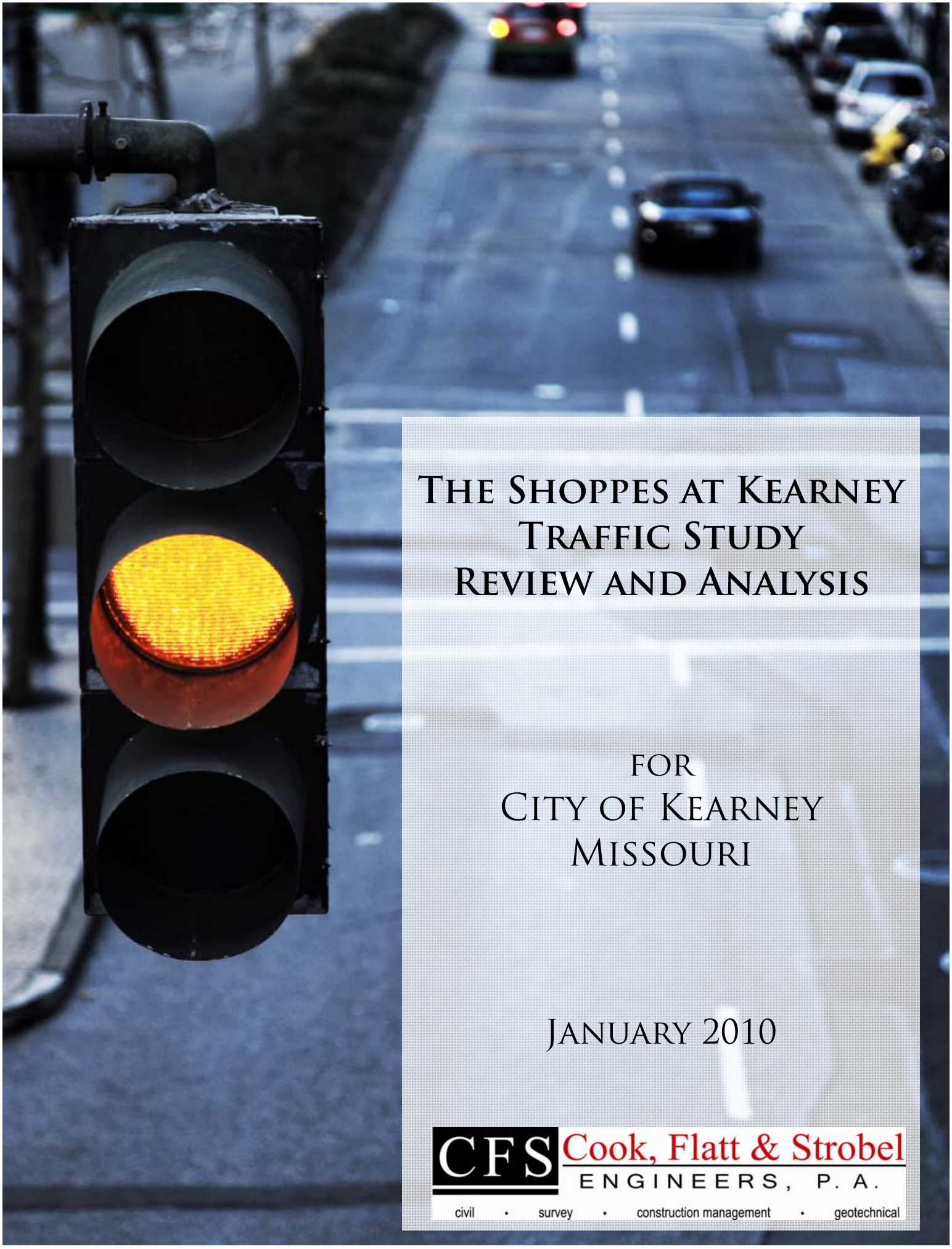

The Shoppes at Kearney Traffic Study Review and Analysis

for

City of Kearney

Missouri

January 2010

CFS Cook, Flatt & Strobel ENGINEERS, P. A.

civil • survey • construction management • geotechnical

Table of Contents

1. Introduction

Cook, Flatt & Strobel Engineers, P.A. has been retained by the City of Kearney, MO to review and comment on the traffic analyses completed by Lutjen, Inc. and TranSystems Corporation for the area located at the southeast corner of MO Route 92 and Interstate 35 in Kearney, MO. The property is bordered on the north by MO Route 92, on the east by Regency Drive, and on the west by Interstate 35. The location is proposed for development of a shopping center with a variety of retail and commercial stores currently named *The Shoppes at Kearney.* This proposed development will realign existing Regency Drive, now designated as Drive A southwesterly through the development with a potential future connection to the south with West 19th Street. This realignment of Regency Drive would include the construction of a stop controlled intersection at the proposed development roadway designated as Drive A. This report will analyze the traffic impact analyses completed by Lutjen and TranSystems, as well as analyze additional scenarios as requested by City of Kearney officials. These additional scenarios are as follows:

- Study the traffic intersection options at Regency Drive and new development Drive A
- Analysis of traffic impacts from existing gas station at the southwest corner of Route 92 and Regency Drive
- Study the impacts of extending Drive A south from the development to 19th Street
- Identify possible traffic calming measures for Regency Drive from Drive A to 19th Street

2. Analysis of Existing Traffic Studies

Analysis of the traffic studies completed by by Lutjen and TranSystems indicate that the assumptions of traffic flow and traffic generated by the proposed development are accurate and reasonably balanced. CFS's review concluded that the intersection at Drive A and Route 92 would operate at a Level of Service (LOS) C with 30.8 seconds of delay in the proposed build conditions with the northbound thru lane becoming a shared thru/ left turn lane, in addition to the exclusive northbound left turn lane currently in place. Also an exclusive eastbound right turn lane and an exclusive northbound right turn lane would need to be constructed to achieve LOS C in the PM peak hour. Lutjen reported a LOS C at this intersection with an average delay of 31.4 seconds in the PM peak hour, while TranSystems reported a LOS D with 45.9 seconds of delay in the same time period.

The reconfiguration of Regency Drive into a tee intersection with Drive A at the north was also analyzed by Lutjen and TranSystems. Lutjen's analysis provided a LOS A with 9.6 seconds of delay for the southbound left turn movement, a LOS F with 61.2 seconds of delay for the westbound left turn movement and a LOS B with 11.6 seconds of delay for the westbound right turn movement. TranSystems analysis provided a LOS A with 9.5 seconds of delay, LOS D with 32.8 seconds of delay, and LOS B with 13.7 seconds of delay for the respective movements. CFS's analysis of this intersection derived a LOS A with 9.4 seconds of delay, LOS D with 34.8 seconds of delay, and LOS B with 11.2 seconds of delay for the same movements. These results are for the PM peak hour. This information can also be found graphically in Table 1. CFS's Synchro traffic analyses for this condition titled *AM Peak* and *PM Peak* can be found in Appendix B.

Table 1. Levels of Service for AM and PM peak hours at future conditions

	Lutjen				TranSystems				Cook, Flatt & Strobel*			
Intersection	AM Peak		PM Peak		AM Peak		PM Peak		AM Peak		PM Peak	
Movement	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay
Route 92 & Platte Clay Way												
All Movements (Signalized)	B	16.7	C	31.4	C	24.3	D	45.9	A	9.8	C	30.8
Drive A & Regency Drive												
Southbound Left Turn	A	7.8	A	9.6	A	7.6	A	9.5	A	7.6	A	9.4
Westbound Left Turn	B	14.1	F	61.2	B	11.4	D	32.8	B	11.5	D	34.8
Westbound Right Turn	A	9.9	B	11.6	A	9.8	B	13.7	A	9.5	B	11.2

** Using TranSystems traffic counts conducted in November 2009*

3. Omissions and Conditions Not Studied

As noted before, the two traffic studies completed appear to be accurate, with a few small differences in assumptions of traffic movement and generation; Lutjen reports a LOS C at the Route 92/ Regency Drive intersection with a realignment of Drive A, which is the desired outcome, while TranSystems reports a LOS D with 45.9 seconds of delay in the PM peak hour. While these studies appear to be accurate, there are two significant omissions in both. The first omission is the gas station currently located at the southwest corner of Route 92 and Regency Drive. This station was absent from both traffic studies, and it's impacts to the traffic conditions should be considered within any traffic impact analysis. The second omission is that Drive A has been considered as having a future connection to the south at West 19th Street at some point in the future. While there is no current plan for this connection, it has been discussed as a possibility. This report will analyze these conditions to provide a more accurate model of what the traffic conditions will be when and if these developments are implemented.

4. Trip Generation

The traffic generated by the gas station was taken from the ITE Trip Generation Handbook: 7th Edition using site code 946: Gasoline/Service Station with Convenience Market and Car Wash. From this resource it was found that on average, 86 trips are generated by the gas station in the AM peak hour and 107 trips are generated in the PM peak hour. The in/out distribution can be seen in Table 2. These numbers were added to the volumes provided by TranSystems and are included in the models created by CFS.

Table 2. Trip Generation

			AM Peak Hour			*Pm Peak Hour*		
Land Use	***Intensity***	***ADT***	***Total***	***In***	***Out***	***Total***	***In***	***Out***
Gas Station W/ Car Wash	8 pumps	1223	86	44	42	107	54	54

5. Traffic Counts

CFS used the traffic counts conducted by TranSystems for this traffic analysis and CFS believes these counts to be accurate as only two months had passed between when the counts were taken (November 2009) and when this report was written (January 2010). Additionally the Missouri Department of Transportation considers counts taken up to two years previous can be admissible in a traffic study.

6. Analysis of Traffic Conditions

Cook, Flatt & Strobel Engineers, P.A. (CFS) has created additional Synchro traffic models that include the omissions mentioned in Section 3 of this report. In creating these scenarios, CFS has used the traffic counts and assumptions of traffic flow and recommended lane configuration made by TranSystems to create several models of the proposed future build conditions in the AM and PM peak hours. These models are listed below.

- *AM Peak RIRO* and *PM Peak RIRO*:
  - This scenario includes a Right In Right Out entrance for the gas station from MO 92, the 2 existing gas station entrances, as well as an entrance at the intersection of Drive A and Regency Drive

- *AM Peak Right In* and *PM Peak Right In:*
  - This scenario includes a Right In entrance for the gas station from MO 92, the 2 existing gas station entrances, as well as an entrance at the intersection of Drive A and Regency Drive

- *AM Peak No Access* and *PM Peak No Access:*
  - This scenario includes no access for the gas station to MO 92, but does include the 2 existing gas station entrances, as well as an entrance at the intersection of Drive A and Regency Drive

Figures 1-3 of Appendix A illustrate conceptual geometric layouts for these scenarios.

The quality of operation for an intersection is defined using a grading system called Level of Service (LOS). The LOS is defined in terms of average vehicle delay. Levels of Service A through F have been established with A representing the best and F representing the worst.

Table 3. Levels of Service Definitions

Level of Service	*Unsignalized Intersection*	*Signalized Intersection*
A	< 10 Seconds	< 10 seconds
B	< 15 seconds	< 20 seconds
C	< 25 seconds	< 35 seconds
D	< 35 seconds	< 55 seconds
E	< 50 seconds	< 80 seconds
F	> 50 seconds	> 80 seconds

In creating these traffic simulation models, assumptions were made about the alignment of Drive A and the configuration of the entrances to the gas station located at the southwest corner of the Route 92/ Regency Drive intersection. The current entrances into and out of the gas station are located on Regency Drive just south of the Route 92. In addition to these entrances, a new entrance from Drive A would be constructed to the south at the new intersection of Drive A and Regency Drive, creating a four way intersection at this location. Also an entrance would be constructed on the south side of Route 92 into the existing parking lot of the gas station. The scenarios mentioned above have also been modeled to include a connection of Drive A to the south at West 19th Street. These scenarios have all been named the same as before only "*w/ Connection"* has been added to the title. The traffic generated by the gas station was added to these models as well as traffic diverted to Drive A due to a southerly connection. These scenarios were created to better understand how traffic will flow in the future if proposed roadway connections are made.

The LOS and average delay results for these scenarios can be seen in Table 4 and Table 5. The delay shown is in seconds.

Table 4. LOS and average delay with no connection of Drive A to the south

	Gas w/ RIRO				Gas w/ Right In				No Route 92 Access			
Intersection	AM Peak		PM Peak		AM Peak		PM Peak		AM Peak		PM Peak	
Movement	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay
Route 92 & Platte Clay Way												
All Movements (Signalized)	A	9.9	C	30.8	B	10.0	C	30.8	A	10.0	C	30.9
Drive A & Regency Drive												
Southbound Left Turn	A	7.6	A	9.3	A	7.6	A	9.3	A	7.6	A	9.3
*Northbound Left Turn**	A	1.2	A	0.3	A	1.2	A	0.3	A	1.2	A	0.3
*Westbound (Shared Left/Thru)***	B	12.1	E	38.6	B	12.1	E	38.8	B	12.1	E	38.8
Westbound Right Turn	A	9.5	B	11.2	A	9.5	B	11.0	A	9.5	B	11.0
*Eastbound (Shared Left/Thru/Right)**	B	13.6	D	32.3	C	16.0	F	50.9	C	16.1	F	51.4
Route 92 & Entrance*												
Northbound Right Turn	B	10.9	C	22.2	--	--	--	--	--	--	--	--
Drive A & Entrance 1*												
Eastbound Right Turn	A	8.8	A	9.6	A	8.8	A	9.6	A	8.9	A	9.7
Drive A & Entrance 2*												
Northbound Left Turn	A	0.3	A	0.2	A	0.2	A	0.2	A	0.2	A	0.2
Eastbound (Shared Left/Right)	A	9.5	B	11.7	A	9.8	B	12.8	A	9.9	B	13.0

** Not included in Lutjen or TranSystems traffic analysis*

*** Westbound Thru not included in Lutjen or TranSystems traffic analysis*

Table 5. LOS and average delay with connection of Drive A to the south

	Gas w/ RIRO				Gas w/ Right In				No Route 92 Access			
Intersection	AM Peak		PM Peak		AM Peak		PM Peak		AM Peak		PM Peak	
Movement	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay
Route 92 & Platte Clay Way												
All Movements (Signalized)	A	9.9	C	27.6	A	10.0	C	27.6	A	10.0	C	28.3
Drive A & Regency Drive												
Southbound Left Turn	A	7.8	A	9.0	A	7.7	A	8.9	A	7.7	A	8.9
*Northbound Left Turn**	A	0.5	A	0.2	A	0.5	A	0.2	A	0.5	A	0.2
*Westbound (Shared Left/Thru)***	B	12.4	D	29.2	B	12.4	D	28.2	B	12.3	D	28.2
Westbound Right Turn	A	9.3	B	10.6	A	9.3	B	10.5	A	9.3	B	10.5
Eastbound (Shared Left/Thru/Right)	B	11.3	C	18.1	B	12.2	C	22.4	B	12.2	C	22.5
Route 92 & Entrance*												
Northbound Right Turn	B	10.9	C	22.2	--	--	--	--	--	--	--	--
Drive A & Entrance 1*												
Eastbound Right Turn	A	8.8	A	9.5	A	8.8	A	9.5	A	8.8	A	9.6
Drive A & Entrance 2*												
Northbound Left Turn	A	0.3	A	0.2	A	0.3	A	0.2	A	0.2	A	0.2
Eastbound (Shared Left/Right)	A	9.5	B	11.4	A	9.9	B	12.5	A	9.8	B	12.6

** Not included in Lutjen or TranSystems traffic analysis*

*** Westbound Thru not included in Lutjen or TranSystems traffic analysis*

Assumptions made for the "*w/Connection*" scenarios were that 65% of the traffic currently using Regency Drive (westbound right and southbound left at Drive A/ Regency Drive intersection) would divert to the new connection of Drive A and West 19th Street. Also assumed was that 50% of the westbound left turn traffic from MO Route 92 added by the development would be diverted to the new connection. The Synchro traffic analyses for these scenarios can be found in Appendix B.

7. Additional Models

In addition to the scenarios requested by the city, CFS has created another traffic model for this area. These models have been named *AM* and *PM CFS,* for the scenario of no southerly connection of Drive A. As before "*w/Connection*" has been added for the models that account for the traffic diverted to this new connection. In this scenario, a Right In entrance from Route 92 is included and a connection to the south at the Drive A/ Regency Drive intersection, however, only one entrance is included between Route 92 and Regency. This intersection is a full access intersection. The LOS and average delay results for this scenario can be seen in Table 6. The delay shown is in seconds. The Synchro traffic analyses for these conditions can be found in Appendix B.

Figure 4 of Appendix A illustrates a conceptual geometric layout for this scenario.

Table 6. LOS and average delay for models *AM* and *PM CFS*

	No connection				w/ connection			
Intersection	AM Peak		PM Peak		AM Peak		PM Peak	
Movement	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay
Route 92 & Platte Clay Way								
All Movements (Signalized)	B	10.0	C	30.8	A	10.0	C	27.6
Drive A & Regency Drive								
Southbound Left Turn	A	7.6	A	9.3	A	7.7	A	8.9
*Northbound Left Turn**	A	1.2	A	0.3	A	0.5	A	0.2
*Westbound (Shared Left/Thru)***	B	12.1	E	38.6	B	12.4	D	28.2
Westbound Right Turn	A	9.5	B	11.0	A	9.3	B	10.5
*Eastbound (Shared Left/Thru/Right)**	C	16.0	F	50.7	B	12.2	C	22.4
Route 92 & Entrance*								
Northbound Right Turn	--	--	--	--	--	--	--	--
Drive A & Entrance 1*								
Northbound Left Turn	A	0.2	A	0.2	A	0.3	A	0.2
Eastbound (Shared Left/Right)	A	9.5	B	12.0	A	9.6	B	11.6

** Not included in Lutjen or TranSystems traffic analysis*

*** Westbound Thru not included in Lutjen or TranSystems traffic analysis*

This scenario has also been analyzed for the *"build"* condition. This condition consists of the full development being completed and all traffic generated. This has been assumed to happen in the year 2013. Traffic volumes have been assumed for this year and the development generated traffic has been added to provide these traffic volumes. These traffic models have been named *AM* and *PM Peak 2013 CFS*, and as before "*w/Connection*" has been added to show the results of a connection of Drive A to the south at West 19th Street. The conceptual geometric layout for this scenario can be found in Figure 4 of Appendix A. The Synchro traffic analysis of these conditions can be found in Appendix B.

The Level of Service (LOS) and average delay results for these scenarios can be seen in Table 1. The delay shown is in seconds.

Table 7. LOS and average delay for models *AM* and *PM 2013 CFS*

	No connection				w/ connection			
Intersection	AM Peak		PM Peak		AM Peak		PM Peak	
Movement	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay
Route 92 & Platte Clay Way								
All Movements (Signalized)	A	9.8	B	15.3	B	10.4	B	14.6
Drive A & Regency Drive								
Southbound Left Turn	A	7.6	A	9.2	A	7.8	A	8.8
*Northbound Left Turn**	A	1.2	A	0.3	A	0.5	A	0.2
*Westbound (Shared Left/Thru)***	B	12.1	E	35.4	B	12.3	D	26.2
Westbound Right Turn	A	9.5	B	11.2	A	9.3	B	10.4
*Eastbound (Shared Left/Thru/Right)**	C	16.0	E	47.9	B	12.1	C	21.0
Route 92 & Entrance*								
Northbound Right Turn	--	--	--	--	--	--	--	--
Drive A & Entrance 1*								
Northbound Left Turn	A	0.2	A	0.2	A	0.2	A	0.2
Eastbound (Shared Left/Right)	A	9.5	B	11.9	A	9.4	B	11.5

** Not included in Lutjen or TranSystems traffic analysis*

*** Westbound Thru not included in Lutjen or TranSystems traffic analysis*

8. Queue Lengths

The City of Kearney has also expressed concern about the queue lengths along Regency Drive south from the Drive A/ Regency Drive intersection. This concern grew from the close proximity of residential dwellings to the new intersection. The traffic analysis reports a maximum 95th percentile queue length of 29 feet. This equates to approximately 1.5 vehicles in queue south along Regency Drive in the 95th worst hour out of 100. CFS has no reason to believe that vehicles will queue south along Regency Drive blocking residents from entering or leaving their driveways.

9. Timeframe

The traffic models in this analysis were created using a design year of 2025. This is standard in most traffic studies to conduct traffic analysis based on traffic 15-20 years in the future and is done using a standard growth rate between 2-3 percent based on past traffic growth. Again, the traffic volumes used were taken from TranSystems' analysis completed in November 2009.

10. Other Considerations

In completing the review of the traffic studies submitted by Lutjen and TranSystems, CFS considered other options of moving traffic through the area. The three scenarios that were considered, but not modeled are:

- Termination of Regency Drive at the north end with no connection to Drive A
- Construction of a roundabout at the intersection of Drive A and Regency
- Termination of Drive A at Regency in a tee intersection, with Regency remaining aligned as is currently as the main north/south roadway

Terminating Regency Drive at the north as a dead end would not be desirable as there are many residential dwellings along this roadway. A termination of Regency Drive would necessitate that any

traffic from this residential area to the north would have to travel south to West 19th before returning northbound along Drive A or along Route 33 until a connection was made at West 19th Street and Drive A. This would result in a detour of approximately 2.5 miles in order to reach MO Route 92. Also any emergency vehicle would have a greater response time to and from these residential dwellings. Because of these reasons as well as Regency Drive currently being a major north/south roadway, this option was not considered for further analysis.

