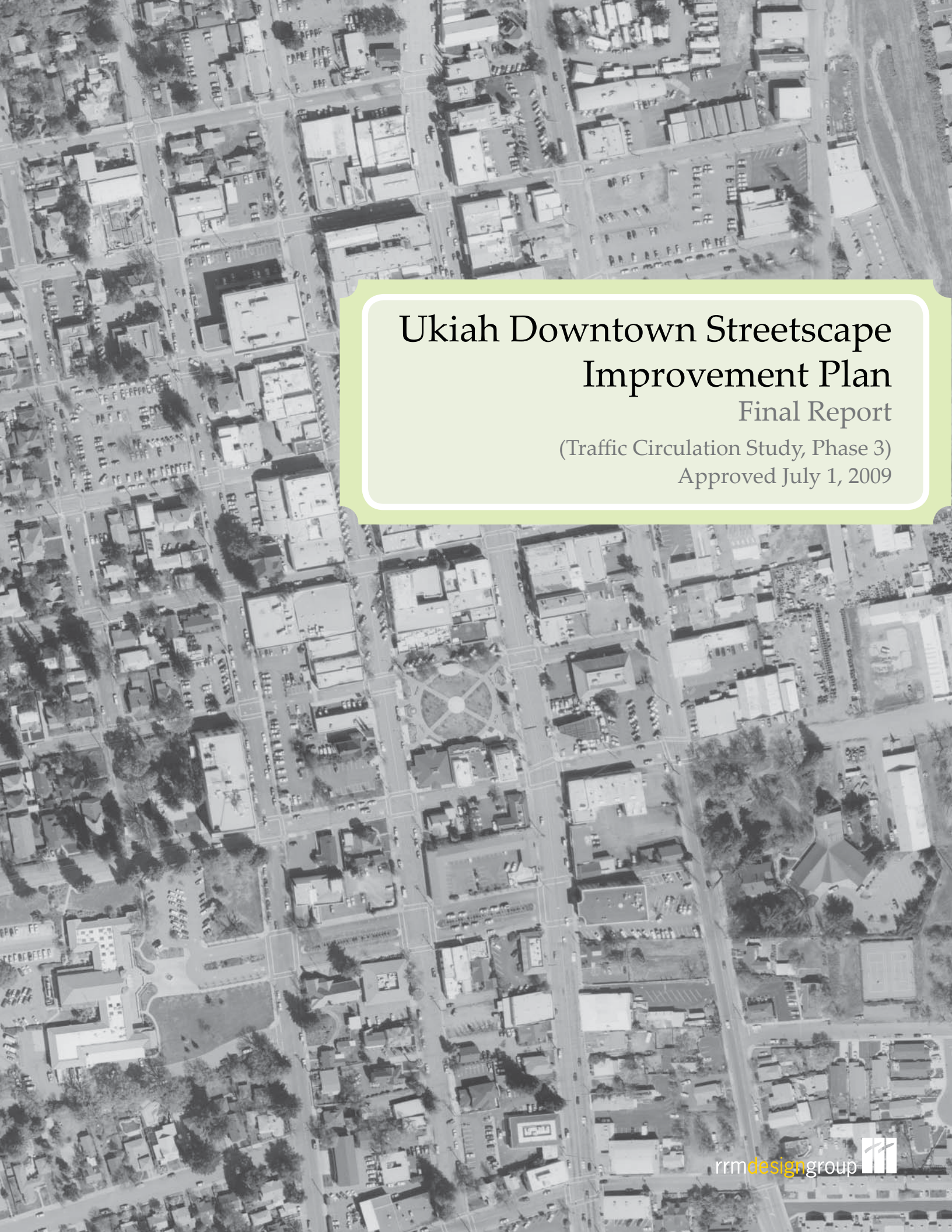

Ukiah Downtown Streetscape Improvement Plan

Final Report

(Traffic Circulation Study, Phase 3)

Approved July 1, 2009

rrmdesigngroup

ACKNOWLEDGEMENTS

CITY COUNCIL MEMBERS

Phil Baldwin – Mayor
Benj Thomas – Vice Mayor
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Mary Anne Landis

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FUNDING PROVIDED BY

Mendocino Council of Governments (MCOG)
Ukiah Redevelopment Agency

PREPARED BY

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WITH ASSISTANCE FROM

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TABLE OF CONTENTS

I) INTRODUCTION

A) Purpose

The Ukiah Downtown Streetscape Improvement Plan is Phase 3 of the City of Ukiah's efforts to resolve traffic, circulation, and urban design issues associated with its downtown area. The purpose of this plan is to upgrade State Street and Main Street from Norton Street to Gobbi Street to provide for a cohesive, pedestrian-friendly, attractive, and complete downtown core. This Final Report summarizes the process leading up to the formation of the Ukiah Downtown Streetscape Improvement Plan ("the Plan") and incorporates the results of the existing conditions analyses, stakeholder interviews, Internal Review Committee (IRC) meetings, public workshops, and traffic analyses. The report also describes the changes that have occurred since the Draft Streetscape Concept Plan ("the Draft Plan").

B) Existing Conditions

1) Context and Location

The City of Ukiah is located in southern Mendocino County, 60 miles from the Mendocino Coast. Situated on the Highway 101 corridor, Ukiah serves as the city center for Mendocino County and neighboring areas.

As two primary north/south carriers in the heart of Ukiah, State and Main Streets stretch along eight blocks of Downtown Ukiah. One block west of State Street is School Street, the primary downtown corridor and the biggest attractor of pedestrian foot traffic.

2) Street Character

State Street carries heavier traffic than Main Street and contains several distinctive and historic buildings with strong relationships to the street. Main Street, in contrast, provides access to rear-of-business parking areas and a number of vintage craftsman style residences and buildings. Common challenges to both corridors include the lack of pedestrian-friendly, visitor-attracting amenities such as street trees, street furniture, gateway features, and consistent sidewalks; a large number of curb cuts/driveways and overhead utility lines; and heavier and faster traffic in relation to other streets in the downtown.

II) STAKEHOLDER AND INTERNAL REVIEW COMMITTEE MEETINGS

A) Key Stakeholder Interviews

RRM Design Group conducted stakeholder interviews on June 13, 2008 at the Ukiah Conference Center. There were 20 participants including: former Mayor Crane, Planning Commissioners, City Council members, commercial developers, Ukiah citizens, property owners, business owners, and representatives from the Chamber of Commerce, Grace Hudson Museum, the Ukiah Main Street, MTA, and Employers Council. The purpose of the interviews was to gather issues and ideas to consider during preparation of the new streetscape designs and traffic study. Many participants said they would like the State Street and Main Street streetscape to tie in with School Street since School Street is also a part of the downtown. The following is a summary of the most frequently noted comments:

- State Street is a barrier from east to west
- Beautify the walkways

- Underground utilities are a challenge
- Showcase history of Ukiah in the streetscape
- Move courthouse
- Provide more shade
- Slow down traffic on State Street
- Introduce diagonal parking on State Street
- Provide more shade in the plaza, shelter, better businesses adjacent
- Create more walkability, safer crossings, and connectivity between east and west on Main Street
- Improve aesthetic appearance on Main Street
- Create a visual connection from City Hall to Grace Hudson Museum

B) Internal Review Committee Meetings

In addition to obtaining feedback from key stakeholders, RRM recommended the formation of an Internal Review Committee (IRC) that would meet on an as needed basis to review and provide timely direction on all work products associated with the project. The IRC comprised of Richard Seanor, Deputy Director of Public Works; Tim Eriksen, Director of Public Works/City Engineer; Charles Stump, Director of Planning and Community Development Department; and Sage Sangiacomo, Director of Community Services.

The first IRC meeting was held on July 17, 2008, and the Committee discussed future road functions, streetscape improvements, results from the first workshop, alternative streetscape plans, and next steps. The group formulated strategies for improving the circulation along State Street, including preparing a new circulation study, meeting with the Mayor, and preparing a Project Status Report to the City Council. The IRC also revisited diagonal parking and turn pocket options and brainstormed strategies for public outreach. Lastly, the group reviewed and provided feedback on the alternatives table.

The second IRC meeting was held on May 26, 2009, and the Committee reviewed the Draft Streetscape Concept Plan, the results of Workshop #2, and the Draft Report. The Committee's comments helped inform the the Plan.

C) Opportunities and Constraints

Making use of the data gathered and the feedback collected from the key stakeholder interviews, RRM prepared a map depicting all known opportunities and constraints along the State Street and Main Street corridors. See Appendix A for the Opportunities and Constraints Map. The following is a summary of the opportunities and constraints identified:

- Numerous existing parking lots along Main Street
- Inconsistent street trees
- Existing and insufficient/inconsistent landscaping
- Existing traffic lights
- Existing dirt path in front of the Grace Hudson Museum
- Existing east-west one-way streets

- Potential road connections from the Grace Hudson Museum to City Hall on Seminary Avenue as well as along Stephenson Street (Stephenson Street is disconnected at Alex R. Thomas Plaza)
- Potential pedestrian street on Church Street between State Street and School Street
- Gateway opportunities at the intersections of Gobbi Street and State Street, Gobbi Street and Main Street, Norton Street and State Street, and Norton Street and Main Street
- Potential landscape improvement at Alex R. Thomas Plaza
- Potential sidewalk improvements on Mill Street between State Street and Main Street, and on Main Street between Mill Street and Seminary Avenue
- Decorative paving opportunities at the intersections of Gobbi Street and State Street, Perkins Street and State Street, and Norton Street and State Street
- Potential bridge element where Gibson Creek crosses under State Street
- Possible street extensions where Stephenson Street and Church Street meet Main Street
- Traffic control opportunities at the intersections of Gobbi Street and Main Street, and Perkins Street and Main Street

III) PUBLIC OUTREACH

RRM organized two workshops as forums for members of the public to ask questions, share ideas, and react to the plan concepts. The complete Workshop Results Summaries are included in Appendix B.

A) Public Workshop #1

On Thursday, July 11, 2008, the first public workshop was held in the Cabernet Room at the Ukiah Valley Conference Center. The purpose of this initial workshop was to obtain input on the issues and ideas that would need to be addressed in developing a streetscape improvement plan for the Downtown, to have workshop participants prioritize those ideas that were most and least important, and to then conduct a design brainstorming session. Attendance at the workshop was unfortunately very low at only 10 people.

1) Issue Identification and Priority Setting Results

The following summarizes the outcome of the Issue Identification and Priority Setting exercise:

<u>Strong Support</u>

- Bulb-outs to shorten crossings
- Provide more shade, more trees throughout
- Improve pedestrian crossings on State Street, reduce crossing distance, include bulb-outs
- Beautification on State Street
- Wider sidewalks with street trees, space for outdoor café (seating on sidewalk) on State Street
- Vintage lights reflecting late 1800's
- Upgrade parking lot lands & paving
- Enhance Bridge at Gibson Creek on State Street

Support
- Slow traffic on State Street, provide traffic calming
- Introduce sidewalks where there are none
- More street trees on State Street
- Soften edges of buildings at walkway on State Street
- Street-level landscaping
- Replenish creeks
- Incorporate seating into green areas and with trees
- Good lighting at crosswalks
- Cohesive signage
- Underground utilities on Main Street
- Public art
- Better landscape and development of private parking on Main Street

Neutral Issues
- "History Walk"
- Bioswale strips as way to reduce pavement
- One-way couplet on State Street and Main Street
- Traffic calming on Main Street
- Roundabout at Perkins Street and Orchard Street

Opposition
- Reduce straight-in parking
- Traffic control at Smith Street & State Street
- Diagonal parking on State Street
- Reduce State Street to 2 lanes
- Stormwater cells

Issues that were more controversial at the workshop included using bioswale strips as way to reduce pavement, creating one-way couplet on State Street and Main Street, adding traffic calming on Main Street, constructing a roundabout at Perkins Street and Orchard Avenue, and forming a gateway at Highway 101 and Perkins Street. After consulting with W-Trans and the City, RRM determined that it would be infeasible to create a couplet on State Street and Main Street as it would require the reconfiguration of adjacent perpendicular streets and larger alterations to the Downtown that were out of the scope of this plan.

2) Design Charrette Results

As part of the design brainstorming exercise, one group looked at all of Downtown Ukiah, identifying opportunities and constraints including current hazard areas and need for landscaping, sidewalks, bulb-outs, one-way streets, and a gateway. The other group decided to focus on the "core area" of Downtown, defined as the sections of State Street and Main Street between Clay Street and Henry Street. The group added benches/seating, street lighting, sidewalks, bulb-outs, trees, a decorative crosswalk, a roundabout, a bridge element, and an opened creek.

From the drawings, it was apparent that the safety and comfort of pedestrians was an important issue. The beautification of State Street and Main Street mainly by means of additional trees, landscaping, and gateway elements was also a common theme. In general, the focus was on creating a distinct, pedestrian-friendly Downtown.

3) General Conclusions

The following findings and conclusions were derived from this first workshop:

- There was overwhelming support for improving the walkability, landscaping, and general aesthetics of the Downtown streetscape to reflect Ukiah's historical character. However, participants were split on whether changes to the existing traffic system were necessary to achieve these goals.
- With respect to parking, attendees at the workshop did not give much attention to the issue, in contrast to the key stakeholder interviews in which parking was a main concern. Participants were split on the issue of parking, generally supporting existing parallel parking over diagonal parking.
- There was generally support for some type of vegetated landscape treatment along the streets, though exactly what these might look like was undecided.
- There appeared to be consensus for restoring the creek or adding some type of creek element, with emphasis on a bridge element.
- There was strong support for increasing the vitality of the Downtown streetscapes by encouraging more uses on the sidewalks such as outdoor restaurant seating.

B) Public Workshop #2

On Tuesday, May 12, 2009, the second public workshop was held in the Cabernet 2 Room at the Ukiah Valley Conference Center. The purpose of this workshop was to review the traffic and circulation improvements recommended by W-Trans, present the Draft Streetscape Concept Plan, and obtain feedback on the Draft Streetscape Concept Plan through a "Report Card" exercise. Twenty-eight (28) people attended the workshop.

1) Report Card Exercise

RRM distributed "Report Cards" to the workshop attendees which asked a series of questions to obtain feedback on the Draft Streetscape Concept Plan. The results of the Report Card exercise indicated that for each of the street section locations, the majority of participants preferred the proposed configuration over the existing street configuration (see Street Sections on page 13 of this document). Also, participants were asked whether they "Support Strongly," Support Moderately," or "Oppose" specific features of the Draft Streetscape Concept Plan. Out of these three options, the "Support Strongly" choice was the most common choice for each of the features listed.

2) General Conclusions

The workshop attendees generally supported most elements of the Draft Streetscape Concept Plan. The most controversial new features were: the diagonal parking on State Street; the 1-way to 2-way street conversions on Standley Street, Smith Street, and Henry Street; and the traffic signals at Gobbi Street and Main Street and Perkins Street and Main Street. Many comments emphasized the need for more planted medians and pedestrian refuge islands on State Street, especially in front of the Palace Hotel, between Gobbi Street and Seminary Avenue, and at the south side of the Church Street intersection. The general consensus was that medians were preferable to diagonal parking if there was room for only one of these options. Many participants were also interested in installing roundabouts at Gobbi Street and State Street and Gobbi Street and State Street, if the City could explore property acquisitions to create ample right-of-way. Additional elements that were frequently mentioned among participants included:

- Street furniture that follows existing trends and compliments Ukiah's historic character
- 30 degree instead of 45 degree diagonal parking on State Street to reduce probability of traffic conflicts
- Crosswalk paving of a material other than brick (e.g. granite)
- Underground utilities on Main Street
- Consideration of loading zones and garbage pick-ups for businesses
- Consistency with earlier plans, including the City's form-based zoning
- A one-block pedestrian mall (e.g. on Perkins Street or Church Street between School Street and State Street)
- Larger trees that will shade the sidewalk not conflict with existing aesthetics, signage, and infrastructure
- Gobbi Street and Norton Street gateway treatments
- Bicycle amenities, including bicycle lanes, sharrows, and racks
- Widened sidewalks on Perkins Street between State Street and School Street with no parking on the north side and diagonal parking on the south side
- Widened sidewalks surrounding the Courthouse

IV) DRAFT STREETSCAPE CONCEPT PLAN ELEMENTS

The following summarizes the elements of the Draft Streetscape Concept Plan which was prepared for Workshop #2. The Draft Plan was devised based on the results of a traffic study conducted by W-Trans which examined existing and future traffic operation under current geometrics as well as with several streetscape options for State Street and Main Street. The results of the traffic study are presented in the document titled *Traffic Analysis for Downtown*. The Draft Plan has since been revised, as discussed in the next section (Section V, Final Downtown Streetscape Improvement Plan).

A) Traffic Circulation

1) Lane Reconfigurations

"Road diets" on State Street would reduce the current two through lanes in each direction to a single travel lane in each direction with a two-way left-turn lane that would operate as a left-turn lane at appropriate intersections. Parallel parking would be maintained on both sides of the street. This lane configuration would allow flexibility for widened sidewalks or buffer zones on State Street between the travel lanes and parking. Main Street would continue to have a single travel lane in each direction with parallel parking, but travel lanes would be reduced to 10 feet wide to accommodate 5-foot Class II bicycle lanes in each direction.

2) Signals

The traffic analysis proposed installing new traffic signals at the Gobbi Street and Main Street and Perkins Street and Main Street intersections. The existing traffic signal controllers at the Standley Street and State Street and Perkins Street and State Street intersections would be reprogrammed to improve traffic movement.

3) **Side Streets**
To increase traffic circulation, Henry Street west of State Street, and Smith Street and Standley Street both west and east of State Street would be converted from one-way streets to two-way.

B) Diagonal Parking
Diagonal parking on the west side of State Street for the block between Stephenson Street and Clay Street (adjacent to the Alex R. Thomas Plaza) would take the place of existing parallel parking. The east side of State Street would have no parking. The diagonal parking would promote usage of the plaza by providing easier access, increased parking, and a wide buffer from traffic. Diagonal parking would also be added on the east side of State Street between Henry Street and the proposed gateway element at Gibson Creek to signify the entrance into the downtown area and to provide additional parking and easy access to nearby businesses.

C) Bicycle Lanes
Main Street would contain Class II Bicycle Lanes in both directions between Clay Street and Norton Street. On State Street, a buffer zone between parking lane and the travel lane would provide some space for bicyclists to ride outside of the flow of traffic, though this buffer would not be wide enough to accommodate a dedicated bicycle lane. The traffic analysis recommended that State Street within the downtown corridor between Gobbi Street and Norton Street be identified as a Class III Bicycle Route.

D) Bulb-outs and Mid-Block Extensions
All of the intersections on State Street within the project area would be retrofitted with bulb-outs except at Mill Street, Scott Street, Gobbi Street, and Norton Street to preserve right turn movements. Bulb-outs would reduce street crossing distances for pedestrians, slow down traffic, and provide additional space for sidewalk improvements. In addition, mid-block extensions where Seminary Avenue, Stephenson Street, and Henry Street dead-end at State Street would serve a similar purpose as bulb-outs and create focal points at the dead-ends.

E) Intersection Treatments and Gateways
The Draft Plan suggests enhancing the existing paving treatment at Perkins Street and State Street, one of the busiest intersections on State Street. These intersection treatments would help denote the significance of the intersections through Downtown. The intersection at Seminary Avenue and State Street would have a similar paving treatment to highlight its connection to the City Hall.

The northern entrance into the downtown on State Street would be marked by a "bridge" gateway element where Gibson Creek currently crosses under State Street. The gateway would include a paved pedestrian crossing, potential flashers (flashing inground lights warning oncoming motorists of crossing pedestrians), bollards or street lights, and a mid-block sidewalk extension to narrow the crossing distance.

F) Median
Between Smith Street and Henry Street, a new raised median would add greenery and trees to the center of the streetscape. RRM and W-Trans examined the possibility of adding additional center medians on State Street, but turning movements and the large number of curb cuts/driveways along State Street would make this difficult.

G) Sidewalks

In general, State Street would have widened sidewalks that would accommodate new planters, trees, street furniture, outdoor restaurant/café seating opportunities, and other street beautification and pedestrian amenities. Sidewalks would range between 8 to 15.5 feet in width depending on the existing right-of-way. Main Street sidewalks would be filled in wherever gaps currently occur to give continuity to the streetscape. A new sidewalk would replace the dirt path fronting the Grace Hudson Museum while retaining the existing granite curb to preserve the path's historic character.

H) Trees

New trees on both State Street and Main Street would provide additional landscaping where existing trees are not present to create a continuous canopy within the downtown. Additional trees would be added to the Alex R. Thomas Plaza and to the sidewalk on the State Street side of the plaza to provide much-needed shade to the space. Accent trees at sidewalk corners would signify gateways at the Gibson Creek crossing and at the Perkins Street and State Street and Seminary Avenue and State Street intersections.

I) Crosswalks

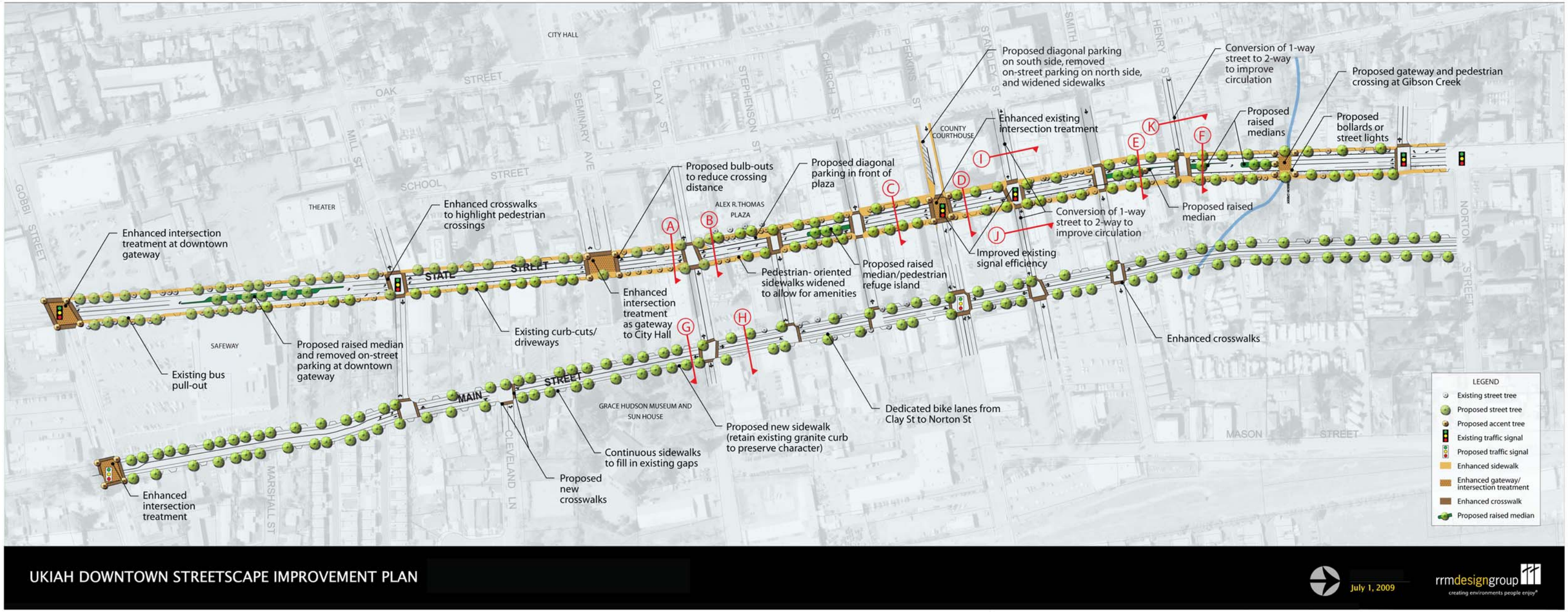
Brick or enhanced paving at all crosswalks within the project area would give the crossings more prominence and increase pedestrian safety. Also, the Draft Plan proposes new crosswalks at the northern and eastern sides of the Cleveland Lane and Main Street intersection.

J) Street Furniture

Street furniture all along State Street and Main Street such as benches, trash receptacles, bollards, lights, etc. would improve the pedestrian experience of the downtown. The street furniture would have a cohesive style that would reflect Ukiah's historic character.

V) FINAL DOWNTOWN STREETSCAPE IMPROVEMENT PLAN ELEMENTS

After compiling the comments and suggestions from Workshop #2 and the second IRC meeting, RRM completed the Final Downtown Streetscape Improvement Plan (referred hereafter as the Ukiah Downtown Streetscape Improvement Plan). In general, the Plan retains the majority of the Draft Plan elements, with only minor alterations. The overall approach to traffic circulation and streetscape design remain the same. Please refer to the Downtown Streetscape Improvement Plan map and corresponding street sections on the following pages.



UKIAH DOWNTOWN STREETSCAPE IMPROVEMENT PLAN

July 1, 2009

rrmdesigngroup
creating environments people enjoy®

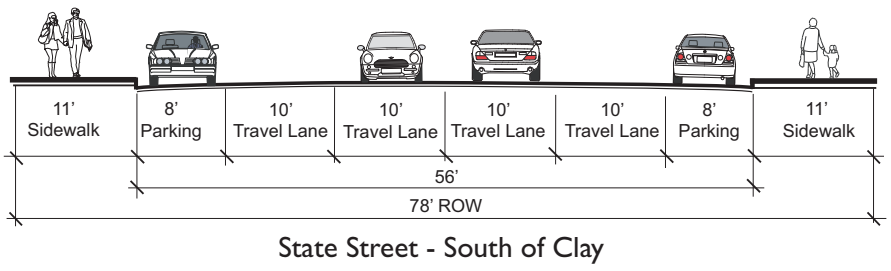
Back of Downtown Streetscape Improvement Plan Map

State Street Cross-Sections

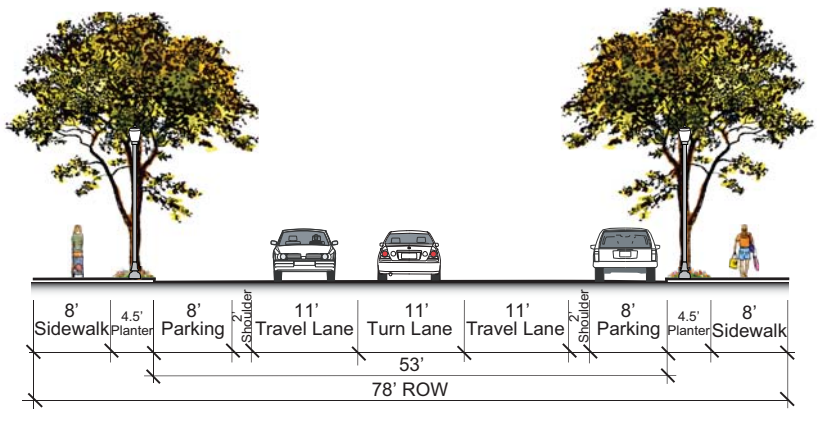
Existing

Proposed

A



State Street - South of Clay



State Street - South of Clay

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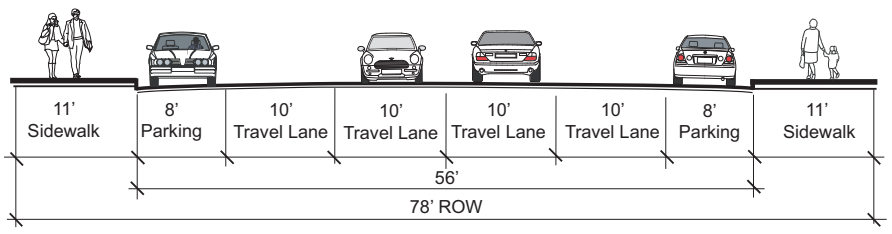
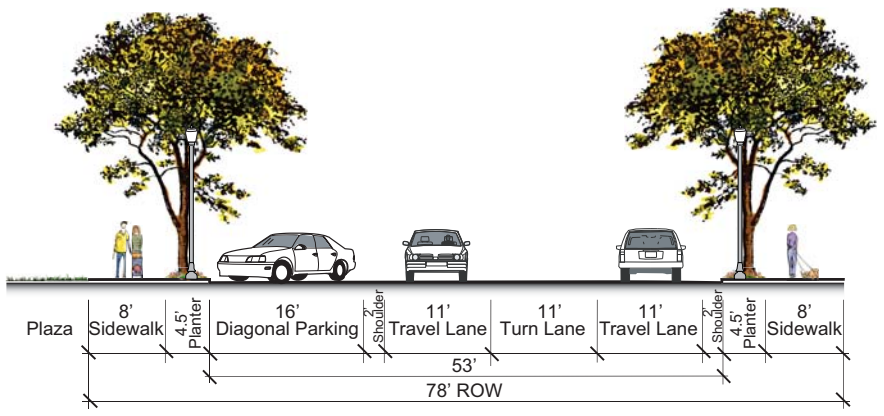
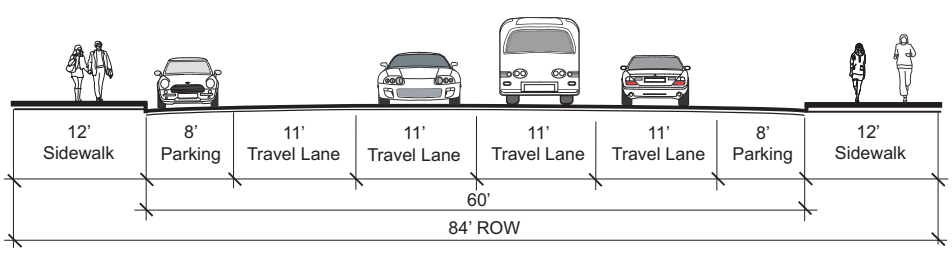


State Street - North of Clay

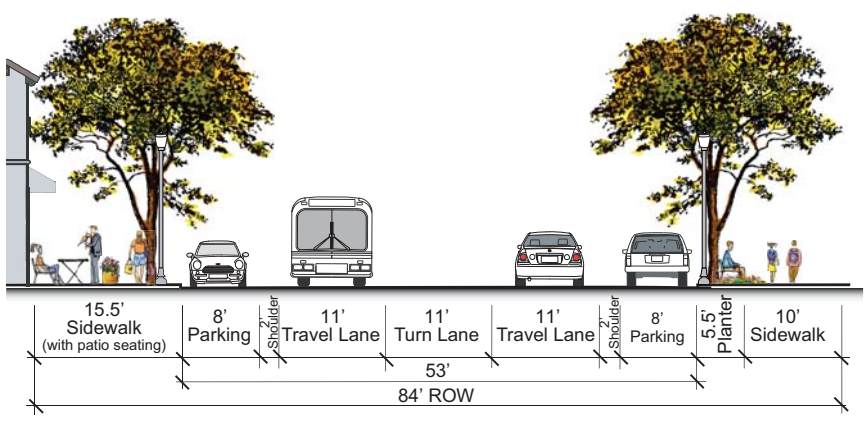


State Street North of Clay

C



State Street - South of Perkins



State Street - South of Perkins

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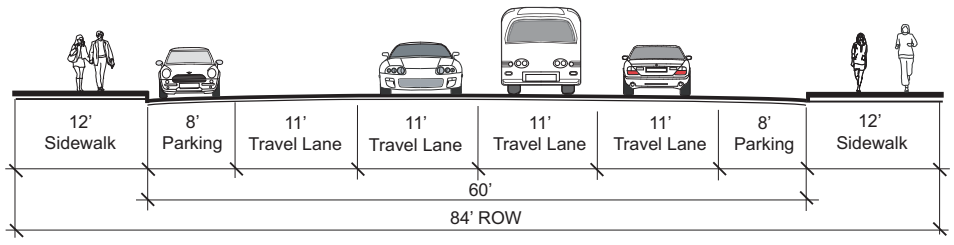

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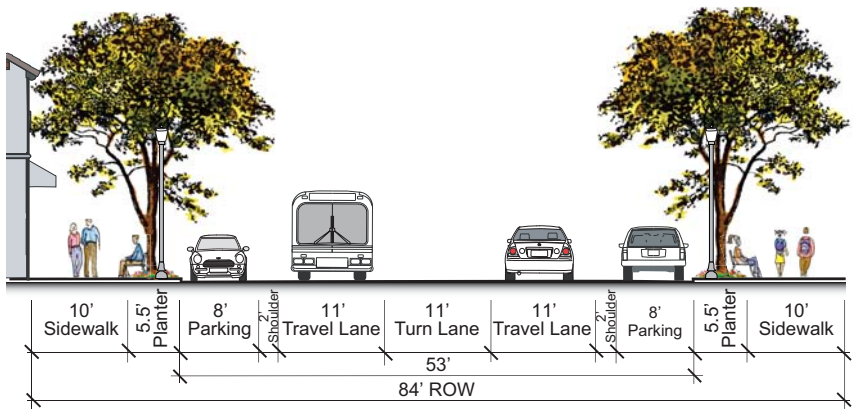

State Street - North of Perkins

Back of Street Sections- Page 1

State Street Cross-Sections

Existing

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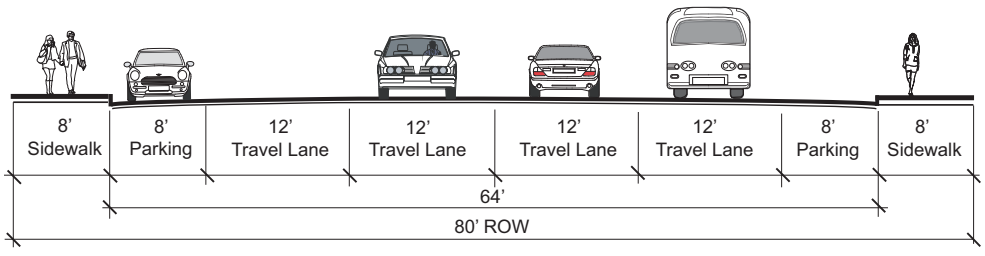

State Street - North of Smith

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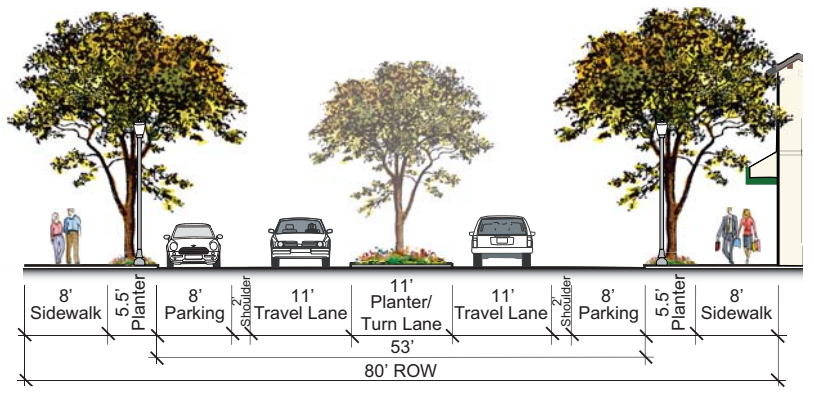

State Street - North of Smith

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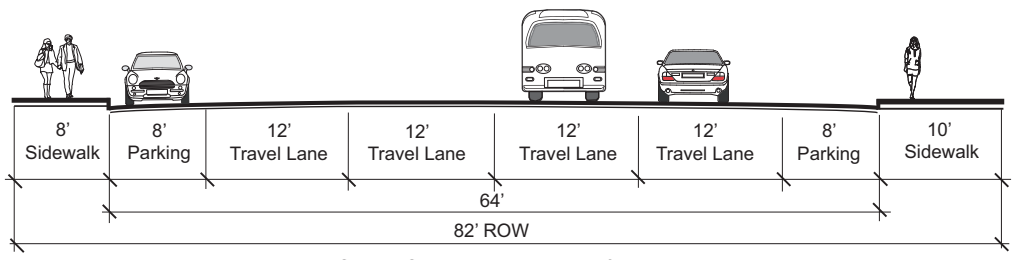
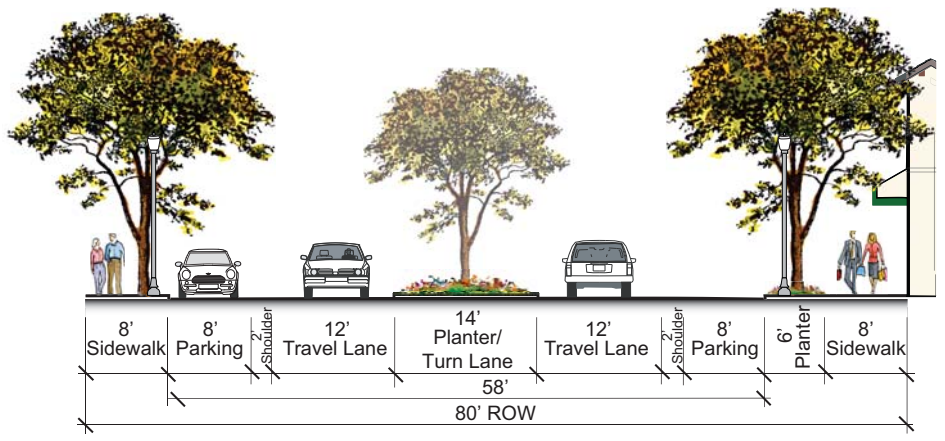


State Street - North of Henry

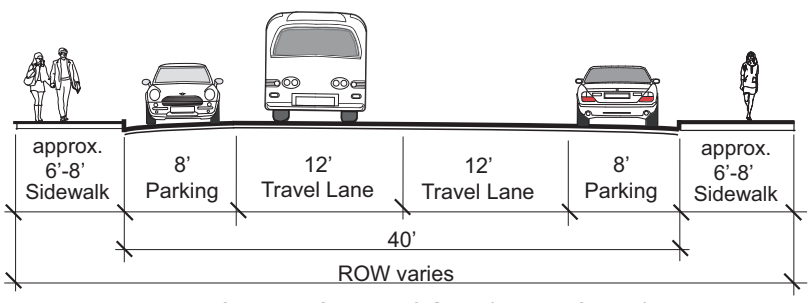


State Street - North of Henry

Main Street Cross-Sections

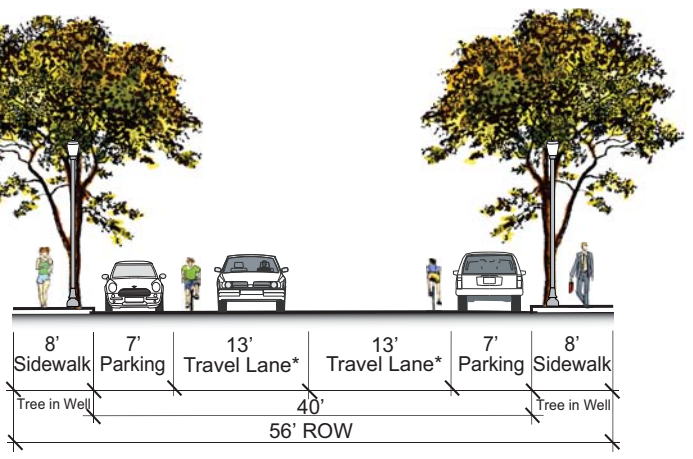
Existing

G



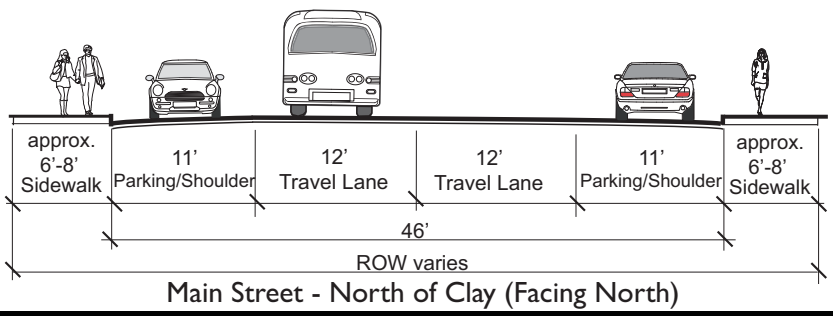
Main Street - South of Clay (Facing South)

Proposed

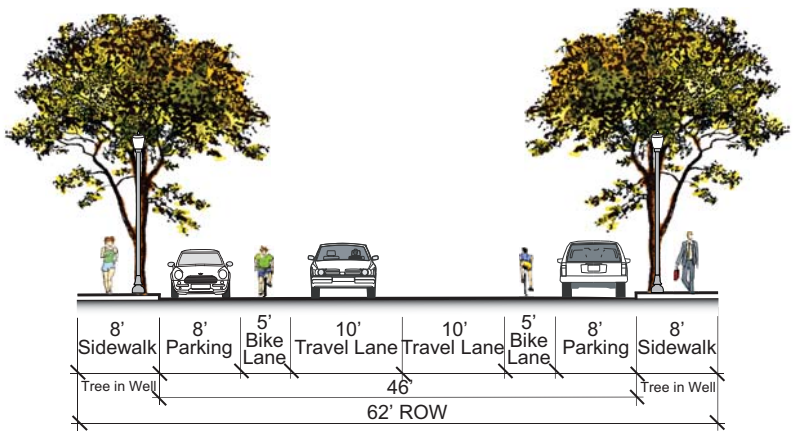


Main Street - South of Clay (Facing South)
*sharrows - shared lane marking for bicycles

H



Main Street - North of Clay (Facing North)



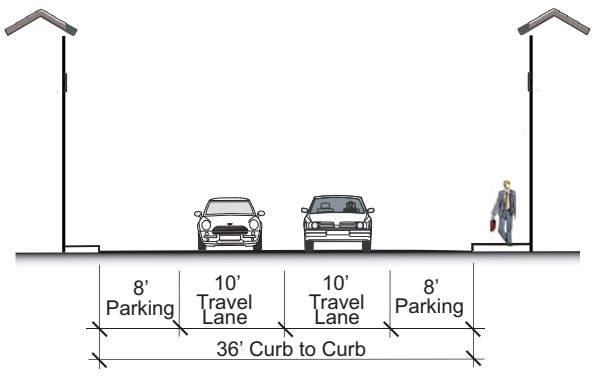
Main Street - North of Clay (Facing North)

Back of Street Sections- Page 2

Standley Street Cross-Sections

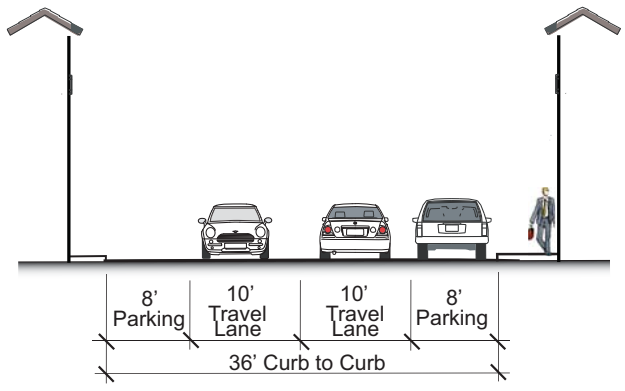
Existing

I



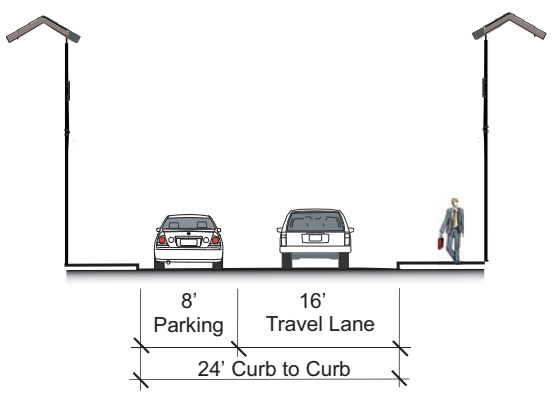
West of State St.

Proposed

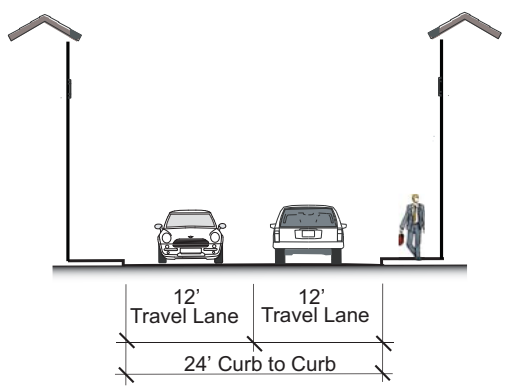


West of State St. (one-way street converted to two-way)

J



East of State St.

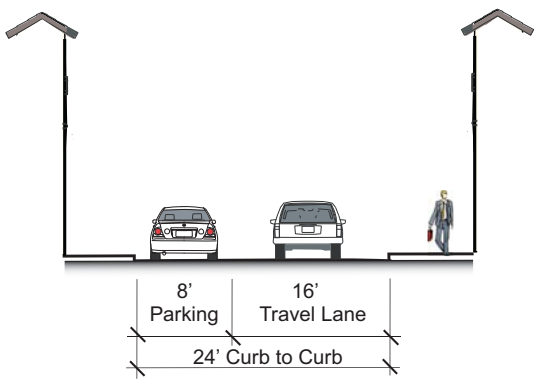


East of State St. (one-way street converted to two-way with no parking)

Henry Street Cross-Section

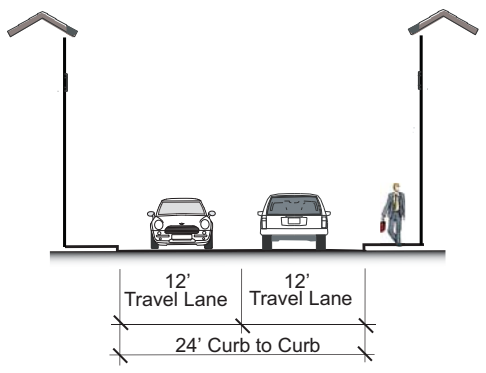
Existing

K



West of State St.

Proposed



West of State St. (one-way street converted to two-way with no parking)

Back of Street Sections- Page 3

The following summarizes notable changes from the Draft Plan:

A) Traffic Circulation Changes

1) Lane Reconfigurations
No changes were made to the lane reconfigurations proposed in the Draft Plan.

2) Signals
New traffic signals were added at the intersections of Gobbi Street and Main Street, and Main Street and Perkins Street. This would help improve traffic circulation.

3) Side Streets
The traffic modifications to Smith Street were left out, meaning that Smith Street would remain as-is with one-way travel heading west. Retaining Smith Street as a one-way street would ensure that adjacent businesses have ample room for loading zones.

B) Diagonal Parking
All proposed diagonal parking would be at 30 degree rather than 45 degree angles as originally proposed in the Draft Plan. Diagonal parking was added to the south side of Perkins Street between State Street and School Street. This would remove on-street parallel parking on the north side of Perkins Street, and allow widened sidewalks on both sides. Also, diagonal parking is no longer recommended north of Henry Street on State Street. The resulting added width would allow wider sidewalks on both sides of the street, a widened sidewalk extension, and parallel parking on both sides.

C) Bicycle Lanes
No changes were made to the bicycle lanes proposed in the Draft Plan.

D) Bulb-outs and Mid-Block Extensions
No changes were made to the bulb-outs and mid-block extensions proposed in the Draft Plan.

E) Intersection Treatments and Gateways
Intersection treatments were added to Gobbi Street and State Street, and Gobbi Street and Main Street to delineate the southern gateways to the Downtown.

F) Median
A raised median was added to State Street between Gobbi Street and Mill Street, removing on-street parallel parking on both sides. A small raised pedestrian refuge island was added on State Street at the south side of the Church Street intersection. Given that one-way travel on Smith Street would be retained, the raised median proposed in the Draft Plan on State Street between Smith Street and Henry Street would be extended further south to the intersection since a left turn lane is no longer necessary. Also, since there would no longer be diagonal parking north of Henry Street on State Street, two raised medians were added between Henry Street and the proposed northern gateway. Space between these two medians would allow left turn movements for traffic heading north on State Street and wanting to enter driveways on the west side of the street.

G) Sidewalks
No changes were made to the sidewalk widening proposed in the Draft Plan.

H) Trees

No changes were made to the street trees proposed in the Draft Plan. Street trees on State Street and Main Street would be consistent with the City's *Downtown Perkins and Street Code* tree list and would add character to Ukiah's streets without interfering with current utilities, signs, and other infrastructure. Given Ukiah's hot and dry summer weather, RRM proposes native, drought-tolerant street trees that would be carefully selected and spaced depending on their respective planter sizes to encourage growth and long-term survival. See "K," Streetscape Amenities, below for a list of recommended street trees.

I) Crosswalks

No changes were made to the paved crosswalks proposed in the Draft Plan.

J) Street Furniture

No changes were made to the street furniture proposed in the Draft Plan. See "K," Streetscape Amenities, below for a list of recommended street furniture styles.

K) Streetscape Amenities

The following are recommended street tree species and street furniture/material styles for State Street and Main Street within the downtown. These particular options were chosen because of their distinctiveness and ability to contribute to Ukiah's historic character. See the *Downtown and Perkins Street Code* for a complete description of the following street trees, including planting information.

