Colorado State University

Office of Facilities Management

Fort Collins, Colorado 80523-6030
6030 Campus Delivery

March 18, 2015

Jason Holland
Current Planning
Development Review Center
281 North College Avenue
Fort Collins, CO 80524

RE: CSU Research Boulevard Parking Lot

Dear Jason,

The Research Boulevard Parking lot would be a new +/- 900 space surface lot on the CSU south campus. As redevelopment occurs in the core of the campus, parking relocates to the periphery of the campus per the University Master Plan approved by the Board of Governors.

The site is approximately 11 acres in total. The north and portions of the east edges of the project are adjacent to the Larimer #2 ditch system. Approximately 3.5 acres of the 11 have been under the continued ownership of Colorado State University. The remaining 7.5 acres have transferred ownership over the years between Colorado State University and Colorado State University Research Foundation. Currently all 11 acres are under the ownership and control of Colorado State University and its Board of Governors.

The proposed parking lot would not only serve the immediate south campus veterinary medical campus but also the greater campus community. Parking in these lots would be managed by CSU Parking and Transportation Services and would require permits or payment at meters. Currently there are 2 Transfort bus routes that serve this area, 1 specifically funded by CSU, with a combined 15 minute headway. The parking lot as proposed includes a bus pull out area and a shelter with bathrooms at our existing Tennis Court complex. Users of the lot could access either of these busses and connect to the main campus via this service.

A new connection between Research Boulevard and the Veterinary Medical Campus is proposed in these plans. This will allow for greater access to the Medical Campus and supports access for the Transfort bus system. Future plans of Drake Road suggest that access to the facility from its current entry point will be greatly limited by a median. This connection becomes a critical access point in the future for staff and clientele of the campus.

This project addresses the **Character**, **Location** and **Extent** requirements of pertinent State Statute and evolving City of Fort Collins SPAR requirements in the following ways:

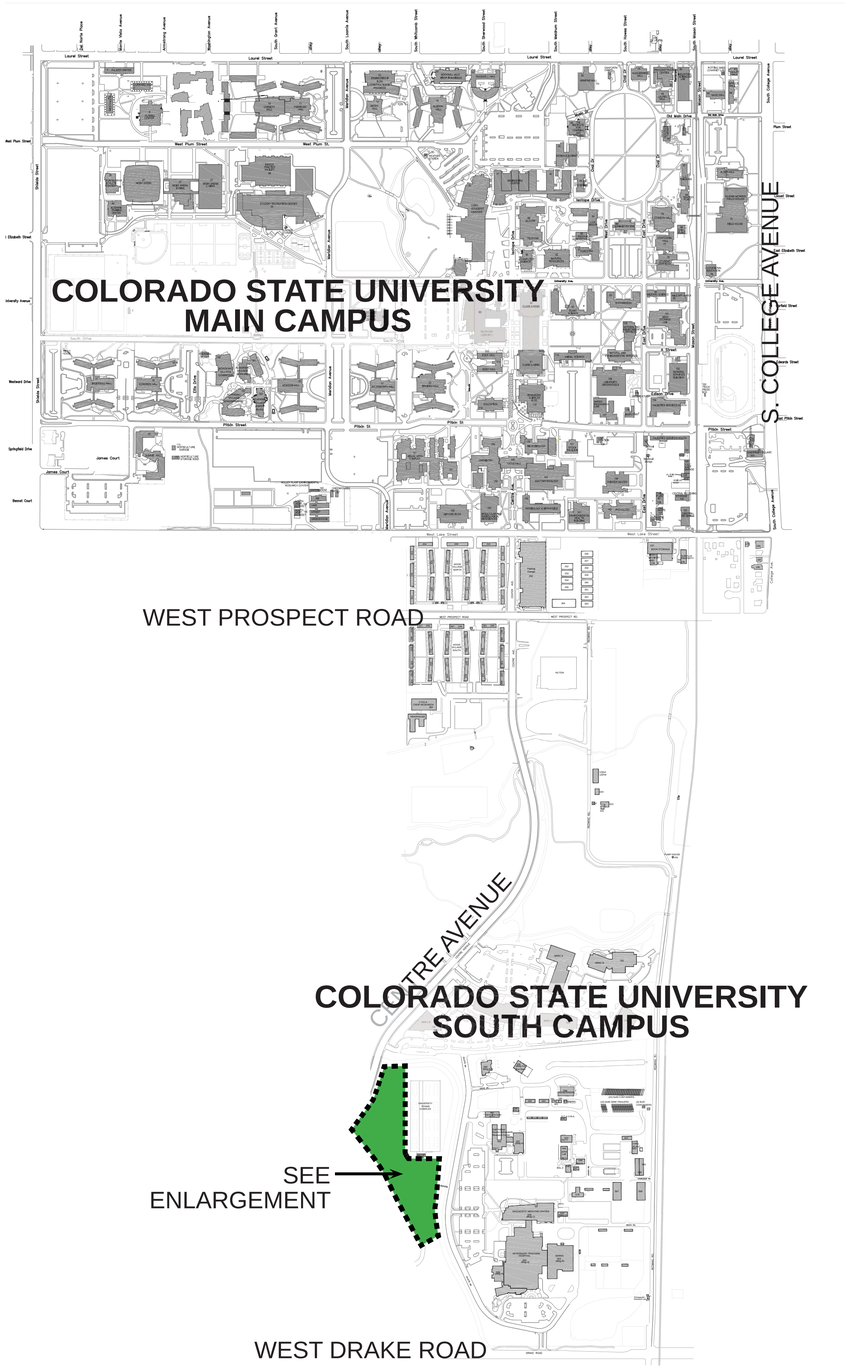
Location- the parking lot is situated along two major city collector streets, Research Boulevard to the West, Centre Avenue to the North. North and East of the project site is the Larimer #2 ditch. East of the project is the existing CSU Tennis Court Complex.

Character- The project will conform to the landscape, lighting standards, and materials spelled out in the CSU Aesthetic Guideline and CSU Facilities Construction Standards Manual. Landscape character would be compatible with the existing west parking lot of the adjacent Veterinary Medical Center and a mature landscape along Research Boulevard is preserved.

Extent- The site will be a change from existing open space to a paved parking surface. Traffic patterns are expected to change in the area with the addition of this lot. The parking lot will be in support of immediately adjacent CSU functions as well as the Main CSU campus.

Sincerely,

David Hansen,
Campus Landscape Architect
Facilities Services Center North
Colorado State University
Fort Collins, Colorado 80523-6030
970.491.0318 970.491.0105 - fax



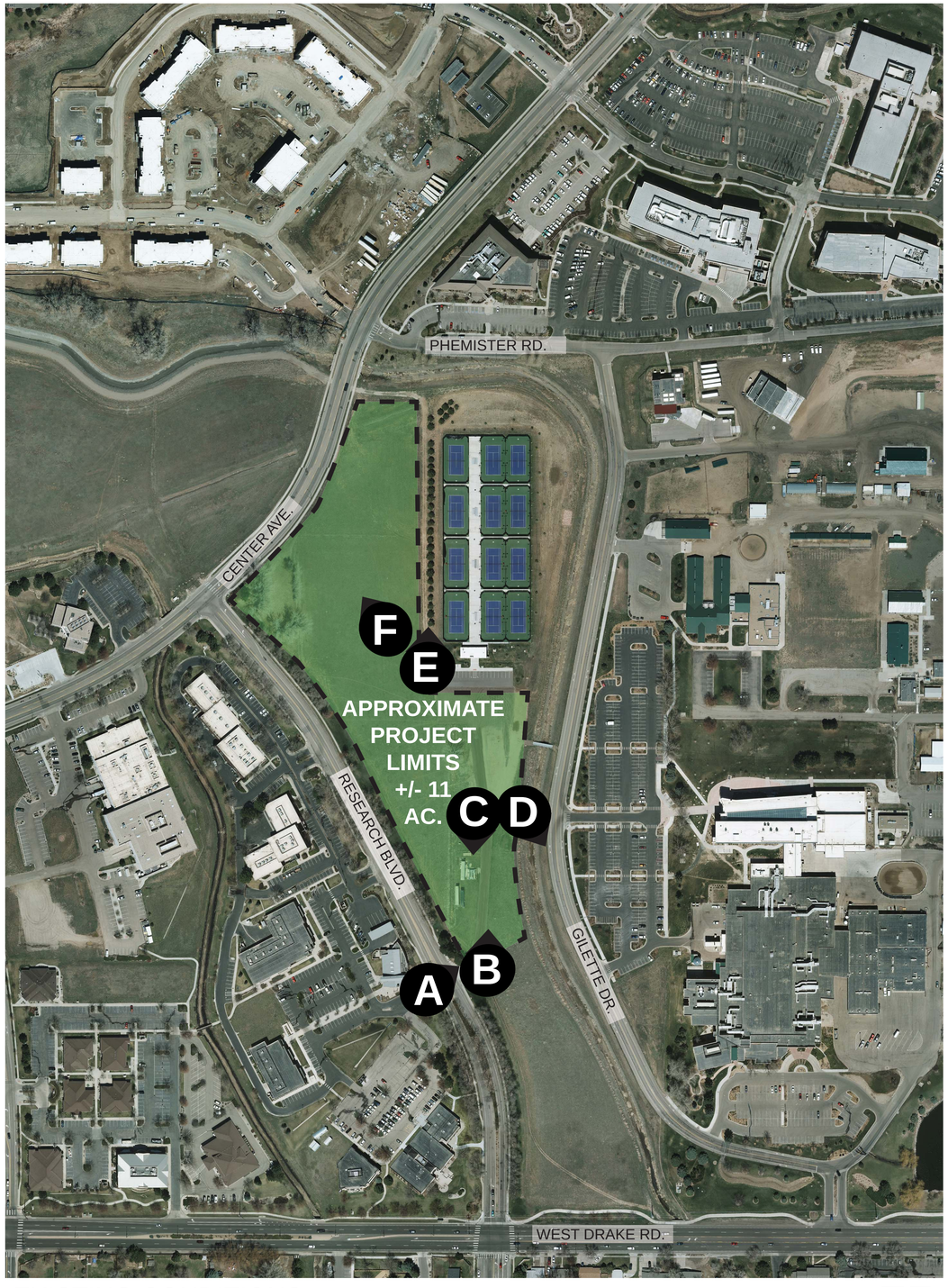
CAMPUS CONTEXT MAP

ENLARGED VICINITY MAP

NORTH

SPAR SUBMITTAL
RESEARCH BLVD. PARKING LOT
VICINITY MAP

03.18.2015



EXISTING CONDITIONS

NORTH

A

B

C

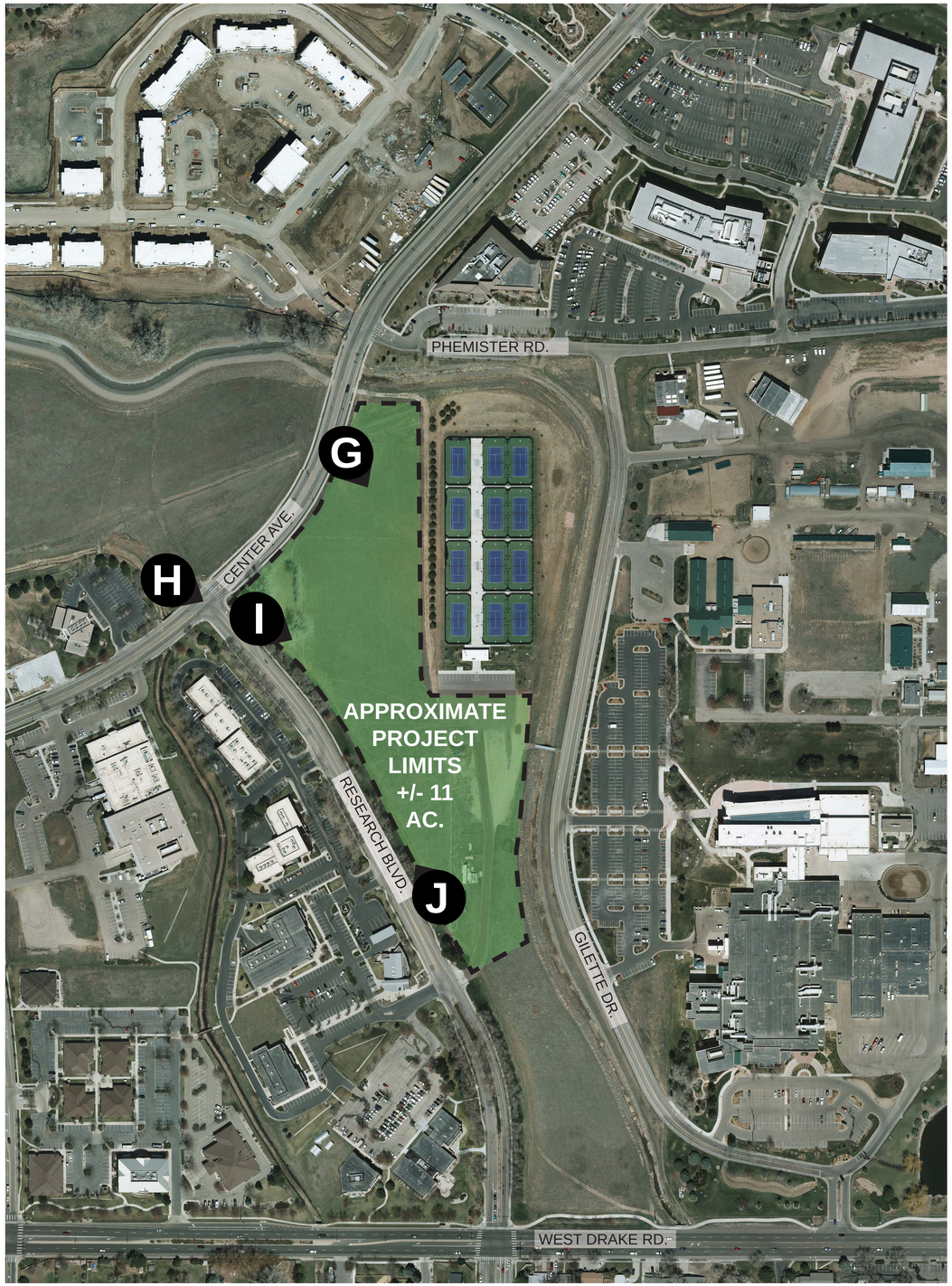
D

E

F

RESEARCH BLVD. PARKING LOT
EXISTING CONDITIONS/ SITE PHOTOS

03.18.2015



EXISTING CONDITIONS

NORTH

G

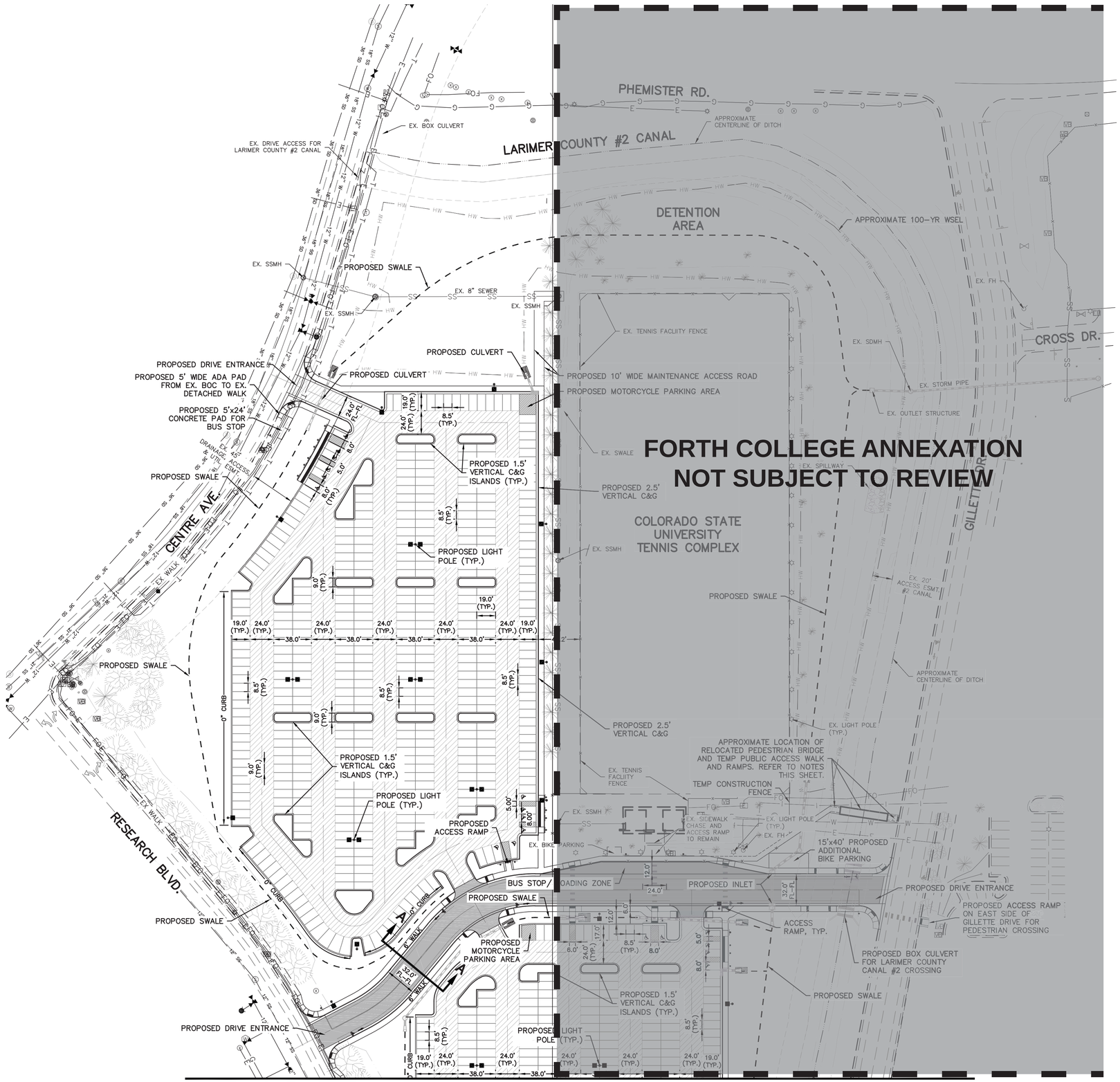
H

I

J

RESEARCH BLVD. PARKING LOT
EXISTING CONDITIONS/ SITE PHOTOS

03.18.2015



MATCHLINE SEE SHEET C3.02

NOTES:

1. ALL LINE AND CURVE DATA TO BE PROVIDED WITH FINAL DESIGN.
2. CONTRACTOR TO RELOCATE EXISTING PEDESTRIAN BRIDGE TO PROVIDE TEMPORARY PUBLIC ACCESS TO TENNIS FACILITY DURING CONSTRUCTION. LOCATION SHOWN IS APPROXIMATE AND SHOULD BE ADJUSTED AS CONTRACTOR SEES FIT FOR SAFE ACCESS TO TENNIS FACILITIES.
3. TEMPORARY WALK AND ACCESS RAMPS UP TO AND FROM RELOCATED BRIDGE SHALL MEET ADA REQUIREMENTS.
4. CONTRACTOR SHALL INSTALL CONSTRUCTION FENCING TO KEEP PUBLIC FROM ACCESSING CONSTRUCTION AREAS.
5. CONTRACTOR TO COORDINATE WITH STRUCTURAL ENGINEER FOR FINAL DESIGN OF ABUTMENTS FOR TEMPORARY PEDESTRIAN BRIDGE CROSSING.
6. CONTRACTOR TO COORDINATE WITH CSU TO ACQUIRE CROSSINGS PERMITS FROM LARIMER COUNTY #2 CANAL.
7. PEDESTRIAN BRIDGE TO BE REMOVED AT END OF CONSTRUCTION. SITE TO BE RESTORED BACK TO EXISTING CONDITIONS.
8. CONTRACTOR TO COORDINATE WITH CSU TO PROVIDE TEMPORARY ADA PARKING ALONG GILLETTE DRIVE FOR ACCESS TO TENNIS FACILITY.

PAVING LEGEND:

- HEAVY DUTY CONCRETE PAVING
- HEAVY DUTY ASPHALT PAVING
- LIGHT DUTY ASPHALT PAVING

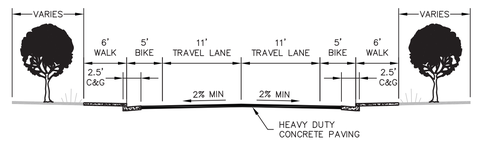
PARKING COUNT:

TOTAL SPACES = 910

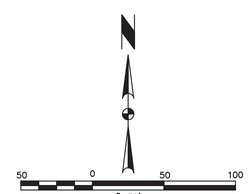
HANDICAP PARKING = 18
(3 VAN-ACCESSIBLE)

2 MOTORCYCLE PARKING AREAS

1-15'x40' BIKE PARKING PAD



TYPICAL SECTION A-A
N.T.S



REVISIONS		
DESCRIPTION	DATE	BY

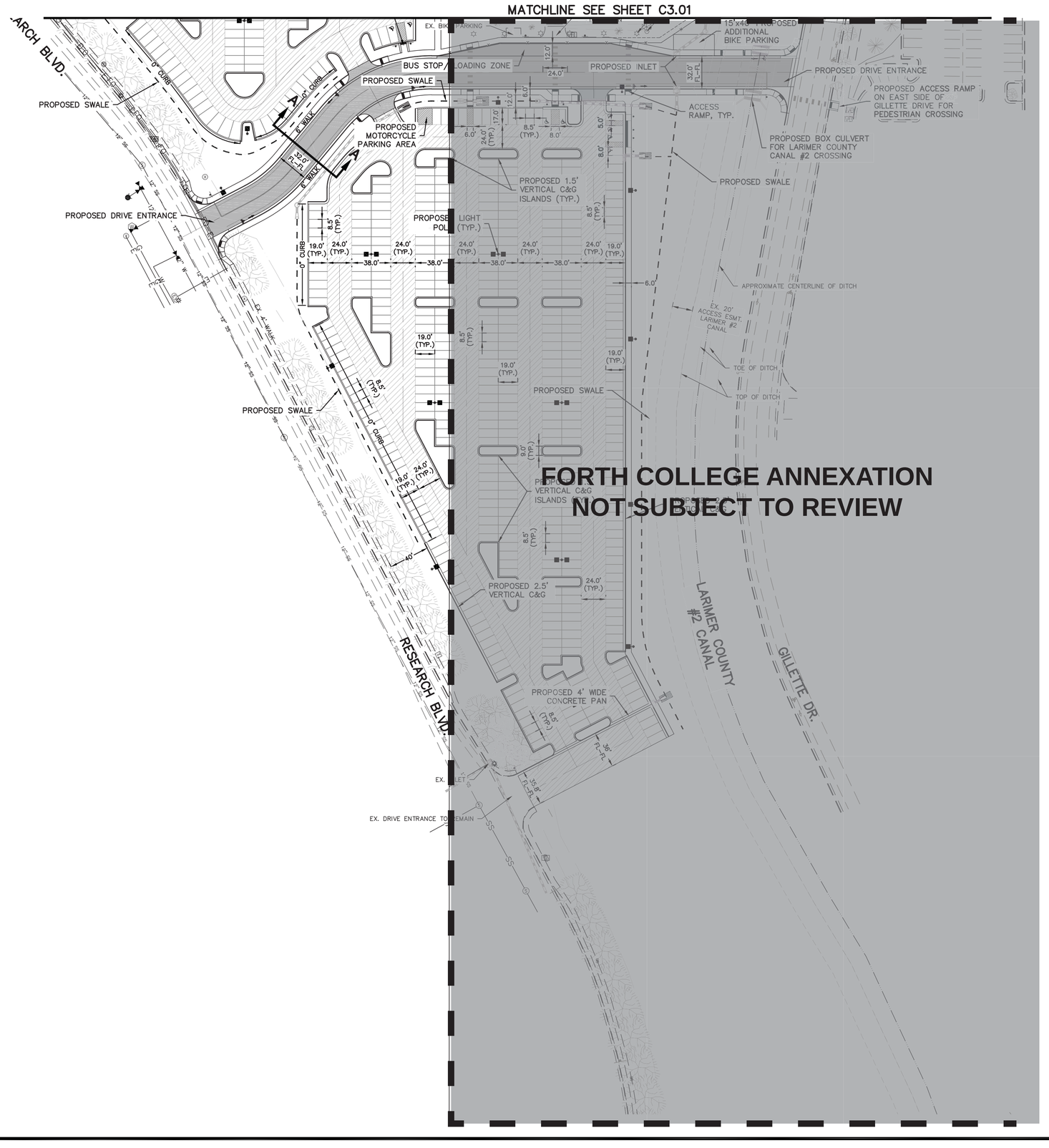
DRAWN D.A.P.
CHECKED H.E.M.
DESIGNED D.A.P.
FILENAME 091_0014_SitePlan

RESEARCH BLVD. PARKING LOT PROJECT #14-031
DESIGN BUILD RFP SET

SITE PLAN

TST
TST, INC.
CONSULTING ENGINEERS
760 Whalers Way
Building C, Suite 200
Fort Collins, Colorado
Phone: 970.226.0557
Fax: 970.226.0204

JOB NO. 0091.0014.00
SCALE 1"=50'
DATE MARCH 5, 2015
SHEET C3.01



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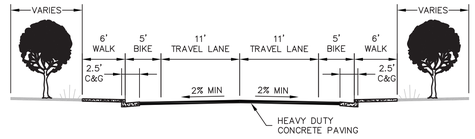

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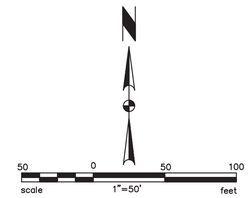


REVISIONS

DESCRIPTION	DATE	BY

DRAWN D.A.P.
CHECKED 3.02
DESIGNED D.A.P.
FILENAME 091_0014_SitePlan

RESEARCH BLVD. PARKING LOT PROJECT #14-031
DESIGN BUILD RFP SET

SITE PLAN

TST
TST, INC.
CONSULTING ENGINEERS
760 Whalers Way
Building C, Suite 200
Fort Collins, Colorado
Phone: 970.226.0557
Fax: 970.226.0204

JOB NO. 0091.0014.00
SCALE 1"=50'
DATE MARCH 5, 2015
SHEET C3.02

NOTES:

1. ANY LIMITS OF STREET CUT SHOWN ON THESE PLANS ARE APPROXIMATE. FINAL LIMITS ARE TO BE DETERMINED IN THE FIELD BY THE CITY ENGINEERING INSPECTOR. ALL REPAIRS TO BE IN ACCORDANCE WITH THE CITY OF FORT COLLINS STREET REPAIR STANDARDS.

2. ALL EXISTING UTILITIES ARE APPROXIMATELY SHOWN. BOTH VERTICAL AND HORIZONTAL LOCATION SHALL BE VERIFIED BY THE CONTRACTOR PRIOR TO CONSTRUCTION.

3. CONTRACTOR SHALL COORDINATE WITH GEOTECHNICAL ENGINEER DURING CONSTRUCTION. MINIMUM PAVEMENT SECTION TO BE DETERMINED BY GEOTECHNICAL ENGINEER AND SUBMITTED TO COLORADO STATE UNIVERSITY FOR APPROVAL AFTER SUBGRADE INVESTIGATION AND PRIOR TO ANY PAVING.

   MINIMUM ALLOWABLE PAVEMENT SECTION PER PRELIMINARY GEOTECHINICAL REPORT:

	ASPHALT PAVEMENT THICKNESS(IN)	AGGREGATE BASE THICKNESS(IN)
AUTOMOBILE PARKING AREAS	*3.0	6.0
MAIN TRAFFIC CORRIDORS	4.5	6.0

	CONCRETE PAVEMENT THICKNESS(IN)
MAIN TRAFFIC CORRIDORS	**7.5

   * OWNER HAS REQUESTED TO USE MINIMUM 4.0" THICK ASPHALT SECTION

   ** OWNER HAS REQUESTED TO USE MINIMUM 9" THICK CONCRETE SECTION

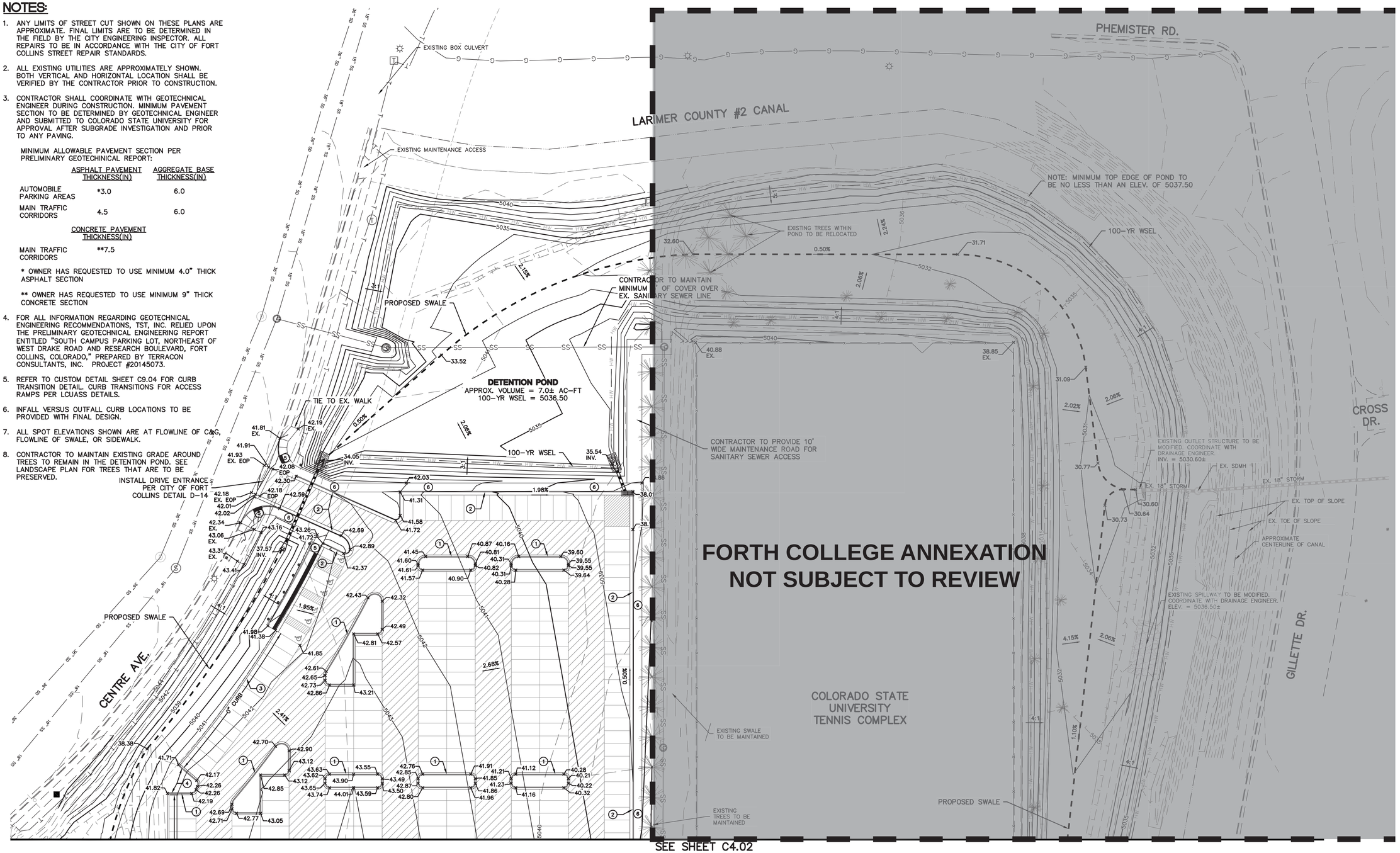
4. FOR ALL INFORMATION REGARDING GEOTECHNICAL ENGINEERING RECOMMENDATIONS, TST, INC. RELIED UPON THE PRELIMINARY GEOTECHNICAL ENGINEERING REPORT ENTITLED "SOUTH CAMPUS PARKING LOT, NORTHEAST OF WEST DRAKE ROAD AND RESEARCH BOULEVARD, FORT COLLINS, COLORADO," PREPARED BY TERRACON CONSULTANTS, INC. PROJECT #20145073.

5. REFER TO CUSTOM DETAIL SHEET C9.04 FOR CURB TRANSITION DETAIL. CURB TRANSITIONS FOR ACCESS RAMPS PER LCUASS DETAILS.

6. INFALL VERSUS OUTFALL CURB LOCATIONS TO BE PROVIDED WITH FINAL DESIGN.

7. ALL SPOT ELEVATIONS SHOWN ARE AT FLOWLINE OF C&G, FLOWLINE OF SWALE, OR SIDEWALK.

8. CONTRACTOR TO MAINTAIN EXISTING GRADE AROUND TREES TO REMAIN IN THE DETENTION POND. SEE LANDSCAPE PLAN FOR TREES THAT ARE TO BE PRESERVED.



PAVING LEGEND:

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- HEAVY DUTY ASPHALT PAVING
- LIGHT DUTY ASPHALT PAVING

LEGEND:

1. 1.5' C&G
2. 2.5' C&G
3. CUSTOM 0" CURB
4. CURB TRANSITION (6" TO 0")
5. ACCESS RAMP
6. 6' SIDEWALK
7. 4' CROSSPAN

30 0 30 60
scale 1"=30' feet

REVISIONS

BY	DATE	DESCRIPTION

DRAWN D.A.P.
CHECKED H.E.M.
DESIGNED D.A.P.
FILENAME 091_0014_Grading

RESEARCH BLVD. PARKING LOT PROJECT #14-031
DESIGN BUILD RFP SET

GRADING PLAN

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CONSULTING ENGINEERS
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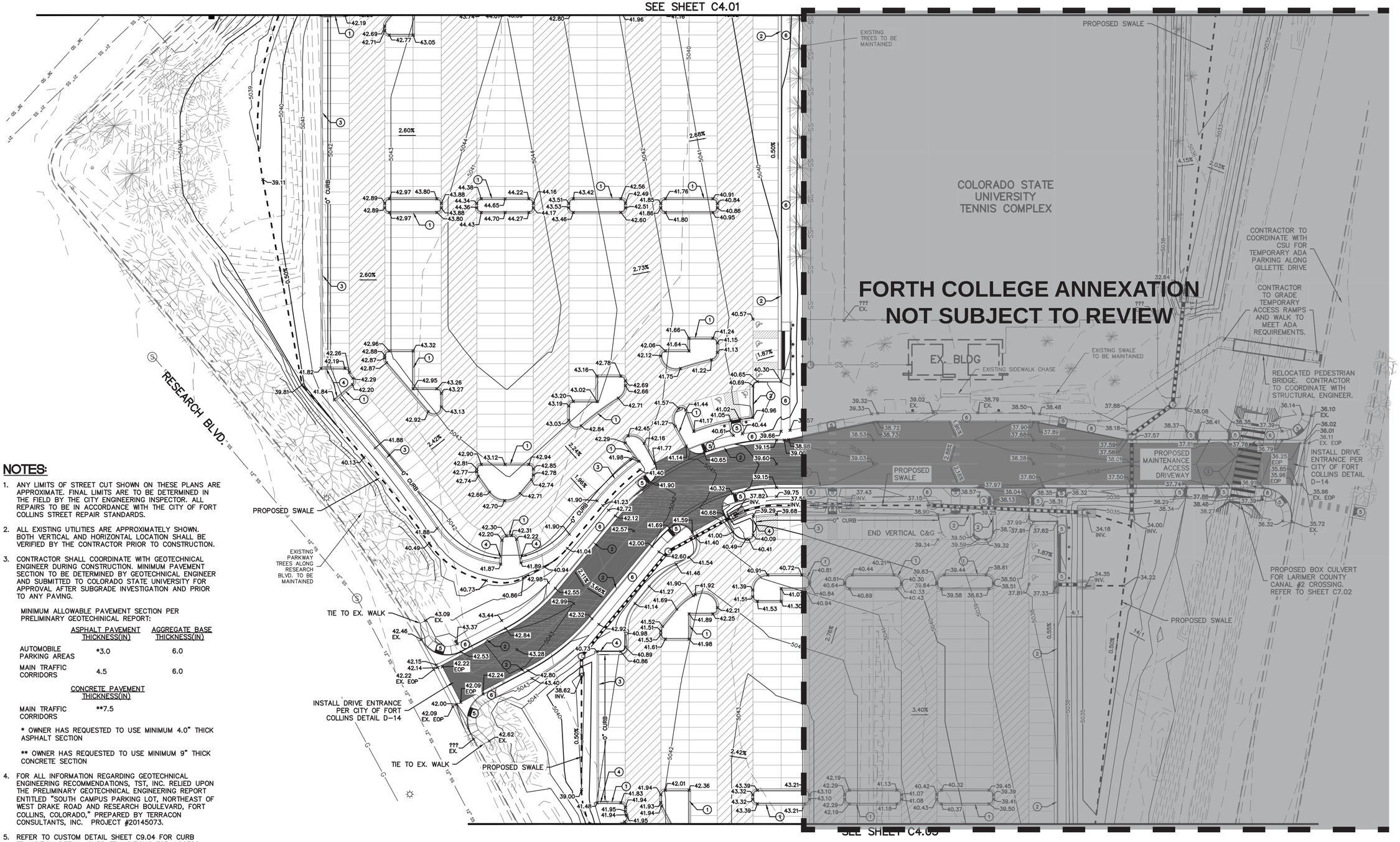
JOB NO. 0091.0014.00
SCALE 1"=30'
DATE MARCH 5, 2015
SHEET C4.01

SEE SHEET C4.01



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7. 4' CROSSPAN

scale 1"=30' (30 0 30 60 feet)

REVISIONS

BY	DATE	DESCRIPTION

DRAWN D.A.P.
CHECKED H.E.M.
DESIGNED D.A.P.
FILENAME 091_0014_Grading

RESEARCH BLVD. PARKING LOT PROJECT #14-031
DESIGN BUILD RFP SET
GRADING PLAN

TST
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CONSULTING ENGINEERS
760 Whalers Way
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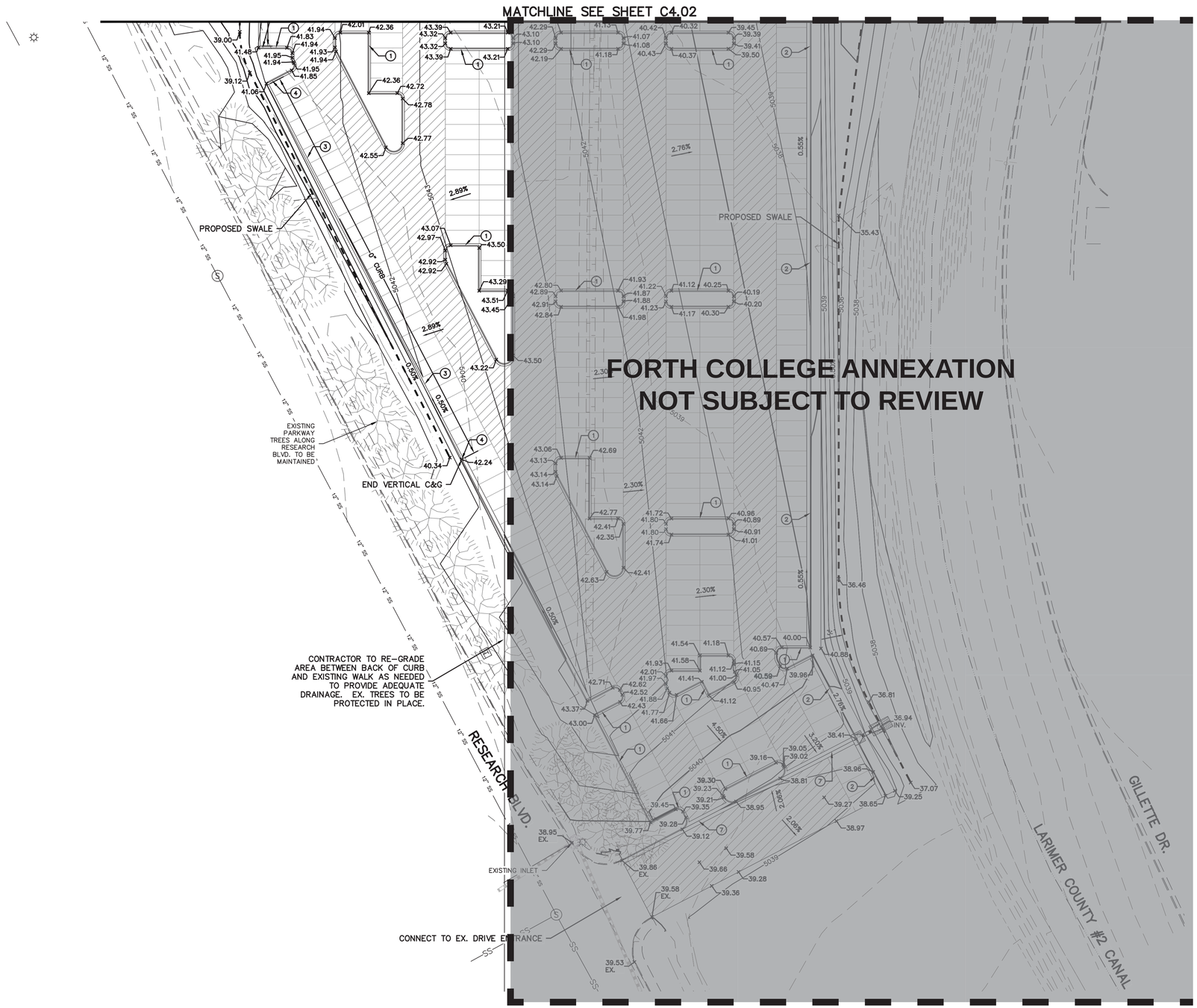
Fax: 970.226.0204

JOB NO. 0091.0014.00
SCALE 1"=30'
DATE MARCH 5, 2015
SHEET C4.02



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30 0 30 60
scale 1"=30' feet

REVISIONS

BY	DATE	DESCRIPTION

DRAWN D.A.P.
CHECKED H.E.M.
DESIGNED D.A.P.
FILENAME 091_0014_Grading

RESEARCH BLVD. PARKING LOT PROJECT #14-031
DESIGN BUILD RFP SET

GRADING PLAN

TST
TST, INC.
CONSULTING ENGINEERS
760 Whalers Way
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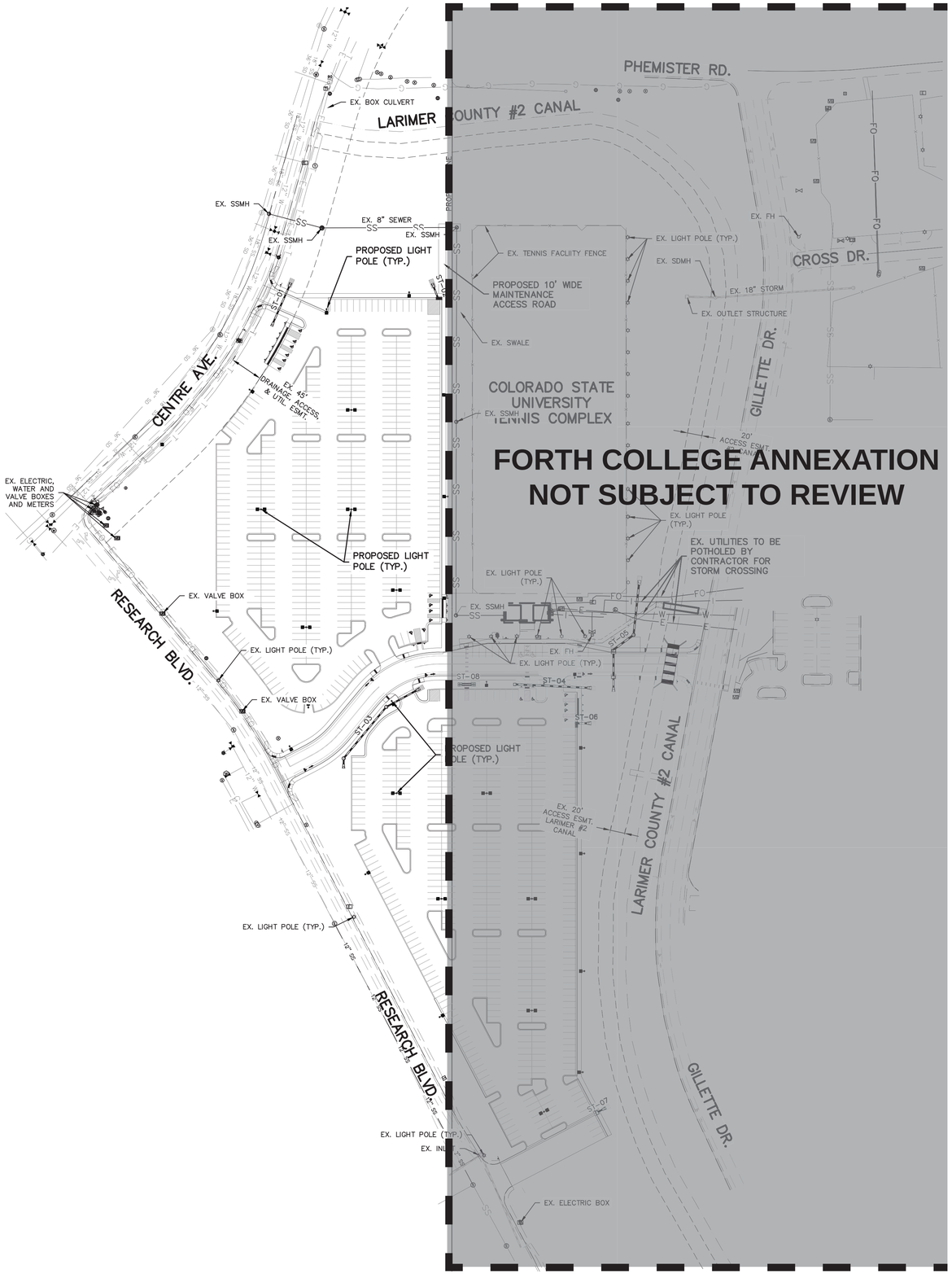
Fort Collins, Colorado
Phone: 970.226.0557
Fax: 970.226.0204

JOB NO. 0091.0014.00
SCALE 1"=30'
DATE MARCH 5, 2015
SHEET C4.03



NOTES:

1. LIGHT POLES AND FIXTURES TO BE PROVIDED BY COLORADO STATE UNIVERSITY (CSU).

80 0 80 160
scale 1"=80' feet

REVISIONS

BY	DATE	DESCRIPTION

DRAWN D.A.P.
CHECKED H.E.M.
DESIGNED D.A.P.
FILENAME 091_0014_Utility

RESEARCH BLVD. PARKING LOT PROJECT #14-031
DESIGN BUILD RFP SET

UTILITY & LIGHTING PLAN

TST
TST, INC.
CONSULTING ENGINEERS
760 Whalers Way
Building C, Suite 200
Fort Collins, Colorado
Phone: 970.226.0557
Fax: 970.226.0204

JOB NO. 0091.0014.00
SCALE 1"=80'
DATE MARCH 5, 2015
SHEET C6.01

NEW TURF AND IRRIGATION IN PARKWAY STRIP (TYP)

NATIVE SEED MIX

(5) CO

(2) CO

(23) PH
(3) CC
(11) CK
(3) JB

(6) CK
(1) JB
(11) PH

(2) JB
(6) CK
(27) PH
(2) QT

(2) JB
(6) CK
(27) PH
(2) QT

PROTECT EXISTING TREES AND TURF (TYP)

(12) FS
(9) CB
(5) CA
(8) SA

(4) JB
(1) QT
(12) CK
(3) CC
(34) PH
(5) CC
(1) QT
(3) JB

(13) CI
(5) CB

(7) SE
(5) SP

TURF

(9) EX-CO

(33) MG
(9) CA
(5) SP
(5) SE

(9) SE

(3) JB
(2) QT

(12) CK
(2) CC
(19) PR
(8) SP
(1) QT
(1) JB

(2) JB
(12) CK
(17) PR
(2) QT

(3) CC
(2) JB

(3) CC
(4) SA

NEW TURF AND IRRIGATION IN PARKWAY STRIP (TYP)

PROTECT EXISTING TREES AND TURF (TYP)

(11) MG

(13) CA

(12) CB
(8) SP
(11) SE
(3) PF

PROXIMATE LIMITS OF TING TURF. PROTECT PLACE OR RESTORE ORIGINAL CONDITION

NEW TURF

EXISTING TURF

(7) MG
(12) CA

(7) CB
(8) CI

(5) T-PINE
(3) SE
(5) SP
(7) SA

(3) PF
(5) SE

(3) T-PINE

(12) CI

(16) MG
(7) CB

(2) PF
(5) SE

(7) CA
(1) PF

(6) CI
(7) CA

MATCHLINE SHEET L2.02

MATCHLINE SHEET L2.03

(5) JB
(2) QR

(5) CC
(13) PS

(4) JB
(2) QR
(11) CK

TREE TO REMAIN IN DETENTION POND (TYP) CONTRACTOR TO PRESERVE EXISTING GRADES AROUND TREE

IF EXISTING GRADES PREVENT TREES FROM BEING TRANSPLANTED TREES MARKED FOR TRANSPLANT MAY BE REMOVED WITH AUTHORIZATION FROM CSU LANDSCAPE ARCHITECT

NATIVE SEED MIX

TREE TO REMAIN IN DETENTION POND (TYP) CONTRACTOR TO PRESERVE EXISTING GRADES AROUND TREE

IF EXISTING GRADES PREVENT TREES FROM BEING TRANSPLANTED TREES MARKED FOR TRANSPLANT MAY BE REMOVED WITH AUTHORIZATION FROM CSU LANDSCAPE ARCHITECT

FORTH COLLEGE ANNEXATION
NOT SUBJECT TO REVIEW

EXISTING BUILDING FOUR

NATIVE SEED MIX

TREE TO REMAIN IN DETENTION POND (TYP) CONTRACTOR TO PRESERVE EXISTING GRADES AROUND TREE

PROTECT EXISTING TREES AND TURF (TYP)

TURF

REVISIONS

DESCRIPTION	DATE	BY

DRAWN B.E.W.

CHECKED B.E.W.

DESIGNED M.J.B.

FILENAME 091_0014_CSU Landscape Plan

RESEARCH BLVD. PARKING LOT PROJECT #14-031

LANDSCAPE PLAN
LANDSCAPE DETAIL NORTH

TST

TST, INC.
CONSULTING ENGINEERS
760 Whalers Way
Building C, Suite 200
Fort Collins, Colorado
Phone: 970.226.0557
Fax: 970.226.0204

JOB NO. 0091.0014.00

SCALE 1"=30'

DATE MARCH 5, 2015

SHEET L2.02

MATCHLINE SHEET L2.02

MATCHLINE SHEET L2.03

MATCHLINE SHEET THIS SHEET

MATCHLINE SHEET THIS SHEET

FORTH COLLEGE ANNEXATION
NOT SUBJECT TO REVIEW

FORTH COLLEGE ANNEXATION
NOT SUBJECT TO REVIEW

PROTECT EXISTING TREES AND TURF (TYP)

EXISTING TURF

TURF

NATIVE SEED MIX

scale 1"=30' feet

30 0 30 60

REVISIONS	DESCRIPTION	DATE	BY

DRAWN B.E.W.

CHECKED B.E.W.

DESIGNED M.J.B.

FILENAME 091_0014_CSU Landscape Plan

RESEARCH BLVD. PARKING LOT PROJECT #14-031

LANDSCAPE PLAN
LANDSCAPE DETAIL SOUTH

TST

TST, INC.
CONSULTING ENGINEERS
760 Whalers Way
Building C, Suite 200
Fort Collins, Colorado
Phone: 970.226.0557
Fax: 970.226.0204

JOB NO. 0091.0014.00

SCALE 1"=30'

DATE MARCH 5, 2015

SHEET L2.03

TENNIS COURT PARKING LOT

PRELIMINARY DRAINAGE REPORT

PREPARED FOR

Colorado State University

Fort Collins, Colorado

PREPARED BY

Olsson Associates
5285 McWhinney Blvd.
Loveland, CO 80538
970.635.3721

February 2015

Olsson Associates Project No. 015-0358

OLSSON ASSOCIATES

Table of Contents

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List of Appendices

1.0 GENERAL LOCATION AND DESCRIPTION

1.1 Location

The proposed project is located within part of the south half of Section 23, in the Township 7 north, and the Range 69 west of the sixth principal meridian. The site is bound on the north and east by the Larimer County Canal Number 2, on the northwest by Center Avenue, on the southwest by Research Boulevard, and on the south by Drake Road.

1.2 Description of Property

The proposed project site is part of Colorado State University's South Campus and includes the current Tennis Complex. The property is approximately 20 acres in size.

Currently the site includes a tennis court facility with twelve tennis courts, a small parking lot, and small building with restrooms. The remaining site is primarily vegetated in a mixture of grasses. A depression at the western most corner of the property is populated with stands of cottonwood trees. The existing topography slopes to the east at average slopes of between 0 and 3%. Soils in this area consist of Nunn clay loam which are classified as hydrologic group "C".

2.0 DRAINAGE BASINS AND SUB-BASINS

2.1 Major Basin Description

The project site is located in the City of Fort Collins Spring Creek drainage basin and is identified as basins 89 and 62 in the Spring Creek master plan. Spring Creek lies north of the project running west to east. The property is also part of Colorado State University's South Campus. The master plan for the south campus, completed by Anderson Consulting Engineers, correlates to the City's Spring Creek Master Plan's drainage basin numbering. The proposed project is outside any FEMA and City of Fort Collins floodplains areas.

2.2 Sub-Basin Description

2.2.1 Historical Drainage Patterns

Historically the northern two-thirds of the site drains to the east and the southern third drains to the south. The northern portion drains to a detention pond at the northern and eastern sides of the tennis courts. This detention pond discharges to the east under the Larimer County Canal Number 2 and over to a drainage swale that runs north to Spring Creek.

3.0 DRAINAGE DESIGN CRITERIA

3.1 Regulations/Development Criteria

The preliminary design of the proposed drainage facilities was completed in accordance with the criteria presented in the City of Fort Collins Spring Creek Basin Master Plan and Colorado State University's South Campus Drainage Master Plan. The following criteria were used in the drainage design.

- The developed 100-year peak runoff from the developed site was limited to a release of no greater 3.0 CFS based on the release rates identified for Pond 289 in the Spring Creek and South Campus master plans.
- The southern portion of the site remained undeveloped and was therefore not analyzed.

3.2 Hydrological Criteria

The design storm used was the 100-year (major) for the developed discharge. The City of Fort Collins Intensity-Duration-Frequency curves were used to obtain rainfall data used for the 100-year storm event. The runoff for the site was determined using EPA Storm Water Management Model, version 5.1 (SWMM). This was done in order to accurately model the detention pond because the FAA Method was not sufficient. The volume required in the detention pond exceeded the limits of the FAA Method, therefore, SWMM was used to model the site.

3.3 Hydraulic Criteria

The stormwater conveyance systems were designed to capture and convey the major event to the detention pond. The discharge used to size and design the conveyance structures was based on the SWMM model of the discharges from the basins. Swales were sized to accommodate 133% of the 100-year storm event while pipes were sized to using SWMM to ensure ponding at inlets met Fort Collins criteria.

3.4 Waivers/Variance from Criteria

No waiver or variance is requested.

3.5 Stormwater Quality Considerations

In general, stormwater quality will be mitigated on-site during construction with the use of silt fencing, vehicle tracking devices, inlet / outlet protection devices, and other best management practices as needed. Long-term stormwater quality will be obtained by running the stormwater over grassed areas and by providing a 40-hour water quality capture volume (WQCV) within the detention pond in conjunction with a water quality orifice plate designed for a 12 hour release rate.

4.0 WETLAND PRESERVATION AND MITIGATION

There are no jurisdictional wetlands located on this property.

5.0 DRAINAGE FACILITY DESIGN

5.1 General Concept

Onsite basins have been determined and are defined as Basins B1-1, B1-2, B2 through B9. No offsite basins affect the project. Adjacent streets were accommodated in the Spring Creek Master Plan and as such, onsite basins do not include adjacent roadways. The proposed drainage patterns for the onsite basins have been determined by the layout and grading of the site. Overall, the site will be similar to the historic flow path. The majority of the stormwater from the site will be routed through the site by the stormwater system to the detention pond. Due to

grading limitations, small portions of the site (the entrances, basins B10, 26, 27, and 28) drain out to the adjacent streets.

To mitigate the developed flows from the developed basins, the existing detention pond will be modified to accommodate the developed flows while maintaining the overall release rate from the site.

5.2 Specific Details

SWMM modeling was used to determine runoff from each basin and then used to size drainage structures to convey the discharge downstream. The rainfall from the City of Fort Collins Drainage Criteria was used in the SWMM model. A summary of the SWMM parameters used in the model are listed in Table 5.1 below. As each basin contributed to the total discharge for each conveyance, the routed summation of the contributing discharges was used to size the conveyance structures at key points. See Table 5.2 for a summary of the drainage basins and their characteristics.

Table 5.1 SWMM Input Parameters

Parameter	Value
Depth of Storage on Impervious Area	0.1 Inches
Depth of Storage on Pervious Area	0.3 Inches
Horton's Maximum Infiltration Rate	0.51 Inches/hr
B3 Horton's Minimum Infiltration Rate	0.50 Inches/hr
Decay Rate	0.0018 inches/sec
Zero Detention Depth	1%
Manning's n Value for Pervious Surfaces	0.025
Manning's n Value for Impervious Surfaces	0.016

Table 5.2 Basin Summary

Basin ID	Area (ac)	Percent Imp. (%)	Runoff (cfs)
B1-1	6.24	45	37.4
B1-2	1.94	96	18.7
B2	2.24	54	20.5
B3	0.38	64	3.3
B4	0.08	29	0.6
B5	2.31	96.1	21.5
B6	0.11	100	1.0
B7	1.51	61	14.5
B8	0.40	67	3.9
B9	0.80	2.1	7.4
OS-1*	0.05	100	0.5
OS-2*	0.06	100	0.6
OS-3*	0.05	100	0.5
OS-4**	0.18	22	1.7

* These basins drain offsite and the runoff from these basins deducted from the pond release rate identified in the master plans.
** The runoff from this basin was not deducted from the pond release rate as it was identified in the master plan as flowing south.

The existing detention pond was enlarged with the proposed parking lot improvements. The outlet is a siphon that was designed with the previous tennis courts improvements. Because the detention pond was modified, the outlet structure will need to be constructed to have a water quality orifice plate sized to release the WQCV within 12 hours and the revised release rate accounted for. If the outlet structure should ever become plugged, the spillway will allow the pond to overtop by providing a controlled release of 68 cfs during the major event while maintaining a minimum1-foot of freeboard. The following table summarizes the calculated stormwater runoff quantities and pond design parameters. See Table 5.3

Table 5.3 Detention Pond Details

Pond Elevation Variables	
Bottom of Pond, feet	5030.96
Top of WQCV control structure, feet	5032.43
100-yr WSEL	5034.98
Pond spillway elevation, feet	5036.50
Top of pond elevation, feet	5038.00
Pond Outlet	
Spillway, feet (at 0.5 feet deep)	66
Freeboard 100-year plugged outlet condition, feet	1.0
Outlet pipe, inches	24
WQCV Volumes	
Volume required basins, ac-ft	0.67
Volume provided, ac-ft	0.67
Storage Volumes	
Volume required, ac-ft	3.86
Volume provided, ac-ft	6.16
Pond Discharge	
100-year Event, cfs	1.44
Master Plan Pond Discharge, cfs	3.0
Undetained discharge, cfs	1.5

Refer to the Appendix B for detention pond sizing and outlet structure calculations.

6.0 CONCLUSIONS

Overall, the design of the structures used to convey the runoff from the proposed development will control required storm events effectively. The proposed stormwater system will capture the majority of the increased runoff from the site and route the storm flows to the detention pond. The detention pond will attenuate the developed flows and release them at a controlled rate to the Spring Creek basin. Water quality control will be provided before discharging developed flows. No offsite drainage improvements are required.

7.0 REFERENCES

Urban Storm Drainage Criteria Manual (USDCM), Volumes 1 and 2, published by the Urban Drainage and Flood Control District, Denver, Colorado, June 2001, Revised April 2008

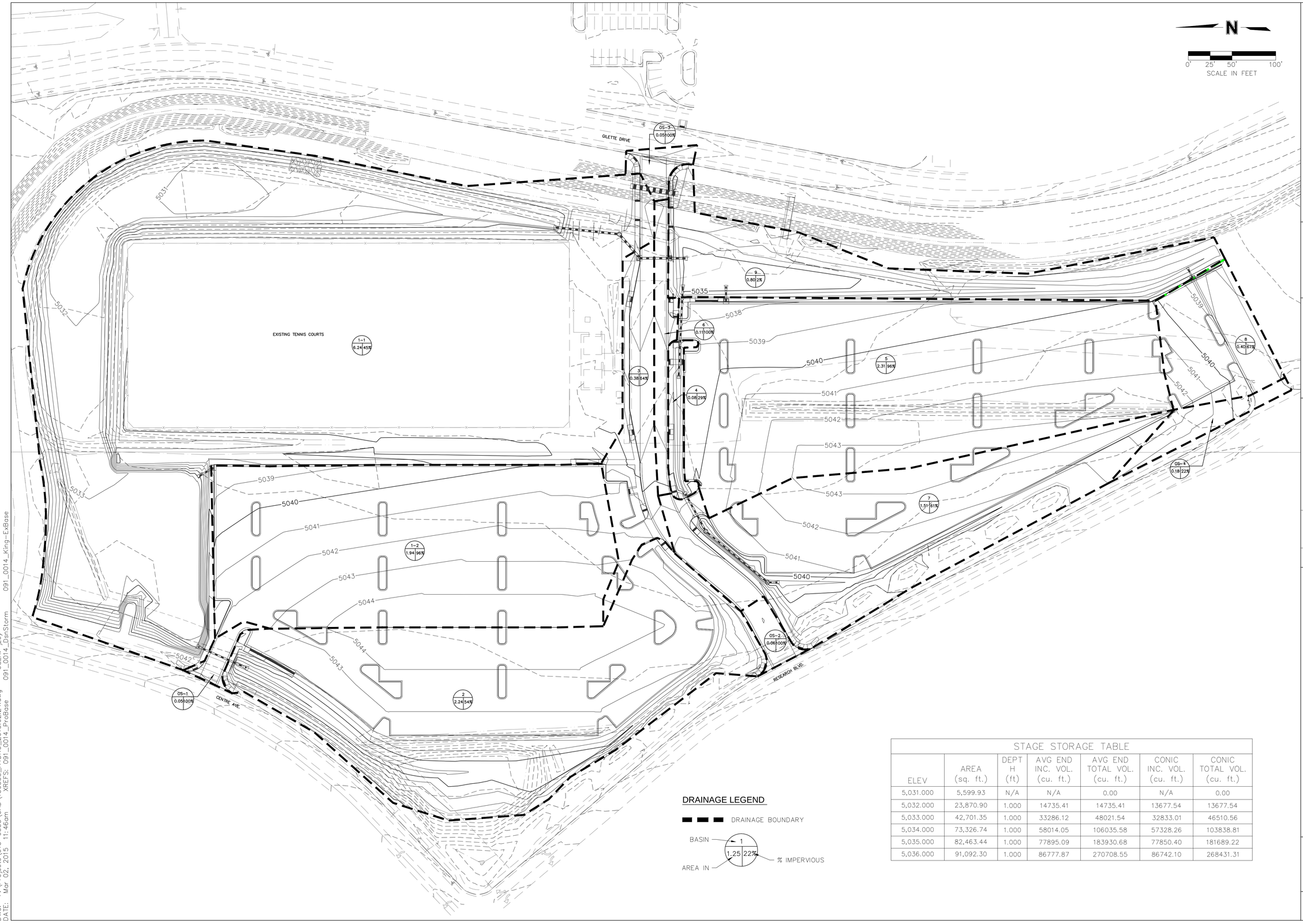
Urban Storm Drainage Criteria Manual (USDCM), Volumes 3, published by the Urban Drainage and Flood Control District, Denver, Colorado, November 2010

Fort Collins Stormwater Criteria Manual, City of Fort Collins, December 2011, Addendum February 2013

CSU South Campus/Vetrinary Teaching Hospital Drainage Evaluation, Anderson Consulting Engineers, October 19, 2001.