Constructing a roundabout at the intersection of Drive A and Regency Drive was not modeled because Drive A would be the main entrance to this development. There appears to be no other entrance for truck traffic making routine deliveries to the shopping center. Therefore most truck traffic would use Drive A for deliveries. With an assumption of 12% trucks, this would create congestion through the roundabout as trucks must move at a very slow speed through roundabouts. Also, the wear and tear on the truck apron of a roundabout from constant truck use would require the City to consider longterm maintenance as a factor. Finally, the footprint of a roundabout here would necessitate demolition of the car wash located at the south end of the existing gas station lot and encroach into the other businesses surrounding this location. After discussion with city officials, this option was removed from consideration.

Finally, the idea of no change to current Regency Drive with Drive A teeing into Regency Drive is not desirable because it has been proposed that Drive A will connect to W. 19th Street in the future, becoming the major north/south roadway for this area. If Drive A were to terminate in a tee at Regency Drive, most likely the traffic would not divert from Regency Drive to the new connection, which is a concern of the City and the residents of the neighborhood surrounding Regency Drive.

11. Traffic Calming Measures for Regency Drive

One of the concerns expressed by City of Kearney officials and citizens of the adjacent neighborhoods was the continued growth of traffic "cutting through" their residential neighborhoods on Regency Drive. The concern has been heightened with the proposed development in this area. The goal of City officials and citizens is to identify solutions that would minimize additional traffic flow on Regency Drive and allow Regency Drive to operate as a residential collector route.

A solution to be considered for achieving the goal of maintaining Regency Drive as a residential collector is the use of traffic calming techniques. The Institute of Transportation Engineers (ITE) defines traffic calming as, "… changes in street alignment, installation of barriers, and other physical measures to reduce traffic speeds and/or cut-through volumes, in the interest of street safety, livability, and other public purposes." Traffic calming methods originally were used in Europe in the 1960's as a means to stop residential streets from becoming urban arterials. Eventually, many of the same issues surfaced in America, and traffic calming tools began to be utilized by public agencies in the 1970's. This led to the first national study in 1980, which looked at residential preferences related to traffic. From there, The Institute of Transportation Engineers (ITE) and the Federal Highway Administration (FHWA) have advanced the study of traffic calming methods from residential streets to major thoroughfares and published "Traffic Calming: State of Practice" in the late 1990's.

CFS has reviewed several methods that may provide traffic calming benefits to Regency Drive. The methods that seem most applicable to Regency Drive are:

- **Neckdowns** - curb extensions at intersections that reduce the roadway width from curb to curb. They also tighten the curb radii at the corners, reducing the speeds of turning vehicles. When

used, neckdowns have created an average reduction in speeds of 7% in residential areas. This may be a good tool to utilize at the south end of Regency Drive just north of 19th Street.

- **Curb extensions** – located at mid-block locations that narrow a street by widening the sidewalk or planting strip. If marked as crosswalks, they are also known as safe crosses. Two-lane narrow sections leave the street cross section with two lanes that are narrower than the normal cross section. They are good for areas with substantial speed problems and no on-street parking shortage. These could be used along the southern portion of Regency Drive and if constructed with sidewalks, may provide excellent mid-block crosswalks. Curb extensions have been shown to reduce speeds by an average of 7%.
- **Speed Tables** - flat-topped speed humps often constructed with brick or other textured materials on the flat section. Speed tables are typically long enough for the entire wheelbase of a passenger car to rest on the flat section. The brick or other textured materials improve the appearance of speed tables, draw attention to them, and may enhance safety and speed reduction. Speed tables are good for locations where low speeds are desired but a somewhat smooth ride is needed for larger vehicles. A possible effective site for a speed table on Regency Drive would be in the area of the neighborhood swimming pool. This is an area where speeds should be reduced to benefit the safety of pedestrians and bicyclists. Speed table have been proven to reduce speeds an average of 18%.

Figure 5 of Appendix A illustrates a possible configuration of these traffic calming methods along Regency Drive.

12. Conclusions

The findings of this traffic study review and additional traffic analysis by CFS has shown that the models created by Lutjen and TranSystems are accurate based on the assumptions made in each study. However, both studies omitted the existing gas station and a connection of Drive A south to West 19th Street. If the gas station is to remain open, as the City has informed CFS, there must be changes made to the entrances. If these changes are made the LOS at the Route 92/ Regency Drive intersection would be LOS A in the AM and LOS C in the PM, which is what the City of Kearney desires. Also this LOS is an acceptable condition for MoDOT, who maintains and operates Missouri Route 92. The connection of Drive A to West 19th Street will have little impact on the Route 92/ Regency Drive intersection, with only 62 vehicles in the peak hour diverting to this southerly connection. However, this will divert traffic from the residential area surrounding Regency Drive and reduce delays at the Drive A/ Regency Drive intersection. The traffic volumes and LOS for each scenario modeled can be found graphically in Figures 7-17 of the Appendix A. Synchro traffic model results can be found in Appendix B.

CFS believes the models conducted for this study are accurate based on the assumptions made. However for these results to be realized, there must be some geometric improvements made to the roadways in this area.

Appendix A

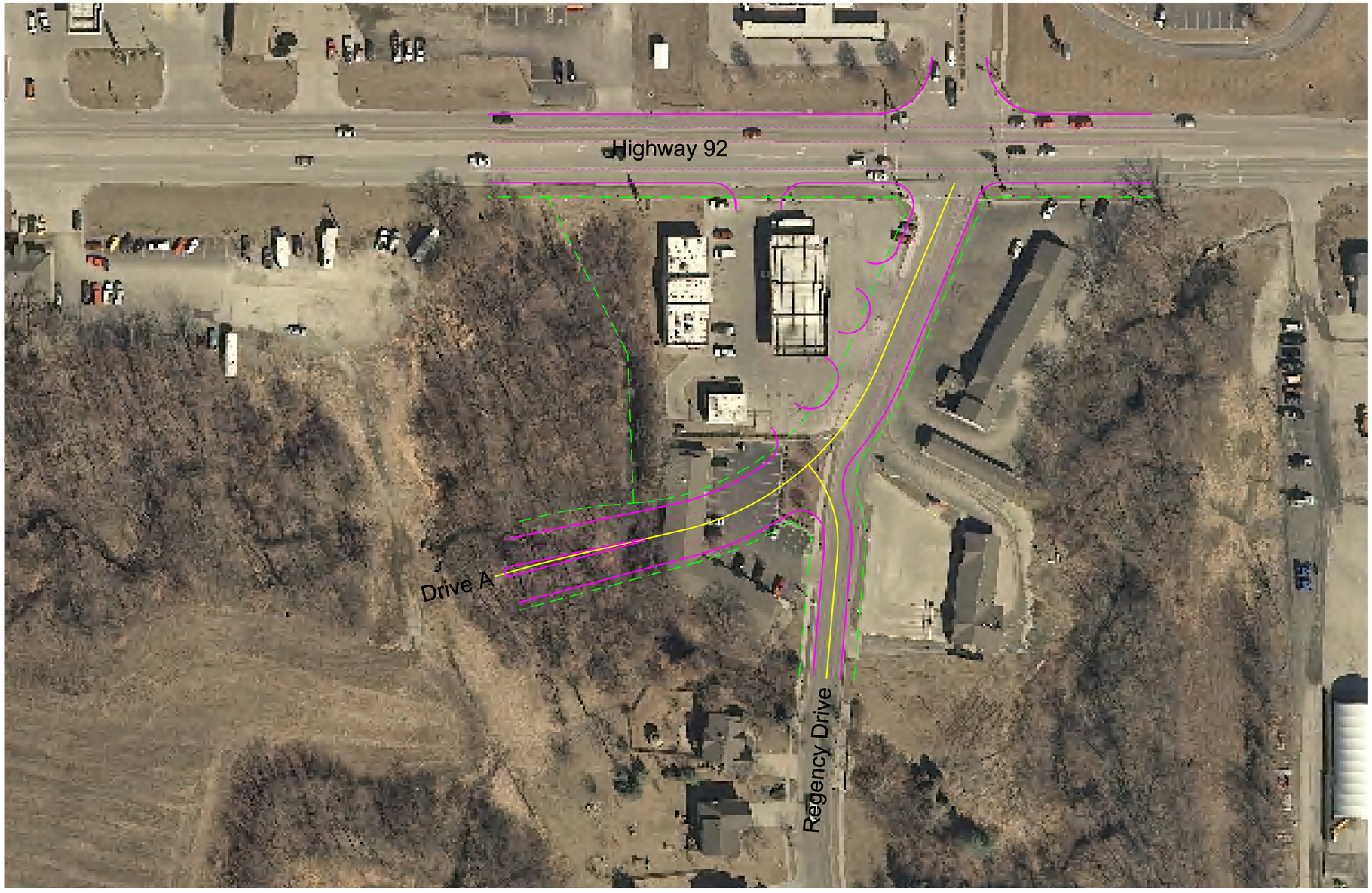

Figure 1.
Geometric layout for Models
AM & PM Peak RIRO

CFS
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9229 WARD PARKWAY, SUITE 110
KANSAS CITY, MISSOURI 64114
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Fax (816) 333-6688

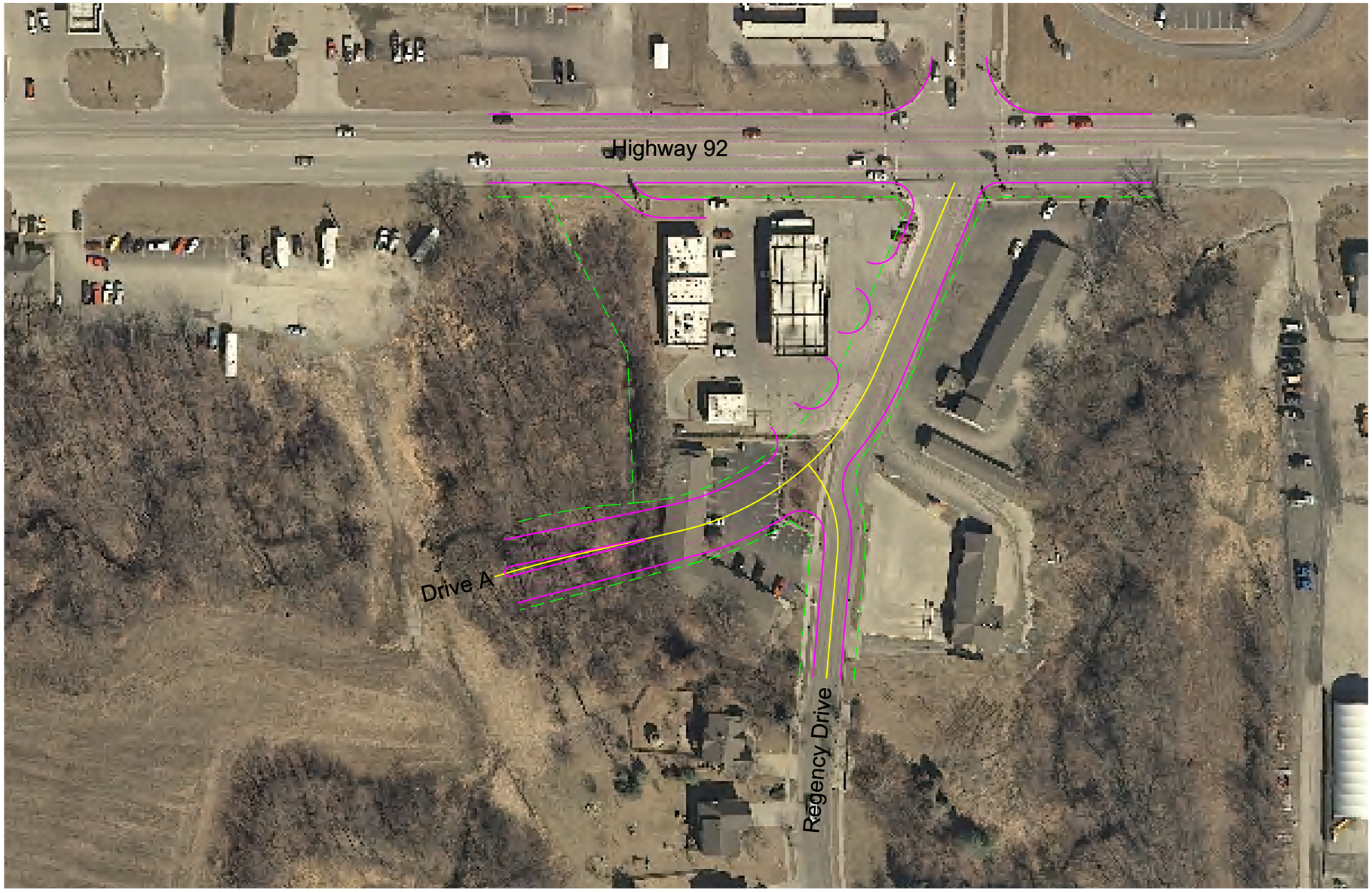

Figure 2.
Geometric layout for Models
AM & PM Peak Right In

CFS
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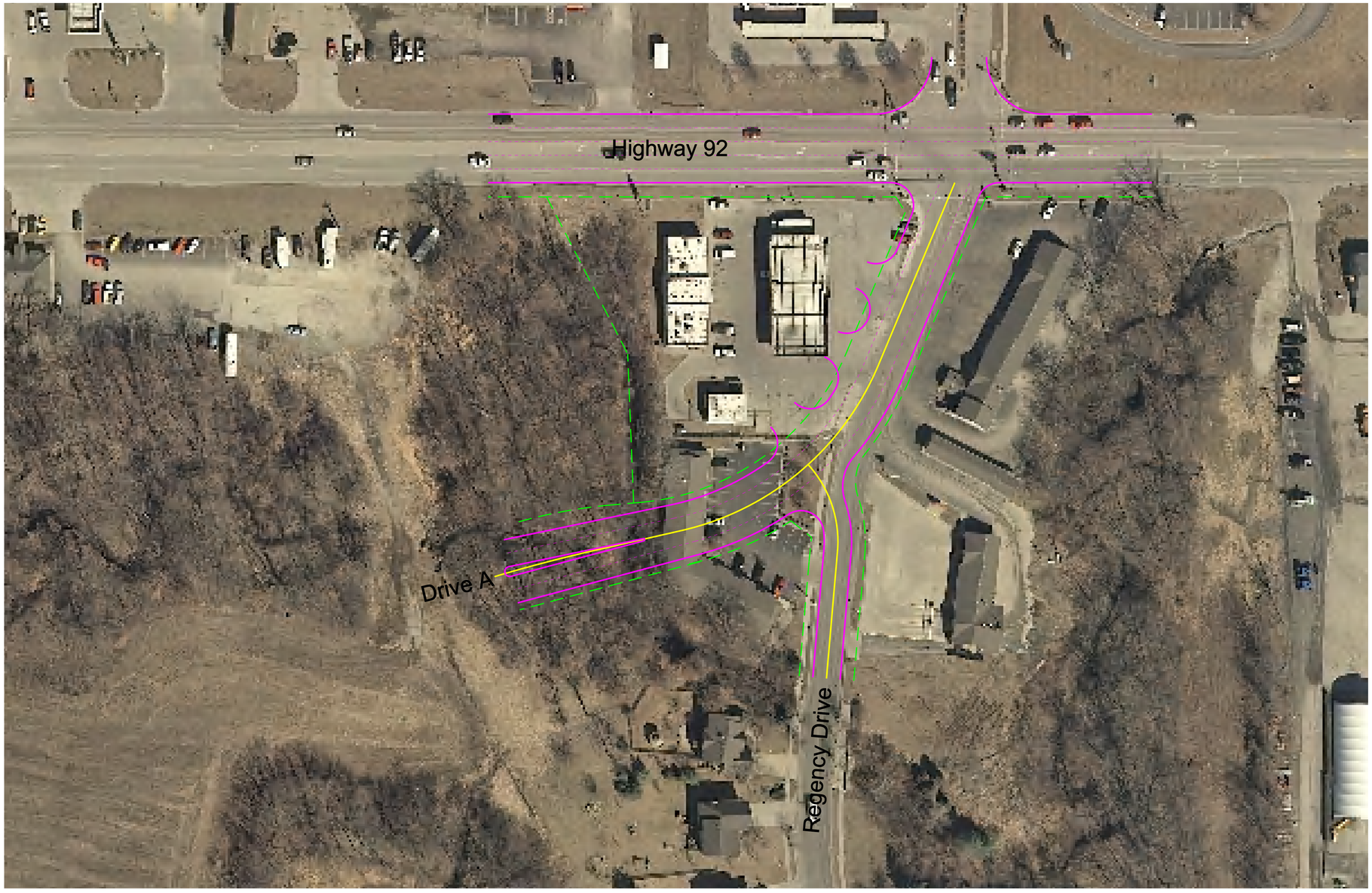

Figure 3.
Geometric layout for Models
AM & PM Peak No Access

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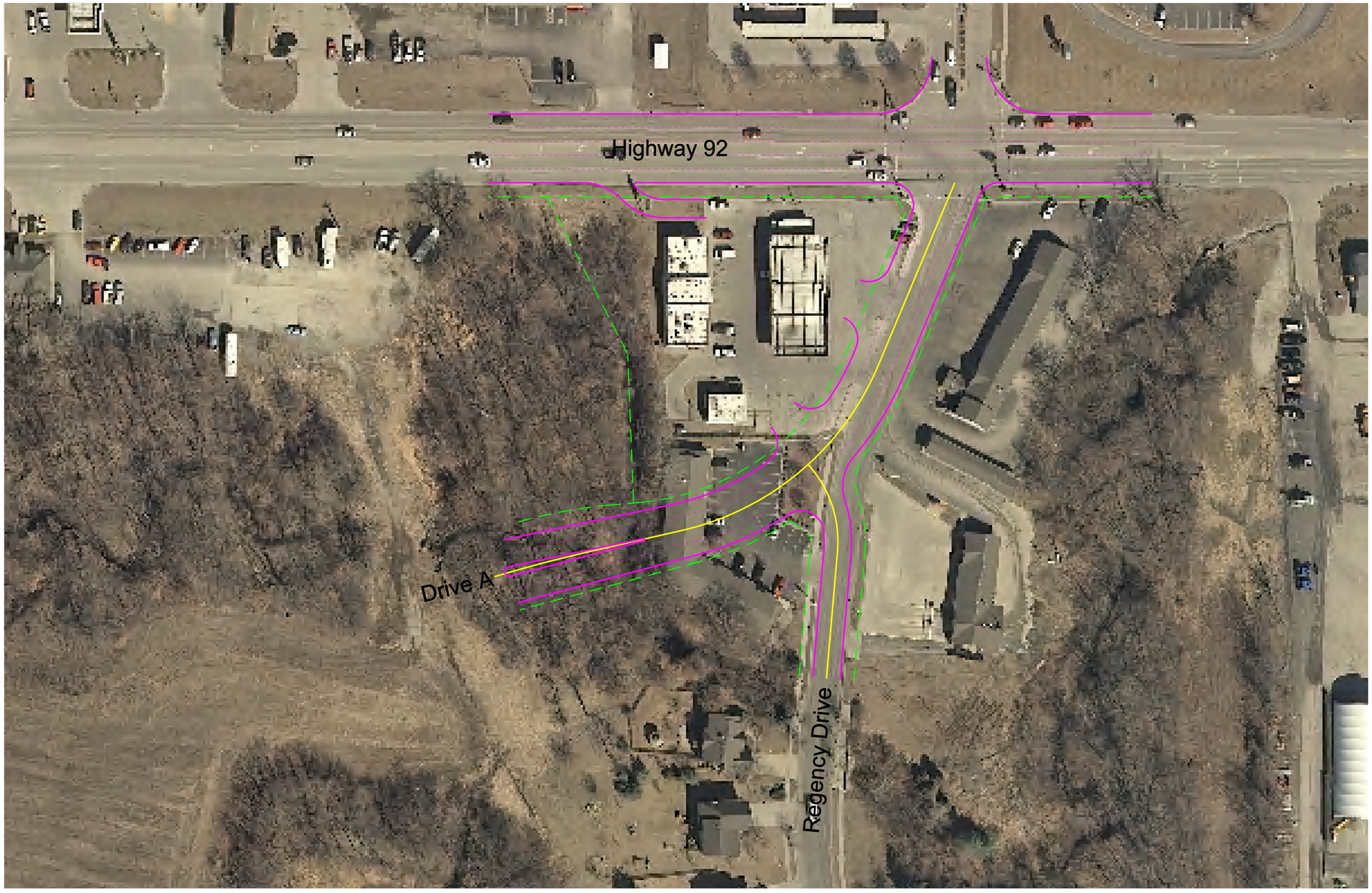

Figure 4.
Geometric layout for Models
AM & PM Peak CFS

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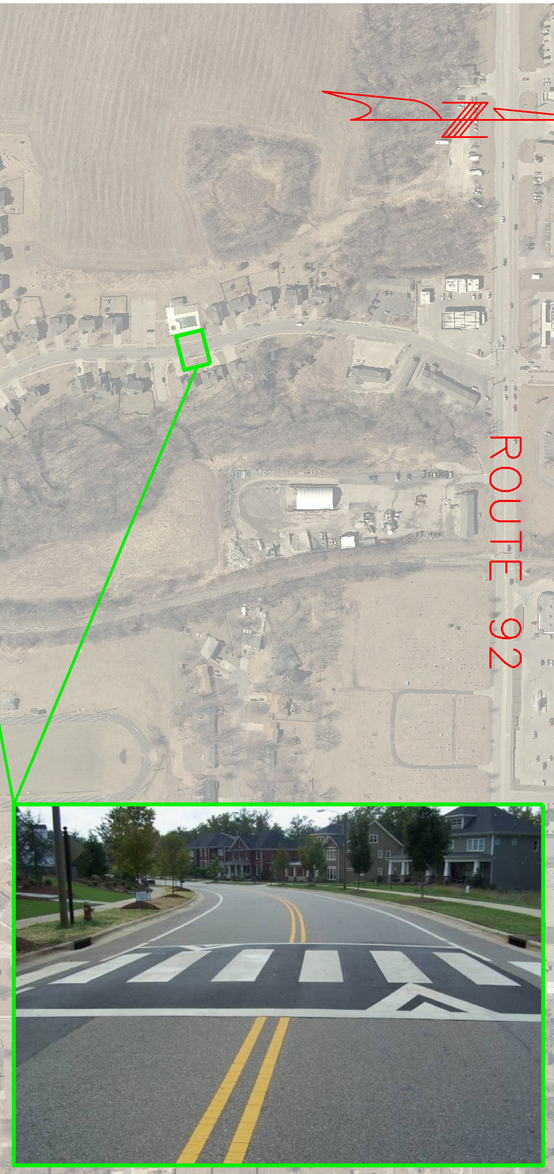
REGENCY DRIVE

