

ENGINEERING SUCCESS

VEHICULAR TRAFFIC IMPACT and PEDESTRIAN & BICYCLIST STUDIES



411 N. Webb Rd.
Wichita, KS 67206
316.684.9600

WSU Innovation Campus



PROJECT NUMBER: 1401010547
DATE: December 2014



Table of Contents

Vehicular Traffic Impact Study	1
Purpose	1
Project Site Description and Location.....	1
Existing Conditions and Daily Traffic Counts	1
Study Area	1
General Descriptions of Roadways	1
Arterial Roads.....	1
Minor Roads	2
Means of Traffic Count Collection.....	2
Table 1. Traffic Counter Locations	3
Existing Traffic Distribution.....	3
Existing Traffic Analysis	3
Table 2. Existing Level of Service (LOS) – AM Peak Hour	4
Table 3. Existing Level of Service (LOS) – PM Peak Hour	4
Traffic Trip Generation Information and Discussion	4
Trip Generation by Land Use per Phase.....	4
Table 4. Mixed Use Generation Rates	5
Table 5. Trip Generation Summary	9
Locations of Proposed Access Points	10
Proposed Traffic Distribution for Full Build Out.....	10
Intersection Analysis.....	10
Summary of Findings	11
Recommendations for Traffic.....	11
Geometric Changes	11
Arterial Roads.....	11
Minor Roads	12
Right of Way Needs.....	12
Traffic Control	13
Pedestrian and Bicyclists System Study	13
Study Area	13
Purpose	13
Existing Pedestrian and Bicyclist Facilities.....	13
Developed Conditions.....	14
Pedestrian Connectivity	14
Bicyclist Connectivity.....	14
Appendix A - Innovation Campus Master Plan.....	16
Appendix B - Campus Master Plan with Phasing	17
Appendix C - Campus Location Diagram.....	18
Appendix D - Existing A.M. Peak Hour Traffic Count	19
Appendix E - Existing P.M. Peak Hour Traffic Count.....	20
Appendix F - AM Peak Hour Traffic Distribution at Build Out.....	21
Appendix G - PM Peak Hour Traffic Distribution at Build Out.....	22
Appendix H - Demographics Exhibit.....	23
Appendix I - Top 100 Intersections	24
Appendix J - LOS Summaries	25
Appendix K - Geometric Changes, ROW Needs & Traffic Control	26
Appendix L - Bicycle & Pedestrian Facilities Context Map.....	27
Appendix M - Existing Wichita Bikeways Diagram	28
Appendix N - Bicycle & Pedestrian Circulation	29

Vehicular Traffic Impact Study

Purpose

This study addresses traffic impacts within the Innovation Campus (Project Site), as well as, along the four adjacent arterial street corridors, at the four arterial street intersections; at the Innovation Campus access points; at four major existing WSU campus access points (Yale Ave., Mike Oatman Dr/Belmont, Harvard Ave. and Fairmont Ave.); and at the intersection of the central drive through the Innovation Campus and Mike Oatman Dr.

Using SimTraffic (for modeling) and Synchro (for intersection analysis) software, this study has the purpose of analyzing the potential vehicular traffic impacts of implementing the Innovation Campus Master Plan shown in Appendix A and its phasing, as shown in Appendix B. It assesses level-of-service factors along abutting arterial streets and intersections and provides mitigating recommendations. Recommendations will be provided for consideration.

The last section of the study provides a plan for improving pedestrian and bicyclists connectivity both to and within the Innovation Campus and to the existing WSU campus.

Project Site Description and Location

The Project Site is an area of approximately 132 acres just east of the main Wichita State University campus. Within this acreage is the Braeburn Golf Course, which is now closed to the public, and the soon to be razed Wheatshocker Hall. The proposed development is south of 21st Street, west of North Oliver Avenue, north of East 17th Street. The Project Site is shown in its relationship to the City of Wichita and Sedgwick County in Appendix C.

Existing Conditions and Daily Traffic Counts

Study Area

The arterials are known in this study as 21st Street (bounding the project to the north), Oliver Avenue (bounding the project to the east), 17th Street (bounding the project to the south) and Hillside Street (bounding the existing campus to the west).

General Descriptions of Roadways

Arterial Roads

21st Street is a 5-lane urban section with two through lanes per direction and a fifth lane in the middle, utilized as a continuous shared left turn lane, although at signalized intersections (Hillside, Yale, Mike Oatman/Belmont and Oliver) it is marked specifically as a varied length of dedicated left turn lane eastbound and westbound. Street drainage is controlled by curb and gutter with a storm sewer system. Also, sidewalk is present on the north side from Yale to Oliver and on the south side from Hillside to Mike Oatman Dr.

Oliver Avenue is a 4-lane urban undivided section with two through lanes in either direction. It does widen to a 5-lane section at the 21st Street intersection to accommodate a dedicated left lane. Again, street drainage is controlled by curb and gutter with a storm sewer system. Sidewalk is not present on either side of the street from 17th Street to 21st Street.

17th Street is a 4-lane urban undivided section with two through lanes in either direction. It does widen to a 5-lane section at the Hillside Street intersection to accommodate a dedicated left lane. Again, street drainage is controlled by curb and gutter with a storm sewer system. Also, sidewalk is present on the north side from Hillside Street to Wheatshocker Dr. and on the south side from Hillside Street to Oliver.

Hillside Street is a 4-lane urban partially divided and partially undivided section with two through lanes in either direction, sporadically having turn lanes throughout this stretch. Again, street drainage is controlled by curb and gutter with a storm sewer system. Sidewalk is present along the east side from 17th to Alumni Drive and along the west side from 17th Street to 21st Street.

Traffic Control is handled by traffic signals at the following locations:

- 21st Street & Hillside
- 21st Street & Yale Avenue
- Pedestrian Crossing near 21st Street & Omega Court
- 21st Street & Mike Oatman/Belmont
- 21st Street & Oliver
- 17th Street & Oliver
- Pedestrian Crossing near 17th & Fairmount Street
- 17th Street & Hillside

All signals are vehicle actuated except the pedestrian signals which are pedestrian actuated. The signals all have permitted and protected left turns except the one at 17th Street & Oliver.

Minor Roads

The present WSU Campus roadways are mainly 2-lane urban sections, one lane in each direction, although the roadway accommodates a turn lane at the signalized intersections with arterials. Sidewalks appear on one or both sides of the roadways throughout the campus. Again as with the arterials, street drainage is controlled by curb and gutter and features a storm sewer system. Traffic Control is handled by signage.

Means of Traffic Count Collection

Traffic counts were provided by the City of Wichita Traffic Engineering Department using MetroCount traffic counters with standard rubber road tubes. The dates collected were from September 17, 2014 to October 13, 2014, at least three days at a particular set-up to, at the most, seven days.

Counts were taken at the various locations displayed in Table 1. The raw data is not included in this report but may be obtained upon request.

Table 1. Traffic Counter Locations

Locations	Counter Identifier	Date Began	Date Ended
Hillside north of 21st St.	CC75HNMS	October 6, 2014	October 14, 2014
Hillside south of 21st St.	DA28CQ9P	October 6, 2014	October 14, 2014
21st St. west of Hillside	DA21XEVF	October 6, 2014	October 14, 2014
Yale north of 21st St.	DA3160QF	October 6, 2014	October 14, 2014
Yale south of 21st St.	CD55T7K6	October 6, 2014	October 13, 2014
21st St. east of Yale	DA22WGYX	October 6, 2014	October 13, 2014
Belmont north of 21st St.	DA20C10S	September 24, 2014	October 6, 2014
Mike Oatman Dr. south of 21st St.	CC86VD9B	September 24, 2014	October 6, 2014
21st St. between Belmont and Oliver	DA34QWMJ	September 27, 2014	October 5, 2014
21st St. west of Belmont	DA24C3AH	September 24, 2014	October 6, 2014
Oliver north of 21st St.	DA13Y4NB	September 26, 2014	October 5, 2014
Oliver between 17th St. and 21st St.	CC75HNMS	September 17, 2014	September 24, 2014
21st St. east of Oliver	DA254AA4	September 27, 2014	September 30, 2014
Hillside south of 17th St.	DA321RND	September 18, 2014	September 24, 2014
17th St. between Fairmount and Hillside	CC7086MR	September 18, 2014	September 24, 2014
17th St. west of Hillside	DA21XEVF	September 18, 2014	September 24, 2014
Fairmount north of 17th St.	DA254AA4	September 10, 2014	September 12, 2014
Fairmount south of 17th St.	CC86VD9B	September 11, 2014	September 23, 2014
17th St. east of Fairmount	DA13Y4NB	September 18, 2014	September 24, 2014
Harvard north of 17th St.	DA24C3AH	September 13, 2014	September 23, 2014
Harvard south of 17th St.	DA34QWMJ	September 12, 2014	September 24, 2014
17th St. east of Harvard	DA22WGYX	September 18, 2014	September 24, 2014
Hillside north of 17th St.	DA28CQ9P	September 18, 2014	September 24, 2014
Hillside south of 17th St.	DA321RND	September 18, 2014	September 24, 2014
Oliver south of 17th St.	DA303B06	September 16, 2014	September 22, 2014
17th St. west of Oliver	DA3160QF	September 17, 2014	September 24, 2014

Existing Traffic Distribution

Graphical depictions of the existing AM Peak Hour traffic are included in Appendix D. Graphical depictions of the existing PM Peak Hour traffic are included in Appendix E.

Existing Traffic Analysis

The quality of traffic flow is commonly described in terms of the Level of Service (LOS). The Highway Capacity Manual defines six levels of service, ranging from A to F for each service measure. LOS A represents the best operating conditions from the traveler's perspective and LOS F the worst. For cost, environmental impact, and other reasons, roadways are not typically designed to provide LOS A conditions during peak hours, but rather some lower LOS that reflects a balance between individual travelers' desires and society's desires and financial resources. For this study LOS D or better is assumed to be an acceptable level of service during peak hours. This is a common standard for urban streets during peak hours, as attaining LOS C would likely require prohibitive costs for the additional benefits realized.

A model was produced utilizing Synchro Version 9 technology to describe the level of service at the existing intersections within the Study Area. These intersections are Hillside & 21st Street, Yale & 21st St., Mike Oatman/Belmont & 21st Street, Oliver & 21st Street, Hillside & 17th Street, Fairmount & 17th Street, Harvard & 17th Street, and Oliver & 17th. The results are shown in Tables 2 and 3.

Table 2. Existing Level of Service (LOS) - AM Peak Hour

Intersection	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Hillside & 21st St.	B	A	A	C	A	A	B	B	A	C	A	A
Yale & 21st St.	A	A	A	B	A	A	A	A	A	A	A	A
M.O./Belmont & 21st St.	A	A	A	C	A	A	C	C	B	C	C	C
Oliver & 21st St.	C	A	A	D	B	A	E	A	A	B	A	A
Hillside & 17th St.	B	A	A	B	A	A	A	A	A	B	A	A
Fairmount & 17th St.	A	A	A	A	A	A	B	B	B	B	B	B
Harvard & 17th St.	A	A	A	A	A	A	C	C	C	D	D	B
Oliver & 17th St.	A	N/A	A	N/A	N/A	N/A	C	C	N/A	N/A	A	A

Table 3. Existing Level of Service (LOS) - PM Peak Hour

Intersection	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Hillside & 21st St.	C	A	A	B	A	A	C	B	A	B	A	A
Yale & 21st St.	B	B	B	A	A	A	A	A	A	A	A	A
M.O./Belmont & 21st St.	A	A	A	C	A	A	C	C	B	B	B	B
Oliver & 21st St.	E	A	A	D	B	A	E	A	A	C	A	A
Hillside & 17th St.	A	A	A	B	A	A	B	A	A	B	A	A
Fairmount & 17th St.	A	A	A	A	A	A	C	C	C	C	C	C
Harvard & 17th St.	A	A	A	A	A	A	C	C	C	C	C	B
Oliver & 17th St.	B	N/A	B	N/A	N/A	N/A	C	C	N/A	N/A	B	B

From examination of the various levels of service for the existing intersections, there are noticeable deficiencies at the Oliver and 21st Street intersection. In the AM northbound left turns have a LOS E and in the PM both northbound and eastbound left turns are also at a LOS E, which is below the acceptable LOS for a peak hour. There are various ways that this may be improved and those are addressed later in the study.

Traffic Trip Generation Information and Discussion

Trip Generation by Land Use per Phase

The projection of trips likely to be generated by the proposed Innovation Campus was accomplished by referencing the Master Plan's land uses (Appendix A); the Plan's phasing (Appendix B); GLMV Architecture's building occupancy information for establishing Land Use Codes (LUC's); and then using generation rates for the various LUC's the Institute of Transportation Engineers (ITE) Trip Generation Manual, 9th Edition.

Below are the projected trips generated by the various land uses expected to be developed during each phase. Trips are defined as vehicles entering and exiting during the peak hour indicated. A summary of the trips generated is provided in Table 5 on page 10.

Phase 1a – Experiential Engineering/Maker Space

Experiential Learning: LUC #550 University/College, data measured in Average Vehicle Trip Ends vs. Students and of the 300 occupants, 100 are students.

AM Peak Hour Generation Rate is 0.14 trips per student = $(0.14) \times 100 = \underline{14 \text{ trips}}$
 PM Peak Hour Generation Rate is 0.15 trips per student = $(0.15) \times 100 = \underline{15 \text{ trips}}$

Maker Space: LUC #760 Research and Development Center, data measured in Average Vehicle Trip Ends vs. Employees and of the 300 occupants, 200 are employees.

AM Peak Hr. Generation Rate is 0.43 trips per employee = $(0.43) \times 200 = \underline{86 \text{ trips}}$
 PM Peak Hr. Generation Rate is 0.41 trips per employee = $(0.41) \times 200 = \underline{82 \text{ trips}}$

Phase 1b – Partnership Building 1:

Commercial Office: LUC #710 General Office Building, data measured in Average Vehicle Trip Ends vs. Employees and of the 450 occupants, 375 are employees.

AM Peak Hr. Generation Rate is 0.48 trips per employee = $(0.48) \times 375 = \underline{180 \text{ trips}}$
 PM Peak Hr. Generation Rate is 0.46 trips per employee = $(0.46) \times 375 = \underline{173 \text{ trips}}$

University: LUC #550 University/College, data measured in Average Vehicle Trip Ends vs. Students and of the 450 occupants, 75 are students.

AM Peak Hr. Generation Rate is 0.14 trips per student = $(0.14) \times 75 = \underline{10 \text{ trips}}$
 PM Peak Hr. Generation Rate is 0.15 trips per student = $(0.15) \times 75 = \underline{11 \text{ trips}}$

Phase 1c – 21st and Oliver Mixed-Use Development Buildings 1, 2, 3, 4 & Retail building:

Six land use codes (LUC's) apply to the first floor of these four buildings, therefore an average rate for these six LUC's in the AM and PM Peak hour is used to project trips, as shown in Table 4.

Table 4. Mixed Use Generation Rates

LUC #	Description	Based on	AM Peak Hr. Rate	PM Peak Hr. Rate
826	Specialty Retail Center	1,000 sq.ft. gross leasable area	6.84	5.02
925	Drinking Place	1,000 sq.ft. gross floor area		15.49
931	Quality Restaurant	1,000 sq.ft. gross floor area	5.57	9.02
932	High Turnover (Sit-Down) Restaurant	1,000 sq.ft. gross floor area	13.33	18.49
936	Coffee/Donut Shop w/o Drive-through Window	1,000 sq.ft. gross floor area	64.21	25.81
939	Bread/Donut/Bagel Shop w/o Drive-through Window	1,000 sq.ft. gross floor area	NA	NA
Average			22.49	14.77

Mixed Use Building 1, 1st floor:

AM Peak Hr. = $9,112 \text{ sq.ft.} / 1,000 = 9.112 \times (22.49) = \underline{205 \text{ trips}}$
 PM Peak Hr. = $9,112 \text{ sq.ft.} / 1,000 = 9.112 \times (14.77) = \underline{135 \text{ trips}}$

Mixed Use Building 2, 1st floor:

AM Peak Hr. = $9,112 \text{ sq.ft.} / 1,000 = 9.112 \times (22.49) = \underline{205 \text{ trips}}$
 PM Peak Hr. = $9,112 \text{ sq.ft.} / 1,000 = 9.112 \times (14.77) = \underline{135 \text{ trips}}$

Mixed Use Building 3, 1st floor:

AM Peak Hr.) = 8,250 sq.ft. /1,000 = 8.250 x (22.49) = 186 trips

PM Peak Hr. = 8,250 sq.ft. /1,000 = 8.250 x (14.77) = 122 trips

Mixed Use Building 4, 1st floor:

AM Peak Hr. = 8,250 sq.ft. /1,000 = 8.250 x (22.49) = 186 trips

PM Peak Hr. = 8,250 sq.ft. /1,000 = 8.250 x (14.77) = 122 trips

Mixed Use Buildings 1-4, Second through Fourth Floors: LUC #223 Mid-rise Apartments, data measured in average Vehicle Trip Ends vs. Dwelling Units and there will be 98 dwelling units.

AM Peak Hr. Generation Rate is 0.35 trips per dwelling unit = (0.35) x 98 = 35 trips

PM Peak Hr. Generation Rate is 0.44 trips per dwelling unit = (0.44) x 98 = 43 trips

Retail Building: LUC #931 Quality Restaurant, data measured in Average Vehicle Trip Ends vs. 1,000 Sq. Feet Gross Floor area and the total is 18, 200.

AM peak hr. = 18,200 sq.ft. /1,000 = 18.2 x (5.57) = 101 trips

PM Peak hr. = 18,200 sq.ft. /1,000 = 18.2 x (9.02) = 164 trips

Phase 1d – Hotel 1 at 21st & Oliver:

Hotel: LUC #312 Business Hotel, data measured in Average Vehicle Trip Ends vs. Occupied Rooms and there will be 95 rooms (worse case is all rooms occupied).

AM Peak Hour Generation Rate is 0.56 trips per occupied rooms = (0.56) x 95 = 53trips

PM Peak Hour Generation Rate is 0.57 trips per occupied rooms = (0.57) x 95 = 54 trips

Phase 2a – Innovation Center:

Innovation Center: LCU#550 University/College, 0.14 per student (AM Peak Hour rate), 0.15 per student (PM Peak Hour rate)

Assuming that all occupants given are students = 200

AM Peak Hr. Trips = (0.14) x (200) = 28 trips

PM Peak Hr. Trips = (0.15) x (200) = 30 trips

Phase 2b – Partnership Building 2:

Commercial Office: LUC #710 General Office Building, data measured in Average Vehicle Trip Ends vs. Employees and there will be 450 occupants (employees).

AM Peak Hour Generation Rate is 0.48 trips per employee = (0.48) x 450 = 216 trips

PM Peak Hour Generation Rate is 0.46 trips per employee = (0.46) x 450 = 207 trips

Phase 2c – 17th & Oliver Mixed Use Development Buildings 5 & 6:

Land Use Code for 1st floor, similar to Phase 1(c). Rate = 22.49 (AM Peak Hr.) & 14.77 (PM Peak Hr.)

Mixed Use Building 5, 1st floor:

AM Peak Hr. = 23,600 sq.ft. /1,000 = 23.600 x (22.49) = 531 trips

PM Peak Hr. = 23,600 sq.ft. /1,000 = 23.600 x (14.77)= 350 trips

Mixed Use Building 6, 1st floor:

AM Peak Hr. = 23,600 sq.ft. /1,000 = 23.600 x (22.49) = 531 trips

PM Peak Hr. = 23,600 sq.ft. /1,000 = 23.600 x (14.77)= 350 trips

Mixed Use Buildings 5 & 6, Second through Fourth Floors: LUC #223 Mid-rise Apartments, data measured in Average Vehicle Trip Ends vs. Dwelling Units and there will be 75 dwelling units for Buildings 5 & 6, together 150 dwelling units.

AM Peak Hr. Generation Rate is 0.35 trips per dwelling unit = (0.35) x 75 = 26 trips

PM Peak Hr. Generation Rate is 0.44 trips per dwelling unit = (0.44) x 75 = 33 trips

Phase 3a – Partnership Building 3:

Commercial Office: LUC #710 General Office Building, data measured in Average Vehicle Trip Ends vs. Employees and there will be 450 occupants (employees).

AM Peak Hr. Generation Rate is 0.48 trips per employee = (0.48) x 450 = 216 trips

PM Peak Hr. Generation Rate is 0.46 trips per employee = (0.46) x 450 = 207 trips

Phase 3b – Business School:

Business School: LCU#550 University/College, 0.14 per student (AM Peak Hour rate), 0.15 per student (PM Peak Hour rate)

Assuming that all occupants given are students = 400

AM Peak Hr. Trips = (0.14) x (400) = 56 trips

PM Peak Hr. Trips = (0.15) x (400) = 60 trips

Phase 3c – Residence Hall:

Residence Hall: LUC #223 Mid-rise Apartments, data measured in Average Vehicle Trip Ends vs. Dwelling Units and 225 dwelling units.

AM Peak Hr. Generation Rate is 0.35 trips per dwelling unit = (0.35) x 225 = 79 trips

PM Peak Hr. Generation Rate is 0.44 trips per dwelling unit = (0.44) x 225 = 100 trips

Phase 4a – Partnership Building 4:

Partnership Building 4: LCU #550 University/College- 0.14 per student (AM Peak Hour rate), 0.15 per student (PM Peak Hour rate)

Assuming that all occupants are students = 450

AM Peak Hr. Trips = (0.14) x (450) = 63 trips

PM Peak Hr. Trips = (0.15) x (450) = 68 trips

Phase 4b – Partnership Building 5:

Partnership Building 5: LCU #550 University/College- 0.14 per student (AM Peak Hour rate), 0.15 per student (PM Peak Hour rate)

Assuming that all occupants are students = 450

AM Peak Hr. Trips = (0.14) x (450) = 63 trips

PM Peak Hr. Trips = (0.15) x (450) = 68 trips

Phase 4c – Partnership Building 9:

Partnership Building 9: LCU #550 University/College- 0.14 per student (AM Peak Hour rate), 0.15 per student (PM Peak Hour rate)
Assuming that all occupants are students = 450

$$\text{AM Peak Hr. Trips} = (0.14) \times (450) = \underline{63 \text{ trips}}$$

$$\text{PM Peak Hr. Trips} = (0.15) \times (450) = \underline{68 \text{ trips}}$$

Phase 5a – Pad Site #1 (Partnership Building 8):

Pad Site #1: LCU #550 University/College- 0.14 per student (AM Peak Hour rate), 0.15 per student (PM Peak Hour rate)
Assuming that all occupants given are students = 225

$$\text{AM Peak Hr. Trips} = (0.14) \times (225) = \underline{32 \text{ trips}}$$

$$\text{PM Peak Hr. Trips} = (0.15) \times (225) = \underline{34 \text{ trips}}$$

Phase 5b – Hotel 2 at 21st & Oliver:

Hotel: LUC #312 Business Hotel, data measured in Average Vehicle Trip Ends vs. Occupied Rooms and there will be 95 rooms (worse case is all rooms occupied).

$$\text{AM Peak Hr. Generation Rate is } 0.56 \text{ trips per occupied rooms} = (0.56) \times 95 = \underline{53 \text{ trips}}$$

$$\text{PM Peak Hr. Generation Rate is } 0.57 \text{ trips per occupied rooms} = (0.57) \times 95 = \underline{54 \text{ trips}}$$

Phase 6a – Pad Site #2 (Partnership Building 7):

Pad Site #2: LCU #550 University/College- 0.14 per student (AM Peak Hour rate), 0.15 per student (PM Peak Hour rate)
Assuming that all occupants are students = 900

$$\text{AM Peak Hr. Trips} = (0.14) \times (900) = \underline{126 \text{ trips}}$$

$$\text{PM Peak Hr. Trips} = (0.15) \times (900) = \underline{135 \text{ trips}}$$

Phase 6b – Pad Site #3 (Partnership Building 6):

Pad Site #3: LCU #550 University/College- 0.14 per student (AM Peak Hour rate), 0.15 per student (PM Peak Hour rate)
Assuming that all occupants are students = 225

$$\text{AM Peak Hr. Trips} = (0.14) \times (225) = \underline{32 \text{ trips}}$$

$$\text{PM Peak Hr. Trips} = (0.15) \times (225) = \underline{34 \text{ trips}}$$

Phase 6c – Community Outreach Center:

Community Outreach Center: LCU #550 University/College- 0.14 per student (AM Peak Hour rate), 0.15 per student (PM Peak Hour rate)
Assuming that all occupants are students = 450

$$\text{AM Peak Hr. Trips} = (0.14) \times (450) = \underline{63 \text{ trips}}$$

$$\text{PM Peak Hr. Trips} = (0.15) \times (450) = \underline{68 \text{ trips}}$$

Table 5. Trip Generation Summary

Phase/Building*	AM Peak Hr Trips	PM Peak Hr Trips	AM Entering	AM Exiting	PM Entering	PM Exiting
Phase 1						
a. Experiential Engineering	14	15	10	4	5	10
Maker Space	86	82	74	12	8	74
b. Partnership Building 1						
Commercial Office	180	173	158	22	29	144
University	10	11	7	3	4	7
c. Mixed Use Bldgs 1,2,3 & 4						
Building 1 (1st floor only)	205	135	59	82	77	58
Building 1 (2nd - 4th floors)	35	43	10	25	25	18
Building 2 (1st floor only)	205	135	123	82	77	58
Building 2 (2nd - 4th floors)	35	43	10	25	25	18
Building 3 (1st floor only)	186	122	112	74	70	52
Building 3 (2nd - 4th floors)	35	43	10	25	25	18
Building 4 (1st floor only)	186	122	112	74	70	52
Building 4 (2nd - 4th floors)	35	43	10	25	25	18
Retail Building	101	164	83	18	102	62
d. Hotel 1 at 21st & Oliver	53	54	15	24	33	21
Phase 2						
a. Innovation Center	28	30	25	3	5	25
b. Partnership Building 2	216	207	190	56	35	172
c. Mixed Use Develop. Bldgs 5 & 6						
Building 5 (1st floor only)	531	350	319	212	200	291
Building 5 (2nd - 4th floors)	26	33	8	18	19	14
Building 6 (1st floor only)	531	350	319	212	200	291
Building 6 (2nd - 4th floors)	26	33	8	18	19	14
Phase 3						
a. Partnership Building 3	216	207	190	56	35	172
b. Business School	56	60	41	15	19	41
c. Residence Hall	79	100	23	56	59	41
Phase 4						
a. Partnership Building 4	63	68	55	8	12	56
b. Partnership Building 5	63	68	55	8	12	56
c. Partnership Building 9	63	68	55	8	12	56
Phase 5						
a. Pad Site #1 (Partnership Building 8)	32	34	28	4	6	28
b. Hotel 2 at 21st & Oliver	53	54	29	24	33	21
Phase 6						
a. Pad Site #2 (Partnership Building 7)	126	135	111	15	23	112
b. Pad Site #3 (Partnership Building 6)	32	34	28	4	6	28
c. Community Outreach Center	63	68	47	16	22	46

**After the above trip generation task was completed and summarized several changes were made in the Master Plan's phasing. The reader may see these minor changes by comparing the above phasing in Table 1 to that shown on the Master Plan in Appendix B.*

Locations of Proposed Access Points

The Project Site currently has only one access point onto the surrounding arterial street system. This is the Wheatshocker Drive access onto 17th Street. This Drive also provides access from the Site to the WSU Perimeter Rd system.

