TRAFFIC IMPACT STUDY FOR PROPOSED MEDICAL CAMPUS

O'Fallon, Missouri *May 2012*

Prepared For:

Mercy
615 South New Ballas Road
St. Louis, Missouri 63141

Prepared by:

Bernardin, Lochmueller & Associates, Inc.
411 North 10th Street, Suite 200
St. Louis, Missouri 63101

BLA Report 512-0008-0TE

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Executive Summary

Bernardin, Lochmueller & Associates, Inc. has completed a traffic study to address the impact associated with a proposed medical campus in O'Fallon, Missouri. The site is located to the west of Missouri Highway K between South Outer 364 and Waterford Crossing Drive.

Although a specific site layout has not been finalized, it is our understanding that the campus would include approximately 122,000 square feet (s.f.) of medical offices by 2014 and a 60-bed hospital by 2016. The proposed development would be expected to generate a total of 350 and 500 trips during the weekday a.m. and p.m. peak hours, respectively.

Access to the campus is tentatively proposed via full access driveways on Highway K, South Outer 364, and Waterford Crossing Drive. The proposed drive on Highway K would be located opposite Pheasant Point Drive and serve as the primary entrance/exit for the medical campus.

The purpose of this study was to identify the roadway and traffic control improvements that would be needed to accommodate traffic from the proposed development and, ultimately, long-term growth within the region. In conjunction with this development, it is recommended that the following improvements be implemented on the adjoining road system:

Improvements Recommended in Conjunction with the Proposed Medical Campus:

- Install a new traffic signal at the intersection of Highway K and Pheasant Point Drive/proposed site drive. The intersection should be interconnected with the rest of the coordinated system along Highway K and signal timing plans should be developed to ensure efficient operations with an emphasis on maintaining the progression of traffic along Highway K.
- At the intersection of Highway K and Pheasant Point Drive, construct a separate southbound right-turn lane on Highway K. This auxiliary lane would provide a safe area for motorists turning into the medical campus to decelerate without unduly delaying traffic on Highway K.

It should be noted that the proposed signal at Pheasant Point Drive would not satisfy the standard spacing guidelines outlined in MoDOT's Access Management Guidelines. However, the signal would likely have similar spacing as the four signals immediately upstream following the completion of the planned Route 364 interchange.

Based on extensive analysis, it was concluded that the installation of a new signal on Highway K at Pheasant Point Drive can be accommodated favorably. The signal would fit well within the anticipated spacing of other signals along Highway K. Furthermore, it would have minimal impact on operations on Highway K while providing valuable safety and operational benefits to side-street motorists accessing both the medical campus and the residential neighborhood to the east.

It is our understanding that MoDOT and the City of O'Fallon have expressed an interest in a potential roadway connection between South Outer 364 and Waterford Crossing Drive through the proposed development site. To that end, additional analyses were completed to estimate how much traffic would utilize a potential "backage road" and determine how these diversions would affect operations on Highway K.

It was determined that a connection between South Outer 364 and Waterford Crossing Drive to the west of Highway K would attract moderate usage during peak periods. The resulting diversion of traffic from Highway K would result in improved operating conditions and enhance the efficiency of travel along the Highway K corridor.

Overall, it was concluded that the proposed medical campus could be accommodated satisfactorily, provided the improvements recommended in this report are implemented. These improvements would adequately accommodate this development and facilitate future growth on the adjoining roadway system.

Introduction

Bernardin, Lochmueller & Associates, Inc. has completed a traffic study to address the impact associated with a proposed medical campus in O'Fallon, Missouri. The site is located to the west of Missouri Highway K between South Outer 364 and Waterford Crossing Drive.

Although a specific site layout has not been finalized, it is our understanding that the campus would include approximately 122,000 square feet (s.f.) of medical offices by 2014 and a 60-bed hospital by 2016. A preliminary site plan is provided in **Exhibit 1.**

Access to the campus is tentatively proposed via full access driveways on Highway K, South Outer 364, and Waterford Crossing Drive. The location of the site as well as the study intersections are depicted in **Figure 1.**

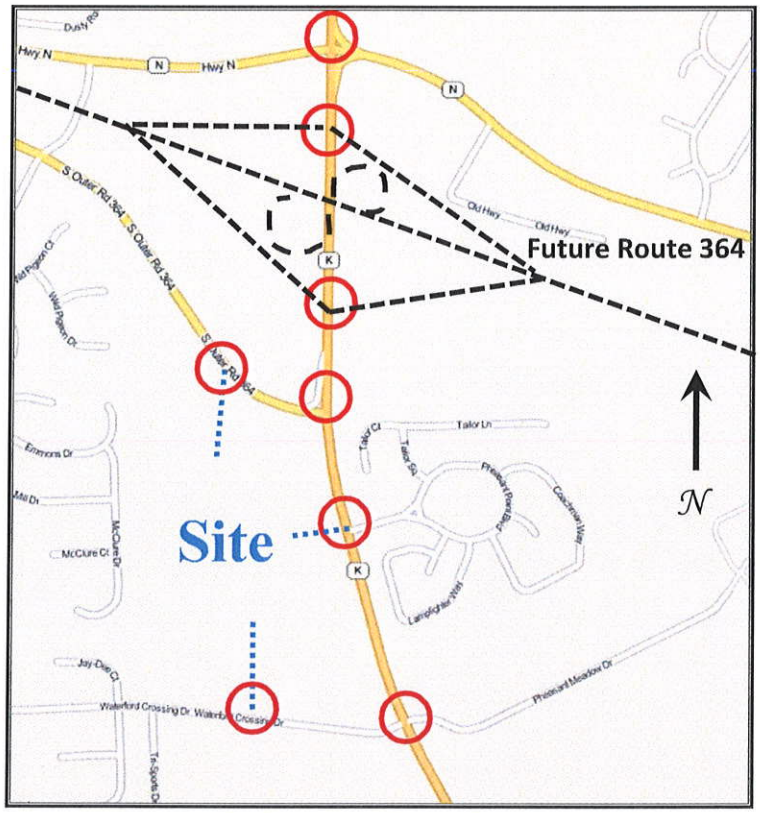


Figure 1: Site Location & Study Area Map

As depicted schematically in Figure 1, the study accounted for the planned extension of Missouri Route 364. That project is scheduled for completion in 2014 under a design-build contract. Since the interchange of Route 364 with Highway K has not been designed yet, this study assumed it will be configured as a partial cloverleaf as shown in previous planning studies available from MoDOT.

Specifically, the following intersections were included in the study:

- Highway K at Highway N (signalized)
- Highway K at Future Route 364 North Ramps (signalized)
- Highway K at Future Route 364 South Ramps (signalized)
- Highway K at South Outer 364 (signalized)
- Highway K at Site Drive/Pheasant Point Boulevard
- Highway K at Waterford Crossing Drive/Pheasant Meadow Drive (signalized)
- South Outer 364 at Site Drive
- Waterford Crossing Drive at Site Drive

The purpose of this study was to determine the amount of traffic that would be generated by the proposed development, evaluate its impact upon the adjoining road system and identify the need for roadway and/or traffic control improvements to mitigate those impacts.

For the purposes of the traffic impact study, it was assumed that the entire development would be completed by 2016 and the following analysis scenarios were agreed upon with the review agencies:

- Existing Conditions
- 2016 No-Build Conditions (4 years of background growth and traffic changes associated with the Route 364 extension)
- 2016 Build Conditions (includes the proposed medical campus)
- 2036 No-Build Conditions (includes 20 additional years of background growth)
- 2036 Build Conditions

The focus of our analysis was the a.m. and p.m. peak periods of commuter traffic for a typical weekday since these represent the most critical time periods with regards to traffic operations for the proposed development.

The following report summarizes our findings regarding existing conditions and forecasted conditions following completion of the proposed development. The methodology employed to complete this study, along with the findings and recommendations, are discussed in greater detail in the subsequent sections.

Existing Roadway & Traffic Conditions

Before analyzing the impacts of the proposed mixed-use development, it was necessary to establish the existing traffic conditions on the adjacent roadways.

Existing Roadway Conditions

Highway K is a north-south arterial with connections to Interstate 70 to the north and Interstate 64 to the south. Adjacent to the site, it generally consists of five lanes (two northbound and two southbound plus a center left-turn lane) with auxiliary lanes provided at major intersections.

Highway N is an east-west arterial roadway that serves St. Charles County between Highway Z and Highway 94. It intersects Highway K at a signalized intersection with auxiliary turn lanes.

Missouri Route 364 currently ends near Highway 94, but it is scheduled for extension through the study area (terminating at Interstate 64 to the west) in 2014 under a design-build contract. The exact configuration of its new interchange with Highway K has not been finalized, but previous MoDOT planning documents contemplated a partial cloverleaf interchange with two signalized ramp terminals.

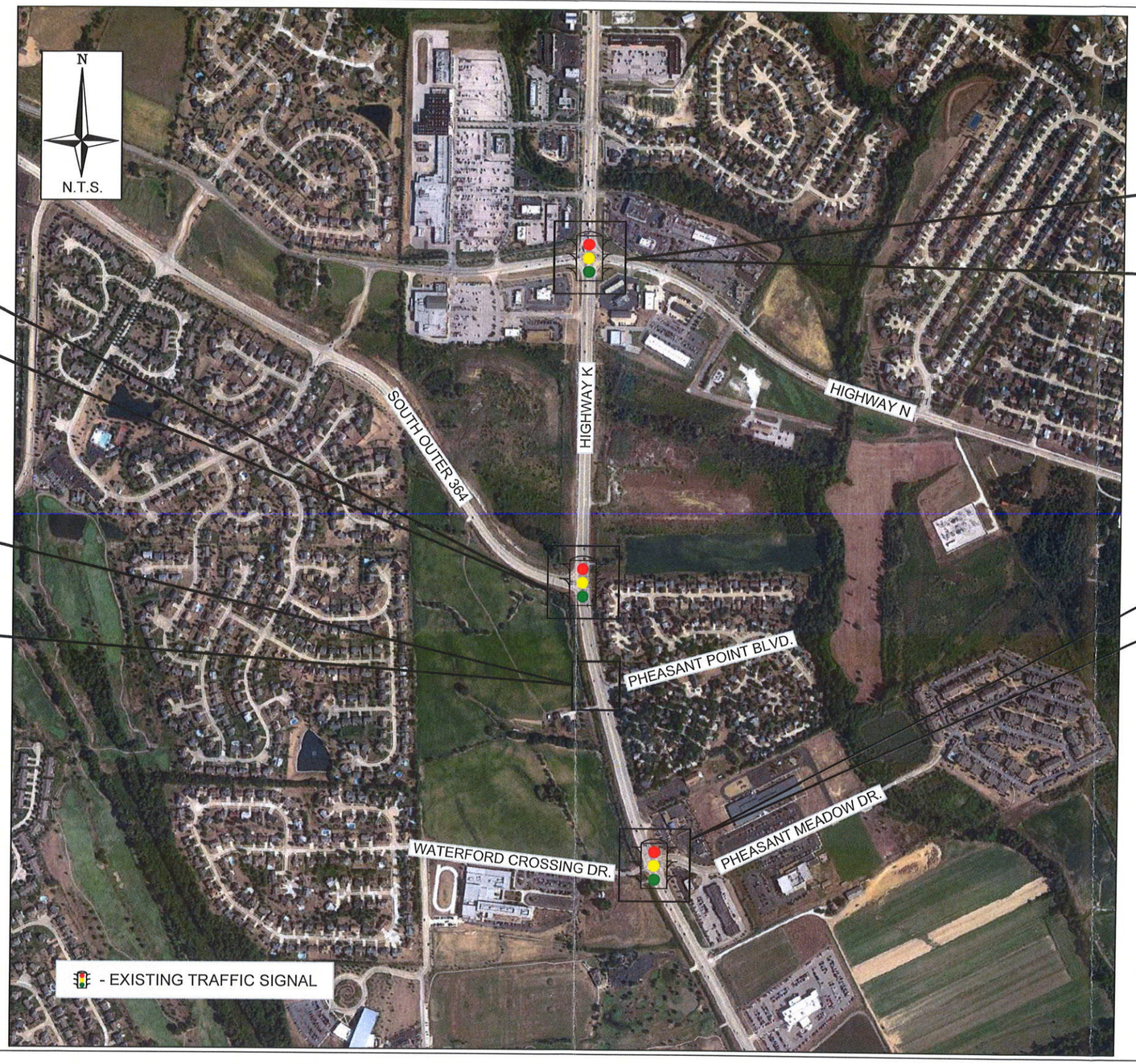
South Outer 364 provides access to several major residential subdivisions via connections to Highway K to the east and Highway N to the west (near Bryan Road). Waterford Crossing Drive serves Fort Zumwalt West Middle School, a recreation center and a residential subdivision to the west of Highway K.

