PRE-CONCEPT REPORT

USTICK ROAD, MONTANA TO INDIANA, PRE-CONCEPT

COMPASS PROJECT NO. 2015-16

PREPARED FOR:

COMPASS **City of Caldwell**

PREPARED BY:

SIX MILE ENGINEERING, PA

OCTOBER 19, 2015

TABLE OF CONTENTS

INTRODUCTION

The Community Planning Association of Southwest Idaho (COMPASS) retained Six Mile Engineering to conduct this pre-concept study of Ustick Road, from Montana Avenue to Indiana Avenue. The proposed improvements consist of widening Ustick Road from a two-lane roadway without curb, gutter and sidewalk to a four-lane roadway with raised median lanes or a five-lane roadway with curb, gutter sidewalk and bike lanes. Two improvement options are considered at the Montana Avenue intersection – a conventional signalized intersection and a roundabout. At the Indiana Avenue intersection, improvements considered consist of widening the single-lane roundabout to a modified dual-lane roundabout or a dual-lane roundabout.

The City of Caldwell is the sponsor for this potential federal-aid project to reconstruct Ustick Road. The purpose of this study is to provide information to the City and COMPASS to assist with project programming.

EXISTING CONDITIONS

Existing Roadway and Intersections

Ustick Road is a two-lane rural section functionally classified as a principal arterial within the project limits. The posted speed limit is 35 miles per hour (mph). Approximately 300 feet west of the Montana Avenue intersection, Ustick Road widens to a five-lane roadway with curb, gutter and sidewalk.

Montana Avenue is a two-lane rural section functionally classified as a collector within the project limits with a posted speed limit of 35 mph.

The Indiana Avenue and Ustick Road intersection is a single-lane roundabout that was constructed by City forces in 2013.

The Montana Avenue and Ustick Road intersection is two-way stop-controlled on the Montana Avenue approaches.

GIS Data and Surface Utilities

The City of Caldwell provided their GIS and aerial mapping for the project area. DigLine was contacted for a list of utility companies within the project limits. Individual utility companies were not contacted as part of this study. See below for a list of affected utilities and potential impacts:

- City of Caldwell – Sanitary Sewer/Water/Storm Drain (shown on GIS)
  - Existing SD structures relocated/replaced
  - New SD structures and pipe will be required
  - Water valve/Sanitary manhole adjustments
  - May encounter underground conflicts with existing water/sewer and proposed storm drain laterals

- Intermountain Gas
  - Line appears to run on north side of Ustick with occasional crossings
  - Valve adjustments
  - May encounter underground conflicts with proposed storm drain laterals
- Idaho Power
  - Primarily overhead (south side of Ustick/west side of Montana)
  - Relocate poles to utility buffer
- Cable One – West Valley
  - Share poles with power on south side of Ustick. Potential underground crossings.
  - Overhead east side of south leg of Montana
  - Relocate poles to utility buffer
  - May encounter underground conflicts with proposed storm drain trunk line
- CenturyLink
  - Share poles with power on south side of Ustick. Potential underground crossings.
  - Overhead east side of south leg of Montana
  - Relocate poles to utility buffer
  - May encounter underground conflicts with proposed storm drain trunk line
- Zayo Fiber Group
  - Potential overhead and underground locations.
  - May encounter underground conflicts with proposed storm drain trunk line
- Pioneer Irrigation District
  - Dixie Drain
  - Open concrete channel on north side of Ustick (1/4 mile east of Indiana to Dixie Drain).
  - Apparent abandoned cast-iron pipe along right-of-way on property at northwest corner of Montana Avenue.
  - Underground piping possible within project limits. May require relocation.

Detailed coordination with all affected utilities during the next phases of design will be required to confirm impacts.

TRAFFIC AND SAFETY ANALYSIS

A traffic and safety analysis of the existing and proposed conditions was developed to evaluate the traffic operations and safety to support the pre-concept designs presented in this report. The full report is in the Appendix B with excerpts listed below.

Peak Hour Operations

The existing AM and PM peak hour traffic operations were analyzed for both intersections. The Montana Avenue approaches at Ustick Road are currently operating at LOS E for the northbound movements and LOS F for the southbound movements during the AM peak hour. During the PM peak hour, the movements are operating at LOS C and D.

The Ustick Road and Montana Avenue roundabout is currently operating at LOS A during the PM peak hour.

Traffic Signal Warrant Analysis

A signal warrant analysis was performed for the Ustick Road and Montana Avenue intersection. The two applicable warrants, Warrant 1 – Eight-Hour Vehicular Volume and Warrant 2 – Four-Hour Vehicular Volume were evaluated. Warrant 7 – Crash Experience was also evaluated because there were six report crashes in the past 12-month period. The remaining signal warrants did not apply.

The Ustick Road and Montana Avenue intersection does not meet warrants for a traffic signal with existing traffic from August 2015. With existing traffic, the warrant thresholds for Warrant 1 are satisfied for four of eight hours, and two of four hours for Warrant 2.

With 2020 traffic conditions and the proposed widening completed, the warrant thresholds for Warrant 1 are satisfied for two of eight hours and no hours for Warrant 2. The intersection is expected to meet Warrant 2 for a traffic signal with 2040 traffic conditions.

In 2014, there were six reported angle crashes at the Ustick Road and Montana Avenue intersection. These angle crashes are susceptible to correction by a traffic signal and would satisfy Warrant 7 Criteria B requirements of five or more reported crashes within a 12-month period. However, Warrant 7 also requires meeting Criteria A – adequate trial of alternatives has failed to reduce the crash frequency, and Criteria C – eight-hour vehicular volume at 80 percent level or pedestrian volume is not less than 80 percent level of the required volume. Criteria A of Warrant 7 is not satisfied because there has not been adequate trial of alternatives to reduce the crash frequency. Criteria C of Warrant 7 is also not met with 2015 existing traffic – only six of eight hours vehicular volumes are satisfied. With 2020 traffic, seven of eight hours of vehicular volumes for Criteria C are satisfied. Warrant 7 is not met because all three criteria are not satisfied. With 2040 traffic, Criteria C of Warrant 7 will be satisfied.

Intersection Operations

The Ustick Road and Montana Avenue intersection was evaluated with the following intersection improvements alternatives with 2020 (assumed construction year) and 2040 (assumed design year) traffic conditions:

- No-build (existing two-way stop-control)
- Multi-lane roundabout
- Conventional signalized intersection

The following are results from the 2020 and 2040 AM and PM peak hour traffic analysis of the Ustick Road and Montana Avenue intersection:

- With the no-build alternative, the northbound and southbound approaches at the intersection are expected to operate at LOS F during peak hours with the 2020 and 2040 forecasted peak hour traffic.
- As a multi-lane roundabout, consisting of two entry lanes on the Ustick Road approaches and one entry lane on the Montana Avenue approaches, the intersection is expected to operate at LOS A

with a v/c ratio of 0.24 or less for all approaches with 2020 peak hour traffic. With 2040 peak hour traffic, the intersection is expected to operate at LOS A with a v/c ratio of 0.57 or less for all approaches.

- With a conventional traffic signal with 2020 peak hour traffic, the intersection is expected to operate at LOS C with a v/c ratio of 0.27 or less for all lane groups. With 2040 peak hour traffic, the intersection is expected to operate at LOS C with a v/c ratio of 0.50 or less for all lane groups. The following lane configurations were evaluated for both forecast scenarios:
    - One exclusive left-turn lane, two through lanes and one exclusive right-turn lane on the Ustick Road approaches.
    - One exclusive left-turn lane, one through lane and one exclusive right-turn lane on the Montana Avenue approaches.

The Ustick Road and Indiana Avenue intersection was evaluated with the following intersection improvement alternatives with 2020 and 2040 traffic conditions:

- No-build (existing single-lane roundabout)
- Modified dual-lane roundabout
- Dual-lane roundabout

The following are results from the 2020 and 2040 AM and PM peak hour traffic analysis of the Ustick Road and Indiana Avenue intersection:

- With the no-build alternative, the intersection is expected to operate at LOS F during peak hour with 2020 and 2040 forecasted peak hour traffic.
- As a modified dual-lane roundabout, consisting of a single circulating lane with slip lanes on all approaches, the intersection is expected to operate at LOS A with a v/c ratio of 0.46 or less for all approaches 2020 peak hour traffic. With 2040 peak hour traffic, the intersection is expected to operate at LOS F with a v/c ratio exceeding 0.85 on the southbound, eastbound and westbound approaches.
- As a dual-lane roundabout with 2020 peak hour traffic, the intersection is expected to operate at LOS C with a v/c ratio of 0.27 or less for all lane groups. With 2040 peak hour traffic, the intersection is expected to operate at LOS C with a v/c ratio of 0.84 or less for all lane groups.

Crash Data

Crash history over the previous five years (2010 to 2014) was evaluated for the roadway segment and for the intersections to determine the existing crash rates. The existing crash rate for the Ustick Road segment between Montana Avenue and Indiana Avenue is 4.59 ACC/MV, nearly four times the base rate of 1.19 ACC/MV, which is the expected crash rate for similar roadways in Idaho with similar traffic volumes.

The existing crash rate for the Montana Avenue intersection is 0.99 ACC/MV which exceeds the base crash rate of 0.67 ACC/MV. The existing crash rate for the Indiana Avenue intersection is 0.51 ACC/MV which is below the base crash rate of 0.70 ACC/MV.

ENVIRONMENTAL SCAN

An environmental scan was conducted to identify environmental resources within the project area that may be impacted by the proposed project. Possible issues and required permits were identified. The full report prepared by Bionomics is in the Appendix C. Highlights of the scan include:

- Four known previously recorded cultural resource sites within a ½ mile of the project area. One of those sites, the Dixie Drain, was identified crossing the project area which is a NRHP eligible site.
- The Dixie Drain and an unnamed irrigation ditch were identified in the project area. Both irrigation ditches are considered a water of the U.S. and likely under the jurisdiction of the USACE due to their eventual hydrological connection to the Boise River, a traditional navigable waterway. Any fringe wetlands associated with these drainages would also be considered under the jurisdiction of the USACE.
- The USFWS IPaC list identifies slickspot peppergrass as potentially occurring in the project area.
- The project is within an Idaho DEQ identified air quality Area of Concern for CO and PM10. The project is exempt from an air quality analysis in accordance with 40 CFR 93.126, and, therefore, it can be concluded that the project would have no significant adverse impact on air quality.
- Prime farmlands were identified along the project area. If determined that prime farmlands are to be impacted, consultation with the NRCS and completion of the NRCS Prime Farmland Conversion Form AD-1006 would need to be completed.

The following technical studies may require completion and approval prior to any construction activity, if federal funds are utilized.

- A categorical exclusion would be required in compliance with NEPA.
- Archaeological and Historic Survey Report, in accordance with Section 106 of the National Historic Preservation Act.
- Waters of the U.S. and Wetland Delineation Report in accordance with Section 404 of the Clean Water Act.
- Biological Evaluation in accordance with Section 7 of the Endangered Species Act, as well as Idaho Species of Concern Report.
- Traffic Noise Analysis in accordance with FHWA guidelines and ITD Noise Policy.
- Hazardous Materials Assessment (project specific).

The following approvals may be necessary, given the resources on or in proximity to the project. This list is not meant to be all inclusive, as additional approval and permits may be necessary based on project specifics.

- Joint Permit Application (to place fill in or dredge waters of the US, including wetlands; to obtain a Section 401 Water Quality Certification; and/or to obtain a state stream alteration permit)
- NPDES Stormwater Permit
- Prime Farmland Conversion

ALTERNATE SOLUTIONS

Two intersection alternatives were developed for the intersection of Ustick and Montana:

- Alternative 1 – Conventional intersection
- Alternative 2 – Roundabout

The lane configuration for Alternative 1 includes two through lanes, one left-turn lane, and one right-turn lane eastbound and westbound on Ustick Road. The northbound and southbound Montana Avenue approaches each contain one through lane, one left-turn lane and one right-turn lane.

Alternative 2 is a multi-lane roundabout with two approach lanes eastbound and westbound on Ustick Road and one approach lane northbound and southbound on Montana Avenue.

Modifications to the existing roundabout at the Indiana Avenue intersection were also developed to accommodate the five-lane section west of Indiana. Right-turn slip lanes were added on all approaches. If future traffic volumes warrant, this roundabout can be converted to a dual-lane roundabout by removing the curb separating the right-turn lane from the single circulating lane.

STORM WATER DISPOSAL

Currently, storm drain facilities are limited to the western portion of the project in the vicinity of Montana Avenue. In areas that have curb and gutter, roadway runoff is collected in catch basins and piped to underground structures or surface swales. The remaining rural section of roadway does not contain any storm water collection or disposal facilities.

The proposed roadway improvements will increase impervious area significantly; therefore, careful consideration must be used in developing storm water disposal options. The proposed urban section will collect the roadway runoff in catch basins throughout the corridor and convey it to the preferred disposal site or sites developed during design. Preliminary thoughts on disposal options include the following:

- Pre-treatment and outfall to the Dixie Drain and/or unnamed drain west of Montana
- Underground treatment and storage
    - Seepage beds
    - Pipe storage detention system with outfall to Dixie Drain and/or unnamed drain
- Pond treatment and storage with overflow to Dixie Drain and/or unnamed drain

For the purposes of the pre-concept design, it was assumed that Ustick Road could be divided into two drainage basins that would each encompass approximately half of the project corridor. The combined drainage basin area is approximately 10 acres for the conventional intersection and 11 acres for the roundabout. In each basin, roadway runoff would be collected in catch basins in the gutter and conveyed through underground pipes to treatment areas at the east end and west end of the project respectively.

With current stormwater treatment and storage standards, an approximate volume of stormwater was calculated for both alternatives assuming a 100-yr storm event:

- Conventional intersection – 40,000 cubic feet

- Roundabout – 45,000 cubic feet

Without subsurface information, the depth to groundwater is unknown, but for the purposes of this report it was assumed that groundwater is present at a depth of 6 feet. This allows for a pond depth of 2 feet, which equates to an overall pond area of approximately 20,000 to 22,500 square feet. Subsurface investigations will be completed during design at which time the pond/storage areas and volumes can be designed.

The pre-concept construction cost estimates includes costs to construct the pond storage and treatment. Right-of-way acquisition may be required for the chosen stormwater treatment and storage system and are not included in the pre-concept cost estimates.

COST ESTIMATES

The estimated construction cost for the proposed concept design improvements is summarized in Table 1. ITD Form 1150 – Project Cost Summary Sheet is included in the Appendix.

Table 1. Concept design estimated construction costs

	Conventional Signalized Intersection	Multi-Lane Roundabout
Right-of-Way	$660,000	$930,000
Utilities	$0	$0
Construction	$3,600,000	$3,400,000
Construction Engineering and Contingencies (15%)	$540,000	$510,000
Total	**$4,800,000**	**$4,840,000**

The City currently has development agreements with two properties adjacent to the project which help reduce the amount of right-of-way required for this project.

PUBLIC INVOLVEMENT PLAN

The City of Caldwell is the sponsor of the project. Public involvement for this project will follow the ITD Guide to Public Involvement. No public involvement was conducted as part of the pre-concept development.

Public Involvement Tasks

Following ITD's Public Outreach Planner (POP), this project is classified as an Environmental and Design Level 3. Below is a list of the tools and resources suggested in the POP to effectively and successfully

reach out to and involve the public in the design process. Detailed descriptions of the tools and resources listed can be found in the ITD Public Outreach Planner.

- Agency/municipal coordination
- Stakeholder interviews
- School district/busing coordination
- Fliers/Newsletters
- Public meeting
- Environmental justice outreach
- Legal notices/notice of availability
- Community Advisory Committee
- Facilitated decision-making
- Special interest group outreach
- Media relations
- Social media
- District projects website posting
- Online surveying
- EMS contacts

List of Stakeholders

Agencies

- City of Caldwell
- COMPASS
- Idaho Transportation Department
- Canyon Highway District #4

Schools/Community

- Heritage Community Charter School
- Lewis and Clark Elementary
- Washington Elementary
- Jefferson Middle School
- Syringa Middle School
- Caldwell High School
- Vallivue Middle School
- Vallivue High School
- Treasure Valley YMCA - Caldwell

Adjacent Property Owners

- Gregory D and Carol M Larsen
- Michael C and Kelly A Hill
- Eldorado Estates Subdivision Owners
- Sundowner Inc

- CIC Development LLC
- Dawna L Jenkins
- Julia Chapman Living Trust, Julia Faye Chapman Trustee
- Roberto A and Linda L Jasso TR
- Yolanda Hernandez
- Jose and Josefina Robles
- Modesto L Vega
- Isaias and Maria G Velez H/W
- Philip G and Mary E Eldredge Trust
- Hoshaw Family Land Trust, Thomas Hoshaw Trustee
- James and Pammala Hooven
- Patrick D and Cheryl H Baker
- Edward Aitchison
- James E and Deborah Herring H/W
- Hector Barraza and Patricia Rivera H/W
- Javier Serrano
- Kelly Dean Hoffman and Jessica Lane Dockard Hoffman
- Gorilla Capital ID 201 LLC
- Jerry W and Patricia K Dix
- MC Ventures LLC
- Rhino and Moose LLC
- Smiles 4 Kids Caldwell PLLC
- Darryl and Leesa Kilby
- Juan P and Carmen Pesina
- Feller Limited Partnership Feller Family Trust
- Cooper Family Trust, Gary L Cooper Trustee

Utilities

- Intermountain Gas
- Idaho Power
- Cable One – West Valley
- Century Link
- Zayo Fiber Group
- Pioneer Irrigation District

PROJECT PURPOSE, NEEDS, GOALS AND SCHEDULE

Purpose and Needs Statement

The Montana Avenue approaches at Ustick Road are currently operating at LOS E for the northbound movements and LOS F for the southbound movements during the AM peak hour. During the PM peak hour, the movements are operating at LOS C/D.

The existing crash rate for the Ustick Road segment between Montana Avenue and Indiana Avenue is 4.59 ACC/MV, nearly four times the base rate of 1.19 ACC/MV, for similar roadway segments in Idaho. The existing crash rate for the Montana Avenue intersection is 0.99 ACC/MV which exceeds the base crash rate of 0.67 ACC/MV.

Pedestrian accommodations with sidewalk are important for this corridor. A YMCA is located on Indiana north of Ustick, and there are several schools located within a one-mile radius of the project area.

The project purpose and needs are:

- The purpose of this project is to improve operations and safety for all users; vehicles, pedestrians and bicycles.
- The project is needed to increase intersection capacity at the Ustick and Montana intersection and maintain a minimum LOS D with future traffic demand, and to improve sidewalk connectivity within the project area.

Strategic Goals and Performance Measures

In collaboration with the City of Caldwell and COMPASS, the following performance measures in accordance with the Communities in Motion 2040 plan, are recommended for the project.

- Transportation/Freight Movement and Economic Vitality (PM 14)
- Transportation/Congestion Reduction and System Reliability (PM 6)
- Transportation Safety (PM 15-24)
- Health (PM 26-29, PM 50-53)

The measurable variables that quantify the above performance measures include:

- Travel time index
- Auto, bicycle and pedestrian crashes
- Bicycle/Pedestrian level of service
- Household connectivity to parks, schools, and grocers

The following list of strategic goals has been developed for this project:

- Reduction in crash rate
    - Installation of traffic signal can reduce crashes at an intersection by up to 30 percent
    - Installation of roundabout can reduce crashes at an intersection by up to 35 percent, with injury crashes reduced up to 76 (see Traffic and Safety Analysis Report in Appendix B for further explanation of crash reduction rates.)
- Improved bicycle/pedestrian level of service
    - Bicycle baseline/no-build LOS is D, with a link score of 3.72. With the proposed addition of bike lanes and center turn lane, the LOS will improve to A with a link score of 1.53.
    - Pedestrian baseline/no-build LOS is D, with a link score of 4.08. With the proposed addition of continuous sidewalks and a mid-block signalized pedestrian crossing, the LOS will improve to B with a link score of 2.06.

A reduction in travel time or delay for the corridor was not selected as a strategic goal because the project improvements will add intersection control to currently uncontrolled approaches on Ustick Road, which will increase the corridor travel time and delay. The intersection improvements are expected to increase safety and reduce delay for Montana Avenue traffic. The increase in delay for the Ustick Road corridor and the Ustick Road and Montana Avenue intersection will result in an acceptable LOS for both intersection improvement options.

An improvement in the connectivity to parks, schools and grocers was also not selected as a strategic goal because the connectivity analysis results were deemed inaccurate due to the level of development within the corridor. The number of houses affected is too large for comparison to an undeveloped area but also significantly too small for a developed area.

Schedule and Milestones

As a federal project the project development schedule is estimated as follows:

- Consultant selection, scoping, negotiations and contract ..... 6 months
- Design ..... 33 months
    - Concept Report approval ..... 6 months
    - Environmental Evaluation approval ..... 12 months
    - R/W acquisition ..... 12 months
    - Final design (PS&E) ..... 3 months
- Construction letting by ITD ..... 3 month
- Construction ..... 10 months
- Total ..... 46 months

APPENDIX A
PLAN AND TYPICAL SECTION EXHIBITS

USTICK ROAD, MONTANA TO INDIANA

PRE-CONCEPT DESIGN ALTERNATIVE 1 - CONVENTIONAL INTERSECTION

0 50' 100' 200'

OCTOBER 2015

COMPASS
COMMUNITY PLANNING ASSOCIATION
of Southwest Idaho

CITY OF CALDWELL
Home To Opportunity

IRRIGATION DRAIN CROSSING

BUILDING SETBACK - 18'

BUILDING SETBACK - 11'

BUILDING SETBACK - 17.5'

BUILDING SETBACK - 10'

USTICK ROAD

DIXIE DRAIN CROSSING

MODIFICATION TO EXISTING ROUNDABOUT (ADD RIGHT-TURN SLIP LANES)

CONVENTIONAL SIGNALIZED INTERSECTION

USTICK ROAD 4-LANE WITH RAISED MEDIAN OR 5-LANE SECTION

PEDESTRIAN HYBRID BEACON

BUILDING SETBACK - 12'

DIXIE DRAIN CROSSING

MONTANA AVENUE

INDIANA AVENUE

- NEW PAVEMENT
- NEW CONCRETE SIDEWALK
- LANDSCAPE AREA
- HARDSCAPE MEDIAN
- REQUIRED RIGHT-OF-WAY
- PROPERTY UNDER DEVELOPMENT AGREEMENT
- EXISTING RIGHT-OF-WAY
- EXISTING PROPERTY LINE
- EXISTING PRESCRIPTIVE RIGHT-OF-WAY
- PROPOSED RIGHT-OF-WAY

USTICK ROAD, MONTANA TO INDIANA

PRE-CONCEPT DESIGN ALTERNATIVE 1 - CONVENTIONAL INTERSECTION

0 25' 50' 100'

OCTOBER 2015

COMPASS
COMMUNITY PLANNING ASSOCIATION of Southwest Idaho

CITY OF CALDWELL IDAHO

USTICK ROAD

MONTANA AVENUE

NEW PAVEMENT

NEW CONCRETE SIDEWALK

REQUIRED RIGHT-OF-WAY

PROPERTY UNDER DEVELOPMENT AGREEMENT

R/W EXISTING RIGHT-OF-WAY

P/L EXISTING PROPERTY LINE

P EXISTING PRESCRIPTIVE RIGHT-OF-WAY

P/W PROPOSED RIGHT-OF-WAY

USTICK ROAD, MONTANA TO INDIANA

PRE-CONCEPT DESIGN ALTERNATIVE 2 - ROUNDABOUT

0 50' 100' 200'

OCTOBER 2015

COMPASS
COMMUNITY PLANNING ASSOCIATION
of Southwest Idaho

CITY OF CALDWELL
BOISE TO OREGON

USTICK ROAD, MONTANA TO INDIANA

PRE-CONCEPT DESIGN ALTERNATIVE 2 - ROUNDABOUT

0 25' 50' 100'

OCTOBER 2015

COMPASS
COMMUNITY PLANNING ASSOCIATION of Southwest Idaho

CITY OF CALDWELL IDAHO

USTICK ROAD

MONTANA AVENUE

NEW PAVEMENT

NEW CONCRETE SIDEWALK

HARDSCAPE MEDIAN

REQUIRED RIGHT-OF-WAY

PROPERTY UNDER DEVELOPMENT AGREEMENT

EXISTING RIGHT-OF-WAY

EXISTING PROPERTY LINE

EXISTING PRESCRIPTIVE RIGHT-OF-WAY

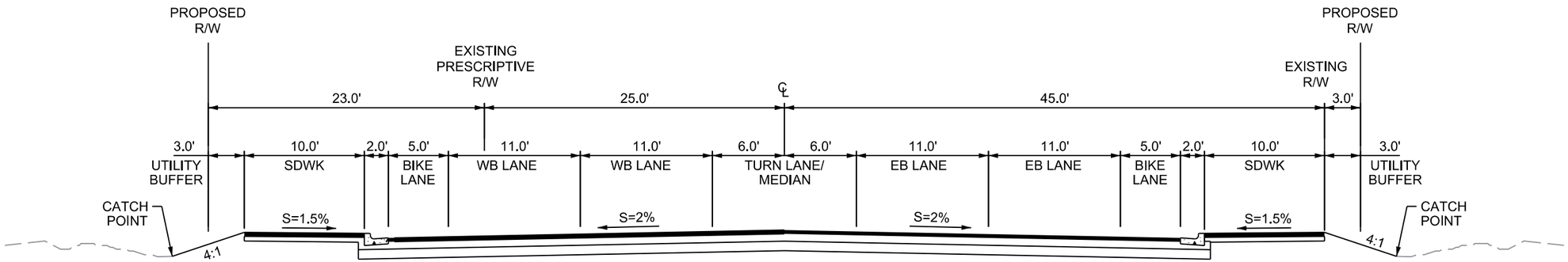
PROPOSED RIGHT-OF-WAY

USTICK ROAD, MONTANA TO INDIANA

PRE-CONCEPT DESIGN

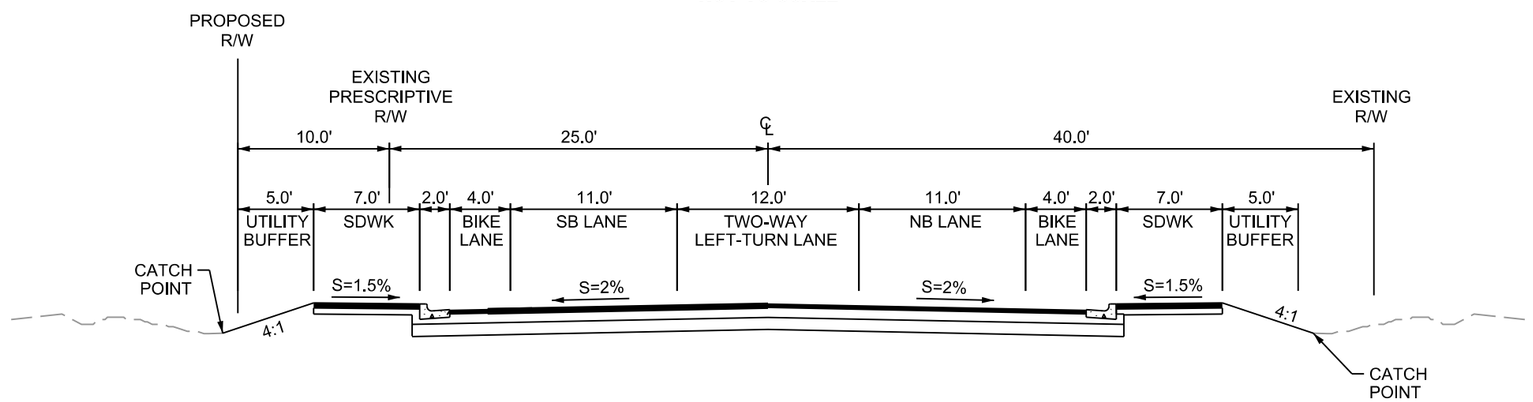
USTICK ROAD TYPICAL SECTION

NOT TO SCALE



MONTANA AVENUE TYPICAL SECTION

NOT TO SCALE



APPENDIX B
TRAFFIC AND SAFETY ANALYSIS REPORT

TRAFFIC AND SAFETY ANALYSIS REPORT

USTICK ROAD, MONTANA TO INDIANA, PRE-CONCEPT

COMPASS PROJECT NO. 2015-16

PREPARED FOR:

COMPASS

City of Caldwell

PREPARED BY:

SIX MILE ENGINEERING, PA

OCTOBER 19, 2015

PROFESSIONAL ENGINEER
REGISTERED
12052
10/19/15
STATE OF IDAHO
CHHANG REAM

TABLE OF CONTENTS

INTRODUCTION

This project conducts pre-concept designs and studies for the proposed widening of Ustick Road to five lanes from Montana Avenue to Indiana Avenue with improvements at the two intersections to accommodate the forecasted planning year traffic volumes. The pre-concept work is intended to help define the scope of project development so the City of Caldwell and COMPASS can more accurately program the project.

The purpose of this traffic and safety analysis is to evaluate the traffic operations and safety to support the pre-concept design. Based on the ITD *Roadway Design Manual*, the maximum acceptable Level of Service (LOS) is D for federal aid projects on non-NHS state and local highways. The maximum intersection lane group v/c ratio is 1.0 for a traffic signal and 0.85 for a roundabout for this project, following Ada County Highway District requirements.

The Ustick Road and Montana Avenue intersection was evaluated with the following intersection improvements alternatives with 2020 (assumed construction year) and 2040 (assumed design year) traffic conditions:

- No-build (existing two-way stop-control)
- Multi-lane roundabout
- Conventional signalized intersection

The Ustick Road and Indiana Avenue intersection was evaluated with the following intersection improvement alternatives with 2020 and 2040 traffic conditions:

- No-build (existing single-lane roundabout)
- Modified dual-lane roundabout
- Dual-lane roundabout

Crash history over the previous five years (2010 to 2014) was evaluated for the roadway segment and intersections to determine the existing crash rates.

EXISTING CONDITIONS

Traffic Volumes

The 2015 existing average daily traffic (ADT) and peak hour intersection turning movement counts were collected to support traffic and safety analysis for the project and are included in the appendix. A 24-hour count was collected at the Ustick Road and Montana Avenue intersection on all four approaches on a weekday in August 2015. Both AM and PM peak hour intersection turning movement counts were collected at the Ustick Road and Montana Avenue intersection on a weekday for a 2-hour period at 15-minute intervals between 7:00 and 9:00 during the AM peak travel period hour and between 4:00 and 6:00 during the PM peak travel period. PM peak hour intersection turning movement counts were also collected at the Ustick Road and Indiana Avenue intersection.

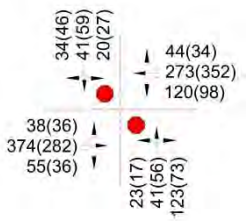
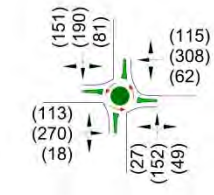
Peak Hour Intersection Operations

The existing AM and PM peak hour traffic operations were analyzed using Synchro 9.1 (version 904.125) and SIDRA 6.1, which utilizes the 2010 *Highway Capacity Manual* (HCM 2010) methodologies. The intersection was evaluated with the existing intersection control, lane configuration and peak hour volumes. All parameters used in the analysis were based on existing data when available or default values when not available. Data from roundabout parameters performance studies in Oregon and California were used to estimate the gap acceptance parameters. Table 1 summarizes the existing turning movement volumes, lane configuration, intersection control and measures of effectiveness (MOEs). Synchro and SIDRA analysis reports are included in the appendix.

The followings are results from the 2015 existing traffic analysis:

- The Montana Avenue stop-controlled approaches at Ustick Road are currently operating at LOS E for the northbound movements and LOS F for the southbound movements during the AM peak hour. During the PM peak hour, the movements are operating at LOS C/D.
- The Ustick Road and Indiana Avenue single-lane roundabout is currently operating at LOS A during the PM peak hour.

Table 1. 2015 existing traffic analysis results

Intersection	AM(PM) Peak Hour Volumes, Control and Channelization	MOE	AM Peak Hour	PM Peak Hour
Ustick Road and Montana Avenue		LOS (NB/SB)	E/F	C/D
		Delay (sec) (NB/SB)	45/51	25/32
		Intersection v/c	–	–
		Max Lane Group v/c	0.74 (NB)	0.51 (SB)
Ustick Road and Indiana Avenue		LOS	Not Evaluated	A
		Delay (sec)		9
		Intersection v/c		–
		Max Lane Group v/c		0.48 (WB)

Crash Data

The most recent five years of crash data, from 2010 to 2014, was obtained from ITD for the Ustick Road segment between Montana Avenue and Indiana Avenue and for the Montana Avenue and Indiana Avenue intersections on Ustick Road. Table 2 on page 3 summarizes the crashes, base crash rates and

existing crash rates for the roadway segment and intersections. The ITD-2658 Safety Evaluation forms were completed to determine the existing crash rates and are included in the appendix.

The existing crash rate for the Ustick Road segment between Montana Avenue and Indiana Avenue is nearly four times the base rate, which is the expected crash rate for similar roadways in Idaho with similar traffic volumes. The existing crash rate for the Montana Avenue intersection exceeds the base crash rate, and the existing crash rate for the Indiana Avenue intersection is below the base crash rate.

Table 2. Crash data summary (2010 to 2014)

Roadway Segment or Intersection	Total Crashes	Property Damage Crashes	Injury Crashes	Fatal Crashes	Ped/Bike Crashes	Base Rate (ACC/MV (MVM))*	Existing Crash Rate (ACC/MV (MVM))
Ustick Road, Montana to Indiana	51	*32*	*19*	*0*	*0*	1.19 (Type 60)	4.59
Ustick / Montana	25	*14*	*11*	*0*	*0*	0.67 (Type 63)	0.99
Ustick / Indiana	15	*13*	*2*	*0*	*0*	0.70 (Type 60)	0.51

*The base rate is the typical number of accidents to occur on a roadway or intersection in Idaho with similar travel lanes and volumes

Traffic Signal Warrant Analysis

A signal warrant analysis was performed for the Ustick Road and Montana Avenue intersection using the 24-hour tube counts, following the procedures outlined in the 2009 *Manual on Uniform Traffic Control Devices* (MUTCD). The two applicable warrants, Warrant 1 – Eight-Hour Vehicular Volume and Warrant 2 – Four-Hour Vehicular Volume were evaluated. Warrant 7 – Crash Experience was also evaluated because there were six report crashes in the most recent 12-month period. Warrant 4 – Pedestrian Volume was not evaluated because the existing count of pedestrians crossing Ustick Road, obtained when school was in session, is lower than the warrant minimum threshold. The remaining signal warrants did not apply.

The Ustick Road and Montana Avenue intersection does not meet traffic signal warrants with 2015 existing traffic. With existing traffic, the warrant thresholds for Warrant 1 are satisfied for four of eight hours, and Warrant 2 for two of four hours. With 2020 traffic conditions and the proposed widening completed, the warrant thresholds for Warrant 1 are satisfied two of eight hours and none for Warrant 2. The intersection is expected to meet Warrant 2 with 2040 traffic conditions.

In 2014, there were six reported angle crashes at the Ustick Road and Montana Avenue intersection. These angle crashes are susceptible to correction by a traffic signal and would satisfy Warrant 7 Criteria B requirements of five or more reported crashes within a 12-month period. However, Warrant 7 also requires meeting Criteria A, adequate trial of alternatives has failed to reduce the crash frequency, and Criteria C, eight-hour vehicular volume at 80 percent level or pedestrian volume is not less than 80 percent level of the required volume. Criteria A of Warrant 7 is not satisfied because there has not been adequate trial of alternatives to reduce the crash frequency. Criteria C of Warrant 7 is also not met with

2015 existing traffic because only six of eight hours of vehicular volumes are satisfied. With 2020 traffic, seven of eight hours vehicular volumes for Criteria C are satisfied. With 2040 traffic, Criteria C of Warrant 7 is satisfied. In conclusion, Warrant 7 is not met because all three criteria are not satisfied.

2020 (CONSTRUCTION YEAR) AND 2040 (DESIGN YEAR) ANALYSIS

Traffic Forecasts

COMPASS provided 24-hour and PM peak hour travel demand model traffic forecasts for the study area intersections from their 2015, 2020 and 2040 adopted (base) models. The roadway networks in the adopted models follow COMPASS's *Communities in Motion 2040* (CIM 2040), which does not include unfunded roadway projects in the Treasure Valley. One of the unfunded projects within the study area is widening Ustick Road to five lanes with curb, gutter and sidewalk from Montana Avenue to McDermott Road. However, this segment of Ustick Road is identified in the CIM 2040 as a priority corridor. To verify the 2040 traffic demand, a special model run with Ustick Road widened to five lanes was also evaluated. The 2040 traffic forecasts from the special model were higher than the 2040 base model, and therefore were used in this traffic analysis.

A comparison of the 2015 traffic forecasts from the model with the actual traffic counts within the study area showed a wide range of discrepancies ranging from 7 percent higher than existing to 78 percent lower. As a result, traffic forecasts from the models were adjusted following the post-processing procedures outlined in *National Cooperative Research Program Report 255* (NCHRP 255).

The 2020 and 2040 PM peak hour intersection turning movement traffic forecasts were developed using the adjusted peak hour model forecasts. The 2020 and 2040 AM peak hour intersection turning movement traffic forecasts were developed using the adjusted 24-hour model forecasts and estimated k-factors that were based on existing k-factors. The forecasted AM and PM peak hour intersection turning movement traffic was estimated by balancing the forecasted peak hour approach volumes with existing turning movement percentages using the Furness Method. The Furness Method is a turning movement estimation technique presented in NCHRP 255 that alternatively balances the entering and departing traffic until the results converge, providing balanced forecasted turning movement traffic at the intersection. The 2020 and 2040 AM and PM peak hour intersection turning movements are presented in the following sections.

Peak Hour Intersection Operations

The intersections were evaluated with HCM 2010 methodologies using Synchro for stop-controlled and signalized intersections and SIDRA 6.1 for roundabouts. The traffic signal evaluation assumes fully-actuated traffic signals with 120-second cycle lengths, optimized timing splits and protected/permissive left-turn phasing. Exclusive right-turn lanes were added to all approaches as a safety enhancement.

Ustick Road and Montana Avenue Intersection

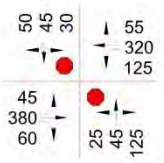
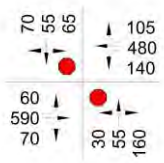
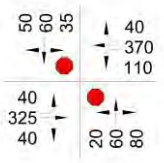
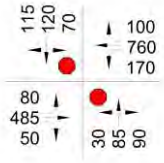
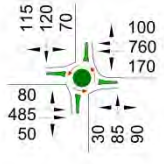
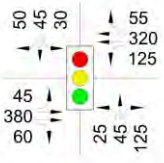
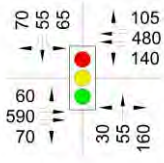
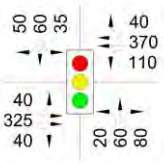
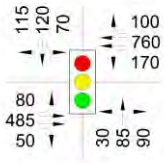
Three intersection improvement alternatives were evaluated with 2020 and 2040 traffic conditions:

- No-build (existing two-way stop-control)
- Multi-lane roundabout
- Conventional signalized intersection

Table 3 on page 6 summarizes the 2020 and 2040 forecasted intersection turning movement volumes, lane configurations, intersection control and MOEs. Traffic analysis reports are included in the appendix. The following are results from the 2020 and 2040 AM and PM peak hour traffic analysis of the Ustick Road and Montana Avenue intersection:

- With the no-build alternative, the intersection is expected to operate at LOS F during peak hours with the 2020 and 2040 forecasted peak hour traffic.
- As a multi-lane roundabout with 2020 peak hour traffic, the intersection is expected to operate at LOS A with a v/c ratio of 0.24 or less for all approaches. With two entry lanes on Ustick Road approaches and one entry lane on Montana Avenue approaches, and 2040 peak hour traffic, the intersection is expected to operate at LOS A with a v/c ratio of 0.57 or less for all approaches.
- With a conventional traffic signal with 2020 peak hour traffic, the intersection is expected to operate at LOS C with a v/c ratio of 0.27 or less for all lane groups. With 2040 peak hour traffic, the intersection is expected to operate at LOS C with a v/c ratio of 0.50 or less for all lane groups. The following lane configurations were evaluated for both forecast scenarios:
    - One exclusive left-turn lane, two through lanes and one exclusive right-turn lane on the Ustick Road approaches.
    - One exclusive left-turn lane, one through lane and one exclusive right-turn lane on the Montana Avenue approaches.

Table 3. Ustick Road and Montana Avenue – 2020 (construction year) and 2040 (design year) traffic analysis results

Intersection Alternative	Peak Period	2020 Peak Hour Volumes, Control and Channelization	2040 Peak Hour Volumes, Control and Channelization	MOE	2020	2040
No-Build	AM			LOS (NB/SB)	F/F	F/F
				Delay (sec)	>50/>50	>50/>50
				Intersection v/c	–	–
				Max Lane Group v/c	0.80 (SB)	>1.00 (NB/SB)
	PM			LOS (NB/SB)	D/F	F/F
				Delay (sec)	34/>50	>50/>50
				Intersection v/c	–	–
				Max Lane Group v/c	0.69 (SB)	>1.00 (NB/SB)
Multi-Lane Roundabout	AM			LOS	A	A
				Delay (sec)	5	8
				Intersection v/c	–	–
				Max Lane Group v/c	0.24 (EB)	0.40 (NB)
	PM			LOS	A	A
				Delay (sec)	5	9
				Intersection v/c	–	–
				Max Lane Group v/c	0.0.22 (WB)	0.57 (WB)
Signal	AM			LOS	C	C
				Delay (sec)	21	22
				Intersection v/c	0.33	0.45
				Max Lane Group v/c	0.27 (EBT)	0.43 (EBT)
	PM			LOS	C	C
				Delay (sec)	22	24
				Intersection v/c	0.26	0.46
				Max Lane Group v/c	0.24 (WBT)	0.50 (WBT)

Ustick Road and Indiana Avenue Intersection

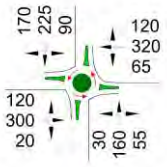
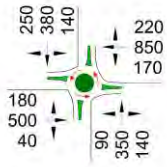
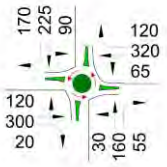
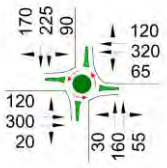
Three intersection improvement alternatives were evaluated with 2020 and 2040 traffic conditions:

- No-build (existing single-lane roundabout)
- Modified dual-lane roundabout
- Dual-lane roundabout

Table 4 on page 8 summarizes the 2020 and 2040 forecasted intersection turning movement volumes, lane configurations, intersection control and MOEs. Traffic analysis reports are included in the appendix. The following are results from the 2020 and 2040 AM and PM peak hour traffic analysis of the Ustick Road and Indiana Avenue intersection:

- With the no-build alternative, the intersection is expected to operate at LOS F during peak hour with the 2040 forecasted peak hour traffic.
- As a modified dual-lane roundabout with 2020 peak hour traffic, the intersection is expected to operate at LOS A with a v/c ratio of 0.46 or less for all approaches. With one entry lane and one right-turn lane on all approaches and 2040 peak hour traffic, the intersection is expected to operate at LOS F with a v/c ratio exceeding 0.85 on the southbound, eastbound and westbound approaches. As a modified dual-lane roundabout, the intersection is expected to operate below the maximum operational threshold until year 2030.
- As a dual-lane roundabout with 2020 peak hour traffic, the intersection is expected to operate at LOS C with a v/c ratio of 0.27 or less for all lane groups. With 2040 peak hour traffic, the intersection is expected to operate at LOS C with a v/c ratio of 0.84 or less for all lane groups.

Table 4. Ustick Road and Indiana Avenue – 2020 (construction year) and 2040 (design year) traffic analysis results

Intersection Alternative	Peak Period	2020 Peak Hour Volumes, Control and Channelization	2040 Year Peak Hour Volumes, Control and Channelization	MOE	2020	2040
No-Build	PM			LOS	A	**F**
				Delay (sec)	10	**>50**
				Intersection v/c	–	–
				Max Lane Group v/c	0.54 (SB)	**>0.85 (All)**
Modified Dual-Lane Roundabout	PM			LOS	A	**F**
				Delay (sec)	6	**>50**
				Intersection v/c	–	–
				Max Lane Group v/c	0.46 (EB)	**>0.85 (SB,EB,WB)**
Dual-Lane Roundabout	PM			LOS	A	C
				Delay (sec)	6	25
				Intersection v/c	–	–
				Max Lane Group v/c	0.27 (SB)	0.84 (WB)

CRASH REDUCTION

ITD Safety Evaluation Manual

The crash reduction factors recommended by ITD are shown in Table 5 on page 9. The factors are based upon extensive accident studies and are available in Appendix A of the ITD *Safety Evaluation Instruction Manual*. ITD does not have a crash reduction factor specifically for widening a roadway from two lanes to five lanes or installing a roundabout. ITD has a crash reduction factor for intersection reconstruction which may be comparable to installing a roundabout. The ITD recommended crash reduction factors were applied to the existing crash rate to determine the expected crash rate after improvements are constructed. The raised median will prohibit turning movements and is projected to reduce crashes on the Ustick Road segment by 40 percent, resulting in an expected crash rate of 2.76 ACC/MVM, which still higher than the base rate. Reconstructing the Ustick Road and Montana Avenue intersection is projected to reduce crashes by approximately 40 percent and crash rate to 0.59 ACC/MV, which is below the base rate. For the traffic signal intersection alternative, the signal improvements are projected to reduce crashes at the Ustick Road and Montana Avenue intersection by approximately 30 percent and crash rate to 0.69 ACC/MV, which is slightly higher than the base rate.