19th STREET

ROUTE 92

INTERSECTION NECKING

LANE NECKING



SPEED HUMPS

Figure 5.
Traffic Calming Features
Regency Drive

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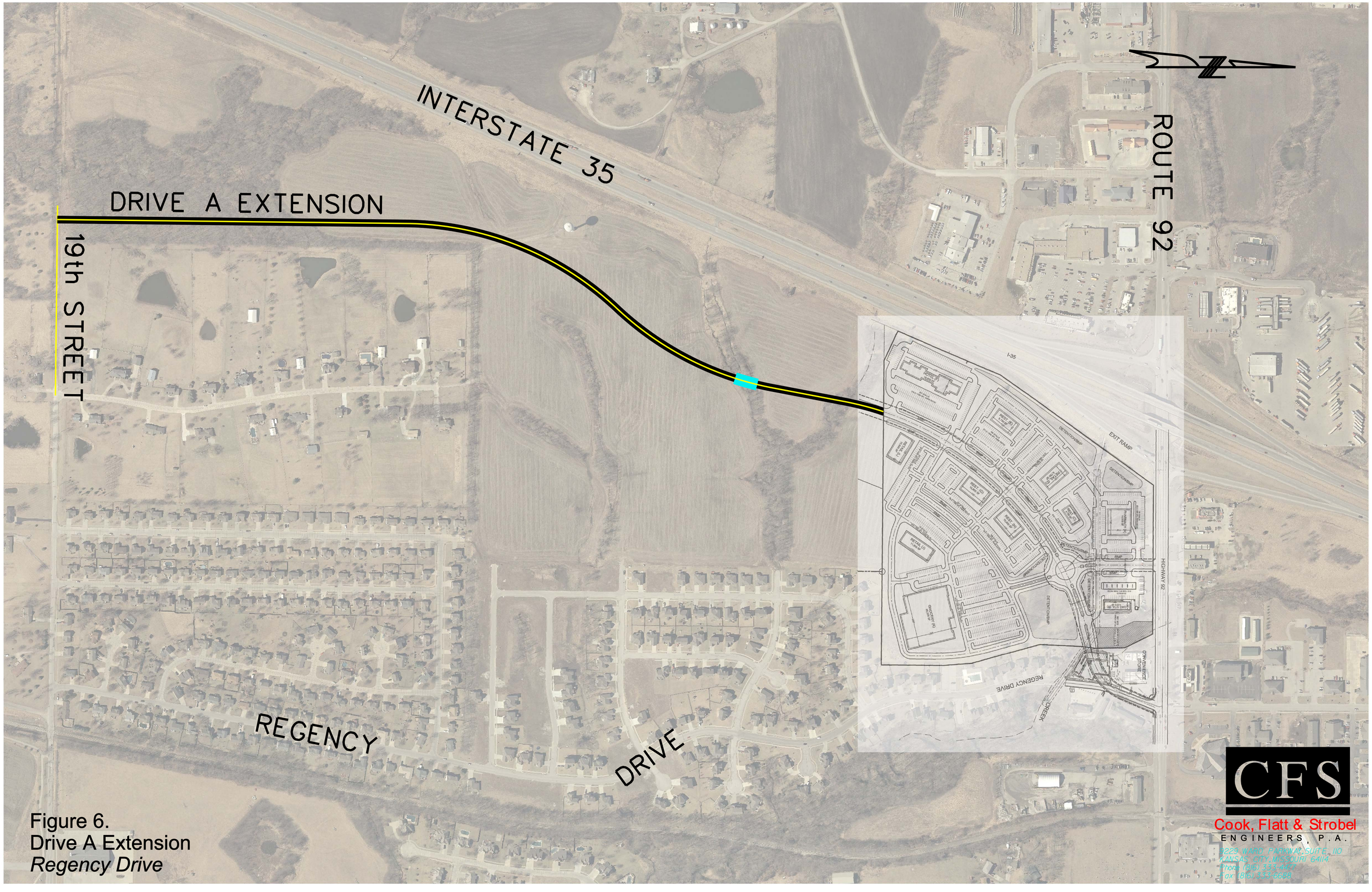

Figure 6.
Drive A Extension
Regency Drive

Cook, Flatt & Strobel
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2229 WARD PARKWAY, SUITE E, 110
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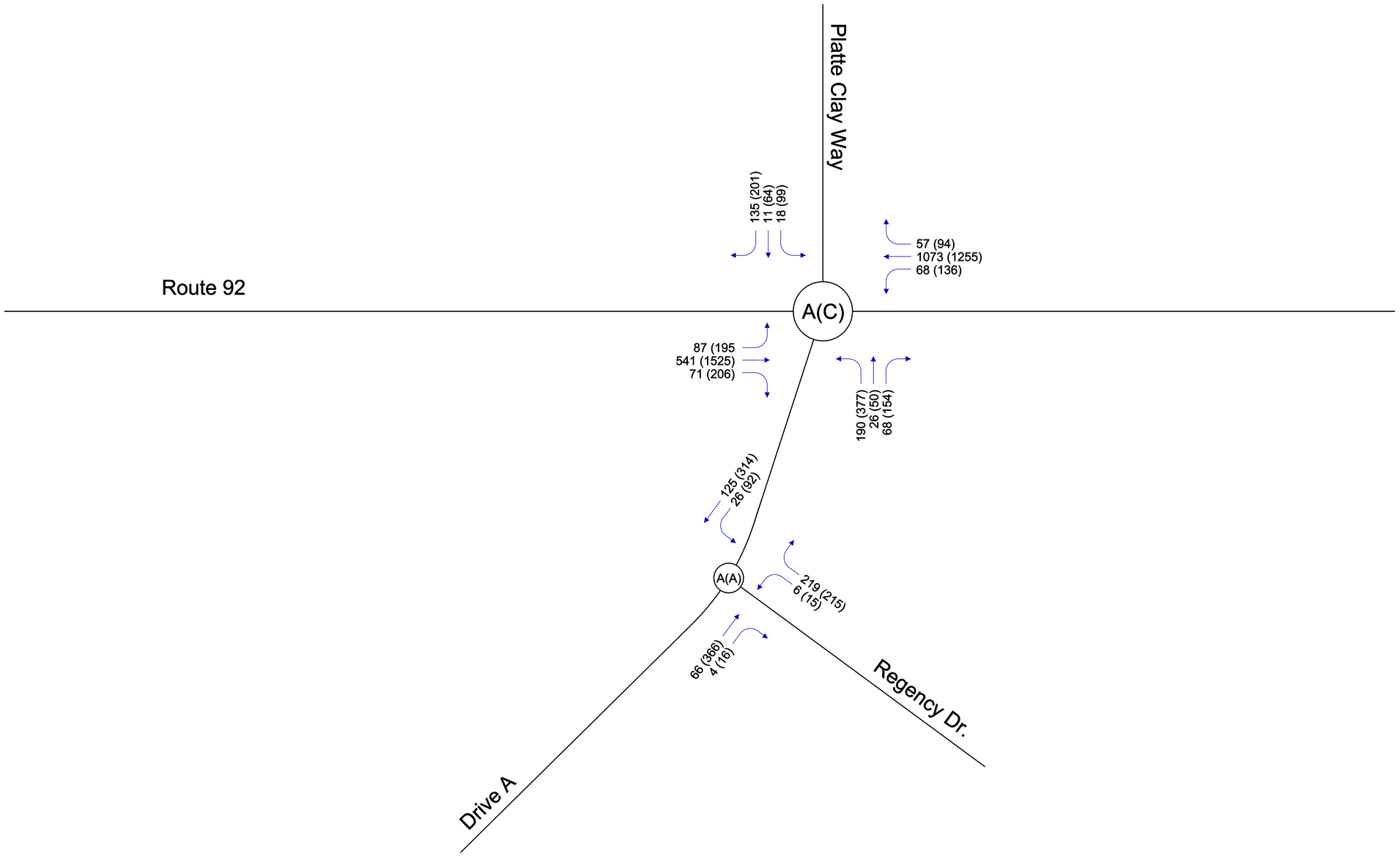

Figure 7.
Levels of Service and Traffic Volumes for Model
AM (PM) Peak Hour

CFS
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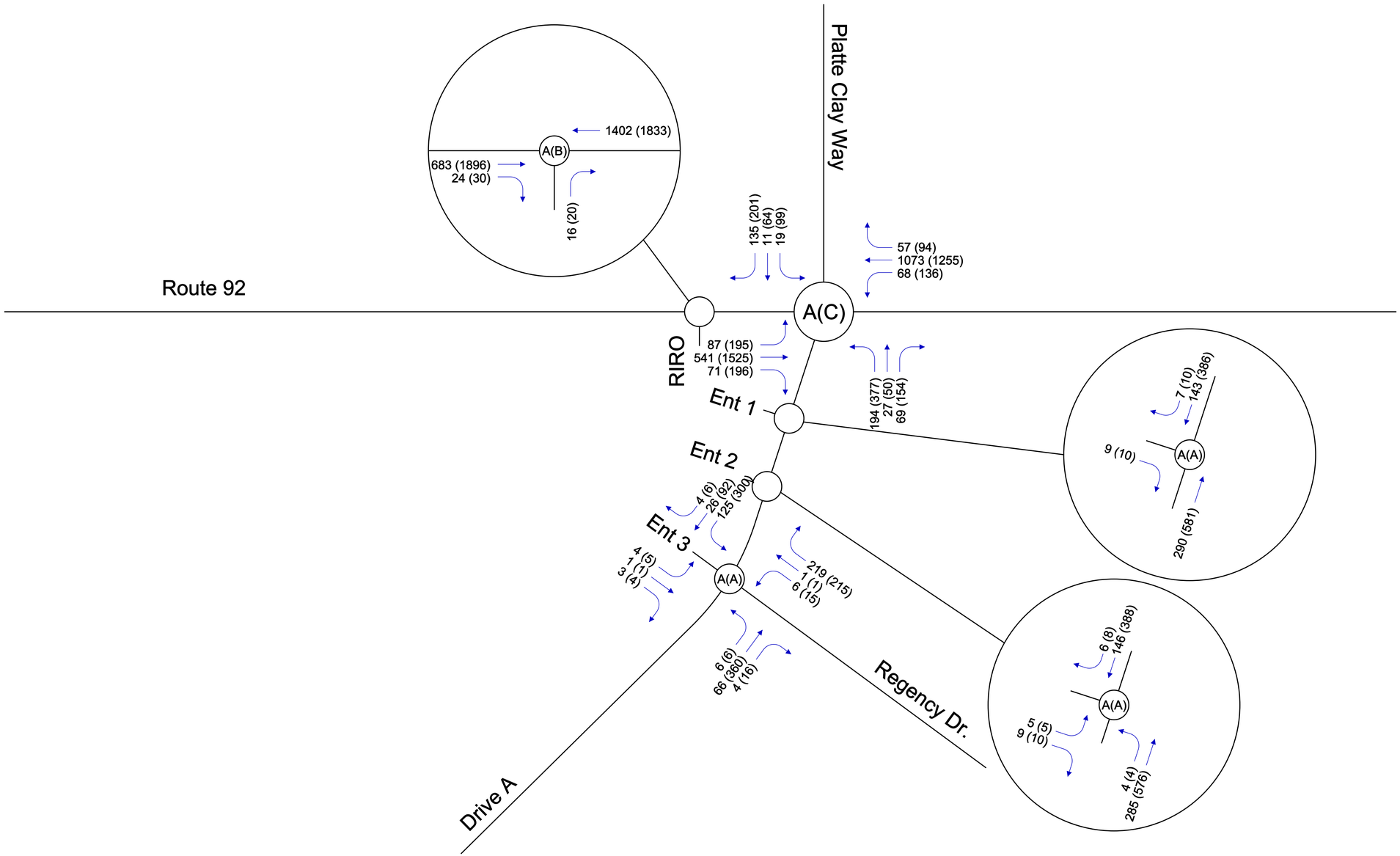

Figure 8.
Levels of Service and Traffic Volumes for Model
AM (PM) Peak RIRO

CFS
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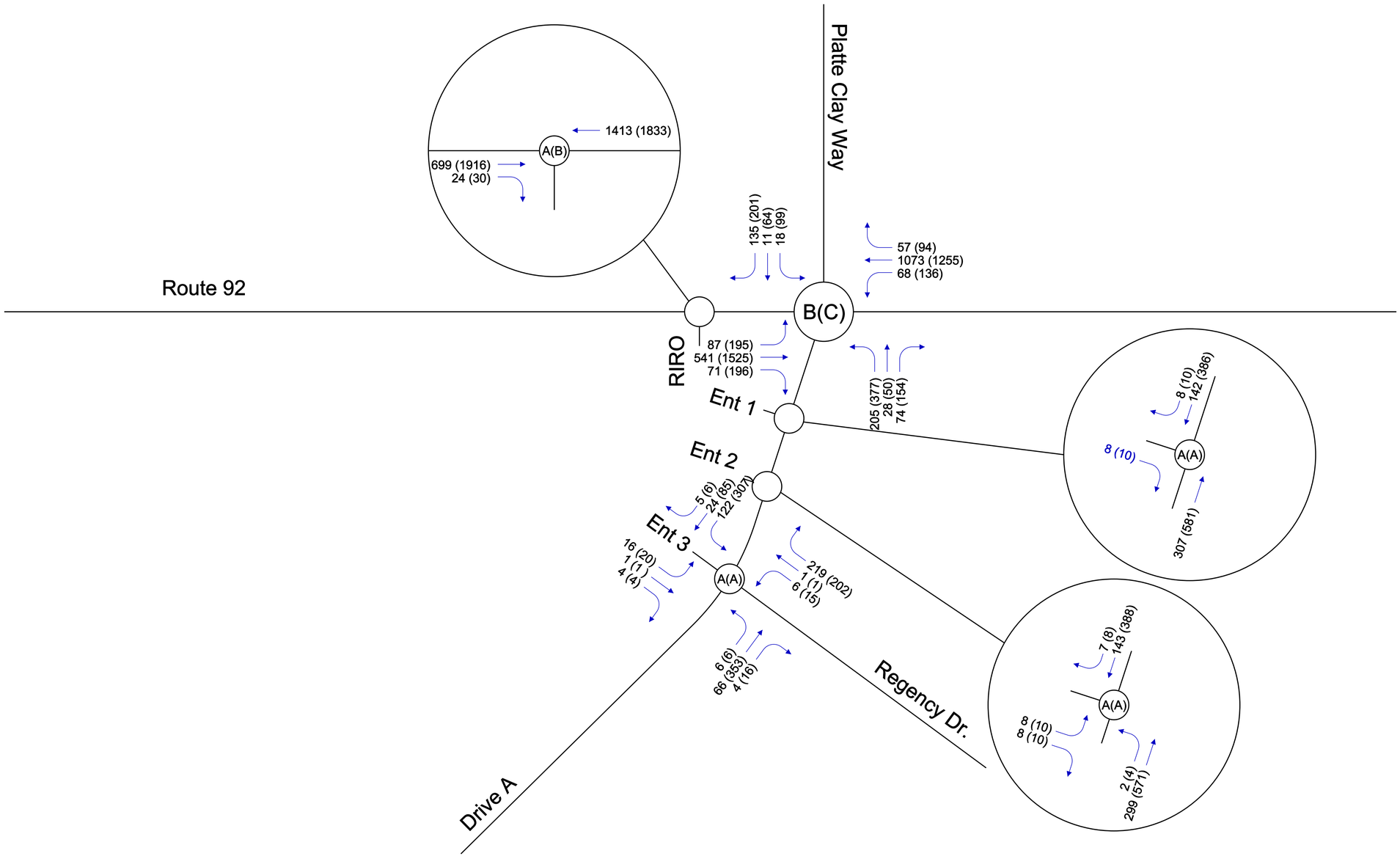

Figure 9.
Levels of Service and Traffic Volumes for Model
AM (PM) Peak Right In

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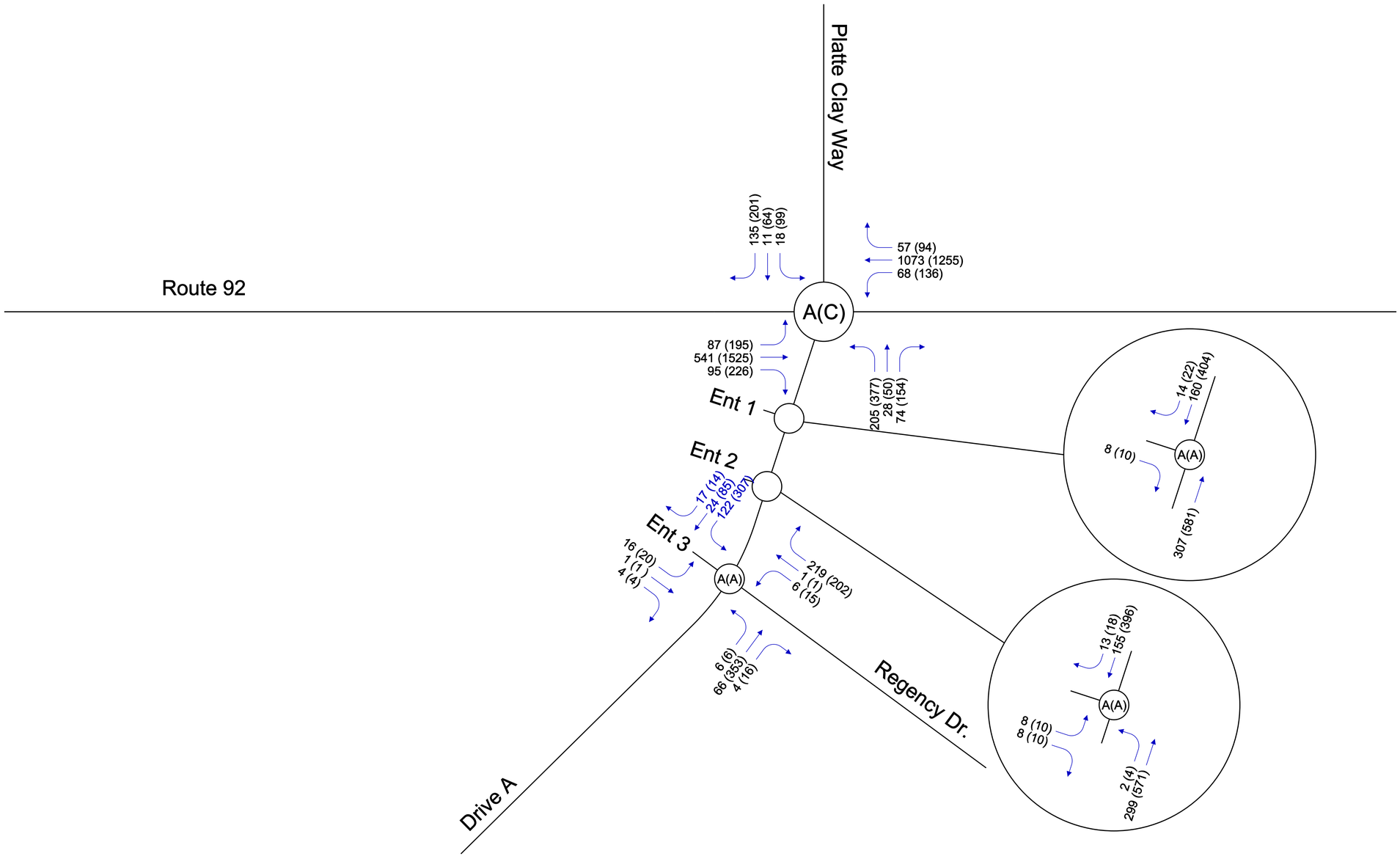

Figure 10.
Levels of Service and Traffic Volumes for Model
AM (PM) Peak No Access