Spring Creek Master Plan, Anderson Consulting Engineers, December 8, 1999

APPENDIX A
MAPS AND FIGURES



STAGE STORAGE TABLE						
ELEV	AREA (sq. ft.)	DEPTH (ft)	AVG END INC. VOL. (cu. ft.)	AVG END TOTAL VOL. (cu. ft.)	CONIC INC. VOL. (cu. ft.)	CONIC TOTAL VOL. (cu. ft.)
5,031.000	5,599.93	N/A	N/A	0.00	N/A	0.00
5,032.000	23,870.90	1.000	14735.41	14735.41	13677.54	13677.54
5,033.000	42,701.35	1.000	33286.12	48021.54	32833.01	46510.56
5,034.000	73,326.74	1.000	58014.05	106035.58	57328.26	103838.81
5,035.000	82,463.44	1.000	77895.09	183930.68	77850.40	181689.22
5,036.000	91,092.30	1.000	86777.87	270708.55	86742.10	268431.31

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REVISIONS

REV. NO.	DATE	REVISIONS DESCRIPTION

DRAINAGE EXHIBIT

CSU TENNIS COURTS

FORT COLLINS, COLORADO

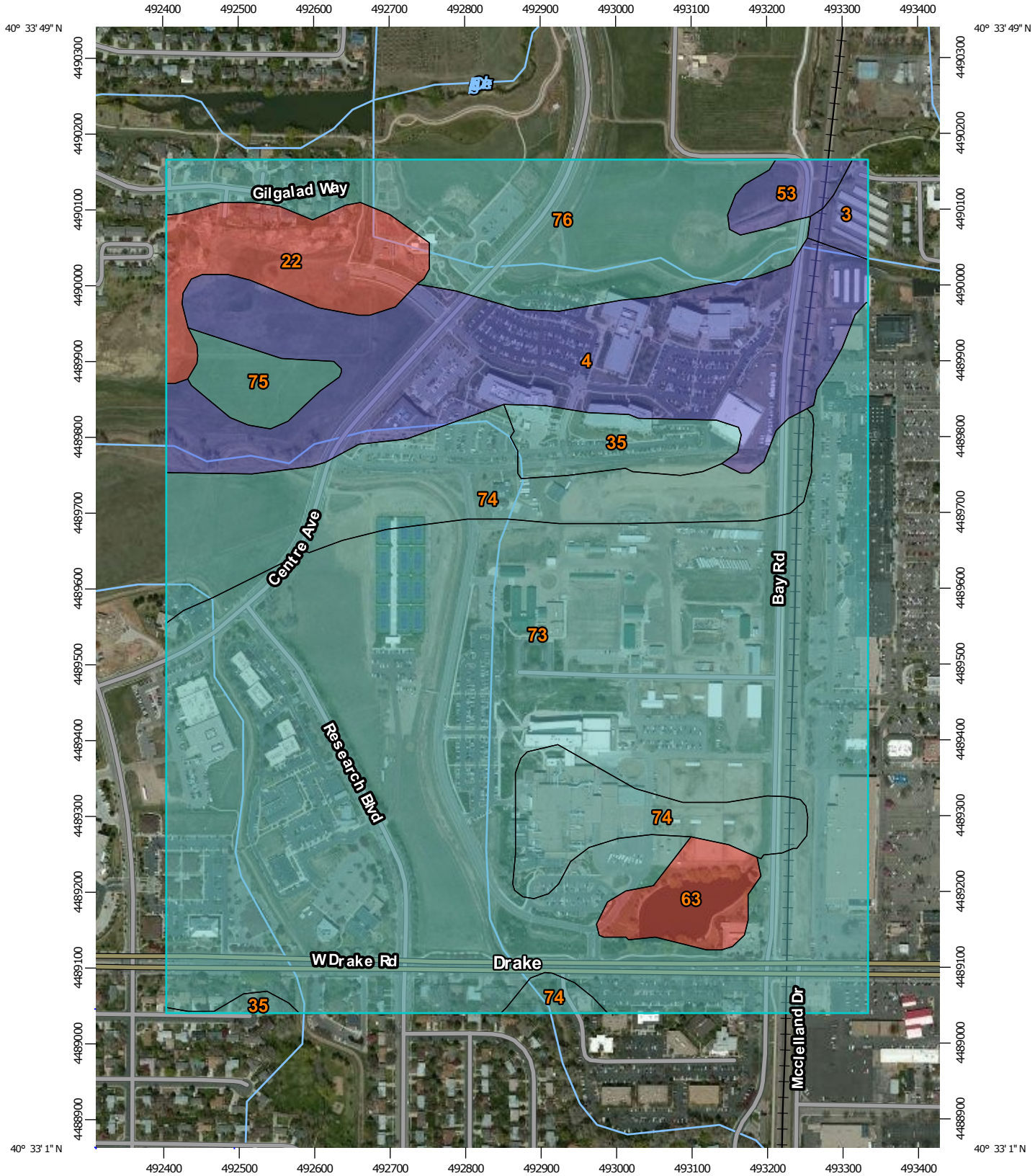
2015

drawn by: JEZ
checked by: AK
approved by: AK
QA/QC by: AK
project no.: 150358
drawing no.: 150358_HYDRO
date: 03.02.2015

SHEET
1 of 1

DWG: F:\Projects\015-0358\CAD\150358_HYDRO_2015.02.24.dwg
DATE: Mar 02, 2015 11:46am
XREFS: 091_0014_ProBase
091_0014_DsnStorm
USER: jzey
091_0014_King-ExBase

Hydrologic Soil Group—Larimer County Area, Colorado
(CSU Parking Area)



Map Scale: 1:7,210 if printed on A portrait (8.5" x 11") sheet.

N

Meters
0 100 200 400 600

Feet
0 350 700 1400 2100

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 13N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils

Soil Rating Polygons
- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Lines
- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Points
- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

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

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

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

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

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

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

Soil Survey Area: Larimer County Area, Colorado
Survey Area Data: Version 9, Sep 22, 2014

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

Date(s) aerial images were photographed: Apr 22, 2011—Nov 18, 2011

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

Hydrologic Soil Group

Hydrologic Soil Group— Summary by Map Unit — Larimer County Area, Colorado (CO644)				
Map unit symbol	**Map unit name**	**Rating**	**Acres in AOI**	**Percent of AOI**
3	Altvan-Satanta loams, 0 to 3 percent slopes	B	1.6	0.6%
4	Altvan-Satanta loams, 3 to 9 percent slopes	B	37.9	14.6%
22	Caruso clay loam, 0 to 1 percent slope	D	10.4	4.0%
35	Fort Collins loam, 0 to 3 percent slopes	C	6.2	2.4%
53	Kim loam, 1 to 3 percent slopes	B	2.6	1.0%
63	Longmont clay, 0 to 3 percent slopes	D	5.0	1.9%
73	Nunn clay loam, 0 to 1 percent slopes	C	133.8	51.5%
74	Nunn clay loam, 1 to 3 percent slopes	C	32.5	12.5%
75	Nunn clay loam, 3 to 5 percent slopes	C	3.7	1.4%
76	Nunn clay loam, wet, 1 to 3 percent slopes	C	25.9	10.0%
Totals for Area of Interest			**259.7**	**100.0%**

Description

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

Rating Options

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

APPENDIX B
POND CALCULATIONS

STAGE-DISCHARGE SIZING OF THE WATER QUALITY CAPTURE VOLUME (WQCV) OUTLET

Project: _____

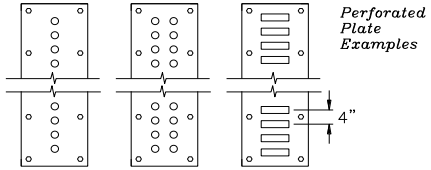
Basin ID: _____

WQCV Design Volume (Input):

Catchment Imperviousness, I_a =	90.0 percent		
Catchment Area, A =	16.60 acres	Diameter of holes, D =	1.602 inches
Depth at WQCV outlet above lowest perforation, H =	2 feet	Number of holes per row, N =	1
Vertical distance between rows, h =	4.00 inches	**OR**	
Number of rows, NL =	6.00		
Orifice discharge coefficient, C_o =	0.67	Height of slot, H =	inches
Slope of Basin Trickle Channel, S =	0.005 ft / ft	Width of slot, W =	inches
Time to Drain the Pond =	40 hours		

Watershed Design Information (Input):

Percent Soil Type A =	%
Percent Soil Type B =	%
Percent Soil Type C/D =	100 %



Perforated Plate Examples

Outlet Design Information (Output):

Water Quality Capture Volume, WQCV =	0.401 watershed inches	
Water Quality Capture Volume (WQCV) =	0.555 acre-feet	
Design Volume (WQCV / 12 * Area * 1.2) Vol =	**0.666 acre-feet**	29014.59
Outlet area per row, Ao =	1.45 square inches	
Total opening area at each row based on user-input above, Ao =	2.01 square inches	
Total opening area at each row based on user-input above, Ao =	0.014 square feet	

3

	Central Elevations of Rows of Holes in feet																							Σ Flow
	Row 1	Row 2	Row 3	Row 4	Row 5	Row 6	Row 7	Row 8	Row 9	Row 10	Row 11	Row 12	Row 13	Row 14	Row 15	Row 16	Row 17	Row 18	Row 19	Row 20	Row 21	Row 22	Row 23	Row 23	
	5030.60	5030.93	5031.27	5031.60	5031.93	5032.27																			
	Collection Capacity for Each Row of Holes in cfs																								
5030.60	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000																			**0.00**
5031.10	0.0532	0.0310	0.0000	0.0000	0.0000	0.0000																			**0.08**
5031.60	0.0752	0.0616	0.0432	0.0000	0.0000	0.0000																			**0.18**
5032.10	0.0921	0.0814	0.0685	0.0532	0.0310	0.0000																			**0.33**
5032.60	0.1064	0.0972	0.0868	0.0752	0.0616	0.0432																			**0.47**
5033.10	0.1190	0.1108	0.1018	0.0921	0.0814	0.0685																			**0.57**
5033.60	0.1303	0.1229	0.1148	0.1064	0.0972	0.0868																			**0.66**
5034.10	0.1407	0.1339	0.1266	0.1190	0.1108	0.1018																			**0.73**
5034.60	0.1505	0.1441	0.1373	0.1303	0.1229	0.1148																			**0.80**
5035.10	0.1596	0.1536	0.1472	0.1407	0.1339	0.1266																			**0.86**
5035.60	0.1682	0.1626	0.1565	0.1505	0.1441	0.1373																			**0.92**
5036.10	0.1764	0.1711	0.1653	0.1596	0.1536	0.1472																			**0.97**
5036.60	0.1843	0.1791	0.1737	0.1682	0.1626	0.1565																			**1.02**
5037.10	0.1918	0.1869	0.1816	0.1764	0.1711	0.1653																			**1.07**
5037.60	0.1990	0.1943	0.1893	0.1843	0.1791	0.1737																			**1.12**
5038.10	0.2060	0.2014	0.1966	0.1918	0.1869	0.1816																			**1.16**
5038.60	0.2128	0.2084	0.2037	0.1990	0.1943	0.1893																			**1.21**
5039.10	0.2193	0.2150	0.2105	0.2060	0.2014	0.1966																			**1.25**
5039.60	0.2257	0.2215	0.2171	0.2128	0.2084	0.2037																			**1.29**
5040.10	0.2319	0.2278	0.2236	0.2193	0.2150	0.2105																			**1.33**
	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A																			**#N/A**
	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A																			**#N/A**
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	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A																			**#N/A**
	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A																			**#N/A**
	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A																			**#N/A**
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	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A																			**#N/A**
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	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A																			**#N/A**
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	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A																			**#N/A**
	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A																			**#N/A**
	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A																			**#N/A**
	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A																			**#N/A**
	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A																			**#N/A**
	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A																			**#N/A**
	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A																			**#N/A**
	Override Area Row 1	Override Area Row 2	Override Area Row 3	Override Area Row 4	Override Area Row 5	Override Area Row 6	Override Area Row 7	Override Area Row 8	Override Area Row 9	Override Area Row 10	Override Area Row 11	Override Area Row 12	Override Area Row 13	Override Area Row 14	Override Area Row 15	Override Area Row 16	Override Area Row 17	Override Area Row 18	Override Area Row 19	Override Area Row 20	Override Area Row 21	Override Area Row 22	Override Area Row 23	Override Area Row 24	

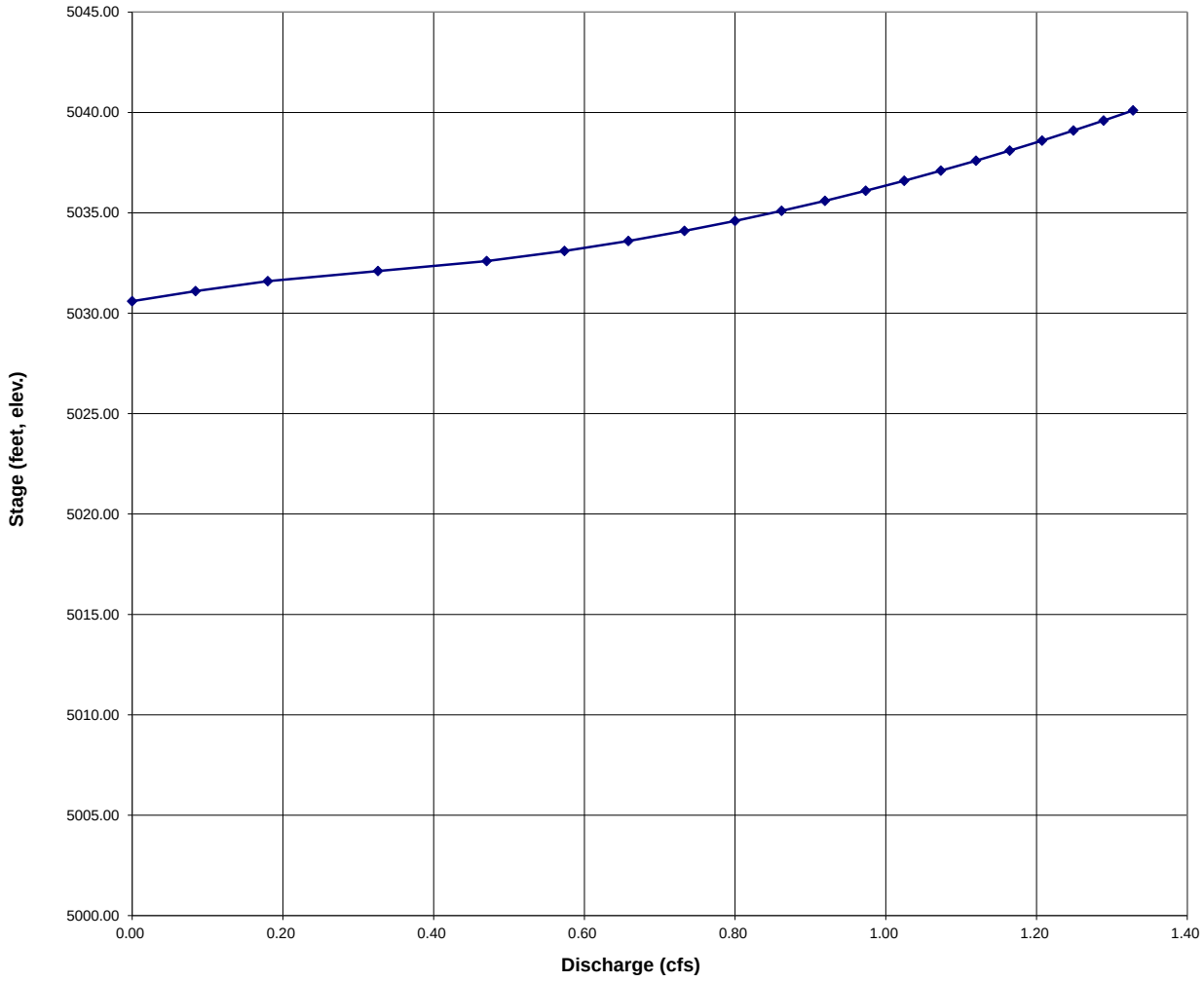
STAGE-DISCHARGE SIZING OF THE WATER QUALITY CAPTURE VOLUME (WQCV) OUTLET

Worksheet Protected

Project: _____

Basin ID: _____

STAGE-DISCHARGE CURVE FOR THE WQCV OUTLET STRUCTURE



APPENDIX C
SWMM INPUT AND OUTPUT

```
[TITLE]
;;Project Title/Notes

[OPTIONS]
;;Option             Value
FLOW_UNITS           CFS
INFILTRATION         HORTON
FLOW_ROUTING         DYNWAVE
LINK_OFFSETS         DEPTH
MIN_SLOPE            0
ALLOW_PONDING        NO
SKIP_STEADY_STATE    NO

START_DATE           02/06/2015
START_TIME           00:00:00
REPORT_START_DATE    02/06/2015
REPORT_START_TIME    00:00:00
END_DATE             02/06/2015
END_TIME             06:00:00
SWEEP_START          01/01
SWEEP_END            12/31
DRY_DAYS             0
REPORT_STEP          00:01:00
WET_STEP             00:01:00
DRY_STEP             01:00:00
ROUTING_STEP         0:00:05

INERTIAL_DAMPING     PARTIAL
NORMAL_FLOW_LIMITED  BOTH
FORCE_MAIN_EQUATION  H-W
VARIABLE_STEP        0.75
LENGTHENING_STEP     0
MIN_SURFAREA         12.557
MAX_TRIALS           8
HEAD_TOLERANCE       0.005
SYS_FLOW_TOL         5
LAT_FLOW_TOL         5

[EVAPORATION]
;;Evap Data      Parameters
;;-------------- ----------
CONSTANT         0.0
DRY_ONLY         NO

[RAINGAGES]
;;Gage           Format    Interval SCF      Source
;;-------------- --------- ------ ------ ----------
1                INTENSITY 0:05     1.0      TIMESERIES FC-100YR
```

[SUBCATCHMENTS]

;;Subcatchment	Rain Gage	Outlet	Area	%Imperv	Width	%Slope	CurbLen	Snow Pack
B1-1	1	POND	6.24	45	212	0.5	0	
B1-2	1	12	1.94	96.03	244	2.65	0	
B2	1	1	2.24	54	160	2.08	0	
B3	1	INLET-5A	0.38	64	18	1.98	0	
B4	1	INLET-4B	0.08	29	5	0.5	0	
OS-4	1	20	0.18	22	42	6.37	0	
B8	1	INLET-7A	0.4	67	120	4.46	0	
B7	1	FES-3B	1.51	61	165	2.89	0	
B9	1	FES-5B	0.8	2.1	500	0.5	0	
B5	1	INLET-6A	2.31	96.1	195	2.68	0	
B6	1	INLET-5B	0.11	100	18	1.17	0	
OS-2	1	22	0.06	100	18	0.5	0	
OS-3	1	21	0.05	100	18	0.5	0	
OS-1	1	29	0.05	100	18	0.5	0	

[SUBAREAS]

;;Subcatchment	N-Imperv	N-Perv	S-Imperv	S-Perv	PctZero	RouteTo	PctRouted
B1-1	.016	.025	.1	.3	1	OUTLET	
B1-2	.016	.025	0.05	0.05	1	OUTLET	
B2	.016	.025	0.05	0.05	1	OUTLET	
B3	.016	.025	0.05	0.05	1	OUTLET	
B4	.016	.025	0.05	0.05	1	OUTLET	
OS-4	.016	.025	0.05	0.05	1	OUTLET	
B8	.016	.025	0.05	0.05	1	OUTLET	
B7	.016	.025	0.05	0.05	1	OUTLET	
B9	.016	.025	0.05	0.05	1	OUTLET	
B5	.016	.025	0.05	0.05	1	OUTLET	

B6	.016	.025	0.05	0.05	1	OUTLET
OS-2	.016	.025	0.05	0.05	1	OUTLET
OS-3	.016	.025	0.05	0.05	1	OUTLET
OS-1	.016	.025	0.05	0.05	1	OUTLET

[INFILTRATION]

;;Subcatchment	MaxRate	MinRate	Decay	DryTime	MaxInfil
B1-1	.51	0.5	4	7	0
B1-2	.51	0.5	4	7	0
B2	.51	0.5	4	7	0
B3	.51	0.5	4	7	0
B4	.51	0.5	4	7	0
OS-4	.51	0.5	4	7	0
B8	.51	0.5	4	7	0
B7	.51	0.5	4	7	0
B9	.51	0.5	4	7	0
B5	.51	0.5	4	7	0
B6	.51	0.5	4	7	0
OS-2	.51	0.5	4	7	0
OS-3	.51	0.5	4	7	0
OS-1	.51	0.5	4	7	0

[JUNCTIONS]

;;Junction	Invert	MaxDepth	InitDepth	SurDepth	Aponded
1	5037.78	0	0	2	0
INLET-5A	5033.18	4.39	0	0.5	0
FES-5B	5034.11	0	0	4	0
INLET-4B	5034.53	0	0	4.3	0
FES-3B	5038.00	0	0	3.5	0
FES-3A	5037.82	0	0	2	0
SDMH-5A	5033.01	0	0	4.87	0
12	5035.67	2.41	0	1	0
INLET-7A	5037.02	1.67	0	1	0
FES-4A	5034.17	0	0	4	0
INLET-5B	5033.34	4.16	0	0.5	0
INLET-6A	5034.46	3.12	0	0.7	0
FES-6A	5034.36	0	0	2	0
FES-7A	5036.94	0	0	2	0

[OUTFALLS]

;;Outfall	Invert	Type	Stage Data	Gated
11	0	FREE		NO
20	0	FREE		NO
22	0	FREE		NO
21	0	FREE		NO

29 0 FREE NO

[STORAGE]

;;Storage Node	Invert	MaxDepth	InitDepth	Shape	Curve Name/Params	Fevap	Seepage
POND	5030.96	6	0	TABULAR	STORAGE	0	0

[CONDUITS]

;;Conduit	From Node	To Node	Length	Roughness	InOffset	OutOffset	InitFlow	MaxFlow
ST03	FES-3B	FES-3A	26	0.016	0	0	0	0
ST05-3	INLET-5A	SDMH-5A	34.21	0.016	0	0	0	0
ST05-1	FES-5B	INLET-5B	22.01	0.016	0	0	0	0
ST05-2	INLET-5B	INLET-5A	32	0.016	0	0	0	0
SW-3TO4	FES-3A	INLET-4B	163	0.035	0	0	0	0
ST01	1	POND	65	0.016	0	3.45	0	0
ST05-4	SDMH-5A	POND	75.19	0.016	0	2.02	0	0
SW-4TO5	FES-4A	FES-5B	35	0.035	0	0	0	0
ST02	12	POND	24	0.016	0	4.58	0	0
ST07	INLET-7A	FES-7A	15.76	0.016	0	0	0	0
ST06	INLET-6A	FES-6A	19.42	0.016	0	0	0	0
SW-7TO5	FES-7A	FES-5B	572	0.035	0	0	0	0
SW-6TO5	FES-6A	FES-5B	52	0.035	0	0	0	0
ST04	INLET-4B	FES-4A	105.69	0.016	0	0	0	0

[OUTLETS]

;;Outlet	From Node	To Node	CrestHt	Type	QTable/Qcoeff	Qexpon	Gated

7	POND	11	0	TABULAR/DEPTH	OUTLET	NO

[XSECTIONS]

;;Link	Shape	Geom1	Geom2	Geom3	Geom4	Barrels
ST03	CIRCULAR	1.75	0	0	0	1
ST05-3	CIRCULAR	3	0	0	0	1
ST05-1	CIRCULAR	2.5	0	0	0	1
ST05-2	CIRCULAR	3	0	0	0	1
SW-3TO4	TRAPEZOIDAL	2	0	3	3	1
ST01	CIRCULAR	1.5	0	0	0	1
ST05-4	CIRCULAR	3	0	0	0	1
SW-4TO5	TRAPEZOIDAL	3	0	3	3	1
ST02	CIRCULAR	1.75	0	0	0	1
ST07	CIRCULAR	1.5	0	0	0	1
ST06	CIRCULAR	2	0	0	0	1
SW-7TO5	TRAPEZOIDAL	3	0	3	3	1
SW-6TO5	TRAPEZOIDAL	3	0	3	3	1
ST04	CIRCULAR	2.5	0	0	0	1

[LOSSES]

;;Link	Kinlet	Koutlet	Kavg	Flap Gate	SeepRate
ST03	1	0	0	NO	0
ST05-3	1	0	0	NO	0
ST05-1	1	0	0	NO	0
ST05-2	1	0	0	NO	0
ST01	1	0	0	NO	0
ST05-4	1	0	0	NO	0
ST02	1	0	0	NO	0
ST07	1	0	0	NO	0
ST06	1	0	0	NO	0
ST04	1	0	0	NO	0

[CURVES]

;;Curve	Type	X-Value	Y-Value
OUTLET	Rating	0	0
OUTLET		.5	.08
OUTLET		1	.18
OUTLET		1.5	.33
OUTLET		2	1
OUTLET		2.5	1.13
OUTLET		3	1.24
OUTLET		3.5	1.34
OUTLET		4	1.44
OUTLET		4.5	1.53

```
OUTLET                   5           1.61
OUTLET                   5.5         1.69
OUTLET                   6           1.77
OUTLET                   6.5         1.84
OUTLET                   7           1.91
;
SPILLWAY        Rating   0           0
SPILLWAY                 .5          0
SPILLWAY                 1           0
SPILLWAY                 1.5         0
SPILLWAY                 2           0
SPILLWAY                 2.5         0
SPILLWAY                 3           0
SPILLWAY                 3.5         0
SPILLWAY                 4           .01
SPILLWAY                 4.5         .46
SPILLWAY                 5           .69
SPILLWAY                 5.5         .87
SPILLWAY                 6           1.01
SPILLWAY                 6.5         1.13
SPILLWAY                 7           1.24
;
STORAGE         Storage  0           0
STORAGE                  1           0
STORAGE                  1.467       32664.72
STORAGE                  3           73326.74
STORAGE                  4           82463.44
STORAGE                  5           91092.3

[TIMESERIES]
;;Time Series     Date       Time       Value
;;-------------- ---------- ---------- ----------
FC-100YR         2/6/2015   0:05       1
FC-100YR                    0:10       1.14
FC-100YR                    0:15       1.33
FC-100YR                    0:20       2.23
FC-100YR                    0:25       2.84
FC-100YR                    0:30       5.49
FC-100YR                    0:35       9.95
FC-100YR                    0:40       4.12
FC-100YR                    0:45       2.48
FC-100YR                    0:50       1.46
FC-100YR                    0:55       1.22
FC-100YR                    1:00       1.06
FC-100YR                    1:05       1
FC-100YR                    1:10       0.95
FC-100YR                    1:15       0.91
FC-100YR                    1:20       0.87
```

```
FC-100YR                  1:25       0.84
FC-100YR                  1:30       0.81
FC-100YR                  1:35       0.78
FC-100YR                  1:40       0.75
FC-100YR                  1:45       0.73
FC-100YR                  1:50       0.71
FC-100YR                  1:55       0.69
FC-100YR                  2:00       0.67

[REPORT]
;;Reporting Options
INPUT      NO
CONTROLS   NO
SUBCATCHMENTS ALL
NODES ALL
LINKS ALL

[TAGS]

[MAP]
DIMENSIONS -3634.985 0.000 13634.985 10000.000
Units      None

[COORDINATES]
;;Node           X-Coord            Y-Coord
;;-------------- ------------------ ------------------
1                -166.835           2639.029
INLET-5A         4868.554           7735.086
FES-5B           5480.283           7735.264
INLET-4B         5434.783           6592.518
FES-3B           6420.627           3693.124
FES-3A           5475.228           4843.276
SDMH-5A          4676.441           8048.534
12               -358.948           5045.501
INLET-7A         12209.302          7606.168
FES-4A           5480.283           7361.148
INLET-5B         5293.225           7735.264
INLET-6A         6203.236           7151.163
FES-6A           6188.069           7312.942
FES-7A           12148.635          7732.558
11               -490.394           8999.167
20               13058.645          6043.984
22               6617.796           2628.918
21               5313.448           8958.544
29               -733.064           2517.695
POND             -2047.523          5096.057

[VERTICES]
```

```
;;Link           X-Coord           Y-Coord
;;-------------- ----------------- -----------------

[Polygons]
;;Subcatchment   X-Coord           Y-Coord
;;-------------- ----------------- -----------------
B1-1              5080.890          7987.867
B1-1              4696.663          7724.975
B1-1              4706.775          5631.951
B1-1              4464.105          5197.169
B1-1              -480.283          5176.946
B1-1              -419.616          2982.811
B1-1              -540.950          2699.697
B1-1              -864.510          2558.140
B1-1              -2724.975         3265.925
B1-1              -2593.529         3882.710
B1-1              -2563.195         4337.715
B1-1              -2553.084         4782.609
B1-1              -2623.862         5146.613
B1-1              -2654.196         5551.062
B1-1              -2876.643         7340.748
B1-1              -2654.196         7957.533
B1-1              -2421.638         8331.648
B1-1              -2158.746         8614.762
B1-1              -1825.076         8887.765
B1-1              -1410.516         9079.879
B1-1              -935.288          9221.436
B1-1              -490.394          9231.547
B1-1              864.510           9039.434
B1-1              1683.519          8867.543
B1-1              2724.975          8645.096
B1-1              4898.888          8816.987
B1-1              5101.112          8463.094
B1-2              -460.061          5136.502
B1-2              -399.393          2992.922
B1-2              -35.389           3185.035
B1-2              136.502           3104.146
B1-2              4464.105          3124.368
B1-2              4433.771          3468.150
B1-2              4646.107          3943.377
B1-2              4433.771          5156.724
B2                4484.328          3104.146
B2                4919.110          4135.490
B2                5111.223          4246.714
B2                5212.336          4206.269
B2                5384.226          4014.156
B2                6183.013          3336.704
B2                6506.572          2790.698
```

B2	6496.461	2618.807
B2	6435.794	2497.472
B2	5879.676	2537.917
B2	4888.777	1789.687
B2	4009.100	1213.347
B2	3887.765	1041.456
B2	3463.094	768.453
B2	2542.973	667.341
B2	1703.741	980.789
B2	783.620	1830.131
B2	-65.723	2315.470
B2	-136.502	2264.914
B2	-278.059	2325.581
B2	-308.392	2568.251
B2	-45.501	3063.701
B2	267.947	3083.923
B3	4737.108	7704.752
B3	4737.108	5631.951
B3	4474.216	5156.724
B3	4464.105	5085.945
B3	4676.441	3953.488
B3	4464.105	3437.816
B3	4494.439	3164.813
B3	4908.999	4165.824
B3	5131.446	4256.825
B3	5232.558	4216.380
B3	5343.782	4084.934
B3	5151.668	4762.386
B3	5111.223	5348.837
B3	5101.112	7987.867
B4	5364.004	4752.275
B4	5414.560	4732.053
B4	5657.230	4823.054
B4	5677.452	4914.055
B4	5637.007	4944.388
B4	5485.339	4984.833
B4	5485.339	6622.851
B4	5637.007	6653.185
B4	5657.230	6713.852
B4	5606.673	6734.075
B4	5394.338	6734.075
B4	5293.225	6673.407
B4	5273.003	6572.295
B4	5273.003	5035.389
B4	5303.337	4812.942
OS-4	10819.009	4881.193
OS-4	13114.257	6043.984
OS-4	12912.033	6488.878

OS-4	11673.408	5861.982
B8	11425.683	7216.886
B8	12290.192	7722.447
B8	12906.977	6504.045
B8	11663.296	5872.093
B7	5358.948	4062.184
B7	5182.002	4785.136
B7	5298.281	4785.136
B7	5414.560	4714.358
B7	5677.452	4835.693
B7	5773.509	4471.689
B7	6870.576	4992.417
B7	8276.036	5154.196
B7	11638.018	5841.759
B7	10834.176	4896.360
B7	6936.299	2773.003
B7	6466.127	3541.456
B7	6177.958	3359.454
B9	8195.147	7762.892
B9	5267.947	8536.400
B9	5267.947	7267.442
B9	11420.627	7232.053
B9	12280.081	7732.558
B9	12123.357	8051.062
B5	5409.505	7242.164
B5	5419.616	6746.714
B5	5647.118	6736.603
B5	5672.396	6696.158
B5	5637.007	6630.435
B5	5495.450	6589.990
B5	5505.561	4992.417
B5	5682.508	4926.694
B5	5697.674	4825.581
B5	5778.564	4486.855
B5	6835.187	5007.583
B5	8331.648	5179.474
B5	11648.130	5856.926
B5	11410.516	7216.886
B6	5273.003	7252.275
B6	5399.393	7242.164
B6	5404.449	6756.825
B6	5283.114	6675.935
B6	5262.892	6584.934
B6	5273.003	5012.639
B6	5288.170	4860.971
B6	5303.337	4795.248
B6	5171.891	4790.192
B6	5111.223	8000.506

```
B6              5101.112          8000.506
B6              5111.223          8465.622
B6              5080.890          8521.234
B6              5257.836          8526.289
OS-2            6536.906          2770.475
OS-2            6516.684          2558.139
OS-2            6921.132          2760.364
OS-2            6466.127          3508.595
OS-2            6193.124          3346.815
OS-3            4898.888          8837.209
OS-3            4828.109          8837.209
OS-3            4807.887          9069.768
OS-3            5333.670          8958.544
OS-3            5333.670          8533.873
OS-3            5070.779          8533.873
OS-1            -510.617          2709.808
OS-1            -389.282          2992.922
OS-1            5.056             3154.702
OS-1            106.168           3083.923
OS-1            75.834            3083.923
OS-1            -96.057           3043.478
OS-1            -328.615          2517.695
OS-1            -288.170          2315.470
OS-1            -844.287          2548.028

[SYMBOLS]
;;Gage           X-Coord           Y-Coord
;;-------------- ----------------- -----------------
1               -1076.845         1698.686

[LABELS]
;;X-Coord          Y-Coord            Label
7517.695           4064.712           "SWALE1" "" "Arial" 10 0 0
884.732            2012.133           "SWALE-BASIN2" "" "Arial" 10 0 0
7760.364           7462.083           "SW-3TO4" "" "Arial" 10 0 0
5495.450           5490.394           "SW-7TO5" "" "Arial" 10 0 0


[PROFILES]
;;Name           Links
;;-------------- ----------
"Pond to South Entrance" ST05-4 ST05-3 ST05-2 ST05-1 SW-4TO5
"Pond to South Entrance" ST04 SW-3TO4 ST03
"Basin 2 to pond " ST01
"Basin 12 to Pond" ST02
"ST-06          " ST06
"ST-07          " ST07
```

EPA STORM WATER MANAGEMENT MODEL - VERSION 5.1 (Build 5.1.007)

****
NOTE: The summary statistics displayed in this report are
based on results found at every computational time step,
not just on results from each reporting time step.
****

****
Analysis Options
****
Flow Units ..... CFS
Process Models:
  Rainfall/Runoff ..... YES
  RDII ..... NO
  Snowmelt ..... NO
  Groundwater ..... NO
  Flow Routing ..... YES
  Ponding Allowed ..... NO
  Water Quality ..... NO
Infiltration Method ..... HORTON
Flow Routing Method ..... DYNWAVE
Starting Date FEB-06-2015 00:00:00
Ending Date FEB-06-2015 06:00:00
Antecedent Dry Days 0.0
Report Time Step 00:01:00
Wet Time Step 00:01:00
Dry Time Step 01:00:00
Routing Time Step ..... 5.00 sec
Variable Time Step ..... YES
Maximum Trials 8
Head Tolerance ..... 0.005000 ft

Runoff Quantity Continuity	Volume acre-feet	Depth inches
Total Precipitation	4.999	3.669
Evaporation Loss	0.000	0.000
Infiltration Loss	0.699	0.513
Surface Runoff	4.247	3.117
Final Surface Storage	0.055	0.041
Continuity Error (%)	-0.041	

Flow Routing Continuity	Volume acre-feet	Volume 10^6 gal
Dry Weather Inflow	0.000	0.000
Wet Weather Inflow	4.247	1.384
Groundwater Inflow	0.000	0.000
RDII Inflow	0.000	0.000
External Inflow	0.000	0.000
External Outflow	0.730	0.238
Internal Outflow	0.001	0.000
Evaporation Loss	0.000	0.000
Exfiltration Loss	0.000	0.000
Initial Stored Volume	0.000	0.000
Final Stored Volume	3.518	1.146
Continuity Error (%)	-0.029	

Highest Continuity Errors

Node FES-7A (-4.83%)
Node FES-5B (1.03%)

Time-Step Critical Elements

Link ST06 (33.35%)
Link ST05-1 (15.73%)
Link ST05-2 (6.51%)
Link ST02 (1.69%)

Highest Flow Instability Indexes

Link SW-4TO5 (1)

Routing Time Step Summary

Minimum Time Step	:	0.50 sec
Average Time Step	:	3.18 sec
Maximum Time Step	:	5.00 sec
Percent in Steady State	:	0.00
Average Iterations per Step	:	2.04
Percent Not Converging	:	0.25

****
Subcatchment Runoff Summary
****

Subcatchment	Total Precip in	Total Runon in	Total Evap in	Total Infil in	Total Runoff in	Total Runoff 10^6 gal	Peak Runoff CFS	Runoff Coeff
B1-1	3.67	0.00	0.00	0.81	2.81	0.48	37.35	0.766
B1-2	3.67	0.00	0.00	0.04	3.58	0.19	18.69	0.976
B2	3.67	0.00	0.00	0.51	3.13	0.19	20.54	0.854
B3	3.67	0.00	0.00	0.40	3.24	0.03	3.32	0.882
B4	3.67	0.00	0.00	0.84	2.81	0.01	0.57	0.767
OS-4	3.67	0.00	0.00	0.84	2.82	0.01	1.72	0.769
B8	3.67	0.00	0.00	0.35	3.29	0.04	3.94	0.896
B7	3.67	0.00	0.00	0.42	3.22	0.13	14.54	0.877
B9	3.67	0.00	0.00	1.06	2.61	0.06	7.44	0.710
B5	3.67	0.00	0.00	0.04	3.58	0.22	21.48	0.976
B6	3.67	0.00	0.00	0.00	3.62	0.01	1.04	0.987
OS-2	3.67	0.00	0.00	0.00	3.62	0.01	0.58	0.987
OS-3	3.67	0.00	0.00	0.00	3.62	0.00	0.49	0.987
OS-1	3.67	0.00	0.00	0.00	3.62	0.00	0.49	0.987

****
Node Depth Summary
****

Node	Type	Average Depth Feet	Maximum Depth Feet	Maximum HGL Feet	Time of Max Occurrence days hr:min
1	JUNCTION	0.38	3.50	5041.28	0 00:38
INLET-5A	JUNCTION	1.77	2.91	5036.09	0 00:42
FES-5B	JUNCTION	1.08	2.96	5037.07	0 00:43
INLET-4B	JUNCTION	0.75	3.59	5038.12	0 00:40
FES-3B	JUNCTION	0.42	1.90	5039.90	0 00:39
FES-3A	JUNCTION	0.35	1.11	5038.93	0 00:40
SDMH-5A	JUNCTION	1.83	2.65	5035.66	0 00:42
12	JUNCTION	0.58	2.91	5038.58	0 00:39
INLET-7A	JUNCTION	0.27	1.02	5038.04	0 00:40
FES-4A	JUNCTION	1.04	2.91	5037.08	0 00:43
INLET-5B	JUNCTION	1.69	3.09	5036.43	0 00:42
INLET-6A	JUNCTION	0.95	3.32	5037.78	0 00:40

FES-6A	JUNCTION	0.93	2.72	5037.08	0	00:43
FES-7A	JUNCTION	0.30	0.83	5037.77	0	00:40
11	OUTFALL	0.00	0.00	0.00	0	00:00
20	OUTFALL	0.00	0.00	0.00	0	00:00
22	OUTFALL	0.00	0.00	0.00	0	00:00
21	OUTFALL	0.00	0.00	0.00	0	00:00
29	OUTFALL	0.00	0.00	0.00	0	00:00
POND	STORAGE	3.32	4.02	5034.98	0	02:21

****
Node Inflow Summary
****

Node	Type	Maximum Lateral Inflow CFS	Maximum Total Inflow CFS	Time of Max Occurrence days hr:min	Lateral Inflow Volume 10^6 gal	Total Inflow Volume 10^6 gal	Flow Balance Error Percent
1	JUNCTION	20.53	20.53	0 00:39	0.191	0.191	0.012
INLET-5A	JUNCTION	3.32	30.56	0 00:42	0.0334	0.495	0.222
FES-5B	JUNCTION	7.44	44.03	0 00:40	0.0566	0.456	1.044
INLET-4B	JUNCTION	0.57	15.02	0 00:40	0.00611	0.139	0.483
FES-3B	JUNCTION	14.54	14.54	0 00:39	0.132	0.132	0.003
FES-3A	JUNCTION	0.00	14.54	0 00:40	0	0.132	-0.398
SDMH-5A	JUNCTION	0.00	30.56	0 00:42	0	0.494	0.654
12	JUNCTION	18.68	18.68	0 00:39	0.189	0.189	-0.003
INLET-7A	JUNCTION	3.94	3.94	0 00:39	0.0357	0.0357	-0.013
FES-4A	JUNCTION	0.00	15.25	0 00:40	0	0.138	0.392
INLET-5B	JUNCTION	1.04	28.36	0 00:43	0.0108	0.462	0.162
INLET-6A	JUNCTION	21.47	21.47	0 00:39	0.225	0.225	0.009
FES-6A	JUNCTION	0.00	21.46	0 00:40	0	0.225	0.015
FES-7A	JUNCTION	0.00	3.94	0 00:39	0	0.0357	-4.605
11	OUTFALL	0.00	1.44	0 02:21	0	0.208	0.000
20	OUTFALL	1.72	1.72	0 00:39	0.0138	0.0138	0.000
22	OUTFALL	0.58	0.58	0 00:39	0.0059	0.0059	0.000
21	OUTFALL	0.49	0.49	0 00:39	0.00492	0.00492	0.000
29	OUTFALL	0.49	0.49	0 00:39	0.00492	0.00492	0.000
POND	STORAGE	37.34	104.26	0 00:40	0.476	1.35	0.035

****
Node Surcharge Summary
****

Surcharging occurs when water rises above the top of the highest conduit.

Node	Type	Hours Surcharged	Max. Height Above Crown Feet	Min. Depth Below Rim Feet
1	JUNCTION	0.07	2.000	0.000
INLET-4B	JUNCTION	0.10	1.089	0.000
FES-3B	JUNCTION	0.04	0.147	0.000
12	JUNCTION	0.12	1.156	0.000
INLET-5B	JUNCTION	0.09	0.086	1.074
INLET-6A	JUNCTION	0.27	1.324	0.000

****
Node Flooding Summary
****

Flooding refers to all water that overflows a node, whether it ponds or not.

Node	Hours Flooded	Maximum Rate CFS	Time of Max Occurrence days hr:min	Total Flood Volume 10^6 gal	Maximum Ponded Depth Feet
1	0.02	0.87	0 00:40	0.000	2.000

****
Storage Volume Summary
****

Storage Unit	Average Volume 1000 ft3	Avg Pcnt Full	Evap Pcnt Loss	Exfil Pcnt Loss	Maximum Volume 1000 ft3	Max Pcnt Full	Time of Max Occurrence days hr:min	Maximum Outflow CFS
POND	121.420	35	0	0	168.067	48	0 02:21	1.44

****
Outfall Loading Summary
****

Outfall Node	Flow Freq Pcnt	Avg Flow CFS	Max Flow CFS	Total Volume 10^6 gal
11	98.63	1.25	1.44	0.208

20	58.43	0.37	1.72	0.014
22	65.03	0.13	0.58	0.006
21	63.53	0.11	0.49	0.005
29	63.53	0.11	0.49	0.005
System	69.83	1.98	4.38	0.238

****
Link Flow Summary
****

Link	Type	Maximum |Flow| CFS	Time of Max Occurrence days hr:min	Maximum |Veloc| ft/sec	Max/ Full Flow	Max/ Full Depth
ST03	CONDUIT	14.54	0 00:40	6.92	1.36	0.82
ST05-3	CONDUIT	30.56	0 00:42	4.47	0.80	0.93
ST05-1	CONDUIT	27.77	0 00:43	5.66	0.45	1.00
ST05-2	CONDUIT	28.36	0 00:43	4.03	0.74	0.99
SW-3TO4	CONDUIT	14.45	0 00:40	2.40	0.21	0.78
ST01	CONDUIT	19.66	0 00:40	11.54	1.01	1.00
ST05-4	CONDUIT	30.56	0 00:42	5.45	2.82	0.74
SW-4TO5	CONDUIT	16.76	0 00:40	1.25	0.28	0.98
ST02	CONDUIT	18.68	0 00:40	7.93	1.97	0.95
ST07	CONDUIT	3.94	0 00:39	3.72	0.65	0.62
ST06	CONDUIT	21.46	0 00:40	6.83	1.63	1.00
SW-7TO5	CONDUIT	3.30	0 00:40	0.74	0.03	0.62
SW-6TO5	CONDUIT	20.09	0 00:40	2.70	0.20	0.95
ST04	CONDUIT	15.25	0 00:40	3.11	0.78	1.00
7	DUMMY	1.44	0 02:21			

****
Flow Classification Summary
****

Conduit	Adjusted /Actual Length	Fraction of Time in Flow Class: Dry	Up Dry	Down Dry	Sub Crit	Sup Crit	Up Crit	Down Crit	Norm Ltd	Inlet Ctrl
ST03	1.00	0.01	0.00	0.00	0.94	0.05	0.00	0.00	0.64	0.00
ST05-3	1.00	0.01	0.00	0.00	0.99	0.00	0.00	0.00	0.00	0.00
ST05-1	1.00	0.01	0.00	0.00	0.97	0.02	0.00	0.00	0.01	0.00
ST05-2	1.00	0.01	0.00	0.00	0.99	0.00	0.00	0.00	0.01	0.00
SW-3TO4	1.00	0.01	0.00	0.00	0.98	0.01	0.00	0.00	0.94	0.00

ST01	1.00	0.01	0.00	0.00	0.43	0.14	0.00	0.42	0.73	0.00
ST05-4	1.00	0.01	0.00	0.00	0.69	0.00	0.00	0.30	0.00	0.00
SW-4TO5	1.00	0.01	0.01	0.00	0.98	0.00	0.00	0.00	0.01	0.00
ST02	1.00	0.01	0.00	0.00	0.00	0.00	0.00	0.99	0.00	0.00
ST07	1.00	0.01	0.00	0.00	0.99	0.01	0.00	0.00	0.49	0.00
ST06	1.00	0.01	0.00	0.00	0.99	0.00	0.00	0.00	0.00	0.00
SW-7TO5	1.00	0.01	0.00	0.00	0.99	0.00	0.00	0.00	0.96	0.00
SW-6TO5	1.00	0.01	0.00	0.00	0.99	0.00	0.00	0.00	0.03	0.00
ST04	1.00	0.01	0.00	0.00	0.99	0.00	0.00	0.00	0.01	0.00

****
Conduit Surcharge Summary
****

Conduit	Hours Full: Both Ends	Hours Full: Upstream	Hours Full: Dnstream	Hours Above Full Normal Flow	Hours Capacity Limited
ST03	0.01	0.01	0.01	0.08	0.01
ST05-1	0.18	0.18	0.18	0.01	0.01
ST01	0.02	0.02	0.02	0.02	0.02
ST05-4	0.01	0.01	0.01	0.53	0.01
ST02	0.01	0.01	0.01	0.17	0.01
ST06	0.23	0.23	0.23	0.12	0.20
ST04	0.10	0.10	0.10	0.01	0.01

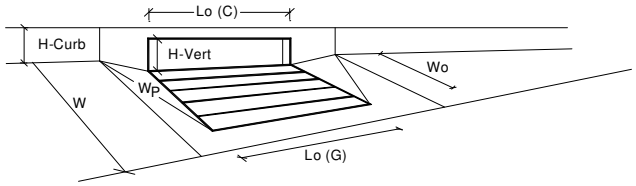
Analysis begun on: Mon Mar 02 11:19:14 2015
Analysis ended on: Mon Mar 02 11:19:14 2015
Total elapsed time: < 1 sec

APPENDIX D
INLET AND SWALE SIZING

INLET IN A SUMP OR SAG LOCATION

Project = 015-0358 COLORAOD STATE UNIVERSITY TENNIS COURTS

Inlet ID = INLET-2A

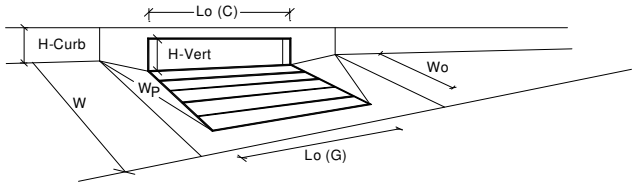


Design Information (Input)		MINOR	MAJOR	
Type of Inlet	Inlet Type =	CDOT Type R Curb Opening		
Local Depression (additional to continuous gutter depression 'a' from 'Q-Allow')	a_{local} =	3.00	3.00	inches
Number of Unit Inlets (Grate or Curb Opening)	No =	2	2	
Water Depth at Flowline (outside of local depression)	Ponding Depth =	18.0	18.0	inches
				☐ Override Depths
Grate Information		MINOR	MAJOR	
Length of a Unit Grate	L_o (G) =	N/A	N/A	feet
Width of a Unit Grate	W_o =	N/A	N/A	feet
Area Opening Ratio for a Grate (typical values 0.15-0.90)	A_{ratio} =	N/A	N/A	
Clogging Factor for a Single Grate (typical value 0.50 - 0.70)	C_f (G) =	N/A	N/A	
Grate Weir Coefficient (typical value 2.15 - 3.60)	C_w (G) =	N/A	N/A	
Grate Orifice Coefficient (typical value 0.60 - 0.80)	C_o (G) =	N/A	N/A	
Curb Opening Information		MINOR	MAJOR	
Length of a Unit Curb Opening	L_o (C) =	5.00	5.00	feet
Height of Vertical Curb Opening in Inches	H_{vert} =	6.00	6.00	inches
Height of Curb Orifice Throat in Inches	H_{throat} =	6.00	6.00	inches
Angle of Throat (see USDCM Figure ST-5)	Theta =	63.40	63.40	degrees
Side Width for Depression Pan (typically the gutter width of 2 feet)	W_p =	2.00	2.00	feet
Clogging Factor for a Single Curb Opening (typical value 0.10)	C_f (C) =	0.10	0.10	
Curb Opening Weir Coefficient (typical value 2.3-3.7)	C_w (C) =	3.60	3.60	
Curb Opening Orifice Coefficient (typical value 0.60 - 0.70)	C_o (C) =	0.67	0.67	
		MINOR	MAJOR	
Total Inlet Interception Capacity (assumes clogged condition)	**Q_a =**	**31.1**	**31.1**	**cfs**
Inlet Capacity IS GOOD for Minor and Major Storms (>Q PEAK)	$Q_{PEAK\ REQUIRED}$ =	0.0	19.1	cfs

INLET IN A SUMP OR SAG LOCATION

Project = 015-0358 COLORAOD STATE UNIVERSITY TENNIS COURTS

Inlet ID = INLET-2A

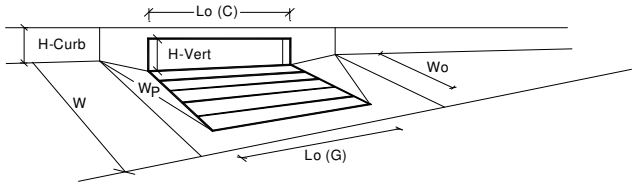


Design Information (Input)		MINOR	MAJOR	
Type of Inlet	Inlet Type =	CDOT/Denver 13 Combination		
Local Depression (additional to continuous gutter depression 'a' from 'Q-Allow')	a_{local} =	2.00	2.00	inches
Number of Unit Inlets (Grate or Curb Opening)	No =	2	2	
Water Depth at Flowline (outside of local depression)	Ponding Depth =	18.0	18.0	inches
				☐ Override Depths
Grate Information		MINOR	MAJOR	
Length of a Unit Grate	L_o (G) =	3.00	3.00	feet
Width of a Unit Grate	W_o =	1.73	1.73	feet
Area Opening Ratio for a Grate (typical values 0.15-0.90)	A_{ratio} =	0.43	0.43	
Clogging Factor for a Single Grate (typical value 0.50 - 0.70)	C_f (G) =	0.50	0.50	
Grate Weir Coefficient (typical value 2.15 - 3.60)	C_w (G) =	3.30	3.30	
Grate Orifice Coefficient (typical value 0.60 - 0.80)	C_o (G) =	0.60	0.60	
Curb Opening Information		MINOR	MAJOR	
Length of a Unit Curb Opening	L_o (C) =	3.00	3.00	feet
Height of Vertical Curb Opening in Inches	H_{vert} =	6.50	6.50	inches
Height of Curb Orifice Throat in Inches	H_{throat} =	5.25	5.25	inches
Angle of Throat (see USDCM Figure ST-5)	Theta =	0.00	0.00	degrees
Side Width for Depression Pan (typically the gutter width of 2 feet)	W_p =	2.00	2.00	feet
Clogging Factor for a Single Curb Opening (typical value 0.10)	C_f (C) =	0.10	0.10	
Curb Opening Weir Coefficient (typical value 2.3-3.7)	C_w (C) =	3.70	3.70	
Curb Opening Orifice Coefficient (typical value 0.60 - 0.70)	C_o (C) =	0.66	0.66	
		MINOR	MAJOR	
Total Inlet Interception Capacity (assumes clogged condition)	**Q_a =**	**27.2**	**27.2**	**cfs**
Inlet Capacity IS GOOD for Minor and Major Storms (>Q PEAK)	$Q_{PEAK\ REQUIRED}$ =	0.0	19.1	cfs

INLET IN A SUMP OR SAG LOCATION

Project = 015-0358 COLORAOD STATE UNIVERSITY TENNIS COURTS

Inlet ID = INLET-4B

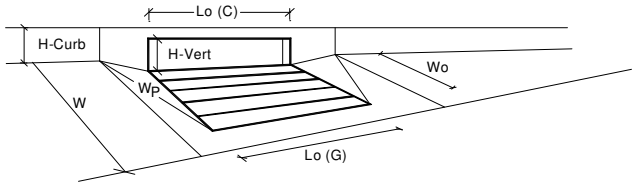


Design Information (Input)		MINOR	MAJOR	
Type of Inlet	Inlet Type =	CDOT Type C Grate		
Local Depression (additional to continuous gutter depression 'a' from 'Q-Allow')	a_{local} =	0.00	0.00	inches
Number of Unit Inlets (Grate or Curb Opening)	No =	1	1	
Water Depth at Flowline (outside of local depression)	Ponding Depth =	18.0	18.0	inches
				☐ Override Depths
Grate Information		MINOR	MAJOR	
Length of a Unit Grate	L_o (G) =	2.92	2.92	feet
Width of a Unit Grate	W_o =	2.92	2.92	feet
Area Opening Ratio for a Grate (typical values 0.15-0.90)	A_{ratio} =	0.70	0.70	
Clogging Factor for a Single Grate (typical value 0.50 - 0.70)	C_f (G) =	0.50	0.50	
Grate Weir Coefficient (typical value 2.15 - 3.60)	C_w (G) =	2.41	2.41	
Grate Orifice Coefficient (typical value 0.60 - 0.80)	C_o (G) =	0.67	0.67	
Curb Opening Information		MINOR	MAJOR	
Length of a Unit Curb Opening	L_o (C) =	N/A	N/A	feet
Height of Vertical Curb Opening in Inches	H_{vert} =	N/A	N/A	inches
Height of Curb Orifice Throat in Inches	H_{throat} =	N/A	N/A	inches
Angle of Throat (see USDCM Figure ST-5)	Theta =	N/A	N/A	degrees
Side Width for Depression Pan (typically the gutter width of 2 feet)	W_p =	N/A	N/A	feet
Clogging Factor for a Single Curb Opening (typical value 0.10)	C_f (C) =	N/A	N/A	
Curb Opening Weir Coefficient (typical value 2.3-3.7)	C_w (C) =	N/A	N/A	
Curb Opening Orifice Coefficient (typical value 0.60 - 0.70)	C_o (C) =	N/A	N/A	
		MINOR	MAJOR	
Total Inlet Interception Capacity (assumes clogged condition)	**Q_a =**	**14.4**	**14.4**	**cfs**
Inlet Capacity IS GOOD for Minor and Major Storms (>Q PEAK)	$Q_{PEAK\ REQUIRED}$ =	0.0	13.1	cfs

INLET IN A SUMP OR SAG LOCATION

Project = 015-0358 COLORAOD STATE UNIVERSITY TENNIS COURTS

Inlet ID = INLET-5A

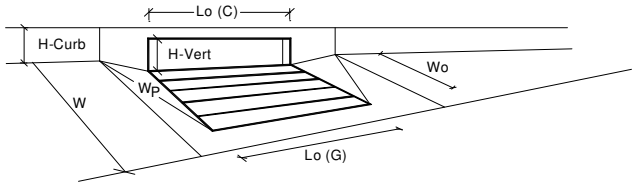


Design Information (Input)		MINOR	MAJOR	
Type of Inlet	Inlet Type =	CDOT Type R Curb Opening		
Local Depression (additional to continuous gutter depression 'a' from 'Q-Allow')	a_{local} =	3.00	3.00	inches
Number of Unit Inlets (Grate or Curb Opening)	No =	1	1	
Water Depth at Flowline (outside of local depression)	Ponding Depth =	18.0	18.0	inches
				☐ Override Depths
Grate Information		MINOR	MAJOR	
Length of a Unit Grate	L_o (G) =	N/A	N/A	feet
Width of a Unit Grate	W_o =	N/A	N/A	feet
Area Opening Ratio for a Grate (typical values 0.15-0.90)	A_{ratio} =	N/A	N/A	
Clogging Factor for a Single Grate (typical value 0.50 - 0.70)	C_f (G) =	N/A	N/A	
Grate Weir Coefficient (typical value 2.15 - 3.60)	C_w (G) =	N/A	N/A	
Grate Orifice Coefficient (typical value 0.60 - 0.80)	C_o (G) =	N/A	N/A	
Curb Opening Information		MINOR	MAJOR	
Length of a Unit Curb Opening	L_o (C) =	5.00	5.00	feet
Height of Vertical Curb Opening in Inches	H_{vert} =	6.00	6.00	inches
Height of Curb Orifice Throat in Inches	H_{throat} =	6.00	6.00	inches
Angle of Throat (see USDCM Figure ST-5)	Theta =	63.40	63.40	degrees
Side Width for Depression Pan (typically the gutter width of 2 feet)	W_p =	2.00	2.00	feet
Clogging Factor for a Single Curb Opening (typical value 0.10)	C_f (C) =	0.10	0.10	
Curb Opening Weir Coefficient (typical value 2.3-3.7)	C_w (C) =	3.60	3.60	
Curb Opening Orifice Coefficient (typical value 0.60 - 0.70)	C_o (C) =	0.67	0.67	
		MINOR	MAJOR	
Total Inlet Interception Capacity (assumes clogged condition)	**Q_a =**	**14.9**	**14.9**	**cfs**
Inlet Capacity IS GOOD for Minor and Major Storms (>Q PEAK)	$Q_{PEAK\ REQUIRED}$ =	0.0	2.9	cfs

INLET IN A SUMP OR SAG LOCATION

Project = 015-0358 COLORAOD STATE UNIVERSITY TENNIS COURTS

Inlet ID = INLET-5B

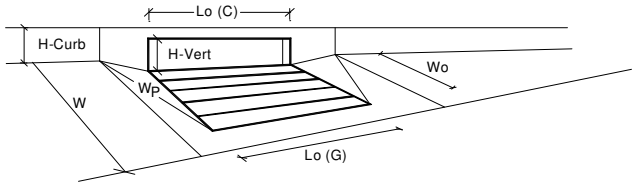


Design Information (Input)		MINOR	MAJOR	
Type of Inlet	Inlet Type =	CDOT Type R Curb Opening		
Local Depression (additional to continuous gutter depression 'a' from 'Q-Allow')	a_{local} =	3.00	3.00	inches
Number of Unit Inlets (Grate or Curb Opening)	No =	1	1	
Water Depth at Flowline (outside of local depression)	Ponding Depth =	18.0	18.0	inches
				☐ Override Depths
Grate Information		MINOR	MAJOR	
Length of a Unit Grate	L_o (G) =	N/A	N/A	feet
Width of a Unit Grate	W_o =	N/A	N/A	feet
Area Opening Ratio for a Grate (typical values 0.15-0.90)	A_{ratio} =	N/A	N/A	
Clogging Factor for a Single Grate (typical value 0.50 - 0.70)	C_f (G) =	N/A	N/A	
Grate Weir Coefficient (typical value 2.15 - 3.60)	C_w (G) =	N/A	N/A	
Grate Orifice Coefficient (typical value 0.60 - 0.80)	C_o (G) =	N/A	N/A	
Curb Opening Information		MINOR	MAJOR	
Length of a Unit Curb Opening	L_o (C) =	5.00	5.00	feet
Height of Vertical Curb Opening in Inches	H_{vert} =	6.00	6.00	inches
Height of Curb Orifice Throat in Inches	H_{throat} =	6.00	6.00	inches
Angle of Throat (see USDCM Figure ST-5)	Theta =	63.40	63.40	degrees
Side Width for Depression Pan (typically the gutter width of 2 feet)	W_p =	2.00	2.00	feet
Clogging Factor for a Single Curb Opening (typical value 0.10)	C_f (C) =	0.10	0.10	
Curb Opening Weir Coefficient (typical value 2.3-3.7)	C_w (C) =	3.60	3.60	
Curb Opening Orifice Coefficient (typical value 0.60 - 0.70)	C_o (C) =	0.67	0.67	
		MINOR	MAJOR	
Total Inlet Interception Capacity (assumes clogged condition)	**Q_a =**	**14.9**	**14.9**	**cfs**
Inlet Capacity IS GOOD for Minor and Major Storms (>Q PEAK)	$Q_{PEAK\ REQUIRED}$ =	0.0	1.1	cfs

INLET IN A SUMP OR SAG LOCATION

Project = 015-0358 COLORAOD STATE UNIVERSITY TENNIS COURTS

Inlet ID = INLET-6A

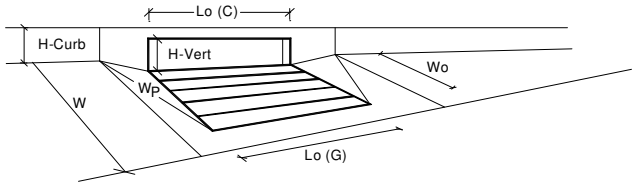


Design Information (Input)		MINOR	MAJOR	
Type of Inlet	Inlet Type =	CDOT Type R Curb Opening		
Local Depression (additional to continuous gutter depression 'a' from 'Q-Allow')	a_{local} =	3.00	3.00	inches
Number of Unit Inlets (Grate or Curb Opening)	No =	2	2	
Water Depth at Flowline (outside of local depression)	Ponding Depth =	18.0	18.0	inches
				☐ Override Depths
Grate Information		MINOR	MAJOR	
Length of a Unit Grate	L_o (G) =	N/A	N/A	feet
Width of a Unit Grate	W_o =	N/A	N/A	feet
Area Opening Ratio for a Grate (typical values 0.15-0.90)	A_{ratio} =	N/A	N/A	
Clogging Factor for a Single Grate (typical value 0.50 - 0.70)	C_f (G) =	N/A	N/A	
Grate Weir Coefficient (typical value 2.15 - 3.60)	C_w (G) =	N/A	N/A	
Grate Orifice Coefficient (typical value 0.60 - 0.80)	C_o (G) =	N/A	N/A	
Curb Opening Information		MINOR	MAJOR	
Length of a Unit Curb Opening	L_o (C) =	5.00	5.00	feet
Height of Vertical Curb Opening in Inches	H_{vert} =	6.00	6.00	inches
Height of Curb Orifice Throat in Inches	H_{throat} =	6.00	6.00	inches
Angle of Throat (see USDCM Figure ST-5)	Theta =	63.40	63.40	degrees
Side Width for Depression Pan (typically the gutter width of 2 feet)	W_p =	2.00	2.00	feet
Clogging Factor for a Single Curb Opening (typical value 0.10)	C_f (C) =	0.10	0.10	
Curb Opening Weir Coefficient (typical value 2.3-3.7)	C_w (C) =	3.60	3.60	
Curb Opening Orifice Coefficient (typical value 0.60 - 0.70)	C_o (C) =	0.67	0.67	
		MINOR	MAJOR	
Total Inlet Interception Capacity (assumes clogged condition)	**Q_a =**	**31.1**	**31.1**	**cfs**
Inlet Capacity IS GOOD for Minor and Major Storms (>Q PEAK)	$Q_{PEAK\ REQUIRED}$ =	0.0	22.3	cfs