The Master Plan shows an additional access point onto 17th; three access points onto Oliver and three onto 21st. An additional access point is proposed onto Mike Oatman Dr., a part of the Perimeter Road system. The spacing on these proposed access points is as follows:

- The 17th Street access point at Innovation Way is about 1120 ft. west of Oliver on the north side of 17th Street, this will be the main north/south route through the Innovation Campus.
- On Oliver, the northernmost access point aligns with Shadybrook Street, which goes east from Oliver. The drive here provides access to the Hotel 2 site and secondary access for the Retail Building. The second access point will be for 19th Street, a minor arterial serving the Innovation Campus. It is located 425 ft. south of Shadybrook Street. The third access will be for 18th Street, another minor arterial serving the Innovation Campus. This proposed access point is about 920 feet south of 19th and 870 ft. north of 17th Street.
- On 21st Street the westernmost access point is approximately 225 ft. east of Mike Oatman Dr. A drive here will provide primary access to the Hotel 1 site and a small Retail site, as well as, secondary access to the existing Marcus Welcome and Woodman Alumni Centers. Onto the east is a drive which aligns with Crestview Lake East which goes north from 21st Street. This drive is 610 ft. east of Mike Oatman Drive and 980 ft. west of Oliver. It provides primary access to Mixed Use Buildings 1 & 2 and secondary access for Hotel 1. It also connects to the proposed 19th Street. Third 21st Street access point is 377 ft. west of Oliver and will be mainly used to access Mixed Use Buildings 3 & 4 and the Retail Building on the corner of 21st & Oliver.
- On Mike Oatman Drive the proposed access point for Innovation Way is located 730 ft. south of the 21st Street & Mike Oatman/Belmont intersection and 775 ft. east of the Perimeter Road & Mike Oatman Drive intersection.

Proposed Traffic Distribution for Full Build Out

Graphical depictions of the proposed AM Peak Hour traffic distributions are included in Appendix F. Graphical depictions of the proposed PM Peak Hour traffic distributions are included in Appendix G.

Intersection Analysis

For the intersection analysis a key assumption was that the majority of trips generated were distributed to the north on Oliver toward K-96 for access to destinations to the west and east sections of Wichita. This assumption was based on residential locations of present WSU employees and students within various zip codes. See Appendix H.

With the use of Synchro 9 many options were reviewed in order to explore what intersection improvements might be employed to attain a LOS D or better at full build out, during the peak hour.

A summary of findings concerning existing and future intersection levels of service are provided below.

At 21st Street and Oliver there are deficiencies in several existing movements in both the AM and the PM Peak Hours. As shown in Tables 1 and 2, three movements are below LOS D. As the Innovation Campus is developed and more movements are added the LOS will worsen unless improvements are made. The recommended improvements include the following: double left turn lanes are needed to improve 21st Street and Oliver northbound for both through and left turn

movements. Also, to balance out the intersection, southbound double left turns would be added. This proposal was reinforced through an examination of other top intersections in the City of Wichita. Appendix I shows current intersections of similar size or even smaller volumes have double left turns.

Other substandard LOS movements are the north and southbound right turns on Oliver. Therefore right turns are proposed to be added. This was done to reduce the delay and length of queue for the north and southbound through movements.

At 18th & 19th intersections with Oliver consideration was given to stop sign conditions. However, proposed movements out of the Campus turning left had a LOS F; therefore, signals were introduced into the model. Although not modeled, another option considered at the 18th Street intersection was a Florida "T" which would have a continuous northbound movement. Left turns into and out of the Campus would still have actuated turn signals but they would allow a continuous northbound movement without delay at a signal. Another proposed improvement is to add southbound right turn lanes for 17th, 18th & 19th Street, to relieve delay and queue on Oliver

The 17th Street & Oliver intersection is currently perceived to be operating at a less than acceptable standard LOS. However, the model does not indicate such a condition. Still, with additional vehicle volumes generated by the Innovation Campus, it is recommended that a northbound left turn lane be added. This will reduce the delay and queue on Oliver.

Synchro run data provided upon request.

Summary of Findings

Various geometric, right-of-way and traffic control recommendations are listed below. Once these are implemented all movements for the 55 intersections are LOS D or above at full build out. Appendix J shows the LOS Summaries for AM and PM Peak Hour traffic. These summaries show that there are four movements that have a LOS D in the AM and five movements in the PM. However, these low LOS D movements are during the rush hour AM and PM, and some delay is regularly acceptable by the general public during these hours, and alternate routes will be discovered by the public as they get familiar to the delay, if not acceptable. During hours outside of peak hours, intersections will operate at higher levels of service. Some delay can be relieved by signal timing at the moment of full build out.

Recommendations for Traffic

The recommended geometric and signalization improvements for the study area are shown on the Traffic Recommendations in Appendix K.

Geometric Changes

Arterial Roads

In 17th Street several changes are recommended. Pavement markings will be used to delineate bike lanes on both sides of the road from Hillside to Oliver; center islands and turn bays will occupy the center of the existing roadway; and through traffic will be accommodated by single lanes eastbound and westbound.

In Oliver south of 17th Street, a 200 ft. left turn lane for north bound traffic is proposed. Also recommended north of 17th is a 200 ft. right turn lane for the southbound traffic.

At the 18th Street and Oliver intersection these improvements are proposed: Eastbound traffic should have dedicated left and right turn lanes for 280 ft. Northbound traffic should have a left turn lane for 200 ft. Southbound traffic should have at least a 125 ft. right turn lane. As improvements are made at this intersection consideration could be given to installing a Continuous Green T-intersection (CGT). If applied here northbound Oliver traffic would be allowed to pass through a signalized intersection without stopping under a steady green arrow traffic signal. The cemetery gravesites along the east right-of-way precludes any conflicting

vehicular movement from the east. Movements from the west to northbound Oliver would be precluded from entering the through, northbound Oliver by pavement markings or other lane delineation devices. Northbound Oliver traffic wishing to turn left into 18th Street would have advance warning signs to inform them of the special lane configuration and to move to the appropriate lane.

At the 19th Street and Oliver intersection these improvements are proposed; Eastbound should have dedicated left and right turn lanes for 175 ft. Northbound traffic should have a left turn lane for 200 ft. Southbound traffic should have a continuous right turn lane which begins at the 21st Street and Oliver intersection.

At the Shadybrook Street and Oliver intersection these improvements are proposed: Proposed Eastbound traffic is recommended to have a dedicated left turn lane and through/right turn lane. Existing westbound Shadybrook traffic is to remain unchanged. Northbound traffic should have a left turn lane for 100 ft. Southbound traffic should have a continuous right turn lane beginning at the 21st Street and Oliver intersection.

At the 21st Street and Oliver intersection these improvements are proposed: Eastbound traffic should have two through lanes; double left turn lanes for 250 ft; and a right turn lane for 200 ft. Westbound traffic should have an additional left turn lane added to the existing left turn to make a double left turn for 200 ft. Northbound traffic should have two through lanes; double left turn lanes for 280 ft; and a 150 ft right turn lane. Southbound traffic should have two through lanes; double left turn lanes for 250 ft.; and a 200 ft right turn lane.

At the 21st Street and the drive to the Mixed Use Buildings 3 & 4 and Retail Building it is recommended that the proposed drive shown in the Master Plan be relocated 100 ft west of the location shown. This will relieve traffic congestion at 21st & Oliver and improve movement into and out of these sites.

Minor Roads

The interior roadways are Innovation Way, 18th Street and 19th Street. These boulevards are to have raised, landscaped medians, turn lanes at the various intersections and one through lane in each direction. Lane width should be 20 ft from face of curb to face of curb to accommodate emergency vehicles or any vehicle that may be stalled.

Also recommended are two urban single lane roundabouts. One is at the first intersection north of 17th Street on Innovation Way and the second for the first intersection west of Oliver on 18th Street. These roundabouts should have an inscribed circle diameter of 100 to 130 feet and accommodate a single 20 ft lane. The roundabout on 18th Street accommodates the entrance into the parking garage on the north side and the drive to the Mixed Use Buildings 5 and 6 on the south side. The second roundabout north of 17th on Innovation Way accommodates the parking garage on the east and the surface parking on the west. There is adequate right-of-way to insert these two roundabouts at the locations mentioned but the parking and roadway layouts will require adjustment

With the above recommended improvements, acceptable LOS's are realized at full build out. This result can be found in Appendix J for both the AM and PM Peak Hours.

Right of Way Needs

There will be no additional right of way required along 17th Street for the recommended roadway improvements.

Right of way will be required for the following improvements:

- on Oliver south of 17th Street for the left turn lane;
- from 17th Street to 19th Street all right of way will be taken from the Project Site;
- from 19th to 21st Streets both sides of the roadway will require additional right of way but mainly on the Project Site's side;

- north of 21st Street on Oliver additional right of way will be required on the west side;
- on west side of Oliver for about 400 ft both sides of 21st Street;
- on the east side about 300 ft on the south side of 21st Street only.

Traffic Control

All existing signals will remain in the locations they are today, except the signals at 21st & Oliver and 17th Street & Oliver. At these locations new ones will be installed initially to facilitate the recommended lane configurations.

Five additional intersections are required to have signalization. At 17th Street and Fairmount and at 17th Street and Harvard, signalization is needed initially. At near full build-out, signals should be installed at 17th and Innovation Way; 18th Street and Oliver; and 19th Street and Oliver. These signals are recommended to be actuated-uncoordinated, with the use of camera actuators. All signals will be equipped with pedestrian push-buttons for pedestrian crossings and comply with ADA regulations.

Internal campus drives intersecting with Innovation Way, 18th & 19th Street are recommended to be controlled by signage or mini-roundabouts. No signalization is needed. The Innovation Way and Mike Oatman Drive intersection should have a stop sign to control Innovation Way traffic.

The traffic modeled included only a 225 dwelling unit Residence Hall. The Master Plan provides space for doubling its size. Should this occur, the current traffic model should be updated to see if signalization of the Innovation Way and Mike Oatman Drive intersection is required. It may be prudent to install conduit as this intersection is constructed.

Pedestrian and Bicyclists System Study

Study Area

The Innovation Campus Project Site is an area of 132 acres just east of the main Wichita State University campus. Within this acreage is the now closed Braeburn Golf Course. The Study Area for evaluating pedestrian and bicyclist needs is this Project Site and its immediate environs.

Purpose

The purpose of this Study is to provide a plan for improving pedestrian and bicyclists connectivity both to and within the Innovation Campus and to the existing WSU campus. There will be considerably more vehicular traffic coming to the Innovation Campus and it will be highly desirable to mitigate its possible negative impacts on non-motorized, i.e., pedestrian and bicyclist movements.

In preparing this Study, consideration was then given to the findings of the Vehicular Traffic Impact Study, as well as, recommendations from the Wichita Bicycle Master Plan; field observations and discussions with WSU and City staff.

Existing Pedestrian and Bicyclist Facilities

Although there is an extensive system of golf cart paths throughout the Project Site, it will be necessary to remove them as the Innovation Campus develops. Also, these paths are unlighted and not easily supervised. However, engaging the community as to their possible day use for walking and bicycling on an interim basis could result in a wise use of this valuable open space resource.

Pedestrian Sidewalks—Since the site of the Innovation Campus is the now closed Braeburn Golf Course and the recently razed Wheatshocker Residence Hall, there are currently no internal or external sidewalks. Proposed sidewalks, crosswalks and pedestrian actuated signals on the perimeter and immediate environs of the Innovation Campus and WSU are shown in Appendix L.

Bicycle Facilities—As with sidewalks, since the Project Site has been developed as a golf course and the recently razed Wheatshocker Residence Hall, there are currently no internal bicycle facilities present. The bicyclist facilities within the City of Wichita are shown in Appendix M. Those closest to the Project Site are the K-96 and the, soon to be completed, Redbud Paths.

A December, 2014 City of Wichita RFP entitled “Wichita Street Safety Education Initiative” notes the need for improved bicycle facilities: It states that, in citizen surveys taken in comparable cities, in 2006, 2010 and 2012 the ease of bicycle travel in Wichita is ranked low. And, in the 2012 survey, Wichita ranked 232 out of 273 comparable cities for the ease of bicycle travel.

Developed Conditions

Development on the site is shown on the Innovation Campus Master Plan in Appendix A, and its phasing is shown in Appendix B. At build-out it will include 2.6 million square feet of occupiable building space and related surface and structured parking. It will include campus buildings, office buildings, parking lots, apartments, retail shops, restaurants, hotels, and open space. Major streets will be built within the development to connect the development to 17th Street, 21st Street, Oliver Avenue and Mike Oatman Dr.

Pedestrian Connectivity

An important objective is to safely and conveniently move pedestrians internally within all the various land uses within the Innovation Campus. Such movements and chance meetings that can occur in a pleasant, walkable environment will facilitate the kind of informal interaction sought between the community, students, entrepreneurs, inventors, and business partnerships, i.e., those who are occupants and visitors to the site.

The proposed main sidewalk infrastructure is shown in Appendix N. Ancillary sidewalks and meeting plazas will accompany this basic network as specific development plans within the Project Site are realized.

It will also be highly desirable to provide for the safe and convenient movement of pedestrians from beyond the Innovation Campus to WSU and adjoining neighborhoods. Everyone is a pedestrian at some point during the day and one must rely on the motorized and non-motorized infrastructure, and competent drivers and pedestrians, to avoid accidents. As reported in the Wall Street Journal on August 4, 2014, there were 33,561 traffic fatalities in the US in 2012 and 4,743 were pedestrians, an increase of 9.4% from 2010. Another trend was described in a Washington Post article on May 21, 2014: It noted that while walking is becoming increasingly dangerous, riding in a car has become historically less so. Various sidewalk and signalization improvements which will enhance pedestrian connectivity in a safe and convenient manner are also proposed as shown in Appendix N.

Bicyclist Connectivity

In recent years Wichita residents have indicated an increasing desire of more and improved bicycle facilities. Recently completed was a bicycle facilities planning process that lasted more than two years; included more than 50 public meetings; and 4,000 participants. When implemented, several projects within the resulting Wichita Bicycle Master Plan will help integrate both WSU and the Innovation Campus into the existing city-wide bike facilities system. These projects are in the following corridors:

1. Redbud Shared-Use Path
2. 17th Street
3. Belmont
4. Fairmount
5. Fountain
6. Belmont
7. 18th Street

With a goal of promoting bicycling as a safe and convenient mode of transportation to both the Innovation Campus and WSU, several improvements are proposed as shown in Appendix N.

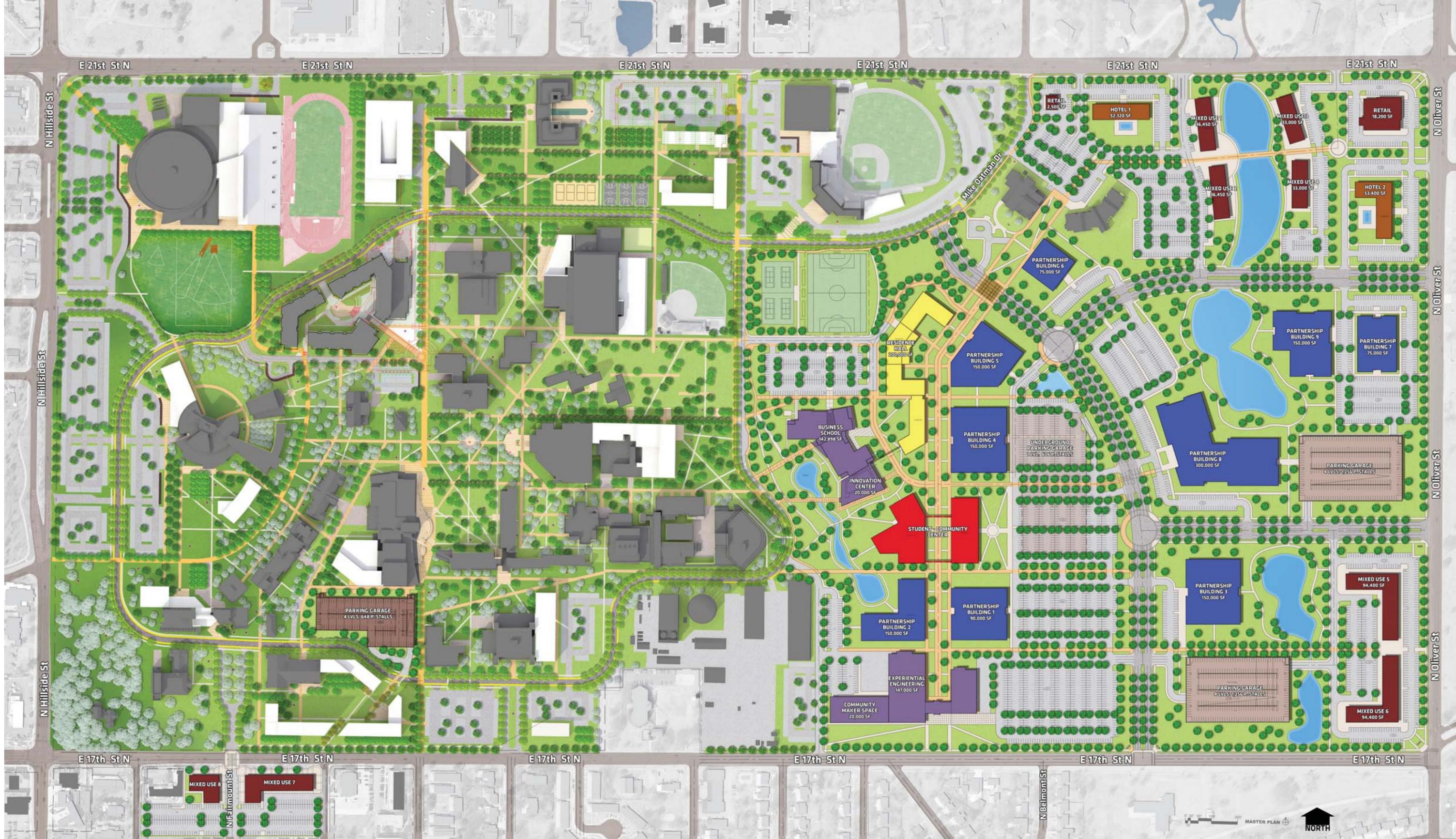
Especially key is the Redbud Shared Use Path. This is a partially constructed rails-to-trails project that is scheduled for completion in 2015. At that time, it will extend from the existing I-135 shared use path, near the northeast part of downtown Wichita, to 17th and Oliver. Under design is the next segment of the Redbud Path from Oliver to Woodlawn. Ultimately it will extend through the rest of East Wichita and on through the City of Andover. Part of this Path is shown in Appendix N.

Also, shown in Appendix N are proposals for reconfiguring 17th Street into a pedestrian and bicyclist-friendly street from Hillside to Oliver. This can be done by converting 17th Street's existing four travel lanes into two travel lanes with a continuous, center left turn/chicken lane and adding buffered bicycle lanes, with striping and rumble strips, adjacent to both the north and south curb and gutters. An example of such street with buffered bicycle lanes is found within the same Appendix N.

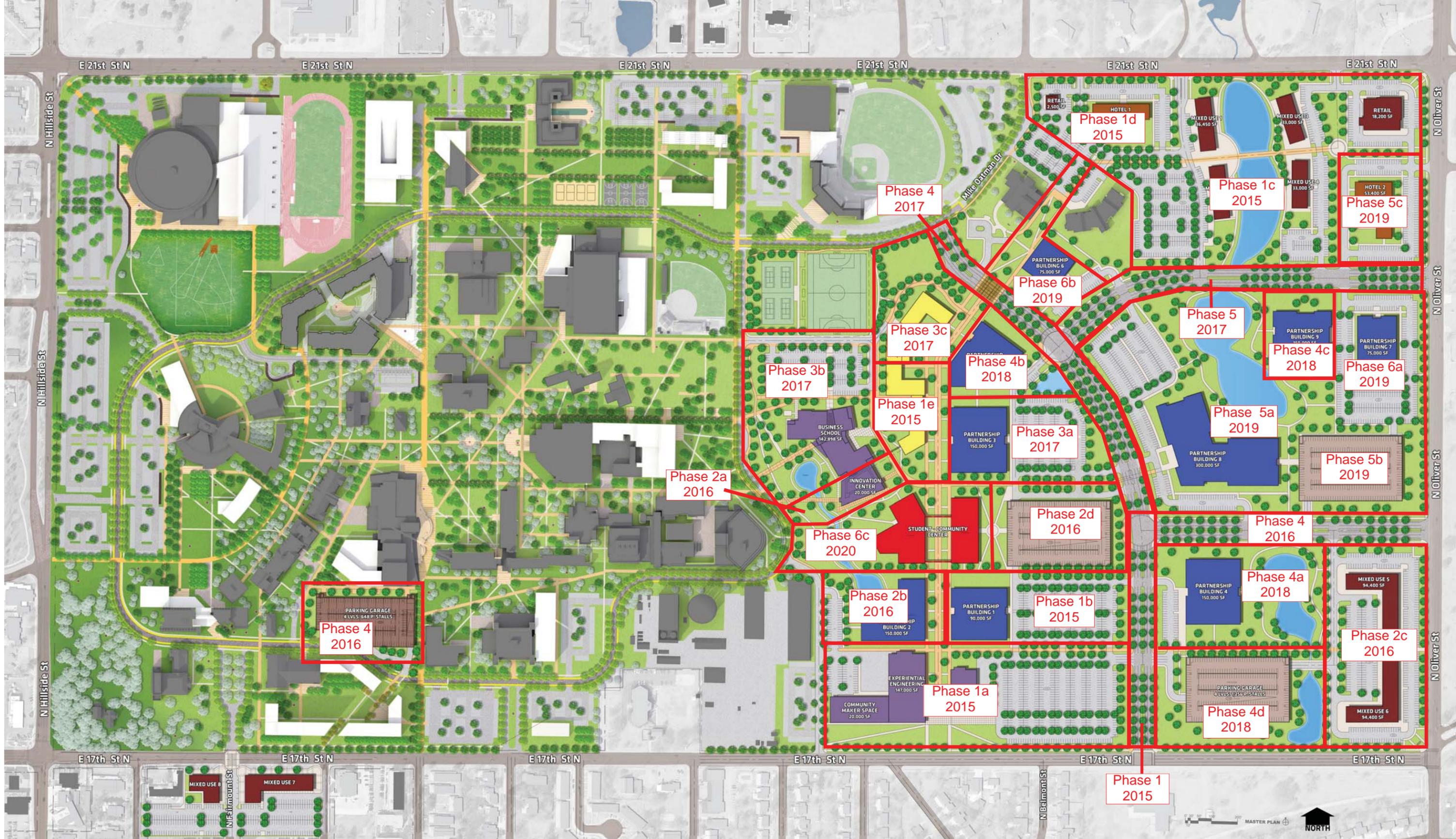
Additional traffic signals at Fairmount and Harvard Avenues on 17th have multiple benefits: They provide additional traffic calming; they improve traffic service to WSU and the Innovation Campus from 17th; and they accommodate pedestrian and bicycle crossing movements between residential/supportive service areas south of 17th and both campuses.

A pedestrian actuated signal on 17th Street just east of the present Wheatshocker Dr. will accommodate pedestrian and bicyclist crossing needs at an intermediate point between Harvard Ave. and the Innovation Way/17th Street signalized intersection. This signal will also aid movements between the Red Bud Trail and the Innovation Campus.

