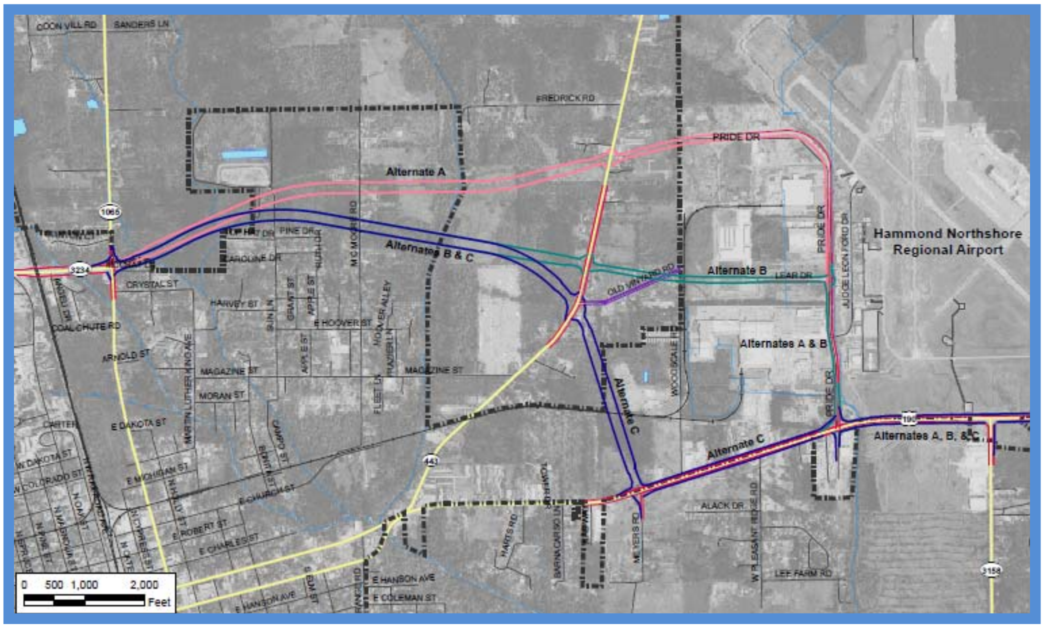
STAGE 0 STUDY FOR LA 3234 EXTENSION
STATE PROJECT NO. H.008915.1
LEGACY STATE PROJECT NO. 700-53-0135
F.A.P. NO. STP-5310 (505)



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Prepared for:

LOUISIANA'S ON THE MOVE... DOTD BUILDS THE WAY

Prepared by:

NEEL-SCHAFFER
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12/15/2011

STAGE 0 FEASIBILITY STUDY AND ENVIRONMENTAL INVENTORY

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STAGE 0 FEASIBILITY STUDY AND ENVIRONMENTAL INVENTORY

STAGE 0 STUDY FOR LA 3234 EXTENSION
STATE PROJECT NO. H.008915.1
LEGACY STATE PROJECT NO. 700-53-0135
F.A.P. NO. STP-5310 (505)

CHAPTER 1
CHECKLIST FOR STAGE 0
PRELIMINARY SCOPE & BUDGET

Prepared for:

Prepared by:

PRELIMINARY SCOPE AND BUDGET CHECKLIST

LOCAL STREET NAME East University Avenue PARISH Tangipahoa

ROUTE LA 3234

CONTROL SECTION 853-40 (Existing No.)

TOTAL PROJECT LENGTH (MILES) Alternate A -4.422 miles;
Alternate B - 4.067 miles
Alternate C - 3.996 miles

BEGIN PROJECT (CS LOG MILE) _

Approximately 115 feet east of the Canadian National Railroad crossing of LA 3234 at Station 140+18.96 as shown on the Plan View Drawings

END PROJECT (CS LOG MILE)

Alternate A - Intersection with LA 3158 (South Airport Road) as shown on the Plan View Drawings

Alternate B - Intersection with LA 3158 (South Airport Road) as shown on the Plan View Drawings

Alternate C - US 190 Intersection with LA 3158 (South Airport Road) as shown on the Plan View Drawings

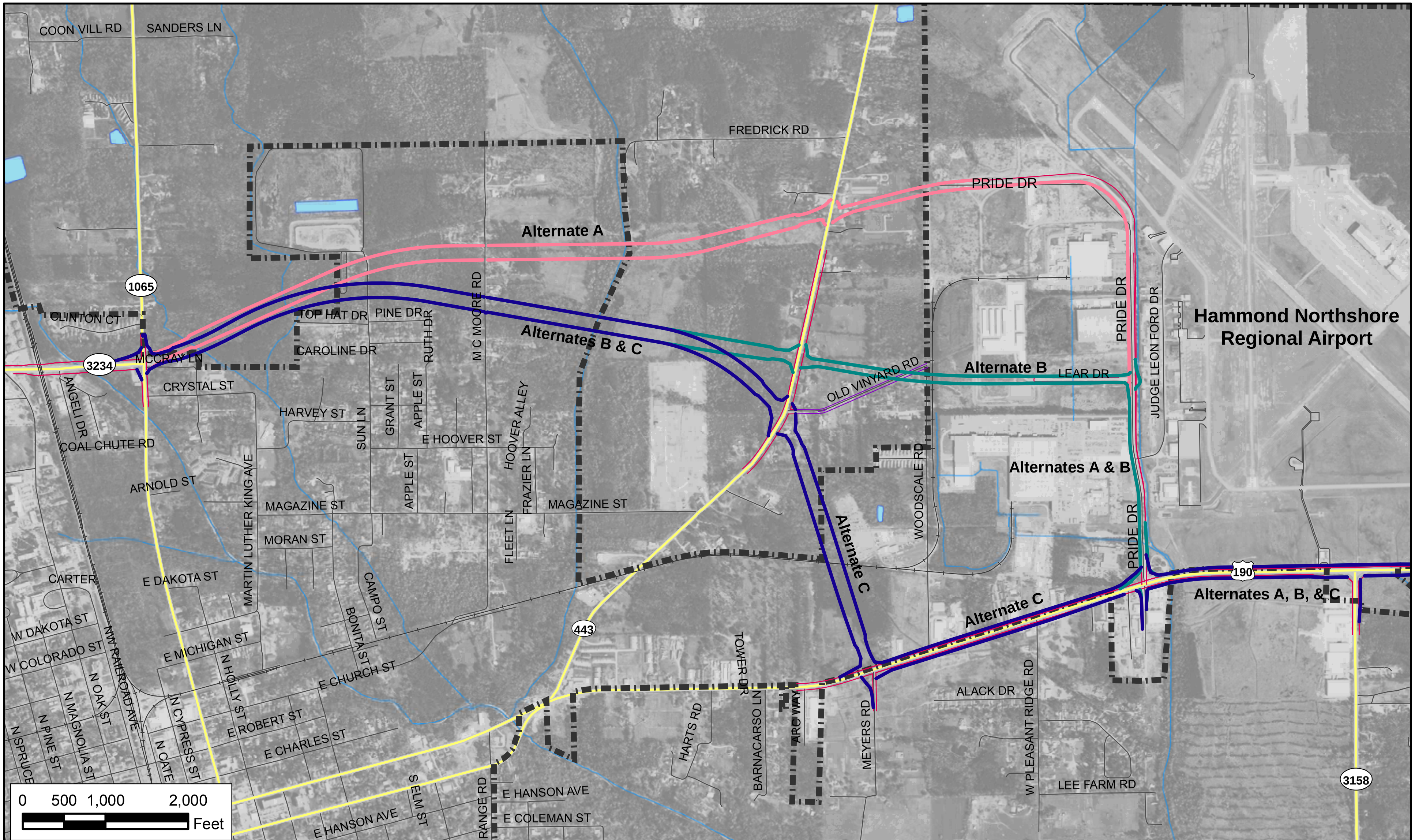
PROJECT CATEGORY (SAFETY, CAPACITY, ETC.) Capacity / Intermodal Connectivity

DATE PREPARED: December 2011

A. PURPOSE AND NEED FOR THE PROJECT:

The Stage 0 Study for LA 3234 Extension was conceptualized by LADOTD to support intermodal connectivity at Hammond Northshore Regional Airport. The project will improve east-west connectivity through Hammond by extending LA 3234 (East University Avenue) from its current terminus at LA 1065 (North Cherry Street) to Hammond Northtshore Regional Airport, thus providing a direct link for truck traffic to transit between the Airport and Interstate I-55. Key project features include:

- *The development of a regional travel demand model which was used to estimate future travel demand throughout the Hammond region and to test the travel demand associated with project routing alternates.*
- *The development of three routing concepts, as shown on Exhibit 1-1. Initially the project scope located the western terminus at Pride Drive. As the project developed, LADOTD shifted the western terminus to the US 190 intersection with LA 3158 (South Airport Road).*



Legend

Study Corridors

Alternate A	Alternate C
Required ROW	Required ROW
Existing ROW	Existing ROW
Alternate B	Not Part of Project
Required ROW	City Limits
Existing ROW	

Stage 0 Study for LA 3234 Extension
State Project No. H.008915.1
Legacy State Project No. 700-53-0135
F.A.P. No. STP-5310 (505)

Prepared By:

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Routing Concepts

1 Inch = 1,700 Feet

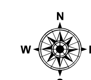


Exhibit 1-1

B. PROJECT CONCEPT

Description of existing facility (functional class, ADT, number of lanes, etc.):

LA 3234 (East University Avenue), CN railroad to LA 1065 (North Cherry Street)

Between North Oak Street, and LA 1065 (North Cherry Street), LA 3234 is a four-lane urban arterial roadway with integral curb and gutter, without median. The road is aligned east-west. The posted speed is 45 mph. There is a sidewalk on the east side of the street segment. However, the bridge crossing of Ponchatoula Creek is deficient in that the sidewalk does not extend across the bridge, and shoulders across the bridge are only 2 feet wide. LA 3234 currently terminates at LA 1065 (North Cherry Street).

LA 1065 (North Cherry Street)

LA 1065 (North Cherry Street) is an existing two-lane undivided highway aligned north-south with a posted speed of 45 mph.

LA 443 (Morris Road)

LA 443 (Morris Road) is an existing two-lane undivided highway aligned north-south with a posted speed of 55 mph.

Pride Drive

Pride Drive serves as the primary access roadway to the Hammond Northshore Regional Airport. Pride Dive is a 30' wide concrete roadway with surface drainage. The road is aligned north-south with a posted speed of 35 mph. Selsers Creek parallels the road to the east.

US 190

Between LA 443 (Morris Road) and LA 3158 (South Airport Road) US 190 is a two-lane rural arterial roadway with 8' shoulders. US 190 is aligned east-west with a posted speed of 55 mph. The intersection of US 190 and Pride Drive has recently been improved. A turning lane was provided to support northbound left turn movements from US 190 to Pride Drive and the intersection was upgraded with signal control.

LA 3158 (South Airport Road)

LA 3158 (South Airport Road) is an existing two-lane undivided roadway aligned north-south with a posted speed of 35 mph.

Existing 24 hour volumes were collected at various locations within the study area. The collected volumes and count locations are summarized below.

Location	*Vehicles per day (vpd)*
• *LA 3234 just west of LA 1065(North Cherry Street)*	*7,617*
• *US 190 just east of Pride Drive*	*13,345*
• *US 190 just west of Pride Drive*	*14,749*
• *Pride Drive just north of US 190*	*1,903*
• *LA 443 (Morris Road) near Magazine Street*	*6,462*

Major Design Features/Criteria of the Proposed Facility:

Design Criteria

Roadway classifications and subsequent planning for improvements associated with this project are based on the following assumptions:

- *The extension on LA 3234 (East University Avenue) to LA 443 on new route is undertaken using the Design Guidelines for Urban Arterial Roads and Streets, Urban UA-3 Classification. For Alternate C, the Urban UA-3 Classification is also used for the extension of LA 3234 from LA 443 to US 190. Urban UA-3 classification provides for design speed of 50 mph. According to EDSM II.2.1.7 (Curb Policy) for high speed roadways (Design Speed 50 mph or greater), curbs may be used only after obtaining approval for the Chief Engineer. A design exception will be required for use of curbs along LA 3234 in limits of UA-3 classification. A design exception would not be required if it is determined in the preliminary engineering services to reduce the UA-3 classification to a UA-2 classification.*
- *Improvements at connecting state and federal routes (LA 1065, LA 443, and US 190) are undertaken using the Design Guidelines for Urban Arterial Roads and Streets, Urban UA-3 Classification.*
- *For Alternates A and B, the extension on LA 3234 (East University Avenue) from LA 443 to and including Pride Drive is undertaken using the Design Guidelines for Arterial Roads and Streets, Urban UA-1 Classification.*
- *Improvements at connecting local roads are undertaken using the Design Guidelines for Local Roads and Streets, Urban UL-2 Classification.*
- *Improvements to US 190 are undertaken using the Design Guidelines for Urban Arterial Roads and Streets, Urban UA-2 Classification.*

Applicable LADOTD design criteria for these classifications are provided in Appendix 1 to Chapter 1. Pedestrian and bicycle concepts are in conformance with the LADOTD Complete Streets Work Group Final Report and this is reflected in the proposed typical sections. DOTD's EDSM No. VI.1.1.6, Roundabout Design, states that the District Traffic Operations Engineer (DTOE) has to justify pedestrian crosswalks before including pedestrians in the design of a roundabout. It is anticipated that EDSM No. VI.1.1.6 *conformance regarding pedestrian access through roundabouts will be accomplished as part of preliminary engineering services.*

Alternate Engineering Concepts:

The conceptual engineering undertaken in support of this project was developed using a Precision Airborne LiDAR Survey topographic base. Three route corridors were studied resulting in the development of plan – profile engineering concepts for three alternates.

- *Alternate A: Consists of the extension of LA 3234 from its existing western terminus to the east, intersecting LA 443 and terminating at the existing terminus of Pride Drive. This alternate would also include improvements along Pride Drive up to US 190 and along US 190 from Pride Drive to LA 3158 (South Airport Road).*
- *Alternate B: Consists of the extension of LA 3234 from its existing western terminus to the east, intersecting LA 443 and terminating at Pride Drive at Lear Drive. This alternate would also include improvements along Pride Drive up to US 190 and along US 190 from Pride Drive to LA 3158 (South Airport Road).*
- *Alternate C: Consists of the extension of LA 3234 from its existing western terminus to the east, intersecting LA 443 and terminating at US 190 at a location west of the intersection of US 190 and Pride Drive. This alternate would also include improvements along US 190 from this intersection to LA 3158 (South Airport Road).*

For all three alternatives, the intersection of US 190 with LA 3158 (South Airport Road) was evaluated as a signalized intersection. It is recommended that the environmental documents for this project (Stage 1 services) include a roundabout alternative for this intersection.

Typical sections as well as plan-profile view drawings (plan scale 1"=100') of the three alternates as shown on Exhibit 1-1 are presented in Appendix 2 to Chapter 1.

Features of Design

The project provides for the Extension of LA 3234 (East University Avenue) on new route alignment from its existing terminus at LA 1065 to Hammond Regional Airport. Additional right-of way will be acquired throughout the entire route, and both businesses and residences may be impacted by the requirements for additional right-of-way. The route transits though areas of 100-year floodplain and potential wetlands. Stream crossings will be provided at Drainage Canal L-5, Drainage Canal L-5A, and East Ponchatoula Creek.

One issue of concern regarding the western terminus is the transition from existing bike and pedestrian facilities to a route developed in conformance with Complete Streets Guidance. Between North Oak Street and LA 1065 (North Cherry Street), LA 3234 is a four-lane urban arterial roadway with integral curb and gutter, without median. There is a sidewalk on the east side of the street segment. However, the bridge crossing of Ponchatoula Creek is deficient in that the sidewalk does not extend across the bridge and shoulders across the bridge are only 2 feet wide.

Alternate concepts for pedestrian and bicycle facilities west of LA 1065 (North Cherry Street) were considered:

> ***Concept 1** - Bike and pedestrian facilities from extended LA 3234 would transition through the proposed roundabout geometry at LA 1065 and LA 3234 to locate all bike and pedestrian facilities on the east side of LA 3234.*
>
> *For this concept either the existing bridge crossing of Ponchatoula Creek would be widened to allow for construction of a 8'-10' multi-use bike / ped path or a new bike / ped bridge across Ponchatoula Creek would be constructed to the east side of LA 3234 and the existing roadway bridge would remain. The bike / ped path would be extended across the CN main line to North Oak Street. In this option, additional right-of-way would be required. The existing grade crossing closure gate may be impacted and a fire station, located at the corner on North University and North Oak Street, would be relocated.*
>
> ***Concept 2** – In Concept 2, the roadway section west of LA 3234 is improved to provide 5' shoulders also serving as bike lanes. The existing bridge crossing of Ponchatoula Creek is widened to accommodate a new sidewalk on the south side of the roadway and 5' wide shoulders. West of Ponchatoula Creek, the existing sidewalk can be maintained as is. The bike lanes are eliminated prior to the CN main line, with bikes routed within roadway travel lanes. Per request of the Department, as built plans for the existing bridge crossing of Ponchatoula Creek have been provided as an appendix to Chapter 1.*

It was determined that only Concept 2 would be developed for inclusion in the project alternate drawings. Project features include:

Alternates A, B and C

- *A new roundabout intersection at the LA 3234 intersection with LA 1065;*
- *A new roundabout intersection at the LA 3234 intersection with LA 443;*
- *A new roundabout intersection at the US 190 intersection with Pride Drive;*
- *Consideration of turning lanes as required;*
- *Geometric improvements at local road intersections with the LA 3234 extension; and*
- *Upgrade of US 190 between Pride Drive and LA 3158 (South Airport Road) to four-lane capacity.*

Alternate B Only - A new roundabout intersection is provided at the intersection of LA 3234 and Pride Drive.

Alternates B and C Only - At-grade rail crossings of the Airport Rail Spur are provided.

Alternate C Only

- *A new roundabout intersection is provided at the intersection of LA 3234 and US 190;*
- *US 190 between LA 3234 and Pride Drive is upgraded to four-lane capacity; and*
- *Lear Drive is extended west from the Airport as a local road using Old Vineyard Road to tie into a 5-legged roundabout intersection with LA 3234 and LA 443. Only the connection of Old Vineyard Road with the roundabout is included in the State Project.*

The remainder of the work required to extend Lear Drive from the Airport will be part of a local planning effort. The conceptual geometry for the extension of Lear Drive is provided in plan view.

Technical Analyses (traffic analysis, safety analysis, etc):

Basis of Future Traffic Forecast

The Project Traffic Study enclosed as Appendix 3 to Chapter 1. The Study documents existing traffic conditions and assesses future transportation impacts associated with and without the construction of the extension of LA 3234 between its terminus at LA 1065 and the Hammond Airport in Tangipahoa Parish. The report analyzes three (3) existing intersections, three (3) proposed intersections and seven (7) roadway segments located within the study area.

A travel demand forecasting model for the City of Hammond and vicinity was developed for this project to assist in forecast design year traffic volumes for the proposed alignment alternates. This model was calibrated to replicate existing traffic conditions for the base year of 2010 as closely as possible. The validation process involved comparing 24-hour traffic volumes output by the model with annual average daily traffic (AADT) estimates based on actual counts conducted by the Louisiana Department of Transportation (LADOTD) Planning Division.

The calibrated base year 2010 travel demand model was utilized to forecast 2015 and 2035 No Build ADT as well as 2015 and 2035 Build ADT for Alternate A, Alternate B, and Alternate C scenarios. Modeling results are shown on Exhibit 1-2.

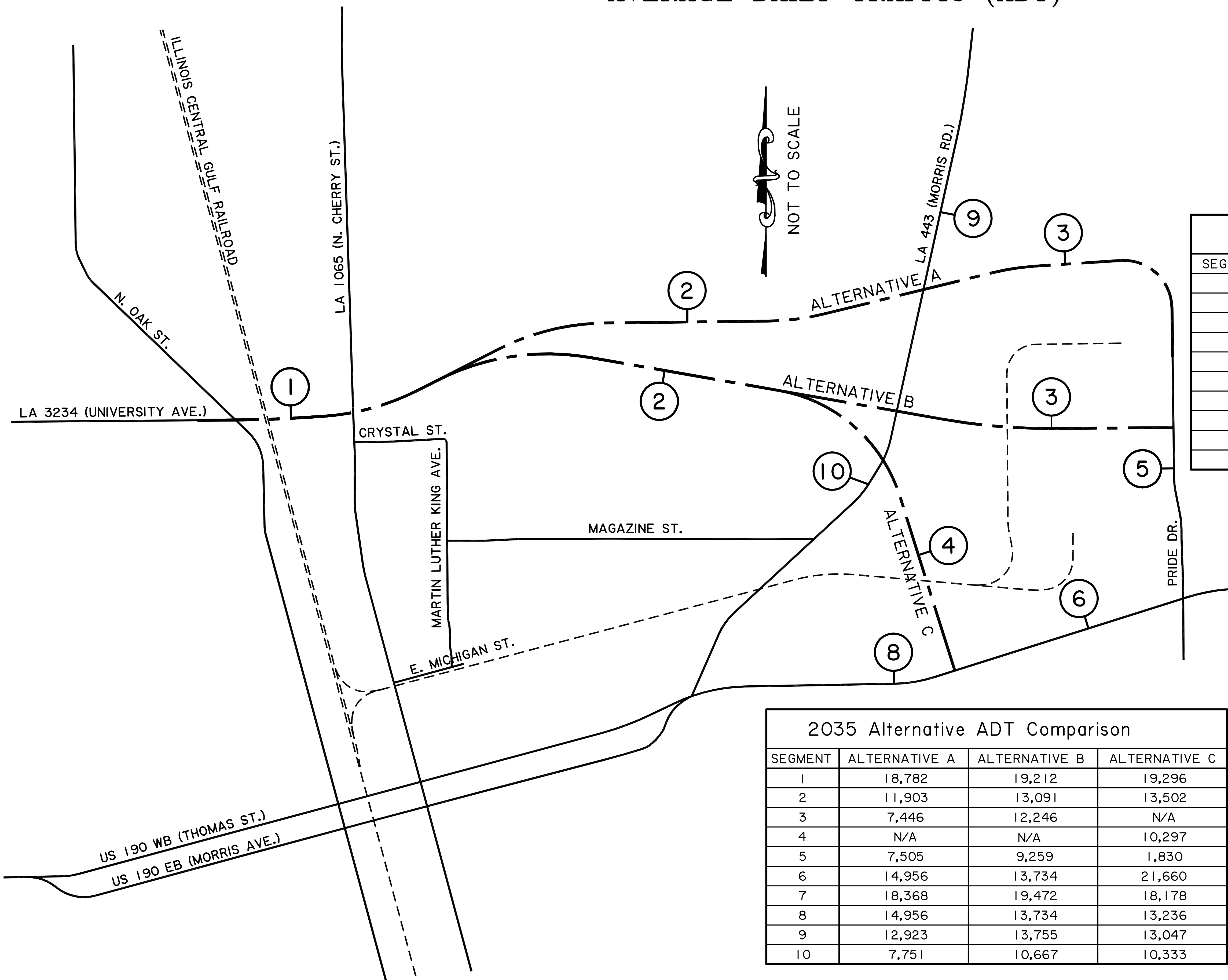
Roadway Segment Analysis

Roadway segment analyses were conducted to evaluate existing conditions, identify operational deficiencies, and to define future facility requirements. This analysis included the identification of peak hour traffic volumes, capacity, and level of service. Various roadway segments within the study area were evaluated with respect to existing (2011), 2015 & 2035 No Build and 2015 & 2035 Build conditions.

The analyses within this study analyzed the following roadway segments:

- *LA 3234*
  - *Between LA 1065 (North Cherry Street) and LA 443 (Morris Road)*
  - *Between LA 443 (Morris Road) and Pride Drive (Alternates A and B)*
  - *Between LA 443 (Morris Road) and US 190 (Alternate C)*
  -
- *US 190*
  - *West of Pride Drive (Alternate A and B)*
  - *West of LA 3234 (Alternate C)*
  - *Between Pride Drive and LA 3158 (S. Airport Road) (Alternates A, B & C)*
  - *East of LA 3158 (South Airport Road) (Alternates A, B & C)*

EXISTING AND PROJECTED AVERAGE DAILY TRAFFIC (ADT)



EXISTING/NO-BUILD ADT COMPARISON

SEGMENT	EXISTING 2011	2015 NO-BUILD	2035 NO-BUILD
1	7,617	10,570	13,843
2	N/A	N/A	N/A
3	N/A	N/A	N/A
4	N/A	N/A	N/A
5	1903	2,297	2,126
6	14,749	14,723	17,595
7	13,345	12,623	15,790
8	14,749	14723	17,595
9	6,462	8619	12,273
10	6,462	8619	12,273

2015 Alternative ADT Comparison

SEGMENT	ALTERNATIVE A	ALTERNATIVE B	ALTERNATIVE C
1	13,364	14,648	14,928
2	8,031	9,721	9,931
3	5,309	9,639	N/A
4	N/A	N/A	8,039
5	6,188	7,500	2,094
6	12,904	10,962	17,463
7	14,565	15,790	15,138
8	12,904	10,962	10,846
9	9,963	10,527	10,279
10	6,424	8,465	7,387

2035 Alternative ADT Comparison

SEGMENT	ALTERNATIVE A	ALTERNATIVE B	ALTERNATIVE C
1	18,782	19,212	19,296
2	11,903	13,091	13,502
3	7,446	12,246	N/A
4	N/A	N/A	10,297
5	7,505	9,259	1,830
6	14,956	13,734	21,660
7	18,368	19,472	18,178
8	14,956	13,734	13,236
9	12,923	13,755	13,047
10	7,751	10,667	10,333

EXHIBIT 1-2

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- *Pride Drive*
  - *North of US 190*

As described within the 2000 Highway Capacity Manual, "vehicle capacity represents the maximum number of vehicles that can pass a given point during a specified period under prevailing roadway, traffic and control conditions," for a given facility. Levels of service identify ranges of operation conditions. The concept of levels of service is defined as "qualitative measures that characterize operational conditions within a traffic stream and their perception by motorists and passengers. These operational conditions include such factors and travel time, freedom to maneuver, traffic interruption, comfort and convenience, and safety."

"Six levels of service are defined for each type of facility. They are given letter designations, from A to F, with level-of-service A (LOS A) representing the best operating conditions and level-of-service F (LOS F) the worst." Utilizing the HCS 2010 computer program, capacity and levels of service analyses were performed for the existing roadways and proposed alternate routes along LA 3234, LA 1065, US 190, LA 443, Pride Drive and Airport Road located within Hammond, Louisiana, Tangipahoa Parish.

The detailed findings of the AM and PM peak hour analyses are summarized in Table 1-1.

TABLE 1-1
SUMMARY OF ROADWAY
DESIGN PEAK HOUR LEVELS OF SERVICE (LOS)

Roadway Segment	2011	2015 No Build	2035 No Build	2015 Build Alternate A	2015 Build Alternate B	2015 Build Alternate C	2035 Build Alternate A	2035 Build Alternate B	2035 Build Alternate C
AM Peak Hour									
LA 3234 (LA 1065 – LA 443)	-	-	-	A(3.4)/A(4.1)*	A(3.9)/A(5.1)*	A(3.9)/A(5.3)*	A(4.6)/A(6.3)*	A(5.3)/A(6.9)*	A(5.4)/A(7.2)*
LA 3234 (LA 443 – Pride Dr.)	-	-	-	C (49.1)**	C (61.2)**	-	C (56.6)**	D (70.0)**	-
LA 3234 (LA 443 – US 190)	-	-	-	-	-	A(3.9)/A(3.6)*	-	-	A(5.2)/A(4.6)*
Pride Dr. (N. of US 190)	B (51.3)**	B (53.0)**	C (58.1)**	C (59.3)**	C (63.7)**	A (36.3)**	C (63.5)** +	C (62.7)** +	A (34.3)**
US 190 (W. of LA 3234)	-	-	-	-	-	D (70.1)**	-	-	D (75.0)**
US 190 (W. of Pride Dr.)	D (77.5)**	D (79.5)**	E (85.0)**	D (79.8)**	D (75.8)**	A(9.6)/B(11.2)*	E (83.1)**	E (81.2)**	B(11.2)/B(13.2)*
US 190 (Pride Dr. – LA 3158)	E (86.4)**	E (87.6)**	E (91.5)**	A(8.8)/A(10.0)*	A(9.3)/A(10.8)*	A(9.1)/A(10.1)*	A(10.5)/B(12.1)*	B(11.2)/B(12.6)*	A(10.5)/B(11.9)*
US 190 (E. of LA 3158)	D (75.9)**	D (79.3)**	E (85.3)**	D (79.4)**	E (81.0)**	E (81.0)**	E (84.9)**	E (86.0)**	E (84.7)**
PM Peak Hour									
LA 3234 (LA 1065 – LA 443)	-	-	-	A(3.9)/A(3.5)*	A(5.0)/A(4.0)*	A(4.7)/A(4.2)*	A(6.3)/A(4.8)*	A(6.7)/A(5.8)*	A(6.7)/A(6.0)*
LA 3234 (LA 443 – Pride Dr.)	-	-	-	C (47.3)**	C (64.4)**	-	C (57.2)**	D (69.5)**	-
LA 3234 (LA 443 – US 190)	-	-	-	-	-	A(3.6)/A(3.8)*	-	-	A(4.7)/A(5.1)*
Pride Dr. (N. of US 190)	B (43.4)**	B (44.9)**	B (48.9)**	C (56.5)**	C (61.9)**	A (33.4)**	C (62.9)** +	D (66.8)** +	A (33.8)**
US 190 (W. of LA 3234)	-	-	-	-	-	D (67.7)**	-	-	D (71.4)**
US 190 (W. of Pride Dr.)	D (76.4)**	D (77.7)**	E (84.0)**	D (72.5)**	D (69.4)**	A(9.0)/A(9.1)*	D (79.5)**	D (76.6)**	B(11.6)/B(11.1)*
US 190 (Pride Dr. – LA 3158)	E (83.6)**	E (82.1)**	E (85.7)**	A(7.6)/A(8.0)*	A(8.8)/A(8.2)*	A(8.0)/A(8.2)*	A(9.9)/A(10.3)*	A(10.3)/B(11.1)*	A(10.9)/A(9.9)*
US 190 (E. of LA 3158)	D (73.0)**	D (72.0)**	D (76.4)**	D (72.7)**	D (73.7)**	D (73.5)**	D (79.6)**	E (81.2)**	D (79.3)**

* Multilane analysis. A(3.4)/A(4.1) = EB/WB; LOS(Density – pc/mi/ln)
** Two Lane analysis C(49.1) = LOS (Percent time spent following)
+ - Indicates this section of roadway will operate at an LOS D as a two lane roadway with 4 lane roadway forecasted volumes.

Intersection Capacity Analysis

Intersection analyses were conducted to evaluate existing conditions, identify operational deficiencies, and to define future facility requirements. These analyses include the identification of design AM and PM peak hour traffic volumes, capacity, delay, and intersection level of service. The three (3) existing intersections and three (3) proposed intersections were evaluated with respect to 2011 base year, 2015 and 2035 No Build and Build conditions.

Early on in the project, the Department apprised the consultant, that EDSM VI.1.1.6 relating to roundabout traffic analysis was being modified by the Department. NSI was instructed to complete the roundabout traffic analysis for the buildout condition using a single lane roundabout, and only if that analysis failed, would a double lane roundabout be considered.

Roundabout operations for the multiple roundabouts proposed in support of the three LA 3234 alternatives were analyzed using SIDRA. The draft line and grade geometry, and draft traffic study report (August 2011) supported recommendations for both single and double lane roundabouts.

The final traffic report for the project includes analysis of both multi-lane and single-lane roundabouts based on the latest SIDRA settings as described in the recently published "Roundabout Analysis: Required Settings and Standards for SIDRA 5.1". Based on these latest settings and standards, the analyses indicate that all locations will operate at an acceptable LOS for both single and multi-lane roundabouts.

However, the line and grade geometry includes multi-lane roundabout geometry at the intersections of LA 3234 at 1065 (Cherry Street), LA 3234 at LA 443 (Alternate C only), LA 3234 at US 190 (Alternate C only) and US 190 at Pride Drive (Alternate C only). The approach legs on LA 3234 (all Alternatives) and US 190 (Alternate C only) at these roundabouts are proposed to be two lanes in each direction. All other locations are shown as single lane roundabouts.

These multi lane roundabouts are based on analysis performed prior to the release of the "Required Settings and Standards for SIDRA 5.1". If it is desired to consider single lane roundabout alternatives at these locations, single lane geometry roundabouts should be developed during the Stage 1, Environmental Services, in support of the Environmental Assessment documents.

A summary of the LOS for each of the existing and proposed intersections within the study area is presented in Table 1-2. These results are based on the existing and projected peak hour design year volume; existing and proposed geometry and traffic control.

TABLE 1-2
SUMMARY OF INTERSECTION
DESIGN PEAK HOUR LEVELS OF SERVICE (LOS) AND DELAY (SEC/VEH)

Intersection		2011 Delay (LOS)	2015 No Build Delay (LOS)	2035 No Build Delay (LOS)	2015 Build Alternate A Delay (LOS)	2015 Build Alternate B Delay (LOS)	2015 Build Alternate C Delay (LOS)	2035 Build Alternate A Delay (LOS)	2035 Build Alternate B Delay (LOS)	2035 Build Alternate C Delay (LOS)
AM Peak Hour										
LA 3234 at LA 1065*	UNS	8.7 (NA)	16.4 (NA)	25.1 (NA)	-	-	-	-	-	-
	SLR	-	-	-	-	-	10.8 (B)	13.1 (B)	13.6 (B)	14.3 (B)
	MLR	-	-	-	10.5 (B)	10.6 (B)	10.5 (B)	10.9 (B)	11.0 (B)	11.1 (B)
LA 3234 at LA 443*	SLR	-	-	-	12.2 (B)	13.2 (B)	14.5 (B)	12.7 (B)	16.1 (B)	19.7 (B)
	MLR	-	-	-	-	-	12.0 (B)	-	-	12.8 (B)
LA 3234 at Pride Drive*	SLR	-	-	-	-	10.2 (B)	-	-	10.5 (B)	-
US 190 at LA 3234*	SLR	-	-	-	-	-	12.7 (B)	-	-	13.8 (B)
	MLR	-	-	-	-	-	12.4 (B)	-	-	13.0 (B)
US 190 at Pride Drive**	S	24.2 (C)	61.6 (E)	121.1 (F)	-	-	-	-	-	-
	SLR	-	-	-	17.7 (B)	17.9 (B)	11.3 (B)	22.0 (C)	27.8 (C)	12.2 (B)
	MLR	-	-	-	-	-	9.8 (A)	-	-	9.7 (A)
US 190 at Airport Road***	S	15.7 (B)	21.0 (C)	27.0 (C)	18.2 (B)	18.8 (B)	18.4 (B)	21.1 (C)	22.3 (C)	20.9 (C)
PM Peak Hour										
LA 3234 at LA 1065*	UNS	11.6 (NA)	15.5 (NA)	27.5 (NA)	-	-	-	-	-	-
	SLR				12.1 (B)	12.0 (B)	11.9 (B)	14.7 (B)	16.3 (B)	17.2 (B)
	MLR				11.2 (B)	10.9 (B)	10.9 (B)	11.6 (B)	12.0 (B)	12.1 (B)
LA 3234 at LA 443*	SLR				12.2 (B)	12.5 (B)	14.5 (B)	13.7 (B)	14.5 (B)	21.1 (C)
	MLR				-	-	11.9 (B)	-	-	12.9 (B)
LA 3234 at Pride Drive*	SLR				-	9.7 (A)	-	-	9.9 (A)	-
US 190 at LA 3234*	SLR				-	-	13.5 (B)	-	-	15.5 (B)
	MLR				-	-	13.1 (B)	-	-	14.0 (B)
US 190 at Pride Drive**	S	26.1 (C)	28.9 (C)	55.8 (E)	-	-	-	-	-	-
	SLR				14.6 (B)	17.6 (B)	9.5 (A)	20.6 (C)	27.4 (C)	11.3 (B)
	MLR				-	-	9.2 (A)	-	-	9.6 (A)
US 190 at Airport Road***	S	13.9 (B)	13.8 (B)	17.0 (B)	15.2 (B)	15.8 (B)	15.7 (B)	17.9 (B)	18.4 (B)	17.5 (B)

* Unsignalized (UNS) Analysis for Existing and No Build, Single Lane Roundabout (SLR) and Multi Lane Roundabout (MLR) Analysis for all Build Alternates using SIDRA 5.1.7
** Signalized (S) Analysis for Existing and No Build, Single Lane Roundabout (SLR) and Multi Lane Roundabout (MLR) Analysis for all Build Alternates using SIDRA 5.1.7
***Signalized (S) Intersection Analysis for all Build Alternates using HCS+

Cost Summary:

TABLE 1-3
COST SUMMARY

LA 3234 (E. University Blvd.) Extension	Alternative Cost in Millions $			
LA 1065 (N. Cherry St. to LA 3189 (S. Airport Drive) Tangipahoa, Louisiana	**Alt A**	**Alt B**	**Alt C**	**Anticpated Funding Source**
Environmental (Document and Mitigtion)				
Environmental Documentation Preparation	*$1,000,000*	*$1,000,000*	*$1,000,000*	
Mitigation [1]	*$1,290,000*	*$1,430,000*	*$1,590,000*	
Engineering Design	*$2,062,500*	*$1,837,500*	*$2,085,000*	
Right-of-way Acquisition	*$11,100,000*	*$12,500,000*	*$15,500,000*	
Utility Relocations	*$3,000,000*	*$3,500,000*	*$4,500,000*	
Roadway Construction	*$26,000,000*	*$23,000,000*	*$26,300,000*	
Bridge Construction	*$1,500,000*	*$1,500,000*	*$1,500,000*	
TOTAL COST	**$45,952,500**	**$44,767,500**	**$52,475,000**	

Note 1 - Potential Wetlands Mitigation, mitigation costs associated with Noise and Section 106 impacts was not considered in the Stage 0 Study

Prepared By: Daniel Thornhill, P.E. Date 15-Dec-11
Neel-Schaffer, Inc.

Appendix 1 to Chapter 1
LDOTD Design Guidelines

LOUISIANA DEPARTMENT OF TRANSPORTATION AND DEVELOPMENT
Minimum Design Guidelines for Urban Arterial Roads and Streets

State law requires that the state highway system conform to these guidelines.

Item No.	Item	Urban				
		UA-1	UA-2	UA-3	UA-4	UA-5
1	Design Speed (mph)	40	45	50	55	60
2	Level of Service [1]	C	C	C	C	C
3	Number of Lanes	2 (min) – 4 (typ)	2 (min) – 4 (typ)	2 (min) – 4 (typ)	2 (min) – 4 (typ)	2 (min) – 4 (typ)
4	Width of Travel Lanes (ft)	11	11 – 12	12	12	12
5	Width of Shoulders (minimum) (ft) [2]					
	(a) Inside on multilane facilities	N/A	N/A	4	4	4
	(b) Outside	8	8	8	8	8
6	Shoulder Type	Paved	Paved	Paved	Paved	Paved
7	Parking Lane Width (ft)	10 – 12	10 – 12	N/A	N/A	N/A
8	Width of Median on Multilane Facilities (ft)					
	(a) Depressed	N/A	N/A	30	34 – 42	42
	(b) Raised	6[3] – 30	6[3] – 30	30	30	30
	(c) Two way left turn lane	11 – 14 typ. [4]	11 – 14 typ. [4]	N/A	N/A	N/A
9	Width of Sidewalk (minimum) (where used) (ft) [5]					
	(a) When offset from curb	4	4	4	4	4
	(b) When adjacent to curb	6	6	N/A	N/A	N/A
10	Fore slope (vertical – horizontal)	1:3 (min) – 1:4 (des)	1:3 (min) – 1:4 (des)	1:4	1:6	1:6
11	Back slope (vertical – horizontal)	1:3	1:3	1:3	1:4	1:4
12	Pavement Cross-slope (%)	2.5	2.5	2.5	2.5	2.5
13	Min. Stopping Sight Distance (ft)	305	360	425	495	570
14	Maximum Superelevation (%)	4	4	4	6	6
15	Minimum Radius (ft) [6,7]					
	(a) With normal crown (-2.5% cross-slope)	700	1,000	16,700	19,700	22,880
	(b) With 2.5% superelevation	550	750	3,500	5,250	6,280
	(c) With full superelevation	500	700	1,000	1,100	1,400
16	Maximum Grade (%)	7	6	6	5	5
17	Minimum Vertical Clearance (ft) [8]	16	16	16	16	16
18	Minimum Clear Zone (ft)					
	(a) From edge of through travel lane	18 [9]	24 [9]	28 [10]	22	30
	(b) Outside from back of curb (when curb is used)	6 (min) – 16 (des) [11]	6 (min) – 22 (des) [11]	19 [10]	13	21
	(c) Median from back of curb [12] (when curb is used)	4 (min) – 12 (des)	4 (min) – 18 (des)	8 (min) – 17 (des)	8 (min) – 17 (des)	8 (min) – 25 (des)
19	Bridge Design Live Load [13]	AASHTO	AASHTO	AASHTO	AASHTO	AASHTO
20	Width of Bridges (minimum) (face to face of bridge rail at gutter line) (ft)					
	(a) Curbed facilities (without sidewalks)	Traveled [14] way plus 8′	Traveled [14] way plus 8′	Roadway width	Roadway width	Roadway width
	(b) Shoulder facilities	Roadway width	Roadway width	Roadway width	Roadway width	Roadway width
21	Guardrail Required at Bridge Ends	[14]	[14]	Yes	Yes	Yes

Approved ______________________ 12-4-09

Chief Engineer Date

LOUISIANA DEPARTMENT OF TRANSPORTATION AND DEVELOPMENT

Footnotes for Minimum Design Guidelines for Urban Arterial Roads and Streets

1- Level of service D allowable in heavily developed urban areas.
2- Curb may be used in place of shoulders on UA-1 and UA-2 facilities. If used on UA-3, UA-4, or UA-5 facilities, curb should be placed at the edge of shoulder. For design speeds greater than 45 mph, curb will not be placed in front of guardrail.
3- With Chief Engineer's approval, curb offsets may be eliminated and the minimum median width can be reduced to 4 feet. On principal arterials, particularly at intersections, the upper limit should be considered.
4- Cannot be used on multilane roadways (with four or more through lanes) without the Chief Engineer's approval.
5- Sidewalks must be separated from the shoulder and should be placed as near the right of way line as possible. On high speed facilities, they should preferably be placed outside the minimum clear zone shown in item 18.
6- It may be necessary to increase the radius of the curve and/or increase the shoulder width (maximum of 12 feet) to provide adequate stopping sight distance on structure.
7- The following radii apply at divisional islands. The radius selected must match the design speed of the road. These radii also apply to the other guidelines where divisional islands are mentioned.

Design Speed	Radius (rounded)	Degree of Curve
20 mph	1,450′	4°
25 mph	1,650′	3° 30′
30 mph	1,950′	3°
35 mph	2,300′	2° 30′

Design Speed	Radius (rounded)	Degree of curve
40 mph	2,900′	2°
45 mph	3,850′	1° 30′
50 mph	5,750′	1°
55 & 60 mph	11,500′	0° 30′

8- An additional 6 inches should be added for additional future surfacing.
9- Applies to facilities with shoulders. Refer to the Roadside Design Guide when 1:3 fore slopes are used or for slopes flatter than 1:4.
10- The distance may be reduced by 6 feet if 1:6 slopes are used. For outside shoulders wider than 8 feet, further reduction should be proportional to the added shoulder width.
11- If outside shoulders and curb are used, refer to the Roadside Design Guide.
12- Where left turn lanes are provided or where the median is less than 6 feet in width, the minimum clearance will be 1.5 feet from back of curb. For median slopes steeper than 1:6, refer to the Roadside Design Guide for the desirable clear zone.
13- LRFD for bridge design.
14- Refer to EDSM II.3.1.4 when sidewalks will be provided and for guardrail requirements.

General Note:

DOTD pavement preservation minimum design guidelines or 3R minimum design guidelines (separate sheets) shall be applicable to those projects for which the primary purpose is to improve the riding surface.

LOUISIANA DEPARTMENT OF TRANSPORTATION AND DEVELOPMENT
Minimum Design Guidelines for Local Roads and Streets

State law requires that the state highway system conform to these guidelines.

Item No.	Item	Rural			Urban	
		RL-1	RL-2	RL-3	UL-1	UL-2
1	Design Speed (mph) [1]	30	40	50	20	30
2	Average Daily Traffic	0 – 250	250 – 400	Over 400	N/A	N/A
3	Typical Number of Lanes	2	2	2	2	2
4	Minimum Width of Travel Lanes (ft)	9	9	11 – 12 [2]	10 – 11 [3]	10 – 11 [3]
5	Minimum Width of Shoulders (ft) [4]	2	2	5 – 8 [5]	When used [6]	When used [6]
6	Shoulder Type	Aggregate	Aggregate	Aggregate	Paved	Paved
7	Minimum Width of Parking Lanes (where used) (ft)	N/A	N/A	N/A	7 – Residential 8 – Industrial	7 – Residential 8 – Industrial
8	Minimum Width of Sidewalk (where used) (ft)					
	(a) When offset from curb	N/A	N/A	N/A	4	4
	(b) When adjacent to curb	N/A	N/A	N/A	6	6
9	Fore Slope (vertical – horizontal)	1:3 [7]	1:3 [7]	1:4	1:3	1:3
10	Back Slope (vertical – horizontal)	1:2	1:2	1:3	1:2	1:2
11	Pavement Cross Slope (%)	2.5	2.5	2.5	2.5	2.5
12	Min. Stopping Sight Distance (ft)	200	305	425	115	200
13	Maximum Superelevation (%)	10 [8]	10 [8]	10 [8]	4	4
14	Minimum Radius (ft) [9, 10]					
	(a) With normal crown (-2.5% cross slope)	7,585	11,625	16,700	100	325
	(b) With 2.5% superelevation	1,930	3,250	5,000	85	250
	(c) With full superelevation	250	450	700	80	235
15	Maximum Grade (%) [11]	7	7	6	10	9
16	Minimum Vertical Clearance (ft)	15	15	15	15	15
17	Minimum Clear Zone (ft)					
	(a) From edge of though travel lane	10 [7]	10 [7]	Varies [12]	7 – Shoulder facilities	10 – Shoulder facilities
	(b) From back of curb (when curb is used)	N/A	N/A	N/A	1 (min) – 6 (des)	1 (min) – 6 (des)
18	Bridge Design Live Load [13]	AASHTO	AASHTO	AASHTO	AASHTO	AASHTO
19	Minimum Width of Bridges (face to face of bridge rail at gutter line)	Traveled way plus 4'	Traveled way plus 4'	Traveled way plus 6' [14]	Traveled way plus 8' [15, 16]	Traveled way plus 8' [15, 16]
20	Bridge End Treatment	Yes	Yes	Yes	[16]	[16]

Approved *(signature)*
Chief Engineer

12-4-09
Date

LOUISIANA DEPARTMENT OF TRANSPORTATION AND DEVELOPMENT

Footnotes for Minimum Design Guidelines for Local Roads and Streets

1- The design speed may not be less than the current posted speed of the overall route.
2- For ADT greater than 2,000, use 12-foot lane widths.
3- Lane widths in residential areas may be reduced to 9 feet if necessary. Twelve foot lane widths are preferred in industrial areas.
4- Where bicycle activity is prevalent, a paved 4-foot shoulder should be provided.
5- For ADT less than 1,500, the minimum shoulder width may be reduced to 4 feet if necessary. For ADT 1,500 to 2,000, use 6-foot shoulders. For ADT over 2,000, use 8-foot shoulders.
6- Select the shoulder width that corresponds to the ADT shown in the rural local road guidelines.
7- The value shown should be provided on new roadways. A lesser value may be used on existing roads depending on soil stability, right-of-way constraints, the safety record of the road, and the size vehicles using the road. Guidance is available in the AASHTO publication titled 'Guidelines for Geometric Design of Very Low Volume Local Roads (ADT $\leq$ 400)'.
8- In Districts 04 and 05, where ice is more frequent, superelevation should not exceed 8 percent from the emax = 10% table.
9- It may be necessary to increase the radius of the curve and/or increase the shoulder width (maximum of 12 feet) to provide adequate stopping sight distance on structure.
10- On roadways with an ADT $\leq$ 400, a sharper radius may be used on fully superelevated roadways if necessary. For specific values refer to the AASHTO publication titled 'Guidelines for Geometric Design of Very Low Volume Local Roads (ADT $\leq$ 400)'. Different radii apply at divisional islands.
11- Grades 2 percent higher may be used in rural rolling terrain.
12- Varies from 14 feet to 28 feet. Refer to the Roadside Design Guide for the applicable value. For spot replacement projects refer to footnote 7.
13- LRFD for bridge design.
14- For ADT greater than 2,000, use roadway width.
15- Refer to EDSM II.3.1.4 when sidewalks will be provided and for guardrail requirements.
16- When shoulders are provided, the minimum bridge width shall be the larger of that shown or the roadway width.

General Local Road Notes:

These guidelines shall not apply to:

a. Dead end roads (open at one end only).
b. Roads that are dependent on dead end roads for access.

Urban guidelines may be applied to any street for which curb is to be used and the posted speed is less than 50 mph, or any street for which a posted speed of 30 mph or less would be appropriate.

On spot replacement projects the existing geometry and superelevation may remain providing there are no safety problems.

The appropriate local governing body is authorized to make design exceptions for specific items listed in these guidelines, with proper engineering justification.

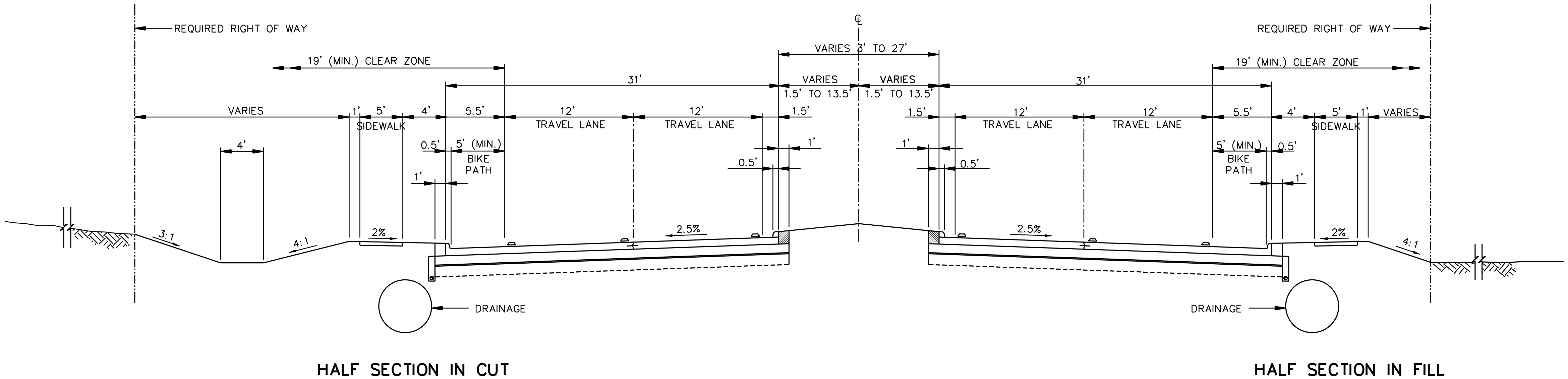
General Note:

DOTD pavement preservation minimum design guidelines or 3R minimum design guidelines (separate sheets) shall be applicable to those projects for which the primary purpose is to improve the riding surface.

Appendix 2 to Chapter 1
Typical Sections and Engineering Concepts By Alternate

Appendix 2 to Chapter 1
Typical Sections

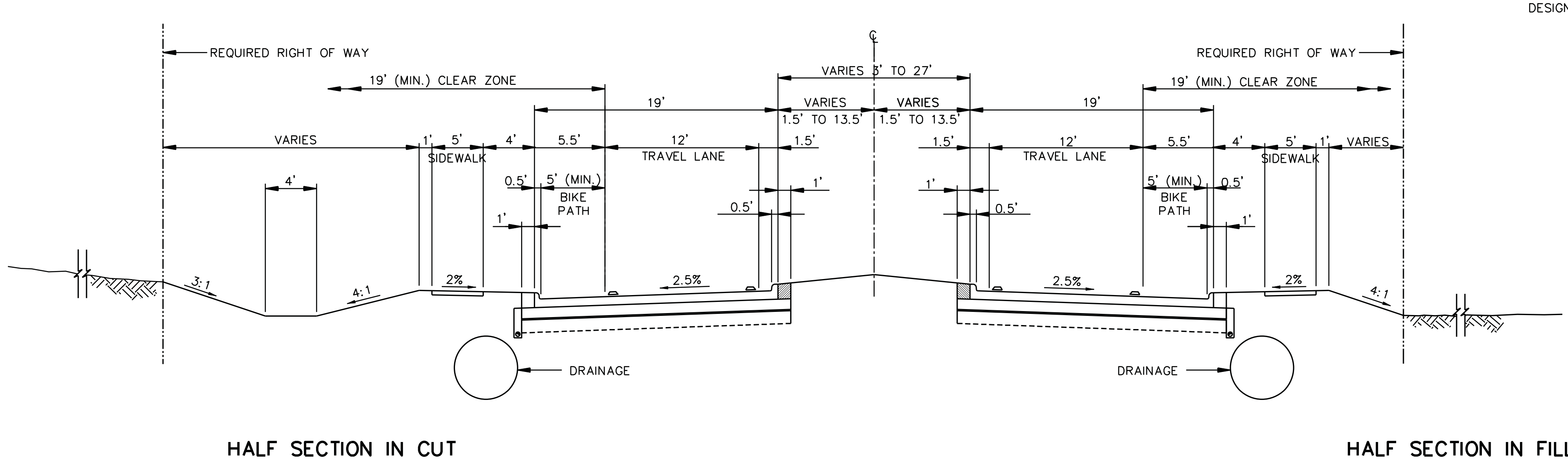
NOTE:
6' SIDEWALK ADJACENT TO BACK OF CURB ON RIGHT SIDE OF LA 3234 (E. UNIVERSITY AVENUE) FROM BEGINNING OF PROJECT (B.O.P.) TO LA 1065 (N. CHERRY STREET).
SIDEWALK NOT PROVIDED ON LEFT SIDE OF LA 3234 (E. UNIVERSITY AVENUE) FROM BEGINNING OF PROJECT (B.O.P.) TO LA 1065 (N. CHERRY STREET).



TYPICAL SECTION
LA 3234 (E. UNIVERSITY AVENUE)
ALTERNATES A, B, C – B.O.P. TO LA 1065 (N. CHERRY STREET) (UA-1)
US 190 (UA-2)
ALTERNATE C – LA 3234 TO PRIDE DRIVE

TYPICAL SECTION AT MULTI-LANE ROUNDABOUTS (UA-3)
ALTERNATES A, B & C – LA 3234 (E. UNIVERSITY AVENUE) AT LA 1065 (N. CHERRY STREET)
ALTERNATE C
LA 3234 (E. UNIVERSITY AVENUE) AT LA 443 (MORRIS ROAD)
US 190 (E. THOMAS STREET) AT LA 3234 (E. UNIVERSITY AVENUE)
US 190 (E. THOMAS STREET) AT PRIDE DRIVE

NOTE:
DESIGN OF CURBS CONFORM TO EDSM II.2.1.7 (CURB POLICY) IN SHOULDER SECTIONS FOR UA-3 DESIGN CRITERIA. CURB AND GUTTER SECTIONS IN ROUNDABOUT APPROACHES DO NOT CONFORM TO THE EDSM POLICY. CURBING FOR UA-3 TYPICAL SECTIONS WILL REQUIRE DESIGN EXCEPTION AND APPROVAL FROM THE CHIEF ENGINEER DURING DESIGN PHASE OF PROJECT.



TYPICAL SECTION AT SINGLE LANE ROUNDABOUTS (UA-3)
ALTERNATES A & B – LA 3234 (E. UNIVERSITY AVENUE) AT LA 443 (MORRIS ROAD) &
US 190 (E. THOMAS STREET) AT PRIDE DRIVE
ALTERNATE B – LA 3234 (E. UNIVERSITY AVENUE) AT PRIDE DRIVE

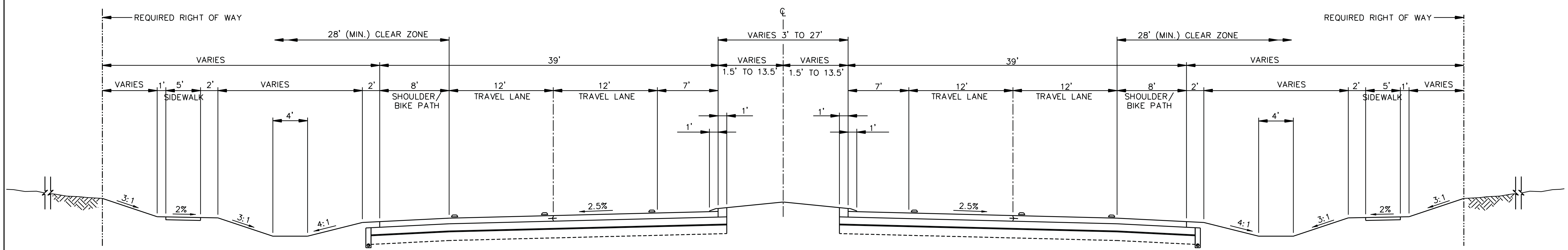
SHEET NUMBER
PARISH TANGIPAHOA
FEDERAL PROJECT STP-5310 (505)
STATE PROJECT H.008915.1
DESIGNED CHECKED DETAILED CHECKED DATE SHEET
NO. DATE REVISION DESCRIPTION BY

TYPICAL SECTION ALTERNATIVES
LA 3234 (E. UNIVERSITY AVE.)

1

12/13/20111:14:36

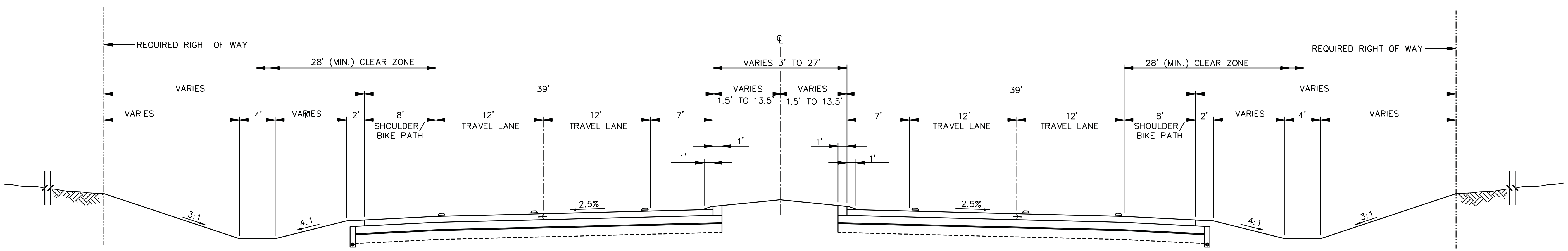
EA PRELIMINARY SUBMITTAL



TYPICAL SECTION – LA 3234 (E. UNIVERSITY AVENUE)
ALTERNATES A & B – LA 1065 (N. CHERRY STREET) TO LA 443 (MORRIS ROAD)
ALTERNATE C – LA 1065 (N. CHERRY STREET) TO US 190 (E. THOMAS STREET)

UA-3 URBAN SHOULDER SECTION

NOTE:
DESIGN OF CURBS CONFORM TO EDSM II.2.1.7 (CURB POLICY) IN SHOULDER SECTIONS FOR UA-3 DESIGN CRITERIA. CURB AND GUTTER SECTIONS IN ROUNDABOUT APPROACHES DO NOT CONFORM TO THE EDSM POLICY. CURBING FOR UA-3 TYPICAL SECTIONS WILL REQUIRE DESIGN EXCEPTION AND APPROVAL FROM THE CHIEF ENGINEER DURING DESIGN PHASE OF PROJECT.



TYPICAL SECTION – US 190 (E. THOMAS STREET)
ALTERNATES A, B & C – PRIDE DRIVE TO APROX. 1,900' EAST OF LA 3158 (S. AIRPORT ROAD)

UA-3 URBAN SHOULDER SECTION

SHEET NUMBER

PARISH TANGIPAHOA

FEDERAL PROJECT STP-5310 (505)

STATE PROJECT H.008915.1

DESIGNED CHECKED DETAILED CHECKED DATE SHEET

NO. DATE REVISION DESCRIPTION BY

TYPICAL SECTION ALTERNATIVES

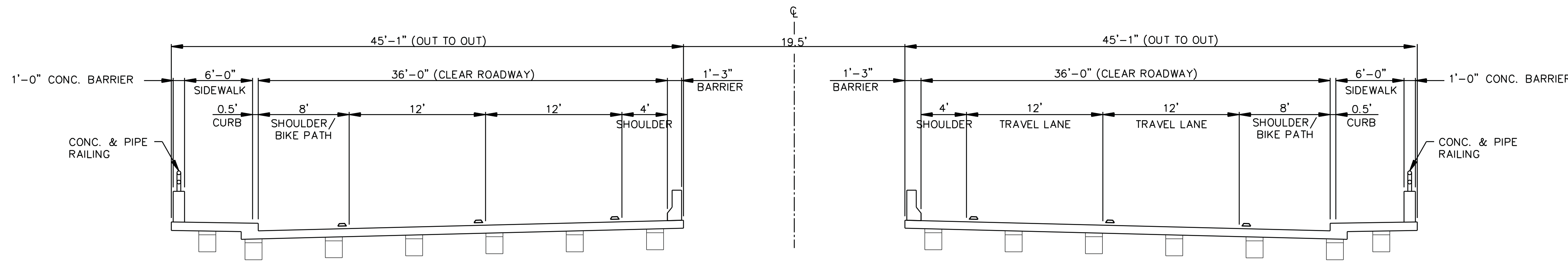
LA 3234 (E. UNIVERSITY AVE.)

2

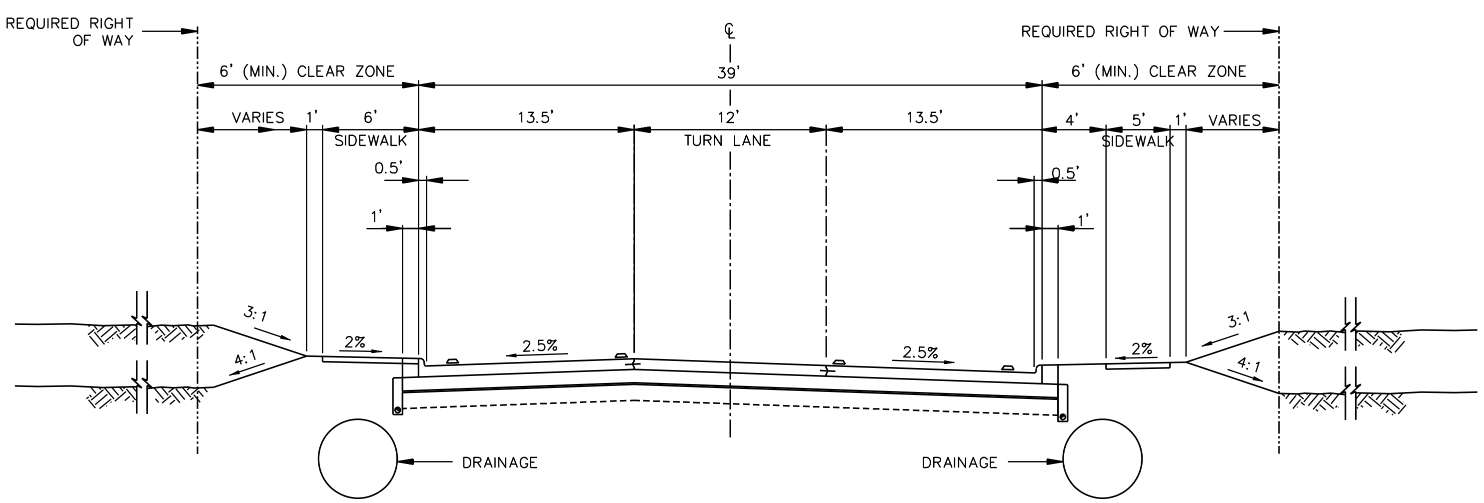
12/13/20111:14:36

EA PRELIMINARY SUBMITTAL

NOTE:
BRIDGE ASSUMED TO BE 40' SPANS RESTING ON QUAD BEAMS. BEAMS SHOWN ARE FOR INFORMATIONAL PURPOSES ONLY. NUMBER AND SPACING OF BEAMS TO BE DETERMINED IN FUTURE DESIGN PHASES OF PROJECT.



TYPICAL BRIDGE SECTION AT E. PONCHATOULA CREEK
LA 3234 (E. UNIVERSITY AVENUE) EXTENSION
QUAD BEAM BRIDGE SPANS – 40' SPANS



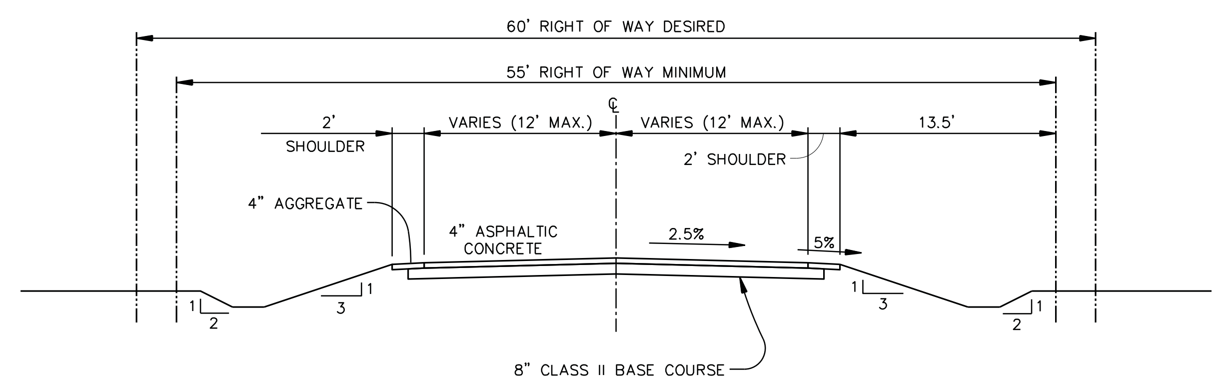
HALF SECTION WITH SIDEWALK ADJACENT TO CURB

HALF SECTION WITH SIDEWALK SEPARATED FROM CURB

TYPICAL 3-LANE SECTION
ALTERNATE A – LA 443 (MORRIS ROAD) TO US 190
ALTERNATE B – LA 443 (MORRIS ROAD TO PRIDE DRIVE & LA 3234 (E. UNIVERSITY AVENUE TO US 190)

UA-1 URBAN

NOTE:
SEE PLAN & PROFILE EXHIBITS FOR SIDEWALK LOCATIONS BEHIND ROADWAY CURBING.



RURAL LOCAL 2 LANE ROADWAY (RL-1 OR RL-2)

(FOR TIE-INS OF LOCAL ROADWAYS)

SHEET NUMBER	
PARISH	TANGIPAHOA
FEDERAL PROJECT	STP-5310 (505)
STATE PROJECT	H.008915.1
DESIGNED / CHECKED	
DETAILED / CHECKED	
DATE / SHEET	

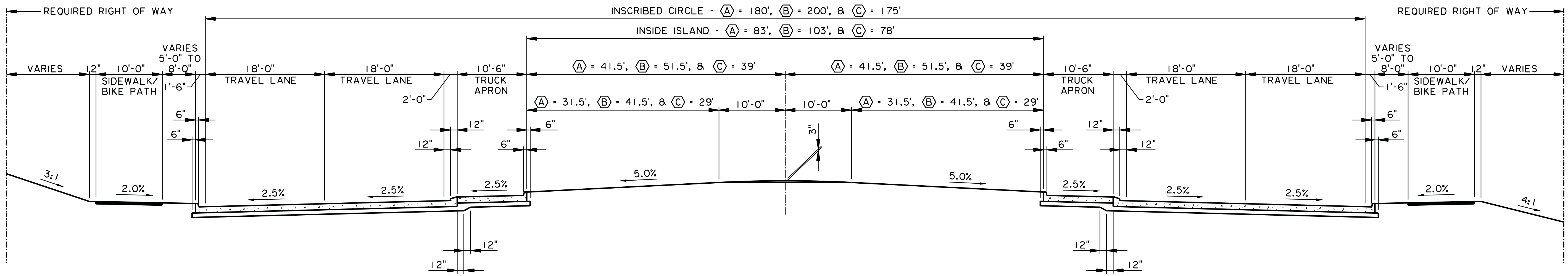
NO.	DATE	REVISION DESCRIPTION	BY

TYPICAL SECTION ALTERNATIVES

LA 3234 (E. UNIVERSITY AVE.)

12/13/20111:14:36

EA PRELIMINARY SUBMITTAL



HALF SECTION IN CUT

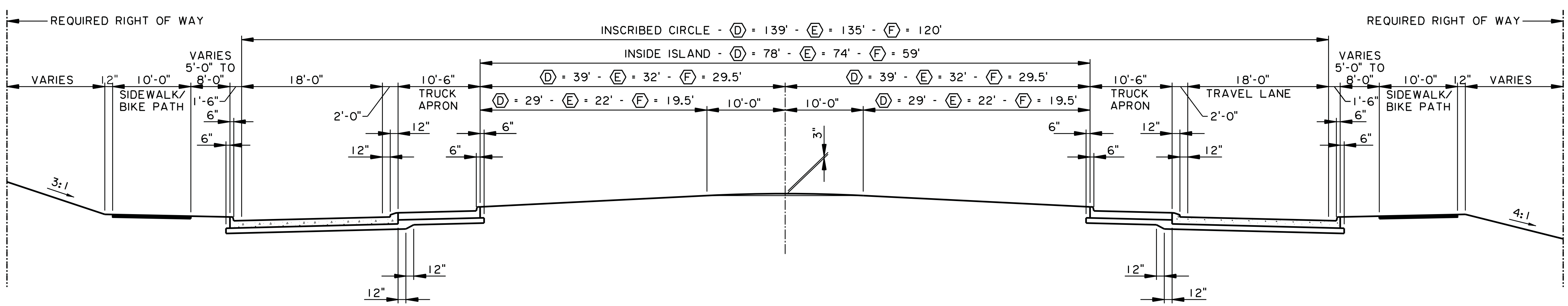
MULTI-LANE ROUNDABOUT

Ⓐ = LA 3234 (E. UNIVERSITY AVENUE) AT LA 1065 (N. CHERRY STREET) (ALTERNATES A, B & C)

Ⓑ = PROPOSED LA 3234 (E. UNIVERSITY AVENUE) AT LA 443 (MORRIS ROAD) (ALTERNATE C)

Ⓒ = US 190 (E. THOMAS STREET) AT LA 3234 (E. UNIVERSITY AVENUE) (ALTERNATE C) &
US 190 (E. THOMAS STREET) AT PRIDE DRIVE (ALTERNATE C)

NOTE:
SIDEWALKS WERE PROVIDED TO MEET COMPLETE STREETS POLICY.
CONFORMANCE TO EDSM VI.1.1.6 TO BE CONSIDERED IN DESIGN.



HALF SECTION IN CUT

HALF SECTION IN FILL

SINGLE LANE ROUNDABOUT

Ⓓ = PROPOSED LA 3234 (E. UNIVERSITY AVENUE) AT LA 443 (MORRIS ROAD) (ALTERNATES A & B)

Ⓔ = PROPOSED LA 3234 (E. PRIDE DRIVE) AT US 190 (E. THOMAS STREET) (ALTERNATES A & B)

Ⓕ = PROPOSED LA 3234 (LEAR DRIVE) AT PROPOSED LA 3234 (PRIDE DRIVE) (ALTERNATE B)

SHEET NUMBER

PARISH TANGIPAHOA

FEDERAL PROJECT STP-5310 (505)

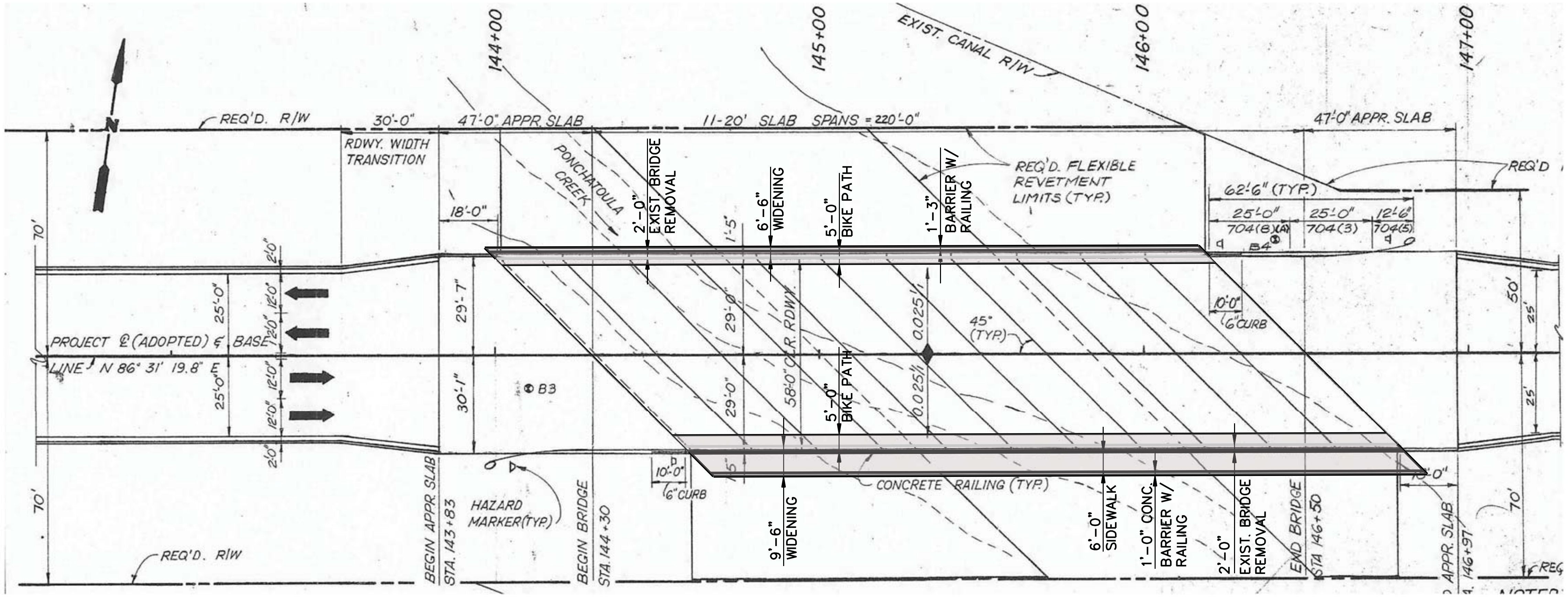
STATE PROJECT H.008915.1

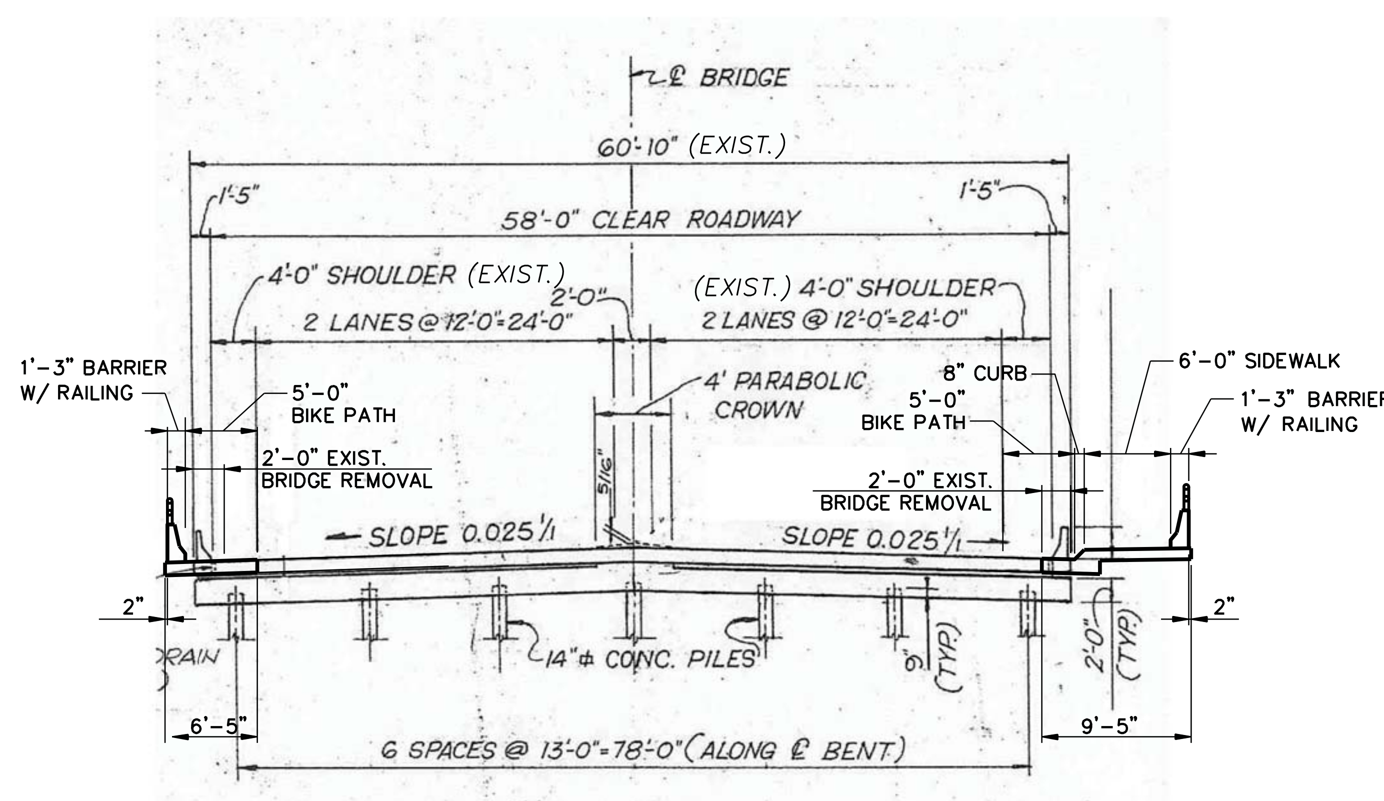
DESIGNED CHECKED | DETAILED CHECKED | DATE SHEET

NO. | DATE | REVISION DESCRIPTION | BY

TYPICAL SECTION
ROUNDABOUTS
LA 3234 (E. UNIVERSITY AVE.)

EA PRELIMINARY SUBMITTAL





PONTCHATOULA CREEK BRIDGE WIDENING

SHEET NUMBER

PARISH TANGIPAHOA
FEDERAL PROJECT STP-5310 (505)
STATE PROJECT H.008915.1

DESIGNED / CHECKED / DETAILED / CHECKED / DATE / SHEET

NO. | DATE | REVISION DESCRIPTION | BY

TYPICAL SECTION ALTERNATIVES

LA 3234 (E. UNIVERSITY AVE.)

DOTD

Appendix 2 to Chapter 1
Alternate A

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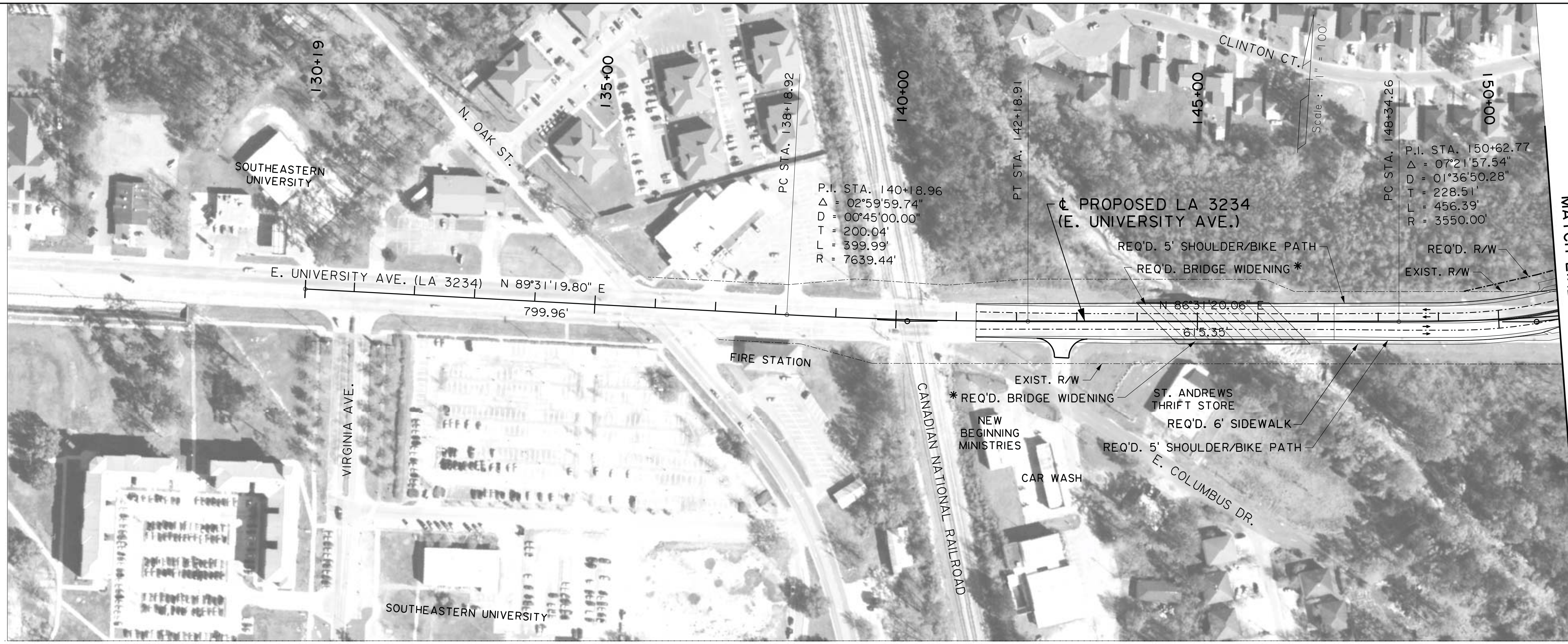
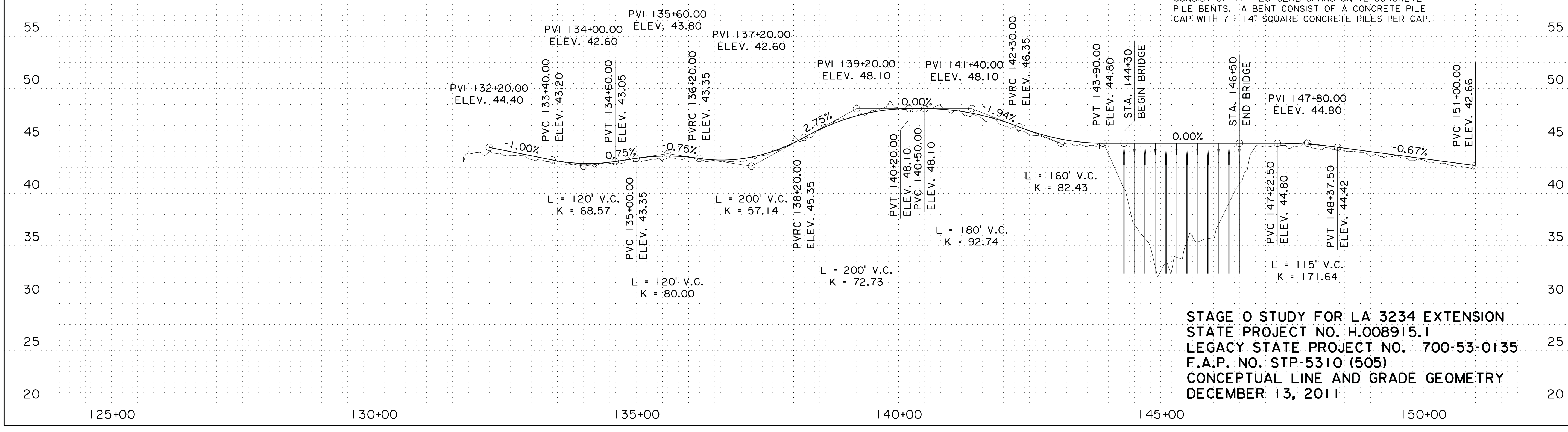
STAGE 0



*NOTE:
SEE TYPICAL SECTION FOR LIMITS OF BRIDGE WIDENING.

NOTE:
EXISTING PONCHATOULA CREEK BRIDGE, STA. 144+30 TO STA. 146+50, IS A 60'-10" x 220'-0" BRIDGE THAT CONSIST OF 11 - 20' SLAB SPANS ON 12 CONCRETE PILE BENTS. A BENT CONSIST OF A CONCRETE PILE CAP WITH 7 - 14" SQUARE CONCRETE PILES PER CAP.



STAGE 0 STUDY FOR LA 3234 EXTENSION
STATE PROJECT NO. H.008915.1
LEGACY STATE PROJECT NO. 700-53-0135
F.A.P. NO. STP-5310 (505)
CONCEPTUAL LINE AND GRADE GEOMETRY
DECEMBER 13, 2011

SHEET NUMBER	1
PARISH	TANGIPAHOA
FEDERAL PROJECT	STP-5310 (505)
STATE PROJECT	H.008915.1

DESIGNED / CHECKED / DETAILED / CHECKED / DATE / SHEET

BY / REVISION DESCRIPTION / DATE / NO.

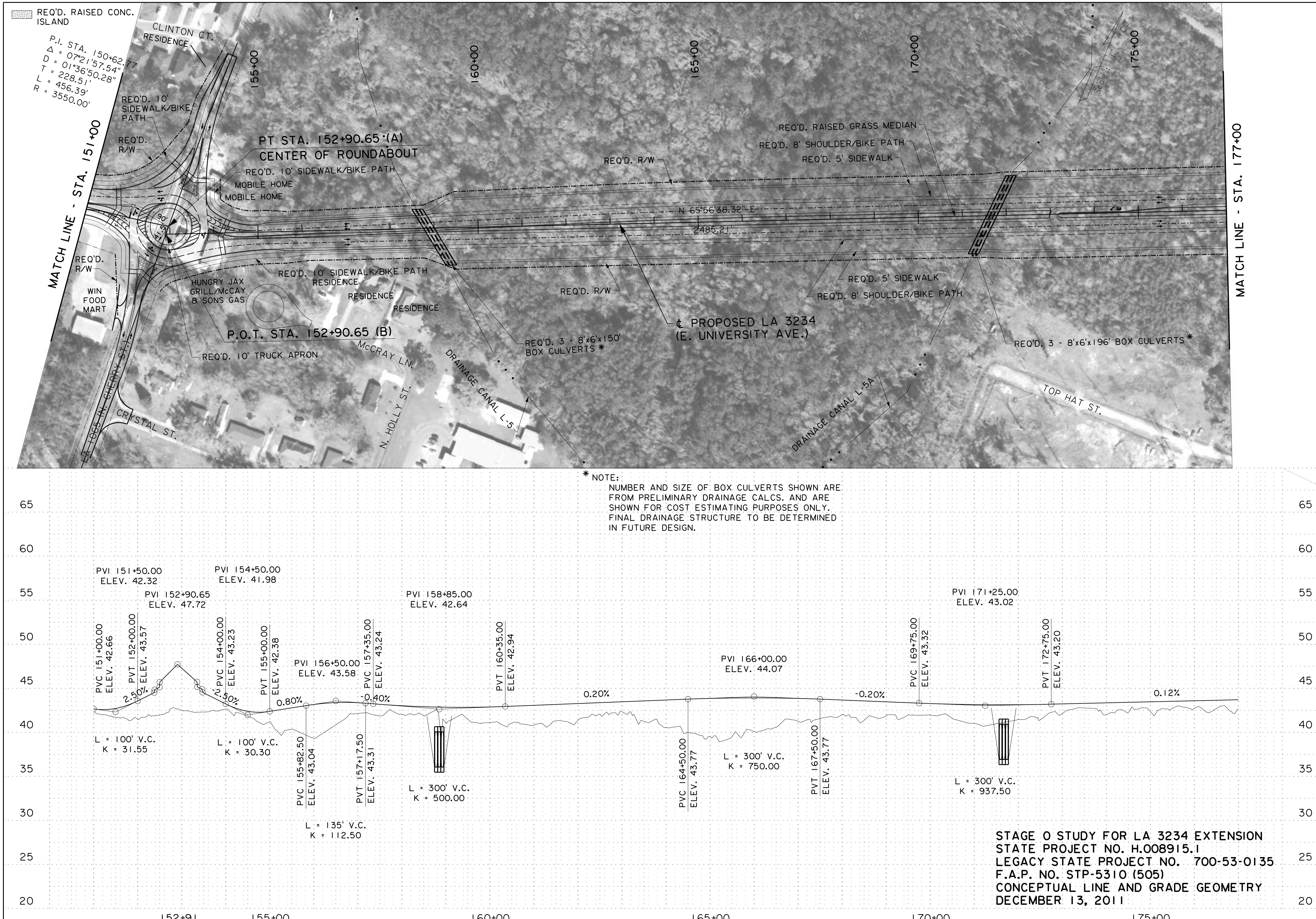
STATE OF LOUISIANA

ALTERNATE A

DOTD
DEPARTMENT OF TRANSPORTATION AND DEVELOPMENT

12/13/2011 12:30:26

STAGE 0



* NOTE:
NUMBER AND SIZE OF BOX CULVERTS SHOWN ARE FROM PRELIMINARY DRAINAGE CALCS. AND ARE SHOWN FOR COST ESTIMATING PURPOSES ONLY. FINAL DRAINAGE STRUCTURE TO BE DETERMINED IN FUTURE DESIGN.

STAGE 0 STUDY FOR LA 3234 EXTENSION
STATE PROJECT NO. H.008915.1
LEGACY STATE PROJECT NO. 700-53-0135
F.A.P. NO. STP-5310 (505)
CONCEPTUAL LINE AND GRADE GEOMETRY
DECEMBER 13, 2011

SHEET NUMBER 2

PARISH TANGIPAHOA
FEDERAL PROJECT STP-5310 (505)
STATE PROJECT H.008915.1

DESIGNED
CHECKED
DETAILED
CHECKED
DATE
SHEET

NO. DATE REVISION DESCRIPTION BY

ALTERNATE A

12/13/2011 2:30:40

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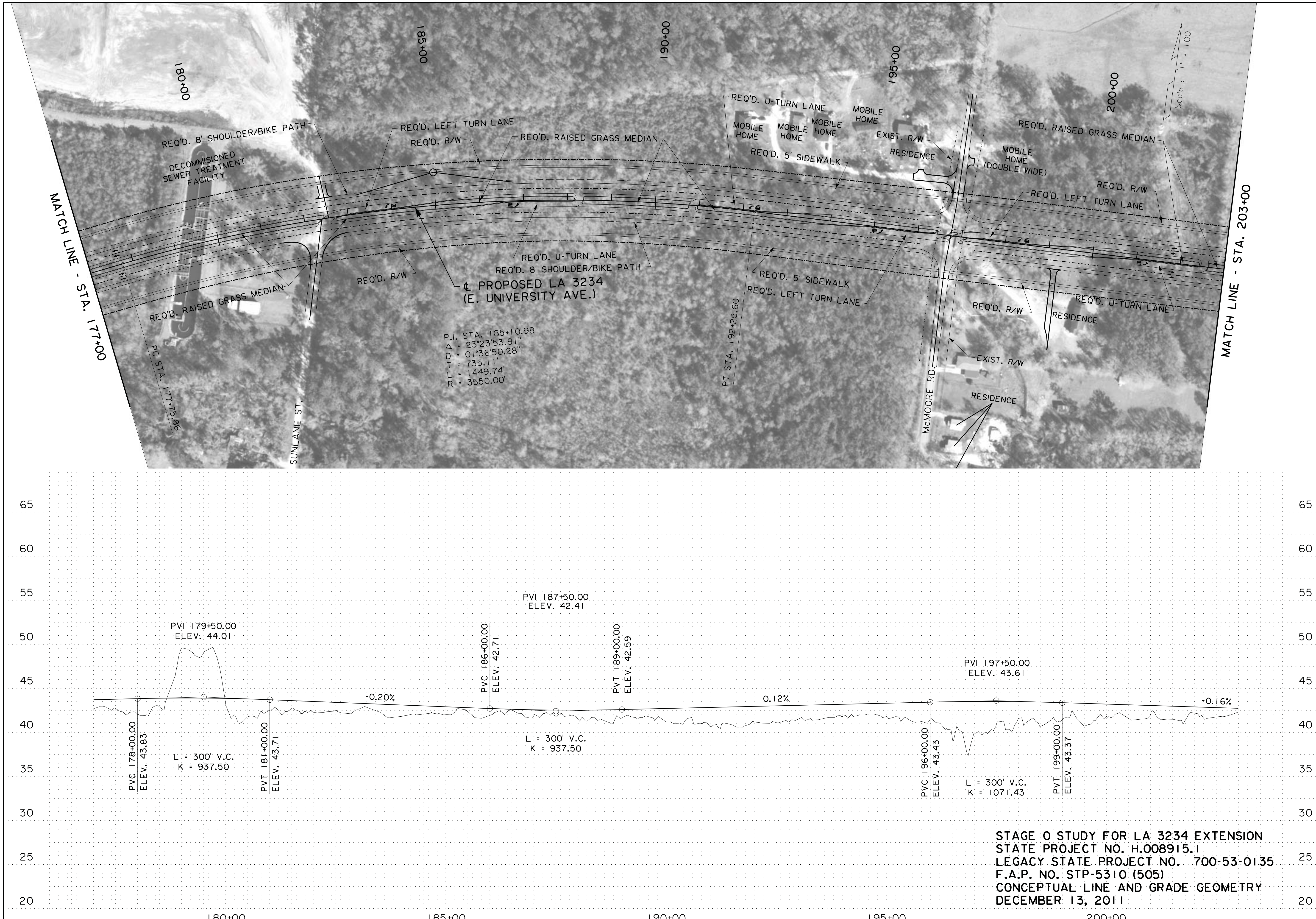


STAGE 0 STUDY FOR LA 3234 EXTENSION
STATE PROJECT NO. H.008915.1
LEGACY STATE PROJECT NO. 700-53-0135
F.A.P. NO. STP-5310 (505)
CONCEPTUAL LINE AND GRADE GEOMETRY
DECEMBER 13, 2011

SHEET NUMBER 3

PARISH: TANGIPAHOA
FEDERAL PROJECT: STP-5310 (505)
STATE PROJECT: H.008915.1

DESIGNED / CHECKED / DETAILED / CHECKED / DATE / SHEET

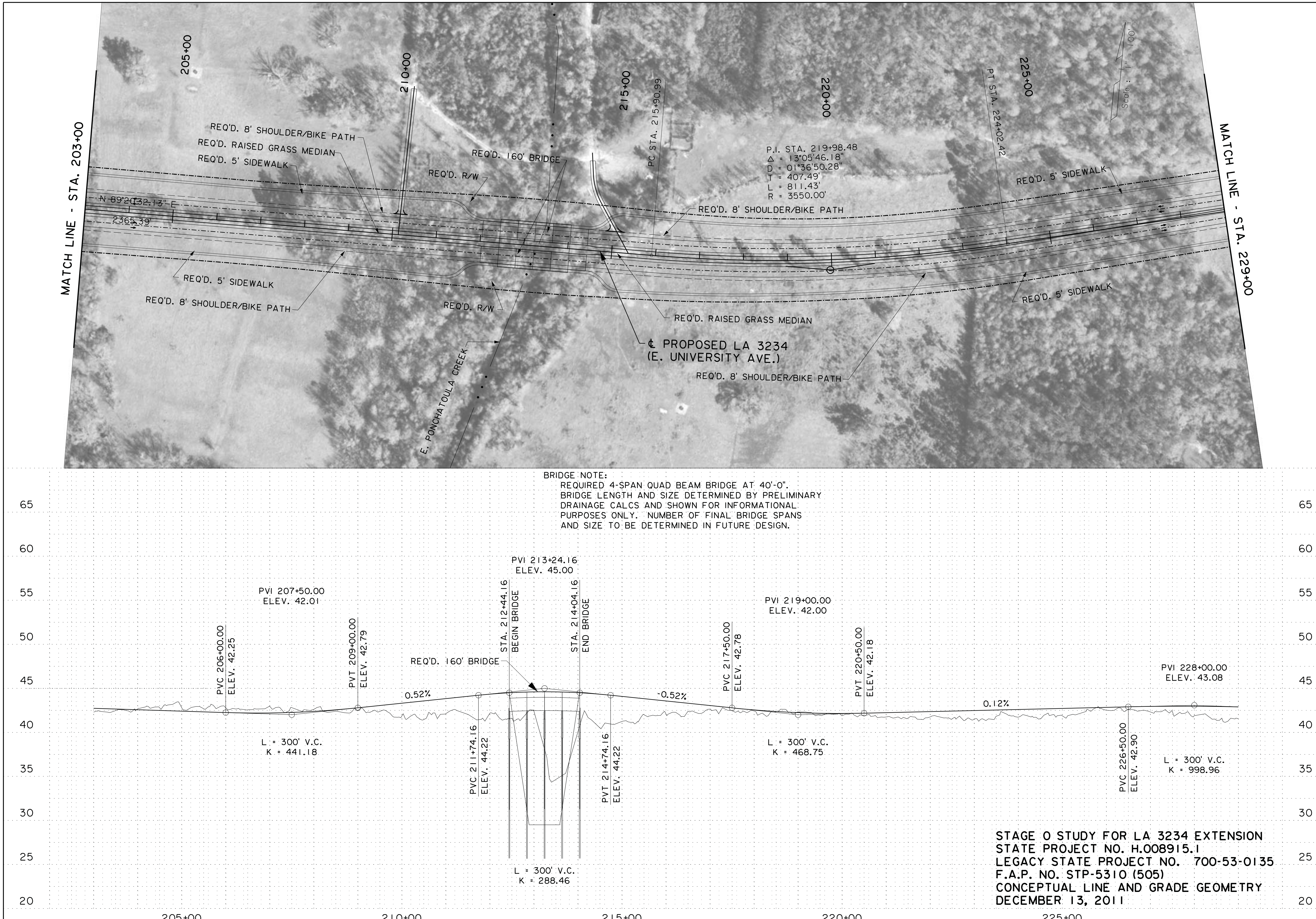
NO. | DATE | REVISION DESCRIPTION | BY

ALTERNATE A

DOTD — DEPARTMENT OF TRANSPORTATION AND DEVELOPMENT

12/13/2011 12:30:55

STAGE 0



STAGE 0 STUDY FOR LA 3234 EXTENSION
STATE PROJECT NO. H.008915.1
LEGACY STATE PROJECT NO. 700-53-0135
F.A.P. NO. STP-5310 (505)
CONCEPTUAL LINE AND GRADE GEOMETRY
DECEMBER 13, 2011

SHEET NUMBER 4

PARISH TANGIPAHOA
FEDERAL PROJECT STP-5310 (505)
STATE PROJECT H.008915.1

DESIGNED / CHECKED / DETAILED / CHECKED / DATE / SHEET

NO. / DATE / REVISION DESCRIPTION / BY

STATE OF LOUISIANA

ALTERNATE A

DOTD
DEPARTMENT OF TRANSPORTATION AND DEVELOPMENT

12/13/201112:31:09

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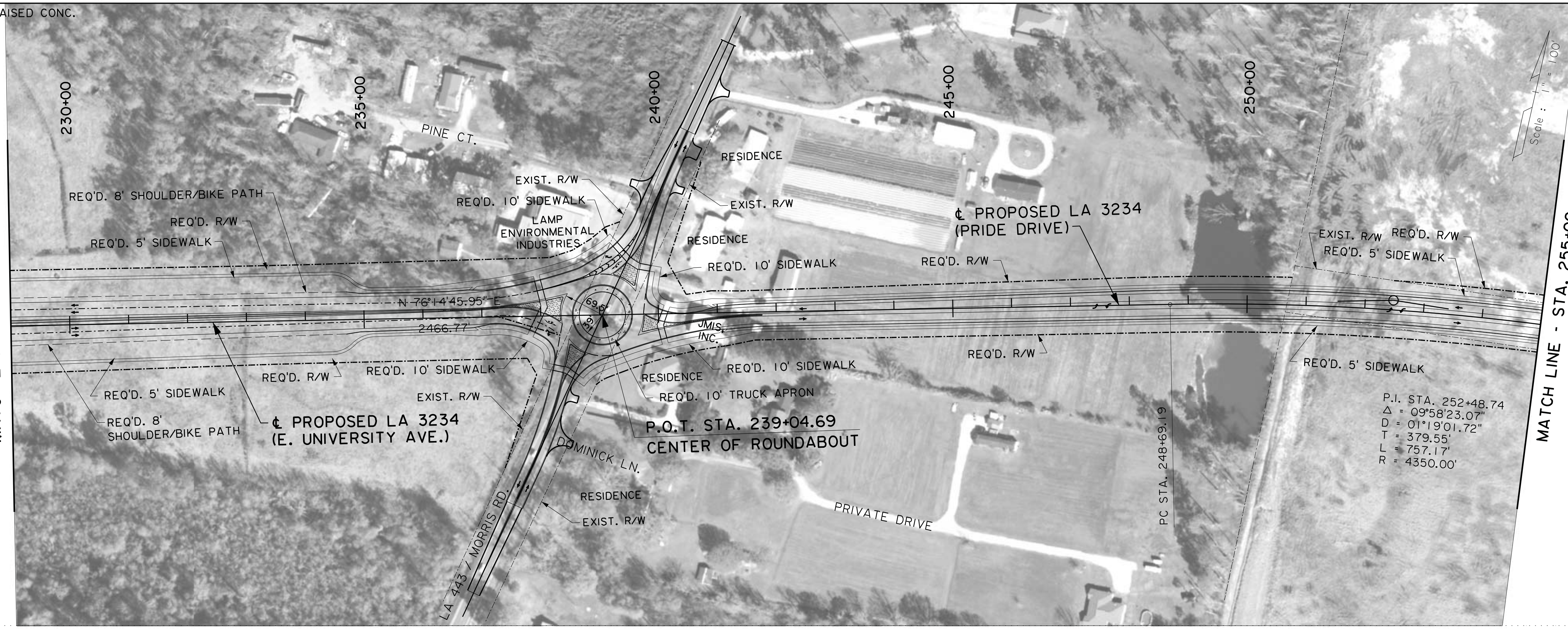

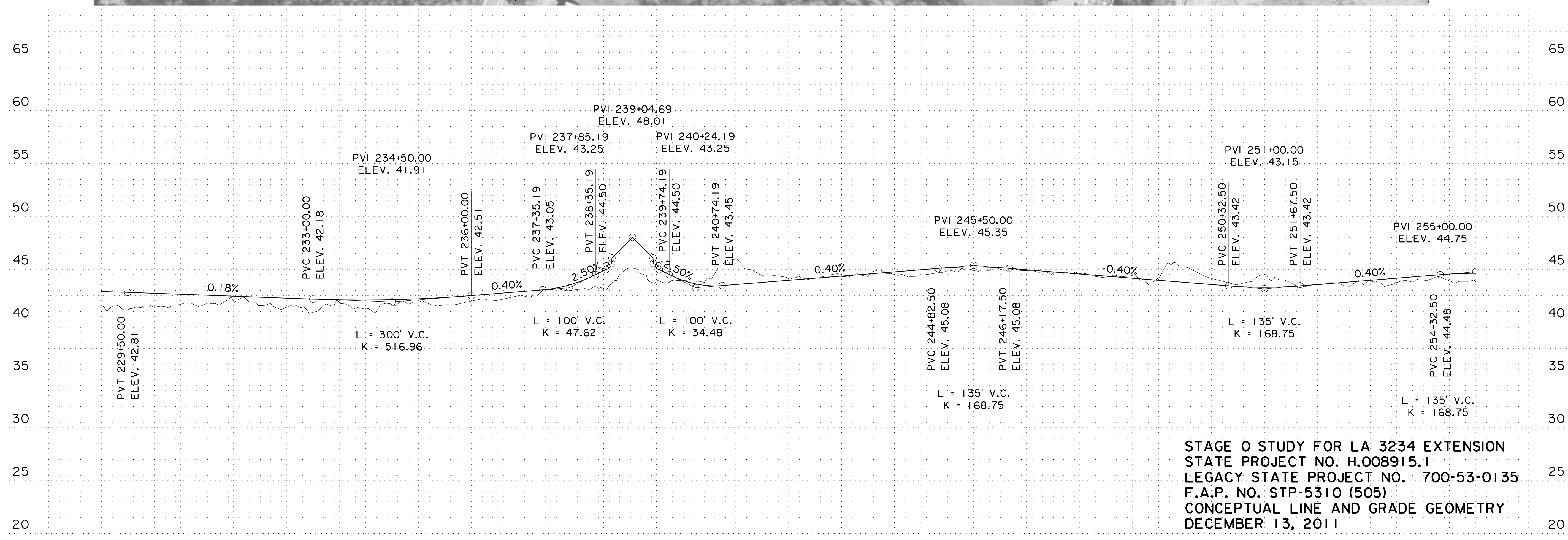

STAGE 0 STUDY FOR LA 3234 EXTENSION
STATE PROJECT NO. H.008915.1
LEGACY STATE PROJECT NO. 700-53-0135
F.A.P. NO. STP-5310 (505)
CONCEPTUAL LINE AND GRADE GEOMETRY
DECEMBER 13, 2011

SHEET NUMBER 5

PARISH: TANGIPAHOA | FEDERAL PROJECT: STP-5310 (505) | STATE PROJECT: H.008915.1

DESIGNED / CHECKED / DETAILED / CHECKED / DATE / SHEET / BY

NO. / DATE / REVISION DESCRIPTION

ALTERNATE A

DOTD — DEPARTMENT OF TRANSPORTATION AND DEVELOPMENT

12/13/2011 12:31:25

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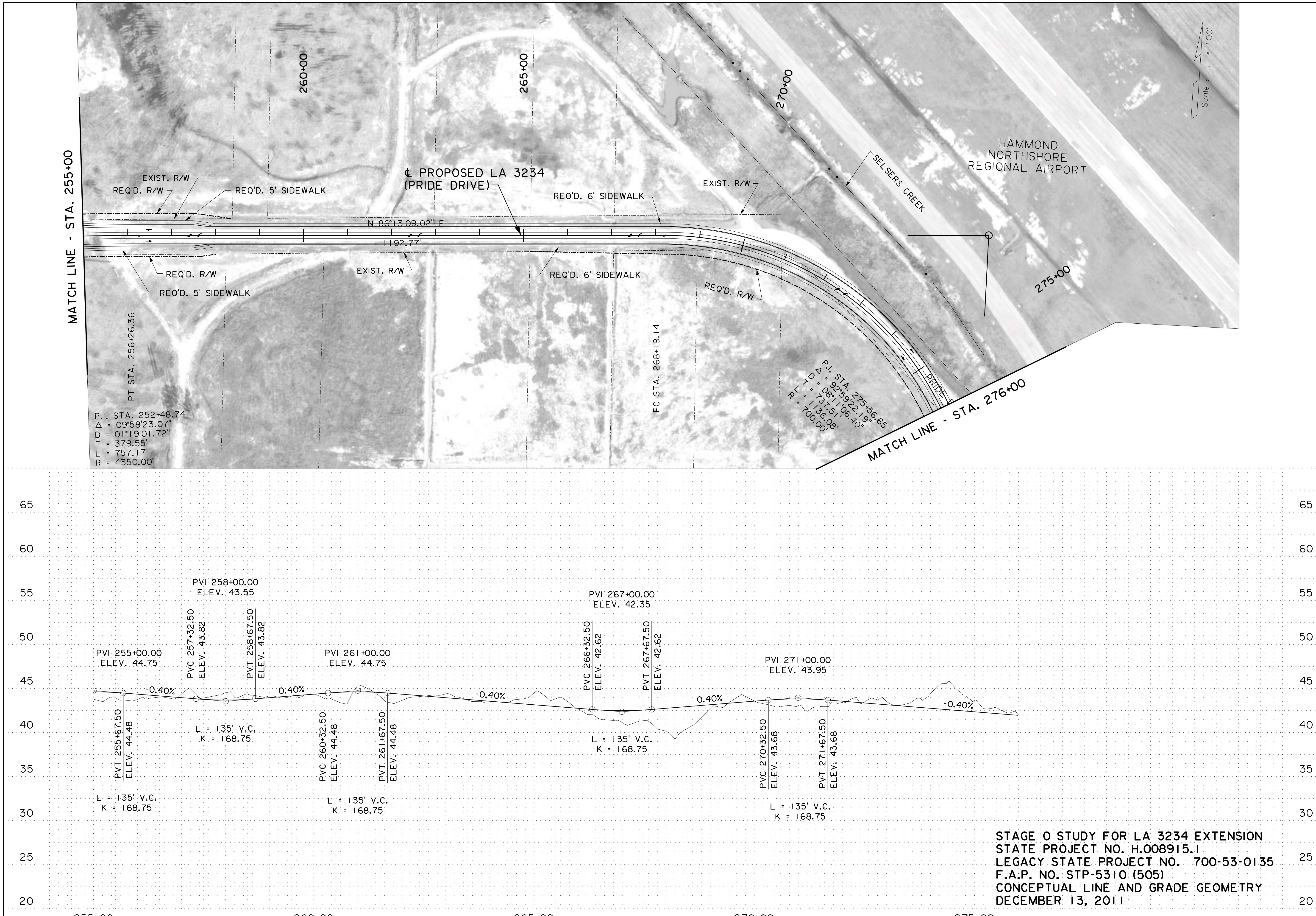

STAGE 0 STUDY FOR LA 3234 EXTENSION
STATE PROJECT NO. H.008915.1
LEGACY STATE PROJECT NO. 700-53-0135
F.A.P. NO. STP-5310 (505)
CONCEPTUAL LINE AND GRADE GEOMETRY
DECEMBER 13, 2011

SHEET NUMBER 6

PARISH: TANGIPAHOA
FEDERAL PROJECT: STP-5310 (505)
STATE PROJECT: H.008915.1

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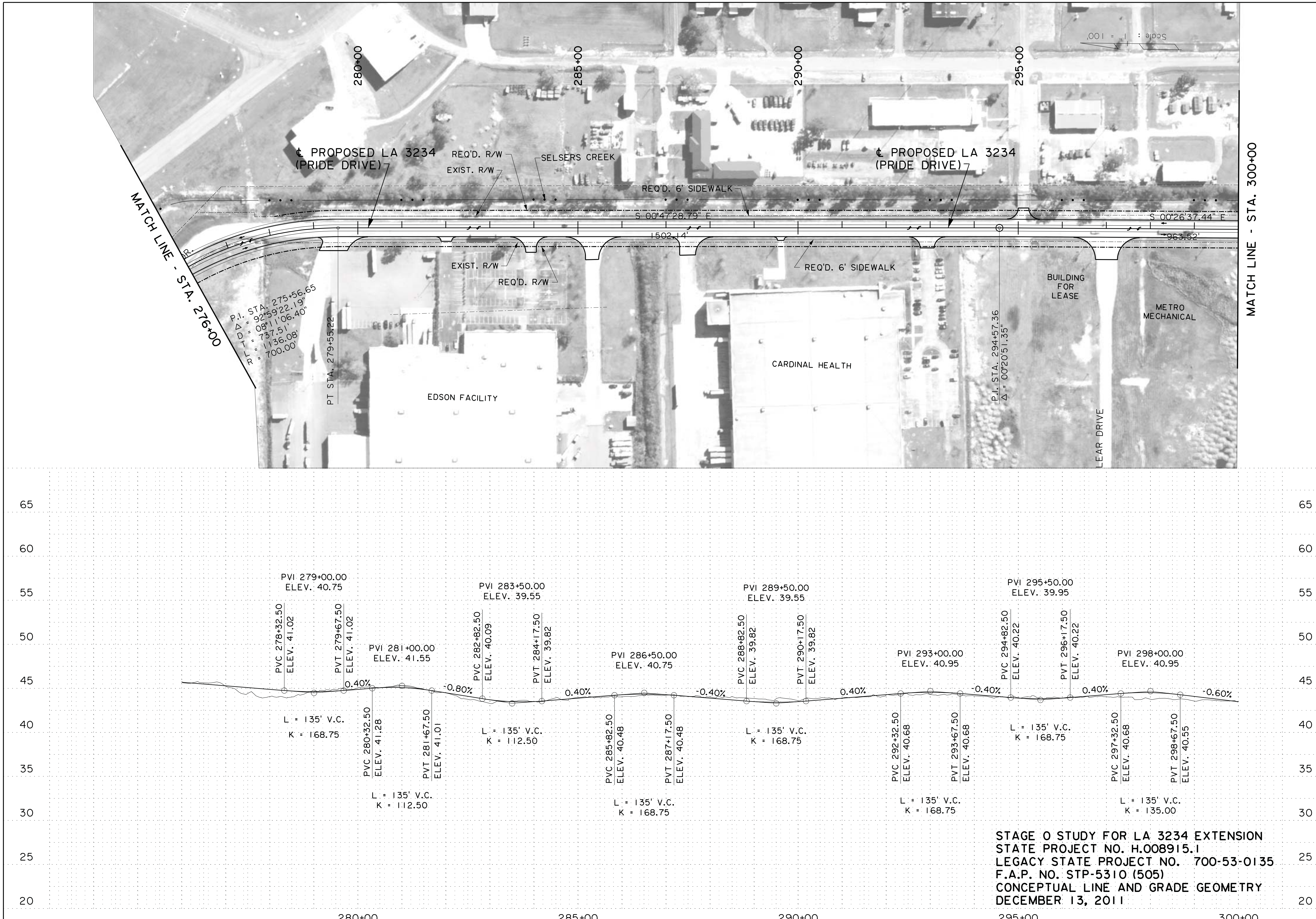
NO. / DATE / REVISION DESCRIPTION / BY

ALTERNATE A

DOTD

12/13/2011 12:31:40

STAGE 0



STAGE 0 STUDY FOR LA 3234 EXTENSION
STATE PROJECT NO. H.008915.1
LEGACY STATE PROJECT NO. 700-53-0135
F.A.P. NO. STP-5310 (505)
CONCEPTUAL LINE AND GRADE GEOMETRY
DECEMBER 13, 2011

PARISH: TANGIPAHOA
FEDERAL PROJECT: STP-5310 (505)
STATE PROJECT: H.008915.1

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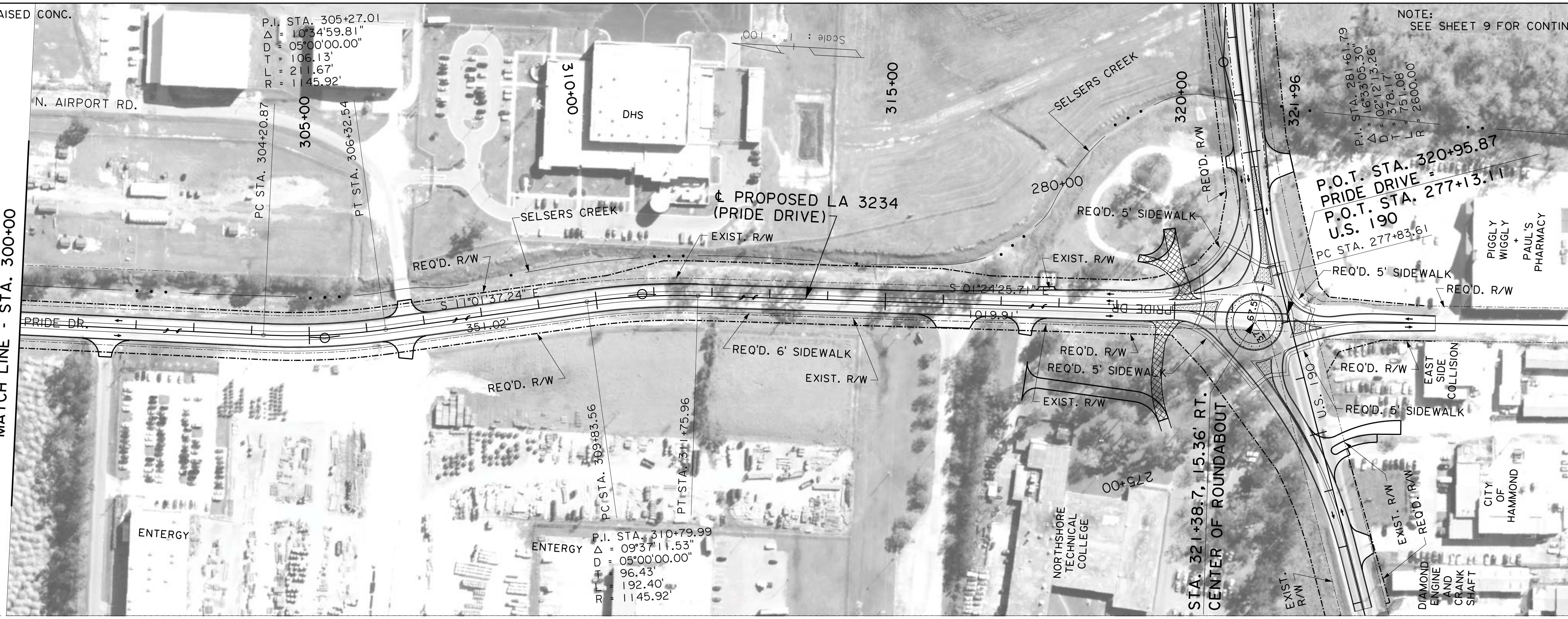
NO. | DATE | REVISION DESCRIPTION

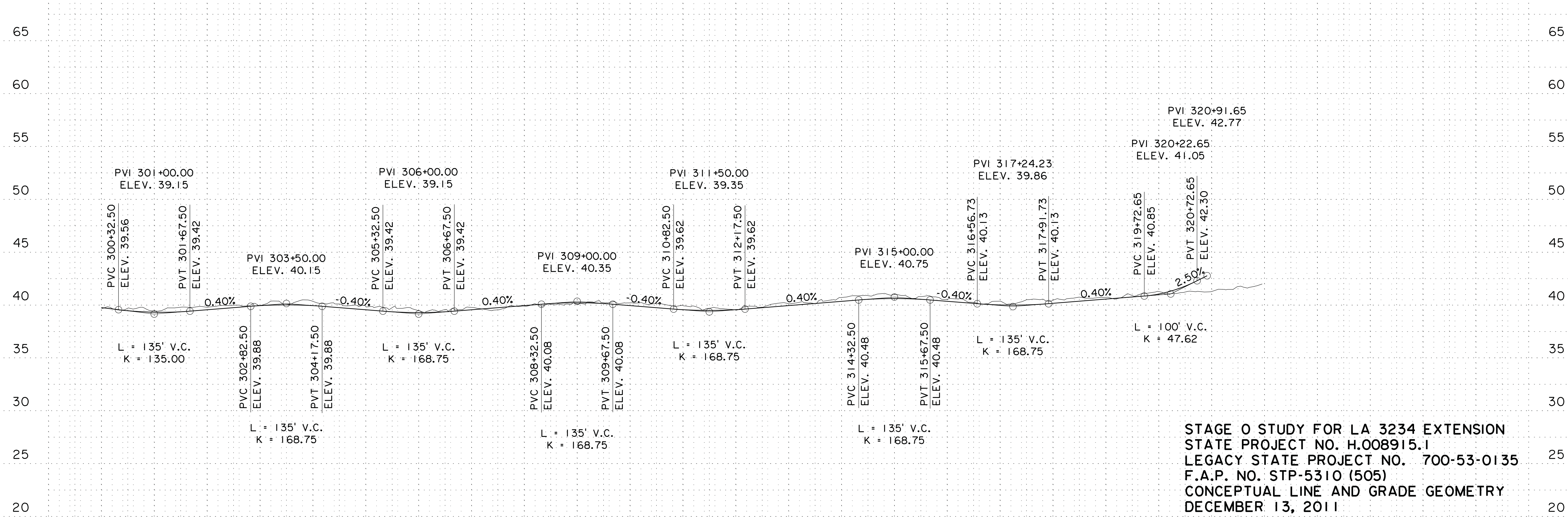
ALTERNATE A

DOTD

12/13/201112:31:54

STAGE 0





STAGE 0 STUDY FOR LA 3234 EXTENSION
STATE PROJECT NO. H.008915.1
LEGACY STATE PROJECT NO. 700-53-0135
F.A.P. NO. STP-5310 (505)
CONCEPTUAL LINE AND GRADE GEOMETRY
DECEMBER 13, 2011

SHEET NUMBER 8

PARISH: TANGIPAHOA
FEDERAL PROJECT: STP-5310 (505)
STATE PROJECT: H.008915.1

DESIGNED / CHECKED / DETAILED / CHECKED / DATE / SHEET

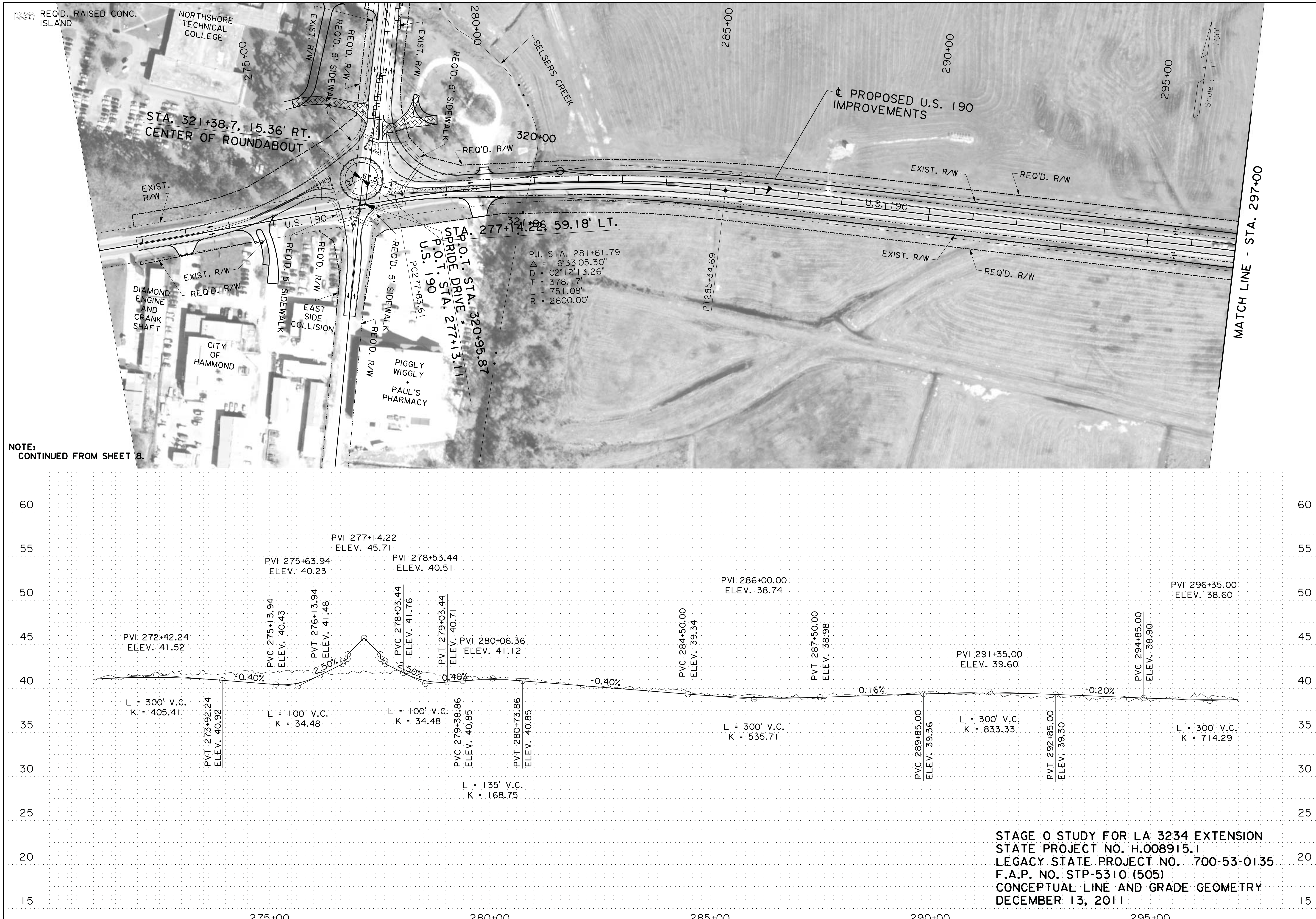
NO. / DATE / REVISION DESCRIPTION / BY

ALTERNATE A

DOTD

12/13/2011 12:32:15

STAGE 0



STAGE 0 STUDY FOR LA 3234 EXTENSION
STATE PROJECT NO. H.008915.1
LEGACY STATE PROJECT NO. 700-53-0135
F.A.P. NO. STP-5310 (505)
CONCEPTUAL LINE AND GRADE GEOMETRY
DECEMBER 13, 2011

SHEET NUMBER 9

PARISH TANGIPAHOA | FEDERAL PROJECT STP-5310 (505) | STATE PROJECT H.008915.1

DESIGNED / CHECKED / DETAILED / CHECKED / DATE / SHEET

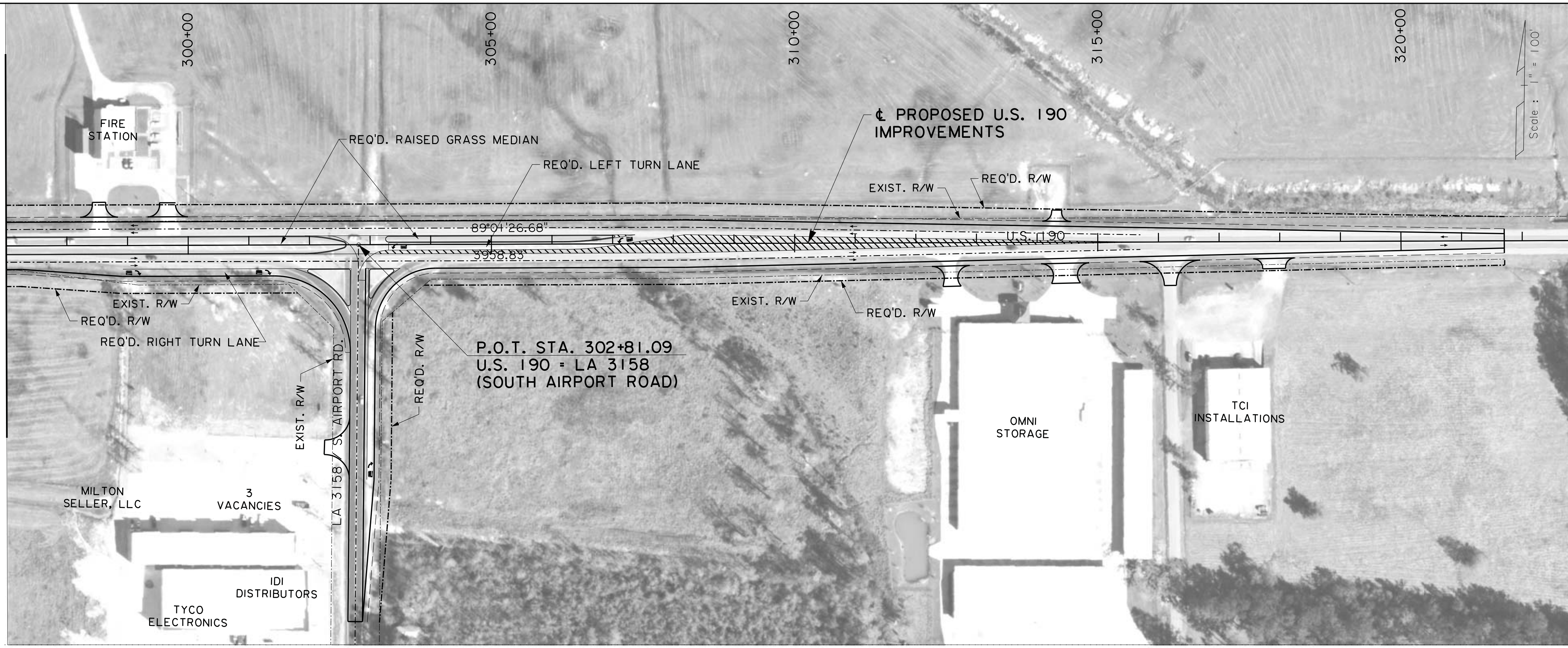
NO. / DATE / REVISION DESCRIPTION / BY

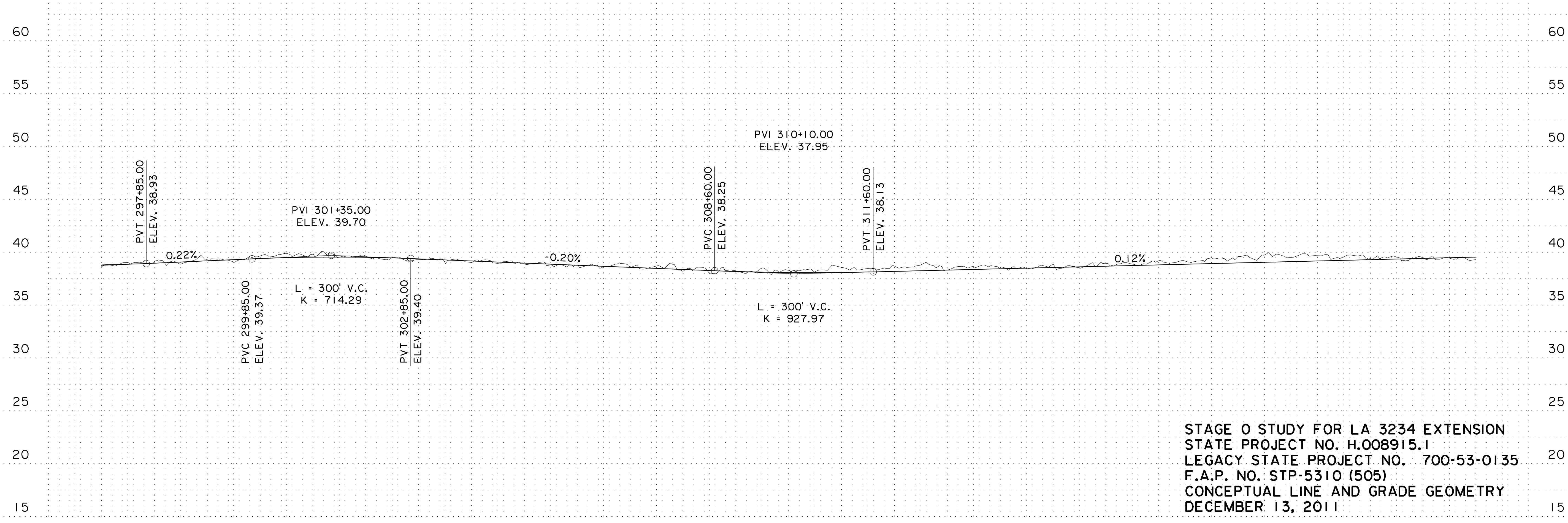
ALTERNATE A

STATE OF LOUISIANA

DEPARTMENT OF TRANSPORTATION AND DEVELOPMENT DOTD

STAGE 0





STAGE 0 STUDY FOR LA 3234 EXTENSION
STATE PROJECT NO. H.008915.1
LEGACY STATE PROJECT NO. 700-53-0135
F.A.P. NO. STP-5310 (505)
CONCEPTUAL LINE AND GRADE GEOMETRY
DECEMBER 13, 2011

SHEET NUMBER 10

PARISH TANGIPAHOA
FEDERAL PROJECT STP-5310 (505)
STATE PROJECT H.008915.1

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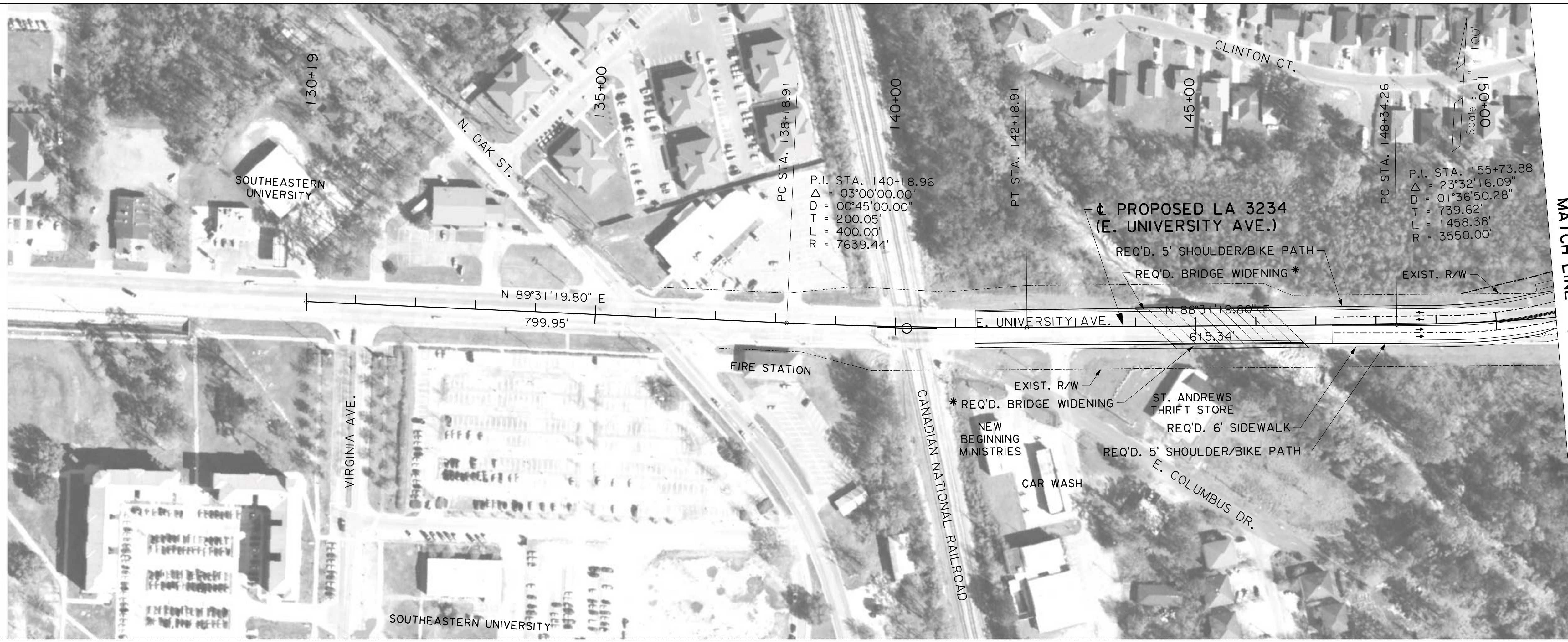
NO. / DATE / REVISION DESCRIPTION / BY

ALTERNATE A

DOTD

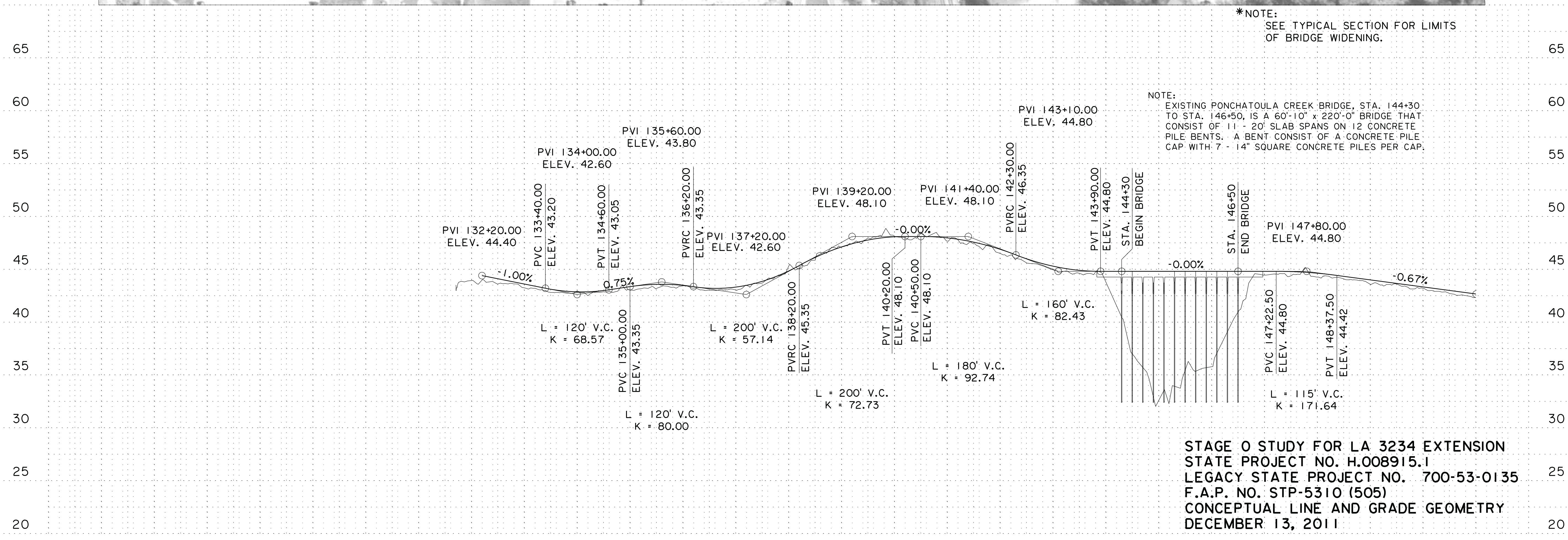
Appendix 2 to Chapter 1
Alternate B

STAGE 0



*NOTE:
SEE TYPICAL SECTION FOR LIMITS OF BRIDGE WIDENING.

NOTE:
EXISTING PONCHATOULA CREEK BRIDGE, STA. 144+30 TO STA. 146+50, IS A 60'-10" x 220'-0" BRIDGE THAT CONSIST OF 11 - 20' SLAB SPANS ON 12 CONCRETE PILE BENTS. A BENT CONSIST OF A CONCRETE PILE CAP WITH 7 - 14" SQUARE CONCRETE PILES PER CAP.