As an initial step in quantifying existing traffic conditions within the study area, turning movement count data was collected and supplemented with file data from MoDOT at the four existing study intersections during the typical weekday morning (7:00 to 9:00 a.m.) and afternoon (4:00 to 6:00 p.m.) peak periods. It was determined that the peak hours of traffic flow are 7:30 to 8:30 a.m. and 5:00 to 6:00 p.m. on weekdays.

These peak periods of the adjacent roadway would coincide with the peak trip generation times for the proposed uses. Therefore, if traffic from the proposed development can be accommodated at these times, it can be reasoned that adequate capacity would be available throughout the remainder of the day. The existing traffic volumes are summarized in **Exhibits 2a and 2b**.

N

EXHIBIT 1: PRELIMINARY SITE PLAN (BY OTHERS)



HIGHWAY K / S OUTER 364: 75, 1,585, 250, 515, 180, 765

HIGHWAY K / HIGHWAY N: 155, 1,330, 155, 130, 170, 225, 275, 350, 65, 45, 600, 310

HIGHWAY K / PHEASANT POINT BLVD: 2,085, 15, 45, 35, 900, 10

HIGHWAY K / PHEASANT MEADOW DR / WATERFORD CROSSING DR: 275, 1,725, 120, 85, 0, 75, 130, 15, 40, 35, 695, 20

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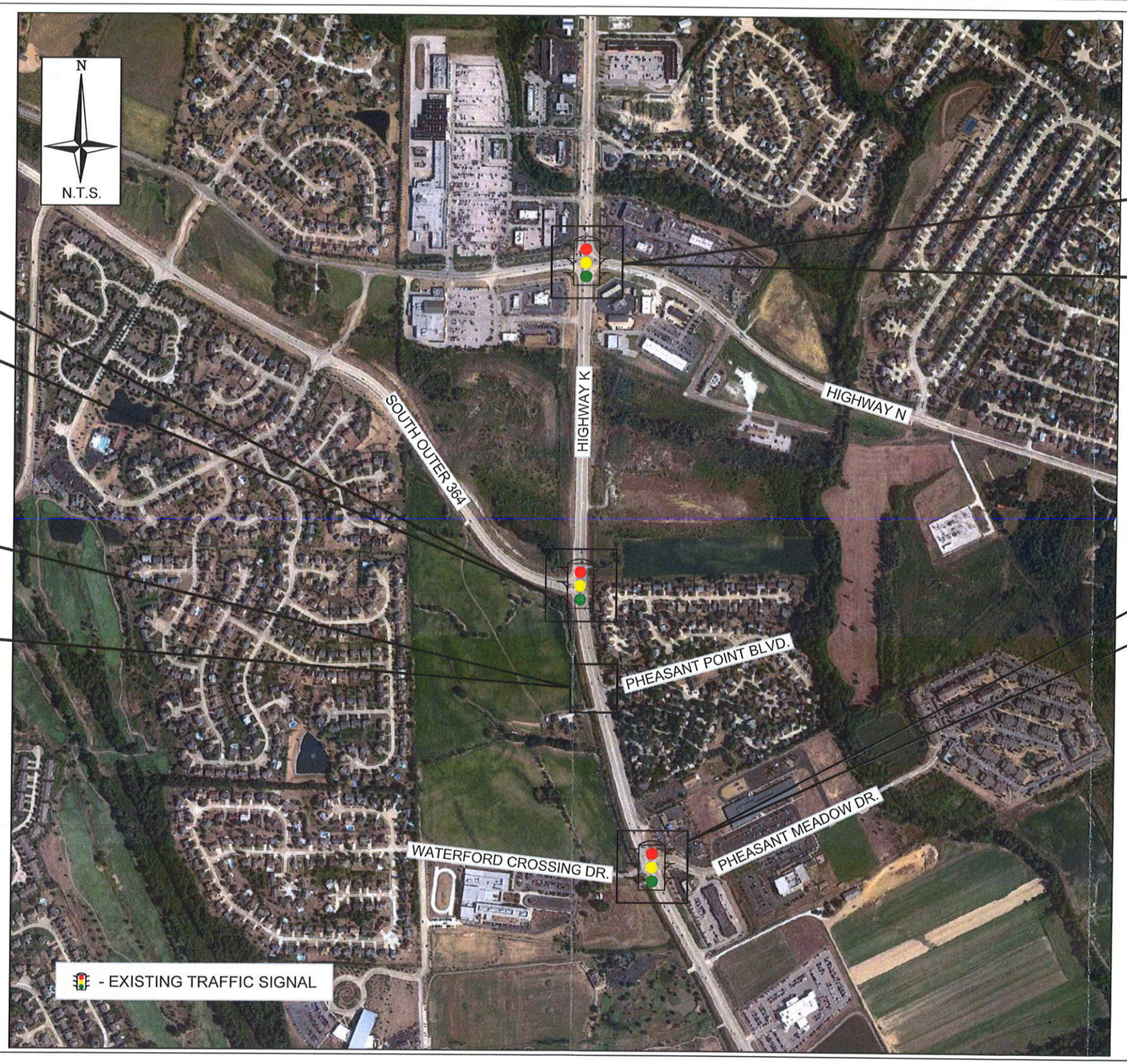
EXHIBIT 2A: EXISTING TRAFFIC - AM PEAK HOUR

MERCY MEDICAL CAMPUS
O'FALLON, MISSOURI
512-0008-0TE



HIGHWAY K
295
1,065
S OUTER 364
180
335
415
1,800

HIGHWAY K
345
1,040
210
HIGHWAY N
210
310
285
290
295
50
105
1,440
335

HIGHWAY K
1,415
45
40
10
PHEASANT POINT BLVD
2,175
30

HIGHWAY K
150
1,095
180
135
0
65
PHEASANT MEADOW DR
WATERFORD CROSSING DR
100
10
35
60
1,970
115

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EXHIBIT 2B: EXISTING TRAFFIC - PM PEAK HOUR

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As shown, traffic on Highway K is heavy and directional with heavier flows southbound during the a.m. peak period and northbound in the afternoon. Significant turning movements occur at all three signalized intersections, particularly during the p.m. peak period.

Highway N and Waterford Crossing Drive carry more balanced flows. The traffic shown on Waterford Crossing during the morning peak hour is heavily influenced by buses and parents dropping off students at the middle school.

Existing Operating Conditions

The intersections within the study area were evaluated to quantify existing operating conditions. The analysis was completed using Synchro 7, which is based upon the methodologies outlined in the "Highway Capacity Manual" (HCM) published in 2000 by the Transportation Research Board. The capacity of an intersection is quantified by the Level of Service (LOS), which is based upon the delay an average vehicle experiences at a particular intersection.

Table 1 summarizes the criterion for both signalized and unsignalized intersections, as defined in the Highway Capacity Manual. LOS C, which is normally used for highway design, represents a roadway with volumes ranging from 70% to 80% of its capacity. However, Level D is considered acceptable for peak period conditions in urban and suburban areas.

Table 1: Level of Service Thresholds

Level of Service (LOS)	Control Delay per Vehicle (sec/veh)	
	Signalized Intersections	*Unsignalized Intersections*
A	≤ 10	0-10
B	> 10-20	> 10-15
C	> 20-35	> 15-25
D	> 35-55	> 25-35
E	> 55-80	> 35-50
F	> 80	> 50

The existing operating conditions at the study intersections are summarized in **Table 2**. It should be noted that the traffic signals along Highway K are interconnected and operate as part of a coordinated system.

Table 2: Existing Operating Conditions

Mercy Medical Campus O'Fallon, Missouri		
Intersection/Approach	*Weekday AM Peak Hour*	*Weekday PM Peak Hour*
Highway K at Highway N – Signalized		
Eastbound Approach	D (46.2)	F (133.9)
Westbound Approach	C (34.6)	E (68.9)
Northbound Approach	C (29.0)	E (60.6)
Southbound Approach	D (50.0)	C (28.0)
Overall Intersection	D (41.9)	E (60.9)
Highway K at South Outer 364 – Signalized		
Eastbound Approach	E (58.1)	D (37.8)
Northbound Approach	B (16.0)	B (11.5)
Southbound Approach	B (15.6)	B (16.1)
Overall Intersection	C (28.8)	B (16.4)
Highway K at Pheasant Point Dr – Unsignalized		
Westbound Approach	B (13.9)	D (48.5)
Southbound Left	A (9.9)	E (38.7)
Highway K at Waterford Crossing Dr – Signalized		
Eastbound Approach	D (49.3)	E (61.3)
Westbound Approach	C (21.6)	C (24.7)
Northbound Approach	B (14.2)	F (209.5)
Southbound Approach	B (10.6)	A (9.0)
Overall Intersection	B (14.2)	F (121.6)

X (XX.X) - Level of Service (Average vehicular delay in seconds per vehicle)

As shown, the intersection of Highway K and Highway N is constrained during the afternoon peak hour when heavy demands are present on several approaches. Although acceptable levels of service are reflected, periodic lengthy queues were also observed on the southbound approach during the morning peak when commuter flows are heaviest in that direction.

Likewise, the northbound approach of Highway K at Waterford Crossing Drive is constrained during the p.m. peak when demands are heavy for traffic in that direction. In general, conditions at the remaining study intersections are satisfactory.

It should be noted that Waterford Crossing Drive is congested adjacent to West Middle School during both the morning arrival and afternoon dismissal periods. The combination of parents parking on the street, spillbacks from on-site drop-offs/pick-ups and bus traffic periodically restricts portions of the roadway such that effectively only a single travel lane remains.

2016 Baseline Conditions

As previously noted, it was assumed that the development would be fully built-out by the year 2016. It is important to establish anticipated conditions within the study area at that time *without* the proposed development, particularly because Route 364 will be extended to the study area by 2016 and significantly affect traffic conditions.

2016 Baseline Roadway & Traffic Conditions

Route 364 currently terminates near Highway 94, but plans are underway to extend the highway to I-64 at its interchange with Highway N. Officials with the Missouri Department of Transportation (MoDOT) anticipate that extended Route 364 will be open to I-64 by the year 2014.

It should be noted that this phase of Route 364 will be constructed as a design-build project. Consequently, the specific configuration and operational characteristics of the roadway are subject to change. However, for the purposes of this study, it was assumed that the interchange of Route 364 with Highway K will be configured as a partial cloverleaf, as reflected in previous planning studies.

The completion of Route 364 would be expected to impact travel patterns within the study area. Specifically, traffic patterns on Highway K would change as some motorists divert to the new highway in lieu of I-70, I-64 or Highway N for regional trips. To a lesser extent, some local trips currently utilizing South Outer 364 or Highway N would also be expected to use extended Route 364 instead for east-west travel.

In order to assess the likely traffic diversions, existing travel patterns were analyzed and the East-West Gateway travel demand model was utilized to review scenarios with and without the Route 364 connection in place (although these scenarios were of limited value in assessing shifts to local trips).

In addition, MoDOT planning documents that projected long-term traffic for Route 364 were reviewed to provide a sense of the ultimate travel patterns anticipated at and near the new Highway K interchange. As discussed in a later section of this report, the long-term forecasts for Route 364 and Highway K reflect very heavy growth, so the 2016 forecasts were adjusted to reflect reasonable growth in the near-term.

Based upon these reviews and analysis, it is anticipated that the volumes shown in **Exhibits 3a and 3b** represent a reasonable estimate of 2016 baseline traffic at the study intersections.