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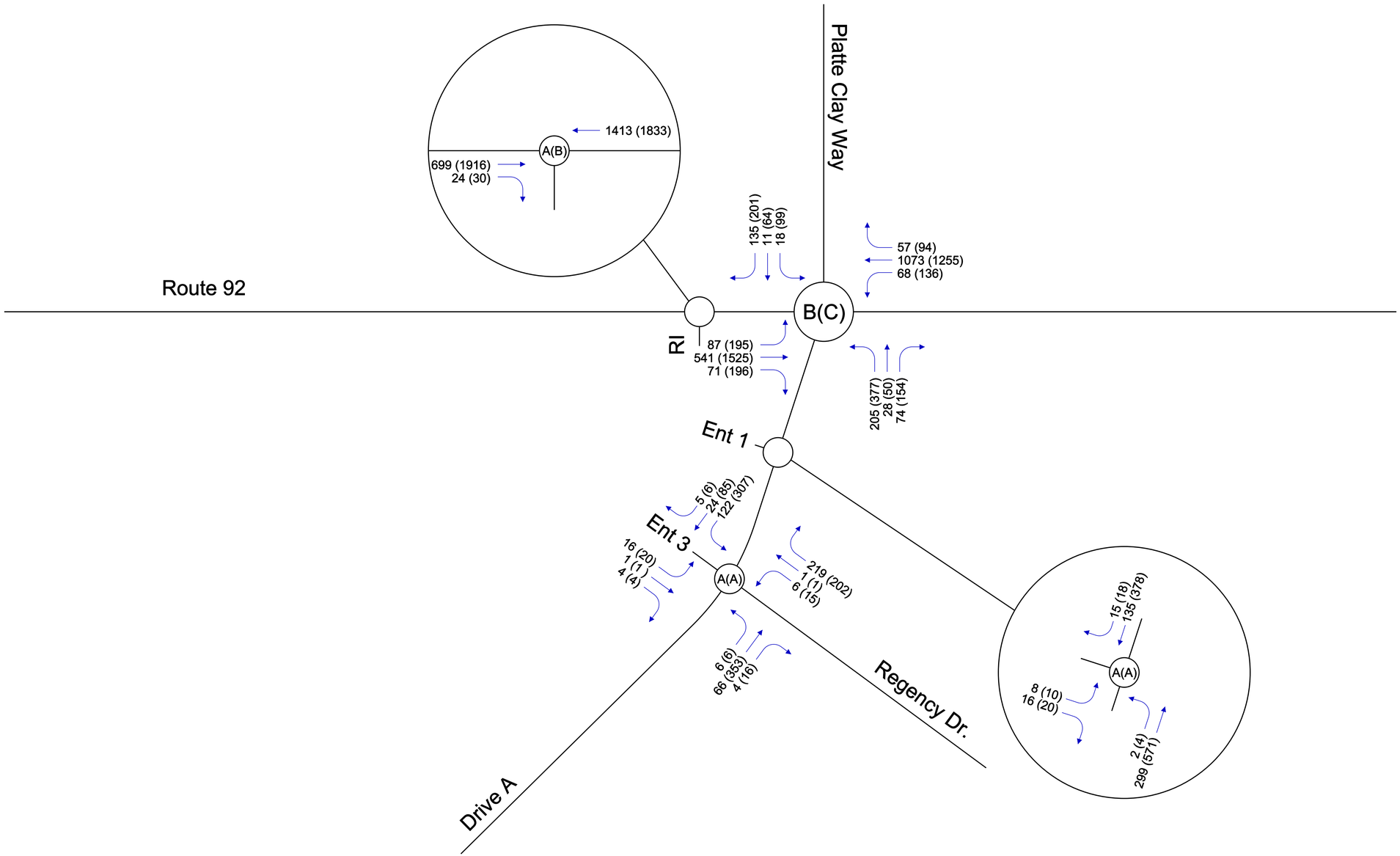

Figure 11.
Levels of Service and Traffic Volumes for Model
AM (PM) Peak CFS

CFS
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9229 WARD PARKWAY, SUITE 110
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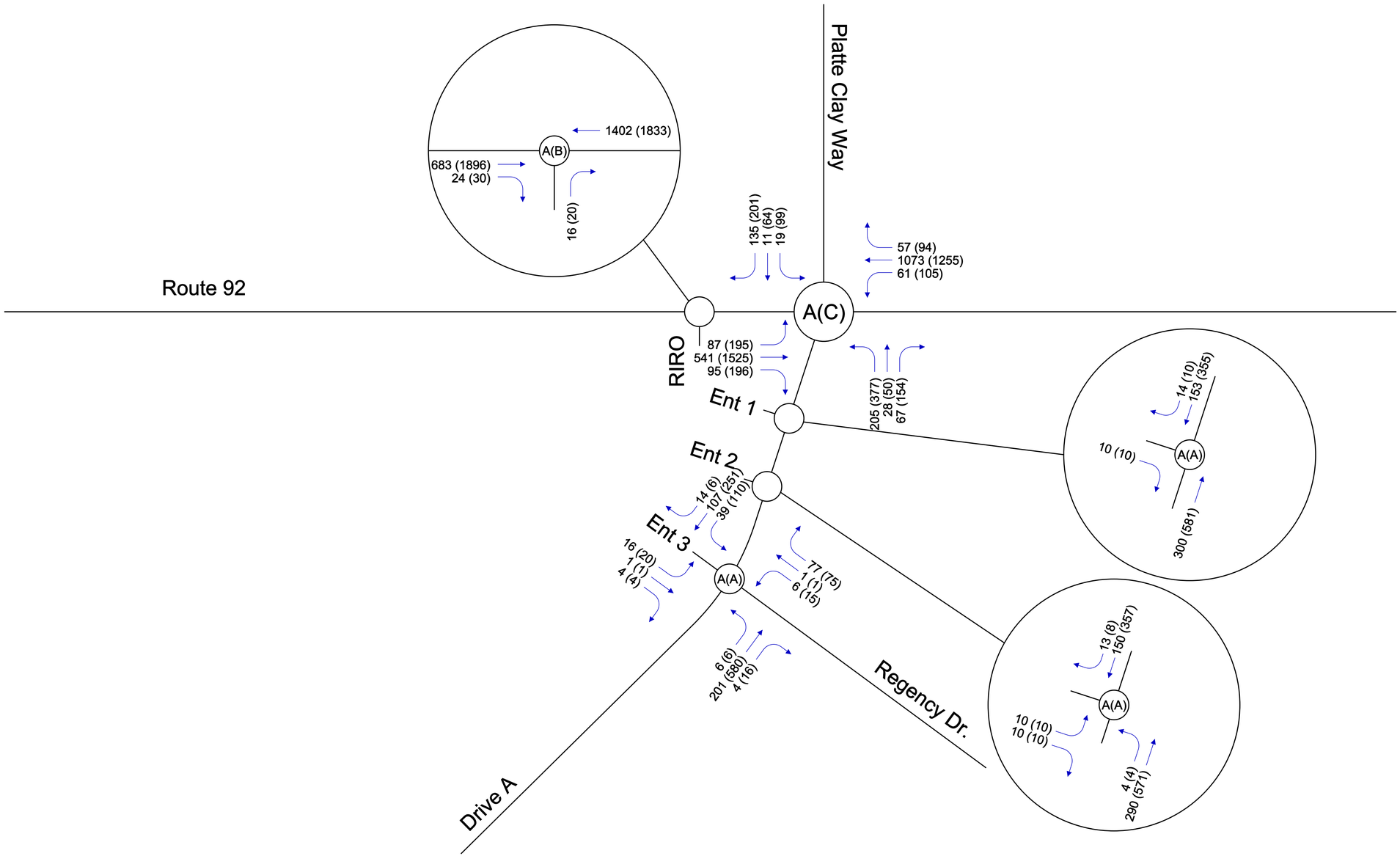

Figure 12.
Levels of Service and Traffic Volumes for Model
AM (PM) Peak RIRO w/Connection

CFS
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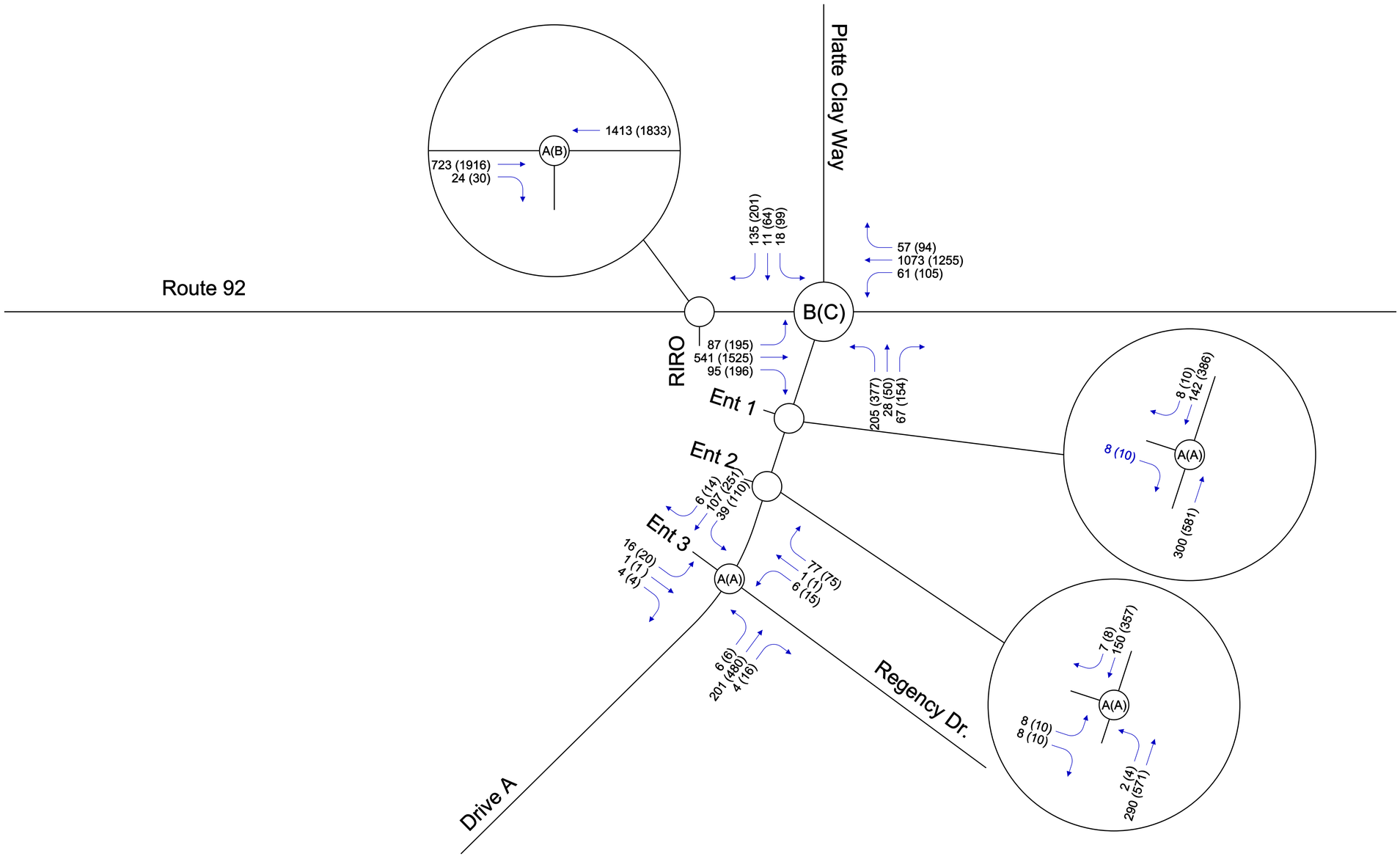

Figure 13.
Levels of Service and Traffic Volumes for Model
AM (PM) Peak Right In w/ Connection

CFS
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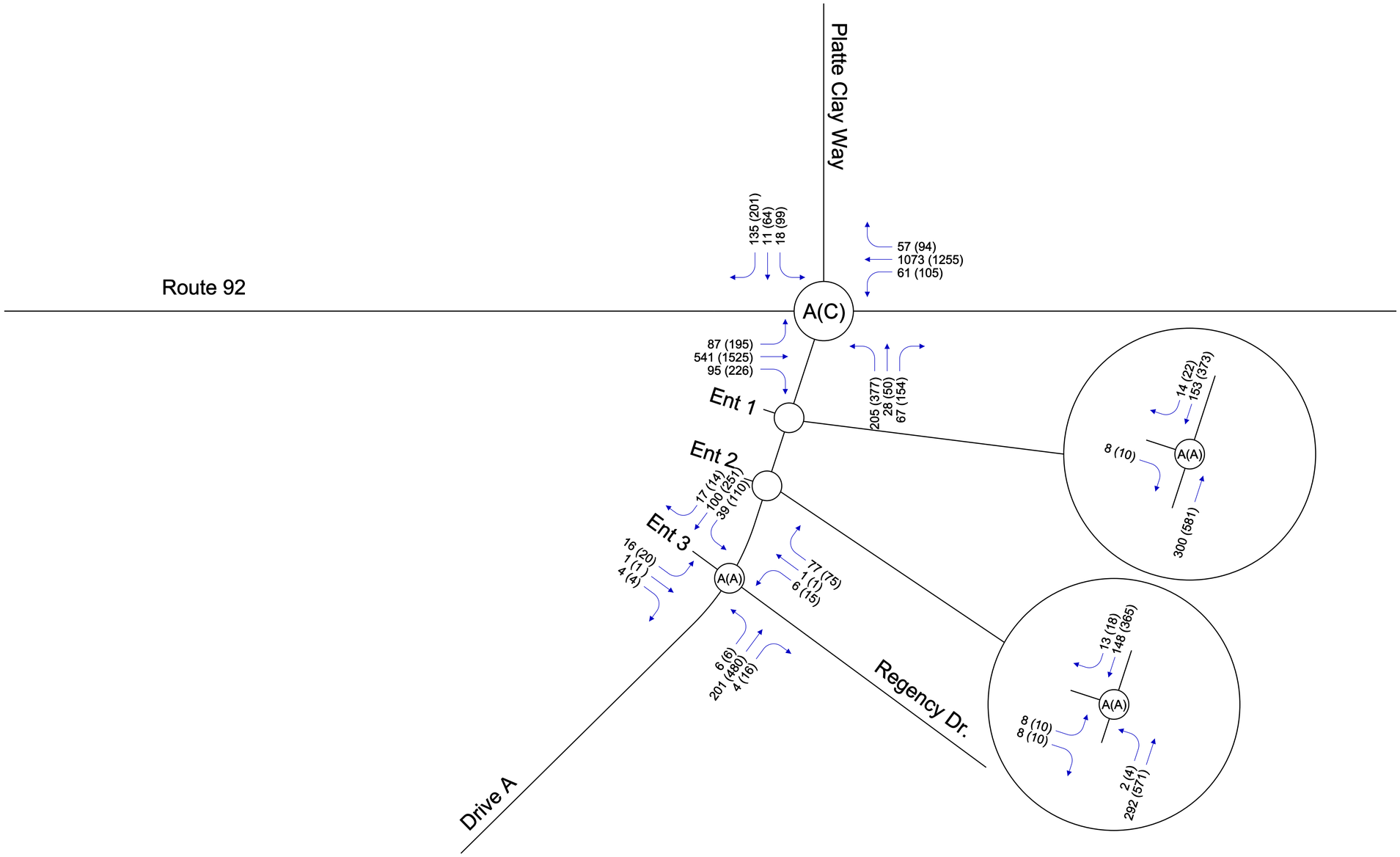

Figure 14.
Levels of Service and Traffic Volumes for Model
AM (PM) Peak No Access w/ Connection

CFS
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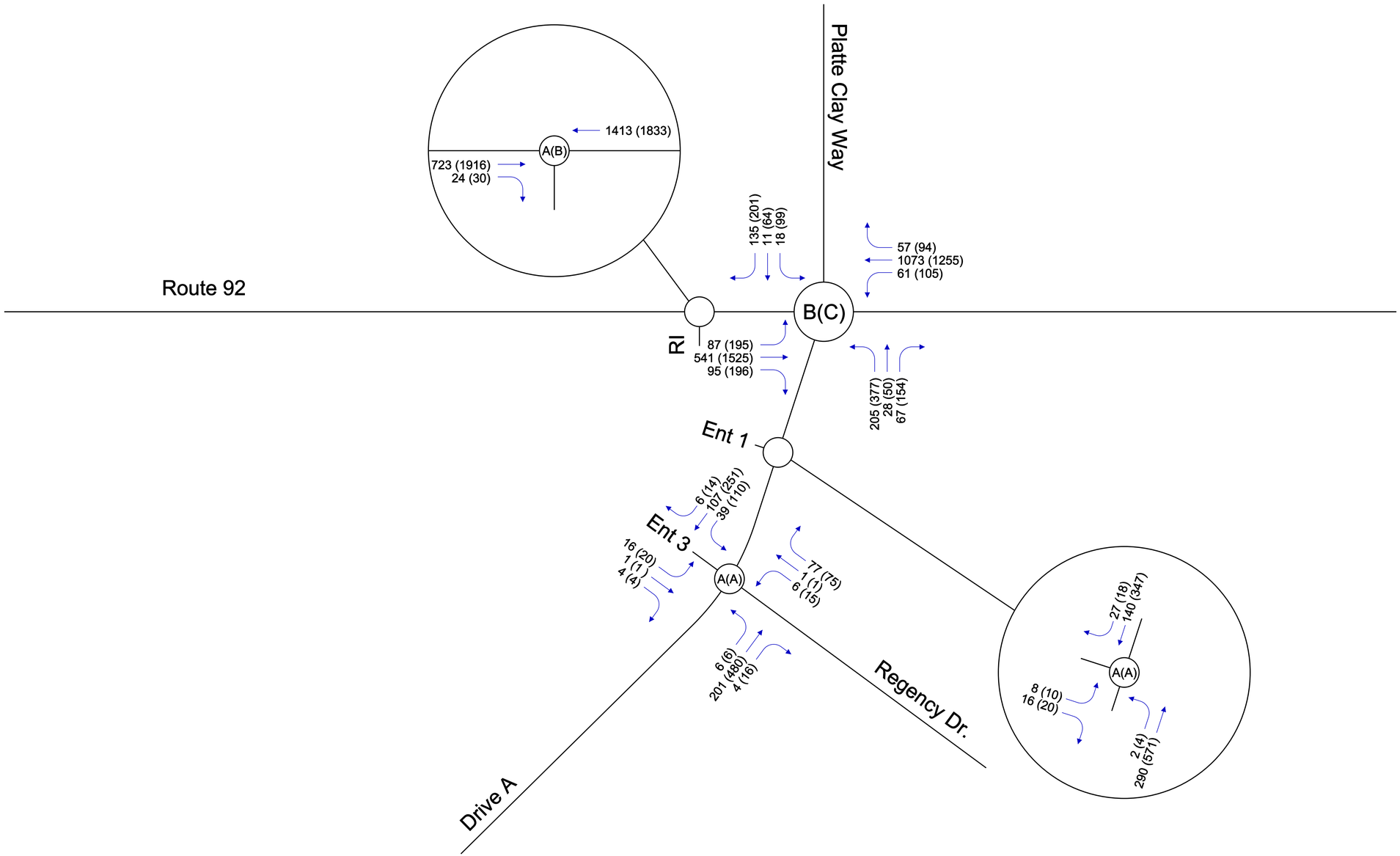

Figure 15.
Levels of Service and Traffic Volumes for Model
AM (PM) Peak CFS w/ Connection

CFS
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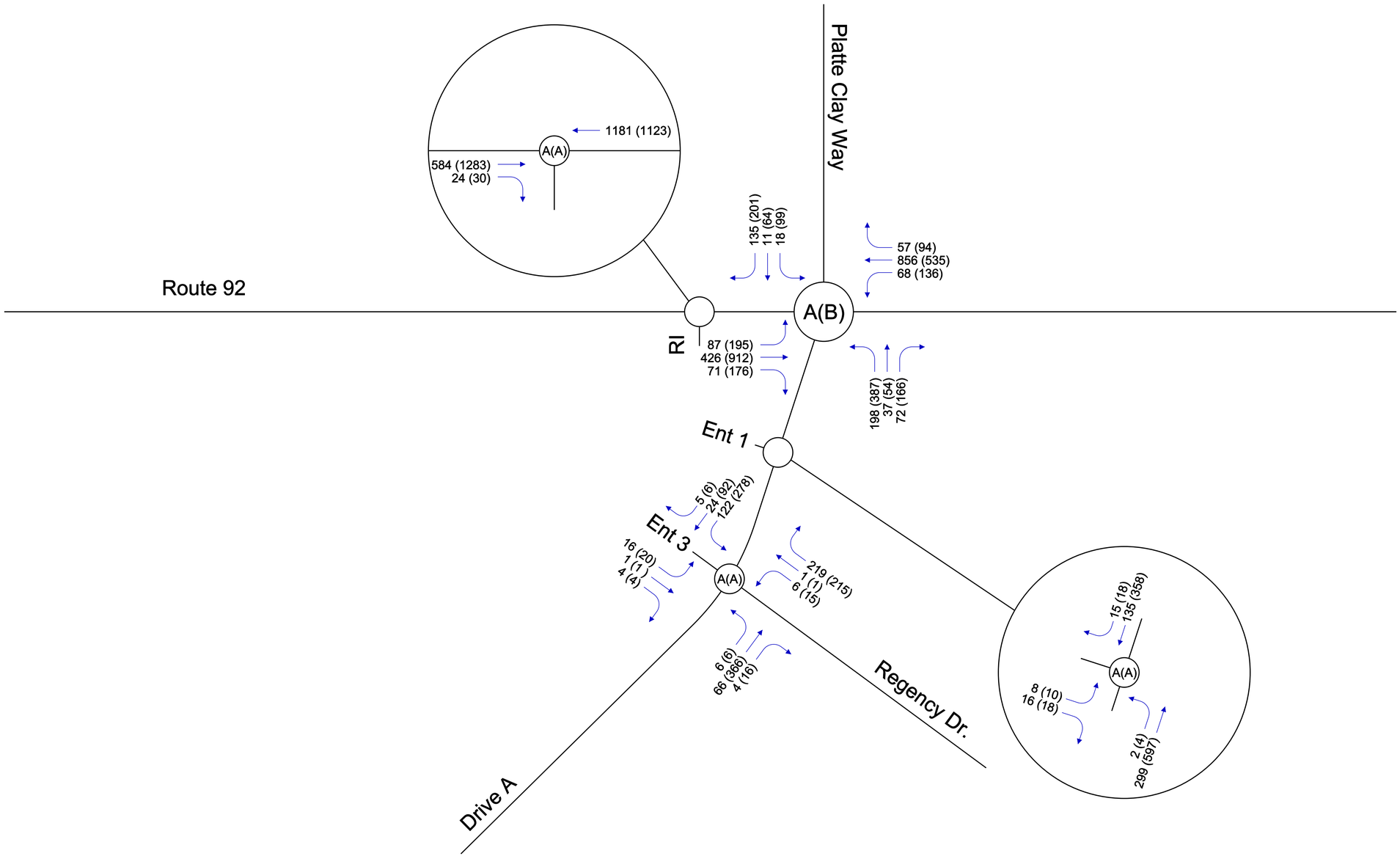

