NOTICE OF PUBLIC MEETING
CITY OF ALBANY
CITY COUNCIL WORK SESSION
Municipal Court Room
333 Broadalbin Street SW
Monday, March 21, 2016
4:00 p.m.

AGENDA

OUR MISSION IS

"Providing quality public services for a better Albany community."

OUR VISION IS

"A vital and diversified community that promotes a high quality of life, great neighborhoods, balanced economic growth, and quality public services."

Rules of Conduct for Public Meetings

1. No person shall be disorderly, abusive, or disruptive of the orderly conduct of the meeting.
2. Persons shall not testify without first receiving recognition from the presiding officer and stating their full name and residence address.
3. No person shall present irrelevant, immaterial, or repetitious testimony or evidence.
4. There shall be no audience demonstrations such as applause, cheering, display of signs, or other conduct disruptive of the meeting.

4:00 p.m. CALL TO ORDER

4:00 p.m. ROLL CALL

4:05 p.m. BUSINESS FROM THE PUBLIC

4:10 p.m. 37th AVENUE PROPERTY SALE – Ed Hodney. [Pages 3-6]
Action Requested: Information, discussion, and direction.

4:30 p.m. GIBSON HILL ROAD/CROCKER LANE INTERSECTION ALTERNATIVES – Ron Irish. [Pages 7-58]
Action Requested: Information, discussion, and direction.

5:15 p.m. BUSINESS FROM THE COUNCIL

5:25 p.m. CITY MANAGER REPORT

5:30 p.m. ADJOURNMENT

City of Albany Web site: www.cityofalbany.net

The location of the meeting/hearing is accessible to the disabled. If you have a disability that requires accommodation, advanced notice is requested by notifying the City Manager's Office at 541-917-7508, 541-704-2307, or 541-917-7519.

TO: Albany City Council

VIA: Wes Hare, City Manager

FROM: Ed Hodney, Director of Parks and Recreation

DATE: March 16, 2016 for the March 21, 2016 City Council Work Session

SUBJECT: Sale of property

RELATES TO STRATEGIC PLAN THEME: • An Effective Government

Action Requested:

Receive a report and provide direction.

Discussion:

In late 2013, the City received a gift of land for park and open space purposes in the Oak Creek area of southwest Albany (Exhibit 1). This donation was made for "parks, recreation and open space purpose" but without conditions or restrictions. The land has been managed as an unimproved preserve and mowed two or three times each year.

At a work session in March 2015, the City Council was made aware of interest by adjacent landowners on 37th Avenue to purchase a part of the previously donated tract. The homes of these owners front on 37th Avenue, a street that doesn't currently meet the City's street design standards. Storm water presently flows across 37th Avenue and south across their lots towards Oak Creek.

The City property lies south of the developed lots on 37th Avenue and north of 39th Avenue, another substandard City street. The homeowners would like to construct drainage improvements across their lots and the City's land, connecting with the City drainage facility south of 39th Avenue.

Their solution can be accommodated with either a drainage easement from the City or a purchase of property. The subject parcel has no practical value to the City as park land, but could with land use approvals and significant expense be developed as one or more residential lots. The City has neither the inclination nor the resources itself to do so. Therefore, we are considering the requested sale. A sale of the property would also place it back on the tax rolls.

The Community Development Department has approved a Tentative Replat at my request, defining two proposed sale parcels (Exhibit 2). A sale price of $0.46 per square foot has been discussed, or $9,429 for the 18,858 sq. ft. parcel and $3,299 for the 6,597 sq. ft. parcel. This price is based on the average value established by an independent appraisal on the donated tract.

At the City Council's direction, a final sale price will be negotiated, and a Resolution will be prepared for the Council to consider at a future meeting.

Budget Impact:

In keeping with the donor's stated purpose, sale proceeds would accrue to the Parks & Recreation Fund to support ongoing management of the remainder of the donated property.

Attachment: 2 Exhibits

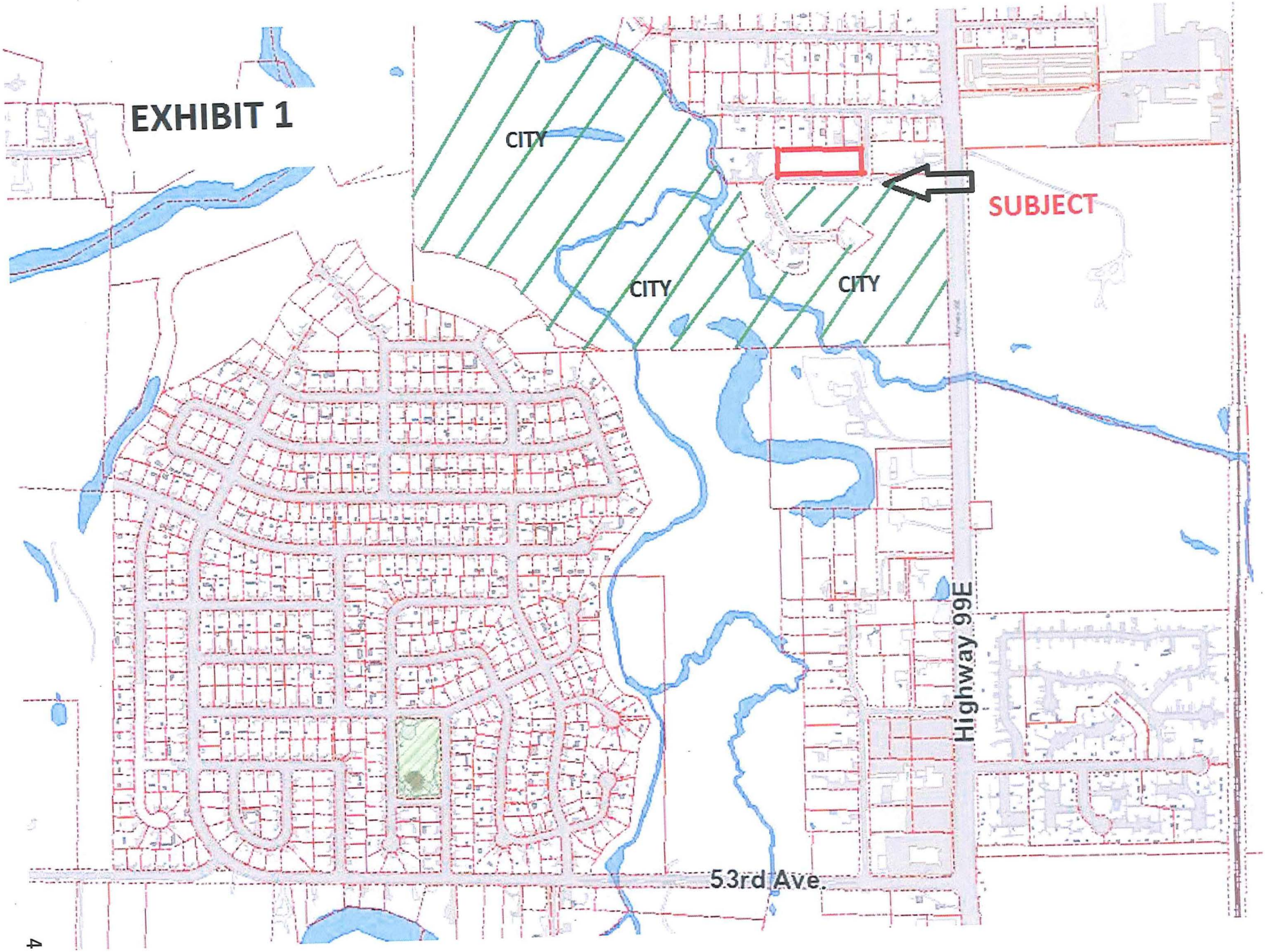
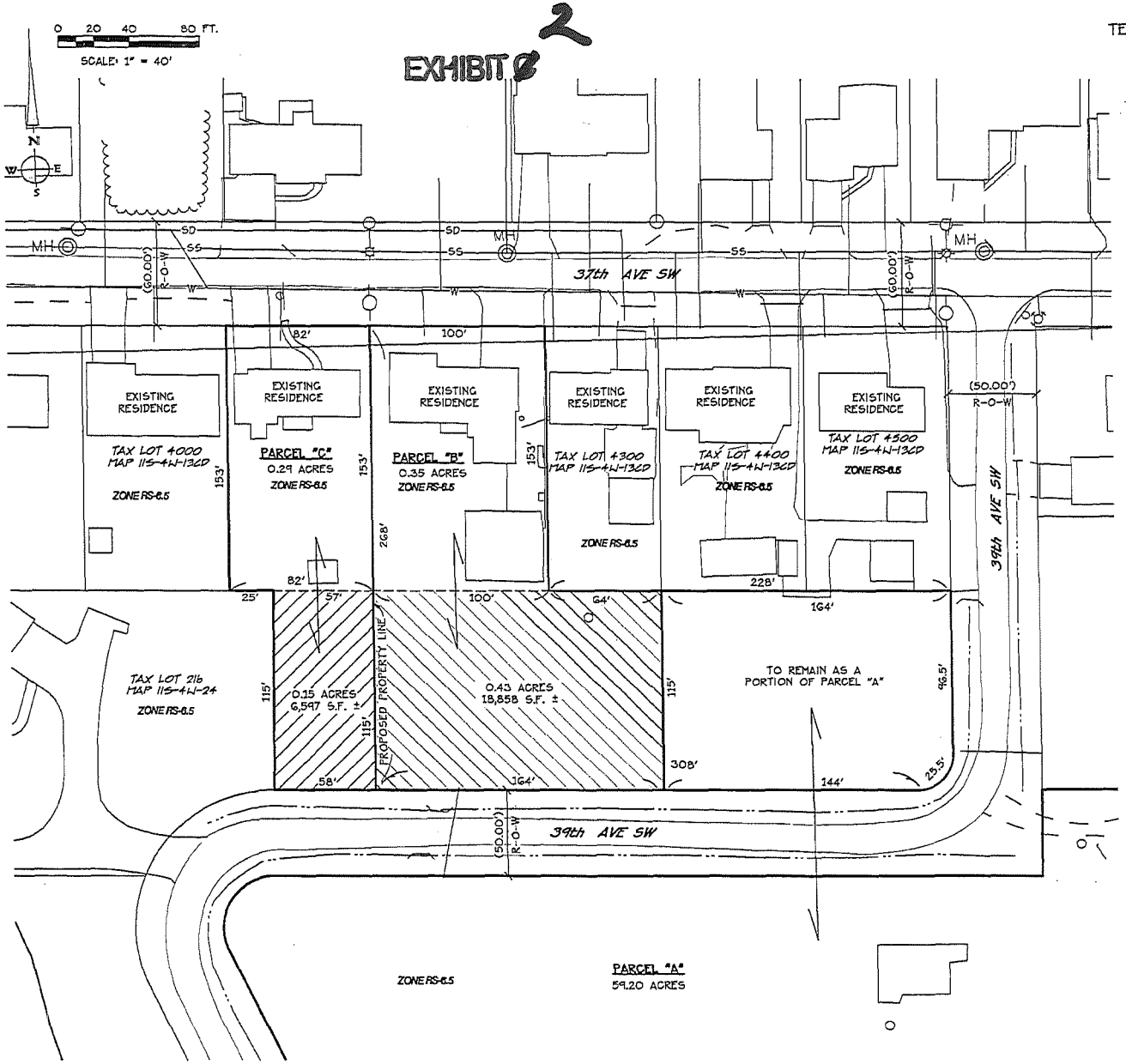


EXHIBIT 1
CITY
CITY
CITY
SUBJECT
Highway 99E
53rd Ave.



TENTATIVE PROPERTY LINE ADJUSTMENT \ REPLAT

FOR

TAX LOTS: 4100, 4200 [11S-04W-13DC]
+ 200 [11S-04W-24]

LOCATED IN THE

S 1/2 SEC. 13 T. 11 S., R. 4 W., W.M.
CITY OF ALBANY, LINN COUNTY, OREGON

SEPTEMBER 1, 2015

APPLICANT:

ED HODNEY
P.O. BOX 490
ALBANY, OR 97321

ENGINEER/SURVEYOR:

K+D ENGINEERING, INC.
276 NW HICKORY STREET
ALBANY, OREGON 97321
(541) 928-2583

PROPERTY INFORMATION:

PROPERTY "A":

CITY OF ALBANY
333 BROADALBIN STREET SW
ALBANY, OREGON 97321
TAX LOT 200 (MAP 11S-4W-24)

PROPERTY "B":

JAMISON M + KRISTI L SMITH
112 37TH AVENUE SW
ALBANY, OREGON 97321
TAX LOT 4200 (MAP11S-04W-13DC)

PROPERTY "C"

MERLAN W + CECELIA R SWANSON
1120 37TH AVENUE SW
ALBANY, OREGON 97321
TAX LOT 4100 (MAP11S-04W-13DC)

EXHIBIT 2

LEGEND:

- AREA TO BE TRANSFERED FROM PROPERTY "A" TO PROPERTY "B" = 0.43 ACRES
- AREA TO BE TRANSFERED FROM PROPERTY "A" TO PROPERTY "C" = 0.15 ACRES
- —W— EXISTING WATER MAIN PER CITY OF ALBANY GIS.
- —SS— EXISTING SEWER MAIN PER CITY OF ALBANY GIS.
- —SD— EXISTING STORM MAIN PER CITY OF ALBANY GIS.

PROPERTY "A"

ORIGINAL AREA:	59.20 ACRES
TRANSFER AREA "B":	-0.43 ACRES
TRANSFER AREA "C":	-0.15 ACRES
NEW AREA:	58.62 ACRES

PROPERTY "B"

ORIGINAL AREA:	0.35 ACRES
TRANSFER AREA:	+0.43 ACRES
NEW AREA:	0.78 ACRES

PROPERTY "C"

ORIGINAL AREA:	0.29 ACRES
TRANSFER AREA:	+0.15 ACRES
NEW AREA:	0.44 ACRES

K&D K & D ENGINEERING, Inc.
276 N.W. Hickory Street P.O. Box 725
Albany, Oregon 97321
(541) 928-2583

Date: 8/5/2015 Time: 13:33
View: PLOT Scale: 1=40'
File: dwg\2015\15-94\15-94.dwg (Brian)

TO: Albany City Council

VIA: Wes Hare, City Manager
Jeff Blaine, P.E., Public Works Engineering and Community Development Director JB

FROM: Staci Belcastro, P.E., City Engineer SB
Ron Irish, Transportation Systems Analyst RI

DATE: March 16, 2016, for the March 21, 2016, City Council Work Session

SUBJECT: Gibson Hill Road/Crocker Lane Intersection

RELATES TO STRATEGIC PLAN THEME: • Great Neighborhoods

Action Requested:

Staff requests direction from Council regarding the preferred intersection treatment option for the Gibson Hill Road/Crocker Lane intersection and the desired construction schedule.

Discussion:

The engineering firm of David Evans & Associates (DEA) has prepared a memorandum (attached) analyzing the performance, safety, right-of-way impact, and cost of five different intersection improvement options for the Gibson Hill Road/Crocker Lane intersection in North Albany. Although Gibson Hill Road and Crocker Lane are currently under the jurisdiction of Benton County, the City contracted with DEA to complete the analysis due to the increased traffic volumes through the intersection with development activity in North Albany. Residents have, as a result of development, become increasingly concerned about delay and safety issues related to turn movements from Crocker Lane onto Gibson Hill Road. Those concerns came up most recently during the land use hearings for the Albany Heights development at the southwest corner of Crocker Lane and Valley View Drive. Following those hearings, Council directed staff to evaluate the performance of, and potential impacts to, this intersection.

The improvement options evaluated by DEA were:

- *All-Way Stop Control*. An all-way stop was found to be the least expensive treatment, but also the only option with insufficient capacity to accommodate anticipated future traffic volumes. If used in the short term as an interim measure, it would also have the potential to result in queue issues that conflict with the operation of the Gibson Hill Road/Crittenden Loop intersection to the east. For those reasons, staff from both the City and Benton County recommends this option be dropped from further consideration.
- *Single-Lane Traffic Signal*. A single-lane traffic signal would perform well and operate at Level of Service (LOS) B through year 2040. It would also have minimal right-of-way impacts on adjoining property. Access control would eventually be needed at the Crittenden Loop intersection because of queuing conflicts. The project cost closely matches the current TSDC funding eligible for improvements at the intersection.
- *Traffic Signal with Turn Lanes*. A traffic signal with turn lanes would operate at LOS A through year 2040, but that slight improvement over a single-lane signal would come at significant additional cost and right-of-way impacts. In addition, the recently installed sidewalk improvements on the south side of the intersection would need to be modified and access control could still be needed at the Crittenden Loop intersection. For those reasons, staff recommends this option be dropped from further consideration.

- *Modern Roundabout.* A modern roundabout would perform well and operate at LOS B through year 2040. A roundabout would also be expected to have fewer crashes and a better safety record than would control by traffic signal. Those benefits would be offset by substantial right-of-way impacts and associated construction costs. Because other options would perform well without those impacts, staff recommends this option be dropped from further consideration.
- *Mini-Roundabout.* A mini-roundabout would perform well through year 2040, operating at LOS C in the AM peak hour and LOS B in the PM peak hour. Safety benefits would be similar to a modern roundabout if installation included a reduction in the posted speed limit on Gibson Hill to 35 mph for the approaches to the intersection. Right-of-way impacts would be minor and similar to the impacts with a single-lane approach traffic signal. A mini-roundabout would cost less to construct than a traffic signal.

DEA's analysis included a summary of the existing performance of the intersection. The current crash rate for the intersection is typical of similar intersections around the state and does not represent a high risk for users. The worst case movement at the intersection meets the City's performance standard. During peak conditions, vehicles stopped on Crocker may experience delays while waiting for appropriate gaps to turn onto Gibson Hill Road; as volumes increase with development, delays on Crocker are expected to increase. Based on current traffic volumes, the peak-hour and four-hour MUTCD warrants are met for installation of a traffic signal. Based on current intersection operation and projected development in the area, staff's recommendation is that capacity improvements should occur at the intersection within the next five years.