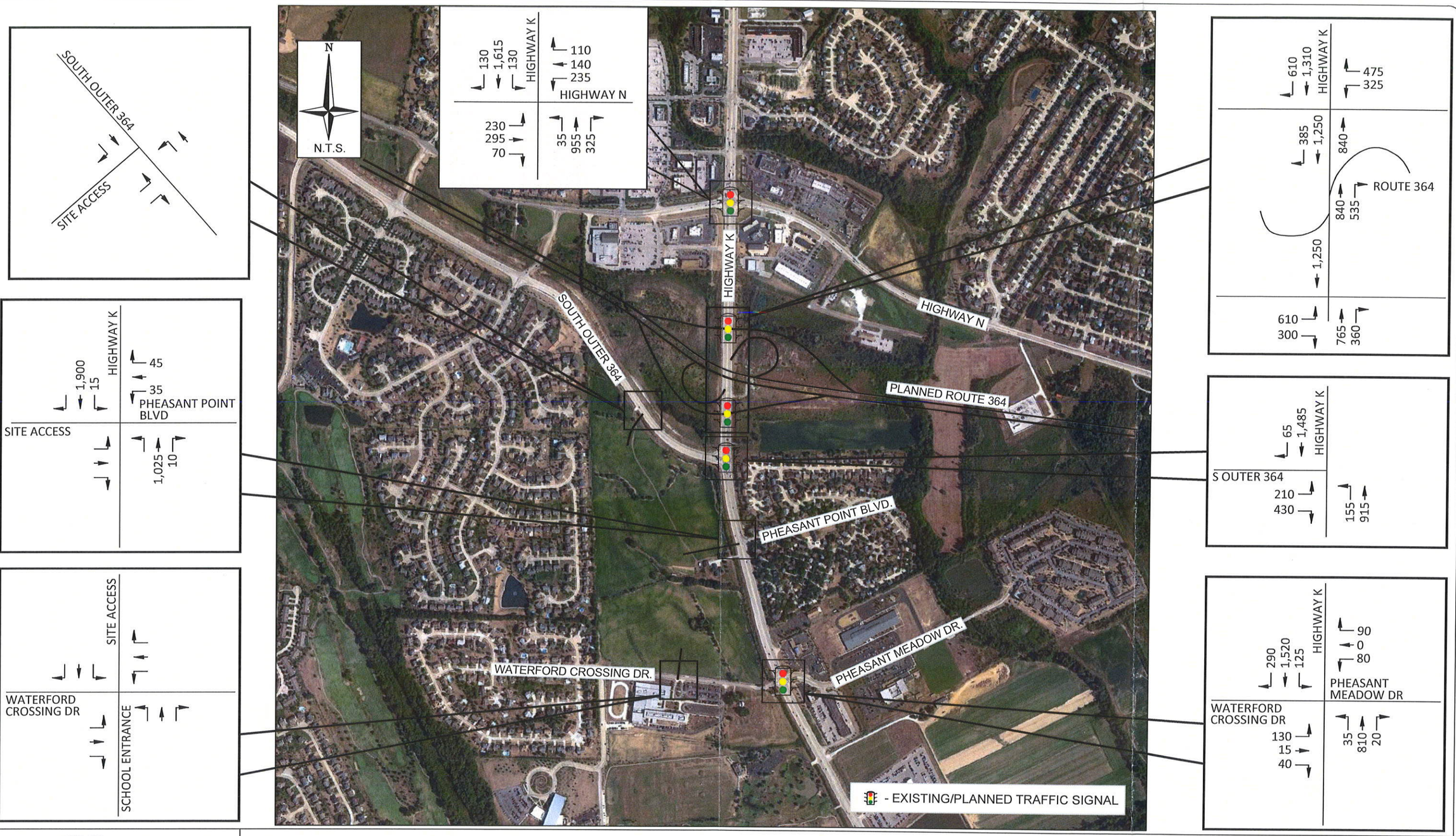

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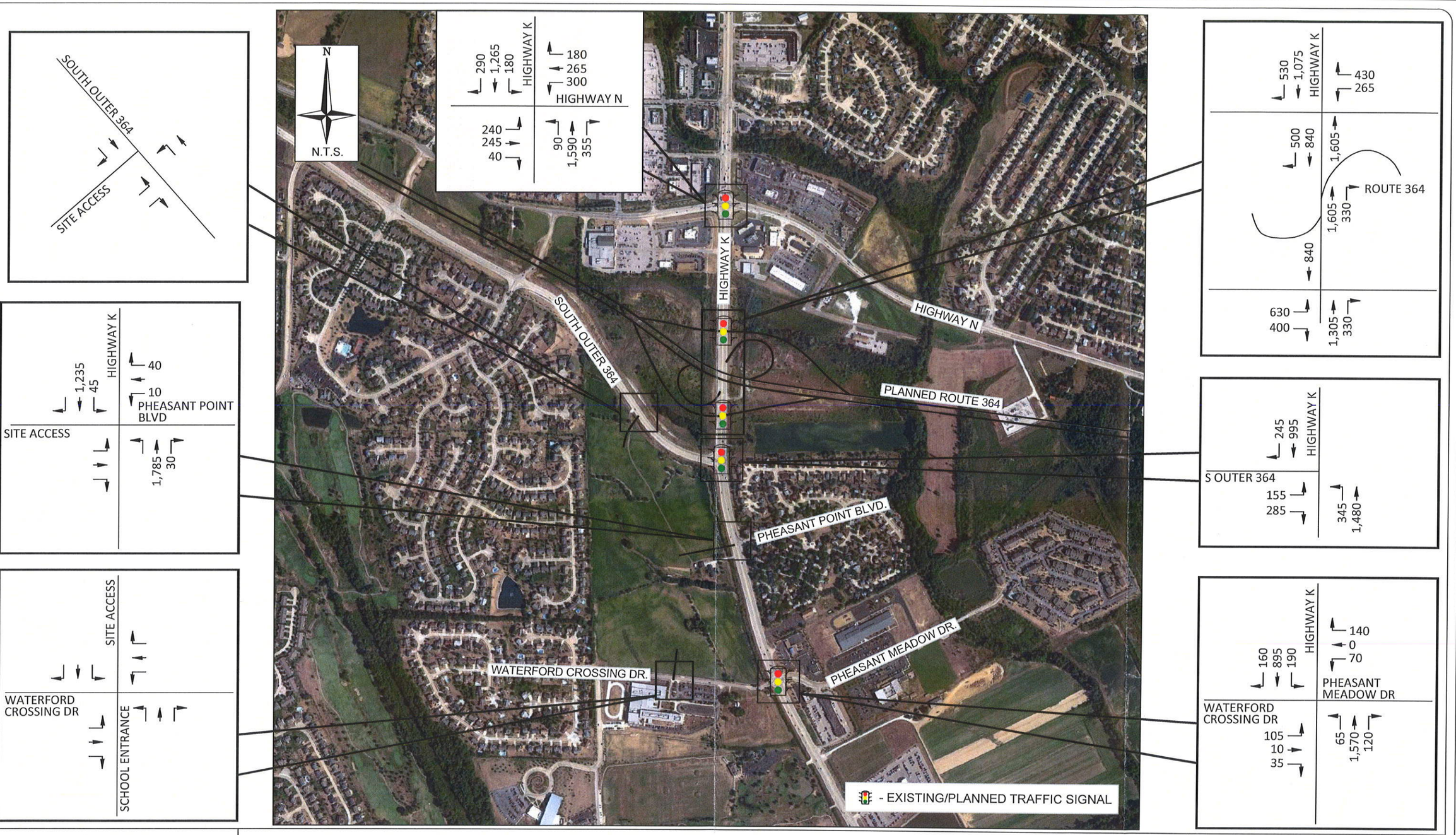
EXHIBIT 3A: 2016 BASELINE TRAFFIC - AM PEAK HOUR

MERCY MEDICAL CAMPUS
O'FALLON, MISSOURI
512-0008-0TE



HIGHWAY K		HIGHWAY N	
290 → 1,265 → 180 ←		← 180 ← 265 ← 300	
← 240 ← 245 ← 40		90 → 1,590 → 355 →	

SITE ACCESS		HIGHWAY K	
		← 40 ← 10	
1,235 → 45 →			1,785 → 30 →
		PHEASANT POINT BLVD	

SITE ACCESS		
WATERFORD CROSSING DR		SCHOOL ENTRANCE
→		→ →

HIGHWAY K		
530 → 1,075 →		← 430 ← 265
← 500 ← 840		1,605 →
		1,605 → 330 → ROUTE 364
840 →		
630 → 400 →		1,305 → 330 →

HIGHWAY K		
245 → 995 →		
S OUTER 364		
← 155 ← 285		345 → 1,480 →

HIGHWAY K		
160 → 895 → 190 →		← 140 ← 0 ← 70
		PHEASANT MEADOW DR
WATERFORD CROSSING DR		
← 105 ← 10 ← 35		65 → 1,570 → 120 →

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EXHIBIT 3B: 2016 BASELINE TRAFFIC - PM PEAK HOUR

MERCY MEDICAL CAMPUS
O'FALLON, MISSOURI
512-0008-0TE

2016 Baseline Operating Conditions

The intersections within the study area were evaluated using these baseline traffic projections to assess conditions following the completion of Route 364 but *without* the proposed development in place. The results of this analysis are summarized in **Table 3**.

As shown, the intersections within the study area will generally operate similar to existing conditions. The signalized intersections where the proposed Route 364 ramps would intersect Highway K would operate satisfactorily provided they are constructed with adequate capacity.

Table 3: 2016 Baseline Operating Conditions

Mercy Medical Campus O'Fallon, Missouri		
Intersection/Approach	*Weekday AM Peak Hour*	*Weekday PM Peak Hour*
Highway K at Highway N – Signalized		
Eastbound Approach	D (46.8)	F (87.5)
Westbound Approach	D (37.7)	E (55.2)
Northbound Approach	D (35.8)	F (93.6)
Southbound Approach	E (66.6)	C (31.3)
Overall Intersection	D (51.1)	E (65.9)
Highway K at 364 Westbound Ramps – Signalized		
Westbound Approach	D (36.9)	D (44.6)
Northbound Approach	A (3.6)	B (11.0)
Southbound Approach	A (7.8)	A (5.4)
Overall Intersection	B (13.3)	B (14.7)
Highway K at 364 Eastbound Ramps – Signalized		
Eastbound Approach	D (38.4)	C (34.7)
Northbound Approach	A (4.8)	A (2.6)
Southbound Approach	A (9.0)	B (12.8)
Overall Intersection	B (15.7)	B (14.5)
Highway K at South Outer 364 – Signalized		
Eastbound Approach	D (53.4)	D (38.6)
Northbound Approach	A (7.7)	B (10.2)
Southbound Approach	B (19.3)	B (18.3)
Overall Intersection	C (22.2)	B (16.6)
Highway K at Pheasant Point Dr – Unsignalized		
Westbound Approach	B (10.4)	D (28.5)
Southbound Left	A (9.9)	C (18.6)
Highway K at Waterford Crossing Dr – Signalized		
Eastbound Approach	D (51.0)	E (62.5)
Westbound Approach	C (21.9)	C (24.6)
Northbound Approach	B (15.2)	F (92.6)
Southbound Approach	B (12.0)	B (11.0)
Overall Intersection	B (15.8)	E (56.8)

X (XX.X) - Level of Service (Average vehicular delay in seconds per vehicle)

2016 Forecasted Conditions with Proposed Mercy Medical Campus

Once the baseline roadway and traffic conditions have been established, the impacts of the traffic generated by the proposed development and its associated access needs can be analyzed. The purpose of this forecasted scenario was to identify the impacts of the medical campus and determine the roadway and traffic control improvements that would be necessary to support the resulting traffic demands.

Trip Generation Estimate

Although a specific site layout has not been finalized, it is our understanding that the campus would include approximately 122,000 square feet (s.f.) of medical offices and a 60-bed hospital.

The trip generation forecasts were based upon data provided in the "Trip Generation Manual", Eighth Edition, published by the Institute of Transportation Engineers (ITE). This manual, which is a standard resource for transportation engineers, is based on a compilation of nationwide studies documenting the characteristics of various land uses. The resulting traffic projection for the proposed medical campus is summarized in **Table 4**.

Table 4: Trip Generation Estimate

Mercy Medical Campus O'Fallon, Missouri							
		Weekday AM Peak Hour			*Weekday PM Peak Hour*		
Use	*Size*	*In*	*Out*	*Total*	*In*	*Out*	*Total*
Medical Offices	122,000 ft^2	220	60	280	115	305	420
Hospital	60 beds	50	20	70	30	50	80
Total Trips		**270**	**80**	**350**	**145**	**355**	**500**

As summarized in Table 4, the proposed medical campus would be expected to generate a total of approximately 350 and 500 trips during the weekday a.m. and p.m. peak hours, respectively.

The traffic generated by the proposed development was assigned to the adjoining road system by evaluating existing traffic patterns, assessing the market area of the medical uses, and accounting for the extension of Highway 364 to Interstate 64/Highway N.

The resulting distribution of new site-generated trips would be as follows:

- To/from the west on Route 364.....25%
- To/from the east on Route 364.....20%
- To/from the west on South Outer 364.....8%
- To/from the west on Highway N.....3%
- To/from the east on Highway N.....5%
- To/from the north on Highway K.....20%
- To/from the south on Highway K.....18%
- To/from the west on Waterford Crossing Dr.....1%

In accordance with the preliminary site layout, full access drives would be provided on Highway K, South Outer 364 and Waterford Crossing Drive. Based on the regional roadway system, the site's layout, and the character of the adjoining roadways, the proposed drive on Highway K would serve as the primary entrance/exit for the medical campus.

