DEPARTMENT OF TRANSPORTATION
STATE OF GEORGIA

TE PROJECT CONCEPT REPORT

GDOT Project Number: CSTEE-0008-00(979)

GDOT P.I. Number: 0008979 **COUNTY: Barrow**

FEDERAL FUNDS: $500,000 **MATCHING FUNDS: $125,000**

FISCAL YEAR PROPOSED: 2011

PROJECT SPONSOR: City of Winder

CONTACT PERSON: Bob Beck, City Administrator, 770-867-3106

Date of Report: A pril 7, 2010

The undersigned have reviewed the concept report:

_____ _____
Date **District Engineer**

4/14/10 _____
Date **State Environmental Administrator**

_____ _____
Date **State Traffic Engineer**

_____ _____
Date **State Transportation Planning Administrator**

This project concept is contained in the Regional Transportation Program (RTP) and/or in the State Transportation Improvement Program (STIP). The concept as presented herein and submitted for approval is consistent with that which is included in the RTP and/or STIP.
(Information copies have been provided to the following offices: Engineering Services, Maintenance, Road Design, Urban Design, Bridge Design, and Right-of-Way. Their comments are welcomed.)

DEPARTMENT OF TRANSPORTATION
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Date of Report: April 7, 2010

The undersigned have reviewed the concept report:

Date **District Engineer**

Date **State Environmental Administrator**

4-30-10 Kathleen S Rahul for
Date **State Traffic Engineer**

Date **State Transportation Planning Administrator**

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Date of Report: April 7, 2010

The undersigned have reviewed the concept report

4/23/10 _____
Date **District Engineer**

_____
Date **State Environmental Administrator**

_____
Date **State Traffic Engineer**

_____
Date **State Transportation Planning Administrator**

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Date of Report: April 7, 2010

The undersigned have reviewed the concept report:

_____ _____
Date **District Engineer**

_____ _____
Date **State Environmental Administrator**

_____ _____
Date **State Traffic Engineer**

4/16/10 Angela L. Alexander
_____ _____
Date **State Transportation Planning Administrator**

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(Information copies have been provided to the following offices: Engineering Services, Maintenance, Road Design, Urban Design, Bridge Design, and Right-of-Way. Their comments are welcomed.)

P.I. No. **0008979**

TE PROJECT COMMON NAME: **Winder Downtown Streetscape**

TE PROJECT LOCATION: **North Broad Street, City of Winder, Barrow County, Georgia**

TE PROJECT CONCEPT *[DESCRIPTION]*:
The proposed project is to be built using TE funds and local funds. The project would provide approximately 1700 linear feet of streetscape improvements to North Broad Street (SR 11/SR 53), beginning at Porter Street and ending at Stephens Street. The improvements include new sidewalks, handicap access ramps, lighting, signage, benches, trash receptacles, street trees, landscaping, bicycle parking racks, improved pedestrian crossings, traffic signals, and drainage improvements. Existing lane configuration will be modified to allow for the widening of existing sidewalks. These modifications include the removal of left turn lanes and consequent prohibiting of left turns on Broad Street between Athens Street and Midland Avenue. The impact of removing these turn lanes has been assessed, and it was concluded that the streetscape will have negligible effect upon traffic operation (See attached report). The improvements are proposed to be in accordance with the DOT Enhancement Program requirements. The project will conform to the American with Disabilities Act (ADA). Any lighting that is located within 8 feet of curb at the travel lanes will have breakaway design for the bases. The posted speed limit for Broad Street (SR 211/SR 53) is 35 mph. Should any drainage improvements be required, an indemnity agreement will be signed between GDOT and the Sponsor. Right of way and/or permanent easements will be required for new sidewalk outside of the existing right of way; more specifically along the west side of Broad Street between Porter Street, the improved radius at Midland Avenue and Laura Street and from Midland Avenue to north end of the project. Existing parking will be modified (in some locations) by improving parking angles and removing parking spaces near intersection crosswalks.

PROPOSED TYPICAL SECTION: **The proposed typical section for Broad Street between Porter Street and Laura Street will be a 12' turn lane, two 12' lanes, 13.5' 30 degree angled parking stalls on both sides, 2.5' curb and gutter on both sides, and approximately 10' wide concrete and brick paver sidewalks on both sides. An alternating pattern of trees and pedestrian lights will be in the sidewalk, 1.5' from the face of curb to the face of the object.**

The proposed typical section for Broad Street between Laura Street and Athens Street will be a 12' turn lane, two 12' lanes, 14.5' 35 degree parking stalls on the west side, 9' wide parallel parking stalls on the east side, 2.5' curb and gutter on both sides, 5' wide concrete and brick paver sidewalks on the west side, approximately 4' wide concrete and brick paver sidewalks on the east side. Beyond the sidewalk on the east side will be a retaining wall and an elevated, approximately 6' wide concrete and brick paver sidewalk up to the face of the adjacent buildings. Pedestrian lights will be in the sidewalk, 1.5' from the face of curb on the west side to the face of the object, and approximately 6.5' from the face of curb on the east side to the center of the object.

The proposed typical section for Broad Street between Athens Street and Midland Avenue will be a 0' to 4' flush median, two 12' to 14' lanes, 16' 45 degree angled parking stalls on both sides, 2.5' curb and gutter on both sides, and 9.5' wide concrete and brick paver sidewalks on both sides. An alternating pattern of trees and pedestrian lights will be in the sidewalk, 1.5' from the face of curb to the face of the object.

The proposed typical section for Broad Street from Midland Avenue to halfway up the block toward Stephens Street will be a 12.5' flush median/turn lane, one 12' lane on the west side, one 12' to 18.5' lane on the east side, 14.5' 35 degree angled parking stalls on the east side, 2.5' curb and gutter on both sides, 0' to 4' grass strip in the west side, 7' to 9.5' wide concrete and brick paver sidewalks on the west side, and 7' wide concrete and brick paver sidewalks on the east side. Pedestrian lights will be in the sidewalks on the west side, 7' to 11' from the face of curb to the face of the object.

The proposed typical section for Broad Street from midblock between Midland Avenue and Stephens Street to Stephens will be a 11.5 flush median/turn lane, two 12' lanes, 13.5' 30 degree parking on the east side, 2.5' curb and gutter on both sides, 7.5' wide concrete and brick paver sidewalk on the west side, 7' wide concrete and brick paver sidewalk on the east side. An alternating pattern of trees and pedestrian lights will be in the sidewalk 6' from the face of curb on the west side, and 5.5' from the face of curb on the east side to the face of object.

On all sections, existing Georgia Power owned pedestrians lights will be relocated as needed. (See Exhibits)

MAJOR STRUCTURES *[BRIDGES, IF APPLICABLE]*: **None anticipated.**

PERMITS REQUIRED: **None anticipated.**

LEVEL OF ENVIRONMENTAL ANALYSIS: **CATEGORICAL EXCLUSION**

SECTION 4(f)/SECTION 106 INVOLVEMENT: IF YES, LIST RESOURCES: **None.**

OTHER KNOWN OR SUSPECTED ENVIRONMENTAL ISSUES: **None.**

LEVEL OF PUBLIC INVOLVEMENT: **A public meeting was held on January 5, 2010 to present the concept. Minor changes were then made and a second public meeting was held on February 25, 2010.**

DESIGN STANDARDS TO BE USED:

AASHTO
GDOT
ADA

DESIGN VARIANCES REQUIRED: **None**

OTHER GDOT PROJECTS IN IMMEDIATE VICINITY OF TE PROJECT:
There is a Maintenance project along SR 11. This project is a construction work program including resurfacing and maintenance along a 6.13 mile stretch from SR 8 to Jackson County Line. Project ID for this project is M004054. A portion

of this project overlaps with the Winder Downtown Streetscape. According to GDOT, the portion that overlaps the streetscape project will be left out of the maintenance project. According to GDOT, the District plans to perform the necessary maintenance activities to the pavement within the streetscape limits concurrently with the construction of the streetscape construction. At the time of this report, it is not known what improvements will be included in this project (i.e. how much pavement will be milled, will the asphalt pavement be replaced with concrete, re-striping lanes, etc.) Should this GDOT project include improvements which were anticipated to be paid from the TE project, we anticipate the maintenance project funds will supersede the TE project funds for those items.

CONCEPT TEAM MEETING HELD *[OPTIONAL]* AND PERSONS PRESENT: **None Held.**

FIELD REVIEW HELD *[OPTIONAL]*: **None Held.**

RAILROAD INVOLVEMENT: **None.**

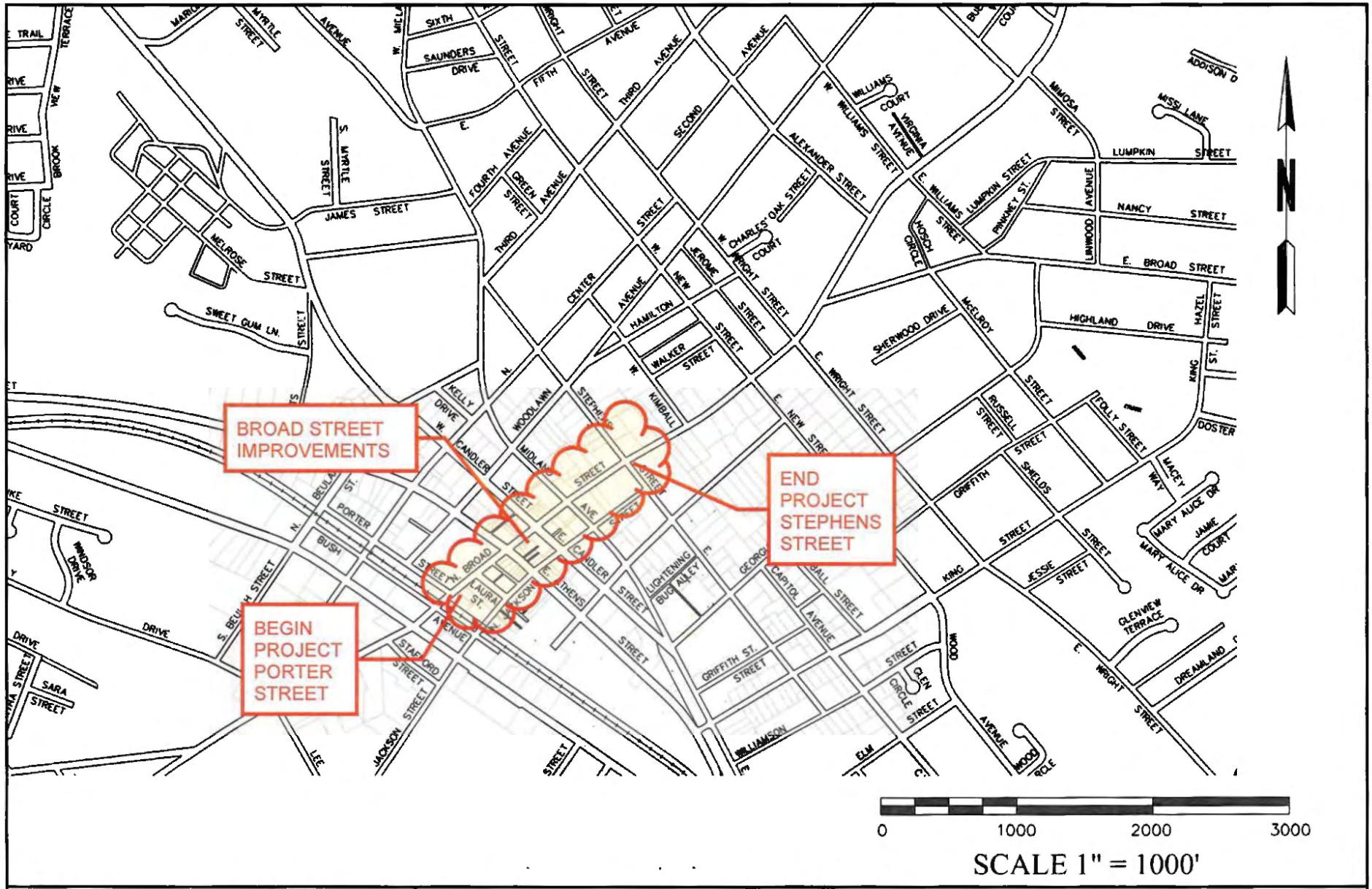
UTILITIES: **Various water, sewer and gas upgrades/relocations will be performed while the streetscape is under construction. Existing utility poles in conflict with proposed improvements will be relocated. The exact location of the relocations is to yet be determined.**

Water:	**City of Winder** **Roger Wilhelm** **770-867-7978**	**Sewer:**	**City of Winder** **Dan Feldman** **770-868-0863**
Gas:	**City of Winder** **Mike Jewell** **77-867-7978**	**Telephone:**	**Alltell / Windstream** **Angie Shumate** **770-267-6800**
Cable:	**Comcast** **Joseph Keenam** **770-307-0813**	**Electric:**	**Georgia Power** **Tony Ferguson** **770-995-4709**

COMMENTS: **None Stated.**

ATTACHMENTS:

1. **Exhibit A – Project Location Map**
2. **Exhibit B thru K – Existing and Proposed Typical Sections**
3. **Plan View Rendered Exhibits**
4. **Conceptual Construction Cost Estimate**
5. **Streetscape Impact Assessment (Traffic Analysis for Left Turn Removals)**