STAGE 0 STUDY FOR LA 3234 EXTENSION
STATE PROJECT NO. H.008915.1
LEGACY STATE PROJECT NO. 700-53-0135
F.A.P. NO. STP-5310 (505)
CONCEPTUAL LINE AND GRADE GEOMETRY
DECEMBER 13, 2011

SHEET NUMBER	1
PARISH	TANGIPAHOA
FEDERAL PROJECT	STP-5310 (505)
STATE PROJECT	H.008915.1

DESIGNED CHECKED DETAILED CHECKED DATE SHEET

NO. DATE REVISION DESCRIPTION BY

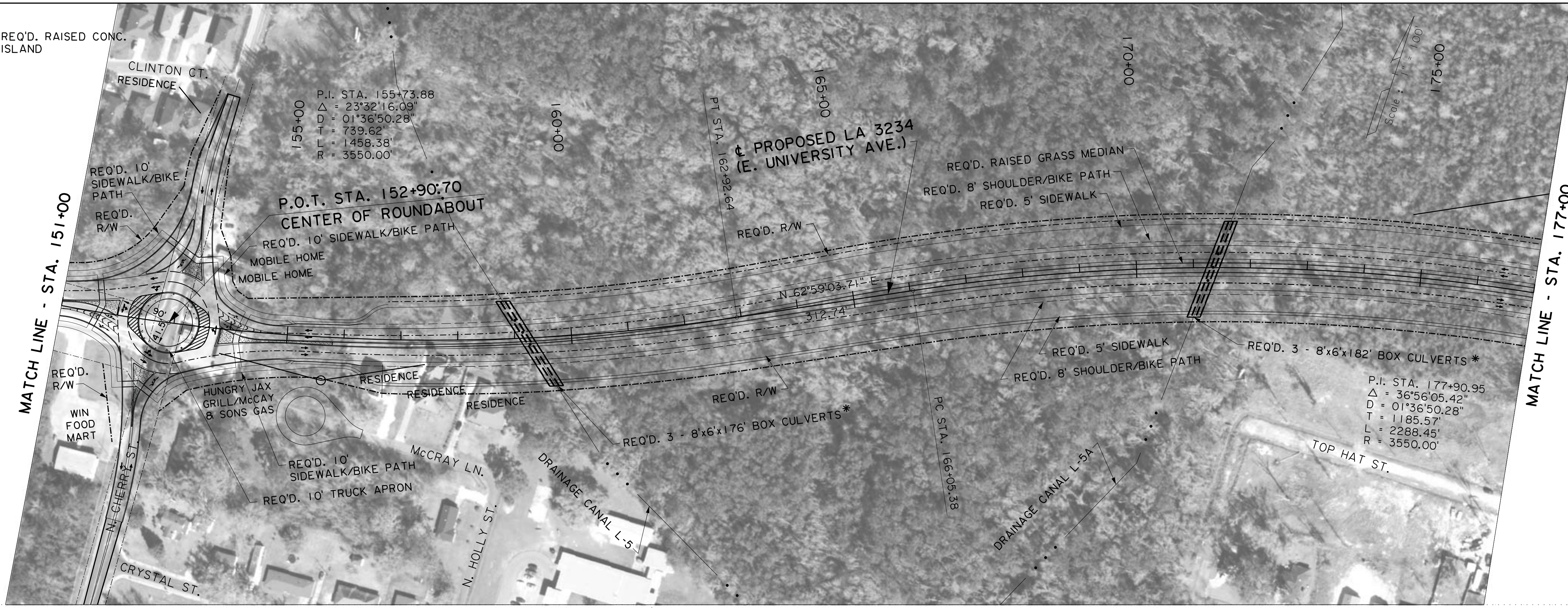
ALTERNATE B

STATE OF LOUISIANA

DOTD DEPARTMENT OF TRANSPORTATION AND DEVELOPMENT

12/13/2011 2:46:17

STAGE 0



* NOTE:
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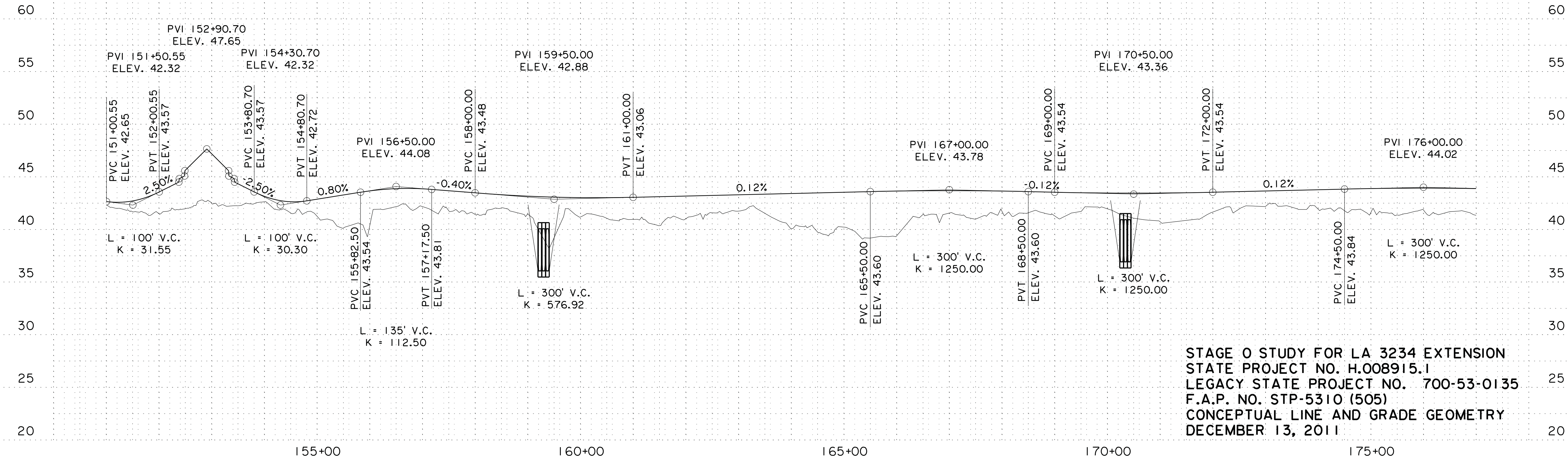


STAGE 0 STUDY FOR LA 3234 EXTENSION
STATE PROJECT NO. H.008915.1
LEGACY STATE PROJECT NO. 700-53-0135
F.A.P. NO. STP-5310 (505)
CONCEPTUAL LINE AND GRADE GEOMETRY
DECEMBER 13, 2011

SHEET NUMBER 2

PARISH: TANGIPAHOA
FEDERAL PROJECT: STP-5310 (505)
STATE PROJECT: H.008915.1

DESIGNED / CHECKED / DETAILED / CHECKED / DATE / SHEET

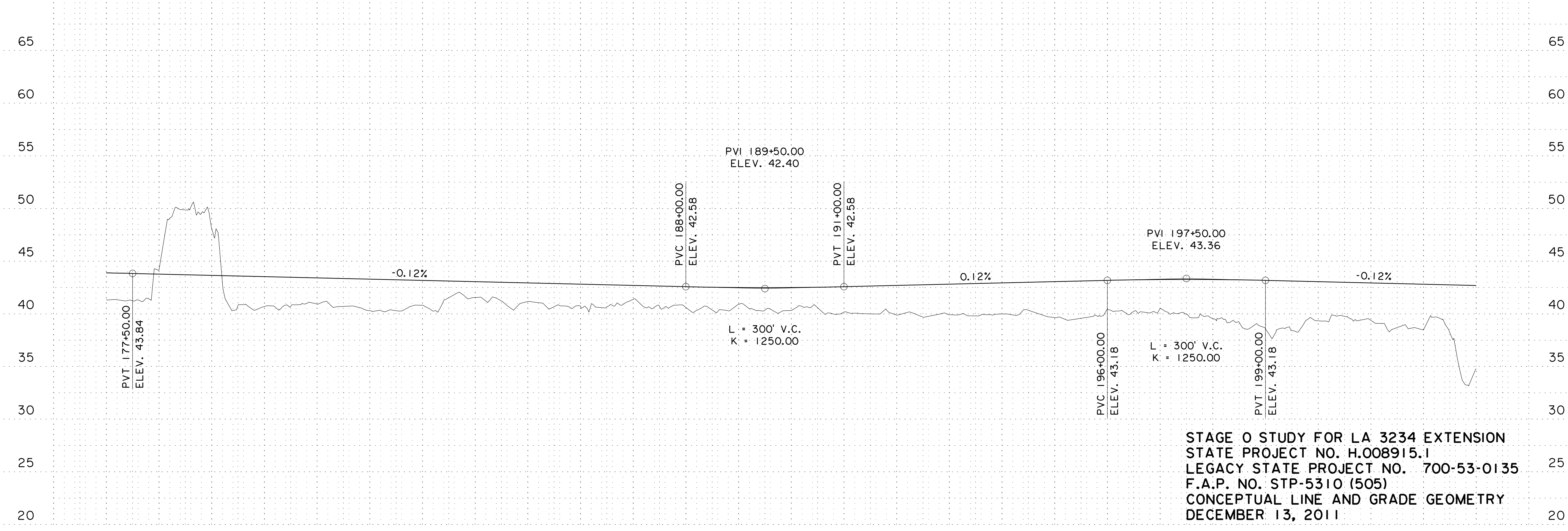
NO. / DATE / REVISION DESCRIPTION / BY

ALTERNATE B

DOTD

12/13/2011 2:46:29

STAGE 0



STAGE 0 STUDY FOR LA 3234 EXTENSION
STATE PROJECT NO. H.008915.1
LEGACY STATE PROJECT NO. 700-53-0135
F.A.P. NO. STP-5310 (505)
CONCEPTUAL LINE AND GRADE GEOMETRY
DECEMBER 13, 2011

SHEET NUMBER 3

PARISH: TANGIPAHOA
FEDERAL PROJECT: STP-5310 (505)
STATE PROJECT: H.008915.1

DESIGNED / CHECKED / DETAILED / CHECKED / DATE / SHEET

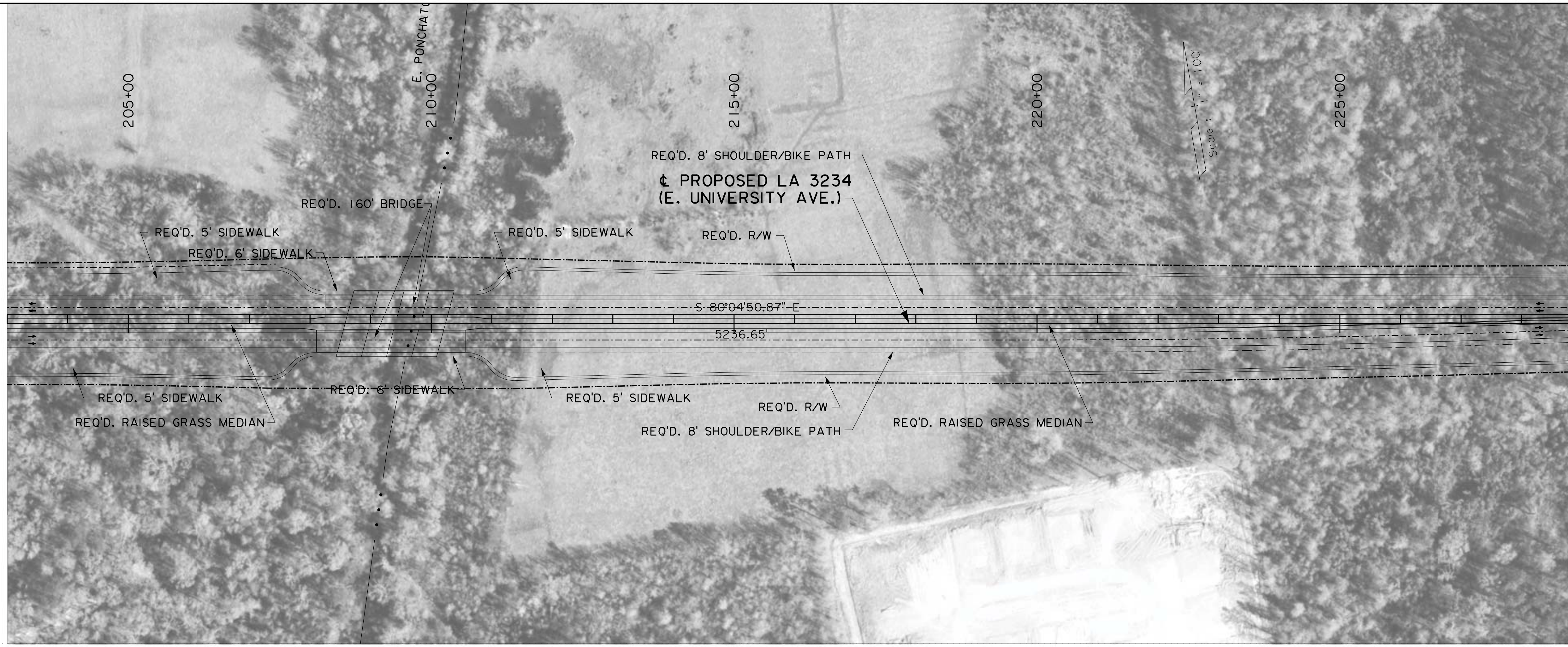
NO. | DATE | REVISION DESCRIPTION | BY

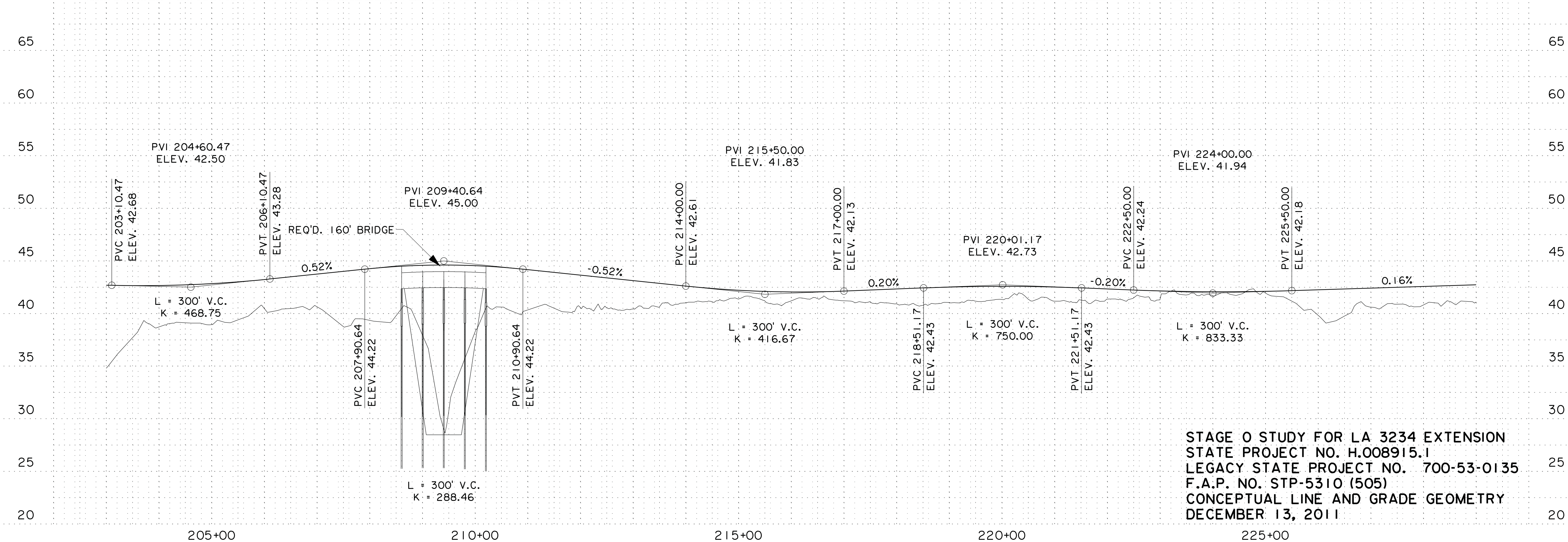
ALTERNATE B

DEPARTMENT OF TRANSPORTATION AND DEVELOPMENT DOTD

12/13/2011 12:46:42

STAGE 0





STAGE 0 STUDY FOR LA 3234 EXTENSION
STATE PROJECT NO. H.008915.1
LEGACY STATE PROJECT NO. 700-53-0135
F.A.P. NO. STP-5310 (505)
CONCEPTUAL LINE AND GRADE GEOMETRY
DECEMBER 13, 2011

SHEET NUMBER	4
PARISH	TANGIPAHOA
FEDERAL PROJECT	STP-5310 (505)
STATE PROJECT	H.008915.1

DESIGNED / CHECKED / DETAILED / CHECKED / DATE / SHEET

NO. / DATE / REVISION DESCRIPTION / BY

ALTERNATE B

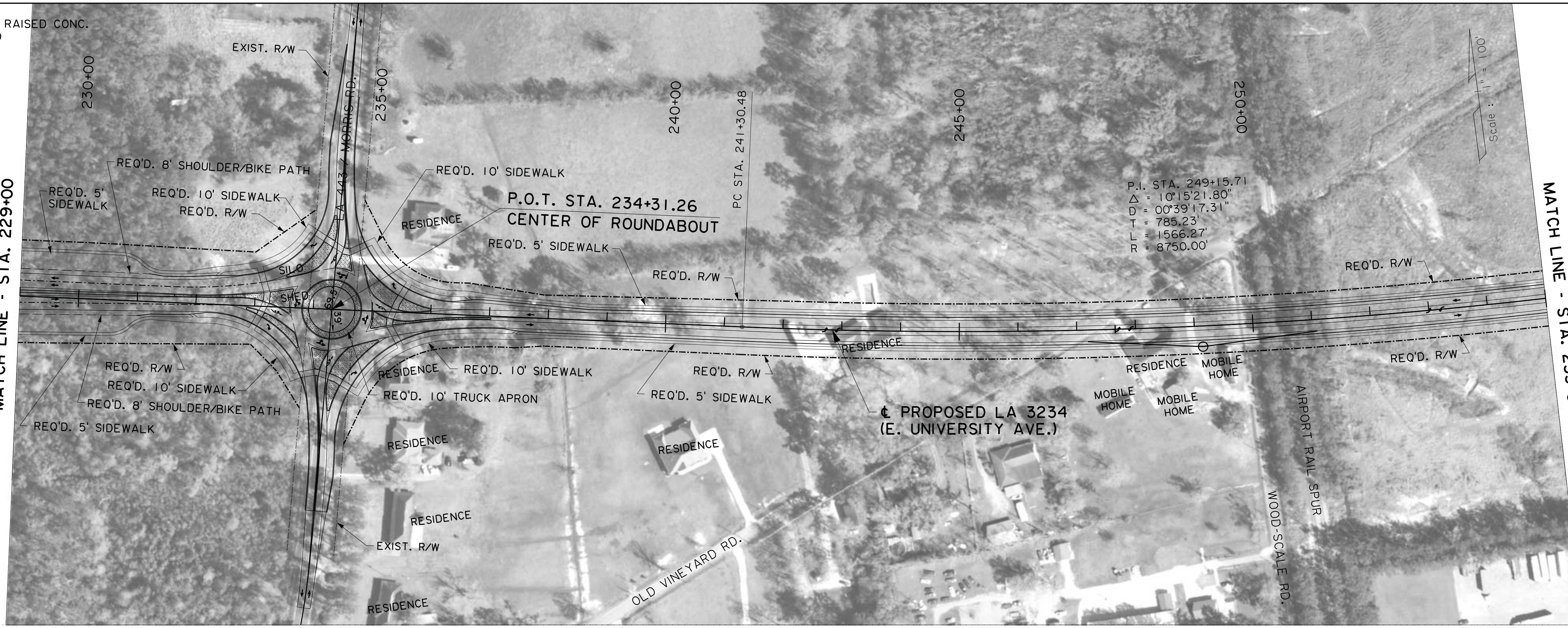
STATE OF LOUISIANA

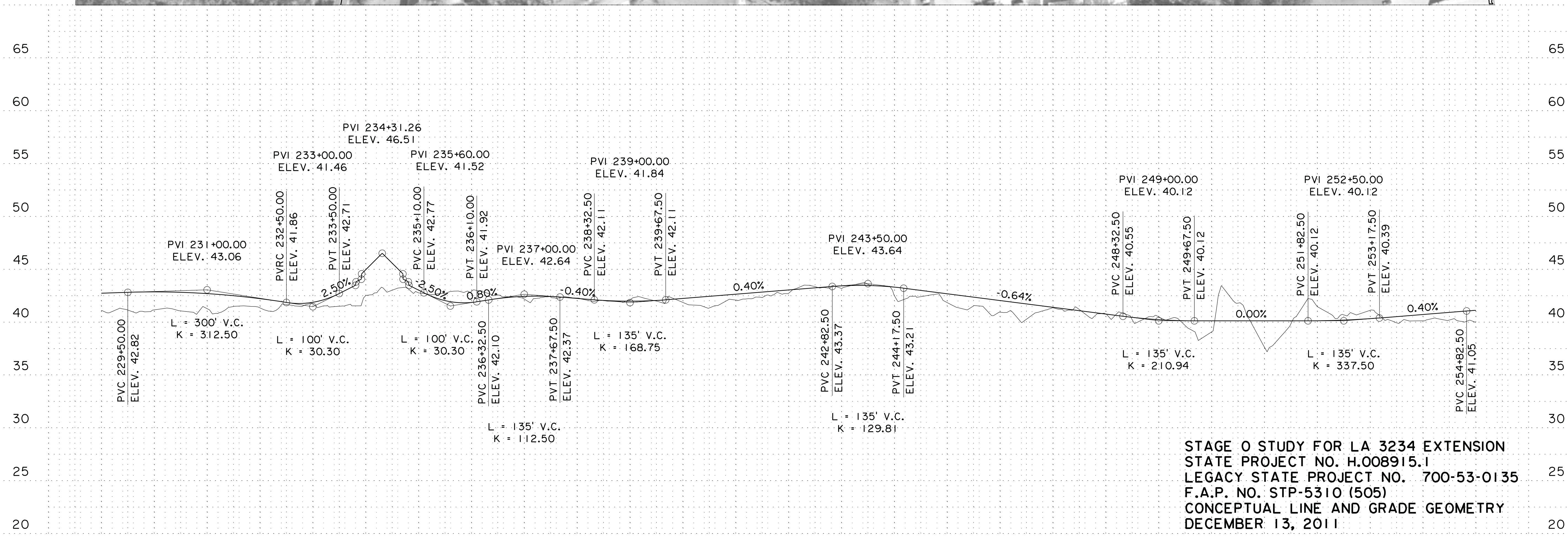
DOTD DEPARTMENT OF TRANSPORTATION AND DEVELOPMENT

12/13/2011 2:46:56

REQ'D. RAISED CONC. ISLAND

STAGE 0





STAGE 0 STUDY FOR LA 3234 EXTENSION
STATE PROJECT NO. H.008915.1
LEGACY STATE PROJECT NO. 700-53-0135
F.A.P. NO. STP-5310 (505)
CONCEPTUAL LINE AND GRADE GEOMETRY
DECEMBER 13, 2011

SHEET NUMBER	5
PARISH	TANGIPAHOA
FEDERAL PROJECT	STP-5310 (505)
STATE PROJECT	H.008915.1

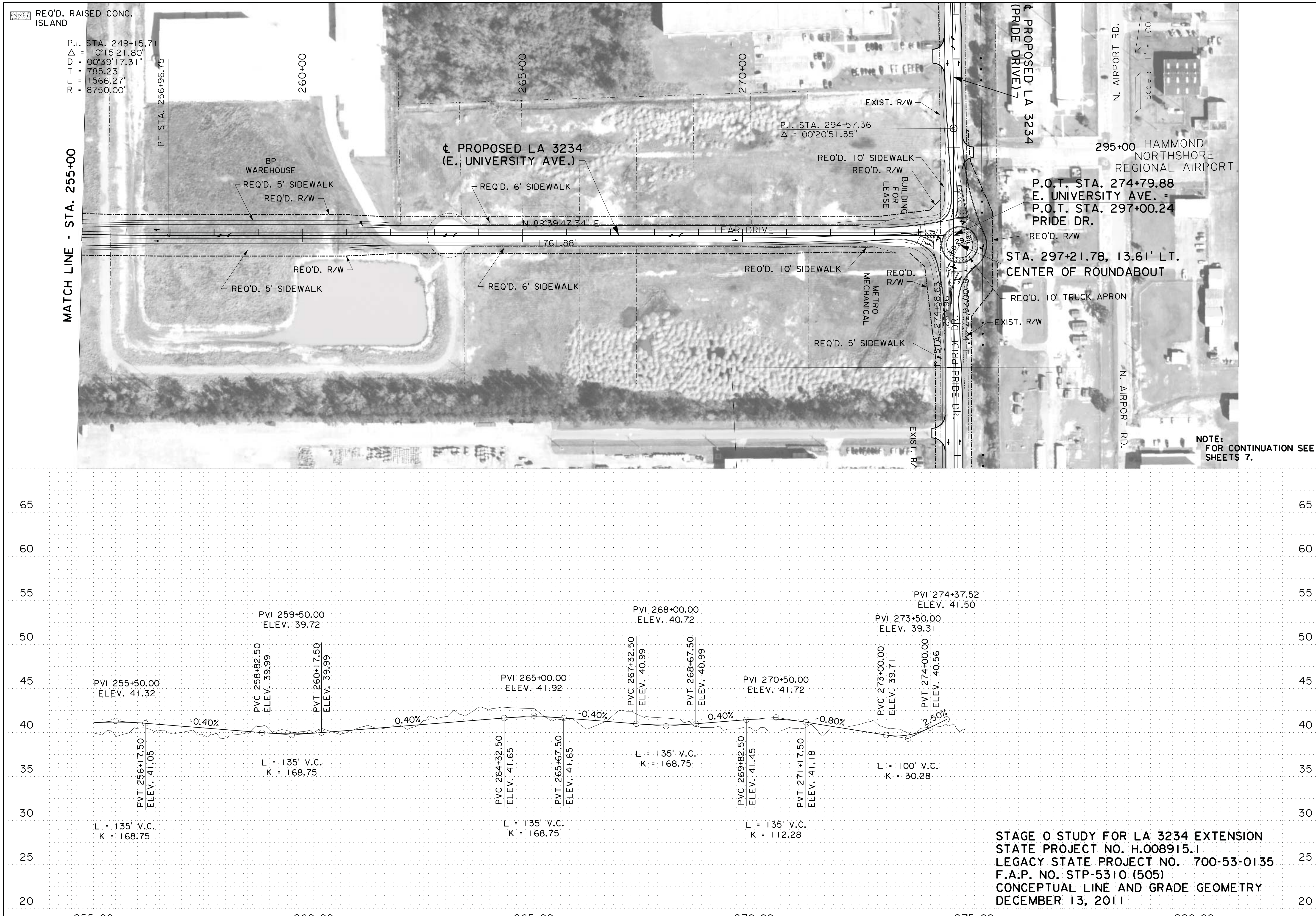
DESIGNED / CHECKED / DETAILED / CHECKED / DATE / SHEET

NO. / DATE / REVISION DESCRIPTION / BY

ALTERNATE B

12/13/2011 2:47:10

STAGE 0



STAGE 0 STUDY FOR LA 3234 EXTENSION
STATE PROJECT NO. H.008915.1
LEGACY STATE PROJECT NO. 700-53-0135
F.A.P. NO. STP-5310 (505)
CONCEPTUAL LINE AND GRADE GEOMETRY
DECEMBER 13, 2011

SHEET NUMBER 6

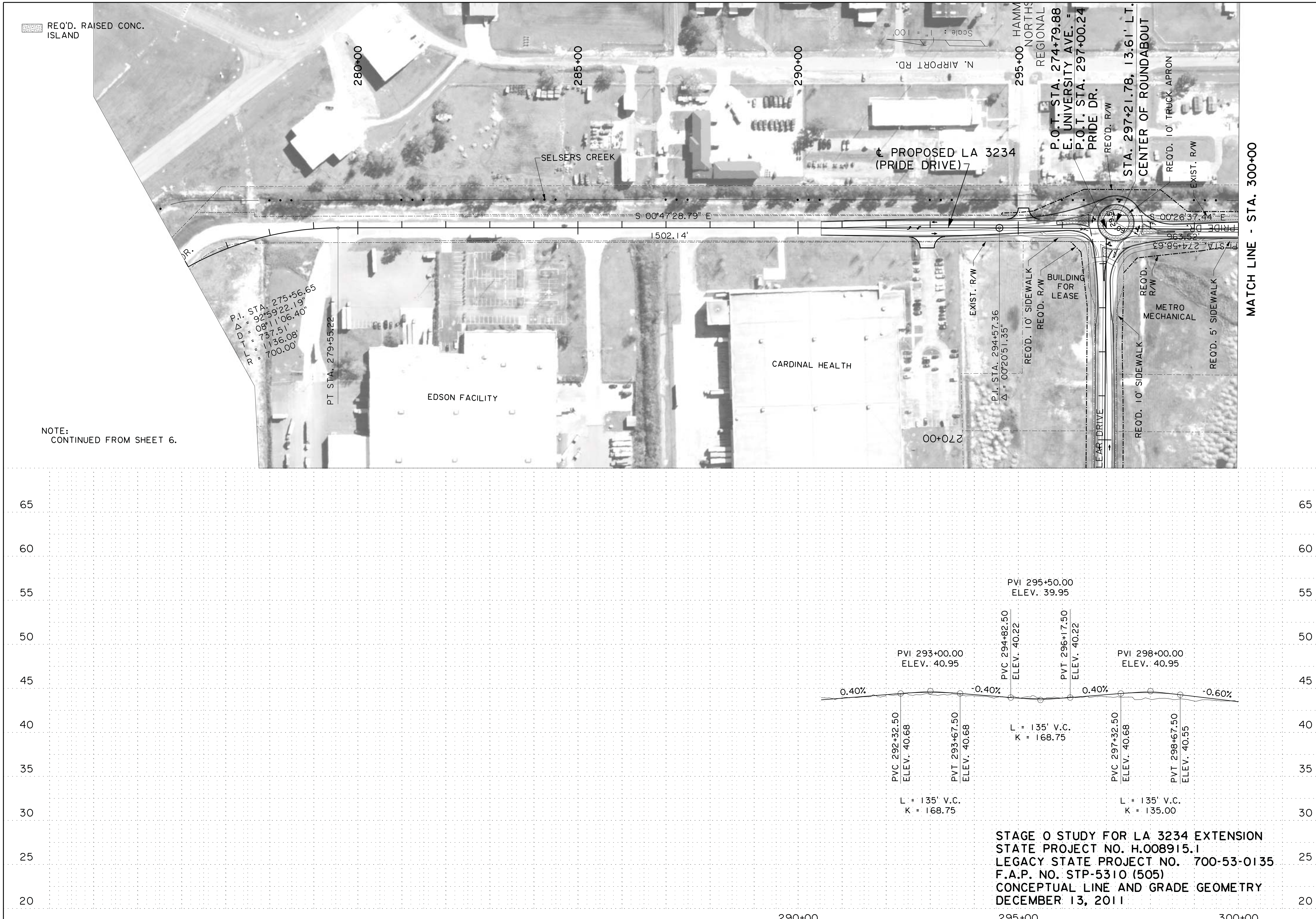
PARISH TANGIPAHOA
FEDERAL PROJECT STP-5310 (505)
STATE PROJECT H.008915.1

DESIGNED
CHECKED
DETAILED
CHECKED
DATE
SHEET

NO. DATE REVISION DESCRIPTION BY

ALTERNATE B

STAGE 0



STAGE 0 STUDY FOR LA 3234 EXTENSION
STATE PROJECT NO. H.008915.1
LEGACY STATE PROJECT NO. 700-53-0135
F.A.P. NO. STP-5310 (505)
CONCEPTUAL LINE AND GRADE GEOMETRY
DECEMBER 13, 2011

SHEET NUMBER 7

PARISH TANGIPAHOA
FEDERAL PROJECT STP-5310 (505)
STATE PROJECT H.008915.1

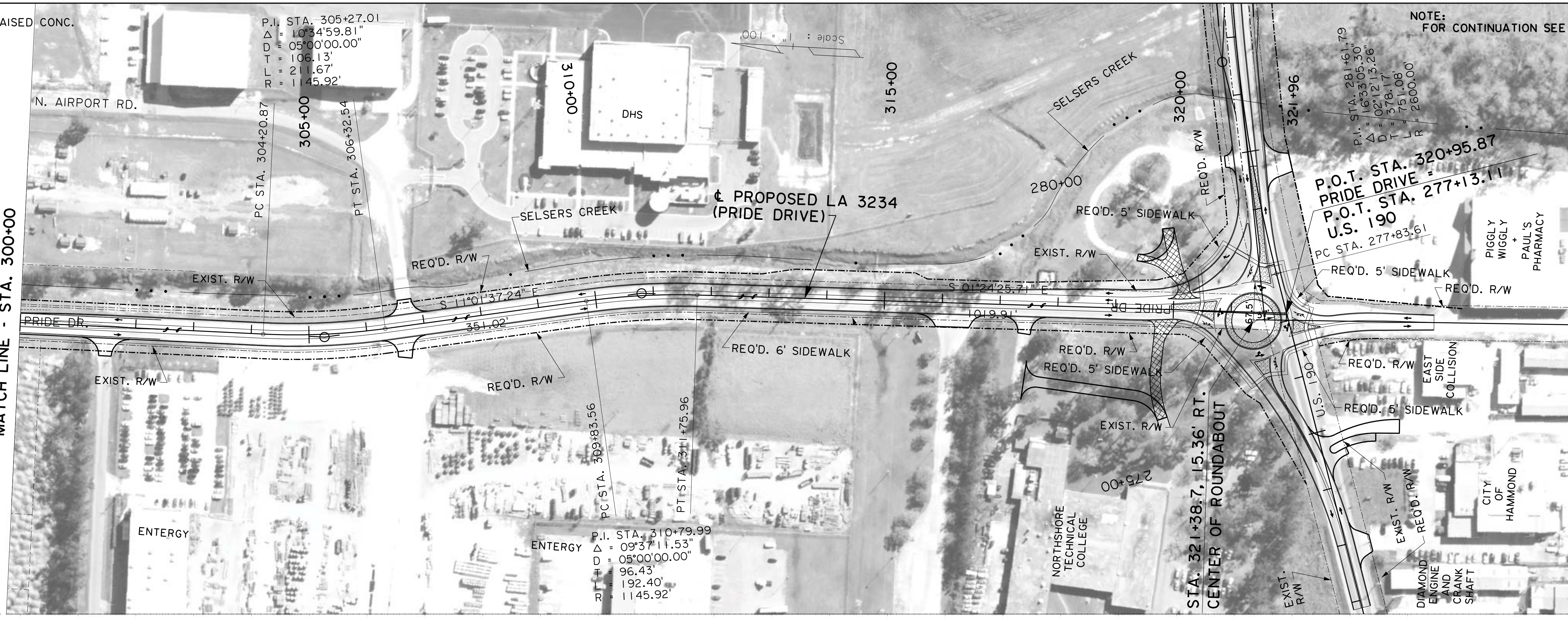
ALTERNATE B

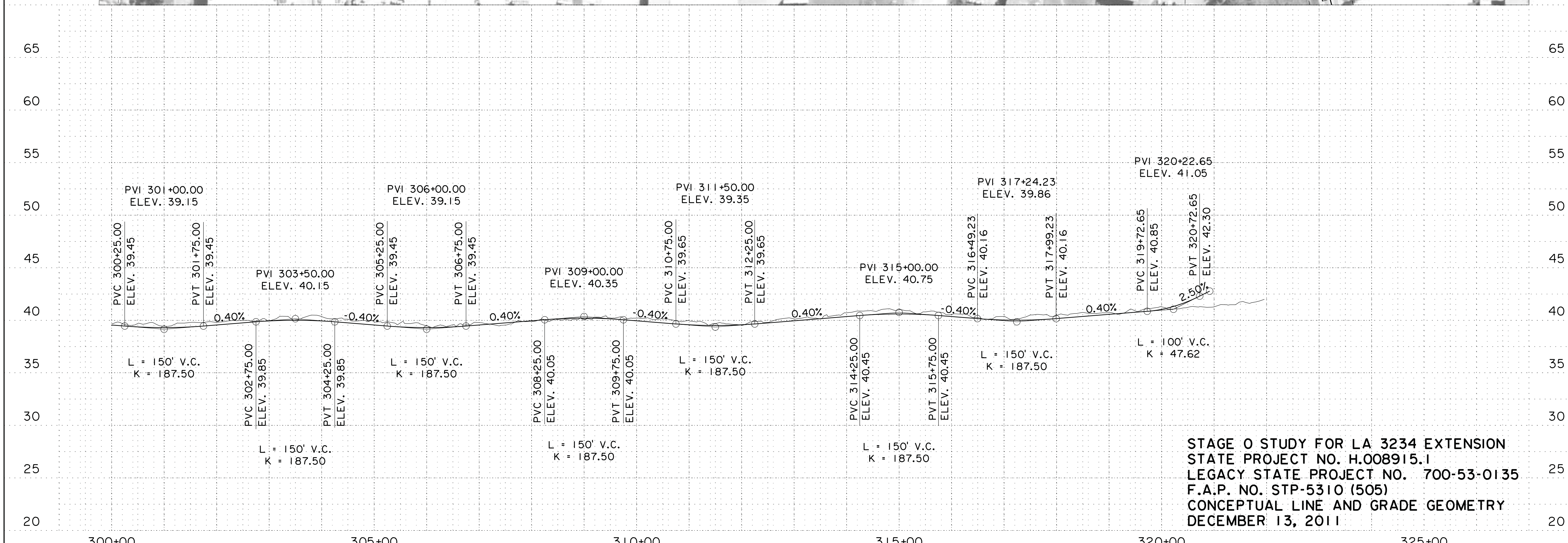
12/13/2011 2:47:36

STAGE 0

REQ'D. RAISED CONC. ISLAND

NOTE:
FOR CONTINUATION SEE SHEET 9.





STAGE 0 STUDY FOR LA 3234 EXTENSION
STATE PROJECT NO. H.008915.1
LEGACY STATE PROJECT NO. 700-53-0135
F.A.P. NO. STP-5310 (505)
CONCEPTUAL LINE AND GRADE GEOMETRY
DECEMBER 13, 2011

SHEET NUMBER	8
PARISH	TANGIPAHOA
FEDERAL PROJECT	STP-5310 (505)
STATE PROJECT	H.008915.1

DESIGNED / CHECKED / DETAILED / CHECKED / DATE / SHEET

NO. / DATE / REVISION DESCRIPTION / BY

ALTERNATE B

DOTD — DEPARTMENT OF TRANSPORTATION AND DEVELOPMENT

12/13/2011 2:47:49

STAGE 0

STAGE 0 STUDY FOR LA 3234 EXTENSION
STATE PROJECT NO. H.008915.1
LEGACY STATE PROJECT NO. 700-53-0135
F.A.P. NO. STP-5310 (505)
CONCEPTUAL LINE AND GRADE GEOMETRY
DECEMBER 13, 2011

SHEET NUMBER 9

PARISH: TANGIPAHOA
FEDERAL PROJECT: STP-5310 (505)
STATE PROJECT: H.008915.1

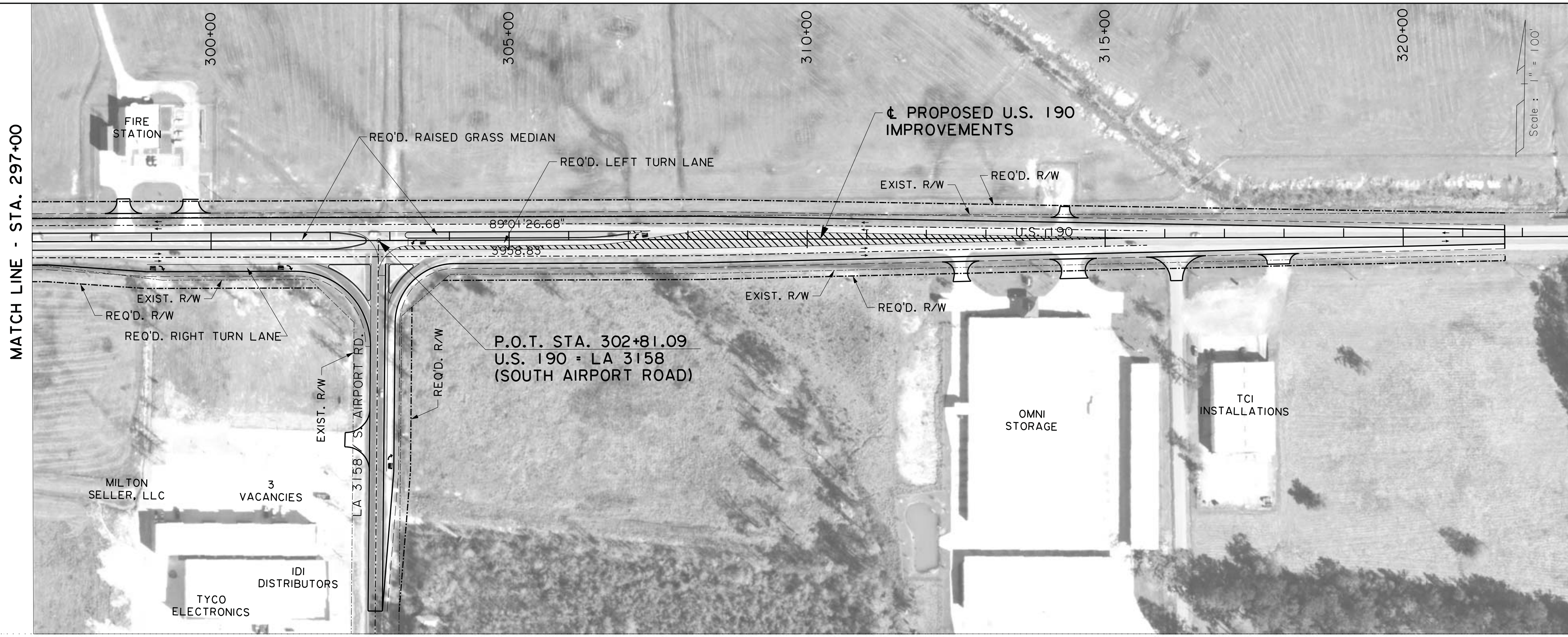
DESIGNED / CHECKED / DETAILED / CHECKED / DATE / SHEET / BY

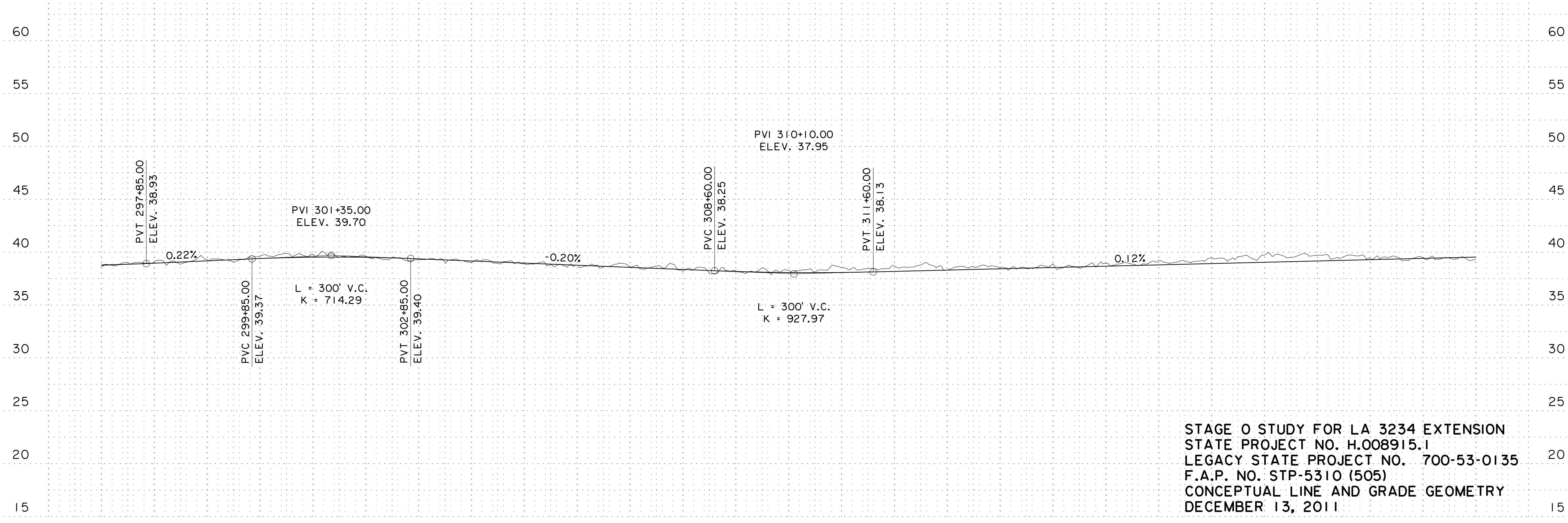
REVISION DESCRIPTION / DATE / NO.

ALTERNATE B

12/13/2011 12:48:02

STAGE 0





STAGE 0 STUDY FOR LA 3234 EXTENSION
STATE PROJECT NO. H.008915.1
LEGACY STATE PROJECT NO. 700-53-0135
F.A.P. NO. STP-5310 (505)
CONCEPTUAL LINE AND GRADE GEOMETRY
DECEMBER 13, 2011

SHEET NUMBER 10

PARISH: TANGIPAHOA
FEDERAL PROJECT: STP-5310 (505)
STATE PROJECT: H.008915.1

DESIGNED / CHECKED / DETAILED / CHECKED / DATE / SHEET

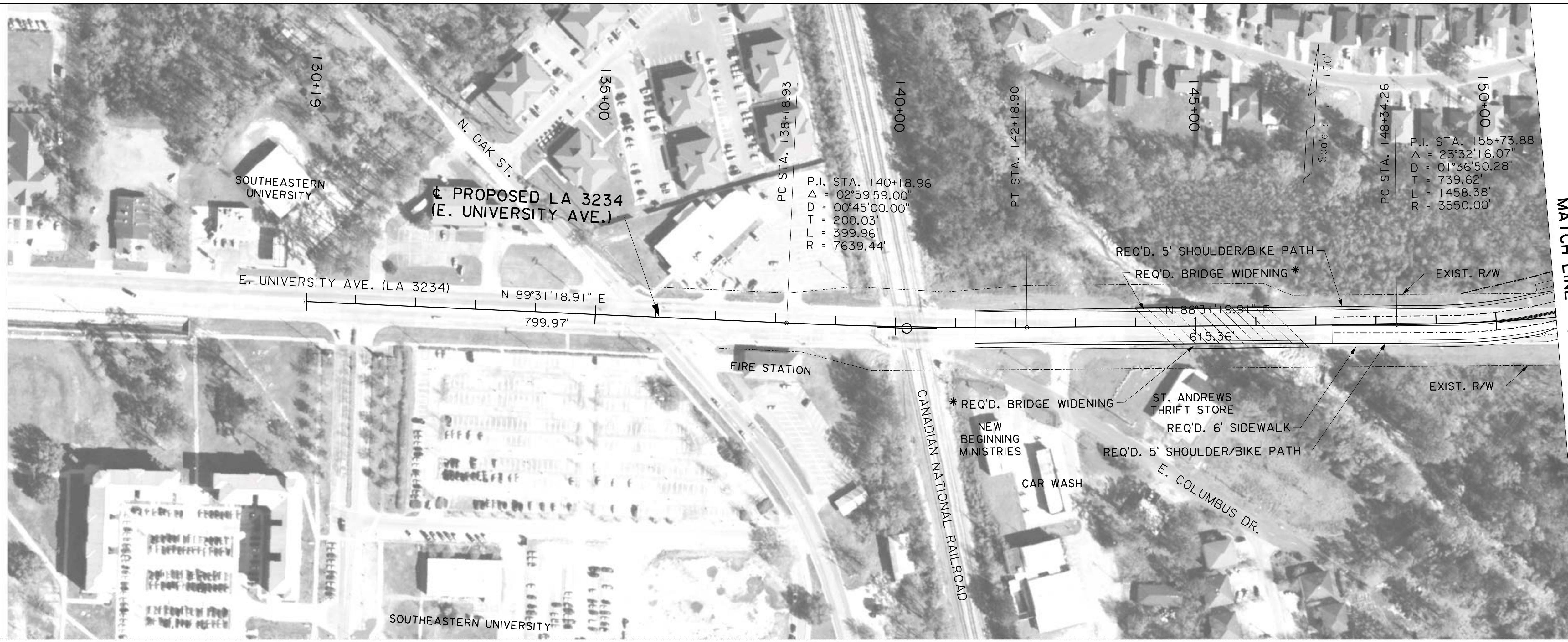
NO. / DATE / REVISION DESCRIPTION / BY

ALTERNATE B

Appendix 2 to Chapter 1
Alternate C

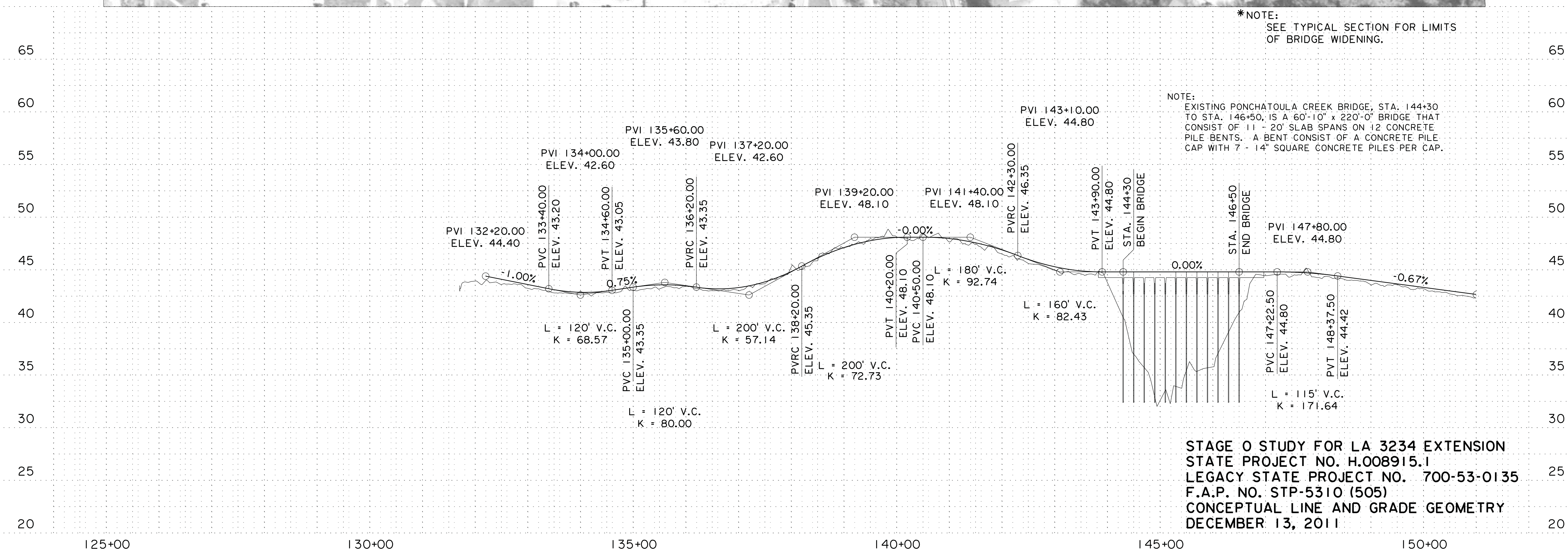
12/13/2011 12:49:26

STAGE 0



*NOTE:
SEE TYPICAL SECTION FOR LIMITS OF BRIDGE WIDENING.

NOTE:
EXISTING PONCHATOULA CREEK BRIDGE, STA. 144+30 TO STA. 146+50, IS A 60'-10" x 220'-0" BRIDGE THAT CONSIST OF 11 - 20' SLAB SPANS ON 12 CONCRETE PILE BENTS. A BENT CONSIST OF A CONCRETE PILE CAP WITH 7 - 14" SQUARE CONCRETE PILES PER CAP.



STAGE 0 STUDY FOR LA 3234 EXTENSION
STATE PROJECT NO. H.008915.1
LEGACY STATE PROJECT NO. 700-53-0135
F.A.P. NO. STP-5310 (505)
CONCEPTUAL LINE AND GRADE GEOMETRY
DECEMBER 13, 2011

SHEET NUMBER	1
PARISH	TANGIPAHOA
FEDERAL PROJECT	STP-5310 (505)
STATE PROJECT	H.008915.1
DESIGNED / CHECKED	
DETAILED / CHECKED	
DATE / SHEET	

NO.	DATE	REVISION DESCRIPTION	BY

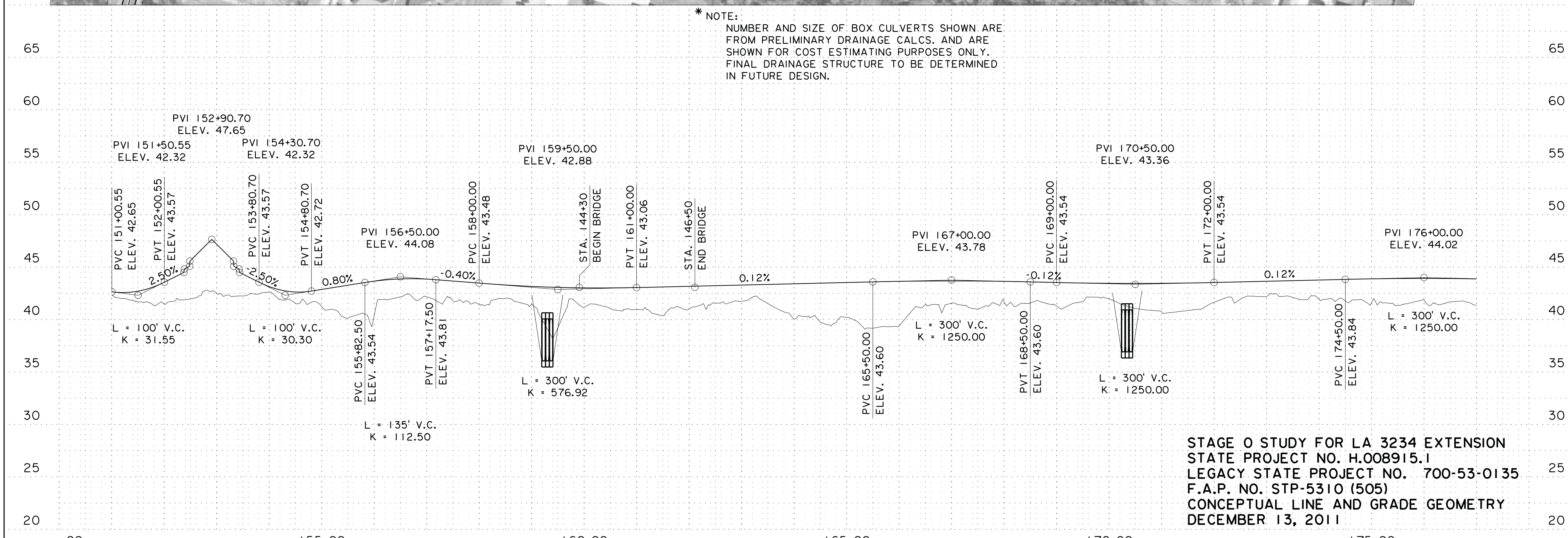
ALTERNATE C

DOTD — DEPARTMENT OF TRANSPORTATION AND DEVELOPMENT

12/13/2011 2:49:38

STAGE 0

*NOTE:
NUMBER AND SIZE OF BOX CULVERTS SHOWN ARE FROM PRELIMINARY DRAINAGE CALCS. AND ARE SHOWN FOR COST ESTIMATING PURPOSES ONLY. FINAL DRAINAGE STRUCTURE TO BE DETERMINED IN FUTURE DESIGN.



STAGE 0 STUDY FOR LA 3234 EXTENSION
STATE PROJECT NO. H.008915.1
LEGACY STATE PROJECT NO. 700-53-0135
F.A.P. NO. STP-5310 (505)
CONCEPTUAL LINE AND GRADE GEOMETRY
DECEMBER 13, 2011

SHEET NUMBER	2
PARISH	TANGIPAHOA
FEDERAL PROJECT	STP-5310 (505)
STATE PROJECT	H.008915.1

DESIGNED / CHECKED / DETAILED / CHECKED / DATE / SHEET

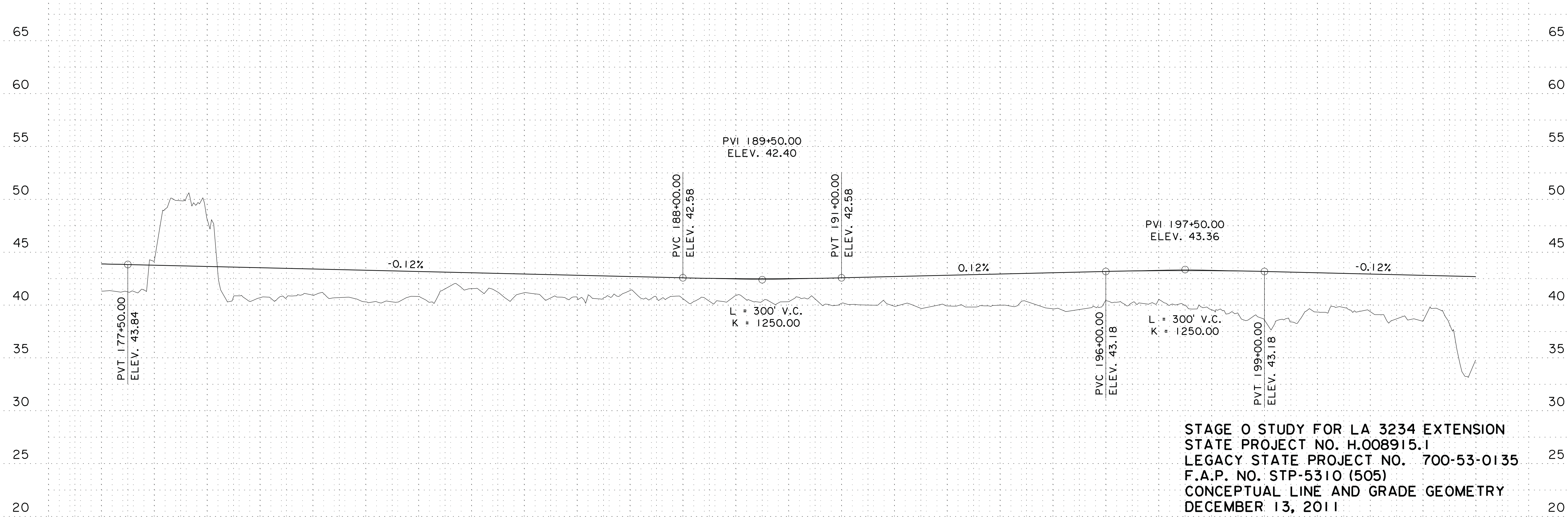
NO. / DATE / REVISION DESCRIPTION / BY

ALTERNATE C

DOTD

12/13/20112:49:49

STAGE 0



STAGE 0 STUDY FOR LA 3234 EXTENSION
STATE PROJECT NO. H.008915.1
LEGACY STATE PROJECT NO. 700-53-0135
F.A.P. NO. STP-5310 (505)
CONCEPTUAL LINE AND GRADE GEOMETRY
DECEMBER 13, 2011

SHEET NUMBER	3
PARISH	TANGIPAHOA
FEDERAL PROJECT	STP-5310 (505)
STATE PROJECT	H.008915.1

DESIGNED / CHECKED / DETAILED / CHECKED / DATE / SHEET

NO. / DATE / REVISION DESCRIPTION / BY

ALTERNATE C

12/13/2011 12:50:02

STAGE 0

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STATE PROJECT NO. H.008915.1
LEGACY STATE PROJECT NO. 700-53-0135
F.A.P. NO. STP-5310 (505)
CONCEPTUAL LINE AND GRADE GEOMETRY
DECEMBER 13, 2011

SHEET NUMBER 4

PARISH TANGIPAHOA
FEDERAL PROJECT STP-5310 (505)
STATE PROJECT H.008915.1

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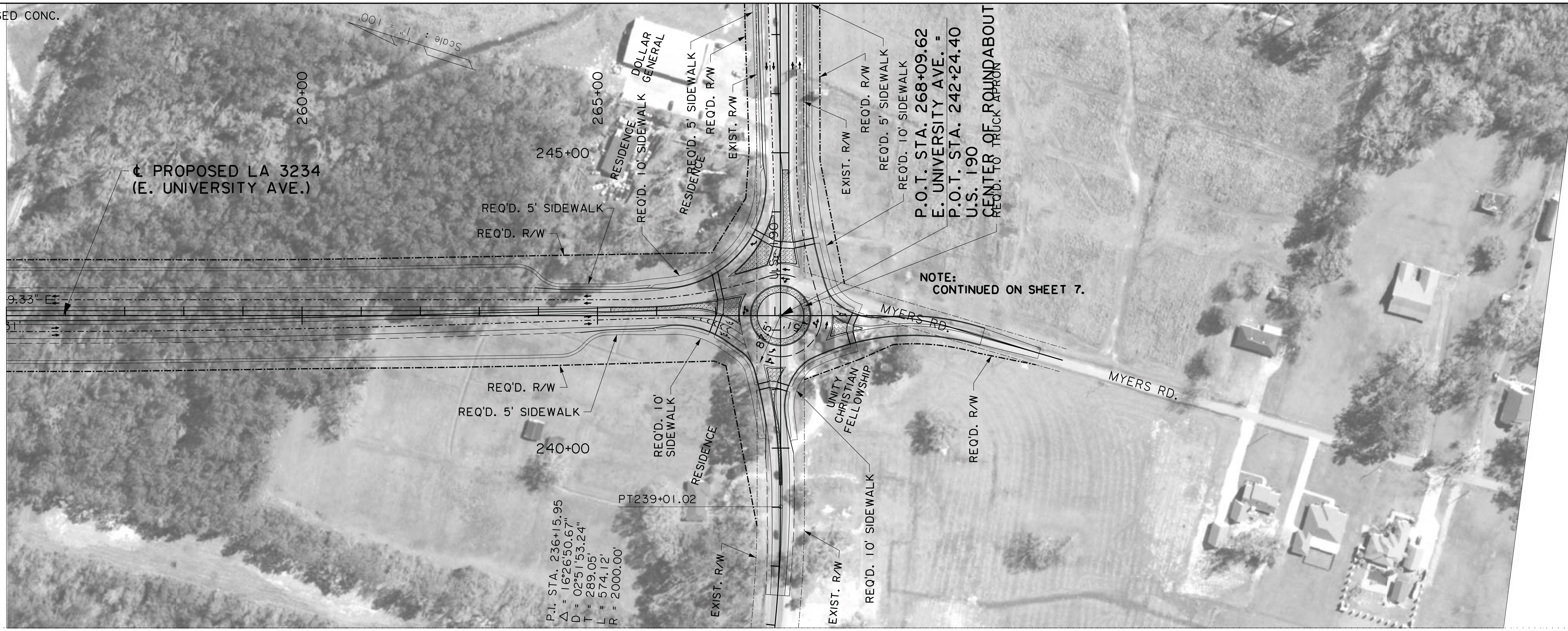

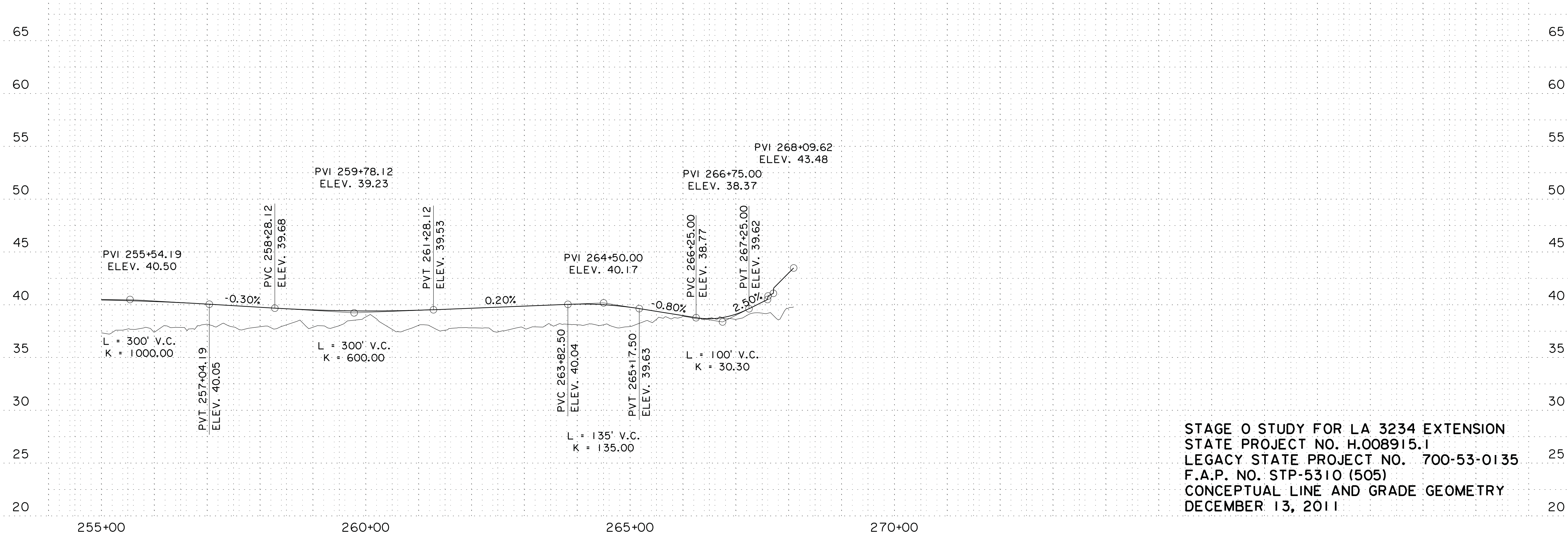

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CONCEPTUAL LINE AND GRADE GEOMETRY
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F.A.P. NO. STP-5310 (505)
CONCEPTUAL LINE AND GRADE GEOMETRY
DECEMBER 13, 2011

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FEDERAL PROJECT	STP-5310 (505)
STATE PROJECT	H.008915.1

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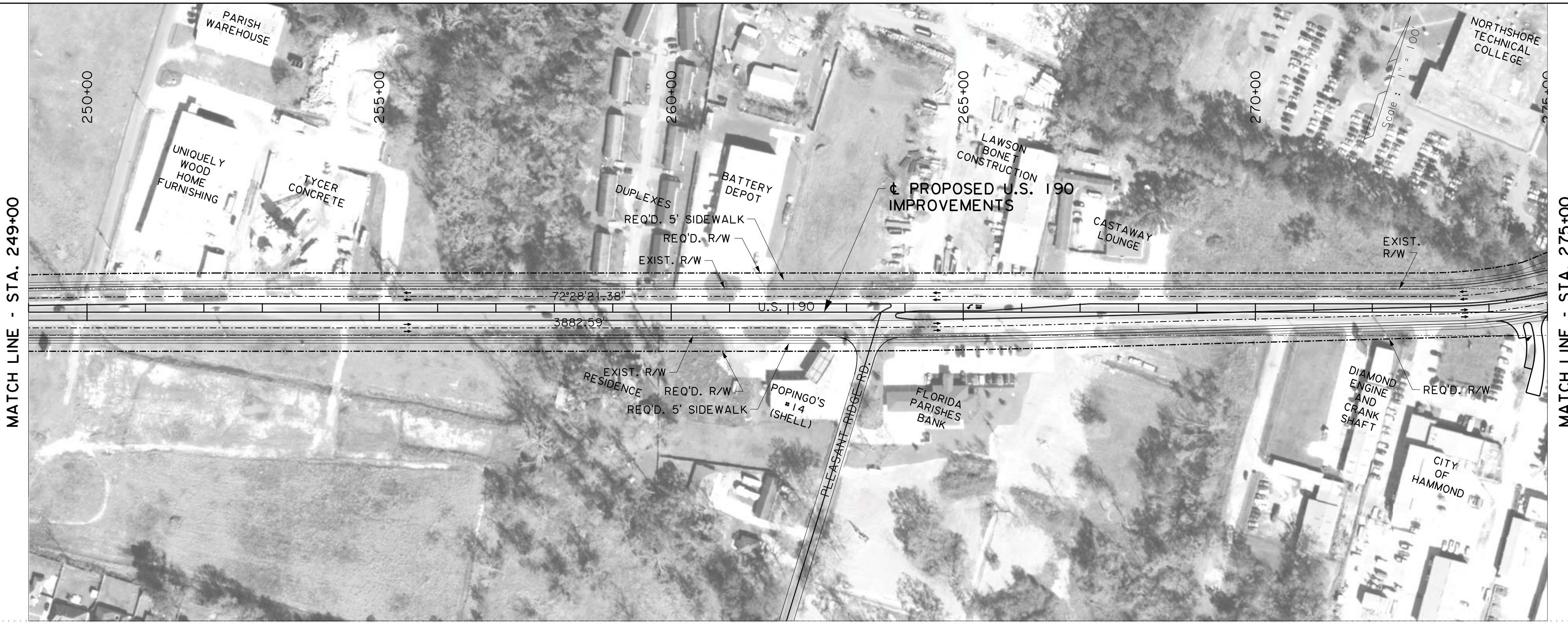

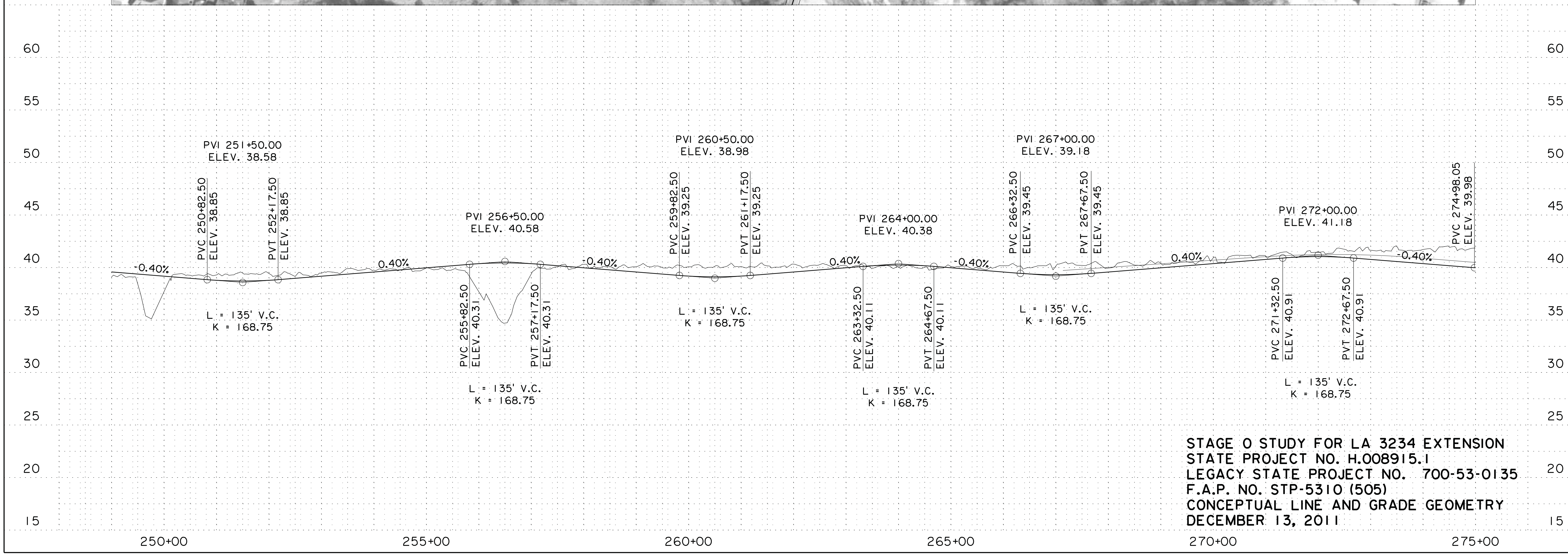

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CONCEPTUAL LINE AND GRADE GEOMETRY
DECEMBER 13, 2011

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FEDERAL PROJECT: STP-5310 (505)
STATE PROJECT: H.008915.1

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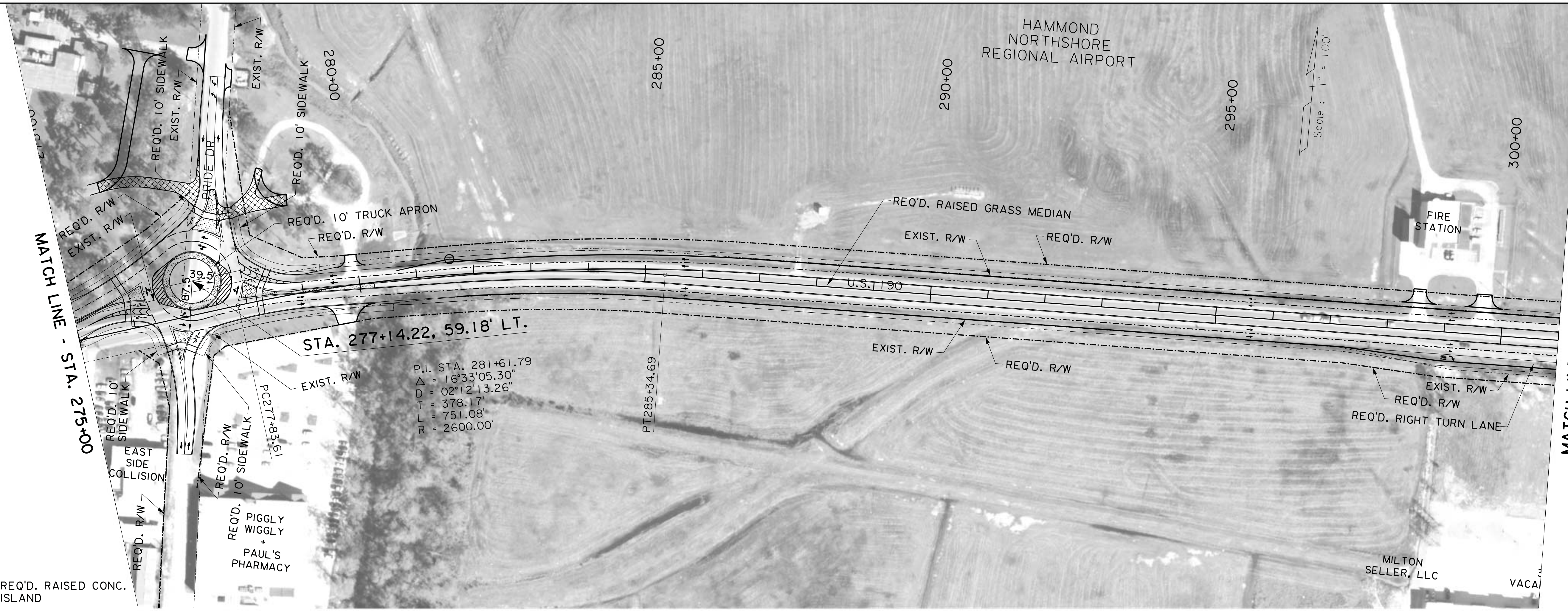

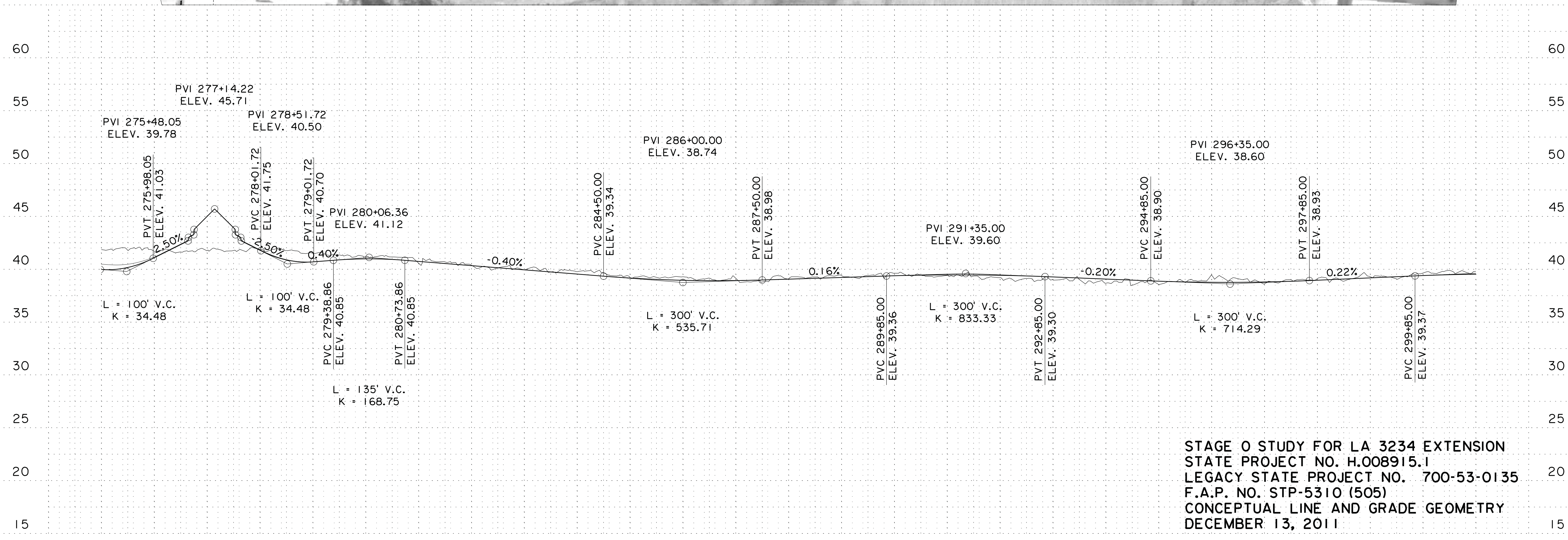

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CONCEPTUAL LINE AND GRADE GEOMETRY
DECEMBER 13, 2011

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FEDERAL PROJECT	STP-5310 (505)
STATE PROJECT	H.008915.1

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STATE PROJECT NO. H.008915.1
LEGACY STATE PROJECT NO. 700-53-0135
F.A.P. NO. STP-5310 (505)
CONCEPTUAL LINE AND GRADE GEOMETRY
DECEMBER 13, 2011

SHEET NUMBER 10

PARISH: TANGIPAHOA
FEDERAL PROJECT: STP-5310 (505)
STATE PROJECT: H.008915.1

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STAGE 0 STUDY FOR LA 3234 EXTENSION
STATE PROJECT NO. H.008915.1
LEGACY STATE PROJECT NO. 700-53-0135
F.A.P. NO. STP-5310 (505)
CONCEPTUAL LINE AND GRADE GEOMETRY
DECEMBER 13, 2011

SHEET NUMBER 11

PARISH TANGIPAHOA
FEDERAL PROJECT STP-5310 (505)
STATE PROJECT H.008915.1

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STAGE 0 STUDY FOR LA 3234 EXTENSION
STATE PROJECT NO. H.008915.1
LEGACY STATE PROJECT NO. 700-53-0135
F.A.P. NO. STP-5310 (505)
CONCEPTUAL LINE AND GRADE GEOMETRY
DECEMBER 13, 2011

SHEET NUMBER 12

PARISH TANGIPAHOA
FEDERAL PROJECT STP-5310 (505)
STATE PROJECT H.008915.1

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Appendix 3 to Chapter 1
Traffic Report

LA 3234 Extension

Stage 0 Feasibility Study

Traffic Study

Tangipahoa Parish

State Project No. H.008915.1
F.A.P. No. STP-5310(505)

For

December 2011

STATE OF LOUISIANA
PRASANTH MALISETTY
REG. No. 35792
REGISTERED
PROFESSIONAL
ENGINEER
IN
CIVIL ENGINEERING

1.0 Traffic Study

1.1 Introduction/Overview

1.1.1 Project Purpose

This project is proposed by the Louisiana Department of Transportation and Development (DOTD) in cooperation with the Federal Highway Administration (FHWA) and will be developed in coordination with federal and state resource agencies. The purpose of this project is to develop a description of the transportation problems and needs associated with the proposed LA 3234 Extension in Tangipahoa Parish Louisiana.

1.1.2 Project Background

The proposed east-west LA 3234 study shall determine the feasibility of extending LA 3234 in Tangipahoa Parish from its existing terminus at LA 1065 (North Cherry Street) to the Hammond Northshore Regional Airport in accordance with the Stage 0 Manual of Standard Practice.

The Stage 0 Study for LA 3234 Extension was conceptualized by LADOTD to support intermodal connectivity at Hammond Northshore Regional Airport. The project will improve east-west connectivity through Hammond by extending LA 3234 (East University Avenue) from its current terminus at LA 1065 (North Cherry Street) to Hammond Northshore Regional Airport, thus providing a direct link for truck traffic to transit between the Airport and Interstate I-55. Key project features include:

- The development of a regional travel demand model to estimate future travel demand throughout the Hammond region and to test the travel demand associated with project routing alternates.

- The development of three routing concepts, as shown on Figure 1. Initially the project scope located the western terminus at Pride Drive. As the project developed, LADOTD shifted the western terminus to the US 190 intersection with LA 3158 (South Airport Road).

This proposed LA 3234 Extension Road will begin at LA 1065 (North Cherry Street), then intersect LA 443 (Morris Road) and tie into US 190 either through Pride Drive (Alternates A and B) or directly (Alternate C). This project extends on US 190 from the proposed LA 3234 intersection to LA 3158 (South Airport Road).

1.1.3 Study Purpose

The purpose of this *Traffic Study* is to document existing traffic conditions and to assess future transportation impacts associated with and without the construction of the extension of LA 3234 between its terminus at LA 1065 and the Hammond Airport in Tangipahoa Parish. This report analyzes three (3) existing intersections, three (3) proposed intersections and seven (7) roadway segments located within the study area as shown in Figure 1.

STUDY AREA MAP

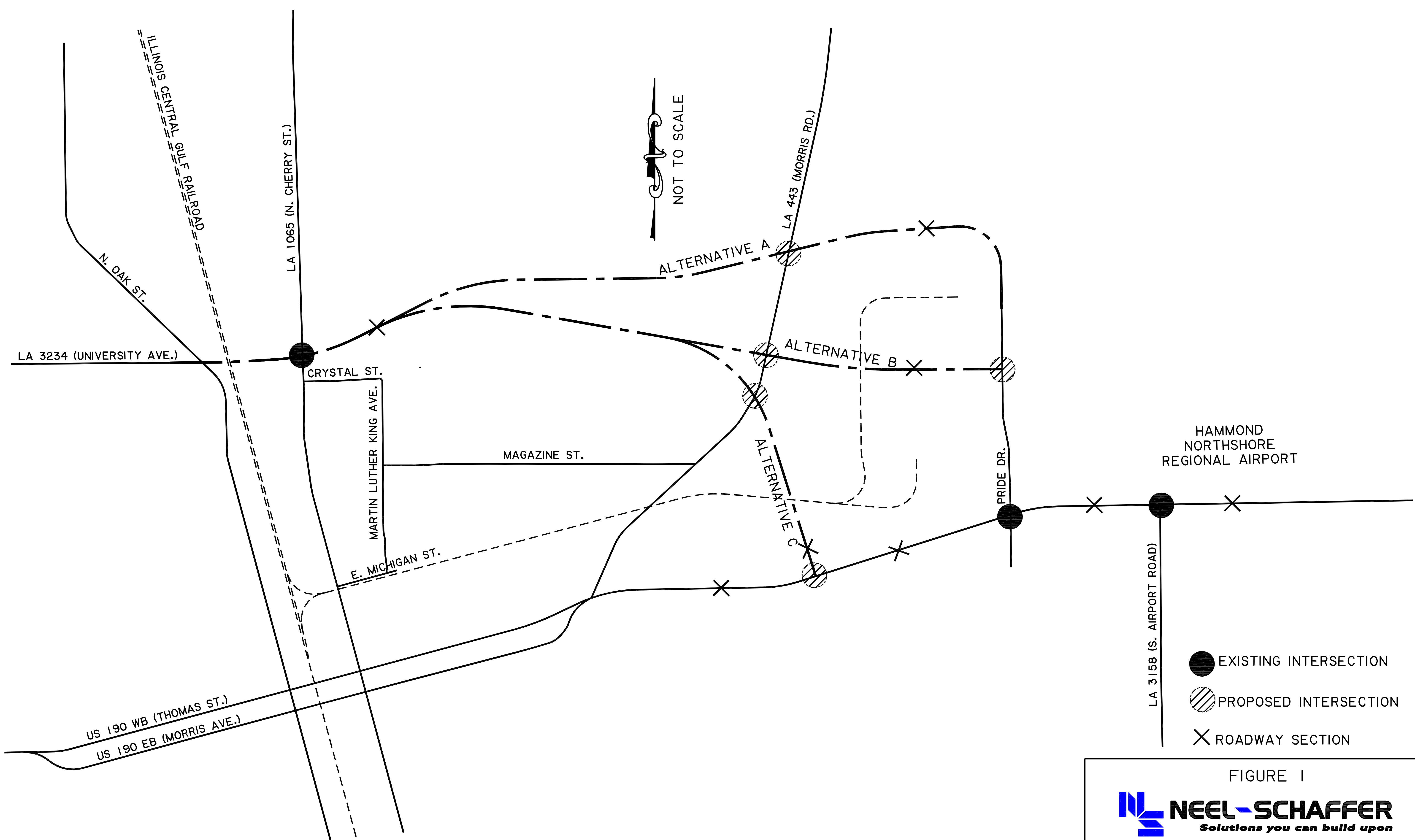

FIGURE 1

NEEL-SCHAFFER
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1.1.4 Study Area

The roadways within the study area include LA 3234, US 190, LA 1065 (North Cherry Street), LA 443 (Morris Road), LA 3158 (South Airport Road), Magazine Street and Pride Drive located within Hammond, Louisiana, Tangipahoa Parish.

The intersections within the study area:

- LA 3234 (University Avenue) at LA 1065 (North Cherry Street) Existing / Unsignalized
- US 190 at Pride Drive Existing / Signalized
- US 190 at LA 3158 (South Airport Road) Existing / Signalized
- US 190 at LA 3234 Proposed
- LA 3234 at Pride Drive Proposed
- LA 3234 at LA 443 (Morris Road) Proposed

1.1.5 Scope of Work

The scope of work conducted as part of this study included the identification of base year (2011), implementation year (2015) and design year (2035) corridor and intersection volumes. Also included within the scope were intersection and roadway capacity analyses. Finally, Level of Service (LOS) determinations were performed. The following data was collected to successfully perform these tasks:

- Existing Average Daily Traffic (ADT)
- Existing peak hour Turning Movement Counts (TMC)
- Traffic Signal Inventory (TSI) records
- Field inventories and observations
- Demographic data for developing the TRANSCAD model network

The aforementioned tasks were conducted for the study area as a whole. Understanding the interaction between the roadway network design and related traffic issues was necessary in order to develop recommended intersection geometry for the six (6) previously mentioned intersections.

Twenty-four (24) hour forecast volumes were forecasted using the regional travel demand model developed for the City of Hammond using TRANSCAD.

Neel-Schaffer, Inc. collected existing (2011) traffic volume data at each of the three (3) existing intersections and seven (7) roadway segments. The 2015 & 2035 roadway and intersection volume projections were estimated using the TRANSCAD regional travel demand model developed as part of the scope of this project.

1.1.6 Study Analysis Period

For planning purposes, it is anticipated that construction of the LA 3234 Extension will be completed by the year 2015. The design year for a roadway facility is generally defined as 20 years from the date of construction completion which would establish 2035 as the design year. All Levels-of-Service (LOS) analyses presented in this report are based on the AM and PM peak hours determine from evaluation of existing and forecasted traffic data.

1.2 Facility Conditions

1.2.1 Existing Conditions

1.2.1.1 Physical Features

LA 3234 (University Avenue) just west of LA 1065 (North Cherry Street) is an existing 4 lane undivided highway aligned east-west with a posted speed of 45 mph. LA 1065(North Cherry Street) is an existing 2 lane undivided highway aligned north-south with a posted speed of 45 mph. US 190 is an existing 2 lane undivided highway aligned east-west with a posted speed of 55 mph. LA 443 (Morris Road) is an existing 2 lane undivided highway aligned north-south with a posted speed of 55 mph. LA 3158 (South Airport Road) is an existing 2 lane undivided roadway aligned north-south with a posted speed of 35 mph. Pride Drive is an existing 2 lane undivided roadway aligned north-south with a posted speed of 35 mph.

Existing 24 hour volumes were collected at various locations within the study area. The collected volumes and count locations are summarized below.

Location	Vehicles per day (vpd)
• LA 3234 just west of LA 1065(North Cherry Street)	7,617
• US 190 just east of Pride Drive	13,345
• US 190 just west of Pride Drive	14,749
• Pride Drive just north of US 190	1,903
• LA 443(Morris Road) near of Magazine Street	6,462

Within the study area, there are two (2) existing signalized intersections and one (1) existing unsignalized intersections. The US 190 at Pride Drive traffic signal operates as a fully-actuated uncoordinated intersection. The US 190 at South Airport Road traffic signal operates as a fixed time isolated intersection.

LA 3234 at LA 1065 (North Cherry Street) is an existing unsignalized intersection with a stop control on LA 3234.

1.2.2 Proposed Facilities

Three alternates were evaluated for the LA 3234 extension as part of this study. They are as follows:

- Alternate A: Consists of the extension of LA 3234 from its existing western terminus to the east, intersecting LA 443 and terminating at the existing terminus of Pride Drive. This alternate would also include improvements along Pride Drive up to US 190 and along US 190 from Pride Drive to LA 3158 (South Airport Road).

- Alternate B: Consists of the extension of LA 3234 from its existing western terminus to the east, intersecting LA 443 and terminating at Pride Drive at Lear Drive. This alternate would also include improvements along Pride Drive up to US 190 and along US 190 from Pride Drive to LA 3158 (South Airport Road).

- Alternate C: Consists of the extension of LA 3234 from its existing western terminus to the east, intersecting LA 443 and terminating at US 190 at a location west of the intersection of US 190 and Pride Drive. This alternate would also include improvements along US 190 from this intersection to LA 3158 (South Airport Road).

Detailed intersection analyses were performed at each of the six (6) intersections defined in the scope. The analyses included projected peak hour volumes, proposed geometry and traffic control measures. Based on these criteria, LOS were determined at each location and appropriate traffic control and intersection geometry was determined.

1.3 Traffic Volumes

1.3.1 Volume Purpose

In order to identify existing roadway capacity constraints and to define future capacity requirements, an estimate of base year, implementation year and design year traffic volumes were necessary. Both roadway segment ADT; and intersection AM and PM peak hour volumes were determined. The base year 2011 ADT segment volumes are shown in Figure 2.

1.3.2 Volumes Forecasting (Projection) Methodology

A travel demand forecasting model for the city of Hammond was developed for this project to assist in forecast design year traffic volumes for the proposed alignment alternates. This model was calibrated to replicate existing traffic conditions for the base year of 2010 as closely as possible. The validation process involved comparing 24-hour traffic volumes output by the model with annual average daily traffic (AADT) estimates based on actual counts conducted by the Louisiana Department of Transportation (LADOTD) Planning Division. Aggregate model volumes were compared with the corresponding AADT totals for designated LADOTD count locations by roadway functional classification, AADT groups and for specific major routes. Table 1 and Table 2 show the results of validation process.

Table 1 Validation of Base-Year Model by Roadway Functional Class				
Functional Class	**Total Count[1]**	**Total Model Volume[2]**	**% Dev Limit[3]**	**% Dev**
INTERSTATES	352,440	371,793	+/- 7.0	5.5
PRINCIPAL ARTERIALS	263,759	266,011	+/- 10.0	0.9
MINOR ARTERIALS	214,464	215,762	+/- 15.0	0.6
COLLECTORS/LOCAL	39,768	45,122	+/- 25.0	13.5
Total	1,058,951	1,086,837	+/- 5.0	2.6

Table 2 Validation of Base-Year Model by ADT Group						
ADT Range	**Total Count[1]**	**Total Model Volume[2]**	**% Dev Limit[3]**	**% Dev**	**% RMSE Limit[4]**	**% RMSE**
ADT < 5,000	24,981	25,811	+/- 50.0	3.3	115.0	24.5
5,000<= ADT < 10,000	183,165	194,928	+/- 25.0	6.4	43.0	22.5
10,000<= ADT < 20,000	150,734	160,733	+/- 20.0	6.6	30.0	27.6
20,000<= ADT < 40,000	431,167	435,968	+/- 15.0	1.1	25.0	15.9
ADT >= 40,000	268,904	269,396	+/- 12.0	0.2	20.0	9.9
Total	1,058,951	1,086,837	+/- 5.0	2.6	40.0	19.4

(1) Total Count represents the sum of average daily traffic estimates for all LADOTD count locations (area wide), all count locations on principal arterials, all locations on minor arterials, and all on major/minor collectors.
(2) Total Model Volume is the sum of model-generated traffic volumes for all network links associated with LADOTD count locations (area wide), all links associated with count locations on principal arterials, all links associated with locations on minor arterials, and all links associated with count locations on collectors.
(3) % Dev Limit is the maximum acceptable plus/minus percentage deviation from estimated base-year (2010) average daily traffic (ADT) based on counts conducted by LADOTD.
(4) % Root Mean Square Error (RMSE) Limit is the maximum acceptable magnitude of the error relative to that of the counts conducted by the LADOTD.

From the results of the validation effort, it was concluded that the City of Hammond travel demand forecasting model performs well within the established limits of acceptable deviation from base-year estimated volumes and can be used for forecasting future volumes.

The calibrated base year 2010 travel demand model was utilized to forecast 2015 and 2035 No Build ADT as well as 2015 and 2035 Build ADT for Alternate A, Alternate B, and Alternate C scenarios.

Projected 2015 and 2035 twenty-four (24) hour travel volumes for the three (3) LA 3234 alternate routes, LA 1065 (North Cherry Street), US 190, LA 443 (Morris Road), Pride Drive and LA 3158 (South Airport Road) are presented in Figure 2.

Existing 2011 ADT on LA 3234 just west of LA 1065 (North Cherry Street) is approximately 7,617 and is projected to increases to 13,843 utilizing the 2035 No Build scenario and increase to 18,782; 19,212; and 19,296 utilizing the 2035 Build Alternates A, B, and C scenarios, respectively.

Existing 2011 ADT on US 190 just west of Pride Drive is approximately 14,749 and is projected to increases to 17,595 utilizing the 2035 No Build scenario and increase to 14,956; 13,734; and 21,660 utilizing the 2035 Build Alternates A, B, and C scenarios, respectively.

Existing 2011 ADT on US 190 just east of Pride Drive is approximately 13,345 and is projected to increases to 15,790 utilizing the 2035 No Build scenario and increase to 18,368; 19,472; and 18,178 utilizing the 2035 Build Alternates A, B, and C scenarios, respectively.

Existing 2011 ADT on Pride Drive just north of US 190 is approximately 1,903 and is projected to increases to 2,126 utilizing the 2035 No Build scenario and increase to 7,505 and 9,259 utilizing the 2035 Build Alternates A and B, respectively as a 2-lane roadway. However, the ADT for the projected 2035 Build Alternate C scenario decreases to 1,830.

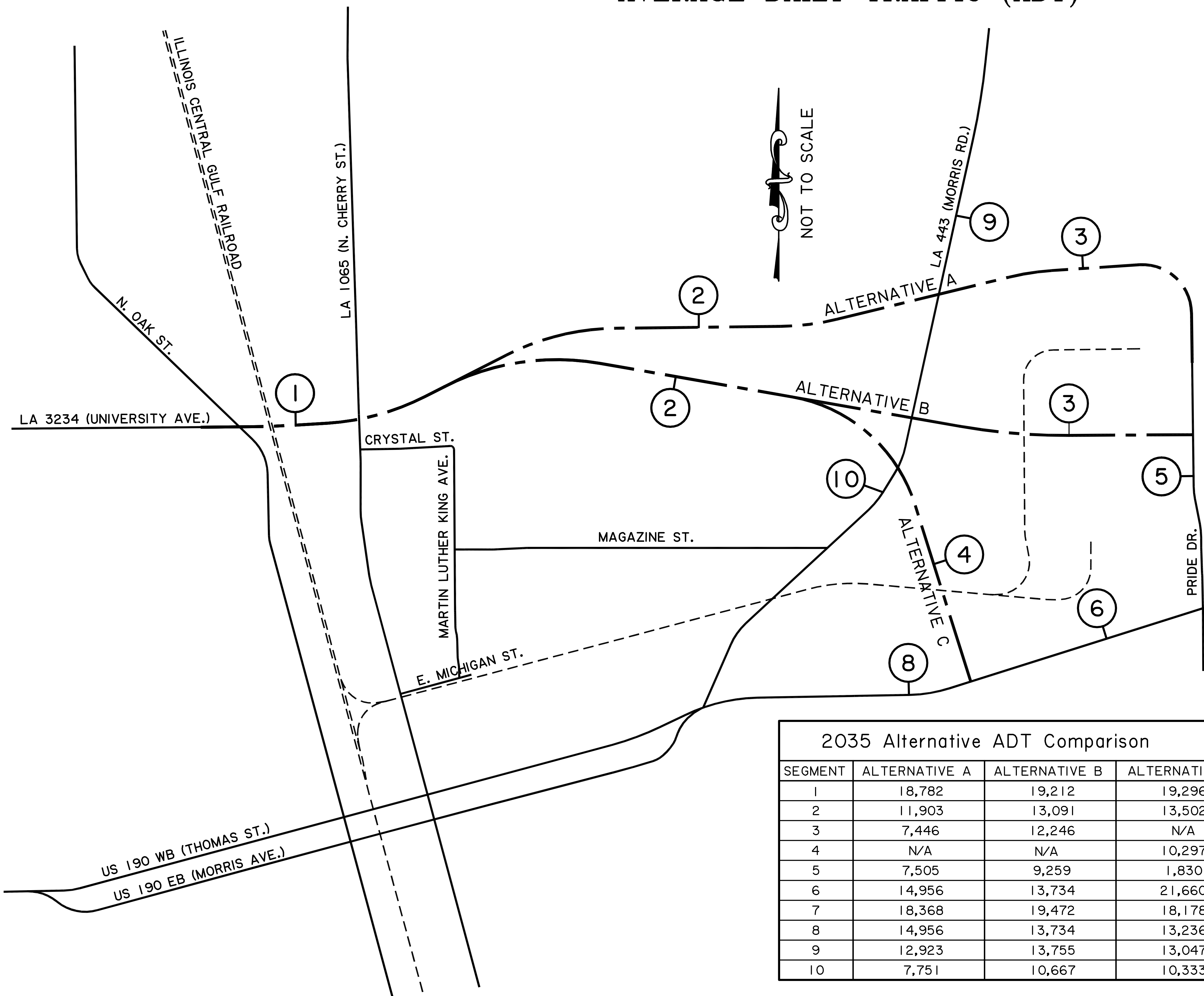
It should be noted, that additional model runs for Alternates A and B were performed with Pride Drive as a 4-lane roadway to determine if the widening of Pride Road would attract addition vehicles in 2035. Based on the model runs, it is anticipated that the 2035 ADT for a 4-laned Pride Drive would increase to 11,817 and 11,560 respectively for Alternates A and B.

Additionally, the City of Hammond travel demand forecasting model was utilized to forecast 2015 and 2035 No Build 3-hour AM and PM peak intersection turning movement volumes as well as 2015 and 2035 Build AM and PM peak intersection turning movement volumes for Alternate A, Alternate B and Alternate C scenarios.

Based on existing turning movement counts that were collected within the study area, it was determined that the actual 1-hour peak during the AM peak was approximately 48% of the 3 hours counted during the AM peak. During the PM peak, the actual 1-hour peak was approximately 37% of the hours counted during the PM peak. The existing turning movement counts are included in the Appendix (as a separate file on the enclosed CD).

These 1-hour percentages were applied to the forecasted intersection 3-hour AM and PM peak volumes forecasted by the travel demand model to establish the 1-hour AM and PM peak hour intersection turning movement counts for the 2015 and 2035 No Build scenarios as well as 2015 and 2035 Build scenarios. These volumes were used in the intersection analyses. These No Build and Build peak hour turning movement volumes are included in the Appendix (as a separate file on the enclosed CD).

EXISTING AND PROJECTED AVERAGE DAILY TRAFFIC (ADT)



EXISTING/NO-BUILD ADT COMPARISON

SEGMENT	EXISTING COUNTS 2011	NO-BUILD TRAVEL DEMAND MODEL		
		2010 NB	2015 NB	2035 NB
1	7,617	9,285	10,570	13,843
2	N/A	N/A	N/A	N/A
3	N/A	N/A	N/A	N/A
4	N/A	N/A	N/A	N/A
5	1,903	2,136	2,297	2,126
6	14,749	13,082	14,723	17,595
7	13,345	11,786	12,623	15,790
8	14,749	13,082	14,723	17,595
9	6,462	7,185	8,619	12,273
10	6,462	7,185	8,619	12,273

2015 Alternative ADT Comparison

SEGMENT	ALTERNATIVE A	ALTERNATIVE B	ALTERNATIVE C
1	13,364	14,648	14,928
2	8,031	9,721	9,931
3	5,309	9,639	N/A
4	N/A	N/A	8,039
5	6,188	7,500	2,094
6	12,904	10,962	17,463
7	14,565	15,790	15,138
8	12,904	10,962	10,846
9	9,963	10,527	10,279
10	6,424	8,465	7,387

2035 Alternative ADT Comparison

SEGMENT	ALTERNATIVE A	ALTERNATIVE B	ALTERNATIVE C
1	18,782	19,212	19,296
2	11,903	13,091	13,502
3	7,446	12,246	N/A
4	N/A	N/A	10,297
5	7,505	9,259	1,830
6	14,956	13,734	21,660
7	18,368	19,472	18,178
8	14,956	13,734	13,236
9	12,923	13,755	13,047
10	7,751	10,667	10,333

FIGURE 2

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1.4 Roadway Segment Analysis

1.4.1 Purpose

Roadway segment analyses were conducted to evaluate existing conditions, identify operational deficiencies, and to define future facility requirements. This analysis included the identification of peak hour traffic volumes, capacity, and level of service. Various roadway segments within the study area were evaluated with respect to existing (2011), 2015 & 2035 No Build and 2015 & 2035 Build conditions.

1.4.2 Methodology

The roadway analyses conducted in fulfillment of this study included the following subtasks:

- Field observations
- Compilation of peak hour volumes
- Roadway capacity analyses

Field observations were conducted in order to collect data relevant to existing roadway, traffic and intersection control parameters. Roadway information gathered included, but is not limited to the following, lane widths, lane assignments, and posted speed limits. Volume data, vehicle composition, and directional distribution were several traffic variables analyzed.

The analyses within this study analyzed the following roadway segments:

- LA 3234
  - Between LA 1065 (North Cherry Street) and LA 443 (Morris Road)
  - Between LA 443 (Morris Road) and Pride Drive (Alternates A and B)
  - Between LA 443 (Morris Road) and US 190 (Alternate C)
- US 190
  - West of Pride Drive (Alternate A and B)
  - West of LA 3234 (Alternate C)
  - Between Pride Drive and LA 3158 (S. Airport Road) (Alternates A, B & C)
  - East of LA 3158 (South Airport Road) (Alternates A, B & C)
- Pride Drive
  - North of US 190

Traffic data was collected by Neel-Schaffer, Inc. These counts were obtained to identify actual travel demand and travel patterns within the corridor. From this data, AM and PM peak hour traffic volumes were derived for the base year conditions. These counts were collected during late March and early April 2011, and therefore reflect school season driving conditions.

The task performed as part of the roadway segment analyses involved capacity and level of service analyses. The analyses of roadway segments were performed using the *Highway Capacity Software (HCS+)*. This computer program models the methodologies described in the *2000 Highway Capacity Manual.* These analyses were performed for 2011, 2015 No Build, 2035 No Build, 2015 Build and 2035 Build scenarios.

1.4.3 Roadway Capacity Analysis

As described within the *2000 Highway Capacity Manual,* "vehicle capacity represents the maximum number of vehicles that can pass a given point during a specified period under prevailing roadway, traffic and control conditions," for a given facility. Levels of service identify ranges of operation conditions. The concept of levels of service is defined as "qualitative measures that characterize operational conditions within a traffic stream and their perception by motorists and passengers. These operational conditions include such factors and travel time, freedom to maneuver, traffic interruption, comfort and convenience, and safety."

"Six levels of service are defined for each type of facility. They are given letter designations, from A to F, with level-of-service A (LOS A) representing the best operating conditions and level-of-service F (LOS F) the worst." Utilizing the *HCS+* computer program, capacity and levels of service analyses were performed for the existing roadways and proposed alternate routes along LA 3234, LA 1065, US 190, LA 443, Pride Drive and Airport Road located within Hammond, Louisiana, Tangipahoa Parish.

The detailed findings of the AM and PM peak hour analyses are summarized in Table 3. The HCS+ Analyses are included in the Appendix (as a separate file on the enclosed CD).

TABLE 3
SUMMARY OF ROADWAY
DESIGN PEAK HOUR LEVELS OF SERVICE (LOS)

Roadway Segment	2011	2015 No Build	2035 No Build	2015 Build Alternate A	2015 Build Alternate B	2015 Build Alternate C	2035 Build Alternate A	2035 Build Alternate B	2035 Build Alternate C
AM Peak Hour									
LA 3234 (LA 1065 – LA 443)	-	-	-	A(3.4)/A(4.1)*	A(3.9)/A(5.1)*	A(3.9)/A(5.3)*	A(4.6)/A(6.3)*	A(5.3)/A(6.9)*	A(5.4)/A(7.2)*
LA 3234 (LA 443 – Pride Dr.)	-	-	-	C (49.1)**	C (61.2)**	-	C (56.6)**	D (70.0)**	-
LA 3234 (LA 443 – US 190)	-	-	-	-	-	A(3.9)/A(3.6)*	-	-	A(5.2)/A(4.6)*
Pride Dr. (N. of US 190)	B (51.3)**	B (53.0)**	C (58.1)**	C (59.3)**	C (63.7)**	A (36.3)**	C (63.5)** +	C (62.7)** +	A (34.3)**
US 190 (W. of LA 3234)	-	-	-	-	-	D (70.1)**	-	-	D (75.0)**
US 190 (W. of Pride Dr.)	D (77.5)**	D (79.5)**	E (85.0)**	D (79.8)**	D (75.8)**	A(9.6)/B(11.2)*	E (83.1)**	E (81.2)**	B(11.2)/B(13.2)*
US 190 (Pride Dr. – LA 3158)	E (86.4)**	E (87.6)**	E (91.5)**	A(8.8)/A(10.0)*	A(9.3)/A(10.8)*	A(9.1)/A(10.1)*	A(10.5)/B(12.1)*	B(11.2)/B(12.6)*	A(10.5)/B(11.9)*
US 190 (E. of LA 3158)	D (75.9)**	D (79.3)**	E (85.3)**	D (79.4)**	E (81.0)**	E (81.0)**	E (84.9)**	E (86.0)**	E (84.7)**
PM Peak Hour									
LA 3234 (LA 1065 – LA 443)	-	-	-	A(3.9)/A(3.5)*	A(5.0)/A(4.0)*	A(4.7)/A(4.2)*	A(6.3)/A(4.8)*	A(6.7)/A(5.8)*	A(6.7)/A(6.0)*
LA 3234 (LA 443 – Pride Dr.)	-	-	-	C (47.3)**	C (64.4)**	-	C (57.2)**	D (69.5)**	-
LA 3234 (LA 443 – US 190)	-	-	-	-	-	A(3.6)/A(3.8)*	-	-	A(4.7)/A(5.1)*
Pride Dr. (N. of US 190)	B (43.4)**	B (44.9)**	B (48.9)**	C (56.5)**	C (61.9)**	A (33.4)**	C (62.9)** +	D (66.8)** +	A (33.8)**
US 190 (W. of LA 3234)	-	-	-	-	-	D (67.7)**	-	-	D (71.4)**
US 190 (W. of Pride Dr.)	D (76.4)**	D (77.7)**	E (84.0)**	D (72.5)**	D (69.4)**	A(9.0)/A(9.1)*	D (79.5)**	D (76.6)**	B(11.6)/B(11.1)*
US 190 (Pride Dr. – LA 3158)	E (83.6)**	E (82.1)**	E (85.7)**	A(7.6)/A(8.0)*	A(8.8)/A(8.2)*	A(8.0)/A(8.2)*	A(9.9)/A(10.3)*	A(10.3)/B(11.1)*	A(10.9)/A(9.9)*
US 190 (E. of LA 3158)	D (73.0)**	D (72.0)**	D (76.4)**	D (72.7)**	D (73.7)**	D (73.5)**	D (79.6)**	E (81.2)**	D (79.3)**

* Multilane analysis. A(3.4)/A(4.1) = EB/WB; LOS(Density – pc/mi/ln)
** Two Lane analysis C(49.1) = LOS (Percent time spent following)
+ - Indicates this section of roadway will operate at an LOS D as a two lane roadway with 4 lane roadway forecasted volumes.

1.4.4 Purpose

Intersection analyses were conducted to evaluate existing conditions, identify operational deficiencies, and to define future facility requirements. These analyses include the identification of design AM and PM peak hour traffic volumes, capacity, delay, and intersection level of service. The three (3) existing intersections and three (3) proposed intersections were evaluated with respect to 2011 base year, 2015 and 2035 No Build and Build conditions.

1.4.5 Methodology

The intersection analyses conducted in fulfillment of this study included the following subtasks:

- Field observations
- Compilation of AM and PM peak hour turning movement counts
- Intersection capacity analyses

Field observations were conducted in order to collect data relevant to existing roadway, traffic, and intersection control parameters. Roadway information gathered included lane widths, lane assignments, and posted speed limits. Volume data, vehicle composition, and directional distribution were among the several traffic variables analyzed. Traffic control data reviewed included type of intersection control and also traffic signal timing and phasing. Intersection geometry was further refined based on anticipated design year traffic impacts and results of intersection capacity analyses.

Traffic data was collected by Neel-Schaffer, Inc. These counts were obtained to identify actual travel demand and travel patterns within the corridor. Intersection turning movement counts were collected at the four (4) existing intersections over a three hour period during the morning and afternoon. From this data, AM and PM peak hour traffic volumes were derived for the base year conditions. These counts were collected during March and April of 2011.

Existing 2011 and projected 2015 & 2035 No Build and Build AM and PM peak hour turning movement volumes and geometrics were evaluated for the following intersections. The proposed intersection geometry utilized in these analyses is shown on the Line & Grade exhibits.

- LA 3234 (University Avenue) at LA 1065 (N. Cherry Street) (Alternates A, B & C)
- LA 3234 at LA 443 (Alternates A, B & C)
- LA 3234 at Pride Drive (Alternates A & B)
- LA 3234 at US 190 (Alternate C)
- US 190 at Pride Drive (Alternates A, B & C)
- US 190 at LA 3158 (S. Airport Road) (Alternates A, B & C)

The task performed as part of the intersection analyses involved capacity, delay and level of service analyses. The analyses for signalized intersection US 190 at LA 3158 (S. Airport Road) were performed utilizing the *HCS+*, *Highway Capacity Software*. This computer program models the methodologies described in the *2000 Highway Capacity Manual*. The unsignalized,

signalized and roundabout analyses for intersections where roundabouts were considered as a proposed alternative were evaluated using *SIDRA 5.1.7* for No Build and Alternates A, B & C conditions.

1.4.6 Intersection Capacity Analysis

As described within the *2000 Highway Capacity Manual*, "vehicle capacity represents the maximum number of vehicles that can pass a given point during a specified period under prevailing roadway, traffic and control conditions," for a given facility. "Levels of service identify ranges of operation conditions. The concept of levels of service is defined "as a qualitative measure of the operational conditions include such factors and travel time, freedom to maneuver, traffic interruption, comfort and convenience, and safety."

"Six levels of service are defined for each type of facility. They are given letter designations, from A to F, with level-of-service A (LOS A) representing the best operating conditions and level-of-service F (LOS F) the worst." Utilizing *HCS+* and *SIDRA 5.1.7* computer programs, capacity and levels of service analyses were performed at each of the existing and proposed intersections within the study area.

A summary of the resulting LOS for each of the existing and proposed intersections within the study area are presented in Table 4. These results are based on the existing and projected peak hour design year volume; existing and proposed geometry and traffic control. These Analyses are included in the Appendix (as a separate file on the enclosed CD).

TABLE 4
SUMMARY OF INTERSECTION
DESIGN PEAK HOUR LEVELS OF SERVICE (LOS) AND DELAY (SEC/VEH)

Intersection		2011 Delay (LOS)	2015 No Build Delay (LOS)	2035 No Build Delay (LOS)	2015 Build Alternate A Delay (LOS)	2015 Build Alternate B Delay (LOS)	2015 Build Alternate C Delay (LOS)	2035 Build Alternate A Delay (LOS)	2035 Build Alternate B Delay (LOS)	2035 Build Alternate C Delay (LOS)
AM Peak Hour										
LA 3234 at LA 1065*	UNS	8.7 (NA)	16.4 (NA)	25.1 (NA)	-	-	-	-	-	-
	SLR	-	-	-	-	-	10.8 (B)	13.1 (B)	13.6 (B)	14.3 (B)
	MLR	-	-	-	10.5 (B)	10.6 (B)	10.5 (B)	10.9 (B)	11.0 (B)	11.1 (B)
LA 3234 at LA 443*	SLR	-	-	-	12.2 (B)	13.2 (B)	14.5 (B)	12.7 (B)	16.1 (B)	19.7 (B)
	MLR	-	-	-	-	-	12.0 (B)	-	-	12.8 (B)
LA 3234 at Pride Drive*	SLR	-	-	-	-	10.2 (B)	-	-	10.5 (B)	-
US 190 at LA 3234*	SLR	-	-	-	-	-	12.7 (B)	-	-	13.8 (B)
	MLR	-	-	-	-	-	12.4 (B)	-	-	13.0 (B)
US 190 at Pride Drive**	S	24.2 (C)	61.6 (E)	121.1 (F)	-	-	-	-	-	-
	SLR	-	-	-	17.7 (B)	17.9 (B)	11.3 (B)	22.0 (C)	27.8 (C)	12.2 (B)
	MLR	-	-	-	-	-	9.8 (A)	-	-	9.7 (A)
US 190 at Airport Road***	S	15.7 (B)	21.0 (C)	27.0 (C)	18.2 (B)	18.8 (B)	18.4 (B)	21.1 (C)	22.3 (C)	20.9 (C)
PM Peak Hour										
LA 3234 at LA 1065*	UNS	11.6 (NA)	15.5 (NA)	27.5 (NA)	-	-	-	-	-	-
	SLR				12.1 (B)	12.0 (B)	11.9 (B)	14.7 (B)	16.3 (B)	17.2 (B)
	MLR				11.2 (B)	10.9 (B)	10.9 (B)	11.6 (B)	12.0 (B)	12.1 (B)
LA 3234 at LA 443*	SLR				12.2 (B)	12.5 (B)	14.5 (B)	13.7 (B)	14.5 (B)	21.1 (C)
	MLR				-	-	11.9 (B)	-	-	12.9 (B)
LA 3234 at Pride Drive*	SLR				-	9.7 (A)	-	-	9.9 (A)	-
US 190 at LA 3234*	SLR				-	-	13.5 (B)	-	-	15.5 (B)
	MLR				-	-	13.1 (B)	-	-	14.0 (B)
US 190 at Pride Drive**	S	26.1 (C)	28.9 (C)	55.8 (E)	-	-	-	-	-	-
	SLR				14.6 (B)	17.6 (B)	9.5 (A)	20.6 (C)	27.4 (C)	11.3 (B)
	MLR				-	-	9.2 (A)	-	-	9.6 (A)
US 190 at Airport Road***	S	13.9 (B)	13.8 (B)	17.0 (B)	15.2 (B)	15.8 (B)	15.7 (B)	17.9 (B)	18.4 (B)	17.5 (B)

* Unsignalized (UNS) Analysis for Existing and No Build, Single Lane Roundabout (SLR) and Multi Lane Roundabout (MLR) Analysis for all Build Alternates using SIDRA 5.1.7
** Signalized (S) Analysis for Existing and No Build, Single Lane Roundabout (SLR) and Multi Lane Roundabout (MLR) Analysis for all Build Alternates using SIDRA 5.1.7
***Signalized (S) Intersection Analysis for all Build Alternates using HCS+

It should be noted that all roundabouts were evaluated as both single-lane and multi-lane roundabouts with the forecasted volumes for all Alternates. All intersections with a proposed single lane roundabout were observed to operate with an acceptable overall intersection LOS.

However, although the intersection of US 190 at Pride Drive operates at an acceptable overall intersection LOS during the AM peak period for the 2035 Alternate B, the analyses indicate that the southbound approach on Pride Drive may experience significant delays resulting in an unacceptable LOS.

1.5 Summary

In summary, the analyses performed as part of this study indicate that the proposed roadway typical sections and intersection geometry and control will operate at acceptable LOS for forecasted 2015 and 2035 traffic volumes for all three (3) alignments.

However, it should be noted, that US 190 east of the proposed terminus of this project is anticipated to operate at an unacceptable LOS 'E' based on the forecasted 2015 and 2035 Build volumes as a two lane roadway. US 190 west of Pride Drive is project is anticipated to operate at an unacceptable LOS 'E' based on the forecasted 2035 Build volumes as a two lane roadway.

Additionally, separate model runs for Alternates A and B were performed with Pride Drive as a 4-lane roadway to determine if the widening of Pride Road would attract addition vehicles in 2035. Based on the model runs, it is anticipated that the 2035 ADT for a 4-laned Pride Drive would increase to 11,817 and 11,560 respectively for Alternates A and B. However, additional analyses indicate that the proposed Pride Drive typical section would continue to operate at an acceptable LOS even with these higher than anticipated forecasted volumes.

APPENDIX

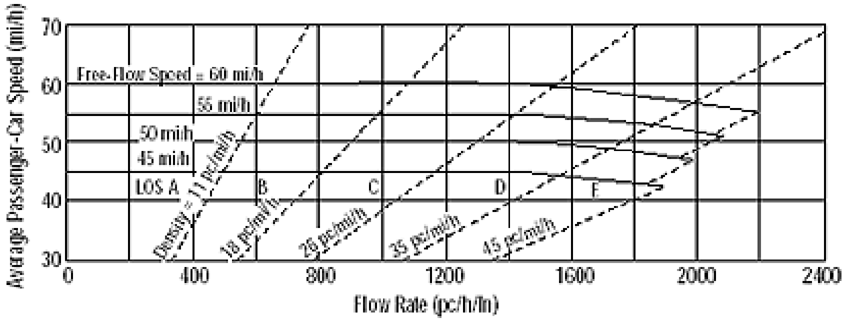
ROADWAY ANALYSIS

LA 3234

Between LA 1065 (North Cherry Street) and

LA 443 (Morris Road)

MULTILANE HIGHWAYS WORKSHEET(Direction 2)



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	AJP
Agency or Company	Neel-Schaffer, Inc.
Date Performed	7/11/2011
Analysis Time Period	AM Peak

Site Information

Highway/Direction to Travel	LA 3234
From/To	Between Cherry St & LA 443
Jurisdiction	Tangipahoa Parish
Analysis Year	2015 Alternate A - EB

Project Description N-S Prj# 8437

☑ Oper.(LOS) ☐ Des. (N) ☐ Plan. (vp)

Flow Inputs

Volume, V (veh/h)	301	Peak-Hour Factor, PHF	0.90
AADT(veh/h)		%Trucks and Buses, P_T	5
Peak-Hour Prop of AADT (veh/d)		%RVs, P_R	0
Peak-Hour Direction Prop, D		General Terrain:	Level
DDHV (veh/h)		Grade Length (mi)	0.00
Driver Type Adjustment	1.00	Up/Down %	0.00
		Number of Lanes	2

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	f_{HV}	0.976

Speed Inputs

Lane Width, LW (ft)	12.0
Total Lateral Clearance, LC (ft)	12.0
Access Points, A (A/mi)	0
Median Type, M	Divided
FFS (measured)	
Base Free-Flow Speed, BFFS	50.0

Calc Speed Adj and FFS

f_{LW} (mi/h)	0.0
f_{LC} (mi/h)	0.0
f_A (mi/h)	0.0
f_M (mi/h)	0.0
FFS (mi/h)	50.0

Operations

Operational (LOS)

Flow Rate, v_p (pc/h/ln)	171
Speed, S (mi/h)	50.0
D (pc/mi/ln)	3.4
LOS	A

Design

Design (N)

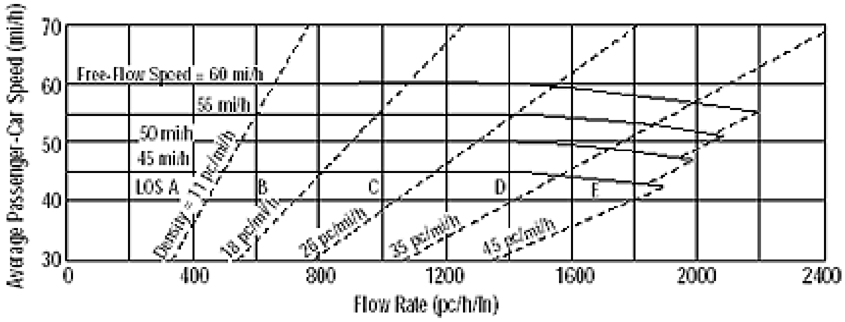
Required Number of Lanes, N

Flow Rate, v_p (pc/h)

Max Service Flow Rate (pc/h/ln)

Design LOS

MULTILANE HIGHWAYS WORKSHEET(Direction 1)



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	AJP
Agency or Company	Neel-Schaffer, Inc.
Date Performed	7/11/2011
Analysis Time Period	AM Peak

Site Information

Highway/Direction to Travel	LA 3234
From/To	Between Cherry St & LA 443
Jurisdiction	Tangipahoa Parish
Analysis Year	2015 Alternate A - WB

Project Description N-S Prj# 8437

☑ Oper.(LOS) ☐ Des. (N) ☐ Plan. (vp)

Flow Inputs

Volume, V (veh/h)	363	Peak-Hour Factor, PHF	0.90
AADT(veh/h)		%Trucks and Buses, P_T	5
Peak-Hour Prop of AADT (veh/d)		%RVs, P_R	0
Peak-Hour Direction Prop, D		General Terrain:	Level
DDHV (veh/h)		Grade Length (mi)	0.00
Driver Type Adjustment	1.00	Up/Down %	0.00
		Number of Lanes	2

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	f_{HV}	0.976

Speed Inputs

Lane Width, LW (ft)	12.0
Total Lateral Clearance, LC (ft)	12.0
Access Points, A (A/mi)	0
Median Type, M	Divided
FFS (measured)	
Base Free-Flow Speed, BFFS	50.0

Calc Speed Adj and FFS

f_{LW} (mi/h)	0.0
f_{LC} (mi/h)	0.0
f_A (mi/h)	0.0
f_M (mi/h)	0.0
FFS (mi/h)	50.0

Operations

Operational (LOS)

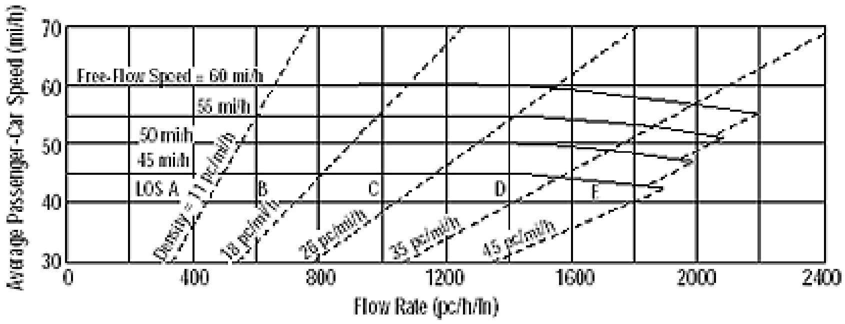
Flow Rate, v_p (pc/h/ln)	206
Speed, S (mi/h)	50.0
D (pc/mi/ln)	4.1
LOS	A

Design

Design (N)

Required Number of Lanes, N	
Flow Rate, v_p (pc/h)	
Max Service Flow Rate (pc/h/ln)	
Design LOS	

MULTILANE HIGHWAYS WORKSHEET(Direction 2)



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	AJP
Agency or Company	Neel-Schaffer, Inc.
Date Performed	7/11/2011
Analysis Time Period	PM Peak

Site Information

Highway/Direction to Travel	LA 3234
From/To	Between Cherry St & LA 443
Jurisdiction	Tangipahoa Parish
Analysis Year	2015 Alternate A - EB

Project Description N-S Prj# 8437

☑ Oper.(LOS) ☐ Des. (N) ☐ Plan. (vp)

Flow Inputs

Volume, V (veh/h)	345	Peak-Hour Factor, PHF	0.90
AADT(veh/h)		%Trucks and Buses, P_T	5
Peak-Hour Prop of AADT (veh/d)		%RVs, P_R	0
Peak-Hour Direction Prop, D		General Terrain:	Level
DDHV (veh/h)		Grade Length (mi)	0.00
Driver Type Adjustment	1.00	Up/Down %	0.00
		Number of Lanes	2

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	f_{HV}	0.976

Speed Inputs

Lane Width, LW (ft)	12.0
Total Lateral Clearance, LC (ft)	12.0
Access Points, A (A/mi)	0
Median Type, M	Divided
FFS (measured)	
Base Free-Flow Speed, BFFS	50.0

Calc Speed Adj and FFS

f_{LW} (mi/h)	0.0
f_{LC} (mi/h)	0.0
f_A (mi/h)	0.0
f_M (mi/h)	0.0
FFS (mi/h)	50.0

Operations

Operational (LOS)

Flow Rate, v_p (pc/h/ln)	196
Speed, S (mi/h)	50.0
D (pc/mi/ln)	3.9
LOS	A

Design

Design (N)

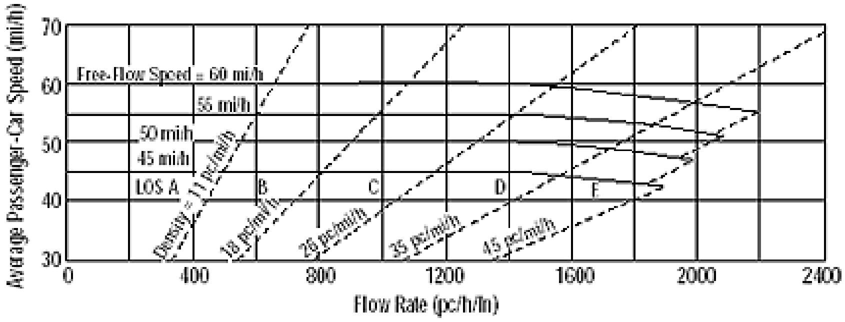
Required Number of Lanes, N

Flow Rate, v_p (pc/h)

Max Service Flow Rate (pc/h/ln)

Design LOS

MULTILANE HIGHWAYS WORKSHEET(Direction 1)



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	AJP
Agency or Company	Neel-Schaffer, Inc.
Date Performed	7/11/2011
Analysis Time Period	PM Peak

Site Information

Highway/Direction to Travel	LA 3234
From/To	Between Cherry St & LA 443
Jurisdiction	Tangipahoa Parish
Analysis Year	2015 Alternate A - WB

Project Description N-S Prj# 8437

☑ Oper.(LOS) ☐ Des. (N) ☐ Plan. (vp)

Flow Inputs

Volume, V (veh/h)	306	Peak-Hour Factor, PHF	0.90
AADT(veh/h)		%Trucks and Buses, P_T	5
Peak-Hour Prop of AADT (veh/d)		%RVs, P_R	0
Peak-Hour Direction Prop, D		General Terrain:	Level
DDHV (veh/h)		Grade Length (mi)	0.00
Driver Type Adjustment	1.00	Up/Down %	0.00
		Number of Lanes	2

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	f_{HV}	0.976

Speed Inputs

Lane Width, LW (ft)	12.0
Total Lateral Clearance, LC (ft)	12.0
Access Points, A (A/mi)	0
Median Type, M	Divided
FFS (measured)	
Base Free-Flow Speed, BFFS	50.0

Calc Speed Adj and FFS

f_{LW} (mi/h)	0.0
f_{LC} (mi/h)	0.0
f_A (mi/h)	0.0
f_M (mi/h)	0.0
FFS (mi/h)	50.0

Operations

Operational (LOS)

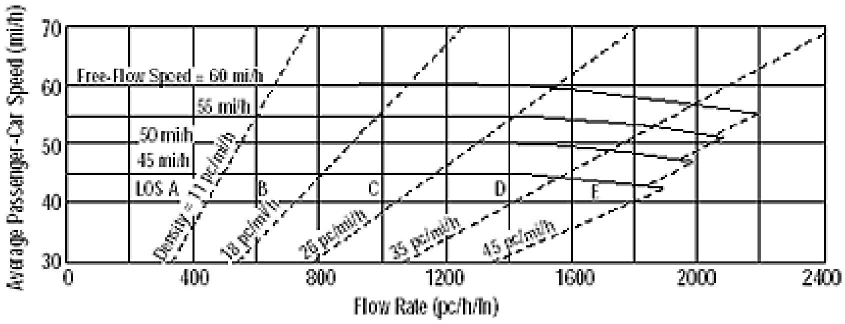
Flow Rate, v_p (pc/h/ln)	174
Speed, S (mi/h)	50.0
D (pc/mi/ln)	3.5
LOS	A

Design

Design (N)

Required Number of Lanes, N	
Flow Rate, v_p (pc/h)	
Max Service Flow Rate (pc/h/ln)	
Design LOS	

MULTILANE HIGHWAYS WORKSHEET(Direction 2)



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	AJP
Agency or Company	Neel-Schaffer, Inc.
Date Performed	7/11/2011
Analysis Time Period	AM Peak

Site Information

Highway/Direction to Travel	LA 3234
From/To	Between Cherry St & LA 443
Jurisdiction	Tangipahoa Parish
Analysis Year	2035 Alternate A - EB

Project Description N-S Prj# 8437

☑ Oper.(LOS) ☐ Des. (N) ☐ Plan. (vp)

Flow Inputs

Volume, V (veh/h)	406	Peak-Hour Factor, PHF	0.90
AADT(veh/h)		%Trucks and Buses, P_T	5
Peak-Hour Prop of AADT (veh/d)		%RVs, P_R	0
Peak-Hour Direction Prop, D		General Terrain:	Level
DDHV (veh/h)		Grade Length (mi)	0.00
Driver Type Adjustment	1.00	Up/Down %	0.00
		Number of Lanes	2

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	f_{HV}	0.976

Speed Inputs

Lane Width, LW (ft)	12.0
Total Lateral Clearance, LC (ft)	12.0
Access Points, A (A/mi)	0
Median Type, M	Divided
FFS (measured)	
Base Free-Flow Speed, BFFS	50.0

Calc Speed Adj and FFS

f_{LW} (mi/h)	0.0
f_{LC} (mi/h)	0.0
f_A (mi/h)	0.0
f_M (mi/h)	0.0
FFS (mi/h)	50.0

Operations

Operational (LOS)

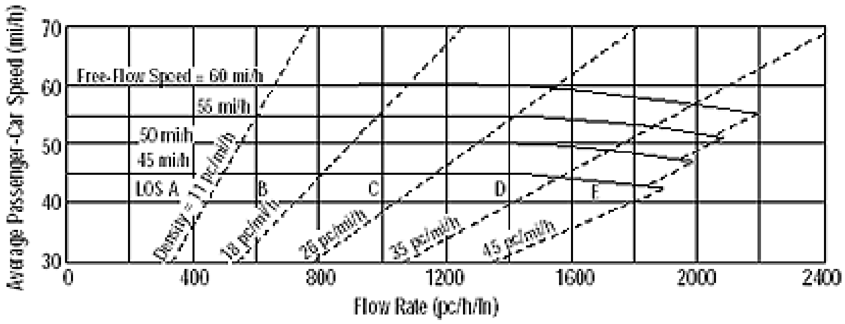
Flow Rate, v_p (pc/h/ln)	231
Speed, S (mi/h)	50.0
D (pc/mi/ln)	4.6
LOS	A

Design

Design (N)

Required Number of Lanes, N	
Flow Rate, v_p (pc/h)	
Max Service Flow Rate (pc/h/ln)	
Design LOS	

MULTILANE HIGHWAYS WORKSHEET(Direction 1)



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	AJP
Agency or Company	Neel-Schaffer, Inc.
Date Performed	7/11/2011
Analysis Time Period	AM Peak

Site Information

Highway/Direction to Travel	LA 3234
From/To	Between Cherry St & LA 443
Jurisdiction	Tangipahoa Parish
Analysis Year	2035 Alternate A - WB

Project Description N-S Prj# 8437

☑ Oper.(LOS) ☐ Des. (N) ☐ Plan. (vp)

Flow Inputs

Volume, V (veh/h)	558	Peak-Hour Factor, PHF	0.90
AADT(veh/h)		%Trucks and Buses, P_T	5
Peak-Hour Prop of AADT (veh/d)		%RVs, P_R	0
Peak-Hour Direction Prop, D		General Terrain:	Level
DDHV (veh/h)		Grade Length (mi)	0.00
Driver Type Adjustment	1.00	Up/Down %	0.00
		Number of Lanes	2

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	f_{HV}	0.976

Speed Inputs

Lane Width, LW (ft)	12.0
Total Lateral Clearance, LC (ft)	12.0
Access Points, A (A/mi)	0
Median Type, M	Divided
FFS (measured)	
Base Free-Flow Speed, BFFS	50.0

Calc Speed Adj and FFS

f_{LW} (mi/h)	0.0
f_{LC} (mi/h)	0.0
f_A (mi/h)	0.0
f_M (mi/h)	0.0
FFS (mi/h)	50.0

Operations

Operational (LOS)

Flow Rate, v_p (pc/h/ln)	317
Speed, S (mi/h)	50.0
D (pc/mi/ln)	6.3
LOS	A

Design

Design (N)

Required Number of Lanes, N

Flow Rate, v_p (pc/h)

Max Service Flow Rate (pc/h/ln)

Design LOS

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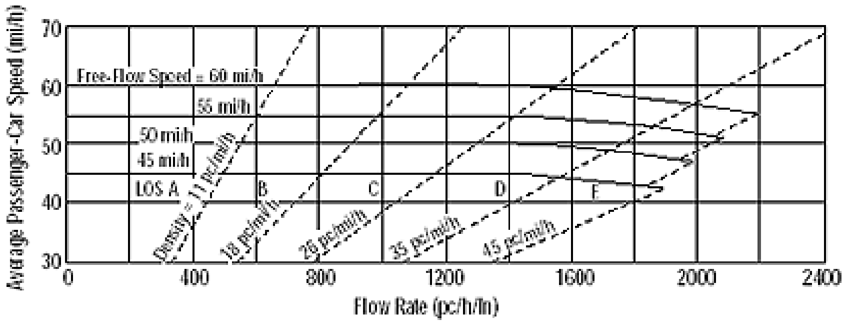
MULTILANE HIGHWAYS WORKSHEET(Direction 2)



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	AJP
Agency or Company	Neel-Schaffer, Inc.
Date Performed	7/11/2011
Analysis Time Period	PM Peak

Site Information

Highway/Direction to Travel	LA 3234
From/To	Between Cherry St & LA 443
Jurisdiction	Tangipahoa Parish
Analysis Year	2035 Alternate A - EB

Project Description N-S Prj# 8437

☑ Oper.(LOS) ☐ Des. (N) ☐ Plan. (vp)

Flow Inputs

Volume, V (veh/h)	554	Peak-Hour Factor, PHF	0.90
AADT(veh/h)		%Trucks and Buses, P_T	5
Peak-Hour Prop of AADT (veh/d)		%RVs, P_R	0
Peak-Hour Direction Prop, D		General Terrain:	Level
DDHV (veh/h)		Grade Length (mi)	0.00
Driver Type Adjustment	1.00	Up/Down %	0.00
		Number of Lanes	2

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	f_{HV}	0.976

Speed Inputs

Lane Width, LW (ft)	12.0
Total Lateral Clearance, LC (ft)	12.0
Access Points, A (A/mi)	0
Median Type, M	Divided
FFS (measured)	
Base Free-Flow Speed, BFFS	50.0

Calc Speed Adj and FFS

f_{LW} (mi/h)	0.0
f_{LC} (mi/h)	0.0
f_A (mi/h)	0.0
f_M (mi/h)	0.0
FFS (mi/h)	50.0

Operations

Operational (LOS)

Flow Rate, v_p (pc/h/ln)	315
Speed, S (mi/h)	50.0
D (pc/mi/ln)	6.3
LOS	A

Design

Design (N)

Required Number of Lanes, N

Flow Rate, v_p (pc/h)

Max Service Flow Rate (pc/h/ln)

Design LOS

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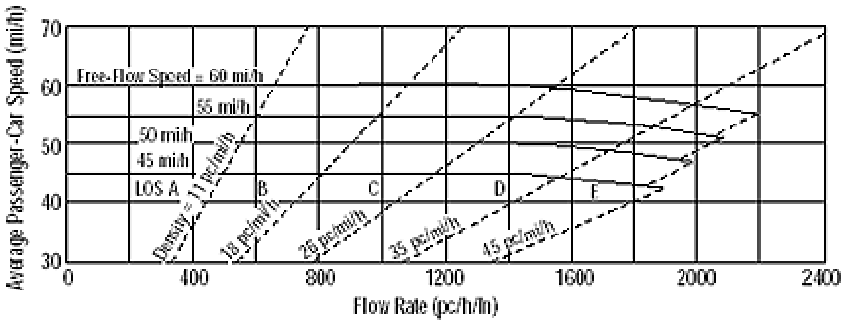
MULTILANE HIGHWAYS WORKSHEET(Direction 1)



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	AJP
Agency or Company	Neel-Schaffer, Inc.
Date Performed	7/11/2011
Analysis Time Period	PM Peak

Site Information

Highway/Direction to Travel	LA 3234
From/To	Between Cherry St & LA 443
Jurisdiction	Tangipahoa Parish
Analysis Year	2035 Alternate A - WB

Project Description N-S Prj# 8437

☑ Oper.(LOS) ☐ Des. (N) ☐ Plan. (vp)

Flow Inputs

Volume, V (veh/h)	425	Peak-Hour Factor, PHF	0.90
AADT(veh/h)		%Trucks and Buses, P_T	5
Peak-Hour Prop of AADT (veh/d)		%RVs, P_R	0
Peak-Hour Direction Prop, D		General Terrain:	Level
DDHV (veh/h)		Grade Length (mi)	0.00
Driver Type Adjustment	1.00	Up/Down %	0.00
		Number of Lanes	2

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	f_{HV}	0.976

Speed Inputs

Lane Width, LW (ft)	12.0
Total Lateral Clearance, LC (ft)	12.0
Access Points, A (A/mi)	0
Median Type, M	Divided
FFS (measured)	
Base Free-Flow Speed, BFFS	50.0

Calc Speed Adj and FFS

f_{LW} (mi/h)	0.0
f_{LC} (mi/h)	0.0
f_A (mi/h)	0.0
f_M (mi/h)	0.0
FFS (mi/h)	50.0

Operations

Operational (LOS)

Flow Rate, v_p (pc/h/ln)	242
Speed, S (mi/h)	50.0
D (pc/mi/ln)	4.8
LOS	A

Design

Design (N)

Required Number of Lanes, N	
Flow Rate, v_p (pc/h)	
Max Service Flow Rate (pc/h/ln)	
Design LOS	

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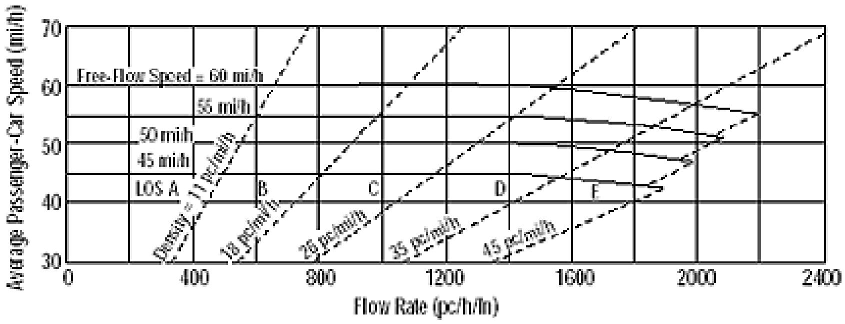
MULTILANE HIGHWAYS WORKSHEET(Direction 2)



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	AJP
Agency or Company	Neel-Schaffer, Inc.
Date Performed	7/11/2011
Analysis Time Period	AM Peak

Site Information

Highway/Direction to Travel	LA 3234
From/To	Between Cherry St & LA 443
Jurisdiction	Tangipahoa Parish
Analysis Year	2015 Alternate B - EB

Project Description N-S Prj# 8437

☑ Oper.(LOS) ☐ Des. (N) ☐ Plan. (vp)

Flow Inputs

Volume, V (veh/h)	346	Peak-Hour Factor, PHF	0.90
AADT(veh/h)		%Trucks and Buses, P_T	5
Peak-Hour Prop of AADT (veh/d)		%RVs, P_R	0
Peak-Hour Direction Prop, D		General Terrain:	Level
DDHV (veh/h)		Grade Length (mi)	0.00
Driver Type Adjustment	1.00	Up/Down %	0.00
		Number of Lanes	2

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	f_{HV}	0.976

Speed Inputs

Lane Width, LW (ft)	12.0
Total Lateral Clearance, LC (ft)	12.0
Access Points, A (A/mi)	0
Median Type, M	Divided
FFS (measured)	
Base Free-Flow Speed, BFFS	50.0

Calc Speed Adj and FFS

f_{LW} (mi/h)	0.0
f_{LC} (mi/h)	0.0
f_A (mi/h)	0.0
f_M (mi/h)	0.0
FFS (mi/h)	50.0

Operations

Operational (LOS)

Flow Rate, v_p (pc/h/ln)	197
Speed, S (mi/h)	50.0
D (pc/mi/ln)	3.9
LOS	A

Design

Design (N)

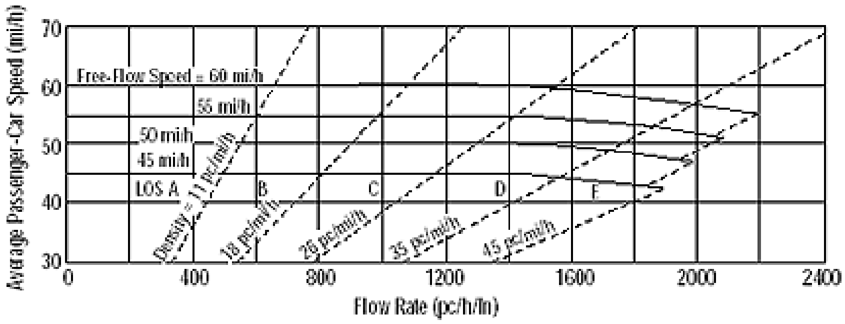
Required Number of Lanes, N

Flow Rate, v_p (pc/h)

Max Service Flow Rate (pc/h/ln)

Design LOS

MULTILANE HIGHWAYS WORKSHEET(Direction 1)



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	AJP
Agency or Company	Neel-Schaffer, Inc.
Date Performed	7/11/2011
Analysis Time Period	AM Peak

Site Information

Highway/Direction to Travel	LA 3234
From/To	Between Cherry St & LA 443
Jurisdiction	Tangipahoa Parish
Analysis Year	2015 Alternate B - WB

Project Description N-S Prj# 8437

☑ Oper.(LOS) ☐ Des. (N) ☐ Plan. (vp)

Flow Inputs

Volume, V (veh/h)	446	Peak-Hour Factor, PHF	0.90
AADT(veh/h)		%Trucks and Buses, P_T	5
Peak-Hour Prop of AADT (veh/d)		%RVs, P_R	0
Peak-Hour Direction Prop, D		General Terrain:	Level
DDHV (veh/h)		Grade Length (mi)	0.00
Driver Type Adjustment	1.00	Up/Down %	0.00
		Number of Lanes	2

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	f_{HV}	0.976

Speed Inputs

Lane Width, LW (ft)	12.0
Total Lateral Clearance, LC (ft)	12.0
Access Points, A (A/mi)	0
Median Type, M	Divided
FFS (measured)	
Base Free-Flow Speed, BFFS	50.0

Calc Speed Adj and FFS

f_{LW} (mi/h)	0.0
f_{LC} (mi/h)	0.0
f_A (mi/h)	0.0
f_M (mi/h)	0.0
FFS (mi/h)	50.0

Operations

Operational (LOS)

Flow Rate, v_p (pc/h/ln)	253
Speed, S (mi/h)	50.0
D (pc/mi/ln)	5.1
LOS	A

Design

Design (N)

Required Number of Lanes, N

Flow Rate, v_p (pc/h)

Max Service Flow Rate (pc/h/ln)

Design LOS

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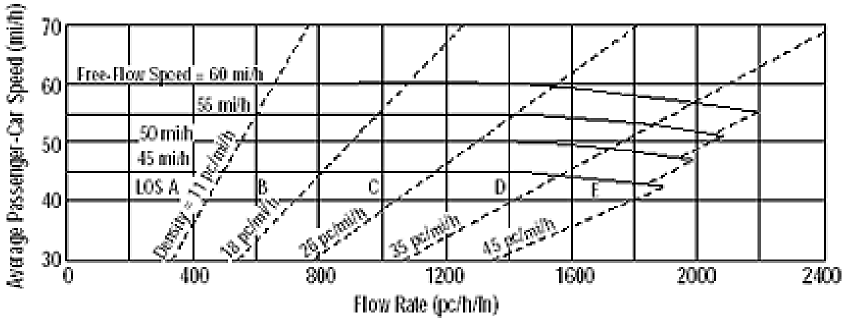
MULTILANE HIGHWAYS WORKSHEET(Direction 2)



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	AJP
Agency or Company	Neel-Schaffer, Inc.
Date Performed	7/11/2011
Analysis Time Period	PM Peak

Site Information

Highway/Direction to Travel	LA 3234
From/To	Between Cherry St & LA 443
Jurisdiction	Tangipahoa Parish
Analysis Year	2015 Alternate B - EB

Project Description N-S Prj# 8437

☑ Oper.(LOS) ☐ Des. (N) ☐ Plan. (vp)

Flow Inputs

Volume, V (veh/h)	438	Peak-Hour Factor, PHF	0.90
AADT(veh/h)		%Trucks and Buses, P_T	5
Peak-Hour Prop of AADT (veh/d)		%RVs, P_R	0
Peak-Hour Direction Prop, D		General Terrain:	Level
DDHV (veh/h)		Grade Length (mi)	0.00
Driver Type Adjustment	1.00	Up/Down %	0.00
		Number of Lanes	2

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	f_{HV}	0.976

Speed Inputs

Lane Width, LW (ft)	12.0
Total Lateral Clearance, LC (ft)	12.0
Access Points, A (A/mi)	0
Median Type, M	Divided
FFS (measured)	
Base Free-Flow Speed, BFFS	50.0

Calc Speed Adj and FFS

f_{LW} (mi/h)	0.0
f_{LC} (mi/h)	0.0
f_A (mi/h)	0.0
f_M (mi/h)	0.0
FFS (mi/h)	50.0

Operations

Operational (LOS)

Flow Rate, v_p (pc/h/ln)	249
Speed, S (mi/h)	50.0
D (pc/mi/ln)	5.0
LOS	A

Design

Design (N)

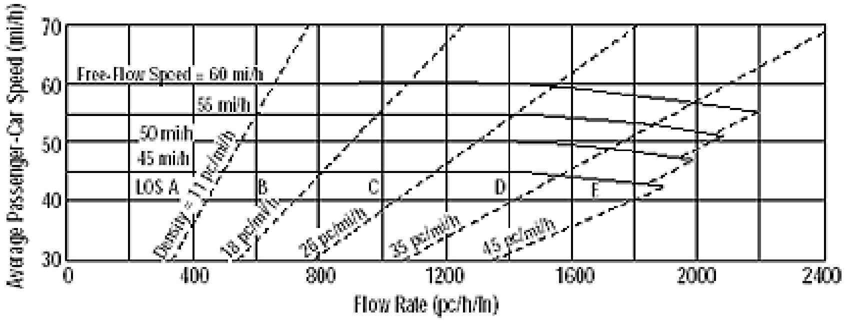
Required Number of Lanes, N

Flow Rate, v_p (pc/h)

Max Service Flow Rate (pc/h/ln)

Design LOS

MULTILANE HIGHWAYS WORKSHEET(Direction 1)



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	AJP
Agency or Company	Neel-Schaffer, Inc.
Date Performed	7/11/2011
Analysis Time Period	PM Peak

Site Information

Highway/Direction to Travel	LA 3234
From/To	Between Cherry St & LA 443
Jurisdiction	Tangipahoa Parish
Analysis Year	2015 Alternate B - WB

Project Description N-S Prj# 8437

☑ Oper.(LOS) ☐ Des. (N) ☐ Plan. (vp)

Flow Inputs

Volume, V (veh/h)	355	Peak-Hour Factor, PHF	0.90
AADT(veh/h)		%Trucks and Buses, P_T	5
Peak-Hour Prop of AADT (veh/d)		%RVs, P_R	0
Peak-Hour Direction Prop, D		General Terrain:	Level
DDHV (veh/h)		Grade Length (mi)	0.00
Driver Type Adjustment	1.00	Up/Down %	0.00
		Number of Lanes	2

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	f_{HV}	0.976

Speed Inputs

Lane Width, LW (ft)	12.0
Total Lateral Clearance, LC (ft)	12.0
Access Points, A (A/mi)	0
Median Type, M	Divided
FFS (measured)	
Base Free-Flow Speed, BFFS	50.0

Calc Speed Adj and FFS

f_{LW} (mi/h)	0.0
f_{LC} (mi/h)	0.0
f_A (mi/h)	0.0
f_M (mi/h)	0.0
FFS (mi/h)	50.0

Operations

Operational (LOS)

Flow Rate, v_p (pc/h/ln)	202
Speed, S (mi/h)	50.0
D (pc/mi/ln)	4.0
LOS	A

Design

Design (N)

Required Number of Lanes, N

Flow Rate, v_p (pc/h)

Max Service Flow Rate (pc/h/ln)

Design LOS

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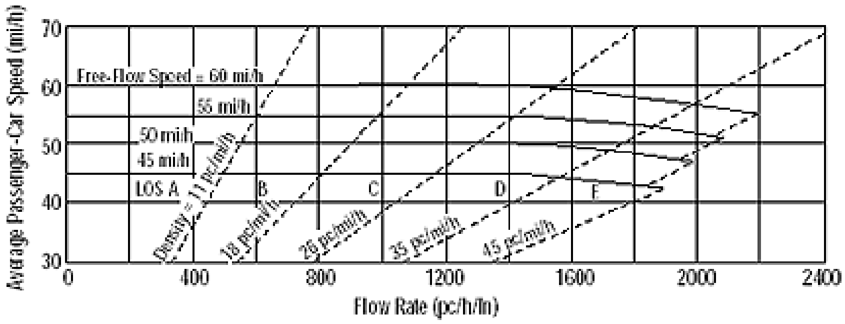
MULTILANE HIGHWAYS WORKSHEET(Direction 2)



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	AJP
Agency or Company	Neel-Schaffer, Inc.
Date Performed	7/11/2011
Analysis Time Period	AM Peak

Site Information

Highway/Direction to Travel	LA 3234
From/To	Between Cherry St & LA 443
Jurisdiction	Tangipahoa Parish
Analysis Year	2035 Alternate B - EB

Project Description N-S Prj# 8437

☑ Oper.(LOS) ☐ Des. (N) ☐ Plan. (vp)

Flow Inputs

Volume, V (veh/h)	462	Peak-Hour Factor, PHF	0.90
AADT(veh/h)		%Trucks and Buses, P_T	5
Peak-Hour Prop of AADT (veh/d)		%RVs, P_R	0
Peak-Hour Direction Prop, D		General Terrain:	Level
DDHV (veh/h)		Grade Length (mi)	0.00
Driver Type Adjustment	1.00	Up/Down %	0.00
		Number of Lanes	2

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	f_{HV}	0.976

Speed Inputs

Lane Width, LW (ft)	12.0
Total Lateral Clearance, LC (ft)	12.0
Access Points, A (A/mi)	0
Median Type, M	Divided
FFS (measured)	
Base Free-Flow Speed, BFFS	50.0

Calc Speed Adj and FFS

f_{LW} (mi/h)	0.0
f_{LC} (mi/h)	0.0
f_A (mi/h)	0.0
f_M (mi/h)	0.0
FFS (mi/h)	50.0

Operations

Operational (LOS)

Flow Rate, v_p (pc/h/ln)	263
Speed, S (mi/h)	50.0
D (pc/mi/ln)	5.3
LOS	A

Design

Design (N)

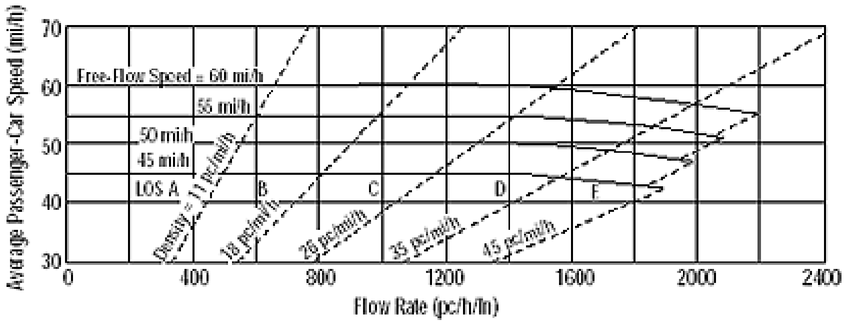
Required Number of Lanes, N

Flow Rate, v_p (pc/h)

Max Service Flow Rate (pc/h/ln)

Design LOS

MULTILANE HIGHWAYS WORKSHEET(Direction 1)



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	AJP
Agency or Company	Neel-Schaffer, Inc.
Date Performed	7/11/2011
Analysis Time Period	AM Peak

Site Information

Highway/Direction to Travel	LA 3234
From/To	Between Cherry St & LA 443
Jurisdiction	Tangipahoa Parish
Analysis Year	2035 Alternate B - WB

Project Description N-S Prj# 8437

☑ Oper.(LOS) ☐ Des. (N) ☐ Plan. (vp)

Flow Inputs

Volume, V (veh/h)	608	Peak-Hour Factor, PHF	0.90
AADT(veh/h)		%Trucks and Buses, P_T	5
Peak-Hour Prop of AADT (veh/d)		%RVs, P_R	0
Peak-Hour Direction Prop, D		General Terrain:	Level
DDHV (veh/h)		Grade Length (mi)	0.00
Driver Type Adjustment	1.00	Up/Down %	0.00
		Number of Lanes	2

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	f_{HV}	0.976

Speed Inputs

Lane Width, LW (ft)	12.0
Total Lateral Clearance, LC (ft)	12.0
Access Points, A (A/mi)	0
Median Type, M	Divided
FFS (measured)	
Base Free-Flow Speed, BFFS	50.0

Calc Speed Adj and FFS

f_{LW} (mi/h)	0.0
f_{LC} (mi/h)	0.0
f_A (mi/h)	0.0
f_M (mi/h)	0.0
FFS (mi/h)	50.0

Operations

Operational (LOS)

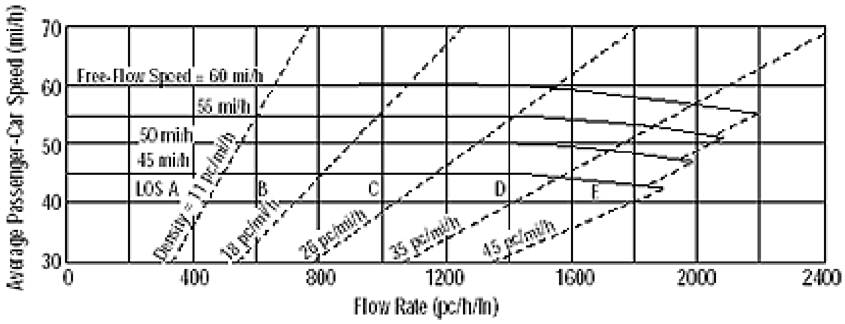
Flow Rate, v_p (pc/h/ln)	346
Speed, S (mi/h)	50.0
D (pc/mi/ln)	6.9
LOS	A

Design

Design (N)

Required Number of Lanes, N	
Flow Rate, v_p (pc/h)	
Max Service Flow Rate (pc/h/ln)	
Design LOS	

MULTILANE HIGHWAYS WORKSHEET(Direction 2)



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	AJP
Agency or Company	Neel-Schaffer, Inc.
Date Performed	7/11/2011
Analysis Time Period	PM Peak

Site Information

Highway/Direction to Travel	LA 3234
From/To	Between Cherry St & LA 443
Jurisdiction	Tangipahoa Parish
Analysis Year	2035 Alternate B - EB

Project Description N-S Prj# 8437

☑ Oper.(LOS) ☐ Des. (N) ☐ Plan. (vp)

Flow Inputs

Volume, V (veh/h)	585	Peak-Hour Factor, PHF	0.90
AADT(veh/h)		%Trucks and Buses, P_T	5
Peak-Hour Prop of AADT (veh/d)		%RVs, P_R	0
Peak-Hour Direction Prop, D		General Terrain:	Level
DDHV (veh/h)		Grade Length (mi)	0.00
Driver Type Adjustment	1.00	Up/Down %	0.00
		Number of Lanes	2

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	f_{HV}	0.976

Speed Inputs

Lane Width, LW (ft)	12.0
Total Lateral Clearance, LC (ft)	12.0
Access Points, A (A/mi)	0
Median Type, M	Divided
FFS (measured)	
Base Free-Flow Speed, BFFS	50.0

Calc Speed Adj and FFS

f_{LW} (mi/h)	0.0
f_{LC} (mi/h)	0.0
f_A (mi/h)	0.0
f_M (mi/h)	0.0
FFS (mi/h)	50.0

Operations

Operational (LOS)

Flow Rate, v_p (pc/h/ln)	333
Speed, S (mi/h)	50.0
D (pc/mi/ln)	6.7
LOS	A

Design

Design (N)

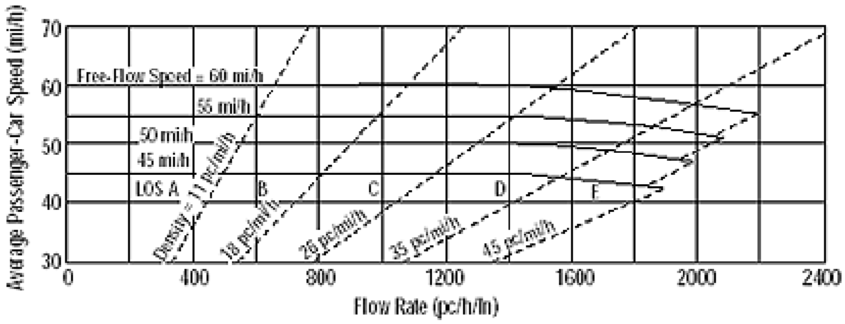
Required Number of Lanes, N

Flow Rate, v_p (pc/h)

Max Service Flow Rate (pc/h/ln)

Design LOS

MULTILANE HIGHWAYS WORKSHEET(Direction 1)



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	AJP
Agency or Company	Neel-Schaffer, Inc.
Date Performed	7/11/2011
Analysis Time Period	PM Peak

Site Information

Highway/Direction to Travel	LA 3234
From/To	Between Cherry St & LA 443
Jurisdiction	Tangipahoa Parish
Analysis Year	2035 Alternate B - WB

Project Description N-S Prj# 8437

☑ Oper.(LOS) ☐ Des. (N) ☐ Plan. (vp)

Flow Inputs

Volume, V (veh/h)	506	Peak-Hour Factor, PHF	0.90
AADT(veh/h)		%Trucks and Buses, P_T	5
Peak-Hour Prop of AADT (veh/d)		%RVs, P_R	0
Peak-Hour Direction Prop, D		General Terrain:	Level
DDHV (veh/h)		Grade Length (mi)	0.00
Driver Type Adjustment	1.00	Up/Down %	0.00
		Number of Lanes	2

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	f_{HV}	0.976

Speed Inputs

Lane Width, LW (ft)	12.0
Total Lateral Clearance, LC (ft)	12.0
Access Points, A (A/mi)	0
Median Type, M	Divided
FFS (measured)	
Base Free-Flow Speed, BFFS	50.0

Calc Speed Adj and FFS

f_{LW} (mi/h)	0.0
f_{LC} (mi/h)	0.0
f_A (mi/h)	0.0
f_M (mi/h)	0.0
FFS (mi/h)	50.0

Operations

Operational (LOS)

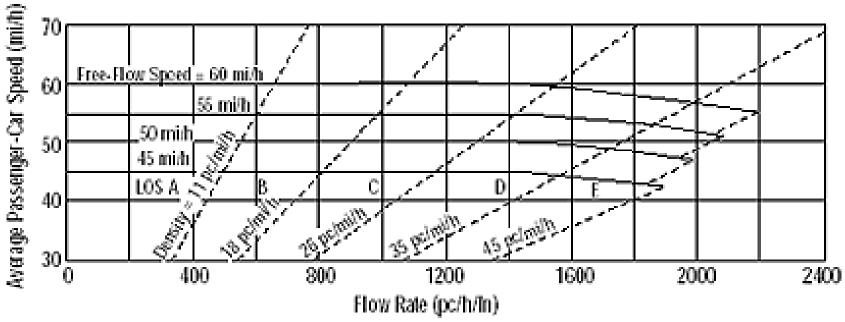
Flow Rate, v_p (pc/h/ln)	288
Speed, S (mi/h)	50.0
D (pc/mi/ln)	5.8
LOS	A

Design

Design (N)

Required Number of Lanes, N	
Flow Rate, v_p (pc/h)	
Max Service Flow Rate (pc/h/ln)	
Design LOS	

MULTILANE HIGHWAYS WORKSHEET(Direction 2)



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	AJP
Agency or Company	Neel-Schaffer, Inc.
Date Performed	7/11/2011
Analysis Time Period	AM Peak

Site Information

Highway/Direction to Travel	LA 3234
From/To	Between Cherry St & LA 443
Jurisdiction	Tangipahoa Parish
Analysis Year	2015 Alternate C - EB

Project Description N-S Prj# 8437

☑ Oper.(LOS) ☐ Des. (N) ☐ Plan. (vp)

Flow Inputs

Volume, V (veh/h)	347	Peak-Hour Factor, PHF	0.90
AADT(veh/h)		%Trucks and Buses, P_T	5
Peak-Hour Prop of AADT (veh/d)		%RVs, P_R	0
Peak-Hour Direction Prop, D		General Terrain:	Level
DDHV (veh/h)		Grade Length (mi)	0.00
Driver Type Adjustment	1.00	Up/Down %	0.00
		Number of Lanes	2

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	f_{HV}	0.976

Speed Inputs

Lane Width, LW (ft)	12.0
Total Lateral Clearance, LC (ft)	12.0
Access Points, A (A/mi)	0
Median Type, M	Divided
FFS (measured)	
Base Free-Flow Speed, BFFS	50.0

Calc Speed Adj and FFS

f_{LW} (mi/h)	0.0
f_{LC} (mi/h)	0.0
f_A (mi/h)	0.0
f_M (mi/h)	0.0
FFS (mi/h)	50.0

Operations

Operational (LOS)

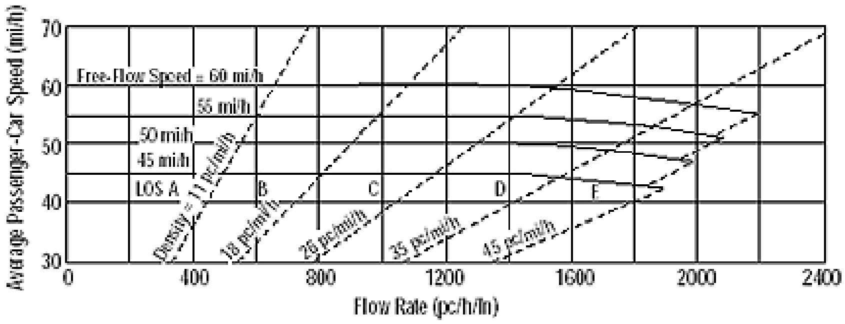
Flow Rate, v_p (pc/h/ln)	197
Speed, S (mi/h)	50.0
D (pc/mi/ln)	3.9
LOS	A

Design

Design (N)

Required Number of Lanes, N	
Flow Rate, v_p (pc/h)	
Max Service Flow Rate (pc/h/ln)	
Design LOS	

MULTILANE HIGHWAYS WORKSHEET(Direction 1)



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	AJP
Agency or Company	Neel-Schaffer, Inc.
Date Performed	7/11/2011
Analysis Time Period	AM Peak

Site Information

Highway/Direction to Travel	LA 3234
From/To	Between Cherry St & LA 443
Jurisdiction	Tangipahoa Parish
Analysis Year	2015 Alternate C - WB

Project Description N-S Prj# 8437

☑ Oper.(LOS) ☐ Des. (N) ☐ Plan. (vp)

Flow Inputs

Volume, V (veh/h)	464	Peak-Hour Factor, PHF	0.90
AADT(veh/h)		%Trucks and Buses, P_T	5
Peak-Hour Prop of AADT (veh/d)		%RVs, P_R	0
Peak-Hour Direction Prop, D		General Terrain:	Level
DDHV (veh/h)		Grade Length (mi)	0.00
Driver Type Adjustment	1.00	Up/Down %	0.00
		Number of Lanes	2

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	f_{HV}	0.976

Speed Inputs

Lane Width, LW (ft)	12.0
Total Lateral Clearance, LC (ft)	12.0
Access Points, A (A/mi)	0
Median Type, M	Divided
FFS (measured)	
Base Free-Flow Speed, BFFS	50.0

Calc Speed Adj and FFS

f_{LW} (mi/h)	0.0
f_{LC} (mi/h)	0.0
f_A (mi/h)	0.0
f_M (mi/h)	0.0
FFS (mi/h)	50.0

Operations

Operational (LOS)

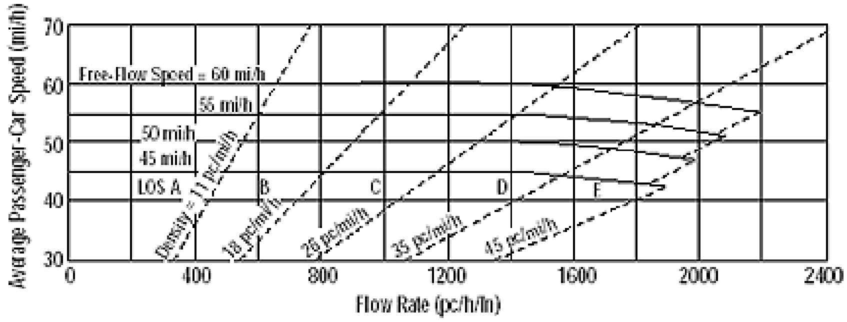
Flow Rate, v_p (pc/h/ln)	264
Speed, S (mi/h)	50.0
D (pc/mi/ln)	5.3
LOS	A

Design

Design (N)

Required Number of Lanes, N	
Flow Rate, v_p (pc/h)	
Max Service Flow Rate (pc/h/ln)	
Design LOS	

MULTILANE HIGHWAYS WORKSHEET(Direction 2)



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	AJP
Agency or Company	Neel-Schaffer, Inc.
Date Performed	7/11/2011
Analysis Time Period	PM Peak

Site Information

Highway/Direction to Travel	LA 3234
From/To	Between Cherry St & LA 443
Jurisdiction	Tangipahoa Parish
Analysis Year	2015 Alternate C - EB

Project Description N-S Prj# 8437

☑ Oper.(LOS) ☐ Des. (N) ☐ Plan. (vp)

Flow Inputs

Volume, V (veh/h)	416	Peak-Hour Factor, PHF	0.90
AADT(veh/h)		%Trucks and Buses, P_T	5
Peak-Hour Prop of AADT (veh/d)		%RVs, P_R	0
Peak-Hour Direction Prop, D		General Terrain:	Level
DDHV (veh/h)		Grade Length (mi)	0.00
Driver Type Adjustment	1.00	Up/Down %	0.00
		Number of Lanes	2

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	f_{HV}	0.976

Speed Inputs

Lane Width, LW (ft)	12.0
Total Lateral Clearance, LC (ft)	12.0
Access Points, A (A/mi)	0
Median Type, M	Divided
FFS (measured)	
Base Free-Flow Speed, BFFS	50.0

Calc Speed Adj and FFS

f_{LW} (mi/h)	0.0
f_{LC} (mi/h)	0.0
f_A (mi/h)	0.0
f_M (mi/h)	0.0
FFS (mi/h)	50.0

Operations

Operational (LOS)

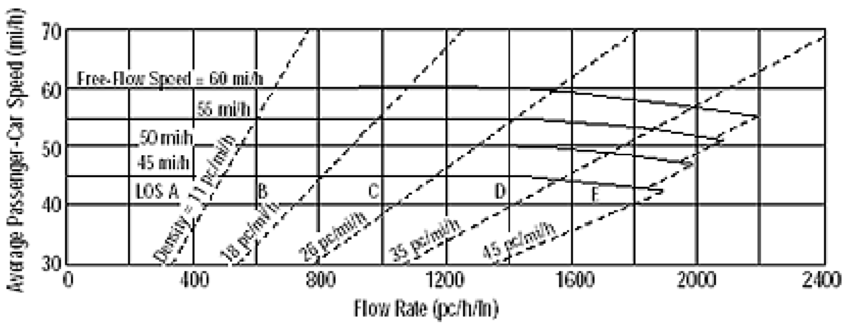
Flow Rate, v_p (pc/h/ln)	236
Speed, S (mi/h)	50.0
D (pc/mi/ln)	4.7
LOS	A

Design

Design (N)

Required Number of Lanes, N	
Flow Rate, v_p (pc/h)	
Max Service Flow Rate (pc/h/ln)	
Design LOS	

MULTILANE HIGHWAYS WORKSHEET(Direction 1)



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	AJP
Agency or Company	Neel-Schaffer, Inc.
Date Performed	7/11/2011
Analysis Time Period	PM Peak

Site Information

Highway/Direction to Travel	LA 3234
From/To	Between Cherry St & LA 443
Jurisdiction	Tangipahoa Parish
Analysis Year	2015 Alternate C - WB

Project Description N-S Prj# 8437

☑ Oper.(LOS) ☐ Des. (N) ☐ Plan. (vp)

Flow Inputs

Volume, V (veh/h)	370	Peak-Hour Factor, PHF	0.90
AADT(veh/h)		%Trucks and Buses, P_T	5
Peak-Hour Prop of AADT (veh/d)		%RVs, P_R	0
Peak-Hour Direction Prop, D		General Terrain:	Level
DDHV (veh/h)		Grade Length (mi)	0.00
Driver Type Adjustment	1.00	Up/Down %	0.00
		Number of Lanes	2

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	f_{HV}	0.976

Speed Inputs

Lane Width, LW (ft)	12.0
Total Lateral Clearance, LC (ft)	12.0
Access Points, A (A/mi)	0
Median Type, M	Divided
FFS (measured)	
Base Free-Flow Speed, BFFS	50.0

Calc Speed Adj and FFS

f_{LW} (mi/h)	0.0
f_{LC} (mi/h)	0.0
f_A (mi/h)	0.0
f_M (mi/h)	0.0
FFS (mi/h)	50.0

Operations

Operational (LOS)

Flow Rate, v_p (pc/h/ln)	210
Speed, S (mi/h)	50.0
D (pc/mi/ln)	4.2
LOS	A

Design

Design (N)

Required Number of Lanes, N

Flow Rate, v_p (pc/h)

Max Service Flow Rate (pc/h/ln)

Design LOS

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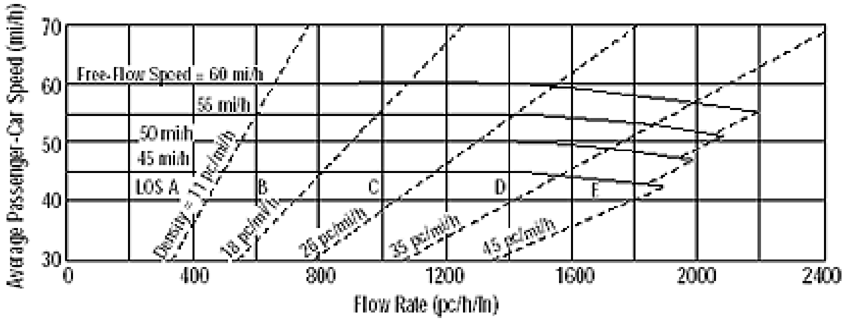
MULTILANE HIGHWAYS WORKSHEET(Direction 2)



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	AJP
Agency or Company	Neel-Schaffer, Inc.
Date Performed	7/11/2011
Analysis Time Period	AM Peak

Site Information

Highway/Direction to Travel	LA 3234
From/To	Between Cherry St & LA 443
Jurisdiction	Tangipahoa Parish
Analysis Year	2035 Alternate C - EB

Project Description N-S Prj# 8437

☑ Oper.(LOS) ☐ Des. (N) ☐ Plan. (vp)

Flow Inputs

Volume, V (veh/h)	476	Peak-Hour Factor, PHF	0.90
AADT(veh/h)		%Trucks and Buses, P_T	5
Peak-Hour Prop of AADT (veh/d)		%RVs, P_R	0
Peak-Hour Direction Prop, D		General Terrain:	Level
DDHV (veh/h)		Grade Length (mi)	0.00
Driver Type Adjustment	1.00	Up/Down %	0.00
		Number of Lanes	2

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	f_{HV}	0.976

Speed Inputs

Lane Width, LW (ft)	12.0
Total Lateral Clearance, LC (ft)	12.0
Access Points, A (A/mi)	0
Median Type, M	Divided
FFS (measured)	
Base Free-Flow Speed, BFFS	50.0

Calc Speed Adj and FFS

f_{LW} (mi/h)	0.0
f_{LC} (mi/h)	0.0
f_A (mi/h)	0.0
f_M (mi/h)	0.0
FFS (mi/h)	50.0

Operations

Operational (LOS)

Flow Rate, v_p (pc/h/ln)	271
Speed, S (mi/h)	50.0
D (pc/mi/ln)	5.4
LOS	A

Design

Design (N)

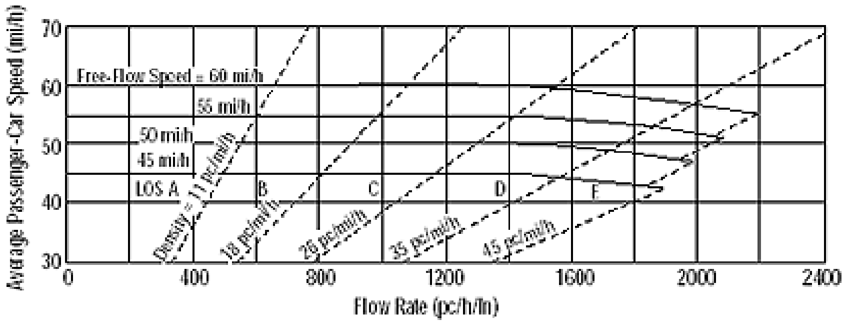
Required Number of Lanes, N

Flow Rate, v_p (pc/h)

Max Service Flow Rate (pc/h/ln)

Design LOS

MULTILANE HIGHWAYS WORKSHEET(Direction 1)



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	AJP
Agency or Company	Neel-Schaffer, Inc.
Date Performed	7/11/2011
Analysis Time Period	AM Peak

Site Information

Highway/Direction to Travel	LA 3234
From/To	Between Cherry St & LA 443
Jurisdiction	Tangipahoa Parish
Analysis Year	2035 Alternate C - WB

Project Description N-S Prj# 8437

☑ Oper.(LOS) ☐ Des. (N) ☐ Plan. (vp)

Flow Inputs

Volume, V (veh/h)	636	Peak-Hour Factor, PHF	0.90
AADT(veh/h)		%Trucks and Buses, P_T	5
Peak-Hour Prop of AADT (veh/d)		%RVs, P_R	0
Peak-Hour Direction Prop, D		General Terrain:	Level
DDHV (veh/h)		Grade Length (mi)	0.00
Driver Type Adjustment	1.00	Up/Down %	0.00
		Number of Lanes	2

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	f_{HV}	0.976

Speed Inputs

Lane Width, LW (ft)	12.0
Total Lateral Clearance, LC (ft)	12.0
Access Points, A (A/mi)	0
Median Type, M	Divided
FFS (measured)	
Base Free-Flow Speed, BFFS	50.0

Calc Speed Adj and FFS

f_{LW} (mi/h)	0.0
f_{LC} (mi/h)	0.0
f_A (mi/h)	0.0
f_M (mi/h)	0.0
FFS (mi/h)	50.0

Operations

Operational (LOS)

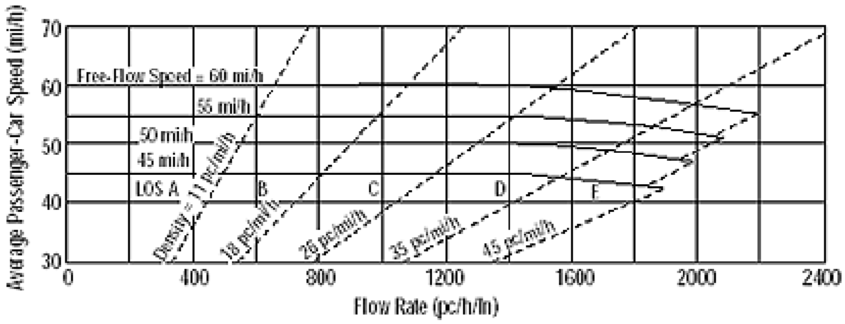
Flow Rate, v_p (pc/h/ln)	362
Speed, S (mi/h)	50.0
D (pc/mi/ln)	7.2
LOS	A

Design

Design (N)

Required Number of Lanes, N	
Flow Rate, v_p (pc/h)	
Max Service Flow Rate (pc/h/ln)	
Design LOS	

MULTILANE HIGHWAYS WORKSHEET(Direction 2)



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	AJP
Agency or Company	Neel-Schaffer, Inc.
Date Performed	7/11/2011
Analysis Time Period	PM Peak

Site Information

Highway/Direction to Travel	LA 3234
From/To	Between Cherry St & LA 443
Jurisdiction	Tangipahoa Parish
Analysis Year	2035 Alternate C - EB

Project Description N-S Prj# 8437

☑ Oper.(LOS) ☐ Des. (N) ☐ Plan. (vp)

Flow Inputs

Volume, V (veh/h)	591	Peak-Hour Factor, PHF	0.90
AADT(veh/h)		%Trucks and Buses, P_T	5
Peak-Hour Prop of AADT (veh/d)		%RVs, P_R	0
Peak-Hour Direction Prop, D		General Terrain:	Level
DDHV (veh/h)		Grade Length (mi)	0.00
Driver Type Adjustment	1.00	Up/Down %	0.00
		Number of Lanes	2

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	f_{HV}	0.976

Speed Inputs

Lane Width, LW (ft)	12.0
Total Lateral Clearance, LC (ft)	12.0
Access Points, A (A/mi)	0
Median Type, M	Divided
FFS (measured)	
Base Free-Flow Speed, BFFS	50.0

Calc Speed Adj and FFS

f_{LW} (mi/h)	0.0
f_{LC} (mi/h)	0.0
f_A (mi/h)	0.0
f_M (mi/h)	0.0
FFS (mi/h)	50.0

Operations

Operational (LOS)

Flow Rate, v_p (pc/h/ln)	336
Speed, S (mi/h)	50.0
D (pc/mi/ln)	6.7
LOS	A

Design

Design (N)

Required Number of Lanes, N

Flow Rate, v_p (pc/h)

Max Service Flow Rate (pc/h/ln)

Design LOS

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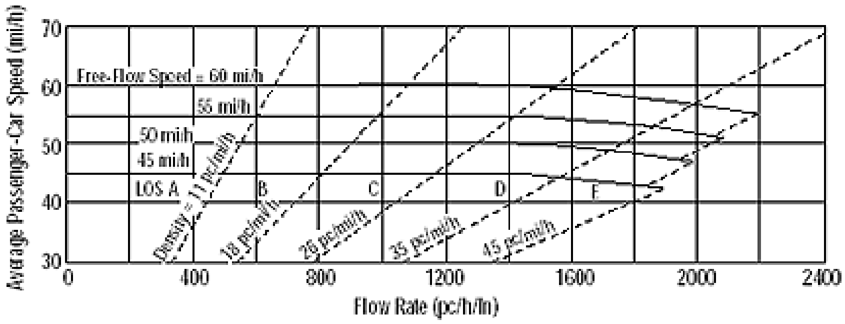
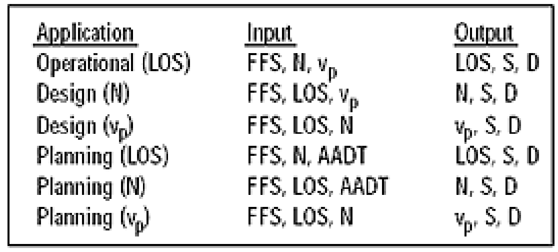
MULTILANE HIGHWAYS WORKSHEET(Direction 1)





Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	AJP
Agency or Company	Neel-Schaffer, Inc.
Date Performed	7/11/2011
Analysis Time Period	PM Peak

Site Information

Highway/Direction to Travel	LA 3234
From/To	Between Cherry St & LA 443
Jurisdiction	Tangipahoa Parish
Analysis Year	2035 Alternate C - WB

Project Description N-S Prj# 8437

☑ Oper.(LOS) ☐ Des. (N) ☐ Plan. (vp)

Flow Inputs

Volume, V (veh/h)	530	Peak-Hour Factor, PHF	0.90
AADT(veh/h)		%Trucks and Buses, P_T	5
Peak-Hour Prop of AADT (veh/d)		%RVs, P_R	0
Peak-Hour Direction Prop, D		General Terrain:	Level
DDHV (veh/h)		Grade Length (mi)	0.00
Driver Type Adjustment	1.00	Up/Down %	0.00
		Number of Lanes	2

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	f_{HV}	0.976

Speed Inputs

Lane Width, LW (ft)	12.0
Total Lateral Clearance, LC (ft)	12.0
Access Points, A (A/mi)	0
Median Type, M	Divided
FFS (measured)	
Base Free-Flow Speed, BFFS	50.0

Calc Speed Adj and FFS

f_{LW} (mi/h)	0.0
f_{LC} (mi/h)	0.0
f_A (mi/h)	0.0
f_M (mi/h)	0.0
FFS (mi/h)	50.0

Operations

Operational (LOS)

Flow Rate, v_p (pc/h/ln)	301
Speed, S (mi/h)	50.0
D (pc/mi/ln)	6.0
LOS	A

Design

Design (N)

Required Number of Lanes, N

Flow Rate, v_p (pc/h)

Max Service Flow Rate (pc/h/ln)

Design LOS

LA 3234

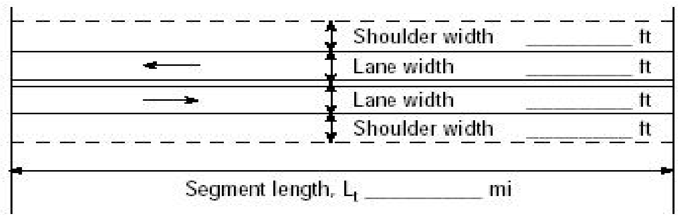
Between LA 443 (Morris Road) and Pride Drive

DIRECTIONAL TWO-LANE HIGHWAY SEGMENT WORKSHEET

General Information		Site Information	
Analyst	*AJP*	Highway / Direction of Travel	*LA 3234*
Agency or Company	*Neel-Schaffer, Inc.*	From/To	*East of LA 443*
Date Performed	*7/8/2011*	Jurisdiction	*Tangipahoa Parish*
Analysis Time Period	*AM Peak*	Analysis Year	*2015 Alternate A*

Project Description: *N-S Prj# 8437*

Input Data



☑ Class I highway ☐ Class II highway

Terrain ☑ Level ☐ Rolling

Grade Length mi Up/down

Peak-hour factor, PHF *0.90*

No-passing zone *20*%

% Trucks and Buses , P_T *5* %

% Recreational vehicles, P_R *0*%

Access points/ *mi* *8*

Analysis direction vol., V_d *238*veh/h

Opposing direction vol., V_o *221*veh/h

Average Travel Speed

	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E_T (Exhibit 20-9 or 20-15)	*1.7*	*1.7*
Passenger-car equivalents for RVs, E_R (Exhibit 20-9 or 20-17)	*1.0*	*1.0*
Heavy-vehicle adjustment factor, f_{HV}=1/ (1+ $P_T(E_T$-1)+$P_R(E_R$-1))	*0.966*	*0.966*
Grade adjustment factor ¹, f_G (Exhibit 20-7 or 20-13)	*1.00*	*1.00*
Directional flow rate², v_i(pc/h) $v_i=V_i/(PHF*f_{HV}*f_G)$	*274*	*254*

Free-Flow Speed from Field Measurement		Estimated Free-Flow Speed	
Field measured speed³, S_{FM}	*mi/h*	Base free-flow speed³, $BFFS_{FM}$	*55.0 mi/h*
Observed volume³, V_f	veh/h	Adj. for lane width and shoulder width,³ f_{LS}(Exh 20-5)	*0.0 mi/h*
Free-flow speed, FFS_d $FFS=S_{FM}+0.00776(V_f/f_{HV})$	*mi/h*	Adj. for access points³, f_A (Exhibit 20-5)	*2.0 mi/h*
Adjustment for no-passing zones, f_{np} (Exhibit 20-19)	*1.3 mi/h*	Free-flow speed, FFS_d $(FSS=BFFS-f_{LS}-f_A)$	*53.0 mi/h*
		Average travel speed, ATS=FFS-0.00776v_p-f_{np}	*47.6 mi/h*

Percent Time-Spent-Following

	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E_T(Exhibit 20-10 or 20-16)	*1.1*	*1.1*
Passenger-car equivalents for RVs, E_R (Exhibit 20-10 or 20-16)	*1.0*	*1.0*
Heavy-vehicle adjustment factor, f_{HV}=1/ (1+ $P_T(E_T$-1)+$P_R(E_R$-1))	*0.995*	*0.995*
Grade adjustment factor¹, f_G (Exhibit 20-8 or 20-14)	*1.00*	*1.00*
Directional flow rate², $v_i(pc/h)=V_i/(PHF*f_{HV}*f_G)$	*266*	*247*
Base percent time-spent-following⁴, BPTSF(%)=100(1-$e^{av_d^b}$)	*28.8*	
Adj. for no-passing zone, f_{np} (Exhibit. 20-20)	*39.1*	
Percent time-spent-following, PTSF(%)=BPTSF+f_{np}	*49.1*	

Level of Service and Other Performance Measures

Level of service, LOS (Exhibit 20-3 or 20-4)	*C*
Volume to capacity ratio, v/c=V_p/ 1,700	*0.16*
Peak 15-min veh-miles of travel, VMT_{15} (veh- *mi*)=0.25L_t(V/PHF)	*66*
Peak-hour vehicle-miles of travel, VMT_{60}(veh- *mi*)=V*L_t	*238*
Peak 15-min total travel time, TT_{15}(veh-h)=VMT_{15}/ATS	*1.4*

Notes

1. If the highway is extended segment (level) or rolling terrain, fG=1.0 .
2. If v_i(v_d or v_o) >=1,700 pc/h, terminate analysis--the LOS is F.
3. For the analysis direction only.
4. Exhibit 20-21 provides factors a and b.
5. Use alternative Equation 20-14 if some trucks operate at crawl speeds on a specific downgrade.