Table 5. ITD recommended crash reduction factors

Roadway Segment or Intersection	Improvement	Existing Crash Rate	ITD Recommended Crash Reduction Factors	Crash Reduction	Expected Crash Rate (ACC/MV)
Ustick Road, Montana to Indiana	Widen roadway from 2 to 5 lanes	4.59	(Not Available)		
	Widen roadway from 2 to 4 lanes with raised median		0.40	40%	2.76
Ustick / Montana	Reconstruct intersection (to multi-lane roundabout)	0.99	0.40	40%	0.59
	New signal installation		0.30	30%	0.69
Ustick / Indiana	Convert single-lane to dual lane roundabout	0.51	(Not Available)		

Federal Highway Administration

NCHRP Report 672, Roundabouts: An Informational Guide (Report 672), published by the Federal Highway Administration in 2010 provides information on the safety of both signalized intersections and roundabouts. The report found that the overall estimated crash reduction to convert any intersection treatment to a roundabout is 35 percent and the estimated reduction of injury crashes is 76 percent. The large reduction in injury crashes is due to the configuration of the roundabout, which reduces conflict points and eliminates severe crashes such as left-turn head on and right angle crashes. The reduction of crashes for roundabouts, particularly for injury crashes, exceeds the anticipated 30 percent crash reduction for the signalized intersections from the ITD *Safety Evaluation Instruction Manual*. Therefore, a roundabout is anticipated to improve safety more than a signalized intersection.

APPENDIX

L2 Data Collection

L2DataCollection.com
Idaho (208) 860-7554 Utah (801) 431-2993

Study: SIX0036
Type: Volume / Direction
Tech: Judd
Count: Vehicle Volume

Ustick & Montana N Leg VOL
Date Start: 26-Aug-15
Date End: 27-Aug-15
Montana & Ustick - North Leg
Caldwell, Idaho
Site Code: N Leg

Start Time	26-Aug-15 Wed	SB	NB							Total
12:00 AM		*	*							*
12:15		*	*							*
12:30		*	*							*
12:45		*	*							*
01:00		*	*							*
01:15		*	*							*
01:30		*	*							*
01:45		*	*							*
02:00		*	*							*
02:15		*	*							*
02:30		*	*							*
02:45		*	*							*
03:00		*	*							*
03:15		*	*							*
03:30		*	*							*
03:45		*	*							*
04:00		*	*							*
04:15		*	*							*
04:30		*	*							*
04:45		*	*							*
05:00		*	*							*
05:15		*	*							*
05:30		*	*							*
05:45		*	*							*
06:00		5	9							14
06:15		16	13							29
06:30		9	14							23
06:45		10	15							25
07:00		10	13							23
07:15		15	**38**							53
07:30		36	**34**							**70**
07:45		21	**29**							**50**
08:00		**23**	**22**							**45**
08:15		**44**	33							**77**
08:30		**34**	28							62
08:45		**26**	24							50
09:00		20	20							40
09:15		8	12							20
09:30		12	10							22
09:45		15	13							28
10:00		9	8							17
10:15		17	17							34
10:30		12	9							21
10:45		19	6							25
11:00		11	10							21
11:15		16	21							37
11:30		17	23							40
11:45		6	23							29
Total		411	444							855
Percent		48.1%	51.9%							
Peak	-	08:00	07:15	-	-	-	-	-	-	07:30
Vol.	-	127	123	-	-	-	-	-	-	242
P.H.F.		0.722	0.809							0.786

L2 Data Collection

L2DataCollection.com
Idaho (208) 860-7554 Utah (801) 431-2993

Study: SIX0036
Type: Volume / Direction
Tech: Judd
Count: Vehicle Volume

Ustick & Montana N Leg VOL
Date Start: 26-Aug-15
Date End: 27-Aug-15
Montana & Ustick - North Leg
Caldwell, Idaho
Site Code: N Leg

Start Time	26-Aug-15 Wed	SB	NB							Total
12:00 PM		25	24							49
12:15		25	22							47
12:30		20	12							32
12:45		9	22							31
01:00		23	19							42
01:15		15	17							32
01:30		8	15							23
01:45		18	20							38
02:00		16	24							40
02:15		19	18							37
02:30		18	22							40
02:45		27	30							57
03:00		31	**33**							**64**
03:15		30	**29**							**59**
03:30		40	**36**							**76**
03:45		29	**38**							**67**
04:00		26	32							58
04:15		25	24							49
04:30		31	33							64
04:45		**30**	27							57
05:00		**36**	35							71
05:15		**38**	28							66
05:30		**33**	31							64
05:45		25	32							57
06:00		29	30							59
06:15		37	18							55
06:30		26	29							55
06:45		17	27							44
07:00		20	19							39
07:15		15	19							34
07:30		24	15							39
07:45		18	13							31
08:00		16	21							37
08:15		29	22							51
08:30		12	16							28
08:45		12	10							22
09:00		12	13							25
09:15		16	18							34
09:30		13	16							29
09:45		15	14							29
10:00		5	9							14
10:15		9	7							16
10:30		5	7							12
10:45		3	7							10
11:00		3	7							10
11:15		5	1							6
11:30		7	7							14
11:45		0	4							4
Total		945	972							1917
Percent		49.3%	50.7%							
Peak	-	16:45	15:00	-	-	-	-	-	-	15:00
Vol.	-	137	136	-	-	-	-	-	-	266
P.H.F.		0.901	0.895							0.875

L2 Data Collection

L2DataCollection.com
Idaho (208) 860-7554 Utah (801) 431-2993

Study: SIX0036
Type: Volume / Direction
Tech: Judd
Count: Vehicle Volume

Ustick & Montana N Leg VOL
Date Start: 26-Aug-15
Date End: 27-Aug-15
Montana & Ustick - North Leg
Caldwell, Idaho
Site Code: N Leg

Start Time	27-Aug-15 Thu	SB	NB	Total
12:00 AM		3	4	7
12:15		6	2	8
12:30		2	2	4
12:45		4	3	7
01:00		1	5	6
01:15		1	1	2
01:30		4	1	5
01:45		0	2	2
02:00		2	1	3
02:15		0	2	2
02:30		1	2	3
02:45		1	3	4
03:00		0	0	0
03:15		0	2	2
03:30		0	1	1
03:45		0	1	1
04:00		0	1	1
04:15		3	1	4
04:30		1	0	1
04:45		3	1	4
05:00		**6**	**1**	**7**
05:15		**8**	**3**	**11**
05:30		**5**	**5**	**10**
05:45		**6**	**8**	**14**
06:00		*	*	*
06:15		*	*	*
06:30		*	*	*
06:45		*	*	*
07:00		*	*	*
07:15		*	*	*
07:30		*	*	*
07:45		*	*	*
08:00		*	*	*
08:15		*	*	*
08:30		*	*	*
08:45		*	*	*
09:00		*	*	*
09:15		*	*	*
09:30		*	*	*
09:45		*	*	*
10:00		*	*	*
10:15		*	*	*
10:30		*	*	*
10:45		*	*	*
11:00		*	*	*
11:15		*	*	*
11:30		*	*	*
11:45		*	*	*
Total		57	52	109
Percent		52.3%	47.7%	
Peak	-	05:00	05:00	05:00
Vol.	-	25	17	42
P.H.F.		0.781	0.531	0.750
Grand Total		1413	1468	2881
Percent		49.0%	51.0%	

L2 Data Collection

L2DataCollection.com
Idaho (208) 860-7554 Utah (801) 431-2993

Study: SIX0036
Type: Volume / Direction
Tech: Judd
Count: Vehicle Volume

Ustick & Montana S Leg VOL
Date Start: 26-Aug-15
Date End: 27-Aug-15
Montana & Ustick - South Leg
Caldwell, Idaho
Site Code: S Leg

Start Time	26-Aug-15 Wed	SB	NB							Total
12:00 AM		*	*							*
12:15		*	*							*
12:30		*	*							*
12:45		*	*							*
01:00		*	*							*
01:15		*	*							*
01:30		*	*							*
01:45		*	*							*
02:00		*	*							*
02:15		*	*							*
02:30		*	*							*
02:45		*	*							*
03:00		*	*							*
03:15		*	*							*
03:30		*	*							*
03:45		*	*							*
04:00		*	*							*
04:15		*	*							*
04:30		*	*							*
04:45		*	*							*
05:00		*	*							*
05:15		*	*							*
05:30		*	*							*
05:45		*	*							*
06:00		6	18							24
06:15		13	22							35
06:30		10	27							37
06:45		10	17							27
07:00		22	29							51
07:15		52	52							104
07:30		**44**	**51**							**95**
07:45		**54**	**44**							**98**
08:00		**66**	**40**							**106**
08:15		**71**	**78**							**149**
08:30		30	35							65
08:45		21	27							48
09:00		16	18							34
09:15		18	15							33
09:30		19	24							43
09:45		28	20							48
10:00		15	8							23
10:15		11	25							36
10:30		11	22							33
10:45		15	17							32
11:00		16	18							34
11:15		18	23							41
11:30		20	15							35
11:45		17	19							36
Total		603	664							1267
Percent		47.6%	52.4%							
Peak	-	07:30	07:30	-	-	-	-	-	-	07:30
Vol.	-	235	213	-	-	-	-	-	-	448
P.H.F.		0.827	0.683							0.752

L2 Data Collection

L2DataCollection.com
Idaho (208) 860-7554 Utah (801) 431-2993

Study: SIX0036
Type: Volume / Direction
Tech: Judd
Count: Vehicle Volume

Ustick & Montana S Leg VOL
Date Start: 26-Aug-15
Date End: 27-Aug-15
Montana & Ustick - South Leg
Caldwell, Idaho
Site Code: S Leg

Start Time	26-Aug-15 Wed	SB	NB							Total
12:00 PM		25	32							57
12:15		24	27							51
12:30		30	16							46
12:45		19	29							48
01:00		38	27							65
01:15		17	24							41
01:30		19	20							39
01:45		21	35							56
02:00		26	23							49
02:15		21	20							41
02:30		24	28							52
02:45		34	34							68
03:00		**47**	32							79
03:15		**61**	21							**82**
03:30		**56**	**53**							**109**
03:45		**38**	**84**							**122**
04:00		41	**41**							**82**
04:15		33	**28**							61
04:30		30	42							72
04:45		48	28							76
05:00		52	31							83
05:15		48	31							79
05:30		42	48							90
05:45		51	36							87
06:00		61	36							97
06:15		44	53							97
06:30		29	53							82
06:45		25	29							54
07:00		36	31							67
07:15		23	27							50
07:30		33	19							52
07:45		25	20							45
08:00		23	23							46
08:15		33	21							54
08:30		22	25							47
08:45		26	14							40
09:00		20	10							30
09:15		30	13							43
09:30		15	15							30
09:45		13	12							25
10:00		9	12							21
10:15		13	6							19
10:30		15	11							26
10:45		9	9							18
11:00		1	2							3
11:15		2	2							4
11:30		7	6							13
11:45		6	3							9
Total		1365	1242							2607
Percent		52.4%	47.6%							
Peak	-	15:00	15:30	-	-	-	-	-	-	15:15
Vol.	-	202	206	-	-	-	-	-	-	395
P.H.F.		0.828	0.613							0.809

L2 Data Collection

L2DataCollection.com
Idaho (208) 860-7554 Utah (801) 431-2993

Study: SIX0036
Type: Volume / Direction
Tech: Judd
Count: Vehicle Volume

Ustick & Montana S Leg VOL
Date Start: 26-Aug-15
Date End: 27-Aug-15
Montana & Ustick - South Leg
Caldwell, Idaho
Site Code: S Leg

Start Time	27-Aug-15 Thu	SB	NB	Total
12:00 AM		**6**	2	8
12:15		**9**	1	10
12:30		**7**	0	7
12:45		**4**	1	5
01:00		0	1	1
01:15		2	1	3
01:30		3	1	4
01:45		2	1	3
02:00		1	1	2
02:15		2	3	5
02:30		2	4	6
02:45		1	3	4
03:00		2	0	2
03:15		2	4	6
03:30		0	0	0
03:45		1	2	3
04:00		1	0	1
04:15		1	3	4
04:30		1	1	2
04:45		5	8	13
05:00		3	**5**	**8**
05:15		3	**9**	**12**
05:30		4	**8**	**12**
05:45		11	**15**	**26**
06:00		*	*	*
06:15		*	*	*
06:30		*	*	*
06:45		*	*	*
07:00		*	*	*
07:15		*	*	*
07:30		*	*	*
07:45		*	*	*
08:00		*	*	*
08:15		*	*	*
08:30		*	*	*
08:45		*	*	*
09:00		*	*	*
09:15		*	*	*
09:30		*	*	*
09:45		*	*	*
10:00		*	*	*
10:15		*	*	*
10:30		*	*	*
10:45		*	*	*
11:00		*	*	*
11:15		*	*	*
11:30		*	*	*
11:45		*	*	*
Total		73	74	147
Percent		49.7%	50.3%	
Peak	-	12:00	05:00	05:00
Vol.	-	26	37	58
P.H.F.		0.722	0.617	0.558
Grand Total		2041	1980	4021
Percent		50.8%	49.2%	

L2 Data Collection

L2DataCollection.com
Idaho (208) 860-7554 Utah (801) 431-2993

Study: SIX0036
Type: Volume / Direction
Tech: Judd
Count: Axle Hits / 2

Ustick b Montana & Indiana VOL
Date Start: 26-Aug-15
Date End: 28-Aug-15
Ustick Road between Montana & Indiana
Caldwell, Idaho
Site Code:

Start Time	26-Aug-15 Wed	WB	EB							Total
12:00 AM		*	*							*
12:15		*	*							*
12:30		*	*							*
12:45		*	*							*
01:00		*	*							*
01:15		*	*							*
01:30		*	*							*
01:45		*	*							*
02:00		*	*							*
02:15		*	*							*
02:30		*	*							*
02:45		*	*							*
03:00		*	*							*
03:15		*	*							*
03:30		*	*							*
03:45		*	*							*
04:00		*	*							*
04:15		*	*							*
04:30		*	*							*
04:45		*	*							*
05:00		*	*							*
05:15		*	*							*
05:30		*	*							*
05:45		*	*							*
06:00		*	*							*
06:15		30	46							76
06:30		36	54							90
06:45		52	59							111
07:00		39	79							118
07:15		**115**	**142**							**257**
07:30		**117**	**168**							**285**
07:45		**117**	**173**							**290**
08:00		**95**	**94**							**189**
08:15		82	110							192
08:30		47	96							143
08:45		58	73							131
09:00		60	64							124
09:15		46	61							107
09:30		44	80							124
09:45		59	67							126
10:00		56	58							114
10:15		32	62							94
10:30		64	72							136
10:45		52	87							139
11:00		58	60							118
11:15		62	82							144
11:30		50	72							122
11:45		76	62							138
Total		1447	1921							3368
Percent		43.0%	57.0%							
Peak	-	07:15	07:15	-	-	-	-	-	-	07:15
Vol.	-	444	577	-	-	-	-	-	-	1021
P.H.F.		0.949	0.834							0.880

L2 Data Collection

L2DataCollection.com
Idaho (208) 860-7554 Utah (801) 431-2993

Study: SIX0036
Type: Volume / Direction
Tech: Judd
Count: Axle Hits / 2

Ustick b Montana & Indiana VOL
Date Start: 26-Aug-15
Date End: 28-Aug-15
Ustick Road between Montana & Indiana
Caldwell, Idaho
Site Code:

Start Time	26-Aug-15 Wed	WB	EB	Total
12:00 PM		68	66	134
12:15		70	88	158
12:30		88	64	152
12:45		85	64	149
01:00		84	76	160
01:15		85	56	141
01:30		72	72	144
01:45		78	91	169
02:00		96	78	174
02:15		96	86	182
02:30		97	106	203
02:45		102	102	204
03:00		118	**160**	**278**
03:15		**138**	**60**	**198**
03:30		**131**	**131**	**262**
03:45		**108**	**198**	**306**
04:00		**136**	104	240
04:15		103	84	187
04:30		94	112	206
04:45		120	96	216
05:00		118	102	220
05:15		118	98	216
05:30		117	108	225
05:45		124	100	224
06:00		126	98	224
06:15		104	100	204
06:30		110	84	194
06:45		91	86	177
07:00		0	0	0
07:15		0	0	0
07:30		0	0	0
07:45		0	0	0
08:00		0	0	0
08:15		0	0	0
08:30		0	0	0
08:45		0	0	0
09:00		0	0	0
09:15		0	0	0
09:30		0	0	0
09:45		0	0	0
10:00		0	0	0
10:15		0	0	0
10:30		0	0	0
10:45		0	0	0
11:00		0	0	0
11:15		0	0	0
11:30		0	0	0
11:45		0	0	0
Total		2877	2670	5547
Percent		51.9%	48.1%	
Peak	-	15:15	15:00	15:00
Vol.	-	513	549	1044
P.H.F.		0.929	0.693	0.853

L2 Data Collection

L2DataCollection.com
Idaho (208) 860-7554 Utah (801) 431-2993

Study: SIX0036
Type: Volume / Direction
Tech: Judd
Count: Axle Hits / 2

Ustick b Montana & Indiana VOL
Date Start: 26-Aug-15
Date End: 28-Aug-15
Ustick Road between Montana & Indiana
Caldwell, Idaho
Site Code:

Start Time	27-Aug-15 Thu	WB	EB							Total
12:00 AM		0	0							0
12:15		0	0							0
12:30		0	0							0
12:45		0	0							0
01:00		0	0							0
01:15		0	0							0
01:30		0	0							0
01:45		0	0							0
02:00		0	0							0
02:15		0	0							0
02:30		0	0							0
02:45		0	0							0
03:00		0	0							0
03:15		0	0							0
03:30		0	0							0
03:45		0	0							0
04:00		0	0							0
04:15		0	0							0
04:30		0	0							0
04:45		0	0							0
05:00		0	0							0
05:15		0	0							0
05:30		0	0							0
05:45		0	0							0
06:00		0	0							0
06:15		0	0							0
06:30		28	56							84
06:45		50	74							124
07:00		41	73							114
07:15		**86**	**138**							**224**
07:30		**99**	**194**							**293**
07:45		**110**	**180**							**290**
08:00		**88**	**116**							**204**
08:15		80	134							214
08:30		52	96							148
08:45		57	76							133
09:00		44	68							112
09:15		54	83							137
09:30		52	64							116
09:45		51	58							109
10:00		45	82							127
10:15		68	60							128
10:30		56	70							126
10:45		58	69							127
11:00		48	62							110
11:15		68	69							137
11:30		68	78							146
11:45		58	92							150
Total		1361	1992							3353
Percent		40.6%	59.4%							
Peak	-	07:15	07:15	-	-	-	-	-	-	07:15
Vol.	-	383	628	-	-	-	-	-	-	1011
P.H.F.		0.870	0.809							0.863

L2 Data Collection

L2DataCollection.com
Idaho (208) 860-7554 Utah (801) 431-2993

Study: SIX0036
Type: Volume / Direction
Tech: Judd
Count: Axle Hits / 2

Ustick b Montana & Indiana VOL
Date Start: 26-Aug-15
Date End: 28-Aug-15
Ustick Road between Montana & Indiana
Caldwell, Idaho
Site Code:

Start Time	27-Aug-15 Thu	WB	EB							Total
12:00 PM		70	69							139
12:15		78	74							152
12:30		55	82							137
12:45		66	79							145
01:00		66	62							128
01:15		76	63							139
01:30		74	58							132
01:45		92	89							181
02:00		97	80							177
02:15		76	68							144
02:30		100	90							190
02:45		86	112							198
03:00		120	132							252
03:15		114	88							202
03:30		108	**120**							**228**
03:45		96	**172**							**268**
04:00		122	**110**							**232**
04:15		112	**115**							**227**
04:30		94	114							208
04:45		90	101							191
05:00		122	92							214
05:15		120	123							243
05:30		119	106							225
05:45		**132**	125							257
06:00		**107**	117							224
06:15		**130**	117							247
06:30		**125**	96							221
06:45		76	77							153
07:00		106	67							173
07:15		88	68							156
07:30		89	56							145
07:45		88	103							191
08:00		118	66							184
08:15		92	58							150
08:30		75	62							137
08:45		88	50							138
09:00		55	43							98
09:15		65	33							98
09:30		49	39							88
09:45		52	31							83
10:00		35	21							56
10:15		24	20							44
10:30		22	20							42
10:45		33	12							45
11:00		27	12							39
11:15		15	17							32
11:30		19	13							32
11:45		16	5							21
Total		3879	3527							7406
Percent		52.4%	47.6%							
Peak	-	17:45	15:30	-	-	-	-	-	-	15:30
Vol.	-	494	517	-	-	-	-	-	-	955
P.H.F.		0.936	0.751							0.891

L2 Data Collection

L2DataCollection.com
Idaho (208) 860-7554 Utah (801) 431-2993

Study: SIX0036
Type: Volume / Direction
Tech: Judd
Count: Axle Hits / 2

Ustick b Montana & Indiana VOL
Date Start: 26-Aug-15
Date End: 28-Aug-15
Ustick Road between Montana & Indiana
Caldwell, Idaho
Site Code:

Start Time	28-Aug-15 Fri	WB	EB	Total
12:00 AM		18	8	26
12:15		8	10	18
12:30		7	5	12
12:45		12	6	18
01:00		6	1	7
01:15		5	5	10
01:30		8	2	10
01:45		5	4	9
02:00		6	2	8
02:15		1	0	1
02:30		2	1	3
02:45		3	3	6
03:00		2	2	4
03:15		2	1	3
03:30		3	3	6
03:45		4	5	9
04:00		4	4	8
04:15		2	13	15
04:30		1	13	14
04:45		8	7	15
05:00		8	22	30
05:15		**8**	**15**	**23**
05:30		**14**	**26**	**40**
05:45		**16**	**29**	**45**
06:00		**25**	**32**	**57**
06:15		*	*	*
06:30		*	*	*
06:45		*	*	*
07:00		*	*	*
07:15		*	*	*
07:30		*	*	*
07:45		*	*	*
08:00		*	*	*
08:15		*	*	*
08:30		*	*	*
08:45		*	*	*
09:00		*	*	*
09:15		*	*	*
09:30		*	*	*
09:45		*	*	*
10:00		*	*	*
10:15		*	*	*
10:30		*	*	*
10:45		*	*	*
11:00		*	*	*
11:15		*	*	*
11:30		*	*	*
11:45		*	*	*
Total		178	219	397
Percent		44.8%	55.2%	
Peak	-	05:15	05:15	05:15
Vol.	-	63	102	165
P.H.F.		0.630	0.797	0.724
Grand Total		9742	10329	20071
Percent		48.5%	51.5%	

L2 Data Collection

L2DataCollection.com
Idaho (208) 860-7554 Utah (801) 431-2993

Study: SIX0036
Type: Volume / Direction
Tech: Judd
Count: Vehicle Volume

Ustick & Montana W Leg VOL
Date Start: 26-Aug-15
Date End: 27-Aug-15
Montana & Ustick - West Leg
Caldwell, Idaho
Site Code: W Leg

Start Time	26-Aug-15 Wed	WB	EB							Total
12:00 AM		*	*							*
12:15		*	*							*
12:30		*	*							*
12:45		*	*							*
01:00		*	*							*
01:15		*	*							*
01:30		*	*							*
01:45		*	*							*
02:00		*	*							*
02:15		*	*							*
02:30		*	*							*
02:45		*	*							*
03:00		*	*							*
03:15		*	*							*
03:30		*	*							*
03:45		*	*							*
04:00		*	*							*
04:15		*	*							*
04:30		*	*							*
04:45		*	*							*
05:00		*	*							*
05:15		*	*							*
05:30		*	*							*
05:45		*	*							*
06:00		22	25							47
06:15		33	34							67
06:30		42	50							92
06:45		45	54							99
07:00		33	71							104
07:15		**65**	**122**							**187**
07:30		**112**	**132**							**244**
07:45		**95**	**136**							**231**
08:00		**58**	**77**							**135**
08:15		65	70							135
08:30		44	83							127
08:45		55	62							117
09:00		50	52							102
09:15		35	65							100
09:30		40	65							105
09:45		49	57							106
10:00		44	50							94
10:15		38	55							93
10:30		60	55							115
10:45		52	66							118
11:00		56	50							106
11:15		56	75							131
11:30		43	72							115
11:45		66	61							127
Total		1258	1639							2897
Percent		43.4%	56.6%							
Peak	-	07:15	07:15	-	-	-	-	-	-	07:15
Vol.	-	330	467	-	-	-	-	-	-	797
P.H.F.		0.737	0.858							0.817

L2 Data Collection

L2DataCollection.com
Idaho (208) 860-7554 Utah (801) 431-2993

Study: SIX0036
Type: Volume / Direction
Tech: Judd
Count: Vehicle Volume

Ustick & Montana W Leg VOL
Date Start: 26-Aug-15
Date End: 27-Aug-15
Montana & Ustick - West Leg
Caldwell, Idaho
Site Code: W Leg

Start Time	26-Aug-15 Wed	WB	EB	Total
12:00 PM		67	62	129
12:15		56	65	121
12:30		77	50	127
12:45		76	47	123
01:00		67	64	131
01:15		78	47	125
01:30		61	62	123
01:45		70	72	142
02:00		76	67	143
02:15		90	**85**	175
02:30		87	**88**	175
02:45		95	**100**	195
03:00		**127**	**100**	**227**
03:15		**106**	70	**176**
03:30		**110**	96	**206**
03:45		**109**	96	**205**
04:00		114	77	191
04:15		97	78	175
04:30		97	96	193
04:45		105	96	201
05:00		96	90	186
05:15		106	73	179
05:30		107	93	200
05:45		106	98	204
06:00		98	92	190
06:15		111	70	181
06:30		103	69	172
06:45		82	79	161
07:00		67	75	142
07:15		77	59	136
07:30		88	63	151
07:45		62	44	106
08:00		70	44	114
08:15		74	51	125
08:30		58	53	111
08:45		49	46	95
09:00		46	39	85
09:15		44	32	76
09:30		47	39	86
09:45		31	19	50
10:00		32	21	53
10:15		28	22	50
10:30		25	17	42
10:45		16	7	23
11:00		17	9	26
11:15		19	4	23
11:30		12	11	23
11:45		9	6	15
Total		3445	2843	6288
Percent		54.8%	45.2%	
Peak	-	15:00	14:15	15:00
Vol.	-	452	373	814
P.H.F.		0.890	0.933	0.896

L2 Data Collection

L2DataCollection.com
Idaho (208) 860-7554 Utah (801) 431-2993

Study: SIX0036
Type: Volume / Direction
Tech: Judd
Count: Vehicle Volume

Ustick & Montana W Leg VOL
Date Start: 26-Aug-15
Date End: 27-Aug-15
Montana & Ustick - West Leg
Caldwell, Idaho
Site Code: W Leg

Start Time	27-Aug-15 Thu	WB	EB	Total
12:00 AM		7	6	13
12:15		9	3	12
12:30		2	9	11
12:45		5	5	10
01:00		3	6	9
01:15		1	3	4
01:30		2	1	3
01:45		7	4	11
02:00		0	2	2
02:15		3	0	3
02:30		2	1	3
02:45		1	1	2
03:00		3	1	4
03:15		2	1	3
03:30		2	4	6
03:45		1	6	7
04:00		3	4	7
04:15		1	6	7
04:30		2	11	13
04:45		9	7	16
05:00		**6**	**7**	**13**
05:15		**14**	**8**	**22**
05:30		**19**	**24**	**43**
05:45		**24**	**38**	**62**
06:00		*	*	*
06:15		*	*	*
06:30		*	*	*
06:45		*	*	*
07:00		*	*	*
07:15		*	*	*
07:30		*	*	*
07:45		*	*	*
08:00		*	*	*
08:15		*	*	*
08:30		*	*	*
08:45		*	*	*
09:00		*	*	*
09:15		*	*	*
09:30		*	*	*
09:45		*	*	*
10:00		*	*	*
10:15		*	*	*
10:30		*	*	*
10:45		*	*	*
11:00		*	*	*
11:15		*	*	*
11:30		*	*	*
11:45		*	*	*
Total		128	158	286
Percent		44.8%	55.2%	
Peak	-	05:00	05:00	05:00
Vol.	-	63	77	140
P.H.F.		0.656	0.507	0.565
Grand Total		4831	4640	9471
Percent		51.0%	49.0%	

L2 Data Collection

L2DataCollection.com
Idaho (208) 860-7554 Utah (801) 431-2993

Study: SIX0036
Type: Volume / Direction
Tech: Judd
Count: Axle Hits / 2

Indiana N of Usitck VOL
Date Start: 26-Aug-15
Date End: 28-Aug-15
Indiana Ave north of Ustick Road
Caldwell, Idaho
Site Code: 18419

Start Time	26-Aug-15 Wed	SB	NB							Total
12:00 AM		*	*							*
12:15		*	*							*
12:30		*	*							*
12:45		*	*							*
01:00		*	*							*
01:15		*	*							*
01:30		*	*							*
01:45		*	*							*
02:00		*	*							*
02:15		*	*							*
02:30		*	*							*
02:45		*	*							*
03:00		*	*							*
03:15		*	*							*
03:30		*	*							*
03:45		*	*							*
04:00		*	*							*
04:15		*	*							*
04:30		*	*							*
04:45		*	*							*
05:00		*	*							*
05:15		*	*							*
05:30		14	14							28
05:45		17	28							45
06:00		32	34							66
06:15		14	28							42
06:30		24	50							74
06:45		38	56							94
07:00		38	**64**							102
07:15		**70**	**114**							**184**
07:30		**98**	**146**							**244**
07:45		**100**	**132**							**232**
08:00		**60**	60							**120**
08:15		59	46							105
08:30		38	65							103
08:45		40	48							88
09:00		46	54							100
09:15		47	45							92
09:30		37	48							85
09:45		26	50							76
10:00		44	47							91
10:15		42	43							85
10:30		40	43							83
10:45		35	52							87
11:00		41	40							81
11:15		68	36							104
11:30		46	36							82
11:45		50	39							89
Total		1164	1418							2582
Percent		45.1%	54.9%							
Peak	-	07:15	07:00	-	-	-	-	-	-	07:15
Vol.	-	328	456	-	-	-	-	-	-	780
P.H.F.		0.820	0.781							0.799

L2 Data Collection

L2DataCollection.com
Idaho (208) 860-7554 Utah (801) 431-2993

Study: SIX0036
Type: Volume / Direction
Tech: Judd
Count: Axle Hits / 2

Indiana N of Usitck VOL
Date Start: 26-Aug-15
Date End: 28-Aug-15
Indiana Ave north of Ustick Road
Caldwell, Idaho
Site Code: 18419

Start Time	26-Aug-15 Wed	SB	NB	Total
12:00 PM		60	40	100
12:15		46	**50**	**96**
12:30		50	**37**	**87**
12:45		43	**51**	**94**
01:00		61	**45**	**106**
01:15		43	38	81
01:30		**27**	42	69
01:45		**41**	38	79
02:00		**72**	47	119
02:15		**62**	50	112
02:30		0	0	0
02:45		0	0	0
03:00		0	0	0
03:15		0	0	0
03:30		0	0	0
03:45		0	0	0
04:00		0	0	0
04:15		0	0	0
04:30		0	0	0
04:45		0	0	0
05:00		0	0	0
05:15		0	0	0
05:30		0	0	0
05:45		0	0	0
06:00		0	0	0
06:15		0	0	0
06:30		0	0	0
06:45		0	0	0
07:00		0	0	0
07:15		0	0	0
07:30		0	0	0
07:45		0	0	0
08:00		0	0	0
08:15		0	0	0
08:30		0	0	0
08:45		0	0	0
09:00		0	0	0
09:15		0	0	0
09:30		0	0	0
09:45		0	0	0
10:00		0	0	0
10:15		0	0	0
10:30		0	0	0
10:45		0	0	0
11:00		0	0	0
11:15		0	0	0
11:30		0	0	0
11:45		0	0	0
Total		505	438	943
Percent		53.6%	46.4%	
Peak	-	13:30	12:15	12:15
Vol.	-	202	183	383
P.H.F.		0.701	0.897	0.903

L2 Data Collection

L2DataCollection.com
Idaho (208) 860-7554 Utah (801) 431-2993

Study: SIX0036
Type: Volume / Direction
Tech: Judd
Count: Axle Hits / 2

Indiana N of Usitck VOL
Date Start: 26-Aug-15
Date End: 28-Aug-15
Indiana Ave north of Ustick Road
Caldwell, Idaho
Site Code: 18419

Start Time	27-Aug-15 Thu	SB	NB							Total
12:00 AM		0	0							0
12:15		0	0							0
12:30		0	0							0
12:45		0	0							0
01:00		0	0							0
01:15		0	0							0
01:30		0	0							0
01:45		0	0							0
02:00		0	0							0
02:15		0	0							0
02:30		0	0							0
02:45		0	0							0
03:00		0	0							0
03:15		0	0							0
03:30		0	0							0
03:45		0	0							0
04:00		0	0							0
04:15		0	0							0
04:30		0	0							0
04:45		0	0							0
05:00		0	0							0
05:15		0	0							0
05:30		0	0							0
05:45		0	0							0
06:00		16	26							42
06:15		26	29							55
06:30		26	47							73
06:45		38	65							103
07:00		48	56							104
07:15		**59**	**115**							**174**
07:30		**88**	**153**							**241**
07:45		**90**	**122**							**212**
08:00		**66**	**70**							**136**
08:15		54	63							117
08:30		30	64							94
08:45		38	52							90
09:00		40	53							93
09:15		32	42							74
09:30		39	48							87
09:45		32	48							80
10:00		48	36							84
10:15		51	37							88
10:30		32	40							72
10:45		47	37							84
11:00		39	47							86
11:15		56	56							112
11:30		50	40							90
11:45		40	64							104
Total		1085	1410							2495
Percent		43.5%	56.5%							
Peak	-	07:15	07:15	-	-	-	-	-	-	07:15
Vol.	-	303	460	-	-	-	-	-	-	763
P.H.F.		0.842	0.752							0.791

L2 Data Collection

L2DataCollection.com
Idaho (208) 860-7554 Utah (801) 431-2993

Study: SIX0036
Type: Volume / Direction
Tech: Judd
Count: Axle Hits / 2

Indiana N of Usitck VOL
Date Start: 26-Aug-15
Date End: 28-Aug-15
Indiana Ave north of Ustick Road
Caldwell, Idaho
Site Code: 18419

Start Time	27-Aug-15 Thu	SB	NB							Total
12:00 PM		58	42							100
12:15		57	50							107
12:30		46	44							90
12:45		46	45							91
01:00		52	38							90
01:15		49	42							91
01:30		56	27							83
01:45		52	62							114
02:00		58	50							108
02:15		46	52							98
02:30		56	66							122
02:45		98	84							182
03:00		110	76							186
03:15		74	60							134
03:30		84	64							148
03:45		78	116							194
04:00		87	68							155
04:15		82	80							162
04:30		94	78							172
04:45		92	82							174
05:00		92	90							182
05:15		106	100							206
05:30		97	**83**							180
05:45		84	**130**							**214**
06:00		101	**102**							**203**
06:15		108	**118**							**226**
06:30		118	70							**188**
06:45		82	71							153
07:00		92	60							152
07:15		70	78							148
07:30		**84**	57							141
07:45		**90**	98							188
08:00		**144**	59							203
08:15		**122**	56							178
08:30		69	54							123
08:45		64	32							96
09:00		66	26							92
09:15		43	26							69
09:30		42	38							80
09:45		33	21							54
10:00		40	12							52
10:15		21	18							39
10:30		12	9							21
10:45		20	8							28
11:00		14	8							22
11:15		15	14							29
11:30		9	7							16
11:45		9	8							17
Total		3222	2679							5901
Percent		54.6%	45.4%							
Peak	-	19:30	17:30	-	-	-	-	-	-	17:45
Vol.	-	440	433	-	-	-	-	-	-	831
P.H.F.		0.764	0.833							0.919

L2 Data Collection

L2DataCollection.com
Idaho (208) 860-7554 Utah (801) 431-2993

Study: SIX0036
Type: Volume / Direction
Tech: Judd
Count: Axle Hits / 2

Indiana N of Usitck VOL
Date Start: 26-Aug-15
Date End: 28-Aug-15
Indiana Ave north of Ustick Road
Caldwell, Idaho
Site Code: 18419

Start Time	28-Aug-15 Fri	SB	NB	Total
12:00 AM		**13**	4	17
12:15		**11**	7	18
12:30		**5**	6	11
12:45		**9**	1	10
01:00		1	1	2
01:15		2	2	4
01:30		0	1	1
01:45		1	1	2
02:00		2	2	4
02:15		3	1	4
02:30		0	0	0
02:45		2	3	5
03:00		5	1	6
03:15		0	2	2
03:30		0	3	3
03:45		1	2	3
04:00		2	4	6
04:15		1	4	5
04:30		1	**5**	**6**
04:45		8	**16**	**24**
05:00		4	**22**	**26**
05:15		12	**21**	**33**
05:30		*	*	*
05:45		*	*	*
06:00		*	*	*
06:15		*	*	*
06:30		*	*	*
06:45		*	*	*
07:00		*	*	*
07:15		*	*	*
07:30		*	*	*
07:45		*	*	*
08:00		*	*	*
08:15		*	*	*
08:30		*	*	*
08:45		*	*	*
09:00		*	*	*
09:15		*	*	*
09:30		*	*	*
09:45		*	*	*
10:00		*	*	*
10:15		*	*	*
10:30		*	*	*
10:45		*	*	*
11:00		*	*	*
11:15		*	*	*
11:30		*	*	*
11:45		*	*	*
Total		83	109	192
Percent		43.2%	56.8%	
Peak	-	12:00	04:30	04:30
Vol.	-	38	64	89
P.H.F.		0.731	0.727	0.674
Grand Total		6059	6054	12113
Percent		50.0%	50.0%	

L2 Data Collection

L2DataCollection.com
Idaho (208) 860-7554 Utah (801) 413-2993

Study: SIX0036
Intersection: Montana Ave / Ustick Road
City: Caldwell, Idaho
Control: Stop Sign

File Name : Montana & Ustick
Site Code : 00000000
Start Date : 8/26/2015
Page No : 1

Groups Printed- General Traffic

	Montana Avenue From North					Ustick Road From East					Montana Avenue From South					Ustick Road From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
07:00 AM	2	6	2	1	11	4	27	8	0	39	21	4	4	0	29	8	58	5	0	71	150
07:15 AM	4	4	7	0	15	12	54	34	0	100	29	16	7	1	53	14	98	10	2	124	292
07:30 AM	15	15	6	0	36	14	92	21	0	127	35	11	5	0	51	8	115	9	1	133	347
07:45 AM	10	7	4	0	21	11	80	34	0	125	30	9	5	0	44	13	114	9	1	137	327
Total	31	32	19	1	83	41	253	97	0	391	115	40	21	1	177	43	385	33	4	465	1116
08:00 AM	5	15	3	0	23	7	47	31	0	85	29	5	6	0	40	20	47	10	0	77	225
08:15 AM	18	21	5	0	44	10	36	30	0	76	50	17	11	0	78	20	44	6	0	70	268
08:30 AM	10	12	12	4	38	7	28	9	1	45	18	11	6	0	35	9	64	10	0	83	201
08:45 AM	7	13	6	0	26	7	41	4	0	52	10	10	7	0	27	4	51	7	1	63	168
Total	40	61	26	4	131	31	152	74	1	258	107	43	30	0	180	53	206	33	1	293	862

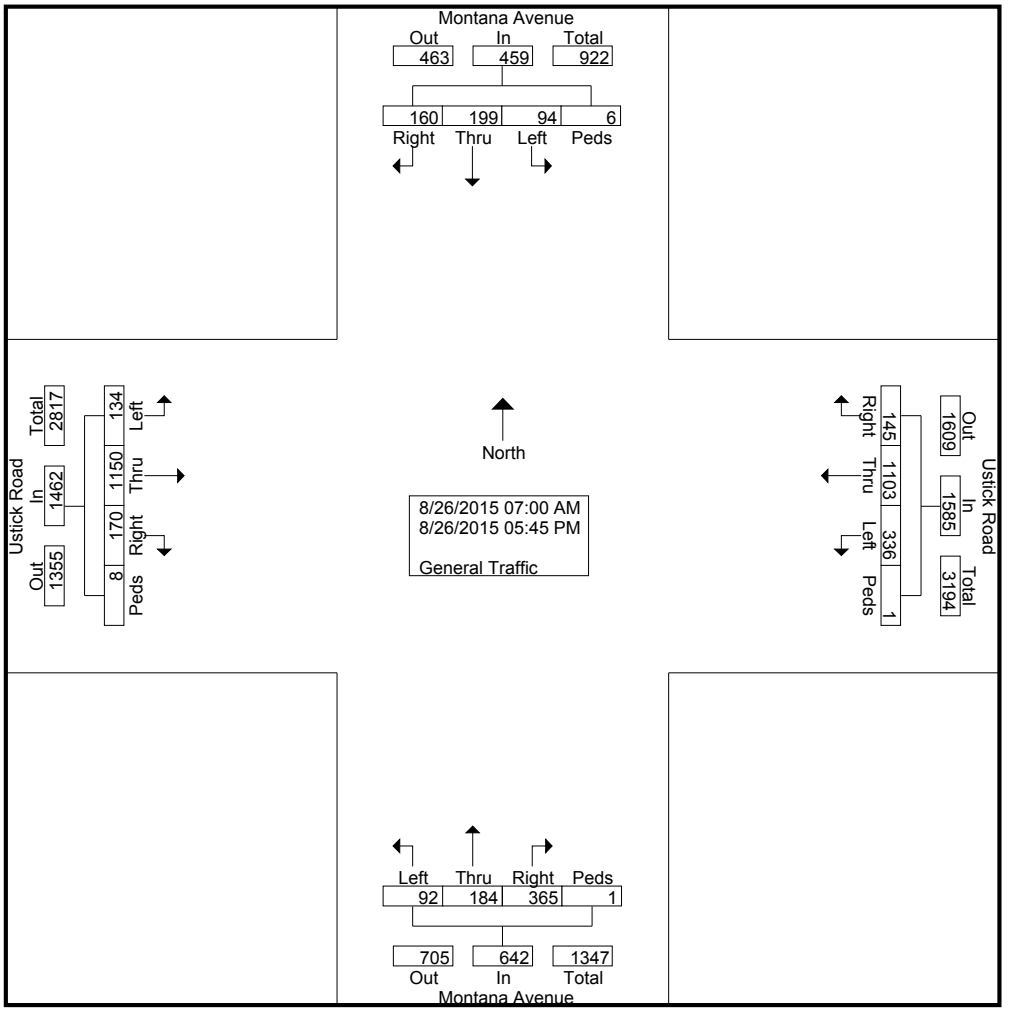
04:00 PM	10	10	6	0	26	13	96	23	0	132	20	13	8	0	41	8	63	6	0	77	276
04:15 PM	7	15	3	1	26	5	84	13	0	102	11	11	6	0	28	5	65	8	1	79	235
04:30 PM	15	8	8	0	31	12	75	10	0	97	25	10	7	0	42	12	73	11	0	96	266
04:45 PM	11	14	5	0	30	9	91	21	0	121	14	11	3	0	28	13	76	7	0	96	275
Total	43	47	22	1	113	39	346	67	0	452	70	45	24	0	139	38	277	32	1	348	1052
05:00 PM	11	19	6	0	36	10	82	25	0	117	12	16	3	0	31	8	73	9	2	92	276
05:15 PM	13	14	11	0	38	11	88	26	0	125	18	8	5	0	31	8	56	9	0	73	267
05:30 PM	11	15	7	0	33	6	92	17	0	115	27	17	4	0	48	10	75	8	0	93	289
05:45 PM	11	11	3	0	25	7	90	30	0	127	16	15	5	0	36	10	78	10	0	98	286
Total	46	59	27	0	132	34	352	98	0	484	73	56	17	0	146	36	282	36	2	356	1118
Grand Total	160	199	94	6	459	145	1103	336	1	1585	365	184	92	1	642	170	1150	134	8	1462	4148
Apprch %	34.9	43.4	20.5	1.3		9.1	69.6	21.2	0.1		56.9	28.7	14.3	0.2		11.6	78.7	9.2	0.5		
Total %	3.9	4.8	2.3	0.1	11.1	3.5	26.6	8.1	0	38.2	8.8	4.4	2.2	0	15.5	4.1	27.7	3.2	0.2	35.2	

L2 Data Collection

L2DataCollection.com
Idaho (208) 860-7554 Utah (801) 413-2993

Study: SIX0036
Intersection: Montana Ave / Ustick Road
City: Caldwell, Idaho
Control: Stop Sign

File Name : Montana & Ustick
Site Code : 00000000
Start Date : 8/26/2015
Page No : 2