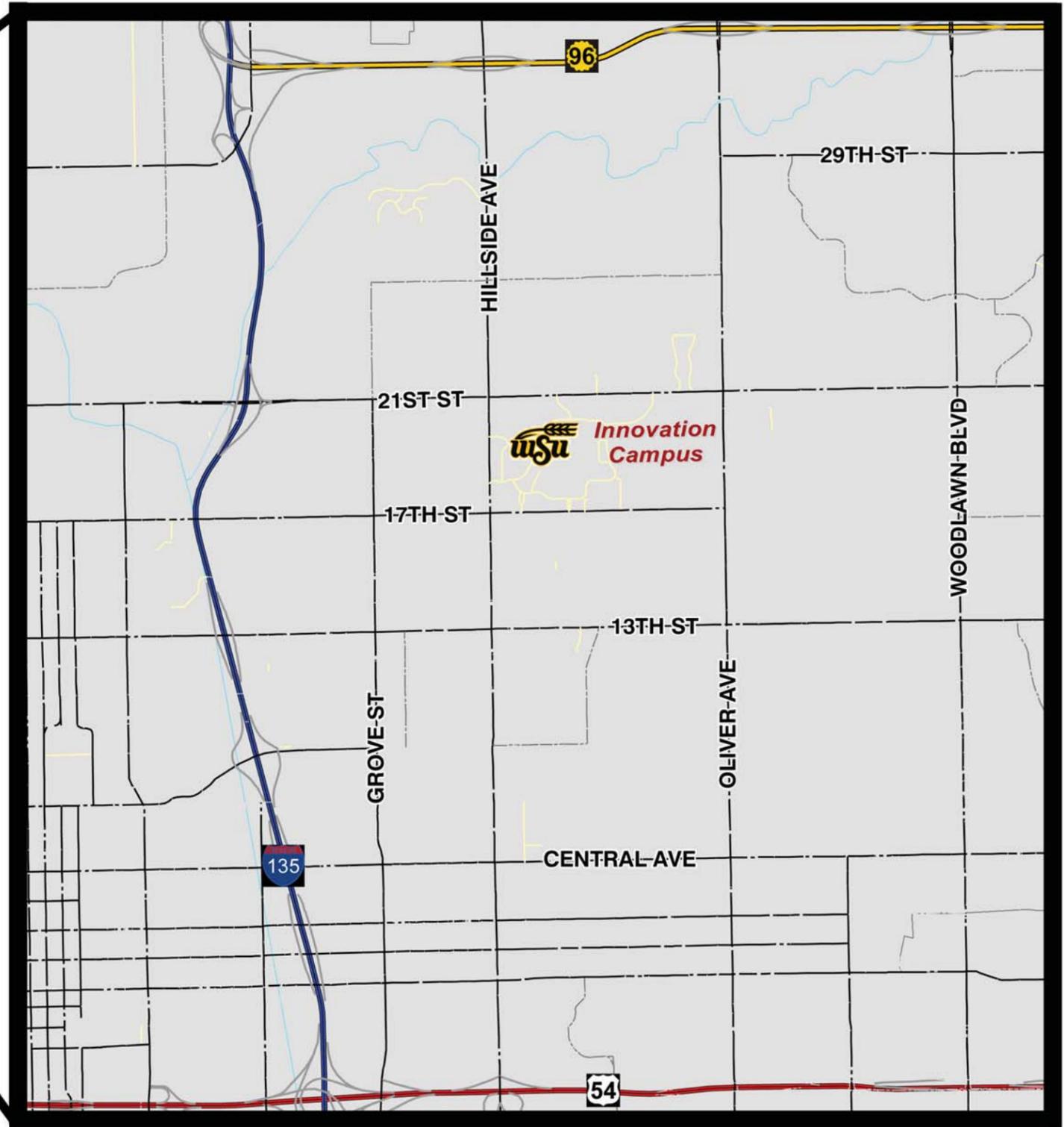
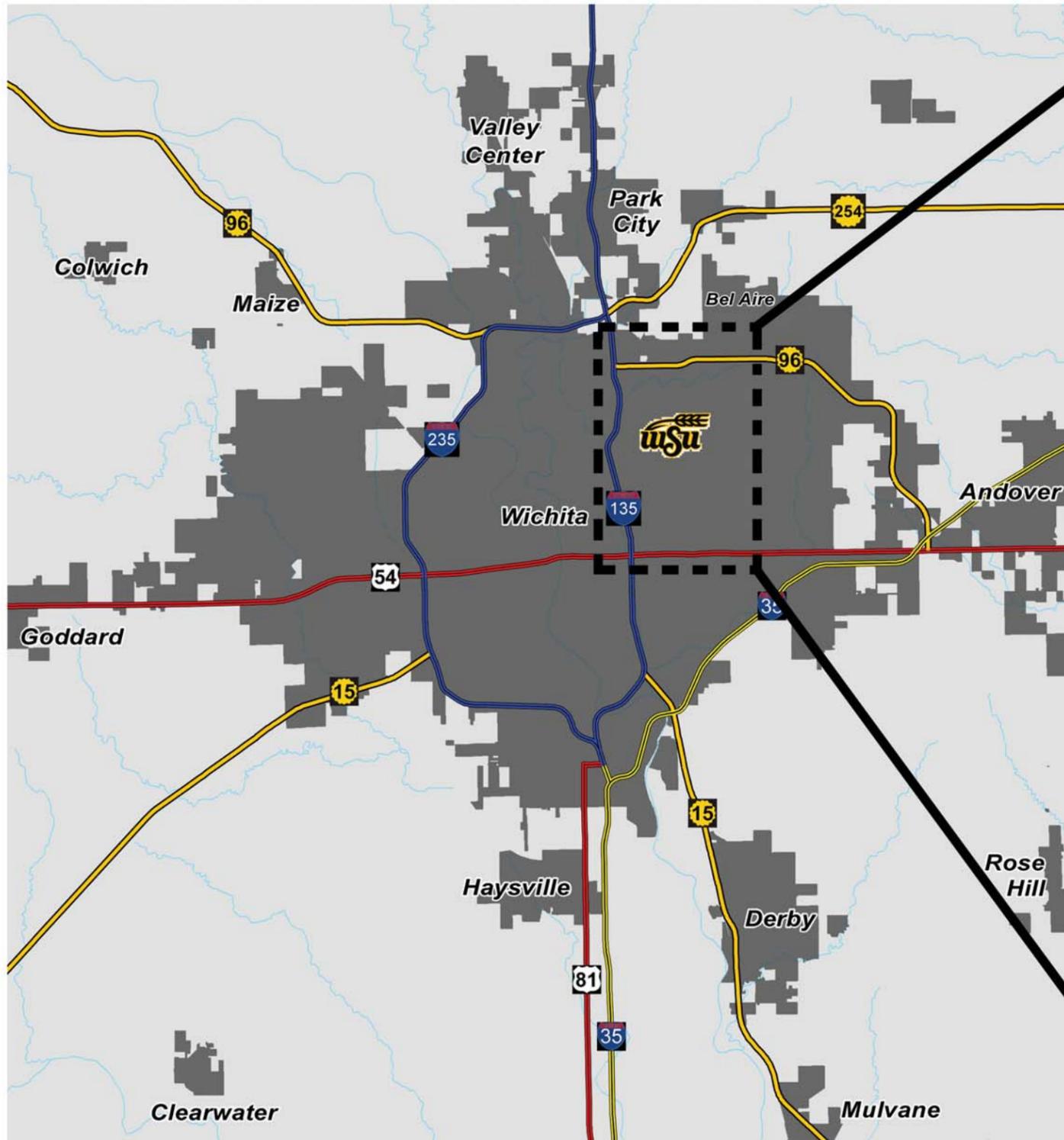
Appendix A - Innovation Campus Master Plan



Appendix B - Campus Master Plan with Phasing



Appendix C - Campus Location Diagram



CAMPUS LOCATION DIAGRAM

WSU INNOVATION CAMPUS

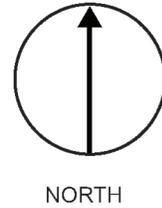
12.09.2014



Wichita, KS • 316.684.9600

Appendix D - Existing A.M. Peak Hour Traffic Count

TRAFFIC VOLUME AND
TURNING MOVEMENT STUDY

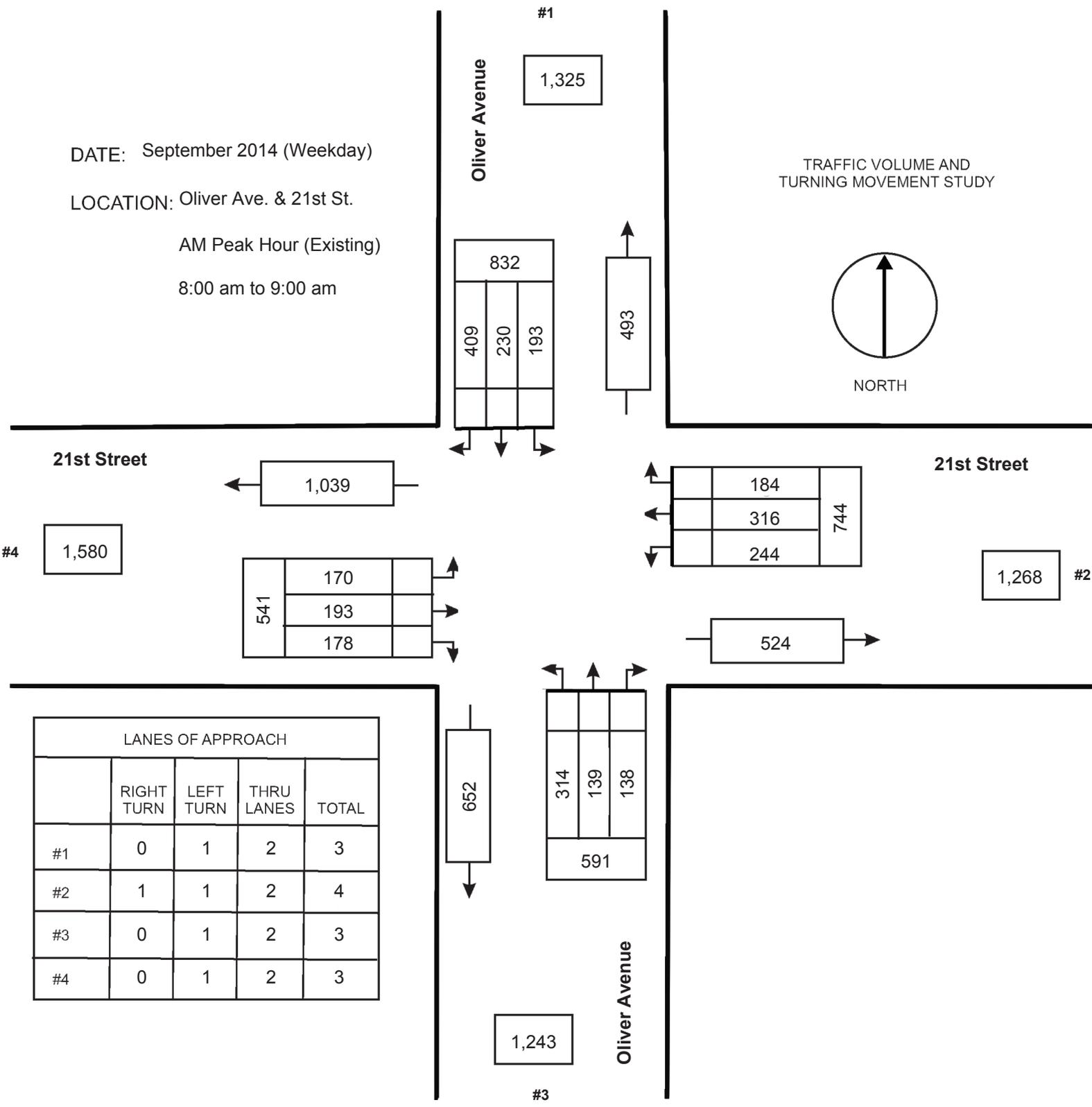


DATE: September 2014 (Weekday)

LOCATION: Oliver Ave. & 21st St.

AM Peak Hour (Existing)

8:00 am to 9:00 am

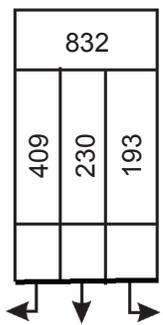


LANES OF APPROACH				
	RIGHT TURN	LEFT TURN	THRU LANES	TOTAL
#1	0	1	2	3
#2	1	1	2	4
#3	0	1	2	3
#4	0	1	2	3

#1

1,325

Oliver Avenue

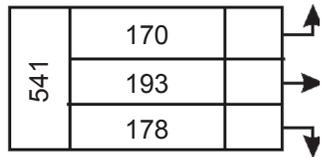


21st Street

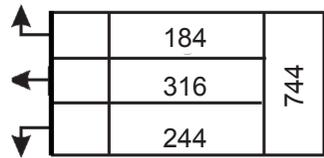


#4

1,580

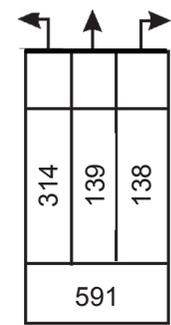
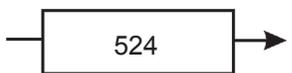


21st Street



1,268

#2



Oliver Avenue

1,243

#3

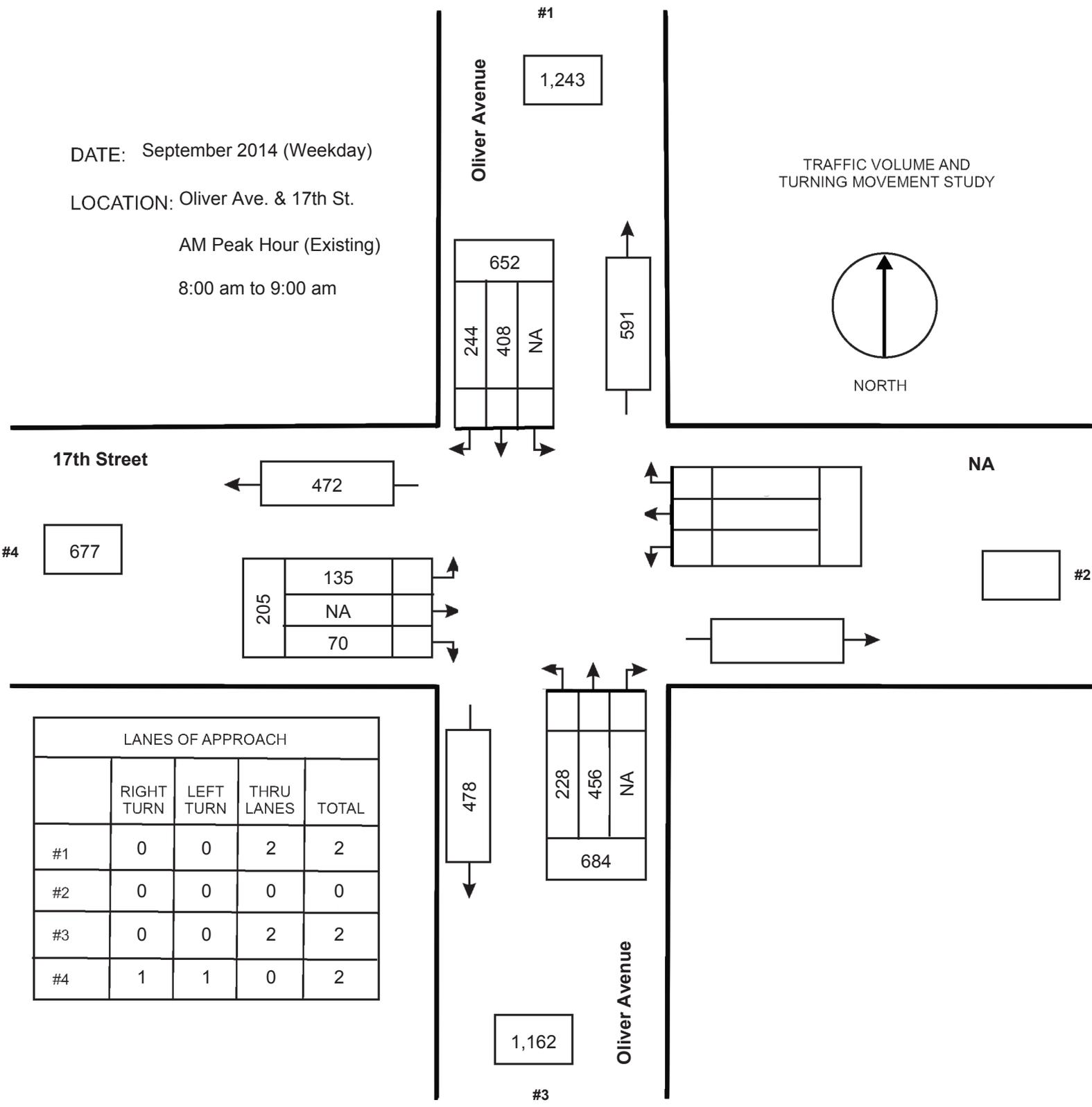
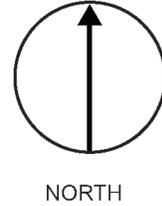
DATE: September 2014 (Weekday)

LOCATION: Oliver Ave. & 17th St.

AM Peak Hour (Existing)

8:00 am to 9:00 am

TRAFFIC VOLUME AND TURNING MOVEMENT STUDY



#1

1,243

Oliver Avenue

652		
244	408	NA

591

17th Street

472

NA

--

#2

#4

677

205	135	
	NA	
	70	

--

#3

478

228	456	NA
684		

Oliver Avenue

1,162

#3

LANES OF APPROACH				
	RIGHT TURN	LEFT TURN	THRU LANES	TOTAL
#1	0	0	2	2
#2	0	0	0	0
#3	0	0	2	2
#4	1	1	0	2

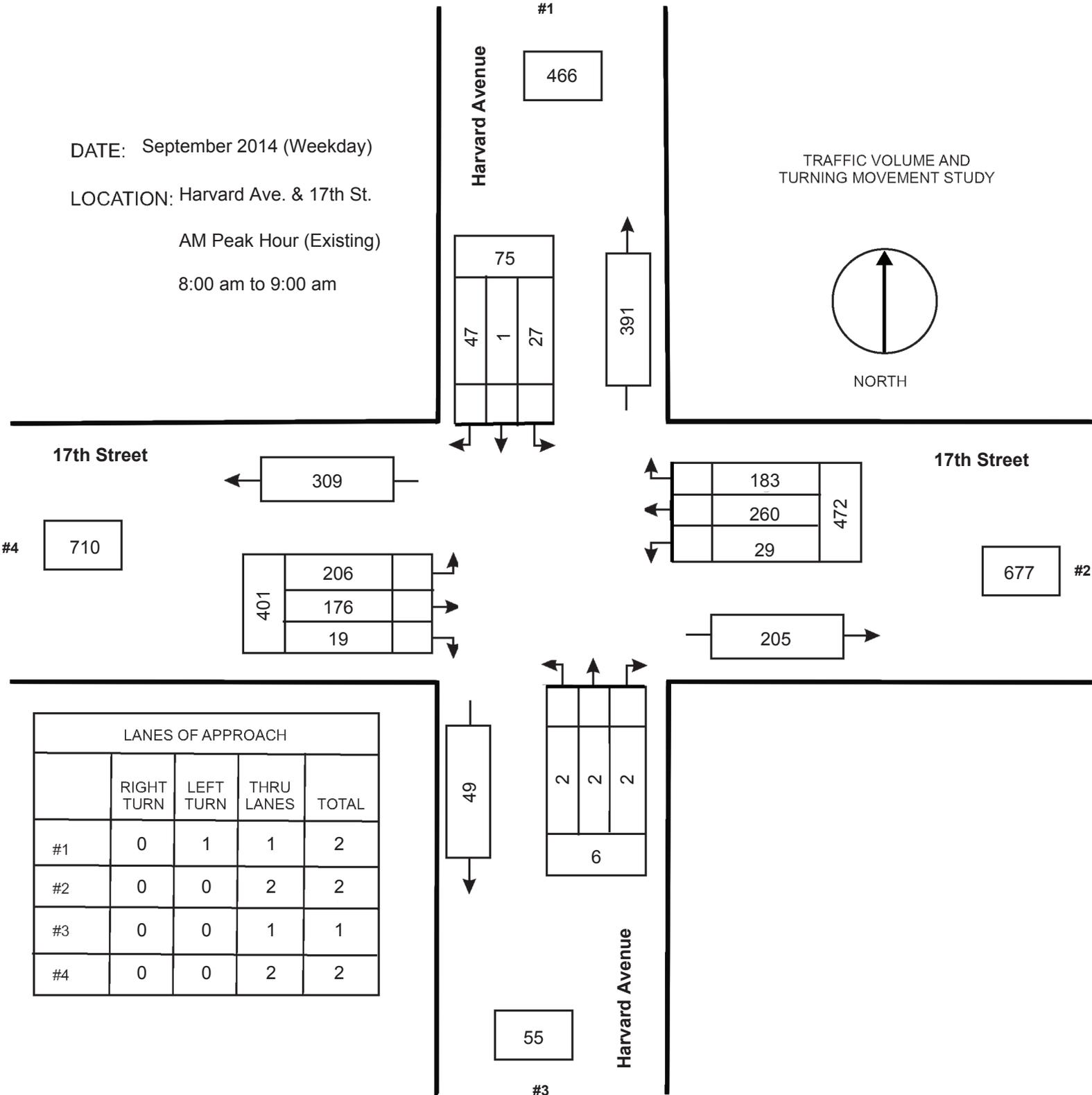
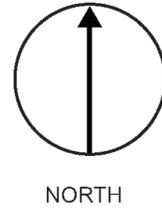
DATE: September 2014 (Weekday)

LOCATION: Harvard Ave. & 17th St.

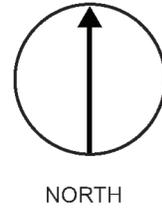
AM Peak Hour (Existing)

8:00 am to 9:00 am

TRAFFIC VOLUME AND TURNING MOVEMENT STUDY



TRAFFIC VOLUME AND TURNING MOVEMENT STUDY

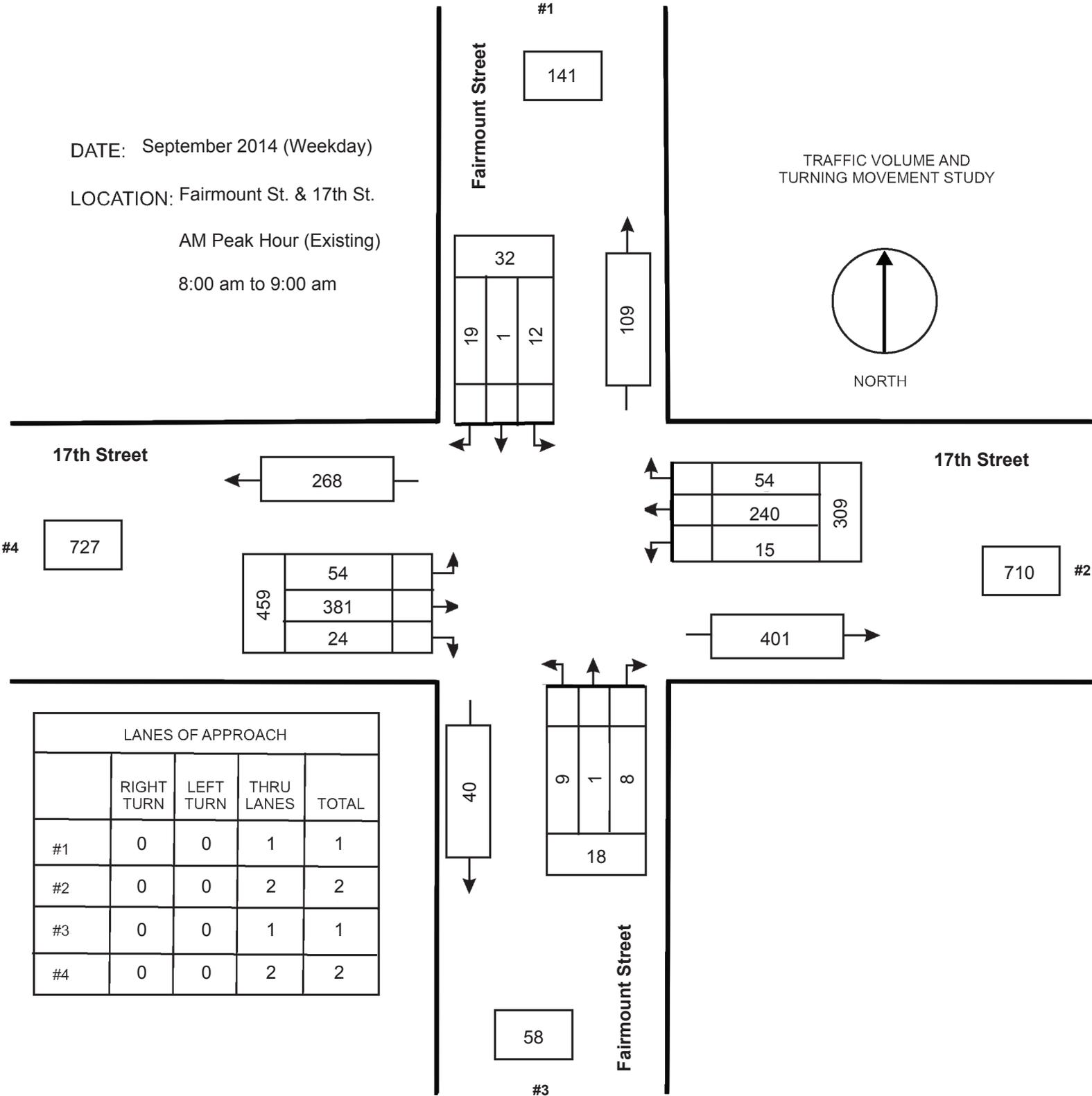


DATE: September 2014 (Weekday)

LOCATION: Fairmount St. & 17th St.