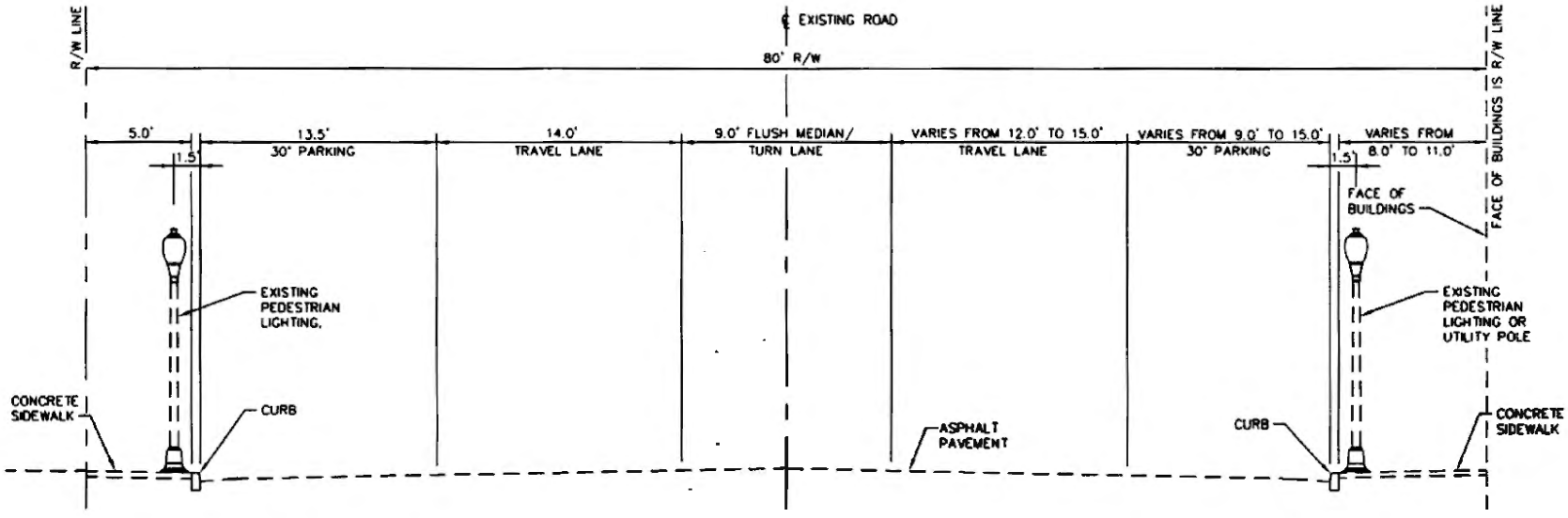


Keck & Wood, Inc. ENGINEERS SURVEYORS PLANNERS
2750 PREMIERE PARKWAY SUITE 900
DULUTH, GEORGIA 30097 (678) 417-4300

CITY OF WINDER, GEORGIA

BROAD STREET
LOCATION MAP
WINDER DOWNTOWN STREETSCAPE

EXHIBIT A
MARCH 2010



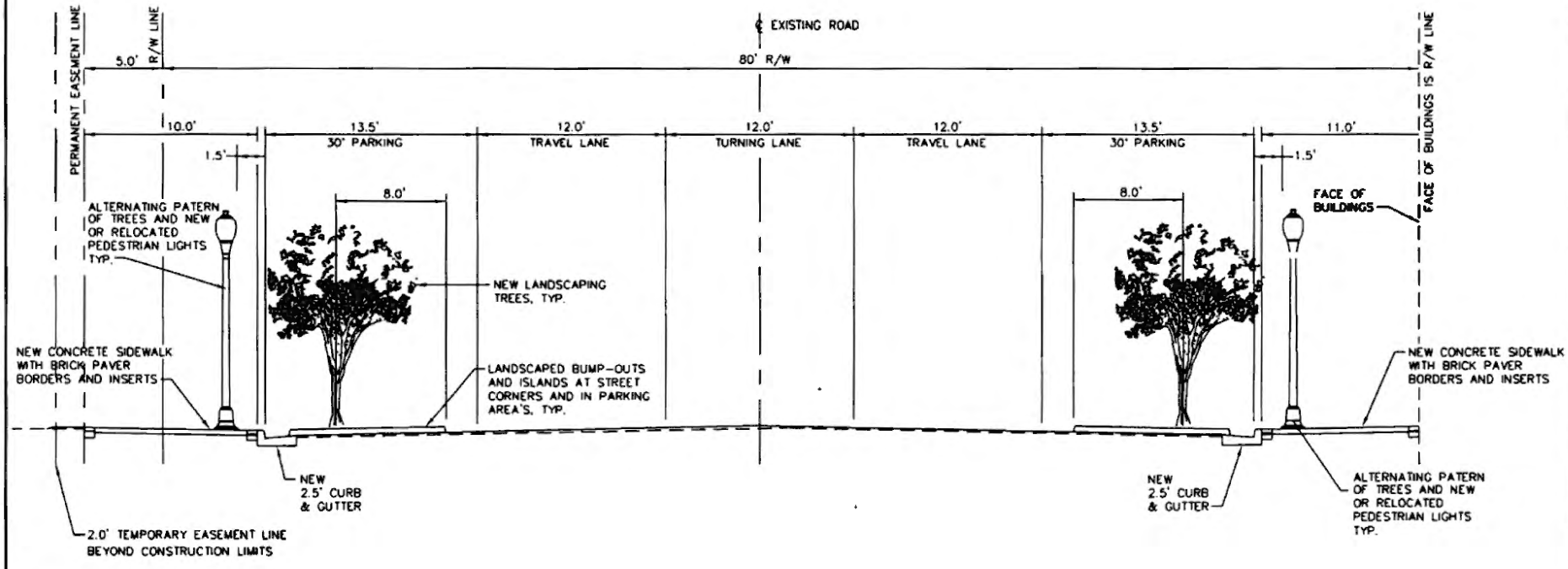
EXISTING CONDITIONS BROAD STREET FROM PORTER STREET TO LAURA STREET

Keck & Wood, Inc. ENGINEERS SURVEYORS PLANNERS
2750 PREMIERE PARKWAY SUITE 900
DULUTH, GEORGIA 30097 (678) 417-4000

CITY OF WINDER, GEORGIA

BROAD STREET
TYPICAL SECTIONS
WINDER DOWNTOWN STREETSCAPE

EXHIBIT B
MARCH 2010



PROPOSED IMPROVEMENTS BROAD STREET FROM PORTER STREET TO LAURA STREET

Keck & Wood, Inc. ENGINEERS SURVEYORS PLANNERS
2750 PREMIERE PARKWAY SUITE 900
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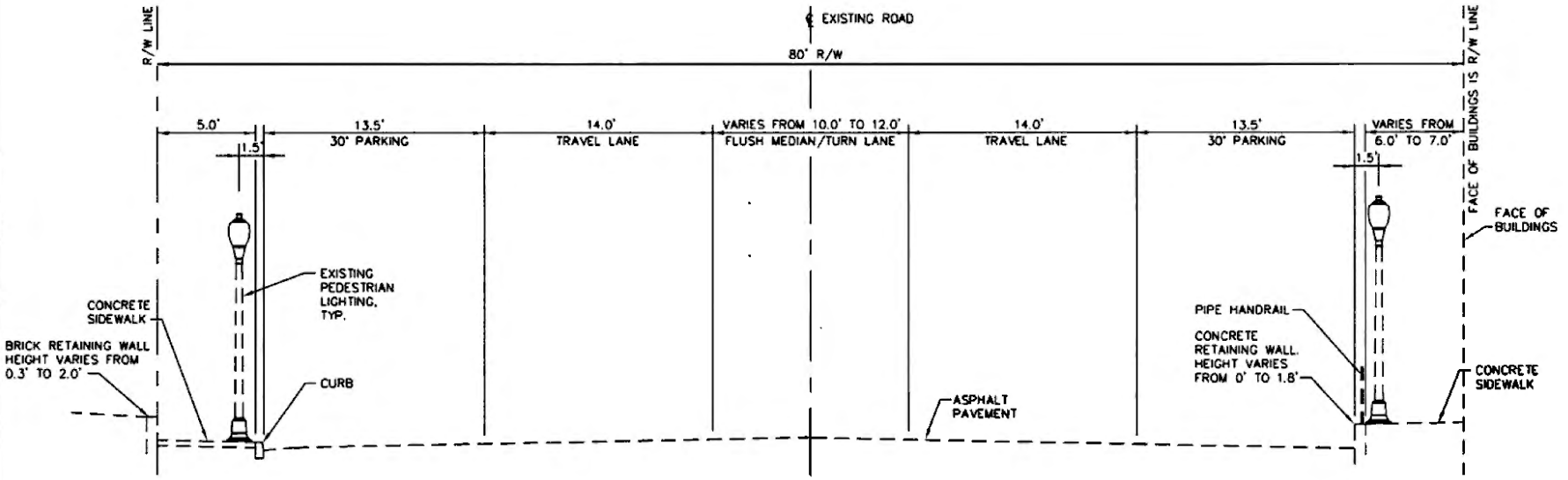
CITY OF WINDER, GEORGIA

BROAD STREET
TYPICAL SECTIONS
WINDER DOWNTOWN STREETSCAPE

EXHIBIT C
MARCH 2010



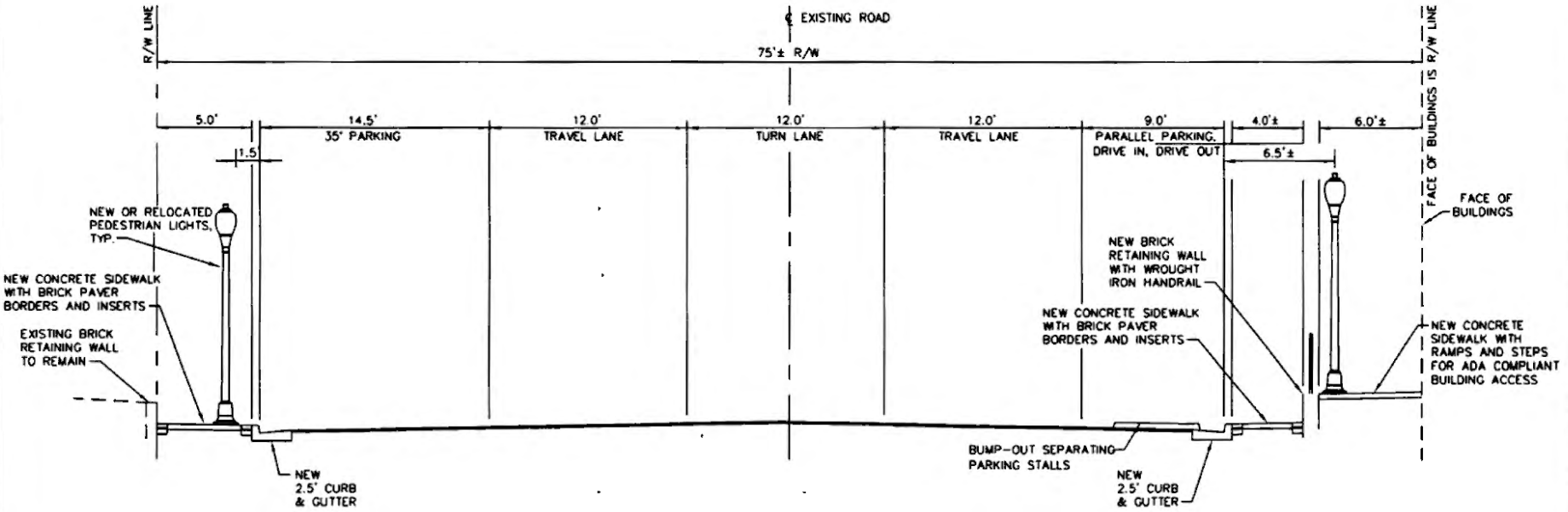
EXISTING CONDITIONS BROAD STREET FROM LAURA STREET TO ATHENS STREET

Keck & Wood, Inc. ENGINEERS SURVEYORS PLANNERS
2750 PREMIERE PARKWAY SUITE 900
DULUTH, GEORGIA 30097 (678) 417-4000

CITY OF WINDER, GEORGIA

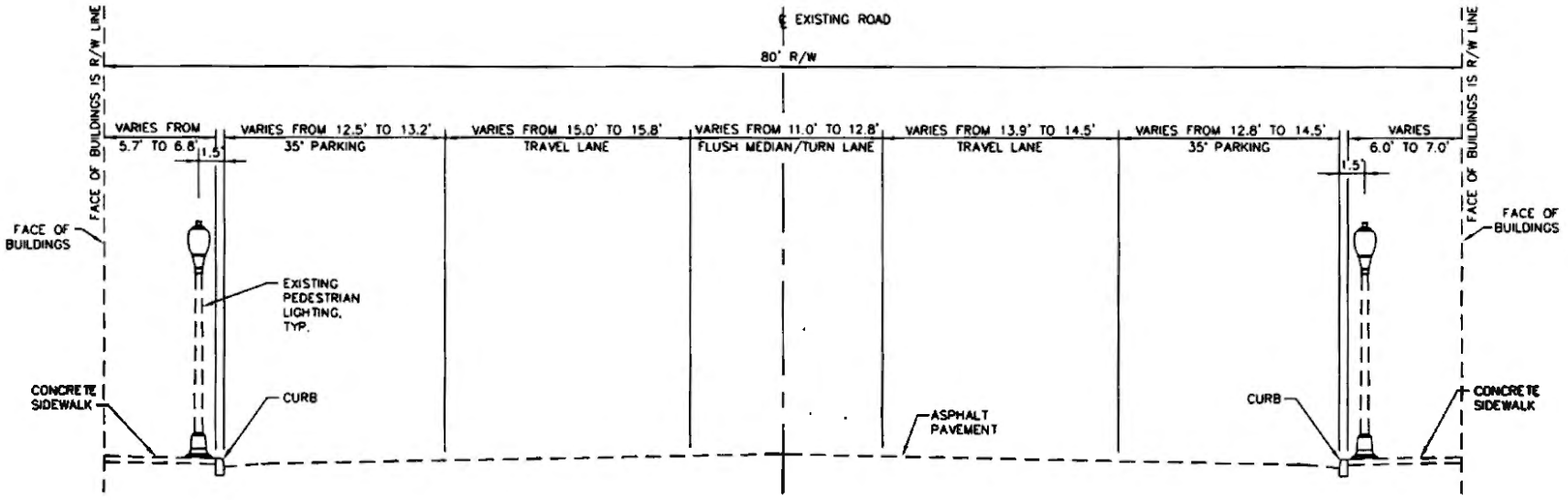
BROAD STREET
TYPICAL SECTIONS
WINDER DOWNTOWN STREETSCAPE

EXHIBIT D
MARCH 2010



PROPOSED IMPROVEMENTS BROAD STREET FROM LAURA STREET TO ATHENS STREET

Keck & Wood, Inc. ENGINEERS SURVEYORS PLANNERS 2750 PREMIERE PARKWAY SUITE 900 DULUTH, GEORGIA 30097 (678) 417-4000	BROAD STREET TYPICAL SECTIONS WINDER DOWNTOWN STREETSCAPE	**EXHIBIT E** **MARCH 2010**
CITY OF WINDER, GEORGIA		



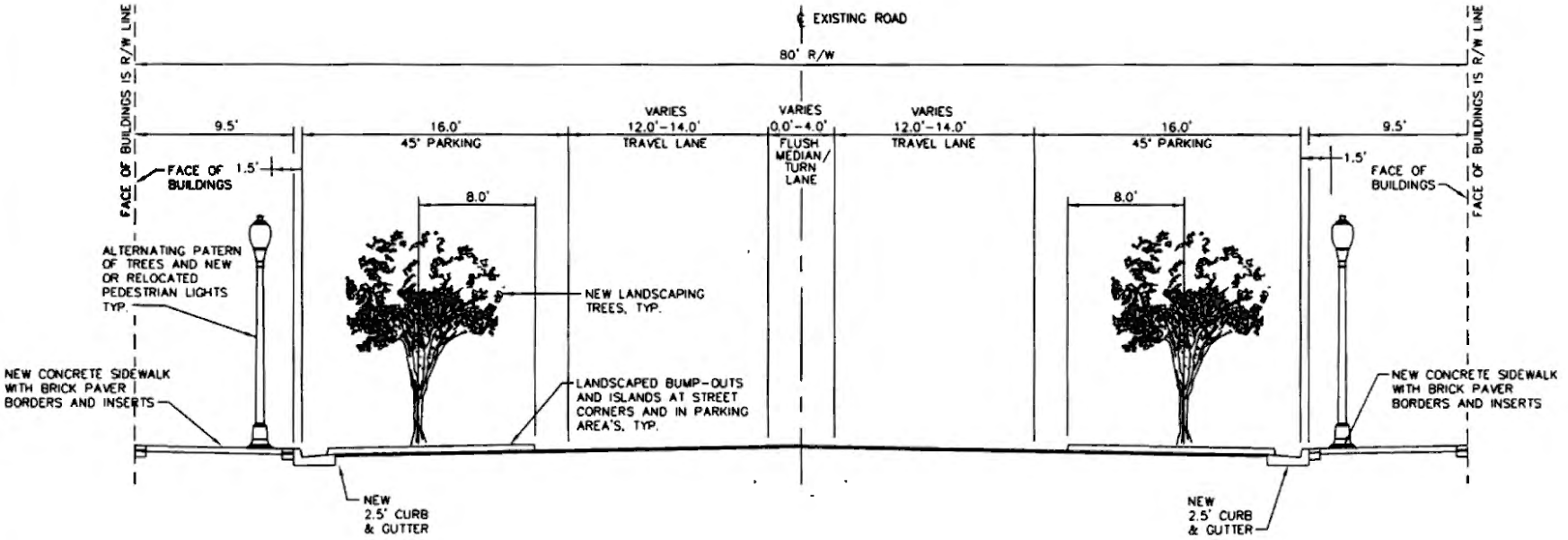
EXISTING CONDITIONS BROAD STREET FROM ATHENS STREET TO MIDLAND STREET

Keck & Wood, Inc. ENGINEERS SURVEYORS PLANNERS
2750 PREMIERE PARKWAY SUITE 900
DULUTH, GEORGIA 30097 (678) 417-4000

CITY OF WINDER, GEORGIA

BROAD STREET
TYPICAL SECTIONS
WINDER DOWNTOWN STREETSCAPE

EXHIBIT F
MARCH 2010



PROPOSED IMPROVEMENTS BROAD STREET FROM ATHENS STREET TO MIDLAND STREET

Keck & Wood, Inc. ENGINEERS SURVEYORS PLANNERS
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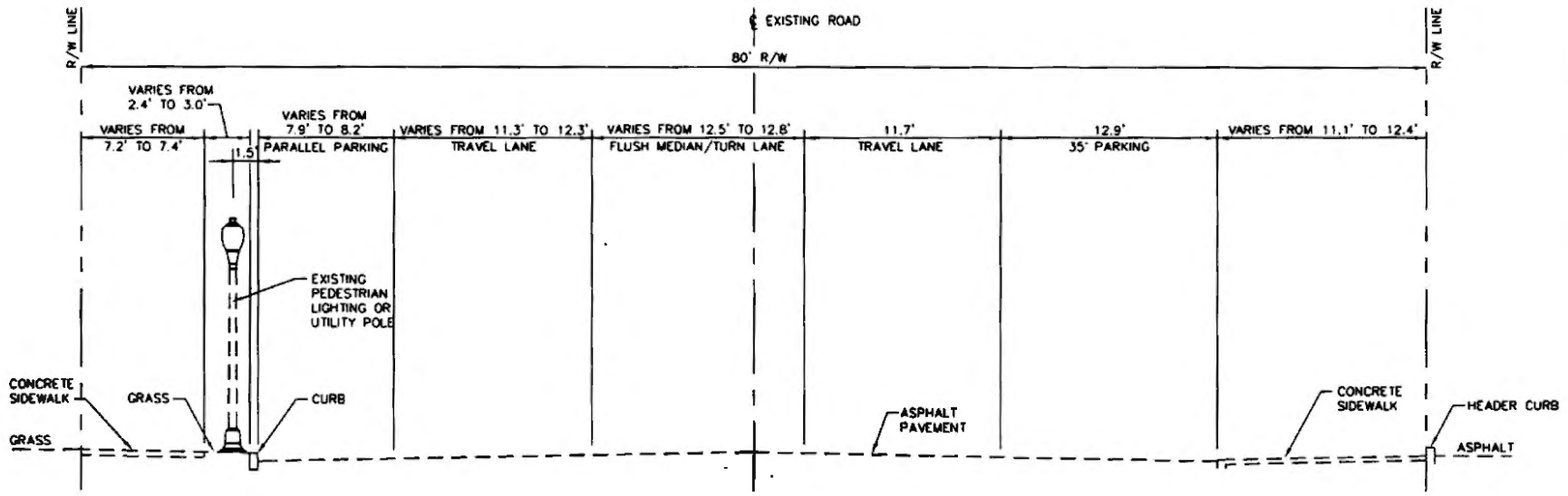
CITY OF WINDER, GEORGIA