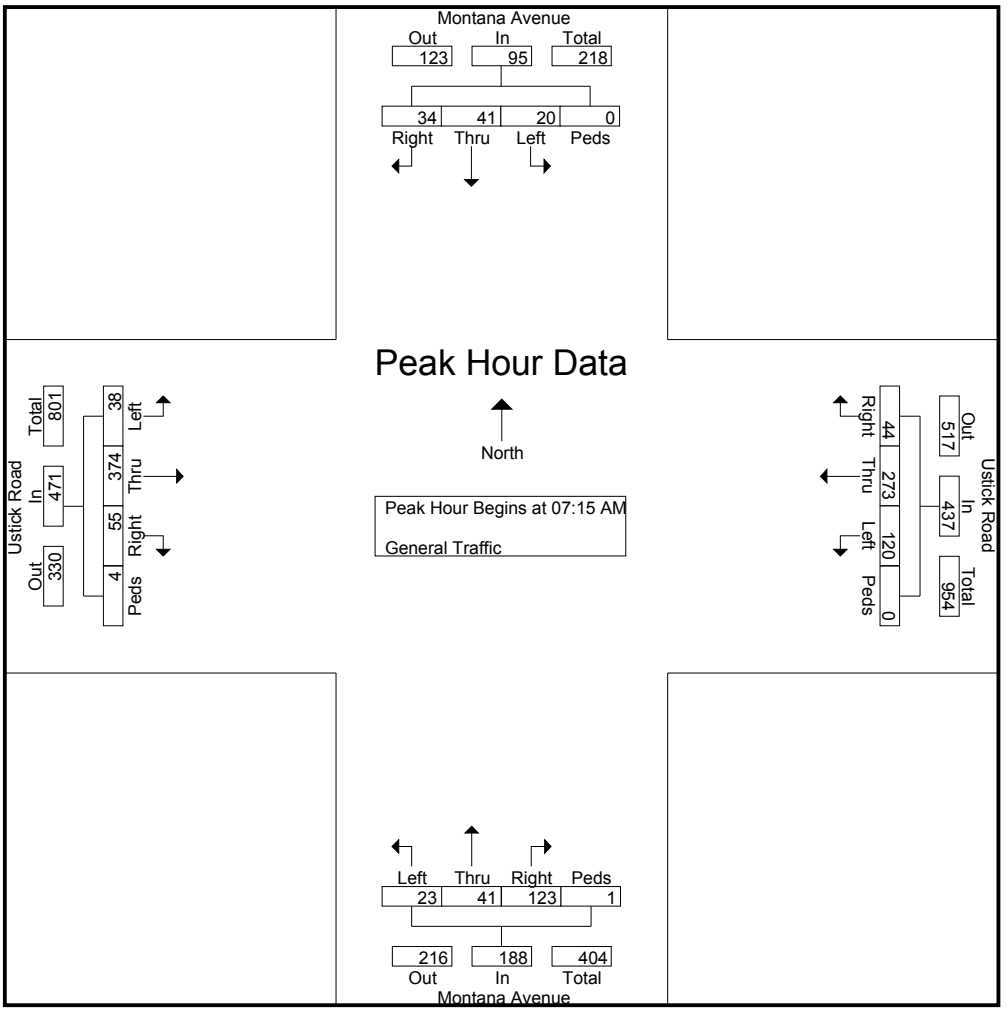
L2 Data Collection

L2DataCollection.com
Idaho (208) 860-7554 Utah (801) 413-2993

Study: SIX0036
Intersection: Montana Ave / Ustick Road
City: Caldwell, Idaho
Control: Stop Sign

File Name : Montana & Ustick
Site Code : 00000000
Start Date : 8/26/2015
Page No : 3

	Montana Avenue From North					Ustick Road From East					Montana Avenue From South					Ustick Road From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 11:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:15 AM																					
07:15 AM	4	4	**7**	0	15	12	54	**34**	0	100	29	**16**	**7**	**1**	**53**	14	98	**10**	**2**	124	292
07:30 AM	**15**	**15**	6	0	**36**	**14**	**92**	21	0	**127**	**35**	11	5	0	51	8	**115**	9	1	133	**347**
07:45 AM	10	7	4	0	21	11	80	34	0	125	30	9	5	0	44	13	114	9	1	**137**	327
08:00 AM	5	15	3	0	23	7	47	31	0	85	29	5	6	0	40	**20**	47	10	0	77	225
Total Volume	34	41	20	0	95	44	273	120	0	437	123	41	23	1	188	55	374	38	4	471	1191
% App. Total	35.8	43.2	21.1	0		10.1	62.5	27.5	0		65.4	21.8	12.2	0.5		11.7	79.4	8.1	0.8		
PHF	.567	.683	.714	.000	.660	.786	.742	.882	.000	.860	.879	.641	.821	.250	.887	.688	.813	.950	.500	.859	.858



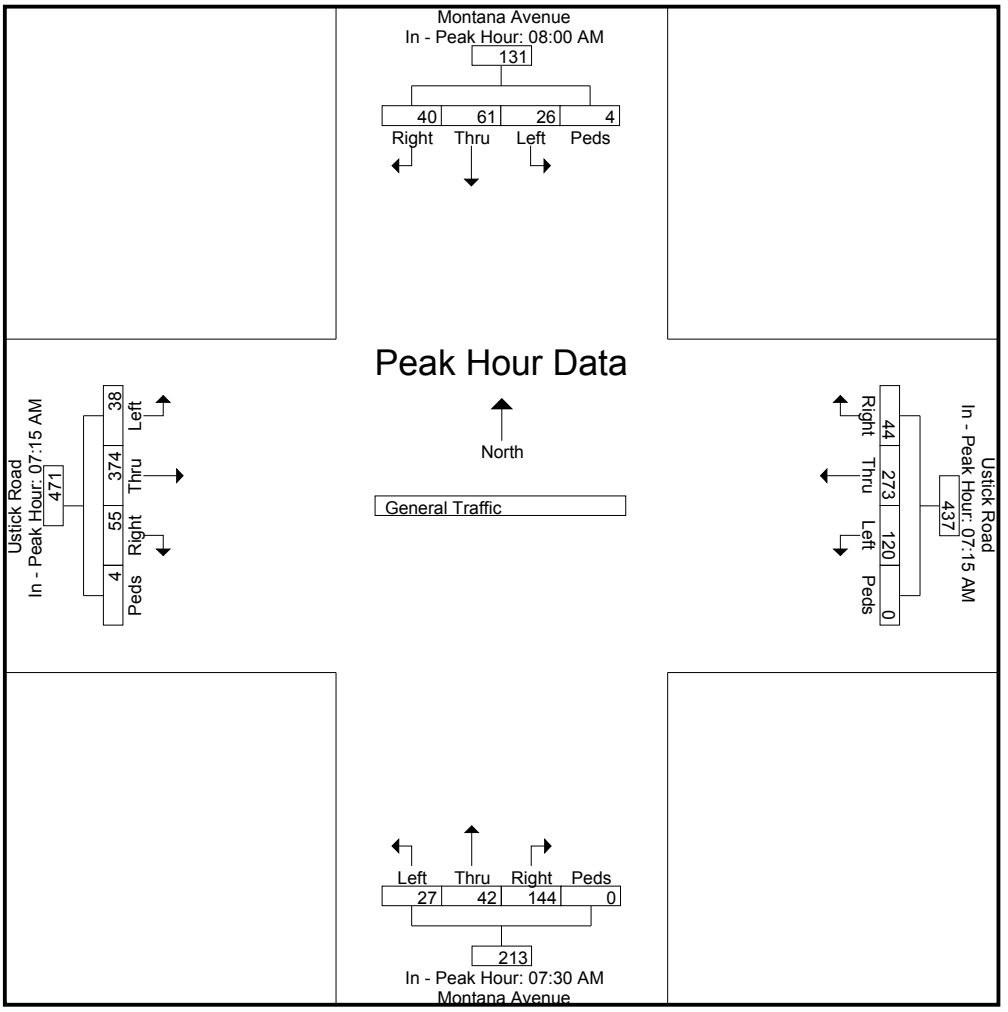
L2 Data Collection

L2DataCollection.com
Idaho (208) 860-7554 Utah (801) 413-2993

Study: SIX0036
Intersection: Montana Ave / Ustick Road
City: Caldwell, Idaho
Control: Stop Sign

File Name : Montana & Ustick
Site Code : 00000000
Start Date : 8/26/2015
Page No : 4

	Montana Avenue From North					Ustick Road From East					Montana Avenue From South					Ustick Road From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 11:45 AM - Peak 1 of 1																					
Peak Hour for Each Approach Begins at:																					
	08:00 AM					07:15 AM					07:30 AM					07:15 AM					
+0 mins.	5	15	3	0	23	12	54	**34**	0	100	35	11	5	0	51	14	98	**10**	**2**	124	
+15 mins.	**18**	**21**	5	0	**44**	**14**	**92**	21	0	**127**	30	9	5	0	44	8	**115**	9	1	133	
+30 mins.	10	12	**12**	**4**	38	11	80	34	0	125	29	5	6	0	40	13	114	9	1	**137**	
+45 mins.	7	13	6	0	26	7	47	31	0	85	**50**	**17**	**11**	0	**78**	**20**	47	10	0	77	
Total Volume	40	61	26	4	131	44	273	120	0	437	144	42	27	0	213	55	374	38	4	471	
% App. Total	30.5	46.6	19.8	3.1		10.1	62.5	27.5	0		67.6	19.7	12.7	0		11.7	79.4	8.1	0.8		
PHF	.556	.726	.542	.250	.744	.786	.742	.882	.000	.860	.720	.618	.614	.000	.683	.688	.813	.950	.500	.859	



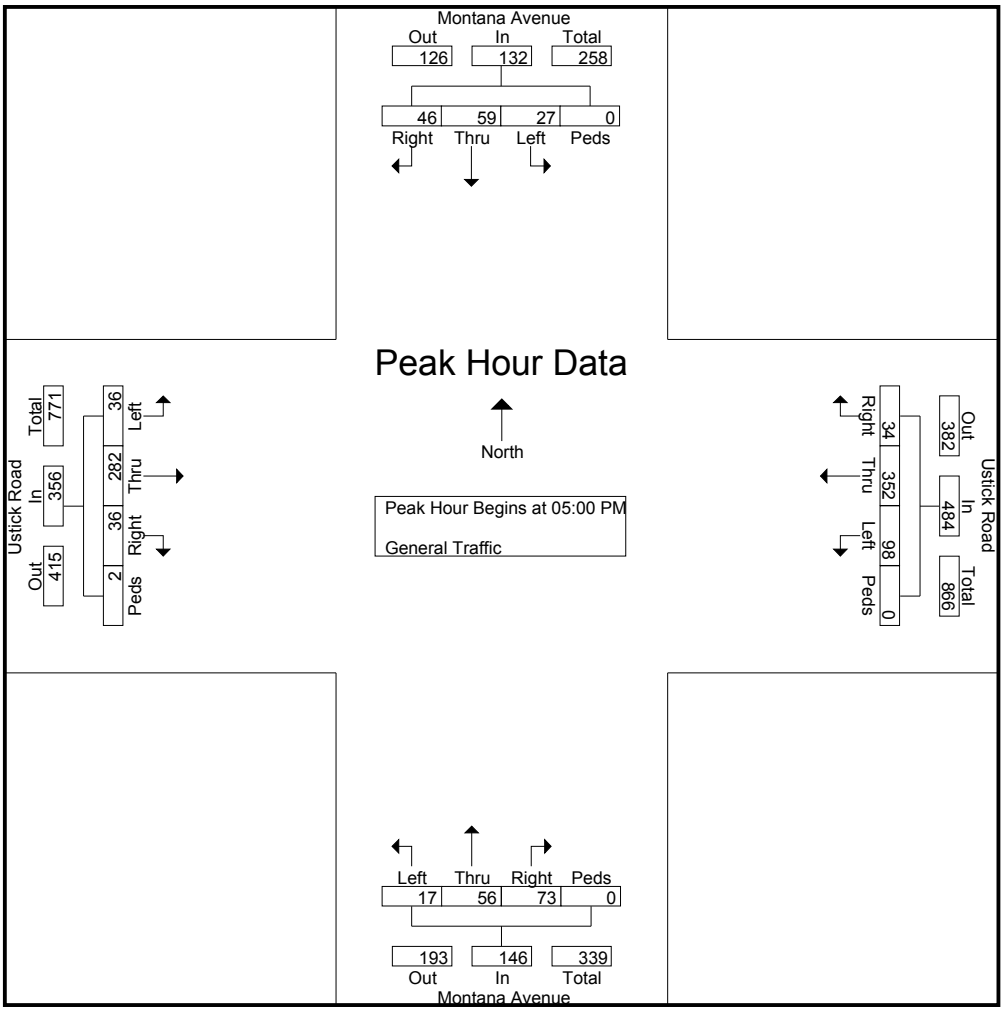
L2 Data Collection

L2DataCollection.com
Idaho (208) 860-7554 Utah (801) 413-2993

Study: SIX0036
Intersection: Montana Ave / Ustick Road
City: Caldwell, Idaho
Control: Stop Sign

File Name : Montana & Ustick
Site Code : 00000000
Start Date : 8/26/2015
Page No : 5

	Montana Avenue From North					Ustick Road From East					Montana Avenue From South					Ustick Road From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 12:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 05:00 PM																					
05:00 PM	11	**19**	6	0	36	10	82	25	0	117	12	16	3	0	31	8	73	9	**2**	92	276
05:15 PM	**13**	14	**11**	0	**38**	**11**	88	26	0	125	18	8	**5**	0	31	8	56	9	0	73	267
05:30 PM	11	15	7	0	33	6	**92**	17	0	115	**27**	**17**	4	0	**48**	**10**	75	8	0	93	**289**
05:45 PM	11	11	3	0	25	7	90	**30**	0	**127**	16	15	5	0	36	10	**78**	**10**	0	**98**	286
Total Volume	46	59	27	0	132	34	352	98	0	484	73	56	17	0	146	36	282	36	2	356	1118
% App. Total	34.8	44.7	20.5	0		7	72.7	20.2	0		50	38.4	11.6	0		10.1	79.2	10.1	0.6		
PHF	.885	.776	.614	.000	.868	.773	.957	.817	.000	.953	.676	.824	.850	.000	.760	.900	.904	.900	.250	.908	.967



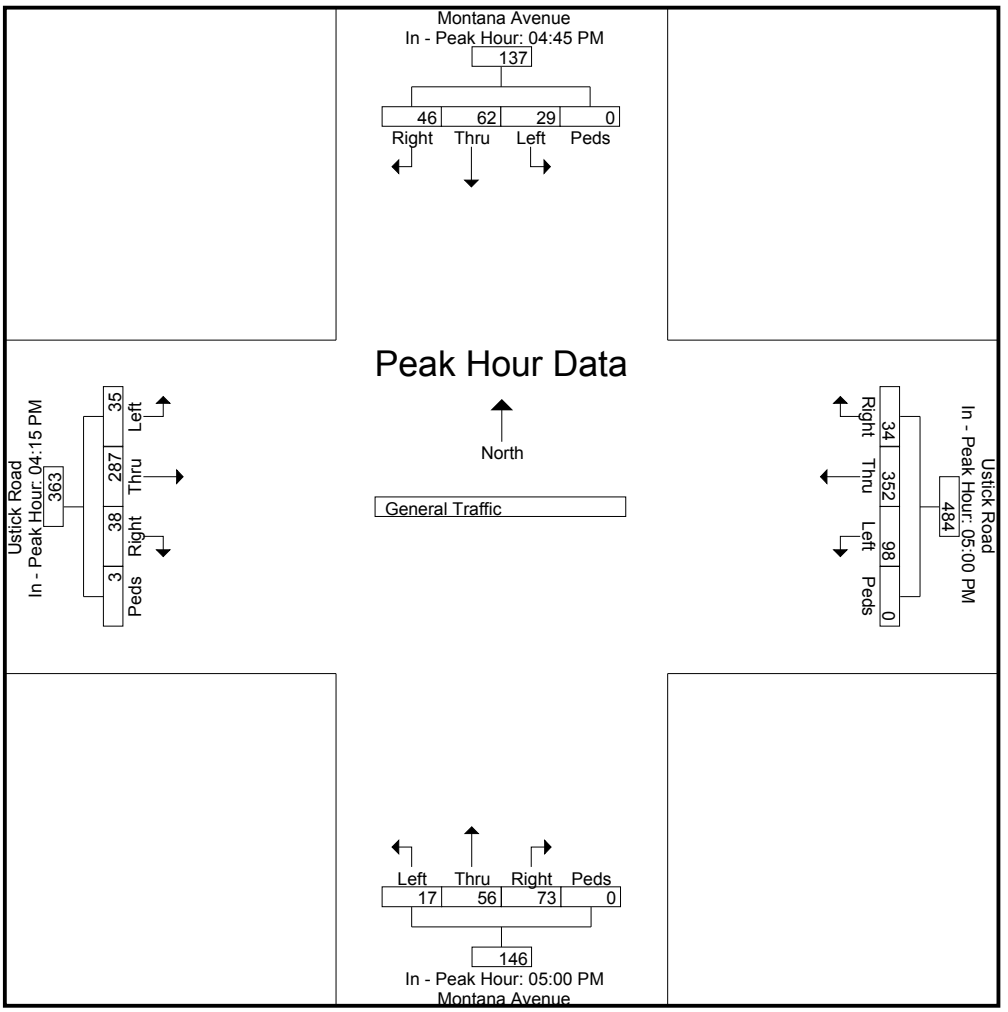
L2 Data Collection

L2DataCollection.com
Idaho (208) 860-7554 Utah (801) 413-2993

Study: SIX0036
Intersection: Montana Ave / Ustick Road
City: Caldwell, Idaho
Control: Stop Sign

File Name : Montana & Ustick
Site Code : 00000000
Start Date : 8/26/2015
Page No : 6

	Montana Avenue From North					Ustick Road From East					Montana Avenue From South					Ustick Road From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 12:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Each Approach Begins at:																					
	04:45 PM					05:00 PM					05:00 PM					04:15 PM					
+0 mins.	11	14	5	0	30	10	82	25	0	117	12	16	3	0	31	5	65	8	1	79	
+15 mins.	11	**19**	6	0	36	**11**	88	26	0	125	18	8	**5**	0	31	12	73	**11**	0	**96**	
+30 mins.	**13**	14	**11**	0	**38**	6	**92**	17	0	115	**27**	**17**	4	0	**48**	**13**	**76**	7	0	96	
+45 mins.	11	15	7	0	33	7	90	**30**	0	**127**	16	15	5	0	36	8	73	9	**2**	92	
Total Volume	46	62	29	0	137	34	352	98	0	484	73	56	17	0	146	38	287	35	3	363	
% App. Total	33.6	45.3	21.2	0		7	72.7	20.2	0		50	38.4	11.6	0		10.5	79.1	9.6	0.8		
PHF	.885	.816	.659	.000	.901	.773	.957	.817	.000	.953	.676	.824	.850	.000	.760	.731	.944	.795	.375	.945	



L2 Data Collection

L2DataCollection.com
Idaho (208) 860-7554 Utah (801) 413-2993

Study: SIX0036
Intersection: Montana Ave / Ustick Road
City: Caldwell, Idaho
Control: Stop Sign

File Name : Montana & Ustick
Site Code : 00000000
Start Date : 8/26/2015
Page No : 7

Image 1

L2 Data Collection

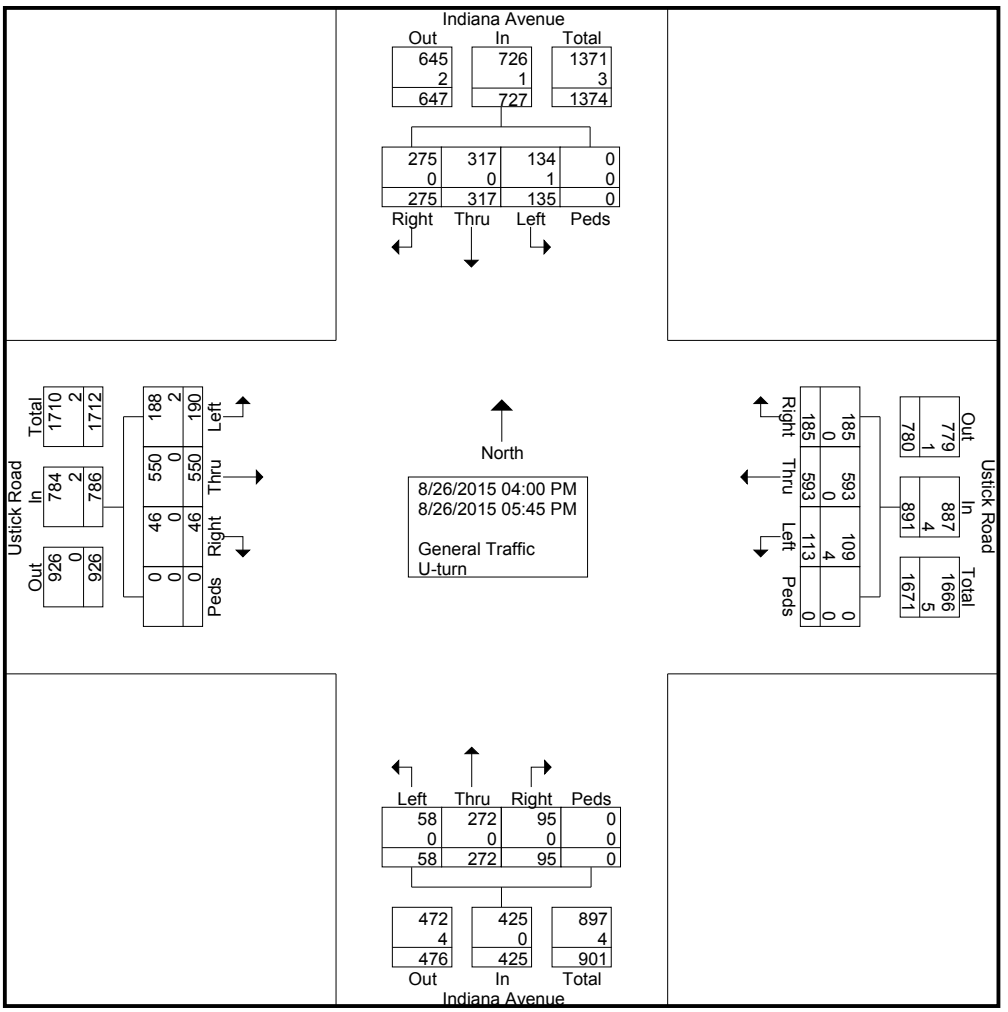
L2DataCollection.com
Idaho (208) 860-7554 Utah (801) 413-2993

Study: SIX0036
Intersection: Indiana Ave / Ustick Road
City: Caldwell, Idaho
Control: All Yields

File Name : Indiana & Ustick RDBT
Site Code : RDBT
Start Date : 8/26/2015
Page No : 1

Groups Printed- General Traffic - turn

	Indiana Avenue From North					Ustick Road From East					Indiana Avenue From South					Ustick Road From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
04:00 PM	42	33	12	0	87	13	81	8	0	102	17	29	8	0	54	8	69	24	0	101	344
04:15 PM	24	29	12	0	65	12	63	19	0	94	10	28	7	0	45	8	65	14	0	87	291
04:30 PM	24	24	16	0	64	18	64	9	0	91	7	34	9	0	50	5	86	15	0	106	311
04:45 PM	34	41	14	0	89	27	77	15	0	119	12	29	7	0	48	7	60	24	0	91	347
Total	124	127	54	0	305	70	285	51	0	406	46	120	31	0	197	28	280	77	0	385	1293
05:00 PM	33	41	21	0	95	25	82	11	0	118	7	37	9	0	53	10	66	25	0	101	367
05:15 PM	35	49	18	0	102	31	75	15	0	121	21	35	6	0	62	7	63	26	0	96	381
05:30 PM	37	49	29	0	115	19	75	19	0	113	14	36	3	0	53	1	86	23	0	110	391
05:45 PM	46	51	13	0	110	40	76	17	0	133	7	44	9	0	60	0	55	39	0	94	397
Total	151	190	81	0	422	115	308	62	0	485	49	152	27	0	228	18	270	113	0	401	1536
Grand Total	275	317	135	0	727	185	593	113	0	891	95	272	58	0	425	46	550	190	0	786	2829
Apprch %	37.8	43.6	18.6	0		20.8	66.6	12.7	0		22.4	64	13.6	0		5.9	70	24.2	0		
Total %	9.7	11.2	4.8	0	25.7	6.5	21	4	0	31.5	3.4	9.6	2.1	0	15	1.6	19.4	6.7	0	27.8	
General Traffic	275	317	134	0	726	185	593	109	0	887	95	272	58	0	425	46	550	188	0	784	2822
% General Traffic	100	100	99.3	0	99.9	100	100	96.5	0	99.6	100	100	100	0	100	100	100	98.9	0	99.7	99.8
U-turn	0	0	1	0	1	0	0	4	0	4	0	0	0	0	0	0	0	2	0	2	7
% U-turn	0	0	0.7	0	0.1	0	0	3.5	0	0.4	0	0	0	0	0	0	0	1.1	0	0.3	0.2



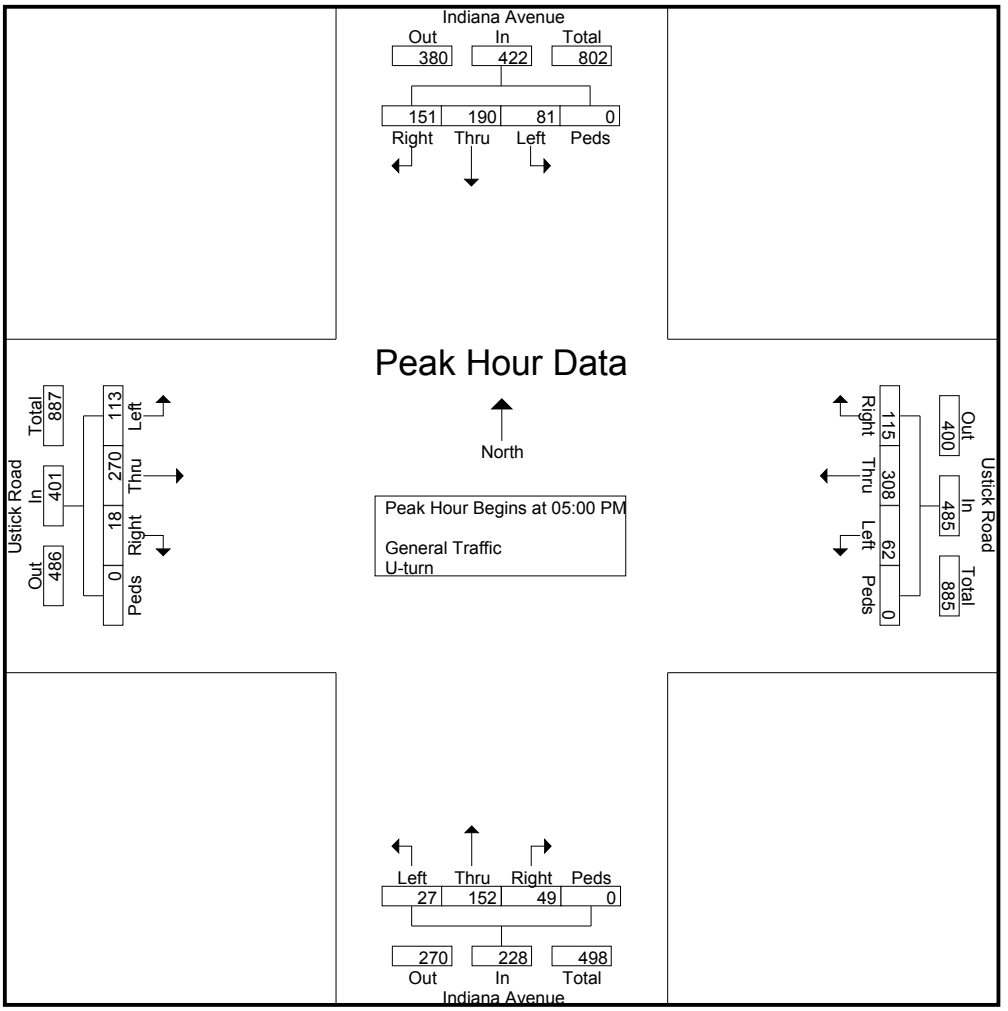
L2 Data Collection

L2DataCollection.com
Idaho (208) 860-7554 Utah (801) 413-2993

Study: SIX0036
Intersection: Indiana Ave / Ustick Road
City: Caldwell, Idaho
Control: All Yields

File Name : Indiana & Ustick RDBT
Site Code : RDBT
Start Date : 8/26/2015
Page No : 2

	Indiana Avenue From North					Ustick Road From East					Indiana Avenue From South					Ustick Road From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 05:00 PM																					
05:00 PM	33	41	21	0	95	25	**82**	11	0	118	7	37	**9**	0	53	**10**	66	25	0	101	367
05:15 PM	35	49	18	0	102	31	75	15	0	121	**21**	35	6	0	**62**	7	63	26	0	96	381
05:30 PM	37	49	**29**	0	**115**	19	75	**19**	0	113	14	36	3	0	53	1	**86**	23	0	**110**	391
05:45 PM	**46**	**51**	13	0	110	**40**	76	17	0	**133**	7	**44**	9	0	60	0	55	**39**	0	94	**397**
Total Volume	151	190	81	0	422	115	308	62	0	485	49	152	27	0	228	18	270	113	0	401	1536
% App. Total	35.8	45	19.2	0		23.7	63.5	12.8	0		21.5	66.7	11.8	0		4.5	67.3	28.2	0		
PHF	.821	.931	.698	.000	.917	.719	.939	.816	.000	.912	.583	.864	.750	.000	.919	.450	.785	.724	.000	.911	.967



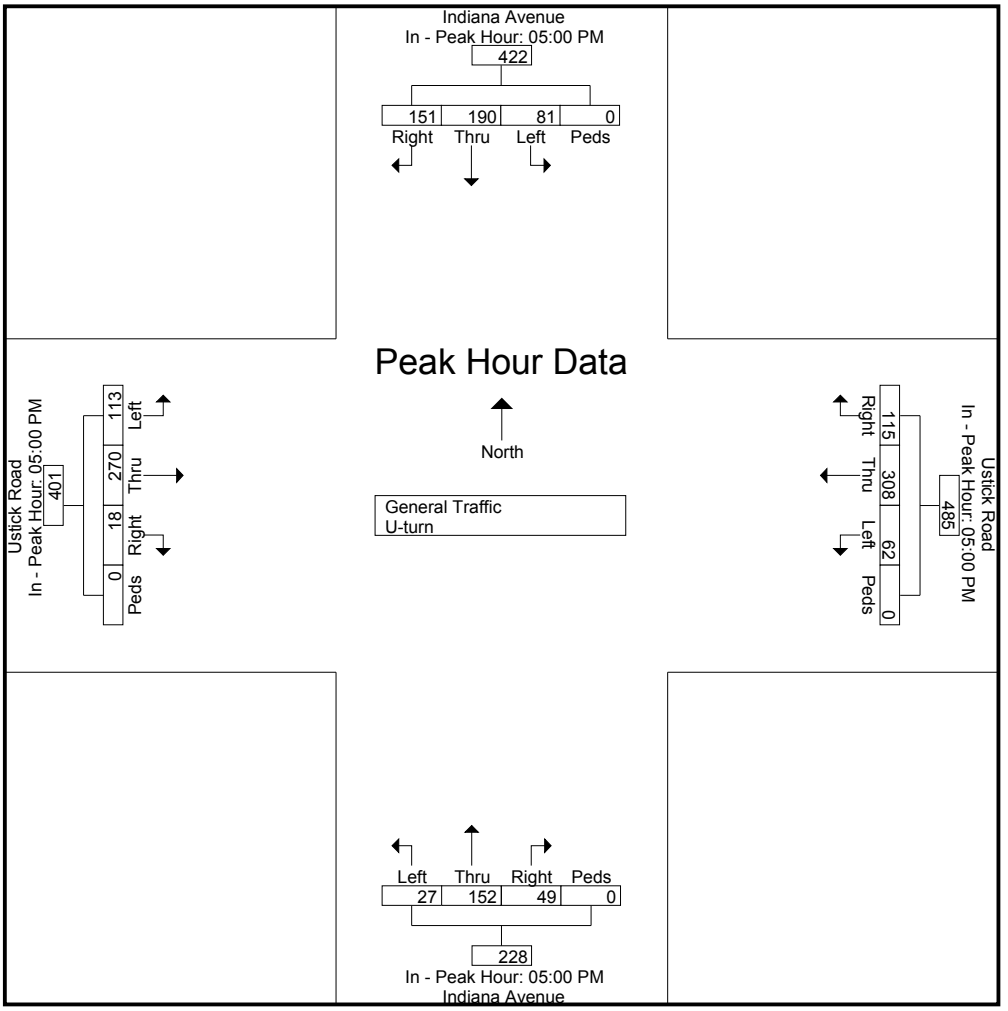
L2 Data Collection

L2DataCollection.com
Idaho (208) 860-7554 Utah (801) 413-2993

Study: SIX0036
Intersection: Indiana Ave / Ustick Road
City: Caldwell, Idaho
Control: All Yields

File Name : Indiana & Ustick RDBT
Site Code : RDBT
Start Date : 8/26/2015
Page No : 3

	Indiana Avenue From North					Ustick Road From East					Indiana Avenue From South					Ustick Road From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Each Approach Begins at:																					
	05:00 PM					05:00 PM					05:00 PM					05:00 PM					
+0 mins.	33	41	21	0	95	25	**82**	11	0	118	7	37	**9**	0	53	**10**	66	25	0	101	
+15 mins.	35	49	18	0	102	31	75	15	0	121	**21**	35	6	0	**62**	7	63	26	0	96	
+30 mins.	37	49	**29**	0	**115**	19	75	**19**	0	113	14	36	3	0	53	1	**86**	23	0	**110**	
+45 mins.	**46**	**51**	13	0	110	**40**	76	17	0	**133**	7	**44**	9	0	60	0	55	**39**	0	94	
Total Volume	151	190	81	0	422	115	308	62	0	485	49	152	27	0	228	18	270	113	0	401	
% App. Total	35.8	45	19.2	0		23.7	63.5	12.8	0		21.5	66.7	11.8	0		4.5	67.3	28.2	0		
PHF	.821	.931	.698	.000	.917	.719	.939	.816	.000	.912	.583	.864	.750	.000	.919	.450	.785	.724	.000	.911	



L2 Data Collection

L2DataCollection.com
Idaho (208) 860-7554 Utah (801) 413-2993

Study: SIX0036
Intersection: Indiana Ave / Ustick Road
City: Caldwell, Idaho
Control: All Yields

File Name : Indiana & Ustick RDBT
Site Code : RDBT
Start Date : 8/26/2015

Image 1

Intersection	
Int Delay, s/veh	12.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Vol, veh/h	38	374	55	120	273	44	23	41	123	20	41	34
Future Vol, veh/h	38	374	55	120	273	44	23	41	123	20	41	34
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	100	-	0	100	-	225	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	86	86	86	86	86	86	86	86	86	86	86	86
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	44	435	64	140	317	51	27	48	143	23	48	40

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	317	0	0	435	0	0	1163	1120	435	1216	1120	317
Stage 1	-	-	-	-	-	-	523	523	-	597	597	-
Stage 2	-	-	-	-	-	-	640	597	-	619	523	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1243	-	-	1125	-	-	172	206	621	158	206	724
Stage 1	-	-	-	-	-	-	537	530	-	490	491	-
Stage 2	-	-	-	-	-	-	464	491	-	476	530	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1243	-	-	1125	-	-	114	174	621	85	174	724
Mov Cap-2 Maneuver	-	-	-	-	-	-	114	174	-	85	174	-
Stage 1	-	-	-	-	-	-	518	511	-	473	430	-
Stage 2	-	-	-	-	-	-	341	430	-	320	511	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.7	2.4	45.3	50.8
HCM LOS			E	F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	294	1243	-	-	1125	-	-	183
HCM Lane V/C Ratio	0.74	0.036	-	-	0.124	-	-	0.604
HCM Control Delay (s)	45.3	8	-	-	8.7	-	-	50.8
HCM Lane LOS	E	A	-	-	A	-	-	F
HCM 95th %tile Q(veh)	5.4	0.1	-	-	0.4	-	-	3.3

Intersection	
Int Delay, s/veh	7.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Vol, veh/h	36	282	36	98	352	34	17	56	73	27	59	46
Future Vol, veh/h	36	282	36	98	352	34	17	56	73	27	59	46
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	100	-	0	100	-	225	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	97	97	97	97	97	97	97	97	97	97	97	97
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	37	291	37	101	363	35	18	58	75	28	61	47

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	363	0	0	291	0	0	984	930	291	996	930	363
Stage 1	-	-	-	-	-	-	365	365	-	565	565	-
Stage 2	-	-	-	-	-	-	619	565	-	431	365	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1196	-	-	1271	-	-	228	267	748	223	267	682
Stage 1	-	-	-	-	-	-	654	623	-	510	508	-
Stage 2	-	-	-	-	-	-	476	508	-	603	623	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1196	-	-	1271	-	-	157	238	748	150	238	682
Mov Cap-2 Maneuver	-	-	-	-	-	-	157	238	-	150	238	-
Stage 1	-	-	-	-	-	-	634	604	-	494	468	-
Stage 2	-	-	-	-	-	-	355	468	-	475	604	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.8	1.6	24.6	31.9
HCM LOS			C	D

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	331	1196	-	-	1271	-	-	266
HCM Lane V/C Ratio	0.455	0.031	-	-	0.079	-	-	0.512
HCM Control Delay (s)	24.6	8.1	-	-	8.1	-	-	31.9
HCM Lane LOS	C	A	-	-	A	-	-	D
HCM 95th %tile Q(veh)	2.3	0.1	-	-	0.3	-	-	2.7

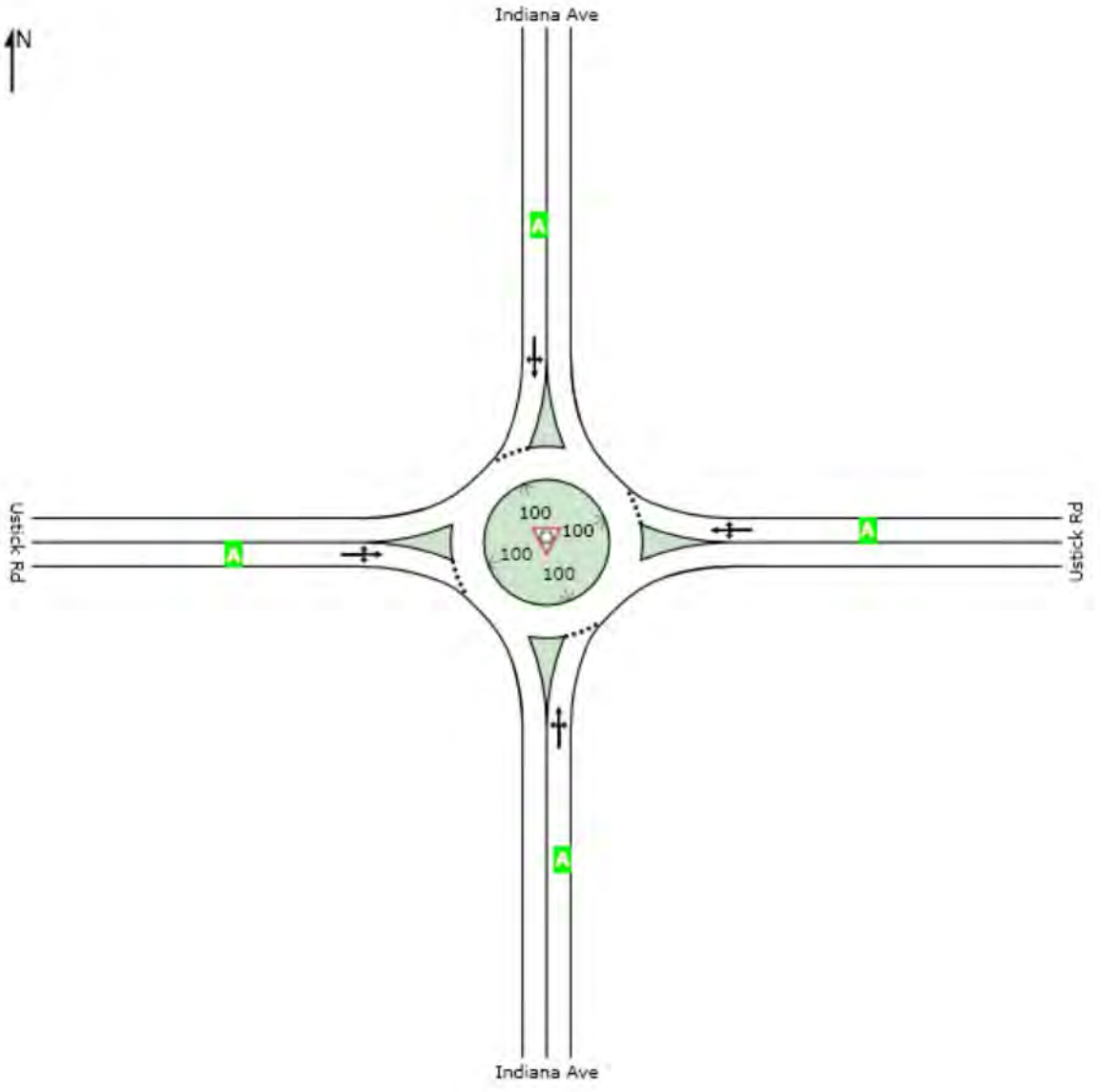
LEVEL OF SERVICE

Site: 2015 Existing PM

Indiana/Ustick
Roundabout

All Movement Classes

	South	East	North	West	Intersection
LOS	A	A	A	A	A



Level of Service (LOS) Method: Delay & v/c (HCM 2010).
Roundabout LOS Method: Same as Sign Control.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 2010).
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.

MOVEMENT SUMMARY

Site: 2015 Existing PM

Indiana/Ustick
Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: Indiana Ave											
3	L2	28	2.0	0.267	6.9	LOS A	1.1	28.1	0.54	0.50	31.3
8	T1	157	2.0	0.267	6.9	LOS A	1.1	28.1	0.54	0.50	31.1
18	R2	51	2.0	0.267	6.9	LOS A	1.1	28.1	0.54	0.50	30.2
Approach		235	2.0	0.267	6.9	LOS A	1.1	28.1	0.54	0.50	30.9
East: Ustick Rd											
1	L2	64	2.0	0.484	9.1	LOS A	2.7	68.2	0.56	0.47	30.4
6	T1	318	2.0	0.484	9.1	LOS A	2.7	68.2	0.56	0.47	30.2
16	R2	119	2.0	0.484	9.1	LOS A	2.7	68.2	0.56	0.47	29.3
Approach		500	2.0	0.484	9.1	LOS A	2.7	68.2	0.56	0.47	30.0
North: Indiana Ave											
7	L2	84	2.0	0.465	9.5	LOS A	2.5	63.6	0.60	0.58	30.1
4	T1	196	2.0	0.465	9.5	LOS A	2.5	63.6	0.60	0.58	29.9
14	R2	156	2.0	0.465	9.5	LOS A	2.5	63.6	0.60	0.58	29.1
Approach		435	2.0	0.465	9.5	LOS A	2.5	63.6	0.60	0.58	29.6
West: Ustick Rd											
5	L2	116	2.0	0.416	8.3	LOS A	2.1	52.5	0.54	0.47	30.4
2	T1	278	2.0	0.416	8.3	LOS A	2.1	52.5	0.54	0.47	30.2
12	R2	19	2.0	0.416	8.3	LOS A	2.1	52.5	0.54	0.47	29.4
Approach		413	2.0	0.416	8.3	LOS A	2.1	52.5	0.54	0.47	30.2
All Vehicles		1584	2.0	0.484	8.7	LOS A	2.7	68.2	0.56	0.50	30.1

Level of Service (LOS) Method: Delay & v/c (HCM 2010).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 2010).
Roundabout Capacity Model: US HCM 2010.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

ITD-2658 7-99

SAFETY EVALUATION

I. PROJECT DATA

	DISTRICT	ROUTE	SEG CODE	B.M.P.	E.M.P.	LENGTH	AADT	TYPE RDWY
EXIST. RDWY	3		4875	0.76	1.34	0.59	10.37	60

LOCATION	Ustick Road, Montana to Indiana	PROPOSED IMPROVEMENT			
		LIFE	COST (1000)		
			CONST	R/W	TOTAL
IMPROVEMENT	Widen from 2 to 4 lanes with raised median				

II. ACCIDENT SUMMARY - SIGNIFICANCE

MO.	YR.	TOTAL	FATAL	INJURY	I + F	PDO	SV	MV	WET	DRY		
12	2010	5	0	2	2	3						
12	2011	11	0	4	4	7						
12	2012	7	0	2	2	5						
12	2013	12	0	5	5	7						
12	2014	16	0	6	6	10						
TOTAL------		51	0	19	19	32	0	0	0	0	0	0

AVE. SEVERITY % FOR THIS ROAD TYPE--------	44.8	55.2
EXPECTED I+F AND PDO ACCIDENTS----------	22.8	28.2
DIFFERENCE (DEVIATION FROM EXPECTED)---	-3.8	
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)			CROSS STREET		TOTAL NO. OF			TOTAL TRAVEL			
				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)
10.4				###	5	51	10.20	3.78	2.22	-	4.59

IV. REDUCTION FACTOR

1	2	3	4	5	6
ACC/MVM	R.F.	BASE RATE ACC/MV(M)	EXPECTED ACC/MV(M)	D.R. MV(M)	CALC. R.F.
				1-(>3 OR 4)	(5 ÷ 1)
4.59	0.4	1.19	2.76	1.84	0.40

V. SAFETY INDEX CALCULATION (METHOD I)

1	2		3	4							
	ACC.		BEFORE ACC. COST ($1000)								
	TYPE	NO.	COST	TOTAL	5	6	7	8	9	10	11
	I+F	19	60.6	1151.4							
	PDO	32	3.7	118.4	$/ACC.	ACC./YR	VCF	LIFE	1.00-CRF	$ BEFORE	$ AFTER
YES(+)											
YES(-)											
NO			32.71			10.2	#####	0	0.600	#######	#VALUE!
SAFETY INDEX = (BOX 10 - BOX 11) ÷ TOTAL COST =					#VALUE!	÷	#VALUE!	=	#VALUE!		
ANNUAL SAFETY BENEFIT = (BOX 10 - BOX 11) ÷ (BOX 8) =					#VALUE!	÷	#VALUE!	=	#VALUE!		