Of the five improvement options evaluated, a single-lane traffic signal or mini-roundabout appear to be the best choices for further evaluation by Council based on long-term performance, cost, and right-of-way impacts. The two options have similar performance and right-of-way impacts. A traffic signal is a more traditional form of intersection control, might be better received by residents, and would have an installation cost that closely matches the current TSDC funding eligibility for the intersection. The mini-roundabout would offer a reduced installation cost and the potential for improved safety performance. A mini-roundabout would also trigger the need for a reduction in the posted speed limits on Gibson Hill Road from just west of Crocker Lane to North Albany Road.

Staff requests that Council identify their preferred intersection treatment and desired construction schedule. If Council chooses to prioritize this improvement over other TSDC eligible projects, staff will work with Benton County to develop a proposed schedule based on available funding and other planned improvements to Gibson Hill Road.

Budget Impact:

None at this time. A decision to install a single-lane traffic signal or mini-roundabout would result in construction costs at or below the current TSDC funding eligibility for the intersection. A decision to install a traffic signal with turn lanes or a modern roundabout would require the identification of additional funding options.

RGI:kw
Attachment

Gibson Hill Road and Crocker Lane

Intersection Alternatives Analysis Memorandum

Prepared for:

City of Albany, Oregon

Prepared By:

David Evans and Associates, Inc.
2100 SW River Parkway
Portland, OR 97201

February 2016

February 2016

Alternatives Analysis Memorandum

Introduction

The Gibson Hill Road and Crocker Lane intersection is a three-leg "T" intersection with stop-control on the Crocker Lane approach. The intersection is located in North Albany, and connects residential areas to the north to an east-west connection between rural lands and an urban center. Crittenden Loop intersects Gibson Hill Road 160 ft to the east of the intersection with Crocker Lane. As development continues in the area, traffic volumes at the intersection with Crocker Lane are anticipated to grow leaving residents concerned with increasing delays and worsening conditions for bike and pedestrian crossings of Gibson Hill Road. These concerns have prompted the City of Albany to consider traffic control improvement alternatives at this intersection. The City of Albany and Benton County Transportation System Plans both recommend the improvement of Gibson Hill Road to an urban minor arterial with improved traffic control at the intersection with Crocker Lane.

Purpose

The purpose of this memorandum is to provide the City of Albany and Benton County with a summary evaluation of the performance, cost, safety considerations, and impacts of each intersection concept design alternative.

Alternatives Considered and Evaluated:

1. All-Way Stop Control
2. Single Lane Traffic Signal
3. Traffic Signal with Turn Lanes
4. Modern Roundabout
5. Mini Roundabout

Existing Conditions

The existing intersection is controlled by a stop sign on the southbound approach of Crocker Lane. The speed on Gibson Hill Road is 40 mph to the east and 45 mph to the west. Crocker Lane is posted at 35 mph. Bike and pedestrian crossings of Gibson Hill Road are currently accommodated by a Rectangular Rapid Flash Beacon (RRFB) and striped crosswalk.

City of Albany Minimum Performance Standards

The City of Albany defines the minimum performance standards for intersections with different traffic control in their *Traffic Impact Study Guidelines.*

Traffic Control	Minimum Performance Standard
Traffic Signal and All-Way Stop	Level of Service (LOS): D
Uncontrolled and Two-Way Stop *(worst case movement)*	Volume-to-Capacity (V/C): 0.85

Crash Analysis

Five years of the most recent crash data available (January 1, 2010 to December 31, 2014) was obtained from the Oregon Department of Transportation for a review of existing crash history. In total there were four crashes recorded at the intersection between Gibson Hill Road and Crocker Lane and 3 crashes recorded on the approaches of Gibson Hill Road within 250 ft of the intersection. Of the crashes at the intersection, all four were turning movement crashes involving a vehicle making a left turn from Crocker Lane. One of these crashes involved a bicycle and resulted in serious injuries. The crashes on the Gibson Hill Road

approaches included one rear-end crash, one crash involving an animal, and one turning movement crash involving a vehicle turning from the nearby intersection with Crittenden Loop. The crash rate observed at this intersection is below the 90th percentile statewide crash rates for a 3-way stop-controlled intersection, produced by the Oregon Department of Transportation. This indicates that the crash rate at this intersection is within a typical range for similar intersections around the state.

All-Way Stop Warrants

Conditions for installing an all-way stop controlled intersection are established by the *2009 Manual of Uniform Traffic Control Devices* (MUTCD). The criteria for all-way stop control include an analysis of eight-hour intersection volumes, crash history, delay, and speed. All-way stop control can also be used as an interim measure at locations found to justify traffic signal control. Current traffic volumes at the intersection of Gibson Hill Road and Crocker Lane currently satisfy the requirements for installation of all-way stop control.

Signal Warrants

There are eight signal warrants established by the MUTCD that are used to evaluate the need for a traffic signal at a given intersection. Three of these warrants are based solely on traffic volumes: Warrant 1 – 8-hour Traffic Volumes, Warrant 2 – 4-hour Traffic Volumes, and Warrant 3 – Peak Hour Traffic Volumes. These warrants also include a lower volume threshold for facilities with actual driver speeds (as opposed to posted) in excess of 40 mph.

After comparing existing (2016) turning movement volumes on the Gibson Hill Road and Crocker Lane intersection it was determined that two of the volume-based warrants are currently met by 2016 volumes. The 4-hour traffic volume warrant and peak hour warrant are satisfied based on 2016 volumes because based on city provided data the 85th percentile speeds on Gibson Hill Road are in excess of 40 mph. Volume thresholds for traffic signal warrants increase where typical travel speeds do not exceed 40 mph; therefore, if travel speeds on Gibson Hill Road did not exceed 40 mph the current 2016 traffic volumes would not meet volume warrants. Traffic signal warrant spreadsheets are attached to this report.

Summary of Existing Performance

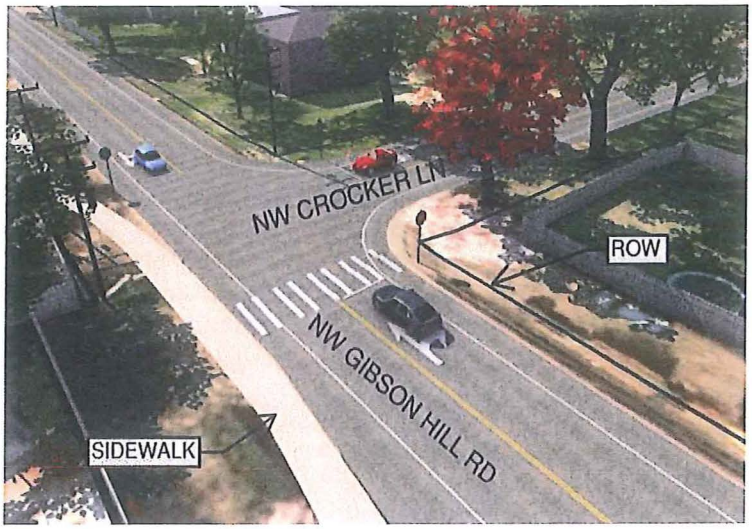
The existing intersection configuration, a stop-controlled southbound approach (Crocker Lane), currently meets operational standards with a volume-to-capacity ratio of 0.44 for the southbound approach during the afternoon peak hour. During peak conditions, vehicles stopped on Crocker Lane may experience delays while waiting for appropriate gaps to turn onto Gibson Hill Road. As volumes on Gibson Hill Road continue to increase with development, delays on Crocker Lane are expected to increase. Bicycle and pedestrian crossings of Gibson Hill Road are currently accommodated with a Rectangular Rapid Flash Beacon (RRFB).

Alternatives Analysis Methodology

Each proposed alternative was evaluated to understand the impacts, performance and costs of the proposed intersection configurations. Concept-level designs were created to estimate the potential right-of-way impacts, constraints, and planning-level cost opinions (does not include costs of ROW, utility relocations, hazmat, environmental mitigation, etc.). Traffic analysis was completed to identify the expected operations of each configuration based on projected future year (2040) traffic volumes provided by the City of Albany. Year 2040 volumes are intended to closely approximate buildout of the current UGB boundary in North Albany. Qualitative evaluation of geometric safety considerations, bike and pedestrian facilities, and fatal flaws is also presented. Specific findings for each alternative are presented below by alternative. The findings of this evaluation are summarized within this report by Alternative. A summary of findings is presented in a matrix at the end of this heading.

Alternative 1:

All-Way Stop Control



Conceptual Design

- ✓ Re-stripe the intersection to include stop-bars and stop-signs at each roadway approach.
- ✓ Remove the existing Rectangular Rapid Flash Beacon (RRFB).
- ✓ More detailed design information is included in the concept design sheet attached to this memorandum.

Right-Of-Way Impacts

The all-way stop control intersection alternative requires no additional right-of-way.

2040 Traffic Operations

In 2040, the all-way stop controlled intersection does not meet operational standards during the afternoon peak hour with a volume-to-capacity ratio of 1.10 for the westbound approach. It is likely that operations would only fail to meet minimum standards during the peak hour and would operate sufficiently for the rest of the day. Queuing results obtained from a Highway Capacity Manual (HCM) analysis don't indicate significant queuing with this alternative; however, the queuing for this alternative is expected to be similar to what would be experienced for the roundabout alternatives since the HCM analysis typically underestimates queuing for all-way stop-controlled intersections.

Geometric Safety Evaluation

Installation of all-way stop-control may reduce the frequency of turning movement and angle collisions at the intersection. There is potential for short-term increases in specific crash types, such as rear-end crashes, while drivers become accustomed to the change in traffic control to an all-way stop. Sight distance evaluation should be completed to ensure final intersection configuration meets standards.

Bike and Pedestrian Considerations

Bikes would continue to use the striped bike lane/shoulders. The striped crosswalk at all-way stop intersections provide some level of protection; however, the stop-signs at the all-way stop control may not provide the same level of driver warning as the existing RRFB.

Cost Estimate

Construction: $6,000
Contingency: $1,500
Preliminary Engineering: $2,000
TOTAL: $9,500

2040 Traffic Operations

- ✓ **Meets standards in the AM peak hour**
- ✗ **Does not meet standards in the PM peak hour**

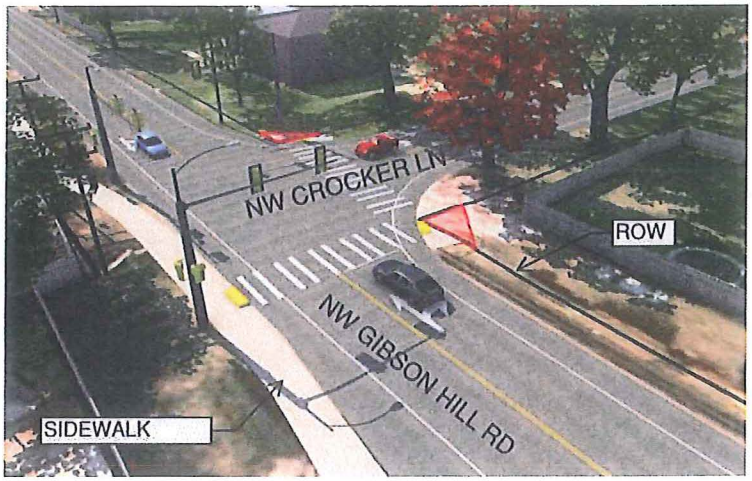
Worst Queuing:
Queuing is expected to be similar to what is experienced with the roundabout alternatives in the AM and PM peak hours

Future Considerations

- Potential as an interim, low-cost alternative until ultimate corridor design configuration is decided (roundabouts vs. signals, etc.)

Alternative 2:

Single Lane Traffic Signal



Conceptual Design

- ✓ Install a traffic signal and maintain single lane approaches.
- ✓ New ADA pedestrian ramps on the northeast and northwest corners of the intersection.
- ✓ Striped crosswalks on the north and east legs of the intersection.
- ✓ Pavement widening to accommodate the turning radius for a large semitrailer (WB-50 design vehicle).
- ✓ Remove the existing RRFB.
- ✓ Existing bus pullout on the south side of Gibson Hill Road remains.
- ✓ More detailed design information is included in the concept design sheet attached to this memorandum.

Right-Of-Way Impacts

The right-of-way impacts for a single lane traffic signal are minimal. The only right-of-way impacts are at the northwest and northeast corners of the intersection (illustrated by red hatching above) for the ADA pedestrian ramps.

2040 Traffic Operations

In 2040, the single lane traffic signal operates under adopted standards with a LOS B in the morning and afternoon peak periods. Queuing in the westbound direction is expected to back up well past the intersection with Crittenden Loop. Access restriction on Gibson Hill Road should be considered at this location.

Geometric Safety Evaluation

Traffic signals are generally recognized as reducing the frequency of specific crash types, primarily angle and turning movement crashes. However, the introduction of traffic signals can also increase the frequency of other types of crashes, most notably rear-ends.

Bike and Pedestrian Considerations

Bikes will continue to use striped bike lane/shoulders. Pedestrians will benefit from striped crosswalks and pedestrian push buttons for controlled pedestrian crossings. Maintaining single lane approaches means that the pedestrian crossing distance is shorter than at a traffic signal with turn lanes.

Cost Estimate

Construction: $311,000
Contingency: $156,000
Preliminary Engineering: $71,000
TOTAL: $538,000

2040 Traffic Operations

✓ **Meets standards in the AM and PM peak hours**

Worst Queuing:

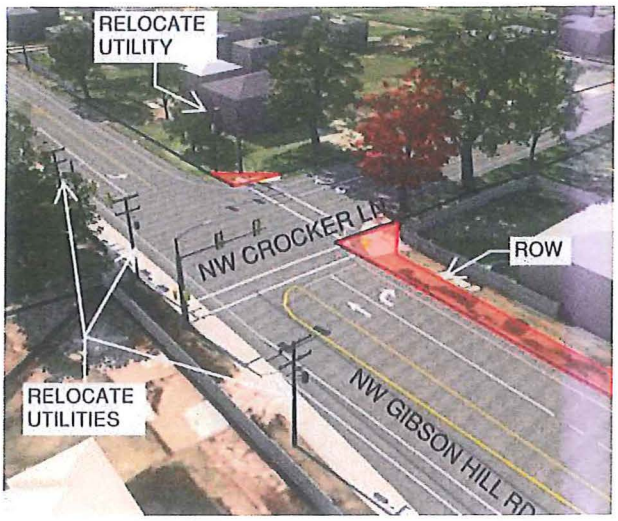
Eastbound: 225 ft (AM)
Westbound: 350 ft (PM)
Southbound: 200 ft (AM)

Future Considerations

- Consider future plans for Gibson Hill Rd corridor (roundabouts vs. signals)
- May require access control on Gibson Hill Road at Crittenden Loop
- Potential for increased delay to side-street volumes in off-peak hours

Alternative 3:

Traffic Signal with Turn Lanes



Conceptual Design

- ✓ Install a traffic signal with left-turn lanes in the eastbound and southbound directions and a right-turn lane in the westbound direction.
- ✓ Remove the existing RRFB and relocate existing overhead utilities.
- ✓ ADA pedestrian ramps with striped crosswalks.
- ✓ Reconfigure the existing bus pullout on the south side of Gibson Hill Road.
- ✓ Restrict access to Crittenden Loop as it's located within the taper for the westbound right-turn lane.
- ✓ Lane widths include: 11' travel lanes, 12' turn lanes, 5' bike lanes/shoulders, and right-of-way for 6 ft sidewalks.
- ✓ Designed to accommodate the turning radius of a large semitrailer (WB-50 design vehicle).
- ✓ More detailed design information is included in the concept design sheet attached to this memorandum.

Right-Of-Way Impacts

The right-of-way impacts for this alternative are localized to the north side of Gibson Hill Road (illustrated by red hatching above).

2040 Traffic Operations

In 2040, the signalized intersection with turn lanes operates under adopted standards with an overall LOS A during the morning and afternoon peak hours. While traffic signals may decrease side street delay during peak periods, it's possible that Crocker Lane may experience additional delay during off peak hours, where acceptable gaps in oncoming traffic are more frequent and signalization isn't needed. Turn lanes improve vehicular operations and reduce queuing when compared to Alternative 2.

Cost Estimate

Construction: $1,084,000
Contingency: $542,000
Preliminary Engineering: $244,000
TOTAL: $1,870,000

2040 Traffic Operations

✓ **Meets standards in the AM and PM peak hours**

Worst Queuing:

Eastbound: 200 ft (AM)
Westbound: 150 ft (PM)
Southbound: 100 ft (AM)

Future Considerations

- Consider future plans for Gibson Hill Rd corridor (roundabouts vs. signals)
- Access control at Crittenden Loop
- Right-turn lane conflict with bike lanes
- Potential for increased delay to side-street volumes in off-peak hours

Geometric Safety Evaluation

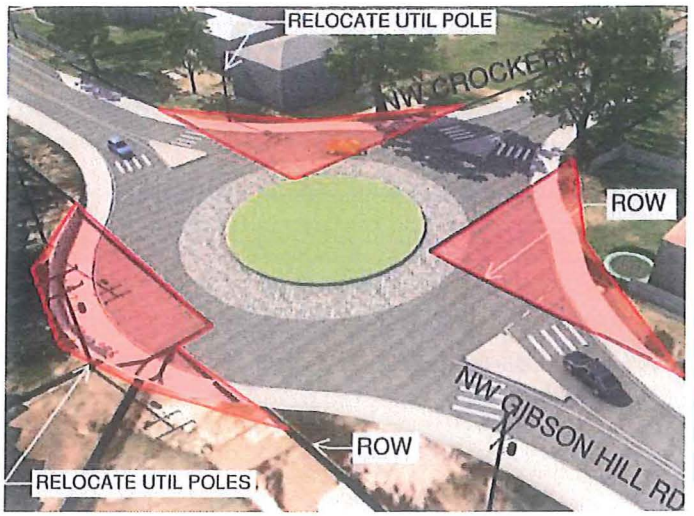
Traffic signals are generally recognized as reducing the frequency of specific crash types, specifically angle and turning movement crashes. However, the introduction of traffic signals can also increase the frequency of other types of crashes, most notably rear-ends.