BROAD STREET
TYPICAL SECTIONS
WINDER DOWNTOWN STREETSCAPE

EXHIBIT G
MARCH 2010



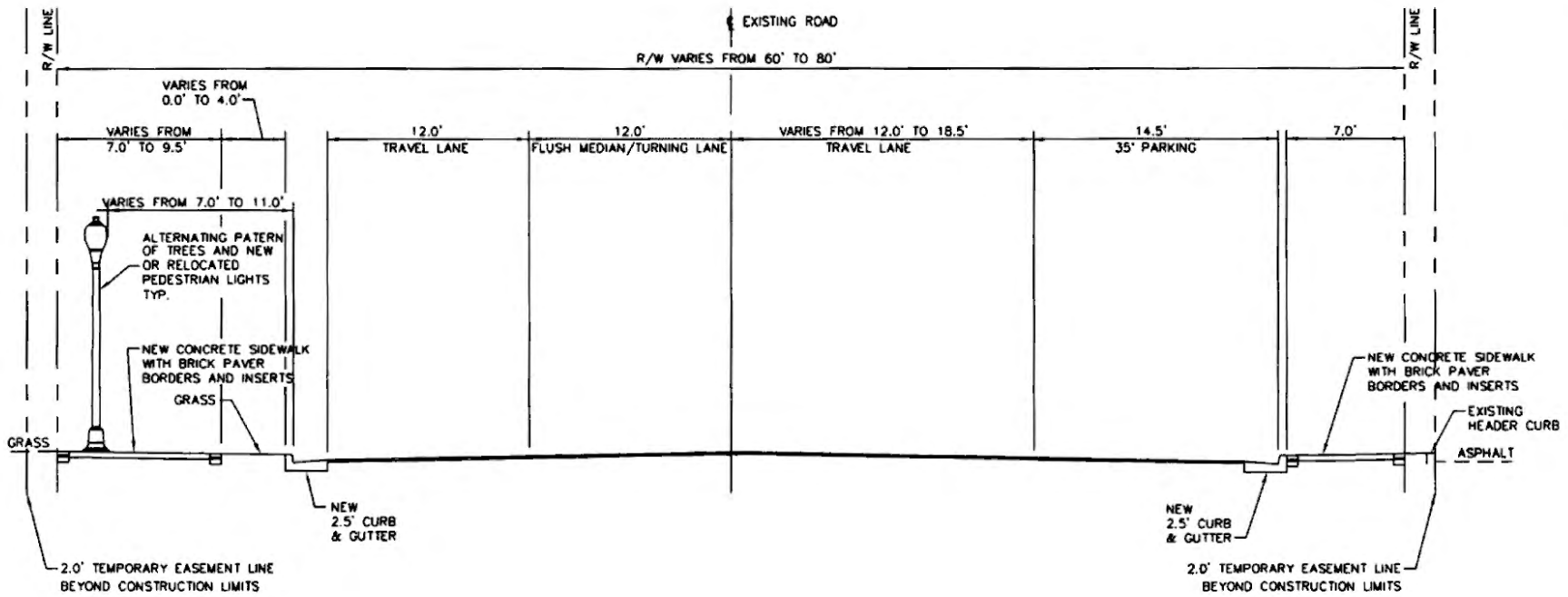
EXISTING CONDITIONS BROAD STREET FROM MIDLAND STREET TO MIDBLOCK

Keck & Wood, Inc. ENGINEERS SURVEYORS PLANNERS
2750 PREMIERE PARKWAY SUITE 900
DULUTH, GEORGIA 30097 (678) 417-4000

CITY OF WINDER, GEORGIA

BROAD STREET
TYPICAL SECTIONS
WINDER DOWNTOWN STREETSCAPE

EXHIBIT H
MARCH 2010



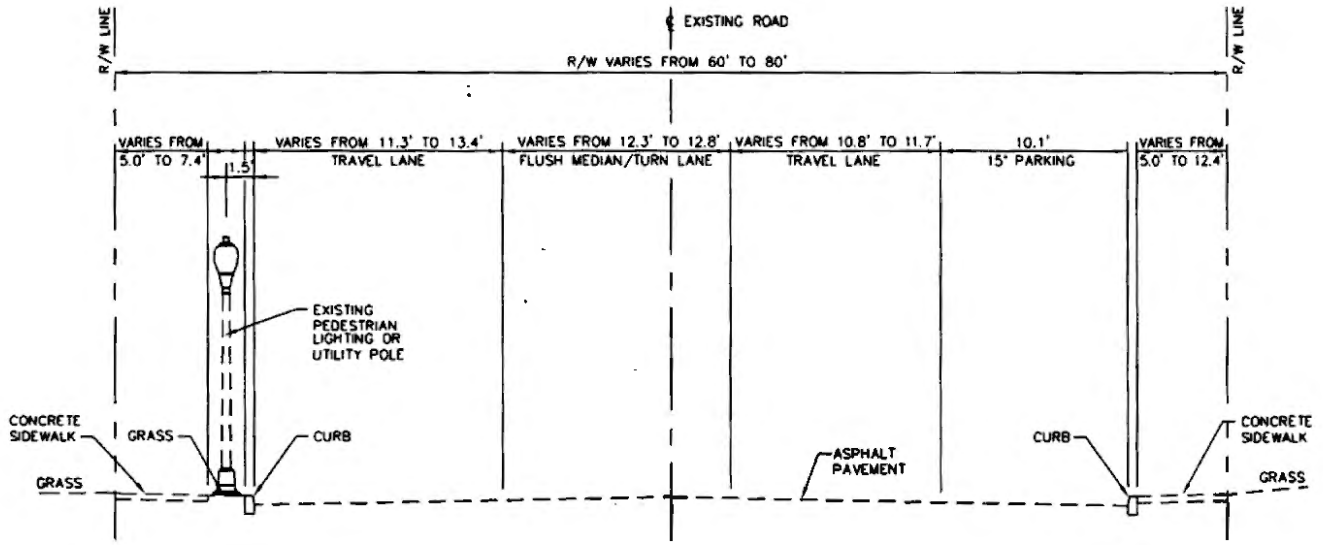
PROPOSED IMPROVEMENTS BROAD STREET FROM MIDLAND STREET TO MIDBLOCK

Keck & Wood, Inc. ENGINEERS SURVEYORS PLANNERS
2750 PREMIERE PARKWAY SUITE 900
DULUTH, GEORGIA 30097 (678) 417-4000

CITY OF WINDER, GEORGIA

BROAD STREET
TYPICAL SECTIONS
WINDER DOWNTOWN STREETSCAPE

EXHIBIT I
MARCH 2010



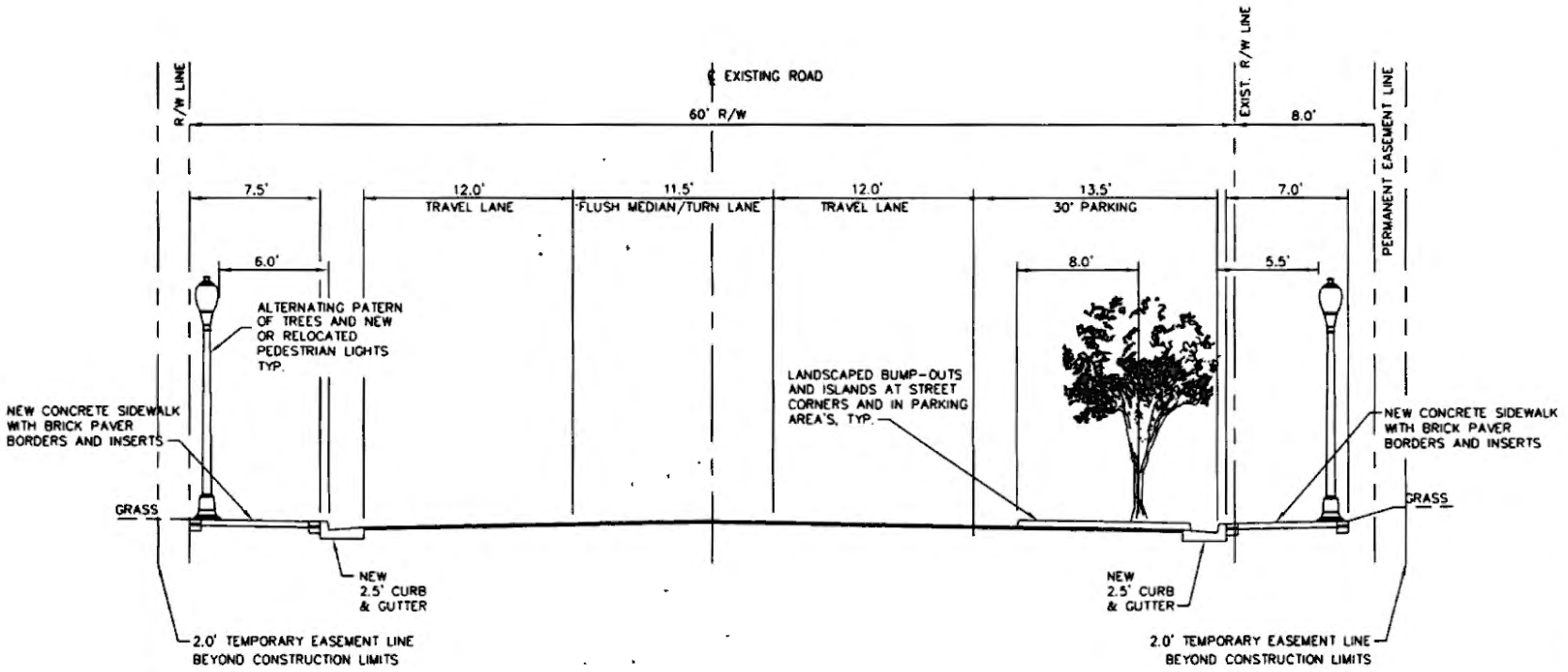
EXISTING CONDITIONS BROAD STREET
FROM 115 FT. NORTH EAST OF MIDLAND STREET TO STEPHENS STREET

Keck & Wood, Inc. ENGINEERS SURVEYORS PLANNERS
2750 PREMIERE PARKWAY SUITE 900
DULUTH, GEORGIA 30097 (678) 417-4000

CITY OF WINDER, GEORGIA

BROAD STREET
TYPICAL SECTIONS
WINDER DOWNTOWN STREETSCAPE

EXHIBIT J
MARCH 2010



PROPOSED IMPROVEMENTS BROAD STREET FROM MIDBLOCK TO STEPHENS STREET

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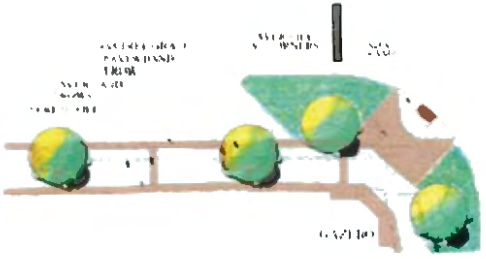
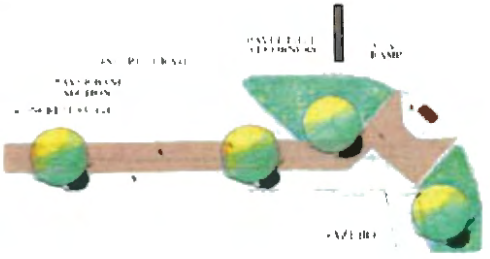
CITY OF WINDER, GEORGIA

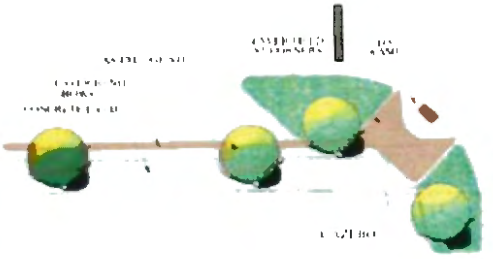
BROAD STREET
TYPICAL SECTIONS
WINDER DOWNTOWN STREETSCAPE

EXHIBIT K
MARCH 2010

PLAN VIEW
RAILROAD CROSSING TO CANDLER STREET

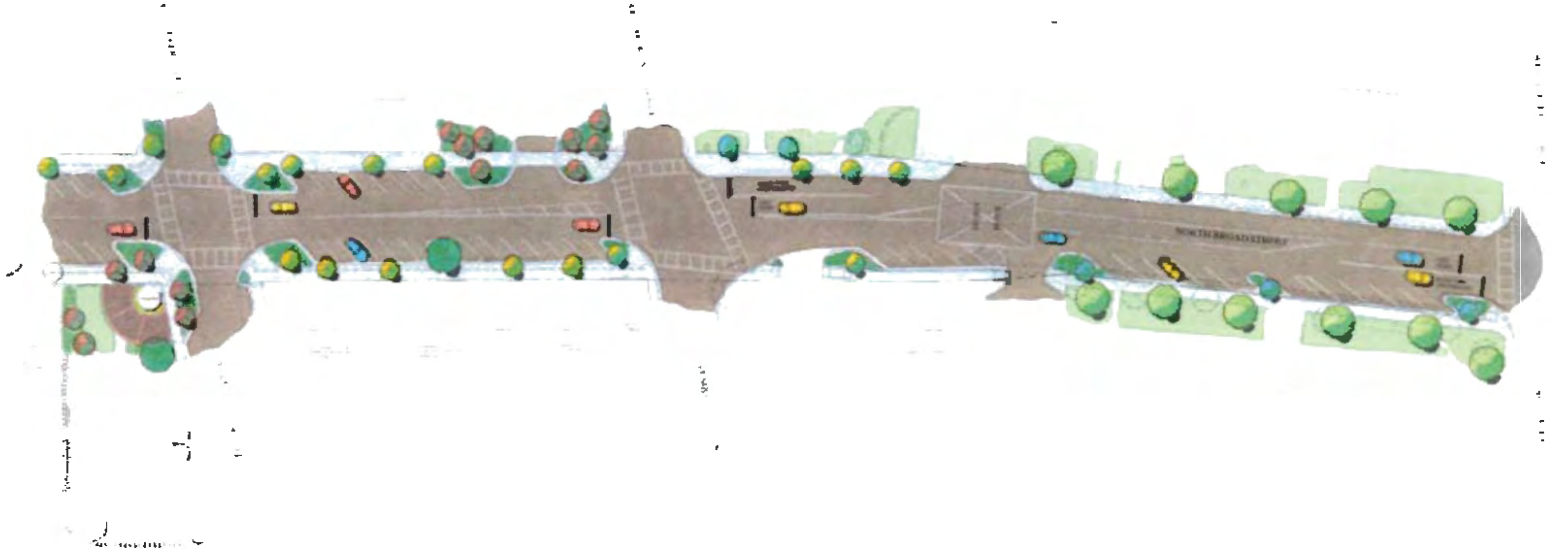




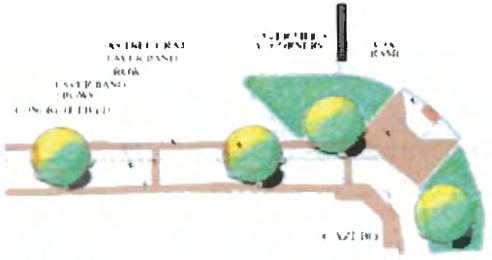


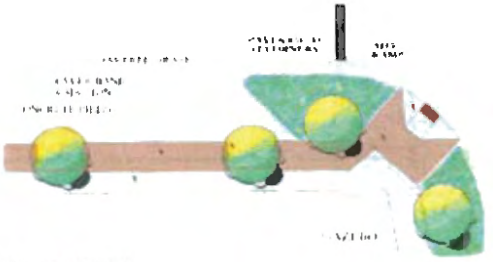
MARCH 2010

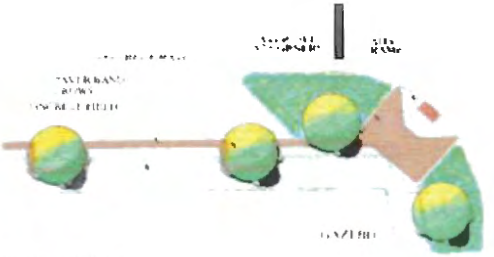
PRELIMINARY STREETSCAPE DESIGN FOR THE CITY OF WINDER NORTH BROAD STREET CORRIDOR



PLAN VIEW
CANDLER STREET TO STEPHENS STREET







MARCH 2010

PRELIMINARY STREETSCAPE DESIGN FOR THE CITY OF WINDER NORTH BROAD STREET CORRIDOR

DOWNTOWN STREETSCAPE - WINDER, GEORGIA

CONCEPTUAL COST ESTIMATE

KECK & WOOD, INC.
2750 Premiere Parkway
Suite 900
Duluth, GA. 30097

DESCRIPTION: NORTH BROAD STREET STREETSCAPE
K&W PROJECT N 090160.00
GDOT PI #: 0008979
DATE: 4/7/2010

ITEM	ITEM	QTY.	UNIT	PRICE	TOTAL
1	CURB & GUTTER	4,500	LF	$ 15.00	$ 67,500.00
2	SIDEWALK - CONCRETE/BRICK	3,550	SY	$ 40.00	$ 142,000.00
5	NEW/REBUILT DROP INLET	18	EA	$ 1,500.00	$ 27,000.00
6	DRAINAGE PIPE	200	LF	$ 40.00	$ 8,000.00
7	STRIPING	1	LS	$ 10,000.00	$ 10,000.00
8	MODIFY EX. TRAFFIC SIGNAL/PED HEADS	2	EA	$ 20,000.00	$ 40,000.00
9	MODIFY EX. TRAFFIC SIGNAL	1	EA	$ 100,000.00	$ 100,000.00
10	LANDSCAPING	1	LS	$ 85,000.00	$ 85,000.00
11	TREE GRATES	25	EA	$ 400.00	$ 10,000.00
12	RETAINING WALL	200	LF	$ 200.00	$ 40,000.00
13	BENCHES	4	EA	$ 500.00	$ 2,000.00
14	EROSION CONTROL	1	LS	$ 12,000.00	$ 12,000.00

Total-	$	**543,500**
Contingency (~15%)-	$	**81,500**
Grand Total-	**$**	**625,000**

Notes:

1. Georgia Power owned pedestrian lights will be attempt to be salvaged and relocated as needed by Georgia Power. As budget allows, new pedestrian lights will be installed.
2. Cost estimate does not include right-of-way acquisition, utiltiy relocations or professional engineering services.
3. Modification of existing traffic signal is due to revised radius at Midland Avenue intersection. This radius was revised for pedestrian safety reasons with high amounts of truck traffic making a right turn to travel north on Broad
4. Re-striping will be required due to new curb lines being set (due to wider sidewalks), resulting in new parking stall striping and re-striping of traffic lanes where turn lanes were eliminated.

Streetscape Public Presentation

1/5/2010

Eddie Williams from Keck & Wood presented the proposed North Broad Street Streetscape Plan via a power point presentation.

The following items were presented by Eddie:

- Project ongoing for +/-5 years. The project will help with the revitalization and the future economic development of the downtown area.
- Project Extends from the Historic Train Depot North to Stephens Street.
- Transportation Enhancement Grant of $500,000.00 plus a 20% City match.
- A preliminary cost estimate was shown.
- Based on the Project Flow Chart we are still conservatively +/-2 years from beginning construction.

Design Considerations:

- Better angle for parking spaces along North Broad Street, some parallel spaces to be created. Some parking will be eliminated but some of those spaces currently on the ground that are proposed to be eliminated should never have been there as they are hazards to pedestrians and do not meet good sound design standards for parking. Some of the spaces to be eliminated are too close to crosswalks and intersections. When backing out of these spaces your car is either into the crosswalk or into the intersection.
- Landscaping to make the downtown area more aesthetically pleasing and pedestrian friendly destination.
- Wider sidewalks. Most will be 9 to 10 feet wide. Wider sidewalks will better accommodate pedestrians and may allow for more outdoor dining opportunities. All sidewalks must be ADA compliant throughout.
- Mainly the new sidewalks will be concrete but there will be brick in-lays in the sidewalk areas. The bricks will also help to better define the corner areas. All street crossings will be ADA compliant.
- Tree grates will be installed around the trees in the sidewalk areas and they will all be A.D.A. compliant.
- Bike racks and benches will be installed.
- Drainage and other utilities will be reworked in some areas and improved throughout.