Figure 16.
Levels of Service and Traffic Volumes for Model
AM (PM) Peak CFS 2013

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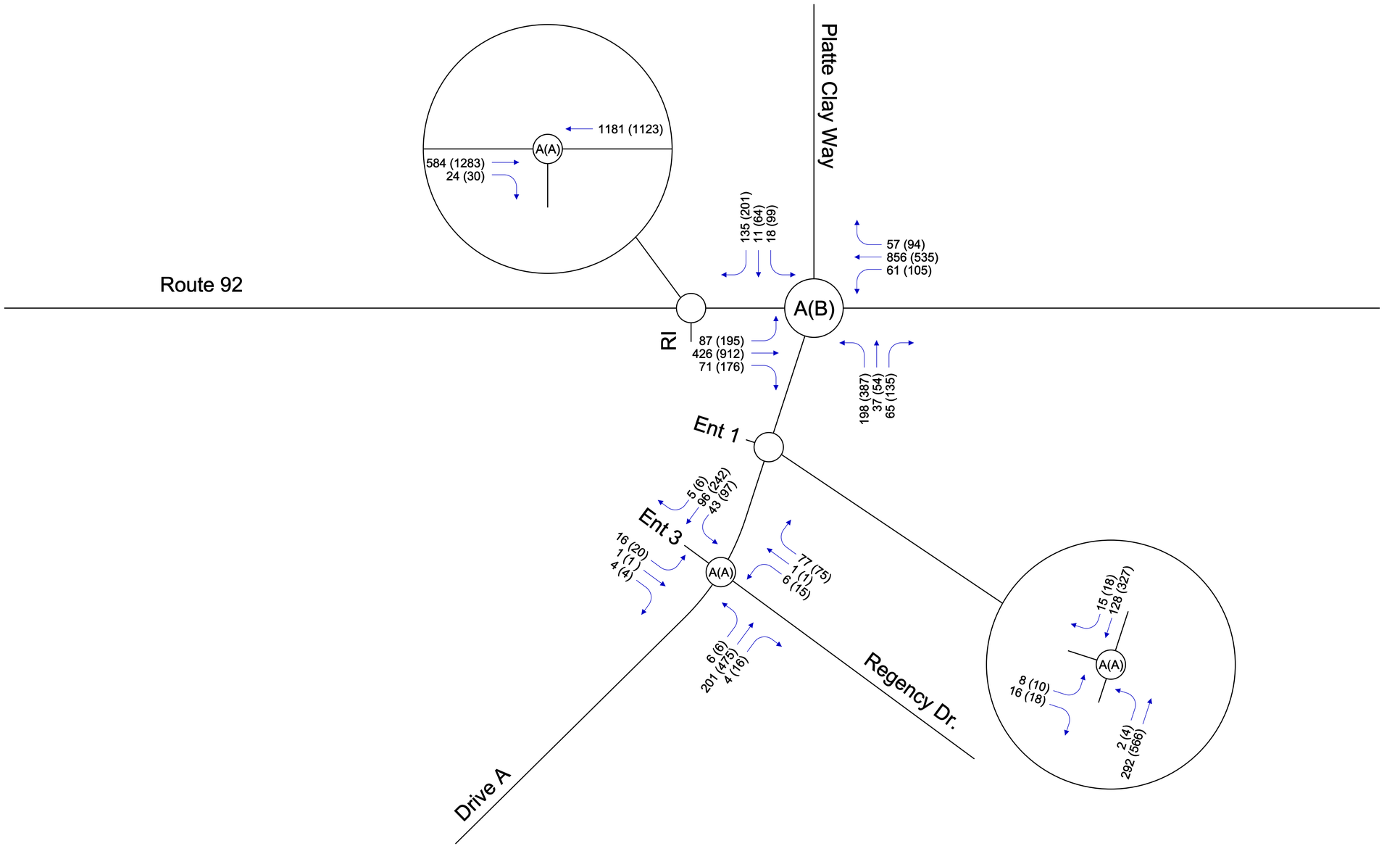

Figure 17.
Levels of Service and Traffic Volumes for Model
AM (PM) Peak CFS 2013 w/ Connection

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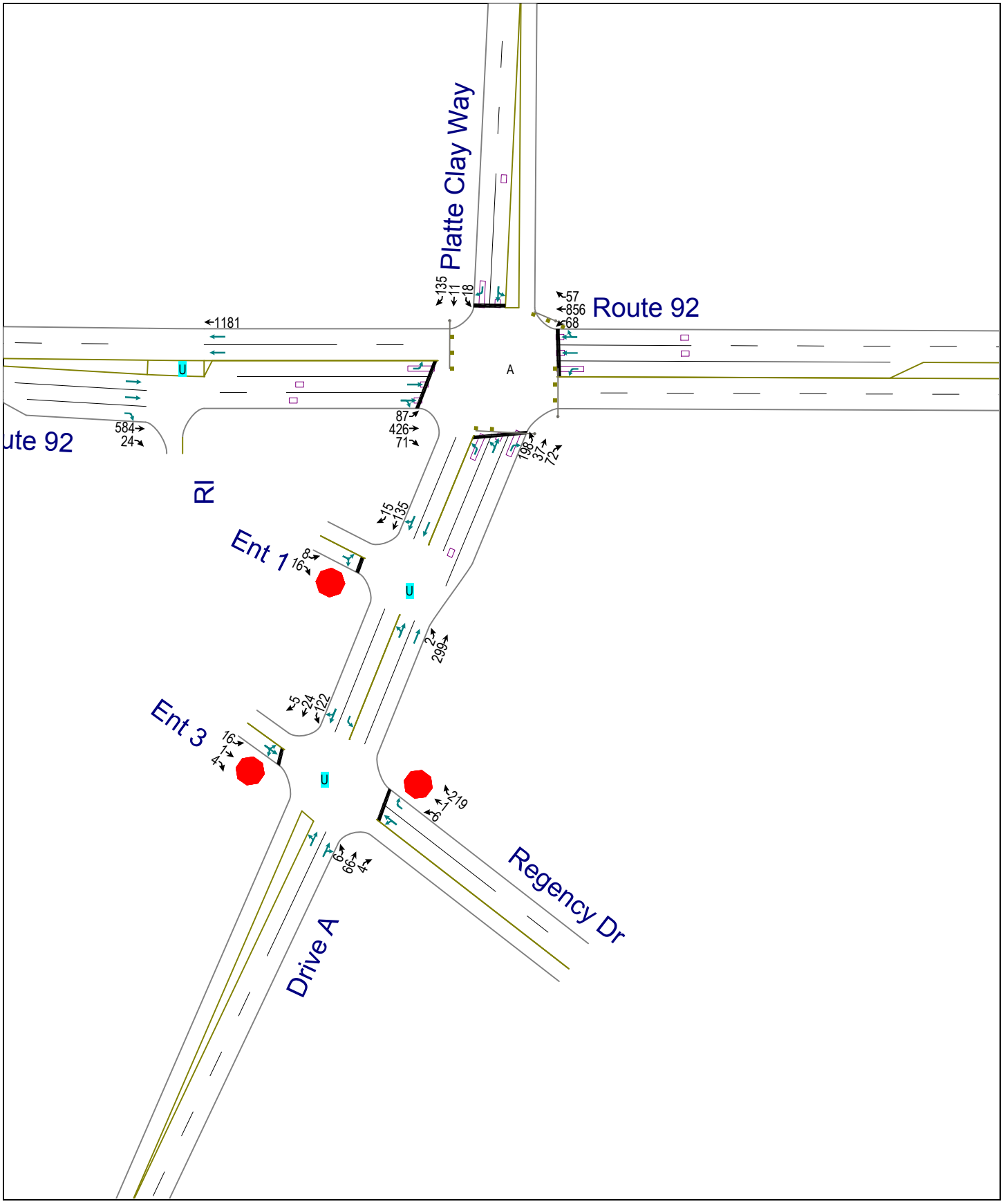
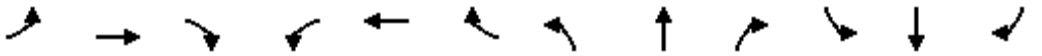
Appendix B


Platte Clay Way
Route 92
ute 92
RI
Ent 1
Ent 3
Drive A
Regency Dr
1181
135
11
18
57
856
68
584
24
87
426
71
198
37
72
15
135
8
16
2
299
5
24
122
16
1
4
219
6
63
66
4
U
A



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	87	426	71	68	856	57	198	37	72	18	11	135
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	0.95		1.00	0.95		0.95	0.95	1.00		1.00	1.00
Frt	1.00	0.98		1.00	0.99		1.00	1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	0.97	1.00		0.97	1.00
Satd. Flow (prot)	1770	3463		1770	3506		1681	1711	1583		1807	1583
Flt Permitted	0.26	1.00		0.45	1.00		0.74	0.79	1.00		0.84	1.00
Satd. Flow (perm)	482	3463		847	3506		1304	1402	1583		1567	1583
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	92	448	75	72	901	60	208	39	76	19	12	142
RTOR Reduction (vph)	0	21	0	0	7	0	0	0	57	0	0	107
Lane Group Flow (vph)	92	502	0	72	954	0	123	124	19	0	31	35
Turn Type	Perm			Perm			Perm		Perm	Perm		Perm
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2		2	6		6
Actuated Green, G (s)	41.0	41.0		41.0	41.0		16.0	16.0	16.0		16.0	16.0
Effective Green, g (s)	41.0	41.0		41.0	41.0		16.0	16.0	16.0		16.0	16.0
Actuated g/C Ratio	0.63	0.63		0.63	0.63		0.25	0.25	0.25		0.25	0.25
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0		4.0	4.0
Lane Grp Cap (vph)	304	2184		534	2211		321	345	390		386	390
v/s Ratio Prot		0.15			c0.27							
v/s Ratio Perm	0.19			0.09			c0.09	0.09	0.01		0.02	0.02
v/c Ratio	0.30	0.23		0.13	0.43		0.38	0.36	0.05		0.08	0.09
Uniform Delay, d1	5.5	5.2		4.8	6.1		20.4	20.3	18.7		18.8	18.9
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	2.5	0.2		0.5	0.6		3.4	2.9	0.2		0.4	0.5
Delay (s)	8.0	5.4		5.4	6.7		23.8	23.2	18.9		19.2	19.3
Level of Service	A	A		A	A		C	C	B		B	B
Approach Delay (s)		5.8			6.6			22.4			19.3	
Approach LOS		A			A			C			B	

Intersection Summary			
HCM Average Control Delay	9.8	HCM Level of Service	A
HCM Volume to Capacity ratio	0.42		
Actuated Cycle Length (s)	65.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	53.4%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBT	SBR
Lane Group Flow (vph)	92	523	72	961	123	124	76	31	142
v/c Ratio	0.30	0.24	0.13	0.43	0.38	0.36	0.17	0.08	0.29
Control Delay	8.8	4.9	5.6	6.7	24.6	23.9	6.7	19.6	5.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	8.8	4.9	5.6	6.7	24.6	23.9	6.7	19.6	5.9
Queue Length 50th (ft)	14	35	10	84	43	43	0	9	0
Queue Length 95th (ft)	39	54	24	118	89	88	28	28	38
Internal Link Dist (ft)		167		388		103		210	
Turn Bay Length (ft)	250		250						
Base Capacity (vph)	304	2204	535	2219	321	345	447	386	497
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.30	0.24	0.13	0.43	0.38	0.36	0.17	0.08	0.29

Intersection Summary

Movement	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Volume (veh/h)	6	66	4	122	24	5	16	1	4	6	1	219
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.95	0.95	0.95	0.95	0.92	0.92	0.92	0.92	0.95	0.92	0.95
Hourly flow rate (vph)	7	69	4	128	25	5	17	1	4	6	1	231
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)					490							
pX, platoon unblocked												
vC, conflicting volume	31			74			564	372	28	372	372	37
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	31			74			564	372	28	372	372	37
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			92			94	100	100	99	100	78
cM capacity (veh/h)	1580			1524			295	508	1041	519	508	1027

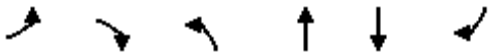
Direction, Lane #	NB 1	NB 2	SB 1	SB 2	SE 1	NW 1	NW 2
Volume Total	41	39	128	31	23	7	231
Volume Left	7	0	128	0	17	6	0
Volume Right	0	4	0	5	4	0	231
cSH	1580	1700	1524	1700	350	518	1027
Volume to Capacity	0.00	0.02	0.08	0.02	0.07	0.01	0.22
Queue Length 95th (ft)	0	0	7	0	5	1	22
Control Delay (s)	1.2	0.0	7.6	0.0	16.0	12.1	9.5
Lane LOS	A		A		C	B	A
Approach Delay (s)	0.6		6.1		16.0	9.6	
Approach LOS					C	A	

Intersection Summary				
Average Delay	7.3			
Intersection Capacity Utilization	30.2%	ICU Level of Service		A
Analysis Period (min)	15			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	584	24	0	1181	0	0
Sign Control	Free			Free	Yield	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	635	26	0	1284	0	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)				247		
pX, platoon unblocked					0.87	
vC, conflicting volume			661		1277	317
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			661		1013	317
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	100
cM capacity (veh/h)			923		204	678

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2
Volume Total	317	317	26	642	642
Volume Left	0	0	0	0	0
Volume Right	0	0	26	0	0
cSH	1700	1700	1700	1700	1700
Volume to Capacity	0.19	0.19	0.02	0.38	0.38
Queue Length 95th (ft)	0	0	0	0	0
Control Delay (s)	0.0	0.0	0.0	0.0	0.0
Lane LOS					
Approach Delay (s)	0.0			0.0	
Approach LOS					

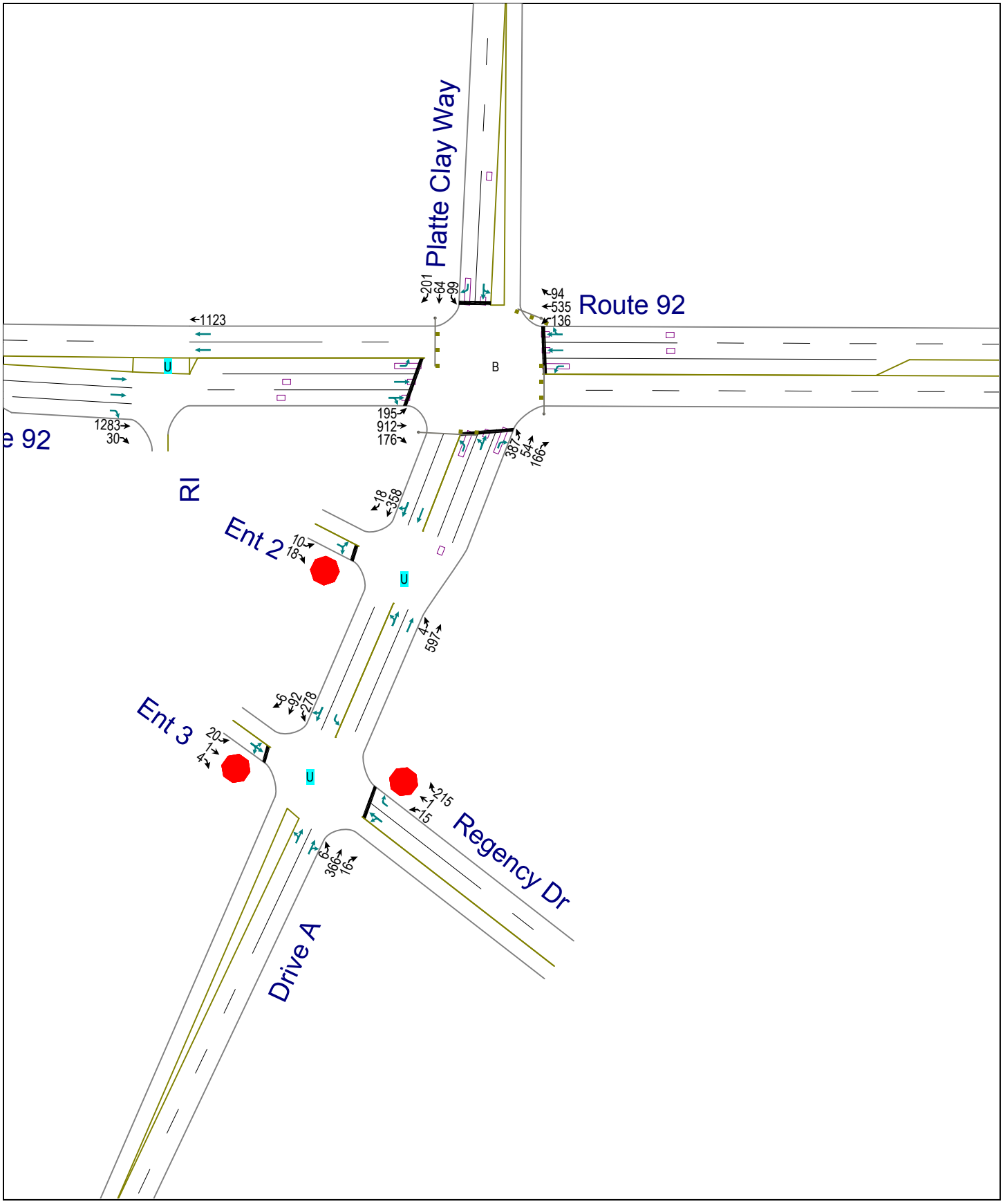
Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	36.0%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	8	16	2	299	135	15
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	9	17	2	325	147	16
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)					183	
pX, platoon unblocked						
vC, conflicting volume	322	82	163			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	322	82	163			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	99	98	100			
cM capacity (veh/h)	646	962	1413			

Direction, Lane #	EB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	26	111	217	98	65
Volume Left	9	2	0	0	0
Volume Right	17	0	0	0	16
cSH	827	1413	1700	1700	1700
Volume to Capacity	0.03	0.00	0.13	0.06	0.04
Queue Length 95th (ft)	2	0	0	0	0
Control Delay (s)	9.5	0.2	0.0	0.0	0.0
Lane LOS	A	A			
Approach Delay (s)	9.5	0.1		0.0	
Approach LOS	A				

Intersection Summary			
Average Delay	0.5		
Intersection Capacity Utilization	19.7%	ICU Level of Service	A
Analysis Period (min)	15		


Platte Clay Way
Route 92
e 92
RI
Ent 2
Ent 3
Regency Dr
Drive A
1123
1283
30
201
64
99
94
535
136
195
912
176
387
54
166
18
358
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4
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92
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6
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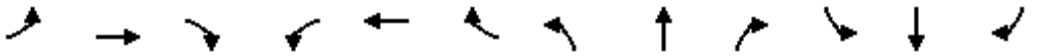
16
U
B



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	195	912	176	136	535	94	387	54	166	99	64	201
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	0.95		1.00	0.95		0.95	0.95	1.00		1.00	1.00
Frt	1.00	0.98		1.00	0.98		1.00	1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	0.96	1.00		0.97	1.00
Satd. Flow (prot)	1770	3453		1770	3460		1681	1705	1583		1808	1583
Flt Permitted	0.37	1.00		0.19	1.00		0.62	0.64	1.00		0.62	1.00
Satd. Flow (perm)	697	3453		345	3460		1099	1135	1583		1164	1583
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	205	960	185	143	563	99	407	57	175	104	67	212
RTOR Reduction (vph)	0	25	0	0	22	0	0	0	88	0	0	150
Lane Group Flow (vph)	205	1120	0	143	640	0	228	236	87	0	171	62
Turn Type	Perm			Perm			Perm		Perm	Perm		Perm
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2		2	6		6
Actuated Green, G (s)	38.0	38.0		38.0	38.0		19.0	19.0	19.0		19.0	19.0
Effective Green, g (s)	38.0	38.0		38.0	38.0		19.0	19.0	19.0		19.0	19.0
Actuated g/C Ratio	0.58	0.58		0.58	0.58		0.29	0.29	0.29		0.29	0.29
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0		4.0	4.0
Lane Grp Cap (vph)	407	2019		202	2023		321	332	463		340	463
v/s Ratio Prot		0.32			0.18							
v/s Ratio Perm	0.29			c0.41			0.21	c0.21	0.05		0.15	0.04
v/c Ratio	0.50	0.55		0.71	0.32		0.71	0.71	0.19		0.50	0.13
Uniform Delay, d1	7.9	8.3		9.6	6.9		20.5	20.5	17.2		19.1	16.9
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	4.4	1.1		18.9	0.4		12.5	12.2	0.9		5.2	0.6
Delay (s)	12.3	9.4		28.5	7.3		33.1	32.7	18.1		24.3	17.5
Level of Service	B	A		C	A		C	C	B		C	B
Approach Delay (s)		9.9			11.1			28.9			20.6	
Approach LOS		A			B			C			C	