AM Peak Hour (Existing)

8:00 am to 9:00 am



LANES OF APPROACH				
	RIGHT TURN	LEFT TURN	THRU LANES	TOTAL
#1	0	0	1	1
#2	0	0	2	2
#3	0	0	1	1
#4	0	0	2	2

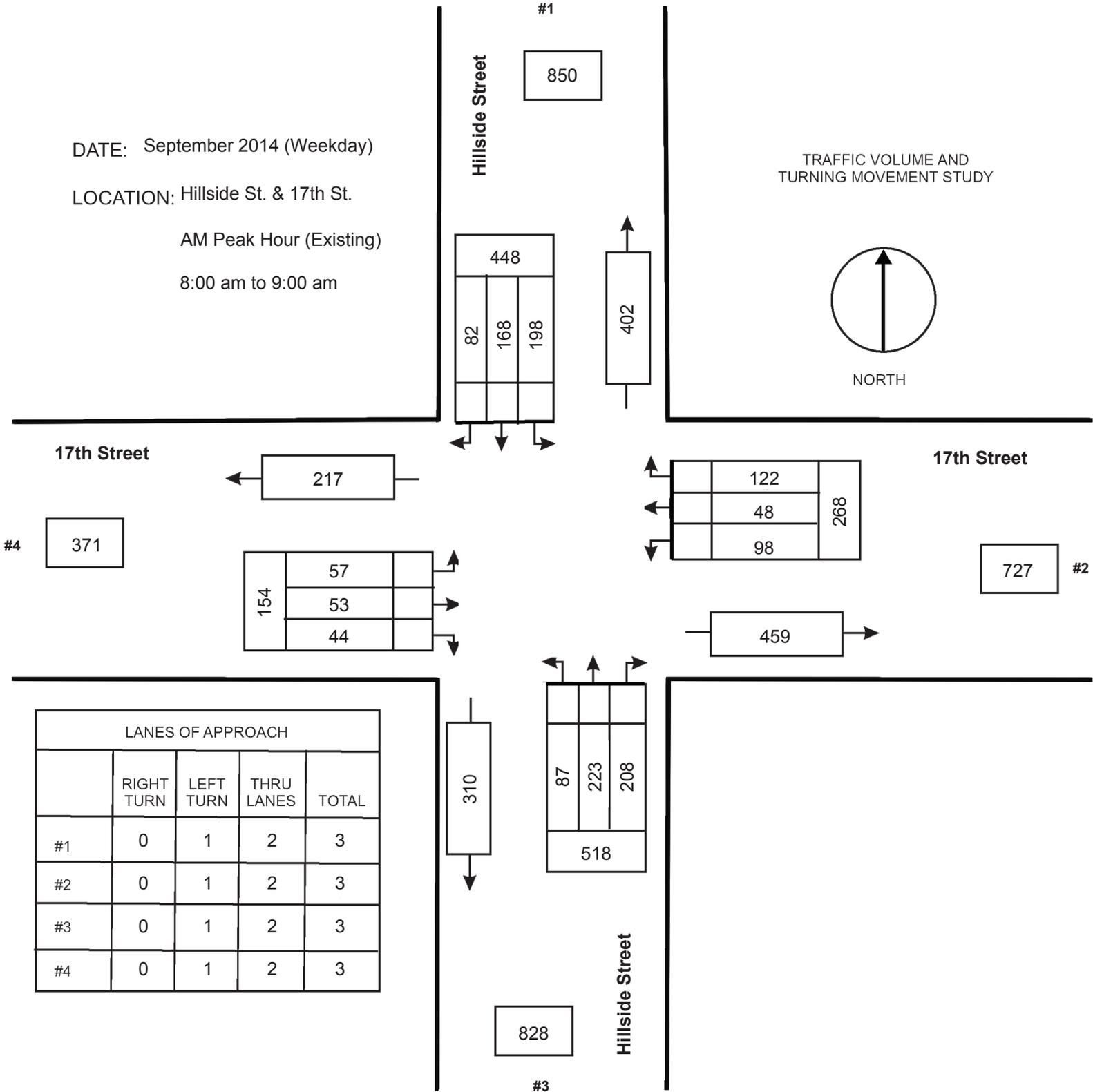
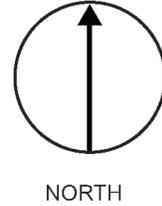
DATE: September 2014 (Weekday)

LOCATION: Hillside St. & 17th St.

AM Peak Hour (Existing)

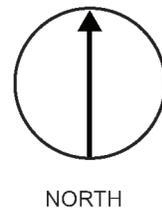
8:00 am to 9:00 am

TRAFFIC VOLUME AND TURNING MOVEMENT STUDY



LANES OF APPROACH				
	RIGHT TURN	LEFT TURN	THRU LANES	TOTAL
#1	0	1	2	3
#2	0	1	2	3
#3	0	1	2	3
#4	0	1	2	3

TRAFFIC VOLUME AND TURNING MOVEMENT STUDY

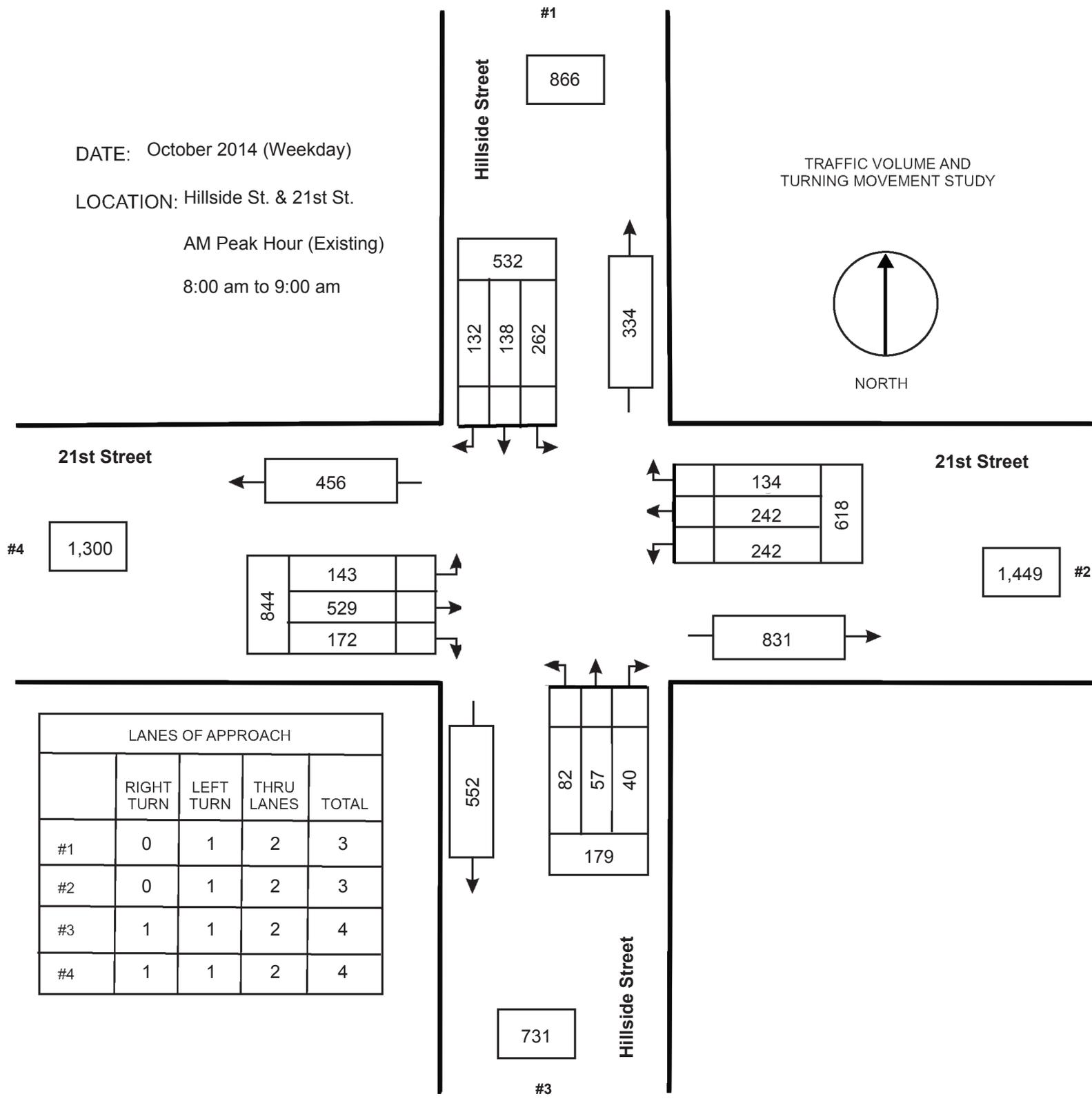


DATE: October 2014 (Weekday)

LOCATION: Hillside St. & 21st St.

AM Peak Hour (Existing)

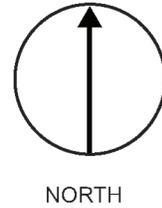
8:00 am to 9:00 am



LANES OF APPROACH

	RIGHT TURN	LEFT TURN	THRU LANES	TOTAL
#1	0	1	2	3
#2	0	1	2	3
#3	1	1	2	4
#4	1	1	2	4

TRAFFIC VOLUME AND TURNING MOVEMENT STUDY

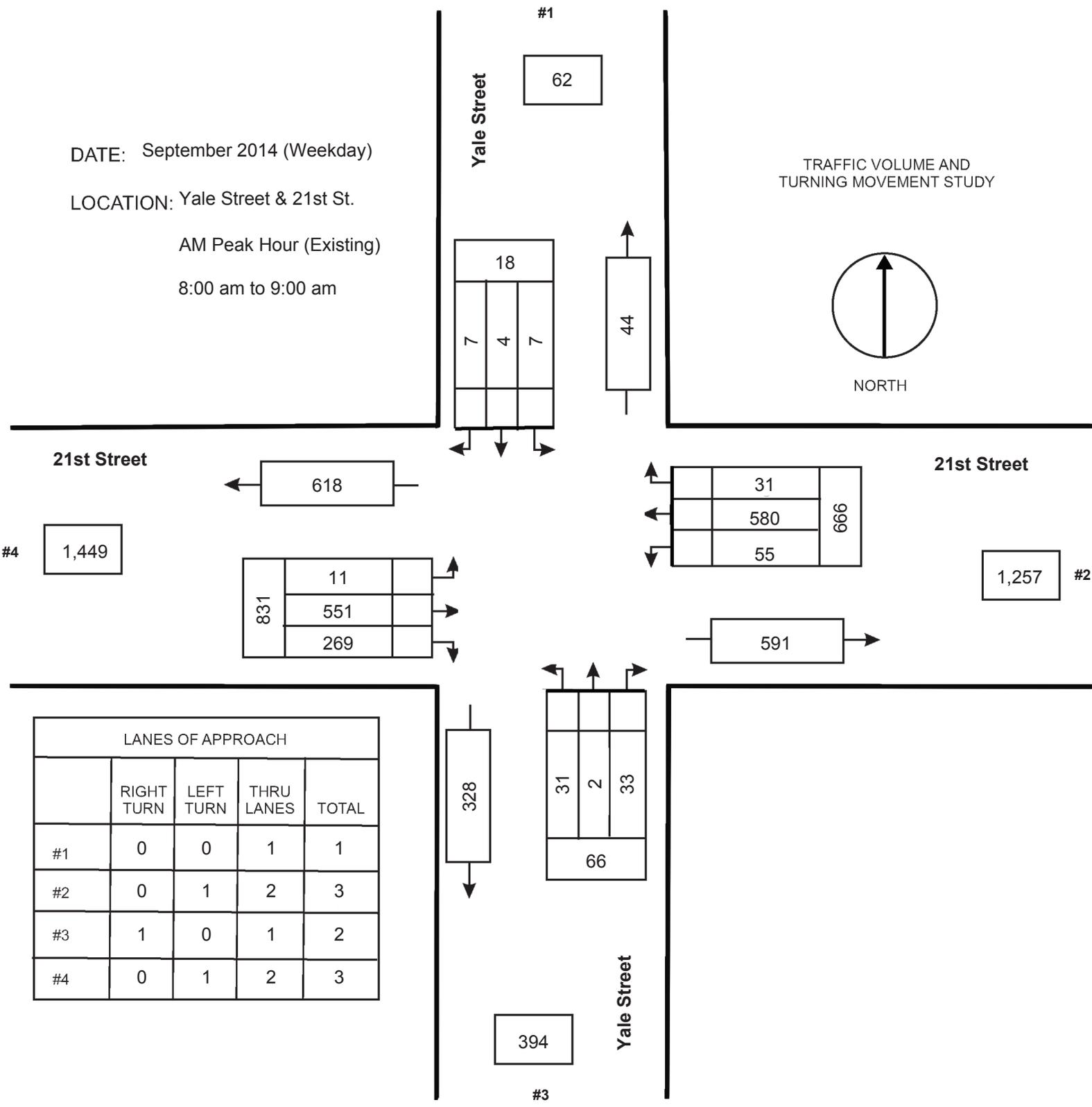


DATE: September 2014 (Weekday)

LOCATION: Yale Street & 21st St.

AM Peak Hour (Existing)

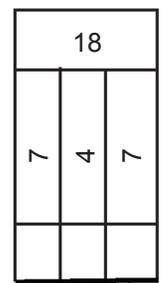
8:00 am to 9:00 am



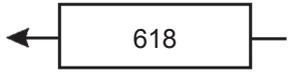
#1

62

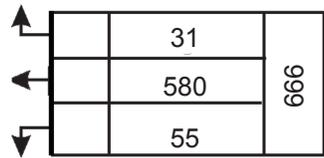
Yale Street



21st Street

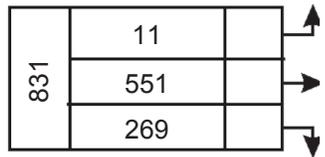


21st Street



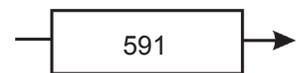
#4

1,449

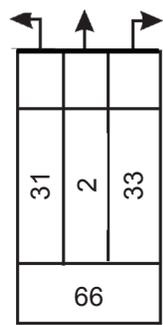


1,257

#2



LANES OF APPROACH				
	RIGHT TURN	LEFT TURN	THRU LANES	TOTAL
#1	0	0	1	1
#2	0	1	2	3
#3	1	0	1	2
#4	0	1	2	3

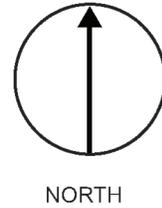


Yale Street

394

#3

TRAFFIC VOLUME AND TURNING MOVEMENT STUDY

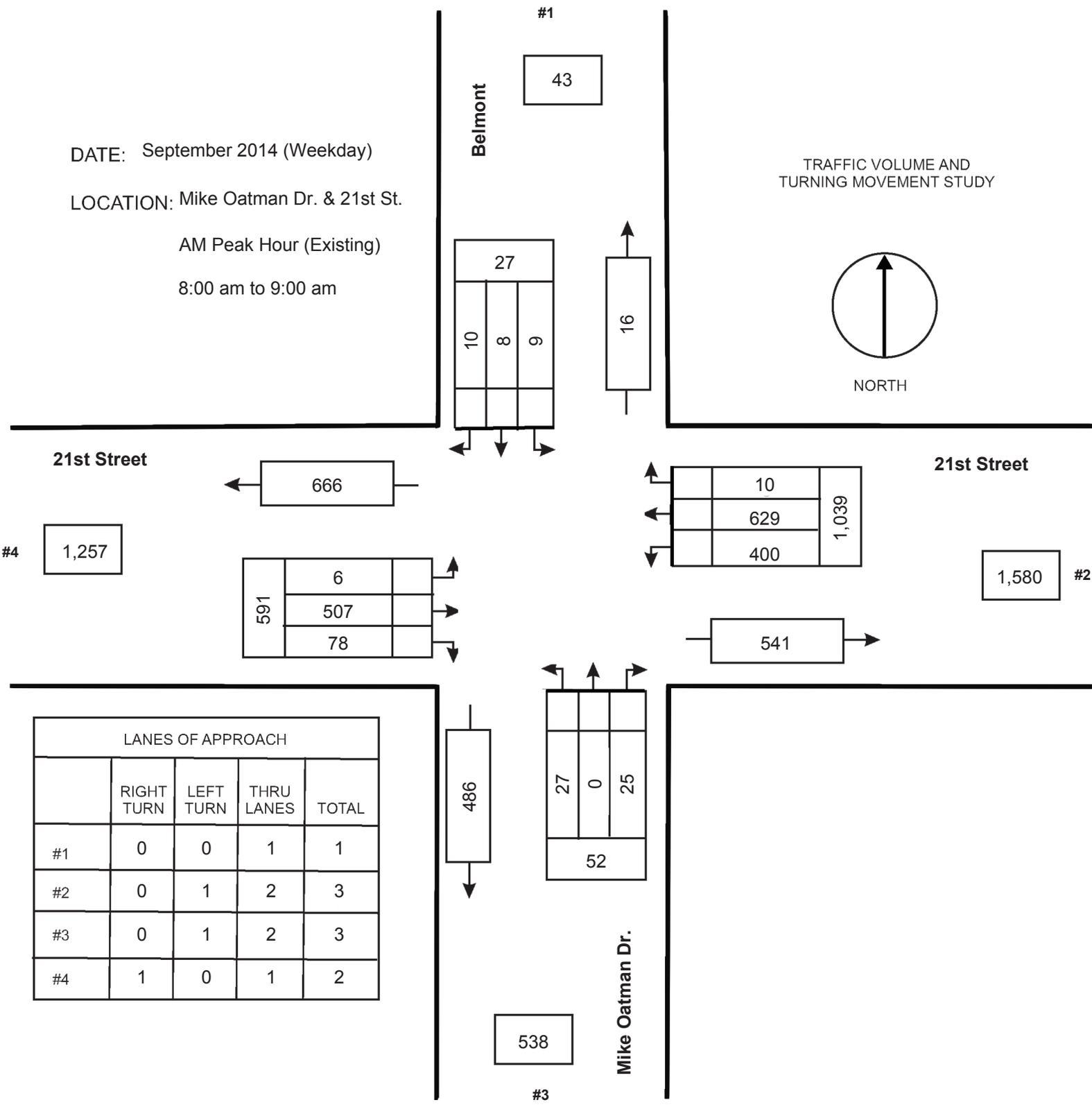


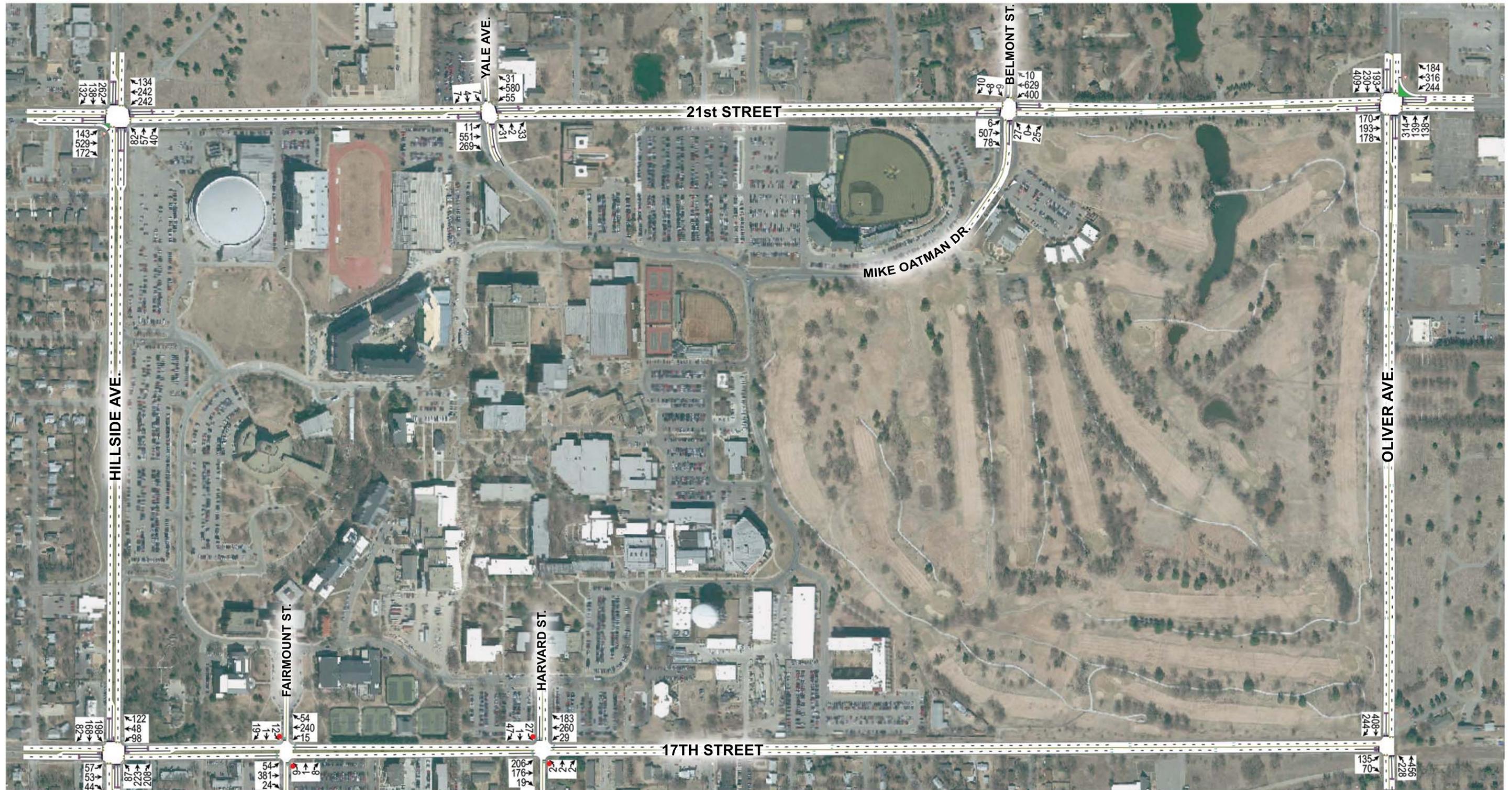
DATE: September 2014 (Weekday)

LOCATION: Mike Oatman Dr. & 21st St.

AM Peak Hour (Existing)

8:00 am to 9:00 am





EXISTING A.M. PEAK HOUR TRAFFIC COUNT

WSU INNOVATION CAMPUS

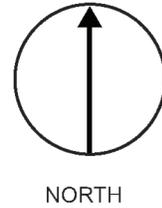
11.21.2014



Wichita, KS • 316.684.9600

Appendix E - Existing P.M. Peak Hour Traffic Count

TRAFFIC VOLUME AND TURNING MOVEMENT STUDY

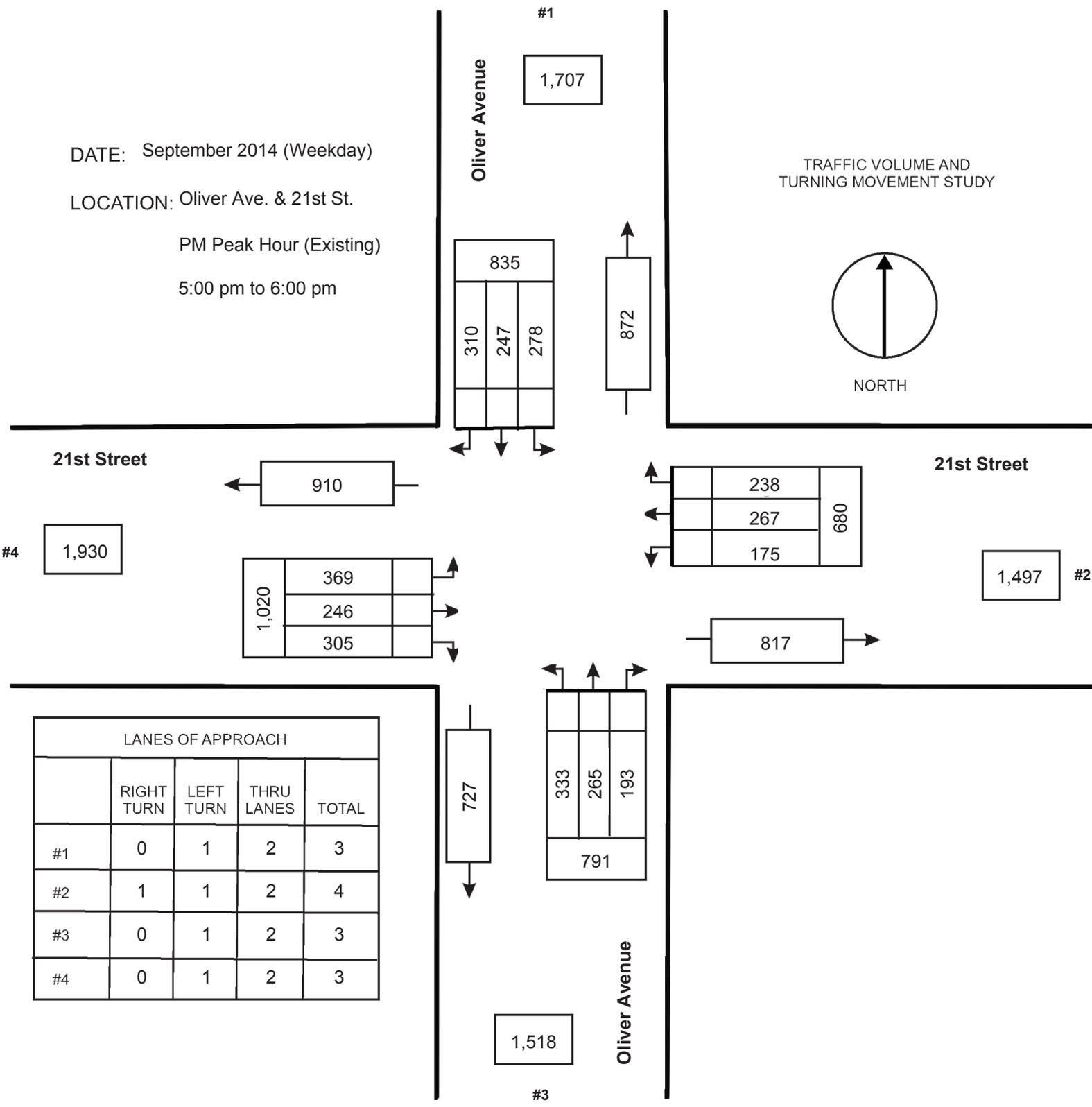


DATE: September 2014 (Weekday)

LOCATION: Oliver Ave. & 21st St.

PM Peak Hour (Existing)

5:00 pm to 6:00 pm



LANES OF APPROACH				
	RIGHT TURN	LEFT TURN	THRU LANES	TOTAL
#1	0	1	2	3
#2	1	1	2	4
#3	0	1	2	3
#4	0	1	2	3

#1
1,707

835
310 247 278

872

910

238
267
175
680

#2
1,497

1,020
369
246
305

817

727

333 265 193
791

#3
1,518

Oliver Avenue

21st Street

21st Street

#4
1,930

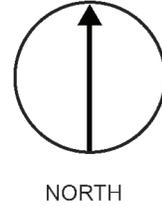
DATE: September 2014 (Weekday)

LOCATION: Oliver Ave. & 17th St.