- Lighting will be provided in the landscape areas, either some sort of up-lighting or lights in the trees.
- Left Hand Turn Lane Eliminations. Elimination of left turn lanes at four locations. One at North Broad and Midland Ave., two at North Broad and Candler Street and one at North Broad and Athens Street. GDOT has not approved the removal of these left turn lanes yet.
- North Broad Street repaving. The State will hopefully allow the City to utilize funds they have assigned for the repaving of North Broad Street (From the Depot to Stephens Street) to be made a part of the North Broad Street Streetscape project so the repaving can be done in concurrence with the Streetscape construction.

Comments:

- **Mike Rice:** Concerns over the elimination of some of the parking spaces along North Broad Street. Wants more notification to be given to the downtown businesses and property owners of future meetings. Their input needs to be considered.
- **Ronnie Massey:** Concerns over the elimination of some of the parking along North Broad Street and the proposed area with parallel spaces along North Broad Street.
- **Kelly Yarbrough (Hair Gallery, 70 North Broad Street):** Concerns over the drainage in front of her business. Has flooded in the past.
- **John Bowen:** Concerns over the proposed eliminating of the turn lanes discussed and the effect this might have on trucks making deliveries in the downtown area. Who was in charge of the traffic studies? Did not like the meeting time being at 5:00.
- **Councilman Maynard:** Were improving the drainage and the upgrading or relocating of utilities considered as a part of the project?
- **Councilman Morris:** Relocation of utilities.
- **Mayor Thompson:** Utility and drainage upgrades are a part of the project.

witnesses.

The Sheriff's Office is developing the case.

charged with shoplifting and disorderly conduct after she allegedly attempted to steal a bicycle from

charged with DUI, failure to maintain lane and too fast for conditions after a traffic stop.

payments.

A 1996 Chrysler Sebring was reported missing from a Mystic Lane address on Dec. 11, however, several days later, the owner notified authorities that her neighbor, who frequently borrows the car, was driving it. She declined to press charges.

A Browning deer rifle was removed from a 2003 F-150 parked at a Waverly Lane home while the owner was out of town. The vehicle was unlocked.

A 20-year-in-the-making tool collection valued at $5,000 was taken off a Georgia Avenue carport on Dec. 14.

Aaron Edwin Riley of a Shenandoah Circle address was charged Dec. 11 with disorderly conduct and public drunkenness after several calls were made to police about a man walking the street and yelling and cussing.

A small party being hosted Dec. 12 at a Patrick Mill Road address brought law enforcement to the scene on reports of underaged drinking and a domestic dispute. Charged with underage possession, purchase or consumption of alcohol was Ivan Juruz and Franklin D. Segobia while Eliseo Hernandez-Davalos and Julian Oviedo were charged with contributing to the delinquency of a minor. Four females, including two juveniles, were also at the scene. All tested positive for alcohol use, and the females' parents were called to take them home. Hernandez-Davalos was also charged with simple battery - domestic violence.

A 1996 Dodge truck was apparently taken on a joy ride by someone who broke the back window of the truck parked on Waverly Lane. The person returned the truck – sans gas – to the scene. Also taken from the truck was $1.07.

Man arrested for pot possesssion

By Lona Panter
Barrow County News

A traffic stop initiated by the Auburn Police Department resulted in the arrest of a man for possession of marijuana. Valentin Rodriguez Jr. was arrested and charged after officers stopped his vehicle. A juvenile in the vehicle was released to his mother.

Auburn Police also arrested Jorge Alberto Villa-Gallardo for driving without a license after a traffic stop.

Officers also investigated two different cases of harassment, where one man was being bothered via text messages and a female was being harassed by phone messages.

Also under investigation is an incident at Ingles, where a counterfeit paycheck was cashed.

Officers arrested Santiago Jamal Taylor and Kyke Bruce McDuffie on outstanding warrants.

Officers investigated an incident where a woman reported her airbag deployed when she turned her vehicle on. The victim was treated by EMTs at the scene.

An identity theft report was taken by police after the victim attempted to purchase a firearm and was told he had a felony on his record despite never having been arrested.

One prisoner transport was made this week.

Carjacking, burglary, home invasion are investigated by Statham Police

From staff reports

Statham Police Department investigated a carjacking last week.

In the Dec. 7 incident, a man driving a teal green minivan was attempting to sell clothing out of his van when he was approached by two males with a shotgun. The suspects took the victim's clothing and the minivan and drove away. There were no injuries. The investigation is continuing.

Another public indecency report is under investigation. On Dec. 7, a male entered a business on Atlanta Highway and exposed himself as he left. Police have the surveillance video and are seeking a suspect in the case.

A burglary was investigated at a residence on Providence Road. The homeowner returned home from work on Dec. 7 and found his door had been forced open. The only items missing were some prescription medication.

A Dec. 10 auto theft was reported on Railroad Street. The stolen vehicle was recovered a short time later. The vehicle was processed and fingerprints were found on the vehicle. A suspect is being sought in the case.

Two theft by taking reports were also received last week including one on Third Street and the other on Greenfield Drive.

A home invasion was investigated on Dec. 13 in which three suspects entered a home on Atlanta Highway after midnight. One suspect has been questioned in the case and two other suspects are being sought at this time.

Two arrests were logged last week including the Dec. 6 arrest of Catherine Johnson, 27, of Statham, who was charged with battery after a domestic disturbance at a residence on Hammond Road.

Raymond Hooper, 59, of Statham, was charged with DUI after a traffic stop on Dec. 9.

Two traffic accidents were investigated last week. The two were actually related.

A one-vehicle accident was reported Dec. 11 at 11:44 a.m. on Broad Street near Eighth Street. The driver swerved to miss an oncoming vehicle in the middle of the road and struck two mailboxes. There were no injuries but two mailboxes were damaged as well as damage to the vehicle.

Minutes later, the vehicle that had been in the middle of the road on the previous accident, was involved in an accident on Broad Street at Glen Jackson Road.

The driver left the vehicle on foot and was gone when officers arrived. The vehicle was impounded and the investigation is continuing.

Statham officers issued 11 citations and two warnings last week.

Chief Rodger Tripp and all the officers of the Statham Police Department urge everyone to drive safely this holiday season and please don't drink and drive.

Christmas Party
Saturday, December 19th
Heavy Hors 'd Oeuvres 8:00
Southfire Band 9:00
Single - $8 Couple $15
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The City of Winder invites you to join us for a
Streetscape Plan Public Hearing
North Broad Street parking, landscaping, turn lanes, sidewalks, and much more will be discussed.
January 5, 2010 at 5:00 p.m.
North Broad Street Merchants are encouraged to attend.
Meeting is to be held at the
Winder Community Center
113 East Athens Street
Winder, GA 30680
For More Information Contact
770-867-3510

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City of Winder
Streetscape Plan Public Meeting
Winder Community Center
113 East Athens Street
Thursday, February 25, 2010
6:00 p.m.

Councilmen: Bob Dixon
David Maynard

Staff: Planning Director Barry Edgar
License and Permit/Planning and Zoning Clerk Yvonne Greenway
Purchasing Director Ambrose Jackson

The public meeting was called to order at 6:00 p.m.

1. **The City of Winder Second Streetscape Public meeting was called to order by Sam Serio of Keck and Wood.** Mr. Serio presented the attached power point presentation to the public and answered questions.

Questions

1. Mickey Thompson – If there are currently 113 parking spaces even though ten are not considered usable, twenty-four parking spaces would be lost when reducing to 89 spaces. This would be a 22 % loss of parking spaces. Would any of the parking spaces, including the "unusable spaces," be lost if the project were not done?

Sam Serio – No, none of the parking spaces would be lost if the project was not done.

2. What would be the time line for construction to begin?

Sam Serio – The concept plan being presented tonight will hopefully be submitted by the middle of March. Then the environmental study will begin which will take at least 6 months. The final design plan will have to be submitted, and any property needed for right-of-way will have to be acquired. It will probably be 1 ½ - 2 years before construction would actually begin.

3. How would eliminating left turns actually help traffic flow? It seems like it would cause traffic to get backed-up even more.

Sam Serio – No left turns would be allowed where the turn lanes were eliminated so traffic would not get backed up.

4. Would there be any limitations to trucks turning left onto Stephens Street since left turns would be eliminated on Candler and Midland Avenue?

Sam Serio – The streetscape plan itself would not place any limitations on trucks making left or right turns off of Broad Street.

5. Chip Lewis – Would there be a hearing with the Department of Transportation before construction would begin on the project? I would like to recommend limiting trucks that are not making deliveries to downtown Winder businesses.

Sam Serio – Once the Streetscape Plan is approved by the City Council to proceed, the approved concept plan would be submitted to the DOT. There would not be any scheduled public hearings or meetings with the DOT.

6. Will paving on North Broad Street wait for another two years so that it can be done during the construction phase of the project?

Sam Serio – Core samples of North Broad Street will be taken and evaluated to insure that the paving can be delayed until the construction phase begins.

The public meeting adjourned at 6:42 p.m.

yg

in a row and eighth of its last nine. The Bulldoggs are 9-3 since the Christmas holidays.

Jamias Davis led the Bulldoggs with 17 points against Cedar Shoals, nine of them in the fourth quarter as the 'Doggs were holding off the Jaguars, who scored 13 points in the final period after only scoring 14 in the first three.

Alonzo Nelson-Ododa and D.J. Butler scored 10 apiece for the Bulldoggs, who were outrebounded 27-18 in the contest.

Harrison Stephens led the Jaguars with nine points, while Dontai Robinson and C.D. Simmons managed five apiece.

Winder-Barrow's previous low defensive effort was 32 points against Habersham Central and Cedar Shoals on Jan. 19 and 22, respectively.

"I believe this is the first time we've held anyone in the 20s," Sokol said. "We free throws, with Davis making all five of his. Cedar Shoals was only awarded two free throws in the game.

W-B BOYS 43, CEDAR SHOALS 27

Winder-Barrow	12	6	9	14—43
Cedar Shoals	4	5	3	13—27

Winder-Barrow—Alonzo Nelson-Ododa 4 2-2 10, D.J. Butler 4 2-3 10, Trent Demorrito 1 2-4 4, Que Flanigan 1 0-0 2, Jamias Davis 6 5-5 17, Travis Demorrito 0 0-0 0, Uriney Bradley 0 0-0 0, D.J. Jackson 0 0-0 0, Jeremiah Sampson 0 0-0 0. Totals 16 33 13-16 43.

Cedar Shoals—Neal Harris 0 0-0 0, Troy Briscoe 1 0-0 2, Troy Andrews 2 0-0 4, Harrison Stephens 3 1-2 9, James Gordon 0 0-0 0, Chamarcus Peters 1 0-0 2, Carl Clemons 0 0-0 0, Dontai Robinson 2 0-0 5, Jeremiah Godard 0 0-0 0, Lorenzo Bush 0 0-0 0, C.D. Simmons 2 0-0 5. Totals 11 41 1-2 27.

3-pointers—Winder-Barrow 0, Cedar Shoals 4 (Stephens 2, Robinson, Simmons). Rebounds—Winder-Barrow 18 (Nelson-Ododa 3, Butler 3, Trent Demorrito 3, Davis 3, Travis Demorrito 3), Cedar Shoals 27 (Simmons 6). Turnovers—Winder-Barrow 16, Cedar Shoals 21. Personal fouls—Winder-Barrow 8, Cedar Shoals 21.

BOYS RIVALRY

Continued from Page 3B

Apalachee was very close to making this a game that the home team would have wanted to forget.

In the first six minutes the Wildcats built a 13-3 lead, frustrating the Bulldoggs.

Then Nelson-Ododa broke free. he nailed a jump shot with 1:30 in the first and sank a trey just before the end of the quarter, as Winder-Barrow settled for a 15-8 deficit at the first break.

The home team outscored the visitors 18-6 in the second quarter to pull ahead. Jamias Davis' freethrow in the second gave the Doggs a 19-18 lead they would never relinquish.

The Wildcats didn't go away; a free throw by Ansley early in the third brought Apalachee within three points at 39-36.

Nelson-Ododa converted a put-back on the next possession, starting a 17-7 run to finish the game.

WINDER-BARROW 56, APALACHEE 43

WBHS	9	15	13	17—56
APA	15	6	14	8—43

Winder-Barrow—Alonzo Nelson-Ododa 9 3-7 22, DJ Butler 4 2-2 12, Que Flanigan 3 0-0 9, Trent Demorrito 3 0-1 7, Jamias Davis 1 2-4 4, Uriney Bradley 1 0-0 2. Totals 21 7-14 56

Apalachee - Rabin Peters 3 2-3 8, John Ansley 3 0-1 7, Quincy Gibson 3 1-2 7, DeVaughn Kalgore 1 5-8 7, Chris Smith 3 1-2 7, Cameron Blakely 1 1-2 3, Nelton Gibson 0 2-2 2, Maurice Dixon 1 0-0 2. Totals 15 12 20-43.

Three-pointers—Winder-Barrow 7 (Flanigan 3, Butler 2, Demorrito, Nelson-Ododa); Apalachee 1 (Ansley). Rebounds—Winder-Barrow 25 (Nelson-Ododa 7); Apalachee 25 (Smith 7). Personal fouls—Winder-Barrow 18; Apalachee 16.

GIRLS RIVALRY

Continued from Page 3B

throws with 1:33 left.

Hill and Witt scored baskets 10 seconds apart to push Winder-Barrow's lead back to nine, 66-57, with 1:10 remaining.

Mayweather scored for the Lady 'Cats with 12.3 seconds remaining. Following timeouts by both teams with 10.4 seconds left, Hill scored a meaningless basket with 2.0 left to account for the final score.

Winder-Barrow improved to 12-11 overall and 5-4 in the subregion while Apalachee lost its fourth in a row, all of them last week, and fell to 10-13 and 2-7.

Unlike the first meeting between the two teams, when there were a whopping 17 lead changes and 11 ties, Saturday night's game was not quite as heart-pounding. There were four lead changes and three ties, but Winder-Barrow never trailed after Hill's 3-pointer with 3:57 left in the third quarter gave the Lady 'Doggs a 40-38 lead.

Things looked a bit bleak from the outset for Apalachee when Winder-Barrow, with Witt and Shant Finch sinking 3-pointers, jumped out to a 10-1 lead with 5:01 still to play in the opening period.

But these aren't your mother's Lady 'Cats, and Cleveland led a 12-5 Apalachee run with seven points and the Lady 'Cats got back within two, 15-13, with 1:38 left in the quarter.

Delorean Itabiyi's bucket with 1:17 left gave Winder-Barrow a 17-13 advantage which lasted until the end of the quarter.

Baskets by Witt and Hill sandwiched around a hoop by Aliya Ballard gave the Lady 'Doggs a pair of six-point leads early in the second period, but a 12-6 run by the Lady Wildcats had them in the lead late in the quarter. Mayweather's hoop with 2:21 left put Apalachee ahead 27-26 and Shelton made one of two free throws moments later to increase the edge to 28-26.

Hamel tied the score with a basket at 1:35 before Cleveland's foul shot put Apalachee back in front 29-28.

Rebekah Autry scored with 33.3 seconds left to put Winder-Barrow back on top, then Hamel nailed a 3-pointer with 1.4 seconds left to give the Lady Bulldoggs a 33-29 halftime lead.

Cleveland scored a pair of baskets in the first 53 seconds of the second half to tie the score at 33, then Mayweather sank a 3-pointer with 5:46 left to put Apalachee back on top, 36-33, the Lady 'Cats biggest lead of the game.

Hamel scored for the Lady 'Doggs on their next trip down the floor, but Ballard sank a free throw to keep Apalachee ahead 37-35.

Hill's bucket at 4:59 tied the game at 37 before Sanford made a free throw to give Apalachee its last lead at 38-37 with 4:30 remaining in the period.

Hill, who scored 12 points in the quarter, sank a three at 3:57 to ignite a 14-2 binge which pushed Winder-Barrow out to a 51-40 lead by the end of the period.

Ballard's hoop early in the final period broke the drought for the Lady Wildcats before baskets by Hamel and Witt gave the Lady 'Doggs their 13-point lead.

Cleveland scored nine points in the Lady 'Cats' 15-7 surge which got them back within striking distance, but Winder-Barrow's game-ending 6-2 spurt assured its victory.

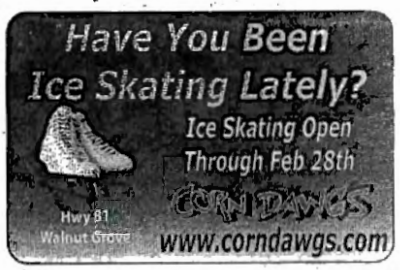
W-B GIRLS 68, APS GIRLS 59

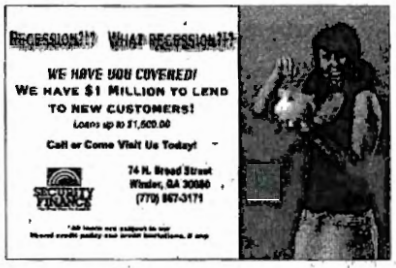
Apalachee	13	16	11	19—59
Winder-Barrow	17	16	18	17—68

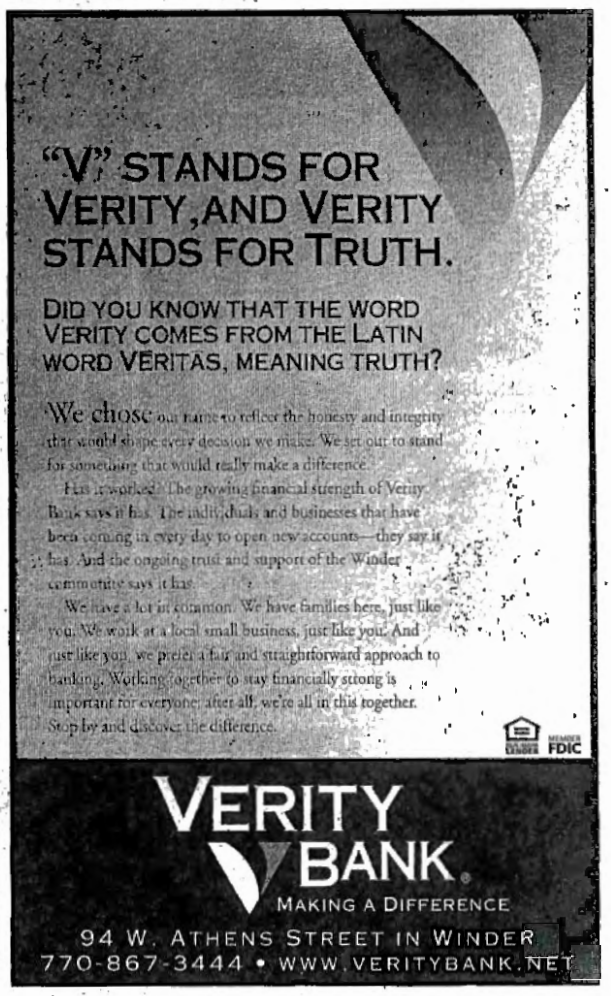
Apalachee—Kiara Sanford 1 1-2 3, Porshia Cleveland 7 8-12 22, Saloyce Shelton 4 1-2 10, Leonisha Mayweather 7 0-0 17, Aliya Ballard 2 1-2 5, Ryan Burke 1 0-0 2, Amy Kelley 0 0-0 0, Amanda Hopkins 0 0-0 0. Totals 23-55 11-18 59.