Recommended Street Trees

Common Name *Scientific Name*	Location	Minimum Spacing	Example Image
Interior Live Oak *Quercus wislizanii*	State Street	40'	

Common Name *Scientific Name*	Location	Minimum Spacing	Example Image
Littleleaf Linden *Tilia cordata 'Greenspire'*	State Street (alternate)	35'	
Fruitless Olive *Olea europea 'Swan Hill'*	State Street- accent trees for designated intersections	30'	

Common Name *Scientific Name*	Location	Minimum Spacing	Example Image
Valley Oak *Quercus lobata*	State Street- accent trees for Gibson Creek gateway	60’	
Holly Oak *Quercus ilex*	Main Street	40’	

Common Name *Scientific Name*	Location	Minimum Spacing	Example Image
Washington Hawthorne *Crataegus phaenopyrum*	Main Street- accent trees	30'	

Recommended Street Furniture and Materials

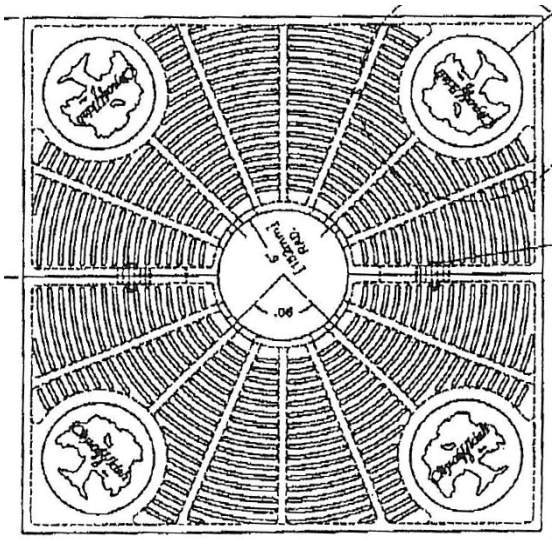
Model Information	Example Image
Benches	
Victor Stanley, Inc. Framers Modern Series, Model FM-324 Recycled wood slats with steel frame http://www.victorstanley.com:80/products/printVersion.aspx?id=368	

Model Information	Example Image
Bollards (With Lights)	
Olympic Foundry Model CB-F Lighted Cast aluminum and ductile cast iron LED lighted bollard (black color) http://www.fairweathersf.com/led/index.php?model=CB-F-LIGHTED	
(Alternate) Olympic Foundry Model CB-C Removable cast aluminum and ductile cast iron bollard http://www.fairweathersf.com/cast_bollards/index.php?model=CB-C	

Model Information	Example Image
Street Lights	
King Luminaire • *Streetlights should include shields to direct lighting toward the ground and reduce light pollution.* • *Street lights should be approximately 12-16 feet in height and placed approximately 40-60 feet apart.* • *Light poles should include banner attachment and planter arms* <u>Pole:</u> The Community Millennium Series, Model KM13FC One piece tapered cast aluminum pole with octagonal base http://www.stresscrete.com/king-luminaire-product/poles/pole-info.asp?type=16&product=61&model=24	
<u>Luminaire (non-LED option):</u> K56 Tudor and Cleveland Luminaire Historic style in heavy-duty aluminum casting; available in glass, durable polycarbonate or high impact UV resistant acrylic http://www.stresscrete.com/king-luminaire-product/luminaires/luminaire-info.asp?style=2&type=1&product=7&model=110	

Model Information	Example Image
Street Lights (continued)	
Luminaire (LED option): K136R Regency LED Luminaire Historic acorn shape in heavy duty aluminum casting with LED Input Watts 60W (5000 Series); globe available in durable polycarbonate or high impact UV resistant acrylic http://www.stresscrete.com/king-luminaire-product/luminaires/luminaire-info.asp?style=2&type=32&product=88&model=236	
Bicycle Racks	
Secure Site Design, L.L.C. Cycle Sentry Series, Model BRHS-101 Circular steel bike rack (black color) http://www.securesitedesign.com/products/?mode=prodDetail&id=19&catId=4	

Model Information	Example Image
Trash Receptacles	
Victor Stanley, Inc. T Series, Model T-32 Vertical steel bars flared at the top (black color) http://www.victorstanley.com:80/products/printVersion.aspx?id=44	
Crosswalk Paving	
Cobblestone paving material at crosswalks bracketed with 2' concrete bands	

Model Information	Example Image
Crosswalk Paving	
(Alternate) Interlocking pavers bracketed by typical crosswalk painting	
Tree Grates	
City of Ukiah Tree Grates Material: Cast gray iron ASTM A-48, Class 358 Finish: No paint <u>3 Sizes:</u> 36" each side Component Nos.: (2) PCS. 8704-XXXX Equipment: D87040010: K87040010 (New Corner Logos) 48" each side Component Nos.: (2) PCS. 8710-XXXX Equipment: D87100001: K87100001 (New Corner Logos) 60" each side Component Nos.: (2) PCS. 8712-XXXX Equipment: D87120001: C87120001 (New Corner Logos)	

VI) Infrastructure

In July of 2008, RRM's engineering department performed an assessment of the site. Investigation was performed through interviews with city staff, field inspection, and review of existing utility maps and GIS data. These conditions provided a baseline for improvement plan designs and estimated implementation costs.

A) Existing Condition Constraints

- High ground water table is only 3 to 4 feet below surface in some places.
- Sewer lines date back to 1897 and may require replacement in the near future which if done in conventional methods would require trenching in the street.
- Sewer lines are predominantly located along the center of the street which would affect whether trees are planted in a median.
- Waterlines run under the sidewalk or just off the curb along both sides of State Street which could affect location of street trees.
- Storm Drain projects are planned for Mill Street, Perkins Street and Clay Street in the near future.
- Storm Drain inlets are located at intersections which would affect bulb-outs because movement of basins would be costly.
- Gas lines appear to run under the sidewalks on the east side of both streets and could affect location of street trees.
- According to the GIS data property lines extend into the sidewalks in numerous locations. This should be clarified.
- There are basements that extend under the sidewalk on the south side of Perkins Street just west of State Street and on the north east corner of Church Street and State Street.
- There is a tunnel under Church Street just west of State Street
- There are bridges that need improvement located on State Street between Scott and Henry Streets and on Main Street between Smith Street and Norton Ave.

B) Cost Estimate for Implementation of the Plan

Implementation of the Ukiah Downtown Streetscape Improvement Plan will require relocation of curb and gutter along State Street, construction of intermittent median islands, restriping of all traffic lanes, and undergrounding of all overhead utility lines. Overall cost of improvements is currently estimated at $3.8 million and $4.6 million with contingency.

1) Sidewalk Widening

Extension of the existing sidewalk will require saw cutting and removing the existing curb and gutter, removal of several feet of existing asphalt and concrete base, and grinding in of the remainder to match grade. Existing drain inlets on the uphill corner of intersections will need to be relocated to prevent storm water runoff from ponding behind bulb outs. Curb ramps eliminated by sidewalk extension at intersections will need to be replaced.

Improvement	*Unit Cost*		*Quantity*	*Cost*	*20% Contingency*
Relocate Inlets	$8,800	ea	10	$88,000	$105,600
Curb & Gutter	$30	lf	7,000	$210,000	$252,000
Saw cutting	$2	lf	7,000	$14,000	$16,800
Curb Ramps	$5,000	ea	30	$150,000	$180,000
Sidewalk	$6	sf	30,000	$180,000	$216,000
Relocate street lights	$1,500	ea	40	$60,000	$72,000
Sidewalk on Main St	$6	sf	5,600	$33,600	$40,320
Demo	$3	sf	35,000	$105,000	$126,000
Asphalt grinding	$0.50	sf	300,000	$150,000	$180,000
Asphalt overlay	$1.50	sf	300,000	$450,000	$540,000
Patch Back	$10	sf	7,000	$70,000	$84,000
subtotal				***$1,510,600***	**$1,812,720**

2) Central Median Construction
Construction of central medians will require saw cutting, demolition, and removal of the existing asphalt and underlying concrete followed by construction of new curb and imported fill. The median will lie directly over the sewer which should be slip-lined to reduce the chance of fracture due to tree roots.

Improvement	*Unit Cost*		*Quantity*	*Cost*	*20% Contingency*
Curb	$20	lf	1,600	$32,000	$38,400
Saw cutting	$2	lf	1,600	$3,200	$3,840
Colored stamped concrete	$10	sf	10,000	$100,000	$120,000
Import	$30	yd	300	$9,000	$10,800
Demo	$3	sf	8,000	$24,000	$28,800
Sewer Slip lining	$75	lf	3200	$240,000	$288,000
Patch Back	$10	sf	1,600	$16,000	$19,200
Traffic Control	$75,000	ea	1	$75,000	$90,000
subtotal				***$499,200***	***$599,040***

3) Traffic Channelization
Extension of the sidewalk and addition of the median will reduce the road section and require reconfiguration of the lane striping. Transition to two travel lanes and a turn lane from four travel lanes will involve removal of all existing striping and markers, addition of some pedestrian push button polls, reconfiguration of the traffic signal loop modifiers, and relocation of street signs. All lane striping will need to be replaced including turn arrows and bike lanes.

Improvement	*Unit Cost*		*Quantity*	*Cost*	*20% Contingency*
Traffic Signal (main)	$350,000	ea	2	$700,000	$840,000
Pedestrian push buttons	$15,000	ea	28	$420,000	$504,000
Yellow striping	$1	lf	12,000	$12,000	$14,400
White striping	$1	lf	18,000	$18,000	$21,600
Pavement marking arrows	$40	ea	80	$3,200	$3,840
Signal loop modifiers	$60,000	ea	4	$240,000	$288,000
Removal of existing markers	$1,500	ls	1	$1,500	$1,800
Relocation of street signs	$400	ea	15	$6,000	$7,200
subtotal				**$1,400,700**	**$1,680,840**

4) Utility Undergrounding

Utility undergrounding will require running conduit the length of Main Street and down most of State Street with the exception of from Clay Street to Henry Street. The process will also include providing underground service to all parcels and buildings currently serviced by the overhead system.

Improvement	*Unit Cost*		*Quantity*	*Cost*	*20% Contingency*
Utility undergrounding (state)	$60	lf	1,920	$115,200	$138,240
Utility undergrounding (main)	$60	lf	3,100	$186,000	$223,200
Utility service to buildings	$350	ea	90	$31,500	$37,800
subtotal				***$332,700***	***$399,240***

Implementation of the project in phases may lead to additional costs associated with traffic control and temporary traffic signage.

VII) IMPLEMENTATION

The approval of the Ukiah Downtown Streetscape Improvement Plan will enable the City to position itself to secure state and federal funds for implementation of the plan improvements. A phased approach to implementation will allow the City to tackle the project early and work incrementally toward implementation of the elements described in this plan and supporting illustrations. The conceptual plans provide a long term vision for the State Street and Main Street corridors through downtown Ukiah and provide a guide for the City as it continues to maintain and upgrade infrastructure and provide community services. The following provides a summary of potential phasing and several possible funding sources for construction and maintenance of the proposed improvements.

A) Strategies for Implementation

This section describes potential actions or next steps toward implementing the Ukiah Downtown Streetscape Improvement Plan (the Plan). This includes approval of the roadway

lane reconfigurations and streetscape design improvements, additional studies, and capital improvement updates.

1) Actions Items

The next steps of action are provided in descending order of importance. However, some steps will need to be executed simultaneously and are described as such.

Step 1: Approval of the Ukiah Downtown Streetscape Improvement Plan

The first step to implementing the Plan is for the City Council to approve the Plan and Final Report. Once approved, the City and agencies will have a guiding document to begin applying for funding and grants to help implement the Plan.

Step 2: Develop a Funding Strategy

Developing a funding strategy requires identification of the funds that would be appropriate for the improvements for the corridor, and to assign or hire a grant administrator to oversee the process as described below.

a. Determine Which Funds to Pursue

The City should target appropriate funding streams for the capital improvements and maintenance of streetscape improvements. Earmarking funds today will establish a base of matching funds for grants in the near future (refer to Funding section below).

b. Appoint a Grant Administrator

The City will need to appoint or hire a person or team to begin to actively pursue public grant monies. A grant administrator will need to act on the City's behalf to oversee the application process and to make sure the terms of any grants awarded are fulfilled. The grant team will need to identify specific funding opportunities, coordinate specific grants with the appropriate portions of the project and complete grant applications within the required time frame.

Step 3: Apply for Grants to Fund the Streetscape Improvement Plan

The City should be prepared to apply for grants to fund the preparation of design development and construction documents for the Streetscape Improvement Plan for State Street and Main Street in the downtown area. This includes the preparation of engineered road and streetscape improvement drawings and specifications in order to construct the new improvements (including road reconfigurations, landscaping, and furniture palette) as delineated in the Streetscape Design Concepts. A phased approach is recommended that allows for staggered funding cycles and coordination with other public improvements projects.

Step 4: Prepare the Streetscape Improvement Plan RFP Package

Upon obtaining grant funding, proceed with hiring an engineering and landscape architecture firm, and commence with producing engineered construction drawings and specifications for the Streetscape Improvement Plan.

Step 5: Environmental Review and Permitting

Any publicly-funded project is required by law to comply with the terms of the California Environmental Quality Act (CEQA), another potentially lengthy process, before construction can begin. The City should begin applying for permits and undergoing environmental review during the design and engineering phase as soon as a definite

scope of improvements has been determined. This will allow a resiliency in both processes: the review will consider all of the potential impacts, and improvement designs will be revised based on Initial Study review. Costs associated with environmental review vary based on the scope of work and permits required.

Step 6: Private Property Owners Negotiations
As soon as the Development Plan has been approved, negotiations with property owners should begin for any necessary public access and right-of-way negotiations, and to facilitate any shared parking agreements (as a result of potential driveway consolidations).

Step 7: Establish a Maintenance Plan
Before construction for the streetscape begins, the City should establish a plan for the maintenance of the public improvements. It should include landscaping, lighting, furniture and walkway maintenance. The City will need to examine the alternative methods available and decide on the most affordable and feasible one for the downtown corridor. Alternatives may include: City Public Works Department as lead agency, creating a Landscape & Lighting District, or creating a Business Improvements District. These programs should be designed to support and complement the efforts currently implemented by the Ukiah Chamber of Commerce and Ukiah Main Street Program.

Step 8: Streetscape Construction and Phasing
Once construction documents are completed and approved and construction funding is in place the construction documents will be put out to bid and installation of public improvements can begin. Part of this process will require a construction manager to oversee the phasing of installations and coordinate the improvements with agencies such as PGE if any undergrounding of utilities is to take place.

A strategic phasing of the improvements may include the following:

- An initial step may include restriping the roadways per the prescribed lane and parking widths determined by W-Trans in the Traffic Analysis (see Appendix C). The restriping could include the reconfiguration of Standley Street and Henry Street from 1-way to 2-way streets to improve the efficiency of the traffic flow through the downtown area.
- It is anticipated per the Traffic Analysis that the parallel parking in front the plaza downtown will remain parallel until driving behaviors adapt slightly slower speeds consistent with a pedestrian-oriented environment. Once that occurs the parallel parking in that area can be reconfigured to diagonal parking.
- The final phase would include integrating the remainder of the improvements described in this report including the widening of sidewalks along State Street and the prescribed landscaping and streetscape amenities throughout the downtown corridor.

B) Funding the Downtown Improvement Plan Program

In implementing the Ukiah Downtown Streetscape Improvement Plan, it will be essential to develop long term funding strategies to design, construct, and maintain the improvements envisioned in this Plan.

The primary purpose of this section is to identify and briefly describe potential funding sources and financing vehicles for the public costs associated with the Improvement Program recommended by the Downtown Streetscape Improvement Plan.

1) The Process Overview

Keeping track of potential funding sources is a full time job. Many cities retain a full time staff person for this function. There are literally thousands of potential sources. There are also hundreds of publications and web sites that have information on these sources, and each source has different requirements for the activity, matching funds, application procedures, qualifying criteria, and so forth.

Many of these funding programs are undergoing constant changes in their rules and guidelines. In some cases this means that even the participating lenders are not familiar with the current rules and must be guided through the process. It will require an ongoing effort to seek out and apply for various grants and loans as implementation proceeds.

There are several important points to be kept in mind with regard to all of these funding sources:

- Except where indicated, most of these sources can be used for implementation and construction activities.
- Many sources require that a specific number of jobs be created at certain levels of funding and many funding sources are specifically aimed at existing businesses.
- Some sources may require a matching contribution from the recipient or from the private sector.
- All of these programs are very competitive and generally receive between 5 and 10 applications per grant award.

2) Who Applies for Funding

Applications for most grant programs would need to be submitted by the City. Applications that demonstrate a partnership between agencies are viewed favorably. In most cases additional planning would be required to establish assessment district boundaries or conduct a nexus analysis to impose fees to cover ongoing maintenance expenses.

The table below presents a summary of the salient characteristics of each funding source and the agencies administering these funds.

KEY CHARACTERISTICS OF POTENTIAL FUNDING SOURCES for Ukiah Downtown Streetscape Improvement Plan

Agency/Program	Focus on Bike/Ped	Maximum Grant	Next Round
A. MCOG Programs			
Overall Work Program (Transportation Planning)			
State Transportation Improvement Program (STIP)		varies	cyclical (Dec 2009)

Regional Surface Transportation Program Funds (RSTP)-special projects		$100,000 total	annual
Transportation Enhancement Program (TE)-Regional	X	$2 m total	2010
Transportation Development Act (TDA)-bike funds	X	$50,000	annual
STP d(1)		varies (average $100,000)	annual
Prop 42 (Traffic Congestion Relief Program—TCRP)		Average $64,000 per year	quarterly
C. Caltrans Programs			
State Highway Operations and Protection Plan (SHOPP)		fully committed	cyclical
Transportation Enhancement Program (TE)-Inter-Regional	X	none stated	2008
Safe Routes to School (Highway2S)	X	$1 m	annual
Bicycle Transportation Account (BTA)	X	$1.25 m	annual
Environmental Enhancement & Mitigations Program (EEM)		$350,000	annual
Federal Exchange and State Match Programs		$100,000	annual
D. State Treasurer Programs			
Sustainable Communities Grant and Loan Program (SCGL)		$350,000	annual
E. Coastal Trail and Planning Grants			
Grants-for Coastal Trail	X	none stated	ongoing
F. State Housing and Community Development Programs			
Community Development Block Grants (CDBG)-Economic Development		$500,000	ongoing
G. Federal Programs			
USDA-Rural Business Enterprise Grants (RBEG)		$200,000	annual
Highway Safety Improvement Program (HSIP)		$900,000 m	annual
Safe Routes to School Program (HighwayTS)	X	$1 m	annual
Community-Based Transportation Planning and Environmental Justice: Context Sensitive Planning Grants		$300,000	Annual or 2 years
Recreational Trails Program (RTP)			Annual (Oct 2009)
H. Private Funding Programs			
Foundations		varies	ongoing
Corporate Sponsors/Fundraising			
I. Pacific Gas & Electric Company Programs			
Undergrounding			
J. Local Financing Vehicles			
Development Impact Fees (DIF)			
Benefit Assessments			
Private Business Improvement District (PBID)			
Mello-Roos Community Facilities Act			

3) The Programs

a. MCOG Programs

i) STIP Funds

STIP – Bicycle & Pedestrian 5% Program. In 1998, MCOG adopted a modal split funding formula which dedicated 5% of the region's State Transportation Improvement Program (STIP) funding to bicycle and pedestrian projects. A total of $391,000 was awarded to local agencies for bicycle and pedestrian projects in the 2000 Regional Transportation Improvement Program (RTIP) through a local, competitive process. In the 2002 STIP, bicycle and pedestrian projects received $1,262,000 in funding, which included funding reserved from the 2000 STIP Augmentation. Unfortunately, no new funding was made available to the region in the 2004 or 2006 STIP cycles. The modal split will be reconsidered by MCOG when sufficient STIP funding is once again available to the region. Future cycles of the Bicycle & Pedestrian 5% Program represent an outstanding opportunity to implement improvements indentified in the Ukiah Downtown Streetscape Improvement Plan.

ii) RSTP Funds

Most shares are passed through to the County and cities on a formula basis. MCOG retains up to $100,000 per year for partnering on important regional projects.

iii) Transportation Development Act (TDA) Article 3 Funds

Transportation Development Act (TDA) Article 3 funds are generated from State gasoline sales taxes and are returned to the source counties from which they originate to fund transportation projects. Article 3 funds provide a 2 percent set aside of the County TDA funds for bicycle and pedestrian projects. Eligible projects include right-of-way acquisition; planning, design and engineering; support programs; and construction of bicycle and pedestrian infrastructure, including retrofitting to meet ADA requirements, and related facilities. MCOG awards approximately $50,000 per year from TDA funds to bike and pedestrian projects. These funds can be used as matching fund requirements for state and federal grants.

Administering Agency:	MCOG
Project Type:	Construction, Planning, Maintenance, Education
Eligible Projects:	Bicycle, Pedestrian
Application Deadline:	Varies, Contact MCOG

iv) STP d(1)

The revenue for this funding source varies on a yearly basis. For the last several years the City received an average of $100,000 per year. The primary funding restriction is that these funds may only be utilized on

streets classified as collector and above. This funding is typically an annual distribution from the Mendocino Council of Governments to the City of Ukiah.

Administering Agency: MCOG

v) Prop 42 (Traffic Congestion Relief Program—TCRP)

These funds may be diverted at the State level due to budget emergencies. However, when funding is distributed, the City receives an average of $64,000 per year. TCRP funds are distributed quarterly.

Administering Agency: State

c. Caltrans Programs

i) Transportation Enhancement (TE) Program

TE is a Federal funding source that provides for transportation-related capital improvement projects that enhance quality-of-life, in or around transportation facilities. TE projects must fall within twelve specific categories, including the provision of facilities for pedestrians and bicycles, the provision of safety and educational activities for pedestrians and bicyclists, and preservation of abandoned railway corridors (including the conversion and use thereof for pedestrian or bicycle trails). The TE program is authorized by the Federal government in 6-year cycles under the federal surface transportation bill.

Administering Agency:	Caltrans / MCOG
Project Type:	Construction
Eligible Projects:	Varies
Application Deadline:	Varies
Web Link:	http://www.dot.ca.gov/hq/TransEnhAct/TransEnact.htm

Regional TE
These funds are awarded by MCOG. The entire recent round of funding has been awarded. The next round of funding is not expected until 2010.

Inter-regional TE
These funds are awarded by Caltrans for projects on State highways. This is a reimbursable capital-improvement program. Projects must comply with federal environmental requirements and other federal regulations, including those for considering disadvantaged business enterprises in consultant selection and for paying prevailing wages during construction. Transportation Enhancement activities must have a direct relationship – by function, proximity or impact – to the surface transportation system. Activities must be over and above normal projects, including mitigation.

d. State Treasurer Program

i) Sustainable Communities Grant and Loan Program (SCGL)

This program is sponsored by the State Treasurer's Office in their role as the California Pollution Control financing authority. The grants are intended to encourage sustainable development which includes infill development, proximity to transportation, and promotion of economic development in low income areas, support alternative transportation and so forth. The funds can be used for planning or implementation. The maximum grant amount is $350,000. Total annual amount statewide is $2.5 million. Counties and cities are eligible. Counties can submit one application per round. Application solicitation is currently awaiting funding authorization but is expected by the end of the year.

e. State Housing and Community Development Programs

i) Community Development Block Grants (CDBG)

The CDBG program is a flexible program that provides communities with resources to address a wide range of unique community development needs. The program provides money for streetscape revitalization, which may be largely comprised of pedestrian improvements. Federal Community Development Block Grant Grantees may "use CDBG funds for activities that include (but are not limited to): acquisition of property for public purposes; construction or reconstruction of streets, water and sewer facilities, neighborhood centers, recreation facilities, and other public works; demolition; rehabilitation of public and private buildings; public services; planning activities; assistance to nonprofit entities for community development activities; and assistance to private, for profit entities to carry out economic development activities (including assistance to micro-enterprises)."

Administering Agency:	CA Dept. of Housing and Urban Development
Project Type:	Construction
Eligible Projects:	Various Public Works Improvements
Application Deadline:	On-going
Web Link:	http://www.hcd.ca.gov/fa/cdbg/about.html

ii) CDBG Planning & Technical Assistance

These Planning and Technical Assistance grants offer up to $35,000 each. Each county is eligible for two grants per year, one for General Allocation projects (housing and infrastructure) and one for Economic Development projects.

f. Federal Programs

i) USDA-Rural Business Enterprise Grants (RBEG)

These grants are available to cities and non-profits. The primary criterion is the creation of jobs and economic development, with an emphasis on small businesses. They can be used for training, RLFs, technical assistance, capital expenditures, parking, façade improvements and other uses. Not all costs are eligible for Rural Business Enterprise Grant funds. RBEG funds are intended to jump-start new projects to meet the critical needs portion of the project. They typically range from $100,000 to $200,000. Notification of Funding Availability for the next round is expected in December. These grants are generally very competitive.

g. Private Funding Programs

i) Corporate Sponsors/Fundraising

Corporate sponsorship has become a major source of funding for large-scale projects with substantial public exposure. Corporate sponsors are potential sources of funding for facilities, where they can put their name on the facilities and/or special events they can be identified with. Possible sponsors include tourism-related companies (such as hotels) or local companies seeking goodwill in the community. Some communities have successfully used local fundraising campaigns to fund community amenities such as trails and landscaping.

ii) Foundations

Foundation giving is governed by specific guidelines that stipulate purposes for which grant money can be used, areas of foundation interest and geographic jurisdiction. Competition for foundation funding has become exceedingly competitive, with many foundations deciding to focus on social problems (housing, poverty, medical care, literacy, education, etc.). In most cases they are guided by some affinity for the project, such as location near a company facility or employee sponsorship. However, there are still foundations that provide funding for community facilities, amenities and beautification. A preliminary search conducted by Action Network identified several examples: American Express; America the Beautiful Fund: Keep America Beautiful, Inc., The Pew Charitable Trusts; PepsiCo Foundation; and State Farm Mutual Contributions.

h. Pacific Gas & Electric Company Programs

i) Undergrounding

AT&T, with PG&E, has an ongoing program to underground electrical wires under Rule 21A of the Public Utilities Commission (PUC). The

streetscape improvements should coordinate in every way possible with undergrounding projects.

i. Local Financing Vehicles

i) Development Impact Fees

AB 1600 regulates the way that impact fees are imposed. It requires that a nexus or connection be made between a fee and the type of development on which the fee is imposed. A development fee cannot be imposed to correct an existing problem or pay for improvements needed for existing development. Development Impact Fees do not require a vote of the people. Thus, in the case of Ukiah a nexus study would need to be conducted to demonstrate that future development will require certain improvements. Then assuming that an impact fee is approved, the funds would not be available until the new development occurred.

ii) Benefit Assessments

These are levies imposed within a designated district to finance a specific maintenance or capital improvements. The improvements must specifically benefit the properties. The levy can vary among properties depending on square ft or property frontage. To form an assessment district, 50% approval is required from the property owners. In some cases there are different tiers within the district which pay different assessments.

iii) Private Business Improvement District (PBID)

A PBID is financed through special assessments on commercial properties. Passage requires a 50% approval by the property owners in the District. The assessment must be re-approved every five years. Typically these revenues are used for public space maintenance, security, and promotion.

iv) Mello-Roos Community Facilities Act

The Mello-Roos Community Facilities Act was passed by the Legislature in 1982 in response to reduced funding opportunities brought about by the passage of Proposition 13. The Mello-Roos Act allows any county, city, special district, school district or joint powers of authority to establish a Community Facility Districts (CFD) for the purpose of financing of public improvements and services. The services and improvements that Mello-Roos CFDs can finance include streets, sewer systems and other basic infrastructure, police protection, fire protection, ambulance services, schools, parks, libraries, museums and other cultural facilities. By law, the CFD is also entitled to recover expenses needed to form the CFD and administer the annual special taxes and bonded debt. CFDs must be approved by a two-thirds margin of qualified voters in the district.

Property owners within the district are responsible for paying back the bonds. Pedestrian facilities are eligible for funding under CFD bonds.

Administering Agency:	Local Agency
Project Type:	Construction/Maintenance
Eligible Projects:	Various Public Works Improvements
Application Deadline:	None

v) Mitigations/Exactions
Mitigations can be imposed whenever a development requires approval by a local entity. Mitigations are imposed as a condition on a tentative map for private development projects. These conditions reflect on and off site mitigations that must be completed in order to be able to develop. Development agreements are another form of mitigation. Mitigations can include providing adequate pedestrian access, setbacks, parking requirements, lighting, signage, sidewalks, landscaping and so forth.

Appendix A: Opportunities and Constraints Map

Note: Contour lines are at 2 feet intervals

LEGEND

- Existing Parking
- Potential Road Connection
- Potential Pedestrian Street
- Gateway Opportunity
- Potential Landscape Improvement
- Potential Sidewalk Improvement
- Existing Crosswalk
- Decorative Paving Opportunity
- Existing Street Trees
- Existing Landscaping
- Potential Bridge Element
- Existing Traffic Light
- Existing Dirt Path
- Existing One-Way Street
- Possible Street Extension
- Traffic Control Opportunity

UKIAH DOWNTOWN STREETSCAPE IMPROVEMENT PLAN | OPPORTUNITIES AND CONSTRAINT MAP

Scale 1"=100'
JULY, 2008

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Appendix B: Workshop Results Summaries

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Ukiah Downtown Streetscape Improvement Plan

Public Workshop #1: Issue Identification, Priority Setting, and Design Charrette

July 15, 2008

Workshop Results Summary

I. Introduction

On Thursday, July 11, 2008, the first public workshop for the City of Ukiah Downtown Streetscape Improvement Plan was held in the Cabernet Room at the Ukiah Valley Conference Center. The purpose of this initial workshop was to obtain input on the issues and ideas that will need to be addressed in developing a streetscape improvement plan for the Downtown, to have workshop participants prioritize those ideas that were most and least important, and to then conduct a design brainstorming session to inform the future physical planning of the Downtown sections of Main Street and State Street.

Attendance at the workshop was unfortunately very low at only 10 people, the majority of which were City of Ukiah employees. RRM is interested in cooperating with the City to explore other publicity "campaign" options that would ensure better attendance at the next public workshop. As such the results of this workshop are not as meaningful as the input of a better representation from the community.

During the Issue Identification period, participant comments on the issues and ideas associated with each of the eight topic areas were recorded on the appropriate banners. Once completed, RRM facilitated a Priority Setting tape dot exercise to gauge participant preferences, after which the results were briefly recapped. Participants were then asked to work together at two tables to utilize what came out of the priority setting exercise and do some design brainstorming for improvements along Main Street and State Street.

This report summarizes the outcome of the Issue Identification and Priority Setting exercise, as well as the outcome of the design brainstorming session noting areas of commonalities and differences. The report also recommends alternative improvement programs that would be explored in two Alternative Concept Plans to be presented at the next public workshop tentatively scheduled for July 31, 2008.

II. Issue Identification and Priority Setting Exercise

A total of eight (8) topic banners were placed on the walls within the room. The topics were chosen based on the stakeholder interviews to solicit input from workshop attendees regarding any issues, concerns, or ideas associated with that particular topic. The eight topic areas were as follows:

- Walkability (Crossings & Walkways)
- Landscaping & Stormwater Features

- Street Furniture & Lighting
- Gateways
- Parking
- State Street
- Main Street
- Other

RRM Design Group facilitators went through the banners one at a time and participant comments were written on the appropriate banners. Upon completion of all of the banners, participants were then given tape dots to prioritize the issues by indicating their support or lack of support for the ideas. Those tape dots were distributed as follows:

- Two (2) large green tape dots indicating the *strongest support* on a topic area or statement under one of those topics.
- Twelve (12) small green dots indicating *support* for any of the statements.
- One (1) large red dot indicating *strongest opposition* to an idea or concept listed under the topic banners.
- Six (6) small red dots also indicating *lack of support* for a statement made under the banners.

The topic banners garnering the most voter activity were **"Walkability"** and **"State Street"** both with 27 votes, followed by **"Landscaping & Stormwater Features"** with 14 votes. These results indicate many of the attendees who participated in the exercise felt strongly about making the Downtown streetscape more pedestrian friendly and incorporating more natural features, especially on State Street.

The following is a summary of statements, descending from most active to least active, with votes expressed as percentages of the total votes on that topic banner. The first column states Support for the statement. The second column states Opposition toward the statement. The actual tallies of the tape dot exercise are attached at the back of this report.

Walkability (27 total dots) 7 votes- Most important topic

Greatest Support (GS), Support	**Great Opposition (GO) Opposed**
Bulb-outs to shorten crossings (18.5%)	
Reduce crossing distance on State (18.5%)	
More shade (14.8%)	
"History Walk" (7.4%)	3.7%
Introduce sidewalks where none (7.4%)	
Slow traffic on State (7.4%)	
Enhance ADA on both streets (3.7%)	
Lighting barrier at crossings (3.7%)	
Reduce straight-in parking	3.7% GO
Separation between traffic & sidewalk (3.7%)	

Traffic control at Smith & State	3.7%
Widen sidewalks on Main (3.7%)	
Improve crossing at Smith & State	

State Street (27 total dots) 2 votes– Second most important topic

Greatest Support (GS), Support	**Great Opposition (GO) Opposed**
Space for outdoor café (seating on sidewalk) (18.5%)	
Bulb-outs (14.8%)	
Improve pedestrian crossings (14.8%)	
Beautification (11.1%)	
More street trees (7.4%)	
Reduce to 2 lanes	7.4%
Soften edges of buildings at walkway (7.4%)	
Traffic calming (7.4%)	
Diagonal parking	3.7% GO
New pavement surface (3.7%)	
Ways to dampen noise (3.7%)	
Not a pleasant place to walk	

Landscaping & Stormwater Features (14 total dots) 2 votes- Third most important topic

Greatest Support (GS), Support	**Great Opposition (GO) Opposed**
More trees (21.4%)	
Wider sidewalks with street trees (7.1% GS, 14.3%)	
Bioswale strips as way to reduce pavement (7.1%)	7.1%
Replenish creeks (14.3%)	
Street-level landscaping (14.3%)	
Avoid allergenic trees (7.1%)	
Stormwater cells	7.1%
Diversity of trees to avoid disease	
Pear trees= hearty	
Safety considerations (fire rescue access)	

Street Furniture & Lighting (13 total dots) 1 vote– Fourth most important topic

Greatest Support (GS), Support	**Great Opposition (GO) Opposed**
Vintage lights reflecting late 1800s (23.1%)	
Cohesive signage (15.4%)	
Good lighting at crosswalks (15.4%)	
Incorporate seating into green areas & with trees	

(15.4%)	
Outdoor seating at cafes (15.4%)	
More public places to sit (7.7%)	
Natural-looking trash containers (as at School St) (7.7%)	
Consistent trash & recycling containers	
Limit light pollution	
More & safe bike racks	

Main Street (13 total dots) Fifth most important topic

Greatest Support (GS), Support	**Great Opposition (GO) Opposed**
One-way couplet on State & Main (7.7% GS, 7.7%)	15.4%
Traffic calming (15.4%)	7.7%
Upgrade parking lot lands & paving (23.1%)	
Underground utilities (7.7% GS, 7.7%)	
"Street printing" or special treatment at Main & Perkins (7.7%)	
Too plain by Norton	

Gateways (11 total dots)

Greatest Support (GS), Support	**Great Opposition (GO) Opposed**
Bridge at Gibson Creek (18.2%)	
Public art (18.2 %)	
Roundabout at Perkins & Orchard (9.1%)	9.1%
Coordinate with varying streets (9.1%)	
Green gateways (9.1%)	
Intersection at Perkins & State (9.1%)	
Roundabout or gateway at Gobbi & State (9.1% GS)	
Ukiah Theater sign (9.1%)	
Overhead banners	
Roundabout at Gobbi & Main	

Parking (2 total dots)

Greatest Support (GS), Support	**Great Opposition (GO) Opposed**
Better landscape & development of private parking on Main (100%)	
Better spacing of loading zones	
Consolidate driveways & parking on Main (reduce curb cuts)	
Retain diagonal parking	

Other (2 total dots)

Greatest Support (GS), Support	Great Opposition (GO) Opposed
TGateway at 101 and Perkins (50%)	50% GO

h

The following summarizes the banner statements with the most activity in terms of statement support or opposition.

1) **Strong Support**
   - Bulb-outs to shorten crossings
   - Provide more shade, more trees throughout
   - Improve pedestrian crossings on State, Reduce crossing distance, include Bulb-outs
   - Beautification on State Street
   - Wider sidewalks with street trees, Space for outdoor café (seating on sidewalk) on State
   - Vintage lights reflecting late 1800
   - Upgrade parking lot lands & paving
   - Enhance Bridge at Gibson Creek on State Street

2) **Support**
   - Slow traffic on State, provide Traffic calming
   - Introduce sidewalks where none
   - More street trees on State
   - Soften edges of buildings at walkway on State
   - Street-level landscaping
   - Replenish creeks
   - Incorporate seating into green areas & with trees
   - Good lighting at crosswalks
   - Cohesive signage
   - Underground utilities on Main
   - Public Art
   - Better landscape & development of private parking on Main

3) **Nearly Equal Support and Opposition**
   - "History Walk"
   - Bioswale strips as way to reduce pavement
   - One-way couplet on State & Main
   - Traffic calming on Main
   - Roundabout at Perkins & Orchard
   - Gateway at 101 and Perkins

4) Opposition

- Reduce straight-in parking
- Traffic control at Smith & State
- Diagonal parking on State
- Reduce State to 2 lanes
- Stormwater cells

5) Controversial Issues- these items will require further discussion since there was not agreement on them:

- Bioswale strips as way to reduce pavement
- One-way couplet on State & Main
- Traffic calming on Main
- Roundabout at Perkins & Orchard
- Gateway at 101 and Perkins

III. Design Charrette Exercise

Of the two (2) tables participating in the design brainstorming exercise, one table looked at all of Downtown Ukiah, identifying current hazard areas and adding landscaping, sidewalks, bulb-outs, one-way streets, and a gateway. The other table focused more on a "core area" of the Downtown, defined as the sections of State Street and Main Street between Clay Street and Henry Street. This table added benches/seating, street lighting, sidewalks, bulb-outs, trees, a decorative crosswalk, a roundabout, a bridge element, and an opened creek.

Of the features drawn on the plan these were the results.

A. Gateway Elements

Both tables drew gateway elements at the point where the creek crosses State Street, one of which showing a bridge feature. One table added a roundabout at Main Street and Gobbi Street that could be part of a gateway treatment.

B. Street Furniture

One table added benches/seating on every block, and more street lamps at crosswalks.

D. Pedestrian Elements

Both tables depicted changes that would make Main Street and State Street more pedestrian-friendly. One showed sidewalk additions all along Perkins Street east of Main Street and also highlighted a decorative crosswalk element at State and Perkins, as well as bulb-outs in the "core area" at the intersections of State and Perkins, State and Standley, State and Smith, Main and Perkins, Main and Standley, and Main and Smith.

The other table had sidewalk additions at the north end of Main Street in front of the trailer park, at the intersection of Main Street and Clay Street, and in front of the Grace Hudson Museum and Sun House. This table showed limited bulb-outs at the intersection of State Street and Gobbi Street on the northern side of State Street, as well as on the west side of State Street at the end of Norton Ave.

G. Streetscape Elements

Another common theme among both tables was a "greening" of Main Street and State Street. One table added street trees in the "core area" between Church Street and Henry Street. The other table drew landscaping in front of the theater on State Street as well as along both sides of State Street between Mill Street and Smith Street. This table also had landscaping along both sides of Main Street near Clay Street and Stephenson Street.

H. Hazards

One table noted intersection hazards at Main and Mill, Main and Clay, State and Seminary, State and Clay, State and Stephenson, State and Church, State and Smith, State and Henry, and Mason and Perkins.

I. Creek Daylighting

One table proposed opening up the creek all through the Downtown.

J. Traffic Changes

One table had a one-way couplet on State Street and Main Street between Gobbi Street and Norton Ave, with State going South and Main going North. The other table retained the existing two travel lanes in both directions and no parking changes on State Street, and two travel lanes and parallel parking on Main Street.

In terms of what can be learned from these drawings, it is apparent that the safety and comfort of pedestrians was an important issue. The beautification of State Street and Main Street mainly by means of additional trees, landscaping, and gateway elements was also a common theme. In general, the focus was on creating a distinct, pedestrian friendly Downtown.

IV. What Does It All Mean?

From the results of the tape dot exercise and the design charette, it is evident there was a dominating presence of City of Ukiah employees. Of the 10 people who participated in the exercise, 8 of them or nearly 80% of the attendees were key City players and stakeholders.

There are a number of findings and conclusions that can be derived from this first workshop. Among them are the following:

1. There was overwhelming support for improving the walkability, landscaping, and general aesthetics of the Downtown streetscape to reflect Ukiah's historical character. However, participants were split on whether changes to the existing traffic system were necessary to achieve these goals.

2. With respect to parking, attendees at the workshop did not give much attention to the issue, in contrast to the key stakeholder interviews in which parking was a main concern. Participants were split on the issue of parking, generally supporting existing parallel parking over diagonal parking.

3. There was generally support for some type of vegetated landscape treatment along the streets, though exactly what these might look like was undecided.

4. There appeared to be consensus for restoring the creek or adding some type of creek element, with emphasis on a bridge element.

5. There was strong support for increasing the vitality of the Downtown streetscapes by encouraging more uses on the sidewalks such as outdoor restaurant seating.

V. Recommended Alternative Improvement Programs

Based on the feedback received at the key stakeholder interviews and the findings from the two exercises conducted at the first public workshop, two Alternative Streetscape Plans will be prepared for Main Street and State Street. The two different approaches and their elements suggested below retain the two-way street circulation on both streets, should the City wish to explore the one-way couplet as proposed by the workshop participants this will require further discussion. To achieve the desired traffic calming we suggest converting to three lanes, two travel lanes and one center turn lane, with parallel on-street parking. This allows for wider sidewalks fro more usability and more landscaping to increase shade.

1. Focused Downtown Core Option

This option would focus major improvements to the Downtown streetscape within a core area centered around the historic portion of Downtown near the County Courthouse. Improvements outside of the core area but still within the Downtown could also occur but at a lesser degree. This option would concentrate on creating a distinct Center that would emphasize Ukiah's "Old Town." Improvements would include distinctive landscaping, special paving at crosswalks and at bulb-outs, and street furniture in this core area. Gateways would be on the form of a special feature at the north side of the plaza and at the creek crossing on State Street.

2. Expanded Downtown Option

This option would treat the larger Downtown of the project area with the same theme. Improvements would be throughout the Downtown rather than in the core area, and would include landscaping, special paving at crosswalks only, limited bulb-outs on State Street, and street furniture. Gateway features would be at the corner of State and Gobbi Streets and at Norton Avenue.

3. Common Elements to both Alternatives

The following improvements would be common features in both alternatives:

1. Gateway elements that would clearly signal one's entry into the Downtown area.
2. Bridge elements to highlight the creek.
3. A consistent and continuous network of sidewalks.
4. "Green streets" with expanded vegetated landscaping, a continuous canopy of substantial street trees, and other sustainable methods such as swales and permeable paving.
5. Street furniture consistent with a historical aesthetic.
6. Traffic calming measures.
7. Bulb-outs to reduce crosswalk lengths and to slow traffic.
8. An enhanced east-west connection between City Hall and the Grace Hudson Museum and Sun House.
9. Expanded sidewalk spaces for outdoor restaurant seating.
10. Street beautification methods such as decorative paving, public art, etc.
11. Enhancements to the Alex R. Thomas Plaza to increase shade, seating, and community interaction.

	Features	Focused Downtown Core Option	Expanded Downtown Option
1.	Gateways	Place at the core area entrances (at Plaza and at the creek crossing)	Place at the Downtown entrances (Gobbi Street and Norton Ave)
2.	Travel Lanes	Reduce to three lanes	Reduce to three lanes
3.	Sidewalks	State -Expand sidewalks. Main Street - Add sidewalks where they are lacking	State- Expand some sidewalks as pop-outs at restaurants. Main - Add sidewalks where they are lacking.
4.	Parking	Retain parallel parking.	Retain parallel parking
5.	Bike Lanes	Use Main Street	Use Rail Trail, share the road
6.	State St. Traffic calming	Add Bulb-outs and ornamental crosswalks	Round about at Gobbi Intersection
7.	Bulb-outs	Focus bulb-outs in the core area (both State & Main). Introduce some sidewalk pop-outs for outdoor dining	Provide bulb-outs at heavily used pedestrian intersections
8.	Alex R. Thomas Plaza	Redesign the plaza to be more inviting. Remove on-street parking at frontage with State St. and pop-out the sidewalk and landscape.	Enhance existing plan with more shade, seating, etc. Remove diagonal parking
9.	East-west connections	Create a pedestrian-only section on Church St between School St and State Street.	Strengthen east-west connections on Seminary Ave to Grace Hudson park.
10.	Street beautification & public art*	Focus intense landscaping in the core area, street trees in the remainder.	Distribute trees throughout the entire corridor, some landscaping at major intersections and in roundabout

* Note: The Green Street treatment on Main Street will result in no bike lanes and no on-street parking. Parking will need to be accommodated on-site and in parking lots.

Other ideas: Introduce arcades over the sidewalks for more shade, and may use the façade improvement program for maintenance requirement.

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Ukiah Downtown Streetscape Improvement Plan

Public Workshop #2: Considering the Preferred Plan

May 12, 2009

Workshop Results Summary

I. Introduction

On Tuesday, May 12, 2009, the second public workshop for the City of Ukiah Downtown Streetscape Improvement Plan was held in the Cabernet 2 Room at the Ukiah Valley Conference Center. The purpose of this workshop was to review the traffic and circulation improvements recommended by W-Trans, present the Preferred Concept Plan, and obtain feedback on the Preferred Concept Plan through a "Report Card" exercise. About 28 people attended the workshop.

This report summarizes the outcome of the Report Card exercise, as well as other comments that were gathered at the workshop.

II. Report Card Exercise

RRM distributed "Report Cards" to the workshop attendees which asked a series of questions to obtain feedback on the Preferred Concept Plan. The Report Cards were meant to gauge whether attendees generally preferred the existing or proposed street section configurations and whether they supported or opposed specific elements of the Plan.

26 Report Cards were collected. Of those who submitted a Report Card, 1 person indicated that they live in the project area, 9 people indicated that they own a business in the project area, and 5 people indicated that they own property in the project area. Participators also included one or more persons that live near Downtown Ukiah, work in the project area, patronize locally-owned businesses, are former business owner in the project area, are Mendocino Council of Government (MCOG) members, are City staff members, are members of Mendocino County ReLeaf, are members of the Main Street Program Board, are members of the Friends of the Palace, are City Council Members, manage local museums/attractions, and are Design Review Board Members.

The following table tallies the results of the first question on the Report Card exercise, which asked if participants preferred the existing or proposed street sections. Shaded cells indicate the majority vote.

	Existing	Proposed	Additional Written Comments
(A) State Street- South of Clay	2 votes (8%)	24 votes (92%)	• Take out parking on one side to add bike lane & 9-10' sidewalks • Like 3 travel lanes

(B) State Street- North of Clay	3 votes (12%)	23 votes (88%)	• Use 30 degree parking • Add a median & trees (2) • No diagonal parking (4) • Have 3 travel lanes • Crossing State on Church going west to east—need clear view of traffic traveling south on State • 10' travel lanes adequate, keep 9' sidewalks
(C) State Street- South of Perkins	2 votes (8%)	24 votes (92%)	• Add bike lane or sharrows, could eliminate one side of parking
(D) State Street- North of Perkins	2 votes (8%)	24 votes (92%)	• Need room for loading zone on east side of State • Add bike lane or sharrows
(E) State Street- North of Smith	2 votes (8%)	24 votes (92%)	• Add a signal light timed with Perkins and Standley • Like the planter/turn lane (even without bike lane), sharrows possible?
(F) State Street- North of Henry	1 vote (4%)	25 votes (96%)	• Use 30 degree parking • Add a median (2) • No diagonal parking (2) • Prefer 11' travel lanes or sharrows
(G) Main Street- South of Clay (Facing South)	1 vote (4%)	24 votes (96%)	• Add bike route signage • Slightly prefer separate bike lanes to sharrows
(H) Main Street- North of Clay (Facing North)	2 votes (8%)	24 votes (92%)	
(I)-(L) Standley, Smith, and Henry Streets—one-way to two-way conversions	8 votes (35%)	15 votes (65%)	• Unresolved solution • No left turn onto Smith

The following table tallies the results of the second question on the Report Card exercise, which asked participants to indicate which features of the Preferred Concept Plan they support.