Based on these trip generation and distribution estimates, the site-generated traffic was assigned to the adjoining road system as shown in **Exhibits 4a and 4b**. As shown, the site's frontage on three roadways would disperse its traffic relatively well, although the majority of traffic entering the site would be expected to utilize the driveway on Highway K.

The site-generated volumes were aggregated with 2016 baseline traffic to produce the traffic forecast shown in **Exhibits 5a and 5b.**

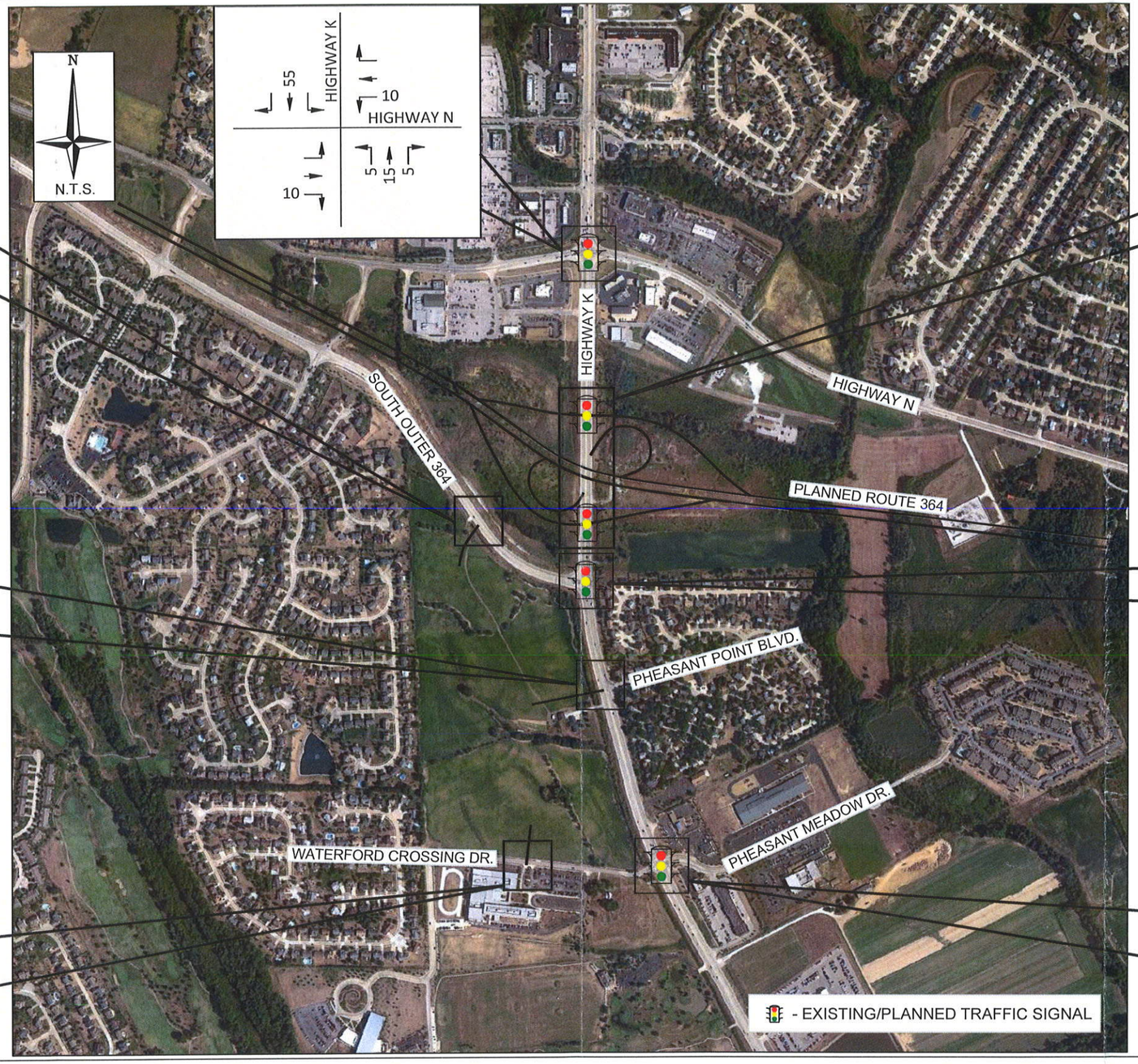

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EXHIBIT 4A: SITE GENERATED TRAFFIC - AM PEAK HOUR

MERCY MEDICAL CAMPUS
O'FALLON, MISSOURI
512-0008-0TE

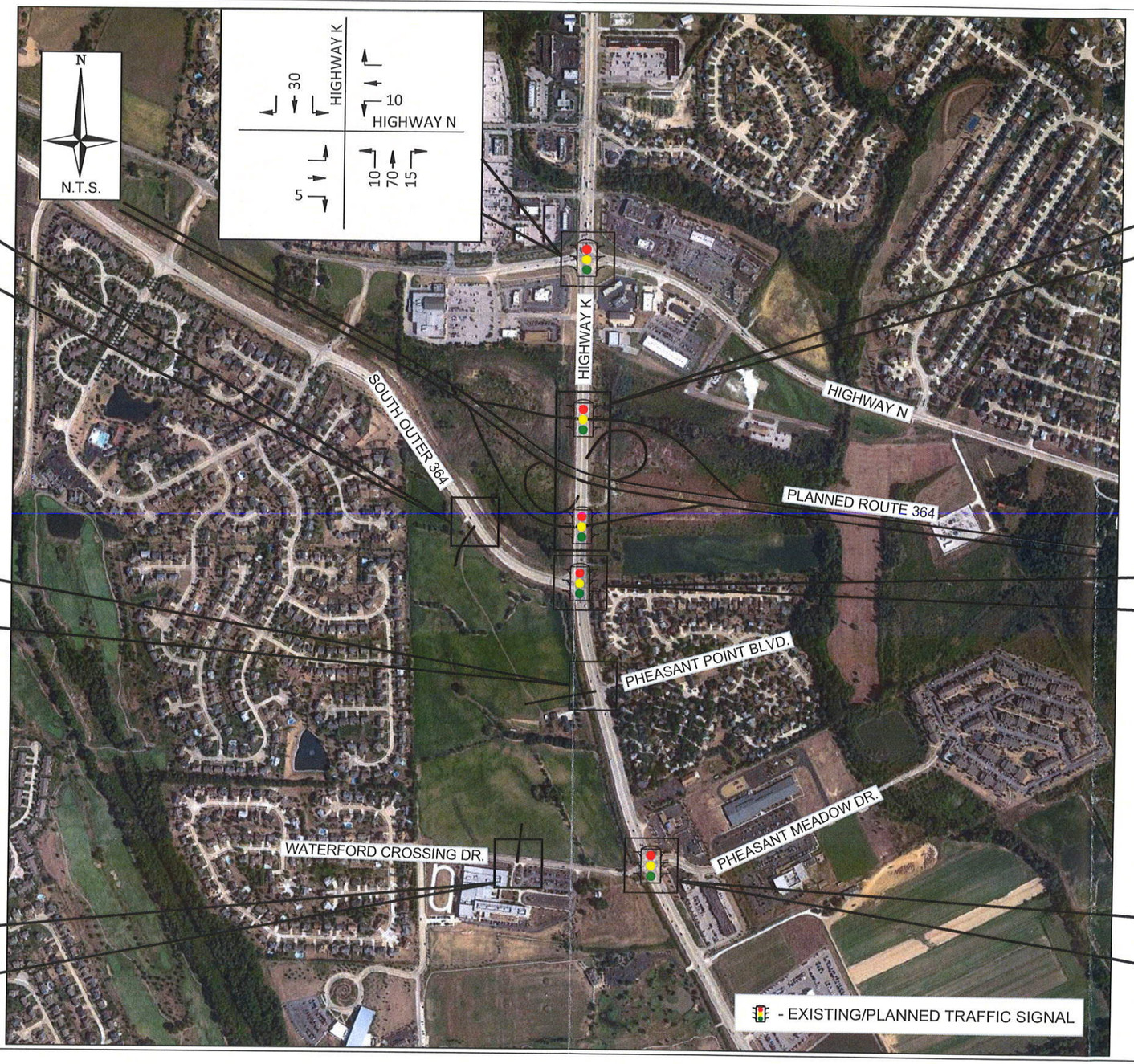

EXHIBIT 4B: SITE GENERATED TRAFFIC - PM PEAK HOUR

BERNARDIN · LOCHMUELLER & ASSOCIATES

MERCY MEDICAL CAMPUS
O'FALLON, MISSOURI
512-0008-0TE

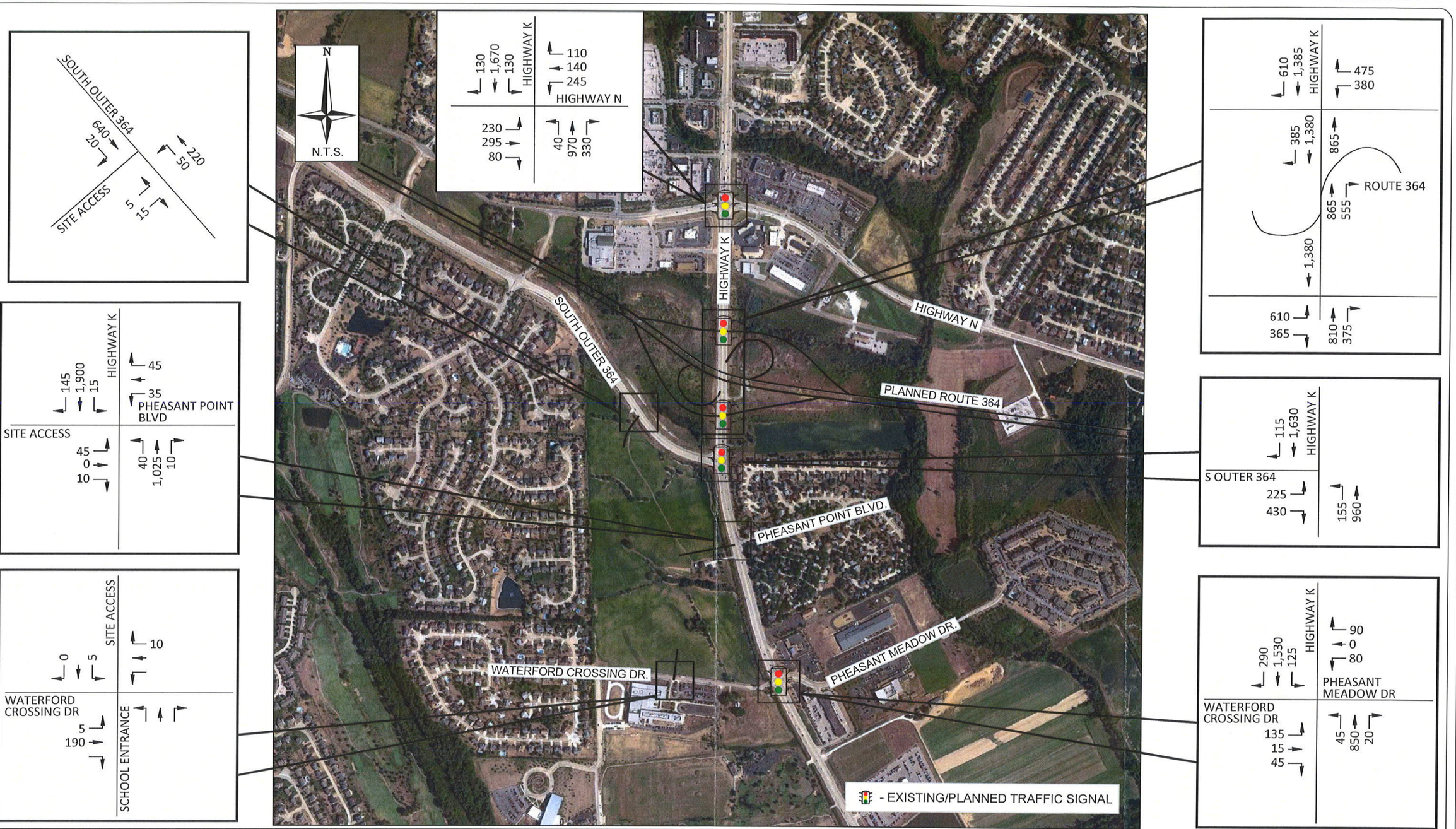

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EXHIBIT 5A: 2016 TOTAL FORECASTED TRAFFIC - AM PEAK HOUR

MERCY MEDICAL CAMPUS
O'FALLON, MISSOURI
512-0008-0TE

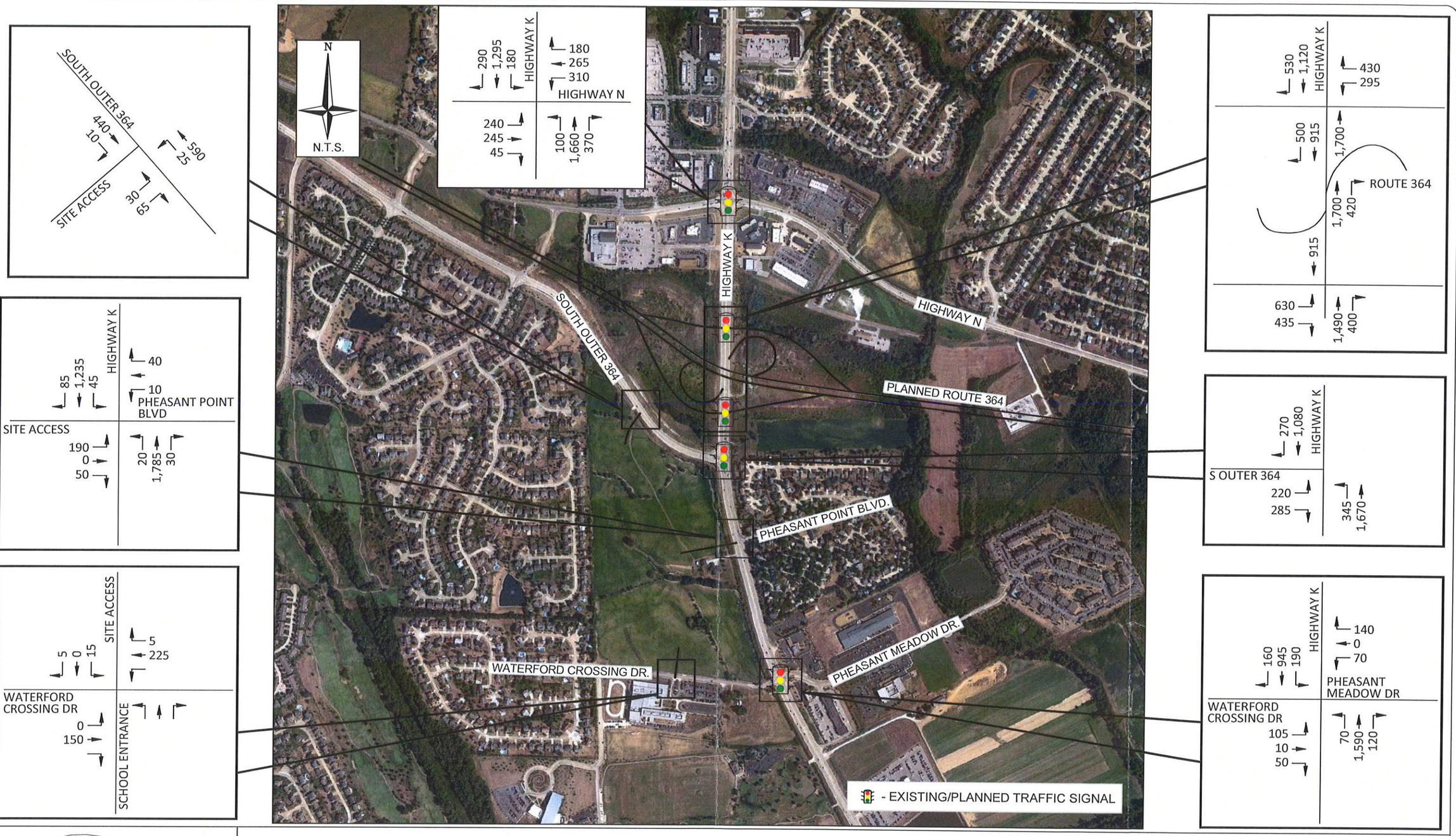

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EXHIBIT 5B: 2016 TOTAL FORECASTED TRAFFIC - PM PEAK HOUR

MERCY MEDICAL CAMPUS
O'FALLON, MISSOURI
512-0008-0TE

Evaluation of Traffic Control Needs

Based upon further evaluation, it was determined that the proposed driveways on South Outer 364 and Waterford Crossing Drive would operate satisfactorily under side-street stop control. However, the access on Highway K opposite Pheasant Point Drive would be heavily constrained if it remains unsignalized.

As shown in **Table 5**, left turns exiting the medical campus onto Highway K would be subject to lengthy delays with Level of Service F during both peak periods under side-street stop control. This is due to the relatively heavy demand for those movements coupled with the steady flow of traffic on Highway K, which limits the availability of gaps for motorists entering from a side-street, particularly left-turn movements.

Table 5: 2016 Forecasted Operating Conditions under Side-Street Stop Control

Mercy Medical Campus O'Fallon, Missouri		
Intersection/Approach	*Weekday AM Peak Hour*	*Weekday PM Peak Hour*
Highway K at Pheasant Point Dr – Unsignalized		
Eastbound Approach	F (89.0)	F (160.2)
Westbound Approach	C (19.5)	C (20.6)
Northbound Left	D (26.4)	B (12.0)
Southbound Left	B (10.4)	C (18.6)

X (XX.X) - Level of Service (Average vehicular delay in seconds per vehicle)

Based on these anticipated lengthy delays for exiting movements, a traffic signal warrants evaluation was conducted to determine if forecasted traffic volumes for the intersection of Highway K with Pheasant Point Drive would satisfy the standard warrants for signalization as published by the United States Department of Transportation in the Manual on Uniform Traffic Control Devices (MUTCD).

Part Four of the MUTCD, Highway Traffic Signals, provides nine different warrants for signalization based upon criteria such as hourly traffic volumes, traffic management, pedestrian volumes or accident experience. This manual further states that a traffic signal should not be installed unless one or more warrants are satisfied, an engineering study indicates that the installation will improve the overall safety and/or operation of the intersection, and that it will not seriously disrupt progressive traffic flow.

Warrant 1, Eight-Hour Vehicular Volume, is generally most applicable. Warrant 1 has two conditions, one of which must be met to satisfy the warrant. Condition "A" (Minimum

Vehicular Volume) is intended for application where large volumes of intersecting traffic on both roadways are the principal reason for a signal. Condition "B" (Interruption of Continuous Traffic) is intended where traffic volumes on a major street are heavy and create excessive delays or conflict for traffic on the minor intersecting street.

Warrant 1A requires hourly approach volumes of at least 600 vehicles per hour (vph) on the major street, in this case Highway K, for a minimum of eight hours on a typical weekday. During this same period, the volume of traffic entering from the higher volume minor street approach (the proposed site drive) must exceed 150 vph if one approach lane is provided or 200 vph if two lanes are provided. Warrant 1B requires approach volumes of at least 900 vph on the major street with a minimum of 75 vph on the higher volume minor street if one approach lane is provided or 100 vph if two lanes are provided.

The preceding volume thresholds must be satisfied during the same 8 hours of the day. In the absence of hourly count data, volumes for the 8th busiest hour are commonly accepted as 55 percent of peak hour volumes. Based on that assumption, traffic volumes on Highway K would satisfy both Warrant 1A and Warrant 1B. The site drive approach would have two lanes, so it would require 200 vph to satisfy 1A and 100 vph to satisfy 1B. Warrant 1A would not be satisfied, but the proposed site drive approach (132 vph in 8th highest hour) would satisfy 1B.

Therefore, the overall intersection would satisfy the standard warrants for signalization based on Warrant 1B. While the proposed medical campus would drive the need for signalization, the installation of a traffic signal at this location would also serve the residential neighborhood to the east.