Winder-Barrow—Mimi Hill 10 0-0 23, Brittany Witt 9 0-0 19, Lauren Hamel 5 0-0 11, Rebekah Autry 2 1-2 5, Delorean Itabiyi 2 0-0 4, Shant Finch 2 0-0 4, MacKenzie Palette 0 0-0 0, Emily Meyers 0 0-0 0, Ashley Watts 0 0-0 0. Totals 30-62 2-6 68.

3-pointers—Apalachee 4 (Mayweather 2, Shelton), Winder-Barrow 6 (Hill 3, Witt, Hamel, Finch). Rebounds—Apalachee 31 (Shelton 6, Mayweather 6), Winder-Barrow 40 (Hill 8, Witt 7, Itabiyi 7). Turnovers—Apalachee 16, Winder-Barrow 19. Personal fouls—Apalachee 19, Winder-Barrow 16.







The City of Winder Mayor, Council, and DDA invites you to join us for a second

Streetscape Plan Public Meeting

North Broad Street parking, landscaping, turn lanes, sidewalks, and much more will be discussed.

February 25, 2010 at 6:00 p.m.

All Downtown Winder Merchants and Property Owners are encouraged to attend.

Meeting is to be held at the

Winder Community Center

113 East Athens Street

Winder, GA 30680

For More Information Call

770-867-3510

CITY OF WINDER

Broad Street Streetscape Project Impact Assessment

Prepared By:
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678-417-4008

November 2009

HIGHWAY CAPACITY ANALYSIS
WINDER STREETSCAPE PROJECT

Background

The City of Winder has proposed a streetscape project for Broad Street in the central business district. The project would include the following changes to street configurations:

- Broad Street & Athens Street – the southbound left turn lane on Broad Street would be eliminated and left turns would be prohibited for southbound traffic.
- Broad Street & Candler Street – the left turn lanes for northbound and southbound traffic on Broad Street would be eliminated and left turns would be prohibited for northbound and southbound traffic.
- Broad Street and Midland Avenue - the northbound left turn lane on Broad Street would be eliminated and left turns would be prohibited for northbound traffic.

The firm of Keck & Wood, Inc. was contracted to design the streetscape and the firm of GCA, Inc. was retained as a subconsultant to conduct a capacity analysis to determine the effects of the roadway changes that would be part of the streetscape project.

Level of Service Standards

Two modeling and simulation programs were used in the analysis process: Synchro and Sim Traffic. Synchro was used to calculate levels of service and Sim Traffic was used to observe traffic flow and backups.

Synchro uses the methodology set forth in the Highway Capacity Manual to calculate levels of service. The Highway Capacity Manual, published by the Federal Highway Administration, defines level of service in terms of the amount of control delay experienced by road users. The level of service definitions for signalized intersections are provided in the following table.

Level of Service Criteria for Signalized Intersections

LEVEL OF SERVICE	CONTROL DELAY PER VEHICLE (SEC)
A	≤ 10
B	> 10 and ≤ 20
C	> 20 and ≤ 35
D	> 35 and ≤ 55
E	> 55 and ≤ 80
F	> 80

The HCM indicates that levels of service "A" through "D" are considered to be acceptable to most drivers. Levels of service "E" and "F" indicate long delays that most drivers generally consider to be unacceptable. LOS "D" will be the desired goal for this study.

Capacity Analysis

It was determined that the capacity analysis would include the intersections of Broad Street with Athens Street, Candler Street, Midland Avenue and Stephens Street. (Even

though no revisions are planned for the Stephens Street intersection, it was included to determine if it would be affected by the changes at the other intersections.) GCA visited the site of the proposed streetscape project in Winder to determine signal configuration and phasing. The signals at Athens Street, Candler Street and Stephens Street currently operate as 2-phase signals, without left turn phases. The signal at Midland Avenue has left turn phases for northbound and southbound traffic on Broad Street (the northbound left turn phase will be eliminated and northbound left turns prohibited as part of the streetscape project).

Turning movement traffic volume counts were conducted on Thursday, July 9, 2009. Trucks made up 2% or less of the volumes at the study intersections. Traffic volumes were projected to 2019 to determine future operating conditions. Based upon growth rates for similar cities, GCA feels that an annual growth rate of 1% is appropriate. However, to project a worst-case scenario, projections were generated with a 2% annual growth rate as well.

The following table shows the existing levels of service (LOS), the LOS in 2009 with the streetscape, the LOS in 2019 with the streetscape and a 1% annual growth rate, and the LOS in 2019 with the streetscape and a 2% annual growth rate.

2009 & 2019 Levels of Service & Delay in Seconds

Broad Street & Athens Street					
AM Peak	Int.	EB	WB	NB	SB
2009	B	C	C	A	A
Existing	10.2	22.8	24.5	9.3	2.5
2009	B	C	C	A	A
Streetscape	10.3	22.8	24.5	9.3	2.6
2019 Growth 1%	B	C	C	A	A
Streetscape	11.2	24.8	26.8	8.5	3.4
2019 Growth 2%	B	C	C	A	A
Streetscape	11.7	25.3	27.6	8.8	4.0
PM Peak	Int.	EB	WB	NB	SB
2009	B	C	C	B	A
Existing	13.4	24.2	23.6	13.2	3.9
2009	B	C	C	B	A
Streetscape	13.5	24.2	23.6	13.2	3.9
2019 Growth 1%	B	C	C	B	A
Streetscape	14.2	25.6	24.9	13.1	4.5
2019 Growth 2%	B	C	C	B	A
Streetscape	14.6	25.5	24.6	14.4	5.0

Broad Street & Candler Street					
AM Peak	Int.	EB	WB	NB	SB
2009	A	C	C	A	A
Existing	7.1	21.9	21.8	7.2	5.6
2009	A	C	C	A	A
Streetscape	7.1	21.9	21.8	7.2	5.5
2019 Growth 1%	A	C	C	A	A
Streetscape	6.1	25.0	24.8	6.0	4.2
2019 Growth 2%	A	C	C	A	A
Streetscape	6.4	25.1	24.9	6.1	4.7
PM Peak	Int.	EB	WB	NB	SB
2009	B	C	C	B	A
Existing	11.0	24.1	23.4	10.4	7.0
2009	B	C	C	B	A
Streetscape	10.9	24.1	23.4	10.4	6.8
2019 Growth 1%	B	C	C	A	A
Streetscape	11.0	26.0	25.1	9.9	6.7
2019 Growth 2%	B	C	C	B	A
Streetscape	12.0	24.8	23.8	11.2	8.4

Broad Street & Midland Avenue					
AM Peak	Int.	EB	WB	NB	SB
2009	A	D	D	A	A
Existing	9.0	38.2	39.4	3.1	1.0
2009	A	D	D	A	A
Streetscape	9.0	38.2	39.4	3.0	1.1
2019 Growth 1%	A	D	D	A	A
Streetscape	9.0	38.0	39.8	3.6	0.9
2019 Growth 2%	A	D	D	A	A
Streetscape	9.2	37.4	40.3	4.0	1.0

Broad Street & Stephens Street					
AM Peak	Int.	EB	WB	NB	SB
2009	B	C	C	A	B
Existing	11.1	24.3	23.2	6.0	12.5
2009	B	C	C	A	B
Streetscape	11.1	24.3	23.2	6.1	12.5
2019 Growth 1%	B	C	C	A	B
Streetscape	12.4	24.5	23.3	7.4	13.9
2019 Growth 2%	B	C	C	A	B
Streetscape	13.8	24.8	23.4	8.0	16.0

PM Peak	Int.	EB	WB	NB	SB
2009	B	D	D	A	A
Existing	14.7	50.7	46.2	3.4	1.6
2009	B	D	D	A	A
Streetscape	15.6	50.7	46.2	5.1	2.3
2019 Growth 1%	B	D	D	A	A
Streetscape	15.3	52.3	46.5	4.8	1.2
2019 Growth 2%	B	D	D	A	A
Streetscape	16.2	52.1	46.2	5.9	2.9

PM Peak	Int.	EB	WB	NB	SB
2009	B	C	C	A	B
Existing	14.5	28.0	22.8	8.1	15.7
2009	B	C	C	A	B
Streetscape	14.7	28.0	22.8	8.5	15.7
2019 Growth 1%	B	C	C	B	B
Streetscape	17.1	29.1	22.9	12.5	17.2
2019 Growth 2%	B	C	C	B	B
Streetscape	18.1	31.2	23.0	12.0	19.5

Conclusions

Based upon the results of the capacity analysis shown in the previous table, the proposed streetscape will have negligible effect upon traffic operations on Broad Street in Winder.

Additional Observations

During GCA's field visit to the site, it appeared that the intersections of Broad Street & Candler Street, Midland Avenue and Stephens Street are operating as a coordinated system, but Athens Street was uncoordinated. GCA did not open the cabinet, so we do not know the reason. Overall operation of the system could be expected to improve if the signal at of Broad Street & Athens Street were coordinated.

APPENDIX

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	51	87	28	10	152	12	18	233	9	12	418	137
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	0.96			0.99		1.00	0.99		1.00	0.96	
Flt Protected	0.95	1.00			1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1796			1840		1770	1852		1770	1794	
Flt Permitted	0.57	1.00			0.99		0.32	1.00		0.57	1.00	
Satd. Flow (perm)	1053	1796			1818		589	1852		1063	1794	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	55	95	30	11	165	13	20	253	10	13	454	149
RTOR Reduction (vph)	0	13	0	0	3	0	0	2	0	0	13	0
Lane Group Flow (vph)	55	112	0	0	186	0	20	261	0	13	590	0
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	29.0	29.0			29.0		53.0	53.0		53.0	53.0	
Effective Green, g (s)	29.0	29.0			29.0		53.0	53.0		53.0	53.0	
Actuated g/C Ratio	0.32	0.32			0.32		0.59	0.59		0.59	0.59	
Clearance Time (s)	4.0	4.0			4.0		4.0	4.0		4.0	4.0	
Lane Grp Cap (vph)	339	579			586		347	1091		626	1056	
v/s Ratio Prot		0.06						0.14			c0.33	
v/s Ratio Perm	0.05				c0.10		0.03			0.01		
v/c Ratio	0.16	0.19			0.32		0.06	0.24		0.02	0.56	
Uniform Delay, d1	21.8	22.0			23.0		7.9	8.9		7.7	11.3	
Progression Factor	1.00	1.00			1.00		1.00	1.00		0.14	0.07	
Incremental Delay, d2	1.0	0.7			1.4		0.3	0.5		0.1	1.8	
Delay (s)	22.8	22.8			24.5		8.2	9.4		1.1	2.6	
Level of Service	C	C			C		A	A		A	A	
Approach Delay (s)		22.8			24.5			9.3			2.5	
Approach LOS		C			C			A			A	

Intersection Summary			
HCM Average Control Delay	10.2	HCM Level of Service	B
HCM Volume to Capacity ratio	0.47		
Actuated Cycle Length (s)	90.0	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)	10	15	8	6	15	5	0	287	4	7	554	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	
Lane Util. Factor		1.00			1.00			1.00		1.00	1.00	
Frt		0.97			0.98			1.00		1.00	0.99	
Flt Protected		0.98			0.99			1.00		0.95	1.00	
Satd. Flow (prot)		1773			1795			1859		1770	1846	
Flt Permitted		0.95			0.96			1.00		0.53	1.00	
Satd. Flow (perm)		1706			1749			1859		987	1846	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	11	16	9	7	16	5	0	312	4	8	602	38
RTOR Reduction (vph)	0	6	0	0	3	0	0	0	0	0	2	0
Lane Group Flow (vph)	0	30	0	0	25	0	0	316	0	8	638	0
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		28.0			28.0			54.0		54.0	54.0	
Effective Green, g (s)		28.0			28.0			54.0		54.0	54.0	
Actuated g/C Ratio		0.31			0.31			0.60		0.60	0.60	
Clearance Time (s)		4.0			4.0			4.0		4.0	4.0	
Lane Grp Cap (vph)		531			544			1115		592	1108	
v/s Ratio Prot								0.17			c0.35	
v/s Ratio Perm		c0.02			0.01					0.01		
v/c Ratio		0.06			0.05			0.28		0.01	0.58	
Uniform Delay, d1		21.7			21.7			8.7		7.3	11.0	
Progression Factor		1.00			1.00			0.76		0.45	0.33	
Incremental Delay, d2		0.2			0.2			0.6		0.0	2.0	
Delay (s)		21.9			21.8			7.2		3.3	5.6	
Level of Service		C			C			A		A	A	
Approach Delay (s)		21.9			21.8			7.2			5.6	
Approach LOS		C			C			A			A	

Intersection Summary

HCM Average Control Delay	7.1	HCM Level of Service	A
HCM Volume to Capacity ratio	0.40		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	41.3%	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)	25	67	15	12	52	68	4	364	5	51	537	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	
Lane Util. Factor	1.00	1.00			1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.97			0.93		1.00	1.00		1.00	0.99	
Flt Protected	0.95	1.00			1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1813			1726		1770	1859		1770	1844	
Flt Permitted	0.40	1.00			0.97		0.37	1.00		0.49	1.00	
Satd. Flow (perm)	743	1813			1677		686	1859		914	1844	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	27	73	16	13	57	74	4	396	5	55	584	41
RTOR Reduction (vph)	0	10	0	0	49	0	0	0	0	0	2	0
Lane Group Flow (vph)	27	79	0	0	95	0	4	401	0	55	623	0
Turn Type	Perm			Perm			pm+pt			pm+pt		
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	10.3	10.3			10.3		62.0	60.9		71.7	66.6	
Effective Green, g (s)	10.3	10.3			10.3		62.0	60.9		71.7	66.6	
Actuated g/C Ratio	0.11	0.11			0.11		0.69	0.68		0.80	0.74	
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)	85	207			192		486	1258		793	1365	
v/s Ratio Prot		0.04					0.00	0.22		c0.01	c0.34	
v/s Ratio Perm	0.04				c0.06		0.01			0.05		
v/c Ratio	0.32	0.38			0.50		0.01	0.32		0.07	0.46	
Uniform Delay, d1	36.6	36.9			37.4		7.4	6.0		3.0	4.6	
Progression Factor	1.00	1.00			1.00		0.41	0.41		0.03	0.04	
Incremental Delay, d2	2.2	1.2			2.0		0.0	0.7		0.0	0.9	
Delay (s)	38.8	38.1			39.4		3.1	3.1		0.1	1.1	
Level of Service	D	D			D		A	A		A	A	
Approach Delay (s)		38.2			39.4			3.1			1.0	
Approach LOS		D			D			A			A	

Intersection Summary

HCM Average Control Delay	9.0	HCM Level of Service	A
HCM Volume to Capacity ratio	0.44		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	58.1%	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)	42	9	8	3	10	27	4	433	11	42	613	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	4.0		4.0	4.0	
Lane Util. Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Frt		0.98			0.91		1.00	1.00		1.00	0.99	
Flt Protected		0.97			1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1765			1687		1770	1856		1770	1846	
Flt Permitted		0.82			0.99		0.27	1.00		0.41	1.00	
Satd. Flow (perm)		**1497**			**1676**		**500**	**1856**		**771**	**1846**	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	46	10	9	3	11	29	4	471	12	46	666	42
RTOR Reduction (vph)	0	6	0	0	21	0	0	1	0	0	3	0
Lane Group Flow (vph)	0	59	0	0	22	0	4	482	0	46	705	0
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		26.0			26.0		56.0	56.0		56.0	56.0	
Effective Green, g (s)		26.0			26.0		56.0	56.0		56.0	56.0	
Actuated g/C Ratio		0.29			0.29		0.62	0.62		0.62	0.62	
Clearance Time (s)		4.0			4.0		4.0	4.0		4.0	4.0	
Lane Grp Cap (vph)		432			484		311	1155		480	1149	
v/s Ratio Prot								0.26			c0.38	
v/s Ratio Perm		c0.04			0.01		0.01			0.06		
v/c Ratio		0.14			0.05		0.01	0.42		0.10	0.61	
Uniform Delay, d1		23.7			23.1		6.5	8.7		6.8	10.4	
Progression Factor		1.00			1.00		0.64	0.57		1.00	1.00	
Incremental Delay, d2		0.7			0.2		0.1	1.1		0.4	2.5	
Delay (s)		24.3			23.2		4.2	6.0		7.2	12.8	
Level of Service		C			C		A	A		A	B	
Approach Delay (s)		24.3			23.2			6.0			12.5	
Approach LOS		C			C			A			B	

