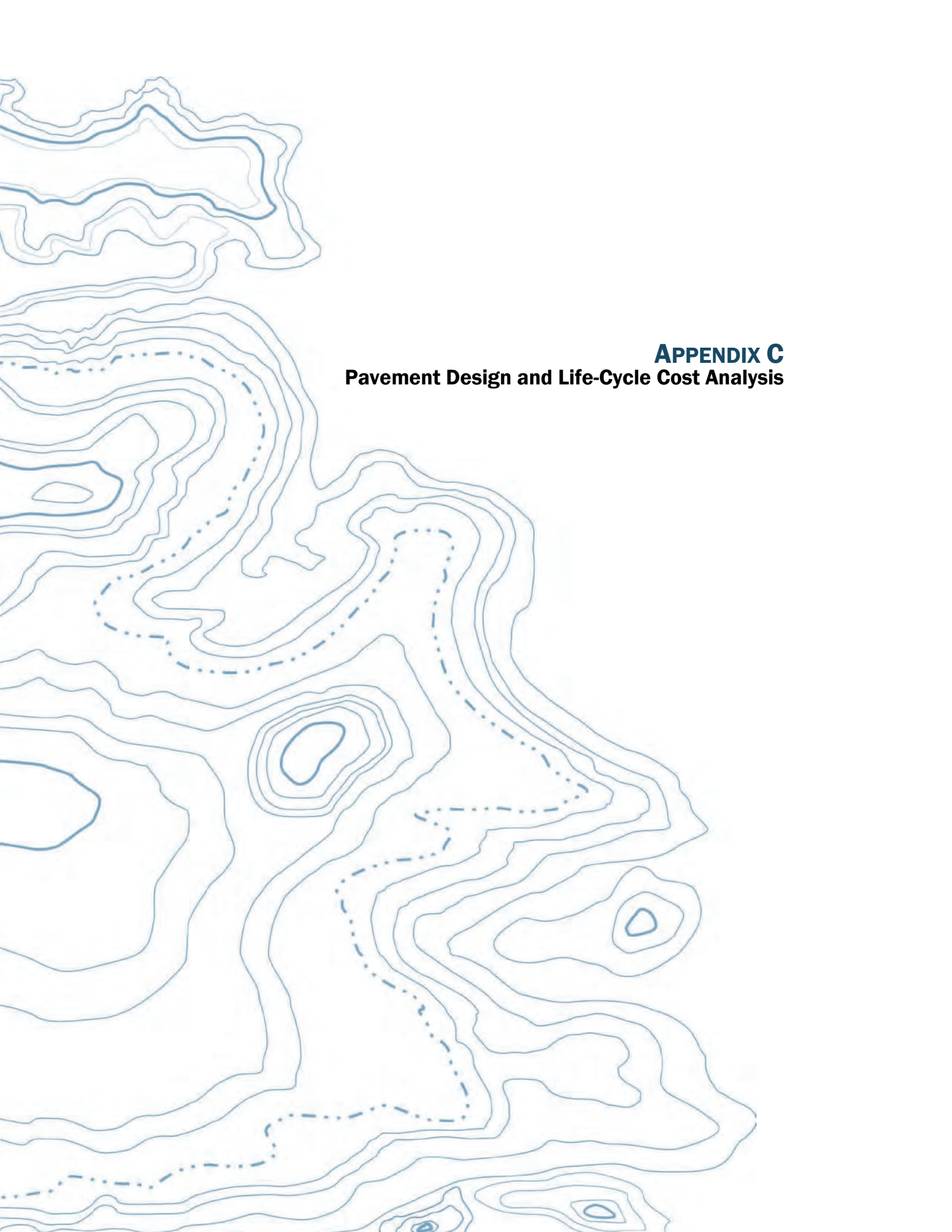
**DRILLING CONTRACTOR:** Haz-Tech Drilling Inc.  
**DRILLING EQUIPMENT:** BK-51  
**DRILLING METHOD:** Hollow Stem Auger



**LOGGED BY:** Seth Olsen, E.I.T.  
**DATE OF BORING:** 3-26-10  
**WATER LEVEL(S)/DATE(S):** None observed on 3-26-10.

**KLF PROJECT NO.** 110148

DEPTH (meters) (feet)	SAMPLE			GRAPHIC SYMBOL	DESCRIPTION	REMARKS
	TYPE - NUMBER	RECOVERY (in.)	SPT RESULTS blows/6 in.			
0					3.5" Asphalt	Stratification lines on this log are based on sampling observations and represent approximate boundaries between soil and rock. In-situ, the transition between soil types may be gradual.  Lab Test Data at 1 ft: Gravel: 4.0% Sand: 10.9% Fines: 85.1% Moisture Content: 13.6% LL=24, PL=20, PI=4 R-Value: 48
0.4	BK-1				2.5" Road Base (Poorly Graded Gravel with Sand - GP): brown, moist, dense.	
0.8					Silty Clay (CL-ML): brown, moist, medium stiff, fine sand.	
1.2	BK-4 SS-2	8	4-4-4			
1.6						
2.0	SS-3	6	2-3-4			
2.4					Boring Terminated at 6.5 ft.	
2.8						
3.2						
3.6						



**APPENDIX C**  
**Pavement Design and Life-Cycle Cost Analysis**

PROJECT Alameda Rd. Intersection PROJECT NO. 110148

SUBJECT Flexible Pavement Traffic BY Brian Marker DATE 4/1/10

REVIEWED BY PAUL WASSON, P.E. DATE 4/5/10

Rockledge Creek / E. Alameda Road ESALS

50% Cumulative Traffic 2011-2031 = 4,796,000

$$TI = 9 \left( \frac{4,796,000}{1E6} \right)^{.119} = \underline{10.8} \quad \checkmark$$

Jefferson Ave. / Itiline Road

50% Cumulative Traffic 2011-2031 = 504,000

$$TI = 9 \left( \frac{504,000}{1E6} \right)^{.119} = \underline{8.3} \quad \checkmark$$

E. Alameda Road (E of Jefferson Ave)

2010 ADT = 2281

2030 ADT = 2365

Avg = 2327

$$\% \text{ CADT} = 4\% = 2327 (.04) = 93 \quad \checkmark$$

$$\text{From figure 510.02.02.1 } TI = \underline{7.5} \quad \checkmark$$

PROJECT Alameda Rd. Intersection PROJECT NO. 110148

SUBJECT Rigid Pavement Traffic BY Brian Marker DATE 4/1/10

and Modulus values REVIEWED BY PAUL WASSON, P.E. DATE 4/5/10

Pocatello Creek Rd / Alameda Rd

ESALS = 2 281 3000

Subgrade Modulus = 16 Ksi ✓  
(Fig. 520.02.07-7)

Base Modulus = 32 Ksi ✓  
Fig. 520.02.07-7

Modulus of Subgrade Reaction,  $k = 220$  pci ✓  
Figures 520.02.07-2 and 520.02.07-5

Jefferson Ave. / Hillside Road

ESALS = 1,521,000

Subgrade Modulus = 11 Ksi ✓  
(Fig. 520.02.07-7)

Base Modulus = 32 Ksi ✓  
Fig 520.02.07-7

Modulus of subgrade Reaction,  $k = 180$  pci ✓  
Figures 520.02.07-2 and 520.02.07-5

08:51:25 AM 2010/03/30

ADT VOLUME PROJECTION REPORT

HPL01055

INQUIRY DATE: 2010/03/30

KEY #: 11647

OD-00247

PROJECT #: A011 (657)

ROUTE: I. 15 B

COUNTY: BANNOCK

LOCATION : ALAMEDA RD & HILINE RD & JEFFERSON AVE

SEGMENT	001360		001360			
BEG M.P.	4.900		4.983			
END M.P.	4.983		5.050			
ADT 2008	21000		25000			22790
ADT 2011	21650		25780			23490
ADT 2051	30270		36130			32890
DHV 2011	2400	11.1%	2840	11.0%	2600	11.1%
DHV 2051	3340	11.0%	3970	11.0%	3620	11.0%
TRUCKS:						
DHV 2011	40	1.9%	70	2.6%	60	2.2%
2051	80	3.2%	140	5.1%	100	2.8%
ADT 2011	580	2.7%	940	3.7%	740	3.2%
2051	1020	3.4%	1660	4.6%	1310	4.0%
DIRECTION:	60/40%		60/40%		60/40%	
TRK DENSITY	MEDIUM		MEDIUM			

REMARKS:

REQUESTED BY: BRIAN MARKER

PREPARED BY: RAELENE VISTE

PHONE: 830-4258

DISTRICT: KLEINFELDER

Post-it™ Fax Note	7671	Date	3/
To	Brian Marker	From	Raelene
Co./Dept.	Kleinfelder	Co.	ITL
Phone #	893-9700	Phone #	334-8
Fax #	893-9703	Fax #	334-4432

PROJECTED COMMERCIAL AND 18,000 EQUIVALENT SINGLE AXLE LOADINGS (ESALS)

08:52 TUESDAY, MARCH 30, 2010

ROUTE : I. 15 SEGMENT CODE : 001360 BEGINNING MILEPOINT : 4.900 ENDING MILEPOINT : 4.983  
TRUCK DENSITY = 2 : MEDIUM LAST YEAR WITH DATA : 2008 CUMULATING ESALS UP TO 2051 STARTING TO CUMULATE IN 2011

YEAR	PASSENGER CAR ADT	PICKUP ADT	COMMERCIAL ADT	----- RIGID PAVEMENT ESAL (IN THOUSANDS) -----		----- FLEXIBLE PAVEMENT ESAL (IN THOUSANDS) -----	
				ESALS: BOTH DIRECTIONS YEAR VALUE CUMULATIVE	50% DIRECTION OF TRAVEL YEAR VALUE CUMULATIVE	ESALS: BOTH DIRECTIONS YEAR VALUE CUMULATIVE	50% DIRECTION OF TRAVEL YEAR VALUE CUMULATIVE
2008	20,450	0	550	378	189	210	105
2011	21,060	0	580	768	384	216	108
2012	21,270	0	590	1,169	585	222	111
2013	21,470	0	610	1,587	793	231	115
2014	21,680	0	620	2,016	1,008	237	119
2015	21,880	0	630	2,458	1,229	244	122
2016	22,090	0	640	2,914	1,457	250	125
2017	22,290	0	650	3,386	1,693	259	130
2018	22,500	0	660	3,870	1,935	266	133
2019	22,700	0	670	4,369	2,185	273	137
2020	22,900	0	680	4,885	2,442	280	140
2021	23,110	0	690	5,413	2,707	289	145
2022	23,310	0	700	5,958	2,979	297	148
2023	23,520	0	720	6,518	3,259	304	152
2024	23,720	0	730	7,093	3,547	311	156
2025	23,930	0	740	7,685	3,842	321	161
2026	24,130	0	750	8,293	4,147	329	164
2027	24,340	0	760	8,916	4,458	336	168
2028	24,540	0	770	9,556	4,778	344	172
2029	24,740	0	780	10,214	5,107	354	177
2030	24,950	0	790	10,887	5,444	362	181
2031	25,150	0	800	11,579	5,789	370	185
2032	25,360	0	810	12,285	6,143	378	189
2033	25,560	0	830	13,010	6,505	389	195
2034	25,770	0	840	13,754	6,877	398	199
2035	25,970	0	850	14,514	7,257	406	203
2036	26,180	0	860	15,293	7,646	414	207
2037	26,380	0	870	16,091	8,046	426	213
2038	26,590	0	880	16,906	8,453	434	217
2039	26,790	0	890	17,741	8,871	443	222
2040	26,990	0	900	18,593	9,297	452	226
2041	27,200	0	910	19,465	9,733	464	232
2042	27,400	0	920	20,358	10,179	473	236
2043	27,610	0	940	21,268	10,634	482	241
2044	27,810	0	950	22,199	11,100	491	246
2045	28,020	0	960	23,152	11,576	504	252
2046	28,220	0	970	24,122	12,061	513	257
2047	28,430	0	980	25,114	12,557	522	261
2048	28,630	0	990	26,129	13,064	532	266
2049	28,830	0	1,000	27,161	13,581	545	273
2050	29,040	0	1,010	28,216	14,108	555	277
2051	29,240	0	1,020				

PROJECTED COMMERCIAL AND 18,000 EQUIVALENT SINGLE AXLE LOADINGS (ESALS)

08:52 TUESDAY, MARCH 30, 2010

ROUTE : I. 15 SEGMENT CODE : 001360 BEGINNING MILEPOINT : 4.983 ENDING MILEPOINT : 5.050  
TRUCK DENSITY = 2 : MEDIUM LAST YEAR WITH DATA : 2008 CUMULATING ESALS UP TO 2051 STARTING TO CUMULATE IN 2011

YEAR	PASSENGER CAR ADT	PICKUP ADT	COMMERCIAL ADT	----- RIGID PAVEMENT ESAL (IN THOUSANDS) -----		----- FLEXIBLE PAVEMENT ESAL (IN THOUSANDS) -----	
				ESALS:BOTH DIRECTIONS YEAR VALUE CUMULATIVE	50% DIRECTION OF TRAVEL YEAR VALUE CUMULATIVE	ESALS:BOTH DIRECTIONS YEAR VALUE CUMULATIVE	50% DIRECTION OF TRAVEL YEAR VALUE CUMULATIVE
2008	24,111	0	890	611	306	339	170
2011	24,850	0	940	630	315	349	175
2012	25,000	0	960	649	324	359	180
2013	25,320	0	980	675	337	373	186
2014	25,560	0	1,000	694	347	383	192
2015	25,800	0	1,010	714	357	394	197
2016	26,040	0	1,030	738	369	404	202
2017	26,280	0	1,050	762	381	419	202
2018	26,520	0	1,070	783	391	430	210
2019	26,760	0	1,090	808	404	441	215
2020	27,000	0	1,100	833	416	452	221
2021	27,240	0	1,120	854	427	468	226
2022	27,480	0	1,140	880	440	479	234
2023	27,720	0	1,160	907	453	491	240
2024	27,960	0	1,170	929	465	503	245
2025	28,200	0	1,190	956	478	519	251
2026	28,440	0	1,210	984	492	531	259
2027	28,680	0	1,230	1,007	504	543	266
2028	28,920	0	1,250	1,035	518	556	272
2029	29,170	0	1,260	1,064	532	573	278
2030	29,410	0	1,280	1,088	544	586	286
2031	29,660	0	1,300	1,118	559	598	293
2032	29,900	0	1,320	1,142	571	611	299
2033	30,140	0	1,340	1,172	586	629	306
2034	30,380	0	1,350	1,203	601	643	315
2035	30,620	0	1,370	1,229	614	656	321
2036	30,860	0	1,390	1,260	630	670	328
2037	31,100	0	1,410	1,291	646	688	335
2038	31,340	0	1,420	1,318	659	702	344
2039	31,580	0	1,440	1,350	675	716	351
2040	31,830	0	1,460	1,377	689	730	358
2041	32,070	0	1,480	1,410	705	744	365
2042	32,310	0	1,500	1,444	722	759	375
2043	32,550	0	1,510	1,472	736	779	382
2044	32,790	0	1,530	1,506	753	794	390
2045	33,030	0	1,550	1,540	770	814	397
2046	33,270	0	1,570	1,569	785	829	407
2047	33,510	0	1,580	1,605	802	844	415
2048	33,750	0	1,600	1,640	820	860	422
2049	34,000	0	1,620	1,670	835	881	430
2050	34,240	0	1,640	1,706	853	897	441
2051	34,480	0	1,660	1,706	853	897	448

08:51:25 AM 2010/03/30

ADT VOLUME PROJECTION REPORT

HPL01055

INQUIRY DATE: 2010/03/30

KEY #: 11647

OD-00247

PROJECT #: A011(657)

ROUTE: SMA 7331

COUNTY: BANNOCK

LOCATION : ALAMEDA RD & HILINE RD & JEFFERSON AVE

SEGMENT <sup>Jefferson Av</sup> 003250 <sup>Hilinae Rd</sup> 003250

BEG M.P.	1.000			1.047			
END M.P.	1.047			1.100			
ADT 2008	18000			10000			13760
ADT 2011	18820			10460			14390
ADT 2051	29650			16520			22700
DHV 2011	1880	10.0%	1050	10.0%		1440	10.0%
DHV 2051	2960	10.0%	1650	10.0%		2270	10.0%

TRUCKS:

DHV 2011	20	1.0%	20	1.0%		20	1.4%
2051	40	1.4%	40	2.2%		40	1.7%
ADT 2011	320	1.7%	270	1.6%		290	2.0%
2051	620	2.1%	520	3.1%		570	2.5%

DIRECTION: 60/40% 60/40% 60/40%

TRK DENSITY LIGHT LIGHT

REMARKS:

REQUESTED BY: BRIAN MARKER

PREPARED BY: RAELENE VISTE

PHONE: 830-4258

DISTRICT: KLEINWELDER



PROJECTED COMMERCIAL AND 18,000 EQUIVALENT SINGLE AXLE LOADINGS (ESALS)

08:52 TUESDAY, MARCH 30, 2010

ROUTE : SMA 7331 SEGMENT CODE : 003250 BEGINNING MILEPOINT : 1.000 ENDING MILEPOINT : 1.047  
TRUCK DENSITY = 1 : LIGHT LAST YEAR WITH DATA : 2008 CUMULATING ESALS UP TO 2051 STARTING TO CUMULATE IN 2011