COMPUTED BY: Chhang Ream DATE: 09/29/15 PROJECT NO.:

CHECKED BY: Lionel Starchman DATE: 09/21/15 KEY NUMBER:

ITD-2658 7-99
(REVERSE SIDE)

SAFETY EVALUATION
-SUPPLEMENTAL-

VI. ACCIDENT COSTS (METHOD II)

1	2	3	4		5	6	7
BEFORE ACCIDENTS					EXPECTED ACCIDENTS		
TYPE	NO.	COST	TOTAL		NO.	COST	TOTAL
I + F							
PDO							
TOTAL							

VII. SAFETY INDEX CALCULATION (METHOD II)

1	2	3	4	5	6	7
BEFORE	EXPECTED				BEFORE	EXPECTED
$/ACC	$/ACC	ACC/YR	VCF	LIFE	COST	COST
SAFETY INDEX = (BOX 6 - BOX 7) ÷ TOTAL COST =				÷	=	
ANNUAL SAFETY BENEFIT = (BOX 6 - BOX 7) ÷ (BOX 5) =				÷	=	

COMMENTS:

Prohibit turning movement - 40%

51 crashes * 40% = 21 crashes reduced by constructing raised median

ITD-2658 7-99

SAFETY EVALUATION

I. PROJECT DATA

	DISTRICT	ROUTE	SEG CODE	B.M.P.	E.M.P.	LENGTH	AADT	TYPE RDWY
EXIST. RDWY	3		4875	0.76	0.76	SPOT	10.37	63

LOCATION	Ustick Road and Montana Avenue	PROPOSED IMPROVEMENT			
		LIFE	COST (1000)		
			CONST	R/W	TOTAL
IMPROVEMENT	Reconstruct intersection - roundabout				

II. ACCIDENT SUMMARY - SIGNIFICANCE

MO.	YR.	TOTAL	FATAL	INJURY	I + F	PDO	SV	MV	WET	DRY		
12	2010	2	0	0	0	2						
12	2011	6	0	4	4	2						
12	2012	7	0	2	2	5						
12	2013	4	0	2	2	2						
12	2014	6	0	3	3	3						
TOTAL------		25	0	11	11	14	0	0	0	0	0	0
AVE. SEVERITY % FOR THIS ROAD TYPE--------					48.8	51.2						
EXPECTED I+F AND PDO ACCIDENTS----------					12.2	12.8						
DIFFERENCE (DEVIATION FROM EXPECTED)---					-1.2							
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)
10.37			3.451	###	5	25	5.00	5.04	-	0.99	-

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)
0.99	0.4	0.67	0.59	0.32	0.32

V. SAFETY INDEX CALCULATION (METHOD I)

1	2		3	4							
	ACC.		BEFORE ACC. COST ($1000)								
	TYPE	NO.	COST	TOTAL	5	6	7	8	9	10	11
	I+F	11	27.7	304.7							
	PDO	14	2.8	39.2	$/ACC.	ACC./YR	VCF	LIFE	1.00-CRF	$ BEFORE	$ AFTER
YES(+)											
YES(-)											
NO			30.729			5	#####	0	0.676	#######	#VALUE!
SAFETY INDEX = (BOX 10 - BOX 11) ÷ TOTAL COST =					#VALUE!	÷	#VALUE!	=	#VALUE!		
ANNUAL SAFETY BENEFIT = (BOX 10 - BOX 11) ÷ (BOX 8) =					#VALUE!	÷	#VALUE!	=	#VALUE!		

COMPUTED BY: Chhang Ream DATE: 09/29/15 PROJECT NO.:

CHECKED BY: Lionel Starchman DATE: 09/29/15 KEY NUMBER:

ITD-2658 7-99
(REVERSE SIDE)

SAFETY EVALUATION
-SUPPLEMENTAL-

VI. ACCIDENT COSTS (METHOD II)

1	2	3	4		5	6	7
BEFORE ACCIDENTS					EXPECTED ACCIDENTS		
TYPE	NO.	COST	TOTAL		NO.	COST	TOTAL
I + F							
PDO							
TOTAL							

VII. SAFETY INDEX CALCULATION (METHOD II)

1	2	3	4	5	6	7
BEFORE	EXPECTED				BEFORE	EXPECTED
$/ACC	$/ACC	ACC/YR	VCF	LIFE	COST	COST
SAFETY INDEX = (BOX 6 - BOX 7) ÷ TOTAL COST =				÷	=	
ANNUAL SAFETY BENEFIT = (BOX 6 - BOX 7) ÷ (BOX 5) =				÷	=	

COMMENTS:

Reconstruct intersection - 40%

25 crashes * 40% = 10 crashes reduced by reconstructing the intersection

ITD-2658 7-99

SAFETY EVALUATION

I. PROJECT DATA

	DISTRICT	ROUTE	SEG CODE	B.M.P.	E.M.P.	LENGTH	AADT	TYPE RDWY
EXIST. RDWY	3		4875	1.26	1.26	SPOT	9.47	60

LOCATION	Ustick Road and Indiana Avenue	PROPOSED IMPROVEMENT			
		LIFE	COST (1000)		
			CONST	R/W	TOTAL
IMPROVEMENT					

II. ACCIDENT SUMMARY - SIGNIFICANCE

MO.	YR.	TOTAL	FATAL	INJURY	I + F	PDO	SV	MV	WET	DRY		
12	2010	1	0	1	1	0						
12	2011	3	0	0	0	3						
12	2012	0	0	0	0	0						
12	2013	6	0	1	1	5						
12	2014	5	0	0	0	5						
TOTAL------		15	0	2	2	13	0	0	0	0	0	0

AVE. SEVERITY % FOR THIS ROAD TYPE--------	38.2	61.8
EXPECTED I+F AND PDO ACCIDENTS----------	5.7	9.3
DIFFERENCE (DEVIATION FROM EXPECTED)---	-3.7	
STATISTICALLY SIGNIFICANT?----------	YES(-)	
CONFIDENCE LEVEL----------	80%	

- (●) 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)
9.47			6.7	###	5	15	3.00	5.90	-	0.51	-

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)
0.51	*	0.70	*	*	*

V. SAFETY INDEX CALCULATION (METHOD I)

1	2		3	4								
	ACC.		BEFORE ACC. COST ($1000)									
	TYPE	NO.	COST	TOTAL	5	6	7	8	9	10	11	
	I+F											
	PDO				$/ACC.	ACC./YR	VCF	LIFE	1.00-CRF	$ BEFORE	$ AFTER	
YES(+)												
YES(-)												
NO												

SAFETY INDEX = (BOX 10 - BOX 11) ÷ TOTAL COST =	÷	=	0
ANNUAL SAFETY BENEFIT = (BOX 10 - BOX 11) ÷ (BOX 8) =	÷	=	

COMPUTED BY: Chhang Ream DATE: 09/21/15 PROJECT NO.:

CHECKED BY: Lionel Starchman DATE: 09/21/15 KEY NUMBER:

ITD-2658 7-99
(REVERSE SIDE)

SAFETY EVALUATION
-SUPPLEMENTAL-

VI. ACCIDENT COSTS (METHOD II)

1	2	3	4		5	6	7
BEFORE ACCIDENTS					EXPECTED ACCIDENTS		
TYPE	NO.	COST	TOTAL		NO.	COST	TOTAL
I + F							
PDO							
TOTAL							

VII. SAFETY INDEX CALCULATION (METHOD II)

1	2	3	4	5	6	7
BEFORE	EXPECTED				BEFORE	EXPECTED
$/ACC	$/ACC	ACC/YR	VCF	LIFE	COST	COST
SAFETY INDEX = (BOX 6 - BOX 7) ÷ TOTAL COST =				÷	=	
ANNUAL SAFETY BENEFIT = (BOX 6 - BOX 7) ÷ (BOX 5) =				÷	=	

COMMENTS:

Total Accidents: 25 **Total Fatalities:** 0

Total Units: 50 **Total Injuries:** 19

Total People: 78

Report Criteria: Ustick Rd-Caldwell And Montana Ave

Streets :

Ustick Rd-Caldwell **Counties:**ALL, **Cities:**ALL - In City And Rural,

Montana Ave

Use intersection related crashes

Data From: 2014,2013,2012,2011,2010,

Year	Total
2010	2
2011	6
2012	7
2013	4
2014	6

Severity	Total
B Injury Accident	3
C Injury Accident	8
Property Dmg Report	14

Day Of Week	Total
Friday	5
Monday	4
Saturday	2
Sunday	2
Thursday	3
Tuesday	7
Wednesday	2

Hour	Total
7	2
8	5
9	1
13	1
14	3
15	5
16	1
17	3
19	1
21	2
22	1

Event Name	Total
Angle	36
Angle Turning	8
Head-On	2
Rear-End	2
Rear-End Turning	2

Contributing Circumstance	Total
Alcohol Impaired	1
Failed to Obey Stop Sign	6
Failed to Yield	13
Improper Lane Change	1
Inattention	5
None	120
Speed Too Fast For Condit	1
Vision Obstruction	3

Injury	Total
None Evident	58
Non-Incapacitating	3
Possible	16
Unknown	1

Drivers Age	Total
15	1
16	3
17	6
19	4
22	1
23	2
26	1
27	1
28	2
29	2
31	2
32	2
33	2
34	2
35	1

36	1
39	1
40	1
44	3
50	1
53	1
55	2
58	1
61	2
66	1
75	1
999	3

Total Accidents: 15 **Total Fatalities:** 0

Total Units: 29 **Total Injuries:** 4

Total People: 46

Report Criteria: Ustick Rd-Caldwell And Indiana Ave

Streets :

Ustick Rd-Caldwell **Counties:**ALL, **Cities:**ALL - In City And Rural,

Indiana Ave

Use intersection related crashes

Data From: 2014,2013,2012,2011,2010,

Year	Total
2010	1
2011	3
2013	6
2014	5

Severity	Total
B Injury Accident	1
C Injury Accident	1
Property Dmg Report	13

Day Of Week	Total
Friday	3
Monday	3
Saturday	2
Thursday	1
Tuesday	4
Wednesday	2

Hour	Total
6	1
7	1
8	1
9	2
13	1
15	2
16	2
17	1
18	1
19	2
21	1

Event Name	Total
Angle	16
Angle Turning	4
Ditch	1
Overturn	1
Rear-End	7

Contributing Circumstance	Total
Failed to Obey Stop Sign	1
Failed to Yield	8
Following Too Close	2
Foot Slipped Off or Caugh	1
Improper Turn	1
Inattention	4
None	69
Speed Too Fast For Condit	1

Injury	Total
None Evident	42
Non-Incapacitating	1
Possible	3

Drivers Age	Total
16	1
18	1
23	1
26	1
27	1
29	1
30	1
31	1
33	2
34	1
36	1
37	1
39	1
46	1
50	1
52	2
56	1
57	1

64	1
65	1
72	1
74	2
75	1
76	1
79	1
81	1

Total Accidents: 11 **Total Fatalities:** 0

Total Units: 23 **Total Injuries:** 6

Total People: 43

Report Criteria: Ustick Rd-Caldwell And Indiana Ave

Segment Code: 004875 Milepost Range: 0.757 to 1.344 **Counties:**ALL,

Cities:ALL - In City And Rural,

Data From: 2014,2013,2012,2011,2010,

Year	Total
2010	2
2011	2
2012	0
2013	2
2014	5

Severity	Total
B Injury Accident	1
C Injury Accident	4
Property Dmg Report	6

Day Of Week	Total
Friday	3
Monday	1
Saturday	1
Sunday	0
Thursday	2
Tuesday	2
Wednesday	2

Hour	Total
7	1
8	1
11	1
12	1
13	2
14	1
15	1
16	1
17	1
18	1

Event Name	Total

Angle Turning	2
Fence	1
Head-On	2
Mailbox	1
Rear-End	17

Contributing Circumstance	**Total**
Brakes	1
Failed to Obey Stop Sign	
Failed to Yield	1
Following Too Close	6
Inattention	2
None	57
Speed Too Fast For Condit	2

Injury	**Total**
None Evident	37
Non-Incapacitating	1
Possible	5

Drivers Age	**Total**
16	1
17	4
18	3
19	1
23	3
26	1
29	1
32	1
36	1
39	1
52	1
60	1
61	1
71	1
85	1
86	1

CMF / CRF Details

CMF ID: 4930

Conversion of two-way stop-controlled intersection into single- or multi-lane roundabout

Description: Conversion of two-way stop-controlled intersection into single- or multi-lane roundabout.

Prior Condition: The intersection was operating under TWSC control.

Category: Intersection geometry

Study: *Evaluation of Roundabout Safety*, Qin et al., 2013

Star Quality Rating:	★★★★☆ [View score details]

Crash Modification Factor (CMF)	
Value:	0.751
Adjusted Standard Error:	
Unadjusted Standard Error:	0.105

Crash Reduction Factor (CRF)

CMF / CRF Details

CMF ID: 325

Install a traffic signal

Description:

Prior Condition: Stop controlled

Category: Intersection traffic control

Study: *Accident Modification Factors for Traffic Engineering and ITS Improvements*, Harkey et al., 2008

Star Quality Rating:	★★★★★

Crash Modification Factor (CMF)	
Value:	0.56
Adjusted Standard Error:	0.03
Unadjusted Standard Error:	

Crash Reduction Factor (CRF)

Value:	44 *(This value indicates a **decrease** in crashes)*
Adjusted Standard Error:	3
Unadjusted Standard Error:	

Applicability

Crash Type:	All
Crash Severity:	All
Roadway Types:	Not specified
Number of Lanes:	
Road Division Type:	
Speed Limit:	
Area Type:	Rural
Traffic Volume:	
Time of Day:	

If countermeasure is intersection-based

Intersection Type:	Roadway/roadway (not interchange related)
Intersection Geometry:	3-leg,4-leg
Traffic Control:	Stop-controlled
Major Road Traffic Volume:	3261 to 29926 Annual Average Daily Traffic (AADT)

Minor Road Traffic Volume:	101 to 10300 Annual Average Daily Traffic (AADT)

Development Details

Date Range of Data Used:	
Municipality:	
State:	
Country:	
Type of Methodology Used:	Before/after using empirical Bayes or full Bayes
Sample Size Used:	

Other Details

Included in Highway Safety Manual?	Yes. HSM lists this CMF in **bold** font to indicate that it has the highest reliability since it has an adjusted standard error of 0.1 or less.
Date Added to Clearinghouse:	08-15-2012
Comments:	Countermeasure name has been slightly modified for consistency across Clearinghouse

---

This site is funded by the U.S. Department of Transportation Federal Highway Administration and maintained by the University of North Carolina Highway Safety Research Center

Value:	24.89 *(This value indicates a **decrease** in crashes)*
Adjusted Standard Error:	
Unadjusted Standard Error:	10.5

Applicability

Crash Type:	All
Crash Severity:	All
Roadway Types:	Not specified
Number of Lanes:	2,4
Road Division Type:	All
Speed Limit:	
Area Type:	All
Traffic Volume:	
Time of Day:	All

If countermeasure is intersection-based

Intersection Type:	Roadway/roadway (not interchange related)
Intersection Geometry:	3-leg,4-leg
Traffic Control:	Stop-controlled
Major Road Traffic Volume:	4100 (total entering) to 48100 (total entering) Annual Average Daily Traffic (AADT)

Minor Road Traffic Volume:	

Development Details

Date Range of Data Used:	1994 to 2010
Municipality:	Statewide
State:	WI
Country:	USA
Type of Methodology Used:	Before/after using empirical Bayes or full Bayes
Sample Size Used:	Crashes
Before Sample Size Used:	122 Crashes
After Sample Size Used:	93 Crashes

Other Details

Included in Highway Safety Manual?	No
Date Added to Clearinghouse:	08-01-2013
Comments:	- Study included three-year before and after crash data for each site. - Reported traffic volume is total entering volume.

This site is funded by the U.S. Department of Transportation Federal Highway Administration and maintained by the University of North Carolina Highway Safety Research Center

CMF / CRF Details

CMF ID: 5525

Install a traffic signal

Description:

Prior Condition: Stop controlled intersection

Category: Intersection traffic control

Study: *Comparison of Safety Evaluation Approaches for Intersection Signalization in Florida*, Wang and Abdel-Aty, 2014

Star Quality Rating:	★★★★☆ [View score details]

Crash Modification Factor (CMF)	
Value:	0.656
Adjusted Standard Error:	
Unadjusted Standard Error:	0.105

Crash Reduction Factor (CRF)

Value:	34.4 *(This value indicates a **decrease** in crashes)*
Adjusted Standard Error:	
Unadjusted Standard Error:	10.5

Applicability

Crash Type:	All
Crash Severity:	All
Roadway Types:	Not specified
Number of Lanes:	2 to 4
Road Division Type:	
Speed Limit:	
Area Type:	Not specified
Traffic Volume:	
Time of Day:	Not specified

If countermeasure is intersection-based

Intersection Type:	Roadway/roadway (not interchange related)
Intersection Geometry:	3-leg,4-leg
Traffic Control:	Stop-controlled
Major Road Traffic Volume:	0 to 10000 Annual Average Daily Traffic (AADT)

Minor Road Traffic Volume:	

Development Details

Date Range of Data Used:	2004 to 2009
Municipality:	
State:	FL
Country:	
Type of Methodology Used:	Before/after using empirical Bayes or full Bayes
Sample Size Used:	
Before Sample Size Used:	153

Other Details

Included in Highway Safety Manual?	No
Date Added to Clearinghouse:	07-16-2014
Comments:	CMF applies to intersections with major road AADT

This site is funded by the U.S. Department of Transportation Federal Highway Administration and maintained by the University of North Carolina Highway Safety Research Center

CMF / CRF Details

CMF ID: 5529

Install a traffic signal

Description:

Prior Condition: Stop controlled intersection

Category: Intersection traffic control

Study: *Comparison of Safety Evaluation Approaches for Intersection Signalization in Florida*, Wang and Abdel-Aty, 2014

Star Quality Rating:	★★★★☆ [View score details]

Crash Modification Factor (CMF)	
Value:	1.119
Adjusted Standard Error:	
Unadjusted Standard Error:	0.148

Crash Reduction Factor (CRF)

Value:	-11.9 *(This value indicates an **increase** in crashes)*
Adjusted Standard Error:	
Unadjusted Standard Error:	14.8

Applicability

Crash Type:	All
Crash Severity:	All
Roadway Types:	Not specified
Number of Lanes:	2 to 4
Road Division Type:	
Speed Limit:	
Area Type:	Not specified
Traffic Volume:	
Time of Day:	Not specified

If countermeasure is intersection-based

Intersection Type:	Roadway/roadway (not interchange related)
Intersection Geometry:	3-leg,4-leg
Traffic Control:	Stop-controlled
Major Road Traffic Volume:	20000 to 25000 Annual Average Daily Traffic (AADT)

Minor Road Traffic Volume:	

Development Details

Date Range of Data Used:	2004 to 2009
Municipality:	
State:	FL
Country:	
Type of Methodology Used:	Before/after using empirical Bayes or full Bayes
Sample Size Used:	
Before Sample Size Used:	235

Other Details

Included in Highway Safety Manual?	No
Date Added to Clearinghouse:	07-16-2014
Comments:	CMF applies to intersections with major road AADT 20,000-25,000

This site is funded by the U.S. Department of Transportation Federal Highway Administration and maintained by the University of North Carolina Highway Safety Research Center

CMF / CRF Details

CMF ID: 5531

Install a traffic signal

Description:

Prior Condition: Stop controlled intersection

Category: Intersection traffic control

Study: *Comparison of Safety Evaluation Approaches for Intersection Signalization in Florida*, Wang and Abdel-Aty, 2014

Star Quality Rating:	★★★★☆ [View score details]

Crash Modification Factor (CMF)	
Value:	0.76
Adjusted Standard Error:	
Unadjusted Standard Error:	0.085

Crash Reduction Factor (CRF)

Value:	24 *(This value indicates a **decrease** in crashes)*
Adjusted Standard Error:	
Unadjusted Standard Error:	8.5

Applicability

Crash Type:	All
Crash Severity:	All
Roadway Types:	Not specified
Number of Lanes:	2 to 4
Road Division Type:	
Speed Limit:	
Area Type:	Not specified
Traffic Volume:	
Time of Day:	Not specified

If countermeasure is intersection-based

Intersection Type:	Roadway/roadway (not interchange related)
Intersection Geometry:	3-leg,4-leg
Traffic Control:	Stop-controlled
Major Road Traffic Volume:	25000 to 35000 Annual Average Daily Traffic (AADT)

Minor Road Traffic Volume:	

Development Details

Date Range of Data Used:	2004 to 2009
Municipality:	
State:	FL
Country:	
Type of Methodology Used:	Before/after using empirical Bayes or full Bayes
Sample Size Used:	
Before Sample Size Used:	324

Other Details

Included in Highway Safety Manual?	No
Date Added to Clearinghouse:	07-16-2014
Comments:	CMF applies to intersections with major road AADT 25,000-35,000

This site is funded by the U.S. Department of Transportation Federal Highway Administration and maintained by the University of North Carolina Highway Safety Research Center

CMF / CRF Details

CMF ID: 5534

Install a traffic signal

Description:

Prior Condition: Stop controlled intersection

Category: Intersection traffic control

Study: *Comparison of Safety Evaluation Approaches for Intersection Signalization in Florida*, Wang and Abdel-Aty, 2014

Star Quality Rating:	★★★★☆ [View score details]

Crash Modification Factor (CMF)	
Value:	0.684
Adjusted Standard Error:	
Unadjusted Standard Error:	0.093

Crash Reduction Factor (CRF)

Value:	31.6 *(This value indicates a **decrease** in crashes)*
Adjusted Standard Error:	
Unadjusted Standard Error:	9.3

Applicability

Crash Type:	All
Crash Severity:	Fatal,Serious injury,Minor injury
Roadway Types:	Not specified
Number of Lanes:	2 to 4
Road Division Type:	
Speed Limit:	
Area Type:	Not specified
Traffic Volume:	
Time of Day:	Not specified

If countermeasure is intersection-based

Intersection Type:	Roadway/roadway (not interchange related)
Intersection Geometry:	3-leg,4-leg
Traffic Control:	Stop-controlled
Major Road Traffic Volume:	35000 to Annual Average Daily Traffic (AADT)

Minor Road Traffic Volume:	

Development Details

Date Range of Data Used:	2004 to 2009
Municipality:	
State:	FL
Country:	
Type of Methodology Used:	Before/after using empirical Bayes or full Bayes
Sample Size Used:	
Before Sample Size Used:	214

Other Details

Included in Highway Safety Manual?	No
Date Added to Clearinghouse:	07-16-2014
Comments:	CMF applies to intersections with major road AADT >35,000

This site is funded by the U.S. Department of Transportation Federal Highway Administration and maintained by the University of North Carolina Highway Safety Research Center

CMF / CRF Details

CMF ID: 6398

Install a traffic signal

Description:

Prior Condition: ***No Prior Condition(s)***

Category: Intersection traffic control

Study: ***Safety effects of an extensive black spot treatment programme in Flanders-Belgium*, De Pauw et al., 2014**

Star Quality Rating:	★★★★☆ [View score details]

Crash Modification Factor (CMF)	
Value:	0.65
Adjusted Standard Error:	
Unadjusted Standard Error:	0.14

Crash Reduction Factor (CRF)

Value:	35 *(This value indicates a **decrease** in crashes)*
Adjusted Standard Error:	
Unadjusted Standard Error:	14

Applicability

Crash Type:	All
Crash Severity:	Serious injury,Minor injury
Roadway Types:	Not specified
Number of Lanes:	
Road Division Type:	
Speed Limit:	
Area Type:	All
Traffic Volume:	
Time of Day:	All

If countermeasure is intersection-based

Intersection Type:	Roadway/roadway (not interchange related)
Intersection Geometry:	Not specified
Traffic Control:	Uncontrolled
Major Road Traffic Volume:	

Minor Road Traffic Volume:	

Development Details

Date Range of Data Used:	2000 to 2008
Municipality:	
State:	
Country:	Belgium
Type of Methodology Used:	Before/after using empirical Bayes or full Bayes
Sample Size Used:	

Other Details

Included in Highway Safety Manual?	No
Date Added to Clearinghouse:	12-11-2014
Comments:	Comparison group 1 (black spots treated after 2008)

This site is funded by the U.S. Department of Transportation Federal Highway Administration and maintained by the University of North Carolina Highway Safety Research Center

in the CMF Clearinghouse does not constitute a standard, specification, or regulation, nor is it a substitute for sound engineering judgment.

Warrants Summary Report

1: Ustick Rd and Montana Ave - 2015 Existing

Intersection Information

	Major Street	Minor Street
Street Name	Ustick Rd	Montana Ave
Direction	EB/WB	NB/SB
Number of Lane	2	1
Approch Speed	35	35

Warrant	Met?	Notes
Warrant 1, Eight-Hour Vehicular Volume		
	No	
Condition A or B Met	No	4 Hours met (8 required)
Condition A and B M	No	6 Hours met (8 required)
Warrant 2, Four-Hour Vehicular Volume		
	No	2 Hours met (4 required)
Warrant 7, Crash Experience		
	No	
Traffic Volume Condi	No	6 Hours met (8 required)
Ped Condition?	No	0 Hours met (8 required)

Warrants Summary Report

2: Ustick Rd and Montana Ave - 2020

Intersection Information

	Major Street	Minor Street
Street Name	Ustick Rd	Montana Ave
Direction	EB/WB	NB/SB
Number of Lane	2	2
Approch Speed	35	35

Warrant	Met?	Notes
Warrant 1, Eight-Hour Vehicular Volume		
	No	
Condition A or B Met	No	2 Hours met (8 required)
Condition A and B M	No	4 Hours met (8 required)
Warrant 2, Four-Hour Vehicular Volume		
	No	0 Hours met (4 required)
Warrant 7, Crash Experience		
	No	
Traffic Volume Condi	No	7 Hours met (8 required)
Ped Condition?	No	0 Hours met (8 required)

Warrants Summary Report

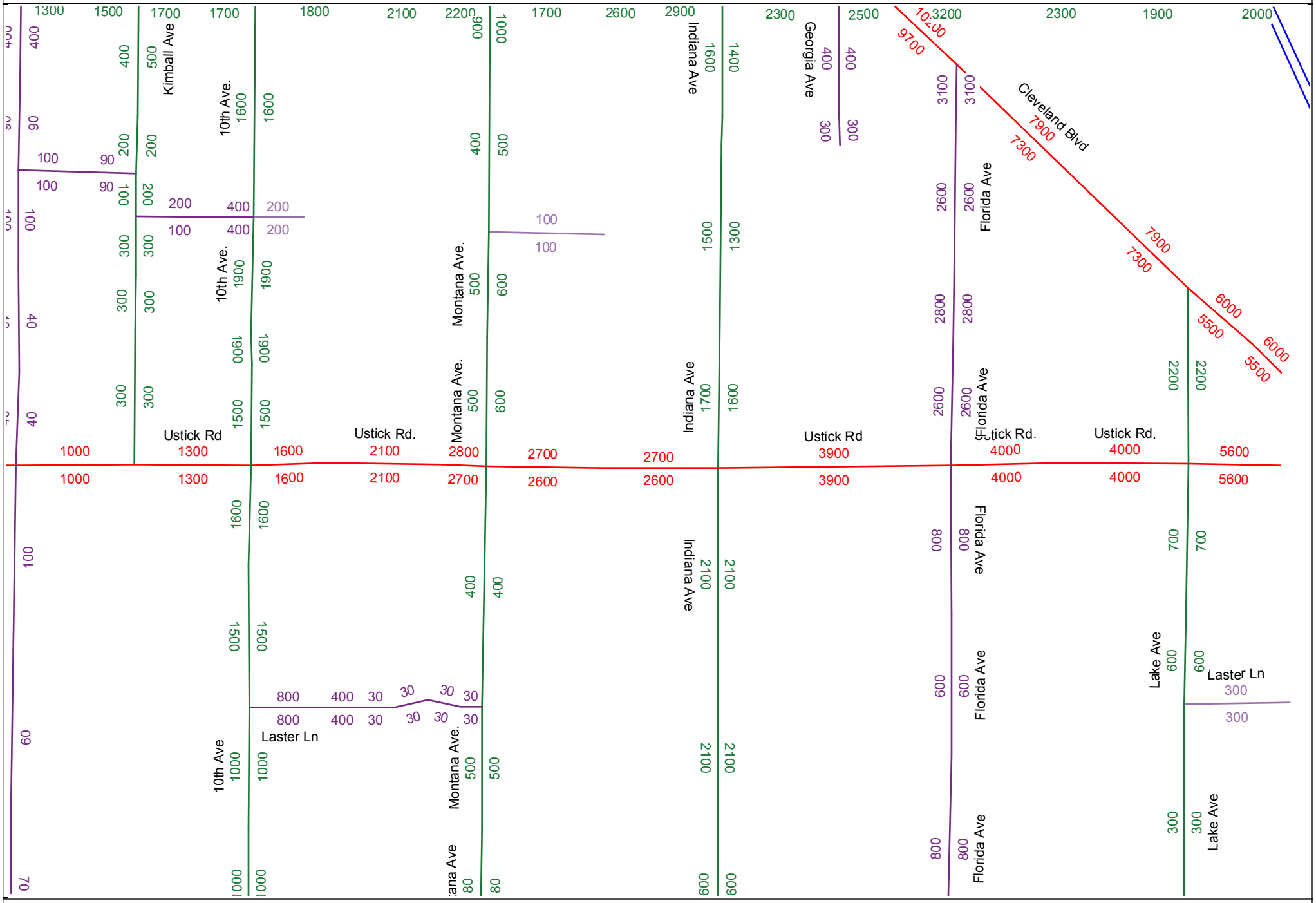
3: Ustick Rd and Montana Ave - 2040

Intersection Information

	Major Street	Minor Street
Street Name	Ustick Rd	Montana Ave
Direction	EB/WB	NB/SB
Number of Lane	2	2
Approch Speed	35	35

Warrant	Met?	Notes
Warrant 1, Eight-Hour Vehicular Volume		
	No	
Condition A or B Met	No	7 Hours met (8 required)
Condition A and B M	No	7 Hours met (8 required)
Warrant 2, Four-Hour Vehicular Volume		
	Yes	5 Hours met (4 required)
Warrant 7, Crash Experience		
	No	
Traffic Volume Condi	Yes	11 Hours met (8 required)
Ped Condition?	No	0 Hours met (8 required)

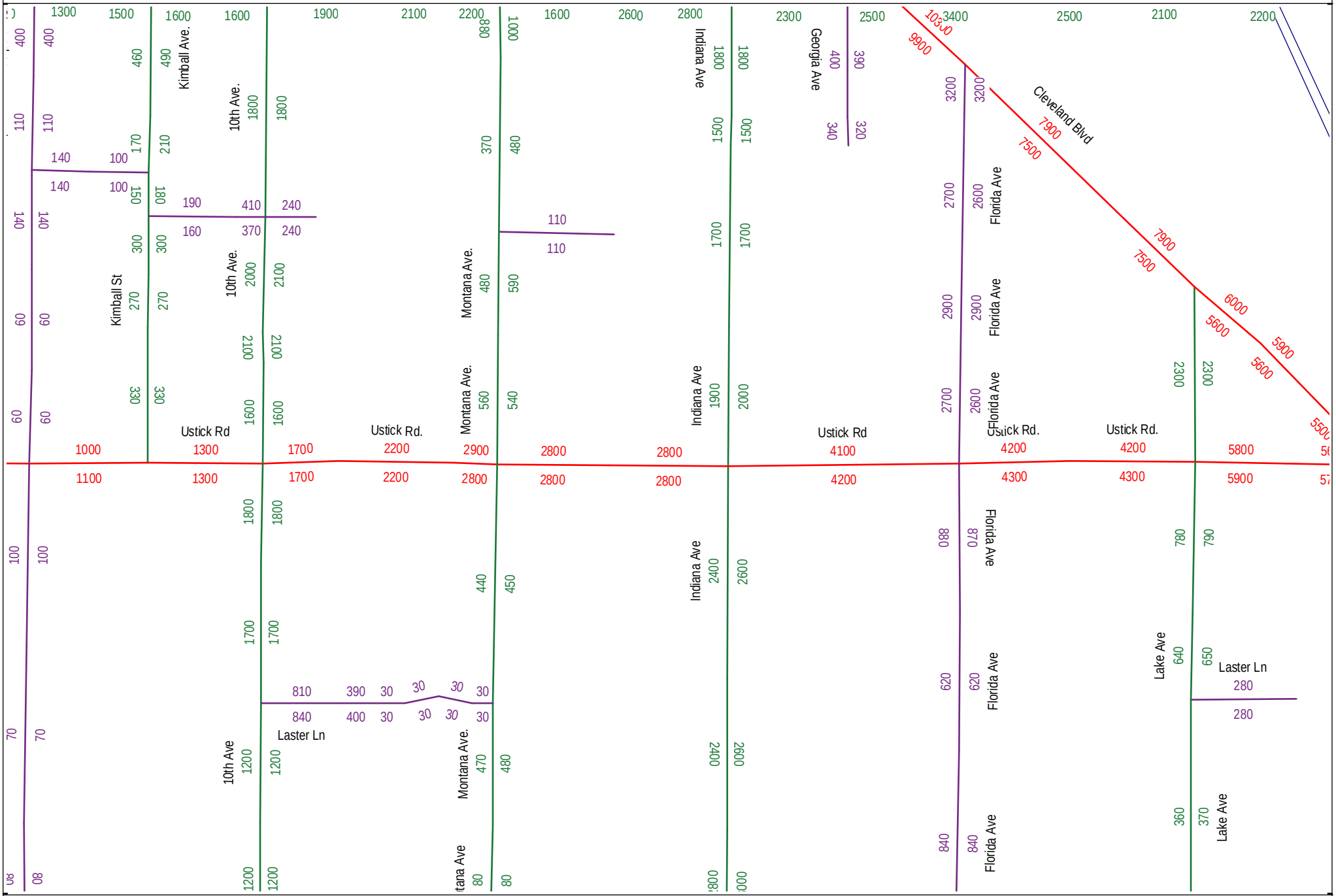
2011 Preliminary Calibration
9/2/2015



D:\UAG\2011Model\calibration\Base\Oct22\RUN7\aug252015\b2011\ROUNDED_b2011.NET

cube

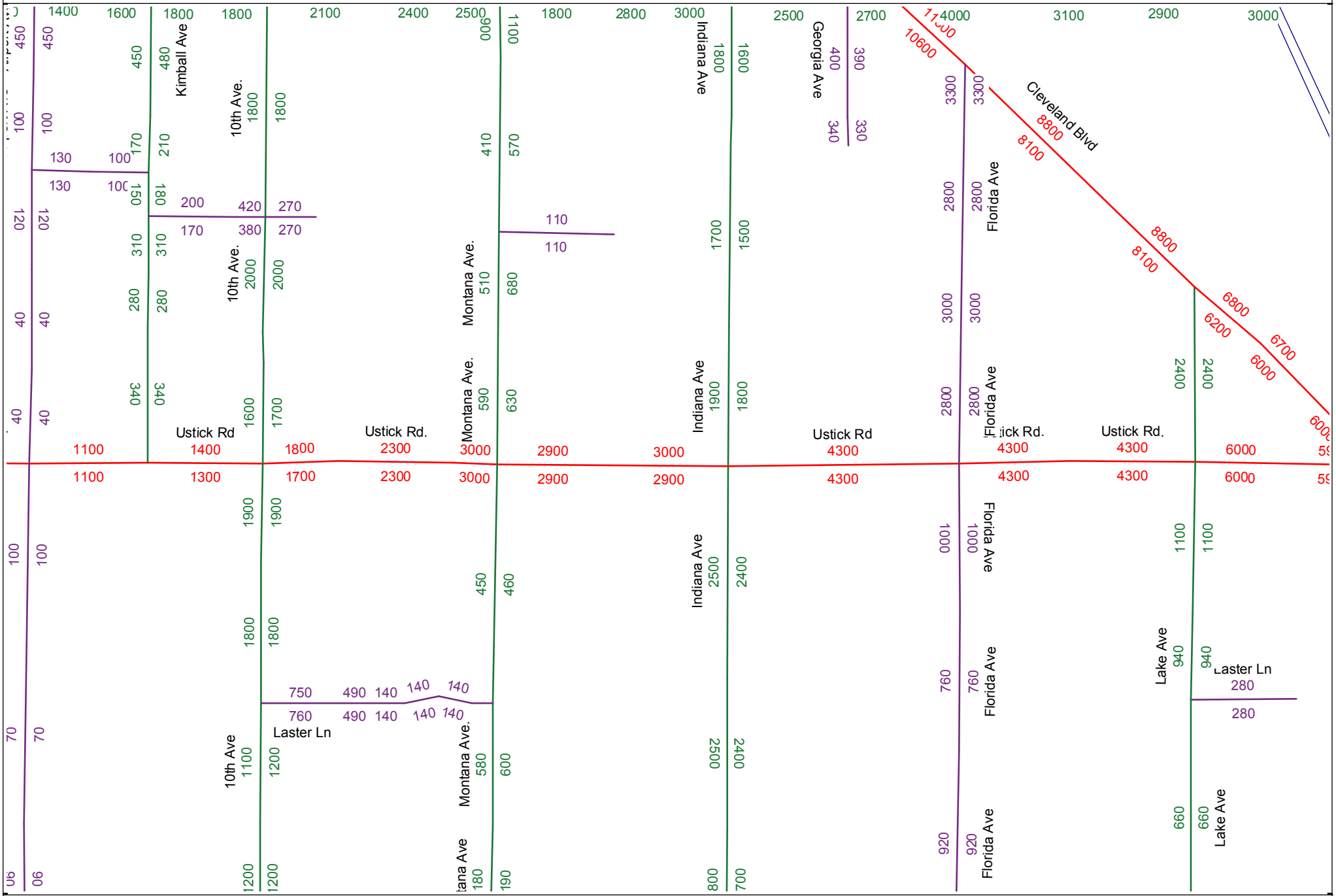
2015 Build: 2015 Demographics on 2015 Network (New Model v2015)
9/2/2015



D:\UAG\2011Model\calibration\Base\TIP\FY1620R1\b2015\ROUNDED_b2015.NET
New Regional Model calibrated to 2011/12 conditions - completed in January 2015

cube

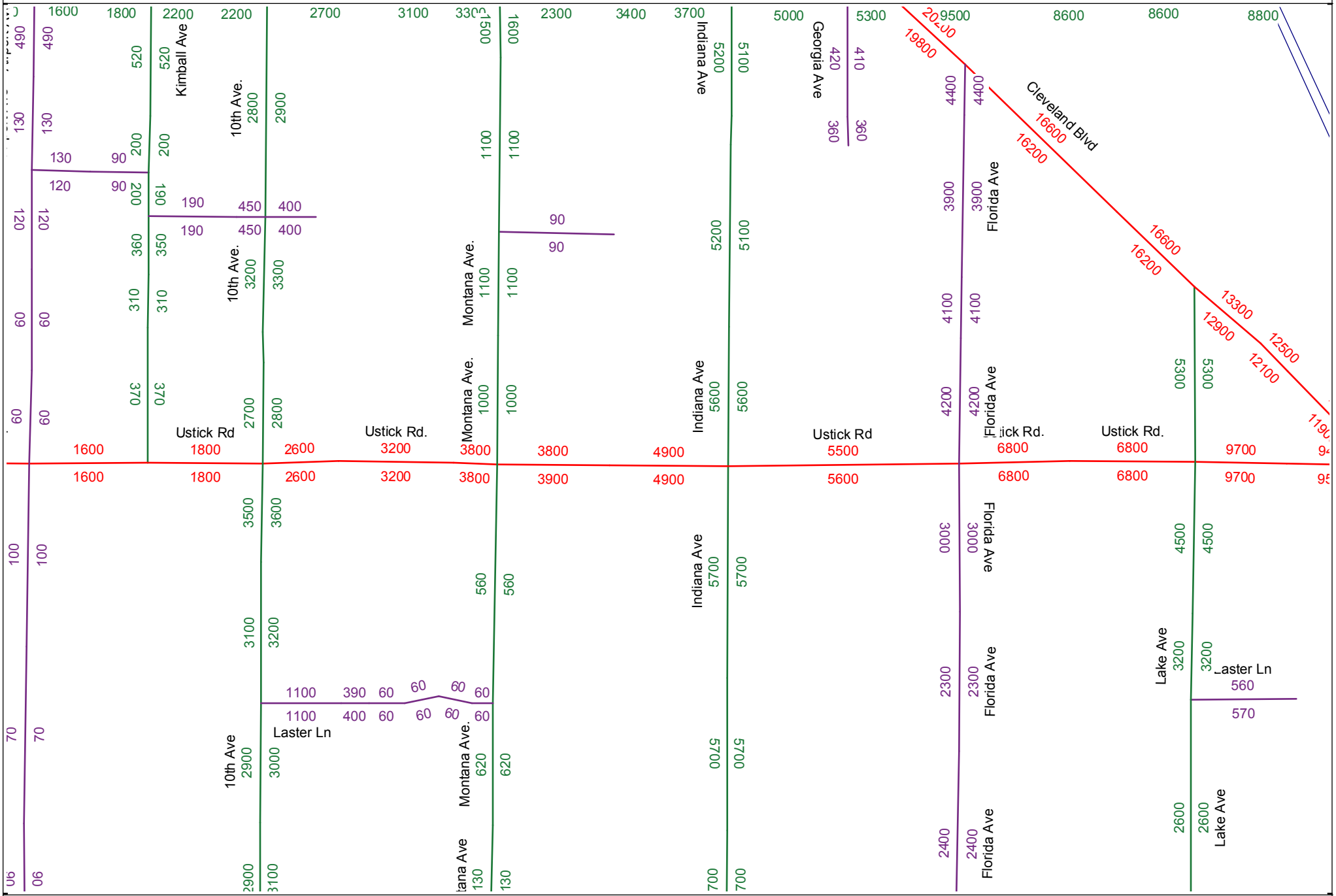
2020 Build: 2020 demographics on 2019 TIP network (New Model v2015)
9/2/2015



D:\UAG\2011Model\calibration\Base\TIP\FY1620R1\b2020\ROUNDED_b2020.NET
New Regional Model calibrated to 2011/12 conditions - completed in January 2015

cube

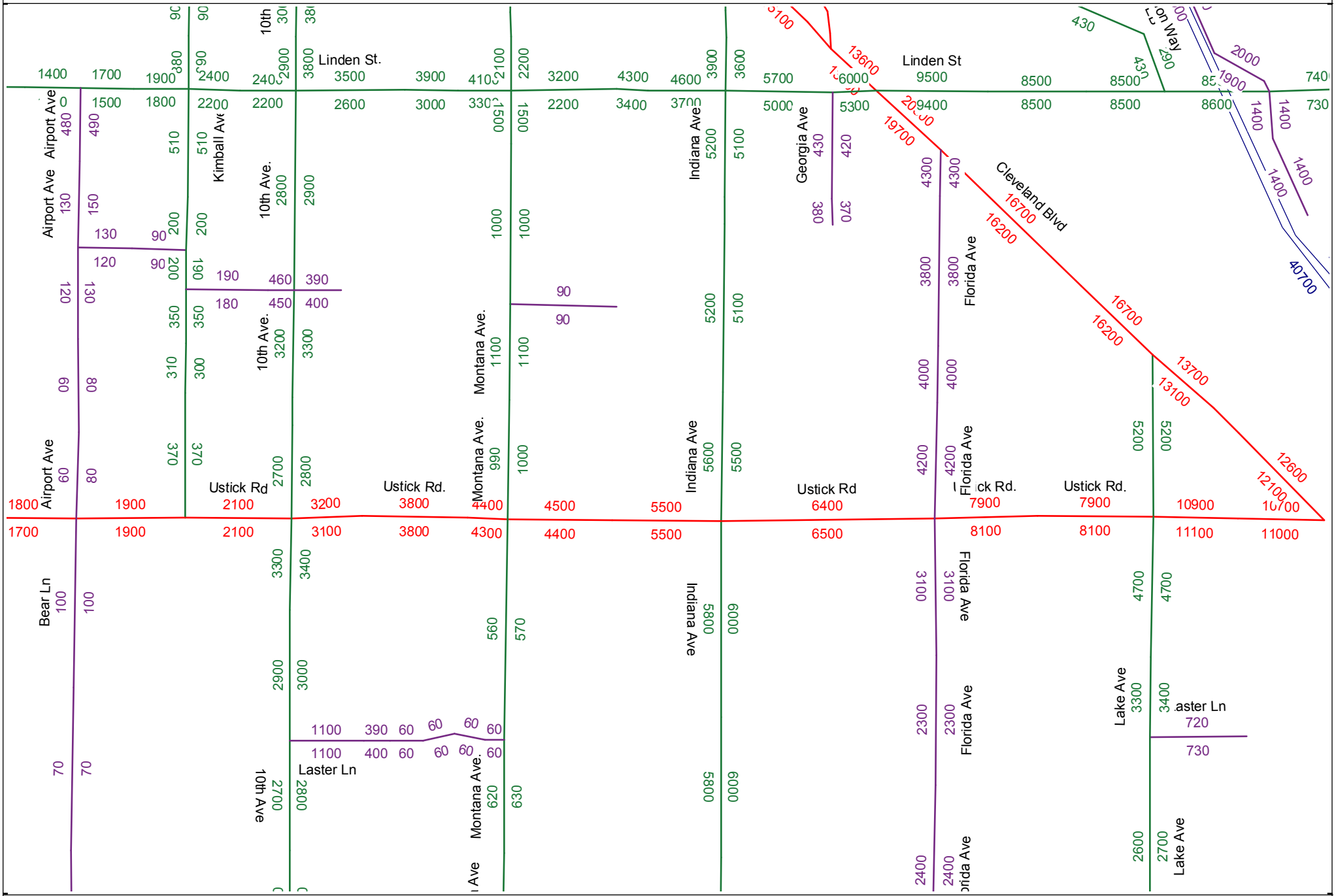
2040 Build - 2040 Demographics on CIM 2040 Funded Network (New Model v2015)
9/2/2015