INLET IN A SUMP OR SAG LOCATION

Project = 015-0358 COLORAOD STATE UNIVERSITY TENNIS COURTS

Inlet ID = INLET-6A

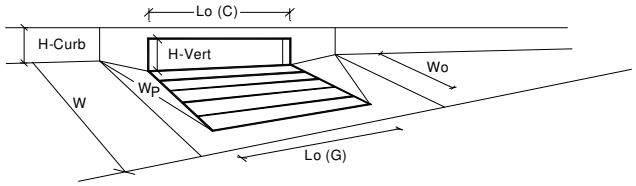


Design Information (Input)		MINOR	MAJOR	
Type of Inlet	Inlet Type =	CDOT/Denver 13 Combination		
Local Depression (additional to continuous gutter depression 'a' from 'Q-Allow')	a_{local} =	2.00	2.00	inches
Number of Unit Inlets (Grate or Curb Opening)	No =	2	2	
Water Depth at Flowline (outside of local depression)	Ponding Depth =	18.0	18.0	inches
				☐ Override Depths
Grate Information		MINOR	MAJOR	
Length of a Unit Grate	L_o (G) =	3.00	3.00	feet
Width of a Unit Grate	W_o =	1.73	1.73	feet
Area Opening Ratio for a Grate (typical values 0.15-0.90)	A_{ratio} =	0.43	0.43	
Clogging Factor for a Single Grate (typical value 0.50 - 0.70)	C_f (G) =	0.50	0.50	
Grate Weir Coefficient (typical value 2.15 - 3.60)	C_w (G) =	3.30	3.30	
Grate Orifice Coefficient (typical value 0.60 - 0.80)	C_o (G) =	0.60	0.60	
Curb Opening Information		MINOR	MAJOR	
Length of a Unit Curb Opening	L_o (C) =	3.00	3.00	feet
Height of Vertical Curb Opening in Inches	H_{vert} =	6.50	6.50	inches
Height of Curb Orifice Throat in Inches	H_{throat} =	5.25	5.25	inches
Angle of Throat (see USDCM Figure ST-5)	Theta =	0.00	0.00	degrees
Side Width for Depression Pan (typically the gutter width of 2 feet)	W_p =	2.00	2.00	feet
Clogging Factor for a Single Curb Opening (typical value 0.10)	C_f (C) =	0.10	0.10	
Curb Opening Weir Coefficient (typical value 2.3-3.7)	C_w (C) =	3.70	3.70	
Curb Opening Orifice Coefficient (typical value 0.60 - 0.70)	C_o (C) =	0.66	0.66	
		MINOR	MAJOR	
Total Inlet Interception Capacity (assumes clogged condition)	**Q_a =**	**27.2**	**27.2**	**cfs**
Inlet Capacity IS GOOD for Minor and Major Storms (>Q PEAK)	$Q_{PEAK\ REQUIRED}$ =	0.0	22.3	cfs

INLET IN A SUMP OR SAG LOCATION

Project = 015-0358 COLORAOD STATE UNIVERSITY TENNIS COURTS

Inlet ID = INLET-7A



Design Information (Input)		MINOR	MAJOR	
Type of Inlet	Inlet Type =	CDOT Type R Curb Opening		
Local Depression (additional to continuous gutter depression 'a' from 'Q-Allow')	a_{local} =	3.00	3.00	inches
Number of Unit Inlets (Grate or Curb Opening)	No =	1	1	
Water Depth at Flowline (outside of local depression)	Ponding Depth =	18.0	18.0	inches
				☐ Override Depths
Grate Information		MINOR	MAJOR	
Length of a Unit Grate	L_o (G) =	N/A	N/A	feet
Width of a Unit Grate	W_o =	N/A	N/A	feet
Area Opening Ratio for a Grate (typical values 0.15-0.90)	A_{ratio} =	N/A	N/A	
Clogging Factor for a Single Grate (typical value 0.50 - 0.70)	C_f (G) =	N/A	N/A	
Grate Weir Coefficient (typical value 2.15 - 3.60)	C_w (G) =	N/A	N/A	
Grate Orifice Coefficient (typical value 0.60 - 0.80)	C_o (G) =	N/A	N/A	
Curb Opening Information		MINOR	MAJOR	
Length of a Unit Curb Opening	L_o (C) =	5.00	5.00	feet
Height of Vertical Curb Opening in Inches	H_{vert} =	6.00	6.00	inches
Height of Curb Orifice Throat in Inches	H_{throat} =	6.00	6.00	inches
Angle of Throat (see USDCM Figure ST-5)	Theta =	63.40	63.40	degrees
Side Width for Depression Pan (typically the gutter width of 2 feet)	W_p =	2.00	2.00	feet
Clogging Factor for a Single Curb Opening (typical value 0.10)	C_f (C) =	0.10	0.10	
Curb Opening Weir Coefficient (typical value 2.3-3.7)	C_w (C) =	3.60	3.60	
Curb Opening Orifice Coefficient (typical value 0.60 - 0.70)	C_o (C) =	0.67	0.67	
		MINOR	MAJOR	
Total Inlet Interception Capacity (assumes clogged condition)	**Q_a =**	**14.9**	**14.9**	**cfs**
Inlet Capacity IS GOOD for Minor and Major Storms (>Q PEAK)	$Q_{PEAK\ REQUIRED}$ =	0.0	3.9	cfs

Worksheet for SWALE 1

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.035	
Channel Slope	0.00500	ft/ft
Left Side Slope	3.00	ft/ft (H:V)
Right Side Slope	3.00	ft/ft (H:V)
Discharge	17.41	ft^3/s

Results

Normal Depth	1.54	ft
Flow Area	7.14	ft^2
Wetted Perimeter	9.76	ft
Hydraulic Radius	0.73	ft
Top Width	9.26	ft
Critical Depth	1.16	ft
Critical Slope	0.02297	ft/ft
Velocity	2.44	ft/s
Velocity Head	0.09	ft
Specific Energy	1.64	ft
Froude Number	0.49	
Flow Type	Subcritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	1.54	ft
Critical Depth	1.16	ft
Channel Slope	0.00500	ft/ft
Critical Slope	0.02297	ft/ft

Worksheet for SWALE 1

Messages

Notes

Q100 = 13.09
1.33 x Q100 = 17.41

Worksheet for SW-BASIN2

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.030	
Channel Slope	0.00050	ft/ft
Left Side Slope	3.00	ft/ft (H:V)
Right Side Slope	3.00	ft/ft (H:V)
Discharge	16.63	ft^3/s

Results

Normal Depth	2.20	ft
Flow Area	14.57	ft^2
Wetted Perimeter	13.94	ft
Hydraulic Radius	1.05	ft
Top Width	13.22	ft
Critical Depth	1.14	ft
Critical Slope	0.01698	ft/ft
Velocity	1.14	ft/s
Velocity Head	0.02	ft
Specific Energy	2.22	ft
Froude Number	0.19	
Flow Type	Subcritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	2.20	ft
Critical Depth	1.14	ft
Channel Slope	0.00050	ft/ft
Critical Slope	0.01698	ft/ft

Worksheet for SW-3TO4

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.035	
Channel Slope	0.00500	ft/ft
Left Side Slope	3.00	ft/ft (H:V)
Right Side Slope	3.00	ft/ft (H:V)
Discharge	3.78	ft^3/s

Results

Normal Depth	0.87	ft
Flow Area	2.27	ft^2
Wetted Perimeter	5.50	ft
Hydraulic Radius	0.41	ft
Top Width	5.22	ft
Critical Depth	0.63	ft
Critical Slope	0.02815	ft/ft
Velocity	1.66	ft/s
Velocity Head	0.04	ft
Specific Energy	0.91	ft
Froude Number	0.44	
Flow Type	Subcritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	0.87	ft
Critical Depth	0.63	ft
Channel Slope	0.00500	ft/ft
Critical Slope	0.02815	ft/ft

Worksheet for SW-3TO4

Messages

Notes

Q100 = 2.84 cfs (less than inlet due to ponding at inlet)
133% Q100 = 3.78 cfs

Worksheet for SW-7TO5

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.035	
Channel Slope	0.00500	ft/ft
Left Side Slope	3.00	ft/ft (H:V)
Right Side Slope	3.00	ft/ft (H:V)
Discharge	16.70	ft^3/s

Results

Normal Depth	1.52	ft
Flow Area	6.92	ft^2
Wetted Perimeter	9.61	ft
Hydraulic Radius	0.72	ft
Top Width	9.11	ft
Critical Depth	1.14	ft
Critical Slope	0.02310	ft/ft
Velocity	2.41	ft/s
Velocity Head	0.09	ft
Specific Energy	1.61	ft
Froude Number	0.49	
Flow Type	Subcritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	1.52	ft
Critical Depth	1.14	ft
Channel Slope	0.00500	ft/ft
Critical Slope	0.02310	ft/ft

Worksheet for SW-7TO5

Messages

Notes

SWMM flow Q100 = 12.65
133% Q100 = 16.7 cfs

Traffic Impact Study

Colorado State University South Campus Parking Lot

Fort Collins, Colorado

Prepared for:

Colorado State University

Kimley»Horn

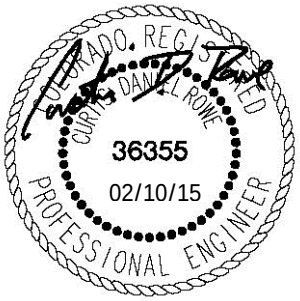
T R A F F I C I M P A C T S T U D Y

Colorado State University
South Campus Parking Lot

Fort Collins, Colorado

Prepared for
Colorado State University
251 Edison Drive
Fort Collins, Colorado 80523

Prepared by
Kimley-Horn and Associates, Inc.
990 South Broadway
Suite 200
Denver, Colorado 80209
(303) 228-2300



February 2015

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1.0 INTRODUCTION

Kimley-Horn and Associates, Inc. (Kimley-Horn) has prepared this report to document the results of a Traffic Impact Study of future traffic conditions associated with the surface parking lot project to be located at Colorado State University (CSU) South Campus on the southeast corner of the Centre Avenue and Research Boulevard intersection on the CSU campus in Fort Collins, Colorado. A vicinity map showing the location of the project site is shown in **Figure 1**.

Kimley-Horn previously prepared the Parking and Transportation Master Plan (April 2014) which studied the future traffic conditions associated with the CSU 2020 Transit Plan prepared by CSU's parking and transportation management team. The CSU 2020 Transit Plan includes construction of seven (7) new parking structures on campus which would allow for a net increase of 5,896 parking spaces available for use by faculty, staff, and students of CSU. CSU is now proposing to construct an additional on-campus surface parking lot not previously included in the 2020 Transit Plan at the site of the existing CSU tennis courts. The additional parking lot is needed based on the projected increase in student admissions and thus increasing demand for parking on campus as described in the CSU 2020 Transit Plan.

The project is anticipated to develop with a surface parking lot containing up to 1,077 parking spaces located adjacent to the existing CSU tennis courts. The surface parking lot will have two access drives off of Research Boulevard, one access off of Centre Avenue, and one access off of Gilette Drive. It is expected that project construction will be completed within 2015. Analysis was therefore completed for the 2015 short-term horizon, as well as the 2025 long-term horizon. A conceptual site plan illustrating the proposed surface parking lot and access locations is provided in **Appendix C**.

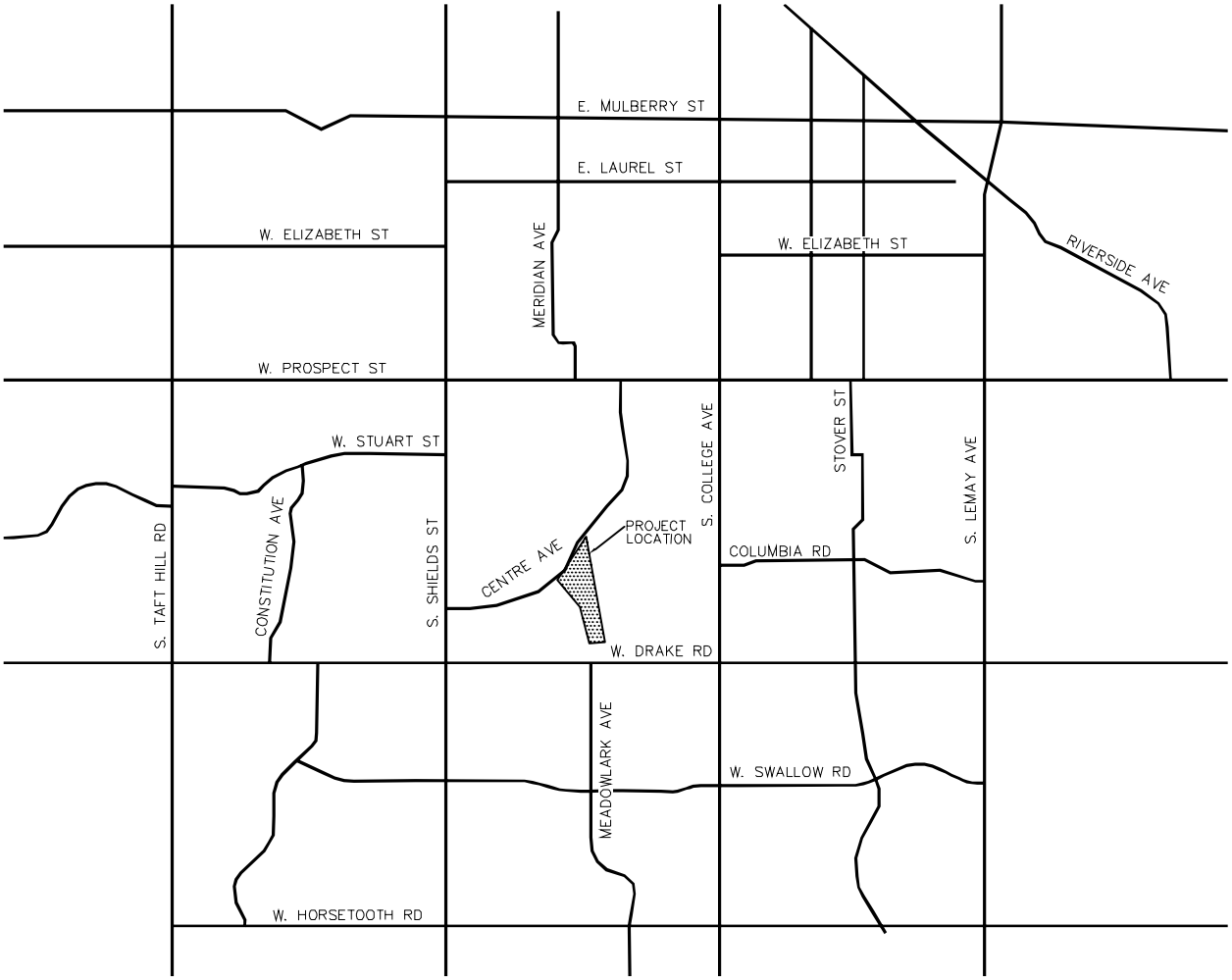
The purpose of this study is to identify project traffic generation characteristics, to identify potential project traffic related impacts on the local street system, and to develop mitigation measures required for identified impacts. The following intersections were incorporated into this traffic study in accordance with Colorado State University and the City of Fort Collins standards and requirements:

- Prospect Road and Center Avenue
- Centre Avenue and Shields Street
- Centre Avenue and Research Boulevard

- Drake Road and Research Boulevard
- Drake Road and Gilette Drive South Campus Access

In addition, the proposed access drives along Centre Avenue, Research Boulevard, and Gilette Drive were included for evaluation.

Kimley»Horn
NORTH
NTS 096336002



CSU SOUTH CAMPUS PARKING LOT
VICINITY MAP

FIGURE 1

Kimley»Horn

2.0 EXISTING AND FUTURE CONDITIONS

The following section outlines existing and future conditions in the vicinity of the CSU South Campus parking lot.

2.1 Study Area and Roadway Network

The study area is located around the existing CSU tennis courts bound between Centre Avenue, Research Boulevard, Drake Road, and Gilette Drive. Developed areas of the CSU South Campus surround the study area and the proposed parking lot. Transportation modes used by commuters traveling to and from campus include driving, biking, walking, carpooling, and taking the bus. This study focuses on the driving (automobile) commuters.

2.2 Existing Roadway and Intersection Configuration

The roadways providing access to the CSU South Campus parking lot project are described below.

Prospect Road

Prospect Road is an arterial roadway at the southern edge of the CSU Main Campus. It provides two through lanes in each direction, eastbound and westbound, with a posted speed limit of 35 miles per hour east of Shields Street through the study area. The intersection of Prospect Road and Center Avenue is signalized with separate left turn lanes on all approaches along with designated right turn lanes on the northbound and southbound approaches. Two-way left-turn lanes occur along Prospect Road and on the northbound approach along Centre Avenue.

Centre Avenue

Centre Avenue provides access between the CSU Main Campus and CSU South Campus. It provides a single northbound and southbound through lane with a posted speed limit of 35 miles per hour on the northern portion and 30 miles per hour on the southern portion. The Centre Avenue intersections with Prospect Road and Shields Street are signalized. A two-way left-turn lane occurs along Centre Avenue.

Shields Street

The western boundary of the Colorado State University Main Campus is Shields Street. It provides two through lanes in each direction (northbound and southbound) with a posted speed limit of 40 miles per hour.

Research Boulevard

Research Boulevard is a two lane roadway with a posted speed limit of 30 miles per hour. It provides access to the CSU tennis courts and other South Campus buildings. The Drake Road/Research Boulevard intersection is signalized with designated left turn lanes on all approaches. The Centre Avenue/Research Boulevard intersection is unsignalized with stop control on the northbound approach.

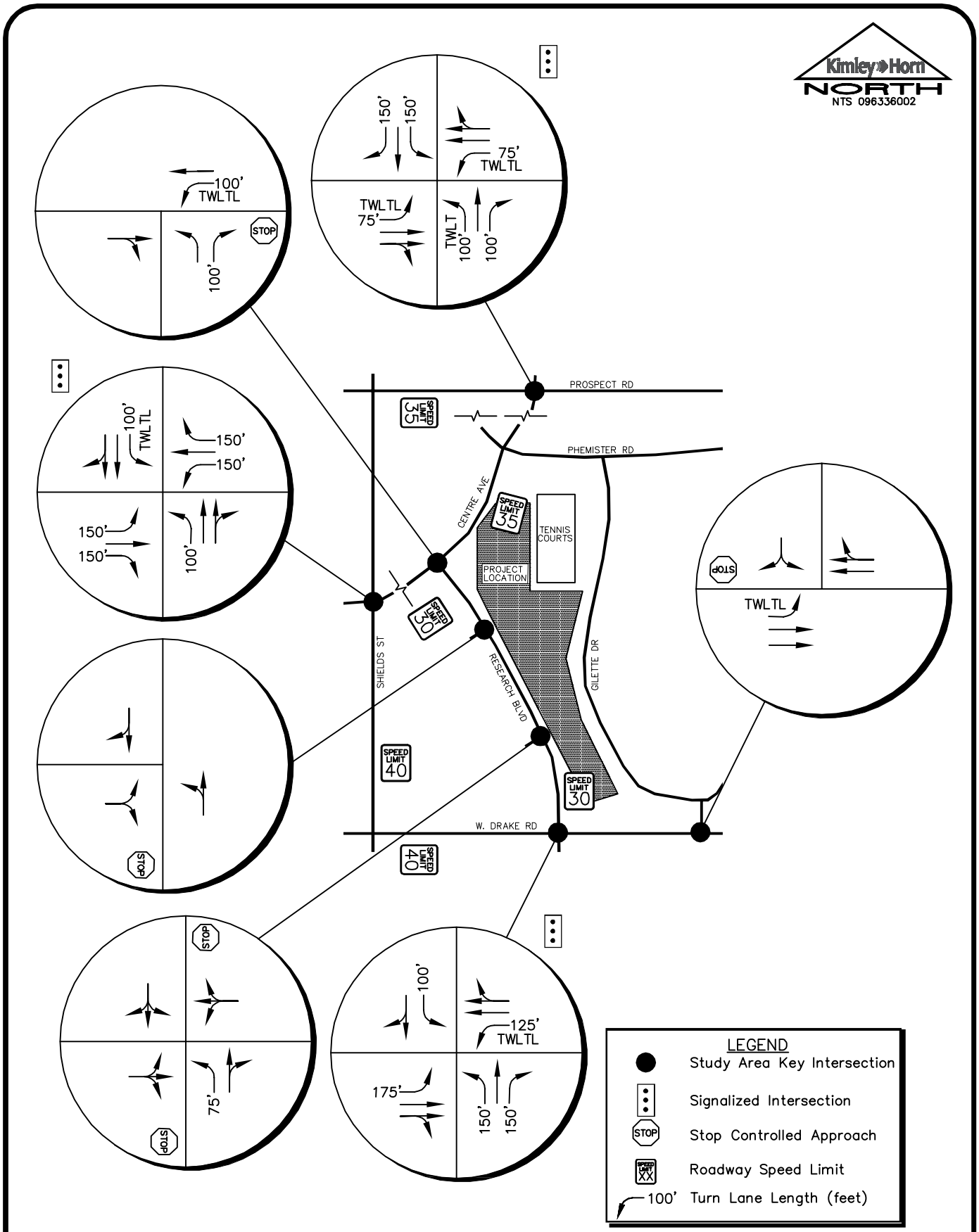
Drake Road

Drake Road is a four lane roadway that has a two-way left-turn lane along almost the entire length of the roadway from Ziegler Road to Taft Hill Road with a speed limit of 40 miles per hour. The Drake Road/Gilette Drive Access intersection is unsignalized with stop control on the southbound approach.

Gilette Drive

Gilette Drive is a north-south roadway providing access through the CSU South Campus. Gilette Drive is a two lane roadway with a speed limit of 35 mile per hour. A dedicated bike lane also exists along the entire length of the roadway, from Drake Road to Phemister Road, in both the north and southbound direction.

The intersection lane configurations and control for the study area are shown in **Figure 2**.



CSU SOUTH CAMPUS PARKING LOT
EXISTING LANE CONFIGURATIONS

FIGURE 2

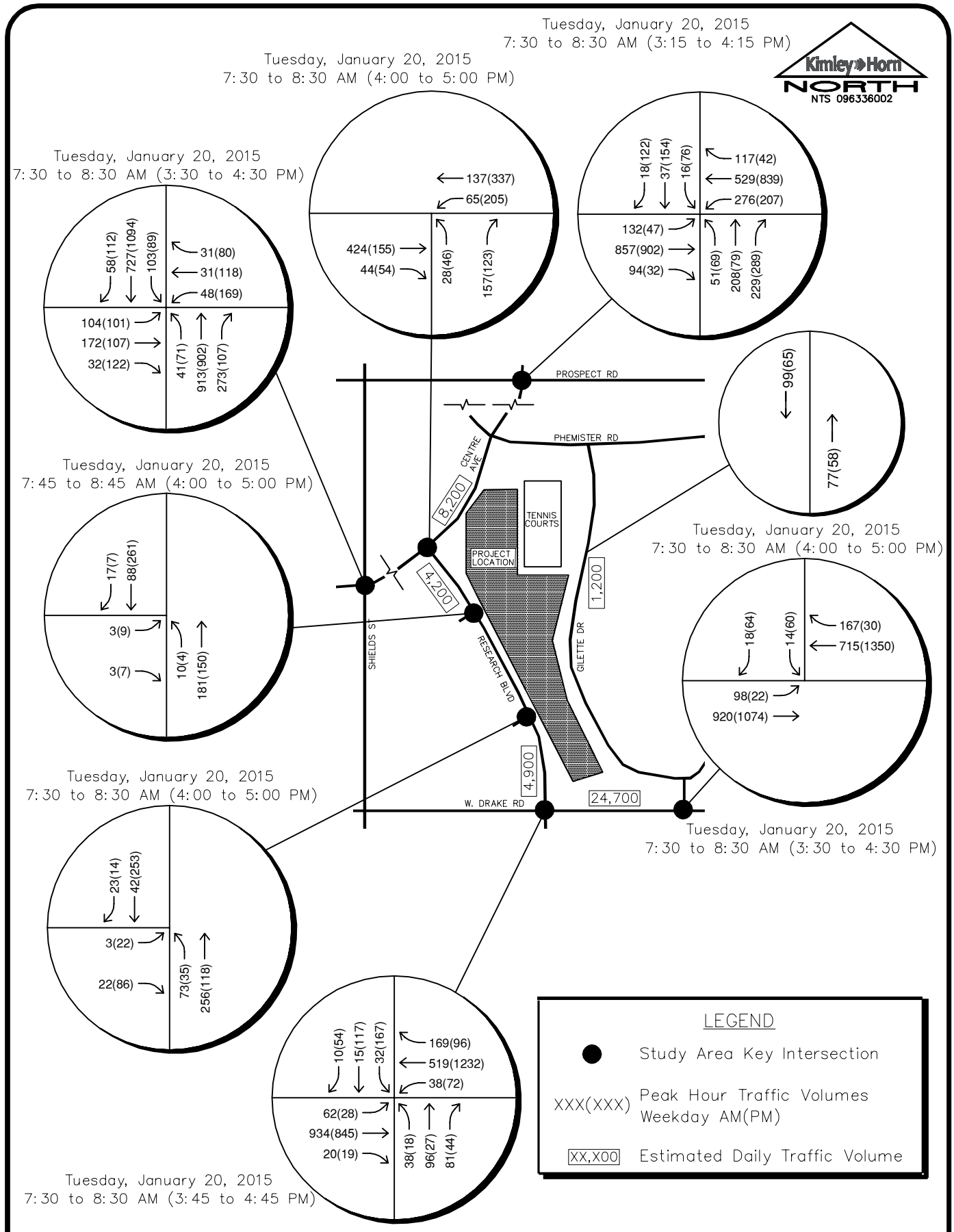
Kimley»Horn

2.3 Existing Traffic Volumes

Existing peak hour turning movement counts were conducted at the existing study intersections on Tuesday, January 20, 2015 during the morning and afternoon peak hours. The weekday counts were conducted in 15-minute intervals during the AM and PM peak hours of adjacent street traffic from 7:30 AM to 9:30 AM and 3:00 PM to 5:00 PM. These time intervals are anticipated to coincide with morning and afternoon peaks of CSU traffic. Existing turning movement counts are shown in **Figure 3** with intersection count sheets provided in **Appendix A**.

2.4 Unspecified Development Traffic Growth

According to the CSU 2020 Transit Plan, the CSU student population may grow by approximately 8,000 students, from 27,000 to 35,000 students, which equates to a 29.6 percent increase between the years of 2013 and 2025. This equates to an annual growth rate of approximately 2.4 percent per year. Based on this growth factor, the projected automobile 2025 background values for the study's key intersections have been calculated and are provided in **Figure 4**.



CSU SOUTH CAMPUS PARKING LOT
2015 EXISITNG TRAFFIC VOLUMES

FIGURE 3

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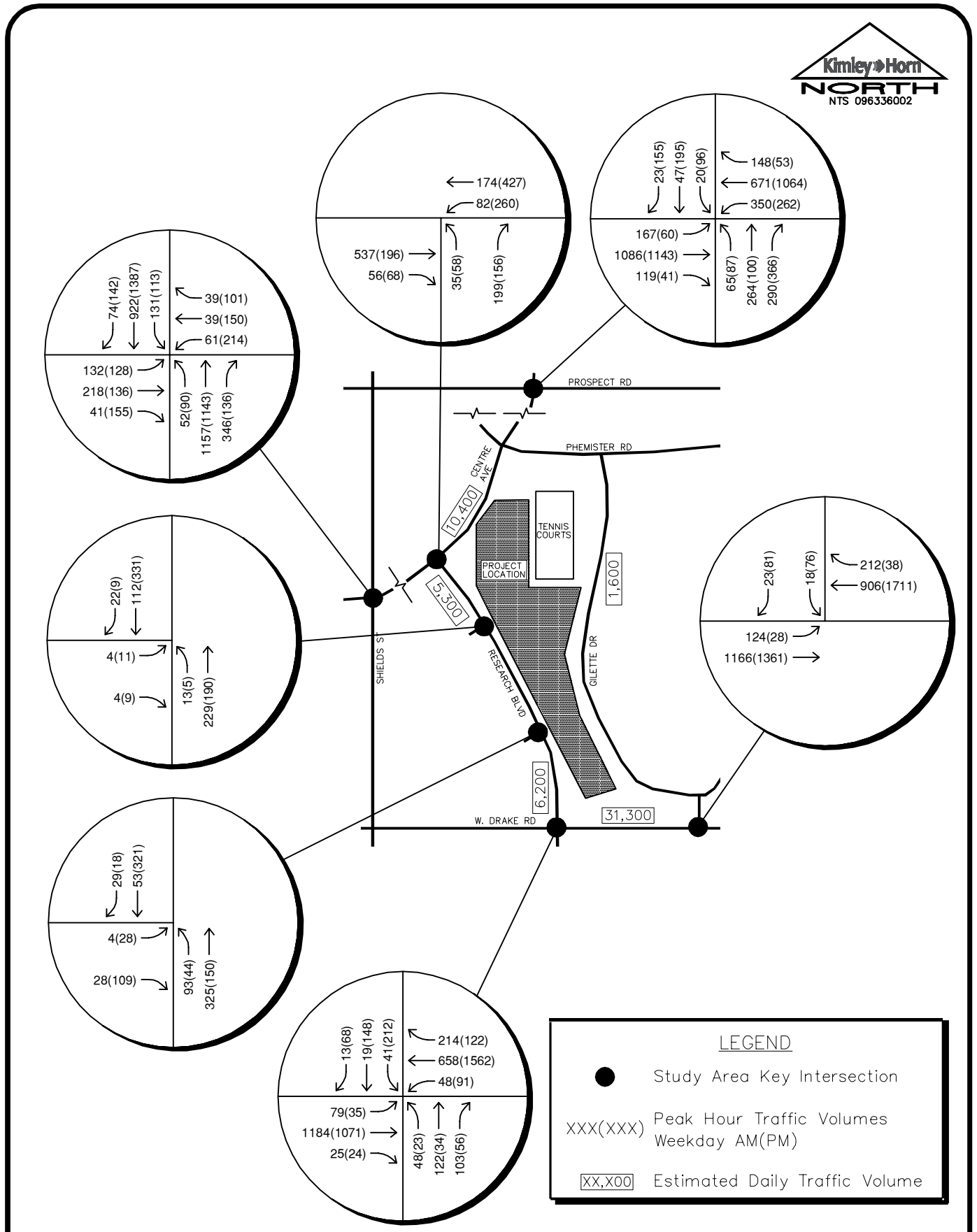


CSU SOUTH CAMPUS PARKING LOT
2025 BACKGROUND TRAFFIC VOLUMES

FIGURE 4

Kimley»Horn

3.0 PARKING LOT DISTRIBUTED TRAFFIC

3.1 South Campus Parking Lot Trip Distribution

The CSU Parking and Transportation Master Plan used traffic count data from existing CSU parking lots as well as the number of total existing parking spaces on-campus to calculate average rates of traffic generated per parking space. It was determined that the existing average morning and afternoon total trips per parking space on the CSU campus are 0.192 and 0.306 trips per parking space, respectively.

Based on the anticipated CSU population increase of 29.6 percent from 2012 to 2025, it is expected that the average trips per parking space will also increase over the same time frame. Future parking structure/lot trip generation rates were determined by multiplying the percent population increase by the existing averages for trips per parking space. As shown in **Table 1**, the total peak hour trips per parking space for the morning and afternoon were calculated to be 0.249 and 0.396 trips per parking space respectively. In other words, 25 percent of the parking spaces generate a vehicle trip during the morning peak hour and 40 percent of the parking spaces generate a vehicle trip during the afternoon peak hour.

Based on these calculated trip generation rates, the predicted trip generation for the proposed CSU South Campus parking lot may be calculated based on the increase of 1,077 parking spaces to the campus with this project. This increase in parking spaces was used in the trip generation calculation. **Table 1** provides the anticipated increase of vehicle trips entering and exiting the south campus parking lot during the morning and afternoon peak hours.

Table 1 – CSU South Campus Parking Lot Trip Generation

Parking Lot	Number of Parking Spaces	Increase in AM Peak Hour Trips			Increase in PM Peak Hour Trips		
		Enter	Exit	Total	Enter	Exit	Total
		0.166 trips/ space	0.083 trips/ space	0.249 trips/ space	0.172 trips/ space	0.224 trips/ space	0.396 trips/ space
South Campus Parking Lot	1,077	179	89	268	185	241	426

3.2 Trip Distribution

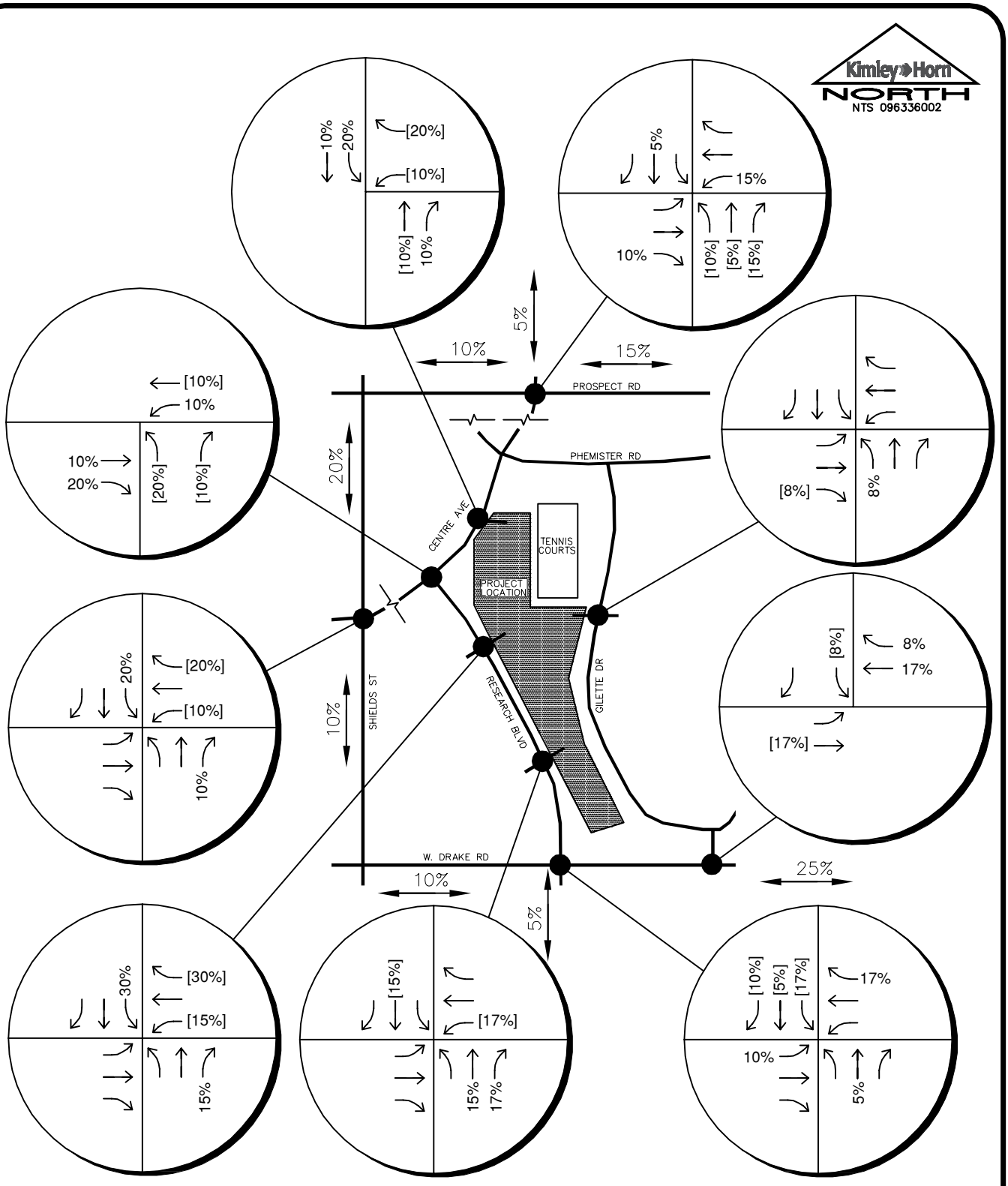
The distribution of the traffic generated by the proposed CSU South Campus parking lot onto the existing street network was based on the area street network characteristics, the existing traffic patterns and volumes, and the proposed accesses for the CSU South Campus parking lot. The directional distribution of traffic is a means to quantify the percentage of traffic that approaches the CSU South Campus parking lot from a given direction and departs the South Campus parking lot in the original source direction. **Figure 5** illustrates the expected trip redistribution with the proposed CSU South Campus parking lot.

3.3 Traffic Assignment

The 2015 and 2025 proposed CSU South Campus parking lot traffic assignment volumes were obtained by applying the trip distributions shown in **Figure 5** to the projected parking lot trip generation calculated in **Table 1**. The resultant 2015 and 2025 parking lot traffic assignment volumes are provided in **Figure 6** for each of the study's key intersections and the four proposed CSU South Campus parking lot accesses.

3.4 Total Traffic Volumes

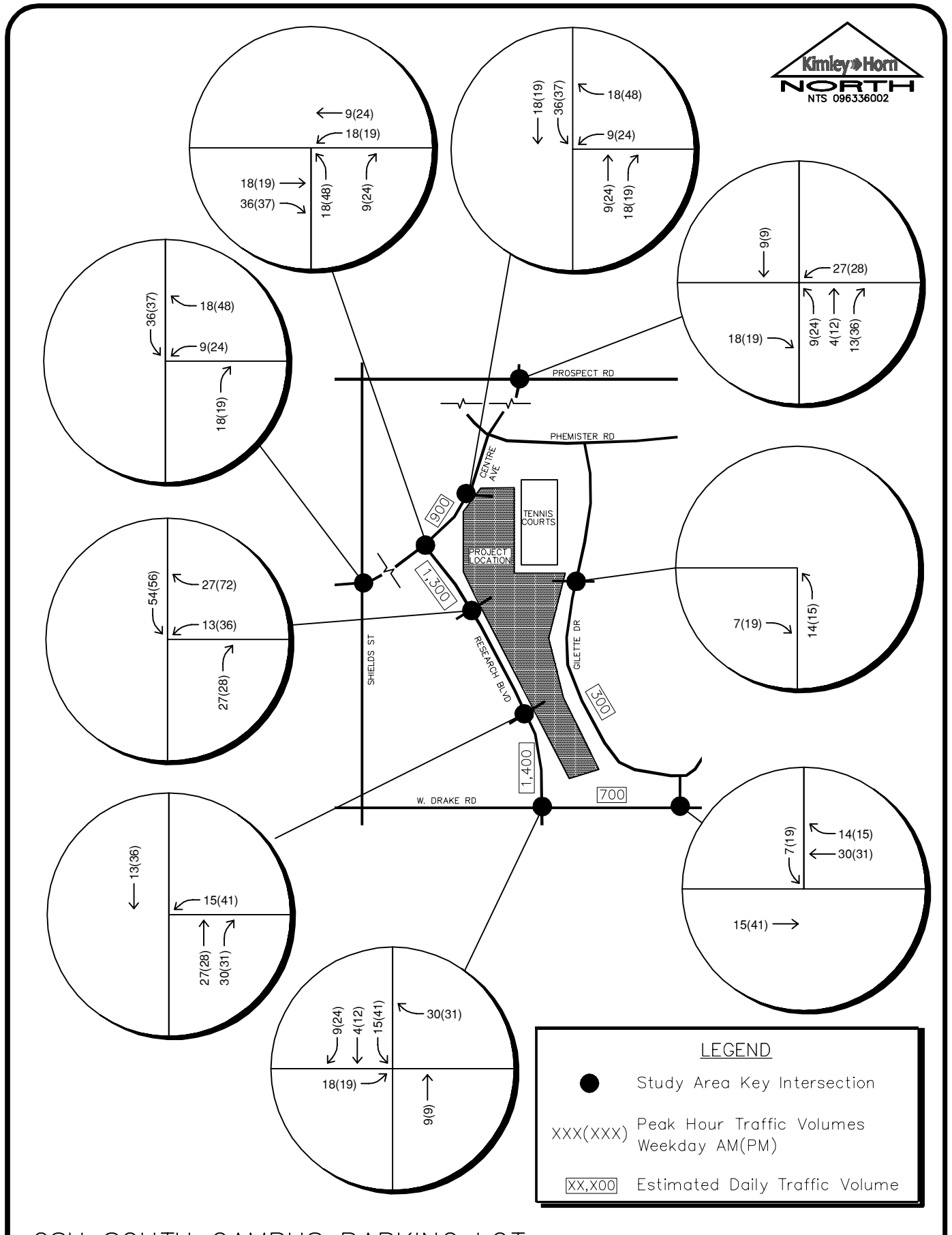
The 2015 and 2025 proposed CSU South Campus parking lot traffic assignment volumes were then added to the 2015 and 2025 background volumes to find the projected 2015 and 2025 total traffic volumes. **Figures 7** and **8** illustrate the projected total traffic volumes for the 2015 and 2025 horizon years.



CSU SOUTH CAMPUS PARKING LOT
TRIP REDISTRIBUTION

FIGURE 5

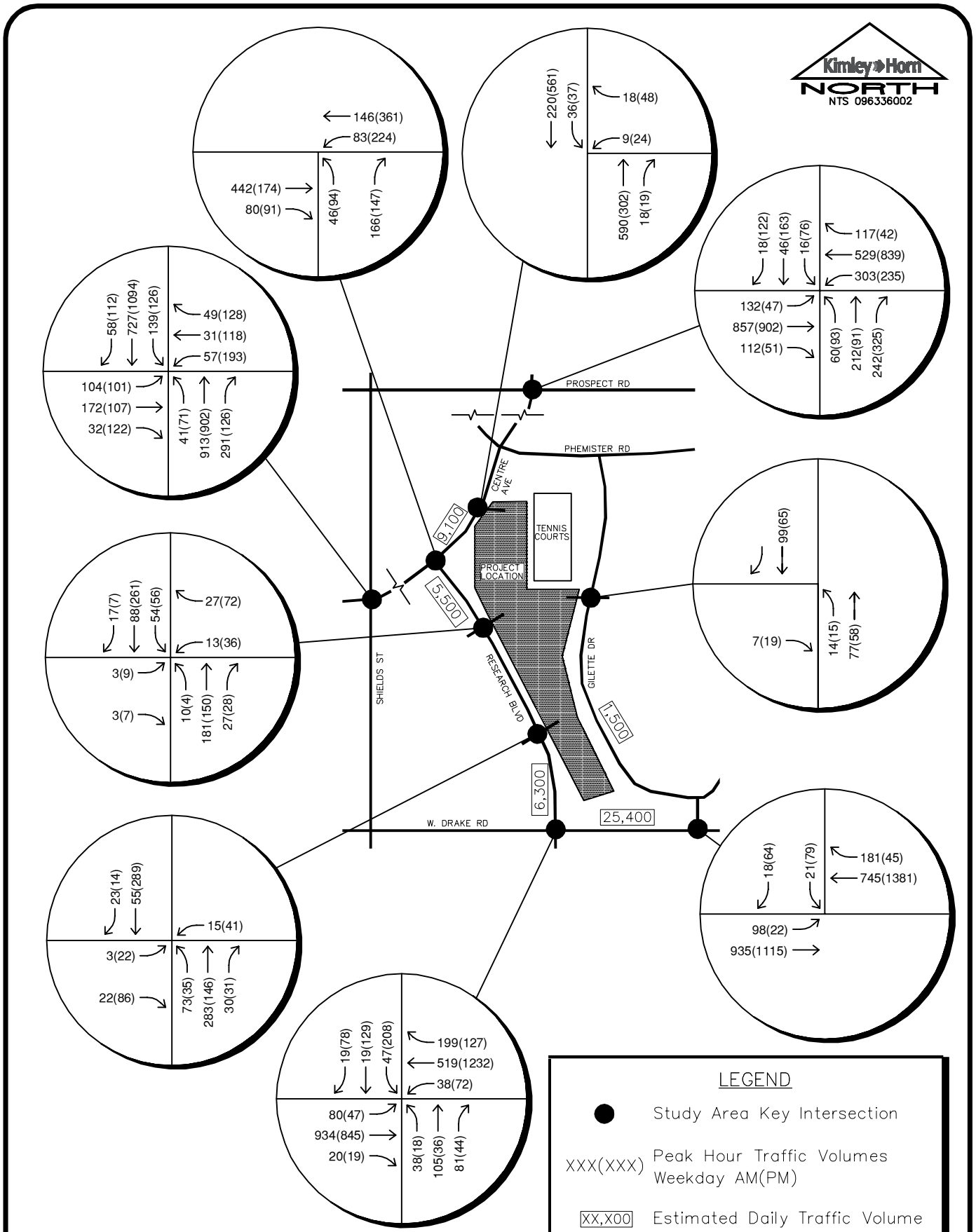
Kimley»Horn



CSU SOUTH CAMPUS PARKING LOT
PROJECT TRAFFIC ASSIGNMENT

FIGURE 6

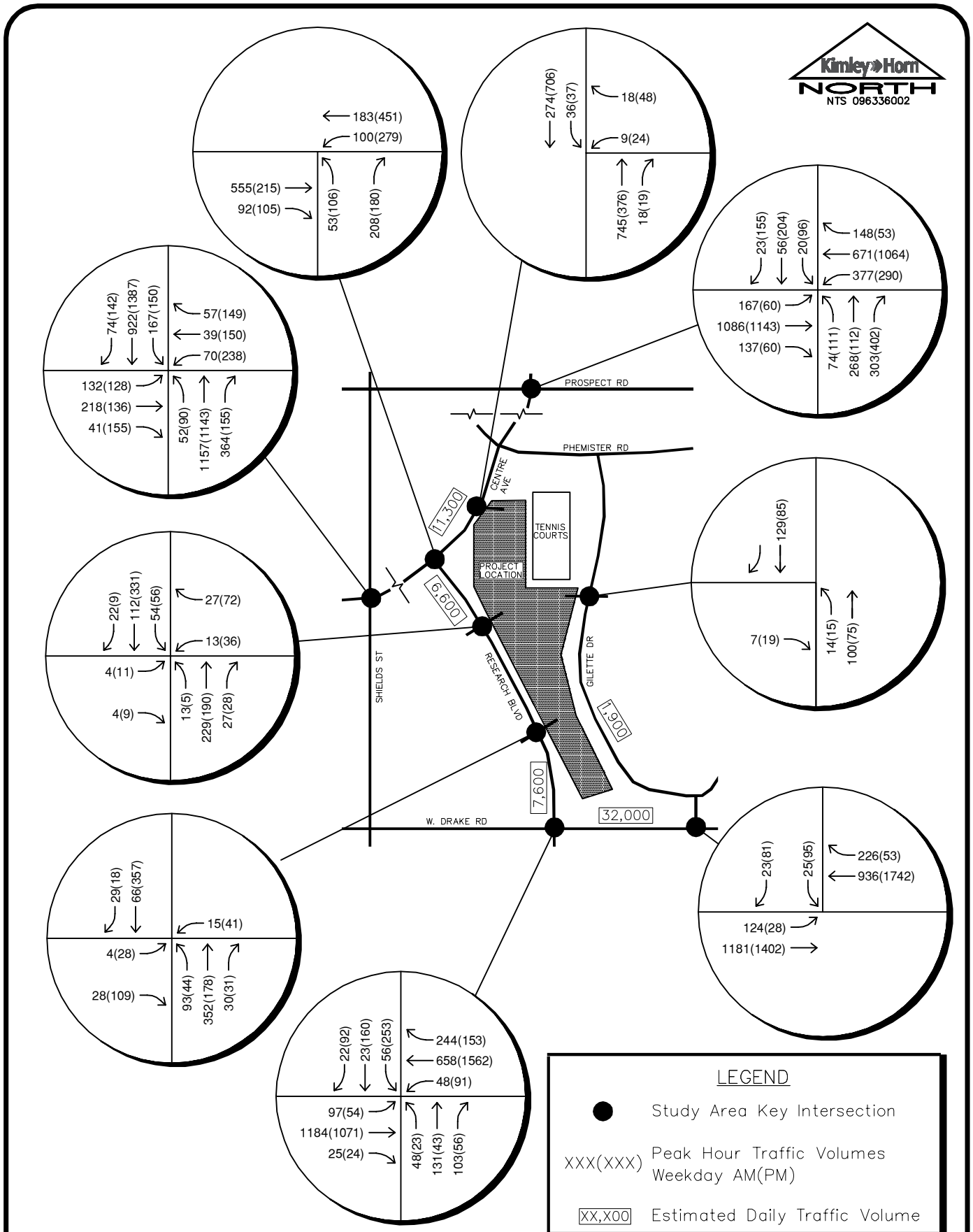
Kimley»Horn



CSU SOUTH CAMPUS PARKING LOT
2015 BACKGROUND
PLUS PROJECT TRAFFIC VOLUMES

FIGURE 7

Kimley»Horn



CSU SOUTH CAMPUS PARKING LOT
2025 BACKGROUND
PLUS PROJECT TRAFFIC VOLUMES

FIGURE 8

Kimley»Horn

4.0 TRAFFIC OPERATIONS ANALYSIS

An analysis of traffic operations in the site vicinity was conducted to determine potential capacity deficiencies in the 2015 and 2025 development horizons at the identified key intersections. The acknowledged source for determining overall capacity is the current edition of the *Highway Capacity Manual (HCM)*[1].

4.1 Analysis Methodology

Capacity analysis results are listed in terms of Level of Service (LOS). LOS is a qualitative term describing operating conditions a driver will experience while traveling on a particular street or highway during a specific time interval. It ranges from A (very little delay) to F (long delays and congestion). For intersections and roadways in this study area, LOS D is recommended as the minimum threshold for acceptable operation. **Table 2** shows the definition of LOS for signalized and unsignalized intersections.

Table 2 – Level of Service Definitions

Level of Service	Signalized Intersection Average Total Delay (sec/veh)	Unsignalized Intersection Average Total Delay (sec/veh)
A	≤ 10	≤ 10
B	> 10 and ≤ 20	> 10 and ≤ 15
C	> 20 and ≤ 35	> 15 and ≤ 25
D	> 35 and ≤ 55	> 25 and ≤ 35
E	> 55 and ≤ 80	> 35 and ≤ 50
F	> 80	> 50

Definitions provided from the Highway Capacity Manual, Special Report 209, Transportation Research Board, 2010.

The study's key intersections were analyzed based on average total delay analysis for signalized and unsignalized intersections. Under the unsignalized analysis, the LOS for a two-way stop controlled intersection is determined by the computed or measured control delay and is defined for each minor movement. LOS for a two-way stop-controlled intersection is not defined for the intersection as a whole. LOS for a signalized and four-way stop controlled intersection is defined for each approach and for the intersection.

[1] Transportation Research Board, *Highway Capacity Manual*, Special Report 209, Washington DC, 2010.

4.2 Key Intersection Operational Analysis

Calculations for the level of service at the key intersections for the study area are provided in **Appendix B**. The existing 2015 analysis is based on the lane geometry and intersection control shown in **Figure 2.** All signalized intersection analyses utilize the existing observed 110-second cycle lengths and existing signal phasing of the intersection provided by the City of Fort Collins. LOS for the intersections was calculated using Synchro analysis software reporting the HCM results. A summary of the existing intersection delay and LOS is provided in **Table 3** and summarized graphically in **Figure 9**. A summary of the background intersection delay and LOS in 2025 is provided in **Table 4** and summarized graphically in **Figure 10**. A summary of the expected intersection delay and LOS in 2015 and 2025 with the proposed project is provided in **Tables 5** and **6** and summarized graphically in **Figures 11** and **12**.

Table 3 – Existing Intersection Delay and Level of Service

Intersection	AM Peak Hour		PM Peak Hour	
	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS
Prospect/Center	24.9	C	23.4	C
Shields/Centre	21.7	C	25.8	C
Centre/Research				
Westbound Left	*9.1*	*A*	*8.3*	*A*
Northbound Approach	*17.0*	*C*	*12.5*	*B*
Drake/Research	14.9	B	19.1	B
Drake/Gilette Access				
Eastbound Left	*6.1*	*A*	*2.3*	*A*
Southbound Approach	*17.0*	*C*	*67.6*	*F*
Research North Access				
Eastbound Approach	*10.0*	*B*	*11.2*	*B*
Northbound Left	*7.5*	*A*	*7.9*	*A*
Research South Access				
Eastbound Approach	*10.0*	*B*	*12.6*	*B*
Northbound Left	*7.5*	*A*	*8.0*	*A*

Table 4 – 2025 Expected Background Intersection Delay and Level of Service

Intersection	AM Peak Hour		PM Peak Hour	
	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS
Prospect/Center	50.0	D	33.0	C
Shields/Centre	36.9	D	40.7	D
Centre/Research				
Westbound Left	*9.9*	*A*	*8.8*	*A*
Northbound Approach	*29.4*	*D*	*15.4*	*C*
Drake/Research	16.5	B	23.5	C
Drake/Gilette Drive Access				
Eastbound Left	*11.4*	*B*	*4.8*	*A*
Southbound Approach	*24.0*	*C*	*360.1*	*F*
Research North Access				
Eastbound Approach	*10.7*	*B*	*12.3*	*B*
Northbound Approach	*7.6*	*A*	*8.1*	*A*
Research South Access				
Eastbound Approach	*11.0*	*B*	*15.5*	*C*
Northbound Left	*7.6*	*A*	*8.3*	*A*

Table 5 – 2015 Expected Background Plus Project Intersection Delay and Level of Service

Intersection	AM Peak Hour		PM Peak Hour	
	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS
Prospect/Center	28.7	C	25.6	C
Shields/Centre	23.3	C	27.7	C
Centre/Research				
Westbound Left	*9.5*	*A*	*8.7*	*A*
Northbound Approach	*19.1*	*C*	*16.6*	*C*
Drake/Research	15.9	B	21.5	C
Drake/Gilette Drive Access				
Eastbound Left	*6.5*	*A*	*2.4*	*A*
Southbound Approach	*19.3*	*C*	*122.4*	*F*
Drake/Gilette Drive Access #				
Eastbound Left	*6.5*	*A*	*2.4*	*A*
Southbound Left	*26.6*	*C*	*70.1*	*F*
Southbound Right	*13.9*	*B*	*21.7*	*C*
Research North Access				
Eastbound Approach	*11.5*	*B*	*14.1*	*B*
Westbound Approach	*11.3*	*B*	*12.6*	*B*
Northbound Left	*7.5*	*A*	*7.9*	*A*
Southbound Left	*7.9*	*A*	*7.8*	*A*
Research South Access				
Eastbound Left	*12.2*	*B*	*14.5*	*B*
Eastbound Right	*8.7*	*A*	*10.7*	*B*
Westbound Approach	*19.7*	*C*	*28.6*	*D*
Northbound Left	*7.6*	*A*	*8.1*	*A*
Centre Access				
Westbound Approach	*15.4*	*C*	*15.0*	*C*
Southbound Left	*9.1*	*A*	*8.1*	*A*
Gilette Access				
Eastbound Approach	*8.8*	*A*	*8.7*	*A*
Westbound Approach	*9.6*	*A*	*9.4*	*A*
Northbound Left	*7.5*	*A*	*7.4*	*A*
Southbound Left	*7.4*	*A*	*7.4*	*A*

Southbound designated left turn and right turn lanes

Table 6 – 2025 Expected Background Plus Project Intersection Delay and Level of Service

Intersection	AM Peak Hour		PM Peak Hour	
	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS
Prospect/Center	57.2	E	39.2	D
Prospect/Center *	58.9	E	48.3	D
Shields/Centre	44.6	D	45.8	D
Centre/Research				
Westbound Left	*10.5*	*A*	*9.3*	*A*
Northbound Approach	*37.2*	*E*	*25.0*	*C*
Drake/Research	18.7	B	27.0	C
Drake/Gilette Drive Access				
Eastbound Left	*12.4*	*B*	*5.2*	*A*
Southbound Approach	*28.3*	*D*	*522.6*	*F*
Drake/Gilette Drive Access #				
Eastbound Left	*12.4*	*B*	*5.2*	*A*
Southbound Left	*33.0*	*D*	*306.3*	*F*
Southbound Right	*23.5*	*C*	*40.7*	*E*
Research North Access				
Eastbound Approach	*12.5*	*B*	*16.2*	*C*
Westbound Approach	*12.3*	*B*	*14.2*	*B*
Northbound Left	*7.8*	*A*	*8.1*	*A*
Southbound Left	*8.1*	*A*	*7.9*	*A*
Research South Access				
Eastbound Left	*14.3*	*B*	*18.0*	*C*
Eastbound Right	*8.8*	*A*	*11.6*	*B*
Westbound Approach	*26.3*	*D*	*51.4*	*F*
Northbound Left	*7.7*	*A*	*8.4*	*A*
Centre Access				
Westbound Approach	*19.0*	*C*	*18.6*	*C*
Southbound Left	*9.7*	*A*	*8.3*	*A*
Gilette Access				
Eastbound Approach	*9.0*	*A*	*8.8*	*A*
Westbound Approach	*9.9*	*A*	*9.6*	*A*
Northbound Left	*7.5*	*A*	*7.4*	*A*
Southbound Left	*7.5*	*A*	*7.4*	*A*

* Northbound and southbound dual left turn lanes
# Southbound designated left turn and right turn lanes

The intersections with LOS values of E or below were analyzed in further detail. These analyses provide recommendations for what improvements may be needed at the intersections to improve the LOS, allowing them to better handle the anticipated 2015 and 2025 traffic volumes. The following provides a description of the recommended intersection improvements for consideration by CSU and the City of Fort Collins:

Drake Road and Gilette Drive Access

The only capacity deficiency found during the existing condition is the southbound approach of Gillette Drive to Drake Road during the afternoon peak hour. To improve the Drake Road/Gilette Drive unsignalized intersection, the southbound Gilette Drive Access approach would benefit from a separate left turn and right turn lanes. Currently there is one shared left turn/right turn lane with a width of roughly 20 feet. With separate left turn and right turn lanes, long delays on the southbound could still occur. If delays are too excessive for drivers it is expected that traffic will reroute on the street network. Otherwise, a traffic signal could be considered at this intersection. It is located approximately halfway (approximately 800 feet) between the Drake Road/Research Boulevard and Drake Road/Redwing Road signalized intersections.

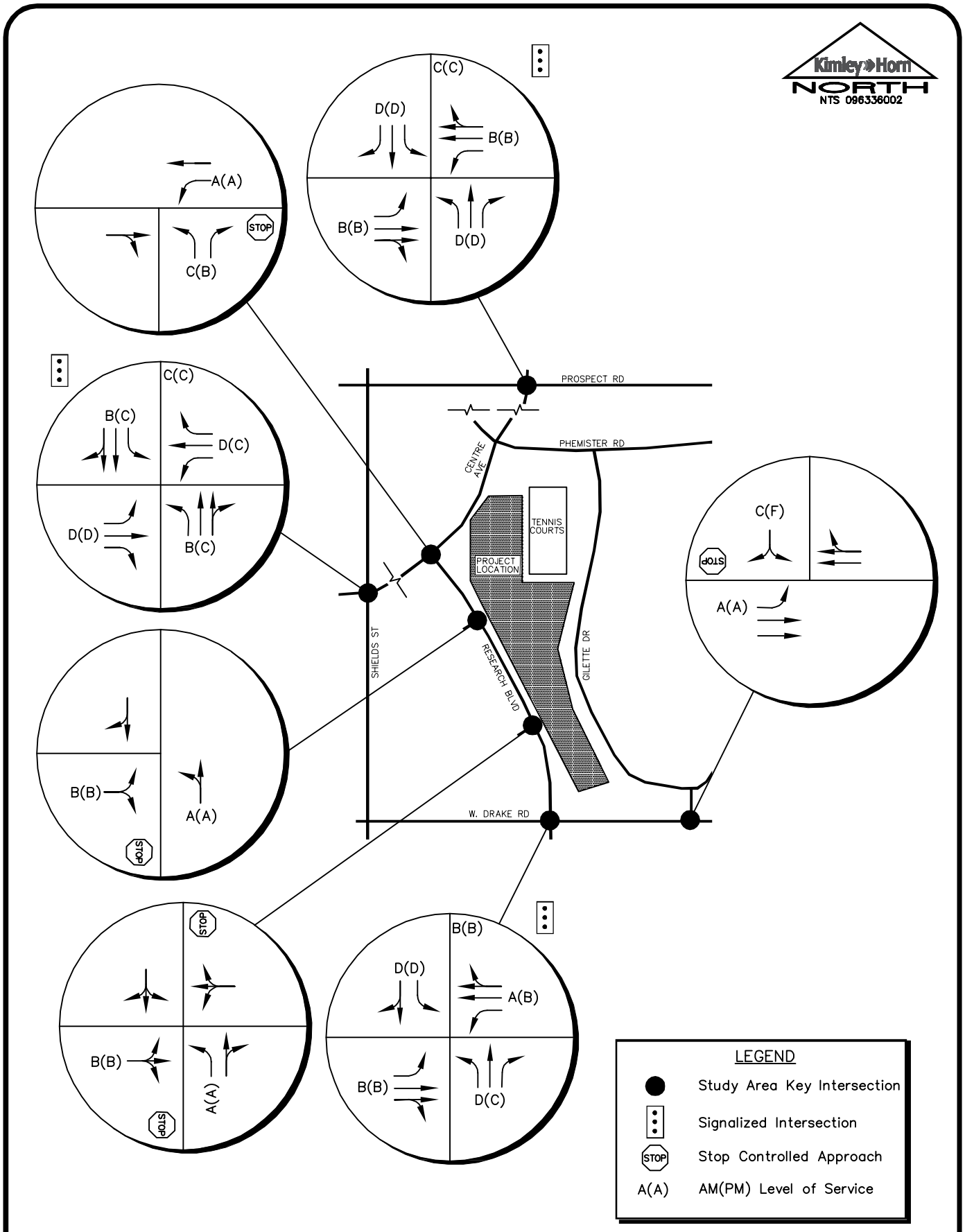
Research Boulevard South Access

With the completion of the CSU South Campus parking lot, the existing Research Boulevard south driveway that provides access to the tennis courts will be modified to provide access to the parking lot. It is recommended that the approach be constructed with a sufficient width to include separate shared left turn/through and right turn lanes. It is anticipated that the eastbound approach from the credit union will also function with two approach lanes as well since it has an adequate driveway width. In addition, it is recommended that the southbound Research Boulevard approach be restriped to include a left turn lane to shadow the northbound left turn lane. It is believed that a left turn lane length of 75 feet would be sufficient. With this configuration, acceptable level of service is anticipated for all movements with the addition of the parking lot traffic in the near term 2015 horizon. In the 2025 horizon, the westbound left turn movement may operate at a 51 second LOS F during the afternoon peak hour. It is believed that during times of heavy adjacent street traffic, drivers will reroute on the street network. This will occur either by vehicles turning right at this access or by traffic suing alternate driveways from the parking lot.

Prospect Road and Center Avenue

By 2025, the existing signalized intersection of Prospect Road and Center Avenue may operate at LOS E. This intersection was also identified as operating with poor LOS in the Parking and Transportation Master Plan (April 2014), prepared by Kimley-Horn, which studied the future traffic conditions associated with the CSU 2020 Transit Plan prepared by CSU's parking and transportation management team. Within the previous study it was recommended that the northbound and southbound approaches include dual left turn lanes.