Intersection Summary			
HCM Average Control Delay	15.3	HCM Level of Service	B
HCM Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	65.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	67.2%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBT	SBR
Lane Group Flow (vph)	205	1145	143	662	228	236	175	171	212
v/c Ratio	0.50	0.56	0.71	0.32	0.71	0.71	0.32	0.50	0.35
Control Delay	13.4	9.2	33.8	6.8	35.5	35.2	8.2	25.3	4.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	13.4	9.2	33.8	6.8	35.5	35.2	8.2	25.3	4.8
Queue Length 50th (ft)	42	122	36	56	84	87	14	56	0
Queue Length 95th (ft)	98	172	#135	83	#188	#192	56	112	42
Internal Link Dist (ft)		167		388		94		210	
Turn Bay Length (ft)	250		250						
Base Capacity (vph)	407	2044	202	2045	321	331	551	340	613
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.50	0.56	0.71	0.32	0.71	0.71	0.32	0.50	0.35

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Volume (veh/h)	6	366	16	278	92	6	20	1	4	15	1	215
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.95	0.95	0.95	0.95	0.92	0.92	0.92	0.92	0.95	0.92	0.95
Hourly flow rate (vph)	7	385	17	293	97	7	22	1	4	16	1	226
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)					481							
pX, platoon unblocked												
vC, conflicting volume	103			402			1118	1101	100	1094	1095	201
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	103			402			1118	1101	100	1094	1095	201
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			75			77	99	100	88	99	72
cM capacity (veh/h)	1486			1153			93	157	936	134	158	806

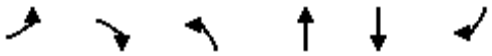
Direction, Lane #	NB 1	NB 2	SB 1	SB 2	SE 1	NW 1	NW 2
Volume Total	199	209	293	103	27	17	226
Volume Left	7	0	293	0	22	16	0
Volume Right	0	17	0	7	4	0	226
cSH	1486	1700	1153	1700	111	135	806
Volume to Capacity	0.00	0.12	0.25	0.06	0.25	0.12	0.28
Queue Length 95th (ft)	0	0	25	0	23	10	29
Control Delay (s)	0.3	0.0	9.2	0.0	47.9	35.4	11.2
Lane LOS	A		A		E	E	B
Approach Delay (s)	0.1		6.8		47.9	12.9	
Approach LOS					E	B	

Intersection Summary				
Average Delay	6.7			
Intersection Capacity Utilization	44.3%	ICU Level of Service		A
Analysis Period (min)	15			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	1283	30	0	1123	0	0
Sign Control	Free			Free	Yield	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	1395	33	0	1221	0	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)				247		
pX, platoon unblocked					0.93	
vC, conflicting volume			1427		2005	697
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			1427		1927	697
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	100
cM capacity (veh/h)			472		54	383

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2
Volume Total	697	697	33	610	610
Volume Left	0	0	0	0	0
Volume Right	0	0	33	0	0
cSH	1700	1700	1700	1700	1700
Volume to Capacity	0.41	0.41	0.02	0.36	0.36
Queue Length 95th (ft)	0	0	0	0	0
Control Delay (s)	0.0	0.0	0.0	0.0	0.0
Lane LOS					
Approach Delay (s)	0.0			0.0	
Approach LOS					

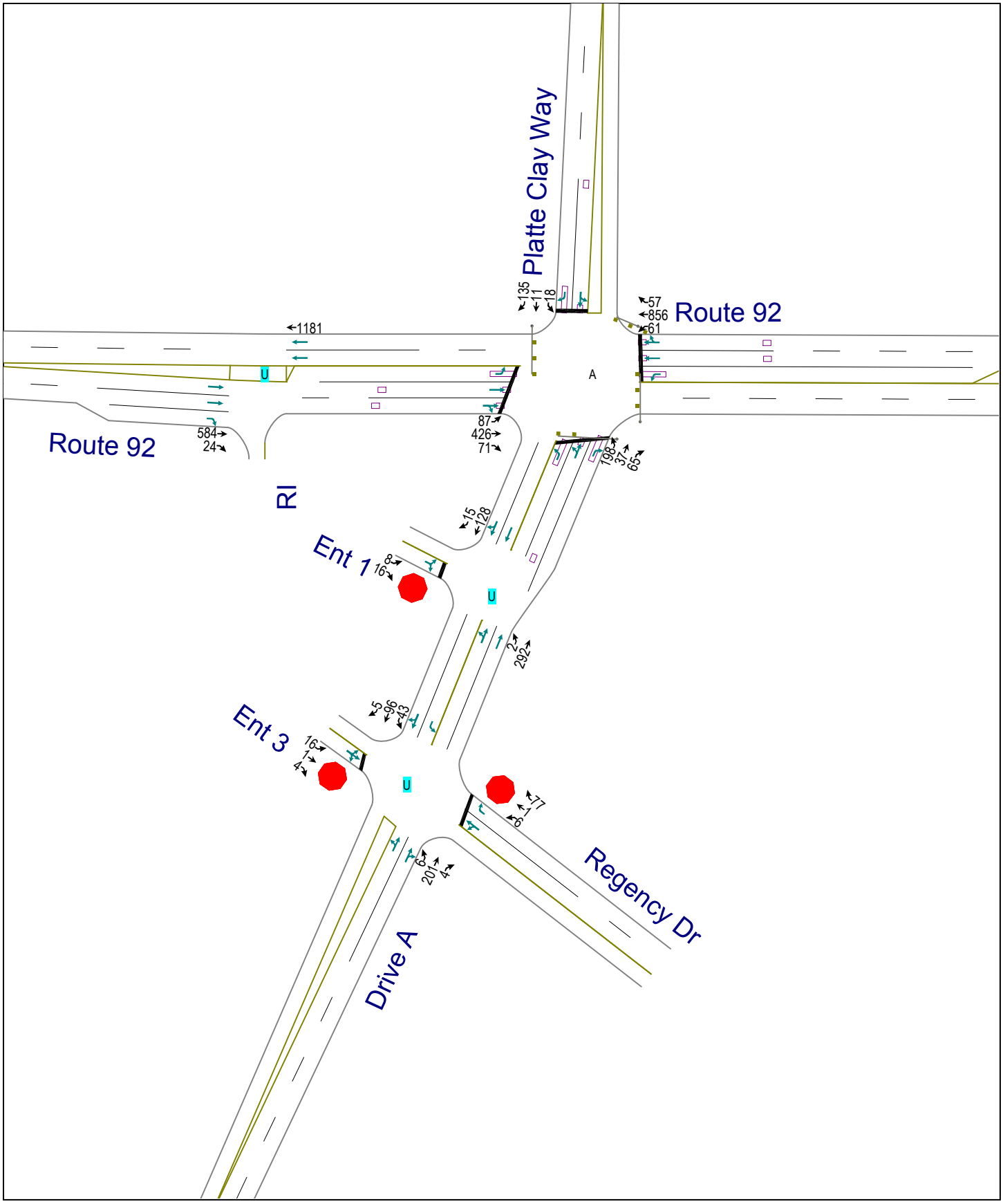
Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	38.8%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	10	18	4	597	358	18
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	11	20	4	649	389	20
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)					174	
pX, platoon unblocked						
vC, conflicting volume	732	204	409			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	732	204	409			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	97	98	100			
cM capacity (veh/h)	355	802	1147			

Direction, Lane #	EB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	30	221	433	259	149
Volume Left	11	4	0	0	0
Volume Right	20	0	0	0	20
cSH	553	1147	1700	1700	1700
Volume to Capacity	0.06	0.00	0.25	0.15	0.09
Queue Length 95th (ft)	4	0	0	0	0
Control Delay (s)	11.9	0.2	0.0	0.0	0.0
Lane LOS	B	A			
Approach Delay (s)	11.9	0.1		0.0	
Approach LOS	B				

Intersection Summary			
Average Delay	0.4		
Intersection Capacity Utilization	29.3%	ICU Level of Service	A
Analysis Period (min)	15		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Route 92
RI
Ent 1
Ent 3
Drive A
Regency Dr
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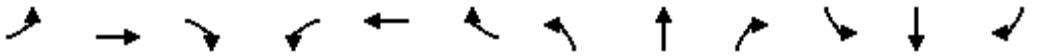


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	87	426	71	61	856	57	198	37	65	18	11	135
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	0.95		1.00	0.95		0.95	0.95	1.00		1.00	1.00
Frt	1.00	0.98		1.00	0.99		1.00	1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	0.97	1.00		0.97	1.00
Satd. Flow (prot)	1770	3463		1770	3506		1681	1711	1583		1807	1583
Flt Permitted	0.25	1.00		0.45	1.00		0.74	0.80	1.00		0.85	1.00
Satd. Flow (perm)	459	3463		834	3506		1304	1418	1583		1586	1583
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	92	448	75	64	901	60	208	39	68	19	12	142
RTOR Reduction (vph)	0	21	0	0	7	0	0	0	48	0	0	100
Lane Group Flow (vph)	92	502	0	64	954	0	123	124	20	0	31	42
Turn Type	Perm			Perm			Perm		Perm	Perm		Perm
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2		2	6		6
Actuated Green, G (s)	38.0	38.0		38.0	38.0		19.0	19.0	19.0		19.0	19.0
Effective Green, g (s)	38.0	38.0		38.0	38.0		19.0	19.0	19.0		19.0	19.0
Actuated g/C Ratio	0.58	0.58		0.58	0.58		0.29	0.29	0.29		0.29	0.29
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0		4.0	4.0
Lane Grp Cap (vph)	268	2025		488	2050		381	414	463		464	463
v/s Ratio Prot		0.15			c0.27							
v/s Ratio Perm	0.20			0.08			c0.09	0.09	0.01		0.02	0.03
v/c Ratio	0.34	0.25		0.13	0.47		0.32	0.30	0.04		0.07	0.09
Uniform Delay, d1	7.0	6.6		6.1	7.7		18.0	17.8	16.5		16.6	16.7
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	3.5	0.3		0.6	0.8		2.2	1.8	0.2		0.3	0.4
Delay (s)	10.5	6.9		6.6	8.5		20.2	19.7	16.7		16.9	17.1
Level of Service	B	A		A	A		C	B	B		B	B
Approach Delay (s)		7.4			8.3			19.2			17.1	
Approach LOS		A			A			B			B	

Intersection Summary				
HCM Average Control Delay	10.4	HCM Level of Service	B	
HCM Volume to Capacity ratio	0.42			
Actuated Cycle Length (s)	65.0	Sum of lost time (s)	8.0	
Intersection Capacity Utilization	53.4%	ICU Level of Service	A	
Analysis Period (min)	15			

c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBT	SBR
Lane Group Flow (vph)	92	523	64	961	123	124	68	31	142
v/c Ratio	0.34	0.26	0.13	0.47	0.32	0.30	0.13	0.07	0.25
Control Delay	11.5	6.3	7.0	8.5	20.9	20.3	5.9	17.2	5.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	11.5	6.3	7.0	8.5	20.9	20.3	5.9	17.2	5.0
Queue Length 50th (ft)	17	42	10	99	40	40	0	9	0
Queue Length 95th (ft)	46	64	26	138	83	82	25	26	35
Internal Link Dist (ft)		167		388		103		210	
Turn Bay Length (ft)	250		250						
Base Capacity (vph)	269	2044	488	2058	381	414	511	464	563
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.34	0.26	0.13	0.47	0.32	0.30	0.13	0.07	0.25

Intersection Summary

Movement	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Volume (veh/h)	6	201	4	43	96	5	16	1	4	6	1	77
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.95	0.95	0.95	0.95	0.92	0.92	0.92	0.92	0.95	0.92	0.95
Hourly flow rate (vph)	7	212	4	45	101	5	17	1	4	6	1	81
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)					490							
pX, platoon unblocked												
vC, conflicting volume	106			216			395	423	104	423	424	108
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	106			216			395	423	104	423	424	108
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			97			96	100	100	99	100	91
cM capacity (veh/h)	1482			1351			477	501	931	497	501	925

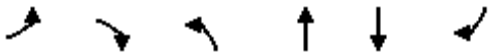
Direction, Lane #	NB 1	NB 2	SB 1	SB 2	SE 1	NW 1	NW 2
Volume Total	112	110	45	106	23	7	81
Volume Left	7	0	45	0	17	6	0
Volume Right	0	4	0	5	4	0	81
cSH	1482	1700	1351	1700	527	497	925
Volume to Capacity	0.00	0.06	0.03	0.06	0.04	0.01	0.09
Queue Length 95th (ft)	0	0	3	0	3	1	7
Control Delay (s)	0.5	0.0	7.8	0.0	12.1	12.3	9.3
Lane LOS	A		A		B	B	A
Approach Delay (s)	0.2		2.3		12.1	9.5	
Approach LOS					B	A	

Intersection Summary				
Average Delay	3.1			
Intersection Capacity Utilization	29.1%	ICU Level of Service		A
Analysis Period (min)	15			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	584	24	0	1181	0	0
Sign Control	Free			Free	Yield	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	635	26	0	1284	0	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)				247		
pX, platoon unblocked					0.85	
vC, conflicting volume			661		1277	317
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			661		972	317
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	100
cM capacity (veh/h)			923		212	678

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2
Volume Total	317	317	26	642	642
Volume Left	0	0	0	0	0
Volume Right	0	0	26	0	0
cSH	1700	1700	1700	1700	1700
Volume to Capacity	0.19	0.19	0.02	0.38	0.38
Queue Length 95th (ft)	0	0	0	0	0
Control Delay (s)	0.0	0.0	0.0	0.0	0.0
Lane LOS					
Approach Delay (s)	0.0			0.0	
Approach LOS					

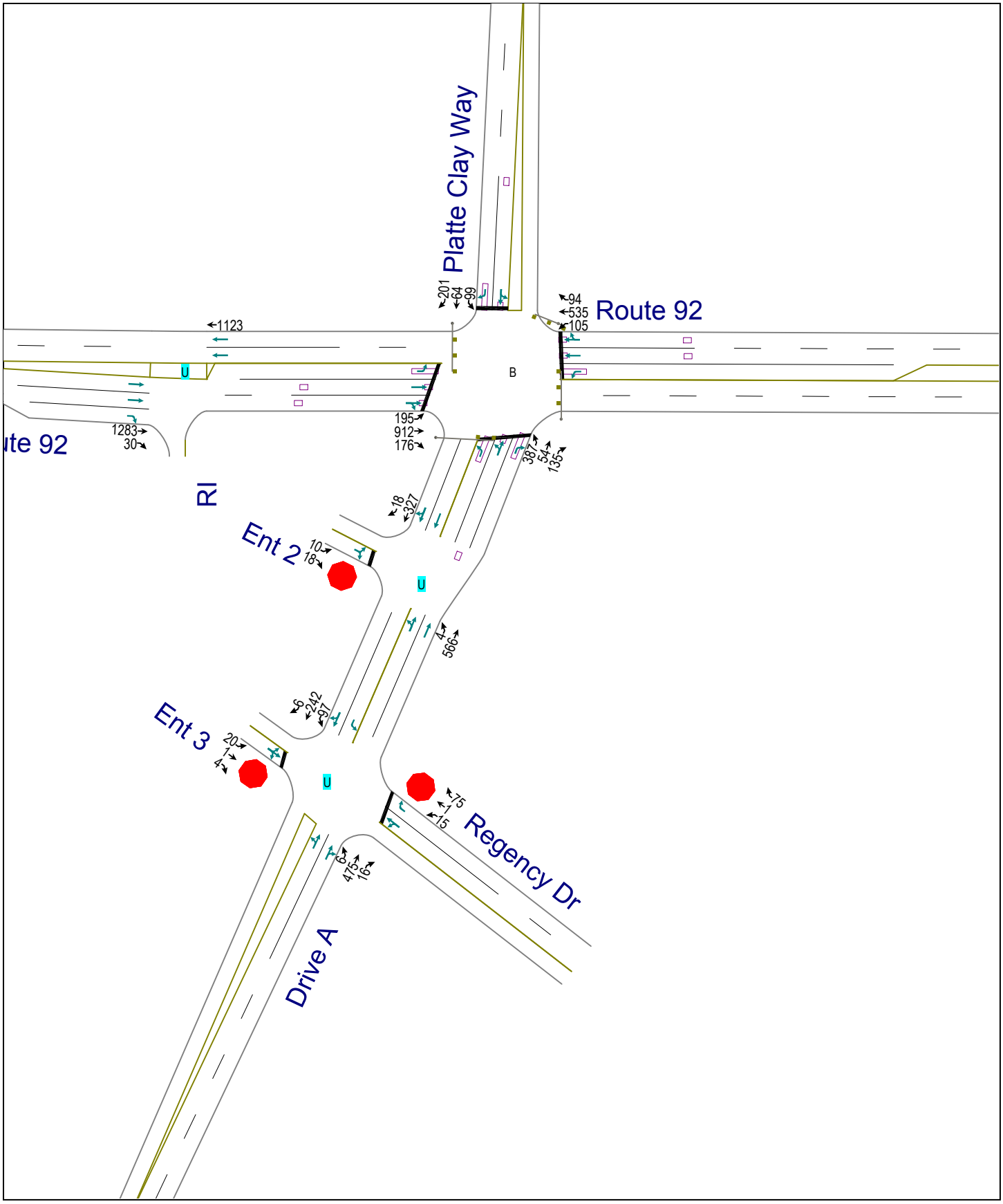
Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	36.0%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	8	16	2	292	128	15
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	9	17	2	317	139	16
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)					183	
pX, platoon unblocked						
vC, conflicting volume	310	78	155			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	310	78	155			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	99	98	100			
cM capacity (veh/h)	657	967	1422			

Direction, Lane #	EB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	26	108	212	93	63
Volume Left	9	2	0	0	0
Volume Right	17	0	0	0	16
cSH	835	1422	1700	1700	1700
Volume to Capacity	0.03	0.00	0.12	0.05	0.04
Queue Length 95th (ft)	2	0	0	0	0
Control Delay (s)	9.4	0.2	0.0	0.0	0.0
Lane LOS	A	A			
Approach Delay (s)	9.4	0.1		0.0	
Approach LOS	A				

Intersection Summary			
Average Delay	0.5		
Intersection Capacity Utilization	19.5%	ICU Level of Service	A
Analysis Period (min)	15		


Platte Clay Way
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Ent 3
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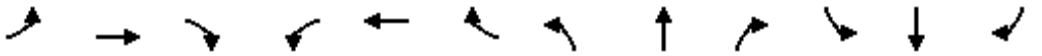


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	195	912	176	105	535	94	387	54	135	99	64	201
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	0.95		1.00	0.95		0.95	0.95	1.00		1.00	1.00
Frt	1.00	0.98		1.00	0.98		1.00	1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	0.96	1.00		0.97	1.00
Satd. Flow (prot)	1770	3453		1770	3460		1681	1705	1583		1808	1583
Flt Permitted	0.37	1.00		0.18	1.00		0.63	0.65	1.00		0.67	1.00
Satd. Flow (perm)	684	3453		326	3460		1115	1152	1583		1242	1583
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	205	960	185	111	563	99	407	57	142	104	67	212
RTOR Reduction (vph)	0	25	0	0	22	0	0	0	74	0	0	144
Lane Group Flow (vph)	205	1120	0	111	640	0	228	236	68	0	171	68
Turn Type	Perm			Perm			Perm		Perm	Perm		Perm
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2		2	6		6
Actuated Green, G (s)	36.0	36.0		36.0	36.0		21.0	21.0	21.0		21.0	21.0
Effective Green, g (s)	36.0	36.0		36.0	36.0		21.0	21.0	21.0		21.0	21.0
Actuated g/C Ratio	0.55	0.55		0.55	0.55		0.32	0.32	0.32		0.32	0.32
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0		4.0	4.0
Lane Grp Cap (vph)	379	1912		181	1916		360	372	511		401	511
v/s Ratio Prot		0.32			0.19							
v/s Ratio Perm	0.30			c0.34			0.20	c0.20	0.04		0.14	0.04
v/c Ratio	0.54	0.59		0.61	0.33		0.63	0.63	0.13		0.43	0.13
Uniform Delay, d1	9.2	9.6		9.8	7.9		18.7	18.7	15.6		17.3	15.6
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	5.5	1.3		14.6	0.5		8.2	8.0	0.5		3.3	0.5
Delay (s)	14.7	10.9		24.3	8.4		26.9	26.7	16.1		20.6	16.1
Level of Service	B	B		C	A		C	C	B		C	B
Approach Delay (s)		11.5			10.7			24.3			18.1	
Approach LOS		B			B			C			B	

Intersection Summary			
HCM Average Control Delay	14.6	HCM Level of Service	B
HCM Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	65.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	65.4%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBT	SBR
Lane Group Flow (vph)	205	1145	111	662	228	236	142	171	212
v/c Ratio	0.54	0.59	0.61	0.34	0.63	0.63	0.24	0.43	0.32
Control Delay	15.9	10.6	29.1	7.9	28.4	28.1	6.8	21.4	4.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	15.9	10.6	29.1	7.9	28.4	28.1	6.8	21.4	4.3
Queue Length 50th (ft)	47	135	27	62	80	82	9	52	0
Queue Length 95th (ft)	110	189	#107	92	#163	#165	43	103	40
Internal Link Dist (ft)		167		388		94		210	
Turn Bay Length (ft)	250		250						
Base Capacity (vph)	379	1938	181	1939	360	372	586	401	655
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.54	0.59	0.61	0.34	0.63	0.63	0.24	0.43	0.32

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Volume (veh/h)	6	475	16	97	242	6	20	1	4	15	1	75
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.95	0.95	0.95	0.95	0.92	0.92	0.92	0.92	0.95	0.92	0.95
Hourly flow rate (vph)	7	500	17	102	255	7	22	1	4	16	1	79
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)					481							
pX, platoon unblocked												
vC, conflicting volume	261			517			805	992	258	985	987	258
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	261			517			805	992	258	985	987	258
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			90			90	100	99	91	100	89
cM capacity (veh/h)	1300			1045			225	219	741	185	221	741