PM Peak Hour (Existing)

5:00 pm to 6:00 pm

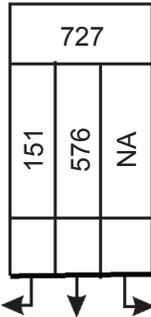
TRAFFIC VOLUME AND TURNING MOVEMENT STUDY



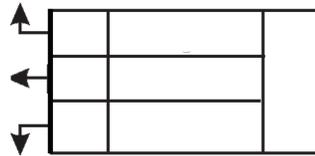
Oliver Avenue

#1

1,477



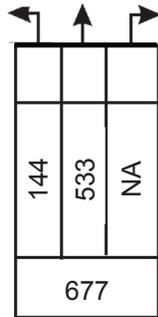
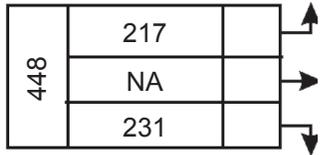
17th Street



NA



#2



1,484

#3

Oliver Avenue

#4

743

LANES OF APPROACH				
	RIGHT TURN	LEFT TURN	THRU LANES	TOTAL
#1	0	0	2	2
#2	0	0	0	0
#3	0	0	2	2
#4	1	1	0	2

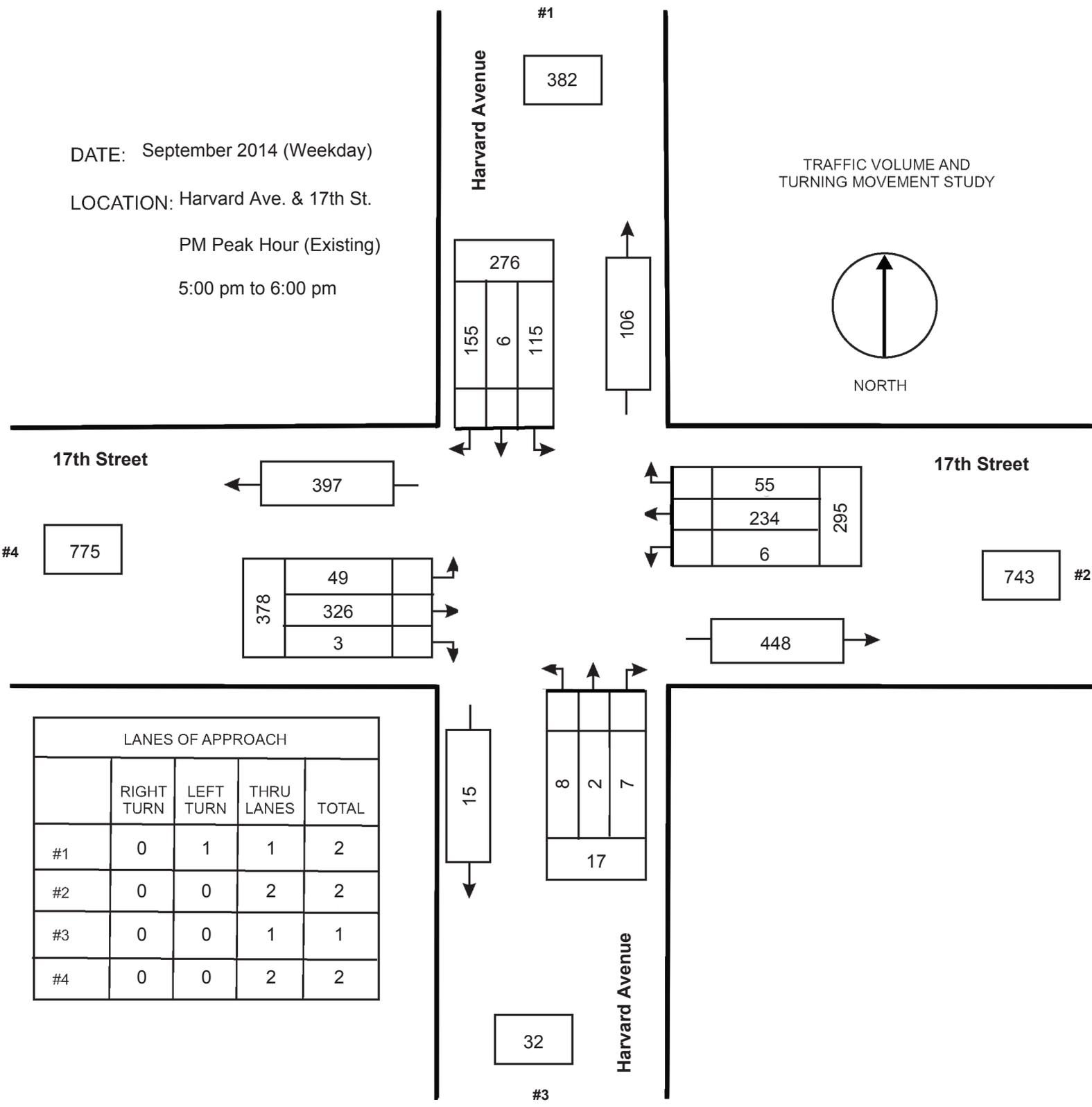
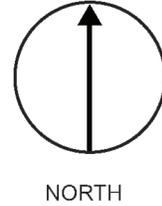
DATE: September 2014 (Weekday)

LOCATION: Harvard Ave. & 17th St.

PM Peak Hour (Existing)

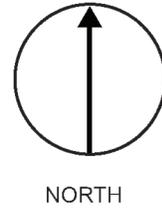
5:00 pm to 6:00 pm

TRAFFIC VOLUME AND TURNING MOVEMENT STUDY



LANES OF APPROACH				
	RIGHT TURN	LEFT TURN	THRU LANES	TOTAL
#1	0	1	1	2
#2	0	0	2	2
#3	0	0	1	1
#4	0	0	2	2

TRAFFIC VOLUME AND TURNING MOVEMENT STUDY

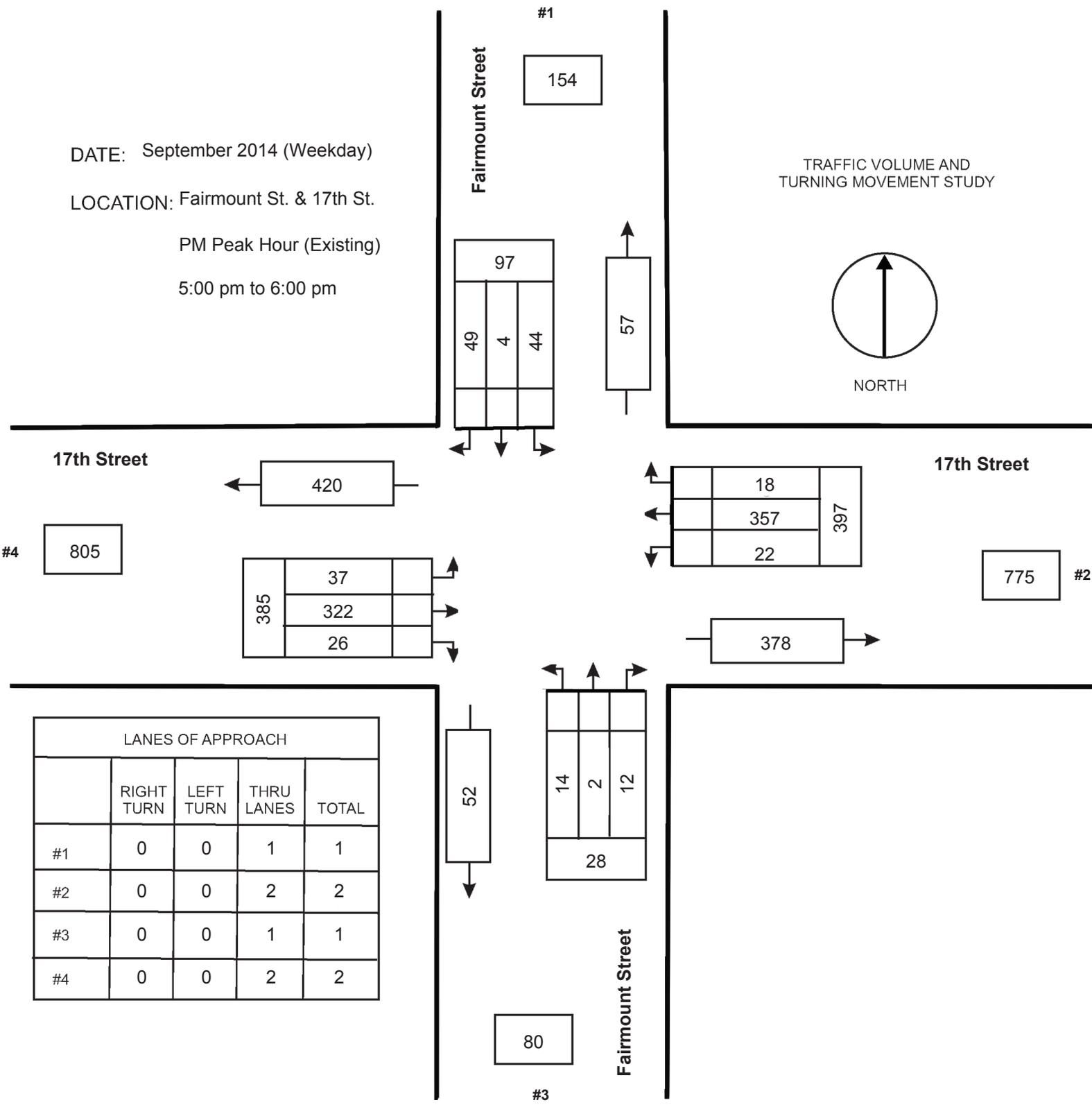


DATE: September 2014 (Weekday)

LOCATION: Fairmount St. & 17th St.

PM Peak Hour (Existing)

5:00 pm to 6:00 pm



97		
49	4	44

57

420

18	397
357	
22	

385	37	
	322	
	26	

378

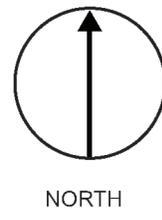
52

14	2	12
28		

80

LANES OF APPROACH				
	RIGHT TURN	LEFT TURN	THRU LANES	TOTAL
#1	0	0	1	1
#2	0	0	2	2
#3	0	0	1	1
#4	0	0	2	2

TRAFFIC VOLUME AND TURNING MOVEMENT STUDY

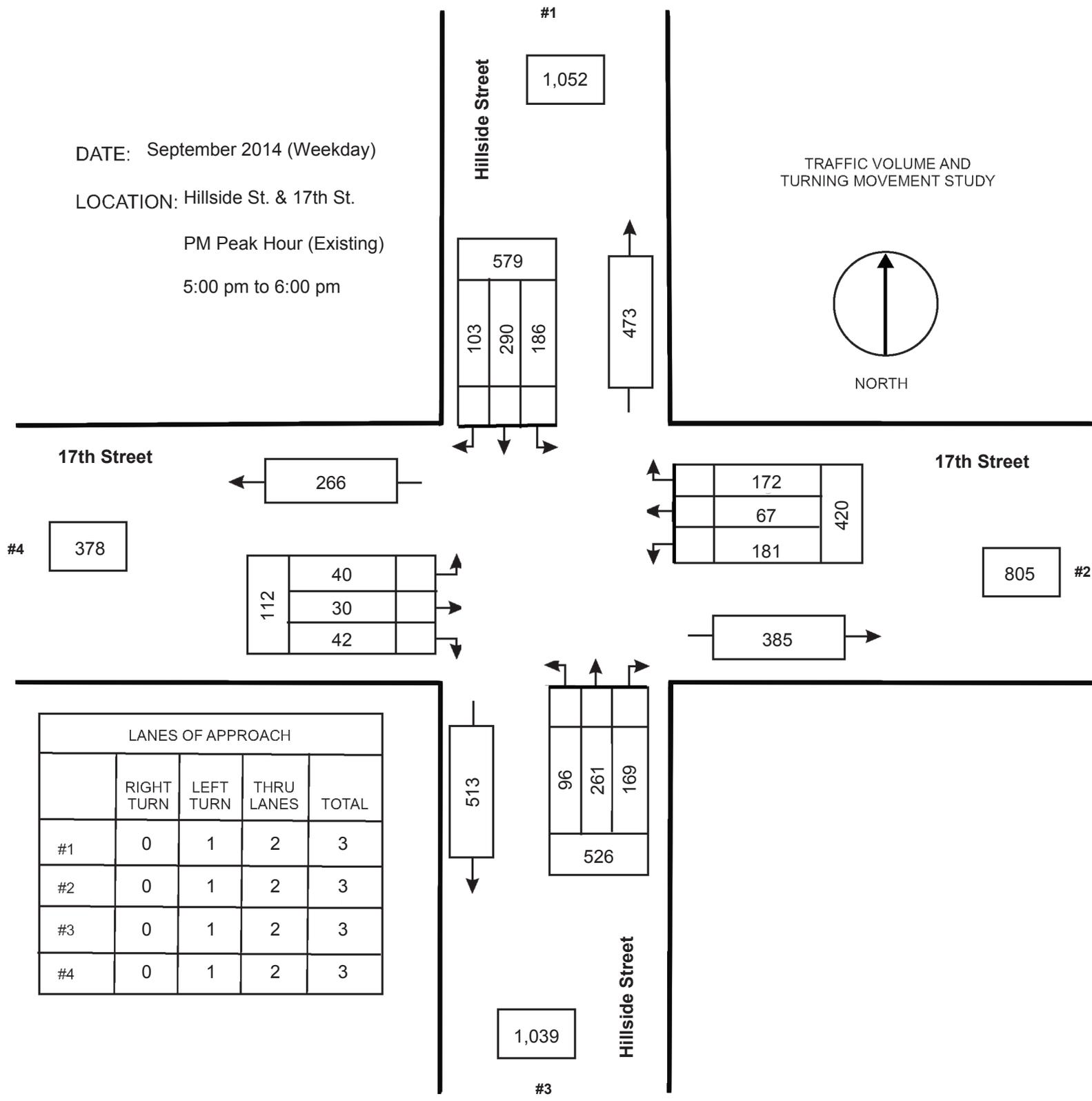


DATE: September 2014 (Weekday)

LOCATION: Hillside St. & 17th St.

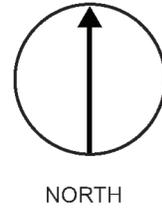
PM Peak Hour (Existing)

5:00 pm to 6:00 pm



LANES OF APPROACH				
	RIGHT TURN	LEFT TURN	THRU LANES	TOTAL
#1	0	1	2	3
#2	0	1	2	3
#3	0	1	2	3
#4	0	1	2	3

TRAFFIC VOLUME AND TURNING MOVEMENT STUDY

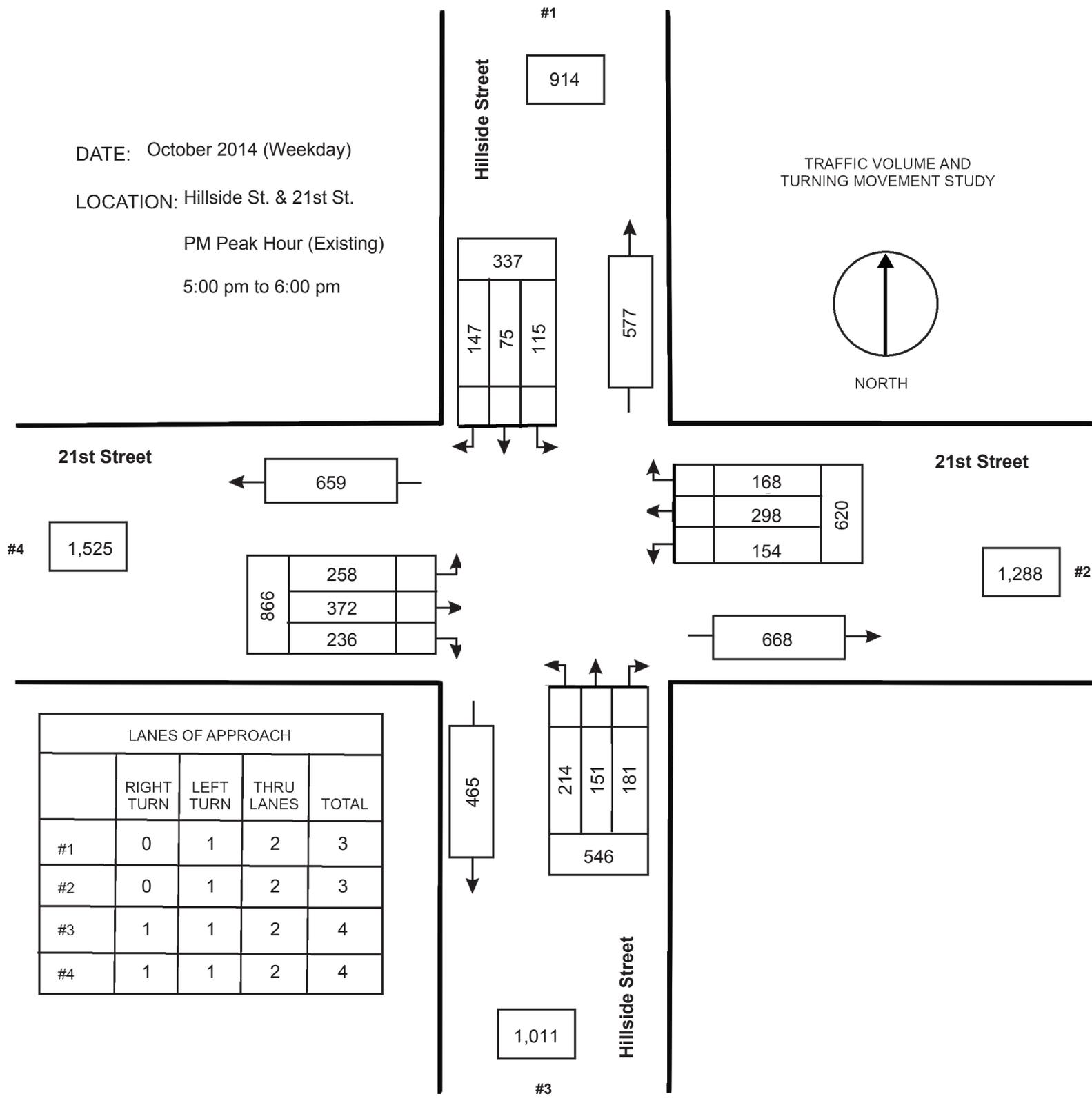


DATE: October 2014 (Weekday)

LOCATION: Hillside St. & 21st St.

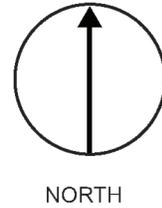
PM Peak Hour (Existing)

5:00 pm to 6:00 pm



LANES OF APPROACH				
	RIGHT TURN	LEFT TURN	THRU LANES	TOTAL
#1	0	1	2	3
#2	0	1	2	3
#3	1	1	2	4
#4	1	1	2	4

TRAFFIC VOLUME AND
TURNING MOVEMENT STUDY



DATE: October 2014 (Weekday)

LOCATION: Yale Street & 21st St.

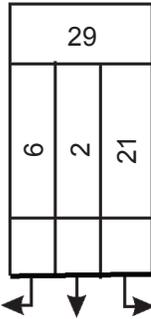
PM Peak Hour (Existing)

5:00 pm to 6:00 pm

#1

129

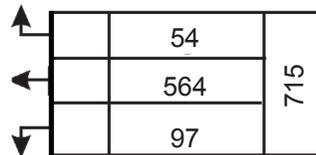
Yale Street



21st Street

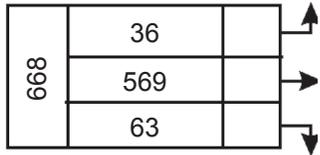


21st Street



#4

1,288

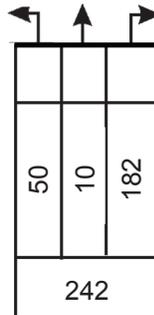


1,487

#2



LANES OF APPROACH				
	RIGHT TURN	LEFT TURN	THRU LANES	TOTAL
#1	0	0	1	1
#2	0	1	2	3
#3	1	0	1	2
#4	0	1	2	3

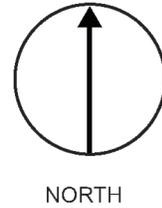


Yale Street

404

#3

TRAFFIC VOLUME AND
TURNING MOVEMENT STUDY

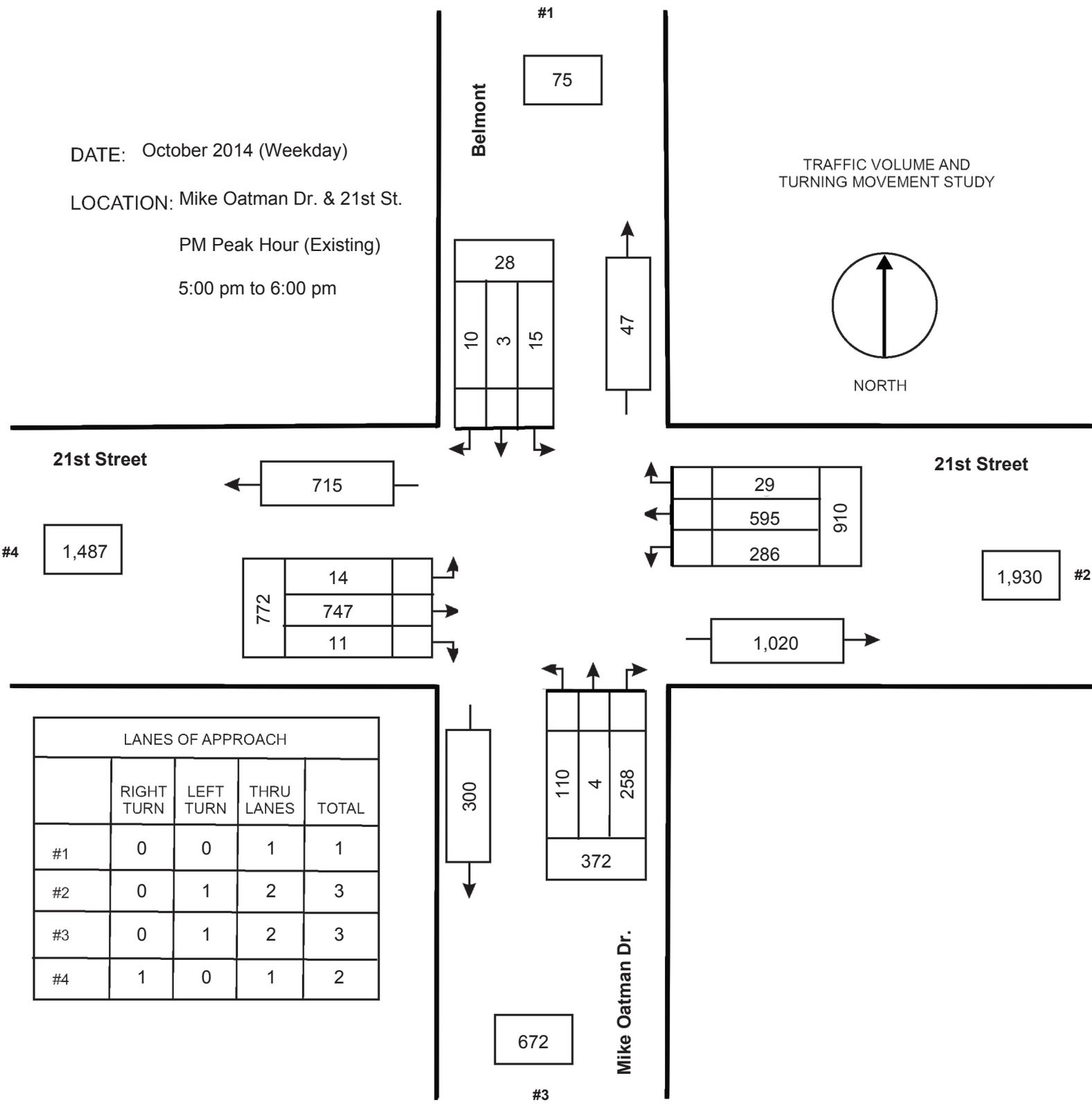


DATE: October 2014 (Weekday)

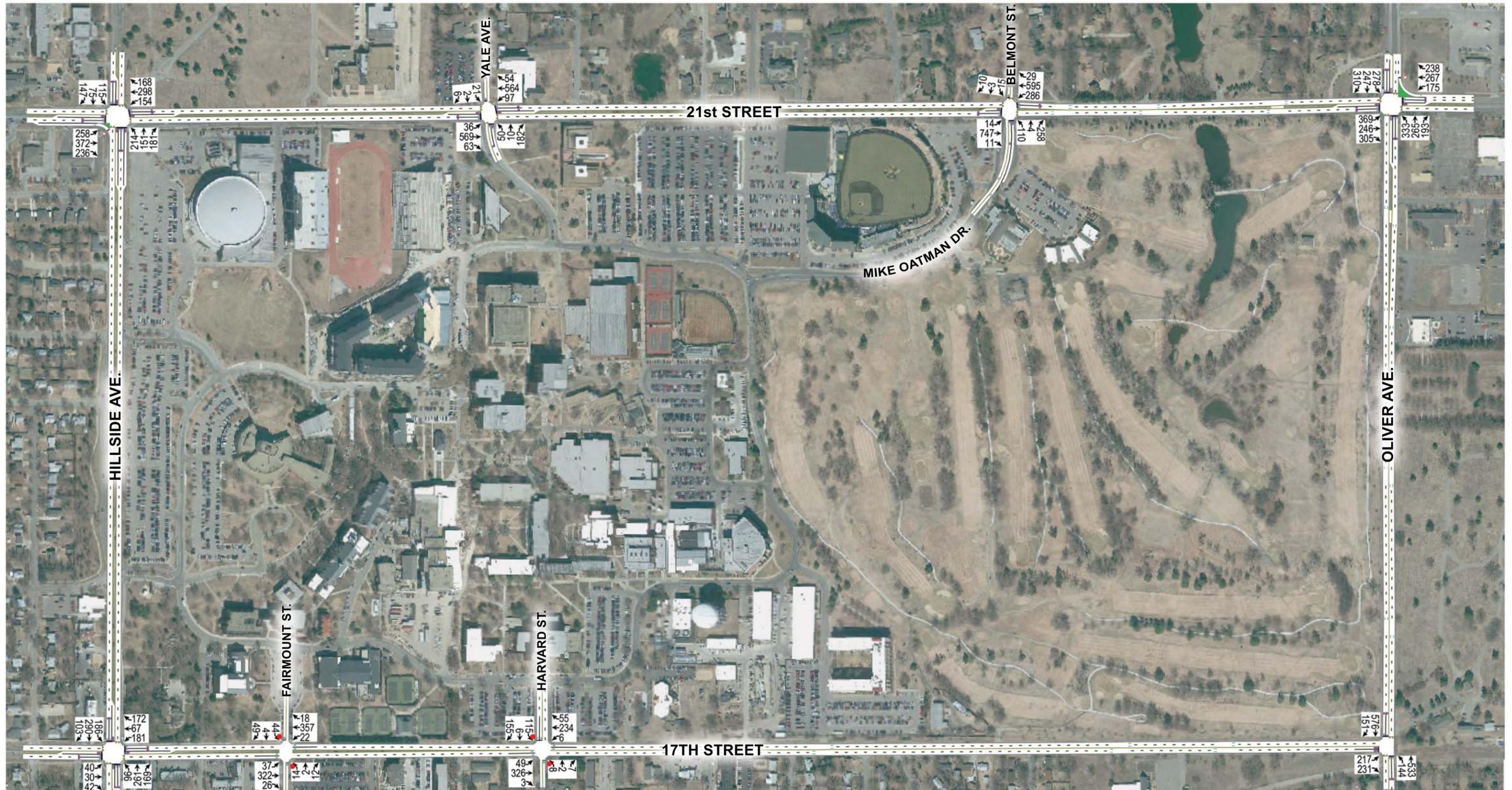
LOCATION: Mike Oatman Dr. & 21st St.