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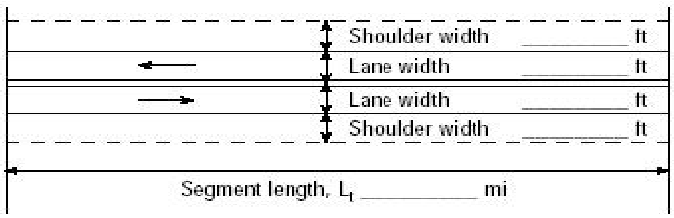
DIRECTIONAL TWO-LANE HIGHWAY SEGMENT WORKSHEET

General Information		Site Information	
Analyst	*AJP*	Highway / Direction of Travel	*LA 3234*
Agency or Company	*Neel-Schaffer, Inc.*	From/To	*East of LA 443*
Date Performed	*7/8/2011*	Jurisdiction	*Tangipahoa Parish*
Analysis Time Period	*PM Peak*	Analysis Year	*2015 Alternate A*

Project Description: *N-S Prj# 8437*

Input Data



Analysis direction vol., V_d *222*veh/h

Opposing direction vol., V_o *215*veh/h

☑ Class I highway ☐ Class II highway

Terrain ☑ Level ☐ Rolling

Grade Length mi Up/down

Peak-hour factor, PHF *0.90*

No-passing zone *20*%

% Trucks and Buses , P_T *5* %

% Recreational vehicles, P_R *0*%

Access points/ *mi* *8*

Average Travel Speed

	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E_T (Exhibit 20-9 or 20-15)	*1.7*	*1.7*
Passenger-car equivalents for RVs, E_R (Exhibit 20-9 or 20-17)	*1.0*	*1.0*
Heavy-vehicle adjustment factor, $f_{HV}=1/ (1+ P_T(E_T-1)+P_R(E_R-1))$	*0.966*	*0.966*
Grade adjustment factor [1], f_G (Exhibit 20-7 or 20-13)	*1.00*	*1.00*
Directional flow rate[2], v_i(pc/h) $v_i=V_i/(PHF*f_{HV}*f_G)$	*255*	*247*

Free-Flow Speed from Field Measurement		Estimated Free-Flow Speed	
Field measured speed[3], S_{FM}	*mi/h*	Base free-flow speed[3], $BFFS_{FM}$	*55.0 mi/h*
Observed volume[3], V_f	veh/h	Adj. for lane width and shoulder width,[3] f_{LS}(Exh 20-5)	*0.0 mi/h*
Free-flow speed, FFS_d $FFS=S_{FM}+0.00776(V_f/ f_{HV})$	*mi/h*	Adj. for access points[3], f_A (Exhibit 20-5)	*2.0 mi/h*
Adjustment for no-passing zones, f_{np} (Exhibit 20-19)	*1.3 mi/h*	Free-flow speed, FFS_d $(FSS=BFFS-f_{LS}-f_A)$	*53.0 mi/h*
		Average travel speed, $ATS=FFS-0.00776v_p-f_{np}$	*47.8 mi/h*

Percent Time-Spent-Following

	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E_T(Exhibit 20-10 or 20-16)	*1.1*	*1.1*
Passenger-car equivalents for RVs, E_R (Exhibit 20-10 or 20-16)	*1.0*	*1.0*
Heavy-vehicle adjustment factor, $f_{HV}=1/ (1+ P_T(E_T-1)+P_R(E_R-1))$	*0.995*	*0.995*
Grade adjustment factor[1], f_G (Exhibit 20-8 or 20-14)	*1.00*	*1.00*
Directional flow rate[2], $v_i(pc/h)=V_i/(PHF*f_{HV}*f_G)$	*248*	*240*
Base percent time-spent-following[4], $BPTSF(\%)=100(1-e^{av_d^b})$	*27.1*	
Adj. for no-passing zone, f_{np} (Exhibit. 20-20)	*39.8*	
Percent time-spent-following, $PTSF(\%)=BPTSF+f_{np}$	*47.3*	

Level of Service and Other Performance Measures

Level of service, LOS (Exhibit 20-3 or 20-4)	*C*
Volume to capacity ratio, $v/c=V_p/ 1,700$	*0.15*
Peak 15-min veh-miles of travel, VMT_{15} (veh- *mi*)$=0.25L_t(V/PHF)$	*62*
Peak-hour vehicle-miles of travel, VMT_{60}(veh- *mi*)$=V*L_t$	*222*
Peak 15-min total travel time, TT_{15}(veh-h)$=VMT_{15}/ATS$	*1.3*

Notes

1. If the highway is extended segment (level) or rolling terrain, fG=1.0 .
2. If $v_i(v_d$ or $v_o) >=1,700$ pc/h, terminate analysis--the LOS is F.
3. For the analysis direction only.
4. Exhibit 20-21 provides factors a and b.
5. Use alternative Equation 20-14 if some trucks operate at crawl speeds on a specific downgrade.

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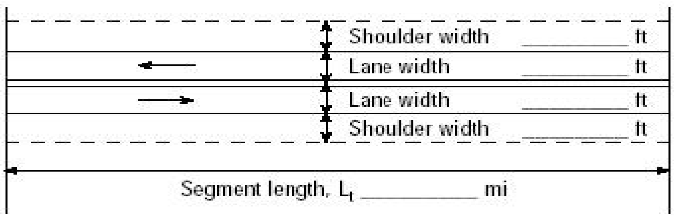
DIRECTIONAL TWO-LANE HIGHWAY SEGMENT WORKSHEET

General Information		***Site Information***	
Analyst	*AJP*	Highway / Direction of Travel	*LA 3234*
Agency or Company	*Neel-Schaffer, Inc.*	From/To	*East of LA 443*
Date Performed	*7/8/2011*	Jurisdiction	*Tangipahoa Parish*
Analysis Time Period	*AM Peak*	Analysis Year	*2035 Alternate A*

Project Description: *N-S Prj# 8437*

Input Data



Class I highway ☑ Class II highway ☐

Terrain ☑ Level ☐ Rolling

Grade Length mi Up/down

Peak-hour factor, PHF *0.90*

No-passing zone *20%*

% Trucks and Buses , P_T *5 %*

% Recreational vehicles, P_R *0%*

Access points/ *mi* *8*

Analysis direction vol., V_d *318*veh/h

Opposing direction vol., V_o *312*veh/h

Average Travel Speed

	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E_T (Exhibit 20-9 or 20-15)	*1.2*	*1.2*
Passenger-car equivalents for RVs, E_R (Exhibit 20-9 or 20-17)	*1.0*	*1.0*
Heavy-vehicle adjustment factor, f_{HV}=1/ (1+ P_T(E_T-1)+P_R(E_R-1))	*0.990*	*0.990*
Grade adjustment factor [1], f_G (Exhibit 20-7 or 20-13)	*1.00*	*1.00*
Directional flow rate[2], v_i(pc/h) v_i=V_i/(PHF*f_{HV}* f_G)	*357*	*350*

Free-Flow Speed from Field Measurement		Estimated Free-Flow Speed	
Field measured speed[3], S_{FM}	mi/h	Base free-flow speed[3], $BFFS_{FM}$	*55.0 mi/h*
Observed volume[3], V_f	veh/h	Adj. for lane width and shoulder width,[3] f_{LS}(Exh 20-5)	*0.0 mi/h*
Free-flow speed, FFS_d FFS=S_{FM}+0.00776(V_f/ f_{HV})	mi/h	Adj. for access points[3], f_A (Exhibit 20-5)	*2.0 mi/h*
Adjustment for no-passing zones, f_{np} (Exhibit 20-19)	*1.3 mi/h*	Free-flow speed, FFS_d (FSS=BFFS-f_{LS}-f_A)	*53.0 mi/h*
		Average travel speed, ATS=FFS-0.00776v_p-f_{np}	*46.3 mi/h*

Percent Time-Spent-Following

	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E_T(Exhibit 20-10 or 20-16)	*1.1*	*1.1*
Passenger-car equivalents for RVs, E_R (Exhibit 20-10 or 20-16)	*1.0*	*1.0*
Heavy-vehicle adjustment factor, f_{HV}=1/ (1+ P_T(E_T-1)+P_R(E_R-1))	*0.995*	*0.995*
Grade adjustment factor[1], f_G (Exhibit 20-8 or 20-14)	*1.00*	*1.00*
Directional flow rate[2], v_i(pc/h)=V_i/(PHF*f_{HV}* f_G)	*355*	*348*
Base percent time-spent-following[4], BPTSF(%)=100(1-$e^{av_d^b}$)	*38.5*	
Adj. for no-passing zone, f_{np} (Exhibit. 20-20)	*35.9*	
Percent time-spent-following, PTSF(%)=BPTSF+f_{np}	*56.6*	

Level of Service and Other Performance Measures

Level of service, LOS (Exhibit 20-3 or 20-4)	*C*
Volume to capacity ratio, v/c=V_p/ 1,700	*0.21*
Peak 15-min veh-miles of travel, VMT_{15} (veh- *mi*)=0.25L_t(V/PHF)	*88*
Peak-hour vehicle-miles of travel, VMT_{60}(veh- *mi*)=V*L_t	*318*
Peak 15-min total travel time, TT_{15}(veh-h)=VMT_{15}/ATS	*1.9*

Notes

1. If the highway is extended segment (level) or rolling terrain, fG=1.0 .
2. If v_i(v_d or v_o) >=1,700 pc/h, terminate analysis--the LOS is F.
3. For the analysis direction only.
4. Exhibit 20-21 provides factors a and b.
5. Use alternative Equation 20-14 if some trucks operate at crawl speeds on a specific downgrade.

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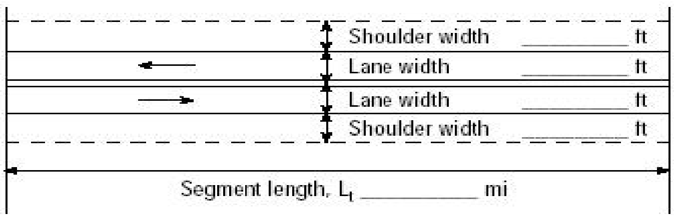
DIRECTIONAL TWO-LANE HIGHWAY SEGMENT WORKSHEET

General Information		Site Information	
Analyst	*AJP*	Highway / Direction of Travel	*LA 3234*
Agency or Company	*Neel-Schaffer, Inc.*	From/To	*East of LA 443*
Date Performed	*7/8/2011*	Jurisdiction	*Tangipahoa Parish*
Analysis Time Period	*PM Peak*	Analysis Year	*2035 Alternate A*

Project Description: *N-S Prj# 8437*

Input Data



☑ Class I highway ☐ Class II highway

Terrain ☑ Level ☐ Rolling

Grade Length mi Up/down

Peak-hour factor, PHF *0.90*

No-passing zone *20%*

% Trucks and Buses, P_T *5 %*

% Recreational vehicles, P_R *0%*

Access points/ *mi* *8*

Analysis direction vol., V_d *324*veh/h

Opposing direction vol., V_o *305*veh/h

Average Travel Speed

	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E_T (Exhibit 20-9 or 20-15)	*1.2*	*1.2*
Passenger-car equivalents for RVs, E_R (Exhibit 20-9 or 20-17)	*1.0*	*1.0*
Heavy-vehicle adjustment factor, f_{HV}=1/ (1+ P_T(E_T-1)+P_R(E_R-1))	*0.990*	*0.990*
Grade adjustment factor [1], f_G (Exhibit 20-7 or 20-13)	*1.00*	*1.00*
Directional flow rate[2], v_i(pc/h) v_i=V_i/(PHF*f_{HV}* f_G)	*364*	*342*

Free-Flow Speed from Field Measurement		Estimated Free-Flow Speed	
Field measured speed[3], S_{FM}	*mi/h*	Base free-flow speed[3], $BFFS_{FM}$	*55.0 mi/h*
Observed volume[3], V_f	veh/h	Adj. for lane width and shoulder width,[3] f_{LS}(Exh 20-5)	*0.0 mi/h*
Free-flow speed, FFS_d FFS=S_{FM}+0.00776(V_f/ f_{HV})	*mi/h*	Adj. for access points[3], f_A (Exhibit 20-5)	*2.0 mi/h*
Adjustment for no-passing zones, f_{np} (Exhibit 20-19)	*1.3 mi/h*	Free-flow speed, FFS_d (FSS=BFFS-f_{LS}-f_A)	*53.0 mi/h*
		Average travel speed, ATS=FFS-0.00776v_p-f_{np}	*46.3 mi/h*

Percent Time-Spent-Following

	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E_T(Exhibit 20-10 or 20-16)	*1.1*	*1.1*
Passenger-car equivalents for RVs, E_R (Exhibit 20-10 or 20-16)	*1.0*	*1.0*
Heavy-vehicle adjustment factor, f_{HV}=1/ (1+ P_T(E_T-1)+P_R(E_R-1))	*0.995*	*0.995*
Grade adjustment factor[1], f_G (Exhibit 20-8 or 20-14)	*1.00*	*1.00*
Directional flow rate[2], v_i(pc/h)=V_i/(PHF*f_{HV}* f_G)	*362*	*341*
Base percent time-spent-following[4], BPTSF(%)=100(1-$e^{av_d^b}$)	*38.9*	
Adj. for no-passing zone, f_{np} (Exhibit. 20-20)	*35.6*	
Percent time-spent-following, PTSF(%)=BPTSF+f_{np}	*57.2*	

Level of Service and Other Performance Measures

Level of service, LOS (Exhibit 20-3 or 20-4)	*C*
Volume to capacity ratio, v/c=V_p/ 1,700	*0.21*
Peak 15-min veh-miles of travel, VMT_{15} (veh- *mi*)=0.25L_t(V/PHF)	*90*
Peak-hour vehicle-miles of travel, VMT_{60}(veh- *mi*)=V*L_t	*324*
Peak 15-min total travel time, TT_{15}(veh-h)=VMT_{15}/ATS	*1.9*

Notes

1. If the highway is extended segment (level) or rolling terrain, fG=1.0 .
2. If v_i(v_d or v_o) >=1,700 pc/h, terminate analysis--the LOS is F.
3. For the analysis direction only.
4. Exhibit 20-21 provides factors a and b.
5. Use alternative Equation 20-14 if some trucks operate at crawl speeds on a specific downgrade.

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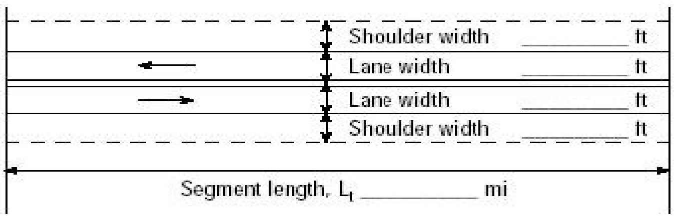
DIRECTIONAL TWO-LANE HIGHWAY SEGMENT WORKSHEET

General Information		***Site Information***	
Analyst	*AJP*	Highway / Direction of Travel	*LA 3234*
Agency or Company	*Neel-Schaffer, Inc.*	From/To	*East of LA 443*
Date Performed	*7/8/2011*	Jurisdiction	*Tangipahoa Parish*
Analysis Time Period	*AM Peak*	Analysis Year	*2015 Alternate B*

Project Description: *N-S Prj# 8437*

Input Data



Class I highway ☑ Class II highway ☐

Terrain ☑ Level ☐ Rolling

Grade Length mi Up/down

Peak-hour factor, PHF *0.90*

No-passing zone *20*%

% Trucks and Buses , P_T *5* %

% Recreational vehicles, P_R *0*%

Access points/ *mi* *8*

Analysis direction vol., V_d *409*veh/h

Opposing direction vol., V_o *416*veh/h

Average Travel Speed

	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E_T (Exhibit 20-9 or 20-15)	*1.2*	*1.2*
Passenger-car equivalents for RVs, E_R (Exhibit 20-9 or 20-17)	*1.0*	*1.0*
Heavy-vehicle adjustment factor, f_{HV}=1/ (1+ $P_T(E_T$-1)+$P_R(E_R$-1))	*0.990*	*0.990*
Grade adjustment factor [1], f_G (Exhibit 20-7 or 20-13)	*1.00*	*1.00*
Directional flow rate[2], v_i(pc/h) $v_i=V_i/(PHF*f_{HV}*f_G)$	*459*	*467*

Free-Flow Speed from Field Measurement		Estimated Free-Flow Speed	
Field measured speed[3], S_{FM}	*mi/h*	Base free-flow speed[3], $BFFS_{FM}$	*56.0 mi/h*
Observed volume[3], V_f	veh/h	Adj. for lane width and shoulder width,[3] f_{LS}(Exh 20-5)	*0.0 mi/h*
Free-flow speed, FFS_d $FFS=S_{FM}+0.00776(V_f/f_{HV})$	*mi/h*	Adj. for access points[3], f_A (Exhibit 20-5)	*2.0 mi/h*
Adjustment for no-passing zones, f_{np} (Exhibit 20-19)	*1.1 mi/h*	Free-flow speed, FFS_d (FSS=BFFS-f_{LS}-f_A)	*54.0 mi/h*
		Average travel speed, ATS=FFS-0.00776v_p-f_{np}	*45.7 mi/h*

Percent Time-Spent-Following

	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E_T(Exhibit 20-10 or 20-16)	*1.1*	*1.1*
Passenger-car equivalents for RVs, E_R (Exhibit 20-10 or 20-16)	*1.0*	*1.0*
Heavy-vehicle adjustment factor, f_{HV}=1/ (1+ $P_T(E_T$-1)+$P_R(E_R$-1))	*0.995*	*0.995*
Grade adjustment factor[1], f_G (Exhibit 20-8 or 20-14)	*1.00*	*1.00*
Directional flow rate[2], v_i(pc/h)=$V_i/(PHF*f_{HV}*f_G)$	*457*	*465*
Base percent time-spent-following[4], BPTSF(%)=100(1-$e^{av_d^b}$)	*48.1*	
Adj. for no-passing zone, f_{np} (Exhibit. 20-20)	*26.3*	
Percent time-spent-following, PTSF(%)=BPTSF+f_{np}	*61.2*	

Level of Service and Other Performance Measures

Level of service, LOS (Exhibit 20-3 or 20-4)	*C*
Volume to capacity ratio, v/c=V_p/ 1,700	*0.27*
Peak 15-min veh-miles of travel, VMT_{15} (veh- *mi*)=0.25L_t(V/PHF)	*114*
Peak-hour vehicle-miles of travel, VMT_{60}(veh- *mi*)=V*L_t	*409*
Peak 15-min total travel time, TT_{15}(veh-h)=VMT_{15}/ATS	*2.5*

Notes

1. If the highway is extended segment (level) or rolling terrain, fG=1.0 .
2. If v_i(v_d or v_o) >=1,700 pc/h, terminate analysis--the LOS is F.
3. For the analysis direction only.
4. Exhibit 20-21 provides factors a and b.
5. Use alternative Equation 20-14 if some trucks operate at crawl speeds on a specific downgrade.

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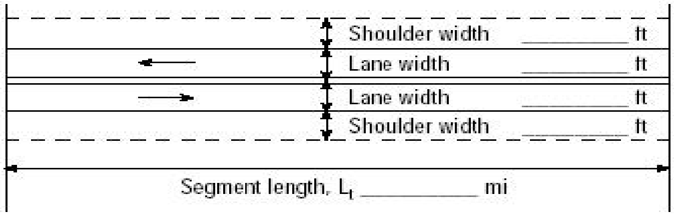
DIRECTIONAL TWO-LANE HIGHWAY SEGMENT WORKSHEET

General Information		Site Information	
Analyst	*AJP*	Highway / Direction of Travel	*LA 3234*
Agency or Company	*Neel-Schaffer, Inc.*	From/To	*East of LA 443*
Date Performed	*7/8/2011*	Jurisdiction	*Tangipahoa Parish*
Analysis Time Period	*PM Peak*	Analysis Year	*2015 Alternate B*

Project Description: *N-S Prj# 8437*

Input Data



☑ Class I highway ☐ Class II highway

Terrain ☑ Level ☐ Rolling

Grade Length mi Up/down

Peak-hour factor, PHF *0.90*

No-passing zone *20*%

% Trucks and Buses , P_T *5* %

% Recreational vehicles, P_R *0*%

Access points/ *mi* *8*

Analysis direction vol., V_d *421*veh/h

Opposing direction vol., V_o *395*veh/h

Average Travel Speed

	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E_T (Exhibit 20-9 or 20-15)	*1.2*	*1.2*
Passenger-car equivalents for RVs, E_R (Exhibit 20-9 or 20-17)	*1.0*	*1.0*
Heavy-vehicle adjustment factor, f_{HV}=1/ (1+ P_T(E_T-1)+P_R(E_R-1))	*0.990*	*0.990*
Grade adjustment factor [1], f_G (Exhibit 20-7 or 20-13)	*1.00*	*1.00*
Directional flow rate[2], v_i(pc/h) v_i=V_i/(PHF*f_{HV}* f_G)	*472*	*443*

Free-Flow Speed from Field Measurement		Estimated Free-Flow Speed	
Field measured speed[3], S_{FM}	*mi/h*	Base free-flow speed[3], $BFFS_{FM}$	*56.0* *mi/h*
Observed volume[3], V_f	veh/h	Adj. for lane width and shoulder width,[3] f_{LS}(Exh 20-5)	*0.0* *mi/h*
Free-flow speed, FFS_d FFS=S_{FM}+0.00776(V_f/ f_{HV})	*mi/h*	Adj. for access points[3], f_A (Exhibit 20-5)	*2.0* *mi/h*
Adjustment for no-passing zones, f_{np} (Exhibit 20-19)	*1.2* *mi/h*	Free-flow speed, FFS_d (FSS=BFFS-f_{LS}-f_A)	*54.0* *mi/h*
		Average travel speed, ATS=FFS-0.00776v_p-f_{np}	*45.7* *mi/h*

Percent Time-Spent-Following

	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E_T(Exhibit 20-10 or 20-16)	*1.1*	*1.1*
Passenger-car equivalents for RVs, E_R (Exhibit 20-10 or 20-16)	*1.0*	*1.0*
Heavy-vehicle adjustment factor, f_{HV}=1/ (1+ P_T(E_T-1)+P_R(E_R-1))	*0.995*	*0.995*
Grade adjustment factor[1], f_G (Exhibit 20-8 or 20-14)	*1.00*	*1.00*
Directional flow rate[2], v_i(pc/h)=V_i/(PHF*f_{HV}* f_G)	*470*	*441*
Base percent time-spent-following[4], BPTSF(%)=100(1-$e^{av_d^b}$)	*48.5*	
Adj. for no-passing zone, f_{np} (Exhibit. 20-20)	*30.8*	
Percent time-spent-following, PTSF(%)=BPTSF+f_{np}	*64.4*	

Level of Service and Other Performance Measures

Level of service, LOS (Exhibit 20-3 or 20-4)	*C*
Volume to capacity ratio, v/c=V_p/ 1,700	*0.28*
Peak 15-min veh-miles of travel, VMT_{15} (veh- *mi*)=0.25L_t(V/PHF)	*117*
Peak-hour vehicle-miles of travel, VMT_{60}(veh- *mi*)=V*L_t	*421*
Peak 15-min total travel time, TT_{15}(veh-h)=VMT_{15}/ATS	*2.6*

Notes

1. If the highway is extended segment (level) or rolling terrain, fG=1.0 .
2. If v_i(v_d or v_o) >=1,700 pc/h, terminate analysis--the LOS is F.
3. For the analysis direction only.
4. Exhibit 20-21 provides factors a and b.
5. Use alternative Equation 20-14 if some trucks operate at crawl speeds on a specific downgrade.

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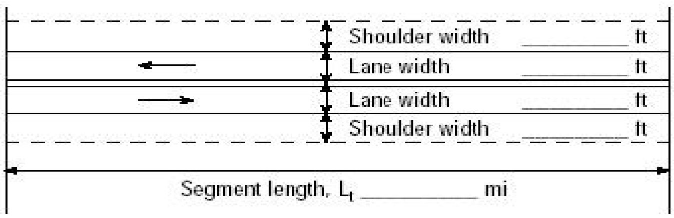
DIRECTIONAL TWO-LANE HIGHWAY SEGMENT WORKSHEET

General Information		***Site Information***	
Analyst	*AJP*	Highway / Direction of Travel	*LA 3234*
Agency or Company	*Neel-Schaffer, Inc.*	From/To	*East of LA 443*
Date Performed	*7/8/2011*	Jurisdiction	*Tangipahoa Parish*
Analysis Time Period	*AM Peak*	Analysis Year	*2035 Alternate B*

Project Description: *N-S Prj# 8437*

Input Data



Analysis direction vol., V_d *526*veh/h

Opposing direction vol., V_o *512*veh/h

☑ Class I highway ☐ Class II highway

Terrain ☑ Level ☐ Rolling

Grade Length mi Up/down

Peak-hour factor, PHF *0.90*

No-passing zone *20%*

% Trucks and Buses , P_T *5 %*

% Recreational vehicles, P_R *0%*

Access points/ *mi* *8*

Average Travel Speed

	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E_T (Exhibit 20-9 or 20-15)	*1.2*	*1.2*
Passenger-car equivalents for RVs, E_R (Exhibit 20-9 or 20-17)	*1.0*	*1.0*
Heavy-vehicle adjustment factor, f_{HV}=1/ (1+ $P_T(E_T$-1)+$P_R(E_R$-1))	*0.990*	*0.990*
Grade adjustment factor [1], f_G (Exhibit 20-7 or 20-13)	*1.00*	*1.00*
Directional flow rate[2], v_i(pc/h) $v_i=V_i/(PHF*f_{HV}*f_G)$	*590*	*575*

Free-Flow Speed from Field Measurement		Estimated Free-Flow Speed	
Field measured speed[3], S_{FM}	*mi/h*	Base free-flow speed[3], $BFFS_{FM}$	*55.0 mi/h*
Observed volume[3], V_f	veh/h	Adj. for lane width and shoulder width,[3] f_{LS}(Exh 20-5)	*0.0 mi/h*
Free-flow speed, FFS_d FFS=S_{FM}+0.00776(V_f/ f_{HV})	*mi/h*	Adj. for access points[3], f_A (Exhibit 20-5)	*2.0 mi/h*
Adjustment for no-passing zones, f_{np} (Exhibit 20-19)	*0.8 mi/h*	Free-flow speed, FFS_d (FSS=BFFS-f_{LS}-f_A)	*53.0 mi/h*
		Average travel speed, ATS=FFS-0.00776v_p-f_{np}	*43.1 mi/h*

Percent Time-Spent-Following

	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E_T(Exhibit 20-10 or 20-16)	*1.1*	*1.1*
Passenger-car equivalents for RVs, E_R (Exhibit 20-10 or 20-16)	*1.0*	*1.0*
Heavy-vehicle adjustment factor, f_{HV}=1/ (1+ $P_T(E_T$-1)+$P_R(E_R$-1))	*0.995*	*0.995*
Grade adjustment factor[1], f_G (Exhibit 20-8 or 20-14)	*1.00*	*1.00*
Directional flow rate[2], v_i(pc/h)=$V_i/(PHF*f_{HV}*f_G)$	*587*	*572*
Base percent time-spent-following[4], BPTSF(%)=100($1-e^{av_d^b}$)	*57.1*	
Adj. for no-passing zone, f_{np} (Exhibit. 20-20)	*25.5*	
Percent time-spent-following, PTSF(%)=BPTSF+f_{np}	*70.0*	

Level of Service and Other Performance Measures

Level of service, LOS (Exhibit 20-3 or 20-4)	*D*
Volume to capacity ratio, v/c=V_p/ 1,700	*0.35*
Peak 15-min veh-miles of travel, VMT_{15} (veh- *mi*)=0.25L_t(V/PHF)	*146*
Peak-hour vehicle-miles of travel, VMT_{60}(veh- *mi*)=V*L_t	*526*
Peak 15-min total travel time, TT_{15}(veh-h)=VMT_{15}/ATS	*3.4*

Notes

1. If the highway is extended segment (level) or rolling terrain, fG=1.0 .
2. If v_i(v_d or v_o) >=1,700 pc/h, terminate analysis--the LOS is F.
3. For the analysis direction only.
4. Exhibit 20-21 provides factors a and b.
5. Use alternative Equation 20-14 if some trucks operate at crawl speeds on a specific downgrade.

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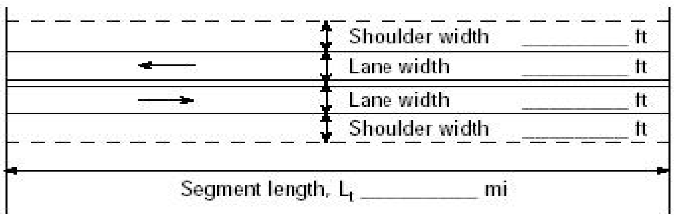
DIRECTIONAL TWO-LANE HIGHWAY SEGMENT WORKSHEET

General Information		Site Information	
Analyst	*AJP*	Highway / Direction of Travel	*LA 3234*
Agency or Company	*Neel-Schaffer, Inc.*	From/To	*East of LA 443*
Date Performed	*7/8/2011*	Jurisdiction	*Tangipahoa Parish*
Analysis Time Period	*PM Peak*	Analysis Year	*2035 Alternate B*

Project Description: *N-S Prj# 8437*

Input Data



Analysis direction vol., V_d *517*veh/h

Opposing direction vol., V_o *510*veh/h

☑ Class I highway ☐ Class II highway

Terrain ☑ Level ☐ Rolling

Grade Length mi Up/down

Peak-hour factor, PHF *0.90*

No-passing zone *20*%

% Trucks and Buses , P_T *5* %

% Recreational vehicles, P_R *0*%

Access points/ *mi* *8*

Average Travel Speed

	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E_T (Exhibit 20-9 or 20-15)	*1.2*	*1.2*
Passenger-car equivalents for RVs, E_R (Exhibit 20-9 or 20-17)	*1.0*	*1.0*
Heavy-vehicle adjustment factor, $f_{HV}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	*0.990*	*0.990*
Grade adjustment factor [1], f_G (Exhibit 20-7 or 20-13)	*1.00*	*1.00*
Directional flow rate[2], v_i(pc/h) $v_i=V_i/(PHF*f_{HV}*f_G)$	*580*	*572*

Free-Flow Speed from Field Measurement		Estimated Free-Flow Speed	
Field measured speed[3], S_{FM}	*mi/h*	Base free-flow speed[3], $BFFS_{FM}$	*55.0* *mi/h*
Observed volume[3], V_f	veh/h	Adj. for lane width and shoulder width,[3] f_{LS}(Exh 20-5)	*0.0* *mi/h*
Free-flow speed, FFS_d $FFS=S_{FM}+0.00776(V_f/f_{HV})$	*mi/h*	Adj. for access points[3], f_A (Exhibit 20-5)	*2.0* *mi/h*
Adjustment for no-passing zones, f_{np} (Exhibit 20-19)	*0.8* *mi/h*	Free-flow speed, FFS_d ($FSS=BFFS-f_{LS}-f_A$)	*53.0* *mi/h*
		Average travel speed, $ATS=FFS-0.00776v_p-f_{np}$	*43.2* *mi/h*

Percent Time-Spent-Following

	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E_T(Exhibit 20-10 or 20-16)	*1.1*	*1.1*
Passenger-car equivalents for RVs, E_R (Exhibit 20-10 or 20-16)	*1.0*	*1.0*
Heavy-vehicle adjustment factor, $f_{HV}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	*0.995*	*0.995*
Grade adjustment factor[1], f_G (Exhibit 20-8 or 20-14)	*1.00*	*1.00*
Directional flow rate[2], $v_i(pc/h)=V_i/(PHF*f_{HV}*f_G)$	*577*	*570*
Base percent time-spent-following[4], $BPTSF(\%)=100(1-e^{av_d^b})$	*56.5*	
Adj. for no-passing zone, f_{np} (Exhibit. 20-20)	*25.8*	
Percent time-spent-following, $PTSF(\%)=BPTSF+f_{np}$	*69.5*	

Level of Service and Other Performance Measures

Level of service, LOS (Exhibit 20-3 or 20-4)	*D*
Volume to capacity ratio, $v/c=V_p/1,700$	*0.34*
Peak 15-min veh-miles of travel, VMT_{15} (veh- *mi*)$=0.25L_t(V/PHF)$	*144*
Peak-hour vehicle-miles of travel, VMT_{60}(veh- *mi*)$=V*L_t$	*517*
Peak 15-min total travel time, TT_{15}(veh-h)$=VMT_{15}/ATS$	*3.3*

Notes

1. If the highway is extended segment (level) or rolling terrain, fG=1.0 .
2. If v_i(v_d or v_o) >=1,700 pc/h, terminate analysis--the LOS is F.
3. For the analysis direction only.
4. Exhibit 20-21 provides factors a and b.
5. Use alternative Equation 20-14 if some trucks operate at crawl speeds on a specific downgrade.

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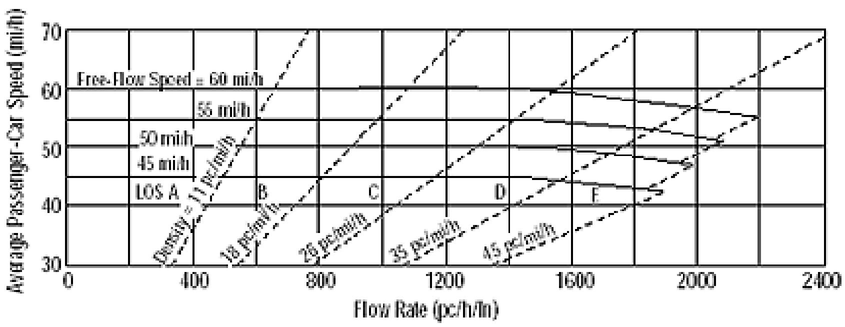
LA 3234

Between LA 443 (Morris Road) and US 190

MULTILANE HIGHWAYS WORKSHEET(Direction 2)



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	AJP
Agency or Company	Neel-Schaffer, Inc.
Date Performed	7/11/2011
Analysis Time Period	AM Peak

Site Information

Highway/Direction to Travel	LA 3234
From/To	Between LA 443 and US 190
Jurisdiction	Tangipahoa Parishp
Analysis Year	2015 Alternate C - NB

Project Description N-S Prj# 8437

☑ Oper.(LOS) ☐ Des. (N) ☐ Plan. (vp)

Flow Inputs

Volume, V (veh/h)	346	Peak-Hour Factor, PHF	0.90
AADT(veh/h)		%Trucks and Buses, P_T	5
Peak-Hour Prop of AADT (veh/d)		%RVs, P_R	0
Peak-Hour Direction Prop, D		General Terrain:	Level
DDHV (veh/h)		Grade Length (mi)	0.00
Driver Type Adjustment	1.00	Up/Down %	0.00
		Number of Lanes	2

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	f_{HV}	0.976

Speed Inputs

Lane Width, LW (ft)	12.0
Total Lateral Clearance, LC (ft)	12.0
Access Points, A (A/mi)	0
Median Type, M	Divided
FFS (measured)	
Base Free-Flow Speed, BFFS	50.0

Calc Speed Adj and FFS

f_{LW} (mi/h)	0.0
f_{LC} (mi/h)	0.0
f_A (mi/h)	0.0
f_M (mi/h)	0.0
FFS (mi/h)	50.0

Operations

Operational (LOS)

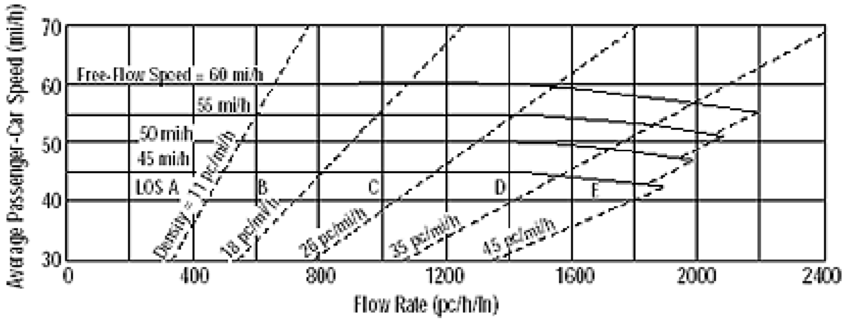
Flow Rate, v_p (pc/h/ln)	197
Speed, S (mi/h)	50.0
D (pc/mi/ln)	3.9
LOS	A

Design

Design (N)

Required Number of Lanes, N
Flow Rate, v_p (pc/h)
Max Service Flow Rate (pc/h/ln)
Design LOS

MULTILANE HIGHWAYS WORKSHEET(Direction 1)



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	AJP
Agency or Company	Neel-Schaffer, Inc.
Date Performed	7/11/2011
Analysis Time Period	AM Peak

Site Information

Highway/Direction to Travel	LA 3234
From/To	Between LA 443 and US 190
Jurisdiction	Tangipahoa Parishp
Analysis Year	2015 Alternate C - SB

Project Description N-S Prj# 8437

☑ Oper.(LOS) ☐ Des. (N) ☐ Plan. (vp)

Flow Inputs

Volume, V (veh/h)	318	Peak-Hour Factor, PHF	0.90
AADT(veh/h)		%Trucks and Buses, P_T	5
Peak-Hour Prop of AADT (veh/d)		%RVs, P_R	0
Peak-Hour Direction Prop, D		General Terrain:	Level
DDHV (veh/h)		Grade Length (mi)	0.00
Driver Type Adjustment	1.00	Up/Down %	0.00
		Number of Lanes	2

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	f_{HV}	0.976

Speed Inputs

Lane Width, LW (ft)	12.0
Total Lateral Clearance, LC (ft)	12.0
Access Points, A (A/mi)	0
Median Type, M	Divided
FFS (measured)	
Base Free-Flow Speed, BFFS	50.0

Calc Speed Adj and FFS

f_{LW} (mi/h)	0.0
f_{LC} (mi/h)	0.0
f_A (mi/h)	0.0
f_M (mi/h)	0.0
FFS (mi/h)	50.0

Operations

Operational (LOS)

Flow Rate, v_p (pc/h/ln)	181
Speed, S (mi/h)	50.0
D (pc/mi/ln)	3.6
LOS	A

Design

Design (N)

Required Number of Lanes, N
Flow Rate, v_p (pc/h)
Max Service Flow Rate (pc/h/ln)
Design LOS

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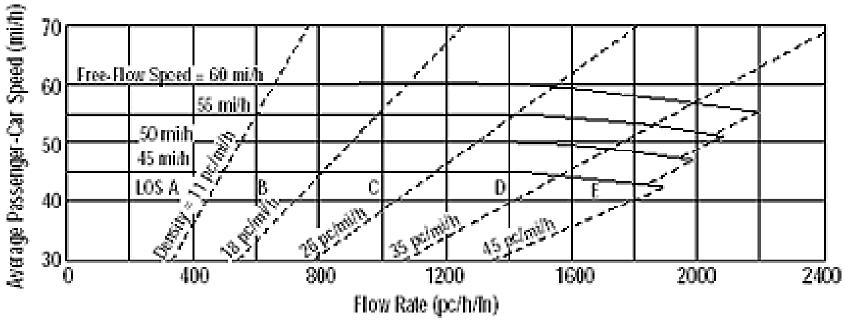
MULTILANE HIGHWAYS WORKSHEET(Direction 2)



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	AJP
Agency or Company	Neel-Schaffer, Inc.
Date Performed	7/11/2011
Analysis Time Period	PM Peak

Site Information

Highway/Direction to Travel	LA 3234
From/To	Between LA 443 and US 190
Jurisdiction	Tangipahoa Parish
Analysis Year	2015 Alternate C - NB

Project Description N-S Prj# 8437

☑ Oper.(LOS) ☐ Des. (N) ☐ Plan. (vp)

Flow Inputs

Volume, V (veh/h)	318	Peak-Hour Factor, PHF	0.90
AADT(veh/h)		%Trucks and Buses, P_T	5
Peak-Hour Prop of AADT (veh/d)		%RVs, P_R	0
Peak-Hour Direction Prop, D		General Terrain:	Level
DDHV (veh/h)		Grade Length (mi)	0.00
Driver Type Adjustment	1.00	Up/Down %	0.00
		Number of Lanes	2

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	f_{HV}	0.976

Speed Inputs

Lane Width, LW (ft)	12.0
Total Lateral Clearance, LC (ft)	12.0
Access Points, A (A/mi)	0
Median Type, M	Divided
FFS (measured)	
Base Free-Flow Speed, BFFS	50.0

Calc Speed Adj and FFS

f_{LW} (mi/h)	0.0
f_{LC} (mi/h)	0.0
f_A (mi/h)	0.0
f_M (mi/h)	0.0
FFS (mi/h)	50.0

Operations

Operational (LOS)

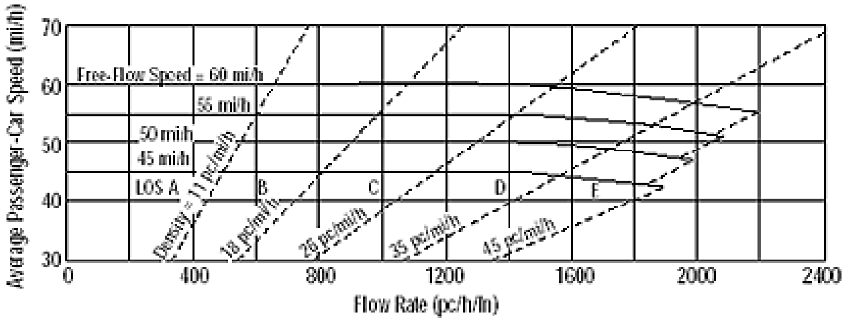
Flow Rate, v_p (pc/h/ln)	181
Speed, S (mi/h)	50.0
D (pc/mi/ln)	3.6
LOS	A

Design

Design (N)

Required Number of Lanes, N	
Flow Rate, v_p (pc/h)	
Max Service Flow Rate (pc/h/ln)	
Design LOS	

MULTILANE HIGHWAYS WORKSHEET(Direction 1)



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	AJP
Agency or Company	Neel-Schaffer, Inc.
Date Performed	7/11/2011
Analysis Time Period	PM Peak

Site Information

Highway/Direction to Travel	LA 3234
From/To	Between LA 443 and US 190
Jurisdiction	Tangipahoa Parish
Analysis Year	2015 Alternate C - SB

Project Description N-S Prj# 8437

☑ Oper.(LOS) ☐ Des. (N) ☐ Plan. (vp)

Flow Inputs

Volume, V (veh/h)	336	Peak-Hour Factor, PHF	0.90
AADT(veh/h)		%Trucks and Buses, P_T	5
Peak-Hour Prop of AADT (veh/d)		%RVs, P_R	0
Peak-Hour Direction Prop, D		General Terrain:	Level
DDHV (veh/h)		Grade Length (mi)	0.00
Driver Type Adjustment	1.00	Up/Down %	0.00
		Number of Lanes	2

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	f_{HV}	0.976

Speed Inputs

Lane Width, LW (ft)	12.0
Total Lateral Clearance, LC (ft)	12.0
Access Points, A (A/mi)	0
Median Type, M	Divided
FFS (measured)	
Base Free-Flow Speed, BFFS	50.0

Calc Speed Adj and FFS

f_{LW} (mi/h)	0.0
f_{LC} (mi/h)	0.0
f_A (mi/h)	0.0
f_M (mi/h)	0.0
FFS (mi/h)	50.0

Operations

Operational (LOS)

Flow Rate, v_p (pc/h/ln)	191
Speed, S (mi/h)	50.0
D (pc/mi/ln)	3.8
LOS	A

Design

Design (N)

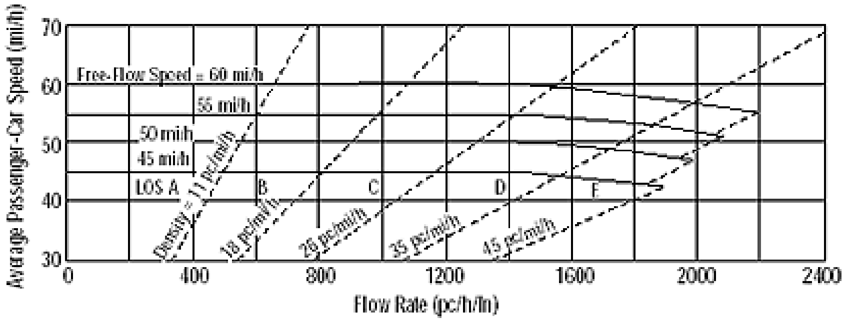
Required Number of Lanes, N

Flow Rate, v_p (pc/h)

Max Service Flow Rate (pc/h/ln)

Design LOS

MULTILANE HIGHWAYS WORKSHEET(Direction 2)



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	AJP
Agency or Company	Neel-Schaffer, Inc.
Date Performed	7/11/2011
Analysis Time Period	AM Peak

Site Information

Highway/Direction to Travel	LA 3234
From/To	Between LA 443 and US 190
Jurisdiction	Tangipahoa Parish
Analysis Year	2035 Alternate C - NB

Project Description N-S Prj# 8437

☑ Oper.(LOS) ☐ Des. (N) ☐ Plan. (vp)

Flow Inputs

Volume, V (veh/h)	457	Peak-Hour Factor, PHF	0.90
AADT(veh/h)		%Trucks and Buses, P_T	5
Peak-Hour Prop of AADT (veh/d)		%RVs, P_R	0
Peak-Hour Direction Prop, D		General Terrain:	Level
DDHV (veh/h)		Grade Length (mi)	0.00
Driver Type Adjustment	1.00	Up/Down %	0.00
		Number of Lanes	2

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	f_{HV}	0.976

Speed Inputs

Lane Width, LW (ft)	12.0
Total Lateral Clearance, LC (ft)	12.0
Access Points, A (A/mi)	0
Median Type, M	Divided
FFS (measured)	
Base Free-Flow Speed, BFFS	50.0

Calc Speed Adj and FFS

f_{LW} (mi/h)	0.0
f_{LC} (mi/h)	0.0
f_A (mi/h)	0.0
f_M (mi/h)	0.0
FFS (mi/h)	50.0

Operations

Operational (LOS)

Flow Rate, v_p (pc/h/ln)	260
Speed, S (mi/h)	50.0
D (pc/mi/ln)	5.2
LOS	A

Design

Design (N)

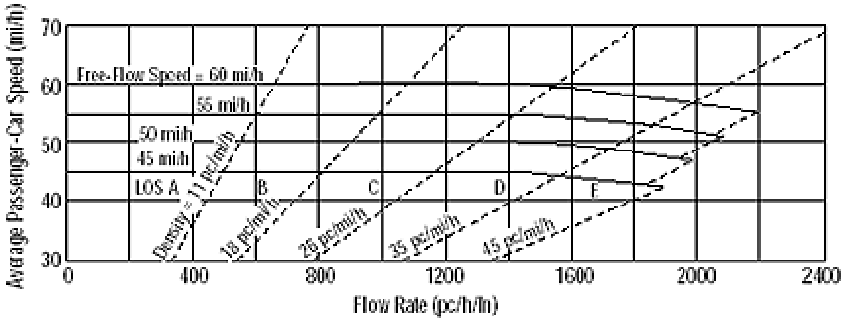
Required Number of Lanes, N

Flow Rate, v_p (pc/h)

Max Service Flow Rate (pc/h/ln)

Design LOS

MULTILANE HIGHWAYS WORKSHEET(Direction 1)



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	AJP
Agency or Company	Neel-Schaffer, Inc.
Date Performed	7/11/2011
Analysis Time Period	AM Peak

Site Information

Highway/Direction to Travel	LA 3234
From/To	Between LA 443 and US 190
Jurisdiction	Tangipahoa Parish
Analysis Year	2035 Alternate C - SB

Project Description N-S Prj# 8437

☑ Oper.(LOS) ☐ Des. (N) ☐ Plan. (vp)

Flow Inputs

Volume, V (veh/h)	401	Peak-Hour Factor, PHF	0.90
AADT(veh/h)		%Trucks and Buses, P_T	5
Peak-Hour Prop of AADT (veh/d)		%RVs, P_R	0
Peak-Hour Direction Prop, D		General Terrain:	Level
DDHV (veh/h)		Grade Length (mi)	0.00
Driver Type Adjustment	1.00	Up/Down %	0.00
		Number of Lanes	2

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	f_{HV}	0.976

Speed Inputs

Lane Width, LW (ft)	12.0
Total Lateral Clearance, LC (ft)	12.0
Access Points, A (A/mi)	0
Median Type, M	Divided
FFS (measured)	
Base Free-Flow Speed, BFFS	50.0

Calc Speed Adj and FFS

f_{LW} (mi/h)	0.0
f_{LC} (mi/h)	0.0
f_A (mi/h)	0.0
f_M (mi/h)	0.0
FFS (mi/h)	50.0

Operations

Operational (LOS)

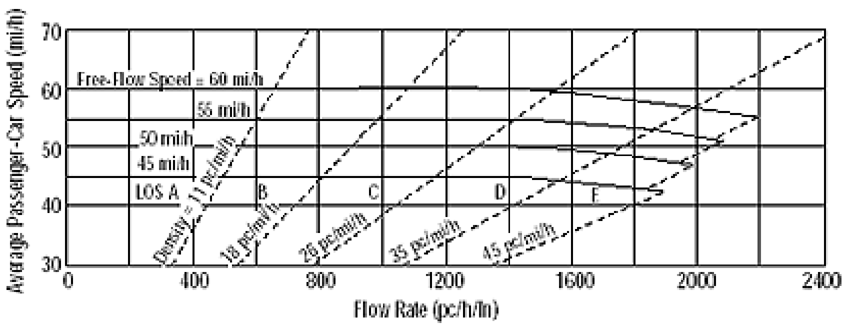
Flow Rate, v_p (pc/h/ln)	228
Speed, S (mi/h)	50.0
D (pc/mi/ln)	4.6
LOS	A

Design

Design (N)

Required Number of Lanes, N
Flow Rate, v_p (pc/h)
Max Service Flow Rate (pc/h/ln)
Design LOS

MULTILANE HIGHWAYS WORKSHEET(Direction 2)



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	AJP
Agency or Company	Neel-Schaffer, Inc.
Date Performed	7/11/2011
Analysis Time Period	PM Peak

Site Information

Highway/Direction to Travel	LA 3234
From/To	Between LA 443 and US 190
Jurisdiction	Tangipahoa Parish
Analysis Year	2035 Alternate C - NB

Project Description N-S Prj# 8437

☑ Oper.(LOS) ☐ Des. (N) ☐ Plan. (vp)

Flow Inputs

Volume, V (veh/h)	416	Peak-Hour Factor, PHF	0.90
AADT(veh/h)		%Trucks and Buses, P_T	5
Peak-Hour Prop of AADT (veh/d)		%RVs, P_R	0
Peak-Hour Direction Prop, D		General Terrain:	Level
DDHV (veh/h)		Grade Length (mi)	0.00
Driver Type Adjustment	1.00	Up/Down %	0.00
		Number of Lanes	2

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	f_{HV}	0.976

Speed Inputs

Lane Width, LW (ft)	12.0
Total Lateral Clearance, LC (ft)	12.0
Access Points, A (A/mi)	0
Median Type, M	Divided
FFS (measured)	
Base Free-Flow Speed, BFFS	50.0

Calc Speed Adj and FFS

f_{LW} (mi/h)	0.0
f_{LC} (mi/h)	0.0
f_A (mi/h)	0.0
f_M (mi/h)	0.0
FFS (mi/h)	50.0

Operations

Operational (LOS)

Flow Rate, v_p (pc/h/ln)	236
Speed, S (mi/h)	50.0
D (pc/mi/ln)	4.7
LOS	A

Design

Design (N)

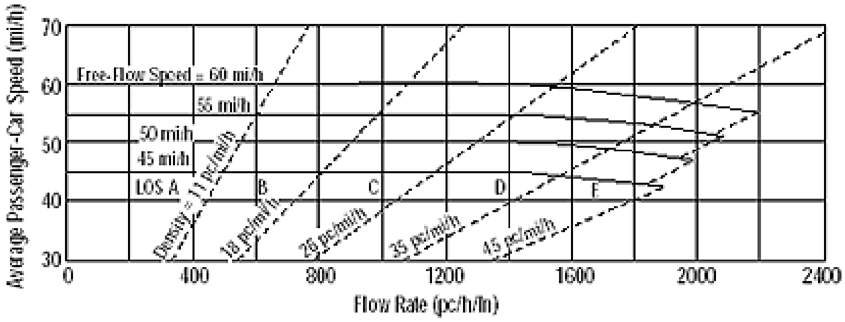
Required Number of Lanes, N

Flow Rate, v_p (pc/h)

Max Service Flow Rate (pc/h/ln)

Design LOS

MULTILANE HIGHWAYS WORKSHEET(Direction 1)



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	AJP
Agency or Company	Neel-Schaffer, Inc.
Date Performed	7/11/2011
Analysis Time Period	PM Peak

Site Information

Highway/Direction to Travel	LA 3234
From/To	Between LA 443 and US 190
Jurisdiction	Tangipahoa Parish
Analysis Year	2035 Alternate C - SB

Project Description N-S Prj# 8437

☑ Oper.(LOS) ☐ Des. (N) ☐ Plan. (vp)

Flow Inputs

Volume, V (veh/h)	450	Peak-Hour Factor, PHF	0.90
AADT(veh/h)		%Trucks and Buses, P_T	5
Peak-Hour Prop of AADT (veh/d)		%RVs, P_R	0
Peak-Hour Direction Prop, D		General Terrain:	Level
DDHV (veh/h)		Grade Length (mi)	0.00
Driver Type Adjustment	1.00	Up/Down %	0.00
		Number of Lanes	2

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	f_{HV}	0.976

Speed Inputs

Lane Width, LW (ft)	12.0
Total Lateral Clearance, LC (ft)	12.0
Access Points, A (A/mi)	0
Median Type, M	Divided
FFS (measured)	
Base Free-Flow Speed, BFFS	50.0

Calc Speed Adj and FFS

f_{LW} (mi/h)	0.0
f_{LC} (mi/h)	0.0
f_A (mi/h)	0.0
f_M (mi/h)	0.0
FFS (mi/h)	50.0

Operations

Operational (LOS)

Flow Rate, v_p (pc/h/ln)	256
Speed, S (mi/h)	50.0
D (pc/mi/ln)	5.1
LOS	A

Design

Design (N)

Required Number of Lanes, N

Flow Rate, v_p (pc/h)

Max Service Flow Rate (pc/h/ln)

Design LOS

PRIDE DRIVE

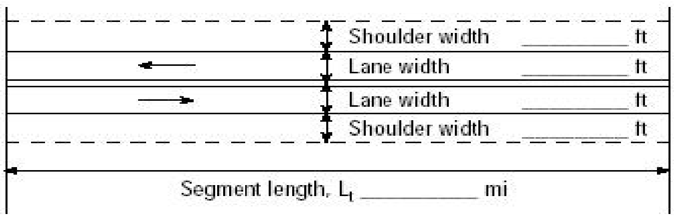
North of US 190

DIRECTIONAL TWO-LANE HIGHWAY SEGMENT WORKSHEET

General Information		Site Information	
Analyst	*AJP*	Highway / Direction of Travel	*Pride Dr*
Agency or Company	*Neel-Schaffer, Inc.*	From/To	*North of US 190*
Date Performed	*7/8/2011*	Jurisdiction	*Tangipahoa Parish*
Analysis Time Period	*AM Peak No Build*	Analysis Year	*2011*

Project Description: *N-S Prj# 8437*

Input Data



Class I highway ☐ Class II highway ☑

Terrain ☑ Level ☐ Rolling

Grade Length mi	Up/down	
Peak-hour factor, PHF		*0.94*
No-passing zone		*20%*
% Trucks and Buses , P_T		*19 %*
% Recreational vehicles, P_R		*0%*
Access points/ *mi*		*8*

Analysis direction vol., V_d *275*veh/h

Opposing direction vol., V_o *74*veh/h

Average Travel Speed

	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E_T (Exhibit 20-9 or 20-15)	*1.2*	*1.7*
Passenger-car equivalents for RVs, E_R (Exhibit 20-9 or 20-17)	*1.0*	*1.0*
Heavy-vehicle adjustment factor, f_{HV}=1/ (1+ $P_T(E_T$-1)+$P_R(E_R$-1))	*0.963*	*0.883*
Grade adjustment factor [1], f_G (Exhibit 20-7 or 20-13)	*1.00*	*1.00*
Directional flow rate[2], v_i(pc/h) $v_i=V_i/(PHF*f_{HV}*f_G)$	*304*	*89*

Free-Flow Speed from Field Measurement		Estimated Free-Flow Speed	
Field measured speed[3], S_{FM}	mi/h	Base free-flow speed[3], $BFFS_{FM}$	*45.0* mi/h
Observed volume[3], V_f	veh/h	Adj. for lane width and shoulder width,[3] f_{LS}(Exh 20-5)	*0.0* mi/h
Free-flow speed, FFS_d FFS=S_{FM}+0.00776(V_f/ f_{HV})	mi/h	Adj. for access points[3], f_A (Exhibit 20-5)	*2.0* mi/h
Adjustment for no-passing zones, f_{np} (Exhibit 20-19)	*0.1* mi/h	Free-flow speed, FFS_d (FSS=BFFS-f_{LS}-f_A)	*43.0* mi/h
		Average travel speed, ATS=FFS-0.00776v_p-f_{np}	*39.9* mi/h

Percent Time-Spent-Following

	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E_T(Exhibit 20-10 or 20-16)	*1.1*	*1.1*
Passenger-car equivalents for RVs, E_R (Exhibit 20-10 or 20-16)	*1.0*	*1.0*
Heavy-vehicle adjustment factor, f_{HV}=1/ (1+ $P_T(E_T$-1)+$P_R(E_R$-1))	*0.981*	*0.981*
Grade adjustment factor[1], f_G (Exhibit 20-8 or 20-14)	*1.00*	*1.00*
Directional flow rate[2], v_i(pc/h)=$V_i/(PHF*f_{HV}*f_G)$	*298*	*80*
Base percent time-spent-following[4], BPTSF(%)=100(1-$e^{av_d^b}$)	*30.1*	
Adj. for no-passing zone, f_{np} (Exhibit. 20-20)	*27.0*	
Percent time-spent-following, PTSF(%)=BPTSF+f_{np}	*51.3*	

Level of Service and Other Performance Measures

Level of service, LOS (Exhibit 20-3 or 20-4)	*B*
Volume to capacity ratio, v/c=V_p/ 1,700	*0.18*
Peak 15-min veh-miles of travel, VMT_{15} (veh- *mi*)=0.25L_t(V/PHF)	*73*
Peak-hour vehicle-miles of travel, VMT_{60}(veh- *mi*)=V*L_t	*275*
Peak 15-min total travel time, TT_{15}(veh-h)=VMT_{15}/ATS	*1.8*

Notes

1. If the highway is extended segment (level) or rolling terrain, fG=1.0 .
2. If v_i(v_d or v_o) >=1,700 pc/h, terminate analysis--the LOS is F.
3. For the analysis direction only.
4. Exhibit 20-21 provides factors a and b.
5. Use alternative Equation 20-14 if some trucks operate at crawl speeds on a specific downgrade.

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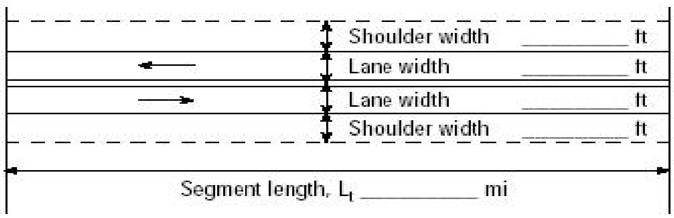
DIRECTIONAL TWO-LANE HIGHWAY SEGMENT WORKSHEET

General Information		Site Information	
Analyst	*AJP*	Highway / Direction of Travel	*Pride Dr*
Agency or Company	*Neel-Schaffer, Inc.*	From/To	*North of US 190*
Date Performed	*7/8/2011*	Jurisdiction	*Tangipahoa Parish*
Analysis Time Period	*PM Peak No Build*	Analysis Year	*2011*

Project Description: *N-S Prj# 8437*

Input Data



☐ Class I highway ☑ Class II highway

Terrain ☑ Level ☐ Rolling

Grade Length mi Up/down

Peak-hour factor, PHF *0.90*

No-passing zone *20%*

% Trucks and Buses , P_T *19 %*

% Recreational vehicles, P_R *0%*

Access points/ *mi* *8*

Analysis direction vol., V_d *181*veh/h

Opposing direction vol., V_o *49*veh/h

Average Travel Speed

	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E_T (Exhibit 20-9 or 20-15)	*1.7*	*1.7*
Passenger-car equivalents for RVs, E_R (Exhibit 20-9 or 20-17)	*1.0*	*1.0*
Heavy-vehicle adjustment factor, f_{HV}=1/ (1+ P_T(E_T-1)+P_R(E_R-1))	*0.883*	*0.883*
Grade adjustment factor [1], f_G (Exhibit 20-7 or 20-13)	*1.00*	*1.00*
Directional flow rate[2], v_i(pc/h) v_i=V_i/(PHF*f_{HV}* f_G)	*228*	*62*

Free-Flow Speed from Field Measurement		Estimated Free-Flow Speed	
Field measured speed[3], S_{FM}	*mi/h*	Base free-flow speed[3], $BFFS_{FM}$	*45.0 mi/h*
Observed volume[3], V_f	veh/h	Adj. for lane width and shoulder width,[3] f_{LS}(Exh 20-5)	*0.0 mi/h*
Free-flow speed, FFS_d FFS=S_{FM}+0.00776(V_f/ f_{HV})	*mi/h*	Adj. for access points[3], f_A (Exhibit 20-5)	*2.0 mi/h*
Adjustment for no-passing zones, f_{np} (Exhibit 20-19)	*0.1 mi/h*	Free-flow speed, FFS_d (FSS=BFFS-f_{LS}-f_A)	*43.0 mi/h*
		Average travel speed, ATS=FFS-0.00776v_p-f_{np}	*40.6 mi/h*

Percent Time-Spent-Following

	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E_T(Exhibit 20-10 or 20-16)	*1.1*	*1.1*
Passenger-car equivalents for RVs, E_R (Exhibit 20-10 or 20-16)	*1.0*	*1.0*
Heavy-vehicle adjustment factor, f_{HV}=1/ (1+ P_T(E_T-1)+P_R(E_R-1))	*0.981*	*0.981*
Grade adjustment factor[1], f_G (Exhibit 20-8 or 20-14)	*1.00*	*1.00*
Directional flow rate[2], v_i(pc/h)=V_i/(PHF*f_{HV}* f_G)	*205*	*55*
Base percent time-spent-following[4], BPTSF(%)=100(1-$e^{av_d^b}$)	*22.0*	
Adj. for no-passing zone, f_{np} (Exhibit. 20-20)	*27.2*	
Percent time-spent-following, PTSF(%)=BPTSF+f_{np}	*43.4*	

Level of Service and Other Performance Measures

Level of service, LOS (Exhibit 20-3 or 20-4)	*B*
Volume to capacity ratio, v/c=V_p/ 1,700	*0.13*
Peak 15-min veh-miles of travel, VMT_{15} (veh- *mi*)=0.25L_t(V/PHF)	*50*
Peak-hour vehicle-miles of travel, VMT_{60}(veh- *mi*)=V*L_t	*181*
Peak 15-min total travel time, TT_{15}(veh-h)=VMT_{15}/ATS	*1.2*

Notes

1. If the highway is extended segment (level) or rolling terrain, fG=1.0 .
2. If v_i(v_d or v_o) >=1,700 pc/h, terminate analysis--the LOS is F.
3. For the analysis direction only.
4. Exhibit 20-21 provides factors a and b.
5. Use alternative Equation 20-14 if some trucks operate at crawl speeds on a specific downgrade.

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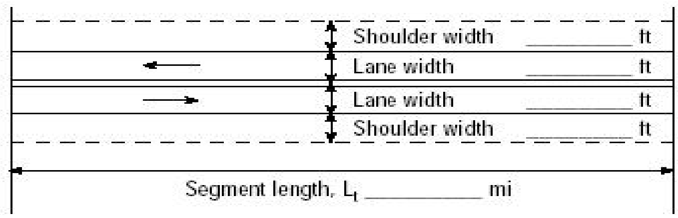
DIRECTIONAL TWO-LANE HIGHWAY SEGMENT WORKSHEET

General Information		Site Information	
Analyst	*AJP*	Highway / Direction of Travel	*Pride Dr*
Agency or Company	*Neel-Schaffer, Inc.*	From/To	*North of US 190*
Date Performed	*7/8/2011*	Jurisdiction	*Tangipahoa Parish*
Analysis Time Period	*AM Peak No Build*	Analysis Year	*2015*

Project Description: *N-S Prj# 8437*

Input Data



Class I highway ☐ Class II highway ☑

Terrain ☑ Level ☐ Rolling

Grade Length mi Up/down

Peak-hour factor, PHF *0.94*

No-passing zone *20%*

% Trucks and Buses , P_T *19 %*

% Recreational vehicles, P_R *0%*

Access points/ *mi* *8*

Analysis direction vol., V_d *295*veh/h

Opposing direction vol., V_o *80*veh/h

Average Travel Speed

	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E_T (Exhibit 20-9 or 20-15)	*1.2*	*1.7*
Passenger-car equivalents for RVs, E_R (Exhibit 20-9 or 20-17)	*1.0*	*1.0*
Heavy-vehicle adjustment factor, f_{HV}=1/ (1+ P_T(E_T-1)+P_R(E_R-1))	*0.963*	*0.883*
Grade adjustment factor [1], f_G (Exhibit 20-7 or 20-13)	*1.00*	*1.00*
Directional flow rate[2], v_i(pc/h) v_i=V_i/(PHF*f_{HV}* f_G)	*326*	*96*

Free-Flow Speed from Field Measurement		Estimated Free-Flow Speed	
Field measured speed[3], S_{FM}	mi/h	Base free-flow speed[3], $BFFS_{FM}$	*45.0* mi/h
Observed volume[3], V_f	veh/h	Adj. for lane width and shoulder width,[3] f_{LS}(Exh 20-5)	*0.0* mi/h
Free-flow speed, FFS_d FFS=S_{FM}+0.00776(V_f/ f_{HV})	mi/h	Adj. for access points[3], f_A (Exhibit 20-5)	*2.0* mi/h
Adjustment for no-passing zones, f_{np} (Exhibit 20-19)	*0.1* mi/h	Free-flow speed, FFS_d (FSS=BFFS-f_{LS}-f_A)	*43.0* mi/h
		Average travel speed, ATS=FFS-0.00776v_p-f_{np}	*39.6* mi/h

Percent Time-Spent-Following

	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E_T(Exhibit 20-10 or 20-16)	*1.1*	*1.1*
Passenger-car equivalents for RVs, E_R (Exhibit 20-10 or 20-16)	*1.0*	*1.0*
Heavy-vehicle adjustment factor, f_{HV}=1/ (1+ P_T(E_T-1)+P_R(E_R-1))	*0.981*	*0.981*
Grade adjustment factor[1], f_G (Exhibit 20-8 or 20-14)	*1.00*	*1.00*
Directional flow rate[2], v_i(pc/h)=V_i/(PHF*f_{HV}* f_G)	*320*	*87*
Base percent time-spent-following[4], BPTSF(%)=100(1-$e^{av_d^b}$)	*31.8*	
Adj. for no-passing zone, f_{np} (Exhibit. 20-20)	*26.9*	
Percent time-spent-following, PTSF(%)=BPTSF+f_{np}	*53.0*	

Level of Service and Other Performance Measures

Level of service, LOS (Exhibit 20-3 or 20-4)	*B*
Volume to capacity ratio, v/c=V_p/ 1,700	*0.19*
Peak 15-min veh-miles of travel, VMT_{15} (veh- *mi*)=0.25L_t(V/PHF)	*78*
Peak-hour vehicle-miles of travel, VMT_{60}(veh- *mi*)=V*L_t	*295*
Peak 15-min total travel time, TT_{15}(veh-h)=VMT_{15}/ATS	*2.0*

Notes

1. If the highway is extended segment (level) or rolling terrain, fG=1.0 .
2. If v_i(v_d or v_o) >=1,700 pc/h, terminate analysis--the LOS is F.
3. For the analysis direction only.
4. Exhibit 20-21 provides factors a and b.
5. Use alternative Equation 20-14 if some trucks operate at crawl speeds on a specific downgrade.

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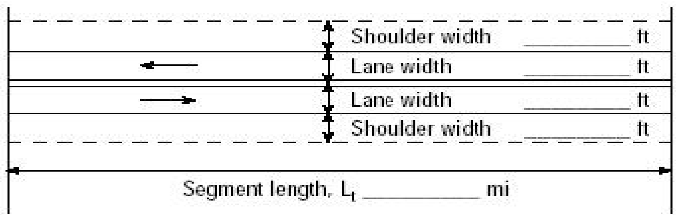
DIRECTIONAL TWO-LANE HIGHWAY SEGMENT WORKSHEET

General Information		**Site Information**	
Analyst	*AJP*	Highway / Direction of Travel	*Pride Dr*
Agency or Company	*Neel-Schaffer, Inc.*	From/To	*North of US 190*
Date Performed	*7/8/2011*	Jurisdiction	*Tangipahoa Parish*
Analysis Time Period	*PM Peak No Build*	Analysis Year	*2015*

Project Description: *N-S Prj# 8437*

Input Data



Analysis direction vol., V_d *195*veh/h

Opposing direction vol., V_o *52*veh/h

☐ Class I highway ☑ Class II highway

Terrain ☑ Level ☐ Rolling

Grade Length mi Up/down

Peak-hour factor, PHF *0.90*

No-passing zone *20%*

% Trucks and Buses , P_T *19* %

% Recreational vehicles, P_R *0%*

Access points/ *mi* *8*

Average Travel Speed

	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E_T (Exhibit 20-9 or 20-15)	*1.7*	*1.7*
Passenger-car equivalents for RVs, E_R (Exhibit 20-9 or 20-17)	*1.0*	*1.0*
Heavy-vehicle adjustment factor, f_{HV}=1/ (1+ $P_T(E_T$-1)+$P_R(E_R$-1))	*0.883*	*0.883*
Grade adjustment factor [1], f_G (Exhibit 20-7 or 20-13)	*1.00*	*1.00*
Directional flow rate[2], v_i(pc/h) $v_i=V_i/(PHF*f_{HV}*f_G)$	*245*	*65*

Free-Flow Speed from Field Measurement		Estimated Free-Flow Speed	
Field measured speed[3], S_{FM}	*mi/h*	Base free-flow speed[3], $BFFS_{FM}$	*45.0 mi/h*
Observed volume[3], V_f	veh/h	Adj. for lane width and shoulder width,[3] f_{LS}(Exh 20-5)	*0.0 mi/h*
Free-flow speed, FFS_d FFS=S_{FM}+0.00776(V_f/ f_{HV})	*mi/h*	Adj. for access points[3], f_A (Exhibit 20-5)	*2.0 mi/h*
Adjustment for no-passing zones, f_{np} (Exhibit 20-19)	*0.1 mi/h*	Free-flow speed, FFS_d (FSS=BFFS-f_{LS}-f_A)	*43.0 mi/h*
		Average travel speed, ATS=FFS-0.00776v_p-f_{np}	*40.5 mi/h*

Percent Time-Spent-Following

	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E_T(Exhibit 20-10 or 20-16)	*1.1*	*1.1*
Passenger-car equivalents for RVs, E_R (Exhibit 20-10 or 20-16)	*1.0*	*1.0*
Heavy-vehicle adjustment factor, f_{HV}=1/ (1+ $P_T(E_T$-1)+$P_R(E_R$-1))	*0.981*	*0.981*
Grade adjustment factor[1], f_G (Exhibit 20-8 or 20-14)	*1.00*	*1.00*
Directional flow rate[2], v_i(pc/h)=$V_i/(PHF*f_{HV}*f_G)$	*221*	*59*
Base percent time-spent-following[4], BPTSF(%)=100(1-$e^{av_d^b}$)	*23.5*	
Adj. for no-passing zone, f_{np} (Exhibit. 20-20)	*27.2*	
Percent time-spent-following, PTSF(%)=BPTSF+f_{np}	*44.9*	

Level of Service and Other Performance Measures

Level of service, LOS (Exhibit 20-3 or 20-4)	*B*
Volume to capacity ratio, v/c=V_p/ 1,700	*0.14*
Peak 15-min veh-miles of travel, VMT_{15} (veh- *mi*)=0.25L_t(V/PHF)	*54*
Peak-hour vehicle-miles of travel, VMT_{60}(veh- *mi*)=V*L_t	*195*
Peak 15-min total travel time, TT_{15}(veh-h)=VMT_{15}/ATS	*1.3*

Notes

1. If the highway is extended segment (level) or rolling terrain, fG=1.0 .
2. If v_i(v_d or v_o) >=1,700 pc/h, terminate analysis--the LOS is F.
3. For the analysis direction only.
4. Exhibit 20-21 provides factors a and b.
5. Use alternative Equation 20-14 if some trucks operate at crawl speeds on a specific downgrade.

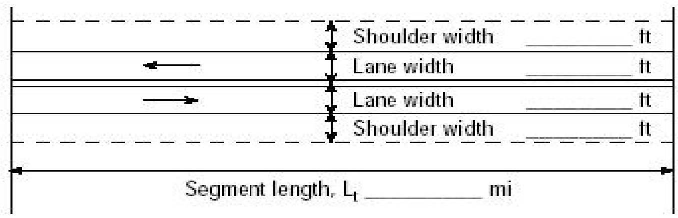
 HCS+™ Version 5.3 Generated: 10/27/2011 8:53 AM

DIRECTIONAL TWO-LANE HIGHWAY SEGMENT WORKSHEET

General Information		***Site Information***	
Analyst	*AJP*	Highway / Direction of Travel	*Pride Dr*
Agency or Company	*Neel-Schaffer, Inc.*	From/To	*North of US 190*
Date Performed	*7/8/2011*	Jurisdiction	*Tangipahoa Parish*
Analysis Time Period	*AM Peak No Build*	Analysis Year	*2035*

Project Description: *N-S Prj# 8437*

Input Data



☐ Class I highway ☑ Class II highway

Terrain ☑ Level ☐ Rolling

Grade Length mi Up/down

Peak-hour factor, PHF *0.94*

No-passing zone *20%*

% Trucks and Buses , P_T *19 %*

% Recreational vehicles, P_R *0%*

Access points/ *mi* *8*

Analysis direction vol., V_d *362*veh/h

Opposing direction vol., V_o *97*veh/h

Average Travel Speed

	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E_T (Exhibit 20-9 or 20-15)	*1.2*	*1.7*
Passenger-car equivalents for RVs, E_R (Exhibit 20-9 or 20-17)	*1.0*	*1.0*
Heavy-vehicle adjustment factor, f_{HV}=1/ (1+ P_T(E_T-1)+P_R(E_R-1))	*0.963*	*0.883*
Grade adjustment factor [1], f_G (Exhibit 20-7 or 20-13)	*1.00*	*1.00*
Directional flow rate[2], v_i(pc/h) v_i=V_i/(PHF*f_{HV}* f_G)	*400*	*117*

Free-Flow Speed from Field Measurement		Estimated Free-Flow Speed	
Field measured speed[3], S_{FM}	*mi/h*	Base free-flow speed[3], $BFFS_{FM}$	*45.0 mi/h*
Observed volume[3], V_f	veh/h	Adj. for lane width and shoulder width,[3] f_{LS}(Exh 20-5)	*0.0 mi/h*
Free-flow speed, FFS_d FFS=S_{FM}+0.00776(V_f/ f_{HV})	*mi/h*	Adj. for access points[3], f_A (Exhibit 20-5)	*2.0 mi/h*
Adjustment for no-passing zones, f_{np} (Exhibit 20-19)	*0.2 mi/h*	Free-flow speed, FFS_d (FSS=BFFS-f_{LS}-f_A)	*43.0 mi/h*
		Average travel speed, ATS=FFS-0.00776v_p-f_{np}	*38.8 mi/h*

Percent Time-Spent-Following

	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E_T(Exhibit 20-10 or 20-16)	*1.1*	*1.1*
Passenger-car equivalents for RVs, E_R (Exhibit 20-10 or 20-16)	*1.0*	*1.0*
Heavy-vehicle adjustment factor, f_{HV}=1/ (1+ P_T(E_T-1)+P_R(E_R-1))	*0.981*	*0.981*
Grade adjustment factor[1], f_G (Exhibit 20-8 or 20-14)	*1.00*	*1.00*
Directional flow rate[2], v_i(pc/h)=V_i/(PHF*f_{HV}* f_G)	*392*	*105*
Base percent time-spent-following[4], BPTSF(%)=100(1-$e^{av_d^b}$)	*37.3*	
Adj. for no-passing zone, f_{np} (Exhibit. 20-20)	*26.4*	
Percent time-spent-following, PTSF(%)=BPTSF+f_{np}	*58.1*	

Level of Service and Other Performance Measures

Level of service, LOS (Exhibit 20-3 or 20-4)	*C*
Volume to capacity ratio, v/c=V_p/ 1,700	*0.24*
Peak 15-min veh-miles of travel, VMT_{15} (veh- *mi*)=0.25L_t(V/PHF)	*96*
Peak-hour vehicle-miles of travel, VMT_{60}(veh- *mi*)=V*L_t	*362*
Peak 15-min total travel time, TT_{15}(veh-h)=VMT_{15}/ATS	*2.5*

Notes

1. If the highway is extended segment (level) or rolling terrain, fG=1.0 .
2. If v_i(v_d or v_o) >=1,700 pc/h, terminate analysis--the LOS is F.
3. For the analysis direction only.
4. Exhibit 20-21 provides factors a and b.
5. Use alternative Equation 20-14 if some trucks operate at crawl speeds on a specific downgrade.

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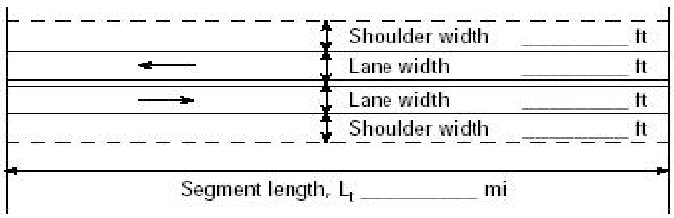
DIRECTIONAL TWO-LANE HIGHWAY SEGMENT WORKSHEET

General Information		Site Information	
Analyst	*AJP*	Highway / Direction of Travel	*Pride Dr*
Agency or Company	*Neel-Schaffer, Inc.*	From/To	*North of US 190*
Date Performed	*7/8/2011*	Jurisdiction	*Tangipahoa Parish*
Analysis Time Period	*PM Peak No Build*	Analysis Year	*2035*

Project Description: *N-S Prj# 8437*

Input Data



Class I highway ☐ Class II highway ☑

Terrain ☑ Level ☐ Rolling

Grade Length mi Up/down

Peak-hour factor, PHF *0.90*

No-passing zone *20*%

% Trucks and Buses , P_T *19* %

% Recreational vehicles, P_R *0*%

Access points/ *mi* *8*

Analysis direction vol., V_d *239*veh/h

Opposing direction vol., V_o *64*veh/h

Average Travel Speed

	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E_T (Exhibit 20-9 or 20-15)	*1.2*	*1.7*
Passenger-car equivalents for RVs, E_R (Exhibit 20-9 or 20-17)	*1.0*	*1.0*
Heavy-vehicle adjustment factor, f_{HV}=1/ (1+ P_T(E_T-1)+P_R(E_R-1))	*0.963*	*0.883*
Grade adjustment factor [1], f_G (Exhibit 20-7 or 20-13)	*1.00*	*1.00*
Directional flow rate[2], v_i(pc/h) v_i=V_i/(PHF*f_{HV}* f_G)	*276*	*81*

Free-Flow Speed from Field Measurement		Estimated Free-Flow Speed	
Field measured speed[3], S_{FM}	mi/h	Base free-flow speed[3], $BFFS_{FM}$	*45.0* mi/h
Observed volume[3], V_f	veh/h	Adj. for lane width and shoulder width,[3] f_{LS}(Exh 20-5)	*0.0* mi/h
Free-flow speed, FFS_d FFS=S_{FM}+0.00776(V_f/ f_{HV})	mi/h	Adj. for access points[3], f_A (Exhibit 20-5)	*2.0* mi/h
Adjustment for no-passing zones, f_{np} (Exhibit 20-19)	*0.1* mi/h	Free-flow speed, FFS_d (FSS=BFFS-f_{LS}-f_A)	*43.0* mi/h
		Average travel speed, ATS=FFS-0.00776v_p-f_{np}	*40.1* mi/h

Percent Time-Spent-Following

	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E_T(Exhibit 20-10 or 20-16)	*1.1*	*1.1*
Passenger-car equivalents for RVs, E_R (Exhibit 20-10 or 20-16)	*1.0*	*1.0*
Heavy-vehicle adjustment factor, f_{HV}=1/ (1+ P_T(E_T-1)+P_R(E_R-1))	*0.981*	*0.981*
Grade adjustment factor[1], f_G (Exhibit 20-8 or 20-14)	*1.00*	*1.00*
Directional flow rate[2], v_i(pc/h)=V_i/(PHF*f_{HV}* f_G)	*271*	*72*
Base percent time-spent-following[4], BPTSF(%)=100(1-$e^{av_d^b}$)	*27.8*	
Adj. for no-passing zone, f_{np} (Exhibit. 20-20)	*26.7*	
Percent time-spent-following, PTSF(%)=BPTSF+f_{np}	*48.9*	

Level of Service and Other Performance Measures

Level of service, LOS (Exhibit 20-3 or 20-4)	*B*
Volume to capacity ratio, v/c=V_p/ 1,700	*0.16*
Peak 15-min veh-miles of travel, VMT_{15} (veh- *mi*)=0.25L_t(V/PHF)	*66*
Peak-hour vehicle-miles of travel, VMT_{60}(veh- *mi*)=V*L_t	*239*
Peak 15-min total travel time, TT_{15}(veh-h)=VMT_{15}/ATS	*1.6*

Notes

1. If the highway is extended segment (level) or rolling terrain, fG=1.0 .
2. If v_i(v_d or v_o) >=1,700 pc/h, terminate analysis--the LOS is F.
3. For the analysis direction only.
4. Exhibit 20-21 provides factors a and b.
5. Use alternative Equation 20-14 if some trucks operate at crawl speeds on a specific downgrade.

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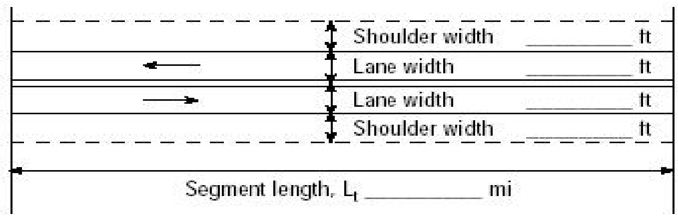
DIRECTIONAL TWO-LANE HIGHWAY SEGMENT WORKSHEET

General Information		**Site Information**	
Analyst	*AJP*	Highway / Direction of Travel	*Pride Dr*
Agency or Company	*Neel-Schaffer, Inc.*	From/To	*North of US 190*
Date Performed	*7/8/2011*	Jurisdiction	*Tangipahoa Parish*
Analysis Time Period	*AM Peak*	Analysis Year	*2015 Alternate A*

Project Description: *N-S Prj# 8437*

Input Data



☑ Class I highway ☐ Class II highway

Terrain ☑ Level ☐ Rolling

Grade Length mi Up/down

Peak-hour factor, PHF *0.94*

No-passing zone *20%*

% Trucks and Buses , P_T *10 %*

% Recreational vehicles, P_R *0%*

Access points/ *mi* *8*

Analysis direction vol., V_d *364*veh/h

Opposing direction vol., V_o *316*veh/h

Average Travel Speed

	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E_T (Exhibit 20-9 or 20-15)	*1.2*	*1.2*
Passenger-car equivalents for RVs, E_R (Exhibit 20-9 or 20-17)	*1.0*	*1.0*
Heavy-vehicle adjustment factor, f_{HV}=1/ (1+ $P_T(E_T$-1)+$P_R(E_R$-1))	*0.980*	*0.980*
Grade adjustment factor [1], f_G (Exhibit 20-7 or 20-13)	*1.00*	*1.00*
Directional flow rate[2], v_i(pc/h) $v_i=V_i/(PHF*f_{HV}*f_G)$	*395*	*343*

Free-Flow Speed from Field Measurement		Estimated Free-Flow Speed	
Field measured speed[3], S_{FM}	*mi/h*	Base free-flow speed[3], $BFFS_{FM}$	*55.0 mi/h*
Observed volume[3], V_f	veh/h	Adj. for lane width and shoulder width,[3] f_{LS}(Exh 20-5)	*0.0 mi/h*
Free-flow speed, FFS_d FFS=S_{FM}+0.00776(V_f/ f_{HV})	*mi/h*	Adj. for access points[3], f_A (Exhibit 20-5)	*2.0 mi/h*
Adjustment for no-passing zones, f_{np} (Exhibit 20-19)	*1.3 mi/h*	Free-flow speed, FFS_d (FSS=BFFS-f_{LS}-f_A)	*53.0 mi/h*
		Average travel speed, ATS=FFS-0.00776v_p-f_{np}	*46.0 mi/h*

Percent Time-Spent-Following

	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E_T(Exhibit 20-10 or 20-16)	*1.1*	*1.1*
Passenger-car equivalents for RVs, E_R (Exhibit 20-10 or 20-16)	*1.0*	*1.0*
Heavy-vehicle adjustment factor, f_{HV}=1/ (1+ $P_T(E_T$-1)+$P_R(E_R$-1))	*0.990*	*0.990*
Grade adjustment factor[1], f_G (Exhibit 20-8 or 20-14)	*1.00*	*1.00*
Directional flow rate[2], v_i(pc/h)=$V_i/(PHF*f_{HV}*f_G)$	*391*	*340*
Base percent time-spent-following[4], BPTSF(%)=100(1-$e^{av_d^b}$)	*41.1*	
Adj. for no-passing zone, f_{np} (Exhibit. 20-20)	*34.1*	
Percent time-spent-following, PTSF(%)=BPTSF+f_{np}	*59.3*	

Level of Service and Other Performance Measures

Level of service, LOS (Exhibit 20-3 or 20-4)	*C*
Volume to capacity ratio, v/c=V_p/ 1,700	*0.23*
Peak 15-min veh-miles of travel, VMT_{15} (veh- *mi*)=0.25L_t(V/PHF)	*97*
Peak-hour vehicle-miles of travel, VMT_{60}(veh- *mi*)=V*L_t	*364*
Peak 15-min total travel time, TT_{15}(veh-h)=VMT_{15}/ATS	*2.1*

Notes

1. If the highway is extended segment (level) or rolling terrain, fG=1.0 .
2. If v_i(v_d or v_o) >=1,700 pc/h, terminate analysis--the LOS is F.
3. For the analysis direction only.
4. Exhibit 20-21 provides factors a and b.
5. Use alternative Equation 20-14 if some trucks operate at crawl speeds on a specific downgrade.

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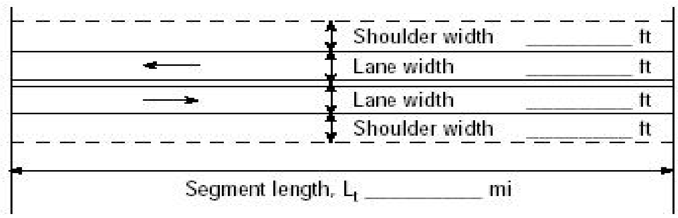
DIRECTIONAL TWO-LANE HIGHWAY SEGMENT WORKSHEET

General Information		Site Information	
Analyst	*AJP*	Highway / Direction of Travel	*Pride Dr*
Agency or Company	*Neel-Schaffer, Inc.*	From/To	*North of US 190*
Date Performed	*7/8/2011*	Jurisdiction	*Tangipahoa Parish*
Analysis Time Period	*PM Peak*	Analysis Year	*2015 Alternate A*

Project Description: *N-S Prj# 8437*

Input Data



Analysis direction vol., V_d *310*veh/h

Opposing direction vol., V_o *276*veh/h

☑ Class I highway ☐ Class II highway

Terrain ☑ Level ☐ Rolling

Grade Length mi Up/down

Peak-hour factor, PHF *0.90*

No-passing zone *20*%

% Trucks and Buses , P_T *10* %

% Recreational vehicles, P_R *0*%

Access points/ *mi* *8*

Average Travel Speed

	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E_T (Exhibit 20-9 or 20-15)	*1.2*	*1.2*
Passenger-car equivalents for RVs, E_R (Exhibit 20-9 or 20-17)	*1.0*	*1.0*
Heavy-vehicle adjustment factor, f_{HV}=1/ (1+ $P_T(E_T$-1)+$P_R(E_R$-1))	*0.980*	*0.980*
Grade adjustment factor [1], f_G (Exhibit 20-7 or 20-13)	*1.00*	*1.00*
Directional flow rate[2], v_i(pc/h) $v_i=V_i/(PHF*f_{HV}*f_G)$	*351*	*313*

Free-Flow Speed from Field Measurement		Estimated Free-Flow Speed	
Field measured speed[3], S_{FM}	*mi/h*	Base free-flow speed[3], $BFFS_{FM}$	*55.0 mi/h*
Observed volume[3], V_f	veh/h	Adj. for lane width and shoulder width,[3] f_{LS}(Exh 20-5)	*0.0 mi/h*
Free-flow speed, FFS_d FFS=S_{FM}+0.00776(V_f/ f_{HV})	*mi/h*	Adj. for access points[3], f_A (Exhibit 20-5)	*2.0 mi/h*
Adjustment for no-passing zones, f_{np} (Exhibit 20-19)	*1.3 mi/h*	Free-flow speed, FFS_d (FSS=BFFS-f_{LS}-f_A)	*53.0 mi/h*
		Average travel speed, ATS=FFS-0.00776v_p-f_{np}	*46.6 mi/h*

Percent Time-Spent-Following

	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E_T(Exhibit 20-10 or 20-16)	*1.1*	*1.1*
Passenger-car equivalents for RVs, E_R (Exhibit 20-10 or 20-16)	*1.0*	*1.0*
Heavy-vehicle adjustment factor, f_{HV}=1/ (1+ $P_T(E_T$-1)+$P_R(E_R$-1))	*0.990*	*0.990*
Grade adjustment factor[1], f_G (Exhibit 20-8 or 20-14)	*1.00*	*1.00*
Directional flow rate[2], v_i(pc/h)=$V_i/(PHF*f_{HV}*f_G)$	*348*	*310*
Base percent time-spent-following[4], BPTSF(%)=100(1-$e^{av_d^b}$)	*37.2*	
Adj. for no-passing zone, f_{np} (Exhibit. 20-20)	*36.4*	
Percent time-spent-following, PTSF(%)=BPTSF+f_{np}	*56.5*	

Level of Service and Other Performance Measures

Level of service, LOS (Exhibit 20-3 or 20-4)	*C*
Volume to capacity ratio, v/c=V_p/ 1,700	*0.21*
Peak 15-min veh-miles of travel, VMT_{15} (veh- *mi*)=0.25L_t(V/PHF)	*86*
Peak-hour vehicle-miles of travel, VMT_{60}(veh- *mi*)=V*L_t	*310*
Peak 15-min total travel time, TT_{15}(veh-h)=VMT_{15}/ATS	*1.8*

Notes

1. If the highway is extended segment (level) or rolling terrain, fG=1.0 .
2. If v_i(v_d or v_o) >=1,700 pc/h, terminate analysis--the LOS is F.
3. For the analysis direction only.
4. Exhibit 20-21 provides factors a and b.
5. Use alternative Equation 20-14 if some trucks operate at crawl speeds on a specific downgrade.

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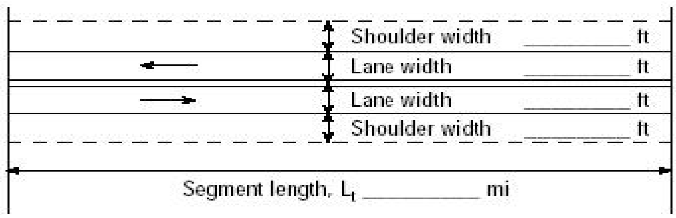
DIRECTIONAL TWO-LANE HIGHWAY SEGMENT WORKSHEET

General Information		Site Information	
Analyst	*AJP*	Highway / Direction of Travel	*Pride Dr*
Agency or Company	*Neel-Schaffer, Inc.*	From/To	*North of US 190*
Date Performed	*7/8/2011*	Jurisdiction	*Tangipahoa Parish*
Analysis Time Period	*AM Peak*	Analysis Year	*2035 Alternate A*

Project Description: *N-S Prj# 8437*

Input Data



☑ Class I highway ☐ Class II highway

Terrain ☑ Level ☐ Rolling

Grade Length mi Up/down

Peak-hour factor, PHF *0.94*

No-passing zone *20%*

% Trucks and Buses , P_T *10 %*

% Recreational vehicles, P_R *0%*

Access points/ *mi* *8*

Analysis direction vol., V_d *432*veh/h

Opposing direction vol., V_o *353*veh/h

Average Travel Speed

	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E_T (Exhibit 20-9 or 20-15)	*1.2*	*1.2*
Passenger-car equivalents for RVs, E_R (Exhibit 20-9 or 20-17)	*1.0*	*1.0*
Heavy-vehicle adjustment factor, f_{HV}=1/ (1+ $P_T(E_T$-1)+$P_R(E_R$-1))	*0.980*	*0.980*
Grade adjustment factor [1], f_G (Exhibit 20-7 or 20-13)	*1.00*	*1.00*
Directional flow rate[2], v_i(pc/h) $v_i=V_i/(PHF*f_{HV}*f_G)$	*469*	*383*

Free-Flow Speed from Field Measurement		Estimated Free-Flow Speed	
Field measured speed[3], S_{FM}	mi/h	Base free-flow speed[3], $BFFS_{FM}$	*55.0* mi/h
Observed volume[3], V_f	veh/h	Adj. for lane width and shoulder width,[3] f_{LS}(Exh 20-5)	*0.0* mi/h
Free-flow speed, FFS_d FFS=S_{FM}+0.00776(V_f/ f_{HV})	mi/h	Adj. for access points[3], f_A (Exhibit 20-5)	*2.0* mi/h
Adjustment for no-passing zones, f_{np} (Exhibit 20-19)	*1.2* mi/h	Free-flow speed, FFS_d (FSS=BFFS-f_{LS}-f_A)	*53.0* mi/h
		Average travel speed, ATS=FFS-0.00776v_p-f_{np}	*45.2* mi/h

Percent Time-Spent-Following

	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E_T(Exhibit 20-10 or 20-16)	*1.1*	*1.1*
Passenger-car equivalents for RVs, E_R (Exhibit 20-10 or 20-16)	*1.0*	*1.0*
Heavy-vehicle adjustment factor, f_{HV}=1/ (1+ $P_T(E_T$-1)+$P_R(E_R$-1))	*0.990*	*0.990*
Grade adjustment factor[1], f_G (Exhibit 20-8 or 20-14)	*1.00*	*1.00*
Directional flow rate[2], v_i(pc/h)=$V_i/(PHF*f_{HV}*f_G)$	*464*	*379*
Base percent time-spent-following[4], BPTSF(%)=100(1-$e^{av_d^b}$)	*46.8*	
Adj. for no-passing zone, f_{np} (Exhibit. 20-20)	*30.2*	
Percent time-spent-following, PTSF(%)=BPTSF+f_{np}	*63.5*	

Level of Service and Other Performance Measures

Level of service, LOS (Exhibit 20-3 or 20-4)	*C*
Volume to capacity ratio, v/c=V_p/ 1,700	*0.28*
Peak 15-min veh-miles of travel, VMT_{15} (veh- *mi*)=0.25L_t(V/PHF)	*115*
Peak-hour vehicle-miles of travel, VMT_{60}(veh- *mi*)=V*L_t	*432*
Peak 15-min total travel time, TT_{15}(veh-h)=VMT_{15}/ATS	*2.5*

Notes

1. If the highway is extended segment (level) or rolling terrain, fG=1.0 .
2. If v_i(v_d or v_o) >=1,700 pc/h, terminate analysis--the LOS is F.
3. For the analysis direction only.
4. Exhibit 20-21 provides factors a and b.
5. Use alternative Equation 20-14 if some trucks operate at crawl speeds on a specific downgrade.

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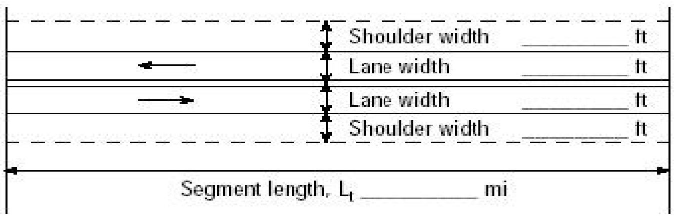
DIRECTIONAL TWO-LANE HIGHWAY SEGMENT WORKSHEET

General Information		***Site Information***	
Analyst	*AJP*	Highway / Direction of Travel	*Pride Dr*
Agency or Company	*Neel-Schaffer, Inc.*	From/To	*North of US 190*
Date Performed	*7/8/2011*	Jurisdiction	*Tangipahoa Parish*
Analysis Time Period	*PM Peak*	Analysis Year	*2035 Alternate A*

Project Description: *N-S Prj# 8437*

Input Data



Analysis direction vol., V_d *405*veh/h

Opposing direction vol., V_o *317*veh/h

☑ Class I highway ☐ Class II highway

Terrain ☑ Level ☐ Rolling

Grade Length mi Up/down

Peak-hour factor, PHF *0.90*

No-passing zone *20*%

% Trucks and Buses , P_T *10* %

% Recreational vehicles, P_R *0*%

Access points/ *mi* *8*

Average Travel Speed

	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E_T (Exhibit 20-9 or 20-15)	*1.2*	*1.2*
Passenger-car equivalents for RVs, E_R (Exhibit 20-9 or 20-17)	*1.0*	*1.0*
Heavy-vehicle adjustment factor, f_{HV}=1/ (1+ $P_T(E_T$-1)+$P_R(E_R$-1))	*0.980*	*0.980*
Grade adjustment factor [1], f_G (Exhibit 20-7 or 20-13)	*1.00*	*1.00*
Directional flow rate[2], v_i(pc/h) $v_i=V_i/(PHF*f_{HV}*f_G)$	*459*	*359*

Free-Flow Speed from Field Measurement		Estimated Free-Flow Speed	
Field measured speed[3], S_{FM}	*mi/h*	Base free-flow speed[3], $BFFS_{FM}$	*55.0* *mi/h*
Observed volume[3], V_f	veh/h	Adj. for lane width and shoulder width,[3] f_{LS}(Exh 20-5)	*0.0* *mi/h*
Free-flow speed, FFS_d $FFS=S_{FM}+0.00776(V_f/f_{HV})$	*mi/h*	Adj. for access points[3], f_A (Exhibit 20-5)	*2.0* *mi/h*
Adjustment for no-passing zones, f_{np} (Exhibit 20-19)	*1.3* *mi/h*	Free-flow speed, FFS_d ($FSS=BFFS-f_{LS}-f_A$)	*53.0* *mi/h*
		Average travel speed, $ATS=FFS-0.00776v_p-f_{np}$	*45.4* *mi/h*

Percent Time-Spent-Following

	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E_T(Exhibit 20-10 or 20-16)	*1.1*	*1.1*
Passenger-car equivalents for RVs, E_R (Exhibit 20-10 or 20-16)	*1.0*	*1.0*
Heavy-vehicle adjustment factor, f_{HV}=1/ (1+ $P_T(E_T$-1)+$P_R(E_R$-1))	*0.990*	*0.990*
Grade adjustment factor[1], f_G (Exhibit 20-8 or 20-14)	*1.00*	*1.00*
Directional flow rate[2], v_i(pc/h)=$V_i/(PHF*f_{HV}*f_G)$	*455*	*356*
Base percent time-spent-following[4], BPTSF(%)=100(1-$e^{av_d^b}$)	*45.9*	
Adj. for no-passing zone, f_{np} (Exhibit. 20-20)	*30.2*	
Percent time-spent-following, PTSF(%)=BPTSF+f_{np}	*62.9*	

Level of Service and Other Performance Measures

Level of service, LOS (Exhibit 20-3 or 20-4)	*C*
Volume to capacity ratio, v/c=V_p/ 1,700	*0.27*
Peak 15-min veh-miles of travel, VMT_{15} (veh- *mi*)=0.25L_t(V/PHF)	*113*
Peak-hour vehicle-miles of travel, VMT_{60}(veh- *mi*)=V*L_t	*405*
Peak 15-min total travel time, TT_{15}(veh-h)=VMT_{15}/ATS	*2.5*

Notes

1. If the highway is extended segment (level) or rolling terrain, fG=1.0 .
2. If v_i(v_d or v_o) >=1,700 pc/h, terminate analysis--the LOS is F.
3. For the analysis direction only.
4. Exhibit 20-21 provides factors a and b.
5. Use alternative Equation 20-14 if some trucks operate at crawl speeds on a specific downgrade.

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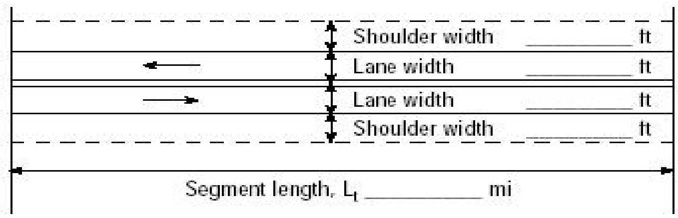
DIRECTIONAL TWO-LANE HIGHWAY SEGMENT WORKSHEET

General Information		Site Information	
Analyst	*AJP*	Highway / Direction of Travel	*Pride Dr*
Agency or Company	*Neel-Schaffer, Inc.*	From/To	*North of US 190*
Date Performed	*7/8/2011*	Jurisdiction	*Tangipahoa Parish*
Analysis Time Period	*AM Peak*	Analysis Year	*2015 Alternate B*

Project Description: *N-S Prj# 8437*

Input Data



Class I highway ☐ Class II highway ☑

Terrain ☑ Level ☐ Rolling

Grade Length mi Up/down

Peak-hour factor, PHF *0.94*

No-passing zone *20%*

% Trucks and Buses , P_T *10 %*

% Recreational vehicles, P_R *0%*

Access points/ *mi* *8*

Analysis direction vol., V_d *436*veh/h

Opposing direction vol., V_o *368*veh/h

Average Travel Speed

	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E_T (Exhibit 20-9 or 20-15)	*1.2*	*1.2*
Passenger-car equivalents for RVs, E_R (Exhibit 20-9 or 20-17)	*1.0*	*1.0*
Heavy-vehicle adjustment factor, f_{HV}=1/ (1+ P_T(E_T-1)+P_R(E_R-1))	*0.980*	*0.980*
Grade adjustment factor [1], f_G (Exhibit 20-7 or 20-13)	*1.00*	*1.00*
Directional flow rate[2], v_i(pc/h) v_i=V_i/(PHF*f_{HV}* f_G)	*473*	*399*

Free-Flow Speed from Field Measurement		Estimated Free-Flow Speed	
Field measured speed[3], S_{FM}	*mi/h*	Base free-flow speed[3], $BFFS_{FM}$	*55.0 mi/h*
Observed volume[3], V_f	veh/h	Adj. for lane width and shoulder width,[3] f_{LS}(Exh 20-5)	*0.0 mi/h*
Free-flow speed, FFS_d FFS=S_{FM}+0.00776(V_f/ f_{HV})	*mi/h*	Adj. for access points[3], f_A (Exhibit 20-5)	*2.0 mi/h*
Adjustment for no-passing zones, f_{np} (Exhibit 20-19)	*1.2 mi/h*	Free-flow speed, FFS_d (FSS=BFFS-f_{LS}-f_A)	*53.0 mi/h*
		Average travel speed, ATS=FFS-0.00776v_p-f_{np}	*45.0 mi/h*

Percent Time-Spent-Following

	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E_T(Exhibit 20-10 or 20-16)	*1.1*	*1.1*
Passenger-car equivalents for RVs, E_R (Exhibit 20-10 or 20-16)	*1.0*	*1.0*
Heavy-vehicle adjustment factor, f_{HV}=1/ (1+ P_T(E_T-1)+P_R(E_R-1))	*0.990*	*0.990*
Grade adjustment factor[1], f_G (Exhibit 20-8 or 20-14)	*1.00*	*1.00*
Directional flow rate[2], v_i(pc/h)=V_i/(PHF*f_{HV}* f_G)	*468*	*395*
Base percent time-spent-following[4], BPTSF(%)=100(1-$e^{av_d^b}$)	*47.3*	
Adj. for no-passing zone, f_{np} (Exhibit. 20-20)	*30.3*	
Percent time-spent-following, PTSF(%)=BPTSF+f_{np}	*63.7*	

Level of Service and Other Performance Measures

Level of service, LOS (Exhibit 20-3 or 20-4)	*C*
Volume to capacity ratio, v/c=V_p/ 1,700	*0.28*
Peak 15-min veh-miles of travel, VMT_{15} (veh- *mi*)=0.25L_t(V/PHF)	*116*
Peak-hour vehicle-miles of travel, VMT_{60}(veh- *mi*)=V*L_t	*436*
Peak 15-min total travel time, TT_{15}(veh-h)=VMT_{15}/ATS	*2.6*

Notes

1. If the highway is extended segment (level) or rolling terrain, fG=1.0 .
2. If v_i(v_d or v_o) >=1,700 pc/h, terminate analysis--the LOS is F.
3. For the analysis direction only.
4. Exhibit 20-21 provides factors a and b.
5. Use alternative Equation 20-14 if some trucks operate at crawl speeds on a specific downgrade.

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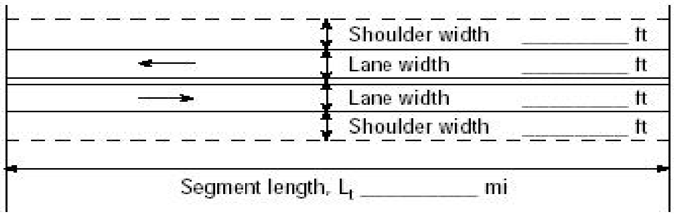
DIRECTIONAL TWO-LANE HIGHWAY SEGMENT WORKSHEET

General Information		Site Information	
Analyst	*AJP*	Highway / Direction of Travel	*Pride Dr*
Agency or Company	*Neel-Schaffer, Inc.*	From/To	*North of US 190*
Date Performed	*7/8/2011*	Jurisdiction	*Tangipahoa Parish*
Analysis Time Period	*PM Peak*	Analysis Year	*2015 Alternate B*

Project Description: *N-S Prj# 8437*

Input Data



☑ Class I highway ☐ Class II highway

Terrain ☑ Level ☐ Rolling

Grade Length mi Up/down

Peak-hour factor, PHF *0.90*

No-passing zone *20%*

% Trucks and Buses , P_T *10 %*

% Recreational vehicles, P_R *0%*

Access points/ *mi* *8*

Analysis direction vol., V_d *389*veh/h

Opposing direction vol., V_o *318*veh/h

Average Travel Speed

	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E_T (Exhibit 20-9 or 20-15)	*1.2*	*1.2*
Passenger-car equivalents for RVs, E_R (Exhibit 20-9 or 20-17)	*1.0*	*1.0*
Heavy-vehicle adjustment factor, f_{HV}=1/ (1+ P_T(E_T-1)+P_R(E_R-1))	*0.980*	*0.980*
Grade adjustment factor [1], f_G (Exhibit 20-7 or 20-13)	*1.00*	*1.00*
Directional flow rate[2], v_i(pc/h) v_i=V_i/(PHF*f_{HV}* f_G)	*441*	*360*

Free-Flow Speed from Field Measurement		Estimated Free-Flow Speed	
Field measured speed[3], S_{FM}	*mi/h*	Base free-flow speed[3], $BFFS_{FM}$	*55.0 mi/h*
Observed volume[3], V_f	veh/h	Adj. for lane width and shoulder width,[3] f_{LS}(Exh 20-5)	*0.0 mi/h*
Free-flow speed, FFS_d FFS=S_{FM}+0.00776(V_f/ f_{HV})	*mi/h*	Adj. for access points[3], f_A (Exhibit 20-5)	*2.0 mi/h*
Adjustment for no-passing zones, f_{np} (Exhibit 20-19)	*1.3 mi/h*	Free-flow speed, FFS_d (FSS=BFFS-f_{LS}-f_A)	*53.0 mi/h*
		Average travel speed, ATS=FFS-0.00776v_p-f_{np}	*45.5 mi/h*

Percent Time-Spent-Following

	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E_T(Exhibit 20-10 or 20-16)	*1.1*	*1.1*
Passenger-car equivalents for RVs, E_R (Exhibit 20-10 or 20-16)	*1.0*	*1.0*
Heavy-vehicle adjustment factor, f_{HV}=1/ (1+ P_T(E_T-1)+P_R(E_R-1))	*0.990*	*0.990*
Grade adjustment factor[1], f_G (Exhibit 20-8 or 20-14)	*1.00*	*1.00*
Directional flow rate[2], v_i(pc/h)=V_i/(PHF*f_{HV}* f_G)	*437*	*357*
Base percent time-spent-following[4], BPTSF(%)=100(1-$e^{av_d^b}$)	*44.7*	
Adj. for no-passing zone, f_{np} (Exhibit. 20-20)	*31.2*	
Percent time-spent-following, PTSF(%)=BPTSF+f_{np}	*61.9*	

Level of Service and Other Performance Measures

Level of service, LOS (Exhibit 20-3 or 20-4)	*C*
Volume to capacity ratio, v/c=V_p/ 1,700	*0.26*
Peak 15-min veh-miles of travel, VMT_{15} (veh- *mi*)=0.25L_t(V/PHF)	*108*
Peak-hour vehicle-miles of travel, VMT_{60}(veh- *mi*)=V*L_t	*389*
Peak 15-min total travel time, TT_{15}(veh-h)=VMT_{15}/ATS	*2.4*

Notes

1. If the highway is extended segment (level) or rolling terrain, fG=1.0 .
2. If v_i(v_d or v_o) >=1,700 pc/h, terminate analysis--the LOS is F.
3. For the analysis direction only.
4. Exhibit 20-21 provides factors a and b.
5. Use alternative Equation 20-14 if some trucks operate at crawl speeds on a specific downgrade.

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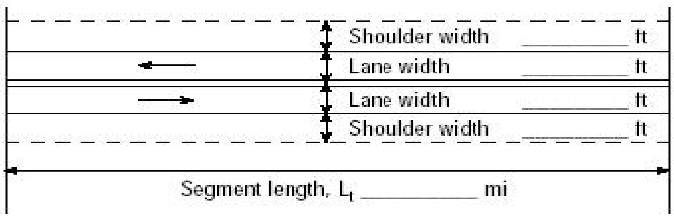
DIRECTIONAL TWO-LANE HIGHWAY SEGMENT WORKSHEET

General Information		Site Information	
Analyst	*AJP*	Highway / Direction of Travel	*Pride Dr*
Agency or Company	*Neel-Schaffer, Inc.*	From/To	*North of US 190*
Date Performed	*7/8/2011*	Jurisdiction	*Tangipahoa Parish*
Analysis Time Period	*AM Peak*	Analysis Year	*2035 Alternate B*

Project Description: *N-S Prj# 8437*

Input Data



Analysis direction vol., V_d *432*veh/h

Opposing direction vol., V_o *520*veh/h

☑ Class I highway ☐ Class II highway

Terrain ☑ Level ☐ Rolling

Grade Length mi	Up/down
Peak-hour factor, PHF	*0.94*
No-passing zone	*20*%
% Trucks and Buses , P_T	*10* %
% Recreational vehicles, P_R	*0*%
Access points/ *mi*	*8*

Average Travel Speed

	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E_T (Exhibit 20-9 or 20-15)	*1.2*	*1.2*
Passenger-car equivalents for RVs, E_R (Exhibit 20-9 or 20-17)	*1.0*	*1.0*
Heavy-vehicle adjustment factor, f_{HV}=1/ (1+ $P_T(E_T$-1)+$P_R(E_R$-1))	*0.980*	*0.980*
Grade adjustment factor [1], f_G (Exhibit 20-7 or 20-13)	*1.00*	*1.00*
Directional flow rate[2], v_i(pc/h) $v_i=V_i/(PHF*f_{HV}*f_G)$	*469*	*564*

Free-Flow Speed from Field Measurement		Estimated Free-Flow Speed	
Field measured speed[3], S_{FM}	*mi/h*	Base free-flow speed[3], $BFFS_{FM}$	*56.0 mi/h*
Observed volume[3], V_f	veh/h	Adj. for lane width and shoulder width,[3] f_{LS}(Exh 20-5)	*0.0 mi/h*
Free-flow speed, FFS_d $FFS=S_{FM}+0.00776(V_f/f_{HV})$	*mi/h*	Adj. for access points[3], f_A (Exhibit 20-5)	*2.0 mi/h*
Adjustment for no-passing zones, f_{np} (Exhibit 20-19)	*0.9 mi/h*	Free-flow speed, FFS_d ($FSS=BFFS-f_{LS}-f_A$)	*54.0 mi/h*
		Average travel speed, $ATS=FFS-0.00776v_p-f_{np}$	*45.1 mi/h*

Percent Time-Spent-Following

	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E_T(Exhibit 20-10 or 20-16)	*1.1*	*1.1*
Passenger-car equivalents for RVs, E_R (Exhibit 20-10 or 20-16)	*1.0*	*1.0*
Heavy-vehicle adjustment factor, f_{HV}=1/ (1+ $P_T(E_T$-1)+$P_R(E_R$-1))	*0.990*	*0.990*
Grade adjustment factor[1], f_G (Exhibit 20-8 or 20-14)	*1.00*	*1.00*
Directional flow rate[2], $v_i(pc/h)=V_i/(PHF*f_{HV}*f_G)$	*464*	*559*
Base percent time-spent-following[4], BPTSF(%)=100(1-$e^{av_d^b}$)	*49.7*	
Adj. for no-passing zone, f_{np} (Exhibit. 20-20)	*28.7*	
Percent time-spent-following, PTSF(%)=BPTSF+f_{np}	*62.7*	

Level of Service and Other Performance Measures

Level of service, LOS (Exhibit 20-3 or 20-4)	*C*
Volume to capacity ratio, $v/c=V_p/1,700$	*0.28*
Peak 15-min veh-miles of travel, VMT_{15} (veh- *mi*)=0.25L_t(V/PHF)	*115*
Peak-hour vehicle-miles of travel, VMT_{60}(veh- *mi*)=V*L_t	*432*
Peak 15-min total travel time, TT_{15}(veh-h)=VMT_{15}/ATS	*2.6*

Notes

1. If the highway is extended segment (level) or rolling terrain, fG=1.0 .
2. If $v_i(v_d$ or v_o) >=1,700 pc/h, terminate analysis--the LOS is F.
3. For the analysis direction only.
4. Exhibit 20-21 provides factors a and b.
5. Use alternative Equation 20-14 if some trucks operate at crawl speeds on a specific downgrade.

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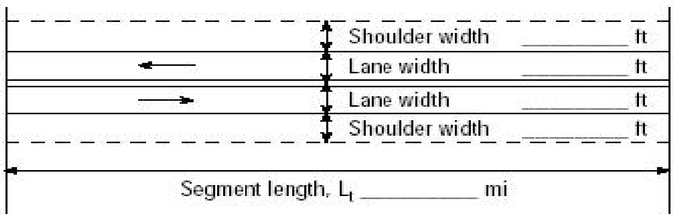
DIRECTIONAL TWO-LANE HIGHWAY SEGMENT WORKSHEET

General Information		Site Information	
Analyst	*AJP*	Highway / Direction of Travel	*Pride Dr*
Agency or Company	*Neel-Schaffer, Inc.*	From/To	*North of US 190*
Date Performed	*7/8/2011*	Jurisdiction	*Tangipahoa Parish*
Analysis Time Period	*PM Peak*	Analysis Year	*2035 Alternate B*

Project Description: *N-S Prj# 8437*

Input Data



Class I highway (checked) Class II highway

Terrain Level (checked) Rolling

Grade Length	mi	Up/down
Peak-hour factor, PHF	*0.90*	
No-passing zone	*20*%	
% Trucks and Buses , P_T	*10* %	
% Recreational vehicles, P_R	*0*%	
Access points/ *mi*	*8*	

Analysis direction vol., V_d *454*veh/h

Opposing direction vol., V_o *420*veh/h

Average Travel Speed

	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E_T (Exhibit 20-9 or 20-15)	*1.2*	*1.2*
Passenger-car equivalents for RVs, E_R (Exhibit 20-9 or 20-17)	*1.0*	*1.0*
Heavy-vehicle adjustment factor, f_{HV}=1/ (1+ $P_T(E_T$-1)+$P_R(E_R$-1))	*0.980*	*0.980*
Grade adjustment factor [1], f_G (Exhibit 20-7 or 20-13)	*1.00*	*1.00*
Directional flow rate[2], v_i(pc/h) $v_i=V_i/(PHF*f_{HV}*f_G)$	*515*	*476*

Free-Flow Speed from Field Measurement		Estimated Free-Flow Speed	
Field measured speed[3], S_{FM}	*mi/h*	Base free-flow speed[3], $BFFS_{FM}$	*56.0 mi/h*
Observed volume[3], V_f	veh/h	Adj. for lane width and shoulder width,[3] f_{LS}(Exh 20-5)	*0.0 mi/h*
Free-flow speed, FFS_d $FFS=S_{FM}+0.00776(V_f/f_{HV})$	*mi/h*	Adj. for access points[3], f_A (Exhibit 20-5)	*2.0 mi/h*
Adjustment for no-passing zones, f_{np} (Exhibit 20-19)	*1.1 mi/h*	Free-flow speed, FFS_d ($FSS=BFFS-f_{LS}-f_A$)	*54.0 mi/h*
		Average travel speed, $ATS=FFS-0.00776v_p-f_{np}$	*45.2 mi/h*

Percent Time-Spent-Following

	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E_T(Exhibit 20-10 or 20-16)	*1.1*	*1.1*
Passenger-car equivalents for RVs, E_R (Exhibit 20-10 or 20-16)	*1.0*	*1.0*
Heavy-vehicle adjustment factor, f_{HV}=1/ (1+ $P_T(E_T$-1)+$P_R(E_R$-1))	*0.990*	*0.990*
Grade adjustment factor[1], f_G (Exhibit 20-8 or 20-14)	*1.00*	*1.00*
Directional flow rate[2], v_i(pc/h)=$V_i/(PHF*f_{HV}*f_G)$	*509*	*471*
Base percent time-spent-following[4], BPTSF(%)=100(1-$e^{av_d^b}$)	*51.6*	
Adj. for no-passing zone, f_{np} (Exhibit. 20-20)	*29.2*	
Percent time-spent-following, PTSF(%)=BPTSF+f_{np}	*66.8*	

Level of Service and Other Performance Measures

Level of service, LOS (Exhibit 20-3 or 20-4)	*D*
Volume to capacity ratio, v/c=V_p/ 1,700	*0.30*
Peak 15-min veh-miles of travel, VMT_{15} (veh- *mi*)=0.25L_t(V/PHF)	*126*
Peak-hour vehicle-miles of travel, VMT_{60}(veh- *mi*)=V*L_t	*454*
Peak 15-min total travel time, TT_{15}(veh-h)=VMT_{15}/ATS	*2.8*

Notes

1. If the highway is extended segment (level) or rolling terrain, fG=1.0 .
2. If v_i(v_d or v_o) >=1,700 pc/h, terminate analysis--the LOS is F.
3. For the analysis direction only.
4. Exhibit 20-21 provides factors a and b.
5. Use alternative Equation 20-14 if some trucks operate at crawl speeds on a specific downgrade.

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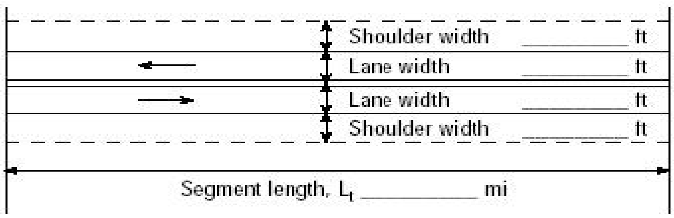
DIRECTIONAL TWO-LANE HIGHWAY SEGMENT WORKSHEET

General Information		**Site Information**	
Analyst	*AJP*	Highway / Direction of Travel	*Pride Dr*
Agency or Company	*Neel-Schaffer, Inc.*	From/To	*North of US 190*
Date Performed	*7/8/2011*	Jurisdiction	*Tangipahoa Parish*
Analysis Time Period	*AM Peak*	Analysis Year	*2015 Alternate C*

Project Description: *N-S Prj# 8437*

Input Data



Analysis direction vol., V_d *141*veh/h

Opposing direction vol., V_o *95*veh/h

☐ Class I highway ☑ Class II highway

Terrain ☑ Level ☐ Rolling

Grade Length mi Up/down

Peak-hour factor, PHF *0.94*

No-passing zone *20*%

% Trucks and Buses , P_T *19* %

% Recreational vehicles, P_R *0*%

Access points/ *mi* *8*

Average Travel Speed

	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E_T (Exhibit 20-9 or 20-15)	*1.7*	*1.7*
Passenger-car equivalents for RVs, E_R (Exhibit 20-9 or 20-17)	*1.0*	*1.0*
Heavy-vehicle adjustment factor, f_{HV}=1/ (1+ $P_T(E_T$-1)+$P_R(E_R$-1))	*0.883*	*0.883*
Grade adjustment factor [1], f_G (Exhibit 20-7 or 20-13)	*1.00*	*1.00*
Directional flow rate[2], v_i(pc/h) $v_i=V_i/(PHF*f_{HV}*f_G)$	*170*	*115*

Free-Flow Speed from Field Measurement		Estimated Free-Flow Speed	
Field measured speed[3], S_{FM}	mi/h	Base free-flow speed[3], $BFFS_{FM}$	*45.0* mi/h
Observed volume[3], V_f	veh/h	Adj. for lane width and shoulder width,[3] f_{LS}(Exh 20-5)	*0.0* mi/h
Free-flow speed, FFS_d FFS=S_{FM}+0.00776(V_f/ f_{HV})	mi/h	Adj. for access points[3], f_A (Exhibit 20-5)	*2.0* mi/h
Adjustment for no-passing zones, f_{np} (Exhibit 20-19)	*0.2* mi/h	Free-flow speed, FFS_d (FSS=BFFS-f_{LS}-f_A)	*43.0* mi/h
		Average travel speed, ATS=FFS-0.00776v_p-f_{np}	*40.6* mi/h

Percent Time-Spent-Following

	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E_T(Exhibit 20-10 or 20-16)	*1.1*	*1.1*
Passenger-car equivalents for RVs, E_R (Exhibit 20-10 or 20-16)	*1.0*	*1.0*
Heavy-vehicle adjustment factor, f_{HV}=1/ (1+ $P_T(E_T$-1)+$P_R(E_R$-1))	*0.981*	*0.981*
Grade adjustment factor[1], f_G (Exhibit 20-8 or 20-14)	*1.00*	*1.00*
Directional flow rate[2], v_i(pc/h)=$V_i/(PHF*f_{HV}*f_G)$	*153*	*103*
Base percent time-spent-following[4], BPTSF(%)=100(1-$e^{av_d^b}$)	*17.1*	
Adj. for no-passing zone, f_{np} (Exhibit. 20-20)	*32.2*	
Percent time-spent-following, PTSF(%)=BPTSF+f_{np}	*36.3*	

Level of Service and Other Performance Measures

Level of service, LOS (Exhibit 20-3 or 20-4)	*A*
Volume to capacity ratio, v/c=V_p/ 1,700	*0.10*
Peak 15-min veh-miles of travel, VMT_{15} (veh- *mi*)=0.25L_t(V/PHF)	*38*
Peak-hour vehicle-miles of travel, VMT_{60}(veh- *mi*)=V*L_t	*141*
Peak 15-min total travel time, TT_{15}(veh-h)=VMT_{15}/ATS	*0.9*

Notes

1. If the highway is extended segment (level) or rolling terrain, fG=1.0 .
2. If v_i(v_d or v_o) >=1,700 pc/h, terminate analysis--the LOS is F.
3. For the analysis direction only.
4. Exhibit 20-21 provides factors a and b.
5. Use alternative Equation 20-14 if some trucks operate at crawl speeds on a specific downgrade.

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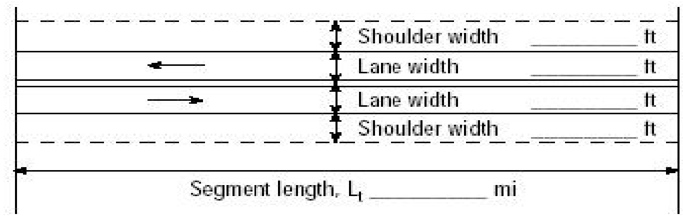
DIRECTIONAL TWO-LANE HIGHWAY SEGMENT WORKSHEET

General Information		Site Information	
Analyst	*AJP*	Highway / Direction of Travel	*Pride Dr*
Agency or Company	*Neel-Schaffer, Inc.*	From/To	*North of US 190*
Date Performed	*7/8/2011*	Jurisdiction	*Tangipahoa Parish*
Analysis Time Period	*PM Peak*	Analysis Year	*2015 Alternate C*

Project Description: *N-S Prj# 8437*

Input Data



Analysis direction vol., V_d *118*veh/h

Opposing direction vol., V_o *85*veh/h

☐ Class I highway ☑ Class II highway

Terrain ☑ Level ☐ Rolling

Grade Length mi Up/down

Peak-hour factor, PHF *0.90*

No-passing zone *20%*

% Trucks and Buses , P_T *19 %*

% Recreational vehicles, P_R *0%*

Access points/ *mi* *8*

Average Travel Speed

	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E_T (Exhibit 20-9 or 20-15)	*1.7*	*1.7*
Passenger-car equivalents for RVs, E_R (Exhibit 20-9 or 20-17)	*1.0*	*1.0*
Heavy-vehicle adjustment factor, f_{HV}=1/ (1+ $P_T(E_T$-1)+$P_R(E_R$-1))	*0.883*	*0.883*
Grade adjustment factor [1], f_G (Exhibit 20-7 or 20-13)	*1.00*	*1.00*
Directional flow rate[2], v_i(pc/h) $v_i=V_i/(PHF*f_{HV}*f_G)$	*149*	*107*

Free-Flow Speed from Field Measurement		Estimated Free-Flow Speed	
Field measured speed[3], S_{FM}	mi/h	Base free-flow speed[3], $BFFS_{FM}$	*45.0* mi/h
Observed volume[3], V_f	veh/h	Adj. for lane width and shoulder width,[3] f_{LS}(Exh 20-5)	*0.0* mi/h
Free-flow speed, FFS_d FFS=S_{FM}+0.00776(V_f/ f_{HV})	mi/h	Adj. for access points[3], f_A (Exhibit 20-5)	*2.0* mi/h
Adjustment for no-passing zones, f_{np} (Exhibit 20-19)	*0.2* mi/h	Free-flow speed, FFS_d (FSS=BFFS-f_{LS}-f_A)	*43.0* mi/h
		Average travel speed, ATS=FFS-0.00776v_p-f_{np}	*40.9* mi/h

Percent Time-Spent-Following

	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E_T(Exhibit 20-10 or 20-16)	*1.1*	*1.1*
Passenger-car equivalents for RVs, E_R (Exhibit 20-10 or 20-16)	*1.0*	*1.0*
Heavy-vehicle adjustment factor, f_{HV}=1/ (1+ $P_T(E_T$-1)+$P_R(E_R$-1))	*0.981*	*0.981*
Grade adjustment factor[1], f_G (Exhibit 20-8 or 20-14)	*1.00*	*1.00*
Directional flow rate[2], v_i(pc/h)=$V_i/(PHF*f_{HV}*f_G)$	*134*	*96*
Base percent time-spent-following[4], BPTSF(%)=100(1-$e^{av_d^b}$)	*15.2*	
Adj. for no-passing zone, f_{np} (Exhibit. 20-20)	*31.3*	
Percent time-spent-following, PTSF(%)=BPTSF+f_{np}	*33.4*	

Level of Service and Other Performance Measures

Level of service, LOS (Exhibit 20-3 or 20-4)	*A*
Volume to capacity ratio, v/c=V_p/ 1,700	*0.09*
Peak 15-min veh-miles of travel, VMT_{15} (veh- *mi*)=0.25L_t(V/PHF)	*33*
Peak-hour vehicle-miles of travel, VMT_{60}(veh- *mi*)=V*L_t	*118*
Peak 15-min total travel time, TT_{15}(veh-h)=VMT_{15}/ATS	*0.8*

Notes

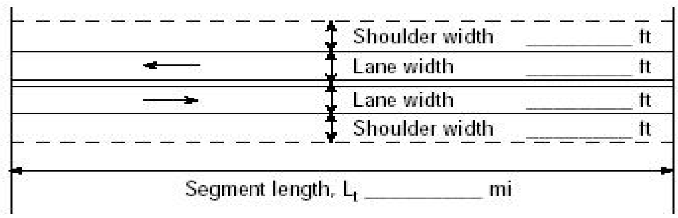
1. If the highway is extended segment (level) or rolling terrain, fG=1.0 .
2. If v_i(v_d or v_o) >=1,700 pc/h, terminate analysis--the LOS is F.
3. For the analysis direction only.
4. Exhibit 20-21 provides factors a and b.
5. Use alternative Equation 20-14 if some trucks operate at crawl speeds on a specific downgrade.

DIRECTIONAL TWO-LANE HIGHWAY SEGMENT WORKSHEET

General Information		Site Information	
Analyst	*AJP*	Highway / Direction of Travel	*Pride Dr*
Agency or Company	*Neel-Schaffer, Inc.*	From/To	*North of US 190*
Date Performed	*7/8/2011*	Jurisdiction	*Tangipahoa Parish*
Analysis Time Period	*AM Peak*	Analysis Year	*2035 Alternate C*

Project Description: *N-S Prj# 8437*

Input Data



☐ Class I highway ☑ Class II highway

Terrain ☑ Level ☐ Rolling

Grade Length mi Up/down

Peak-hour factor, PHF *0.94*

No-passing zone *20%*

% Trucks and Buses , P_T *19 %*

% Recreational vehicles, P_R *0%*

Access points/ *mi* *8*

Analysis direction vol., V_d *129*veh/h

Opposing direction vol., V_o *91*veh/h

Average Travel Speed

	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E_T (Exhibit 20-9 or 20-15)	*1.7*	*1.7*
Passenger-car equivalents for RVs, E_R (Exhibit 20-9 or 20-17)	*1.0*	*1.0*
Heavy-vehicle adjustment factor, f_{HV}=1/ (1+ $P_T(E_T$-1)+$P_R(E_R$-1))	*0.883*	*0.883*
Grade adjustment factor [1], f_G (Exhibit 20-7 or 20-13)	*1.00*	*1.00*
Directional flow rate[2], v_i(pc/h) $v_i=V_i/(PHF*f_{HV}*f_G)$	*155*	*110*

Free-Flow Speed from Field Measurement		Estimated Free-Flow Speed	
Field measured speed[3], S_{FM}	*mi/h*	Base free-flow speed[3], $BFFS_{FM}$	*45.0 mi/h*
Observed volume[3], V_f	veh/h	Adj. for lane width and shoulder width,[3] f_{LS}(Exh 20-5)	*0.0 mi/h*
Free-flow speed, FFS_d FFS=S_{FM}+0.00776(V_f/ f_{HV})	*mi/h*	Adj. for access points[3], f_A (Exhibit 20-5)	*2.0 mi/h*
Adjustment for no-passing zones, f_{np} (Exhibit 20-19)	*0.2 mi/h*	Free-flow speed, FFS_d (FSS=BFFS-f_{LS}-f_A)	*43.0 mi/h*
		Average travel speed, ATS=FFS-0.00776v_p-f_{np}	*40.8 mi/h*

Percent Time-Spent-Following

	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E_T(Exhibit 20-10 or 20-16)	*1.1*	*1.1*
Passenger-car equivalents for RVs, E_R (Exhibit 20-10 or 20-16)	*1.0*	*1.0*
Heavy-vehicle adjustment factor, f_{HV}=1/ (1+ $P_T(E_T$-1)+$P_R(E_R$-1))	*0.981*	*0.981*
Grade adjustment factor[1], f_G (Exhibit 20-8 or 20-14)	*1.00*	*1.00*
Directional flow rate[2], v_i(pc/h)=$V_i/(PHF*f_{HV}*f_G)$	*140*	*99*
Base percent time-spent-following[4], BPTSF(%)=100(1-$e^{av_d^b}$)	*15.8*	
Adj. for no-passing zone, f_{np} (Exhibit. 20-20)	*31.6*	
Percent time-spent-following, PTSF(%)=BPTSF+f_{np}	*34.3*	

Level of Service and Other Performance Measures

Level of service, LOS (Exhibit 20-3 or 20-4)	*A*
Volume to capacity ratio, v/c=V_p/ 1,700	*0.09*
Peak 15-min veh-miles of travel, VMT_{15} (veh- *mi*)=0.25L_t(V/PHF)	*34*
Peak-hour vehicle-miles of travel, VMT_{60}(veh- *mi*)=V*L_t	*129*
Peak 15-min total travel time, TT_{15}(veh-h)=VMT_{15}/ATS	*0.8*

Notes

1. If the highway is extended segment (level) or rolling terrain, fG=1.0 .
2. If v_i(v_d or v_o) >=1,700 pc/h, terminate analysis--the LOS is F.
3. For the analysis direction only.
4. Exhibit 20-21 provides factors a and b.
5. Use alternative Equation 20-14 if some trucks operate at crawl speeds on a specific downgrade.

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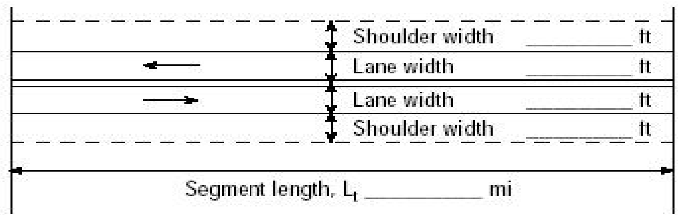
DIRECTIONAL TWO-LANE HIGHWAY SEGMENT WORKSHEET

General Information		Site Information	
Analyst	*AJP*	Highway / Direction of Travel	*Pride Dr*
Agency or Company	*Neel-Schaffer, Inc.*	From/To	*North of US 190*
Date Performed	*7/8/2011*	Jurisdiction	*Tangipahoa Parish*
Analysis Time Period	*PM Peak*	Analysis Year	*2035 Alternate C*

Project Description: *N-S Prj# 8437*

Input Data



Class I highway Class II highway

Terrain Level Rolling

Grade Length mi Up/down	
Peak-hour factor, PHF	*0.90*
No-passing zone	*20*%
% Trucks and Buses , P_T	*19* %
% Recreational vehicles, P_R	*0*%
Access points/ *mi*	*8*
Analysis direction vol., V_d	*120*veh/h
Opposing direction vol., V_o	*84*veh/h

Average Travel Speed

	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E_T (Exhibit 20-9 or 20-15)	*1.7*	*1.7*
Passenger-car equivalents for RVs, E_R (Exhibit 20-9 or 20-17)	*1.0*	*1.0*
Heavy-vehicle adjustment factor, f_{HV}=1/ (1+ P_T(E_T-1)+P_R(E_R-1))	*0.883*	*0.883*
Grade adjustment factor [1], f_G (Exhibit 20-7 or 20-13)	*1.00*	*1.00*
Directional flow rate[2], v_i(pc/h) v_i=V_i/(PHF*f_{HV}* f_G)	*151*	*106*

Free-Flow Speed from Field Measurement		Estimated Free-Flow Speed	
Field measured speed[3], S_{FM}	*mi/h*	Base free-flow speed[3], $BFFS_{FM}$	*45.0* mi/h
Observed volume[3], V_f	veh/h	Adj. for lane width and shoulder width,[3] f_{LS}(Exh 20-5)	*0.0* mi/h
Free-flow speed, FFS_d FFS=S_{FM}+0.00776(V_f/ f_{HV})	*mi/h*	Adj. for access points[3], f_A (Exhibit 20-5)	*2.0* mi/h
Adjustment for no-passing zones, f_{np} (Exhibit 20-19)	*0.1* mi/h	Free-flow speed, FFS_d (FSS=BFFS-f_{LS}-f_A)	*43.0* mi/h
		Average travel speed, ATS=FFS-0.00776v_p-f_{np}	*40.9* mi/h

Percent Time-Spent-Following

	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E_T(Exhibit 20-10 or 20-16)	*1.1*	*1.1*
Passenger-car equivalents for RVs, E_R (Exhibit 20-10 or 20-16)	*1.0*	*1.0*
Heavy-vehicle adjustment factor, f_{HV}=1/ (1+ P_T(E_T-1)+P_R(E_R-1))	*0.981*	*0.981*
Grade adjustment factor[1], f_G (Exhibit 20-8 or 20-14)	*1.00*	*1.00*
Directional flow rate[2], v_i(pc/h)=V_i/(PHF*f_{HV}* f_G)	*136*	*95*
Base percent time-spent-following[4], BPTSF(%)=100(1-$e^{av_d^b}$)	*15.4*	
Adj. for no-passing zone, f_{np} (Exhibit. 20-20)	*31.4*	
Percent time-spent-following, PTSF(%)=BPTSF+f_{np}	*33.8*	

Level of Service and Other Performance Measures

Level of service, LOS (Exhibit 20-3 or 20-4)	*A*
Volume to capacity ratio, v/c=V_p/ 1,700	*0.09*
Peak 15-min veh-miles of travel, VMT_{15} (veh- *mi*)=0.25L_t(V/PHF)	*33*
Peak-hour vehicle-miles of travel, VMT_{60}(veh- *mi*)=V*L_t	*120*
Peak 15-min total travel time, TT_{15}(veh-h)=VMT_{15}/ATS	*0.8*

Notes

1. If the highway is extended segment (level) or rolling terrain, fG=1.0 .
2. If v_i(v_d or v_o) >=1,700 pc/h, terminate analysis--the LOS is F.
3. For the analysis direction only.
4. Exhibit 20-21 provides factors a and b.
5. Use alternative Equation 20-14 if some trucks operate at crawl speeds on a specific downgrade.