Intersection Summary

HCM Average Control Delay	11.1	HCM Level of Service	B
HCM Volume to Capacity ratio	0.46		
Actuated Cycle Length (s)	90.0	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)	102	151	32	15	127	18	23	352	14	14	403	68
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	0.97			0.98		1.00	0.99		1.00	0.98	
Flt Protected	0.95	1.00			1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1814			1825		1770	1852		1770	1822	
Flt Permitted	0.60	1.00			0.97		0.36	1.00		0.45	1.00	
Satd. Flow (perm)	1111	1814			1777		671	1852		834	1822	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	111	164	35	16	138	20	25	383	15	15	438	74
RTOR Reduction (vph)	0	8	0	0	4	0	0	1	0	0	6	0
Lane Group Flow (vph)	111	191	0	0	170	0	25	397	0	15	506	0
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	36.0	36.0			36.0		56.0	56.0		56.0	56.0	
Effective Green, g (s)	36.0	36.0			36.0		56.0	56.0		56.0	56.0	
Actuated g/C Ratio	0.36	0.36			0.36		0.56	0.56		0.56	0.56	
Clearance Time (s)	4.0	4.0			4.0		4.0	4.0		4.0	4.0	
Lane Grp Cap (vph)	400	653			640		376	1037		467	1020	
v/s Ratio Prot		c0.11						0.21			c0.28	
v/s Ratio Perm	0.10				0.10		0.04			0.02		
v/c Ratio	0.28	0.29			0.26		0.07	0.38		0.03	0.50	
Uniform Delay, d1	22.8	22.9			22.6		10.1	12.3		9.9	13.4	
Progression Factor	1.00	1.00			1.00		1.00	1.00		0.23	0.18	
Incremental Delay, d2	1.7	1.1			1.0		0.3	1.1		0.1	1.5	
Delay (s)	24.5	24.0			23.6		10.4	13.4		2.4	3.9	
Level of Service	C	C			C		B	B		A	A	
Approach Delay (s)		24.2			23.6			13.2			3.9	
Approach LOS		C			C			B			A	

Intersection Summary			
HCM Average Control Delay	13.4	HCM Level of Service	B
HCM Volume to Capacity ratio	0.42		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	53.8%	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)	37	52	14	11	62	10	11	466	4	9	471	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		0.98			0.98		1.00	1.00		1.00	0.99	
Flt Protected		0.98			0.99		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1797			1820		1770	1861		1770	1844	
Flt Permitted		0.89			0.97		0.35	1.00		0.37	1.00	
Satd. Flow (perm)		1625			1774		643	1861		692	1844	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	40	57	15	12	67	11	12	507	4	10	512	36
RTOR Reduction (vph)	0	5	0	0	5	0	0	0	0	0	3	0
Lane Group Flow (vph)	0	107	0	0	85	0	12	511	0	10	545	0
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		34.0			34.0		58.0	58.0		58.0	58.0	
Effective Green, g (s)		34.0			34.0		58.0	58.0		58.0	58.0	
Actuated g/C Ratio		0.34			0.34		0.58	0.58		0.58	0.58	
Clearance Time (s)		4.0			4.0		4.0	4.0		4.0	4.0	
Lane Grp Cap (vph)		553			603		373	1079		401	1070	
v/s Ratio Prot								0.27			c0.30	
v/s Ratio Perm		c0.07			0.05		0.02			0.01		
v/c Ratio		0.19			0.14		0.03	0.47		0.02	0.51	
Uniform Delay, d1		23.3			22.9		9.0	12.2		8.9	12.5	
Progression Factor		1.00			1.00		0.83	0.74		0.50	0.43	
Incremental Delay, d2		0.8			0.5		0.2	1.4		0.1	1.6	
Delay (s)		24.1			23.4		7.6	10.4		4.6	7.0	
Level of Service		C			C		A	B		A	A	
Approach Delay (s)		24.1			23.4			10.4			7.0	
Approach LOS		C			C			B			A	

Intersection Summary			
HCM Average Control Delay	11.0	HCM Level of Service	B
HCM Volume to Capacity ratio	0.39		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	45.6%	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)	65	98	28	15	105	86	14	472	11	82	452	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	4.0	
Lane Util. Factor	1.00	1.00			1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.97			0.94		1.00	1.00		1.00	0.98	
Flt Protected	0.95	1.00			1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1802			1752		1770	1856		1770	1831	
Flt Permitted	0.30	1.00			0.97		0.39	1.00		0.40	1.00	
Satd. Flow (perm)	554	1802			1712		724	1856		741	1831	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	71	107	30	16	114	93	15	513	12	89	491	64
RTOR Reduction (vph)	0	12	0	0	30	0	0	1	0	0	3	0
Lane Group Flow (vph)	71	125	0	0	193	0	15	524	0	89	552	0
Turn Type	Perm			Perm			pm+pt			pm+pt		
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	16.4	16.4			16.4		67.0	64.8		75.6	69.4	
Effective Green, g (s)	16.4	16.4			16.4		67.0	64.8		75.6	69.4	
Actuated g/C Ratio	0.16	0.16			0.16		0.67	0.65		0.76	0.69	
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)	91	296			281		508	1203		630	1271	
v/s Ratio Prot		0.07					0.00	0.28		c0.01	c0.30	
v/s Ratio Perm	c0.13				0.11		0.02			0.10		
v/c Ratio	0.78	0.42			0.69		0.03	0.44		0.14	0.43	
Uniform Delay, d1	40.1	37.6			39.4		9.3	8.6		6.8	6.7	
Progression Factor	1.00	1.00			1.00		0.12	0.28		0.11	0.13	
Incremental Delay, d2	34.1	1.0			6.8		0.0	1.0		0.1	0.9	
Delay (s)	74.1	38.5			46.2		1.1	3.5		0.8	1.8	
Level of Service	E	D			D		A	A		A	A	
Approach Delay (s)		50.7			46.2			3.4			1.6	
Approach LOS		D			D			A			A	

Intersection Summary

HCM Average Control Delay	14.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.47		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	62.5%	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)	116	52	15	0	24	70	8	601	8	40	557	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	
Lane Util. Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Frt		0.99			0.90		1.00	1.00		1.00	0.99	
Flt Protected		0.97			1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1786			1675		1770	1859		1770	1845	
Flt Permitted		0.76			1.00		0.28	1.00		0.27	1.00	
Satd. Flow (perm)		1393			1675		519	1859		499	1845	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	126	57	16	0	26	76	9	653	9	43	605	41
RTOR Reduction (vph)	0	3	0	0	50	0	0	0	0	0	3	0
Lane Group Flow (vph)	0	196	0	0	52	0	9	662	0	43	643	0
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		34.0			34.0		58.0	58.0		58.0	58.0	
Effective Green, g (s)		34.0			34.0		58.0	58.0		58.0	58.0	
Actuated g/C Ratio		0.34			0.34		0.58	0.58		0.58	0.58	
Clearance Time (s)		4.0			4.0		4.0	4.0		4.0	4.0	
Lane Grp Cap (vph)		474			570		301	1078		289	1070	
v/s Ratio Prot					0.03			c0.36			0.35	
v/s Ratio Perm		c0.14					0.02			0.09		
v/c Ratio		0.41			0.09		0.03	0.61		0.15	0.60	
Uniform Delay, d1		25.3			22.5		9.0	13.7		9.7	13.5	
Progression Factor		1.00			1.00		0.47	0.42		1.00	1.00	
Incremental Delay, d2		2.6			0.3		0.2	2.4		1.1	2.5	
Delay (s)		28.0			22.8		4.4	8.1		10.7	16.0	
Level of Service		C			C		A	A		B	B	
Approach Delay (s)		28.0			22.8			8.1			15.7	
Approach LOS		C			C			A			B	

Intersection Summary

HCM Average Control Delay	14.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	56.6%	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)	51	87	28	10	152	12	18	233	9	0	418	137
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	1.00	0.96			0.99		1.00	0.99			0.97	
Flt Protected	0.95	1.00			1.00		0.95	1.00			1.00	
Satd. Flow (prot)	1770	1796			1840		1770	1852			1801	
Flt Permitted	0.57	1.00			0.99		0.32	1.00			1.00	
Satd. Flow (perm)	1053	1796			1818		589	1852			1801	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	55	95	30	11	165	13	20	253	10	0	454	149
RTOR Reduction (vph)	0	13	0	0	3	0	0	2	0	0	13	0
Lane Group Flow (vph)	55	112	0	0	186	0	20	261	0	0	590	0
Turn Type	Perm			Perm			Perm					
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2					
Actuated Green, G (s)	29.0	29.0			29.0		53.0	53.0			53.0	
Effective Green, g (s)	29.0	29.0			29.0		53.0	53.0			53.0	
Actuated g/C Ratio	0.32	0.32			0.32		0.59	0.59			0.59	
Clearance Time (s)	4.0	4.0			4.0		4.0	4.0			4.0	
Lane Grp Cap (vph)	339	579			586		347	1091			1061	
v/s Ratio Prot		0.06						0.14			c0.33	
v/s Ratio Perm	0.05				c0.10		0.03					
v/c Ratio	0.16	0.19			0.32		0.06	0.24			0.56	
Uniform Delay, d1	21.8	22.0			23.0		7.9	8.9			11.3	
Progression Factor	1.00	1.00			1.00		1.00	1.00			0.07	
Incremental Delay, d2	1.0	0.7			1.4		0.3	0.5			1.8	
Delay (s)	22.8	22.8			24.5		8.2	9.4			2.6	
Level of Service	C	C			C		A	A			A	
Approach Delay (s)		22.8			24.5			9.3			2.6	
Approach LOS		C			C			A			A	

Intersection Summary

HCM Average Control Delay	10.3	HCM Level of Service	B
HCM Volume to Capacity ratio	0.47		
Actuated Cycle Length (s)	90.0	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)	10	15	8	6	15	5	0	287	4	0	554	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	
Lane Util. Factor		1.00			1.00			1.00			1.00	
Frt		0.97			0.98			1.00			0.99	
Flt Protected		0.98			0.99			1.00			1.00	
Satd. Flow (prot)		1773			1795			1860			1848	
Flt Permitted		0.95			0.96			1.00			1.00	
Satd. Flow (perm)		1706			1749			1860			1848	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	11	16	9	7	16	5	0	312	4	0	602	38
RTOR Reduction (vph)	0	6	0	0	3	0	0	0	0	0	2	0
Lane Group Flow (vph)	0	30	0	0	25	0	0	316	0	0	638	0
Turn Type	Perm			Perm								
Protected Phases		4			8			2			6	
Permitted Phases	4			8								
Actuated Green, G (s)		28.0			28.0			54.0			54.0	
Effective Green, g (s)		28.0			28.0			54.0			54.0	
Actuated g/C Ratio		0.31			0.31			0.60			0.60	
Clearance Time (s)		4.0			4.0			4.0			4.0	
Lane Grp Cap (vph)		531			544			1116			1109	
v/s Ratio Prot								0.17			c0.35	
v/s Ratio Perm		c0.02			0.01							
v/c Ratio		0.06			0.05			0.28			0.57	
Uniform Delay, d1		21.7			21.7			8.7			11.0	
Progression Factor		1.00			1.00			0.76			0.32	
Incremental Delay, d2		0.2			0.2			0.6			2.0	
Delay (s)		21.9			21.8			7.2			5.5	
Level of Service		C			C			A			A	
Approach Delay (s)		21.9			21.8			7.2			5.5	
Approach LOS		C			C			A			A	

Intersection Summary			
HCM Average Control Delay	7.1	HCM Level of Service	A
HCM Volume to Capacity ratio	0.40		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	41.3%	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)	25	67	15	12	52	68	0	364	5	51	537	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	
Lane Util. Factor	1.00	1.00			1.00			1.00		1.00	1.00	
Frt	1.00	0.97			0.93			1.00		1.00	0.99	
Flt Protected	0.95	1.00			1.00			1.00		0.95	1.00	
Satd. Flow (prot)	1770	1813			1726			1860		1770	1844	
Flt Permitted	0.40	1.00			0.97			1.00		0.49	1.00	
Satd. Flow (perm)	743	1813			1677			1860		912	1844	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	27	73	16	13	57	74	0	396	5	55	584	41
RTOR Reduction (vph)	0	10	0	0	49	0	0	0	0	0	2	0
Lane Group Flow (vph)	27	79	0	0	95	0	0	401	0	55	623	0
Turn Type	Perm			Perm						pm+pt		
Protected Phases		4			8			2		1	6	
Permitted Phases	4			8						6		
Actuated Green, G (s)	10.3	10.3			10.3			60.5		71.7	71.7	
Effective Green, g (s)	10.3	10.3			10.3			60.5		71.7	71.7	
Actuated g/C Ratio	0.11	0.11			0.11			0.67		0.80	0.80	
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)	85	207			192			1250		795	1469	
v/s Ratio Prot		0.04						0.22		0.01	c0.34	
v/s Ratio Perm	0.04				c0.06					0.05		
v/c Ratio	0.32	0.38			0.50			0.32		0.07	0.42	
Uniform Delay, d1	36.6	36.9			37.4			6.2		3.0	2.8	
Progression Factor	1.00	1.00			1.00			0.38		0.07	0.16	
Incremental Delay, d2	2.2	1.2			2.0			0.7		0.0	0.7	
Delay (s)	38.8	38.1			39.4			3.0		0.2	1.2	
Level of Service	D	D			D			A		A	A	
Approach Delay (s)		38.2			39.4			3.0			1.1	
Approach LOS		D			D			A			A	

Intersection Summary

HCM Average Control Delay	9.0	HCM Level of Service	A
HCM Volume to Capacity ratio	0.43		
Actuated Cycle Length (s)	90.0	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)	42	9	8	3	10	27	4	433	11	42	613	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	4.0		4.0	4.0	
Lane Util. Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Frt		0.98			0.91		1.00	1.00		1.00	0.99	
Flt Protected		0.97			1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1765			1687		1770	1856		1770	1846	
Flt Permitted		0.82			0.99		0.27	1.00		0.41	1.00	
Satd. Flow (perm)		1497			1676		500	1856		771	1846	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	46	10	9	3	11	29	4	471	12	46	666	42
RTOR Reduction (vph)	0	6	0	0	21	0	0	1	0	0	3	0
Lane Group Flow (vph)	0	59	0	0	22	0	4	482	0	46	705	0
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		26.0			26.0		56.0	56.0		56.0	56.0	
Effective Green, g (s)		26.0			26.0		56.0	56.0		56.0	56.0	
Actuated g/C Ratio		0.29			0.29		0.62	0.62		0.62	0.62	
Clearance Time (s)		4.0			4.0		4.0	4.0		4.0	4.0	
Lane Grp Cap (vph)		432			484		311	1155		480	1149	
v/s Ratio Prot								0.26			c0.38	
v/s Ratio Perm		c0.04			0.01		0.01			0.06		
v/c Ratio		0.14			0.05		0.01	0.42		0.10	0.61	
Uniform Delay, d1		23.7			23.1		6.5	8.7		6.8	10.4	
Progression Factor		1.00			1.00		0.64	0.58		1.00	1.00	
Incremental Delay, d2		0.7			0.2		0.1	1.1		0.4	2.5	
Delay (s)		24.3			23.2		4.2	6.1		7.2	12.8	
Level of Service		C			C		A	A		A	B	
Approach Delay (s)		24.3			23.2			6.1			12.5	
Approach LOS		C			C			A			B	

Intersection Summary			
HCM Average Control Delay	11.1	HCM Level of Service	B
HCM Volume to Capacity ratio	0.46		
Actuated Cycle Length (s)	90.0	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)	102	151	32	15	127	18	23	352	14	0	403	68
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	1.00	0.97			0.98		1.00	0.99			0.98	
Flt Protected	0.95	1.00			1.00		0.95	1.00			1.00	
Satd. Flow (prot)	1770	1814			1825		1770	1852			1826	
Flt Permitted	0.60	1.00			0.97		0.36	1.00			1.00	
Satd. Flow (perm)	1111	1814			1777		671	1852			1826	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	111	164	35	16	138	20	25	383	15	0	438	74
RTOR Reduction (vph)	0	8	0	0	4	0	0	1	0	0	6	0
Lane Group Flow (vph)	111	191	0	0	170	0	25	397	0	0	506	0
Turn Type	Perm			Perm			Perm					
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2					
Actuated Green, G (s)	36.0	36.0			36.0		56.0	56.0			56.0	
Effective Green, g (s)	36.0	36.0			36.0		56.0	56.0			56.0	
Actuated g/C Ratio	0.36	0.36			0.36		0.56	0.56			0.56	
Clearance Time (s)	4.0	4.0			4.0		4.0	4.0			4.0	
Lane Grp Cap (vph)	400	653			640		376	1037			1023	
v/s Ratio Prot		c0.11						0.21			c0.28	
v/s Ratio Perm	0.10				0.10		0.04					
v/c Ratio	0.28	0.29			0.26		0.07	0.38			0.49	
Uniform Delay, d1	22.8	22.9			22.6		10.1	12.3			13.4	
Progression Factor	1.00	1.00			1.00		1.00	1.00			0.18	
Incremental Delay, d2	1.7	1.1			1.0		0.3	1.1			1.5	
Delay (s)	24.5	24.0			23.6		10.4	13.4			3.9	
Level of Service	C	C			C		B	B			A	
Approach Delay (s)		24.2			23.6			13.2			3.9	
Approach LOS		C			C			B			A	

Intersection Summary			
HCM Average Control Delay	13.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.42		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	53.8%	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)	37	52	14	11	62	10	0	466	4	0	471	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			1.00			1.00	
Frt		0.98			0.98			1.00			0.99	
Flt Protected		0.98			0.99			1.00			1.00	
Satd. Flow (prot)		1797			1820			1861			1846	
Flt Permitted		0.89			0.97			1.00			1.00	
Satd. Flow (perm)		**1625**			**1774**			**1861**			**1846**	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	40	57	15	12	67	11	0	507	4	0	512	36
RTOR Reduction (vph)	0	5	0	0	5	0	0	0	0	0	3	0
Lane Group Flow (vph)	0	107	0	0	85	0	0	511	0	0	545	0
Turn Type	Perm			Perm								
Protected Phases		4			8			2			6	
Permitted Phases	4			8								
Actuated Green, G (s)		34.0			34.0			58.0			58.0	
Effective Green, g (s)		34.0			34.0			58.0			58.0	
Actuated g/C Ratio		0.34			0.34			0.58			0.58	
Clearance Time (s)		4.0			4.0			4.0			4.0	
Lane Grp Cap (vph)		553			603			1079			1071	
v/s Ratio Prot								0.27			c0.30	
v/s Ratio Perm		c0.07			0.05							
v/c Ratio		0.19			0.14			0.47			0.51	
Uniform Delay, d1		23.3			22.9			12.2			12.5	
Progression Factor		1.00			1.00			0.74			0.41	
Incremental Delay, d2		0.8			0.5			1.4			1.6	
Delay (s)		24.1			23.4			10.4			6.8	
Level of Service		C			C			B			A	
Approach Delay (s)		24.1			23.4			10.4			6.8	
Approach LOS		C			C			B			A	