Bike and Pedestrian Considerations

Bikes will continue to use striped bike lane/shoulders. Pedestrians will benefit from crosswalks and pedestrian push buttons for controlled pedestrian crossings. Right-turn lanes result in increased pedestrian crossing distance/exposure and create potential conflicts with bicyclists along Gibson Hill Road.

Alternative 4:

Modern Roundabout



Conceptual Design

- ✓ Install a modern roundabout with an inscribed diameter of 115 ft, a 50 ft diameter raised island and 12 ft mountable truck apron.
- ✓ Existing bike lanes would be routed up on to 10' multi-use sidewalks around the perimeter of the roundabout.
- ✓ Designed to accommodate a large semitrailer (WB-50 design vehicle).
- ✓ Remove or relocated existing RRFB.
- ✓ Relocate existing utility poles.
- ✓ Relocate existing bus pullout on the south side of Gibson Hill Road.
- ✓ Restrict access on Gibson Hill Road to Crittenden Loop.
- ✓ A speed study should be completed to inform final design of traffic calming features for a full roundabout.
- ✓ More detailed design information is included in the concept design sheet attached to this memorandum.

Right-Of-Way Impacts

Additional right-of-way is needed on the north and south side of Gibson Hill Road in order to avoid property building takes at the north side of the intersection.

2040 Traffic Operations

In 2040, the modern roundabout operates under adopted standards with a LOS B in the morning and afternoon peaks. Queuing in the westbound direction is expected to extend back past the intersection with Crittenden Loop during the afternoon peak. Access control on Gibson Hill Road at this location may be required.

Geometric Safety Evaluation

Roundabouts reduce the number of crossing conflicts at an intersection which may result in a reduced frequency of severe turning movement conflicts. In general, traffic calming measures can be incorporated into the geometric design of roundabouts which may also help reduce excessive vehicular speeds along Gibson Hill Road.

Cost Estimate

Construction: $848,000
Contingency: $424,000
Preliminary Engineering: $191,000
TOTAL: $1,463,000

2040 Traffic Operations

✓ **Meets standards in the AM and PM peak hours**

Worst Queuing:

Eastbound: 250 ft (AM)
Westbound: 250 ft (PM)
Southbound: 100 ft (AM)

Future Considerations

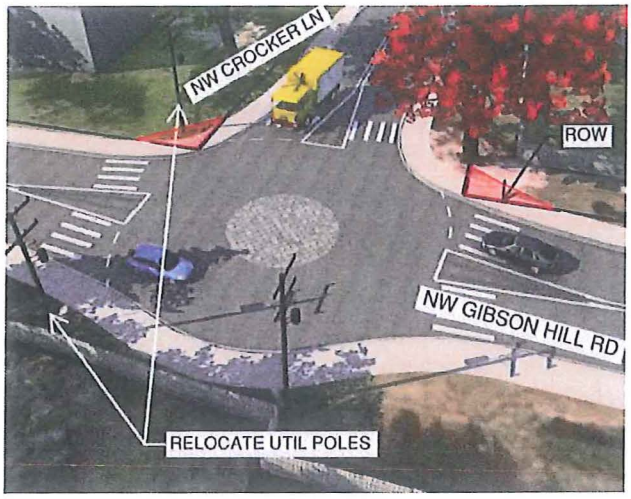
- Speed study to inform design of roundabout with potential, supplemental traffic calming measures to consider pedestrian safety
- Access control at Crittenden Loop
- Intersection re-alignment to avoid property building take
- Consider future plans for Gibson Hill Rd corridor (roundabouts vs. signals)

Bike and Pedestrian Considerations

A 10 ft multi-use sidewalk around the perimeter of the roundabout would accommodate bikes and pedestrians. Crosswalks at each approach should be separated by medians to facilitate two-stage pedestrian crossings. The existing RRFB can be relocated in combination with a roundabout.

Alternative 5:

Mini Roundabout



Conceptual Design

- ✓ Install a mini roundabout with an inscribed diameter of 60 ft and a 25 ft diameter mountable center island.
- ✓ Striped splitter island needed to accommodate a large semitrailer (WB-50 design vehicle).
- ✓ Remove or relocate the existing RRFB.
- ✓ Relocate existing utilities on the north and south sides of the intersection.
- ✓ Bikes to navigate through the roundabout with shared lanes.
- ✓ 6 ft sidewalks along the perimeter for pedestrians.
- ✓ Existing bus pullout is not affected; consider relocating with mini roundabout.
- ✓ More detailed design information is included in the concept design sheet attached to this memorandum.

Right-Of-Way Impacts

Right-of-way impacts for the mini roundabout are localized to the northwest and northeast corner of the intersection, as shown by the red hatching above.

2040 Traffic Operations

In 2040, the mini roundabout operates below adopted standards with a LOS C in the morning peak hour and LOS B in the afternoon peak hour. Queuing in the eastbound direction is expected to extend back approximately 350 ft during the morning peak hour while queuing in the westbound direction will back up past the intersection with Crittenden Loop during the afternoon peak hour. Access restrictions may be required at this location.

Cost Estimate

Construction: $163,000
Contingency: $82,000
Preliminary Engineering: $37,000
TOTAL: $282,000

2040 Traffic Operations

✓ **Meets standards in the AM and PM peak hours**

Worst Queuing:
Eastbound: 350 ft (AM)
Westbound: 300 ft (PM)
Southbound: 125 ft (AM)

Future Considerations

- Speed study to evaluate speed reductions on Gibson Hill Road
- Access control at Crittenden Loop
- Consider future plans for Gibson Hill Rd corridor (roundabouts vs. signals)

Geometric Safety Evaluation

According to the Federal Highway Administration's (FHWA) *Technical Summary on Mini Roundabouts*, mini roundabouts cannot provide the same level of speed reduction as a full roundabout and are less suited for roads with speeds exceeding 30 to 35 mph. Since speeds are currently in excess of 35 mph, a speed study would be required to evaluate the potential for reducing posted speeds through the corridor. If corridor improvements are implemented that result in lower speeds, it's possible that the safety benefits of a full roundabout such as decreased frequency of severe turning movement crashes and traffic calming may be realized.

Bike and Pedestrian Considerations

A 6 ft sidewalk around the perimeter of the roundabout would accommodate pedestrians with crosswalks and splitter islands at each approach to facilitate two-stage pedestrian crossings. Based on design guidance for mini roundabouts, bicyclists would share the travel lanes with vehicles through the mini roundabout. Speeds on Gibson Hill Road would need to be lowered to achieve recommended travel speeds in order to create a safe environment for bikes and pedestrians. The existing RRFB can be relocated in combination with a mini roundabout.

2040 Traffic Operations

If the existing intersection configuration is left in place until 2040 (future analysis year) the intersection can be expected to operate over minimum standards for two-way stop controlled intersections with a volume-to-capacity ratio greater than 0.85 for the southbound approach in the morning and afternoon peak period. Delays on Crocker Lane can be expected to increase as volumes through the intersection continue to grow.

Alternatives Analysis and Evaluation Summary

	Cost*	ROW Impacts	2040 Traffic Operations		Safety	Bike/ Ped Facilities
			AM	PM		
 Alternative 1: All-Way Stop Control	$9,500	+	✓	-	✓	✓
 Alternative 2: Single Lane Traffic Signal	$538,000	✓	✓	✓	✓	✓
 Alternative 3: Traffic Signal with Turn Lanes	$1,870,000	✓	+	+	✓	-
 Alternative 4: Modern Roundabout	$1,463,000	-	+	+	+	✓
 Alternative 5: Mini Roundabout	$282,000	✓	+	+	+	-

**Costs do not include ROW, utilities, hazmat or environmental mitigation*

✓ Acceptable Performance/ Minimal Impact

\+ Above Average Performance/ Little to no impact

\- Below Average Performance/ Significant impact

Summary and Conclusions

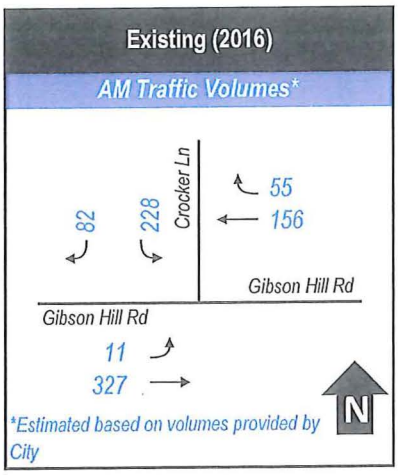
Current conditions at the intersection of Gibson Hill Road and Crocker lane meet operational standards; however, during peak conditions, delays for side street volumes will continue to increase as traffic volumes grow. While there is no immediate need for intersection improvements to meet operational standards, concerns regarding side-street delay and intersection safety warrant evaluation of potential alternatives for future intersection configurations. In general, each of the five intersection alternatives provide a feasible alternative for addressing current, and future, safety and operational concerns as they relate to the existing intersection configuration of Gibson Hill Road and Crocker Lane. The all-way stop controlled alternative is the only alternative that fails to meet operational standards in 2040; however, the implementation of an all-way stop controlled intersection could be a low-cost, interim solution to address current concerns while maintaining maximum flexibility for the ultimate configuration of the corridor. Signalization and roundabout alternatives provide varying benefits, as outlined within this report. The detailed technical information used to summarize performance within this memorandum can be found within the technical attachments included with this report.

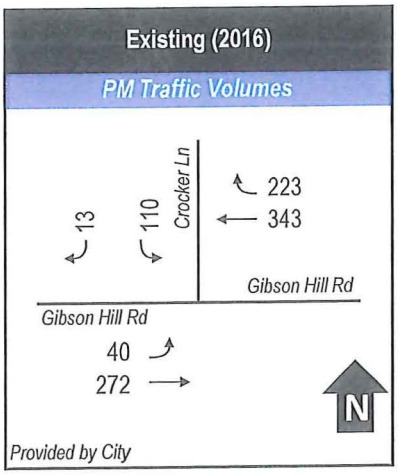
Technical Attachments

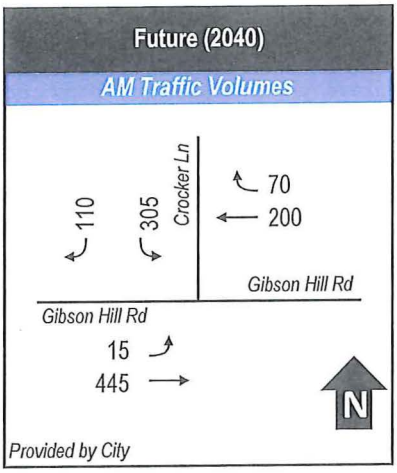
- Existing and Future Traffic Volumes
- Concept Design Sheets
- Preliminary Cost Estimates
- Traffic Operations Output
- Crash History

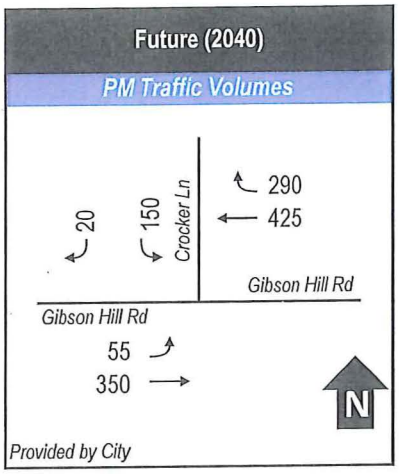
Existing and Future Traffic Volumes

Traffic Volumes - Gibson Hill Road at Crocker Lane





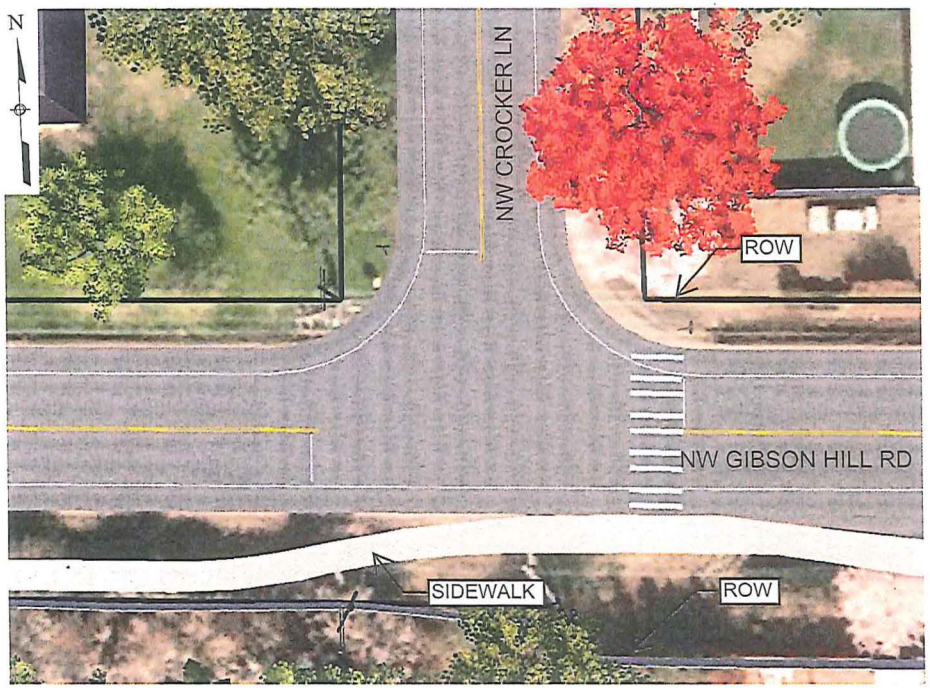




Concept Design Sheets

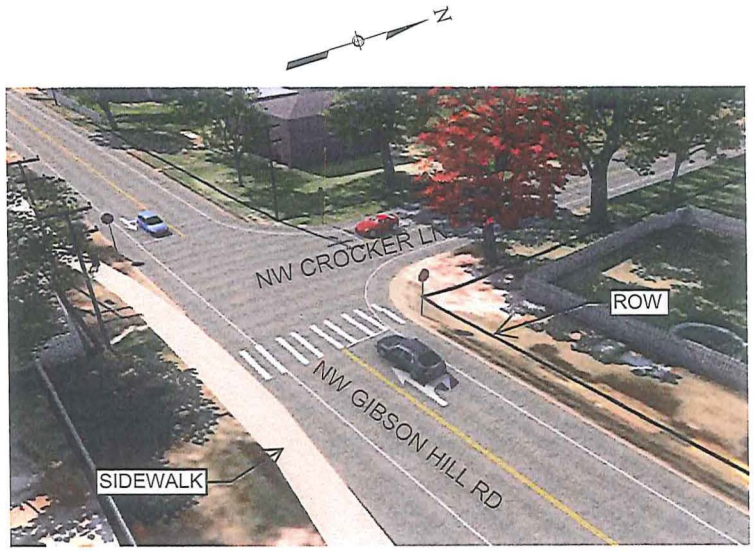
GENERAL NOTES:

1. INSTALL ALL WAY STOP SIGNS & STRIPING
2. REMOVE EXTG RECTANGULAR RAPID FLASHING BEACON
3. NO RIGHT-OF WAY IMPACTS



PLAN VIEW

0' 10' 20' 40'



NW PERSPECTIVE VIEW

ALTERNATIVE 1: ALL WAY STOP

GIBSON HILL ROAD/CROCKER LANE INTERSECTION
ALTERNATIVES ANALYSIS
CITY OF ALBANY

DAVID EVANS AND ASSOCIATES INC.

REVISIONS:	APPD.