Preferred Streetscape Concept Plan Features		**Support strongly**	**Support moderately**	**Oppose**
State Street				
1.	**Single travel lane in each direction with center turn lane/median**	20 votes (83%)	3 votes (13%)	1 votes (4%)
2.	**Timed traffic signals at the Standley St**	23 votes	3 votes	0 votes

	and Perkins St intersections to increase efficiency	(88%)	(12%)	(0%)
3.	**Diagonal parking adjacent to Alex R. Thomas Plaza**	13 votes (50%)	5 votes (19%)	8 votes (31%)
4.	**Diagonal parking north of Henry St**	10 votes (43%)	6 votes (26%)	7 votes (31%)
5.	**Sidewalk bulb-outs at most intersections**	23 votes (92%)	2 votes (8%)	0 votes (0%)
6.	**Sidewalk mid-block extensions along State St at Seminary Ave, Stephenson St, and Henry St**	18 votes (86%)	3 votes (14%)	0 votes (0%)
7.	**Raised median between Smith St and Henry St with trees and landscaping**	18 votes (75%)	4 votes (17%)	2 votes (8%)
8.	**"Bridge" gateway element where Gibson Creek crosses under State St**	18 votes (75%)	6 votes (25%)	0 votes (0%)
9.	**Designation of the Perkins St and Seminary Ave intersections as gateways with special paving/streetscape enhancements**	17 votes (74%)	3 votes (13%)	3 votes (13%)
10.	**Widened sidewalks to accommodate planters, trees, lighting, and street furniture where possible**	21 votes (84%)	4 votes (16%)	0 votes (0%)
11.	**Brick/enhanced crosswalk paving**	19 votes (79%)	0 votes (0%)	5 votes (21%)
12.	**New street furniture (e.g. benches, trash receptacles, lights)**	17 votes (71%)	7 votes (29%)	0 votes (0%)
	Main Street			
14.	**Retained single travel lane in each direction**	22 votes (92%)	2 votes (8%)	0 votes (0%)
15.	**Retained parallel parking**	16 votes (76%)	3 votes (14%)	2 votes (10%)
16.	**Reduced lane widths to allow for new dedicated bike lanes**	17 votes (71%)	6 votes (25%)	1 votes (4%)
17.	**New traffic signal at Gobbi St and Main St**	12 votes (50%)	8 votes (33%)	4 votes (17%)
18.	**New traffic signal at Perkins St and Main St**	11 votes (48%)	10 votes (43%)	2 votes (9%)
19.	**New sidewalks to fill in existing gaps**	24 votes (96%)	1 votes (4%)	0 votes (0%)
20.	**New crosswalks at the northern and eastern sides of the Cleveland Ln and Main St intersection**	14 votes (58%)	8 votes (33%)	0 votes (0%)

III. Comments

Other written comments on the Report Cards indicated support for the following:

- Roundabouts at the Gobbi St and State St, and Gobbi St and Main St
- Bike lanes over sharrows
- Drought-tolerant, native plants
- Street furniture that follows existing trends and compliments Ukiah's historic character
- Large street tree wells
- Planted medians/pedestrian refuge islands in place of the proposed diagonal parking on State St, in front of the Palace Hotel, between Gobbi St and Mill St on State St, between Mill St and Seminary Ave on State St, and on State St just south of Church St
- 30 degree diagonal parking where proposed on State St
- Crosswalk paving of a material other than brick (e.g. granite); make crosswalks more distinct/recognizable from the road
- Timed traffic signals at Gobbi St and Main St, and Perkins Street and Main St
- Timed traffic signal at Smith St and State St in addition to the proposed timed signals at the Standley St and Perkins St intersections
- Diagonal parking on Main St
- Reduced traffic speeds on Main St
- Underground utilities on Main St
- Widened sidewalks on Main St
- Consideration of loading zones and garbage pick-ups for businesses
- No gateway features at Seminary St and State St
- Retained granite curbs in front of the Grace Hudson Museum/Sun House
- Park with trees at Gobbi St and State St on the corner of the Safeway parking lot
- Consistency to the Smart Growth goals of the earlier plan and consistency with the City's form-based zoning
- No widening of travel lanes (Main St south of Clay St) since 11' lanes are adequate
- At least 12' sidewalks downtown
- Extended road diets
- A one-block pedestrian mall (e.g. on Perkins St or Church St between School St and State St)
- Diagonal parking confined to side streets, not State St
- Consideration of bus turnouts
- Trees that will shade the sidewalk and will not interfere with power lines and sidewalks
- Diagonal parking cut into sidewalk width
- Gobbi St and Norton St gateway treatments
- Electric car charging spots
- Bicycle racks
- Consideration of street sweeping when designing bulb-outs
- Gateway arches across State St
- Beautified street furniture

- No intersection treatment on Seminary Ave leading to City Hall
- Widened sidewalks surrounding the Courthouse
- Minimum 4' tree wells
- Widened sidewalks on Perkins St between State St and School St with no parking on the north side and diagonal parking on the south side

Additional comments heard at the workshop or written on the plans (but not previously noted) included:

- Diagonal parking also on School St on the west side of the plaza
- 40' mid-block bulbout on Perkins St between State St and School St
- Planted median on State St just south of Smith St
- Timed signals at Norton St and Scott St on State St

IV. General Conclusions

The workshop attendees generally supported most elements of the Preferred Concept Plan. The most controversial new features were the diagonal parking on State Street, the 1-way to 2-way street conversions of Standley Street, Smith Street, and Henry Street, and the traffic signals at Gobbi Street and Main Street and Perkins Street and Main Street. Many comments emphasized the need for more planted medians and pedestrian refuge islands on State Street, especially in front of the Palace Hotel, between Gobbi Street and Seminary Avenue, and at the south side of the Church Street intersection. The general consensus was that medians were preferable to diagonal parking if it came down to one or the other. Many participants were also interested in installing roundabouts at Gobbi Street and State Street and Gobbi Street and State Street, if the City can explore property acquisitions to create ample right-of-way. Additional elements that were frequently mentioned among participants included:

- Street furniture that follows existing trends and compliments Ukiah's historic character
- 30 degree instead of 45 degree diagonal parking on State St to reduce probability of traffic conflicts
- Crosswalk paving of a material other than brick (e.g. granite)
- Underground utilities on Main St
- Consideration of loading zones and garbage pick-ups for businesses
- Consistency with earlier plans, including the City's form-based zoning
- A one-block pedestrian mall (e.g. on Perkins St or Church St between School St and State St)
- Larger trees that will shade the sidewalk not conflict with existing aesthetics, signage, and infrastructure
- Gobbi St and Norton St gateway treatments
- Bicycle amenities, including bicycle lanes, sharrows, and racks
- Widened sidewalks on Perkins St between State St and School St with no parking on the north side and diagonal parking on the south side
- Widened sidewalks surrounding the Courthouse

Appendix C: Traffic Analysis

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Downtown Streetscape Improvement Plan Traffic Study

for the

City of Ukiah

June 19, 2009

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Appendices

Executive Summary

A traffic study was prepared as part of the *Downtown Streetscape Improvement Plan*. The traffic analysis addresses existing and future traffic operation under the existing geometrics as well as with various streetscape options for the downtown corridors. The study area for the *Downtown Streetscape Improvement Plan* extends along State and Main Streets from Norton Street to Gobbi Street. The Plan focuses on the feasibility of the streetscape improvements and the analysis on the operating conditions for these streetscape modifications at the following twelve key intersections:

1. State Street/Norton Street
2. State Street/Standley Street
3. State Street/Perkins Street
4. State Street/Clay Street
5. State Street/Mill Street
6. State Street/Gobbi Street
7. Main Street/Norton Street
8. Main Street/Standley Street
9. Main Street/Perkins Street
10. Main Street/Clay Street
11. Main Street/Mill Street
12. Main Street/Gobbi Street

The intent of the downtown streetscape plan is to transform Downtown Ukiah to a more pedestrian-oriented environment and an active location for business, recreation and shopping while enhancing the downtown area for all users, including motorists, pedestrians and bicyclists. The streetscape options which were evaluated include modifications to the lane geometry and parking configuration along State Street and traffic control options to key intersections on the State Street and Main Street corridors.

Existing Conditions

Within the study corridor between Norton and Gobbi Streets, State Street consists of two travel lanes in each direction with parallel parking on each side and a total curb-to-curb width of 56 to 64 feet. The lack of separate turn lanes results in turning movements being made from the inside through lane, forcing following through traffic to wait. Buildings on State Street are generally located at the back of the sidewalk, close enough to the street to make widening the street infeasible.

Main Street consists of one travel lane in each direction with parallel parking on each side. The curb-to-curb width of Main Street varies between 40 and 46 feet with turn lanes at some intersections. All intersections are side-street stop-controlled with the Main Street approaches being uncontrolled, except that Main Street/Perkins Street and Main Street/Gobbi Street are both all-way stop-controlled.

Operations

All of the study intersections are currently operating acceptably at LOS C or better during the morning and evening peak periods. Under projected future volumes for the Year 2030 and assuming that the configuration remains constant, all of the study intersections are expected to continue operating acceptably at LOS D or better overall during the morning and evening peak hours, with some increases in average delay. Under existing traffic volumes, queues commonly extend beyond mid-block and occasionally extend past the adjacent intersection. These queuing issues are expected to intensify as volumes increase.

Collision History

A review of the collision histories for the study roadways indicates that State Street from Norton Street to Gobbi Street experienced a collision rate of 6.10 collisions per million vehicle miles traveled (c/mvm), which is greater than the statewide average for a four-lane arterial of 4.95 c/mvm. The study segment of Main Street experienced a collision rate of 2.50 c/mvm, which is less than the statewide average for two-lane streets.

For State Street, rear-end and broadside collisions accounted for 42.2 percent and 22.0 percent, respectively, of all collisions. Both of these collision types are common on four-lane streets that do not have turn lanes. An additional 4.6 percent of all collisions involved pedestrians.

Issues Considered

When considering corridor streetscape options, the existing right-of-way widths were maintained for all options to avoid any impact to existing buildings. Issues considered in developing proposed changes included the following.

Lane Reconfiguration: A "Road Diet," or conversion from four lanes to three lanes, (one through lane in each direction and a center two-way left-turn lane) in a downtown corridor often results in an environment that is safer and more friendly to drivers, bicyclists and pedestrians. The slowing of vehicular traffic also reduces collisions and increases the comfort level for pedestrians and bicyclists. A two-way left turn lane and turn lanes at intersections provide refuge for turning vehicles without obstructing the flow of following vehicles; this also increases the comfort to the driver and decreases collisions. The reduction in lanes can also provide room for bicycle lanes or shoulders adjacent to parking. At signalized intersections, the road diet allows the use of left-turn lanes and traditional left-turn phasing while dispensing with the 'split phase' currently used with the four-lane configuration.

Parking: Due to the commercial and business nature of the downtown corridor, parking is a necessity. As part of the analysis of the alternatives, parking availability was considered with a desire to maximize the amount of parking available, or at the very least, minimize any reduction in the parking supply.

Angled Parking: Angled parking was considered for only one side because the existing road width is insufficient to provide acceptable backing space.

Pedestrian Infrastructure: The State Street streetscape alternatives may include bulb-outs at intersections for pedestrians crossing State Street and Perkins Street.

Balance of Corridor Progression vs. Downtown Destination Activity: State Street is the only street in Ukiah besides US 101 that runs from the northern to southern City Limits. It is therefore expected to carry through traffic traveling between two distant points in addition to traffic with downtown destinations. A reduction in speed is desired for making the downtown core a desirable destination, but any change must also result in minimal added delay to allow progression of through traffic using State Street as a cross-town arterial.

Preferred Alternative

State Street Road Diet with Parallel Parking: The preferred alternative would reduce the two through lanes in each direction to a single travel lane in each direction plus a two-way left-turn lane that would operate as a left-turn lane at intersections where appropriate. Parallel parking would be maintained on both sides of the street. With this option, there is some flexibility to widen sidewalks, install planters or provide a buffer zone between the travel lanes and parking. Additionally, bulb-outs would be installed at major pedestrian crossing points to reduce crossing distance. A modified alternative was identified that would provide angled parking on the west side of State Street between Stephenson and Clay Streets adjacent to the Alex R. Thomas Plaza.

Main Street with Modified Intersection Control: The alternative for Main Street includes maintenance of a single travel lane in each direction with parallel parking, but lane widths would be reduced to ten feet to accommodate a five-foot wide Class II Bicycle Lane in each direction. Additionally, the intersection of Main Street/Gobbi Street was studied as either a signalized intersection or with a roundabout, and the intersection of Main Street/Perkins Street was studied as a signalized intersection. A roundabout was previously ruled out at Main Street/Perkins Street because of the lack of necessary right-of-way.

Other Alternatives Considered

Existing Configuration: To provide a point of comparison for the studied alternatives, both State Street and Main Street were studied using future traffic volumes with the existing lane configurations and traffic control equipment.

State Street Road Diet with Angled Parking: This alternative is the same as the road diet option except that within the core downtown area between Smith and Clay Streets parallel parking would be removed along both sides of the street and angled parking installed on one side of the street. The side of the street with angled parking would alternate every one to two blocks. This alternative was ruled out because an alternating pattern of parking results in an offset greater than a lane width at the intersections and this would slow the flow of traffic and create potential safety issues. Additionally, this alternative would result in a net loss of parking spaces within downtown.

Conditions with Preferred Alternative

Under projected future traffic volumes and with the configurations and controls indicated for the Preferred Alternative, all of the study intersections are expected to operate acceptably at LOS D or better overall during the morning and evening peak hours and with less delay than would generally be expected with the existing configuration. Queuing would continue to be an issue, though queuing would be generally less of a problem with the road diet configuration.

Safety Assessment: With left-turn lanes at intersections and a two-way left-turn lane between intersections drivers waiting to turn left would no longer obstruct through traffic, reducing the number of rear-end collisions. This also eliminates the need for drivers to make an unsafe lane change to avoid waiting behind a driver stopped to turn left.

Pedestrian and Bicycle Circulation Impacts: The conversion of State Street to three lanes under the Preferred Alternative would be beneficial to pedestrian and bicyclists. For pedestrians, the reduction in travel lanes

and installation of bulb-outs will reduce the required crossing distance, making it safer and more comfortable for a pedestrian to cross State Street. Slower, but more constant, traffic flows will also help improve the image of the downtown as a pedestrian environment. For bicyclists, the additional buffer zone provided adjacent to the parking will provide some space for riding that is slightly separated from traffic. Also, the slower speeds will increase comfort and safety for bicyclists.

Parking Impacts: Impacts to parking within the downtown corridor are expected to be minimal under the Preferred Alternative. The installation of bulb-outs at intersections will result in the loss of some parking spaces on State Street.

Corridor Analysis

The performance of the corridor as a whole was also evaluated. Data such as delay, fuel consumption and emissions were considered when evaluating the change in operation under future p.m. peak hour volumes with the proposed road diet and parallel parking as well as with the existing lane configuration. Despite a reduction in the number of through lanes, overall the corridor is expected to perform better with less overall delay under the road diet and parallel parking compared to the current configuration.

To further improve corridor operation it is recommended that the City consider modernizing traffic signal equipment at select locations to be consistent with equipment used elsewhere and to allow coordination with other intersections while easing maintenance by reducing differences in equipment that staff must understand and use.

Air Quality and Emissions

The most common source of emissions in a downtown area is vehicle idling and stop-and-go traffic. More fuel is consumed when a vehicle accelerates from a stop than when traveling at a constant speed. The increased efficiency related to the installation of turn lanes and the associated reduction in vehicle queuing and idling time would be expected to reduce fuel consumption and the associated release of pollutants. Further reductions in delay, fuel consumption and pollutants would be expected with the upgrades to traffic signal equipment. The corridor is expected to experience a 6.2 percent decrease in Carbon Monoxide (CO), Nitrogen Oxides (NOx) and Volatile Organic Compounds (VOC) emissions upon implementation of the proposed road diet with parallel parking.

Study Parameters

Study Area

The study area selected for analysis includes all of the intersections along State and Main Streets in the downtown area between Norton Street to the north and Gobbi Street to the south. Traffic impacts were evaluated at 12 key intersections in the study area, as listed below and shown on Figure 1 along with their lane configurations.

1. State Street/Norton Street
2. State Street/Standley Street
3. State Street/Perkins Street
4. State Street/Clay Street
5. State Street/Mill Street
6. State Street/Gobbi Street
7. Main Street/Norton Street
8. Main Street/Standley Street
9. Main Street/Perkins Street
10. Main Street/Clay Street
11. Main Street/Mill Street
12. Main Street/Gobbi Street

The remaining intersections within the downtown corridor segments were initially studied to determine if conditions warranted additional analysis or would affect operation of the selected study intersections.

Study Periods

Traffic operation during the weekday a.m. and p.m. peak hours was evaluated. The a.m. peak hour is the hour between 7:00 a.m. and 9:00 a.m. with the highest traffic volumes and the p.m. peak hour is the highest volume hour between 4:00 p.m. and 6:00 p.m. The a.m. peak generally represents commute traffic to work and school and the p.m. peak occurs during the homebound commute. These are the periods during which traffic conditions are typically most impacted, and for which future traffic projections were created.

Level of Service Methodologies

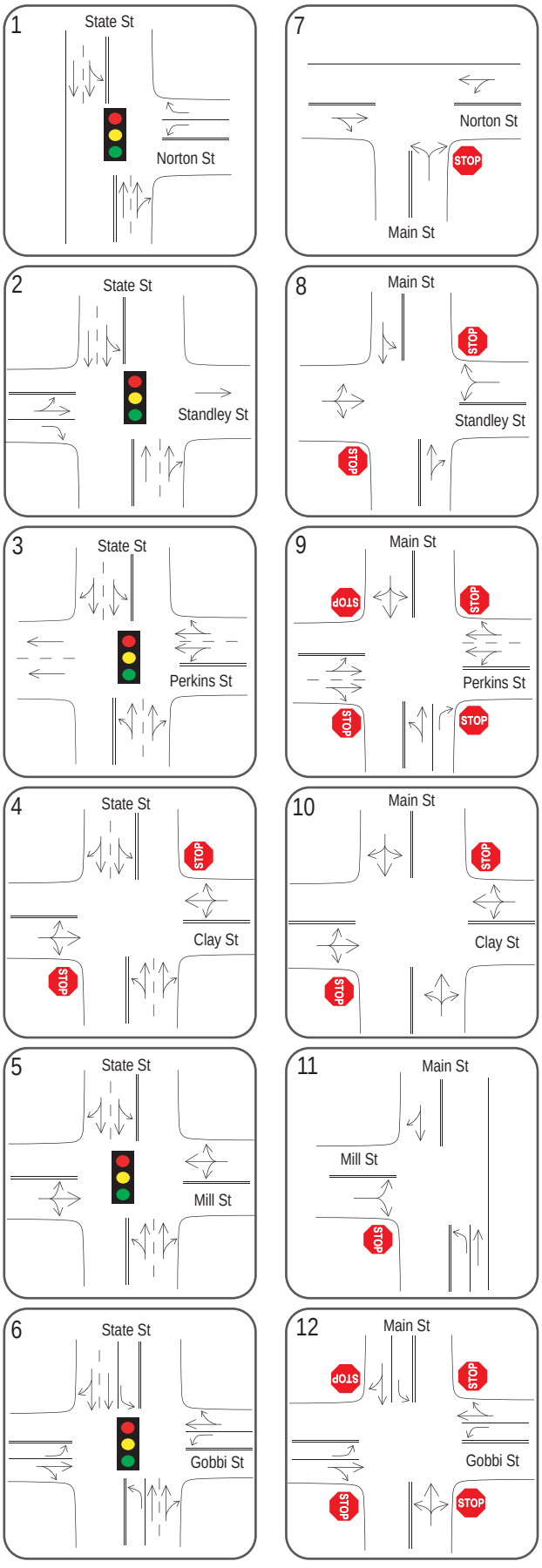
Level of Service (LOS) is used to rank traffic operation on various types of facilities based on traffic volumes and roadway capacity using letter designations ranging from A to F. Generally, LOS A represents free flow conditions and LOS F represents forced flow or breakdown conditions. The study intersections were analyzed using methodologies from the *Highway Capacity Manual*, Transportation Research Board, 2000 (HCM). This source contains methodologies for various types of intersection control, all of which are related to a measurement of delay in average number of seconds per vehicle.

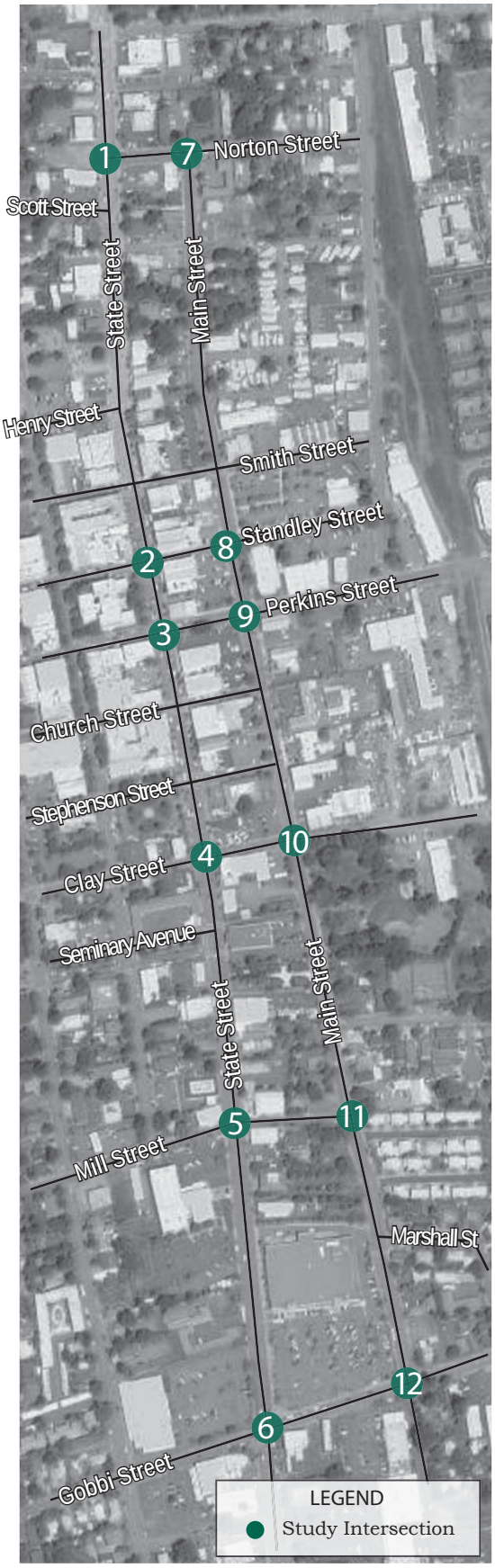
Two-Way Stop-Controlled Intersections

Intersections that are stop-controlled on one or two approaches were analyzed using the HCM two-way stop-controlled intersection capacity method. The methodology determines a level of service for each minor turning movement by estimating the level of average delay in seconds per vehicle. A weighted average for the intersection overall is also determined.

All-Way Stop-Controlled Intersections

Intersections that are stop-controlled on all approaches were analyzed using the HCM all-way stop-controlled intersection capacity method. The methodology determines a level of service for each movement





Downtown Streetscape Improvement Plan Traffic Study — Figure 1

City of Ukiah — Study Area and Existing Lane Configurations

by estimating the average delay in seconds per vehicle. A weighted average for the intersection overall is also determined.

Signalized Intersections

The signalized methodology is based on factors including traffic volumes, green time for each movement, phasing, whether or not the signals are coordinated, truck traffic, and pedestrian activity. Average stopped delay in seconds per vehicle is used as the basis for evaluation in this LOS methodology.

Roundabouts

Operating conditions with a roundabout were determined using the SIDRA 3.1 analysis software. SIDRA uses the "gap acceptance" roundabout analysis method and various geometric data and traffic volumes to determine criteria such as vehicle delays and queue lengths, and the associated LOS for each approach. As with the signalized level of service methodologies, LOS is determined using average vehicle delay.

The ranges of delay associated with the various levels of service are indicated in Table 1.

Table 1
Intersection Level of Service Criteria

LOS	Two-Way Stop-Controlled	All-Way Stop-Controlled	Signalized
A	Delay of 0 to 10 seconds. Gaps in traffic are readily available for drivers exiting the minor street.	Delay of 0 to 10 seconds. Upon stopping, drivers are immediately able to proceed.	Delay of 0 to 10 seconds. Most vehicles arrive during the green phase, so do not stop at all.
B	Delay of 10 to 15 seconds. Gaps in traffic are somewhat less readily available than with LOS A, but no queuing occurs on the minor street.	Delay of 10 to 15 seconds. Drivers may wait for one or two vehicles to clear the intersection before proceeding from a stop.	Delay of 10 to 20 seconds. More vehicles stop than with LOS A, but many drivers still do not have to stop.
C	Delay of 15 to 25 seconds. Acceptable gaps in traffic are less frequent, and drivers may approach while another vehicle is already waiting to exit the side street.	Delay of 15 to 25 seconds. Drivers will enter a queue of one or two vehicles on the same approach, and wait for vehicle to clear from one or more approaches prior to entering the intersection.	Delay of 20 to 35 seconds. The number of vehicles stopping is significant, although many still pass through without stopping.
D	Delay of 25 to 35 seconds. There are fewer acceptable gaps in traffic, and drivers may enter a queue of one or two vehicles on the side street.	Delay of 25 to 35 seconds. Queues of more than two vehicles are encountered on one or more approaches.	Delay of 35 to 55 seconds. The influence of congestion is noticeable, and most vehicles have to stop.
E	Delay of 35 to 50 seconds. Few acceptable gaps in traffic are available, and longer queues may form on the side street.	Delay of 35 to 50 seconds. Longer queues are encountered on more than one approach to the intersection.	Delay of 55 to 80 seconds. Most, if not all, vehicles must stop and drivers consider the delay excessive.
F	Delay of more than 50 seconds. Drivers may wait for long periods before there is an acceptable gap in traffic for exiting the side streets, creating long queues.	Delay of more than 50 seconds. Drivers enter long queues on all approaches.	Delay of more than 80 seconds. Vehicles may wait through more than one cycle to clear the intersection.

Reference: *Highway Capacity Manual,* Transportation Research Board, 2000.

Operational Analysis Software and Assumptions

The traffic analysis was conducted using the HCM methods described above, as applied in the *Traffix* software application for unsignalized intersections, *Synchro* software application for signalized intersections and *SIDRA* intersection software for roundabouts.

Traffic Operation Standards

The Ukiah Valley General Plan and Growth Management Program (1995), updated by City Council Resolution Number 2004-30 in 2004 establishes in General Plan Policy CT-16.4 (e) that LOS D is the minimum acceptable operation for signalized and all-way-stop controlled intersection and LOS E is the applicable standard for side street stop-controlled intersections, "except where side streets have very low traffic volumes, in which case LOS F conditions may be acceptable."

Corridor Descriptions

State Street

Within the study corridor between Norton and Gobbi Streets, State Street consists of two travel lanes in each direction with parallel parking on each side and a total curb-to-curb width 56 to 64 feet. There are no separate turn lanes, so at intersections turning movements are made from the inside through lane. Buildings along State Street are generally located directly at the back of the sidewalk, close enough to the street to prohibit any widening of the streets. Details of the cross-section of State Street at several key locations are indicated in Table 2 and shown in Figure 2; a plan view of State Street between Smith Street and Clay Street is provided in Figure 3.

Table 2
Existing Cross-Section Details for State Street (feet)

Street Segment	West Side				Center	East Side				Est. ROW
	Side walk	Park	Bike/ Shldr	Travel		Travel	Bike/ Shldr	Park	Side walk	
South of Henry St	8	8	-	2x12	-	2x12	-	8	10	82
North of Smith St	8	8	-	2x12	-	2x12	-	8	8	80
South of Smith St	11.5	8	-	2x10	-	2x10	-	8	12	79.5
North of Perkins St	12	8	-	2x10.5	-	2x10.5	-	8	15	80
South of Perkins St	12	8	-	2x11	-	2x11	-	8	12	84
South of Church St	12	8	-	2x10	-	2x10	-	8	12	80
South of Clay St	11	8	-	2x10	-	2x10	-	8	11	78
South of Seminary Ave	7	8	-	2x10	-	2x10	-	8	7	70

Note: Est. = Estimated

The images below in Plates 1 and 2 show a view of the existing cross-section configuration of State Street that is typical for the downtown corridor.

Plate 1 State Street looking north near the Alex R. Thomas Plaza

Plate 2 State Street looking north near Henry Street

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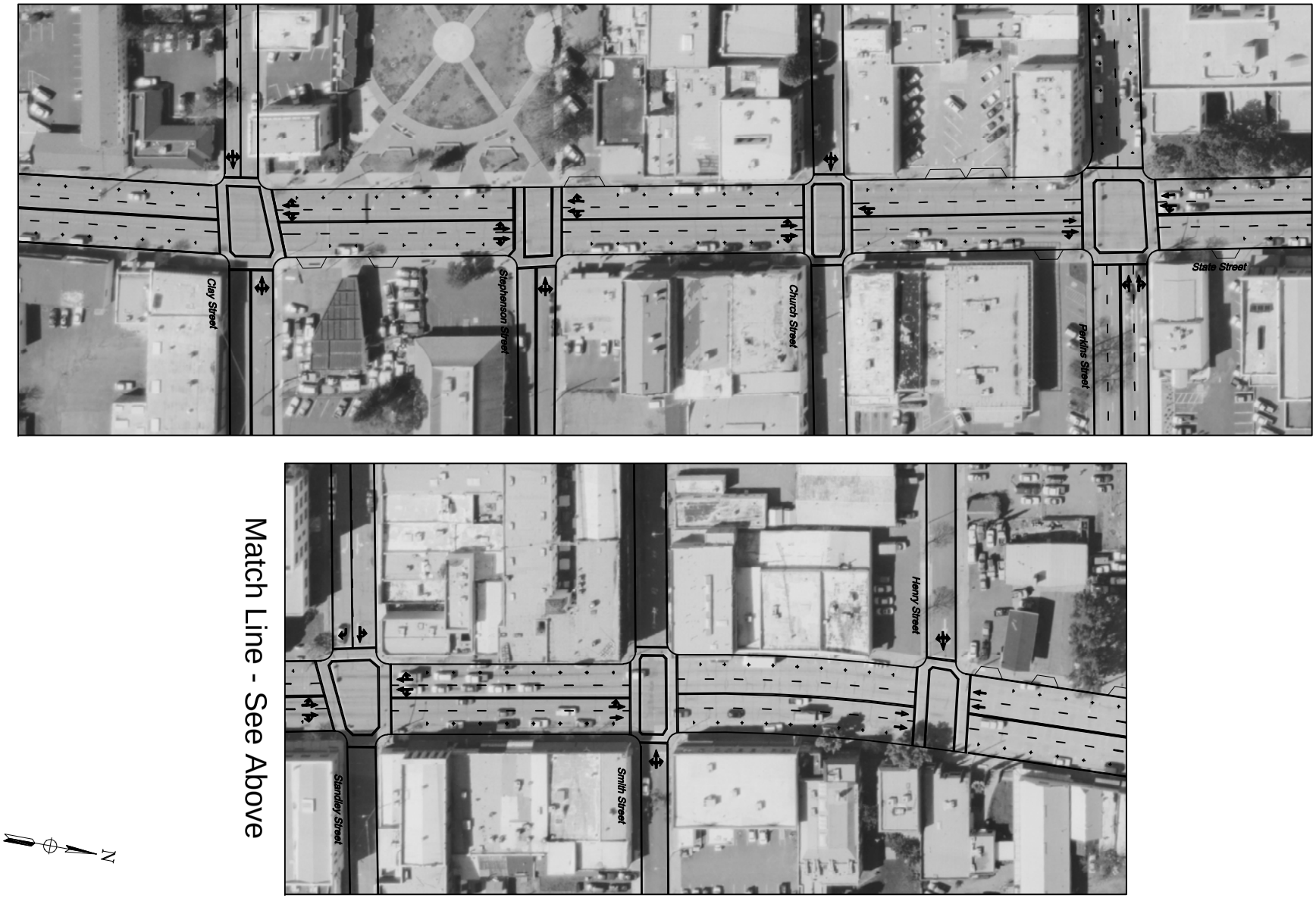
Downtown Streetscape Improvement Plan Traffic Study — Figure 2

City of Ukiah — Existing Cross Sections



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JOB NO. UKI049		DATE: 5/3/2009

DOWNTOWN STREETSCAPE IMPROVEMENT PLAN TRAFFIC STUDY
City of Ukiah

Figure 3
Existing Lane Configuration

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Signalized intersections within the study corridor vary in controlling equipment and timing plans. The State Street intersections with Norton Street, Mill Street and Gobbi Street are equipped with in-pavement inductive loops that detect the presence of vehicles and adjust the signal timing based on traffic demands within predefined parameters. Vehicle detection equipment is installed at the State Street intersections with Standley Street and Perkins Street; however, the timing is fixed regardless of actual demand. Due to the close proximity of these two intersections, the controllers are connected to each other and the timing of the two intersections is coordinated.

Since the current configuration of four travel lanes without a center median does not allow for left-turn lanes at the intersection, the signals are all configured as either split phased, which allows only one direction of traffic to go at a time, or with permitted left turns that result in drivers waiting for an acceptable gap in conflicting traffic to complete a turn movement while blocking following vehicles. Split phasing, which is used at the intersections with Perkins Street and Standley Street, is inherently inefficient since it requires one direction of traffic to always wait during the opposing traffic movements.

Main Street

Main Street consists of one travel lane in each direction with parallel parking on each side. The curb-to-curb width of Main Street varies between 40 and 46 feet. Turn lanes are provided at the intersections of Main Street with Perkins Street, Mill Street and Gobbi Street; however, all other intersections have shared through-turn lanes. All intersections are side-street stop-controlled, with the Main Street approaches being uncontrolled, with the exception of Main Street/Perkins Street and Main Street/Gobbi Street which are both all-way-stop-controlled.

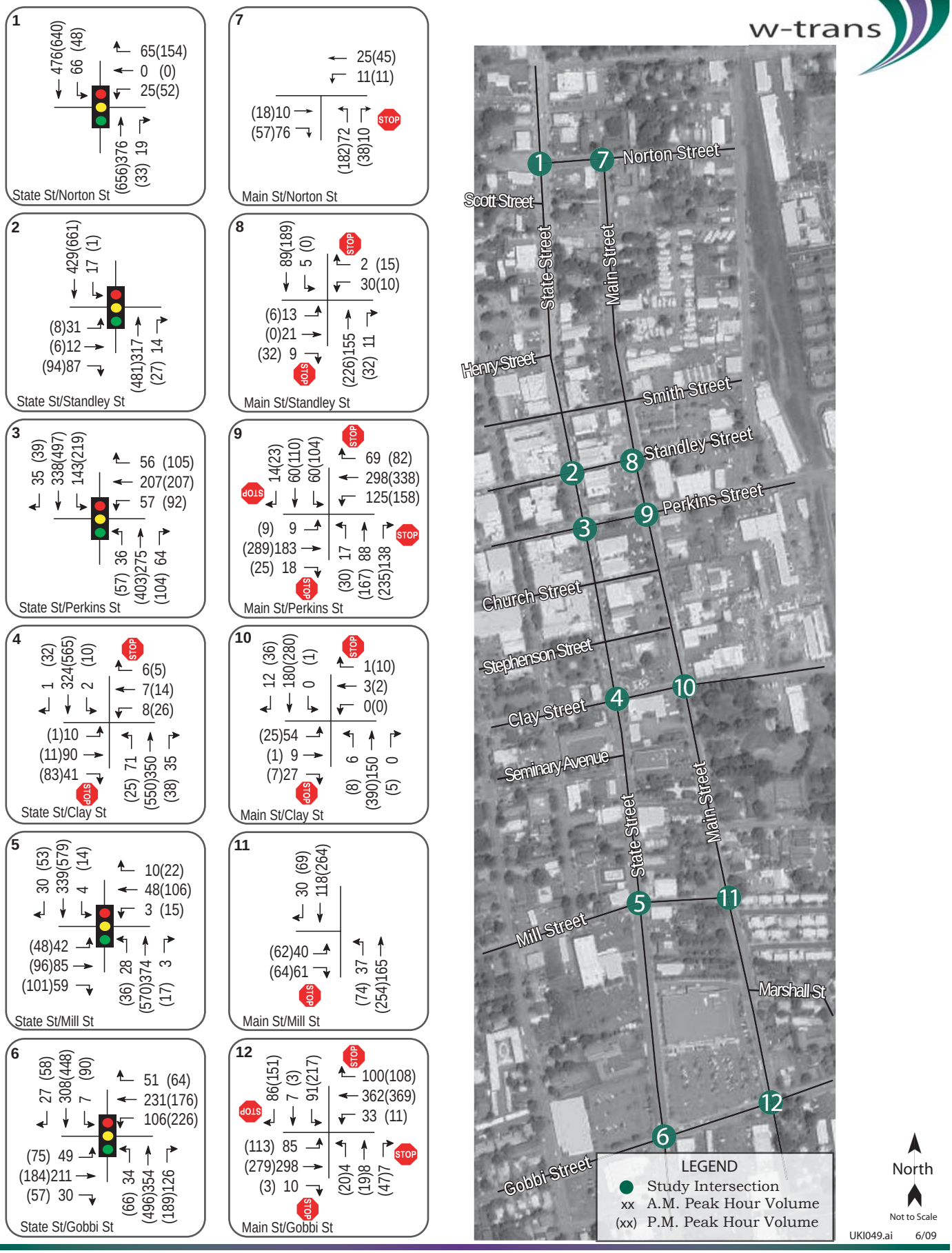
East-West Cross Streets

Currently, the following four cross streets within the downtown corridor are narrow one-way streets which limit circulation options:

- Henry Street – one-way eastbound
- Smith Street – one-way westbound
- Standley Street – one-way eastbound
- Church Street – one-way eastbound

Existing Traffic Volumes

Existing p.m. peak hour traffic volumes were obtained from City staff as reported in the *Citywide Circulation Study* in addition to new counts conducted in October and November 2008 at key intersections. City staff indicated that the traffic volumes reported in the *Citywide Circulation Study* were obtained in 2001 with some factoring applied. The traffic volumes obtained in 2008 were consistently five to 20 percent lower than those presented in the *Citywide Circulation Study*. This is consistent with regional trends observed over the last several years that show decreasing traffic volumes. Because of the decline in volumes and to ensure a conservative analysis, the higher traffic volume counts published in the Ukiah *Citywide Circulation Study* were used for analysis purposes. The existing traffic volumes at all study intersections used for the analysis are shown on Figure 4.



Downtown Streetscape Improvement Plan Traffic Study — Figure 4

City of Ukiah — Existing Traffic Volumes

Existing Intersection Levels of Service

All twelve study intersections are currently operating acceptably at LOS C or better overall during the morning and evening peak hours. The existing intersection levels of service are summarized in Table 3. Copies of the level of service calculations are provided in Appendix A.

Table 3
Summary of Existing Peak Hour Intersection Level of Service Calculations

Study Intersection *Approach*	AM Peak Hour		PM Peak Hour	
	Delay	LOS	Delay	LOS
1. State St/Norton St	7.3	A	7.9	A
2. State St/Standley St	15.5	B	20.3	C
3. State St/Perkins St	15.4	B	22.7	C
4. State St/Clay St	4.3	A	2.1	A
Eastbound Clay St Approach	*21.9*	*C*	*13.7*	*B*
Westbound Clay St Approach	*17.6*	*C*	*28.8*	*D*
5. State St/Mill St	9.0	A	10.7	B
6. State St/Gobbi St	22.3	C	31.9	C
7. Main St/Norton St	4.1	A	6.7	A
Northbound Main St Approach	*9.3*	*A*	*10.2*	*B*
8. Main St/Standley St	2.5	A	1.3	A
Eastbound Standley St Approach	*10.4*	*B*	*9.9*	*A*
Westbound Standley St Approach	*10.7*	*B*	*10.8*	*B*
9. Main St/Perkins St	11.6	B	17.3	C
10. Main St/Clay St	2.5	A	0.9	A
Eastbound Clay St Approach	*11.3*	*B*	*15.2*	*C*
Westbound Clay St Approach	*10.8*	*B*	*11.4*	*B*
11. Main St/Mill St	2.9	A	3.0	A
Eastbound Mill St Approach	*10.4*	*B*	*14.3*	*B*
12. Main St/Gobbi St	15.2	C	22.4	C

Notes: Delay is measured in average seconds per vehicle; LOS = Level of Service

Queuing

Queuing of vehicles occurs when there is a backup of vehicles at an intersection caused by intersection controls. While queuing is unavoidable, excessively long queues may cause problems if they restrict access to mid-block driveways or extend beyond adjacent intersections. Vehicle queuing was examined at the study intersections to determine if there are issues along the study corridor related to queuing. Queuing was also calculated for the study intersections based on simulated traffic flows generated by SIM Traffic, a subprogram of Synchro. SIM Traffic simulates the flow of traffic through the downtown corridor and reports the 95th percentile observed queue for the simulation run. Since the traffic simulated in model runs involves a level of randomness, a total of five model runs was completed and the queuing was averaged. Because the queue data is based upon observed simulated traffic, it is considered more accurate than formulas used by Traffix and Synchro to calculate the expected queue.

Queuing was studied for p.m. peak conditions because the p.m. peak is considered to be the worst case conditions. Under existing traffic volumes, queues commonly extend beyond mid-block and occasionally extend past the adjacent intersection.

Collision History

The collision history for the study area was reviewed to determine any trends or patterns that could indicate a preexisting safety issue. Collision rates were calculated based on records for January 1, 2003, through December 31, 2007, obtained through the California Highway Patrol and published in their State Wide Integrated Traffic Records System (SWITRS) reports (data for 2008 was not yet available at the time of the analysis). The collision data and average rate calculations are provided in Appendix B.

As shown in Table 4, for the five-year study period, State Street from Norton Street to Gobbi Street experienced a total of 109 collisions which equates to an average of 6.08 collisions per million vehicle miles traveled (c/mvm), which is greater than the statewide average of 4.95 c/mvm for similar types of facilities. During the same time period, Main Street from Norton Street to Gobbi Street experienced 23 collisions, or 2.55 c/mvm which is less than the statewide average of 3.05 c/mvm. One-third of all collisions reported on both State Street and Main Street resulted in one or more parties reporting injury, which is less than the statewide average of 39.4 percent for roads like State Street and 40.5 percent for facilities like Main Street. It is important to note that the injury rates do not account for severity of injury or the number of parties injured, only if the collision resulted in one or more injuries. None of the collisions reported on either street resulted in fatalities, compared to the statewide average rate of 0.4 for four-lane streets like State Street and 0.6 percent for two-lane facilities such as Main Street.

Table 4
Summary of Collision Rate Data

Segment	Collision Rates (c/mvm)		Injury Rates (%)	
	Actual	Average	Actual	Average
State St	6.08	4.95	33.3%	39.4%
Main St	2.55	3.05	33.3%	40.5%

Note: Rates higher than the Statewide average are highlighted

Since State Street experienced a collision rate higher than the statewide average, it was further examined to determine what, if any, collision trends exist. As shown in Table 5, rear-end collisions and broadside collisions accounted for 42.2 percent and 22.0 percent, respectively, of all collisions. Rear-end collisions are generally associated with vehicles stopped at an intersection, either due to intersection controls or while drivers wait for an acceptable gap in traffic to complete a turn movement. Broadside collisions are generally associated with a driver attempting a turn movement either on to or off of State Street, or a through movement from the side streets to cross State Street when an acceptable gap in traffic is not present. Generally, both rear-end and broadside collisions are common on four-lane streets that do not have turn lanes. An additional 4.6 percent of all collisions involved pedestrians.

Table 5
Summary of Collision Types

Collision Type	Number of Collisions	Percent of Total Collisions
All Collisions	109	100 %
Rear-End	46	42.2%
Broadside	24	22.0%
Vehicle-Pedestrian	5	4.6%

Bicycle Facilities

Neither State Street nor Main Street are currently identified as bicycle facilities within the study area by the City of Ukiah. The Bicycle and Pedestrian Master Plan does propose designating Main Street from Gobbi Street to Norton Street as a Class III Bicycle Route. Additionally, the cross street of Norton Street is proposed for designation as a Class III Bicycle Route.

Pedestrian Facilities

Many of the land uses within the downtown corridor are pedestrian oriented. Within the downtown corridor State Street has complete sidewalk amenities along both sides of the street and Main Street has sidewalks on both sides along the majority of the corridor except for some discontinuities in sidewalk between Stephenson Street and Cleveland Lane.

All signalized intersections have crosswalks with the crossing controlled by a pedestrian phase supported by a pedestrian push button and crossing indicator lights. Most unsignalized intersections have marked crosswalks; however, none of these intersections have advanced warning systems, so pedestrians crossing State Street must cross four lanes of traffic plus two parking lanes without any refuge area or traffic control. Some intersections have an in-street paddle sign reminding drivers to yield to pedestrians.

Existing Transit Facilities

Ukiah is served by the Mendocino Transit Authority (MTA), which provides fixed route bus service throughout Mendocino County with some connections to Sonoma County to the south. Additional paratransit, or "dial-a-ride" service is provided by MTA for senior citizens and disabled persons. Two fixed

bus routes, Route 7 – Jitney and Route 9 – Local, both operate in Ukiah and have stops within the downtown corridor; however, none of these stops are designated as transfer points. Busses run for the entire length of State Street within the study area and along Main Street north of Perkins Street. Additionally, busses run on the cross streets of Standley Street, Perkins Street and Gobbi Street.

Parking

On-street parallel parking is provided on both sides of State Street and Main Street for the majority of the study corridor with most segments having a two-hour limit during the day. On-street parking within the downtown corridor is currently free. Many of the side streets also have on-street parallel parking and there are City-operated parking lots in the vicinity of the downtown corridor. Most City-operated parking lots offer monthly permit parking, but a limited number of these permits are issued and there is often a waiting list of people wishing to purchase a permit.

Under existing conditions with parallel parking available on State Street between Clay Street and Smith Street, there are an estimated 57 on-street parking spaces available as indicated by field data collected for the *Downtown Ukiah Parking Improvement Study* completed by W-Trans in April 2008.

Commercial Loading and Unloading

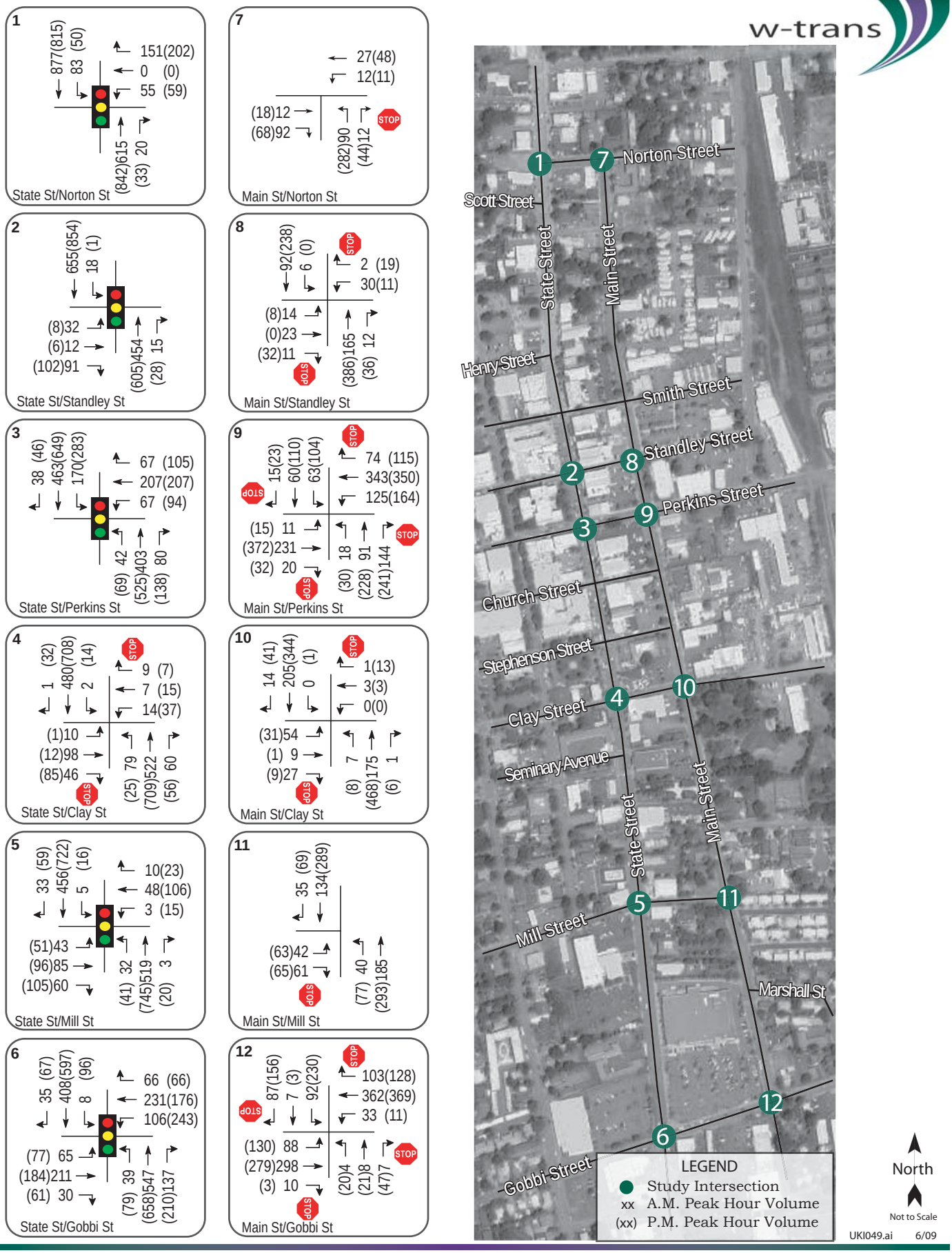
Since many businesses located within the downtown corridor require loading and unloading of goods from delivery trucks, marked loading zones are located throughout the downtown corridor. These zones restrict general parking part or all of the day and are marked with yellow curb painting and signs. Side streets may also be used for loading and unloading as it is less disruptive to traffic. Additionally, some stores have parking lots located along the back, which can also be used for loading and unloading purposes.

Future Traffic Volumes

Future year traffic volumes for analysis of conditions for the year 2030 were based upon the traffic model projections for the Form Based Code that was prepared by Fehr & Peers Transportation Consultants. These model projections include traffic volumes based on existing land uses as well as projected future development under existing General Plan policies. The model-generated link volumes for roads within the downtown corridor were converted to turning movements based on a distribution of existing intersection movements. Some of the minor downtown intersections were not included in the traffic model, so for these intersections the volumes were based on existing traffic volumes that were adjusted to be consistent with adjacent intersections. These projected future year traffic volumes are shown on Figure 5.

Future Intersection Level of Service

Based on projected future traffic volumes, and assuming no changes to geometrics or controls, all of the study intersections are expected to operate acceptably at LOS C or better overall as well as on minor movements during the morning and evening peak hours. Table 6 provides a summary of peak hour LOS for all study intersections and copies of the calculations are provided in Appendix C. While some approaches operate with delay indicative of LOS E or F, the City's standard only applies to the overall operation of the intersection.