D:\UAG\2011Model\calibration\Base\TIP\FY1620R1\b2040\ROUNDED_b2040.NET
New Regional Model calibrated to 2011/12 conditions - completed in January 2015

cube

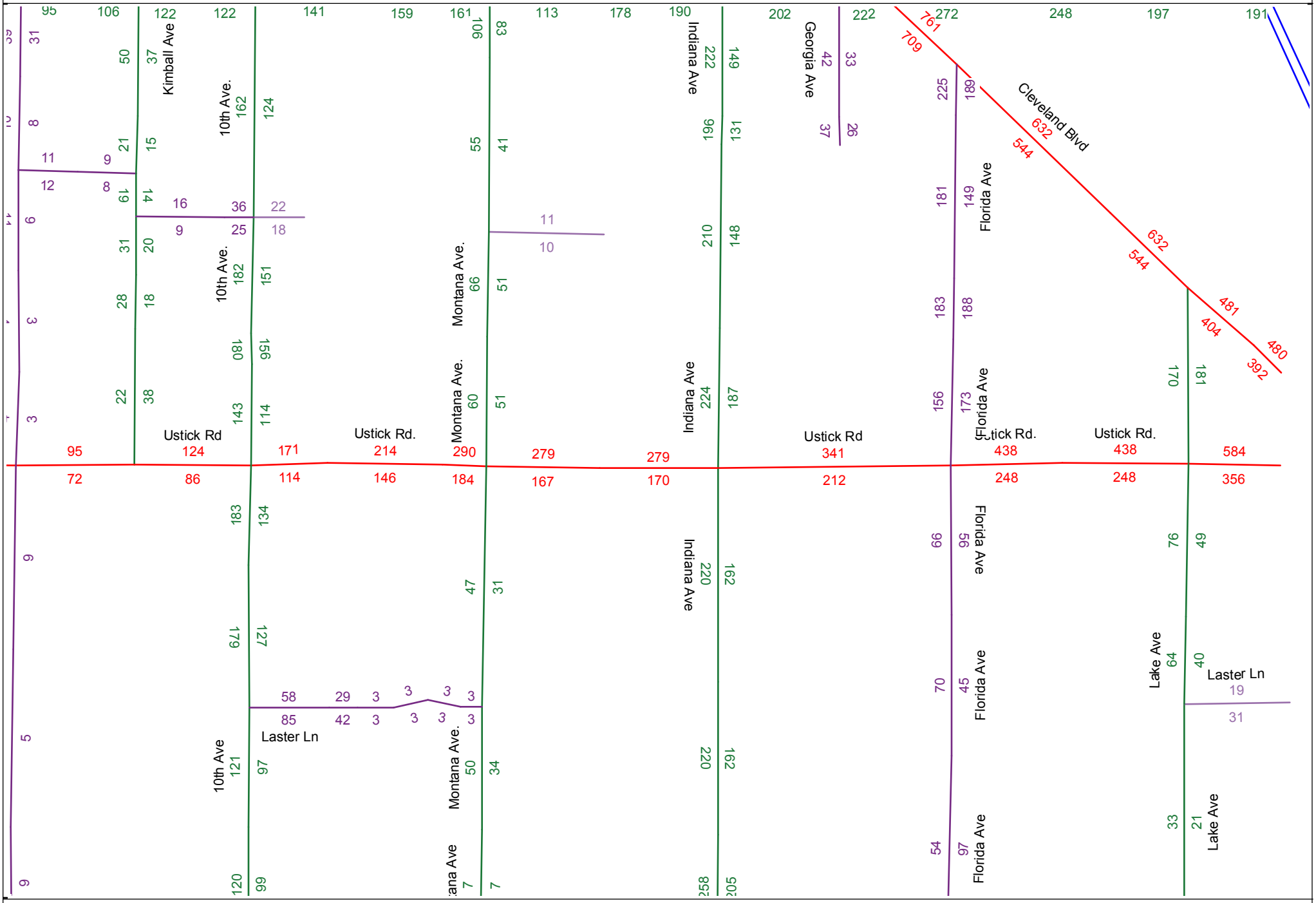
Special: 5 lanes on Ustick, 2040 Build - 2040 Demographics on CIM 2040 Funded Network (New Model v2015)
9/3/2015



D:\UAG\2011Model\calibration\Base\TIP\Studies\UstickCaldwell\b2040\ROUNDED_b2040.NET
New Regional Model calibrated to 2011/12 conditions - completed in January 2015

cube

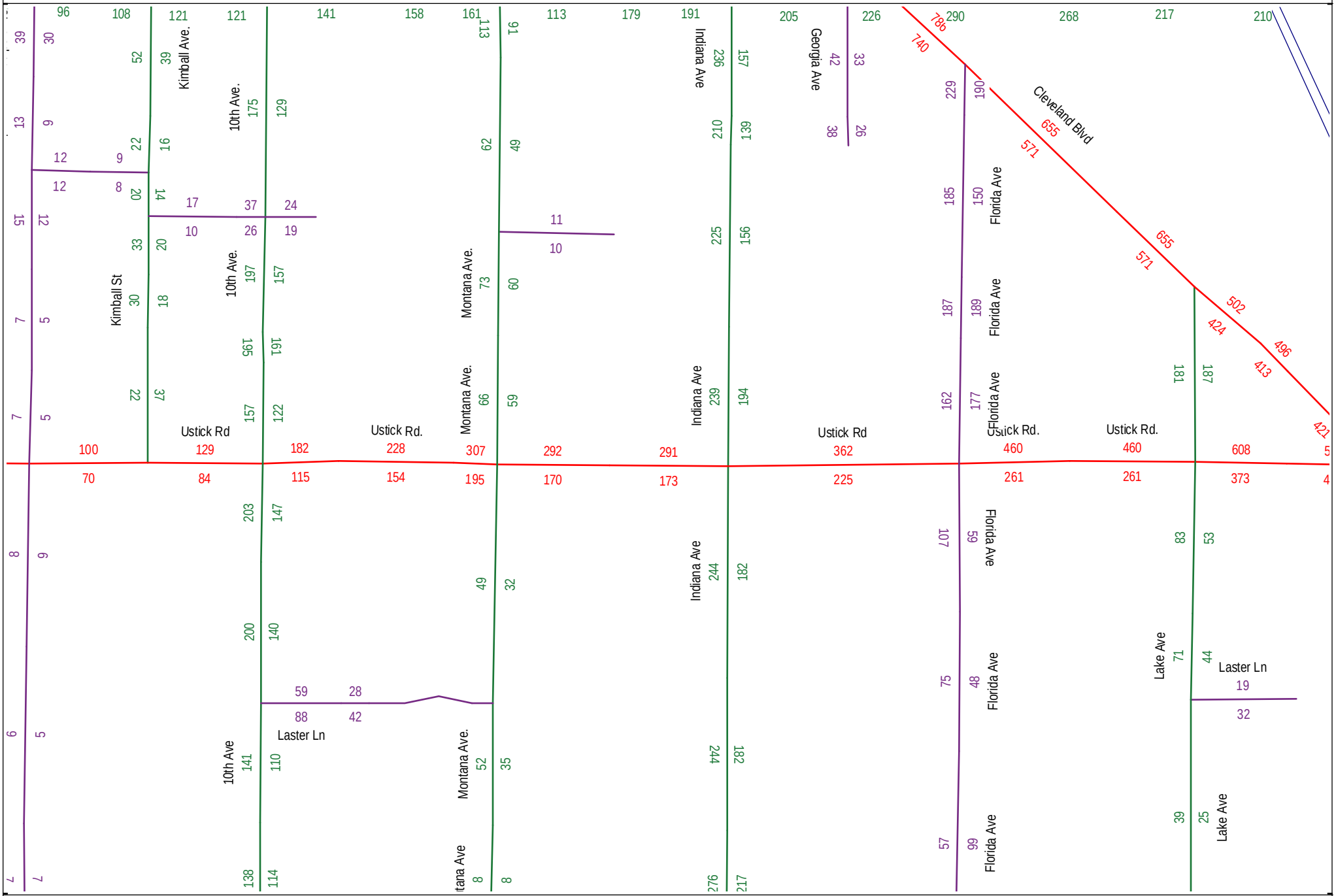
2011 Preliminary Calibration
9/2/2015



D:\UAG\2011Model\calibration\Base\Oct22\RUN7\aug252015\b2011\PH_ASSIGN_b2011.NET

cube

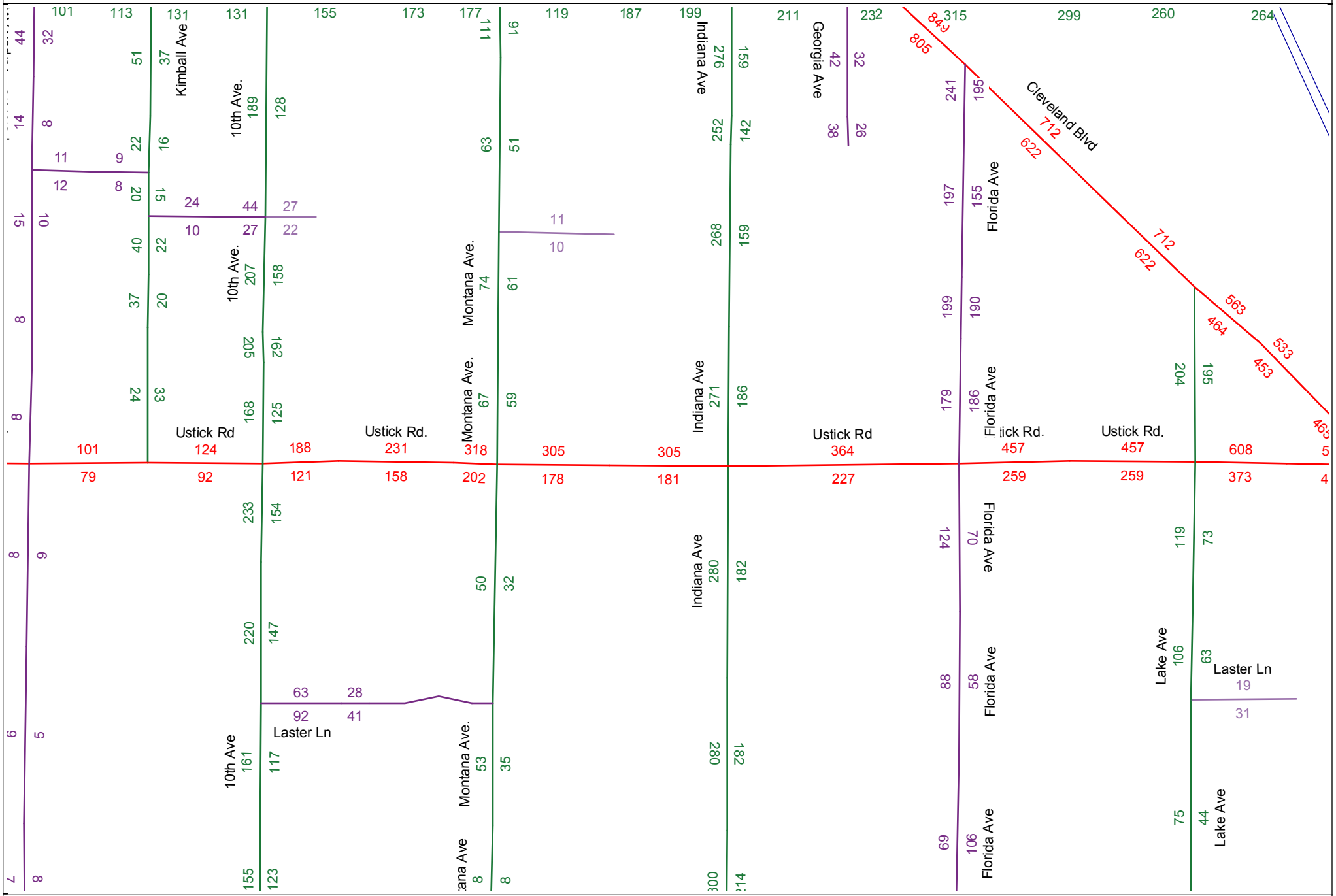
2015 Peak Hour Build: 2015 Demographics on 2015 Network (New Model v2015)
9/2/2015



D:\UAG\2011Model\calibration\Base\TIP\FY1620R1\b2015\PH_ASSIGN_b2015.NET
New Regional Model calibrated to 2011/12 conditions - completed in January 2015

cube

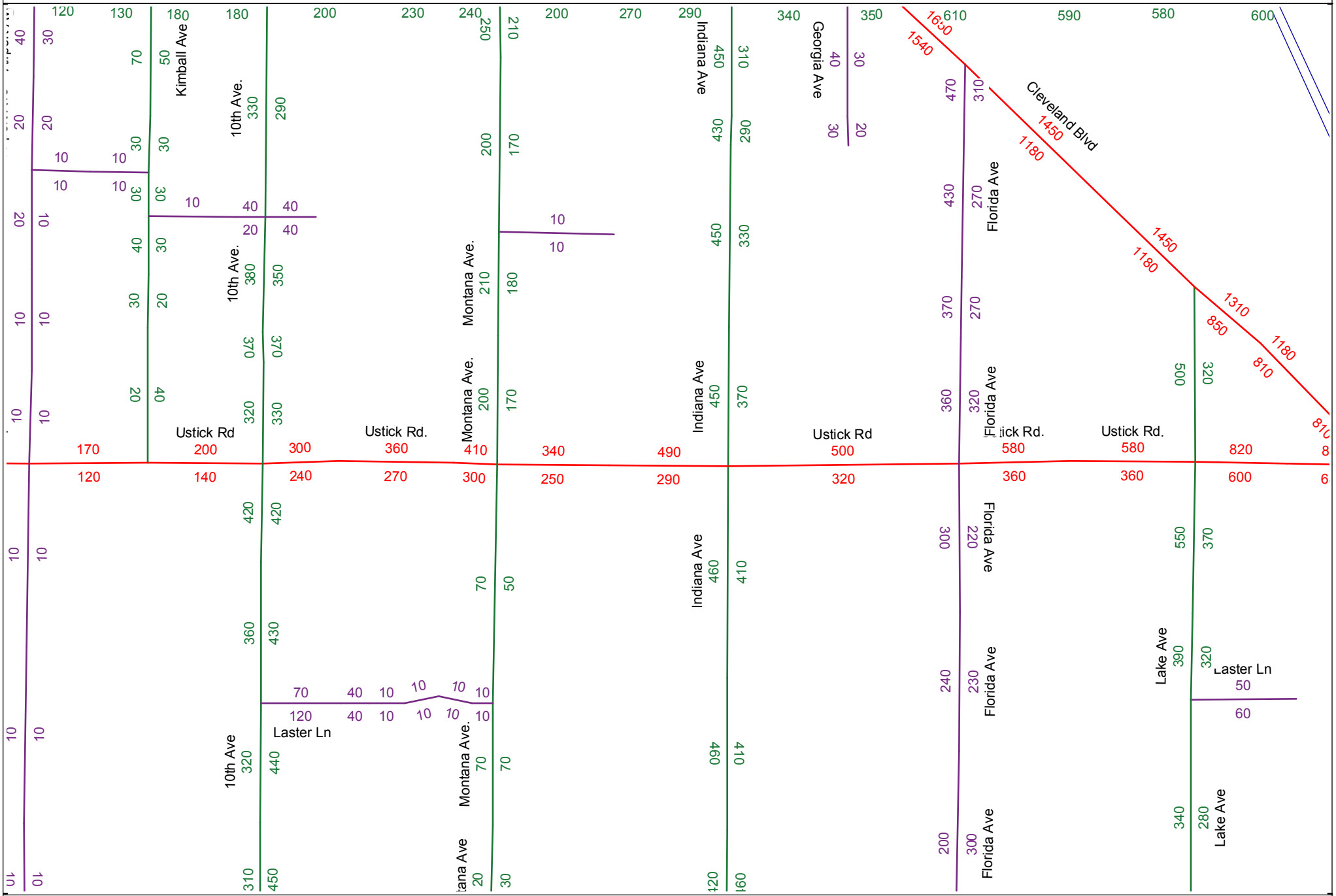
2020 Peak Hour Build: 2020 demographics on 2019 TIP network (New Model v2015)
9/2/2015



D:\UAG\2011Model\calibration\Base\TIP\FY1620R1\b2020\PH_ASSIGN_b2020.NET
New Regional Model calibrated to 2011/12 conditions - completed in January 2015

cube

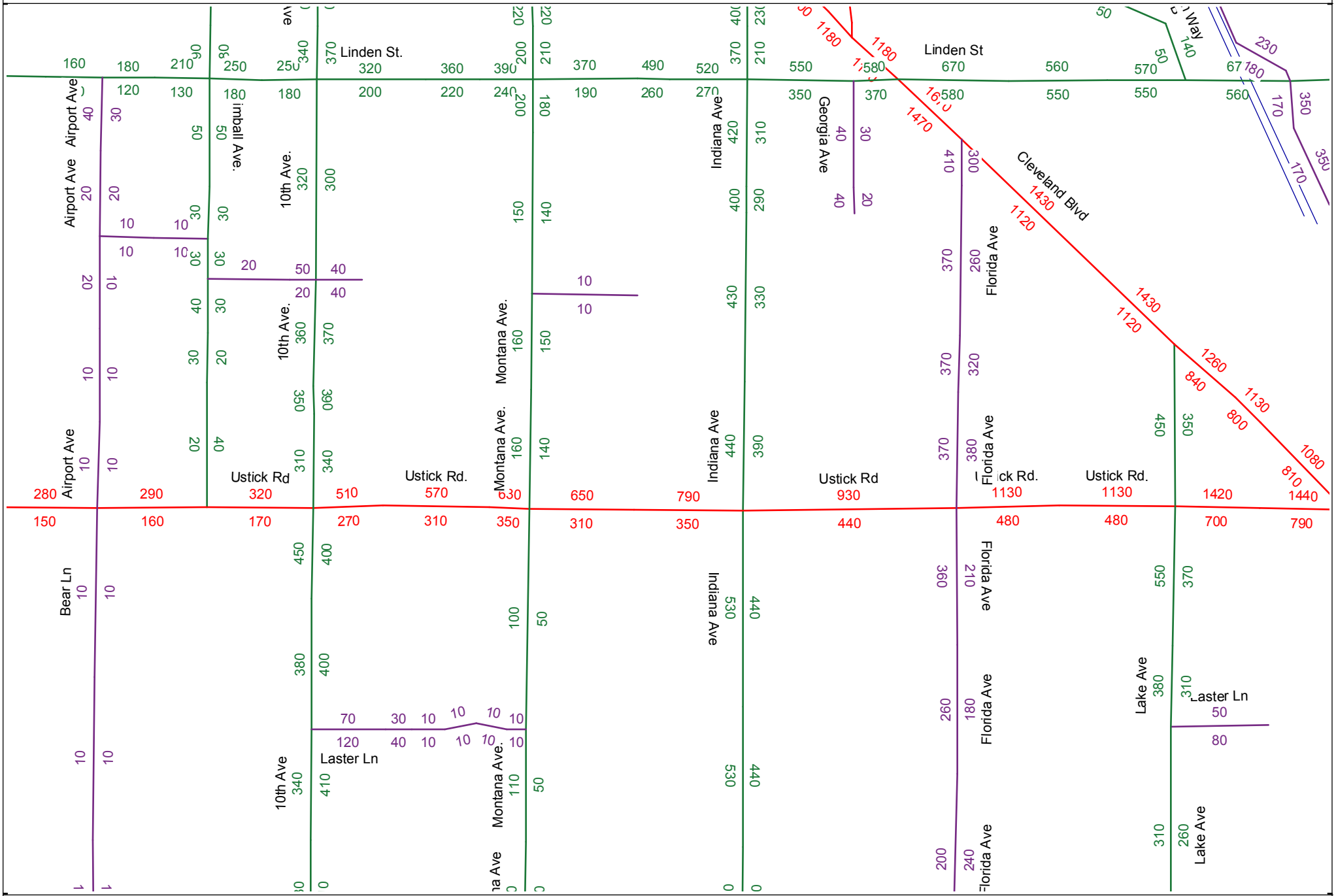
2040 Peak Hour Build - 2040 Demographics on CIM 2040 Funded Network (New Model v2015)
9/2/2015



D:\UAG\2011Model\calibration\Base\TIP\FY1620R1\b2040\PH_ASSIGN_b2040.NET
New Regional Model calibrated to 2011/12 conditions - completed in January 2015

cube

Special: 5 lanes on Ustick, 2040 Peak Hour Build - 2040 Demographics on CIM 2040 Funded Network (New Model v2015)
9/3/2015



D:\UAG\2011Model\calibration\Base\TIP\Studies\UstickCaldwell\b2040\PH_ASSIGN_b2040.NET
New Regional Model calibrated to 2011/12 conditions - completed in January 2015

cube

Intersection	
Int Delay, s/veh	17

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Vol, veh/h	45	380	60	125	320	55	25	45	125	30	45	50
Future Vol, veh/h	45	380	60	125	320	55	25	45	125	30	45	50
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	100	-	0	100	-	225	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	50	422	67	139	356	61	28	50	139	33	50	56

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	356	0	0	422	0	0	1208	1155	422	1250	1155	356
Stage 1	-	-	-	-	-	-	522	522	-	633	633	-
Stage 2	-	-	-	-	-	-	686	633	-	617	522	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1203	-	-	1137	-	-	160	197	632	150	197	688
Stage 1	-	-	-	-	-	-	538	531	-	468	473	-
Stage 2	-	-	-	-	-	-	438	473	-	477	531	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1203	-	-	1137	-	-	100	166	632	79	166	688
Mov Cap-2 Maneuver	-	-	-	-	-	-	100	166	-	79	166	-
Stage 1	-	-	-	-	-	-	516	509	-	449	415	-
Stage 2	-	-	-	-	-	-	311	415	-	322	509	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.8	2.2	55.7	78.8
HCM LOS			F	F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	271	1203	-	-	1137	-	-	173
HCM Lane V/C Ratio	0.8	0.042	-	-	0.122	-	-	0.803
HCM Control Delay (s)	55.7	8.1	-	-	8.6	-	-	78.8
HCM Lane LOS	F	A	-	-	A	-	-	F
HCM 95th %tile Q(veh)	6.2	0.1	-	-	0.4	-	-	5.4

Intersection	
Int Delay, s/veh	11.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Vol, veh/h	40	325	40	110	370	40	20	60	80	35	60	50
Future Vol, veh/h	40	325	40	110	370	40	20	60	80	35	60	50
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	100	-	0	100	-	225	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	97	97	97	97	97	97	97	97	97	97	97	97
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	41	335	41	113	381	41	21	62	82	36	62	52

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	381	0	0	335	0	0	1083	1026	335	1098	1026	381
Stage 1	-	-	-	-	-	-	418	418	-	608	608	-
Stage 2	-	-	-	-	-	-	665	608	-	490	418	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1177	-	-	1224	-	-	195	235	707	190	235	666
Stage 1	-	-	-	-	-	-	612	591	-	483	486	-
Stage 2	-	-	-	-	-	-	449	486	-	560	591	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1177	-	-	1224	-	-	126	206	707	117	206	666
Mov Cap-2 Maneuver	-	-	-	-	-	-	126	206	-	117	206	-
Stage 1	-	-	-	-	-	-	591	570	-	466	441	-
Stage 2	-	-	-	-	-	-	323	441	-	426	570	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.8	1.7	33.9	51.3
HCM LOS			D	F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	284	1177	-	-	1224	-	-	218
HCM Lane V/C Ratio	0.581	0.035	-	-	0.093	-	-	0.686
HCM Control Delay (s)	33.9	8.2	-	-	8.2	-	-	51.3
HCM Lane LOS	D	A	-	-	A	-	-	F
HCM 95th %tile Q(veh)	3.4	0.1	-	-	0.3	-	-	4.3

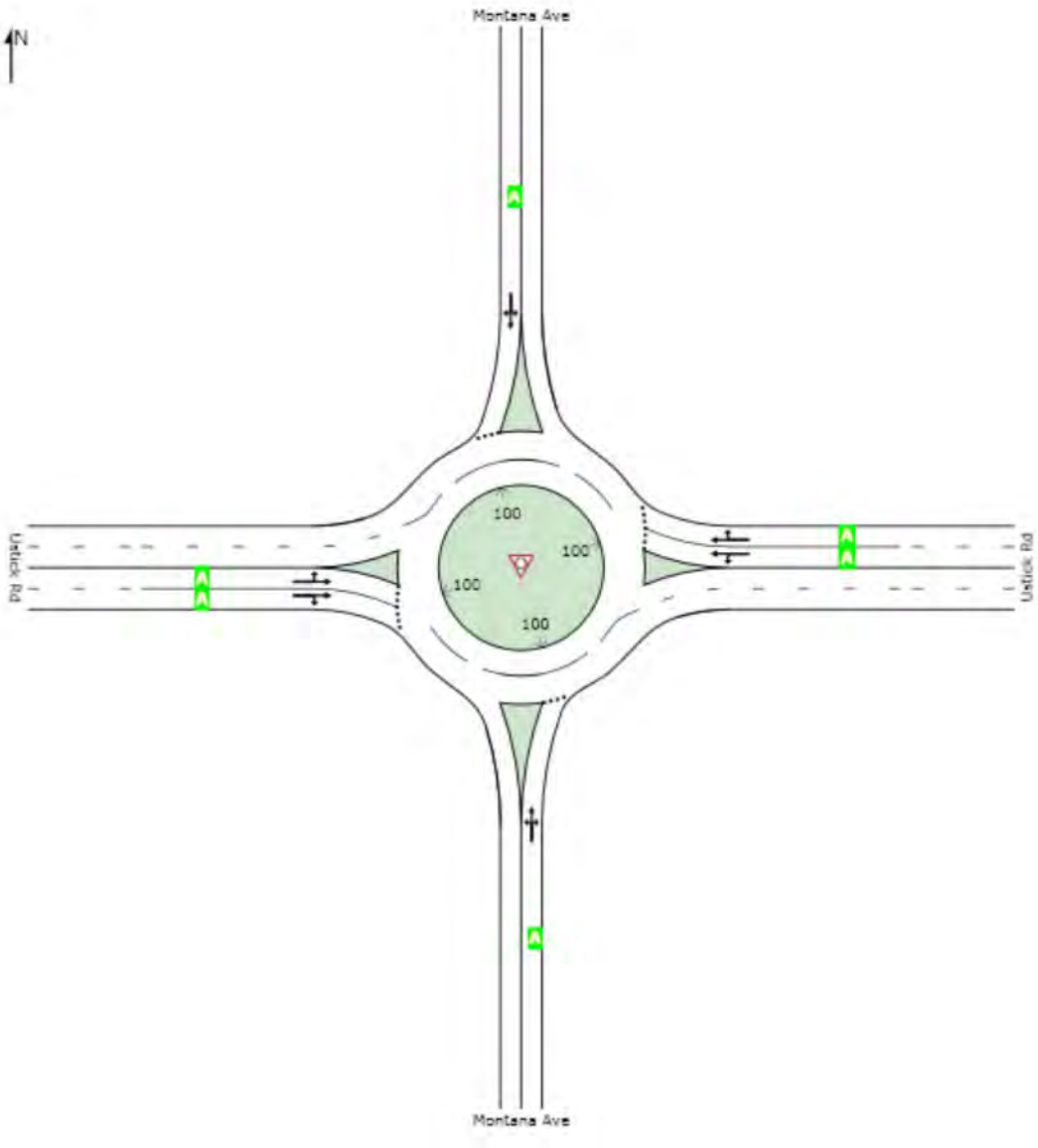
LEVEL OF SERVICE

Site: 2020 Base AM - Multi-lane

Montana/Ustick
Roundabout

All Movement Classes

	South	East	North	West	Intersection
LOS	A	A	A	A	A



Level of Service (LOS) Method: Delay & v/c (HCM 2010).
Roundabout LOS Method: Same as Sign Control.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 2010).
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.

MOVEMENT SUMMARY

Site: 2020 Base AM Multi-lane

Montana/Ustick
Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: Montana Ave											
3	L2	28	2.0	0.238	6.4	LOS A	1.2	29.4	0.61	0.55	31.5
8	T1	50	2.0	0.238	6.4	LOS A	1.2	29.4	0.61	0.55	31.2
18	R2	139	2.0	0.238	6.4	LOS A	1.2	29.4	0.61	0.55	30.4
Approach		217	2.0	0.238	6.4	LOS A	1.2	29.4	0.61	0.55	30.7
East: Ustick Rd											
1	L2	139	2.0	0.230	5.0	LOS A	1.0	26.0	0.28	0.16	31.2
6	T1	356	2.0	0.230	5.0	LOS A	1.0	26.0	0.28	0.16	31.7
16	R2	61	2.0	0.230	5.0	LOS A	1.0	26.0	0.28	0.16	31.1
Approach		556	2.0	0.230	5.0	LOS A	1.0	26.0	0.28	0.16	31.5
North: Montana Ave											
7	L2	33	2.0	0.155	5.5	LOS A	0.7	18.1	0.58	0.51	31.6
4	T1	50	2.0	0.155	5.5	LOS A	0.7	18.1	0.58	0.51	31.3
14	R2	56	2.0	0.155	5.5	LOS A	0.7	18.1	0.58	0.51	30.5
Approach		139	2.0	0.155	5.5	LOS A	0.7	18.1	0.58	0.51	31.1
West: Ustick Rd											
5	L2	50	2.0	0.243	5.5	LOS A	1.1	27.0	0.38	0.26	31.8
2	T1	422	2.0	0.243	5.5	LOS A	1.1	27.0	0.38	0.26	31.7
12	R2	67	2.0	0.243	5.5	LOS A	1.1	27.0	0.38	0.26	30.9
Approach		539	2.0	0.243	5.5	LOS A	1.1	27.0	0.38	0.26	31.6
All Vehicles		1450	2.0	0.243	5.4	LOS A	1.2	29.4	0.39	0.29	31.4

Level of Service (LOS) Method: Delay & v/c (HCM 2010).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 2010).
Roundabout Capacity Model: US HCM 2010.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

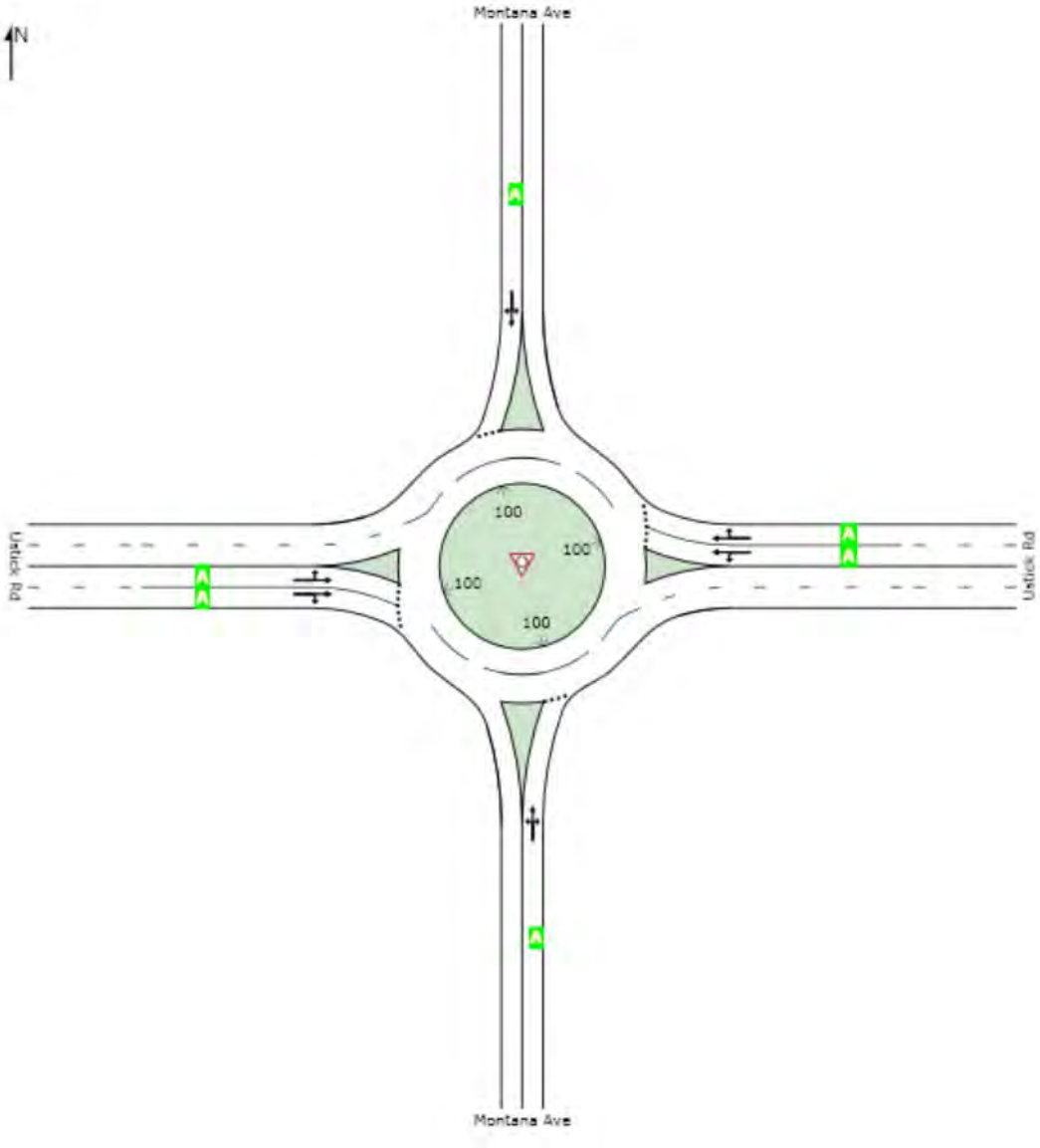
LEVEL OF SERVICE

Site: 2020 Base PM - Multi-lane

Montana/Ustick
Roundabout

All Movement Classes

	South	East	North	West	Intersection
LOS	A	A	A	A	A



Level of Service (LOS) Method: Delay & v/c (HCM 2010).
Roundabout LOS Method: Same as Sign Control.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 2010).
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.

MOVEMENT SUMMARY

Site: 2020 Base PM - Multi-lane

Montana/Ustick
Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: Montana Ave											
3	L2	21	2.0	0.164	5.1	LOS A	0.8	19.9	0.54	0.43	32.1
8	T1	62	2.0	0.164	5.1	LOS A	0.8	19.9	0.54	0.43	31.8
18	R2	82	2.0	0.164	5.1	LOS A	0.8	19.9	0.54	0.43	30.9
Approach		165	2.0	0.164	5.1	LOS A	0.8	19.9	0.54	0.43	31.4
East: Ustick Rd											
1	L2	113	2.0	0.221	4.9	LOS A	1.0	24.8	0.27	0.15	31.5
6	T1	381	2.0	0.221	4.9	LOS A	1.0	24.8	0.27	0.15	31.8
16	R2	41	2.0	0.221	4.9	LOS A	1.0	24.8	0.27	0.15	31.2
Approach		536	2.0	0.221	4.9	LOS A	1.0	24.8	0.27	0.15	31.7
North: Montana Ave											
7	L2	36	2.0	0.166	5.6	LOS A	0.8	19.5	0.58	0.51	31.6
4	T1	62	2.0	0.166	5.6	LOS A	0.8	19.5	0.58	0.51	31.3
14	R2	52	2.0	0.166	5.6	LOS A	0.8	19.5	0.58	0.51	30.5
Approach		149	2.0	0.166	5.6	LOS A	0.8	19.5	0.58	0.51	31.1
West: Ustick Rd											
5	L2	41	2.0	0.186	4.9	LOS A	0.8	19.7	0.35	0.23	32.0
2	T1	335	2.0	0.186	4.9	LOS A	0.8	19.7	0.35	0.23	32.0
12	R2	41	2.0	0.186	4.9	LOS A	0.8	19.7	0.35	0.23	31.2
Approach		418	2.0	0.186	4.9	LOS A	0.8	19.7	0.35	0.23	31.9
All Vehicles		1268	2.0	0.221	5.0	LOS A	1.0	24.8	0.37	0.26	31.6

Level of Service (LOS) Method: Delay & v/c (HCM 2010).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 2010).
Roundabout Capacity Model: US HCM 2010.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	45	380	60	125	320	55	25	45	125	30	45	50
Future Volume (veh/h)	45	380	60	125	320	55	25	45	125	30	45	50
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1765	1765	1765	1765	1765	1765	1765	1765	1765	1765	1765	1765
Adj Flow Rate, veh/h	50	422	67	139	356	61	28	50	139	33	50	56
Adj No. of Lanes	1	2	1	1	2	1	1	1	1	1	1	1
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	537	1556	696	512	1621	725	485	618	525	454	618	525
Arrive On Green	0.04	0.46	0.46	0.06	0.48	0.48	0.35	0.35	0.35	0.35	0.35	0.35
Sat Flow, veh/h	1681	3353	1500	1681	3353	1500	1283	1765	1500	1189	1765	1500
Grp Volume(v), veh/h	50	422	67	139	356	61	28	50	139	33	50	56
Grp Sat Flow(s),veh/h/ln	1681	1676	1500	1681	1676	1500	1283	1765	1500	1189	1765	1500
Q Serve(g_s), s	1.8	9.3	3.0	5.1	7.4	2.6	1.8	2.3	8.0	2.3	2.3	3.0
Cycle Q Clear(g_c), s	1.8	9.3	3.0	5.1	7.4	2.6	4.1	2.3	8.0	4.6	2.3	3.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	537	1556	696	512	1621	725	485	618	525	454	618	525
V/C Ratio(X)	0.09	0.27	0.10	0.27	0.22	0.08	0.06	0.08	0.26	0.07	0.08	0.11
Avail Cap(c_a), veh/h	649	1556	696	676	1621	725	485	618	525	454	618	525
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	15.2	19.7	18.0	15.2	17.9	16.7	27.4	26.1	27.9	27.6	26.1	26.3
Incr Delay (d2), s/veh	0.1	0.4	0.3	0.3	0.3	0.2	0.2	0.3	1.2	0.3	0.3	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	1.5	7.8	2.3	4.3	6.3	2.0	1.2	2.1	6.2	1.4	2.1	2.3
LnGrp Delay(d),s/veh	15.3	20.1	18.3	15.5	18.2	16.9	27.7	26.3	29.2	27.9	26.3	26.7
LnGrp LOS	B	C	B	B	B	B	C	C	C	C	C	C
Approach Vol, veh/h		539			556			217			139	
Approach Delay, s/veh		19.5			17.4			28.3			26.9	
Approach LOS		B			B			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		47.0	12.3	60.7		47.0	10.0	63.0
Change Period (Y+Rc), s		5.0	5.0	5.0		5.0	5.0	5.0
Max Green Setting (Gmax), s		42.0	19.0	44.0		42.0	13.0	50.0
Max Q Clear Time (g_c+I1), s		10.0	7.1	11.3		6.6	3.8	9.4
Green Ext Time (p_c), s		1.4	0.3	6.1		1.4	0.0	6.3

Intersection Summary	
HCM 2010 Ctrl Delay	20.7
HCM 2010 LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	40	325	40	110	370	40	20	60	80	35	60	50
Future Volume (veh/h)	40	325	40	110	370	40	20	60	80	35	60	50
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1765	1765	1765	1765	1765	1765	1765	1765	1765	1765	1765	1765
Adj Flow Rate, veh/h	41	335	41	113	381	41	21	62	82	36	62	52
Adj No. of Lanes	1	2	1	1	2	1	1	1	1	1	1	1
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	506	1528	684	545	1600	716	432	559	475	422	559	475
Arrive On Green	0.03	0.46	0.46	0.05	0.48	0.48	0.32	0.32	0.32	0.32	0.32	0.32
Sat Flow, veh/h	1681	3353	1500	1681	3353	1500	1273	1765	1500	1239	1765	1500
Grp Volume(v), veh/h	41	335	41	113	381	41	21	62	82	36	62	52
Grp Sat Flow(s),veh/h/ln	1681	1676	1500	1681	1676	1500	1273	1765	1500	1239	1765	1500
Q Serve(g_s), s	1.5	7.2	1.8	4.3	8.0	1.8	1.4	3.0	4.7	2.5	3.0	2.9
Cycle Q Clear(g_c), s	1.5	7.2	1.8	4.3	8.0	1.8	4.4	3.0	4.7	5.5	3.0	2.9
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	506	1528	684	545	1600	716	432	559	475	422	559	475
V/C Ratio(X)	0.08	0.22	0.06	0.21	0.24	0.06	0.05	0.11	0.17	0.09	0.11	0.11
Avail Cap(c_a), veh/h	608	1528	684	723	1600	716	432	559	475	422	559	475
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	16.3	19.7	18.3	15.8	18.5	16.9	30.6	29.0	29.6	31.0	29.0	29.0
Incr Delay (d2), s/veh	0.1	0.3	0.2	0.2	0.4	0.2	0.2	0.4	0.8	0.4	0.4	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	3.4	0.8	2.0	3.8	0.8	0.5	1.5	2.1	0.9	1.5	1.3
LnGrp Delay(d),s/veh	16.4	20.1	18.4	16.0	18.8	17.0	30.8	29.4	30.4	31.4	29.4	29.5
LnGrp LOS	B	C	B	B	B	B	C	C	C	C	C	C
Approach Vol, veh/h		417			535			165			150	
Approach Delay, s/veh		19.5			18.1			30.1			29.9	
Approach LOS		B			B			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		45.0	13.3	61.7		45.0	10.7	64.3
Change Period (Y+Rc), s		7.0	7.0	7.0		7.0	7.0	7.0
Max Green Setting (Gmax), s		38.0	19.0	42.0		38.0	11.0	50.0
Max Q Clear Time (g_c+I1), s		6.7	6.3	9.2		7.5	3.5	10.0
Green Ext Time (p_c), s		1.3	0.2	5.4		1.3	0.0	5.5

Intersection Summary	
HCM 2010 Ctrl Delay	21.5
HCM 2010 LOS	C

Intersection	
Int Delay, s/veh	394.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Vol, veh/h	60	590	70	140	480	105	30	55	160	65	55	70
Future Vol, veh/h	60	590	70	140	480	105	30	55	160	65	55	70
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	100	-	0	100	-	225	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	67	656	78	156	533	117	33	61	178	72	61	78

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	533	0	0	656	0	0	1703	1633	656	1752	1633	533
Stage 1	-	-	-	-	-	-	789	789	-	844	844	-
Stage 2	-	-	-	-	-	-	914	844	-	908	789	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1035	-	-	931	-	-	72	101	465	~ 67	101	547
Stage 1	-	-	-	-	-	-	384	402	-	358	379	-
Stage 2	-	-	-	-	-	-	327	379	-	330	402	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1035	-	-	931	-	-	~ 19	79	465	~ 13	79	547
Mov Cap-2 Maneuver	-	-	-	-	-	-	~ 19	79	-	~ 13	79	-
Stage 1	-	-	-	-	-	-	359	376	-	335	315	-
Stage 2	-	-	-	-	-	-	188	315	-	160	376	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.7	1.9	$ 951.4	$ 2665.9
HCM LOS			F	F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	94	1035	-	-	931	-	-	33
HCM Lane V/C Ratio	2.896	0.064	-	-	0.167	-	-	6.397
HCM Control Delay (s)	$ 951.4	8.7	-	-	9.6	-	-	$ 2665.9
HCM Lane LOS	F	A	-	-	A	-	-	F
HCM 95th %tile Q(veh)	26.2	0.2	-	-	0.6	-	-	25.4

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Int Delay, s/veh	1.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Vol, veh/h	80	485	50	170	760	100	30	85	90	70	120	115
Future Vol, veh/h	80	485	50	170	760	100	30	85	90	70	120	115
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	100	-	0	100	-	225	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	97	97	97	97	97	97	97	97	97	97	97	97
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	82	500	52	175	784	103	31	88	93	72	124	119

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	784	0	0	500	0	0	1920	1799	500	1889	1799	784
Stage 1	-	-	-	-	-	-	665	665	-	1134	1134	-
Stage 2	-	-	-	-	-	-	1255	1134	-	755	665	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	834	-	-	1064	-	-	51	~ 80	571	~ 53	~ 80	393
Stage 1	-	-	-	-	-	-	449	458	-	246	278	-
Stage 2	-	-	-	-	-	-	210	278	-	401	458	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	834	-	-	1064	-	-	-	~ 60	571	-	~ 60	393
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	~ 60	-	-	~ 60	-
Stage 1	-	-	-	-	-	-	405	413	-	222	232	-
Stage 2	-	-	-	-	-	-	57	232	-	239	413	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1.3	1.5		
HCM LOS			-	-

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	-	834	-	-	1064	-	-	-
HCM Lane V/C Ratio	-	0.099	-	-	0.165	-	-	-
HCM Control Delay (s)	-	9.8	-	-	9	-	-	-
HCM Lane LOS	-	A	-	-	A	-	-	-
HCM 95th %tile Q(veh)	-	0.3	-	-	0.6	-	-	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

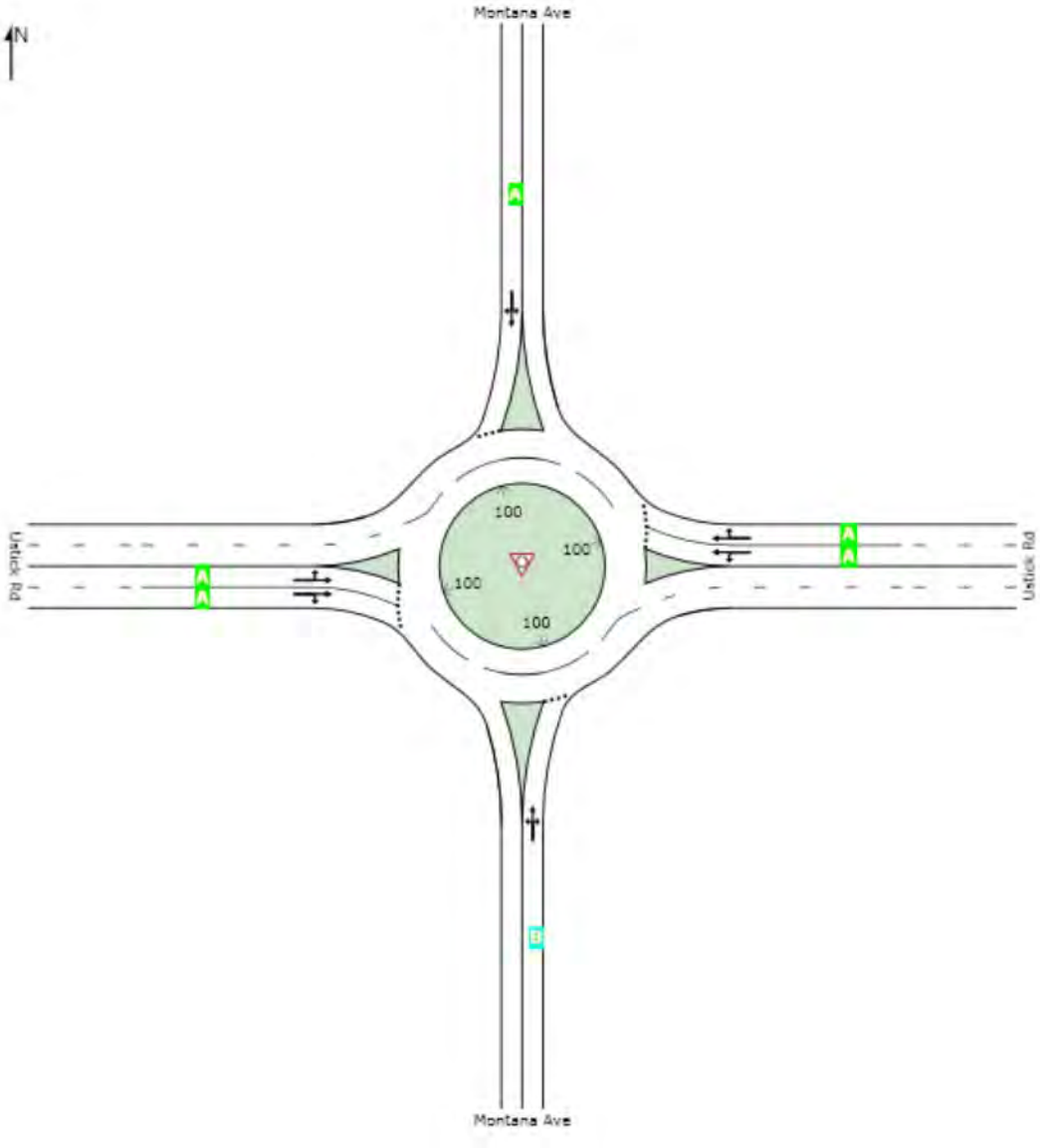
LEVEL OF SERVICE

Site: 2040 Special AM - Multi-lane

Montana/Ustick
Roundabout

All Movement Classes

	South	East	North	West	Intersection
LOS	B	A	A	A	A



Level of Service (LOS) Method: Delay & v/c (HCM 2010).
Roundabout LOS Method: Same as Sign Control.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 2010).
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.