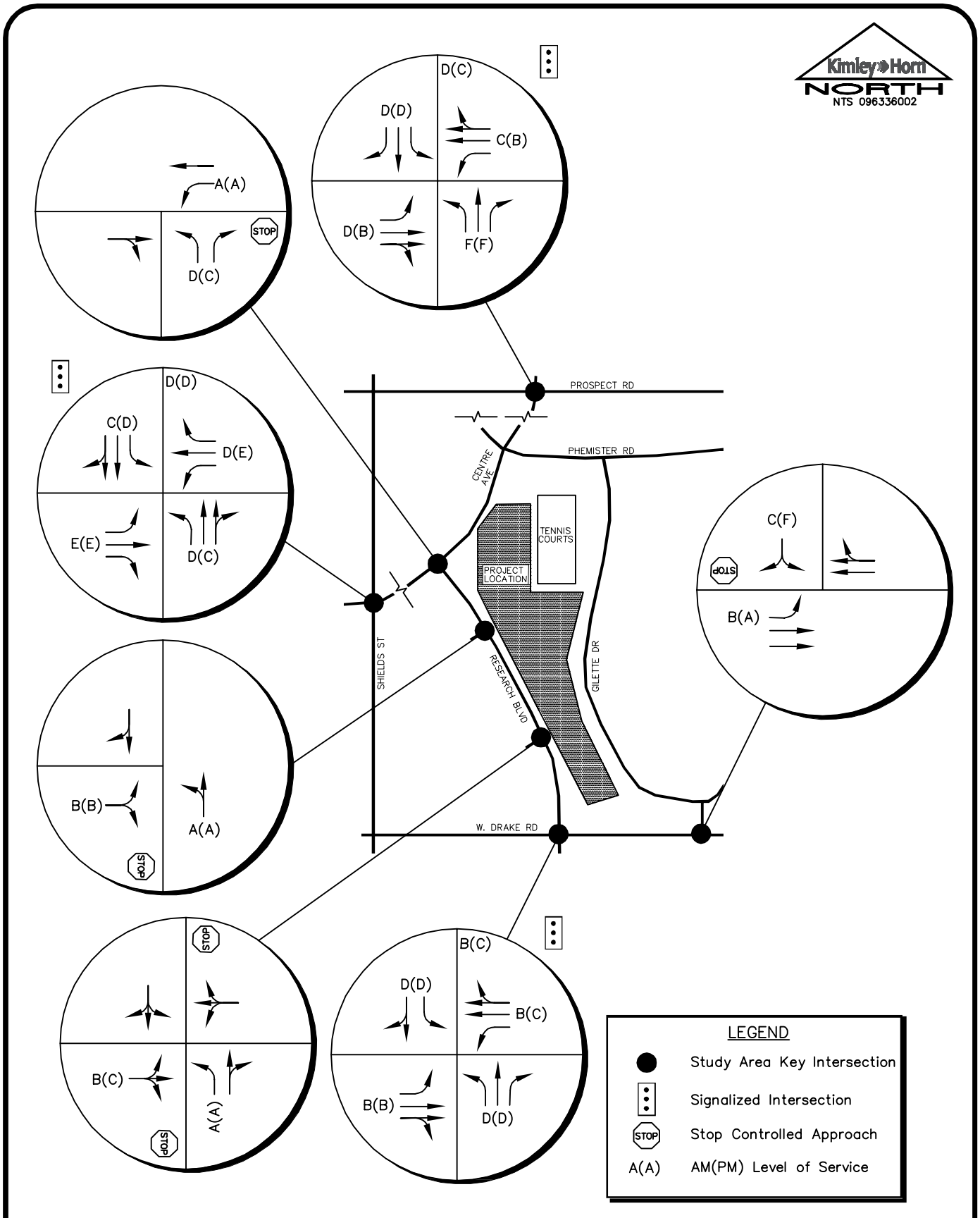
The above mentioned improvements at the Drake Road/Gilette Drive Access, Research Boulevard/South Access, and Prospect Road/Center Avenue intersections were incorporated into the operational analysis. The expected intersection delay and LOS in 2015 and 2025 with the project and the recommended intersection improvements for each of the study's key intersections is provided in **Tables 5** and **6** previously and summarized graphically in **Figures 11** and **12**.



CSU SOUTH CAMPUS PARKING LOT
2015 EXISTING LEVEL OF SERVICE

FIGURE 9

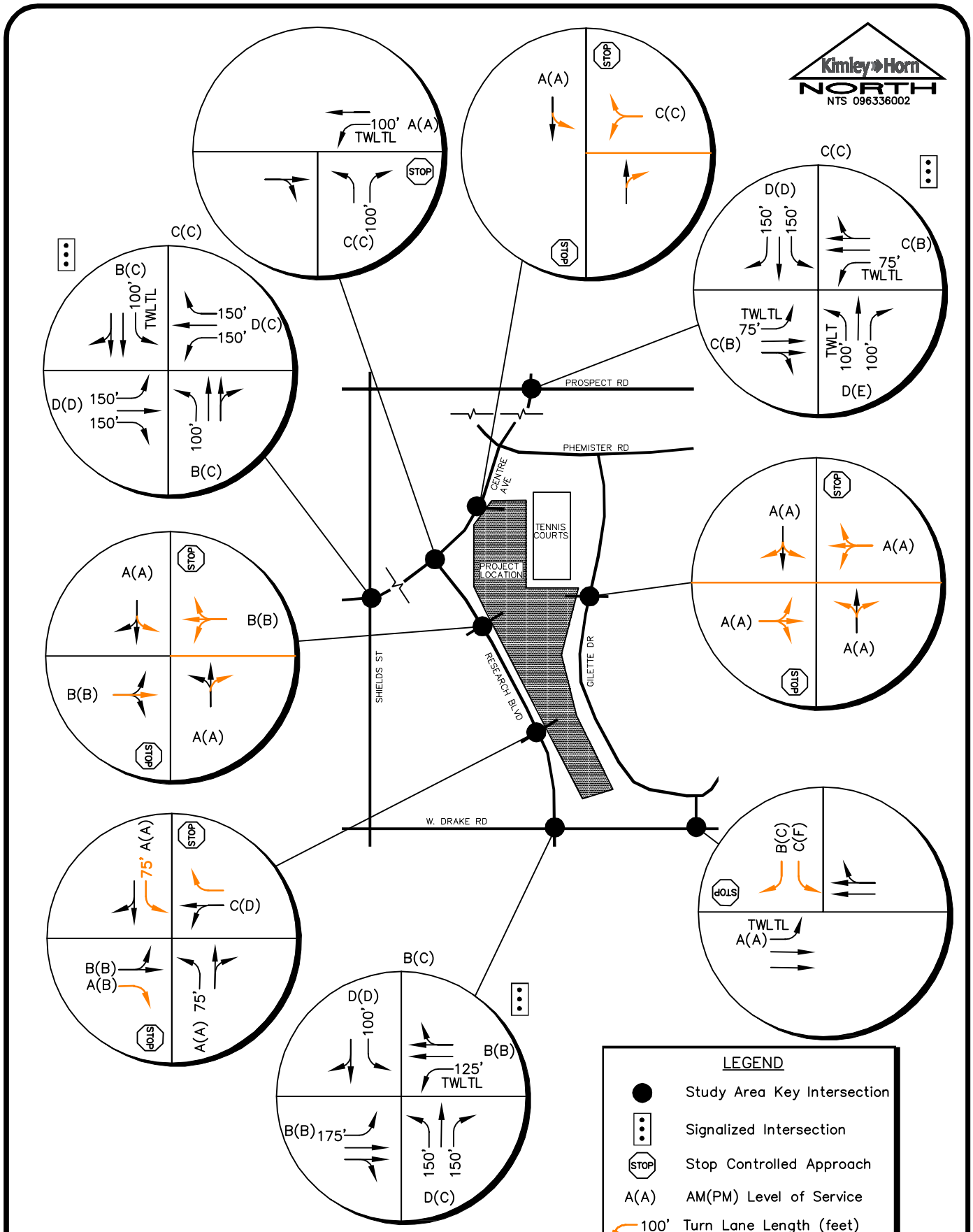
Kimley»Horn



CSU SOUTH CAMPUS PARKING LOT
2025 BACKGROUND
EXPECTED LEVEL OF SERVICE

FIGURE 10

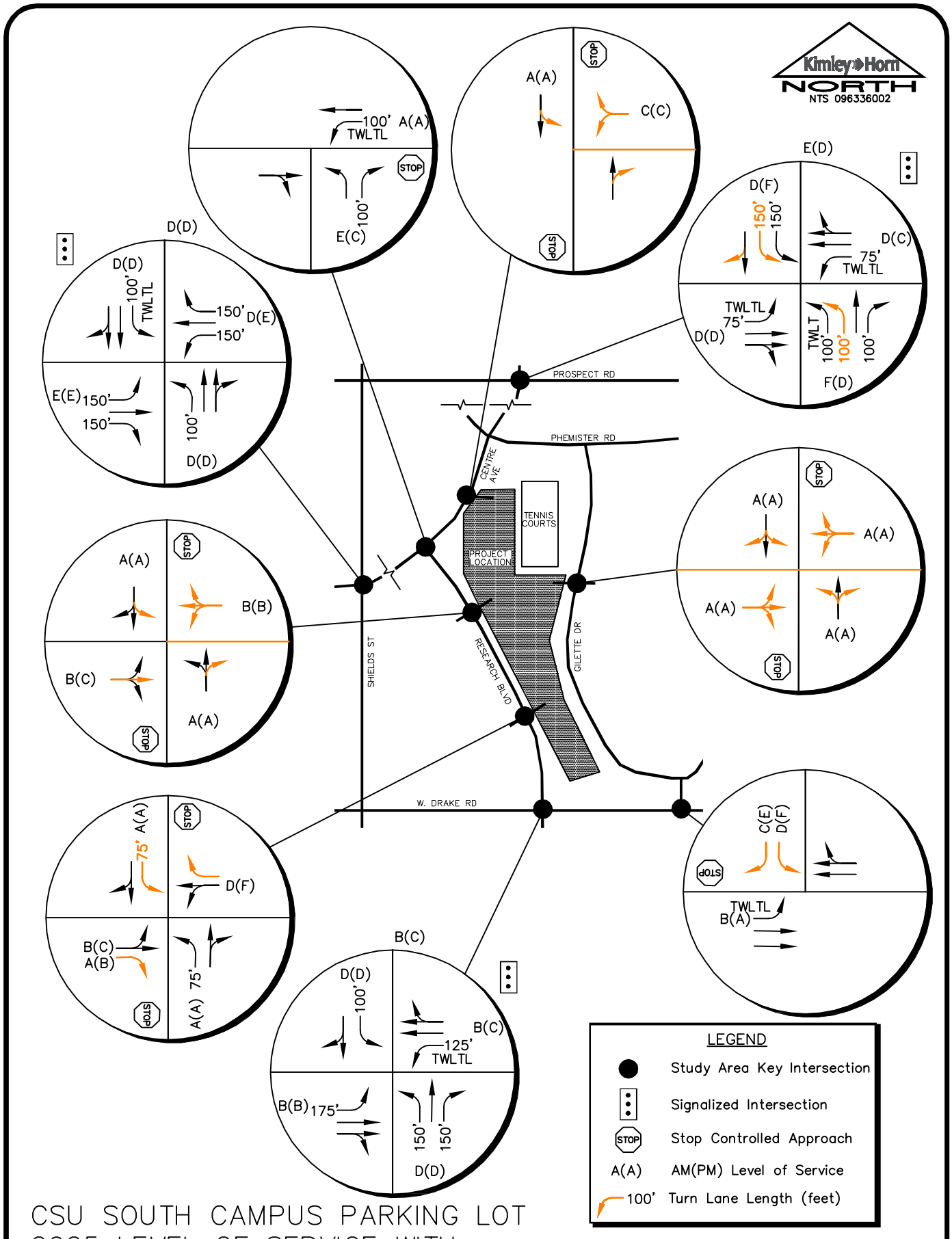
Kimley»Horn



CSU SOUTH CAMPUS PARKING LOT
2015 LEVEL OF SERVICE WITH
RECOMMENDED IMPROVEMENTS

FIGURE 11

Kimley»Horn



CSU SOUTH CAMPUS PARKING LOT
2025 LEVEL OF SERVICE WITH
RECOMMENDED IMPROVEMENTS

FIGURE 12

Kimley»Horn

5.0 CONCLUSIONS AND RECOMMENDATIONS

Based on the analysis presented in this report, Kimley-Horn believes the proposed CSU South Campus parking lot project will be successfully incorporated into the roadway network. The proposed South Campus Parking Lot project development and expected traffic volumes resulted in the following recommendations:

- The access proposed for the surface parking lot project is recommended to include four full movement access driveways; two access drives off of Research Boulevard, one access off of Centre Avenue, and one access off of Gilette Drive.

- At the proposed Centre Avenue access, the westbound approach exiting the parking lot is recommended to have a combined left turn/right turn lane. It is recommended that this approach operate with stop control with the installation of a R1-1 “STOP” sign.

- At the proposed access along Gilette Drive, the eastbound approach exiting the development is recommended to have a combined left turn/through/right turn lane. It is believed that a new access to the parking lot on the east side of Gilette Drive will be constructed to align with this access. It is recommended that the parking lot approaches operate with stop control with the installation of R1-1 “STOP” signs.

- With the completion of the South Campus Parking Lot, an access will be located to align with the existing Centre Tech development. This Research Boulevard North Access will include a stop controlled westbound approach and is recommended to have a combined left turn/through/right turn lane. It is recommended that this approach operate with stop control with the installation of a R1-1 “STOP” sign.

- The existing access to the tennis courts along Research Boulevard will be reconstructed with the parking lot project. It is recommended that the westbound approach exiting the parking lot include shared left turn/through lane and a separate right turn lane. It is recommended that this approach operate with stop control with the installation of a R1-1 “STOP” sign. It is further recommended that southbound Research Boulevard include

restriping a 75-foot left turn lane at the access to shadow the existing northbound left turn lane.

- To improve the Drake Road/Gilette Drive Access unsignalized intersection, the southbound Gilette Drive Access approach would benefit from designating separate left turn and right turn lanes. Currently there is one shared approach lane with a width of approximately 20 feet which could be striped to provide two 10-foot turn lanes.

- To improve LOS conditions in the 2025 horizon at the intersection of Prospect Road/Center Avenue and remain consistent with the Parking and Transportation Master Plan (April 2014), prepared by Kimley-Horn, it is recommended that the northbound and southbound approaches be constructed with dual left turn lanes.

- All on-site and off-site signing and striping improvements should be incorporated into the project civil drawings, and conform to City of Fort Collins standards as well as the Manual on Uniform Traffic Control Devices – 2009 Edition (MUTCD).

APPENDICES

APPENDIX A

Intersection Count Sheets

RDC
Ridgeview Data Collection

Morrison, CO 80465

Fort Collins, CO
CSU South Parking Lot
AM Peak
Centre Ave and Research Blvd

File Name : CentreResearchAM
Site Code : IPO 72
Start Date : 1/20/2015
Page No : 1

Groups Printed- Unshifted

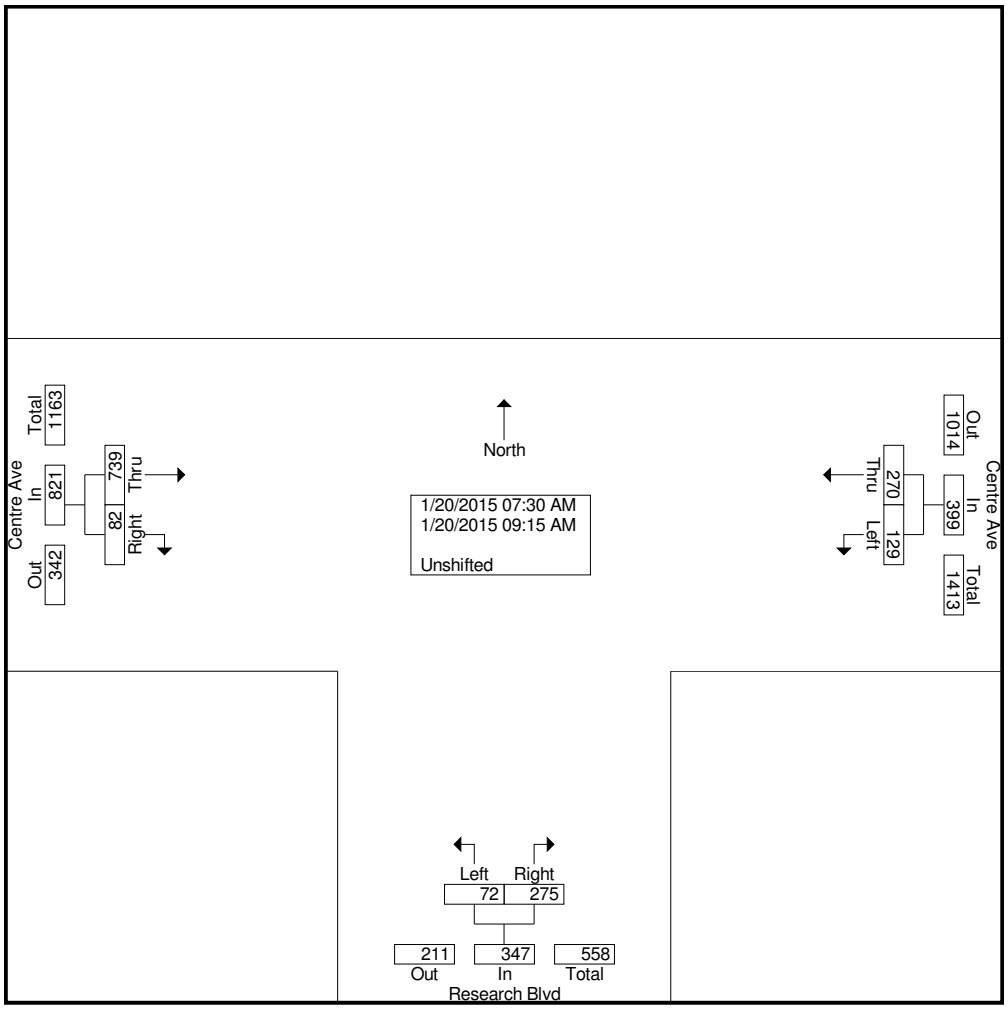
	Centre Ave Eastbound			Centre Ave Westbound			Research Blvd Northbound			
Start Time	Thru	Right	App. Total	Left	Thru	App. Total	Left	Right	App. Total	Int. Total
07:30 AM	133	10	143	15	28	43	8	36	44	230
07:45 AM	136	2	138	17	38	55	10	58	68	261
Total	269	12	281	32	66	98	18	94	112	491
08:00 AM	79	21	100	17	32	49	7	36	43	192
08:15 AM	76	11	87	16	39	55	3	27	30	172
08:30 AM	111	11	122	16	34	50	13	31	44	216
08:45 AM	96	14	110	20	36	56	20	30	50	216
Total	362	57	419	69	141	210	43	124	167	796
09:00 AM	51	7	58	18	42	60	4	30	34	152
09:15 AM	57	6	63	10	21	31	7	27	34	128
Grand Total	739	82	821	129	270	399	72	275	347	1567
Apprch %	90	10		32.3	67.7		20.7	79.3		
Total %	47.2	5.2	52.4	8.2	17.2	25.5	4.6	17.5	22.1	

RDC
Ridgeview Data Collection

Morrison, CO 80465

Fort Collins, CO
CSU South Parking Lot
AM Peak
Centre Ave and Research Blvd

File Name : CentreResearchAM
Site Code : IPO 72
Start Date : 1/20/2015
Page No : 2



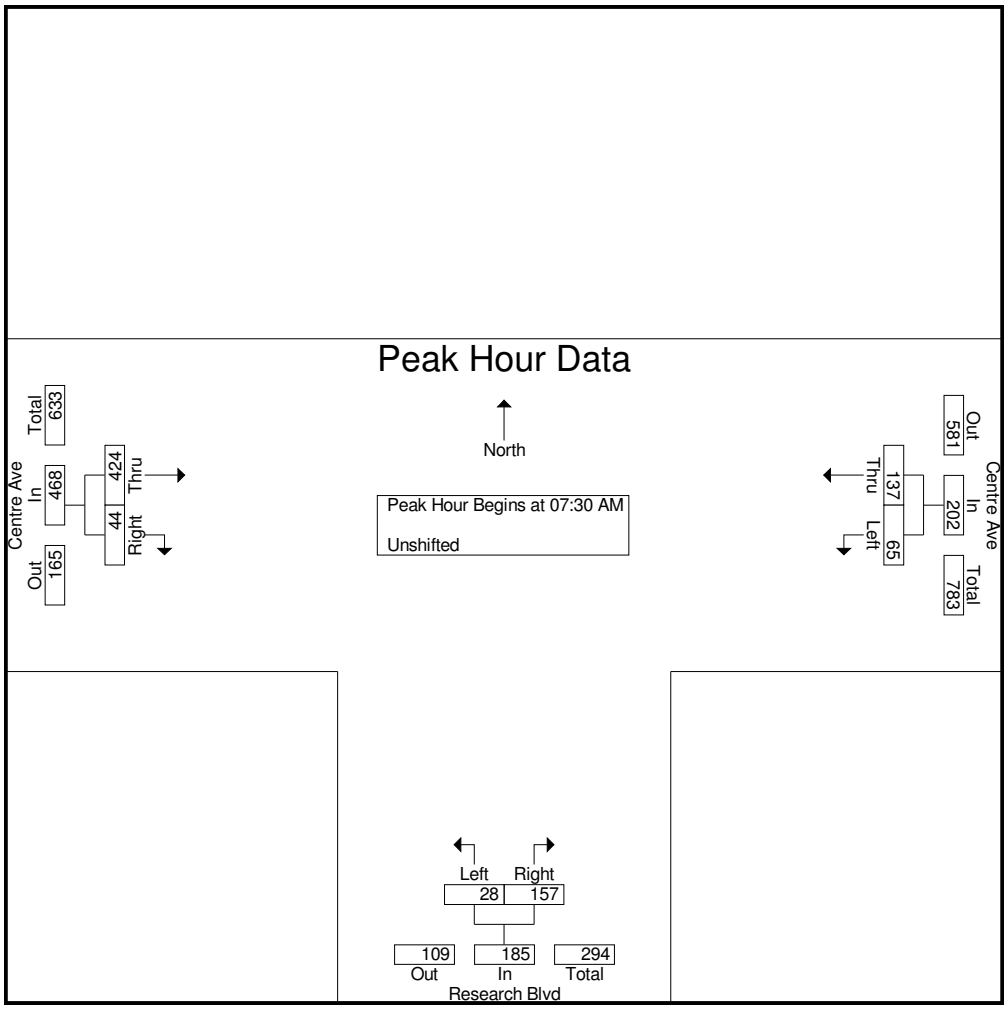
RDC
Ridgeview Data Collection

Morrison, CO 80465

Fort Collins, CO
CSU South Parking Lot
AM Peak
Centre Ave and Research Blvd

File Name : CentreResearchAM
Site Code : IPO 72
Start Date : 1/20/2015
Page No : 3

	Centre Ave Eastbound			Centre Ave Westbound			Research Blvd Northbound			
Start Time	Thru	Right	App. Total	Left	Thru	App. Total	Left	Right	App. Total	Int. Total
Peak Hour Analysis From 07:30 AM to 09:15 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 07:30 AM										
07:30 AM	133	10	**143**	15	28	43	8	36	44	230
07:45 AM	**136**	2	138	**17**	38	**55**	**10**	**58**	**68**	**261**
08:00 AM	79	**21**	100	17	32	49	7	36	43	192
08:15 AM	76	11	87	16	**39**	55	3	27	30	172
Total Volume	424	44	468	65	137	202	28	157	185	855
% App. Total	90.6	9.4		32.2	67.8		15.1	84.9		
PHF	.779	.524	.818	.956	.878	.918	.700	.677	.680	.819



RDC
Ridgeview Data Collection

Morrison, CO 80465

Fort Collins, CO
CSU South Parking Lot
AM Peak
Centre Ave and Research Blvd

File Name : CentreResearchAM
Site Code : IPO 72
Start Date : 1/20/2015
Page No : 4

Image 1

RDC
Ridgeview Data Collection

Morrison, CO 80465

Fort Collins, CO
CSU South Parking Lot
PM Peak
Centre Ave and Research Blvd

File Name : CentreResearchPM
Site Code : IPO 72
Start Date : 1/20/2015
Page No : 1

Groups Printed- Unshifted

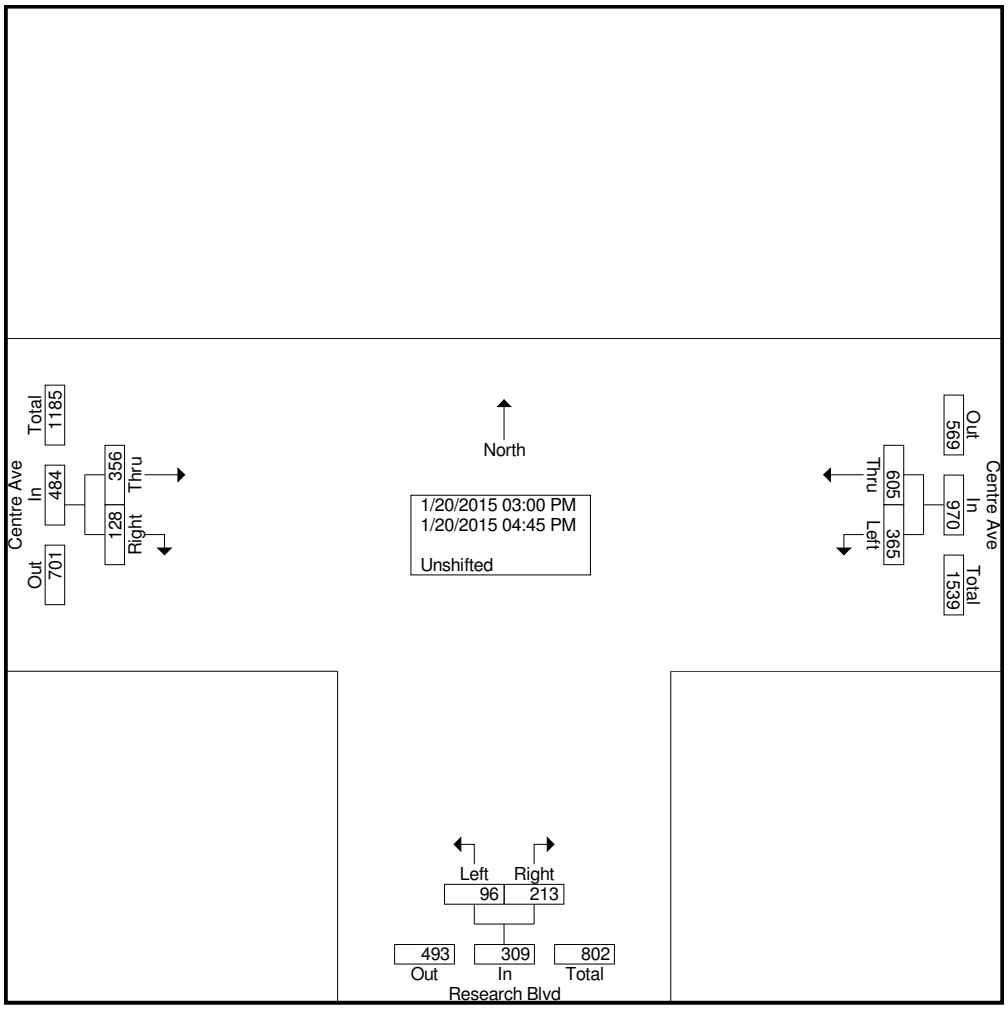
	Centre Ave Eastbound			Centre Ave Westbound			Research Blvd Northbound			
Start Time	Thru	Right	App. Total	Left	Thru	App. Total	Left	Right	App. Total	Int. Total
03:00 PM	54	17	71	41	54	95	11	19	30	196
03:15 PM	41	17	58	36	71	107	17	28	45	210
03:30 PM	53	17	70	40	77	117	11	31	42	229
03:45 PM	53	23	76	43	66	109	11	12	23	208
Total	201	74	275	160	268	428	50	90	140	843
04:00 PM	34	20	54	42	72	114	14	34	48	216
04:15 PM	33	13	46	52	85	137	13	28	41	224
04:30 PM	45	12	57	57	81	138	8	26	34	229
04:45 PM	43	9	52	54	99	153	11	35	46	251
Total	155	54	209	205	337	542	46	123	169	920
Grand Total	356	128	484	365	605	970	96	213	309	1763
Apprch %	73.6	26.4		37.6	62.4		31.1	68.9		
Total %	20.2	7.3	27.5	20.7	34.3	55	5.4	12.1	17.5	

RDC
Ridgeview Data Collection

Morrison, CO 80465

Fort Collins, CO
CSU South Parking Lot
PM Peak
Centre Ave and Research Blvd

File Name : CentreResearchPM
Site Code : IPO 72
Start Date : 1/20/2015
Page No : 2



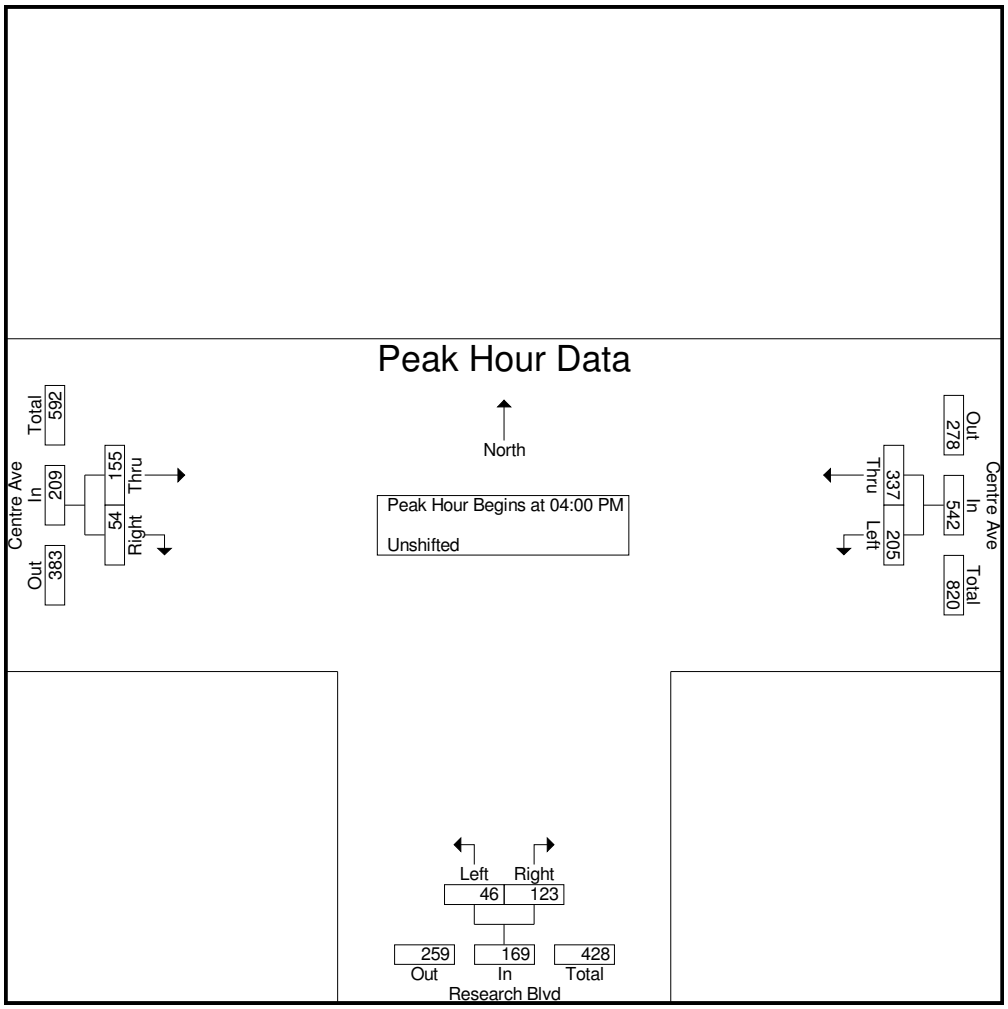
RDC
Ridgeview Data Collection

Morrison, CO 80465

Fort Collins, CO
CSU South Parking Lot
PM Peak
Centre Ave and Research Blvd

File Name : CentreResearchPM
Site Code : IPO 72
Start Date : 1/20/2015
Page No : 3

	Centre Ave Eastbound			Centre Ave Westbound			Research Blvd Northbound			
Start Time	Thru	Right	App. Total	Left	Thru	App. Total	Left	Right	App. Total	Int. Total
Peak Hour Analysis From 03:00 PM to 04:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 04:00 PM										
04:00 PM	34	**20**	54	42	72	114	**14**	34	**48**	216
04:15 PM	33	13	46	52	85	137	13	28	41	224
04:30 PM	**45**	12	**57**	**57**	81	138	8	26	34	229
04:45 PM	43	9	52	54	**99**	**153**	11	**35**	46	**251**
Total Volume	155	54	209	205	337	542	46	123	169	920
% App. Total	74.2	25.8		37.8	62.2		27.2	72.8		
PHF	.861	.675	.917	.899	.851	.886	.821	.879	.880	.916



RDC
Ridgeview Data Collection

Morrison, CO 80465

Fort Collins, CO
CSU South Parking Lot
PM Peak
Centre Ave and Research Blvd

File Name : CentreResearchPM
Site Code : IPO 72
Start Date : 1/20/2015
Page No : 4

Image 1

RDC
Ridgeview Data Collection

Morrison, CO 80465

Fort Collins, CO
CSU South Parking Lot
AM Peak
Centre Ave and Shields St

File Name : CentreShieldsAM
Site Code : IPO 72
Start Date : 1/20/2015
Page No : 1

Groups Printed- Unshifted

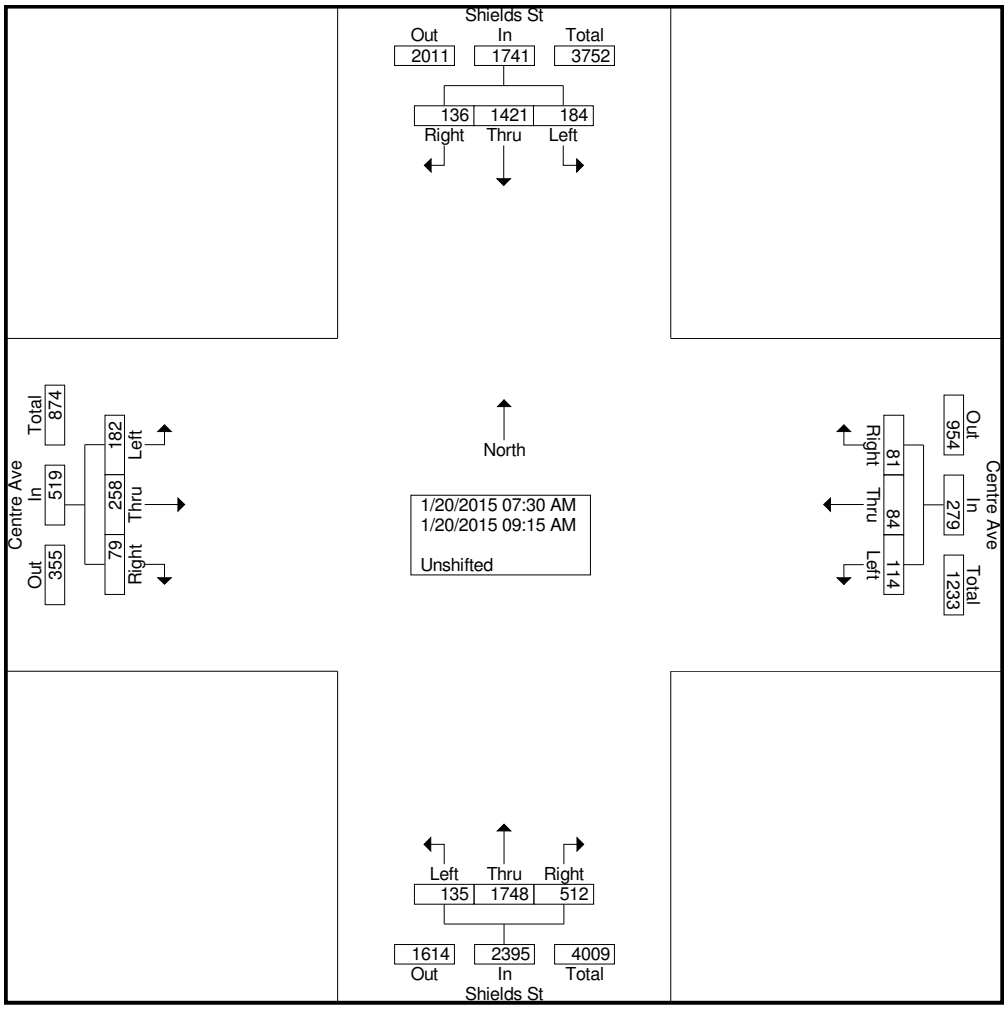
	Centre Ave Eastbound				Centre Ave Westbound				Shields St Northbound				Shields St Southbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:30 AM	45	45	8	98	12	1	12	25	9	263	82	354	26	204	6	236	713
07:45 AM	23	69	4	96	10	7	7	24	9	278	81	368	36	176	15	227	715
Total	68	114	12	194	22	8	19	49	18	541	163	722	62	380	21	463	1428
08:00 AM	18	30	13	61	12	9	4	25	14	188	50	252	21	163	21	205	543
08:15 AM	18	28	7	53	14	14	8	36	9	184	60	253	20	184	16	220	562
08:30 AM	26	23	5	54	19	9	13	41	22	234	81	337	23	198	13	234	666
08:45 AM	19	27	9	55	16	18	17	51	20	203	69	292	33	209	23	265	663
Total	81	108	34	223	61	50	42	153	65	809	260	1134	97	754	73	924	2434
09:00 AM	12	15	12	39	22	14	7	43	26	222	48	296	16	137	15	168	546
09:15 AM	21	21	21	63	9	12	13	34	26	176	41	243	9	150	27	186	526
Grand Total	182	258	79	519	114	84	81	279	135	1748	512	2395	184	1421	136	1741	4934
Apprch %	35.1	49.7	15.2		40.9	30.1	29		5.6	73	21.4		10.6	81.6	7.8		
Total %	3.7	5.2	1.6	10.5	2.3	1.7	1.6	5.7	2.7	35.4	10.4	48.5	3.7	28.8	2.8	35.3	

RDC
Ridgeview Data Collection

Morrison, CO 80465

Fort Collins, CO
CSU South Parking Lot
AM Peak
Centre Ave and Shields St

File Name : CentreShieldsAM
Site Code : IPO 72
Start Date : 1/20/2015
Page No : 2



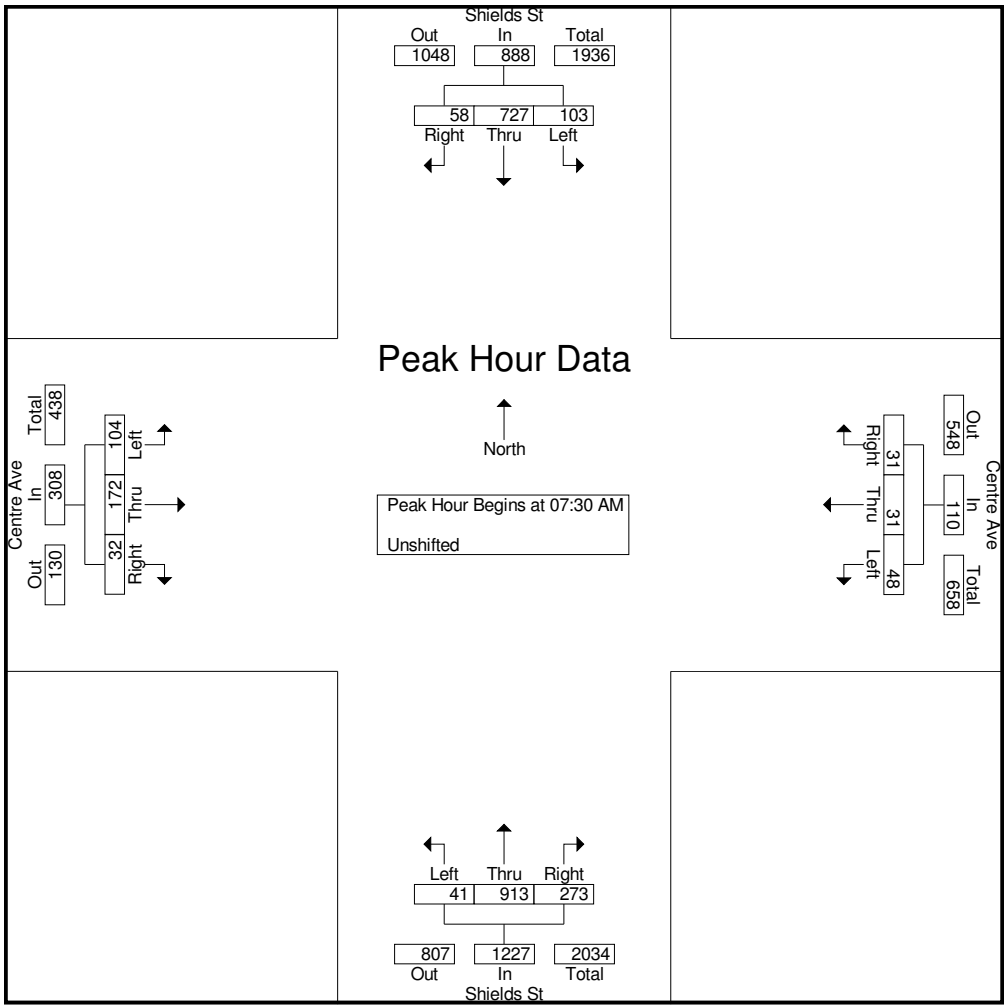
RDC
Ridgeview Data Collection

Morrison, CO 80465

Fort Collins, CO
CSU South Parking Lot
AM Peak
Centre Ave and Shields St

File Name : CentreShieldsAM
Site Code : IPO 72
Start Date : 1/20/2015
Page No : 3

	Centre Ave Eastbound				Centre Ave Westbound				Shields St Northbound				Shields St Southbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:30 AM to 09:15 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:30 AM																	
07:30 AM	**45**	45	8	**98**	12	1	**12**	25	9	263	**82**	354	26	**204**	6	**236**	713
07:45 AM	23	**69**	4	96	10	7	7	24	9	**278**	81	**368**	**36**	176	15	227	**715**
08:00 AM	18	30	**13**	61	12	9	4	25	**14**	188	50	252	21	163	**21**	205	543
08:15 AM	18	28	7	53	**14**	**14**	8	**36**	9	184	60	253	20	184	16	220	562
Total Volume	104	172	32	308	48	31	31	110	41	913	273	1227	103	727	58	888	2533
% App. Total	33.8	55.8	10.4		43.6	28.2	28.2		3.3	74.4	22.2		11.6	81.9	6.5		
PHF	.578	.623	.615	.786	.857	.554	.646	.764	.732	.821	.832	.834	.715	.891	.690	.941	.886



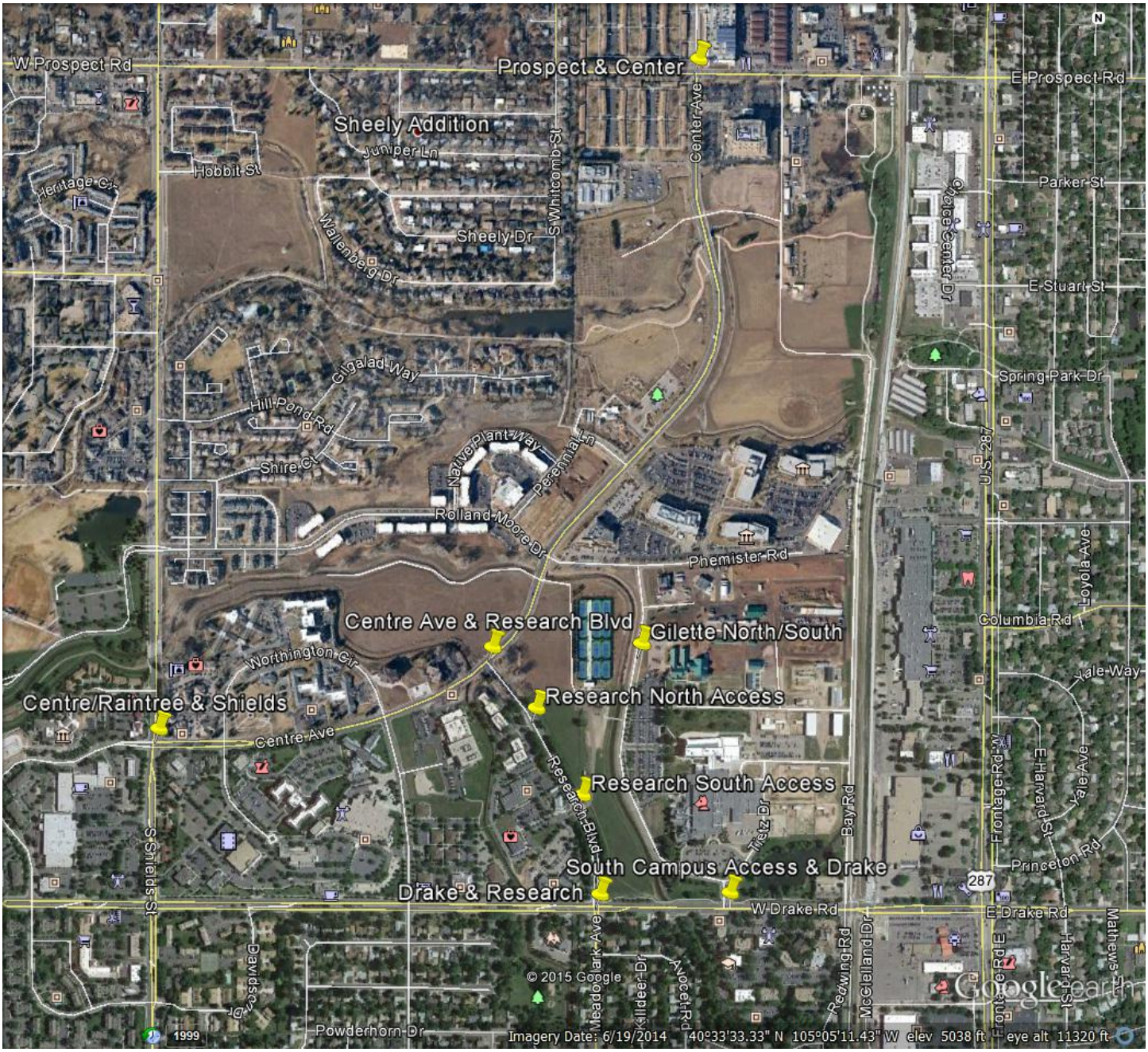
RDC
Ridgeview Data Collection

Morrison, CO 80465

Fort Collins, CO
CSU South Parking Lot
AM Peak
Centre Ave and Shields St

File Name : CentreShieldsAM
Site Code : IPO 72
Start Date : 1/20/2015
Page No : 4

Image 1



RDC
Ridgeview Data Collection

Morrison, CO 80465

Fort Collins, CO
CSU South Parking Lot
PM Peak
Centre Ave and Shields St

File Name : CentreShieldsPM
Site Code : IPO 72
Start Date : 1/20/2015
Page No : 1

Groups Printed- Unshifted

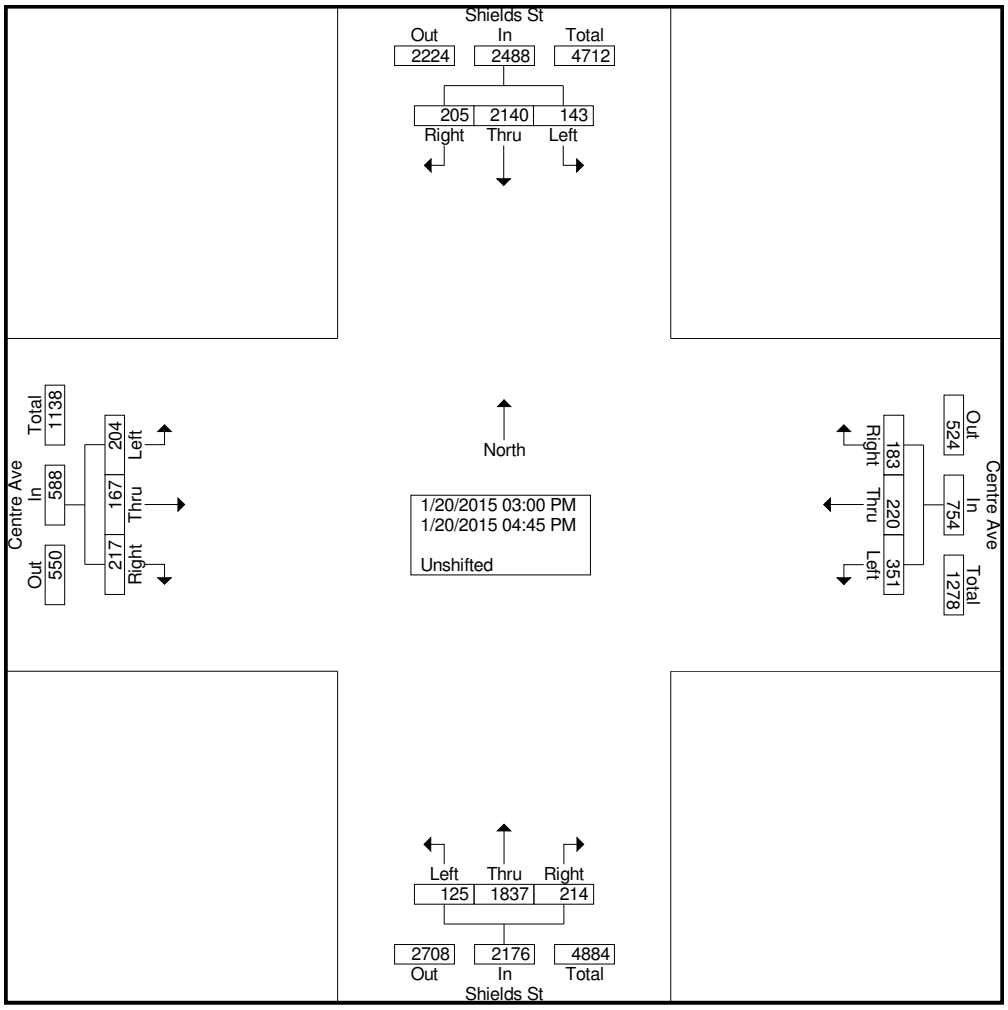
	Centre Ave Eastbound				Centre Ave Westbound				Shields St Northbound				Shields St Southbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
03:00 PM	28	17	34	79	39	18	27	84	13	250	36	299	15	233	22	270	732
03:15 PM	28	19	32	79	44	18	17	79	11	237	26	274	16	268	19	303	735
03:30 PM	35	63	42	140	51	34	18	103	15	185	39	239	22	245	27	294	776
03:45 PM	19	19	35	73	34	21	20	75	23	240	40	303	34	300	38	372	823
Total	110	118	143	371	168	91	82	341	62	912	141	1115	87	1046	106	1239	3066
04:00 PM	20	13	22	55	47	35	17	99	19	236	15	270	17	258	27	302	726
04:15 PM	27	12	23	62	37	28	25	90	14	241	13	268	16	291	20	327	747
04:30 PM	21	16	9	46	49	30	31	110	16	222	21	259	9	245	21	275	690
04:45 PM	26	8	20	54	50	36	28	114	14	226	24	264	14	300	31	345	777
Total	94	49	74	217	183	129	101	413	63	925	73	1061	56	1094	99	1249	2940
Grand Total	204	167	217	588	351	220	183	754	125	1837	214	2176	143	2140	205	2488	6006
Apprch %	34.7	28.4	36.9		46.6	29.2	24.3		5.7	84.4	9.8		5.7	86	8.2		
Total %	3.4	2.8	3.6	9.8	5.8	3.7	3	12.6	2.1	30.6	3.6	36.2	2.4	35.6	3.4	41.4	

RDC
Ridgeview Data Collection

Morrison, CO 80465

Fort Collins, CO
CSU South Parking Lot
PM Peak
Centre Ave and Shields St

File Name : CentreShieldsPM
Site Code : IPO 72
Start Date : 1/20/2015
Page No : 2



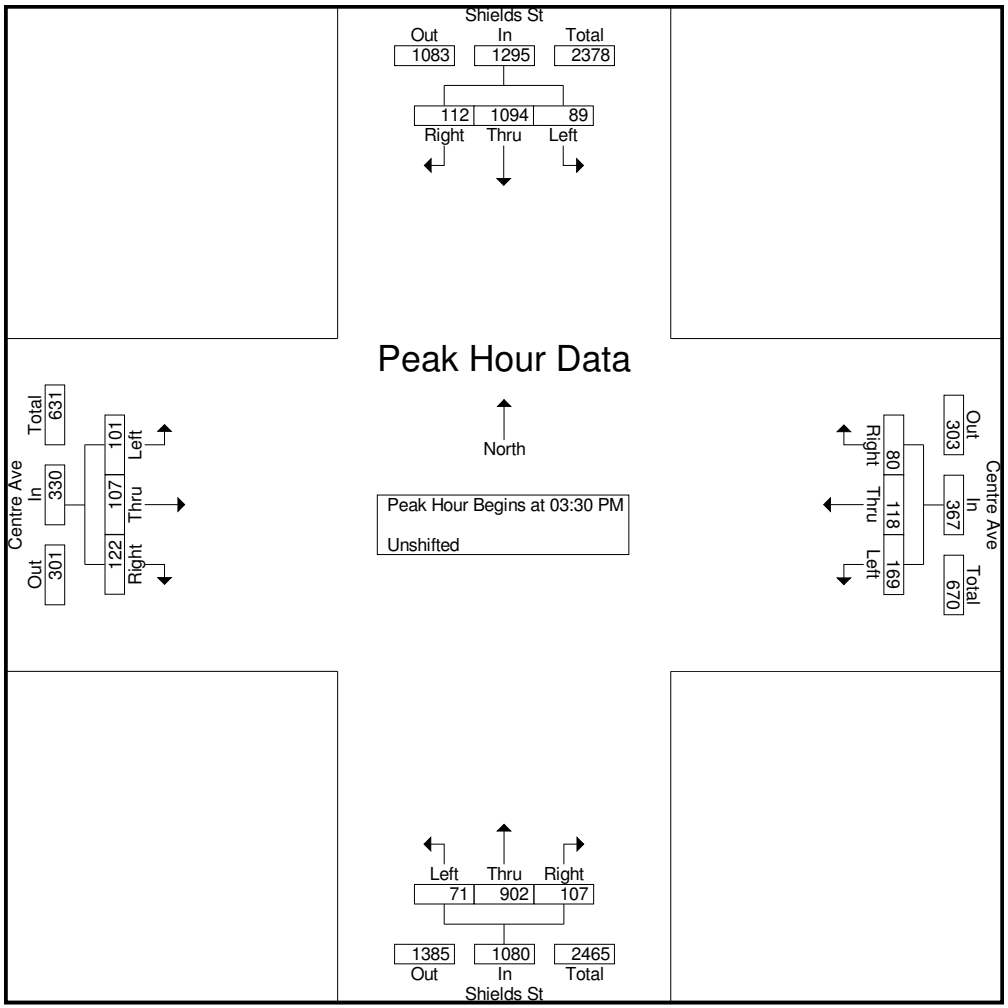
RDC
Ridgeview Data Collection

Morrison, CO 80465

Fort Collins, CO
CSU South Parking Lot
PM Peak
Centre Ave and Shields St

File Name : CentreShieldsPM
Site Code : IPO 72
Start Date : 1/20/2015
Page No : 3

	Centre Ave Eastbound				Centre Ave Westbound				Shields St Northbound				Shields St Southbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 03:00 PM to 04:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 03:30 PM																	
03:30 PM	**35**	**63**	**42**	**140**	**51**	34	18	**103**	15	185	39	239	22	245	27	294	776
03:45 PM	19	19	35	73	34	21	20	75	**23**	240	**40**	**303**	**34**	**300**	**38**	**372**	**823**
04:00 PM	20	13	22	55	47	**35**	17	99	19	236	15	270	17	258	27	302	726
04:15 PM	27	12	23	62	37	28	**25**	90	14	**241**	13	268	16	291	20	327	747
Total Volume	101	107	122	330	169	118	80	367	71	902	107	1080	89	1094	112	1295	3072
% App. Total	30.6	32.4	37		46	32.2	21.8		6.6	83.5	9.9		6.9	84.5	8.6		
PHF	.721	.425	.726	.589	.828	.843	.800	.891	.772	.936	.669	.891	.654	.912	.737	.870	.933



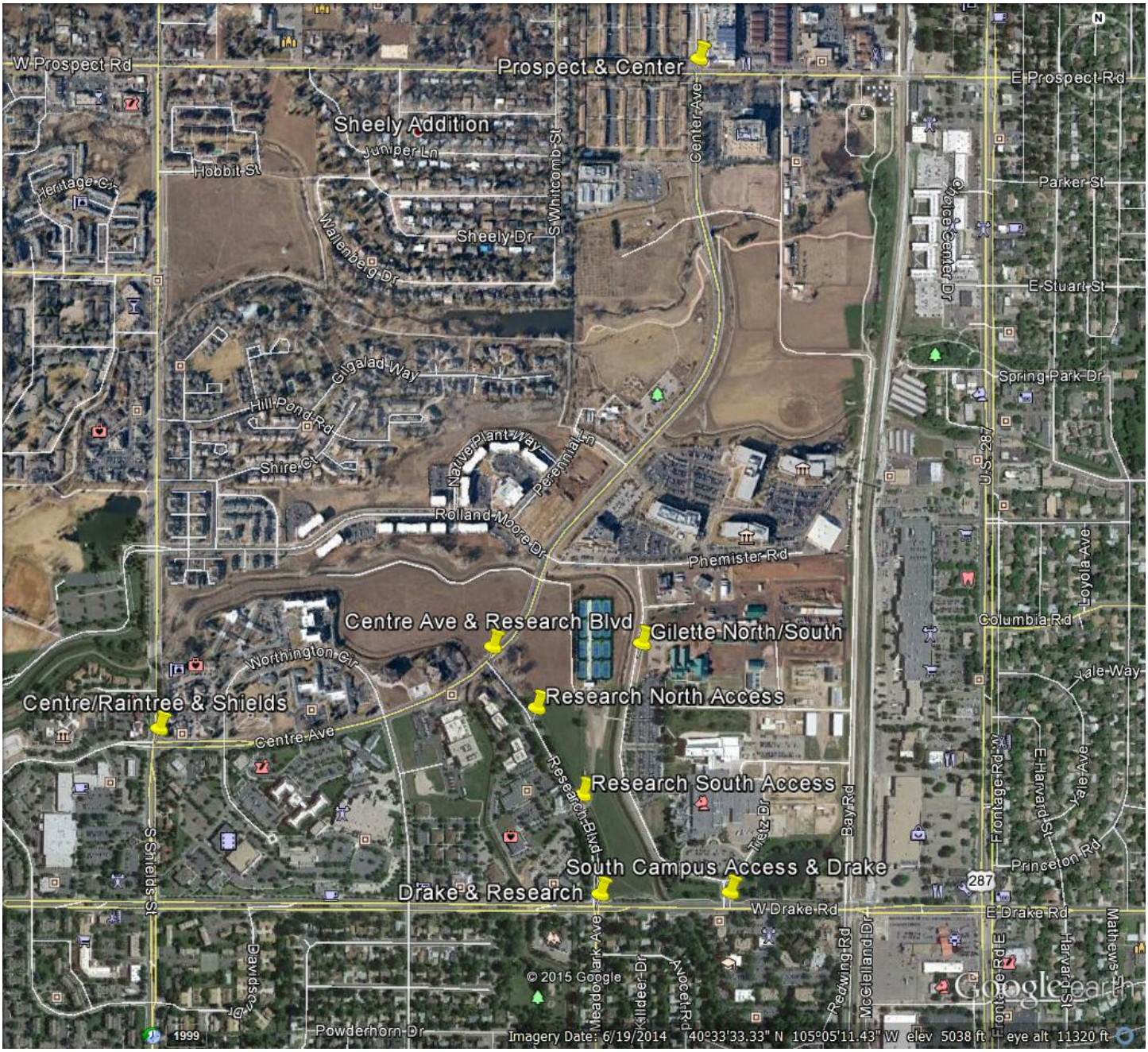
RDC
Ridgeview Data Collection

Morrison, CO 80465

Fort Collins, CO
CSU South Parking Lot
PM Peak
Centre Ave and Shields St

File Name : CentreShieldsPM
Site Code : IPO 72
Start Date : 1/20/2015
Page No : 4

Image 1



RDC
Ridgeview Data Collection

Morrison, CO 80465

Fort Collins, CO
CSU South Parking Lot
AM Peak
Drake Rd and Research Blvd

File Name : DrakeResearchAM
Site Code : IPO 72
Start Date : 1/20/2015
Page No : 1

Groups Printed- Unshifted

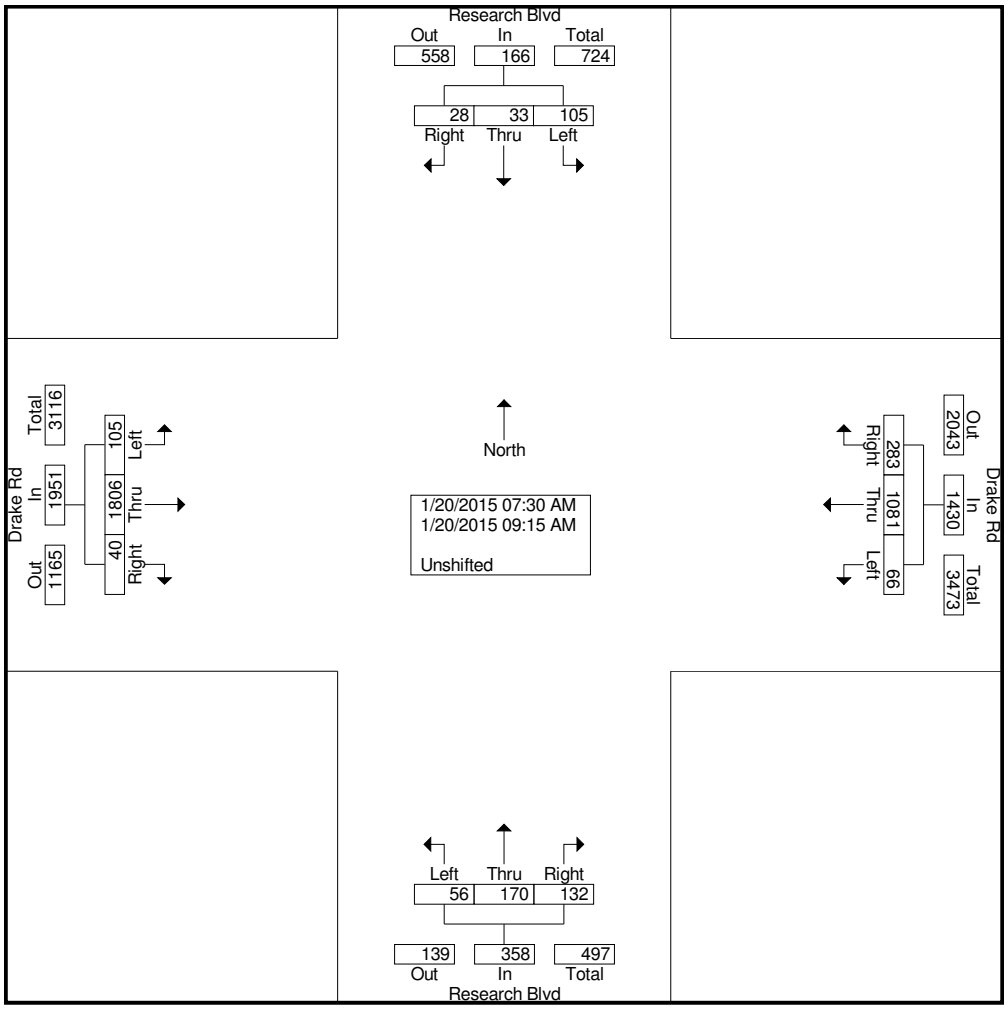
	Drake Rd Eastbound				Drake Rd Westbound				Research Blvd Northbound				Research Blvd Southbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:30 AM	9	285	2	296	5	113	39	157	6	34	15	55	9	4	1	14	522
07:45 AM	23	242	0	265	13	166	60	239	6	31	21	58	7	3	1	11	573
Total	32	527	2	561	18	279	99	396	12	65	36	113	16	7	2	25	1095
08:00 AM	17	195	6	218	4	108	44	156	13	18	11	42	4	6	5	15	431
08:15 AM	13	212	12	237	16	132	26	174	13	13	34	60	12	2	3	17	488
08:30 AM	9	231	3	243	7	151	29	187	10	24	18	52	11	6	2	19	501
08:45 AM	20	263	5	288	5	166	35	206	4	24	11	39	28	4	1	33	566
Total	59	901	26	986	32	557	134	723	40	79	74	193	55	18	11	84	1986
09:00 AM	11	191	4	206	10	121	17	148	3	14	15	32	15	5	8	28	414
09:15 AM	3	187	8	198	6	124	33	163	1	12	7	20	19	3	7	29	410
Grand Total	105	1806	40	1951	66	1081	283	1430	56	170	132	358	105	33	28	166	3905
Apprch %	5.4	92.6	2.1		4.6	75.6	19.8		15.6	47.5	36.9		63.3	19.9	16.9		
Total %	2.7	46.2	1	50	1.7	27.7	7.2	36.6	1.4	4.4	3.4	9.2	2.7	0.8	0.7	4.3	