It is also necessary to ensure that any proposed signal would operate safely and efficiently; to that end, a detailed operational analysis of the intersection and the Highway K corridor was performed assuming Pheasant Point Drive is signalized. Those results are discussed below.

Recommended Improvements & Forecasted Operating Conditions

Based upon a review of the forecasted traffic and operating conditions, it is recommended that the following roadway and traffic control improvements be implemented in conjunction with the proposed development:

- Install a new traffic signal at the intersection of Highway K and Pheasant Point Drive/proposed site drive. The intersection should be interconnected with the rest of the coordinated system along Highway K and signal timing plans should be developed to ensure efficient operations with an emphasis on maintaining the progression of traffic along Highway K.
- At the intersection of Highway K and Pheasant Point Drive, construct a separate southbound right-turn lane on Highway K. This auxiliary lane would provide a safe area for

motorists turning into the medical campus to decelerate without unduly delaying traffic on Highway K.

The operating conditions for the study intersections were analyzed using the forecasted traffic volumes depicted in Exhibit 5 assuming the implementation of the recommended improvements. The results of the forecasted capacity analyses are summarized in **Table 6**.

Table 6: 2016 Forecasted Operating Conditions with Mercy Development

Mercy Medical Campus O'Fallon, Missouri		
Intersection/Approach	*Weekday AM Peak Hour*	*Weekday PM Peak Hour*
Highway K at Highway N – Signalized		
Eastbound Approach	D (46.0)	F (89.0)
Westbound Approach	D (39.4)	E (57.0)
Northbound Approach	D (36.0)	F (110.3)
Southbound Approach	E (79.5)	C (32.8)
Overall Intersection	E (56.4)	E (74.0)
Highway K at 364 Westbound Ramps – Signalized		
Westbound Approach	D (37.6)	D (45.0)
Northbound Approach	A (5.3)	B (10.7)
Southbound Approach	A (8.1)	A (5.7)
Overall Intersection	B (14.3)	B (14.8)
Highway K at 364 Eastbound Ramps – Signalized		
Eastbound Approach	D (39.5)	D (36.4)
Northbound Approach	A (4.3)	B (11.7)
Southbound Approach	B (10.6)	B (13.3)
Overall Intersection	B (16.5)	B (18.9)
Highway K at South Outer 364 – Signalized		
Eastbound Approach	D (54.2)	D (41.5)
Northbound Approach	A (9.8)	B (16.9)
Southbound Approach	C (24.8)	C (21.6)
Overall Intersection	C (25.5)	C (21.8)
Highway K at Pheasant Point Dr – Signalized		
Eastbound Approach	D (36.0)	D (48.7)
Westbound Approach	D (50.3)	C (29.8)
Northbound Approach	B (13.4)	C (22.9)
Southbound Approach	B (12.5)	A (6.6)
Overall Intersection	B (14.1)	B (18.4)

Table 6: 2016 Forecasted Operating Conditions with Mercy Development (cont'd)

Highway K at Waterford Crossing Dr – Signalized		
Eastbound Approach	D (49.8)	E (57.5)
Westbound Approach	C (22.0)	C (24.7)
Northbound Approach	B (15.6)	F (98.0)
Southbound Approach	C (21.2)	B (11.4)
Overall Intersection	C (21.4)	E (59.1)
South Outer 364 at North Site Drive – Unsignalized		
Westbound Left	A (0.7)	A (0.4)
Northbound Approach	B (13.7)	B (12.9)
Waterford Crossing Drive at South Site Drive – Unsignalized		
Southbound Approach	B (12.9)	B (10.9)

X (XX.X) - Level of Service (Average vehicular delay in seconds per vehicle)

As shown in the summary, conditions following build-out of the proposed medical campus would generally remain unchanged as compared to the 2016 baseline operational analysis. Furthermore, each of the proposed site access drives would operate favorably at LOS B or better during both peak periods.

These analyses indicate that the study intersections would satisfactorily accommodate the additional traffic generated by the proposed development provided the recommended improvements are implemented at the site's driveway on Highway K. However, given the proposed addition of a new traffic signal, additional analysis was necessary to ensure that the signal could be accommodated appropriately.

Signal Progression Analysis

While the intersection of Highway K and Pheasant Point Drive would meet the standard warrants for signalization and operate favorably if a signal is installed, it would not satisfy the standard spacing guidelines outlined in MoDOT's Access Management Guidelines since there is only approximately 730 feet between the proposed signal and South Outer 364 (centerline-to-centerline). Consequently, additional analysis was necessary to ensure its installation would not negatively impact traffic progression along Highway K.

Specifically, the six traffic signals that would be present on Highway K between Highway N and Waterford Crossing Drive were evaluated as a network. This includes the proposed signal at Pheasant Point Drive as well as two planned signals serving the Route 364 interchange.

It is important to note that based on a typical design for a partial cloverleaf interchange, the spacing of the traffic signals at Highway N, North Route 364 Ramps, South Route 364 Ramps and South Outer 364 will likely be approximately 750 feet. Therefore, the proposed signal at Pheasant Point Drive would likely have similar spacing as the four signals immediately upstream, which would aid in maintaining effective traffic progression along Highway K.