DATE: 1-27-16
DESIGN: DJ
DRAWN: DJ
CHECKED:
REVISION NUMBER:

PROJECT NUMBER: ALBX00000044

DRAWING FILE: Gibson Hill_Alt 1.dwg

SHEET NO. 1 OF 5

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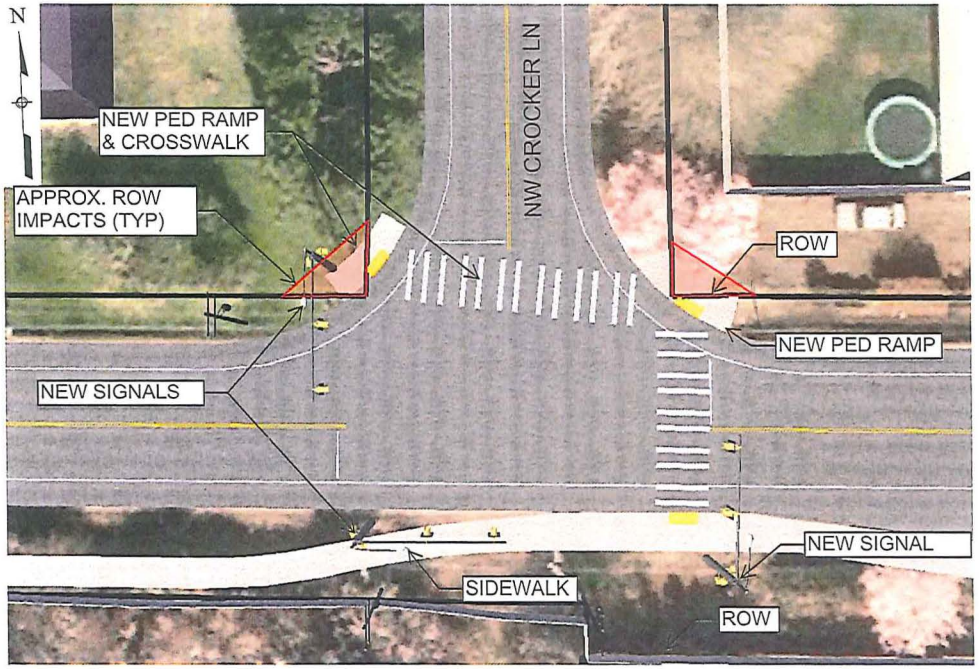
File: P:\ALB\00000044\000\CAD\SHEETS\Gibson Hill_Alt 1.dwg
By: DJ
By:
Xrefs:

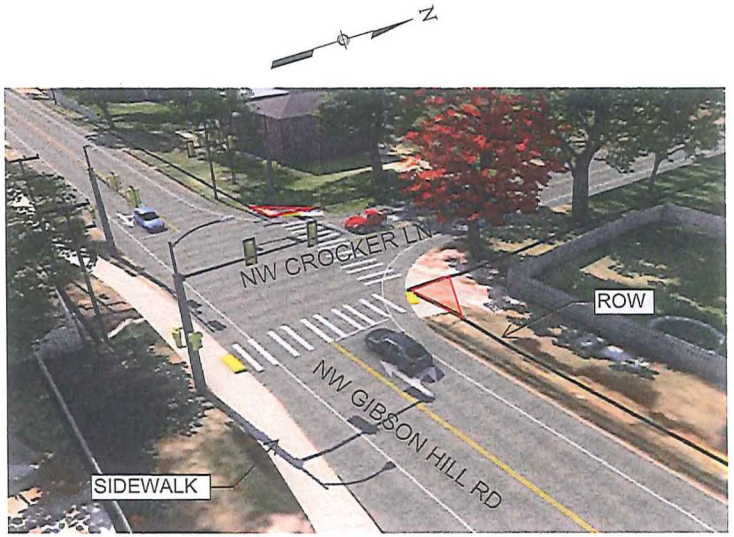
GENERAL NOTES:

1. INSTALL SIGNALS FOR EACH LEG
2. ADD PED RAMPS AT NE & NW CORNERS
3. REMOVE EXTG RECTANGULAR RAPID FLASHING BEACON
4. PAVEMENT WIDENING AT CURB RETURNS TO ACCOMMODATE WB-50 TURNS
5. MINIMAL ROW IMPACTS



PLAN VIEW

0' 10' 20' 40'



NW PERSPECTIVE VIEW

ALTERNATIVE 2: SIGNALIZED SINGLE LANE
GIBSON HILL ROAD/CROCKER LANE INTERSECTION
ALTERNATIVES ANALYSIS
CITY OF ALBANY

DAVID EVANS AND ASSOCIATES INC.

REVISIONS: APPD.

DATE: 1-27-16
DESIGN: DJ
DRAWN: DJ
CHECKED:
REVISION NUMBER:

PROJECT NUMBER: ALBX00000044

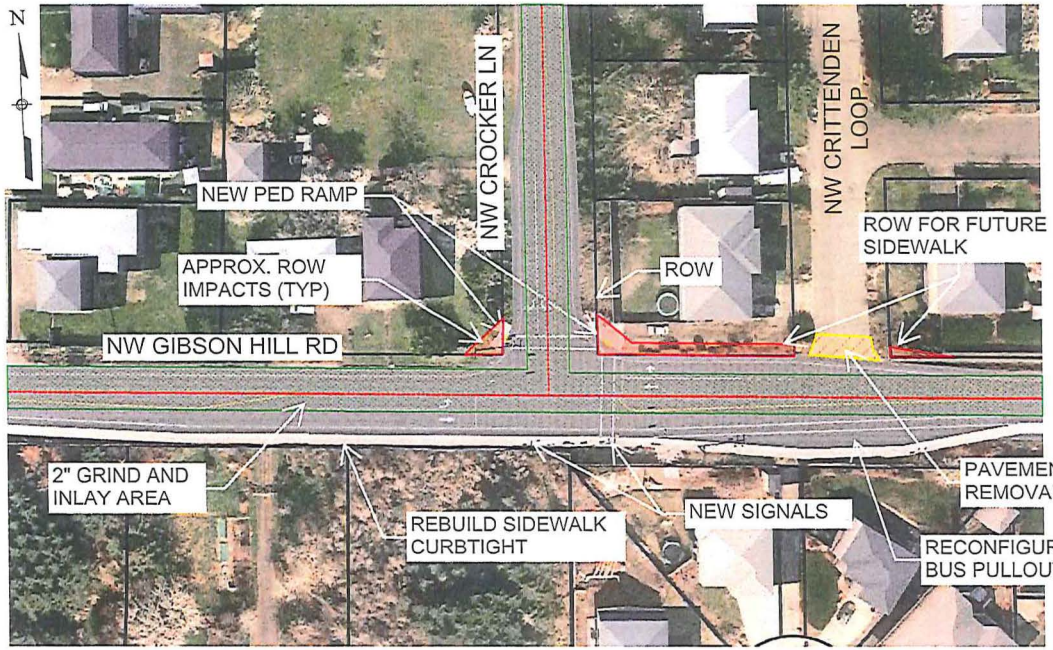
DRAWING FILE: Gibson Hill_Alt 2-Signal.dwg

SHEET NO. 2 OF 5

Plot Date: 1/25/2016 3:07 PM By: Dan Nguyen
Save Date: 1/19/2016 10:28 AM By: DJ File: P:\ALBX00000044\400\CAD\SHEETS\Gibson Hill_Alt 2-Signal.dwg

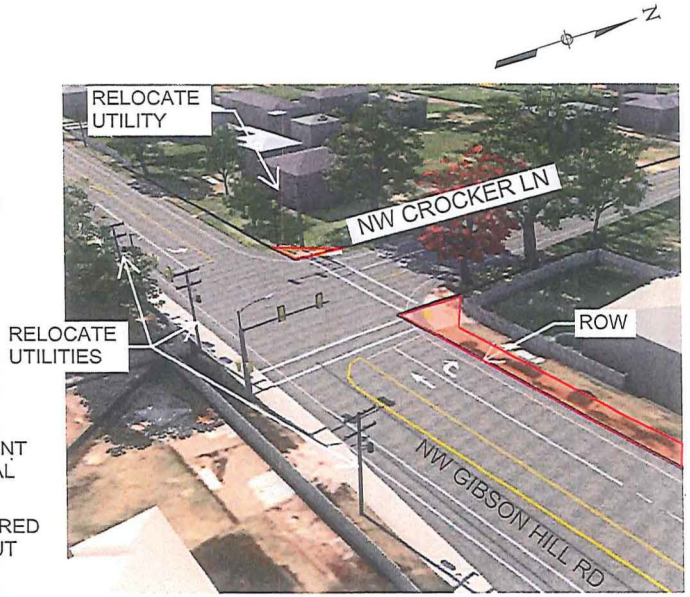
GENERAL NOTES:

1. INSTALL SIGNALS FOR EACH LEG
2. ADD PED RAMPS AT NE & NW CORNERS
3. REMOVE EXTG RECTANGULAR RAPID FLASHING BEACON
4. EASTBOUND GIBSON HILL LEFT TURN WIDENING TO SOUTH - REBUILD SIDEWALK CURBTIGHT
5. WESTBOUND GIBSON HILL RIGHT TURN LANE WIDENED TO THE NORTH - REQUIRES RESTRICTING ACCESS TO NW CRITTENDEN LOOP
6. ROW IMPACTS LOCALIZED TO THE NORTH
7. ASSUMED MINIMUM STORAGE LENGTHS & 25:1 ROADWAY SHIFT TAPERS
8. ROADWAY SECTION: 11' LANES, 12' TURN LANES, 5' SHOULDER/BIKE LANES, 6' SIDEWALK
9. BUS PULLOUT RECONFIGURED
10. ASSUME A SAWCUT & WIDEN WITH 2" GRIND & INLAY OF EXISTING PAVEMENT



PLAN VIEW

0' 20' 40' 80'



NW PERSPECTIVE VIEW

ALTERNATIVE 3: SIGNAL WITH TURN LANES

GIBSON HILL ROAD/CROCKER LANE INTERSECTION
ALTERNATIVES ANALYSIS
CITY OF ALBANY

DAVID EVANS AND ASSOCIATES INC.

REVISIONS: APPD.

DATE: 1-27-16
DESIGN: DJ
DRAWN: DJ
CHECKED:
REVISION NUMBER:

PROJECT NUMBER: ALBX00000044

DRAWING FILE: Gibson Hill_Alt 3.dwg

SHEET NO. 3 OF 5

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Plot By: DJ
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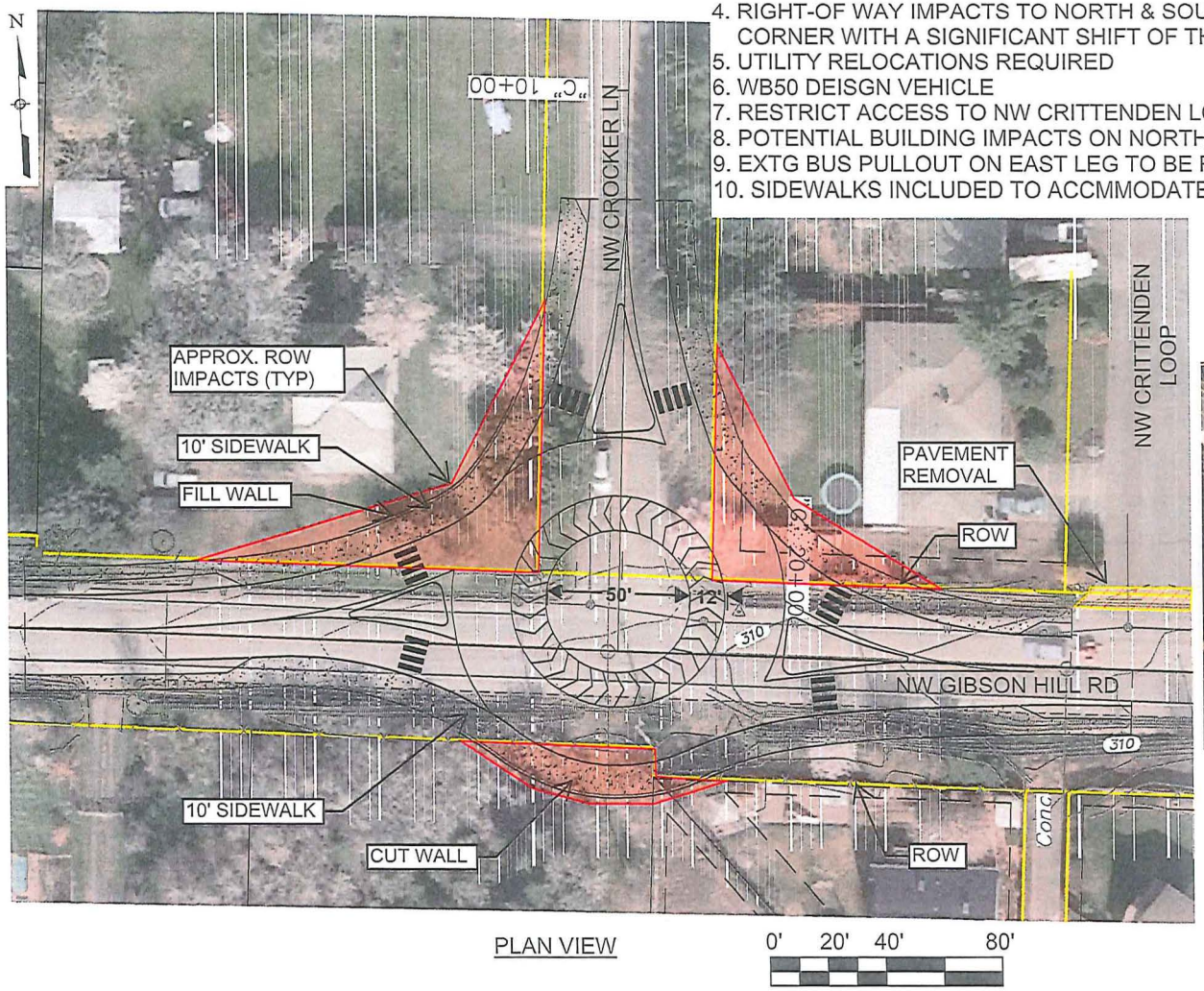
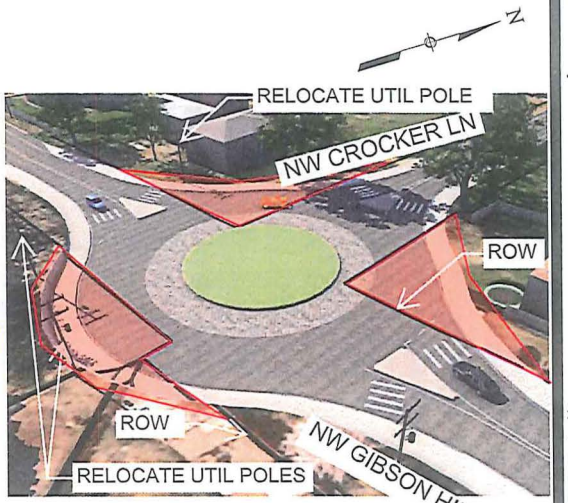
GENERAL NOTES:

1. INSTALL 115' INSCRIBED DIAMETER CONCRETE ROUNDABOUT
2. 50' DIAMETER ISLAND W/12' TRUCK APRON
3. REMOVE EXTG RECTANGULAR RAPIC FLASHING BEACON
4. RIGHT-OF WAY IMPACTS TO NORTH & SOUTH SIDES - COULD BE LOCALIZED TO ONE CORNER WITH A SIGNIFICANT SHIFT OF THE INTERSECTION
5. UTILITY RELOCATIONS REQUIRED
6. WB50 DEISGN VEHICLE
7. RESTRICT ACCESS TO NW CRITTENDEN LOOP
8. POTENTIAL BUILDING IMPACTS ON NORTH SIDE
9. EXTG BUS PULLOUT ON EAST LEG TO BE RELOCATED (NOT INCLUDED IN PROJECT)
10. SIDEWALKS INCLUDED TO ACCMMODATE PEDS & BIKES THROUGH ROUNDABOUT



PLAN VIEW

0' 20' 40' 80'



NW PERSPECTIVE VIEW

ALTERNATIVE 4: FULL ROUNDABOUT
GIBSON HILL ROAD/CROCKER LANE INTERSECTION
ALTERNATIVES ANALYSIS
CITY OF ALBANY

DAVID EVANS AND ASSOCIATES INC.

REVISIONS: APPD.

DATE: 1-27-16
DESIGN: DJ
DRAWN: DJ
CHECKED:
REVISION NUMBER:

PROJECT NUMBER: ALBX00000044

DRAWING FILE: Gibson Hill_Alt 4-Rndb1.dwg

SHEET NO. 4 OF 5

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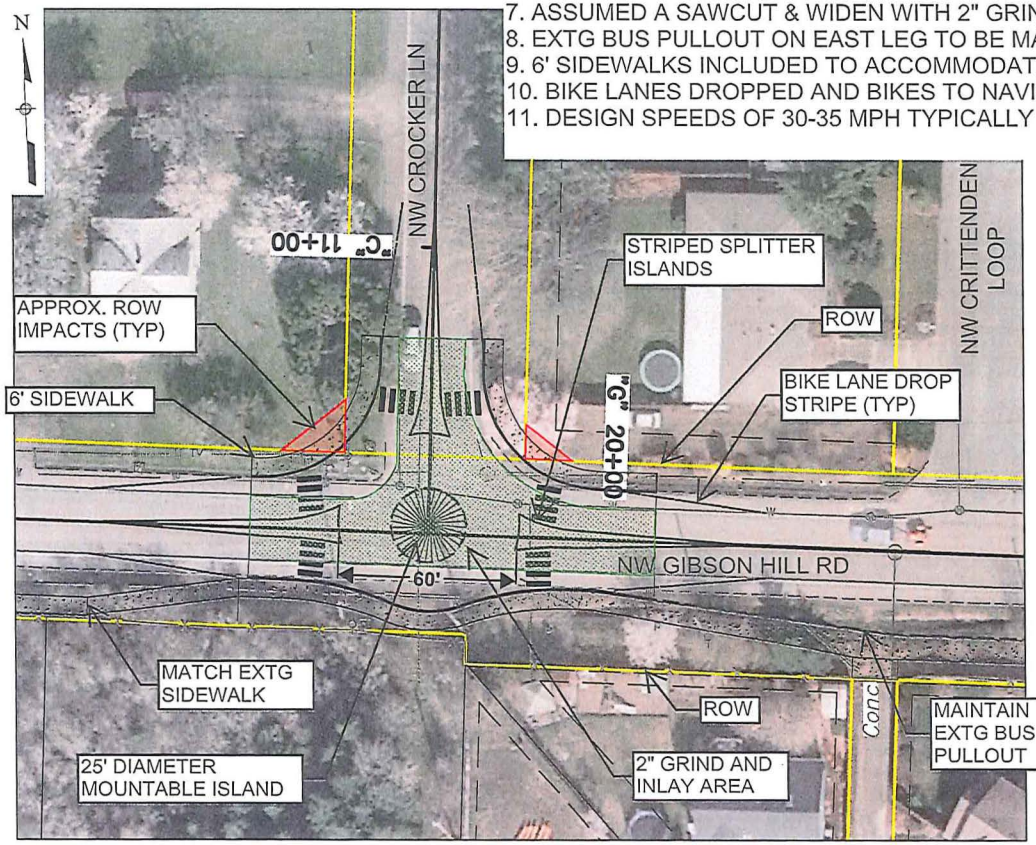
Save Date: 1/26/2016 3:27 PM
By: Dan Ilg
By: DJI
File: P:\ALBX\00000044\Admin\CAD\Sht-EE15 Gibson Hill_Alt 4-Rndb1.dwg