MOVEMENT SUMMARY

Site: 2040 Special AM - Multi-lane

Montana/Ustick
Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: Montana Ave											
3	L2	33	2.0	0.402	10.9	LOS B	2.1	53.6	0.75	0.80	29.6
8	T1	61	2.0	0.402	10.9	LOS B	2.1	53.6	0.75	0.80	29.4
18	R2	178	2.0	0.402	10.9	LOS B	2.1	53.6	0.75	0.80	28.6
Approach		272	2.0	0.402	10.9	LOS B	2.1	53.6	0.75	0.80	28.9
East: Ustick Rd											
1	L2	156	2.0	0.343	6.4	LOS A	1.7	43.7	0.36	0.23	30.9
6	T1	533	2.0	0.343	6.4	LOS A	1.7	43.7	0.36	0.23	31.1
16	R2	117	2.0	0.343	6.4	LOS A	1.7	43.7	0.36	0.23	30.6
Approach		806	2.0	0.343	6.4	LOS A	1.7	43.7	0.36	0.23	31.0
North: Montana Ave											
7	L2	72	2.0	0.290	8.4	LOS A	1.3	34.2	0.70	0.70	30.2
4	T1	61	2.0	0.290	8.4	LOS A	1.3	34.2	0.70	0.70	29.9
14	R2	78	2.0	0.290	8.4	LOS A	1.3	34.2	0.70	0.70	29.2
Approach		211	2.0	0.290	8.4	LOS A	1.3	34.2	0.70	0.70	29.7
West: Ustick Rd											
5	L2	67	2.0	0.383	7.5	LOS A	1.9	48.0	0.49	0.40	31.0
2	T1	656	2.0	0.383	7.5	LOS A	1.9	48.0	0.49	0.40	30.9
12	R2	78	2.0	0.383	7.5	LOS A	1.9	48.0	0.49	0.40	30.1
Approach		800	2.0	0.383	7.5	LOS A	1.9	48.0	0.49	0.40	30.8
All Vehicles		2089	2.0	0.402	7.6	LOS A	2.1	53.6	0.49	0.41	30.5

Level of Service (LOS) Method: Delay & v/c (HCM 2010).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 2010).
Roundabout Capacity Model: US HCM 2010.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

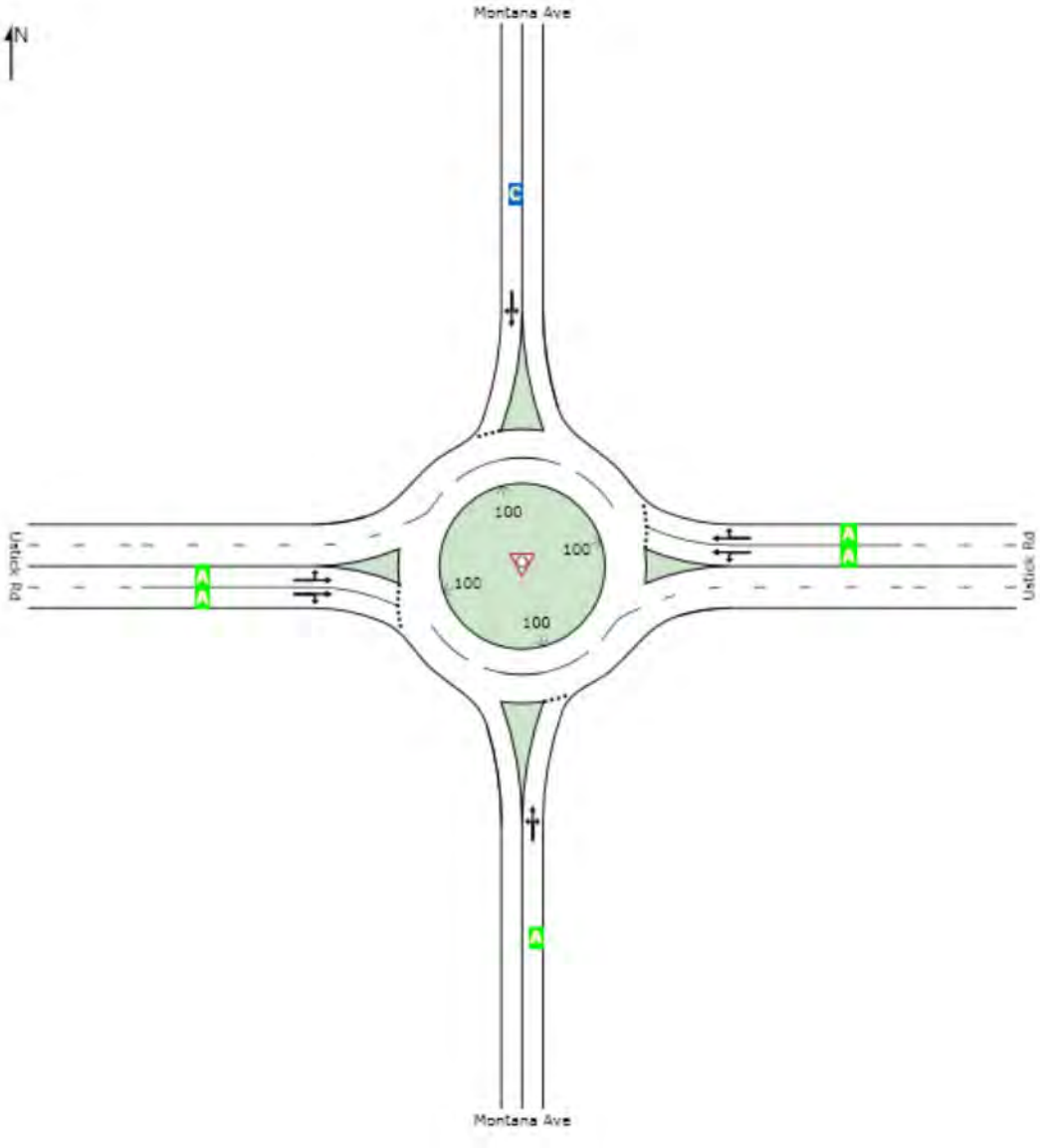
LEVEL OF SERVICE

Site: 2040 Special PM - Multi-lane

Montana/Ustick
Roundabout

All Movement Classes

	South	East	North	West	Intersection
LOS	A	A	C	A	A



Level of Service (LOS) Method: Delay & v/c (HCM 2010).
Roundabout LOS Method: Same as Sign Control.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 2010).
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.

MOVEMENT SUMMARY

Site: 2040 Special PM - Multi-lane

Montana/Ustick
Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: Montana Ave											
3	L2	31	2.0	0.270	7.7	LOS A	1.3	32.4	0.67	0.67	30.9
8	T1	88	2.0	0.270	7.7	LOS A	1.3	32.4	0.67	0.67	30.7
18	R2	93	2.0	0.270	7.7	LOS A	1.3	32.4	0.67	0.67	29.8
Approach		211	2.0	0.270	7.7	LOS A	1.3	32.4	0.67	0.67	30.3
East: Ustick Rd											
1	L2	175	2.0	0.469	8.3	LOS A	2.7	68.4	0.47	0.34	30.3
6	T1	784	2.0	0.469	8.3	LOS A	2.7	68.4	0.47	0.34	30.4
16	R2	103	2.0	0.469	8.3	LOS A	2.7	68.4	0.47	0.34	29.8
Approach		1062	2.0	0.469	8.3	LOS A	2.7	68.4	0.47	0.34	30.3
North: Montana Ave											
7	L2	72	2.0	0.568	17.6	LOS C	3.4	86.8	0.83	0.96	27.1
4	T1	124	2.0	0.568	17.6	LOS C	3.4	86.8	0.83	0.96	26.9
14	R2	119	2.0	0.568	17.6	LOS C	3.4	86.8	0.83	0.96	26.3
Approach		314	2.0	0.568	17.6	LOS C	3.4	86.8	0.83	0.96	26.7
West: Ustick Rd											
5	L2	82	2.0	0.327	7.1	LOS A	1.5	37.5	0.51	0.45	30.9
2	T1	500	2.0	0.327	7.1	LOS A	1.5	37.5	0.51	0.45	31.0
12	R2	52	2.0	0.327	7.1	LOS A	1.5	37.5	0.51	0.45	30.3
Approach		634	2.0	0.327	7.1	LOS A	1.5	37.5	0.51	0.45	30.9
All Vehicles		2222	2.0	0.568	9.2	LOS A	3.4	86.8	0.55	0.49	29.9

Level of Service (LOS) Method: Delay & v/c (HCM 2010).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 2010).
Roundabout Capacity Model: US HCM 2010.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	60	590	70	140	480	105	30	55	160	65	55	70
Future Volume (veh/h)	60	590	70	140	480	105	30	55	160	65	55	70
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1765	1765	1765	1765	1765	1765	1765	1765	1765	1765	1765	1765
Adj Flow Rate, veh/h	67	656	78	156	533	117	33	61	178	72	61	78
Adj No. of Lanes	1	2	1	1	2	1	1	1	1	1	1	1
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	430	1535	687	408	1621	725	467	618	525	431	618	525
Arrive On Green	0.04	0.46	0.46	0.07	0.48	0.48	0.35	0.35	0.35	0.35	0.35	0.35
Sat Flow, veh/h	1681	3353	1500	1681	3353	1500	1245	1765	1500	1136	1765	1500
Grp Volume(v), veh/h	67	656	78	156	533	117	33	61	178	72	61	78
Grp Sat Flow(s),veh/h/ln	1681	1676	1500	1681	1676	1500	1245	1765	1500	1136	1765	1500
Q Serve(g_s), s	2.5	15.8	3.6	5.8	11.7	5.2	2.2	2.8	10.5	5.5	2.8	4.3
Cycle Q Clear(g_c), s	2.5	15.8	3.6	5.8	11.7	5.2	5.0	2.8	10.5	8.3	2.8	4.3
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	430	1535	687	408	1621	725	467	618	525	431	618	525
V/C Ratio(X)	0.16	0.43	0.11	0.38	0.33	0.16	0.07	0.10	0.34	0.17	0.10	0.15
Avail Cap(c_a), veh/h	486	1535	687	561	1621	725	467	618	525	431	618	525
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	16.0	21.9	18.6	16.2	19.0	17.4	27.9	26.3	28.8	29.0	26.3	26.7
Incr Delay (d2), s/veh	0.2	0.9	0.3	0.6	0.5	0.5	0.3	0.3	1.7	0.8	0.3	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	2.1	12.0	2.8	4.9	9.4	4.1	1.4	2.5	8.1	3.3	2.5	3.4
LnGrp Delay(d),s/veh	16.2	22.8	18.9	16.8	19.6	17.8	28.2	26.6	30.5	29.9	26.6	27.3
LnGrp LOS	B	C	B	B	B	B	C	C	C	C	C	C
Approach Vol, veh/h		801			806			272			211	
Approach Delay, s/veh		21.9			18.8			29.4			28.0	
Approach LOS		C			B			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		47.0	13.1	59.9		47.0	10.0	63.0
Change Period (Y+Rc), s		5.0	5.0	5.0		5.0	5.0	5.0
Max Green Setting (Gmax), s		42.0	19.0	44.0		42.0	9.0	54.0
Max Q Clear Time (g_c+I1), s		12.5	7.8	17.8		10.3	4.5	13.7
Green Ext Time (p_c), s		1.9	0.3	9.8		1.9	0.0	11.1

Intersection Summary	
HCM 2010 Ctrl Delay	22.3
HCM 2010 LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	80	485	50	170	760	100	30	85	90	70	120	115
Future Volume (veh/h)	80	485	50	170	760	100	30	85	90	70	120	115
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1765	1765	1765	1765	1765	1765	1765	1765	1765	1765	1765	1765
Adj Flow Rate, veh/h	82	500	52	175	784	103	31	88	93	72	124	119
Adj No. of Lanes	1	2	1	1	2	1	1	1	1	1	1	1
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	319	1449	648	472	1566	700	360	559	475	396	559	475
Arrive On Green	0.04	0.43	0.43	0.08	0.47	0.47	0.32	0.32	0.32	0.32	0.32	0.32
Sat Flow, veh/h	1681	3353	1500	1681	3353	1500	1132	1765	1500	1198	1765	1500
Grp Volume(v), veh/h	82	500	52	175	784	103	31	88	93	72	124	119
Grp Sat Flow(s),veh/h/ln	1681	1676	1500	1681	1676	1500	1132	1765	1500	1198	1765	1500
Q Serve(g_s), s	3.2	11.9	2.4	6.9	19.5	4.7	2.5	4.3	5.4	5.5	6.2	7.1
Cycle Q Clear(g_c), s	3.2	11.9	2.4	6.9	19.5	4.7	8.7	4.3	5.4	9.8	6.2	7.1
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	319	1449	648	472	1566	700	360	559	475	396	559	475
V/C Ratio(X)	0.26	0.35	0.08	0.37	0.50	0.15	0.09	0.16	0.20	0.18	0.22	0.25
Avail Cap(c_a), veh/h	404	1449	648	610	1566	700	360	559	475	396	559	475
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	18.6	22.7	20.0	16.9	22.3	18.3	33.3	29.5	29.9	33.0	30.1	30.4
Incr Delay (d2), s/veh	0.4	0.7	0.2	0.5	1.1	0.4	0.5	0.6	0.9	1.0	0.9	1.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.5	5.6	1.1	3.2	9.3	2.0	0.8	2.2	2.4	1.9	3.2	3.1
LnGrp Delay(d),s/veh	19.0	23.4	20.3	17.4	23.4	18.7	33.8	30.1	30.8	34.0	31.1	31.7
LnGrp LOS	B	C	C	B	C	B	C	C	C	C	C	C
Approach Vol, veh/h		634			1062			212			315	
Approach Delay, s/veh		22.6			22.0			30.9			32.0	
Approach LOS		C			C			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		45.0	16.1	58.9		45.0	12.0	63.0
Change Period (Y+Rc), s		7.0	7.0	7.0		7.0	7.0	7.0
Max Green Setting (Gmax), s		38.0	19.0	42.0		38.0	11.0	50.0
Max Q Clear Time (g_c+I1), s		10.7	8.9	13.9		11.8	5.2	21.5
Green Ext Time (p_c), s		2.3	0.3	10.8		2.3	0.1	10.9

Intersection Summary	
HCM 2010 Ctrl Delay	24.4
HCM 2010 LOS	C

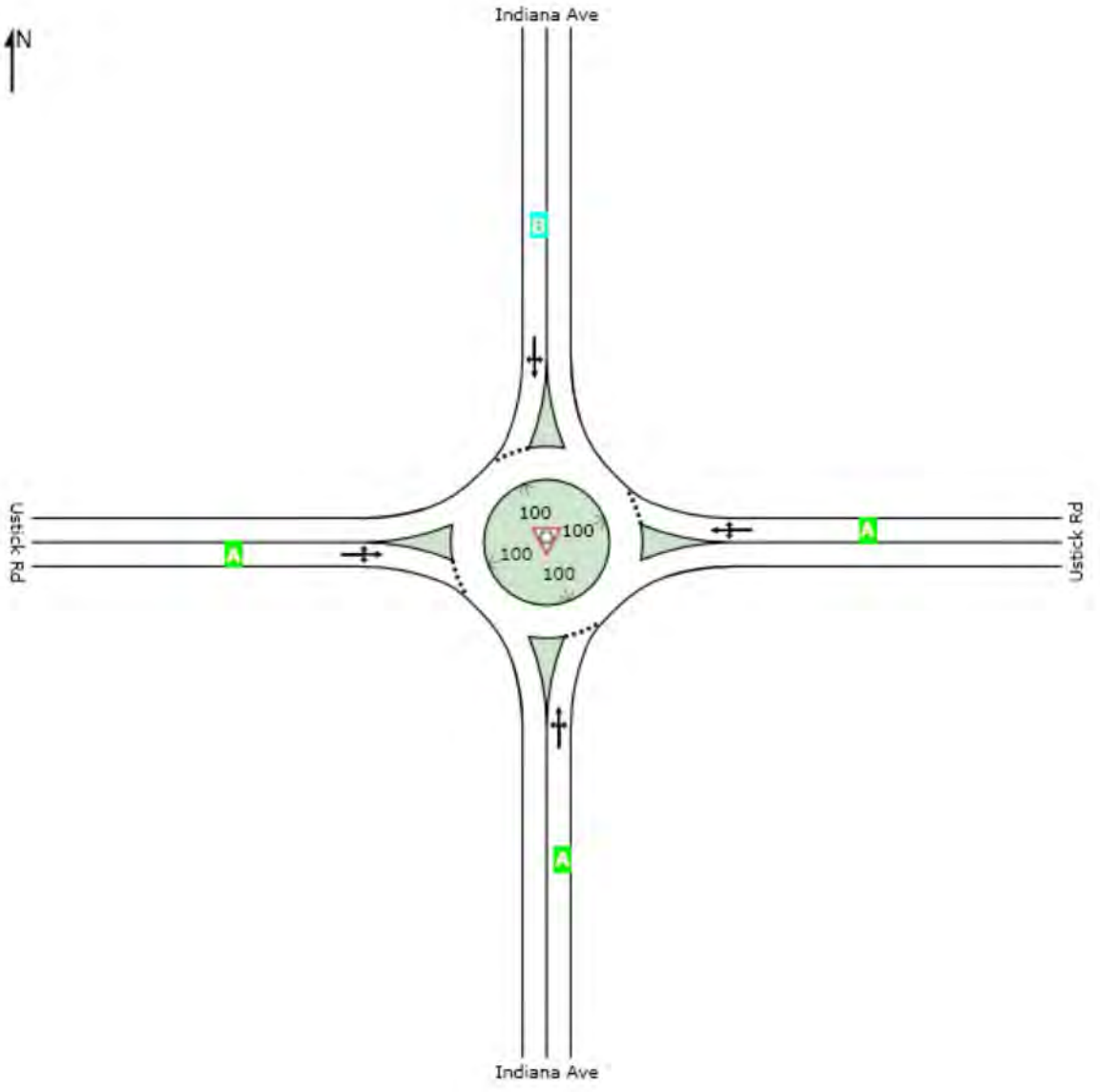
LEVEL OF SERVICE

Site: 2020 No-Build PM

Indiana/Ustick
Roundabout

All Movement Classes

	South	East	North	West	Intersection
LOS	A	A	B	A	A



Level of Service (LOS) Method: Delay & v/c (HCM 2010).
Roundabout LOS Method: Same as Sign Control.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 2010).
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.

MOVEMENT SUMMARY

Site: 2020 No-Build PM

Indiana/Ustick
Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: Indiana Ave											
3	L2	31	2.0	0.300	7.6	LOS A	1.3	31.9	0.57	0.55	31.0
8	T1	165	2.0	0.300	7.6	LOS A	1.3	31.9	0.57	0.55	30.8
18	R2	57	2.0	0.300	7.6	LOS A	1.3	31.9	0.57	0.55	29.9
Approach		253	2.0	0.300	7.6	LOS A	1.3	31.9	0.57	0.55	30.6
East: Ustick Rd											
1	L2	67	2.0	0.512	9.8	LOS A	3.0	77.4	0.59	0.52	30.1
6	T1	330	2.0	0.512	9.8	LOS A	3.0	77.4	0.59	0.52	29.9
16	R2	124	2.0	0.512	9.8	LOS A	3.0	77.4	0.59	0.52	29.1
Approach		521	2.0	0.512	9.8	LOS A	3.0	77.4	0.59	0.52	29.7
North: Indiana Ave											
7	L2	93	2.0	0.543	11.2	LOS B	3.4	86.2	0.66	0.68	29.5
4	T1	232	2.0	0.543	11.2	LOS B	3.4	86.2	0.66	0.68	29.2
14	R2	175	2.0	0.543	11.2	LOS B	3.4	86.2	0.66	0.68	28.4
Approach		500	2.0	0.543	11.2	LOS B	3.4	86.2	0.66	0.68	29.0
West: Ustick Rd											
5	L2	124	2.0	0.477	9.6	LOS A	2.6	66.9	0.60	0.57	29.9
2	T1	309	2.0	0.477	9.6	LOS A	2.6	66.9	0.60	0.57	29.7
12	R2	21	2.0	0.477	9.6	LOS A	2.6	66.9	0.60	0.57	28.9
Approach		454	2.0	0.477	9.6	LOS A	2.6	66.9	0.60	0.57	29.7
All Vehicles		1727	2.0	0.543	9.8	LOS A	3.4	86.2	0.61	0.59	29.6

Level of Service (LOS) Method: Delay & v/c (HCM 2010).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 2010).
Roundabout Capacity Model: US HCM 2010.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

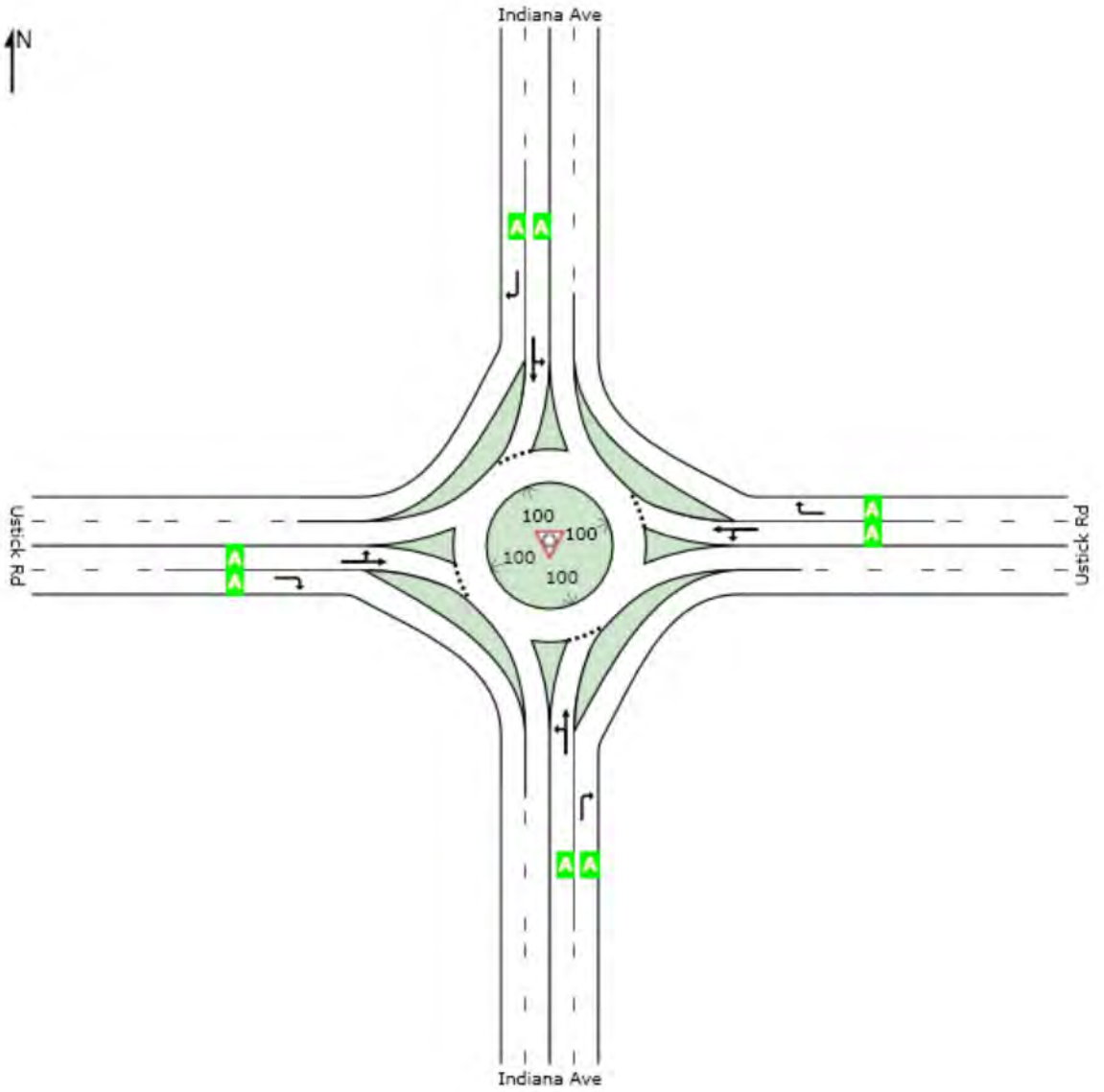
LEVEL OF SERVICE

Site: 2020 Base PM - Modified Multilane

Indiana/Ustick
Roundabout

All Movement Classes

	South	East	North	West	Intersection
LOS	A	A	A	A	A



Level of Service (LOS) Method: Delay & v/c (HCM 2010).
Roundabout LOS Method: Same as Sign Control.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 2010).
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.

MOVEMENT SUMMARY

Site: 2020 Base PM - Modified Multilane

Indiana/Ustick
Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: Indiana Ave											
3	L2	31	2.0	0.232	6.7	LOS A	0.9	23.5	0.54	0.51	31.4
8	T1	165	2.0	0.232	6.7	LOS A	0.9	23.5	0.54	0.51	31.1
18	R2	57	2.0	0.038	0.0	LOS A	0.0	0.0	0.00	0.00	33.8
Approach		253	2.0	0.232	5.2	LOS A	0.9	23.5	0.42	0.40	31.7
East: Ustick Rd											
1	L2	67	2.0	0.391	7.8	LOS A	1.9	48.6	0.51	0.43	30.9
6	T1	330	2.0	0.391	7.8	LOS A	1.9	48.6	0.51	0.43	30.7
16	R2	124	2.0	0.083	0.0	LOS A	0.0	0.0	0.00	0.00	33.8
Approach		521	2.0	0.391	5.9	LOS A	1.9	48.6	0.39	0.33	31.4
North: Indiana Ave											
7	L2	93	2.0	0.353	7.8	LOS A	1.6	40.5	0.55	0.51	30.6
4	T1	232	2.0	0.353	7.8	LOS A	1.6	40.5	0.55	0.51	30.4
14	R2	175	2.0	0.117	0.0	LOS A	0.0	0.0	0.00	0.00	33.7
Approach		500	2.0	0.353	5.1	LOS A	1.6	40.5	0.36	0.33	31.5
West: Ustick Rd											
5	L2	124	2.0	0.455	9.2	LOS A	2.4	61.1	0.59	0.55	30.1
2	T1	309	2.0	0.455	9.2	LOS A	2.4	61.1	0.59	0.55	29.8
12	R2	21	2.0	0.014	0.0	LOS A	0.0	0.0	0.00	0.00	33.8
Approach		454	2.0	0.455	8.8	LOS A	2.4	61.1	0.56	0.53	30.1
All Vehicles		1727	2.0	0.455	6.3	LOS A	2.4	61.1	0.43	0.39	31.1

Level of Service (LOS) Method: Delay & v/c (HCM 2010).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 2010).
Roundabout Capacity Model: US HCM 2010.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

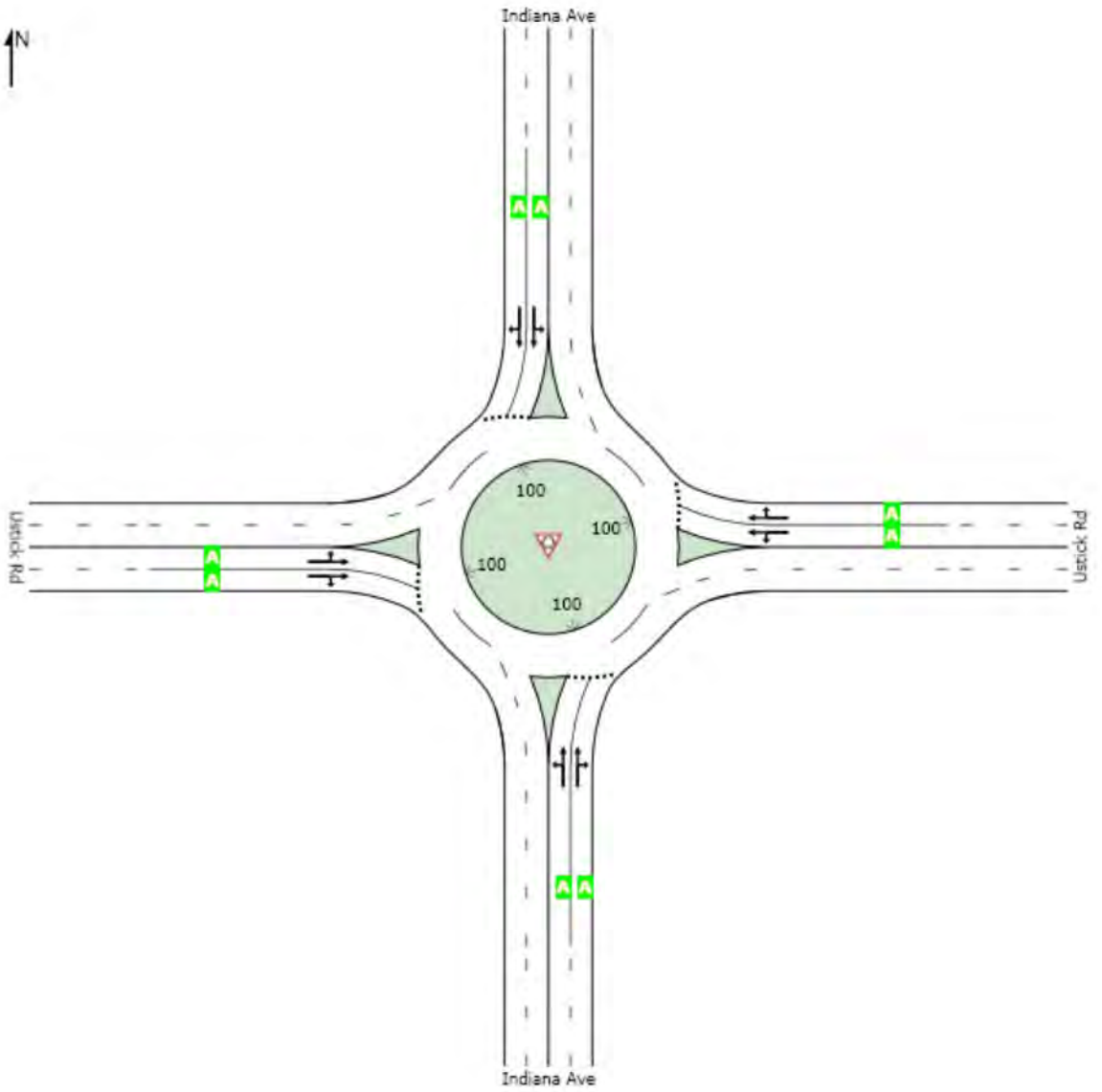
LEVEL OF SERVICE

Site: 2020 Base PM - Multilane

Indiana/Ustick
Roundabout

All Movement Classes

	South	East	North	West	Intersection
LOS	A	A	A	A	A



Level of Service (LOS) Method: Delay & v/c (HCM 2010).
Roundabout LOS Method: Same as Sign Control.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 2010).
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.

MOVEMENT SUMMARY

Site: 2020 Base PM - Multilane

Indiana/Ustick
Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: Indiana Ave											
3	L2	31	2.0	0.150	5.8	LOS A	0.6	14.3	0.51	0.46	31.6
8	T1	165	2.0	0.150	5.8	LOS A	0.6	14.3	0.51	0.46	31.5
18	R2	57	2.0	0.150	5.8	LOS A	0.6	14.3	0.51	0.46	30.8
Approach		253	2.0	0.150	5.8	LOS A	0.6	14.3	0.51	0.46	31.4
East: Ustick Rd											
1	L2	67	2.0	0.256	6.0	LOS A	1.1	28.0	0.45	0.36	31.4
6	T1	330	2.0	0.256	6.0	LOS A	1.1	28.0	0.45	0.36	31.4
16	R2	124	2.0	0.256	6.0	LOS A	1.1	28.0	0.45	0.36	30.7
Approach		521	2.0	0.256	6.0	LOS A	1.1	28.0	0.45	0.36	31.2
North: Indiana Ave											
7	L2	93	2.0	0.271	6.7	LOS A	1.1	29.1	0.52	0.46	30.9
4	T1	232	2.0	0.271	6.7	LOS A	1.1	29.1	0.52	0.46	30.8
14	R2	175	2.0	0.271	6.7	LOS A	1.1	29.1	0.52	0.46	30.4
Approach		500	2.0	0.271	6.7	LOS A	1.1	29.1	0.52	0.46	30.7
West: Ustick Rd											
5	L2	124	2.0	0.238	6.2	LOS A	1.0	25.1	0.48	0.42	30.7
2	T1	309	2.0	0.238	6.2	LOS A	1.0	25.1	0.48	0.42	31.3
12	R2	21	2.0	0.238	6.2	LOS A	1.0	25.1	0.48	0.42	30.7
Approach		454	2.0	0.238	6.2	LOS A	1.0	25.1	0.48	0.42	31.1
All Vehicles		1727	2.0	0.271	6.2	LOS A	1.1	29.1	0.49	0.42	31.1

Level of Service (LOS) Method: Delay & v/c (HCM 2010).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 2010).
Roundabout Capacity Model: US HCM 2010.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

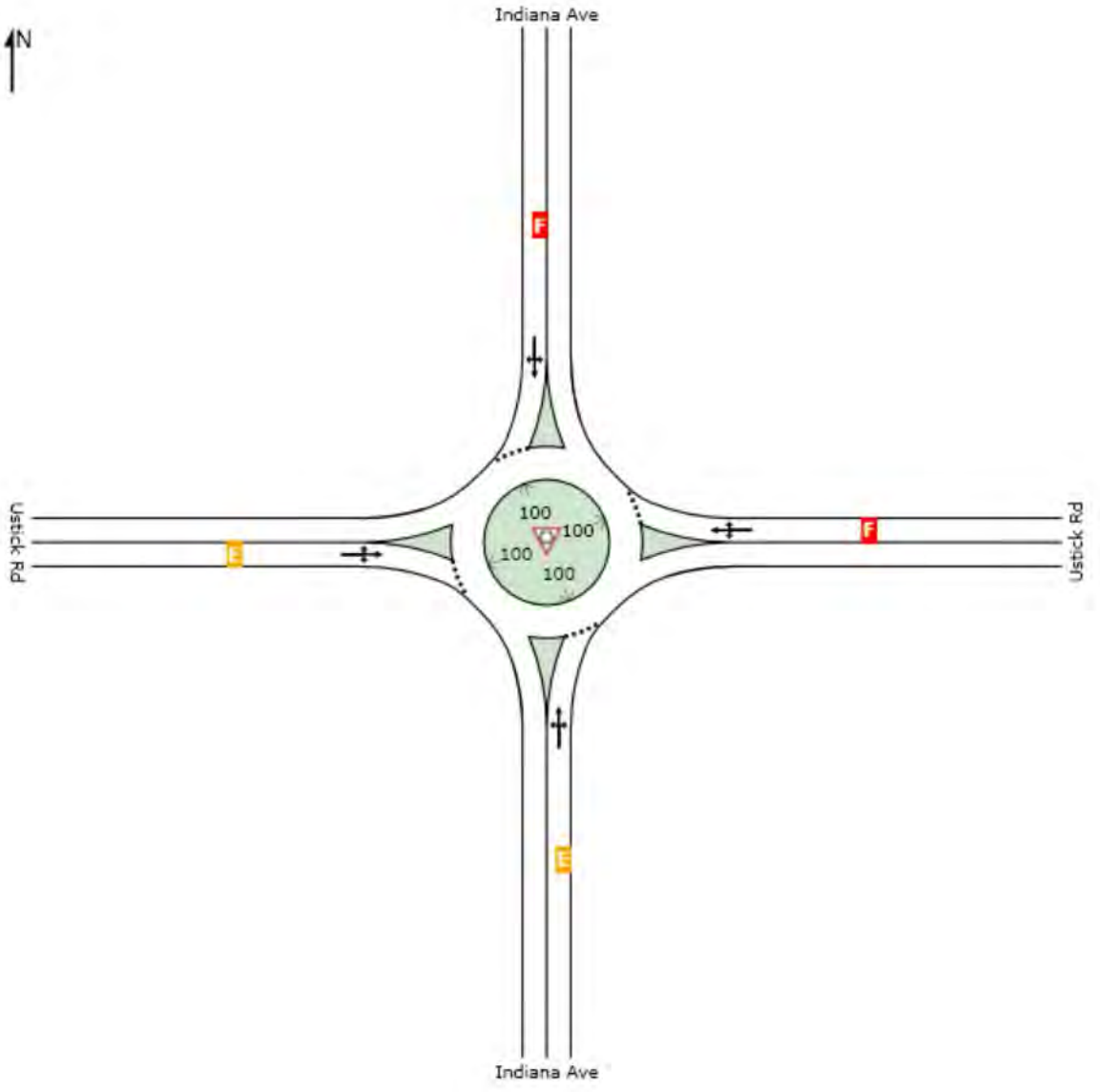
LEVEL OF SERVICE

Site: 2040 No-Build PM

Indiana/Ustick
Roundabout

All Movement Classes

	South	East	North	West	Intersection
LOS	E	F	F	E	F



Level of Service (LOS) Method: Delay & v/c (HCM 2010).
Roundabout LOS Method: Same as Sign Control.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 2010).
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.

MOVEMENT SUMMARY

Site: 2040 No-Build PM

Indiana/Ustick
Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: Indiana Ave											
3	L2	93	2.0	0.935	46.4	LOS E	12.6	319.6	0.98	1.55	20.3
8	T1	361	2.0	0.935	46.4	LOS E	12.6	319.6	0.98	1.55	20.2
18	R2	144	2.0	0.935	46.4	LOS E	12.6	319.6	0.98	1.55	19.8
Approach		598	2.0	0.935	46.4	LOS E	12.6	319.6	0.98	1.55	20.1
East: Ustick Rd											
1	L2	175	2.0	1.682	327.9	LOS F	177.2	4501.8	1.00	6.78	5.8
6	T1	876	2.0	1.682	327.9	LOS F	177.2	4501.8	1.00	6.78	5.8
16	R2	227	2.0	1.682	327.9	LOS F	177.2	4501.8	1.00	6.78	5.8
Approach		1278	2.0	1.682	327.9	LOS F	177.2	4501.8	1.00	6.78	5.8
North: Indiana Ave											
7	L2	144	2.0	1.122	95.1	LOS F	41.7	1059.1	1.00	2.89	14.1
4	T1	392	2.0	1.122	95.1	LOS F	41.7	1059.1	1.00	2.89	14.1
14	R2	258	2.0	1.122	95.1	LOS F	41.7	1059.1	1.00	2.89	13.9
Approach		794	2.0	1.122	95.1	LOS F	41.7	1059.1	1.00	2.89	14.0
West: Ustick Rd											
5	L2	186	2.0	0.926	38.8	LOS E	14.7	373.6	1.00	1.48	21.7
2	T1	515	2.0	0.926	38.8	LOS E	14.7	373.6	1.00	1.48	21.6
12	R2	41	2.0	0.926	38.8	LOS E	14.7	373.6	1.00	1.48	21.2
Approach		742	2.0	0.926	38.8	LOS E	14.7	373.6	1.00	1.48	21.6
All Vehicles		3412	2.0	1.682	161.5	LOS F	177.2	4501.8	1.00	3.81	10.0

Level of Service (LOS) Method: Delay & v/c (HCM 2010).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 2010).
Roundabout Capacity Model: US HCM 2010.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

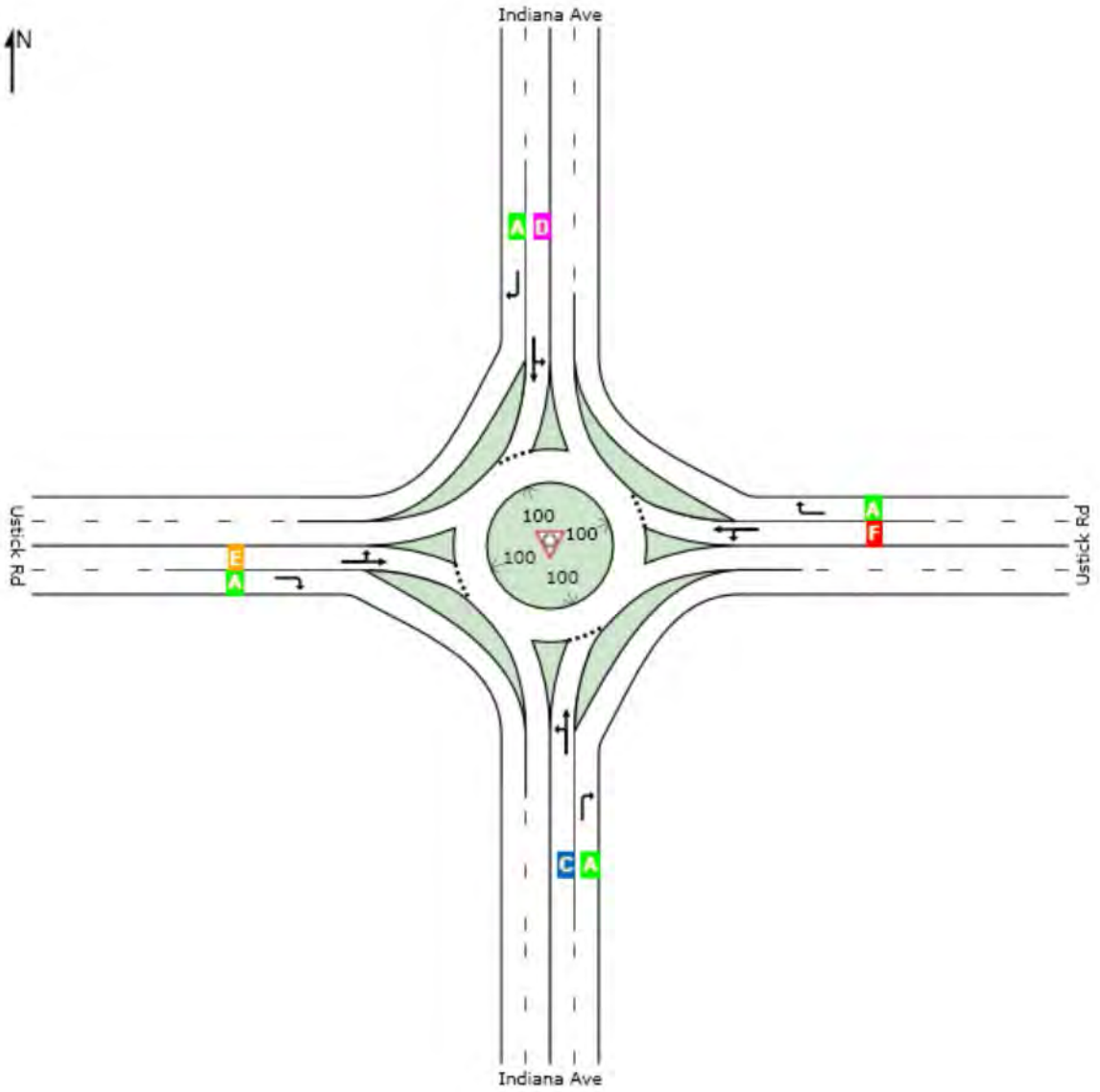
LEVEL OF SERVICE

Site: 2040 Special PM - Modified Multilane

Indiana/Ustick
Roundabout

All Movement Classes

	South	East	North	West	Intersection
LOS	C	F	C	E	F



Level of Service (LOS) Method: Delay & v/c (HCM 2010).
Roundabout LOS Method: Same as Sign Control.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 2010).
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.