In order to evaluate the impact of a new signal at Pheasant Point Drive, a progression analysis was performed using SYNCHRO for scenarios both with and without the signal in place under the 2016 traffic forecasts. It was determined that the recommended signal would fit well within the traffic progression bandwidths on Highway K. In fact, the arterial green bands available along the study corridor would not be impacted by the addition of a signal at Pheasant Point Drive.

Further analysis was completed to assess the impact of the new signal on overall corridor operations along Highway K within the limits of the study area. **Table 7** summarizes the measures of effectiveness associated with corridor performance with and without the proposed signal.

As shown, the proposed signal at Pheasant Point Drive would have minimal impact on operations along Highway K. During peak times, average travel speeds would decrease by an average of 1 mph and average delay per vehicle on Highway K would increase by approximately 1-4 seconds over the length of the study area. These are minor changes, and they do not reflect the benefit provided to side-street traffic, which as discussed previously, is significant.

Overall, it was concluded that the installation of a new signal on Highway K at Pheasant Point Drive can be accommodated favorably. The signal would fit well within the anticipated spacing of other signals along Highway K following the extension of Route 364. Furthermore, it would have minimal impact on operations on Highway K while providing valuable safety and operational benefits to side-street motorists accessing both the medical campus and the residential neighborhood to the east.

Table 7: Highway K Corridor Operational Analysis Results

2016 Operations along Highway K Corridor O'Fallon, Missouri		
Scenario/Measure of Effectiveness	*Weekday AM Peak Hour*	*Weekday PM Peak Hour*
WITHOUT a New Signal at Pheasant Point Drive		
Northbound Highway K (Waterford Crossing to Highway N)		
Average Speed	26 mph	15 mph
Average Stops per Vehicle	0.36	0.43
Average Signal Delay	10 seconds	35 seconds
Southbound Highway K (Highway N to Waterford Crossing)		
Average Speed	14 mph	20 mph
Average Stops per Vehicle	0.50	0.36
Average Signal Delay	23 seconds	13 seconds
WITH a New Signal at Pheasant Point Drive		
Northbound Highway K (Waterford Crossing to Highway N)		
Average Speed	25 mph	14 mph
Average Stops per Vehicle	0.37	0.54
Average Signal Delay	12 seconds	39 seconds
Southbound Highway K (Highway N to Waterford Crossing)		
Average Speed	13 mph	19 mph
Average Stops per Vehicle	0.57	0.41
Average Signal Delay	26 seconds	14 seconds

Assessment of Potential "Backage Road" Connection

It is our understanding that MoDOT and the City of O'Fallon have expressed an interest in a potential roadway connection between South Outer 364 and Waterford Crossing Drive through the proposed development site. Although the connection could potentially occur at other locations, it seems most likely that roadway near the rear of the site would be most logical if such a connection was pursued. As a result, this concept has been referred to as a potential "backage road."

In order to assess the impact of providing such a connection, additional analyses were completed to estimate how much traffic would utilize a backage road and determine how these diversions would affect operations on Highway K. Specifically, conditions at South Outer 364, Pheasant Point Drive and Waterford Crossing Drive would be subject to change if this connection was provided.

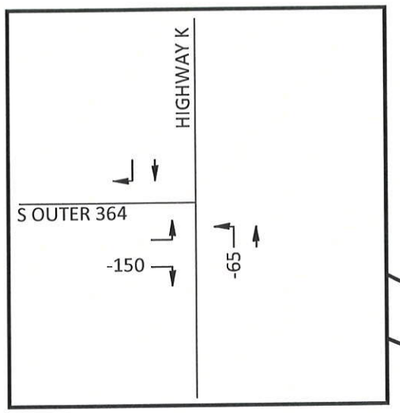
Anticipated Usage of Backage Road Connection

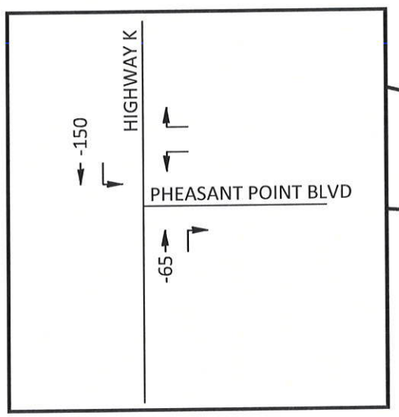
To assist in estimating the attractiveness of a backage road to existing motorists within the study area, peak period observations and tracing counts were performed to document the interaction of traffic between South Outer 364 and Waterford Crossing Drive.

It was determined that approximately 35% of eastbound right-turns from South Outer 364 are destined to Waterford Crossing Drive (the remaining 65% continue south on Highway K or turn onto Pheasant Meadow Drive). Likewise, 35% of eastbound lefts from Waterford Crossing Drive subsequently turn left onto South Outer 364 during the p.m. peak hour, while up to 50% make that movement during the morning peak period when the middle school is a heavier influence.

These motorists would likely be attracted to a roadway directly connecting South Outer 364 and Waterford Crossing Drive without the need to use Highway K. Based on relative travel times, there would be little incentive for other motorists on Highway K to "cut through" a backage road as an alternative to existing routes. The only exception may be those who currently make a northbound left turn onto South Outer 364 during the p.m. peak. This movement is heavy and subject to excessive delay, and a backage road would likely attract a portion of those movements.

Exhibits 6a and 6b summarize the anticipated diversion of traffic to a potential backage road connection of South Outer 364 and Waterford Crossing Drive. As shown, it is anticipated that approximately 215 and 220 vehicles may use a new connection during the a.m. and p.m. peak hours, respectively.





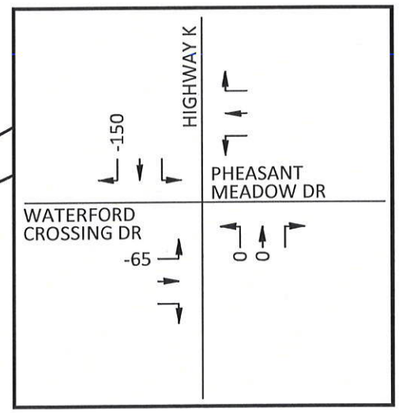


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EXHIBIT 6A: ANTIPICATED DIVERSIONS TO A POTENTIAL BACKAGE ROAD (2016) - AM PEAK HOUR

MERCY MEDICAL CAMPUS
O'FALLON, MISSOURI
512-0008-0TE

BERNARDIN · LOCHMUELLER & ASSOCIATES

EXHIBIT 6B: ANTIPICATED DIVERSIONS TO A POTENTIAL BACKAGE ROAD (2016) - PM PEAK HOUR

MERCY MEDICAL CAMPUS
O'FALLON, MISSOURI
512-0008-0TE

Forecasted Operating Conditions with Backage Road (2016)

The operational analyses were repeated assuming a backage road connection was in place. **Table 8** summarizes the intersection operations at the three impacted locations.

Table 8: 2016 Forecasted Operating Conditions with Backage Road

Mercy Medical Campus O'Fallon, Missouri		
Intersection/Approach	*Weekday AM Peak Hour*	*Weekday PM Peak Hour*
Highway K at South Outer 364 – Signalized		
Eastbound Approach	D (48.6)	D (46.2)
Northbound Approach	A (7.3)	B (15.0)
Southbound Approach	B (15.6)	B (15.8)
Overall Intersection	B (18.0)	B (18.8)
Highway K at Pheasant Point Dr – Signalized		
Eastbound Approach	D (36.0)	D (48.8)
Westbound Approach	D (50.3)	C (29.9)
Northbound Approach	B (14.2)	C (21.0)
Southbound Approach	A (9.1)	A (9.7)
Overall Intersection	B (12.4)	B (18.8)
Highway K at Waterford Crossing Dr – Signalized		
Eastbound Approach	D (39.1)	E (57.3)
Westbound Approach	C (28.0)	C (31.3)
Northbound Approach	B (15.5)	E (74.2)
Southbound Approach	B (18.7)	B (10.9)
Overall Intersection	B (19.2)	D (48.0)

X (XX.X) - Level of Service (Average vehicular delay in seconds per vehicle)

As shown, the introduction of a backage road would generally reduce delays on this section of Highway K and improve overall operating conditions. These benefits are most prevalent during the p.m. peak hour when additional "external" trips would be expected to use the alternative connection in lieu of the northbound left turn from Highway K onto South Outer 364.

Table 9 summarizes the network measures of effectiveness along Highway K with the backage road in place. As shown, the diversion of traffic to the backage road would also slightly improve network operations along the Highway K corridor. With the new connection and a traffic signal at Pheasant Point Drive, average travel speeds through the study area would effectively match those expected without the proposed signal.

Table 9: Highway K Corridor Operational Analysis Results – with Backage Road

2016 Operations along Highway K Corridor O'Fallon, Missouri		
Scenario/Measure of Effectiveness	*Weekday AM Peak Hour*	*Weekday PM Peak Hour*
WITH a New Signal at Pheasant Point Drive & Backage Road		
Northbound Highway K (Waterford Crossing to Highway N)		
Average Speed	25 mph	15 mph
Average Stops per Vehicle	0.37	0.53
Average Signal Delay	12 seconds	36 seconds
Southbound Highway K (Highway N to Waterford Crossing)		
Average Speed	14 mph	20 mph
Average Stops per Vehicle	0.56	0.42
Average Signal Delay	24 seconds	13 seconds

Overall, it was concluded that a connection between South Outer 364 and Waterford Crossing Drive to the west of Highway K would attract moderate usage during peak periods. The resulting diversion of traffic from Highway K would result in improved operating conditions and enhance the efficiency of travel along the Highway K corridor.

2036 Forecasted Conditions

Finally, forecasted conditions were evaluated for the year 2036 as the ultimate design horizon for this project. The purpose of this analysis was to assess the adequacy of the study roadways and recommended improvements in accommodating future growth.

2036 Baseline Traffic Conditions

In order to assess the effects of long-term traffic growth within the study area, 20-year traffic conditions *without* the proposed development were next analyzed. Specifically, it was necessary to forecast anticipated traffic growth within the study area based on "background" growth from increasing population and business growth in the region.

In order to estimate this growth, MoDOT planning documents for the Route 364 corridor and Highway K interchange were reviewed. Based on these sources, it was estimated that traffic on Highway K would grow by more than 45% over 20 years, which represents an average annual growth rates of approximately 2%.

These forecasts appear to be significantly high considering much of the Highway K corridor is already built-out. Nevertheless, these estimates represent the most current long-term growth projections reflecting the Route 364 extension, so they were utilized for the design-year analyses.

The resulting 2036 baseline traffic projections are summarized in **Exhibits 7a and 7b**. As shown, this forecast represents significant growth at all of the study intersections.