RDC
Ridgeview Data Collection

Morrison, CO 80465

Fort Collins, CO
CSU South Parking Lot
AM Peak
Drake Rd and Research Blvd

File Name : DrakeResearchAM
Site Code : IPO 72
Start Date : 1/20/2015
Page No : 2



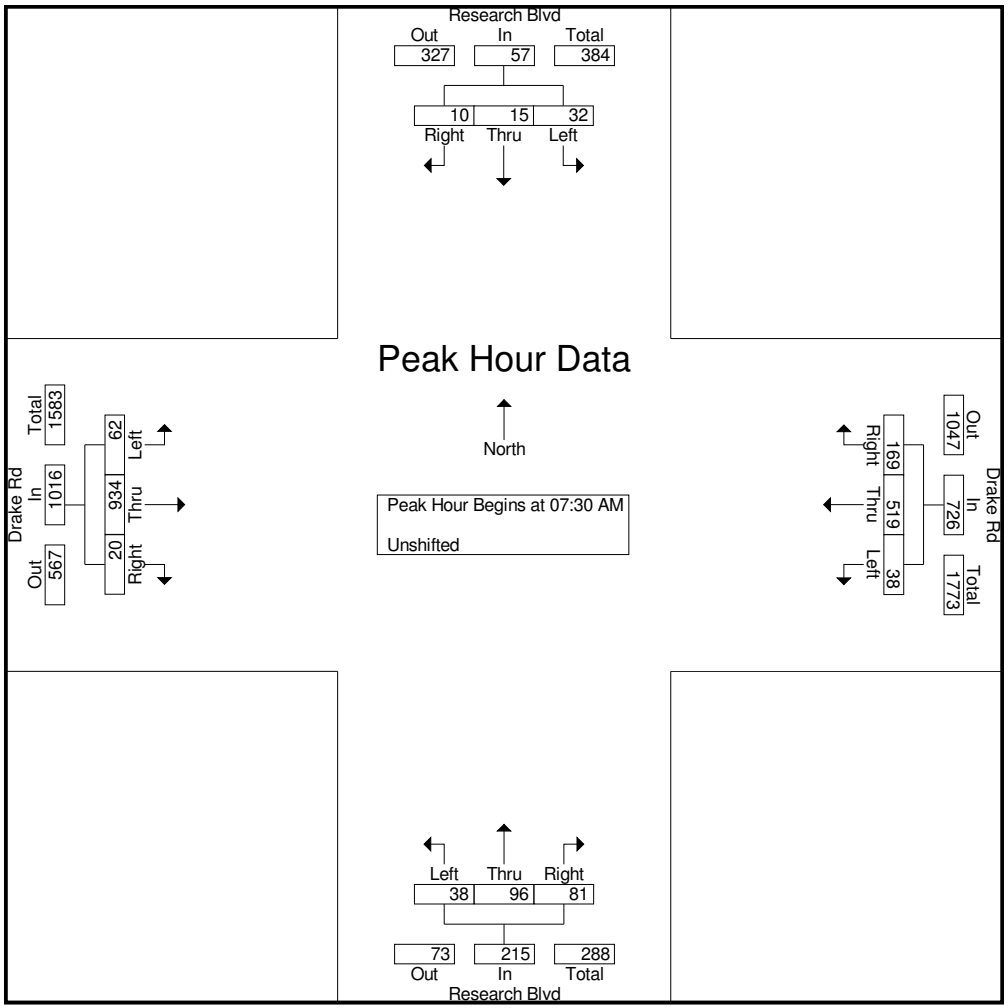
RDC
Ridgeview Data Collection

Morrison, CO 80465

Fort Collins, CO
CSU South Parking Lot
AM Peak
Drake Rd and Research Blvd

File Name : DrakeResearchAM
Site Code : IPO 72
Start Date : 1/20/2015
Page No : 3

	Drake Rd Eastbound				Drake Rd Westbound				Research Blvd Northbound				Research Blvd Southbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:30 AM to 09:15 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:30 AM																	
07:30 AM	9	**285**	2	**296**	5	113	39	157	6	**34**	15	55	9	4	1	14	522
07:45 AM	**23**	242	0	265	13	**166**	**60**	**239**	6	31	21	58	7	3	1	11	**573**
08:00 AM	17	195	6	218	4	108	44	156	**13**	18	11	42	4	**6**	**5**	15	431
08:15 AM	13	212	**12**	237	**16**	132	26	174	13	13	**34**	**60**	**12**	2	3	**17**	488
Total Volume	62	934	20	1016	38	519	169	726	38	96	81	215	32	15	10	57	2014
% App. Total	6.1	91.9	2		5.2	71.5	23.3		17.7	44.7	37.7		56.1	26.3	17.5		
PHF	.674	.819	.417	.858	.594	.782	.704	.759	.731	.706	.596	.896	.667	.625	.500	.838	.879



RDC
Ridgeview Data Collection

Morrison, CO 80465

Fort Collins, CO
CSU South Parking Lot
AM Peak
Drake Rd and Research Blvd

File Name : DrakeResearchAM
Site Code : IPO 72
Start Date : 1/20/2015
Page No : 4

Image 1

RDC
Ridgeview Data Collection

Morrison, CO 80465

Fort Collins, CO
CSU South Parking Lot
PM Peak
Drake Rd and Research Blvd

File Name : DrakeResearchPM
Site Code : IPO 72
Start Date : 1/20/2015
Page No : 1

Groups Printed- Unshifted

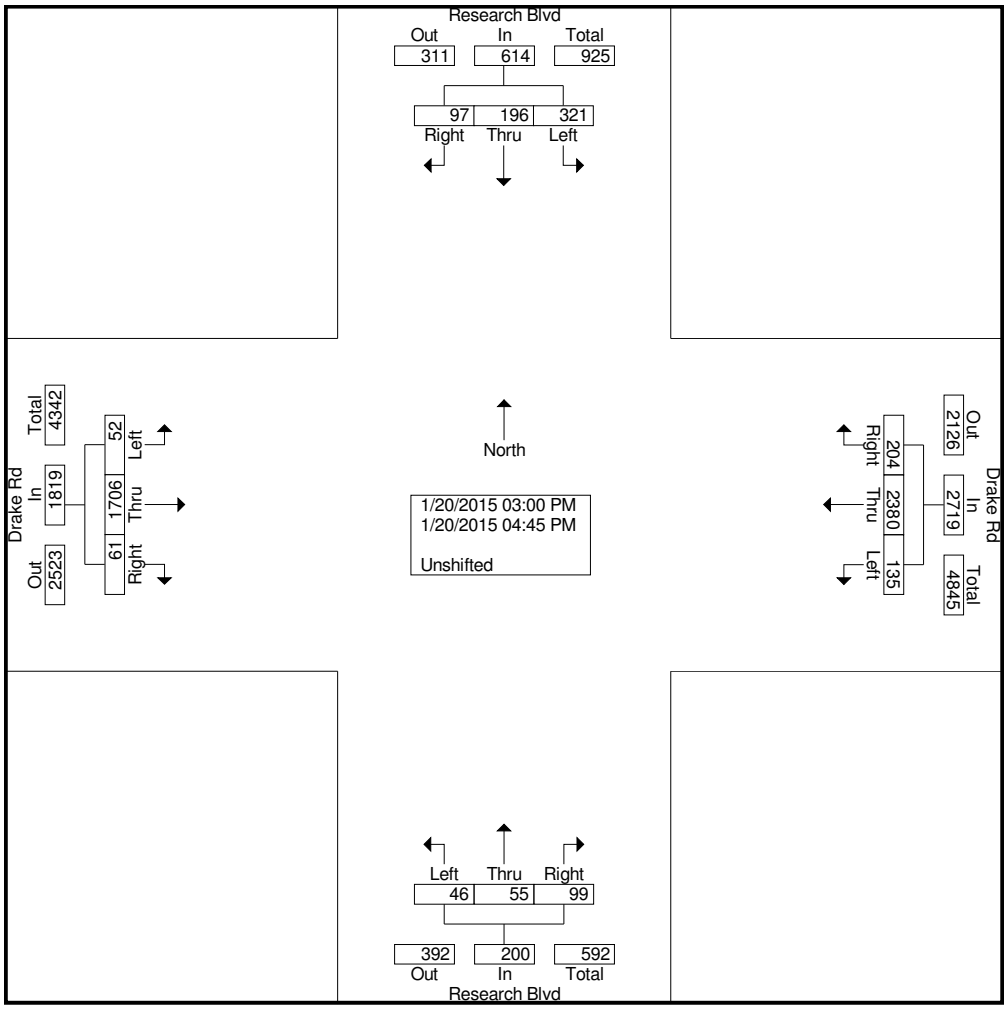
	Drake Rd Eastbound				Drake Rd Westbound				Research Blvd Northbound				Research Blvd Southbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
03:00 PM	4	209	18	231	21	260	21	302	10	5	13	28	43	24	14	81	642
03:15 PM	7	217	6	230	7	255	40	302	9	8	22	39	44	15	9	68	639
03:30 PM	8	229	8	245	14	277	26	317	5	8	10	23	34	19	7	60	645
03:45 PM	5	240	6	251	13	335	24	372	4	3	13	20	36	20	16	72	715
Total	24	895	38	957	55	1127	111	1293	28	24	58	110	157	78	46	281	2641
04:00 PM	12	200	3	215	22	285	24	331	5	9	9	23	45	32	12	89	658
04:15 PM	4	221	6	231	14	326	27	367	2	6	12	20	40	26	16	82	700
04:30 PM	7	184	4	195	23	286	21	330	7	9	10	26	46	39	10	95	646
04:45 PM	5	206	10	221	21	356	21	398	4	7	10	21	33	21	13	67	707
Total	28	811	23	862	80	1253	93	1426	18	31	41	90	164	118	51	333	2711
Grand Total	52	1706	61	1819	135	2380	204	2719	46	55	99	200	321	196	97	614	5352
Apprch %	2.9	93.8	3.4		5	87.5	7.5		23	27.5	49.5		52.3	31.9	15.8		
Total %	1	31.9	1.1	34	2.5	44.5	3.8	50.8	0.9	1	1.8	3.7	6	3.7	1.8	11.5	

RDC
Ridgeview Data Collection

Morrison, CO 80465

Fort Collins, CO
CSU South Parking Lot
PM Peak
Drake Rd and Research Blvd

File Name : DrakeResearchPM
Site Code : IPO 72
Start Date : 1/20/2015
Page No : 2



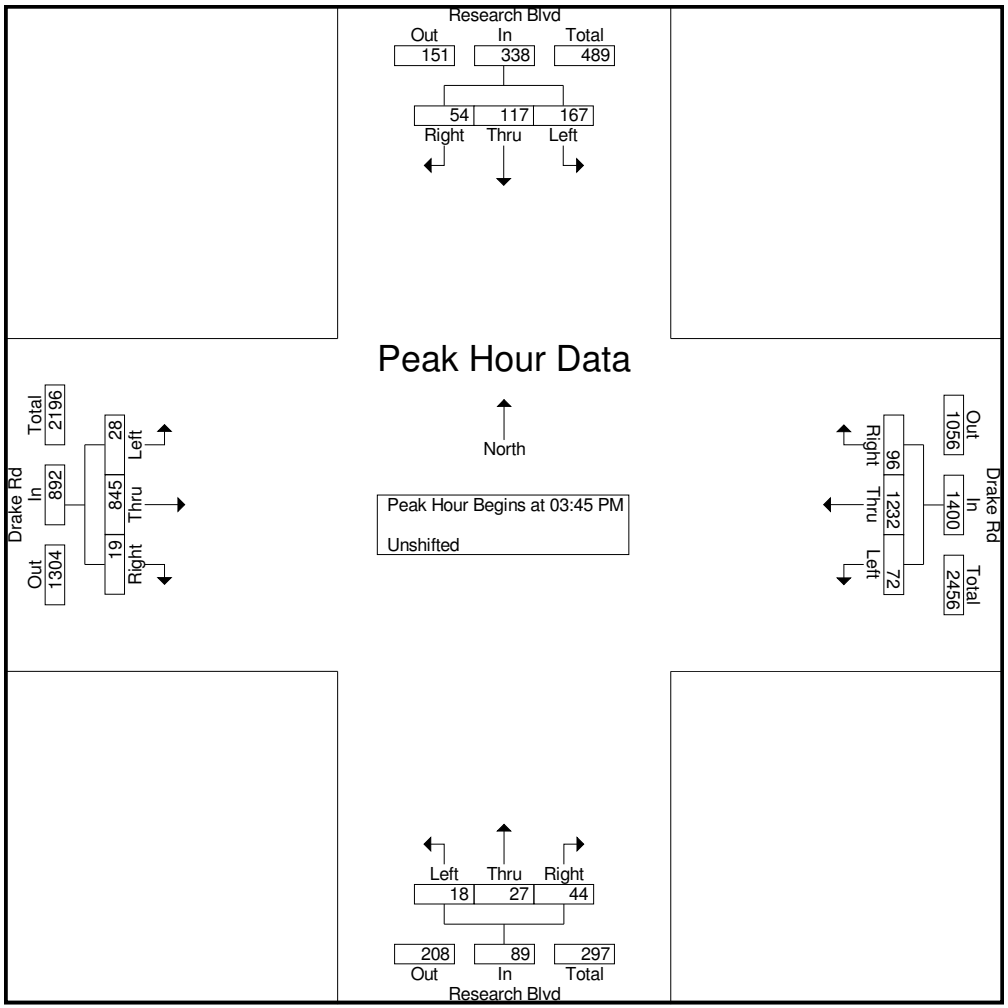
RDC
Ridgeview Data Collection

Morrison, CO 80465

Fort Collins, CO
CSU South Parking Lot
PM Peak
Drake Rd and Research Blvd

File Name : DrakeResearchPM
Site Code : IPO 72
Start Date : 1/20/2015
Page No : 3

	Drake Rd Eastbound				Drake Rd Westbound				Research Blvd Northbound				Research Blvd Southbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 03:00 PM to 04:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 03:45 PM																	
03:45 PM	5	**240**	**6**	**251**	13	**335**	24	**372**	4	3	**13**	20	36	20	**16**	72	**715**
04:00 PM	**12**	200	3	215	22	285	24	331	5	**9**	9	23	45	32	12	89	658
04:15 PM	4	221	6	231	14	326	**27**	367	2	6	12	20	40	26	16	82	700
04:30 PM	7	184	4	195	**23**	286	21	330	**7**	9	10	**26**	**46**	**39**	10	**95**	646
Total Volume	28	845	19	892	72	1232	96	1400	18	27	44	89	167	117	54	338	2719
% App. Total	3.1	94.7	2.1		5.1	88	6.9		20.2	30.3	49.4		49.4	34.6	16		
PHF	.583	.880	.792	.888	.783	.919	.889	.941	.643	.750	.846	.856	.908	.750	.844	.889	.951



RDC
Ridgeview Data Collection

Morrison, CO 80465

Fort Collins, CO
CSU South Parking Lot
PM Peak
Drake Rd and Research Blvd

File Name : DrakeResearchPM
Site Code : IPO 72
Start Date : 1/20/2015
Page No : 4

Image 1

RDC
Ridgeview Data Collection

Morrison, CO 80465

Fort Collins, CO
CSU South Parking Lot
AM Peak
Drake Rd and South Campus Access

File Name : DrakeSouthCampusAM
Site Code : IPO 72
Start Date : 1/20/2015
Page No : 1

Groups Printed- Unshifted

	Drake Rd Eastbound			Drake Rd Westbound			South Campus Access Southbound			
Start Time	Left	Thru	App. Total	Thru	Right	App. Total	Left	Right	App. Total	Int. Total
07:30 AM	26	280	306	158	40	198	3	4	7	511
07:45 AM	35	226	261	228	55	283	3	10	13	557
Total	61	506	567	386	95	481	6	14	20	1068
08:00 AM	19	186	205	200	43	243	3	1	4	452
08:15 AM	18	228	246	129	29	158	5	3	8	412
08:30 AM	9	260	269	179	14	193	0	4	4	466
08:45 AM	4	298	302	204	25	229	3	5	8	539
Total	50	972	1022	712	111	823	11	13	24	1869
09:00 AM	10	207	217	152	19	171	0	2	2	390
09:15 AM	9	204	213	155	18	173	4	5	9	395
Grand Total	130	1889	2019	1405	243	1648	21	34	55	3722
Apprch %	6.4	93.6		85.3	14.7		38.2	61.8		
Total %	3.5	50.8	54.2	37.7	6.5	44.3	0.6	0.9	1.5	

RDC
Ridgeview Data Collection

Morrison, CO 80465

Fort Collins, CO
CSU South Parking Lot
AM Peak
Drake Rd and South Campus Access

File Name : DrakeSouthCampusAM
Site Code : IPO 72
Start Date : 1/20/2015
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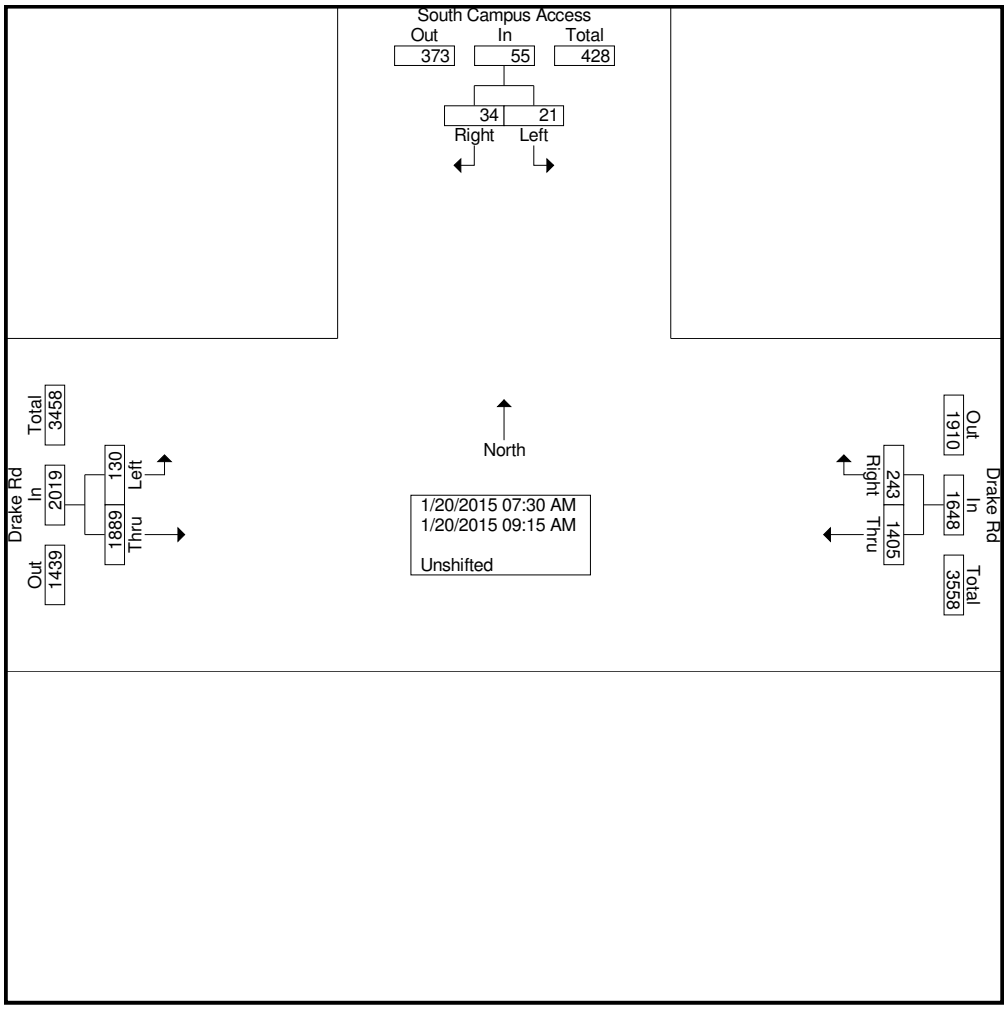


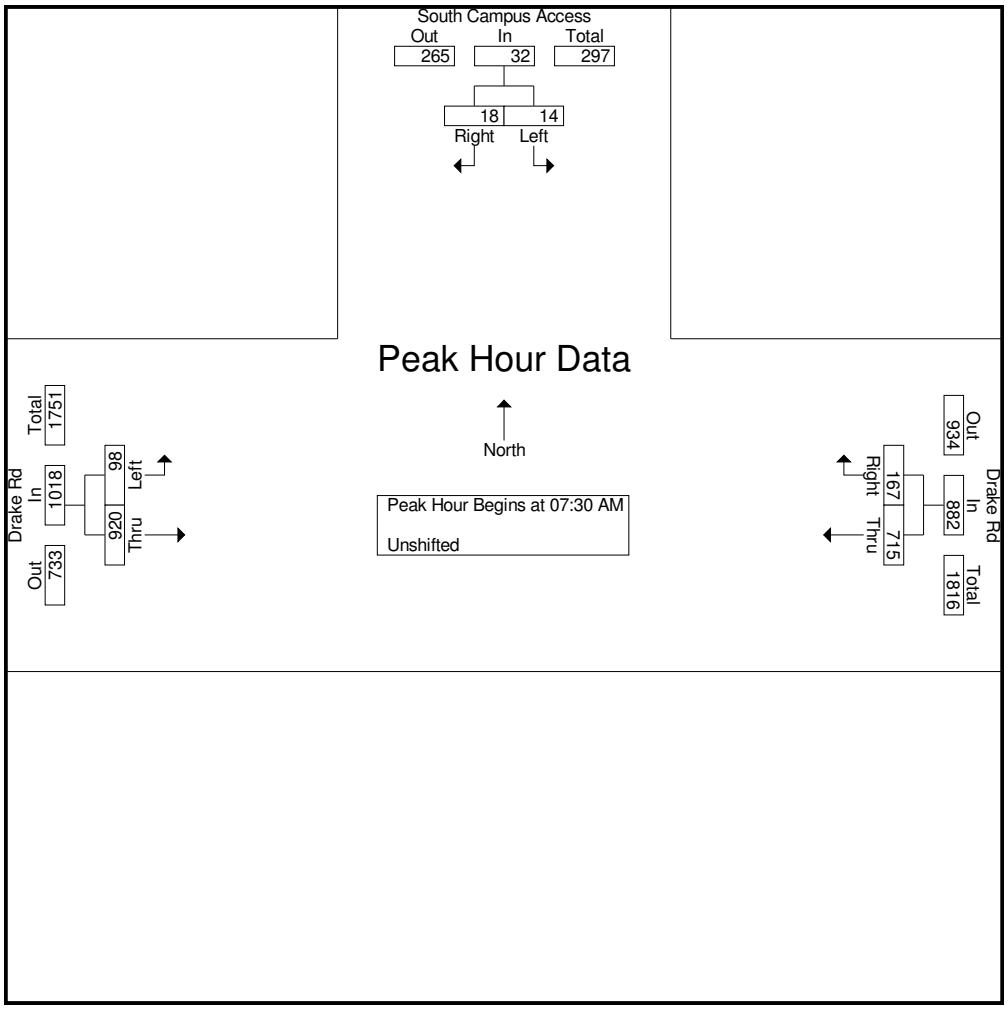
RDC
Ridgeview Data Collection

Morrison, CO 80465

Fort Collins, CO
CSU South Parking Lot
AM Peak
Drake Rd and South Campus Access

File Name : DrakeSouthCampusAM
Site Code : IPO 72
Start Date : 1/20/2015
Page No : 3

	Drake Rd Eastbound			Drake Rd Westbound			South Campus Access Southbound			
Start Time	Left	Thru	App. Total	Thru	Right	App. Total	Left	Right	App. Total	Int. Total
Peak Hour Analysis From 07:30 AM to 09:15 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 07:30 AM										
07:30 AM	26	**280**	**306**	158	40	198	3	4	7	511
07:45 AM	**35**	226	261	**228**	**55**	**283**	3	**10**	**13**	**557**
08:00 AM	19	186	205	200	43	243	3	1	4	452
08:15 AM	18	228	246	129	29	158	**5**	3	8	412
Total Volume	98	920	1018	715	167	882	14	18	32	1932
% App. Total	9.6	90.4		81.1	18.9		43.8	56.2		
PHF	.700	.821	.832	.784	.759	.779	.700	.450	.615	.867



RDC
Ridgeview Data Collection

Morrison, CO 80465

Fort Collins, CO
CSU South Parking Lot
AM Peak
Drake Rd and South Campus Access

File Name : DrakeSouthCampusAM
Site Code : IPO 72
Start Date : 1/20/2015
Page No : 4

Image 1

RDC
Ridgeview Data Collection

Morrison, CO 80465

Fort Collins, CO
CSU South Parking Lot
PM Peak
Drake Rd and South Campus Access

File Name : DrakeSouthCampusPM
Site Code : IPO 72
Start Date : 1/20/2015
Page No : 1

Groups Printed- Unshifted

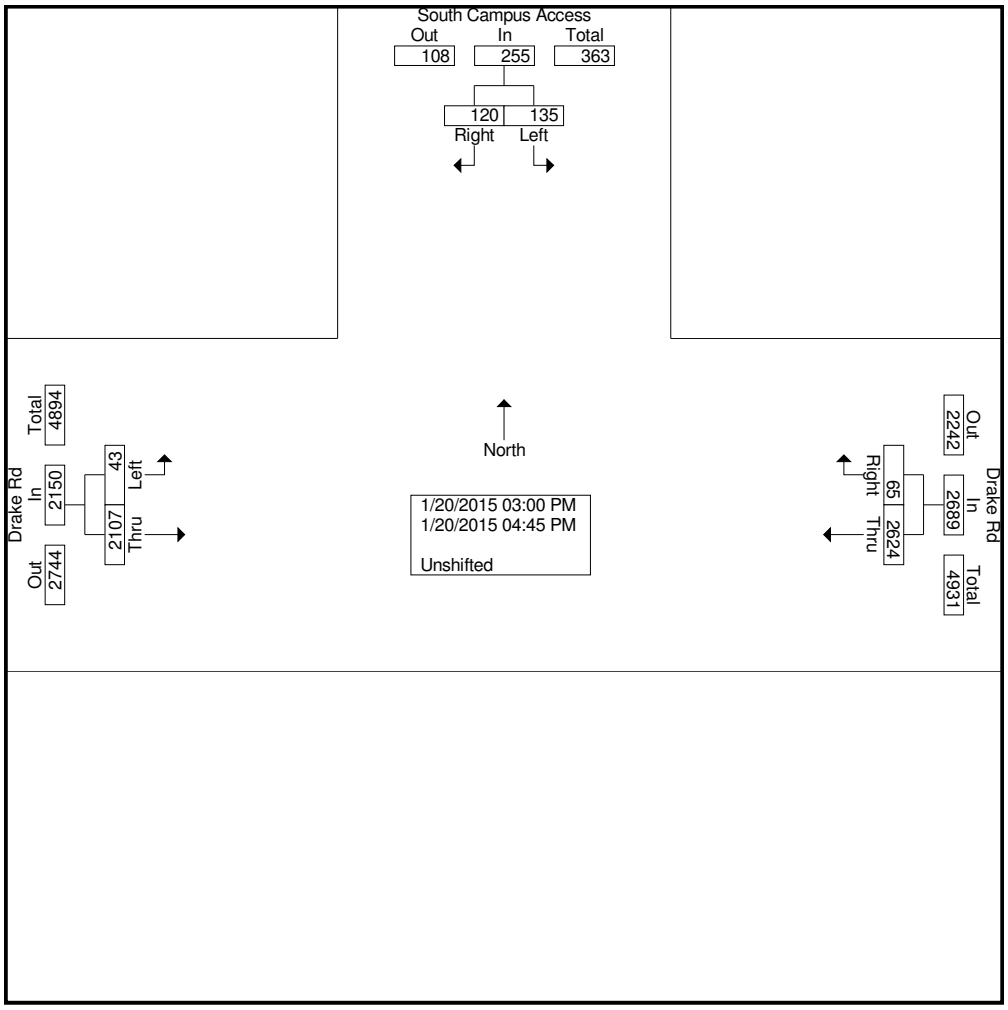
	Drake Rd Eastbound			Drake Rd Westbound			South Campus Access Southbound			
Start Time	Left	Thru	App. Total	Thru	Right	App. Total	Left	Right	App. Total	Int. Total
03:00 PM	5	262	267	307	6	313	19	5	24	604
03:15 PM	6	282	288	294	6	300	7	7	14	602
03:30 PM	3	270	273	304	6	310	14	7	21	604
03:45 PM	4	291	295	371	7	378	10	4	14	687
Total	18	1105	1123	1276	25	1301	50	23	73	2497
04:00 PM	8	251	259	311	12	323	20	29	49	631
04:15 PM	7	262	269	364	5	369	16	24	40	678
04:30 PM	5	241	246	287	14	301	24	23	47	594
04:45 PM	5	248	253	386	9	395	25	21	46	694
Total	25	1002	1027	1348	40	1388	85	97	182	2597
Grand Total	43	2107	2150	2624	65	2689	135	120	255	5094
Apprch %	2	98		97.6	2.4		52.9	47.1		
Total %	0.8	41.4	42.2	51.5	1.3	52.8	2.7	2.4	5	

RDC
Ridgeview Data Collection

Morrison, CO 80465

Fort Collins, CO
CSU South Parking Lot
PM Peak
Drake Rd and South Campus Access

File Name : DrakeSouthCampusPM
Site Code : IPO 72
Start Date : 1/20/2015
Page No : 2



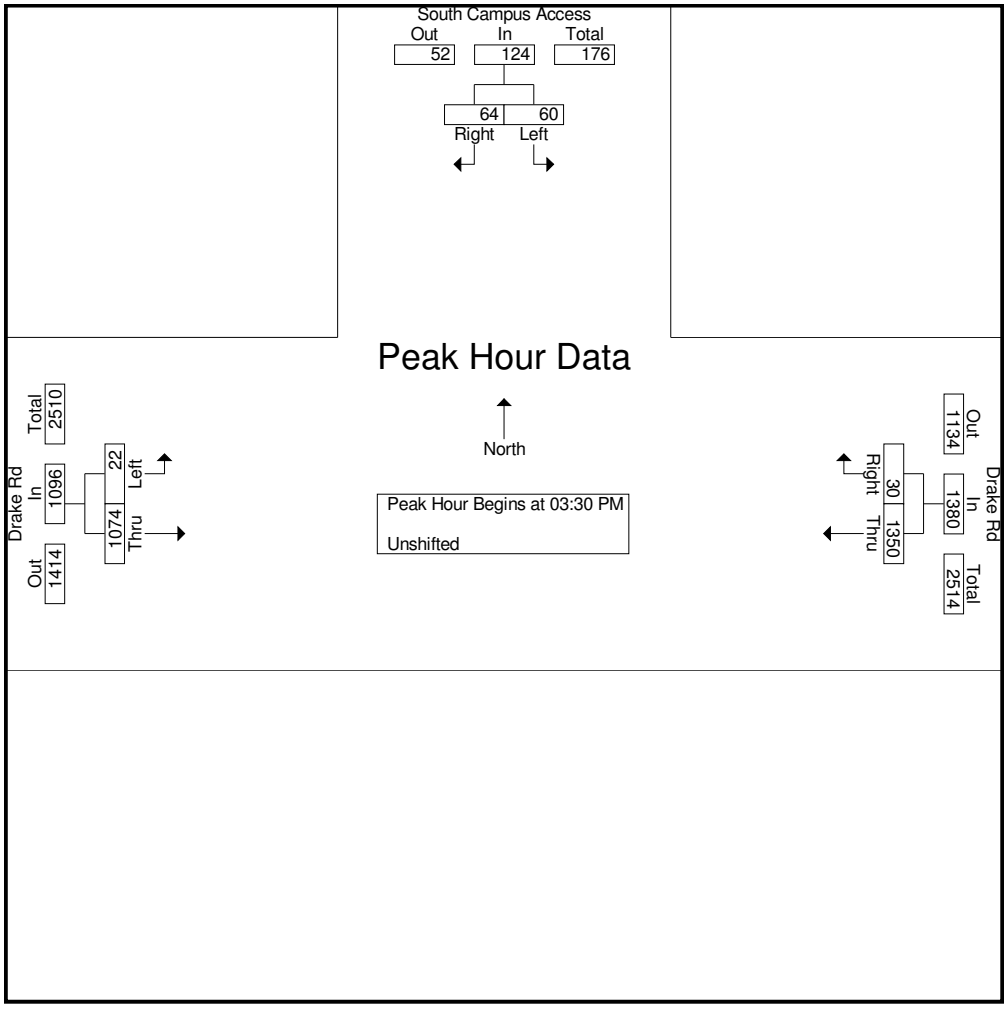
RDC
Ridgeview Data Collection

Morrison, CO 80465

Fort Collins, CO
CSU South Parking Lot
PM Peak
Drake Rd and South Campus Access

File Name : DrakeSouthCampusPM
Site Code : IPO 72
Start Date : 1/20/2015
Page No : 3

	Drake Rd Eastbound			Drake Rd Westbound			South Campus Access Southbound			
Start Time	Left	Thru	App. Total	Thru	Right	App. Total	Left	Right	App. Total	Int. Total
Peak Hour Analysis From 03:00 PM to 04:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 03:30 PM										
03:30 PM	3	270	273	304	6	310	14	7	21	604
03:45 PM	4	**291**	**295**	**371**	7	**378**	10	4	14	**687**
04:00 PM	**8**	251	259	311	**12**	323	**20**	**29**	**49**	631
04:15 PM	7	262	269	364	5	369	16	24	40	678
Total Volume	22	1074	1096	1350	30	1380	60	64	124	2600
% App. Total	2	98		97.8	2.2		48.4	51.6		
PHF	.688	.923	.929	.910	.625	.913	.750	.552	.633	.946



RDC
Ridgeview Data Collection

Morrison, CO 80465

Fort Collins, CO
CSU South Parking Lot
PM Peak
Drake Rd and South Campus Access

File Name : DrakeSouthCampusPM
Site Code : IPO 72
Start Date : 1/20/2015
Page No : 4

Image 1

RDC
Ridgeview Data Collection

Morrison, CO 80465

Fort Collins, CO
CSU South Parking Lot
AM Peak
Gilette Dr North/Southbound only

File Name : GiletteAM
Site Code : IPO 72
Start Date : 1/20/2015
Page No : 1

Groups Printed- Unshifted

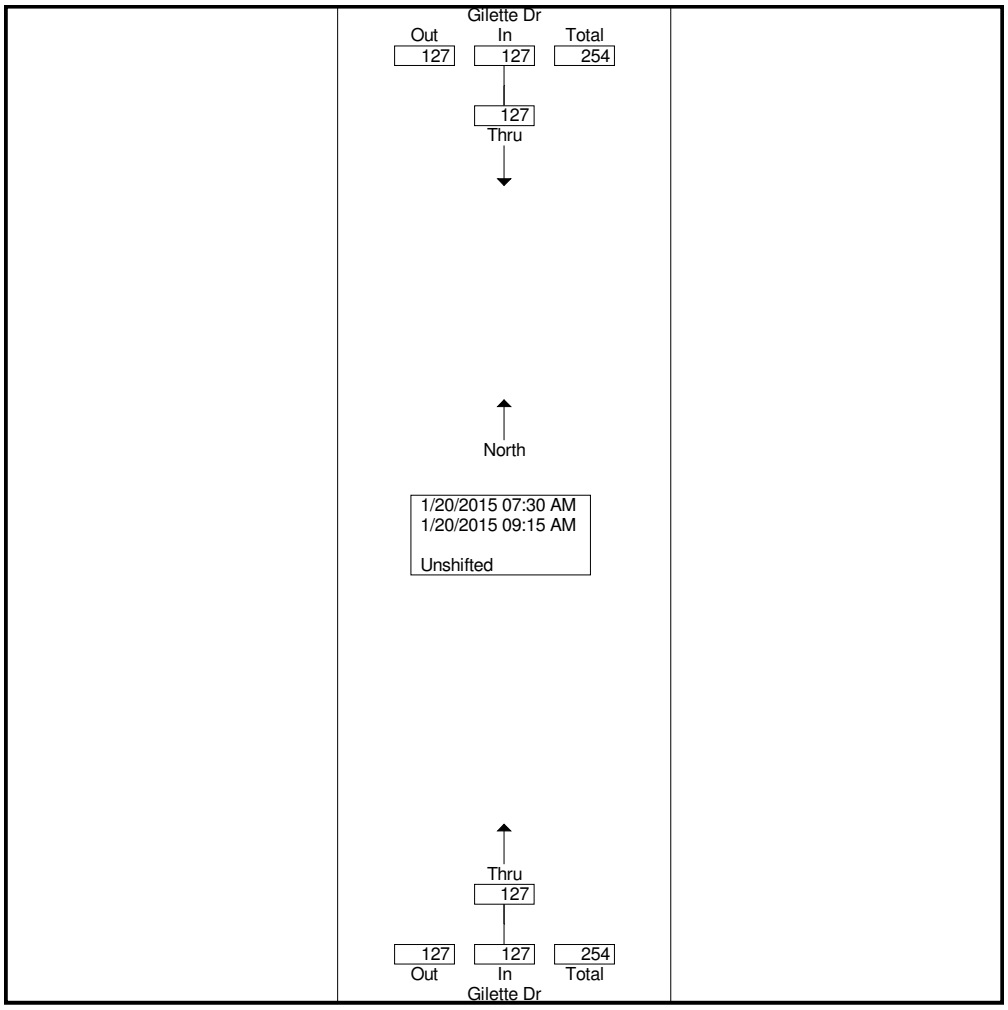
	Gilette Dr Northbound		Gilette Dr Southbound		
Start Time	Thru	App. Total	Thru	App. Total	Int. Total
07:30 AM	24	24	27	27	51
07:45 AM	13	13	44	44	57
Total	37	37	71	71	108
08:00 AM	29	29	14	14	43
08:15 AM	11	11	14	14	25
08:30 AM	11	11	8	8	19
08:45 AM	16	16	8	8	24
Total	67	67	44	44	111
09:00 AM	13	13	6	6	19
09:15 AM	10	10	6	6	16
Grand Total	127	127	127	127	254
Apprch %	100		100		
Total %	50	50	50	50	

RDC
Ridgeview Data Collection

Morrison, CO 80465

Fort Collins, CO
CSU South Parking Lot
AM Peak
Gilette Dr North/Southbound only

File Name : GiletteAM
Site Code : IPO 72
Start Date : 1/20/2015
Page No : 2



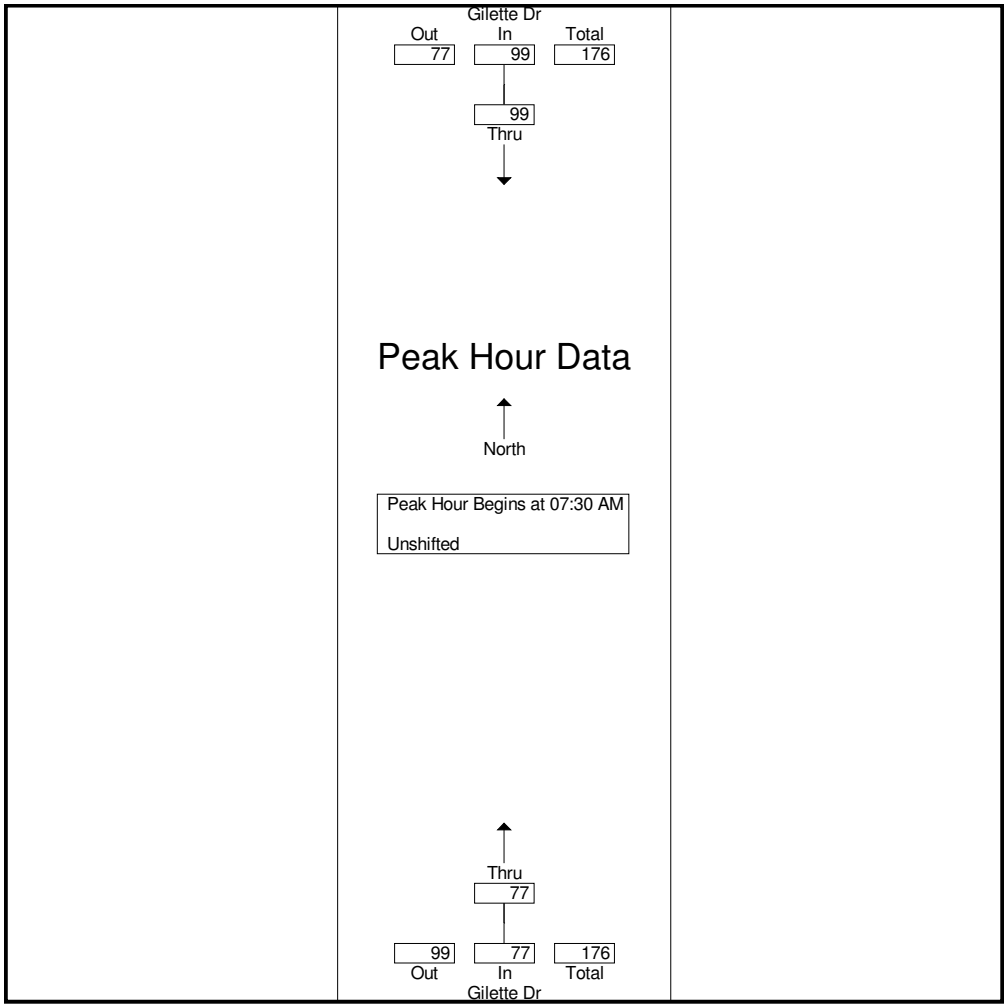
RDC
Ridgeview Data Collection

Morrison, CO 80465

Fort Collins, CO
CSU South Parking Lot
AM Peak
Gilette Dr North/Southbound only

File Name : GiletteAM
Site Code : IPO 72
Start Date : 1/20/2015
Page No : 3

	Gilette Dr Northbound		Gilette Dr Southbound		
Start Time	Thru	App. Total	Thru	App. Total	Int. Total
Peak Hour Analysis From 07:30 AM to 09:15 AM - Peak 1 of 1					
Peak Hour for Entire Intersection Begins at 07:30 AM					
07:30 AM	24	24	27	27	51
07:45 AM	13	13	**44**	**44**	**57**
08:00 AM	**29**	**29**	14	14	43
08:15 AM	11	11	14	14	25
Total Volume	77	77	99	99	176
% App. Total	100		100		
PHF	.664	.664	.563	.563	.772



RDC
Ridgeview Data Collection

Morrison, CO 80465

Fort Collins, CO
CSU South Parking Lot
AM Peak
Gilette Dr North/Southbound only

File Name : GiletteAM
Site Code : IPO 72
Start Date : 1/20/2015
Page No : 4

Image 1

RDC
Ridgeview Data Collection

Morrison, CO 80465

Fort Collins, CO
CSU South Parking Lot
PM Peak
Gilette North/Southbound Only

File Name : GilettePM
Site Code : IPO 72
Start Date : 1/20/2015
Page No : 1

Groups Printed- Unshifted

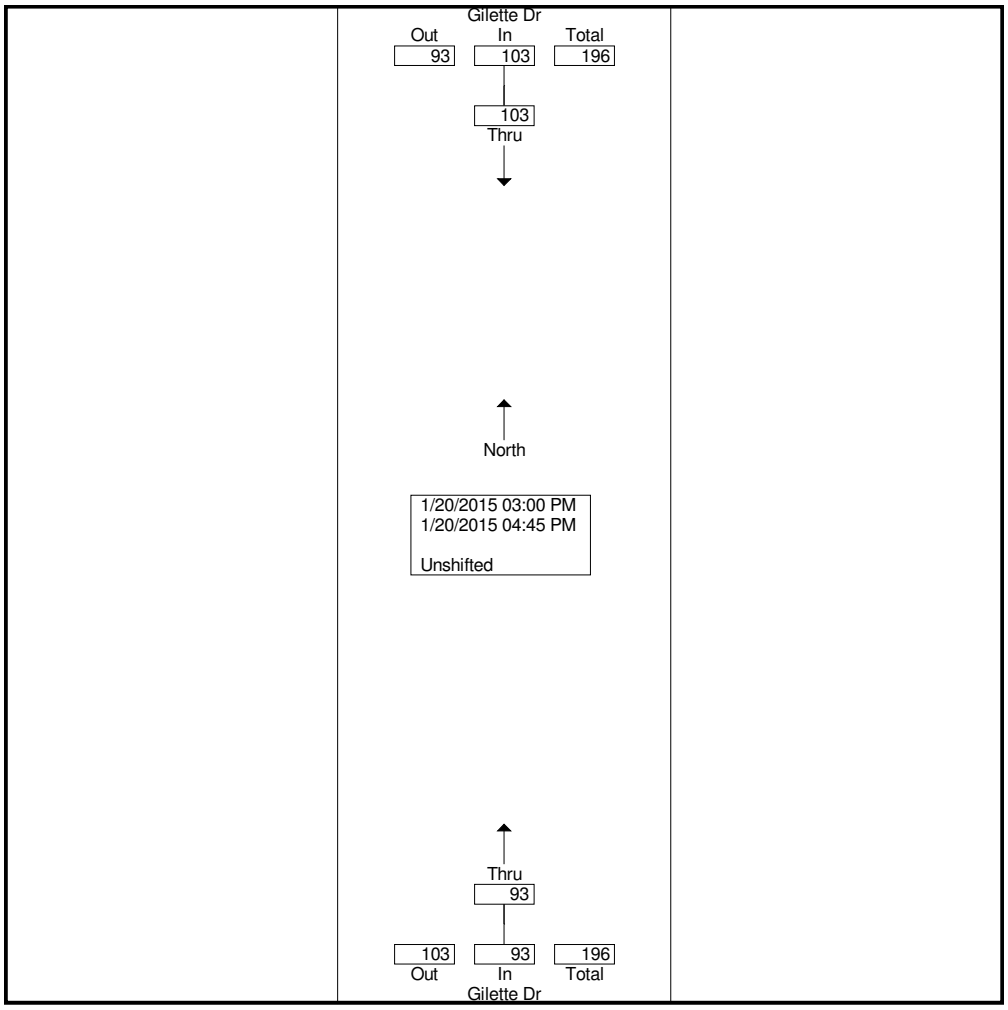
	Gilette Dr Northbound		Gilette Dr Southbound		
Start Time	Thru	App. Total	Thru	App. Total	Int. Total
03:00 PM	8	8	14	14	22
03:15 PM	6	6	6	6	12
03:30 PM	13	13	11	11	24
03:45 PM	8	8	7	7	15
Total	35	35	38	38	73
04:00 PM	11	11	24	24	35
04:15 PM	11	11	10	10	21
04:30 PM	15	15	14	14	29
04:45 PM	21	21	17	17	38
Total	58	58	65	65	123
Grand Total	93	93	103	103	196
Apprch %	100		100		
Total %	47.4	47.4	52.6	52.6	

RDC
Ridgeview Data Collection

Morrison, CO 80465

Fort Collins, CO
CSU South Parking Lot
PM Peak
Gilette North/Southbound Only

File Name : GilettePM
Site Code : IPO 72
Start Date : 1/20/2015
Page No : 2



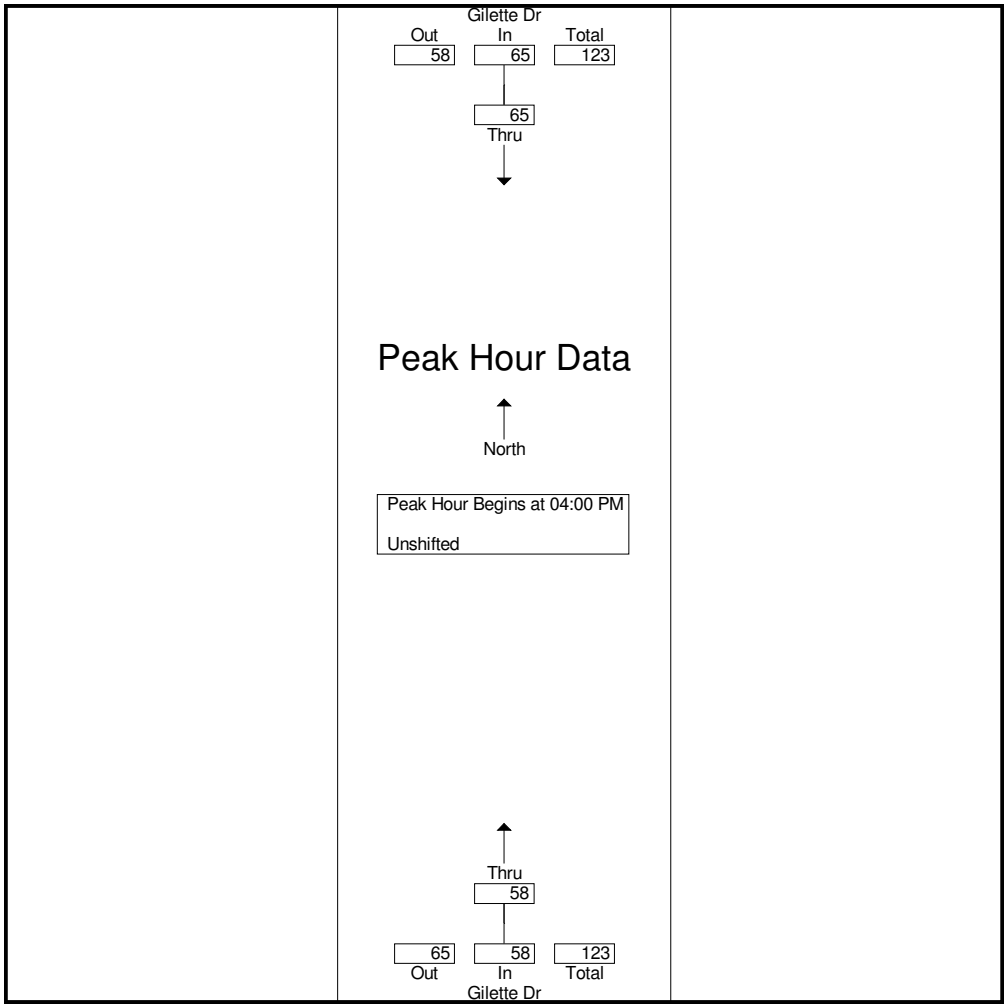
RDC
Ridgeview Data Collection

Morrison, CO 80465

Fort Collins, CO
CSU South Parking Lot
PM Peak
Gilette North/Southbound Only

File Name : GilettePM
Site Code : IPO 72
Start Date : 1/20/2015
Page No : 3

	Gilette Dr Northbound		Gilette Dr Southbound		
Start Time	Thru	App. Total	Thru	App. Total	Int. Total
Peak Hour Analysis From 03:00 PM to 04:45 PM - Peak 1 of 1					
Peak Hour for Entire Intersection Begins at 04:00 PM					
04:00 PM	11	11	**24**	**24**	35
04:15 PM	11	11	10	10	21
04:30 PM	15	15	14	14	29
04:45 PM	**21**	**21**	17	17	**38**
Total Volume	58	58	65	65	123
% App. Total	100		100		
PHF	.690	.690	.677	.677	.809



RDC
Ridgeview Data Collection

Morrison, CO 80465

Fort Collins, CO
CSU South Parking Lot
PM Peak
Gilette North/Southbound Only

File Name : GilettePM
Site Code : IPO 72
Start Date : 1/20/2015
Page No : 4

Image 1

RDC
Ridgeview Data Collection

Morrison, CO 80465

Fort Collins, CO
CSU South Parking Lot
AM Peak
Prospect Rd and Center Ave

File Name : ProspectCenterAM
Site Code : IPO 72
Start Date : 1/20/2015
Page No : 1

Groups Printed- Unshifted

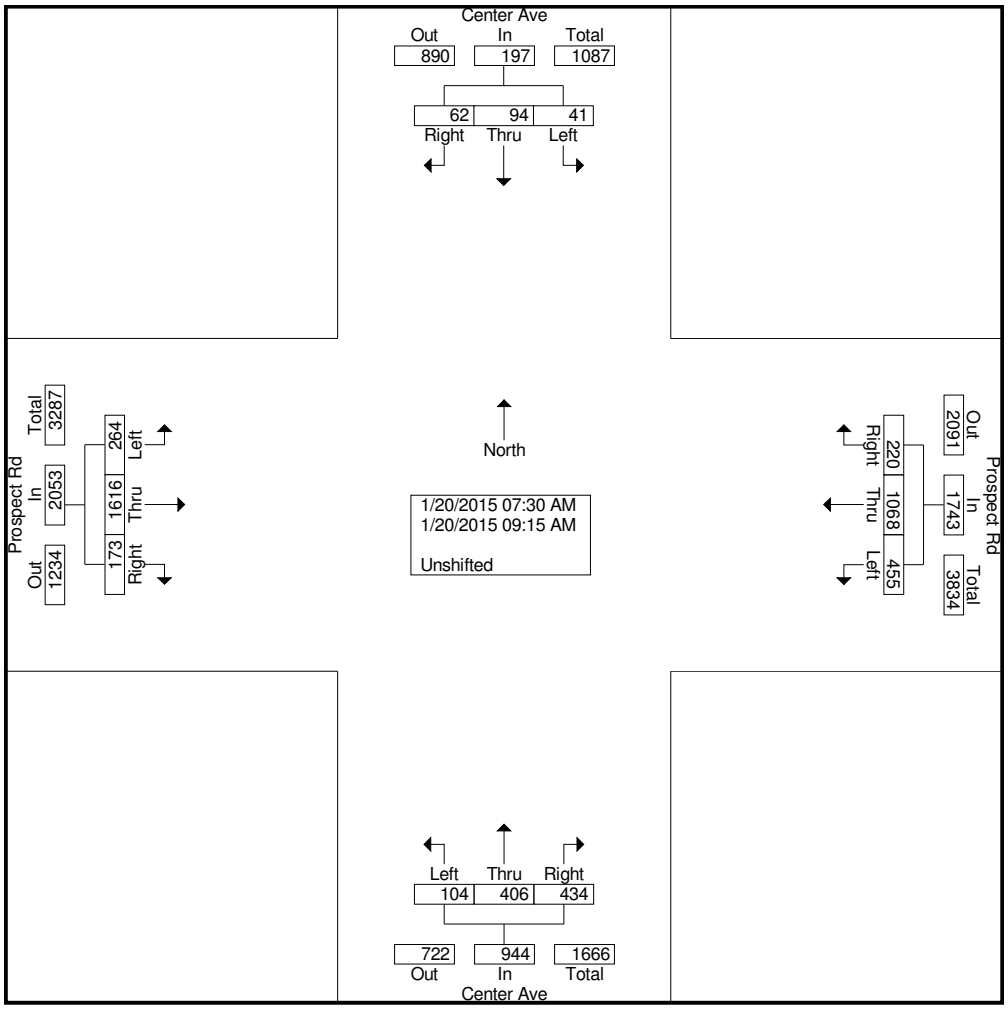
	Prospect Rd Eastbound				Prospect Rd Westbound				Center Ave Northbound				Center Ave Southbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:30 AM	43	203	26	272	61	157	36	254	11	58	70	139	4	5	3	12	677
07:45 AM	52	258	29	339	97	134	41	272	19	77	76	172	5	11	3	19	802
Total	95	461	55	611	158	291	77	526	30	135	146	311	9	16	6	31	1479
08:00 AM	23	201	23	247	54	129	20	203	15	46	40	101	2	8	8	18	569
08:15 AM	14	195	16	225	64	109	20	193	6	27	43	76	5	13	4	22	516
08:30 AM	43	209	25	277	49	146	26	221	11	60	61	132	2	12	5	19	649
08:45 AM	32	246	32	310	53	127	30	210	13	47	69	129	6	11	7	24	673
Total	112	851	96	1059	220	511	96	827	45	180	213	438	15	44	24	83	2407
09:00 AM	34	173	17	224	44	129	33	206	12	47	41	100	5	11	10	26	556
09:15 AM	23	131	5	159	33	137	14	184	17	44	34	95	12	23	22	57	495
Grand Total	264	1616	173	2053	455	1068	220	1743	104	406	434	944	41	94	62	197	4937
Apprch %	12.9	78.7	8.4		26.1	61.3	12.6		11	43	46		20.8	47.7	31.5		
Total %	5.3	32.7	3.5	41.6	9.2	21.6	4.5	35.3	2.1	8.2	8.8	19.1	0.8	1.9	1.3	4	

RDC
Ridgeview Data Collection

Morrison, CO 80465

Fort Collins, CO
CSU South Parking Lot
AM Peak
Prospect Rd and Center Ave

File Name : ProspectCenterAM
Site Code : IPO 72
Start Date : 1/20/2015
Page No : 2



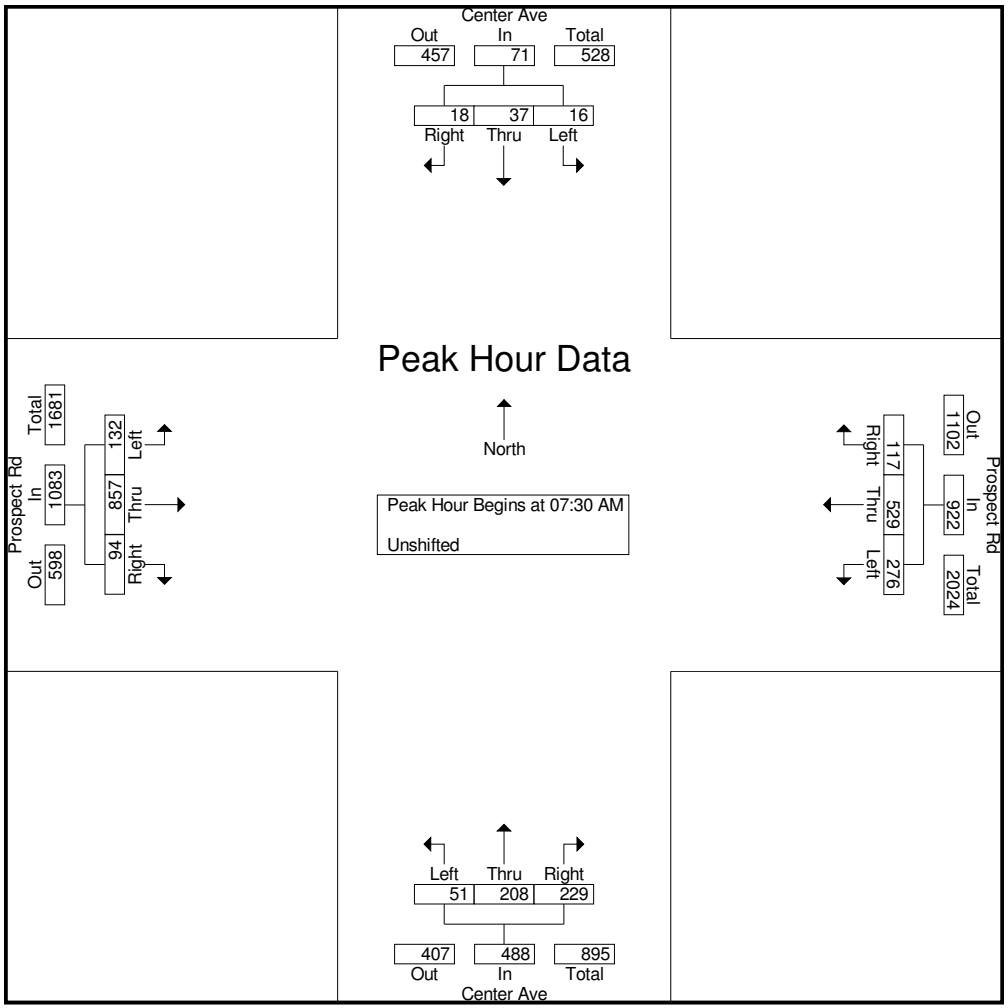
RDC
Ridgeview Data Collection

Morrison, CO 80465

Fort Collins, CO
CSU South Parking Lot
AM Peak
Prospect Rd and Center Ave

File Name : ProspectCenterAM
Site Code : IPO 72
Start Date : 1/20/2015
Page No : 3

	Prospect Rd Eastbound				Prospect Rd Westbound				Center Ave Northbound				Center Ave Southbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:30 AM to 09:15 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:30 AM																	
07:30 AM	43	203	26	272	61	**157**	36	254	11	58	70	139	4	5	3	12	677
07:45 AM	**52**	**258**	**29**	**339**	**97**	134	**41**	**272**	**19**	**77**	**76**	**172**	**5**	11	3	19	**802**
08:00 AM	23	201	23	247	54	129	20	203	15	46	40	101	2	8	**8**	18	569
08:15 AM	14	195	16	225	64	109	20	193	6	27	43	76	5	**13**	4	**22**	516
Total Volume	132	857	94	1083	276	529	117	922	51	208	229	488	16	37	18	71	2564
% App. Total	12.2	79.1	8.7		29.9	57.4	12.7		10.5	42.6	46.9		22.5	52.1	25.4		
PHF	.635	.830	.810	.799	.711	.842	.713	.847	.671	.675	.753	.709	.800	.712	.563	.807	.799



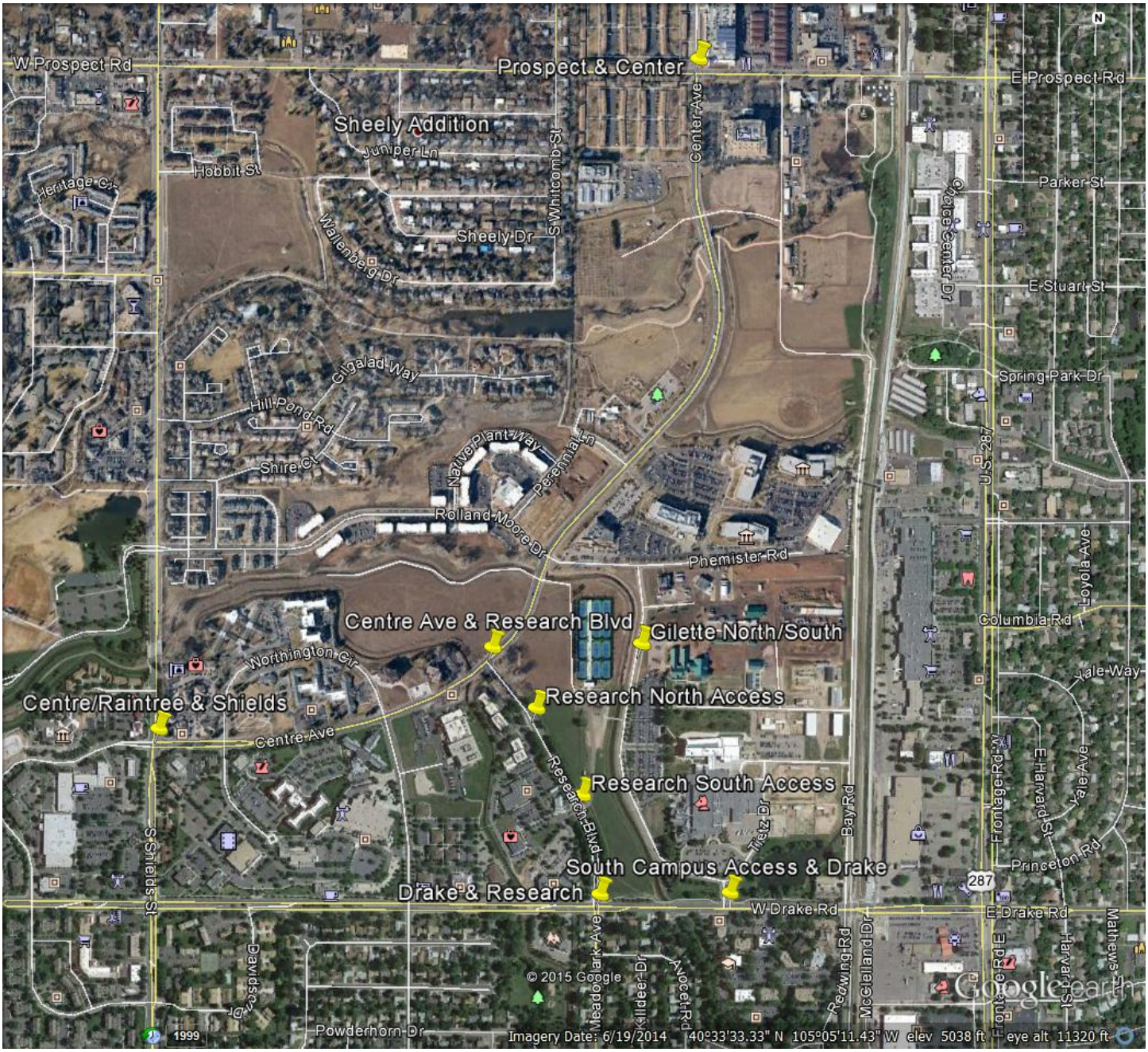
RDC
Ridgeview Data Collection

Morrison, CO 80465

Fort Collins, CO
CSU South Parking Lot
AM Peak
Prospect Rd and Center Ave

File Name : ProspectCenterAM
Site Code : IPO 72
Start Date : 1/20/2015
Page No : 4