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PRIDE DRIVE

North of US 190

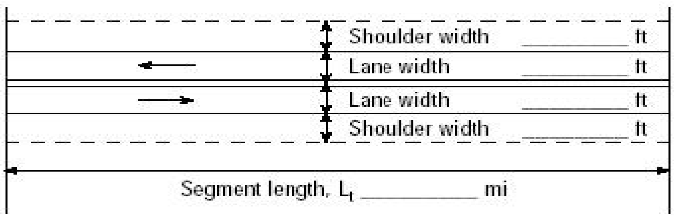
Volumes with Pride Drive as 4-lane Roadway

DIRECTIONAL TWO-LANE HIGHWAY SEGMENT WORKSHEET

General Information		Site Information	
Analyst	*AJP*	Highway / Direction of Travel	*Pride Dr*
Agency or Company	*Neel-Schaffer, Inc.*	From/To	*North of US 190*
Date Performed	*7/8/2011*	Jurisdiction	*Tangipahoa Parish*
Analysis Time Period	*AM Peak*	Analysis Year	*2035 Alternate A, 4 lane Vols.*

Project Description: *N-S Prj# 8437*

Input Data



Class I highway ☑ Class II highway ☐

Terrain ☑ Level ☐ Rolling

Grade Length mi Up/down

Peak-hour factor, PHF *0.94*

No-passing zone *20%*

% Trucks and Buses , P_T *5 %*

% Recreational vehicles, P_R *0%*

Access points/ *mi* *8*

Analysis direction vol., V_d *680*veh/h

Opposing direction vol., V_o *556*veh/h

Average Travel Speed

	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E_T (Exhibit 20-9 or 20-15)	*1.1*	*1.2*
Passenger-car equivalents for RVs, E_R (Exhibit 20-9 or 20-17)	*1.0*	*1.0*
Heavy-vehicle adjustment factor, $f_{HV}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	*0.995*	*0.990*
Grade adjustment factor [1], f_G (Exhibit 20-7 or 20-13)	*1.00*	*1.00*
Directional flow rate[2], v_i(pc/h) $v_i=V_i/(PHF*f_{HV}*f_G)$	*727*	*597*

Free-Flow Speed from Field Measurement		Estimated Free-Flow Speed	
Field measured speed[3], S_{FM}	*mi/h*	Base free-flow speed[3], $BFFS_{FM}$	*55.0 mi/h*
Observed volume[3], V_f	veh/h	Adj. for lane width and shoulder width,[3] f_{LS}(Exh 20-5)	*0.0 mi/h*
Free-flow speed, FFS_d $FFS=S_{FM}+0.00776(V_f/f_{HV})$	*mi/h*	Adj. for access points[3], f_A (Exhibit 20-5)	*2.0 mi/h*
Adjustment for no-passing zones, f_{np} (Exhibit 20-19)	*0.8 mi/h*	Free-flow speed, FFS_d ($FSS=BFFS-f_{LS}-f_A$)	*53.0 mi/h*
		Average travel speed, $ATS=FFS-0.00776v_p-f_{np}$	*41.9 mi/h*

Percent Time-Spent-Following

	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E_T(Exhibit 20-10 or 20-16)	*1.0*	*1.1*
Passenger-car equivalents for RVs, E_R (Exhibit 20-10 or 20-16)	*1.0*	*1.0*
Heavy-vehicle adjustment factor, $f_{HV}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	*1.000*	*0.995*
Grade adjustment factor[1], f_G (Exhibit 20-8 or 20-14)	*1.00*	*1.00*
Directional flow rate[2], $v_i(pc/h)=V_i/(PHF*f_{HV}*f_G)$	*723*	*594*
Base percent time-spent-following[4], $BPTSF(\%)=100(1-e^{av_d^b})$	*63.7*	
Adj. for no-passing zone, f_{np} (Exhibit. 20-20)	*21.2*	
Percent time-spent-following, $PTSF(\%)=BPTSF+f_{np}$	*75.4*	

Level of Service and Other Performance Measures

Level of service, LOS (Exhibit 20-3 or 20-4)	*D*
Volume to capacity ratio, $v/c=V_p/1{,}700$	*0.43*
Peak 15-min veh-miles of travel, VMT_{15} (veh- *mi*)=$0.25L_t(V/PHF)$	*181*
Peak-hour vehicle-miles of travel, VMT_{60}(veh- *mi*)=$V*L_t$	*680*
Peak 15-min total travel time, TT_{15}(veh-h)=VMT_{15}/ATS	*4.3*

Notes

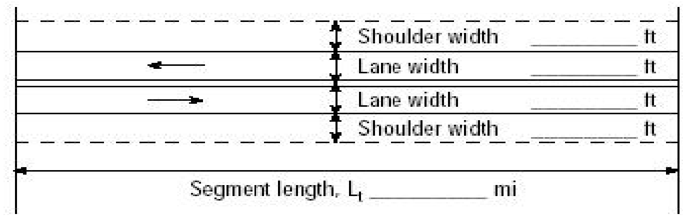
1. If the highway is extended segment (level) or rolling terrain, fG=1.0 .
2. If v_i(v_d or v_o) >=1,700 pc/h, terminate analysis--the LOS is F.
3. For the analysis direction only.
4. Exhibit 20-21 provides factors a and b.
5. Use alternative Equation 20-14 if some trucks operate at crawl speeds on a specific downgrade.

DIRECTIONAL TWO-LANE HIGHWAY SEGMENT WORKSHEET

General Information		Site Information	
Analyst	*AJP*	Highway / Direction of Travel	*Pride Dr*
Agency or Company	*Neel-Schaffer, Inc.*	From/To	*North of US 190*
Date Performed	*7/8/2011*	Jurisdiction	*Tangipahoa Parish*
Analysis Time Period	*PM Peak*	Analysis Year	*2035 Alternate A, 4 lane Vols*

Project Description: *N-S Prj# 8437*

Input Data



☑ Class I highway ☐ Class II highway

Terrain ☑ Level ☐ Rolling

Grade Length mi Up/down

Peak-hour factor, PHF *0.90*

No-passing zone *20*%

% Trucks and Buses , P_T *5* %

% Recreational vehicles, P_R *0*%

Access points/ *mi* *8*

Analysis direction vol., V_d *638*veh/h

Opposing direction vol., V_o *499*veh/h

Average Travel Speed

	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E_T (Exhibit 20-9 or 20-15)	*1.1*	*1.2*
Passenger-car equivalents for RVs, E_R (Exhibit 20-9 or 20-17)	*1.0*	*1.0*
Heavy-vehicle adjustment factor, f_{HV}=1/ (1+ $P_T(E_T$-1)+$P_R(E_R$-1))	*0.995*	*0.990*
Grade adjustment factor [1], f_G (Exhibit 20-7 or 20-13)	*1.00*	*1.00*
Directional flow rate[2], v_i(pc/h) $v_i=V_i/(PHF*f_{HV}*f_G)$	*712*	*560*

Free-Flow Speed from Field Measurement		Estimated Free-Flow Speed	
Field measured speed[3], S_{FM}	mi/h	Base free-flow speed[3], $BFFS_{FM}$	*55.0* mi/h
Observed volume[3], V_f	veh/h	Adj. for lane width and shoulder width,[3] f_{LS}(Exh 20-5)	*0.0* mi/h
Free-flow speed, FFS_d $FFS=S_{FM}+0.00776(V_f/f_{HV})$	mi/h	Adj. for access points[3], f_A (Exhibit 20-5)	*2.0* mi/h
Adjustment for no-passing zones, f_{np} (Exhibit 20-19)	*0.9* mi/h	Free-flow speed, FFS_d ($FSS=BFFS-f_{LS}-f_A$)	*53.0* mi/h
		Average travel speed, $ATS=FFS-0.00776v_p-f_{np}$	*42.3* mi/h

Percent Time-Spent-Following

	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E_T(Exhibit 20-10 or 20-16)	*1.0*	*1.1*
Passenger-car equivalents for RVs, E_R (Exhibit 20-10 or 20-16)	*1.0*	*1.0*
Heavy-vehicle adjustment factor, f_{HV}=1/ (1+ $P_T(E_T$-1)+$P_R(E_R$-1))	*1.000*	*0.995*
Grade adjustment factor[1], f_G (Exhibit 20-8 or 20-14)	*1.00*	*1.00*
Directional flow rate[2], $v_i(pc/h)=V_i/(PHF*f_{HV}*f_G)$	*709*	*557*
Base percent time-spent-following[4], BPTSF(%)=100(1-$e^{av_d^b}$)	*63.1*	
Adj. for no-passing zone, f_{np} (Exhibit. 20-20)	*21.8*	
Percent time-spent-following, PTSF(%)=BPTSF+f_{np}	*75.3*	

Level of Service and Other Performance Measures

Level of service, LOS (Exhibit 20-3 or 20-4)	*D*
Volume to capacity ratio, $v/c=V_p/$ 1,700	*0.42*
Peak 15-min veh-miles of travel, VMT_{15} (veh- *mi*)=0.25L_t(V/PHF)	*177*
Peak-hour vehicle-miles of travel, VMT_{60}(veh- *mi*)=V*L_t	*638*
Peak 15-min total travel time, TT_{15}(veh-h)=VMT_{15}/ATS	*4.2*

Notes

1. If the highway is extended segment (level) or rolling terrain, fG=1.0 .
2. If $v_i(v_d$ or v_o) >=1,700 pc/h, terminate analysis--the LOS is F.
3. For the analysis direction only.
4. Exhibit 20-21 provides factors a and b.
5. Use alternative Equation 20-14 if some trucks operate at crawl speeds on a specific downgrade.

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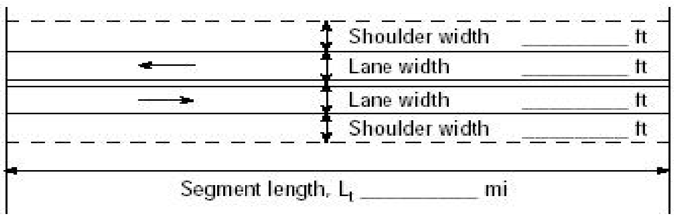
DIRECTIONAL TWO-LANE HIGHWAY SEGMENT WORKSHEET

General Information		Site Information	
Analyst	*AJP*	Highway / Direction of Travel	*Pride Dr*
Agency or Company	*Neel-Schaffer, Inc.*	From/To	*North of US 190*
Date Performed	*7/8/2011*	Jurisdiction	*Tangipahoa Parish*
Analysis Time Period	*AM Peak*	Analysis Year	*2035 Alternate B, 4 lane Vols.*

Project Description: *N-S Prj# 8437*

Input Data



Analysis direction vol., V_d *649*veh/h

Opposing direction vol., V_o *539*veh/h

Class I highway (checked) Class II highway

Terrain Level (checked) Rolling

Grade Length mi Up/down

Peak-hour factor, PHF *0.94*

No-passing zone *20%*

% Trucks and Buses , P_T *5 %*

% Recreational vehicles, P_R *0%*

Access points/ *mi* *8*

Average Travel Speed

	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E_T (Exhibit 20-9 or 20-15)	*1.1*	*1.2*
Passenger-car equivalents for RVs, E_R (Exhibit 20-9 or 20-17)	*1.0*	*1.0*
Heavy-vehicle adjustment factor, f_{HV}=1/ (1+ $P_T(E_T-1)+P_R(E_R-1)$)	*0.995*	*0.990*
Grade adjustment factor [1], f_G (Exhibit 20-7 or 20-13)	*1.00*	*1.00*
Directional flow rate[2], v_i(pc/h) $v_i=V_i/(PHF*f_{HV}*f_G)$	*694*	*579*

Free-Flow Speed from Field Measurement		Estimated Free-Flow Speed	
Field measured speed[3], S_{FM}	*mi/h*	Base free-flow speed[3], $BFFS_{FM}$	*55.0* *mi/h*
Observed volume[3], V_f	veh/h	Adj. for lane width and shoulder width,[3] f_{LS}(Exh 20-5)	*0.0* *mi/h*
Free-flow speed, FFS_d $FFS=S_{FM}+0.00776(V_f/f_{HV})$	*mi/h*	Adj. for access points[3], f_A (Exhibit 20-5)	*2.0* *mi/h*
Adjustment for no-passing zones, f_{np} (Exhibit 20-19)	*0.8* *mi/h*	Free-flow speed, FFS_d $(FSS=BFFS-f_{LS}-f_A)$	*53.0* *mi/h*
		Average travel speed, $ATS=FFS-0.00776v_p-f_{np}$	*42.3* *mi/h*

Percent Time-Spent-Following

	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E_T(Exhibit 20-10 or 20-16)	*1.0*	*1.1*
Passenger-car equivalents for RVs, E_R (Exhibit 20-10 or 20-16)	*1.0*	*1.0*
Heavy-vehicle adjustment factor, f_{HV}=1/ (1+ $P_T(E_T-1)+P_R(E_R-1)$)	*1.000*	*0.995*
Grade adjustment factor[1], f_G (Exhibit 20-8 or 20-14)	*1.00*	*1.00*
Directional flow rate[2], v_i(pc/h)=$V_i/(PHF*f_{HV}*f_G)$	*690*	*576*
Base percent time-spent-following[4], BPTSF(%)=100($1-e^{av_d^b}$)	*62.2*	
Adj. for no-passing zone, f_{np} (Exhibit. 20-20)	*22.2*	
Percent time-spent-following, PTSF(%)=BPTSF+f_{np}	*74.4*	

Level of Service and Other Performance Measures

Level of service, LOS (Exhibit 20-3 or 20-4)	*D*
Volume to capacity ratio, v/c=V_p/ 1,700	*0.41*
Peak 15-min veh-miles of travel, VMT_{15} (veh- *mi*)=0.25L_t(V/PHF)	*173*
Peak-hour vehicle-miles of travel, VMT_{60}(veh- *mi*)=V*L_t	*649*
Peak 15-min total travel time, TT_{15}(veh-h)=VMT_{15}/ATS	*4.1*

Notes

1. If the highway is extended segment (level) or rolling terrain, fG=1.0 .
2. If v_i(v_d or v_o) >=1,700 pc/h, terminate analysis--the LOS is F.
3. For the analysis direction only.
4. Exhibit 20-21 provides factors a and b.
5. Use alternative Equation 20-14 if some trucks operate at crawl speeds on a specific downgrade.

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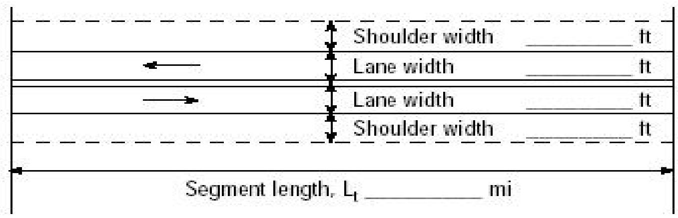
DIRECTIONAL TWO-LANE HIGHWAY SEGMENT WORKSHEET

General Information		Site Information	
Analyst	*AJP*	Highway / Direction of Travel	*Pride Dr*
Agency or Company	*Neel-Schaffer, Inc.*	From/To	*North of US 190*
Date Performed	*7/8/2011*	Jurisdiction	*Tangipahoa Parish*
Analysis Time Period	*PM Peak*	Analysis Year	*2035 Alternate B, 4 lane Vols.*

Project Description: *N-S Prj# 8437*

Input Data



☑ Class I highway ☐ Class II highway

Terrain ☑ Level ☐ Rolling

Grade Length mi Up/down

Peak-hour factor, PHF *0.90*

No-passing zone *20%*

% Trucks and Buses , P_T *5 %*

% Recreational vehicles, P_R *0%*

Access points/ *mi* *8*

Analysis direction vol., V_d *567*veh/h

Opposing direction vol., V_o *524*veh/h

Average Travel Speed

	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E_T (Exhibit 20-9 or 20-15)	*1.1*	*1.2*
Passenger-car equivalents for RVs, E_R (Exhibit 20-9 or 20-17)	*1.0*	*1.0*
Heavy-vehicle adjustment factor, f_{HV}=1/ (1+ P_T(E_T-1)+P_R(E_R-1))	*0.995*	*0.990*
Grade adjustment factor [1], f_G (Exhibit 20-7 or 20-13)	*1.00*	*1.00*
Directional flow rate[2], v_i(pc/h) $v_i=V_i/(PHF*f_{HV}*f_G)$	*633*	*588*

Free-Flow Speed from Field Measurement		Estimated Free-Flow Speed	
Field measured speed[3], S_{FM}	mi/h	Base free-flow speed[3], $BFFS_{FM}$	*55.0* mi/h
Observed volume[3], V_f	veh/h	Adj. for lane width and shoulder width,[3] f_{LS}(Exh 20-5)	*0.0* mi/h
Free-flow speed, FFS_d $FFS=S_{FM}+0.00776(V_f/f_{HV})$	mi/h	Adj. for access points[3], f_A (Exhibit 20-5)	*2.0* mi/h
Adjustment for no-passing zones, f_{np} (Exhibit 20-19)	*0.8* mi/h	Free-flow speed, FFS_d ($FSS=BFFS-f_{LS}-f_A$)	*53.0* mi/h
		Average travel speed, $ATS=FFS-0.00776v_p-f_{np}$	*42.7* mi/h

Percent Time-Spent-Following

	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E_T(Exhibit 20-10 or 20-16)	*1.0*	*1.1*
Passenger-car equivalents for RVs, E_R (Exhibit 20-10 or 20-16)	*1.0*	*1.0*
Heavy-vehicle adjustment factor, f_{HV}=1/ (1+ P_T(E_T-1)+P_R(E_R-1))	*1.000*	*0.995*
Grade adjustment factor[1], f_G (Exhibit 20-8 or 20-14)	*1.00*	*1.00*
Directional flow rate[2], v_i(pc/h)=$V_i/(PHF*f_{HV}*f_G)$	*630*	*585*
Base percent time-spent-following[4], BPTSF(%)=100($1-e^{av_d^b}$)	*59.3*	
Adj. for no-passing zone, f_{np} (Exhibit. 20-20)	*24.0*	
Percent time-spent-following, PTSF(%)=BPTSF+f_{np}	*71.8*	

Level of Service and Other Performance Measures

Level of service, LOS (Exhibit 20-3 or 20-4)	*D*
Volume to capacity ratio, v/c=V_p/ 1,700	*0.37*
Peak 15-min veh-miles of travel, VMT_{15} (veh- *mi*)=0.25L_t(V/PHF)	*158*
Peak-hour vehicle-miles of travel, VMT_{60}(veh- *mi*)=V*L_t	*567*
Peak 15-min total travel time, TT_{15}(veh-h)=VMT_{15}/ATS	*3.7*

Notes

1. If the highway is extended segment (level) or rolling terrain, fG=1.0 .
2. If v_i(v_d or v_o) >=1,700 pc/h, terminate analysis--the LOS is F.
3. For the analysis direction only.
4. Exhibit 20-21 provides factors a and b.
5. Use alternative Equation 20-14 if some trucks operate at crawl speeds on a specific downgrade.

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US 190

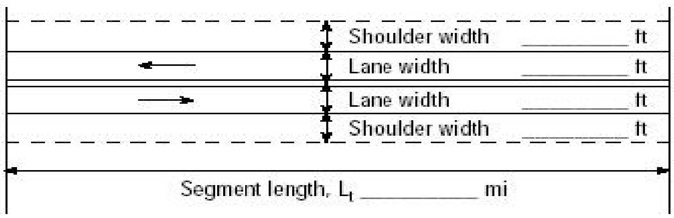
West of LA 3234

DIRECTIONAL TWO-LANE HIGHWAY SEGMENT WORKSHEET

General Information		***Site Information***	
Analyst	*AJP*	Highway / Direction of Travel	*US 190*
Agency or Company	*Neel-Schaffer, Inc.*	From/To	*West of LA 3234*
Date Performed	*7/8/2011*	Jurisdiction	*Tangipahoa Parish*
Analysis Time Period	*AM Peak*	Analysis Year	*2015 Alternate C*

Project Description: *N-S Prj# 8437*

Input Data



☑ Class I highway ☐ Class II highway

Terrain ☑ Level ☐ Rolling

Grade Length mi Up/down

Peak-hour factor, PHF *0.90*

No-passing zone *20*%

% Trucks and Buses , P_T *7* %

% Recreational vehicles, P_R *0*%

Access points/ *mi* *8*

Analysis direction vol., V_d *513*veh/h

Opposing direction vol., V_o *421*veh/h

Average Travel Speed

	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E_T (Exhibit 20-9 or 20-15)	*1.2*	*1.2*
Passenger-car equivalents for RVs, E_R (Exhibit 20-9 or 20-17)	*1.0*	*1.0*
Heavy-vehicle adjustment factor, f_{HV}=1/ (1+ $P_T(E_T$-1)+$P_R(E_R$-1))	*0.986*	*0.986*
Grade adjustment factor [1], f_G (Exhibit 20-7 or 20-13)	*1.00*	*1.00*
Directional flow rate[2], v_i(pc/h) $v_i=V_i/(PHF*f_{HV}*f_G)$	*578*	*474*

Free-Flow Speed from Field Measurement		Estimated Free-Flow Speed	
Field measured speed[3], S_{FM}	*mi/h*	Base free-flow speed[3], $BFFS_{FM}$	*60.0 mi/h*
Observed volume[3], V_f	veh/h	Adj. for lane width and shoulder width,[3] f_{LS}(Exh 20-5)	*0.0 mi/h*
Free-flow speed, FFS_d $FFS=S_{FM}+0.00776(V_f/f_{HV})$	*mi/h*	Adj. for access points[3], f_A (Exhibit 20-5)	*2.0 mi/h*
Adjustment for no-passing zones, f_{np} (Exhibit 20-19)	*1.2 mi/h*	Free-flow speed, FFS_d ($FSS=BFFS-f_{LS}-f_A$)	*58.0 mi/h*
		Average travel speed, $ATS=FFS-0.00776v_p-f_{np}$	*48.6 mi/h*

Percent Time-Spent-Following

	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E_T(Exhibit 20-10 or 20-16)	*1.1*	*1.1*
Passenger-car equivalents for RVs, E_R (Exhibit 20-10 or 20-16)	*1.0*	*1.0*
Heavy-vehicle adjustment factor, f_{HV}=1/ (1+ $P_T(E_T$-1)+$P_R(E_R$-1))	*0.993*	*0.993*
Grade adjustment factor[1], f_G (Exhibit 20-8 or 20-14)	*1.00*	*1.00*
Directional flow rate[2], v_i(pc/h)=$V_i/(PHF*f_{HV}*f_G)$	*574*	*471*
Base percent time-spent-following[4], BPTSF(%)=100(1-$e^{av_d^b}$)	*55.5*	
Adj. for no-passing zone, f_{np} (Exhibit. 20-20)	*26.7*	
Percent time-spent-following, PTSF(%)=BPTSF+f_{np}	*70.1*	

Level of Service and Other Performance Measures

Level of service, LOS (Exhibit 20-3 or 20-4)	*D*
Volume to capacity ratio, v/c=V_p/ 1,700	*0.34*
Peak 15-min veh-miles of travel, VMT_{15} (veh- *mi*)=0.25L_t(V/PHF)	*143*
Peak-hour vehicle-miles of travel, VMT_{60}(veh- *mi*)=V*L_t	*513*
Peak 15-min total travel time, TT_{15}(veh-h)=VMT_{15}/ATS	*2.9*

Notes

1. If the highway is extended segment (level) or rolling terrain, fG=1.0 .
2. If v_i(v_d or v_o) >=1,700 pc/h, terminate analysis--the LOS is F.
3. For the analysis direction only.
4. Exhibit 20-21 provides factors a and b.
5. Use alternative Equation 20-14 if some trucks operate at crawl speeds on a specific downgrade.

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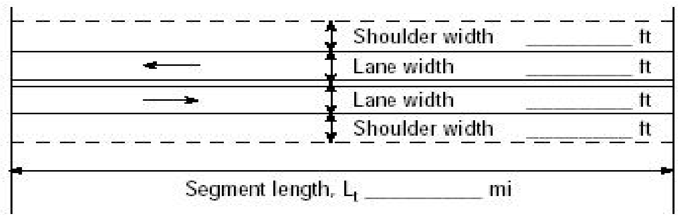
DIRECTIONAL TWO-LANE HIGHWAY SEGMENT WORKSHEET

General Information		Site Information	
Analyst	*AJP*	Highway / Direction of Travel	*US 190*
Agency or Company	*Neel-Schaffer, Inc.*	From/To	*West of LA 3234*
Date Performed	*7/8/2011*	Jurisdiction	*Tangipahoa Parish*
Analysis Time Period	*PM Peak*	Analysis Year	*2015 Alternate C*

Project Description: *N-S Prj# 8437*

Input Data



Class I highway (checked)   Class II highway

Terrain: Level (checked)   Rolling

Grade Length	mi	Up/down
Peak-hour factor, PHF		*0.90*
No-passing zone		*20*%
% Trucks and Buses , P_T		*7* %
% Recreational vehicles, P_R		*0*%
Access points/ *mi*		*8*

Analysis direction vol., V_d *473*veh/h

Opposing direction vol., V_o *430*veh/h

Average Travel Speed

	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E_T (Exhibit 20-9 or 20-15)	*1.2*	*1.2*
Passenger-car equivalents for RVs, E_R (Exhibit 20-9 or 20-17)	*1.0*	*1.0*
Heavy-vehicle adjustment factor, f_{HV}=1/ (1+ $P_T(E_T$-1)+$P_R(E_R$-1))	*0.986*	*0.986*
Grade adjustment factor [1], f_G (Exhibit 20-7 or 20-13)	*1.00*	*1.00*
Directional flow rate[2], v_i(pc/h) $v_i=V_i/(PHF*f_{HV}*f_G)$	*533*	*484*

Free-Flow Speed from Field Measurement		Estimated Free-Flow Speed	
Field measured speed[3], S_{FM}	*mi/h*	Base free-flow speed[3], $BFFS_{FM}$	*60.0 mi/h*
Observed volume[3], V_f	veh/h	Adj. for lane width and shoulder width,[3] f_{LS}(Exh 20-5)	*0.0 mi/h*
Free-flow speed, FFS_d FFS=S_{FM}+0.00776(V_f/ f_{HV})	*mi/h*	Adj. for access points[3], f_A (Exhibit 20-5)	*2.0 mi/h*
Adjustment for no-passing zones, f_{np} (Exhibit 20-19)	*1.2 mi/h*	Free-flow speed, FFS_d (FSS=BFFS-f_{LS}-f_A)	*58.0 mi/h*
		Average travel speed, ATS=FFS-0.00776v_p-f_{np}	*48.9 mi/h*

Percent Time-Spent-Following

	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E_T(Exhibit 20-10 or 20-16)	*1.1*	*1.1*
Passenger-car equivalents for RVs, E_R (Exhibit 20-10 or 20-16)	*1.0*	*1.0*
Heavy-vehicle adjustment factor, f_{HV}=1/ (1+ $P_T(E_T$-1)+$P_R(E_R$-1))	*0.993*	*0.993*
Grade adjustment factor[1], f_G (Exhibit 20-8 or 20-14)	*1.00*	*1.00*
Directional flow rate[2], v_i(pc/h)=$V_i/(PHF*f_{HV}*f_G)$	*529*	*481*
Base percent time-spent-following[4], BPTSF(%)=100(1-$e^{av_d^b}$)	*53.0*	
Adj. for no-passing zone, f_{np} (Exhibit. 20-20)	*28.2*	
Percent time-spent-following, PTSF(%)=BPTSF+f_{np}	*67.7*	

Level of Service and Other Performance Measures

Level of service, LOS (Exhibit 20-3 or 20-4)	*D*
Volume to capacity ratio, v/c=V_p/ 1,700	*0.31*
Peak 15-min veh-miles of travel, VMT_{15} (veh- *mi*)=0.25L_t(V/PHF)	*131*
Peak-hour vehicle-miles of travel, VMT_{60}(veh- *mi*)=V*L_t	*473*
Peak 15-min total travel time, TT_{15}(veh-h)=VMT_{15}/ATS	*2.7*

Notes

1. If the highway is extended segment (level) or rolling terrain, fG=1.0 .
2. If v_i(v_d or v_o) >=1,700 pc/h, terminate analysis--the LOS is F.
3. For the analysis direction only.
4. Exhibit 20-21 provides factors a and b.
5. Use alternative Equation 20-14 if some trucks operate at crawl speeds on a specific downgrade.

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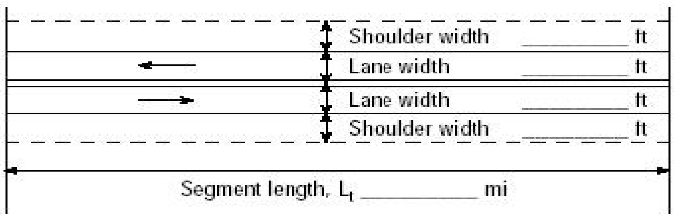
DIRECTIONAL TWO-LANE HIGHWAY SEGMENT WORKSHEET

General Information		**Site Information**	
Analyst	*AJP*	Highway / Direction of Travel	*US 190*
Agency or Company	*Neel-Schaffer, Inc.*	From/To	*West of LA 3234*
Date Performed	*7/8/2011*	Jurisdiction	*Tangipahoa Parish*
Analysis Time Period	*AM Peak*	Analysis Year	*2035 Alternate C*

Project Description: *N-S Prj# 8437*

Input Data



Class I highway ☑ Class II highway ☐

Terrain Level ☑ Rolling ☐

Grade Length mi Up/down

Peak-hour factor, PHF *0.90*

No-passing zone *20*%

% Trucks and Buses , P_T *7* %

% Recreational vehicles, P_R *0*%

Access points/ *mi* *8*

Analysis direction vol., V_d *632*veh/h

Opposing direction vol., V_o *507*veh/h

Average Travel Speed

	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E_T (Exhibit 20-9 or 20-15)	*1.1*	*1.2*
Passenger-car equivalents for RVs, E_R (Exhibit 20-9 or 20-17)	*1.0*	*1.0*
Heavy-vehicle adjustment factor, f_{HV}=1/ (1+ P_T(E_T-1)+P_R(E_R-1))	*0.993*	*0.986*
Grade adjustment factor [1], f_G (Exhibit 20-7 or 20-13)	*1.00*	*1.00*
Directional flow rate[2], v_i(pc/h) v_i=V_i/(PHF*f_{HV}* f_G)	*707*	*571*

Free-Flow Speed from Field Measurement		Estimated Free-Flow Speed	
Field measured speed[3], S_{FM}	mi/h	Base free-flow speed[3], $BFFS_{FM}$	*60.0* mi/h
Observed volume[3], V_f	veh/h	Adj. for lane width and shoulder width,[3] f_{LS}(Exh 20-5)	*0.0* mi/h
Free-flow speed, FFS_d FFS=S_{FM}+0.00776(V_f/ f_{HV})	mi/h	Adj. for access points[3], f_A (Exhibit 20-5)	*2.0* mi/h
Adjustment for no-passing zones, f_{np} (Exhibit 20-19)	*1.1* mi/h	Free-flow speed, FFS_d (FSS=BFFS-f_{LS}-f_A)	*58.0* mi/h
		Average travel speed, ATS=FFS-0.00776v_p-f_{np}	*47.0* mi/h

Percent Time-Spent-Following

	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E_T(Exhibit 20-10 or 20-16)	*1.0*	*1.1*
Passenger-car equivalents for RVs, E_R (Exhibit 20-10 or 20-16)	*1.0*	*1.0*
Heavy-vehicle adjustment factor, f_{HV}=1/ (1+ P_T(E_T-1)+P_R(E_R-1))	*1.000*	*0.993*
Grade adjustment factor[1], f_G (Exhibit 20-8 or 20-14)	*1.00*	*1.00*
Directional flow rate[2], v_i(pc/h)=V_i/(PHF*f_{HV}* f_G)	*702*	*567*
Base percent time-spent-following[4], BPTSF(%)=100(1-$e^{av_d^b}$)	*62.8*	
Adj. for no-passing zone, f_{np} (Exhibit. 20-20)	*22.0*	
Percent time-spent-following, PTSF(%)=BPTSF+f_{np}	*75.0*	

Level of Service and Other Performance Measures

Level of service, LOS (Exhibit 20-3 or 20-4)	*D*
Volume to capacity ratio, v/c=V_p/ 1,700	*0.42*
Peak 15-min veh-miles of travel, VMT_{15} (veh- *mi*)=0.25L_t(V/PHF)	*176*
Peak-hour vehicle-miles of travel, VMT_{60}(veh- *mi*)=V*L_t	*632*
Peak 15-min total travel time, TT_{15}(veh-h)=VMT_{15}/ATS	*3.7*

Notes

1. If the highway is extended segment (level) or rolling terrain, fG=1.0 .
2. If v_i(v_d or v_o) >=1,700 pc/h, terminate analysis--the LOS is F.
3. For the analysis direction only.
4. Exhibit 20-21 provides factors a and b.
5. Use alternative Equation 20-14 if some trucks operate at crawl speeds on a specific downgrade.

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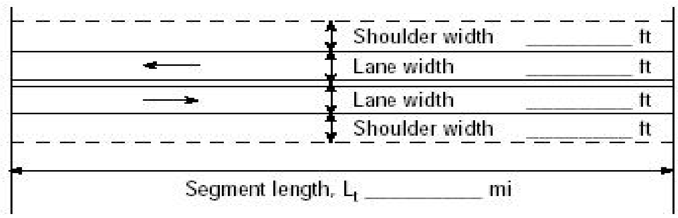
DIRECTIONAL TWO-LANE HIGHWAY SEGMENT WORKSHEET

General Information		***Site Information***	
Analyst	*AJP*	Highway / Direction of Travel	*US 190*
Agency or Company	*Neel-Schaffer, Inc.*	From/To	*West of LA 3234*
Date Performed	*7/8/2011*	Jurisdiction	*Tangipahoa Parish*
Analysis Time Period	*PM Peak*	Analysis Year	*2035 Alternate C*

Project Description: *N-S Prj# 8437*

Input Data



Analysis direction vol., V_d *556*veh/h

Opposing direction vol., V_o *506*veh/h

☑ Class I highway ☐ Class II highway

Terrain ☑ Level ☐ Rolling

Grade Length mi Up/down

Peak-hour factor, PHF *0.90*

No-passing zone *20*%

% Trucks and Buses , P_T *7* %

% Recreational vehicles, P_R *0*%

Access points/ *mi* *8*

Average Travel Speed

	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E_T (Exhibit 20-9 or 20-15)	*1.1*	*1.2*
Passenger-car equivalents for RVs, E_R (Exhibit 20-9 or 20-17)	*1.0*	*1.0*
Heavy-vehicle adjustment factor, f_{HV}=1/ (1+ $P_T(E_T$-1)+$P_R(E_R$-1))	*0.993*	*0.986*
Grade adjustment factor [1], f_G (Exhibit 20-7 or 20-13)	*1.00*	*1.00*
Directional flow rate[2], v_i(pc/h) $v_i=V_i/(PHF*f_{HV}*f_G)$	*622*	*570*

Free-Flow Speed from Field Measurement		Estimated Free-Flow Speed	
Field measured speed[3], S_{FM}	mi/h	Base free-flow speed[3], $BFFS_{FM}$	*60.0* mi/h
Observed volume[3], V_f	veh/h	Adj. for lane width and shoulder width,[3] f_{LS}(Exh 20-5)	*0.0* mi/h
Free-flow speed, FFS_d $FFS=S_{FM}+0.00776(V_f/f_{HV})$	mi/h	Adj. for access points[3], f_A (Exhibit 20-5)	*2.0* mi/h
Adjustment for no-passing zones, f_{np} (Exhibit 20-19)	*1.1* mi/h	Free-flow speed, FFS_d (FSS=BFFS-f_{LS}-f_A)	*58.0* mi/h
		Average travel speed, ATS=FFS-0.00776v_p-f_{np}	*47.7* mi/h

Percent Time-Spent-Following

	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E_T(Exhibit 20-10 or 20-16)	*1.0*	*1.1*
Passenger-car equivalents for RVs, E_R (Exhibit 20-10 or 20-16)	*1.0*	*1.0*
Heavy-vehicle adjustment factor, f_{HV}=1/ (1+ $P_T(E_T$-1)+$P_R(E_R$-1))	*1.000*	*0.993*
Grade adjustment factor[1], f_G (Exhibit 20-8 or 20-14)	*1.00*	*1.00*
Directional flow rate[2], v_i(pc/h)=$V_i/(PHF*f_{HV}*f_G)$	*618*	*566*
Base percent time-spent-following[4], BPTSF(%)=100(1-$e^{av_d^b}$)	*58.7*	
Adj. for no-passing zone, f_{np} (Exhibit. 20-20)	*24.4*	
Percent time-spent-following, PTSF(%)=BPTSF+f_{np}	*71.4*	

Level of Service and Other Performance Measures

Level of service, LOS (Exhibit 20-3 or 20-4)	*D*
Volume to capacity ratio, v/c=V_p/ 1,700	*0.37*
Peak 15-min veh-miles of travel, VMT_{15} (veh- *mi*)=0.25L_t(V/PHF)	*154*
Peak-hour vehicle-miles of travel, VMT_{60}(veh- *mi*)=V*L_t	*556*
Peak 15-min total travel time, TT_{15}(veh-h)=VMT_{15}/ATS	*3.2*

Notes

1. If the highway is extended segment (level) or rolling terrain, fG=1.0 .
2. If $v_i(v_d$ or $v_o)$ >=1,700 pc/h, terminate analysis--the LOS is F.
3. For the analysis direction only.
4. Exhibit 20-21 provides factors a and b.
5. Use alternative Equation 20-14 if some trucks operate at crawl speeds on a specific downgrade.

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US 190

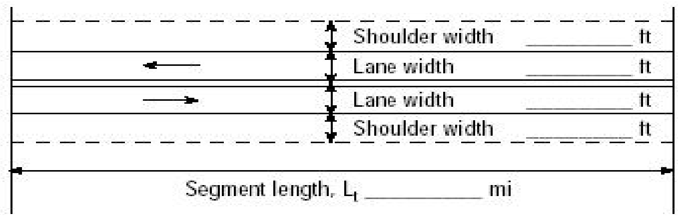
West of Pride Drive

DIRECTIONAL TWO-LANE HIGHWAY SEGMENT WORKSHEET

General Information		***Site Information***	
Analyst	*AJP*	Highway / Direction of Travel	*US 190*
Agency or Company	*Neel-Schaffer, Inc.*	From/To	*West of Pride*
Date Performed	*7/8/2011*	Jurisdiction	*Tangipahoa Parish*
Analysis Time Period	*AM Peak Existing*	Analysis Year	*2011*

Project Description: *N-S Prj# 8437*

Input Data



Analysis direction vol., V_d *696*veh/h

Opposing direction vol., V_o *621*veh/h

☑ Class I highway ☐ Class II highway

Terrain ☑ Level ☐ Rolling

Grade Length mi Up/down

Peak-hour factor, PHF *0.90*

No-passing zone *20*%

% Trucks and Buses , P_T *7* %

% Recreational vehicles, P_R *0*%

Access points/ *mi* *8*

Average Travel Speed

	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E_T (Exhibit 20-9 or 20-15)	*1.1*	*1.1*
Passenger-car equivalents for RVs, E_R (Exhibit 20-9 or 20-17)	*1.0*	*1.0*
Heavy-vehicle adjustment factor, f_{HV}=1/ (1+ P_T(E_T-1)+P_R(E_R-1))	*0.993*	*0.993*
Grade adjustment factor [1], f_G (Exhibit 20-7 or 20-13)	*1.00*	*1.00*
Directional flow rate[2], v_i(pc/h) v_i=V_i/(PHF*f_{HV}* f_G)	*779*	*695*

Free-Flow Speed from Field Measurement		Estimated Free-Flow Speed	
Field measured speed[3], S_{FM}	mi/h	Base free-flow speed[3], $BFFS_{FM}$	*60.0* mi/h
Observed volume[3], V_f	veh/h	Adj. for lane width and shoulder width,[3] f_{LS}(Exh 20-5)	*0.0* mi/h
Free-flow speed, FFS_d FFS=S_{FM}+0.00776(V_f/ f_{HV})	mi/h	Adj. for access points[3], f_A (Exhibit 20-5)	*2.0* mi/h
Adjustment for no-passing zones, f_{np} (Exhibit 20-19)	*0.8* mi/h	Free-flow speed, FFS_d (FSS=BFFS-f_{LS}-f_A)	*58.0* mi/h
		Average travel speed, ATS=FFS-0.00776v_p-f_{np}	*45.8* mi/h

Percent Time-Spent-Following

	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E_T(Exhibit 20-10 or 20-16)	*1.0*	*1.0*
Passenger-car equivalents for RVs, E_R (Exhibit 20-10 or 20-16)	*1.0*	*1.0*
Heavy-vehicle adjustment factor, f_{HV}=1/ (1+ P_T(E_T-1)+P_R(E_R-1))	*1.000*	*1.000*
Grade adjustment factor[1], f_G (Exhibit 20-8 or 20-14)	*1.00*	*1.00*
Directional flow rate[2], v_i(pc/h)=V_i/(PHF*f_{HV}* f_G)	*773*	*690*
Base percent time-spent-following[4], BPTSF(%)=100(1-$e^{av_d^b}$)	*67.4*	
Adj. for no-passing zone, f_{np} (Exhibit. 20-20)	*19.1*	
Percent time-spent-following, PTSF(%)=BPTSF+f_{np}	*77.5*	

Level of Service and Other Performance Measures

Level of service, LOS (Exhibit 20-3 or 20-4)	*D*
Volume to capacity ratio, v/c=V_p/ 1,700	*0.46*
Peak 15-min veh-miles of travel, VMT_{15} (veh- *mi*)=0.25L_t(V/PHF)	*193*
Peak-hour vehicle-miles of travel, VMT_{60}(veh- *mi*)=V*L_t	*696*
Peak 15-min total travel time, TT_{15}(veh-h)=VMT_{15}/ATS	*4.2*

Notes

1. If the highway is extended segment (level) or rolling terrain, fG=1.0 .
2. If v_i(v_d or v_o) >=1,700 pc/h, terminate analysis--the LOS is F.
3. For the analysis direction only.
4. Exhibit 20-21 provides factors a and b.
5. Use alternative Equation 20-14 if some trucks operate at crawl speeds on a specific downgrade.

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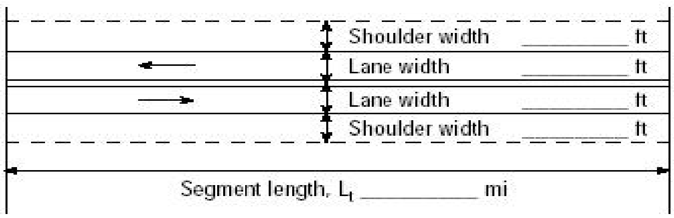
DIRECTIONAL TWO-LANE HIGHWAY SEGMENT WORKSHEET

General Information		Site Information	
Analyst	*AJP*	Highway / Direction of Travel	*US 190*
Agency or Company	*Neel-Schaffer, Inc.*	From/To	*West of Pride*
Date Performed	*7/8/2011*	Jurisdiction	*Tangipahoa Parish*
Analysis Time Period	*PM Peak Existing*	Analysis Year	*2011*

Project Description: *N-S Prj# 8437*

Input Data



Analysis direction vol., V_d *662*veh/h

Opposing direction vol., V_o *493*veh/h

☑ Class I highway ☐ Class II highway

Terrain ☑ Level ☐ Rolling

Grade Length mi Up/down

Peak-hour factor, PHF *0.90*

No-passing zone *20%*

% Trucks and Buses , P_T *7 %*

% Recreational vehicles, P_R *0%*

Access points/ *mi* *8*

Average Travel Speed

	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E_T (Exhibit 20-9 or 20-15)	*1.1*	*1.2*
Passenger-car equivalents for RVs, E_R (Exhibit 20-9 or 20-17)	*1.0*	*1.0*
Heavy-vehicle adjustment factor, $f_{HV}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	*0.993*	*0.986*
Grade adjustment factor [1], f_G (Exhibit 20-7 or 20-13)	*1.00*	*1.00*
Directional flow rate[2], v_i(pc/h) $v_i=V_i/(PHF*f_{HV}*f_G)$	*741*	*555*

Free-Flow Speed from Field Measurement		Estimated Free-Flow Speed	
Field measured speed[3], S_{FM}	mi/h	Base free-flow speed[3], $BFFS_{FM}$	*60.0* mi/h
Observed volume[3], V_f	veh/h	Adj. for lane width and shoulder width,[3] f_{LS}(Exh 20-5)	*0.0* mi/h
Free-flow speed, FFS_d $FFS=S_{FM}+0.00776(V_f/f_{HV})$	mi/h	Adj. for access points[3], f_A (Exhibit 20-5)	*2.0* mi/h
Adjustment for no-passing zones, f_{np} (Exhibit 20-19)	*1.1* mi/h	Free-flow speed, FFS_d $(FSS=BFFS-f_{LS}-f_A)$	*58.0* mi/h
		Average travel speed, $ATS=FFS-0.00776v_p-f_{np}$	*46.8* mi/h

Percent Time-Spent-Following

	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E_T(Exhibit 20-10 or 20-16)	*1.0*	*1.1*
Passenger-car equivalents for RVs, E_R (Exhibit 20-10 or 20-16)	*1.0*	*1.0*
Heavy-vehicle adjustment factor, $f_{HV}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	*1.000*	*0.993*
Grade adjustment factor[1], f_G (Exhibit 20-8 or 20-14)	*1.00*	*1.00*
Directional flow rate[2], $v_i(pc/h)=V_i/(PHF*f_{HV}*f_G)$	*736*	*552*
Base percent time-spent-following[4], $BPTSF(\%)=100(1-e^{av_d^b})$	*64.3*	
Adj. for no-passing zone, f_{np} (Exhibit. 20-20)	*21.2*	
Percent time-spent-following, $PTSF(\%)=BPTSF+f_{np}$	*76.4*	

Level of Service and Other Performance Measures

Level of service, LOS (Exhibit 20-3 or 20-4)	*D*
Volume to capacity ratio, $v/c=V_p/1,700$	*0.44*
Peak 15-min veh-miles of travel, VMT_{15} (veh- *mi*)$=0.25L_t(V/PHF)$	*184*
Peak-hour vehicle-miles of travel, VMT_{60}(veh- *mi*)$=V*L_t$	*662*
Peak 15-min total travel time, TT_{15}(veh-h)$=VMT_{15}/ATS$	*3.9*

Notes

1. If the highway is extended segment (level) or rolling terrain, fG=1.0 .
2. If $v_i(v_d$ or $v_o)$ >=1,700 pc/h, terminate analysis--the LOS is F.
3. For the analysis direction only.
4. Exhibit 20-21 provides factors a and b.
5. Use alternative Equation 20-14 if some trucks operate at crawl speeds on a specific downgrade.

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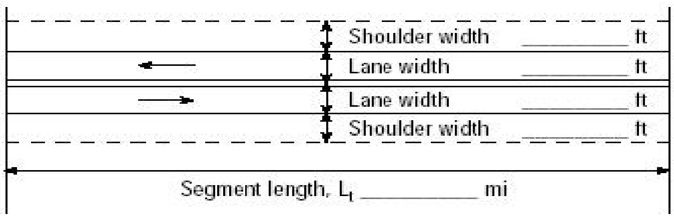
DIRECTIONAL TWO-LANE HIGHWAY SEGMENT WORKSHEET

General Information		Site Information	
Analyst	*AJP*	Highway / Direction of Travel	*US 190*
Agency or Company	*Neel-Schaffer, Inc.*	From/To	*West of Pride*
Date Performed	*7/8/2011*	Jurisdiction	*Tangipahoa Parish*
Analysis Time Period	*AM Peak*	Analysis Year	*2015 NO-BUILD*

Project Description: *N-S Prj# 8437*

Input Data



Analysis direction vol., V_d *746*veh/h

Opposing direction vol., V_o *665*veh/h

☑ Class I highway ☐ Class II highway

Terrain ☑ Level ☐ Rolling

Grade Length mi Up/down

Peak-hour factor, PHF *0.90*

No-passing zone *20*%

% Trucks and Buses , P_T *7* %

% Recreational vehicles, P_R *0*%

Access points/ *mi* *8*

Average Travel Speed

	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E_T (Exhibit 20-9 or 20-15)	*1.1*	*1.1*
Passenger-car equivalents for RVs, E_R (Exhibit 20-9 or 20-17)	*1.0*	*1.0*
Heavy-vehicle adjustment factor, $f_{HV}=1/ (1+ P_T(E_T-1)+P_R(E_R-1))$	*0.993*	*0.993*
Grade adjustment factor [1], f_G (Exhibit 20-7 or 20-13)	*1.00*	*1.00*
Directional flow rate[2], v_i(pc/h) $v_i=V_i/(PHF*f_{HV}* f_G)$	*835*	*744*

Free-Flow Speed from Field Measurement		Estimated Free-Flow Speed	
Field measured speed[3], S_{FM}	*mi/h*	Base free-flow speed[3], $BFFS_{FM}$	*60.0 mi/h*
Observed volume[3], V_f	veh/h	Adj. for lane width and shoulder width,[3] f_{LS}(Exh 20-5)	*0.0 mi/h*
Free-flow speed, FFS_d $FFS=S_{FM}+0.00776(V_f/ f_{HV})$	*mi/h*	Adj. for access points[3], f_A (Exhibit 20-5)	*2.0 mi/h*
Adjustment for no-passing zones, f_{np} (Exhibit 20-19)	*0.7 mi/h*	Free-flow speed, FFS_d $(FSS=BFFS-f_{LS}-f_A)$	*58.0 mi/h*
		Average travel speed, $ATS=FFS-0.00776v_p-f_{np}$	*45.1 mi/h*

Percent Time-Spent-Following

	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E_T(Exhibit 20-10 or 20-16)	*1.0*	*1.0*
Passenger-car equivalents for RVs, E_R (Exhibit 20-10 or 20-16)	*1.0*	*1.0*
Heavy-vehicle adjustment factor, $f_{HV}=1/ (1+ P_T(E_T-1)+P_R(E_R-1))$	*1.000*	*1.000*
Grade adjustment factor[1], f_G (Exhibit 20-8 or 20-14)	*1.00*	*1.00*
Directional flow rate[2], $v_i(pc/h)=V_i/(PHF*f_{HV}* f_G)$	*829*	*739*
Base percent time-spent-following[4], $BPTSF(\%)=100(1-e^{av_d^b})$	*70.0*	
Adj. for no-passing zone, f_{np} (Exhibit. 20-20)	*18.0*	
Percent time-spent-following, $PTSF(\%)=BPTSF+f_{np}$	*79.5*	

Level of Service and Other Performance Measures

Level of service, LOS (Exhibit 20-3 or 20-4)	*D*
Volume to capacity ratio, $v/c=V_p/ 1,700$	*0.49*
Peak 15-min veh-miles of travel, VMT_{15} (veh- *mi*)$=0.25L_t(V/PHF)$	*207*
Peak-hour vehicle-miles of travel, VMT_{60}(veh- *mi*)$=V*L_t$	*746*
Peak 15-min total travel time, TT_{15}(veh-h)$=VMT_{15}/ATS$	*4.6*

Notes

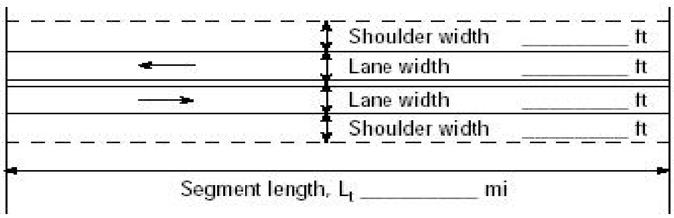
1. If the highway is extended segment (level) or rolling terrain, fG=1.0 .
2. If $v_i(v_d$ or $v_o)$ >=1,700 pc/h, terminate analysis--the LOS is F.
3. For the analysis direction only.
4. Exhibit 20-21 provides factors a and b.
5. Use alternative Equation 20-14 if some trucks operate at crawl speeds on a specific downgrade.

DIRECTIONAL TWO-LANE HIGHWAY SEGMENT WORKSHEET

General Information		Site Information	
Analyst	*AJP*	Highway / Direction of Travel	*US 190*
Agency or Company	*Neel-Schaffer, Inc.*	From/To	*West of Pride*
Date Performed	*7/8/2011*	Jurisdiction	*Tangipahoa Parish*
Analysis Time Period	*PM Peak*	Analysis Year	*2015 NO-BUILD*

Project Description: *N-S Prj# 8437*

Input Data



☑ Class I highway ☐ Class II highway

Terrain ☑ Level ☐ Rolling

Grade Length mi	Up/down
Peak-hour factor, PHF	*0.90*
No-passing zone	*20*%
% Trucks and Buses , P_T	*7* %
% Recreational vehicles, P_R	*0*%
Access points/ *mi*	*8*
Analysis direction vol., V_d	*709*veh/h
Opposing direction vol., V_o	*529*veh/h

Average Travel Speed

	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E_T (Exhibit 20-9 or 20-15)	*1.1*	*1.2*
Passenger-car equivalents for RVs, E_R (Exhibit 20-9 or 20-17)	*1.0*	*1.0*
Heavy-vehicle adjustment factor, f_{HV}=1/ (1+ $P_T(E_T$-1)+$P_R(E_R$-1))	*0.993*	*0.986*
Grade adjustment factor [1], f_G (Exhibit 20-7 or 20-13)	*1.00*	*1.00*
Directional flow rate[2], v_i(pc/h) $v_i=V_i/(PHF*f_{HV}*f_G)$	*793*	*596*

Free-Flow Speed from Field Measurement		Estimated Free-Flow Speed	
Field measured speed[3], S_{FM}	*mi/h*	Base free-flow speed[3], $BFFS_{FM}$	*60.0 mi/h*
Observed volume[3], V_f	veh/h	Adj. for lane width and shoulder width,[3] f_{LS}(Exh 20-5)	*0.0 mi/h*
Free-flow speed, FFS_d FFS=S_{FM}+0.00776(V_f/ f_{HV})	*mi/h*	Adj. for access points[3], f_A (Exhibit 20-5)	*2.0 mi/h*
Adjustment for no-passing zones, f_{np} (Exhibit 20-19)	*1.0 mi/h*	Free-flow speed, FFS_d (FSS=BFFS-f_{LS}-f_A)	*58.0 mi/h*
		Average travel speed, ATS=FFS-0.00776v_p-f_{np}	*46.2 mi/h*

Percent Time-Spent-Following

	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E_T(Exhibit 20-10 or 20-16)	*1.0*	*1.1*
Passenger-car equivalents for RVs, E_R (Exhibit 20-10 or 20-16)	*1.0*	*1.0*
Heavy-vehicle adjustment factor, f_{HV}=1/ (1+ $P_T(E_T$-1)+$P_R(E_R$-1))	*1.000*	*0.993*
Grade adjustment factor[1], f_G (Exhibit 20-8 or 20-14)	*1.00*	*1.00*
Directional flow rate[2], v_i(pc/h)=$V_i/(PHF*f_{HV}*f_G)$	*788*	*592*
Base percent time-spent-following[4], BPTSF(%)=100(1-$e^{av_d^b}$)	*66.5*	
Adj. for no-passing zone, f_{np} (Exhibit. 20-20)	*19.6*	
Percent time-spent-following, PTSF(%)=BPTSF+f_{np}	*77.7*	

Level of Service and Other Performance Measures

Level of service, LOS (Exhibit 20-3 or 20-4)	*D*
Volume to capacity ratio, v/c=V_p/ 1,700	*0.47*
Peak 15-min veh-miles of travel, VMT_{15} (veh- *mi*)=0.25L_t(V/PHF)	*197*
Peak-hour vehicle-miles of travel, VMT_{60}(veh- *mi*)=V*L_t	*709*
Peak 15-min total travel time, TT_{15}(veh-h)=VMT_{15}/ATS	*4.3*

Notes

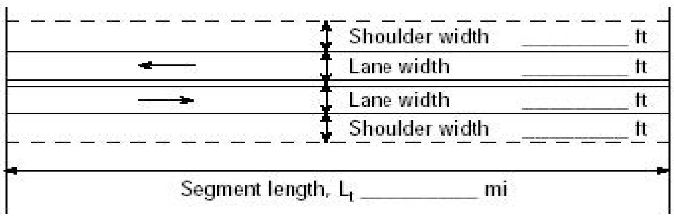
1. If the highway is extended segment (level) or rolling terrain, fG=1.0 .
2. If v_i(v_d or v_o) >=1,700 pc/h, terminate analysis--the LOS is F.
3. For the analysis direction only.
4. Exhibit 20-21 provides factors a and b.
5. Use alternative Equation 20-14 if some trucks operate at crawl speeds on a specific downgrade.

DIRECTIONAL TWO-LANE HIGHWAY SEGMENT WORKSHEET

General Information		Site Information	
Analyst	*AJP*	Highway / Direction of Travel	*US 190*
Agency or Company	*Neel-Schaffer, Inc.*	From/To	*West of Pride*
Date Performed	*7/8/2011*	Jurisdiction	*Tangipahoa Parish*
Analysis Time Period	*AM Peak*	Analysis Year	*2035 NO-BUILD*

Project Description: *N-S Prj# 8437*

Input Data



Analysis direction vol., V_d *918*veh/h

Opposing direction vol., V_o *819*veh/h

☑ Class I highway ☐ Class II highway

Terrain ☑ Level ☐ Rolling

Grade Length mi	Up/down
Peak-hour factor, PHF	*0.90*
No-passing zone	*20*%
% Trucks and Buses , P_T	*7* %
% Recreational vehicles, P_R	*0*%
Access points/ *mi*	*8*

Average Travel Speed

	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E_T (Exhibit 20-9 or 20-15)	*1.1*	*1.1*
Passenger-car equivalents for RVs, E_R (Exhibit 20-9 or 20-17)	*1.0*	*1.0*
Heavy-vehicle adjustment factor, f_{HV}=1/ (1+ P_T(E_T-1)+P_R(E_R-1))	*0.993*	*0.993*
Grade adjustment factor [1], f_G (Exhibit 20-7 or 20-13)	*1.00*	*1.00*
Directional flow rate[2], v_i(pc/h) v_i=V_i/(PHF*f_{HV}* f_G)	*1027*	*916*

Free-Flow Speed from Field Measurement		Estimated Free-Flow Speed	
Field measured speed[3], S_{FM}	*mi/h*	Base free-flow speed[3], $BFFS_{FM}$	*60.0 mi/h*
Observed volume[3], V_f	veh/h	Adj. for lane width and shoulder width,[3] f_{LS}(Exh 20-5)	*0.0 mi/h*
Free-flow speed, FFS_d FFS=S_{FM}+0.00776(V_f/ f_{HV})	*mi/h*	Adj. for access points[3], f_A (Exhibit 20-5)	*2.0 mi/h*
Adjustment for no-passing zones, f_{np} (Exhibit 20-19)	*0.6 mi/h*	Free-flow speed, FFS_d (FSS=BFFS-f_{LS}-f_A)	*58.0 mi/h*
		Average travel speed, ATS=FFS-0.00776v_p-f_{np}	*42.4 mi/h*

Percent Time-Spent-Following

	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E_T(Exhibit 20-10 or 20-16)	*1.0*	*1.0*
Passenger-car equivalents for RVs, E_R (Exhibit 20-10 or 20-16)	*1.0*	*1.0*
Heavy-vehicle adjustment factor, f_{HV}=1/ (1+ P_T(E_T-1)+P_R(E_R-1))	*1.000*	*1.000*
Grade adjustment factor[1], f_G (Exhibit 20-8 or 20-14)	*1.00*	*1.00*
Directional flow rate[2], v_i(pc/h)=V_i/(PHF*f_{HV}* f_G)	*1020*	*910*
Base percent time-spent-following[4], BPTSF(%)=100(1-$e^{av_d^b}$)	*77.5*	
Adj. for no-passing zone, f_{np} (Exhibit. 20-20)	*14.3*	
Percent time-spent-following, PTSF(%)=BPTSF+f_{np}	*85.0*	

Level of Service and Other Performance Measures

Level of service, LOS (Exhibit 20-3 or 20-4)	*E*
Volume to capacity ratio, v/c=V_p/ 1,700	*0.60*
Peak 15-min veh-miles of travel, VMT_{15} (veh- *mi*)=0.25L_t(V/PHF)	*255*
Peak-hour vehicle-miles of travel, VMT_{60}(veh- *mi*)=V*L_t	*918*
Peak 15-min total travel time, TT_{15}(veh-h)=VMT_{15}/ATS	*6.0*

Notes

1. If the highway is extended segment (level) or rolling terrain, fG=1.0 .
2. If v_i(v_d or v_o) >=1,700 pc/h, terminate analysis--the LOS is F.
3. For the analysis direction only.
4. Exhibit 20-21 provides factors a and b.
5. Use alternative Equation 20-14 if some trucks operate at crawl speeds on a specific downgrade.

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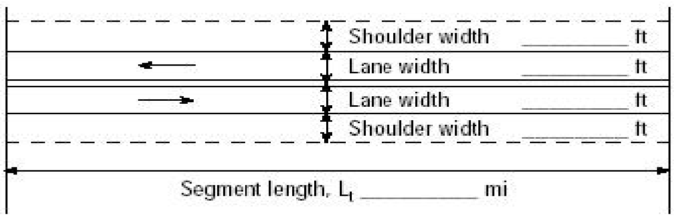
DIRECTIONAL TWO-LANE HIGHWAY SEGMENT WORKSHEET

General Information		Site Information	
Analyst	*AJP*	Highway / Direction of Travel	*US 190*
Agency or Company	*Neel-Schaffer, Inc.*	From/To	*West of Pride*
Date Performed	*7/8/2011*	Jurisdiction	*Tangipahoa Parish*
Analysis Time Period	*PM Peak*	Analysis Year	*2035 NO-BUILD*

Project Description: *N-S Prj# 8437*

Input Data



Class I highway ☑ Class II highway ☐

Terrain ☑ Level ☐ Rolling

Grade Length mi Up/down

Peak-hour factor, PHF *0.90*

No-passing zone *20%*

% Trucks and Buses , P_T *7 %*

% Recreational vehicles, P_R *0%*

Access points/ *mi* *8*

Analysis direction vol., V_d *873*veh/h

Opposing direction vol., V_o *650*veh/h

Average Travel Speed

	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E_T (Exhibit 20-9 or 20-15)	*1.1*	*1.1*
Passenger-car equivalents for RVs, E_R (Exhibit 20-9 or 20-17)	*1.0*	*1.0*
Heavy-vehicle adjustment factor, f_{HV}=1/ (1+ $P_T(E_T$-1)+$P_R(E_R$-1))	*0.993*	*0.993*
Grade adjustment factor [1], f_G (Exhibit 20-7 or 20-13)	*1.00*	*1.00*
Directional flow rate[2], v_i(pc/h) $v_i=V_i/(PHF*f_{HV}*f_G)$	*977*	*727*

Free-Flow Speed from Field Measurement		Estimated Free-Flow Speed	
Field measured speed[3], S_{FM}	*mi/h*	Base free-flow speed[3], $BFFS_{FM}$	*60.0* *mi/h*
Observed volume[3], V_f	veh/h	Adj. for lane width and shoulder width,[3] f_{LS}(Exh 20-5)	*0.0* *mi/h*
Free-flow speed, FFS_d $FFS=S_{FM}+0.00776(V_f/f_{HV})$	*mi/h*	Adj. for access points[3], f_A (Exhibit 20-5)	*2.0* *mi/h*
Adjustment for no-passing zones, f_{np} (Exhibit 20-19)	*0.7* *mi/h*	Free-flow speed, FFS_d (FSS=BFFS-f_{LS}-f_A)	*58.0* *mi/h*
		Average travel speed, ATS=FFS-0.00776v_p-f_{np}	*44.0* *mi/h*

Percent Time-Spent-Following

	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E_T(Exhibit 20-10 or 20-16)	*1.0*	*1.0*
Passenger-car equivalents for RVs, E_R (Exhibit 20-10 or 20-16)	*1.0*	*1.0*
Heavy-vehicle adjustment factor, f_{HV}=1/ (1+ $P_T(E_T$-1)+$P_R(E_R$-1))	*1.000*	*1.000*
Grade adjustment factor[1], f_G (Exhibit 20-8 or 20-14)	*1.00*	*1.00*
Directional flow rate[2], v_i(pc/h)=$V_i/(PHF*f_{HV}*f_G)$	*970*	*722*
Base percent time-spent-following[4], BPTSF(%)=100(1-$e^{av_d^b}$)	*74.6*	
Adj. for no-passing zone, f_{np} (Exhibit. 20-20)	*16.5*	
Percent time-spent-following, PTSF(%)=BPTSF+f_{np}	*84.0*	

Level of Service and Other Performance Measures

Level of service, LOS (Exhibit 20-3 or 20-4)	*E*
Volume to capacity ratio, v/c=V_p/ 1,700	*0.57*
Peak 15-min veh-miles of travel, VMT_{15} (veh- *mi*)=0.25L_t(V/PHF)	*243*
Peak-hour vehicle-miles of travel, VMT_{60}(veh- *mi*)=V*L_t	*873*
Peak 15-min total travel time, TT_{15}(veh-h)=VMT_{15}/ATS	*5.5*

Notes

1. If the highway is extended segment (level) or rolling terrain, fG=1.0 .
2. If $v_i(v_d$ or v_o) >=1,700 pc/h, terminate analysis--the LOS is F.
3. For the analysis direction only.
4. Exhibit 20-21 provides factors a and b.
5. Use alternative Equation 20-14 if some trucks operate at crawl speeds on a specific downgrade.

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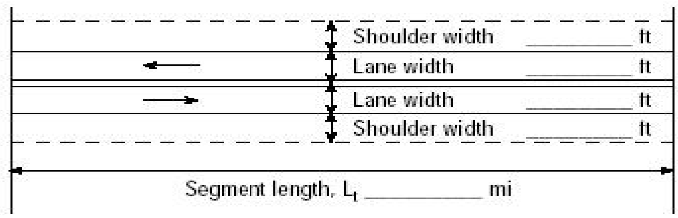
DIRECTIONAL TWO-LANE HIGHWAY SEGMENT WORKSHEET

General Information		**Site Information**	
Analyst	*AJP*	Highway / Direction of Travel	*US 190*
Agency or Company	*Neel-Schaffer, Inc.*	From/To	*West of Pride*
Date Performed	*7/8/2011*	Jurisdiction	*Tangipahoa Parish*
Analysis Time Period	*AM Peak*	Analysis Year	*2015 Alternate A*

Project Description: *N-S Prj# 8437*

Input Data



Class I highway ☑ Class II highway ☐

Terrain: Level ☑ Rolling ☐

Grade Length mi Up/down

Peak-hour factor, PHF *0.90*

No-passing zone *20%*

% Trucks and Buses , P_T *7 %*

% Recreational vehicles, P_R *0%*

Access points/ *mi* *8*

Analysis direction vol., V_d *753*veh/h

Opposing direction vol., V_o *625*veh/h

Average Travel Speed

	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E_T (Exhibit 20-9 or 20-15)	*1.1*	*1.1*
Passenger-car equivalents for RVs, E_R (Exhibit 20-9 or 20-17)	*1.0*	*1.0*
Heavy-vehicle adjustment factor, f_{HV}=1/ (1+ P_T(E_T-1)+P_R(E_R-1))	*0.993*	*0.993*
Grade adjustment factor [1], f_G (Exhibit 20-7 or 20-13)	*1.00*	*1.00*
Directional flow rate[2], v_i(pc/h) v_i=V_i/(PHF*f_{HV}* f_G)	*843*	*699*

Free-Flow Speed from Field Measurement		Estimated Free-Flow Speed	
Field measured speed[3], S_{FM}	*mi/h*	Base free-flow speed[3], $BFFS_{FM}$	*60.0 mi/h*
Observed volume[3], V_f	veh/h	Adj. for lane width and shoulder width,[3] f_{LS}(Exh 20-5)	*0.0 mi/h*
Free-flow speed, FFS_d FFS=S_{FM}+0.00776(V_f/ f_{HV})	*mi/h*	Adj. for access points[3], f_A (Exhibit 20-5)	*2.0 mi/h*
Adjustment for no-passing zones, f_{np} (Exhibit 20-19)	*0.8 mi/h*	Free-flow speed, FFS_d (FSS=BFFS-f_{LS}-f_A)	*58.0 mi/h*
		Average travel speed, ATS=FFS-0.00776v_p-f_{np}	*45.2 mi/h*

Percent Time-Spent-Following

	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E_T(Exhibit 20-10 or 20-16)	*1.0*	*1.0*
Passenger-car equivalents for RVs, E_R (Exhibit 20-10 or 20-16)	*1.0*	*1.0*
Heavy-vehicle adjustment factor, f_{HV}=1/ (1+ P_T(E_T-1)+P_R(E_R-1))	*1.000*	*1.000*
Grade adjustment factor[1], f_G (Exhibit 20-8 or 20-14)	*1.00*	*1.00*
Directional flow rate[2], v_i(pc/h)=V_i/(PHF*f_{HV}* f_G)	*837*	*694*
Base percent time-spent-following[4], BPTSF(%)=100(1-$e^{av_d^b}$)	*69.9*	
Adj. for no-passing zone, f_{np} (Exhibit. 20-20)	*18.3*	
Percent time-spent-following, PTSF(%)=BPTSF+f_{np}	*79.8*	

Level of Service and Other Performance Measures

Level of service, LOS (Exhibit 20-3 or 20-4)	*D*
Volume to capacity ratio, v/c=V_p/ 1,700	*0.50*
Peak 15-min veh-miles of travel, VMT_{15} (veh- *mi*)=0.25L_t(V/PHF)	*209*
Peak-hour vehicle-miles of travel, VMT_{60}(veh- *mi*)=V*L_t	*753*
Peak 15-min total travel time, TT_{15}(veh-h)=VMT_{15}/ATS	*4.6*

Notes

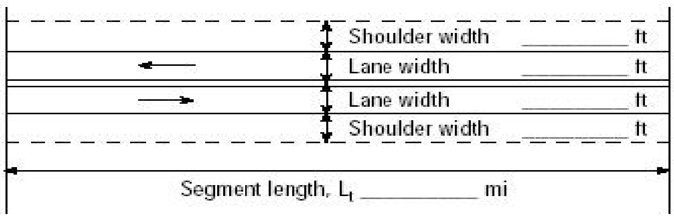
1. If the highway is extended segment (level) or rolling terrain, fG=1.0 .
2. If v_i(v_d or v_o) >=1,700 pc/h, terminate analysis--the LOS is F.
3. For the analysis direction only.
4. Exhibit 20-21 provides factors a and b.
5. Use alternative Equation 20-14 if some trucks operate at crawl speeds on a specific downgrade.

DIRECTIONAL TWO-LANE HIGHWAY SEGMENT WORKSHEET

General Information		Site Information	
Analyst	*AJP*	Highway / Direction of Travel	*US 190*
Agency or Company	*Neel-Schaffer, Inc.*	From/To	*West of Pride*
Date Performed	*7/8/2011*	Jurisdiction	*Tangipahoa Parish*
Analysis Time Period	*PM Peak*	Analysis Year	*2015 Alternate A*

Project Description: *N-S Prj# 8437*

Input Data



Class I highway ☑ Class II highway ☐

Terrain Level ☑ Rolling ☐

Grade Length mi	Up/down
Peak-hour factor, PHF	*0.90*
No-passing zone	*20*%
% Trucks and Buses , P_T	*7* %
% Recreational vehicles, P_R	*0*%
Access points/ *mi*	*8*

Analysis direction vol., V_d *587*veh/h

Opposing direction vol., V_o *562*veh/h

Average Travel Speed	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E_T (Exhibit 20-9 or 20-15)	*1.1*	*1.1*
Passenger-car equivalents for RVs, E_R (Exhibit 20-9 or 20-17)	*1.0*	*1.0*
Heavy-vehicle adjustment factor, f_{HV}=1/ (1+ $P_T(E_T$-1)+$P_R(E_R$-1))	*0.993*	*0.993*
Grade adjustment factor [1], f_G (Exhibit 20-7 or 20-13)	*1.00*	*1.00*
Directional flow rate[2], v_i(pc/h) $v_i=V_i/(PHF*f_{HV}*f_G)$	*657*	*629*

Free-Flow Speed from Field Measurement		Estimated Free-Flow Speed	
Field measured speed[3], S_{FM}	*mi/h*	Base free-flow speed[3], $BFFS_{FM}$	*60.0* *mi/h*
Observed volume[3], V_f	veh/h	Adj. for lane width and shoulder width,[3] f_{LS}(Exh 20-5)	*0.0* *mi/h*
Free-flow speed, FFS_d $FFS=S_{FM}+0.00776(V_f/f_{HV})$	*mi/h*	Adj. for access points[3], f_A (Exhibit 20-5)	*2.0* *mi/h*
Adjustment for no-passing zones, f_{np} (Exhibit 20-19)	*1.0* *mi/h*	Free-flow speed, FFS_d ($FSS=BFFS-f_{LS}-f_A$)	*58.0* *mi/h*
		Average travel speed, $ATS=FFS-0.00776v_p-f_{np}$	*47.1* *mi/h*

Percent Time-Spent-Following	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E_T(Exhibit 20-10 or 20-16)	*1.0*	*1.0*
Passenger-car equivalents for RVs, E_R (Exhibit 20-10 or 20-16)	*1.0*	*1.0*
Heavy-vehicle adjustment factor, f_{HV}=1/ (1+ $P_T(E_T$-1)+$P_R(E_R$-1))	*1.000*	*1.000*
Grade adjustment factor[1], f_G (Exhibit 20-8 or 20-14)	*1.00*	*1.00*
Directional flow rate[2], v_i(pc/h)=$V_i/(PHF*f_{HV}*f_G)$	*652*	*624*
Base percent time-spent-following[4], BPTSF(%)=100(1-$e^{av_d^b}$)	*60.9*	
Adj. for no-passing zone, f_{np} (Exhibit. 20-20)	*22.6*	
Percent time-spent-following, PTSF(%)=BPTSF+f_{np}	*72.5*	

Level of Service and Other Performance Measures	
Level of service, LOS (Exhibit 20-3 or 20-4)	*D*
Volume to capacity ratio, v/c=V_p/ 1,700	*0.39*
Peak 15-min veh-miles of travel, VMT_{15} (veh- *mi*)=0.25L_t(V/PHF)	*163*
Peak-hour vehicle-miles of travel, VMT_{60}(veh- *mi*)=V*L_t	*587*
Peak 15-min total travel time, TT_{15}(veh-h)=VMT_{15}/ATS	*3.5*

Notes

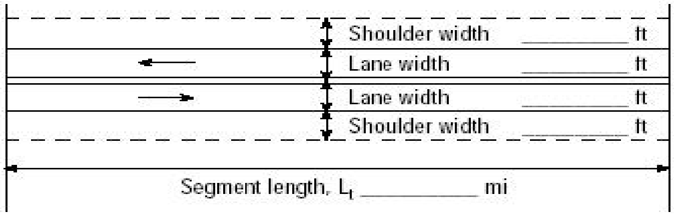
1. If the highway is extended segment (level) or rolling terrain, fG=1.0 .
2. If $v_i(v_d$ or v_o) >=1,700 pc/h, terminate analysis--the LOS is F.
3. For the analysis direction only.
4. Exhibit 20-21 provides factors a and b.
5. Use alternative Equation 20-14 if some trucks operate at crawl speeds on a specific downgrade.

DIRECTIONAL TWO-LANE HIGHWAY SEGMENT WORKSHEET

General Information		**Site Information**	
Analyst	*AJP*	Highway / Direction of Travel	*US 190*
Agency or Company	*Neel-Schaffer, Inc.*	From/To	*West of Pride*
Date Performed	*7/8/2011*	Jurisdiction	*Tangipahoa Parish*
Analysis Time Period	*AM Peak*	Analysis Year	*2035 Alternate A*

Project Description: *N-S Prj# 8437*

Input Data



Analysis direction vol., V_d *850*veh/h

Opposing direction vol., V_o *697*veh/h

☑ Class I highway ☐ Class II highway

Terrain ☑ Level ☐ Rolling

Grade Length mi Up/down

Peak-hour factor, PHF *0.90*

No-passing zone *20*%

% Trucks and Buses , P_T *7* %

% Recreational vehicles, P_R *0*%

Access points/ *mi* *8*

Average Travel Speed

	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E_T (Exhibit 20-9 or 20-15)	*1.1*	*1.1*
Passenger-car equivalents for RVs, E_R (Exhibit 20-9 or 20-17)	*1.0*	*1.0*
Heavy-vehicle adjustment factor, f_{HV}=1/ (1+ $P_T(E_T$-1)+$P_R(E_R$-1))	*0.993*	*0.993*
Grade adjustment factor [1], f_G (Exhibit 20-7 or 20-13)	*1.00*	*1.00*
Directional flow rate[2], v_i(pc/h) $v_i=V_i/(PHF*f_{HV}*f_G)$	*951*	*780*

Free-Flow Speed from Field Measurement		Estimated Free-Flow Speed	
Field measured speed[3], S_{FM}	mi/h	Base free-flow speed[3], $BFFS_{FM}$	*60.0* mi/h
Observed volume[3], V_f	veh/h	Adj. for lane width and shoulder width,[3] f_{LS}(Exh 20-5)	*0.0* mi/h
Free-flow speed, FFS_d $FFS=S_{FM}+0.00776(V_f/f_{HV})$	mi/h	Adj. for access points[3], f_A (Exhibit 20-5)	*2.0* mi/h
Adjustment for no-passing zones, f_{np} (Exhibit 20-19)	*0.6* mi/h	Free-flow speed, FFS_d ($FSS=BFFS-f_{LS}-f_A$)	*58.0* mi/h
		Average travel speed, $ATS=FFS-0.00776v_p-f_{np}$	*44.0* mi/h

Percent Time-Spent-Following

	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E_T(Exhibit 20-10 or 20-16)	*1.0*	*1.0*
Passenger-car equivalents for RVs, E_R (Exhibit 20-10 or 20-16)	*1.0*	*1.0*
Heavy-vehicle adjustment factor, f_{HV}=1/ (1+ $P_T(E_T$-1)+$P_R(E_R$-1))	*1.000*	*1.000*
Grade adjustment factor[1], f_G (Exhibit 20-8 or 20-14)	*1.00*	*1.00*
Directional flow rate[2], $v_i(pc/h)=V_i/(PHF*f_{HV}*f_G)$	*944*	*774*
Base percent time-spent-following[4], BPTSF(%)=100($1-e^{av_d^b}$)	*74.1*	
Adj. for no-passing zone, f_{np} (Exhibit. 20-20)	*16.4*	
Percent time-spent-following, PTSF(%)=BPTSF+f_{np}	*83.1*	

Level of Service and Other Performance Measures

Level of service, LOS (Exhibit 20-3 or 20-4)	*E*
Volume to capacity ratio, $v/c=V_p/1,700$	*0.56*
Peak 15-min veh-miles of travel, VMT_{15} (veh- *mi*)=0.25L_t(V/PHF)	*236*
Peak-hour vehicle-miles of travel, VMT_{60}(veh- *mi*)=V*L_t	*850*
Peak 15-min total travel time, TT_{15}(veh-h)=VMT_{15}/ATS	*5.4*

Notes

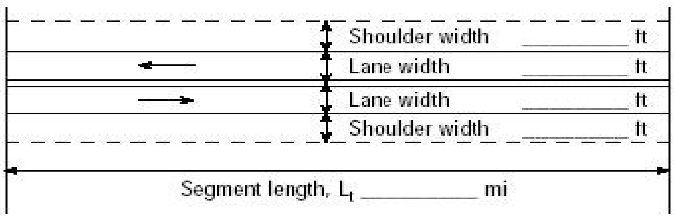
1. If the highway is extended segment (level) or rolling terrain, fG=1.0 .
2. If $v_i(v_d$ or v_o) >=1,700 pc/h, terminate analysis--the LOS is F.
3. For the analysis direction only.
4. Exhibit 20-21 provides factors a and b.
5. Use alternative Equation 20-14 if some trucks operate at crawl speeds on a specific downgrade.

DIRECTIONAL TWO-LANE HIGHWAY SEGMENT WORKSHEET

General Information		Site Information	
Analyst	*AJP*	Highway / Direction of Travel	*US 190*
Agency or Company	*Neel-Schaffer, Inc.*	From/To	*West of Pride*
Date Performed	*7/8/2011*	Jurisdiction	*Tangipahoa Parish*
Analysis Time Period	*PM Peak*	Analysis Year	*2035 Alternate A*

Project Description: *N-S Prj# 8437*

Input Data



Analysis direction vol., V_d *746*veh/h

Opposing direction vol., V_o *679*veh/h

☑ Class I highway ☐ Class II highway

Terrain ☑ Level ☐ Rolling

Grade Length mi	Up/down
Peak-hour factor, PHF	*0.90*
No-passing zone	*20%*
% Trucks and Buses , P_T	*7 %*
% Recreational vehicles, P_R	*0%*
Access points/ *mi*	*8*

Average Travel Speed

	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E_T (Exhibit 20-9 or 20-15)	*1.1*	*1.1*
Passenger-car equivalents for RVs, E_R (Exhibit 20-9 or 20-17)	*1.0*	*1.0*
Heavy-vehicle adjustment factor, f_{HV}=1/ (1+ $P_T(E_T$-1)+$P_R(E_R$-1))	*0.993*	*0.993*
Grade adjustment factor [1], f_G (Exhibit 20-7 or 20-13)	*1.00*	*1.00*
Directional flow rate[2], v_i(pc/h) $v_i=V_i/(PHF*f_{HV}*f_G)$	*835*	*760*

Free-Flow Speed from Field Measurement		Estimated Free-Flow Speed	
Field measured speed[3], S_{FM}	*mi/h*	Base free-flow speed[3], $BFFS_{FM}$	*60.0 mi/h*
Observed volume[3], V_f	veh/h	Adj. for lane width and shoulder width,[3] f_{LS}(Exh 20-5)	*0.0 mi/h*
Free-flow speed, FFS_d FFS=S_{FM}+0.00776(V_f/ f_{HV})	*mi/h*	Adj. for access points[3], f_A (Exhibit 20-5)	*2.0 mi/h*
Adjustment for no-passing zones, f_{np} (Exhibit 20-19)	*0.7 mi/h*	Free-flow speed, FFS_d (FSS=BFFS-f_{LS}-f_A)	*58.0 mi/h*
		Average travel speed, ATS=FFS-0.00776v_p-f_{np}	*45.0 mi/h*

Percent Time-Spent-Following

	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E_T(Exhibit 20-10 or 20-16)	*1.0*	*1.0*
Passenger-car equivalents for RVs, E_R (Exhibit 20-10 or 20-16)	*1.0*	*1.0*
Heavy-vehicle adjustment factor, f_{HV}=1/ (1+ $P_T(E_T$-1)+$P_R(E_R$-1))	*1.000*	*1.000*
Grade adjustment factor[1], f_G (Exhibit 20-8 or 20-14)	*1.00*	*1.00*
Directional flow rate[2], v_i(pc/h)=$V_i/(PHF*f_{HV}*f_G)$	*829*	*754*
Base percent time-spent-following[4], BPTSF(%)=100(1-$e^{av_d^b}$)	*70.1*	
Adj. for no-passing zone, f_{np} (Exhibit. 20-20)	*17.9*	
Percent time-spent-following, PTSF(%)=BPTSF+f_{np}	*79.5*	

Level of Service and Other Performance Measures

Level of service, LOS (Exhibit 20-3 or 20-4)	*D*
Volume to capacity ratio, v/c=V_p/ 1,700	*0.49*
Peak 15-min veh-miles of travel, VMT_{15} (veh- *mi*)=0.25L_t(V/PHF)	*207*
Peak-hour vehicle-miles of travel, VMT_{60}(veh- *mi*)=V*L_t	*746*
Peak 15-min total travel time, TT_{15}(veh-h)=VMT_{15}/ATS	*4.6*

Notes

1. If the highway is extended segment (level) or rolling terrain, fG=1.0 .
2. If v_i(v_d or v_o) >=1,700 pc/h, terminate analysis--the LOS is F.
3. For the analysis direction only.
4. Exhibit 20-21 provides factors a and b.
5. Use alternative Equation 20-14 if some trucks operate at crawl speeds on a specific downgrade.

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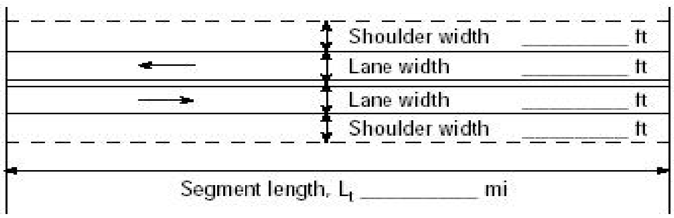
DIRECTIONAL TWO-LANE HIGHWAY SEGMENT WORKSHEET

General Information		Site Information	
Analyst	*AJP*	Highway / Direction of Travel	*US 190*
Agency or Company	*Neel-Schaffer, Inc.*	From/To	*West of Pride*
Date Performed	*7/8/2011*	Jurisdiction	*Tangipahoa Parish*
Analysis Time Period	*AM Peak*	Analysis Year	*2015 Alternate B*

Project Description: *N-S Prj# 8437*

Input Data



Class I highway (checked) Class II highway

Terrain Level (checked) Rolling

Grade Length mi Up/down

Peak-hour factor, PHF *0.90*

No-passing zone *20%*

% Trucks and Buses, P_T *7 %*

% Recreational vehicles, P_R *0%*

Access points/ *mi* *8*

Analysis direction vol., V_d *659*veh/h

Opposing direction vol., V_o *523*veh/h

Average Travel Speed

	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E_T (Exhibit 20-9 or 20-15)	*1.1*	*1.2*
Passenger-car equivalents for RVs, E_R (Exhibit 20-9 or 20-17)	*1.0*	*1.0*
Heavy-vehicle adjustment factor, f_{HV}=1/ (1+ $P_T(E_T$-1)+$P_R(E_R$-1))	*0.993*	*0.986*
Grade adjustment factor [1], f_G (Exhibit 20-7 or 20-13)	*1.00*	*1.00*
Directional flow rate[2], v_i(pc/h) $v_i=V_i/(PHF*f_{HV}*f_G)$	*737*	*589*

Free-Flow Speed from Field Measurement		Estimated Free-Flow Speed	
Field measured speed[3], S_{FM}	*mi/h*	Base free-flow speed[3], $BFFS_{FM}$	*60.0 mi/h*
Observed volume[3], V_f	veh/h	Adj. for lane width and shoulder width,[3] f_{LS}(Exh 20-5)	*0.0 mi/h*
Free-flow speed, FFS_d FFS=S_{FM}+0.00776(V_f/ f_{HV})	*mi/h*	Adj. for access points[3], f_A (Exhibit 20-5)	*2.0 mi/h*
Adjustment for no-passing zones, f_{np} (Exhibit 20-19)	*1.0 mi/h*	Free-flow speed, FFS_d (FSS=BFFS-f_{LS}-f_A)	*58.0 mi/h*
		Average travel speed, ATS=FFS-0.00776v_p-f_{np}	*46.7 mi/h*

Percent Time-Spent-Following

	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E_T(Exhibit 20-10 or 20-16)	*1.0*	*1.1*
Passenger-car equivalents for RVs, E_R (Exhibit 20-10 or 20-16)	*1.0*	*1.0*
Heavy-vehicle adjustment factor, f_{HV}=1/ (1+ $P_T(E_T$-1)+$P_R(E_R$-1))	*1.000*	*0.993*
Grade adjustment factor[1], f_G (Exhibit 20-8 or 20-14)	*1.00*	*1.00*
Directional flow rate[2], v_i(pc/h)=$V_i/(PHF*f_{HV}*f_G)$	*732*	*585*
Base percent time-spent-following[4], BPTSF(%)=100(1-$e^{av_d^b}$)	*64.1*	
Adj. for no-passing zone, f_{np} (Exhibit. 20-20)	*21.0*	
Percent time-spent-following, PTSF(%)=BPTSF+f_{np}	*75.8*	

Level of Service and Other Performance Measures

Level of service, LOS (Exhibit 20-3 or 20-4)	*D*
Volume to capacity ratio, v/c=V_p/ 1,700	*0.43*
Peak 15-min veh-miles of travel, VMT_{15} (veh- *mi*)=0.25L_t(V/PHF)	*183*
Peak-hour vehicle-miles of travel, VMT_{60}(veh- *mi*)=V*L_t	*659*
Peak 15-min total travel time, TT_{15}(veh-h)=VMT_{15}/ATS	*3.9*

Notes

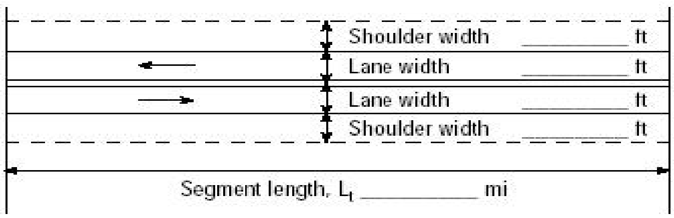
1. If the highway is extended segment (level) or rolling terrain, fG=1.0 .
2. If $v_i(v_d$ or v_o) >=1,700 pc/h, terminate analysis--the LOS is F.
3. For the analysis direction only.
4. Exhibit 20-21 provides factors a and b.
5. Use alternative Equation 20-14 if some trucks operate at crawl speeds on a specific downgrade.

DIRECTIONAL TWO-LANE HIGHWAY SEGMENT WORKSHEET

General Information		Site Information	
Analyst	*AJP*	Highway / Direction of Travel	*US 190*
Agency or Company	*Neel-Schaffer, Inc.*	From/To	*West of Pride*
Date Performed	*7/8/2011*	Jurisdiction	*Tangipahoa Parish*
Analysis Time Period	*PM Peak*	Analysis Year	*2015 Alternate B*

Project Description: *N-S Prj# 8437*

Input Data



Analysis direction vol., V_d *507*veh/h

Opposing direction vol., V_o *488*veh/h

☑ Class I highway ☐ Class II highway

Terrain ☑ Level ☐ Rolling

Grade Length mi Up/down

Peak-hour factor, PHF *0.90*

No-passing zone *20*%

% Trucks and Buses , P_T *7* %

% Recreational vehicles, P_R *0*%

Access points/ *mi* *8*

Average Travel Speed

	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E_T (Exhibit 20-9 or 20-15)	*1.2*	*1.2*
Passenger-car equivalents for RVs, E_R (Exhibit 20-9 or 20-17)	*1.0*	*1.0*
Heavy-vehicle adjustment factor, f_{HV}=1/ (1+ $P_T(E_T$-1)+$P_R(E_R$-1))	*0.986*	*0.986*
Grade adjustment factor [1], f_G (Exhibit 20-7 or 20-13)	*1.00*	*1.00*
Directional flow rate[2], v_i(pc/h) $v_i=V_i/(PHF*f_{HV}*f_G)$	*571*	*550*

Free-Flow Speed from Field Measurement		Estimated Free-Flow Speed	
Field measured speed[3], S_{FM}	mi/h	Base free-flow speed[3], $BFFS_{FM}$	*60.0* mi/h
Observed volume[3], V_f	veh/h	Adj. for lane width and shoulder width,[3] f_{LS}(Exh 20-5)	*0.0* mi/h
Free-flow speed, FFS_d FFS=S_{FM}+0.00776(V_f/ f_{HV})	mi/h	Adj. for access points[3], f_A (Exhibit 20-5)	*2.0* mi/h
Adjustment for no-passing zones, f_{np} (Exhibit 20-19)	*1.1* mi/h	Free-flow speed, FFS_d (FSS=BFFS-f_{LS}-f_A)	*58.0* mi/h
		Average travel speed, ATS=FFS-0.00776v_p-f_{np}	*48.2* mi/h

Percent Time-Spent-Following

	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E_T(Exhibit 20-10 or 20-16)	*1.1*	*1.1*
Passenger-car equivalents for RVs, E_R (Exhibit 20-10 or 20-16)	*1.0*	*1.0*
Heavy-vehicle adjustment factor, f_{HV}=1/ (1+ $P_T(E_T$-1)+$P_R(E_R$-1))	*0.993*	*0.993*
Grade adjustment factor[1], f_G (Exhibit 20-8 or 20-14)	*1.00*	*1.00*
Directional flow rate[2], v_i(pc/h)=$V_i/(PHF*f_{HV}*f_G)$	*567*	*546*
Base percent time-spent-following[4], BPTSF(%)=100(1-$e^{av_d^b}$)	*55.9*	
Adj. for no-passing zone, f_{np} (Exhibit. 20-20)	*26.6*	
Percent time-spent-following, PTSF(%)=BPTSF+f_{np}	*69.4*	

Level of Service and Other Performance Measures

Level of service, LOS (Exhibit 20-3 or 20-4)	*D*
Volume to capacity ratio, v/c=V_p/ 1,700	*0.34*
Peak 15-min veh-miles of travel, VMT_{15} (veh- *mi*)=0.25L_t(V/PHF)	*141*
Peak-hour vehicle-miles of travel, VMT_{60}(veh- *mi*)=V*L_t	*507*
Peak 15-min total travel time, TT_{15}(veh-h)=VMT_{15}/ATS	*2.9*

Notes

1. If the highway is extended segment (level) or rolling terrain, fG=1.0 .
2. If v_i(v_d or v_o) >=1,700 pc/h, terminate analysis--the LOS is F.
3. For the analysis direction only.
4. Exhibit 20-21 provides factors a and b.
5. Use alternative Equation 20-14 if some trucks operate at crawl speeds on a specific downgrade.

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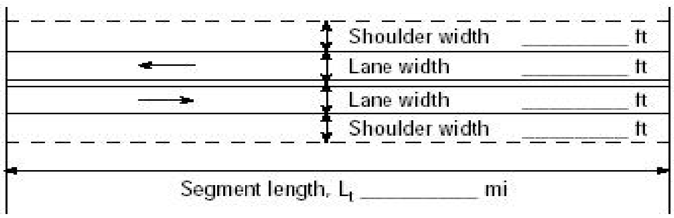
DIRECTIONAL TWO-LANE HIGHWAY SEGMENT WORKSHEET

General Information		Site Information	
Analyst	*AJP*	Highway / Direction of Travel	*US 190*
Agency or Company	*Neel-Schaffer, Inc.*	From/To	*West of Pride*
Date Performed	*7/8/2011*	Jurisdiction	*Tangipahoa Parish*
Analysis Time Period	*AM Peak*	Analysis Year	*2035 Alternate B*

Project Description: *N-S Prj# 8437*

Input Data



Analysis direction vol., V_d *788*veh/h

Opposing direction vol., V_o *653*veh/h

☑ Class I highway ☐ Class II highway

Terrain ☑ Level ☐ Rolling

Grade Length mi Up/down

Peak-hour factor, PHF *0.90*

No-passing zone *20*%

% Trucks and Buses , P_T *7* %

% Recreational vehicles, P_R *0*%

Access points/ *mi* *8*

Average Travel Speed

	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E_T (Exhibit 20-9 or 20-15)	*1.1*	*1.1*
Passenger-car equivalents for RVs, E_R (Exhibit 20-9 or 20-17)	*1.0*	*1.0*
Heavy-vehicle adjustment factor, $f_{HV}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	*0.993*	*0.993*
Grade adjustment factor [1], f_G (Exhibit 20-7 or 20-13)	*1.00*	*1.00*
Directional flow rate[2], v_i(pc/h) $v_i=V_i/(PHF*f_{HV}*f_G)$	*882*	*731*

Free-Flow Speed from Field Measurement		Estimated Free-Flow Speed	
Field measured speed[3], S_{FM}	*mi/h*	Base free-flow speed[3], $BFFS_{FM}$	*60.0 mi/h*
Observed volume[3], V_f	veh/h	Adj. for lane width and shoulder width,[3] f_{LS}(Exh 20-5)	*0.0 mi/h*
Free-flow speed, FFS_d $FFS=S_{FM}+0.00776(V_f/f_{HV})$	*mi/h*	Adj. for access points[3], f_A (Exhibit 20-5)	*2.0 mi/h*
Adjustment for no-passing zones, f_{np} (Exhibit 20-19)	*0.7 mi/h*	Free-flow speed, FFS_d $(FSS=BFFS-f_{LS}-f_A)$	*58.0 mi/h*
		Average travel speed, $ATS=FFS-0.00776v_p-f_{np}$	*44.8 mi/h*

Percent Time-Spent-Following

	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E_T(Exhibit 20-10 or 20-16)	*1.0*	*1.0*
Passenger-car equivalents for RVs, E_R (Exhibit 20-10 or 20-16)	*1.0*	*1.0*
Heavy-vehicle adjustment factor, $f_{HV}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	*1.000*	*1.000*
Grade adjustment factor[1], f_G (Exhibit 20-8 or 20-14)	*1.00*	*1.00*
Directional flow rate[2], $v_i(pc/h)=V_i/(PHF*f_{HV}*f_G)$	*876*	*726*
Base percent time-spent-following[4], $BPTSF(\%)=100(1-e^{av_d^b})$	*71.6*	
Adj. for no-passing zone, f_{np} (Exhibit. 20-20)	*17.5*	
Percent time-spent-following, $PTSF(\%)=BPTSF+f_{np}$	*81.2*	

Level of Service and Other Performance Measures

Level of service, LOS (Exhibit 20-3 or 20-4)	*E*
Volume to capacity ratio, $v/c=V_p/1{,}700$	*0.52*
Peak 15-min veh-miles of travel, VMT_{15} (veh- *mi*)$=0.25L_t(V/PHF)$	*219*
Peak-hour vehicle-miles of travel, VMT_{60}(veh- *mi*)$=V*L_t$	*788*
Peak 15-min total travel time, TT_{15}(veh-h)$=VMT_{15}/ATS$	*4.9*

Notes

1. If the highway is extended segment (level) or rolling terrain, fG=1.0 .
2. If $v_i(v_d$ or $v_o)$ >=1,700 pc/h, terminate analysis--the LOS is F.
3. For the analysis direction only.
4. Exhibit 20-21 provides factors a and b.
5. Use alternative Equation 20-14 if some trucks operate at crawl speeds on a specific downgrade.

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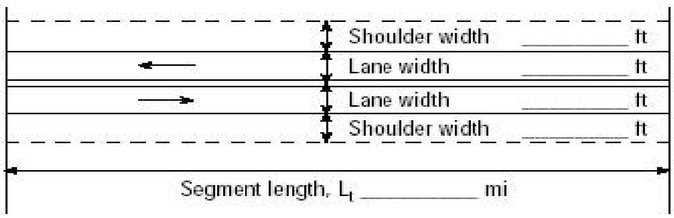
DIRECTIONAL TWO-LANE HIGHWAY SEGMENT WORKSHEET

General Information		Site Information	
Analyst	*AJP*	Highway / Direction of Travel	*US 190*
Agency or Company	*Neel-Schaffer, Inc.*	From/To	*West of Pride*
Date Performed	*7/8/2011*	Jurisdiction	*Tangipahoa Parish*
Analysis Time Period	*PM Peak*	Analysis Year	*2035 Alternate B*

Project Description: *N-S Prj# 8437*

Input Data



Analysis direction vol., V_d *676*veh/h

Opposing direction vol., V_o *632*veh/h

☑ Class I highway ☐ Class II highway

Terrain ☑ Level ☐ Rolling

Grade Length mi Up/down

Peak-hour factor, PHF *0.90*

No-passing zone *20%*

% Trucks and Buses , P_T *7 %*

% Recreational vehicles, P_R *0%*

Access points/ *mi* *8*

Average Travel Speed

	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E_T (Exhibit 20-9 or 20-15)	*1.1*	*1.1*
Passenger-car equivalents for RVs, E_R (Exhibit 20-9 or 20-17)	*1.0*	*1.0*
Heavy-vehicle adjustment factor, f_{HV}=1/ (1+ $P_T(E_T$-1)+$P_R(E_R$-1))	*0.993*	*0.993*
Grade adjustment factor [1], f_G (Exhibit 20-7 or 20-13)	*1.00*	*1.00*
Directional flow rate[2], v_i(pc/h) $v_i=V_i/(PHF*f_{HV}*f_G)$	*756*	*707*

Free-Flow Speed from Field Measurement		Estimated Free-Flow Speed	
Field measured speed[3], S_{FM}	*mi/h*	Base free-flow speed[3], $BFFS_{FM}$	*60.0 mi/h*
Observed volume[3], V_f	veh/h	Adj. for lane width and shoulder width,[3] f_{LS}(Exh 20-5)	*0.0 mi/h*
Free-flow speed, FFS_d FFS=S_{FM}+0.00776(V_f/ f_{HV})	*mi/h*	Adj. for access points[3], f_A (Exhibit 20-5)	*2.0 mi/h*
Adjustment for no-passing zones, f_{np} (Exhibit 20-19)	*0.8 mi/h*	Free-flow speed, FFS_d (FSS=BFFS-f_{LS}-f_A)	*58.0 mi/h*
		Average travel speed, ATS=FFS-0.00776v_p-f_{np}	*45.9 mi/h*

Percent Time-Spent-Following

	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E_T(Exhibit 20-10 or 20-16)	*1.0*	*1.0*
Passenger-car equivalents for RVs, E_R (Exhibit 20-10 or 20-16)	*1.0*	*1.0*
Heavy-vehicle adjustment factor, f_{HV}=1/ (1+ $P_T(E_T$-1)+$P_R(E_R$-1))	*1.000*	*1.000*
Grade adjustment factor[1], f_G (Exhibit 20-8 or 20-14)	*1.00*	*1.00*
Directional flow rate[2], v_i(pc/h)=$V_i/(PHF*f_{HV}*f_G)$	*751*	*702*
Base percent time-spent-following[4], BPTSF(%)=100(1-$e^{av_d^b}$)	*66.6*	
Adj. for no-passing zone, f_{np} (Exhibit. 20-20)	*19.3*	
Percent time-spent-following, PTSF(%)=BPTSF+f_{np}	*76.6*	

Level of Service and Other Performance Measures

Level of service, LOS (Exhibit 20-3 or 20-4)	*D*
Volume to capacity ratio, v/c=V_p/ 1,700	*0.44*
Peak 15-min veh-miles of travel, VMT_{15} (veh- *mi*)=0.25L_t(V/PHF)	*188*
Peak-hour vehicle-miles of travel, VMT_{60}(veh- *mi*)=V*L_t	*676*
Peak 15-min total travel time, TT_{15}(veh-h)=VMT_{15}/ATS	*4.1*

Notes

1. If the highway is extended segment (level) or rolling terrain, fG=1.0 .
2. If v_i(v_d or v_o) >=1,700 pc/h, terminate analysis--the LOS is F.
3. For the analysis direction only.
4. Exhibit 20-21 provides factors a and b.
5. Use alternative Equation 20-14 if some trucks operate at crawl speeds on a specific downgrade.

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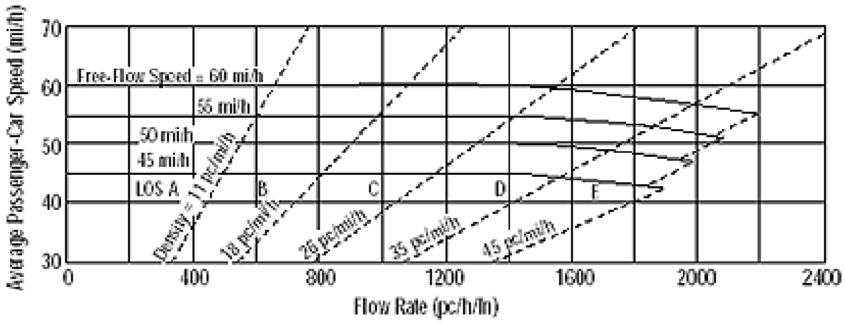
MULTILANE HIGHWAYS WORKSHEET(Direction 2)



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	AJP
Agency or Company	Neel-Schaffer, Inc.
Date Performed	7/11/2011
Analysis Time Period	AM Peak

Site Information

Highway/Direction to Travel	US 190
From/To	Between LA 3234 & Pride Dr
Jurisdiction	Tangipahoa Parish
Analysis Year	2015 Alternate C - EB

Project Description N-S Prj# 8437

☑ Oper.(LOS) ☐ Des. (N) ☐ Plan. (vp)

Flow Inputs

Volume, V (veh/h)	864	Peak-Hour Factor, PHF	0.90
AADT(veh/h)		%Trucks and Buses, P_T	7
Peak-Hour Prop of AADT (veh/d)		%RVs, P_R	0
Peak-Hour Direction Prop, D		General Terrain:	Level
DDHV (veh/h)		Grade Length (mi)	0.00
Driver Type Adjustment	1.00	Up/Down %	0.00
		Number of Lanes	2

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	f_{HV}	0.966

Speed Inputs

Lane Width, LW (ft)	12.0
Total Lateral Clearance, LC (ft)	12.0
Access Points, A (A/mi)	0
Median Type, M	Divided
FFS (measured)	
Base Free-Flow Speed, BFFS	50.0

Calc Speed Adj and FFS

f_{LW} (mi/h)	0.0
f_{LC} (mi/h)	0.0
f_A (mi/h)	0.0
f_M (mi/h)	0.0
FFS (mi/h)	50.0

Operations

Operational (LOS)

Flow Rate, v_p (pc/h/ln)	496
Speed, S (mi/h)	50.0
D (pc/mi/ln)	9.9
LOS	A

Design

Design (N)

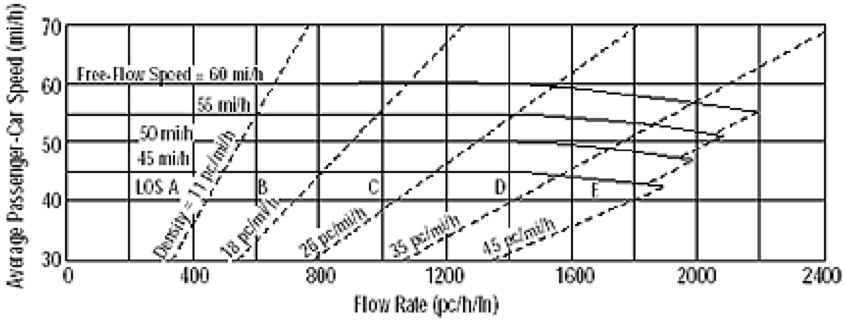
Required Number of Lanes, N

Flow Rate, v_p (pc/h)

Max Service Flow Rate (pc/h/ln)

Design LOS

MULTILANE HIGHWAYS WORKSHEET(Direction 1)



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	AJP
Agency or Company	Neel-Schaffer, Inc.
Date Performed	7/11/2011
Analysis Time Period	AM Peak

Site Information

Highway/Direction to Travel	US 190
From/To	Between LA 3234 & Pride Dr
Jurisdiction	Tangipahoa Parish
Analysis Year	2015 Alternate C - WB

Project Description N-S Prj# 8437

☑ Oper.(LOS) ☐ Des. (N) ☐ Plan. (vp)

Flow Inputs

Volume, V (veh/h)	978	Peak-Hour Factor, PHF	0.90
AADT(veh/h)		%Trucks and Buses, P_T	7
Peak-Hour Prop of AADT (veh/d)		%RVs, P_R	0
Peak-Hour Direction Prop, D		General Terrain:	Level
DDHV (veh/h)		Grade Length (mi)	0.00
Driver Type Adjustment	1.00	Up/Down %	0.00
		Number of Lanes	2

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	f_{HV}	0.966

Speed Inputs

Lane Width, LW (ft)	12.0
Total Lateral Clearance, LC (ft)	12.0
Access Points, A (A/mi)	0
Median Type, M	Divided
FFS (measured)	
Base Free-Flow Speed, BFFS	50.0

Calc Speed Adj and FFS

f_{LW} (mi/h)	0.0
f_{LC} (mi/h)	0.0
f_A (mi/h)	0.0
f_M (mi/h)	0.0
FFS (mi/h)	50.0

Operations

Operational (LOS)

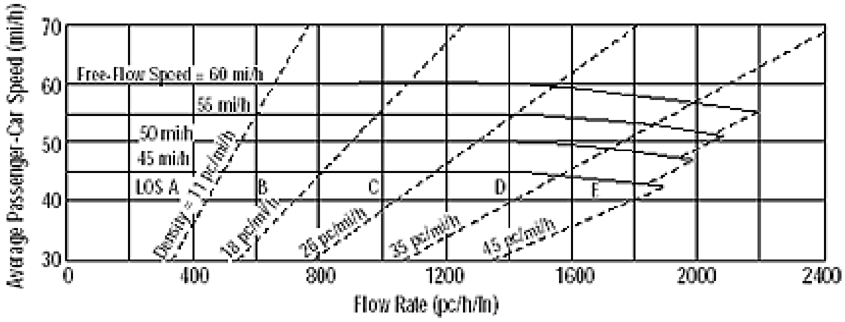
Flow Rate, v_p (pc/h/ln)	562
Speed, S (mi/h)	50.0
D (pc/mi/ln)	11.2
LOS	B

Design

Design (N)

Required Number of Lanes, N	
Flow Rate, v_p (pc/h)	
Max Service Flow Rate (pc/h/ln)	
Design LOS	

MULTILANE HIGHWAYS WORKSHEET(Direction 2)



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	AJP
Agency or Company	Neel-Schaffer, Inc.
Date Performed	7/11/2011
Analysis Time Period	PM Peak

Site Information

Highway/Direction to Travel	US 190
From/To	Between LA 3234 & Pride Dr
Jurisdiction	Tangipahoa Parish
Analysis Year	2015 Alternate C - EB

Project Description N-S Prj# 8437

☑ Oper.(LOS) ☐ Des. (N) ☐ Plan. (vp)

Flow Inputs

Volume, V (veh/h)	781	Peak-Hour Factor, PHF	0.90
AADT(veh/h)		%Trucks and Buses, P_T	7
Peak-Hour Prop of AADT (veh/d)		%RVs, P_R	0
Peak-Hour Direction Prop, D		General Terrain:	Level
DDHV (veh/h)		Grade Length (mi)	0.00
Driver Type Adjustment	1.00	Up/Down %	0.00
		Number of Lanes	2

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	f_{HV}	0.966

Speed Inputs

Lane Width, LW (ft)	12.0
Total Lateral Clearance, LC (ft)	12.0
Access Points, A (A/mi)	0
Median Type, M	Divided
FFS (measured)	
Base Free-Flow Speed, BFFS	50.0

Calc Speed Adj and FFS

f_{LW} (mi/h)	0.0
f_{LC} (mi/h)	0.0
f_A (mi/h)	0.0
f_M (mi/h)	0.0
FFS (mi/h)	50.0

Operations

Operational (LOS)

Flow Rate, v_p (pc/h/ln)	449
Speed, S (mi/h)	50.0
D (pc/mi/ln)	9.0
LOS	A

Design

Design (N)

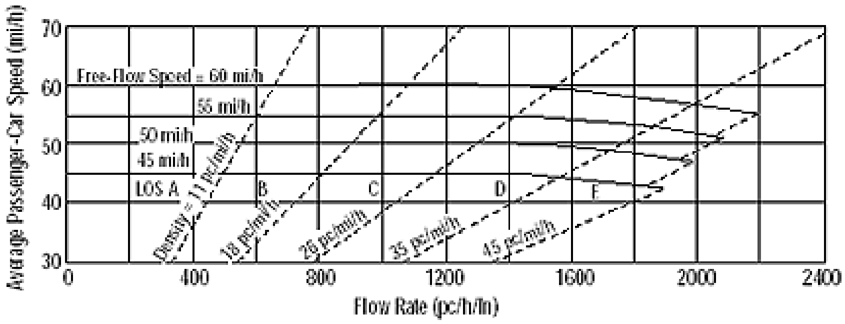
Required Number of Lanes, N

Flow Rate, v_p (pc/h)

Max Service Flow Rate (pc/h/ln)

Design LOS

MULTILANE HIGHWAYS WORKSHEET(Direction 1)



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	AJP
Agency or Company	Neel-Schaffer, Inc.
Date Performed	7/11/2011
Analysis Time Period	PM Peak

Site Information

Highway/Direction to Travel	US 190
From/To	Between LA 3234 & Pride Dr
Jurisdiction	Tangipahoa Parish
Analysis Year	2015 Alternate C - WB

Project Description N-S Prj# 8437

☑ Oper.(LOS) ☐ Des. (N) ☐ Plan. (vp)

Flow Inputs

Volume, V (veh/h)	796	Peak-Hour Factor, PHF	0.90
AADT(veh/h)		%Trucks and Buses, P_T	7
Peak-Hour Prop of AADT (veh/d)		%RVs, P_R	0
Peak-Hour Direction Prop, D		General Terrain:	Level
DDHV (veh/h)		Grade Length (mi)	0.00
Driver Type Adjustment	1.00	Up/Down %	0.00
		Number of Lanes	2

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	f_{HV}	0.966

Speed Inputs

Lane Width, LW (ft)	12.0
Total Lateral Clearance, LC (ft)	12.0
Access Points, A (A/mi)	0
Median Type, M	Divided
FFS (measured)	
Base Free-Flow Speed, BFFS	50.0

Calc Speed Adj and FFS

f_{LW} (mi/h)	0.0
f_{LC} (mi/h)	0.0
f_A (mi/h)	0.0
f_M (mi/h)	0.0
FFS (mi/h)	50.0

Operations

Operational (LOS)

Flow Rate, v_p (pc/h/ln)	457
Speed, S (mi/h)	50.0
D (pc/mi/ln)	9.1
LOS	A

Design

Design (N)

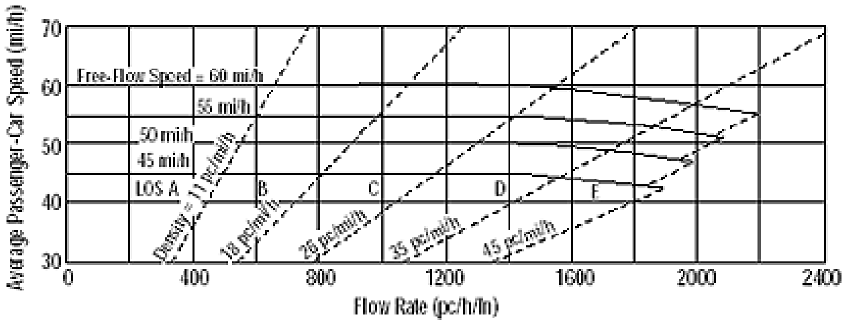
Required Number of Lanes, N

Flow Rate, v_p (pc/h)

Max Service Flow Rate (pc/h/ln)

Design LOS

MULTILANE HIGHWAYS WORKSHEET(Direction 2)



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	AJP
Agency or Company	Neel-Schaffer, Inc.
Date Performed	7/11/2011
Analysis Time Period	AM Peak

Site Information

Highway/Direction to Travel	US 190
From/To	Between LA 3234 & Pride Dr
Jurisdiction	Tangipahoa Parish
Analysis Year	2035 Alternate C - EB

Project Description N-S Prj# 8437

☑ Oper.(LOS) ☐ Des. (N) ☐ Plan. (vp)

Flow Inputs

Volume, V (veh/h)	976	Peak-Hour Factor, PHF	0.90
AADT(veh/h)		%Trucks and Buses, P_T	7
Peak-Hour Prop of AADT (veh/d)		%RVs, P_R	0
Peak-Hour Direction Prop, D		General Terrain:	Level
DDHV (veh/h)		Grade Length (mi)	0.00
Driver Type Adjustment	1.00	Up/Down %	0.00
		Number of Lanes	2

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	f_{HV}	0.966

Speed Inputs

Lane Width, LW (ft)	12.0
Total Lateral Clearance, LC (ft)	12.0
Access Points, A (A/mi)	0
Median Type, M	Divided
FFS (measured)	
Base Free-Flow Speed, BFFS	50.0

Calc Speed Adj and FFS

f_{LW} (mi/h)	0.0
f_{LC} (mi/h)	0.0
f_A (mi/h)	0.0
f_M (mi/h)	0.0
FFS (mi/h)	50.0

Operations

Operational (LOS)

Flow Rate, v_p (pc/h/ln)	561
Speed, S (mi/h)	50.0
D (pc/mi/ln)	11.2
LOS	B

Design

Design (N)

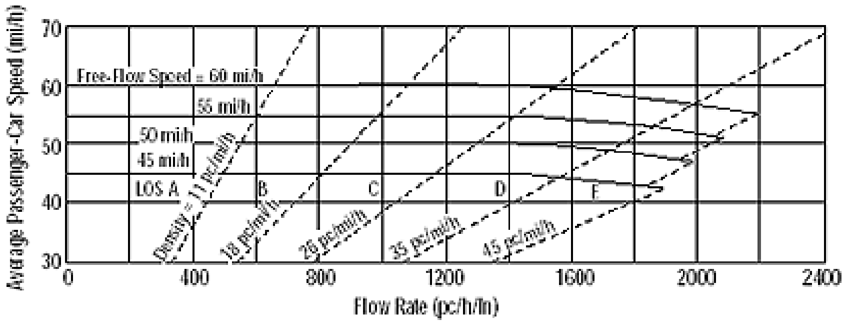
Required Number of Lanes, N

Flow Rate, v_p (pc/h)

Max Service Flow Rate (pc/h/ln)

Design LOS

MULTILANE HIGHWAYS WORKSHEET(Direction 1)



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	AJP
Agency or Company	Neel-Schaffer, Inc.
Date Performed	7/11/2011
Analysis Time Period	AM Peak

Site Information

Highway/Direction to Travel	US 190
From/To	Between LA 3234 & Pride Dr
Jurisdiction	Tangipahoa Parish
Analysis Year	2035 Alternate C - WB

Project Description N-S Prj# 8437

☑ Oper.(LOS) ☐ Des. (N) ☐ Plan. (vp)

Flow Inputs

Volume, V (veh/h)	1148	Peak-Hour Factor, PHF	0.90
AADT(veh/h)		%Trucks and Buses, P_T	7
Peak-Hour Prop of AADT (veh/d)		%RVs, P_R	0
Peak-Hour Direction Prop, D		General Terrain:	Level
DDHV (veh/h)		Grade Length (mi)	0.00
Driver Type Adjustment	1.00	Up/Down %	0.00
		Number of Lanes	2

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	f_{HV}	0.966

Speed Inputs

Lane Width, LW (ft)	12.0
Total Lateral Clearance, LC (ft)	12.0
Access Points, A (A/mi)	0
Median Type, M	Divided
FFS (measured)	
Base Free-Flow Speed, BFFS	50.0

Calc Speed Adj and FFS

f_{LW} (mi/h)	0.0
f_{LC} (mi/h)	0.0
f_A (mi/h)	0.0
f_M (mi/h)	0.0
FFS (mi/h)	50.0

Operations

Operational (LOS)

Flow Rate, v_p (pc/h/ln)	660
Speed, S (mi/h)	50.0
D (pc/mi/ln)	13.2
LOS	B

Design

Design (N)

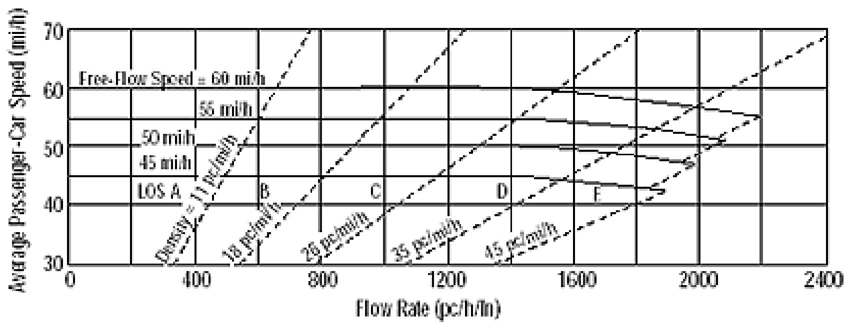
Required Number of Lanes, N

Flow Rate, v_p (pc/h)

Max Service Flow Rate (pc/h/ln)

Design LOS

MULTILANE HIGHWAYS WORKSHEET(Direction 2)



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	AJP
Agency or Company	Neel-Schaffer, Inc.
Date Performed	7/11/2011
Analysis Time Period	PM Peak

Site Information

Highway/Direction to Travel	US 190
From/To	Between LA 3234 & Pride Dr
Jurisdiction	Tangipahoa Parish
Analysis Year	2035 Alternate C - EB

Project Description N-S Prj# 8437

☑ Oper.(LOS) ☐ Des. (N) ☐ Plan. (vp)

Flow Inputs

Volume, V (veh/h)	1008	Peak-Hour Factor, PHF	0.90
AADT(veh/h)		%Trucks and Buses, P_T	7
Peak-Hour Prop of AADT (veh/d)		%RVs, P_R	0
Peak-Hour Direction Prop, D		General Terrain:	Level
DDHV (veh/h)		Grade Length (mi)	0.00
Driver Type Adjustment	1.00	Up/Down %	0.00
		Number of Lanes	2

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	f_{HV}	0.966

Speed Inputs

Lane Width, LW (ft)	12.0
Total Lateral Clearance, LC (ft)	12.0
Access Points, A (A/mi)	0
Median Type, M	Divided
FFS (measured)	
Base Free-Flow Speed, BFFS	50.0

Calc Speed Adj and FFS

f_{LW} (mi/h)	0.0
f_{LC} (mi/h)	0.0
f_A (mi/h)	0.0
f_M (mi/h)	0.0
FFS (mi/h)	50.0

Operations

Operational (LOS)

Flow Rate, v_p (pc/h/ln)	579
Speed, S (mi/h)	50.0
D (pc/mi/ln)	11.6
LOS	B

Design

Design (N)

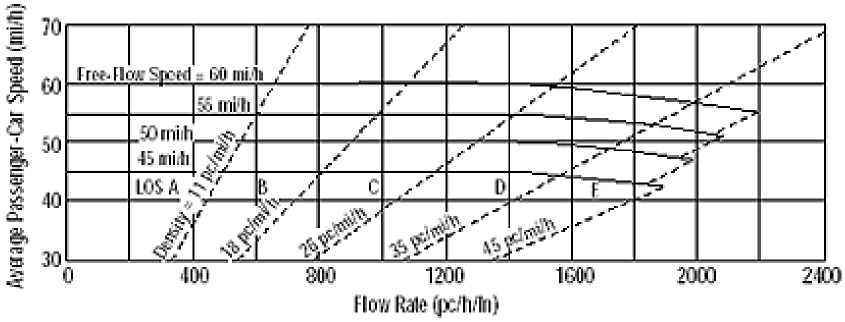
Required Number of Lanes, N

Flow Rate, v_p (pc/h)

Max Service Flow Rate (pc/h/ln)

Design LOS

MULTILANE HIGHWAYS WORKSHEET(Direction 1)



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	AJP
Agency or Company	Neel-Schaffer, Inc.
Date Performed	7/11/2011
Analysis Time Period	PM Peak

Site Information

Highway/Direction to Travel	US 190
From/To	Between LA 3234 & Pride Dr
Jurisdiction	Tangipahoa Parish
Analysis Year	2035 Alternate C - WB

Project Description N-S Prj# 8437

☑ Oper.(LOS) ☐ Des. (N) ☐ Plan. (vp)

Flow Inputs

Volume, V (veh/h)	962	Peak-Hour Factor, PHF	0.90
AADT(veh/h)		%Trucks and Buses, P_T	7
Peak-Hour Prop of AADT (veh/d)		%RVs, P_R	0
Peak-Hour Direction Prop, D		General Terrain:	Level
DDHV (veh/h)		Grade Length (mi)	0.00
Driver Type Adjustment	1.00	Up/Down %	0.00
		Number of Lanes	2

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	f_{HV}	0.966

Speed Inputs

Lane Width, LW (ft)	12.0
Total Lateral Clearance, LC (ft)	12.0
Access Points, A (A/mi)	0
Median Type, M	Divided
FFS (measured)	
Base Free-Flow Speed, BFFS	50.0

Calc Speed Adj and FFS

f_{LW} (mi/h)	0.0
f_{LC} (mi/h)	0.0
f_A (mi/h)	0.0
f_M (mi/h)	0.0
FFS (mi/h)	50.0

Operations

Operational (LOS)

Flow Rate, v_p (pc/h/ln)	553
Speed, S (mi/h)	50.0
D (pc/mi/ln)	11.1
LOS	B

Design

Design (N)

Required Number of Lanes, N

Flow Rate, v_p (pc/h)

Max Service Flow Rate (pc/h/ln)

Design LOS

US 190

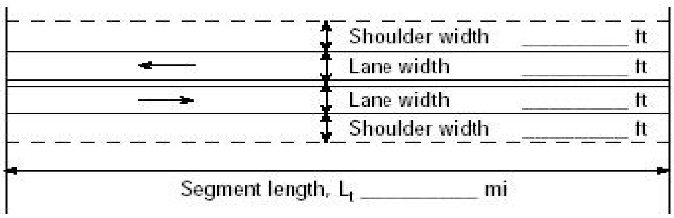
Between Pride Drive and LA 3158 (S. Airport Road)

DIRECTIONAL TWO-LANE HIGHWAY SEGMENT WORKSHEET

General Information		Site Information	
Analyst	*AJP*	Highway / Direction of Travel	*US 190*
Agency or Company	*Neel-Schaffer, Inc.*	From/To	*Between Pride Dr & Airport Rd*
Date Performed	*7/8/2011*	Jurisdiction	*Tangipahoa Parish*
Analysis Time Period	*AM Peak*	Analysis Year	*2011 No-Build*

Project Description: *N-S Prj# 8437*

Input Data



Class I highway ☑   Class II highway ☐

Terrain   Level ☑   Rolling ☐

Grade Length mi Up/down

Peak-hour factor, PHF *0.90*

No-passing zone *100%*

% Trucks and Buses , P_T *7 %*

% Recreational vehicles, P_R *0%*

Access points/ *mi* *8*

Analysis direction vol., V_d *807*veh/h

Opposing direction vol., V_o *510*veh/h

Average Travel Speed

	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E_T (Exhibit 20-9 or 20-15)	*1.1*	*1.2*
Passenger-car equivalents for RVs, E_R (Exhibit 20-9 or 20-17)	*1.0*	*1.0*
Heavy-vehicle adjustment factor, f_{HV}=1/ (1+ $P_T(E_T$-1)+$P_R(E_R$-1))	*0.993*	*0.986*
Grade adjustment factor [1], f_G (Exhibit 20-7 or 20-13)	*1.00*	*1.00*
Directional flow rate[2], v_i(pc/h) $v_i=V_i/(PHF*f_{HV}*f_G)$	*903*	*575*

Free-Flow Speed from Field Measurement		Estimated Free-Flow Speed	
Field measured speed[3], S_{FM}	mi/h	Base free-flow speed[3], $BFFS_{FM}$	*60.0* mi/h
Observed volume[3], V_f	veh/h	Adj. for lane width and shoulder width,[3] f_{LS}(Exh 20-5)	*0.0* mi/h
Free-flow speed, FFS_d FFS=S_{FM}+0.00776(V_f/ f_{HV})	mi/h	Adj. for access points[3], f_A (Exhibit 20-5)	*2.0* mi/h
Adjustment for no-passing zones, f_{np} (Exhibit 20-19)	*2.1* mi/h	Free-flow speed, FFS_d (FSS=BFFS-f_{LS}-f_A)	*58.0* mi/h
		Average travel speed, ATS=FFS-0.00776v_p-f_{np}	*44.5* mi/h

Percent Time-Spent-Following

	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E_T(Exhibit 20-10 or 20-16)	*1.0*	*1.1*
Passenger-car equivalents for RVs, E_R (Exhibit 20-10 or 20-16)	*1.0*	*1.0*
Heavy-vehicle adjustment factor, f_{HV}=1/ (1+ $P_T(E_T$-1)+$P_R(E_R$-1))	*1.000*	*0.993*
Grade adjustment factor[1], f_G (Exhibit 20-8 or 20-14)	*1.00*	*1.00*
Directional flow rate[2], v_i(pc/h)=$V_i/(PHF*f_{HV}*f_G)$	*897*	*571*
Base percent time-spent-following[4], BPTSF(%)=100(1-$e^{av_d^b}$)	*70.7*	
Adj. for no-passing zone, f_{np} (Exhibit. 20-20)	*25.7*	
Percent time-spent-following, PTSF(%)=BPTSF+f_{np}	*86.4*	

Level of Service and Other Performance Measures

Level of service, LOS (Exhibit 20-3 or 20-4)	*E*
Volume to capacity ratio, v/c=V_p/ 1,700	*0.53*
Peak 15-min veh-miles of travel, VMT_{15} (veh- *mi*)=0.25L_t(V/PHF)	*224*
Peak-hour vehicle-miles of travel, VMT_{60}(veh- *mi*)=V*L_t	*807*
Peak 15-min total travel time, TT_{15}(veh-h)=VMT_{15}/ATS	*5.0*

Notes

1. If the highway is extended segment (level) or rolling terrain, fG=1.0 .
2. If $v_i(v_d$ or v_o) >=1,700 pc/h, terminate analysis--the LOS is F.
3. For the analysis direction only.
4. Exhibit 20-21 provides factors a and b.
5. Use alternative Equation 20-14 if some trucks operate at crawl speeds on a specific downgrade.

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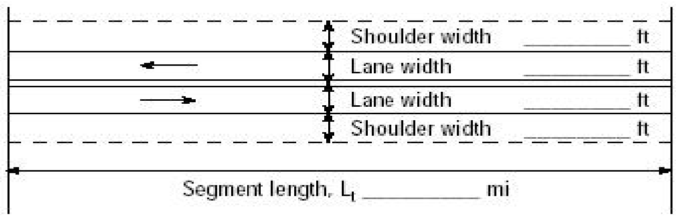
DIRECTIONAL TWO-LANE HIGHWAY SEGMENT WORKSHEET

General Information		Site Information	
Analyst	*AJP*	Highway / Direction of Travel	*US 190*
Agency or Company	*Neel-Schaffer, Inc.*	From/To	*Between Pride Dr & Airport Rd*
Date Performed	*7/8/2011*	Jurisdiction	*Tangipahoa Parish*
Analysis Time Period	*PM Peak*	Analysis Year	*2011 No-Build*

Project Description: *N-S Prj# 8437*

Input Data



Class I highway ☑ Class II highway ☐

Terrain ☑ Level ☐ Rolling

Grade Length mi Up/down

Peak-hour factor, PHF *0.97*

No-passing zone *100%*

% Trucks and Buses , P_T *7 %*

% Recreational vehicles, P_R *0%*

Access points/ *mi* *8*

Analysis direction vol., V_d *733*veh/h

Opposing direction vol., V_o *431*veh/h

Average Travel Speed

	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E_T (Exhibit 20-9 or 20-15)	*1.1*	*1.2*
Passenger-car equivalents for RVs, E_R (Exhibit 20-9 or 20-17)	*1.0*	*1.0*
Heavy-vehicle adjustment factor, f_{HV}=1/ (1+ $P_T(E_T$-1)+$P_R(E_R$-1))	*0.993*	*0.986*
Grade adjustment factor [1], f_G (Exhibit 20-7 or 20-13)	*1.00*	*1.00*
Directional flow rate[2], v_i(pc/h) $v_i=V_i/(PHF*f_{HV}*f_G)$	*761*	*451*

Free-Flow Speed from Field Measurement		Estimated Free-Flow Speed	
Field measured speed[3], S_{FM}	mi/h	Base free-flow speed[3], $BFFS_{FM}$	*60.0* mi/h
Observed volume[3], V_f	veh/h	Adj. for lane width and shoulder width,[3] f_{LS}(Exh 20-5)	*0.0* mi/h
Free-flow speed, FFS_d $FFS=S_{FM}+0.00776(V_f/f_{HV})$	mi/h	Adj. for access points[3], f_A (Exhibit 20-5)	*2.0* mi/h
Adjustment for no-passing zones, f_{np} (Exhibit 20-19)	*2.6* mi/h	Free-flow speed, FFS_d (FSS=BFFS-f_{LS}-f_A)	*58.0* mi/h
		Average travel speed, ATS=FFS-0.00776v_p-f_{np}	*46.0* mi/h

Percent Time-Spent-Following

	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E_T(Exhibit 20-10 or 20-16)	*1.0*	*1.1*
Passenger-car equivalents for RVs, E_R (Exhibit 20-10 or 20-16)	*1.0*	*1.0*
Heavy-vehicle adjustment factor, f_{HV}=1/ (1+ $P_T(E_T$-1)+$P_R(E_R$-1))	*1.000*	*0.993*
Grade adjustment factor[1], f_G (Exhibit 20-8 or 20-14)	*1.00*	*1.00*
Directional flow rate[2], $v_i(pc/h)=V_i/(PHF*f_{HV}*f_G)$	*756*	*447*
Base percent time-spent-following[4], BPTSF(%)=100(1-$e^{av_d^b}$)	*64.2*	
Adj. for no-passing zone, f_{np} (Exhibit. 20-20)	*30.8*	
Percent time-spent-following, PTSF(%)=BPTSF+f_{np}	*83.6*	

Level of Service and Other Performance Measures

Level of service, LOS (Exhibit 20-3 or 20-4)	*E*
Volume to capacity ratio, v/c=V_p/ 1,700	*0.45*
Peak 15-min veh-miles of travel, VMT_{15} (veh- *mi*)=0.25L_t(V/PHF)	*189*
Peak-hour vehicle-miles of travel, VMT_{60}(veh- *mi*)=V*L_t	*733*
Peak 15-min total travel time, TT_{15}(veh-h)=VMT_{15}/ATS	*4.1*

Notes

1. If the highway is extended segment (level) or rolling terrain, fG=1.0 .
2. If $v_i(v_d$ or v_o) >=1,700 pc/h, terminate analysis--the LOS is F.
3. For the analysis direction only.
4. Exhibit 20-21 provides factors a and b.
5. Use alternative Equation 20-14 if some trucks operate at crawl speeds on a specific downgrade.

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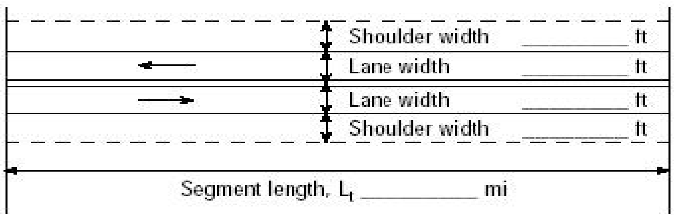
DIRECTIONAL TWO-LANE HIGHWAY SEGMENT WORKSHEET

General Information		Site Information	
Analyst	*AJP*	Highway / Direction of Travel	*US 190*
Agency or Company	*Neel-Schaffer, Inc.*	From/To	*Between Pride Dr & Airport Rd*
Date Performed	*7/8/2011*	Jurisdiction	*Tangipahoa Parish*
Analysis Time Period	*AM Peak*	Analysis Year	*2015 No-Build*

Project Description: *N-S Prj# 8437*

Input Data



Analysis direction vol., V_d *864*veh/h

Opposing direction vol., V_o *546*veh/h

☑ Class I highway ☐ Class II highway

Terrain ☑ Level ☐ Rolling

Grade Length mi Up/down

Peak-hour factor, PHF *0.90*

No-passing zone *100%*

% Trucks and Buses , P_T *7 %*

% Recreational vehicles, P_R *0%*

Access points/ *mi* *8*

Average Travel Speed

	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E_T (Exhibit 20-9 or 20-15)	*1.1*	*1.1*
Passenger-car equivalents for RVs, E_R (Exhibit 20-9 or 20-17)	*1.0*	*1.0*
Heavy-vehicle adjustment factor, f_{HV}=1/ (1+ P_T(E_T-1)+P_R(E_R-1))	*0.993*	*0.993*
Grade adjustment factor [1], f_G (Exhibit 20-7 or 20-13)	*1.00*	*1.00*
Directional flow rate[2], v_i(pc/h) $v_i=V_i/(PHF*f_{HV}*f_G)$	*967*	*611*

Free-Flow Speed from Field Measurement		Estimated Free-Flow Speed	
Field measured speed[3], S_{FM}	mi/h	Base free-flow speed[3], $BFFS_{FM}$	*60.0* mi/h
Observed volume[3], V_f	veh/h	Adj. for lane width and shoulder width,[3] f_{LS}(Exh 20-5)	*0.0* mi/h
Free-flow speed, FFS_d $FFS=S_{FM}+0.00776(V_f/f_{HV})$	mi/h	Adj. for access points[3], f_A (Exhibit 20-5)	*2.0* mi/h
Adjustment for no-passing zones, f_{np} (Exhibit 20-19)	*1.9* mi/h	Free-flow speed, FFS_d ($FSS=BFFS-f_{LS}-f_A$)	*58.0* mi/h
		Average travel speed, $ATS=FFS-0.00776v_p-f_{np}$	*43.8* mi/h

Percent Time-Spent-Following

	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E_T(Exhibit 20-10 or 20-16)	*1.0*	*1.0*
Passenger-car equivalents for RVs, E_R (Exhibit 20-10 or 20-16)	*1.0*	*1.0*
Heavy-vehicle adjustment factor, f_{HV}=1/ (1+ P_T(E_T-1)+P_R(E_R-1))	*1.000*	*1.000*
Grade adjustment factor[1], f_G (Exhibit 20-8 or 20-14)	*1.00*	*1.00*
Directional flow rate[2], $v_i(pc/h)=V_i/(PHF*f_{HV}*f_G)$	*960*	*607*
Base percent time-spent-following[4], BPTSF(%)=100(1-$e^{av_d^b}$)	*72.8*	
Adj. for no-passing zone, f_{np} (Exhibit. 20-20)	*24.1*	
Percent time-spent-following, PTSF(%)=BPTSF+f_{np}	*87.6*	

Level of Service and Other Performance Measures

Level of service, LOS (Exhibit 20-3 or 20-4)	*E*
Volume to capacity ratio, $v/c=V_p/1{,}700$	*0.57*
Peak 15-min veh-miles of travel, VMT_{15} (veh- *mi*)=0.25L_t(V/PHF)	*240*
Peak-hour vehicle-miles of travel, VMT_{60}(veh- *mi*)=V*L_t	*864*
Peak 15-min total travel time, TT_{15}(veh-h)=VMT_{15}/ATS	*5.5*

Notes

1. If the highway is extended segment (level) or rolling terrain, fG=1.0 .
2. If v_i(v_d or v_o) >=1,700 pc/h, terminate analysis--the LOS is F.
3. For the analysis direction only.
4. Exhibit 20-21 provides factors a and b.
5. Use alternative Equation 20-14 if some trucks operate at crawl speeds on a specific downgrade.

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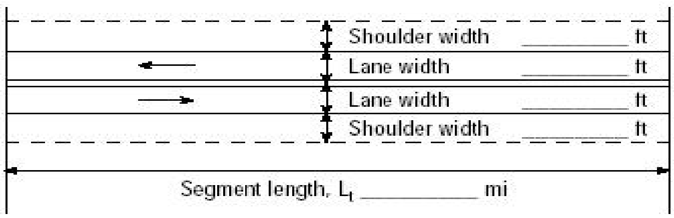
DIRECTIONAL TWO-LANE HIGHWAY SEGMENT WORKSHEET

General Information		Site Information	
Analyst	*AJP*	Highway / Direction of Travel	*US 190*
Agency or Company	*Neel-Schaffer, Inc.*	From/To	*Between Pride Dr & Airport Rd*
Date Performed	*7/8/2011*	Jurisdiction	*Tangipahoa Parish*
Analysis Time Period	*PM Peak*	Analysis Year	*2015 No-Build*

Project Description: *N-S Prj# 8437*

Input Data



Analysis direction vol., V_d *700*veh/h

Opposing direction vol., V_o *483*veh/h

☑ Class I highway ☐ Class II highway

Terrain ☑ Level ☐ Rolling

Grade Length mi Up/down

Peak-hour factor, PHF *0.97*

No-passing zone *100%*

% Trucks and Buses , P_T *7 %*

% Recreational vehicles, P_R *0%*

Access points/ *mi* *8*

Average Travel Speed

	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E_T (Exhibit 20-9 or 20-15)	*1.1*	*1.2*
Passenger-car equivalents for RVs, E_R (Exhibit 20-9 or 20-17)	*1.0*	*1.0*
Heavy-vehicle adjustment factor, f_{HV}=1/ (1+ $P_T(E_T$-1)+$P_R(E_R$-1))	*0.993*	*0.986*
Grade adjustment factor [1], f_G (Exhibit 20-7 or 20-13)	*1.00*	*1.00*
Directional flow rate[2], v_i(pc/h) $v_i=V_i/(PHF*f_{HV}*f_G)$	*727*	*505*

Free-Flow Speed from Field Measurement		Estimated Free-Flow Speed	
Field measured speed[3], S_{FM}	mi/h	Base free-flow speed[3], $BFFS_{FM}$	*60.0* mi/h
Observed volume[3], V_f	veh/h	Adj. for lane width and shoulder width,[3] f_{LS}(Exh 20-5)	*0.0* mi/h
Free-flow speed, FFS_d FFS=S_{FM}+0.00776(V_f/ f_{HV})	mi/h	Adj. for access points[3], f_A (Exhibit 20-5)	*2.0* mi/h
Adjustment for no-passing zones, f_{np} (Exhibit 20-19)	*2.4* mi/h	Free-flow speed, FFS_d (FSS=BFFS-f_{LS}-f_A)	*58.0* mi/h
		Average travel speed, ATS=FFS-0.00776v_p-f_{np}	*46.1* mi/h

Percent Time-Spent-Following

	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E_T(Exhibit 20-10 or 20-16)	*1.0*	*1.1*
Passenger-car equivalents for RVs, E_R (Exhibit 20-10 or 20-16)	*1.0*	*1.0*
Heavy-vehicle adjustment factor, f_{HV}=1/ (1+ $P_T(E_T$-1)+$P_R(E_R$-1))	*1.000*	*0.993*
Grade adjustment factor[1], f_G (Exhibit 20-8 or 20-14)	*1.00*	*1.00*
Directional flow rate[2], v_i(pc/h)=$V_i/(PHF*f_{HV}*f_G)$	*722*	*501*
Base percent time-spent-following[4], BPTSF(%)=100(1-$e^{av_d^b}$)	*63.4*	
Adj. for no-passing zone, f_{np} (Exhibit. 20-20)	*31.7*	
Percent time-spent-following, PTSF(%)=BPTSF+f_{np}	*82.1*	

Level of Service and Other Performance Measures

Level of service, LOS (Exhibit 20-3 or 20-4)	*E*
Volume to capacity ratio, v/c=V_p/ 1,700	*0.43*
Peak 15-min veh-miles of travel, VMT_{15} (veh- *mi*)=0.25L_t(V/PHF)	*180*
Peak-hour vehicle-miles of travel, VMT_{60}(veh- *mi*)=V*L_t	*700*
Peak 15-min total travel time, TT_{15}(veh-h)=VMT_{15}/ATS	*3.9*

Notes

1. If the highway is extended segment (level) or rolling terrain, fG=1.0 .
2. If v_i(v_d or v_o) >=1,700 pc/h, terminate analysis--the LOS is F.
3. For the analysis direction only.
4. Exhibit 20-21 provides factors a and b.
5. Use alternative Equation 20-14 if some trucks operate at crawl speeds on a specific downgrade.

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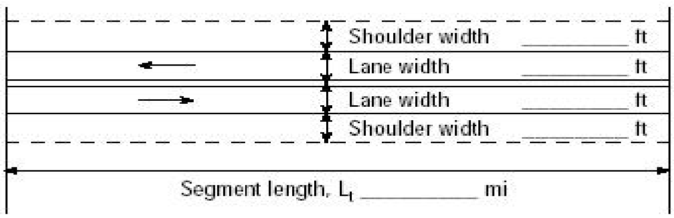
DIRECTIONAL TWO-LANE HIGHWAY SEGMENT WORKSHEET

General Information		Site Information	
Analyst	*AJP*	Highway / Direction of Travel	*US 190*
Agency or Company	*Neel-Schaffer, Inc.*	From/To	*Between Pride Dr & Airport Rd*
Date Performed	*7/8/2011*	Jurisdiction	*Tangipahoa Parish*
Analysis Time Period	*AM Peak*	Analysis Year	*2035 No-Build*

Project Description: *N-S Prj# 8437*

Input Data



☑ Class I highway ☐ Class II highway

Terrain ☑ Level ☐ Rolling

Grade Length mi	Up/down
Peak-hour factor, PHF	*0.90*
No-passing zone	*100%*
% Trucks and Buses , P_T	*7 %*
% Recreational vehicles, P_R	*0%*
Access points/ *mi*	*8*

Analysis direction vol., V_d	*1064*veh/h
Opposing direction vol., V_o	*672*veh/h

Average Travel Speed

	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E_T (Exhibit 20-9 or 20-15)	*1.1*	*1.1*
Passenger-car equivalents for RVs, E_R (Exhibit 20-9 or 20-17)	*1.0*	*1.0*
Heavy-vehicle adjustment factor, f_{HV}=1/ (1+ P_T(E_T-1)+P_R(E_R-1))	*0.993*	*0.993*
Grade adjustment factor [1], f_G (Exhibit 20-7 or 20-13)	*1.00*	*1.00*
Directional flow rate[2], v_i(pc/h) v_i=V_i/(PHF*f_{HV}* f_G)	*1190*	*752*

Free-Flow Speed from Field Measurement		Estimated Free-Flow Speed	
Field measured speed[3], S_{FM}	mi/h	Base free-flow speed[3], $BFFS_{FM}$	*60.0 mi/h*
Observed volume[3], V_f	veh/h	Adj. for lane width and shoulder width,[3] f_{LS}(Exh 20-5)	*0.0 mi/h*
Free-flow speed, FFS_d FFS=S_{FM}+0.00776(V_f/ f_{HV})	mi/h	Adj. for access points[3], f_A (Exhibit 20-5)	*2.0 mi/h*
Adjustment for no-passing zones, f_{np} (Exhibit 20-19)	*1.5 mi/h*	Free-flow speed, FFS_d (FSS=BFFS-f_{LS}-f_A)	*58.0 mi/h*
		Average travel speed, ATS=FFS-0.00776v_p-f_{np}	*41.4 mi/h*

Percent Time-Spent-Following

	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E_T(Exhibit 20-10 or 20-16)	*1.0*	*1.0*
Passenger-car equivalents for RVs, E_R (Exhibit 20-10 or 20-16)	*1.0*	*1.0*
Heavy-vehicle adjustment factor, f_{HV}=1/ (1+ P_T(E_T-1)+P_R(E_R-1))	*1.000*	*1.000*
Grade adjustment factor[1], f_G (Exhibit 20-8 or 20-14)	*1.00*	*1.00*
Directional flow rate[2], v_i(pc/h)=V_i/(PHF*f_{HV}* f_G)	*1182*	*747*
Base percent time-spent-following[4], BPTSF(%)=100(1-$e^{av_d^b}$)	*80.3*	
Adj. for no-passing zone, f_{np} (Exhibit. 20-20)	*18.2*	
Percent time-spent-following, PTSF(%)=BPTSF+f_{np}	*91.5*	

Level of Service and Other Performance Measures

Level of service, LOS (Exhibit 20-3 or 20-4)	*E*
Volume to capacity ratio, v/c=V_p/ 1,700	*0.70*
Peak 15-min veh-miles of travel, VMT_{15} (veh- *mi*)=0.25L_t(V/PHF)	*296*
Peak-hour vehicle-miles of travel, VMT_{60}(veh- *mi*)=V*L_t	*1064*
Peak 15-min total travel time, TT_{15}(veh-h)=VMT_{15}/ATS	*7.2*

Notes

1. If the highway is extended segment (level) or rolling terrain, fG=1.0 .
2. If v_i(v_d or v_o) >=1,700 pc/h, terminate analysis--the LOS is F.
3. For the analysis direction only.
4. Exhibit 20-21 provides factors a and b.
5. Use alternative Equation 20-14 if some trucks operate at crawl speeds on a specific downgrade.

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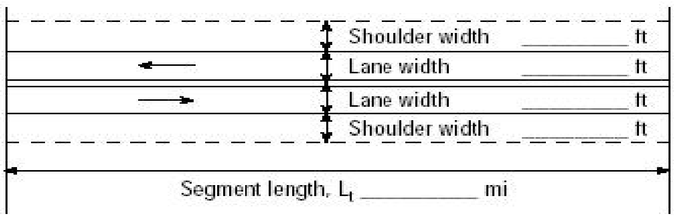
DIRECTIONAL TWO-LANE HIGHWAY SEGMENT WORKSHEET

General Information		Site Information	
Analyst	*AJP*	Highway / Direction of Travel	*US 190*
Agency or Company	*Neel-Schaffer, Inc.*	From/To	*Between Pride Dr & Airport Rd*
Date Performed	*7/8/2011*	Jurisdiction	*Tangipahoa Parish*
Analysis Time Period	*PM Peak*	Analysis Year	*2035 No-Build*

Project Description: *N-S Prj# 8437*

Input Data



Analysis direction vol., V_d *861*veh/h

Opposing direction vol., V_o *594*veh/h

☑ Class I highway ☐ Class II highway

Terrain ☑ Level ☐ Rolling

Grade Length mi Up/down

Peak-hour factor, PHF *0.97*

No-passing zone *100%*

% Trucks and Buses , P_T *7 %*

% Recreational vehicles, P_R *0%*

Access points/ *mi* *8*

Average Travel Speed

	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E_T (Exhibit 20-9 or 20-15)	*1.1*	*1.1*
Passenger-car equivalents for RVs, E_R (Exhibit 20-9 or 20-17)	*1.0*	*1.0*
Heavy-vehicle adjustment factor, f_{HV}=1/ (1+ $P_T(E_T$-1)+$P_R(E_R$-1))	*0.993*	*0.993*
Grade adjustment factor [1], f_G (Exhibit 20-7 or 20-13)	*1.00*	*1.00*
Directional flow rate[2], v_i(pc/h) $v_i=V_i/(PHF*f_{HV}*f_G)$	*894*	*617*

Free-Flow Speed from Field Measurement		Estimated Free-Flow Speed	
Field measured speed[3], S_{FM}	mi/h	Base free-flow speed[3], $BFFS_{FM}$	*60.0* mi/h
Observed volume[3], V_f	veh/h	Adj. for lane width and shoulder width,[3] f_{LS}(Exh 20-5)	*0.0* mi/h
Free-flow speed, FFS_d FFS=S_{FM}+0.00776(V_f/ f_{HV})	mi/h	Adj. for access points[3], f_A (Exhibit 20-5)	*2.0* mi/h
Adjustment for no-passing zones, f_{np} (Exhibit 20-19)	*1.9* mi/h	Free-flow speed, FFS_d (FSS=BFFS-f_{LS}-f_A)	*58.0* mi/h
		Average travel speed, ATS=FFS-0.00776v_p-f_{np}	*44.4* mi/h

Percent Time-Spent-Following

	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E_T(Exhibit 20-10 or 20-16)	*1.0*	*1.0*
Passenger-car equivalents for RVs, E_R (Exhibit 20-10 or 20-16)	*1.0*	*1.0*
Heavy-vehicle adjustment factor, f_{HV}=1/ (1+ $P_T(E_T$-1)+$P_R(E_R$-1))	*1.000*	*1.000*
Grade adjustment factor[1], f_G (Exhibit 20-8 or 20-14)	*1.00*	*1.00*
Directional flow rate[2], v_i(pc/h)=$V_i/(PHF*f_{HV}*f_G)$	*888*	*612*
Base percent time-spent-following[4], BPTSF(%)=100(1-$e^{av_d^b}$)	*70.5*	
Adj. for no-passing zone, f_{np} (Exhibit. 20-20)	*25.8*	
Percent time-spent-following, PTSF(%)=BPTSF+f_{np}	*85.7*	

Level of Service and Other Performance Measures

Level of service, LOS (Exhibit 20-3 or 20-4)	*E*
Volume to capacity ratio, v/c=V_p/ 1,700	*0.53*
Peak 15-min veh-miles of travel, VMT_{15} (veh- *mi*)=0.25L_t(V/PHF)	*222*
Peak-hour vehicle-miles of travel, VMT_{60}(veh- *mi*)=V*L_t	*861*
Peak 15-min total travel time, TT_{15}(veh-h)=VMT_{15}/ATS	*5.0*

Notes

1. If the highway is extended segment (level) or rolling terrain, fG=1.0 .
2. If v_i(v_d or v_o) >=1,700 pc/h, terminate analysis--the LOS is F.
3. For the analysis direction only.
4. Exhibit 20-21 provides factors a and b.
5. Use alternative Equation 20-14 if some trucks operate at crawl speeds on a specific downgrade.