YEAR	PASSENGER CAR ADT	PICKUP ADT	COMMERCIAL ADT	----- RIGID PAVEMENT ESAL (IN THOUSANDS) -----		----- FLEXIBLE PAVEMENT ESAL (IN THOUSANDS) -----	
				ESALS: BOTH DIRECTIONS YEAR VALUE CUMULATIVE	50% DIRECTION OF TRAVEL YEAR VALUE CUMULATIVE	ESALS: BOTH DIRECTIONS YEAR VALUE CUMULATIVE	50% DIRECTION OF TRAVEL YEAR VALUE CUMULATIVE
2008	17,700	0	300	51	25	39	20
2011	18,500	0	320	52	26	40	20
2012	18,760	0	330	53	27	41	20
2013	19,030	0	340	54	27	42	21
2014	19,290	0	350	55	28	43	21
2015	19,560	0	360	57	28	44	22
2016	19,820	0	370	58	29	45	22
2017	20,090	0	380	59	29	46	22
2018	20,360	0	380	60	30	47	23
2019	20,620	0	390	61	31	48	23
2020	20,890	0	400	62	31	49	24
2021	21,150	0	410	64	32	50	24
2022	21,420	0	420	66	33	51	25
2023	21,680	0	430	67	34	52	25
2024	21,950	0	440	68	34	53	26
2025	22,210	0	450	71	35	54	26
2026	22,480	0	460	72	36	55	27
2027	22,740	0	470	73	37	56	28
2028	23,010	0	480	74	37	57	28
2029	23,280	0	490	75	38	58	28
2030	23,540	0	500	77	38	59	29
2031	23,810	0	510	79	39	60	29
2032	24,070	0	520	80	39	61	30
2033	24,340	0	530	81	40	62	30
2034	24,600	0	540	82	41	63	31
2035	24,870	0	550	84	42	64	31
2036	25,130	0	560	85	42	65	32
2037	25,400	0	570	86	43	66	32
2038	25,670	0	580	87	44	67	33
2039	25,930	0	590	88	44	68	33
2040	26,200	0	600	89	45	69	34
2041	26,460	0	610	91	45	70	34
2042	26,730	0	620	92	46	71	35
2043	26,990	0	630	93	46	72	35
2044	27,260	0	640	94	47	73	36
2045	27,520	0	650	95	48	74	36
2046	27,790	0	660	96	48	75	37
2047	28,050	0	670	98	49	75	37
2048	28,320	0	680	99	49	75	37
2049	28,590	0	690	100	49	75	37
2050	28,850	0	700	101	49	75	37
2051	29,120	0	710	102	49	75	37

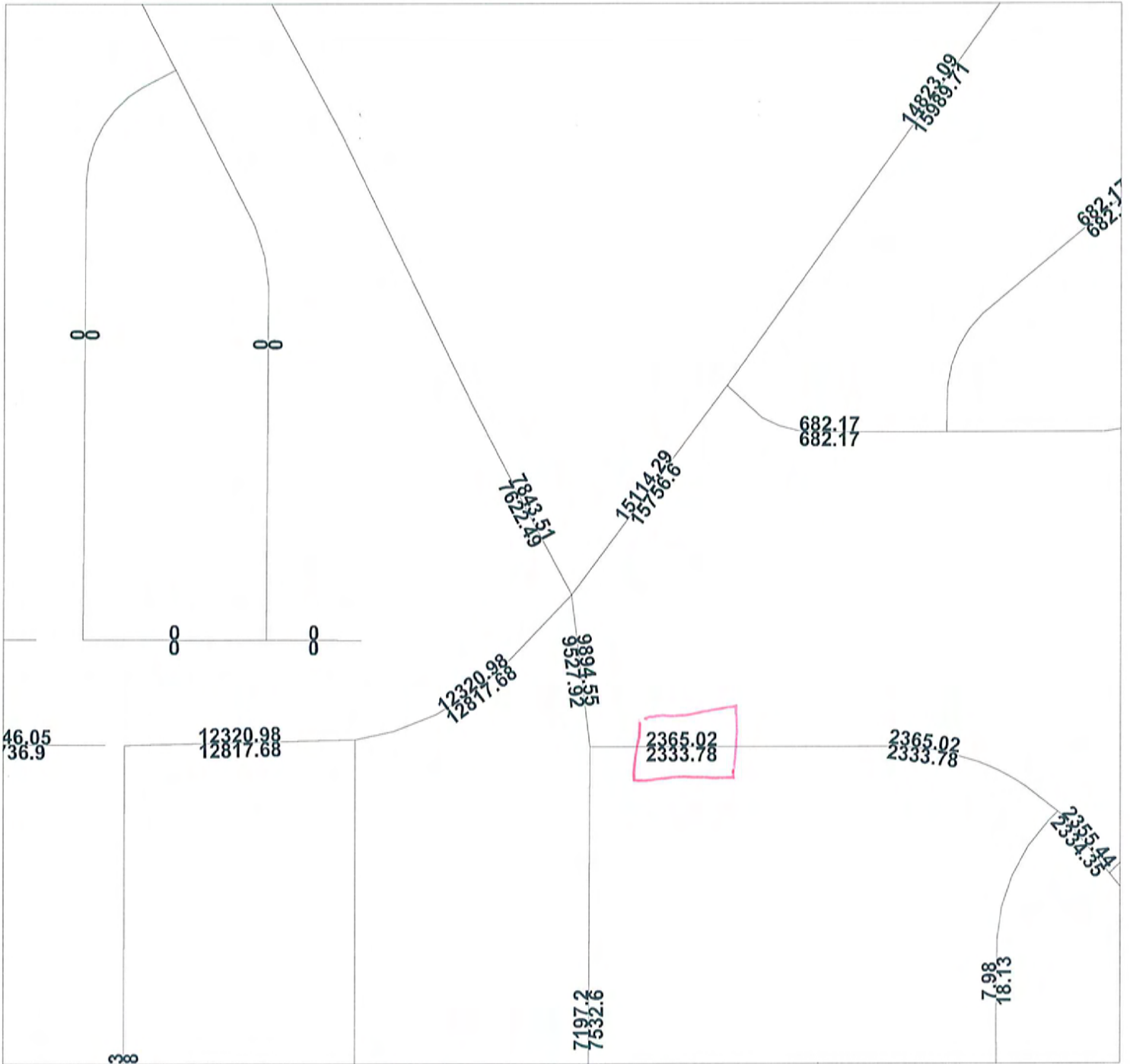
PROJECTED COMMERCIAL AND 10,000 EQUIVALENT SINGLE AXLE LOADINGS (ESALS)

06:52 TUESDAY, MARCH 30, 2010

ROUTE : SMA 7331 SEGMENT CODE : 003250 BEGINNING MILEPOINT : 1.047 ENDING MILEPOINT : 1.100  
TRUCK DENSITY = 1 : LIGHT LAST YEAR WITH DATA : 2006 CUMULATING ESALS UP TO 2051 STARTING TO CUMULATE IN 2011

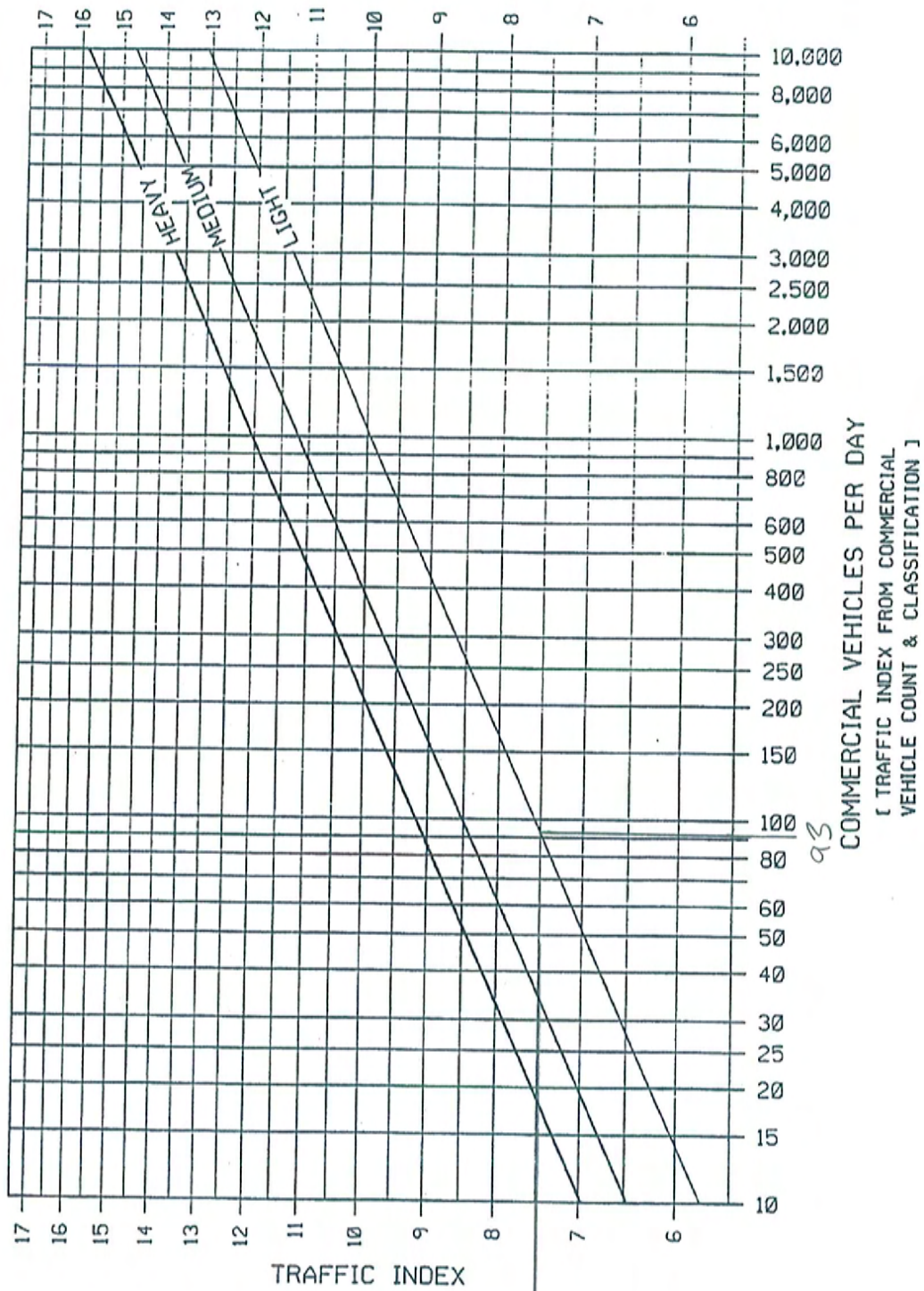
YEAR	PASSENGER CAR ADT	PICKUP ADT	COMMERCIAL ADT	ESALS: BOTH DIRECTIONS 50% DIRECTION OF TRAVEL YEAR VALUE CUMULATIVE	RIGID PAVEMENT ESAL (IN THOUSANDS) 50% DIRECTION OF TRAVEL YEAR VALUE CUMULATIVE	ESALS: BOTH DIRECTIONS 50% DIRECTION OF TRAVEL YEAR VALUE CUMULATIVE	FLEXIBLE PAVEMENT ESAL (IN THOUSANDS) 50% DIRECTION OF TRAVEL YEAR VALUE CUMULATIVE	ESALS: BOTH DIRECTIONS 50% DIRECTION OF TRAVEL YEAR VALUE CUMULATIVE
2008	5,757	0	250	42	21	21	32	16
2011	10,198	0	270	43	21	42	65	33
2012	10,341	0	280	85	22	64	99	49
2013	10,460	0	280	129	22	87	133	66
2014	10,630	0	290	174	22	110	204	84
2015	10,770	0	290	219	23	133	240	102
2016	10,920	0	300	266	23	157	278	120
2017	11,070	0	310	314	24	181	316	139
2018	11,210	0	310	363	25	206	355	158
2019	11,360	0	320	412	25	232	394	177
2020	11,510	0	330	463	26	257	434	197
2021	11,650	0	330	515	26	284	476	217
2022	11,800	0	340	567	27	310	517	238
2023	11,940	0	340	621	27	338	560	259
2024	12,091	0	350	675	28	365	603	280
2025	12,240	0	360	731	28	394	647	302
2026	12,380	0	360	787	29	422	692	324
2027	12,530	0	370	845	29	452	737	346
2028	12,680	0	380	903	30	481	783	369
2029	12,820	0	380	963	30	511	830	392
2030	12,970	0	390	1,023	31	542	878	415
2031	13,110	0	390	1,084	31	573	926	439
2032	13,260	0	400	1,147	31	605	976	463
2033	13,410	0	410	1,210	32	637	1,026	488
2034	13,550	0	410	1,274	32	670	1,076	513
2035	13,700	0	420	1,339	33	703	1,128	538
2036	13,850	0	430	1,405	33	736	1,180	564
2037	13,990	0	430	1,473	34	770	1,233	590
2038	14,140	0	440	1,541	34	805	1,286	616
2039	14,280	0	440	1,610	35	840	1,341	643
2040	14,430	0	450	1,680	35	875	1,396	670
2041	14,580	0	460	1,751	36	911	1,451	698
2042	14,720	0	460	1,823	36	948	1,508	726
2043	14,870	0	470	1,896	36	985	1,565	754
2044	15,020	0	480	1,970	37	1,022	1,623	783
2045	15,160	0	480	2,044	37	1,060	1,682	812
2046	15,310	0	490	2,120	38	1,099	1,742	841
2047	15,450	0	490	2,197	38	1,137	1,802	871
2048	15,600	0	500	2,275	39	1,177	1,863	901
2049	15,750	0	510	2,354	39	1,217	1,925	932
2050	15,890	0	510	2,433	40	1,257		962
2051	16,040	0	520	2,514	40			