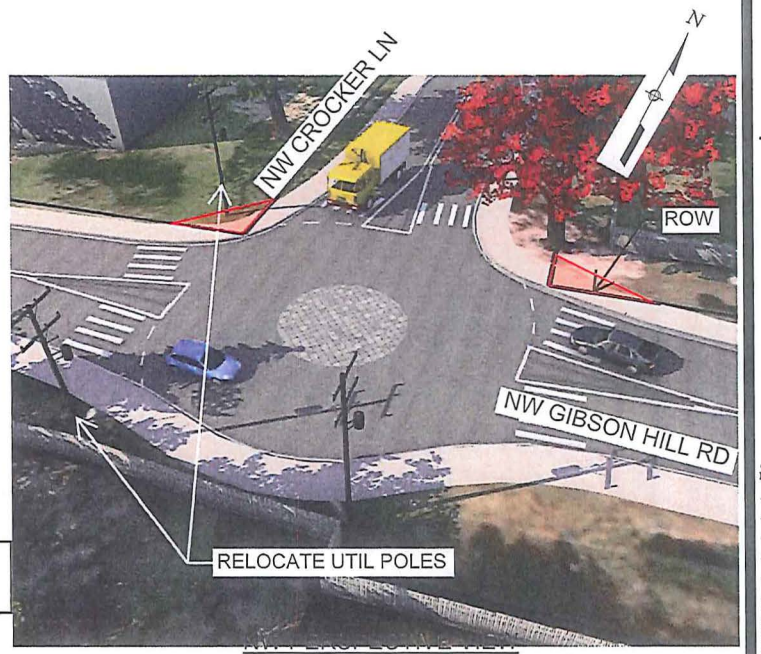
GENERAL NOTES:

1. WIDEN FOR 60' INSCRIBED DIAMETER ASPHALT MINI-ROUNDABOUT
2. INSTALL 25' DIAMETER MOUNTABLE CENTER ISLAND
3. REMOVE EXTG RECTANGULAR RAPID FLASHING BEACON
4. STRIPED SPLITTER ISLANDS REQUIRED TO ACCOMMODATE WB-50 TURNING MOVEMENTS
5. RIGHT-OF WAY IMPACTS LOCALIZED TO NORTH
6. UTILITY RELOCATIONS REQUIRED
7. ASSUMED A SAWCUT & WIDEN WITH 2" GRIND & INLAY OF EXISTING PAVEMENT
8. EXTG BUS PULLOUT ON EAST LEG TO BE MAINTANED
9. 6' SIDEWALKS INCLUDED TO ACCOMMODATE PEDS
10. BIKE LANES DROPPED AND BIKES TO NAVIGATE ROUNDABOUT WITH VEHICLES
11. DESIGN SPEEDS OF 30-35 MPH TYPICALLY REQUIRED TO JUSTIFY MINI-ROUNDABOUT



PLAN VIEW

0' 20' 40' 80'



ALTERNATIVE 5: MINI ROUNDABOUT

GIBSON HILL ROAD/CROCKER LANE INTERSECTION
ALTERNATIVES ANALYSIS
CITY OF ALBANY

DAVID EVANS AND ASSOCIATES INC.

REVISIONS: APPD.

DATE: 2-16-16
DESIGN: DJ
DRAWN: DJ
CHECKED:
REVISION NUMBER:

PROJECT NUMBER: ALBX00000044

DRAWING FILE:

SHEET NO. 5 OF 5

Plot Date: 2/16/2016 8:57 AM
Save Date: 2/16/2016 8:57 AM

Preliminary Cost Estimates

COST ESTIMATE - 2008 English Items

OREGON STATE HIGHWAY DIVISION - ROADWAY ENGINEERING

SECTION				CITY	
Gibson Hill/Crocker Lane Intersection_Alt 1 All-Way Stop				Albany	
KEY NUMBER	KIND OF WORK	LENGTH	DATE	ROADWAY DESIGNER	
0	Signing & Striping		2/16/16	David Evans & Associates	
ITEM NUMBER	ITEM DESCRIPTION	UNIT	AMOUNT	UNIT COST	TOTAL
MOBILIZATION AND TRAFFIC CONTROL					
	MOBILIZATION(10%)	LS	1	$1,000	$1,000
	TRAFFIC CONTROL (10%)	LS	1	$1,000	$1,000
ROADWAY					
PERMANENT TRAFFIC CONTROL AND GUIDANCE DEVICES					
	SIGNS AND STRIPING	LS	1	$3,000	$3,000
RIGHT OF WAY DEVELOPMENT					
SUBTOTAL, Construction Items					$5,000
9800-0000150A	CONSTRUCTION ENGINEERING (15%)			$1,000	$1,000
CONSTRUCTION COST					$6,000
	CONTINGENCY		25%	$1,500	$1,500
TOTAL CONSTRUCTION COST					$7,500
PRELIMINARY ENGINEERING COST			15%		$2,000
PROJECT GRAND TOTALS					$9,500

NOTES: This estimate does not include utility relocation, hazmat or right-of-way costs.

COST ESTIMATE - 2008 English Items

OREGON STATE HIGHWAY DIVISION - ROADWAY ENGINEERING

SECTION				CITY	
Gibson Hill/Crocker Lane Intersection_Alt 2 Signalized Single Lane				Albany	
KEY NUMBER	KIND OF WORK	LENGTH	DATE	ROADWAY DESIGNER	
0	Paving, Signals, Signing, Striping		1/27/16	David Evans & Associates	
ITEM NUMBER	ITEM DESCRIPTION	UNIT	AMOUNT	UNIT COST	TOTAL
MOBILIZATION AND TRAFFIC CONTROL					
	MOBILIZATION(10%)	LS	1	$23,000	$23,000
	TRAFFIC CONTROL (10%)	LS	1	$23,000	$23,000
ROADWAY					
	REMOVAL OF STRUCTURES AND OBSTRUCTIONS	LS	1	$4,000	$4,000
	GENERAL EXCAVATION / EMBANKMENT	CY	110	$15	$1,650
	SUBGRADE GEOTEXTILE	SY	145	$2	$290
	CONCRETE CURB & GUTTER	FOOT	140	$20	$2,800
BASES					
	AGGREGATE BASE	TON	120	$30	$3,600
WEARING SURFACES					
	LEVEL 3, 1/2 INCH DENSE MHMAC MIXTURE	TON	60	$100	$6,000
	CONCRETE SIDEWALK	SF	200	$8	$1,600
PERMANENT TRAFFIC CONTROL AND GUIDANCE DEVICES					
	SIGNS AND STRIPING	LS	1	$3,000	$3,000
	SIGNAL	LS	1	$200,000	$200,000
RIGHT OF WAY DEVELOPMENT					
	LANDSCAPE AND EROSION CONTROL (3%)	LS	1	$1,000	$1,000
SUBTOTAL, Construction Items					**$270,000**
9800-0000150A	CONSTRUCTION ENGINEERING (15%)			$41,000	$41,000
CONSTRUCTION COST					**$311,000**
	CONTINGENCY		50%	$156,000	$156,000
TOTAL CONSTRUCTION COST					**$467,000**
PRELIMINARY ENGINEERING COST			15%		**$71,000**
	PROPERTY IMPACTS	SF	260		
PROJECT GRAND TOTALS					**$538,000**

NOTES: This estimate does not include utility relocation, hazmat or right-of-way costs.

COST ESTIMATE - 2008 English Items

OREGON STATE HIGHWAY DIVISION - ROADWAY ENGINEERING

SECTION				CITY	
Gibson Hill/Crocker Lane Intersection_Alt 3 Signal w/ Turn Lanes				Albany	
KEY NUMBER	KIND OF WORK	LENGTH	DATE	ROADWAY DESIGNER	
0	Paving, Signals, Signing, Striping, Drainage		1/27/16	David Evans & Associates	
ITEM NUMBER	ITEM DESCRIPTION	UNIT	AMOUNT	UNIT COST	TOTAL
MOBILIZATION AND TRAFFIC CONTROL					
	MOBILIZATION(10%)	LS	1	$79,000	$79,000
	TRAFFIC CONTROL (10%)	LS	1	$79,000	$79,000
ROADWAY					
	REMOVAL OF STRUCTURES AND OBSTRUCTIONS (5%)	LS	1	$27,100	$27,100
	CLEARING AND GRUBBING	ACRE	1.0	$5,000	$5,000
	GENERAL EXCAVATION / EMBANKMENT	CY	2100	$15	$31,500
	SUBGRADE GEOTEXTILE	SY	2800	$2	$5,600
	CONCRETE CURB & GUTTER	FOOT	2200	$20	$44,000
DRAINAGE					
	DRAINAGE SYSTEM	FOOT	2200	$80	$176,000
BASES					
	AGGREGATE BASE	TON	2200	$30	$66,000
	2" COLD PLANE PAVEMENT REMOVAL	SY	3600	$3	$10,800
WEARING SURFACES					
	LEVEL 3, 1/2 INCH DENSE MHMAC MIXTURE	TON	1400	$100	$140,000
	CONCRETE SIDEWALK	SF	5800	$8	$46,400
PERMANENT TRAFFIC CONTROL AND GUIDANCE DEVICES					
	SIGNS AND STRIPING	LS	1	$15,000	$15,000
	SIGNAL	LS	1	$200,000	$200,000
RIGHT OF WAY DEVELOPMENT					
	LANDSCAPE AND EROSION CONTROL (3%)	LS	1	$16,000	$16,000
SUBTOTAL, Construction Items					**$942,000**
9800-0000150A	CONSTRUCTION ENGINEERING (15%)			$142,000	$142,000
CONSTRUCTION COST					**$1,084,000**
	CONTINGENCY		50%	$542,000	$542,000
TOTAL CONSTRUCTION COST					**$1,626,000**
PRELIMINARY ENGINEERING COST			15%		**$244,000**
	PROPERTY IMPACTS	SF	2100		
PROJECT GRAND TOTALS					**$1,870,000**

NOTES: **This estimate does not include utility relocation, hazmat or right-of-way costs.**

COST ESTIMATE - 2008 English Items

OREGON STATE HIGHWAY DIVISION - ROADWAY ENGINEERING

SECTION				CITY	
Gibson Hill/Crocker Lane Intersection_Alt 4 Full Roundabout				Albany	
KEY NUMBER	KIND OF WORK	LENGTH	DATE	ROADWAY DESIGNER	
0	Paving, Signing, Striping, Walls, Drainage		1/27/16	David Evans & Associates	
ITEM NUMBER	ITEM DESCRIPTION	UNIT	AMOUNT	UNIT COST	TOTAL
MOBILIZATION AND TRAFFIC CONTROL					
	MOBILIZATION(10%)	LS	1	$62,000	$62,000
	TRAFFIC CONTROL (10%)	LS	1	$62,000	$62,000
ROADWAY					
	REMOVAL OF STRUCTURES AND OBSTRUCTIONS (5%)	LS	1	$28,400	$28,400
	CLEARING AND GRUBBING	ACRE	1.0	$5,000	$5,000
	GENERAL EXCAVATION / EMBANKMENT	CY	1300	$15	$19,500
	SUBGRADE GEOTEXTILE	SY	2700	$2	$5,400
	CONCRETE CURB & GUTTER	FOOT	1200	$20	$24,000
DRAINAGE					
	DRAINAGE SYSTEM	FOOT	1200	$80	$96,000
STRUCTURES					
	WALLS	LS	1	$40,000	$40,000
BASES					
	AGGREGATE BASE	TON	2100	$30	$63,000
WEARING SURFACES					
	LEVEL 3, 1/2 INCH DENSE MHMAC MIXTURE	TON	300	$100	$30,000
	PLAIN CONCRETE PAVEMENT, 9" THICK	SY	1800	$100	$180,000
	CONCRETE SIDEWALK	SF	8600	$8	$68,800
	CONCRETE ISLANDS	SF	3200	$8	$25,600
PERMANENT TRAFFIC CONTROL AND GUIDANCE DEVICES					
	SIGNS AND STRIPING	LS	1	$10,000	$10,000
RIGHT OF WAY DEVELOPMENT					
	LANDSCAPE AND EROSION CONTROL (3%)	LS	1	$17,000	$17,000
SUBTOTAL, Construction Items					**$737,000**
9800-0000150A	CONSTRUCTION ENGINEERING (15%)			$111,000	$111,000
CONSTRUCTION COST					**$848,000**
	CONTINGENCY		50%	$424,000	$424,000
TOTAL CONSTRUCTION COST					**$1,272,000**
PRELIMINARY ENGINEERING COST			15%		**$191,000**
	PROPERTY IMPACTS	SF	7300		
PROJECT GRAND TOTALS					**$1,463,000**

NOTES: **This estimate does not include utility relocation, hazmat or right-of-way costs.**

COST ESTIMATE - 2008 English Items

OREGON STATE HIGHWAY DIVISION - ROADWAY ENGINEERING

SECTION				CITY	
Gibson Hill/Crocker Lane Intersection_Alt 5 Mini Roundabout				Albany	
KEY NUMBER	KIND OF WORK	LENGTH	DATE	ROADWAY DESIGNER	
0	Paving, Signing, Striping		2/16/16	David Evans & Associates	
ITEM NUMBER	ITEM DESCRIPTION	UNIT	AMOUNT	UNIT COST	TOTAL
MOBILIZATION AND TRAFFIC CONTROL					
	MOBILIZATION(10%)	LS	1	$12,000	$12,000
	TRAFFIC CONTROL (10%)	LS	1	$12,000	$12,000
ROADWAY					
	REMOVAL OF STRUCTURES AND OBSTRUCTIONS (5%)	LS	1	$5,400	$5,400
	CLEARING AND GRUBBING	ACRE	0.2	$5,000	$1,000
	GENERAL EXCAVATION / EMBANKMENT	CY	400	$15	$6,000
	SUBGRADE GEOTEXTILE	SY	350	$2	$700
	CONCRETE CURB & GUTTER	FOOT	400	$20	$8,000
DRAINAGE					
	DRAINAGE SYSTEM	FOOT	400	$80	$32,000
STRUCTURES					
BASES					
	AGGREGATE BASE	TON	300	$30	$9,000
	2" COLD PLANE PAVEMENT REMOVAL	SY	530	$3	$1,590
WEARING SURFACES					
	LEVEL 3, 1/2 INCH DENSE MHMAC MIXTURE	TON	200	$100	$20,000
	CONCRETE SIDEWALK	SF	2300	$8	$18,400
	CONCRETE ISLANDS	SF	490	$8	$3,920
PERMANENT TRAFFIC CONTROL AND GUIDANCE DEVICES					
	SIGNS AND STRIPING	LS	1	$6,000	$6,000
RIGHT OF WAY DEVELOPMENT					
	LANDSCAPE AND EROSION CONTROL (3%)	LS	1	$4,000	$4,000
SUBTOTAL, Construction Items					**$141,000**
9800-0000150A	CONSTRUCTION ENGINEERING (15%)			$22,000	$22,000
CONSTRUCTION COST					**$163,000**
	CONTINGENCY		50%	$82,000	$82,000
TOTAL CONSTRUCTION COST					**$245,000**
PRELIMINARY ENGINEERING COST			15%		**$37,000**
	PROPERTY IMPACTS	SF	220		
PROJECT GRAND TOTALS					**$282,000**

NOTES: This estimate does not include utility relocation, hazmat or right-of-way costs.