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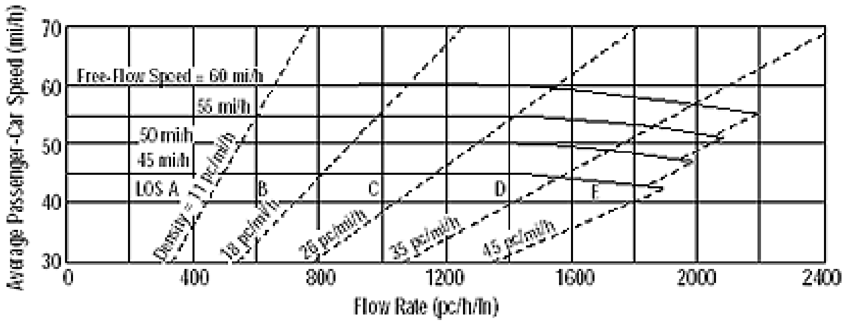
MULTILANE HIGHWAYS WORKSHEET(Direction 2)



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	AJP
Agency or Company	Neel-Schaffer, Inc.
Date Performed	7/11/2011
Analysis Time Period	AM Peak

Site Information

Highway/Direction to Travel	US 190
From/To	Between Pride Dr & Airport Rd
Jurisdiction	Tangipahoa Parish
Analysis Year	2015 Alternate A - EB

Project Description N-S Prj# 8437

☑ Oper.(LOS) ☐ Des. (N) ☐ Plan. (vp)

Flow Inputs

Volume, V (veh/h)	765	Peak-Hour Factor, PHF	0.90
AADT(veh/h)		%Trucks and Buses, P_T	7
Peak-Hour Prop of AADT (veh/d)		%RVs, P_R	0
Peak-Hour Direction Prop, D		General Terrain:	Level
DDHV (veh/h)		Grade Length (mi)	0.00
Driver Type Adjustment	1.00	Up/Down %	0.00
		Number of Lanes	2

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	f_{HV}	0.966

Speed Inputs

Lane Width, LW (ft)	12.0
Total Lateral Clearance, LC (ft)	12.0
Access Points, A (A/mi)	0
Median Type, M	Divided
FFS (measured)	
Base Free-Flow Speed, BFFS	50.0

Calc Speed Adj and FFS

f_{LW} (mi/h)	0.0
f_{LC} (mi/h)	0.0
f_A (mi/h)	0.0
f_M (mi/h)	0.0
FFS (mi/h)	50.0

Operations

Operational (LOS)

Flow Rate, v_p (pc/h/ln)	439
Speed, S (mi/h)	50.0
D (pc/mi/ln)	8.8
LOS	A

Design

Design (N)

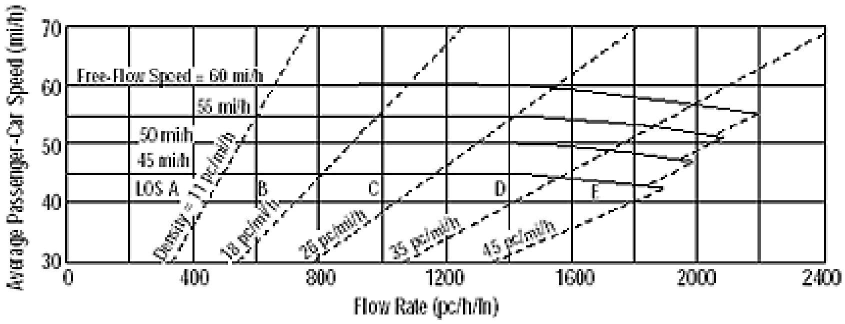
Required Number of Lanes, N

Flow Rate, v_p (pc/h)

Max Service Flow Rate (pc/h/ln)

Design LOS

MULTILANE HIGHWAYS WORKSHEET(Direction 1)



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	AJP
Agency or Company	Neel-Schaffer, Inc.
Date Performed	7/11/2011
Analysis Time Period	AM Peak

Site Information

Highway/Direction to Travel	US 190
From/To	Between Pride Dr & Airport Rd
Jurisdiction	Tangipahoa Parish
Analysis Year	2015 Alternate A - WB

Project Description N-S Prj# 8437

☑ Oper.(LOS) ☐ Des. (N) ☐ Plan. (vp)

Flow Inputs

Volume, V (veh/h)	869	Peak-Hour Factor, PHF	0.90
AADT(veh/h)		%Trucks and Buses, P_T	7
Peak-Hour Prop of AADT (veh/d)		%RVs, P_R	0
Peak-Hour Direction Prop, D		General Terrain:	Level
DDHV (veh/h)		Grade Length (mi)	0.00
Driver Type Adjustment	1.00	Up/Down %	0.00
		Number of Lanes	2

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	f_{HV}	0.966

Speed Inputs

Lane Width, LW (ft)	12.0
Total Lateral Clearance, LC (ft)	12.0
Access Points, A (A/mi)	0
Median Type, M	Divided
FFS (measured)	
Base Free-Flow Speed, BFFS	50.0

Calc Speed Adj and FFS

f_{LW} (mi/h)	0.0
f_{LC} (mi/h)	0.0
f_A (mi/h)	0.0
f_M (mi/h)	0.0
FFS (mi/h)	50.0

Operations

<u>Operational (LOS)</u>

Flow Rate, v_p (pc/h/ln)	499
Speed, S (mi/h)	50.0
D (pc/mi/ln)	10.0
LOS	A

Design

<u>Design (N)</u>

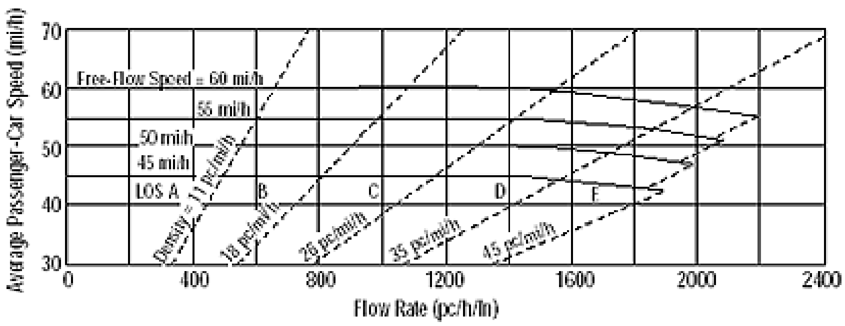
Required Number of Lanes, N

Flow Rate, v_p (pc/h)

Max Service Flow Rate (pc/h/ln)

Design LOS

MULTILANE HIGHWAYS WORKSHEET(Direction 2)



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	AJP
Agency or Company	Neel-Schaffer, Inc.
Date Performed	7/11/2011
Analysis Time Period	PM Peak

Site Information

Highway/Direction to Travel	US 190
From/To	Between Pride Dr & Airport Rd
Jurisdiction	Tangipahoa Parish
Analysis Year	2015 Alternate A - EB

Project Description N-S Prj# 8437

☑ Oper.(LOS) ☐ Des. (N) ☐ Plan. (vp)

Flow Inputs

Volume, V (veh/h)	662	Peak-Hour Factor, PHF	0.90
AADT(veh/h)		%Trucks and Buses, P_T	7
Peak-Hour Prop of AADT (veh/d)		%RVs, P_R	0
Peak-Hour Direction Prop, D		General Terrain:	Level
DDHV (veh/h)		Grade Length (mi)	0.00
Driver Type Adjustment	1.00	Up/Down %	0.00
		Number of Lanes	2

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	f_{HV}	0.966

Speed Inputs

Lane Width, LW (ft)	12.0
Total Lateral Clearance, LC (ft)	12.0
Access Points, A (A/mi)	0
Median Type, M	Divided
FFS (measured)	
Base Free-Flow Speed, BFFS	50.0

Calc Speed Adj and FFS

f_{LW} (mi/h)	0.0
f_{LC} (mi/h)	0.0
f_A (mi/h)	0.0
f_M (mi/h)	0.0
FFS (mi/h)	50.0

Operations

Operational (LOS)

Flow Rate, v_p (pc/h/ln)	380
Speed, S (mi/h)	50.0
D (pc/mi/ln)	7.6
LOS	A

Design

Design (N)

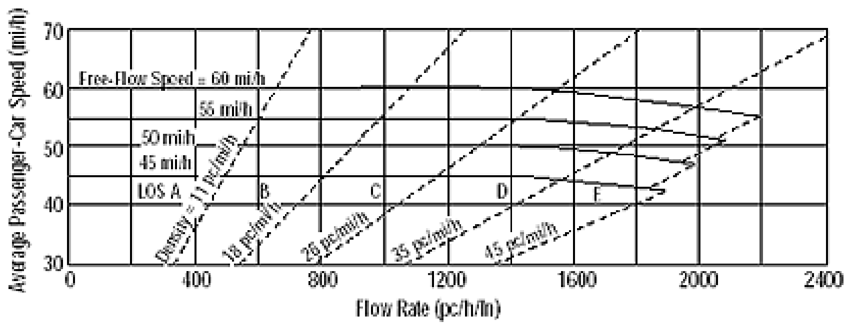
Required Number of Lanes, N

Flow Rate, v_p (pc/h)

Max Service Flow Rate (pc/h/ln)

Design LOS

MULTILANE HIGHWAYS WORKSHEET(Direction 1)



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	AJP
Agency or Company	Neel-Schaffer, Inc.
Date Performed	7/11/2011
Analysis Time Period	PM Peak

Site Information

Highway/Direction to Travel	US 190
From/To	Between Pride Dr & Airport Rd
Jurisdiction	Tangipahoa Parish
Analysis Year	2015 Alternate A - WB

Project Description N-S Prj# 8437

☑ Oper.(LOS) ☐ Des. (N) ☐ Plan. (vp)

Flow Inputs

Volume, V (veh/h)	695	Peak-Hour Factor, PHF	0.90
AADT(veh/h)		%Trucks and Buses, P_T	7
Peak-Hour Prop of AADT (veh/d)		%RVs, P_R	0
Peak-Hour Direction Prop, D		General Terrain:	Level
DDHV (veh/h)		Grade Length (mi)	0.00
Driver Type Adjustment	1.00	Up/Down %	0.00
		Number of Lanes	2

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	f_{HV}	0.966

Speed Inputs

Lane Width, LW (ft)	12.0
Total Lateral Clearance, LC (ft)	12.0
Access Points, A (A/mi)	0
Median Type, M	Divided
FFS (measured)	
Base Free-Flow Speed, BFFS	50.0

Calc Speed Adj and FFS

f_{LW} (mi/h)	0.0
f_{LC} (mi/h)	0.0
f_A (mi/h)	0.0
f_M (mi/h)	0.0
FFS (mi/h)	50.0

Operations

Operational (LOS)

Flow Rate, v_p (pc/h/ln)	399
Speed, S (mi/h)	50.0
D (pc/mi/ln)	8.0
LOS	A

Design

Design (N)

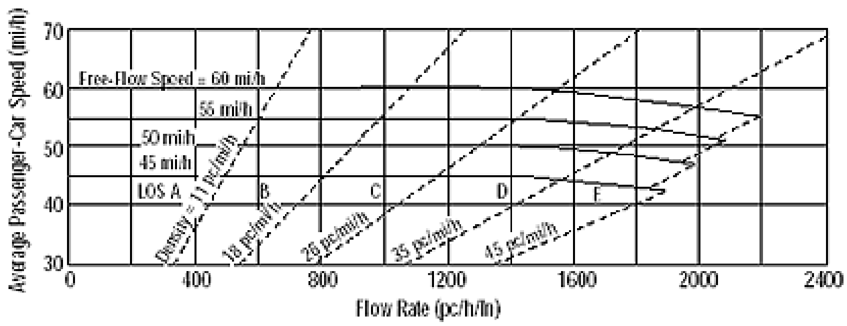
Required Number of Lanes, N

Flow Rate, v_p (pc/h)

Max Service Flow Rate (pc/h/ln)

Design LOS

MULTILANE HIGHWAYS WORKSHEET(Direction 2)



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	AJP
Agency or Company	Neel-Schaffer, Inc.
Date Performed	7/11/2011
Analysis Time Period	AM Peak

Site Information

Highway/Direction to Travel	US 190
From/To	Between Pride Dr & Airport Rd
Jurisdiction	Tangipahoa Parish
Analysis Year	2035 Alternate A - EB

Project Description N-S Prj# 8437

☑ Oper.(LOS) ☐ Des. (N) ☐ Plan. (vp)

Flow Inputs

Volume, V (veh/h)	918	Peak-Hour Factor, PHF	0.90
AADT(veh/h)		%Trucks and Buses, P_T	7
Peak-Hour Prop of AADT (veh/d)		%RVs, P_R	0
Peak-Hour Direction Prop, D		General Terrain:	Level
DDHV (veh/h)		Grade Length (mi)	0.00
Driver Type Adjustment	1.00	Up/Down %	0.00
		Number of Lanes	2

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	f_{HV}	0.966

Speed Inputs

Lane Width, LW (ft)	12.0
Total Lateral Clearance, LC (ft)	12.0
Access Points, A (A/mi)	0
Median Type, M	Divided
FFS (measured)	
Base Free-Flow Speed, BFFS	50.0

Calc Speed Adj and FFS

f_{LW} (mi/h)	0.0
f_{LC} (mi/h)	0.0
f_A (mi/h)	0.0
f_M (mi/h)	0.0
FFS (mi/h)	50.0

Operations

Operational (LOS)

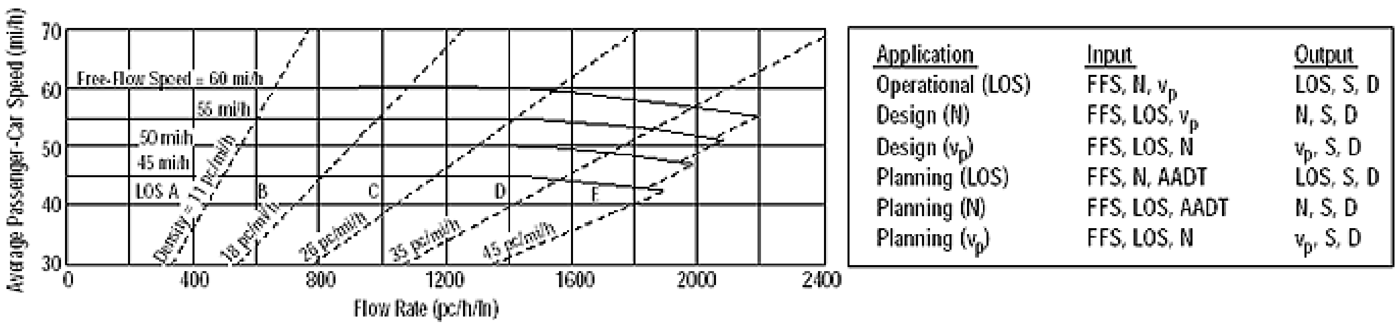
Flow Rate, v_p (pc/h/ln)	527
Speed, S (mi/h)	50.0
D (pc/mi/ln)	10.5
LOS	A

Design

Design (N)

Required Number of Lanes, N	
Flow Rate, v_p (pc/h)	
Max Service Flow Rate (pc/h/ln)	
Design LOS	

MULTILANE HIGHWAYS WORKSHEET(Direction 1)



General Information

Analyst	AJP
Agency or Company	Neel-Schaffer, Inc.
Date Performed	7/11/2011
Analysis Time Period	AM Peak

Site Information

Highway/Direction to Travel	US 190
From/To	Between Pride Dr & Airport Rd
Jurisdiction	Tangipahoa Parish
Analysis Year	2035 Alternate A - WB

Project Description N-S Prj# 8437

☑ Oper.(LOS) ☐ Des. (N) ☐ Plan. (vp)

Flow Inputs

Volume, V (veh/h)	1054	Peak-Hour Factor, PHF	0.90
AADT(veh/h)		%Trucks and Buses, P_T	7
Peak-Hour Prop of AADT (veh/d)		%RVs, P_R	0
Peak-Hour Direction Prop, D		General Terrain:	Level
DDHV (veh/h)		Grade Length (mi)	0.00
Driver Type Adjustment	1.00	Up/Down %	0.00
		Number of Lanes	2

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	f_{HV}	0.966

Speed Inputs

Lane Width, LW (ft)	12.0
Total Lateral Clearance, LC (ft)	12.0
Access Points, A (A/mi)	0
Median Type, M	Divided
FFS (measured)	
Base Free-Flow Speed, BFFS	50.0

Calc Speed Adj and FFS

f_{LW} (mi/h)	0.0
f_{LC} (mi/h)	0.0
f_A (mi/h)	0.0
f_M (mi/h)	0.0
FFS (mi/h)	50.0

Operations

Operational (LOS)

Flow Rate, v_p (pc/h/ln)	606
Speed, S (mi/h)	50.0
D (pc/mi/ln)	12.1
LOS	B

Design

Design (N)

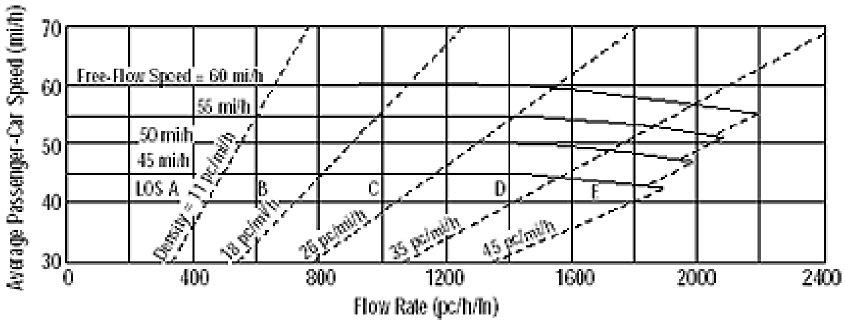
Required Number of Lanes, N

Flow Rate, v_p (pc/h)

Max Service Flow Rate (pc/h/ln)

Design LOS

MULTILANE HIGHWAYS WORKSHEET(Direction 2)



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	AJP
Agency or Company	Neel-Schaffer, Inc.
Date Performed	7/11/2011
Analysis Time Period	PM Peak

Site Information

Highway/Direction to Travel	US 190
From/To	Between Pride Dr & Airport Rd
Jurisdiction	Tangipahoa Parish
Analysis Year	2035 Alternate A - EB

Project Description N-S Prj# 8437

☑ Oper.(LOS) ☐ Des. (N) ☐ Plan. (vp)

Flow Inputs

Volume, V (veh/h)	861	Peak-Hour Factor, PHF	0.90
AADT(veh/h)		%Trucks and Buses, P_T	7
Peak-Hour Prop of AADT (veh/d)		%RVs, P_R	0
Peak-Hour Direction Prop, D		General Terrain:	Level
DDHV (veh/h)		Grade Length (mi)	0.00
Driver Type Adjustment	1.00	Up/Down %	0.00
		Number of Lanes	2

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	f_{HV}	0.966

Speed Inputs

Lane Width, LW (ft)	12.0
Total Lateral Clearance, LC (ft)	12.0
Access Points, A (A/mi)	0
Median Type, M	Divided
FFS (measured)	
Base Free-Flow Speed, BFFS	50.0

Calc Speed Adj and FFS

f_{LW} (mi/h)	0.0
f_{LC} (mi/h)	0.0
f_A (mi/h)	0.0
f_M (mi/h)	0.0
FFS (mi/h)	50.0

Operations

Operational (LOS)

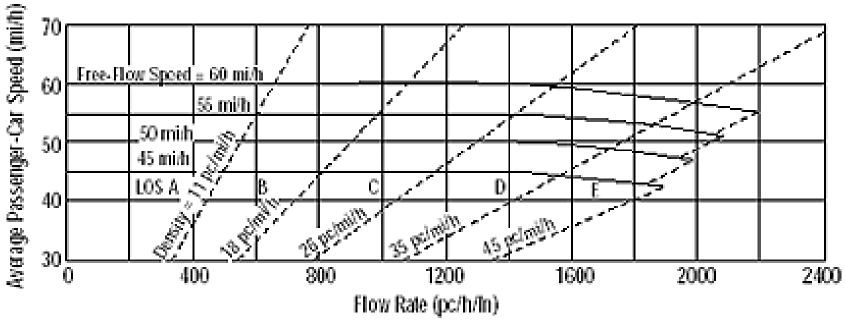
Flow Rate, v_p (pc/h/ln)	495
Speed, S (mi/h)	50.0
D (pc/mi/ln)	9.9
LOS	A

Design

Design (N)

Required Number of Lanes, N	
Flow Rate, v_p (pc/h)	
Max Service Flow Rate (pc/h/ln)	
Design LOS	

MULTILANE HIGHWAYS WORKSHEET(Direction 1)



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	AJP
Agency or Company	Neel-Schaffer, Inc.
Date Performed	7/11/2011
Analysis Time Period	PM Peak

Site Information

Highway/Direction to Travel	US 190
From/To	Between Pride Dr & Airport Rd
Jurisdiction	Tangipahoa Parish
Analysis Year	2035 Alternate A - WB

Project Description N-S Prj# 8437

☑ Oper.(LOS) ☐ Des. (N) ☐ Plan. (vp)

Flow Inputs

Volume, V (veh/h)	897	Peak-Hour Factor, PHF	0.90
AADT(veh/h)		%Trucks and Buses, P_T	7
Peak-Hour Prop of AADT (veh/d)		%RVs, P_R	0
Peak-Hour Direction Prop, D		General Terrain:	Level
DDHV (veh/h)		Grade Length (mi)	0.00
Driver Type Adjustment	1.00	Up/Down %	0.00
		Number of Lanes	2

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	f_{HV}	0.966

Speed Inputs

Lane Width, LW (ft)	12.0
Total Lateral Clearance, LC (ft)	12.0
Access Points, A (A/mi)	0
Median Type, M	Divided
FFS (measured)	
Base Free-Flow Speed, BFFS	50.0

Calc Speed Adj and FFS

f_{LW} (mi/h)	0.0
f_{LC} (mi/h)	0.0
f_A (mi/h)	0.0
f_M (mi/h)	0.0
FFS (mi/h)	50.0

Operations

Operational (LOS)

Flow Rate, v_p (pc/h/ln)	515
Speed, S (mi/h)	50.0
D (pc/mi/ln)	10.3
LOS	A

Design

Design (N)

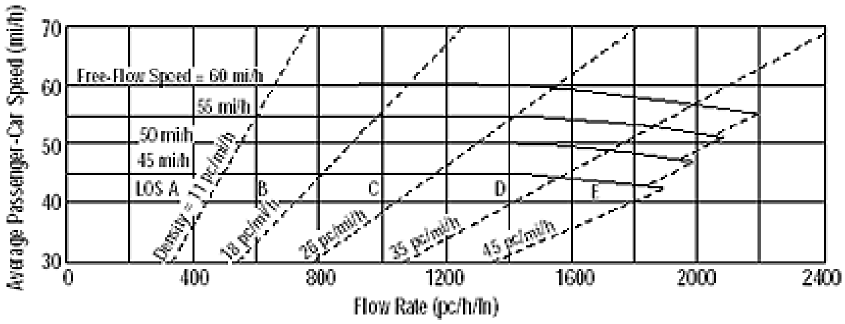
Required Number of Lanes, N

Flow Rate, v_p (pc/h)

Max Service Flow Rate (pc/h/ln)

Design LOS

MULTILANE HIGHWAYS WORKSHEET(Direction 2)



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	AJP
Agency or Company	Neel-Schaffer, Inc.
Date Performed	7/11/2011
Analysis Time Period	AM Peak

Site Information

Highway/Direction to Travel	US 190
From/To	Between Pride Dr & Airport Rd
Jurisdiction	Tangipahoa Parish
Analysis Year	2015 Alternate B - EB

Project Description N-S Prj# 8437

☑ Oper.(LOS) ☐ Des. (N) ☐ Plan. (vp)

Flow Inputs

Volume, V (veh/h)	807	Peak-Hour Factor, PHF	0.90
AADT(veh/h)		%Trucks and Buses, P_T	7
Peak-Hour Prop of AADT (veh/d)		%RVs, P_R	0
Peak-Hour Direction Prop, D		General Terrain:	Level
DDHV (veh/h)		Grade Length (mi)	0.00
Driver Type Adjustment	1.00	Up/Down %	0.00
		Number of Lanes	2

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	f_{HV}	0.966

Speed Inputs

Lane Width, LW (ft)	12.0
Total Lateral Clearance, LC (ft)	12.0
Access Points, A (A/mi)	0
Median Type, M	Divided
FFS (measured)	
Base Free-Flow Speed, BFFS	50.0

Calc Speed Adj and FFS

f_{LW} (mi/h)	0.0
f_{LC} (mi/h)	0.0
f_A (mi/h)	0.0
f_M (mi/h)	0.0
FFS (mi/h)	50.0

Operations

Operational (LOS)

Flow Rate, v_p (pc/h/ln)	464
Speed, S (mi/h)	50.0
D (pc/mi/ln)	9.3
LOS	A

Design

Design (N)

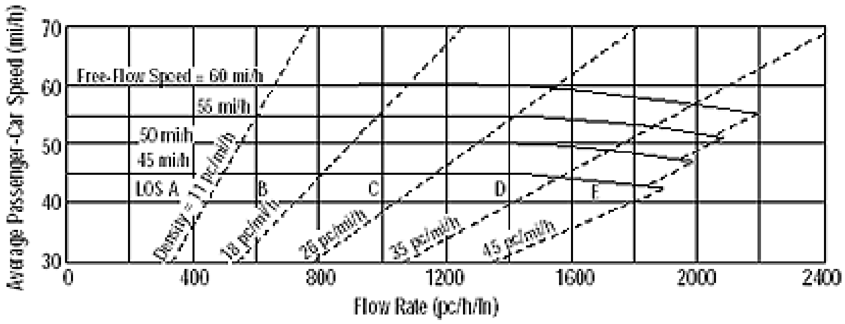
Required Number of Lanes, N

Flow Rate, v_p (pc/h)

Max Service Flow Rate (pc/h/ln)

Design LOS

MULTILANE HIGHWAYS WORKSHEET(Direction 1)



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	AJP
Agency or Company	Neel-Schaffer, Inc.
Date Performed	7/11/2011
Analysis Time Period	AM Peak

Site Information

Highway/Direction to Travel	US 190
From/To	Between Pride Dr & Airport Rd
Jurisdiction	Tangipahoa Parish
Analysis Year	2015 Alternate B - WB

Project Description N-S Prj# 8437

☑ Oper.(LOS) ☐ Des. (N) ☐ Plan. (vp)

Flow Inputs

Volume, V (veh/h)	936	Peak-Hour Factor, PHF	0.90
AADT(veh/h)		%Trucks and Buses, P_T	7
Peak-Hour Prop of AADT (veh/d)		%RVs, P_R	0
Peak-Hour Direction Prop, D		General Terrain:	Level
DDHV (veh/h)		Grade Length (mi)	0.00
Driver Type Adjustment	1.00	Up/Down %	0.00
		Number of Lanes	2

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	f_{HV}	0.966

Speed Inputs

Lane Width, LW (ft)	12.0
Total Lateral Clearance, LC (ft)	12.0
Access Points, A (A/mi)	0
Median Type, M	Divided
FFS (measured)	
Base Free-Flow Speed, BFFS	50.0

Calc Speed Adj and FFS

f_{LW} (mi/h)	0.0
f_{LC} (mi/h)	0.0
f_A (mi/h)	0.0
f_M (mi/h)	0.0
FFS (mi/h)	50.0

Operations

Operational (LOS)

Flow Rate, v_p (pc/h/ln)	538
Speed, S (mi/h)	50.0
D (pc/mi/ln)	10.8
LOS	A

Design

Design (N)

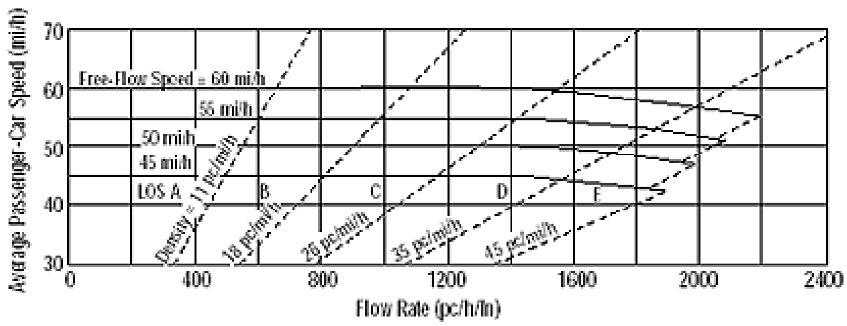
Required Number of Lanes, N

Flow Rate, v_p (pc/h)

Max Service Flow Rate (pc/h/ln)

Design LOS

MULTILANE HIGHWAYS WORKSHEET(Direction 2)



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	AJP
Agency or Company	Neel-Schaffer, Inc.
Date Performed	7/11/2011
Analysis Time Period	PM Peak

Site Information

Highway/Direction to Travel	US 190
From/To	Between Pride Dr & Airport Rd
Jurisdiction	Tangipahoa Parish
Analysis Year	2015 Alternate B - EB

Project Description N-S Prj# 8437

☑ Oper.(LOS) ☐ Des. (N) ☐ Plan. (vp)

Flow Inputs

Volume, V (veh/h)	766	Peak-Hour Factor, PHF	0.90
AADT(veh/h)		%Trucks and Buses, P_T	7
Peak-Hour Prop of AADT (veh/d)		%RVs, P_R	0
Peak-Hour Direction Prop, D		General Terrain:	Level
DDHV (veh/h)		Grade Length (mi)	0.00
Driver Type Adjustment	1.00	Up/Down %	0.00
		Number of Lanes	2

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	f_{HV}	0.966

Speed Inputs

Lane Width, LW (ft)	12.0
Total Lateral Clearance, LC (ft)	12.0
Access Points, A (A/mi)	0
Median Type, M	Divided
FFS (measured)	
Base Free-Flow Speed, BFFS	50.0

Calc Speed Adj and FFS

f_{LW} (mi/h)	0.0
f_{LC} (mi/h)	0.0
f_A (mi/h)	0.0
f_M (mi/h)	0.0
FFS (mi/h)	50.0

Operations

Operational (LOS)

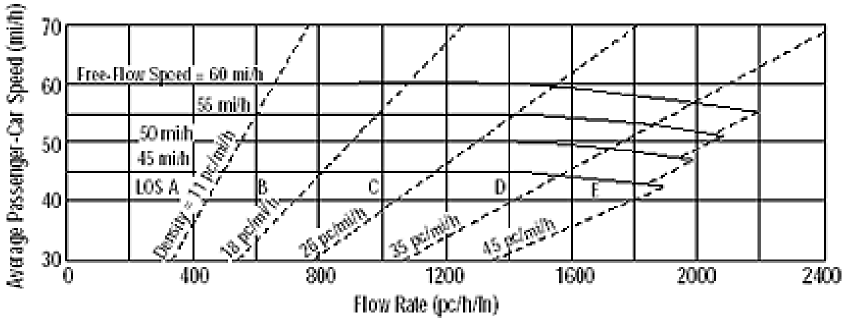
Flow Rate, v_p (pc/h/ln)	440
Speed, S (mi/h)	50.0
D (pc/mi/ln)	8.8
LOS	A

Design

Design (N)

Required Number of Lanes, N	
Flow Rate, v_p (pc/h)	
Max Service Flow Rate (pc/h/ln)	
Design LOS	

MULTILANE HIGHWAYS WORKSHEET(Direction 1)



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	AJP
Agency or Company	Neel-Schaffer, Inc.
Date Performed	7/11/2011
Analysis Time Period	PM Peak

Site Information

Highway/Direction to Travel	US 190
From/To	Between Pride Dr & Airport Rd
Jurisdiction	Tangipahoa Parish
Analysis Year	2015 Alternate B - WB

Project Description N-S Prj# 8437

☑ Oper.(LOS) ☐ Des. (N) ☐ Plan. (vp)

Flow Inputs

Volume, V (veh/h)	718	Peak-Hour Factor, PHF	0.90
AADT(veh/h)		%Trucks and Buses, P_T	7
Peak-Hour Prop of AADT (veh/d)		%RVs, P_R	0
Peak-Hour Direction Prop, D		General Terrain:	Level
DDHV (veh/h)		Grade Length (mi)	0.00
Driver Type Adjustment	1.00	Up/Down %	0.00
		Number of Lanes	2

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	f_{HV}	0.966

Speed Inputs

Lane Width, LW (ft)	12.0
Total Lateral Clearance, LC (ft)	12.0
Access Points, A (A/mi)	0
Median Type, M	Divided
FFS (measured)	
Base Free-Flow Speed, BFFS	50.0

Calc Speed Adj and FFS

f_{LW} (mi/h)	0.0
f_{LC} (mi/h)	0.0
f_A (mi/h)	0.0
f_M (mi/h)	0.0
FFS (mi/h)	50.0

Operations

Operational (LOS)

Flow Rate, v_p (pc/h/ln)	412
Speed, S (mi/h)	50.0
D (pc/mi/ln)	8.2
LOS	A

Design

Design (N)

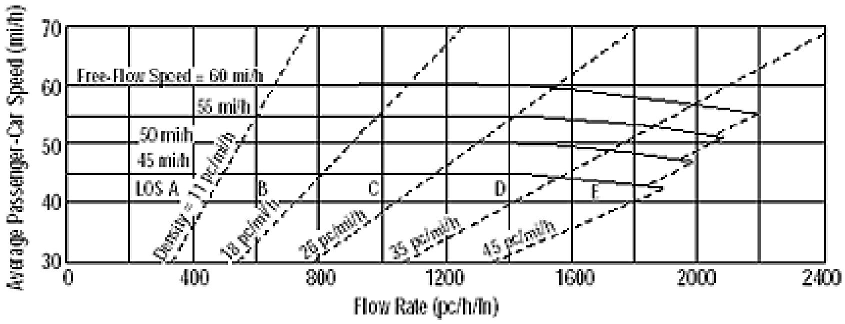
Required Number of Lanes, N

Flow Rate, v_p (pc/h)

Max Service Flow Rate (pc/h/ln)

Design LOS

MULTILANE HIGHWAYS WORKSHEET(Direction 2)



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	AJP
Agency or Company	Neel-Schaffer, Inc.
Date Performed	7/11/2011
Analysis Time Period	AM Peak

Site Information

Highway/Direction to Travel	US 190
From/To	Between Pride Dr & Airport Rd
Jurisdiction	Tangipahoa Parish
Analysis Year	2035 Alternate B - EB

Project Description N-S Prj# 8437

☑ Oper.(LOS) ☐ Des. (N) ☐ Plan. (vp)

Flow Inputs

Volume, V (veh/h)	974	Peak-Hour Factor, PHF	0.90
AADT(veh/h)		%Trucks and Buses, P_T	7
Peak-Hour Prop of AADT (veh/d)		%RVs, P_R	0
Peak-Hour Direction Prop, D		General Terrain:	Level
DDHV (veh/h)		Grade Length (mi)	0.00
Driver Type Adjustment	1.00	Up/Down %	0.00
		Number of Lanes	2

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	f_{HV}	0.966

Speed Inputs

Lane Width, LW (ft)	12.0
Total Lateral Clearance, LC (ft)	12.0
Access Points, A (A/mi)	0
Median Type, M	Divided
FFS (measured)	
Base Free-Flow Speed, BFFS	50.0

Calc Speed Adj and FFS

f_{LW} (mi/h)	0.0
f_{LC} (mi/h)	0.0
f_A (mi/h)	0.0
f_M (mi/h)	0.0
FFS (mi/h)	50.0

Operations

Operational (LOS)

Flow Rate, v_p (pc/h/ln)	560
Speed, S (mi/h)	50.0
D (pc/mi/ln)	11.2
LOS	B

Design

Design (N)

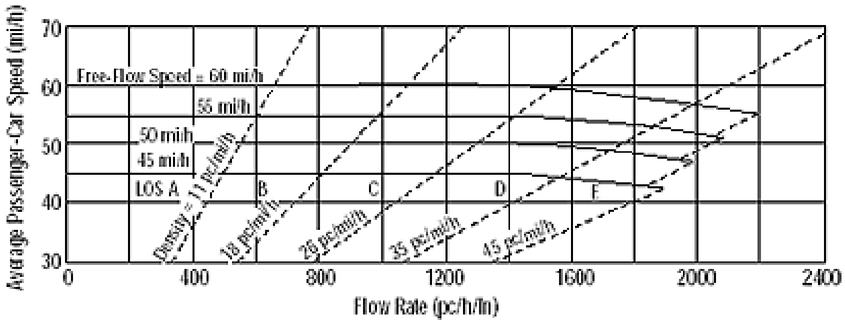
Required Number of Lanes, N

Flow Rate, v_p (pc/h)

Max Service Flow Rate (pc/h/ln)

Design LOS

MULTILANE HIGHWAYS WORKSHEET(Direction 1)



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	AJP
Agency or Company	Neel-Schaffer, Inc.
Date Performed	7/11/2011
Analysis Time Period	AM Peak

Site Information

Highway/Direction to Travel	US 190
From/To	Between Pride Dr & Airport Rd
Jurisdiction	Tangipahoa Parish
Analysis Year	2035 Alternate B - WB

Project Description N-S Prj# 8437

☑ Oper.(LOS) ☐ Des. (N) ☐ Plan. (vp)

Flow Inputs

Volume, V (veh/h)	1098	Peak-Hour Factor, PHF	0.90
AADT(veh/h)		%Trucks and Buses, P_T	7
Peak-Hour Prop of AADT (veh/d)		%RVs, P_R	0
Peak-Hour Direction Prop, D		General Terrain:	Level
DDHV (veh/h)		Grade Length (mi)	0.00
Driver Type Adjustment	1.00	Up/Down %	0.00
		Number of Lanes	2

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	f_{HV}	0.966

Speed Inputs

Lane Width, LW (ft)	12.0
Total Lateral Clearance, LC (ft)	12.0
Access Points, A (A/mi)	0
Median Type, M	Divided
FFS (measured)	
Base Free-Flow Speed, BFFS	50.0

Calc Speed Adj and FFS

f_{LW} (mi/h)	0.0
f_{LC} (mi/h)	0.0
f_A (mi/h)	0.0
f_M (mi/h)	0.0
FFS (mi/h)	50.0

Operations

Operational (LOS)

Flow Rate, v_p (pc/h/ln)	631
Speed, S (mi/h)	50.0
D (pc/mi/ln)	12.6
LOS	B

Design

Design (N)

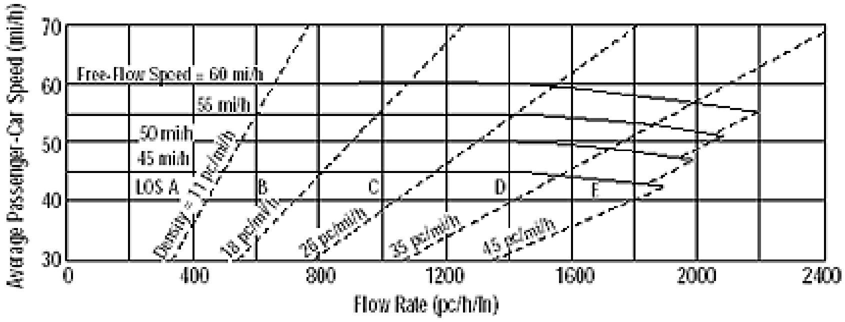
Required Number of Lanes, N

Flow Rate, v_p (pc/h)

Max Service Flow Rate (pc/h/ln)

Design LOS

MULTILANE HIGHWAYS WORKSHEET(Direction 2)



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	AJP
Agency or Company	Neel-Schaffer, Inc.
Date Performed	7/11/2011
Analysis Time Period	PM Peak

Site Information

Highway/Direction to Travel	US 190
From/To	Between Pride Dr & Airport Rd
Jurisdiction	Tangipahoa Parish
Analysis Year	2035 Alternate B - EB

Project Description N-S Prj# 8437

☑ Oper.(LOS) ☐ Des. (N) ☐ Plan. (vp)

Flow Inputs

Volume, V (veh/h)	900	Peak-Hour Factor, PHF	0.90
AADT(veh/h)		%Trucks and Buses, P_T	7
Peak-Hour Prop of AADT (veh/d)		%RVs, P_R	0
Peak-Hour Direction Prop, D		General Terrain:	Level
DDHV (veh/h)		Grade Length (mi)	0.00
Driver Type Adjustment	1.00	Up/Down %	0.00
		Number of Lanes	2

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	f_{HV}	0.966

Speed Inputs

Lane Width, LW (ft)	12.0
Total Lateral Clearance, LC (ft)	12.0
Access Points, A (A/mi)	0
Median Type, M	Divided
FFS (measured)	
Base Free-Flow Speed, BFFS	50.0

Calc Speed Adj and FFS

f_{LW} (mi/h)	0.0
f_{LC} (mi/h)	0.0
f_A (mi/h)	0.0
f_M (mi/h)	0.0
FFS (mi/h)	50.0

Operations

Operational (LOS)

Flow Rate, v_p (pc/h/ln)	517
Speed, S (mi/h)	50.0
D (pc/mi/ln)	10.3
LOS	A

Design

Design (N)

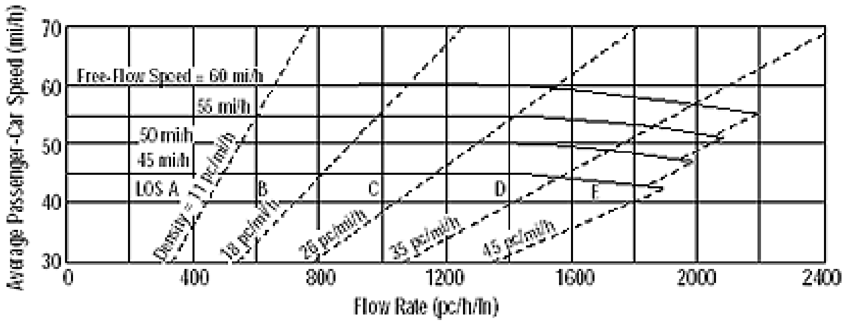
Required Number of Lanes, N

Flow Rate, v_p (pc/h)

Max Service Flow Rate (pc/h/ln)

Design LOS

MULTILANE HIGHWAYS WORKSHEET(Direction 1)



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	AJP
Agency or Company	Neel-Schaffer, Inc.
Date Performed	7/11/2011
Analysis Time Period	PM Peak

Site Information

Highway/Direction to Travel	US 190
From/To	Between Pride Dr & Airport Rd
Jurisdiction	Tangipahoa Parish
Analysis Year	2035 Alternate B - WB

Project Description N-S Prj# 8437

☑ Oper.(LOS) ☐ Des. (N) ☐ Plan. (vp)

Flow Inputs

Volume, V (veh/h)	966	Peak-Hour Factor, PHF	0.90
AADT(veh/h)		%Trucks and Buses, P_T	7
Peak-Hour Prop of AADT (veh/d)		%RVs, P_R	0
Peak-Hour Direction Prop, D		General Terrain:	Level
DDHV (veh/h)		Grade Length (mi)	0.00
Driver Type Adjustment	1.00	Up/Down %	0.00
		Number of Lanes	2

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	f_{HV}	0.966

Speed Inputs

Lane Width, LW (ft)	12.0
Total Lateral Clearance, LC (ft)	12.0
Access Points, A (A/mi)	0
Median Type, M	Divided
FFS (measured)	
Base Free-Flow Speed, BFFS	50.0

Calc Speed Adj and FFS

f_{LW} (mi/h)	0.0
f_{LC} (mi/h)	0.0
f_A (mi/h)	0.0
f_M (mi/h)	0.0
FFS (mi/h)	50.0

Operations

Operational (LOS)

Flow Rate, v_p (pc/h/ln)	555
Speed, S (mi/h)	50.0
D (pc/mi/ln)	11.1
LOS	B

Design

Design (N)

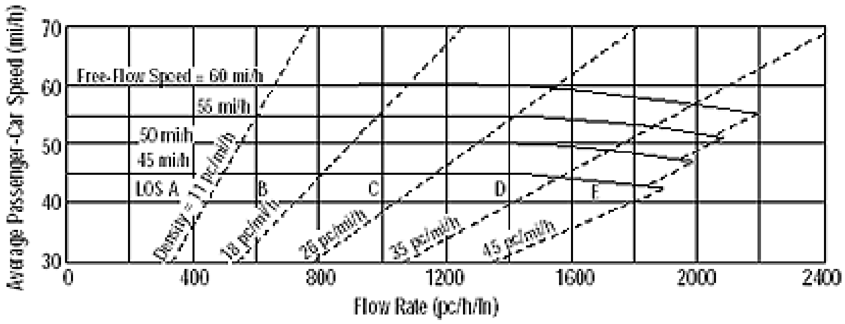
Required Number of Lanes, N

Flow Rate, v_p (pc/h)

Max Service Flow Rate (pc/h/ln)

Design LOS

MULTILANE HIGHWAYS WORKSHEET(Direction 2)



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	AJP
Agency or Company	Neel-Schaffer, Inc.
Date Performed	7/11/2011
Analysis Time Period	AM Peak

Site Information

Highway/Direction to Travel	US 190
From/To	Between Pride Dr & Airport Rd
Jurisdiction	Tangipahoa Parish
Analysis Year	2015 Alternate C - EB

Project Description N-S Prj# 8437

☑ Oper.(LOS) ☐ Des. (N) ☐ Plan. (vp)

Flow Inputs

Volume, V (veh/h)	790	Peak-Hour Factor, PHF	0.90
AADT(veh/h)		%Trucks and Buses, P_T	7
Peak-Hour Prop of AADT (veh/d)		%RVs, P_R	0
Peak-Hour Direction Prop, D		General Terrain:	Level
DDHV (veh/h)		Grade Length (mi)	0.00
Driver Type Adjustment	1.00	Up/Down %	0.00
		Number of Lanes	2

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	f_{HV}	0.966

Speed Inputs

Lane Width, LW (ft)	12.0
Total Lateral Clearance, LC (ft)	12.0
Access Points, A (A/mi)	0
Median Type, M	Divided
FFS (measured)	
Base Free-Flow Speed, BFFS	50.0

Calc Speed Adj and FFS

f_{LW} (mi/h)	0.0
f_{LC} (mi/h)	0.0
f_A (mi/h)	0.0
f_M (mi/h)	0.0
FFS (mi/h)	50.0

Operations

Operational (LOS)

Flow Rate, v_p (pc/h/ln)	454
Speed, S (mi/h)	50.0
D (pc/mi/ln)	9.1
LOS	A

Design

Design (N)

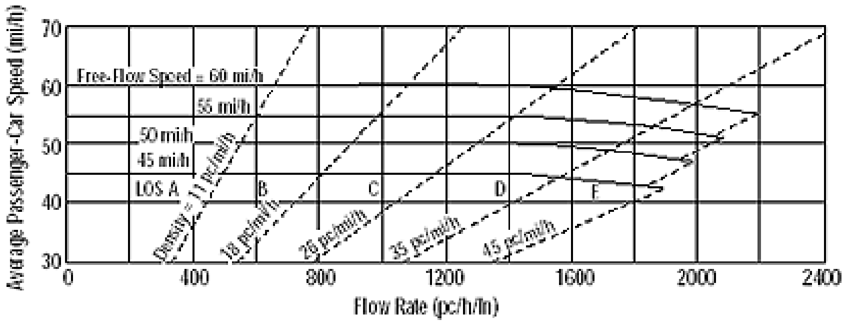
Required Number of Lanes, N

Flow Rate, v_p (pc/h)

Max Service Flow Rate (pc/h/ln)

Design LOS

MULTILANE HIGHWAYS WORKSHEET(Direction 1)



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	AJP
Agency or Company	Neel-Schaffer, Inc.
Date Performed	7/11/2011
Analysis Time Period	AM Peak

Site Information

Highway/Direction to Travel	US 190
From/To	Between Pride Dr & Airport Rd
Jurisdiction	Tangipahoa Parish
Analysis Year	2015 Alternate C - WB

Project Description N-S Prj# 8437

☑ Oper.(LOS) ☐ Des. (N) ☐ Plan. (vp)

Flow Inputs

Volume, V (veh/h)	876	Peak-Hour Factor, PHF	0.90
AADT(veh/h)		%Trucks and Buses, P_T	7
Peak-Hour Prop of AADT (veh/d)		%RVs, P_R	0
Peak-Hour Direction Prop, D		General Terrain:	Level
DDHV (veh/h)		Grade Length (mi)	0.00
Driver Type Adjustment	1.00	Up/Down %	0.00
		Number of Lanes	2

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	f_{HV}	0.966

Speed Inputs

Lane Width, LW (ft)	12.0
Total Lateral Clearance, LC (ft)	12.0
Access Points, A (A/mi)	0
Median Type, M	Divided
FFS (measured)	
Base Free-Flow Speed, BFFS	50.0

Calc Speed Adj and FFS

f_{LW} (mi/h)	0.0
f_{LC} (mi/h)	0.0
f_A (mi/h)	0.0
f_M (mi/h)	0.0
FFS (mi/h)	50.0

Operations

Operational (LOS)

Flow Rate, v_p (pc/h/ln)	503
Speed, S (mi/h)	50.0
D (pc/mi/ln)	10.1
LOS	A

Design

Design (N)

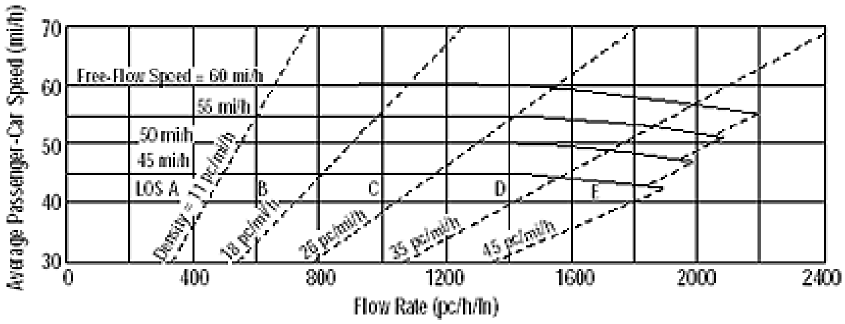
Required Number of Lanes, N

Flow Rate, v_p (pc/h)

Max Service Flow Rate (pc/h/ln)

Design LOS

MULTILANE HIGHWAYS WORKSHEET(Direction 2)



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	AJP
Agency or Company	Neel-Schaffer, Inc.
Date Performed	7/11/2011
Analysis Time Period	PM Peak

Site Information

Highway/Direction to Travel	US 190
From/To	Between Pride Dr & Airport Rd
Jurisdiction	Tangipahoa Parish
Analysis Year	2015 Alternate C - EB

Project Description N-S Prj# 8437

☑ Oper.(LOS) ☐ Des. (N) ☐ Plan. (vp)

Flow Inputs

Volume, V (veh/h)	694	Peak-Hour Factor, PHF	0.90
AADT(veh/h)		%Trucks and Buses, P_T	7
Peak-Hour Prop of AADT (veh/d)		%RVs, P_R	0
Peak-Hour Direction Prop, D		General Terrain:	Level
DDHV (veh/h)		Grade Length (mi)	0.00
Driver Type Adjustment	1.00	Up/Down %	0.00
		Number of Lanes	2

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	f_{HV}	0.966

Speed Inputs

Lane Width, LW (ft)	12.0
Total Lateral Clearance, LC (ft)	12.0
Access Points, A (A/mi)	0
Median Type, M	Divided
FFS (measured)	
Base Free-Flow Speed, BFFS	50.0

Calc Speed Adj and FFS

f_{LW} (mi/h)	0.0
f_{LC} (mi/h)	0.0
f_A (mi/h)	0.0
f_M (mi/h)	0.0
FFS (mi/h)	50.0

Operations

Operational (LOS)

Flow Rate, v_p (pc/h/ln)	399
Speed, S (mi/h)	50.0
D (pc/mi/ln)	8.0
LOS	A

Design

Design (N)

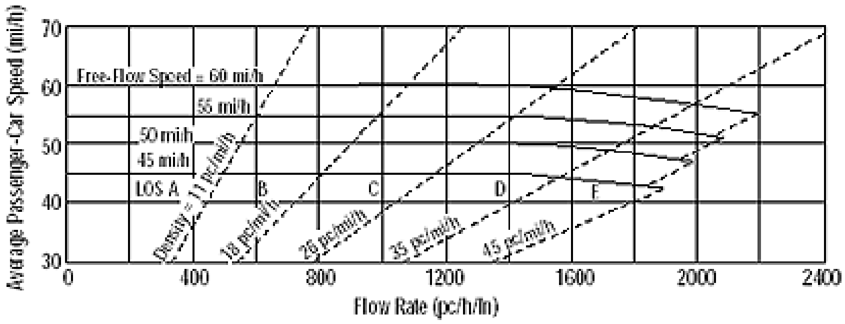
Required Number of Lanes, N

Flow Rate, v_p (pc/h)

Max Service Flow Rate (pc/h/ln)

Design LOS

MULTILANE HIGHWAYS WORKSHEET(Direction 1)



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	AJP
Agency or Company	Neel-Schaffer, Inc.
Date Performed	7/11/2011
Analysis Time Period	PM Peak

Site Information

Highway/Direction to Travel	US 190
From/To	Between Pride Dr & Airport Rd
Jurisdiction	Tangipahoa Parish
Analysis Year	2015 Alternate C - WB

Project Description N-S Prj# 8437

☑ Oper.(LOS) ☐ Des. (N) ☐ Plan. (vp)

Flow Inputs

Volume, V (veh/h)	718	Peak-Hour Factor, PHF	0.90
AADT(veh/h)		%Trucks and Buses, P_T	7
Peak-Hour Prop of AADT (veh/d)		%RVs, P_R	0
Peak-Hour Direction Prop, D		General Terrain:	Level
DDHV (veh/h)		Grade Length (mi)	0.00
Driver Type Adjustment	1.00	Up/Down %	0.00
		Number of Lanes	2

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	f_{HV}	0.966

Speed Inputs

Lane Width, LW (ft)	12.0
Total Lateral Clearance, LC (ft)	12.0
Access Points, A (A/mi)	0
Median Type, M	Divided
FFS (measured)	
Base Free-Flow Speed, BFFS	50.0

Calc Speed Adj and FFS

f_{LW} (mi/h)	0.0
f_{LC} (mi/h)	0.0
f_A (mi/h)	0.0
f_M (mi/h)	0.0
FFS (mi/h)	50.0

Operations

Operational (LOS)

Flow Rate, v_p (pc/h/ln)	412
Speed, S (mi/h)	50.0
D (pc/mi/ln)	8.2
LOS	A

Design

Design (N)

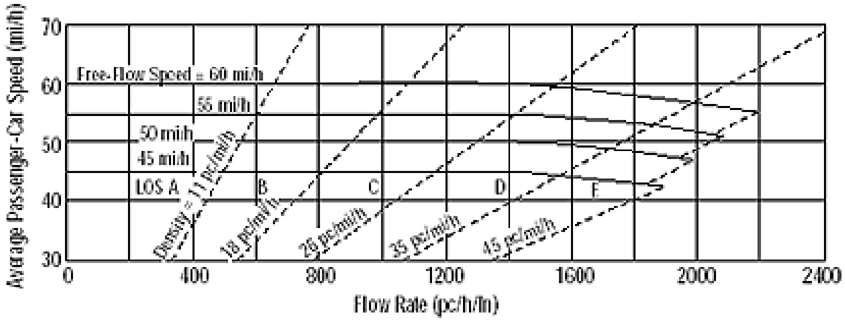
Required Number of Lanes, N

Flow Rate, v_p (pc/h)

Max Service Flow Rate (pc/h/ln)

Design LOS

MULTILANE HIGHWAYS WORKSHEET(Direction 2)



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	AJP
Agency or Company	Neel-Schaffer, Inc.
Date Performed	7/11/2011
Analysis Time Period	AM Peak

Site Information

Highway/Direction to Travel	US 190
From/To	Between Pride Dr & Airport Rd
Jurisdiction	Tangipahoa Parish
Analysis Year	2035 Alternate C - EB

Project Description N-S Prj# 8437

☑ Oper.(LOS) ☐ Des. (N) ☐ Plan. (vp)

Flow Inputs

Volume, V (veh/h)	916	Peak-Hour Factor, PHF	0.90
AADT(veh/h)		%Trucks and Buses, P_T	7
Peak-Hour Prop of AADT (veh/d)		%RVs, P_R	0
Peak-Hour Direction Prop, D		General Terrain:	Level
DDHV (veh/h)		Grade Length (mi)	0.00
Driver Type Adjustment	1.00	Up/Down %	0.00
		Number of Lanes	2

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	f_{HV}	0.966

Speed Inputs

Lane Width, LW (ft)	12.0
Total Lateral Clearance, LC (ft)	12.0
Access Points, A (A/mi)	0
Median Type, M	Divided
FFS (measured)	
Base Free-Flow Speed, BFFS	50.0

Calc Speed Adj and FFS

f_{LW} (mi/h)	0.0
f_{LC} (mi/h)	0.0
f_A (mi/h)	0.0
f_M (mi/h)	0.0
FFS (mi/h)	50.0

Operations

Operational (LOS)

Flow Rate, v_p (pc/h/ln)	526
Speed, S (mi/h)	50.0
D (pc/mi/ln)	10.5
LOS	A

Design

Design (N)

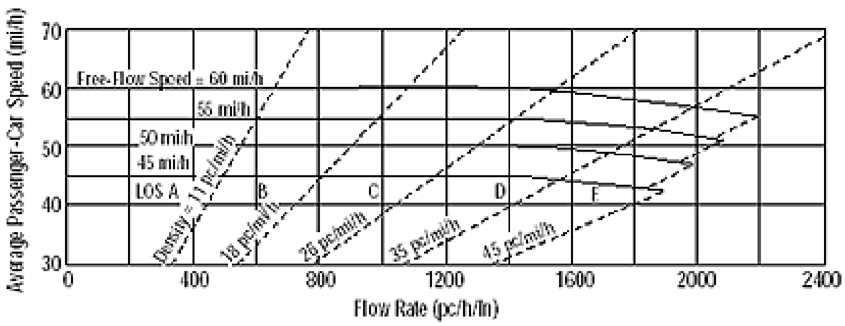
Required Number of Lanes, N

Flow Rate, v_p (pc/h)

Max Service Flow Rate (pc/h/ln)

Design LOS

MULTILANE HIGHWAYS WORKSHEET(Direction 1)



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	AJP
Agency or Company	Neel-Schaffer, Inc.
Date Performed	7/11/2011
Analysis Time Period	AM Peak

Site Information

Highway/Direction to Travel	US 190
From/To	Between Pride Dr & Airport Rd
Jurisdiction	Tangipahoa Parish
Analysis Year	2035 Alternate C - WB

Project Description N-S Prj# 8437

☑ Oper.(LOS) ☐ Des. (N) ☐ Plan. (vp)

Flow Inputs

Volume, V (veh/h)	1035	Peak-Hour Factor, PHF	0.90
AADT(veh/h)		%Trucks and Buses, P_T	7
Peak-Hour Prop of AADT (veh/d)		%RVs, P_R	0
Peak-Hour Direction Prop, D		General Terrain:	Level
DDHV (veh/h)		Grade Length (mi)	0.00
Driver Type Adjustment	1.00	Up/Down %	0.00
		Number of Lanes	2

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	f_{HV}	0.966

Speed Inputs

Lane Width, LW (ft)	12.0
Total Lateral Clearance, LC (ft)	12.0
Access Points, A (A/mi)	0
Median Type, M	Divided
FFS (measured)	
Base Free-Flow Speed, BFFS	50.0

Calc Speed Adj and FFS

f_{LW} (mi/h)	0.0
f_{LC} (mi/h)	0.0
f_A (mi/h)	0.0
f_M (mi/h)	0.0
FFS (mi/h)	50.0

Operations

Operational (LOS)

Flow Rate, v_p (pc/h/ln)	595
Speed, S (mi/h)	50.0
D (pc/mi/ln)	11.9
LOS	B

Design

Design (N)

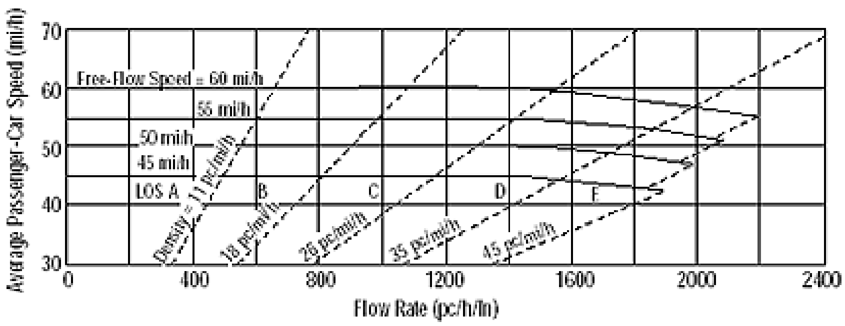
Required Number of Lanes, N

Flow Rate, v_p (pc/h)

Max Service Flow Rate (pc/h/ln)

Design LOS

MULTILANE HIGHWAYS WORKSHEET(Direction 2)



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	AJP
Agency or Company	Neel-Schaffer, Inc.
Date Performed	7/11/2011
Analysis Time Period	PM Peak

Site Information

Highway/Direction to Travel	US 190
From/To	Between Pride Dr & Airport Rd
Jurisdiction	Tangipahoa Parish
Analysis Year	2035 Alternate C - EB

Project Description N-S Prj# 8437

☑ Oper.(LOS) ☐ Des. (N) ☐ Plan. (vp)

Flow Inputs

Volume, V (veh/h)	952	Peak-Hour Factor, PHF	0.90
AADT(veh/h)		%Trucks and Buses, P_T	7
Peak-Hour Prop of AADT (veh/d)		%RVs, P_R	0
Peak-Hour Direction Prop, D		General Terrain:	Level
DDHV (veh/h)		Grade Length (mi)	0.00
Driver Type Adjustment	1.00	Up/Down %	0.00
		Number of Lanes	2

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	f_{HV}	0.966

Speed Inputs

Lane Width, LW (ft)	12.0
Total Lateral Clearance, LC (ft)	12.0
Access Points, A (A/mi)	0
Median Type, M	Divided
FFS (measured)	
Base Free-Flow Speed, BFFS	50.0

Calc Speed Adj and FFS

f_{LW} (mi/h)	0.0
f_{LC} (mi/h)	0.0
f_A (mi/h)	0.0
f_M (mi/h)	0.0
FFS (mi/h)	50.0

Operations

Operational (LOS)

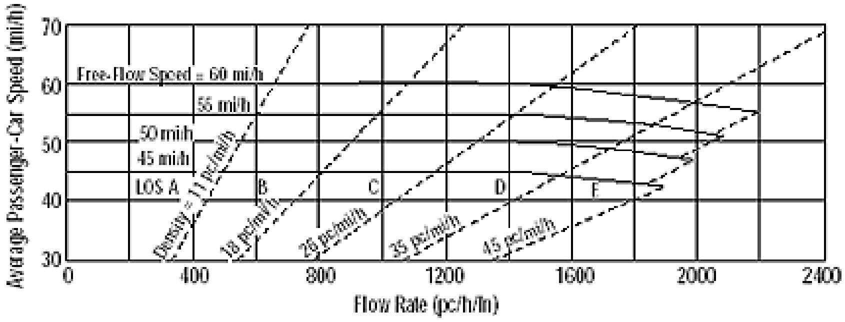
Flow Rate, v_p (pc/h/ln)	547
Speed, S (mi/h)	50.0
D (pc/mi/ln)	10.9
LOS	A

Design

Design (N)

Required Number of Lanes, N	
Flow Rate, v_p (pc/h)	
Max Service Flow Rate (pc/h/ln)	
Design LOS	

MULTILANE HIGHWAYS WORKSHEET(Direction 1)



Application	Input	Output
Operational (LOS)	FFS, N, v_p	LOS, S, D
Design (N)	FFS, LOS, v_p	N, S, D
Design (v_p)	FFS, LOS, N	v_p, S, D
Planning (LOS)	FFS, N, AADT	LOS, S, D
Planning (N)	FFS, LOS, AADT	N, S, D
Planning (v_p)	FFS, LOS, N	v_p, S, D

General Information

Analyst	AJP
Agency or Company	Neel-Schaffer, Inc.
Date Performed	7/11/2011
Analysis Time Period	PM Peak

Site Information

Highway/Direction to Travel	US 190
From/To	Between Pride Dr & Airport Rd
Jurisdiction	Tangipahoa Parish
Analysis Year	2035 Alternate C - WB

Project Description N-S Prj# 8437

☑ Oper.(LOS) ☐ Des. (N) ☐ Plan. (vp)

Flow Inputs

Volume, V (veh/h)	859	Peak-Hour Factor, PHF	0.90
AADT(veh/h)		%Trucks and Buses, P_T	7
Peak-Hour Prop of AADT (veh/d)		%RVs, P_R	0
Peak-Hour Direction Prop, D		General Terrain:	Level
DDHV (veh/h)		Grade Length (mi)	0.00
Driver Type Adjustment	1.00	Up/Down %	0.00
		Number of Lanes	2

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	f_{HV}	0.966

Speed Inputs

Lane Width, LW (ft)	12.0
Total Lateral Clearance, LC (ft)	12.0
Access Points, A (A/mi)	0
Median Type, M	Divided
FFS (measured)	
Base Free-Flow Speed, BFFS	50.0

Calc Speed Adj and FFS

f_{LW} (mi/h)	0.0
f_{LC} (mi/h)	0.0
f_A (mi/h)	0.0
f_M (mi/h)	0.0
FFS (mi/h)	50.0

Operations

Operational (LOS)

Flow Rate, v_p (pc/h/ln)	493
Speed, S (mi/h)	50.0
D (pc/mi/ln)	9.9
LOS	A

Design

Design (N)

Required Number of Lanes, N

Flow Rate, v_p (pc/h)

Max Service Flow Rate (pc/h/ln)

Design LOS

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US 190

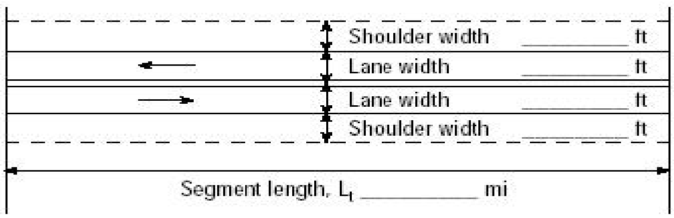
East of LA 3158 (S. Airport Road)

DIRECTIONAL TWO-LANE HIGHWAY SEGMENT WORKSHEET

General Information		Site Information	
Analyst	*AJP*	Highway / Direction of Travel	*US 190*
Agency or Company	*Neel-Schaffer, Inc.*	From/To	*East of Airport Rd*
Date Performed	*7/8/2011*	Jurisdiction	*Tangipahoa Parish*
Analysis Time Period	*AM Peak*	Analysis Year	*2011 No-Build*

Project Description: *N-S Prj# 8437*

Input Data



Class I highway (checked)   Class II highway

Terrain: Level (checked)   Rolling

Grade Length mi	Up/down
Peak-hour factor, PHF	*0.90*
No-passing zone	*20*%
% Trucks and Buses , P_T	*7* %
% Recreational vehicles, P_R	*0*%
Access points/ *mi*	*8*

Analysis direction vol., V_d *664*veh/h

Opposing direction vol., V_o *562*veh/h

Average Travel Speed

	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E_T (Exhibit 20-9 or 20-15)	*1.1*	*1.1*
Passenger-car equivalents for RVs, E_R (Exhibit 20-9 or 20-17)	*1.0*	*1.0*
Heavy-vehicle adjustment factor, f_{HV}=1/ (1+ P_T(E_T-1)+P_R(E_R-1))	*0.993*	*0.993*
Grade adjustment factor [1], f_G (Exhibit 20-7 or 20-13)	*1.00*	*1.00*
Directional flow rate[2], v_i(pc/h) v_i=V_i/(PHF*f_{HV}* f_G)	*743*	*629*

Free-Flow Speed from Field Measurement		Estimated Free-Flow Speed	
Field measured speed[3], S_{FM}	mi/h	Base free-flow speed[3], $BFFS_{FM}$	*60.0* mi/h
Observed volume[3], V_f	veh/h	Adj. for lane width and shoulder width,[3] f_{LS}(Exh 20-5)	*0.0* mi/h
Free-flow speed, FFS_d FFS=S_{FM}+0.00776(V_f/ f_{HV})	mi/h	Adj. for access points[3], f_A (Exhibit 20-5)	*2.0* mi/h
Adjustment for no-passing zones, f_{np} (Exhibit 20-19)	*1.0* mi/h	Free-flow speed, FFS_d (FSS=BFFS-f_{LS}-f_A)	*58.0* mi/h
		Average travel speed, ATS=FFS-0.00776v_p-f_{np}	*46.4* mi/h

Percent Time-Spent-Following

	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E_T(Exhibit 20-10 or 20-16)	*1.0*	*1.0*
Passenger-car equivalents for RVs, E_R (Exhibit 20-10 or 20-16)	*1.0*	*1.0*
Heavy-vehicle adjustment factor, f_{HV}=1/ (1+ P_T(E_T-1)+P_R(E_R-1))	*1.000*	*1.000*
Grade adjustment factor[1], f_G (Exhibit 20-8 or 20-14)	*1.00*	*1.00*
Directional flow rate[2], v_i(pc/h)=V_i/(PHF*f_{HV}* f_G)	*738*	*624*
Base percent time-spent-following[4], BPTSF(%)=100(1-$e^{av_d^b}$)	*64.9*	
Adj. for no-passing zone, f_{np} (Exhibit. 20-20)	*20.3*	
Percent time-spent-following, PTSF(%)=BPTSF+f_{np}	*75.9*	

Level of Service and Other Performance Measures

Level of service, LOS (Exhibit 20-3 or 20-4)	*D*
Volume to capacity ratio, v/c=V_p/ 1,700	*0.44*
Peak 15-min veh-miles of travel, VMT_{15} (veh- *mi*)=0.25L_t(V/PHF)	*184*
Peak-hour vehicle-miles of travel, VMT_{60}(veh- *mi*)=V*L_t	*664*
Peak 15-min total travel time, TT_{15}(veh-h)=VMT_{15}/ATS	*4.0*

Notes

1. If the highway is extended segment (level) or rolling terrain, fG=1.0 .
2. If v_i(v_d or v_o) >=1,700 pc/h, terminate analysis--the LOS is F.
3. For the analysis direction only.
4. Exhibit 20-21 provides factors a and b.
5. Use alternative Equation 20-14 if some trucks operate at crawl speeds on a specific downgrade.

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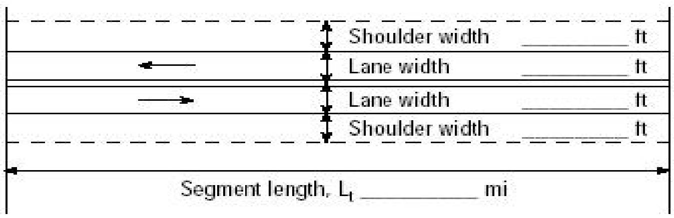
DIRECTIONAL TWO-LANE HIGHWAY SEGMENT WORKSHEET

General Information		Site Information	
Analyst	*AJP*	Highway / Direction of Travel	*US 190*
Agency or Company	*Neel-Schaffer, Inc.*	From/To	*East of Airport Rd*
Date Performed	*7/8/2011*	Jurisdiction	*Tangipahoa Parish*
Analysis Time Period	*PM Peak*	Analysis Year	*2011 No-Build*

Project Description: *N-S Prj# 8437*

Input Data



☑ Class I highway ☐ Class II highway

Terrain ☑ Level ☐ Rolling

Grade Length mi Up/down

Peak-hour factor, PHF *0.90*

No-passing zone *20%*

% Trucks and Buses , P_T *7 %*

% Recreational vehicles, P_R *0%*

Access points/ *mi* *8*

Analysis direction vol., V_d *573*veh/h

Opposing direction vol., V_o *415*veh/h

Average Travel Speed

	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E_T (Exhibit 20-9 or 20-15)	*1.1*	*1.2*
Passenger-car equivalents for RVs, E_R (Exhibit 20-9 or 20-17)	*1.0*	*1.0*
Heavy-vehicle adjustment factor, f_{HV}=1/ (1+ P_T(E_T-1)+P_R(E_R-1))	*0.993*	*0.986*
Grade adjustment factor [1], f_G (Exhibit 20-7 or 20-13)	*1.00*	*1.00*
Directional flow rate[2], v_i(pc/h) v_i=V_i/(PHF*f_{HV}* f_G)	*641*	*468*

Free-Flow Speed from Field Measurement		Estimated Free-Flow Speed	
Field measured speed[3], S_{FM}	*mi/h*	Base free-flow speed[3], $BFFS_{FM}$	*60.0 mi/h*
Observed volume[3], V_f	veh/h	Adj. for lane width and shoulder width,[3] f_{LS}(Exh 20-5)	*0.0 mi/h*
Free-flow speed, FFS_d FFS=S_{FM}+0.00776(V_f/ f_{HV})	*mi/h*	Adj. for access points[3], f_A (Exhibit 20-5)	*2.0 mi/h*
Adjustment for no-passing zones, f_{np} (Exhibit 20-19)	*1.2 mi/h*	Free-flow speed, FFS_d (FSS=BFFS-f_{LS}-f_A)	*58.0 mi/h*
		Average travel speed, ATS=FFS-0.00776v_p-f_{np}	*48.1 mi/h*

Percent Time-Spent-Following

	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E_T(Exhibit 20-10 or 20-16)	*1.0*	*1.1*
Passenger-car equivalents for RVs, E_R (Exhibit 20-10 or 20-16)	*1.0*	*1.0*
Heavy-vehicle adjustment factor, f_{HV}=1/ (1+ P_T(E_T-1)+P_R(E_R-1))	*1.000*	*0.993*
Grade adjustment factor[1], f_G (Exhibit 20-8 or 20-14)	*1.00*	*1.00*
Directional flow rate[2], v_i(pc/h)=V_i/(PHF*f_{HV}* f_G)	*637*	*464*
Base percent time-spent-following[4], BPTSF(%)=100(1-$e^{av_d^b}$)	*58.8*	
Adj. for no-passing zone, f_{np} (Exhibit. 20-20)	*24.5*	
Percent time-spent-following, PTSF(%)=BPTSF+f_{np}	*73.0*	

Level of Service and Other Performance Measures

Level of service, LOS (Exhibit 20-3 or 20-4)	*D*
Volume to capacity ratio, v/c=V_p/ 1,700	*0.38*
Peak 15-min veh-miles of travel, VMT_{15} (veh- *mi*)=0.25L_t(V/PHF)	*159*
Peak-hour vehicle-miles of travel, VMT_{60}(veh- *mi*)=V*L_t	*573*
Peak 15-min total travel time, TT_{15}(veh-h)=VMT_{15}/ATS	*3.3*

Notes

1. If the highway is extended segment (level) or rolling terrain, fG=1.0 .
2. If v_i(v_d or v_o) >=1,700 pc/h, terminate analysis--the LOS is F.
3. For the analysis direction only.
4. Exhibit 20-21 provides factors a and b.
5. Use alternative Equation 20-14 if some trucks operate at crawl speeds on a specific downgrade.

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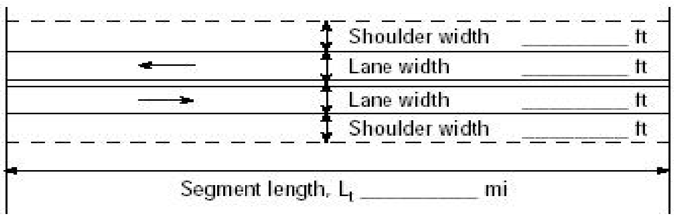
DIRECTIONAL TWO-LANE HIGHWAY SEGMENT WORKSHEET

General Information		Site Information	
Analyst	*AJP*	Highway / Direction of Travel	*US 190*
Agency or Company	*Neel-Schaffer, Inc.*	From/To	*East of Airport Rd*
Date Performed	*7/8/2011*	Jurisdiction	*Tangipahoa Parish*
Analysis Time Period	*AM Peak*	Analysis Year	*2015 No-Build*

Project Description: *N-S Prj# 8437*

Input Data



☑ Class I highway ☐ Class II highway

Terrain ☑ Level ☐ Rolling

Grade Length mi Up/down

Peak-hour factor, PHF *0.90*

No-passing zone *20%*

% Trucks and Buses , P_T *7 %*

% Recreational vehicles, P_R *0%*

Access points/ *mi* *8*

Analysis direction vol., V_d *744*veh/h

Opposing direction vol., V_o *577*veh/h

Average Travel Speed

	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E_T (Exhibit 20-9 or 20-15)	*1.1*	*1.1*
Passenger-car equivalents for RVs, E_R (Exhibit 20-9 or 20-17)	*1.0*	*1.0*
Heavy-vehicle adjustment factor, f_{HV}=1/ (1+ $P_T(E_T$-1)+$P_R(E_R$-1))	*0.993*	*0.993*
Grade adjustment factor [1], f_G (Exhibit 20-7 or 20-13)	*1.00*	*1.00*
Directional flow rate[2], v_i(pc/h) $v_i=V_i/(PHF*f_{HV}*f_G)$	*832*	*646*

Free-Flow Speed from Field Measurement		Estimated Free-Flow Speed	
Field measured speed[3], S_{FM}	*mi/h*	Base free-flow speed[3], $BFFS_{FM}$	*60.0 mi/h*
Observed volume[3], V_f	veh/h	Adj. for lane width and shoulder width,[3] f_{LS}(Exh 20-5)	*0.0 mi/h*
Free-flow speed, FFS_d FFS=S_{FM}+0.00776(V_f/ f_{HV})	*mi/h*	Adj. for access points[3], f_A (Exhibit 20-5)	*2.0 mi/h*
Adjustment for no-passing zones, f_{np} (Exhibit 20-19)	*0.9 mi/h*	Free-flow speed, FFS_d (FSS=BFFS-f_{LS}-f_A)	*58.0 mi/h*
		Average travel speed, ATS=FFS-0.00776v_p-f_{np}	*45.6 mi/h*

Percent Time-Spent-Following

	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E_T(Exhibit 20-10 or 20-16)	*1.0*	*1.0*
Passenger-car equivalents for RVs, E_R (Exhibit 20-10 or 20-16)	*1.0*	*1.0*
Heavy-vehicle adjustment factor, f_{HV}=1/ (1+ $P_T(E_T$-1)+$P_R(E_R$-1))	*1.000*	*1.000*
Grade adjustment factor[1], f_G (Exhibit 20-8 or 20-14)	*1.00*	*1.00*
Directional flow rate[2], v_i(pc/h)=$V_i/(PHF*f_{HV}*f_G)$	*827*	*641*
Base percent time-spent-following[4], BPTSF(%)=100(1-$e^{av_d^b}$)	*68.8*	
Adj. for no-passing zone, f_{np} (Exhibit. 20-20)	*18.7*	
Percent time-spent-following, PTSF(%)=BPTSF+f_{np}	*79.3*	

Level of Service and Other Performance Measures

Level of service, LOS (Exhibit 20-3 or 20-4)	*D*
Volume to capacity ratio, v/c=V_p/ 1,700	*0.49*
Peak 15-min veh-miles of travel, VMT_{15} (veh- *mi*)=0.25L_t(V/PHF)	*207*
Peak-hour vehicle-miles of travel, VMT_{60}(veh- *mi*)=V*L_t	*744*
Peak 15-min total travel time, TT_{15}(veh-h)=VMT_{15}/ATS	*4.5*

Notes

1. If the highway is extended segment (level) or rolling terrain, fG=1.0 .
2. If v_i(v_d or v_o) >=1,700 pc/h, terminate analysis--the LOS is F.
3. For the analysis direction only.
4. Exhibit 20-21 provides factors a and b.
5. Use alternative Equation 20-14 if some trucks operate at crawl speeds on a specific downgrade.

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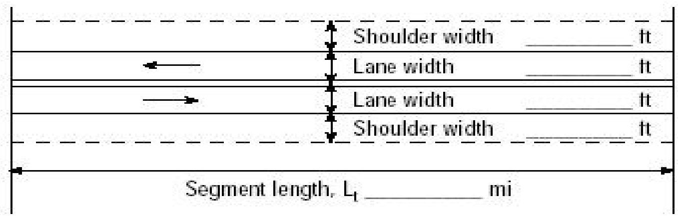
DIRECTIONAL TWO-LANE HIGHWAY SEGMENT WORKSHEET

General Information		Site Information	
Analyst	*AJP*	Highway / Direction of Travel	*US 190*
Agency or Company	*Neel-Schaffer, Inc.*	From/To	*East of Airport Rd*
Date Performed	*7/8/2011*	Jurisdiction	*Tangipahoa Parish*
Analysis Time Period	*PM Peak*	Analysis Year	*2015 No-Build*

Project Description: *N-S Prj# 8437*

Input Data



Class I highway (checked) Class II highway

Terrain Level (checked) Rolling

Grade Length mi Up/down

Peak-hour factor, PHF *0.90*

No-passing zone *20%*

% Trucks and Buses , P_T *7 %*

% Recreational vehicles, P_R *0%*

Access points/ *mi* *8*

Analysis direction vol., V_d *554*veh/h

Opposing direction vol., V_o *456*veh/h

Average Travel Speed

	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E_T (Exhibit 20-9 or 20-15)	*1.1*	*1.2*
Passenger-car equivalents for RVs, E_R (Exhibit 20-9 or 20-17)	*1.0*	*1.0*
Heavy-vehicle adjustment factor, $f_{HV}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	*0.993*	*0.986*
Grade adjustment factor [1], f_G (Exhibit 20-7 or 20-13)	*1.00*	*1.00*
Directional flow rate[2], v_i(pc/h) $v_i=V_i/(PHF*f_{HV}*f_G)$	*620*	*514*

Free-Flow Speed from Field Measurement		Estimated Free-Flow Speed	
Field measured speed[3], S_{FM}	*mi/h*	Base free-flow speed[3], $BFFS_{FM}$	*60.0 mi/h*
Observed volume[3], V_f	veh/h	Adj. for lane width and shoulder width,[3] f_{LS}(Exh 20-5)	*0.0 mi/h*
Free-flow speed, FFS_d $FFS=S_{FM}+0.00776(V_f/f_{HV})$	*mi/h*	Adj. for access points[3], f_A (Exhibit 20-5)	*2.0 mi/h*
Adjustment for no-passing zones, f_{np} (Exhibit 20-19)	*1.2 mi/h*	Free-flow speed, FFS_d $(FSS=BFFS-f_{LS}-f_A)$	*58.0 mi/h*
		Average travel speed, $ATS=FFS-0.00776v_p-f_{np}$	*48.0 mi/h*

Percent Time-Spent-Following

	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E_T(Exhibit 20-10 or 20-16)	*1.0*	*1.1*
Passenger-car equivalents for RVs, E_R (Exhibit 20-10 or 20-16)	*1.0*	*1.0*
Heavy-vehicle adjustment factor, $f_{HV}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	*1.000*	*0.993*
Grade adjustment factor[1], f_G (Exhibit 20-8 or 20-14)	*1.00*	*1.00*
Directional flow rate[2], $v_i(pc/h)=V_i/(PHF*f_{HV}*f_G)$	*616*	*510*
Base percent time-spent-following[4], $BPTSF(\%)=100(1-e^{av_d^b})$	*58.3*	
Adj. for no-passing zone, f_{np} (Exhibit. 20-20)	*25.0*	
Percent time-spent-following, $PTSF(\%)=BPTSF+f_{np}$	*72.0*	

Level of Service and Other Performance Measures

Level of service, LOS (Exhibit 20-3 or 20-4)	*D*
Volume to capacity ratio, $v/c=V_p/1{,}700$	*0.36*
Peak 15-min veh-miles of travel, VMT_{15} (veh- *mi*)$=0.25L_t(V/PHF)$	*154*
Peak-hour vehicle-miles of travel, VMT_{60}(veh- *mi*)$=V*L_t$	*554*
Peak 15-min total travel time, TT_{15}(veh-h)$=VMT_{15}/ATS$	*3.2*

Notes

1. If the highway is extended segment (level) or rolling terrain, fG=1.0 .
2. If $v_i(v_d$ or $v_o) >=1{,}700$ pc/h, terminate analysis--the LOS is F.
3. For the analysis direction only.
4. Exhibit 20-21 provides factors a and b.
5. Use alternative Equation 20-14 if some trucks operate at crawl speeds on a specific downgrade.

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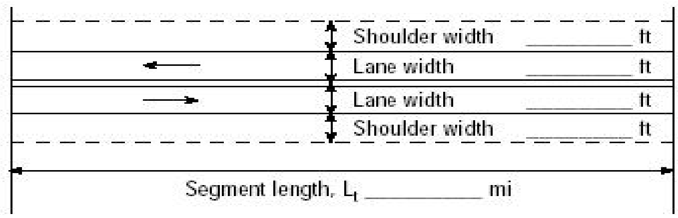
DIRECTIONAL TWO-LANE HIGHWAY SEGMENT WORKSHEET

General Information		Site Information	
Analyst	*AJP*	Highway / Direction of Travel	*US 190*
Agency or Company	*Neel-Schaffer, Inc.*	From/To	*East of Airport Rd*
Date Performed	*7/8/2011*	Jurisdiction	*Tangipahoa Parish*
Analysis Time Period	*AM Peak*	Analysis Year	*2035 No-Build*

Project Description: *N-S Prj# 8437*

Input Data



Analysis direction vol., V_d *923*veh/h

Opposing direction vol., V_o *702*veh/h

☑ Class I highway ☐ Class II highway

Terrain ☑ Level ☐ Rolling

Grade Length mi Up/down

Peak-hour factor, PHF *0.90*

No-passing zone *20%*

% Trucks and Buses , P_T *7 %*

% Recreational vehicles, P_R *0%*

Access points/ *mi* *8*

Average Travel Speed

	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E_T (Exhibit 20-9 or 20-15)	*1.1*	*1.1*
Passenger-car equivalents for RVs, E_R (Exhibit 20-9 or 20-17)	*1.0*	*1.0*
Heavy-vehicle adjustment factor, f_{HV}=1/ (1+ P_T(E_T-1)+P_R(E_R-1))	*0.993*	*0.993*
Grade adjustment factor [1], f_G (Exhibit 20-7 or 20-13)	*1.00*	*1.00*
Directional flow rate[2], v_i(pc/h) v_i=V_i/(PHF*f_{HV}* f_G)	*1033*	*785*

Free-Flow Speed from Field Measurement		Estimated Free-Flow Speed	
Field measured speed[3], S_{FM}	*mi/h*	Base free-flow speed[3], $BFFS_{FM}$	*60.0 mi/h*
Observed volume[3], V_f	veh/h	Adj. for lane width and shoulder width,[3] f_{LS}(Exh 20-5)	*0.0 mi/h*
Free-flow speed, FFS_d FFS=S_{FM}+0.00776(V_f/ f_{HV})	*mi/h*	Adj. for access points[3], f_A (Exhibit 20-5)	*2.0 mi/h*
Adjustment for no-passing zones, f_{np} (Exhibit 20-19)	*0.6 mi/h*	Free-flow speed, FFS_d (FSS=BFFS-f_{LS}-f_A)	*58.0 mi/h*
		Average travel speed, ATS=FFS-0.00776v_p-f_{np}	*43.3 mi/h*

Percent Time-Spent-Following

	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E_T(Exhibit 20-10 or 20-16)	*1.0*	*1.0*
Passenger-car equivalents for RVs, E_R (Exhibit 20-10 or 20-16)	*1.0*	*1.0*
Heavy-vehicle adjustment factor, f_{HV}=1/ (1+ P_T(E_T-1)+P_R(E_R-1))	*1.000*	*1.000*
Grade adjustment factor[1], f_G (Exhibit 20-8 or 20-14)	*1.00*	*1.00*
Directional flow rate[2], v_i(pc/h)=V_i/(PHF*f_{HV}* f_G)	*1026*	*780*
Base percent time-spent-following[4], BPTSF(%)=100(1-$e^{av_d^b}$)	*76.5*	
Adj. for no-passing zone, f_{np} (Exhibit. 20-20)	*15.4*	
Percent time-spent-following, PTSF(%)=BPTSF+f_{np}	*85.3*	

Level of Service and Other Performance Measures

Level of service, LOS (Exhibit 20-3 or 20-4)	*E*
Volume to capacity ratio, v/c=V_p/ 1,700	*0.61*
Peak 15-min veh-miles of travel, VMT_{15} (veh- *mi*)=0.25L_t(V/PHF)	*256*
Peak-hour vehicle-miles of travel, VMT_{60}(veh- *mi*)=V*L_t	*923*
Peak 15-min total travel time, TT_{15}(veh-h)=VMT_{15}/ATS	*5.9*

Notes

1. If the highway is extended segment (level) or rolling terrain, fG=1.0 .
2. If v_i(v_d or v_o) >=1,700 pc/h, terminate analysis--the LOS is F.
3. For the analysis direction only.
4. Exhibit 20-21 provides factors a and b.
5. Use alternative Equation 20-14 if some trucks operate at crawl speeds on a specific downgrade.

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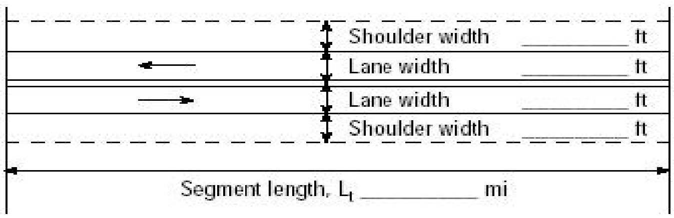
DIRECTIONAL TWO-LANE HIGHWAY SEGMENT WORKSHEET

General Information		Site Information	
Analyst	*AJP*	Highway / Direction of Travel	*US 190*
Agency or Company	*Neel-Schaffer, Inc.*	From/To	*East of Airport Rd*
Date Performed	*7/8/2011*	Jurisdiction	*Tangipahoa Parish*
Analysis Time Period	*PM Peak*	Analysis Year	*2035 No-Build*

Project Description: *N-S Prj# 8437*

Input Data



☑ Class I highway ☐ Class II highway

Terrain ☑ Level ☐ Rolling

Grade Length mi Up/down

Peak-hour factor, PHF *0.90*

No-passing zone *20*%

% Trucks and Buses , P_T *7* %

% Recreational vehicles, P_R *0*%

Access points/ *mi* *8*

Analysis direction vol., V_d *677*veh/h

Opposing direction vol., V_o *565*veh/h

Average Travel Speed

	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E_T (Exhibit 20-9 or 20-15)	*1.1*	*1.1*
Passenger-car equivalents for RVs, E_R (Exhibit 20-9 or 20-17)	*1.0*	*1.0*
Heavy-vehicle adjustment factor, f_{HV}=1/ (1+ P_T(E_T-1)+P_R(E_R-1))	*0.993*	*0.993*
Grade adjustment factor [1], f_G (Exhibit 20-7 or 20-13)	*1.00*	*1.00*
Directional flow rate[2], v_i(pc/h) v_i=V_i/(PHF*f_{HV}* f_G)	*757*	*632*

Free-Flow Speed from Field Measurement		Estimated Free-Flow Speed	
Field measured speed[3], S_{FM}	*mi/h*	Base free-flow speed[3], $BFFS_{FM}$	*60.0 mi/h*
Observed volume[3], V_f	veh/h	Adj. for lane width and shoulder width,[3] f_{LS}(Exh 20-5)	*0.0 mi/h*
Free-flow speed, FFS_d FFS=S_{FM}+0.00776(V_f/ f_{HV})	*mi/h*	Adj. for access points[3], f_A (Exhibit 20-5)	*2.0 mi/h*
Adjustment for no-passing zones, f_{np} (Exhibit 20-19)	*0.9 mi/h*	Free-flow speed, FFS_d (FSS=BFFS-f_{LS}-f_A)	*58.0 mi/h*
		Average travel speed, ATS=FFS-0.00776v_p-f_{np}	*46.3 mi/h*

Percent Time-Spent-Following

	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E_T(Exhibit 20-10 or 20-16)	*1.0*	*1.0*
Passenger-car equivalents for RVs, E_R (Exhibit 20-10 or 20-16)	*1.0*	*1.0*
Heavy-vehicle adjustment factor, f_{HV}=1/ (1+ P_T(E_T-1)+P_R(E_R-1))	*1.000*	*1.000*
Grade adjustment factor[1], f_G (Exhibit 20-8 or 20-14)	*1.00*	*1.00*
Directional flow rate[2], v_i(pc/h)=V_i/(PHF*f_{HV}* f_G)	*752*	*628*
Base percent time-spent-following[4], BPTSF(%)=100(1-$e^{av_d^b}$)	*65.5*	
Adj. for no-passing zone, f_{np} (Exhibit. 20-20)	*20.0*	
Percent time-spent-following, PTSF(%)=BPTSF+f_{np}	*76.4*	

Level of Service and Other Performance Measures

Level of service, LOS (Exhibit 20-3 or 20-4)	*D*
Volume to capacity ratio, v/c=V_p/ 1,700	*0.45*
Peak 15-min veh-miles of travel, VMT_{15} (veh- *mi*)=0.25L_t(V/PHF)	*188*
Peak-hour vehicle-miles of travel, VMT_{60}(veh- *mi*)=V*L_t	*677*
Peak 15-min total travel time, TT_{15}(veh-h)=VMT_{15}/ATS	*4.1*

Notes

1. If the highway is extended segment (level) or rolling terrain, fG=1.0 .
2. If v_i(v_d or v_o) >=1,700 pc/h, terminate analysis--the LOS is F.
3. For the analysis direction only.
4. Exhibit 20-21 provides factors a and b.
5. Use alternative Equation 20-14 if some trucks operate at crawl speeds on a specific downgrade.

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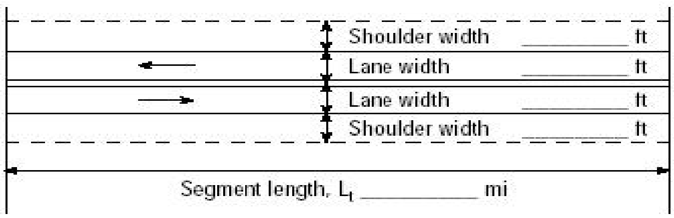
DIRECTIONAL TWO-LANE HIGHWAY SEGMENT WORKSHEET

General Information		Site Information	
Analyst	*AJP*	Highway / Direction of Travel	*US 190*
Agency or Company	*Neel-Schaffer, Inc.*	From/To	*East of Airport Rd*
Date Performed	*7/8/2011*	Jurisdiction	*Tangipahoa Parish*
Analysis Time Period	*AM Peak*	Analysis Year	*2015 Alternate A*

Project Description: *N-S Prj# 8437*

Input Data



Analysis direction vol., V_d *751*veh/h

Opposing direction vol., V_o *768*veh/h

☑ Class I highway ☐ Class II highway

Terrain ☑ Level ☐ Rolling

Grade Length mi Up/down

Peak-hour factor, PHF *0.90*

No-passing zone *20*%

% Trucks and Buses , P_T *7* %

% Recreational vehicles, P_R *0*%

Access points/ *mi* *8*

Average Travel Speed

	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E_T (Exhibit 20-9 or 20-15)	*1.1*	*1.1*
Passenger-car equivalents for RVs, E_R (Exhibit 20-9 or 20-17)	*1.0*	*1.0*
Heavy-vehicle adjustment factor, f_{HV}=1/ (1+ $P_T(E_T$-1)+$P_R(E_R$-1))	*0.993*	*0.993*
Grade adjustment factor [1], f_G (Exhibit 20-7 or 20-13)	*1.00*	*1.00*
Directional flow rate[2], v_i(pc/h) $v_i=V_i/(PHF*f_{HV}*f_G)$	*840*	*859*

Free-Flow Speed from Field Measurement		Estimated Free-Flow Speed	
Field measured speed[3], S_{FM}	*mi/h*	Base free-flow speed[3], $BFFS_{FM}$	*60.0 mi/h*
Observed volume[3], V_f	veh/h	Adj. for lane width and shoulder width,[3] f_{LS}(Exh 20-5)	*0.0 mi/h*
Free-flow speed, FFS_d FFS=S_{FM}+0.00776(V_f/ f_{HV})	*mi/h*	Adj. for access points[3], f_A (Exhibit 20-5)	*2.0 mi/h*
Adjustment for no-passing zones, f_{np} (Exhibit 20-19)	*0.6 mi/h*	Free-flow speed, FFS_d (FSS=BFFS-f_{LS}-f_A)	*58.0 mi/h*
		Average travel speed, ATS=FFS-0.00776v_p-f_{np}	*44.3 mi/h*

Percent Time-Spent-Following

	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E_T(Exhibit 20-10 or 20-16)	*1.0*	*1.0*
Passenger-car equivalents for RVs, E_R (Exhibit 20-10 or 20-16)	*1.0*	*1.0*
Heavy-vehicle adjustment factor, f_{HV}=1/ (1+ $P_T(E_T$-1)+$P_R(E_R$-1))	*1.000*	*1.000*
Grade adjustment factor[1], f_G (Exhibit 20-8 or 20-14)	*1.00*	*1.00*
Directional flow rate[2], v_i(pc/h)=$V_i/(PHF*f_{HV}*f_G)$	*834*	*853*
Base percent time-spent-following[4], BPTSF(%)=100(1-$e^{av_d^b}$)	*71.1*	
Adj. for no-passing zone, f_{np} (Exhibit. 20-20)	*16.9*	
Percent time-spent-following, PTSF(%)=BPTSF+f_{np}	*79.4*	

Level of Service and Other Performance Measures

Level of service, LOS (Exhibit 20-3 or 20-4)	*D*
Volume to capacity ratio, v/c=V_p/ 1,700	*0.49*
Peak 15-min veh-miles of travel, VMT_{15} (veh- *mi*)=0.25L_t(V/PHF)	*209*
Peak-hour vehicle-miles of travel, VMT_{60}(veh- *mi*)=V*L_t	*751*
Peak 15-min total travel time, TT_{15}(veh-h)=VMT_{15}/ATS	*4.7*

Notes

1. If the highway is extended segment (level) or rolling terrain, fG=1.0 .
2. If v_i(v_d or v_o) >=1,700 pc/h, terminate analysis--the LOS is F.
3. For the analysis direction only.
4. Exhibit 20-21 provides factors a and b.
5. Use alternative Equation 20-14 if some trucks operate at crawl speeds on a specific downgrade.

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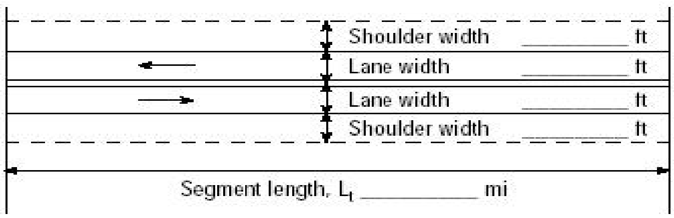
DIRECTIONAL TWO-LANE HIGHWAY SEGMENT WORKSHEET

General Information		Site Information	
Analyst	*AJP*	Highway / Direction of Travel	*US 190*
Agency or Company	*Neel-Schaffer, Inc.*	From/To	*East of Airport Rd*
Date Performed	*7/8/2011*	Jurisdiction	*Tangipahoa Parish*
Analysis Time Period	*PM Peak*	Analysis Year	*2015 Alternate A*

Project Description: *N-S Prj# 8437*

Input Data



☑ Class I highway ☐ Class II highway

Terrain ☑ Level ☐ Rolling

Grade Length mi Up/down

Peak-hour factor, PHF *0.90*

No-passing zone *20%*

% Trucks and Buses , P_T *7 %*

% Recreational vehicles, P_R *0%*

Access points/ *mi* *8*

Analysis direction vol., V_d *591*veh/h

Opposing direction vol., V_o *554*veh/h

Average Travel Speed

	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E_T (Exhibit 20-9 or 20-15)	*1.1*	*1.1*
Passenger-car equivalents for RVs, E_R (Exhibit 20-9 or 20-17)	*1.0*	*1.0*
Heavy-vehicle adjustment factor, f_{HV}=1/ (1+ $P_T(E_T$-1)+$P_R(E_R$-1))	*0.993*	*0.993*
Grade adjustment factor [1], f_G (Exhibit 20-7 or 20-13)	*1.00*	*1.00*
Directional flow rate[2], v_i(pc/h) $v_i=V_i/(PHF*f_{HV}*f_G)$	*661*	*620*

Free-Flow Speed from Field Measurement		Estimated Free-Flow Speed	
Field measured speed[3], S_{FM}	*mi/h*	Base free-flow speed[3], $BFFS_{FM}$	*60.0 mi/h*
Observed volume[3], V_f	veh/h	Adj. for lane width and shoulder width,[3] f_{LS}(Exh 20-5)	*0.0 mi/h*
Free-flow speed, FFS_d FFS=S_{FM}+0.00776(V_f/ f_{HV})	*mi/h*	Adj. for access points[3], f_A (Exhibit 20-5)	*2.0 mi/h*
Adjustment for no-passing zones, f_{np} (Exhibit 20-19)	*1.0 mi/h*	Free-flow speed, FFS_d (FSS=BFFS-f_{LS}-f_A)	*58.0 mi/h*
		Average travel speed, ATS=FFS-0.00776v_p-f_{np}	*47.1 mi/h*

Percent Time-Spent-Following

	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E_T(Exhibit 20-10 or 20-16)	*1.0*	*1.0*
Passenger-car equivalents for RVs, E_R (Exhibit 20-10 or 20-16)	*1.0*	*1.0*
Heavy-vehicle adjustment factor, f_{HV}=1/ (1+ $P_T(E_T$-1)+$P_R(E_R$-1))	*1.000*	*1.000*
Grade adjustment factor[1], f_G (Exhibit 20-8 or 20-14)	*1.00*	*1.00*
Directional flow rate[2], v_i(pc/h)=$V_i/(PHF*f_{HV}*f_G)$	*657*	*616*
Base percent time-spent-following[4], BPTSF(%)=100(1-$e^{av_d^b}$)	*61.0*	
Adj. for no-passing zone, f_{np} (Exhibit. 20-20)	*22.7*	
Percent time-spent-following, PTSF(%)=BPTSF+f_{np}	*72.7*	

Level of Service and Other Performance Measures

Level of service, LOS (Exhibit 20-3 or 20-4)	*D*
Volume to capacity ratio, v/c=V_p/ 1,700	*0.39*
Peak 15-min veh-miles of travel, VMT_{15} (veh- *mi*)=0.25L_t(V/PHF)	*164*
Peak-hour vehicle-miles of travel, VMT_{60}(veh- *mi*)=V*L_t	*591*
Peak 15-min total travel time, TT_{15}(veh-h)=VMT_{15}/ATS	*3.5*

Notes

1. If the highway is extended segment (level) or rolling terrain, fG=1.0 .
2. If $v_i(v_d$ or v_o) >=1,700 pc/h, terminate analysis--the LOS is F.
3. For the analysis direction only.
4. Exhibit 20-21 provides factors a and b.
5. Use alternative Equation 20-14 if some trucks operate at crawl speeds on a specific downgrade.

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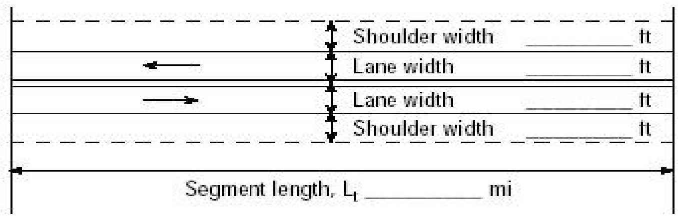
DIRECTIONAL TWO-LANE HIGHWAY SEGMENT WORKSHEET

General Information		Site Information	
Analyst	*AJP*	Highway / Direction of Travel	*US 190*
Agency or Company	*Neel-Schaffer, Inc.*	From/To	*East of Airport Rd*
Date Performed	*7/8/2011*	Jurisdiction	*Tangipahoa Parish*
Analysis Time Period	*AM Peak*	Analysis Year	*2035 Alternate A*

Project Description: *N-S Prj# 8437*

Input Data



☑ Class I highway ☐ Class II highway

Terrain ☑ Level ☐ Rolling

Grade Length mi Up/down

Peak-hour factor, PHF *0.90*

No-passing zone *20%*

% Trucks and Buses , P_T *7 %*

% Recreational vehicles, P_R *0%*

Access points/ *mi* *8*

Analysis direction vol., V_d *913*veh/h

Opposing direction vol., V_o *903*veh/h

Average Travel Speed

	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E_T (Exhibit 20-9 or 20-15)	*1.1*	*1.1*
Passenger-car equivalents for RVs, E_R (Exhibit 20-9 or 20-17)	*1.0*	*1.0*
Heavy-vehicle adjustment factor, f_{HV}=1/ (1+ $P_T(E_T$-1)+$P_R(E_R$-1))	*0.993*	*0.993*
Grade adjustment factor [1], f_G (Exhibit 20-7 or 20-13)	*1.00*	*1.00*
Directional flow rate[2], v_i(pc/h) $v_i=V_i/(PHF*f_{HV}*f_G)$	*1022*	*1010*

Free-Flow Speed from Field Measurement		Estimated Free-Flow Speed	
Field measured speed[3], S_{FM}	*mi/h*	Base free-flow speed[3], $BFFS_{FM}$	*60.0 mi/h*
Observed volume[3], V_f	veh/h	Adj. for lane width and shoulder width,[3] f_{LS}(Exh 20-5)	*0.0 mi/h*
Free-flow speed, FFS_d FFS=S_{FM}+0.00776(V_f/ f_{HV})	*mi/h*	Adj. for access points[3], f_A (Exhibit 20-5)	*2.0 mi/h*
Adjustment for no-passing zones, f_{np} (Exhibit 20-19)	*0.6 mi/h*	Free-flow speed, FFS_d (FSS=BFFS-f_{LS}-f_A)	*58.0 mi/h*
		Average travel speed, ATS=FFS-0.00776v_p-f_{np}	*41.7 mi/h*

Percent Time-Spent-Following

	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E_T(Exhibit 20-10 or 20-16)	*1.0*	*1.0*
Passenger-car equivalents for RVs, E_R (Exhibit 20-10 or 20-16)	*1.0*	*1.0*
Heavy-vehicle adjustment factor, f_{HV}=1/ (1+ $P_T(E_T$-1)+$P_R(E_R$-1))	*1.000*	*1.000*
Grade adjustment factor[1], f_G (Exhibit 20-8 or 20-14)	*1.00*	*1.00*
Directional flow rate[2], v_i(pc/h)=$V_i/(PHF*f_{HV}*f_G)$	*1014*	*1003*
Base percent time-spent-following[4], BPTSF(%)=100(1-$e^{av_d^b}$)	*78.2*	
Adj. for no-passing zone, f_{np} (Exhibit. 20-20)	*13.4*	
Percent time-spent-following, PTSF(%)=BPTSF+f_{np}	*84.9*	

Level of Service and Other Performance Measures

Level of service, LOS (Exhibit 20-3 or 20-4)	*E*
Volume to capacity ratio, v/c=V_p/ 1,700	*0.60*
Peak 15-min veh-miles of travel, VMT_{15} (veh- *mi*)=0.25L_t(V/PHF)	*254*
Peak-hour vehicle-miles of travel, VMT_{60}(veh- *mi*)=V*L_t	*913*
Peak 15-min total travel time, TT_{15}(veh-h)=VMT_{15}/ATS	*6.1*

Notes

1. If the highway is extended segment (level) or rolling terrain, fG=1.0 .
2. If v_i(v_d or v_o) >=1,700 pc/h, terminate analysis--the LOS is F.
3. For the analysis direction only.
4. Exhibit 20-21 provides factors a and b.
5. Use alternative Equation 20-14 if some trucks operate at crawl speeds on a specific downgrade.

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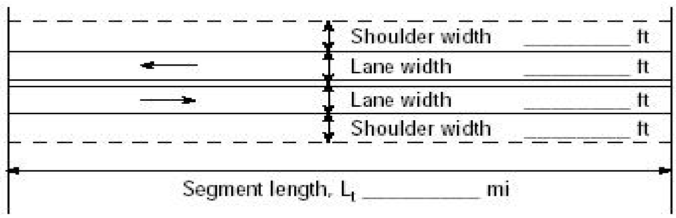
DIRECTIONAL TWO-LANE HIGHWAY SEGMENT WORKSHEET

General Information		Site Information	
Analyst	*AJP*	Highway / Direction of Travel	*US 190*
Agency or Company	*Neel-Schaffer, Inc.*	From/To	*East of Airport Rd*
Date Performed	*7/8/2011*	Jurisdiction	*Tangipahoa Parish*
Analysis Time Period	*PM Peak*	Analysis Year	*2035 Alternate A*

Project Description: *N-S Prj# 8437*

Input Data



Analysis direction vol., V_d *752*veh/h

Opposing direction vol., V_o *692*veh/h

☑ Class I highway ☐ Class II highway

Terrain ☑ Level ☐ Rolling

Grade Length	mi	Up/down
Peak-hour factor, PHF	*0.90*	
No-passing zone	*20*%	
% Trucks and Buses , P_T	*7* %	
% Recreational vehicles, P_R	*0*%	
Access points/ *mi*	*8*	

Average Travel Speed

	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E_T (Exhibit 20-9 or 20-15)	*1.1*	*1.1*
Passenger-car equivalents for RVs, E_R (Exhibit 20-9 or 20-17)	*1.0*	*1.0*
Heavy-vehicle adjustment factor, f_{HV}=1/ (1+ $P_T(E_T$-1)+$P_R(E_R$-1))	*0.993*	*0.993*
Grade adjustment factor [1], f_G (Exhibit 20-7 or 20-13)	*1.00*	*1.00*
Directional flow rate[2], v_i(pc/h) $v_i=V_i/(PHF*f_{HV}*f_G)$	*841*	*774*

Free-Flow Speed from Field Measurement		Estimated Free-Flow Speed	
Field measured speed[3], S_{FM}	*mi/h*	Base free-flow speed[3], $BFFS_{FM}$	*60.0* mi/h
Observed volume[3], V_f	veh/h	Adj. for lane width and shoulder width,[3] f_{LS}(Exh 20-5)	*0.0* mi/h
Free-flow speed, FFS_d FFS=S_{FM}+0.00776(V_f/ f_{HV})	*mi/h*	Adj. for access points[3], f_A (Exhibit 20-5)	*2.0* mi/h
Adjustment for no-passing zones, f_{np} (Exhibit 20-19)	*0.6* mi/h	Free-flow speed, FFS_d (FSS=BFFS-f_{LS}-f_A)	*58.0* mi/h
		Average travel speed, ATS=FFS-0.00776v_p-f_{np}	*44.8* mi/h

Percent Time-Spent-Following

	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E_T(Exhibit 20-10 or 20-16)	*1.0*	*1.0*
Passenger-car equivalents for RVs, E_R (Exhibit 20-10 or 20-16)	*1.0*	*1.0*
Heavy-vehicle adjustment factor, f_{HV}=1/ (1+ $P_T(E_T$-1)+$P_R(E_R$-1))	*1.000*	*1.000*
Grade adjustment factor[1], f_G (Exhibit 20-8 or 20-14)	*1.00*	*1.00*
Directional flow rate[2], v_i(pc/h)=$V_i/(PHF*f_{HV}*f_G)$	*836*	*769*
Base percent time-spent-following[4], BPTSF(%)=100(1-$e^{av_d^b}$)	*70.4*	
Adj. for no-passing zone, f_{np} (Exhibit. 20-20)	*17.7*	
Percent time-spent-following, PTSF(%)=BPTSF+f_{np}	*79.6*	

Level of Service and Other Performance Measures

Level of service, LOS (Exhibit 20-3 or 20-4)	*D*
Volume to capacity ratio, v/c=V_p/ 1,700	*0.49*
Peak 15-min veh-miles of travel, VMT_{15} (veh- *mi*)=0.25L_t(V/PHF)	*209*
Peak-hour vehicle-miles of travel, VMT_{60}(veh- *mi*)=V*L_t	*752*
Peak 15-min total travel time, TT_{15}(veh-h)=VMT_{15}/ATS	*4.7*

Notes

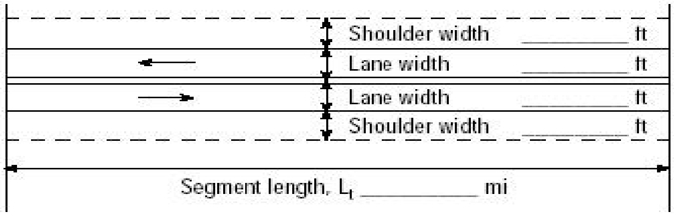
1. If the highway is extended segment (level) or rolling terrain, fG=1.0 .
2. If v_i(v_d or v_o) >=1,700 pc/h, terminate analysis--the LOS is F.
3. For the analysis direction only.
4. Exhibit 20-21 provides factors a and b.
5. Use alternative Equation 20-14 if some trucks operate at crawl speeds on a specific downgrade.

DIRECTIONAL TWO-LANE HIGHWAY SEGMENT WORKSHEET

General Information		Site Information	
Analyst	*AJP*	Highway / Direction of Travel	*US 190*
Agency or Company	*Neel-Schaffer, Inc.*	From/To	*East of Airport Rd*
Date Performed	*7/8/2011*	Jurisdiction	*Tangipahoa Parish*
Analysis Time Period	*AM Peak*	Analysis Year	*2015 Alternate B*

Project Description: *N-S Prj# 8437*

Input Data



Analysis direction vol., V_d *792*veh/h

Opposing direction vol., V_o *792*veh/h

☑ Class I highway ☐ Class II highway

Terrain ☑ Level ☐ Rolling

Grade Length mi	Up/down
Peak-hour factor, PHF	*0.90*
No-passing zone	*20*%
% Trucks and Buses , P_T	*7* %
% Recreational vehicles, P_R	*0*%
Access points/ *mi*	*8*

Average Travel Speed

	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E_T (Exhibit 20-9 or 20-15)	*1.1*	*1.1*
Passenger-car equivalents for RVs, E_R (Exhibit 20-9 or 20-17)	*1.0*	*1.0*
Heavy-vehicle adjustment factor, f_{HV}=1/ (1+ P_T(E_T-1)+P_R(E_R-1))	*0.993*	*0.993*
Grade adjustment factor [1], f_G (Exhibit 20-7 or 20-13)	*1.00*	*1.00*
Directional flow rate[2], v_i(pc/h) $v_i=V_i/(PHF*f_{HV}*f_G)$	*886*	*886*

Free-Flow Speed from Field Measurement		Estimated Free-Flow Speed	
Field measured speed[3], S_{FM}	*mi/h*	Base free-flow speed[3], $BFFS_{FM}$	*60.0* *mi/h*
Observed volume[3], V_f	veh/h	Adj. for lane width and shoulder width,[3] f_{LS}(Exh 20-5)	*0.0* *mi/h*
Free-flow speed, FFS_d $FFS=S_{FM}+0.00776(V_f/f_{HV})$	*mi/h*	Adj. for access points[3], f_A (Exhibit 20-5)	*2.0* *mi/h*
Adjustment for no-passing zones, f_{np} (Exhibit 20-19)	*0.6* *mi/h*	Free-flow speed, FFS_d (FSS=BFFS-f_{LS}-f_A)	*58.0* *mi/h*
		Average travel speed, ATS=FFS-0.00776v_p-f_{np}	*43.7* *mi/h*

Percent Time-Spent-Following

	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E_T(Exhibit 20-10 or 20-16)	*1.0*	*1.0*
Passenger-car equivalents for RVs, E_R (Exhibit 20-10 or 20-16)	*1.0*	*1.0*
Heavy-vehicle adjustment factor, f_{HV}=1/ (1+ P_T(E_T-1)+P_R(E_R-1))	*1.000*	*1.000*
Grade adjustment factor[1], f_G (Exhibit 20-8 or 20-14)	*1.00*	*1.00*
Directional flow rate[2], v_i(pc/h)=$V_i/(PHF*f_{HV}*f_G)$	*880*	*880*
Base percent time-spent-following[4], BPTSF(%)=100(1-$e^{av_d^b}$)	*72.9*	
Adj. for no-passing zone, f_{np} (Exhibit. 20-20)	*16.2*	
Percent time-spent-following, PTSF(%)=BPTSF+f_{np}	*81.0*	

Level of Service and Other Performance Measures

Level of service, LOS (Exhibit 20-3 or 20-4)	*E*
Volume to capacity ratio, v/c=V_p/ 1,700	*0.52*
Peak 15-min veh-miles of travel, VMT_{15} (veh- *mi*)=0.25L_t(V/PHF)	*220*
Peak-hour vehicle-miles of travel, VMT_{60}(veh- *mi*)=V*L_t	*792*
Peak 15-min total travel time, TT_{15}(veh-h)=VMT_{15}/ATS	*5.0*

Notes

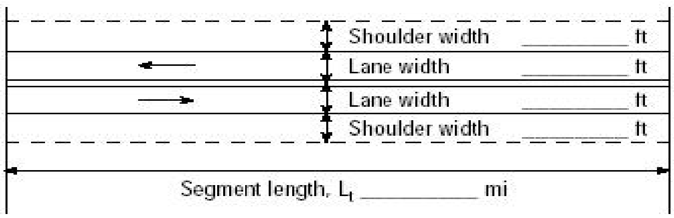
1. If the highway is extended segment (level) or rolling terrain, fG=1.0 .
2. If v_i(v_d or v_o) >=1,700 pc/h, terminate analysis--the LOS is F.
3. For the analysis direction only.
4. Exhibit 20-21 provides factors a and b.
5. Use alternative Equation 20-14 if some trucks operate at crawl speeds on a specific downgrade.

DIRECTIONAL TWO-LANE HIGHWAY SEGMENT WORKSHEET

General Information		Site Information	
Analyst	*AJP*	Highway / Direction of Travel	*US 190*
Agency or Company	*Neel-Schaffer, Inc.*	From/To	*East of Airport Rd*
Date Performed	*7/8/2011*	Jurisdiction	*Tangipahoa Parish*
Analysis Time Period	*PM Peak*	Analysis Year	*2015 Alternate B*

Project Description: *N-S Prj# 8437*

Input Data



Analysis direction vol., V_d *612*veh/h

Opposing direction vol., V_o *606*veh/h

☑ Class I highway ☐ Class II highway

Terrain ☑ Level ☐ Rolling

Grade Length mi Up/down

Peak-hour factor, PHF *0.90*

No-passing zone *20%*

% Trucks and Buses , P_T *7 %*

% Recreational vehicles, P_R *0%*

Access points/ *mi* *8*

Average Travel Speed

	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E_T (Exhibit 20-9 or 20-15)	*1.1*	*1.1*
Passenger-car equivalents for RVs, E_R (Exhibit 20-9 or 20-17)	*1.0*	*1.0*
Heavy-vehicle adjustment factor, f_{HV}=1/ (1+ $P_T(E_T$-1)+$P_R(E_R$-1))	*0.993*	*0.993*
Grade adjustment factor [1], f_G (Exhibit 20-7 or 20-13)	*1.00*	*1.00*
Directional flow rate[2], v_i(pc/h) $v_i=V_i/(PHF*f_{HV}*f_G)$	*685*	*678*

Free-Flow Speed from Field Measurement		Estimated Free-Flow Speed	
Field measured speed[3], S_{FM}	*mi/h*	Base free-flow speed[3], $BFFS_{FM}$	*60.0 mi/h*
Observed volume[3], V_f	veh/h	Adj. for lane width and shoulder width,[3] f_{LS}(Exh 20-5)	*0.0 mi/h*
Free-flow speed, FFS_d $FFS=S_{FM}+0.00776(V_f/f_{HV})$	*mi/h*	Adj. for access points[3], f_A (Exhibit 20-5)	*2.0 mi/h*
Adjustment for no-passing zones, f_{np} (Exhibit 20-19)	*0.8 mi/h*	Free-flow speed, FFS_d (FSS=BFFS-f_{LS}-f_A)	*58.0 mi/h*
		Average travel speed, ATS=FFS-0.00776v_p-f_{np}	*46.6 mi/h*

Percent Time-Spent-Following

	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E_T(Exhibit 20-10 or 20-16)	*1.0*	*1.0*
Passenger-car equivalents for RVs, E_R (Exhibit 20-10 or 20-16)	*1.0*	*1.0*
Heavy-vehicle adjustment factor, f_{HV}=1/ (1+ $P_T(E_T$-1)+$P_R(E_R$-1))	*1.000*	*1.000*
Grade adjustment factor[1], f_G (Exhibit 20-8 or 20-14)	*1.00*	*1.00*
Directional flow rate[2], $v_i(pc/h)=V_i/(PHF*f_{HV}*f_G)$	*680*	*673*
Base percent time-spent-following[4], BPTSF(%)=100(1-$e^{av_d^b}$)	*63.1*	
Adj. for no-passing zone, f_{np} (Exhibit. 20-20)	*21.1*	
Percent time-spent-following, PTSF(%)=BPTSF+f_{np}	*73.7*	

Level of Service and Other Performance Measures

Level of service, LOS (Exhibit 20-3 or 20-4)	*D*
Volume to capacity ratio, v/c=V_p/ 1,700	*0.40*
Peak 15-min veh-miles of travel, VMT_{15} (veh- *mi*)=0.25L_t(V/PHF)	*170*
Peak-hour vehicle-miles of travel, VMT_{60}(veh- *mi*)=V*L_t	*612*
Peak 15-min total travel time, TT_{15}(veh-h)=VMT_{15}/ATS	*3.6*

Notes

1. If the highway is extended segment (level) or rolling terrain, fG=1.0 .
2. If v_i(v_d or v_o) >=1,700 pc/h, terminate analysis--the LOS is F.
3. For the analysis direction only.
4. Exhibit 20-21 provides factors a and b.
5. Use alternative Equation 20-14 if some trucks operate at crawl speeds on a specific downgrade.

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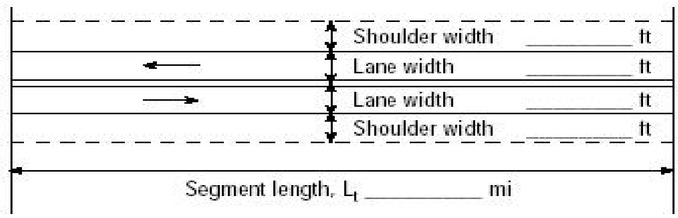
DIRECTIONAL TWO-LANE HIGHWAY SEGMENT WORKSHEET

General Information		Site Information	
Analyst	*AJP*	Highway / Direction of Travel	*US 190*
Agency or Company	*Neel-Schaffer, Inc.*	From/To	*East of Airport Rd*
Date Performed	*7/8/2011*	Jurisdiction	*Tangipahoa Parish*
Analysis Time Period	*AM Peak*	Analysis Year	*2035 Alternate B*

Project Description: *N-S Prj# 8437*

Input Data



Analysis direction vol., V_d *945*veh/h

Opposing direction vol., V_o *952*veh/h

☑ Class I highway ☐ Class II highway

Terrain ☑ Level ☐ Rolling

Grade Length mi Up/down

Peak-hour factor, PHF *0.90*

No-passing zone *20*%

% Trucks and Buses , P_T *7* %

% Recreational vehicles, P_R *0*%

Access points/ *mi* *8*

Average Travel Speed

	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E_T (Exhibit 20-9 or 20-15)	*1.1*	*1.1*
Passenger-car equivalents for RVs, E_R (Exhibit 20-9 or 20-17)	*1.0*	*1.0*
Heavy-vehicle adjustment factor, f_{HV}=1/ (1+ $P_T(E_T$-1)+$P_R(E_R$-1))	*0.993*	*0.993*
Grade adjustment factor [1], f_G (Exhibit 20-7 or 20-13)	*1.00*	*1.00*
Directional flow rate[2], v_i(pc/h) $v_i=V_i/(PHF*f_{HV}*f_G)$	*1057*	*1065*

Free-Flow Speed from Field Measurement		Estimated Free-Flow Speed	
Field measured speed[3], S_{FM}	*mi/h*	Base free-flow speed[3], $BFFS_{FM}$	*60.0 mi/h*
Observed volume[3], V_f	veh/h	Adj. for lane width and shoulder width,[3] f_{LS}(Exh 20-5)	*0.0 mi/h*
Free-flow speed, FFS_d FFS=S_{FM}+0.00776(V_f/ f_{HV})	*mi/h*	Adj. for access points[3], f_A (Exhibit 20-5)	*2.0 mi/h*
Adjustment for no-passing zones, f_{np} (Exhibit 20-19)	*0.6 mi/h*	Free-flow speed, FFS_d (FSS=BFFS-f_{LS}-f_A)	*58.0 mi/h*
		Average travel speed, ATS=FFS-0.00776v_p-f_{np}	*41.0 mi/h*

Percent Time-Spent-Following

	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E_T(Exhibit 20-10 or 20-16)	*1.0*	*1.0*
Passenger-car equivalents for RVs, E_R (Exhibit 20-10 or 20-16)	*1.0*	*1.0*
Heavy-vehicle adjustment factor, f_{HV}=1/ (1+ $P_T(E_T$-1)+$P_R(E_R$-1))	*1.000*	*1.000*
Grade adjustment factor[1], f_G (Exhibit 20-8 or 20-14)	*1.00*	*1.00*
Directional flow rate[2], v_i(pc/h)=$V_i/(PHF*f_{HV}*f_G)$	*1050*	*1058*
Base percent time-spent-following[4], BPTSF(%)=100(1-$e^{av_d^b}$)	*79.8*	
Adj. for no-passing zone, f_{np} (Exhibit. 20-20)	*12.5*	
Percent time-spent-following, PTSF(%)=BPTSF+f_{np}	*86.0*	

Level of Service and Other Performance Measures

Level of service, LOS (Exhibit 20-3 or 20-4)	*E*
Volume to capacity ratio, v/c=V_p/ 1,700	*0.62*
Peak 15-min veh-miles of travel, VMT_{15} (veh- *mi*)=0.25L_t(V/PHF)	*263*
Peak-hour vehicle-miles of travel, VMT_{60}(veh- *mi*)=V*L_t	*945*
Peak 15-min total travel time, TT_{15}(veh-h)=VMT_{15}/ATS	*6.4*

Notes

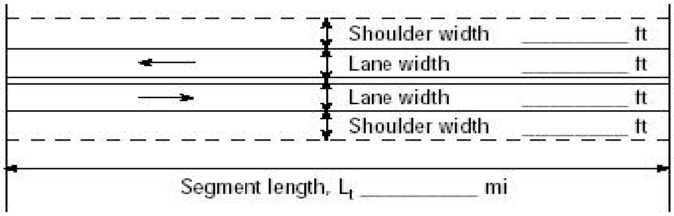
1. If the highway is extended segment (level) or rolling terrain, fG=1.0 .
2. If $v_i(v_d$ or v_o) >=1,700 pc/h, terminate analysis--the LOS is F.
3. For the analysis direction only.
4. Exhibit 20-21 provides factors a and b.
5. Use alternative Equation 20-14 if some trucks operate at crawl speeds on a specific downgrade.

DIRECTIONAL TWO-LANE HIGHWAY SEGMENT WORKSHEET

General Information		Site Information	
Analyst	*AJP*	Highway / Direction of Travel	*US 190*
Agency or Company	*Neel-Schaffer, Inc.*	From/To	*East of Airport Rd*
Date Performed	*7/8/2011*	Jurisdiction	*Tangipahoa Parish*
Analysis Time Period	*PM Peak*	Analysis Year	*2035 Alternate B*

Project Description: *N-S Prj# 8437*

Input Data



Analysis direction vol., V_d *798*veh/h

Opposing direction vol., V_o *721*veh/h

☑ Class I highway ☐ Class II highway

Terrain ☑ Level ☐ Rolling

Grade Length mi Up/down

Peak-hour factor, PHF *0.90*

No-passing zone *20*%

% Trucks and Buses , P_T *7* %

% Recreational vehicles, P_R *0*%

Access points/ *mi* *8*

Average Travel Speed

	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E_T (Exhibit 20-9 or 20-15)	*1.1*	*1.1*
Passenger-car equivalents for RVs, E_R (Exhibit 20-9 or 20-17)	*1.0*	*1.0*
Heavy-vehicle adjustment factor, f_{HV}=1/ (1+ P_T(E_T-1)+P_R(E_R-1))	*0.993*	*0.993*
Grade adjustment factor [1], f_G (Exhibit 20-7 or 20-13)	*1.00*	*1.00*
Directional flow rate[2], v_i(pc/h) v_i=V_i/(PHF*f_{HV}* f_G)	*893*	*807*

Free-Flow Speed from Field Measurement		Estimated Free-Flow Speed	
Field measured speed[3], S_{FM}	*mi/h*	Base free-flow speed[3], $BFFS_{FM}$	*60.0* *mi/h*
Observed volume[3], V_f	veh/h	Adj. for lane width and shoulder width,[3] f_{LS}(Exh 20-5)	*0.0* *mi/h*
Free-flow speed, FFS_d FFS=S_{FM}+0.00776(V_f/ f_{HV})	*mi/h*	Adj. for access points[3], f_A (Exhibit 20-5)	*2.0* *mi/h*
Adjustment for no-passing zones, f_{np} (Exhibit 20-19)	*0.6* *mi/h*	Free-flow speed, FFS_d (FSS=BFFS-f_{LS}-f_A)	*58.0* *mi/h*
		Average travel speed, ATS=FFS-0.00776v_p-f_{np}	*44.2* *mi/h*

Percent Time-Spent-Following

	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E_T(Exhibit 20-10 or 20-16)	*1.0*	*1.0*
Passenger-car equivalents for RVs, E_R (Exhibit 20-10 or 20-16)	*1.0*	*1.0*
Heavy-vehicle adjustment factor, f_{HV}=1/ (1+ P_T(E_T-1)+P_R(E_R-1))	*1.000*	*1.000*
Grade adjustment factor[1], f_G (Exhibit 20-8 or 20-14)	*1.00*	*1.00*
Directional flow rate[2], v_i(pc/h)=V_i/(PHF*f_{HV}* f_G)	*887*	*801*
Base percent time-spent-following[4], BPTSF(%)=100(1-$e^{av_d^b}$)	*72.3*	
Adj. for no-passing zone, f_{np} (Exhibit. 20-20)	*16.8*	
Percent time-spent-following, PTSF(%)=BPTSF+f_{np}	*81.2*	

Level of Service and Other Performance Measures

Level of service, LOS (Exhibit 20-3 or 20-4)	*E*
Volume to capacity ratio, v/c=V_p/ 1,700	*0.53*
Peak 15-min veh-miles of travel, VMT_{15} (veh- *mi*)=0.25L_t(V/PHF)	*222*
Peak-hour vehicle-miles of travel, VMT_{60}(veh- *mi*)=V*L_t	*798*
Peak 15-min total travel time, TT_{15}(veh-h)=VMT_{15}/ATS	*5.0*

Notes

1. If the highway is extended segment (level) or rolling terrain, fG=1.0 .
2. If v_i(v_d or v_o) >=1,700 pc/h, terminate analysis--the LOS is F.
3. For the analysis direction only.
4. Exhibit 20-21 provides factors a and b.
5. Use alternative Equation 20-14 if some trucks operate at crawl speeds on a specific downgrade.

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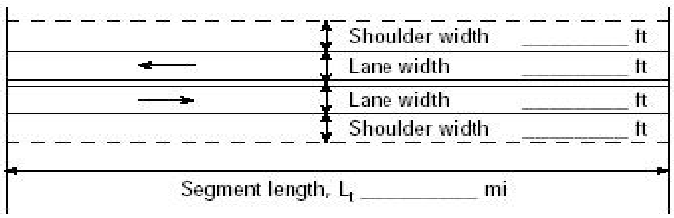
DIRECTIONAL TWO-LANE HIGHWAY SEGMENT WORKSHEET

General Information		Site Information	
Analyst	AJP	Highway / Direction of Travel	US 190
Agency or Company	Neel-Schaffer, Inc.	From/To	East of Airport Rd
Date Performed	7/8/2011	Jurisdiction	Tangipahoa Parish
Analysis Time Period	AM Peak	Analysis Year	2015 Alternate C

Project Description: *N-S Prj# 8437*

Input Data



Analysis direction vol., V_d *792*veh/h

Opposing direction vol., V_o *757*veh/h

☑ Class I highway ☐ Class II highway

Terrain ☑ Level ☐ Rolling

Grade Length mi Up/down

Peak-hour factor, PHF *0.90*

No-passing zone *20*%

% Trucks and Buses , P_T *7* %

% Recreational vehicles, P_R *0*%

Access points/ *mi* *8*

Average Travel Speed

	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E_T (Exhibit 20-9 or 20-15)	*1.1*	*1.1*
Passenger-car equivalents for RVs, E_R (Exhibit 20-9 or 20-17)	*1.0*	*1.0*
Heavy-vehicle adjustment factor, f_{HV}=1/ (1+ $P_T(E_T$-1)+$P_R(E_R$-1))	*0.993*	*0.993*
Grade adjustment factor [1], f_G (Exhibit 20-7 or 20-13)	*1.00*	*1.00*
Directional flow rate[2], v_i(pc/h) $v_i=V_i/(PHF*f_{HV}*f_G)$	*886*	*847*

Free-Flow Speed from Field Measurement		Estimated Free-Flow Speed	
Field measured speed[3], S_{FM}	*mi/h*	Base free-flow speed[3], $BFFS_{FM}$	*60.0* mi/h
Observed volume[3], V_f	veh/h	Adj. for lane width and shoulder width,[3] f_{LS}(Exh 20-5)	*0.0* mi/h
Free-flow speed, FFS_d $FFS=S_{FM}+0.00776(V_f/f_{HV})$	*mi/h*	Adj. for access points[3], f_A (Exhibit 20-5)	*2.0* mi/h
Adjustment for no-passing zones, f_{np} (Exhibit 20-19)	*0.6* mi/h	Free-flow speed, FFS_d ($FSS=BFFS-f_{LS}-f_A$)	*58.0* mi/h
		Average travel speed, $ATS=FFS-0.00776v_p-f_{np}$	*44.0* mi/h

Percent Time-Spent-Following

	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E_T(Exhibit 20-10 or 20-16)	*1.0*	*1.0*
Passenger-car equivalents for RVs, E_R (Exhibit 20-10 or 20-16)	*1.0*	*1.0*
Heavy-vehicle adjustment factor, f_{HV}=1/ (1+ $P_T(E_T$-1)+$P_R(E_R$-1))	*1.000*	*1.000*
Grade adjustment factor[1], f_G (Exhibit 20-8 or 20-14)	*1.00*	*1.00*
Directional flow rate[2], $v_i(pc/h)=V_i/(PHF*f_{HV}*f_G)$	*880*	*841*
Base percent time-spent-following[4], BPTSF(%)=100($1-e^{av_d^b}$)	*72.5*	
Adj. for no-passing zone, f_{np} (Exhibit. 20-20)	*16.5*	
Percent time-spent-following, PTSF(%)=BPTSF+f_{np}	*81.0*	

Level of Service and Other Performance Measures

Level of service, LOS (Exhibit 20-3 or 20-4)	*E*
Volume to capacity ratio, $v/c=V_p/1,700$	*0.52*
Peak 15-min veh-miles of travel, VMT_{15} (veh- *mi*)=$0.25L_t(V/PHF)$	*220*
Peak-hour vehicle-miles of travel, VMT_{60}(veh- *mi*)=$V*L_t$	*792*
Peak 15-min total travel time, TT_{15}(veh-h)=VMT_{15}/ATS	*5.0*

Notes

1. If the highway is extended segment (level) or rolling terrain, fG=1.0 .
2. If v_i(v_d or v_o) >=1,700 pc/h, terminate analysis--the LOS is F.
3. For the analysis direction only.
4. Exhibit 20-21 provides factors a and b.
5. Use alternative Equation 20-14 if some trucks operate at crawl speeds on a specific downgrade.

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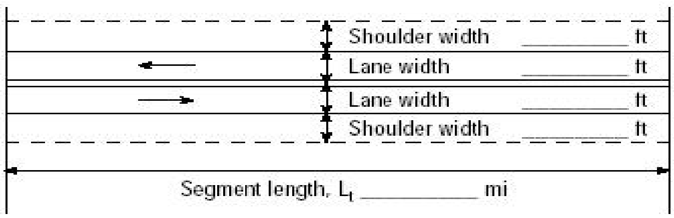
DIRECTIONAL TWO-LANE HIGHWAY SEGMENT WORKSHEET

General Information		Site Information	
Analyst	*AJP*	Highway / Direction of Travel	*US 190*
Agency or Company	*Neel-Schaffer, Inc.*	From/To	*East of Airport Rd*
Date Performed	*7/8/2011*	Jurisdiction	*Tangipahoa Parish*
Analysis Time Period	*PM Peak*	Analysis Year	*2015 Alternate C*

Project Description: *N-S Prj# 8437*

Input Data



Analysis direction vol., V_d *607*veh/h

Opposing direction vol., V_o *577*veh/h

Class I highway ☑ Class II highway ☐

Terrain Level ☑ Rolling ☐

Grade Length mi Up/down

Peak-hour factor, PHF *0.90*

No-passing zone *20*%

% Trucks and Buses , P_T *7* %

% Recreational vehicles, P_R *0*%

Access points/ *mi* *8*

Average Travel Speed

	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E_T (Exhibit 20-9 or 20-15)	*1.1*	*1.1*
Passenger-car equivalents for RVs, E_R (Exhibit 20-9 or 20-17)	*1.0*	*1.0*
Heavy-vehicle adjustment factor, f_{HV}=1/ (1+ $P_T(E_T$-1)+$P_R(E_R$-1))	*0.993*	*0.993*
Grade adjustment factor [1], f_G (Exhibit 20-7 or 20-13)	*1.00*	*1.00*
Directional flow rate[2], v_i(pc/h) $v_i=V_i/(PHF*f_{HV}*f_G)$	*679*	*646*

Free-Flow Speed from Field Measurement		Estimated Free-Flow Speed	
Field measured speed[3], S_{FM}	*mi/h*	Base free-flow speed[3], $BFFS_{FM}$	*60.0 mi/h*
Observed volume[3], V_f	veh/h	Adj. for lane width and shoulder width,[3] f_{LS}(Exh 20-5)	*0.0 mi/h*
Free-flow speed, FFS_d $FFS=S_{FM}+0.00776(V_f/f_{HV})$	*mi/h*	Adj. for access points[3], f_A (Exhibit 20-5)	*2.0 mi/h*
Adjustment for no-passing zones, f_{np} (Exhibit 20-19)	*0.9 mi/h*	Free-flow speed, FFS_d ($FSS=BFFS-f_{LS}-f_A$)	*58.0 mi/h*
		Average travel speed, $ATS=FFS-0.00776v_p-f_{np}$	*46.8 mi/h*

Percent Time-Spent-Following

	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E_T(Exhibit 20-10 or 20-16)	*1.0*	*1.0*
Passenger-car equivalents for RVs, E_R (Exhibit 20-10 or 20-16)	*1.0*	*1.0*
Heavy-vehicle adjustment factor, f_{HV}=1/ (1+ $P_T(E_T$-1)+$P_R(E_R$-1))	*1.000*	*1.000*
Grade adjustment factor[1], f_G (Exhibit 20-8 or 20-14)	*1.00*	*1.00*
Directional flow rate[2], $v_i(pc/h)=V_i/(PHF*f_{HV}*f_G)$	*674*	*641*
Base percent time-spent-following[4], BPTSF(%)=100(1-$e^{av_d^b}$)	*62.3*	
Adj. for no-passing zone, f_{np} (Exhibit. 20-20)	*21.8*	
Percent time-spent-following, PTSF(%)=BPTSF+f_{np}	*73.5*	

Level of Service and Other Performance Measures

Level of service, LOS (Exhibit 20-3 or 20-4)	*D*
Volume to capacity ratio, v/c=V_p/ 1,700	*0.40*
Peak 15-min veh-miles of travel, VMT_{15} (veh- *mi*)=0.25L_t(V/PHF)	*169*
Peak-hour vehicle-miles of travel, VMT_{60}(veh- *mi*)=V*L_t	*607*
Peak 15-min total travel time, TT_{15}(veh-h)=VMT_{15}/ATS	*3.6*

Notes

1. If the highway is extended segment (level) or rolling terrain, fG=1.0 .
2. If v_i(v_d or v_o) >=1,700 pc/h, terminate analysis--the LOS is F.
3. For the analysis direction only.
4. Exhibit 20-21 provides factors a and b.
5. Use alternative Equation 20-14 if some trucks operate at crawl speeds on a specific downgrade.

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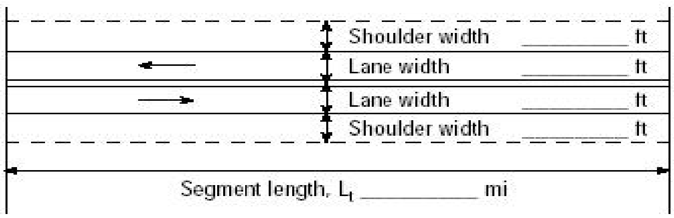
DIRECTIONAL TWO-LANE HIGHWAY SEGMENT WORKSHEET

General Information		**Site Information**	
Analyst	*AJP*	Highway / Direction of Travel	*US 190*
Agency or Company	*Neel-Schaffer, Inc.*	From/To	*East of Airport Rd*
Date Performed	*7/8/2011*	Jurisdiction	*Tangipahoa Parish*
Analysis Time Period	*AM Peak*	Analysis Year	*2035 Alternate C*

Project Description: *N-S Prj# 8437*

Input Data



☑ Class I highway ☐ Class II highway

Terrain ☑ Level ☐ Rolling

Grade Length mi Up/down

Peak-hour factor, PHF *0.90*

No-passing zone *20%*

% Trucks and Buses , P_T *7 %*

% Recreational vehicles, P_R *0%*

Access points/ *mi* *8*

Analysis direction vol., V_d *903*veh/h

Opposing direction vol., V_o *901*veh/h

Average Travel Speed

	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E_T (Exhibit 20-9 or 20-15)	*1.1*	*1.1*
Passenger-car equivalents for RVs, E_R (Exhibit 20-9 or 20-17)	*1.0*	*1.0*
Heavy-vehicle adjustment factor, f_{HV}=1/ (1+ $P_T(E_T$-1)+$P_R(E_R$-1))	*0.993*	*0.993*
Grade adjustment factor [1], f_G (Exhibit 20-7 or 20-13)	*1.00*	*1.00*
Directional flow rate[2], v_i(pc/h) $v_i=V_i/(PHF*f_{HV}*f_G)$	*1010*	*1008*

Free-Flow Speed from Field Measurement		Estimated Free-Flow Speed	
Field measured speed[3], S_{FM}	*mi/h*	Base free-flow speed[3], $BFFS_{FM}$	*60.0 mi/h*
Observed volume[3], V_f	veh/h	Adj. for lane width and shoulder width,[3] f_{LS}(Exh 20-5)	*0.0 mi/h*
Free-flow speed, FFS_d FFS=S_{FM}+0.00776(V_f/ f_{HV})	*mi/h*	Adj. for access points[3], f_A (Exhibit 20-5)	*2.0 mi/h*
Adjustment for no-passing zones, f_{np} (Exhibit 20-19)	*0.6 mi/h*	Free-flow speed, FFS_d (FSS=BFFS-f_{LS}-f_A)	*58.0 mi/h*
		Average travel speed, ATS=FFS-0.00776v_p-f_{np}	*41.8 mi/h*

Percent Time-Spent-Following

	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E_T(Exhibit 20-10 or 20-16)	*1.0*	*1.0*
Passenger-car equivalents for RVs, E_R (Exhibit 20-10 or 20-16)	*1.0*	*1.0*
Heavy-vehicle adjustment factor, f_{HV}=1/ (1+ $P_T(E_T$-1)+$P_R(E_R$-1))	*1.000*	*1.000*
Grade adjustment factor[1], f_G (Exhibit 20-8 or 20-14)	*1.00*	*1.00*
Directional flow rate[2], v_i(pc/h)=$V_i/(PHF*f_{HV}*f_G)$	*1003*	*1001*
Base percent time-spent-following[4], BPTSF(%)=100(1-$e^{av_d^b}$)	*77.9*	
Adj. for no-passing zone, f_{np} (Exhibit. 20-20)	*13.6*	
Percent time-spent-following, PTSF(%)=BPTSF+f_{np}	*84.7*	

Level of Service and Other Performance Measures

Level of service, LOS (Exhibit 20-3 or 20-4)	*E*
Volume to capacity ratio, v/c=V_p/ 1,700	*0.59*
Peak 15-min veh-miles of travel, VMT_{15} (veh- *mi*)=0.25L_t(V/PHF)	*251*
Peak-hour vehicle-miles of travel, VMT_{60}(veh- *mi*)=V*L_t	*903*
Peak 15-min total travel time, TT_{15}(veh-h)=VMT_{15}/ATS	*6.0*

Notes

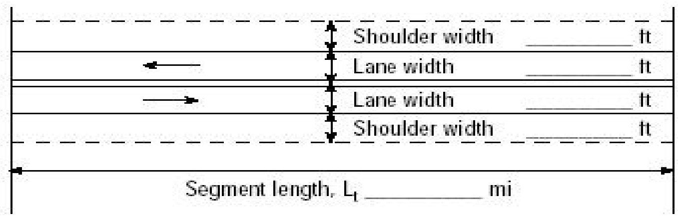
1. If the highway is extended segment (level) or rolling terrain, fG=1.0 .
2. If v_i(v_d or v_o) >=1,700 pc/h, terminate analysis--the LOS is F.
3. For the analysis direction only.
4. Exhibit 20-21 provides factors a and b.
5. Use alternative Equation 20-14 if some trucks operate at crawl speeds on a specific downgrade.

DIRECTIONAL TWO-LANE HIGHWAY SEGMENT WORKSHEET

General Information		Site Information	
Analyst	*AJP*	Highway / Direction of Travel	*US 190*
Agency or Company	*Neel-Schaffer, Inc.*	From/To	*East of Airport Rd*
Date Performed	*7/8/2011*	Jurisdiction	*Tangipahoa Parish*
Analysis Time Period	*PM Peak*	Analysis Year	*2035 Alternate C*

Project Description: *N-S Prj# 8437*

Input Data



☑ Class I highway ☐ Class II highway

Terrain ☑ Level ☐ Rolling

Grade Length mi Up/down

Peak-hour factor, PHF *0.90*

No-passing zone *20%*

% Trucks and Buses , P_T *7 %*

% Recreational vehicles, P_R *0%*

Access points/ *mi* *8*

Analysis direction vol., V_d *748*veh/h

Opposing direction vol., V_o *728*veh/h

Average Travel Speed

	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E_T (Exhibit 20-9 or 20-15)	*1.1*	*1.1*
Passenger-car equivalents for RVs, E_R (Exhibit 20-9 or 20-17)	*1.0*	*1.0*
Heavy-vehicle adjustment factor, f_{HV}=1/ (1+ $P_T(E_T$-1)+$P_R(E_R$-1))	*0.993*	*0.993*
Grade adjustment factor [1], f_G (Exhibit 20-7 or 20-13)	*1.00*	*1.00*
Directional flow rate[2], v_i(pc/h) $v_i=V_i/(PHF*f_{HV}*f_G)$	*837*	*815*

Free-Flow Speed from Field Measurement		Estimated Free-Flow Speed	
Field measured speed[3], S_{FM}	mi/h	Base free-flow speed[3], $BFFS_{FM}$	*60.0* mi/h
Observed volume[3], V_f	veh/h	Adj. for lane width and shoulder width,[3] f_{LS}(Exh 20-5)	*0.0* mi/h
Free-flow speed, FFS_d $FFS=S_{FM}+0.00776(V_f/f_{HV})$	mi/h	Adj. for access points[3], f_A (Exhibit 20-5)	*2.0* mi/h
Adjustment for no-passing zones, f_{np} (Exhibit 20-19)	*0.6* mi/h	Free-flow speed, FFS_d (FSS=BFFS-f_{LS}-f_A)	*58.0* mi/h
		Average travel speed, ATS=FFS-0.00776v_p-f_{np}	*44.6* mi/h

Percent Time-Spent-Following

	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E_T(Exhibit 20-10 or 20-16)	*1.0*	*1.0*
Passenger-car equivalents for RVs, E_R (Exhibit 20-10 or 20-16)	*1.0*	*1.0*
Heavy-vehicle adjustment factor, f_{HV}=1/ (1+ $P_T(E_T$-1)+$P_R(E_R$-1))	*1.000*	*1.000*
Grade adjustment factor[1], f_G (Exhibit 20-8 or 20-14)	*1.00*	*1.00*
Directional flow rate[2], $v_i(pc/h)=V_i/(PHF*f_{HV}*f_G)$	*831*	*809*
Base percent time-spent-following[4], BPTSF(%)=100(1-$e^{av_d^b}$)	*70.5*	
Adj. for no-passing zone, f_{np} (Exhibit. 20-20)	*17.4*	
Percent time-spent-following, PTSF(%)=BPTSF+f_{np}	*79.3*	

Level of Service and Other Performance Measures

Level of service, LOS (Exhibit 20-3 or 20-4)	*D*
Volume to capacity ratio, v/c=V_p/ 1,700	*0.49*
Peak 15-min veh-miles of travel, VMT_{15} (veh- *mi*)=0.25L_t(V/PHF)	*208*
Peak-hour vehicle-miles of travel, VMT_{60}(veh- *mi*)=V*L_t	*748*
Peak 15-min total travel time, TT_{15}(veh-h)=VMT_{15}/ATS	*4.7*

Notes

1. If the highway is extended segment (level) or rolling terrain, fG=1.0 .
2. If v_i(v_d or v_o) >=1,700 pc/h, terminate analysis--the LOS is F.
3. For the analysis direction only.
4. Exhibit 20-21 provides factors a and b.
5. Use alternative Equation 20-14 if some trucks operate at crawl speeds on a specific downgrade.

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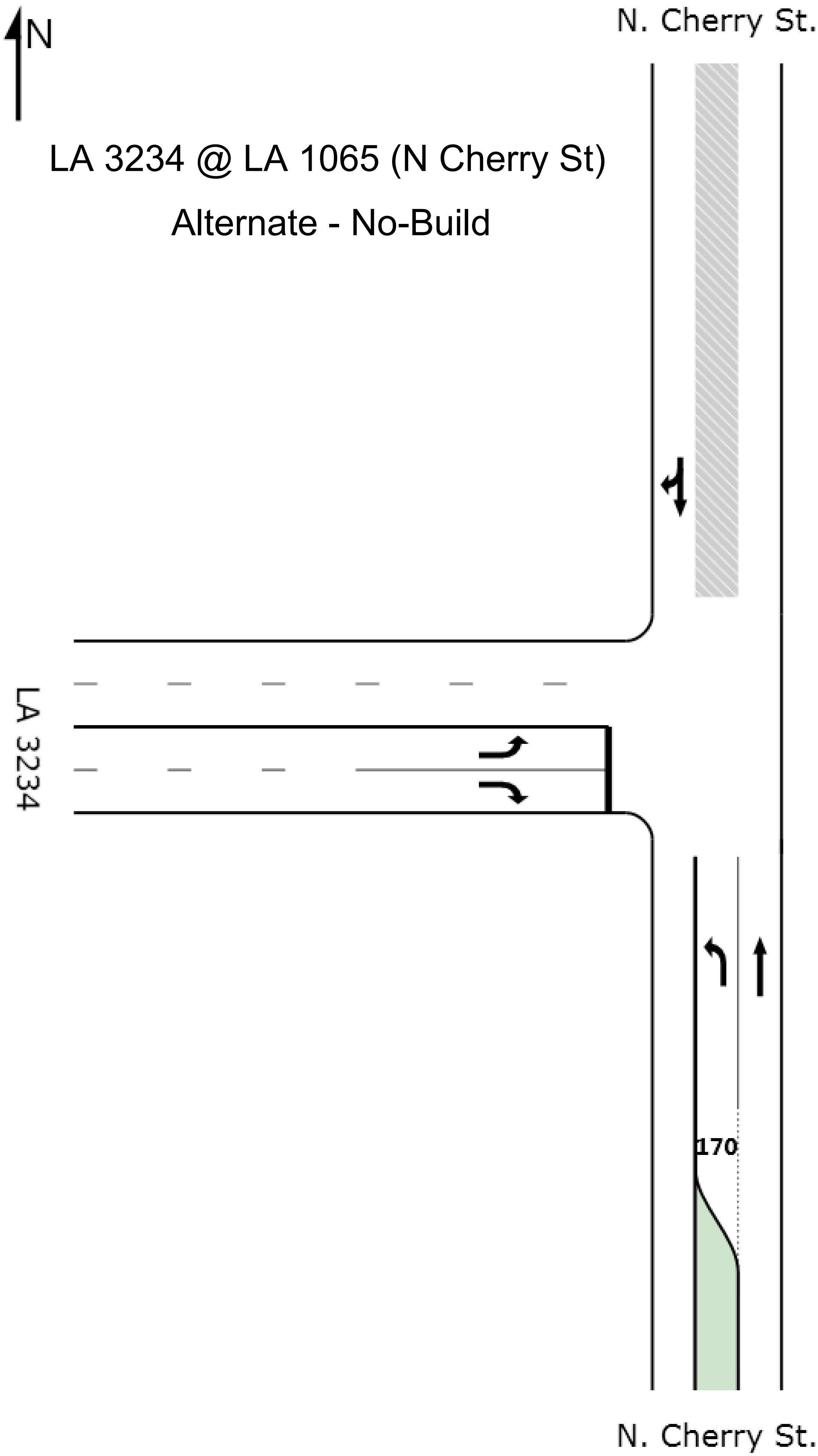
INTERSECTION ANALYSIS

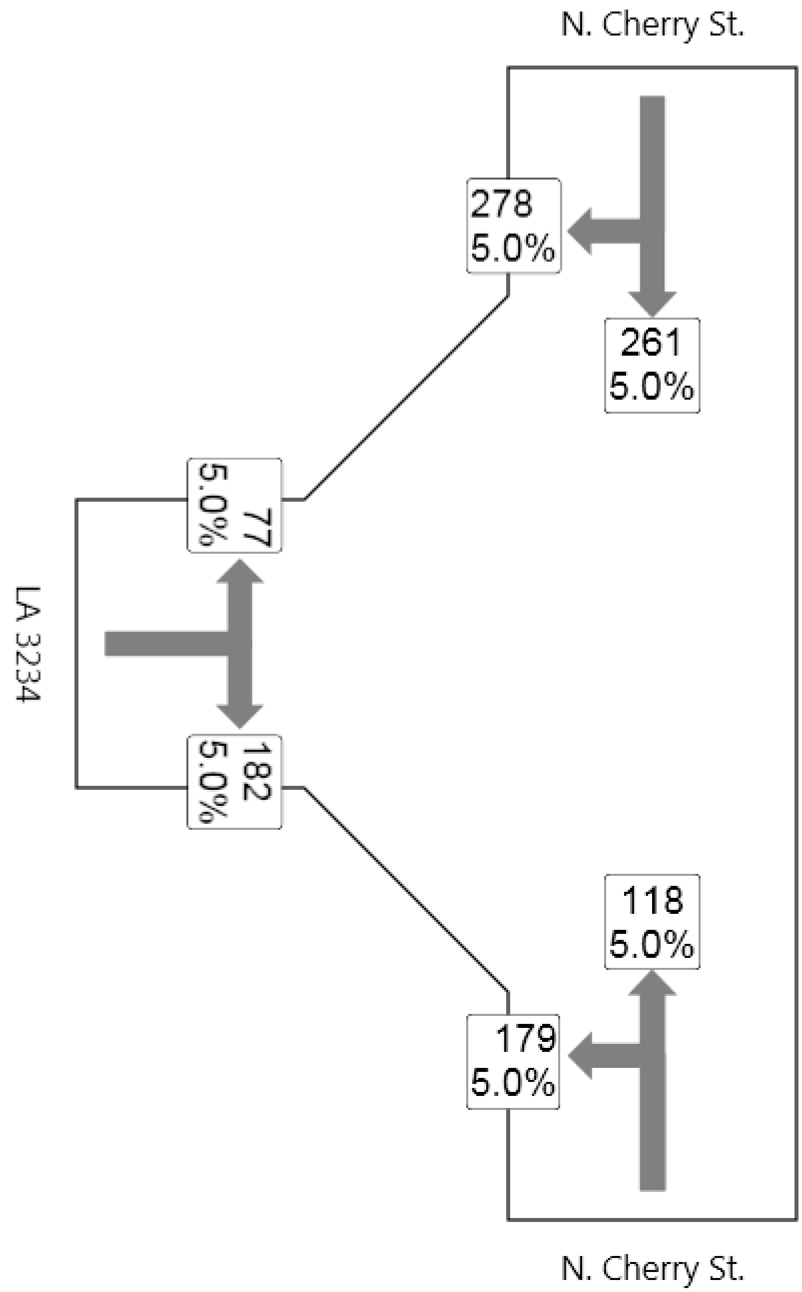
INTERSECTION LA 3234 at LA 1065 (N Cherry St)

No-Build Analysis

LA 3234 @ LA 1065 (N Cherry St)

Alternate - No-Build





LA 3234 @ LA 1065 (N Cherry St)

Alternate - Existing (2011) AM

MOVEMENT SUMMARY

Site: 2011 AM

Three-way intersection with 2-lane major road (Stop control)
LA 3234 at Cherry St.
2011 AM
Stop (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: N. Cherry St.											
3	L	199	5.0	0.654	23.9	LOS C	4.7	123.4	0.87	1.17	21.6
8	T	131	5.0	0.072	0.0	LOS A	0.0	0.0	0.00	0.00	45.0
Approach		330	5.0	0.654	14.4	NA	4.7	123.4	0.52	0.71	27.3
North: N. Cherry St.											
4	T	290	5.0	0.358	0.0	LOS A	0.0	0.0	0.00	0.00	45.0
14	R	309	5.0	0.358	0.0	LOS A	0.0	0.0	0.00	0.90	34.1
Approach		599	5.0	0.358	0.0	NA	0.0	0.0	0.00	0.46	38.6
West: LA 3234											
5	L	86	5.0	0.351	27.6	LOS D	1.7	44.2	0.82	1.06	20.4
12	R	202	5.0	0.401	16.8	LOS C	2.6	68.0	0.72	1.07	24.0
Approach		288	5.0	0.401	20.0	LOS C	2.6	68.0	0.75	1.07	22.8
All Vehicles		1217	5.0	0.654	8.7	NA	4.7	123.4	0.32	0.67	30.3

Level of Service (LOS) Method: Delay (HCM 2000).