Downtown Streetscape Improvement Plan Traffic Study

City of Ukiah

Figure 5

Future Traffic Volumes

Table 6
Summary of Future Peak Hour Intersection Level of Service Calculations
State Street Base Configuration Option

Study Intersection *Approach*	AM Peak Hour		PM Peak Hour	
	Delay	LOS	Delay	LOS
1. State St/Norton St	14.8	B	8.5	A
2. State St/Standley St	13.8	B	22.2	C
3. State St/Perkins St	19.2	B	28.1	C
4. State St/Clay St	7.4	A	3.2	A
Eastbound Clay St Approach	*52.0*	*F*	*17.5*	*C*
Westbound Clay St Approach	*35.3*	*E*	*57.5*	*F*
5. State St/Mill St	10.6	B	12.8	B
6. State St/Gobbi St	25.5	C	47.1	D
7. Main St/Norton St	4.3	A	8.0	A
Northbound Main St Approach	*9.5*	*A*	*11.4*	*A*
8. Main St/Standley St	2.5	A	1.1	A
Eastbound Standley St Approach	*10.5*	*B*	*10.9*	*B*
Westbound Standley St Approach	*10.8*	*B*	*12.6*	*B*
9. Main St/Perkins St	12.5	B	21.4	C
10. Main St/Clay St	2.3	A	1.1	A
Eastbound Clay St Approach	*11.9*	*B*	*18.4*	*C*
Westbound Clay St Approach	*11.1*	*B*	*12.5*	*B*
11. Main St/Mill St	2.8	A	3.0	A
Eastbound Mill St Approach	*10.7*	*B*	*15.3*	*C*
12. Main St/Gobbi St	15.3	C	25.7	D

Notes: Delay is measured in average seconds per vehicle; LOS = Level of Service

Corridor Options

When considering corridor streetscape options, the existing right-of-way widths were maintained for all options to avoid any impact to existing buildings. Revisions to the corridor that were considered included lane reconfigurations and parking modifications with a goal of creating a more comfortable pedestrian environment while still serving the traffic demand.

Lane Reconfiguration

The term "Road Diet" generally refers to the conversion of streets from four lanes (two through lanes in each direction) to three lanes, (one through lane in each direction and a center two-way left-turn lane). These conversions have been used by communities throughout the country to address traffic safety and accessibility as well as to add bicycle facilities. Road diets in a downtown corridor often result in an environment that is safer and more friendly to drivers, bicyclists and pedestrians. The slowing of vehicular traffic generally results in a reduction of collisions and increases the comfort level for pedestrians and bicyclists. The installation of a two-way left turn lane and turn lanes at intersections provides refuge for turning vehicles without obstructing the flow of following vehicles, which also increases the comfort of the driver and decreases collisions. The reduction in lanes also provides enough room to add bicycle lanes or shoulders adjacent to parking. Despite the decrease in travel lanes, road diets have been seen to increase the capacity of a roadway by making it operate more efficiently. At signalized intersections, the road diet allows the use of left-turn lanes and traditional left-turn phasing while dispensing with the split phasing currently used with the four-lane configuration. At the same time, road diets may increase the availability of on-street parking, and make off-street parking easier to access.

The combination of increased safety, efficiency and user comfort has been seen to have a positive impact on businesses located along corridors that have had road diets enacted. Case studies have shown that downtown corridors that undergo a road diet generally experience an increase in sales and property values while experiencing a decrease in vacancy. This is often attributed to the fact that after implementation of a road diet it is easier for drivers and bicyclists to access a business and since pedestrians feel more comfortable, they are more likely to visit multiple businesses during one trip. (Discussion of specific examples is included in Appendix D.)

Parking

On-street parking provides the following benefits:

- supports local economic activity by providing access to uses
- increases pedestrian comfort by providing acting as a buffer
- slows traffic, making pedestrian crossings safer
- enables drivers to become pedestrians conveniently
- increases pedestrian activity on the street
- increases visibility of storefronts to motorists parking on the street
- decreases on-site parking needs
- provides space for on-street loading and unloading

Due to the commercial and business nature of the downtown corridor, parking is a necessity. As part of the analysis of the alternatives, parking availability was considered with a desire to maximize the amount of parking maintained.

Parallel Parking

Under this alternative the road diet option with three travel lanes would be combined with parallel parking, resulting in additional road width which could be used for wider sidewalks and/or bike lanes. Therefore, parallel parking was included in one of the options.

Angled Parking

Angled parking at a 45-degree angle from the curb was considered for either both sides of the street or only one side of the street with parallel parking retained on the other side of the street. If angled parking were to be incorporated into the plan, parking on only one side is recommended for the following reasons:

- With the width varying between 56 and 64 feet, angled parking on both sides of the street would provide backing space that would be only minimally acceptable for exit by a large vehicle, which may result in a large vehicle entering the second travel lane when backing. With angled parking on only one side of the street, a more appropriate backing space could be provided, thereby decreasing the possibilities of delay in traffic or conflicts with other vehicles while backing, and increasing the comfort of use for the driver.

- With angled parking on only one side of the street extra width is provided on the side without parking in the form of a buffer zone that can be used for parking maneuvers or by bicyclists in the absence of a parking maneuver. The Ukiah Bicycle Master Plan calls for future designation of the downtown corridor as a Class III Bicycle Route along with expanding bicycle parking facilities.

- Angled parking on both sides of the street would not allow the installation of the center turn lane, which would eliminate the intended benefit of reducing delay at intersections caused by turning movements and may actually worsen this delay.

Following is a sample of recommendations and guidelines for the use of angled parking:

  - Angled parking should be used on low-speed commercially-oriented streets, primarily those serving as main streets.

  - Angled parking should be prohibited on major streets with speeds greater than 35 mph due to potential conflicts associated with maneuvering in and out of spaces.

  - Angled parking should be allowed in urban zones where operating speeds are 30 mph or less, and where the community finds the delay produced by parking maneuvers acceptable.

On-street angled parking is becoming more common in recent years in downtown areas. Some examples of downtown angled parking includes School Street in Ukiah, one block west of State Street, Old Redwood Highway in downtown Cotati and University Avenue in downtown Palo Alto. University Avenue in Palo Alto, which carries more traffic than State Street, was further examined to determine if safety issues are an

issues in areas with angled parking. For a five-year period, University Avenue experienced a collision rate lower than the statewide average for similar facilities, therefore not indicating any specific safety concerns for that corridor.

Pedestrian Infrastructure

The State Street streetscape alternatives may include the installation of bulb-outs at intersections for pedestrians crossing State Street and Perkins Street. Bulb-outs are an extension of a sidewalk into the intersection, essentially eliminating any shoulder at the intersection while maintaining the number of travel lanes. The purpose of bulb-outs is to reduce the perpendicular street width and therefore the time that a pedestrian needs to cross a street, reducing the time that the pedestrian is potentially exposed to moving traffic. This increases both pedestrian safety and comfort. Since bulb-outs would reduce the time pedestrians need to cross State Street and Perkins Street, some time is freed up that can be used for turning vehicles to complete their movement without conflicts with pedestrians. Bulb-outs are shown in the proposed street section diagrams.

Side Streets

Currently, several cross streets within the downtown corridor are one-way streets; this limits circulation options. Based on an initial review of existing conditions, the following recommendations are made regarding converting one-way streets to allow for two-way traffic with the intent of increasing circulation options.

Henry Street – currently one-way eastbound

- West of State Street: It is recommended that the parking which is currently allowed on only one side be eliminated to allow conversion to two-way traffic flow.

Smith Street – currently one-way westbound

- West of State Street: There is insufficient width to convert to bi-directional traffic while maintaining store-front parking, therefore, no changes are recommended.
- East of State Street: While there is no need for store-front parking, Smith Street is commonly used for commercial loading and unloading, so it is recommend that this segment remains one-way.

Standley Street – currently one-way eastbound

- West of State Street: There are two eastbound lanes; it is recommend that the lanes be restriped for two-way traffic.

- East of State Street: Since there is no need for store-front parking, it is recommend that the parking on one side be eliminated and the road converted to two-way.

Church Street – currently one-way eastbound

- West and East of State Street: There is not enough room to convert to bi-directional flow while maintaining store-front parking, therefore, no changes are recommended.

Corridor Operation

Balance of Corridor Progression vs. Downtown Destination Activity

State Street is the only north-south street in Ukiah that runs the entire length of the City, with the exception of US 101. Because State Street operates as an arterial and is expected to carry a large volume of vehicle traffic between two distant points, the corridor needs to progress at a moderate speed with minimal delay. However, since this is also a downtown location that is currently near buildout conditions, it is expected that some drivers will not be using the route as a cut-through to go between two distant locations, but instead as a destination. This dual-use of State Street requires a balance of progression for the drivers using the route as a cross-town arterial as well as those using it for the downtown destination. A reduction in speed is desired for making the downtown core a desirable destination; however, this must be done with minimal delay to allow for progression of through traffic using State Street as a cross-town arterial. This reduction in speed and flow has a secondary benefit of providing a downtown destination that is friendlier to pedestrians and bicyclists.

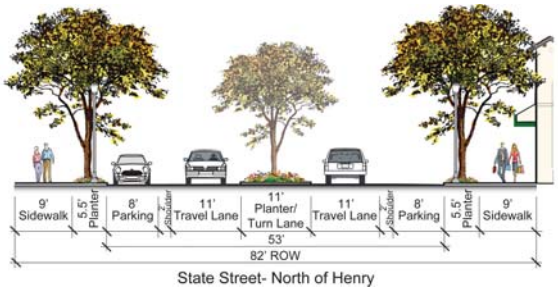
Arterial Corridor Measure of Effectiveness

Systems of traffic signals can be evaluated in much the same way as isolated signalized intersections are. As with isolated traffic signals, vehicle delay is an important measure of the performance of the system. The measures of vehicle delay are expanded to include the influences of platoons of vehicles leaving one intersection and arriving at the next and whether or not the platoon is stopped or passes through in progression. Other measures of effectiveness include total vehicle delay in the system, stop delay, and travel speed. From these measures, fuel consumption and vehicle emissions can be calculated.

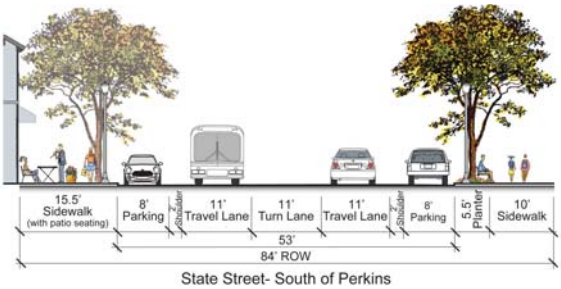
State Street Alternatives

State Street Road Diet with Parallel Parking

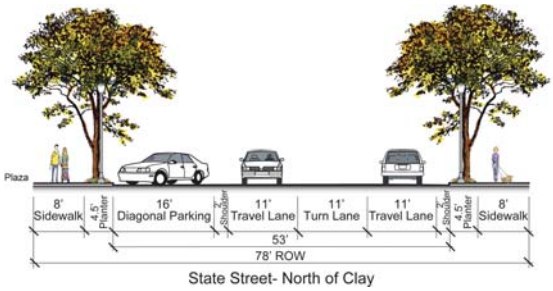
The current configuration of two through lanes in each direction would be reduced to a single travel lane in each direction with a two-way-left-turn lane that would operate as a left-turn lane at intersections where appropriate – a design commonly referred to as a "Road Diet." Parallel parking would be maintained on both sides of the street. With this option, there is some flexibility to widen sidewalks, install planters or provide a buffer zone between the travel lanes and parking. Additionally, bulb-outs would be installed at major pedestrian crossing points to reduce the crossing distance. A summary of proposed cross-sections at several key intersections is provided in Table 7. Additionally, cross-sections at several key locations are shown in Figure 6 with a plan view shown in Figure 7. The summary in Table 7 includes a mix of both widening the sidewalk and the installation of a buffer zone between the travel lanes and parking lane; however, widening of sidewalk and width of buffer zones can be adjusted based upon the needs of the City.



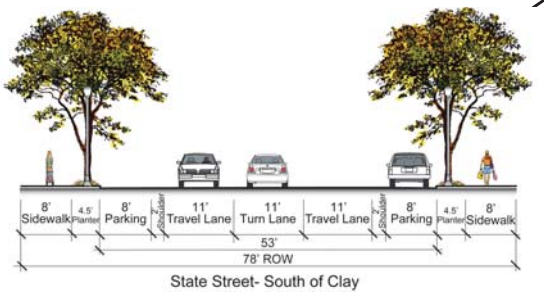
State Street- North of Henry



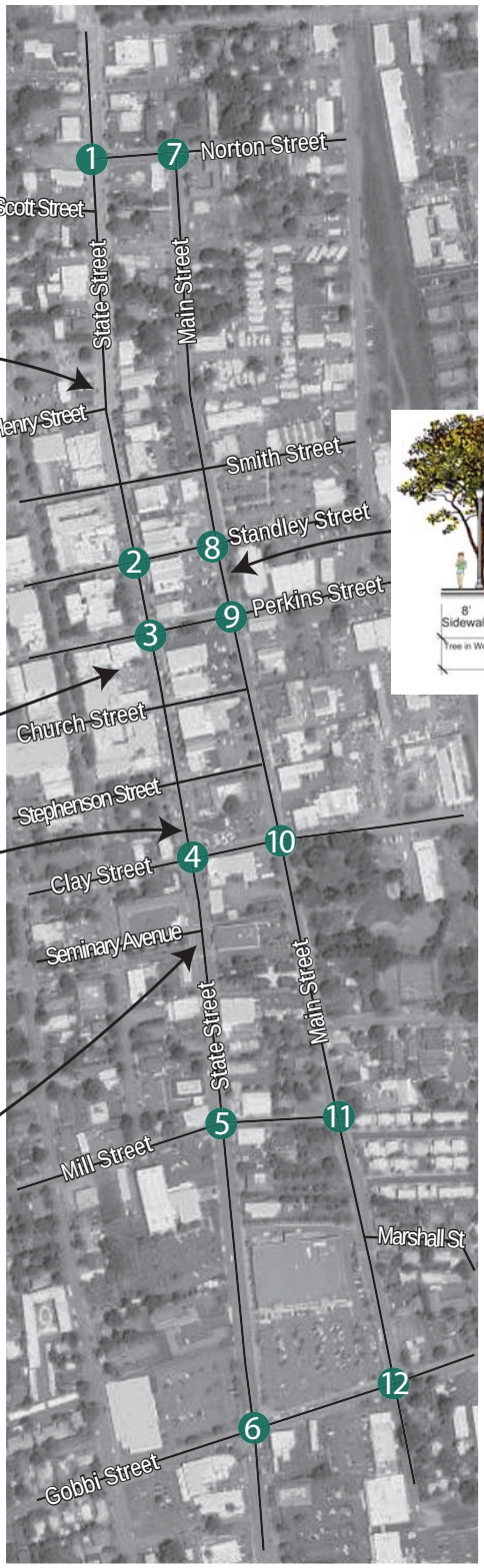
State Street- South of Perkins

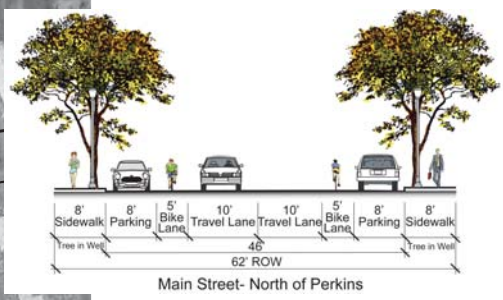


State Street- North of Clay



State Street- South of Clay





Main Street- North of Perkins

LEGEND
Study Intersection

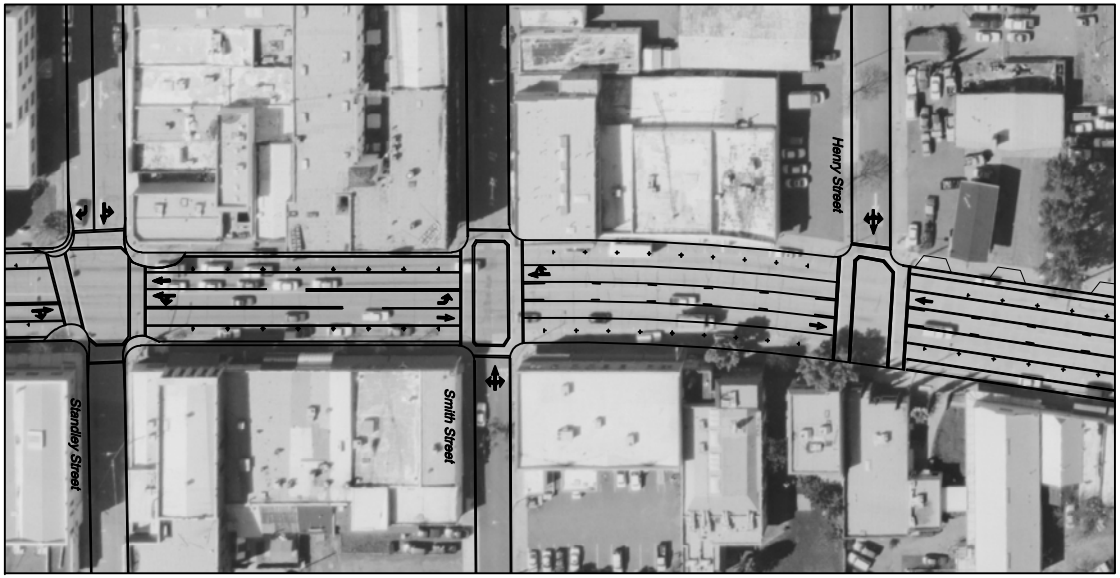
North
Not to Scale

UKI049.ai 6/09

Downtown Streetscape Improvement Plan Traffic Study
City of Ukiah

Figure 6
Proposed Cross Sections

Match Line - See Below



Match Line - See Above

N

DRAWN: TH/VA	DESIGN: SJW	SCALE: 1:120
JOB NO. UKI049		DATE: 5/3/2009

DOWNTOWN STREETSCAPE IMPROVEMENT PLAN TRAFFIC STUDY
City of Ukiah

Figure 7
Preferred Alternative with Limited Angled Parking

w-trans
Whitlock & Weinberger Transportation, Inc.
490 Mendocino Avenue, Suite 201
Santa Rosa, CA 95401
(707) 542-9500 Fax: (707) 542-9590

Table 7
Proposed State Street Road Diet with Parallel Parking Cross-Section Details (feet)

Cross Section	West Side				Center	East Side				Est. ROW
	Side walk	Park	Bike/ Shldr	Travel		Travel	Bike/ Shldr	Park	Side walk	
South of Henry St	14.5	8	2	1x11	1x11	1x11	2	8	14.5	82
North of Smith St	13.5	8	2	1x11	1x11	1x11	2	8	13.5	80
South of Smith St	13.5	8	2	1x11	1x11	1x11	2	8	13.5	79.5
North of Perkins St	14.5	8	2	1x11	1x11	1x11	2	8	14.5	80
South of Perkins St	15.5	8	2	1x11	1x11	1x11	2	8	15.5	84
South of Church St	14	8	2	1x11	1x11	1x11	2	8	14	80
South of Clay St	12.5	8	2	1x11	1x11	1x11	2	8	12.5	78
South of Seminary Ave	8.5	8	2	1x11	1x11	1x11	2	8	8.5	70

Note: Est. = Estimated

State Street Road Diet with Angled Parking

This alternative is the same as the road diet option, except that within the core downtown area of Smith Street to Clay Street, parallel parking would be eliminated along both sides of the street and angled parking installed on one side of the street. The side of the street with angled parking would alternate every one to two blocks. Outside of the core downtown area, parallel parking would be maintained on both sides of the street and a two-way-left-turn lane installed to be used as a left-turn lane at intersections where appropriate. As with the parallel parking option, there is some flexibility to widen sidewalks, install planters or provide a buffer zone between the travel lanes and shoulder as well as install bulb-outs. To accommodate vehicles backing out of parking spaces, a minimum buffer zone between the parking lane and travel lane of two feet is necessary. A summary of proposed cross-sections at several key intersections is provided in Table 8, and Figure 8 shows the proposed plan view. As with the parallel parking option, the summary in Table 8 includes a mix of both widening the sidewalk and installing a buffer zone between the travel lanes and parking lane; however, widening of the sidewalk and the width of buffer zones can be adjusted based upon the needs of the City.

Match Line - See Below

Match Line - See Above

N

DRAWN: TH/VA	DESIGN: SJW	SCALE: 1:120
JOB NO. UKI049		DATE: 5/3/2009

DOWNTOWN STREETSCAPE IMPROVEMENT PLAN TRAFFIC STUDY
City of Ukiah

Figure 8
Road Diet with Angled Parking With Intersection Paths Shown

w-trans
Whitlock & Weinberger Transportation, Inc.
490 Mendocino Avenue, Suite 201
Santa Rosa, CA 95401
(707) 542-9500 Fax: (707) 542-9590

Table 8
Proposed State Street Road Diet with Angled Parking Cross-Section Details (feet)

Cross Section	West Side				Center	East Side				Est. ROW
	Side walk	Park	Bike/ Shldr	Travel		Travel	Bike/ Shldr	Park	Side walk	
South of Henry St	8	7	2	1x11	1x11	1x11	2	7	10	82
North of Smith St	13.5	-	2	1x11	1x11	1x11	4	16	13.5	80
South of Smith St	13.5	16	4	1x11	1x11	1x11	2	-	13.5	79.5
North of Perkins St	14.5	-	2	1x11	1x11	1x11	4	16	14.5	80
South of Perkins St	15.5	16	4	1x11	1x11	1x11	2	-	15.5	84
South of Church St	14	-	2	1x11	1x11	1x11	4	16	14	80
South of Clay St	12.5	8	2	1x11	1x11	1x11	4	16	12.5	78
South of Seminary Ave	9.5	7	2	1x11	1x11	1x11	2	7	9.5	70

Note: Est. = Estimated

Main Street

Main Street with Modified Intersection Control

The alternative for Main Street includes maintenance of a single travel lane in each direction with parallel parking, but reduction of the lane width to ten feet to accommodate a five-foot wide Class II Bicycle Lane in each direction. Additionally, the intersection of Main Street/Gobbi Street was studied as either a signalized intersection or with a roundabout, and the intersection of Main Street/Perkins Street was studied as a signalized intersection. A roundabout at Main Street/Perkins Street was previously ruled out because of the lack of necessary right-of-way. For both intersections, lane adjustments where made to allow for a shared through/right-turn lane and dedicated left-turn lane where appropriate.

Future traffic conditions along State Street through the downtown corridor were analyzed based on two alternative lane configuration and intersection control options for State Street and one alternative lane configuration and intersection control option for Main Street, as described below. The alternatives for Main Street and State Street were each studied independent of the other street. General recommendations are also provided which should be considered in the implementation of any option. All options were compared to future operation of the intersections under their existing configurations.

State Street Road Diet with Parallel Parking

This road diet alternative would reduce the current two through lanes in each direction to a single travel lane in each direction plus a two-way left-turn lane that would operate as a left-turn lane at intersections where appropriate, as shown in Figure 9. Parallel parking would be maintained on both sides of the street. With this alternative, there is some flexibility to widen sidewalks or provide a buffer zone between the travel lanes and parking. Additionally, bulb-outs would be installed at major pedestrian crossing points to reduce the crossing distance.

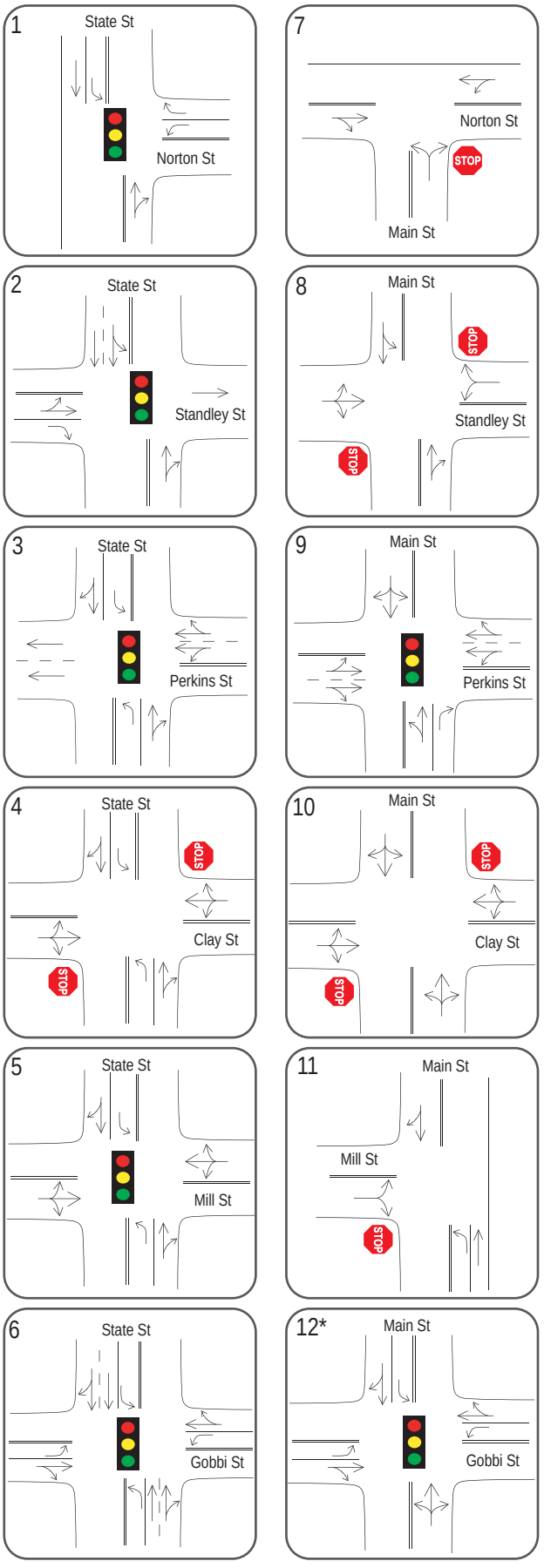
Future Traffic Operations

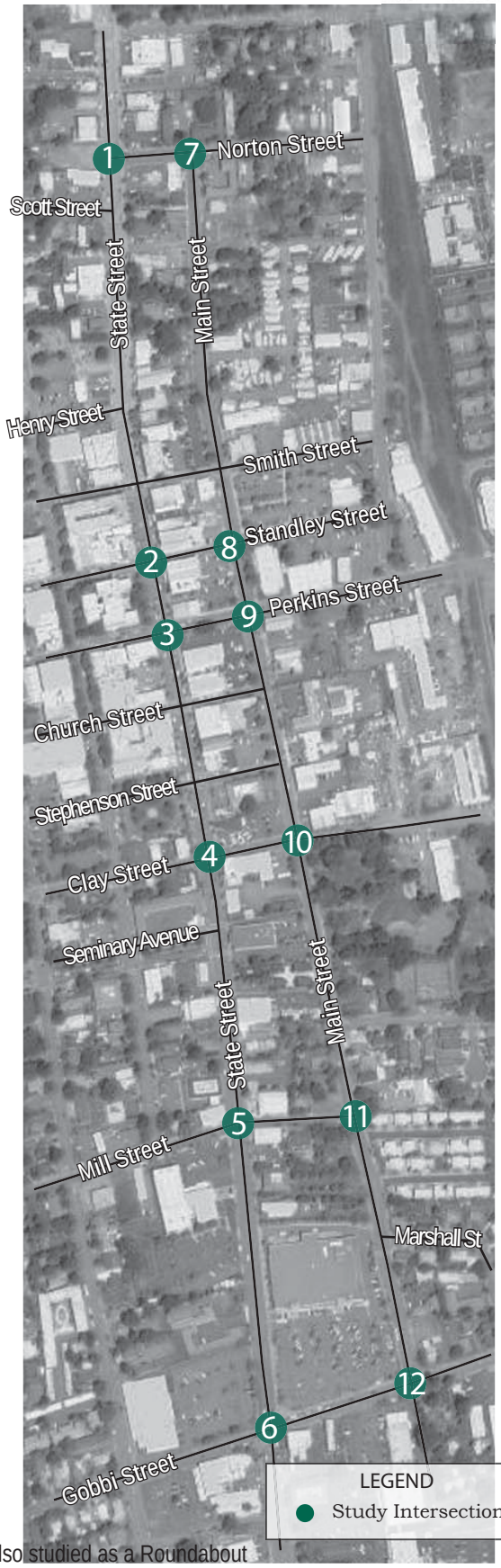
Based on projected future traffic volumes and configurations resulting from the road diet implementation, all of the study intersections are expected to operate acceptably at LOS C or better during the morning and evening peak hours. Table 9 provides a summary of these calculations and copies are provided in Appendix E.

Table 9
Summary of Future Peak Hour Intersection Level of Service Calculations
State Street Road Diet with Parallel Parking Option

Study Intersection *Approach*	AM Peak Hour		PM Peak Hour	
	Delay	LOS	Delay	LOS
1. State St/Norton St	10.9	B	10.3	B
2. State St/Standley St	6.7	A	5.9	A
3. State St/Perkins St	22.0	C	27.9	C
4. State St/Clay St	3.9	A	2.3	A
Eastbound Clay St Approach	*24.7*	*C*	*17.6*	*C*
Westbound Clay St Approach	*20.6*	*C*	*31.0*	*D*
5. State St/Mill St	19.4	B	18.9	B
6. State St/Gobbi St	22.7	C	33.1	C

Notes: Delay is measured in average seconds per vehicle; LOS = Level of Service





*Also studied as a Roundabout

UKI049.ai 6/09

Downtown Streetscape Improvement Plan Traffic Study — Figure 9

City of Ukiah — Future Lane Configurations

Proposed Bicycle Facilities

A buffer zone designated with a white edgeline stripe between the parking lane and travel lane will provide some space for bicyclists to ride outside of the flow of traffic; however, this buffer zone will not be wide enough to accommodate a Class II Bicycle Lane. Because of this additional buffer zone, it is recommended that State Street within the downtown corridor be identified as a Class III Bicycle Route.

Safety Assessment

While it is impossible to predict future collision rates based upon geometric modifications, general trends can be expected. By creating left-turn lanes at intersections and a two-way-left-turn lane between intersections, a driver waiting to turn left will not be obstructing through traffic. This reduces the likelihood of rear-end collisions caused by another driver not expecting a stopped vehicle in the through lane. Additionally, this reduces the possibilities of a driver making an unsafe lane change to avoid delay associated with another vehicle obstructing the through lane while waiting to turn left. This improvement in safety is evident by the fact that the statewide average collision rate for four-lane roads is more than double that for a three-lane facility.

Pedestrian and Bicycle Circulation Impacts

Both State Street alternatives result in a reduction of travel lanes that would benefit pedestrian and bicyclist traffic. For pedestrians, the reduction in travel lanes and installation of bulb-outs would reduce the required crossing distance for a pedestrian, making it safer and more comfortable for a pedestrian to cross State Street. Slower, but more constant traffic flows would also help improve the image of the downtown as a pedestrian environment. For bicyclists, the additional buffer zone provided adjacent to the parking would provide some space for riding that is slightly separated from traffic. Also, the slower speeds would increase comfort and safety for bicyclists.

Parking Impacts

Impacts to parking within the downtown corridor are expected to be minimal under this alternative. The conversion of some one-way cross-streets to two-way streets will result in a loss of some parking spaces. Additionally, the installation of bulb-outs at intersections will result in the loss of some parking spaces along State Street.

Queuing

As with existing conditions, under projected future volumes queuing is expected to extend beyond mid-block, and in some instances beyond the adjacent intersection. While this is projected for both the existing lane configuration and road diet configuration, queuing is generally less of a problem with the road diet configuration because turning vehicles stack in a turn lane so do not cause delay for vehicles in the through lane while with the current split phase stacking occurs in the through lane and affects through traffic.

State Street Road Diet with Angled Parking

This alternative is very similar to the road diet with parallel parking alternative in the sense that the existing four lanes would be reduced to three lanes with a two-way left-turn lane separating the through travel lanes.

This alternative, though, differs in the parking type and location of parking provided. Within the downtown core area between Smith Street and Clay Street parallel parking would be removed from both sides of the street, and angled parking would be installed on one side of the street, with the opposite side of the street having no parking. The side of the street with angled parking would vary every block or two, depending on the characteristics of the land use and any geometric constraints.

Considering current levels of service, the difference in calculated LOS for the State Street Road Diet with Angled Parking compared to the parallel parking alternative is expected to be negligible because the LOS methodology does not consider any geometric issues at the intersection associated with alternating which side of the street has angled parking. Despite this negligible difference in calculated LOS, the offset of lane alignments at intersections would have significant impact to traffic flow. Because this impact cannot be easily quantified, the Angled Parking Alternative was assessed qualitatively.

Traffic Flow

Angled parking maneuvers are less disruptive to the flow of traffic than parallel parking maneuvers because a driver entering a parking space does not need to come to a complete stop, therefore reducing the delay to following drivers. Like with parallel parking, a driver exiting a angled parking must wait for an acceptable gap in traffic to exit the parking space, resulting in no disruption to the flow of traffic.

There are negative impacts to the flow of traffic associated with the proposal to alternate the side of the street with angled parking and eliminate parking on the other side of the street. This alternating pattern will result in an offset of lanes at the intersection, which drivers must navigate at a slower speed, resulting in a decrease in capacity at the intersection. Based upon the amount of offset and the size of the intersection, the speed at which a driver could safely maneuver through the intersections would range between 14 mph and 18 mph, which would restrict the flow of traffic through the corridor. Also, eliminating parking on one side of the street may result in an increased number of drivers making a U-turn or circling around neighboring streets to find parking on the opposite side of the street, resulting in a negative impact to the flow of traffic.

Proposed Bicycle Facilities

A buffer zone between the parking and travel lanes as well as between the travel lane and the curb where parking does not exist will provide some space for bicyclists to ride outside of the flow of traffic; however, this buffer zone will not be wide enough to accommodate a Class II Bicycle Lane. Because of this additional buffer zone, it is recommended that State Street within the downtown corridor be identified as a Class III Bicycle Route.

One-Way Side Street

Recommendations and impacts to one-way streets are the same as under the road diet with parallel parking alternative.

Safety Assessment

As with the road diet with parallel parking option, it is impossible to predict future collision rates based upon geometric alterations; however, it is possible to reasonably estimate possible collision trends and

potential safety issues. Generally, angled parking is considered to be safer than parallel parking because the parking maneuver is less disruptive to the flow of traffic and is more comfortable for the driver. Despite this potential increase of safety due to the angled parking maneuver, this alternative is expected to be less safe than the proposed road diet with parallel parking because of alignment issues at the intersections.

Since this alternative includes alternating the side of the street with angled parking every block or two, it will result in lanes being offset by approximately 12 feet to 14 feet at the transition intersections, as shown on Figure 8. This offset will require drivers to make sharp, and therefore less safe, movements through the intersection. Additionally, a driver not familiar with the downtown corridor could be driving too quickly to make the necessary shift, leaving them facing opposing traffic or conflicting with other movements at the intersection.

Pedestrian Impacts

Since parking will be eliminated on one side of the street, this alternative may result in more people needing to cross State Street after parking to reach their destination. However, installation of bulb-outs at major crossings would increase the safety and comfort of pedestrians crossing State Street. Additionally, this alternative does allow for some flexibility to widen sidewalks, also improving pedestrian comfort.

Parking Impacts

Generally, one of the key advantages of installing angled parking is that it increases the number of parking spaces available compared to parallel parking; however, since this alternative includes removing parking on one side of the street, it is expected that the installation of angled parking will result in an overall reduction in the parking supply within the core downtown corridor. Additional losses occur due to parking setbacks at intersections and driveways so that adequate sight distance can be maintained for turning vehicles. The loss of parking is estimated to be between 33 to 55 percent per block, with the exception of the block adjacent to the Plaza which would actually experience a 28 percent increase in parking spaces. Overall, for State Street between Clay Street and Smith Street, a projected 35 parking spaces will be available with the angled parking option, which is a loss of 22 spaces, or 38.6 percent compared to existing conditions. Since this alternative results in the removal of parking on one side State Street in the downtown core, it could potentially have negative impacts on businesses located on the side of State Street without parking. Outside of the core downtown corridor where parallel parking will be maintained on both sides of the street, there will be no impacts to parking.

Main Street with Modified Intersection Controls

This option would maintain a single travel lane in each direction with parallel parking along Main Street, but reduce the lane width to ten feet wide to accommodate a five-foot wide Class II Bicycle Lane in each direction. This reduction in lane width is expected to be manageable due to the low travel speeds along Main Street. Additionally, the intersection of Main Street/Perkins Street was studied as a signalized intersection and the intersection Main Street/Gobbi Street was studied as either a signalized intersection or with a roundabout.

Future Traffic Operation

Based on projected future traffic volumes and with the modified controls at two of the study intersections, all of the study intersections on Main Street are expected to operate acceptably at LOS C or better during the morning and evening peak hours. Table 10 provides a summary of these results and copies of the calculations are provided in Appendix E.

Table 10
Summary of Future Peak Hour Intersection Levels of Service for Main Street

Study Intersection *Approach*	AM Peak Hour		PM Peak Hour	
	Delay	LOS	Delay	LOS
7. Main St/Norton St	4.3	A	8.0	A
Northbound Main St Approach	*9.5*	*A*	*11.4*	*B*
8. Main St/Standley St	2.5	A	1.1	A
Eastbound Standley St Approach	*10.5*	*B*	*10.9*	*B*
Westbound Standley St Approach	*10.8*	*B*	*12.6*	*B*
9. Main St/Perkins St (signalized)	22.2	C	29.2	C
10. Main St/Clay St	2.3	A	1.1	A
Eastbound Clay St Approach	*11.9*	*B*	*18.4*	*C*
Westbound Clay St Approach	*11.1*	*B*	*12.5*	*B*
11. Main St/Mill St	2.8	A	3.0	A
Eastbound Mill St Approach	*10.7*	*B*	*15.3*	*C*
12. Main St/Gobbi St (signalized)	19.2	B	24.7	C
Main St/Gobbi St (roundabout)	6.9	A	9.2	A

Notes: Delay is measured in average seconds per vehicle; LOS = Level of Service

Bicycle Impacts

By creating Class II Bicycle Lanes through the downtown corridor, this option is expected to be beneficial to bicyclists. Installation of bicycle lanes generally increases both safety and comfort for bicyclists by providing some separation from vehicular traffic. These bicycle lanes may benefit bicyclists with destinations within the downtown corridor while also providing a cross-town route for bicyclists with destinations beyond the downtown corridor.

Pedestrian Impacts

Installation of a traffic signal at Main Street/Perkins Street and the installation of either a traffic signal or roundabout at Main Street/Gobbi Street will provide pedestrians with better protection while crossing at

these intersections. Additionally, it is recommended that any gaps in sidewalk which currently exist along Main Street be filled so that there will be continuous sidewalks within the downtown corridor, further improving pedestrian safety and comfort.

Parking Impacts

This option does not modify the parking that currently exists along Main Street within the downtown corridor; therefore, no impact to parking is expected.

Preferred Alternative

A modified alternative identified for the road diet with parallel parking option includes angled parking on the west side of State Street between Stephenson Street and Clay Street adjacent to the Alex R. Thomas Plaza and no parking on the east side of the street. The main reasoning for this modified alternative is to promote usage of the Plaza by providing easier access and increased parking. Since transitions would need to be provided at each adjacent intersection to the parallel parking on adjacent blocks, there would be an offset at the intersections; however, this is not expected to be significant because the offset is considerably smaller than the offset that would be created under the road diet with angled parking on alternating sides option. This option also have the benefit of increasing the parking supply as this is the only block that would have an increase in the parking supply under the angled parking option. Since angled parking may only be appropriate on State Street where speeds are 30 mph or less, it is suggested that this section of angled parking be phased in at a later date after speeds in the corridor come down with the new road diet alignment.

Angled parking was also considered on the east side of the street at the north end of the downtown corridor on the block between Henry Street and Scott Street. State Street is wide enough through this block to accommodate this angled parking on the east side of the street while maintaining parallel parking on the west side of the street, which would result in an increase in total parking supply. However, since this parking is located at the departure of the downtown core where speeds may increase and on a section which follows a change in street alignment, angled parking should not be installed.

Center Median Opportunities

Installation of a raised center median can have both aesthetic and traffic calming benefits making it a desirable treatment within the downtown corridor; however, since raised medians potentially block left-turn access into and out of mid-block driveways, their installation is not possible everywhere. Due to the large amount of mid-block driveways within the downtown corridor along with short blocks that require left-turn pockets for both adjacent intersections using nearly the entire block length, three locations were identified as possible locations for installation of raised medians:

- State Street, roughly between Mill Street and Gobbi Street, but only between the Safeway Driveway and the Theater Driveway with a center two-way left-turn lane available at these driveways for left and U turn movements.

- State Street, south of Church Street, opening to the south to allow for a left-turn pocket at Stephenson Street.

- State Street, north of Henry Street, which could act as a gateway treatment in lieu of angled parking at this location.

Corridor Analysis

In addition to analyzing individual intersections, the operation of the downtown corridor as a whole was considered. This corridor analysis includes the interaction of each study intersection as well as intermediate intersections which were not studied in individual detail. This interaction of the intersections can be important when considering how closely spaced many intersections are within the downtown corridor. Corridor performance can be greatly affected by lane configuration as well as the type and programming of the traffic signal controller equipment.

Signal Controller Equipment

To further improve corridor operation it is recommended that the City consider modernization of traffic signal equipment at the intersections of State Street/Perkins Street and State Street/Standley Street. These intersections are currently controlled by equipment manufactured by Multisonics. While the Multisonics equipment will likely be able to accommodate the necessary detection equipment, the wiring of such equipment is custom for each intersection, therefore making installation of new equipment to be labor intensive and potentially requiring some expensive additional parts. Because of the potentially high cost of upgrading the current system, it is likely that replacing the equipment with Model 170 controllers would have a similar cost while providing additional benefits. Use of Model 170 controllers would make these intersections compatible and consistent with equipment at other intersections in the downtown corridor, which would allow for coordination with other intersections while easing maintenance by reducing differences in equipment that staff must understand and use.

Future p.m. peak hour traffic volumes were used to evaluate operation of the signalized intersections with both the existing signal equipment and with modified signal equipment that includes detection at all intersections and coordination with adjacent intersections. As shown in Table 11, the modified signals would generally be expected to operate better with less delay than would be experienced using the existing equipment. Copies of the LOS calculations with the signal modifications are provided in Appendix F.

Table 11
Summary of Future PM Peak Hour Level of Service Calculations for Signalized Intersections

Study Intersection	Existing Equipment		Signal Modifications	
	Delay	LOS	Delay	LOS
1. State St/Norton St	10.3	B	10.0	B
2. State St/Standley St	5.9	A	4.5	A
3. State St/Perkins St	27.9	C	26.5	C
5. State St/Mill St	18.9	B	16.0	B
6. State St/Gobbi St	33.1	C	30.8	C
9. Main St/Perkins St	29.2	C	20.8	C
12. Main St/Gobbi St	24.7	C	21.8	C

Notes: Delay is measured in average seconds per vehicle; LOS = Level of Service

Corridor Performance

In addition to evaluating the performance of individual intersections, the performance of the corridor as a whole was evaluated. Data such as delay, fuel consumption and emissions were considered when evaluating the change in corridor performance. These measures of effectiveness were considered for future p.m. peak hour conditions on State Street with the proposed road diet with parallel parking with existing signal equipment, and the proposed road diet with parallel parking with signal equipment upgrades, both of which were compared to future traffic volumes with the existing lane configuration. Despite a reduction from four lanes to three, overall the corridor is expected to perform better under the road diet with parallel parking proposal, even without the upgrades to signal equipment. The improvements in corridor performance increase when the signal equipment is upgraded to provide vehicle detection and coordination. Corridor performance results are summarized in Table 12 and full details are provided in Appendix G.

Table 12
State Street Corridor Measures of Effectiveness – Future PM Peak Hour Traffic

Measure of Effectiveness	Existing Lane Configuration	Road Diet with Existing Signal Equipment		Road Diet with Signal Equipment Upgrades	
			Change*		Change*
Total Delay (hours)	59	51	13.6%	46	22.0%
Average Speed (mph)	14	15	7.1%	16	14.3%
Fuel Consumed (gallon)	141	133	5.7%	130	7.8%
Fuel Economy (mpg)	11.5	12.3	7.0%	12.5	8.7%
CO Emissions (kg)	9.88	9.27	6.2%	9.10	7.9%
NOx Emissions (kg)	1.92	1.80	6.2%	1.77	7.9%
VOC Emissions (kg)	2.29	2.15	6.2%	2.11	7.9%

Note: * Change reported as a percentage improvement compared to the existing lane configuration

Air Quality and Emissions

The use of personal vehicles is considered to be one of the leading contributors of pollution believed to be causing global climate change, including greenhouse gases. Transportation policy decisions greatly affect the number and character of personal vehicle trips made. Within a downtown corridor with characteristics such as State Street in Ukiah, the common cause of an increase in emissions is vehicle idling and stop-and-go-traffic caused by queuing. When a vehicle accelerates from a complete stop, more fuel is generally consumed than when a vehicle is traveling at a constant speed. Additionally, when a vehicle is idling, fuel is being consumed without the vehicle traveling.

In addition to fuel consumption, the Synchro model used to analyze the downtown corridor also reports data on Carbon Monoxide (CO), Nitrogen Oxides (NOx) and Volatile Organic Compounds (VOC). Common byproducts of the internal combustion engine used for vehicles, NOx is considered to be a greenhouse gas and CO and VOC are also known to diminish air quality. As a byproduct of combustion, the amount of these pollutants released is directly proportionate to fuel consumption.

Due to the increased efficiency related to the installation of turn lanes and the associated reduction in vehicle queuing and idling time, the corridor would be expected to experience an overall reduction in fuel consumption and the associated release in these pollutants. These improvements in corridor performance increase with the upgrades to traffic signal equipment. During the p.m. peak the corridor is expected to experience a 6.2 percent decrease in CO, NOx and VOC emissions under the proposed road diet with parallel parking; this increases to an 7.9 percent decrease if equipment upgrades are completed at all signalized intersections. Details of the fuel consumption and emissions data are available in Appendix G and summary corridor performance data is provided in Table 12.