Traffic Operations

Gibson Hill Road at Crocker Lane: 2040 Traffic Operations

	Existing Configuration						Alternative 1: All-Way Stop						Alternative 2: Single Lane Traffic Signal						Alternative 3: Traffic Signal with Turn Lanes						Alternative 4: Modern Roundabout						Alternative 5: Mini Roundabout					
	AM Peak Hour			PM Peak Hour			AM Peak Hour			PM Peak Hour			AM Peak Hour			PM Peak Hour			AM Peak Hour			PM Peak Hour			AM Peak Hour			PM Peak Hour			AM Peak Hour			PM Peak Hour		
	V/C	LOS	Queue	V/C	LOS	Queue	V/C	LOS	Queue	V/C	LOS	Queue	V/C	LOS	Queue	V/C	LOS	Queue	V/C	LOS	Queue	V/C	LOS	Queue	V/C	LOS	Queue	V/C	LOS	Queue	V/C	LOS	Queue	V/C	LOS	Queue
Overall													0.68	B		0.70	B		0.60	A		0.50	A													
EBL																			0.03	A	25	0.17	A	25												
EBLT	0.01	A		0.07	A	25	0.79	D	25	0.69	C	25.00	0.68	B	225	0.58	A	175	0.63	B	200	0.48	A	125	0.73	B	250	0.51	A	125	0.83	C	350	0.56	B	150
WBTR	0.01	A		0.01	A		0.49	C	25	1.10	F	25.00	0.39	A	100	0.80	B	350	0.30	A	75	0.57	A	150	0.26	A	50	0.70	B	250	0.27	A	75	0.75	B	300
WBR																			0.05	A	25	0.22	A	25												
SBL																			0.56	B	150	0.36	B	100												
SBLR	1.00	F	25	0.87	F	25	0.74	C	25	0.35	B	25.00	0.67	B	200	0.46	B	125	0.08	A	25	0.01	A	25	0.49	B	100	0.28	A	50	0.55	B	125	0.33	B	50

HCM 2010 TWSC
10: Gibson Hill Rd & Crocker Ln 1/25/2016

Intersection	
Int Delay, s/veh	27.4

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Traffic Vol, veh/h	15	445	200	70	305	110
Future Vol, veh/h	15	445	200	70	305	110
Conflicting Peds, #/hr	1	0	0	1	1	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	4	8	7	1	0
Mvmt Flow	16	468	211	74	321	116

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	285	0	-	0	748	249
Stage 1	-	-	-	-	248	-
Stage 2	-	-	-	-	500	-
Critical Hdwy	4.1	-	-	-	6.41	6.2
Critical Hdwy Stg 1	-	-	-	-	5.41	-
Critical Hdwy Stg 2	-	-	-	-	5.41	-
Follow-up Hdwy	2.2	-	-	-	3.509	3.3
Pot Cap-1 Maneuver	1289	-	-	-	381	795
Stage 1	-	-	-	-	796	-
Stage 2	-	-	-	-	611	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1288	-	-	-	374	794
Mov Cap-2 Maneuver	-	-	-	-	374	-
Stage 1	-	-	-	-	795	-
Stage 2	-	-	-	-	600	-

Approach	EB	WB	SB
HCM Control Delay, s	0.3	0	75.4
HCM LOS			F

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1288	-	-	-	435
HCM Lane V/C Ratio	0.012	-	-	-	1.004
HCM Control Delay (s)	7.8	0	-	-	75.4
HCM Lane LOS	A	A	-	-	F
HCM 95th %tile Q(veh)	0	-	-	-	12.9

Intersection	
Int Delay, s/veh	10.8

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Traffic Vol, veh/h	55	350	425	290	150	20
Future Vol, veh/h	55	350	425	290	150	20
Conflicting Peds, #/hr	1	0	0	1	1	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	0	3	2	1	1	0
Mvmt Flow	61	389	472	322	167	22

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	795	0	-	0	1145	635
Stage 1	-	-	-	-	634	-
Stage 2	-	-	-	-	511	-
Critical Hdwy	4.1	-	-	-	6.41	6.2
Critical Hdwy Stg 1	-	-	-	-	5.41	-
Critical Hdwy Stg 2	-	-	-	-	5.41	-
Follow-up Hdwy	2.2	-	-	-	3.509	3.3
Pot Cap-1 Maneuver	835	-	-	-	222	482
Stage 1	-	-	-	-	530	-
Stage 2	-	-	-	-	604	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	834	-	-	-	201	481
Mov Cap-2 Maneuver	-	-	-	-	201	-
Stage 1	-	-	-	-	530	-
Stage 2	-	-	-	-	547	-

Approach	EB	WB	SB
HCM Control Delay, s	1.3	0	79.2
HCM LOS			F

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	834	-	-	-	216
HCM Lane V/C Ratio	0.073	-	-	-	0.874
HCM Control Delay (s)	9.7	0	-	-	79.2
HCM Lane LOS	A	A	-	-	F
HCM 95th %tile Q(veh)	0.2	-	-	-	6.9

Intersection	
Intersection Delay, s/veh	23
Intersection LOS	C

Movement	EBU	EBL	EBT	WBU	WBT	WBR	SBU	SBL	SBR
Traffic Vol, veh/h	0	15	445	0	200	70	0	305	110
Future Vol, veh/h	0	15	445	0	200	70	0	305	110
Peak Hour Factor	0.92	0.95	0.95	0.92	0.95	0.95	0.92	0.95	0.95
Heavy Vehicles, %	2	0	4	2	8	7	2	1	0
Mvmt Flow	0	16	468	0	211	74	0	321	116
Number of Lanes	0	0	1	0	1	0	0	1	0

Approach	EB	WB	SB
Opposing Approach	WB	EB	
Opposing Lanes	1	1	0
Conflicting Approach Left	SB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right		SB	EB
Conflicting Lanes Right	0	1	1
HCM Control Delay	26.8	15.1	24
HCM LOS	D	C	C

Lane	EBLn1	WBLn1	SBLn1
Vol Left, %	3%	0%	73%
Vol Thru, %	97%	74%	0%
Vol Right, %	0%	26%	27%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	460	270	415
LT Vol	15	0	305
Through Vol	445	200	0
RT Vol	0	70	110
Lane Flow Rate	484	284	437
Geometry Grp	1	1	1
Degree of Util (X)	0.782	0.491	0.732
Departure Headway (Hd)	5.817	6.219	6.035
Convergence, Y/N	Yes	Yes	Yes
Cap	615	583	594
Service Time	3.913	4.219	4.129
HCM Lane V/C Ratio	0.787	0.487	0.736
HCM Control Delay	26.8	15.1	24
HCM Lane LOS	D	C	C
HCM 95th-tile Q	7.4	2.7	6.2

Intersection	
Intersection Delay, s/veh	38.8
Intersection LOS	E

Movement	EBU	EBL	EBT	WBU	WBT	WBR	SBU	SBL	SBR
Traffic Vol, veh/h	0	55	350	0	425	290	0	150	20
Future Vol, veh/h	0	55	350	0	425	290	0	150	20
Peak Hour Factor	0.92	0.90	0.90	0.92	0.90	0.90	0.92	0.90	0.90
Heavy Vehicles, %	2	0	3	2	2	1	2	1	0
Mvmt Flow	0	61	389	0	472	322	0	167	22
Number of Lanes	0	0	1	0	1	0	0	1	0

Approach	EB	WB	SB
Opposing Approach	WB	EB	
Opposing Lanes	1	1	0
Conflicting Approach Left	SB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right		SB	EB
Conflicting Lanes Right	0	1	1
HCM Control Delay	19.7	55.7	13.4
HCM LOS	C	F	B

Lane	EBLn1	WBLn1	SBLn1
Vol Left, %	14%	0%	88%
Vol Thru, %	86%	59%	0%
Vol Right, %	0%	41%	12%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	405	715	170
LT Vol	55	0	150
Through Vol	350	425	0
RT Vol	0	290	20
Lane Flow Rate	450	794	189
Geometry Grp	1	1	1
Degree of Util (X)	0.685	1	0.352
Departure Headway (Hd)	5.481	5.055	6.705
Convergence, Y/N	Yes	Yes	Yes
Cap	657	723	536
Service Time	3.536	3.055	4.742
HCM Lane V/C Ratio	0.685	1.098	0.353
HCM Control Delay	19.7	55.7	13.4
HCM Lane LOS	C	F	B
HCM 95th-tile Q	5.4	16.3	1.6

HCM Signalized Intersection Capacity Analysis
10: Gibson Hill Rd & Crocker Ln

1/22/2016

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	15	445	200	70	305	110
Future Volume (vph)	15	445	200	70	305	110
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750
Total Lost time (s)		4.0	4.0		4.0	
Lane Util. Factor		1.00	1.00		1.00	
Frpb, ped/bikes		1.00	0.99		1.00	
Flpb, ped/bikes		1.00	1.00		1.00	
Frt		1.00	0.96		0.96	
Flt Protected		1.00	1.00		0.96	
Satd. Flow (prot)		1682	1559		1616	
Flt Permitted		0.99	1.00		0.96	
Satd. Flow (perm)		1663	1559		1616	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	16	468	211	74	321	116
RTOR Reduction (vph)	0	0	22	0	22	0
Lane Group Flow (vph)	0	484	263	0	415	0
Confl. Peds. (#/hr)	1			1	1	
Heavy Vehicles (%)	0%	4%	8%	7%	1%	0%
Turn Type	Perm	NA	NA		Prot	
Protected Phases		2	6		4	
Permitted Phases	2					
Actuated Green, G (s)		18.0	18.0		16.0	
Effective Green, g (s)		18.0	18.0		16.0	
Actuated g/C Ratio		0.43	0.43		0.38	
Clearance Time (s)		4.0	4.0		4.0	
Vehicle Extension (s)		3.0	3.0		3.0	
Lane Grp Cap (vph)		712	668		615	
v/s Ratio Prot			0.17		c0.26	
v/s Ratio Perm		c0.29				
v/c Ratio		0.68	0.39		0.67	
Uniform Delay, d1		9.7	8.2		10.8	
Progression Factor		1.00	1.00		1.00	
Incremental Delay, d2		2.6	0.4		2.9	
Delay (s)		12.3	8.6		13.8	
Level of Service		B	A		B	
Approach Delay (s)		12.3	8.6		13.8	
Approach LOS		B	A		B	

Intersection Summary			
HCM 2000 Control Delay	11.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	42.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	70.9%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Queues

10: Gibson Hill Rd & Crocker Ln

1/22/2016

Lane Group	EBT	WBT	SBL
Lane Group Flow (vph)	484	285	437
v/c Ratio	0.69	0.42	0.70
Control Delay	16.7	10.2	18.1
Queue Delay	0.0	0.0	0.0
Total Delay	16.7	10.2	18.1
Queue Length 50th (ft)	84	36	72
Queue Length 95th (ft)	212	102	202
Internal Link Dist (ft)	394	385	511
Turn Bay Length (ft)			
Base Capacity (vph)	1169	1108	1007
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.41	0.26	0.43

Intersection Summary

HCM Signalized Intersection Capacity Analysis
10: Gibson Hill Rd & Crocker Ln

1/22/2016

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	55	350	425	290	150	20
Future Volume (vph)	55	350	425	290	150	20
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750
Total Lost time (s)		4.0	4.0		4.0	
Lane Util. Factor		1.00	1.00		1.00	
Frpb, ped/bikes		1.00	0.99		1.00	
Flpb, ped/bikes		1.00	1.00		1.00	
Frt		1.00	0.95		0.98	
Flt Protected		0.99	1.00		0.96	
Satd. Flow (prot)		1694	1614		1635	
Flt Permitted		0.79	1.00		0.96	
Satd. Flow (perm)		1340	1614		1635	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	61	389	472	322	167	22
RTOR Reduction (vph)	0	0	43	0	8	0
Lane Group Flow (vph)	0	450	751	0	181	0
Confl. Peds. (#/hr)	1			1	1	
Heavy Vehicles (%)	0%	3%	2%	1%	1%	0%
Turn Type	Perm	NA	NA		Prot	
Protected Phases		2	6		8	
Permitted Phases	2					
Actuated Green, G (s)		25.7	25.7		10.7	
Effective Green, g (s)		25.7	25.7		10.7	
Actuated g/C Ratio		0.58	0.58		0.24	
Clearance Time (s)		4.0	4.0		4.0	
Vehicle Extension (s)		3.0	3.0		3.0	
Lane Grp Cap (vph)		775	934		394	
v/s Ratio Prot			c0.47		c0.11	
v/s Ratio Perm		0.34				
v/c Ratio		0.58	0.80		0.46	
Uniform Delay, d1		5.9	7.4		14.4	
Progression Factor		1.00	1.00		1.00	
Incremental Delay, d2		1.1	5.1		0.8	
Delay (s)		7.0	12.5		15.2	
Level of Service		A	B		B	
Approach Delay (s)		7.0	12.5		15.2	
Approach LOS		A	B		B	

Intersection Summary			
HCM 2000 Control Delay	11.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	44.4	Sum of lost time (s)	8.0
Intersection Capacity Utilization	87.2%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Queues

10: Gibson Hill Rd & Crocker Ln

1/22/2016

Lane Group	EBT	WBT	SBL
Lane Group Flow (vph)	450	794	189
v/c Ratio	0.59	0.83	0.48
Control Delay	10.1	16.1	20.6
Queue Delay	0.0	0.0	0.0
Total Delay	10.1	16.1	20.6
Queue Length 50th (ft)	59	112	40
Queue Length 95th (ft)	157	#352	104
Internal Link Dist (ft)	394	385	511
Turn Bay Length (ft)			
Base Capacity (vph)	1077	1316	640
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.42	0.60	0.30

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

HCM Signalized Intersection Capacity Analysis
10: Gibson Hill Rd & Crocker Ln

1/22/2016

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	15	445	200	70	305	110
Future Volume (vph)	15	445	200	70	305	110
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00	1.00	0.98	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	1.00	0.85	1.00	0.85
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1661	1683	1620	1361	1646	1488
Flt Permitted	0.63	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	1094	1683	1620	1361	1646	1488
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	16	468	211	74	321	116
RTOR Reduction (vph)	0	0	0	41	0	75
Lane Group Flow (vph)	16	468	211	33	321	41
Confl. Peds. (#/hr)	1			1	1	
Heavy Vehicles (%)	0%	4%	8%	7%	1%	0%
Turn Type	Perm	NA	NA	Perm	Prot	Perm
Protected Phases		2	6		4	
Permitted Phases	2			6		4
Actuated Green, G (s)	16.7	16.7	16.7	16.7	13.3	13.3
Effective Green, g (s)	16.7	16.7	16.7	16.7	13.3	13.3
Actuated g/C Ratio	0.44	0.44	0.44	0.44	0.35	0.35
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	480	739	711	598	576	520
v/s Ratio Prot		c0.28	0.13		c0.20	
v/s Ratio Perm	0.01			0.02		0.03
v/c Ratio	0.03	0.63	0.30	0.05	0.56	0.08
Uniform Delay, d1	6.1	8.3	6.9	6.1	10.0	8.3
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.0	1.8	0.2	0.0	1.2	0.1
Delay (s)	6.1	10.1	7.1	6.2	11.1	8.3
Level of Service	A	B	A	A	B	A
Approach Delay (s)		9.9	6.9		10.4	
Approach LOS		A	A		B	

Intersection Summary			
HCM 2000 Control Delay	9.4	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	38.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	50.4%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

HCM 2010 Signalized Intersection Summary
10: Gibson Hill Rd & Crocker Ln

1/22/2016

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	15	445	200	70	305	110
Future Volume (veh/h)	15	445	200	70	305	110
Number	5	2	6	16	7	14
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1750	1683	1620	1636	1733	1750
Adj Flow Rate, veh/h	16	468	211	74	321	116
Adj No. of Lanes	1	1	1	1	1	1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	0	4	8	7	1	0
Cap, veh/h	611	731	704	604	470	424
Arrive On Green	0.43	0.43	0.43	0.43	0.28	0.28
Sat Flow, veh/h	1023	1683	1620	1389	1650	1487
Grp Volume(v), veh/h	16	468	211	74	321	116
Grp Sat Flow(s),veh/h/ln	1023	1683	1620	1389	1650	1487
Q Serve(g_s), s	0.3	6.2	2.4	0.9	4.9	1.7
Cycle Q Clear(g_c), s	2.7	6.2	2.4	0.9	4.9	1.7
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	611	731	704	604	470	424
V/C Ratio(X)	0.03	0.64	0.30	0.12	0.68	0.27
Avail Cap(c_a), veh/h	1242	1770	1705	1461	1273	1148
HCM Platoon Ratio	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
Uniform Delay (d), s/veh	6.1	6.3	5.2	4.8	9.1	7.9
Incr Delay (d2), s/veh	0.0	0.9	0.2	0.1	1.8	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	3.1	1.1	0.4	2.5	0.7
LnGrp Delay(d),s/veh	6.1	7.3	5.5	4.9	10.8	8.3
LnGrp LOS	A	A	A	A	B	A
Approach Vol, veh/h		484	285		437	
Approach Delay, s/veh		7.2	5.3		10.1	
Approach LOS		A	A		B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		
Phs Duration (G+Y+Rc), s		16.4		12.1		16.4		
Change Period (Y+Rc), s		4.0		4.0		4.0		
Max Green Setting (Gmax), s		30.0		22.0		30.0		
Max Q Clear Time (g_c+I1), s		8.2		6.9		4.4		
Green Ext Time (p_c), s		4.2		1.2		4.3		

Intersection Summary	
HCM 2010 Ctrl Delay	7.8
HCM 2010 LOS	A

Queues

10: Gibson Hill Rd & Crocker Ln

1/22/2016

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group Flow (vph)	16	468	211	74	321	116
v/c Ratio	0.03	0.65	0.30	0.12	0.57	0.20
Control Delay	7.4	13.9	9.0	3.0	16.1	4.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	7.4	13.9	9.0	3.0	16.1	4.0
Queue Length 50th (ft)	2	65	24	0	48	0
Queue Length 95th (ft)	11	187	77	17	152	26
Internal Link Dist (ft)		394	385		511	
Turn Bay Length (ft)	150			150	150	
Base Capacity (vph)	879	1352	1302	1107	1024	970
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.02	0.35	0.16	0.07	0.31	0.12

Intersection Summary

HCM Signalized Intersection Capacity Analysis
10: Gibson Hill Rd & Crocker Ln

1/22/2016

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	55	350	425	290	150	20
Future Volume (vph)	55	350	425	290	150	20
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00	1.00	0.98	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	1.00	0.85	1.00	0.85
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1662	1699	1716	1442	1646	1488
Flt Permitted	0.43	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	746	1699	1716	1442	1646	1488
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	61	389	472	322	167	22
RTOR Reduction (vph)	0	0	0	167	0	16
Lane Group Flow (vph)	61	389	472	155	167	6
Confl. Peds. (#/hr)	1			1	1	
Heavy Vehicles (%)	0%	3%	2%	1%	1%	0%
Turn Type	Perm	NA	NA	Perm	Prot	Perm
Protected Phases		2	6		8	
Permitted Phases	2			6		8
Actuated Green, G (s)	16.0	16.0	16.0	16.0	9.3	9.3
Effective Green, g (s)	16.0	16.0	16.0	16.0	9.3	9.3
Actuated g/C Ratio	0.48	0.48	0.48	0.48	0.28	0.28
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	358	816	824	692	459	415
v/s Ratio Prot		0.23	c0.28		c0.10	
v/s Ratio Perm	0.08			0.11		0.00
v/c Ratio	0.17	0.48	0.57	0.22	0.36	0.01
Uniform Delay, d1	4.9	5.8	6.2	5.0	9.6	8.7
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.2	0.4	1.0	0.2	0.5	0.0
Delay (s)	5.1	6.3	7.2	5.2	10.1	8.7
Level of Service	A	A	A	A	B	A
Approach Delay (s)		6.1	6.4		10.0	
Approach LOS		A	A		A	