Image 1



RDC
Ridgeview Data Collection

Morrison, CO 80465

Fort Collins, CO
CSU South Parking Lot
PM Peak
Prospect Rd and Center Ave

File Name : ProspectCenterPM
Site Code : IPO 72
Start Date : 1/20/2015
Page No : 1

Groups Printed- Unshifted

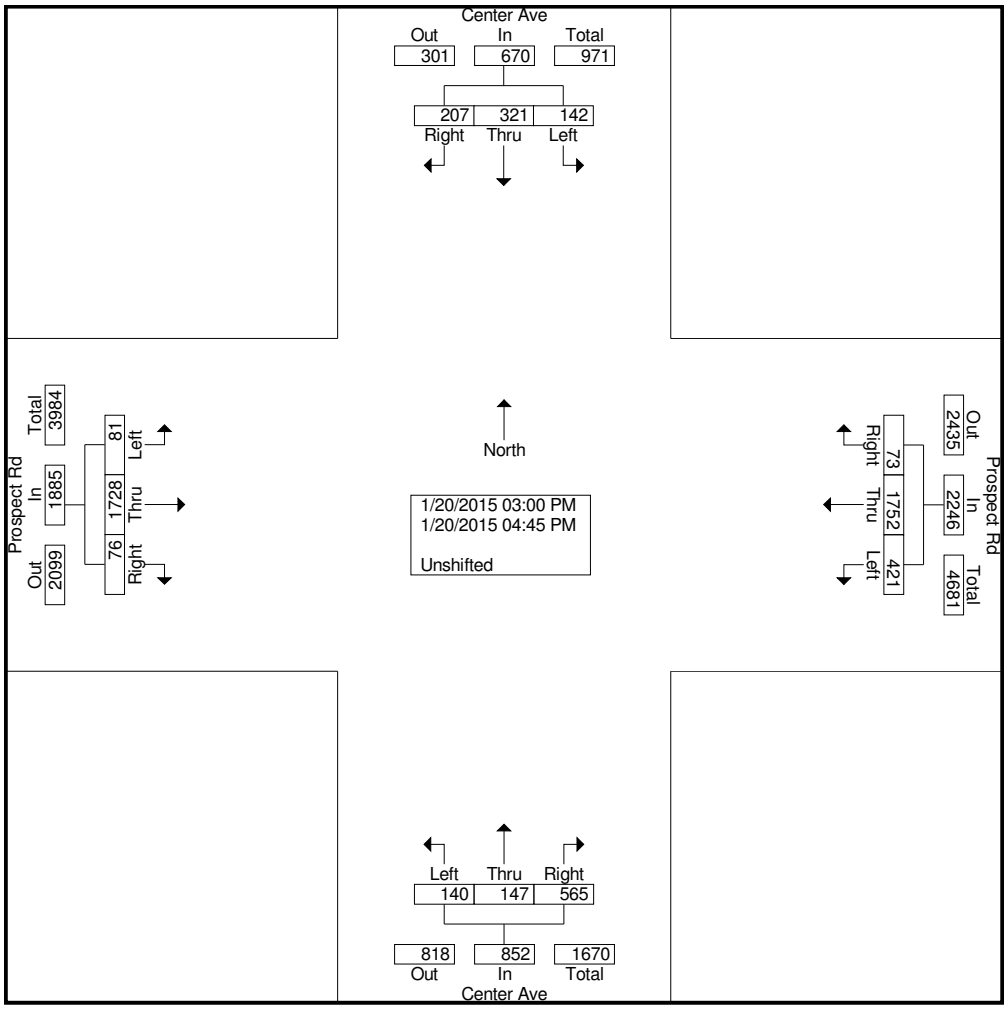
	Prospect Rd Eastbound				Prospect Rd Westbound				Center Ave Northbound				Center Ave Southbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
03:00 PM	9	198	13	220	42	188	7	237	16	24	80	120	25	37	20	82	659
03:15 PM	14	248	12	274	51	218	12	281	21	13	60	94	25	38	35	98	747
03:30 PM	12	215	8	235	60	192	10	262	17	30	83	130	20	38	29	87	714
03:45 PM	17	241	9	267	43	228	14	285	10	24	68	102	14	30	17	61	715
Total	52	902	42	996	196	826	43	1065	64	91	291	446	84	143	101	328	2835
04:00 PM	4	198	3	205	53	201	6	260	21	12	78	111	17	48	41	106	682
04:15 PM	5	200	8	213	69	259	8	336	22	10	53	85	13	36	21	70	704
04:30 PM	11	195	9	215	40	214	4	258	19	19	74	112	12	45	14	71	656
04:45 PM	9	233	14	256	63	252	12	327	14	15	69	98	16	49	30	95	776
Total	29	826	34	889	225	926	30	1181	76	56	274	406	58	178	106	342	2818
Grand Total	81	1728	76	1885	421	1752	73	2246	140	147	565	852	142	321	207	670	5653
Apprch %	4.3	91.7	4		18.7	78	3.3		16.4	17.3	66.3		21.2	47.9	30.9		
Total %	1.4	30.6	1.3	33.3	7.4	31	1.3	39.7	2.5	2.6	10	15.1	2.5	5.7	3.7	11.9	

RDC
Ridgeview Data Collection

Morrison, CO 80465

Fort Collins, CO
CSU South Parking Lot
PM Peak
Prospect Rd and Center Ave

File Name : ProspectCenterPM
Site Code : IPO 72
Start Date : 1/20/2015
Page No : 2



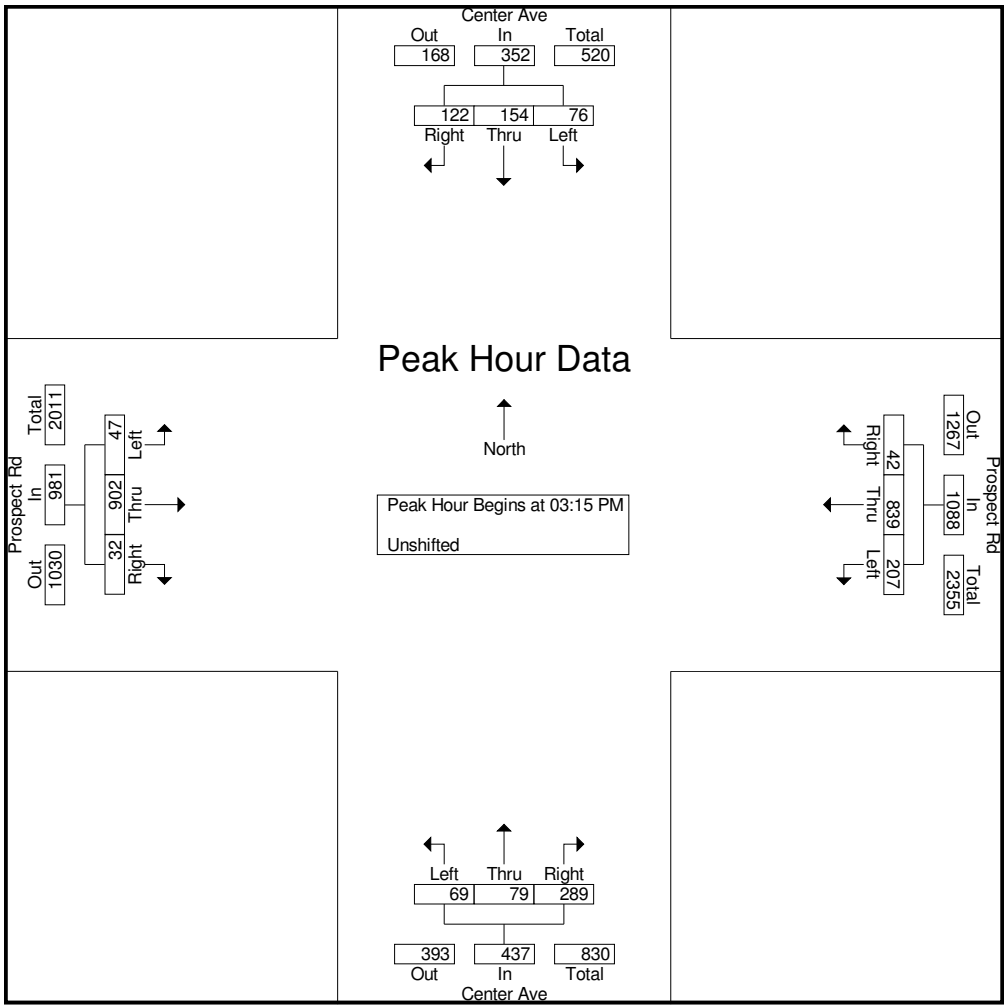
RDC
Ridgeview Data Collection

Morrison, CO 80465

Fort Collins, CO
CSU South Parking Lot
PM Peak
Prospect Rd and Center Ave

File Name : ProspectCenterPM
Site Code : IPO 72
Start Date : 1/20/2015
Page No : 3

	Prospect Rd Eastbound				Prospect Rd Westbound				Center Ave Northbound				Center Ave Southbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 03:00 PM to 04:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 03:15 PM																	
03:15 PM	14	**248**	**12**	**274**	51	218	12	281	**21**	13	60	94	**25**	38	35	98	**747**
03:30 PM	12	215	8	235	**60**	192	10	262	17	**30**	**83**	**130**	20	38	29	87	714
03:45 PM	**17**	241	9	267	43	**228**	**14**	**285**	10	24	68	102	14	30	17	61	715
04:00 PM	4	198	3	205	53	201	6	260	21	12	78	111	17	**48**	**41**	**106**	682
Total Volume	47	902	32	981	207	839	42	1088	69	79	289	437	76	154	122	352	2858
% App. Total	4.8	91.9	3.3		19	77.1	3.9		15.8	18.1	66.1		21.6	43.8	34.7		
PHF	.691	.909	.667	.895	.863	.920	.750	.954	.821	.658	.870	.840	.760	.802	.744	.830	.956



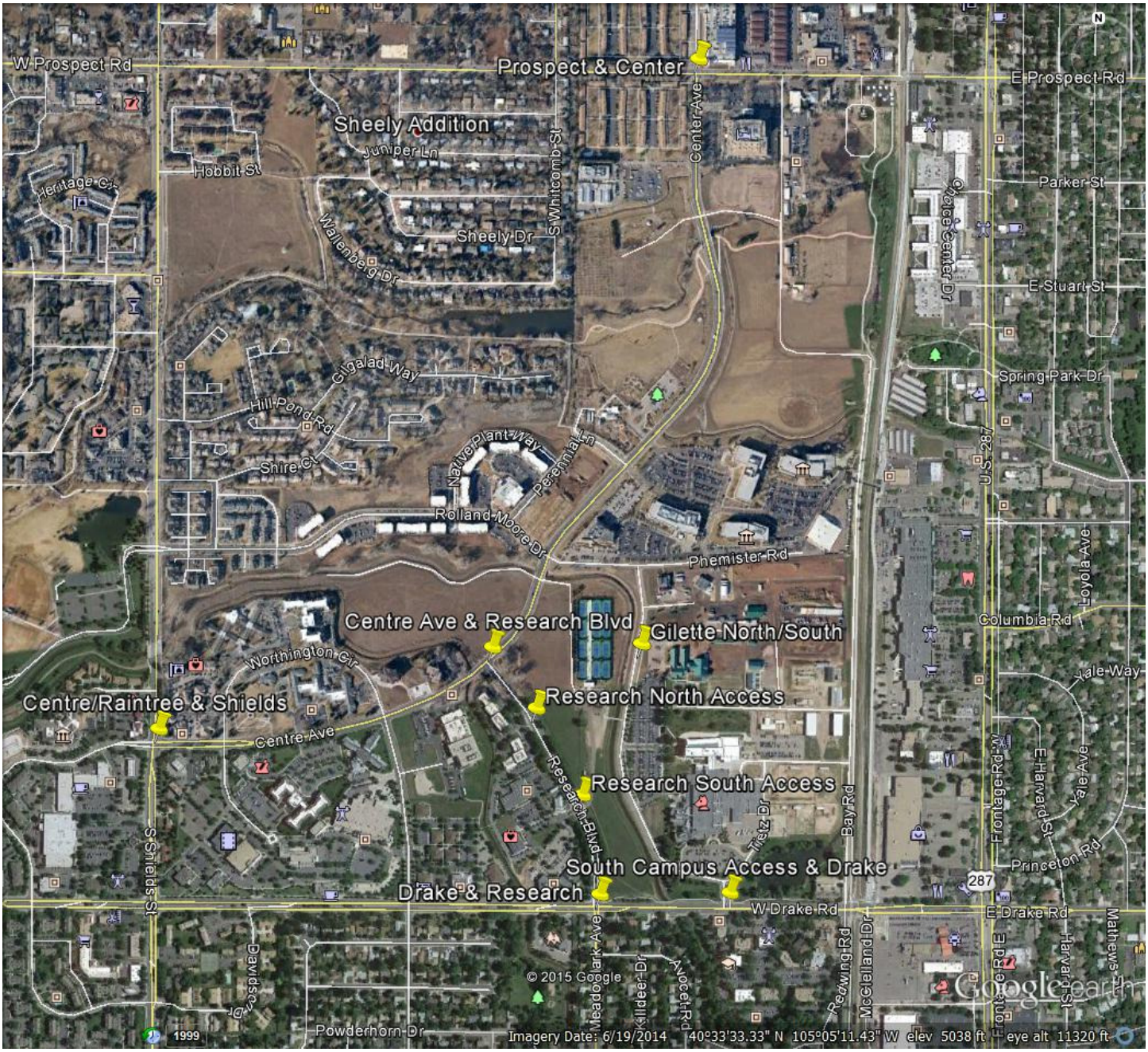
RDC
Ridgeview Data Collection

Morrison, CO 80465

Fort Collins, CO
CSU South Parking Lot
PM Peak
Prospect Rd and Center Ave

File Name : ProspectCenterPM
Site Code : IPO 72
Start Date : 1/20/2015
Page No : 4

Image 1



RDC
Ridgeview Data Collection

Morrison, CO 80465

Fort Collins, CO
CSU South Parking Lot
AM Peak
Research Blvd Northern Access

File Name : ResearchNorthAccessAM
Site Code : IPO 72
Start Date : 1/20/2015
Page No : 1

Groups Printed- Unshifted

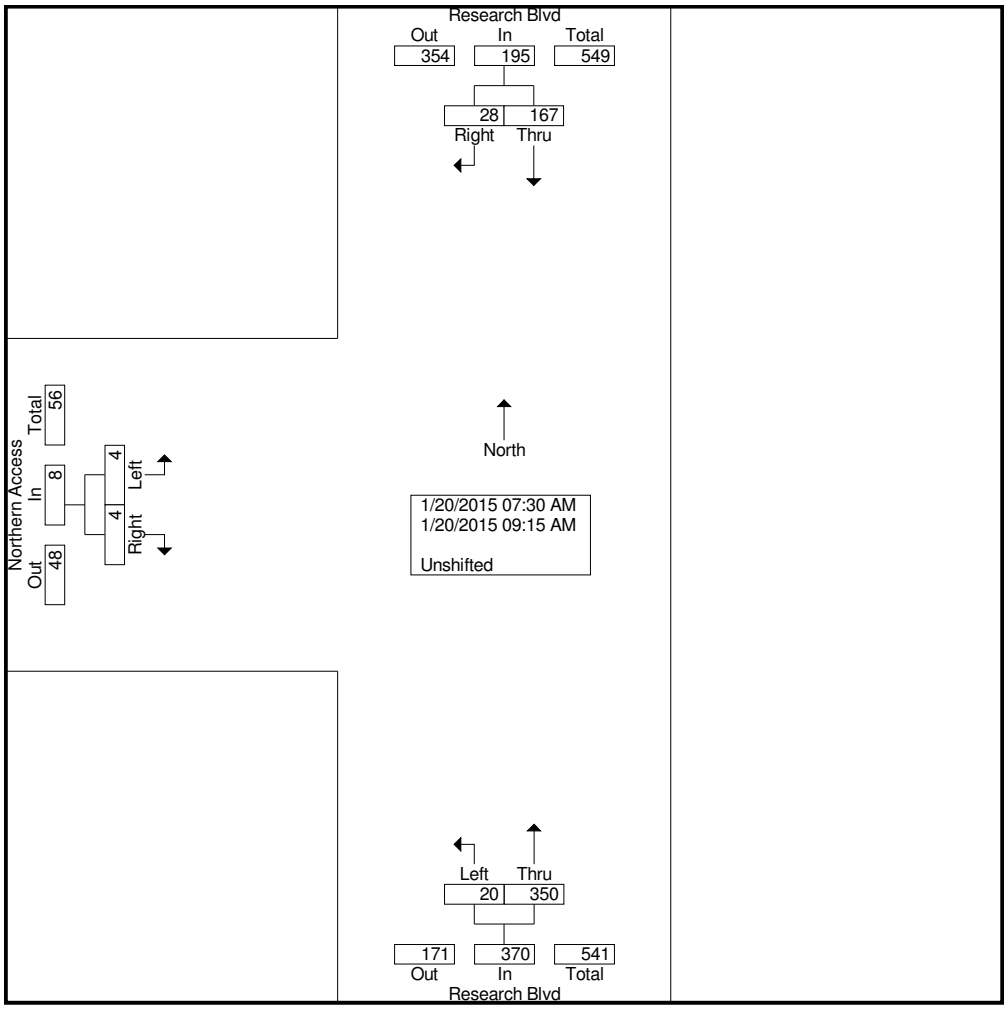
	Northern Access Eastbound			Research Blvd Northbound			Research Blvd Southbound			
Start Time	Left	Right	App. Total	Left	Thru	App. Total	Thru	Right	App. Total	Int. Total
07:30 AM	0	0	0	1	53	54	15	3	18	72
07:45 AM	2	2	4	5	63	68	22	4	26	98
Total	2	2	4	6	116	122	37	7	44	170
08:00 AM	1	0	1	3	38	41	22	1	23	65
08:15 AM	0	0	0	1	31	32	21	8	29	61
08:30 AM	0	1	1	1	49	50	23	4	27	78
08:45 AM	1	0	1	6	52	58	31	2	33	92
Total	2	1	3	11	170	181	97	15	112	296
09:00 AM	0	0	0	2	30	32	21	3	24	56
09:15 AM	0	1	1	1	34	35	12	3	15	51
Grand Total	4	4	8	20	350	370	167	28	195	573
Apprch %	50	50		5.4	94.6		85.6	14.4		
Total %	0.7	0.7	1.4	3.5	61.1	64.6	29.1	4.9	34	

RDC
Ridgeview Data Collection

Morrison, CO 80465

Fort Collins, CO
CSU South Parking Lot
AM Peak
Research Blvd Northern Access

File Name : ResearchNorthAccessAM
Site Code : IPO 72
Start Date : 1/20/2015
Page No : 2



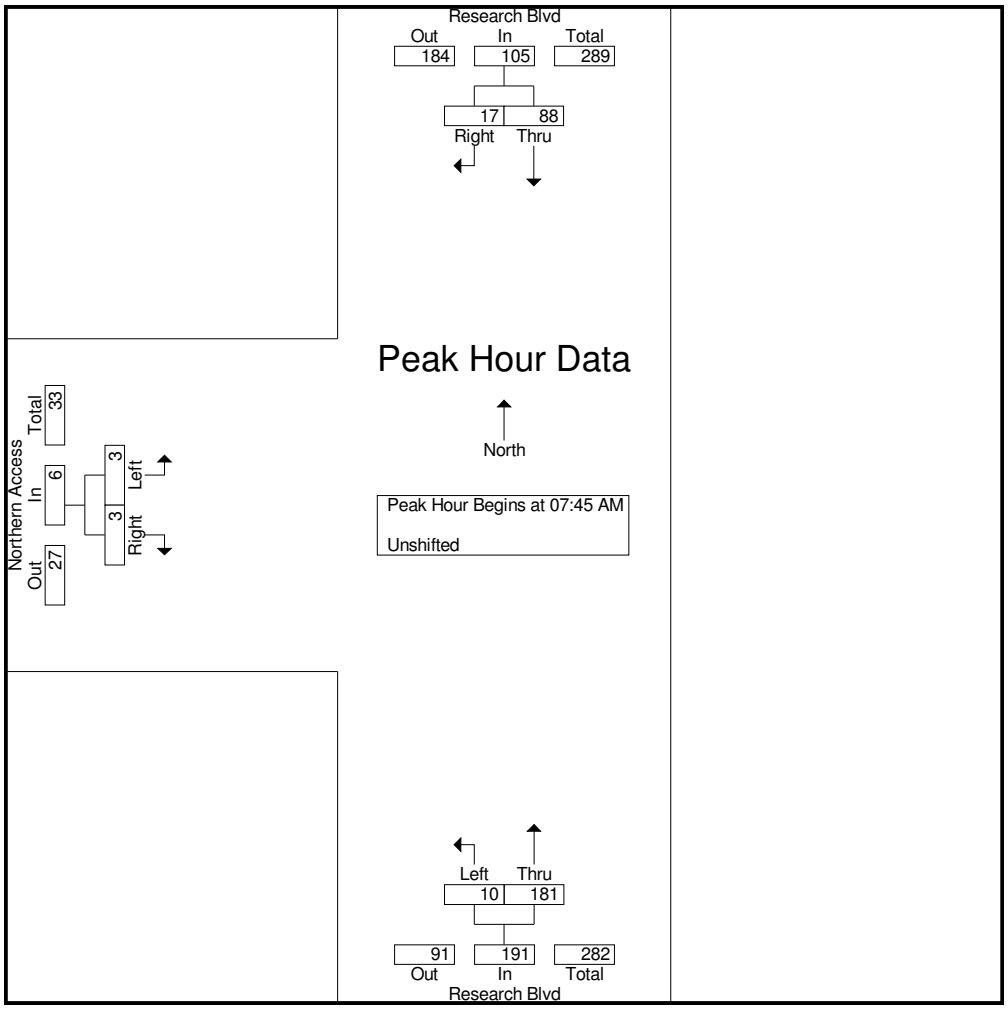
RDC
Ridgeview Data Collection

Morrison, CO 80465

Fort Collins, CO
CSU South Parking Lot
AM Peak
Research Blvd Northern Access

File Name : ResearchNorthAccessAM
Site Code : IPO 72
Start Date : 1/20/2015
Page No : 3

	Northern Access Eastbound			Research Blvd Northbound			Research Blvd Southbound			
Start Time	Left	Right	App. Total	Left	Thru	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:30 AM to 09:15 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 07:45 AM										
07:45 AM	**2**	**2**	**4**	**5**	**63**	**68**	22	4	26	**98**
08:00 AM	1	0	1	3	38	41	22	1	23	65
08:15 AM	0	0	0	1	31	32	21	**8**	**29**	61
08:30 AM	0	1	1	1	49	50	**23**	4	27	78
Total Volume	3	3	6	10	181	191	88	17	105	302
% App. Total	50	50		5.2	94.8		83.8	16.2		
PHF	.375	.375	.375	.500	.718	.702	.957	.531	.905	.770



RDC
Ridgeview Data Collection

Morrison, CO 80465

Fort Collins, CO
CSU South Parking Lot
AM Peak
Research Blvd Northern Access

File Name : ResearchNorthAccessAM
Site Code : IPO 72
Start Date : 1/20/2015
Page No : 4

Image 1

RDC
Ridgeview Data Collection

Morrison, CO 80465

Fort Collins, CO
CSU South Parking Lot
PM Peak
Research Blvd Northern Access

File Name : ResearchNorthAccessPM
Site Code : IPO 72
Start Date : 1/20/2015
Page No : 1

Groups Printed- Unshifted

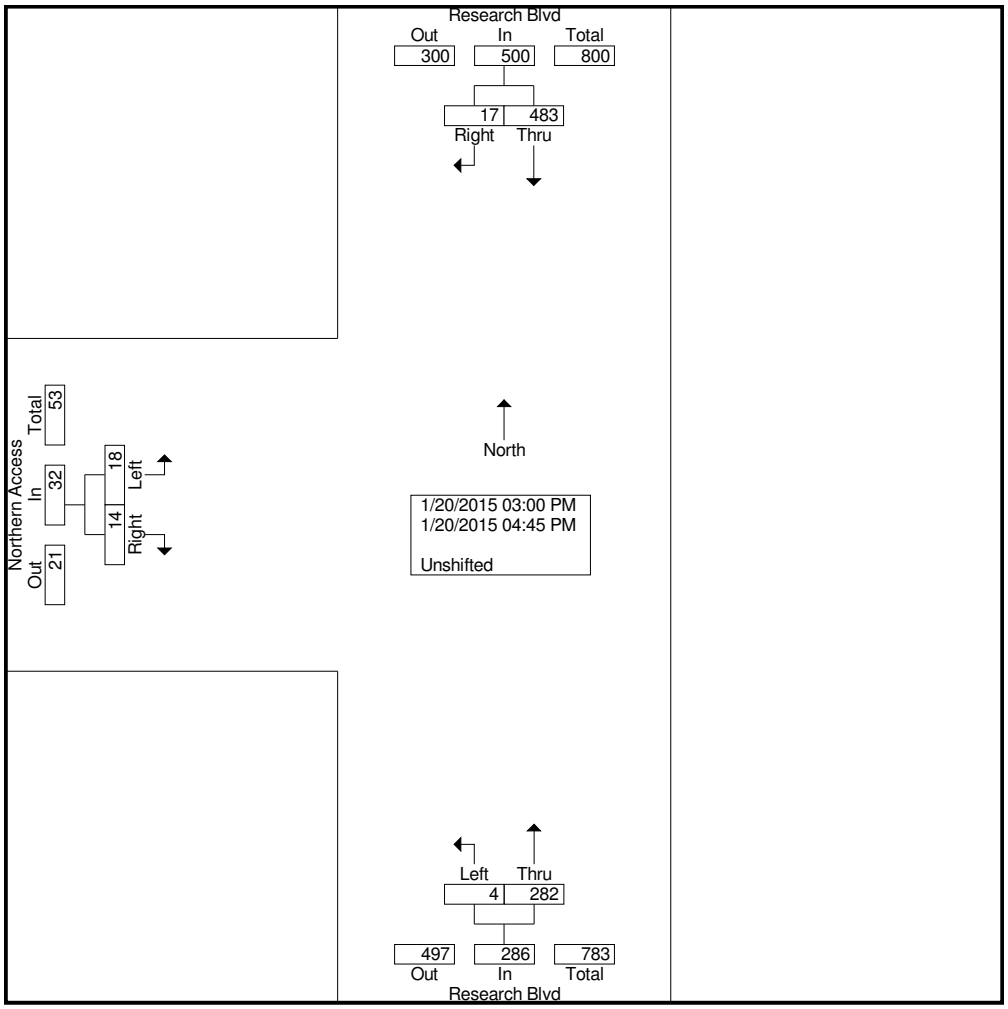
	Northern Access Eastbound			Research Blvd Northbound			Research Blvd Southbound			
Start Time	Left	Right	App. Total	Left	Thru	App. Total	Thru	Right	App. Total	Int. Total
03:00 PM	4	2	6	0	24	24	58	2	60	90
03:15 PM	1	1	2	0	43	43	50	3	53	98
03:30 PM	2	1	3	0	41	41	53	1	54	98
03:45 PM	2	3	5	0	24	24	61	4	65	94
Total	9	7	16	0	132	132	222	10	232	380
04:00 PM	3	2	5	1	38	39	63	2	65	109
04:15 PM	4	1	5	1	37	38	64	2	66	109
04:30 PM	1	1	2	1	29	30	73	1	74	106
04:45 PM	1	3	4	1	46	47	61	2	63	114
Total	9	7	16	4	150	154	261	7	268	438
Grand Total	18	14	32	4	282	286	483	17	500	818
Apprch %	56.2	43.8		1.4	98.6		96.6	3.4		
Total %	2.2	1.7	3.9	0.5	34.5	35	59	2.1	61.1	

RDC
Ridgeview Data Collection

Morrison, CO 80465

Fort Collins, CO
CSU South Parking Lot
PM Peak
Research Blvd Northern Access

File Name : ResearchNorthAccessPM
Site Code : IPO 72
Start Date : 1/20/2015
Page No : 2



RDC
Ridgeview Data Collection

Morrison, CO 80465

Fort Collins, CO
CSU South Parking Lot
PM Peak
Research Blvd Northern Access

File Name : ResearchNorthAccessPM
Site Code : IPO 72
Start Date : 1/20/2015
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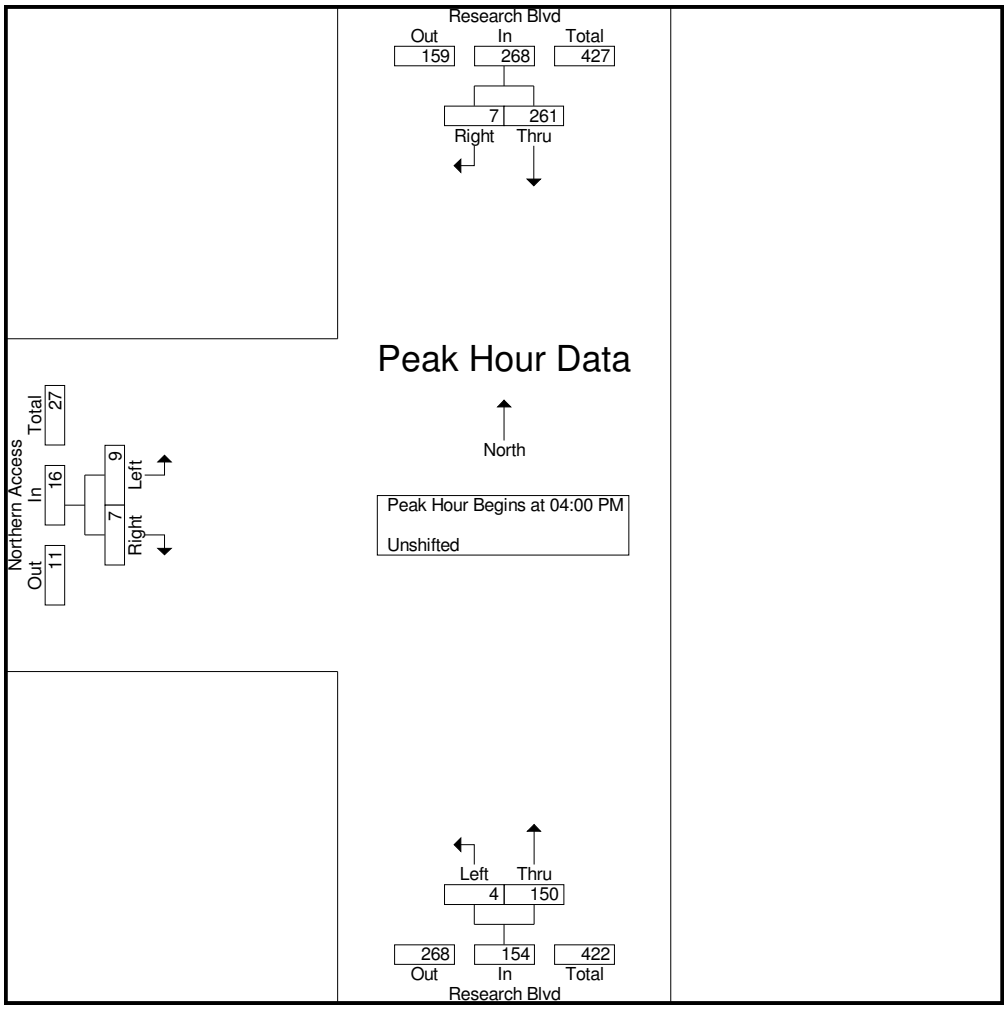
	Northern Access Eastbound			Research Blvd Northbound			Research Blvd Southbound			
Start Time	Left	Right	App. Total	Left	Thru	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 03:00 PM to 04:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 04:00 PM										
04:00 PM	3	2	**5**	**1**	38	39	63	**2**	65	109
04:15 PM	**4**	1	5	1	37	38	64	2	66	109
04:30 PM	1	1	2	1	29	30	**73**	1	**74**	106
04:45 PM	1	**3**	4	1	**46**	**47**	61	2	63	**114**
Total Volume	9	7	16	4	150	154	261	7	268	438
% App. Total	56.2	43.8		2.6	97.4		97.4	2.6		
PHF	.563	.583	.800	1.00	.815	.819	.894	.875	.905	.961



RDC
Ridgeview Data Collection

Morrison, CO 80465

Fort Collins, CO
CSU South Parking Lot
PM Peak
Research Blvd Northern Access

File Name : ResearchNorthAccessPM
Site Code : IPO 72
Start Date : 1/20/2015
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Image 1

RDC
Ridgeview Data Collection

Morrison, CO 80465

Fort Collins, CO
CSU South Parking Lot
AM Peak
Research Blvd Southern Access/Tennis

File Name : ResearchSouthAccessAM
Site Code : IPO 72
Start Date : 1/20/2015
Page No : 1

Groups Printed- Unshifted

	Southern Access Eastbound				Tennis Courts Westbound				Research Blvd Northbound				Research Blvd Southbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:30 AM	0	0	5	5	0	0	0	0	12	69	0	81	0	10	4	14	100
07:45 AM	1	0	3	4	0	0	0	0	25	92	0	117	0	12	6	18	139
Total	1	0	8	9	0	0	0	0	37	161	0	198	0	22	10	32	239
08:00 AM	0	0	6	6	0	0	0	0	17	61	0	78	0	8	6	14	98
08:15 AM	2	0	8	10	0	0	0	0	19	34	0	53	0	12	7	19	82
08:30 AM	6	0	7	13	0	0	0	0	20	43	0	63	0	13	9	22	98
08:45 AM	3	0	7	10	0	0	0	0	21	52	0	73	0	24	4	28	111
Total	11	0	28	39	0	0	0	0	77	190	0	267	0	57	26	83	389
09:00 AM	2	0	13	15	0	0	0	0	13	33	0	46	0	11	4	15	76
09:15 AM	4	0	22	26	0	0	0	0	16	31	0	47	0	11	0	11	84
Grand Total	18	0	71	89	0	0	0	0	143	415	0	558	0	101	40	141	788
Apprch %	20.2	0	79.8		0	0	0		25.6	74.4	0		0	71.6	28.4		
Total %	2.3	0	9	11.3	0	0	0	0	18.1	52.7	0	70.8	0	12.8	5.1	17.9	

RDC
Ridgeview Data Collection

Morrison, CO 80465

Fort Collins, CO
CSU South Parking Lot
AM Peak
Research Blvd Southern Access/Tennis

File Name : ResearchSouthAccessAM
Site Code : IPO 72
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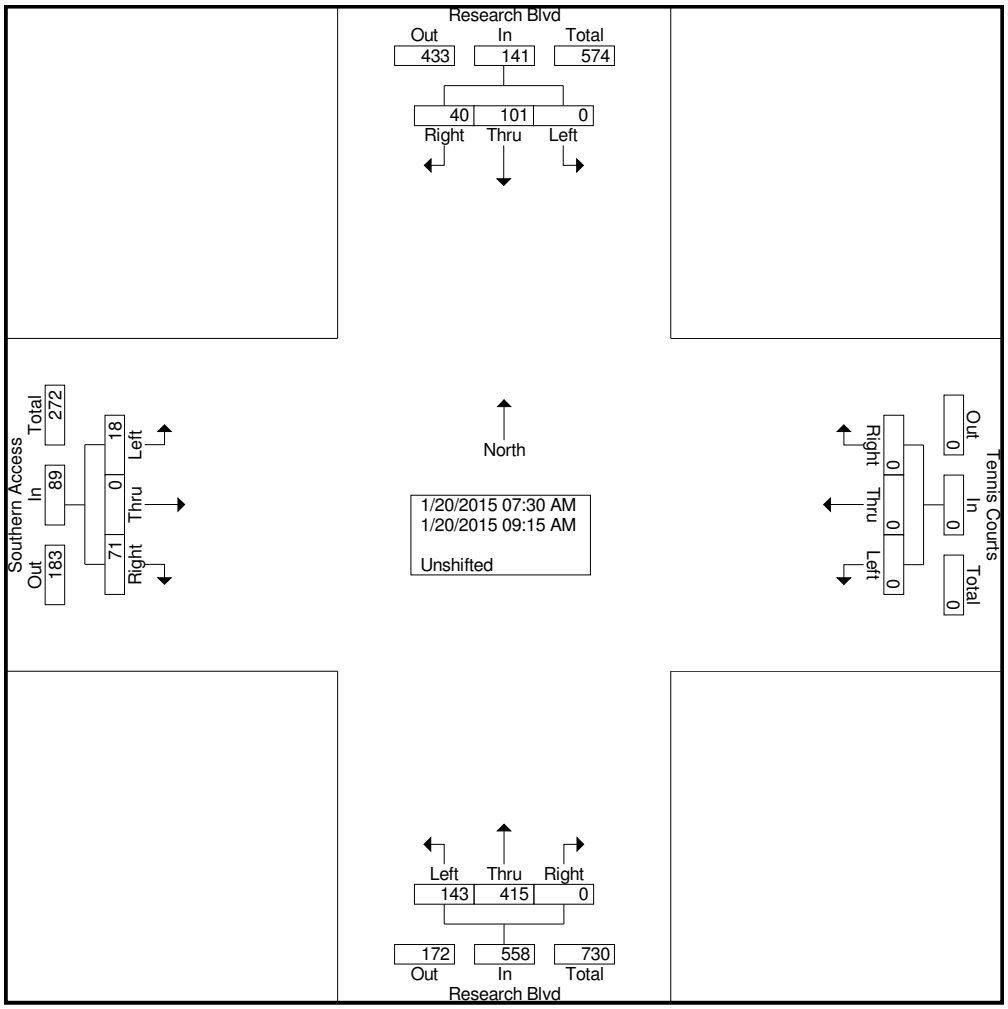


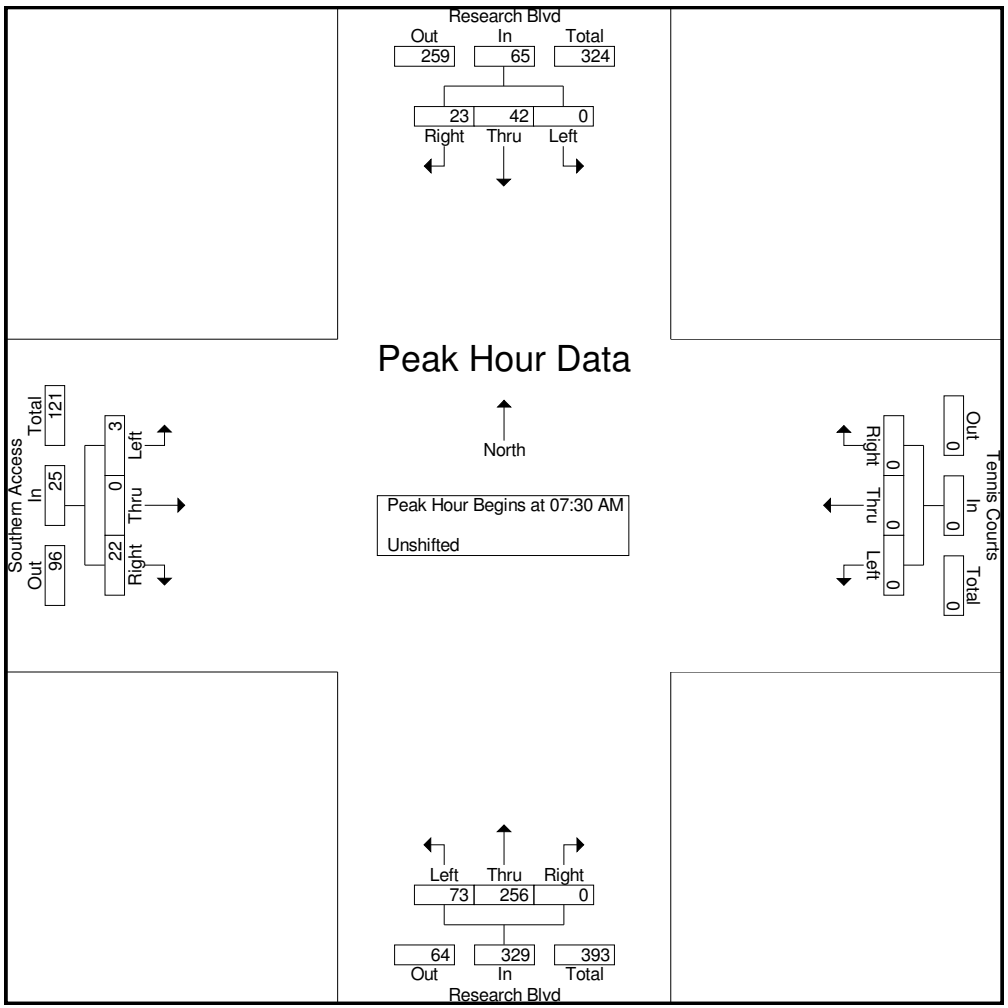
RDC
Ridgeview Data Collection

Morrison, CO 80465

Fort Collins, CO
CSU South Parking Lot
AM Peak
Research Blvd Southern Access/Tennis

File Name : ResearchSouthAccessAM
Site Code : IPO 72
Start Date : 1/20/2015
Page No : 3

	Southern Access Eastbound				Tennis Courts Westbound				Research Blvd Northbound				Research Blvd Southbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:30 AM to 09:15 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:30 AM																	
07:30 AM	0	0	5	5	0	0	0	0	12	69	0	81	0	10	4	14	100
07:45 AM	1	0	3	4	0	0	0	0	**25**	**92**	0	**117**	0	**12**	6	18	**139**
08:00 AM	0	0	6	6	0	0	0	0	17	61	0	78	0	8	6	14	98
08:15 AM	**2**	0	**8**	**10**	0	0	0	0	19	34	0	53	0	12	**7**	**19**	82
Total Volume	3	0	22	25	0	0	0	0	73	256	0	329	0	42	23	65	419
% App. Total	12	0	88		0	0	0		22.2	77.8	0		0	64.6	35.4		
PHF	.375	.000	.688	.625	.000	.000	.000	.000	.730	.696	.000	.703	.000	.875	.821	.855	.754



RDC
Ridgeview Data Collection

Morrison, CO 80465

Fort Collins, CO
CSU South Parking Lot
AM Peak
Research Blvd Southern Access/Tennis

File Name : ResearchSouthAccessAM
Site Code : IPO 72
Start Date : 1/20/2015
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Image 1

RDC
Ridgeview Data Collection

Morrison, CO 80465

Fort Collins, CO
CSU South Parking Lot
PM Peak
Research Blvd Southern Access/Tennis

File Name : ResearchSouthAccessPM
Site Code : IPO 72
Start Date : 1/20/2015
Page No : 1

Groups Printed- Unshifted

	Southern Access Eastbound				Tennis Courts Westbound				Research Blvd Northbound				Research Blvd Southbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
03:00 PM	4	0	22	26	0	0	0	0	11	18	0	29	0	59	3	62	117
03:15 PM	7	0	18	25	0	0	0	0	14	39	0	53	0	45	2	47	125
03:30 PM	2	0	17	19	0	0	0	0	9	34	0	43	0	46	0	46	108
03:45 PM	2	0	25	27	0	0	0	0	9	25	0	34	0	50	4	54	115
Total	15	0	82	97	0	0	0	0	43	116	0	159	0	200	9	209	465
04:00 PM	2	0	21	23	0	0	0	0	12	33	0	45	0	64	6	70	138
04:15 PM	6	0	24	30	0	0	0	0	10	27	0	37	0	59	3	62	129
04:30 PM	3	0	22	25	0	0	0	0	9	27	0	36	0	73	2	75	136
04:45 PM	11	0	19	30	0	0	0	0	4	31	0	35	0	57	3	60	125
Total	22	0	86	108	0	0	0	0	35	118	0	153	0	253	14	267	528
Grand Total	37	0	168	205	0	0	0	0	78	234	0	312	0	453	23	476	993
Apprch %	18	0	82		0	0	0		25	75	0		0	95.2	4.8		
Total %	3.7	0	16.9	20.6	0	0	0	0	7.9	23.6	0	31.4	0	45.6	2.3	47.9	

RDC
Ridgeview Data Collection

Morrison, CO 80465

Fort Collins, CO
CSU South Parking Lot
PM Peak
Research Blvd Southern Access/Tennis

File Name : ResearchSouthAccessPM
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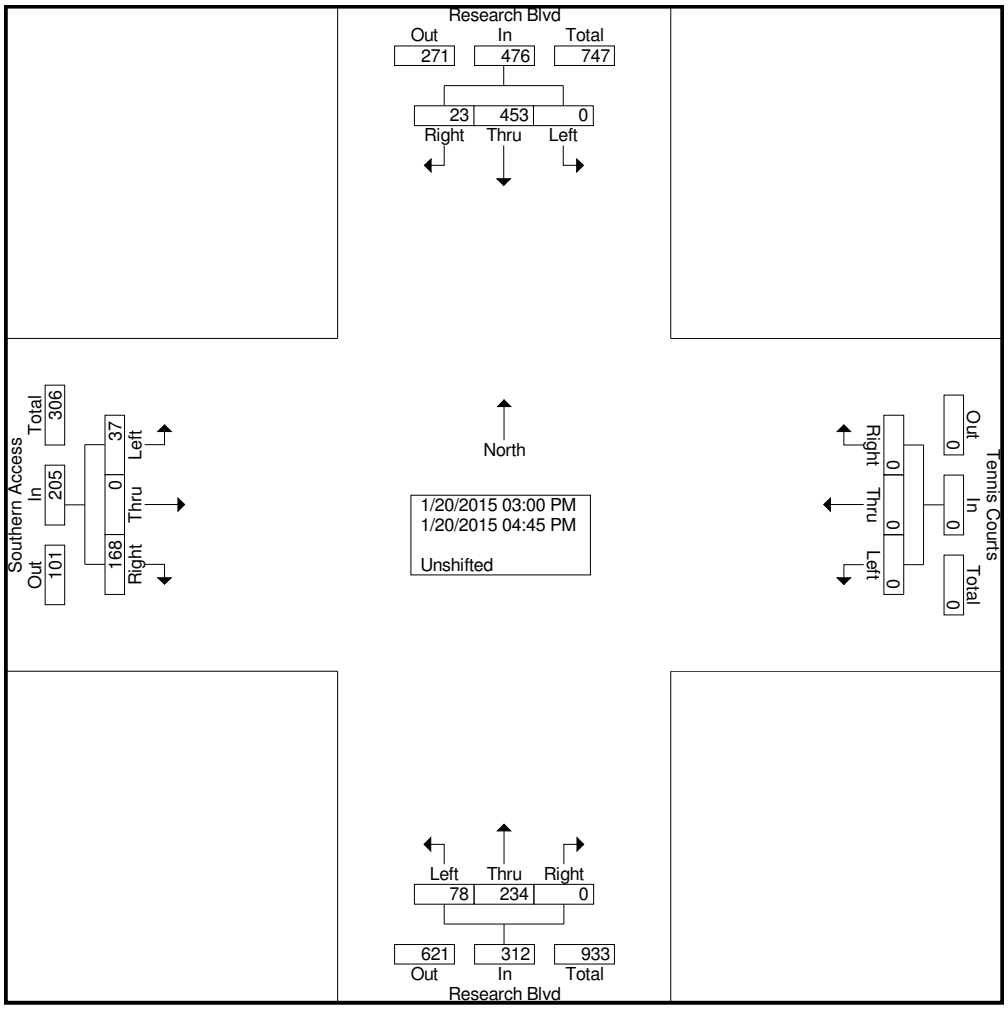


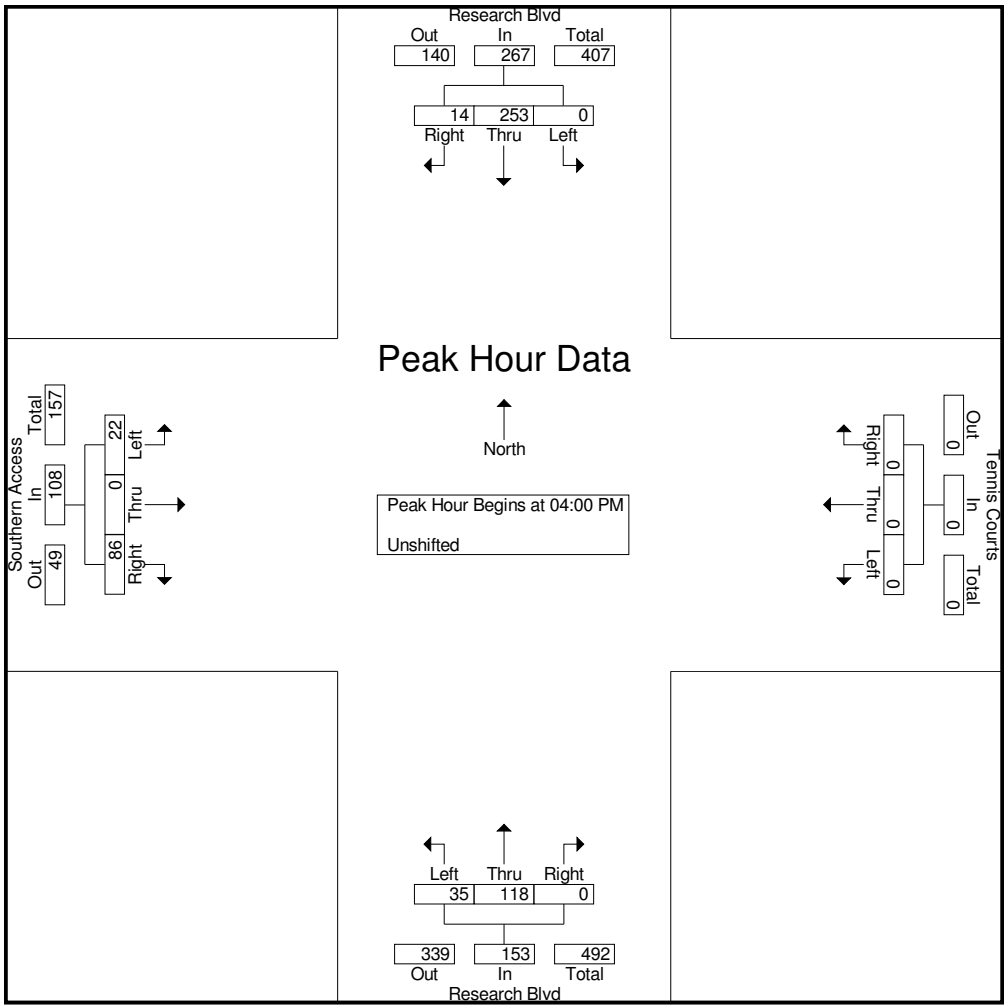
RDC
Ridgeview Data Collection

Morrison, CO 80465

Fort Collins, CO
CSU South Parking Lot
PM Peak
Research Blvd Southern Access/Tennis

File Name : ResearchSouthAccessPM
Site Code : IPO 72
Start Date : 1/20/2015
Page No : 3

	Southern Access Eastbound				Tennis Courts Westbound				Research Blvd Northbound				Research Blvd Southbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 03:00 PM to 04:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:00 PM																	
04:00 PM	2	0	21	23	0	0	0	0	**12**	**33**	0	**45**	0	64	**6**	70	**138**
04:15 PM	6	0	**24**	**30**	0	0	0	0	10	27	0	37	0	59	3	62	129
04:30 PM	3	0	22	25	0	0	0	0	9	27	0	36	0	**73**	2	**75**	136
04:45 PM	**11**	0	19	30	0	0	0	0	4	31	0	35	0	57	3	60	125
Total Volume	22	0	86	108	0	0	0	0	35	118	0	153	0	253	14	267	528
% App. Total	20.4	0	79.6		0	0	0		22.9	77.1	0		0	94.8	5.2		
PHF	.500	.000	.896	.900	.000	.000	.000	.000	.729	.894	.000	.850	.000	.866	.583	.890	.957



RDC
Ridgeview Data Collection

Morrison, CO 80465

Fort Collins, CO
CSU South Parking Lot
PM Peak
Research Blvd Southern Access/Tennis

File Name : ResearchSouthAccessPM
Site Code : IPO 72
Start Date : 1/20/2015
Page No : 4

Image 1

APPENDIX B

Intersection Analysis Worksheets

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	132	857	94	276	529	117	51	208	229	16	37	18
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow veh/h/ln	186.3	186.3	190.0	186.3	186.3	190.0	186.3	186.3	186.3	186.3	186.3	186.3
Lanes	1	2	0	1	2	0	1	1	1	1	1	1
Cap, veh/h	508	1759	197	430	1645	430	349	441	375	138	441	375
Arrive On Green	0.07	0.53	0.53	0.12	0.58	0.58	0.24	0.24	0.24	0.24	0.24	0.24
Sat Flow, veh/h	1774	3291	369	1774	2849	745	1308	1863	1583	807	1863	1583
Grp Volume(v), veh/h	206	584	565	389	412	383	76	306	305	20	52	32
Grp Sat Flow(s),veh/h/ln	1774	1863	1798	1774	1863	1731	1308	1863	1583	807	1863	1583
Q Serve(g_s), s	5.5	22.5	22.5	9.1	12.7	12.7	5.1	15.9	19.2	2.5	2.3	1.7
Cycle Q Clear(g_c), s	5.5	22.5	22.5	9.1	12.7	12.7	7.4	15.9	19.2	18.3	2.3	1.7
Prop In Lane	1.00		0.21	1.00		0.43	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	508	995	961	430	1075	999	349	441	375	138	441	375
V/C Ratio(X)	0.41	0.59	0.59	0.91	0.38	0.38	0.22	0.69	0.81	0.14	0.12	0.09
Avail Cap(c_a), veh/h	580	995	961	695	1075	999	349	441	375	138	441	375
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	9.7	16.7	16.7	18.3	12.1	12.1	34.6	36.8	38.1	45.2	31.7	31.4
Incr Delay (d2), s/veh	0.5	2.5	2.6	10.1	1.0	1.1	1.4	8.7	17.4	2.2	0.5	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q (50%), veh/ln	2.1	10.3	10.0	7.0	5.6	5.2	1.8	8.4	9.3	0.6	1.1	0.7
Lane Grp Delay (d), s/veh	10.2	19.2	19.3	28.4	13.2	13.2	36.0	45.6	55.6	47.4	32.2	31.9
Lane Grp LOS	B	B	B	C	B	B	D	D	E	D	C	C
Approach Vol, veh/h		1355			1184			687			104	
Approach Delay, s/veh		17.9			18.2			48.9			35.0	
Approach LOS		B			B			D			D	

Timer												
Assigned Phs	7	4		3	8			2			6	
Phs Duration (G+Y+Rc), s	11.7	60.5		16.2	65.0			29.0			29.0	
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0			4.0			4.0	
Max Green Setting (Gmax), s	12.0	45.0		28.0	61.0			25.0			25.0	
Max Q Clear Time (g_c+I1), s	7.5	24.5		11.1	14.7			21.2			20.3	
Green Ext Time (p_c), s	0.2	12.8		1.1	19.7			1.4			1.6	

Intersection Summary		
HCM 2010 Ctrl Delay		24.9
HCM 2010 LOS		C

Notes

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	47	902	32	207	839	42	69	79	289	76	154	122
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow veh/h/ln	186.3	186.3	190.0	186.3	186.3	190.0	186.3	186.3	186.3	186.3	186.3	186.3
Lanes	1	2	0	1	2	0	1	1	1	1	1	1
Cap, veh/h	396	2021	98	411	2126	131	229	459	390	248	459	390
Arrive On Green	0.03	0.57	0.57	0.07	0.61	0.61	0.25	0.25	0.25	0.25	0.25	0.25
Sat Flow, veh/h	1774	3525	171	1774	3474	213	1020	1863	1583	935	1863	1583
Grp Volume(v), veh/h	68	524	515	241	489	479	84	120	332	100	192	165
Grp Sat Flow(s),veh/h/ln	1774	1863	1833	1774	1863	1825	1020	1863	1583	935	1863	1583
Q Serve(g_s), s	1.7	18.3	18.3	5.2	15.1	15.1	8.3	5.7	21.9	10.6	9.5	9.6
Cycle Q Clear(g_c), s	1.7	18.3	18.3	5.2	15.1	15.1	17.7	5.7	21.9	16.2	9.5	9.6
Prop In Lane	1.00		0.09	1.00		0.12	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	396	1068	1051	411	1140	1117	229	459	390	248	459	390
V/C Ratio(X)	0.17	0.49	0.49	0.59	0.43	0.43	0.37	0.26	0.85	0.40	0.42	0.42
Avail Cap(c_a), veh/h	405	1068	1051	626	1140	1117	229	459	390	248	459	390
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	9.5	13.9	13.9	10.6	11.2	11.2	42.1	33.2	39.3	39.8	34.6	34.7
Incr Delay (d2), s/veh	0.2	1.6	1.6	1.3	1.2	1.2	4.5	1.4	20.2	4.8	2.8	3.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q (50%), veh/ln	0.7	8.0	7.9	2.0	6.6	6.5	2.4	2.8	10.7	2.8	4.7	4.1
Lane Grp Delay (d), s/veh	9.7	15.5	15.5	12.0	12.4	12.4	46.6	34.6	59.5	44.6	37.4	38.0
Lane Grp LOS	A	B	B	B	B	B	D	C	E	D	D	D
Approach Vol, veh/h		1107			1209			536			457	
Approach Delay, s/veh		15.1			12.3			51.9			39.2	
Approach LOS		B			B			D			D	

Timer												
Assigned Phs	7	4		3	8			2			6	
Phs Duration (G+Y+Rc), s	7.5	66.8		11.7	71.0			31.0			31.0	
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0			4.0			4.0	
Max Green Setting (Gmax), s	4.0	50.0		21.0	67.0			27.0			27.0	
Max Q Clear Time (g_c+I1), s	3.7	20.3		7.2	17.1			23.9			18.2	
Green Ext Time (p_c), s	0.0	16.5		0.6	20.8			1.4			2.8	

Intersection Summary	
HCM 2010 Ctrl Delay	23.4
HCM 2010 LOS	C

Notes

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	132	857	112	303	529	117	60	212	242	16	46	18
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow veh/h/ln	186.3	186.3	190.0	186.3	186.3	190.0	186.3	186.3	186.3	186.3	186.3	186.3
Lanes	1	2	0	1	2	0	1	1	1	1	1	1
Cap, veh/h	513	1596	213	467	1637	428	337	439	373	132	439	373
Arrive On Green	0.08	0.50	0.50	0.16	0.57	0.57	0.24	0.24	0.24	0.24	0.24	0.24
Sat Flow, veh/h	1774	3220	430	1774	2849	745	1293	1863	1583	789	1863	1583
Grp Volume(v), veh/h	206	597	574	427	412	383	90	312	323	20	65	32
Grp Sat Flow(s),veh/h/ln	1774	1863	1787	1774	1863	1731	1293	1863	1583	789	1863	1583
Q Serve(g_s), s	6.0	25.3	25.3	13.4	12.8	12.8	6.3	16.3	20.8	2.5	2.9	1.7
Cycle Q Clear(g_c), s	6.0	25.3	25.3	13.4	12.8	12.8	9.2	16.3	20.8	18.9	2.9	1.7
Prop In Lane	1.00		0.24	1.00		0.43	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	513	923	886	467	1070	995	337	439	373	132	439	373
V/C Ratio(X)	0.40	0.65	0.65	0.91	0.38	0.39	0.27	0.71	0.87	0.15	0.15	0.09
Avail Cap(c_a), veh/h	577	923	886	675	1070	995	337	439	373	132	439	373
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	11.1	19.9	19.9	24.7	12.3	12.3	35.8	37.3	39.0	45.9	32.1	31.7
Incr Delay (d2), s/veh	0.5	3.5	3.7	13.1	1.0	1.1	1.9	9.4	22.7	2.4	0.7	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q (50%), veh/ln	2.4	11.8	11.4	8.1	5.7	5.3	2.2	8.7	10.4	0.6	1.4	0.7
Lane Grp Delay (d), s/veh	11.6	23.4	23.5	37.8	13.4	13.5	37.7	46.7	61.7	48.3	32.9	32.1
Lane Grp LOS	B	C	C	D	B	B	D	D	E	D	C	C
Approach Vol, veh/h		1377			1222			725			117	
Approach Delay, s/veh		21.7			21.9			52.2			35.3	
Approach LOS		C			C			D			D	
Timer												
Assigned Phs	7	4		3	8			2			6	
Phs Duration (G+Y+Rc), s	12.1	56.6		20.5	65.0			29.0			29.0	
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0			4.0			4.0	
Max Green Setting (Gmax), s	12.0	44.0		29.0	61.0			25.0			25.0	
Max Q Clear Time (g_c+I1), s	8.0	27.3		15.4	14.8			22.8			20.9	
Green Ext Time (p_c), s	0.2	11.3		1.1	20.1			0.9			1.6	
Intersection Summary												
HCM 2010 Ctrl Delay			28.7									
HCM 2010 LOS			C									
Notes												

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	47	902	51	235	839	42	93	91	325	76	163	122
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow veh/h/ln	186.3	186.3	190.0	186.3	186.3	190.0	186.3	186.3	186.3	186.3	186.3	186.3
Lanes	1	2	0	1	2	0	1	1	1	1	1	1
Cap, veh/h	387	1884	144	402	2082	128	235	481	409	242	481	409
Arrive On Green	0.03	0.55	0.55	0.08	0.60	0.60	0.26	0.26	0.26	0.26	0.26	0.26
Sat Flow, veh/h	1774	3417	262	1774	3474	213	1009	1863	1583	885	1863	1583
Grp Volume(v), veh/h	68	540	527	273	489	479	113	138	374	100	204	165
Grp Sat Flow(s),veh/h/ln	1774	1863	1817	1774	1863	1825	1009	1863	1583	885	1863	1583
Q Serve(g_s), s	1.8	19.9	19.9	6.0	15.5	15.5	11.4	6.4	24.9	11.1	9.9	9.4
Cycle Q Clear(g_c), s	1.8	19.9	19.9	6.0	15.5	15.5	21.3	6.4	24.9	17.5	9.9	9.4
Prop In Lane	1.00		0.14	1.00		0.12	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	387	1027	1002	402	1116	1094	235	481	409	242	481	409
V/C Ratio(X)	0.18	0.53	0.53	0.68	0.44	0.44	0.48	0.29	0.92	0.41	0.42	0.40
Avail Cap(c_a), veh/h	412	1027	1002	653	1116	1094	235	481	409	242	481	409
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	10.3	15.4	15.4	12.9	11.8	11.8	42.4	32.2	39.1	39.3	33.5	33.3
Incr Delay (d2), s/veh	0.2	1.9	2.0	2.0	1.3	1.3	6.9	1.5	27.6	5.1	2.7	3.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q (50%), veh/ln	0.7	9.0	8.7	3.2	6.8	6.6	3.3	3.2	12.8	2.8	4.9	4.0
Lane Grp Delay (d), s/veh	10.5	17.3	17.3	14.9	13.1	13.1	49.3	33.7	66.7	44.4	36.3	36.3
Lane Grp LOS	B	B	B	B	B	B	D	C	E	D	D	D
Approach Vol, veh/h		1135			1241			625			469	
Approach Delay, s/veh		16.9			13.5			56.3			38.0	
Approach LOS		B			B			E			D	