Study Participants and References

Study Participants

Principal-in-Charge:	Steve Weinberger, P.E., PTOE
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Senior Planner:	Zachary Matley, AICP
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Report Review:	Dalene J. Whitlock, P.E., PTOE

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UKI049

Appendix A

Existing Level of Service Calculations

HCM Signalized Intersection Capacity Analysis
1: Norton Street & State Street

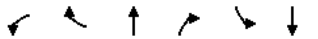
Downtown Ukiah Streetsacpe
2/19/2009

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	25	65	376	19	66	476
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0			4.0
Lane Util. Factor	1.00	1.00	0.95			0.95
Frt	1.00	0.85	0.99			1.00
Flt Protected	0.95	1.00	1.00			0.99
Satd. Flow (prot)	1770	1385	3294			3298
Flt Permitted	0.95	1.00	1.00			0.87
Satd. Flow (perm)	1770	1385	3294			2871
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	26	68	396	20	69	501
RTOR Reduction (vph)	0	41	9	0	0	0
Lane Group Flow (vph)	26	27	407	0	0	570
Parking (#/hr)		5	5			5
Turn Type		Perm			Perm	
Protected Phases	8		2			6
Permitted Phases		8			6	
Actuated Green, G (s)	16.0	16.0	16.0			16.0
Effective Green, g (s)	16.0	16.0	16.0			16.0
Actuated g/C Ratio	0.40	0.40	0.40			0.40
Clearance Time (s)	4.0	4.0	4.0			4.0
Lane Grp Cap (vph)	708	554	1318			1148
v/s Ratio Prot	0.01		0.12			
v/s Ratio Perm		c0.02				c0.20
v/c Ratio	0.04	0.05	0.31			0.50
Uniform Delay, d1	7.3	7.3	8.2			9.0
Progression Factor	1.00	1.00	0.27			1.00
Incremental Delay, d2	0.1	0.2	0.6			1.5
Delay (s)	7.4	7.5	2.8			10.5
Level of Service	A	A	A			B
Approach Delay (s)	7.5		2.8			10.5
Approach LOS	A		A			B

Intersection Summary				
HCM Average Control Delay	7.3	HCM Level of Service	A	
HCM Volume to Capacity ratio	0.27			
Actuated Cycle Length (s)	40.0	Sum of lost time (s)	8.0	
Intersection Capacity Utilization	39.4%	ICU Level of Service	A	
Analysis Period (min)	15			
c Critical Lane Group				

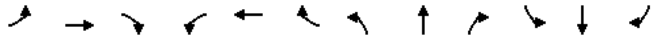
HCM Signalized Intersection Capacity Analysis
1: Norton Street & State Street

2/19/2009



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	52	154	656	33	48	640
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0			4.0
Lane Util. Factor	1.00	1.00	0.95			0.95
Frt	1.00	0.85	0.99			1.00
Flt Protected	0.95	1.00	1.00			1.00
Satd. Flow (prot)	1770	1385	3294			3306
Flt Permitted	0.95	1.00	1.00			0.87
Satd. Flow (perm)	1770	1385	3294			2895
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	55	162	691	35	51	674
RTOR Reduction (vph)	0	67	9	0	0	0
Lane Group Flow (vph)	55	95	717	0	0	725
Parking (#/hr)		5	5			5
Turn Type		Perm			Perm	
Protected Phases	8		2			6
Permitted Phases		8			6	
Actuated Green, G (s)	16.0	16.0	16.0			16.0
Effective Green, g (s)	16.0	16.0	16.0			16.0
Actuated g/C Ratio	0.40	0.40	0.40			0.40
Clearance Time (s)	4.0	4.0	4.0			4.0
Lane Grp Cap (vph)	708	554	1318			1158
v/s Ratio Prot	0.03		0.22			
v/s Ratio Perm		c0.07				c0.25
v/c Ratio	0.08	0.17	0.54			0.63
Uniform Delay, d1	7.4	7.7	9.2			9.6
Progression Factor	1.00	1.00	0.23			1.00
Incremental Delay, d2	0.2	0.7	1.3			2.6
Delay (s)	7.6	8.4	3.5			12.2
Level of Service	A	A	A			B
Approach Delay (s)	8.2		3.5			12.2
Approach LOS	A		A			B

Intersection Summary				
HCM Average Control Delay	7.9	HCM Level of Service	A	
HCM Volume to Capacity ratio	0.40			
Actuated Cycle Length (s)	40.0	Sum of lost time (s)	8.0	
Intersection Capacity Utilization	51.6%	ICU Level of Service	A	
Analysis Period (min)	15			
c Critical Lane Group				

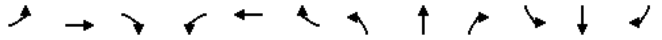


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	31	12	87	0	0	0	0	317	14	17	429	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0					4.0			4.0	
Lane Util. Factor		1.00	1.00					0.95			0.95	
Frt		1.00	0.85					0.99			1.00	
Flt Protected		0.97	1.00					1.00			1.00	
Satd. Flow (prot)		1573	1583					3253			3268	
Flt Permitted		0.97	1.00					1.00			1.00	
Satd. Flow (perm)		1573	1583					3253			3268	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	33	13	92	0	0	0	0	334	15	18	452	0
RTOR Reduction (vph)	0	0	67	0	0	0	0	5	0	0	0	0
Lane Group Flow (vph)	0	46	25	0	0	0	0	344	0	0	470	0
Parking (#/hr)		5			5			10			10	
Turn Type	Split		Perm							Split		
Protected Phases	4	4						2		6	6	
Permitted Phases			4									
Actuated Green, G (s)		16.0	16.0					16.0			16.0	
Effective Green, g (s)		16.0	16.0					16.0			16.0	
Actuated g/C Ratio		0.27	0.27					0.27			0.27	
Clearance Time (s)		4.0	4.0					4.0			4.0	
Lane Grp Cap (vph)		419	422					867			871	
v/s Ratio Prot		c0.03						c0.11			c0.14	
v/s Ratio Perm			0.02									
v/c Ratio		0.11	0.06					0.40			0.54	
Uniform Delay, d1		16.6	16.4					18.0			18.8	
Progression Factor		1.00	1.00					0.33			1.00	
Incremental Delay, d2		0.5	0.3					1.2			2.4	
Delay (s)		17.1	16.7					7.2			21.2	
Level of Service		B	B					A			C	
Approach Delay (s)		16.8			0.0			7.2			21.2	
Approach LOS		B			A			A			C	

Intersection Summary				
HCM Average Control Delay	15.5	HCM Level of Service	B	
HCM Volume to Capacity ratio	0.35			
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	12.0	
Intersection Capacity Utilization	34.3%	ICU Level of Service	A	
Analysis Period (min)	15			
c Critical Lane Group				

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	8	6	94	0	0	0	0	481	27	1	661	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0					4.0			4.0	
Lane Util. Factor		1.00	1.00					0.95			0.95	
Frt		1.00	0.85					0.99			1.00	
Flt Protected		0.97	1.00					1.00			1.00	
Satd. Flow (prot)		1585	1583					3248			3274	
Flt Permitted		0.97	1.00					1.00			1.00	
Satd. Flow (perm)		1585	1583					3248			3274	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	8	6	99	0	0	0	0	506	28	1	696	0
RTOR Reduction (vph)	0	0	73	0	0	0	0	7	0	0	0	0
Lane Group Flow (vph)	0	14	26	0	0	0	0	527	0	0	697	0
Parking (#/hr)		5			5			10			10	
Turn Type	Split		Perm							Split		
Protected Phases	4	4						2		6	6	
Permitted Phases			4									
Actuated Green, G (s)		16.0	16.0					16.0			16.0	
Effective Green, g (s)		16.0	16.0					16.0			16.0	
Actuated g/C Ratio		0.27	0.27					0.27			0.27	
Clearance Time (s)		4.0	4.0					4.0			4.0	
Lane Grp Cap (vph)		423	422					866			873	
v/s Ratio Prot		0.01						c0.16			c0.21	
v/s Ratio Perm			c0.02									
v/c Ratio		0.03	0.06					0.61			0.80	
Uniform Delay, d1		16.3	16.4					19.3			20.5	
Progression Factor		1.00	1.00					0.44			1.00	
Incremental Delay, d2		0.1	0.3					2.5			7.5	
Delay (s)		16.4	16.7					11.0			28.0	
Level of Service		B	B					B			C	
Approach Delay (s)		16.7			0.0			11.0			28.0	
Approach LOS		B			A			B			C	

Intersection Summary				
HCM Average Control Delay	20.3	HCM Level of Service	C	
HCM Volume to Capacity ratio	0.49			
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	12.0	
Intersection Capacity Utilization	30.8%	ICU Level of Service	A	
Analysis Period (min)	15			
c Critical Lane Group				



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	57	207	56	36	275	64	143	338	35
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0			4.0			4.0	
Lane Util. Factor					0.95			0.95			0.95	
Frt					0.97			0.97			0.99	
Flt Protected					0.99			1.00			0.99	
Satd. Flow (prot)					3202			3175			3196	
Flt Permitted					0.99			1.00			0.99	
Satd. Flow (perm)					3202			3175			3196	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	0	0	60	218	59	38	289	67	151	356	37
RTOR Reduction (vph)	0	0	0	0	30	0	0	29	0	0	9	0
Lane Group Flow (vph)	0	0	0	0	307	0	0	365	0	0	535	0
Parking (#/hr)		10			5			10			10	
Turn Type				Split			Split			Split		
Protected Phases				8	8		2	2		6	6	
Permitted Phases												
Actuated Green, G (s)					16.0			16.0			16.0	
Effective Green, g (s)					16.0			16.0			16.0	
Actuated g/C Ratio					0.27			0.27			0.27	
Clearance Time (s)					4.0			4.0			4.0	
Lane Grp Cap (vph)					854			847			852	
v/s Ratio Prot					c0.10			c0.12			c0.17	
v/s Ratio Perm												
v/c Ratio					0.36			0.43			0.63	
Uniform Delay, d1					17.8			18.2			19.4	
Progression Factor					1.00			1.00			0.35	
Incremental Delay, d2					1.2			1.6			3.1	
Delay (s)					19.0			19.8			9.9	
Level of Service					B			B			A	
Approach Delay (s)		0.0			19.0			19.8			9.9	
Approach LOS		A			B			B			A	

Intersection Summary				
HCM Average Control Delay	15.4	HCM Level of Service	B	
HCM Volume to Capacity ratio	0.47			
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	12.0	
Intersection Capacity Utilization	44.5%	ICU Level of Service	A	
Analysis Period (min)	15			
c Critical Lane Group				

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	92	207	105	57	403	104	219	497	39
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0			4.0			4.0	
Lane Util. Factor					0.95			0.95			0.95	
Frt					0.96			0.97			0.99	
Flt Protected					0.99			0.99			0.99	
Satd. Flow (prot)					3152			3167			3202	
Flt Permitted					0.99			0.99			0.99	
Satd. Flow (perm)					3152			3167			3202	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	0	0	97	218	111	60	424	109	231	523	41
RTOR Reduction (vph)	0	0	0	0	59	0	0	32	0	0	7	0
Lane Group Flow (vph)	0	0	0	0	367	0	0	561	0	0	788	0
Parking (#/hr)		10			5			10			10	
Turn Type				Split			Split			Split		
Protected Phases				8	8		2	2		6	6	
Permitted Phases												
Actuated Green, G (s)					16.0			16.0			16.0	
Effective Green, g (s)					16.0			16.0			16.0	
Actuated g/C Ratio					0.27			0.27			0.27	
Clearance Time (s)					4.0			4.0			4.0	
Lane Grp Cap (vph)					841			845			854	
v/s Ratio Prot					c0.12			c0.18			c0.25	
v/s Ratio Perm												
v/c Ratio					0.44			0.66			0.92	
Uniform Delay, d1					18.3			19.6			21.4	
Progression Factor					1.00			1.00			0.51	
Incremental Delay, d2					1.6			4.1			12.5	
Delay (s)					19.9			23.7			23.3	
Level of Service					B			C			C	
Approach Delay (s)		0.0			19.9			23.7			23.3	
Approach LOS		A			B			C			C	

Intersection Summary				
HCM Average Control Delay	22.7	HCM Level of Service	C	
HCM Volume to Capacity ratio	0.67			
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	12.0	
Intersection Capacity Utilization	59.2%	ICU Level of Service	B	
Analysis Period (min)	15			
c Critical Lane Group				

AM Peak Hour - Existing Conditions
Traffic Analysis for the Downtown
City of Ukiah

Level Of Service Computation Report
2000 HCM Unsignalized Method (Base Volume Alternative)

Intersection #4 State St/Clay St

Average Delay (sec/veh): 4.3 Worst Case Level Of Service: C[21.9]

Street Name:	State St									Clay St								
Approach:	North Bound				South Bound				East Bound				West Bound					
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Uncontrolled				Uncontrolled				Stop Sign				Stop Sign					
Rights:	Include				Include				Include				Include					
Lanes:	0	1	0	1	0	0	1	0	1	0	0	0	1!	0	0	0	0	1!	0	0
Volume Module:																				
Base Vol:	71	350		35		2	324		1		10		90		41	8		7		6
Growth Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00		1.00		1.00	1.00		1.00		1.00
Initial Bse:	71	350		35		2	324		1		10		90		41	8		7		6
User Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00		1.00		1.00	1.00		1.00		1.00
PHF Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00		1.00		1.00	1.00		1.00		1.00
PHF Volume:	71	350		35		2	324		1		10		90		41	8		7		6
Reduct Vol:	0	0		0		0	0		0		0		0		0	0		0		0
FinalVolume:	71	350		35		2	324		1		10		90		41	8		7		6
Critical Gap Module:																				
Critical Gp:	4.1	xxxx	xxxxx			4.1	xxxx	xxxxx			7.5		6.5		6.9	7.5		6.5		6.9
FollowUpTim:	2.2	xxxx	xxxxx			2.2	xxxx	xxxxx			3.5		4.0		3.3	3.5		4.0		3.3
Capacity Module:																				
Cnflict Vol:	325	xxxx	xxxxx			385	xxxx	xxxxx			649		856		163	721		839		193
Potent Cap.:	1246	xxxx	xxxxx			1185	xxxx	xxxxx			359		298		860	319		304		823
Move Cap.:	1246	xxxx	xxxxx			1185	xxxx	xxxxx			333		279		860	218		285		823
Volume/Cap:	0.06	xxxx	xxxx			0.00	xxxx	xxxx			0.03		0.32		0.05	0.04		0.02		0.01
Level Of Service Module:																				
2Way95thQ:	0.2	xxxx	xxxxx			0.0	xxxx	xxxxx			xxxx		xxxx		xxxxx	xxxx		xxxx		xxxxx
Control Del:	8.1	xxxx	xxxxx			8.0	xxxx	xxxxx			xxxxx		xxxx		xxxxx	xxxxx		xxxx		xxxxx
LOS by Move:	A	*	*			A	*	*			*		*		*	*		*		*
Movement:	LT	-	LTR	-	RT	LT	-	LTR	-	RT	LT	-	LTR	-	RT	LT	-	LTR	-	RT
Shared Cap.:	xxxx	xxxx	xxxxx			xxxx	xxxx	xxxxx			xxxx		352		xxxxx	xxxx		306		xxxxx
SharedQueue:	0.2	xxxx	xxxxx			0.0	xxxx	xxxxx			xxxxx		1.9		xxxxx	xxxxx		0.2		xxxxx
Shrd ConDel:	8.1	xxxx	xxxxx			8.0	xxxx	xxxxx			xxxxx		21.9		xxxxx	xxxxx		17.6		xxxxx
Shared LOS:	A	*	*			A	*	*			*		C		*	*		C		*
ApproachDel:	xxxxxx					xxxxxx					21.9					17.6				
ApproachLOS:	*					*					C					C				

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Existing Conditions
Traffic Analysis for the Downtown
City of Ukiah

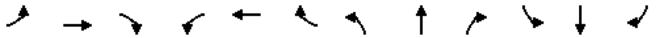
Level Of Service Computation Report
2000 HCM Unsignalized Method (Base Volume Alternative)

Intersection #4 State St/Clay St

Average Delay (sec/veh): 2.1 Worst Case Level Of Service: D[28.8]

Street Name:	State St									Clay St								
Approach:	North Bound				South Bound				East Bound				West Bound					
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Uncontrolled				Uncontrolled				Stop Sign				Stop Sign					
Rights:	Include				Include				Include				Include					
Lanes:	0	1	0	1	0	0	1	0	1	0	0	0	1!	0	0	0	0	1!	0	0
Volume Module:																				
Base Vol:	25	550		38		10	565		32		1		11		83	26		14		5
Growth Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00		1.00		1.00	1.00		1.00		1.00
Initial Bse:	25	550		38		10	565		32		1		11		83	26		14		5
User Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00		1.00		1.00	1.00		1.00		1.00
PHF Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00		1.00		1.00	1.00		1.00		1.00
PHF Volume:	25	550		38		10	565		32		1		11		83	26		14		5
Reduct Vol:	0	0		0		0	0		0		0		0		0	0		0		0
FinalVolume:	25	550		38		10	565		32		1		11		83	26		14		5
Critical Gap Module:																				
Critical Gp:	4.1	xxxx	xxxxx			4.1	xxxx	xxxxx			7.5		6.5		6.9	7.5		6.5		6.9
FollowUpTim:	2.2	xxxx	xxxxx			2.2	xxxx	xxxxx			3.5		4.0		3.3	3.5		4.0		3.3
Capacity Module:																				
Cnflict Vol:	597	xxxx	xxxxx			588	xxxx	xxxxx			933		1239		299	927		1236		294
Potent Cap.:	989	xxxx	xxxxx			997	xxxx	xxxxx			224		177		704	226		178		708
Move Cap.:	989	xxxx	xxxxx			997	xxxx	xxxxx			203		171		704	185		171		708
Volume/Cap:	0.03	xxxx	xxxx			0.01	xxxx	xxxx			0.00		0.06		0.12	0.14		0.08		0.01
Level Of Service Module:																				
2Way95thQ:	0.1	xxxx	xxxxx			0.0	xxxx	xxxxx			xxxx		xxxx		xxxxx	xxxx		xxxx		xxxxx
Control Del:	8.7	xxxx	xxxxx			8.6	xxxx	xxxxx			xxxxx		xxxx		xxxxx	xxxxx		xxxx		xxxxx
LOS by Move:	A	*	*			A	*	*			*		*		*	*		*		*
Movement:	LT	-	LTR	-	RT	LT	-	LTR	-	RT	LT	-	LTR	-	RT	LT	-	LTR	-	RT
Shared Cap.:	xxxx	xxxx	xxxxx			xxxx	xxxx	xxxxx			xxxx		507		xxxxx	xxxx		196		xxxxx
SharedQueue:	0.1	xxxx	xxxxx			0.0	xxxx	xxxxx			xxxxx		0.7		xxxxx	xxxxx		0.9		xxxxx
Shrd ConDel:	8.7	xxxx	xxxxx			8.6	xxxx	xxxxx			xxxxx		13.7		xxxxx	xxxxx		28.8		xxxxx
Shared LOS:	A	*	*			A	*	*			*		B		*	*		D		*
ApproachDel:	xxxxxx					xxxxxx					13.7					28.8				
ApproachLOS:	*					*					B					D				

Note: Queue reported is the number of cars per lane.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	42	85	59	3	48	10	28	374	3	4	339	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0			4.0	
Lane Util. Factor		1.00			1.00			0.95			0.95	
Frt		0.96			0.98			1.00			0.99	
Flt Protected		0.99			1.00			1.00			1.00	
Satd. Flow (prot)		1543			1589			3270			3243	
Flt Permitted		0.94			0.99			0.92			0.95	
Satd. Flow (perm)		1459			1576			3008			3086	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	44	89	62	3	51	11	29	394	3	4	357	32
RTOR Reduction (vph)	0	37	0	0	7	0	0	1	0	0	16	0
Lane Group Flow (vph)	0	158	0	0	58	0	0	425	0	0	377	0
Bus Blockages (#/hr)	0	0	0	0	0	0	0	5	0	0	5	0
Parking (#/hr)		5			5			5			5	
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		16.0			16.0			16.0			16.0	
Effective Green, g (s)		16.0			16.0			16.0			16.0	
Actuated g/C Ratio		0.40			0.40			0.40			0.40	
Clearance Time (s)		4.0			4.0			4.0			4.0	
Lane Grp Cap (vph)		584			630			1203			1234	
v/s Ratio Prot												
v/s Ratio Perm		c0.11			0.04			c0.14			0.12	
v/c Ratio		0.27			0.09			0.35			0.31	
Uniform Delay, d1		8.1			7.5			8.4			8.2	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		1.1			0.3			0.8			0.6	
Delay (s)		9.2			7.8			9.2			8.8	
Level of Service		A			A			A			A	
Approach Delay (s)		9.2			7.8			9.2			8.8	
Approach LOS		A			A			A			A	

Intersection Summary				
HCM Average Control Delay	9.0	HCM Level of Service	A	
HCM Volume to Capacity ratio	0.31			
Actuated Cycle Length (s)	40.0	Sum of lost time (s)	8.0	
Intersection Capacity Utilization	48.8%	ICU Level of Service	A	
Analysis Period (min)	15			

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	48	96	101	15	106	22	36	570	17	14	579	53
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0			4.0	
Lane Util. Factor		1.00			1.00			0.95			0.95	
Frt		0.94			0.98			1.00			0.99	
Flt Protected		0.99			0.99			1.00			1.00	
Satd. Flow (prot)		1524			1588			3262			3241	
Flt Permitted		0.92			0.96			0.90			0.94	
Satd. Flow (perm)		1423			1534			2931			3043	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	51	101	106	16	112	23	38	600	18	15	609	56
RTOR Reduction (vph)	0	63	0	0	14	0	0	5	0	0	17	0
Lane Group Flow (vph)	0	195	0	0	137	0	0	651	0	0	663	0
Bus Blockages (#/hr)	0	0	0	0	0	0	0	5	0	0	5	0
Parking (#/hr)		5			5			5			5	
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		16.0			16.0			16.0			16.0	
Effective Green, g (s)		16.0			16.0			16.0			16.0	
Actuated g/C Ratio		0.40			0.40			0.40			0.40	
Clearance Time (s)		4.0			4.0			4.0			4.0	
Lane Grp Cap (vph)		569			614			1172			1217	
v/s Ratio Prot												
v/s Ratio Perm		c0.14			0.09			c0.22			0.22	
v/c Ratio		0.34			0.22			0.56			0.54	
Uniform Delay, d1		8.3			7.9			9.3			9.2	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		1.6			0.8			1.9			1.8	
Delay (s)		10.0			8.7			11.2			11.0	
Level of Service		A			A			B			B	
Approach Delay (s)		10.0			8.7			11.2			11.0	
Approach LOS		A			A			B			B	

Intersection Summary				
HCM Average Control Delay	10.7	HCM Level of Service	B	
HCM Volume to Capacity ratio	0.45			
Actuated Cycle Length (s)	40.0	Sum of lost time (s)	8.0	
Intersection Capacity Utilization	68.7%	ICU Level of Service	C	
Analysis Period (min)	15			

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	49	211	30	106	231	51	34	354	126	7	308	27
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frt	1.00	0.98		1.00	0.97		1.00	0.96		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1599		1770	1812		1770	3187		1770	3278	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	1599		1770	1812		1770	3187		1770	3278	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	52	222	32	112	243	54	36	373	133	7	324	28
RTOR Reduction (vph)	0	9	0	0	13	0	0	60	0	0	11	0
Lane Group Flow (vph)	52	245	0	112	284	0	36	446	0	7	341	0
Parking (#/hr)		5						5			5	
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases												
Actuated Green, G (s)	4.0	17.0		7.0	20.0		4.0	16.0		4.0	16.0	
Effective Green, g (s)	4.0	17.0		7.0	20.0		4.0	16.0		4.0	16.0	
Actuated g/C Ratio	0.07	0.28		0.12	0.33		0.07	0.27		0.07	0.27	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Grp Cap (vph)	118	453		207	604		118	850		118	874	
v/s Ratio Prot	0.03	c0.15		c0.06	c0.16		0.02	c0.14		0.00	c0.10	
v/s Ratio Perm												
v/c Ratio	0.44	0.54		0.54	0.47		0.31	0.52		0.06	0.39	
Uniform Delay, d1	26.9	18.2		25.0	15.8		26.7	18.8		26.2	18.0	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	11.5	4.6		9.8	2.6		6.6	2.3		1.0	1.3	
Delay (s)	38.4	22.8		34.8	18.4		33.2	21.1		27.2	19.3	
Level of Service	D	C		C	B		C	C		C	B	
Approach Delay (s)		25.5			22.9			21.9			19.5	
Approach LOS		C			C			C			B	

Intersection Summary				
HCM Average Control Delay	22.3	HCM Level of Service	C	
HCM Volume to Capacity ratio	0.53			
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	16.0	
Intersection Capacity Utilization	49.3%	ICU Level of Service	A	
Analysis Period (min)	15			
c Critical Lane Group				

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	75	184	57	226	176	64	66	496	189	90	448	58
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frt	1.00	0.96		1.00	0.96		1.00	0.96		1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1572		1770	1788		1770	3181		1770	3261	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	1572		1770	1788		1770	3181		1770	3261	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	79	194	60	238	185	67	69	522	199	95	472	61
RTOR Reduction (vph)	0	17	0	0	20	0	0	61	0	0	16	0
Lane Group Flow (vph)	79	237	0	238	232	0	69	660	0	95	517	0
Parking (#/hr)		5						5			5	
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases												
Actuated Green, G (s)	7.0	17.0		11.0	21.0		4.0	16.0		5.0	17.0	
Effective Green, g (s)	7.0	17.0		11.0	21.0		4.0	16.0		5.0	17.0	
Actuated g/C Ratio	0.11	0.26		0.17	0.32		0.06	0.25		0.08	0.26	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Grp Cap (vph)	191	411		300	578		109	783		136	853	
v/s Ratio Prot	0.04	c0.15		c0.13	c0.13		0.04	c0.21		c0.05	0.16	
v/s Ratio Perm												
v/c Ratio	0.41	0.58		0.79	0.40		0.63	0.84		0.70	0.61	
Uniform Delay, d1	27.1	20.9		25.9	17.1		29.8	23.3		29.3	21.1	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	6.5	5.8		19.1	2.1		24.8	10.7		25.8	3.2	
Delay (s)	33.6	26.7		45.0	19.2		54.6	34.0		55.0	24.3	
Level of Service	C	C		D	B		D	C		E	C	
Approach Delay (s)		28.3			31.7			35.8			28.9	
Approach LOS		C			C			D			C	

Intersection Summary				
HCM Average Control Delay	31.9	HCM Level of Service	C	
HCM Volume to Capacity ratio	0.76			
Actuated Cycle Length (s)	65.0	Sum of lost time (s)	20.0	
Intersection Capacity Utilization	63.7%	ICU Level of Service	B	
Analysis Period (min)	15			
c Critical Lane Group				

AM Peak Hour - Existing Conditions
Traffic Analysis for the Downtown
City of Ukiah

Level Of Service Computation Report
2000 HCM Unsignalized Method (Base Volume Alternative)

Intersection #7 Main St/Norton St

Average Delay (sec/veh): 4.1 Worst Case Level Of Service: A[9.3]

Street Name:	Main St						Norton St					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	- T	- R	L	- T	- R	L	- T	- R	L	- T	- R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Rights:	Include			Include			Include			Include		
Lanes:	0 0	1! 0	0	0 0	0 0	0	0 0	0 1	0	0 1	0 0	0
Volume Module:												
Base Vol:	72	0	10	0	0	0	0	10	76	11	25	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	72	0	10	0	0	0	0	10	76	11	25	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	72	0	10	0	0	0	0	10	76	11	25	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	72	0	10	0	0	0	0	10	76	11	25	0
Critical Gap Module:												
Critical Gp:	6.4	6.5	6.2	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	4.1	xxxx	xxxxx
FollowUpTim:	3.5	4.0	3.3	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	2.2	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	95	95	48	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	86	xxxx	xxxxx
Potent Cap.:	909	799	1027	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	1523	xxxx	xxxxx
Move Cap.:	904	793	1027	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	1523	xxxx	xxxxx
Volume/Cap:	0.08	0.00	0.01	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	0.01	xxxx	xxxx
Level Of Service Module:												
2Way95thQ:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	0.0	xxxx	xxxxx
Control Del:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	7.4	xxxx	xxxxx
LOS by Move:	*	*	*	*	*	*	*	*	*	A	*	*
Movement:	LT -	LTR -	RT	LT -	LTR -	RT	LT -	LTR -	RT	LT -	LTR -	RT
Shared Cap.:	xxxx	918	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
SharedQueue:	xxxxx	0.3	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	0.0	xxxx	xxxxx
Shrd ConDel:	xxxxx	9.3	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	7.4	xxxx	xxxxx
Shared LOS:	*	A	*	*	*	*	*	*	*	A	*	*
ApproachDel:		9.3		xxxxxx			xxxxxx			xxxxxx		
ApproachLOS:		A		*			*			*		

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Existing Conditions
Traffic Analysis for the Downtown
City of Ukiah

Level Of Service Computation Report
2000 HCM Unsignalized Method (Base Volume Alternative)

Intersection #7 Main St/Norton St

Average Delay (sec/veh): 6.7 Worst Case Level Of Service: B[10.2]

Street Name:	Main St						Norton St					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	- T	- R	L	- T	- R	L	- T	- R	L	- T	- R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Rights:	Include			Include			Include			Include		
Lanes:	0 0	1! 0	0	0 0	0 0	0	0 0	0 1	0	0 1	0 0	0
Volume Module:												
Base Vol:	182	0	38	0	0	0	0	18	57	11	45	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	182	0	38	0	0	0	0	18	57	11	45	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	182	0	38	0	0	0	0	18	57	11	45	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	182	0	38	0	0	0	0	18	57	11	45	0
Critical Gap Module:												
Critical Gp:	6.4	6.5	6.2	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	4.1	xxxx	xxxxx
FollowUpTim:	3.5	4.0	3.3	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	2.2	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	114	114	47	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	75	xxxx	xxxxx
Potent Cap.:	888	780	1029	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	1537	xxxx	xxxxx
Move Cap.:	883	775	1029	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	1537	xxxx	xxxxx
Volume/Cap:	0.21	0.00	0.04	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	0.01	xxxx	xxxx
Level Of Service Module:												
2Way95thQ:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	0.0	xxxx	xxxxx
Control Del:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	7.4	xxxx	xxxxx
LOS by Move:	*	*	*	*	*	*	*	*	*	A	*	*
Movement:	LT -	LTR -	RT	LT -	LTR -	RT	LT -	LTR -	RT	LT -	LTR -	RT
Shared Cap.:	xxxx	905	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
SharedQueue:	xxxxx	1.0	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	0.0	xxxx	xxxxx
Shrd ConDel:	xxxxx	10.2	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	7.4	xxxx	xxxxx
Shared LOS:	*	B	*	*	*	*	*	*	*	A	*	*
ApproachDel:		10.2		xxxxxx			xxxxxx			xxxxxx		
ApproachLOS:		B		*			*			*		

Note: Queue reported is the number of cars per lane.

AM Peak Hour - Existing Conditions
Traffic Analysis for the Downtown
City of Ukiah

Level Of Service Computation Report
2000 HCM Unsignalized Method (Base Volume Alternative)

Intersection #8 Main St/Standley St

Average Delay (sec/veh): 2.5 Worst Case Level Of Service: B[10.7]

Street Name:	Main St									Standley St					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Lanes:	0	0	0	1	0	0	1	0	0	0	0	0	1!	0	0	0	0	1!	0	0
Volume Module:																				
Base Vol:	0	155		11		5	89		0		13	21		9		30		0		2
Growth Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00		1.00		1.00
Initial Bse:	0	155		11		5	89		0		13	21		9		30		0		2
User Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00		1.00		1.00
PHF Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00		1.00		1.00
PHF Volume:	0	155		11		5	89		0		13	21		9		30		0		2
Reduct Vol:	0	0		0		0	0		0		0	0		0		0		0		0
FinalVolume:	0	155		11		5	89		0		13	21		9		30		0		2
Critical Gap Module:																				
Critical Gp:	xxxxx	xxxx	xxxxx			4.1	xxxx	xxxxx			7.1	6.5		6.2		7.1		6.5		6.2
FollowUpTim:	xxxxx	xxxx	xxxxx			2.2	xxxx	xxxxx			3.5	4.0		3.3		3.5		4.0		3.3
Capacity Module:																				
Cnflict Vol:	xxxx	xxxx	xxxxx			166	xxxx	xxxxx			261	265		89		275		260		161
Potent Cap.:	xxxx	xxxx	xxxxx			1424	xxxx	xxxxx			697	644		975		682		648		890
Move Cap.:	xxxx	xxxx	xxxxx			1424	xxxx	xxxxx			693	642		975		657		646		890
Volume/Cap:	xxxx	xxxx	xxxx			0.00	xxxx	xxxx			0.02	0.03		0.01		0.05		0.00		0.00
Level Of Service Module:																				
2Way95thQ:	xxxx	xxxx	xxxxx			0.0	xxxx	xxxxx			xxxx	xxxx	xxxxx			xxxx	xxxx	xxxxx		
Control Del:	xxxxx	xxxx	xxxxx			7.5	xxxx	xxxxx			xxxxx	xxxx	xxxxx			xxxxx	xxxx	xxxxx		
LOS by Move:	*	*	*			A	*	*			*	*	*			*	*	*		
Movement:	LT -	LTR -	RT			LT -	LTR -	RT			LT -	LTR -	RT			LT -	LTR -	RT		
Shared Cap.:	xxxx	xxxx	xxxxx			xxxx	xxxx	xxxxx			xxxx	708	xxxxx			xxxx	668	xxxxx		
SharedQueue:	xxxxx	xxxx	xxxxx			0.0	xxxx	xxxxx			xxxxx	0.2	xxxxx			xxxxx	0.2	xxxxx		
Shrd ConDel:	xxxxx	xxxx	xxxxx			7.5	xxxx	xxxxx			xxxxx	10.4	xxxxx			xxxxx	10.7	xxxxx		
Shared LOS:	*	*	*			A	*	*			*	B	*			*	B	*		
ApproachDel:	xxxxxx					xxxxxx					10.4					10.7				
ApproachLOS:	*					*					B					B				

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Existing Conditions
Traffic Analysis for the Downtown
City of Ukiah

Level Of Service Computation Report
2000 HCM Unsignalized Method (Base Volume Alternative)

Intersection #8 Main St/Standley St

Average Delay (sec/veh): 1.3 Worst Case Level Of Service: B[10.8]

Street Name:	Main St									Standley St					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Lanes:	0	0	0	1	0	0	1	0	0	0	0	0	1!	0	0	0	0	1!	0	0
Volume Module:																				
Base Vol:	0	226		32		0	189		0		6	0		32		10		0		15
Growth Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00		1.00		1.00
Initial Bse:	0	226		32		0	189		0		6	0		32		10		0		15
User Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00		1.00		1.00
PHF Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00		1.00		1.00
PHF Volume:	0	226		32		0	189		0		6	0		32		10		0		15
Reduct Vol:	0	0		0		0	0		0		0	0		0		0		0		0
FinalVolume:	0	226		32		0	189		0		6	0		32		10		0		15
Critical Gap Module:																				
Critical Gp:	xxxxx	xxxx	xxxxx			xxxxx	xxxx	xxxxx			7.1	6.5		6.2		7.1		6.5		6.2
FollowUpTim:	xxxxx	xxxx	xxxxx			xxxxx	xxxx	xxxxx			3.5	4.0		3.3		3.5		4.0		3.3
Capacity Module:																				
Cnflict Vol:	xxxx	xxxx	xxxxx			xxxx	xxxx	xxxxx			439	447		189		447		431		242
Potent Cap.:	xxxx	xxxx	xxxxx			xxxx	xxxx	xxxxx			532	509		858		525		520		802
Move Cap.:	xxxx	xxxx	xxxxx			xxxx	xxxx	xxxxx			522	509		858		506		520		802
Volume/Cap:	xxxx	xxxx	xxxx			xxxx	xxxx	xxxx			0.01	0.00		0.04		0.02		0.00		0.02
Level Of Service Module:																				
2Way95thQ:	xxxx	xxxx	xxxxx			xxxx	xxxx	xxxxx			xxxx	xxxx	xxxxx			xxxx	xxxx	xxxxx		
Control Del:	xxxxx	xxxx	xxxxx			xxxxx	xxxx	xxxxx			xxxxx	xxxx	xxxxx			xxxxx	xxxx	xxxxx		
LOS by Move:	*	*	*			*	*	*			*	*	*			*	*	*		
Movement:	LT -	LTR -	RT			LT -	LTR -	RT			LT -	LTR -	RT			LT -	LTR -	RT		
Shared Cap.:	xxxx	xxxx	xxxxx			xxxx	xxxx	xxxxx			xxxx	779	xxxxx			xxxx	650	xxxxx		
SharedQueue:	xxxxx	xxxx	xxxxx			xxxxx	xxxx	xxxxx			xxxxx	0.2	xxxxx			xxxxx	0.1	xxxxx		
Shrd ConDel:	xxxxx	xxxx	xxxxx			xxxxx	xxxx	xxxxx			xxxxx	9.9	xxxxx			xxxxx	10.8	xxxxx		
Shared LOS:	*	*	*			*	*	*			*	A	*			*	B	*		
ApproachDel:	xxxxxx					xxxxxx					9.9					10.8				
ApproachLOS:	*					*					A					B				

Note: Queue reported is the number of cars per lane.

AM Peak Hour - Existing Conditions
Traffic Analysis for the Downtown
City of Ukiah

Level Of Service Computation Report
2000 HCM 4-Way Stop Method (Base Volume Alternative)

Intersection #9 Main St/Perkins St

Cycle (sec): 100 Critical Vol./Cap.(X): 0.432
Loss Time (sec): 0 (Y+R=4.0 sec) Average Delay (sec/veh): 11.6
Optimal Cycle: 0 Level Of Service: B

Street Name:	Main St						Perkins St					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	0 1	0	0 1	0	0 1!	0 0	0 1	0	1 0	0 1	0	1 0
Volume Module:												
Base Vol:	17	88	138	60	60	14	9	183	18	125	298	69
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	17	88	138	60	60	14	9	183	18	125	298	69
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	17	88	138	60	60	14	9	183	18	125	298	69
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	17	88	138	60	60	14	9	183	18	125	298	69
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	17	88	138	60	60	14	9	183	18	125	298	69
Saturation Flow Module:												
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	0.16	0.84	1.00	0.45	0.45	0.10	0.09	1.74	0.17	0.51	1.21	0.28
Final Sat.:	84	433	582	228	228	53	46	957	95	289	721	172
Capacity Analysis Module:												
Vol/Sat:	0.20	0.20	0.24	0.26	0.26	0.26	0.19	0.19	0.19	0.43	0.41	0.40
Crit Moves:			****		****		****			****		
Delay/Veh:	10.9	10.9	10.2	11.8	11.8	11.8	10.4	10.3	10.2	13.3	12.5	12.0
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	10.9	10.9	10.2	11.8	11.8	11.8	10.4	10.3	10.2	13.3	12.5	12.0
LOS by Move:	B	B	B	B	B	B	B	B	B	B	B	B
ApproachDel:	10.5			11.8			10.3			12.6		
Delay Adj:	1.00			1.00			1.00			1.00		
ApprAdjDel:	10.5			11.8			10.3			12.6		
LOS by Appr:	B			B			B			B		
AllWayAvgQ:	0.2	0.2	0.3	0.3	0.3	0.3	0.2	0.2	0.2	0.7	0.6	0.6

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Existing Conditions
Traffic Analysis for the Downtown
City of Ukiah

Level Of Service Computation Report
2000 HCM 4-Way Stop Method (Base Volume Alternative)

Intersection #9 Main St/Perkins St

Cycle (sec): 100 Critical Vol./Cap.(X): 0.616
Loss Time (sec): 0 (Y+R=4.0 sec) Average Delay (sec/veh): 17.3
Optimal Cycle: 0 Level Of Service: C

Street Name:	Main St						Perkins St					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	0 1	0	0 1	0	0 1!	0 0	0 1	0	1 0	0 1	0	1 0
Volume Module:												
Base Vol:	30	167	235	104	110	23	9	289	25	158	338	82
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	30	167	235	104	110	23	9	289	25	158	338	82
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	30	167	235	104	110	23	9	289	25	158	338	82
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	30	167	235	104	110	23	9	289	25	158	338	82
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	30	167	235	104	110	23	9	289	25	158	338	82
Saturation Flow Module:												
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	0.15	0.85	1.00	0.44	0.46	0.10	0.06	1.79	0.15	0.55	1.17	0.28
Final Sat.:	69	386	506	193	204	43	25	809	71	256	571	142
Capacity Analysis Module:												
Vol/Sat:	0.43	0.43	0.46	0.54	0.54	0.54	0.36	0.36	0.35	0.62	0.59	0.58
Crit Moves:			****		****		****			****		
Delay/Veh:	15.8	15.8	15.1	19.0	19.0	19.0	14.4	14.2	14.1	21.1	19.6	18.6
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	15.8	15.8	15.1	19.0	19.0	19.0	14.4	14.2	14.1	21.1	19.6	18.6
LOS by Move:	C	C	C	C	C	C	B	B	B	C	C	C
ApproachDel:	15.4			19.0			14.2			19.8		
Delay Adj:	1.00			1.00			1.00			1.00		
ApprAdjDel:	15.4			19.0			14.2			19.8		
LOS by Appr:	C			C			B			C		
AllWayAvgQ:	0.7	0.7	0.8	1.0	1.0	1.0	0.5	0.5	0.5	1.4	1.2	1.2

Note: Queue reported is the number of cars per lane.

AM Peak Hour - Existing Conditions
Traffic Analysis for the Downtown
City of Ukiah

Level Of Service Computation Report
2000 HCM Unsignalized Method (Base Volume Alternative)

Intersection #10 Main St/Clay St

Average Delay (sec/veh): 2.5 Worst Case Level Of Service: B[11.3]

Street Name:	Main St									Clay St								
Approach:	North Bound				South Bound				East Bound				West Bound					
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Uncontrolled				Uncontrolled				Stop Sign				Stop Sign					
Rights:	Include				Include				Include				Include					
Lanes:	0	1	0	0	0	0	0	0	1	0	0	0	1!	0	0	0	0	1	0	
Volume Module:																				
Base Vol:	6	150		0		0	180		12		54		9		27		0		3	1
Growth Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00		1.00		1.00		1.00		1.00	1.00
Initial Bse:	6	150		0		0	180		12		54		9		27		0		3	1
User Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00		1.00		1.00		1.00		1.00	1.00
PHF Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00		1.00		1.00		1.00		1.00	1.00
PHF Volume:	6	150		0		0	180		12		54		9		27		0		3	1
Reduct Vol:	0	0		0		0	0		0		0		0		0		0		0	0
FinalVolume:	6	150		0		0	180		12		54		9		27		0		3	1
Critical Gap Module:																				
Critical Gp:	4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx			7.1		6.5		6.2	xxxxx		6.5			6.2	
FollowUpTim:	2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx			3.5		4.0		3.3	xxxxx		4.0			3.3	
Capacity Module:																				
Cnflict Vol:	192	xxxx	xxxxx	xxxx	xxxx	xxxxx			350		348		186	xxxx		354			150	
Potent Cap.:	1394	xxxx	xxxxx	xxxx	xxxx	xxxxx			608		579		861	xxxx		574			902	
Move Cap.:	1394	xxxx	xxxxx	xxxx	xxxx	xxxxx			603		576		861	xxxx		572			902	
Volume/Cap:	0.00	xxxx	xxxx	xxxx	xxxx	xxxx			0.09		0.02		0.03	xxxx		0.01			0.00	
Level Of Service Module:																				
2Way95thQ:	0.0	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxx	xxxxx							
Control Del:	7.6	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx								
LOS by Move:	A	*	*	*	*	*	*	*	*	*	*	*								
Movement:	LT - LTR - RT			LT - LTR - RT			LT - LTR - RT			LT - LTR - RT										
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	660	xxxxx	xxxx	xxxx	630								
SharedQueue:	0.0	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	0.5	xxxxx	xxxxx	xxxx	0.0								
Shrd ConDel:	7.6	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	11.3	xxxxx	xxxxx	xxxx	10.8								
Shared LOS:	A	*	*	*	*	*	*	B	*	*	*	B								
ApproachDel:	xxxxxx			xxxxxx			11.3			10.8										
ApproachLOS:	*			*			B			B										

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Existing Conditions
Traffic Analysis for the Downtown
City of Ukiah

Level Of Service Computation Report
2000 HCM Unsignalized Method (Base Volume Alternative)

Intersection #10 Main St/Clay St

Average Delay (sec/veh): 0.9 Worst Case Level Of Service: C[15.2]

Street Name:	Main St									Clay St								
Approach:	North Bound				South Bound				East Bound				West Bound					
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Uncontrolled				Uncontrolled				Stop Sign				Stop Sign					
Rights:	Include				Include				Include				Include					
Lanes:	0	0	1!	0	0	0	0	1!	0	0	0	0	1!	0	0	0	0	1	0	
Volume Module:																				
Base Vol:	8	390		5		1	280		36		25		1		7		0		2	10
Growth Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00		1.00		1.00		1.00		1.00	1.00
Initial Bse:	8	390		5		1	280		36		25		1		7		0		2	10
User Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00		1.00		1.00		1.00		1.00	1.00
PHF Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00		1.00		1.00		1.00		1.00	1.00
PHF Volume:	8	390		5		1	280		36		25		1		7		0		2	10
Reduct Vol:	0	0		0		0	0		0		0		0		0		0		0	0
FinalVolume:	8	390		5		1	280		36		25		1		7		0		2	10
Critical Gap Module:																				
Critical Gp:	4.1	xxxx	xxxxx			4.1	xxxx	xxxxx			7.1		6.5		6.2	xxxxx			6.5	6.2
FollowUpTim:	2.2	xxxx	xxxxx			2.2	xxxx	xxxxx			3.5		4.0		3.3	xxxxx			4.0	3.3
Capacity Module:																				
Cnflict Vol:	316	xxxx	xxxxx			395	xxxx	xxxxx			715		711		298	xxxx			727	393
Potent Cap.:	1256	xxxx	xxxxx			1175	xxxx	xxxxx			349		361		746	xxxx			353	661
Move Cap.:	1256	xxxx	xxxxx			1175	xxxx	xxxxx			340		358		746	xxxx			351	661
Volume/Cap:	0.01	xxxx	xxxx			0.00	xxxx	xxxx			0.07		0.00		0.01	xxxx			0.01	0.02
Level Of Service Module:																				
2Way95thQ:	0.0	xxxx	xxxxx			0.0	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx						
Control Del:	7.9	xxxx	xxxxx			8.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx						
LOS by Move:	A	*	*			A	*	*	*	*	*	*	*	*						
Movement:	LT - LTR - RT					LT - LTR - RT					LT - LTR - RT					LT - LTR - RT				
Shared Cap.:	xxxx	xxxx	xxxxx			xxxx	xxxx	xxxxx	xxxx	385	xxxxx	xxxx	xxxx	576						
SharedQueue:	xxxxx	xxxx	xxxxx			xxxxx	xxxx	xxxxx	xxxxx	0.3	xxxxx	xxxxx	xxxx	0.1						
Shrd ConDel:	xxxxx	xxxx	xxxxx			xxxxx	xxxx	xxxxx	xxxxx	15.2	xxxxx	xxxxx	xxxx	11.4						
Shared LOS:	*	*	*			*	*	*	*	C	*	*	*	B						
ApproachDel:	xxxxxx					xxxxxx				15.2			11.4							
ApproachLOS:	*					*				C			B							

Note: Queue reported is the number of cars per lane.

AM Peak Hour - Existing Conditions
Traffic Analysis for the Downtown
City of Ukiah

Level Of Service Computation Report
2000 HCM Unsignalized Method (Base Volume Alternative)

Intersection #11 Main St/Mill St

Average Delay (sec/veh): 2.9 Worst Case Level Of Service: B[10.4]

Street Name:	Main St								Mill St							
Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Uncontrolled					Uncontrolled					Stop Sign					Stop Sign				
Rights:	Include					Include					Include					Include				
Lanes:	1	0	1	0	0	0	0	0	1	0	0	0	1!	0	0	0	0	0	0	0
Volume Module:																				
Base Vol:	37		165		0	0		118		30	40		0		61	0		0		0
Growth Adj:	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00
Initial Bse:	37		165		0	0		118		30	40		0		61	0		0		0
User Adj:	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00
PHF Adj:	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00
PHF Volume:	37		165		0	0		118		30	40		0		61	0		0		0
Reduct Vol:	0		0		0	0		0		0	0		0		0	0		0		0
FinalVolume:	37		165		0	0		118		30	40		0		61	0		0		0
Critical Gap Module:																				
Critical Gp:	4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx					6.4		6.5		6.2	xxxxx	xxxx	xxxxx		
FollowUpTim:	2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx					3.5		4.0		3.3	xxxxx	xxxx	xxxxx		
Capacity Module:																				
Cnflict Vol:	148	xxxx	xxxxx	xxxx	xxxx	xxxxx					372		372		133	xxxx	xxxx	xxxxx		
Potent Cap.:	1446	xxxx	xxxxx	xxxx	xxxx	xxxxx					633		561		922	xxxx	xxxx	xxxxx		
Move Cap.:	1446	xxxx	xxxxx	xxxx	xxxx	xxxxx					620		547		922	xxxx	xxxx	xxxxx		
Volume/Cap:	0.03	xxxx	xxxx	xxxx	xxxx	xxxx					0.06		0.00		0.07	xxxx	xxxx	xxxx		
Level Of Service Module:																				
2Way95thQ:	0.1	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxx	xxxxx							
Control Del:	7.6	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx								
LOS by Move:	A	*	*	*	*	*	*	*	*	*	*	*								
Movement:	LT - LTR - RT			LT - LTR - RT			LT - LTR - RT			LT - LTR - RT										
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	773	xxxxx	xxxx	xxxx	xxxxx								
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	0.4	xxxxx	xxxxx	xxxx	xxxxx								
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	10.4	xxxxx	xxxxx	xxxx	xxxxx								
Shared LOS:	*	*	*	*	*	*	*	B	*	*	*	*								
ApproachDel:	xxxxxx			xxxxxx			10.4			xxxxxx										
ApproachLOS:	*			*			B			*										

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Existing Conditions
Traffic Analysis for the Downtown
City of Ukiah

Level Of Service Computation Report
2000 HCM Unsignalized Method (Base Volume Alternative)

Intersection #11 Main St/Mill St

Average Delay (sec/veh): 3.0 Worst Case Level Of Service: B[14.3]

Street Name:	Main St								Mill St							
Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Uncontrolled					Uncontrolled					Stop Sign					Stop Sign				
Rights:	Include					Include					Include					Include				
Lanes:	1	0	1	0	0	0	0	0	1	0	0	0	1!	0	0	0	0	0	0	0
Volume Module:																				
Base Vol:	74		254		0	0		264		69	62		0		64	0		0		0
Growth Adj:	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00
Initial Bse:	74		254		0	0		264		69	62		0		64	0		0		0
User Adj:	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00
PHF Adj:	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00
PHF Volume:	74		254		0	0		264		69	62		0		64	0		0		0
Reduct Vol:	0		0		0	0		0		0	0		0		0	0		0		0
FinalVolume:	74		254		0	0		264		69	62		0		64	0		0		0
Critical Gap Module:																				
Critical Gp:	4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx					6.4		6.5		6.2	xxxxx	xxxx	xxxxx		
FollowUpTim:	2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx					3.5		4.0		3.3	xxxxx	xxxx	xxxxx		
Capacity Module:																				
Cnflict Vol:	333	xxxx	xxxxx	xxxx	xxxx	xxxxx					701		701		299	xxxx	xxxx	xxxxx		
Potent Cap.:	1238	xxxx	xxxxx	xxxx	xxxx	xxxxx					408		366		746	xxxx	xxxx	xxxxx		
Move Cap.:	1238	xxxx	xxxxx	xxxx	xxxx	xxxxx					390		344		746	xxxx	xxxx	xxxxx		
Volume/Cap:	0.06	xxxx	xxxx	xxxx	xxxx	xxxx					0.16		0.00		0.09	xxxx	xxxx	xxxx		
Level Of Service Module:																				
2Way95thQ:	0.2	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxx	xxxxx							
Control Del:	8.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx								
LOS by Move:	A	*	*	*	*	*	*	*	*	*	*	*								
Movement:	LT - LTR - RT			LT - LTR - RT			LT - LTR - RT			LT - LTR - RT										
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	514	xxxxx	xxxx	xxxx	xxxxx								
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	1.0	xxxxx	xxxxx	xxxx	xxxxx								
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	14.3	xxxxx	xxxxx	xxxx	xxxxx								
Shared LOS:	*	*	*	*	*	*	*	B	*	*	*	*								
ApproachDel:	xxxxxx			xxxxxx			14.3			xxxxxx										
ApproachLOS:	*			*			B			*										

Note: Queue reported is the number of cars per lane.