PM Peak Hour (Existing)

5:00 pm to 6:00 pm



LANES OF APPROACH				
	RIGHT TURN	LEFT TURN	THRU LANES	TOTAL
#1	0	0	1	1
#2	0	1	2	3
#3	0	1	2	3
#4	1	0	1	2



EXISTING P.M. PEAK HOUR TRAFFIC COUNT

WSU INNOVATION CAMPUS

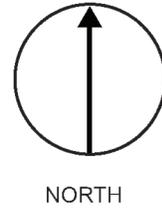
11.21.2014



Wichita, KS • 316.684.9600

Appendix F - AM Peak Hour Traffic Distribution at Build Out

TRAFFIC VOLUME AND TURNING MOVEMENT STUDY



DATE: Weekday

LOCATION: Oliver Ave. & 21st St.

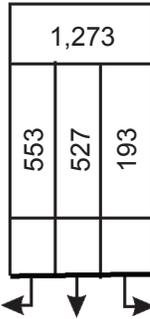
AM Peak Hour (Proposed)

8:00 am to 9:00 am

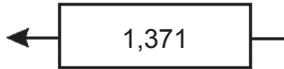
Oliver Avenue

#1

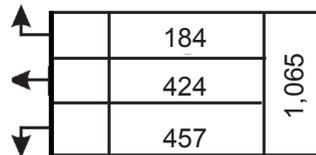
2,001



21st Street

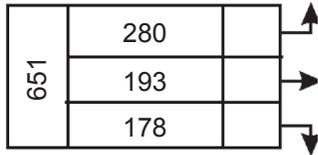


21st Street



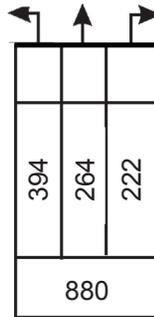
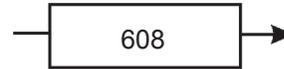
#4

2,022



1,673

#2



Oliver Avenue

2,042

#3

LANES OF APPROACH

	RIGHT TURN	LEFT TURN	THRU LANES	TOTAL
#1	1	2	2	5
#2	1	2	2	5
#3	1	2	2	5
#4	0	2	2	4

TRAFFIC VOLUME AND TURNING MOVEMENT STUDY



DATE: Weekday

LOCATION: Oliver Ave. & 17th St.

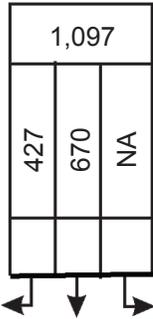
AM Peak Hour (Proposed)

8:00 am to 9:00 am

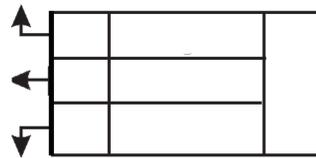
Oliver Avenue

#1

2,000



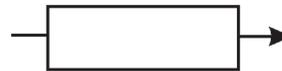
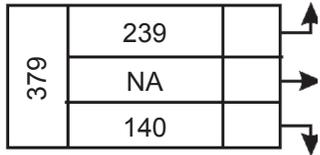
17th Street



NA

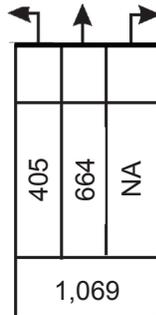


#2



#4

1,211



Oliver Avenue

#3

1,879

LANES OF APPROACH

	RIGHT TURN	LEFT TURN	THRU LANES	TOTAL
#1	1	0	2	3
#2	0	0	0	0
#3	0	1	2	3
#4	1	1	0	2

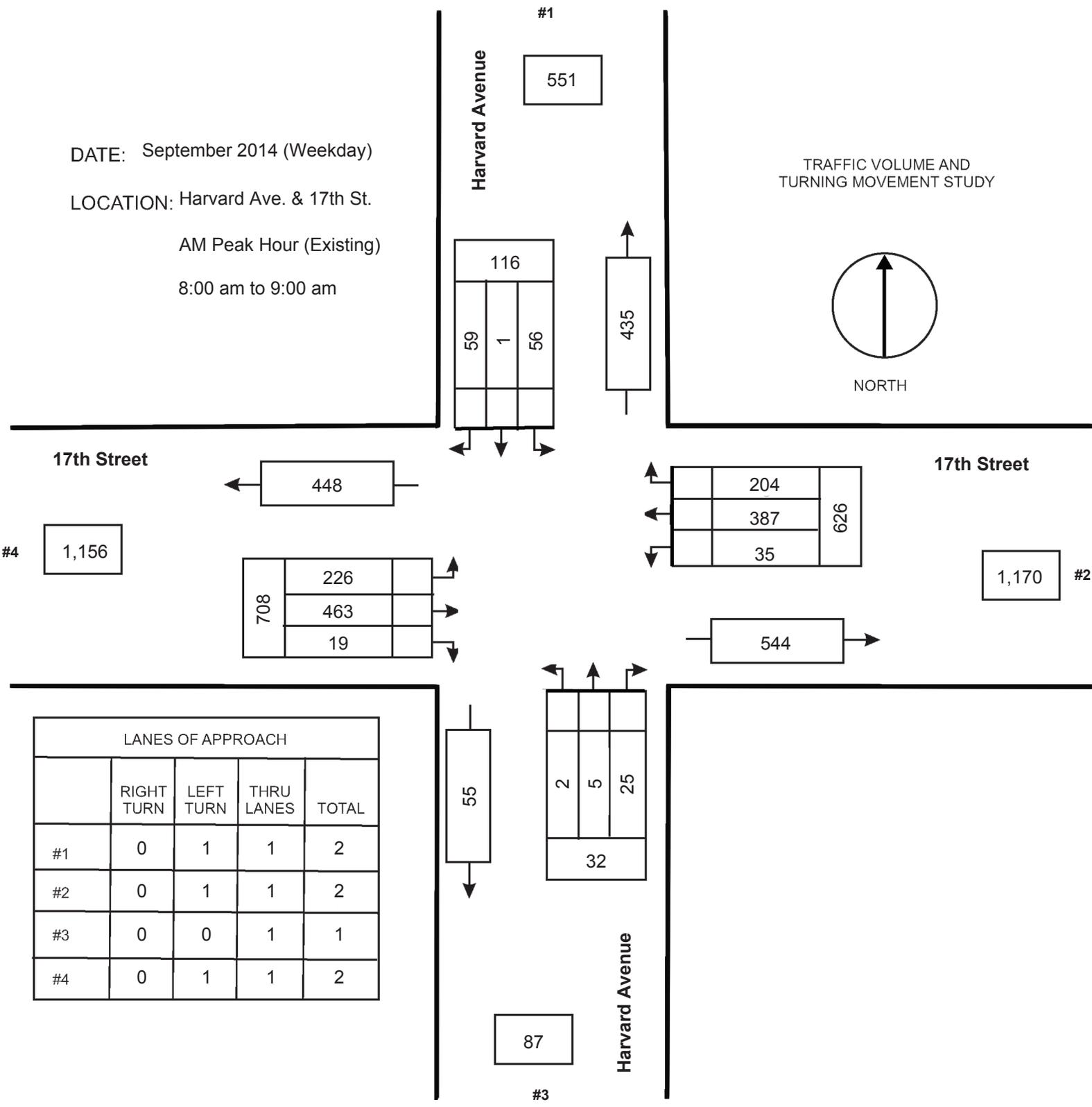
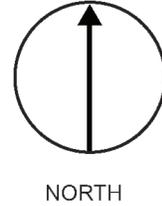
DATE: September 2014 (Weekday)

LOCATION: Harvard Ave. & 17th St.

AM Peak Hour (Existing)

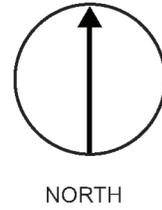
8:00 am to 9:00 am

TRAFFIC VOLUME AND TURNING MOVEMENT STUDY



LANES OF APPROACH				
	RIGHT TURN	LEFT TURN	THRU LANES	TOTAL
#1	0	1	1	2
#2	0	1	1	2
#3	0	0	1	1
#4	0	1	1	2

TRAFFIC VOLUME AND TURNING MOVEMENT STUDY



DATE: Weekday

LOCATION: Fairmount St. & 17th St.

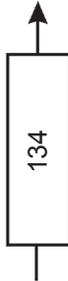
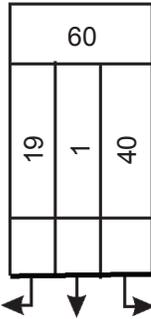
AM Peak Hour (Proposed)

8:00 am to 9:00 am

Fairmount Street

#1

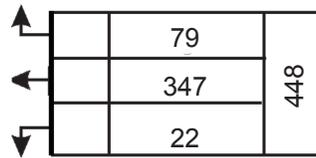
194



17th Street

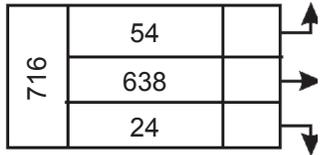


17th Street



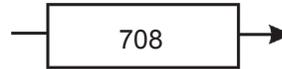
#4

1,091

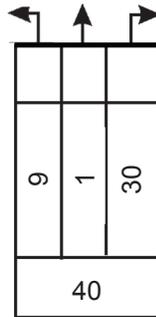


1,156

#2



LANES OF APPROACH				
	RIGHT TURN	LEFT TURN	THRU LANES	TOTAL
#1	0	0	1	1
#2	0	1	1	2
#3	0	0	1	1
#4	0	1	1	2

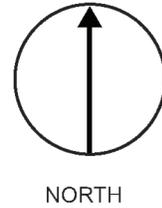


Fairmount Street

87

#3

TRAFFIC VOLUME AND TURNING MOVEMENT STUDY



DATE: Weekday

LOCATION: Hillside St. & 17th St.

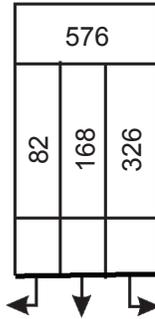
AM Peak Hour (Proposed)

8:00 am to 9:00 am

#1

1,038

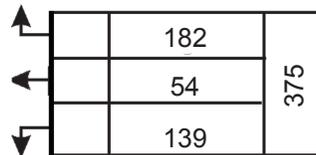
Hillside Street



17th Street

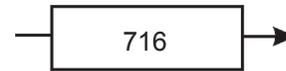


17th Street



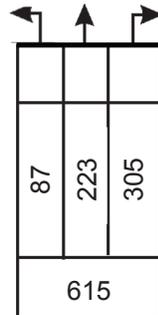
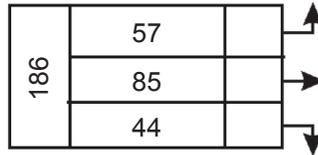
1,091

#2



#4

409



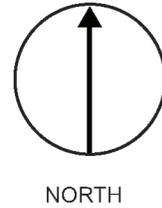
Hillside Street

966

#3

LANES OF APPROACH				
	RIGHT TURN	LEFT TURN	THRU LANES	TOTAL
#1	0	1	2	3
#2	0	1	2	3
#3	0	1	2	3
#4	0	1	2	3

TRAFFIC VOLUME AND TURNING MOVEMENT STUDY

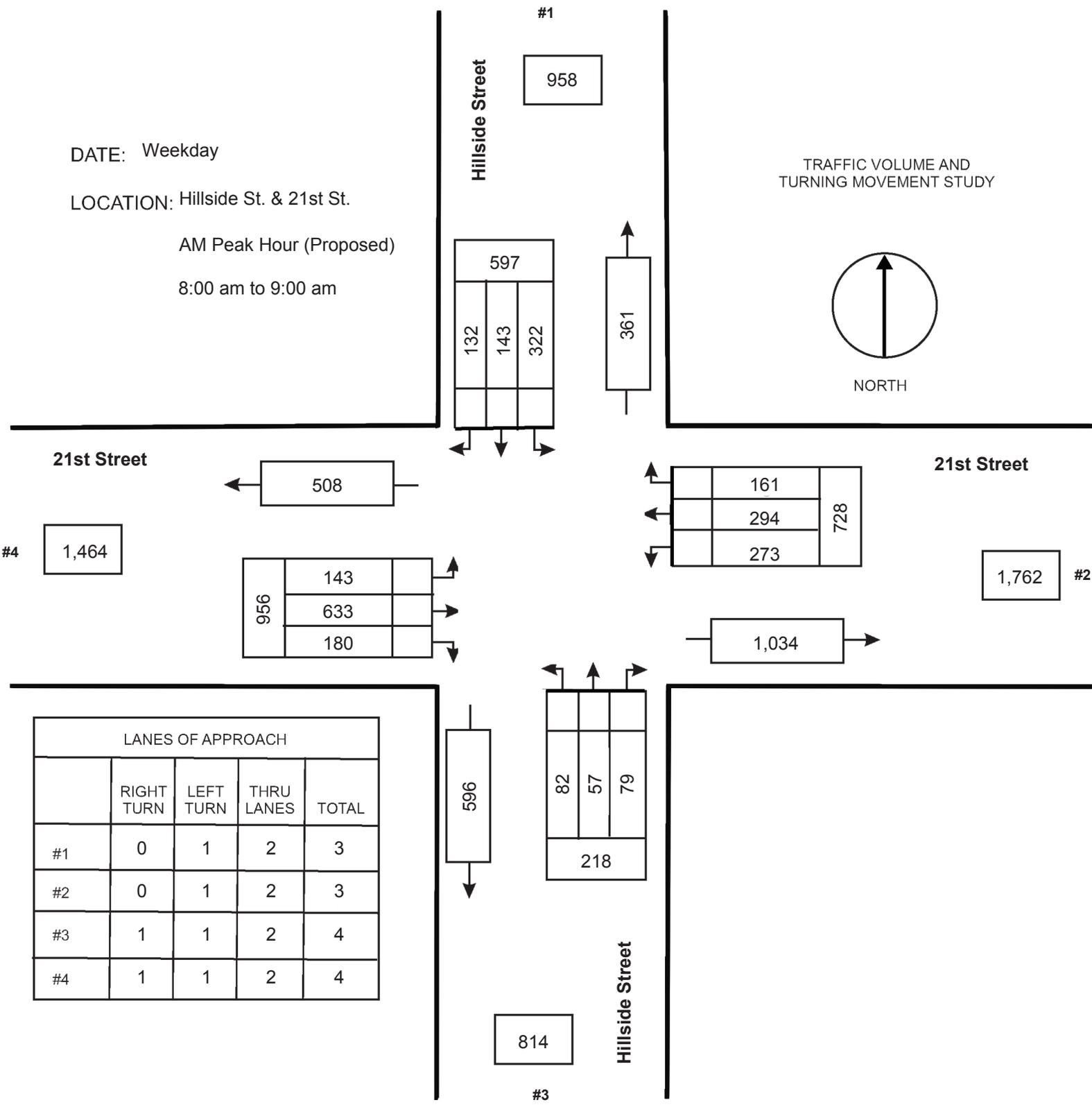


DATE: Weekday

LOCATION: Hillside St. & 21st St.

AM Peak Hour (Proposed)

8:00 am to 9:00 am



LANES OF APPROACH				
	RIGHT TURN	LEFT TURN	THRU LANES	TOTAL
#1	0	1	2	3
#2	0	1	2	3
#3	1	1	2	4
#4	1	1	2	4

#1
958

Hillside Street

597
132 143 322

361

21st Street

508

21st Street

161
294
273
728

#4
1,464

956
143
633
180

#2
1,762

1,034

596

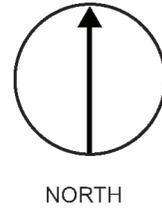
82 57 79
218

Hillside Street

#3
814

#3

TRAFFIC VOLUME AND TURNING MOVEMENT STUDY



DATE: Weekday

LOCATION: Yale Street & 21st St.

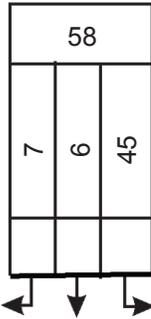
AM Peak Hour (Proposed)

8:00 am to 9:00 am

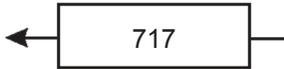
Yale Street

#1

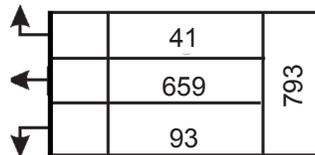
112



21st Street

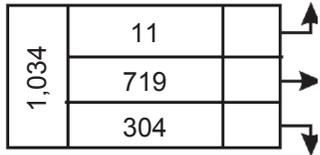


21st Street



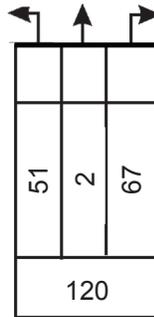
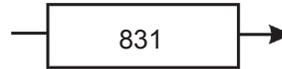
#4

1,751



1,624

#2



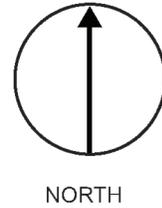
Yale Street

523

#3

LANES OF APPROACH				
	RIGHT TURN	LEFT TURN	THRU LANES	TOTAL
#1	0	0	1	1
#2	0	1	2	3
#3	1	0	1	2
#4	0	1	2	3

TRAFFIC VOLUME AND
TURNING MOVEMENT STUDY



DATE: Weekday

LOCATION: Mike Oatman Dr. & 21st St.

AM Peak Hour (Proposed)

8:00 am to 9:00 am

Belmont

#1

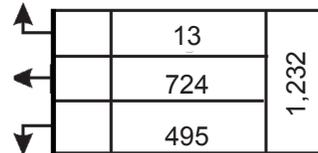
58



21st Street

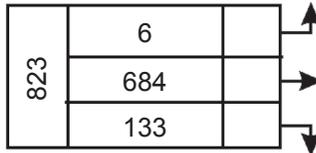


21st Street



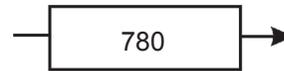
#4

1,609

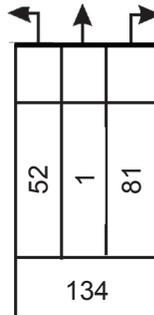


2,012

#2



LANES OF APPROACH				
	RIGHT TURN	LEFT TURN	THRU LANES	TOTAL
#1	0	0	1	1
#2	0	1	2	3
#3	0	1	2	3
#4	1	0	1	2



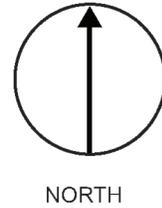
Mike Oatman Dr.

775

#3

Appendix G - PM Peak Hour Traffic Distribution at Build Out

TRAFFIC VOLUME AND TURNING MOVEMENT STUDY



DATE: Weekday

LOCATION: Oliver Ave. & 21st St.

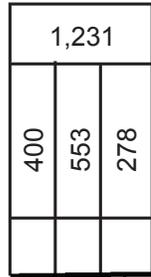
PM Peak Hour (Proposed)

5:00 pm to 6:00 pm

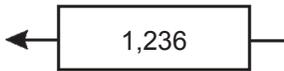
Oliver Avenue

#1

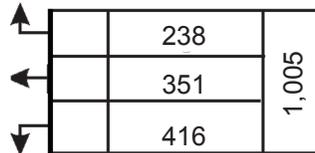
2,502



21st Street

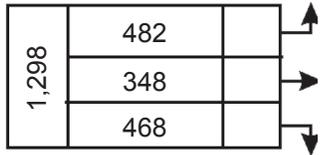


21st Street



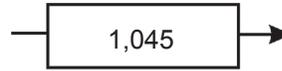
#4

2,534

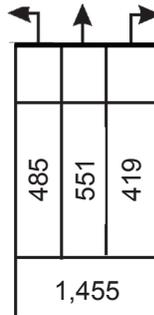


2,050

#2



LANES OF APPROACH				
	RIGHT TURN	LEFT TURN	THRU LANES	TOTAL
#1	1	2	2	5
#2	1	2	2	5
#3	1	2	2	5
#4	0	2	2	4



Oliver Avenue

2,892

#3

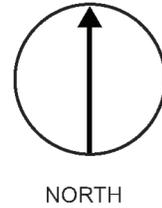
DATE: September 2014 (Weekday)

LOCATION: Oliver Ave. & 17th St.

PM Peak Hour (Existing)

5:00 pm to 6:00 pm

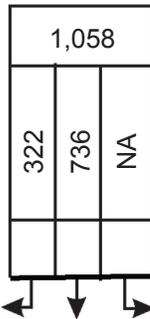
TRAFFIC VOLUME AND TURNING MOVEMENT STUDY



Oliver Avenue

#1

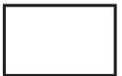
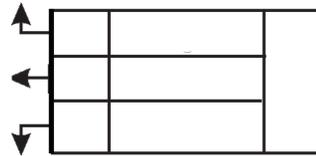
2,087



17th Street



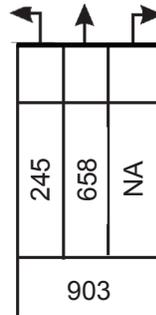
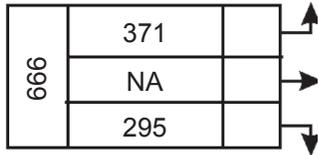
NA



#2

#4

1,233



Oliver Avenue

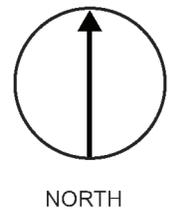
1,934

#3

LANES OF APPROACH

	RIGHT TURN	LEFT TURN	THRU LANES	TOTAL
#1	1	0	2	3
#2	0	0	0	0
#3	0	1	2	3
#4	1	1	0	2

TRAFFIC VOLUME AND TURNING MOVEMENT STUDY



DATE: Weekday

LOCATION: Harvard Ave. & 17th St.

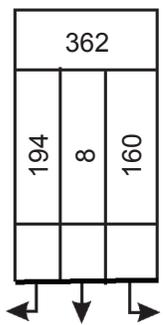
PM Peak Hour (Proposed)

5:00 pm to 6:00 pm

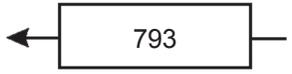
Harvard Avenue

#1

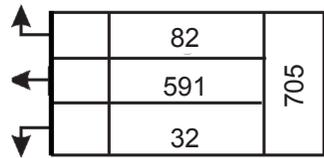
503



17th Street

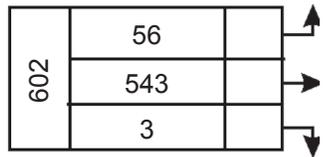


17th Street



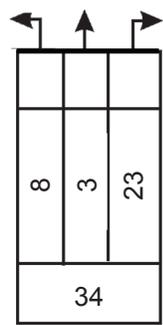
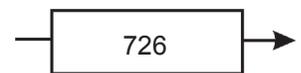
#4

1,395



1,431

#2



Harvard Avenue

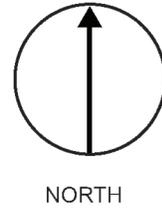
77

#3

LANES OF APPROACH

	RIGHT TURN	LEFT TURN	THRU LANES	TOTAL
#1	0	1	1	2
#2	0	1	1	2
#3	0	0	1	1
#4	0	1	1	2

TRAFFIC VOLUME AND TURNING MOVEMENT STUDY



DATE: Weekday

LOCATION: Fairmount St. & 17th St.

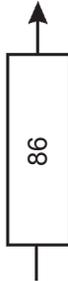
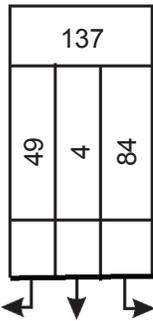
PM Peak Hour (Proposed)

5:00 pm to 6:00 pm

Fairmount Street

#1

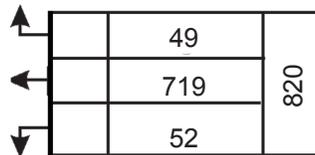
223



17th Street

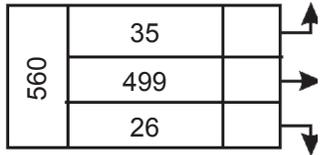


17th Street



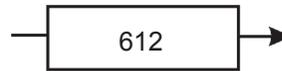
#4

1,342

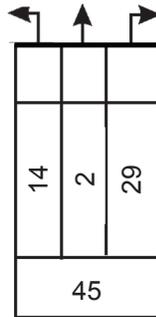
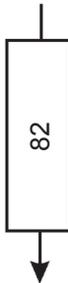


1,432

#2



LANES OF APPROACH				
	RIGHT TURN	LEFT TURN	THRU LANES	TOTAL
#1	0	0	1	1
#2	0	1	1	2
#3	0	0	1	1
#4	0	1	1	2

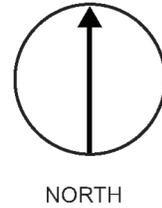


Fairmount Street

127

#3

TRAFFIC VOLUME AND TURNING MOVEMENT STUDY



DATE: Weekday

LOCATION: Hillside St. & 17th St.