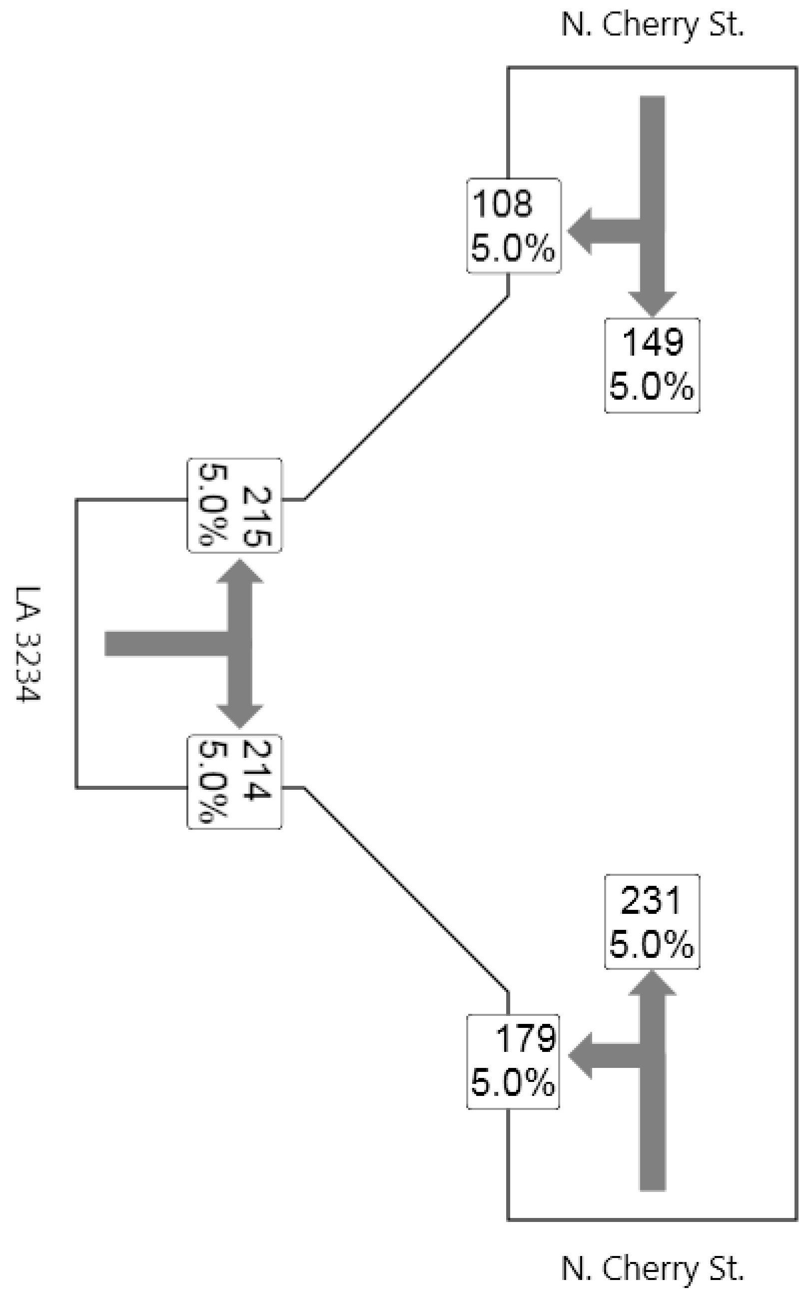
Vehicle movement LOS values are based on average delay per movement

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

HCM Delay Model used. Geometric Delay not included.

SIDRA INTERSECTION



LA 3234 @ LA 1065 (N Cherry St)

Alternate - Existing (2011) PM

MOVEMENT SUMMARY

Site: 2011 PM

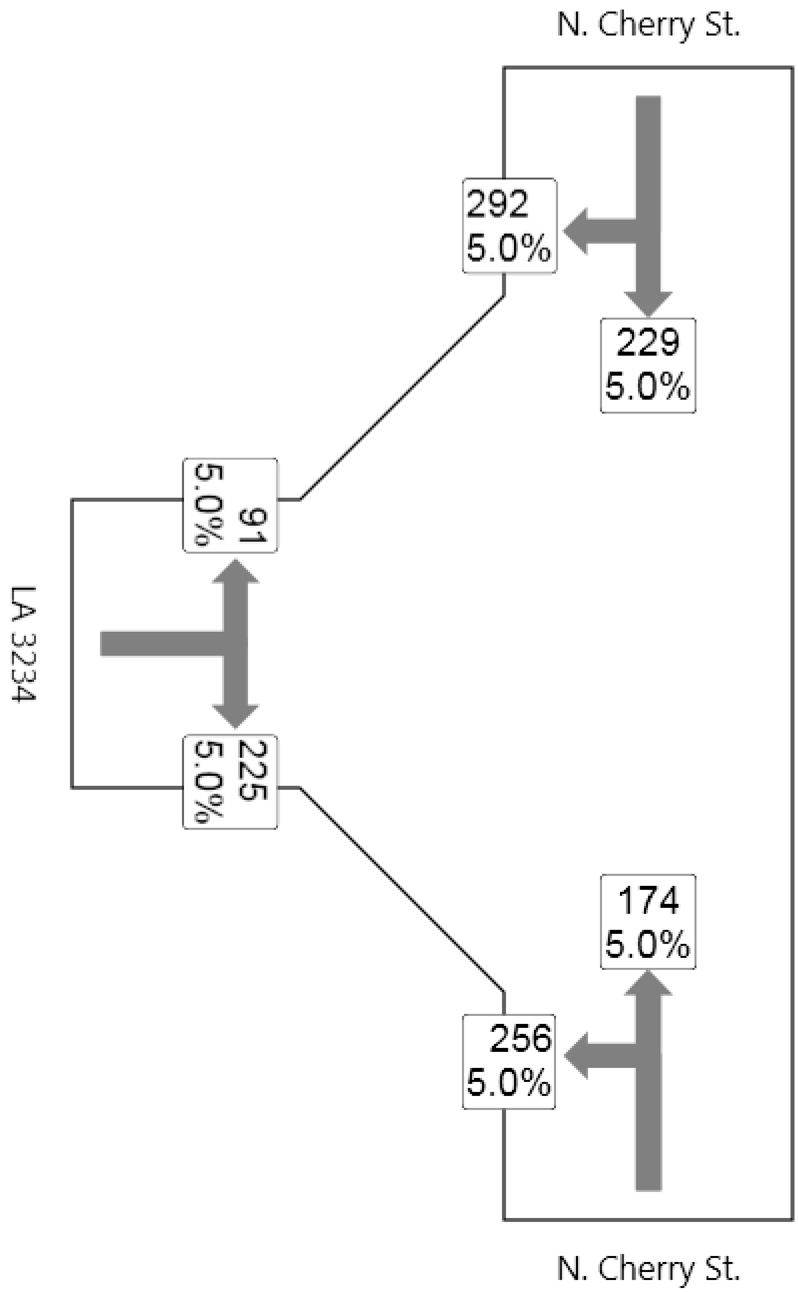
Three-way intersection with 2-lane major road (Stop control)
LA 3234 at Cherry St.
2011 PM
Stop (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: N. Cherry St.											
3	L	185	5.0	0.351	9.5	LOS A	2.1	54.2	0.66	0.92	27.7
8	T	238	5.0	0.132	0.0	LOS A	0.0	0.0	0.00	0.00	45.0
Approach		423	5.0	0.351	4.1	NA	2.1	54.2	0.29	0.40	35.5
North: N. Cherry St.											
4	T	154	5.0	0.156	0.0	LOS A	0.0	0.0	0.00	0.00	45.0
14	R	111	5.0	0.156	0.0	LOS A	0.0	0.0	0.00	0.94	34.1
Approach		265	5.0	0.156	0.0	NA	0.0	0.0	0.00	0.40	39.7
West: LA 3234											
5	L	222	5.0	0.702	39.3	LOS E	6.1	157.9	0.88	1.27	17.5
12	R	221	5.0	0.298	11.9	LOS B	1.7	44.0	0.53	0.87	26.0
Approach		442	5.0	0.702	25.6	LOS D	6.1	157.9	0.70	1.07	20.9
All Vehicles		1130	5.0	0.702	11.6	NA	6.1	157.9	0.38	0.66	28.4

Level of Service (LOS) Method: Delay (HCM 2000).
Vehicle movement LOS values are based on average delay per movement
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
HCM Delay Model used. Geometric Delay not included.

SIDRA INTERSECTION



LA 3234 @ LA 1065 (N Cherry St)

Alternate - 2015 No-Build AM

MOVEMENT SUMMARY

Site: 2015 AM No Build

Three-way intersection with 2-lane major road (Stop control)
LA 3234 at Cherry St.
2015 AM No Build
Stop (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: N. Cherry St.											
3	L	284	5.0	0.942	50.8	LOS F	12.9	335.2	0.97	1.63	15.3
8	T	193	5.0	0.107	0.0	LOS A	0.0	0.0	0.00	0.00	45.0
Approach		478	5.0	0.942	30.2	NA	12.9	335.2	0.58	0.97	21.0
North: N. Cherry St.											
4	T	254	5.0	0.349	0.0	LOS A	0.0	0.0	0.00	0.00	45.0
14	R	324	5.0	0.349	0.0	LOS A	0.0	0.0	0.00	0.87	34.1
Approach		579	5.0	0.349	0.0	NA	0.0	0.0	0.00	0.49	38.2
West: LA 3234											
5	L	101	5.0	0.518	41.7	LOS E	2.7	70.7	0.89	1.11	17.0
12	R	250	5.0	0.474	17.8	LOS C	3.6	93.6	0.74	1.11	23.6
Approach		351	5.0	0.518	24.7	LOS C	3.6	93.6	0.78	1.11	21.2
All Vehicles		1408	5.0	0.942	16.4	NA	12.9	335.2	0.39	0.81	25.9

Level of Service (LOS) Method: Delay (HCM 2000).

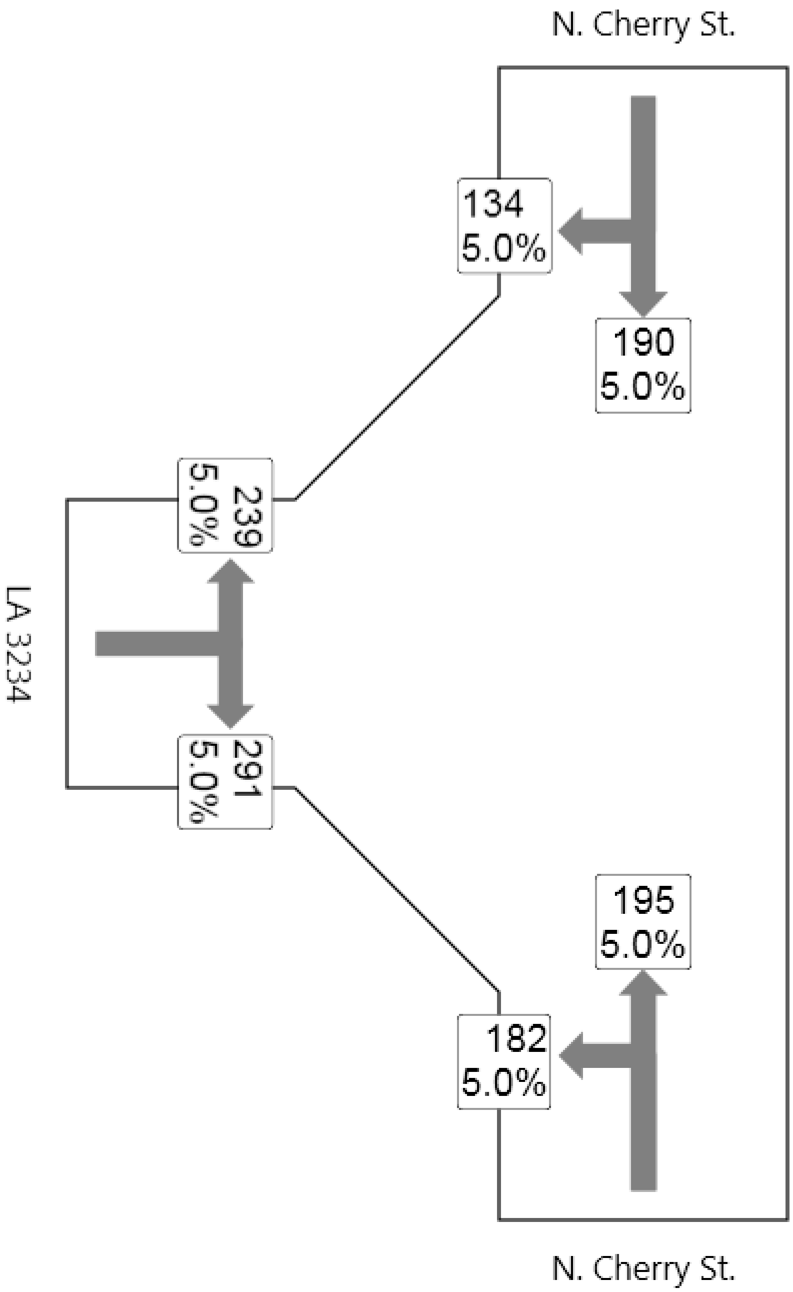
Vehicle movement LOS values are based on average delay per movement

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

HCM Delay Model used. Geometric Delay not included.

SIDRA INTERSECTION



LA 3234 @ LA 1065 (N Cherry St)

Alternate - 2015 No-Build PM

MOVEMENT SUMMARY

Three-way intersection with 2-lane major road (Stop control)
LA 3234 at Cherry St.
2015 PM No Build
Stop (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: N. Cherry St.											
3	L	188	5.0	0.428	12.5	LOS B	2.7	70.5	0.73	1.01	26.2
8	T	201	5.0	0.111	0.0	LOS A	0.0	0.0	0.00	0.00	45.0
Approach		389	5.0	0.428	6.0	NA	2.7	70.5	0.35	0.49	33.5
North: N. Cherry St.											
4	T	196	5.0	0.197	0.0	LOS A	0.0	0.0	0.00	0.00	45.0
14	R	138	5.0	0.197	0.0	LOS A	0.0	0.0	0.00	0.95	34.1
Approach		334	5.0	0.197	0.0	NA	0.0	0.0	0.00	0.39	39.8
West: LA 3234											
5	L	246	5.0	0.811	52.7	LOS F	8.5	221.6	0.92	1.40	15.0
12	R	300	5.0	0.443	14.5	LOS B	3.6	93.1	0.66	0.96	24.9
Approach		546	5.0	0.811	31.7	LOS D	8.5	221.6	0.78	1.16	19.2
All Vehicles		1269	5.0	0.811	15.5	NA	8.5	221.6	0.44	0.75	26.2

Level of Service (LOS) Method: Delay (HCM 2000).

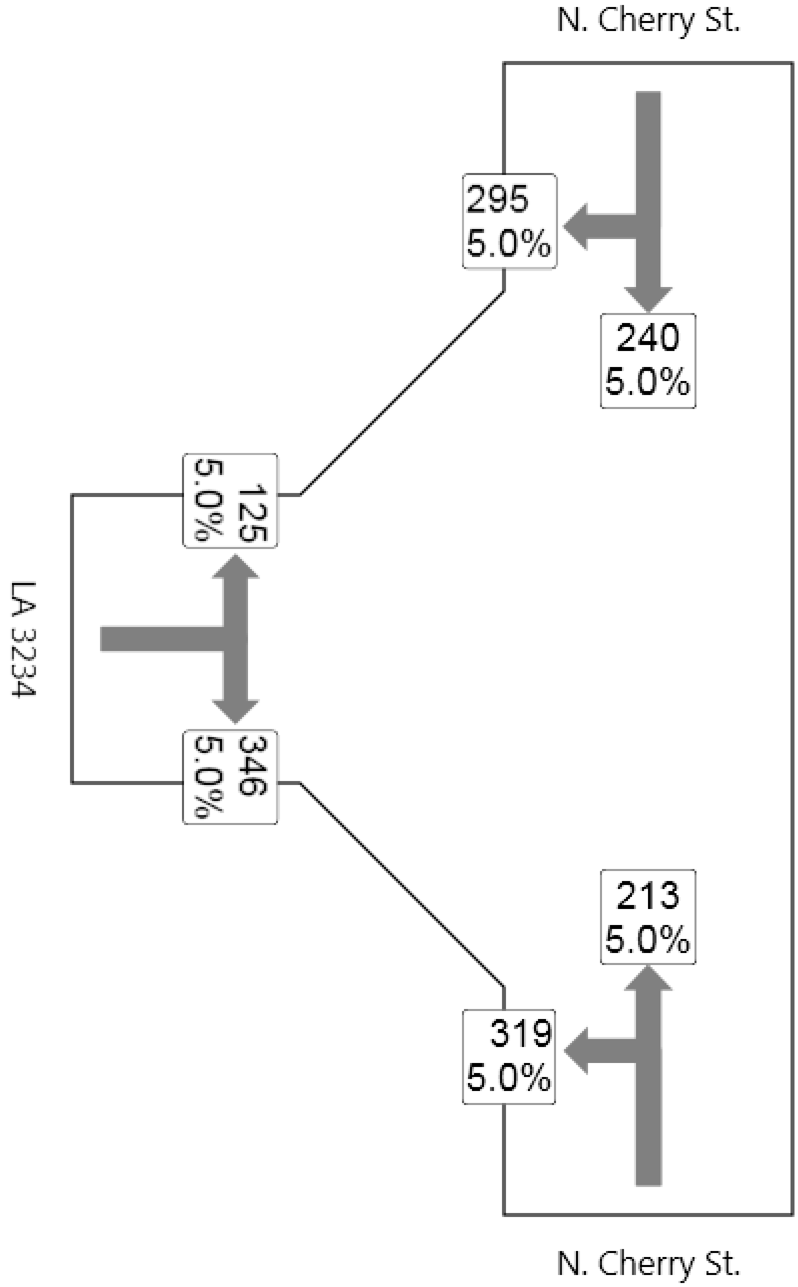
Vehicle movement LOS values are based on average delay per movement

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

HCM Delay Model used. Geometric Delay not included.

SIDRA INTERSECTION



LA 3234 @ LA 1065 (N Cherry St)

Alternate - 2035 No-Build AM

MOVEMENT SUMMARY

Site: 2035 AM No Build

Three-way intersection with 2-lane major road (Stop control)
LA 3234 at Cherry St.
2035 AM No Build
Stop (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: N. Cherry St.											
3	L	270	5.0	1.030	76.4	LOS F	16.1	417.8	1.00	1.80	12.0
8	T	321	5.0	0.180	2.9	LOS A	0.0	0.0	0.00	0.00	45.0
Approach		591	5.0	1.030	36.5	NA	16.1	417.8	0.46	0.82	20.1
North: N. Cherry St.											
4	T	267	5.0	0.357	0.0	LOS A	0.0	0.0	0.00	0.00	45.0
14	R	328	5.0	0.357	0.0	LOS A	0.0	0.0	0.00	0.88	34.1
Approach		594	5.0	0.357	0.0	NA	0.0	0.0	0.00	0.48	38.3
West: LA 3234											
5	L	139	5.0	0.770	71.1	LOS F	5.3	138.8	0.95	1.26	12.5
12	R	384	5.0	0.745	29.7	LOS D	9.7	251.3	0.90	1.34	19.8
Approach		523	5.0	0.770	40.7	LOS E	9.7	251.3	0.92	1.32	17.2
All Vehicles		1709	5.0	1.030	25.1	NA	16.1	417.8	0.44	0.86	22.7

Level of Service (LOS) Method: Delay (HCM 2000).

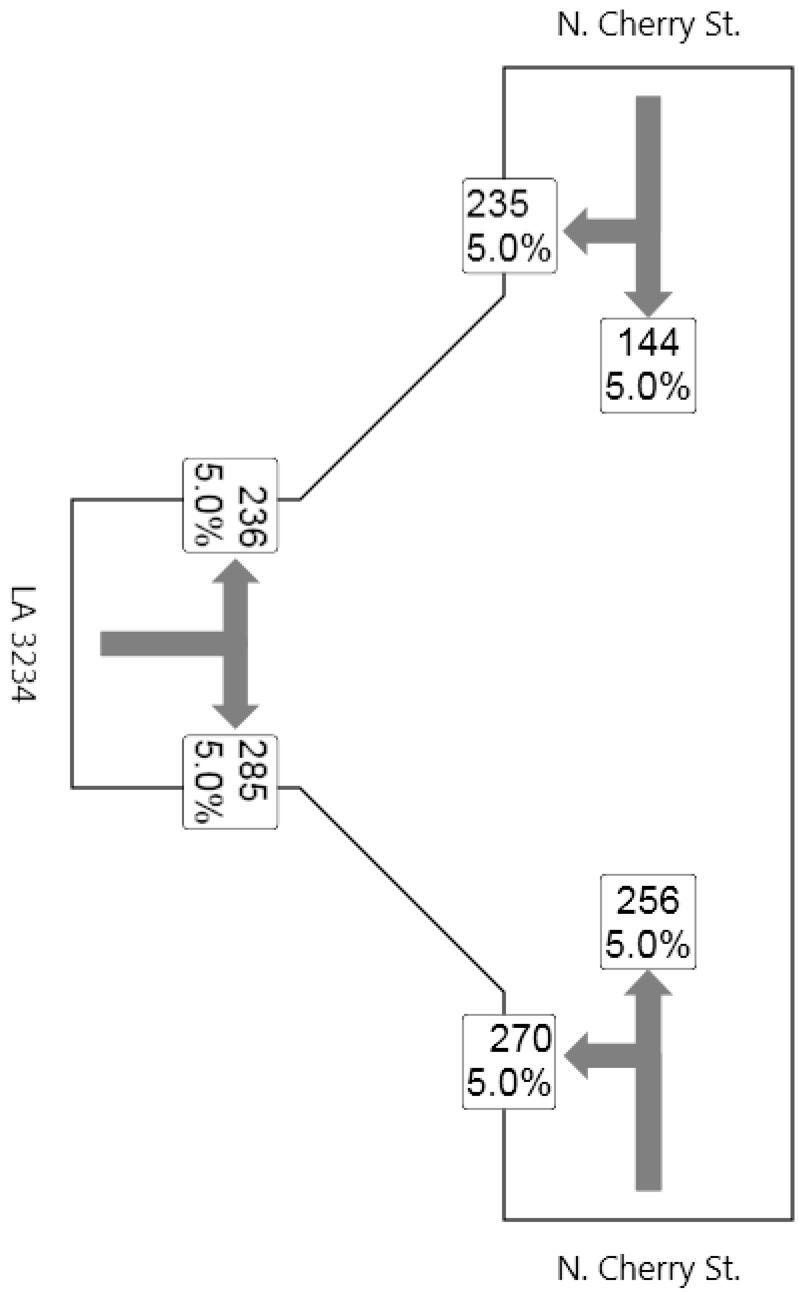
Vehicle movement LOS values are based on average delay per movement

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

HCM Delay Model used. Geometric Delay not included.

SIDRA INTERSECTION



LA 3234 @ LA 1065 (N Cherry St)

Alternate - 2035 No-Build PM

MOVEMENT SUMMARY

Site: 2035 PM No Build

Three-way intersection with 2-lane major road (Stop control)
LA 3234 at Cherry St.
2035 PM No Build
Stop (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: N. Cherry St.											
3	L	278	5.0	0.695	20.5	LOS C	6.5	169.8	0.85	1.23	22.8
8	T	264	5.0	0.146	0.0	LOS A	0.0	0.0	0.00	0.00	45.0
Approach		542	5.0	0.695	10.5	NA	6.5	169.8	0.44	0.63	30.1
North: N. Cherry St.											
4	T	148	5.0	0.237	0.0	LOS A	0.0	0.0	0.00	0.00	45.0
14	R	242	5.0	0.237	0.0	LOS A	0.0	0.0	0.00	0.85	34.1
Approach		391	5.0	0.237	0.0	NA	0.0	0.0	0.00	0.53	37.6
West: LA 3234											
5	L	243	5.0	1.071	125.5	LOS F	17.2	447.3	1.00	1.83	8.5
12	R	294	5.0	0.438	14.5	LOS B	3.5	90.3	0.65	0.96	24.9
Approach		537	5.0	1.071	64.8	LOS F	17.2	447.3	0.81	1.36	13.3
All Vehicles		1470	5.0	1.071	27.5	NA	17.2	447.3	0.46	0.87	21.4

Level of Service (LOS) Method: Delay (HCM 2000).

Vehicle movement LOS values are based on average delay per movement

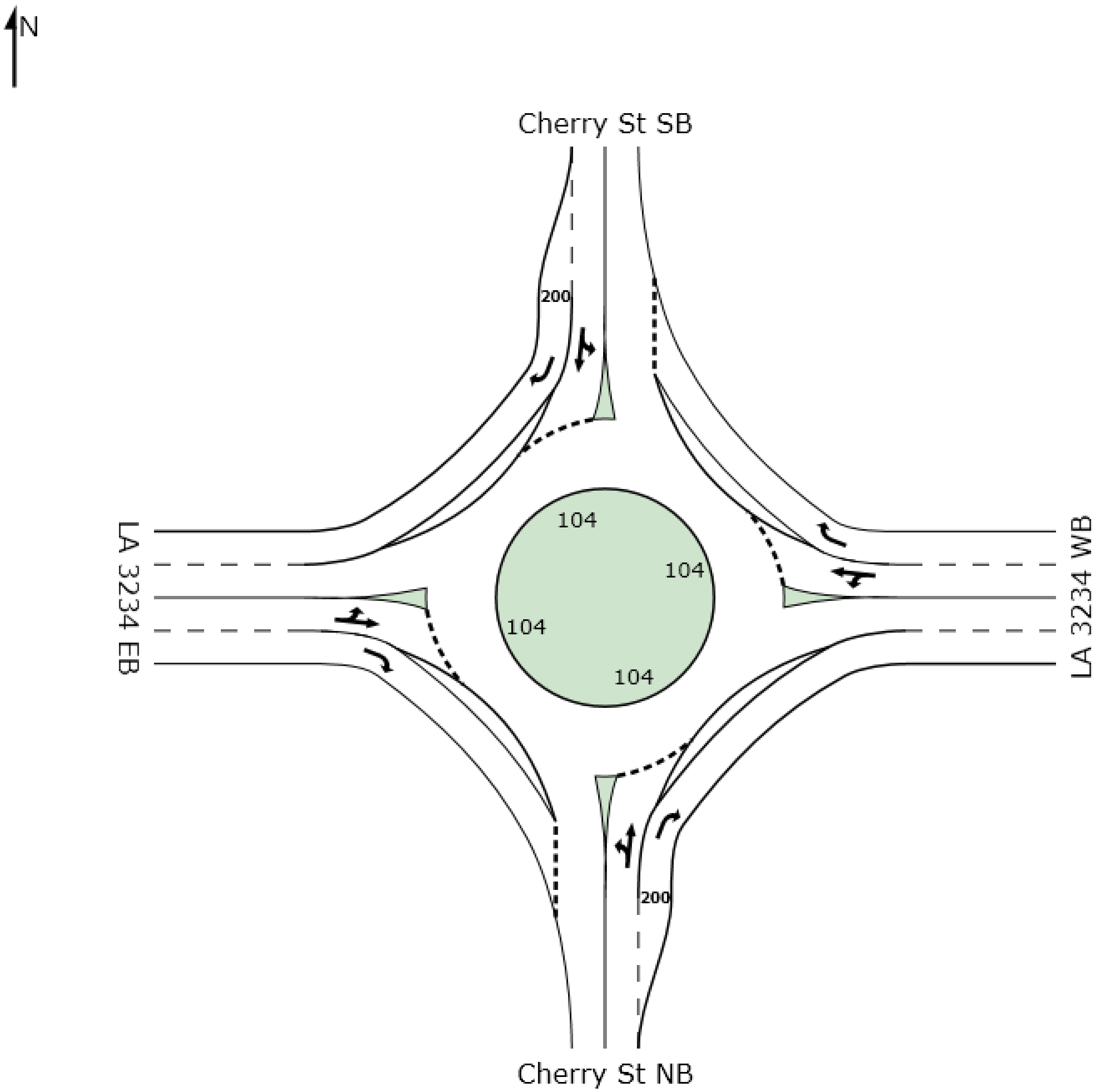
Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

HCM Delay Model used. Geometric Delay not included.

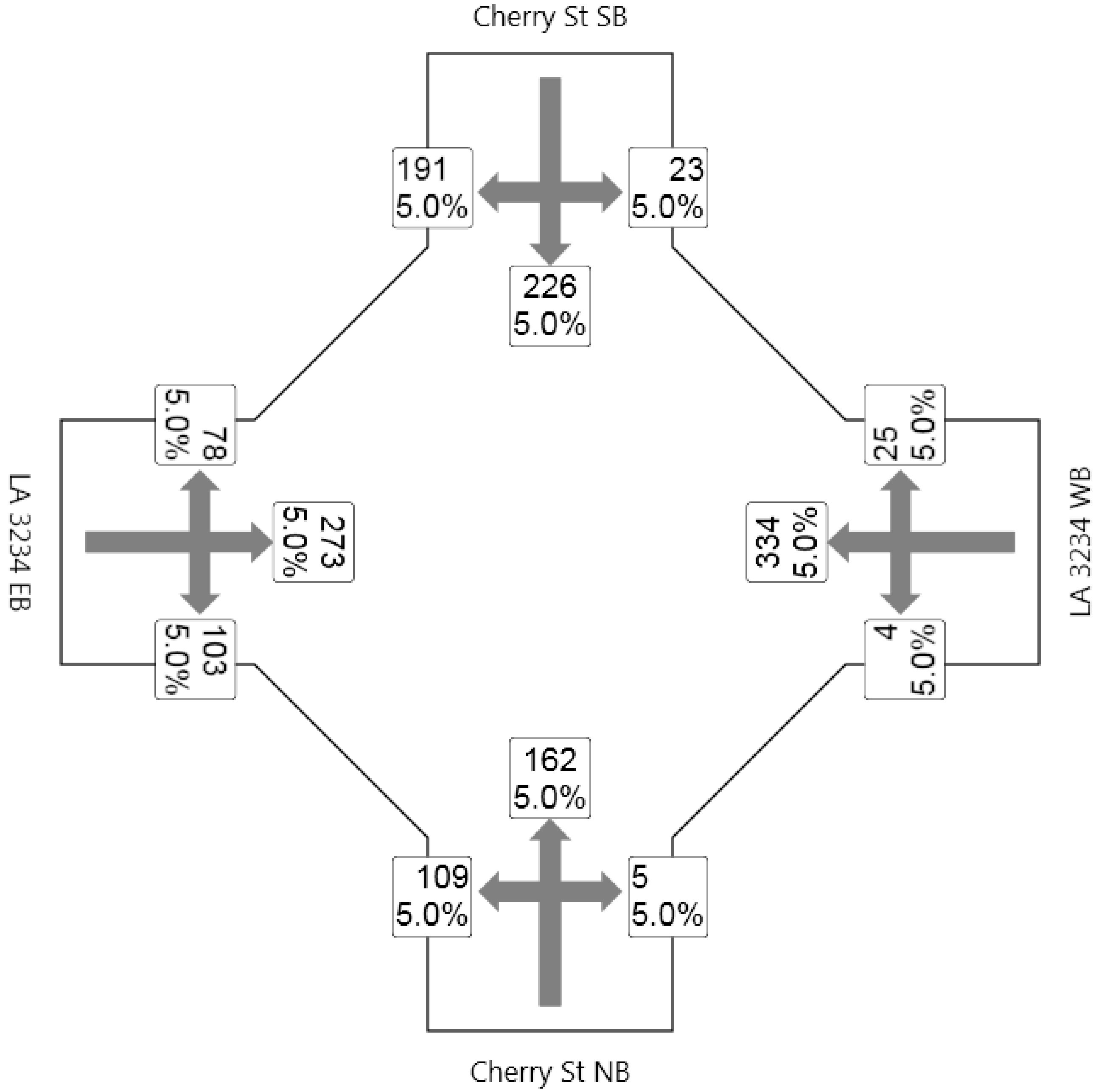
INTERSECTION LA 3234 at LA 1065 (N Cherry St)

Single Lane Roundabout Analysis



LA 3234 @ LA 1065 (N Cherry St)

Alternate - A



LA 3234 @ LA 1065 (N Cherry St)

Alternate - A, 2015 AM

MOVEMENT SUMMARY

Site: 3234@Cherry 2015 AM-A-1 Lane

LA 3234 (University Ave) at N. Cherry St
AM Peak - 2015 Alt A

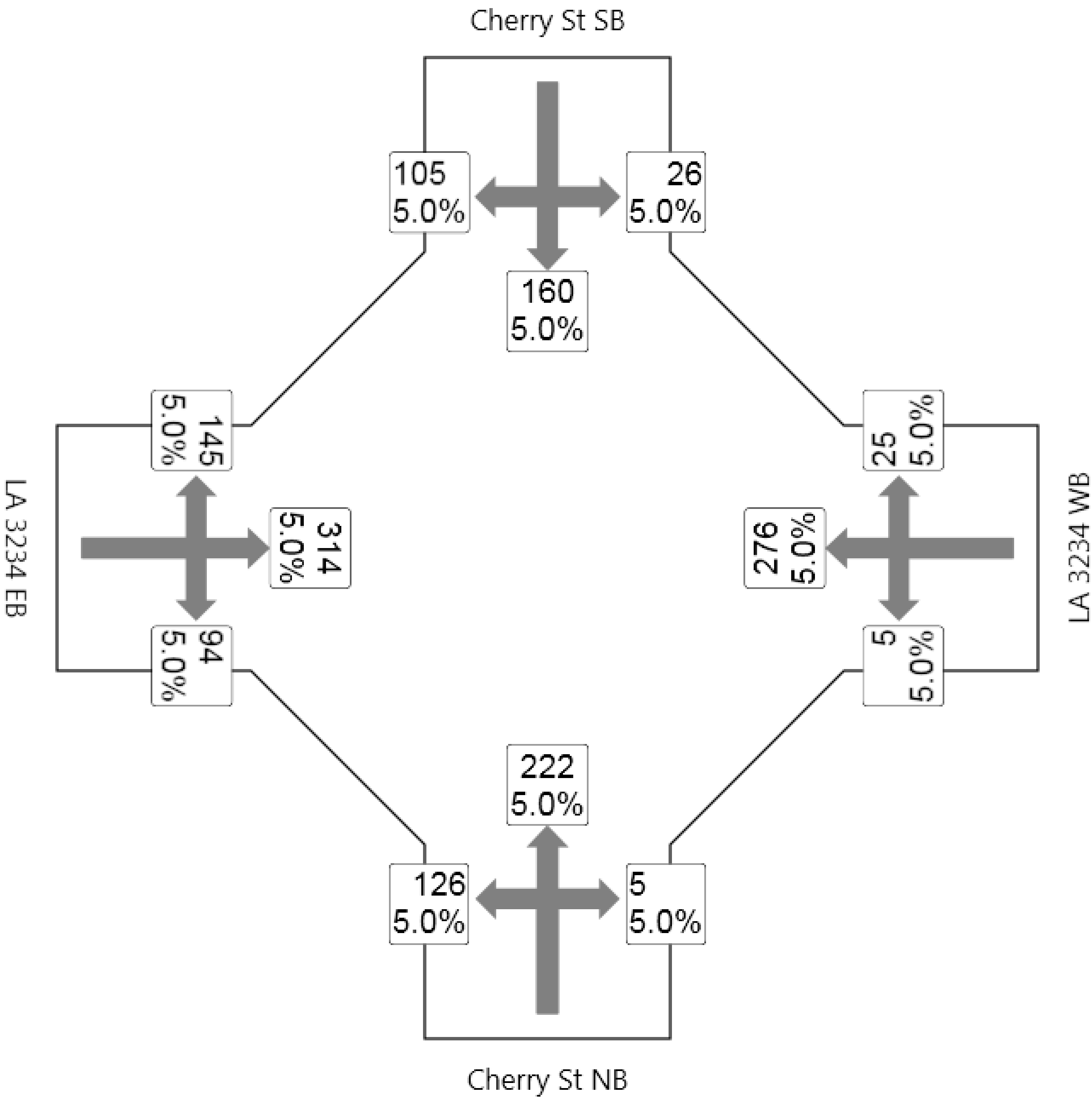
Roundabout

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: Cherry St NB											
3	L	121	5.0	0.409	18.8	LOS B	2.7	69.2	0.72	0.89	30.7
8	T	180	5.0	0.409	10.4	LOS B	2.7	69.2	0.72	0.76	32.8
18	R	6	5.0	0.004	7.5	X	X	X	X	0.54	36.6
Approach		307	5.0	0.409	13.6	LOS B	2.7	69.2	0.70	0.81	31.9
East: LA 3234 WB											
1	L	4	5.0	0.394	17.4	LOS B	2.7	70.7	0.67	0.88	32.6
6	T	371	5.0	0.394	10.7	LOS B	2.7	70.7	0.67	0.72	35.5
16	R	28	5.0	0.026	9.5	LOS A	0.1	3.5	0.44	0.56	35.8
Approach		403	5.0	0.394	10.7	LOS B	2.7	70.7	0.66	0.71	35.4
North: Cherry St SB											
7	L	26	5.0	0.407	19.6	LOS B	2.6	68.4	0.75	0.95	30.5
4	T	251	5.0	0.407	11.3	LOS B	2.6	68.4	0.75	0.82	33.0
14	R	212	5.0	0.136	7.5	X	X	X	X	0.54	36.6
Approach		489	5.0	0.407	10.1	LOS B	2.6	68.4	0.43	0.70	34.3
West: LA 3234 EB											
5	L	87	5.0	0.374	16.6	LOS B	2.6	68.7	0.60	0.83	32.8
2	T	303	5.0	0.374	9.9	LOS A	2.6	68.7	0.60	0.65	35.6
12	R	114	5.0	0.108	9.6	LOS A	0.6	16.1	0.47	0.60	35.6
Approach		504	5.0	0.374	11.0	LOS B	2.6	68.7	0.57	0.67	35.1
All Vehicles		1703	5.0	0.409	11.1	LOS B	2.7	70.7	0.57	0.72	34.3

X: Not applicable for Continuous movement.

Level of Service (LOS) Method: Delay (HCM 2000).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay per movement
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model used.



LA 3234 @ LA 1065 (N Cherry St)

Alternate - A, 2015 PM

MOVEMENT SUMMARY

Site: 3234@Cherry 2015 PM-A-1 Lane

LA 3234 (University Ave) at N. Cherry St
PM Peak - 2015 Alt A

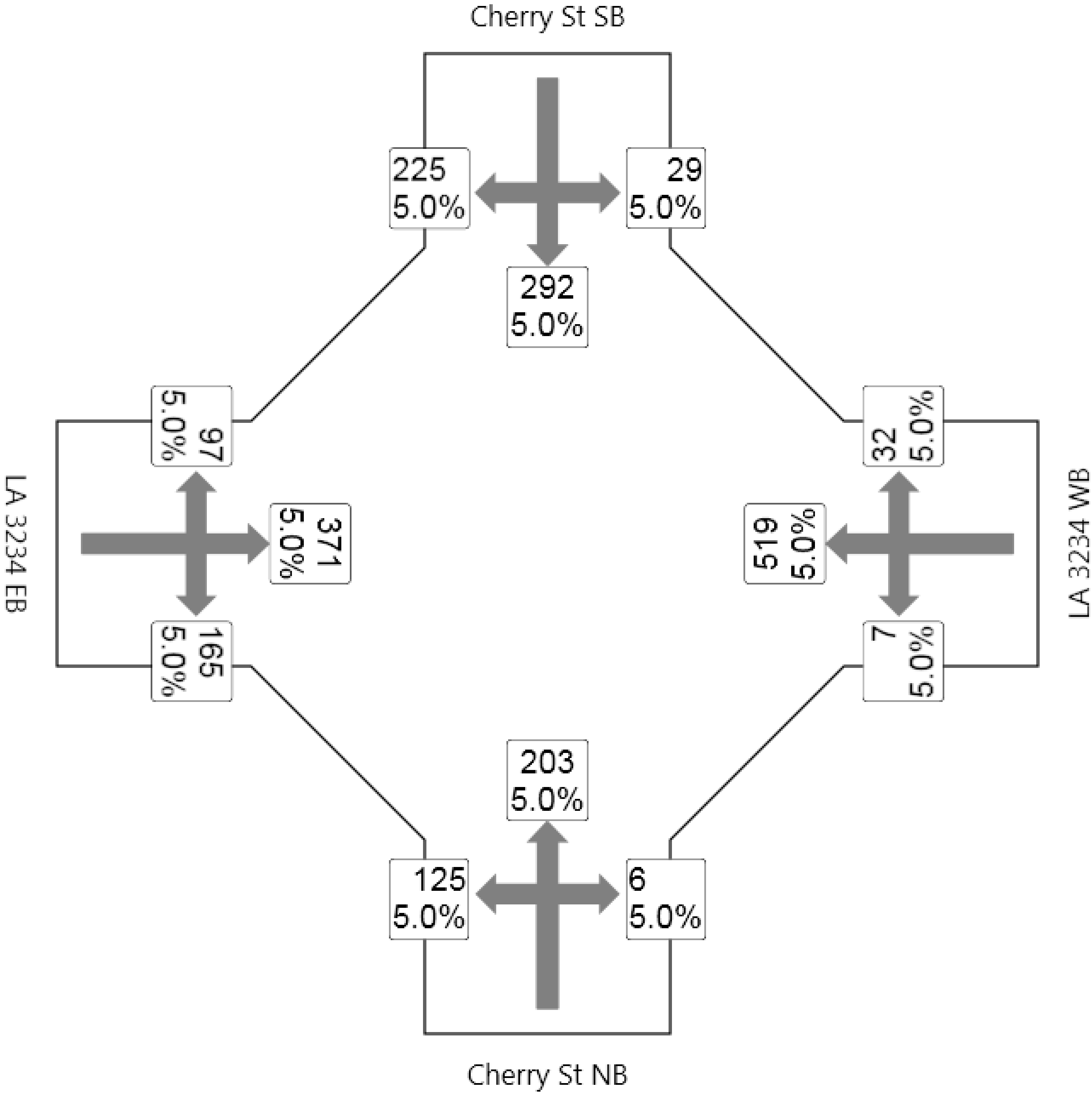
Roundabout

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: Cherry St NB											
3	L	130	5.0	0.528	21.5	LOS C	4.2	109.5	0.81	1.00	29.3
8	T	229	5.0	0.528	13.1	LOS B	4.2	109.5	0.81	0.91	31.5
18	R	5	5.0	0.003	7.5	X	X	X	X	0.54	36.6
Approach		364	5.0	0.528	16.0	LOS B	4.2	109.5	0.80	0.93	30.7
East: LA 3234 WB											
1	L	5	5.0	0.342	18.1	LOS B	2.3	59.7	0.73	0.90	32.1
6	T	285	5.0	0.342	11.5	LOS B	2.3	59.7	0.73	0.77	35.1
16	R	26	5.0	0.027	10.1	LOS B	0.1	3.7	0.52	0.59	35.3
Approach		315	5.0	0.342	11.5	LOS B	2.3	59.7	0.71	0.76	35.1
North: Cherry St SB											
7	L	27	5.0	0.260	18.3	LOS B	1.5	39.4	0.65	0.89	31.1
4	T	165	5.0	0.260	10.0	LOS A	1.5	39.4	0.65	0.72	33.5
14	R	108	5.0	0.069	7.5	X	X	X	X	0.54	36.6
Approach		300	5.0	0.260	9.8	LOS A	1.5	39.4	0.41	0.67	34.3
West: LA 3234 EB											
5	L	149	5.0	0.406	16.0	LOS B	3.0	77.1	0.52	0.79	32.9
2	T	324	5.0	0.406	9.4	LOS A	3.0	77.1	0.52	0.59	36.0
12	R	97	5.0	0.084	9.1	LOS A	0.5	11.9	0.37	0.56	36.1
Approach		570	5.0	0.406	11.1	LOS B	3.0	77.1	0.50	0.64	35.2
All Vehicles		1549	5.0	0.528	12.1	LOS B	4.2	109.5	0.60	0.74	33.8

X: Not applicable for Continuous movement.

Level of Service (LOS) Method: Delay (HCM 2000).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay per movement
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model used.



LA 3234 @ LA 1065 (N Cherry St)

Alternate - A, 2035 AM

MOVEMENT SUMMARY

Site: 3234@Cherry 2035 AM-A-1 Lane

LA 3234 (University Ave) at N. Cherry St
AM Peak - 2035 Alt A

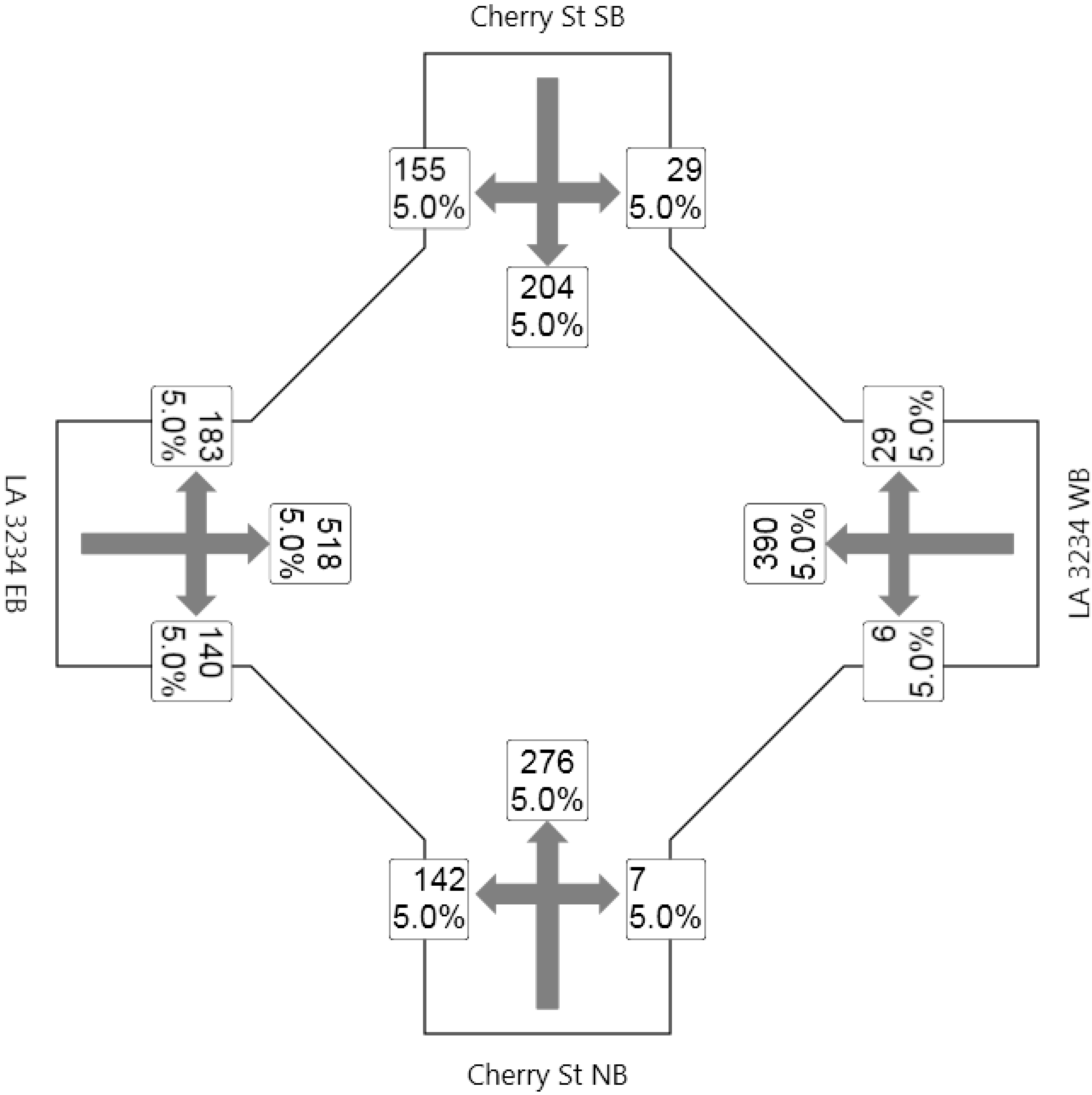
Roundabout

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: Cherry St NB											
3	L	139	5.0	0.515	21.0	LOS C	4.3	110.5	0.85	0.98	29.6
8	T	226	5.0	0.515	12.6	LOS B	4.3	110.5	0.85	0.91	31.8
18	R	7	5.0	0.004	7.5	X	X	X	X	0.54	36.6
Approach		371	5.0	0.515	15.6	LOS B	4.3	110.5	0.83	0.93	30.9
East: LA 3234 WB											
1	L	8	5.0	0.594	19.3	LOS B	5.9	153.3	0.84	0.94	31.5
6	T	577	5.0	0.594	12.7	LOS B	5.9	153.3	0.84	0.86	34.5
16	R	36	5.0	0.032	9.6	LOS A	0.2	4.5	0.49	0.58	35.5
Approach		620	5.0	0.594	12.6	LOS B	5.9	153.3	0.82	0.84	34.5
North: Cherry St SB											
7	L	32	5.0	0.619	26.3	LOS C	6.0	156.8	0.96	1.11	27.3
4	T	324	5.0	0.619	17.9	LOS B	6.0	156.8	0.96	1.09	28.8
14	R	250	5.0	0.160	7.5	X	X	X	X	0.54	36.6
Approach		607	5.0	0.619	14.1	LOS B	6.0	156.8	0.57	0.87	31.4
West: LA 3234 EB											
5	L	108	5.0	0.491	17.0	LOS B	4.1	105.4	0.74	0.84	32.7
2	T	412	5.0	0.491	10.4	LOS B	4.1	105.4	0.74	0.70	34.8
12	R	183	5.0	0.169	9.8	LOS A	1.1	28.3	0.57	0.64	35.1
Approach		703	5.0	0.491	11.3	LOS B	4.1	105.4	0.70	0.71	34.5
All Vehicles		2301	5.0	0.619	13.1	LOS B	6.0	156.8	0.72	0.82	33.1

X: Not applicable for Continuous movement.

Level of Service (LOS) Method: Delay (HCM 2000).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay per movement
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model used.



LA 3234 @ LA 1065 (N Cherry St)

Alternate - A, 2035 PM

MOVEMENT SUMMARY

Site: 3234@Cherry 2035 PM-A-1 Lane

LA 3234 (University Ave) at N. Cherry St
PM Peak - 2035 Alt A

Roundabout

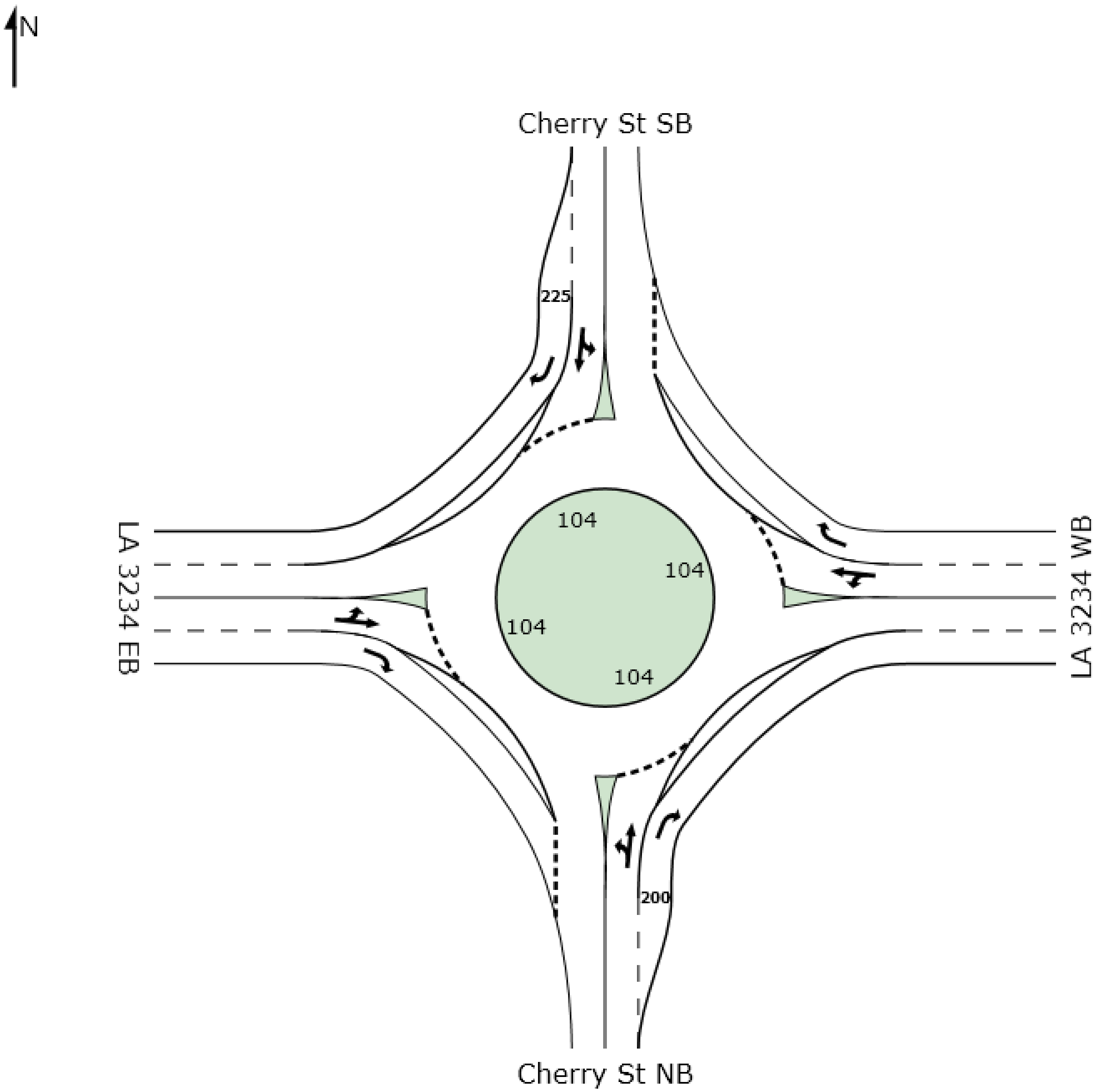
Movement Performance - Vehicles

Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: Cherry St NB											
3	L	146	5.0	0.771	33.5	LOS C	9.8	256.0	1.00	1.23	24.1
8	T	285	5.0	0.771	25.2	LOS C	9.8	256.0	1.00	1.23	24.9
18	R	7	5.0	0.005	7.5	X	X	X	X	0.54	36.6
Approach		438	5.0	0.771	27.7	LOS C	9.8	256.0	0.98	1.22	24.7
East: LA 3234 WB											
1	L	6	5.0	0.486	19.5	LOS B	4.2	108.2	0.87	0.94	31.4
6	T	402	5.0	0.486	12.9	LOS B	4.2	108.2	0.87	0.88	34.4
16	R	30	5.0	0.030	10.3	LOS B	0.2	4.6	0.59	0.61	35.0
Approach		438	5.0	0.486	12.8	LOS B	4.2	108.2	0.85	0.86	34.4
North: Cherry St SB											
7	L	30	5.0	0.337	19.2	LOS B	2.2	57.5	0.76	0.92	30.8
4	T	210	5.0	0.337	10.8	LOS B	2.2	57.5	0.76	0.80	32.9
14	R	160	5.0	0.102	7.5	X	X	X	X	0.54	36.6
Approach		400	5.0	0.337	10.1	LOS B	2.2	57.5	0.46	0.71	34.1
West: LA 3234 EB											
5	L	189	5.0	0.589	16.5	LOS B	5.4	140.2	0.68	0.79	32.9
2	T	534	5.0	0.589	9.9	LOS A	5.4	140.2	0.68	0.65	35.1
12	R	144	5.0	0.118	9.2	LOS A	0.7	18.1	0.43	0.58	35.8
Approach		867	5.0	0.589	11.2	LOS B	5.4	140.2	0.64	0.67	34.7
All Vehicles		2143	5.0	0.771	14.7	LOS B	9.8	256.0	0.72	0.83	31.9

X: Not applicable for Continuous movement.

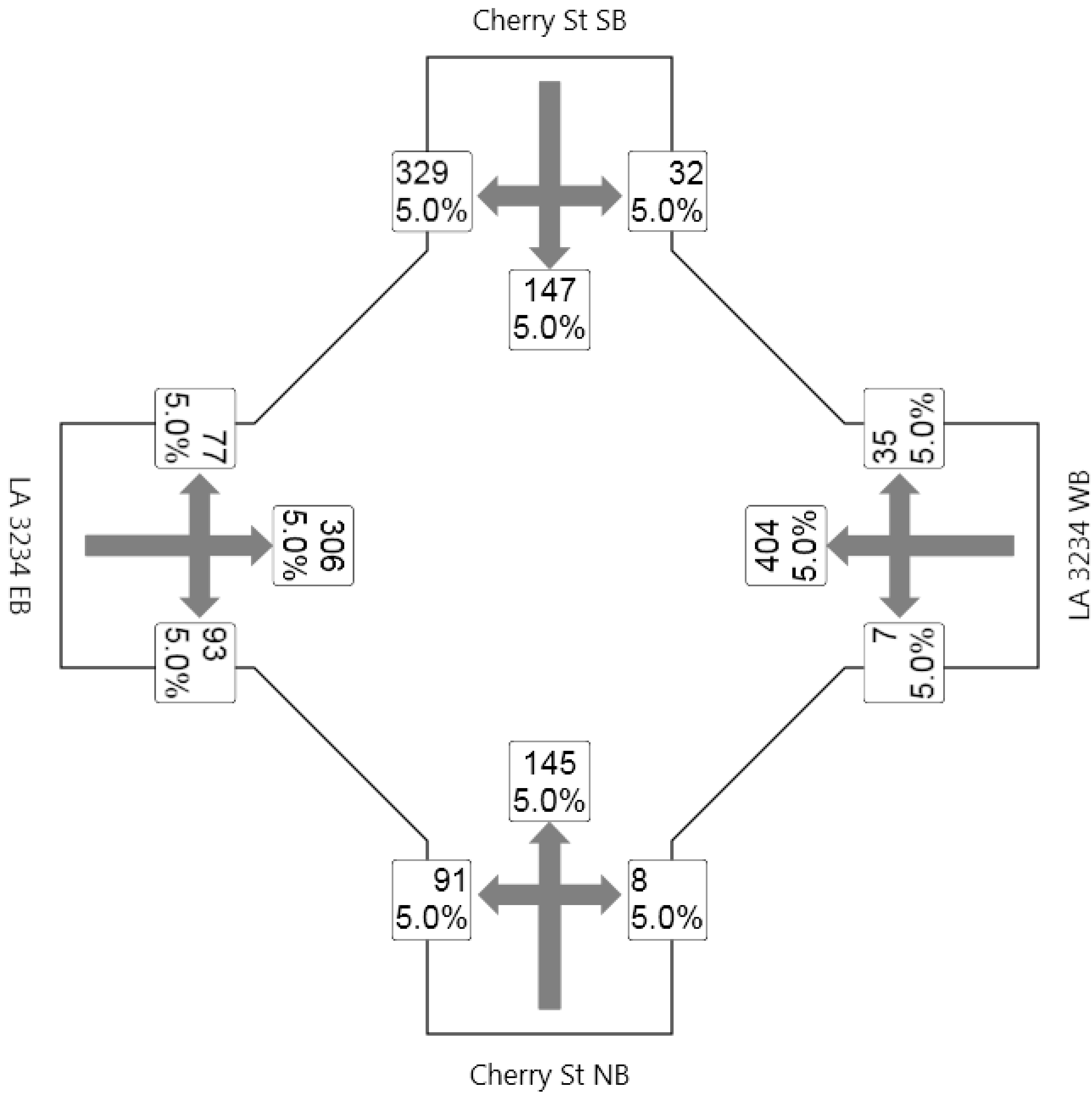
Level of Service (LOS) Method: Delay (HCM 2000).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay per movement
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model used.

SIDRA INTERSECTION



LA 3234 @ LA 1065 (N Cherry St)

Alternate - B



LA 3234 @ LA 1065 (N Cherry St)

Alternate - B, 2015 AM

MOVEMENT SUMMARY

Site: 3234@Cherry 2015 AM-B-1 LANE

LA 3234 (University Ave) at N. Cherry St
AM Peak - 2015 Alt B

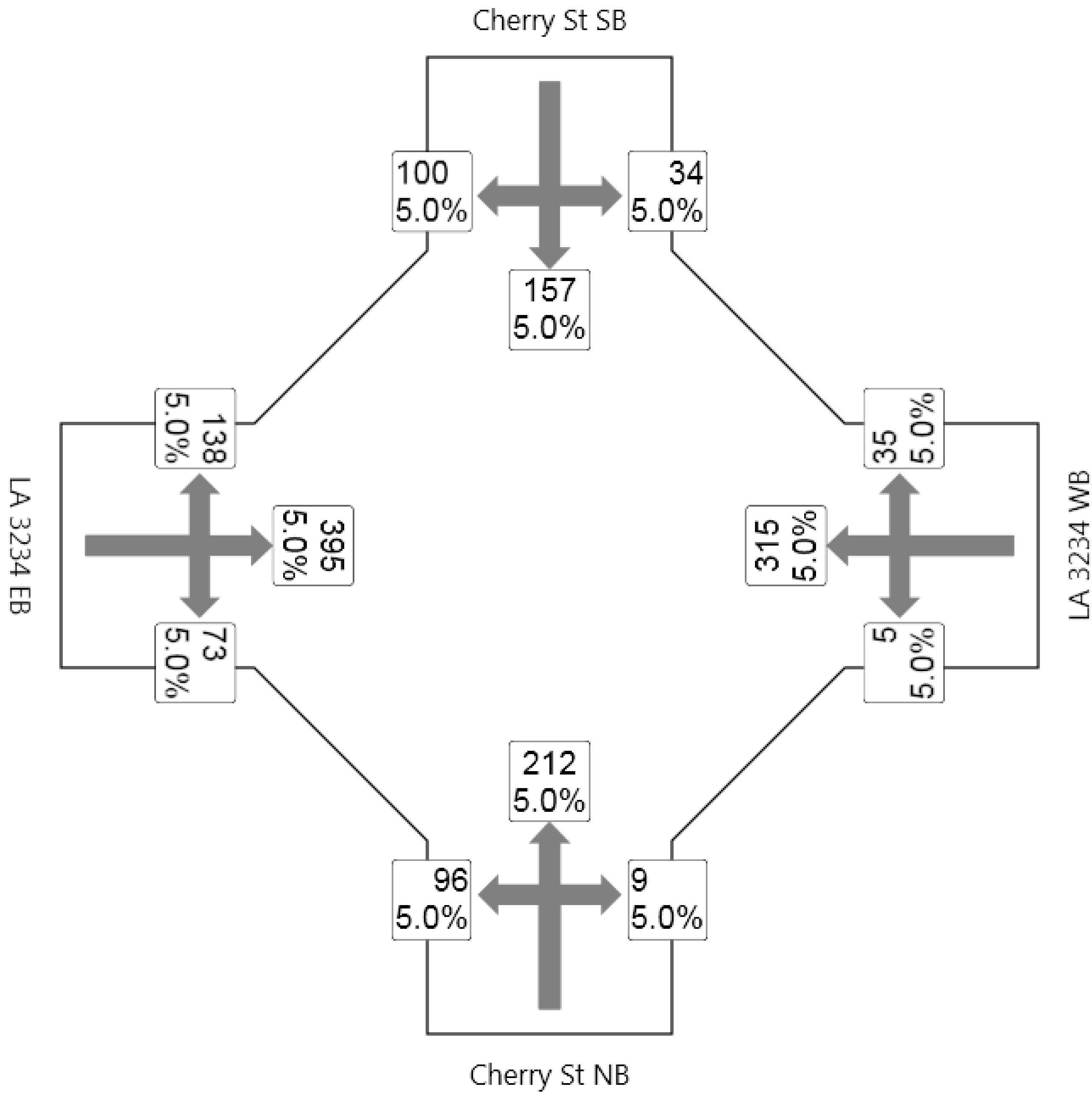
Roundabout

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: Cherry St NB											
3	L	101	5.0	0.370	19.1	LOS B	2.3	60.0	0.72	0.90	30.5
8	T	161	5.0	0.370	10.7	LOS B	2.3	60.0	0.72	0.77	32.8
18	R	9	5.0	0.006	7.5	X	X	X	X	0.54	36.6
Approach		271	5.0	0.370	13.7	LOS B	2.3	60.0	0.69	0.81	31.9
East: LA 3234 WB											
1	L	8	5.0	0.460	17.2	LOS B	3.3	87.0	0.68	0.88	32.7
6	T	449	5.0	0.460	10.6	LOS B	3.3	87.0	0.68	0.71	35.4
16	R	39	5.0	0.036	9.4	LOS A	0.2	4.8	0.42	0.57	35.9
Approach		496	5.0	0.460	10.6	LOS B	3.3	87.0	0.66	0.70	35.4
North: Cherry St SB											
7	L	36	5.0	0.315	19.8	LOS B	1.9	50.1	0.75	0.94	30.3
4	T	163	5.0	0.315	11.4	LOS B	1.9	50.1	0.75	0.81	32.9
14	R	366	5.0	0.234	7.5	X	X	X	X	0.54	36.6
Approach		564	5.0	0.315	9.4	LOS A	1.9	50.1	0.26	0.64	34.9
West: LA 3234 EB											
5	L	86	5.0	0.373	16.0	LOS B	2.7	69.3	0.52	0.81	33.1
2	T	340	5.0	0.373	9.4	LOS A	2.7	69.3	0.52	0.60	36.1
12	R	103	5.0	0.090	9.1	LOS A	0.5	13.1	0.38	0.56	36.1
Approach		529	5.0	0.373	10.4	LOS B	2.7	69.3	0.50	0.63	35.6
All Vehicles		1860	5.0	0.460	10.7	LOS B	3.3	87.0	0.50	0.68	34.8

X: Not applicable for Continuous movement.

Level of Service (LOS) Method: Delay (HCM 2000).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay per movement
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model used.



LA 3234 @ LA 1065 (N Cherry St)

Alternate - B, 2015 PM

MOVEMENT SUMMARY

Site: 3234@Cherry 2015 PM-B-1 LANE

LA 3234 (University Ave) at N. Cherry St
PM Peak - 2015 Alt B

Roundabout

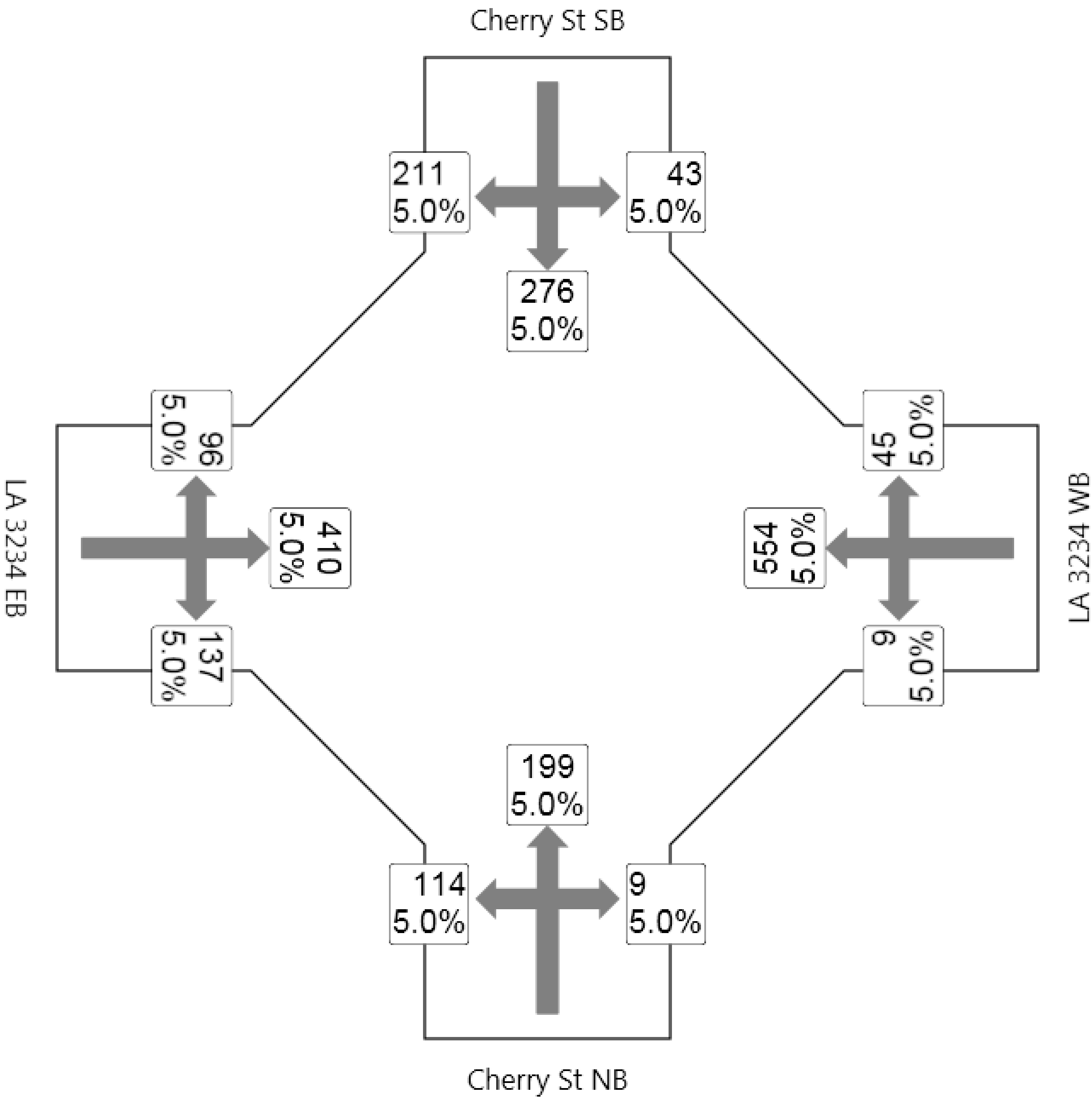
Movement Performance - Vehicles

Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: Cherry St NB											
3	L	99	5.0	0.516	22.6	LOS C	4.1	105.6	0.85	1.03	28.8
8	T	219	5.0	0.516	14.2	LOS B	4.1	105.6	0.85	0.96	30.8
18	R	9	5.0	0.006	7.5	X	X	X	X	0.54	36.6
Approach		327	5.0	0.516	16.6	LOS B	4.1	105.6	0.82	0.97	30.2
East: LA 3234 WB											
1	L	5	5.0	0.372	17.8	LOS B	2.5	66.0	0.71	0.90	32.3
6	T	325	5.0	0.372	11.2	LOS B	2.5	66.0	0.71	0.75	35.2
16	R	36	5.0	0.037	10.0	LOS B	0.2	5.1	0.51	0.60	35.4
Approach		366	5.0	0.372	11.2	LOS B	2.5	66.0	0.69	0.74	35.2
North: Cherry St SB											
7	L	35	5.0	0.271	18.5	LOS B	1.6	41.7	0.66	0.89	31.0
4	T	162	5.0	0.271	10.1	LOS B	1.6	41.7	0.66	0.73	33.4
14	R	103	5.0	0.066	7.5	X	X	X	X	0.54	36.6
Approach		300	5.0	0.271	10.2	LOS B	1.6	41.7	0.43	0.68	34.1
West: LA 3234 EB											
5	L	142	5.0	0.471	16.2	LOS B	3.7	96.1	0.56	0.80	33.0
2	T	407	5.0	0.471	9.5	LOS A	3.7	96.1	0.56	0.61	35.8
12	R	75	5.0	0.065	9.1	LOS A	0.4	9.1	0.37	0.55	36.2
Approach		625	5.0	0.471	11.0	LOS B	3.7	96.1	0.54	0.64	35.1
All Vehicles		1618	5.0	0.516	12.0	LOS B	4.1	105.6	0.61	0.74	33.9

X: Not applicable for Continuous movement.

Level of Service (LOS) Method: Delay (HCM 2000).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay per movement
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model used.

SIDRA INTERSECTION



LA 3234 @ LA 1065 (N Cherry St)

Alternate - B, 2035 AM

MOVEMENT SUMMARY

Site: 3234@Cherry 2035 AM-B-1 LANE

LA 3234 (University Ave) at N. Cherry St
AM Peak - 2035 Alt B

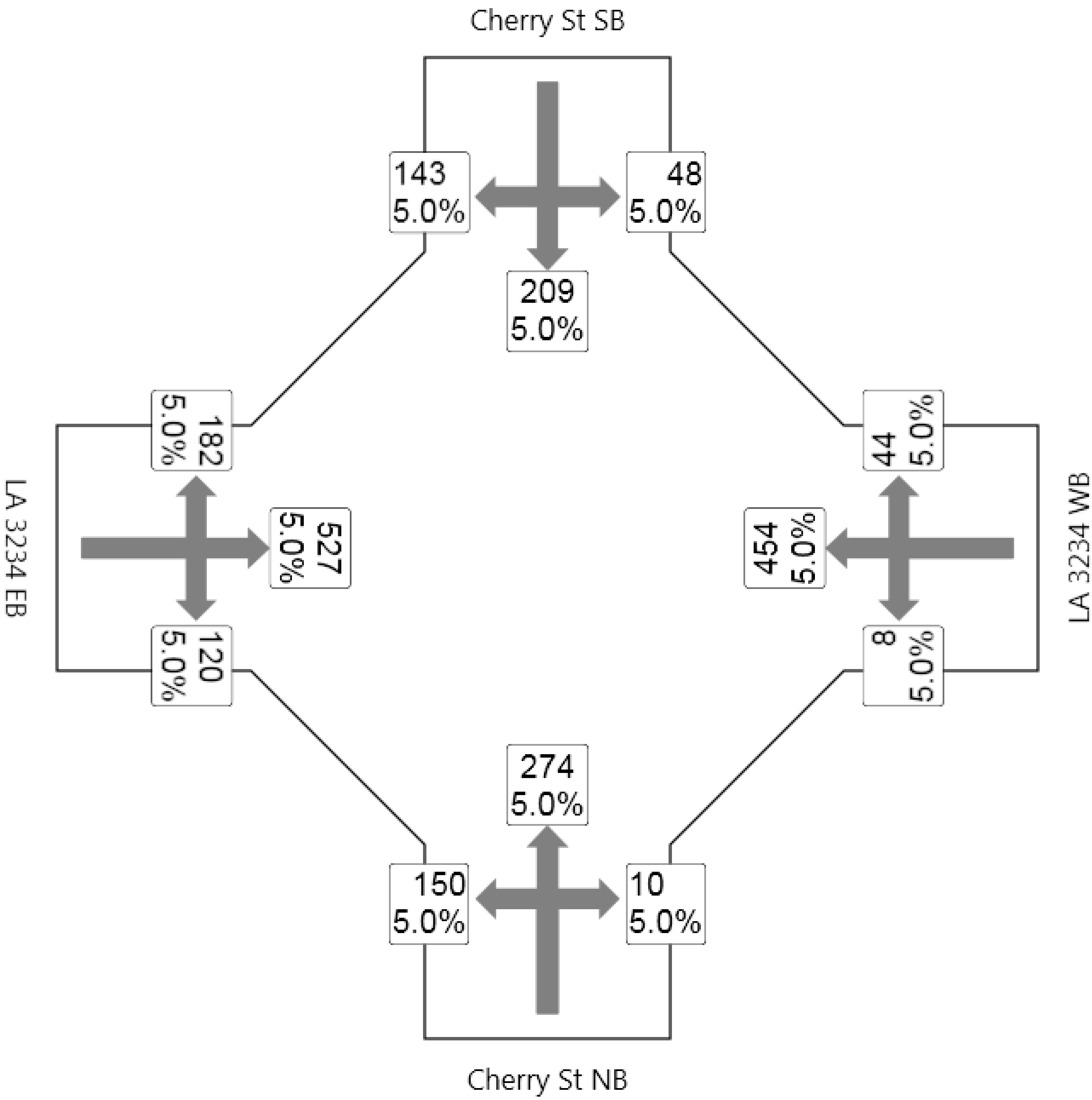
Roundabout

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: Cherry St NB											
3	L	127	5.0	0.527	22.0	LOS C	4.5	116.1	0.88	1.01	29.0
8	T	221	5.0	0.527	13.7	LOS B	4.5	116.1	0.88	0.96	31.1
18	R	10	5.0	0.006	7.5	X	X	X	X	0.54	36.6
Approach		358	5.0	0.527	16.4	LOS B	4.5	116.1	0.86	0.97	30.4
East: LA 3234 WB											
1	L	10	5.0	0.626	19.6	LOS B	6.6	171.9	0.86	0.94	31.4
6	T	616	5.0	0.626	13.0	LOS B	6.6	171.9	0.86	0.87	34.4
16	R	50	5.0	0.044	9.6	LOS A	0.2	6.4	0.49	0.59	35.5
Approach		676	5.0	0.626	12.8	LOS B	6.6	171.9	0.83	0.85	34.5
North: Cherry St SB											
7	L	48	5.0	0.646	27.8	LOS C	6.5	170.2	0.99	1.13	26.6
4	T	307	5.0	0.646	19.5	LOS B	6.5	170.2	0.99	1.12	27.9
14	R	234	5.0	0.150	7.5	X	X	X	X	0.54	36.6
Approach		589	5.0	0.646	15.4	LOS B	6.5	170.2	0.59	0.89	30.6
West: LA 3234 EB											
5	L	107	5.0	0.531	17.2	LOS B	4.6	120.4	0.77	0.84	32.6
2	T	456	5.0	0.531	10.6	LOS B	4.6	120.4	0.77	0.72	34.7
12	R	152	5.0	0.138	9.7	LOS A	0.9	22.7	0.54	0.62	35.2
Approach		714	5.0	0.531	11.4	LOS B	4.6	120.4	0.72	0.72	34.4
All Vehicles		2337	5.0	0.646	13.6	LOS B	6.6	171.9	0.74	0.84	32.8

X: Not applicable for Continuous movement.

Level of Service (LOS) Method: Delay (HCM 2000).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay per movement
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model used.



LA 3234 @ LA 1065 (N Cherry St)

Alternate - B, 2035 PM

MOVEMENT SUMMARY

Site: 3234@Cherry 2035 PM-B-1 LANE

LA 3234 (University Ave) at N. Cherry St
PM Peak - 2035 Alt B

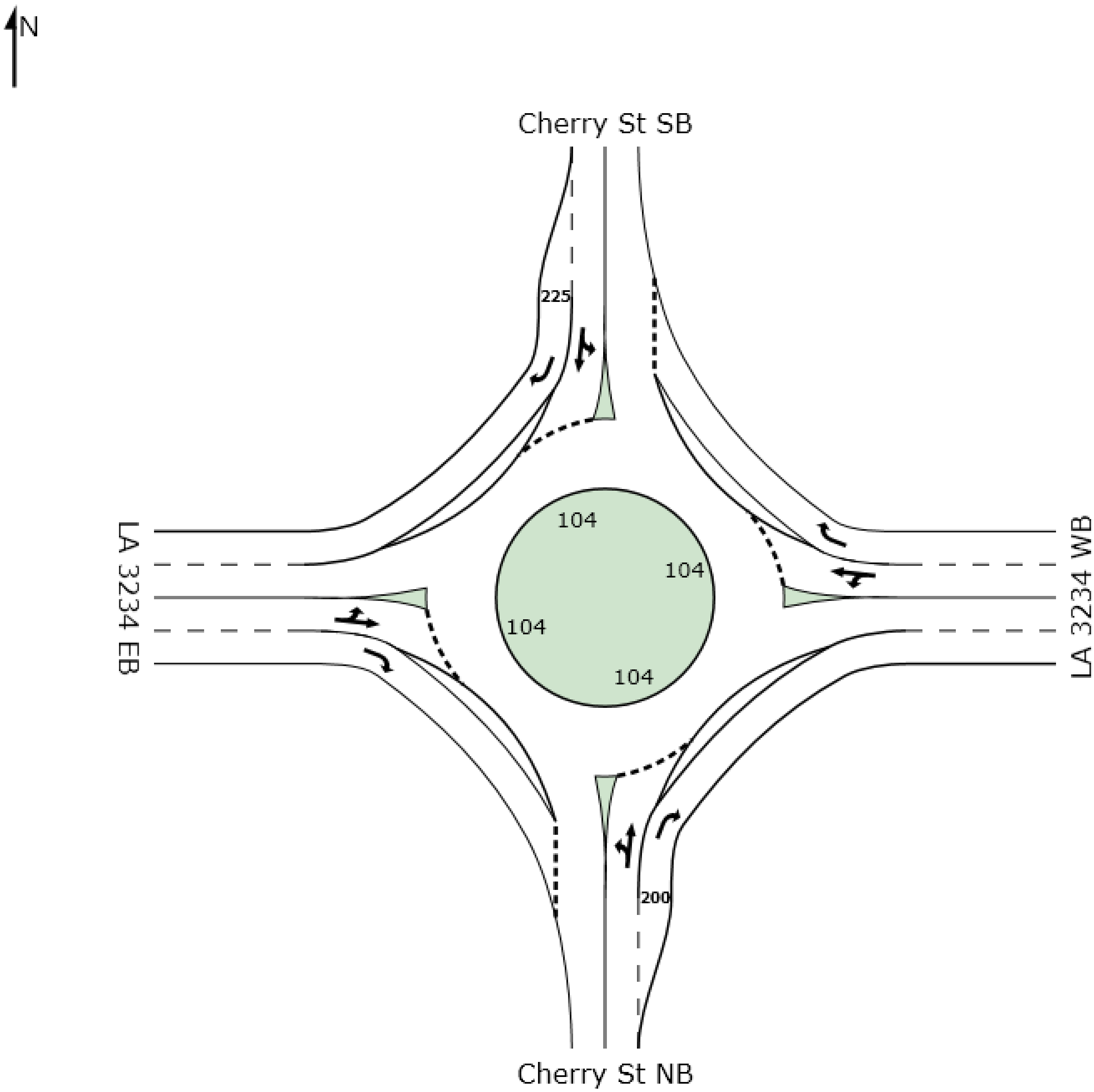
Roundabout

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: Cherry St NB											
3	L	155	5.0	0.822	38.3	LOS D	11.6	302.7	1.00	1.29	22.5
8	T	282	5.0	0.822	30.0	LOS C	11.6	302.7	1.00	1.29	23.0
18	R	10	5.0	0.007	7.5	X	X	X	X	0.54	36.6
Approach		447	5.0	0.822	32.3	LOS C	11.6	302.7	0.98	1.28	23.0
East: LA 3234 WB											
1	L	8	5.0	0.571	21.0	LOS C	5.6	146.9	0.92	0.99	30.6
6	T	468	5.0	0.571	14.4	LOS B	5.6	146.9	0.92	0.94	34.0
16	R	45	5.0	0.046	10.3	LOS B	0.3	7.0	0.59	0.63	34.9
Approach		522	5.0	0.571	14.1	LOS B	5.6	146.9	0.89	0.92	34.0
North: Cherry St SB											
7	L	49	5.0	0.410	20.4	LOS C	2.9	75.9	0.84	0.96	30.1
4	T	215	5.0	0.410	12.0	LOS B	2.9	75.9	0.84	0.88	32.4
14	R	147	5.0	0.094	7.5	X	X	X	X	0.54	36.6
Approach		412	5.0	0.410	11.4	LOS B	2.9	75.9	0.54	0.77	33.4
West: LA 3234 EB											
5	L	188	5.0	0.615	16.9	LOS B	6.0	155.9	0.74	0.81	32.6
2	T	543	5.0	0.615	10.3	LOS B	6.0	155.9	0.74	0.69	34.7
12	R	124	5.0	0.102	9.2	LOS A	0.6	15.7	0.44	0.58	35.8
Approach		855	5.0	0.615	11.6	LOS B	6.0	155.9	0.69	0.70	34.4
All Vehicles		2236	5.0	0.822	16.3	LOS B	11.6	302.7	0.77	0.88	31.1

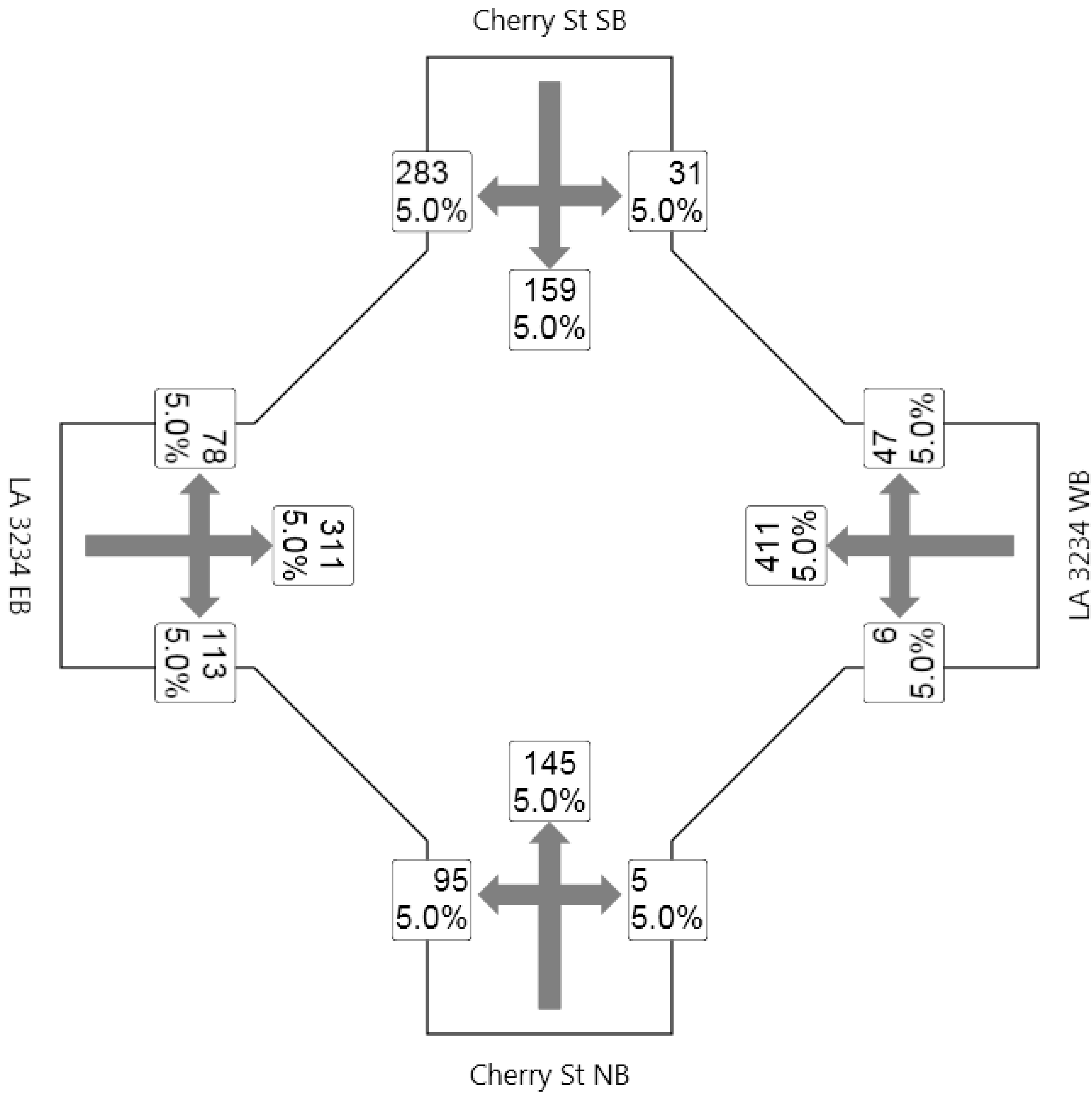
X: Not applicable for Continuous movement.

Level of Service (LOS) Method: Delay (HCM 2000).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay per movement
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model used.



LA 3234 @ LA 1065 (N Cherry St)

Alternate - C



LA 3234 @ LA 1065 (N Cherry St)

Alternate - C, 2015 AM

MOVEMENT SUMMARY

Site: 3234@Cherry 2015 AM-C- 1 LANES

LA 3234 (University Ave) at N. Cherry St
AM Peak - 2015 Alt C

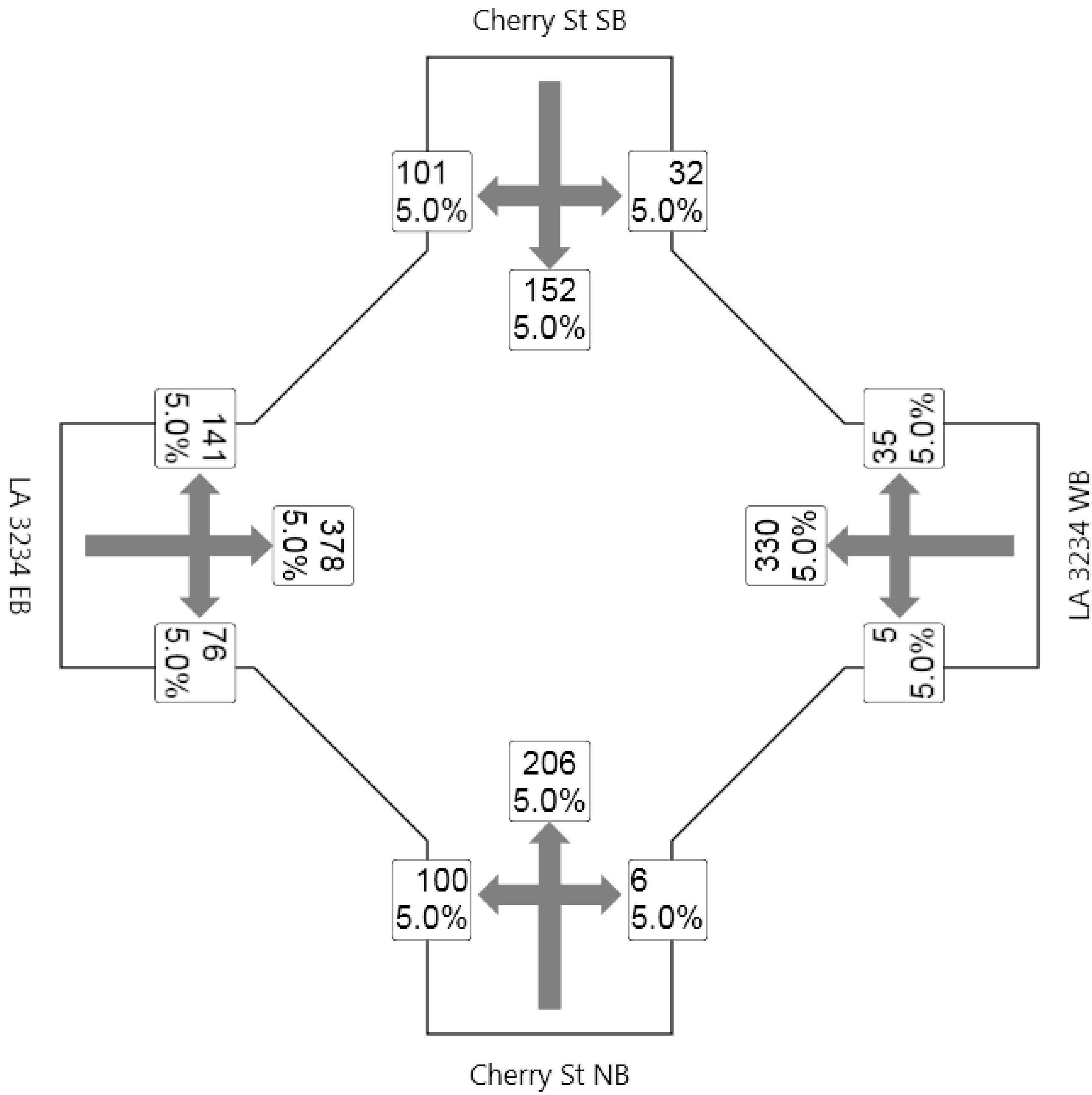
Roundabout

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: Cherry St NB											
3	L	106	5.0	0.379	19.1	LOS B	2.4	62.1	0.72	0.91	30.5
8	T	161	5.0	0.379	10.8	LOS B	2.4	62.1	0.72	0.78	32.7
18	R	6	5.0	0.004	7.5	X	X	X	X	0.54	36.6
Approach		272	5.0	0.379	14.0	LOS B	2.4	62.1	0.71	0.82	31.8
East: LA 3234 WB											
1	L	7	5.0	0.469	17.3	LOS B	3.4	89.5	0.69	0.88	32.6
6	T	457	5.0	0.469	10.7	LOS B	3.4	89.5	0.69	0.72	35.4
16	R	52	5.0	0.048	9.4	LOS A	0.3	6.5	0.42	0.57	35.8
Approach		516	5.0	0.469	10.6	LOS B	3.4	89.5	0.66	0.70	35.4
North: Cherry St SB											
7	L	34	5.0	0.339	20.0	LOS B	2.1	54.7	0.77	0.95	30.3
4	T	177	5.0	0.339	11.6	LOS B	2.1	54.7	0.77	0.83	32.8
14	R	314	5.0	0.202	7.5	X	X	X	X	0.54	36.6
Approach		526	5.0	0.339	9.7	LOS A	2.1	54.7	0.31	0.66	34.7
West: LA 3234 EB											
5	L	87	5.0	0.384	16.1	LOS B	2.8	72.2	0.54	0.81	33.0
2	T	346	5.0	0.384	9.5	LOS A	2.8	72.2	0.54	0.61	36.0
12	R	126	5.0	0.111	9.2	LOS A	0.6	16.4	0.40	0.57	36.0
Approach		558	5.0	0.384	10.5	LOS B	2.8	72.2	0.51	0.63	35.5
All Vehicles		1871	5.0	0.469	10.8	LOS B	3.4	89.5	0.52	0.69	34.7

X: Not applicable for Continuous movement.

Level of Service (LOS) Method: Delay (HCM 2000).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay per movement
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model used.



LA 3234 @ LA 1065 (N Cherry St)

Alternate - C, 2015 PM

MOVEMENT SUMMARY

Site: 3234@Cherry 2015 PM-C- 1 LANES

LA 3234 (University Ave) at N. Cherry St
PM Peak - 2015 Alt C

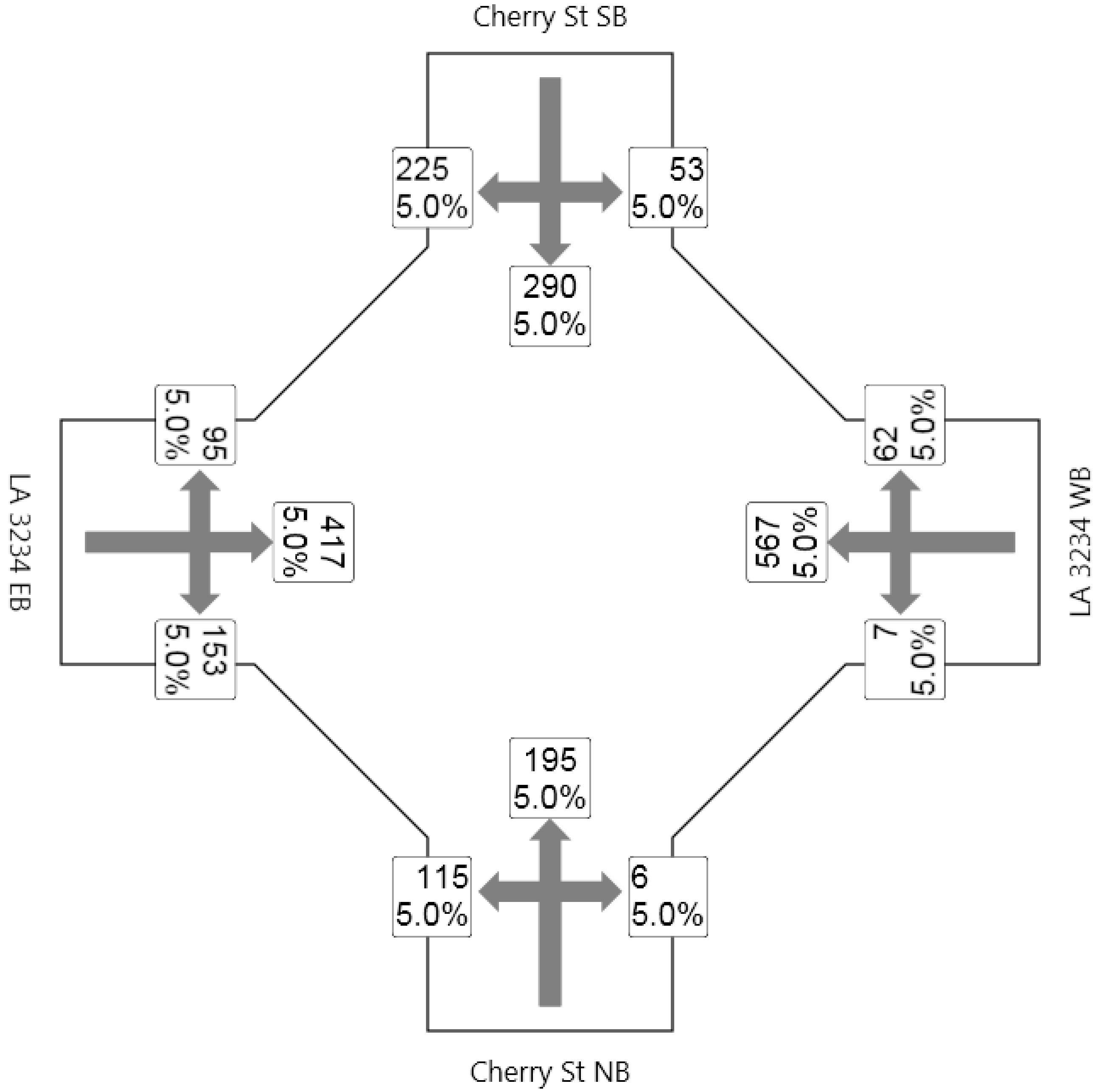
Roundabout

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: Cherry St NB											
3	L	103	5.0	0.502	22.1	LOS C	3.9	100.2	0.83	1.02	29.0
8	T	212	5.0	0.502	13.7	LOS B	3.9	100.2	0.83	0.94	31.1
18	R	6	5.0	0.004	7.5	X	X	X	X	0.54	36.6
Approach		322	5.0	0.502	16.3	LOS B	3.9	100.2	0.81	0.95	30.5
East: LA 3234 WB											
1	L	5	5.0	0.389	17.9	LOS B	2.7	69.7	0.72	0.90	32.3
6	T	340	5.0	0.389	11.3	LOS B	2.7	69.7	0.72	0.76	35.2
16	R	36	5.0	0.037	10.0	LOS A	0.2	5.1	0.51	0.60	35.4
Approach		381	5.0	0.389	11.2	LOS B	2.7	69.7	0.70	0.74	35.2
North: Cherry St SB											
7	L	33	5.0	0.266	18.6	LOS B	1.6	41.0	0.67	0.90	31.0
4	T	157	5.0	0.266	10.2	LOS B	1.6	41.0	0.67	0.74	33.3
14	R	104	5.0	0.067	7.5	X	X	X	X	0.54	36.6
Approach		294	5.0	0.266	10.2	LOS B	1.6	41.0	0.43	0.69	34.1
West: LA 3234 EB											
5	L	145	5.0	0.455	16.1	LOS B	3.5	91.8	0.55	0.79	33.0
2	T	390	5.0	0.455	9.5	LOS A	3.5	91.8	0.55	0.60	35.9
12	R	78	5.0	0.067	9.0	LOS A	0.4	9.5	0.36	0.55	36.2
Approach		613	5.0	0.455	11.0	LOS B	3.5	91.8	0.52	0.64	35.2
All Vehicles		1610	5.0	0.502	11.9	LOS B	3.9	100.2	0.61	0.73	33.9

X: Not applicable for Continuous movement.

Level of Service (LOS) Method: Delay (HCM 2000).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay per movement
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model used.



LA 3234 @ LA 1065 (N Cherry St)

Alternate - C, 2035 AM

MOVEMENT SUMMARY

Site: 3234@Cherry 2035 AM-C- 1 LANES

LA 3234 (University Ave) at N. Cherry St
AM Peak - 2035 Alt C

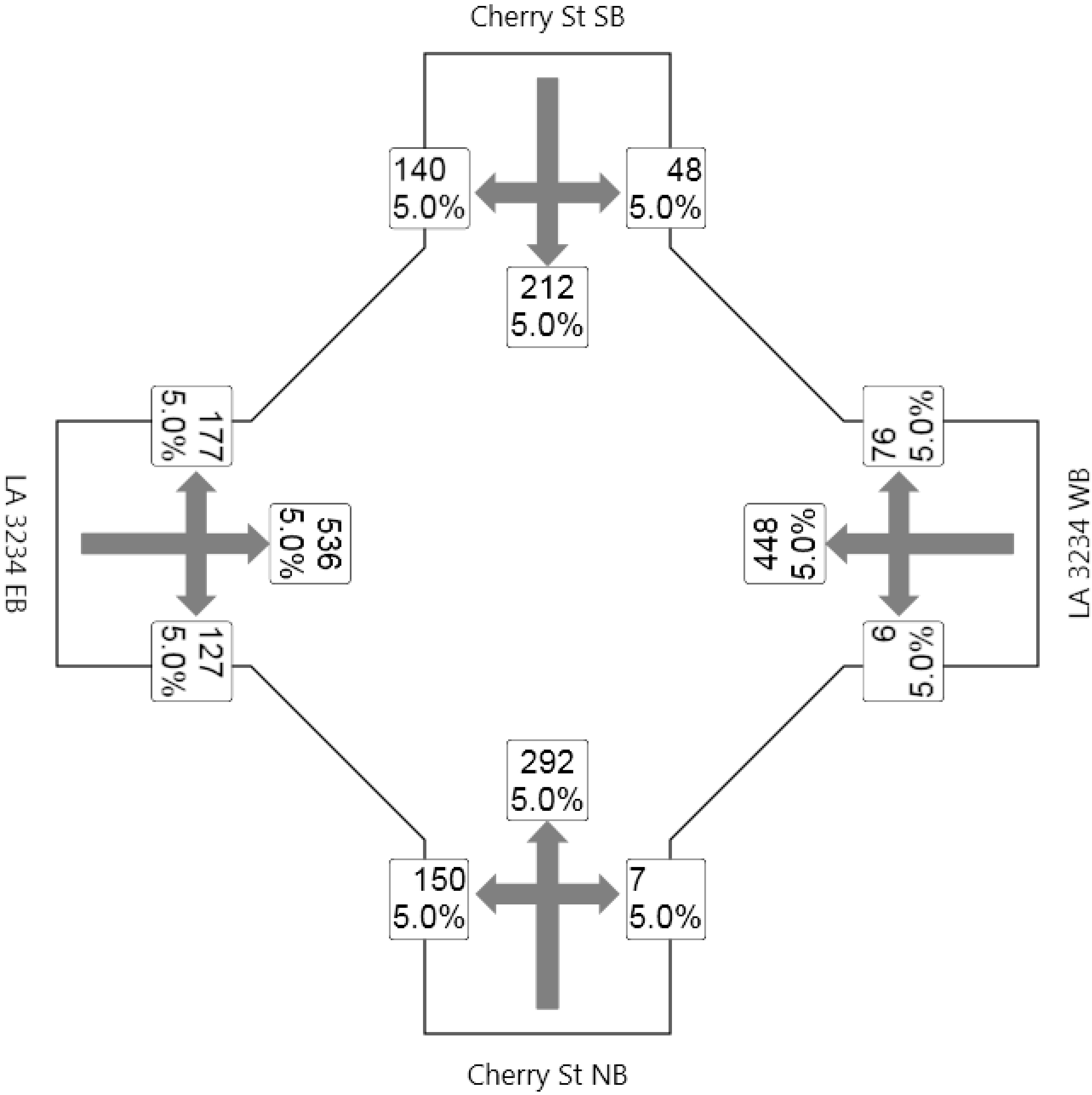
Roundabout

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: Cherry St NB											
3	L	128	5.0	0.536	22.5	LOS C	4.6	120.1	0.90	1.03	28.8
8	T	217	5.0	0.536	14.1	LOS B	4.6	120.1	0.90	0.98	30.8
18	R	7	5.0	0.004	7.5	X	X	X	X	0.54	36.6
Approach		351	5.0	0.536	17.0	LOS B	4.6	120.1	0.88	0.99	30.1
East: LA 3234 WB											
1	L	8	5.0	0.636	19.7	LOS B	6.9	178.5	0.86	0.94	31.3
6	T	630	5.0	0.636	13.1	LOS B	6.9	178.5	0.86	0.87	34.4
16	R	69	5.0	0.061	9.6	LOS A	0.3	8.9	0.49	0.59	35.5
Approach		707	5.0	0.636	12.8	LOS B	6.9	178.5	0.83	0.85	34.5
North: Cherry St SB											
7	L	59	5.0	0.709	30.7	LOS C	8.0	207.1	1.00	1.17	25.3
4	T	322	5.0	0.709	22.3	LOS C	8.0	207.1	1.00	1.17	26.4
14	R	250	5.0	0.160	7.5	X	X	X	X	0.54	36.6
Approach		631	5.0	0.709	17.2	LOS B	8.0	207.1	0.60	0.92	29.5
West: LA 3234 EB											
5	L	106	5.0	0.553	17.7	LOS B	5.1	133.0	0.80	0.86	32.3
2	T	463	5.0	0.553	11.1	LOS B	5.1	133.0	0.80	0.77	34.5
12	R	170	5.0	0.156	9.8	LOS A	1.0	26.3	0.56	0.64	35.1
Approach		739	5.0	0.553	11.8	LOS B	5.1	133.0	0.75	0.75	34.3
All Vehicles		2428	5.0	0.709	14.3	LOS B	8.0	207.1	0.75	0.86	32.3

X: Not applicable for Continuous movement.

Level of Service (LOS) Method: Delay (HCM 2000).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay per movement
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model used.



LA 3234 @ LA 1065 (N Cherry St)

Alternate - C, 2035 PM

MOVEMENT SUMMARY

Site: 3234@Cherry 2035 PM-C- 1 LANES

LA 3234 (University Ave) at N. Cherry St
PM Peak - 2035 Alt C

Roundabout

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: Cherry St NB											
3	L	155	5.0	0.863	42.6	LOS D	13.6	353.2	1.00	1.36	21.2
8	T	301	5.0	0.863	34.2	LOS C	13.6	353.2	1.00	1.36	21.5
18	R	7	5.0	0.005	7.5	X	X	X	X	0.54	36.6
Approach		463	5.0	0.863	36.6	LOS D	13.6	353.2	0.98	1.34	21.5
East: LA 3234 WB											
1	L	6	5.0	0.572	21.2	LOS C	5.7	147.8	0.93	0.99	30.5
6	T	462	5.0	0.572	14.6	LOS B	5.7	147.8	0.93	0.95	33.9
16	R	78	5.0	0.080	10.5	LOS B	0.5	12.6	0.62	0.66	34.8
Approach		546	5.0	0.572	14.1	LOS B	5.7	147.8	0.88	0.91	34.0
North: Cherry St SB											
7	L	49	5.0	0.411	20.3	LOS C	2.9	76.0	0.84	0.96	30.1
4	T	219	5.0	0.411	11.9	LOS B	2.9	76.0	0.84	0.88	32.4
14	R	144	5.0	0.092	7.5	X	X	X	X	0.54	36.6
Approach		412	5.0	0.411	11.4	LOS B	2.9	76.0	0.54	0.77	33.4
West: LA 3234 EB											
5	L	182	5.0	0.619	17.0	LOS B	6.1	158.8	0.74	0.81	32.6
2	T	553	5.0	0.619	10.4	LOS B	6.1	158.8	0.74	0.69	34.7
12	R	131	5.0	0.108	9.2	LOS A	0.6	16.7	0.44	0.58	35.8
Approach		866	5.0	0.619	11.6	LOS B	6.1	158.8	0.70	0.70	34.4
All Vehicles		2288	5.0	0.863	17.2	LOS B	13.6	353.2	0.77	0.89	30.5

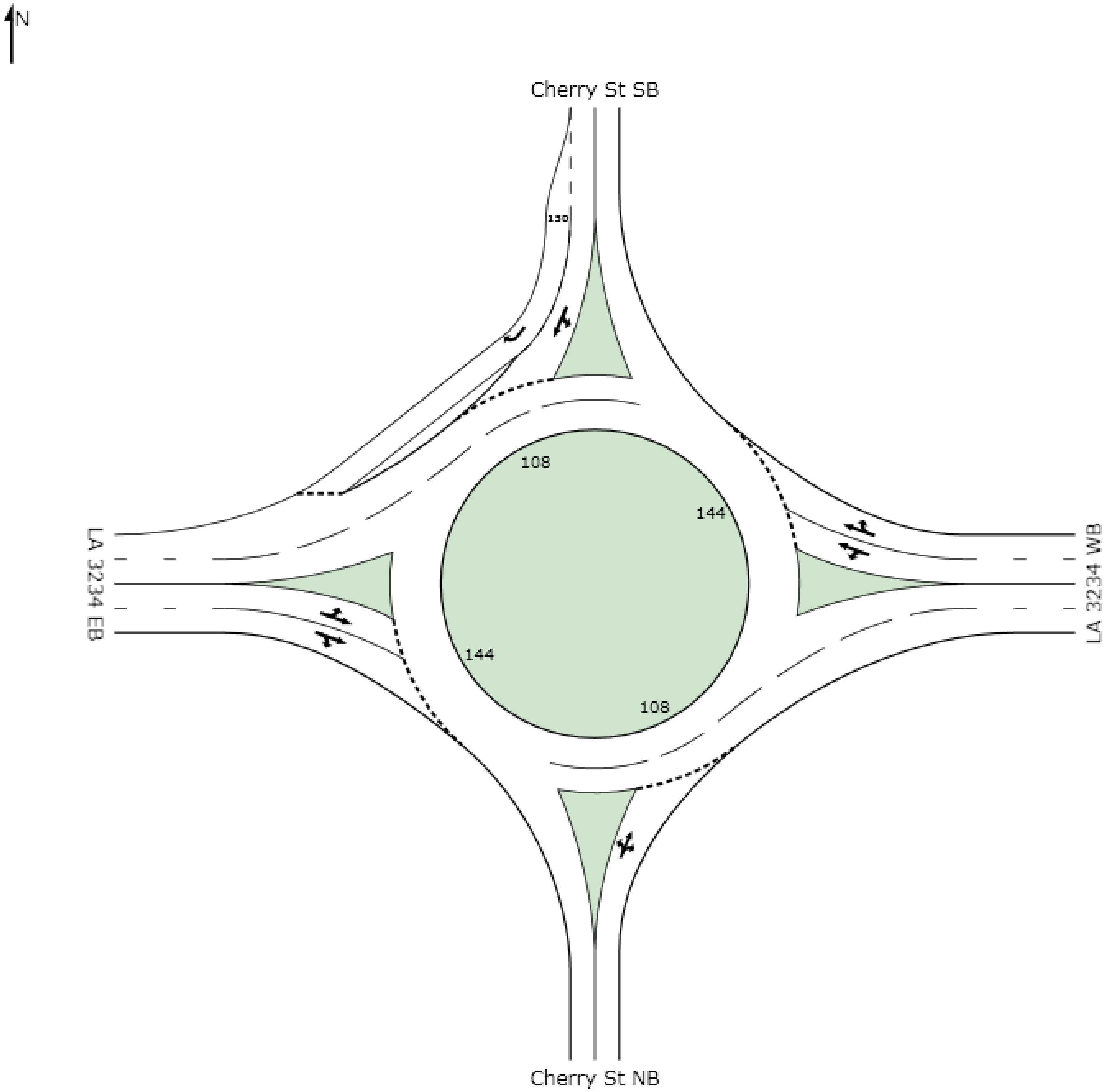
X: Not applicable for Continuous movement.

Level of Service (LOS) Method: Delay (HCM 2000).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay per movement
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model used.

SIDRA INTERSECTION

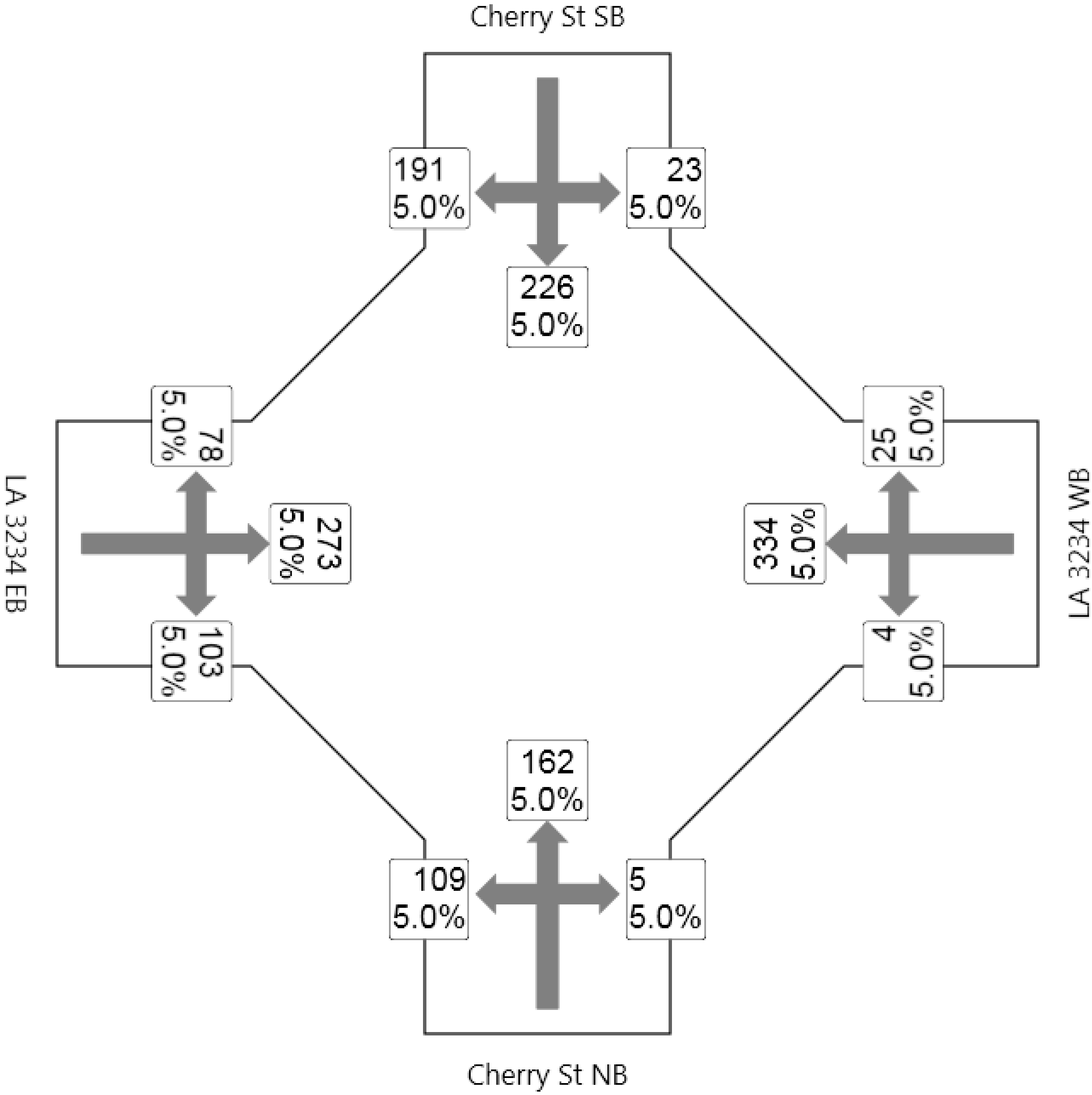
INTERSECTION LA 3234 at LA 1065 (N Cherry St)

Multi-lane Roundabout Analysis



LA 3234 @ LA 1065 (N Cherry St)

Alternate - A



LA 3234 @ LA 1065 (N Cherry St)

Alternate - A, 2015 AM

MOVEMENT SUMMARY

Site: 3234@Cherry 2015 AM-A-2 LANE

LA 3234 (University Ave) at N. Cherry St
AM Peak - 2015 Alt A

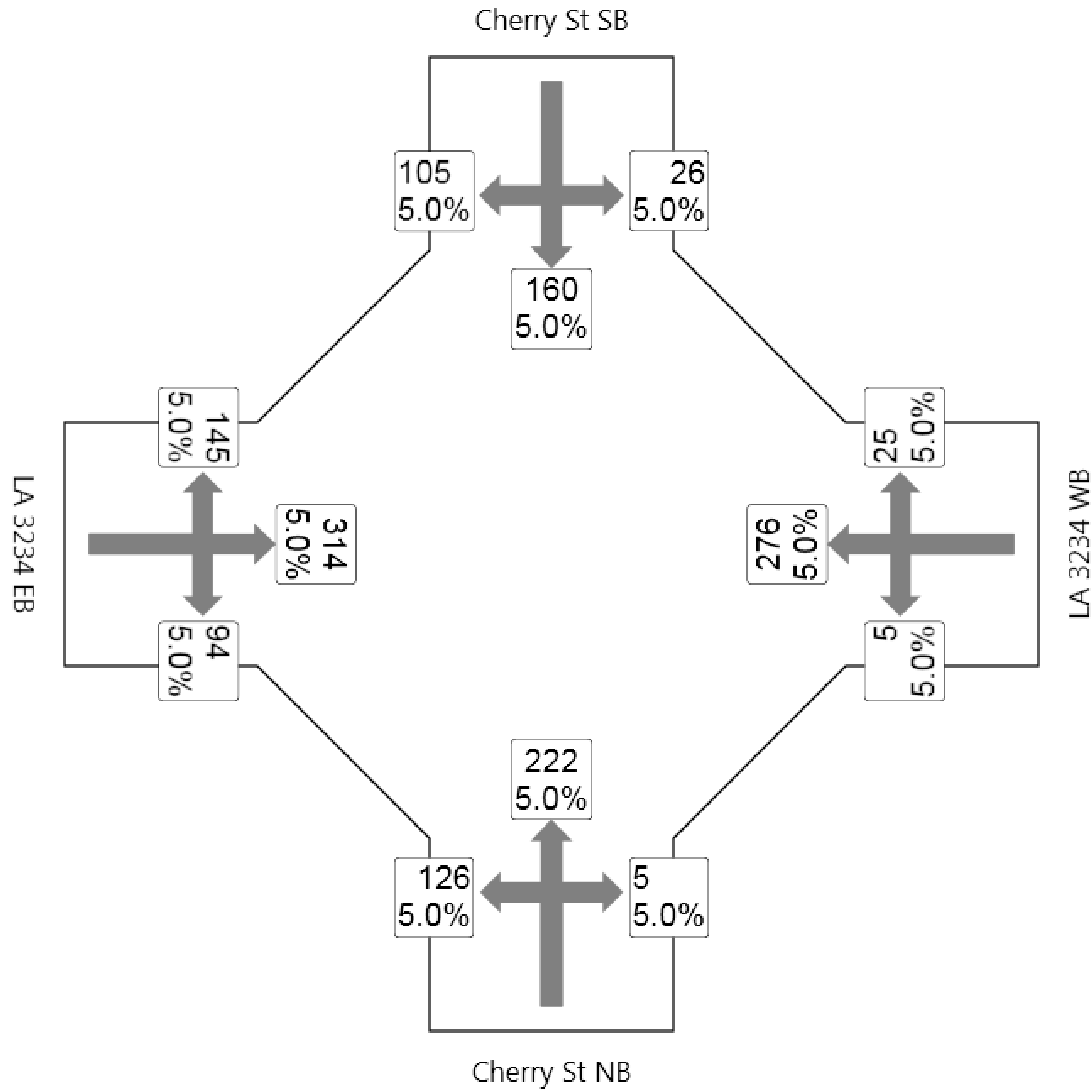
Roundabout

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: Cherry St NB											
3	L	121	5.0	0.417	18.2	LOS B	2.2	56.1	0.61	0.94	31.2
8	T	180	5.0	0.417	9.1	LOS A	2.2	56.1	0.61	0.69	33.6
18	R	6	5.0	0.417	11.3	LOS B	2.2	56.1	0.61	0.79	34.0
Approach		307	5.0	0.417	12.7	LOS B	2.2	56.1	0.61	0.79	32.6
East: LA 3234 WB											
1	L	4	5.0	0.204	17.4	LOS B	1.2	31.1	0.59	0.88	32.7
6	T	371	5.0	0.204	9.8	LOS A	1.2	32.4	0.58	0.65	36.2
16	R	28	5.0	0.204	10.0	LOS B	1.2	32.4	0.57	0.68	35.6
Approach		403	5.0	0.204	9.9	LOS A	1.2	32.4	0.58	0.66	36.2
North: Cherry St SB											
7	L	26	5.0	0.319	17.4	LOS B	1.5	39.7	0.57	0.95	31.9
4	T	251	5.0	0.319	8.3	LOS A	1.5	39.7	0.57	0.63	34.3
14	R	212	5.0	0.244	10.0	LOS B	1.1	28.9	0.54	0.70	34.4
Approach		489	5.0	0.319	9.5	LOS A	1.5	39.7	0.56	0.68	34.2
West: LA 3234 EB											
5	L	87	5.0	0.233	16.7	LOS B	1.4	36.7	0.53	0.81	32.7
2	T	303	5.0	0.233	9.2	LOS A	1.5	37.8	0.52	0.60	36.4
12	R	114	5.0	0.233	9.5	LOS A	1.5	37.8	0.51	0.64	35.8
Approach		504	5.0	0.233	10.5	LOS B	1.5	37.8	0.52	0.64	35.5
All Vehicles		1703	5.0	0.417	10.5	LOS B	2.2	56.1	0.56	0.68	34.7

Level of Service (LOS) Method: Delay (HCM 2000).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay per movement
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model used.

SIDRA INTERSECTION



LA 3234 @ LA 1065 (N Cherry St)

Alternate - A, 2015 PM

MOVEMENT SUMMARY

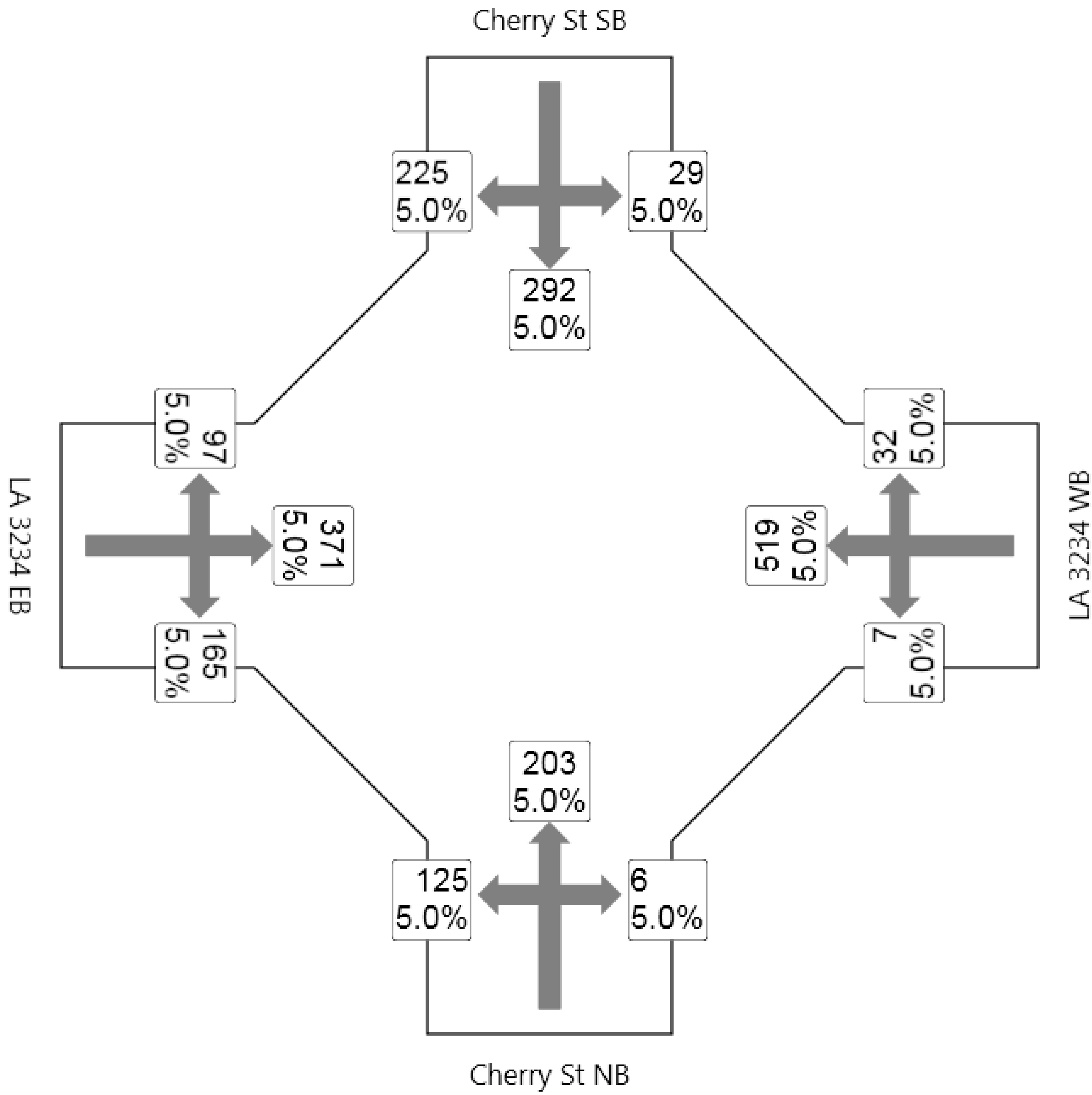
Site: 3234@Cherry 2015 PM-A-2 LANE

LA 3234 (University Ave) at N. Cherry St
PM Peak - 2015 Alt A

Roundabout

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: Cherry St NB											
3	L	130	5.0	0.520	19.7	LOS B	3.1	80.4	0.68	1.01	30.4
8	T	229	5.0	0.520	10.6	LOS B	3.1	80.4	0.68	0.83	33.2
18	R	5	5.0	0.520	12.8	LOS B	3.1	80.4	0.68	0.90	33.5
Approach		364	5.0	0.520	13.8	LOS B	3.1	80.4	0.68	0.90	32.1
East: LA 3234 WB											
1	L	5	5.0	0.179	18.2	LOS B	1.1	27.4	0.66	0.89	32.2
6	T	285	5.0	0.179	10.5	LOS B	1.1	29.0	0.65	0.70	35.8
16	R	26	5.0	0.179	10.7	LOS B	1.1	29.0	0.65	0.72	35.3
Approach		315	5.0	0.179	10.7	LOS B	1.1	29.0	0.65	0.70	35.7
North: Cherry St SB											
7	L	27	5.0	0.211	17.0	LOS B	1.0	24.9	0.50	0.91	32.1
4	T	165	5.0	0.211	7.8	LOS A	1.0	24.9	0.50	0.59	34.6
14	R	108	5.0	0.119	9.6	LOS A	0.5	13.2	0.47	0.66	34.7
Approach		300	5.0	0.211	9.3	LOS A	1.0	24.9	0.49	0.64	34.4
West: LA 3234 EB											
5	L	149	5.0	0.242	16.2	LOS B	1.5	38.0	0.44	0.76	32.6
2	T	324	5.0	0.242	8.7	LOS A	1.5	38.9	0.44	0.55	36.9
12	R	97	5.0	0.242	9.0	LOS A	1.5	38.9	0.43	0.60	36.3
Approach		570	5.0	0.242	10.7	LOS B	1.5	38.9	0.44	0.61	35.5
All Vehicles		1549	5.0	0.520	11.2	LOS B	3.1	80.4	0.55	0.70	34.5

Level of Service (LOS) Method: Delay (HCM 2000).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay per movement
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model used.



LA 3234 @ LA 1065 (N Cherry St)

Alternate - A, 2035 AM

MOVEMENT SUMMARY

Site: 3234@Cherry 2035 AM-A-2 LANE

LA 3234 (University Ave) at N. Cherry St
AM Peak - 2035 Alt A

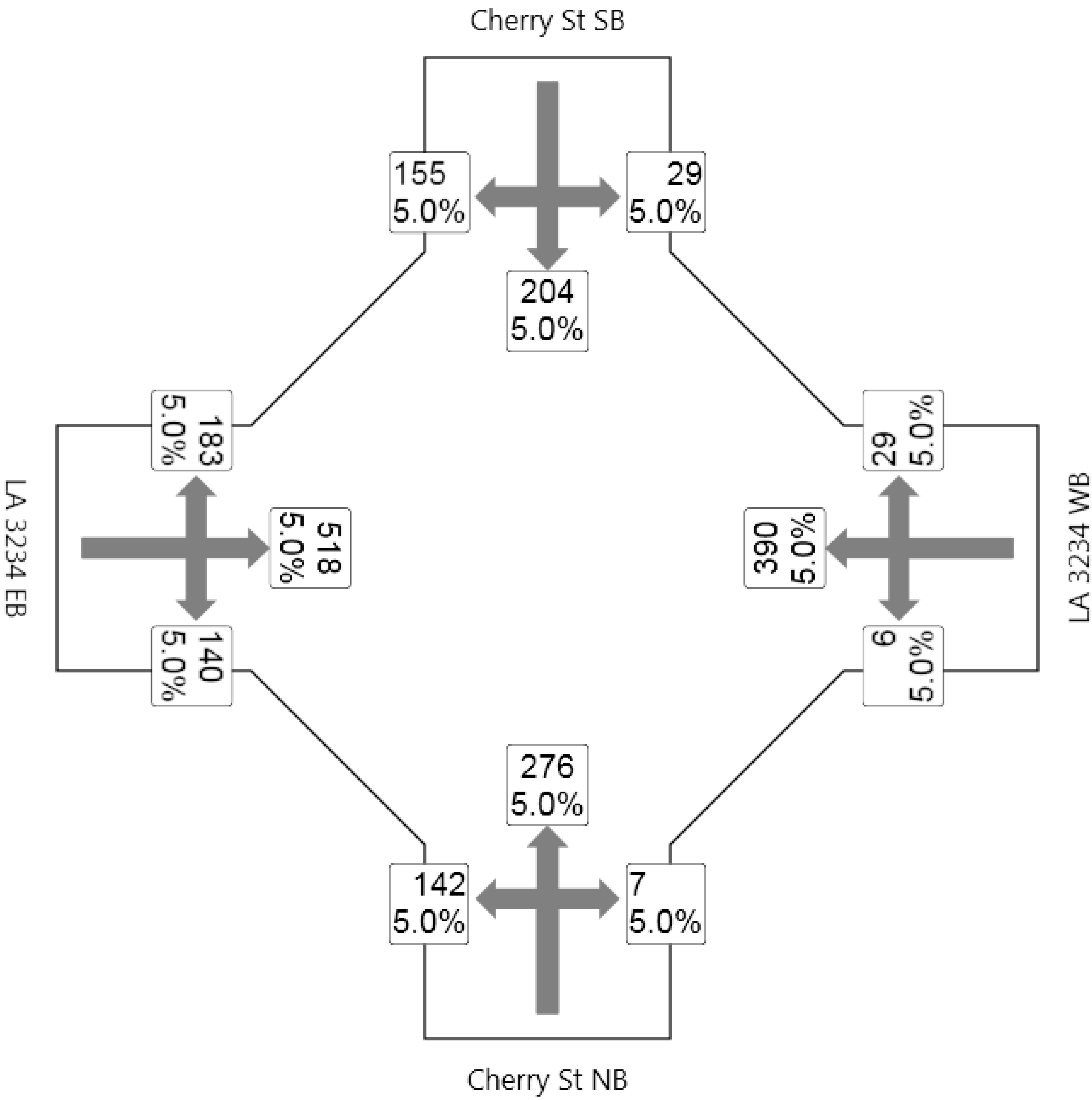
Roundabout

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: Cherry St NB											
3	L	139	5.0	0.494	19.0	LOS B	3.0	76.7	0.69	1.00	30.8
8	T	226	5.0	0.494	9.9	LOS A	3.0	76.7	0.69	0.78	33.1
18	R	7	5.0	0.494	12.1	LOS B	3.0	76.7	0.69	0.87	33.7
Approach		371	5.0	0.494	13.4	LOS B	3.0	76.7	0.69	0.87	32.2
East: LA 3234 WB											
1	L	8	5.0	0.312	18.0	LOS B	2.0	52.8	0.69	0.90	32.4
6	T	577	5.0	0.312	10.3	LOS B	2.2	57.0	0.68	0.70	35.6
16	R	36	5.0	0.312	10.4	LOS B	2.2	57.0	0.67	0.72	35.2
Approach		620	5.0	0.312	10.4	LOS B	2.2	57.0	0.68	0.70	35.6
North: Cherry St SB											
7	L	32	5.0	0.418	18.2	LOS B	2.3	60.8	0.69	1.01	31.6
4	T	324	5.0	0.418	9.1	LOS A	2.3	60.8	0.69	0.71	33.6
14	R	250	5.0	0.292	10.4	LOS B	1.4	37.6	0.64	0.73	33.9
Approach		607	5.0	0.418	10.1	LOS B	2.3	60.8	0.67	0.73	33.6
West: LA 3234 EB											
5	L	108	5.0	0.325	17.3	LOS B	2.2	56.7	0.64	0.84	32.4
2	T	412	5.0	0.325	9.6	LOS A	2.3	60.3	0.63	0.65	35.6
12	R	183	5.0	0.325	9.8	LOS A	2.3	60.3	0.62	0.68	35.2
Approach		703	5.0	0.325	10.9	LOS B	2.3	60.3	0.63	0.69	35.0
All Vehicles		2301	5.0	0.494	10.9	LOS B	3.0	76.7	0.66	0.73	34.3

Level of Service (LOS) Method: Delay (HCM 2000).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay per movement
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model used.

SIDRA INTERSECTION



LA 3234 @ LA 1065 (N Cherry St)

Alternate - A, 2035 PM

MOVEMENT SUMMARY

Site: 3234@Cherry 2035 PM-A-2 LANE

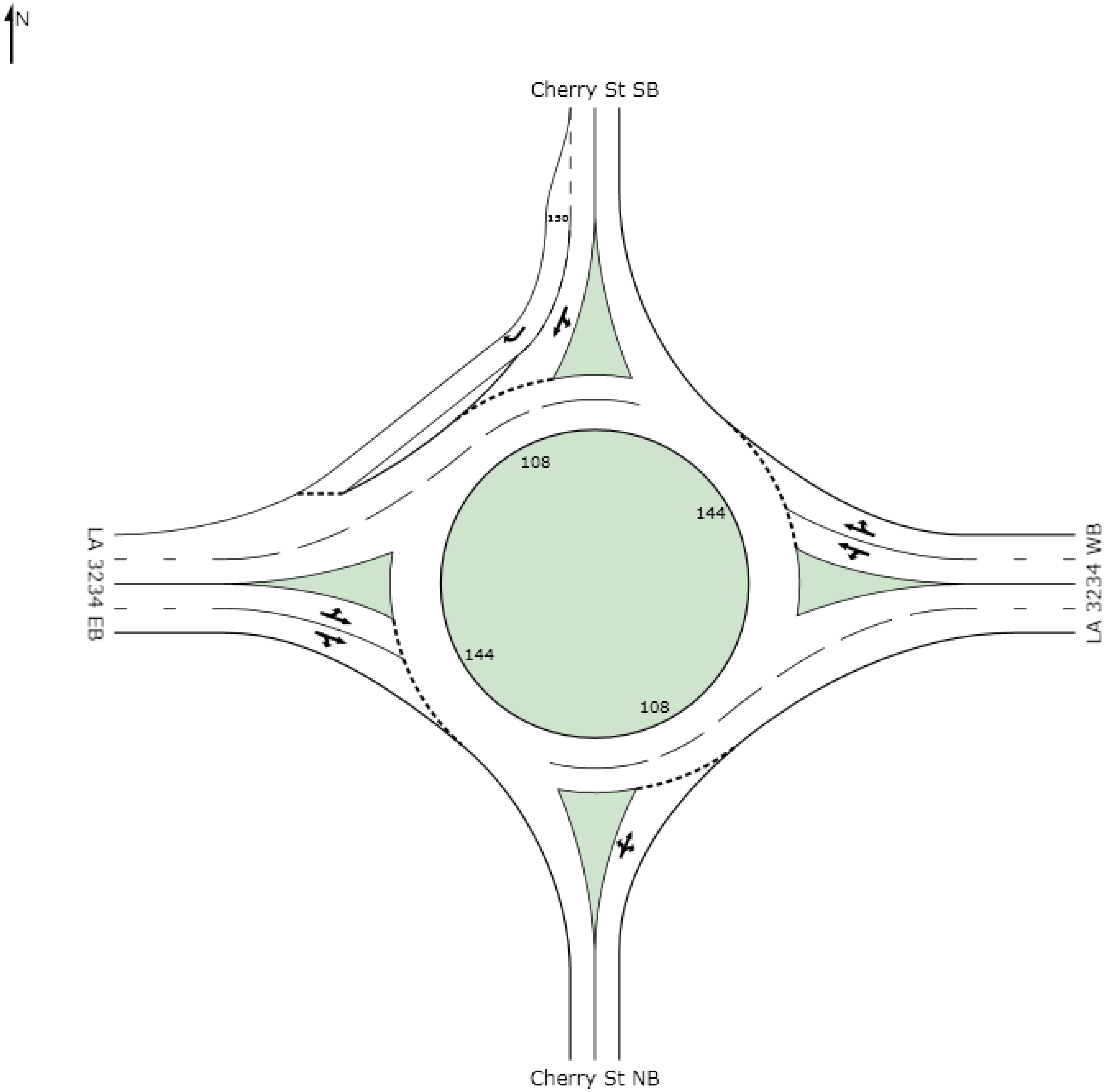
LA 3234 (University Ave) at N. Cherry St
PM Peak - 2035 Alt A

Roundabout

Movement Performance - Vehicles

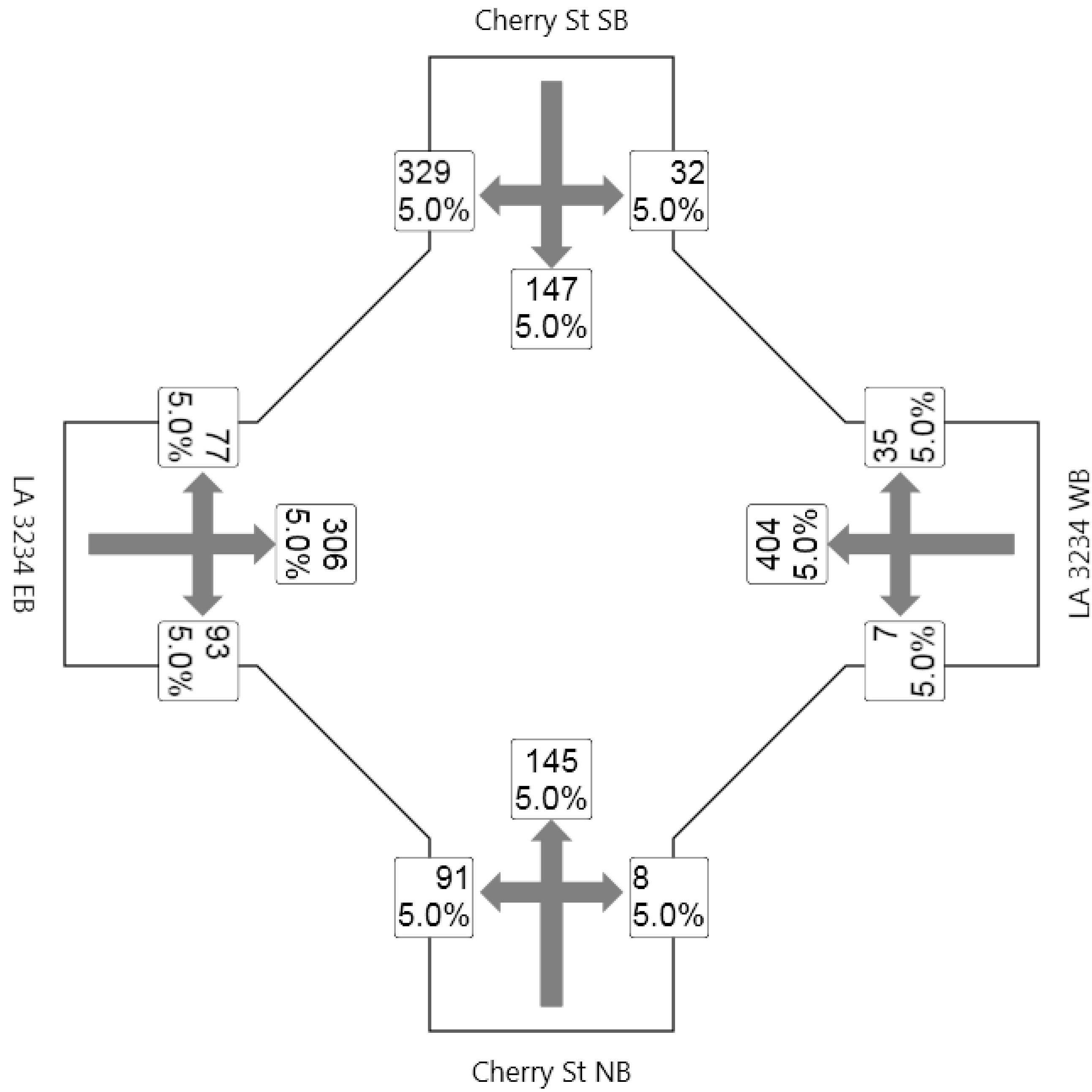
Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: Cherry St NB											
3	L	146	5.0	0.648	21.7	LOS C	4.5	117.6	0.79	1.07	29.4
8	T	285	5.0	0.648	12.6	LOS B	4.5	117.6	0.79	0.97	31.9
18	R	7	5.0	0.648	14.8	LOS B	4.5	117.6	0.79	1.00	32.0
Approach		438	5.0	0.648	15.7	LOS B	4.5	117.6	0.79	1.00	30.9
East: LA 3234 WB											
1	L	6	5.0	0.256	19.1	LOS B	1.7	43.2	0.76	0.91	31.8
6	T	402	5.0	0.256	11.2	LOS B	1.8	47.6	0.75	0.76	35.2
16	R	30	5.0	0.256	11.3	LOS B	1.8	47.6	0.75	0.76	34.8
Approach		438	5.0	0.256	11.4	LOS B	1.8	47.6	0.75	0.76	35.1
North: Cherry St SB											
7	L	30	5.0	0.257	17.2	LOS B	1.3	32.8	0.58	0.93	32.0
4	T	210	5.0	0.257	8.0	LOS A	1.3	32.8	0.58	0.61	34.2
14	R	160	5.0	0.171	9.8	LOS A	0.8	20.6	0.55	0.68	34.4
Approach		400	5.0	0.257	9.4	LOS A	1.3	32.8	0.57	0.66	34.1
West: LA 3234 EB											
5	L	189	5.0	0.356	16.5	LOS B	2.4	62.9	0.54	0.79	32.6
2	T	534	5.0	0.356	8.9	LOS A	2.5	65.8	0.53	0.59	36.3
12	R	144	5.0	0.356	9.2	LOS A	2.5	65.8	0.52	0.63	35.8
Approach		867	5.0	0.356	10.7	LOS B	2.5	65.8	0.53	0.64	35.3
All Vehicles		2143	5.0	0.648	11.6	LOS B	4.5	117.6	0.64	0.74	34.1

Level of Service (LOS) Method: Delay (HCM 2000).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay per movement
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model used.



LA 3234 @ LA 1065 (N Cherry St)

Alternate - B



LA 3234 @ LA 1065 (N Cherry St)

Alternate - B, 2015 AM

MOVEMENT SUMMARY

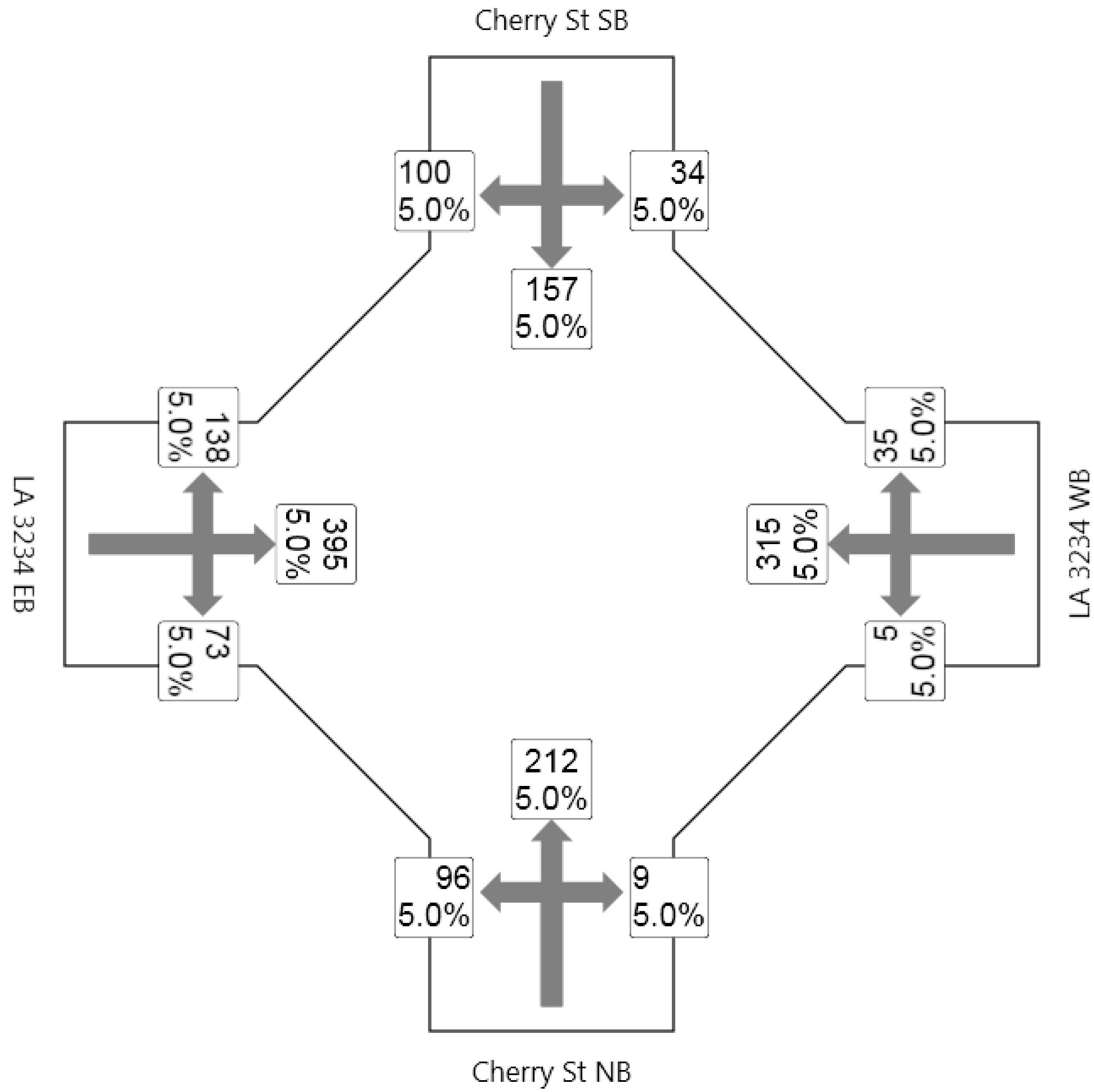
Site: 3234@Cherry 2015 AM-B-2 LANE

LA 3234 (University Ave) at N. Cherry St
AM Peak - 2015 Alt B

Roundabout

Movement Performance - Vehicles												
Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: Cherry St NB											
3	L	101	5.0	0.377	18.2	LOS B	1.8	46.9	0.60	0.94	31.2
8	T	161	5.0	0.377	9.1	LOS A	1.8	46.9	0.60	0.68	33.7
18	R	9	5.0	0.377	11.3	LOS B	1.8	46.9	0.60	0.79	34.1
Approach		271	5.0	0.377	12.5	LOS B	1.8	46.9	0.60	0.78	32.7
East: LA 3234 WB											
1	L	8	5.0	0.242	17.2	LOS B	1.4	37.5	0.57	0.88	32.8
6	T	449	5.0	0.242	9.6	LOS A	1.5	38.9	0.56	0.64	36.3
16	R	39	5.0	0.242	9.9	LOS A	1.5	38.9	0.56	0.67	35.7
Approach		496	5.0	0.242	9.7	LOS A	1.5	38.9	0.56	0.65	36.2
North: Cherry St SB											
7	L	36	5.0	0.293	18.3	LOS B	1.3	33.9	0.60	0.98	31.3
4	T	163	5.0	0.293	9.2	LOS A	1.3	33.9	0.60	0.70	34.0
14	R	366	5.0	0.435	10.9	LOS B	2.4	61.3	0.64	0.77	33.9
Approach		564	5.0	0.435	10.9	LOS B	2.4	61.3	0.63	0.76	33.7
West: LA 3234 EB											
5	L	86	5.0	0.228	16.2	LOS B	1.4	35.9	0.46	0.80	33.0
2	T	340	5.0	0.228	8.7	LOS A	1.4	36.8	0.45	0.56	36.9
12	R	103	5.0	0.228	9.1	LOS A	1.4	36.8	0.44	0.60	36.2
Approach		529	5.0	0.228	10.0	LOS A	1.4	36.8	0.45	0.60	36.0
All Vehicles		1860	5.0	0.435	10.6	LOS B	2.4	61.3	0.56	0.69	34.8

Level of Service (LOS) Method: Delay (HCM 2000).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay per movement
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model used.