2030 ADT  
 Commercial = 4%

Figure 510.02.02.1



7.5

APPROXIMATE RELATIONSHIP BETWEEN R-VALUE AND RESILIENT MODULUS

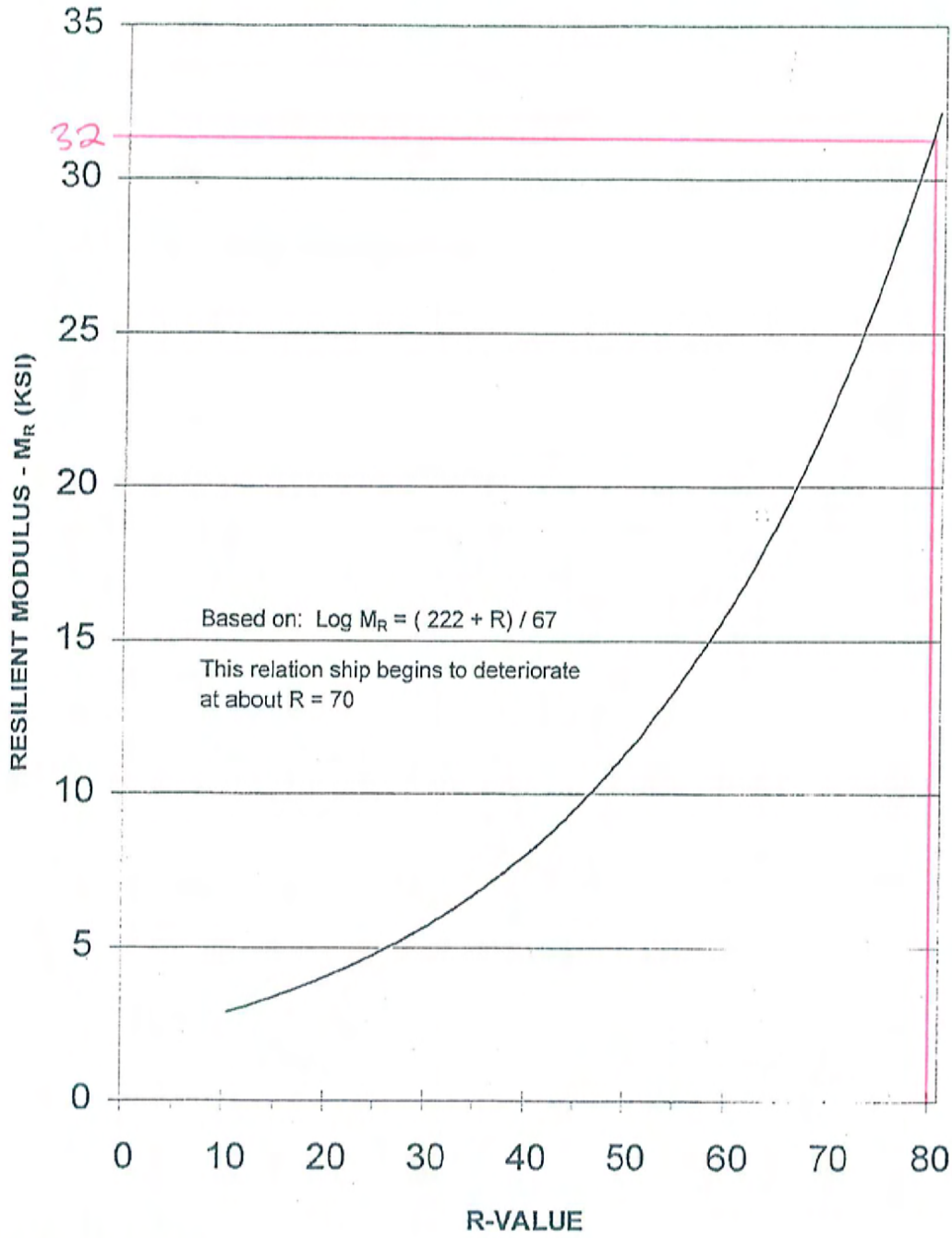


FIGURE 520.02.07-7

Base

### APPROXIMATE RELATIONSHIP BETWEEN R-VALUE AND RESILIENT MODULUS

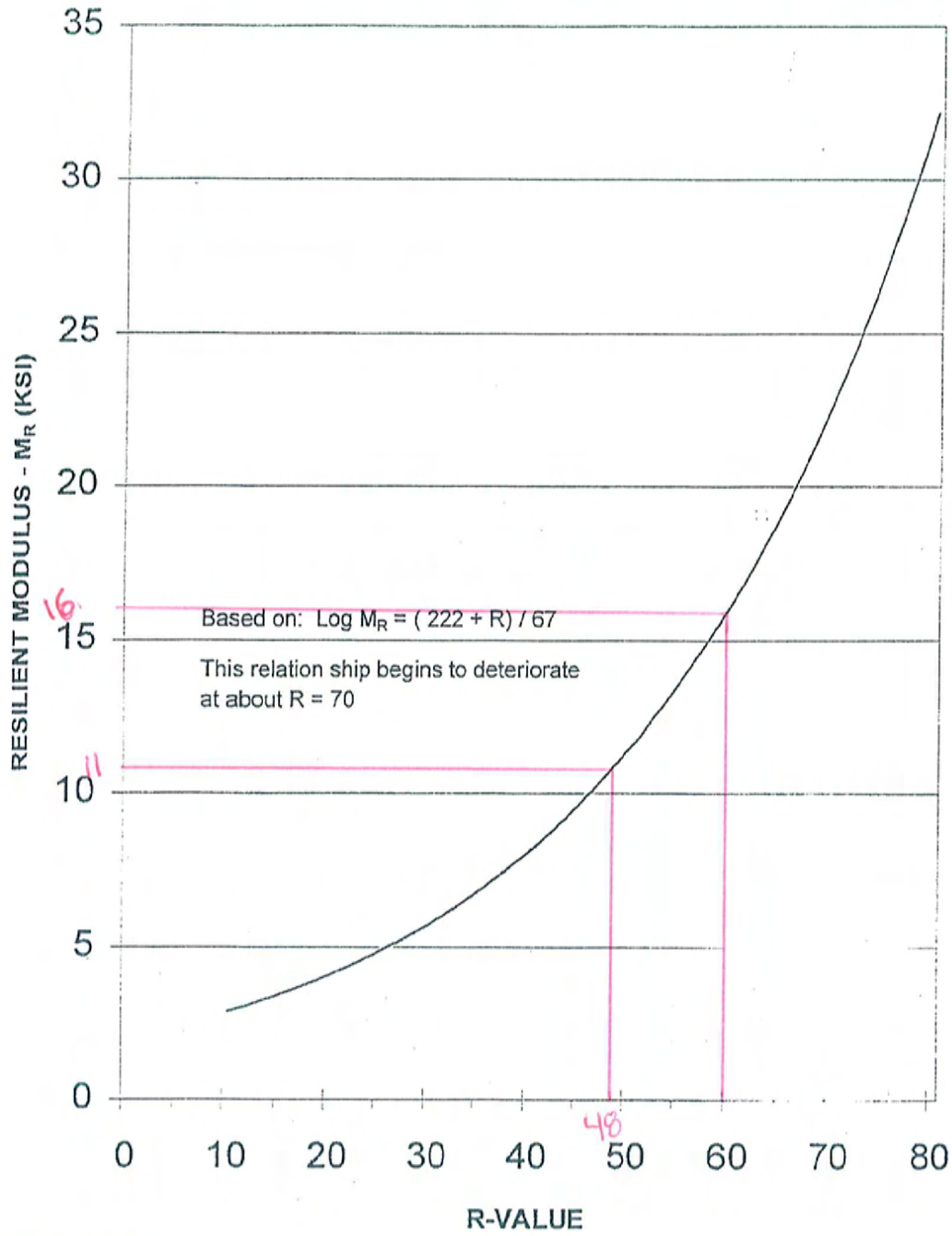


FIGURE 520.02.07-7

*Subgrade*

Example:

$D_{SB} = 6$  inches

$E_{SB} = 20,000$  psi

$M_R = 7,000$  psi

Solution:  $k_w = 400$  pci

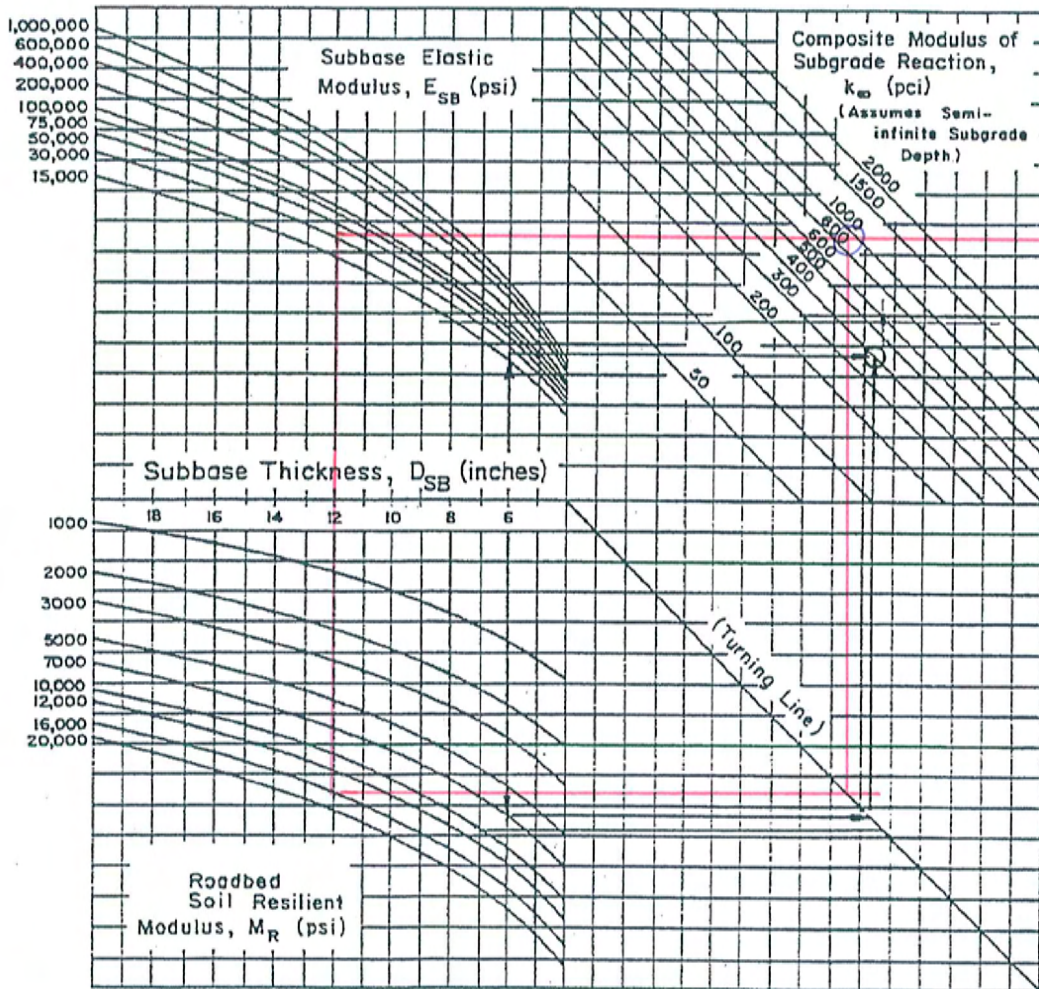


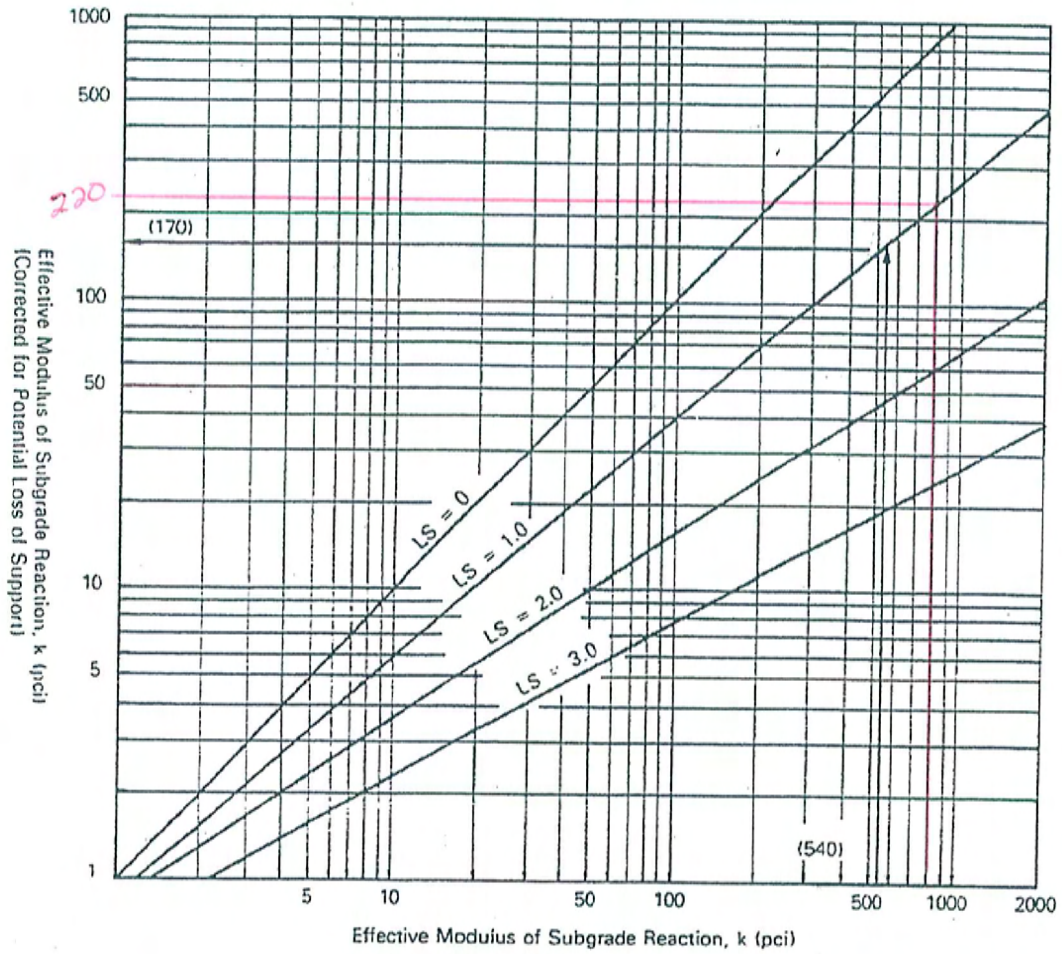
Chart for Estimating Composite Modulus of Subgrade Reaction,  $k_w$ , Assuming a Semi-Infinite Subgrade Depth. (For practical purposes, a semi-infinite depth is considered to be greater than 10 feet below the surface of the subgrade.)

Reference: Part II, Chapter 3, Figure 3.3. AASHTO Guide for Design of Pavement Structures, 1993

FIGURE 520.02.07-2

*Pacatello Cr Road / E. Alameda RD*





Correction of Effective Modulus of Subgrade Reaction for Potential Loss of Subgrade Support

Reference: Part II, Chapter 3, Figure 3.6, AASHTO Guide for Design of Pavement Structures, 1993

FIGURE 520.02.07-5

Pocatello Cr Road/E. Alameda Rd

Example:

$D_{SB} = 6$  inches

$E_{SB} = 20,000$  psi

$M_R = 7,000$  psi

Solution:  $k_w = 400$  pci

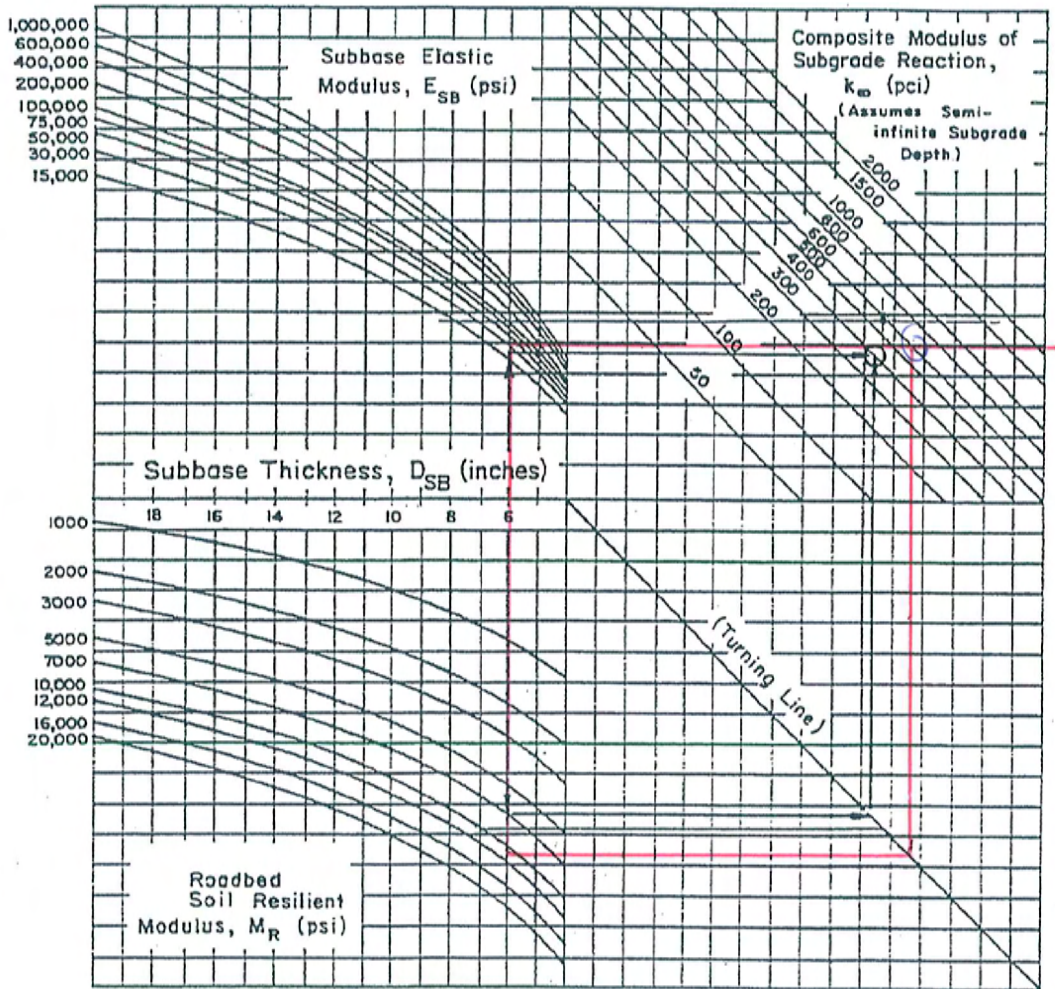
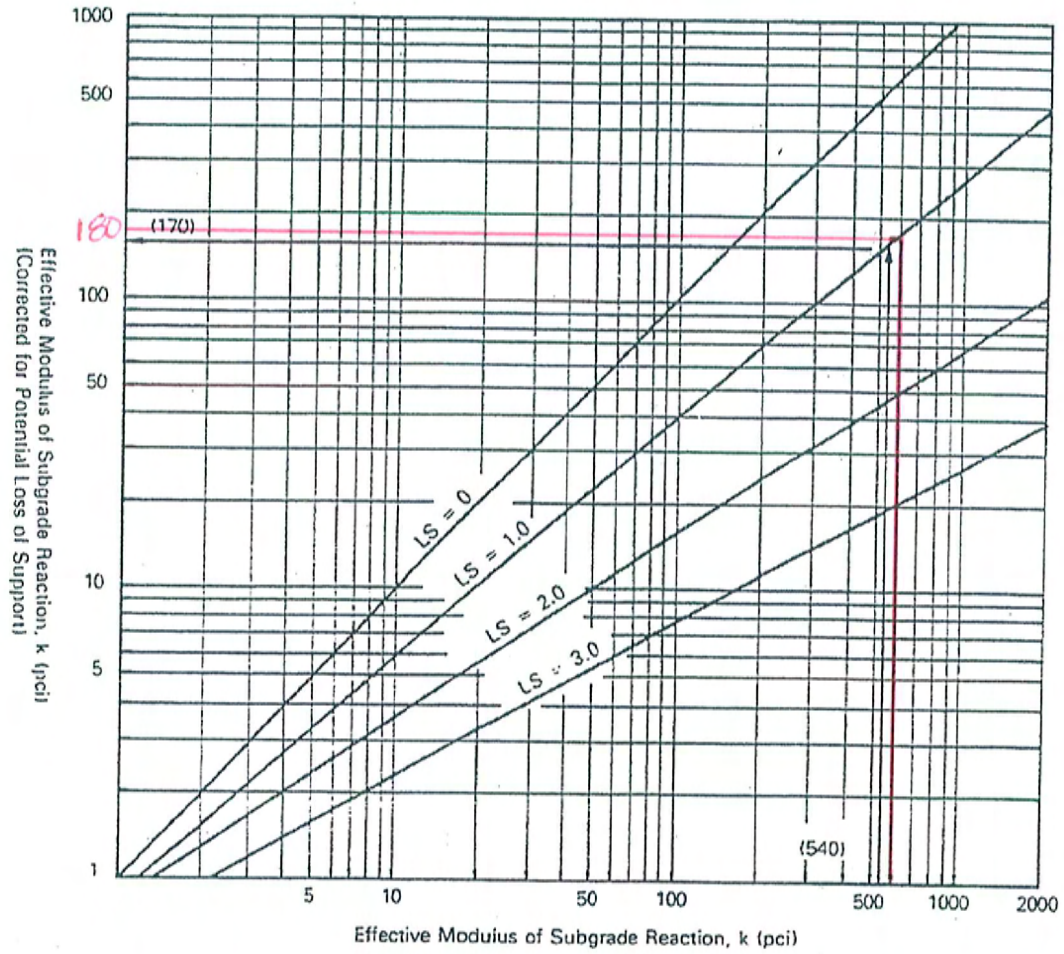


Chart for Estimating Composite Modulus of Subgrade Reaction,  $k_w$ , Assuming a Semi-Infinite Subgrade Depth. (For practical purposes, a semi-infinite depth is considered to be greater than 10 feet below the surface of the subgrade.)