Intersection Summary			
HCM 2000 Control Delay	6.8	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.50		
Actuated Cycle Length (s)	33.3	Sum of lost time (s)	8.0
Intersection Capacity Utilization	46.6%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

HCM 2010 Signalized Intersection Summary
10: Gibson Hill Rd & Crocker Ln

1/22/2016

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	55	350	425	290	150	20
Future Volume (veh/h)	55	350	425	290	150	20
Number	5	2	6	16	3	18
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1750	1699	1716	1733	1733	1750
Adj Flow Rate, veh/h	61	389	472	322	167	22
Adj No. of Lanes	1	1	1	1	1	1
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	0	3	2	1	1	0
Cap, veh/h	490	939	948	813	288	260
Arrive On Green	0.55	0.55	0.55	0.55	0.17	0.17
Sat Flow, veh/h	639	1699	1716	1471	1650	1487
Grp Volume(v), veh/h	61	389	472	322	167	22
Grp Sat Flow(s),veh/h/ln	639	1699	1716	1471	1650	1487
Q Serve(g_s), s	1.9	3.9	5.0	3.7	2.7	0.4
Cycle Q Clear(g_c), s	6.9	3.9	5.0	3.7	2.7	0.4
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	490	939	948	813	288	260
V/C Ratio(X)	0.12	0.41	0.50	0.40	0.58	0.08
Avail Cap(c_a), veh/h	877	1968	1987	1704	1012	912
HCM Platoon Ratio	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
Uniform Delay (d), s/veh	6.2	3.8	4.1	3.8	11.1	10.1
Incr Delay (d2), s/veh	0.1	0.3	0.4	0.3	1.8	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	1.8	2.3	1.5	1.4	0.2
LnGrp Delay(d),s/veh	6.3	4.1	4.5	4.1	13.0	10.3
LnGrp LOS	A	A	A	A	B	B
Approach Vol, veh/h		450	794		189	
Approach Delay, s/veh		4.4	4.3		12.6	
Approach LOS		A	A		B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2				6		8
Phs Duration (G+Y+Rc), s		20.2				20.2		9.1
Change Period (Y+Rc), s		4.0				4.0		4.0
Max Green Setting (Gmax), s		34.0				34.0		18.0
Max Q Clear Time (g_c+I1), s		8.9				7.0		4.7
Green Ext Time (p_c), s		7.3				7.5		0.4

Intersection Summary	
HCM 2010 Ctrl Delay	5.4
HCM 2010 LOS	A

Queues

10: Gibson Hill Rd & Crocker Ln

1/22/2016

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group Flow (vph)	61	389	472	322	167	22
v/c Ratio	0.17	0.49	0.58	0.38	0.37	0.05
Control Delay	6.5	8.4	9.8	2.3	14.5	6.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	6.5	8.4	9.8	2.3	14.5	6.7
Queue Length 50th (ft)	5	38	49	0	22	0
Queue Length 95th (ft)	22	104	133	25	80	12
Internal Link Dist (ft)		394	385		511	
Turn Bay Length (ft)	150			150	150	
Base Capacity (vph)	699	1591	1607	1370	940	860
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.09	0.24	0.29	0.24	0.18	0.03

Intersection Summary

MOVEMENT SUMMARY

Site: 2040 AM

2040 Future Conditions
Gibson Hill Road @ Crocker Lane - AM Peak
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
East: Gibson Hill Rd											
6	T1	247	8.0	0.256	5.0	LOS A	2.0	52.4	0.15	0.04	28.5
16	R2	86	7.0	0.256	4.9	LOS A	2.0	52.4	0.15	0.04	27.8
Approach		333	7.7	0.256	5.0	LOS A	2.0	52.4	0.15	0.04	28.3
North: Crocker Ln											
7	L2	321	1.0	0.488	10.3	LOS B	3.5	87.8	0.64	0.50	19.7
14	R2	116	0.0	0.488	10.2	LOS B	3.5	87.8	0.64	0.50	24.3
Approach		437	0.7	0.488	10.2	LOS B	3.5	87.8	0.64	0.50	20.7
West: Gibson Hill Rd											
5	L2	19	0.0	0.729	18.9	LOS B	9.3	239.1	0.91	0.90	19.6
2	T1	556	4.0	0.729	19.5	LOS B	9.3	239.1	0.91	0.90	24.7
Approach		575	3.9	0.729	19.5	LOS B	9.3	239.1	0.91	0.90	24.5
All Vehicles		1345	3.8	0.729	12.9	LOS B	9.3	239.1	0.63	0.56	23.9

Level of Service (LOS) Method: Delay & v/c (HCM 2010).
Roundabout LOS Method: Same as Signalised Intersections.
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: SIDRA Standard.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 2040 PM

2040 Future Conditions
Gibson Hill Road @ Crocker Lane - AM Peak
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
East: Gibson Hill Rd											
6	T1	525	2.0	0.698	12.7	LOS B	9.2	234.1	0.54	0.26	26.0
16	R2	358	1.0	0.698	12.5	LOS B	9.2	234.1	0.54	0.26	25.4
Approach		883	1.6	0.698	12.6	LOS B	9.2	234.1	0.54	0.26	25.7
North: Crocker Ln											
7	L2	158	1.0	0.281	9.3	LOS A	1.7	43.1	0.73	0.66	19.8
14	R2	21	0.0	0.281	9.1	LOS A	1.7	43.1	0.73	0.66	24.4
Approach		179	0.9	0.281	9.2	LOS A	1.7	43.1	0.73	0.66	20.2
West: Gibson Hill Rd											
5	L2	69	0.0	0.505	9.4	LOS A	4.3	110.6	0.59	0.39	21.3
2	T1	437	3.0	0.505	9.8	LOS A	4.3	110.6	0.59	0.39	27.5
Approach		506	2.6	0.505	9.7	LOS A	4.3	110.6	0.59	0.39	26.4
All Vehicles		1568	1.8	0.698	11.3	LOS B	9.2	234.1	0.57	0.35	25.1

Level of Service (LOS) Method: Delay & v/c (HCM 2010).
Roundabout LOS Method: Same as Signalised Intersections.
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: SIDRA Standard.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Organisation: DAVID EVANS AND ASSOCIATES INC | Processed: Friday, January 22, 2016 10:26:12 AM
Project: P:\A\ALBX00000044\0600INFO\TT\Analysis\Alt4_Modern_Roundabout\AM-Gibson_Hill_Crocker.sip6

MOVEMENT SUMMARY

Site: 2040 AM

2040 Future Conditions
Gibson Hill Road @ Crocker Lane - AM Peak
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
East: Gibson Hill Rd											
6	T1	247	8.0	0.274	5.5	LOS A	2.2	57.7	0.16	0.05	19.6
16	R2	86	7.0	0.274	5.4	LOS A	2.2	57.7	0.16	0.05	19.5
Approach		333	7.7	0.274	5.5	LOS A	2.2	57.7	0.16	0.05	19.6
North: Crocker Ln											
7	L2	321	1.0	0.553	12.8	LOS B	4.4	111.7	0.70	0.59	18.2
14	R2	116	0.0	0.553	12.7	LOS B	4.4	111.7	0.70	0.59	18.0
Approach		437	0.7	0.553	12.8	LOS B	4.4	111.7	0.70	0.59	18.2
West: Gibson Hill Rd											
5	L2	19	0.0	0.833	29.2	LOS C	13.7	352.0	1.00	1.15	16.2
2	T1	556	4.0	0.833	29.9	LOS C	13.7	352.0	1.00	1.15	16.1
Approach		575	3.9	0.833	29.8	LOS C	13.7	352.0	1.00	1.15	16.1
All Vehicles		1345	3.8	0.833	18.3	LOS B	13.7	352.0	0.70	0.69	17.5

Level of Service (LOS) Method: Delay & v/c (HCM 2010).
Roundabout LOS Method: Same as Signalised Intersections.
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: SIDRA Standard.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 2040 PM

2040 Future Conditions
Gibson Hill Road @ Crocker Lane - AM Peak
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
East: Gibson Hill Rd											
6	T1	525	2.0	0.754	15.6	LOS B	11.4	289.7	0.64	0.32	18.0
16	R2	358	1.0	0.754	15.5	LOS B	11.4	289.7	0.64	0.32	17.9
Approach		883	1.6	0.754	15.6	LOS B	11.4	289.7	0.64	0.32	17.9
North: Crocker Ln											
7	L2	158	1.0	0.333	11.7	LOS B	2.0	50.9	0.77	0.73	18.4
14	R2	21	0.0	0.333	11.5	LOS B	2.0	50.9	0.77	0.73	18.2
Approach		179	0.9	0.333	11.6	LOS B	2.0	50.9	0.77	0.73	18.3
West: Gibson Hill Rd											
5	L2	69	0.0	0.561	11.4	LOS B	5.1	129.1	0.65	0.45	18.6
2	T1	437	3.0	0.561	11.8	LOS B	5.1	129.1	0.65	0.45	18.5
Approach		506	2.6	0.561	11.7	LOS B	5.1	129.1	0.65	0.45	18.6
All Vehicles		1568	1.8	0.754	13.9	LOS B	11.4	289.7	0.66	0.41	18.2

Level of Service (LOS) Method: Delay & v/c (HCM 2010).
Roundabout LOS Method: Same as Signalised Intersections.
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: SIDRA Standard.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Crash History

CITY OF ALBANY, BENTON COUNTY

GIBSON HILL RD and CROCKER LN, City of Albany, Benton County, 01/01/2010 to 12/31/2014

Total crash records: 6

SER# / INVEST	S P E D E A L C S L K	R S W U C G H R O	DATE / DAY / TIME	CLASS / DIST FROM	CITY STREET / FIRST STREET / SECOND STREET	RD CHAR / DIRECT / LOCTN	INT-TYPE (MEDIAN) / LEGS (#LANES)	INT-REL / TRAF- / CONTL	OFFRD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH / COLL / SVRTY	V#	SPCL USE / TRLR QTY / OWNER	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	A G E	S E X	LICNS RES	PED LOC	ERROR	ACT	EVENT	CAUSE
00129	N N N		02/19/2010	16	CROCKER LN	INTER	3-LEG	N	N	CLR	ANGL-OTH	01	NONE 0	TURN-L											03
NONE			FR	0	GIBSON HILL RD	CN		STOP SIGN	N	DRY	TURN		PRVTE	N -E										000		00
			7P			01	0		N	DLIT	PDO		PSNGR CAR		01	DRVR	NONE	00	F	OR-Y OR<25		020	000		03
												02	NONE 0	STRGHT											
													PRVTE	W -E										000		00
													PSNGR CAR		01	DRVR	NONE	23	F	OR-Y OR<25		000	000		00
80189	N N N N N		02/25/2010	16	CROCKER LN	INTER	3-LEG	N	N	CLD	ANGL-OTH	01	NONE 0	STRGHT											02
CITY			TH	0	GIBSON HILL RD	CN		STOP SIGN	N	DRY	TURN		PRVTE	E -W										000	079	00
			4P			01	0		N	DAY	INJ		PSNGR CAR		01	DRVR	INJC	26	M	OR-Y OR<25		000	000		00
												02	NONE 0	TURN-L											
													PRVTE	N -E										000		00
													PSNGR CAR		01	DRVR	NONE	17	F	OR-Y OR<25		028	000		02
00448	N N N N N		06/25/2010	16	CROCKER LN	INTER	3-LEG	N	N	CLR	BIKE														02
CITY			FR	0	GIBSON HILL RD	CN		STOP SIGN	N	DRY	TURN			-											
			5P			01	0		N	DAY	INJ			STRGHT E W	01	BIKE	INJA	64	F		I XWK?	000	000		00
												01	NONE 0	TURN-L											
													PRVTE	N -E										000		00
													PSNGR CAR		01	DRVR	NONE	17	M	OR-Y OR<25		027	000		02
00837	N N N		12/03/2013	16	CROCKER LN	INTER	3-LEG	N	N	CLR	ANGL-OTH	01	NONE 0	STRGHT											02
NONE			TU	0	GIBSON HILL RD	CN		STOP SIGN	N	DRY	TURN		PRVTE	E -W										000		00
			7A			01	0		N	DAWN	INJ		PSNGR CAR		01	DRVR	INJC	61	F	OR-Y OR<25		000	000		00
												02	NONE 0	TURN-L											
													PRVTE	N -E										015		00
													PSNGR CAR		01	DRVR	NONE	18	M	OR-Y OR<25		028	000		02
00033	N N N		01/13/2010	17	GIBSON HILL RD	STRGHT		N	N	FOG	ANIMAL	01	NONE 0	STRGHT											12
NONE			WE	30	CROCKER LN	E	(NONE)	UNKNOWN	N	DRY	OTH		PRVTE	W -E										000	035	00
			7A			05			N	DAWN	PDO		PSNGR CAR		01	DRVR	NONE	44	F	OR-Y OR<25		000	000		12
							(02)																	035	
00085	N N N N N		02/04/2011	16	GIBSON HILL RD	STRGHT		N	N	CLR	S-1STOP	01	NONE 0	STRGHT											27,07
CITY			FR	20	CROCKER LN	W	(NONE)	NONE	N	DRY	REAR		PRVTE	W -E										000		00
			7A			06			N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	18	F	OR-Y OR<25		043	000		07
							(02)					02	NONE 0	STOP											
													PRVTE	W -E										011		00
													PSNGR CAR		01	DRVR	INJC	34	F	OR-Y OR<25		000	000		00

CITY OF ALBANY, BENTON COUNTY

GIBSON HILL RD and Intersectional Crashes at GIBSON HILL RD, City of Albany, Benton County, 01/01/2010 to 12/31/2014

Total crash records: 29

SER# / INVEST	S P E D	A L C S	R S W U G L	C O H K	DATE / DAY / TIME	CLASS / DIST FROM	CITY STREET / FIRST STREET / SECOND STREET	RD CHAR / DIRECT / LOCTN	INT-TYPE (MEDIAN) / LEGS / (#LANES)	INT-REL / TRAF- / CONTL	OFFRD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH / COLL / SVRTY	V#	SPCL USE / TRLR QTY / OWNER	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	A G E	S E X	LICNS RES	PED LOC	ERROR	ACT	EVENT	CAUSE
00431	N	N	N		06/30/2013	16	N ALBANY RD	INTER	CROSS	N	N	CLR	S-1STOP	01	NONE 0	STRGHT											07
NONE					SU	0	GIBSON HILL RD	W		YIELD	Y	DRY	REAR		PRVTE	W -E									000		00
					7A			06	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	39	F	OR-Y		026	000		07
																						OR<25					
														02	NONE 0	STOP											
															PRVTE	W -E									011		00
															PSNGR CAR		01	DRVR	NONE	00	M	UNK		000	000		00
																						UNK					
00900	N	N	N	N	12/26/2013	16	N ALBANY RD	INTER	CROSS	N	N	FOG	S-1STOP	01	NONE 0	STRGHT											07
CITY					TH	0	GIBSON HILL RD	W		YIELD	Y	DRY	REAR		PRVTE	N -S									000		00
					5P			06	0		N	DUSK	INJ		PSNGR CAR		01	DRVR	NONE	33	F	OR-Y		026	000		07
																						OR<25					
														02	NONE 0	STOP											
															PRVTE	N -S									011		00
															PSNGR CAR		01	DRVR	INJC	37	F	OR-Y		000	000		00
																						OR<25					
81252	N	N	N	N	11/02/2013	16	N ALBANY RD	INTER	CROSS	N	N	UNK	S-1STOP	01	NONE 0	STRGHT										092	02
NONE					SA	0	GIBSON HILL RD	CN		YIELD	N	UNK	REAR		PRVTE	UN-UN									000		00
					9A			04	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	35	M	OR-Y		026	000		07
																						OR<25					
														02	NONE 0	STOP											
															PRVTE	UN-UN									011		26
															PSNGR CAR		01	DRVR	NONE	30	M	OR-Y		000	000		00
																						OR<25					
00190	N	N	N		03/30/2014	16	N ALBANY RD	INTER	CROSS	N	N	CLR	ANGL-OTH	01	NONE 0	TURN-R											12
NONE					SU	0	GIBSON HILL RD	CN		YIELD	Y	DRY	TURN		PRVTE	W -S									000		00
					8A			03	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	88	F	OR-Y		000	026		12
																						OR<25					
														02	NONE 0	STRGHT											
															PRVTE	N -S									000		00
															PSNGR CAR		01	DRVR	NONE	19	M	OR-Y		000	000		00
																						OR<25					
00817	N	N	N	N	11/20/2014	16	N ALBANY RD	INTER	CROSS	N	Y	RAIN	FIX OBJ	01	NONE 0	STRGHT										050	27
CITY					TH	0	GIBSON HILL RD	CN		YIELD	Y	WET	FIX		PRVTE	W -E									000	050	00
					11P			03	0		N	DLIT	INJ		PSNGR CAR		01	DRVR	INJC	45	M	OR-Y		016,081	038		27
																						OR<25					
00414	N	N	N		06/11/2011	16	GIBSON HILL RD	STRGHT		N	N	CLR	ANIMAL	01	NONE 0	STRGHT										035	00
NO RPT					SA	100	N ALBANY RD	W	(NONE)	NONE	N	DRY	OTH		PRVTE	W -E									000	035	00
					10P			08			N	DARK	PDO		PSNGR CAR		01	DRVR	NONE	16	M	OR-Y		000	000		00
									(02)													OR<25					
00875	N	N	N		11/30/2010	16	THORN DR	INTER	3-LEG	N	N	RAIN	S-1STOP	01	NONE 0	STRGHT											07
CITY					TU	0	GIBSON HILL RD	E		UNKNOWN	N	WET	REAR		PRVTE	E -W									000		00
					6P			06	0		N	DUSK	INJ		PSNGR CAR		01	DRVR	INJC	16	M	OR-Y		043	000		07
																						OR<25					
														02	NONE 0	STOP											
															PRVTE	E -W									012		00
															PSNGR CAR		01	DRVR	INJC	29	M	OR-Y		000	000		00
																						OR<25					
00557	N	N	N	N	08/21/2014	16	GIBSON HILL RD	ALLEY		N	N	CLR	BIKE	01	NONE 0	TURN-R											02
CITY					TH	85	PARK TER	E	(NONE)	NONE	N	DRY	TURN		PRVTE	S -E									018		00