LA 3234 @ LA 1065 (N Cherry St)

Alternate - B, 2015 PM

MOVEMENT SUMMARY

Site: 3234@Cherry 2015 PM-B-2 LANE

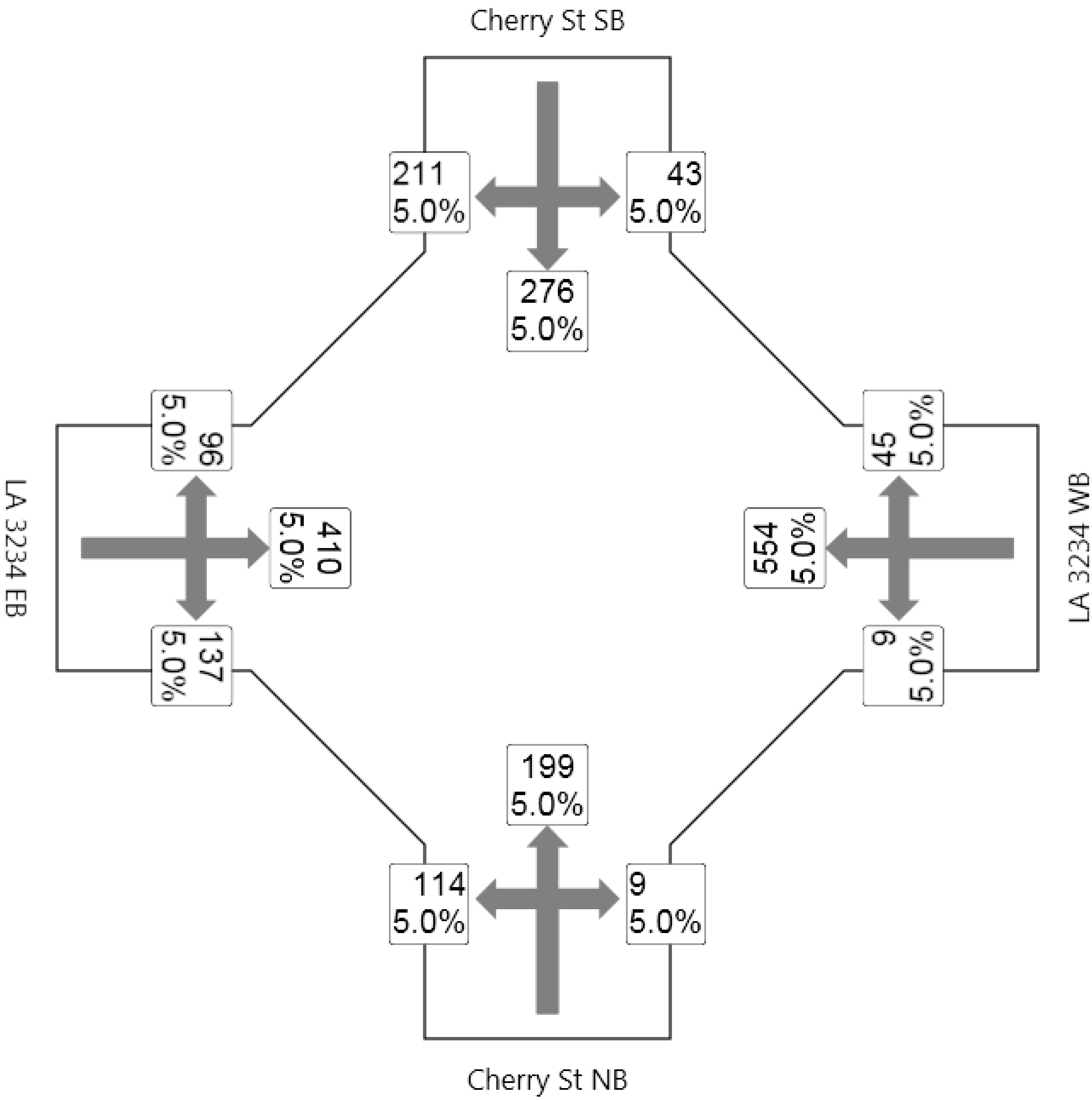
LA 3234 (University Ave) at N. Cherry St
PM Peak - 2015 Alt B

Roundabout

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: Cherry St NB											
3	L	99	5.0	0.494	19.9	LOS B	2.8	71.8	0.69	1.02	30.3
8	T	219	5.0	0.494	10.8	LOS B	2.8	71.8	0.69	0.85	33.3
18	R	9	5.0	0.494	13.0	LOS B	2.8	71.8	0.69	0.91	33.3
Approach		327	5.0	0.494	13.6	LOS B	2.8	71.8	0.69	0.91	32.2
East: LA 3234 WB											
1	L	5	5.0	0.198	17.9	LOS B	1.2	30.4	0.63	0.89	32.4
6	T	325	5.0	0.198	10.2	LOS B	1.2	31.9	0.63	0.69	35.9
16	R	36	5.0	0.198	10.4	LOS B	1.2	31.9	0.62	0.70	35.4
Approach		366	5.0	0.198	10.4	LOS B	1.2	31.9	0.63	0.69	35.8
North: Cherry St SB											
7	L	35	5.0	0.219	17.0	LOS B	1.0	25.8	0.51	0.91	32.0
4	T	162	5.0	0.219	7.9	LOS A	1.0	25.8	0.51	0.59	34.5
14	R	103	5.0	0.114	9.5	LOS A	0.5	12.5	0.48	0.66	34.7
Approach		300	5.0	0.219	9.5	LOS A	1.0	25.8	0.50	0.65	34.2
West: LA 3234 EB											
5	L	142	5.0	0.266	16.2	LOS B	1.6	42.7	0.46	0.78	32.7
2	T	407	5.0	0.266	8.7	LOS A	1.7	43.7	0.45	0.56	36.9
12	R	75	5.0	0.266	9.1	LOS A	1.7	43.7	0.44	0.61	36.2
Approach		625	5.0	0.266	10.5	LOS B	1.7	43.7	0.45	0.61	35.7
All Vehicles		1618	5.0	0.494	10.9	LOS B	2.8	71.8	0.55	0.70	34.7

Level of Service (LOS) Method: Delay (HCM 2000).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay per movement
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model used.

SIDRA INTERSECTION



LA 3234 @ LA 1065 (N Cherry St)

Alternate - B, 2035 AM

MOVEMENT SUMMARY

Site: 3234@Cherry 2035 AM-B-2 LANE

LA 3234 (University Ave) at N. Cherry St
AM Peak - 2035 Alt B

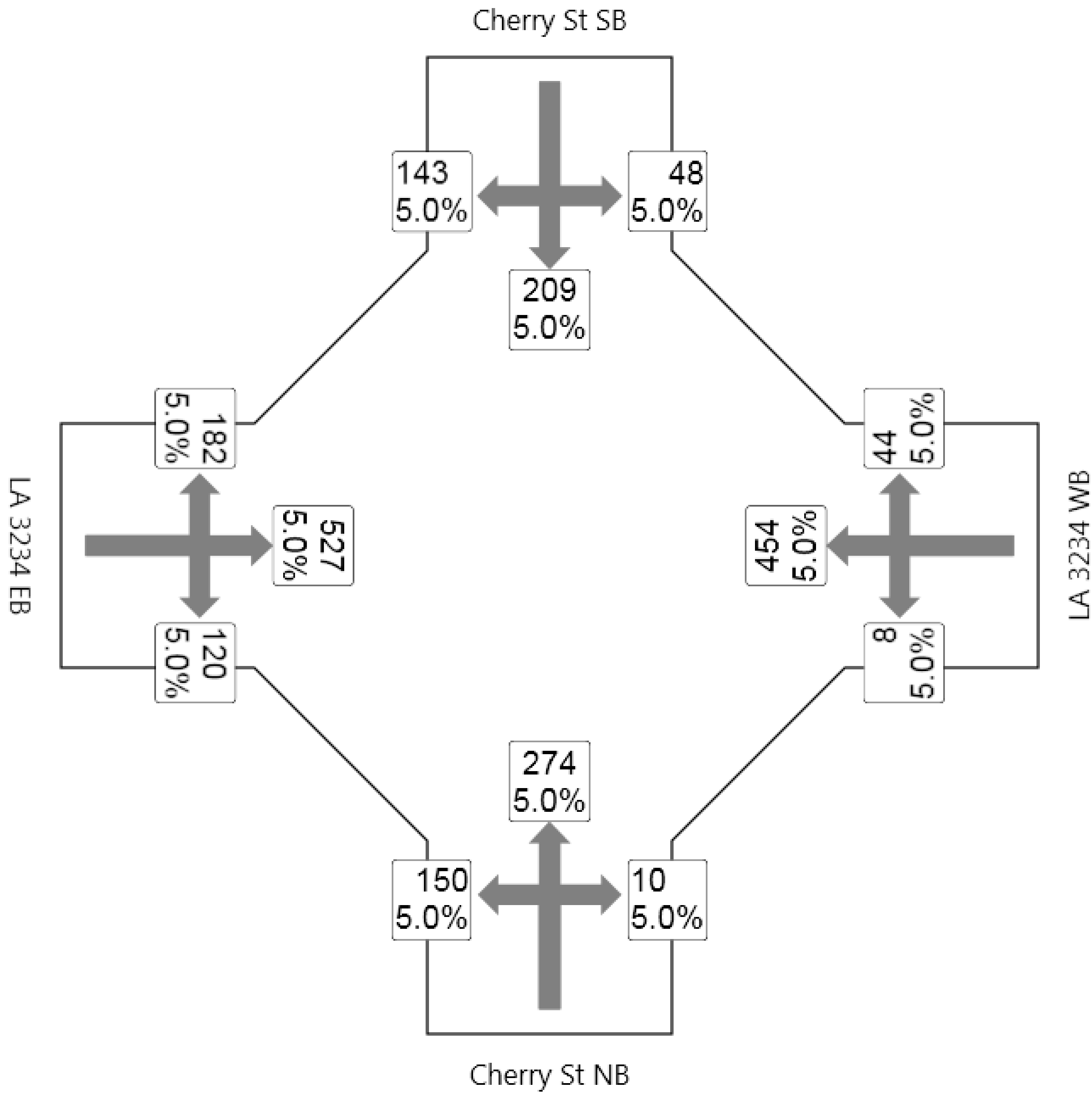
Roundabout

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: Cherry St NB											
3	L	127	5.0	0.494	19.3	LOS B	2.9	75.4	0.70	1.01	30.6
8	T	221	5.0	0.494	10.2	LOS B	2.9	75.4	0.70	0.81	33.1
18	R	10	5.0	0.494	12.4	LOS B	2.9	75.4	0.70	0.90	33.6
Approach		358	5.0	0.494	13.5	LOS B	2.9	75.4	0.70	0.88	32.1
East: LA 3234 WB											
1	L	10	5.0	0.334	18.0	LOS B	2.2	57.5	0.69	0.89	32.4
6	T	616	5.0	0.334	10.2	LOS B	2.4	61.8	0.68	0.70	35.6
16	R	50	5.0	0.334	10.3	LOS B	2.4	61.8	0.67	0.72	35.2
Approach		676	5.0	0.334	10.4	LOS B	2.4	61.8	0.68	0.70	35.5
North: Cherry St SB											
7	L	48	5.0	0.422	18.3	LOS B	2.4	61.5	0.70	1.01	31.5
4	T	307	5.0	0.422	9.2	LOS A	2.4	61.5	0.70	0.72	33.5
14	R	234	5.0	0.278	10.4	LOS B	1.4	35.3	0.64	0.73	33.9
Approach		589	5.0	0.422	10.4	LOS B	2.4	61.5	0.68	0.74	33.4
West: LA 3234 EB											
5	L	107	5.0	0.331	17.3	LOS B	2.2	57.8	0.64	0.84	32.4
2	T	456	5.0	0.331	9.6	LOS A	2.4	61.6	0.63	0.65	35.7
12	R	152	5.0	0.331	9.8	LOS A	2.4	61.6	0.62	0.68	35.3
Approach		714	5.0	0.331	10.8	LOS B	2.4	61.6	0.63	0.69	35.0
All Vehicles		2337	5.0	0.494	11.0	LOS B	2.9	75.4	0.67	0.73	34.3

Level of Service (LOS) Method: Delay (HCM 2000).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay per movement
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model used.

SIDRA INTERSECTION



LA 3234 @ LA 1065 (N Cherry St)

Alternate - B, 2035 PM

MOVEMENT SUMMARY

Site: 3234@Cherry 2035 PM-B-2 LANE

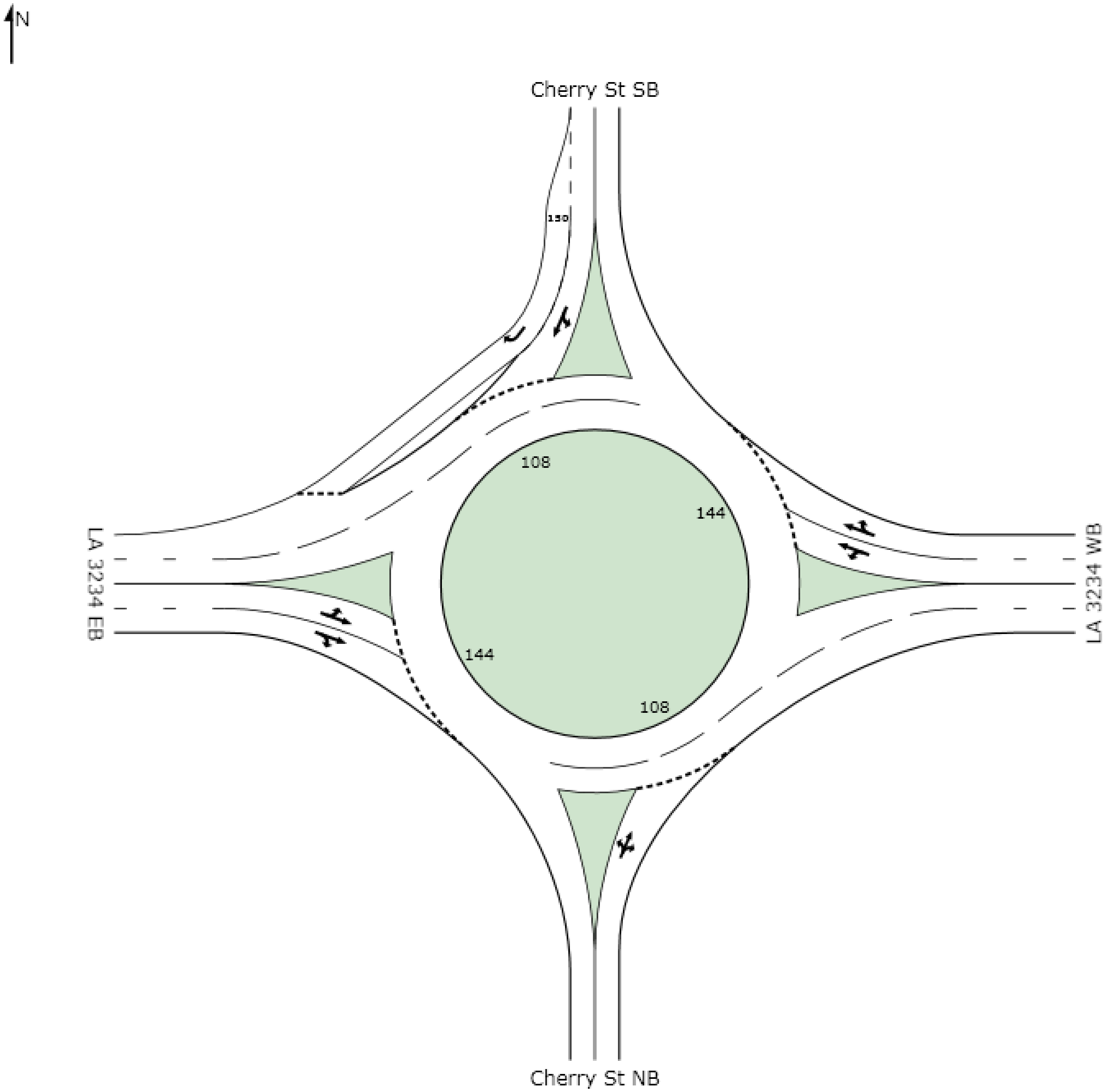
LA 3234 (University Ave) at N. Cherry St
PM Peak - 2035 Alt B

Roundabout

Movement Performance - Vehicles

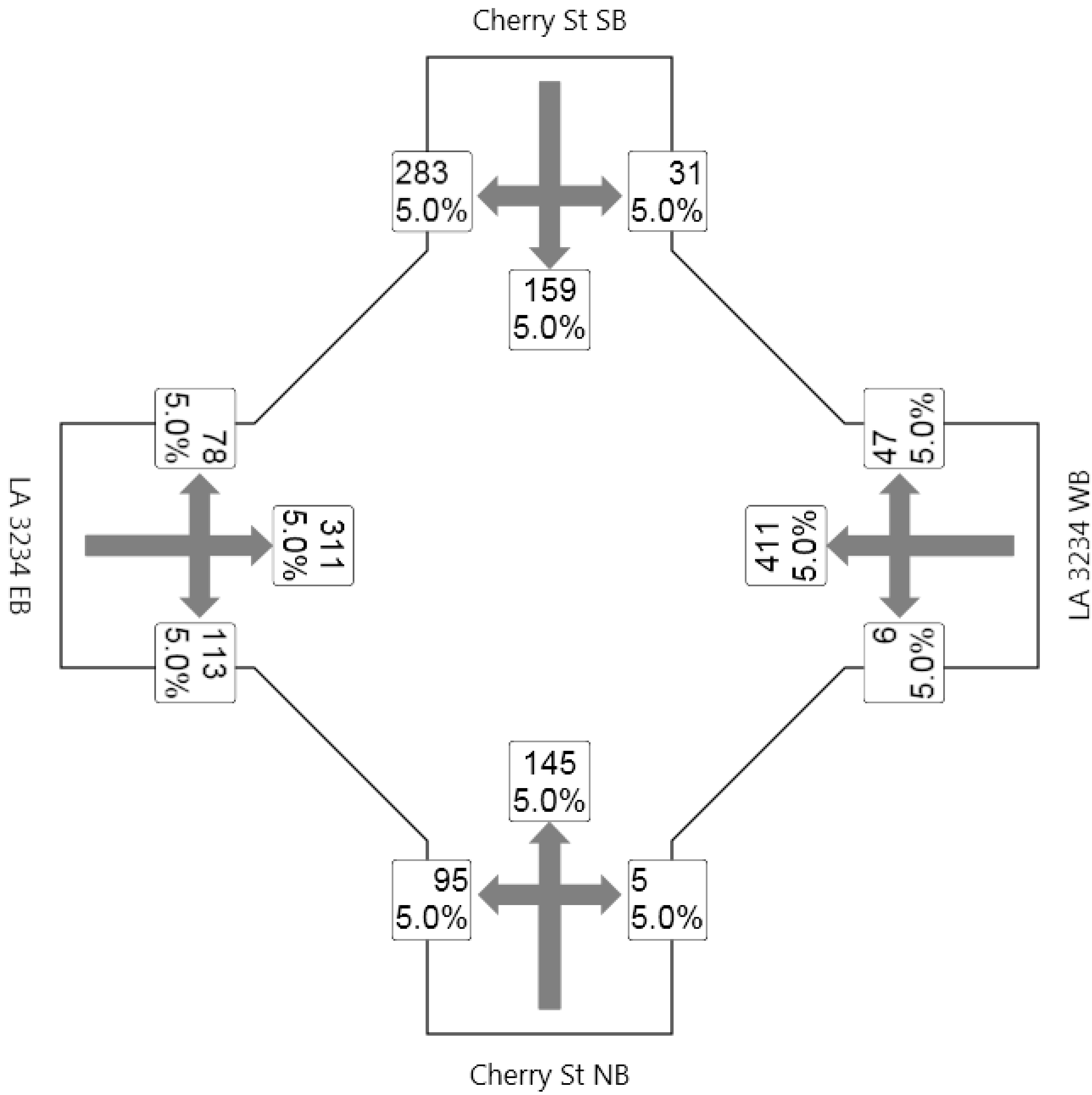
Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: Cherry St NB											
3	L	155	5.0	0.676	22.4	LOS C	4.9	127.4	0.81	1.08	29.1
8	T	282	5.0	0.676	13.2	LOS B	4.9	127.4	0.81	0.99	31.4
18	R	10	5.0	0.676	15.4	LOS B	4.9	127.4	0.81	1.02	31.6
Approach		447	5.0	0.676	16.4	LOS B	4.9	127.4	0.81	1.02	30.5
East: LA 3234 WB											
1	L	8	5.0	0.307	19.3	LOS B	2.1	53.5	0.78	0.92	31.7
6	T	468	5.0	0.307	11.4	LOS B	2.3	59.1	0.78	0.78	35.0
16	R	45	5.0	0.307	11.4	LOS B	2.3	59.1	0.78	0.78	34.7
Approach		522	5.0	0.307	11.6	LOS B	2.3	59.1	0.78	0.78	34.9
North: Cherry St SB											
7	L	49	5.0	0.298	17.4	LOS B	1.5	39.1	0.62	0.95	31.9
4	T	215	5.0	0.298	8.3	LOS A	1.5	39.1	0.62	0.63	33.8
14	R	147	5.0	0.165	10.0	LOS A	0.8	20.1	0.58	0.69	34.2
Approach		412	5.0	0.298	10.0	LOS B	1.5	39.1	0.61	0.69	33.7
West: LA 3234 EB											
5	L	188	5.0	0.361	16.7	LOS B	2.5	64.3	0.57	0.79	32.6
2	T	543	5.0	0.361	9.1	LOS A	2.6	67.5	0.56	0.61	36.1
12	R	124	5.0	0.361	9.4	LOS A	2.6	67.5	0.55	0.64	35.7
Approach		855	5.0	0.361	10.8	LOS B	2.6	67.5	0.56	0.66	35.2
All Vehicles		2236	5.0	0.676	12.0	LOS B	4.9	127.4	0.67	0.76	33.8

Level of Service (LOS) Method: Delay (HCM 2000).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay per movement
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model used.



LA 3234 @ LA 1065 (N Cherry St)

Alternate - C



LA 3234 @ LA 1065 (N Cherry St)

Alternate - C, 2015 AM

MOVEMENT SUMMARY

Site: 3234@Cherry 2015 AM-C- 2 LANES

LA 3234 (University Ave) at N. Cherry St
AM Peak - 2015 Alt C

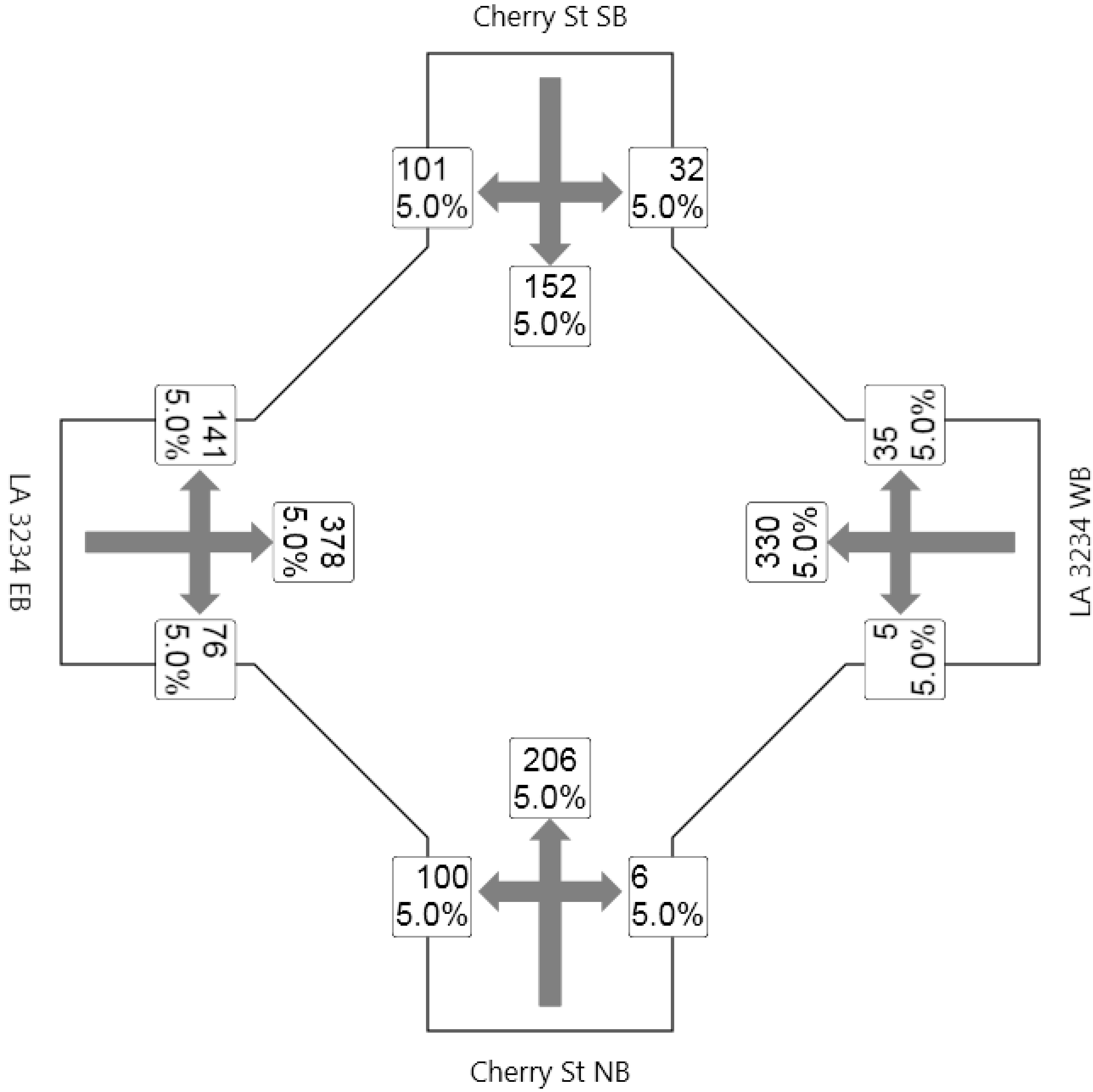
Roundabout

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: Cherry St NB											
3	L	106	5.0	0.381	18.3	LOS B	1.8	48.0	0.61	0.95	31.1
8	T	161	5.0	0.381	9.2	LOS A	1.8	48.0	0.61	0.69	33.7
18	R	6	5.0	0.381	11.3	LOS B	1.8	48.0	0.61	0.79	34.0
Approach		272	5.0	0.381	12.7	LOS B	1.8	48.0	0.61	0.79	32.6
East: LA 3234 WB											
1	L	7	5.0	0.253	17.2	LOS B	1.5	39.6	0.58	0.88	32.7
6	T	457	5.0	0.253	9.7	LOS A	1.6	41.1	0.57	0.65	36.3
16	R	52	5.0	0.253	9.9	LOS A	1.6	41.1	0.57	0.68	35.6
Approach		516	5.0	0.253	9.8	LOS A	1.6	41.1	0.57	0.66	36.2
North: Cherry St SB											
7	L	34	5.0	0.292	18.1	LOS B	1.3	34.3	0.60	0.97	31.5
4	T	177	5.0	0.292	9.0	LOS A	1.3	34.3	0.60	0.68	34.0
14	R	314	5.0	0.378	10.5	LOS B	1.9	48.7	0.62	0.74	34.0
Approach		526	5.0	0.378	10.5	LOS B	1.9	48.7	0.61	0.73	33.8
West: LA 3234 EB											
5	L	87	5.0	0.243	16.3	LOS B	1.5	38.7	0.47	0.80	32.9
2	T	346	5.0	0.243	8.8	LOS A	1.5	39.7	0.47	0.57	36.7
12	R	126	5.0	0.243	9.1	LOS A	1.5	39.7	0.46	0.61	36.1
Approach		558	5.0	0.243	10.0	LOS B	1.5	39.7	0.47	0.61	35.9
All Vehicles		1871	5.0	0.381	10.5	LOS B	1.9	48.7	0.56	0.68	34.8

Level of Service (LOS) Method: Delay (HCM 2000).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay per movement
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model used.

SIDRA INTERSECTION



LA 3234 @ LA 1065 (N Cherry St)

Alternate - C, 2015 PM

MOVEMENT SUMMARY

Site: 3234@Cherry 2015 PM-C- 2 LANES

LA 3234 (University Ave) at N. Cherry St
PM Peak - 2015 Alt C

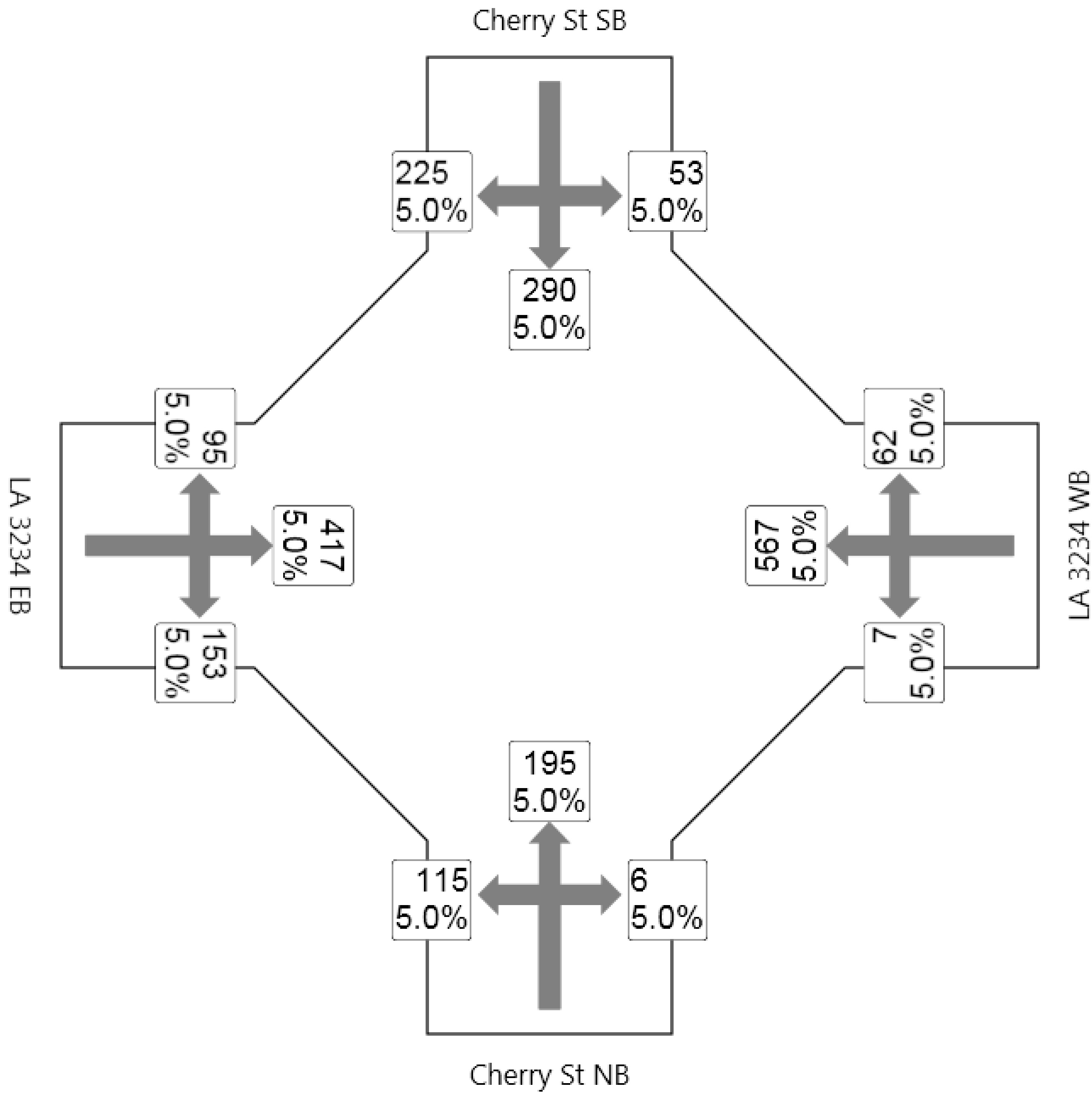
Roundabout

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: Cherry St NB											
3	L	103	5.0	0.481	19.7	LOS B	2.6	68.6	0.67	1.01	30.4
8	T	212	5.0	0.481	10.6	LOS B	2.6	68.6	0.67	0.83	33.3
18	R	6	5.0	0.481	12.8	LOS B	2.6	68.6	0.67	0.90	33.5
Approach		322	5.0	0.481	13.6	LOS B	2.6	68.6	0.67	0.89	32.3
East: LA 3234 WB											
1	L	5	5.0	0.207	17.9	LOS B	1.2	31.8	0.63	0.89	32.4
6	T	340	5.0	0.207	10.3	LOS B	1.3	33.3	0.63	0.69	35.9
16	R	36	5.0	0.207	10.5	LOS B	1.3	33.3	0.62	0.71	35.4
Approach		381	5.0	0.207	10.4	LOS B	1.3	33.3	0.63	0.69	35.8
North: Cherry St SB											
7	L	33	5.0	0.213	16.1	LOS B	1.0	25.0	0.52	0.92	31.5
4	T	157	5.0	0.213	8.7	LOS A	1.0	25.0	0.52	0.62	35.0
14	R	104	5.0	0.117	8.9	LOS A	0.5	12.8	0.48	0.65	34.2
Approach		294	5.0	0.213	9.6	LOS A	1.0	25.0	0.51	0.66	34.3
West: LA 3234 EB											
5	L	145	5.0	0.259	16.2	LOS B	1.6	41.5	0.45	0.77	32.7
2	T	390	5.0	0.259	8.7	LOS A	1.6	42.4	0.44	0.55	36.9
12	R	78	5.0	0.259	9.0	LOS A	1.6	42.4	0.43	0.60	36.3
Approach		613	5.0	0.259	10.5	LOS B	1.6	42.4	0.44	0.61	35.7
All Vehicles		1610	5.0	0.481	10.9	LOS B	2.6	68.6	0.54	0.70	34.7

Level of Service (LOS) Method: Delay (HCM 2000).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay per movement
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model used.

SIDRA INTERSECTION



LA 3234 @ LA 1065 (N Cherry St)

Alternate - C, 2035 AM

MOVEMENT SUMMARY

Site: 3234@Cherry 2035 AM-C- 2 LANES

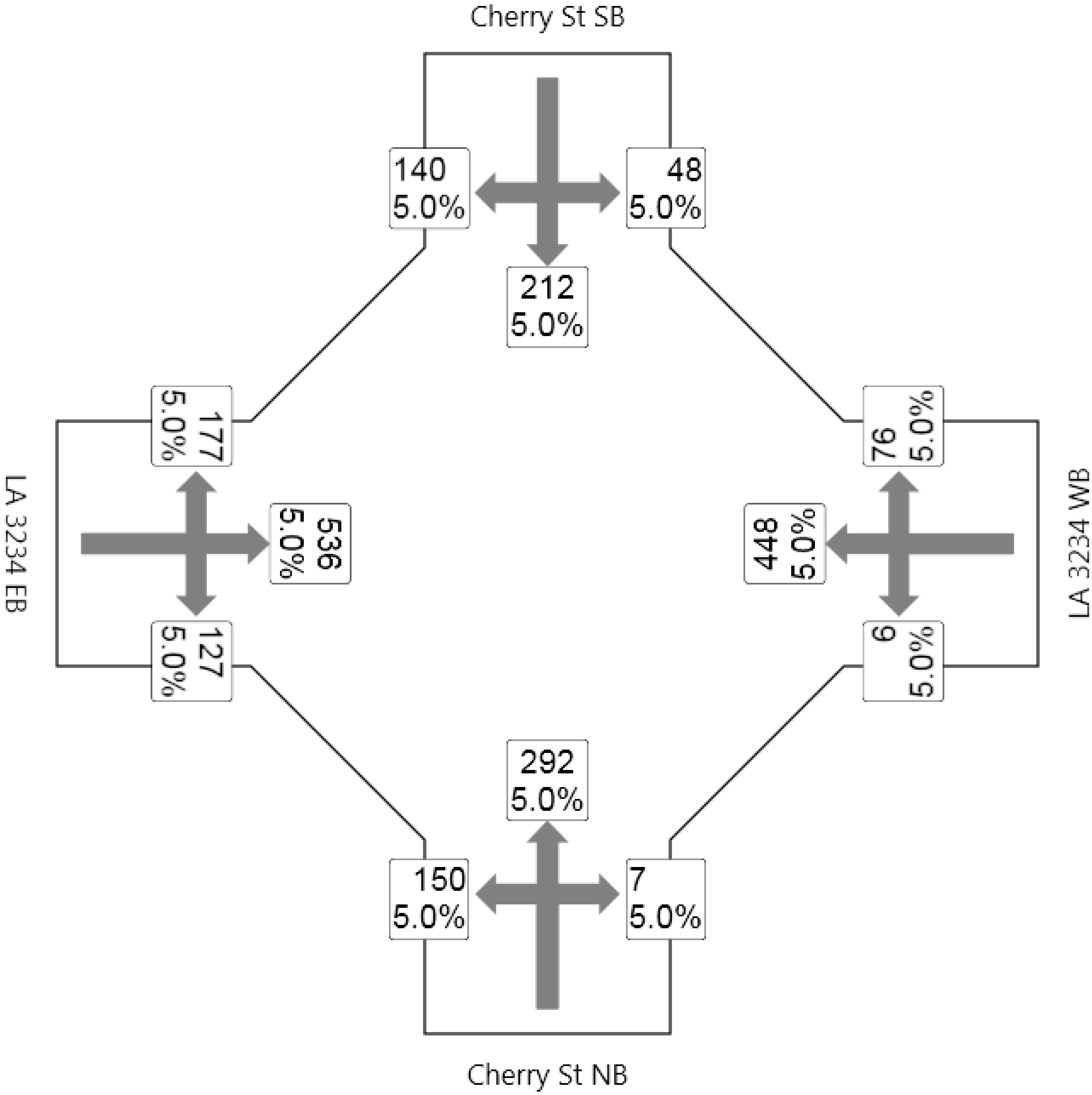
LA 3234 (University Ave) at N. Cherry St
AM Peak - 2035 Alt C

Roundabout

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: Cherry St NB											
3	L	128	5.0	0.492	19.4	LOS B	2.9	75.5	0.71	1.01	30.6
8	T	217	5.0	0.492	10.3	LOS B	2.9	75.5	0.71	0.82	33.0
18	R	7	5.0	0.492	12.5	LOS B	2.9	75.5	0.71	0.91	33.6
Approach		351	5.0	0.492	13.7	LOS B	2.9	75.5	0.71	0.89	32.0
East: LA 3234 WB											
1	L	8	5.0	0.348	18.0	LOS B	2.3	60.5	0.69	0.90	32.4
6	T	630	5.0	0.348	10.2	LOS B	2.5	65.1	0.68	0.70	35.6
16	R	69	5.0	0.348	10.4	LOS B	2.5	65.1	0.68	0.72	35.1
Approach		707	5.0	0.348	10.3	LOS B	2.5	65.1	0.68	0.70	35.5
North: Cherry St SB											
7	L	59	5.0	0.457	18.6	LOS B	2.7	69.5	0.72	1.02	31.3
4	T	322	5.0	0.457	9.5	LOS A	2.7	69.5	0.72	0.75	33.3
14	R	250	5.0	0.299	10.5	LOS B	1.5	38.3	0.65	0.73	33.8
Approach		631	5.0	0.457	10.7	LOS B	2.7	69.5	0.69	0.77	33.3
West: LA 3234 EB											
5	L	106	5.0	0.351	17.5	LOS B	2.4	62.5	0.67	0.85	32.4
2	T	463	5.0	0.351	9.8	LOS A	2.6	66.8	0.66	0.67	35.5
12	R	170	5.0	0.351	10.0	LOS A	2.6	66.8	0.65	0.69	35.1
Approach		739	5.0	0.351	11.0	LOS B	2.6	66.8	0.66	0.70	34.9
All Vehicles		2428	5.0	0.492	11.1	LOS B	2.9	75.5	0.68	0.74	34.2

Level of Service (LOS) Method: Delay (HCM 2000).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay per movement
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model used.



LA 3234 @ LA 1065 (N Cherry St)

Alternate - C, 2035 PM

MOVEMENT SUMMARY

Site: 3234@Cherry 2035 PM-C- 2 LANES

LA 3234 (University Ave) at N. Cherry St
PM Peak - 2035 Alt C

Roundabout

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: Cherry St NB											
3	L	155	5.0	0.702	22.9	LOS C	5.3	138.1	0.83	1.10	28.9
8	T	301	5.0	0.702	13.8	LOS B	5.3	138.1	0.83	1.01	31.1
18	R	7	5.0	0.702	15.9	LOS B	5.3	138.1	0.83	1.04	31.3
Approach		463	5.0	0.702	16.8	LOS B	5.3	138.1	0.83	1.04	30.2
East: LA 3234 WB											
1	L	6	5.0	0.328	19.5	LOS B	2.2	58.1	0.80	0.93	31.6
6	T	462	5.0	0.328	11.6	LOS B	2.5	64.5	0.80	0.79	34.9
16	R	78	5.0	0.328	11.6	LOS B	2.5	64.5	0.80	0.79	34.5
Approach		546	5.0	0.328	11.7	LOS B	2.5	64.5	0.80	0.79	34.8
North: Cherry St SB											
7	L	49	5.0	0.301	17.4	LOS B	1.5	39.5	0.62	0.95	31.9
4	T	219	5.0	0.301	8.3	LOS A	1.5	39.5	0.62	0.63	33.8
14	R	144	5.0	0.161	9.9	LOS A	0.7	19.4	0.57	0.69	34.2
Approach		412	5.0	0.301	10.0	LOS A	1.5	39.5	0.61	0.69	33.7
West: LA 3234 EB											
5	L	182	5.0	0.366	16.8	LOS B	2.5	65.5	0.58	0.80	32.6
2	T	553	5.0	0.366	9.1	LOS A	2.6	68.8	0.56	0.61	36.1
12	R	131	5.0	0.366	9.4	LOS A	2.6	68.8	0.55	0.64	35.7
Approach		866	5.0	0.366	10.8	LOS B	2.6	68.8	0.56	0.66	35.2
All Vehicles		2288	5.0	0.702	12.1	LOS B	5.3	138.1	0.68	0.77	33.7

Level of Service (LOS) Method: Delay (HCM 2000).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay per movement
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model used.

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SIDRA INTERSECTION 5.1.7.2056

Project: R:\LA\Tangipahoa\8437 LA 3234 - Stage 0\Analysis\Final Report\INTERSECTION\LA 3234 at N Cherry ST\ROUNDABOUT\3234@Cherry Alt C - Two Lane.sip
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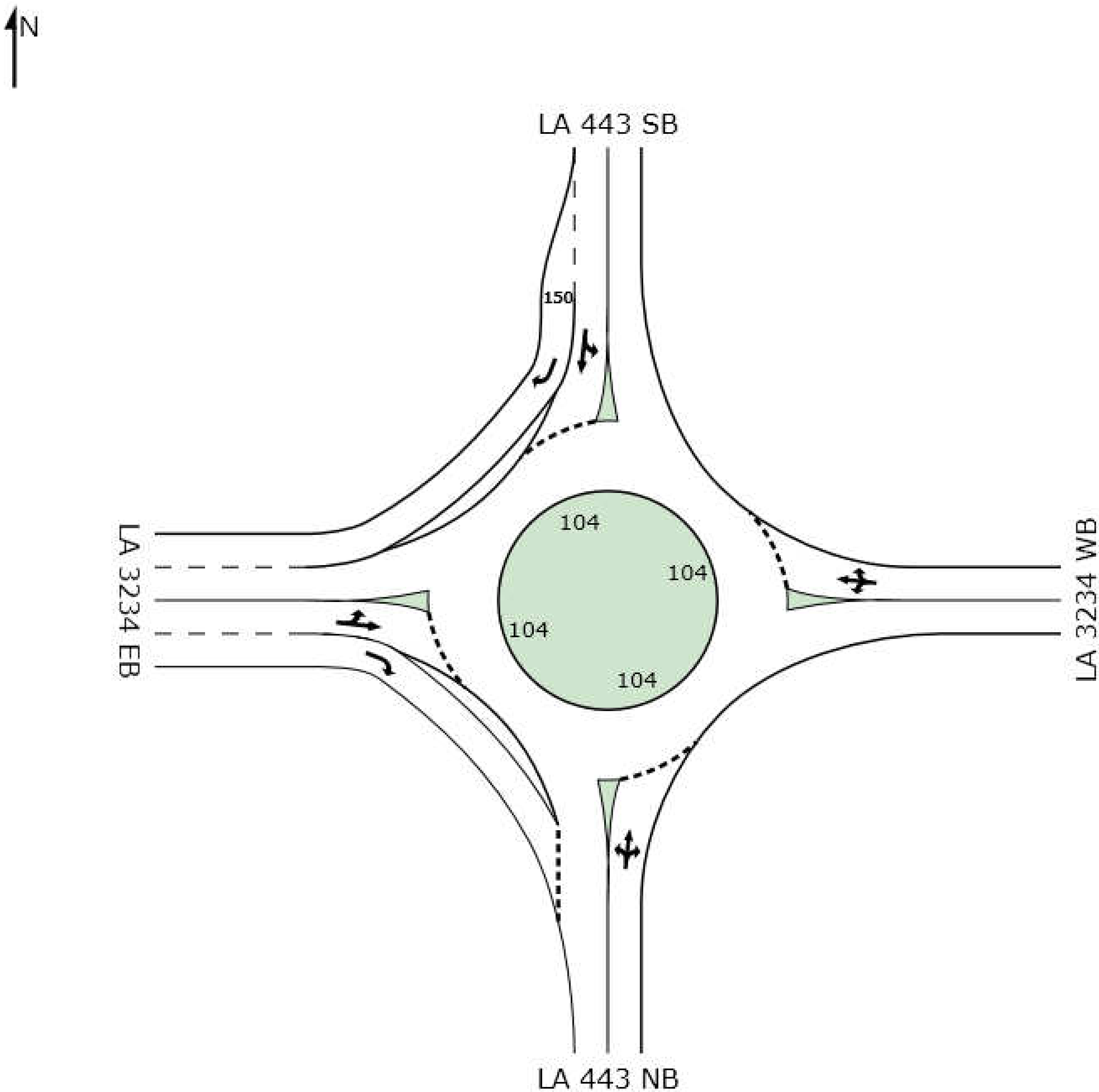
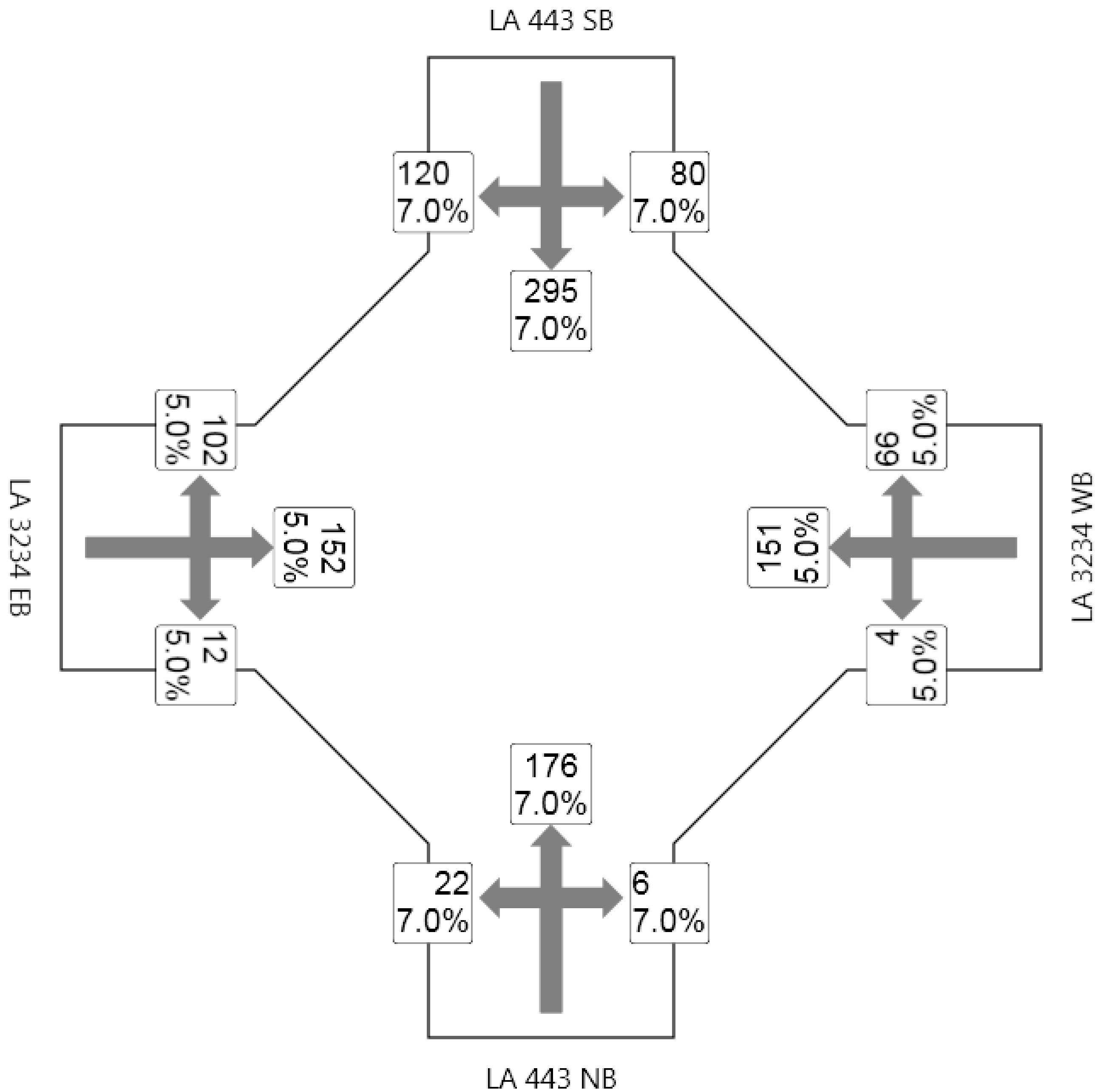
INTERSECTION LA 3234 at LA 443 (Morris Rd)

Single-lane Roundabout Analysis



LA 3234 @ LA 443 (Morris Rd)

Alternate - A



LA 3234 @ LA 443 (Morris Rd)

Alternate - A, 2015 AM

MOVEMENT SUMMARY

Site: 3234@443 2015 AM-A

LA 3234 (University Ave) at LA 443 (Morris Rd)
AM Peak - 2015 Alt A

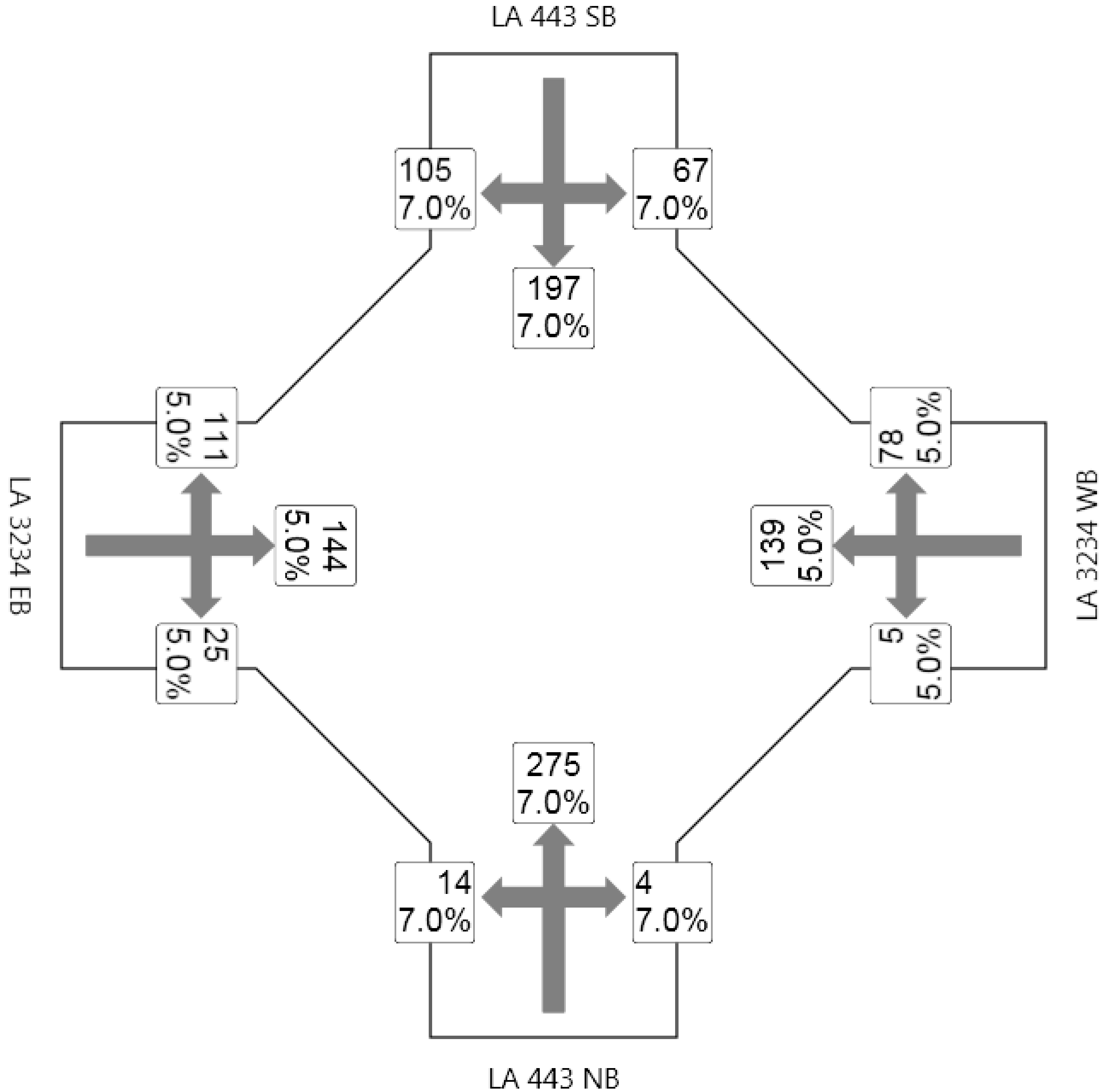
Roundabout

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: LA 443 NB											
3	L	24	7.0	0.300	19.4	LOS B	1.8	47.2	0.64	0.89	33.5
8	T	196	7.0	0.300	12.8	LOS B	1.8	47.2	0.64	0.74	37.3
18	R	7	7.0	0.300	12.5	LOS B	1.8	47.2	0.64	0.77	36.0
Approach		227	7.0	0.300	13.5	LOS B	1.8	47.2	0.64	0.76	36.8
East: LA 3234 WB											
1	L	4	5.0	0.304	17.2	LOS B	1.8	47.0	0.61	0.87	30.7
6	T	168	5.0	0.304	9.1	LOS A	1.8	47.0	0.61	0.68	32.5
16	R	73	5.0	0.304	10.8	LOS B	1.8	47.0	0.61	0.73	33.0
Approach		246	5.0	0.304	9.8	LOS A	1.8	47.0	0.61	0.69	32.6
North: LA 443 SB											
7	L	89	7.0	0.439	16.8	LOS B	3.1	82.6	0.56	0.83	33.6
4	T	328	7.0	0.439	11.5	LOS B	3.1	82.6	0.56	0.65	37.7
14	R	133	7.0	0.087	10.4	X	X	X	X	0.62	40.7
Approach		550	7.0	0.439	12.1	LOS B	3.1	82.6	0.43	0.67	37.7
West: LA 3234 EB											
5	L	113	5.0	0.308	19.0	LOS B	2.0	52.0	0.66	0.85	33.3
2	T	169	5.0	0.308	9.6	LOS A	2.0	52.0	0.66	0.70	34.1
12	R	13	5.0	0.013	11.2	LOS B	0.1	1.8	0.49	0.58	36.6
Approach		296	5.0	0.308	13.2	LOS B	2.0	52.0	0.65	0.75	33.8
All Vehicles		1318	6.2	0.439	12.2	LOS B	3.1	82.6	0.55	0.71	35.6

X: Not applicable for Continuous movement.

Level of Service (LOS) Method: Delay (HCM 2000).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay per movement
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model used.



LA 3234 @ LA 443 (Morris Rd)

Alternate - A, 2015 PM

MOVEMENT SUMMARY

Site: 3234@443 2015 PM-A

LA 3234 (University Ave) at LA 443 (Morris Rd)
PM Peak - 2015 Alt A

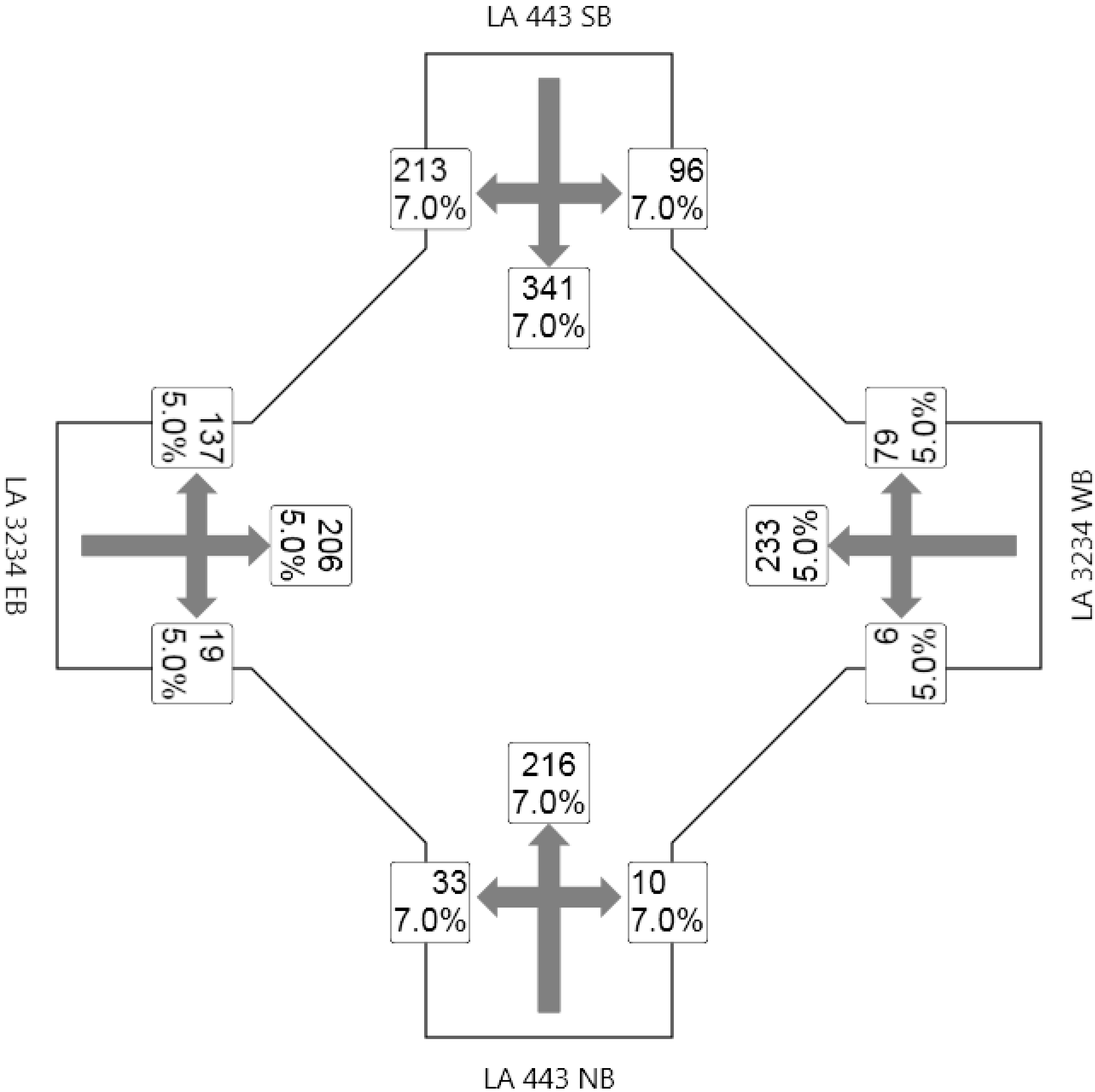
Roundabout

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: LA 443 NB											
3	L	15	7.0	0.410	19.5	LOS B	2.6	69.3	0.67	0.90	33.6
8	T	299	7.0	0.410	13.0	LOS B	2.6	69.3	0.67	0.76	37.2
18	R	4	7.0	0.410	12.7	LOS B	2.6	69.3	0.67	0.79	35.9
Approach		318	7.0	0.410	13.3	LOS B	2.6	69.3	0.67	0.77	37.0
East: LA 3234 WB											
1	L	5	5.0	0.333	18.2	LOS B	2.0	52.9	0.69	0.91	30.2
6	T	151	5.0	0.333	10.1	LOS B	2.0	52.9	0.69	0.75	32.1
16	R	85	5.0	0.333	11.8	LOS B	2.0	52.9	0.69	0.79	32.6
Approach		241	5.0	0.333	10.9	LOS B	2.0	52.9	0.69	0.77	32.2
North: LA 443 SB											
7	L	73	7.0	0.301	16.4	LOS B	1.9	50.4	0.47	0.82	33.8
4	T	214	7.0	0.301	11.1	LOS B	1.9	50.4	0.47	0.61	38.2
14	R	114	7.0	0.074	10.4	X	X	X	X	0.62	40.7
Approach		401	7.0	0.301	11.9	LOS B	1.9	50.4	0.34	0.65	38.0
West: LA 3234 EB											
5	L	121	5.0	0.266	18.0	LOS B	1.6	42.6	0.54	0.81	33.8
2	T	157	5.0	0.266	8.6	LOS A	1.6	42.6	0.54	0.60	34.9
12	R	27	5.0	0.024	10.6	LOS B	0.1	3.2	0.40	0.57	37.1
Approach		304	5.0	0.266	12.5	LOS B	1.6	42.6	0.53	0.68	34.6
All Vehicles		1265	6.1	0.410	12.2	LOS B	2.6	69.3	0.53	0.71	35.7

X: Not applicable for Continuous movement.

Level of Service (LOS) Method: Delay (HCM 2000).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay per movement
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model used.



LA 3234 @ LA 443 (Morris Rd)

Alternate - A, 2035 AM

MOVEMENT SUMMARY

Site: 3234@443 2035 AM-A

LA 3234 (University Ave) at LA 443 (Morris Rd)
AM Peak - 2035 Alt A

Roundabout

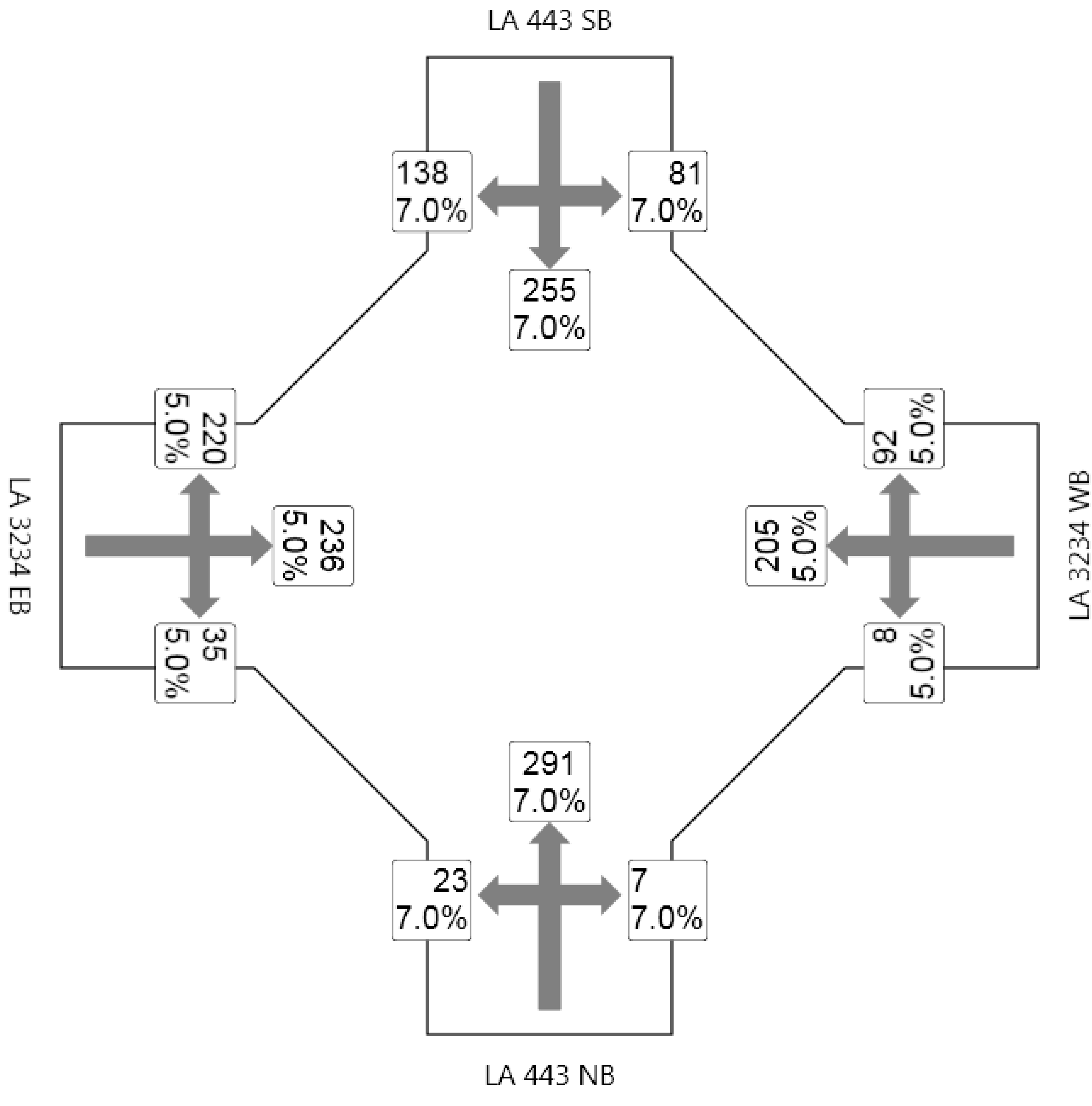
Movement Performance - Vehicles

Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: LA 443 NB											
3	L	37	7.0	0.383	20.1	LOS C	2.5	66.7	0.74	0.92	33.2
8	T	240	7.0	0.383	13.6	LOS B	2.5	66.7	0.74	0.81	36.6
18	R	11	7.0	0.383	13.2	LOS B	2.5	66.7	0.74	0.83	35.4
Approach		288	7.0	0.383	14.4	LOS B	2.5	66.7	0.74	0.82	36.1
East: LA 3234 WB											
1	L	7	5.0	0.427	17.9	LOS B	2.9	74.9	0.72	0.90	30.5
6	T	259	5.0	0.427	9.8	LOS A	2.9	74.9	0.72	0.75	32.0
16	R	88	5.0	0.427	11.5	LOS B	2.9	74.9	0.72	0.80	32.6
Approach		353	5.0	0.427	10.4	LOS B	2.9	74.9	0.72	0.76	32.1
North: LA 443 SB											
7	L	107	7.0	0.527	17.9	LOS B	4.2	110.2	0.71	0.86	33.0
4	T	379	7.0	0.527	12.6	LOS B	4.2	110.2	0.71	0.74	36.7
14	R	237	7.0	0.154	10.4	X	X	X	X	0.62	40.7
Approach		722	7.0	0.527	12.7	LOS B	4.2	110.2	0.48	0.72	37.4
West: LA 3234 EB											
5	L	152	5.0	0.401	19.3	LOS B	3.0	77.8	0.76	0.86	33.2
2	T	229	5.0	0.401	9.9	LOS A	3.0	77.8	0.76	0.73	33.4
12	R	21	5.0	0.020	11.2	LOS B	0.1	3.0	0.54	0.59	36.3
Approach		402	5.0	0.401	13.5	LOS B	3.0	77.8	0.75	0.77	33.5
All Vehicles		1766	6.1	0.527	12.7	LOS B	4.2	110.2	0.63	0.76	35.1

X: Not applicable for Continuous movement.

Level of Service (LOS) Method: Delay (HCM 2000).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay per movement
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model used.

SIDRA INTERSECTION



LA 3234 @ LA 443 (Morris Rd)

Alternate - A, 2035 PM

MOVEMENT SUMMARY

Site: 3234@443 2035 PM-A

LA 3234 (University Ave) at LA 443 (Morris Rd)
PM Peak - 2035 Alt A

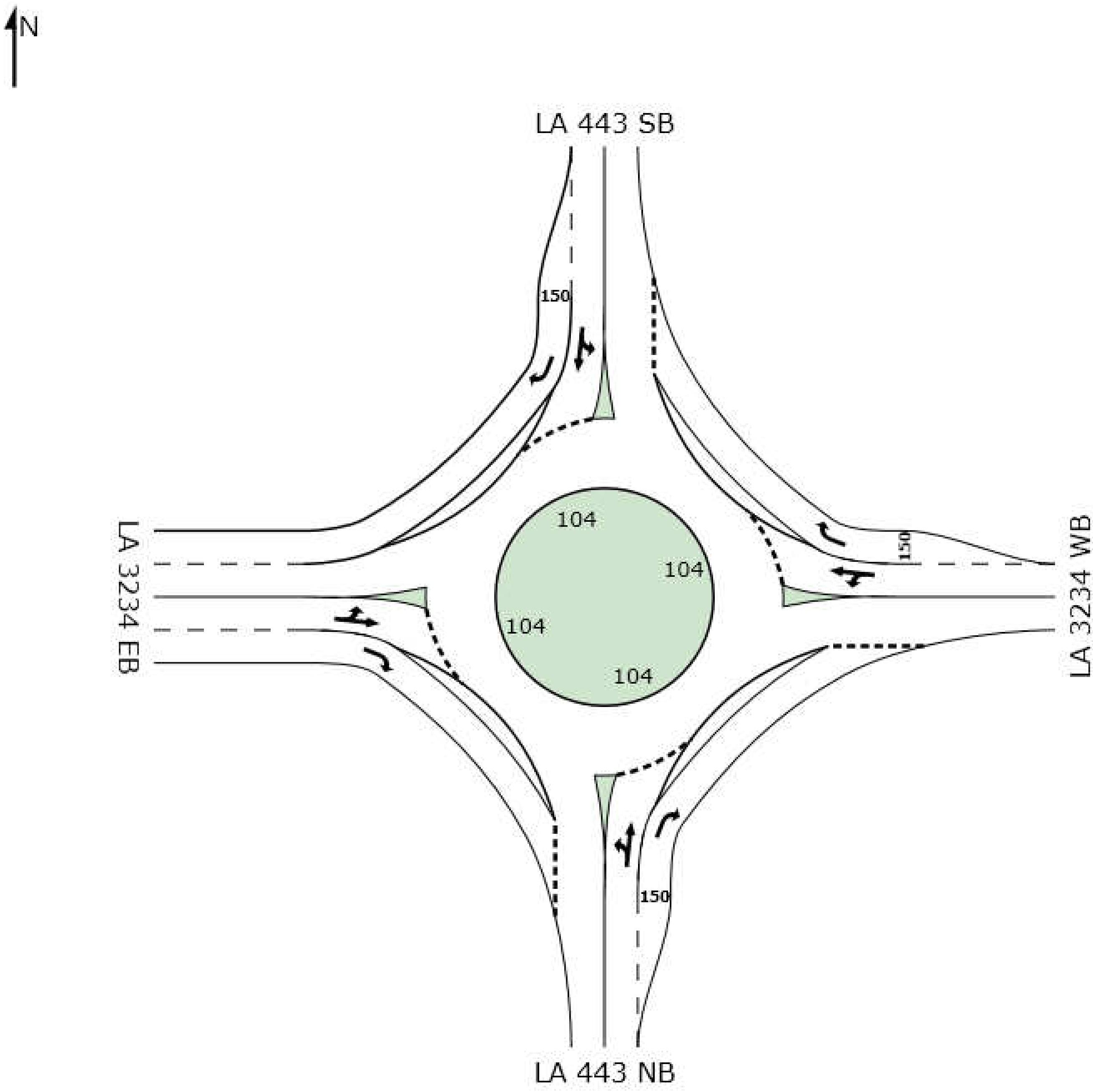
Roundabout

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: LA 443 NB											
3	L	25	7.0	0.514	22.9	LOS C	4.2	110.6	0.85	1.01	31.6
8	T	316	7.0	0.514	16.3	LOS B	4.2	110.6	0.85	0.94	35.3
18	R	8	7.0	0.514	16.0	LOS B	4.2	110.6	0.85	0.96	33.6
Approach		349	7.0	0.514	16.8	LOS B	4.2	110.6	0.85	0.95	35.0
East: LA 3234 WB											
1	L	9	5.0	0.469	20.2	LOS C	3.5	92.0	0.82	0.98	29.3
6	T	223	5.0	0.469	12.1	LOS B	3.5	92.0	0.82	0.89	31.3
16	R	100	5.0	0.469	13.8	LOS B	3.5	92.0	0.82	0.92	31.6
Approach		332	5.0	0.469	12.8	LOS B	3.5	92.0	0.82	0.90	31.3
North: LA 443 SB											
7	L	88	7.0	0.384	16.9	LOS B	2.7	70.3	0.60	0.84	33.5
4	T	277	7.0	0.384	11.7	LOS B	2.7	70.3	0.60	0.67	37.4
14	R	150	7.0	0.097	10.4	X	X	X	X	0.62	40.7
Approach		515	7.0	0.384	12.2	LOS B	2.7	70.3	0.42	0.68	37.6
West: LA 3234 EB											
5	L	239	5.0	0.460	18.6	LOS B	3.5	90.5	0.70	0.83	33.4
2	T	257	5.0	0.460	9.3	LOS A	3.5	90.5	0.70	0.68	33.7
12	R	38	5.0	0.033	10.8	LOS B	0.2	4.6	0.45	0.59	36.8
Approach		534	5.0	0.460	13.6	LOS B	3.5	90.5	0.68	0.74	33.8
All Vehicles		1729	6.0	0.514	13.7	LOS B	4.2	110.6	0.66	0.80	34.6

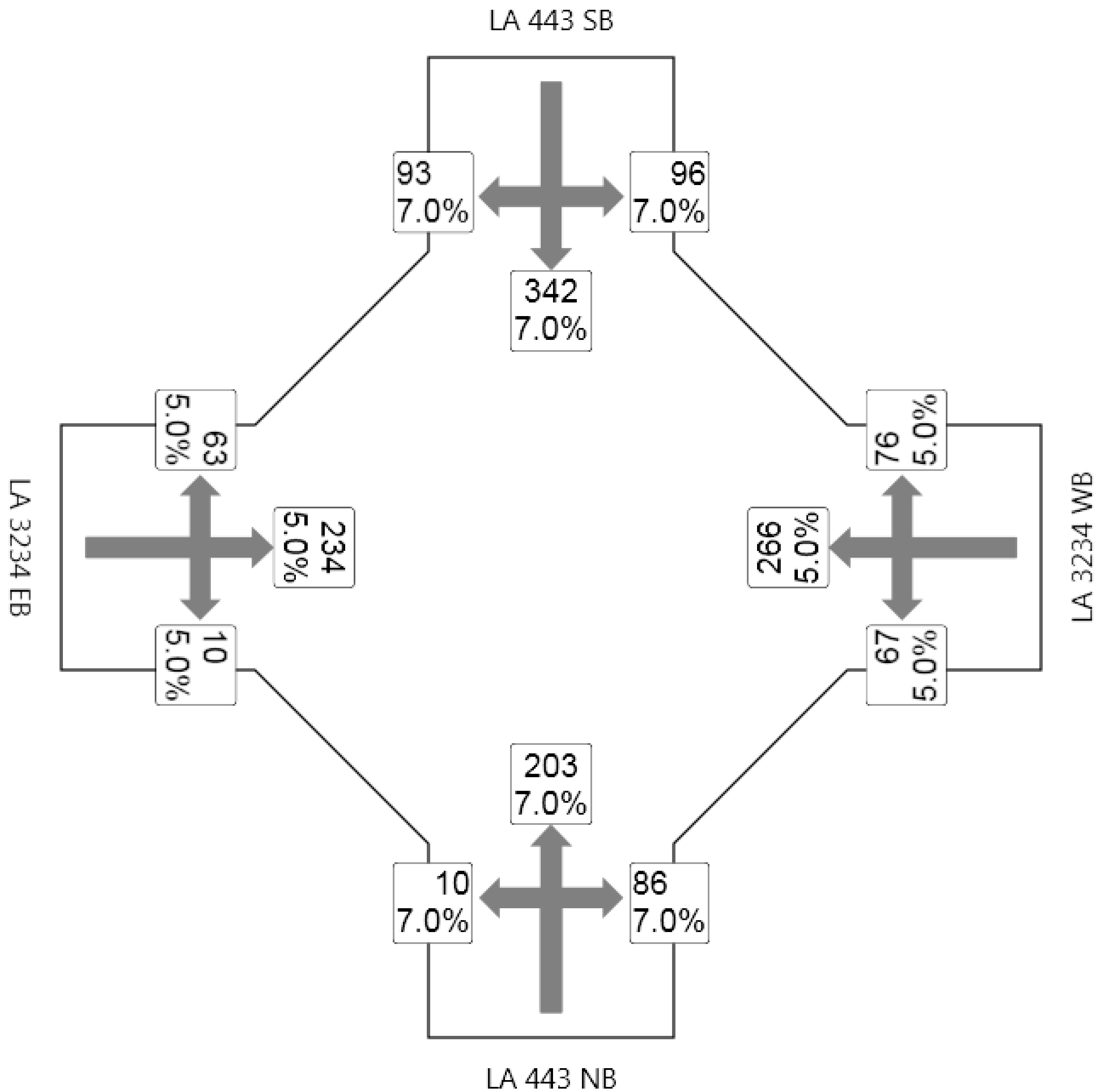
X: Not applicable for Continuous movement.

Level of Service (LOS) Method: Delay (HCM 2000).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay per movement
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model used.



LA 3234 @ LA 443 (Morris Rd)

Alternate - B



LA 3234 @ LA 443 (Morris Rd)

Alternate - B, 2015 AM

MOVEMENT SUMMARY

Site: 3234@443 2015 AM-B

LA 3234 (University Ave) at LA 443 (Morris Rd)
AM Peak - 2015 Alt B

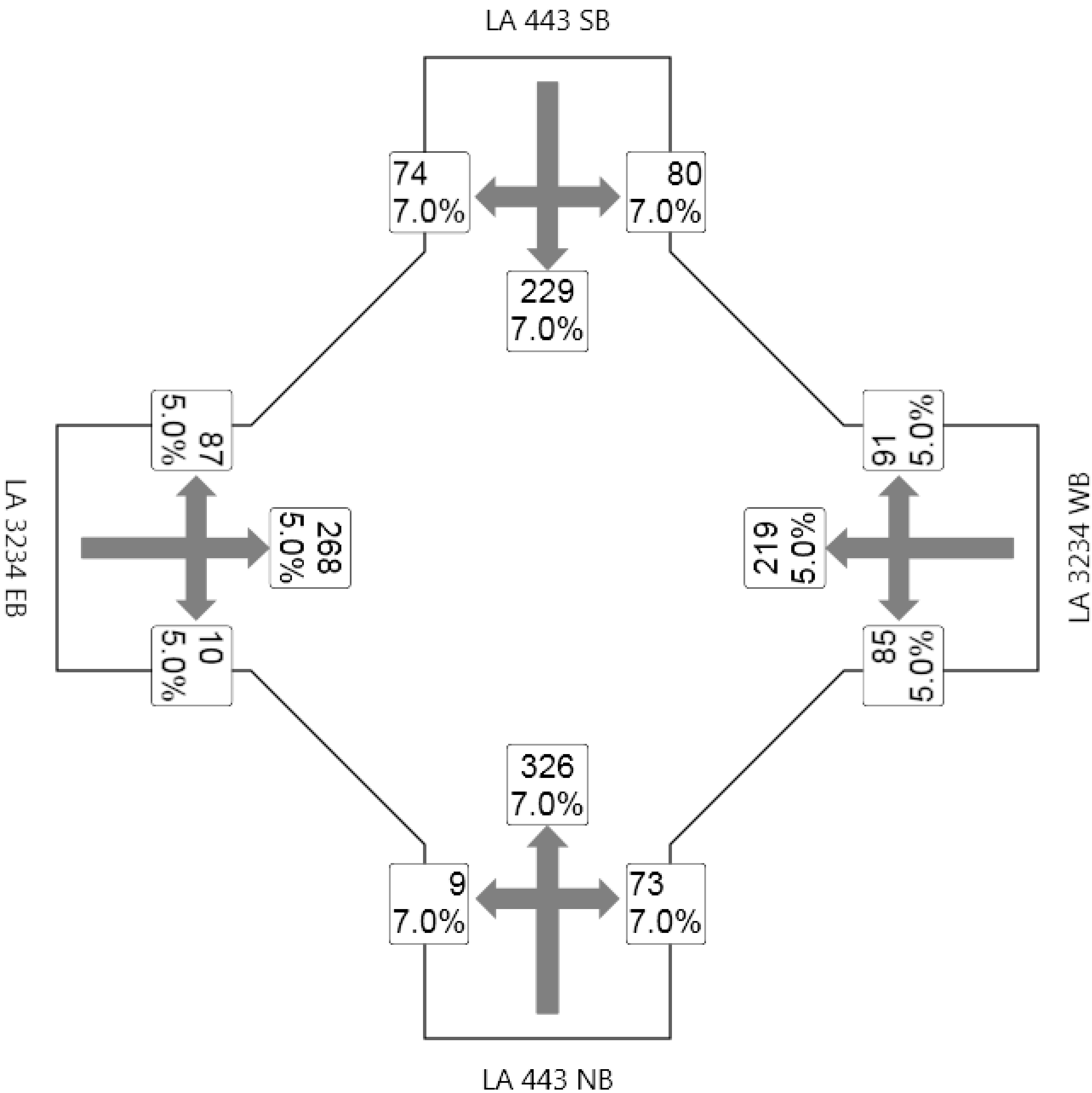
Roundabout

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: LA 443 NB											
3	L	11	7.0	0.269	18.9	LOS B	1.7	45.2	0.66	0.88	34.0
8	T	226	7.0	0.269	12.4	LOS B	1.7	45.2	0.66	0.73	37.3
18	R	96	7.0	0.101	10.9	LOS B	0.6	15.0	0.55	0.65	36.1
Approach		332	7.0	0.269	12.2	LOS B	1.7	45.2	0.63	0.72	36.8
East: LA 3234 WB											
1	L	74	5.0	0.361	16.4	LOS B	2.4	62.7	0.60	0.84	31.1
6	T	296	5.0	0.361	8.3	LOS A	2.4	62.7	0.60	0.63	32.5
16	R	84	5.0	0.087	9.1	LOS A	0.4	11.5	0.48	0.60	33.4
Approach		454	5.0	0.361	9.8	LOS A	2.4	62.7	0.58	0.66	32.4
North: LA 443 SB											
7	L	107	7.0	0.651	22.0	LOS C	6.6	174.0	0.85	0.99	30.4
4	T	380	7.0	0.651	16.7	LOS B	6.6	174.0	0.85	0.93	34.8
14	R	103	7.0	0.067	10.4	X	X	X	X	0.62	40.7
Approach		590	7.0	0.651	16.5	LOS B	6.6	174.0	0.70	0.89	34.9
West: LA 3234 EB											
5	L	70	5.0	0.428	20.5	LOS C	3.2	82.7	0.82	0.92	32.7
2	T	260	5.0	0.428	11.1	LOS B	3.2	82.7	0.82	0.82	33.4
12	R	11	5.0	0.013	11.9	LOS B	0.1	1.9	0.60	0.60	36.0
Approach		341	5.0	0.428	13.0	LOS B	3.2	82.7	0.82	0.83	33.3
All Vehicles		1718	6.1	0.651	13.2	LOS B	6.6	174.0	0.68	0.78	34.2

X: Not applicable for Continuous movement.

Level of Service (LOS) Method: Delay (HCM 2000).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay per movement
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model used.



LA 3234 @ LA 443 (Morris Rd)

Alternate - B, 2015 PM

MOVEMENT SUMMARY

Site: 3234@443 2015 PM-B

LA 3234 (University Ave) at LA 443 (Morris Rd)
PM Peak - 2015 Alt B

Roundabout

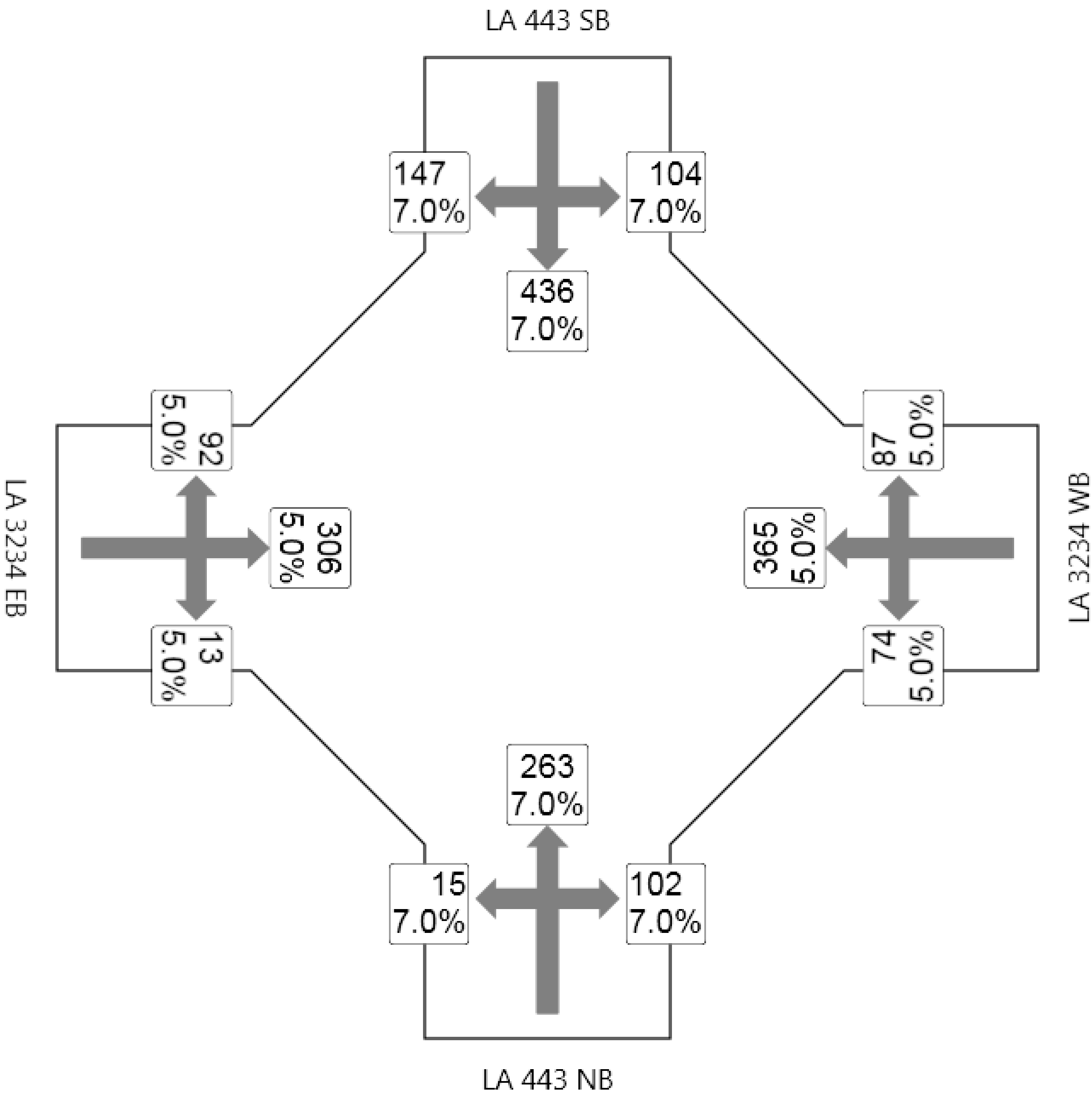
Movement Performance - Vehicles

Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: LA 443 NB											
3	L	10	7.0	0.427	19.6	LOS B	3.0	79.3	0.75	0.91	33.6
8	T	354	7.0	0.427	13.1	LOS B	3.0	79.3	0.75	0.80	36.8
18	R	79	7.0	0.085	11.0	LOS B	0.5	12.4	0.55	0.65	36.1
Approach		443	7.0	0.427	12.9	LOS B	3.0	79.3	0.71	0.77	36.6
East: LA 3234 WB											
1	L	92	5.0	0.375	17.6	LOS B	2.6	66.9	0.72	0.87	30.5
6	T	238	5.0	0.375	9.5	LOS A	2.6	66.9	0.72	0.72	31.8
16	R	99	5.0	0.111	10.1	LOS B	0.6	16.8	0.61	0.67	32.8
Approach		429	5.0	0.375	11.3	LOS B	2.6	66.9	0.69	0.74	31.7
North: LA 443 SB											
7	L	87	7.0	0.438	18.2	LOS B	3.0	78.7	0.70	0.88	32.7
4	T	249	7.0	0.438	13.0	LOS B	3.0	78.7	0.70	0.76	36.7
14	R	80	7.0	0.052	10.4	X	X	X	X	0.62	40.7
Approach		416	7.0	0.438	13.6	LOS B	3.0	78.7	0.56	0.76	36.5
West: LA 3234 EB											
5	L	95	5.0	0.423	19.3	LOS B	3.0	77.3	0.72	0.88	33.3
2	T	291	5.0	0.423	9.9	LOS A	3.0	77.3	0.72	0.73	34.0
12	R	11	5.0	0.011	11.2	LOS B	0.1	1.5	0.49	0.58	36.6
Approach		397	5.0	0.423	12.2	LOS B	3.0	77.3	0.71	0.76	33.8
All Vehicles		1686	6.0	0.438	12.5	LOS B	3.0	79.3	0.67	0.76	34.6

X: Not applicable for Continuous movement.

Level of Service (LOS) Method: Delay (HCM 2000).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay per movement
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model used.

SIDRA INTERSECTION



LA 3234 @ LA 443 (Morris Rd)

Alternate - B, 2035 AM

MOVEMENT SUMMARY

LA 3234 (University Ave) at LA 443 (Morris Rd)
AM Peak - 2035 Alt B

Roundabout

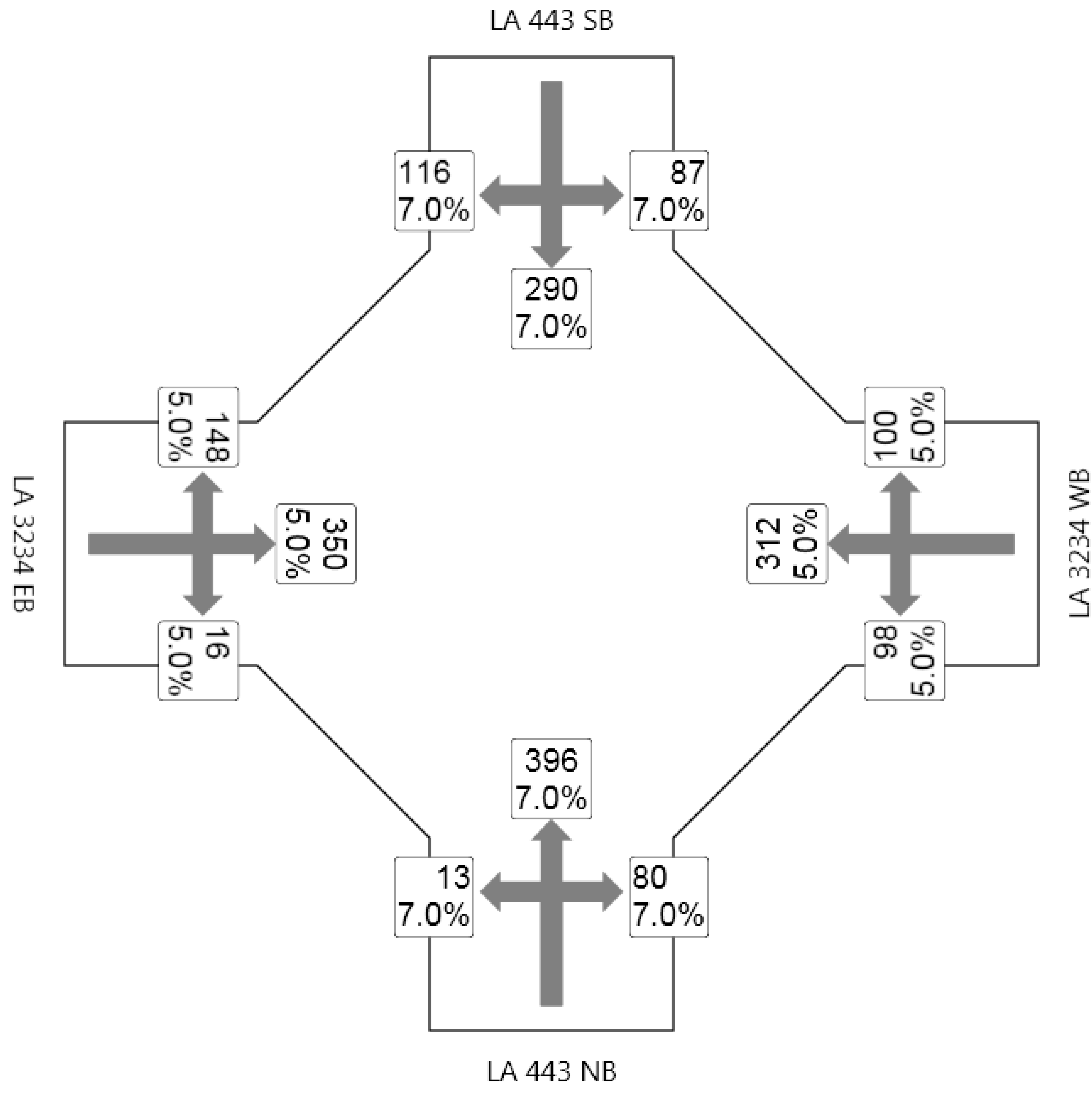
Movement Performance - Vehicles

Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: LA 443 NB											
3	L	17	7.0	0.360	19.6	LOS B	2.7	70.2	0.79	0.89	33.7
8	T	292	7.0	0.360	13.1	LOS B	2.7	70.2	0.79	0.79	36.5
18	R	113	7.0	0.118	11.2	LOS B	0.7	19.3	0.62	0.68	35.7
Approach		422	7.0	0.360	12.8	LOS B	2.7	70.2	0.75	0.77	36.1
East: LA 3234 WB											
1	L	82	5.0	0.468	17.1	LOS B	3.6	92.9	0.73	0.86	30.9
6	T	406	5.0	0.468	9.0	LOS A	3.6	92.9	0.73	0.68	31.9
16	R	97	5.0	0.091	9.4	LOS A	0.5	13.9	0.56	0.62	33.1
Approach		584	5.0	0.468	10.2	LOS B	3.6	92.9	0.70	0.70	31.9
North: LA 443 SB											
7	L	116	7.0	0.824	29.4	LOS C	12.6	333.9	1.00	1.17	26.5
4	T	484	7.0	0.824	24.1	LOS C	12.6	333.9	1.00	1.17	29.9
14	R	163	7.0	0.106	10.4	X	X	X	X	0.62	40.7
Approach		763	7.0	0.824	22.0	LOS C	12.6	333.9	0.79	1.05	31.1
West: LA 3234 EB											
5	L	102	5.0	0.606	24.3	LOS C	6.5	168.5	0.99	1.02	30.5
2	T	340	5.0	0.606	14.9	LOS B	6.5	168.5	0.99	1.02	31.3
12	R	14	5.0	0.017	12.2	LOS B	0.1	2.8	0.69	0.62	35.5
Approach		457	5.0	0.606	16.9	LOS B	6.5	168.5	0.98	1.01	31.2
All Vehicles		2227	6.1	0.824	16.1	LOS B	12.6	333.9	0.80	0.90	32.2

X: Not applicable for Continuous movement.

Level of Service (LOS) Method: Delay (HCM 2000).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay per movement
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model used.

SIDRA INTERSECTION



LA 3234 @ LA 443 (Morris Rd)

Alternate - B, 2035 PM

MOVEMENT SUMMARY

Site: 3234@443 2035 PM-B

LA 3234 (University Ave) at LA 443 (Morris Rd)
PM Peak - 2035 Alt B

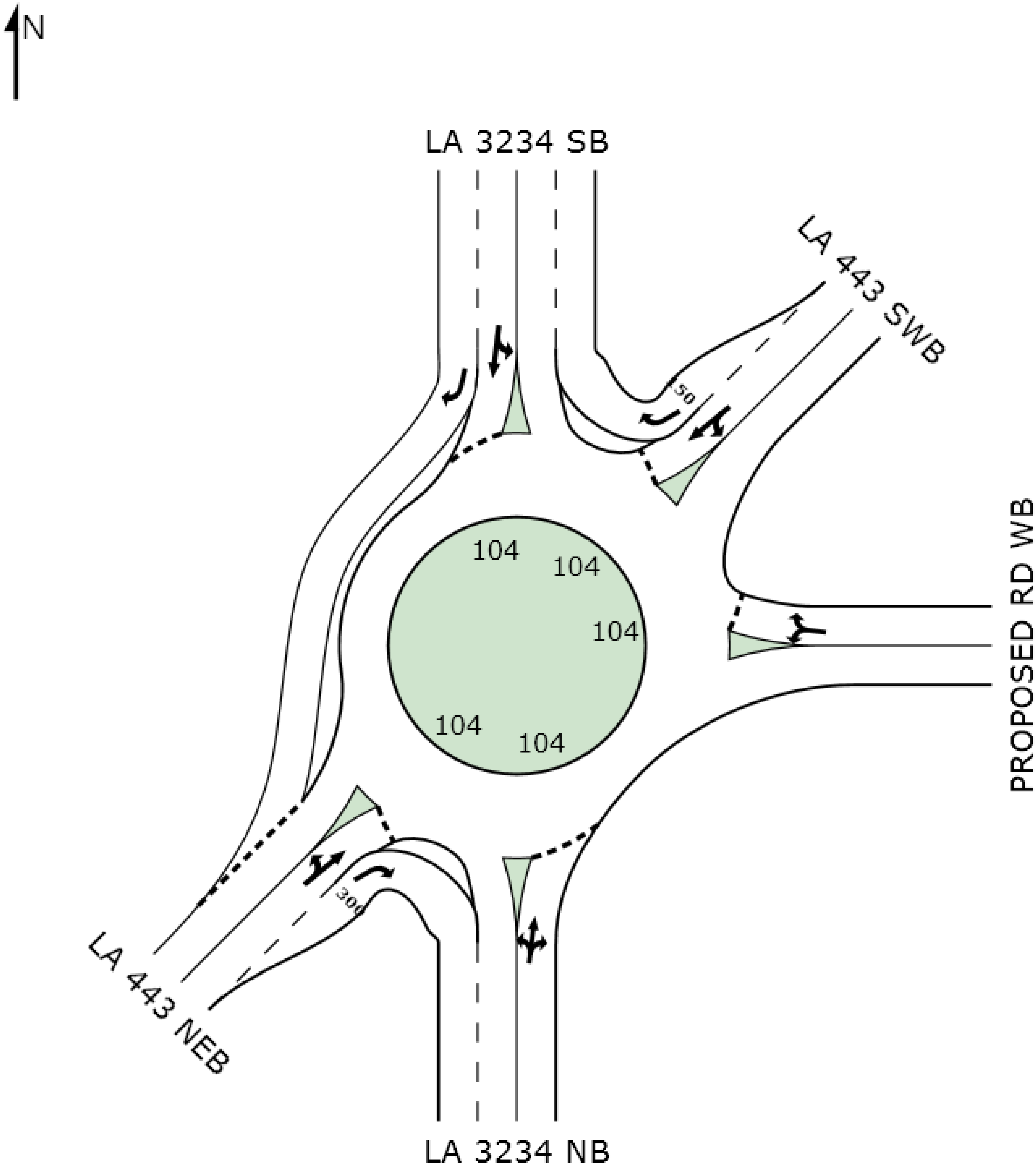
Roundabout

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: LA 443 NB											
3	L	14	7.0	0.560	22.6	LOS C	5.4	142.9	0.92	0.98	31.9
8	T	430	7.0	0.560	16.1	LOS B	5.4	142.9	0.92	0.95	35.6
18	R	87	7.0	0.091	11.2	LOS B	0.6	14.8	0.62	0.67	35.7
Approach		532	7.0	0.560	15.4	LOS B	5.4	142.9	0.87	0.91	35.5
East: LA 3234 WB											
1	L	107	5.0	0.525	19.8	LOS B	4.8	124.5	0.89	0.96	29.5
6	T	339	5.0	0.525	11.7	LOS B	4.8	124.5	0.89	0.90	31.1
16	R	109	5.0	0.126	10.7	LOS B	0.8	21.5	0.72	0.71	32.4
Approach		554	5.0	0.525	13.0	LOS B	4.8	124.5	0.85	0.87	31.0
North: LA 443 SB											
7	L	95	7.0	0.548	20.3	LOS C	4.8	126.3	0.84	0.96	31.4
4	T	315	7.0	0.548	15.1	LOS B	4.8	126.3	0.84	0.89	35.9
14	R	126	7.0	0.082	10.4	X	X	X	X	0.62	40.7
Approach		536	7.0	0.548	14.9	LOS B	4.8	126.3	0.64	0.84	36.1
West: LA 3234 EB											
5	L	161	5.0	0.580	21.3	LOS C	5.7	147.8	0.87	0.94	32.1
2	T	380	5.0	0.580	11.9	LOS B	5.7	147.8	0.87	0.88	33.0
12	R	17	5.0	0.017	11.4	LOS B	0.1	2.5	0.56	0.60	36.2
Approach		559	5.0	0.580	14.6	LOS B	5.7	147.8	0.86	0.89	32.8
All Vehicles		2180	6.0	0.580	14.5	LOS B	5.7	147.8	0.81	0.88	33.7

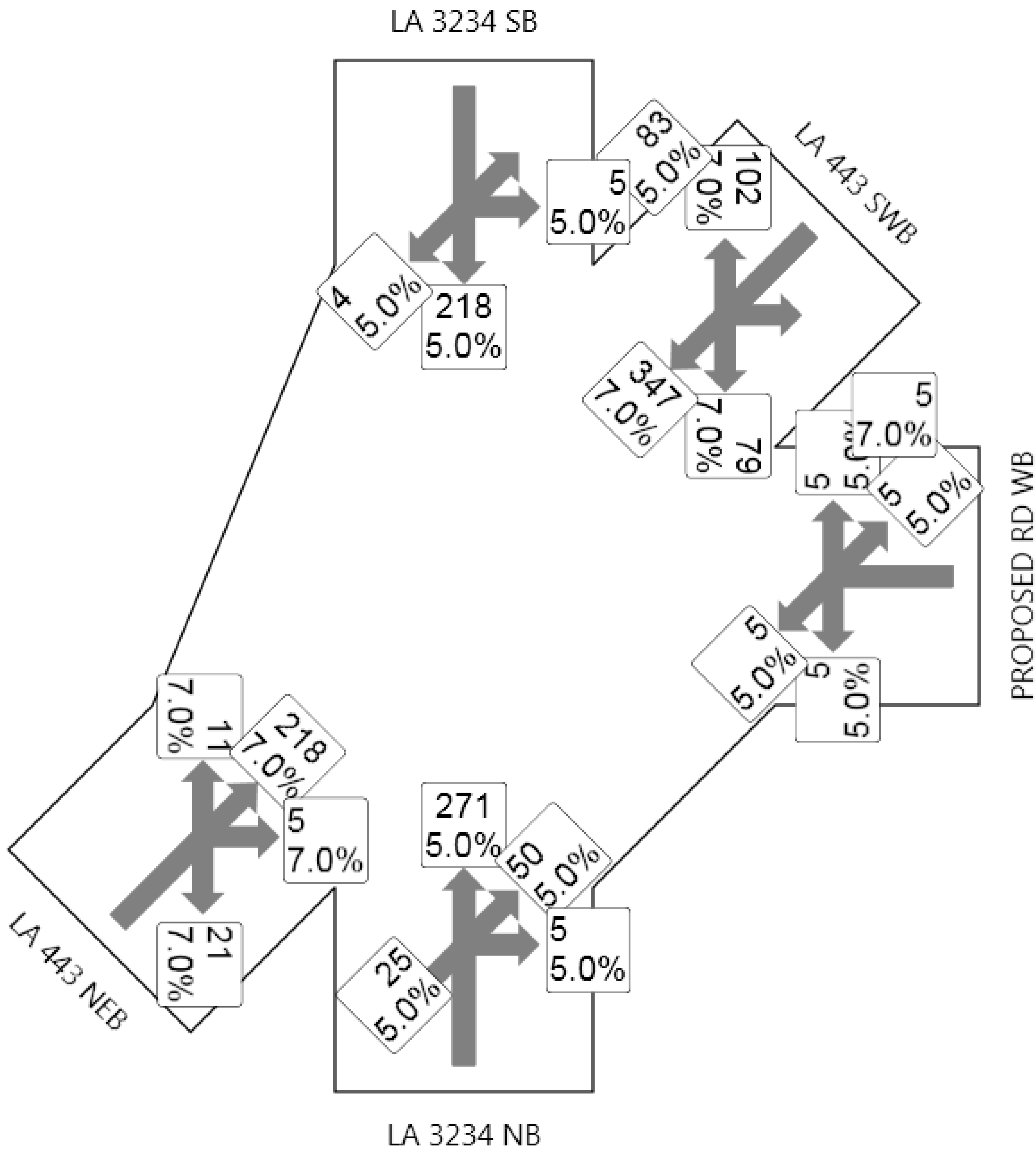
X: Not applicable for Continuous movement.

Level of Service (LOS) Method: Delay (HCM 2000).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay per movement
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model used.



LA 3234 @ LA 443 (Morris Rd)

Alternate - C, Single Lane Roundabout



LA 3234 @ LA 443 (Morris Rd)

Alternate - C, 2015 AM

MOVEMENT SUMMARY

Site: 3234@443 2015 AM - C

LA 3234 (University Ave) at LA 443 (Morris Rd)
AM Peak - 2015 Alt C

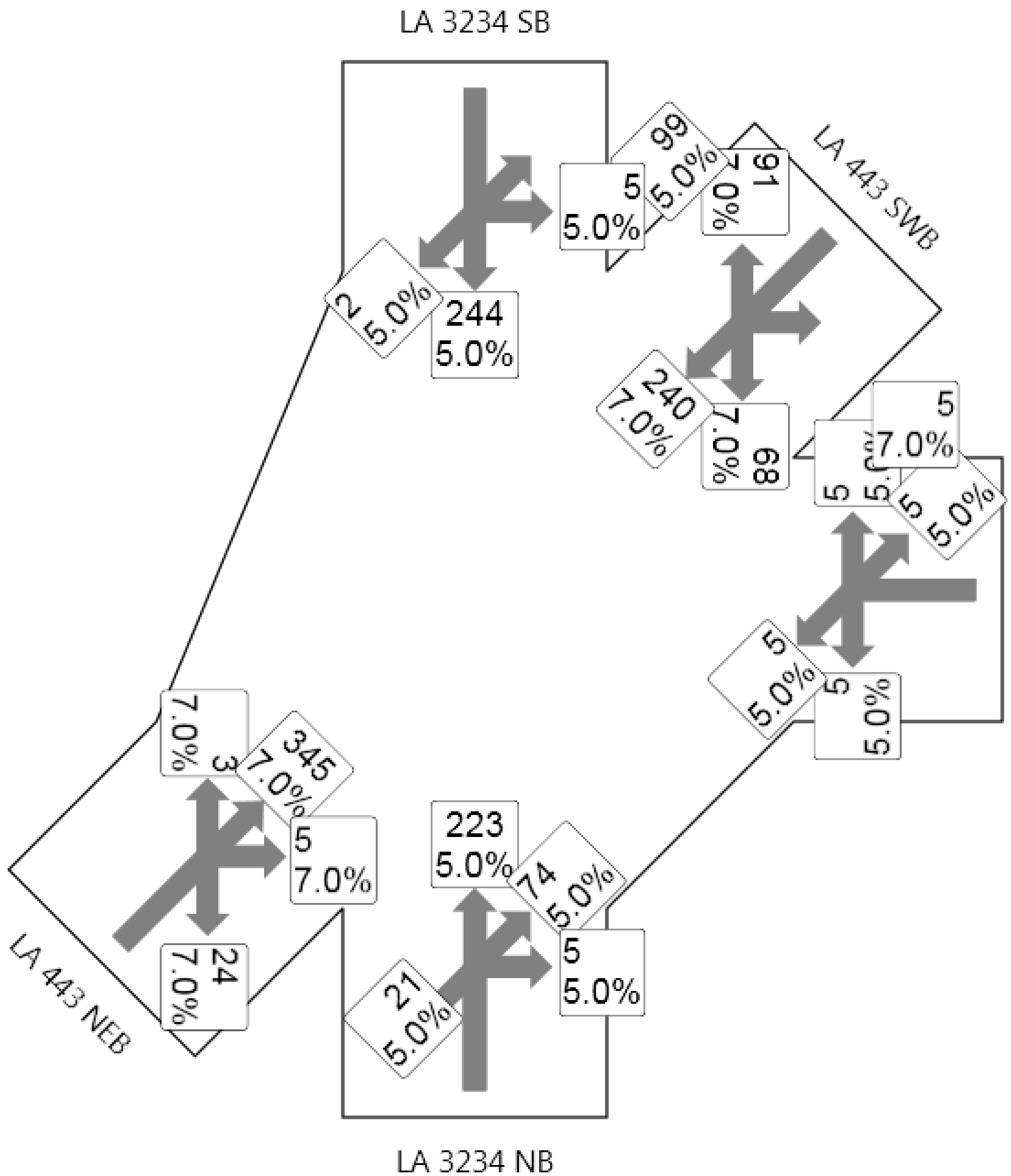
Roundabout

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: LA 3234 NB											
3	L	28	5.0	0.501	21.9	LOS C	3.8	97.7	0.73	0.94	32.1
8	T	301	5.0	0.501	12.3	LOS B	3.8	97.7	0.73	0.80	35.0
18	R	61	5.0	0.501	12.9	LOS B	3.8	97.7	0.73	0.81	35.4
Approach		390	5.0	0.501	13.1	LOS B	3.8	97.7	0.73	0.81	34.8
East: PROPOSED RD WB											
1	L	11	5.0	0.041	18.2	LOS B	0.2	5.8	0.73	0.79	27.0
16	R	11	5.0	0.041	12.8	LOS B	0.2	5.8	0.73	0.72	28.6
Approach		22	5.0	0.041	15.5	LOS B	0.2	5.8	0.73	0.76	27.7
North East: LA 443 SWB											
1X	L	93	7.0	0.635	21.2	LOS C	6.3	165.5	0.84	0.96	32.1
6X	T	386	7.0	0.635	16.0	LOS B	6.3	165.5	0.84	0.90	35.4
16X	R	113	7.0	0.074	10.9	X	X	X	X	0.65	40.2
Approach		592	7.0	0.635	15.8	LOS B	6.3	165.5	0.68	0.86	35.6
North: LA 3234 SB											
7	L	98	5.0	0.423	21.2	LOS C	3.1	80.4	0.80	0.90	32.1
4	T	242	5.0	0.423	11.8	LOS B	3.1	80.4	0.80	0.80	34.3
14	R	4	5.0	0.005	10.7	LOS B	0.0	0.7	0.58	0.55	36.6
Approach		344	5.0	0.423	14.5	LOS B	3.1	80.4	0.80	0.82	33.6
South West: LA 443 NEB											
5X	L	12	7.0	0.367	18.8	LOS B	2.3	61.1	0.72	0.91	34.0
2X	T	242	7.0	0.367	13.7	LOS B	2.3	61.1	0.72	0.81	36.9
12X	R	29	7.0	0.019	10.7	X	X	X	X	0.63	40.5
Approach		283	7.0	0.367	13.6	LOS B	2.3	61.1	0.64	0.79	37.1
All Vehicles		1632	6.1	0.635	14.5	LOS B	6.3	165.5	0.71	0.83	35.1

X: Not applicable for Continuous movement.

Level of Service (LOS) Method: Delay (HCM 2000).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay per movement
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model used.



LA 3234 @ LA 443 (Morris Rd)

Alternate - C, 2015 PM

MOVEMENT SUMMARY

Site: 3234@443 2015 PM - C

LA 3234 (University Ave) at LA 443 (Morris Rd)
PM Peak - 2015 Alt C

Roundabout

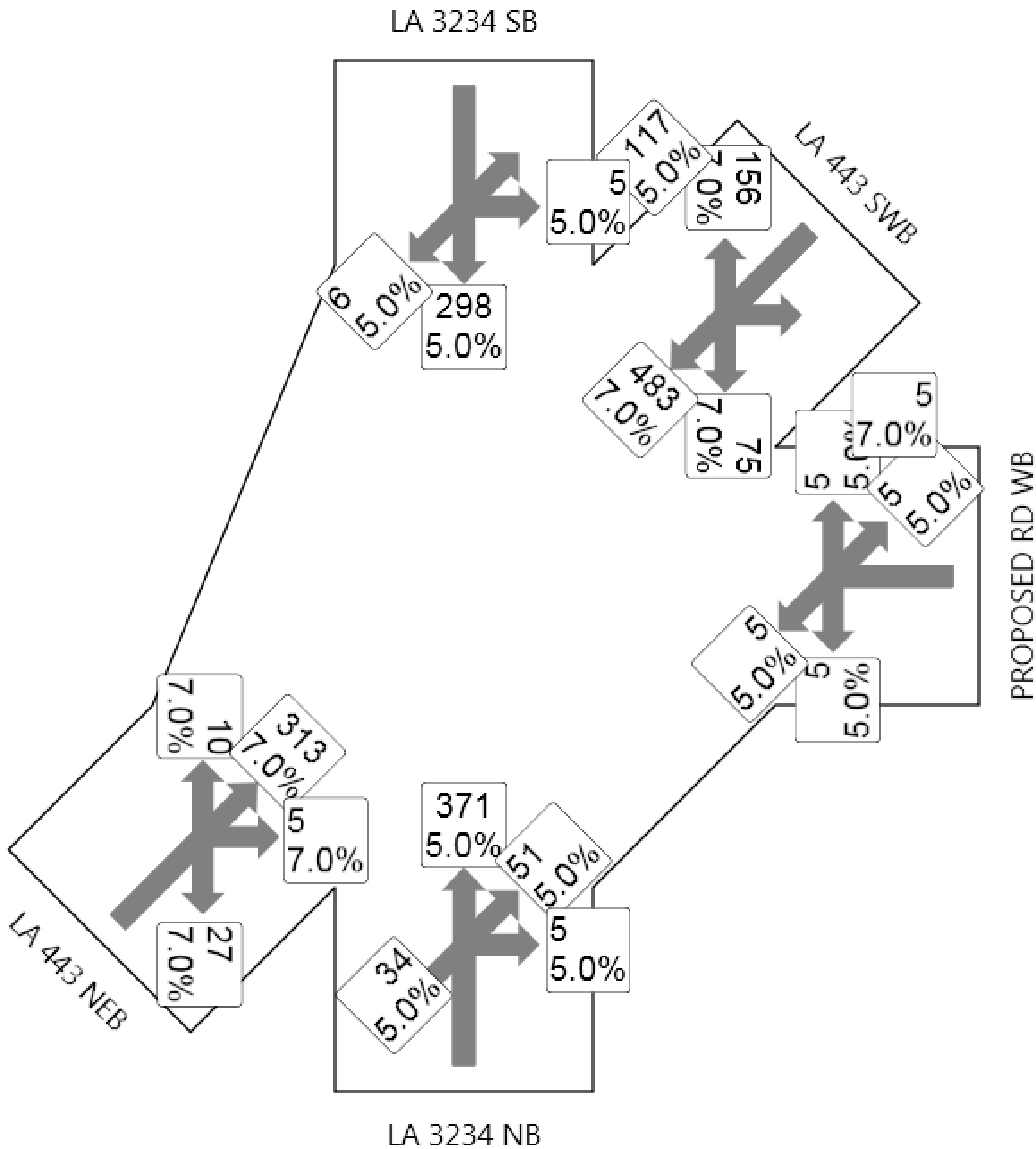
Movement Performance - Vehicles

Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: LA 3234 NB											
3	L	23	5.0	0.532	24.4	LOS C	4.3	112.5	0.83	1.02	30.7
8	T	242	5.0	0.532	14.8	LOS B	4.3	112.5	0.83	0.93	33.6
18	R	86	5.0	0.532	15.4	LOS B	4.3	112.5	0.83	0.94	34.1
Approach		351	5.0	0.532	15.6	LOS B	4.3	112.5	0.83	0.94	33.5
East: PROPOSED RD WB											
1	L	11	5.0	0.046	19.7	LOS B	0.3	6.6	0.77	0.81	26.4
16	R	11	5.0	0.046	14.2	LOS B	0.3	6.6	0.77	0.76	27.8
Approach		22	5.0	0.046	16.9	LOS B	0.3	6.6	0.77	0.79	27.1
North East: LA 443 SWB											
1X	L	79	7.0	0.420	17.6	LOS B	2.9	76.3	0.66	0.85	34.4
6X	T	261	7.0	0.420	12.4	LOS B	2.9	76.3	0.66	0.72	37.0
16X	R	99	7.0	0.064	10.9	X	X	X	X	0.65	40.2
Approach		439	7.0	0.420	13.0	LOS B	2.9	76.3	0.51	0.73	37.2
North: LA 3234 SB											
7	L	113	5.0	0.396	20.1	LOS C	2.8	71.6	0.67	0.86	32.6
4	T	265	5.0	0.396	10.7	LOS B	2.8	71.6	0.67	0.71	35.1
14	R	2	5.0	0.002	10.0	LOS B	0.0	0.3	0.46	0.51	37.3
Approach		380	5.0	0.396	13.5	LOS B	2.8	71.6	0.67	0.76	34.3
South West: LA 443 NEB											
5X	L	3	7.0	0.555	21.4	LOS C	4.6	122.2	0.82	1.00	32.3
2X	T	375	7.0	0.555	16.3	LOS B	4.6	122.2	0.82	0.93	35.4
12X	R	32	7.0	0.020	10.7	X	X	X	X	0.63	40.4
Approach		410	7.0	0.555	15.9	LOS B	4.6	122.2	0.76	0.91	35.8
All Vehicles		1602	6.1	0.555	14.5	LOS B	4.6	122.2	0.69	0.83	35.1

X: Not applicable for Continuous movement.

Level of Service (LOS) Method: Delay (HCM 2000).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay per movement
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model used.

SIDRA INTERSECTION



LA 3234 @ LA 443 (Morris Rd)

Alternate - C, 2035 AM

MOVEMENT SUMMARY

Site: 3234@443 2035 AM - C

LA 3234 (University Ave) at LA 443 (Morris Rd)
AM Peak - 2035 Alt C

Roundabout

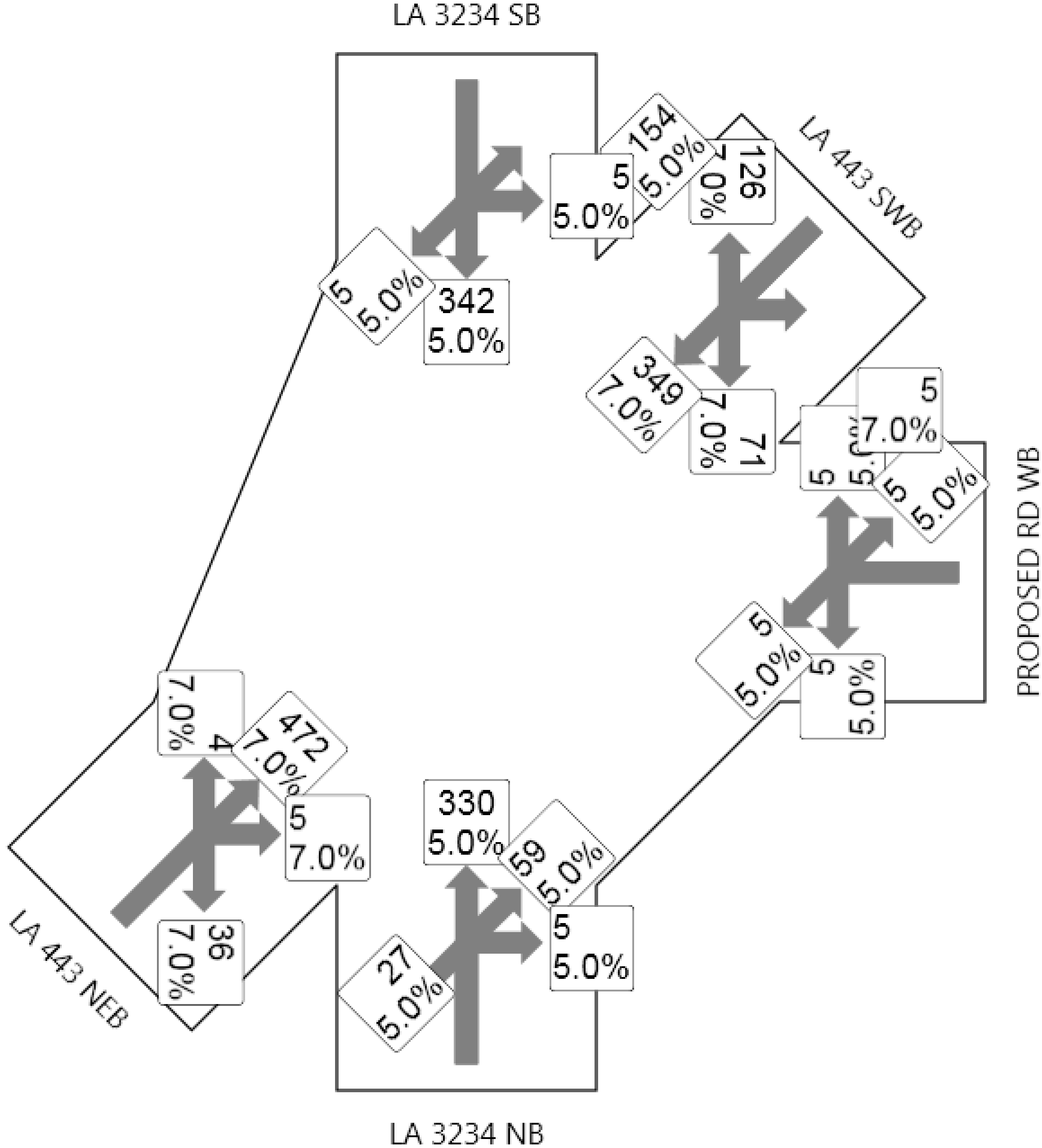
Movement Performance - Vehicles

Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: LA 3234 NB											
3	L	38	5.0	0.684	26.5	LOS C	7.6	197.6	0.92	1.06	29.7
8	T	412	5.0	0.684	16.9	LOS B	7.6	197.6	0.92	1.03	32.1
18	R	62	5.0	0.684	17.5	LOS B	7.6	197.6	0.92	1.03	32.5
Approach		512	5.0	0.684	17.7	LOS B	7.6	197.6	0.92	1.03	31.9
East: PROPOSED RD WB											
1	L	11	5.0	0.052	21.6	LOS C	0.3	8.5	0.87	0.82	25.6
16	R	11	5.0	0.052	16.1	LOS B	0.3	8.5	0.87	0.79	26.9
Approach		22	5.0	0.052	18.9	LOS B	0.3	8.5	0.87	0.81	26.2
North East: LA 443 SWB											
1X	L	89	7.0	0.856	30.7	LOS C	14.5	382.7	1.00	1.19	27.0
6X	T	537	7.0	0.856	25.5	LOS C	14.5	382.7	1.00	1.19	29.2
16X	R	173	7.0	0.113	10.9	X	X	X	X	0.65	40.2
Approach		799	7.0	0.856	22.9	LOS C	14.5	382.7	0.78	1.07	30.7
North: LA 3234 SB											
7	L	136	5.0	0.642	26.3	LOS C	7.3	189.3	1.00	1.04	29.4
4	T	331	5.0	0.642	16.9	LOS B	7.3	189.3	1.00	1.04	31.7
14	R	7	5.0	0.008	11.4	LOS B	0.1	1.4	0.71	0.58	35.9
Approach		473	5.0	0.642	19.5	LOS B	7.3	189.3	1.00	1.04	31.0
South West: LA 443 NEB											
5X	L	11	7.0	0.541	21.6	LOS C	4.7	123.3	0.88	1.00	32.3
2X	T	348	7.0	0.541	16.4	LOS B	4.7	123.3	0.88	0.96	35.3
12X	R	36	7.0	0.023	10.7	X	X	X	X	0.63	40.4
Approach		394	7.0	0.541	16.0	LOS B	4.7	123.3	0.80	0.93	35.6
All Vehicles		2201	6.1	0.856	19.7	LOS B	14.5	382.7	0.87	1.03	31.8

X: Not applicable for Continuous movement.

Level of Service (LOS) Method: Delay (HCM 2000).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay per movement
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model used.

SIDRA INTERSECTION



LA 3234 @ LA 443 (Morris Rd)

Alternate - C, 2035 PM

MOVEMENT SUMMARY

Site: 3234@443 2035 PM - C

LA 3234 (University Ave) at LA 443 (Morris Rd)
PM Peak - 2035 Alt C

Roundabout

Movement Performance - Vehicles

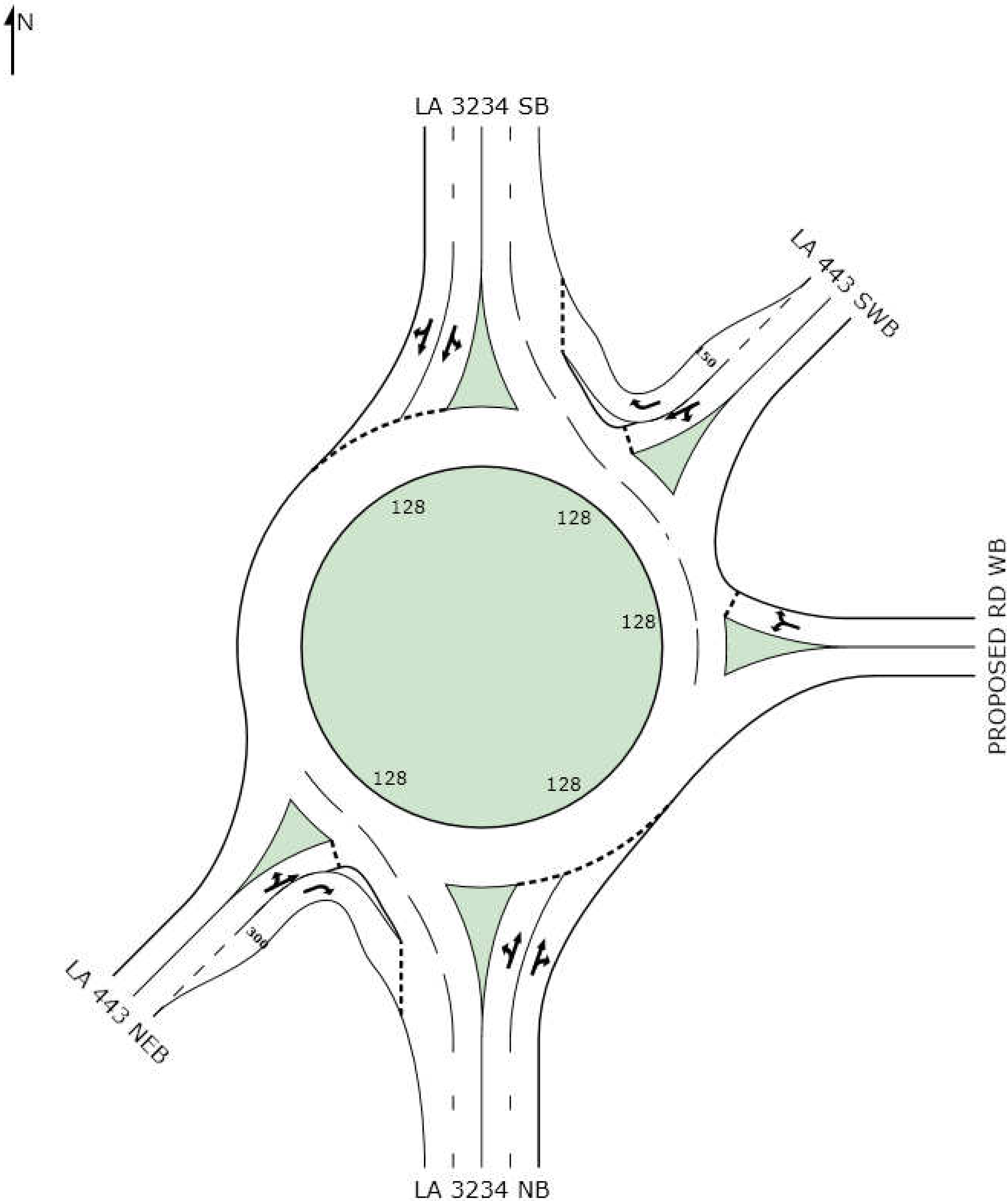
Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: LA 3234 NB											
3	L	29	5.0	0.796	36.4	LOS D	10.8	279.9	1.00	1.22	25.4
8	T	359	5.0	0.796	26.8	LOS C	10.8	279.9	1.00	1.22	26.5
18	R	70	5.0	0.796	27.4	LOS C	10.8	279.9	1.00	1.22	27.0
Approach		458	5.0	0.796	27.5	LOS C	10.8	279.9	1.00	1.22	26.5
East: PROPOSED RD WB											
1	L	11	5.0	0.063	25.6	LOS C	0.4	10.8	0.92	0.86	24.1
16	R	11	5.0	0.063	20.1	LOS C	0.4	10.8	0.92	0.84	25.1
Approach		22	5.0	0.063	22.8	LOS C	0.4	10.8	0.92	0.85	24.6
North East: LA 443 SWB											
1X	L	83	7.0	0.590	20.2	LOS C	5.6	147.0	0.85	0.94	32.8
6X	T	379	7.0	0.590	15.0	LOS B	5.6	147.0	0.85	0.89	35.9
16X	R	137	7.0	0.089	10.9	X	X	X	X	0.65	40.2
Approach		599	7.0	0.590	14.8	LOS B	5.6	147.0	0.65	0.84	36.3
North: LA 3234 SB											
7	L	173	5.0	0.586	22.5	LOS C	5.9	152.5	0.88	0.94	31.4
4	T	372	5.0	0.586	13.1	LOS B	5.9	152.5	0.88	0.88	33.8
14	R	5	5.0	0.005	10.4	LOS B	0.0	0.8	0.57	0.54	36.7
Approach		550	5.0	0.586	16.0	LOS B	5.9	152.5	0.87	0.90	33.0
South West: LA 443 NEB											
5X	L	4	7.0	0.839	34.3	LOS C	12.8	336.6	1.00	1.24	25.7
2X	T	513	7.0	0.839	29.1	LOS C	12.8	336.6	1.00	1.24	27.5
12X	R	45	7.0	0.029	10.8	X	X	X	X	0.64	40.4
Approach		562	7.0	0.839	27.7	LOS C	12.8	336.6	0.92	1.20	28.2
All Vehicles		2190	6.1	0.839	21.1	LOS C	12.8	336.6	0.85	1.03	30.8

X: Not applicable for Continuous movement.

Level of Service (LOS) Method: Delay (HCM 2000).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay per movement
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model used.

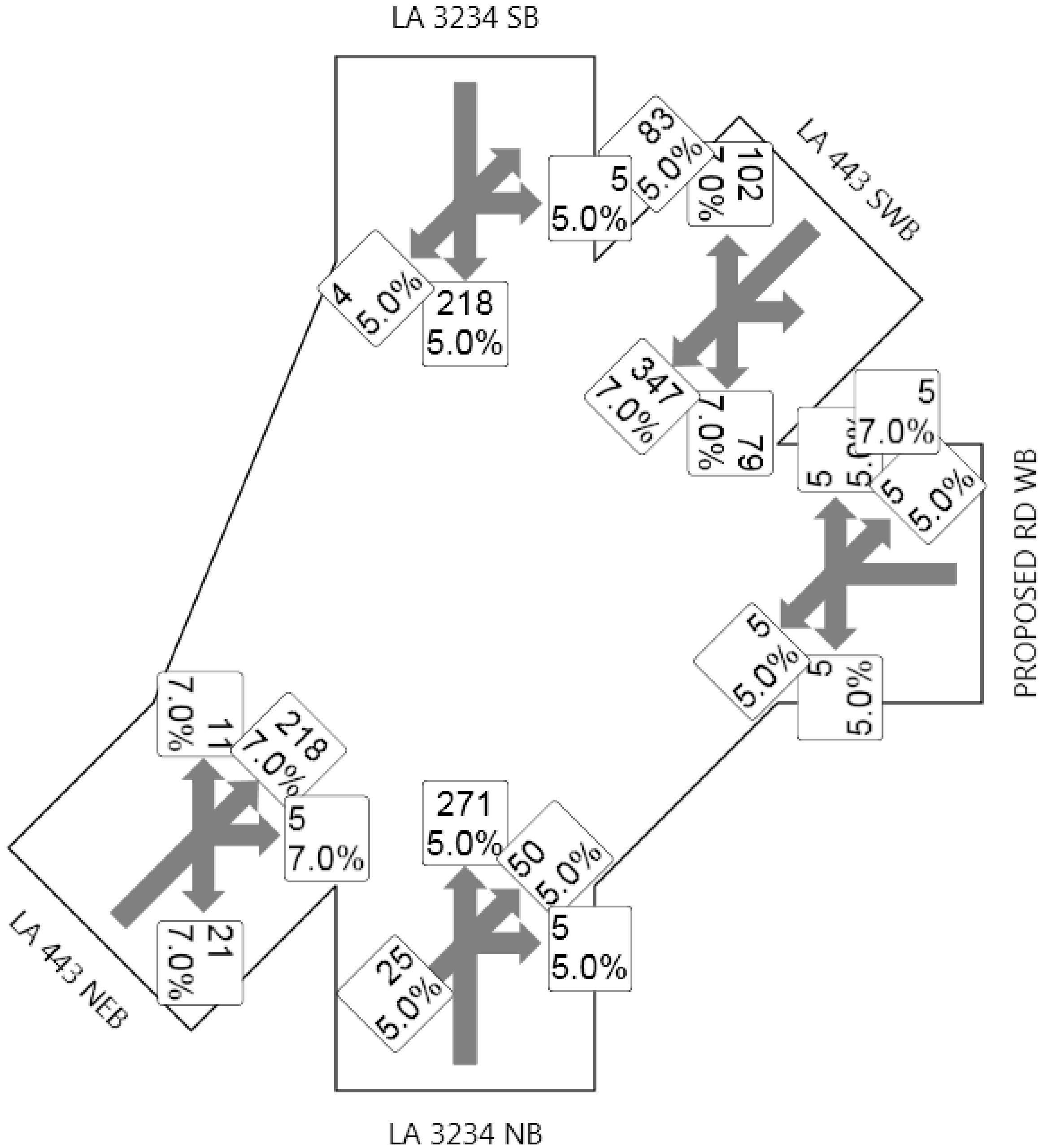
INTERSECTION LA 3234 at LA 443 (Morris Rd)

Multi-lane Roundabout Analysis



LA 3234 @ LA 443 (Morris Rd)

Alternate - C, Multi-Lane Roundabout



LA 3234 @ LA 443 (Morris Rd)

Alternate - C, 2015 AM

MOVEMENT SUMMARY

Site: 3234@443 2015 AM -C-DOUBLE

LA 3234 (University Ave) at LA 443 (Morris Rd)
AM Peak - 2015 Alt C

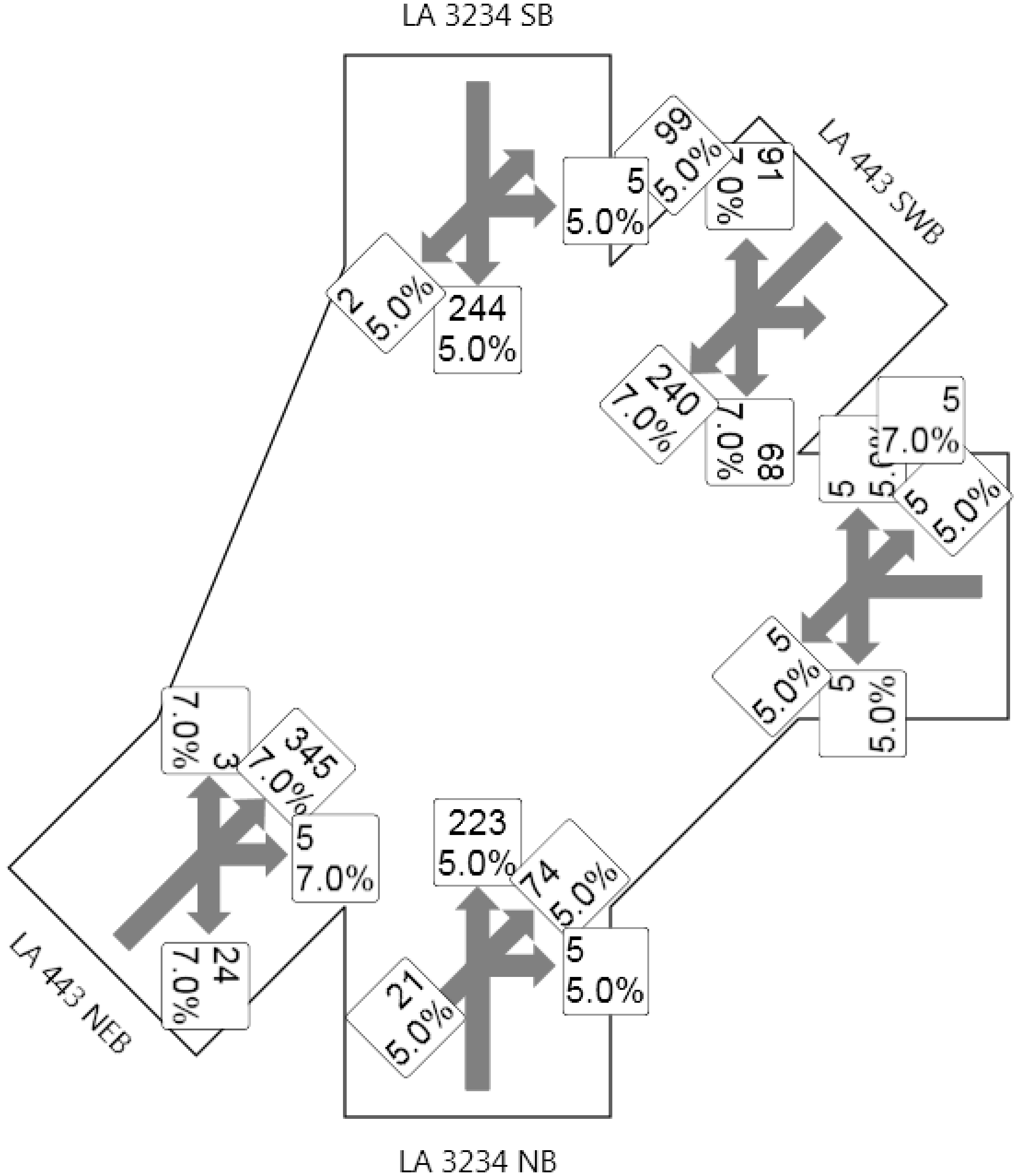
Roundabout

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: LA 3234 NB											
3	L	28	5.0	0.198	20.7	LOS C	1.1	29.4	0.56	0.88	32.9
8	T	301	5.0	0.198	9.7	LOS A	1.2	30.3	0.56	0.64	36.3
18	R	61	5.0	0.198	10.1	LOS B	1.2	30.3	0.55	0.65	36.8
Approach		390	5.0	0.198	10.5	LOS B	1.2	30.3	0.56	0.66	36.1
East: PROPOSED RD WB											
1	L	11	5.0	0.036	16.2	LOS B	0.1	3.8	0.58	0.80	28.2
16	R	11	5.0	0.036	9.8	LOS A	0.1	3.8	0.58	0.68	30.3
Approach		22	5.0	0.036	13.0	LOS B	0.1	3.8	0.58	0.74	29.2
North East: LA 443 SWB											
1X	L	93	7.0	0.503	17.5	LOS B	3.1	81.8	0.61	0.90	34.9
6X	T	386	7.0	0.503	11.4	LOS B	3.1	81.8	0.61	0.71	37.7
16X	R	113	7.0	0.116	11.0	LOS B	0.5	13.1	0.43	0.66	37.5
Approach		592	7.0	0.503	12.3	LOS B	3.1	81.8	0.57	0.73	37.2
North: LA 3234 SB											
7	L	98	5.0	0.208	21.7	LOS C	1.3	32.8	0.69	0.86	31.7
4	T	242	5.0	0.208	10.7	LOS B	1.3	34.5	0.68	0.72	35.5
14	R	4	5.0	0.208	11.1	LOS B	1.3	34.5	0.68	0.72	36.3
Approach		344	5.0	0.208	13.8	LOS B	1.3	34.5	0.69	0.76	34.2
South West: LA 443 NEB											
5X	L	12	7.0	0.283	17.0	LOS B	1.4	35.9	0.54	0.91	35.3
2X	T	242	7.0	0.283	11.1	LOS B	1.4	35.9	0.54	0.68	38.3
12X	R	29	7.0	0.030	10.5	LOS B	0.1	3.3	0.42	0.61	37.5
Approach		283	7.0	0.283	11.3	LOS B	1.4	35.9	0.53	0.68	38.1
All Vehicles		1632	6.1	0.503	12.0	LOS B	3.1	81.8	0.59	0.71	36.3

Level of Service (LOS) Method: Delay (HCM 2000).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay per movement
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model used.

SIDRA INTERSECTION



LA 3234 @ LA 443 (Morris Rd)

Alternate - C, 2015 PM

MOVEMENT SUMMARY

Site: 3234@443 2015 PM -C-DOUBLE

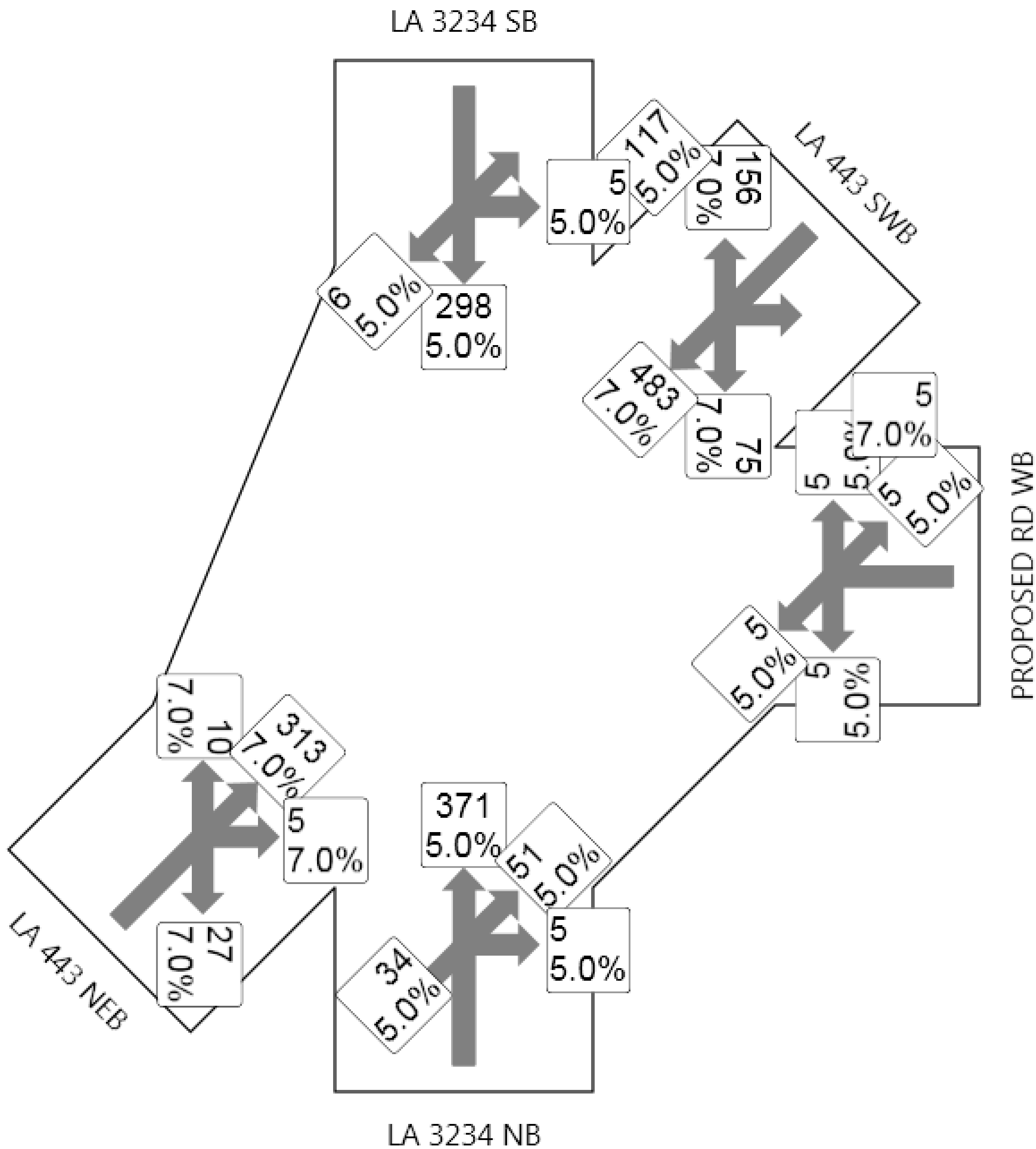
LA 3234 (University Ave) at LA 443 (Morris Rd)
PM Peak - 2015 Alt C

Roundabout

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: LA 3234 NB											
3	L	23	5.0	0.205	21.8	LOS C	1.2	31.6	0.67	0.90	32.3
8	T	242	5.0	0.205	10.7	LOS B	1.3	33.1	0.66	0.71	35.7
18	R	86	5.0	0.205	11.1	LOS B	1.3	33.1	0.66	0.71	36.3
Approach		351	5.0	0.205	11.5	LOS B	1.3	33.1	0.66	0.73	35.6
East: PROPOSED RD WB											
1	L	11	5.0	0.039	17.2	LOS B	0.2	4.3	0.63	0.82	27.7
16	R	11	5.0	0.039	10.8	LOS B	0.2	4.3	0.63	0.71	29.8
Approach		22	5.0	0.039	14.0	LOS B	0.2	4.3	0.63	0.77	28.7
North East: LA 443 SWB											
1X	L	79	7.0	0.344	16.5	LOS B	1.8	48.5	0.50	0.85	35.1
6X	T	261	7.0	0.344	10.5	LOS B	1.8	48.5	0.50	0.64	38.4
16X	R	99	7.0	0.103	10.8	LOS B	0.4	11.4	0.39	0.63	37.7
Approach		439	7.0	0.344	11.7	LOS B	1.8	48.5	0.48	0.67	37.6
North: LA 3234 SB											
7	L	113	5.0	0.196	20.5	LOS C	1.1	29.5	0.58	0.82	32.3
4	T	265	5.0	0.196	9.6	LOS A	1.2	30.5	0.57	0.64	36.2
14	R	2	5.0	0.196	10.1	LOS B	1.2	30.5	0.57	0.65	37.1
Approach		380	5.0	0.196	12.9	LOS B	1.2	30.5	0.57	0.69	34.8
South West: LA 443 NEB											
5X	L	3	7.0	0.423	17.4	LOS B	2.3	59.5	0.60	0.94	35.1
2X	T	375	7.0	0.423	11.5	LOS B	2.3	59.5	0.60	0.71	37.9
12X	R	32	7.0	0.033	10.5	LOS B	0.1	3.6	0.42	0.61	37.5
Approach		410	7.0	0.423	11.5	LOS B	2.3	59.5	0.59	0.70	37.9
All Vehicles		1602	6.1	0.423	11.9	LOS B	2.3	59.5	0.57	0.70	36.4

Level of Service (LOS) Method: Delay (HCM 2000).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay per movement
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model used.



LA 3234 @ LA 443 (Morris Rd)

Alternate - C, 2035 AM

MOVEMENT SUMMARY

Site: 3234@443 2035 AM -C-DOUBLE

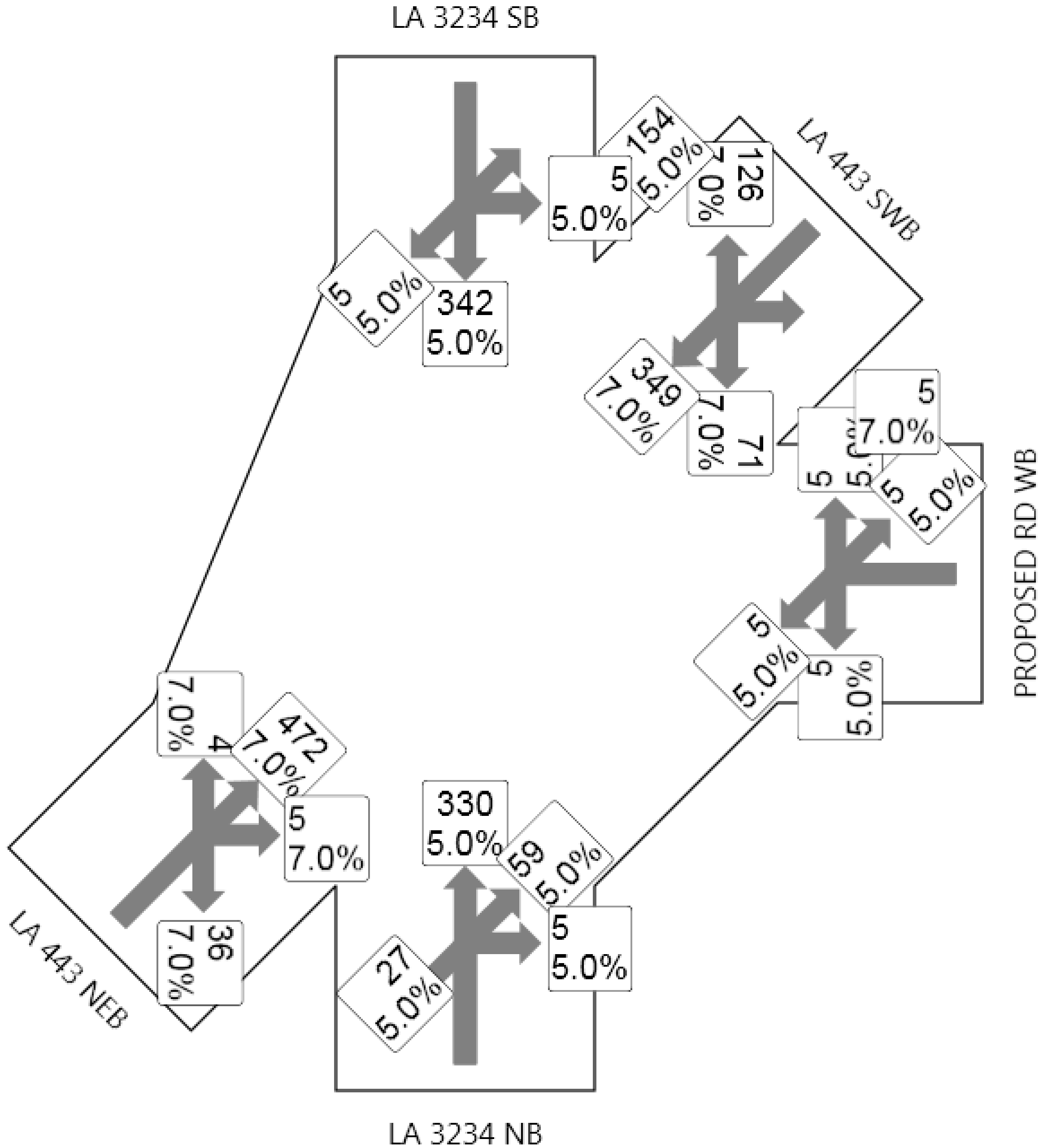
LA 3234 (University Ave) at LA 443 (Morris Rd)
AM Peak - 2035 Alt C

Roundabout

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: LA 3234 NB											
3	L	38	5.0	0.273	21.8	LOS C	1.7	44.6	0.69	0.90	32.3
8	T	412	5.0	0.273	10.6	LOS B	1.8	47.9	0.68	0.72	35.6
18	R	62	5.0	0.273	10.8	LOS B	1.8	47.9	0.68	0.71	36.1
Approach		512	5.0	0.273	11.4	LOS B	1.8	47.9	0.68	0.73	35.3
East: PROPOSED RD WB											
1	L	11	5.0	0.039	17.4	LOS B	0.2	4.6	0.68	0.83	27.7
16	R	11	5.0	0.039	11.0	LOS B	0.2	4.6	0.68	0.73	29.6
Approach		22	5.0	0.039	14.2	LOS B	0.2	4.6	0.68	0.78	28.6
North East: LA 443 SWB											
1X	L	89	7.0	0.634	18.5	LOS B	5.0	131.2	0.73	0.98	34.2
6X	T	537	7.0	0.634	12.6	LOS B	5.0	131.2	0.73	0.81	37.0
16X	R	173	7.0	0.171	11.2	LOS B	0.8	20.7	0.50	0.69	37.1
Approach		799	7.0	0.634	12.9	LOS B	5.0	131.2	0.68	0.81	36.7
North: LA 3234 SB											
7	L	136	5.0	0.318	23.3	LOS C	2.2	56.8	0.83	0.91	30.9
4	T	331	5.0	0.318	11.8	LOS B	2.4	63.1	0.84	0.80	34.6
14	R	7	5.0	0.318	12.1	LOS B	2.4	63.1	0.84	0.79	35.4
Approach		473	5.0	0.318	15.1	LOS B	2.4	63.1	0.84	0.83	33.3
South West: LA 443 NEB											
5X	L	11	7.0	0.387	17.2	LOS B	2.1	55.7	0.64	0.94	35.3
2X	T	348	7.0	0.387	11.3	LOS B	2.1	55.7	0.64	0.69	37.7
12X	R	36	7.0	0.035	10.6	LOS B	0.2	4.2	0.47	0.63	37.2
Approach		394	7.0	0.387	11.4	LOS B	2.1	55.7	0.63	0.69	37.5
All Vehicles		2201	6.1	0.634	12.8	LOS B	5.0	131.2	0.70	0.77	35.6

Level of Service (LOS) Method: Delay (HCM 2000).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay per movement
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model used.