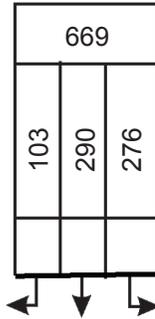
PM Peak Hour (Proposed)

5:00 pm to 6:00 pm

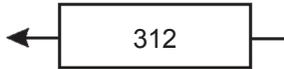
#1

1,300

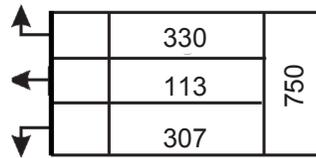
Hillside Street



17th Street



17th Street

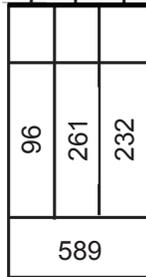
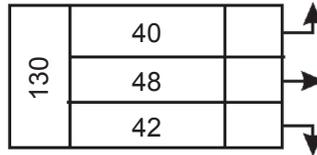


1,306

#2

#4

442



1,228

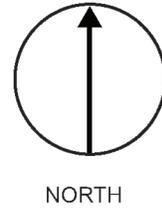
#3

Hillside Street

LANES OF APPROACH

	RIGHT TURN	LEFT TURN	THRU LANES	TOTAL
#1	0	1	2	3
#2	0	1	2	3
#3	0	1	2	3
#4	0	1	2	3

TRAFFIC VOLUME AND TURNING MOVEMENT STUDY



DATE: Weekday

LOCATION: Hillside St. & 21st St.

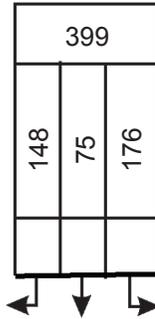
PM Peak Hour (Proposed)

5:00 pm to 6:00 pm

#1

1,038

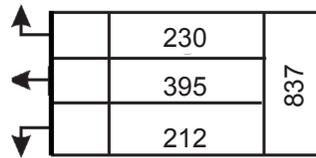
Hillside Street



21st Street

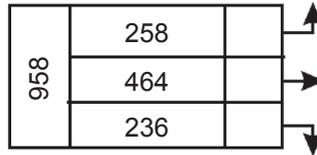


21st Street



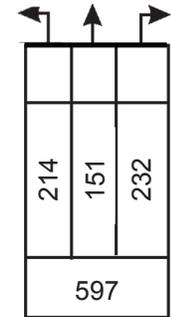
#4

1,715



1,709

#2



1,120

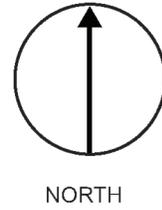
#3

Hillside Street

LANES OF APPROACH

	RIGHT TURN	LEFT TURN	THRU LANES	TOTAL
#1	0	1	2	3
#2	0	1	2	3
#3	1	1	2	4
#4	1	1	2	4

TRAFFIC VOLUME AND TURNING MOVEMENT STUDY



DATE: Weekday

LOCATION: Yale Street & 21st St.

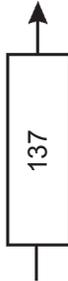
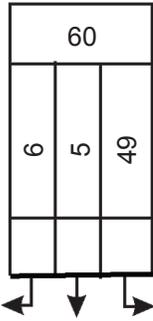
PM Peak Hour (Proposed)

5:00 pm to 6:00 pm

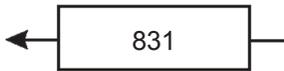
Yale Street

#1

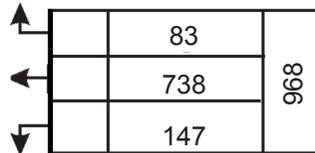
197



21st Street

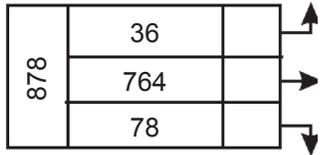


21st Street



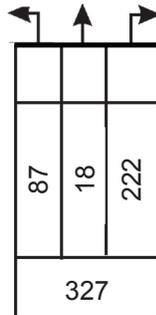
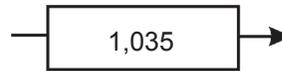
#4

1,709



2,003

#2



557

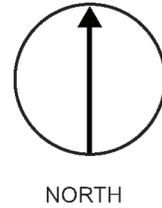
#3

Yale Street

LANES OF APPROACH

	RIGHT TURN	LEFT TURN	THRU LANES	TOTAL
#1	0	0	1	1
#2	0	1	2	3
#3	1	0	1	2
#4	0	1	2	3

TRAFFIC VOLUME AND
TURNING MOVEMENT STUDY



DATE: Weekday

LOCATION: Mike Oatman Dr. & 21st St.

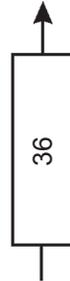
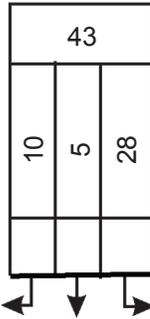
PM Peak Hour (Proposed)

5:00 pm to 6:00 pm

Belmont

#1

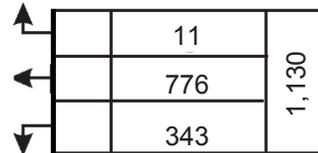
79



21st Street

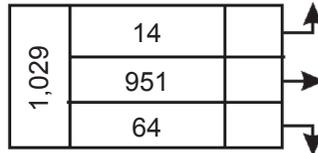


21st Street



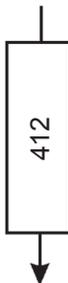
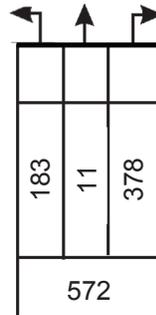
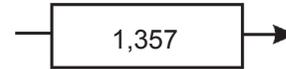
#4

1,998



2,487

#2



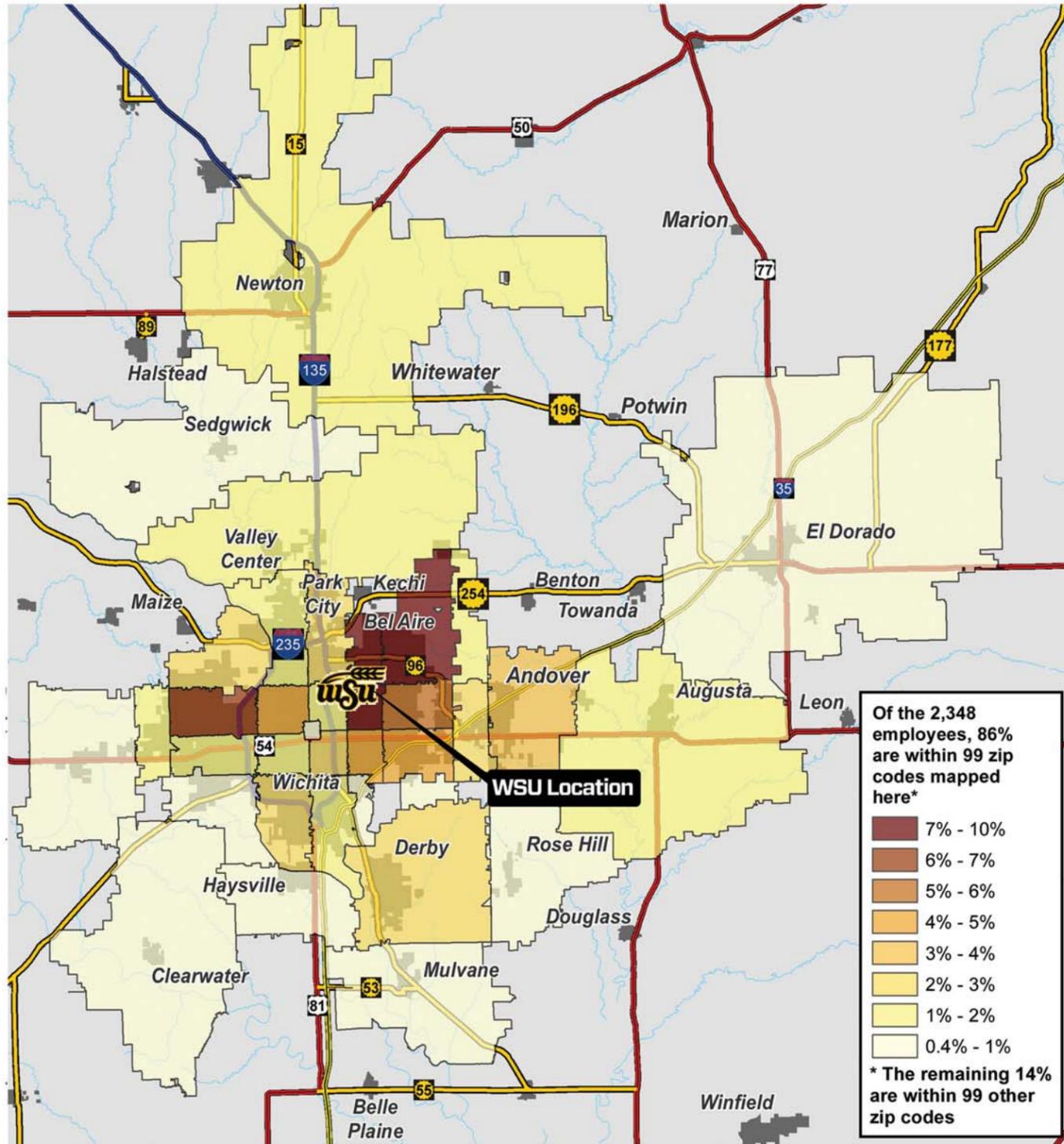
Mike Oatman Dr.

984

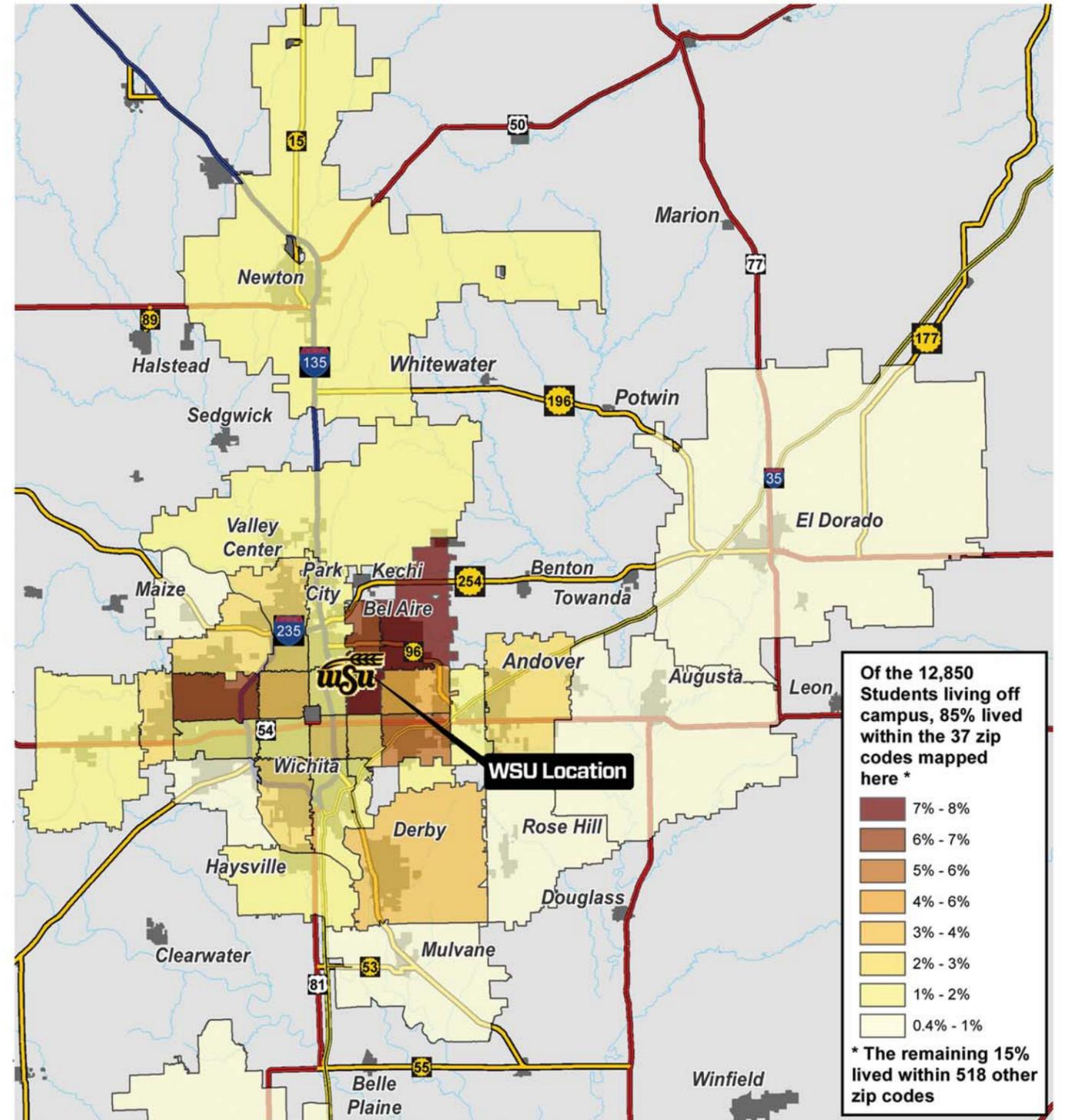
#3

LANES OF APPROACH				
	RIGHT TURN	LEFT TURN	THRU LANES	TOTAL
#1	0	0	1	1
#2	0	1	2	3
#3	0	1	2	3
#4	1	0	1	2

Appendix H - Demographics Exhibit



1 DENSITY OF EMPLOYEES WITHIN ZIP CODES



1 DENSITY OF STUDENTS LIVING OFF CAMPUS WITHIN ZIP CODES (SPRING 2014)

WICHITA STATE UNIVERSITY

INNOVATION CAMPUS

11.24.2014



Wichita, KS • 316.684.9600

Appendix I - Top 100 Intersections

100 Busiest Intersections in the City of Wichita

2013 Ranking	Inter Number	EB	WB	NB	SB	YEAR	EAST	WEST	NORTH	SOUTH	Intersection Totals
1	3085	Kellooa	Kellooa	Webb	Webb	2011	39292	47767	25567	25465	69046
2	3090	Kellooa	Kellooa	Greenwich	Greenwich	2011	29500	39987	15851	17796	51567
3	2090	Central	Central	Ridae	Ridae	2009	30208	23459	22764	23459	49945
4	1170	Central	Central	Rock	Rock	2012	16366	22423	30144	30250	49592
5	2210	I-235 Ramp	I-235 Ramp	Zoo	Zoo	2007		15135	43595	38697	48714
6	2260	21st	21st	Maize	Maize	2010	29203	20423	25144	21933	48352
7	1275	13th	13th	Rock	Rock	2012	14766	15282	32102	30275	46213
8	2215	Windmill	Windmill	Zoo	Zoo	2007		0 12646	35021	43595	45631
9	2250	21st	21st	Ridae	Ridae	2007	29403	29841	17625	14173	45521
10	3285	Harrv	Harrv	Rock	Rock	2009	22752	21814	23100	22522	45094
11	3070	Kellooa Dr	Kellooa Dr	Rock	Rock	2010	13643	18869	30251	27080	44922
11	3071	Kellooa Dr S	Kellooa Dr S	Rock	Rock	2010	13643	18869	30251	27080	44922
13	2205	Westdale	I-235 Ramp	Zoo	Zoo	2007	10283	16095	38697	24428	44752
14	1415	21st	21st	Woodlawn	Woodlawn	2012	22270	22883	20962	20678	43397
15	1420	21st	21st	Rock	Rock	2010	15367	20787	25420	25078	43326
16	2255	21st	21st	Tyler	Tyler	2010	27600	25823	18296	13653	42686
17	1410	21st	21st	Oliver	Oliver	2008	25835	25489	16637	16656	42309
18	2075	Central	Central	West	West	2012	17349	22628	17673	24667	41159
19	4176	Kellooa	Kellooa	119th	119th	2010	35148	27522	10907	8645	41111
20	2100	Central	Central	Tvler	Tvler	2009	19851	20262	19780	21643	40768
21	4050	Maple	Maple	Ridae	Ridae	2008	15907	17526	23965	22185	39792
22	857	47th	47th	Southeast Blvd	Southeast Blvd	2010	11613	15739	25098	26378	39414
23	2110	Central	Central	Maize	Maize	2009	17230	13449	21505	22386	37285
24	1270	13th	13th	Woodlawn	Woodlawn	2012	15514	14982	21581	21559	36818
25	3290	Harrv	Harrv	Webb	Webb	2009	17130	22336	19870	13600	36468
26	3390	Pawnee	Pawnee	Rock	Rock	2009	13547	17963	21599	19340	36225
28	1390	21st	21st	Hillside	Hillside	2008	22550	21396	11819	15452	35609
29	1040	Douglas	Douglas	Rock	Rock	2010	12050	11893	18560	28542	35523
30	1010	Douglas	Douglas	Hillside	Hillside	2010	11405	14976	20601	23300	35141
31	3455	47th	47th	Broadwav	Broadwav	2007	24465	12071	13970	19760	35133
32	4025	Maple	Maple	West	West	2007	9921	16016	22121	21662	34860
33	4060	Maple	Maple	Tvler	Tvler	2008	16443	14160	20439	18564	34803
34	1140	Central	Central	Hillside	Hillside	2012	18016	17921	16500	16690	34564
35	1165	Central	Central	Woodlawn	Woodlawn	2012	18420	15056	20000	15523	34500
36	3415	31st	31st	Southeast	Southeast	2006	11028		0 30279	27008	34158
37	1515	K-96 S	K-96 S	Rock	Rock	2010		0 10786	27453	29636	33938
38	1155	Central	Central	Oliver	Oliver	2012	19003	18759	14710	14988	33730
39	2245	21st	21st	Amidon	Amidon	2004	17316	15826	17750	16257	33575
40	2086	Central	Central	Gilda	Gilda	2009	22264	31346	6173	7221	33502
41	3100	Kellooa	Kellooa	Zelta	Zelta	2011	30965	27507	733	7565	33385
42	1430	21st	21st	Webb	Webb	2012	15116	16655	15879	18970	33310
43	2085	Central	Central	I-235 ramp	I-235 ramp	2009	22264	31346	5138	7836	33292
44	3280	Harrv	Harrv	Woodlawn	Woodlawn	2009	21810	16879	15529	10662	32440
45	4065	Maple	Maple	Maize	Maize	2007	10781	11001	23049	19624	32228
46	2222	21st	21st	North Shore	North Shore	2013	30834	31163	1602	827	32213
47	2165	13th	13th	McLean	McLean	2009	20699	16350	14530	12812	32196
48	290	Douglas	Douglas	Washinaton	Washinaton	2010	15126	15770	14666	18202	31882
49	3270	Harrv	Harrv	Oliver	Oliver	2012	18288	18738	12644	13947	31809

Dual Turn Lanes
Dual Turn Lanes

Dual Turn Lanes

100 Busiest Intersections in the City of Wichita

2013 Ranking	Inter Number	EB	WB	NB	SB	YEAR	EAST	WEST	NORTH	SOUTH	Intersection Totals
50	2035	McLean	McLean	Seneca	Seneca	2013	9747	20526	19599	13655	31764
51	2060	Central	Central	Meridian	Meridian	2012	20457	23211	14660	5081	31705
52	1495	32nd	32nd	Rock	Rock	2010	4909	2911	29636	25759	31608
53	1265	13th	13th	Oliver	Oliver	2008	16971	16018	15266	14417	31336
54	3050	Kelloaa Dr	Kelloaa Dr	Oliver	Oliver	2011	11562	11075	16312	23307	31128
55	1285	13th	13th	Webb	Webb	2011	11445	14875	14987	20719	31013
56	3072	Eastgate	Eastgate	Rock	Rock	2013	4479	1301	27994	27855	30815
57	906	Turnpike	Turnpike	Southeast	Southeast Blvd	2010	5373		0 26369	29745	30744
58	884	Kelloaa	Kelloaa	135th	135th	2010	27522	25214	7605	796	30569
59	4195	McCormick	McCormick	Seneca	Seneca	2007	5664	6123	24870	23720	30189
60	4230	Harrv	Harrv	Seneca	Seneca	2007	9651	4312	23382	23008	30177
61	1510	K-96	K-96	Rock	Rock	2010	3230		0 27453	29636	30160
62	4305	31st	31st	Seneca	Seneca	2010	9574	9205	20818	20623	30110
63	1180	Central	Central	Webb	Webb	2012	10823	12749	17348	19008	29964
64	2190	13th	13th	Ridae	Ridae	2007	11660	14444	15515	17894	29757
65	3155	Lincoln	Lincoln	Oliver	Oliver	2006	12424	8898	21479	16075	29438
66	2706	37th	37th	Woodlawn	Woodlawn	2013	15221	10697	14921	17946	29393
67	4085	Taft	Taft	Ridae	Ridae	2008	10241	5420	22534	20571	29383
68	4080	Taft	Taft	West	West	2013	2422	5994	23377	26913	29353
69	1160	Central	Central	Edaemoor	Edaemoor	2012	22998	20179	6463	8892	29266
70	3170	Lincoln	Lincoln	Rock	Rock	2009		0 9931	22141	25597	28835
71	1380	21st	21st	Grove	Grove	2008	22713	23735	4410	6525	28692
72	1465	29th	29th	Woodlawn	Woodlawn	2012	9872	9063	19104	19034	28537
73	1045	Douglas	Douglas	Webb	Webb	2010		0 8586	22310	24063	27480
74	4170	Kelloaa Dr	Kelloaa Dr	Maize	Maize	2010	16110	1700	20372	16600	27391
75	3385	Pawnee	Pawnee	Oliver	Oliver	2009	16436	13021	10579	14682	27359
76	3375	Pawnee	Pawnee	Hillside	Hillside	2009	14642	21623	9003	9355	27312
77	3165	Lincoln	Lincoln	Woodlawn	Woodlawn	2009	9855	9046	19589	16066	27278
78	4010	Maple	Maple	Seneca	Seneca	2007	5554	7779	18195	22379	26954
79	1505	K-96 S	K-96 S	Woodlawn	Woodlawn	2012		0 8409	21789	23687	26943
80	3150	Lincoln	Lincoln	Hillside	Hillside	2009	7898	10081	19324	16559	26931
81	380	Waterman	Waterman	Washinaton	Washinaton	2010	4489	5938	19576	23206	26605
82	3250	Harrv	Harrv	Hillside	Hillside	2012	16831	16817	9932	9064	26322
83	1220	13th	13th	Broadwav	Broadwav	2012	16083	13925	10698	11719	26213
84	3365	Pawnee	Pawnee	Southeast	Southeast	2006	19116	18070	7894	7190	26135
85	270	Douglas	Douglas	Broadwav	Broadwav	2010	12919	12888	13477	12806	26045
86	15	Murdock	Murdock	Broadwav	Broadwav	2010	14001	10982	13700	13145	25914
87	3360	Pawnee	Pawnee	Hvdraulic	Hvdraulic	2006	18070	19409	5580	8727	25893
88	60	Central	Central	Broadwav	Broadwav	2010	13862	12540	13411	11949	25881
89	1070	1st	1st	Hillside	Hillside	2010	3868	5432	21765	20601	25833
90	1470	29th	29th	Rock	Rock	2008	12370	13313	25759		0 25721
91	1005	Douglas	Douglas	Grove	Grove	2010	15080	14699	10282	11130	25596
92	2235	21st	21st	Arkansas	Arkansas	2012	16267	17323	11361	6191	25571
93	2267	New Market	New Market	Maize	Maize	2013		0 7089	21299	22604	25496
94	2070	Central	Central	Zoo	Sheridan	2009	22140	16378	9453	3011	25491
95	1020	Douglas	Douglas	Oliver	Oliver	2010	9430	11121	14806	15505	25431
96	1442	22nd	22nd	Rock	Rock	2010		0	0 25420	25420	25420
97	1030	Douglas	Douglas	Woodlawn	Woodlawn	2010	7605	8028	19005	16022	25330
98	1100	2nd	2nd	Hillside	Hillside	2010	3344	3404	21937	21765	25225
99	80	Central	Central	Washinaton	Washinaton	2010	18554	17717	5629	8519	25210
100	4171	Kelloaa Dr S	Kelloaa Dr S	Maize	Maize	2010	8230	5110	20372	16600	25156

Appendix J - LOS Summaries

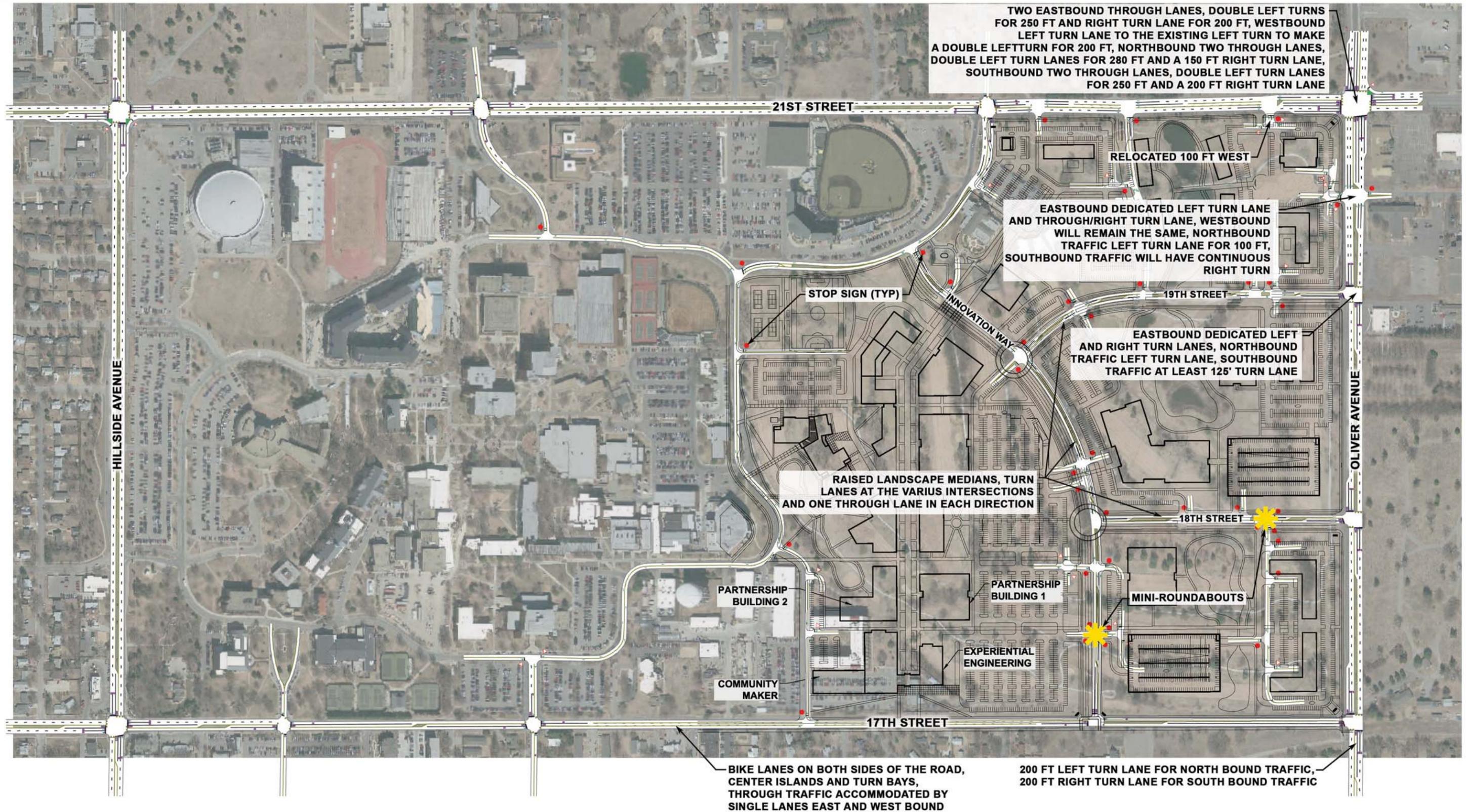
LEVEL OF SERVICE (LOS) SUMMARY - AM PEAK HOUR