Reference: Part II, Chapter 3, Figure 3.3. AASHTO Guide for Design of Pavement Structures, 1993

FIGURE 520.02.07-2

*Jefferson Ave / Hillside Road*



Correction of Effective Modulus of Subgrade Reaction for Potential Loss of Subgrade Support

Reference: Part II, Chapter 3, Figure 3.6, AASHTO Guide for Design of Pavement Structures, 1993

FIGURE 520.02.07-5

*Jefferson Ave / Hilline Road*

# FLEXIBLE ASPHALT PAVEMENT DESIGN - GRAVEL EQUIVALENCY (GE) METHOD

Project: Alameda Road Intersection ITD Proj. A0011(657) Key No. 11657  
File: 110148  
Date: 1-Apr-10  
Section: Alameda Road and Pocatello Cr. Road

Design Subgrade Support R-value: 60

Estimated Traffic Index (T.I.): 10.8

Regional Climate Factor, F: 1.05 (see figure 510.09.03.1  
ITD Materials Manual)

### Material Substitution Ratios

Asphalt: 1.60

Base: 1.00

Granular Borrow: 0.85

Aggregate Base Course Minimum Support R-value: 80

Granular Borrow Course Minimum Support R-value: 60

Minimum Design Gravel Equivalence (GE)= 1.452 feet

Recommended Asphalt Concrete Thickness: 0.45 feet

Design Asphalt Thickness: 0.45 feet

Recommended Aggregate Base Course Thickness: 0.73 feet

Design Base Thickness: 0.75 feet

Recommended Subbase Course Thickness: 0.00 feet

Design Subbase Thickness: 0.00 feet

### DESIGN PAVEMENT SECTION:

**Asphalt concrete: 0.45 feet**

**Base course: 0.75 feet**

**Subbase course: 0.00 feet**

**GE Provided : 1.47 feet**

**Minimum GE Required: 1.45 feet**

# FLEXIBLE ASPHALT PAVEMENT DESIGN - GRAVEL EQUIVALENCY (GE) METHOD

Project: Alameda Road Intersection ITD Proj. A0011(657) Key No. 11657  
File: 110148  
Date: 1-Apr-10  
Section: Hiline Road and Jefferson Avenue

Design Subgrade Support R-value: 48

Estimated Traffic Index (T.I.): 8.3

Regional Climate Factor, F: 1.05 (see figure 510.09.03.1  
ITD Materials Manual)

### Material Substitution Ratios

Asphalt: 1.80

Base: 1.00

Granular Borrow: 0.85

Aggregate Base Course Minimum Support R-value: 80

Granular Borrow Course Minimum Support R-value: 60

Minimum Design Gravel Equivalence (GE)= 1.450 feet

Recommended Asphalt Concrete Thickness: 0.31 feet

Design Asphalt Thickness: 0.35 feet

Recommended Aggregate Base Course Thickness: 0.49 feet

Design Base Thickness: 0.50 feet

Recommended Subbase Course Thickness: 0.38 feet

Design Subbase Thickness: 0.40 feet

### DESIGN PAVEMENT SECTION:

Asphalt concrete: 0.35 feet

Base course: 0.50 feet

Subbase course: 0.40 feet

GE Provided : 1.47 feet

Minimum GE Required: 1.45 feet

# FLEXIBLE ASPHALT PAVEMENT DESIGN - GRAVEL EQUIVALENCY (GE) METHOD

Project: Alameda Road Intersection ITD Proj. A0011(657) Key No. 11657  
 File: 110148  
 Date: 1-Apr-10  
 Section: Alameda Road East of Pocatello Cr. Road

Design Subgrade Support R-value: 48

Estimated Traffic Index (T.I.): 7.5

Regional Climate Factor, F: 1.05 (see figure 510.09.03.1  
ITD Materials Manual)

**Material Substitution Ratios**

Asphalt: 2.00

Base: 1.00

Granular Borrow: 0.85

Aggregate Base Course Minimum Support R-value: 80

Granular Borrow Course Minimum Support R-value: 60

Minimum Design Gravel Equivalence (GE)= 1.310 feet

Recommended Asphalt Concrete Thickness: 0.25 feet

Design Asphalt Thickness: 0.25 feet

Recommended Aggregate Base Course Thickness: 0.51 feet

Design Base Thickness: 0.50 feet

Recommended Subbase Course Thickness: 0.37 feet

Design Subbase Thickness: 0.40 feet

**DESIGN PAVEMENT SECTION:**

**Asphalt concrete: 0.25 feet**

**Base course: 0.50 feet**

**Subbase course: 0.40 feet**

**GE Provided : 1.34 feet**

**Minimum GE Required: 1.31 feet**

**Rigid Pavement Design Based on 1993 AASHTO Design Guide**

Project: Alameda Road Intersection ITD Project A0011(657) Key No. 11657  
File: 110148  
Date: 1-Apr-10  
Section: Alameda Road and Pocatello Creek Road

ESALS (millions)	22813000
Modulus of subgrade reaction, k (pci)	220
Reliability, R	85
Zr (see Table C-3)	-1.037
Standard Deviation So	0.34
Design Serviceability Loss	2
Terminal Serviceability	2.5
Concrete Elastic Modulus, Ec (psi)	4200000
Concrete Modulus of Rupture, S'c (psi)	700
Load Transfer Coefficient, J	2.9
Drainage Coefficient, Cd	1

Thickness of Concrete, D (inches) **10**

<b><u>Required for Traffic</u></b>	<b><u>Result from Design</u></b>
<b>7.36</b>	<b>7.39</b>

**Rigid Pavement Design Based on 1993 AASHTO Design Guide**

Project: Alameda Road Intersection ITD Project A0011(657) Key No. 11657  
File: 110148  
Date: 1-Apr-10  
Section: Hiline Road and Jefferson Avenue

ESALS (millions)	1521000
Modulus of subgrade reaction, k (pci)	180
Reliability, R	85
Zr (see Table C-3)	-1.037
Standard Deviation So	0.34
Design Serviceability Loss	2
Terminal Serviceability	2.5
Concrete Elastic Modulus, Ec (psi)	4200000
Concrete Modulus of Rupture, S'c (psi)	700
Load Transfer Coefficient, J	2.9
Drainage Coefficient, Cd	1

Thickness of Concrete, D (inches) **9**









<b><u>Required for Traffic</u></b>	<b><u>Result from Design</u></b>
<b>6.18</b>	<b>7.08</b>



# FLEXIBLE PAVEMENT WORKSHEET

Flexible Pavement Reconstruction

PROJECT NAME **Alameda Road/Pocatello Cr. Road**  
 PROJECT NUMBER **A0011(657)**  
 KEY **11657**

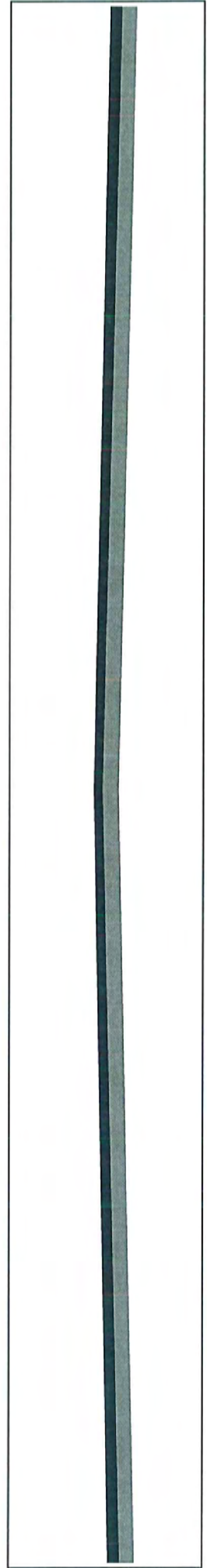
Material	Depth	Haul	Width	Weight / ft <sup>3</sup>	Cost	Color
Plant Mix PG with high polymer	2.40 in		60.00 ft	156.07 lb	89.50 / t	
Plant Mix PG with low polymer	3.00 in		60.00 ft	156.07 lb	82.16 / t	
Asp/lt Treat Permeable Base	in	mile	ft	lb	/ t	
Aggregate Base	9.00 in	mile	60.00 ft	156.07 lb	18.43 / t	
Rock Cap	in	mile	ft	lb	/ t	
Granular Subbase	in	mile	ft	lb	/ t	
Granular Borrow	in	mile	ft	lb	/ yd <sup>3</sup>	
( Rotomill )	2.40 in	mile	60.00 ft	142.96 lb	0.57 / t	

Project Length **850 ft**  
 Travel Lane Width **60.00 ft**  
 Surface Width - Left Side **30.00 ft**  
 Surface Width - Right Side **30.00 ft**

Additional Borrow **0 \$**  
 Traffic Cross Overs **0 \$**  
 Number of Edge Drains **0 no**  
 Longitudinal Cracks **0 no**  
 Transverse Cracks **0 / mile**  
 Foreslope Angle - Left **0 Vertical**  
 Foreslope Angle - Right **0 Vertical**  
 No Excavation **0.00 in**  
 No Subgrade Sep. Fabric Layer **60.00 ft**

**Flexible Road**

width: 1.5      scale: 1 / 30



Flexible Pavement Reconstruction		PROJECT NAME	Alameda Road/Pocatello Cr. Road	
04/02/10 5:08 PM		PROJECT NUMBER	A0011(657)	
FLEXIBLE PAVEMENT QUANTITIES		KEY	11657	
Analysis Section Length			850 ft	
Traffic Cross Overs			\$0.00	\$
Rotomilling			see below	\$
Additional Borrow			\$0.00	\$
Additional Excavation		0 cu.yd	\$0	\$
Plant Mix PG with high polymer				
Width	60.00 ft			
Depth	2.40 in			
Unit Weight	156.07 lb / cu.ft			
		796 t		
Cost	\$89.50 \$ / t		\$71,200	\$
Plant Mix PG with low polymer				
Width	60.00 ft			
Depth	3.00 in			
Unit Weight	156.07 lb / cu.ft			
		995 t		
Cost	\$82.16 \$ / t		\$81,700	\$
Additional Haul for Plant Mix				
Hauled	0.00 mile			
		0 t mile		
Cost	\$1.50 \$ / t mile		\$0	\$
Permeable (ATPB) Base Material				
Width	0.00 ft			
Depth	0.00 in			
Unit Weight	0.00 lb / cu.ft			
		0 t		
Cost	\$0.00 \$ / t		\$0	\$
Additional Haul for (ATPB) Base Material				
Hauled	0.00 mile			
		0 t mile		
Cost	\$1.50 \$ / t mile		\$0	\$
Aggregate Base Material				
Width	60.00 ft			
Depth	9.00 in			
Unit Weight	156.07 lb / cu.ft			
		2,985 t		
Cost	\$18.43 \$ / t		\$55,000	\$
Additional Haul for Aggregate Base				
Hauled	0.00 mile			
		0 t mile		
Cost	\$1.50 \$ / t mile		\$0	\$
Rock Cap (Aggregate) Material				
Width	0.00 ft			
Depth	0.00 in			
Unit Weight	0.00 lb / cu.ft			
		0 t		
Cost	\$0.00 \$ / t		\$0	\$
Additional Haul for Rock Cap (Aggregate)				
Hauled	0.00 mile			
		0 t mile		
Cost	\$1.50 \$ / t mile		\$0	\$
Granular (Aggregate) Sub Base Material				
Width	0.00 ft			
Depth	0.00 in			
Unit Weight	0.00 lb / cu.ft			
		0 t		
Cost	\$0.00 \$ / t		\$0	\$
Additional Haul for Granular (Aggregate) Sub Base				
Hauled	0.00 mile			
		0 t mile		
Cost	\$1.50 \$ / t mile		\$0	\$
Granular Borrow Material				
Width	0.00 ft			
Depth	0.00 in			
Unit Weight	0.00 lb / cu.ft			

			0 t		0.00
Cost	\$0.00 \$ / cu.yd	0 cu.yd		\$0 \$	thickness
Additional Haul for Granular Borrow					0.00
Hauled	0.00 mile				cost
			0 t mile		\$0
Cost	\$1.50 \$ / t mile			\$0 \$	
Rotomilling					
Width	60.00 ft				
Depth	2.40 in				ROTO
Unit Weight	142.96 lb / cu.ft				width
			729 t		60.00
Cost	\$0.57 \$ / cu.ft	10,200 cu.ft		5,800 \$	thickness
Additional Haul for Rotomilling					2.40
Hauled	0.00 mile				cost
			0 t mile		\$5,800
Cost	\$1.50 \$ / t mile			\$0 \$	
Edge Drains					
Drains	0 no				
Cost	\$28.60 \$ / lin.ft	0 lin.ft		\$0 \$	
Seal Full Width					
Width	60.00 ft				
Cost	\$1.83 \$ / sq.yd	5,667 sq.yd		\$10,400 \$	
			<b>Initial Cost</b>		<b>\$218,300 \$</b>
Cover Coat Material for 1, 12, & 24 Years Full width					
Width	60.00 ft				
			5,667 sq.yd		
Cost	\$1.83 \$ / sq.yd			\$10,400 \$	
			<b>Seal Coat Full Width</b>		<b>\$10,400 \$</b>
Cover Coat Material for 8, 19, & 31 Years Driving Lanes only					
Width	60.00 ft				
			5,667 sq.yd		
Cost	\$1.83 \$ / sq.yd			\$10,400 \$	
			<b>Seal Coat Driving Lanes</b>		<b>\$10,400 \$</b>
Route & Seal Longitudinal Joints					
Number of Joints	0 no				
			0 lin.ft		
Cost	\$1.17 \$ / lin.ft			\$0 \$	
Route & Seal Transvers Cracks					
Width	60.00 ft				
Joints	0 / mile				
			0 lin.ft		
Cost	\$1.17 \$ / lin.ft			\$0 \$	
			<b>Seal Cracks</b>		<b>\$0 \$</b>
Rehabilitation at Year 12:					
Rotomill Travel Lanes					
Width	60.00 ft				
Depth	2.40 in				
			10,200 cu.ft		
Cost	\$0.57 \$ / cu.ft			\$5,800 \$	
Plant Mix Inlay (RECYCLE)					
Width	60.00 ft				
Depth	2.40 in				
Unit Weight	142.96 lb / cu.ft				
			729 t		
Cost	\$82.16 \$ / t			\$59,900 \$	
Seal Coat Full Width				\$10,400 \$	
Seal Cracks				\$0 \$	
			<b>Rehab and Seal - Year 12</b>		<b>\$76,100 \$</b>
Rehabilitation at Year 24					

Overlay Full Width			
Width	60.00 ft		
Depth	2.40 in		
Unit Weight	142.96 lb / cu.ft		
		729 t	
Cost	\$82.16 \$ / t		\$59,900 \$
Rotomill Travel Lanes			
Width	60.00 ft		
Depth	2.40 in		
		10,200 cu.ft	
Cost	\$0.57 \$ / cu.ft		\$5,800 \$
Fabric Membrane			
Width	0.00 ft		
		0 sq.yd	
Cost	\$1.64 \$ / sq.yd		\$0 \$
Plant Mix Inlay (RECYCLE)			
Width	60.00 ft		
Depth	2.40 in		
Unit Weight	142.96 lb / cu.ft		
		729 t	
Cost	\$82.16 \$ / t		\$59,900 \$
Seal Coat Full Width			\$10,400 \$
Seal Cracks			\$0 \$

<b>Rehab and Seal - Year 24</b>	<b>\$136,000 \$</b>
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LIFE CYCLE COST ANALYSIS  
 PROJECT NAME Alameda Road/Pocatello Cr. Road  
 PROJECT NUMBER A0011(657)  
 KEY 11657

STANDARD TIME LINES  
 36 YEAR LIFE CYCLE  
 UNIFORM PROJECT COSTS PER MILE  
 (English units)

02-Apr-10

Flexible Pavement Reconstruction

YEAR	WORK	COST	PRESENT WORTH FACTOR	CAPITAL RECOVERY FACTOR	EQUIVALENT UNIFORM ANNUAL COST
0	-----> Initial Cost	\$218,300	1.0000	0.0529	\$11,500
	----->				
	----->				
5					
	-----> Seal Coat Driving Lanes	\$10,400	0.7307	0.0529	\$400
10					
	-----> Rehab and Seal - Year 12	\$76,100	0.6246	0.0529	\$2,500
15					
	-----> Seal Cracks	\$0	0.5553	0.0529	\$0
	-----> Seal Cracks	\$0	0.4936	0.0529	\$0
	-----> Seal Coat Driving Lanes	\$10,400	0.4746	0.0529	\$300
20					
	-----> Seal Cracks	\$0	0.4388	0.0529	\$0
	-----> Rehab and Seal - Year 24	\$136,000	0.3901	0.0529	\$2,800
25					
	-----> Seal Cracks	\$0	0.3468	0.0529	\$0
30					
	-----> Seal Cracks	\$0	0.3083	0.0529	\$0
	-----> Seal Coat Driving Lanes	\$10,400	0.2965	0.0529	\$200
	-----> Seal Cracks	\$0	0.2741	0.0529	\$0
35					
	-----> End Life - Salvage Value	\$0	0.2444	0.0529	\$0
TOTAL		\$461,600		EUAC ----->	\$17,700
			Total Net Present Worth @ 4%		\$334,600

LIFE CYCLE COST ANALYSIS  
Alameda Road/Pocatello Cr. Road  
A0011(657)  
**Flexible Pavement Reconstruction**

Construct roadway using 3.00 in of AC-10 Plant Mix and 2.40 in of AC-20R Plant Mix on top of 9.00 in of Aggregate Base. Roadway shoulders at Vertical (L) and Vertical (R) slopes.