MOVEMENT SUMMARY

Site: 2040 Special PM - Modified Multilane

Indiana/Ustick
Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: Indiana Ave											
3	L2	93	2.0	0.720	22.6	LOS C	5.0	127.7	0.84	1.02	25.7
8	T1	361	2.0	0.720	22.6	LOS C	5.0	127.7	0.84	1.02	25.5
18	R2	144	2.0	0.097	0.0	LOS A	0.0	0.0	0.00	0.00	33.8
Approach		598	2.0	0.720	17.1	LOS C	5.0	127.7	0.64	0.77	27.1
East: Ustick Rd											
1	L2	175	2.0	1.383	198.0	LOS F	105.3	2675.2	1.00	5.04	8.7
6	T1	876	2.0	1.383	198.0	LOS F	105.3	2675.2	1.00	5.04	8.7
16	R2	227	2.0	0.152	0.0	LOS A	0.0	0.0	0.00	0.00	33.7
Approach		1278	2.0	1.383	162.9	LOS F	105.3	2675.2	0.82	4.15	9.9
North: Indiana Ave											
7	L2	144	2.0	0.856	34.8	LOS D	8.3	211.2	0.92	1.27	22.5
4	T1	392	2.0	0.856	34.8	LOS D	8.3	211.2	0.92	1.27	22.4
14	R2	258	2.0	0.172	0.0	LOS A	0.0	0.0	0.00	0.00	33.7
Approach		794	2.0	0.856	23.5	LOS C	8.3	211.2	0.62	0.86	25.1
West: Ustick Rd											
5	L2	186	2.0	0.942	43.7	LOS E	15.1	382.8	1.00	1.57	20.7
2	T1	515	2.0	0.942	43.7	LOS E	15.1	382.8	1.00	1.57	20.6
12	R2	41	2.0	0.028	0.0	LOS A	0.0	0.0	0.00	0.00	33.8
Approach		742	2.0	0.942	41.3	LOS E	15.1	382.8	0.94	1.48	21.1
All Vehicles		3412	2.0	1.383	78.5	LOS F	105.3	2675.2	0.77	2.21	15.7

Level of Service (LOS) Method: Delay & v/c (HCM 2010).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 2010).
Roundabout Capacity Model: US HCM 2010.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

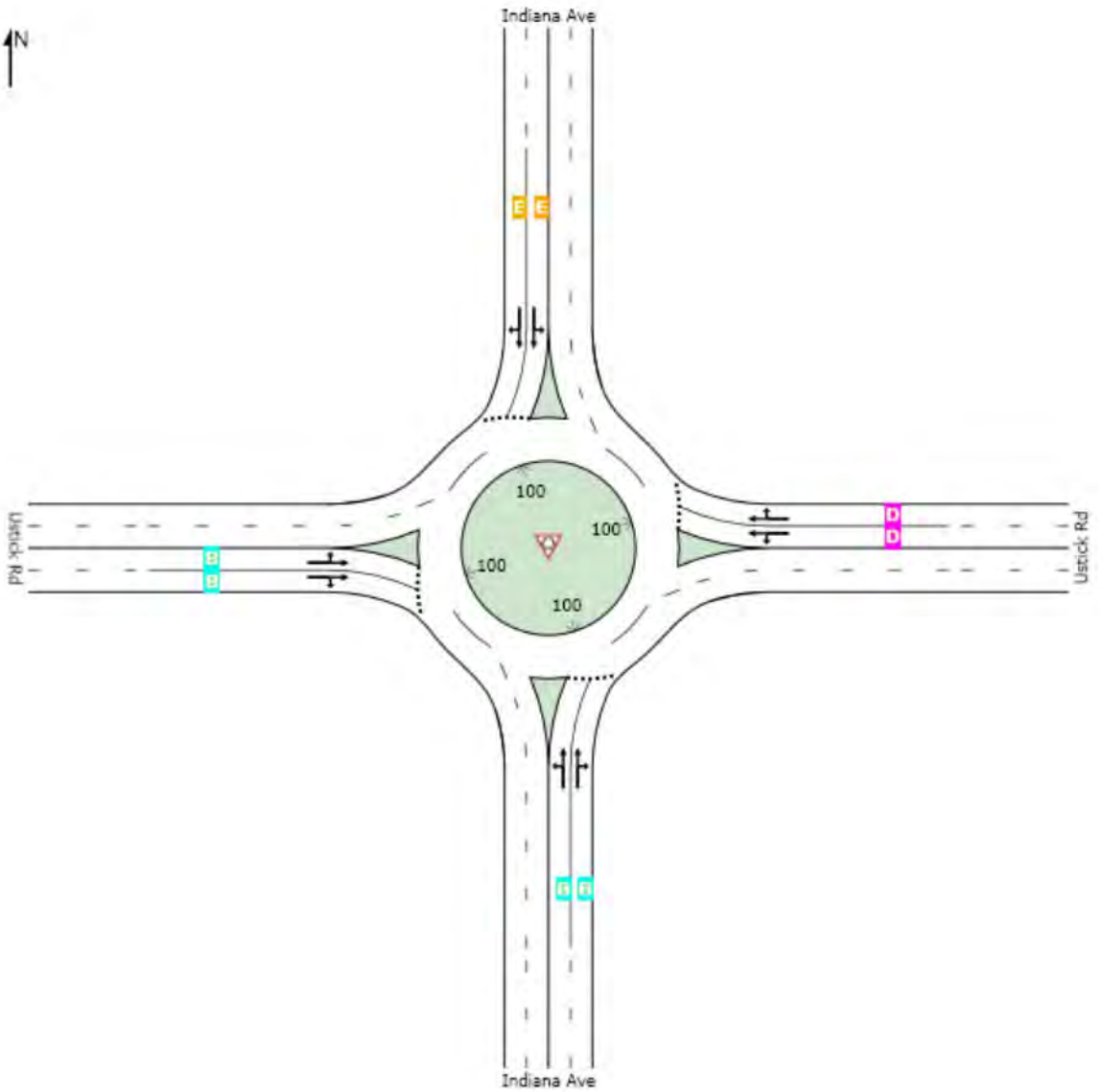
LEVEL OF SERVICE

Site: 2040 Special PM - Multilane

Indiana/Ustick
Roundabout

All Movement Classes

	South	East	North	West	Intersection
LOS	B	D	E	B	C



Level of Service (LOS) Method: Delay & v/c (HCM 2010).
Roundabout LOS Method: Same as Sign Control.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 2010).
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.

MOVEMENT SUMMARY

Site: 2040 Special PM - Multilane

Indiana/Ustick
Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: Indiana Ave											
3	L2	93	2.0	0.474	13.1	LOS B	2.3	58.4	0.72	0.78	28.5
8	T1	361	2.0	0.474	13.1	LOS B	2.3	58.4	0.72	0.78	28.5
18	R2	144	2.0	0.474	13.1	LOS B	2.3	58.4	0.72	0.78	28.0
Approach		598	2.0	0.474	13.1	LOS B	2.3	58.4	0.72	0.78	28.4
East: Ustick Rd											
1	L2	175	2.0	0.841	28.6	LOS D	9.1	230.8	0.94	1.22	24.0
6	T1	876	2.0	0.841	28.6	LOS D	9.1	230.8	0.94	1.22	24.0
16	R2	227	2.0	0.841	28.6	LOS D	9.1	230.8	0.94	1.22	23.5
Approach		1278	2.0	0.841	28.6	LOS D	9.1	230.8	0.94	1.22	23.9
North: Indiana Ave											
7	L2	144	2.0	0.826	38.2	LOS E	6.1	155.8	0.91	1.22	21.7
4	T1	392	2.0	0.826	38.2	LOS E	6.1	155.8	0.91	1.22	21.7
14	R2	258	2.0	0.826	38.2	LOS E	6.1	155.8	0.91	1.22	21.3
Approach		794	2.0	0.826	38.2	LOS E	6.1	155.8	0.91	1.22	21.6
West: Ustick Rd											
5	L2	186	2.0	0.521	13.0	LOS B	2.8	71.9	0.72	0.79	28.2
2	T1	515	2.0	0.521	13.0	LOS B	2.8	71.9	0.72	0.79	28.6
12	R2	41	2.0	0.521	13.0	LOS B	2.8	71.9	0.72	0.79	28.1
Approach		742	2.0	0.521	13.0	LOS B	2.8	71.9	0.72	0.79	28.5
All Vehicles		3412	2.0	0.841	24.7	LOS C	9.1	230.8	0.84	1.05	24.8

Level of Service (LOS) Method: Delay & v/c (HCM 2010).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 2010).
Roundabout Capacity Model: US HCM 2010.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

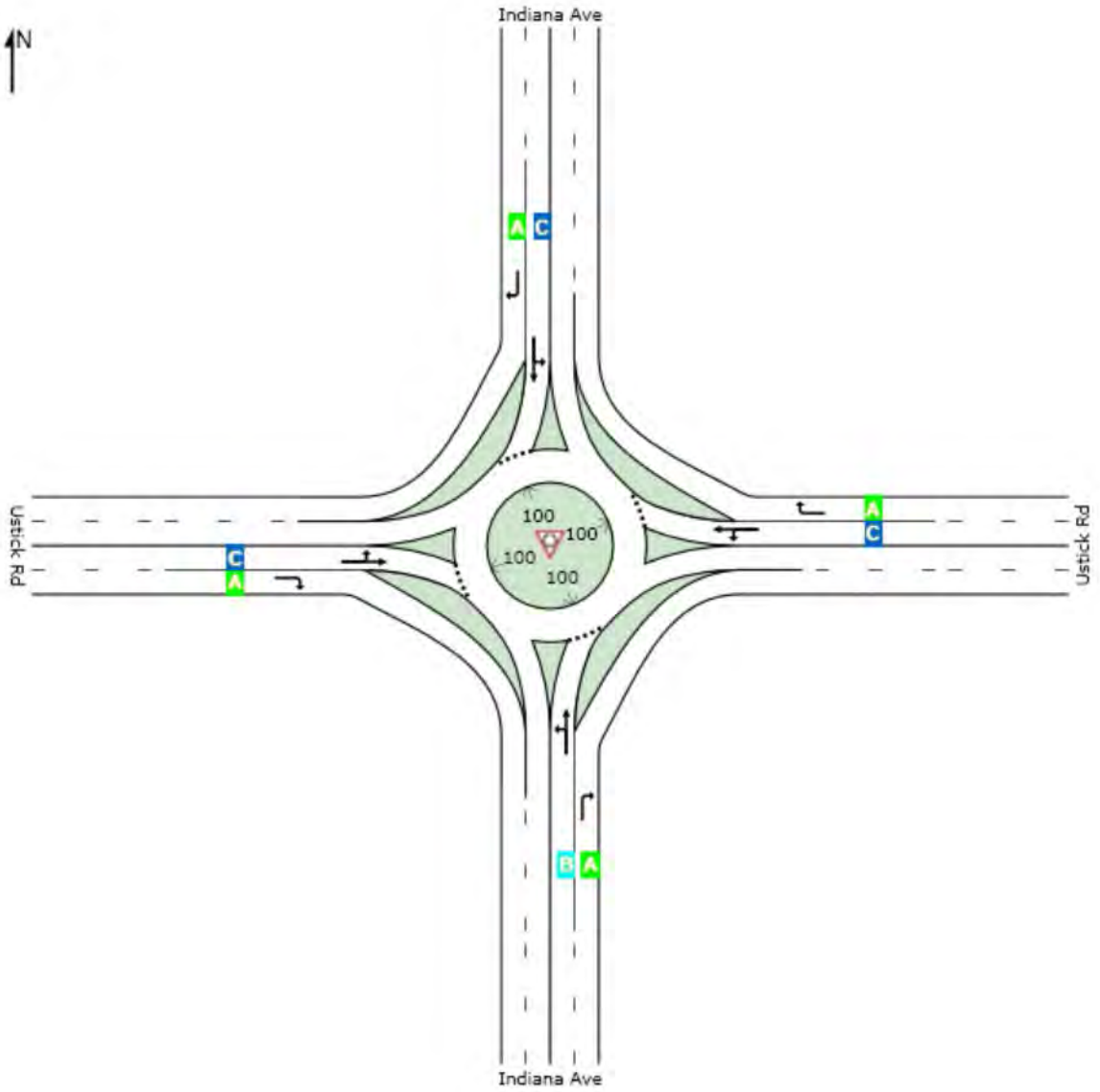
LEVEL OF SERVICE

Site: 2030 PM - Modified Multilane

Indiana/Ustick
Roundabout

All Movement Classes

	South	East	North	West	Intersection
LOS	A	C	B	C	C



Level of Service (LOS) Method: Delay & v/c (HCM 2010).
Roundabout LOS Method: Same as Sign Control.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 2010).
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.

MOVEMENT SUMMARY

Site: 2030 PM - Modified Multilane

Indiana/Ustick
Roundabout

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: Indiana Ave											
3	L2	62	2.0	0.446	11.1	LOS B	2.2	55.6	0.68	0.72	29.5
8	T1	263	2.0	0.446	11.1	LOS B	2.2	55.6	0.68	0.72	29.3
18	R2	103	2.0	0.069	0.0	LOS A	0.0	0.0	0.00	0.00	33.8
Approach		428	2.0	0.446	8.4	LOS A	2.2	55.6	0.52	0.55	30.3
East: Ustick Rd											
1	L2	124	2.0	0.827	24.5	LOS C	9.7	247.4	0.94	1.16	25.2
6	T1	603	2.0	0.827	24.5	LOS C	9.7	247.4	0.94	1.16	25.1
16	R2	175	2.0	0.117	0.0	LOS A	0.0	0.0	0.00	0.00	33.7
Approach		902	2.0	0.827	19.7	LOS C	9.7	247.4	0.76	0.94	26.4
North: Indiana Ave											
7	L2	119	2.0	0.652	18.3	LOS C	4.2	106.1	0.80	0.93	26.9
4	T1	314	2.0	0.652	18.3	LOS C	4.2	106.1	0.80	0.93	26.7
14	R2	216	2.0	0.145	0.0	LOS A	0.0	0.0	0.00	0.00	33.7
Approach		649	2.0	0.652	12.2	LOS B	4.2	106.1	0.53	0.62	28.7
West: Ustick Rd											
5	L2	155	2.0	0.692	17.1	LOS C	5.4	138.3	0.81	0.93	27.3
2	T1	412	2.0	0.692	17.1	LOS C	5.4	138.3	0.81	0.93	27.1
12	R2	31	2.0	0.021	0.0	LOS A	0.0	0.0	0.00	0.00	33.8
Approach		598	2.0	0.692	16.2	LOS C	5.4	138.3	0.76	0.89	27.4
All Vehicles		2577	2.0	0.827	15.1	LOS C	9.7	247.4	0.66	0.78	27.8

Level of Service (LOS) Method: Delay & v/c (HCM 2010).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 2010).
Roundabout Capacity Model: US HCM 2010.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

APPENDIX C
ENVIRONMENTAL SCAN

ENVIRONMENTAL SCAN

Ustick Road, Montana to Indiana, Pre-Concept
Caldwell, Idaho
COMPASS Project No. 2015-16

Prepared by
Bionomics Environmental, Inc.
1045 E Winding Creek Drive
Eagle, Idaho 83616

September 4, 2015

TABLE OF CONTENTS

LIST OF TABLES

APPENDIX A: SUPPORTING DOCUMENTATION

1 Introduction

The Community Planning Association of Southwest Idaho has tasked Six Mile Engineering to prepare a pre-concept report for improvements to Ustick Road from Montana Avenue to Indiana Avenue in Caldwell, Idaho (see Appendix A, Figure 1). As part of the pre-concept report, the following environmental scan will identify environmental resources within the study boundary that may be impacted by the proposed project and identify any red flag issues. The scan will also identify environmental permits that may be required during future design and construction phases.

2 Project Description

The Ustick Road project is located in the western portion of the City of Caldwell. Ustick Road is a rural two-lane roadway with a posted speed limit of 35 miles per hour. Within the project limits, Montana Avenue is a rural two-lane roadway.

The project is intended to widen Ustick Road to five lanes from west of Montana Avenue to Indiana Avenue and to install a traffic signal or roundabout at the Montana intersection if warranted (see Appendix A, Figure 2). The proposed cross section will also include bike lanes in both directions.

The project will include new sidewalk on both sides of Ustick Road. A YMCA is located on Indiana north of Ustick, and there are several schools located within a one-mile radius of the project area. The proposed YMCA Corridor Pathway will cross Ustick Road midway between Montana and Indiana. A pedestrian hybrid beacon (HAWK signal) will be included at this crossing.

The evaluation of proposed improvements at the Montana-Ustick intersection will include a conventional traffic signal and a roundabout. A traffic signal may be a better candidate due to property impacts, depending on the traffic analysis results.

3 Methods

This technical document utilized existing documentation and studies available from various regulatory agencies, including:

- Archaeological and Historical Site Atlas
- National Register of Historic Places (NRHP)
- US Fish and Wildlife Service (USFWS) National Wetlands Inventory Maps
- Soil Survey Maps, US Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS)
- Idaho Conservation Data Center (CDC) informational request
- USFWS Information for Planning Conservation (IPaC)
- Noise Guidance from Federal Highway Administration, June 2010, Highway Traffic Noise: Analysis and Abatement Guidance
- Air Quality Division, Idaho Department of Environmental Quality (DEQ)
- Underground Storage Tanks/Leaking Underground Storage Tanks Database, DEQ
- Envirofacts Database, Environmental Protection Agency (EPA)
- Emergency Response Database, National Response Center
- Water Quality Division, DEQ
- Well Inventory Database, Idaho Department of Water Resources (DWR)
- County List of Funds Granted, State Land and Water Conservation Funds (LWCF)

4 Environmental Scan

4.1 Cultural Resources

A record search (#15351) was conducted at the Idaho State Historic Preservation Office (SHPO) on August 24, 2015. A total of seven surveys have been previously conducted and four sites have been previously recorded within one-half mile of the project area. Table 1 represents the previous studies within one-half mile of the study area, and Table 2 represents the previously recorded historic sites within one-half mile of the study area. Also, a review of aerial maps indicates the presence of historic properties along the north and south side of Ustick Road within the project area, but no formal recommendations or recordations have been made in regards to these properties for this scan.

Table 1. Summary of Previous Studies Within One-Half Mile of the Project Area.

Report No.	Author	Title	Results	Proximity to APE
2014/375	Retter, M.	ID4 Cougs Cellular Telecommunications Project, 4007 South Montana Avenue, Caldwell, Canyon County, Idaho	Two cultural resources identified within 0.5 mile of the project area	0.03 mile north of the project area
2007/542	TEC	Pioneer Irrigation District, Title Transfer, Canyon Co.	One cultural resource identified within 0.5 mile of the project area	At its closest point: 0.04 mile southeast of the project area
2007/562	Mauser, L.	Caldwell Biking-Walking Trail System, South-Central Caldwell. Mauser, Bayview, ID	Three cultural resources identified within 0.5 mile of the project area	0.5 mile north/northwest of the project area
2001/973	Mauser, L.	City of Caldwell Brother's Park Development, Caldwell, Idaho. Archaeological and Historical Resource Consulting, Boise, Idaho	No cultural resources identified within 0.5 mile of the project area	0.23 mile east of the project area
2000/965	Mauser, L.	CRS for the Portstewart Senior Community Apartments, Caldwell, Idaho. Archaeological and Historical Consulting, Boise, ID	No cultural resources identified within 0.5 mile of the project area	0.43 mile west of the project area
1996/1039	Miss, C., et. al.	Cultural Resources Inventory Completed for the Proposed Worldcom Seattle to Salt Lake City Fiber Optic Line Part 2: Idaho. Northwest Archaeological Associates, Inc.	Archived Report – Not available at Idaho SHPO	Archived Report – Not available at Idaho SHPO
1992/318	Petersen, N.	Linden Street, Caldwell. Idaho Transportation Dept.	Archived Report – Not available at Idaho SHPO	Archived Report – Not available at Idaho SHPO

Table 2. Previously Recorded Historic Sites Within One-Half Mile of the Project Area.

Site No.	Name/Type of Site	NRHP Eligibility	Proximity to APE
27-19639	Caldwell Low Line Canal	Eligible	At its closest point – 575 feet north of the project area
27-19653	Dixie Drain – Pioneer Irrigation District	Eligible	Within; crosses the project area on the eastern end in a northwest/southeast direction
27-20215	Henderson House – 3904 S. Indiana Ave.	Eligible	585 feet northwest project area (at the southern end)
27-20632	2nd Order Unnamed Ditch	Not Eligible	At its closest point – 0.26 miles east of the project area

Summary of the Site Within the Current Project Area *(Information in the following section is derived from the respective site form, which is available at the Idaho SHPO)*:

Dixie Drain – Pioneer Irrigation District (27-19653)

This site was recorded in 2005 and 2007. The Dixie Drain flows through the Caldwell area beginning near Kimball Road east of Caldwell and generally flows south/southeast for approximately 4.2 miles where it ends southwest of the Maple Grove School. Construction began circa1913 and is part of the Pioneer Irrigation District which was formed in 1900 and has a network of drains throughout Canyon County. This site is **eligible** for listing in the NRHP under Criterion A for its association with the Boise Project and the development of agriculture in the Boise Valley, and Criterion C for engineering design.

The previous studies and surveys outlined above were all identified because they are located within one-half mile of the current project area for the Ustick Road, Montana to Indiana, Pre-Concept Design. These previous surveys provide useful information to the types of cultural resources that have the potential to be encountered during the proposed ground disturbing activities. Notably, the towns of Nampa and Caldwell (specifically) and Treasure Valley (generally) has been used as far back as 14,000 years. A review of aerial photos indicates the presence of historic properties along the project area. The resources identified were not formally recorded for NRHP eligibility. If this project proceeds to a formal Section 106 evaluation, these resources (along with all other properties within the project area) will be formally recorded and eligibility determinations will be made. Prior to construction, it is recommended that all known historic sites within the project area be assessed for NRHP eligibility.

4.2 Waters of the US, including Wetlands

The Dixie Drain and an unidentified irrigation ditch were identified crossing under Ustick Road within the project area (see Appendix A, Figure 4). Both irrigation features were identified through topographic maps and aerial photographs of the project. The Dixie Drain was identified 350 feet west of the intersection of Ustick Road and Indiana Avenue, while the unnamed ditch was identified 250 feet west of the intersection of Ustick Road and Montana Avenue. Review of topographic maps indicates the unnamed ditch flows northwest to the Dixie Drain. The Dixie Drain flows generally in a northern direction to the Boise River, located approximately three miles north of the project area. The Dixie Drain and unnamed irrigation ditch are part of the Pioneer Irrigation District.

Review of the USFWS National Wetland Inventory Maps did not reveal any mapped wetlands within the project area (see Appendix A, Figure 4). Further, review of the Natural Resources Conservation Service Soil Survey data indicates the project area is comprised of the following soils: Bram silt loam, 0 to 3% slopes, and Power silt loam, 0 to 3% slopes. None of these soils are considered hydric. Although existing data sources do not reveal wetlands, the potential for fringe emergent wetland along

irrigation features is likely to occur. A wetland delineation should be conducted to verify presence or absence of wetlands.

The Dixie Drain and unnamed irrigation ditch are likely to be considered under the jurisdiction of the U.S. Army Corps of Engineers (USACE) due to their hydrological connection to the Boise River, a traditional navigable water. Any wetland associated with these irrigation features are also likely considered under the jurisdiction of the USACE. As such, a waters of the U.S. including wetland delineation should be conducted to identify any additional smaller irrigation features within the project area, as well as presence or absence of wetlands. Any purposed construction activity in or near these features could potentially require a permit from the USACE.

4.3 Threatened, Endangered, and Sensitive Species

The USFWS list of endangered, threatened, and candidate species under the Endangered Species Act (ESA) which may occur in the project area can be found in Table 3. No field investigations were made to determine the presence of these species or habitat in the project area. The USFWS Information for Planning Conservation (IPaC) project list can be found in Appendix A.

Table 3. List of endangered, threatened, and candidate species for the Project Area (USFWS IPaC list derived on updated on August 26, 2015).

Species	Scientific Name	Federal Status
Slickspot peppergrass	*Lepidium papilliferum*	Proposed endangered

No field investigations were made to determine the presence of these species or habitat in the project area. A survey should be conducted prior to project implementation to determine the presence/absence of the species.

4.4 Noise

For all federally funded projects, noise analysis is required if the project is a Type I project. Type I projects are projects that involve construction of a highway on a new location, substantially change the horizontal or vertical alignment of an existing highway, and/or increase the number of through traffic lanes on an existing highway (FHWA 2010).

The project would be classified as a Type 1 project as it's proposing an additional travel lane. In addition, the potential roundabout at Montana Avenue would shift the horizontal alignment of the existing roadway potentially toward sensitive receptors. Therefore, a noise analysis would be warranted for the project.

4.5 Air Quality

The project is not within a federally designated air quality Non-Attainment Area for CO or PM10. The project is within an Idaho Department of Environmental Quality identified air quality Area of Concern for CO and PM10. (Idaho DEQ, 2015) This project has been identified as being exempt from air quality analysis in accordance with 40 CFR 93.126. It can therefore be concluded that the project would have no significant adverse impact on air quality.

4.6 Hazardous Materials

All available databases were searched to determine whether the site location or any neighboring properties were listed. The search radius used for each database was taken from the American Society for Testing and Materials (ASTM) Standard E 1527-05. Review of state and federal agency databases did not reveal any records within the ASTM required search radius.

4.7 Minority and Low Income Populations/Environmental Justice

Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, signed by the President on February 11, 1994, directs Federal agencies to take the appropriate and necessary steps to identify and address disproportionately high and adverse effects of Federal projects on the health or environment of minority and low-income populations to the greatest extent practicable and permitted by law.

A minority or low-income population is described in the December 2, 1998, FHWA memo called FHWA Actions to Address Environmental Justice in Minority and Low Income Populations: any readily identifiable group of minority or low-income persons who live in geographic proximity and, if circumstances warrant, geographically dispersed/transient persons who would be similarly affected by a proposed FHWA program, policy or activity.

Census 2000 information identified the following minority population for census tracts in the project area:

- Census Tract 210.01, Block Group1 revealed 1,049 persons (8%),
- Census Tract 217, Block Group 1 revealed 319 persons (8%),
- Census Tract 217, Block Group 2 revealed 365 persons (8%), and
- Census Tract 217, Block Group 3 revealed 106 persons (6%).

The citywide minority population consists of 4,285 persons (9%). The ethnic population in these block groups is lower than the city average.

Census 2000 information identified the following person living in poverty for census tracts in the project area.

- Census Tract 210.01, Block Group 1 revealed 51 persons (12%),
- Census Tract 217, Block Group 1 revealed 94 persons (10%),
- Census Tract 217, Block Group 2 revealed 80 persons (7%), and
- Census Tract 217, Block Group 3 revealed 29 persons (6%).

The citywide poverty population consists of 1,757 persons (16%). The population living in poverty in these block groups is lower than the city average.

Although the above census information did not identify a minority or low-income population in the project area, a windshield survey of the project should be conducted to verify this information.

4.8 Water Quality

Wells

A search of the IDWR well database indicates 37 domestic wells, seven irrigation wells, three municipal wells, and one record indicating a drill and fill within a ½ mile search radius of the project. (see Appendix A, Figure 5)

Two wells were identified adjacent to the intersection of Ustick Road and Indiana Ave; however, not within the project area.

Sole Source Aquifer

No sole source aquifer is located in the vicinity of the project area. The closest sole source aquifer, the Eastern Snake River Plain Aquifer, is located in eastern Idaho (Idaho DEQ, 2015).

Impaired Waters

No water quality impaired waterbodies were identified in the project area.

Floodplains

The Federal Emergency Management Administration (FEMA) Flood Insurance Rate Map (Map Number 16027C0243F) dated May 24, 2011 for Canyon County and unincorporated areas did not show a mapped floodplain associated with the Dixie Drain or any other water feature in the project area. See FEMA map in Appendix A.

Navigable Waters

Navigable waters are those waters of the United States that are subject to tidal action shoreward to mean high water, or are used, have been used, or are susceptible to use in interstate or foreign commerce. According to the ITD's Online Environmental Manual, navigable waters in Idaho include Bear Lake, Clear Fork River, Clearwater River, North Fork Clearwater River, Kootenai River, Pack River, Pend Oreille Lake, Pend Oreille River, and Snake River. None of the water bodies identified in the vicinity of the project area are listed as navigable waters.

National Pollutant Discharge Elimination System (NPDES)

Another source of surface water in the project area is stormwater runoff from Ustick Road, Montana Avenue, and Indiana Avenue. The roadways create an impervious surface, which allows stormwater to carry pollutants to roadside ditches. If ground disturbance will be greater than one acre and stormwater will be discharged to waters of the U.S., an NPDES stormwater permit and stormwater pollution prevention plan (SWPPP) in accordance with Federal and State requirements would be required prior to project implementation.

4.9 Section 6(f) Land and Water Conservation Funds

Passed by Congress in 1965, the Recreation Coordination and Development Act established the LWCF, a matching assistance program that provides grants, which pay half the acquisition and development cost of outdoor recreation sites and facilities. Section 6(f) of the act prohibits the conversion of property acquired or developed with these grants to a non-recreational purpose without the approval of the US Department of the Interior's (USDOI) National Park Service.

A search of grants funded for Canyon County does not show any LWCF funded projects in the project vicinity.

4.10 Prime Farmland

The Farmlands Protection Policy Act (FPPA) of 1981 intended to minimize the impact Federal programs have on the unnecessary and irreversible conversion of farmland to nonagricultural uses. It assures that to the extent possible federal programs are administered to be compatible with state, local units of government, and private programs and policies to protect farmland. For the purpose of FPPA, farmland includes prime farmland, unique farmland, and land of statewide or local importance. Farmland subject to FPPA requirements do not have to be currently used for cropland. These lands can be forest land, pastureland, cropland, or other land, but not water or urban and built-up land (developed areas).

Review of the Canyon County soil survey for the project area identified Bram silt loam, 0 to 3% slopes and Power silt loam, 0 to 3% slopes. Both soil complexes are considered prime farmland if irrigated. However, the Bram silt loam soil complex also needs to be reclaimed of excess salts and sodium to be considered prime farmland.

Depending on the layout of the project, there is a potential to impact prime farmlands. If determined to be impacted, consultation with the NRCS and completion of the NRCS Prime Farmland Conversion Form AD-1006 would need to be completed.

5 Conclusions

The environmental scan report has identified existing conditions for the Ustick Road, Montana to Indiana Avenue project based on a desktop review of available information. This document does not serve as the environmental document for any proposed future design phases; it should be used only as a guide to identify potential resources of concern within the area. No site visits were conducted as part of this scan. The environmental scan of the Ustick Road, Montana to Indiana project area revealed the following information:

- Four known previously recorded cultural resource sites within a ½ mile of the project area. One of those sites, the Dixie Drain, was identified crossing the project area which is a NRHP eligible site.
- The Dixie Drain and an unnamed irrigation ditch were identified in the project area. Both irrigation ditches are considered a water of the U.S. and likely under the jurisdiction of the USACE due to their eventual hydrological connection to the Boise River, a traditional navigable waterway. Any fringe wetlands associated with these drainages would also be considered under the jurisdiction of the USACE.
- The USFWS IPaC list identifies slickspot peppergrass as potentially occurring in the project area.
- The project is within an Idaho DEQ identified air quality Area of Concern for CO and PM10. The project is exempt from an air quality analysis in accordance with 40 CFR 93.126, and, therefore, it can be concluded that the project would have no significant adverse impact on air quality.
- No hazardous material records were identified with the ASTM search radius.
- Census information did not reveal low-income or minority populations in the project area.
- No surface waters were identified in the project area; therefore, no water quality impaired drainages were identified. In addition, no navigable waters or floodplains were identified. Numerous wells were identified within a ½ mile of the project. No sole source aquifer was identified.
- No Section 6(f) resources were identified.
- Prime farmlands were identified along the project area. If determined that prime farmlands are to be impacted, consultation with the NRCS and completion of the NRCS Prime Farmland Conversion Form AD-1006 would need to be completed.

The following technical studies may require completion and approval prior to any construction activity, if federal funds are utilized.

- A categorical exclusion would be required in compliance with NEPA.
- Archaeological and Historic Survey Report, in accordance with Section 106 of the National Historic Preservation Act.
- Waters of the U.S. and Wetland Delineation Report in accordance with Section 404 of the Clean Water Act.
- Biological Evaluation in accordance with Section 7 of the Endangered Species Act, as well as Idaho Species of Concern Report.
- Traffic Noise Analysis in accordance with FHWA guidelines and ITD Noise Policy.
- Hazardous Materials Assessment (project specific).

The following approvals may be necessary, given the resources on or in proximity to the project. This list is not meant to be all inclusive, as additional approval and permits may be necessary based on project specifics.

- Joint Permit Application (to place fill in or dredge waters of the US, including wetlands; to obtain a Section 401 Water Quality Certification; and/or to obtain a state stream alteration permit)
- NPDES Stormwater Permit
- Prime Farmland Conversion

6 References

Federal Emergency Management Agency, Department of Homeland Security. FIRM Maps, Community Panel 243, Map Number 16027C0243F dated May 24, 2011.

Federal Highway Administration. December 2011. Highway Traffic Noise: Analysis and Abatement Guidance

Idaho Department of Environmental Quality. 2015. Attainment Areas in Idaho. Available at http://www.deq.idaho.gov/media/662796-nonattainment_map.pdf

Idaho Department of Environmental Quality. 2015. Groundwater in Idaho: Idaho's Sole Source Aquifer. Available at
http://www.deq.idaho.gov/media/462639-sole_source_aquifers_west_map.pdf

Idaho Department of Environmental Quality. . UST/LUST Database. Available at http://www.deq.idaho.gov/waste-mgmt-remediation/storage-tanks/ust-lust-sites.aspx.

Idaho Department of Water Resources. 2015. Well Information Search. Available at http://www.idwr.idaho.gov/WaterManagement/WellInformation/DrillerReports/dr_default.htm.

Idaho State Historic Preservation Office home page. 2015. Available at http://history.idaho.gov/.

Idaho Transportation Department Online Manual. Available at http://itd.idaho.gov/manuals/Online_Manuals/Environmental/index.htm.

Land and Water Conservation Funds Grant Database: Idaho. Available at http://www.invw.org/data/lwcf/grants-id.html

United States Army Corps of Engineers Wetland Delineation Manual. 1987. Available at http://www.nww.usace.army.mil/Portals/28/docs/regulatory/Wetlands/Regional_Supplement_Arid%20West.pdf.

US Department of the Interior, US Fish and Wildlife Service, National Wetlands Inventory Wetland Mapper. Available at http://wetlandsfws.er.usgs.gov/wtlnds/launch.html

US Environmental Protection Agency. Envirofacts database, Available at http://www.epa.gov/enviro/.

US Fish and Wildlife Service, IPaC Trust Report. Generated on August 25, 2015.

7 Preparers

Nicole Parks has 12 years of experience in the environmental and natural resources field with emphasis in program and project management. She specializes in field survey, sampling, and report preparation in accordance with state and federal environmental regulations. She has experience and expertise in NEPA compliance regulations and environmental permitting for transportation projects, land development, and infrastructure projects. She has prepared NEPA categorical exclusions and environmental evaluations and assessments. As part of the permitting and assessment process, she performs extensive coordination and consultation with federal, state, and local agencies.

Niki Nickoloff holds a Masters of Applied Anthropology degree and has five years of professional experience in intensive and reconnaissance field surveys for cultural resource investigations, prehistoric and historic site excavation, site recordation that includes mapping and photography, and artifact recordation and preservation. Her experience also includes preparation of site forms for historical sites, background/pre-field research with several agencies including the Idaho SHPO and county offices, and preparation of cultural resource reports according to Section 106 of the National Historic Preservation Act of 1966.

APPENDIX A:
Supporting Documentation

- Figure 1. Vicinity Map for the Ustick Road, Montana to Indiana Project Area.
- Figure 2. Site Map for the Ustick Road, Montana to Indiana Project Area
- Figure 3. Previously Recorded Sites Within a ½ Mile of the Ustick Road, Montana to Indiana Project Area.
- Figure 4. Waters and Wetlands Identified in the Ustick Road, Montana to Indiana Project Area.
- USFWS IPaC Trust Resource Report for the Project Area (August 26, 2015)
- Figure 5. Wells Identified for the Ustick Road, Montana to Indiana Project Area.
- Figure 6. Flood Insurance Rate Map for Canyon County, Idaho and Incorporated Areas dated May 24, 2011
- Figure 7. Prime Farmlands Identified in the Ustick Road, Montana to Indiana Project Area.

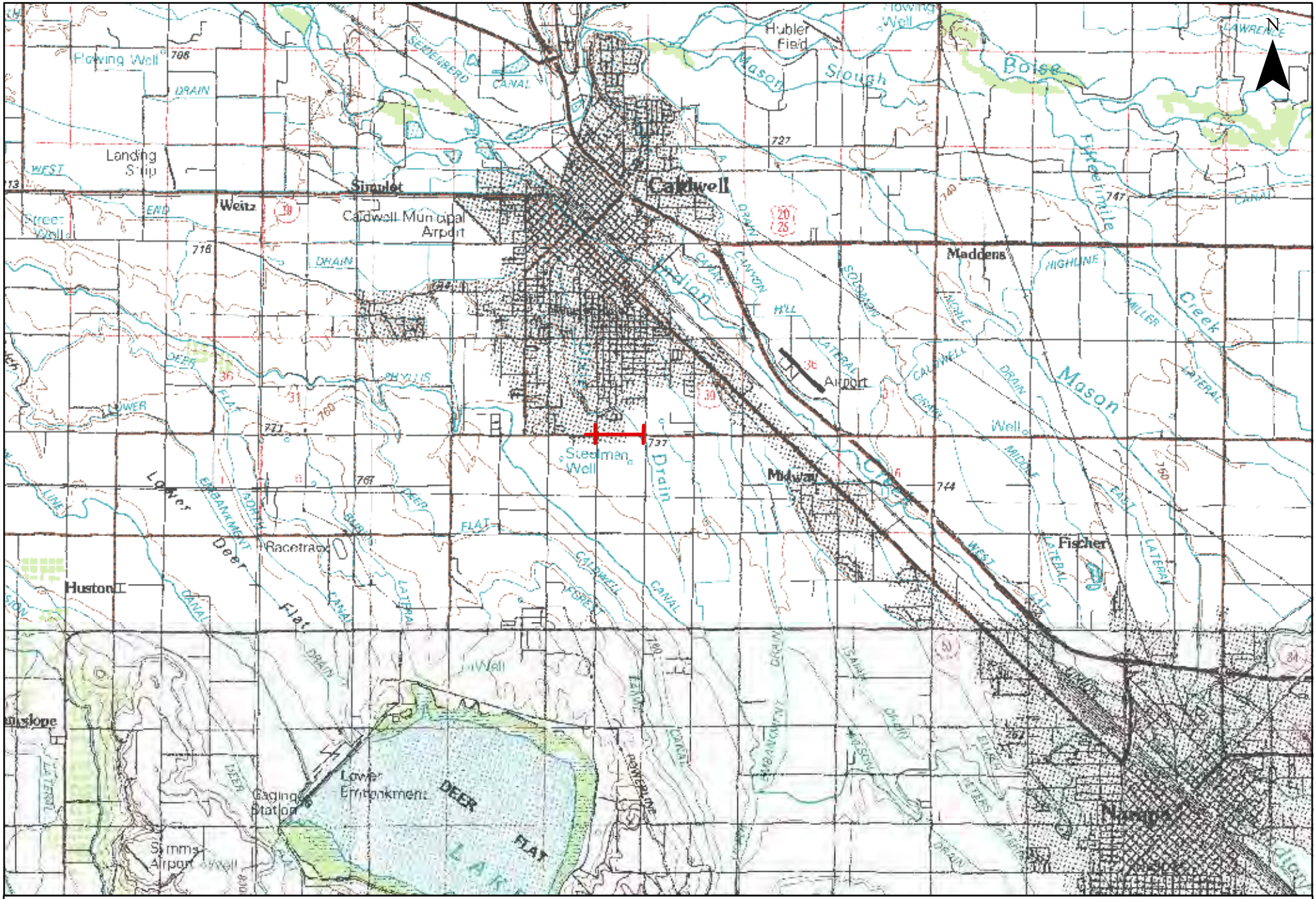


Figure 1. Vicinity Map for the Ustick Road, Montana to Indiana Project Area.

Legend

Project Area

0 0.75 1.5 Miles

Figure 2. Site Map for the Ustick Road, Montana to Indiana Project Area.

Legend

Project Area — Waters

Roads

0 255 510 Feet

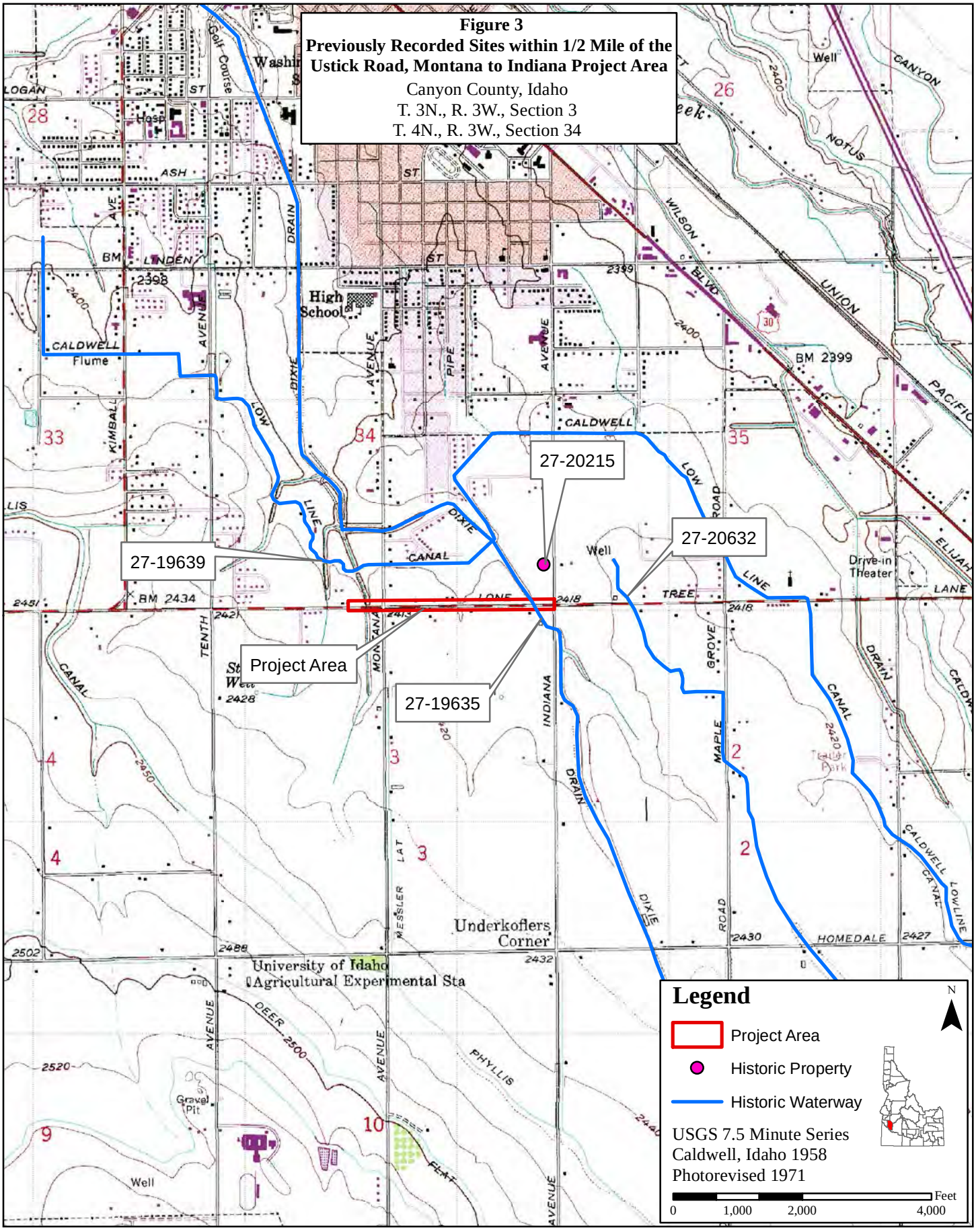


Figure 3
Previously Recorded Sites within 1/2 Mile of the Ustick Road, Montana to Indiana Project Area
Canyon County, Idaho
T. 3N., R. 3W., Section 3
T. 4N., R. 3W., Section 34
27-20215
27-20632
27-19639
27-19635
Project Area
Legend
Project Area
Historic Property
Historic Waterway
USGS 7.5 Minute Series
Caldwell, Idaho 1958
Photorevised 1971
N
0
1,000
2,000
4,000
Feet
CALDWELL
Flume
High School
Drive-in Theater
Underkoflers Corner
University of Idaho Agricultural Experimental Sta
Gravel Pit
Well
BM 2399
BM 2434
LINDEN
ASH
TENTH
DIXIE
LOW LINE
CANAL
TREE LANE
GROVE
MAPLE
INDIANA
DRAIN
HOMEDALE
PHYLLIS
DEER
FLAT
ROAD
AVENUE
BLVD
UNION
PACIFIC
NOTUS
CANYON
ELIJAH
KIMBALL
MESSLER
LAT
PIPE
Golf Course
Hosp
2398
2399
2400
2418
2420
2427
2428
2430
2432
2450
2488
2500
2502
2520

Figure 4. Waters of the U.S. & Wetland Identified in the Ustick Road, Montana to Indiana Project Area.