Intersection ID	Description	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
1	21st & Hillside	B	C	A	D	B	B	B	C	A	C	B	B
2	21st & Yale	A	B	B	B	B	B	B	B	A	B	B	B
3	21st & Mike Oatman	A	D	D	D	A	A	C	C	A	B	B	B
4	21st Entrance for Hotel		A	A	A	A		B		B			
5	21st & Pershing		A	A	A	A		B		B			
6	21st Entrance for Retail/Mixed Use		A	A	A	A		B		A			
7	21st & Oliver	B	C	A	B	C	A	B	B	A	B	B	C
8	Retail & Mixed Use Entrance	B	B			A	A				A		A
9	Mike Oatman Entrance for Marcus Welcome Center				A		A		A	A	A	A	
10	South Entrance for Hotel on 21st	A	A			A	A				A		A
11	Hotel Entrance onto Pershing	B		B				A	A			A	A
12	Mixed Use 1 & 2 entrance onto Pershing	B		B				A	A			A	A
13	South Entrance for Retail @ 21st & Oliver	A		A				A	A			A	A
15	North Entrance for Hotel on Oliver	A	A	A	A	A	A	A	A	A	A	A	A
16	Oliver & Shadybrook St.	D	D	A	C	C	A	B	A	A	A	A	A
17	Innovation Way & Mike Oatman		A	A	A	A		D		A			
18	Innovation Way & Marcus Welcom Center				B		B		A	A	A	A	
19	19th & Innovation Way	B	B	A	B	B	A	B	A	A	B	A	A
20	19th & Entrances for Part. Bldg. 7 & 6	A	A	A	A	A	A	B	B	B	B	B	B
21	19th & Pershing	A	A			A	A				B		B
22	19th & Entrance for Mix Use Bldg. 4	A	A			A	A				B		B
23	19th & Entrance for Part.Bldg. 6 & 9	A	A	A	A	A	A	B	B	B	B	B	B
24	South Entrance for Hotel on Oliver				A		A		A	A	A	A	
25	19th & Oliver	B		A				B	A			C	A
26	Innovation Way & Ent. For Part.Bldg. 4 & 7	B	B	B	A	A	A	A	A	A	A	A	A
27	Innovation Way & Ent. for Student Comm. Center	B		B				A	A			A	A
28	18th & Innovation Way				C		A		A	A	A	A	
29	18th & South Entrance for Part.Bldg.7	A	A			A	A				A		A
30	18th & Entrance for Parking Garage	A	A			A	A				B		B
31	North Entrance for Mixed Use 5				B		B		A	A	A	A	
32	18th & Entrance for Mixed Use 5&6		A	A	B	B		A		A			
33	18th & Oliver	B		A				A	A			B	A
34	Intersection west of main entrance for Part.Bldg 1	A	A	A	A	A	A	A	A	A	B	B	B
35	Innovation Way & Entrance for Part.Bldg.1 & 3	B	B	B	B	B	B	A	A	A	A	A	A
36	South Entrance for Mixed Use 5				B		B		A	A	A	A	
37	Entrance for South Parking Garage	A		A				B	B			B	B
38	East/west road between garage and Mixed Use 5 & 6	B		B				A	A			A	A
39	Entrances for Mixed Use Bldg. 6				A		A		A	A	A	A	
40	Innovation Way & Experiential Bldg Entrance	B	B	B	B	A	A	A	C	C	B	B	B
42	17th & Oliver	D		A				B	A			C	A
44	17th & Innovation Way	C	A			A	A				D		B
45	17th & Bluff	A	A		A		A				B		B
46	17th & Harvard	C	A	A	A	A	A	A	A	A	B	B	A
47	17th & Fairmount	A	B	B	A	A	A	A	A	A	B	B	B
48	17th & Hillside	B	B	B	B	A	A	B	B	B	D	B	B
49	Harvard & Perimeter Rd.		B	B	C	C		A		A			
50	Bluff & Entrance to Exp. Eng. & Maker Space Bldgs.				A		A		A	A	A	A	
51	Bluff & entrance for Part.Bldg. 2				A		A		A	A	A	A	
52	Perimeter Rd. & Bluff				A		A		A	A	A	A	
53	Perimeter Rd. & Entrance for Res. Hall				A		A		A	A	A	A	
54	Mike Oatman & Perimeter Rd.				A		A		A	A	A	A	
55	Yale & Perimeter Rd.	A	A			A	A				B		B

LEVEL OF SERVICE (LOS) SUMMARY - PM PEAK HOUR

Intersection ID	Description	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
1	21st & Hillside	C	C	A	C	C	C	B	C	A	B	A	A
2	21st & Yale	A	B	B	B	B	B	B	B	A	B	B	B
3	21st & Mike Oatman	A	C	C	C	A	A	C	C	A	B	B	B
4	21st Entrance for Hotel		A	A	B	A		B		B			
5	21st & Pershing		A	A	B	A		B		B			
6	21st Entrance for Retail/Mixed Use		A	A	A	A		C		A			
7	21st & Oliver	C	C	C	B	C	A	C	C	A	B	C	B
8	Retail & Mixed Use Entrance	B	B			A	A				A		A
9	Mike Oatman Entrance for Marcus Welcome Center				C		C		A	A	A	A	
10	South Entrance for Hotel on 21st	A	A			A	A				A		A
11	Hotel Entrance onto Pershing	A		A				A	A			A	A
12	Mixed Use 1 & 2 entrance onto Pershing	B		B				A	A			A	A
13	South Entrance for Retail @ 21st & Oliver	A		A				A	A			A	A
15	North Entrance for Hotel on Oliver	A	A	A	A	A	A	A	A	A	A	A	A
16	Oliver & Shadybrook St.	D	A	A	D	D	D	B	A	A	A	A	A
17	Innovation Way & Mike Oatman		A	A	A	A		D		B			
18	Innovation Way & Marcus Welcom Center				A		A		A	A	B	B	
19	19th & Innovation Way	B	B	B	B	B	B	A	A	A	A	A	A
20	19th & Entrances for Part. Bldg. 7 & 6	A	A	A	A	A	A	A	A	A	B	B	B
21	19th & Pershing	A	A			A	A				B		B
22	19th & Entrance for Mix Use Bldg. 4	A	A			A	A				B		B
23	19th & Entrance for Part.Bldg. 6 & 9	A	A	A	A	A	A	B	B	B	B	B	B
24	South Entrance for Hotel on Oliver				A		A		A	A	A	A	
25	19th & Oliver	C		A				A	A			B	A
26	Innovation Way & Ent. For Part.Bldg. 4 & 7	B	B	B	B	B	B	A	A	A	A	A	A
27	Innovation Way & Ent. for Student Comm. Center	A		A				A	A			A	A
28	18th & Innovation Way				C		A		A	A	A	A	
29	18th & South Entrance for Part.Bldg.7	A	A			A	A				B		B
30	18th & Entrance for Parking Garage	A	A			A	A				B		B
31	North Entrance for Mixed Use 5				B		B		A	A	A	A	
32	18th & Entrance for Mixed Use 5&6		C	C	C	A		C		C			
33	18th & Oliver	C		A				B	B			C	A
34	Intersection west of main entrance for Part.Bldg 1	A	A	A	A	A	A	A	A	A	A	A	A
35	Innovation Way & Entrance for Part.Bldg.1 & 3	B	B	B	A	A	A	A	A	A	A	A	A
36	South Entrance for Mixed Use 5				B		B		A	A	A	A	
37	Entrance for South Parking Garage	A		A				B	B			A	A
38	East/west road between garage and Mixed Use 5 & 6	B		B				A	A			A	A
39	Entrances for Mixed Use Bldg. 6				A		A		A	A	A	A	
40	Innovation Way & Experiential Bldg Entrance	B	B	B	B	B	B	A	B	B	C	C	C
42	17th & Oliver	D		A				B	A			C	A
44	17th & Innovation Way	B	B			B	B				B		A
45	17th & Bluff	A	A		A		A				C		C
46	17th & Harvard	B	B	B	A	C	C	A	A	A	B	B	A
47	17th & Fairmount	A	A	A	A	C	C	A	A	A	B	B	B
48	17th & Hillside	B	B	B	C	A	A	B	B	B	D	B	B
49	Harvard & Perimeter Rd.		A	A	B	B		A		A			
50	Bluff & Entrance to Exp. Eng. & Maker Space Bldgs.				A		A		A	A	A	A	
51	Bluff & entrance for Part.Bldg. 2				A		A		A	A	A	A	
52	Perimeter Rd. & Bluff				A		A		A	A	A	A	
53	Perimeter Rd. & Entrance for Res. Hall				A		A		A	A	A	A	
54	Mike Oatman & Perimeter Rd.				B		B		A	A	A	A	
55	Yale & Perimeter Rd.	A	A			A	A				B		B

Appendix K - Geometric Changes, ROW Needs & Traffic Control



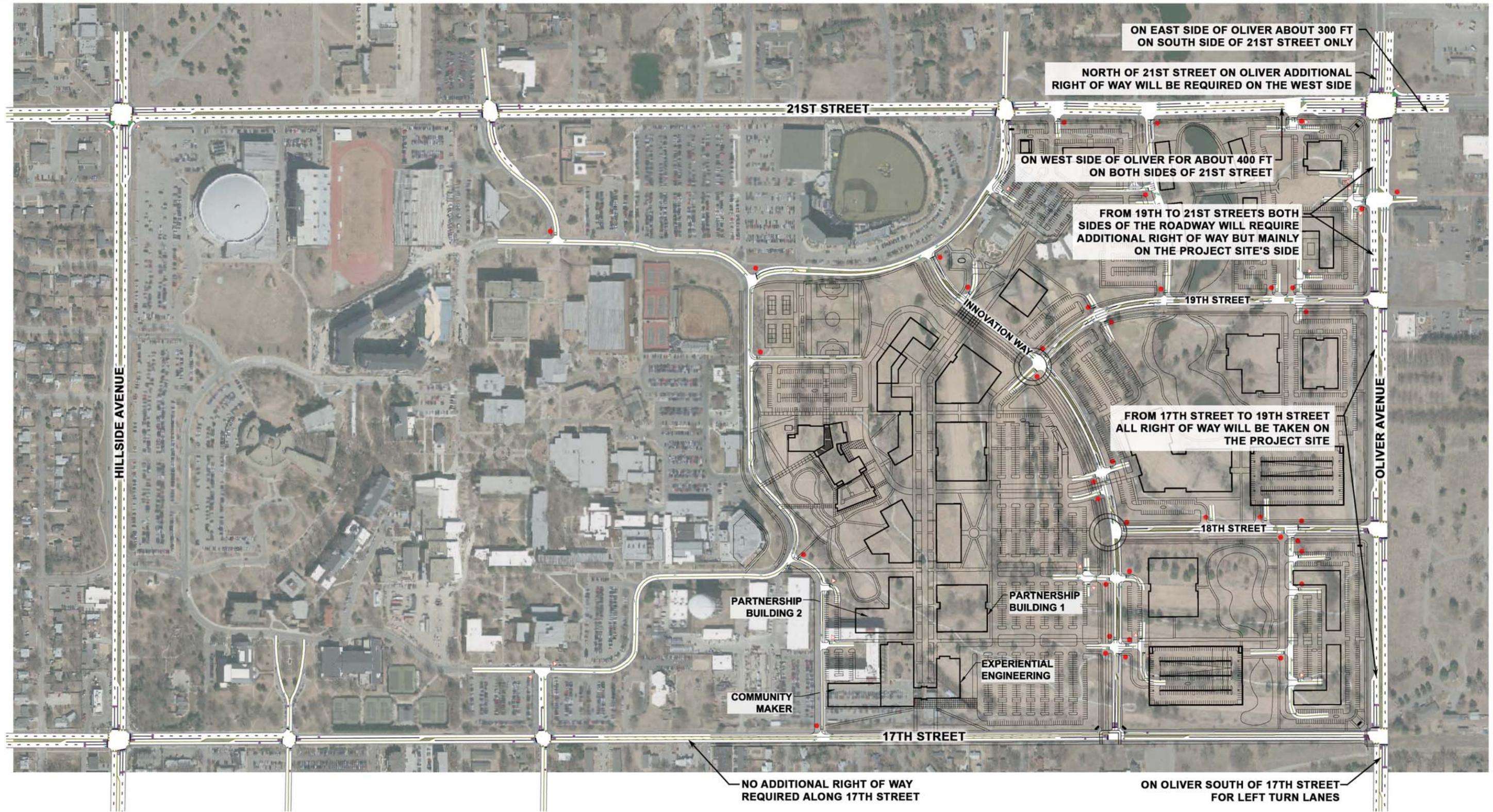
TRAFFIC RECOMMENDATIONS

WSU INNOVATION CAMPUS

12.09.2014



Wichita, KS • 316.684.9600



RIGHT OF WAY

WSU INNOVATION CAMPUS

12.09.2014



Wichita, KS • 316.684.9600



TRAFFIC CONTROL

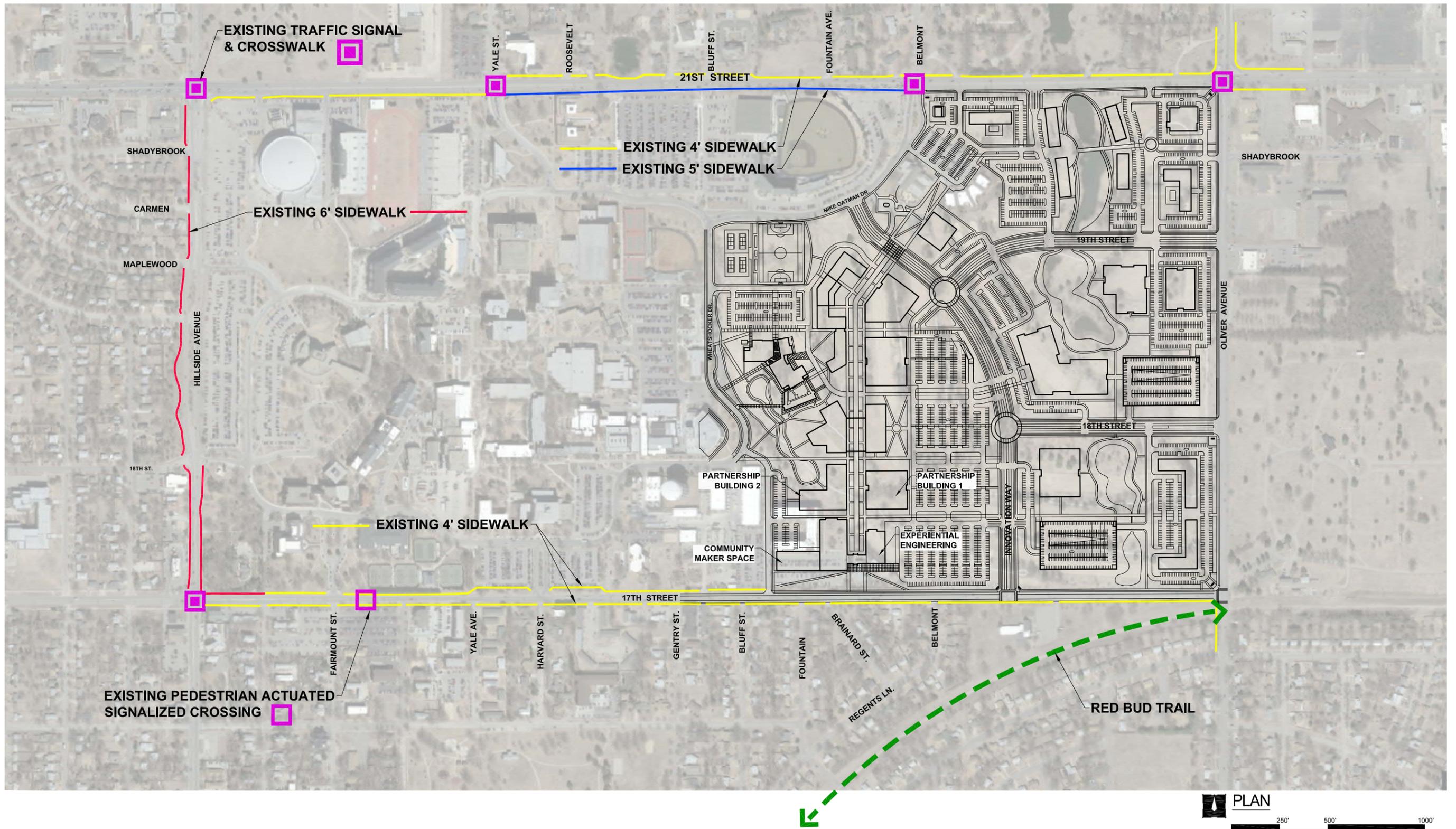
WSU INNOVATION CAMPUS

12.09.2014



Wichita, KS • 316.684.9600

Appendix L - Bicycle & Pedestrian Facilities Context Map

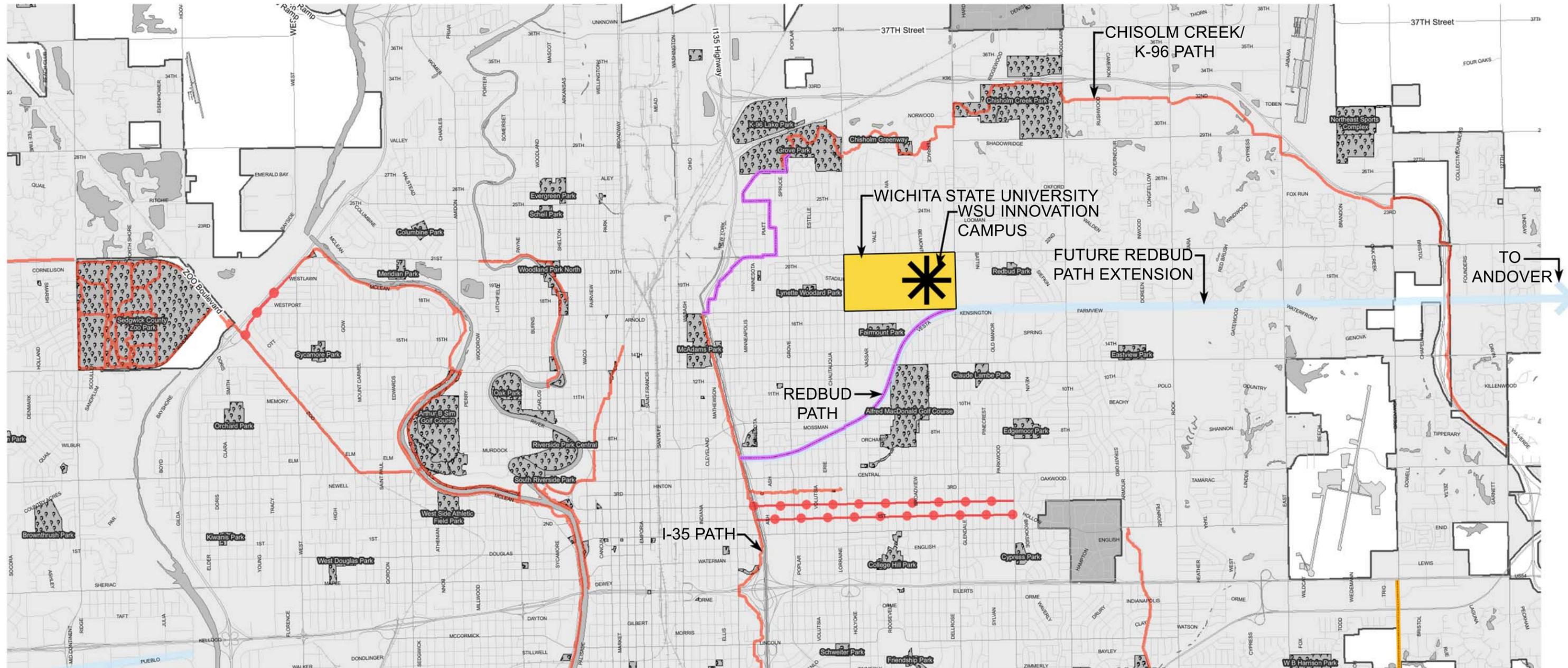


BICYCLE & PEDESTRIAN FACILITIES CONTEXT MAP

WSU INNOVATION CAMPUS
11.24.2014



Appendix M - Existing Wichita Bikeways Diagram



BICYCLE FACILITIES IN DEVELOPMENT

- Final Design
- Under Construction

EXISTING BICYCLE FACILITIES

- Chipped Rock
- ▲—▲—▲— Singletrack (Mountain Bike)
- Paved Path
- On-Street
- Railbanked - City of Wichita
- Railbanked - Prairie Travelers
- Railbanked - Sedgwick County
- Railroad
- Public Parks

It is understood that while the City of Wichita Data Center Geographical Information Systems Department have no indication and reason to believe that there are inaccuracies in information incorporated in the base map, the Data Center-GIS personnel make no warranty or representation, either expressed or implied, with respect to the information or data displayed.
 Note: Public property represented on this map is not intended to be inclusive.

Software: ArcGIS
 Map Data Sources:
 City of Wichita
 Sedgwick County
 Aerial photography from April 2003
 Prepared: 4/21/2011

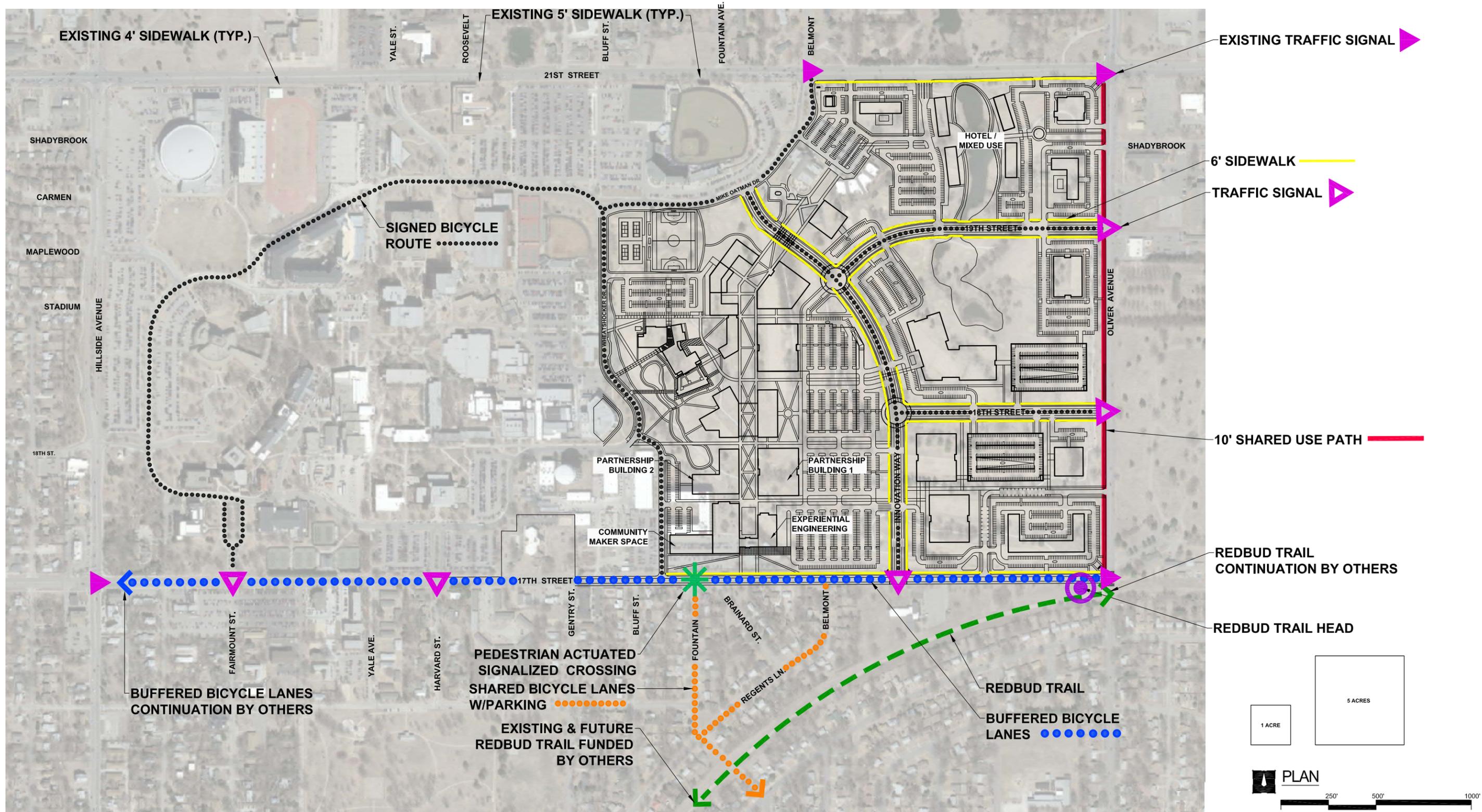
EXISTING WICHITA BIKEWAYS DIAGRAM

WSU INNOVATION CAMPUS

11.14.2014



Appendix N - Bicycle & Pedestrian Circulation



BICYCLE & PEDESTRIAN CIRCULATION

WSU INNOVATION CAMPUS
11.14.2014