**COST PER MILE SUMMARY:**

**INITIAL CONSTRUCTION:**

Traffic Cross Overs	\$0
Borrow	\$0
Excavation	\$0
AC-10 Plant Mix	\$81,700
AC-20R Plant Mix	\$71,200
Permeable Base	\$0
Aggregate Base	\$55,000
Rock Cap	\$0
Granular Subbase	\$0
Granular Borrow	\$0
Edge Drains	\$0
Seal Coat at Year 1	\$10,400

<b>TOTAL INITIAL</b>	<b>\$218,300</b>
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Seal Coat Full Width	\$10,400
Seal Driving Lanes	\$10,400
Seal Cracks	\$0

**REHABILITATION AT 12 YEARS:**

Rotomill travel lanes	\$5,800
Plant mix inlay (recycled)	\$59,900
Seal coat full width	\$10,400
Seal cracks	\$0

<b>TOTAL 12 YEAR REHABILITATION</b>	<b>\$76,100</b>
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**REHABILITATION AT 24 YEARS:**









Rotomill travel lanes	\$59,900
Plant mix inlay (recycled)	\$59,900
Fabric membrane	\$0
Plant mix overlay	\$59,900
Seal coat full width	\$10,400
Seal cracks	\$0

<b>TOTAL 24 YEAR REHABILITATION</b>	<b>\$190,100</b>
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<b>TOTAL 36 YEAR LIFE CYCLE COST (from Time Line Chart)</b>	<b>\$461,600</b>
<b>EQUIVALENT UNIFORM ANNUAL COST (euac)</b>	<b>\$17,700</b>
<b>TOTAL NET PRESENT WORTH AT 4% INTREST</b>	<b>\$334,600</b>

**RIGID PAVEMENT WORKSHEET**  
Rigid Pavement Reconstruction

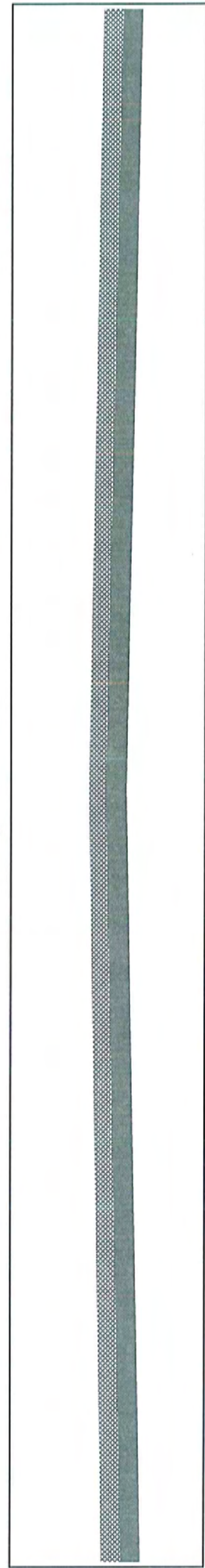
PROJECT NAME Alameda Road/Pocatello Cr. Road  
PROJECT NUMBER A0011(657)  
KEY 11657

Material	Depth	Haul	Width	Weight / ft <sup>3</sup>	Cost	Color
PCC Surface (Conc. Aggr. Haul)	10.00 in	mile	60.00 ft	156.07 lb	206.70 / yd <sup>3</sup>	
Asphalt Treated Base	in	mile	ft	lb	/ t	
Aspl Treat Permeable Base	in	mile	ft	lb	/ t	
ATPB Leveling Course	in	mile	ft	lb	/ t	
Aggregate Base	12.00 in	mile	60.00 ft	156.07 lb	18.43 / t	
Rock Cap	in	mile	ft	lb	/ t	
Granular Subbase	in	mile	ft	lb	/ t	
Granular Borrow	in	mile	ft	lb	/ yd <sup>3</sup>	

Project Length	850 ft
Travel Lane Width	60.00 ft
Surface Width - Left Side	30.00 ft
Surface Width - Right Side	30.00 ft

Additional Borrow	\$
Traffic Cross Overs	0 \$
Number of Edge Drains	0 no
Longitudinal Cracks	4 no
Transverse Cracks	218 / mile
Foreslope Angle - Left	0 Vertical
Foreslope Angle - Right	0 Vertical
No Excavation	19.69 in
No Subgrade Sep. Fabric Layer	60.00 ft

24 Year Standard Remaining Life **Rigid Road** width: 1.4 14 scale: 1 / 30



**Rigid Pavement Reconstruction**  
 04/02/10 5:08 PM  
 RIGID PAVEMENT QUANTITIES

**PROJECT NAME** Alameda Road/Pocatello Cr. Road  
**PROJECT NUMBER** A0011(657)  
**KEY** 11687

Analysis Section Length			850 ft	
Traffic Cross Overs			\$0.00	\$
Rotomilling			\$0.00	\$
Additional Borrow			\$0.00	\$
Additional Excavation		0 cu.yd	\$0	\$
<b>Furnish Dowelled Concrete</b>				
Width	60.00 ft			
Depth	10.00 in			
Unit Weight	156.07 lb / cu.ft			
		1,574 cu.yd		
Cost	\$206.70 \$ / cu.yd		\$325,400	\$
<b>Place &amp; Finish Dowelled Concrete</b>				
Width	60.00 ft			
Depth	10.00 in			
Unit Weight	156.07 lb / cu.ft			
		5,667 sq.yd		
Cost	\$16.91 \$ / sq.yd		\$95,900	\$
<b>Additional Haul for Concrete Aggregates</b>				
Hauled	0.00 mile			
		0 t mile		
Cost	\$1.50 \$ / t mile		\$0	\$
<b>Permeable (ATPB) Base Material</b>				
Width	0.00 ft			
Depth	0.00 in			
Unit Weight	0.00 lb / cu.ft			
		0 t		
Cost	\$0.00 \$ / t		\$0	\$
<b>Additional Haul for (ATPB) Base Material</b>				
Hauled	0.00 mile			
		0 t mile		
Cost	\$1.50 \$ / t mile		\$0	\$
<b>Aggregate Base Material</b>				
Width	60.00 ft			
Depth	12.00 in			
Unit Weight	156.07 lb / cu.ft			
		3,980 t		
Cost	\$18.43 \$ / t		\$73,400	\$
<b>Additional Haul for Aggregate Base</b>				
Hauled	0.00 mile			
		0 t mile		
Cost	\$1.50 \$ / t mile		\$0	\$
<b>Rock Cap (Aggregate) Material</b>				
Width	0.00 ft			
Depth	0.00 in			
Unit Weight	0.00 lb / cu.ft			
		0 t		
Cost	\$0.00 \$ / t		\$0	\$
<b>Additional Haul for Rock Cap (Aggregate)</b>				
Hauled	0.00 mile			
		0 t mile		
Cost	\$1.50 \$ / t mile		\$0	\$
<b>Granular (Aggregate) Sub Base Material</b>				
Width	0.00 ft			
Depth	0.00 in			
Unit Weight	0.00 lb / cu.ft			
		0 cu.yd		
Cost	\$0.00 \$ / cu.yd		\$0	\$
<b>Additional Haul for Granular (Aggregate) Sub Base</b>				
Hauled	0.00 mile			
		0 t mile		
Cost	\$1.50 \$ / t mile		\$0	\$
<b>Granular Borrow Material</b>				
Width	0.00 ft			
Depth	0.00 in			
Unit Weight	0.00 lb / cu.ft			



Cost	\$0.00 \$ / cu.yd	0 cu.yd	\$0 \$	0.00
		0 cu.yd		thickness
Additional Haul for Granular Borrow				0.00
Hauled	0.00 mile			cost
		0 t mile		\$0
Cost	\$1.50 \$ / t mile		\$0 \$	
Edge Drains				
Drains	0 no			
Cost	\$28.60 \$ / lin.ft	0 lin.ft	\$0 \$	
			<b>Total Initial Cost</b>	<b>\$494,700 \$</b>
Seal Longitudinal Joints at 9, 18, & 27 Years				
Number of Joints	4 no			
		3,400 lin.ft		
Cost	\$1.17 \$ / lin.ft		\$4,000 \$	
Route & Seal Transvers Cracks at 9 Years				
Width	60.00 ft			
Joints	218 / mile			
		13,080 lin.ft		
Cost	\$1.17 \$ / lin.ft		\$15,300 \$	
			<b>Total Seal Cracks</b>	<b>\$19,300 \$</b>
Rehabilitation Slab Replacement				
Width	60.00 ft			
Replacement	2 %			
		113 sq.yd		
Cost	9.0803431 \$ / sq.yd		\$1,000 \$	
Grinding Driving Lanes				
Width	60.00 ft			
		5,667 sq.yd		
Cost	3.5786251 \$ / sq.yd		\$20,300 \$	
Seal Longitudinal Joints			\$4,000 \$	
Seal Transvers Joints			\$15,300 \$	
			<b>Total Rehab Plus Joints</b>	<b>\$40,600 \$</b>

LIFE CYCLE COST ANALYSIS

STANDARD TIME LINES

02-Apr-10

PROJECT NAME Alameda Road/Pocatello Cr. Road  
 PROJECT NUMBER A0011(657)  
 KEY 11657

36 YEAR LIFE CYCLE  
 UNIFORM PROJECT COSTS PER MILE  
 (English units)

**Rigid Pavement Reconstruction**

YEAR	WORK	COST	PRESENT WORTH FACTOR	CAPITAL RECOVERY FACTOR	EQUIVALENT UNIFORM ANNUAL COST
0	Initial Cost	\$494,700	1.0000	0.0529	\$26,200
10	Seal Joints	\$19,300	0.7026	0.0529	\$700
20	Rehab & Seal Joints	\$40,600	0.4936	0.0529	\$1,100
30	Seal Joints	\$19,300	0.3468	0.0529	\$400
35	End Life - Salvage Value	(\$212,721)	0.2444	0.0529	(\$2,800)
TOTAL		\$361,179		EUAC	\$25,600
			Total Net Present Worth @ 4%		\$484,000

LIFE CYCLE COST ANALYSIS  
Alameda Road/Pocatello Cr. Road  
A0011(657)

**Rigid Pavement Reconstruction**

Construct roadway using 10.00 in of Dowelled & Jointed PCC Pavement on top of  
12.00 of Aggregate Base. Roadway shoulders at Vertical (L) and Vertical (R)  
slopes.

COST PER MILE SUMMARY:

INITIAL CONSTRUCTION:

Traffic Cross Overs	\$0
Rotomilling	\$0
Additional Borrow	\$0
Additional Excavation	\$0
Dowelled & Jointed PCC Pavement	\$421,300
ATPB Base	\$0
Aggregate Base	\$73,400
Rock Cap	\$0
Granular Subbase	\$0
Granular Borrow	\$0
Edge Drains	\$0

TOTAL INITIAL	\$494,700
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REHABILITATION AT 9 YEARS

Seal Longitudinal Joints	\$4,000
Seal Transverse Joints	\$15,300

TOTAL 9 YEAR REHABILITATION	\$19,300
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REHABILITATION AT 18 YEARS:

Slab Replacement at 2%	\$1,000
Grinding Driving Lanes	\$20,300
Seal Longitudinal Joints	\$4,000
Seal Transverse Joints	\$15,300

TOTAL 18 YEAR REHABILITATION	\$40,600
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REHABILITATION AT 27 YEARS

Seal Longitudinal Joints	\$4,000
Seal Transverse Joints	\$15,300

TOTAL 27 YEAR REHABILITATION	\$19,300
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TOTAL 36 YEAR LIFE CYCLE COST (from Time Line Chart)	\$361,179
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EQUIVALENT UNIFORM ANNUAL COST (euac)	\$25,600
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TOTAL NET PRESENT WORTH AT 4% INTREST	\$484,000
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# FLEXIBLE PAVEMENT WORKSHEET

Flexible Pavement Reconstruction

PROJECT NAME Hiline Road/Jefferson Avenue

PROJECT NUMBER A0011(657)

KEY 11657

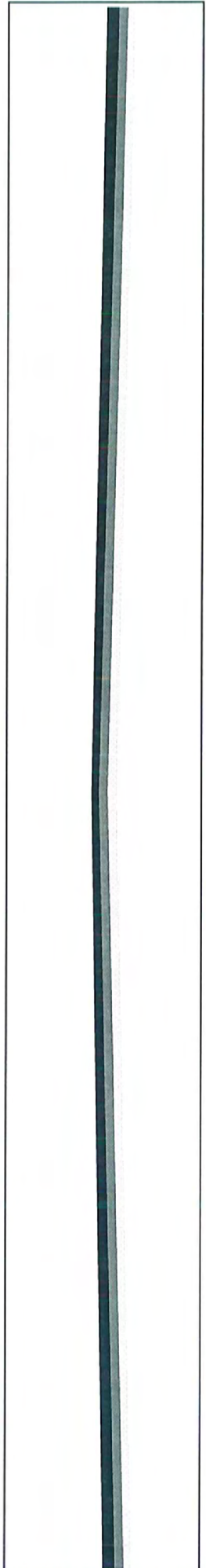
Material	Depth	Haul	Width	Weight / ft <sup>3</sup>	Cost	Color
Plant Mix PG with high polymer	2.40 in	mile	60.00 ft	156.07 lb	89.50 / t	
Plant Mix PG with low polymer	1.80 in	mile	60.00 ft	156.07 lb	82.16 / t	
Asphalt Treat Permeable Base	in	mile	ft	lb	/ t	
Aggregate Base	6.00 in	mile	60.00 ft	156.07 lb	18.43 / t	
Rock Cap	in	mile	ft	lb	/ t	
Granular Subbase	4.80 in	mile	60.00 ft	109.87 lb	13.69 / t	
Granular Borrow	in	mile	ft	lb	/ yd <sup>3</sup>	
( Rotomill )	2.40 in	mile	60.00 ft	142.96 lb	0.57 / t	

Project Length 800 ft  
 Travel Lane Width 60.00 ft  
 Surface Width - Left Side 30.00 ft  
 Surface Width - Right Side 30.00 ft

Additional Borrow 0 \$  
 Traffic Cross Overs 0 \$  
 Number of Edge Drains 0 no  
 Longitudinal Cracks 0 no  
 Transverse Cracks 0 / mile  
 Foreslope Angle - Left 0 Vertical  
 Foreslope Angle - Right 0 Vertical  
 No Excavation 0.00 in  
 No Subgrade Sep. Fabric Layer 60.00 ft

**Flexible Road** width: 1.5 15 scale: 1 / 30

**24 Year Standard Remaining Life**



Flexible Pavement Reconstruction  
 04/02/10 5:10 PM  
 FLEXIBLE PAVEMENT QUANTITIES

PROJECT NAME Hillne Road/Jefferson Avenue  
 PROJECT NUMBER A0011(657)  
 KEY 11657