AM Peak Hour - Existing Conditions
Traffic Analysis for the Downtown
City of Ukiah

Level Of Service Computation Report
2000 HCM 4-Way Stop Method (Base Volume Alternative)

Intersection #12 Main St/Gobbi St

Cycle (sec): 100 Critical Vol./Cap.(X): 0.707
Loss Time (sec): 0 (Y+R=4.0 sec) Average Delay (sec/veh): 15.2
Optimal Cycle: 0 Level Of Service: C

Street Name:	Main St						Gobbi St					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	0	0	1! 0	0	1	0 0 1	0	1	0 0 1	0	1	0 0 1 0
Volume Module:												
Base Vol:	4	8	7	91	7	86	85	298	10	33	362	100
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	4	8	7	91	7	86	85	298	10	33	362	100
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	4	8	7	91	7	86	85	298	10	33	362	100
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	4	8	7	91	7	86	85	298	10	33	362	100
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	4	8	7	91	7	86	85	298	10	33	362	100
Saturation Flow Module:												
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	0.21	0.42	0.37	1.00	0.08	0.92	1.00	0.97	0.03	1.00	0.78	0.22
Final Sat.:	98	195	171	471	42	512	568	604	20	577	512	142
Capacity Analysis Module:												
Vol/Sat:	0.04	0.04	0.04	0.19	0.17	0.17	0.15	0.49	0.49	0.06	0.71	0.71
Crit Moves:		****		****					****		****	
Delay/Veh:	10.1	10.1	10.1	11.4	9.8	9.8	9.9	13.5	13.5	9.2	19.7	19.7
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	10.1	10.1	10.1	11.4	9.8	9.8	9.9	13.5	13.5	9.2	19.7	19.7
LOS by Move:	B	B	B	B	A	A	A	B	B	A	C	C
ApproachDel:	10.1			10.6			12.7			19.0		
Delay Adj:	1.00			1.00			1.00			1.00		
ApprAdjDel:	10.1			10.6			12.7			19.0		
LOS by Appr:	B			B			B			C		
AllWayAvgQ:	0.0	0.0	0.0	0.2	0.2	0.2	0.2	0.9	0.9	0.1	2.1	2.1

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Existing Conditions
Traffic Analysis for the Downtown
City of Ukiah

Level Of Service Computation Report
2000 HCM 4-Way Stop Method (Base Volume Alternative)

Intersection #12 Main St/Gobbi St

Cycle (sec): 100 Critical Vol./Cap.(X): 0.865
Loss Time (sec): 0 (Y+R=4.0 sec) Average Delay (sec/veh): 22.4
Optimal Cycle: 0 Level Of Service: C

Street Name:	Main St						Gobbi St					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	0	0	1! 0	0	1	0 0 1	0	1	0 0 1	0	1	0 0 1 0
Volume Module:												
Base Vol:	20	19	47	217	3	151	113	279	3	11	369	108
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	20	19	47	217	3	151	113	279	3	11	369	108
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	20	19	47	217	3	151	113	279	3	11	369	108
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	20	19	47	217	3	151	113	279	3	11	369	108
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	20	19	47	217	3	151	113	279	3	11	369	108
Saturation Flow Module:												
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	0.23	0.22	0.55	1.00	0.02	0.98	1.00	0.99	0.01	1.00	0.77	0.23
Final Sat.:	100	95	235	451	10	518	479	511	5	493	427	125
Capacity Analysis Module:												
Vol/Sat:	0.20	0.20	0.20	0.48	0.29	0.29	0.24	0.55	0.55	0.02	0.86	0.86
Crit Moves:	****			****					****			****
Delay/Veh:	12.3	12.3	12.3	16.7	11.6	11.6	12.1	16.8	16.8	10.0	36.4	36.4
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	12.3	12.3	12.3	16.7	11.6	11.6	12.1	16.8	16.8	10.0	36.4	36.4
LOS by Move:	B	B	B	C	B	B	B	C	C	A	E	E
ApproachDel:	12.3			14.6			15.5			35.8		
Delay Adj:	1.00			1.00			1.00			1.00		
ApprAdjDel:	12.3			14.6			15.5			35.8		
LOS by Appr:	B			B			C			E		
AllWayAvgQ:	0.2	0.2	0.2	0.8	0.4	0.4	0.3	1.1	1.1	0.0	4.2	4.2

Note: Queue reported is the number of cars per lane.

Appendix B

Collision History

COLLISION CALCULATIONS
for City of Ukiah

Location: State Street - Norton Street to Gobbi Street

ADT: 13100

Number of Collisions: 109
Start Date: January 1, 2003
End Date: December 31, 2007
Number of Years: 5.00

Highway Type: UNDIVIDED 4 LANES
Area: Urban
Design Speed: <=45

Segment Length: 0.8 miles
Direction: NORTH/SOUTH

$$\frac{\text{NUMBER OF COLLISIONS} \times 1\text{ MILLION}}{\text{ADT} \times 365\text{ DAYS PER YEAR} \times \text{SEGMENT LENGTH} \times \text{NUMBER OF YEARS}}$$

$$\frac{109 \times 1{,}000{,}000}{13{,}100 \times 365 \times 1 \times 5}$$

calculated collision rate = 6.08 c/mvm

statewide average collision rate* = 4.95 c/mvm

ADT = average daily total vehicles entering intersection (adjusted for seasonal & weekday
c/mvm = collisions per million vehicle miles
* *2002 Collision Data on California State Highways*, Caltrans

Location: Main Street - Norton Street to Gobbi Street

ADT: 6600

Number of Collisions: 23
Start Date: January 1, 2003
End Date: December 31, 2007
Number of Years: 5

Highway Type: CONVENTIONAL 2 LANES OR LESS
Area: Urban
Design Speed: <=45

Segment Length: 0.8 miles
Direction: NORTH/SOUTH

$$\frac{\text{NUMBER OF COLLISIONS} \times 1\text{ MILLION}}{\text{ADT} \times 365\text{ DAYS PER YEAR} \times \text{SEGMENT LENGTH} \times \text{NUMBER OF YEARS}}$$

$$\frac{23 \times 1{,}000{,}000}{6{,}600 \times 365 \times 1 \times 5}$$

calculated collision rate = 2.55 c/mvm

statewide average collision rate* = 3.05 c/mvm

ADT = average daily total vehicles entering intersection (adjusted for seasonal & weekday
c/mvm = collisions per million vehicle miles
* *2002 Collision Data on California State Highways*, Caltrans

Appendix C

Future Base Conditions Level of Service Calculations

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	55	151	615	20	83	877
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0			4.0
Lane Util. Factor	1.00	1.00	0.95			0.95
Frt	1.00	0.85	1.00			1.00
Flt Protected	0.95	1.00	1.00			1.00
Satd. Flow (prot)	1770	1385	3302			3304
Flt Permitted	0.95	1.00	1.00			0.84
Satd. Flow (perm)	1770	1385	3302			2800
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	58	159	647	21	87	923
RTOR Reduction (vph)	0	77	6	0	0	0
Lane Group Flow (vph)	58	82	662	0	0	1010
Parking (#/hr)		5	5			5
Turn Type		Perm			Perm	
Protected Phases	8		2			6
Permitted Phases		8			6	
Actuated Green, G (s)	16.0	16.0	16.0			16.0
Effective Green, g (s)	16.0	16.0	16.0			16.0
Actuated g/C Ratio	0.40	0.40	0.40			0.40
Clearance Time (s)	4.0	4.0	4.0			4.0
Lane Grp Cap (vph)	708	554	1321			1120
v/s Ratio Prot	0.03		0.20			
v/s Ratio Perm		c0.06				c0.36
v/c Ratio	0.08	0.15	0.50			0.90
Uniform Delay, d1	7.4	7.7	9.0			11.3
Progression Factor	1.00	1.00	0.39			1.00
Incremental Delay, d2	0.2	0.6	1.2			11.7
Delay (s)	7.7	8.2	4.7			22.9
Level of Service	A	A	A			C
Approach Delay (s)	8.1		4.7			22.9
Approach LOS	A		A			C

Intersection Summary			
HCM Average Control Delay	14.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	40.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	57.6%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	59	202	842	33	50	815
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0			4.0
Lane Util. Factor	1.00	1.00	0.95			0.95
Frt	1.00	0.85	0.99			1.00
Flt Protected	0.95	1.00	1.00			1.00
Satd. Flow (prot)	1770	1385	3299			3308
Flt Permitted	0.95	1.00	1.00			0.85
Satd. Flow (perm)	1770	1385	3299			2821
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	62	213	886	35	53	858
RTOR Reduction (vph)	0	123	3	0	0	0
Lane Group Flow (vph)	62	90	918	0	0	911
Parking (#/hr)		5	5			5
Turn Type		Perm			Perm	
Protected Phases	8		2			6
Permitted Phases		8			6	
Actuated Green, G (s)	22.0	22.0	50.0			50.0
Effective Green, g (s)	22.0	22.0	50.0			50.0
Actuated g/C Ratio	0.28	0.28	0.62			0.62
Clearance Time (s)	4.0	4.0	4.0			4.0
Lane Grp Cap (vph)	487	381	2062			1763
v/s Ratio Prot	0.04		0.28			
v/s Ratio Perm		c0.06				c0.32
v/c Ratio	0.13	0.24	0.45			0.52
Uniform Delay, d1	21.8	22.5	7.8			8.3
Progression Factor	1.00	1.00	0.32			1.00
Incremental Delay, d2	0.5	1.4	0.6			1.1
Delay (s)	22.3	23.9	3.1			9.4
Level of Service	C	C	A			A
Approach Delay (s)	23.6		3.1			9.4
Approach LOS	C		A			A

Intersection Summary			
HCM Average Control Delay	8.5	HCM Level of Service	A
HCM Volume to Capacity ratio	0.43		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	61.6%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	32	12	91	0	0	0	0	454	15	18	655	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0					4.0			4.0	
Lane Util. Factor		1.00	1.00					0.95			0.95	
Frt		1.00	0.85					1.00			1.00	
Flt Protected		0.97	1.00					1.00			1.00	
Satd. Flow (prot)		1573	1583					3258			3269	
Flt Permitted		0.97	1.00					1.00			1.00	
Satd. Flow (perm)		1573	1583					3258			3269	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	34	13	96	0	0	0	0	478	16	19	689	0
RTOR Reduction (vph)	0	0	76	0	0	0	0	3	0	0	0	0
Lane Group Flow (vph)	0	47	20	0	0	0	0	491	0	0	708	0
Parking (#/hr)		5			5			10			10	
Turn Type	Split		Perm							Split		
Protected Phases	4	4						2		6	6	
Permitted Phases			4									
Actuated Green, G (s)		17.0	17.0					24.0			27.0	
Effective Green, g (s)		17.0	17.0					24.0			27.0	
Actuated g/C Ratio		0.21	0.21					0.30			0.34	
Clearance Time (s)		4.0	4.0					4.0			4.0	
Lane Grp Cap (vph)		334	336					977			1103	
v/s Ratio Prot		c0.03						c0.15			c0.22	
v/s Ratio Perm			0.01									
v/c Ratio		0.14	0.06					0.50			0.64	
Uniform Delay, d1		25.6	25.1					23.1			22.4	
Progression Factor		1.00	1.00					0.24			0.62	
Incremental Delay, d2		0.9	0.3					1.5			2.1	
Delay (s)		26.5	25.5					7.2			15.9	
Level of Service		C	C					A			B	
Approach Delay (s)		25.8			0.0			7.2			15.9	
Approach LOS		C			A			A			B	

Intersection Summary				
HCM Average Control Delay	13.8	HCM Level of Service	B	
HCM Volume to Capacity ratio	0.47			
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	12.0	
Intersection Capacity Utilization	41.1%	ICU Level of Service	A	
Analysis Period (min)	15			
c Critical Lane Group				

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	8	6	102	0	0	0	0	605	28	1	854	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0					4.0			4.0	
Lane Util. Factor		1.00	1.00					0.95			0.95	
Frt		1.00	0.85					0.99			1.00	
Flt Protected		0.97	1.00					1.00			1.00	
Satd. Flow (prot)		1585	1583					3252			3274	
Flt Permitted		0.97	1.00					1.00			1.00	
Satd. Flow (perm)		1585	1583					3252			3274	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	8	6	107	0	0	0	0	637	29	1	899	0
RTOR Reduction (vph)	0	0	83	0	0	0	0	4	0	0	0	0
Lane Group Flow (vph)	0	14	24	0	0	0	0	662	0	0	900	0
Parking (#/hr)		5			5			10			10	
Turn Type	Split		Perm							Split		
Protected Phases	4	4						2		6	6	
Permitted Phases			4									
Actuated Green, G (s)		16.0	16.0					18.0			24.0	
Effective Green, g (s)		16.0	16.0					18.0			24.0	
Actuated g/C Ratio		0.23	0.23					0.26			0.34	
Clearance Time (s)		4.0	4.0					4.0			4.0	
Lane Grp Cap (vph)		362	362					836			1123	
v/s Ratio Prot		0.01						c0.20			c0.27	
v/s Ratio Perm			c0.02									
v/c Ratio		0.04	0.07					0.79			0.80	
Uniform Delay, d1		21.0	21.2					24.2			20.8	
Progression Factor		1.00	1.00					0.50			1.00	
Incremental Delay, d2		0.2	0.4					3.9			6.1	
Delay (s)		21.2	21.5					16.0			26.9	
Level of Service		C	C					B			C	
Approach Delay (s)		21.5			0.0			16.0			26.9	
Approach LOS		C			A			B			C	

Intersection Summary				
HCM Average Control Delay	22.2	HCM Level of Service	C	
HCM Volume to Capacity ratio	0.60			
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	12.0	
Intersection Capacity Utilization	36.6%	ICU Level of Service	A	
Analysis Period (min)	15			
c Critical Lane Group				

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	67	207	67	42	403	80	170	463	38
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0			4.0			4.0	
Lane Util. Factor					0.95			0.95			0.95	
Frt					0.97			0.98			0.99	
Flt Protected					0.99			1.00			0.99	
Satd. Flow (prot)					3188			3186			3205	
Flt Permitted					0.99			1.00			0.99	
Satd. Flow (perm)					3188			3186			3205	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	0	0	71	218	71	44	424	84	179	487	40
RTOR Reduction (vph)	0	0	0	0	27	0	0	18	0	0	5	0
Lane Group Flow (vph)	0	0	0	0	333	0	0	534	0	0	701	0
Parking (#/hr)		10			5			10			10	
Turn Type				Split			Split			Split		
Protected Phases				8	8		2	2		6	6	
Permitted Phases												
Actuated Green, G (s)					17.0			24.0			27.0	
Effective Green, g (s)					17.0			24.0			27.0	
Actuated g/C Ratio					0.21			0.30			0.34	
Clearance Time (s)					4.0			4.0			4.0	
Lane Grp Cap (vph)					677			956			1082	
v/s Ratio Prot					c0.10			c0.17			c0.22	
v/s Ratio Perm												
v/c Ratio					0.49			0.56			0.65	
Uniform Delay, d1					27.7			23.5			22.5	
Progression Factor					1.00			0.82			0.41	
Incremental Delay, d2					2.5			2.3			2.4	
Delay (s)					30.3			21.5			11.7	
Level of Service					C			C			B	
Approach Delay (s)		0.0			30.3			21.5			11.7	
Approach LOS		A			C			C			B	

Intersection Summary				
HCM Average Control Delay	19.2	HCM Level of Service		B
HCM Volume to Capacity ratio	0.58			
Actuated Cycle Length (s)	80.0	Sum of lost time (s)		12.0
Intersection Capacity Utilization	53.7%	ICU Level of Service		A
Analysis Period (min)	15			
c Critical Lane Group				

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	94	207	105	69	525	138	283	649	46
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0			4.0			4.0	
Lane Util. Factor					0.95			0.95			0.95	
Frt					0.96			0.97			0.99	
Flt Protected					0.99			1.00			0.99	
Satd. Flow (prot)					3152			3166			3204	
Flt Permitted					0.99			1.00			0.99	
Satd. Flow (perm)					3152			3166			3204	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	0	0	99	218	111	73	553	145	298	683	48
RTOR Reduction (vph)	0	0	0	0	50	0	0	28	0	0	5	0
Lane Group Flow (vph)	0	0	0	0	378	0	0	743	0	0	1024	0
Parking (#/hr)		10			5			10			10	
Turn Type				Split			Split			Split		
Protected Phases				8	8		2	2		6	6	
Permitted Phases												
Actuated Green, G (s)					16.0			18.0			24.0	
Effective Green, g (s)					16.0			18.0			24.0	
Actuated g/C Ratio					0.23			0.26			0.34	
Clearance Time (s)					4.0			4.0			4.0	
Lane Grp Cap (vph)					720			814			1099	
v/s Ratio Prot					c0.12			c0.23			c0.32	
v/s Ratio Perm												
v/c Ratio					0.52			0.91			0.93	
Uniform Delay, d1					23.7			25.2			22.2	
Progression Factor					1.00			1.00			0.35	
Incremental Delay, d2					2.7			16.3			11.0	
Delay (s)					26.4			41.5			18.8	
Level of Service					C			D			B	
Approach Delay (s)		0.0			26.4			41.5			18.8	
Approach LOS		A			C			D			B	

Intersection Summary				
HCM Average Control Delay	28.1	HCM Level of Service		C
HCM Volume to Capacity ratio	0.81			
Actuated Cycle Length (s)	70.0	Sum of lost time (s)		12.0
Intersection Capacity Utilization	70.4%	ICU Level of Service		C
Analysis Period (min)	15			
c Critical Lane Group				

AM Peak Hour - Future Conditions (with Existing lanes)
Traffic Analysis for the Downtown
City of Ukiah

Level Of Service Computation Report
2000 HCM Unsignalized Method (Base Volume Alternative)

Intersection #4 State St/Clay St

Average Delay (sec/veh): 7.4 Worst Case Level Of Service: F[52.0]

Street Name:	State St									Clay St								
Approach:	North Bound				South Bound				East Bound				West Bound					
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Uncontrolled				Uncontrolled				Stop Sign				Stop Sign					
Rights:	Include				Include				Include				Include					
Lanes:	0	1	0	1	0	0	1	0	1	0	0	0	1!	0	0	0	0	1!	0	0
Volume Module:																				
Base Vol:	79	522		60		2	480		1		10		98		46	14		7		9
Growth Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00		1.00		1.00	1.00		1.00		1.00
Initial Bse:	79	522		60		2	480		1		10		98		46	14		7		9
User Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00		1.00		1.00	1.00		1.00		1.00
PHF Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00		1.00		1.00	1.00		1.00		1.00
PHF Volume:	79	522		60		2	480		1		10		98		46	14		7		9
Reduct Vol:	0	0		0		0	0		0		0		0		0	0		0		0
FinalVolume:	79	522		60		2	480		1		10		98		46	14		7		9
Critical Gap Module:																				
Critical Gp:	4.1	xxxx	xxxxx		4.1	xxxx	xxxxx		7.5	6.5		6.9	7.5	6.5		6.9				
FollowUpTim:	2.2	xxxx	xxxxx		2.2	xxxx	xxxxx		3.5	4.0		3.3	3.5	4.0		3.3				
Capacity Module:																				
Cnflict Vol:	481	xxxx	xxxxx		582	xxxx	xxxxx		907	1225		241	1003	1195		291				
Potent Cap.:	1092	xxxx	xxxxx		1002	xxxx	xxxxx		234	181		767	199	188		712				
Move Cap.:	1092	xxxx	xxxxx		1002	xxxx	xxxxx		210	166		767	94	173		712				
Volume/Cap:	0.07	xxxx	xxxx		0.00	xxxx	xxxx		0.05	0.59		0.06	0.15	0.04		0.01				
Level Of Service Module:																				
2Way95thQ:	0.2	xxxx	xxxxx		0.0	xxxx	xxxxx		xxxx	xxxx	xxxxx		xxxx	xxxx	xxxxx					
Control Del:	8.6	xxxx	xxxxx		8.6	xxxx	xxxxx		xxxxx	xxxx	xxxxx		xxxxx	xxxx	xxxxx					
LOS by Move:	A	*	*		A	*	*		*	*	*		*	*	*					
Movement:	LT -	LTR -	RT		LT -	LTR -	RT		LT -	LTR -	RT		LT -	LTR -	RT					
Shared Cap.:	xxxx	xxxx	xxxxx		xxxx	xxxx	xxxxx		xxxx	221	xxxxx		xxxx	148	xxxxx					
SharedQueue:	0.2	xxxx	xxxxx		0.0	xxxx	xxxxx		xxxxx	4.5	xxxxx		xxxxx	0.7	xxxxx					
Shrd ConDel:	8.6	xxxx	xxxxx		8.6	xxxx	xxxxx		xxxxx	52.0	xxxxx		xxxxx	35.3	xxxxx					
Shared LOS:	A	*	*		A	*	*		*	F	*		*	E	*					
ApproachDel:	xxxxxx				xxxxxx					52.0				35.3						
ApproachLOS:	*				*					F				E						

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Future Conditions (with Existing lanes)
Traffic Analysis for the Downtown
City of Ukiah

Level Of Service Computation Report
2000 HCM Unsignalized Method (Base Volume Alternative)

Intersection #4 State St/Clay St

Average Delay (sec/veh): 3.2 Worst Case Level Of Service: F[57.5]

Street Name:	State St									Clay St								
Approach:	North Bound				South Bound				East Bound				West Bound					
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Uncontrolled				Uncontrolled				Stop Sign				Stop Sign					
Rights:	Include				Include				Include				Include					
Lanes:	0	1	0	1	0	0	1	0	1	0	0	0	1!	0	0	0	0	1!	0	0
Volume Module:																				
Base Vol:	25	709		56		14	708		32		1		12		85	37		15		7
Growth Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00		1.00		1.00	1.00		1.00		1.00
Initial Bse:	25	709		56		14	708		32		1		12		85	37		15		7
User Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00		1.00		1.00	1.00		1.00		1.00
PHF Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00		1.00		1.00	1.00		1.00		1.00
PHF Volume:	25	709		56		14	708		32		1		12		85	37		15		7
Reduct Vol:	0	0		0		0	0		0		0		0		0	0		0		0
FinalVolume:	25	709		56		14	708		32		1		12		85	37		15		7
Critical Gap Module:																				
Critical Gp:	4.1	xxxx	xxxxx		4.1	xxxx	xxxxx		7.5	6.5		6.9	7.5	6.5		6.9				
FollowUpTim:	2.2	xxxx	xxxxx		2.2	xxxx	xxxxx		3.5	4.0		3.3	3.5	4.0		3.3				
Capacity Module:																				
Cnflict Vol:	740	xxxx	xxxxx		765	xxxx	xxxxx		1164	1567		370	1175	1555		383				
Potent Cap.:	876	xxxx	xxxxx		857	xxxx	xxxxx		152	112		633	149	114		621				
Move Cap.:	876	xxxx	xxxxx		857	xxxx	xxxxx		130	107		633	114	109		621				
Volume/Cap:	0.03	xxxx	xxxx		0.02	xxxx	xxxx		0.01	0.11		0.13	0.32	0.14		0.01				
Level Of Service Module:																				
2Way95thQ:	0.1	xxxx	xxxxx		0.0	xxxx	xxxxx		xxxx	xxxx	xxxxx		xxxx	xxxx	xxxxx					
Control Del:	9.2	xxxx	xxxxx		9.3	xxxx	xxxxx		xxxxx	xxxx	xxxxx		xxxxx	xxxx	xxxxx					
LOS by Move:	A	*	*		A	*	*		*	*	*		*	*	*					
Movement:	LT -	LTR -	RT		LT -	LTR -	RT		LT -	LTR -	RT		LT -	LTR -	RT					
Shared Cap.:	xxxx	xxxx	xxxxx		xxxx	xxxx	xxxxx		xxxx	386	xxxxx		xxxx	125	xxxxx					
SharedQueue:	0.1	xxxx	xxxxx		0.0	xxxx	xxxxx		xxxxx	1.0	xxxxx		xxxxx	2.1	xxxxx					
Shrd ConDel:	9.2	xxxx	xxxxx		9.3	xxxx	xxxxx		xxxxx	17.5	xxxxx		xxxxx	57.5	xxxxx					
Shared LOS:	A	*	*		A	*	*		*	C	*		*	F	*					
ApproachDel:	xxxxxx				xxxxxx					17.5				57.5						
ApproachLOS:	*				*					C				F						

Note: Queue reported is the number of cars per lane.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	43	85	60	3	48	10	32	519	3	5	456	33
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0			4.0	
Lane Util. Factor		1.00			1.00			0.95			0.95	
Frt		0.96			0.98			1.00			0.99	
Flt Protected		0.99			1.00			1.00			1.00	
Satd. Flow (prot)		1542			1589			3273			3250	
Flt Permitted		0.93			0.99			0.91			0.95	
Satd. Flow (perm)		1456			1576			2989			3089	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	45	89	63	3	51	11	34	546	3	5	480	35
RTOR Reduction (vph)	0	38	0	0	7	0	0	1	0	0	13	0
Lane Group Flow (vph)	0	159	0	0	58	0	0	582	0	0	507	0
Bus Blockages (#/hr)	0	0	0	0	0	0	0	5	0	0	5	0
Parking (#/hr)		5			5			5			5	
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		16.0			16.0			16.0			16.0	
Effective Green, g (s)		16.0			16.0			16.0			16.0	
Actuated g/C Ratio		0.40			0.40			0.40			0.40	
Clearance Time (s)		4.0			4.0			4.0			4.0	
Lane Grp Cap (vph)		582			630			1196			1236	
v/s Ratio Prot												
v/s Ratio Perm		c0.11			0.04			c0.19			0.16	
v/c Ratio		0.27			0.09			0.49			0.41	
Uniform Delay, d1		8.1			7.5			8.9			8.6	
Progression Factor		1.00			1.00			1.00			1.25	
Incremental Delay, d2		1.2			0.3			1.4			0.9	
Delay (s)		9.2			7.8			10.4			11.7	
Level of Service		A			A			B			B	
Approach Delay (s)		9.2			7.8			10.4			11.7	
Approach LOS		A			A			B			B	

Intersection Summary				
HCM Average Control Delay	10.6	HCM Level of Service	B	
HCM Volume to Capacity ratio	0.38			
Actuated Cycle Length (s)	40.0	Sum of lost time (s)	8.0	
Intersection Capacity Utilization	56.4%	ICU Level of Service	B	
Analysis Period (min)	15			

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	51	96	105	15	106	23	41	745	20	16	722	59
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0			4.0	
Lane Util. Factor		1.00			1.00			0.95			0.95	
Frt		0.94			0.98			1.00			0.99	
Flt Protected		0.99			0.99			1.00			1.00	
Satd. Flow (prot)		1523			1587			3264			3245	
Flt Permitted		0.92			0.96			0.89			0.93	
Satd. Flow (perm)		1416			1532			2900			3031	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	54	101	111	16	112	24	43	784	21	17	760	62
RTOR Reduction (vph)	0	52	0	0	14	0	0	4	0	0	14	0
Lane Group Flow (vph)	0	214	0	0	138	0	0	844	0	0	825	0
Bus Blockages (#/hr)	0	0	0	0	0	0	0	5	0	0	5	0
Parking (#/hr)		5			5			5			5	
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		16.0			16.0			16.0			16.0	
Effective Green, g (s)		16.0			16.0			16.0			16.0	
Actuated g/C Ratio		0.40			0.40			0.40			0.40	
Clearance Time (s)		4.0			4.0			4.0			4.0	
Lane Grp Cap (vph)		566			613			1160			1212	
v/s Ratio Prot												
v/s Ratio Perm		c0.15			0.09			c0.29			0.27	
v/c Ratio		0.38			0.22			0.73			0.68	
Uniform Delay, d1		8.5			7.9			10.2			9.9	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		1.9			0.8			4.0			3.1	
Delay (s)		10.4			8.8			14.2			13.0	
Level of Service		B			A			B			B	
Approach Delay (s)		10.4			8.8			14.2			13.0	
Approach LOS		B			A			B			B	

Intersection Summary				
HCM Average Control Delay	12.8	HCM Level of Service	B	
HCM Volume to Capacity ratio	0.55			
Actuated Cycle Length (s)	40.0	Sum of lost time (s)	8.0	
Intersection Capacity Utilization	79.1%	ICU Level of Service	D	
Analysis Period (min)	15			

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	65	211	30	106	231	66	39	547	137	8	408	35
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frt	1.00	0.98		1.00	0.97		1.00	0.97		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1599		1770	1801		1770	3218		1770	3278	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	1599		1770	1801		1770	3218		1770	3278	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	68	222	32	112	243	69	41	576	144	8	429	37
RTOR Reduction (vph)	0	8	0	0	17	0	0	37	0	0	11	0
Lane Group Flow (vph)	68	246	0	112	295	0	41	683	0	8	455	0
Parking (#/hr)		5						5			5	
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases												
Actuated Green, G (s)	5.0	18.0		6.0	19.0		4.0	16.0		4.0	16.0	
Effective Green, g (s)	5.0	18.0		6.0	19.0		4.0	16.0		4.0	16.0	
Actuated g/C Ratio	0.08	0.30		0.10	0.32		0.07	0.27		0.07	0.27	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Grp Cap (vph)	148	480		177	570		118	858		118	874	
v/s Ratio Prot	0.04	0.15		c0.06	c0.16		0.02	c0.21		0.00	c0.14	
v/s Ratio Perm												
v/c Ratio	0.46	0.51		0.63	0.52		0.35	0.80		0.07	0.52	
Uniform Delay, d1	26.2	17.4		25.9	16.8		26.8	20.5		26.3	18.7	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	9.9	3.9		16.0	3.3		7.9	7.6		1.1	2.2	
Delay (s)	36.1	21.2		41.9	20.1		34.7	28.1		27.4	20.9	
Level of Service	D	C		D	C		C	C		C	C	
Approach Delay (s)		24.4			25.9			28.4			21.1	
Approach LOS		C			C			C			C	

Intersection Summary				
HCM Average Control Delay	25.5	HCM Level of Service	C	
HCM Volume to Capacity ratio	0.57			
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	8.0	
Intersection Capacity Utilization	55.9%	ICU Level of Service	B	
Analysis Period (min)	15			
c Critical Lane Group				

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	77	184	61	243	176	66	79	658	210	96	597	67
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frt	1.00	0.96		1.00	0.96		1.00	0.96		1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1569		1770	1787		1770	3198		1770	3267	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	1569		1770	1787		1770	3198		1770	3267	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	81	194	64	256	185	69	83	693	221	101	628	71
RTOR Reduction (vph)	0	20	0	0	22	0	0	51	0	0	15	0
Lane Group Flow (vph)	81	238	0	256	232	0	83	863	0	101	684	0
Parking (#/hr)		5						5			5	
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases												
Actuated Green, G (s)	7.0	16.0		8.0	17.0		4.0	16.0		4.0	16.0	
Effective Green, g (s)	7.0	16.0		8.0	17.0		4.0	16.0		4.0	16.0	
Actuated g/C Ratio	0.12	0.27		0.13	0.28		0.07	0.27		0.07	0.27	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Grp Cap (vph)	207	418		236	506		118	853		118	871	
v/s Ratio Prot	0.05	c0.15		c0.14	0.13		0.05	c0.27		0.06	c0.21	
v/s Ratio Perm												
v/c Ratio	0.39	0.57		1.08	0.46		0.70	1.01		0.86	0.79	
Uniform Delay, d1	24.5	19.0		26.0	17.7		27.4	22.0		27.7	20.4	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	5.5	5.5		83.0	3.0		29.6	33.6		50.8	7.1	
Delay (s)	30.0	24.6		109.0	20.7		57.0	55.6		78.5	27.5	
Level of Service	C	C		F	C		E	E		E	C	
Approach Delay (s)		25.9			65.0			55.8			33.9	
Approach LOS		C			E			E			C	

Intersection Summary				
HCM Average Control Delay	47.1	HCM Level of Service	D	
HCM Volume to Capacity ratio	0.81			
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	12.0	
Intersection Capacity Utilization	70.4%	ICU Level of Service	C	
Analysis Period (min)	15			
c Critical Lane Group				

AM Peak Hour - Future Conditions (with Existing lanes)
Traffic Analysis for the Downtown
City of Ukiah

Level Of Service Computation Report
2000 HCM Unsignalized Method (Base Volume Alternative)

Intersection #7 Main St/Norton St

Average Delay (sec/veh): 4.3 Worst Case Level Of Service: A[9.5]

Street Name:	Main St						Norton St					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	- T	- R	L	- T	- R	L	- T	- R	L	- T	- R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Rights:	Include			Include			Include			Include		
Lanes:	0 0	1! 0	0	0 0	0 0	0	0 0	0 1	0	0 1	0 0	0
Volume Module:												
Base Vol:	90	0	12	0	0	0	0	12	92	12	27	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	90	0	12	0	0	0	0	12	92	12	27	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	90	0	12	0	0	0	0	12	92	12	27	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	90	0	12	0	0	0	0	12	92	12	27	0
Critical Gap Module:												
Critical Gp:	6.4	6.5	6.2	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	4.1	xxxx	xxxxx
FollowUpTim:	3.5	4.0	3.3	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	2.2	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	109	109	58	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	104	xxxx	xxxxx
Potent Cap.:	893	785	1014	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	1500	xxxx	xxxxx
Move Cap.:	888	779	1014	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	1500	xxxx	xxxxx
Volume/Cap:	0.10	0.00	0.01	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	0.01	xxxx	xxxx
Level Of Service Module:												
2Way95thQ:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	0.0	xxxx	xxxxx
Control Del:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	7.4	xxxx	xxxxx
LOS by Move:	*	*	*	*	*	*	*	*	*	A	*	*
Movement:	LT -	LTR -	RT	LT -	LTR -	RT	LT -	LTR -	RT	LT -	LTR -	RT
Shared Cap.:	xxxx	901	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
SharedQueue:	xxxxx	0.4	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	0.0	xxxx	xxxxx
Shrd ConDel:	xxxxx	9.5	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	7.4	xxxx	xxxxx
Shared LOS:	*	A	*	*	*	*	*	*	*	A	*	*
ApproachDel:		9.5		xxxxxx			xxxxxx			xxxxxx		
ApproachLOS:		A		*			*			*		

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Future Conditions (with Existing lanes)
Traffic Analysis for the Downtown
City of Ukiah

Level Of Service Computation Report
2000 HCM Unsignalized Method (Base Volume Alternative)

Intersection #7 Main St/Norton St

Average Delay (sec/veh): 8.0 Worst Case Level Of Service: B[11.4]

Street Name:	Main St						Norton St					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	- T	- R	L	- T	- R	L	- T	- R	L	- T	- R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Rights:	Include			Include			Include			Include		
Lanes:	0 0	1! 0	0	0 0	0 0	0	0 0	0 1	0	0 1	0 0	0
Volume Module:												
Base Vol:	282	0	44	0	0	0	0	18	68	11	48	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	282	0	44	0	0	0	0	18	68	11	48	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	282	0	44	0	0	0	0	18	68	11	48	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	282	0	44	0	0	0	0	18	68	11	48	0
Critical Gap Module:												
Critical Gp:	6.4	6.5	6.2	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	4.1	xxxx	xxxxx
FollowUpTim:	3.5	4.0	3.3	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	2.2	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	122	122	52	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	86	xxxx	xxxxx
Potent Cap.:	878	772	1021	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	1523	xxxx	xxxxx
Move Cap.:	873	767	1021	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	1523	xxxx	xxxxx
Volume/Cap:	0.32	0.00	0.04	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	0.01	xxxx	xxxx
Level Of Service Module:												
2Way95thQ:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	0.0	xxxx	xxxxx
Control Del:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	7.4	xxxx	xxxxx
LOS by Move:	*	*	*	*	*	*	*	*	*	A	*	*
Movement:	LT -	LTR -	RT	LT -	LTR -	RT	LT -	LTR -	RT	LT -	LTR -	RT
Shared Cap.:	xxxx	891	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
SharedQueue:	xxxxx	1.7	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	0.0	xxxx	xxxxx
Shrd ConDel:	xxxxx	11.4	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	7.4	xxxx	xxxxx
Shared LOS:	*	B	*	*	*	*	*	*	*	A	*	*
ApproachDel:		11.4		xxxxxx			xxxxxx			xxxxxx		
ApproachLOS:		B		*			*			*		

Note: Queue reported is the number of cars per lane.

AM Peak Hour - Future Conditions (with Existing lanes)
Traffic Analysis for the Downtown
City of Ukiah

Level Of Service Computation Report
2000 HCM Unsignalized Method (Base Volume Alternative)

Intersection #8 Main St/Standley St

Average Delay (sec/veh): 2.5 Worst Case Level Of Service: B[10.8]

Street Name:	Main St									Standley St								
Approach:	North Bound				South Bound				East Bound				West Bound					
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Uncontrolled				Uncontrolled				Stop Sign				Stop Sign					
Rights:	Include				Include				Include				Include					
Lanes:	0	0	0	1	0	0	1	0	0	0	0	0	1!	0	0	0	0	1!	0	0
Volume Module:																				
Base Vol:	0	165		12		6	92		0		14	23		11		30	0		2	
Growth Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00	
Initial Bse:	0	165		12		6	92		0		14	23		11		30	0		2	
User Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00	
PHF Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00	
PHF Volume:	0	165		12		6	92		0		14	23		11		30	0		2	
Reduct Vol:	0	0		0		0	0		0		0	0		0		0	0		0	
FinalVolume:	0	165		12		6	92		0		14	23		11		30	0		2	
Critical Gap Module:																				
Critical Gp:	xxxxx	xxxx	xxxxx		4.1	xxxx	xxxxx		7.1		6.5		6.2		7.1		6.5		6.2	
FollowUpTim:	xxxxx	xxxx	xxxxx		2.2	xxxx	xxxxx		3.5		4.0		3.3		3.5		4.0		3.3	
Capacity Module:																				
Cnflict Vol:	xxxx	xxxx	xxxxx		177	xxxx	xxxxx		276		281		92		292		275		171	
Potent Cap.:	xxxx	xxxx	xxxxx		1411	xxxx	xxxxx		680		631		971		664		636		878	
Move Cap.:	xxxx	xxxx	xxxxx		1411	xxxx	xxxxx		677		628		971		636		633		878	
Volume/Cap:	xxxx	xxxx	xxxx		0.00	xxxx	xxxx		0.02		0.04		0.01		0.05		0.00		0.00	
Level Of Service Module:																				
2Way95thQ:	xxxx	xxxx	xxxxx		0.0	xxxx	xxxxx		xxxx	xxxx	xxxxx		xxxx	xxxx	xxxxx					
Control Del:	xxxxx	xxxx	xxxxx		7.6	xxxx	xxxxx		xxxxx	xxxx	xxxxx		xxxxx	xxxx	xxxxx					
LOS by Move:	*	*	*		A	*	*		*	*	*		*	*	*					
Movement:	LT -	LTR -	RT		LT -	LTR -	RT		LT -	LTR -	RT		LT -	LTR -	RT					
Shared Cap.:	xxxx	xxxx	xxxxx		xxxx	xxxx	xxxxx		xxxx		699		xxxxx		xxxx		647		xxxxx	
SharedQueue:	xxxxx	xxxx	xxxxx		0.0	xxxx	xxxxx		xxxxx		0.2		xxxxx		xxxxx		0.2		xxxxx	
Shrd ConDel:	xxxxx	xxxx	xxxxx		7.6	xxxx	xxxxx		xxxxx		10.5		xxxxx		xxxxx		10.8		xxxxx	
Shared LOS:	*	*	*		A	*	*		*		B		*		*		B		*	
ApproachDel:	xxxxxx				xxxxxx				10.5								10.8			
ApproachLOS:	*				*				B								B			

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Future Conditions (with Existing lanes)
Traffic Analysis for the Downtown
City of Ukiah

Level Of Service Computation Report
2000 HCM Unsignalized Method (Base Volume Alternative)

Intersection #8 Main St/Standley St

Average Delay (sec/veh): 1.1 Worst Case Level Of Service: B[12.6]

Street Name:	Main St									Standley St								
Approach:	North Bound				South Bound				East Bound				West Bound					
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Uncontrolled				Uncontrolled				Stop Sign				Stop Sign					
Rights:	Include				Include				Include				Include					
Lanes:	0	0	0	1	0	0	1	0	0	0	0	0	1!	0	0	0	0	1!	0	0
Volume Module:																				
Base Vol:	0	386		36		0	238		0		8	0		32		11	0		19	
Growth Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00	
Initial Bse:	0	386		36		0	238		0		8	0		32		11	0		19	
User Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00	
PHF Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00	
PHF Volume:	0	386		36		0	238		0		8	0		32		11	0		19	
Reduct Vol:	0	0		0		0	0		0		0	0		0		0	0		0	
FinalVolume:	0	386		36		0	238		0		8	0		32		11	0		19	
Critical Gap Module:																				
Critical Gp:	xxxxx	xxxx	xxxxx		xxxxx	xxxx	xxxxx		7.1		6.5		6.2		7.1		6.5		6.2	
FollowUpTim:	xxxxx	xxxx	xxxxx		xxxxx	xxxx	xxxxx		3.5		4.0		3.3		3.5		4.0		3.3	
Capacity Module:																				
Cnflict Vol:	xxxx	xxxx	xxxxx		xxxx	xxxx	xxxxx		652		660		238		658		642		404	
Potent Cap.:	xxxx	xxxx	xxxxx		xxxx	xxxx	xxxxx		384		386		806		380		395		651	
Move Cap.:	xxxx	xxxx	xxxxx		xxxx	xxxx	xxxxx		373		386		806		365		395		651	
Volume/Cap:	xxxx	xxxx	xxxx		xxxx	xxxx	xxxx		0.02		0.00		0.04		0.03		0.00		0.03	
Level Of Service Module:																				
2Way95thQ:	xxxx	xxxx	xxxxx		xxxx	xxxx	xxxxx		xxxx	xxxx	xxxxx		xxxx	xxxx	xxxxx					
Control Del:	xxxxx	xxxx	xxxxx		xxxxx	xxxx	xxxxx		xxxxx	xxxx	xxxxx		xxxxx	xxxx	xxxxx					
LOS by Move:	*	*	*		*	*	*		*	*	*		*	*	*					
Movement:	LT -	LTR -	RT		LT -	LTR -	RT		LT -	LTR -	RT		LT -	LTR -	RT					
Shared Cap.:	xxxx	xxxx	xxxxx		xxxx	xxxx	xxxxx		xxxx		654		xxxxx		xxxx		506		xxxxx	
SharedQueue:	xxxxx	xxxx	xxxxx		xxxxx	xxxx	xxxxx		xxxxx		0.2		xxxxx		xxxxx		0.2		xxxxx	
Shrd ConDel:	xxxxx	xxxx	xxxxx		xxxxx	xxxx	xxxxx		xxxxx		10.9		xxxxx		xxxxx		12.6		xxxxx	
Shared LOS:	*	*	*		*	*	*		*		B		*		*		B		*	
ApproachDel:	xxxxxx				xxxxxx				10.9								12.6			
ApproachLOS:	*				*				B								B			

Note: Queue reported is the number of cars per lane.

AM Peak Hour - Future Conditions (with Existing lanes)
Traffic Analysis for the Downtown
City of Ukiah

Level Of Service Computation Report
2000 HCM 4-Way Stop Method (Base Volume Alternative)

Intersection #9 Main St/Perkins St

Cycle (sec): 100 Critical Vol./Cap.(X): 0.486
Loss Time (sec): 0 (Y+R=4.0 sec) Average Delay (sec/veh): 12.5
Optimal Cycle: 0 Level Of Service: B

Street Name:	Main St						Perkins St					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	0 1	0	0 1	0	0 1!	0 0	0 1	0	1 0	0 1	0	1 0
Volume Module:												
Base Vol:	18	91	144	63	60	15	11	231	20	125	343	74
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	18	91	144	63	60	15	11	231	20	125	343	74
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	18	91	144	63	60	15	11	231	20	125	343	74
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	18	91	144	63	60	15	11	231	20	125	343	74
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	18	91	144	63	60	15	11	231	20	125	343	74
Saturation Flow Module:												
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	0.17	0.83	1.00	0.46	0.43	0.11	0.08	1.77	0.15	0.46	1.27	0.27
Final Sat.:	82	414	557	223	212	53	45	945	83	257	733	163
Capacity Analysis Module:												
Vol/Sat:	0.22	0.22	0.26	0.28	0.28	0.28	0.25	0.24	0.24	0.49	0.47	0.45
Crit Moves:			****	****			****			****		
Delay/Veh:	11.4	11.4	10.7	12.4	12.4	12.4	11.2	11.1	10.9	14.6	13.8	13.2
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	11.4	11.4	10.7	12.4	12.4	12.4	11.2	11.1	10.9	14.6	13.8	13.2
LOS by Move:	B	B	B	B	B	B	B	B	B	B	B	B
ApproachDel:	11.0			12.4			11.1			13.9		
Delay Adj:	1.00			1.00			1.00			1.00		
ApprAdjDel:	11.0			12.4			11.1			13.9		
LOS by Appr:	B			B			B			B		
AllWayAvgQ:	0.2	0.2	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.9	0.8	0.8

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Future Conditions (with Existing lanes)
Traffic Analysis for the Downtown
City of Ukiah

Level Of Service Computation Report
2000 HCM 4-Way Stop Method (Base Volume Alternative)

Intersection #9 Main St/Perkins St

Cycle (sec): 100 Critical Vol./Cap.(X): 0.710
Loss Time (sec): 0 (Y+R=4.0 sec) Average Delay (sec/veh): 21.4
Optimal Cycle: 0 Level Of Service: C

Street Name:	Main St						Perkins St					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	0 1	0	0 1	0	0 1!	0 0	0 1	0	1 0	0 1	0	1 0
Volume Module:												
Base Vol:	30	228	241	104	110	23	15	372	32	164	350	115
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	30	228	241	104	110	23	15	372	32	164	350	115
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	30	228	241	104	110	23	15	372	32	164	350	115
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	30	228	241	104	110	23	15	372	32	164	350	115
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	30	228	241	104	110	23	15	372	32	164	350	115
Saturation Flow Module:												
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	0.12	0.88	1.00	0.44	0.46	0.10	0.07	1.78	0.15	0.52	1.11	0.37
Final Sat.:	51	385	479	180	191	40	31	772	67	231	512	173
Capacity Analysis Module:												
Vol/Sat:	0.59	0.59	0.50	0.58	0.58	0.58	0.49	0.48	0.48	0.71	0.68	0.67
Crit Moves:		****			****			****			****	
Delay/Veh:	21.4	21.4	16.9	21.7	21.7	21.7	17.9	17.7	17.4	27.5	25.2	23.4
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	21.4	21.4	16.9	21.7	21.7	21.7	17.9	17.7	17.4	27.5	25.2	23.4
LOS by Move:	C	C	C	C	C	C	C	C	C	D	D	C
ApproachDel:	19.2			21.7			17.6			25.5		
Delay Adj:	1.00			1.00			1.00			1.00		
ApprAdjDel:	19.2			21.7			17.6			25.5		
LOS by Appr:	C			C			C			D		
AllWayAvgQ:	1.3	1.3	0.9	1.2	1.2	1.2	0.8	0.8	0.8	2.1	1.7	1.7

Note: Queue reported is the number of cars per lane.

AM Peak Hour - Future Conditions (with Existing lanes)
Traffic Analysis for the Downtown
City of Ukiah

Level Of Service Computation Report
2000 HCM Unsignalized Method (Base Volume Alternative)

Intersection #10 Main St/Clay St

Average Delay (sec/veh): 2.3 Worst Case Level Of Service: B[11.9]

Street Name:	Main St									Clay St								
Approach:	North Bound				South Bound				East Bound				West Bound					
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Uncontrolled				Uncontrolled				Stop Sign				Stop Sign					
Rights:	Include				Include				Include				Include					
Lanes:	0	0	1!	0	0	0	0	0	1	0	0	0	1!	0	0	0	0	0	1	0
Volume Module:																				
Base Vol:	7		175		1	0		205		14	54		9		27	0		3		1
Growth Adj:	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00
Initial Bse:	7		175		1	0		205		14	54		9		27	0		3		1
User Adj:	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00
PHF Adj:	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00
PHF Volume:	7		175		1	0		205		14	54		9		27	0		3		1
Reduct Vol:	0		0		0	0		0		0	0		0		0	0		0		0
FinalVolume:	7		175		1	0		205		14	54		9		27	0		3		1
Critical Gap Module:																				
Critical Gp:	4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx		7.1		6.5	6.2	xxxxx		6.5		6.2				
FollowUpTim:	2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx		3.5		4.0	3.3	xxxxx		4.0		3.3				
Capacity Module:																				
Cnflict Vol:	219	xxxx	xxxxx	xxxx	xxxx	xxxxx		404		402	212	xxxx		409		176				
Potent Cap.:	1362	xxxx	xxxxx	xxxx	xxxx	xxxxx		561		540	833	xxxx		535		873				
Move Cap.:	1362	xxxx	xxxxx	xxxx	xxxx	xxxxx		556		537	833	xxxx		533		873				
Volume/Cap:	0.01	xxxx	xxxx	xxxx	xxxx	xxxx		0.10		0.02	0.03	xxxx		0.01		0.00				
Level Of Service Module:																				
2Way95thQ:	0.0	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx								
Control Del:	7.7	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx								
LOS by Move:	A	*	*	*	*	*	*	*	*	*	*	*								
Movement:	LT - LTR - RT			LT - LTR - RT			LT - LTR - RT			LT - LTR - RT										
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	615	xxxxx	xxxx	xxxx	590								
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	0.5	xxxxx	xxxxx	xxxx	0.0								
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	11.9	xxxxx	xxxxx	xxxx	11.1								
Shared LOS:	*	*	*	*	*	*	*	B	*	*	*	B								
ApproachDel:	xxxxxx			xxxxxx			11.9			11.1										
ApproachLOS:	*			*			B			B										

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Future Conditions (with Existing lanes)
Traffic Analysis for the Downtown
City of Ukiah

Level Of Service Computation Report
2000 HCM Unsignalized Method (Base Volume Alternative)

Intersection #10 Main St/Clay St

Average Delay (sec/veh): 1.1 Worst Case Level Of Service: C[18.4]

Street Name:	Main St									Clay St								
Approach:	North Bound				South Bound				East Bound				West Bound					
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Uncontrolled				Uncontrolled				Stop Sign				Stop Sign					
Rights:	Include				Include				Include				Include					
Lanes:	0	0	1!	0	0	0	0	0	1	0	0	0	1!	0	0	0	0	0	1	0
Volume Module:																				
Base Vol:	8		468		6	1		344		41	31		1		9	0		3		13
Growth Adj:	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00
Initial Bse:	8		468		6	1		344		41	31		1		9	0		3		13
User Adj:	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00
PHF Adj:	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00
PHF Volume:	8		468		6	1		344		41	31		1		9	0		3		13
Reduct Vol:	0		0		0	0		0		0	0		0		0	0		0		0
FinalVolume:	8		468		6	1		344		41	31		1		9	0		3		13
Critical Gap Module:																				
Critical Gp:	4.1	xxxx	xxxxx			4.1	xxxx	xxxxx			7.1	6.5		6.2	xxxxx	6.5		6.2		
FollowUpTim:	2.2	xxxx	xxxxx			2.2	xxxx	xxxxx			3.5	4.0		3.3	xxxxx	4.0		3.3		
Capacity Module:																				
Cnflict Vol:	385	xxxx	xxxxx			474	xxxx	xxxxx			862	857		365	xxxx	874		471		
Potent Cap.:	1185	xxxx	xxxxx			1099	xxxx	xxxxx			278	297		685	xxxx	290		597		
Move Cap.:	1185	xxxx	xxxxx			1099	xxxx	xxxxx			268	295		685	xxxx	288		597		
Volume/Cap:	0.01	xxxx	xxxx			0.00	xxxx	xxxx			0.12	0.00		0.01	xxxx	0.01		0.02		
Level Of Service Module:																				
2Way95thQ:	0.0	xxxx	xxxxx			0.0	xxxx	xxxxx			xxxx	xxxx	xxxxx		xxxx	xxxx	xxxxx			
Control Del:	8.1	xxxx	xxxxx			8.3	xxxx	xxxxx			xxxxx	xxxx	xxxxx		xxxxx	xxxx	xxxxx			
LOS by Move:	A	*	*			A	*	*			*	*	*		*	*	*			
Movement:	LT - LTR - RT					LT - LTR - RT					LT - LTR - RT				LT - LTR - RT					
Shared Cap.:	xxxx	xxxx	xxxxx			xxxx	xxxx	xxxxx			xxxx	310	xxxxx		xxxx	xxxx	497			
SharedQueue:	xxxxx	xxxx	xxxxx			xxxxx	xxxx	xxxxx			xxxxx	0.5	xxxxx		xxxxx	xxxx	0.1			
Shrd ConDel:	xxxxx	xxxx	xxxxx			xxxxx	xxxx	xxxxx			xxxxx	18.4	xxxxx		xxxxx	xxxx	12.5			
Shared LOS:	*	*	*			*	*	*			*	C	*		*	*	B			
ApproachDel:	xxxxxx					xxxxxx					18.4				12.5					
ApproachLOS:	*					*					C				B					

Note: Queue reported is the number of cars per lane.