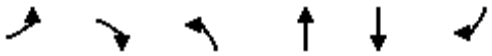
Direction, Lane #	NB 1	NB 2	SB 1	SB 2	SE 1	NW 1	NW 2
Volume Total	257	267	102	261	27	17	79
Volume Left	7	0	102	0	22	16	0
Volume Right	0	17	0	7	4	0	79
cSH	1300	1700	1045	1700	253	187	741
Volume to Capacity	0.01	0.16	0.10	0.15	0.11	0.09	0.11
Queue Length 95th (ft)	0	0	8	0	9	7	9
Control Delay (s)	0.2	0.0	8.8	0.0	21.0	26.2	10.4
Lane LOS	A		A		C	D	B
Approach Delay (s)	0.1		2.5		21.0	13.2	
Approach LOS					C	B	

Intersection Summary				
Average Delay	2.8			
Intersection Capacity Utilization	45.0%	ICU Level of Service		A
Analysis Period (min)	15			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	1283	30	0	1123	0	0
Sign Control	Free			Free	Yield	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	1395	33	0	1221	0	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)				247		
pX, platoon unblocked					0.92	
vC, conflicting volume			1427		2005	697
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			1427		1918	697
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	100
cM capacity (veh/h)			472		54	383

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2
Volume Total	697	697	33	610	610
Volume Left	0	0	0	0	0
Volume Right	0	0	33	0	0
cSH	1700	1700	1700	1700	1700
Volume to Capacity	0.41	0.41	0.02	0.36	0.36
Queue Length 95th (ft)	0	0	0	0	0
Control Delay (s)	0.0	0.0	0.0	0.0	0.0
Lane LOS					
Approach Delay (s)	0.0			0.0	
Approach LOS					

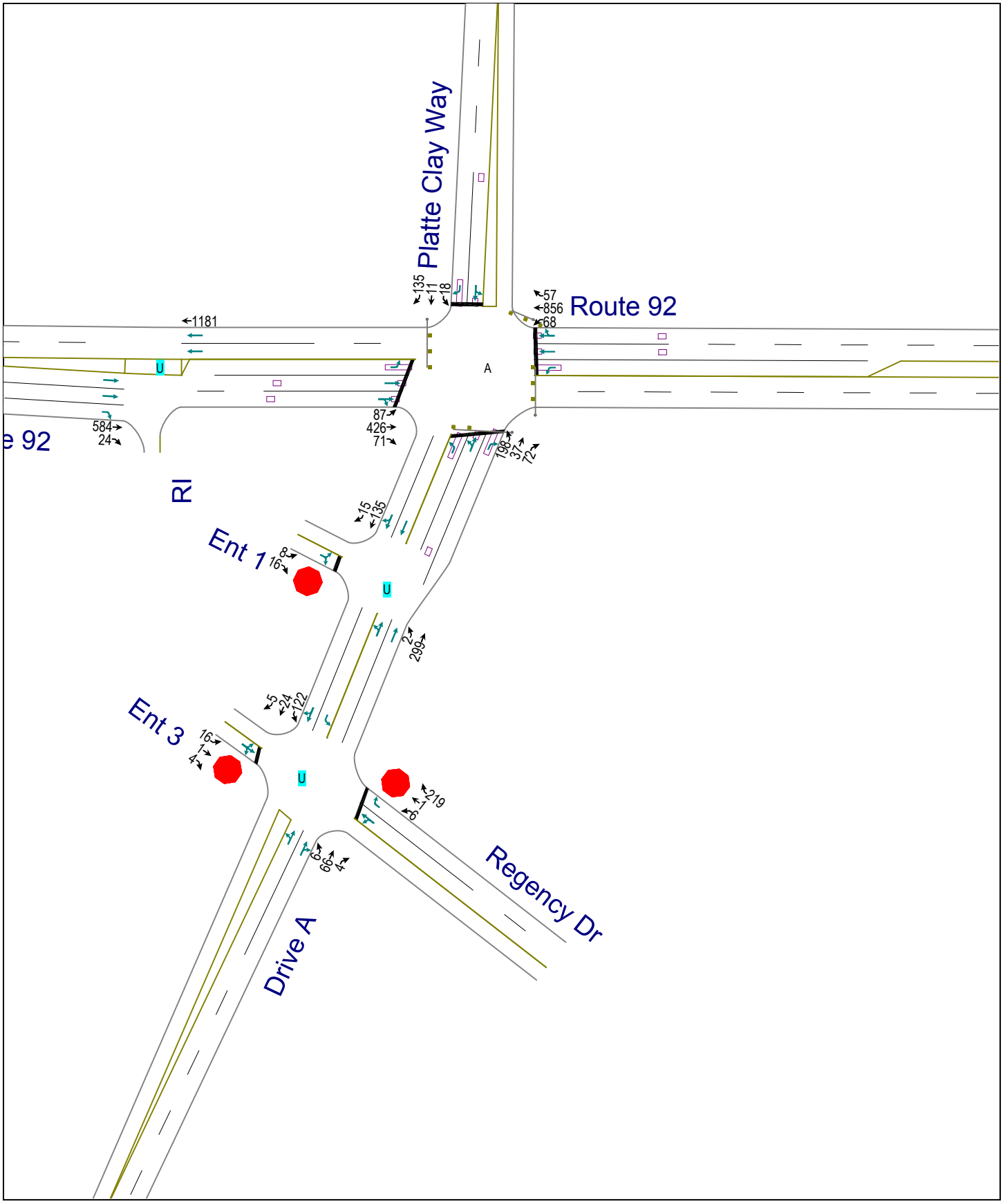
Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	38.8%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	10	18	4	566	327	18
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	11	20	4	615	355	20
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)					174	
pX, platoon unblocked						
vC, conflicting volume	682	188	375			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	682	188	375			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	97	98	100			
cM capacity (veh/h)	382	823	1180			

Direction, Lane #	EB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	30	209	410	237	138
Volume Left	11	4	0	0	0
Volume Right	20	0	0	0	20
cSH	583	1180	1700	1700	1700
Volume to Capacity	0.05	0.00	0.24	0.14	0.08
Queue Length 95th (ft)	4	0	0	0	0
Control Delay (s)	11.5	0.2	0.0	0.0	0.0
Lane LOS	B	A			
Approach Delay (s)	11.5	0.1		0.0	
Approach LOS	B				

Intersection Summary			
Average Delay	0.4		
Intersection Capacity Utilization	28.4%	ICU Level of Service	A
Analysis Period (min)	15		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Ent 3
Drive A
Regency Dr
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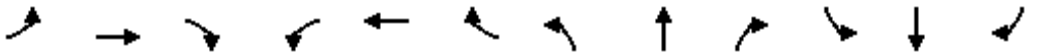


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	87	426	71	68	856	57	198	37	72	18	11	135
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	0.95		1.00	0.95		0.95	0.95	1.00		1.00	1.00
Frt	1.00	0.98		1.00	0.99		1.00	1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	0.97	1.00		0.97	1.00
Satd. Flow (prot)	1770	3463		1770	3506		1681	1711	1583		1807	1583
Flt Permitted	0.26	1.00		0.45	1.00		0.74	0.79	1.00		0.84	1.00
Satd. Flow (perm)	482	3463		847	3506		1304	1402	1583		1567	1583
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	92	448	75	72	901	60	208	39	76	19	12	142
RTOR Reduction (vph)	0	21	0	0	7	0	0	0	57	0	0	107
Lane Group Flow (vph)	92	502	0	72	954	0	123	124	19	0	31	35
Turn Type	Perm			Perm			Perm		Perm	Perm		Perm
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2		2	6		6
Actuated Green, G (s)	41.0	41.0		41.0	41.0		16.0	16.0	16.0		16.0	16.0
Effective Green, g (s)	41.0	41.0		41.0	41.0		16.0	16.0	16.0		16.0	16.0
Actuated g/C Ratio	0.63	0.63		0.63	0.63		0.25	0.25	0.25		0.25	0.25
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0		4.0	4.0
Lane Grp Cap (vph)	304	2184		534	2211		321	345	390		386	390
v/s Ratio Prot		0.15			c0.27							
v/s Ratio Perm	0.19			0.09			c0.09	0.09	0.01		0.02	0.02
v/c Ratio	0.30	0.23		0.13	0.43		0.38	0.36	0.05		0.08	0.09
Uniform Delay, d1	5.5	5.2		4.8	6.1		20.4	20.3	18.7		18.8	18.9
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	2.5	0.2		0.5	0.6		3.4	2.9	0.2		0.4	0.5
Delay (s)	8.0	5.4		5.4	6.7		23.8	23.2	18.9		19.2	19.3
Level of Service	A	A		A	A		C	C	B		B	B
Approach Delay (s)		5.8			6.6			22.4			19.3	
Approach LOS		A			A			C			B	

Intersection Summary			
HCM Average Control Delay	9.8	HCM Level of Service	A
HCM Volume to Capacity ratio	0.42		
Actuated Cycle Length (s)	65.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	53.4%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBT	SBR
Lane Group Flow (vph)	92	523	72	961	123	124	76	31	142
v/c Ratio	0.30	0.24	0.13	0.43	0.38	0.36	0.17	0.08	0.29
Control Delay	8.8	4.9	5.6	6.7	24.6	23.9	6.7	19.6	5.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	8.8	4.9	5.6	6.7	24.6	23.9	6.7	19.6	5.9
Queue Length 50th (ft)	14	35	10	84	43	43	0	9	0
Queue Length 95th (ft)	39	54	24	118	89	88	28	28	38
Internal Link Dist (ft)		167		388		103		210	
Turn Bay Length (ft)	250		250						
Base Capacity (vph)	304	2204	535	2219	321	345	447	386	497
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.30	0.24	0.13	0.43	0.38	0.36	0.17	0.08	0.29

Intersection Summary

Movement	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Volume (veh/h)	6	66	4	122	24	5	16	1	4	6	1	219
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.95	0.95	0.95	0.95	0.92	0.92	0.92	0.92	0.95	0.92	0.95
Hourly flow rate (vph)	7	69	4	128	25	5	17	1	4	6	1	231
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)					490							
pX, platoon unblocked												
vC, conflicting volume	31			74			564	372	28	372	372	37
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	31			74			564	372	28	372	372	37
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			92			94	100	100	99	100	78
cM capacity (veh/h)	1580			1524			295	508	1041	519	508	1027

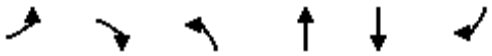
Direction, Lane #	NB 1	NB 2	SB 1	SB 2	SE 1	NW 1	NW 2
Volume Total	41	39	128	31	23	7	231
Volume Left	7	0	128	0	17	6	0
Volume Right	0	4	0	5	4	0	231
cSH	1580	1700	1524	1700	350	518	1027
Volume to Capacity	0.00	0.02	0.08	0.02	0.07	0.01	0.22
Queue Length 95th (ft)	0	0	7	0	5	1	22
Control Delay (s)	1.2	0.0	7.6	0.0	16.0	12.1	9.5
Lane LOS	A		A		C	B	A
Approach Delay (s)	0.6		6.1		16.0	9.6	
Approach LOS					C	A	

Intersection Summary				
Average Delay	7.3			
Intersection Capacity Utilization	30.2%	ICU Level of Service		A
Analysis Period (min)	15			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	584	24	0	1181	0	0
Sign Control	Free			Free	Yield	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	635	26	0	1284	0	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)				247		
pX, platoon unblocked					0.87	
vC, conflicting volume			661		1277	317
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			661		1013	317
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	100
cM capacity (veh/h)			923		204	678

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2
Volume Total	317	317	26	642	642
Volume Left	0	0	0	0	0
Volume Right	0	0	26	0	0
cSH	1700	1700	1700	1700	1700
Volume to Capacity	0.19	0.19	0.02	0.38	0.38
Queue Length 95th (ft)	0	0	0	0	0
Control Delay (s)	0.0	0.0	0.0	0.0	0.0
Lane LOS					
Approach Delay (s)	0.0			0.0	
Approach LOS					

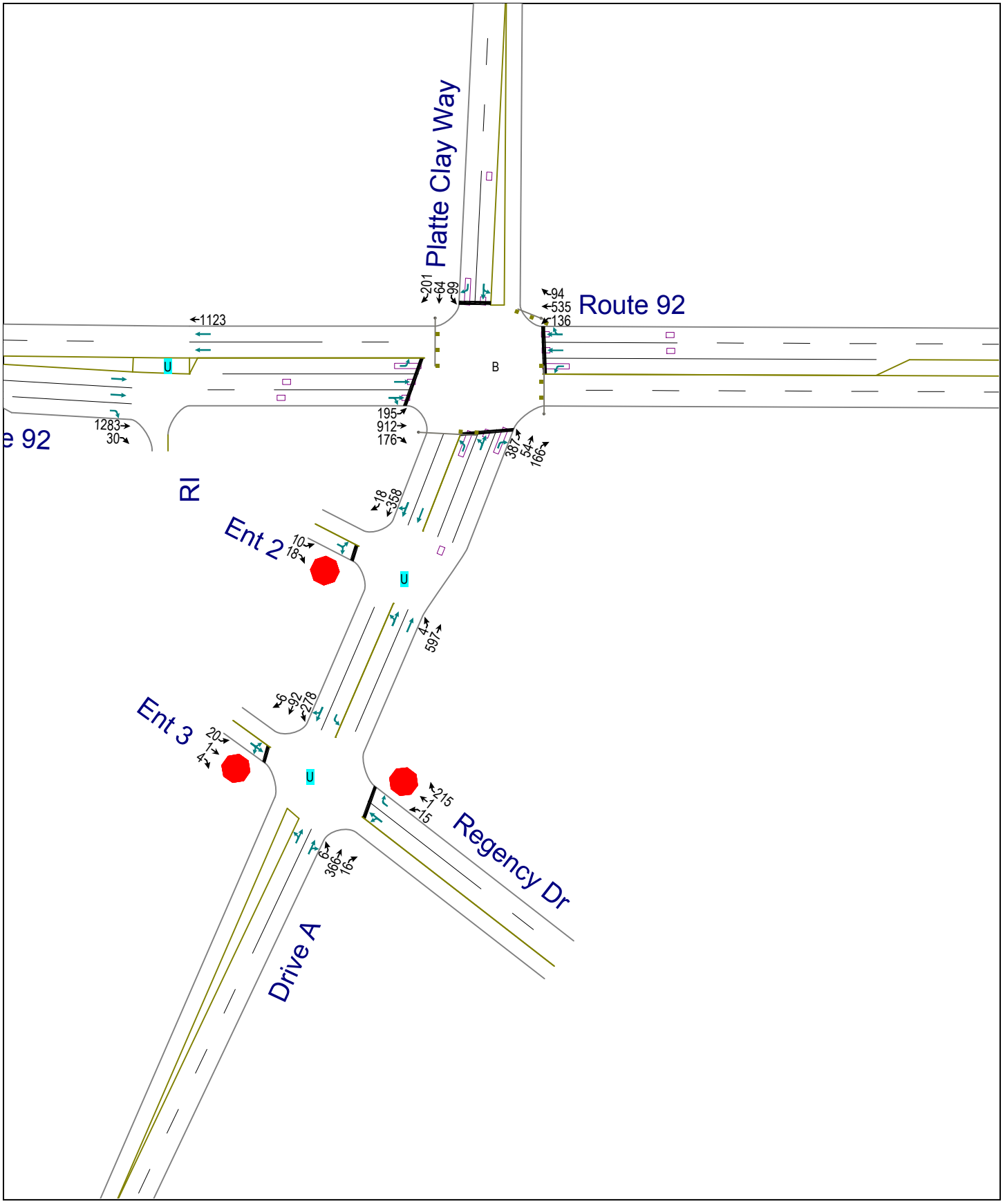
Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	36.0%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	8	16	2	299	135	15
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	9	17	2	325	147	16
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)					183	
pX, platoon unblocked						
vC, conflicting volume	322	82	163			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	322	82	163			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	99	98	100			
cM capacity (veh/h)	646	962	1413			

Direction, Lane #	EB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	26	111	217	98	65
Volume Left	9	2	0	0	0
Volume Right	17	0	0	0	16
cSH	827	1413	1700	1700	1700
Volume to Capacity	0.03	0.00	0.13	0.06	0.04
Queue Length 95th (ft)	2	0	0	0	0
Control Delay (s)	9.5	0.2	0.0	0.0	0.0
Lane LOS	A	A			
Approach Delay (s)	9.5	0.1		0.0	
Approach LOS	A				

Intersection Summary			
Average Delay	0.5		
Intersection Capacity Utilization	19.7%	ICU Level of Service	A
Analysis Period (min)	15		


Platte Clay Way
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Ent 2
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Regency Dr
Drive A
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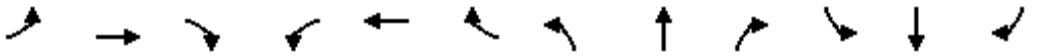


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	195	912	176	136	535	94	387	54	166	99	64	201
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	0.95		1.00	0.95		0.95	0.95	1.00		1.00	1.00
Frt	1.00	0.98		1.00	0.98		1.00	1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	0.96	1.00		0.97	1.00
Satd. Flow (prot)	1770	3453		1770	3460		1681	1705	1583		1808	1583
Flt Permitted	0.37	1.00		0.19	1.00		0.62	0.64	1.00		0.62	1.00
Satd. Flow (perm)	697	3453		345	3460		1099	1135	1583		1164	1583
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	205	960	185	143	563	99	407	57	175	104	67	212
RTOR Reduction (vph)	0	25	0	0	22	0	0	0	88	0	0	150
Lane Group Flow (vph)	205	1120	0	143	640	0	228	236	87	0	171	62
Turn Type	Perm			Perm			Perm		Perm	Perm		Perm
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2		2	6		6
Actuated Green, G (s)	38.0	38.0		38.0	38.0		19.0	19.0	19.0		19.0	19.0
Effective Green, g (s)	38.0	38.0		38.0	38.0		19.0	19.0	19.0		19.0	19.0
Actuated g/C Ratio	0.58	0.58		0.58	0.58		0.29	0.29	0.29		0.29	0.29
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0		4.0	4.0
Lane Grp Cap (vph)	407	2019		202	2023		321	332	463		340	463
v/s Ratio Prot		0.32			0.18							
v/s Ratio Perm	0.29			c0.41			0.21	c0.21	0.05		0.15	0.04
v/c Ratio	0.50	0.55		0.71	0.32		0.71	0.71	0.19		0.50	0.13
Uniform Delay, d1	7.9	8.3		9.6	6.9		20.5	20.5	17.2		19.1	16.9
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	4.4	1.1		18.9	0.4		12.5	12.2	0.9		5.2	0.6
Delay (s)	12.3	9.4		28.5	7.3		33.1	32.7	18.1		24.3	17.5
Level of Service	B	A		C	A		C	C	B		C	B
Approach Delay (s)		9.9			11.1			28.9			20.6	
Approach LOS		A			B			C			C	

Intersection Summary			
HCM Average Control Delay	15.3	HCM Level of Service	B
HCM Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	65.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	67.2%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBT	SBR
Lane Group Flow (vph)	205	1145	143	662	228	236	175	171	212
v/c Ratio	0.50	0.56	0.71	0.32	0.71	0.71	0.32	0.50	0.35
Control Delay	13.4	9.2	33.8	6.8	35.5	35.2	8.2	25.3	4.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	13.4	9.2	33.8	6.8	35.5	35.2	8.2	25.3	4.8
Queue Length 50th (ft)	42	122	36	56	84	87	14	56	0
Queue Length 95th (ft)	98	172	#135	83	#188	#192	56	112	42
Internal Link Dist (ft)		167		388		94		210	
Turn Bay Length (ft)	250		250						
Base Capacity (vph)	407	2044	202	2045	321	331	551	340	613
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.50	0.56	0.71	0.32	0.71	0.71	0.32	0.50	0.35

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Volume (veh/h)	6	366	16	278	92	6	20	1	4	15	1	215
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.95	0.95	0.95	0.95	0.92	0.92	0.92	0.92	0.95	0.92	0.95
Hourly flow rate (vph)	7	385	17	293	97	7	22	1	4	16	1	226
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)					481							
pX, platoon unblocked												
vC, conflicting volume	103			402			1118	1101	100	1094	1095	201
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	103			402			1118	1101	100	1094	1095	201
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			75			77	99	100	88	99	72
cM capacity (veh/h)	1486			1153			93	157	936	134	158	806

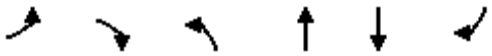
Direction, Lane #	NB 1	NB 2	SB 1	SB 2	SE 1	NW 1	NW 2
Volume Total	199	209	293	103	27	17	226
Volume Left	7	0	293	0	22	16	0
Volume Right	0	17	0	7	4	0	226
cSH	1486	1700	1153	1700	111	135	806
Volume to Capacity	0.00	0.12	0.25	0.06	0.25	0.12	0.28
Queue Length 95th (ft)	0	0	25	0	23	10	29
Control Delay (s)	0.3	0.0	9.2	0.0	47.9	35.4	11.2
Lane LOS	A		A		E	E	B
Approach Delay (s)	0.1		6.8		47.9	12.9	
Approach LOS					E	B	

Intersection Summary				
Average Delay	6.7			
Intersection Capacity Utilization	44.3%	ICU Level of Service		A
Analysis Period (min)	15			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	1283	30	0	1123	0	0
Sign Control	Free			Free	Yield	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	1395	33	0	1221	0	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)				247		
pX, platoon unblocked					0.93	
vC, conflicting volume			1427		2005	697
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			1427		1927	697
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	100
cM capacity (veh/h)			472		54	383