2036 Baseline Operating Conditions

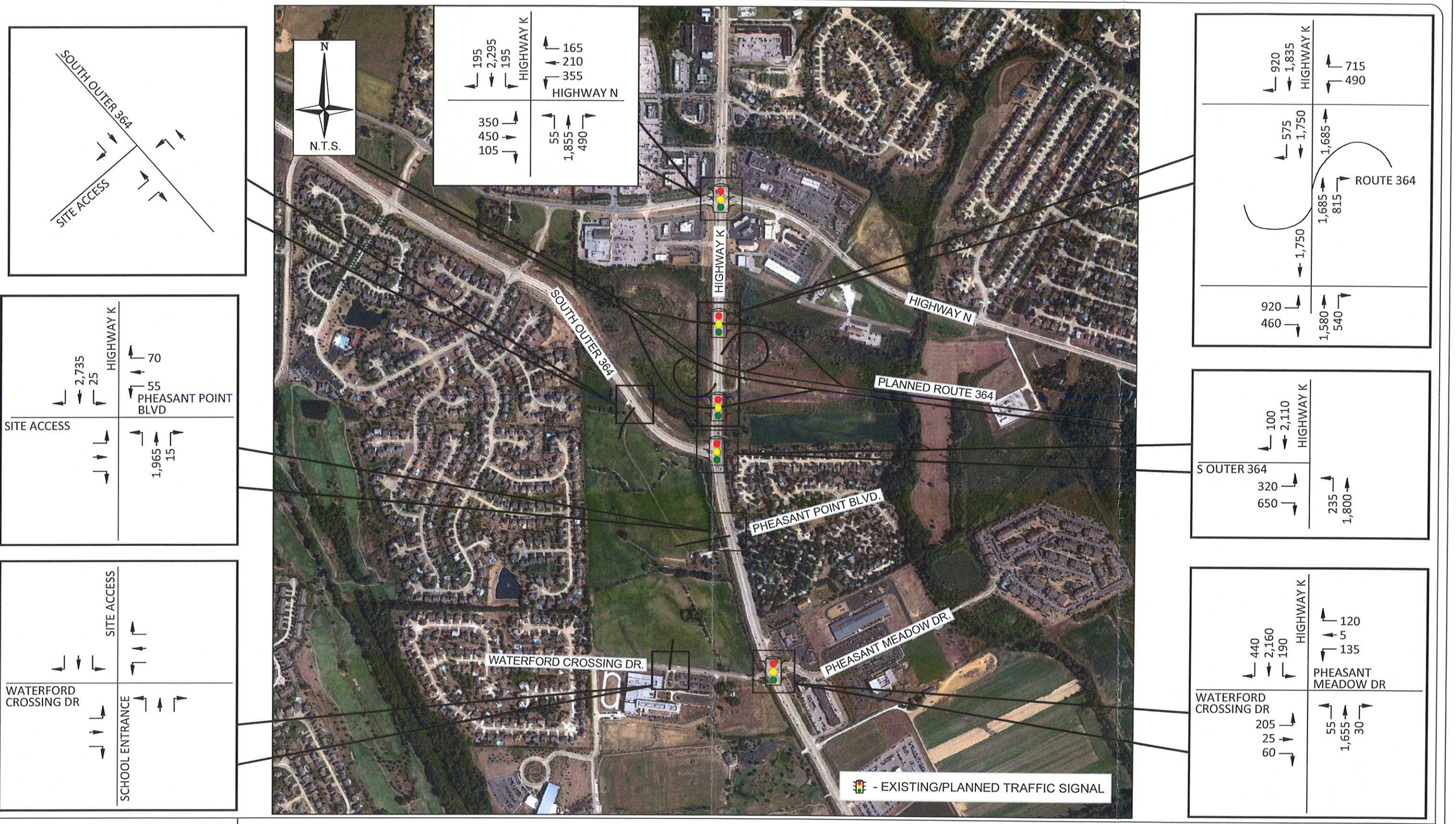
The operating conditions for the study intersections were analyzed using the forecasted traffic volumes depicted in Exhibit 7. The results of the 2036 baseline capacity analyses are summarized in **Table 10**.

As shown, if the aforementioned growth occurred along Highway K, it would result in poor operations at most study intersections during both peak periods. In fact, if these volumes materialized, Highway K would likely require an additional through lane in each direction to support the demand.

Table 10: 2036 Baseline Operating Conditions

Mercy Medical Campus O'Fallon, Missouri		
Intersection/Approach	*Weekday AM Peak Hour*	*Weekday PM Peak Hour*
Highway K at Highway N – Signalized		
Eastbound Approach	F (119.1)	F (253.2)
Westbound Approach	F (368.7)	F (174.4)
Northbound Approach	F (290.0)	F (144.8)
Southbound Approach	F (314.0)	F (247.7)
Overall Intersection	F (285.1)	F (202.8)
Highway K at 364 Westbound Ramps – Signalized		
Westbound Approach	D (43.7)	D (45.8)
Northbound Approach	B (18.3)	C (25.1)
Southbound Approach	E (59.3)	D (45.1)
Overall Intersection	D (43.7)	D (38.9)
Highway K at 364 Eastbound Ramps – Signalized		
Eastbound Approach	D (46.9)	E (62.9)
Northbound Approach	B (13.0)	A (7.1)
Southbound Approach	E (57.9)	B (17.7)
Overall Intersection	D (36.9)	C (27.7)
Highway K at South Outer 364 – Signalized		
Eastbound Approach	F (142.8)	D (39.0)
Northbound Approach	B (11.8)	B (11.4)
Southbound Approach	F (118.1)	F (207.3)
Overall Intersection	F (81.2)	F (102.6)
Highway K at Pheasant Point Dr – Unsignalized		
Westbound Approach	E (35.7)	D (33.0)
Southbound Left	C (21.2)	E (42.7)
Highway K at Waterford Crossing Dr – Signalized		
Eastbound Approach	E (71.3)	D (41.2)
Westbound Approach	C (29.4)	D (45.3)
Northbound Approach	D (50.4)	F (178.4)
Southbound Approach	F (121.9)	E (57.2)
Overall Intersection	F (89.8)	F (108.1)

X (XX.X) - Level of Service (Average vehicular delay in seconds per vehicle)



BERNARDIN · LOCHMUELLER & ASSOCIATES

EXHIBIT 7A: 2036 BASELINE TRAFFIC - AM PEAK HOUR

MERCY MEDICAL CAMPUS
O'FALLON, MISSOURI
512-0008-0TE

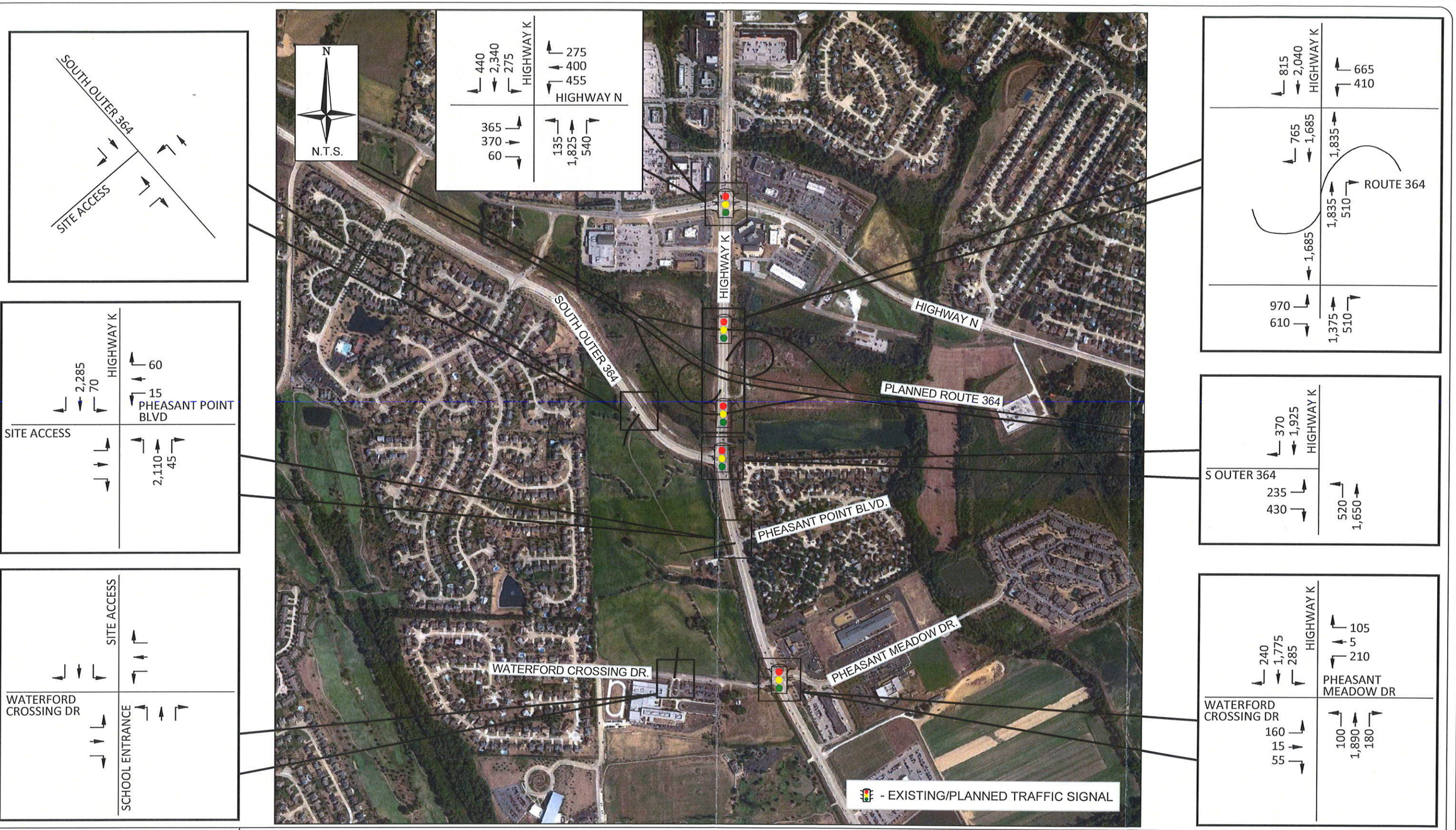


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EXHIBIT 7B: 2036 BASELINE TRAFFIC - PM PEAK HOUR

MERCY MEDICAL CAMPUS
O'FALLON, MISSOURI
512-0008-0TE

2036 Forecasted Conditions with Mercy Development

Finally, in order to assess the long-term traffic impact of the proposed development and the viability of its access, a design-year forecast was prepared *including* the development's traffic. This forecast is summarized in **Exhibits 8a and 8b**.

The operating conditions for the study intersections were analyzed using the forecasted traffic volumes depicted in Exhibit 8. Under this scenario, the improvements recommended in conjunction with the Mercy development are assumed to be in place.

The results of the forecasted capacity analyses are summarized in **Table 11**. As shown, conditions throughout the study area would remain largely unchanged from those shown in the 2036 baseline scenario. The heavy growth projected along Highway K would create significant constraints unrelated to the proposed medical campus.

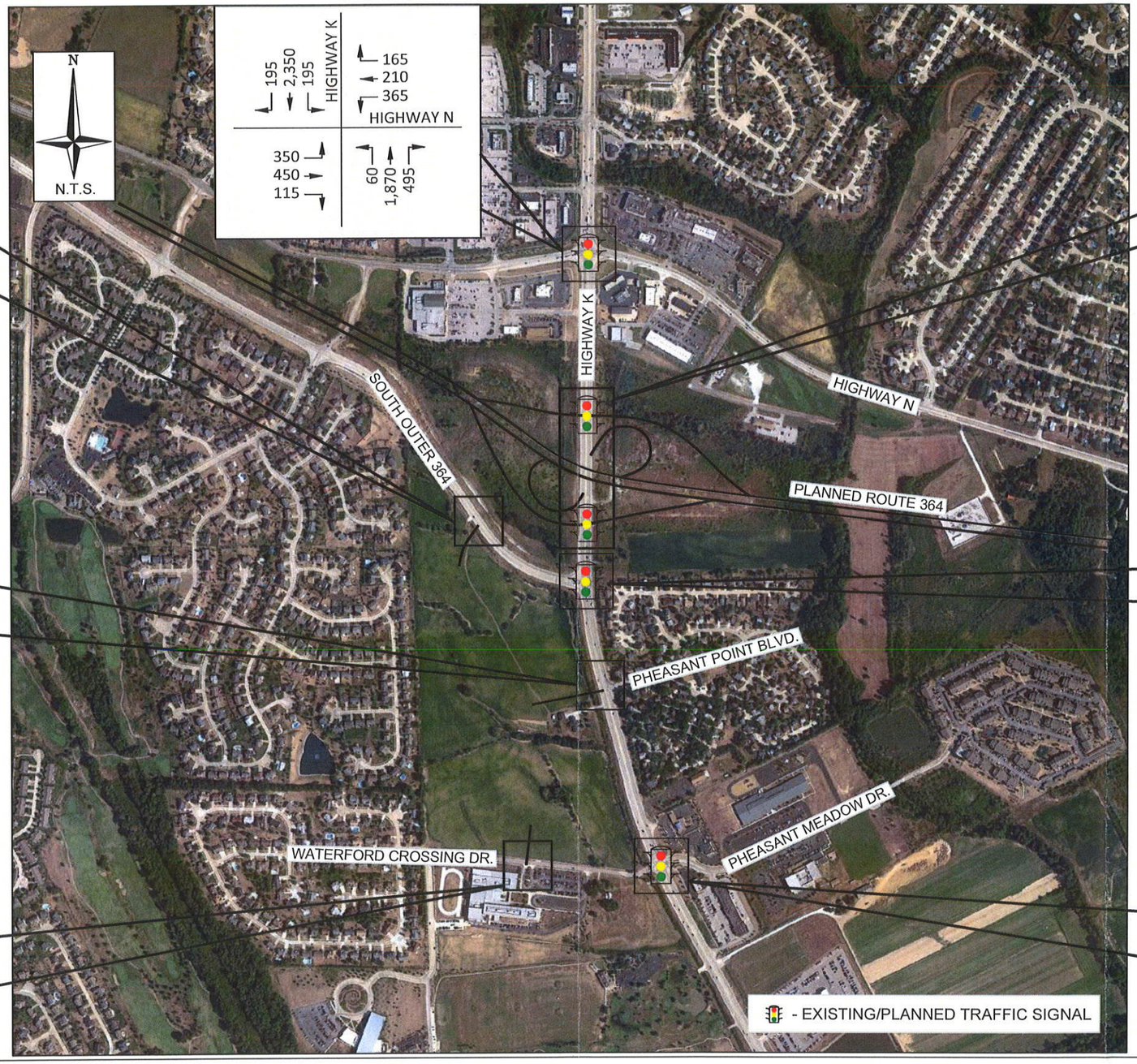
Table 11: 2036 Forecasted Operating Conditions with Mercy Development