Analysis Section Length			800 ft	
Traffic Cross Overs			\$0.00	\$
Rotomilling			see below	\$
Additional Borrow			\$0.00	\$
Additional Excavation		0 cu.yd	\$0	\$
Plant Mix PG with high polymer				
Width	60.00 ft			
Depth	2.40 in			
Unit Weight	156.07 lb / cu.ft			
		749 t		
Cost	\$89.50 \$ / t		\$67,000	\$
Plant Mix PG with low polymer				
Width	60.00 ft			
Depth	1.80 in			
Unit Weight	156.07 lb / cu.ft			
		562 t		
Cost	\$82.16 \$ / t		\$46,200	\$
Additional Haul for Plant Mix				
Hauled	0.00 mile			
		0 t mile		
Cost	\$1.50 \$ / t mile		\$0	\$
Permeable (ATPB) Base Material				
Width	0.00 ft			
Depth	0.00 in			
Unit Weight	0.00 lb / cu.ft			
		0 t		
Cost	\$0.00 \$ / t		\$0	\$
Additional Haul for (ATPB) Base Material				
Hauled	0.00 mile			
		0 t mile		
Cost	\$1.50 \$ / t mile		\$0	\$
Aggregate Base Material				
Width	60.00 ft			
Depth	6.00 in			
Unit Weight	156.07 lb / cu.ft			
		1,873 t		
Cost	\$18.43 \$ / t		\$34,500	\$
Additional Haul for Aggregate Base				
Hauled	0.00 mile			
		0 t mile		
Cost	\$1.50 \$ / t mile		\$0	\$
Rock Cap (Aggregate) Material				
Width	0.00 ft			
Depth	0.00 in			
Unit Weight	0.00 lb / cu.ft			
		0 t		
Cost	\$0.00 \$ / t		\$0	\$
Additional Haul for Rock Cap (Aggregate)				
Hauled	0.00 mile			
		0 t mile		
Cost	\$1.50 \$ / t mile		\$0	\$
Granular (Aggregate) Sub Base Material				
Width	60.00 ft			
Depth	4.80 in			
Unit Weight	109.87 lb / cu.ft			
		1,055 t		
Cost	\$13.69 \$ / t		\$14,400	\$
Additional Haul for Granular (Aggregate) Sub Base				
Hauled	0.00 mile			
		0 t mile		
Cost	\$1.50 \$ / t mile		\$0	\$
Granular Borrow Material				
Width	0.00 ft			
Depth	0.00 in			
Unit Weight	0.00 lb / cu.ft			

Cost	\$0.00 \$ / cu.yd	0 t 0 cu.yd	\$0 \$	0.00 thickness 0.00 cost
<b>Additional Haul for Granular Borrow</b>				
Hauled	0.00 mile			\$0
Cost	\$1.50 \$ / t mile	0 t mile	\$0 \$	
<b>Rotomilling</b>				
Width	60.00 ft			
Depth	2.40 in			ROTO
Unit Weight	142.96 lb / cu.ft			width
Cost	\$0.57 \$ / cu.ft	686 t 9,600 cu.ft	5,400 \$	60.00 thickness 2.40 cost
<b>Additional Haul for Rotomilling</b>				
Hauled	0.00 mile			\$5,400
Cost	\$1.50 \$ / t mile	0 t mile	\$0 \$	
<b>Edge Drains</b>				
Drains	0 no			
Cost	\$28.60 \$ / lin.ft	0 lin.ft	\$0 \$	
<b>Seal Full Width</b>				
Width	60.00 ft			
Cost	\$1.83 \$ / sq.yd	5,333 sq.yd	\$9,800 \$	
			<b>Initial Cost</b>	<b>\$171,900 \$</b>
<b>Cover Coat Material for 1, 12, &amp; 24 Years Full width</b>				
Width	60.00 ft			
		5,333 sq.yd		
Cost	\$1.83 \$ / sq.yd		\$9,800 \$	
			<b>Seal Coat Full Width</b>	<b>\$9,800 \$</b>
<b>Cover Coat Material for 8, 19, &amp; 31 Years Driving Lanes only</b>				
Width	60.00 ft			
		5,333 sq.yd		
Cost	\$1.83 \$ / sq.yd		\$9,800 \$	
			<b>Seal Coat Driving Lanes</b>	<b>\$9,800 \$</b>
<b>Route &amp; Seal Longitudinal Joints</b>				
Number of Joints	0 no			
		0 lin.ft		
Cost	\$1.17 \$ / lin.ft		\$0 \$	
<b>Route &amp; Seal Transvers Cracks</b>				
Width	60.00 ft			
Joints	0 / mile			
		0 lin.ft		
Cost	\$1.17 \$ / lin.ft		\$0 \$	
			<b>Seal Cracks</b>	<b>\$0 \$</b>
<b>Rehabilitation at Year 12:</b>				
<b>Rotomill Travel Lanes</b>				
Width	60.00 ft			
Depth	2.40 in			
Cost	\$0.57 \$ / cu.ft	9,600 cu.ft	\$5,400 \$	
<b>Plant Mix Inlay (RECYCLE)</b>				
Width	60.00 ft			
Depth	2.40 in			
Unit Weight	142.96 lb / cu.ft			
Cost	\$82.16 \$ / t	686 t	\$56,400 \$	
Seal Coat Full Width			\$9,800 \$	
Seal Cracks			\$0 \$	
			<b>Rehab and Seal - Year 12</b>	<b>\$71,600 \$</b>

Rehabilitation at Year 24

Overlay Full Width				
Width	60.00 ft			
Depth	2.40 in			
Unit Weight	142.96 lb / cu.ft	686 t		
Cost	\$82.16 \$ / t		\$56,400	\$
Rotomill Travel Lanes				
Width	60.00 ft			
Depth	2.40 in			
Cost	\$0.57 \$ / cu.ft	9,600 cu.ft	\$5,400	\$
Fabric Membrane				
Width	0.00 ft	0 sq.yd		
Cost	\$1.64 \$ / sq.yd		\$0	\$
Plant Mix Inlay (RECYCLE)				
Width	60.00 ft			
Depth	2.40 in			
Unit Weight	142.96 lb / cu.ft	686 t		
Cost	\$82.16 \$ / t		\$56,400	\$
Seal Coat Full Width			\$9,800	\$
Seal Cracks			\$0	\$
			<b>\$128,000</b>	<b>\$</b>

LIFE CYCLE COST ANALYSIS

STANDARD TIME LINES

02-Apr-10

PROJECT NAME **Hiline Road/Jefferson Avenue**

36 YEAR LIFE CYCLE

PROJECT NUMBER **A0011(657)**

UNIFORM PROJECT COSTS PER MILE

KEY **11657**

(English units)

**Flexible Pavement Reconstruction**

YEAR	WORK	COST	PRESENT WORTH FACTOR	CAPITAL RECOVERY FACTOR	EQUIVALENT UNIFORM ANNUAL COST
0	Initial Cost	\$171,900	1.0000	0.0529	\$9,100
5					
10	Seal Coat Driving Lanes	\$9,800	0.7307	0.0529	\$400
12	Rehab and Seal - Year 12	\$71,600	0.6246	0.0529	\$2,400
15	Seal Cracks	\$0	0.5553	0.0529	\$0
16	Seal Cracks	\$0	0.4936	0.0529	\$0
17	Seal Coat Driving Lanes	\$9,800	0.4746	0.0529	\$200
20	Seal Cracks	\$0	0.4388	0.0529	\$0
24	Rehab and Seal - Year 24	\$128,000	0.3901	0.0529	\$2,600
26	Seal Cracks	\$0	0.3468	0.0529	\$0
30	Seal Cracks	\$0	0.3083	0.0529	\$0
31	Seal Coat Driving Lanes	\$9,800	0.2965	0.0529	\$200
32	Seal Cracks	\$0	0.2741	0.0529	\$0
35	End Life - Salvage Value	\$0	0.2444	0.0529	\$0
TOTAL		\$400,900		EUAC ----->	\$14,900
			Total Net Present Worth @ 4%		\$281,700



LIFE CYCLE COST ANALYSIS  
 Hiline Road/Jefferson Avenue  
 A0011(657)  
**Flexible Pavement Reconstruction**

Construct roadway using 1.80 in of AC-10 Plant Mix and 2.40 in of AC-20R Plant Mix on top of 6.00 in of Aggregate Base and 4.80 in of Granular Subbase. Roadway shoulders at Vertical (L) and Vertical (R) slopes.

**COST PER MILE SUMMARY:**

**INITIAL CONSTRUCTION:**

Traffic Cross Overs	\$0
Borrow	\$0
Excavation	\$0
AC-10 Plant Mix	\$46,200
AC-20R Plant Mix	\$67,000
Permeable Base	\$0
Aggregate Base	\$34,500
Rock Cap	\$0
Granular Subbase	\$14,400
Granular Borrow	\$0
Edge Drains	\$0
Seal Coat at Year 1	\$9,800

<b>TOTAL INITIAL</b>	\$171,900
----------------------	-----------

Seal Coat Full Width	\$9,800
Seal Driving Lanes	\$9,800
Seal Cracks	\$0

**REHABILITATION AT 12 YEARS:**

Rotomill travel lanes	\$5,400
Plant mix inlay (recycled)	\$56,400
Seal coat full width	\$9,800
Seal cracks	\$0

<b>TOTAL 12 YEAR REHABILITATION</b>	\$71,600
-------------------------------------	----------

**REHABILITATION AT 24 YEARS:**

Rotomill travel lanes	\$56,400
Plant mix inlay (recycled)	\$56,400
Fabric membrane	\$0
Plant mix overlay	\$56,400
Seal coat full width	\$9,800
Seal cracks	\$0









<b>TOTAL 24 YEAR REHABILITATION</b>	\$179,000
-------------------------------------	-----------

<b>TOTAL 36 YEAR LIFE CYCLE COST (from Time Line Chart)</b>	\$400,900
<b>EQUIVALENT UNIFORM ANNUAL COST (euac)</b>	\$14,900
<b>TOTAL NET PRESENT WORTH AT 4% INTREST</b>	\$281,700

# RIGID PAVEMENT WORKSHEET

Rigid Pavement Reconstruction

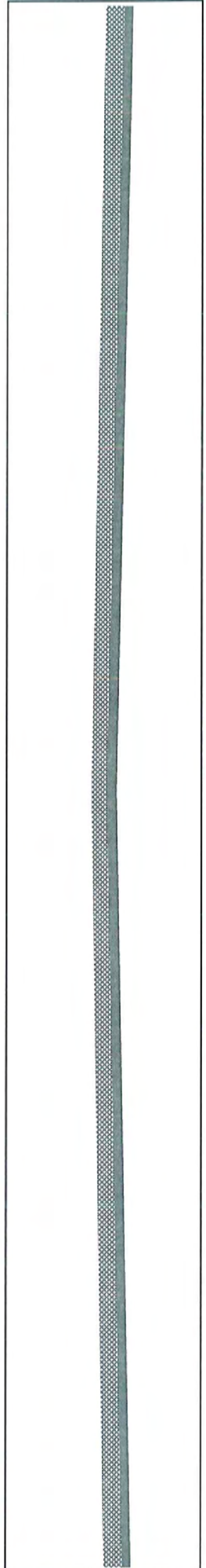
PROJECT NAME: Hilline Road/Jefferson Avenue  
 PROJECT NUMBER: A0011(657)  
 KEY: 11657

Material	Depth	Haul	Width	Weight / ft <sup>3</sup>	Cost	Color
PCC Surface (Conc. Aggr. Haul)	9.00 in		60.00 ft	156.07 lb	206.70 / yd <sup>3</sup>	
Asphalt Treated Base		mile	ft	lb	/ t	
Asphalt Permeable Base		mile	ft	lb	/ t	
ATPB Leveling Course		mile	ft	lb	/ t	
Aggregate Base	6.00 in	mile	60.00 ft	156.07 lb	18.43 / t	
Rock Cap		mile	ft	lb	/ t	
Granular Subbase		mile	ft	lb	/ t	
Granular Borrow		mile	ft	lb	/ yd <sup>3</sup>	

Project Length: 800 ft  
 Travel Lane Width: 60.00 ft  
 Surface Width - Left Side: 30.00 ft  
 Surface Width - Right Side: 30.00 ft

Additional Borrow: \$  
 Traffic Cross Overs: 0 \$  
 Number of Edge Drains: 0 no  
 Longitudinal Cracks: 4 no  
 Transverse Cracks: 218 / mile  
 Foreslope Angle - Left: 0 Vertical  
 Foreslope Angle - Right: 0 Vertical  
 No Excavation: 19.69 in  
 No Subgrade Sep. Fabric Layer: 60.00 ft

Rigid Road width: 1.4 scale: 1 / 30



**Rigid Pavement Reconstruction**  
 04/02/10 5:10 PM  
 RIGID PAVEMENT QUANTITIES

PROJECT NAME	Hilline Road/Jefferson Avenue
PROJECT NUMBER	A0011(657)
KEY	11657

Analysis Section Length		800 ft		
Traffic Cross Overs			\$0.00	\$
Rotomilling			\$0.00	\$
Additional Borrow			\$0.00	\$
Additional Excavation		0 cu.yd	\$0	\$
<b>Furnish Dowelled Concrete</b>				
Width	60.00 ft			
Depth	9.00 in			
Unit Weight	156.07 lb / cu.ft			
		1,333 cu.yd		
Cost	\$206.70 \$ / cu.yd		\$275,600	\$
<b>Place &amp; Finish Dowelled Concrete</b>				
Width	60.00 ft			
Depth	9.00 in			
Unit Weight	156.07 lb / cu.ft			
		5,333 sq.yd		
Cost	\$16.91 \$ / sq.yd		\$90,200	\$
<b>Additional Haul for Concrete Aggregates</b>				
Hauled	0.00 mile			
		0 t mile		
Cost	\$1.50 \$ / t mile		\$0	\$
<b>Permeable (ATPB) Base Material</b>				
Width	0.00 ft			
Depth	0.00 in			
Unit Weight	0.00 lb / cu.ft			
		0 t		
Cost	\$0.00 \$ / t		\$0	\$
<b>Additional Haul for (ATPB) Base Material</b>				
Hauled	0.00 mile			
		0 t mile		
Cost	\$1.50 \$ / t mile		\$0	\$
<b>Aggregate Base Material</b>				
Width	60.00 ft			
Depth	6.00 in			
Unit Weight	156.07 lb / cu.ft			
		1,873 t		
Cost	\$18.43 \$ / t		\$34,500	\$
<b>Additional Haul for Aggregate Base</b>				
Hauled	0.00 mile			
		0 t mile		
Cost	\$1.50 \$ / t mile		\$0	\$
<b>Rock Cap (Aggregate) Material</b>				
Width	0.00 ft			
Depth	0.00 in			
Unit Weight	0.00 lb / cu.ft			
		0 t		
Cost	\$0.00 \$ / t		\$0	\$
<b>Additional Haul for Rock Cap (Aggregate)</b>				
Hauled	0.00 mile			
		0 t mile		
Cost	\$1.50 \$ / t mile		\$0	\$
<b>Granular (Aggregate) Sub Base Material</b>				
Width	0.00 ft			
Depth	0.00 in			
Unit Weight	0.00 lb / cu.ft			
		0 cu.yd		
Cost	\$0.00 \$ / cu.yd		\$0	\$
<b>Additional Haul for Granular (Aggregate) Sub Base</b>				
Hauled	0.00 mile			
		0 t mile		
Cost	\$1.50 \$ / t mile		\$0	\$
<b>Granular Borrow Material</b>				
Width	0.00 ft			
Depth	0.00 in			
Unit Weight	0.00 lb / cu.ft			

Cost	\$0.00 \$ / cu.yd	0 cu.yd 0 cu.yd	\$0 \$	0.00 thickness 0.00 cost
Additional Haul for Granular Borrow Hauled	0.00 mile	0 t mile	\$0 \$	\$0
Cost	\$1.50 \$ / t mile		\$0 \$	
Edge Drains				
Drains	0 no			
Cost	\$28.60 \$ / lin.ft	0 lin.ft	\$0 \$	
			<b>Total Initial Cost</b>	<b>\$400,300 \$</b>
Seal Longitudinal Joints at 9, 18, & 27 Years				
Number of Joints	4 no	3,200 lin.ft		
Cost	\$1.17 \$ / lin.ft		\$3,700 \$	
Route & Seal Transvers Cracks at 9 Years				
Width	60.00 ft			
Joints	218 / mile	13,080 lin.ft		
Cost	\$1.17 \$ / lin.ft		\$15,300 \$	
			<b>Total Seal Cracks</b>	<b>\$19,000 \$</b>
Rehabilitation Slab Replacement				
Width	60.00 ft			
Replacement	2 %	107 sq.yd		
Cost	9.0803431 \$ / sq.yd		\$1,000 \$	
Grinding Driving Lanes				
Width	60.00 ft	5,333 sq.yd		
Cost	3.5786251 \$ / sq.yd		\$19,100 \$	
Seal Longitudinal Joints			\$3,700 \$	
Seal Transvers Joints			\$15,300 \$	
			<b>Total Rehab Plus Joints</b>	<b>\$39,100 \$</b>

LIFE CYCLE COST ANALYSIS

STANDARD TIME LINES

02-Apr-10

PROJECT NAME Hillne Road/Jefferson Avenue  
 PROJECT NUMBER A0011(657)  
 KEY 11657

36 YEAR LIFE CYCLE  
 UNIFORM PROJECT COSTS PER MILE  
 (English units)

**Rigid Pavement Reconstruction**

YEAR	WORK	COST	PRESENT WORTH FACTOR	CAPITAL RECOVERY FACTOR	EQUIVALENT UNIFORM ANNUAL COST
0	Initial Cost	\$400,300	1.0000	0.0529	\$21,200
10	Seal Joints	\$19,000	0.7026	0.0529	\$700
20	Rehab & Seal Joints	\$39,100	0.4936	0.0529	\$1,000
30	Seal Joints	\$19,000	0.3468	0.0529	\$300
35	End Life - Salvage Value	(\$172,129)	0.2444	0.0529	(\$2,200)
TOTAL		\$305,271		EUAC ----->	\$21,000
			Total Net Present Worth @ 4%		\$397,100

LIFE CYCLE COST ANALYSIS  
 Hiline Road/Jefferson Avenue  
 A0011(657)

Rigid Pavement Reconstruction

Construct roadway using 9.00 in of Dowelled & Jointed PCC Pavement on top of 6.00 of Aggregate Base. Roadway shoulders at Vertical (L) and Vertical (R) slopes.