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CITY OF ALBANY, BENTON COUNTY

GIBSON HILL RD and Intersectional Crashes at GIBSON HILL RD, City of Albany, Benton County, 01/01/2010 to 12/31/2014

Total crash records: 29

SER# / INVEST	SPEED	ALC	DRUGS	SCHL	WORK	DATE / DAY / TIME	CLASS / DIST / FROM	CITY STREET / FIRST STREET / SECOND STREET	RD CHAR / DIRECT / LOCTN	INT-TYPE (MEDIAN) / LEGS / (#LANES)	INT-REL / TRAF- / CONTL	OFFRD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH / COLL / SVRTY	V#	SPCL USE / TRLR QTY / OWNER / TYPE	MOVE / FROM / TO	PRTC / P# TYPE / PSNGR CAR	INJ / SVRTY	AGE	SEX	LICNS / RES	PED LOC	ERROR	ACT EVENT	CAUSE
						7P			07	(02)		N	DAY	INJ		PSNGR CAR		01 DRVR	NONE	73	F	OR-Y OR<25		027	000	02
																	STRGHT E W	01 BIKE	INJB	19	M		BKPATH	000	047	18
00923	Y	N	N	N	N	12/13/2010	17	NORTH HEIGHTS DR	INTER	3-LEG	N	N	RAIN	S-1STOP	01	NONE 0	STRGHT									07,01
CITY						MO	0	GIBSON HILL RD	E		UNKNOWN	N	WET	REAR		PRVTE	E -W								000	00
						5P			06	0		N	DARK	PDO		PSNGR CAR		01 DRVR	NONE	32	M	OR-Y OR<25		043,047	000	07,01
															02	NONE 0	STOP									
																PRVTE	E -W								011	00
																PSNGR CAR		01 DRVR	NONE	38	M	OR-Y OR<25		000	000	00
00134	N	N	N			02/28/2013	16	BROADWAY ST	INTER	3-LEG	N	N	CLR	S-1STOP	01	NONE 0	STRGHT									013	07
NONE						TH	0	GIBSON HILL RD	W		UNKNOWN	N	DRY	REAR		PRVTE	W -E								000	00
						1P			06	0		N	DAY	INJ		PSNGR CAR		01 DRVR	INJC	26	F	OR-Y OR<25		026	000	07
															02	NONE 0	STOP									
																PRVTE	W -E								011 013	00
																PSNGR CAR		01 DRVR	NONE	68	M	OR-Y OR<25		000	000	00
															03	NONE 0	STOP									
																PRVTE	W -E								022	00
																PSNGR CAR		01 DRVR	NONE	56	F	OR-Y UNK		000	000	00
00146	N	N	N	N	N	03/03/2013	16	BROADWAY ST	INTER	CROSS	N	N	CLR	S-1STOP	01	NONE 0	STRGHT									32,27
CITY						SU	0	GIBSON HILL RD	W		UNKNOWN	N	DRY	REAR		PRVTE	W -E								000	00
						6P			06	0		N	DARK	INJ		PSNGR CAR		01 DRVR	NONE	66	M	OR-Y OR<25		052,016,026	000	32,27
															02	NONE 0	STOP									
																PRVTE	W -E								012	00
																PSNGR CAR		01 DRVR	INJC	25	M	OR-Y OR<25		000	000	00
00129	N	N	N			02/19/2010	16	CROCKER LN	INTER	3-LEG	N	N	CLR	ANGL-OTH	01	NONE 0	TURN-L									03
NONE						FR	0	GIBSON HILL RD	CN		STOP SIGN	N	DRY	TURN		PRVTE	N -E								000	00
						7P			01	0		N	DLIT	PDO		PSNGR CAR		01 DRVR	NONE	00	F	OR-Y OR<25		020	000	03
															02	NONE 0	STRGHT									
																PRVTE	W -E								000	00
																PSNGR CAR		01 DRVR	NONE	23	F	OR-Y OR<25		000	000	00
80189	N	N	N	N	N	02/25/2010	16	CROCKER LN	INTER	3-LEG	N	N	CLD	ANGL-OTH	01	NONE 0	STRGHT									079	02
CITY						TH	0	GIBSON HILL RD	CN		STOP SIGN	N	DRY	TURN		PRVTE	E -W								000	00
						4P			01	0		N	DAY	INJ		PSNGR CAR		01 DRVR	INJC	26	M	OR-Y OR<25		000	000	00
															02	NONE 0	TURN-L									
																PRVTE	N -E								000	00
																PSNGR CAR		01 DRVR	NONE	17	F	OR-Y OR<25		028	000	02
00448	N	N	N	N	N	06/25/2010	16	CROCKER LN	INTER	3-LEG	N	N	CLR	BIKE													02

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SER# INVEST	SPEED ALC DRUGS SCHL WORK	DATE DAY TIME	CLASS DIST FROM	CITY STREET FIRST STREET SECOND STREET	RD CHAR DIRECT LOCTN	INT-TYPE (MEDIAN) LEGS (#LANES)	INT-REL TRAF- CONTL	OFFRD RNDBT DRVWY	WTHR SURF LIGHT	CRASH COLL SVRTY	SPCL USE TRLR QTY OWNER V# TYPE	MOVE FROM TO	PRTC P# TYPE	INJ SVRTY	AGE	SEX	LICNS RES	PED LOC	ERROR	ACT	EVENT	CAUSE
CITY		FR	0	GIBSON HILL RD	CN		STOP SIGN	N	DRY	TURN		-										
		5P			01	0		N	DAY	INJ		STRGHT	01 BIKE	INJA	64	F		I XWK?	000	000		00
												E W										
											01 NONE 0	TURN-L										
											PRVTE	N -E								000		00
											PSNGR CAR		01 DRVR	NONE	17	M	OR-Y		027	000		02
																	OR<25					
00837	N N N	12/03/2013	16	CROCKER LN	INTER	3-LEG	N	N	CLR	ANGL-OTH	01 NONE 0	STRGHT										02
NONE		TU	0	GIBSON HILL RD	CN		STOP SIGN	N	DRY	TURN	PRVTE	E -W								000		00
		7A			01	0		N	DAWN	INJ	PSNGR CAR		01 DRVR	INJC	61	F	OR-Y		000	000		00
																	OR<25					
											02 NONE 0	TURN-L										
											PRVTE	N -E								015		00
											PSNGR CAR		01 DRVR	NONE	18	M	OR-Y		028	000		02
																	OR<25					
00033	N N N	01/13/2010	17	GIBSON HILL RD	STRGHT		N	N	FOG	ANIMAL	01 NONE 0	STRGHT									035	12
NONE		WE	30	CROCKER LN	E	(NONE)	UNKNOWN	N	DRY	OTH	PRVTE	W -E								000	035	00
		7A			05			N	DAWN	PDO	PSNGR CAR		01 DRVR	NONE	44	F	OR-Y		000	000		12
						(02)											OR<25					
00085	N N N N N	02/04/2011	16	GIBSON HILL RD	STRGHT		N	N	CLR	S-1STOP	01 NONE 0	STRGHT										27,07
CITY		FR	20	CROCKER LN	W	(NONE)	NONE	N	DRY	REAR	PRVTE	W -E								000		00
		7A			06			N	DAY	INJ	PSNGR CAR		01 DRVR	NONE	18	F	OR-Y		043	000		07
						(02)											OR<25					
											02 NONE 0	STOP										
											PRVTE	W -E								011		00
											PSNGR CAR		01 DRVR	INJC	34	F	OR-Y		000	000		00
																	OR<25					
80513	N N N N N	05/19/2014	16	CRITTENDON LP	INTER	3-LEG	N	N	UNK	ANGL-OTH	01 NONE 0	STRGHT										02
NO RPT		MO	0	GIBSON HILL RD	CN		STOP SIGN	N	UNK	TURN	PRVTE	UN-UN								000		00
		4A			03	0		N	DARK	PDO	PSNGR CAR		01 DRVR	NONE	78	M	OR-Y		000	000		00
																	OR<25					
											02 NONE 0	UNK										
											PRVTE	UN-UN								015		00
											PSNGR CAR		01 DRVR	NONE	22	M	OR-Y		028	000		02
																	OR<25					
00583	N N N N N	08/01/2012	16	GIBSON HILL RD	INTER	3-LEG	N	N	CLR	S-1STOP	01 NONE 0	STRGHT										32,27
CITY		WE	0	GRANDVIEW DR	W		UNKNOWN	N	DRY	REAR	PRVTE	W -E								000		00
		5P			06	0		N	DAY	INJ	PSNGR CAR		01 DRVR	NONE	17	M	OR-Y		052,016,026	000		32,27
																	OR<25					
											02 NONE 0	STOP										
											PRVTE	W -E								012		00
											PSNGR CAR		01 DRVR	INJC	32	F	OR-Y		000	000		00
																	OR<25					
00295	N N N	05/14/2014	16	GIBSON HILL RD	GRADE		N	N	CLR	S-1STOP	01 NONE 0	STRGHT										12
NONE		WE	30	GIBSON HILL WAY	E	(NONE)	UNKNOWN	N	DRY	REAR	PRVTE	W -E								000		00
		6P			05			N	DAY	INJ	PSNGR CAR		01 DRVR	NONE	22	F	OR-Y		026	026		12
						(02)											OR>25					
											02 NONE 0	STOP										
											PRVTE	W -E								011		00
											PSNGR CAR		01 DRVR	NONE	28	F	OR-Y		000	000		00
																	OR<25					

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CITY OF ALBANY, BENTON COUNTY

GIBSON HILL RD and Intersectional Crashes at GIBSON HILL RD, City of Albany, Benton County, 01/01/2010 to 12/31/2014

Total crash records: 29

SER# / INVEST	S P E D / A L C S	R S W U G L	C O H R K	DATE / DAY / TIME	CLASS / DIST FROM	CITY STREET / FIRST STREET / SECOND STREET	RD CHAR / DIRECT / LOCTN	INT-TYPE (MEDIAN) / LEGS / (#LANES)	INT-REL / TRAF- / CONTL	OFFRD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH / COLL / SVRTY	V#	SPCL USE / TRLR QTY / OWNER / TYPE	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	A G E	S E X	LICNS RES	PED LOC	ERROR	ACT	EVENT	CAUSE
													02	NONE 0	STOP											
														PRVTE	W -E									011		00
														PSNGR CAR		02	PSNG	INJB	02	F			000	000		00
													02	NONE 0	STOP											
														PRVTE	W -E									011		00
														PSNGR CAR		03	PSNG	NO<5	01	F			000	000		00
00232	N N N			04/03/2010		16	GIBSON HILL RD	INTER	3-LEG	N	N	RAIN	S-1STOP	01	NONE 0	STRGHT											07
CITY				SA	0		PULVER LN	E		UNKNOWN	N	WET	REAR		PRVTE	E -W								000		00
				2P				06	0		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	18	M	OR-Y		026	000		07
																						OR<25					
													02	NONE 0	STOP											
														PRVTE	E -W									012		00
														PSNGR CAR		01	DRVR	INJB	16	F	UNK		000	000		00
																						OR<25					
													02	NONE 0	STOP											
														PRVTE	E -W									012		00
														PSNGR CAR		02	PSNG	INJC	12	F			000	000		00
80099	N N N N N N			01/29/2010		16	GIBSON HILL RD	INTER	3-LEG	N	N	CLR	O-1TURN	01	NONE 0	TURN-L										079	02
CITY				FR	0		PULVER LN	CN		NONE	N	DRY	TURN		PRVTE	E -S								000		00
				12P				03	0		N	DAY	INJ		PSNGR CAR		01	DRVR	INJB	16	M	OR-Y		004	000		02
																						OR<25					
													02	NONE 0	STRGHT											
														PRVTE	W -E									000	079	00
														PSNGR CAR		01	DRVR	NONE	34	F	OR-Y		000	000		00
																						OR<25					
80153	N N N N N N			02/05/2014		16	GIBSON HILL RD	INTER	3-LEG	N	N	CLR	S-1STOP	01	NONE 0	STRGHT										002	07,27
CITY				WE	0		PENNY LN	E		UNKNOWN	N	DRY	REAR		PRVTE	E -W								000		00
				1P				06	0		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	34	F	OR-Y		043,026	038	002	07,27
																						OR<25					
													01	NONE 0	STRGHT											
														PRVTE	E -W									000		00
														PSNGR CAR		02	PSNG	NO<5	02	F			000	000		00
													01	NONE 0	STRGHT											
														PRVTE	E -W									000		00
														PSNGR CAR		03	PSNG	NO<5	04	M			000	000		00
													02	NONE 0	STOP											
														PRVTE	E -W									011		00
														PSNGR CAR		01	DRVR	INJC	68	F	OR-Y		000	000		00
																						OR<25					
00388	N N N N N N			06/16/2014		16	GIBSON HILL RD	STRGHT		Y	N	CLR	S-STRGHT	01	NONE 0	STRGHT										093	27,07
CITY				MO	36		PENNY LN	W	(NONE)	STOP SIGN	N	DRY	REAR		PRVTE	W -E								000		00
				6P				06			N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	41	M	OR-Y		016,042	038	093	27,07
									(02)													OR<25					
													02	NONE 0	STRGHT											
														PRVTE	W -E									000		00
														PSNGR CAR		01	DRVR	INJC	57	M	OR-Y		000	000		00

OREGON.. DEPARTMENT OF TRANSPORTATION - TRANSPORTATION DEVELOPMENT DIVISION
TRANSPORTATION DATA SECTION - CRASH ANAYLYSIS AND REPORTING UNIT
URBAN NON-SYSTEM CRASH LISTING

CITY OF ALBANY, BENTON COUNTY

GIBSON HILL RD and Intersectional Crashes at GIBSON HILL RD, City of Albany, Benton County, 01/01/2010 to 12/31/2014

Total crash records: 29

SER# / INVEST	S P E D / A L C / U G S / C H L / O R K	DATE / DAY / TIME	CLASS / DIST FROM	CITY STREET / FIRST STREET / SECOND STREET	RD CHAR / DIRECT / LOCTN	INT-TYPE (MEDIAN) / LEGS / (#LANES)	INT-REL / TRAF- / CONTL	OFFRD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH / COLL / SVRTY	V#	SPCL USE / TRLR QTY / OWNER / TYPE	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	A G E	S E X	LICNS RES OR<25	PED LOC	ERROR	ACT EVENT	CAUSE
00451	N N N	06/04/2012	16	GIBSON HILL RD	GRADE		Y	N	RAIN	S-1STOP	01	NONE 0	STRGHT										07
NONE		MO	20	PENNY LN	E	(NONE)	UNKNOWN	N	WET	REAR		PRVTE	E -W									022	00
		4P			06			N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	16	M	OR-Y OR<25		026	000	07
						(02)					02	NONE 0	STOP										
												PRVTE	E -W									011	00
												PSNGR CAR		01	DRVR	NONE	64	F	OR-Y OR<25		000	000	00
											03	NONE 0	STRGHT										
												PRVTE	E -W									000	00
												PSNGR CAR		01	DRVR	NONE	48	F	OR-Y OR<25		000	000	00
00580	N N N	08/27/2011	16	GIBSON HILL RD	INTER	3-LEG	N	N	CLR	S-1STOP	01	NONE 0	STRGHT										07
NONE		SA	0	SKYLINE DR	E		UNKNOWN	N	DRY	REAR		PRVTE	E -W									000	00
		10A			06	0		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	18	F	OR-Y OR<25		026	000	07
											02	NONE 0	STOP										
												PRVTE	E -W									012	00
												PSNGR CAR		01	DRVR	INJC	17	M	OR-Y OR<25		000	000	00
00323	N N N N N	05/22/2014	16	GIBSON HILL RD	INTER	3-LEG	N	N	CLR	S-1STOP	01	NONE 0	STRGHT										07
CITY		TH	0	SKYLINE DR	E		STOP SIGN	N	DRY	REAR		PRVTE	E -W									000	00
		2P			06	0		N	DAY	INJ		PSNGR CAR		01	DRVR	INJC	62	F	OR-Y OR<25		043,026	000	07
											02	NONE 0	STOP										
												PRVTE	E -W									012	00
												PSNGR CAR		01	DRVR	INJC	19	F	OR-Y OR<25		000	000	00
00764	N N N	11/07/2014	16	GIBSON HILL RD	INTER	3-LEG	N	N	CLR	ANGL-OTH	01	NONE 0	STRGHT										02
NONE		FR	0	SKYLINE DR	CN		STOP SIGN	N	DRY	TURN		PRVTE	W -E									000	00
		7P			04	0		N	DLIT	INJ		PSNGR CAR		01	DRVR	INJB	37	M	OR-Y OR<25		000	000	00
											02	NONE 0	TURN-L										
												PRVTE	S -W									000	00
												PSNGR CAR		01	DRVR	NONE	17	F	OR-Y OR<25		028	000	02
00017	N N N	01/09/2014	16	GIBSON HILL RD	STRGHT		N	N	RAIN	S-1STOP	01	NONE 0	STRGHT										29
NONE		TH	150	SKYLINE DR	W	(NONE)	UNKNOWN	N	WET	REAR		PRVTE	W -E									000	00
		7A			08			N	DLIT	PDO		PSNGR CAR		01	DRVR	NONE	20	M	OR-Y OR<25		026	000	29
						(02)					02	NONE 0	STOP										
												PRVTE	W -E									011	00
												PSNGR CAR		01	DRVR	NONE	57	M	OR-Y OR<25		000	000	00