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2
Volume Total	697	697	33	610	610
Volume Left	0	0	0	0	0
Volume Right	0	0	33	0	0
cSH	1700	1700	1700	1700	1700
Volume to Capacity	0.41	0.41	0.02	0.36	0.36
Queue Length 95th (ft)	0	0	0	0	0
Control Delay (s)	0.0	0.0	0.0	0.0	0.0
Lane LOS					
Approach Delay (s)	0.0			0.0	
Approach LOS					

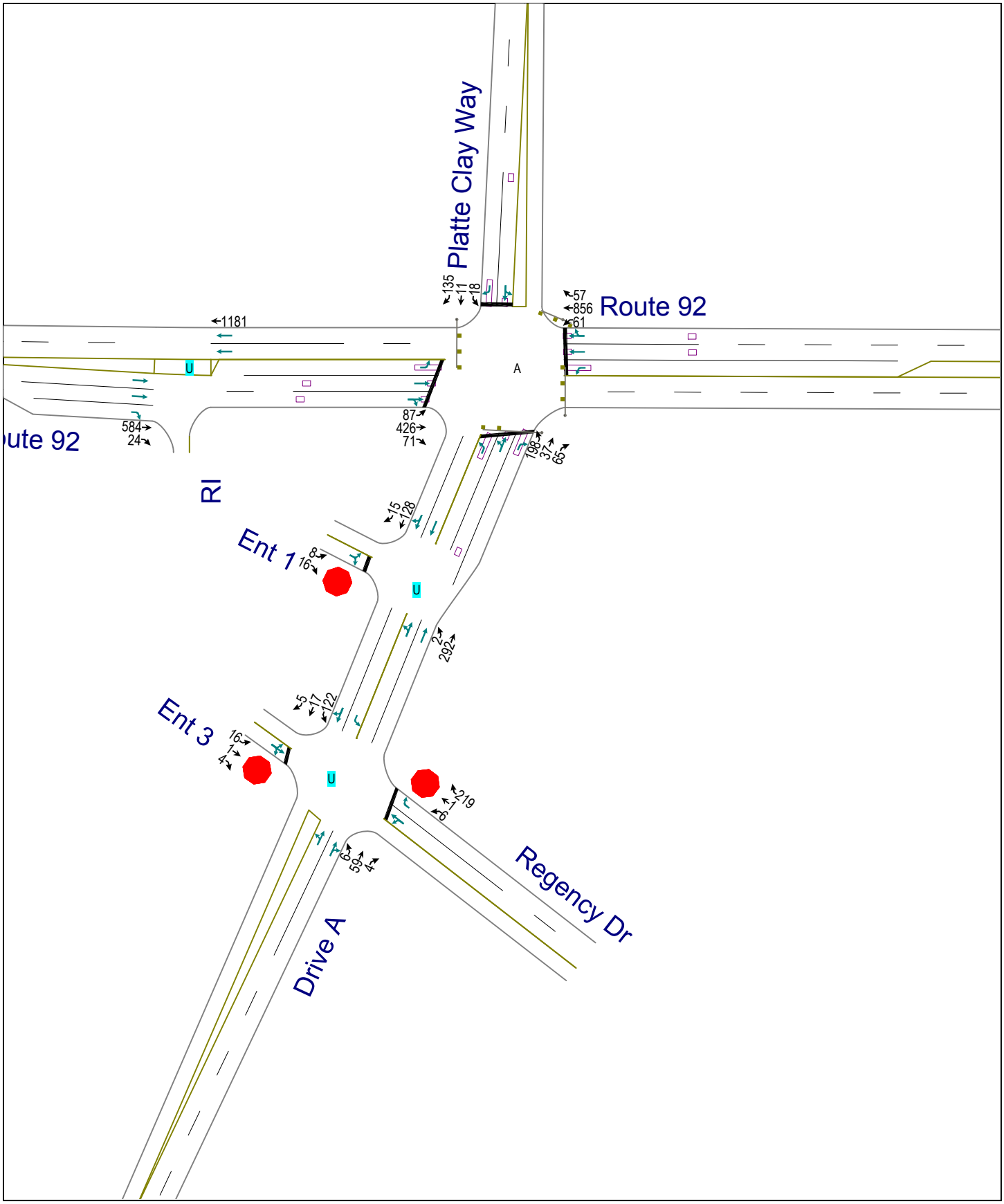
Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	38.8%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	10	18	4	597	358	18
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	11	20	4	649	389	20
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)					174	
pX, platoon unblocked						
vC, conflicting volume	732	204	409			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	732	204	409			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	97	98	100			
cM capacity (veh/h)	355	802	1147			

Direction, Lane #	EB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	30	221	433	259	149
Volume Left	11	4	0	0	0
Volume Right	20	0	0	0	20
cSH	553	1147	1700	1700	1700
Volume to Capacity	0.06	0.00	0.25	0.15	0.09
Queue Length 95th (ft)	4	0	0	0	0
Control Delay (s)	11.9	0.2	0.0	0.0	0.0
Lane LOS	B	A			
Approach Delay (s)	11.9	0.1		0.0	
Approach LOS	B				

Intersection Summary			
Average Delay	0.4		
Intersection Capacity Utilization	29.3%	ICU Level of Service	A
Analysis Period (min)	15		


Platte Clay Way
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Ent 3
Drive A
Regency Dr
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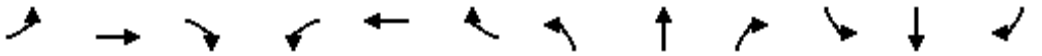


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	87	426	71	61	856	57	198	37	65	18	11	135
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	0.95		1.00	0.95		0.95	0.95	1.00		1.00	1.00
Frt	1.00	0.98		1.00	0.99		1.00	1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	0.97	1.00		0.97	1.00
Satd. Flow (prot)	1770	3463		1770	3506		1681	1711	1583		1807	1583
Flt Permitted	0.25	1.00		0.45	1.00		0.74	0.80	1.00		0.85	1.00
Satd. Flow (perm)	459	3463		834	3506		1304	1418	1583		1586	1583
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	92	448	75	64	901	60	208	39	68	19	12	142
RTOR Reduction (vph)	0	21	0	0	7	0	0	0	48	0	0	100
Lane Group Flow (vph)	92	502	0	64	954	0	123	124	20	0	31	42
Turn Type	Perm			Perm			Perm		Perm	Perm		Perm
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2		2	6		6
Actuated Green, G (s)	38.0	38.0		38.0	38.0		19.0	19.0	19.0		19.0	19.0
Effective Green, g (s)	38.0	38.0		38.0	38.0		19.0	19.0	19.0		19.0	19.0
Actuated g/C Ratio	0.58	0.58		0.58	0.58		0.29	0.29	0.29		0.29	0.29
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0		4.0	4.0
Lane Grp Cap (vph)	268	2025		488	2050		381	414	463		464	463
v/s Ratio Prot		0.15			c0.27							
v/s Ratio Perm	0.20			0.08			c0.09	0.09	0.01		0.02	0.03
v/c Ratio	0.34	0.25		0.13	0.47		0.32	0.30	0.04		0.07	0.09
Uniform Delay, d1	7.0	6.6		6.1	7.7		18.0	17.8	16.5		16.6	16.7
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	3.5	0.3		0.6	0.8		2.2	1.8	0.2		0.3	0.4
Delay (s)	10.5	6.9		6.6	8.5		20.2	19.7	16.7		16.9	17.1
Level of Service	B	A		A	A		C	B	B		B	B
Approach Delay (s)		7.4			8.3			19.2			17.1	
Approach LOS		A			A			B			B	

Intersection Summary				
HCM Average Control Delay	10.4	HCM Level of Service	B	
HCM Volume to Capacity ratio	0.42			
Actuated Cycle Length (s)	65.0	Sum of lost time (s)	8.0	
Intersection Capacity Utilization	53.4%	ICU Level of Service	A	
Analysis Period (min)	15			

c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBT	SBR
Lane Group Flow (vph)	92	523	64	961	123	124	68	31	142
v/c Ratio	0.34	0.26	0.13	0.47	0.32	0.30	0.13	0.07	0.25
Control Delay	11.5	6.3	7.0	8.5	20.9	20.3	5.9	17.2	5.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	11.5	6.3	7.0	8.5	20.9	20.3	5.9	17.2	5.0
Queue Length 50th (ft)	17	42	10	99	40	40	0	9	0
Queue Length 95th (ft)	46	64	26	138	83	82	25	26	35
Internal Link Dist (ft)		167		388		103		210	
Turn Bay Length (ft)	250		250						
Base Capacity (vph)	269	2044	488	2058	381	414	511	464	563
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.34	0.26	0.13	0.47	0.32	0.30	0.13	0.07	0.25

Intersection Summary

Movement	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Volume (veh/h)	6	59	4	122	17	5	16	1	4	6	1	219
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.95	0.95	0.95	0.95	0.92	0.92	0.92	0.92	0.95	0.92	0.95
Hourly flow rate (vph)	7	62	4	128	18	5	17	1	4	6	1	231
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)					490							
pX, platoon unblocked												
vC, conflicting volume	23			66			553	357	21	357	357	33
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	23			66			553	357	21	357	357	33
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			92			94	100	100	99	100	78
cM capacity (veh/h)	1590			1533			301	518	1052	532	518	1033

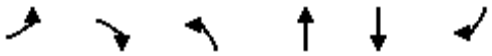
Direction, Lane #	NB 1	NB 2	SB 1	SB 2	SE 1	NW 1	NW 2
Volume Total	38	35	128	23	23	7	231
Volume Left	7	0	128	0	17	6	0
Volume Right	0	4	0	5	4	0	231
cSH	1590	1700	1533	1700	357	530	1033
Volume to Capacity	0.00	0.02	0.08	0.01	0.06	0.01	0.22
Queue Length 95th (ft)	0	0	7	0	5	1	21
Control Delay (s)	1.3	0.0	7.6	0.0	15.8	11.9	9.5
Lane LOS	A		A		C	B	A
Approach Delay (s)	0.7		6.4		15.8	9.6	
Approach LOS					C	A	

Intersection Summary				
Average Delay	7.5			
Intersection Capacity Utilization	30.2%	ICU Level of Service		A
Analysis Period (min)	15			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	584	24	0	1181	0	0
Sign Control	Free			Free	Yield	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	635	26	0	1284	0	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)				247		
pX, platoon unblocked					0.85	
vC, conflicting volume			661		1277	317
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			661		972	317
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	100
cM capacity (veh/h)			923		212	678

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2
Volume Total	317	317	26	642	642
Volume Left	0	0	0	0	0
Volume Right	0	0	26	0	0
cSH	1700	1700	1700	1700	1700
Volume to Capacity	0.19	0.19	0.02	0.38	0.38
Queue Length 95th (ft)	0	0	0	0	0
Control Delay (s)	0.0	0.0	0.0	0.0	0.0
Lane LOS					
Approach Delay (s)	0.0			0.0	
Approach LOS					

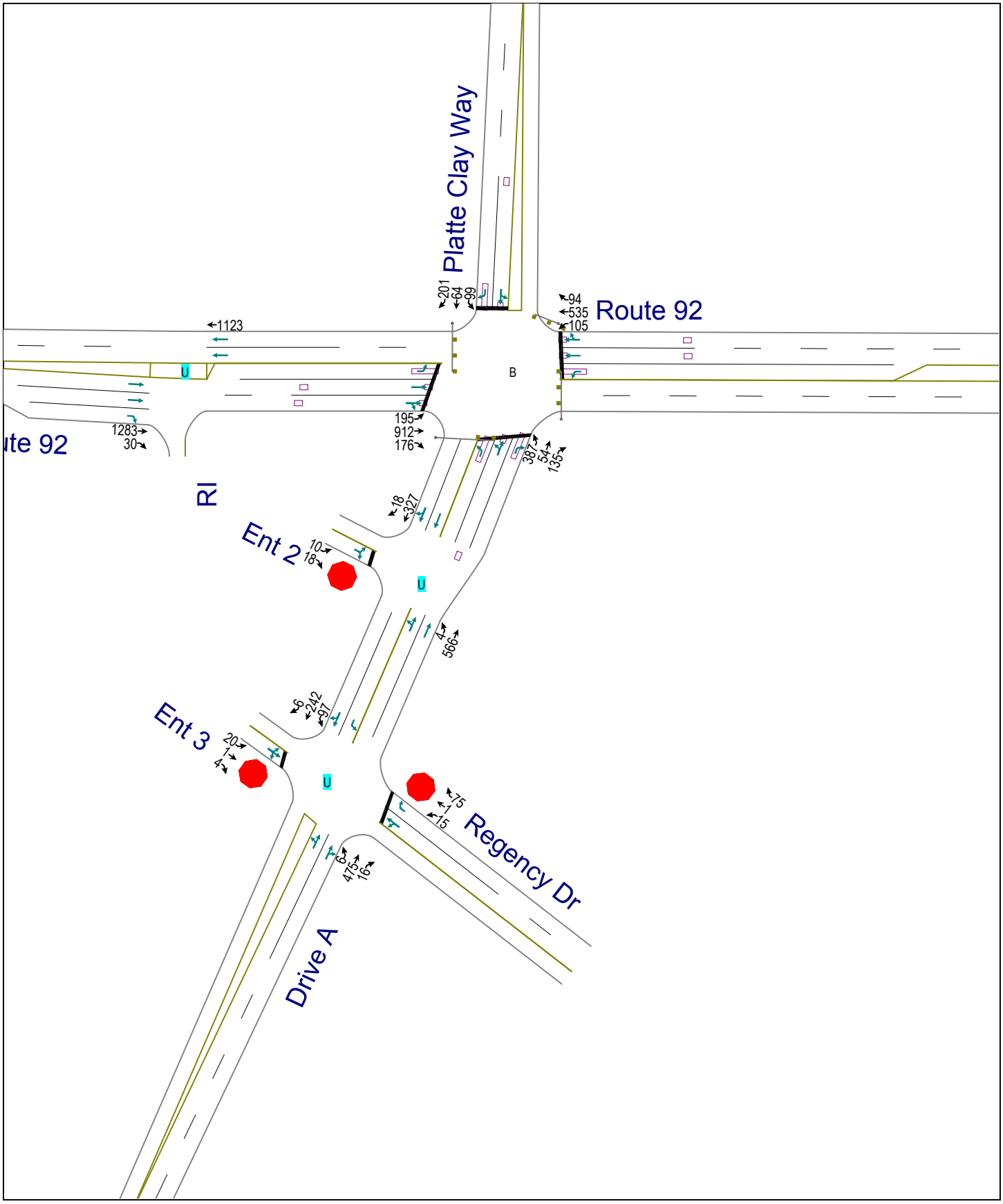
Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	36.0%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	8	16	2	292	128	15
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	9	17	2	317	139	16
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)					183	
pX, platoon unblocked						
vC, conflicting volume	310	78	155			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	310	78	155			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	99	98	100			
cM capacity (veh/h)	657	967	1422			

Direction, Lane #	EB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	26	108	212	93	63
Volume Left	9	2	0	0	0
Volume Right	17	0	0	0	16
cSH	835	1422	1700	1700	1700
Volume to Capacity	0.03	0.00	0.12	0.05	0.04
Queue Length 95th (ft)	2	0	0	0	0
Control Delay (s)	9.4	0.2	0.0	0.0	0.0
Lane LOS	A	A			
Approach Delay (s)	9.4	0.1		0.0	
Approach LOS	A				

Intersection Summary			
Average Delay	0.5		
Intersection Capacity Utilization	19.5%	ICU Level of Service	A
Analysis Period (min)	15		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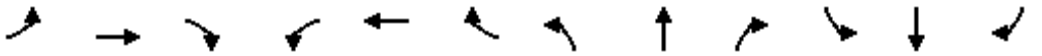


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	195	912	176	105	535	94	387	54	135	99	64	201
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	0.95		1.00	0.95		0.95	0.95	1.00		1.00	1.00
Frt	1.00	0.98		1.00	0.98		1.00	1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	0.96	1.00		0.97	1.00
Satd. Flow (prot)	1770	3453		1770	3460		1681	1705	1583		1808	1583
Flt Permitted	0.37	1.00		0.18	1.00		0.63	0.65	1.00		0.67	1.00
Satd. Flow (perm)	684	3453		326	3460		1115	1152	1583		1242	1583
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	205	960	185	111	563	99	407	57	142	104	67	212
RTOR Reduction (vph)	0	25	0	0	22	0	0	0	74	0	0	144
Lane Group Flow (vph)	205	1120	0	111	640	0	228	236	68	0	171	68
Turn Type	Perm			Perm			Perm		Perm	Perm		Perm
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2		2	6		6
Actuated Green, G (s)	36.0	36.0		36.0	36.0		21.0	21.0	21.0		21.0	21.0
Effective Green, g (s)	36.0	36.0		36.0	36.0		21.0	21.0	21.0		21.0	21.0
Actuated g/C Ratio	0.55	0.55		0.55	0.55		0.32	0.32	0.32		0.32	0.32
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0		4.0	4.0
Lane Grp Cap (vph)	379	1912		181	1916		360	372	511		401	511
v/s Ratio Prot		0.32			0.19							
v/s Ratio Perm	0.30			c0.34			0.20	c0.20	0.04		0.14	0.04
v/c Ratio	0.54	0.59		0.61	0.33		0.63	0.63	0.13		0.43	0.13
Uniform Delay, d1	9.2	9.6		9.8	7.9		18.7	18.7	15.6		17.3	15.6
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	5.5	1.3		14.6	0.5		8.2	8.0	0.5		3.3	0.5
Delay (s)	14.7	10.9		24.3	8.4		26.9	26.7	16.1		20.6	16.1
Level of Service	B	B		C	A		C	C	B		C	B
Approach Delay (s)		11.5			10.7			24.3			18.1	
Approach LOS		B			B			C			B	

Intersection Summary			
HCM Average Control Delay	14.6	HCM Level of Service	B
HCM Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	65.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	65.4%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBT	SBR
Lane Group Flow (vph)	205	1145	111	662	228	236	142	171	212
v/c Ratio	0.54	0.59	0.61	0.34	0.63	0.63	0.24	0.43	0.32
Control Delay	15.9	10.6	29.1	7.9	28.4	28.1	6.8	21.4	4.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	15.9	10.6	29.1	7.9	28.4	28.1	6.8	21.4	4.3
Queue Length 50th (ft)	47	135	27	62	80	82	9	52	0
Queue Length 95th (ft)	110	189	#107	92	#163	#165	43	103	40
Internal Link Dist (ft)		167		388		94		210	
Turn Bay Length (ft)	250		250						
Base Capacity (vph)	379	1938	181	1939	360	372	586	401	655
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.54	0.59	0.61	0.34	0.63	0.63	0.24	0.43	0.32

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Volume (veh/h)	6	475	16	97	242	6	20	1	4	15	1	75
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.95	0.95	0.95	0.95	0.92	0.92	0.92	0.92	0.95	0.92	0.95
Hourly flow rate (vph)	7	500	17	102	255	7	22	1	4	16	1	79
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)					481							
pX, platoon unblocked												
vC, conflicting volume	261			517			805	992	258	985	987	258
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	261			517			805	992	258	985	987	258
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			90			90	100	99	91	100	89
cM capacity (veh/h)	1300			1045			225	219	741	185	221	741

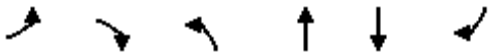
Direction, Lane #	NB 1	NB 2	SB 1	SB 2	SE 1	NW 1	NW 2
Volume Total	257	267	102	261	27	17	79
Volume Left	7	0	102	0	22	16	0
Volume Right	0	17	0	7	4	0	79
cSH	1300	1700	1045	1700	253	187	741
Volume to Capacity	0.01	0.16	0.10	0.15	0.11	0.09	0.11
Queue Length 95th (ft)	0	0	8	0	9	7	9
Control Delay (s)	0.2	0.0	8.8	0.0	21.0	26.2	10.4
Lane LOS	A		A		C	D	B
Approach Delay (s)	0.1		2.5		21.0	13.2	
Approach LOS					C	B	

Intersection Summary				
Average Delay	2.8			
Intersection Capacity Utilization	45.0%	ICU Level of Service		A
Analysis Period (min)	15			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	1283	30	0	1123	0	0
Sign Control	Free			Free	Yield	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	1395	33	0	1221	0	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)				247		
pX, platoon unblocked					0.92	
vC, conflicting volume			1427		2005	697
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			1427		1918	697
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	100
cM capacity (veh/h)			472		54	383

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2
Volume Total	697	697	33	610	610
Volume Left	0	0	0	0	0
Volume Right	0	0	33	0	0
cSH	1700	1700	1700	1700	1700
Volume to Capacity	0.41	0.41	0.02	0.36	0.36
Queue Length 95th (ft)	0	0	0	0	0
Control Delay (s)	0.0	0.0	0.0	0.0	0.0
Lane LOS					
Approach Delay (s)	0.0			0.0	
Approach LOS					

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	38.8%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	10	18	4	566	327	18
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	11	20	4	615	355	20
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)					174	
pX, platoon unblocked						
vC, conflicting volume	682	188	375			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	682	188	375			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	97	98	100			
cM capacity (veh/h)	382	823	1180			

Direction, Lane #	EB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	30	209	410	237	138
Volume Left	11	4	0	0	0
Volume Right	20	0	0	0	20
cSH	583	1180	1700	1700	1700
Volume to Capacity	0.05	0.00	0.24	0.14	0.08
Queue Length 95th (ft)	4	0	0	0	0
Control Delay (s)	11.5	0.2	0.0	0.0	0.0
Lane LOS	B	A			
Approach Delay (s)	11.5	0.1		0.0	
Approach LOS	B				

Intersection Summary			
Average Delay	0.4		
Intersection Capacity Utilization	28.4%	ICU Level of Service	A
Analysis Period (min)	15		