Intersection Summary			
HCM Average Control Delay	10.9	HCM Level of Service	B
HCM Volume to Capacity ratio	0.39		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	45.6%	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)	65	98	28	15	105	86	0	472	11	82	452	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	1.00	0.97			0.94			1.00		1.00	0.98	
Flt Protected	0.95	1.00			1.00			1.00		0.95	1.00	
Satd. Flow (prot)	1770	1802			1752			1857		1770	1831	
Flt Permitted	0.30	1.00			0.97			1.00		0.38	1.00	
Satd. Flow (perm)	554	1802			1712			1857		713	1831	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	71	107	30	16	114	93	0	513	12	89	491	64
RTOR Reduction (vph)	0	12	0	0	30	0	0	1	0	0	3	0
Lane Group Flow (vph)	71	125	0	0	193	0	0	524	0	89	552	0
Turn Type	Perm			Perm						pm+pt		
Protected Phases		4			8			2		1	6	
Permitted Phases	4			8						6		
Actuated Green, G (s)	16.4	16.4			16.4			61.2		75.6	75.6	
Effective Green, g (s)	16.4	16.4			16.4			61.2		75.6	75.6	
Actuated g/C Ratio	0.16	0.16			0.16			0.61		0.76	0.76	
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)	91	296			281			1136		649	1384	
v/s Ratio Prot		0.07						c0.28		0.01	c0.30	
v/s Ratio Perm	c0.13				0.11					0.09		
v/c Ratio	0.78	0.42			0.69			0.46		0.14	0.40	
Uniform Delay, d1	40.1	37.6			39.4			10.5		7.4	4.3	
Progression Factor	1.00	1.00			1.00			0.37		0.23	0.41	
Incremental Delay, d2	34.1	1.0			6.8			1.2		0.1	0.7	
Delay (s)	74.1	38.5			46.2			5.1		1.8	2.4	
Level of Service	E	D			D			A		A	A	
Approach Delay (s)		50.7			46.2			5.1			2.3	
Approach LOS		D			D			A			A	

Intersection Summary

HCM Average Control Delay	15.6	HCM Level of Service	B
HCM Volume to Capacity ratio	0.50		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	61.9%	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)	116	52	15	0	24	70	8	601	8	40	557	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	
Lane Util. Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Frt		0.99			0.90		1.00	1.00		1.00	0.99	
Flt Protected		0.97			1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1786			1675		1770	1859		1770	1845	
Flt Permitted		0.76			1.00		0.28	1.00		0.27	1.00	
Satd. Flow (perm)		1393			1675		519	1859		499	1845	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	126	57	16	0	26	76	9	653	9	43	605	41
RTOR Reduction (vph)	0	3	0	0	50	0	0	0	0	0	3	0
Lane Group Flow (vph)	0	196	0	0	52	0	9	662	0	43	643	0
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		34.0			34.0		58.0	58.0		58.0	58.0	
Effective Green, g (s)		34.0			34.0		58.0	58.0		58.0	58.0	
Actuated g/C Ratio		0.34			0.34		0.58	0.58		0.58	0.58	
Clearance Time (s)		4.0			4.0		4.0	4.0		4.0	4.0	
Lane Grp Cap (vph)		474			570		301	1078		289	1070	
v/s Ratio Prot					0.03			c0.36			0.35	
v/s Ratio Perm		c0.14					0.02			0.09		
v/c Ratio		0.41			0.09		0.03	0.61		0.15	0.60	
Uniform Delay, d1		25.3			22.5		9.0	13.7		9.7	13.5	
Progression Factor		1.00			1.00		0.72	0.45		1.00	1.00	
Incremental Delay, d2		2.6			0.3		0.2	2.4		1.1	2.5	
Delay (s)		28.0			22.8		6.6	8.5		10.7	16.0	
Level of Service		C			C		A	A		B	B	
Approach Delay (s)		28.0			22.8			8.5			15.7	
Approach LOS		C			C			A			B	

Intersection Summary			
HCM Average Control Delay	14.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	56.6%	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)	51	87	28	10	152	12	18	233	9	0	418	137
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	1.00	0.96			0.99		1.00	0.99			0.97	
Flt Protected	0.95	1.00			1.00		0.95	1.00			1.00	
Satd. Flow (prot)	1770	1795			1841		1770	1852			1801	
Flt Permitted	0.52	1.00			0.98		0.29	1.00			1.00	
Satd. Flow (perm)	978	1795			1817		538	1852			1801	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor (vph)	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%
Adj. Flow (vph)	61	104	33	12	182	14	22	279	11	0	500	164
RTOR Reduction (vph)	0	13	0	0	3	0	0	2	0	0	13	0
Lane Group Flow (vph)	61	124	0	0	205	0	22	288	0	0	651	0
Turn Type	Perm			Perm			Perm					
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2					
Actuated Green, G (s)	27.0	27.0			27.0		55.0	55.0			55.0	
Effective Green, g (s)	27.0	27.0			27.0		55.0	55.0			55.0	
Actuated g/C Ratio	0.30	0.30			0.30		0.61	0.61			0.61	
Clearance Time (s)	4.0	4.0			4.0		4.0	4.0			4.0	
Lane Grp Cap (vph)	293	539			545		329	1132			1101	
v/s Ratio Prot		0.07						0.16			c0.36	
v/s Ratio Perm	0.06				c0.11		0.04					
v/c Ratio	0.21	0.23			0.38		0.07	0.25			0.59	
Uniform Delay, d1	23.5	23.7			24.9		7.1	8.1			10.7	
Progression Factor	1.00	1.00			1.00		1.00	1.00			0.14	
Incremental Delay, d2	1.6	1.0			2.0		0.4	0.5			1.9	
Delay (s)	25.1	24.7			26.8		7.5	8.6			3.4	
Level of Service	C	C			C		A	A			A	
Approach Delay (s)		24.8			26.8			8.5			3.4	
Approach LOS		C			C			A			A	

Intersection Summary

HCM Average Control Delay	11.2	HCM Level of Service	B
HCM Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	60.5%	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)	10	15	8	6	15	5	0	287	4	0	554	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	
Lane Util. Factor		1.00			1.00			1.00			1.00	
Frt		0.97			0.97			1.00			0.99	
Flt Protected		0.99			0.99			1.00			1.00	
Satd. Flow (prot)		1773			1794			1859			1848	
Flt Permitted		0.94			0.96			1.00			1.00	
Satd. Flow (perm)		1699			1746			1859			1848	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor (vph)	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%
Adj. Flow (vph)	12	18	10	7	18	6	0	343	5	0	662	42
RTOR Reduction (vph)	0	7	0	0	4	0	0	1	0	0	2	0
Lane Group Flow (vph)	0	33	0	0	27	0	0	347	0	0	702	0
Turn Type	Perm			Perm								
Protected Phases		4			8			2			6	
Permitted Phases	4			8								
Actuated Green, G (s)		24.0			24.0			58.0			58.0	
Effective Green, g (s)		24.0			24.0			58.0			58.0	
Actuated g/C Ratio		0.27			0.27			0.64			0.64	
Clearance Time (s)		4.0			4.0			4.0			4.0	
Lane Grp Cap (vph)		453			466			1198			1191	
v/s Ratio Prot								0.19			c0.38	
v/s Ratio Perm		c0.02			0.02							
v/c Ratio		0.07			0.06			0.29			0.59	
Uniform Delay, d1		24.7			24.6			7.0			9.2	
Progression Factor		1.00			1.00			0.77			0.24	
Incremental Delay, d2		0.3			0.2			0.6			2.0	
Delay (s)		25.0			24.8			6.0			4.2	
Level of Service		C			C			A			A	
Approach Delay (s)		25.0			24.8			6.0			4.2	
Approach LOS		C			C			A			A	

Intersection Summary			
HCM Average Control Delay	6.1	HCM Level of Service	A
HCM Volume to Capacity ratio	0.44		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	44.4%	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)	25	67	15	12	52	68	0	364	5	51	537	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	
Lane Util. Factor	1.00	1.00			1.00			1.00		1.00	1.00	
Frt	1.00	0.97			0.93			1.00		1.00	0.99	
Flt Protected	0.95	1.00			1.00			1.00		0.95	1.00	
Satd. Flow (prot)	1770	1811			1725			1859		1770	1844	
Flt Permitted	0.37	1.00			0.97			1.00		0.44	1.00	
Satd. Flow (perm)	694	1811			1677			1859		814	1844	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor (vph)	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%
Adj. Flow (vph)	30	80	18	14	62	81	0	435	6	61	642	45
RTOR Reduction (vph)	0	11	0	0	49	0	0	0	0	0	2	0
Lane Group Flow (vph)	30	87	0	0	108	0	0	441	0	61	685	0
Turn Type	Perm			Perm						pm+pt		
Protected Phases		4			8			2		1	6	
Permitted Phases	4			8						6		
Actuated Green, G (s)	10.9	10.9			10.9			62.0		71.1	71.1	
Effective Green, g (s)	10.9	10.9			10.9			62.0		71.1	71.1	
Actuated g/C Ratio	0.12	0.12			0.12			0.69		0.79	0.79	
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)	84	219			203			1281		697	1457	
v/s Ratio Prot		0.05						0.24		0.00	c0.37	
v/s Ratio Perm	0.04				c0.06					0.06		
v/c Ratio	0.36	0.40			0.53			0.34		0.09	0.47	
Uniform Delay, d1	36.3	36.5			37.1			5.7		2.5	3.2	
Progression Factor	1.00	1.00			1.00			0.50		0.07	0.04	
Incremental Delay, d2	2.6	1.2			2.7			0.7		0.0	0.8	
Delay (s)	38.9	37.7			39.8			3.6		0.2	0.9	
Level of Service	D	D			D			A		A	A	
Approach Delay (s)		38.0			39.8			3.6			0.9	
Approach LOS		D			D			A			A	

Intersection Summary

HCM Average Control Delay	9.0	HCM Level of Service	A
HCM Volume to Capacity ratio	0.48		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	55.3%	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)	42	9	8	3	10	27	4	433	11	42	613	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	4.0		4.0	4.0	
Lane Util. Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Frt		0.98			0.91		1.00	1.00		1.00	0.99	
Flt Protected		0.97			1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1765			1688		1770	1856		1770	1846	
Flt Permitted		0.81			0.99		0.22	1.00		0.38	1.00	
Satd. Flow (perm)		1485			1673		419	1856		710	1846	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor (vph)	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%
Adj. Flow (vph)	50	11	10	4	12	32	5	518	13	50	733	47
RTOR Reduction (vph)	0	6	0	0	23	0	0	1	0	0	3	0
Lane Group Flow (vph)	0	65	0	0	25	0	5	530	0	50	777	0
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		26.0			26.0		56.0	56.0		56.0	56.0	
Effective Green, g (s)		26.0			26.0		56.0	56.0		56.0	56.0	
Actuated g/C Ratio		0.29			0.29		0.62	0.62		0.62	0.62	
Clearance Time (s)		4.0			4.0		4.0	4.0		4.0	4.0	
Lane Grp Cap (vph)		429			483		261	1155		442	1149	
v/s Ratio Prot								0.29			c0.42	
v/s Ratio Perm		c0.04			0.02		0.01			0.07		
v/c Ratio		0.15			0.05		0.02	0.46		0.11	0.68	
Uniform Delay, d1		23.8			23.1		6.5	9.0		6.9	11.1	
Progression Factor		1.00			1.00		0.71	0.69		1.00	1.00	
Incremental Delay, d2		0.7			0.2		0.1	1.3		0.5	3.2	
Delay (s)		24.5			23.3		4.7	7.5		7.4	14.3	
Level of Service		C			C		A	A		A	B	
Approach Delay (s)		24.5			23.3			7.4			13.9	
Approach LOS		C			C			A			B	

Intersection Summary

HCM Average Control Delay	12.4	HCM Level of Service	B
HCM Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	55.3%	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)	102	151	32	15	127	18	23	352	14	0	403	68
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	1.00	0.97			0.98		1.00	0.99			0.98	
Flt Protected	0.95	1.00			1.00		0.95	1.00			1.00	
Satd. Flow (prot)	1770	1814			1825		1770	1852			1827	
Flt Permitted	0.57	1.00			0.97		0.33	1.00			1.00	
Satd. Flow (perm)	1062	1814			1770		613	1852			1827	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor (vph)	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%
Adj. Flow (vph)	122	181	38	18	152	22	28	421	17	0	482	81
RTOR Reduction (vph)	0	8	0	0	5	0	0	1	0	0	6	0
Lane Group Flow (vph)	122	211	0	0	187	0	28	437	0	0	557	0
Turn Type	Perm			Perm			Perm					
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2					
Actuated Green, G (s)	35.0	35.0			35.0		57.0	57.0			57.0	
Effective Green, g (s)	35.0	35.0			35.0		57.0	57.0			57.0	
Actuated g/C Ratio	0.35	0.35			0.35		0.57	0.57			0.57	
Clearance Time (s)	4.0	4.0			4.0		4.0	4.0			4.0	
Lane Grp Cap (vph)	372	635			620		349	1056			1041	
v/s Ratio Prot		c0.12						0.24			c0.30	
v/s Ratio Perm	0.11				0.11		0.05					
v/c Ratio	0.33	0.33			0.30		0.08	0.41			0.54	
Uniform Delay, d1	23.9	23.9			23.6		9.7	12.1			13.3	
Progression Factor	1.00	1.00			1.00		1.00	1.00			0.21	
Incremental Delay, d2	2.3	1.4			1.3		0.4	1.2			1.7	
Delay (s)	26.2	25.3			24.9		10.1	13.3			4.5	
Level of Service	C	C			C		B	B			A	
Approach Delay (s)		25.6			24.9			13.1			4.5	
Approach LOS		C			C			B			A	

Intersection Summary

HCM Average Control Delay	14.2	HCM Level of Service	B
HCM Volume to Capacity ratio	0.46		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	58.2%	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)	37	52	14	11	62	10	0	466	4	0	471	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			1.00			1.00	
Frt		0.98			0.98			1.00			0.99	
Flt Protected		0.98			0.99			1.00			1.00	
Satd. Flow (prot)		1796			1820			1861			1846	
Flt Permitted		0.88			0.97			1.00			1.00	
Satd. Flow (perm)		1611			1770			1861			1846	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor (vph)	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%
Adj. Flow (vph)	44	62	17	13	74	12	0	557	5	0	563	39
RTOR Reduction (vph)	0	5	0	0	5	0	0	0	0	0	2	0
Lane Group Flow (vph)	0	118	0	0	94	0	0	562	0	0	600	0
Turn Type	Perm			Perm								
Protected Phases		4			8			2			6	
Permitted Phases	4			8								
Actuated Green, G (s)		32.0			32.0			60.0			60.0	
Effective Green, g (s)		32.0			32.0			60.0			60.0	
Actuated g/C Ratio		0.32			0.32			0.60			0.60	
Clearance Time (s)		4.0			4.0			4.0			4.0	
Lane Grp Cap (vph)		516			566			1117			1108	
v/s Ratio Prot								0.30			c0.32	
v/s Ratio Perm		c0.07			0.05							
v/c Ratio		0.23			0.17			0.50			0.54	
Uniform Delay, d1		24.9			24.4			11.5			11.8	
Progression Factor		1.00			1.00			0.73			0.42	
Incremental Delay, d2		1.0			0.6			1.5			1.7	
Delay (s)		26.0			25.1			9.9			6.7	
Level of Service		C			C			A			A	
Approach Delay (s)		26.0			25.1			9.9			6.7	
Approach LOS		C			C			A			A	

Intersection Summary			
HCM Average Control Delay	11.0	HCM Level of Service	B
HCM Volume to Capacity ratio	0.43		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	49.0%	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)	65	98	28	15	105	86	0	472	11	82	452	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	1.00	0.97			0.94			1.00		1.00	0.98	
Flt Protected	0.95	1.00			1.00			1.00		0.95	1.00	
Satd. Flow (prot)	1770	1801			1751			1857		1770	1830	
Flt Permitted	0.29	1.00			0.97			1.00		0.34	1.00	
Satd. Flow (perm)	535	1801			1709			1857		627	1830	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor (vph)	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%
Adj. Flow (vph)	78	117	33	18	126	103	0	564	13	98	540	71
RTOR Reduction (vph)	0	12	0	0	30	0	0	1	0	0	3	0
Lane Group Flow (vph)	78	138	0	0	217	0	0	576	0	98	608	0
Turn Type	Perm			Perm						pm+pt		
Protected Phases		4			8			2		1	6	
Permitted Phases	4			8						6		
Actuated Green, G (s)	17.8	17.8			17.8			64.2		74.2	74.2	
Effective Green, g (s)	17.8	17.8			17.8			64.2		74.2	74.2	
Actuated g/C Ratio	0.18	0.18			0.18			0.64		0.74	0.74	
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)	95	321			304			1192		534	1358	
v/s Ratio Prot		0.08						c0.31		0.01	c0.33	
v/s Ratio Perm	c0.15				0.13					0.13		
v/c Ratio	0.82	0.43			0.72			0.48		0.18	0.45	
Uniform Delay, d1	39.6	36.6			38.7			9.3		5.1	5.0	
Progression Factor	1.00	1.00			1.00			0.38		0.14	0.09	
Incremental Delay, d2	41.0	0.9			7.8			1.3		0.1	0.8	
Delay (s)	80.6	37.5			46.5			4.8		0.8	1.3	
Level of Service	F	D			D			A		A	A	
Approach Delay (s)		52.3			46.5			4.8			1.2	
Approach LOS		D			D			A			A	