AM Peak Hour - Future Conditions (with Existing lanes)
Traffic Analysis for the Downtown
City of Ukiah

Level Of Service Computation Report
2000 HCM Unsignalized Method (Base Volume Alternative)

Intersection #11 Main St/Mill St

Average Delay (sec/veh): 2.8 Worst Case Level Of Service: B[10.7]

Street Name:	Main St								Mill St							
Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Uncontrolled					Uncontrolled					Stop Sign					Stop Sign				
Rights:	Include					Include					Include					Include				
Lanes:	1	0	1	0	0	0	0	0	1	0	0	0	1!	0	0	0	0	0	0	0
Volume Module:																				
Base Vol:	40	185		0		0	134		35		42		0		61		0		0	
Growth Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00		1.00		1.00		1.00		1.00	
Initial Bse:	40	185		0		0	134		35		42		0		61		0		0	
User Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00		1.00		1.00		1.00		1.00	
PHF Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00		1.00		1.00		1.00		1.00	
PHF Volume:	40	185		0		0	134		35		42		0		61		0		0	
Reduct Vol:	0	0		0		0	0		0		0		0		0		0		0	
FinalVolume:	40	185		0		0	134		35		42		0		61		0		0	
Critical Gap Module:																				
Critical Gp:	4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx			6.4	6.5		6.2	xxxxx	xxxx	xxxxx					
FollowUpTim:	2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx			3.5	4.0		3.3	xxxxx	xxxx	xxxxx					
Capacity Module:																				
Cnflict Vol:	169	xxxx	xxxxx	xxxx	xxxx	xxxxx			417	417		152	xxxx	xxxx	xxxxx					
Potent Cap.:	1421	xxxx	xxxxx	xxxx	xxxx	xxxxx			597	530		900	xxxx	xxxx	xxxxx					
Move Cap.:	1421	xxxx	xxxxx	xxxx	xxxx	xxxxx			584	515		900	xxxx	xxxx	xxxxx					
Volume/Cap:	0.03	xxxx	xxxx	xxxx	xxxx	xxxx			0.07	0.00		0.07	xxxx	xxxx	xxxx					
Level Of Service Module:																				
2Way95thQ:	0.1	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx		xxxx	xxxx	xxxxx							
Control Del:	7.6	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx								
LOS by Move:	A	*	*	*	*	*	*	*	*	*	*	*								
Movement:	LT - LTR - RT			LT - LTR - RT			LT - LTR - RT			LT - LTR - RT										
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	737	xxxxx	xxxx	xxxx	xxxxx								
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	0.5	xxxxx	xxxxx	xxxx	xxxxx								
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	10.7	xxxxx	xxxxx	xxxx	xxxxx								
Shared LOS:	*	*	*	*	*	*	*	B	*	*	*	*								
ApproachDel:	xxxxxx			xxxxxx			10.7			xxxxxx										
ApproachLOS:	*			*			B			*										

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Future Conditions (with Existing lanes)
Traffic Analysis for the Downtown
City of Ukiah

Level Of Service Computation Report
2000 HCM Unsignalized Method (Base Volume Alternative)

Intersection #11 Main St/Mill St

Average Delay (sec/veh): 3.0 Worst Case Level Of Service: C[15.3]

Street Name:	Main St								Mill St							
Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Uncontrolled					Uncontrolled					Stop Sign					Stop Sign				
Rights:	Include					Include					Include					Include				
Lanes:	1	0	1	0	0	0	0	0	1	0	0	0	1!	0	0	0	0	0	0	0
Volume Module:																				
Base Vol:	77	293		0		0	289		69		63		0		65		0		0	
Growth Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00		1.00		1.00		1.00		1.00	
Initial Bse:	77	293		0		0	289		69		63		0		65		0		0	
User Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00		1.00		1.00		1.00		1.00	
PHF Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00		1.00		1.00		1.00		1.00	
PHF Volume:	77	293		0		0	289		69		63		0		65		0		0	
Reduct Vol:	0	0		0		0	0		0		0		0		0		0		0	
FinalVolume:	77	293		0		0	289		69		63		0		65		0		0	
Critical Gap Module:																				
Critical Gp:	4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx			6.4	6.5		6.2	xxxxx	xxxx	xxxxx					
FollowUpTim:	2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx			3.5	4.0		3.3	xxxxx	xxxx	xxxxx					
Capacity Module:																				
Cnflict Vol:	358	xxxx	xxxxx	xxxx	xxxx	xxxxx			771	771		324	xxxx	xxxx	xxxxx					
Potent Cap.:	1212	xxxx	xxxxx	xxxx	xxxx	xxxxx			371	333		722	xxxx	xxxx	xxxxx					
Move Cap.:	1212	xxxx	xxxxx	xxxx	xxxx	xxxxx			353	312		722	xxxx	xxxx	xxxxx					
Volume/Cap:	0.06	xxxx	xxxx	xxxx	xxxx	xxxx			0.18	0.00		0.09	xxxx	xxxx	xxxx					
Level Of Service Module:																				
2Way95thQ:	0.2	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx		xxxx	xxxx	xxxxx							
Control Del:	8.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx								
LOS by Move:	A	*	*	*	*	*	*	*	*	*	*	*								
Movement:	LT - LTR - RT			LT - LTR - RT			LT - LTR - RT			LT - LTR - RT										
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	477	xxxxx	xxxx	xxxx	xxxxx								
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	1.1	xxxxx	xxxxx	xxxx	xxxxx								
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	15.3	xxxxx	xxxxx	xxxx	xxxxx								
Shared LOS:	*	*	*	*	*	*	*	C	*	*	*	*								
ApproachDel:	xxxxxx			xxxxxx			15.3			xxxxxx										
ApproachLOS:	*			*			C			*										

Note: Queue reported is the number of cars per lane.

AM Peak Hour - Future Conditions (with Existing lanes)
Traffic Analysis for the Downtown
City of Ukiah

Level Of Service Computation Report
2000 HCM 4-Way Stop Method (Base Volume Alternative)

Intersection #12 Main St/Gobbi St

Cycle (sec):	100	Critical Vol./Cap.(X):	0.712
Loss Time (sec):	0 (Y+R=4.0 sec)	Average Delay (sec/veh):	15.3
Optimal Cycle:	0	Level Of Service:	C

Street Name:	Main St							Gobbi St							
Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Stop Sign				Stop Sign				Stop Sign				Stop Sign			
Rights:	Include				Include				Include				Include			
Min. Green:	0	0	0		0	0	0		0	0	0		0	0	0	
Lanes:	0	0	1!	0	0	1	0	0	1	0	1	0	0	1	0	1	0	0	1	0
Volume Module:																
Base Vol:	4	8	7		92	7		87	88	298		10	33	362		103
Growth Adj:	1.00	1.00	1.00		1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00
Initial Bse:	4	8	7		92	7		87	88	298		10	33	362		103
User Adj:	1.00	1.00	1.00		1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00
PHF Adj:	1.00	1.00	1.00		1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00
PHF Volume:	4	8	7		92	7		87	88	298		10	33	362		103
Reduct Vol:	0	0	0		0	0		0	0	0		0	0	0		0
Reduced Vol:	4	8	7		92	7		87	88	298		10	33	362		103
PCE Adj:	1.00	1.00	1.00		1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00
MLF Adj:	1.00	1.00	1.00		1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00
FinalVolume:	4	8	7		92	7		87	88	298		10	33	362		103
Saturation Flow Module:																
Adjustment:	1.00	1.00	1.00		1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00
Lanes:	0.21	0.42	0.37		1.00	0.07		0.93	1.00	0.97		0.03	1.00	0.78		0.22
Final Sat.:	97	194	170		470	41		512	567	603		20	576	508		145
Capacity Analysis Module:																
Vol/Sat:	0.04	0.04	0.04		0.20	0.17		0.17	0.16	0.49		0.49	0.06	0.71		0.71
Crit Moves:		****			****							****				****
Delay/Veh:	10.1	10.1	10.1		11.4	9.8		9.8	10.0	13.6		13.6	9.2	20.0		20.0
Delay Adj:	1.00	1.00	1.00		1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00
AdjDel/Veh:	10.1	10.1	10.1		11.4	9.8		9.8	10.0	13.6		13.6	9.2	20.0		20.0
LOS by Move:	B	B	B		B	A		A	A	B		B	A	C		C
ApproachDel:	10.1				10.6				12.8				19.3			
Delay Adj:	1.00				1.00				1.00				1.00			
ApprAdjDel:	10.1				10.6				12.8				19.3			
LOS by Appr:	B				B				B				C			
AllWayAvgQ:	0.0	0.0	0.0		0.2	0.2		0.2	0.2	0.9		0.9	0.1	2.2		2.2

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Future Conditions (with Existing lanes)
Traffic Analysis for the Downtown
City of Ukiah

Level Of Service Computation Report
2000 HCM 4-Way Stop Method (Base Volume Alternative)

Intersection #12 Main St/Gobbi St

Cycle (sec):	100	Critical Vol./Cap.(X):	0.913
Loss Time (sec):	0 (Y+R=4.0 sec)	Average Delay (sec/veh):	25.7
Optimal Cycle:	0	Level Of Service:	D

Street Name:	Main St							Gobbi St							
Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Stop Sign				Stop Sign				Stop Sign				Stop Sign			
Rights:	Include				Include				Include				Include			
Min. Green:	0	0	0		0	0	0		0	0	0		0	0	0	
Lanes:	0	0	1!	0	0	1	0	0	1	0	1	0	0	1	0	1	0	0	1	0
Volume Module:																
Base Vol:	20	21	47		230	3		156	130	279		3	11	369		128
Growth Adj:	1.00	1.00	1.00		1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00
Initial Bse:	20	21	47		230	3		156	130	279		3	11	369		128
User Adj:	1.00	1.00	1.00		1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00
PHF Adj:	1.00	1.00	1.00		1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00
PHF Volume:	20	21	47		230	3		156	130	279		3	11	369		128
Reduct Vol:	0	0	0		0	0		0	0	0		0	0	0		0
Reduced Vol:	20	21	47		230	3		156	130	279		3	11	369		128
PCE Adj:	1.00	1.00	1.00		1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00
MLF Adj:	1.00	1.00	1.00		1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00
FinalVolume:	20	21	47		230	3		156	130	279		3	11	369		128
Saturation Flow Module:																
Adjustment:	1.00	1.00	1.00		1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00
Lanes:	0.23	0.24	0.53		1.00	0.02		0.98	1.00	0.99		0.01	1.00	0.74		0.26
Final Sat.:	97	101	227		448	10		515	471	501		5	485	404		140
Capacity Analysis Module:																
Vol/Sat:	0.21	0.21	0.21		0.51	0.30		0.30	0.28	0.56		0.56	0.02	0.91		0.91
Crit Moves:		****			****							****		****		
Delay/Veh:	12.7	12.7	12.7		17.9	12.0		12.0	12.8	17.4		17.4	10.1	44.3		44.3
Delay Adj:	1.00	1.00	1.00		1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00
AdjDel/Veh:	12.7	12.7	12.7		17.9	12.0		12.0	12.8	17.4		17.4	10.1	44.3		44.3
LOS by Move:	B	B	B		C	B		B	B	C		C	B	E		E
ApproachDel:	12.7				15.5				16.0				43.6			
Delay Adj:	1.00				1.00				1.00				1.00			
ApprAdjDel:	12.7				15.5				16.0				43.6			
LOS by Appr:	B				C				C				E			
AllWayAvgQ:	0.2	0.2	0.2		0.9	0.4		0.4	0.4	1.1		1.1	0.0	5.3		5.3

Note: Queue reported is the number of cars per lane.

Appendix D

Downtown Road Diet Economic Success

Downtown Road Diet Economic Success

Road diets in a downtown corridor often result in an environment that is safer and more friendly to drivers, bicyclists and pedestrians. The slowing of vehicular traffic generally results in a reduction of collisions and increase of comfort level for pedestrians and bicyclists. The installation of a two-way left turn lane and turn lanes at intersections provides refuge for turning vehicles without obstructing the flow of following vehicles which also increases the comfort to the driver and decreases collisions. Despite the decrease in travel lanes, road diets have been seen to increase the average daily traffic of a road way by making it operate more efficiently. At the same time, road diets may increase the availability of on-street parking, and make off-street parking easier to access. The combination of increased safety, efficiency and user comfort has been seen to have a positive impact on businesses located along road diet corridor. Case studies have shown that downtown corridors that undergo a road diet generally experience an increase in sales and property values while experiencing a decrease in vacancy. This is often attributed to the fact that after an implementation of a road diet, it is easier for drivers and bicyclists to access a business and since pedestrians feel more comfortable, they are more likely to visit multiple business during one trip. Case studies shown below give some of the details of the findings.

Fourth Plain Boulevard, Vancouver, Washington[1]
Businesses located along Fourth Plain Boulevard were surveyed before and after implementation of road diet. After the implementation of the road diet program, businesses reported an increase in gross receipts of 3.1 percent. This is especially significant considering that comparable commercial zones in the city experienced a decrease in gross receipts ranging from 9.8 percent to 25 percent for the same time period.

Atlantic Boulevard, Del Ray Beach, Florida[2]
Merchants in this downtown requested the four-lane to two-lane conversion in an effort to revitalize a suffering downtown business district. The road diet program resulted in an increase in business and resulting in Atlantic Boulevard being considered to be one of the more successful downtowns in Florida.

The same report notes other communities where road diets have been implemented and it resulted in an increase in average daily traffic as well as increases in pedestrian and bicycle traffic.

Lake Avenue, Lake Worth, Florida[3]
After completion of a road diet project in downtown Lake Worth, Florida, the taxable property values increased by 6.5 percent while retail vacancies greatly decreased to "virtually zero."

Clematis Street, West Palm Beach, Florida[4]
After implementation of a road diet in a struggling commercial district, commercial rents have risen and vacancy rates have decreased from 80 percent to 20 percent. Also noted was an increase in pedestrian traffic and private redevelopment investment.

Sources

[1] *Road Diet Handbook – Overview,* Jennifer A. Rosales, 2006

[2] *Road Diets – Fixing the Big Roads,* Dan Burden and Peter Lanerwey, Walkable Communities, Inc., 1999 www.walkable.org

[3] "Lake Worth: Reclaiming a Small Downtown," Cynthia Pollock Shea, Florida Sustainable Communities Network, 1998, compiled by Dom Nozzi, http://www.walkablestreets.com/diet.htm

[4] "Traffic Calming Reference Materials," Ian Lockwood and Timothy Stillings, City of West Palm Beach, 1998, compiled by Dom Nozzi, http://www.walkablestreets.com/diet.htm

Appendix E

Future Road Diet Level of Service Calculations

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	55	151	615	20	83	877
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	1.00	1.00		1.00	1.00
Frt	1.00	0.85	1.00		1.00	1.00
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1770	1385	1623		1770	1630
Flt Permitted	0.95	1.00	1.00		0.35	1.00
Satd. Flow (perm)	1770	1385	1623		648	1630
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	58	159	647	21	87	923
RTOR Reduction (vph)	0	131	1	0	0	0
Lane Group Flow (vph)	58	28	667	0	87	923
Parking (#/hr)		5	5			5
Turn Type		Perm			Perm	
Protected Phases	8		2			6
Permitted Phases		8			6	
Actuated Green, G (s)	16.0	16.0	66.0		66.0	66.0
Effective Green, g (s)	16.0	16.0	66.0		66.0	66.0
Actuated g/C Ratio	0.18	0.18	0.73		0.73	0.73
Clearance Time (s)	4.0	4.0	4.0		4.0	4.0
Lane Grp Cap (vph)	315	246	1190		475	1195
v/s Ratio Prot	c0.03		0.41			c0.57
v/s Ratio Perm		0.02			0.13	
v/c Ratio	0.18	0.11	0.56		0.18	0.77
Uniform Delay, d1	31.5	31.1	5.4		3.7	7.4
Progression Factor	1.00	1.00	0.20		1.00	1.00
Incremental Delay, d2	1.3	0.9	1.7		0.8	4.9
Delay (s)	32.7	32.0	2.8		4.5	12.3
Level of Service	C	C	A		A	B
Approach Delay (s)	32.2		2.8			11.6
Approach LOS	C		A			B

Intersection Summary				
HCM Average Control Delay	10.9	HCM Level of Service		B
HCM Volume to Capacity ratio	0.66			
Actuated Cycle Length (s)	90.0	Sum of lost time (s)		8.0
Intersection Capacity Utilization	56.2%	ICU Level of Service		B
Analysis Period (min)	15			
c Critical Lane Group				

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	59	202	842	33	50	815
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	1.00	1.00		1.00	1.00
Frt	1.00	0.85	0.99		1.00	1.00
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1770	1385	1622		1770	1630
Flt Permitted	0.95	1.00	1.00		0.23	1.00
Satd. Flow (perm)	1770	1385	1622		432	1630
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	62	213	886	35	53	858
RTOR Reduction (vph)	0	178	1	0	0	0
Lane Group Flow (vph)	62	35	920	0	53	858
Parking (#/hr)		5	5			5
Turn Type		Perm			Perm	
Protected Phases	8		2			6
Permitted Phases		8			6	
Actuated Green, G (s)	16.0	16.0	74.0		74.0	74.0
Effective Green, g (s)	16.0	16.0	74.0		74.0	74.0
Actuated g/C Ratio	0.16	0.16	0.76		0.76	0.76
Clearance Time (s)	4.0	4.0	4.0		4.0	4.0
Lane Grp Cap (vph)	289	226	1225		326	1231
v/s Ratio Prot	c0.04		c0.57			0.53
v/s Ratio Perm		0.03			0.12	
v/c Ratio	0.21	0.15	0.75		0.16	0.70
Uniform Delay, d1	35.6	35.2	6.8		3.4	6.2
Progression Factor	1.00	1.00	0.09		1.00	1.00
Incremental Delay, d2	1.7	1.4	2.9		1.1	3.3
Delay (s)	37.2	36.6	3.5		4.4	9.5
Level of Service	D	D	A		A	A
Approach Delay (s)	36.8		3.5			9.2
Approach LOS	D		A			A

Intersection Summary				
HCM Average Control Delay	10.3	HCM Level of Service		B
HCM Volume to Capacity ratio	0.66			
Actuated Cycle Length (s)	98.0	Sum of lost time (s)		8.0
Intersection Capacity Utilization	65.5%	ICU Level of Service		C
Analysis Period (min)	15			
c Critical Lane Group				

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	32	12	91	0	0	0	0	454	15	18	655	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0					4.0			4.0	
Lane Util. Factor		1.00	1.00					1.00			0.95	
Frt		1.00	0.85					1.00			1.00	
Flt Protected		0.97	1.00					1.00			1.00	
Satd. Flow (prot)		1573	1583					1576			3269	
Flt Permitted		0.97	1.00					1.00			0.94	
Satd. Flow (perm)		1573	1583					1576			3074	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	34	13	96	0	0	0	0	478	16	19	689	0
RTOR Reduction (vph)	0	0	73	0	0	0	0	1	0	0	0	0
Lane Group Flow (vph)	0	47	23	0	0	0	0	493	0	0	708	0
Parking (#/hr)		5			5			10			10	
Turn Type	Split		Perm							Perm		
Protected Phases	4	4						2			6	
Permitted Phases			4							6		
Actuated Green, G (s)		19.0	19.0					53.0			53.0	
Effective Green, g (s)		19.0	19.0					53.0			53.0	
Actuated g/C Ratio		0.24	0.24					0.66			0.66	
Clearance Time (s)		4.0	4.0					4.0			4.0	
Lane Grp Cap (vph)		374	376					1044			2037	
v/s Ratio Prot		c0.03						c0.31				
v/s Ratio Perm			0.01								0.23	
v/c Ratio		0.13	0.06					0.47			0.35	
Uniform Delay, d1		24.0	23.6					6.6			5.9	
Progression Factor		1.00	1.00					0.15			1.00	
Incremental Delay, d2		0.7	0.3					1.2			0.5	
Delay (s)		24.7	23.9					2.2			6.4	
Level of Service		C	C					A			A	
Approach Delay (s)		24.2			0.0			2.2			6.4	
Approach LOS		C			A			A			A	

Intersection Summary				
HCM Average Control Delay	6.7	HCM Level of Service	A	
HCM Volume to Capacity ratio	0.38			
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	8.0	
Intersection Capacity Utilization	41.1%	ICU Level of Service	A	
Analysis Period (min)	15			
c Critical Lane Group				

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	8	6	102	0	0	0	0	605	28	1	854	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0					4.0			4.0	
Lane Util. Factor		1.00	1.00					1.00			0.95	
Frt		1.00	0.85					0.99			1.00	
Flt Protected		0.97	1.00					1.00			1.00	
Satd. Flow (prot)		1585	1583					1574			3274	
Flt Permitted		0.97	1.00					1.00			0.95	
Satd. Flow (perm)		1585	1583					1574			3126	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	8	6	107	0	0	0	0	637	29	1	899	0
RTOR Reduction (vph)	0	0	88	0	0	0	0	2	0	0	0	0
Lane Group Flow (vph)	0	14	19	0	0	0	0	664	0	0	900	0
Parking (#/hr)		5			5			10			10	
Turn Type	Split		Perm							Perm		
Protected Phases	4	4						2			6	
Permitted Phases			4							6		
Actuated Green, G (s)		17.0	17.0					73.0			73.0	
Effective Green, g (s)		17.0	17.0					73.0			73.0	
Actuated g/C Ratio		0.17	0.17					0.74			0.74	
Clearance Time (s)		4.0	4.0					4.0			4.0	
Lane Grp Cap (vph)		275	275					1172			2329	
v/s Ratio Prot		0.01						c0.42				
v/s Ratio Perm			c0.01								0.29	
v/c Ratio		0.05	0.07					0.57			0.39	
Uniform Delay, d1		33.8	33.9					5.5			4.5	
Progression Factor		1.00	1.00					0.20			0.96	
Incremental Delay, d2		0.4	0.5					1.3			0.4	
Delay (s)		34.1	34.3					2.4			4.7	
Level of Service		C	C					A			A	
Approach Delay (s)		34.3			0.0			2.4			4.7	
Approach LOS		C			A			A			A	

Intersection Summary				
HCM Average Control Delay	5.9	HCM Level of Service	A	
HCM Volume to Capacity ratio	0.47			
Actuated Cycle Length (s)	98.0	Sum of lost time (s)	8.0	
Intersection Capacity Utilization	43.5%	ICU Level of Service	A	
Analysis Period (min)	15			
c Critical Lane Group				

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	67	207	67	42	403	80	170	463	38
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt				1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.99	
Flt Protected				0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)				1770	1630	1583	1770	1583	1583	1770	1565	
Flt Permitted				0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)				1770	1630	1583	1770	1583	1583	1770	1565	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	0	0	71	218	71	44	424	84	179	487	40
RTOR Reduction (vph)	0	0	0	0	0	56	0	0	29	0	4	0
Lane Group Flow (vph)	0	0	0	71	218	15	44	424	55	179	523	0
Parking (#/hr)		10			5			10			10	
Turn Type				Split		Perm	Prot		Perm	Prot		
Protected Phases				8	8		5	2		1	6	
Permitted Phases						8			2			
Actuated Green, G (s)				16.0	16.0	16.0	16.0	30.0	30.0	16.0	30.0	
Effective Green, g (s)				16.0	16.0	16.0	16.0	30.0	30.0	16.0	30.0	
Actuated g/C Ratio				0.22	0.22	0.22	0.22	0.41	0.41	0.22	0.41	
Clearance Time (s)				4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Lane Grp Cap (vph)				383	352	342	383	642	642	383	634	
v/s Ratio Prot				0.04	c0.13		0.02	c0.27		0.10	c0.33	
v/s Ratio Perm						0.01			0.03			
v/c Ratio				0.19	0.62	0.04	0.11	0.66	0.09	0.47	0.82	
Uniform Delay, d1				23.7	26.2	23.0	23.3	17.9	13.6	25.3	19.7	
Progression Factor				0.35	0.42	0.32	1.00	1.00	1.00	0.95	0.76	
Incremental Delay, d2				0.7	5.6	0.2	0.6	5.3	0.3	3.9	11.2	
Delay (s)				9.1	16.5	7.5	23.9	23.1	13.8	28.0	26.1	
Level of Service				A	B	A	C	C	B	C	C	
Approach Delay (s)		0.0			13.3			21.8			26.6	
Approach LOS		A			B			C			C	

Intersection Summary				
HCM Average Control Delay	22.0	HCM Level of Service	C	
HCM Volume to Capacity ratio	0.71			
Actuated Cycle Length (s)	74.0	Sum of lost time (s)	8.0	
Intersection Capacity Utilization	51.5%	ICU Level of Service	A	
Analysis Period (min)	15			
c Critical Lane Group				

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	94	207	105	69	525	138	283	649	46
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt				1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.99	
Flt Protected				0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)				1770	1630	1583	1770	1583	1583	1770	1568	
Flt Permitted				0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)				1770	1630	1583	1770	1583	1583	1770	1568	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	0	0	99	218	111	73	553	145	298	683	48
RTOR Reduction (vph)	0	0	0	0	0	86	0	0	29	0	3	0
Lane Group Flow (vph)	0	0	0	99	218	25	73	553	116	298	728	0
Parking (#/hr)		10			5			10			10	
Turn Type				Split		Perm	Prot		Perm	Prot		
Protected Phases				8	8		5	2		1	6	
Permitted Phases						8			2			
Actuated Green, G (s)				18.0	18.0	18.0	16.0	47.0	47.0	21.0	52.0	
Effective Green, g (s)				18.0	18.0	18.0	16.0	47.0	47.0	21.0	52.0	
Actuated g/C Ratio				0.18	0.18	0.18	0.16	0.48	0.48	0.21	0.53	
Clearance Time (s)				4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Lane Grp Cap (vph)				325	299	291	289	759	759	379	832	
v/s Ratio Prot				0.06	c0.13		0.04	c0.35		0.17	c0.46	
v/s Ratio Perm						0.02			0.07			
v/c Ratio				0.30	0.73	0.09	0.25	0.73	0.15	0.79	0.88	
Uniform Delay, d1				34.6	37.7	33.2	35.8	20.4	14.3	36.4	20.2	
Progression Factor				0.60	0.65	0.90	1.00	1.00	1.00	0.76	0.59	
Incremental Delay, d2				1.5	9.1	0.4	2.1	6.1	0.4	14.4	11.9	
Delay (s)				22.2	33.6	30.1	37.9	26.5	14.7	42.0	23.7	
Level of Service				C	C	C	D	C	B	D	C	
Approach Delay (s)		0.0			30.0			25.3			29.0	
Approach LOS		A			C			C			C	

Intersection Summary				
HCM Average Control Delay	27.9	HCM Level of Service	C	
HCM Volume to Capacity ratio	0.83			
Actuated Cycle Length (s)	98.0	Sum of lost time (s)	12.0	
Intersection Capacity Utilization	64.2%	ICU Level of Service	C	
Analysis Period (min)	15			
c Critical Lane Group				

AM Peak Hour - Future Conditions (TWLT Lane)
Traffic Analysis for the Downtown
City of Ukiah

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #4 State St/Clay St

Average Delay (sec/veh): 3.9 Worst Case Level Of Service: C[24.7]

Street Name:	State St						Clay St					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	- T	- R	L	- T	- R	L	- T	- R	L	- T	- R
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Lanes:	1 0	0 1	0	1 0	0 1	0	0 0	1! 0	0	0 0	1! 0	0
Volume Module:												
Base Vol:	79	522	60	2	480	1	10	98	46	14	7	9
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	79	522	60	2	480	1	10	98	46	14	7	9
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	79	522	60	2	480	1	10	98	46	14	7	9
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	79	522	60	2	480	1	10	98	46	14	7	9
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	79	522	60	2	480	1	10	98	46	14	7	9
Critical Gap Module:												
Critical Gp:	4.1	xxxx	xxxxx	4.1	xxxx	xxxxx	7.1	6.5	6.2	7.1	6.5	6.2
FollowUpTim:	2.2	xxxx	xxxxx	2.2	xxxx	xxxxx	3.5	4.0	3.3	3.5	4.0	3.3
Capacity Module:												
Cnflict Vol:	481	xxxx	xxxxx	582	xxxx	xxxxx	1203	1225	481	1267	1195	552
Potent Cap.:	1092	xxxx	xxxxx	1002	xxxx	xxxxx	163	181	590	147	188	537
Move Cap.:	1092	xxxx	xxxxx	1002	xxxx	xxxxx	146	167	590	69	174	537
Total Cap:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	270	283	xxxxx	191	279	xxxxx
Volume/Cap:	0.07	xxxx	xxxx	0.00	xxxx	xxxx	0.04	0.35	0.08	0.07	0.03	0.02
Level Of Service Module:												
2Way95thQ:	0.2	xxxx	xxxxx	0.0	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Control Del:	8.6	xxxx	xxxxx	8.6	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
LOS by Move:	A	*	*	A	*	*	*	*	*	*	*	*
Movement:	LT -	LTR -	RT	LT -	LTR -	RT	LT -	LTR -	RT	LT -	LTR -	RT
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	334	xxxxx	xxxx	260	xxxxx
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	2.3	xxxxx	xxxxx	0.4	xxxxx
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	24.7	xxxxx	xxxxx	20.6	xxxxx
Shared LOS:	*	*	*	*	*	*	*	C	*	*	C	*
ApproachDel:	xxxxxx			xxxxxx			24.7			20.6		
ApproachLOS:	*			*			C			C		

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Future Conditions (TWLT Lane)
Traffic Analysis for the Downtown
City of Ukiah

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #4 State St/Clay St

Average Delay (sec/veh): 2.3 Worst Case Level Of Service: D[31.0]

Street Name:	State St						Clay St					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	- T	- R	L	- T	- R	L	- T	- R	L	- T	- R
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Lanes:	1 0	0 1	0	1 0	0 1	0	0 0	1! 0	0	0 0	1! 0	0
Volume Module:												
Base Vol:	25	709	56	14	708	32	1	12	85	37	15	7
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	25	709	56	14	708	32	1	12	85	37	15	7
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	25	709	56	14	708	32	1	12	85	37	15	7
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	25	709	56	14	708	32	1	12	85	37	15	7
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	25	709	56	14	708	32	1	12	85	37	15	7
Critical Gap Module:												
Critical Gp:	4.1	xxxx	xxxxx	4.1	xxxx	xxxxx	7.1	6.5	6.2	7.1	6.5	6.2
FollowUpTim:	2.2	xxxx	xxxxx	2.2	xxxx	xxxxx	3.5	4.0	3.3	3.5	4.0	3.3
Capacity Module:												
Cnflict Vol:	740	xxxx	xxxxx	765	xxxx	xxxxx	1550	1567	724	1588	1555	737
Potent Cap.:	876	xxxx	xxxxx	857	xxxx	xxxxx	94	112	429	88	114	422
Move Cap.:	876	xxxx	xxxxx	857	xxxx	xxxxx	80	107	429	62	109	422
Total Cap:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	203	227	xxxxx	170	227	xxxxx
Volume/Cap:	0.03	xxxx	xxxx	0.02	xxxx	xxxx	0.00	0.05	0.20	0.22	0.07	0.02
Level Of Service Module:												
2Way95thQ:	0.1	xxxx	xxxxx	0.0	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Control Del:	9.2	xxxx	xxxxx	9.3	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
LOS by Move:	A	*	*	A	*	*	*	*	*	*	*	*
Movement:	LT -	LTR -	RT	LT -	LTR -	RT	LT -	LTR -	RT	LT -	LTR -	RT
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	383	xxxxx	xxxx	197	xxxxx
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	1.0	xxxxx	xxxxx	1.2	xxxxx
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	17.6	xxxxx	xxxxx	31.0	xxxxx
Shared LOS:	*	*	*	*	*	*	*	C	*	*	D	*
ApproachDel:	xxxxxx			xxxxxx			17.6			31.0		
ApproachLOS:	*			*			C			D		

Note: Queue reported is the number of cars per lane.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	43	85	60	3	48	10	32	519	3	5	456	33
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Frt		0.96			0.98		1.00	1.00		1.00	0.99	
Flt Protected		0.99			1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1542			1589		1770	1629		1770	1613	
Flt Permitted		0.93			0.99		0.31	1.00		0.27	1.00	
Satd. Flow (perm)		1456			1576		572	1629		506	1613	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	45	89	63	3	51	11	34	546	3	5	480	35
RTOR Reduction (vph)	0	38	0	0	7	0	0	1	0	0	7	0
Lane Group Flow (vph)	0	159	0	0	58	0	34	548	0	5	508	0
Parking (#/hr)		5			5			5			5	
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		16.0			16.0		16.0	16.0		16.0	16.0	
Effective Green, g (s)		16.0			16.0		16.0	16.0		16.0	16.0	
Actuated g/C Ratio		0.40			0.40		0.40	0.40		0.40	0.40	
Clearance Time (s)		4.0			4.0		4.0	4.0		4.0	4.0	
Lane Grp Cap (vph)		582			630		229	652		202	645	
v/s Ratio Prot								c0.34			0.32	
v/s Ratio Perm		c0.11			0.04		0.06			0.01		
v/c Ratio		0.27			0.09		0.15	0.84		0.02	0.79	
Uniform Delay, d1		8.1			7.5		7.7	10.9		7.3	10.5	
Progression Factor		1.00			1.15		1.00	1.00		1.16	1.24	
Incremental Delay, d2		1.2			0.3		1.4	12.4		0.2	8.2	
Delay (s)		9.2			8.9		9.0	23.3		8.6	21.3	
Level of Service		A			A		A	C		A	C	
Approach Delay (s)		9.2			8.9			22.5			21.2	
Approach LOS		A			A			C			C	

Intersection Summary				
HCM Average Control Delay	19.4	HCM Level of Service	B	
HCM Volume to Capacity ratio	0.56			
Actuated Cycle Length (s)	40.0	Sum of lost time (s)	8.0	
Intersection Capacity Utilization	51.3%	ICU Level of Service	A	
Analysis Period (min)	15			
c Critical Lane Group				

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	51	96	105	15	106	23	41	745	20	16	722	59
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Frt		0.94			0.98		1.00	1.00		1.00	0.99	
Flt Protected		0.99			0.99		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1523			1587		1770	1624		1770	1611	
Flt Permitted		0.91			0.96		0.20	1.00		0.21	1.00	
Satd. Flow (perm)		1403			1525		365	1624		385	1611	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	54	101	111	16	112	24	43	784	21	17	760	62
RTOR Reduction (vph)	0	43	0	0	11	0	0	2	0	0	5	0
Lane Group Flow (vph)	0	223	0	0	141	0	43	803	0	17	817	0
Parking (#/hr)		5			5			5			5	
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		16.0			16.0		36.0	36.0		36.0	36.0	
Effective Green, g (s)		16.0			16.0		36.0	36.0		36.0	36.0	
Actuated g/C Ratio		0.27			0.27		0.60	0.60		0.60	0.60	
Clearance Time (s)		4.0			4.0		4.0	4.0		4.0	4.0	
Lane Grp Cap (vph)		374			407		219	974		231	967	
v/s Ratio Prot								0.49			c0.51	
v/s Ratio Perm		c0.16			0.09		0.12			0.04		
v/c Ratio		0.60			0.35		0.20	0.82		0.07	0.85	
Uniform Delay, d1		19.2			17.8		5.4	9.5		5.0	9.7	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		6.8			2.3		2.0	7.9		0.6	9.0	
Delay (s)		26.0			20.1		7.4	17.4		5.6	18.7	
Level of Service		C			C		A	B		A	B	
Approach Delay (s)		26.0			20.1			16.9			18.5	
Approach LOS		C			C			B			B	

Intersection Summary				
HCM Average Control Delay	18.9	HCM Level of Service	B	
HCM Volume to Capacity ratio	0.77			
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	8.0	
Intersection Capacity Utilization	72.7%	ICU Level of Service	C	
Analysis Period (min)	15			
c Critical Lane Group				

HCM Signalized Intersection Capacity Analysis — Downtown Ukiah Streetscape
6: Gobbi Street & State Street

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	65	211	30	106	231	66	39	547	137	8	408	35
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frt	1.00	0.98		1.00	0.97		1.00	0.97		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1828		1770	1801		1770	3433		1770	3322	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	1828		1770	1801		1770	3433		1770	3322	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	68	222	32	112	243	69	41	576	144	8	429	37
RTOR Reduction (vph)	0	7	0	0	14	0	0	30	0	0	9	0
Lane Group Flow (vph)	68	247	0	112	298	0	41	690	0	8	457	0
Parking (#/hr)											0	
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases												
Actuated Green, G (s)	7.0	21.0		10.0	24.0		6.0	23.0		4.0	21.0	
Effective Green, g (s)	7.0	21.0		10.0	24.0		6.0	23.0		4.0	21.0	
Actuated g/C Ratio	0.09	0.28		0.14	0.32		0.08	0.31		0.05	0.28	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Grp Cap (vph)	167	519		239	584		144	1067		96	943	
v/s Ratio Prot	0.04	c0.14		0.06	c0.17		c0.02	c0.20		0.00	0.14	
v/s Ratio Perm												
v/c Ratio	0.41	0.48		0.47	0.51		0.28	0.65		0.08	0.49	
Uniform Delay, d1	31.5	21.9		29.5	20.2		32.0	22.0		33.3	22.0	
Progression Factor	1.00	1.00		0.54	0.31		1.00	1.00		1.00	1.00	
Incremental Delay, d2	7.2	3.1		5.3	2.6		4.9	3.0		1.7	1.8	
Delay (s)	38.8	25.0		21.4	8.8		36.9	25.0		35.0	23.8	
Level of Service	D	C		C	A		D	C		C	C	
Approach Delay (s)		27.9			12.1			25.7			24.0	
Approach LOS		C			B			C			C	

Intersection Summary				
HCM Average Control Delay	22.7	HCM Level of Service	C	
HCM Volume to Capacity ratio	0.50			
Actuated Cycle Length (s)	74.0	Sum of lost time (s)	8.0	
Intersection Capacity Utilization	55.9%	ICU Level of Service	B	
Analysis Period (min)	15			
c Critical Lane Group				

HCM Signalized Intersection Capacity Analysis — Downtown Ukiah Streetscape
6: Gobbi Street & State Street

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	77	184	61	243	176	66	79	658	210	96	597	67
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frt	1.00	0.96		1.00	0.96		1.00	0.96		1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1569		1770	1787		1770	3198		1770	3267	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	1569		1770	1787		1770	3198		1770	3267	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	81	194	64	256	185	69	83	693	221	101	628	71
RTOR Reduction (vph)	0	15	0	0	17	0	0	39	0	0	11	0
Lane Group Flow (vph)	81	243	0	256	237	0	83	876	0	101	689	0
Parking (#/hr)		5						5			5	
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases												
Actuated Green, G (s)	9.0	17.0		15.0	23.0		8.0	25.0		7.0	24.0	
Effective Green, g (s)	9.0	17.0		15.0	23.0		8.0	25.0		7.0	24.0	
Actuated g/C Ratio	0.11	0.21		0.19	0.29		0.10	0.31		0.09	0.30	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Grp Cap (vph)	199	333		332	514		177	999		155	980	
v/s Ratio Prot	0.05	c0.15		c0.14	0.13		0.05	c0.27		c0.06	0.21	
v/s Ratio Perm												
v/c Ratio	0.41	0.73		0.77	0.46		0.47	0.88		0.65	0.70	
Uniform Delay, d1	33.0	29.4		30.9	23.4		34.0	26.0		35.3	24.8	
Progression Factor	1.00	1.00		0.57	0.39		1.00	1.00		1.00	1.00	
Incremental Delay, d2	6.1	13.2		12.5	2.3		8.7	10.7		19.3	4.2	
Delay (s)	39.1	42.5		30.0	11.3		42.7	36.7		54.7	29.0	
Level of Service	D	D		C	B		D	D		D	C	
Approach Delay (s)		41.7			20.7			37.2			32.3	
Approach LOS		D			C			D			C	

Intersection Summary				
HCM Average Control Delay	33.1	HCM Level of Service	C	
HCM Volume to Capacity ratio	0.79			
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	16.0	
Intersection Capacity Utilization	70.4%	ICU Level of Service	C	
Analysis Period (min)	15			
c Critical Lane Group				

AM Peak Hour - Future Conditions
Traffic Analysis for the Downtown
City of Ukiah

Level Of Service Computation Report
2000 HCM Unsignalized Method (Base Volume Alternative)

Intersection #7 Main St/Norton St

Average Delay (sec/veh): 4.3 Worst Case Level Of Service: A[9.5]

Street Name:	Main St						Norton St					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	- T	- R	L	- T	- R	L	- T	- R	L	- T	- R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Rights:	Include			Include			Include			Include		
Lanes:	0 0	1! 0	0	0 0	0 0	0	0 0	0 1	0	0 1	0 0	0
Volume Module:												
Base Vol:	90	0	12	0	0	0	0	12	92	12	27	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	90	0	12	0	0	0	0	12	92	12	27	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	90	0	12	0	0	0	0	12	92	12	27	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	90	0	12	0	0	0	0	12	92	12	27	0
Critical Gap Module:												
Critical Gp:	6.4	6.5	6.2	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	4.1	xxxx	xxxxx
FollowUpTim:	3.5	4.0	3.3	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	2.2	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	109	109	58	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	104	xxxx	xxxxx
Potent Cap.:	893	785	1014	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	1500	xxxx	xxxxx
Move Cap.:	888	779	1014	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	1500	xxxx	xxxxx
Volume/Cap:	0.10	0.00	0.01	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	0.01	xxxx	xxxx
Level Of Service Module:												
2Way95thQ:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	0.0	xxxx	xxxxx
Control Del:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	7.4	xxxx	xxxxx
LOS by Move:	*	*	*	*	*	*	*	*	*	A	*	*
Movement:	LT -	LTR -	RT	LT -	LTR -	RT	LT -	LTR -	RT	LT -	LTR -	RT
Shared Cap.:	xxxx	901	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
SharedQueue:	xxxxx	0.4	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	0.0	xxxx	xxxxx
Shrd ConDel:	xxxxx	9.5	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	7.4	xxxx	xxxxx
Shared LOS:	*	A	*	*	*	*	*	*	*	A	*	*
ApproachDel:		9.5		xxxxxx			xxxxxx			xxxxxx		
ApproachLOS:		A		*			*			*		

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Future Conditions
Traffic Analysis for the Downtown
City of Ukiah

Level Of Service Computation Report
2000 HCM Unsignalized Method (Base Volume Alternative)

Intersection #7 Main St/Norton St

Average Delay (sec/veh): 8.0 Worst Case Level Of Service: B[11.4]

Street Name:	Main St						Norton St					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	- T	- R	L	- T	- R	L	- T	- R	L	- T	- R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Rights:	Include			Include			Include			Include		
Lanes:	0 0	1! 0	0	0 0	0 0	0	0 0	0 1	0	0 1	0 0	0
Volume Module:												
Base Vol:	282	0	44	0	0	0	0	18	68	11	48	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	282	0	44	0	0	0	0	18	68	11	48	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	282	0	44	0	0	0	0	18	68	11	48	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	282	0	44	0	0	0	0	18	68	11	48	0
Critical Gap Module:												
Critical Gp:	6.4	6.5	6.2	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	4.1	xxxx	xxxxx
FollowUpTim:	3.5	4.0	3.3	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	2.2	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	122	122	52	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	86	xxxx	xxxxx
Potent Cap.:	878	772	1021	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	1523	xxxx	xxxxx
Move Cap.:	873	767	1021	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	1523	xxxx	xxxxx
Volume/Cap:	0.32	0.00	0.04	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	0.01	xxxx	xxxx
Level Of Service Module:												
2Way95thQ:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	0.0	xxxx	xxxxx
Control Del:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	7.4	xxxx	xxxxx
LOS by Move:	*	*	*	*	*	*	*	*	*	A	*	*
Movement:	LT -	LTR -	RT	LT -	LTR -	RT	LT -	LTR -	RT	LT -	LTR -	RT
Shared Cap.:	xxxx	891	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
SharedQueue:	xxxxx	1.7	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	0.0	xxxx	xxxxx
Shrd ConDel:	xxxxx	11.4	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	7.4	xxxx	xxxxx
Shared LOS:	*	B	*	*	*	*	*	*	*	A	*	*
ApproachDel:		11.4		xxxxxx			xxxxxx			xxxxxx		
ApproachLOS:		B		*			*			*		

Note: Queue reported is the number of cars per lane.