Mercy Medical Campus O'Fallon, Missouri		
Intersection/Approach	*Weekday AM Peak Hour*	*Weekday PM Peak Hour*
Highway K at Highway N – Signalized		
Eastbound Approach	F (117.8)	F (251.8)
Westbound Approach	F (373.1)	F (180.0)
Northbound Approach	F (294.2)	F (161.9)
Southbound Approach	F (355.5)	F (257.9)
Overall Intersection	F (303.7)	F (212.9)
Highway K at 364 Westbound Ramps – Signalized		
Westbound Approach	D (43.8)	D (45.9)
Northbound Approach	C (22.0)	D (37.8)
Southbound Approach	E (72.5)	D (53.7)
Overall Intersection	D (51.4)	D (47.1)
Highway K at 364 Eastbound Ramps – Signalized		
Eastbound Approach	D (47.2)	D (36.4)
Northbound Approach	B (15.0)	B (11.7)
Southbound Approach	F (128.7)	B (13.3)
Overall Intersection	E (62.3)	B (18.9)

Table 11: 2036 Forecasted Operating Conditions with Mercy Development (cont'd)

Highway K at South Outer 364 – Signalized		
Eastbound Approach	F (141.5)	D (43.4)
Northbound Approach	B (15.5)	C (24.5)
Southbound Approach	F (152.3)	F (299.4)
Overall Intersection	F (98.3)	F (147.3)
Highway K at Pheasant Point Dr – Signalized		
Eastbound Approach	C (34.5)	E (69.0)
Westbound Approach	E (78.2)	C (34.5)
Northbound Approach	C (31.1)	E (60.9)
Southbound Approach	F (143.0)	F (148.2)
Overall Intersection	F (96.0)	F (104.1)
Highway K at Waterford Crossing Dr – Signalized		
Eastbound Approach	E (70.3)	D (38.5)
Westbound Approach	C (29.8)	D (46.5)
Northbound Approach	E (57.8)	F (183.8)
Southbound Approach	F (126.6)	E (73.8)
Overall Intersection	F (94.6)	F (117.6)
South Outer 364 at North Site Drive – Unsignalized		
Westbound Left	A (1.3)	A (0.7)
Northbound Approach	C (19.2)	B (16.9)
Waterford Crossing Drive at South Site Drive – Unsignalized		
Southbound Approach	C (16.7)	B (12.8)

X (XX.X) - Level of Service (Average vehicular delay in seconds per vehicle)



SOUTH OUTER 364: 970 ←, 20 →, 335 ↑, 50 ↓
SITE ACCESS: 5 ↑, 15 ↓

HIGHWAY K: 195 ←, 2,350 ↓, 195 →
HIGHWAY N: 165 ←, 210 →, 365 ↓
350 ←, 450 →, 115 ↓
60 ←, 1,870 ↑, 495 →

HIGHWAY K: 920 ←, 1,910 ↓, 715 →
ROUTE 364: 575 ←, 1,880 ↓, 1,710 ↑
1,710 ↑, 835 →, 1,880 ↓
920 ←, 525 ↓
1,625 ↑, 555 →

HIGHWAY K: 145 ←, 2,735 ↓, 25 →, 70 ↑, 55 ↓
PHEASANT POINT BLVD
SITE ACCESS: 45 ←, 0 →, 10 ↓
40 ↑, 1,965 ↑, 15 ↓

HIGHWAY K: 150 ←, 2,255 ↓
S OUTER 364: 335 ←, 650 ↓
235 ↑, 1,845 ↑

SITE ACCESS: 0 ←, 0 ↓, 5 →, 10 ↑, 495 ↓
WATERFORD CROSSING DR: 5 ←, 290 →
SCHOOL ENTRANCE

HIGHWAY K: 440 ←, 2,170 ↓, 190 →, 120 ↑, 5 ↓, 135 ↓
PHEASANT MEADOW DR
WATERFORD CROSSING DR: 205 ←, 25 →, 65 ↓
65 ↑, 1,695 ↑, 30 ↓

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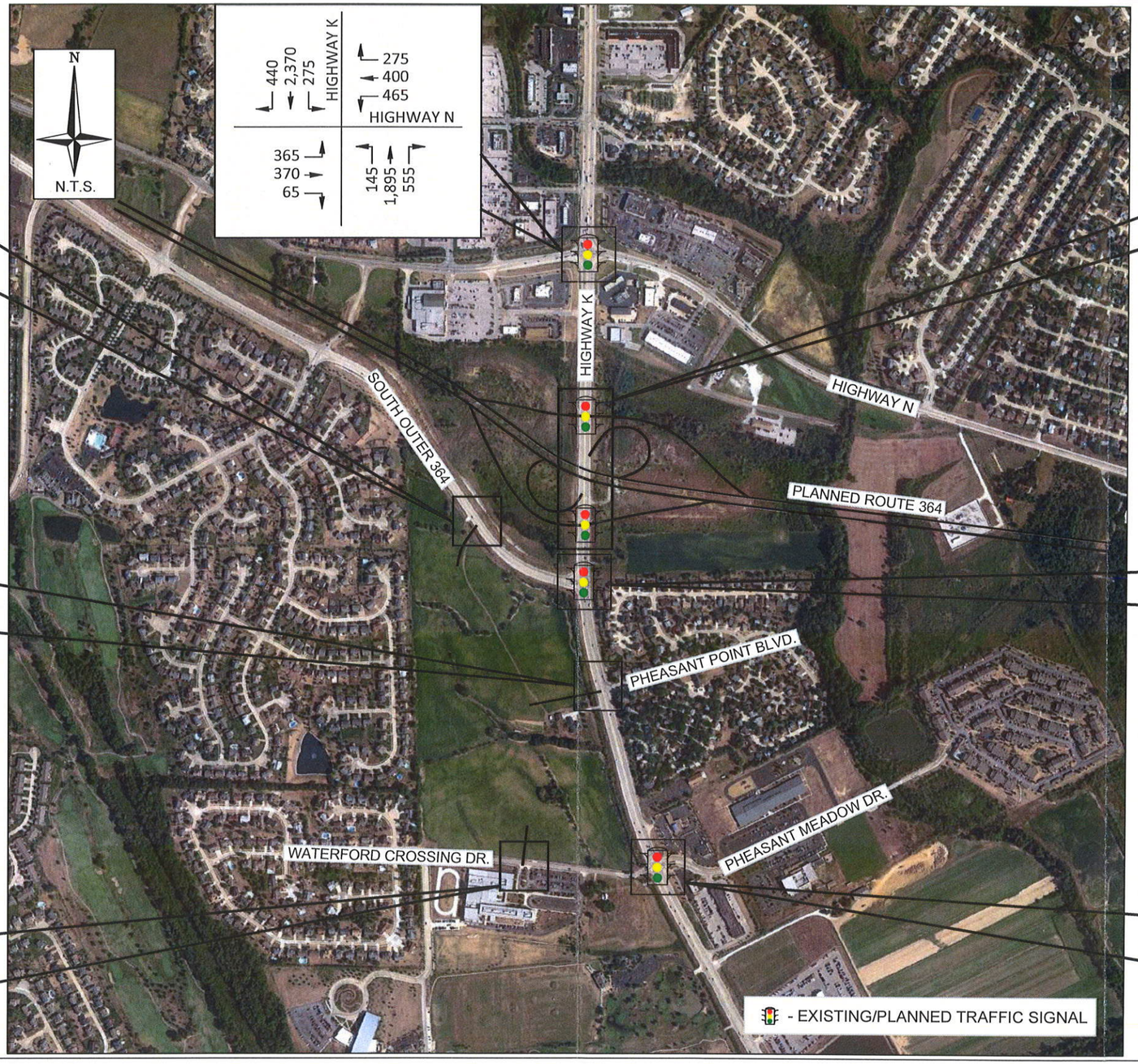
EXHIBIT 8A: 2036 TOTAL FORECASTED TRAFFIC - AM PEAK HOUR

MERCY MEDICAL CAMPUS
O'FALLON, MISSOURI
512-0008-0TE



SOUTH OUTER 364: 665, 10, 890, 25

SITE ACCESS: 30, 65

HIGHWAY K: 440, 2,370, 275, 275, 400, 465

HIGHWAY N: 365, 370, 65, 145, 1,895, 555

HIGHWAY K: 815, 2,085, 665, 440

ROUTE 364: 765, 1,760, 1,930, 1,930, 600, 1,760, 970, 645, 1,560, 580

HIGHWAY K: 85, 2,285, 70, 60, 0, 15

PHEASANT POINT BLVD

SITE ACCESS: 190, 0, 50, 20, 2,110, 45

HIGHWAY K: 395, 2,010

S OUTER 364: 300, 520, 1,840

SITE ACCESS: 5, 0, 15, 5, 340

WATERFORD CROSSING DR: 0, 230

SCHOOL ENTRANCE

HIGHWAY K: 240, 1,825, 285, 105, 5, 210

PHEASANT MEADOW DR

WATERFORD CROSSING DR: 160, 15, 70, 105, 1,910, 180

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EXHIBIT 8B: 2036 TOTAL FORECASTED TRAFFIC - PM PEAK HOUR

MERCY MEDICAL CAMPUS
O'FALLON, MISSOURI
512-0008-0TE

Conclusion

Bernardin, Lochmueller & Associates, Inc. has completed a traffic study to address the impact associated with a proposed medical campus in O'Fallon, Missouri. The site is located to the west of Missouri Highway K between South Outer 364 and Waterford Crossing Drive.

Although a specific site layout has not been finalized, it is our understanding that the campus would include approximately 122,000 square feet (s.f.) of medical offices by 2014 and a 60-bed hospital by 2016. The proposed development would be expected to generate a total of 350 and 500 trips during the weekday a.m. and p.m. peak hours, respectively.

Access to the campus is tentatively proposed via full access driveways on Highway K, South Outer 364, and Waterford Crossing Drive. The proposed drive on Highway K would be located opposite Pheasant Point Drive and serve as the primary entrance/exit for the medical campus.

The purpose of this study was to identify the roadway and traffic control improvements that would be needed to accommodate traffic from the proposed development and, ultimately, long-term growth within the region. In conjunction with this development, it is recommended that the following improvements be implemented on the adjoining road system:

Improvements Recommended in Conjunction with the Proposed Medical Campus:

- Install a new traffic signal at the intersection of Highway K and Pheasant Point Drive/proposed site drive. The intersection should be interconnected with the rest of the coordinated system along Highway K and signal timing plans should be developed to ensure efficient operations with an emphasis on maintaining the progression of traffic along Highway K.
- At the intersection of Highway K and Pheasant Point Drive, construct a separate southbound right-turn lane on Highway K. This auxiliary lane would provide a safe area for motorists turning into the medical campus to decelerate without unduly delaying traffic on Highway K.

It should be noted that the proposed signal at Pheasant Point Drive would not satisfy the standard spacing guidelines outlined in MoDOT's Access Management Guidelines. However, the signal would likely have similar spacing as the four signals immediately upstream following the completion of the planned Route 364 interchange.

Based on extensive analysis, it was concluded that the installation of a new signal on Highway K at Pheasant Point Drive can be accommodated favorably. The signal would fit well within the anticipated spacing of other signals along Highway K. Furthermore, it would have minimal impact on operations on Highway K while providing valuable safety and operational benefits to side-street motorists accessing both the medical campus and the residential neighborhood to the east.

It is our understanding that MoDOT and the City of O'Fallon have expressed an interest in a potential roadway connection between South Outer 364 and Waterford Crossing Drive through the proposed development site. To that end, additional analyses were completed to estimate how much traffic would utilize a potential "backage road" and determine how these diversions would affect operations on Highway K.

It was determined that a connection between South Outer 364 and Waterford Crossing Drive to the west of Highway K would attract moderate usage during peak periods. The resulting diversion of traffic from Highway K would result in improved operating conditions and enhance the efficiency of travel along the Highway K corridor.

Overall, it was concluded that the proposed medical campus could be accommodated satisfactorily, provided the improvements recommended in this report are implemented. These improvements would adequately accommodate this development and facilitate future growth on the adjoining roadway system.