Timer												
Assigned Phs	7	4		3	8			2			6	
Phs Duration (G+Y+Rc), s	7.5	63.8		12.7	69.0			32.0			32.0	
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0			4.0			4.0	
Max Green Setting (Gmax), s	5.0	46.0		24.0	65.0			28.0			28.0	
Max Q Clear Time (g_c+I1), s	3.8	21.9		8.0	17.5			26.9			19.5	
Green Ext Time (p_c), s	0.0	14.8		0.7	21.0			0.6			3.1	

Intersection Summary	
HCM 2010 Ctrl Delay	25.6
HCM 2010 LOS	C

Notes

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	167	1086	119	350	671	148	65	264	290	20	47	23
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow veh/h/ln	186.3	186.3	190.0	186.3	186.3	190.0	186.3	186.3	186.3	186.3	186.3	186.3
Lanes	1	2	0	1	2	0	1	1	1	1	1	1
Cap, veh/h	472	1408	158	517	1624	423	309	407	346	74	407	346
Arrive On Green	0.10	0.43	0.43	0.24	0.57	0.57	0.22	0.22	0.22	0.22	0.22	0.22
Sat Flow, veh/h	1774	3292	368	1774	2852	742	1281	1863	1583	693	1863	1583
Grp Volume(v), veh/h	261	737	718	493	522	485	97	388	387	25	66	41
Grp Sat Flow(s),veh/h/ln	1774	1863	1798	1774	1863	1732	1281	1863	1583	693	1863	1583
Q Serve(g_s), s	8.9	41.2	41.8	24.8	18.4	18.4	7.3	22.6	24.0	1.4	3.2	2.3
Cycle Q Clear(g_c), s	8.9	41.2	41.8	24.8	18.4	18.4	10.4	22.6	24.0	24.0	3.2	2.3
Prop In Lane	1.00		0.20	1.00		0.43	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	472	797	769	517	1060	986	309	407	346	74	407	346
V/C Ratio(X)	0.55	0.93	0.93	0.95	0.49	0.49	0.31	0.95	1.12	0.34	0.16	0.12
Avail Cap(c_a), veh/h	580	797	769	519	1060	986	309	407	346	74	407	346
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	14.3	29.8	29.9	35.5	14.2	14.2	39.0	42.4	42.9	54.7	34.8	34.5
Incr Delay (d2), s/veh	1.0	18.2	19.8	28.2	1.6	1.8	2.6	34.4	84.5	11.8	0.9	0.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q (50%), veh/ln	3.7	22.2	22.0	17.7	8.3	7.8	2.6	14.3	17.5	0.9	1.5	1.0
Lane Grp Delay (d), s/veh	15.3	47.9	49.7	63.7	15.8	15.9	41.7	76.7	127.5	66.5	35.6	35.1
Lane Grp LOS	B	D	D	E	B	B	D	E	F	E	D	D
Approach Vol, veh/h		1716			1500			872			132	
Approach Delay, s/veh		43.7			31.6			95.4			41.3	
Approach LOS		D			C			F			D	

Timer												
Assigned Phs	7	4		3	8			2			6	
Phs Duration (G+Y+Rc), s	15.3	51.0		30.9	66.6			28.0			28.0	
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0			4.0			4.0	
Max Green Setting (Gmax), s	18.0	47.0		27.0	56.0			24.0			24.0	
Max Q Clear Time (g_c+I1), s	10.9	43.8		26.8	20.4			26.0			26.0	
Green Ext Time (p_c), s	0.4	3.0		0.0	24.2			0.0			0.0	

Intersection Summary	
HCM 2010 Ctrl Delay	50.0
HCM 2010 LOS	D

Notes

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	60	1143	41	262	1064	53	87	100	366	96	195	155
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow veh/h/ln	186.3	186.3	190.0	186.3	186.3	190.0	186.3	186.3	186.3	186.3	186.3	186.3
Lanes	1	2	0	1	2	0	1	1	1	1	1	1
Cap, veh/h	320	1985	96	350	2125	130	185	449	381	212	449	381
Arrive On Green	0.04	0.56	0.56	0.08	0.61	0.61	0.24	0.24	0.24	0.24	0.24	0.24
Sat Flow, veh/h	1774	3524	171	1774	3475	213	934	1863	1583	836	1863	1583
Grp Volume(v), veh/h	87	663	654	305	620	608	106	152	421	126	244	209
Grp Sat Flow(s),veh/h/ln	1774	1863	1833	1774	1863	1825	934	1863	1583	836	1863	1583
Q Serve(g_s), s	2.2	26.1	26.1	6.4	20.9	21.0	12.1	7.3	26.0	15.8	12.4	12.5
Cycle Q Clear(g_c), s	2.2	26.1	26.1	6.4	20.9	21.0	24.4	7.3	26.0	23.1	12.4	12.5
Prop In Lane	1.00		0.09	1.00		0.12	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	320	1049	1032	350	1139	1116	185	449	381	212	449	381
V/C Ratio(X)	0.27	0.63	0.63	0.87	0.54	0.54	0.57	0.34	1.10	0.60	0.54	0.55
Avail Cap(c_a), veh/h	354	1049	1032	562	1139	1116	185	449	381	212	449	381
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	10.5	16.0	16.0	19.2	12.2	12.2	46.5	33.9	41.0	43.4	35.8	35.8
Incr Delay (d2), s/veh	0.5	2.9	3.0	8.6	1.9	1.9	12.3	2.0	77.1	11.7	4.7	5.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q (50%), veh/ln	0.9	11.9	11.7	5.8	9.0	8.9	3.5	3.6	18.3	4.0	6.3	5.5
Lane Grp Delay (d), s/veh	11.0	18.9	19.0	27.7	14.1	14.1	58.8	35.9	118.1	55.2	40.5	41.4
Lane Grp LOS	B	B	B	C	B	B	E	D	F	E	D	D
Approach Vol, veh/h		1404			1533			679			579	
Approach Delay, s/veh		18.4			16.8			90.4			44.0	
Approach LOS		B			B			F			D	

Timer												
Assigned Phs	7	4		3	8			2			6	
Phs Duration (G+Y+Rc), s	7.9	64.8		13.1	70.0			30.0			30.0	
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0			4.0			4.0	
Max Green Setting (Gmax), s	6.0	50.0		22.0	66.0			26.0			26.0	
Max Q Clear Time (g_c+I1), s	4.2	28.1		8.4	23.0			28.0			25.1	
Green Ext Time (p_c), s	0.0	17.1		0.7	28.1			0.0			0.5	

Intersection Summary	
HCM 2010 Ctrl Delay	33.0
HCM 2010 LOS	C

Notes

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	167	1086	137	377	671	148	74	268	303	20	56	23
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow veh/h/ln	186.3	186.3	190.0	186.3	186.3	190.0	186.3	186.3	186.3	186.3	186.3	186.3
Lanes	1	2	0	1	2	0	1	1	1	1	1	1
Cap, veh/h	473	1353	174	524	1622	422	298	406	345	71	406	345
Arrive On Green	0.10	0.42	0.42	0.25	0.57	0.57	0.22	0.22	0.22	0.22	0.22	0.22
Sat Flow, veh/h	1774	3237	416	1774	2852	742	1266	1863	1583	678	1863	1583
Grp Volume(v), veh/h	261	749	728	531	522	485	110	394	404	25	79	41
Grp Sat Flow(s),veh/h/ln	1774	1863	1789	1774	1863	1732	1266	1863	1583	678	1863	1583
Q Serve(g_s), s	9.1	43.1	43.9	28.0	18.5	18.5	8.5	23.1	24.0	0.9	3.8	2.3
Cycle Q Clear(g_c), s	9.1	43.1	43.9	28.0	18.5	18.5	12.4	23.1	24.0	24.0	3.8	2.3
Prop In Lane	1.00		0.23	1.00		0.43	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	473	779	748	524	1059	985	298	406	345	71	406	345
V/C Ratio(X)	0.55	0.96	0.97	1.01	0.49	0.49	0.37	0.97	1.17	0.35	0.19	0.12
Avail Cap(c_a), veh/h	563	779	748	524	1059	985	298	406	345	71	406	345
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	14.8	31.2	31.4	36.6	14.2	14.2	40.1	42.6	43.0	54.9	35.1	34.5
Incr Delay (d2), s/veh	1.0	24.2	26.8	42.7	1.6	1.8	3.5	37.6	102.9	13.1	1.1	0.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q (50%), veh/ln	3.8	24.6	24.6	20.8	8.3	7.8	3.0	15.0	19.3	1.0	1.9	1.0
Lane Grp Delay (d), s/veh	15.8	55.4	58.2	79.4	15.9	16.0	43.6	80.3	145.9	68.0	36.2	35.2
Lane Grp LOS	B	E	E	F	B	B	D	F	F	E	D	D
Approach Vol, veh/h		1738			1538			908			145	
Approach Delay, s/veh		50.6			37.8			105.0			41.4	
Approach LOS		D			D			F			D	

Timer												
Assigned Phs	7	4		3	8			2			6	
Phs Duration (G+Y+Rc), s	15.4	50.0		32.0	66.6			28.0			28.0	
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0			4.0			4.0	
Max Green Setting (Gmax), s	17.0	46.0		28.0	57.0			24.0			24.0	
Max Q Clear Time (g_c+I1), s	11.1	45.9		30.0	20.5			26.0			26.0	
Green Ext Time (p_c), s	0.4	0.1		0.0	25.0			0.0			0.0	

Intersection Summary	
HCM 2010 Ctrl Delay	57.2
HCM 2010 LOS	E

Notes

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	60	1143	60	290	1064	53	111	112	402	96	204	155
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow veh/h/ln	186.3	186.3	190.0	186.3	186.3	190.0	186.3	186.3	186.3	186.3	186.3	186.3
Lanes	1	2	0	1	2	0	1	1	1	1	1	1
Cap, veh/h	316	1796	128	373	2089	128	187	465	395	205	465	395
Arrive On Green	0.04	0.52	0.52	0.12	0.60	0.60	0.25	0.25	0.25	0.25	0.25	0.25
Sat Flow, veh/h	1774	3436	246	1774	3475	213	925	1863	1583	792	1863	1583
Grp Volume(v), veh/h	87	680	666	337	620	608	135	170	462	126	255	209
Grp Sat Flow(s),veh/h/ln	1774	1863	1819	1774	1863	1825	925	1863	1583	792	1863	1583
Q Serve(g_s), s	2.4	29.7	29.8	9.9	21.5	21.6	14.1	8.1	27.0	16.9	12.9	12.3
Cycle Q Clear(g_c), s	2.4	29.7	29.8	9.9	21.5	21.6	27.0	8.1	27.0	25.1	12.9	12.3
Prop In Lane	1.00		0.14	1.00		0.12	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	316	973	951	373	1120	1097	187	465	395	205	465	395
V/C Ratio(X)	0.28	0.70	0.70	0.90	0.55	0.55	0.72	0.37	1.17	0.62	0.55	0.53
Avail Cap(c_a), veh/h	347	973	951	527	1120	1097	187	465	395	205	465	395
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	11.9	19.4	19.4	26.1	12.9	12.9	47.7	33.5	40.6	43.8	35.3	35.1
Incr Delay (d2), s/veh	0.5	4.2	4.3	14.5	2.0	2.0	21.2	2.2	99.9	13.1	4.6	5.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q (50%), veh/ln	1.0	13.8	13.5	6.9	9.6	9.4	4.8	4.1	21.5	4.1	6.5	5.3
Lane Grp Delay (d), s/veh	12.4	23.6	23.7	40.6	14.9	14.9	68.9	35.7	140.5	57.0	39.9	40.1
Lane Grp LOS	B	C	C	D	B	B	E	D	F	E	D	D
Approach Vol, veh/h		1433			1565			767			590	
Approach Delay, s/veh		23.0			20.4			104.7			43.6	
Approach LOS		C			C			F			D	

Timer												
Assigned Phs	7	4		3	8			2			6	
Phs Duration (G+Y+Rc), s	8.1	60.5		16.6	69.0			31.0			31.0	
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0			4.0			4.0	
Max Green Setting (Gmax), s	6.0	49.0		22.0	65.0			27.0			27.0	
Max Q Clear Time (g_c+I1), s	4.4	31.8		11.9	23.6			29.0			27.1	
Green Ext Time (p_c), s	0.0	14.2		0.7	27.9			0.0			0.0	

Intersection Summary	
HCM 2010 Ctrl Delay	39.2
HCM 2010 LOS	D

Notes

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	167	1086	137	377	671	148	74	268	303	20	56	23
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow veh/h/ln	186.3	186.3	190.0	186.3	186.3	190.0	186.3	186.3	186.3	186.3	186.3	190.0
Lanes	1	2	0	1	2	0	2	1	1	2	1	0
Cap, veh/h	473	1353	174	524	1622	422	125	406	345	142	168	87
Arrive On Green	0.10	0.42	0.42	0.25	0.57	0.57	0.04	0.22	0.22	0.15	0.15	0.15
Sat Flow, veh/h	1774	3237	416	1774	2852	742	3442	1863	1583	1316	1157	600
Grp Volume(v), veh/h	261	749	728	531	522	485	110	394	404	25	0	120
Grp Sat Flow(s),veh/h/ln	1774	1863	1789	1774	1863	1732	1721	1863	1583	658	0	1757
Q Serve(g_s), s	9.1	43.1	43.9	28.0	18.5	18.5	3.5	23.1	24.0	0.9	0.0	6.9
Cycle Q Clear(g_c), s	9.1	43.1	43.9	28.0	18.5	18.5	3.5	23.1	24.0	16.0	0.0	6.9
Prop In Lane	1.00		0.23	1.00		0.43	1.00		1.00	1.00		0.34
Lane Grp Cap(c), veh/h	473	779	748	524	1059	985	125	406	345	142	0	256
V/C Ratio(X)	0.55	0.96	0.97	1.01	0.49	0.49	0.88	0.97	1.17	0.18	0.00	0.47
Avail Cap(c_a), veh/h	563	779	748	524	1059	985	125	406	345	142	0	256
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	14.8	31.2	31.4	36.6	14.2	14.2	52.8	42.6	43.0	54.8	0.0	43.1
Incr Delay (d2), s/veh	1.0	24.2	26.8	42.7	1.6	1.8	45.9	37.6	102.9	2.7	0.0	6.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q (50%), veh/ln	3.8	24.6	24.6	20.8	8.3	7.8	2.3	15.0	19.3	0.4	0.0	3.5
Lane Grp Delay (d), s/veh	15.8	55.4	58.2	79.4	15.9	16.0	98.7	80.3	145.9	57.5	0.0	49.2
Lane Grp LOS	B	E	E	F	B	B	F	F	F	E		D
Approach Vol, veh/h		1738			1538			908			145	
Approach Delay, s/veh		50.6			37.8			111.7			50.6	
Approach LOS		D			D			F			D	

Timer												
Assigned Phs	7	4		3	8		5	2			6	
Phs Duration (G+Y+Rc), s	15.4	50.0		32.0	66.6		8.0	28.0			20.0	
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0		4.0	4.0			4.0	
Max Green Setting (Gmax), s	17.0	46.0		28.0	57.0		4.0	24.0			16.0	
Max Q Clear Time (g_c+I1), s	11.1	45.9		30.0	20.5		5.5	26.0			18.0	
Green Ext Time (p_c), s	0.4	0.1		0.0	25.0		0.0	0.0			0.0	

Intersection Summary												
HCM 2010 Ctrl Delay			58.9									
HCM 2010 LOS			E									

Notes

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	60	1143	60	290	1064	53	111	112	402	96	204	155
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow veh/h/ln	186.3	186.3	190.0	186.3	186.3	190.0	186.3	186.3	186.3	186.3	186.3	190.0
Lanes	1	2	0	1	2	0	2	1	1	2	1	0
Cap, veh/h	263	1351	97	364	1764	108	157	630	536	525	243	199
Arrive On Green	0.04	0.39	0.39	0.16	0.51	0.51	0.05	0.34	0.34	0.26	0.26	0.26
Sat Flow, veh/h	1774	3436	246	1774	3475	213	3442	1863	1583	1536	948	777
Grp Volume(v), veh/h	87	680	666	337	620	608	135	170	462	126	0	464
Grp Sat Flow(s),veh/h/ln	1774	1863	1819	1774	1863	1825	1721	1863	1583	768	0	1726
Q Serve(g_s), s	3.2	38.1	38.3	15.3	26.8	26.9	4.3	7.3	29.8	7.3	0.0	28.0
Cycle Q Clear(g_c), s	3.2	38.1	38.3	15.3	26.8	26.9	4.3	7.3	29.8	7.3	0.0	28.0
Prop In Lane	1.00		0.14	1.00		0.12	1.00		1.00	1.00		0.45
Lane Grp Cap(c), veh/h	263	733	715	364	946	927	157	630	536	525	0	442
V/C Ratio(X)	0.33	0.93	0.93	0.92	0.66	0.66	0.86	0.27	0.86	0.24	0.00	1.05
Avail Cap(c_a), veh/h	298	733	715	375	946	927	157	630	536	525	0	442
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	19.4	31.7	31.8	34.6	19.9	19.9	51.8	26.3	33.8	33.0	0.0	40.7
Incr Delay (d2), s/veh	0.7	19.7	20.5	27.9	3.5	3.6	34.7	1.1	16.6	1.1	0.0	56.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q (50%), veh/ln	1.4	21.2	20.9	12.2	12.5	12.3	2.6	3.5	13.9	1.5	0.0	19.0
Lane Grp Delay (d), s/veh	20.1	51.4	52.2	62.5	23.4	23.5	86.6	27.4	50.4	34.0	0.0	97.2
Lane Grp LOS	C	D	D	E	C	C	F	C	D	C		F
Approach Vol, veh/h		1433			1565			767			590	
Approach Delay, s/veh		49.9			31.9			51.7			83.7	
Approach LOS		D			C			D			F	

Timer												
Assigned Phs	7	4		3	8		5	2			6	
Phs Duration (G+Y+Rc), s	8.8	47.0		21.3	59.5		9.0	41.0			32.0	
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0		4.0	4.0			4.0	
Max Green Setting (Gmax), s	7.0	43.0		18.0	54.0		5.0	37.0			28.0	
Max Q Clear Time (g_c+I1), s	5.2	40.3		17.3	28.9		6.3	31.8			30.0	
Green Ext Time (p_c), s	0.0	2.5		0.1	19.3		0.0	2.8			0.0	

Intersection Summary												
HCM 2010 Ctrl Delay			48.3									
HCM 2010 LOS			D									

Notes

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	104	172	32	48	31	31	41	913	273	103	727	58
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow veh/h/ln	186.3	186.3	186.3	186.3	186.3	186.3	186.3	186.3	190.0	186.3	186.3	190.0
Lanes	1	1	1	1	1	1	1	2	0	1	2	0
Cap, veh/h	356	328	279	170	217	185	414	1609	470	268	1996	205
Arrive On Green	0.10	0.18	0.18	0.04	0.12	0.12	0.03	0.58	0.58	0.05	0.60	0.60
Sat Flow, veh/h	1774	1863	1583	1774	1863	1583	1774	2773	810	1774	3324	342
Grp Volume(v), veh/h	179	277	52	56	56	48	56	743	699	145	458	443
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	1863	1583	1774	1863	1720	1774	1863	1802
Q Serve(g_s), s	8.2	14.9	2.9	2.8	2.8	2.9	1.3	28.8	29.6	3.2	13.4	13.4
Cycle Q Clear(g_c), s	8.2	14.9	2.9	2.8	2.8	2.9	1.3	28.8	29.6	3.2	13.4	13.4
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.47	1.00		0.19
Lane Grp Cap(c), veh/h	356	328	279	170	217	185	414	1081	998	268	1119	1082
V/C Ratio(X)	0.50	0.84	0.19	0.33	0.26	0.26	0.14	0.69	0.70	0.54	0.41	0.41
Avail Cap(c_a), veh/h	356	433	368	172	325	276	428	1081	998	367	1119	1082
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	29.4	41.2	36.2	38.5	41.5	41.5	8.7	15.1	15.3	14.9	10.9	10.9
Incr Delay (d2), s/veh	1.1	11.2	0.3	1.1	0.6	0.7	0.1	3.6	4.1	1.7	1.1	1.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q (50%), veh/ln	3.7	8.1	1.2	1.3	1.4	1.2	0.5	13.0	12.4	1.6	5.8	5.6
Lane Grp Delay (d), s/veh	30.5	52.4	36.6	39.6	42.1	42.3	8.9	18.7	19.4	16.6	12.0	12.1
Lane Grp LOS	C	D	D	D	D	D	A	B	B	B	B	B
Approach Vol, veh/h		508			160			1498			1046	
Approach Delay, s/veh		43.1			41.3			18.7			12.7	
Approach LOS		D			D			B			B	

Timer												
Assigned Phs	7	4		3	8		5	2		1	6	
Phs Duration (G+Y+Rc), s	14.0	22.2		7.9	16.1		7.2	63.9		9.3	66.0	
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Max Green Setting (Gmax), s	10.0	24.0		4.0	18.0		4.0	55.0		11.0	62.0	
Max Q Clear Time (g_c+I1), s	10.2	16.9		4.8	4.9		3.3	31.6		5.2	15.4	
Green Ext Time (p_c), s	0.0	1.3		0.0	1.9		0.0	16.7		0.2	25.9	

Intersection Summary		
HCM 2010 Ctrl Delay		21.7
HCM 2010 LOS		C

Notes

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	101	107	122	169	118	80	71	902	107	89	1094	112
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow veh/h/ln	186.3	186.3	186.3	186.3	186.3	186.3	186.3	186.3	190.0	186.3	186.3	190.0
Lanes	1	1	1	1	1	1	1	2	0	1	2	0
Cap, veh/h	350	317	269	296	403	342	242	1591	265	316	1704	213
Arrive On Green	0.06	0.17	0.17	0.11	0.22	0.22	0.04	0.51	0.51	0.06	0.52	0.52
Sat Flow, veh/h	1774	1863	1583	1774	1863	1583	1774	3115	519	1774	3247	407
Grp Volume(v), veh/h	140	255	167	204	140	100	92	574	546	137	688	665
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	1863	1583	1774	1863	1771	1774	1863	1791
Q Serve(g_s), s	6.0	13.3	9.9	8.6	6.4	5.3	2.5	22.0	22.0	3.6	28.1	28.4
Cycle Q Clear(g_c), s	6.0	13.3	9.9	8.6	6.4	5.3	2.5	22.0	22.0	3.6	28.1	28.4
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.29	1.00		0.23
Lane Grp Cap(c), veh/h	350	317	269	296	403	342	242	951	904	316	977	940
V/C Ratio(X)	0.40	0.81	0.62	0.69	0.35	0.29	0.38	0.60	0.60	0.43	0.70	0.71
Avail Cap(c_a), veh/h	350	406	345	319	516	439	292	951	904	428	977	940
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	32.8	40.3	38.9	27.2	33.5	33.1	15.4	17.5	17.5	13.4	18.1	18.2
Incr Delay (d2), s/veh	0.7	8.9	2.3	5.7	0.5	0.5	1.0	2.8	3.0	0.9	4.2	4.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q (50%), veh/ln	3.1	7.1	4.2	4.6	3.1	2.2	1.0	10.2	9.7	1.4	13.2	12.8
Lane Grp Delay (d), s/veh	33.5	49.3	41.2	32.9	34.1	33.6	16.3	20.3	20.5	14.3	22.3	22.6
Lane Grp LOS	C	D	D	C	C	C	B	C	C	B	C	C
Approach Vol, veh/h		562			444			1212			1490	
Approach Delay, s/veh		42.9			33.4			20.1			21.7	
Approach LOS		D			C			C			C	

Timer												
Assigned Phs	7	4		3	8		5	2		1	6	
Phs Duration (G+Y+Rc), s	10.0	21.2		14.7	25.9		8.2	55.6		9.6	57.0	
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Max Green Setting (Gmax), s	6.0	22.0		12.0	28.0		7.0	48.0		12.0	53.0	
Max Q Clear Time (g_c+I1), s	8.0	15.3		10.6	8.4		4.5	24.0		5.6	30.4	
Green Ext Time (p_c), s	0.0	1.9		0.1	3.1		0.0	17.6		0.2	16.9	

Intersection Summary												
HCM 2010 Ctrl Delay			25.8									
HCM 2010 LOS			C									

Notes

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	104	172	32	57	31	49	41	913	291	139	727	58
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow veh/h/ln	186.3	186.3	186.3	186.3	186.3	186.3	186.3	186.3	190.0	186.3	186.3	190.0
Lanes	1	1	1	1	1	1	1	2	0	1	2	0
Cap, veh/h	348	323	274	166	217	184	417	1571	489	277	2016	207
Arrive On Green	0.09	0.17	0.17	0.04	0.12	0.12	0.03	0.58	0.58	0.06	0.61	0.61
Sat Flow, veh/h	1774	1863	1583	1774	1863	1583	1774	2728	848	1774	3324	342
Grp Volume(v), veh/h	179	277	52	66	56	75	56	755	709	196	458	443
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	1863	1583	1774	1863	1713	1774	1863	1802
Q Serve(g_s), s	8.4	15.2	3.0	3.4	2.9	4.6	1.4	30.5	31.6	4.2	13.5	13.5
Cycle Q Clear(g_c), s	8.4	15.2	3.0	3.4	2.9	4.6	1.4	30.5	31.6	4.2	13.5	13.5
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.50	1.00		0.19
Lane Grp Cap(c), veh/h	348	323	274	166	217	184	417	1073	987	277	1130	1093
V/C Ratio(X)	0.51	0.86	0.19	0.40	0.26	0.41	0.13	0.70	0.72	0.71	0.41	0.41
Avail Cap(c_a), veh/h	348	388	330	166	283	240	430	1073	987	387	1130	1093
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	30.5	42.4	37.3	39.6	42.5	43.2	9.0	15.9	16.2	18.8	10.8	10.8
Incr Delay (d2), s/veh	1.3	15.1	0.3	1.5	0.6	1.4	0.1	3.9	4.5	3.5	1.1	1.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q (50%), veh/ln	3.9	8.7	1.2	1.6	1.4	1.9	0.5	13.7	13.2	5.4	5.8	5.6
Lane Grp Delay (d), s/veh	31.8	57.4	37.6	41.2	43.1	44.7	9.1	19.8	20.7	22.3	11.9	11.9
Lane Grp LOS	C	E	D	D	D	D	A	B	C	C	B	B
Approach Vol, veh/h		508			197			1520			1097	
Approach Delay, s/veh		46.4			43.1			19.8			13.8	
Approach LOS		D			D			B			B	

Timer												
Assigned Phs	7	4		3	8		5	2		1	6	
Phs Duration (G+Y+Rc), s	14.0	22.3		8.0	16.3		7.2	64.8		10.5	68.0	
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Max Green Setting (Gmax), s	10.0	22.0		4.0	16.0		4.0	55.0		13.0	64.0	
Max Q Clear Time (g_c+I1), s	10.4	17.2		5.4	6.6		3.4	33.6		6.2	15.5	
Green Ext Time (p_c), s	0.0	1.0		0.0	1.6		0.0	15.8		0.3	26.9	

Intersection Summary	
HCM 2010 Ctrl Delay	23.3
HCM 2010 LOS	C

Notes

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	101	107	122	193	118	128	71	902	126	126	1094	112
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow veh/h/ln	186.3	186.3	186.3	186.3	186.3	186.3	186.3	186.3	190.0	186.3	186.3	190.0
Lanes	1	1	1	1	1	1	1	2	0	1	2	0
Cap, veh/h	360	315	268	317	407	346	237	1462	286	317	1664	208
Arrive On Green	0.07	0.17	0.17	0.12	0.22	0.22	0.04	0.48	0.48	0.07	0.51	0.51
Sat Flow, veh/h	1774	1863	1583	1774	1863	1583	1774	3029	592	1774	3247	407
Grp Volume(v), veh/h	140	255	167	233	140	160	92	590	558	194	688	665
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	1863	1583	1774	1863	1758	1774	1863	1791
Q Serve(g_s), s	6.6	13.4	9.9	9.9	6.4	8.9	2.6	24.3	24.4	5.1	29.0	29.2
Cycle Q Clear(g_c), s	6.6	13.4	9.9	9.9	6.4	8.9	2.6	24.3	24.4	5.1	29.0	29.2
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.34	1.00		0.23
Lane Grp Cap(c), veh/h	360	315	268	317	407	346	237	899	849	317	955	918
V/C Ratio(X)	0.39	0.81	0.62	0.74	0.34	0.46	0.39	0.66	0.66	0.61	0.72	0.72
Avail Cap(c_a), veh/h	360	385	328	351	514	437	283	899	849	451	955	918
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	32.0	40.6	39.2	26.8	33.5	34.5	16.5	19.9	19.9	16.0	19.1	19.2
Incr Delay (d2), s/veh	0.7	10.2	2.5	7.1	0.5	1.0	1.0	3.7	4.0	1.9	4.7	5.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q (50%), veh/ln	3.0	7.3	4.2	6.6	3.1	3.7	1.1	11.4	10.9	2.1	13.7	13.3
Lane Grp Delay (d), s/veh	32.7	50.8	41.7	33.8	34.0	35.5	17.5	23.6	23.8	17.9	23.8	24.2
Lane Grp LOS	C	D	D	C	C	D	B	C	C	B	C	C
Approach Vol, veh/h		562			533			1240			1547	
Approach Delay, s/veh		43.6			34.4			23.3			23.2	
Approach LOS		D			C			C			C	

Timer												
Assigned Phs	7	4		3	8		5	2		1	6	
Phs Duration (G+Y+Rc), s	11.0	21.1		16.0	26.2		8.3	53.0		11.3	56.0	
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Max Green Setting (Gmax), s	7.0	21.0		14.0	28.0		7.0	44.0		15.0	52.0	
Max Q Clear Time (g_c+I1), s	8.6	15.4		11.9	10.9		4.6	26.4		7.1	31.2	
Green Ext Time (p_c), s	0.0	1.8		0.1	3.2		0.0	14.0		0.3	16.0	

Intersection Summary		
HCM 2010 Ctrl Delay		27.7
HCM 2010 LOS		C

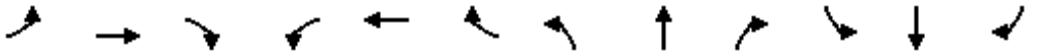
Notes

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	132	218	41	61	39	39	52	1157	346	131	922	74
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow veh/h/ln	186.3	186.3	186.3	186.3	186.3	186.3	186.3	186.3	190.0	186.3	186.3	190.0
Lanes	1	1	1	1	1	1	1	2	0	1	2	0
Cap, veh/h	346	356	302	147	288	245	324	1548	440	210	1977	204
Arrive On Green	0.07	0.19	0.19	0.04	0.15	0.15	0.03	0.55	0.55	0.07	0.60	0.60
Sat Flow, veh/h	1774	1863	1583	1774	1863	1583	1774	2792	793	1774	3322	343
Grp Volume(v), veh/h	228	352	67	71	71	60	71	922	906	185	581	562
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	1863	1583	1774	1863	1723	1774	1863	1802
Q Serve(g_s), s	8.0	20.7	3.9	3.7	3.7	3.7	1.9	48.1	54.3	6.3	20.2	20.2
Cycle Q Clear(g_c), s	8.0	20.7	3.9	3.7	3.7	3.7	1.9	48.1	54.3	6.3	20.2	20.2
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.46	1.00		0.19
Lane Grp Cap(c), veh/h	346	356	302	147	288	245	324	1033	955	210	1108	1072
V/C Ratio(X)	0.66	0.99	0.22	0.48	0.25	0.25	0.22	0.89	0.95	0.88	0.52	0.52
Avail Cap(c_a), veh/h	346	356	302	147	288	245	348	1033	955	210	1108	1072
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	35.9	44.4	37.6	38.6	40.9	40.9	11.1	21.6	23.0	33.4	13.1	13.1
Incr Delay (d2), s/veh	4.5	44.9	0.4	2.4	0.4	0.5	0.3	11.7	19.0	32.3	1.8	1.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q (50%), veh/ln	2.6	14.3	1.6	1.8	1.8	1.5	0.8	23.6	26.2	7.0	8.9	8.7
Lane Grp Delay (d), s/veh	40.5	89.3	38.0	41.0	41.3	41.4	11.4	33.3	42.0	65.7	14.9	14.9
Lane Grp LOS	D	F	D	D	D	D	B	C	D	E	B	B
Approach Vol, veh/h		647			202			1899			1328	
Approach Delay, s/veh		66.8			41.2			36.6			22.0	
Approach LOS		E			D			D			C	

Timer												
Assigned Phs	7	4		3	8		5	2		1	6	
Phs Duration (G+Y+Rc), s	12.0	25.0		8.0	21.0		7.5	65.0		12.0	69.5	
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Max Green Setting (Gmax), s	8.0	21.0		4.0	17.0		5.0	61.0		8.0	64.0	
Max Q Clear Time (g_c+I1), s	10.0	22.7		5.7	5.7		3.9	56.3		8.3	22.2	
Green Ext Time (p_c), s	0.0	0.0		0.0	2.3		0.0	4.5		0.0	33.1	

Intersection Summary	
HCM 2010 Ctrl Delay	36.9
HCM 2010 LOS	D

Notes



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	128	136	155	214	150	101	90	1143	136	113	1387	142
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow veh/h/ln	186.3	186.3	186.3	186.3	186.3	186.3	186.3	186.3	190.0	186.3	186.3	190.0
Lanes	1	1	1	1	1	1	1	2	0	1	2	0
Cap, veh/h	344	339	288	267	389	331	169	1556	258	246	1684	209
Arrive On Green	0.08	0.18	0.18	0.11	0.21	0.21	0.05	0.50	0.50	0.06	0.52	0.52
Sat Flow, veh/h	1774	1863	1583	1774	1863	1583	1774	3117	517	1774	3250	404
Grp Volume(v), veh/h	178	324	212	258	179	126	117	724	695	174	865	851
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	1863	1583	1774	1863	1771	1774	1863	1791
Q Serve(g_s), s	9.0	19.0	13.9	12.0	9.2	7.5	3.5	35.0	35.6	5.0	46.0	48.0
Cycle Q Clear(g_c), s	9.0	19.0	13.9	12.0	9.2	7.5	3.5	35.0	35.6	5.0	46.0	48.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.29	1.00		0.23
Lane Grp Cap(c), veh/h	344	339	288	267	389	331	169	930	884	246	965	928
V/C Ratio(X)	0.52	0.96	0.74	0.97	0.46	0.38	0.69	0.78	0.79	0.71	0.90	0.92
Avail Cap(c_a), veh/h	344	339	288	267	389	331	169	930	884	309	965	928
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	33.4	44.6	42.5	32.5	38.1	37.4	25.0	22.6	22.7	21.7	23.8	24.3
Incr Delay (d2), s/veh	1.3	37.4	9.5	45.4	0.8	0.7	11.3	6.4	7.0	5.4	12.7	15.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q (50%), veh/ln	4.1	12.5	6.4	8.9	4.5	3.1	3.8	16.9	16.6	5.2	23.1	23.5
Lane Grp Delay (d), s/veh	34.7	82.0	52.0	77.9	38.9	38.1	36.3	29.0	29.7	27.1	36.5	39.5
Lane Grp LOS	C	F	D	E	D	D	D	C	C	C	D	D
Approach Vol, veh/h		714			563			1536			1890	
Approach Delay, s/veh		61.3			56.6			29.9			37.0	
Approach LOS		E			E			C			D	

Timer												
Assigned Phs	7	4		3	8		5	2		1	6	
Phs Duration (G+Y+Rc), s	13.0	24.0		16.0	27.0		9.0	58.9		11.1	61.0	
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Max Green Setting (Gmax), s	9.0	20.0		12.0	23.0		5.0	51.0		11.0	57.0	
Max Q Clear Time (g_c+I1), s	11.0	21.0		14.0	11.2		5.5	37.6		7.0	50.0	
Green Ext Time (p_c), s	0.0	0.0		0.0	3.4		0.0	12.4		0.2	6.7	

Intersection Summary	
HCM 2010 Ctrl Delay	40.7
HCM 2010 LOS	D

Notes

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	132	218	41	70	39	57	52	1157	364	167	922	74
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow veh/h/ln	186.3	186.3	186.3	186.3	186.3	186.3	186.3	186.3	190.0	186.3	186.3	190.0
Lanes	1	1	1	1	1	1	1	2	0	1	2	0
Cap, veh/h	342	356	302	147	288	245	324	1455	433	243	1976	204
Arrive On Green	0.07	0.19	0.19	0.04	0.15	0.15	0.03	0.53	0.53	0.10	0.59	0.59
Sat Flow, veh/h	1774	1863	1583	1774	1863	1583	1774	2759	822	1774	3322	343
Grp Volume(v), veh/h	228	352	67	81	71	88	71	932	918	235	581	562
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	1863	1583	1774	1863	1718	1774	1863	1802
Q Serve(g_s), s	8.0	20.7	3.9	4.0	3.7	5.5	2.0	52.1	58.0	10.4	20.2	20.2
Cycle Q Clear(g_c), s	8.0	20.7	3.9	4.0	3.7	5.5	2.0	52.1	58.0	10.4	20.2	20.2
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.48	1.00		0.19
Lane Grp Cap(c), veh/h	342	356	302	147	288	245	324	982	906	243	1108	1072
V/C Ratio(X)	0.67	0.99	0.22	0.55	0.25	0.36	0.22	0.95	1.01	0.97	0.52	0.52
Avail Cap(c_a), veh/h	342	356	302	147	288	245	348	982	906	243	1108	1072
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	36.0	44.4	37.6	39.7	40.9	41.6	12.0	24.6	26.0	39.0	13.1	13.1
Incr Delay (d2), s/veh	4.8	44.9	0.4	4.3	0.4	0.9	0.3	18.8	33.2	48.5	1.8	1.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q (50%), veh/ln	2.6	14.3	1.6	2.1	1.8	2.3	0.8	27.4	31.0	9.8	8.9	8.7
Lane Grp Delay (d), s/veh	40.8	89.3	38.0	43.9	41.3	42.5	12.3	43.4	59.2	87.5	14.9	15.0
Lane Grp LOS	D	F	D	D	D	D	B	D	F	F	B	B
Approach Vol, veh/h		647			240			1921			1378	
Approach Delay, s/veh		66.9			42.6			49.8			27.3	
Approach LOS		E			D			D			C	

Timer												
Assigned Phs	7	4		3	8		5	2		1	6	
Phs Duration (G+Y+Rc), s	12.0	25.0		8.0	21.0		7.6	62.0		15.0	69.4	
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Max Green Setting (Gmax), s	8.0	21.0		4.0	17.0		5.0	58.0		11.0	64.0	
Max Q Clear Time (g_c+I1), s	10.0	22.7		6.0	7.5		4.0	60.0		12.4	22.2	
Green Ext Time (p_c), s	0.0	0.0		0.0	2.2		0.0	0.0		0.0	33.4	

Intersection Summary												
HCM 2010 Ctrl Delay			44.6									
HCM 2010 LOS			D									

Notes

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	128	136	155	238	150	149	90	1143	155	150	1387	142
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow veh/h/ln	186.3	186.3	186.3	186.3	186.3	186.3	186.3	186.3	190.0	186.3	186.3	190.0
Lanes	1	1	1	1	1	1	1	2	0	1	2	0
Cap, veh/h	347	339	288	283	406	345	164	1425	269	260	1655	206
Arrive On Green	0.08	0.18	0.18	0.12	0.22	0.22	0.05	0.47	0.47	0.09	0.51	0.51
Sat Flow, veh/h	1774	1863	1583	1774	1863	1583	1774	3049	575	1774	3250	404
Grp Volume(v), veh/h	178	324	212	287	179	186	117	739	708	231	865	851
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	1863	1583	1774	1863	1761	1774	1863	1791
Q Serve(g_s), s	9.0	19.0	13.9	13.0	9.1	11.4	3.8	38.5	39.4	7.5	46.8	48.9
Cycle Q Clear(g_c), s	9.0	19.0	13.9	13.0	9.1	11.4	3.8	38.5	39.4	7.5	46.8	48.9
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.33	1.00		0.23
Lane Grp Cap(c), veh/h	347	339	288	283	406	345	164	870	823	260	948	912
V/C Ratio(X)	0.51	0.96	0.74	1.01	0.44	0.54	0.71	0.85	0.86	0.89	0.91	0.93
Avail Cap(c_a), veh/h	347	339	288	283	406	345	164	870	823	283	948	912
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	33.3	44.6	42.5	30.9	37.2	38.1	25.4	25.9	26.1	27.1	24.7	25.2
Incr Delay (d2), s/veh	1.3	37.4	9.5	56.8	0.8	1.7	13.4	10.1	11.4	25.7	14.4	17.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q (50%), veh/ln	4.1	12.5	6.4	10.3	4.4	4.8	3.9	19.3	18.9	5.0	24.0	24.5
Lane Grp Delay (d), s/veh	34.6	82.0	52.0	87.7	37.9	39.8	38.8	36.0	37.5	52.8	39.2	42.7
Lane Grp LOS	C	F	D	F	D	D	D	D	D	D	D	D
Approach Vol, veh/h		714			652			1564			1947	
Approach Delay, s/veh		61.3			60.4			36.9			42.3	
Approach LOS		E			E			D			D	

Timer												
Assigned Phs	7	4		3	8		5	2		1	6	
Phs Duration (G+Y+Rc), s	13.0	24.0		17.0	28.0		9.0	55.4		13.6	60.0	
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Max Green Setting (Gmax), s	9.0	20.0		13.0	24.0		5.0	50.0		11.0	56.0	
Max Q Clear Time (g_c+I1), s	11.0	21.0		15.0	13.4		5.8	41.4		9.5	50.9	
Green Ext Time (p_c), s	0.0	0.0		0.0	3.4		0.0	8.2		0.1	5.0	

Intersection Summary	
HCM 2010 Ctrl Delay	45.8
HCM 2010 LOS	D

Notes

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	424	44	65	137	28	157
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.78	0.52	0.96	0.88	0.70	0.68
Hourly flow rate (vph)	544	85	68	156	40	231
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						4
Median type	TWLTL			TWLTL		
Median storage veh)	2			2		
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			628		877	586
vC1, stage 1 conf vol					586	
vC2, stage 2 conf vol					291	
vCu, unblocked vol			628		877	586
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)					5.4	
tF (s)			2.2		3.5	3.3
p0 queue free %			93		92	55
cM capacity (veh/h)			954		493	510

Direction, Lane #	EB 1	WB 1	WB 2	NB 1
Volume Total	628	68	156	271
Volume Left	0	68	0	40
Volume Right	85	0	0	231
cSH	1700	954	1700	599
Volume to Capacity	0.37	0.07	0.09	0.45
Queue Length 95th (ft)	0	6	0	59
Control Delay (s)	0.0	9.1	0.0	17.0
Lane LOS		A		C
Approach Delay (s)	0.0	2.7		17.0
Approach LOS				C

Intersection Summary			
Average Delay	4.7		
Intersection Capacity Utilization	41.9%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	155	54	205	337	46	123
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.86	0.68	0.90	0.85	0.82	0.88
Hourly flow rate (vph)	180	79	228	396	56	140
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						4
Median type	TWLTL			TWLTL		
Median storage veh)	2			2		
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			260		1072	220
vC1, stage 1 conf vol					220	
vC2, stage 2 conf vol					852	
vCu, unblocked vol			260		1072	220
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)					5.4	
tF (s)			2.2		3.5	3.3
p0 queue free %			83		83	83
cM capacity (veh/h)			1305		331	820

Direction, Lane #	EB 1	WB 1	WB 2	NB 1
Volume Total	260	228	396	196
Volume Left	0	228	0	56
Volume Right	79	0	0	140
cSH	1700	1305	1700	1149
Volume to Capacity	0.15	0.17	0.23	0.17
Queue Length 95th (ft)	0	16	0	15
Control Delay (s)	0.0	8.3	0.0	12.5
Lane LOS		A		B
Approach Delay (s)	0.0	3.0		12.5
Approach LOS				B

Intersection Summary			
Average Delay	4.0		
Intersection Capacity Utilization	36.1%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	442	80	83	146	46	166
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.78	0.52	0.96	0.88	0.70	0.68
Hourly flow rate (vph)	567	154	86	166	66	244
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						4
Median type	TWLTL			TWLTL		
Median storage veh)	2			2		
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			721		982	644
vC1, stage 1 conf vol					644	
vC2, stage 2 conf vol					339	
vCu, unblocked vol			721		982	644
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)					5.4	
tF (s)			2.2		3.5	3.3
p0 queue free %			90		85	48
cM capacity (veh/h)			881		453	473

Direction, Lane #	EB 1	WB 1	WB 2	NB 1
Volume Total	721	86	166	310
Volume Left	0	86	0	66
Volume Right	154	0	0	244
cSH	1700	881	1700	600
Volume to Capacity	0.42	0.10	0.10	0.52
Queue Length 95th (ft)	0	8	0	74
Control Delay (s)	0.0	9.5	0.0	19.1
Lane LOS		A		C
Approach Delay (s)	0.0	3.3		19.1
Approach LOS				C

Intersection Summary			
Average Delay	5.3		
Intersection Capacity Utilization	46.1%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	174	91	224	361	94	147
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.86	0.68	0.90	0.85	0.82	0.88
Hourly flow rate (vph)	202	134	249	425	115	167
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						4
Median type	TWLTL			TWLTL		
Median storage veh)	2			2		
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			336		1192	269
vC1, stage 1 conf vol					269	
vC2, stage 2 conf vol					922	
vCu, unblocked vol			336		1192	269
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)					5.4	
tF (s)			2.2		3.5	3.3
p0 queue free %			80		61	78
cM capacity (veh/h)			1223		295	769

Direction, Lane #	EB 1	WB 1	WB 2	NB 1
Volume Total	336	249	425	282
Volume Left	0	249	0	115
Volume Right	134	0	0	167
cSH	1700	1223	1700	725
Volume to Capacity	0.20	0.20	0.25	0.39
Queue Length 95th (ft)	0	19	0	46
Control Delay (s)	0.0	8.7	0.0	16.6
Lane LOS		A		C
Approach Delay (s)	0.0	3.2		16.6
Approach LOS				C

Intersection Summary			
Average Delay	5.3		
Intersection Capacity Utilization	42.3%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	537	56	82	174	35	199
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.78	0.52	0.96	0.88	0.70	0.68
Hourly flow rate (vph)	688	108	85	198	50	293
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						4
Median type	TWLTL			TWLTL		
Median storage veh)	2			2		
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			796		1111	742
vC1, stage 1 conf vol					742	
vC2, stage 2 conf vol					369	
vCu, unblocked vol			796		1111	742
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)					5.4	
tF (s)			2.2		3.5	3.3
p0 queue free %			90		88	30
cM capacity (veh/h)			826		409	415

Direction, Lane #	EB 1	WB 1	WB 2	NB 1
Volume Total	796	85	198	343
Volume Left	0	85	0	50
Volume Right	108	0	0	293
cSH	1700	826	1700	486
Volume to Capacity	0.47	0.10	0.12	0.70
Queue Length 95th (ft)	0	9	0	137
Control Delay (s)	0.0	9.9	0.0	29.4
Lane LOS		A		D
Approach Delay (s)	0.0	3.0		29.4
Approach LOS				D

Intersection Summary			
Average Delay	7.7		
Intersection Capacity Utilization	50.6%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	196	68	260	427	58	156
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.86	0.68	0.90	0.85	0.82	0.88
Hourly flow rate (vph)	228	100	289	502	71	177
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						4
Median type	TWLTL			TWLTL		
Median storage veh)	2			2		
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			328		1358	278
vC1, stage 1 conf vol					278	
vC2, stage 2 conf vol					1080	
vCu, unblocked vol			328		1358	278
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)					5.4	
tF (s)			2.2		3.5	3.3
p0 queue free %			77		71	77
cM capacity (veh/h)			1232		240	761

Direction, Lane #	EB 1	WB 1	WB 2	NB 1
Volume Total	328	289	502	248
Volume Left	0	289	0	71
Volume Right	100	0	0	177
cSH	1700	1232	1700	841
Volume to Capacity	0.19	0.23	0.30	0.29
Queue Length 95th (ft)	0	23	0	31
Control Delay (s)	0.0	8.8	0.0	15.4
Lane LOS		A		C
Approach Delay (s)	0.0	3.2		15.4
Approach LOS				C

Intersection Summary			
Average Delay	4.7		
Intersection Capacity Utilization	42.2%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	555	92	100	183	53	208
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.78	0.52	0.96	0.88	0.70	0.68
Hourly flow rate (vph)	712	177	104	208	76	306
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						4
Median type	TWLTL			TWLTL		
Median storage veh)	2			2		
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			888		1216	800
vC1, stage 1 conf vol					800	
vC2, stage 2 conf vol					416	
vCu, unblocked vol			888		1216	800
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)					5.4	
tF (s)			2.2		3.5	3.3
p0 queue free %			86		80	21
cM capacity (veh/h)			762		376	385

Direction, Lane #	EB 1	WB 1	WB 2	NB 1
Volume Total	888	104	208	382
Volume Left	0	104	0	76
Volume Right	177	0	0	306
cSH	1700	762	1700	480
Volume to Capacity	0.52	0.14	0.12	0.79
Queue Length 95th (ft)	0	12	0	182
Control Delay (s)	0.0	10.5	0.0	37.2
Lane LOS		B		E
Approach Delay (s)	0.0	3.5		37.2
Approach LOS				E

Intersection Summary			
Average Delay	9.7		
Intersection Capacity Utilization	54.3%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	215	105	279	451	106	180
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.86	0.68	0.90	0.85	0.82	0.88
Hourly flow rate (vph)	250	154	310	531	129	205
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						4
Median type	TWLTL			TWLTL		
Median storage veh)	2			2		
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			404		1478	327
vC1, stage 1 conf vol					327	
vC2, stage 2 conf vol					1151	
vCu, unblocked vol			404		1478	327
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)					5.4	
tF (s)			2.2		3.5	3.3
p0 queue free %			73		39	71
cM capacity (veh/h)			1154		212	714

Direction, Lane #	EB 1	WB 1	WB 2	NB 1
Volume Total	404	310	531	334
Volume Left	0	310	0	129
Volume Right	154	0	0	205
cSH	1700	1154	1700	547
Volume to Capacity	0.24	0.27	0.31	0.61
Queue Length 95th (ft)	0	27	0	102
Control Delay (s)	0.0	9.3	0.0	25.0
Lane LOS		A		C
Approach Delay (s)	0.0	3.4		25.0
Approach LOS				C

Intersection Summary			
Average Delay	7.1		
Intersection Capacity Utilization	49.0%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	62	934	20	38	519	169	38	96	81	32	15	10
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow veh/h/ln	186.3	186.3	190.0	186.3	186.3	190.0	186.3	186.3	186.3	186.3	186.3	190.0
Lanes	1	2	0	1	2	0	1	1	1	1	1	0
Cap, veh/h	451	2302	97	351	1685	611	320	385	327	228	194	162
Arrive On Green	0.04	0.65	0.65	0.03	0.65	0.65	0.21	0.21	0.21	0.21	0.21	0.21
Sat Flow, veh/h	1774	3550	150	1774	2612	946	1357	1863	1583	1105	941	784
Grp Volume(v), veh/h	93	598	589	64	474	432	52	135	135	48	0	44
Grp Sat Flow(s),veh/h/ln	1774	1863	1836	1774	1863	1696	1357	1863	1583	1105	0	1724
Q Serve(g_s), s	1.9	17.7	17.7	1.3	12.9	12.9	3.5	6.6	7.9	4.1	0.0	2.2
Cycle Q Clear(g_c), s	1.9	17.7	17.7	1.3	12.9	12.9	5.7	6.6	7.9	10.7	0.0	2.2
Prop In Lane	1.00		0.08	1.00		0.56	1.00		1.00	1.00		0.45
Lane Grp Cap(c), veh/h	451	1208	1191	351	1202	1094	320	385	327	228	0	357
V/C Ratio(X)	0.21	0.49	0.49	0.18	0.39	0.39	0.16	0.35	0.41	0.21	0.00	0.12
Avail Cap(c_a), veh/h	539	1208	1191	411	1202	1094	320	385	327	228	0	357
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	6.6	9.7	9.7	7.4	9.0	9.0	36.7	36.1	36.6	40.7	0.0	34.3
Incr Delay (d2), s/veh	0.2	1.4	1.5	0.2	1.0	1.1	1.1	2.5	3.8	2.1	0.0	0.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q (50%), veh/ln	0.7	7.5	7.4	0.5	5.3	4.9	1.3	3.4	3.4	1.3	0.0	1.0
Lane Grp Delay (d), s/veh	6.8	11.1	11.2	7.6	10.0	10.1	37.7	38.6	40.4	42.8	0.0	35.1
Lane Grp LOS	A	B	B	A	A	B	D	D	D	D		D
Approach Vol, veh/h		1280			970			322			92	
Approach Delay, s/veh		10.8			9.8			39.2			39.1	
Approach LOS		B			A			D			D	

Timer												
Assigned Phs	7	4		3	8			2			6	
Phs Duration (G+Y+Rc), s	7.7	73.0		7.4	72.7			26.0			26.0	
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0			4.0			4.0	
Max Green Setting (Gmax), s	9.0	69.0		7.0	67.0			22.0			22.0	
Max Q Clear Time (g_c+I1), s	3.9	19.7		3.3	14.9			9.9			12.7	
Green Ext Time (p_c), s	0.1	21.6		0.0	22.0			1.4			1.2	

Intersection Summary	
HCM 2010 Ctrl Delay	14.9
HCM 2010 LOS	B

Notes

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	28	845	19	72	1232	96	18	27	44	167	117	54
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow veh/h/ln	186.3	186.3	190.0	186.3	186.3	190.0	186.3	186.3	186.3	186.3	186.3	190.0
Lanes	1	2	0	1	2	0	1	1	1	1	1	0
Cap, veh/h	242	2148	54	385	2047	165	245	483	410	385	326	134
Arrive On Green	0.03	0.59	0.59	0.04	0.60	0.60	0.26	0.26	0.26	0.26	0.26	0.26
Sat Flow, veh/h	1774	3619	90	1774	3404	274	1156	1863	1583	1304	1256	515
Grp Volume(v), veh/h	48	494	490	92	731	716	28	36	52	184	0	220
Grp Sat Flow(s),veh/h/ln	1774	1863	1847	1774	1863	1814	1156	1863	1583	1304	0	1772
Q Serve(g_s), s	1.1	15.9	15.9	2.1	27.8	28.1	2.3	1.6	2.7	13.4	0.0	11.3
Cycle Q Clear(g_c), s	1.1	15.9	15.9	2.1	27.8	28.1	13.6	1.6	2.7	15.0	0.0	11.3
Prop In Lane	1.00		0.05	1.00		0.15	1.00		1.00	1.00		0.29
Lane Grp Cap(c), veh/h	242	1106	1096	385	1121	1092	245	483	410	385	0	459
V/C Ratio(X)	0.20	0.45	0.45	0.24	0.65	0.66	0.11	0.07	0.13	0.48	0.00	0.48
Avail Cap(c_a), veh/h	274	1106	1096	420	1121	1092	245	483	410	385	0	459
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	11.9	12.1	12.1	9.0	14.1	14.2	39.6	30.2	30.7	35.9	0.0	33.9
Incr Delay (d2), s/veh	0.4	1.3	1.3	0.3	3.0	3.1	0.9	0.3	0.6	4.2	0.0	3.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q (50%), veh/ln	0.4	6.9	6.8	0.8	12.5	12.3	0.7	0.8	1.1	4.9	0.0	5.6
Lane Grp Delay (d), s/veh	12.3	13.4	13.5	9.3	17.1	17.3	40.6	30.5	31.3	40.1	0.0	37.4
Lane Grp LOS	B	B	B	A	B	B	D	C	C	D		D
Approach Vol, veh/h		1032			1539			116			404	
Approach Delay, s/veh		13.4			16.7			33.3			38.6	
Approach LOS		B			B			C			D	

Timer												
Assigned Phs	7	4		3	8			2			6	
Phs Duration (G+Y+Rc), s	7.1	68.1		7.9	69.0			32.0			32.0	
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0			4.0			4.0	
Max Green Setting (Gmax), s	5.0	64.0		6.0	65.0			28.0			28.0	
Max Q Clear Time (g_c+I1), s	3.1	17.9		4.1	30.1			15.6			17.0	
Green Ext Time (p_c), s	0.0	26.7		0.0	22.6			1.9			1.8	

Intersection Summary												
HCM 2010 Ctrl Delay			19.1									
HCM 2010 LOS			B									

Notes

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	80	934	20	38	519	199	38	105	81	47	19	19
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow veh/h/ln	186.3	186.3	190.0	186.3	186.3	190.0	186.3	186.3	186.3	186.3	186.3	190.0
Lanes	1	2	0	1	2	0	1	1	1	1	1	0
Cap, veh/h	432	2269	96	345	1560	666	310	403	342	230	165	202
Arrive On Green	0.04	0.64	0.64	0.03	0.63	0.63	0.22	0.22	0.22	0.22	0.22	0.22
Sat Flow, veh/h	1774	3550	150	1774	2480	1059	1326	1863	1583	1092	763	935
Grp Volume(v), veh/h	119	598	589	64	500	449	52	148	135	70	0	69
Grp Sat Flow(s),veh/h/ln	1774	1863	1836	1774	1863	1676	1326	1863	1583	1092	0	1698
Q Serve(g_s), s	2.4	18.1	18.2	1.3	14.5	14.5	3.5	7.2	7.8	6.2	0.0	3.5
Cycle Q Clear(g_c), s	2.4	18.1	18.2	1.3	14.5	14.5	7.1	7.2	7.8	13.4	0.0	3.5
Prop In Lane	1.00		0.08	1.00		0.63	1.00		1.00	1.00		0.55
Lane Grp Cap(c), veh/h	432	1191	1174	345	1172	1054	310	403	342	230	0	367
V/C Ratio(X)	0.28	0.50	0.50	0.19	0.43	0.43	0.17	0.37	0.39	0.30	0.00	0.19
Avail Cap(c_a), veh/h	575	1191	1174	405	1172	1054	310	403	342	230	0	367
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	7.2	10.2	10.2	7.9	10.0	10.0	37.0	35.5	35.7	41.2	0.0	34.1
Incr Delay (d2), s/veh	0.3	1.5	1.5	0.3	1.1	1.3	1.2	2.6	3.4	3.4	0.0	1.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q (50%), veh/ln	0.9	7.8	7.7	0.5	6.2	5.6	1.3	3.7	3.3	1.9	0.0	1.6
Lane Grp Delay (d), s/veh	7.6	11.7	11.7	8.2	11.1	11.3	38.1	38.1	39.1	44.6	0.0	35.2
Lane Grp LOS	A	B	B	A	B	B	D	D	D	D		D
Approach Vol, veh/h		1306			1013			335			139	
Approach Delay, s/veh		11.3			11.0			38.5			39.9	
Approach LOS		B			B			D			D	

Timer												
Assigned Phs	7	4		3	8			2			6	
Phs Duration (G+Y+Rc), s	8.5	72.0		7.4	70.9			27.0			27.0	
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0			4.0			4.0	
Max Green Setting (Gmax), s	13.0	68.0		7.0	62.0			23.0			23.0	
Max Q Clear Time (g_c+I1), s	4.4	20.2		3.3	16.5			9.8			15.4	
Green Ext Time (p_c), s	0.2	22.1		0.0	21.6			1.8			1.3	

Intersection Summary	
HCM 2010 Ctrl Delay	15.9
HCM 2010 LOS	B

Notes

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	47	845	19	72	1232	127	18	36	44	208	129	78
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow veh/h/ln	186.3	186.3	190.0	186.3	186.3	190.0	186.3	186.3	186.3	186.3	186.3	190.0
Lanes	1	2	0	1	2	0	1	1	1	1	1	0
Cap, veh/h	230	2077	52	372	1910	203	232	517	440	400	316	171
Arrive On Green	0.03	0.57	0.57	0.04	0.58	0.58	0.28	0.28	0.28	0.28	0.28	0.28
Sat Flow, veh/h	1774	3619	90	1774	3312	352	1110	1863	1583	1290	1139	616
Grp Volume(v), veh/h	81	494	490	92	750	732	28	48	52	229	0	265
Grp Sat Flow(s),veh/h/ln	1774	1863	1847	1774	1863	1801	1110	1863	1583	1290	0	1754
Q Serve(g_s), s	2.0	16.6	16.6	2.3	30.8	31.3	2.4	2.1	2.6	17.3	0.0	13.9
Cycle Q Clear(g_c), s	2.0	16.6	16.6	2.3	30.8	31.3	16.3	2.1	2.6	19.4	0.0	13.9
Prop In Lane	1.00		0.05	1.00		0.20	1.00		1.00	1.00		0.35
Lane Grp Cap(c), veh/h	230	1069	1060	372	1074	1039	232	517	440	400	0	487
V/C Ratio(X)	0.35	0.46	0.46	0.25	0.70	0.70	0.12	0.09	0.12	0.57	0.00	0.54
Avail Cap(c_a), veh/h	316	1069	1060	404	1074	1039	232	517	440	400	0	487
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	14.4	13.3	13.3	10.1	16.2	16.3	40.1	28.9	29.1	36.1	0.0	33.2
Incr Delay (d2), s/veh	0.9	1.4	1.5	0.3	3.8	4.0	1.1	0.4	0.5	5.8	0.0	4.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q (50%), veh/ln	0.8	7.4	7.4	0.9	13.8	13.8	0.7	1.0	1.1	6.3	0.0	6.8
Lane Grp Delay (d), s/veh	15.4	14.8	14.8	10.4	20.0	20.3	41.2	29.3	29.7	41.9	0.0	37.5
Lane Grp LOS	B	B	B	B	B	C	D	C	C	D		D
Approach Vol, veh/h		1065			1574			128			494	
Approach Delay, s/veh		14.8			19.6			32.1			39.6	
Approach LOS		B			B			C			D	

Timer												
Assigned Phs	7	4		3	8			2			6	
Phs Duration (G+Y+Rc), s	7.7	66.0		8.0	66.3			34.0			34.0	
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0			4.0			4.0	
Max Green Setting (Gmax), s	9.0	62.0		6.0	59.0			30.0			30.0	
Max Q Clear Time (g_c+I1), s	4.0	18.6		4.3	33.3			18.3			21.4	
Green Ext Time (p_c), s	0.1	26.4		0.0	18.6			2.3			2.0	