AM Peak Hour - Future Conditions
Traffic Analysis for the Downtown
City of Ukiah

Level Of Service Computation Report
2000 HCM Unsignalized Method (Base Volume Alternative)

Intersection #8 Main St/Standley St

Average Delay (sec/veh): 2.5 Worst Case Level Of Service: B[10.8]

Street Name:	Main St									Standley St								
Approach:	North Bound			South Bound			East Bound			West Bound								
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign								
Rights:	Include			Include			Include			Include								
Lanes:	0	0	0	1	0	0	1	0	0	0	0	0	1!	0	0	0	0	1!	0	0
Volume Module:																				
Base Vol:	0	165		12		6	92		0		14	23		11		30		0		2
Growth Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00		1.00		1.00
Initial Bse:	0	165		12		6	92		0		14	23		11		30		0		2
User Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00		1.00		1.00
PHF Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00		1.00		1.00
PHF Volume:	0	165		12		6	92		0		14	23		11		30		0		2
Reduct Vol:	0	0		0		0	0		0		0	0		0		0		0		0
FinalVolume:	0	165		12		6	92		0		14	23		11		30		0		2
Critical Gap Module:																				
Critical Gp:	xxxxx	xxxx	xxxxx			4.1	xxxx	xxxxx			7.1	6.5		6.2		7.1		6.5		6.2
FollowUpTim:	xxxxx	xxxx	xxxxx			2.2	xxxx	xxxxx			3.5	4.0		3.3		3.5		4.0		3.3
Capacity Module:																				
Cnflict Vol:	xxxx	xxxx	xxxxx			177	xxxx	xxxxx			276	281		92		292		275		171
Potent Cap.:	xxxx	xxxx	xxxxx			1411	xxxx	xxxxx			680	631		971		664		636		878
Move Cap.:	xxxx	xxxx	xxxxx			1411	xxxx	xxxxx			677	628		971		636		633		878
Volume/Cap:	xxxx	xxxx	xxxx			0.00	xxxx	xxxx			0.02	0.04		0.01		0.05		0.00		0.00
Level Of Service Module:																				
2Way95thQ:	xxxx	xxxx	xxxxx			0.0	xxxx	xxxxx			xxxx	xxxx	xxxxx			xxxx	xxxx	xxxxx		
Control Del:	xxxxx	xxxx	xxxxx			7.6	xxxx	xxxxx			xxxxx	xxxx	xxxxx			xxxxx	xxxx	xxxxx		
LOS by Move:	*	*	*			A	*	*			*	*	*			*	*	*		
Movement:	LT -	LTR -	RT			LT -	LTR -	RT			LT -	LTR -	RT			LT -	LTR -	RT		
Shared Cap.:	xxxx	xxxx	xxxxx			xxxx	xxxx	xxxxx			xxxx	699	xxxxx			xxxx	647	xxxxx		
SharedQueue:	xxxxx	xxxx	xxxxx			0.0	xxxx	xxxxx			xxxxx	0.2	xxxxx			xxxxx	0.2	xxxxx		
Shrd ConDel:	xxxxx	xxxx	xxxxx			7.6	xxxx	xxxxx			xxxxx	10.5	xxxxx			xxxxx	10.8	xxxxx		
Shared LOS:	*	*	*			A	*	*			*	B	*			*	B	*		
ApproachDel:	xxxxxx					xxxxxx					10.5					10.8				
ApproachLOS:	*					*					B					B				

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Future Conditions
Traffic Analysis for the Downtown
City of Ukiah

Level Of Service Computation Report
2000 HCM Unsignalized Method (Base Volume Alternative)

Intersection #8 Main St/Standley St

Average Delay (sec/veh): 1.1 Worst Case Level Of Service: B[12.6]

Street Name:	Main St									Standley St								
Approach:	North Bound			South Bound			East Bound			West Bound								
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign								
Rights:	Include			Include			Include			Include								
Lanes:	0	0	0	1	0	0	1	0	0	0	0	0	1!	0	0	0	0	1!	0	0
Volume Module:																				
Base Vol:	0	386		36		0	238		0		8	0		32		11		0		19
Growth Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00		1.00		1.00
Initial Bse:	0	386		36		0	238		0		8	0		32		11		0		19
User Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00		1.00		1.00
PHF Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00		1.00		1.00
PHF Volume:	0	386		36		0	238		0		8	0		32		11		0		19
Reduct Vol:	0	0		0		0	0		0		0	0		0		0		0		0
FinalVolume:	0	386		36		0	238		0		8	0		32		11		0		19
Critical Gap Module:																				
Critical Gp:	xxxxx	xxxx	xxxxx			xxxxx	xxxx	xxxxx			7.1	6.5		6.2		7.1		6.5		6.2
FollowUpTim:	xxxxx	xxxx	xxxxx			xxxxx	xxxx	xxxxx			3.5	4.0		3.3		3.5		4.0		3.3
Capacity Module:																				
Cnflict Vol:	xxxx	xxxx	xxxxx			xxxx	xxxx	xxxxx			652	660		238		658		642		404
Potent Cap.:	xxxx	xxxx	xxxxx			xxxx	xxxx	xxxxx			384	386		806		380		395		651
Move Cap.:	xxxx	xxxx	xxxxx			xxxx	xxxx	xxxxx			373	386		806		365		395		651
Volume/Cap:	xxxx	xxxx	xxxx			xxxx	xxxx	xxxx			0.02	0.00		0.04		0.03		0.00		0.03
Level Of Service Module:																				
2Way95thQ:	xxxx	xxxx	xxxxx			xxxx	xxxx	xxxxx			xxxx	xxxx	xxxxx			xxxx	xxxx	xxxxx		
Control Del:	xxxxx	xxxx	xxxxx			xxxxx	xxxx	xxxxx			xxxxx	xxxx	xxxxx			xxxxx	xxxx	xxxxx		
LOS by Move:	*	*	*			*	*	*			*	*	*			*	*	*		
Movement:	LT -	LTR -	RT			LT -	LTR -	RT			LT -	LTR -	RT			LT -	LTR -	RT		
Shared Cap.:	xxxx	xxxx	xxxxx			xxxx	xxxx	xxxxx			xxxx	654	xxxxx			xxxx	506	xxxxx		
SharedQueue:	xxxxx	xxxx	xxxxx			xxxxx	xxxx	xxxxx			xxxxx	0.2	xxxxx			xxxxx	0.2	xxxxx		
Shrd ConDel:	xxxxx	xxxx	xxxxx			xxxxx	xxxx	xxxxx			xxxxx	10.9	xxxxx			xxxxx	12.6	xxxxx		
Shared LOS:	*	*	*			*	*	*			*	B	*			*	B	*		
ApproachDel:	xxxxxx					xxxxxx					10.9					12.6				
ApproachLOS:	*					*					B					B				

Note: Queue reported is the number of cars per lane.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	11	231	20	125	343	74	18	91	144	63	60	15
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0	4.0		4.0	
Lane Util. Factor		0.95			0.95			1.00	1.00		1.00	
Frt		0.99			0.98			1.00	0.85		0.99	
Flt Protected		1.00			0.99			0.99	1.00		0.98	
Satd. Flow (prot)		3273			3170			1617	1583		1570	
Flt Permitted		1.00			0.99			0.95	1.00		0.83	
Satd. Flow (perm)		3273			3170			1547	1583		1337	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	12	243	21	132	361	78	19	96	152	66	63	16
RTOR Reduction (vph)	0	8	0	0	16	0	0	0	106	0	6	0
Lane Group Flow (vph)	0	268	0	0	555	0	0	115	46	0	139	0
Parking (#/hr)		5			10			5			5	
Turn Type	Split			Split			Perm		Perm	Perm		
Protected Phases	4	4		8	8			2			6	
Permitted Phases							2		2	6		
Actuated Green, G (s)		18.0			26.0			24.0	24.0		24.0	
Effective Green, g (s)		18.0			26.0			24.0	24.0		24.0	
Actuated g/C Ratio		0.22			0.32			0.30	0.30		0.30	
Clearance Time (s)		4.0			4.0			4.0	4.0		4.0	
Lane Grp Cap (vph)		736			1030			464	475		401	
v/s Ratio Prot		c0.08			c0.18							
v/s Ratio Perm								0.07	0.03		c0.10	
v/c Ratio		0.36			0.54			0.25	0.10		0.35	
Uniform Delay, d1		26.2			22.1			21.2	20.2		21.9	
Progression Factor		0.63			1.00			1.00	1.00		1.00	
Incremental Delay, d2		1.3			2.0			1.3	0.4		2.4	
Delay (s)		17.7			24.1			22.4	20.6		24.3	
Level of Service		B			C			C	C		C	
Approach Delay (s)		17.7			24.1			21.4			24.3	
Approach LOS		B			C			C			C	

Intersection Summary				
HCM Average Control Delay	22.2	HCM Level of Service	C	
HCM Volume to Capacity ratio	0.43			
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	12.0	
Intersection Capacity Utilization	47.0%	ICU Level of Service	A	
Analysis Period (min)	15			
c Critical Lane Group				

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	15	372	32	164	350	115	30	228	241	104	110	23
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0	4.0		4.0	
Lane Util. Factor		0.95			0.95			1.00	1.00		1.00	
Frt		0.99			0.97			1.00	0.85		0.99	
Flt Protected		1.00			0.99			0.99	1.00		0.98	
Satd. Flow (prot)		3274			3143			1620	1583		1574	
Flt Permitted		1.00			0.99			0.94	1.00		0.68	
Satd. Flow (perm)		3274			3143			1540	1583		1096	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	16	392	34	173	368	121	32	240	254	109	116	24
RTOR Reduction (vph)	0	6	0	0	19	0	0	0	137	0	4	0
Lane Group Flow (vph)	0	436	0	0	643	0	0	272	117	0	245	0
Parking (#/hr)		5			10			5			5	
Turn Type	Split			Split			Perm		Perm	Perm		
Protected Phases	4	4		8	8			2			6	
Permitted Phases							2		2	6		
Actuated Green, G (s)		20.0			28.0			38.0	38.0		38.0	
Effective Green, g (s)		20.0			28.0			38.0	38.0		38.0	
Actuated g/C Ratio		0.20			0.29			0.39	0.39		0.39	
Clearance Time (s)		4.0			4.0			4.0	4.0		4.0	
Lane Grp Cap (vph)		668			898			597	614		425	
v/s Ratio Prot		c0.13			c0.20							
v/s Ratio Perm								0.18	0.07		c0.22	
v/c Ratio		0.65			0.72			0.46	0.19		0.58	
Uniform Delay, d1		35.8			31.4			22.3	19.8		23.7	
Progression Factor		0.61			1.00			1.00	1.00		1.04	
Incremental Delay, d2		4.2			4.9			2.5	0.7		5.6	
Delay (s)		25.8			36.3			24.8	20.5		30.1	
Level of Service		C			D			C	C		C	
Approach Delay (s)		25.8			36.3			22.7			30.1	
Approach LOS		C			D			C			C	

Intersection Summary				
HCM Average Control Delay	29.2	HCM Level of Service	C	
HCM Volume to Capacity ratio	0.64			
Actuated Cycle Length (s)	98.0	Sum of lost time (s)	12.0	
Intersection Capacity Utilization	69.8%	ICU Level of Service	C	
Analysis Period (min)	15			
c Critical Lane Group				

AM Peak Hour - Future Conditions
Traffic Analysis for the Downtown
City of Ukiah

Level Of Service Computation Report
2000 HCM Unsignalized Method (Base Volume Alternative)

Intersection #10 Main St/Clay St

Average Delay (sec/veh): 2.3 Worst Case Level Of Service: B[11.9]

Street Name:	Main St									Clay St								
Approach:	North Bound				South Bound				East Bound				West Bound					
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Uncontrolled				Uncontrolled				Stop Sign				Stop Sign					
Rights:	Include				Include				Include				Include					
Lanes:	0	0	1!	0	0	0	0	0	1	0	0	0	1!	0	0	0	0	0	1	0
Volume Module:																				
Base Vol:	7		175		1	0		205		14	54		9		27	0		3		1
Growth Adj:	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00
Initial Bse:	7		175		1	0		205		14	54		9		27	0		3		1
User Adj:	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00
PHF Adj:	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00
PHF Volume:	7		175		1	0		205		14	54		9		27	0		3		1
Reduct Vol:	0		0		0	0		0		0	0		0		0	0		0		0
FinalVolume:	7		175		1	0		205		14	54		9		27	0		3		1
Critical Gap Module:																				
Critical Gp:	4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx					7.1		6.5		6.2	xxxxx		6.5		6.2
FollowUpTim:	2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx					3.5		4.0		3.3	xxxxx		4.0		3.3
Capacity Module:																				
Cnflict Vol:	219	xxxx	xxxxx	xxxx	xxxx	xxxxx					404		402		212	xxxx		409		176
Potent Cap.:	1362	xxxx	xxxxx	xxxx	xxxx	xxxxx					561		540		833	xxxx		535		873
Move Cap.:	1362	xxxx	xxxxx	xxxx	xxxx	xxxxx					556		537		833	xxxx		533		873
Volume/Cap:	0.01	xxxx	xxxx	xxxx	xxxx	xxxx					0.10		0.02		0.03	xxxx		0.01		0.00
Level Of Service Module:																				
2Way95thQ:	0.0	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx		xxxx	xxxx	xxxxx							
Control Del:	7.7	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx		xxxxx	xxxx	xxxxx							
LOS by Move:	A	*	*	*	*	*	*	*	*		*	*	*							
Movement:	LT - LTR - RT			LT - LTR - RT			LT - LTR - RT				LT - LTR - RT									
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	615	xxxxx		xxxx	xxxx	590							
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	0.5	xxxxx		xxxxx	xxxx	0.0							
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	11.9	xxxxx		xxxxx	xxxx	11.1							
Shared LOS:	*	*	*	*	*	*	*	B	*		*	*	B							
ApproachDel:	xxxxxx			xxxxxx			11.9				11.1									
ApproachLOS:	*			*			B				B									

Note: Queue reported is the number of cars per lane.

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Level Of Service Computation Report
2000 HCM Unsignalized Method (Base Volume Alternative)

Intersection #10 Main St/Clay St

Average Delay (sec/veh): 1.1 Worst Case Level Of Service: C[18.4]

Street Name:	Main St									Clay St								
Approach:	North Bound				South Bound				East Bound				West Bound					
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Uncontrolled				Uncontrolled				Stop Sign				Stop Sign					
Rights:	Include				Include				Include				Include					
Lanes:	0	0	1!	0	0	0	0	0	1!	0	0	0	1!	0	0	0	0	0	1	0
Volume Module:																				
Base Vol:	8		468		6	1		344		41	31		1		9	0		3		13
Growth Adj:	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00
Initial Bse:	8		468		6	1		344		41	31		1		9	0		3		13
User Adj:	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00
PHF Adj:	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00	1.00		1.00		1.00
PHF Volume:	8		468		6	1		344		41	31		1		9	0		3		13
Reduct Vol:	0		0		0	0		0		0	0		0		0	0		0		0
FinalVolume:	8		468		6	1		344		41	31		1		9	0		3		13
Critical Gap Module:																				
Critical Gp:	4.1	xxxx	xxxxx			4.1	xxxx	xxxxx			7.1		6.5		6.2	xxxxx		6.5		6.2
FollowUpTim:	2.2	xxxx	xxxxx			2.2	xxxx	xxxxx			3.5		4.0		3.3	xxxxx		4.0		3.3
Capacity Module:																				
Cnflict Vol:	385	xxxx	xxxxx			474	xxxx	xxxxx			862		857		365	xxxx		874		471
Potent Cap.:	1185	xxxx	xxxxx			1099	xxxx	xxxxx			278		297		685	xxxx		290		597
Move Cap.:	1185	xxxx	xxxxx			1099	xxxx	xxxxx			268		295		685	xxxx		288		597
Volume/Cap:	0.01	xxxx	xxxx			0.00	xxxx	xxxx			0.12		0.00		0.01	xxxx		0.01		0.02
Level Of Service Module:																				
2Way95thQ:	0.0	xxxx	xxxxx			0.0	xxxx	xxxxx			xxxx	xxxx	xxxxx			xxxx	xxxx	xxxxx		
Control Del:	8.1	xxxx	xxxxx			8.3	xxxx	xxxxx			xxxxx	xxxx	xxxxx			xxxxx	xxxx	xxxxx		
LOS by Move:	A	*	*			A	*	*			*	*	*			*	*	*		
Movement:	LT - LTR - RT					LT - LTR - RT					LT - LTR - RT					LT - LTR - RT				
Shared Cap.:	xxxx	xxxx	xxxxx			xxxx	xxxx	xxxxx			xxxx		310	xxxxx		xxxx	xxxx	497		
SharedQueue:	xxxxx	xxxx	xxxxx			xxxxx	xxxx	xxxxx			xxxxx		0.5	xxxxx		xxxxx	xxxx	0.1		
Shrd ConDel:	xxxxx	xxxx	xxxxx			xxxxx	xxxx	xxxxx			xxxxx		18.4	xxxxx		xxxxx	xxxx	12.5		
Shared LOS:	*	*	*			*	*	*			*		C	*		*	*	B		
ApproachDel:	xxxxxx					xxxxxx					18.4			12.5						
ApproachLOS:	*					*					C			B						

Note: Queue reported is the number of cars per lane.

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Level Of Service Computation Report
2000 HCM Unsignalized Method (Base Volume Alternative)

Intersection #11 Main St/Mill St

Average Delay (sec/veh): 2.8 Worst Case Level Of Service: B[10.7]

Street Name:	Main St								Mill St							
Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Uncontrolled					Uncontrolled					Stop Sign					Stop Sign				
Rights:	Include					Include					Include					Include				
Lanes:	1	0	1	0	0	0	0	0	1	0	0	0	1!	0	0	0	0	0	0	0
Volume Module:																				
Base Vol:	40	185		0		0	134		35		42		0		61		0		0	
Growth Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00		1.00		1.00		1.00		1.00	
Initial Bse:	40	185		0		0	134		35		42		0		61		0		0	
User Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00		1.00		1.00		1.00		1.00	
PHF Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00		1.00		1.00		1.00		1.00	
PHF Volume:	40	185		0		0	134		35		42		0		61		0		0	
Reduct Vol:	0	0		0		0	0		0		0		0		0		0		0	
FinalVolume:	40	185		0		0	134		35		42		0		61		0		0	
Critical Gap Module:																				
Critical Gp:	4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx					6.4		6.5		6.2	xxxxx	xxxx	xxxxx		
FollowUpTim:	2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx					3.5		4.0		3.3	xxxxx	xxxx	xxxxx		
Capacity Module:																				
Cnflict Vol:	169	xxxx	xxxxx	xxxx	xxxx	xxxxx					417		417		152	xxxx	xxxx	xxxxx		
Potent Cap.:	1421	xxxx	xxxxx	xxxx	xxxx	xxxxx					597		530		900	xxxx	xxxx	xxxxx		
Move Cap.:	1421	xxxx	xxxxx	xxxx	xxxx	xxxxx					584		515		900	xxxx	xxxx	xxxxx		
Volume/Cap:	0.03	xxxx	xxxx	xxxx	xxxx	xxxx					0.07		0.00		0.07	xxxx	xxxx	xxxx		
Level Of Service Module:																				
2Way95thQ:	0.1	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxx	xxxxx							
Control Del:	7.6	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxx	xxxxx							
LOS by Move:	A	*	*	*	*	*	*	*	*	*	*	*	*							
Movement:	LT - LTR - RT			LT - LTR - RT			LT - LTR - RT			LT - LTR - RT										
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	737	xxxxx	xxxx	xxxx	xxxxx								
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	0.5	xxxxx	xxxxx	xxxx	xxxxx								
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	10.7	xxxxx	xxxxx	xxxx	xxxxx								
Shared LOS:	*	*	*	*	*	*	*	B	*	*	*	*								
ApproachDel:	xxxxxx			xxxxxx			10.7			xxxxxx										
ApproachLOS:	*			*			B			*										

Note: Queue reported is the number of cars per lane.

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Traffic Analysis for the Downtown
City of Ukiah

Level Of Service Computation Report
2000 HCM Unsignalized Method (Base Volume Alternative)

Intersection #11 Main St/Mill St

Average Delay (sec/veh): 3.0 Worst Case Level Of Service: C[15.3]

Street Name:	Main St								Mill St							
Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R	L	-	T	-	R
Control:	Uncontrolled					Uncontrolled					Stop Sign					Stop Sign				
Rights:	Include					Include					Include					Include				
Lanes:	1	0	1	0	0	0	0	0	1	0	0	0	1!	0	0	0	0	0	0	0
Volume Module:																				
Base Vol:	77	293		0		0	289		69		63		0		65		0		0	
Growth Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00		1.00		1.00		1.00		1.00	
Initial Bse:	77	293		0		0	289		69		63		0		65		0		0	
User Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00		1.00		1.00		1.00		1.00	
PHF Adj:	1.00	1.00		1.00		1.00	1.00		1.00		1.00		1.00		1.00		1.00		1.00	
PHF Volume:	77	293		0		0	289		69		63		0		65		0		0	
Reduct Vol:	0	0		0		0	0		0		0		0		0		0		0	
FinalVolume:	77	293		0		0	289		69		63		0		65		0		0	
Critical Gap Module:																				
Critical Gp:	4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx					6.4		6.5		6.2	xxxxx	xxxx	xxxxx		
FollowUpTim:	2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx					3.5		4.0		3.3	xxxxx	xxxx	xxxxx		
Capacity Module:																				
Cnflict Vol:	358	xxxx	xxxxx	xxxx	xxxx	xxxxx					771		771		324	xxxx	xxxx	xxxxx		
Potent Cap.:	1212	xxxx	xxxxx	xxxx	xxxx	xxxxx					371		333		722	xxxx	xxxx	xxxxx		
Move Cap.:	1212	xxxx	xxxxx	xxxx	xxxx	xxxxx					353		312		722	xxxx	xxxx	xxxxx		
Volume/Cap:	0.06	xxxx	xxxx	xxxx	xxxx	xxxx					0.18		0.00		0.09	xxxx	xxxx	xxxx		
Level Of Service Module:																				
2Way95thQ:	0.2	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxx	xxxxx							
Control Del:	8.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxx	xxxxx							
LOS by Move:	A	*	*	*	*	*	*	*	*	*	*	*	*							
Movement:	LT - LTR - RT			LT - LTR - RT			LT - LTR - RT			LT - LTR - RT										
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	477	xxxxx	xxxx	xxxx	xxxxx								
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	1.1	xxxxx	xxxxx	xxxx	xxxxx								
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	15.3	xxxxx	xxxxx	xxxx	xxxxx								
Shared LOS:	*	*	*	*	*	*	*	C	*	*	*	*								
ApproachDel:	xxxxxx			xxxxxx			15.3			xxxxxx										
ApproachLOS:	*			*			C			*										

Note: Queue reported is the number of cars per lane.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	88	298	10	33	362	103	4	8	7	92	7	87
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00		1.00	1.00	
Frt	1.00	0.99		1.00	0.97			0.95		1.00	0.86	
Flt Protected	0.95	1.00		0.95	1.00			0.99		0.95	1.00	
Satd. Flow (prot)	1770	1853		1770	1801			1533		1770	1403	
Flt Permitted	0.95	1.00		0.95	1.00			0.98		0.75	1.00	
Satd. Flow (perm)	1770	1853		1770	1801			1517		1388	1403	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	93	314	11	35	381	108	4	8	7	97	7	92
RTOR Reduction (vph)	0	2	0	0	14	0	0	5	0	0	72	0
Lane Group Flow (vph)	93	323	0	35	475	0	0	14	0	97	27	0
Parking (#/hr)								5			5	
Turn Type	Prot			Prot			pm+pt			pm+pt		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases							2			6		
Actuated Green, G (s)	8.0	33.0		5.0	30.0			20.0		20.0	16.0	
Effective Green, g (s)	8.0	33.0		5.0	30.0			20.0		20.0	16.0	
Actuated g/C Ratio	0.11	0.45		0.07	0.41			0.27		0.27	0.22	
Clearance Time (s)	4.0	4.0		4.0	4.0			4.0		4.0	4.0	
Lane Grp Cap (vph)	191	826		120	730			411		396	303	
v/s Ratio Prot	c0.05	0.17		0.02	c0.26			0.00		c0.01	0.02	
v/s Ratio Perm								0.01		c0.05		
v/c Ratio	0.49	0.39		0.29	0.65			0.03		0.24	0.09	
Uniform Delay, d1	31.1	13.8		32.8	17.8			19.9		20.8	23.2	
Progression Factor	0.77	0.38		1.00	1.00			1.00		1.00	1.00	
Incremental Delay, d2	7.7	1.2		6.1	4.5			0.2		1.5	0.6	
Delay (s)	31.7	6.4		38.9	22.2			20.0		22.3	23.8	
Level of Service	C	A		D	C			C		C	C	
Approach Delay (s)		12.1			23.4			20.0			23.0	
Approach LOS		B			C			C			C	

Intersection Summary				
HCM Average Control Delay	19.2	HCM Level of Service	B	
HCM Volume to Capacity ratio	0.49			
Actuated Cycle Length (s)	74.0	Sum of lost time (s)	16.0	
Intersection Capacity Utilization	52.0%	ICU Level of Service	A	
Analysis Period (min)	15			
c Critical Lane Group				

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	130	279	3	11	369	128	20	21	47	230	3	156
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00		1.00	1.00	
Frt	1.00	1.00		1.00	0.96			0.93		1.00	0.85	
Flt Protected	0.95	1.00		0.95	1.00			0.99		0.95	1.00	
Satd. Flow (prot)	1770	1860		1770	1791			1496		1770	1390	
Flt Permitted	0.95	1.00		0.95	1.00			0.94		0.70	1.00	
Satd. Flow (perm)	1770	1860		1770	1791			1415		1299	1390	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	137	294	3	12	388	135	21	22	49	242	3	164
RTOR Reduction (vph)	0	1	0	0	16	0	0	36	0	0	121	0
Lane Group Flow (vph)	137	296	0	12	507	0	0	56	0	242	46	0
Parking (#/hr)								5			5	
Turn Type	Prot			Prot			pm+pt			pm+pt		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases							2			6		
Actuated Green, G (s)	10.0	35.0		4.0	29.0			22.0		28.0	21.0	
Effective Green, g (s)	10.0	35.0		4.0	29.0			22.0		28.0	21.0	
Actuated g/C Ratio	0.12	0.44		0.05	0.36			0.28		0.35	0.26	
Clearance Time (s)	4.0	4.0		4.0	4.0			4.0		4.0	4.0	
Lane Grp Cap (vph)	221	814		89	649			393		496	365	
v/s Ratio Prot	c0.08	0.16		0.01	c0.28			0.01		c0.04	0.03	
v/s Ratio Perm								0.03		c0.13		
v/c Ratio	0.62	0.36		0.13	0.78			0.14		0.49	0.13	
Uniform Delay, d1	33.2	15.1		36.3	22.7			21.9		19.6	22.5	
Progression Factor	0.95	0.47		1.00	1.00			1.00		1.00	1.00	
Incremental Delay, d2	7.6	0.8		3.1	9.1			0.8		3.4	0.7	
Delay (s)	39.3	7.9		39.5	31.8			22.7		23.0	23.2	
Level of Service	D	A		D	C			C		C	C	
Approach Delay (s)		17.8			31.9			22.7			23.1	
Approach LOS		B			C			C			C	

Intersection Summary				
HCM Average Control Delay	24.7	HCM Level of Service	C	
HCM Volume to Capacity ratio	0.66			
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	16.0	
Intersection Capacity Utilization	65.6%	ICU Level of Service	C	
Analysis Period (min)	15			
c Critical Lane Group				

SIDRA INTERSECTION

Movement Summary

Main Street/Gobbi Street

AM Peak Hour

Roundabout

Vehicle Movements

Mov ID	Turn	Dem Flow (veh/h)	%HV	Deg of Satn (v/c)	Aver Delay (sec)	Level of Service	95% Back of Queue (ft)	Prop. Queued	Eff. Stop Rate	Aver Speed (mph)
Northbound Main Street										
3L	L	4	20.0	0.036	13.9	LOS B	6	0.58	0.73	22.2
8T	T	9	10.0	0.036	7.6	LOS A	6	0.58	0.59	25.9
8R	R	8	12.5	0.036	8.8	LOS A	6	0.58	0.59	24.9
Approach		**23**	**13.0**	**0.036**	**9.4**	**LOS A**	**6**	**0.58**	**0.62**	**24.6**
Westbound Gobbi Street										
1L	L	36	2.8	0.468	11.3	LOS B	107	0.39	0.64	23.3
6T	T	393	2.0	0.465	4.9	LOS A	107	0.39	0.45	27.0
6R	R	112	1.8	0.465	6.1	LOS A	107	0.39	0.50	26.1
Approach		**542**	**2.0**	**0.465**	**5.6**	**LOS A**	**107**	**0.39**	**0.48**	**26.5**
Southbound Main Street										
7L	L	100	2.0	0.265	13.5	LOS B	47	0.61	0.79	22.5
4T	T	8	12.5	0.267	7.1	LOS A	47	0.61	0.68	25.7
4R	R	95	2.1	0.265	8.4	LOS A	47	0.61	0.66	25.0
Approach		**203**	**2.5**	**0.265**	**10.9**	**LOS B**	**47**	**0.61**	**0.72**	**23.7**
Eastbound Gobbi street										
5L	L	96	2.1	0.398	11.5	LOS B	84	0.43	0.66	23.2
2T	T	324	1.9	0.399	5.1	LOS A	84	0.43	0.48	26.8
2R	R	11	8.3	0.400	6.4	LOS A	84	0.43	0.53	25.9
Approach		**431**	**2.1**	**0.399**	**6.6**	**LOS A**	**84**	**0.43**	**0.52**	**25.8**
All Vehicles		**1199**	**2.3**	**0.468**	**6.9**	**LOS A**	**107**	**0.45**	**0.54**	**25.7**

Symbols which may appear in this table:

Following Degree of Saturation
x = 1.00 for Short Lane with resulting Excess Flow
* x = 1.00 due to minimum capacity

Following LOS
- Based on density for continuous movements

Following Queue

Movement Summary Page 1 of 2

SIDRA INTERSECTION

Movement Summary

Main Street/Gobbi Street

AM Peak Hour

Roundabout

Vehicle Movements

Mov ID	Turn	Dem Flow (veh/h)	%HV	Deg of Satn (v/c)	Aver Delay (sec)	Level of Service	95% Back of Queue (ft)	Prop. Queued	Eff. Stop Rate	Aver Speed (mph)
Northbound Main Street										
3L	L	22	4.5	0.161	15.5	LOS B	29	0.71	0.84	21.4
8T	T	23	4.3	0.161	9.1	LOS A	29	0.71	0.75	24.7
8R	R	51	2.0	0.161	10.3	LOS B	29	0.71	0.71	23.7
Approach		**96**	**3.1**	**0.161**	**11.2**	**LOS B**	**29**	**0.71**	**0.75**	**23.3**
Westbound Gobbi Street										
1L	L	12	7.7	0.542	12.1	LOS B	129	0.56	0.70	22.8
6T	T	401	2.0	0.534	5.7	LOS A	129	0.56	0.55	26.0
6R	R	139	2.2	0.535	7.0	LOS A	129	0.56	0.58	25.3
Approach		**553**	**2.2**	**0.534**	**6.2**	**LOS A**	**129**	**0.56**	**0.56**	**25.7**
Southbound Main Street										
7L	L	250	2.0	0.561	15.7	LOS B	143	0.77	0.92	21.2
4T	T	3	25.0	0.571	9.3	LOS A	143	0.77	0.89	24.5
4R	R	170	1.8	0.560	10.6	LOS B	143	0.77	0.81	23.5
Approach		**423**	**2.1**	**0.560**	**13.6**	**LOS B**	**143**	**0.77**	**0.88**	**22.1**
Eastbound Gobbi street										
5L	L	141	2.1	0.496	12.7	LOS B	114	0.64	0.75	22.6
2T	T	303	2.0	0.497	6.3	LOS A	114	0.64	0.61	25.5
2R	R	3	25.0	0.500	7.5	LOS A	114	0.64	0.67	24.9
Approach		**448**	**2.2**	**0.497**	**8.4**	**LOS A**	**114**	**0.64**	**0.65**	**24.5**
All Vehicles		**1520**	**2.2**	**0.571**	**9.2**	**LOS A**	**143**	**0.65**	**0.69**	**24.0**

Symbols which may appear in this table:

Following Degree of Saturation
x = 1.00 for Short Lane with resulting Excess Flow
* x = 1.00 due to minimum capacity

Following LOS
- Based on density for continuous movements

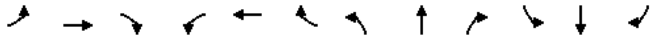
Following Queue

Future Road Diet with Signal Improvements Level of Service Calculations

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	59	202	842	33	50	815
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	1.00	1.00		1.00	1.00
Frt	1.00	0.85	0.99		1.00	1.00
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1770	1385	1622		1770	1630
Flt Permitted	0.95	1.00	1.00		0.26	1.00
Satd. Flow (perm)	1770	1385	1622		490	1630
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	62	213	886	35	53	858
RTOR Reduction (vph)	0	192	1	0	0	0
Lane Group Flow (vph)	62	21	920	0	53	858
Parking (#/hr)		5	5			5
Turn Type		Perm			Perm	
Protected Phases	8		2			6
Permitted Phases		8			6	
Actuated Green, G (s)	9.0	9.0	73.0		73.0	73.0
Effective Green, g (s)	9.0	9.0	73.0		73.0	73.0
Actuated g/C Ratio	0.10	0.10	0.81		0.81	0.81
Clearance Time (s)	4.0	4.0	4.0		4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	177	139	1316		397	1322
v/s Ratio Prot	c0.04		c0.57			0.53
v/s Ratio Perm		0.02			0.11	
v/c Ratio	0.35	0.15	0.70		0.13	0.65
Uniform Delay, d1	37.8	37.0	3.7		1.8	3.4
Progression Factor	1.00	1.00	0.94		1.00	1.00
Incremental Delay, d2	1.2	0.5	2.5		0.7	2.5
Delay (s)	39.0	37.5	6.0		2.5	5.9
Level of Service	D	D	A		A	A
Approach Delay (s)	37.9		6.0			5.7
Approach LOS	D		A			A

Intersection Summary			
HCM Average Control Delay	10.0	HCM Level of Service	B
HCM Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	65.5%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	8	6	102	0	0	0	0	605	28	1	854	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0					4.0			4.0	
Lane Util. Factor		1.00	1.00					1.00			0.95	
Frt		1.00	0.85					0.99			1.00	
Flt Protected		0.97	1.00					1.00			1.00	
Satd. Flow (prot)		1585	1583					1574			3274	
Flt Permitted		0.97	1.00					1.00			0.95	
Satd. Flow (perm)		1585	1583					1574			3126	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	8	6	107	0	0	0	0	637	29	1	899	0
RTOR Reduction (vph)	0	0	99	0	0	0	0	1	0	0	0	0
Lane Group Flow (vph)	0	14	8	0	0	0	0	665	0	0	900	0
Parking (#/hr)		5			5			10			10	
Turn Type	Split		Perm							Perm		
Protected Phases	4	4						2			6	
Permitted Phases			4							6		
Actuated Green, G (s)		5.8	5.8					66.2			66.2	
Effective Green, g (s)		5.8	5.8					66.2			66.2	
Actuated g/C Ratio		0.07	0.07					0.83			0.83	
Clearance Time (s)		4.0	4.0					4.0			4.0	
Vehicle Extension (s)		3.0	3.0					3.0			3.0	
Lane Grp Cap (vph)		115	115					1302			2587	
v/s Ratio Prot		c0.01						c0.42				
v/s Ratio Perm			0.00								0.29	
v/c Ratio		0.12	0.07					0.51			0.35	
Uniform Delay, d1		34.7	34.6					2.1			1.7	
Progression Factor		1.00	1.00					0.85			1.00	
Incremental Delay, d2		0.5	0.2					1.0			0.1	
Delay (s)		35.2	34.8					2.7			1.8	
Level of Service		D	C					A			A	
Approach Delay (s)		34.9			0.0			2.7			1.8	
Approach LOS		C			A			A			A	

Intersection Summary			
HCM Average Control Delay	4.5	HCM Level of Service	A
HCM Volume to Capacity ratio	0.48		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	43.5%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	94	207	105	69	525	138	283	649	46
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt				1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.99	
Flt Protected				0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)				1770	1630	1583	1770	1583	1583	1770	1568	
Flt Permitted				0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)				1770	1630	1583	1770	1583	1583	1770	1568	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	0	0	99	218	111	73	553	145	298	683	48
RTOR Reduction (vph)	0	0	0	0	0	91	0	0	38	0	3	0
Lane Group Flow (vph)	0	0	0	99	218	20	73	553	107	298	728	0
Parking (#/hr)		10			5			10			10	
Turn Type				Split		Perm	Prot		Perm	Prot		
Protected Phases				8	8		5	2		1	6	
Permitted Phases						8			2			
Actuated Green, G (s)				14.3	14.3	14.3	8.6	31.7	31.7	22.0	45.1	
Effective Green, g (s)				14.3	14.3	14.3	8.6	31.7	31.7	22.0	45.1	
Actuated g/C Ratio				0.18	0.18	0.18	0.11	0.40	0.40	0.28	0.56	
Clearance Time (s)				4.0	4.0	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	3.0	3.0	
Lane Grp Cap (vph)				316	291	283	190	627	627	487	884	
v/s Ratio Prot				0.06	c0.13		0.04	c0.35		0.17	c0.46	
v/s Ratio Perm						0.01			0.07			
v/c Ratio				0.31	0.75	0.07	0.38	0.88	0.17	0.61	0.82	
Uniform Delay, d1				28.6	31.1	27.3	33.2	22.4	15.6	25.3	14.2	
Progression Factor				0.69	0.75	0.73	1.00	1.00	1.00	0.96	0.94	
Incremental Delay, d2				0.5	8.7	0.1	1.3	13.8	0.1	5.4	6.1	
Delay (s)				20.2	32.0	19.9	34.5	36.2	15.8	29.8	19.4	
Level of Service				C	C	B	C	D	B	C	B	
Approach Delay (s)		0.0			26.1			32.2			22.4	
Approach LOS		A			C			C			C	

Intersection Summary				
HCM Average Control Delay	26.5	HCM Level of Service	C	
HCM Volume to Capacity ratio	0.82			
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	8.0	
Intersection Capacity Utilization	64.2%	ICU Level of Service	C	
Analysis Period (min)	15			

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	51	96	105	15	106	23	41	745	20	16	722	59
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Frt		0.94			0.98		1.00	1.00		1.00	0.99	
Flt Protected		0.99			0.99		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1523			1587		1770	1624		1770	1611	
Flt Permitted		0.92			0.96		0.20	1.00		0.21	1.00	
Satd. Flow (perm)		1409			1535		366	1624		386	1611	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	54	101	111	16	112	24	43	784	21	17	760	62
RTOR Reduction (vph)	0	44	0	0	11	0	0	2	0	0	5	0
Lane Group Flow (vph)	0	222	0	0	141	0	43	803	0	17	817	0
Parking (#/hr)		5			5			5			5	
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		12.4			12.4		29.3	29.3		29.3	29.3	
Effective Green, g (s)		12.4			12.4		29.3	29.3		29.3	29.3	
Actuated g/C Ratio		0.25			0.25		0.59	0.59		0.59	0.59	
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)		352			383		216	957		228	950	
v/s Ratio Prot								0.49			c0.51	
v/s Ratio Perm		c0.16			0.09		0.12			0.04		
v/c Ratio		0.63			0.37		0.20	0.84		0.07	0.86	
Uniform Delay, d1		16.6			15.4		4.7	8.3		4.4	8.5	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		3.5			0.6		0.5	6.6		0.1	8.0	
Delay (s)		20.1			16.0		5.2	14.9		4.5	16.5	
Level of Service		C			B		A	B		A	B	
Approach Delay (s)		20.1			16.0			14.4			16.3	
Approach LOS		C			B			B			B	

Intersection Summary				
HCM Average Control Delay	16.0	HCM Level of Service	B	
HCM Volume to Capacity ratio	0.79			
Actuated Cycle Length (s)	49.7	Sum of lost time (s)	8.0	
Intersection Capacity Utilization	72.7%	ICU Level of Service	C	
Analysis Period (min)	15			

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	77	184	61	243	176	66	79	658	210	96	597	67
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frt	1.00	0.96		1.00	0.96		1.00	0.96		1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1569		1770	1787		1770	3198		1770	3267	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	1569		1770	1787		1770	3198		1770	3267	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	81	194	64	256	185	69	83	693	221	101	628	71
RTOR Reduction (vph)	0	17	0	0	19	0	0	44	0	0	12	0
Lane Group Flow (vph)	81	241	0	256	235	0	83	870	0	101	687	0
Parking (#/hr)		5						5			5	
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases												
Actuated Green, G (s)	6.2	14.4		12.8	21.0		4.8	20.8		6.0	22.0	
Effective Green, g (s)	6.2	14.4		12.8	21.0		4.8	20.8		6.0	22.0	
Actuated g/C Ratio	0.09	0.21		0.18	0.30		0.07	0.30		0.09	0.31	
Clearance Time (s)	4.0	4.0		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		3.0	3.0	
Lane Grp Cap (vph)	157	323		324	536		121	950		152	1027	
v/s Ratio Prot	0.05	c0.15		c0.14	0.13		0.05	c0.27		0.06	c0.21	
v/s Ratio Perm												
v/c Ratio	0.52	0.74		0.79	0.44		0.69	0.92		0.66	0.67	
Uniform Delay, d1	30.5	26.1		27.3	19.7		31.9	23.8		31.0	20.8	
Progression Factor	1.00	1.00		0.69	0.52		1.00	1.00		1.00	1.00	
Incremental Delay, d2	2.8	14.4		10.8	2.2		14.9	13.2		10.4	1.7	
Delay (s)	33.3	40.5		29.7	12.5		46.8	36.9		41.5	22.5	
Level of Service	C	D		C	B		D	D		D	C	
Approach Delay (s)		38.8			21.1			37.7			24.9	
Approach LOS		D			C			D			C	

Intersection Summary				
HCM Average Control Delay	30.8	HCM Level of Service	C	
HCM Volume to Capacity ratio	0.79			
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	12.0	
Intersection Capacity Utilization	70.4%	ICU Level of Service	C	
Analysis Period (min)	15			

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	15	372	32	164	350	115	30	228	241	104	110	23
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0	4.0		4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00	1.00		1.00	
Frt	1.00	0.99		1.00	0.96			1.00	0.85		0.99	
Flt Protected	0.95	1.00		0.95	1.00			0.99	1.00		0.98	
Satd. Flow (prot)	1770	1610		1770	1525			1620	1583		1574	
Flt Permitted	0.35	1.00		0.38	1.00			0.95	1.00		0.59	
Satd. Flow (perm)	655	1610		700	1525			1547	1583		948	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	16	392	34	173	368	121	32	240	254	109	116	24
RTOR Reduction (vph)	0	3	0	0	13	0	0	0	181	0	5	0
Lane Group Flow (vph)	16	423	0	173	476	0	0	272	73	0	244	0
Parking (#/hr)		5			10			5			5	
Turn Type	pm+pt			pm+pt			Perm		Perm	Perm		
Protected Phases	7	4		3	8			2			6	
Permitted Phases	4			8			2		2	6		
Actuated Green, G (s)	34.9	34.1		48.9	44.1			23.1	23.1		23.1	
Effective Green, g (s)	34.9	34.1		48.9	44.1			23.1	23.1		23.1	
Actuated g/C Ratio	0.44	0.43		0.61	0.55			0.29	0.29		0.29	
Clearance Time (s)	4.0	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		3.0	
Lane Grp Cap (vph)	297	686		572	841			447	457		274	
v/s Ratio Prot	0.00	c0.26		c0.04	c0.31							
v/s Ratio Perm	0.02			0.14				0.18	0.05		c0.26	
v/c Ratio	0.05	0.62		0.30	0.57			0.61	0.16		0.89	
Uniform Delay, d1	18.9	17.9		13.0	11.7			24.5	21.2		27.2	
Progression Factor	0.58	0.32		1.00	1.00			1.00	1.00		1.00	
Incremental Delay, d2	0.1	3.7		0.3	0.9			2.3	0.2		28.1	
Delay (s)	11.0	9.4		13.3	12.6			26.9	21.4		55.3	
Level of Service	B	A		B	B			C	C		E	
Approach Delay (s)		9.5			12.8			24.2			55.3	
Approach LOS		A			B			C			E	

Intersection Summary				
HCM Average Control Delay	20.8	HCM Level of Service	C	
HCM Volume to Capacity ratio	0.66			
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	8.0	
Intersection Capacity Utilization	70.5%	ICU Level of Service	C	
Analysis Period (min)	15			

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	130	279	3	11	369	128	20	21	47	230	3	156
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00		1.00	1.00	
Frt	1.00	1.00		1.00	0.96			0.93		1.00	0.85	
Flt Protected	0.95	1.00		0.95	1.00			0.99		0.95	1.00	
Satd. Flow (prot)	1770	1860		1770	1791			1496		1770	1390	
Flt Permitted	0.95	1.00		0.95	1.00			0.89		0.53	1.00	
Satd. Flow (perm)	1770	1860		1770	1791			1343		981	1390	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	137	294	3	12	388	135	21	22	49	242	3	164
RTOR Reduction (vph)	0	0	0	0	16	0	0	43	0	0	123	0
Lane Group Flow (vph)	137	297	0	12	507	0	0	49	0	242	44	0
Parking (#/hr)								5			5	
Turn Type	Prot			Prot			pm+pt			pm+pt		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases							2			6		
Actuated Green, G (s)	11.0	39.9		0.8	29.7			8.1		17.3	17.3	
Effective Green, g (s)	11.0	39.9		0.8	29.7			8.1		17.3	17.3	
Actuated g/C Ratio	0.16	0.57		0.01	0.42			0.12		0.25	0.25	
Clearance Time (s)	4.0	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	3.0	
Lane Grp Cap (vph)	278	1060		20	760			155		301	344	
v/s Ratio Prot	c0.08	0.16		0.01	c0.28					c0.06	0.03	
v/s Ratio Perm								0.04		c0.14		
v/c Ratio	0.49	0.28		0.60	0.67			0.31		0.80	0.13	
Uniform Delay, d1	27.0	7.7		34.4	16.2			28.4		25.4	20.5	
Progression Factor	0.89	0.42		1.00	1.00			1.00		1.00	1.00	
Incremental Delay, d2	0.8	0.4		40.2	4.6			1.2		14.3	0.2	
Delay (s)	24.8	3.6		74.6	20.8			29.6		39.7	20.6	
Level of Service	C	A		E	C			C		D	C	
Approach Delay (s)		10.3			22.0			29.6			31.9	
Approach LOS		B			C			C			C	

Intersection Summary			
HCM Average Control Delay	21.8	HCM Level of Service	C
HCM Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	65.6%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Corridor Performance

Main Street

Direction	NB	SB	All
Total Delay (hr)	5	3	8
Stops (#)	1032	663	1695
Average Speed (mph)	21	21	21
Total Travel Time (hr)	15	11	26
Distance Traveled (mi)	303	239	542
Fuel Consumed (gal)	21	16	38
Fuel Economy (mpg)	14.1	14.9	14.4
CO Emissions (kg)	1.50	1.12	2.62
NOx Emissions (kg)	0.29	0.22	0.51
VOC Emissions (kg)	0.35	0.26	0.61
Unserved Vehicles (#)	0	0	0
Vehicles in dilemma zone (#)	0	0	0
Performance Index	7.4	5.3	12.7

State Street

Direction	NB	SB	All
Total Delay (hr)	34	26	59
Stops (#)	2839	2775	5614
Average Speed (mph)	13	15	14
Total Travel Time (hr)	61	53	113
Distance Traveled (mi)	815	810	1626
Fuel Consumed (gal)	74	67	141
Fuel Economy (mpg)	11.0	12.0	11.5
CO Emissions (kg)	5.17	4.71	9.88
NOx Emissions (kg)	1.01	0.92	1.92
VOC Emissions (kg)	1.20	1.09	2.29
Unserved Vehicles (#)	9	0	9
Vehicles in dilemma zone (#)	0	0	0
Performance Index	41.6	33.3	74.8

Network Totals

Number of Intersections	22
Total Delay (hr)	110
Stops (#)	11513
Average Speed (mph)	13
Total Travel Time (hr)	192
Distance Traveled (mi)	2476
Fuel Consumed (gal)	246
Fuel Economy (mpg)	10.1
CO Emissions (kg)	17.20
NOx Emissions (kg)	3.35
VOC Emissions (kg)	3.99
Unserved Vehicles (#)	28
Vehicles in dilemma zone (#)	0
Performance Index	141.9

Main Street

Direction	NB	SB	All
Total Delay (hr)	4	5	9
Stops (#)	789	427	1216
Average Speed (mph)	21	19	20
Total Travel Time (hr)	14	13	27
Distance Traveled (mi)	303	239	542
Fuel Consumed (gal)	20	16	36
Fuel Economy (mpg)	15.2	15.2	15.2
CO Emissions (kg)	1.39	1.10	2.49
NOx Emissions (kg)	0.27	0.21	0.48
VOC Emissions (kg)	0.32	0.25	0.58
Unserved Vehicles (#)	0	0	0
Vehicles in dilemma zone (#)	0	0	0
Performance Index	6.4	6.0	12.3

State Street

Direction	NB	SB	All
Total Delay (hr)	22	28	51
Stops (#)	2310	2852	5162
Average Speed (mph)	16	15	15
Total Travel Time (hr)	50	55	105
Distance Traveled (mi)	815	810	1626
Fuel Consumed (gal)	63	70	133
Fuel Economy (mpg)	13.0	11.6	12.3
CO Emissions (kg)	4.38	4.89	9.27
NOx Emissions (kg)	0.85	0.95	1.80
VOC Emissions (kg)	1.02	1.13	2.15
Unserved Vehicles (#)	0	0	0
Vehicles in dilemma zone (#)	0	0	0
Performance Index	28.8	36.3	65.1

Measures of Effectiveness Downtown Ukiah Streetscape

Network Totals

Number of Intersections	22
Total Delay (hr)	92
Stops (#)	9915
Average Speed (mph)	14
Total Travel Time (hr)	175
Distance Traveled (mi)	2476
Fuel Consumed (gal)	224
Fuel Economy (mpg)	11.0
CO Emissions (kg)	15.68
NOx Emissions (kg)	3.05
VOC Emissions (kg)	3.63
Unserved Vehicles (#)	0
Vehicles in dilemma zone (#)	0
Performance Index	119.9

Future PM Volumes
Road Diet
Synchro 7 - Report

Main Street

Direction	NB	SB	All
Total Delay (hr)	4	7	11
Stops (#)	775	445	1220
Average Speed (mph)	22	16	19
Total Travel Time (hr)	14	15	29
Distance Traveled (mi)	303	239	542
Fuel Consumed (gal)	20	18	37
Fuel Economy (mpg)	15.5	13.6	14.6
CO Emissions (kg)	1.37	1.23	2.59
NOx Emissions (kg)	0.27	0.24	0.50
VOC Emissions (kg)	0.32	0.28	0.60
Unserved Vehicles (#)	0	0	0
Vehicles in dilemma zone (#)	0	0	0
Performance Index	6.0	8.4	14.4

State Street

Direction	NB	SB	All
Total Delay (hr)	25	21	46
Stops (#)	2825	2549	5374
Average Speed (mph)	16	17	16
Total Travel Time (hr)	52	48	100
Distance Traveled (mi)	815	810	1626
Fuel Consumed (gal)	68	63	130
Fuel Economy (mpg)	12.1	12.9	12.5
CO Emissions (kg)	4.72	4.38	9.10
NOx Emissions (kg)	0.92	0.85	1.77
VOC Emissions (kg)	1.09	1.02	2.11
Unserved Vehicles (#)	0	0	0
Vehicles in dilemma zone (#)	0	0	0
Performance Index	32.9	27.9	60.8

Network Totals

Number of Intersections	22
Total Delay (hr)	84
Stops (#)	9885
Average Speed (mph)	15
Total Travel Time (hr)	168
Distance Traveled (mi)	2506
Fuel Consumed (gal)	219
Fuel Economy (mpg)	11.4
CO Emissions (kg)	15.33
NOx Emissions (kg)	2.98
VOC Emissions (kg)	3.55
Unserved Vehicles (#)	0
Vehicles in dilemma zone (#)	0
Performance Index	111.5