Intersection Summary

HCM Average Control Delay	15.3	HCM Level of Service	B
HCM Volume to Capacity ratio	0.56		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	66.7%	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)	116	52	15	0	24	70	8	601	8	40	557	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	
Lane Util. Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Frt		0.99			0.90		1.00	1.00		1.00	0.99	
Flt Protected		0.97			1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1785			1676		1770	1859		1770	1845	
Flt Permitted		0.75			1.00		0.24	1.00		0.22	1.00	
Satd. Flow (perm)		1373			1676		439	1859		417	1845	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor (vph)	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%
Adj. Flow (vph)	139	62	18	0	29	84	10	719	10	48	666	45
RTOR Reduction (vph)	0	3	0	0	55	0	0	0	0	0	3	0
Lane Group Flow (vph)	0	216	0	0	58	0	10	729	0	48	708	0
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		34.0			34.0		58.0	58.0		58.0	58.0	
Effective Green, g (s)		34.0			34.0		58.0	58.0		58.0	58.0	
Actuated g/C Ratio		0.34			0.34		0.58	0.58		0.58	0.58	
Clearance Time (s)		4.0			4.0		4.0	4.0		4.0	4.0	
Lane Grp Cap (vph)		467			570		255	1078		242	1070	
v/s Ratio Prot					0.03			c0.39			0.38	
v/s Ratio Perm		c0.16					0.02			0.12		
v/c Ratio		0.46			0.10		0.04	0.68		0.20	0.66	
Uniform Delay, d1		25.8			22.6		9.0	14.5		10.0	14.3	
Progression Factor		1.00			1.00		0.83	0.66		1.00	1.00	
Incremental Delay, d2		3.3			0.4		0.3	3.0		1.8	3.2	
Delay (s)		29.1			22.9		7.8	12.6		11.8	17.5	
Level of Service		C			C		A	B		B	B	
Approach Delay (s)		29.1			22.9			12.5			17.2	
Approach LOS		C			C			B			B	

Intersection Summary			
HCM Average Control Delay	17.1	HCM Level of Service	B
HCM Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	61.0%	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	87	28	10	152	12	18	233	9	0	418	137
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	1.00	0.96			0.99		1.00	0.99			0.97	
Flt Protected	0.95	1.00			1.00		0.95	1.00			1.00	
Satd. Flow (prot)	1770	1795			1840		1770	1852			1801	
Flt Permitted	0.49	1.00			0.98		0.24	1.00			1.00	
Satd. Flow (perm)	920	1795			1815		455	1852			1801	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor (vph)	122%	122%	122%	122%	122%	122%	122%	122%	122%	122%	122%	122%
Adj. Flow (vph)	68	115	37	13	202	16	24	309	12	0	554	182
RTOR Reduction (vph)	0	13	0	0	3	0	0	2	0	0	13	0
Lane Group Flow (vph)	68	139	0	0	228	0	24	319	0	0	723	0
Turn Type	Perm			Perm			Perm					
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2					
Actuated Green, G (s)	27.0	27.0			27.0		55.0	55.0			55.0	
Effective Green, g (s)	27.0	27.0			27.0		55.0	55.0			55.0	
Actuated g/C Ratio	0.30	0.30			0.30		0.61	0.61			0.61	
Clearance Time (s)	4.0	4.0			4.0		4.0	4.0			4.0	
Lane Grp Cap (vph)	276	539			545		278	1132			1101	
v/s Ratio Prot		0.08						0.17			c0.40	
v/s Ratio Perm	0.07				c0.13		0.05					
v/c Ratio	0.25	0.26			0.42		0.09	0.28			0.66	
Uniform Delay, d1	23.8	23.9			25.2		7.2	8.2			11.4	
Progression Factor	1.00	1.00			1.00		1.00	1.00			0.15	
Incremental Delay, d2	2.1	1.2			2.4		0.6	0.6			2.4	
Delay (s)	25.9	25.1			27.6		7.8	8.8			4.0	
Level of Service	C	C			C		A	A			A	
Approach Delay (s)		25.3			27.6			8.8			4.0	
Approach LOS		C			C			A			A	

Intersection Summary

HCM Average Control Delay	11.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	66.0%	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)	10	15	8	6	15	5	0	287	4	0	554	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	
Lane Util. Factor		1.00			1.00			1.00			1.00	
Frt		0.97			0.97			1.00			0.99	
Flt Protected		0.99			0.99			1.00			1.00	
Satd. Flow (prot)		1774			1792			1859			1848	
Flt Permitted		0.94			0.96			1.00			1.00	
Satd. Flow (perm)		1696			1740			1859			1848	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor (vph)	122%	122%	122%	122%	122%	122%	122%	122%	122%	122%	122%	122%
Adj. Flow (vph)	13	20	11	8	20	7	0	381	5	0	735	46
RTOR Reduction (vph)	0	8	0	0	5	0	0	0	0	0	2	0
Lane Group Flow (vph)	0	36	0	0	30	0	0	386	0	0	779	0
Turn Type	Perm			Perm								
Protected Phases		4			8			2			6	
Permitted Phases	4			8								
Actuated Green, G (s)		24.0			24.0			58.0			58.0	
Effective Green, g (s)		24.0			24.0			58.0			58.0	
Actuated g/C Ratio		0.27			0.27			0.64			0.64	
Clearance Time (s)		4.0			4.0			4.0			4.0	
Lane Grp Cap (vph)		452			464			1198			1191	
v/s Ratio Prot								0.21			c0.42	
v/s Ratio Perm		c0.02			0.02							
v/c Ratio		0.08			0.06			0.32			0.65	
Uniform Delay, d1		24.7			24.6			7.2			9.8	
Progression Factor		1.00			1.00			0.75			0.23	
Incremental Delay, d2		0.3			0.3			0.7			2.5	
Delay (s)		25.1			24.9			6.1			4.7	
Level of Service		C			C			A			A	
Approach Delay (s)		25.1			24.9			6.1			4.7	
Approach LOS		C			C			A			A	

Intersection Summary			
HCM Average Control Delay	6.4	HCM Level of Service	A
HCM Volume to Capacity ratio	0.49		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	48.2%	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)	25	67	15	12	52	68	0	364	5	51	537	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	
Lane Util. Factor	1.00	1.00			1.00			1.00		1.00	1.00	
Frt	1.00	0.97			0.93			1.00		1.00	0.99	
Flt Protected	0.95	1.00			1.00			1.00		0.95	1.00	
Satd. Flow (prot)	1770	1811			1726			1859		1770	1844	
Flt Permitted	0.35	1.00			0.97			1.00		0.40	1.00	
Satd. Flow (perm)	652	1811			1674			1859		751	1844	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor (vph)	122%	122%	122%	122%	122%	122%	122%	122%	122%	122%	122%	122%
Adj. Flow (vph)	33	89	20	16	69	90	0	483	7	68	712	50
RTOR Reduction (vph)	0	10	0	0	48	0	0	0	0	0	2	0
Lane Group Flow (vph)	33	99	0	0	127	0	0	490	0	68	760	0
Turn Type	Perm			Perm						pm+pt		
Protected Phases		4			8			2		1	6	
Permitted Phases	4			8						6		
Actuated Green, G (s)	11.9	11.9			11.9			60.8		70.1	70.1	
Effective Green, g (s)	11.9	11.9			11.9			60.8		70.1	70.1	
Actuated g/C Ratio	0.13	0.13			0.13			0.68		0.78	0.78	
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)	86	239			221			1256		645	1436	
v/s Ratio Prot		0.05						0.26		0.01	c0.41	
v/s Ratio Perm	0.05				c0.08					0.08		
v/c Ratio	0.38	0.41			0.58			0.39		0.11	0.53	
Uniform Delay, d1	35.7	35.8			36.7			6.4		3.0	3.7	
Progression Factor	1.00	1.00			1.00			0.48		0.07	0.03	
Incremental Delay, d2	2.8	1.2			3.6			0.9		0.0	0.9	
Delay (s)	38.5	37.0			40.3			4.0		0.3	1.0	
Level of Service	D	D			D			A		A	A	
Approach Delay (s)		37.4			40.3			4.0			1.0	
Approach LOS		D			D			A			A	

Intersection Summary			
HCM Average Control Delay	9.2	HCM Level of Service	A
HCM Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	59.9%	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)	42	9	8	3	10	27	4	433	11	42	613	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	4.0		4.0	4.0	
Lane Util. Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Frt		0.98			0.91		1.00	1.00		1.00	0.99	
Flt Protected		0.97			1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1765			1686		1770	1856		1770	1846	
Flt Permitted		0.80			0.99		0.17	1.00		0.34	1.00	
Satd. Flow (perm)		1467			1671		325	1856		639	1846	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor (vph)	122%	122%	122%	122%	122%	122%	122%	122%	122%	122%	122%	122%
Adj. Flow (vph)	56	12	11	4	13	36	5	574	15	56	813	52
RTOR Reduction (vph)	0	6	0	0	26	0	0	1	0	0	3	0
Lane Group Flow (vph)	0	73	0	0	27	0	5	588	0	56	862	0
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		26.0			26.0		56.0	56.0		56.0	56.0	
Effective Green, g (s)		26.0			26.0		56.0	56.0		56.0	56.0	
Actuated g/C Ratio		0.29			0.29		0.62	0.62		0.62	0.62	
Clearance Time (s)		4.0			4.0		4.0	4.0		4.0	4.0	
Lane Grp Cap (vph)		424			483		202	1155		398	1149	
v/s Ratio Prot								0.32			c0.47	
v/s Ratio Perm		c0.05			0.02		0.02			0.09		
v/c Ratio		0.17			0.06		0.02	0.51		0.14	0.75	
Uniform Delay, d1		23.9			23.1		6.5	9.4		7.0	12.0	
Progression Factor		1.00			1.00		0.74	0.69		1.00	1.00	
Incremental Delay, d2		0.9			0.2		0.2	1.5		0.7	4.5	
Delay (s)		24.8			23.4		5.0	8.0		7.8	16.6	
Level of Service		C			C		A	A		A	B	
Approach Delay (s)		24.8			23.4			8.0			16.0	
Approach LOS		C			C			A			B	

Intersection Summary

HCM Average Control Delay	13.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.57		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	59.9%	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)	102	151	32	15	127	18	23	352	14	14	403	68
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	0.97			0.98		1.00	0.99		1.00	0.98	
Flt Protected	0.95	1.00			1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1814			1826		1770	1852		1770	1822	
Flt Permitted	0.55	1.00			0.96		0.28	1.00		0.38	1.00	
Satd. Flow (perm)	1029	1814			1765		522	1852		707	1822	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor (vph)	122%	122%	122%	122%	122%	122%	122%	122%	122%	122%	122%	122%
Adj. Flow (vph)	135	200	42	20	168	24	30	467	19	19	534	90
RTOR Reduction (vph)	0	8	0	0	4	0	0	1	0	0	6	0
Lane Group Flow (vph)	135	234	0	0	208	0	30	485	0	19	618	0
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	36.0	36.0			36.0		56.0	56.0		56.0	56.0	
Effective Green, g (s)	36.0	36.0			36.0		56.0	56.0		56.0	56.0	
Actuated g/C Ratio	0.36	0.36			0.36		0.56	0.56		0.56	0.56	
Clearance Time (s)	4.0	4.0			4.0		4.0	4.0		4.0	4.0	
Lane Grp Cap (vph)	370	653			635		292	1037		396	1020	
v/s Ratio Prot		0.13						0.26			c0.34	
v/s Ratio Perm	c0.13				0.12		0.06			0.03		
v/c Ratio	0.36	0.36			0.33		0.10	0.47		0.05	0.61	
Uniform Delay, d1	23.6	23.5			23.2		10.3	13.1		9.9	14.6	
Progression Factor	1.00	1.00			1.00		1.00	1.00		0.28	0.20	
Incremental Delay, d2	2.8	1.5			1.4		0.7	1.5		0.2	2.1	
Delay (s)	26.3	25.1			24.6		11.0	14.6		3.0	5.1	
Level of Service	C	C			C		B	B		A	A	
Approach Delay (s)		25.5			24.6			14.4			5.0	
Approach LOS		C			C			B			A	

Intersection Summary

HCM Average Control Delay	14.6	HCM Level of Service	B
HCM Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	63.5%	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)	37	52	14	11	62	10	11	466	4	9	471	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		0.98			0.98		1.00	1.00		1.00	0.99	
Flt Protected		0.98			0.99		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1796			1821		1770	1861		1770	1844	
Flt Permitted		0.87			0.96		0.26	1.00		0.29	1.00	
Satd. Flow (perm)		1599			1764		490	1861		547	1844	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor (vph)	122%	122%	122%	122%	122%	122%	122%	122%	122%	122%	122%	122%
Adj. Flow (vph)	49	69	19	15	82	13	15	618	5	12	625	44
RTOR Reduction (vph)	0	6	0	0	5	0	0	0	0	0	3	0
Lane Group Flow (vph)	0	131	0	0	105	0	15	623	0	12	666	0
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		34.0			34.0		58.0	58.0		58.0	58.0	
Effective Green, g (s)		34.0			34.0		58.0	58.0		58.0	58.0	
Actuated g/C Ratio		0.34			0.34		0.58	0.58		0.58	0.58	
Clearance Time (s)		4.0			4.0		4.0	4.0		4.0	4.0	
Lane Grp Cap (vph)		544			600		284	1079		317	1070	
v/s Ratio Prot								0.33			c0.36	
v/s Ratio Perm		c0.08			0.06		0.03			0.02		
v/c Ratio		0.24			0.18		0.05	0.58		0.04	0.62	
Uniform Delay, d1		23.7			23.2		9.1	13.3		9.0	13.8	
Progression Factor		1.00			1.00		0.79	0.69		0.61	0.44	
Incremental Delay, d2		1.0			0.6		0.3	2.1		0.2	2.4	
Delay (s)		24.8			23.8		7.5	11.3		5.7	8.4	
Level of Service		C			C		A	B		A	A	
Approach Delay (s)		24.8			23.8			11.2			8.4	
Approach LOS		C			C			B			A	

Intersection Summary

HCM Average Control Delay	12.0	HCM Level of Service	B
HCM Volume to Capacity ratio	0.48		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	52.9%	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)	65	98	28	15	105	86	14	472	11	82	452	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	4.0	
Lane Util. Factor	1.00	1.00			1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.97			0.94		1.00	1.00		1.00	0.98	
Flt Protected	0.95	1.00			1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1801			1751		1770	1856		1770	1831	
Flt Permitted	0.28	1.00			0.97		0.30	1.00		0.30	1.00	
Satd. Flow (perm)	524	1801			1706		553	1856		562	1831	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor (vph)	122%	122%	122%	122%	122%	122%	122%	122%	122%	122%	122%	122%
Adj. Flow (vph)	86	130	37	20	139	114	19	626	15	109	599	78
RTOR Reduction (vph)	0	11	0	0	29	0	0	1	0	0	3	0
Lane Group Flow (vph)	86	156	0	0	244	0	19	640	0	109	674	0
Turn Type	Perm			Perm			pm+pt			pm+pt		
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	19.4	19.4			19.4		62.1	59.9		72.6	66.4	
Effective Green, g (s)	19.4	19.4			19.4		62.1	59.9		72.6	66.4	
Actuated g/C Ratio	0.19	0.19			0.19		0.62	0.60		0.73	0.66	
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)	102	349			331		370	1112		513	1216	
v/s Ratio Prot		0.09					0.00	c0.34		c0.02	c0.37	
v/s Ratio Perm	c0.16				0.14		0.03			0.14		
v/c Ratio	0.84	0.45			0.74		0.05	0.58		0.21	0.55	
Uniform Delay, d1	38.8	35.6			37.9		15.0	12.3		12.1	8.9	
Progression Factor	1.00	1.00			1.00		0.15	0.34		0.17	0.19	
Incremental Delay, d2	43.6	0.9			8.3		0.0	1.8		0.1	1.3	
Delay (s)	82.5	36.5			46.2		2.3	6.0		2.1	3.0	
Level of Service	F	D			D		A	A		A	A	
Approach Delay (s)		52.1			46.2			5.9			2.9	
Approach LOS		D			D			A			A	

Intersection Summary			
HCM Average Control Delay	16.2	HCM Level of Service	B
HCM Volume to Capacity ratio	0.59		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	72.6%	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)	116	52	15	0	24	70	8	601	8	40	557	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	
Lane Util. Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Frt		0.99			0.90		1.00	1.00		1.00	0.99	
Flt Protected		0.97			1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1785			1676		1770	1859		1770	1845	
Flt Permitted		0.71			1.00		0.18	1.00		0.17	1.00	
Satd. Flow (perm)		1316			1676		345	1859		322	1845	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor (vph)	122%	122%	122%	122%	122%	122%	122%	122%	122%	122%	122%	122%
Adj. Flow (vph)	154	69	20	0	32	93	11	797	11	53	739	50
RTOR Reduction (vph)	0	3	0	0	61	0	0	0	0	0	3	0
Lane Group Flow (vph)	0	240	0	0	64	0	11	808	0	53	786	0
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		34.0			34.0		58.0	58.0		58.0	58.0	
Effective Green, g (s)		34.0			34.0		58.0	58.0		58.0	58.0	
Actuated g/C Ratio		0.34			0.34		0.58	0.58		0.58	0.58	
Clearance Time (s)		4.0			4.0		4.0	4.0		4.0	4.0	
Lane Grp Cap (vph)		447			570		200	1078		187	1070	
v/s Ratio Prot					0.04			c0.43			0.43	
v/s Ratio Perm		c0.18					0.03			0.16		
v/c Ratio		0.54			0.11		0.06	0.75		0.28	0.74	
Uniform Delay, d1		26.6			22.6		9.1	15.6		10.6	15.4	
Progression Factor		1.00			1.00		0.81	0.52		1.00	1.00	
Incremental Delay, d2		4.6			0.4		0.4	4.0		3.8	4.5	
Delay (s)		31.2			23.0		7.9	12.1		14.3	19.9	
Level of Service		C			C		A	B		B	B	
Approach Delay (s)		31.2			23.0			12.0			19.5	
Approach LOS		C			C			B			B	

Intersection Summary

HCM Average Control Delay	18.1	HCM Level of Service	B
HCM Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	66.2%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group