Intersection Summary	
HCM 2010 Ctrl Delay	21.5
HCM 2010 LOS	C

Notes

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	79	1184	25	48	658	214	48	122	103	41	19	13
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow veh/h/ln	186.3	186.3	190.0	186.3	186.3	190.0	186.3	186.3	186.3	186.3	186.3	190.0
Lanes	1	2	0	1	2	0	1	1	1	1	1	0
Cap, veh/h	380	2365	98	279	1725	624	282	349	297	176	176	147
Arrive On Green	0.04	0.67	0.67	0.03	0.66	0.66	0.19	0.19	0.19	0.19	0.19	0.19
Sat Flow, veh/h	1774	3552	147	1774	2613	945	1341	1863	1583	1032	938	786
Grp Volume(v), veh/h	118	756	748	81	601	549	66	172	172	61	0	57
Grp Sat Flow(s),veh/h/ln	1774	1863	1837	1774	1863	1696	1341	1863	1583	1032	0	1724
Q Serve(g_s), s	2.2	24.3	24.5	1.6	17.3	17.3	4.6	8.8	10.6	6.0	0.0	3.0
Cycle Q Clear(g_c), s	2.2	24.3	24.5	1.6	17.3	17.3	7.6	8.8	10.6	14.8	0.0	3.0
Prop In Lane	1.00		0.08	1.00		0.56	1.00		1.00	1.00		0.46
Lane Grp Cap(c), veh/h	380	1240	1223	279	1230	1120	282	349	297	176	0	323
V/C Ratio(X)	0.31	0.61	0.61	0.29	0.49	0.49	0.23	0.49	0.58	0.35	0.00	0.18
Avail Cap(c_a), veh/h	493	1240	1223	335	1230	1120	282	349	297	176	0	323
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	6.9	10.0	10.0	8.7	9.1	9.1	39.6	38.8	39.5	45.4	0.0	36.4
Incr Delay (d2), s/veh	0.5	2.2	2.3	0.6	1.4	1.5	1.9	4.9	8.0	5.3	0.0	1.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q (50%), veh/ln	0.8	10.2	10.1	0.6	7.3	6.7	1.7	4.7	4.8	1.9	0.0	1.4
Lane Grp Delay (d), s/veh	7.4	12.3	12.3	9.3	10.5	10.6	41.5	43.7	47.5	50.7	0.0	37.6
Lane Grp LOS	A	B	B	A	B	B	D	D	D	D		D
Approach Vol, veh/h		1622			1231			410			118	
Approach Delay, s/veh		11.9			10.5			44.9			44.4	
Approach LOS		B			B			D			D	
Timer												
Assigned Phs	7	4		3	8			2			6	
Phs Duration (G+Y+Rc), s	8.2	75.0		7.6	74.4			24.0			24.0	
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0			4.0			4.0	
Max Green Setting (Gmax), s	11.0	71.0		7.0	67.0			20.0			20.0	
Max Q Clear Time (g_c+I1), s	4.2	26.5		3.6	19.3			12.6			16.8	
Green Ext Time (p_c), s	0.1	29.7		0.0	31.1			1.5			0.8	
Intersection Summary												
HCM 2010 Ctrl Delay			16.5									
HCM 2010 LOS			B									
Notes												

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	35	1071	24	91	1562	122	23	34	56	212	148	68
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow veh/h/ln	186.3	186.3	190.0	186.3	186.3	190.0	186.3	186.3	186.3	186.3	186.3	190.0
Lanes	1	2	0	1	2	0	1	1	1	1	1	0
Cap, veh/h	175	2176	54	318	2087	167	183	460	391	357	310	127
Arrive On Green	0.03	0.60	0.60	0.04	0.61	0.61	0.25	0.25	0.25	0.25	0.25	0.25
Sat Flow, veh/h	1774	3621	89	1774	3406	272	1097	1863	1583	1277	1255	516
Grp Volume(v), veh/h	60	626	621	117	920	915	36	45	66	233	0	278
Grp Sat Flow(s),veh/h/ln	1774	1863	1847	1774	1863	1815	1097	1863	1583	1277	0	1772
Q Serve(g_s), s	1.4	22.1	22.1	2.7	41.3	43.1	3.3	2.0	3.6	18.8	0.0	15.3
Cycle Q Clear(g_c), s	1.4	22.1	22.1	2.7	41.3	43.1	18.6	2.0	3.6	20.9	0.0	15.3
Prop In Lane	1.00		0.05	1.00		0.15	1.00		1.00	1.00		0.29
Lane Grp Cap(c), veh/h	175	1120	1110	318	1141	1112	183	460	391	357	0	437
V/C Ratio(X)	0.34	0.56	0.56	0.37	0.81	0.82	0.20	0.10	0.17	0.65	0.00	0.64
Avail Cap(c_a), veh/h	186	1120	1110	389	1141	1112	183	460	391	357	0	437
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	18.2	13.1	13.1	10.4	16.2	16.5	45.1	31.8	32.4	39.8	0.0	36.8
Incr Delay (d2), s/veh	1.1	2.0	2.0	0.7	6.1	6.9	2.4	0.4	0.9	8.9	0.0	6.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q (50%), veh/ln	0.8	9.7	9.6	1.0	19.1	19.4	1.1	1.0	1.5	7.0	0.0	7.8
Lane Grp Delay (d), s/veh	19.3	15.1	15.1	11.1	22.3	23.5	47.5	32.2	33.3	48.8	0.0	43.7
Lane Grp LOS	B	B	B	B	C	C	D	C	C	D		D
Approach Vol, veh/h		1307			1952			147			511	
Approach Delay, s/veh		15.3			22.2			36.4			46.0	
Approach LOS		B			C			D			D	

Timer												
Assigned Phs	7	4		3	8			2			6	
Phs Duration (G+Y+Rc), s	7.4	69.7		8.6	71.0			31.0			31.0	
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0			4.0			4.0	
Max Green Setting (Gmax), s	4.0	62.0		9.0	67.0			27.0			27.0	
Max Q Clear Time (g_c+I1), s	3.4	24.1		4.7	45.1			20.6			22.9	
Green Ext Time (p_c), s	0.0	31.2		0.1	19.4			1.7			1.2	

Intersection Summary	
HCM 2010 Ctrl Delay	23.5
HCM 2010 LOS	C

Notes

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	97	1184	25	48	658	244	48	131	103	56	23	22
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow veh/h/ln	186.3	186.3	190.0	186.3	186.3	190.0	186.3	186.3	186.3	186.3	186.3	190.0
Lanes	1	2	0	1	2	0	1	1	1	1	1	0
Cap, veh/h	349	2232	93	257	1540	635	312	419	356	210	175	208
Arrive On Green	0.05	0.63	0.63	0.03	0.61	0.61	0.23	0.23	0.23	0.23	0.23	0.23
Sat Flow, veh/h	1774	3552	147	1774	2509	1034	1312	1863	1583	1020	776	923
Grp Volume(v), veh/h	145	756	748	81	626	567	66	185	172	84	0	81
Grp Sat Flow(s),veh/h/ln	1774	1863	1837	1774	1863	1680	1312	1863	1583	1020	0	1700
Q Serve(g_s), s	3.1	27.1	27.2	1.8	20.8	21.0	4.6	9.1	10.1	8.2	0.0	4.1
Cycle Q Clear(g_c), s	3.1	27.1	27.2	1.8	20.8	21.0	8.7	9.1	10.1	17.3	0.0	4.1
Prop In Lane	1.00		0.08	1.00		0.62	1.00		1.00	1.00		0.54
Lane Grp Cap(c), veh/h	349	1170	1154	257	1143	1031	312	419	356	210	0	383
V/C Ratio(X)	0.42	0.65	0.65	0.31	0.55	0.55	0.21	0.44	0.48	0.40	0.00	0.21
Avail Cap(c_a), veh/h	462	1170	1154	313	1143	1031	312	419	356	210	0	383
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	9.5	12.4	12.4	11.0	12.0	12.0	37.2	35.5	35.9	43.0	0.0	33.6
Incr Delay (d2), s/veh	0.8	2.8	2.8	0.7	1.9	2.1	1.5	3.3	4.6	5.6	0.0	1.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q (50%), veh/ln	1.2	11.8	11.7	0.7	9.1	8.3	1.7	4.7	4.4	2.5	0.0	1.9
Lane Grp Delay (d), s/veh	10.3	15.2	15.3	11.7	13.9	14.1	38.7	38.9	40.5	48.6	0.0	34.9
Lane Grp LOS	B	B	B	B	B	B	D	D	D	D		C
Approach Vol, veh/h		1649			1274			423			165	
Approach Delay, s/veh		14.8			13.8			39.5			41.9	
Approach LOS		B			B			D			D	

Timer												
Assigned Phs	7	4		3	8			2			6	
Phs Duration (G+Y+Rc), s	9.2	71.0		7.6	69.5			28.0			28.0	
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0			4.0			4.0	
Max Green Setting (Gmax), s	12.0	67.0		7.0	62.0			24.0			24.0	
Max Q Clear Time (g_c+I1), s	5.1	29.2		3.8	23.0			12.1			19.3	
Green Ext Time (p_c), s	0.2	27.1		0.0	27.7			2.1			1.2	

Intersection Summary	
HCM 2010 Ctrl Delay	18.7
HCM 2010 LOS	B

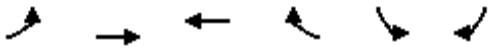
Notes

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	54	1071	24	91	1562	153	23	43	56	253	160	92
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow veh/h/ln	186.3	186.3	190.0	186.3	186.3	190.0	186.3	186.3	186.3	186.3	186.3	190.0
Lanes	1	2	0	1	2	0	1	1	1	1	1	0
Cap, veh/h	171	2122	52	311	1975	197	164	483	410	365	300	155
Arrive On Green	0.04	0.59	0.59	0.04	0.59	0.59	0.26	0.26	0.26	0.26	0.26	0.26
Sat Flow, veh/h	1774	3621	89	1774	3334	333	1052	1863	1583	1263	1159	598
Grp Volume(v), veh/h	93	626	621	117	937	933	36	57	66	278	0	323
Grp Sat Flow(s),veh/h/ln	1774	1863	1847	1774	1863	1804	1052	1863	1583	1263	0	1757
Q Serve(g_s), s	2.3	22.6	22.7	2.8	44.6	47.1	3.5	2.5	3.5	23.3	0.0	18.0
Cycle Q Clear(g_c), s	2.3	22.6	22.7	2.8	44.6	47.1	21.5	2.5	3.5	25.8	0.0	18.0
Prop In Lane	1.00		0.05	1.00		0.18	1.00		1.00	1.00		0.34
Lane Grp Cap(c), veh/h	171	1092	1082	311	1104	1069	164	483	410	365	0	455
V/C Ratio(X)	0.54	0.57	0.57	0.38	0.85	0.87	0.22	0.12	0.16	0.76	0.00	0.71
Avail Cap(c_a), veh/h	203	1092	1082	382	1104	1069	164	483	410	365	0	455
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	23.2	13.9	13.9	11.1	18.1	18.6	46.1	30.6	30.9	40.4	0.0	36.3
Incr Delay (d2), s/veh	2.7	2.2	2.2	0.8	8.2	9.8	3.1	0.5	0.8	14.0	0.0	9.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q (50%), veh/ln	2.6	10.1	10.0	1.1	21.3	22.1	1.1	1.3	1.5	8.9	0.0	9.2
Lane Grp Delay (d), s/veh	25.9	16.1	16.2	11.8	26.2	28.4	49.1	31.1	31.8	54.5	0.0	45.3
Lane Grp LOS	C	B	B	B	C	C	D	C	C	D		D
Approach Vol, veh/h		1340			1987			159			601	
Approach Delay, s/veh		16.8			26.4			35.4			49.6	
Approach LOS		B			C			D			D	

Timer												
Assigned Phs	7	4		3	8			2			6	
Phs Duration (G+Y+Rc), s	8.0	67.3		8.7	68.0			32.0			32.0	
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0			4.0			4.0	
Max Green Setting (Gmax), s	6.0	61.0		9.0	64.0			28.0			28.0	
Max Q Clear Time (g_c+I1), s	4.3	24.7		4.8	49.1			23.5			27.8	
Green Ext Time (p_c), s	0.0	30.5		0.1	13.7			1.6			0.1	

Intersection Summary												
HCM 2010 Ctrl Delay			27.0									
HCM 2010 LOS			C									

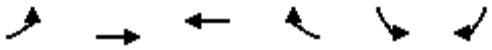
Notes



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	98	920	715	167	14	18
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.70	0.82	0.78	0.76	0.70	0.45
Hourly flow rate (vph)	140	1122	917	220	20	40
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		TWLTL	TWLTL			
Median storage veh)		2	2			
Upstream signal (ft)		823				
pX, platoon unblocked					0.82	
vC, conflicting volume	1136				1868	568
vC1, stage 1 conf vol					1027	
vC2, stage 2 conf vol					841	
vCu, unblocked vol	1136				1624	568
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)					5.8	
tF (s)	2.2				3.5	3.3
p0 queue free %	77				92	91
cM capacity (veh/h)	611				247	466

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1
Volume Total	514	748	611	525	60
Volume Left	140	0	0	0	20
Volume Right	0	0	0	220	40
cSH	611	1700	1700	1700	359
Volume to Capacity	0.23	0.44	0.36	0.31	0.17
Queue Length 95th (ft)	22	0	0	0	15
Control Delay (s)	6.1	0.0	0.0	0.0	17.0
Lane LOS	A				C
Approach Delay (s)	2.5		0.0		17.0
Approach LOS					C

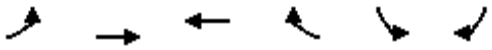
Intersection Summary			
Average Delay	1.7		
Intersection Capacity Utilization	66.7%	ICU Level of Service	C
Analysis Period (min)	15		



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	22	1074	1350	30	60	64
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.69	0.92	0.91	0.62	0.75	0.55
Hourly flow rate (vph)	32	1167	1484	48	80	116
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		TWLTL	TWLTL			
Median storage veh)		2	2			
Upstream signal (ft)		823				
pX, platoon unblocked					0.84	
vC, conflicting volume	1532				2155	766
vC1, stage 1 conf vol					1508	
vC2, stage 2 conf vol					647	
vCu, unblocked vol	1532				1998	766
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)					5.8	
tF (s)	2.2				3.5	3.3
p0 queue free %	93				50	66
cM capacity (veh/h)	430				161	345

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1
Volume Total	421	778	989	543	196
Volume Left	32	0	0	0	80
Volume Right	0	0	0	48	116
cSH	430	1700	1700	1700	235
Volume to Capacity	0.07	0.46	0.58	0.32	0.83
Queue Length 95th (ft)	6	0	0	0	162
Control Delay (s)	2.3	0.0	0.0	0.0	67.6
Lane LOS	A				F
Approach Delay (s)	0.8		0.0		67.6
Approach LOS					F

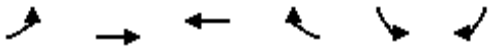
Intersection Summary			
Average Delay	4.9		
Intersection Capacity Utilization	59.3%	ICU Level of Service	B
Analysis Period (min)	15		



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	98	935	745	181	21	18
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.70	0.82	0.78	0.76	0.70	0.45
Hourly flow rate (vph)	140	1140	955	238	30	40
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		TWLTL	TWLTL			
Median storage veh)		2	2			
Upstream signal (ft)		823				
pX, platoon unblocked					0.82	
vC, conflicting volume	1193				1924	597
vC1, stage 1 conf vol					1074	
vC2, stage 2 conf vol					850	
vCu, unblocked vol	1193				1685	597
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)					5.8	
tF (s)	2.2				3.5	3.3
p0 queue free %	76				87	91
cM capacity (veh/h)	581				235	446

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1	SB 2
Volume Total	520	760	637	557	30	40
Volume Left	140	0	0	0	30	0
Volume Right	0	0	0	238	0	40
cSH	581	1700	1700	1700	235	446
Volume to Capacity	0.24	0.45	0.37	0.33	0.13	0.09
Queue Length 95th (ft)	23	0	0	0	11	7
Control Delay (s)	6.5	0.0	0.0	0.0	22.6	13.9
Lane LOS	A				C	B
Approach Delay (s)	2.7		0.0		17.6	
Approach LOS					C	

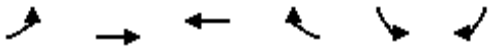
Intersection Summary			
Average Delay	1.8		
Intersection Capacity Utilization	68.4%	ICU Level of Service	C
Analysis Period (min)	15		



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	22	1115	1381	45	79	64
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.69	0.92	0.91	0.62	0.75	0.55
Hourly flow rate (vph)	32	1212	1518	73	105	116
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		TWLTL	TWLTL			
Median storage veh)		2	2			
Upstream signal (ft)		823				
pX, platoon unblocked					0.84	
vC, conflicting volume	1590				2224	795
vC1, stage 1 conf vol					1554	
vC2, stage 2 conf vol					670	
vCu, unblocked vol	1590				2071	795
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)					5.8	
tF (s)	2.2				3.5	3.3
p0 queue free %	92				31	65
cM capacity (veh/h)	409				152	330

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1	SB 2
Volume Total	436	808	1012	578	105	116
Volume Left	32	0	0	0	105	0
Volume Right	0	0	0	73	0	116
cSH	409	1700	1700	1700	152	330
Volume to Capacity	0.08	0.48	0.60	0.34	0.69	0.35
Queue Length 95th (ft)	6	0	0	0	101	39
Control Delay (s)	2.4	0.0	0.0	0.0	70.1	21.7
Lane LOS	A				F	C
Approach Delay (s)	0.9		0.0		44.7	
Approach LOS					E	

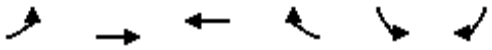
Intersection Summary			
Average Delay	3.6		
Intersection Capacity Utilization	57.5%	ICU Level of Service	B
Analysis Period (min)	15		



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	98	935	745	181	21	18
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.70	0.82	0.78	0.76	0.70	0.45
Hourly flow rate (vph)	140	1140	955	238	30	40
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		TWLTL	TWLTL			
Median storage veh)		2	2			
Upstream signal (ft)		823				
pX, platoon unblocked					0.82	
vC, conflicting volume	1193				1924	597
vC1, stage 1 conf vol					1074	
vC2, stage 2 conf vol					850	
vCu, unblocked vol	1193				1685	597
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)					5.8	
tF (s)	2.2				3.5	3.3
p0 queue free %	76				87	91
cM capacity (veh/h)	581				235	446

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1
Volume Total	520	760	637	557	70
Volume Left	140	0	0	0	30
Volume Right	0	0	0	238	40
cSH	581	1700	1700	1700	322
Volume to Capacity	0.24	0.45	0.37	0.33	0.22
Queue Length 95th (ft)	23	0	0	0	20
Control Delay (s)	6.5	0.0	0.0	0.0	19.3
Lane LOS	A				C
Approach Delay (s)	2.7		0.0		19.3
Approach LOS					C

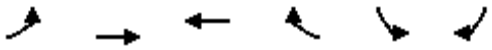
Intersection Summary			
Average Delay	1.9		
Intersection Capacity Utilization	68.4%	ICU Level of Service	C
Analysis Period (min)	15		



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	22	1115	1381	45	79	64
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.69	0.92	0.91	0.62	0.75	0.55
Hourly flow rate (vph)	32	1212	1518	73	105	116
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		TWLTL	TWLTL			
Median storage veh)		2	2			
Upstream signal (ft)		823				
pX, platoon unblocked					0.84	
vC, conflicting volume	1590				2224	795
vC1, stage 1 conf vol					1554	
vC2, stage 2 conf vol					670	
vCu, unblocked vol	1590				2071	795
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)					5.8	
tF (s)	2.2				3.5	3.3
p0 queue free %	92				31	65
cM capacity (veh/h)	409				152	330

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1
Volume Total	436	808	1012	578	222
Volume Left	32	0	0	0	105
Volume Right	0	0	0	73	116
cSH	409	1700	1700	1700	212
Volume to Capacity	0.08	0.48	0.60	0.34	1.05
Queue Length 95th (ft)	6	0	0	0	244
Control Delay (s)	2.4	0.0	0.0	0.0	122.4
Lane LOS	A				F
Approach Delay (s)	0.9		0.0		122.4
Approach LOS					F

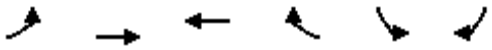
Intersection Summary			
Average Delay	9.2		
Intersection Capacity Utilization	61.5%	ICU Level of Service	B
Analysis Period (min)	15		



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	124	1166	906	212	18	23
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.70	0.82	0.78	0.76	0.70	0.45
Hourly flow rate (vph)	177	1422	1162	279	26	51
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		TWLTL	TWLTL			
Median storage veh)		2	2			
Upstream signal (ft)		823				
pX, platoon unblocked					0.74	
vC, conflicting volume	1440				2366	720
vC1, stage 1 conf vol					1301	
vC2, stage 2 conf vol					1065	
vCu, unblocked vol	1440				2146	720
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)					5.8	
tF (s)	2.2				3.5	3.3
p0 queue free %	62				85	86
cM capacity (veh/h)	467				169	370

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1
Volume Total	651	948	774	666	77
Volume Left	177	0	0	0	26
Volume Right	0	0	0	279	51
cSH	467	1700	1700	1700	265
Volume to Capacity	0.38	0.56	0.46	0.39	0.29
Queue Length 95th (ft)	44	0	0	0	29
Control Delay (s)	11.4	0.0	0.0	0.0	24.0
Lane LOS	B				C
Approach Delay (s)	4.6		0.0		24.0
Approach LOS					C

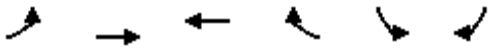
Intersection Summary			
Average Delay	3.0		
Intersection Capacity Utilization	81.0%	ICU Level of Service	D
Analysis Period (min)	15		



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	28	1361	1711	38	76	81
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.69	0.92	0.91	0.62	0.75	0.55
Hourly flow rate (vph)	41	1479	1880	61	101	147
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		TWLTL	TWLTL			
Median storage veh)		2	2			
Upstream signal (ft)		823				
pX, platoon unblocked					0.76	
vC, conflicting volume	1942				2732	971
vC1, stage 1 conf vol					1911	
vC2, stage 2 conf vol					821	
vCu, unblocked vol	1942				2647	971
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)					5.8	
tF (s)	2.2				3.5	3.3
p0 queue free %	86				0	42
cM capacity (veh/h)	298				98	253

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1
Volume Total	534	986	1253	688	249
Volume Left	41	0	0	0	101
Volume Right	0	0	0	61	147
cSH	298	1700	1700	1700	153
Volume to Capacity	0.14	0.58	0.74	0.40	1.62
Queue Length 95th (ft)	12	0	0	0	433
Control Delay (s)	4.8	0.0	0.0	0.0	360.1
Lane LOS	A				F
Approach Delay (s)	1.7		0.0		360.1
Approach LOS					F

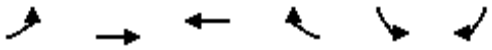
Intersection Summary			
Average Delay	24.8		
Intersection Capacity Utilization	73.4%	ICU Level of Service	D
Analysis Period (min)	15		



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	124	1181	936	226	25	23
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.70	0.82	0.78	0.76	0.70	0.45
Hourly flow rate (vph)	177	1440	1200	297	36	51
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		TWLTL	TWLTL			
Median storage veh)		2	2			
Upstream signal (ft)		823				
pX, platoon unblocked					0.71	
vC, conflicting volume	1497				2423	749
vC1, stage 1 conf vol					1349	
vC2, stage 2 conf vol					1074	
vCu, unblocked vol	1497				2193	749
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)					5.8	
tF (s)	2.2				3.5	3.3
p0 queue free %	60				78	86
cM capacity (veh/h)	444				164	355

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1	SB 2
Volume Total	657	960	800	697	36	51
Volume Left	177	0	0	0	36	0
Volume Right	0	0	0	297	0	51
cSH	444	1700	1700	1700	164	355
Volume to Capacity	0.40	0.56	0.47	0.41	0.22	0.14
Queue Length 95th (ft)	47	0	0	0	20	12
Control Delay (s)	12.4	0.0	0.0	0.0	33.0	16.9
Lane LOS	B				D	C
Approach Delay (s)	5.1		0.0		23.5	
Approach LOS					C	

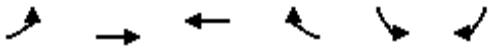
Intersection Summary			
Average Delay	3.2		
Intersection Capacity Utilization	82.7%	ICU Level of Service	E
Analysis Period (min)	15		



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	28	1402	1742	53	95	81
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.69	0.92	0.91	0.62	0.75	0.55
Hourly flow rate (vph)	41	1524	1914	85	127	147
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		TWLTL	TWLTL			
Median storage veh)		2	2			
Upstream signal (ft)		823				
pX, platoon unblocked					0.76	
vC, conflicting volume	2000				2800	1000
vC1, stage 1 conf vol					1957	
vC2, stage 2 conf vol					843	
vCu, unblocked vol	2000				2735	1000
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)					5.8	
tF (s)	2.2				3.5	3.3
p0 queue free %	86				0	39
cM capacity (veh/h)	283				92	242

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1	SB 2
Volume Total	549	1016	1276	724	127	147
Volume Left	41	0	0	0	127	0
Volume Right	0	0	0	85	0	147
cSH	283	1700	1700	1700	92	242
Volume to Capacity	0.14	0.60	0.75	0.43	1.38	0.61
Queue Length 95th (ft)	12	0	0	0	235	90
Control Delay (s)	5.2	0.0	0.0	0.0	306.3	40.7
Lane LOS	A				F	E
Approach Delay (s)	1.8		0.0		163.5	
Approach LOS					F	

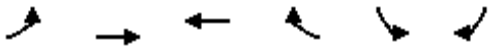
Intersection Summary			
Average Delay	12.4		
Intersection Capacity Utilization	70.6%	ICU Level of Service	C
Analysis Period (min)	15		



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	124	1181	936	226	25	23
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.70	0.82	0.78	0.76	0.70	0.45
Hourly flow rate (vph)	177	1440	1200	297	36	51
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		TWLTL	TWLTL			
Median storage veh)		2	2			
Upstream signal (ft)		823				
pX, platoon unblocked					0.71	
vC, conflicting volume	1497				2423	749
vC1, stage 1 conf vol					1349	
vC2, stage 2 conf vol					1074	
vCu, unblocked vol	1497				2193	749
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)					5.8	
tF (s)	2.2				3.5	3.3
p0 queue free %	60				78	86
cM capacity (veh/h)	444				164	355

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1
Volume Total	657	960	800	697	87
Volume Left	177	0	0	0	36
Volume Right	0	0	0	297	51
cSH	444	1700	1700	1700	240
Volume to Capacity	0.40	0.56	0.47	0.41	0.36
Queue Length 95th (ft)	47	0	0	0	39
Control Delay (s)	12.4	0.0	0.0	0.0	28.3
Lane LOS	B				D
Approach Delay (s)	5.1		0.0		28.3
Approach LOS					D

Intersection Summary			
Average Delay	3.3		
Intersection Capacity Utilization	82.7%	ICU Level of Service	E
Analysis Period (min)	15		



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	28	1402	1742	53	95	81
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.69	0.92	0.91	0.62	0.75	0.55
Hourly flow rate (vph)	41	1524	1914	85	127	147
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		TWLTL	TWLTL			
Median storage veh)		2	2			
Upstream signal (ft)		823				
pX, platoon unblocked					0.76	
vC, conflicting volume	2000				2800	1000
vC1, stage 1 conf vol					1957	
vC2, stage 2 conf vol					843	
vCu, unblocked vol	2000				2735	1000
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)					5.8	
tF (s)	2.2				3.5	3.3
p0 queue free %	86				0	39
cM capacity (veh/h)	283				92	242

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1
Volume Total	549	1016	1276	724	274
Volume Left	41	0	0	0	127
Volume Right	0	0	0	85	147
cSH	283	1700	1700	1700	138
Volume to Capacity	0.14	0.60	0.75	0.43	1.99
Queue Length 95th (ft)	12	0	0	0	543
Control Delay (s)	5.2	0.0	0.0	0.0	522.6
Lane LOS	A				F
Approach Delay (s)	1.8		0.0		522.6
Approach LOS					F

Intersection Summary			
Average Delay	38.0		
Intersection Capacity Utilization	75.6%	ICU Level of Service	D
Analysis Period (min)	15		

Intersection	
Intersection Delay, s/veh	0.8

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	3	3	10	181	88	17
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	38	38	50	72	96	53
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	8	8	20	251	92	32

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	399	108	124	0	-	0
Stage 1	108	-	-	-	-	-
Stage 2	291	-	-	-	-	-
Follow-up Headway	3.518	3.318	2.218	-	-	-
Pot Capacity-1 Maneuver	607	946	1463	-	-	-
Stage 1	916	-	-	-	-	-
Stage 2	759	-	-	-	-	-
Time blocked-Platoon, %				-	-	-
Mov Capacity-1 Maneuver	597	946	1463	-	-	-
Mov Capacity-2 Maneuver	597	-	-	-	-	-
Stage 1	916	-	-	-	-	-
Stage 2	747	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	10	0.6	0
HCM LOS	B		

Minor Lane / Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1463	-	732	-	-
HCM Lane V/C Ratio	0.014	-	0.022	-	-
HCM Control Delay (s)	7.495	0	10	-	-
HCM Lane LOS	A	A	B		
HCM 95th %tile Q(veh)	0.042	-	0.066	-	-

Notes
~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Intersection	
Intersection Delay, s/veh	0.7

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	9	7	4	150	261	7
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	56	58	100	81	89	88
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	16	12	4	185	293	8

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	490	297	301	0	-	0
Stage 1	297	-	-	-	-	-
Stage 2	193	-	-	-	-	-
Follow-up Headway	3.518	3.318	2.218	-	-	-
Pot Capacity-1 Maneuver	537	742	1260	-	-	-
Stage 1	754	-	-	-	-	-
Stage 2	840	-	-	-	-	-
Time blocked-Platoon, %				-	-	-
Mov Capacity-1 Maneuver	535	742	1260	-	-	-
Mov Capacity-2 Maneuver	535	-	-	-	-	-
Stage 1	754	-	-	-	-	-
Stage 2	837	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	11.2	0.2	0
HCM LOS	B		

Minor Lane / Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1260	-	608	-	-
HCM Lane V/C Ratio	0.003	-	0.046	-	-
HCM Control Delay (s)	7.866	0	11.2	-	-
HCM Lane LOS	A	A	B		
HCM 95th %tile Q(veh)	0.01	-	0.145	-	-

Notes
~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Intersection	
Intersection Delay, s/veh	2.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	3	0	3	13	0	27	10	181	27	54	88	17
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	38	92	38	92	92	92	50	72	92	92	96	53
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	8	0	8	14	0	29	20	251	29	59	92	32

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	546	546	108	535	547	266	124	0	0	281	0	0
Stage 1	225	225	-	306	306	-	-	-	-	-	-	-
Stage 2	321	321	-	229	241	-	-	-	-	-	-	-
Follow-up Headway	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Capacity-1 Maneuver	448	445	946	456	445	773	1463	-	-	1282	-	-
Stage 1	778	718	-	704	662	-	-	-	-	-	-	-
Stage 2	691	652	-	774	706	-	-	-	-	-	-	-
Time blocked-Platoon, %								-	-		-	-
Mov Capacity-1 Maneuver	410	416	946	430	416	773	1463	-	-	1282	-	-
Mov Capacity-2 Maneuver	410	416	-	430	416	-	-	-	-	-	-	-
Stage 1	766	682	-	693	651	-	-	-	-	-	-	-
Stage 2	654	642	-	729	671	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	11.5	11.3	0.5	2.6
HCM LOS	B	B		

Minor Lane / Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1463	-	-	572	614	1282	-	-
HCM Lane V/C Ratio	0.014	-	-	0.028	0.071	0.046	-	-
HCM Control Delay (s)	7.495	0	-	11.5	11.3	7.943	0	-
HCM Lane LOS	A	A		B	B	A	A	
HCM 95th %tile Q(veh)	0.042	-	-	0.085	0.228	0.144	-	-

Notes
~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Intersection	
Intersection Delay, s/veh	3.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	9	0	7	36	0	72	4	150	28	56	261	7
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	56	92	58	92	92	92	100	81	92	92	89	88
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	16	0	12	39	0	78	4	185	30	61	293	8

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	667	643	297	633	631	200	301	0	0	216	0	0
Stage 1	419	419	-	208	208	-	-	-	-	-	-	-
Stage 2	248	224	-	425	423	-	-	-	-	-	-	-
Follow-up Headway	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Capacity-1 Maneuver	372	392	742	392	398	841	1260	-	-	1354	-	-
Stage 1	612	590	-	794	730	-	-	-	-	-	-	-
Stage 2	756	718	-	607	588	-	-	-	-	-	-	-
Time blocked-Platoon, %								-	-		-	-
Mov Capacity-1 Maneuver	322	369	742	369	375	841	1260	-	-	1354	-	-
Mov Capacity-2 Maneuver	322	369	-	369	375	-	-	-	-	-	-	-
Stage 1	610	558	-	791	727	-	-	-	-	-	-	-
Stage 2	683	715	-	565	556	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	14.1	12.6	0.1	1.3
HCM LOS	B	B		

Minor Lane / Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1260	-	-	425	590	1354	-	-
HCM Lane V/C Ratio	0.003	-	-	0.066	0.199	0.045	-	-
HCM Control Delay (s)	7.866	0	-	14.1	12.6	7.784	0	-
HCM Lane LOS	A	A		B	B	A	A	
HCM 95th %tile Q(veh)	0.01	-	-	0.212	0.736	0.141	-	-

Notes
~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Intersection	
Intersection Delay, s/veh	0.8

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	4	4	13	229	112	22
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	38	38	50	72	96	53
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	11	11	26	318	117	42

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	507	137	158	0	-	0
Stage 1	137	-	-	-	-	-
Stage 2	370	-	-	-	-	-
Follow-up Headway	3.518	3.318	2.218	-	-	-
Pot Capacity-1 Maneuver	525	911	1422	-	-	-
Stage 1	890	-	-	-	-	-
Stage 2	699	-	-	-	-	-
Time blocked-Platoon, %				-	-	-
Mov Capacity-1 Maneuver	513	911	1422	-	-	-
Mov Capacity-2 Maneuver	513	-	-	-	-	-
Stage 1	890	-	-	-	-	-
Stage 2	684	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	10.7	0.6	0
HCM LOS	B		

Minor Lane / Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1422	-	656	-	-
HCM Lane V/C Ratio	0.018	-	0.032	-	-
HCM Control Delay (s)	7.579	0	10.7	-	-
HCM Lane LOS	A	A	B		
HCM 95th %tile Q(veh)	0.056	-	0.099	-	-

Notes
~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Intersection	
Intersection Delay, s/veh	0.7

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	11	9	5	190	331	9
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	56	58	100	81	89	88
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	20	16	5	235	372	10

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	622	377	382	0	-	0
Stage 1	377	-	-	-	-	-
Stage 2	245	-	-	-	-	-
Follow-up Headway	3.518	3.318	2.218	-	-	-
Pot Capacity-1 Maneuver	450	670	1176	-	-	-
Stage 1	694	-	-	-	-	-
Stage 2	796	-	-	-	-	-
Time blocked-Platoon, %				-	-	-
Mov Capacity-1 Maneuver	448	670	1176	-	-	-
Mov Capacity-2 Maneuver	448	-	-	-	-	-
Stage 1	694	-	-	-	-	-
Stage 2	792	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	12.3	0.2	0
HCM LOS	B		

Minor Lane / Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1176	-	525	-	-
HCM Lane V/C Ratio	0.004	-	0.067	-	-
HCM Control Delay (s)	8.074	0	12.3	-	-
HCM Lane LOS	A	A	B		
HCM 95th %tile Q(veh)	0.013	-	0.215	-	-

Notes
~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Intersection	
Intersection Delay, s/veh	2.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	4	0	4	13	0	27	13	229	27	54	112	22
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	38	92	38	92	92	92	50	72	92	92	96	53
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	11	0	11	14	0	29	26	318	29	59	117	42

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	654	654	137	645	661	333	158	0	0	347	0	0
Stage 1	255	255	-	385	385	-	-	-	-	-	-	-
Stage 2	399	399	-	260	276	-	-	-	-	-	-	-
Follow-up Headway	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Capacity-1 Maneuver	380	386	911	385	383	709	1422	-	-	1212	-	-
Stage 1	749	696	-	638	611	-	-	-	-	-	-	-
Stage 2	627	602	-	745	682	-	-	-	-	-	-	-
Time blocked-Platoon, %								-	-		-	-
Mov Capacity-1 Maneuver	343	357	911	359	354	709	1422	-	-	1212	-	-
Mov Capacity-2 Maneuver	343	357	-	359	354	-	-	-	-	-	-	-
Stage 1	732	658	-	623	597	-	-	-	-	-	-	-
Stage 2	587	588	-	697	645	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	12.5	12.3	0.5	2.2
HCM LOS	B	B		

Minor Lane / Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1422	-	-	498	538	1212	-	-
HCM Lane V/C Ratio	0.018	-	-	0.042	0.081	0.048	-	-
HCM Control Delay (s)	7.579	0	-	12.5	12.3	8.121	0	-
HCM Lane LOS	A	A		B	B	A	A	
HCM 95th %tile Q(veh)	0.056	-	-	0.132	0.263	0.153	-	-

Notes
~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Intersection	
Intersection Delay, s/veh	3.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	11	0	9	36	0	72	5	190	28	56	331	9
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	56	92	58	92	92	92	100	81	92	92	89	88
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	20	0	16	39	0	78	5	235	30	61	372	10

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	798	774	377	767	764	250	382	0	0	265	0	0
Stage 1	499	499	-	260	260	-	-	-	-	-	-	-
Stage 2	299	275	-	507	504	-	-	-	-	-	-	-
Follow-up Headway	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Capacity-1 Maneuver	304	329	670	319	334	789	1176	-	-	1299	-	-
Stage 1	554	544	-	745	693	-	-	-	-	-	-	-
Stage 2	710	683	-	548	541	-	-	-	-	-	-	-
Time blocked-Platoon, %								-	-		-	-
Mov Capacity-1 Maneuver	260	308	670	296	312	789	1176	-	-	1299	-	-
Mov Capacity-2 Maneuver	260	308	-	296	312	-	-	-	-	-	-	-
Stage 1	551	511	-	741	690	-	-	-	-	-	-	-
Stage 2	636	680	-	503	509	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	16.2	14.2	0.1	1.1
HCM LOS	C	B		

Minor Lane / Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1176	-	-	356	507	1299	-	-
HCM Lane V/C Ratio	0.004	-	-	0.099	0.232	0.047	-	-
HCM Control Delay (s)	8.074	0	-	16.2	14.2	7.908	0	-
HCM Lane LOS	A	A		C	B	A	A	
HCM 95th %tile Q(veh)	0.013	-	-	0.326	0.888	0.147	-	-

Notes
~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Intersection	
Intersection Delay, s/veh	2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	3	0	22	0	0	0	73	256	0	0	42	23
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	75	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	38	25	69	25	25	25	73	70	25	25	88	82
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	8	0	32	0	0	0	100	366	0	0	48	28

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	628	628	62	644	642	366	76	0	0	366	0	0
Stage 1	62	62	-	566	566	-	-	-	-	-	-	-
Stage 2	566	566	-	78	76	-	-	-	-	-	-	-
Follow-up Headway	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Capacity-1 Maneuver	395	400	1003	386	392	679	1523	-	-	1193	-	-
Stage 1	949	843	-	509	507	-	-	-	-	-	-	-
Stage 2	509	507	-	931	832	-	-	-	-	-	-	-
Time blocked-Platoon, %								-	-		-	-
Mov Capacity-1 Maneuver	375	374	1003	355	366	679	1523	-	-	1193	-	-
Mov Capacity-2 Maneuver	375	374	-	355	366	-	-	-	-	-	-	-
Stage 1	887	843	-	476	474	-	-	-	-	-	-	-
Stage 2	476	474	-	901	832	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	10	0	1.6	0
HCM LOS	B	A		

Minor Lane / Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1523	-	-	753	0	1193	-	-
HCM Lane V/C Ratio	0.066	-	-	0.053	+	-	-	-
HCM Control Delay (s)	7.53	-	-	10	0	0	-	-
HCM Lane LOS	A			B	A	A		
HCM 95th %tile Q(veh)	0.211	-	-	0.167	+	0	-	-

Notes
~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Intersection	
Intersection Delay, s/veh	3.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	22	0	86	0	0	0	35	118	0	0	253	14
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	75	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	50	25	90	25	25	25	73	89	25	25	87	58
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	44	0	96	0	0	0	48	133	0	0	291	24

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	531	531	303	579	543	133	315	0	0	133	0	0
Stage 1	303	303	-	228	228	-	-	-	-	-	-	-
Stage 2	228	228	-	351	315	-	-	-	-	-	-	-
Follow-up Headway	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Capacity-1 Maneuver	459	454	737	426	447	916	1245	-	-	1452	-	-
Stage 1	706	664	-	775	715	-	-	-	-	-	-	-
Stage 2	775	715	-	666	656	-	-	-	-	-	-	-
Time blocked-Platoon, %								-	-		-	-
Mov Capacity-1 Maneuver	445	436	737	360	430	916	1245	-	-	1452	-	-
Mov Capacity-2 Maneuver	445	436	-	360	430	-	-	-	-	-	-	-
Stage 1	679	664	-	745	687	-	-	-	-	-	-	-
Stage 2	745	687	-	580	656	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	12.6	0	2.1	0
HCM LOS	B	A		

Minor Lane / Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1245	-	-	611	0	1452	-	-
HCM Lane V/C Ratio	0.039	-	-	0.228	+	-	-	-
HCM Control Delay (s)	8.007	-	-	12.6	0	0	-	-
HCM Lane LOS	A			B	A	A		
HCM 95th %tile Q(veh)	0.12	-	-	0.875	+	0	-	-

Notes
~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Intersection	
Intersection Delay, s/veh	2.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	3	0	22	15	0	0	73	283	30	0	55	23
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	-	75	-	-	100	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	38	25	69	25	25	25	73	70	25	25	88	82
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	8	0	32	60	0	0	100	404	120	0	62	28

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	741	801	77	741	755	464	91	0	0	524	0	0
Stage 1	77	77	-	664	664	-	-	-	-	-	-	-
Stage 2	664	724	-	77	91	-	-	-	-	-	-	-
Follow-up Headway	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Capacity-1 Maneuver	332	318	984	332	338	598	1504	-	-	1043	-	-
Stage 1	932	831	-	450	458	-	-	-	-	-	-	-
Stage 2	450	430	-	932	820	-	-	-	-	-	-	-
Time blocked-Platoon, %								-	-		-	-
Mov Capacity-1 Maneuver	315	297	984	305	316	598	1504	-	-	1043	-	-
Mov Capacity-2 Maneuver	315	297	-	305	316	-	-	-	-	-	-	-
Stage 1	870	831	-	420	428	-	-	-	-	-	-	-
Stage 2	420	401	-	902	820	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	10.3	19.7	1.2	0
HCM LOS	B	C		

Minor Lane / Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1504	-	-	516	984	305	1043	-	-
HCM Lane V/C Ratio	0.066	-	-	0.036	0.022	0.197	-	-	-
HCM Control Delay (s)	7.564	-	-	12.2	8.7	19.7	0	-	-
HCM Lane LOS	A			B	A	C	A		
HCM 95th %tile Q(veh)	0.213	-	-	0.112	0.066	0.718	0	-	-

Notes
~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Intersection	
Intersection Delay, s/veh	6.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	22	0	86	41	0	0	35	146	31	0	289	14
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	-	75	-	-	100	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	50	25	90	25	25	25	73	89	25	25	87	58
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	44	0	96	164	0	0	48	164	124	0	332	24

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	666	728	344	666	678	226	356	0	0	288	0	0
Stage 1	344	344	-	322	322	-	-	-	-	-	-	-
Stage 2	322	384	-	344	356	-	-	-	-	-	-	-
Follow-up Headway	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Capacity-1 Maneuver	373	350	699	373	374	813	1203	-	-	1274	-	-
Stage 1	671	637	-	690	651	-	-	-	-	-	-	-
Stage 2	690	611	-	671	629	-	-	-	-	-	-	-
Time blocked-Platoon, %								-	-		-	-
Mov Capacity-1 Maneuver	362	336	699	312	359	813	1203	-	-	1274	-	-
Mov Capacity-2 Maneuver	362	336	-	312	359	-	-	-	-	-	-	-
Stage 1	644	637	-	662	625	-	-	-	-	-	-	-
Stage 2	662	587	-	579	629	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	12.8	28.6	1.2	0
HCM LOS	B	D		

Minor Lane / Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1203	-	-	454	699	312	1274	-	-
HCM Lane V/C Ratio	0.04	-	-	0.167	0.091	0.526	-	-	-
HCM Control Delay (s)	8.117	-	-	14.5	10.7	28.6	0	-	-
HCM Lane LOS	A			B	B	D	A		
HCM 95th %tile Q(veh)	0.124	-	-	0.594	0.3	2.877	0	-	-

Notes

~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Intersection	
Intersection Delay, s/veh	2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	4	0	28	0	0	0	93	325	0	0	53	29
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	75	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	38	25	69	25	25	25	73	70	25	25	88	82
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	11	0	41	0	0	0	127	464	0	0	60	35

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	797	797	78	817	815	464	96	0	0	464	0	0
Stage 1	78	78	-	719	719	-	-	-	-	-	-	-
Stage 2	719	719	-	98	96	-	-	-	-	-	-	-
Follow-up Headway	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Capacity-1 Maneuver	305	319	983	295	312	598	1498	-	-	1097	-	-
Stage 1	931	830	-	420	433	-	-	-	-	-	-	-
Stage 2	420	433	-	908	815	-	-	-	-	-	-	-
Time blocked-Platoon, %								-	-		-	-
Mov Capacity-1 Maneuver	285	292	983	264	286	598	1498	-	-	1097	-	-
Mov Capacity-2 Maneuver	285	292	-	264	286	-	-	-	-	-	-	-
Stage 1	852	830	-	384	396	-	-	-	-	-	-	-
Stage 2	384	396	-	871	815	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	11	0	1.6	0
HCM LOS	B	A		

Minor Lane / Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1498	-	-	653	0	1097	-	-
HCM Lane V/C Ratio	0.085	-	-	0.078	+	-	-	-
HCM Control Delay (s)	7.626	-	-	11	0	0	-	-
HCM Lane LOS	A			B	A	A		
HCM 95th %tile Q(veh)	0.278	-	-	0.254	+	0	-	-

Notes
~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Intersection	
Intersection Delay, s/veh	4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	28	0	109	0	0	0	44	150	0	0	321	18
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	75	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	50	25	90	25	25	25	73	89	25	25	87	58
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	56	0	121	0	0	0	60	169	0	0	369	31

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	673	673	384	734	689	169	400	0	0	169	0	0
Stage 1	384	384	-	289	289	-	-	-	-	-	-	-
Stage 2	289	289	-	445	400	-	-	-	-	-	-	-
Follow-up Headway	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Capacity-1 Maneuver	369	377	664	336	369	875	1159	-	-	1409	-	-
Stage 1	639	611	-	719	673	-	-	-	-	-	-	-
Stage 2	719	673	-	592	602	-	-	-	-	-	-	-
Time blocked-Platoon, %								-	-		-	-
Mov Capacity-1 Maneuver	354	357	664	264	350	875	1159	-	-	1409	-	-
Mov Capacity-2 Maneuver	354	357	-	264	350	-	-	-	-	-	-	-
Stage 1	606	611	-	682	638	-	-	-	-	-	-	-
Stage 2	682	638	-	484	602	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	15.5	0	2.2	0
HCM LOS	C	A		

Minor Lane / Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1159	-	-	520	0	1409	-	-
HCM Lane V/C Ratio	0.052	-	-	0.341	+	-	-	-
HCM Control Delay (s)	8.276	-	-	15.5	0	0	-	-
HCM Lane LOS	A			C	A	A		
HCM 95th %tile Q(veh)	0.164	-	-	1.497	+	0	-	-

Notes
~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Intersection	
Intersection Delay, s/veh	3.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	4	0	28	15	0	0	93	352	30	0	66	29
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	-	75	-	-	100	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	38	25	69	25	25	25	73	70	25	25	88	82
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	11	0	41	60	0	0	127	503	120	0	75	35

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	911	971	93	911	928	563	110	0	0	623	0	0
Stage 1	93	93	-	818	818	-	-	-	-	-	-	-
Stage 2	818	878	-	93	110	-	-	-	-	-	-	-
Follow-up Headway	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Capacity-1 Maneuver	255	253	964	255	268	526	1480	-	-	958	-	-
Stage 1	914	818	-	370	390	-	-	-	-	-	-	-
Stage 2	370	366	-	914	804	-	-	-	-	-	-	-
Time blocked-Platoon, %								-	-		-	-
Mov Capacity-1 Maneuver	238	231	964	228	245	526	1480	-	-	958	-	-
Mov Capacity-2 Maneuver	238	231	-	228	245	-	-	-	-	-	-	-
Stage 1	836	818	-	338	357	-	-	-	-	-	-	-
Stage 2	338	335	-	876	804	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	11.4	26.3	1.3	0
HCM LOS	B	D		

Minor Lane / Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1480	-	-	413	964	228	958	-	-
HCM Lane V/C Ratio	0.086	-	-	0.058	0.028	0.263	-	-	-
HCM Control Delay (s)	7.661	-	-	14.3	8.8	26.3	0	-	-
HCM Lane LOS	A			B	A	D	A		
HCM 95th %tile Q(veh)	0.282	-	-	0.185	0.087	1.022	0	-	-

Notes
~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Intersection	
Intersection Delay, s/veh	9.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	28	0	109	41	0	0	44	178	31	0	357	18
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	-	75	-	-	100	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	50	25	90	25	25	25	73	89	25	25	87	58
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	56	0	121	164	0	0	60	200	124	0	410	31

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	809	871	426	809	824	262	441	0	0	324	0	0
Stage 1	426	426	-	383	383	-	-	-	-	-	-	-
Stage 2	383	445	-	426	441	-	-	-	-	-	-	-
Follow-up Headway	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Capacity-1 Maneuver	299	289	628	299	308	777	1119	-	-	1236	-	-
Stage 1	606	586	-	640	612	-	-	-	-	-	-	-
Stage 2	640	575	-	606	577	-	-	-	-	-	-	-
Time blocked-Platoon, %								-	-		-	-
Mov Capacity-1 Maneuver	287	274	628	231	291	777	1119	-	-	1236	-	-
Mov Capacity-2 Maneuver	287	274	-	231	291	-	-	-	-	-	-	-
Stage 1	574	586	-	606	579	-	-	-	-	-	-	-
Stage 2	606	544	-	489	577	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	15.1	51.4	1.3	0
HCM LOS	C	F		

Minor Lane / Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1119	-	-	372	628	231	1236	-	-
HCM Lane V/C Ratio	0.054	-	-	0.259	0.129	0.71	-	-	-
HCM Control Delay (s)	8.4	-	-	18	11.6	51.4	0	-	-
HCM Lane LOS	A			C	B	F	A		
HCM 95th %tile Q(veh)	0.171	-	-	1.019	0.44	4.703	0	-	-

Notes
~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Intersection	
Intersection Delay, s/veh	0.8

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	9	18	590	18	36	220
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	100	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	10	20	641	20	39	239

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	968	651	0	0	661	0
Stage 1	651	-	-	-	-	-
Stage 2	317	-	-	-	-	-
Follow-up Headway	3.518	3.318	-	-	2.218	-
Pot Capacity-1 Maneuver	282	469	-	-	927	-
Stage 1	519	-	-	-	-	-
Stage 2	738	-	-	-	-	-
Time blocked-Platoon, %			-	-		-
Mov Capacity-1 Maneuver	270	469	-	-	927	-
Mov Capacity-2 Maneuver	270	-	-	-	-	-
Stage 1	519	-	-	-	-	-
Stage 2	707	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	15.4	0	1.3
HCM LOS	C		

Minor Lane / Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	377	927	-
HCM Lane V/C Ratio	-	-	0.078	0.042	-
HCM Control Delay (s)	-	-	15.4	9.055	-
HCM Lane LOS			C	A	
HCM 95th %tile Q(veh)	-	-	0.252	0.132	-

Notes
~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Intersection	
Intersection Delay, s/veh	1.4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	24	48	302	19	37	561
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	100	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	26	52	328	21	40	610

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1029	339	0	0	349	0
Stage 1	339	-	-	-	-	-
Stage 2	690	-	-	-	-	-
Follow-up Headway	3.518	3.318	-	-	2.218	-
Pot Capacity-1 Maneuver	259	703	-	-	1210	-
Stage 1	722	-	-	-	-	-
Stage 2	498	-	-	-	-	-
Time blocked-Platoon, %			-	-		-
Mov Capacity-1 Maneuver	250	703	-	-	1210	-
Mov Capacity-2 Maneuver	250	-	-	-	-	-
Stage 1	722	-	-	-	-	-
Stage 2	482	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	15	0	0.5
HCM LOS	C		

Minor Lane / Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	438	1210	-
HCM Lane V/C Ratio	-	-	0.179	0.033	-
HCM Control Delay (s)	-	-	15	8.077	-
HCM Lane LOS			C	A	
HCM 95th %tile Q(veh)	-	-	0.643	0.103	-

Notes
~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Intersection	
Intersection Delay, s/veh	0.8

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	9	18	745	18	36	274
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	100	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	10	20	810	20	39	298

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1196	820	0	0	829	0
Stage 1	820	-	-	-	-	-
Stage 2	376	-	-	-	-	-
Follow-up Headway	3.518	3.318	-	-	2.218	-
Pot Capacity-1 Maneuver	206	375	-	-	803	-
Stage 1	433	-	-	-	-	-
Stage 2	694	-	-	-	-	-
Time blocked-Platoon, %			-	-		-
Mov Capacity-1 Maneuver	196	375	-	-	803	-
Mov Capacity-2 Maneuver	196	-	-	-	-	-
Stage 1	433	-	-	-	-	-
Stage 2	660	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	19	0	1.1
HCM LOS	C		

Minor Lane / Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	287	803	-
HCM Lane V/C Ratio	-	-	0.102	0.049	-
HCM Control Delay (s)	-	-	19	9.713	-
HCM Lane LOS			C	A	
HCM 95th %tile Q(veh)	-	-	0.338	0.153	-

Notes
~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Intersection	
Intersection Delay, s/veh	1.4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	24	48	376	19	37	706
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	100	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	26	52	409	21	40	767

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1267	419	0	0	429	0
Stage 1	419	-	-	-	-	-
Stage 2	848	-	-	-	-	-
Follow-up Headway	3.518	3.318	-	-	2.218	-
Pot Capacity-1 Maneuver	186	634	-	-	1130	-
Stage 1	664	-	-	-	-	-
Stage 2	420	-	-	-	-	-
Time blocked-Platoon, %			-	-		-
Mov Capacity-1 Maneuver	179	634	-	-	1130	-
Mov Capacity-2 Maneuver	179	-	-	-	-	-
Stage 1	664	-	-	-	-	-
Stage 2	405	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	18.6	0	0.4
HCM LOS	C		

Minor Lane / Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	343	1130	-
HCM Lane V/C Ratio	-	-	0.228	0.036	-
HCM Control Delay (s)	-	-	18.6	8.303	-
HCM Lane LOS			C	A	
HCM 95th %tile Q(veh)	-	-	0.864	0.111	-

Notes
~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Intersection	
Intersection Delay, s/veh	1.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	0	0	7	10	0	10	14	77	10	10	99	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	8	11	0	11	15	84	11	11	108	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	254	254	108	253	249	89	108	0	0	95	0	0
Stage 1	129	129	-	120	120	-	-	-	-	-	-	-
Stage 2	125	125	-	133	129	-	-	-	-	-	-	-
Follow-up Headway	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Capacity-1 Maneuver	699	650	946	700	654	969	1483	-	-	1499	-	-
Stage 1	875	789	-	884	796	-	-	-	-	-	-	-
Stage 2	879	792	-	870	789	-	-	-	-	-	-	-
Time blocked-Platoon, %								-	-		-	-
Mov Capacity-1 Maneuver	681	638	946	684	642	969	1483	-	-	1499	-	-
Mov Capacity-2 Maneuver	681	638	-	684	642	-	-	-	-	-	-	-
Stage 1	865	783	-	874	787	-	-	-	-	-	-	-
Stage 2	860	783	-	856	783	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	8.8	9.6	1	0.7
HCM LOS	A	A		

Minor Lane / Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1483	-	-	946	802	1499	-	-
HCM Lane V/C Ratio	0.01	-	-	0.008	0.027	0.007	-	-
HCM Control Delay (s)	7.453	0	-	8.8	9.6	7.419	0	-
HCM Lane LOS	A	A		A	A	A	A	
HCM 95th %tile Q(veh)	0.031	-	-	0.024	0.084	0.022	-	-

Notes
~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Intersection	
Intersection Delay, s/veh	2.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	0	0	19	10	0	10	15	58	10	10	65	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	21	11	0	11	16	63	11	11	71	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	199	199	71	204	193	68	71	0	0	74	0	0
Stage 1	92	92	-	101	101	-	-	-	-	-	-	-
Stage 2	107	107	-	103	92	-	-	-	-	-	-	-
Follow-up Headway	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Capacity-1 Maneuver	760	697	991	754	702	995	1529	-	-	1526	-	-
Stage 1	915	819	-	905	811	-	-	-	-	-	-	-
Stage 2	898	807	-	903	819	-	-	-	-	-	-	-
Time blocked-Platoon, %								-	-		-	-
Mov Capacity-1 Maneuver	741	684	991	728	689	995	1529	-	-	1526	-	-
Mov Capacity-2 Maneuver	741	684	-	728	689	-	-	-	-	-	-	-
Stage 1	905	812	-	895	802	-	-	-	-	-	-	-
Stage 2	878	798	-	877	812	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	8.7	9.4	1.3	1
HCM LOS	A	A		

Minor Lane / Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1529	-	-	991	841	1526	-	-
HCM Lane V/C Ratio	0.011	-	-	0.021	0.026	0.007	-	-
HCM Control Delay (s)	7.38	0	-	8.7	9.4	7.376	0	-
HCM Lane LOS	A	A		A	A	A	A	
HCM 95th %tile Q(veh)	0.032	-	-	0.064	0.08	0.022	-	-

Notes
~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Intersection	
Intersection Delay, s/veh	1.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	0	0	7	10	0	10	14	100	10	10	129	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	8	11	0	11	15	109	11	11	140	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	312	312	140	311	307	114	140	0	0	120	0	0
Stage 1	162	162	-	145	145	-	-	-	-	-	-	-
Stage 2	150	150	-	166	162	-	-	-	-	-	-	-
Follow-up Headway	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Capacity-1 Maneuver	641	603	908	642	607	939	1443	-	-	1468	-	-
Stage 1	840	764	-	858	777	-	-	-	-	-	-	-
Stage 2	853	773	-	836	764	-	-	-	-	-	-	-
Time blocked-Platoon, %								-	-		-	-
Mov Capacity-1 Maneuver	624	592	908	627	596	939	1443	-	-	1468	-	-
Mov Capacity-2 Maneuver	624	592	-	627	596	-	-	-	-	-	-	-
Stage 1	831	758	-	849	768	-	-	-	-	-	-	-
Stage 2	834	764	-	822	758	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	9	9.9	0.8	0.5
HCM LOS	A	A		

Minor Lane / Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1443	-	-	908	752	1468	-	-
HCM Lane V/C Ratio	0.011	-	-	0.008	0.029	0.007	-	-
HCM Control Delay (s)	7.521	0	-	9	9.9	7.471	0	-
HCM Lane LOS	A	A		A	A	A	A	
HCM 95th %tile Q(veh)	0.032	-	-	0.025	0.089	0.022	-	-

Notes
~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

Intersection	
Intersection Delay, s/veh	2.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	0	0	19	10	0	10	15	75	10	10	85	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	21	11	0	11	16	82	11	11	92	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	239	239	92	244	234	87	92	0	0	92	0	0
Stage 1	114	114	-	120	120	-	-	-	-	-	-	-
Stage 2	125	125	-	124	114	-	-	-	-	-	-	-
Follow-up Headway	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Capacity-1 Maneuver	715	662	965	710	666	971	1503	-	-	1503	-	-
Stage 1	891	801	-	884	796	-	-	-	-	-	-	-
Stage 2	879	792	-	880	801	-	-	-	-	-	-	-
Time blocked-Platoon, %								-	-		-	-
Mov Capacity-1 Maneuver	697	649	965	685	653	971	1503	-	-	1503	-	-
Mov Capacity-2 Maneuver	697	649	-	685	653	-	-	-	-	-	-	-
Stage 1	881	795	-	874	787	-	-	-	-	-	-	-
Stage 2	860	783	-	854	795	-	-	-	-	-	-	-

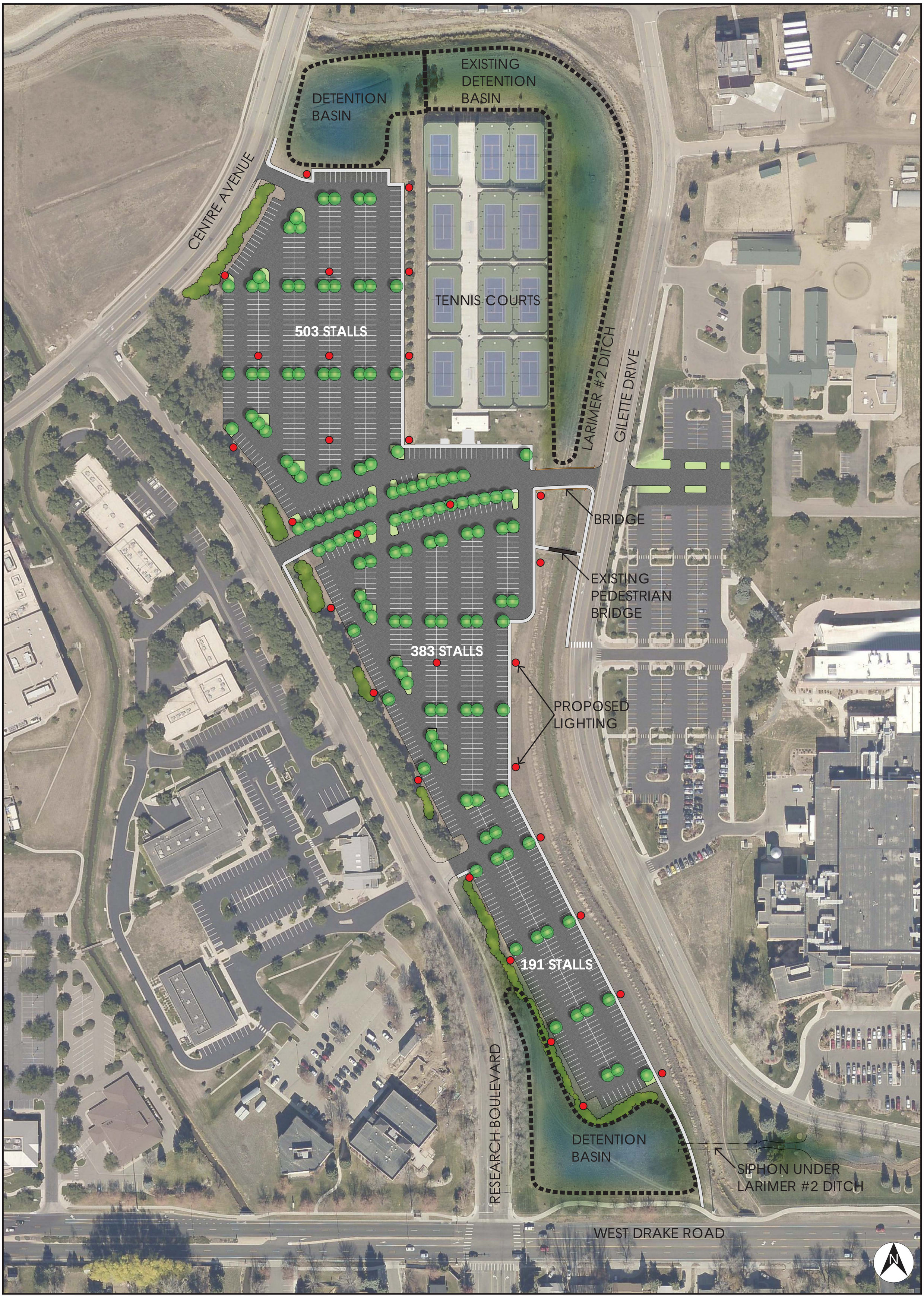
Approach	EB	WB	NB	SB
HCM Control Delay, s	8.8	9.6	1.1	0.8
HCM LOS	A	A		

Minor Lane / Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1503	-	-	965	803	1503	-	-
HCM Lane V/C Ratio	0.011	-	-	0.021	0.027	0.007	-	-
HCM Control Delay (s)	7.421	0	-	8.8	9.6	7.413	0	-
HCM Lane LOS	A	A		A	A	A	A	
HCM 95th %tile Q(veh)	0.033	-	-	0.066	0.083	0.022	-	-

Notes
~ : Volume Exceeds Capacity; $: Delay Exceeds 300 Seconds; Error : Computation Not Defined

APPENDIX C

Conceptual Site Plan



SOUTH CAMPUS

SURFACE PARKING LOT CONCEPT

NOVEMBER 1, 2013