COST PER MILE SUMMARY:

INITIAL CONSTRUCTION:

Traffic Cross Overs	\$0
Rotomilling	\$0
Additional Borrow	\$0
Additional Excavation	\$0
Dowelled & Jointed PCC Pavement	\$365,800
ATPB Base	\$0
Aggregate Base	\$34,500
Rock Cap	\$0
Granular Subbase	\$0
Granular Borrow	\$0
Edge Drains	\$0

TOTAL INITIAL \$400,300 ✓

REHABILITATION AT 9 YEARS

Seal Longitudinal Joints	\$3,700
Seal Transverse Joints	\$15,300

TOTAL 9 YEAR REHABILITATION \$19,000

REHABILITATION AT 18 YEARS:

Slab Replacement at 2%	\$1,000
Grinding Driving Lanes	\$19,100
Seal Longitudinal Joints	\$3,700
Seal Transverse Joints	\$15,300

TOTAL 18 YEAR REHABILITATION \$39,100

REHABILITATION AT 27 YEARS

Seal Longitudinal Joints	\$3,700
Seal Transverse Joints	\$15,300

TOTAL 27 YEAR REHABILITATION \$19,000

TOTAL 36 YEAR LIFE CYCLE COST (from Time Line Chart)	\$305,271	✓
EQUIVALENT UNIFORM ANNUAL COST (euac)	\$21,000	✓
TOTAL NET PRESENT WORTH AT 4% INTREST	\$397,100	✓

A topographic map background with blue contour lines and a dashed blue line path. The map shows various elevations and features, with the dashed line path winding through the terrain.

**APPENDIX D**  
**Laboratory Testing Results**

American Geotechnics  
5260 Chinden Blvd.  
Boise, Idaho 83714  
Phone:(208) 658-8700  
Fax: (208) 658-8703



**Report to:** Kleinfelder Inc.  
**Project:** Alameda Road Intersection  
**Report Date:** 4/1/10  
**Project No.:** 110148  
**ITD Project No.:** A0011(657) Key No.: 11657

---

**Material Information**

---

**Date Sampled:** 3/26/10  
**Sampled By:** Kleinfelder  
**Date Received:** 3/29/10  
**Date Tested:** 3/29 through 4/1/10

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**Test Results**

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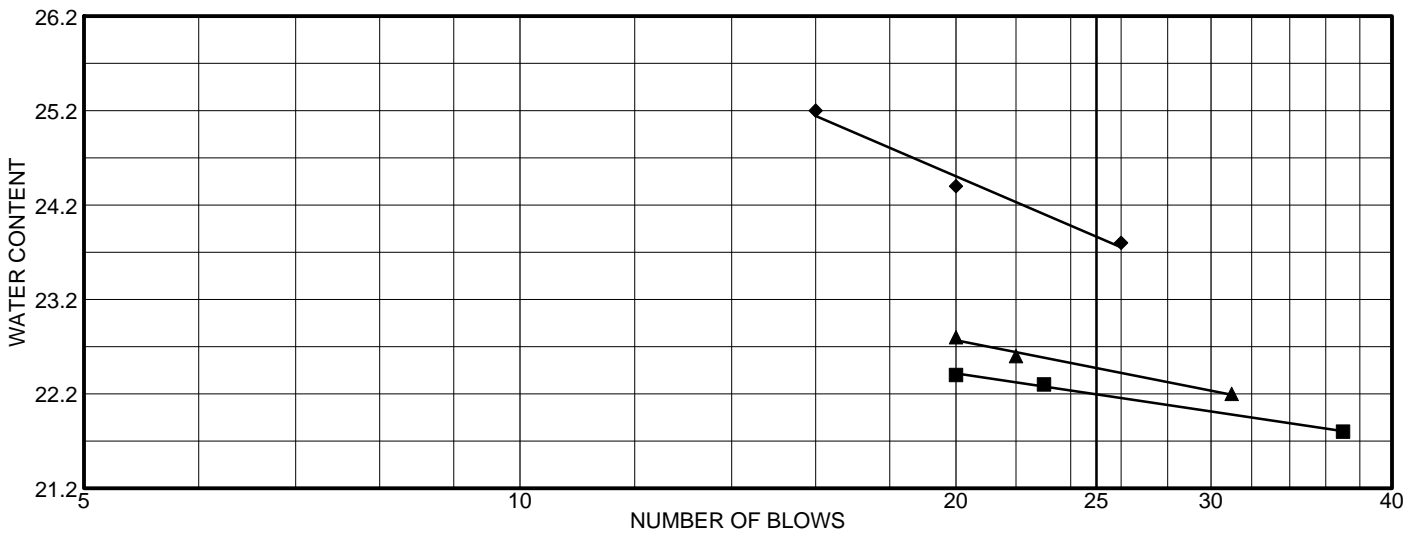
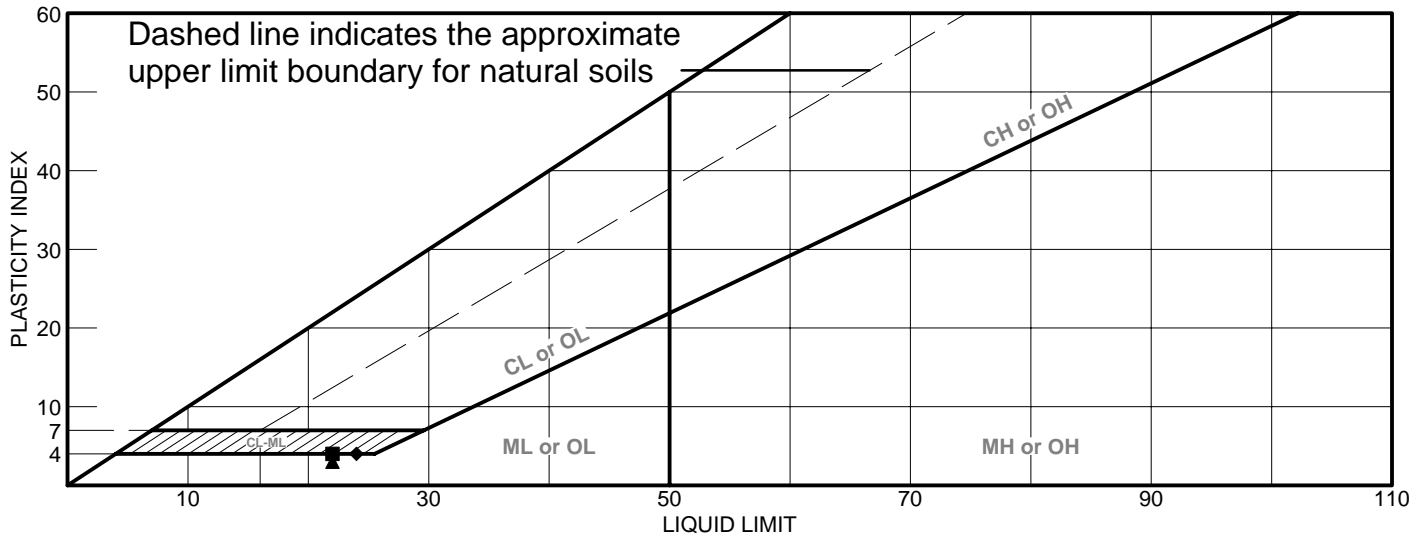
Lab Number	Sample ID	Depth	% Natural Moisture	% Passing #200	Liquid Limit	Plastic Index	Soil Type
10-0146	10-KLF-B1	1.5'-4.0'	---	46.2	NV	NP	SM
10-0147	10-KLF-B2	2.5'-5.0'	---	17.0	22	4	GC-GM
10-0148	10-KLF-B3	2.0'-6.0'	11.4	72.6	22	19	ML
10-0149	10-KLF-B4	1.0'-5.0'	13.6	85.1	24	20	CL-ML

Reviewed By: \_\_\_\_\_

A handwritten signature in black ink, appearing to be "T. J. [unclear]", written over a horizontal line.



# LIQUID AND PLASTIC LIMITS TEST REPORT



	MATERIAL DESCRIPTION	LL	PL	PI	%<#40	%<#200	USCS
●	Silty Sand with Gravel (SM)	NV	NP	NP	61.7	46.2	SM
■	Silty Clayey Gravel with Sand (GC-GM)	22	18	4	24.4	17.0	GC-GM
▲	Silt with Sand (ML)	22	19	3	78.5	72.6	ML
◆	Silty Clay (CL-ML)	24	20	4	88.4	85.1	CL-ML

**Project No.** 110148      **Client:** Kleinfelder  
**Project:** Alameda Rd. Intersection ITD Project No. A0011(657) Key No. 11657  
 Alameda Rd. Intersection ITD Project No. A0011(657) Key No. 11657  
 ● **Location:** 10-KLF-B1; 1.5'-4.0'  
 ■ **Location:** 10-KLF-B2; 2.5'-5.0'  
 ▲ **Location:** 10-KLF-B3; 2.0'-6.0'  
 ◆ **Location:** 10-KLF-B4; 1.0'-5.0'

**AMERICAN GEOTECHNICS**  
Boise, ID

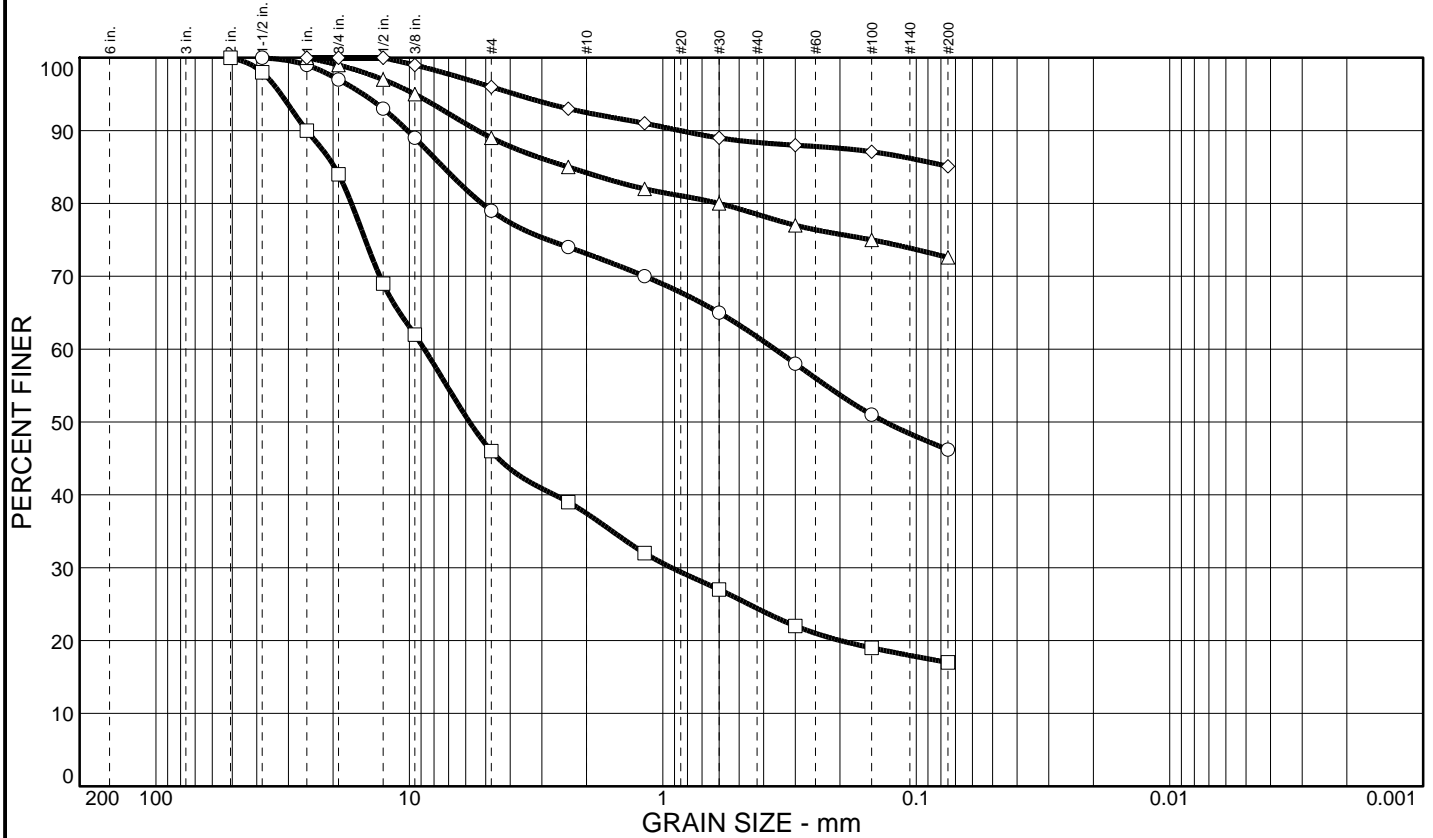
**Remarks:**

- 
- 
- ▲
- ◆

*[Signature]*

**Reviewed by:**

# Particle Size Distribution Report



	% COBBLES	% GRAVEL	% SAND	% SILT	% CLAY
○	0.0	21.0	32.8	46.2	
□	0.0	54.0	29.0	17.0	
△	0.0	11.0	16.4	72.6	
◇	0.0	4.0	10.9	85.1	

	LL	PL	D <sub>85</sub>	D <sub>60</sub>	D <sub>50</sub>	D <sub>30</sub>	D <sub>15</sub>	D <sub>10</sub>	C <sub>c</sub>	C <sub>u</sub>
○	NV	NP	7.35	0.361	0.133					
□	22	18	19.8	8.73	5.79	0.924				
△	22	19	2.36							
◇	24	20								

MATERIAL DESCRIPTION	USCS	AASHTO
○ Silty Sand with Gravel (SM)	SM	
□ Silty Clayey Gravel with Sand (GC-GM)	GC-GM	
△ Silt with Sand (ML)	ML	
◇ Silty Clay (CL-ML)	CL-ML	

<p><b>Project No.</b> 110148      <b>Client:</b> Kleinfelder</p> <p><b>Project:</b> Alameda Rd. Intersection ITD Project No. A0011(657) Key No. 11657</p> <p>○ <b>Location:</b> 10-KLF-B1; 1.5'-4.0'</p> <p>□ <b>Location:</b> 10-KLF-B2; 2.5'-5.0'</p> <p>△ <b>Location:</b> 10-KLF-B3; 2.0'-6.0'</p> <p>◇ <b>Location:</b> 10-KLF-B4; 1.0'-5.0'</p>	<p><b>Remarks:</b></p> <p>○</p> <p>□</p> <p>△</p> <p>◇</p>  <p style="text-align: center;"></p> <p><b>Reviewed by:</b></p>
<p><b>AMERICAN GEOTECHNICS</b></p> <p><b>Boise, ID</b></p>	

American Geotechnics  
 5260 Chinden Blvd.  
 Boise, Idaho 83714  
 Phone:(208) 658-8700  
 Fax: (208) 658-8703



Report To: Kleinfelder  
 Project: Alameda Road Intersection  
 Project No.: 04B-M783.96  
 ITD Project No.: A0011(657), Key No. 11657  
 Sample ID: B-1 @ 1.5'-4.0'  
 Soil Description: Silty Sand with Gravel (SM)

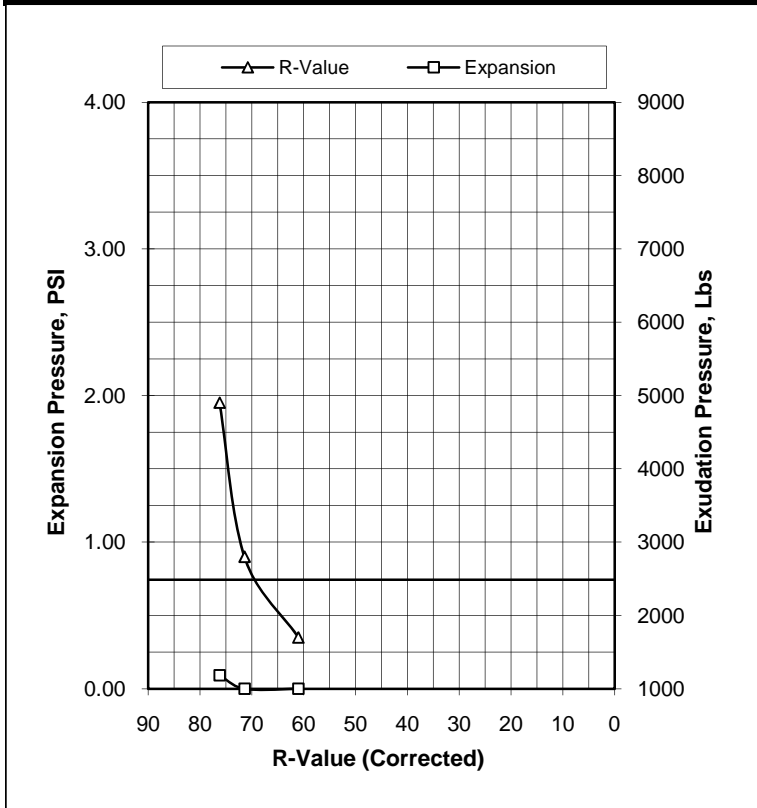
Report Date: 4/1/2010  
 Date Sampled: 3/26/2010  
 Date Received: 3/29/2010  
 Tested By: PC  
 Lab Number: 10-0146

**R-VALUE**  
 IDAHO T-8

	Point 1	Point 2	Point 3
Drainage Description	0	0	0
Dry Density, PCF	125.3	124.7	124.2
Moisture Content, %	10.7	10.5	10.2
Exudation, PSI	135	223	390
R-Value (Corrected)	61	71	76
Expansion, PSI	0.00	0.00	0.09

**R-Value @ 200 PSI  
 Exudation Pressure**

**69**



**Gradation: AASHTO T-11, T-27**

Screen Sizes	% Passing As Received	% Passing As Tested
4"		
3"		
2"	100	
1"	99	
3/4"	97	100
1/2"	93	96
3/8"	89	92
No. 4	79	81
No. 8		
No. 16		
No. 30		
No. 50		
No. 100		
No. 200		

\* This report covers only material as represented by this sample and does not necessarily cover all soils from this layer or source.