Legend

Project Area
Waters
Roads
Freshwater Emergent Wetland

**Wetland polygon source - USFWS National Wetland Inventory Maps.*

0 320 640 Feet

U.S. Fish & Wildlife Service

Ustick Road, Montana to Indiana

IPaC Trust Resource Report

Generated August 26, 2015 01:46 PM MDT

US Fish & Wildlife Service

IPaC Trust Resource Report

Project Description

NAME

Ustick Road, Montana to Indiana

PROJECT CODE

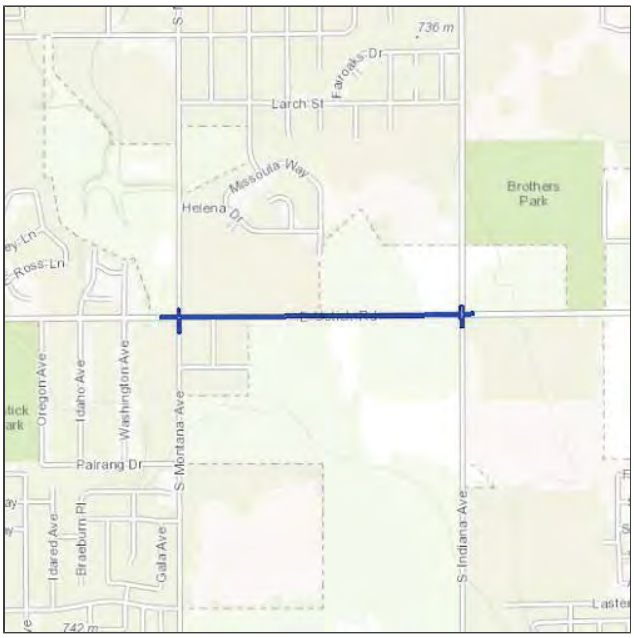
WZP7O-KUBBV-B3VGU-NFXNZ-COTEME

LOCATION

Canyon County, Idaho

DESCRIPTION

Road widening, installation of a traffic signal or roundabout, installation of sidewalks, addition of bike lanes.



U.S. Fish & Wildlife Contact Information

Species in this report are managed by:

Idaho Fish And Wildlife Office
1387 South Vinnell Way, Suite 368
Boise, ID 83709-1657
(208) 378-5243

Endangered Species

Proposed, candidate, threatened, and endangered species that are managed by the Endangered Species Program and should be considered as part of an effect analysis for this project.

This unofficial species list is for informational purposes only and does not fulfill the requirements under Section 7 of the Endangered Species Act, which states that Federal agencies are required to "request of the Secretary of Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action." This requirement applies to projects which are conducted, permitted or licensed by any Federal agency.

A letter from the local office and a species list which fulfills this requirement can be obtained by returning to this project on the IPaC website and requesting an Official Species List from the regulatory documents section.

Flowering Plants

Slickspot Peppergrass Lepidium papilliferum **Proposed Endangered**

CRITICAL HABITAT

There is **proposed** critical habitat designated for this species.

https://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=Q34X

Critical Habitats

Potential effects to critical habitat(s) within the project area must be analyzed along with the endangered species themselves.

There is no critical habitat within this project area

Migratory Birds

Birds are protected by the Migratory Bird Treaty Act and the Bald and Golden Eagle Protection Act.

Any activity which results in the take of migratory birds or eagles is prohibited unless authorized by the U.S. Fish and Wildlife Service (1). There are no provisions for allowing the take of migratory birds that are unintentionally killed or injured.

You are responsible for complying with the appropriate regulations for the protection of birds as part of this project. This involves analyzing potential impacts and implementing appropriate conservation measures for all project activities.

Bald Eagle Haliaeetus leucocephalus — **Bird of conservation concern**
Season: Wintering
https://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=B008

Brewer's Sparrow Spizella breweri — **Bird of conservation concern**
Season: Breeding
https://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=B0HA

Cassin's Finch Carpodacus cassinii — **Bird of conservation concern**
Year-round

Eared Grebe Podiceps nigricollis — **Bird of conservation concern**
Season: Breeding

Ferruginous Hawk Buteo regalis — **Bird of conservation concern**
Year-round
https://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=B06X

Fox Sparrow Passerella iliaca — **Bird of conservation concern**
Season: Breeding

Greater Sage-grouse Centrocercus urophasianus — **Bird of conservation concern**
Year-round
https://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=B06W

Green-tailed Towhee Pipilo chlorurus — **Bird of conservation concern**
Season: Breeding

Lewis's Woodpecker Melanerpes lewis — **Bird of conservation concern**
Season: Breeding

Loggerhead Shrike Lanius ludovicianus — **Bird of conservation concern**
Season: Breeding
https://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=B0FY

Long-billed Curlew Numenius americanus — **Bird of conservation concern**
Season: Breeding
https://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=B06S

Peregrine Falcon Falco peregrinus — **Bird of conservation concern**
Season: Breeding
https://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=B0FU

Rufous Hummingbird selasphorus rufus **Bird of conservation concern**

Season: Breeding
https://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=B0E1

Sage Thrasher Oreoscoptes montanus **Bird of conservation concern**

Season: Breeding

Short-eared Owl Asio flammeus **Bird of conservation concern**

Year-round
https://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=B0HD

Swainson's Hawk Buteo swainsoni **Bird of conservation concern**

Season: Breeding
https://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=B070

Refuges

Any activity proposed on National Wildlife Refuge lands must undergo a 'Compatibility Determination' conducted by the Refuge. If your project overlaps or otherwise impacts a Refuge, please contact that Refuge to discuss the authorization process.

There are no refuges within this project area

Wetlands

Impacts to NWI wetlands and other aquatic habitats from your project may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal Statutes.

Project proponents should discuss the relationship of these requirements to their project with the Regulatory Program of the appropriate U.S. Army Corps of Engineers District.

DATA LIMITATIONS

The Service's objective of mapping wetlands and deepwater habitats is to produce reconnaissance level information on the location, type and size of these resources. The maps are prepared from the analysis of high altitude imagery. Wetlands are identified based on vegetation, visible hydrology and geography. A margin of error is inherent in the use of imagery; thus, detailed on-the-ground inspection of any particular site may result in revision of the wetland boundaries or classification established through image analysis.

The accuracy of image interpretation depends on the quality of the imagery, the experience of the image analysts, the amount and quality of the collateral data and the amount of ground truth verification work conducted. Metadata should be consulted to determine the date of the source imagery used and any mapping problems.

Wetlands or other mapped features may have changed since the date of the imagery or field work. There may be occasional differences in polygon boundaries or classifications between the information depicted on the map and the actual conditions on site.

DATA EXCLUSIONS

Certain wetland habitats are excluded from the National mapping program because of the limitations of aerial imagery as the primary data source used to detect wetlands. These habitats include seagrasses or submerged aquatic vegetation that are found in the intertidal and subtidal zones of estuaries and nearshore coastal waters. Some deepwater reef communities (coral or tuberficid worm reefs) have also been excluded from the inventory. These habitats, because of their depth, go undetected by aerial imagery.

DATA PRECAUTIONS

Federal, state, and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands in a different manner than that used in this inventory. There is no attempt, in either the design or products of this inventory, to define the limits of proprietary jurisdiction of any Federal, state, or local government or to establish the geographical scope of the regulatory programs of government agencies. Persons intending to engage in activities involving modifications within or adjacent to wetland areas should seek the advice of appropriate federal, state, or local agencies concerning specified agency regulatory programs and proprietary jurisdictions that may affect such activities.

There are no wetlands identified in this project area

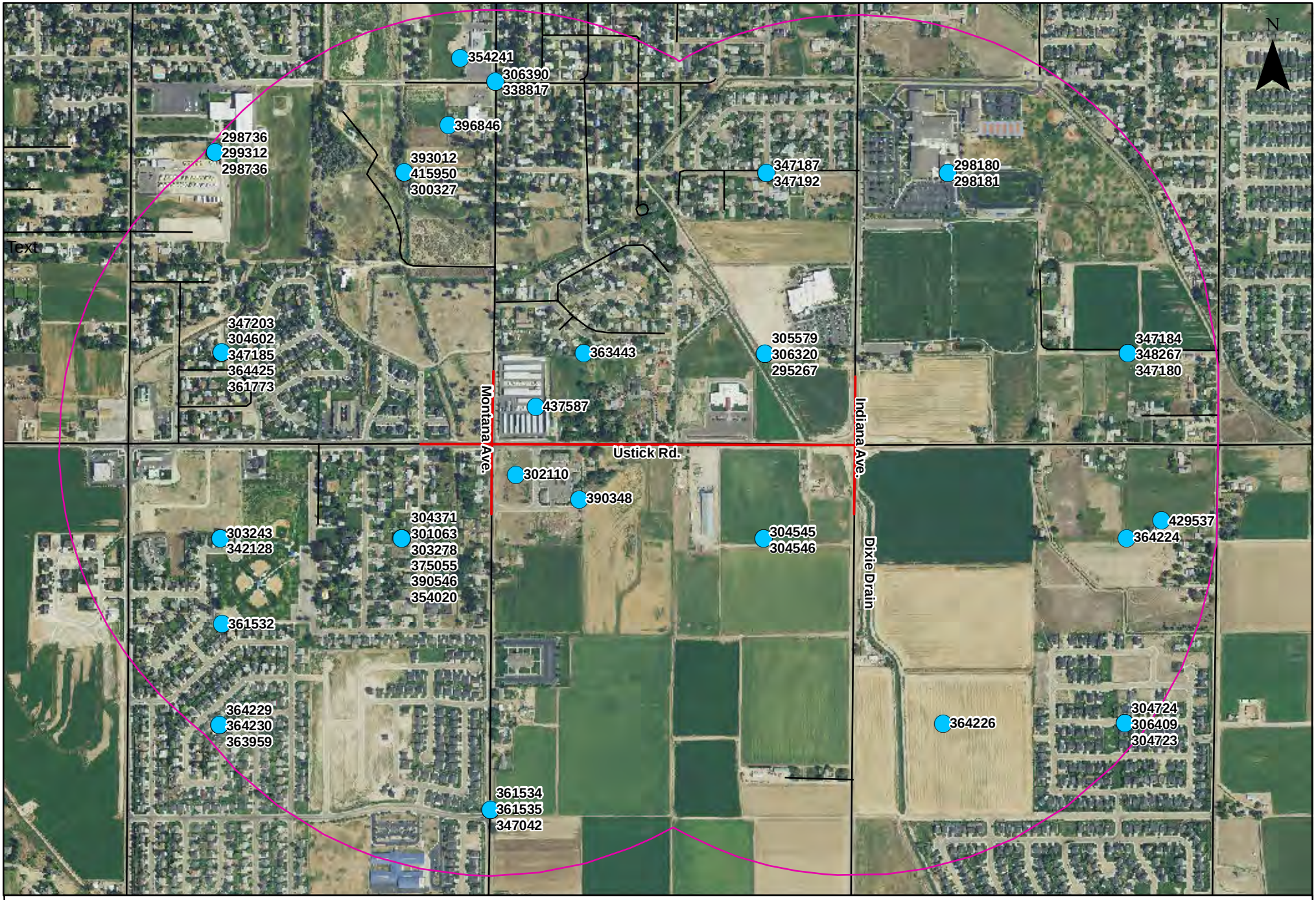


Figure 5. Wells Identified for the Ustick Road, Montana to Indiana Project Area.

Legend

Project Area
Roads
Wells
Half Mile Radius From Project Area

0 650 1,300 Feet

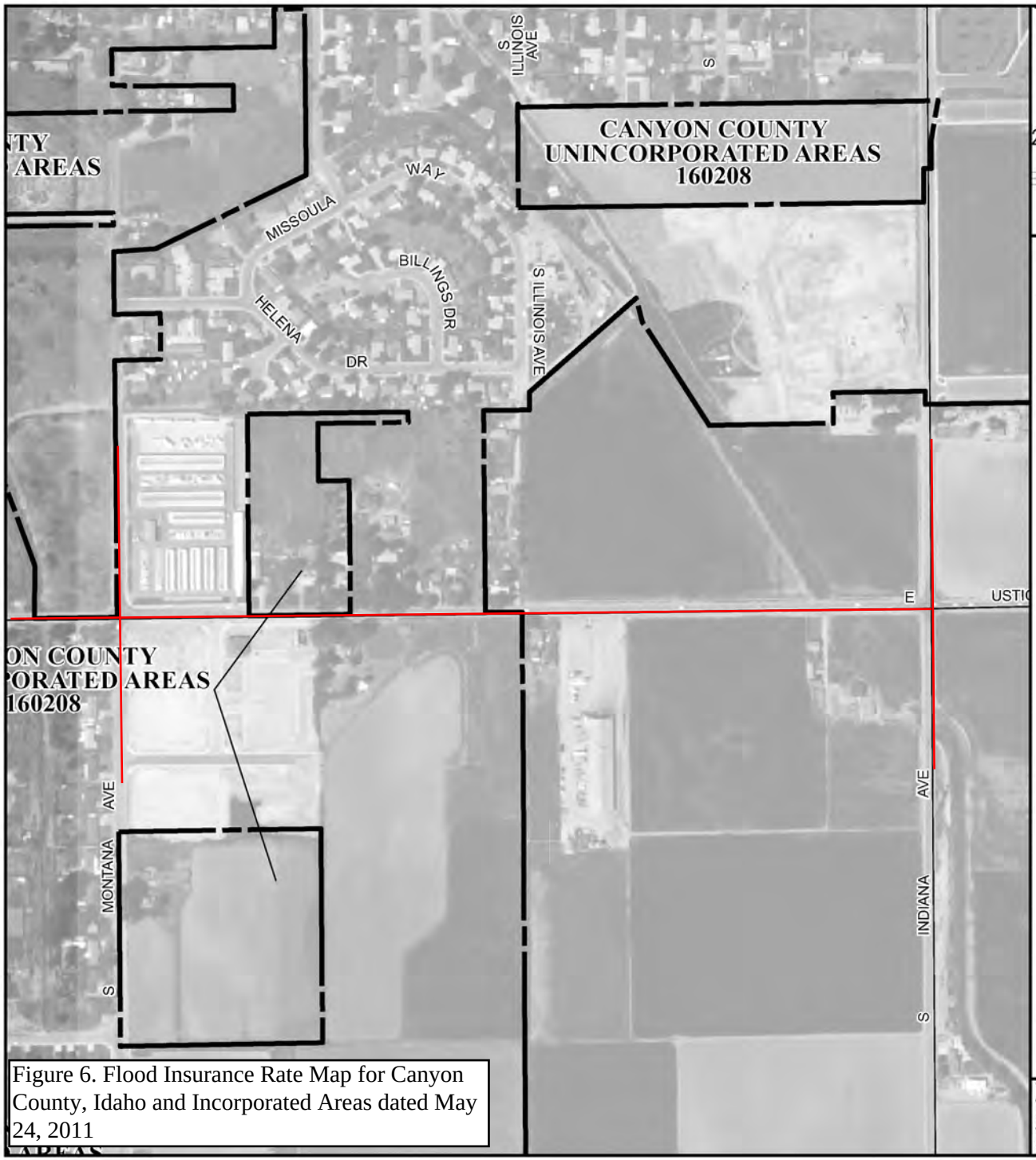


Figure 6. Flood Insurance Rate Map for Canyon County, Idaho and Incorporated Areas dated May 24, 2011

MAP SCALE 1" = 500'

250 0 500 1000 FEET

METE

PANEL 0243F

NATIONAL FLOOD INSURANCE PROGRAM

FIRM

FLOOD INSURANCE RATE MAP

CANYON COUNTY, IDAHO

AND INCORPORATED AREAS

PANEL 243 OF 575

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
CANYON COUNTY	160208	0243	F
CALDWELL, CITY OF	160036	0243	F

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
16027C0243F

EFFECTIVE DATE
MAY 24, 2011

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

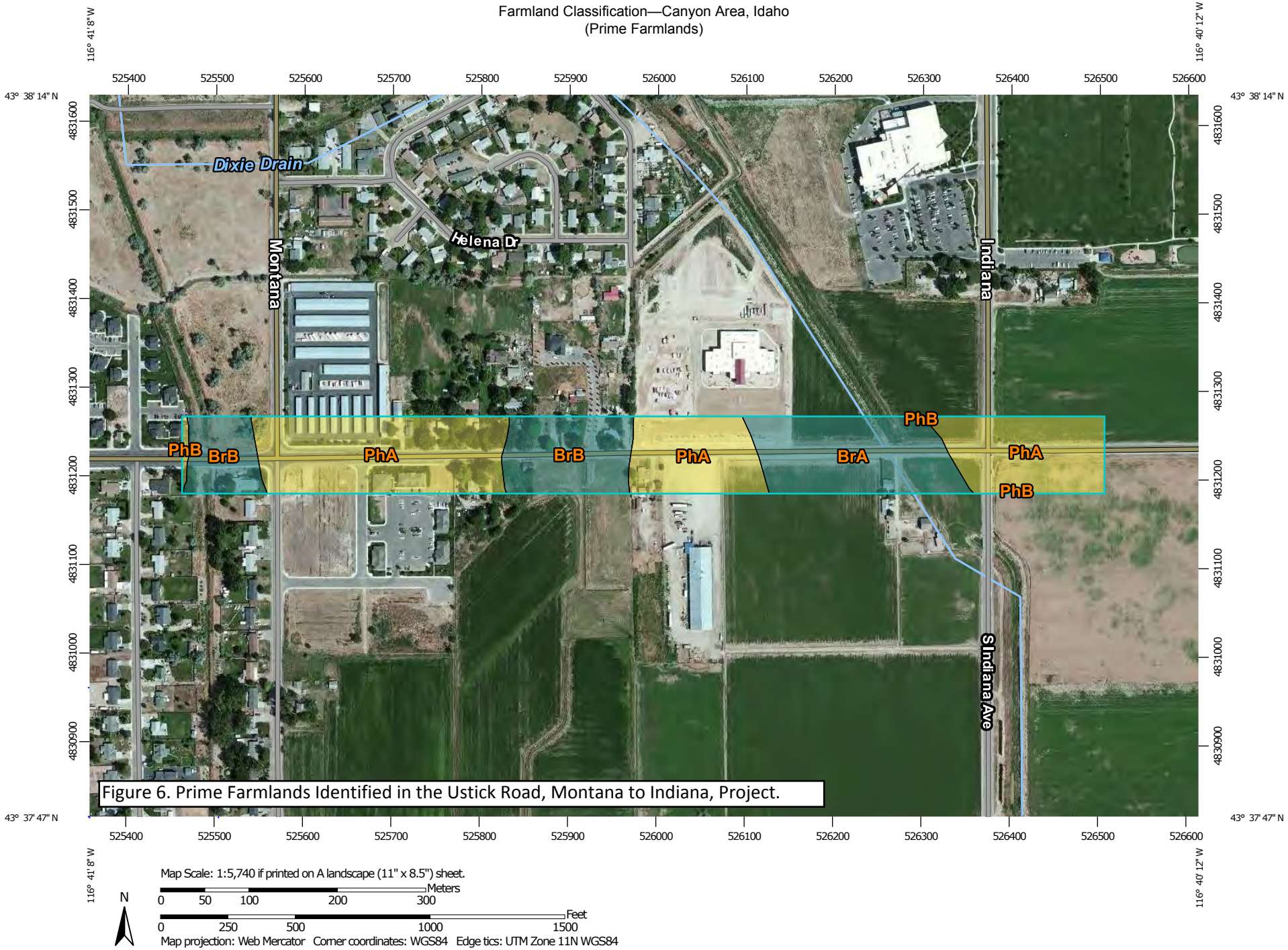


Figure 6. Prime Farmlands Identified in the Ustick Road, Montana to Indiana, Project.

MAP LEGEND

Area of Interest (AOI)

- Area of Interest (AOI)

Soils

Soil Rating Polygons

- Not prime farmland
- All areas are prime farmland
- Prime farmland if drained
- Prime farmland if protected from flooding or not frequently flooded during the growing season
- Prime farmland if irrigated
- Prime farmland if drained and either protected from flooding or not frequently flooded during the growing season
- Prime farmland if irrigated and drained
- Prime farmland if irrigated and either protected from flooding or not frequently flooded during the growing season
- Prime farmland if subsoiled, completely removing the root inhibiting soil layer
- Prime farmland if irrigated and the product of I (soil erodibility) x C (climate factor) does not exceed 60
- Prime farmland if irrigated and reclaimed of excess salts and sodium
- Farmland of statewide importance
- Farmland of local importance
- Farmland of unique importance
- Not rated or not available

Soil Rating Lines

- Not prime farmland
- All areas are prime farmland
- Prime farmland if drained
- Prime farmland if protected from flooding or not frequently flooded during the growing season
- Prime farmland if irrigated
- Prime farmland if drained and either protected from flooding or not frequently flooded during the growing season
- Prime farmland if irrigated and drained
- Prime farmland if irrigated and either protected from flooding or not frequently flooded during the growing season
- Prime farmland if subsoiled, completely removing the root inhibiting soil layer
- Prime farmland if irrigated and the product of I (soil erodibility) x C (climate factor) does not exceed 60
- Prime farmland if irrigated and reclaimed of excess salts and sodium
- Farmland of statewide importance
- Farmland of local importance
- Farmland of unique importance
- Not rated or not available

Soil Rating Points

- Not prime farmland
- All areas are prime farmland
- Prime farmland if drained
- Prime farmland if protected from flooding or not frequently flooded during the growing season
- Prime farmland if irrigated
- Prime farmland if drained and either protected from flooding or not frequently flooded during the growing season
- Prime farmland if irrigated and drained
- Prime farmland if irrigated and either protected from flooding or not frequently flooded during the growing season
- Prime farmland if subsoiled, completely removing the root inhibiting soil layer
- Prime farmland if irrigated and the product of I (soil erodibility) x C (climate factor) does not exceed 60
- Prime farmland if irrigated and reclaimed of excess salts and sodium
- Farmland of statewide importance
- Farmland of local importance
- Farmland of unique importance
- Not rated or not available

Water Features

MAP INFORMATION

Streams and Canals

Transportation

Rails

Interstate Highways

US Routes

Major Roads

Local Roads

Background

Aerial Photography

The soil surveys that comprise your AOI were mapped at 1:20,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Canyon Area, Idaho
Survey Area Data: Version 11, Sep 8, 2014

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Aug 10, 2011—Aug 23, 2011

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Farmland Classification

Farmland Classification— Summary by Map Unit — Canyon Area, Idaho (ID665)				
Map unit symbol	**Map unit name**	**Rating**	**Acres in AOI**	**Percent of AOI**
BrA	Bram silt loam, 0 to 1 percent slopes	Prime farmland if irrigated and reclaimed of excess salts and sodium	4.7	20.8%
BrB	Bram silt loam, 1 to 3 percent slopes	Prime farmland if irrigated and reclaimed of excess salts and sodium	4.8	21.3%
PhA	Power silt loam, 0 to 1 percent slopes	Prime farmland if irrigated	12.9	57.2%
PhB	Power silt loam, 1 to 3 percent slopes	Prime farmland if irrigated	0.2	0.7%
Totals for Area of Interest			**22.6**	**100.0%**

Description

Farmland classification identifies map units as prime farmland, farmland of statewide importance, farmland of local importance, or unique farmland. It identifies the location and extent of the soils that are best suited to food, feed, fiber, forage, and oilseed crops. NRCS policy and procedures on prime and unique farmlands are published in the "Federal Register," Vol. 43, No. 21, January 31, 1978.

Rating Options

Aggregation Method: No Aggregation Necessary

Aggregation is the process by which a set of component attribute values is reduced to a single value that represents the map unit as a whole.

A map unit is typically composed of one or more "components". A component is either some type of soil or some nonsoil entity, e.g., rock outcrop. For the attribute being aggregated, the first step of the aggregation process is to derive one attribute value for each of a map unit's components. From this set of component attributes, the next step of the aggregation process derives a single value that represents the map unit as a whole. Once a single value for each map unit is derived, a thematic map for soil map units can be rendered. Aggregation must be done because, on any soil map, map units are delineated but components are not.

For each of a map unit's components, a corresponding percent composition is recorded. A percent composition of 60 indicates that the corresponding component typically makes up approximately 60% of the map unit. Percent composition is a critical factor in some, but not all, aggregation methods.

The majority of soil attributes are associated with a component of a map unit, and such an attribute has to be aggregated to the map unit level before a thematic map can be rendered. Map units, however, also have their own attributes. An attribute of a map unit does not have to be aggregated in order to render a corresponding thematic map. Therefore, the "aggregation method" for any attribute of a map unit is referred to as "No Aggregation Necessary".

Tie-break Rule: Lower

The tie-break rule indicates which value should be selected from a set of multiple candidate values, or which value should be selected in the event of a percent composition tie.

APPENDIX D
ITD FORMS

Project Cost Summary Sheet

ITD 1150 (Rev. 09-13)
itd.idaho.gov

Round Estimates to Nearest $1,000

Key Number	Project Number	Date
		10/19/2015

Location	District
Ustick Road, Montana to Indiana, Pre-Concept - Conventional Intersection	3

Segment Code	Begin Mile Post	End Mile Post	Length in Miles
004875	0.757	1.176	0.65

	Previous ITD 1150	Initial or Revise To
1a. Preliminary Engineering (PE)		
1b. Preliminary Engineering by Consultant (PEC)		
2. Right-of-Way: Number of Parcels 30 Number of Relocations		$660,000
3. Utility Adjustments: ☐ Work ☐ Materials ☐ By State ☐ By Others		
4. Earthwork		$365,000
5. Drainage and Minor Structures		$411,000
6. Pavement and Base		$1,604,000
7. Railroad Crossing:		
Grade/Separation Structure _____		
At-Grade Signals ☐ Yes ☐ No		
8. Bridges/Grade Separation Structures:		
☐ New Structure Length/Width _____		
Location _____		
☐ Repair/Widening/Rehabilitation Length/Width _____		
Location		
9. Traffic Items (Delineators, Signing, Channelization, Lighting, and Signals)		$275,000
10. Construction Traffic Control (Sign, Pavement Markings, Flagging, and Traffic Separation)		$100,000
11. Detours		
12. Landscaping		$25,000
13. Mitigation Measures		$44,000
14. Other Items (Roadside Development, Guardrail, Fencing, Sidewalks, Curb and Gutter, C.S.S. Items)		$448,000
15. Cost of Constructions (Items 3 through 14)		$3,272,000
16. Mobilization 10 % of Item 15		$327,000
17. Construction Engineer and Contingencies 15 % of Items 15 and 16		$540,000
18. Total Construction Cost (15 + 16 + 17)		$4,139,000
19. Total Project Cost (1 + 2 + 18)		$4,799,000
20. Project Cost Per Mile	$1,000	$7,383,000

Prepared By:

Six Mile Engineering

Project Cost Summary Sheet

ITD 1150 (Rev. 09-13)
itd.idaho.gov

Round Estimates to Nearest $1,000

Key Number	Project Number	Date
		10/19/2015

Location	District
Ustick Road, Montana to Indiana, Pre-Concept - Roundabout	3

Segment Code	Begin Mile Post	End Mile Post	Length in Miles
004875	0.757	1.176	0.65

	Previous ITD 1150	Initial or Revise To
1a. Preliminary Engineering (PE)		
1b. Preliminary Engineering by Consultant (PEC)		
2. Right-of-Way: Number of Parcels 30 Number of Relocations		$930,000
3. Utility Adjustments: ☐ Work ☐ Materials ☐ By State ☑ By Others		
4. Earthwork		$369,000
5. Drainage and Minor Structures		$402,000
6. Pavement and Base		$1,588,000
7. Railroad Crossing:		
Grade/Separation Structure _____		
At-Grade Signals ☐ Yes ☐ No		
8. Bridges/Grade Separation Structures:		
☐ New Structure Length/Width _____		
Location _____		
☐ Repair/Widening/Rehabilitation Length/Width _____		
Location		
9. Traffic Items (Delineators, Signing, Channelization, Lighting, and Signals)		$25,000
10. Construction Traffic Control (Sign, Pavement Markings, Flagging, and Traffic Separation)		$100,000
11. Detours		
12. Landscaping		$25,000
13. Mitigation Measures		$44,000
14. Other Items (Roadside Development, Guardrail, Fencing, Sidewalks, Curb and Gutter, C.S.S. Items)		$529,000
15. Cost of Constructions (Items 3 through 14)		$3,082,000
16. Mobilization 10 % of Item 15		$308,000
17. Construction Engineer and Contingencies 15 % of Items 15 and 16		$509,000
18. Total Construction Cost (15 + 16 + 17)		$3,899,000
19. Total Project Cost (1 + 2 + 18)		$4,829,000
20. Project Cost Per Mile	$1,000	$7,429,000

Prepared By:

Six Mile Engineering

ITD 2435 (Rev. 01-09)

Local Federal-Aid Project Request

Instructions

1. Under Character of Proposed Work, mark appropriate boxes when work includes Bridge Approaches in addition to a Bridge.
2. Attach a Vicinity Map showing the extent of the project limits.
3. Attach an ITD 1150, Project Cost Summary Sheet.
4. Signature of an appropriate local official is the only kind recognized.

Note: In Applying for a Federal-Aid Project, You are Agreeing to Follow all of the Federal Requirements Which Can Add Substantial Time and Costs to the Development of the Project.

Sponsor (City, County, Highway District, State/Federal Agency)	Date
Caldwell	10/19/2015

Project Title (Name of Street or Road)	F.A. Route Number	Project Length	Bridge Length
Ustick Road, Montana to Indiana, Pre-Concept		3,500'	0'

Project Limits (Local Landmarks at Each End of the Project)
Ustick Road - from the unnamed irrigation drain 300' west of Montana Ave to the east approach of the roundabout at Indiana Ave.

Character of Proposed Work (Mark Appropriate Items)

☒ Excavation	☒ Bicycle Facilities	☒ Utilities	☒ Sidewalk
☒ Drainage	☒ Traffic Control	☒ Landscaping	☐ Seal Coat
☒ Base	☐ Bridge(s)	☐ Guardrail	☐ _____
☒ Bit. Surface	☒ Curb & Gutter	☐ Lighting	

Estimated Costs (Attach ITD 1150, Project Cost Summary Sheet)

Preliminary Engineering (ITD 1150, Line 1)	$
Right-of-Way (ITD 1150, Line 2)	$ 930,000
Construction (ITD 1150, Line 18)	$ 3,899,000

Preliminary Engineering By: ☐ Sponsor Forces ☒ Consultant

Checklist (Provide Names, Locations, and Type of Facilities)

Railroad Crossing	n/a
Within 2 miles of an Airport	Caldwell Industrial Aiport
Parks (City, County, State or Federal)	n/a
Environmentally Sensitive Areas	n/a
Federal Lands (Indian, BLM, etc.)	n/a
Historical Sites	n/a
Schools	see attached
Other	

Additional Right-of-Way Required: ☐ None ☐ Minor (1-3 Parcels) ☒ Extensive (4 or More Parcels)

Will any Person or Business be Displaced: ☐ Yes ☐ No ☒ Possibly

Standards	Existing	Proposed	Standards	Existing	Proposed
Number of Lanes	2	4	Roadway Width (Shoulder to Shoulder)	26-46 ft	66 ft
Pavement Type	Asphalt	Asphalt	Right-of-Way Width	50-90 ft	96 ft

Sponsor's Signature	Title

Additional Information to be Furnished by the District

Functional Classification	Terrain Type	20	ADT/DHV

Ustick Road, Montana to Indiana, Pre-Concept
ITD 2345
Supplemental Information

School	Location
Heritage Community Charter School	1803 E Ustick Rd, Caldwell
Lewis and Clark Elementary	1102 Laster St, Caldwell
Washington Elementary	2918 Washington Ave, Caldwell
Jefferson Middle School	3311 S 10th Ave, Caldwell
Syringa Middle School	1100 Willow St, Caldwell
Caldwell High School	3401 S Indiana Ave, Caldwell
Vallivue Middle School	16412 S 10th Ave, Caldwell
Vallivue High School	1407 E Homedale Rd, Caldwell

Infrastructure Project Charter Template

ITD 0332 (Rev. 09-13)
itd.idaho.gov

Use this template to create your charter without going into the PSS.

1. Project Information

Key Number	Project Name			Temporary Key Number
	Ustick Road, Montana to Indiana, Pre-Concept			
District	Work Authority	Funding Year	Route(s)	
D3			NHS 7983	

Beginning Mile Post(s)	Ending Mile Post(s)	Current Project Phase	Type of Project
0.757	1.176	Evaluation Phase	Reconstruction

Program

Highway Local
- ☐ Bridge Local
- ☐ Bridge Off System
- ☐ STP Local Rural
- ☐ STP Local Urban
- ☐ STP Transportation Mgmt. Area
- ☐ TAP Transportation Mgmt. Area

Highway Other Federal Programs
- ☐ High Priority (SAFETEA LU)
- ☐ High Priority (TEA 21)
- ☐ Discretionary Earmarks (carryover)
- ☐ Emergency Relief
- ☐ Federal Lands Access
- ☐ Indian Reservation Roads
- ☐ Other Federal Non Formula

Highway Other State Programs
- ☒ Federal Non-Participating
- ☐ Local Private Partnership

Public Transit
- ☐ Capital
- ☐ Operations

Aeronautics
- ☐ New Airport Facilities
- ☐ Airport Facility Maintenance
- ☐ Airport Planning
- ☐ Aviation System Planning

Highway Planning
- ☐ Metropolitan Planning MPOs
- ☐ State Planning and Research
- ☐ Systems Planning

Highway Safety
- ☐ Rest Area
- ☐ Safety Federal Rail
- ☐ Safety State Rail
- ☐ Safety Statewide

Highway Statewide Competitive
- ☐ CMAQ
- ☐ Recreational Trails
- ☐ Safe Routes to School
- ☐ TAP Urban and Rural

SHS Bridges
- ☐ Bridge Preservation
- ☐ Bridge Restoration

SHS Expansion
- ☐ Early Development
- ☐ Expansion
- ☐ Formula Debt Service plus Fees and Interest

SHS Other
- ☐ State Board Unallocated
- ☐ System Support

SHS Pavements
- ☐ Pavement Preservation
- ☐ Restoration

2. Exit Criteria

Evaluation Phase		Development Phase		Implementation Phase
Temporary Key No.	Temporary Key No. Date	PS&E Package Delivered	Contract Awarded	Final Voucher Issued
	Select	Select	Select	Select

3. Project Organization Chart

Project Sponsor			
Sponsor Name	External Sponsor	External Sponsor Name	Sponsor Contact Info or Email
City of Caldwell	☐	Robb MacDonald	rmacdonald@cityofcaldwell.org
Project Owner			
Owner Name	External Owner	External Owner Name	Owner Contact Info or Email
City of Caldwell	☐	Robb MacDonald	rmacdonald@cityofcaldwell.org
Project Manager			
Project Manager Name	Project Manager Contact Info or Email		

Infrastructure Project Charter Template

Use this template to create your charter without going into the PSS.

Stakeholders		
Stakeholder Name	Interest	Contact Information

4. Scope and Strategic Objectives

Project Objective Statement
The purpose of this project is to improve operations and safety for all users; vehicles, pedestrians and bicycles.

Strategic Objectives

Safest Transportation System

- ☐ Reduction in injuries and fatalities related to distracted driving
- ☐ Reduction in injuries and fatalities to impaired driving
- ☐ Increase in seat belt use
- ☐ Reduction in fatalities
- ☒ Impact of corridor-safety initiatives and improvements
- ☐ Reduction in serious injuries

Mobility Focused Transportation

- ☐ Increase in Idaho gross domestic product
- ☐ Increase in jobs and business revenues
- ☐ Increase in the efficiency in which goods are transported
- ☒ Reduction in travel times for commuting commerce, recreation, and tourism

Implement Innovative Practices

- ☐ Improvement in performance measures
- ☐ Increase in customer satisfaction
- ☐ Reduction in costs through innovation process improvement and technology

Develop Employees

- ☐ Effectiveness of the departments leadership
- ☐ Reduction in Turnover
- ☐ Increase in employee productivity
- ☐ Total employee compensation compared to similar markets
- ☐ Individual performance plans linked to the department's strategic goals
- ☐ Progress toward the desired organizational culture

Infrastructure Project Charter Template

Use this template to create your charter without going into the PSS.

Scope of Work

The project will widen Ustick Road between Montana Ave and Indiana Ave to four lanes with a raised median and bike lanes and sidewalks on both sides. The Ustick/Montana intersection will be improved to include a traffic signal or roundabout and the existing roundabout at Ustick and Indiana will be modified to include exclusive right turn slip lanes. Roadway improvements will include installation of stormwater capture and conveyance facilities, and relocation of existing overhead utilities (power, cable).

5. Environmental Considerations

Project Need		
Primary Need Capacity	**Secondary Need** ☐ Capacity ☐ Deficient-standards ☐ Deficient-structurally ☒ Enhancement ☐ Maintenance	☒ Safety ☒ System Linkage ☐ Traffic Flow ☐ Other _____

Anticipated Major Environmental Deliverables				
EE/Cat Ex	EA/FONSI	EIS/ROD	Navigable Waters	Storm water
Yes, Cat Ex ITD Approval	☐	☐	☐	☒

Cultural	☒ Archaeological and Historic Survey Report ☒ Determination of Adverse Effect Report ☐ Field Survey and or Test Investigations ☐ Memorandum of Agreement ☐ Mitigation	
Noise Air Quality and Hazmat	☐ Air Quality Report ☐ Barrier Analysis ☐ Haz Mat Phase 1	☐ Modeling ☐ Noise Report
Section 4F	☐ Section 4f Deminimus ☐ Section 4f Evaluation Including Alternatives Analysis	
Miscellaneous	☐ Environmental Justice Report ☐ FAA Airspace Intrusion ☐ LWCF Recreation Areas 6f Lands Report	☒ Prime Farmland Report ☐ Visual Impact Report
Wetlands Stream Alteration	☐ Delineation ☐ Field Survey ☐ Mitigation	☐ Mitigation Plan ☐ Permit Application ☐ Wetland Report (Jurisdictional Determination)
Species and Habitat	☐ Biological Assessment ☐ Wildlife Migratory Birds Mag-Ste Fisheries	☒ No Effect Report

Use this template to create your charter without going into the PSS.

Floodway Floodplain	☐ Field Survey ☐ Floodplain Encroachment Permit App ☐ Floodplain Encroachment Report	☐ Sole Source Aquifer Packet ☐ Floodway Encroachment Report
Environmental Narrative		

6. Design Standards

Crash History			
Crash Base Rate **0.67/1.19**	Spot Locations that Exceed Base Rate 0.99 at Montana Ave	Crash Rate with Project Limits **4.59**	Identify HALs (High Accident Locations)

Design Data					
Design Exception Anticipated	Pavement Width Proposed 66'	Traffic Signals ☒ Yes ☐ No	Railroad Crossing ☐ Yes ☒ No		
Pavement Width Existing 26'-46'	Pavement Width Existing Standard	Proposed Design Vehicle WB-67	Design Year 2040		
Posted Speed 35	Design Speed 35	Traffic ADT Present 11,300	Traffic ADT Future 17,900	Traffic DHV Present 870	Traffic DHV Future 1,680

Project Standards	
Project Standards State	Other Comments

Additional Design Data - Development Phase			
Proposed Structures			
Proposed Maximum Super Elevation	Vertical Clearance (Rdwy/Q50)	Existing Bridge Sufficiency Rating	Rail Type
Minimum Curve Radius Proposed	Deck Width (c-c)	Deck Width (o-o)	Design Load

Additional Design Data				
Maximum Grade Existing	Maximum Grade Proposed	Minimum Curve Radius Existing	Clear Zone Fill	Clear Zone Cut
Minimum LOS Existing	Minimum LOS Proposed	Access Control Existing	Access Control Proposed	

Traffic Signals			
Existing Location	Proposed Location (Milepost)	Type of Controller	Type of Warrant

Railroad Crossing Protection			
Existing Location (Milepost)	Proposed Location (Milepost)	Type of Protection	Type of Warrant

Infrastructure Project Charter Template

Use this template to create your charter without going into the PSS.

Design Standards - Development Phase	
Project Oversight	Design Exception District Engineer Approval Date
Select	Select
Design Exception FHWA Approval Date if on NHS	Design Exception Committee Date if Applicable
Select	Select

7. Funding and Cost Summary

Phase	Fiscal Year	Amount
Select		
Select		
Select		
Select		
Select		
Select		
Select		

8. Resource Plan and Constraints

Project Constraints		
Scope Constraint	Schedule Constraint	Budget Constraint
Choose an item.	Choose an item.	Choose an item.
Project Constraints Narrative		

Resource Plan	
Project Design Services	Choose an item.
Narrative	

9. True Minimum Milestones

Task WBS	Task Name	Actual Start	Actual Finish	Baseline Start	Baseline Finish
3.20.Z20	CHARTER APPROVAL	Select	Select	Select	Select
3.30.Z30	DESIGN APPROVAL	Select	Select	Select	Select
3.30.Z34	PRELIMINARY DESIGN REVIEW	Select	Select	Select	Select
3.30.Z36	ENVIRONMENTAL DOCUMENT APPROVAL	Select	Select	Select	Select
3.30.Z38	HEARING COMPLETE	Select	Select	Select	Select
3.40.Z41	SITUATION & LAYOUT APPROVAL	Select	Select	Select	Select
3.40.Z42	INITIATE R/W PURCHASE PROCESS	Select	Select	Select	Select
3.40.Z43	R/W CERTIFIABLE	Select	Select	Select	Select
3.40.Z48	AGREEMENTS COMPLETE	Select	Select	Select	Select
3.40.Z49	FINAL DESIGN REVIEW	Select	Select	Select	Select

Infrastructure Project Charter Template

Use this template to create your charter without going into the PSS.

Task WBS	Task Name	Actual Start	Actual Finish	Baseline Start	Baseline Finish
3.50.Z50	PS & E SUBMITTAL	Select	Select	Select	Select
3.60.Z55	PROJECT AWARD	Select	Select	Select	Select
4.10.Z75	CONTRACT COMPLETION DATE	Select	Select	Select	Select
4.10.Z80	PROJECT CLOSEOUT COMPLETE	Select	Select	Select	Select
4.20.Z60	CONSTRUCTION START	Select	Select	Select	Select
4.20.Z70	CONSTRUCTION COMPLETION	Select	Select	Select	Select

10. Alternatives Analysis

Title	Location	Description

11. Design Exceptions

Title	NHS	District Engineer	District Engineer Approval	District Engineer Approval Date
	☐		☐	Select

Committee Approval Date	FHWA Name	FHWA Approval	FHWA Approval Date
Select		☐	Select

12. Change Requests

Title	Request Date	Request No.	Request Description
	Select		

Reason for Change	Impact to Schedule, Scope, Budget	Impact to Resources, Risks, Quality	Request Results
			Select

Request Comments

Title	Request Date	Request No.	Request Description
	Select		

Reason for Change	Impact to Schedule, Scope, Budget	Impact to Resources, Risks, Quality	Request Results
			Select

Request Comments

Title	Request Date	Request No.	Request Description
	Select		

Reason for Change	Impact to Schedule, Scope, Budget	Impact to Resources, Risks, Quality	Request Results
			Select

Request Comments

Infrastructure Project Charter Template

ITD 0332 (Rev. 09-13)
itd.idaho.gov

Use this template to create your charter without going into the PSS.

Title	Request Date Select	Request No.	Request Description
Reason for Change	Impact to Schedule, Scope, Budget	Impact to Resources, Risks, Quality	Request Results Select
Request Comments			
Title	Request Date Select	Request No.	Request Description
Reason for Change	Impact to Schedule, Scope, Budget	Impact to Resources, Risks, Quality	Request Results Select
Request Comments			

13. Lessons Learned

Title	Project Type Select	Project Phase Select
What Worked Well	What Could Be Done Differently	
Action Plan		
Title	Project Type Select	Project Phase Select
What Worked Well	What Could Be Done Differently	
Action Plan		
Title	Project Type Select	Project Phase Select
What Worked Well	What Could Be Done Differently	
Action Plan		
Title	Project Type Select	Project Phase Select
What Worked Well	What Could Be Done Differently	
Action Plan		
Title	Project Type Select	Project Phase Select
What Worked Well	What Could Be Done Differently	
Action Plan		
Title	Project Type Select	Project Phase Select
What Worked Well	What Could Be Done Differently	
Action Plan		

Infrastructure Project Charter Template

Use this template to create your charter without going into the PSS.

14. Issues

Title	Owner	Assigned To	Status Select	Priority Select	Due Date Select
Discussion					
Resolution					
Title	Owner	Assigned To	Status Select	Priority Select	Due Date Select
Discussion					
Resolution					
Title	Owner	Assigned To	Status Select	Priority Select	Due Date Select
Discussion					
Resolution					

15. Risks

Title	Owner	Assigned To	Status Select	Exposure	Due Date Select
Description					
Mitigation Plan					
Title	Owner	Assigned To	Status Select	Exposure	Due Date Select
Description					
Mitigation Plan					
Title	Owner	Assigned To	Status Select	Exposure	Due Date Select
Description					
Mitigation Plan					