Reviewed By: \_\_\_\_\_

American Geotechnics  
 5260 Chinden Blvd.  
 Boise, Idaho 83714  
 Phone:(208) 658-8700  
 Fax: (208) 658-8703



Report To: Kleinfelder  
 Project: Alameda Road Intersection  
 Project No.: 04B-M783.96  
 ITD Project No.: A0011(657), Key No. 11657  
 Sample ID: B-3 @ 2.0'-6.0'  
 Soil Description: Silt with Sand (ML)

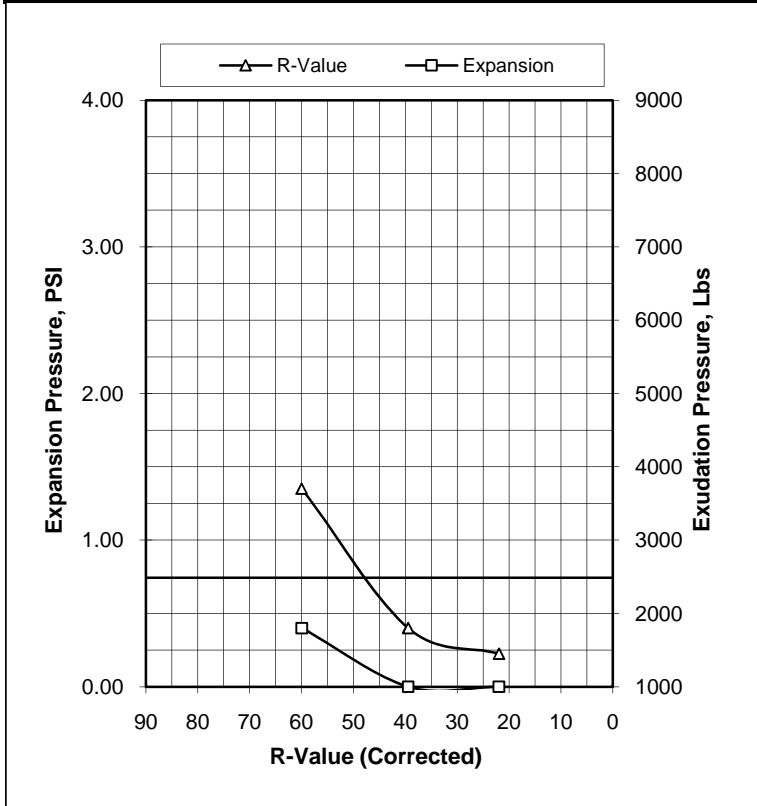
Report Date: 4/1/2010  
 Date Sampled: 3/26/2010  
 Date Received: 3/29/2010  
 Tested By: PC  
 Lab Number: 10-0148

**R-VALUE**  
 IDAHO T-8

	Point 1	Point 2	Point 3
Drainage Description	0	0	0
Dry Density, PCF	118.4	119.3	119.8
Moisture Content, %	12.3	12.0	11.4
Exudation, PSI	115	143	294
R-Value (Corrected)	22	39	60
Expansion, PSI	0.00	0.00	0.40

**R-Value @ 200 PSI  
 Exudation Pressure**

**48**



**Gradation: AASHTO T-11, T-27**

Screen Sizes	% Passing As Received	% Passing As Tested
4"		
3"		
2"		
1"	100	
3/4"	99	100
1/2"	97	98
3/8"	95	96
No. 4	89	90
No. 8		
No. 16		
No. 30		
No. 50		
No. 100		
No. 200		

\* This report covers only material as represented by this sample and does not necessarily cover all soils from this layer or source.

Reviewed By: \_\_\_\_\_

American Geotechnics  
 5260 Chinden Blvd.  
 Boise, Idaho 83714  
 Phone:(208) 658-8700  
 Fax: (208) 658-8703



Report To: Kleinfelder  
 Project: Alameda Road Intersection  
 Project No.: 04B-M783.96  
 ITD Project No.: A0011(657), Key No. 11657  
 Sample ID: B-4 @ 1.0'-5.0'  
 Soil Description: Silty Clay (CL-ML)

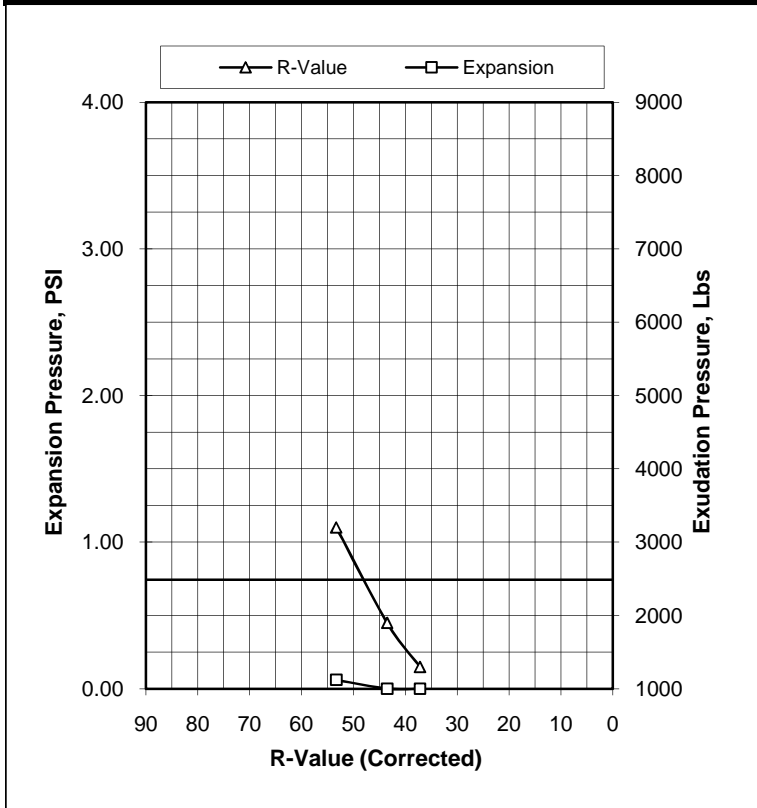
Report Date: 4/1/2010  
 Date Sampled: 3/26/2010  
 Date Received: 3/29/2010  
 Tested By: PC  
 Lab Number: 10-0149

**R-VALUE**  
 IDAHO T-8

	Point 1	Point 2	Point 3
Drainage Description	0	0	0
Dry Density, PCF	113.0	113.4	114.0
Moisture Content, %	14.6	14.4	14.2
Exudation, PSI	103	151	255
R-Value (Corrected)	37	43	53
Expansion, PSI	0.00	0.00	0.06

**R-Value @ 200 PSI  
 Exudation Pressure**


**48**



**Gradation: AASHTO T-11, T-27**

Screen Sizes	% Passing As Received	% Passing As Tested
4"		
3"		
2"		
1"		
3/4"		
1/2"	100	100
3/8"	99	99
No. 4	96	96
No. 8		
No. 16		
No. 30		
No. 50		
No. 100		
No. 200		

\* This report covers only material as represented by this sample and does not necessarily cover all soils from this layer or source.

Reviewed By: 

August 24, 2010

Parametrix, Inc.  
7761 West Riverside Drive, Suite 201  
Boise, Idaho 83714

Attention: Jeremy Robbins, PE

Subject: Addendum  
Final Abbreviated Phase I Geological Reconnaissance Report  
Alameda/Jefferson Intersection  
Pocatello, Idaho  
ITD Project No. A0011(657); Key No. 11657  
File No. 4420-059-00

This letter is an addendum to the Abbreviated Phase I Geological Reconnaissance Report (dated June 16, 2010) prepared by GeoEngineers for the Alameda/Jefferson Intersection project. The following revisions should be made to the appropriate sections of the approved report.

#### **220.4 Surface Water**

Add the following after the first paragraph:

The location of Pocatello Creek and the Pocatello Creek aqueduct are shown on the attached Figure 1. The City of Pocatello has indicated that the Pocatello Creek aqueduct should be replaced within the next 10 to 15 years.

Add the following at the end of the section:

The project site is located within a Zone AO and Zone X FEMA floodplain, but the project site is not located within a regulatory floodway. These regulatory floodplains (Zone AO, X) do not contain a recognized FEMA floodway.

If needed, estimated base flood elevations could be approximated as the estimated flood elevation at FEMA cross section A-A for Pocatello Creek upstream of the project site, as shown in the attached Flood Insurance Rate Maps, Figures 2 and 3.



### 220.7.3 Drainage

Add the following at the end of the section:

Since the project in an urban setting, infiltration beds were not considered. Parametrix Inc. has confirmed with the Idaho Department of Environmental Quality that surface runoff can be drained into Pocatello Creek as long as an appropriate BMP system is in place. All roadways will have a curb and gutter system.

If you have any questions concerning the addendum or the final report, please contact the undersigned at 208.433.8098.

Sincerely,  
GeoEngineers, Inc.



Brian R. Marker, PE  
Senior Engineer

BRM:PEW:mlh  
<http://projects/sites/0442005900/finals/alameda phase i addendum.docx>



Paul E. Wasser, PE  
Associate

#### List of Figures

- Figure 1. Pocatello Creek Culvert Locations
- Figure 2. FEMA Flood Insurance Rate Map
- Figure 3. FEMA Flood Insurance Rate Map

Six copies submitted

Disclaimer: Any electronic form, facsimile or hard copy of the original document (email, text, table, and/or figure), if provided, and any attachments are only a copy of the original document. The original document is stored by GeoEngineers, Inc. and will serve as the official document of record.

PEW : MGF

P:\14420059\00\CAD\dwg\Addendum 1.dwg\TAB:Figure 1 modified on Aug 24, 2010 - 1:00pm



Notes:

1. The locations of all features shown are approximate.
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3. This figure was originally produced in color.

Reference: Drawing provided by Parametrix on 8-13-10.

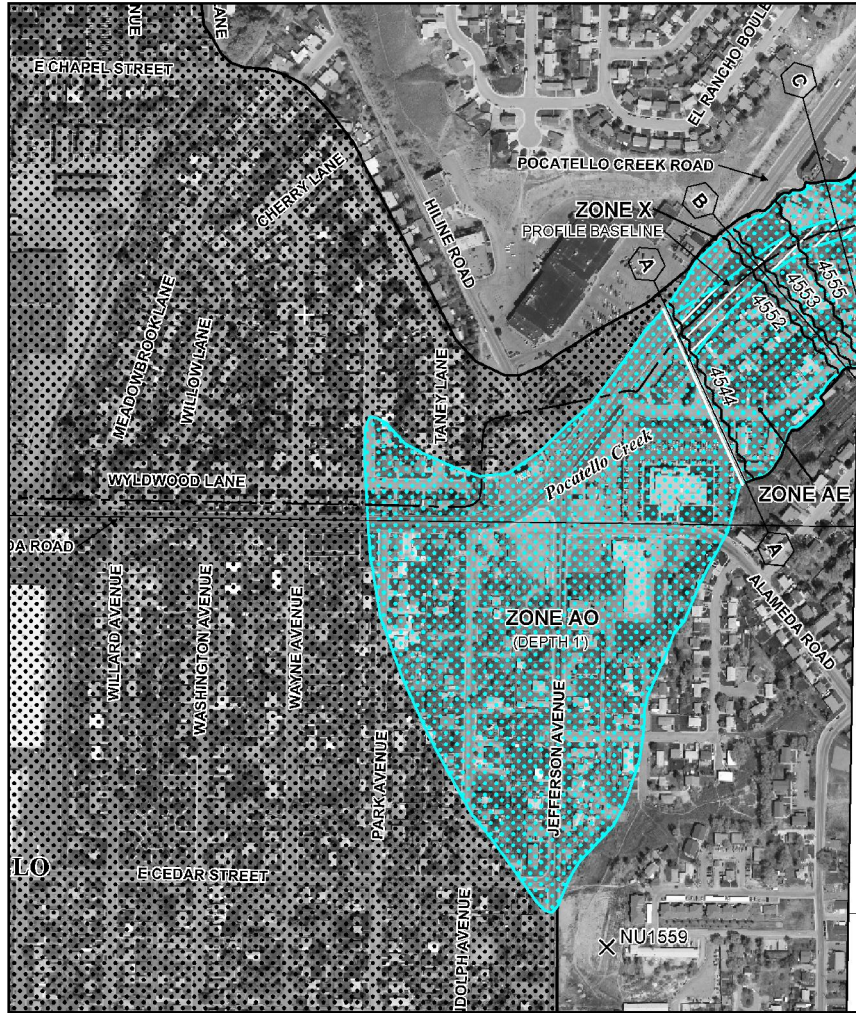
### Pocatello Creek Culvert Locations

Final Abbreviated Phase 1 Geological Reconnaissance Report  
 Alameda/Jefferson Intersection  
 ITD Project No. A0011(657); Key No. 11657



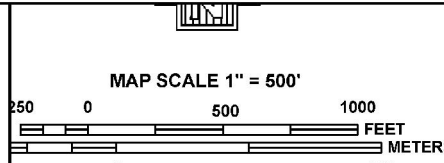
Figure 1





JOINS PANEL 0243

445



**NFP**

PANEL 0239D


**FIRM**  
FLOOD INSURANCE RATE MAP  
BANNOCK COUNTY,  
IDAHO  
AND INCORPORATED AREAS

PANEL 239 OF 925  
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
CHUBBUCK, CITY OF	160162	0239	D
POCATELLO, CITY OF	160012	0239	D

Notice to User: The **Map Number** shown below should be used when placing map orders, the **Community Number** shown above should be used on insurance applications for the subject community.



**MAP NUMBER**  
16005C0239D  
**EFFECTIVE DATE**  
JULY 7, 2009

Federal Emergency Management Agency

This is an official copy of a portion of the above referenced flood map. It was extracted using F-MIT On-Line. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For the latest product information about National Flood Insurance Program flood maps check the FEMA Flood Map Store at [www.msc.fema.gov](http://www.msc.fema.gov)

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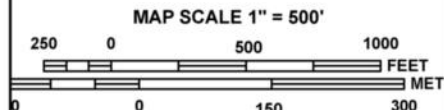
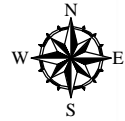
Reference: Drawing from Flood Insurance Rate Map, Pocatello City/Bannock County, Idaho, No. 16005C0239D, 2009, Federal Emergency Management Agency.

**FEMA Flood Insurance Rate Map**

Final Abbreviated Phase 1 Geological Reconnaissance Report  
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**Figure 2**



**LEGEND**

**SPECIAL FLOOD HAZARD AREAS (SFHAs) SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD**  
 The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V, and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

**ZONE A** No Base Flood Elevations determined.  
**ZONE AE** Base Flood Elevations determined.  
**ZONE AH** Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.  
**ZONE AO** Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.  
**ZONE AR** Special Flood Hazard Areas formerly protected from the 1% annual chance flood by a flood control system that was subsequently described. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.  
**ZONE A99** Area to be protected from 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevations determined.  
**ZONE V** Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.  
**ZONE VE** Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

**FLOODWAY AREAS IN ZONE AE**  
 The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

**OTHER FLOOD AREAS**  
**ZONE X** Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.  
**OTHER AREAS**  
**ZONE X** Areas determined to be outside the 0.2% annual chance floodplain.  
**ZONE D** Areas in which flood hazards are undetermined, but possible.  
**COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS**  
**OTHERWISE PROTECTED AREAS (OPAs)**  
 CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

1% Annual Chance Floodplain Boundary  
 0.2% Annual Chance Floodplain Boundary

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Reference: Drawing from Flood Insurance Rate Map, Pocatello City/Bannock County, Idaho, No. 16005C0239D, 2009, Federal Emergency Management Agency.

**FEMA Flood Insurance Rate Map**

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**Figure 3**

## **APPENDIX N**



Prepared by the City of Pocatello

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