LA 3234 @ LA 443 (Morris Rd)

Alternate - C, 2035 PM

MOVEMENT SUMMARY

Site: 3234@443 2035 PM -C-DOUBLE

LA 3234 (University Ave) at LA 443 (Morris Rd)
PM Peak - 2035 Alt C

Roundabout

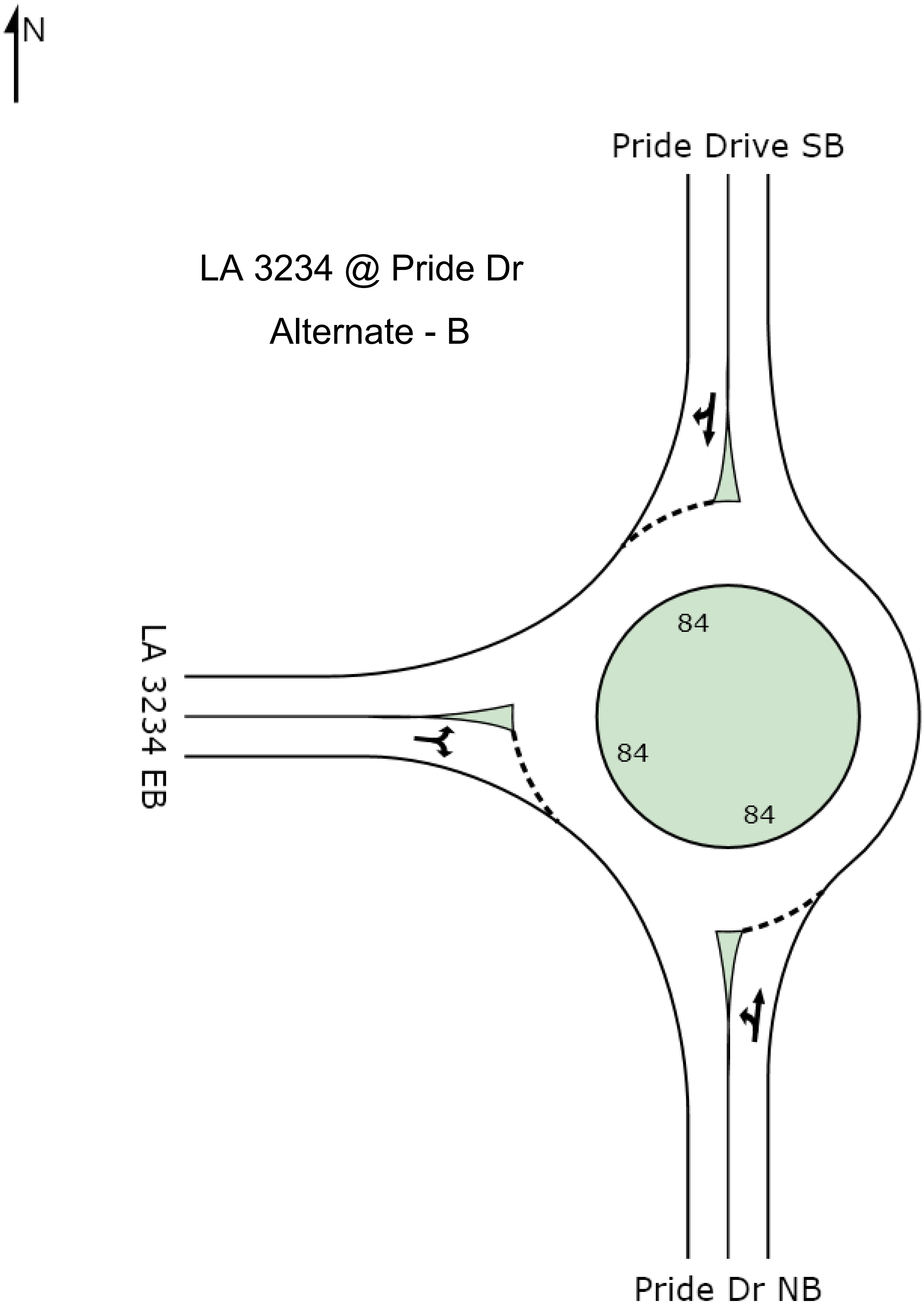
Movement Performance - Vehicles

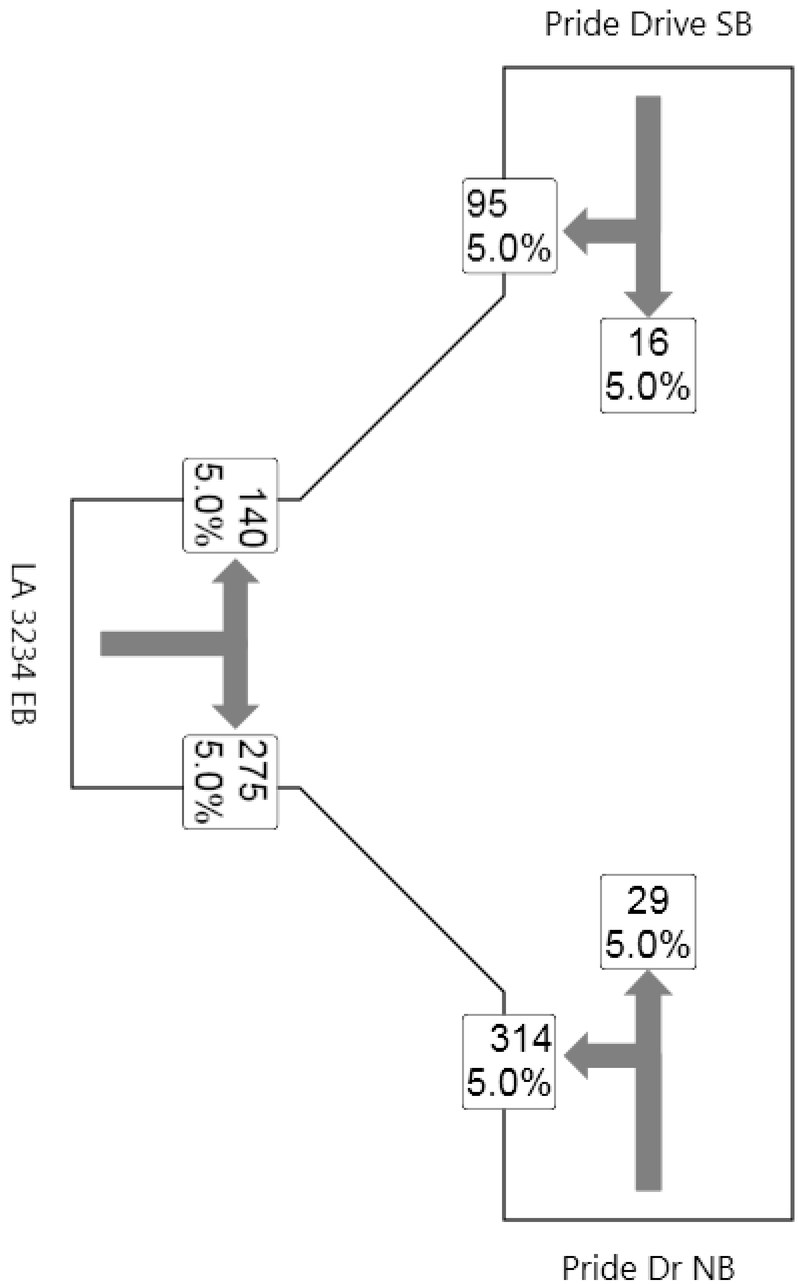
Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: LA 3234 NB											
3	L	29	5.0	0.306	23.7	LOS C	2.1	53.4	0.82	0.94	31.3
8	T	359	5.0	0.306	12.3	LOS B	2.3	59.2	0.83	0.83	34.7
18	R	70	5.0	0.306	12.4	LOS B	2.3	59.2	0.83	0.81	35.3
Approach		458	5.0	0.306	13.1	LOS B	2.3	59.2	0.83	0.83	34.5
East: PROPOSED RD WB											
1	L	11	5.0	0.045	19.4	LOS B	0.2	5.8	0.75	0.85	26.7
16	R	11	5.0	0.045	13.0	LOS B	0.2	5.8	0.75	0.78	28.5
Approach		22	5.0	0.045	16.2	LOS B	0.2	5.8	0.75	0.81	27.5
North East: LA 443 SWB											
1X	L	83	7.0	0.457	16.9	LOS B	2.7	71.9	0.62	0.90	35.1
6X	T	379	7.0	0.457	10.9	LOS B	2.7	71.9	0.62	0.67	37.6
16X	R	137	7.0	0.133	11.0	LOS B	0.6	16.3	0.47	0.67	37.3
Approach		599	7.0	0.457	11.7	LOS B	2.7	71.9	0.58	0.70	37.2
North: LA 3234 SB											
7	L	173	5.0	0.297	21.7	LOS C	1.9	50.2	0.71	0.86	31.7
4	T	372	5.0	0.297	10.4	LOS B	2.1	54.1	0.70	0.71	35.4
14	R	5	5.0	0.297	10.8	LOS B	2.1	54.1	0.70	0.70	36.2
Approach		550	5.0	0.297	13.9	LOS B	2.1	54.1	0.71	0.75	34.0
South West: LA 443 NEB											
5X	L	4	7.0	0.572	18.8	LOS B	4.0	106.1	0.74	1.03	34.3
2X	T	513	7.0	0.572	12.9	LOS B	4.0	106.1	0.74	0.83	37.1
12X	R	45	7.0	0.045	10.9	LOS B	0.2	5.3	0.48	0.64	37.1
Approach		562	7.0	0.572	12.8	LOS B	4.0	106.1	0.72	0.82	37.1
All Vehicles		2190	6.1	0.572	12.9	LOS B	4.0	106.1	0.70	0.77	35.6

Level of Service (LOS) Method: Delay (HCM 2000).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay per movement
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model used.

SIDRA INTERSECTION

LA 3234 at Pride Dr


N
Pride Drive SB
LA 3234 @ Pride Dr
Alternate - B
84
84
84
LA 3234 EB
Pride Dr NB



LA 3234 @ Pride Dr

Alternate - B, 2015 AM

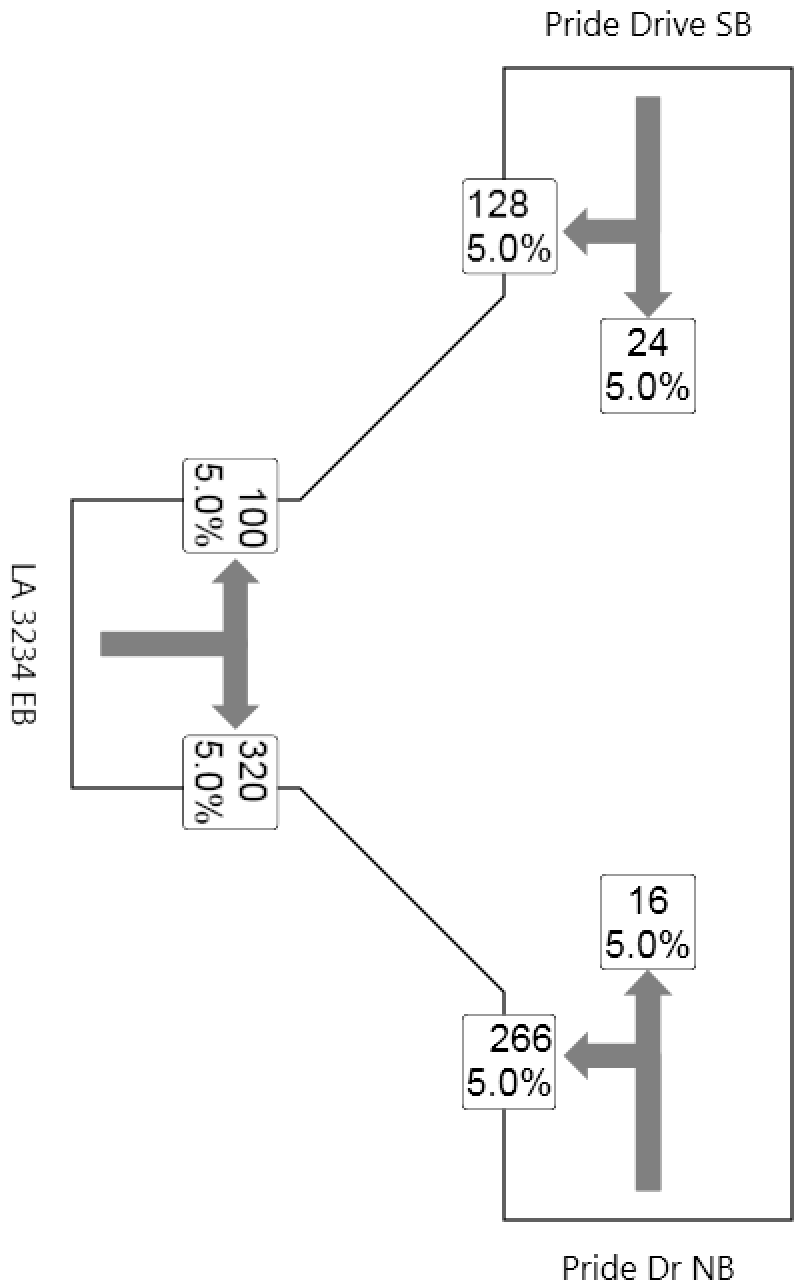
MOVEMENT SUMMARY

LA 3234 at PRIDE DR
AM Peak - 2015 Alt B
Roundabout

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: Pride Dr NB											
3	L	334	5.0	0.362	13.6	LOS B	2.3	59.0	0.43	0.70	28.9
8	T	31	5.0	0.362	6.3	LOS A	2.3	59.0	0.43	0.48	31.2
Approach		365	5.0	0.362	13.0	LOS B	2.3	59.0	0.43	0.68	29.1
North: Pride Drive SB											
4	T	17	5.0	0.152	7.4	LOS A	0.8	21.1	0.55	0.60	29.2
14	R	101	5.0	0.152	8.6	LOS A	0.8	21.1	0.55	0.66	29.0
Approach		118	5.0	0.152	8.5	LOS A	0.8	21.1	0.55	0.65	29.0
West: LA 3234 EB											
5	L	149	5.0	0.319	11.4	LOS B	2.3	58.8	0.13	0.73	29.5
12	R	293	5.0	0.319	7.0	LOS A	2.3	58.8	0.13	0.49	32.8
Approach		441	5.0	0.319	8.4	LOS A	2.3	58.8	0.13	0.57	31.6
All Vehicles		924	5.0	0.362	10.2	LOS B	2.3	59.0	0.30	0.63	30.2

Level of Service (LOS) Method: Delay (HCM 2000).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay per movement
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model used.



LA 3234 @ Pride Dr

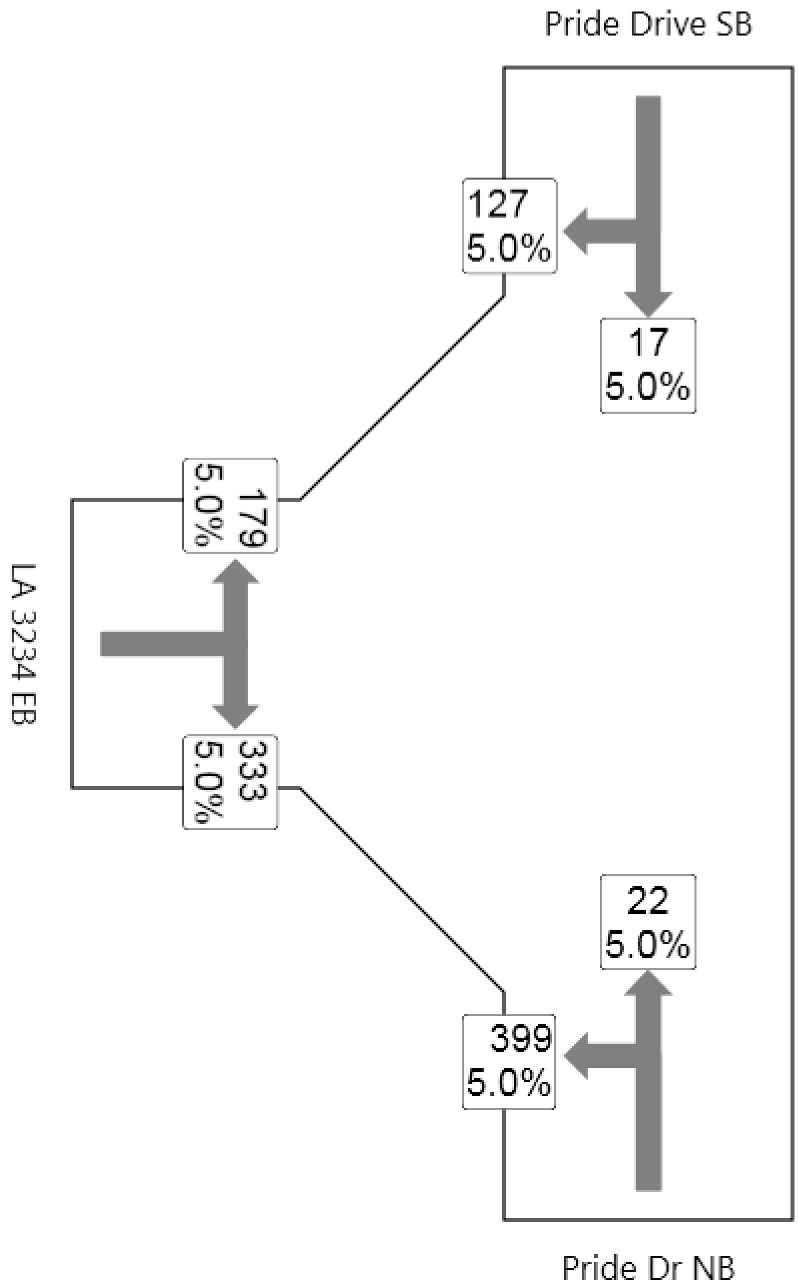
Alternate - B, 2015 PM

MOVEMENT SUMMARY

LA 3234 at PRIDE DR
PM Peak - 2015 Alt B
Roundabout

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: Pride Dr NB											
3	L	296	5.0	0.296	13.2	LOS B	1.8	46.0	0.35	0.68	29.1
8	T	18	5.0	0.296	5.9	LOS A	1.8	46.0	0.35	0.43	31.7
Approach		313	5.0	0.296	12.8	LOS B	1.8	46.0	0.35	0.66	29.2
North: Pride Drive SB											
4	T	27	5.0	0.208	7.2	LOS A	1.1	29.5	0.54	0.59	29.2
14	R	142	5.0	0.208	8.5	LOS A	1.1	29.5	0.54	0.65	29.1
Approach		169	5.0	0.208	8.3	LOS A	1.1	29.5	0.54	0.64	29.1
West: LA 3234 EB											
5	L	111	5.0	0.350	11.4	LOS B	2.6	66.4	0.18	0.73	29.4
12	R	356	5.0	0.350	7.0	LOS A	2.6	66.4	0.18	0.49	32.6
Approach		467	5.0	0.350	8.1	LOS A	2.6	66.4	0.18	0.55	31.8
All Vehicles		949	5.0	0.350	9.7	LOS A	2.6	66.4	0.30	0.60	30.4

Level of Service (LOS) Method: Delay (HCM 2000).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay per movement
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model used.



LA 3234 @ Pride Dr

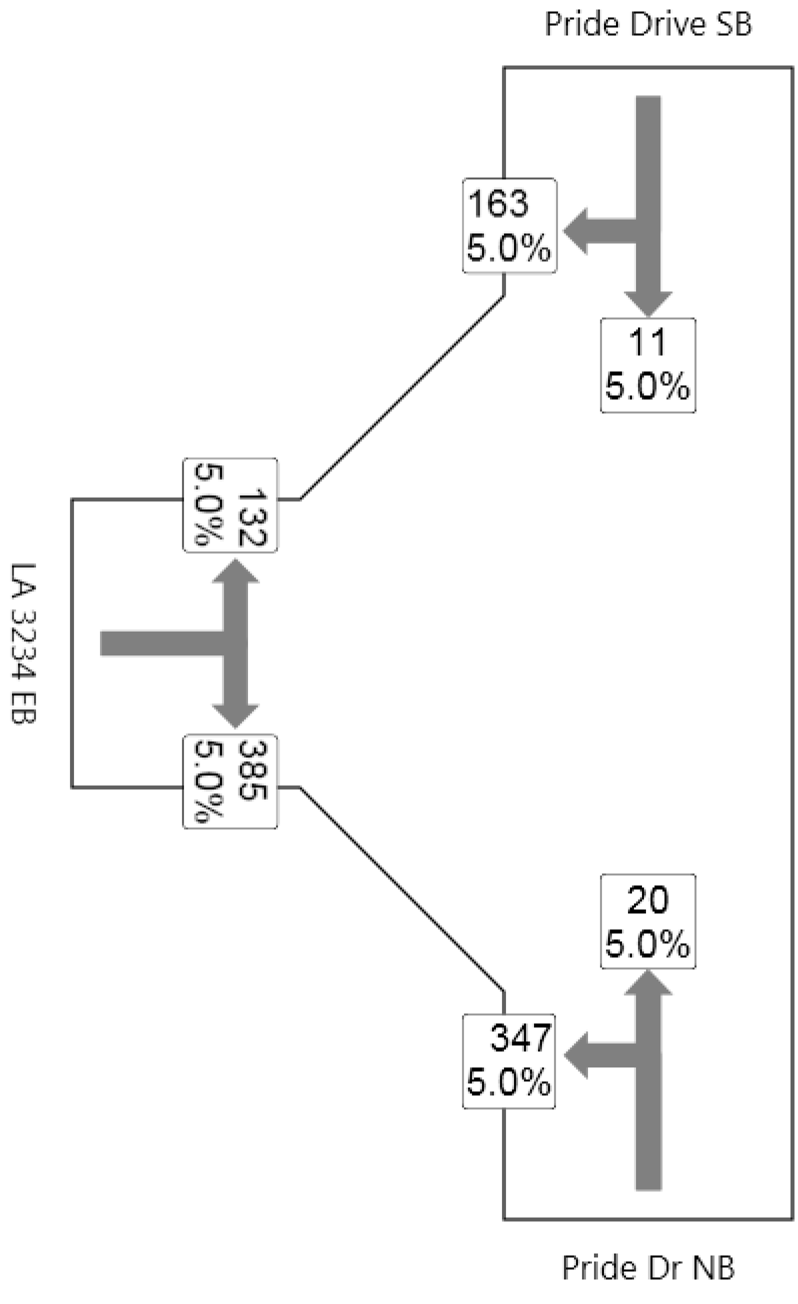
Alternate - B, 2035 AM

MOVEMENT SUMMARY

LA 3234 at PRIDE DR
AM Peak - 2035 Alt B
Roundabout

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: Pride Dr NB											
3	L	424	5.0	0.421	13.9	LOS B	2.8	73.2	0.50	0.71	28.7
8	T	23	5.0	0.421	6.6	LOS A	2.8	73.2	0.50	0.52	30.8
Approach		448	5.0	0.421	13.5	LOS B	2.8	73.2	0.50	0.70	28.8
North: Pride Drive SB											
4	T	18	5.0	0.192	7.8	LOS A	1.1	28.6	0.62	0.65	28.9
14	R	135	5.0	0.192	9.0	LOS A	1.1	28.6	0.62	0.70	28.8
Approach		153	5.0	0.192	8.9	LOS A	1.1	28.6	0.62	0.69	28.8
West: LA 3234 EB											
5	L	190	5.0	0.370	11.4	LOS B	2.9	74.4	0.14	0.73	29.5
12	R	354	5.0	0.370	7.0	LOS A	2.9	74.4	0.14	0.49	32.8
Approach		545	5.0	0.370	8.5	LOS A	2.9	74.4	0.14	0.57	31.5
All Vehicles		1146	5.0	0.421	10.5	LOS B	2.9	74.4	0.34	0.64	30.0

Level of Service (LOS) Method: Delay (HCM 2000).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay per movement
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model used.



LA 3234 @ Pride Dr

Alternate - B, 2035 PM

MOVEMENT SUMMARY

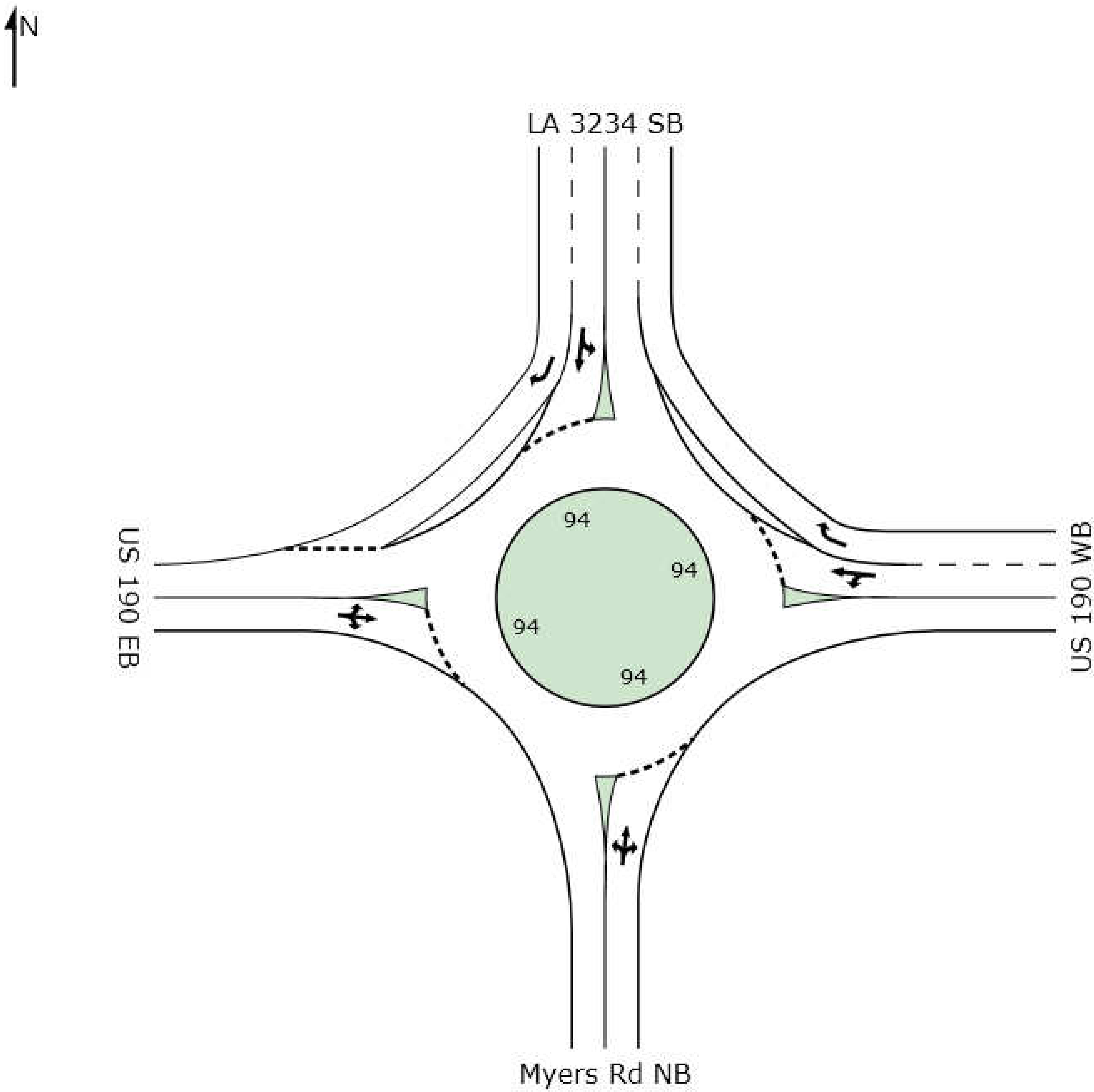
LA 3234 at PRIDE DR
PM Peak - 2035 Alt B
Roundabout

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: Pride Dr NB											
3	L	386	5.0	0.363	13.4	LOS B	2.3	60.0	0.41	0.69	28.9
8	T	22	5.0	0.363	6.1	LOS A	2.3	60.0	0.41	0.46	31.3
Approach		408	5.0	0.363	13.0	LOS B	2.3	60.0	0.41	0.68	29.0
North: Pride Drive SB											
4	T	12	5.0	0.232	7.6	LOS A	1.3	34.7	0.60	0.64	28.9
14	R	181	5.0	0.232	8.8	LOS A	1.3	34.7	0.60	0.69	28.8
Approach		193	5.0	0.232	8.7	LOS A	1.3	34.7	0.60	0.69	28.8
West: LA 3234 EB											
5	L	147	5.0	0.379	11.3	LOS B	3.0	77.4	0.11	0.75	29.5
12	R	428	5.0	0.379	6.9	LOS A	3.0	77.4	0.11	0.50	32.9
Approach		574	5.0	0.379	8.0	LOS A	3.0	77.4	0.11	0.56	32.0
All Vehicles		1176	5.0	0.379	9.9	LOS A	3.0	77.4	0.30	0.62	30.3

Level of Service (LOS) Method: Delay (HCM 2000).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay per movement
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model used.

INTERSECTION LA 3234 at US 190

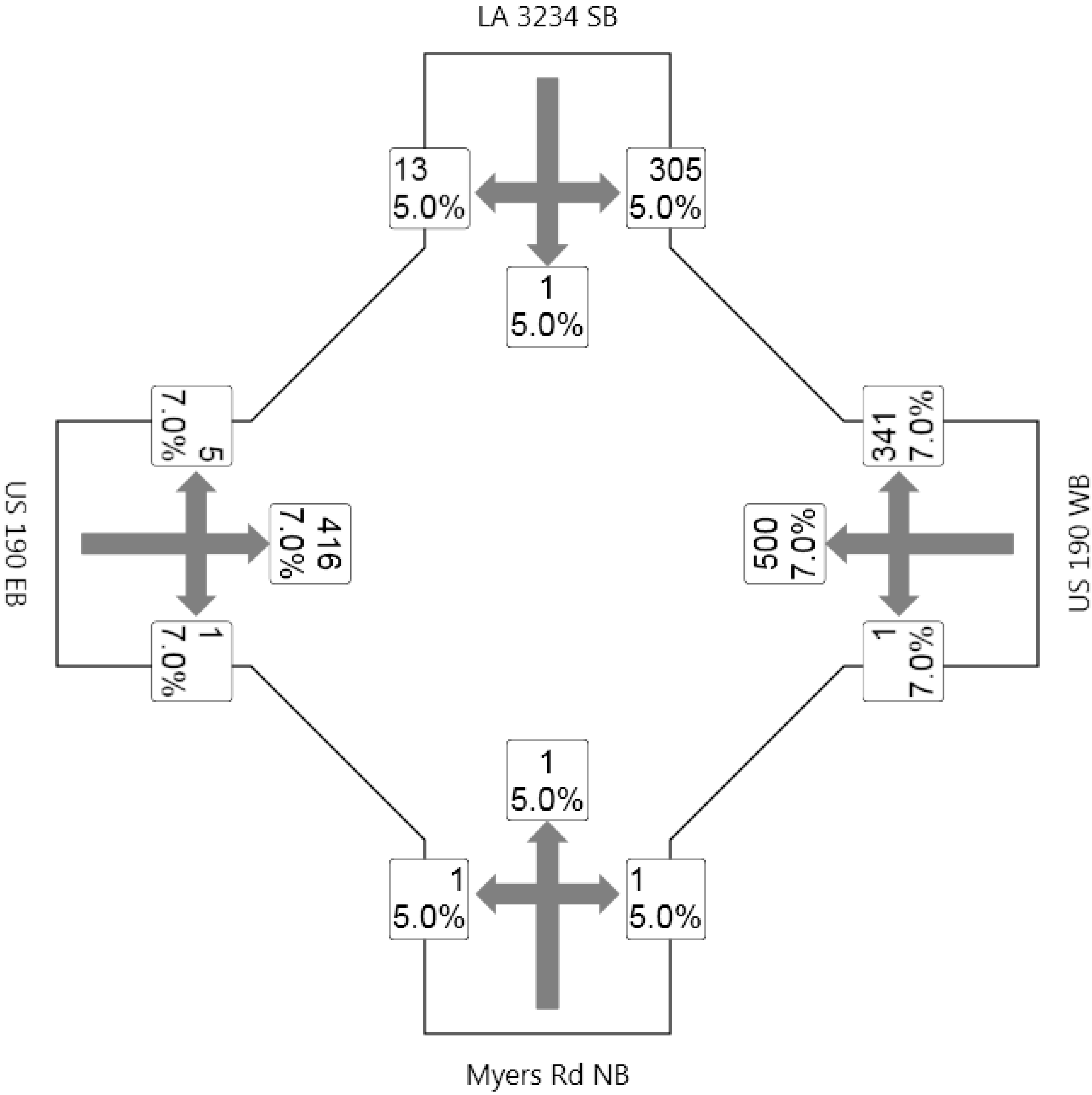
Single Lane Roundabout Analysis



LA 3234 @ US 190

Alternate - C

Single lane Roundabout



LA 3234 @ US 190

Alternate - C, 2015 AM

MOVEMENT SUMMARY

Site: 3234@190 2015 AM-C

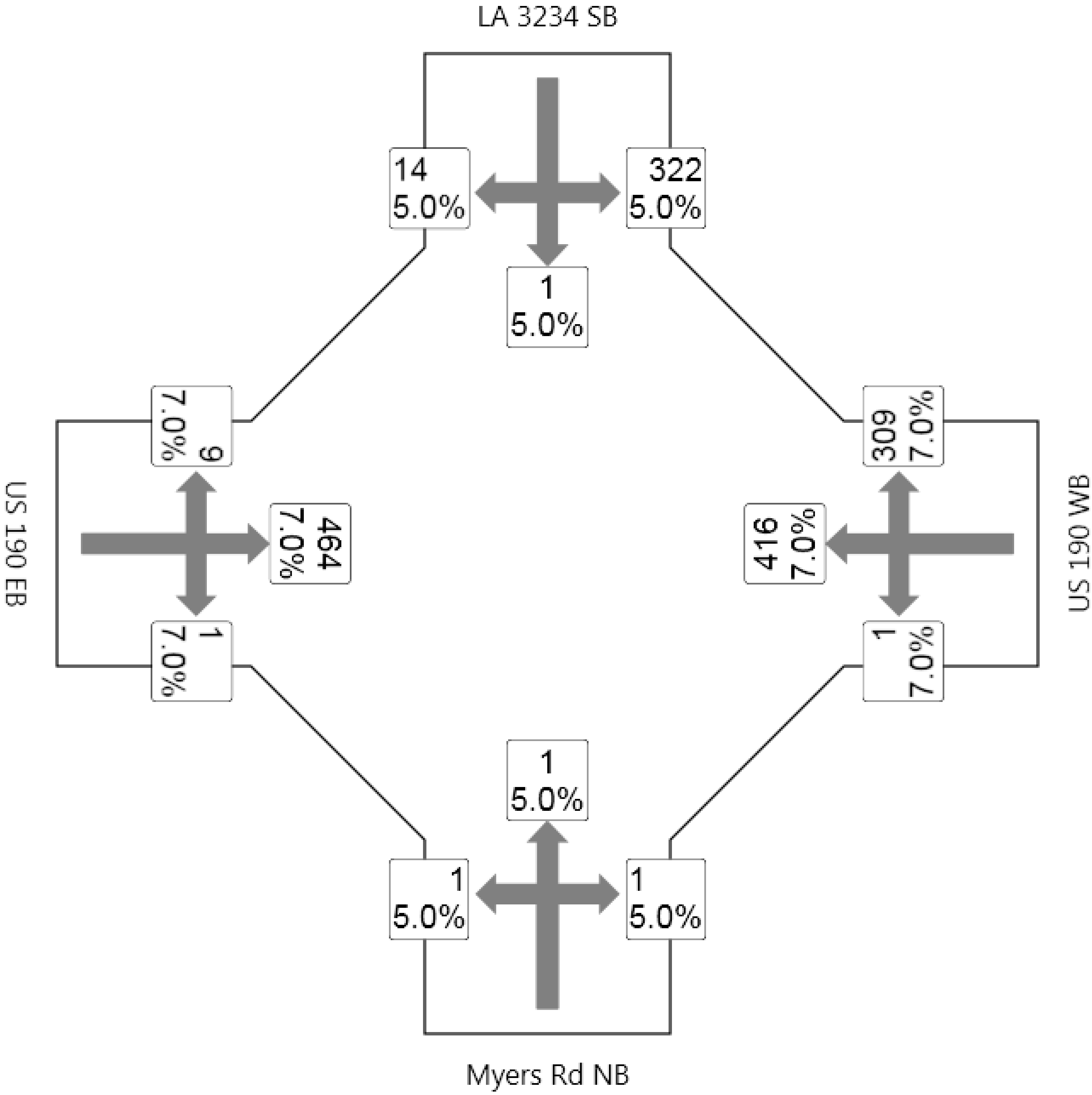
US 190 at LA 3234 (University Ave)
AM Peak - 2015 Alt C
Roundabout

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: Myers Rd NB											
3	L	1	5.0	0.006	18.9	LOS B	0.0	0.9	0.76	0.71	27.3
8	T	1	5.0	0.006	11.3	LOS B	0.0	0.9	0.76	0.60	28.7
18	R	1	5.0	0.006	12.5	LOS B	0.0	0.9	0.76	0.63	28.4
Approach		3	5.0	0.006	14.2	LOS B	0.0	0.9	0.76	0.65	28.1
East: US 190 WB											
1	L	1	7.0	0.371	13.2	LOS B	2.9	75.7	0.09	0.96	32.8
6	T	543	7.0	0.371	9.2	LOS A	2.9	75.7	0.09	0.54	39.4
16	R	371	7.0	0.241	9.3	X	X	X	X	0.59	38.5
Approach		915	7.0	0.371	9.2	LOS A	2.9	75.7	0.05	0.56	39.0
North: LA 3234 SB											
7	L	332	5.0	0.388	19.6	LOS B	2.5	63.8	0.71	0.86	31.1
4	T	1	5.0	0.388	10.9	LOS B	2.5	63.8	0.71	0.75	32.5
14	R	14	5.0	0.016	12.8	LOS B	0.1	2.2	0.58	0.64	36.0
Approach		347	5.0	0.388	19.3	LOS B	2.5	63.8	0.71	0.85	31.2
West: US 190 EB											
5	L	5	7.0	0.599	21.4	LOS C	5.5	145.7	0.80	0.94	32.4
2	T	452	7.0	0.599	14.6	LOS B	5.5	145.7	0.80	0.86	35.6
12	R	1	7.0	0.599	14.6	LOS B	5.5	145.7	0.80	0.86	34.5
Approach		459	7.0	0.599	14.6	LOS B	5.5	145.7	0.80	0.86	35.6
All Vehicles		1724	6.6	0.599	12.7	LOS B	5.5	145.7	0.38	0.70	36.2

X: Not applicable for Continuous movement.

Level of Service (LOS) Method: Delay (HCM 2000).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay per movement
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model used.



LA 3234 @ US 190

Alternate - C, 2015 PM

MOVEMENT SUMMARY

Site: 3234@190 2015 PM-C

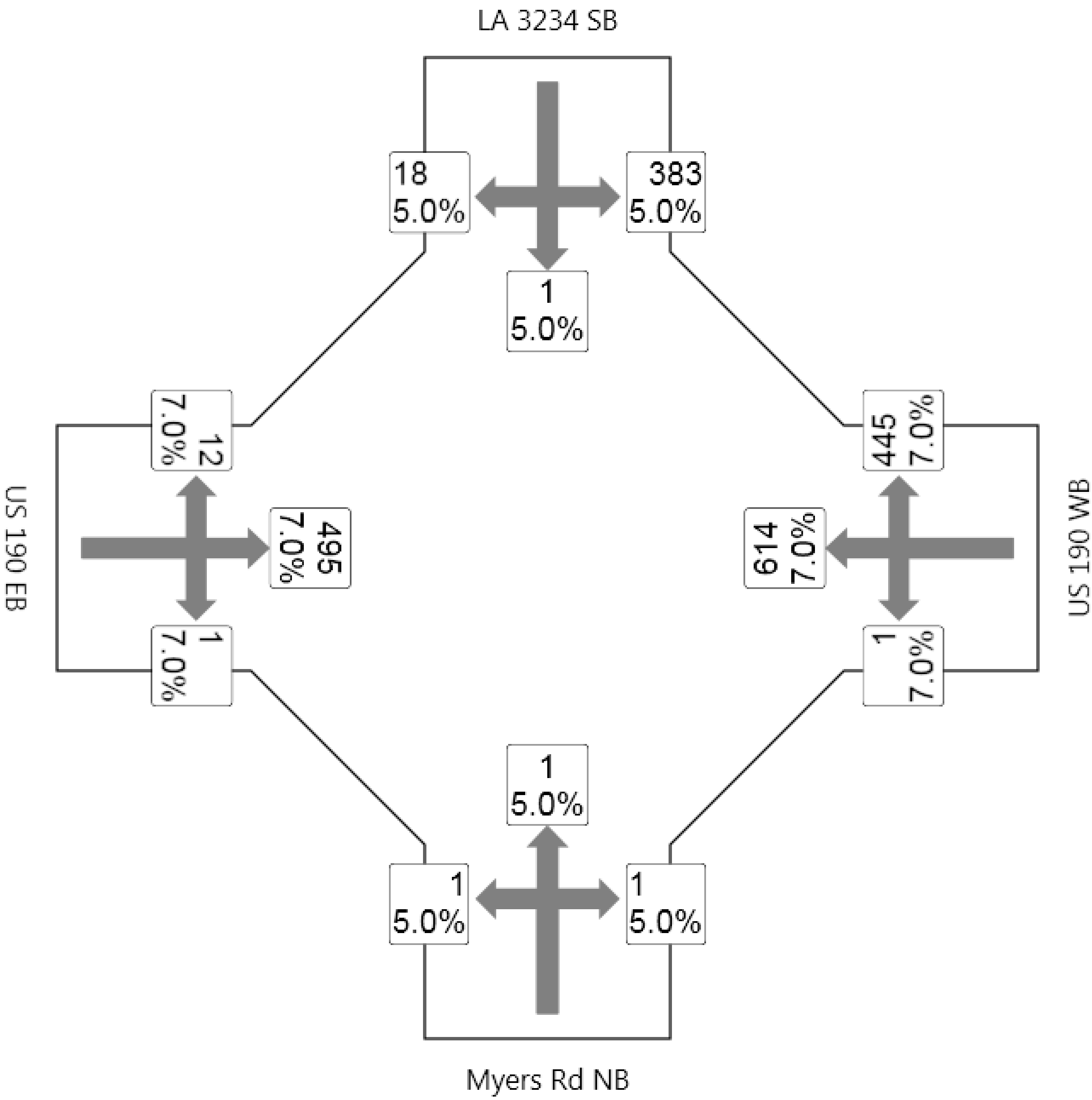
US 190 at LA 3234 (University Ave)
PM Peak - 2015 Alt C
Roundabout

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: Myers Rd NB											
3	L	1	5.0	0.007	20.0	LOS B	0.0	1.1	0.80	0.72	26.9
8	T	1	5.0	0.007	12.4	LOS B	0.0	1.1	0.80	0.63	28.1
18	R	1	5.0	0.007	13.6	LOS B	0.0	1.1	0.80	0.65	27.8
Approach		3	5.0	0.007	15.3	LOS B	0.0	1.1	0.80	0.67	27.6
East: US 190 WB											
1	L	1	7.0	0.320	13.2	LOS B	2.4	62.9	0.11	0.95	32.8
6	T	452	7.0	0.320	9.2	LOS A	2.4	62.9	0.11	0.53	39.2
16	R	336	7.0	0.218	9.3	X	X	X	X	0.59	38.6
Approach		789	7.0	0.320	9.2	LOS A	2.4	62.9	0.06	0.56	38.9
North: LA 3234 SB											
7	L	350	5.0	0.383	18.8	LOS B	2.4	62.6	0.66	0.83	31.6
4	T	1	5.0	0.383	10.1	LOS B	2.4	62.6	0.66	0.70	32.9
14	R	15	5.0	0.017	12.2	LOS B	0.1	2.1	0.53	0.62	36.3
Approach		366	5.0	0.383	18.5	LOS B	2.4	62.6	0.66	0.82	31.7
West: US 190 EB											
5	L	10	7.0	0.681	23.3	LOS C	7.4	195.5	0.87	0.99	31.3
2	T	504	7.0	0.681	16.5	LOS B	7.4	195.5	0.87	0.93	34.1
12	R	1	7.0	0.681	16.5	LOS B	7.4	195.5	0.87	0.93	32.9
Approach		515	7.0	0.681	16.6	LOS B	7.4	195.5	0.87	0.93	34.0
All Vehicles		1674	6.6	0.681	13.5	LOS B	7.4	195.5	0.44	0.73	35.5

X: Not applicable for Continuous movement.

Level of Service (LOS) Method: Delay (HCM 2000).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay per movement
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model used.



LA 3234 @ US 190

Alternate - C, 2035 AM

MOVEMENT SUMMARY

Site: 3234@190 2035 AM-C

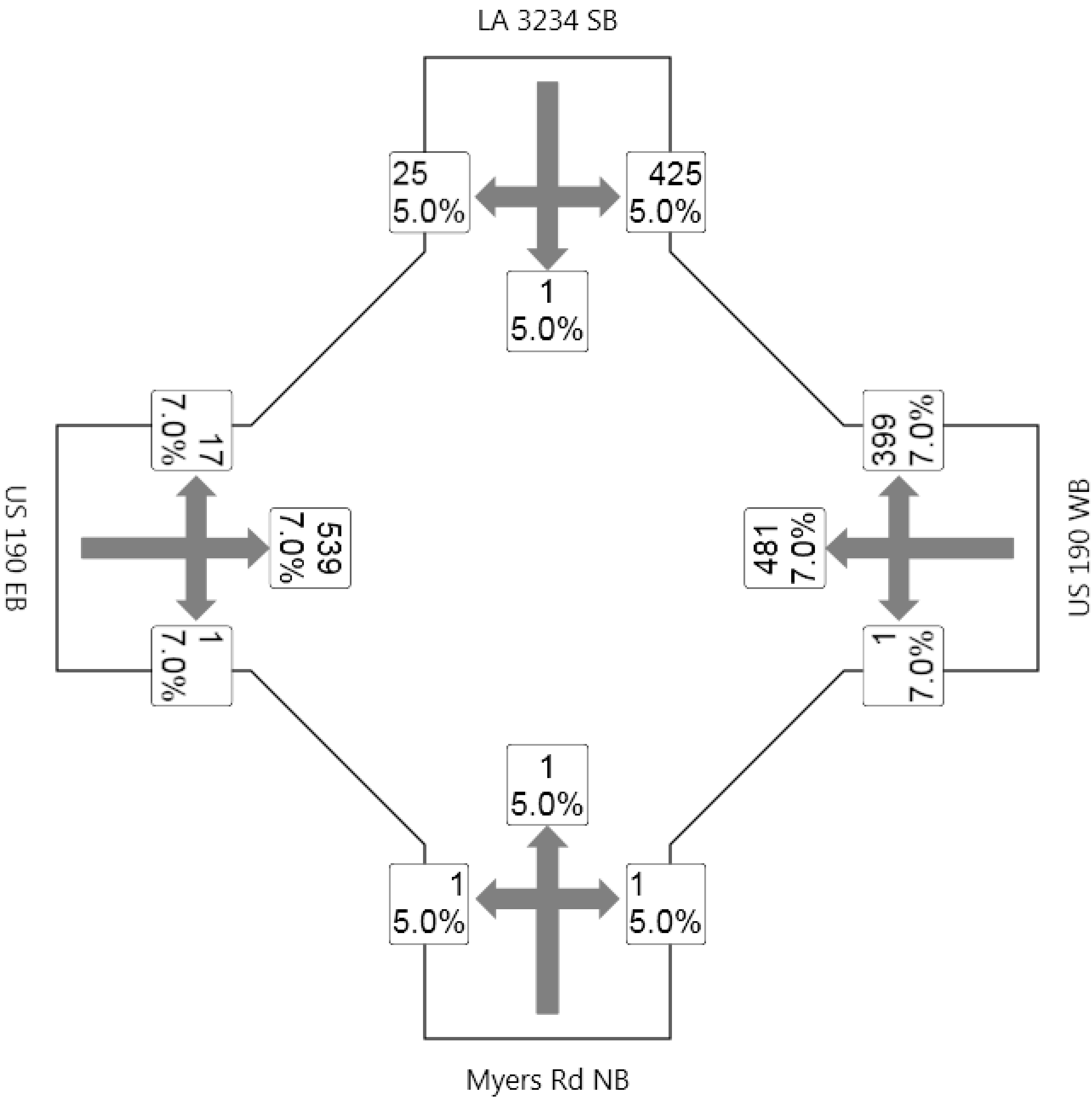
US 190 at LA 3234 (University Ave)
AM Peak - 2035 Alt C
Roundabout

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: Myers Rd NB											
3	L	1	5.0	0.007	20.8	LOS C	0.0	1.2	0.86	0.70	26.5
8	T	1	5.0	0.007	13.2	LOS B	0.0	1.2	0.86	0.64	27.7
18	R	1	5.0	0.007	14.4	LOS B	0.0	1.2	0.86	0.65	27.4
Approach		3	5.0	0.007	16.1	LOS B	0.0	1.2	0.86	0.66	27.2
East: US 190 WB											
1	L	1	7.0	0.448	13.2	LOS B	4.1	107.4	0.15	0.92	32.8
6	T	667	7.0	0.448	9.3	LOS A	4.1	107.4	0.15	0.52	39.0
16	R	484	7.0	0.314	9.3	X	X	X	X	0.59	38.5
Approach		1152	7.0	0.448	9.3	LOS A	4.1	107.4	0.09	0.55	38.8
North: LA 3234 SB											
7	L	416	5.0	0.478	21.3	LOS C	3.8	98.6	0.82	0.93	30.0
4	T	1	5.0	0.478	12.6	LOS B	3.8	98.6	0.82	0.85	31.4
14	R	20	5.0	0.022	13.3	LOS B	0.1	3.3	0.65	0.66	35.7
Approach		437	5.0	0.478	20.9	LOS C	3.8	98.6	0.81	0.91	30.3
West: US 190 EB											
5	L	13	7.0	0.712	24.2	LOS C	8.5	223.1	0.93	1.02	30.8
2	T	538	7.0	0.712	17.4	LOS B	8.5	223.1	0.93	0.99	33.4
12	R	1	7.0	0.712	17.5	LOS B	8.5	223.1	0.93	0.98	32.2
Approach		552	7.0	0.712	17.6	LOS B	8.5	223.1	0.93	0.99	33.3
All Vehicles		2145	6.6	0.712	13.8	LOS B	8.5	223.1	0.45	0.74	35.2

X: Not applicable for Continuous movement.

Level of Service (LOS) Method: Delay (HCM 2000).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay per movement
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model used.



LA 3234 @ US 190

Alternate - C, 2035 PM

MOVEMENT SUMMARY

Site: 3234@190 2035 PM-C

US 190 at LA 3234 (University Ave)
PM Peak - 2035 Alt C
Roundabout

Movement Performance - Vehicles

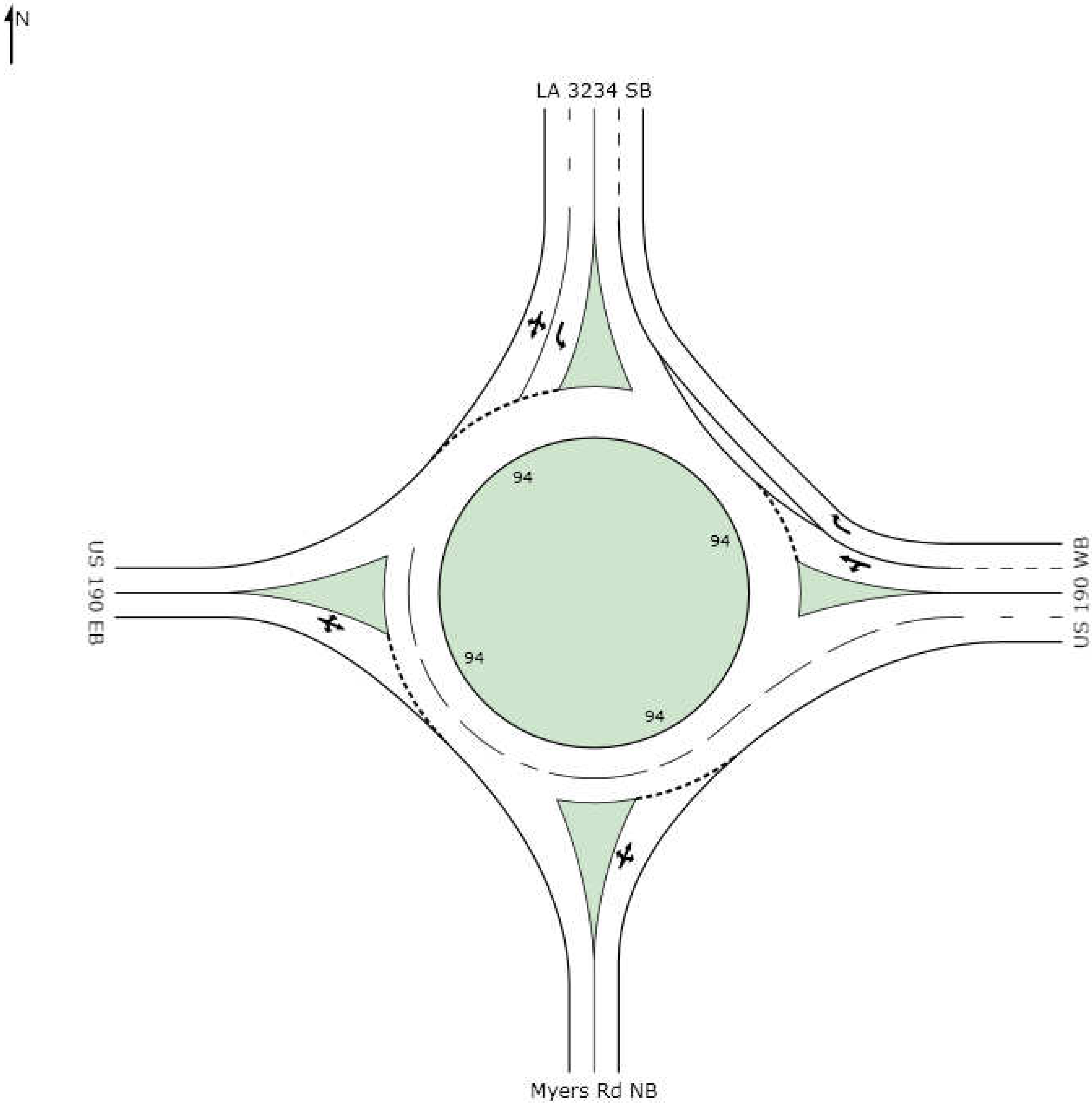
Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: Myers Rd NB											
3	L	1	5.0	0.009	23.0	LOS C	0.1	1.5	0.91	0.71	25.7
8	T	1	5.0	0.009	15.4	LOS B	0.1	1.5	0.91	0.67	26.6
18	R	1	5.0	0.009	16.6	LOS B	0.1	1.5	0.91	0.68	26.3
Approach		3	5.0	0.009	18.3	LOS B	0.1	1.5	0.91	0.69	26.2
East: US 190 WB											
1	L	1	7.0	0.363	13.3	LOS B	3.0	78.5	0.17	0.91	32.8
6	T	523	7.0	0.363	9.3	LOS A	3.0	78.5	0.17	0.52	38.9
16	R	434	7.0	0.282	9.3	X	X	X	X	0.59	38.5
Approach		958	7.0	0.363	9.3	LOS A	3.0	78.5	0.09	0.56	38.7
North: LA 3234 SB											
7	L	462	5.0	0.473	19.4	LOS B	3.5	91.3	0.74	0.86	31.1
4	T	1	5.0	0.473	10.8	LOS B	3.5	91.3	0.74	0.76	32.3
14	R	27	5.0	0.028	12.3	LOS B	0.1	3.9	0.57	0.64	36.0
Approach		490	5.0	0.473	19.0	LOS B	3.5	91.3	0.73	0.85	31.4
West: US 190 EB											
5	L	18	7.0	0.814	29.2	LOS C	12.2	323.3	1.00	1.13	28.1
2	T	586	7.0	0.814	22.4	LOS C	12.2	323.3	1.00	1.13	30.1
12	R	1	7.0	0.814	22.4	LOS C	12.2	323.3	1.00	1.12	28.7
Approach		605	7.0	0.814	22.6	LOS C	12.2	323.3	1.00	1.13	30.0
All Vehicles		2057	6.5	0.814	15.5	LOS B	12.2	323.3	0.51	0.80	33.9

X: Not applicable for Continuous movement.

Level of Service (LOS) Method: Delay (HCM 2000).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay per movement
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model used.

INTERSECTION LA 3234 at US 190

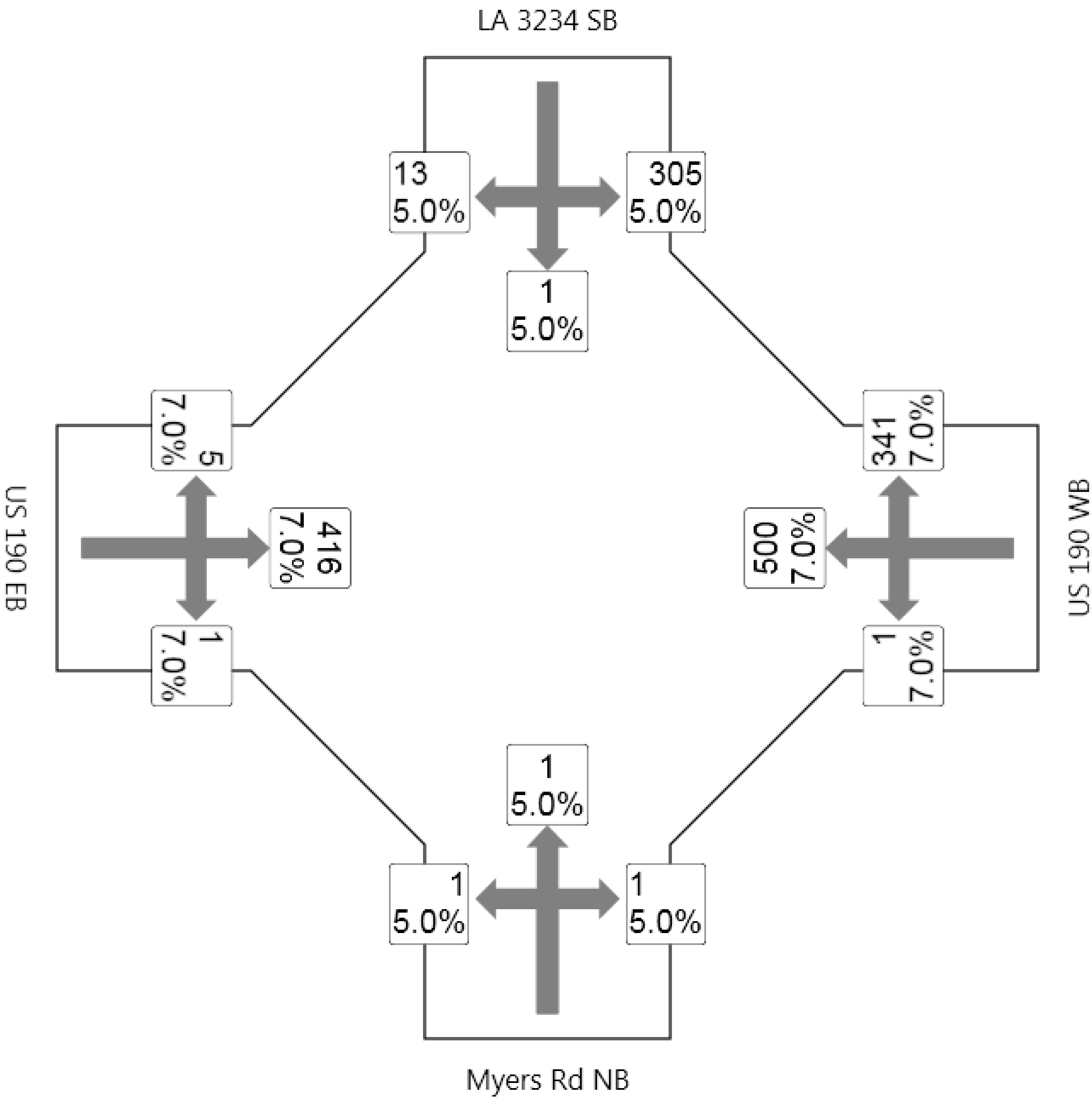
Multi-lane Roundabout Analysis



LA 3234 @ US 190

Alternate - C

Multi-lane Roundabout



LA 3234 @ US 190

Alternate - C, 2015 AM

MOVEMENT SUMMARY

Site: 3234@190 2015 AM-C-Double

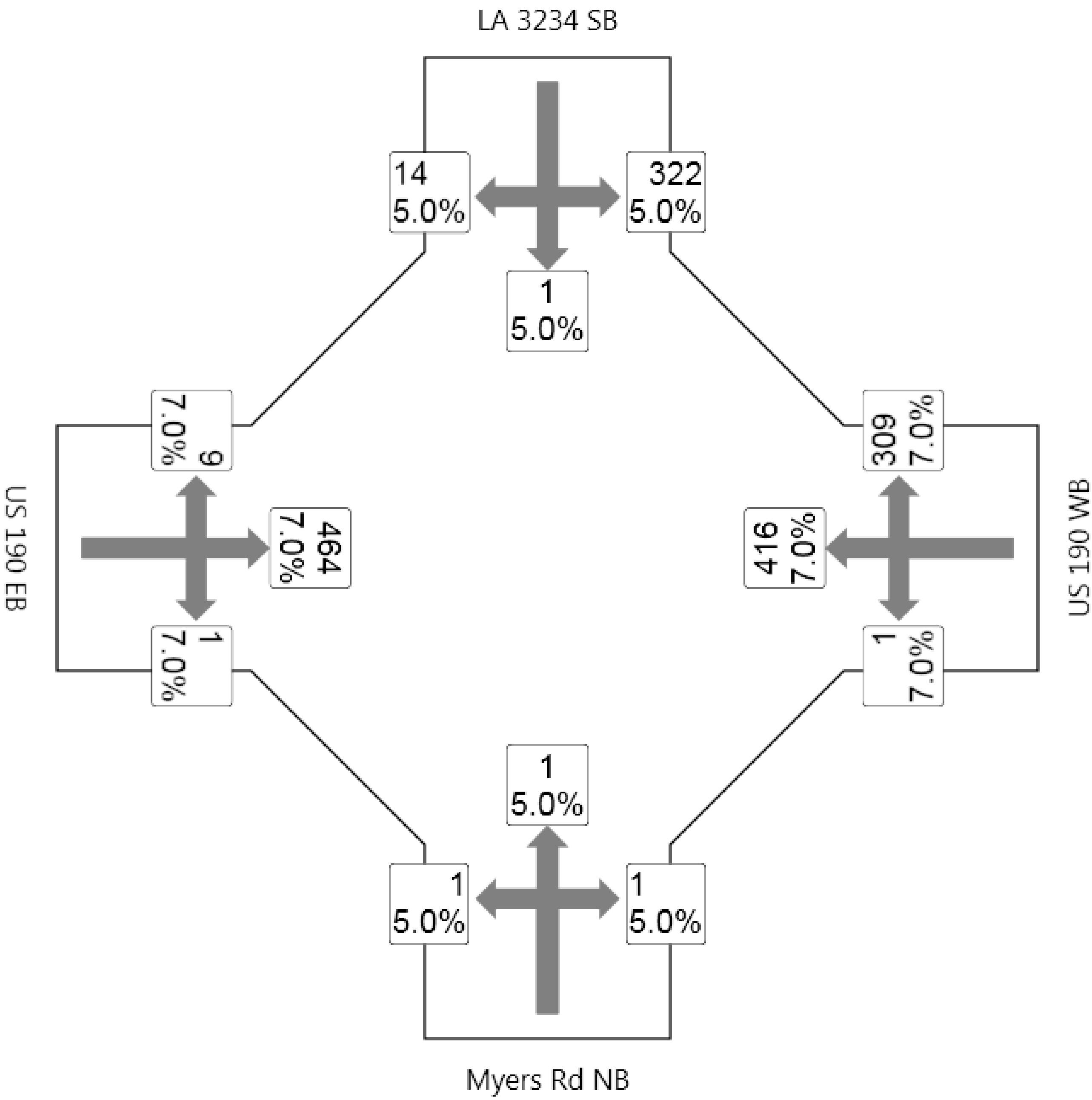
US 190 at LA 3234 (University Ave)
AM Peak - 2015 Alt C
Roundabout

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: Myers Rd NB											
3	L	1	5.0	0.006	16.8	LOS B	0.0	0.6	0.63	0.76	28.3
8	T	1	5.0	0.006	9.2	LOS A	0.0	0.6	0.63	0.59	30.0
18	R	1	5.0	0.006	10.1	LOS B	0.0	0.6	0.63	0.62	29.7
Approach		3	5.0	0.006	12.0	LOS B	0.0	0.6	0.63	0.66	29.3
East: US 190 WB											
1	L	1	7.0	0.371	13.2	LOS B	2.8	74.4	0.09	0.95	32.8
6	T	543	7.0	0.371	9.2	LOS A	2.8	74.4	0.09	0.54	39.4
16	R	371	7.0	0.241	9.3	X	X	X	X	0.59	38.5
Approach		915	7.0	0.371	9.2	LOS A	2.8	74.4	0.05	0.56	39.0
North: LA 3234 SB											
7	L	332	5.0	0.213	19.4	LOS B	1.2	31.5	0.64	0.82	31.3
4	T	1	5.0	0.213	10.4	LOS B	1.2	31.5	0.64	0.69	33.2
14	R	14	5.0	0.213	14.0	LOS B	1.2	31.5	0.64	0.76	35.0
Approach		347	5.0	0.213	19.1	LOS B	1.2	31.5	0.64	0.82	31.4
West: US 190 EB											
5	L	5	7.0	0.614	20.5	LOS C	4.6	121.0	0.71	0.99	32.9
2	T	452	7.0	0.614	13.7	LOS B	4.6	121.0	0.71	0.87	36.1
12	R	1	7.0	0.614	13.3	LOS B	4.6	121.0	0.71	0.88	35.4
Approach		459	7.0	0.614	13.8	LOS B	4.6	121.0	0.71	0.87	36.1
All Vehicles		1724	6.6	0.614	12.4	LOS B	4.6	121.0	0.35	0.70	36.4

X: Not applicable for Continuous movement.

Level of Service (LOS) Method: Delay (HCM 2000).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay per movement
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model used.



LA 3234 @ US 190

Alternate - C, 2015 PM

MOVEMENT SUMMARY

Site: 3234@190 2015 PM-C-Double

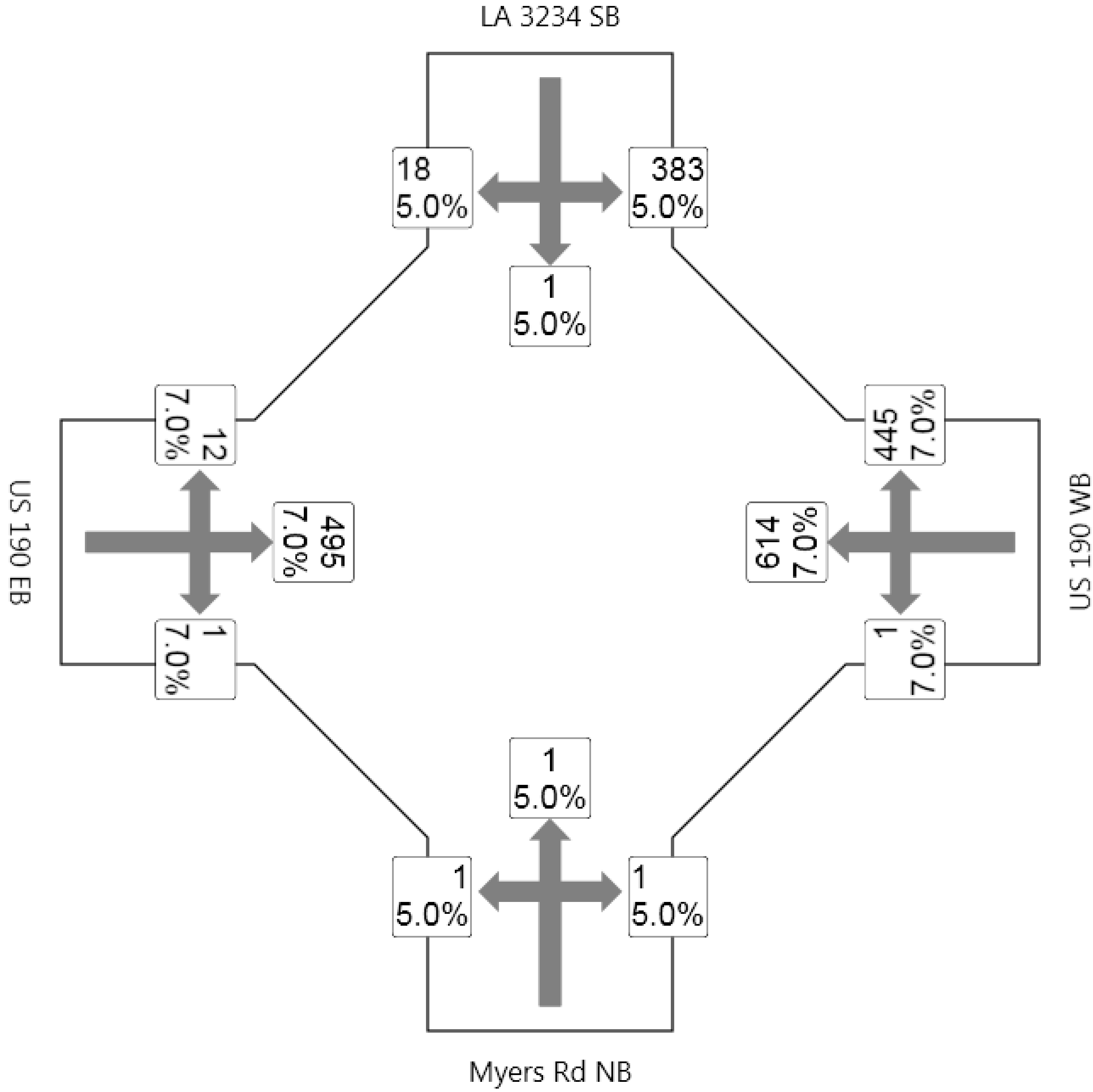
US 190 at LA 3234 (University Ave)
PM Peak - 2015 Alt C
Roundabout

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: Myers Rd NB											
3	L	1	5.0	0.006	17.4	LOS B	0.0	0.7	0.66	0.76	28.0
8	T	1	5.0	0.006	9.8	LOS A	0.0	0.7	0.66	0.61	29.7
18	R	1	5.0	0.006	10.7	LOS B	0.0	0.7	0.66	0.64	29.4
Approach		3	5.0	0.006	12.6	LOS B	0.0	0.7	0.66	0.67	29.0
East: US 190 WB											
1	L	1	7.0	0.320	13.2	LOS B	2.3	61.6	0.11	0.94	32.8
6	T	452	7.0	0.320	9.2	LOS A	2.3	61.6	0.11	0.53	39.2
16	R	336	7.0	0.218	9.3	X	X	X	X	0.59	38.6
Approach		789	7.0	0.320	9.2	LOS A	2.3	61.6	0.06	0.56	38.9
North: LA 3234 SB											
7	L	350	5.0	0.209	18.6	LOS B	1.2	30.3	0.60	0.80	31.8
4	T	1	5.0	0.209	9.7	LOS A	1.2	30.3	0.59	0.65	33.5
14	R	15	5.0	0.209	13.2	LOS B	1.2	30.3	0.59	0.73	35.3
Approach		366	5.0	0.209	18.3	LOS B	1.2	30.3	0.60	0.79	31.9
West: US 190 EB											
5	L	10	7.0	0.693	21.7	LOS C	6.0	157.7	0.77	1.03	32.1
2	T	504	7.0	0.693	15.0	LOS B	6.0	157.7	0.77	0.94	35.3
12	R	1	7.0	0.693	14.6	LOS B	6.0	157.7	0.77	0.94	34.3
Approach		515	7.0	0.693	15.1	LOS B	6.0	157.7	0.77	0.94	35.2
All Vehicles		1674	6.6	0.693	13.1	LOS B	6.0	157.7	0.40	0.73	36.0

X: Not applicable for Continuous movement.

Level of Service (LOS) Method: Delay (HCM 2000).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay per movement
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model used.



LA 3234 @ US 190

Alternate - C, 2035 AM

MOVEMENT SUMMARY

Site: 3234@190 2035 AM-C-Double

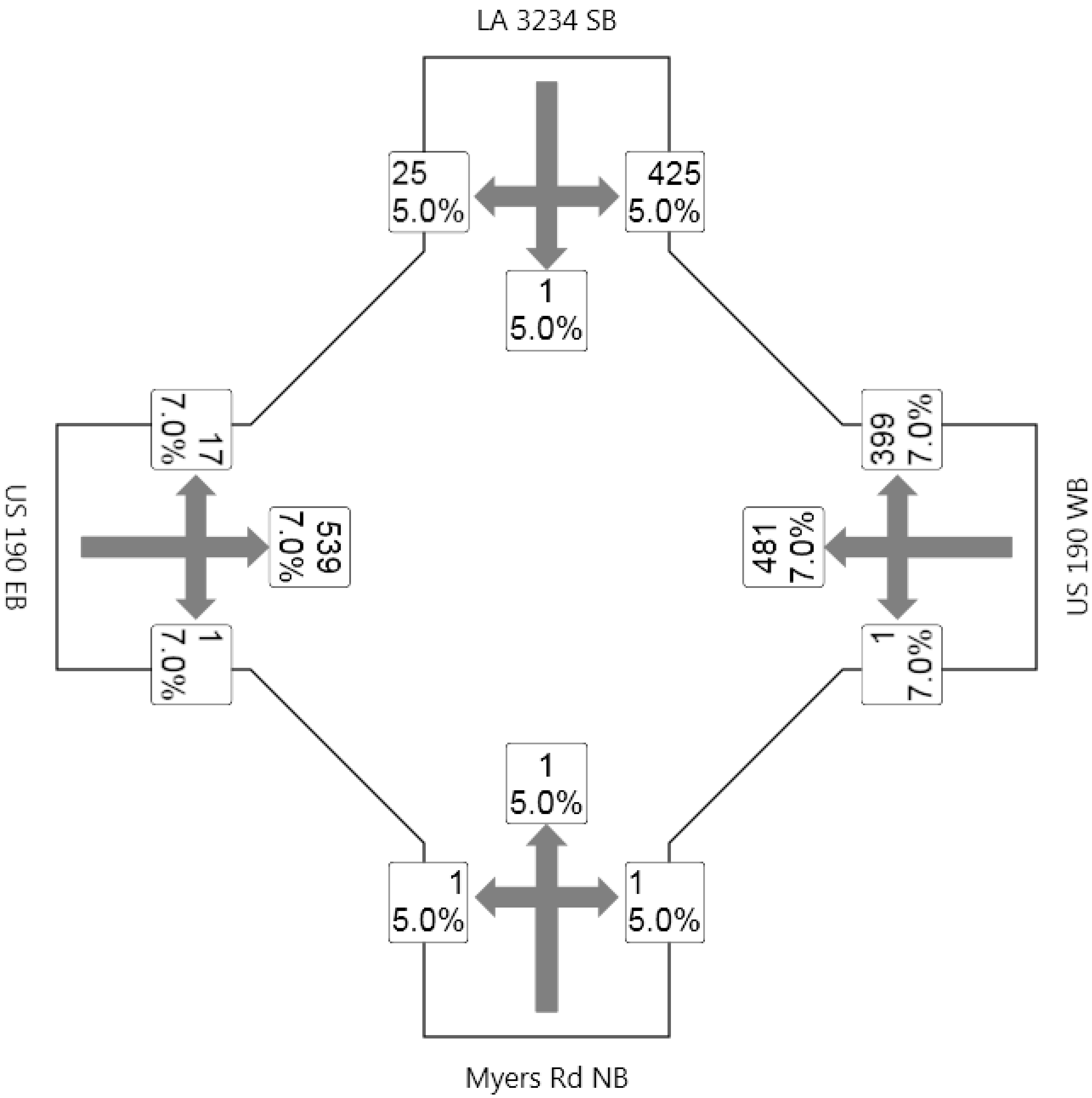
US 190 at LA 3234 (University Ave)
AM Peak - 2035 Alt C
Roundabout

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: Myers Rd NB											
3	L	1	5.0	0.006	17.4	LOS B	0.0	0.7	0.70	0.75	28.0
8	T	1	5.0	0.006	9.8	LOS A	0.0	0.7	0.70	0.62	29.6
18	R	1	5.0	0.006	10.7	LOS B	0.0	0.7	0.70	0.64	29.4
Approach		3	5.0	0.006	12.7	LOS B	0.0	0.7	0.70	0.67	28.9
East: US 190 WB											
1	L	1	7.0	0.448	13.2	LOS B	4.0	104.5	0.15	0.91	32.8
6	T	667	7.0	0.448	9.3	LOS A	4.0	104.5	0.15	0.53	39.0
16	R	484	7.0	0.314	9.3	X	X	X	X	0.59	38.5
Approach		1152	7.0	0.448	9.3	LOS A	4.0	104.5	0.09	0.55	38.8
North: LA 3234 SB											
7	L	416	5.0	0.275	20.3	LOS C	1.8	45.8	0.73	0.86	30.7
4	T	1	5.0	0.275	11.2	LOS B	1.8	45.8	0.73	0.74	32.5
14	R	20	5.0	0.275	14.7	LOS B	1.8	45.8	0.73	0.80	34.4
Approach		437	5.0	0.275	20.1	LOS C	1.8	45.8	0.73	0.86	30.8
West: US 190 EB											
5	L	13	7.0	0.710	21.8	LOS C	6.3	165.9	0.80	1.05	32.1
2	T	538	7.0	0.710	15.0	LOS B	6.3	165.9	0.80	0.97	35.3
12	R	1	7.0	0.710	14.6	LOS B	6.3	165.9	0.80	0.97	34.2
Approach		552	7.0	0.710	15.2	LOS B	6.3	165.9	0.80	0.98	35.2
All Vehicles		2145	6.6	0.710	13.0	LOS B	6.3	165.9	0.40	0.72	35.9

X: Not applicable for Continuous movement.

Level of Service (LOS) Method: Delay (HCM 2000).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay per movement
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model used.



LA 3234 @ US 190

Alternate - C, 2035 PM

MOVEMENT SUMMARY

Site: 3234@190 2035 PM-C-Double

US 190 at LA 3234 (University Ave)
PM Peak - 2035 Alt C
Roundabout

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: Myers Rd NB											
3	L	1	5.0	0.007	18.2	LOS B	0.0	0.8	0.74	0.76	27.7
8	T	1	5.0	0.007	10.6	LOS B	0.0	0.8	0.74	0.64	29.2
18	R	1	5.0	0.007	11.5	LOS B	0.0	0.8	0.74	0.66	28.9
Approach		3	5.0	0.007	13.4	LOS B	0.0	0.8	0.74	0.69	28.5
East: US 190 WB											
1	L	1	7.0	0.363	13.3	LOS B	2.9	76.4	0.16	0.90	32.8
6	T	523	7.0	0.363	9.3	LOS A	2.9	76.4	0.16	0.53	38.9
16	R	434	7.0	0.282	9.3	X	X	X	X	0.59	38.5
Approach		958	7.0	0.363	9.3	LOS A	2.9	76.4	0.09	0.56	38.7
North: LA 3234 SB											
7	L	462	5.0	0.272	19.0	LOS B	1.7	43.7	0.66	0.82	31.5
4	T	1	5.0	0.272	10.0	LOS A	1.7	43.7	0.65	0.68	33.1
14	R	27	5.0	0.272	13.5	LOS B	1.7	43.7	0.65	0.76	35.0
Approach		490	5.0	0.272	18.7	LOS B	1.7	43.7	0.66	0.82	31.7
West: US 190 EB											
5	L	18	7.0	0.798	24.1	LOS C	8.3	220.1	0.88	1.11	30.8
2	T	586	7.0	0.798	17.4	LOS B	8.3	220.1	0.88	1.06	33.4
12	R	1	7.0	0.798	17.0	LOS B	8.3	220.1	0.88	1.07	32.3
Approach		605	7.0	0.798	17.6	LOS B	8.3	220.1	0.88	1.07	33.3
All Vehicles		2057	6.5	0.798	14.0	LOS B	8.3	220.1	0.46	0.77	35.2

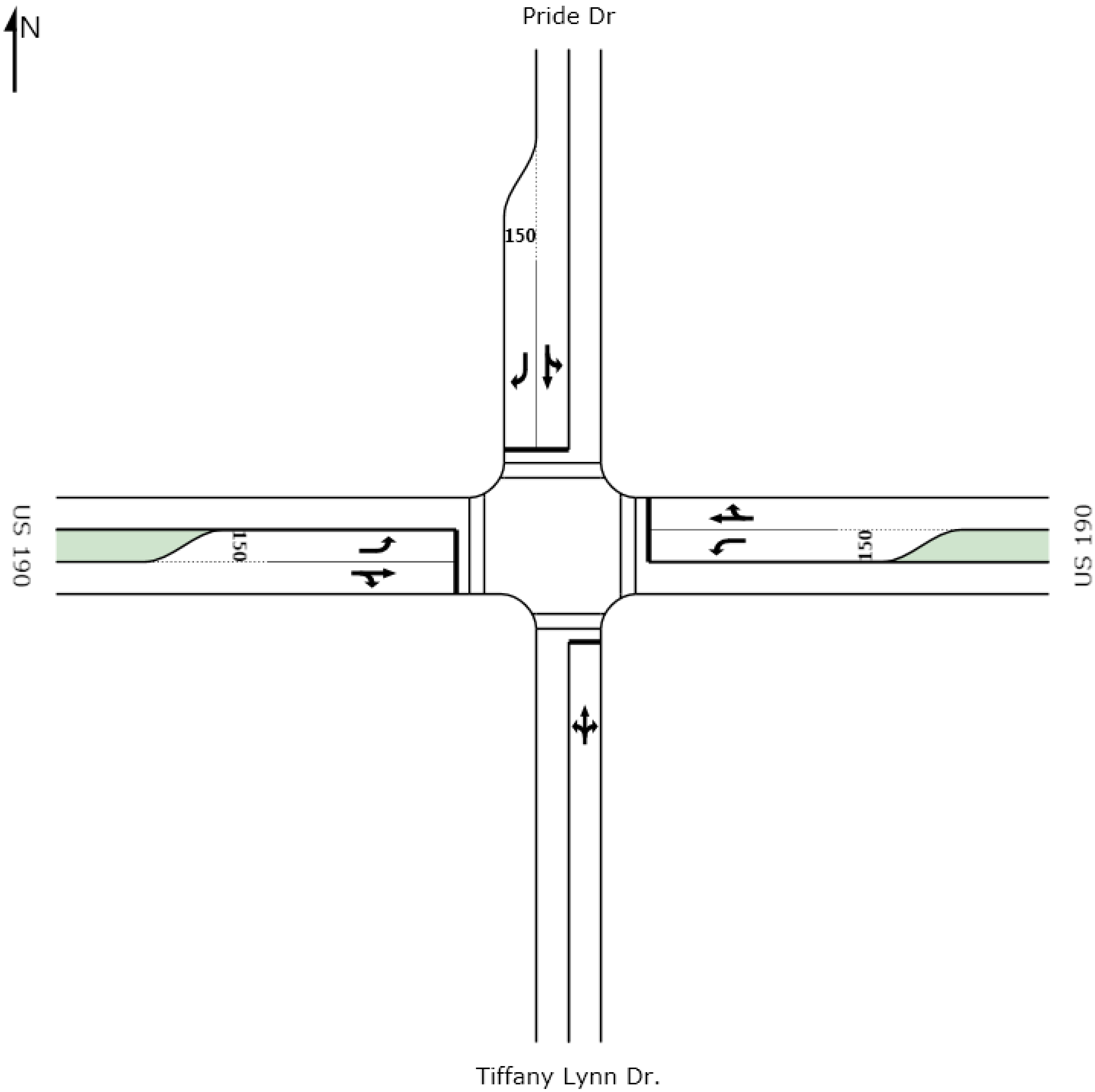
X: Not applicable for Continuous movement.

Level of Service (LOS) Method: Delay (HCM 2000).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay per movement
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model used.

SIDRA INTERSECTION

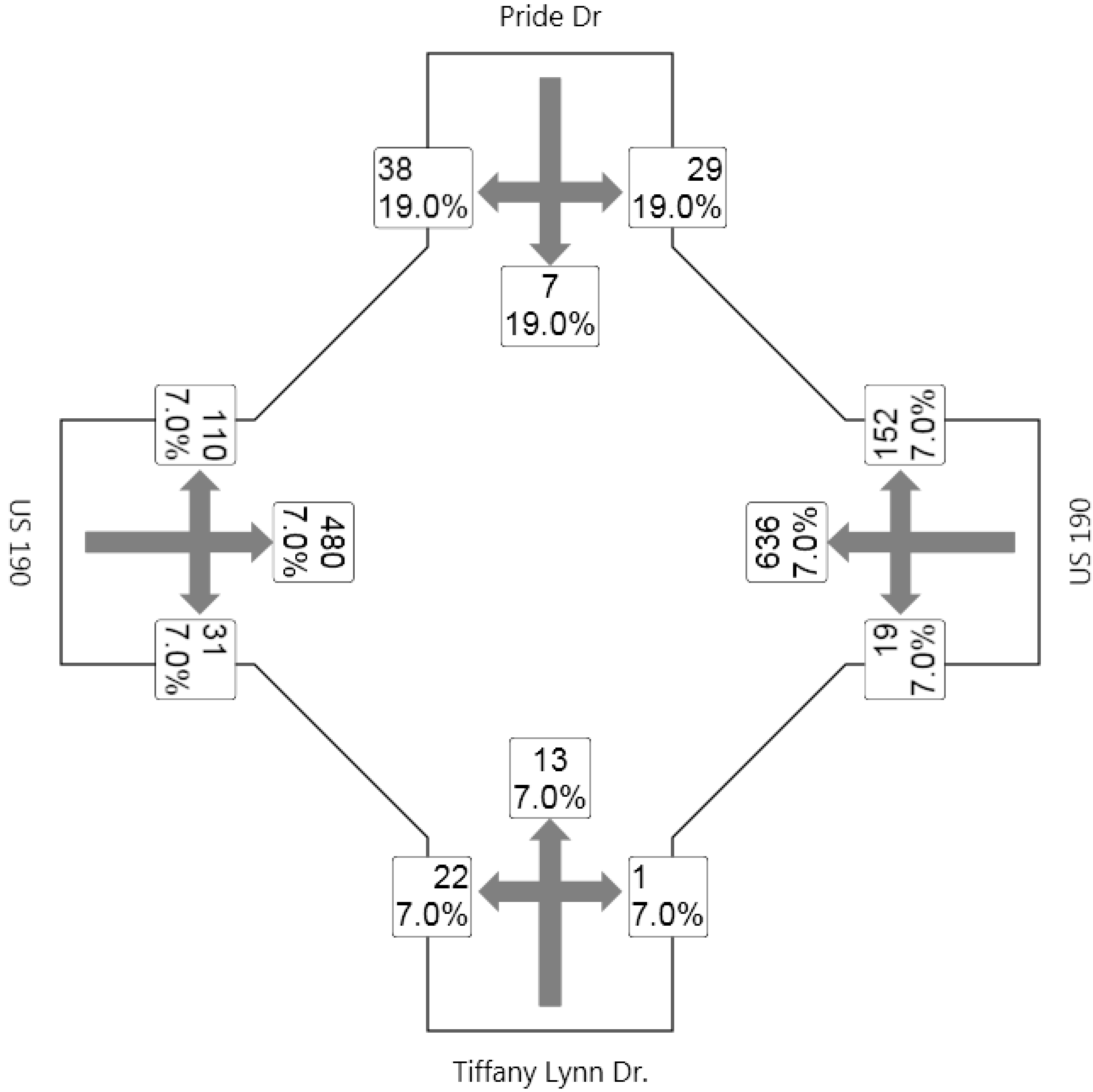
INTERSECTION US 190 at Pride Dr

No-Build Analysis



US 190 @ Pride Dr

Alternate - No-Build



US 190 @ Pride Dr

Alternate - Existing(2011) AM

MOVEMENT SUMMARY

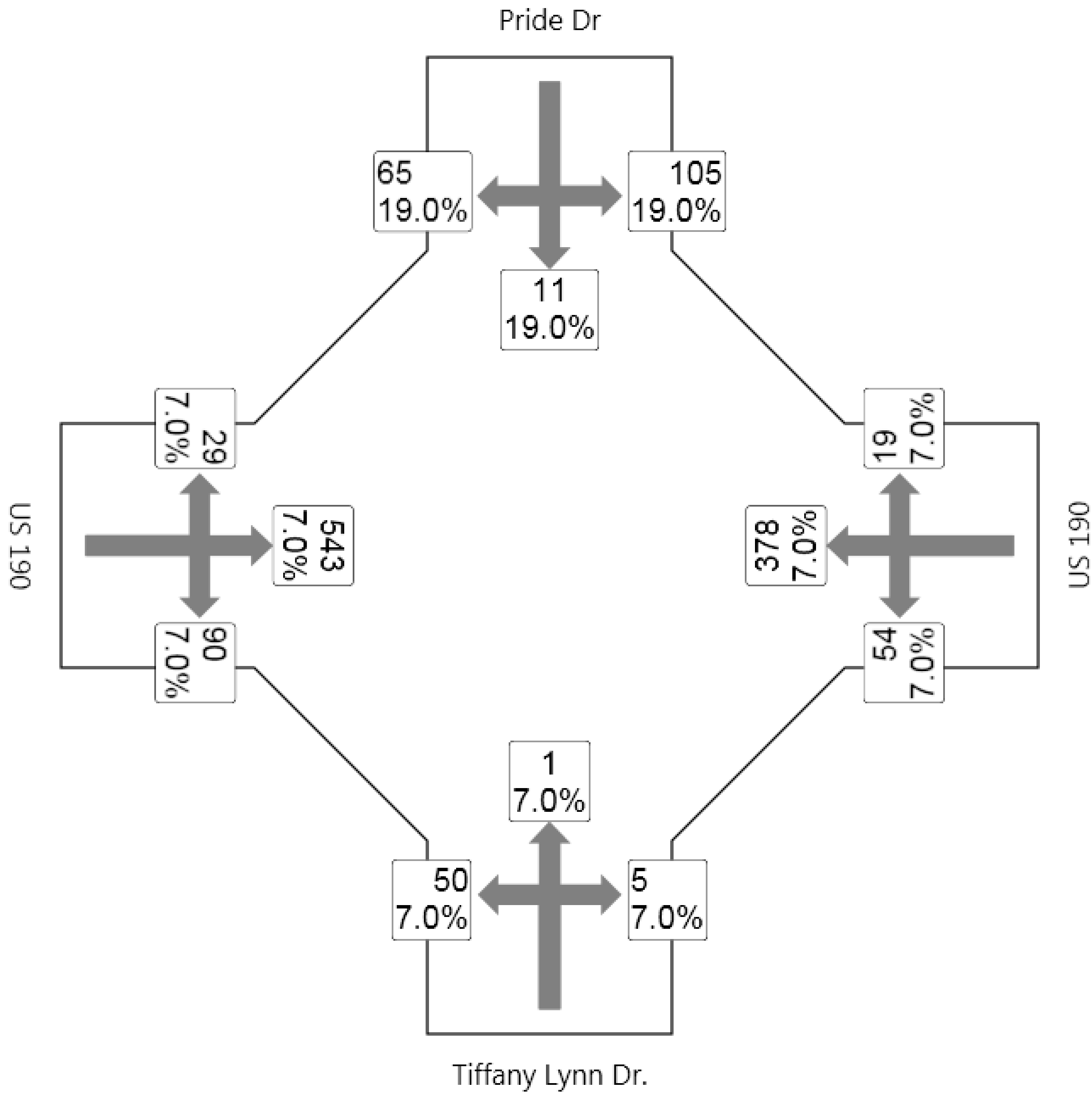
Site: 2011 AM

US 190 at Pride Dr.
2011 AM
Signals - Actuated   Cycle Time = 84 seconds

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: Tiffany Lynn Dr.											
3	L	23	7.0	0.203	56.7	LOS E	2.1	55.8	1.00	0.79	13.0
8	T	14	7.0	0.203	56.7	LOS E	2.1	55.8	1.00	0.79	13.0
18	R	1	7.0	0.199	56.7	LOS E	2.1	55.8	1.00	0.79	13.0
Approach		38	7.0	0.203	56.7	LOS E	2.1	55.8	1.00	0.79	13.0
East: US 190											
1	L	20	7.0	0.046	6.4	LOS A	0.3	7.1	0.53	0.73	29.5
6	T	677	7.0	0.895	29.8	LOS C	36.7	968.9	0.95	0.94	21.5
16	R	162	7.0	0.895	29.8	LOS C	36.7	968.9	0.95	1.00	21.1
Approach		859	7.0	0.895	29.3	LOS C	36.7	968.9	0.94	0.95	21.5
North: Pride Dr											
7	L	31	19.0	0.325	45.9	LOS D	1.8	50.6	0.96	0.73	14.4
4	T	7	19.0	0.325	45.9	LOS D	1.8	50.6	0.96	0.70	14.5
14	R	40	19.0	0.127	8.2	LOS A	0.8	22.4	0.50	0.71	24.6
Approach		79	19.0	0.325	26.5	LOS C	1.8	50.6	0.72	0.72	18.3
West: US 190											
5	L	117	7.0	0.329	17.0	LOS B	3.2	83.7	0.82	0.79	24.2
2	T	511	7.0	0.573	15.1	LOS B	16.0	421.7	0.70	0.63	28.6
12	R	33	7.0	0.573	15.1	LOS B	16.0	421.7	0.70	1.00	26.8
Approach		661	7.0	0.573	15.4	LOS B	16.0	421.7	0.72	0.68	27.6
All Vehicles		1636	7.6	0.895	24.2	LOS C	36.7	968.9	0.84	0.82	23.1

Level of Service (LOS) Method: Delay (HCM 2000).
Vehicle movement LOS values are based on average delay per movement
Intersection and Approach LOS values are based on average delay for all vehicle movements.
HCM Delay Model used. Geometric Delay not included.



US 190 @ Pride Dr

Alternate - Existing(2011) PM

MOVEMENT SUMMARY

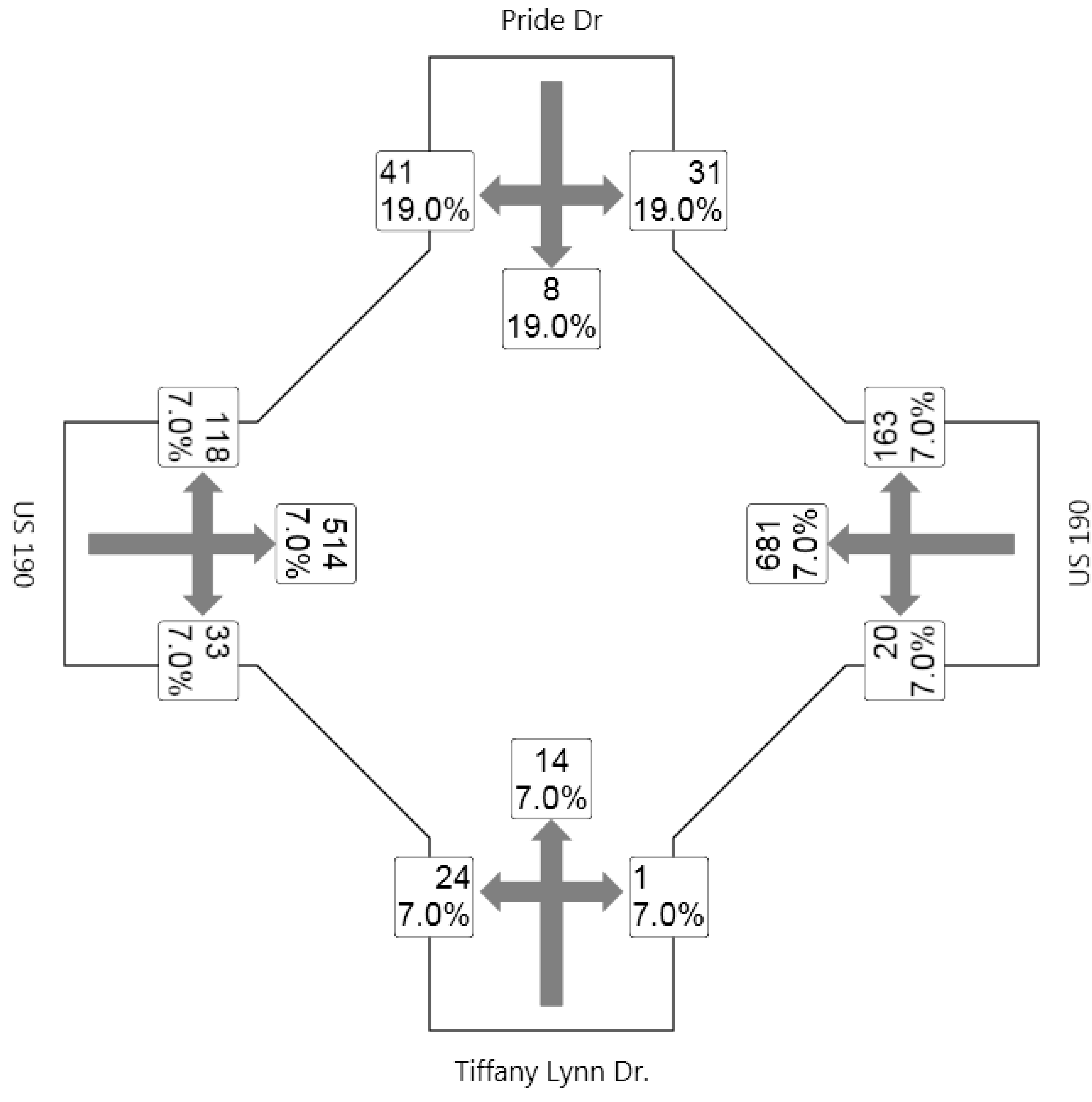
Site: 2011 PM

US 190 at Pride Dr.
2011 PM
Signals - Actuated Cycle Time = 84 seconds

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: Tiffany Lynn Dr.											
3	L	56	7.0	0.149	53.7	LOS D	3.3	86.9	1.00	0.85	13.2
8	T	1	7.0	0.149	53.7	LOS D	3.3	86.9	1.00	0.85	13.2
18	R	6	7.0	0.148	53.7	LOS D	3.3	86.9	1.00	0.85	13.2
Approach		62	7.0	0.149	53.7	LOS D	3.3	86.9	1.00	0.85	13.2
East: US 190											
1	L	60	7.0	0.217	17.0	LOS B	1.3	34.7	0.85	0.76	24.2
6	T	420	7.0	0.535	18.2	LOS B	13.7	362.8	0.74	0.66	26.9
16	R	21	7.0	0.535	18.2	LOS B	13.7	362.8	0.74	0.97	25.4
Approach		501	7.0	0.535	18.0	LOS B	13.7	362.8	0.76	0.68	26.5
North: Pride Dr											
7	L	117	19.0	0.422	33.2	LOS C	5.1	146.3	0.88	0.80	16.7
4	T	12	19.0	0.422	33.2	LOS C	5.1	146.3	0.88	0.71	17.0
14	R	72	19.0	0.174	3.2	LOS A	0.9	25.7	0.33	0.70	27.1
Approach		201	19.0	0.422	22.4	LOS C	5.1	146.3	0.68	0.76	19.4
West: US 190											
5	L	32	7.0	0.082	10.2	LOS B	0.6	15.9	0.64	0.73	27.4
2	T	603	7.0	0.861	31.2	LOS C	30.3	799.7	0.94	0.89	21.1
12	R	100	7.0	0.861	31.2	LOS C	30.3	799.7	0.94	0.96	20.7
Approach		736	7.0	0.861	30.3	LOS C	30.3	799.7	0.93	0.90	21.3
All Vehicles		1500	8.6	0.861	26.1	LOS C	30.3	799.7	0.84	0.80	22.0

Level of Service (LOS) Method: Delay (HCM 2000).
Vehicle movement LOS values are based on average delay per movement
Intersection and Approach LOS values are based on average delay for all vehicle movements.
HCM Delay Model used. Geometric Delay not included.



US 190 @ Pride Dr

Alternate - 2015 No-Build AM

MOVEMENT SUMMARY

Site: 2015 AM No Build

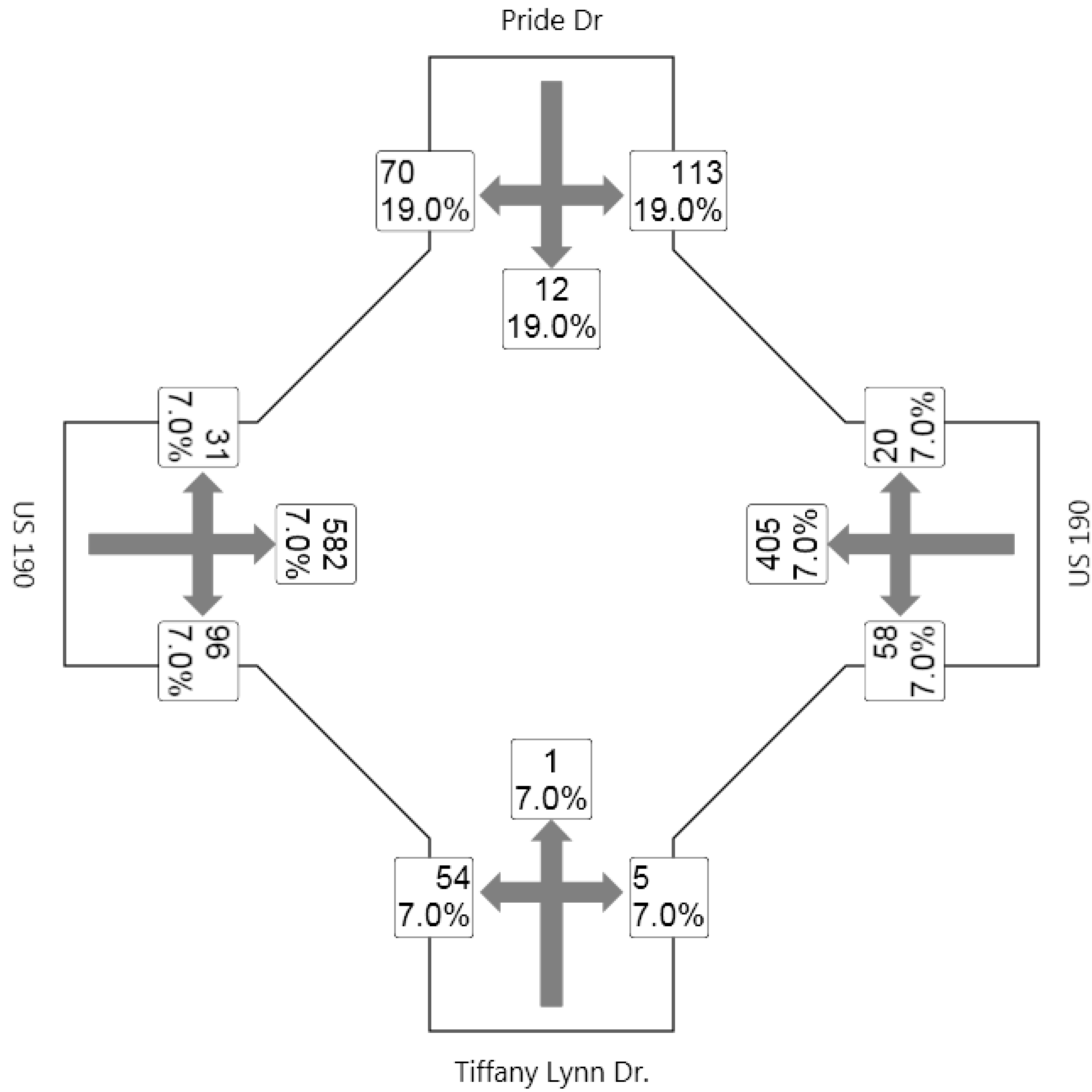
US 190 at Pride Dr.
2015 AM No Build
Signals - Actuated   Cycle Time = 98 seconds

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: Tiffany Lynn Dr.											
3	L	26	7.0	0.112	73.4	LOS E	2.7	72.1	1.00	0.84	12.9
8	T	15	7.0	0.112	73.4	LOS E	2.7	72.1	1.00	0.84	11.2
18	R	1	7.0	0.110	73.4	LOS E	2.7	72.1	1.00	0.84	12.9
Approach		41	7.0	0.112	73.4	LOS E	2.7	72.1	1.00	0.84	12.3
East: US 190											
1	L	21	7.0	0.053	11.8	LOS B	0.4	10.1	0.66	0.74	27.6
6	T	724	7.0	1.118	93.8	LOS F	65.6	1732.0	1.00	1.32	12.5
16	R	173	7.0	1.118	93.8	LOS F	65.6	1732.0	1.00	1.32	10.7
Approach		919	7.0	1.118	91.9	LOS F	65.6	1732.0	0.99	1.31	12.3
North: Pride Dr											
7	L	33	19.0	0.209	43.4	LOS D	1.9	56.0	0.90	0.75	17.0
4	T	9	19.0	0.209	43.4	LOS D	1.9	56.0	0.90	0.68	15.0
14	R	44	19.0	0.149	10.7	LOS B	1.0	29.7	0.51	0.73	26.0
Approach		85	19.0	0.209	26.6	LOS C	1.9	56.0	0.70	0.73	20.5
West: US 190											
5	L	126	7.0	0.470	23.1	LOS C	4.0	104.9	0.89	0.76	22.3
2	T	547	7.0	0.716	26.4	LOS C	24.6	649.6	0.85	0.76	26.7
12	R	35	7.0	0.716	26.4	LOS C	24.6	649.6	0.85	1.00	23.5
Approach		707	7.0	0.716	25.8	LOS C	24.6	649.6	0.85	0.78	25.8
All Vehicles		1753	7.6	1.118	61.6	LOS E	65.6	1732.0	0.92	1.05	16.0

Level of Service (LOS) Method: Delay (HCM 2000).
Vehicle movement LOS values are based on average delay per movement
Intersection and Approach LOS values are based on average delay for all vehicle movements.
HCM Delay Model used. Geometric Delay not included.

SIDRA INTERSECTION



US 190 @ Pride Dr

Alternate - 2015 No-Build PM

MOVEMENT SUMMARY

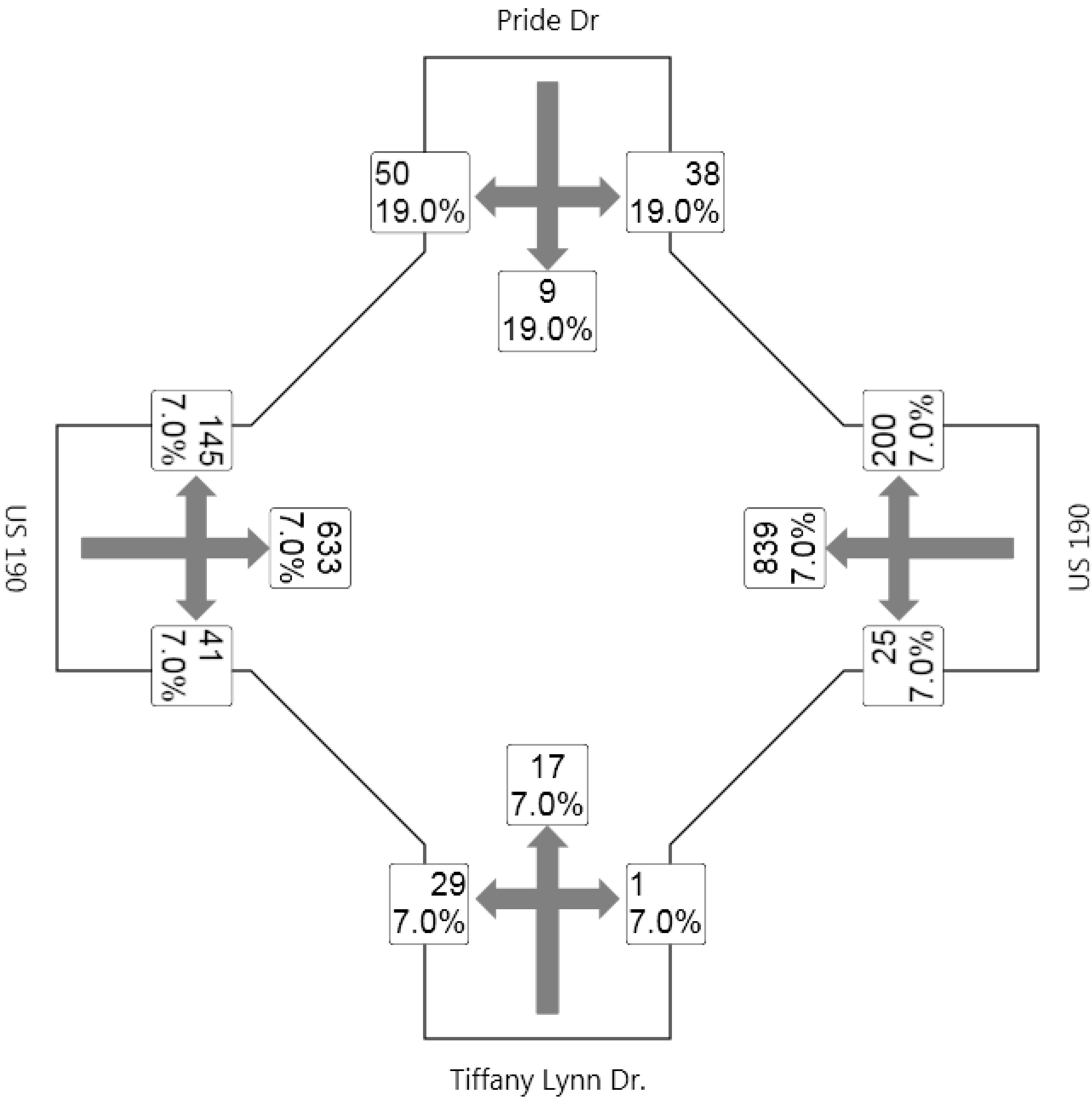
Site: 2015 PM No Build

US 190 at Pride Dr.
2015 PM No Build
Signals - Actuated   Cycle Time = 88 seconds

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: Tiffany Lynn Dr.											
3	L	60	7.0	0.166	60.7	LOS E	3.7	97.7	1.00	0.85	12.3
8	T	1	7.0	0.166	60.7	LOS E	3.7	97.7	1.00	0.85	12.4
18	R	6	7.0	0.165	60.7	LOS E	3.7	97.7	1.00	0.85	12.3
Approach		67	7.0	0.166	60.7	LOS E	3.7	97.7	1.00	0.85	12.3
East: US 190											
1	L	64	7.0	0.238	19.0	LOS B	1.6	42.4	0.87	0.76	23.4
6	T	450	7.0	0.558	18.7	LOS B	15.4	407.2	0.74	0.66	26.6
16	R	22	7.0	0.558	18.7	LOS B	15.4	407.2	0.74	0.98	25.2
Approach		537	7.0	0.558	18.7	LOS B	15.4	407.2	0.76	0.69	26.1
North: Pride Dr											
7	L	126	19.0	0.474	36.2	LOS D	5.9	169.5	0.90	0.80	16.1
4	T	13	19.0	0.474	36.2	LOS D	5.9	169.5	0.90	0.73	16.3
14	R	78	19.0	0.197	3.7	LOS A	1.1	30.7	0.35	0.70	26.9
Approach		217	19.0	0.474	24.5	LOS C	5.9	169.5	0.70	0.76	18.8
West: US 190											
5	L	34	7.0	0.086	10.3	LOS B	0.6	16.9	0.64	0.73	27.3
2	T	647	7.0	0.898	35.5	LOS D	35.7	941.3	0.97	0.96	19.9
12	R	107	7.0	0.898	35.5	LOS D	35.7	941.3	0.97	0.99	19.6
Approach		788	7.0	0.898	34.4	LOS C	35.7	941.3	0.96	0.95	20.1
All Vehicles		1608	8.6	0.898	28.9	LOS C	35.7	941.3	0.86	0.83	21.0

Level of Service (LOS) Method: Delay (HCM 2000).
Vehicle movement LOS values are based on average delay per movement
Intersection and Approach LOS values are based on average delay for all vehicle movements.
HCM Delay Model used. Geometric Delay not included.



US 190 @ Pride Dr

Alternate - 2035 No-Build AM

MOVEMENT SUMMARY

Site: 2035 AM No Build

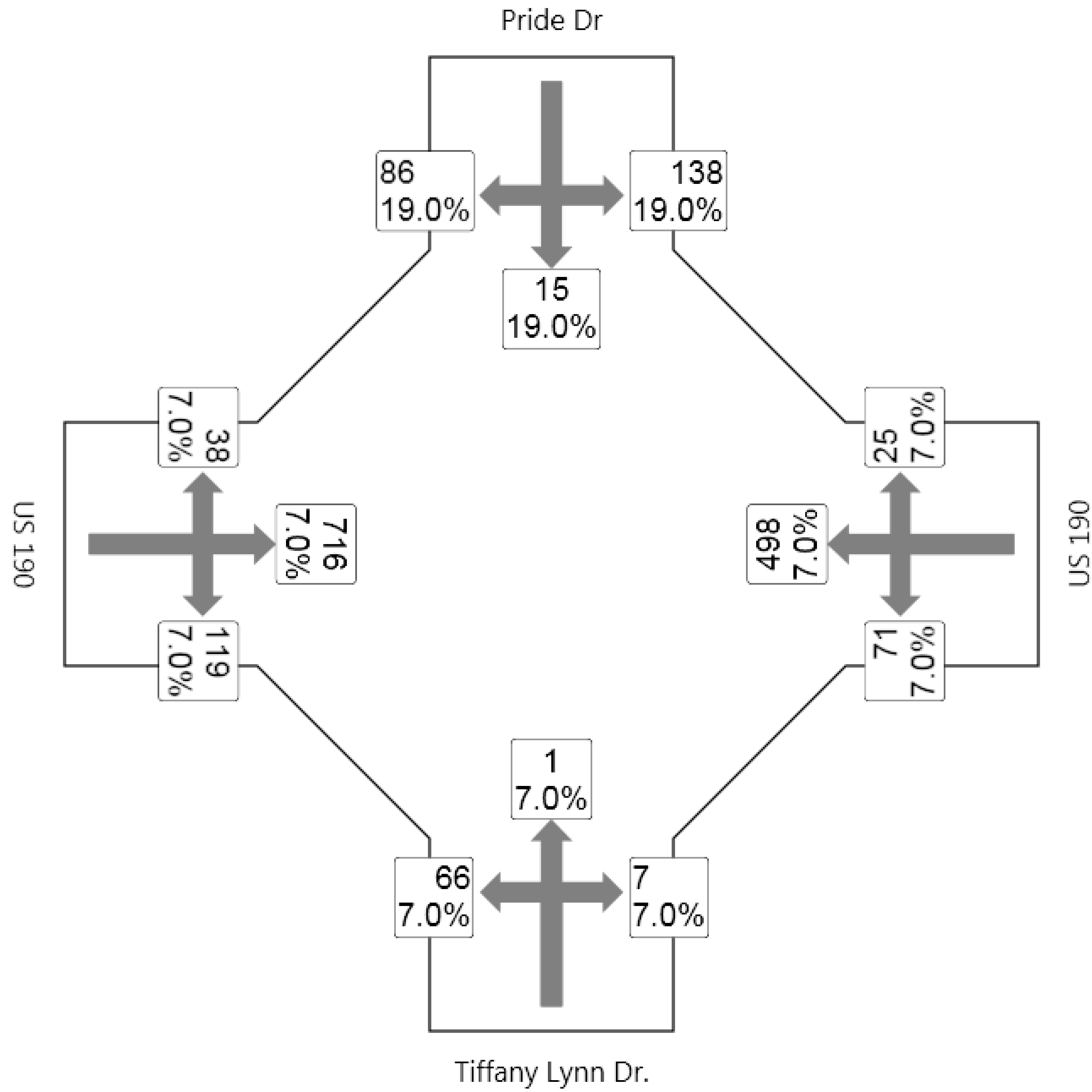
US 190 at Pride Dr.
2035 AM No Build
Signals - Actuated   Cycle Time = 98 seconds

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: Tiffany Lynn Dr.											
3	L	31	7.0	0.134	85.4	LOS F	3.3	87.5	1.00	0.85	10.1
8	T	18	7.0	0.134	85.4	LOS F	3.3	87.5	1.00	0.85	10.1
18	R	1	7.0	0.131	85.4	LOS F	3.3	87.5	1.00	0.85	10.1
Approach		50	7.0	0.134	85.4	LOS F	3.3	87.5	1.00	0.85	10.1
East: US 190											
1	L	27	7.0	0.084	16.5	LOS B	0.6	16.9	0.77	0.73	24.4
6	T	893	7.0	1.376	201.0	LOS F	112.8	2978.4	1.00	1.84	6.0
16	R	213	7.0	1.376	201.0	LOS F	112.8	2978.4	1.00	1.84	5.9
Approach		1132	7.0	1.376	196.7	LOS F	112.8	2978.4	0.99	1.81	6.1
North: Pride Dr											
7	L	40	19.0	0.253	44.0	LOS D	2.4	68.3	0.90	0.76	14.7
4	T	10	19.0	0.253	44.0	LOS D	2.4	68.3	0.90	0.69	14.9
14	R	53	19.0	0.183	10.9	LOS B	1.3	36.9	0.52	0.72	23.4
Approach		103	19.0	0.253	26.9	LOS C	2.4	68.3	0.70	0.73	18.2
West: US 190											
5	L	154	7.0	0.578	28.2	LOS C	5.0	133.2	0.91	0.80	20.3
2	T	673	7.0	0.882	37.8	LOS D	36.9	974.2	0.96	0.93	19.4
12	R	44	7.0	0.882	37.8	LOS D	36.9	974.2	0.96	0.97	19.1
Approach		871	7.0	0.882	36.1	LOS D	36.9	974.2	0.95	0.91	19.5
All Vehicles		2156	7.6	1.376	121.1	LOS F	112.8	2978.4	0.96	1.37	9.0

Level of Service (LOS) Method: Delay (HCM 2000).
Vehicle movement LOS values are based on average delay per movement
Intersection and Approach LOS values are based on average delay for all vehicle movements.
HCM Delay Model used. Geometric Delay not included.

SIDRA INTERSECTION



US 190 @ Pride Dr

Alternate - 2035 No-Build PM

MOVEMENT SUMMARY

Site: 2035 PM No Build

US 190 at Pride Dr.
2035 PM No Build
Signals - Actuated   Cycle Time = 94 seconds

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: Tiffany Lynn Dr.											
3	L	73	7.0	0.217	79.7	LOS E	4.9	129.4	1.00	0.86	10.4
8	T	1	7.0	0.217	79.7	LOS E	4.9	129.4	1.00	0.86	10.5
18	R	8	7.0	0.216	79.7	LOS E	4.9	129.4	1.00	0.86	10.4
Approach		82	7.0	0.217	79.7	LOS E	4.9	129.4	1.00	0.86	10.4
East: US 190											
1	L	79	7.0	0.291	23.1	LOS C	2.4	62.6	0.90	0.74	21.9
6	T	553	7.0	0.685	23.2	LOS C	22.6	595.8	0.82	0.74	24.4
16	R	28	7.0	0.685	23.2	LOS C	22.6	595.8	0.82	0.96	23.5
Approach		660	7.0	0.685	23.2	LOS C	22.6	595.8	0.83	0.75	24.1
North: Pride Dr											
7	L	153	19.0	0.625	44.4	LOS D	8.3	238.1	0.94	0.82	14.6
4	T	17	19.0	0.625	44.4	LOS D	8.3	238.1	0.94	0.78	14.8
14	R	96	19.0	0.278	6.1	LOS A	1.8	50.7	0.42	0.72	25.6
Approach		266	19.0	0.625	30.6	LOS C	8.3	238.1	0.75	0.78	17.3
West: US 190											
5	L	42	7.0	0.112	12.0	LOS B	0.8	20.7	0.68	0.74	26.4
2	T	796	7.0	1.103	86.1	LOS F	64.5	1702.9	1.00	1.37	11.7
12	R	132	7.0	1.103	86.1	LOS F	64.5	1702.9	1.00	1.37	11.5
Approach		970	7.0	1.103	82.9	LOS F	64.5	1702.9	0.99	1.34	11.9
All Vehicles		1978	8.6	1.103	55.8	LOS E	64.5	1702.9	0.90	1.05	15.0

Level of Service (LOS) Method: Delay (HCM 2000).
Vehicle movement LOS values are based on average delay per movement
Intersection and Approach LOS values are based on average delay for all vehicle movements.
HCM Delay Model used. Geometric Delay not included.

SIDRA INTERSECTION

TRAFFIC SIGNAL INVENTORY

LOUISIANA DEPARTMENT OF TRANSPORTATION AND DEVELOPMENT/ TRAFFIC SECTION District 62

TSI NO. 0806
SHEET: 1 OF 5

INTERSECTION: US 190 @ PRIDE DRIVE & TIFFANY LYNN DR.
STATION ID: 806
CITY: HAMMOND **PARISH:** TANGIPAHOA
INSTALLATION DATE: 12/20/10
TYPE SIGNAL: FULLY ACTUATED, ISOLATED
LAST REVISION DATE:

PHASES	Φ2		Φ6	Φ4		Φ8	Φ1		Φ5										FL
INTERVALS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	
SIGNAL FACES 1	G	Y	R			R			R										Y
2	G	Y	R			R	←G/R	←Y/R	R										Y
3	G	Y	R			R	←G/R	←Y/R	R										Y
4	G	Y	R			R			R										Y
5			R	G	Y	G			R										R
6			R	G	Y	G			R										R
7			R	G	Y	R			R										R
8			R	G	Y	R			R										R
9																			
10																			
11																			
12																			
13																			
14																			
15																			
16																			

Hours of Flashing Operation: Emergency

TIME	SEC	**FREE OPERATION**
FO	SEC	
YP	SEC	

Offset = sec

PLAN = 1 CYCLE LENGTH = TIMES OF OPERATION = ALL TIMES

TIME	SEC	
FO	SEC	
YP	SEC	

Offset = sec

PLAN = 2 CYCLE LENGTH = TIMES OF OPERATION =

TIME	SEC	
FO	SEC	
YP	SEC	

Offset = sec

PLAN = CYCLE LENGTH = TIMES OF OPERATION =

TIME	SEC	
FO	SEC	
YP	SEC	

Offset = sec

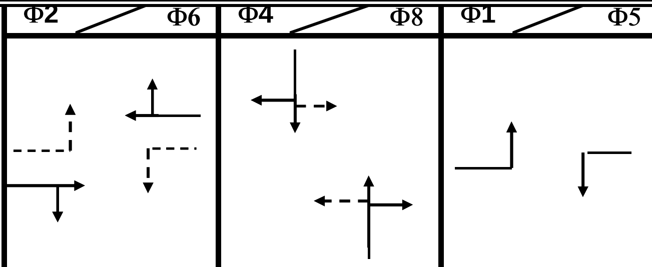
PLAN = CYCLE LENGTH = TIMES OF OPERATION =

TIME	SEC	
FO	SEC	
YP	SEC	

Offset = sec

PLAN = CYCLE LENGTH = TIMES OF OPERATION =

PHASING Φ2 / Φ6 Φ4 / Φ8 Φ1 / Φ5

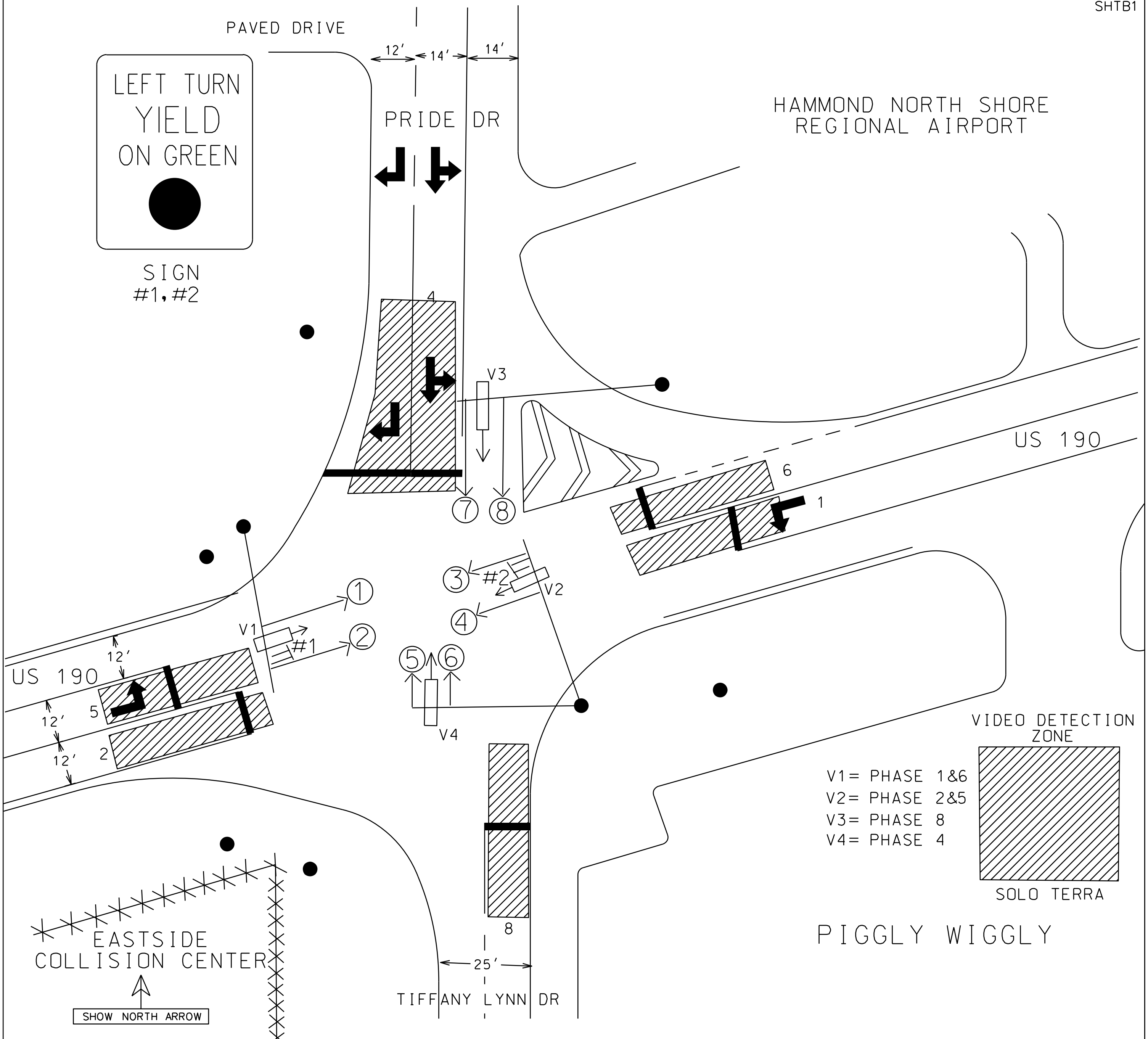


SIGNAL WARRANTS: 1B, 2, 3A MAINTAINED BY: LADOTD CONTROLLER MANUF: NAZTEC TS2 SYSTEM #:

MASTER/ SLAVE: MASTER AT TSI #: COORDINATED WITH TSI #'S:

CONTROL SECTION 013-09	HIGHWAY US 190	PARISH Tangipahoa	TSI NO. 806	SHEET 2 OF 5

SHTB1



- • WOOD POLE
- • METAL POLE
- o——o SPAN WIRE
- ⊠ CONTROLLER
- ▭ STOP LINE
- —— PED CROSS WALK
- #2 SPAN WIRE SIGN & NO.
- #3 GROUND MOUNT SIGN & NO.
- #3 OVERHEAD SIGN & NO.
- L4 LOOP DETECTOR & NO.
- ②←□ PEDESTAL MOUNT SIGNAL & NO.
- ②← SIGNAL FACE & NO.
- [2]← PEDESTRIAN SIGNAL & NO.
- ⊙ PED BUTTON & SIGN
- PARALLEL PARKING

EXISTING SPEED LIMITS

US 190 – 45 MPH

SIGNAL FACES	1, 4-8					2,3				
TOTALS	6					2				
R - RED Y - YELLOW ←G - GREEN ←G - GREEN ARROW Y - YELLOW ARROW DK - DARK 12" - 12" DIA. LENS W - WALK DW - DON'T WALK FDW - FLASHING DON'T WALK	R 12" Y 12" G 12" LED					R 12" ←Y Y 12" ←G G 12" LED				PED

TRAFFIC SIGNAL INVENTORY			**TSI NO.**	**0806**
LOUISIANA DEPARTMENT OF TRANSPORTATION AND DEVELOPMENT/ TRAFFIC SECTION			SHEET: 3	OF 5
CONTROL SECTION: 013-09	**HIGHWAY:** US 190		**PARISH:** TANGIPAHOA	

Phase Timing Parameters

Phase Designation		1	2	3	4	5	6	7	8
Movement Description									
PARAMETER	RANGE								
MIN GREEN (MIN I)	0 - 99.0	5.0	10.0		5.0	5.0	10.0		5.0
PASSAGE TIME	0 - 9.9	3.0	5.0		3.0	3.0	5.0		3.0
MAX GREEN I (MAX I)	0 - 99.0	15.0	45.0		20.0	15.0	45.0		20.0
MAX GREEN II (MAX II)	0 - 99.0								
YELLOW CLEARANCE (YEL)	3 - 9.9	5.0	5.0		5.0	5.0	5.0		5.0
RED CLEARANCE (RED)	0 - 9.9	1.0	1.0		1.0	2.0	1.0		1.0
WALK (WALK)	0 - 99.0								
PED CLEARANCE (P CLR)	0 - 99.0								
ADDED INITIAL GREEN	0 - 9.9								
TIME TO REDUCE	0 - 99.0								
TIME BEFORE REDUCTION	0 - 99.0								
MIN GAP	0 - 9.9								
MAX INITIAL GREEN	0 - 99								
WALK 2	0 - 99.0								
PED CLEARANCE 2	0 - 99.0								
MAX 3	0 - 99.0								
MAX EXTENSION	0 - 99.0								
RECALL	CODES	NON	MIN		NON		MIN		NON
LOOP # - DELAY (in sec.)	0 - 99.0								
LOOP # - EXTEND (in sec.)	0 - 9.9								

RECALL FUNCTIONS	
MON	MEMORY ON
MOF	MEMORY OFF
MIN	MINIMUM
MAX	MAXIMUM
PMN	PEDESTRIAN AND MINIMUM
PMX	PEDESTRIAN AND MAXIMUM

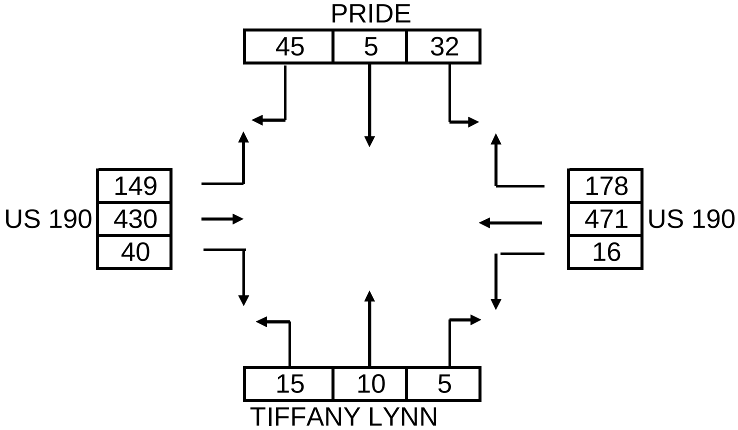
Note 1:

Note 2:

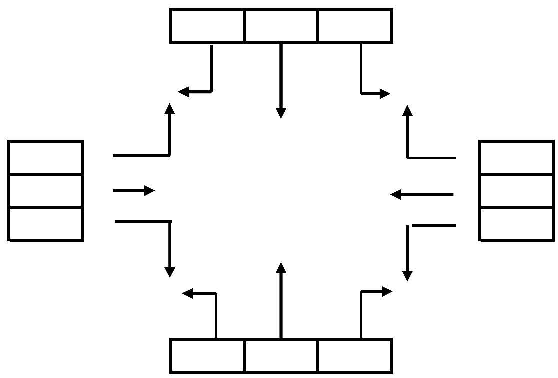
Note 3:

TRAFFIC SIGNAL INVENTORY	TSI NO. 0806
LOUISIANA DEPARTMENT OF TRANSPORTATION AND DEVELOPMENT/ TRAFFIC SECTION	SHEET: 4 OF 5

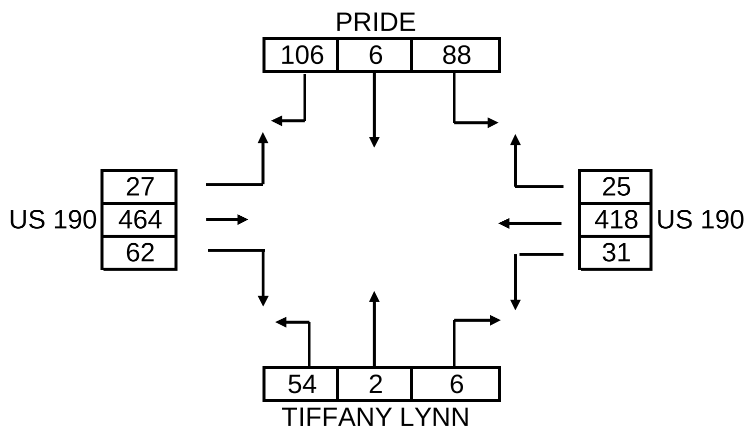
CONTROL SECTION:	013-09	**HIGHWAY:**	US 190	**PARISH:**	TANGIPAHOA



AM PEAK HOUR: 7:00 - 8:00 AM 4-1-09



MIDDAY PEAK HOUR:



PM PEAK HOUR: 4:00 - 5:00 PM 4-1-09

/\
|
SHOW NORTH ARROW

TRAFFIC VOLUMES - VPH

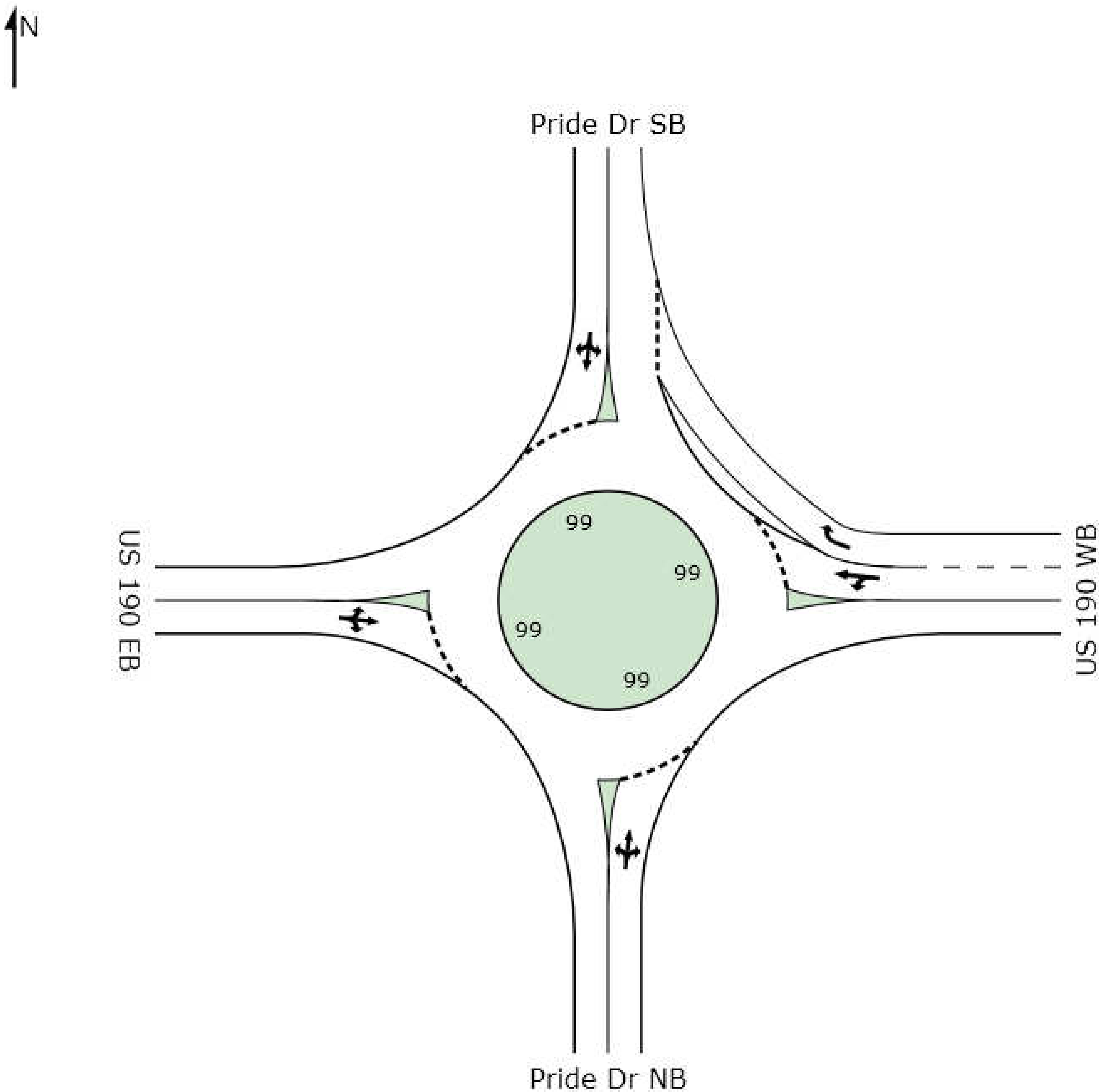
Peak Hour Factor ( )

[illegible], 352, 355

CAM #	ZONE SIZE	PHASE #	MOVEMENT DESCRIPTION
1	12' X 60'	1 & 6	SB N 1ST STREET - THRU/LEFT/RIGHT
2	12' X 60'	2 & 5	WB US 51 - THRU/LEFT/RIGHT
3	12' X 60'	8	NB US 51 - THRU/LEFT/RIGHT
4	12' X 60'	4	EB CHESTNUT - THRU/LEFT/RIGHT

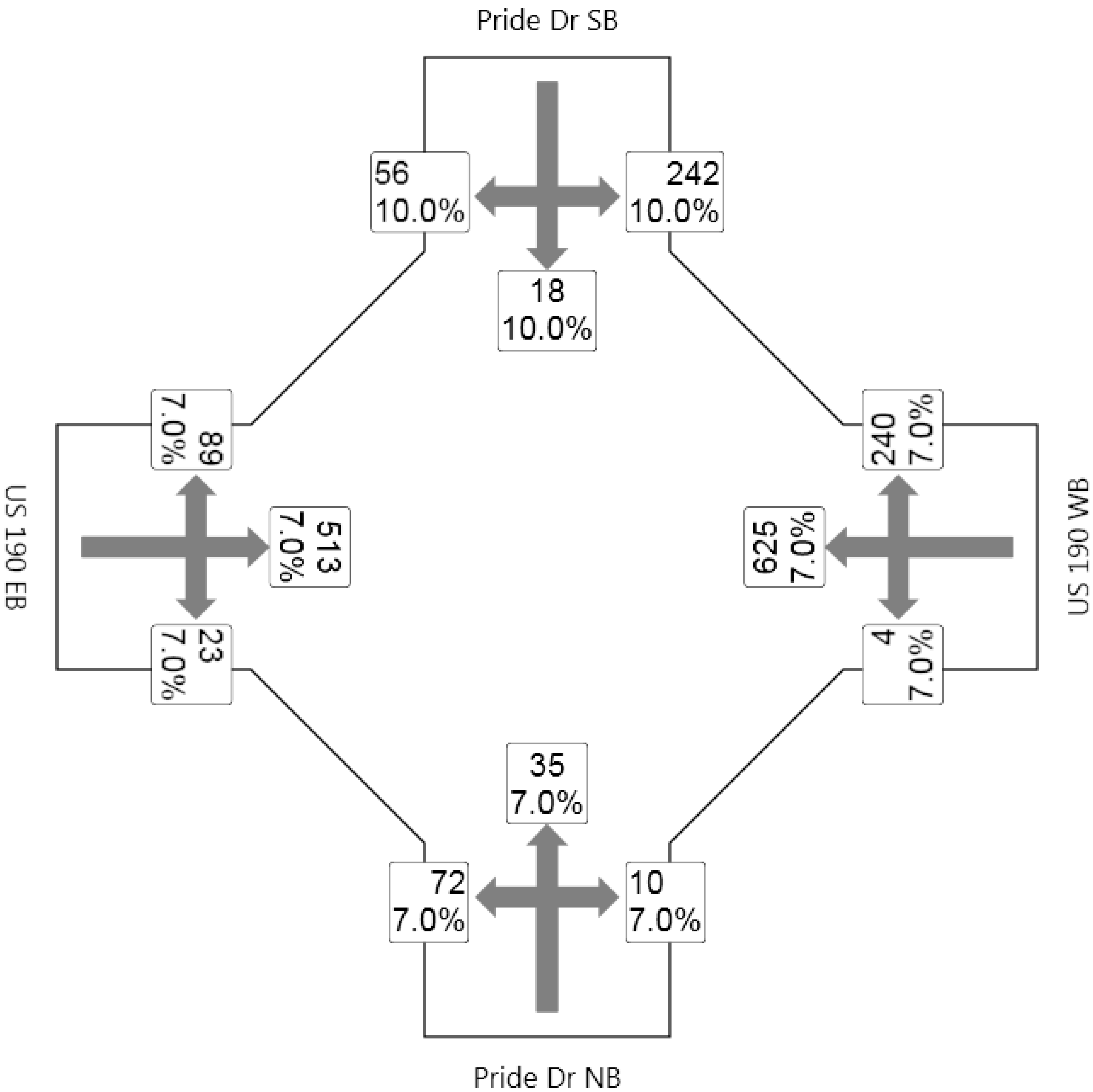
INTERSECTION US 190 at Pride Dr

Single Lane Roundabout Analysis



US 190 @ Pride Dr

Alternate - A



US 190 @ Pride Dr

Alternate - A, 2015 AM

MOVEMENT SUMMARY

Site: 190@Pride 2015 AM-A

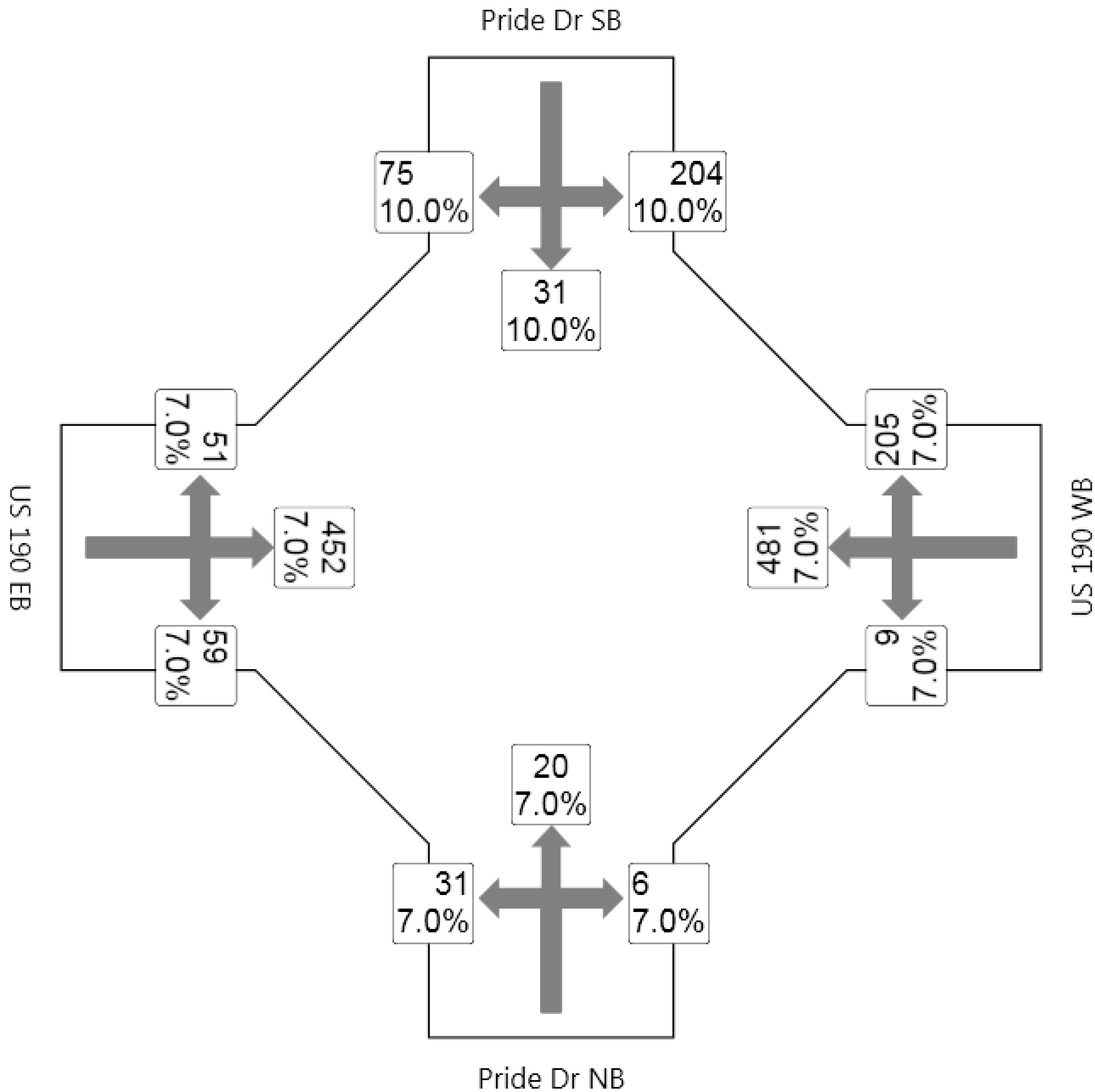
US 190 at Pride Dr
AM Peak - 2015 Alt A
Roundabout

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: Pride Dr NB											
3	L	77	7.0	0.354	24.2	LOS C	2.3	61.6	0.93	1.00	25.2
8	T	37	7.0	0.354	15.3	LOS B	2.3	61.6	0.93	0.97	24.9
18	R	11	7.0	0.354	17.6	LOS B	2.3	61.6	0.93	0.98	25.9
Approach		124	7.0	0.354	21.0	LOS C	2.3	61.6	0.93	0.99	25.2
East: US 190 WB											
1	L	4	7.0	0.589	15.3	LOS B	5.1	135.6	0.65	0.83	32.6
6	T	665	7.0	0.589	10.9	LOS B	5.1	135.6	0.65	0.66	36.2
16	R	255	7.0	0.221	8.8	LOS A	1.4	36.4	0.38	0.56	35.7
Approach		924	7.0	0.589	10.3	LOS B	5.1	135.6	0.57	0.63	36.0
North: Pride Dr SB											
7	L	257	10.0	0.747	34.9	LOS C	8.1	219.3	1.00	1.23	22.1
4	T	19	10.0	0.747	25.3	LOS C	8.1	219.3	1.00	1.23	21.5
14	R	60	10.0	0.747	29.1	LOS C	8.1	219.3	1.00	1.23	23.7
Approach		336	10.0	0.747	33.3	LOS C	8.1	219.3	1.00	1.23	22.4
West: US 190 EB											
5	L	95	7.0	0.807	24.2	LOS C	12.6	333.8	1.00	0.98	29.2
2	T	546	7.0	0.807	18.4	LOS B	12.6	333.8	1.00	0.98	32.4
12	R	24	7.0	0.807	18.8	LOS B	12.6	333.8	1.00	0.98	31.2
Approach		665	7.0	0.807	19.3	LOS B	12.6	333.8	1.00	0.98	31.9
All Vehicles		2050	7.5	0.807	17.7	LOS B	12.6	333.8	0.80	0.87	30.8

Level of Service (LOS) Method: Delay (HCM 2000).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay per movement
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model used.

SIDRA INTERSECTION



US 190 @ Pride Dr

Alternate - A, 2015 PM

MOVEMENT SUMMARY

Site: 190@Pride 2015 PM-A

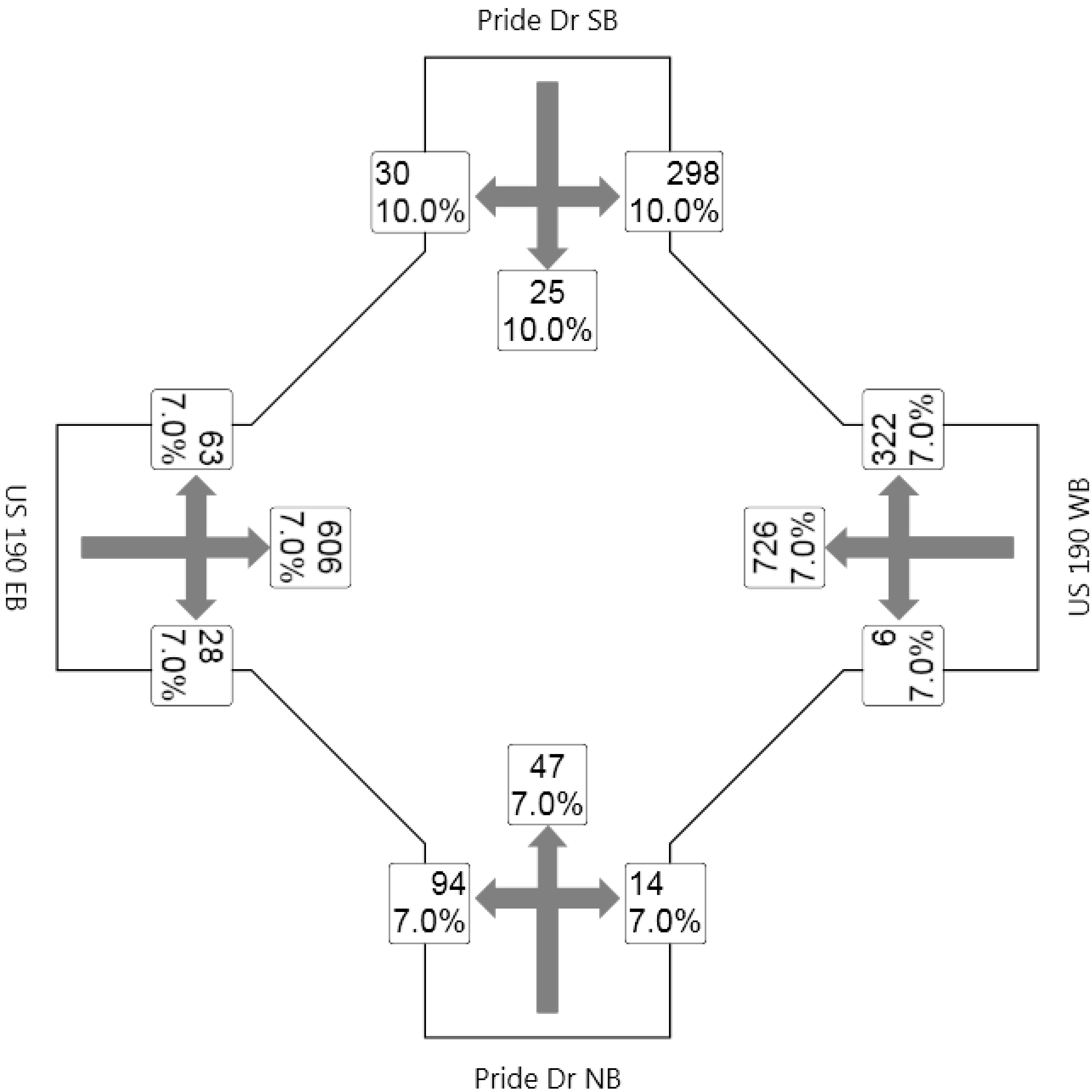
US 190 at Pride Dr
PM Peak - 2015 Alt A
Roundabout

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: Pride Dr NB											
3	L	34	7.0	0.147	20.7	LOS C	0.9	23.0	0.82	0.91	26.6
8	T	22	7.0	0.147	11.9	LOS B	0.9	23.0	0.82	0.83	26.7
18	R	7	7.0	0.147	14.2	LOS B	0.9	23.0	0.82	0.86	27.6
Approach		63	7.0	0.147	16.9	LOS B	0.9	23.0	0.82	0.88	26.8
East: US 190 WB											
1	L	10	7.0	0.427	14.2	LOS B	3.2	84.7	0.41	0.84	32.9
6	T	534	7.0	0.427	9.8	LOS A	3.2	84.7	0.41	0.56	37.5
16	R	228	7.0	0.186	8.4	LOS A	1.1	29.7	0.28	0.53	36.3
Approach		772	7.0	0.427	9.5	LOS A	3.2	84.7	0.37	0.56	37.1
North: Pride Dr SB											
7	L	227	10.0	0.593	24.4	LOS C	5.1	138.1	0.87	1.08	26.0
4	T	34	10.0	0.593	14.7	LOS B	5.1	138.1	0.87	1.02	26.3
14	R	83	10.0	0.593	18.5	LOS B	5.1	138.1	0.87	1.05	28.4
Approach		344	10.0	0.593	22.0	LOS C	5.1	138.1	0.87	1.07	26.6
West: US 190 EB											
5	L	57	7.0	0.743	21.8	LOS C	9.7	256.8	0.91	0.94	30.6
2	T	502	7.0	0.743	16.0	LOS B	9.7	256.8	0.91	0.90	34.2
12	R	66	7.0	0.743	16.4	LOS B	9.7	256.8	0.91	0.91	33.0
Approach		624	7.0	0.743	16.6	LOS B	9.7	256.8	0.91	0.90	33.8
All Vehicles		1804	7.6	0.743	14.6	LOS B	9.7	256.8	0.67	0.78	33.0

Level of Service (LOS) Method: Delay (HCM 2000).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay per movement
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model used.

SIDRA INTERSECTION



US 190 @ Pride Dr

Alternate - A, 2035 AM

MOVEMENT SUMMARY

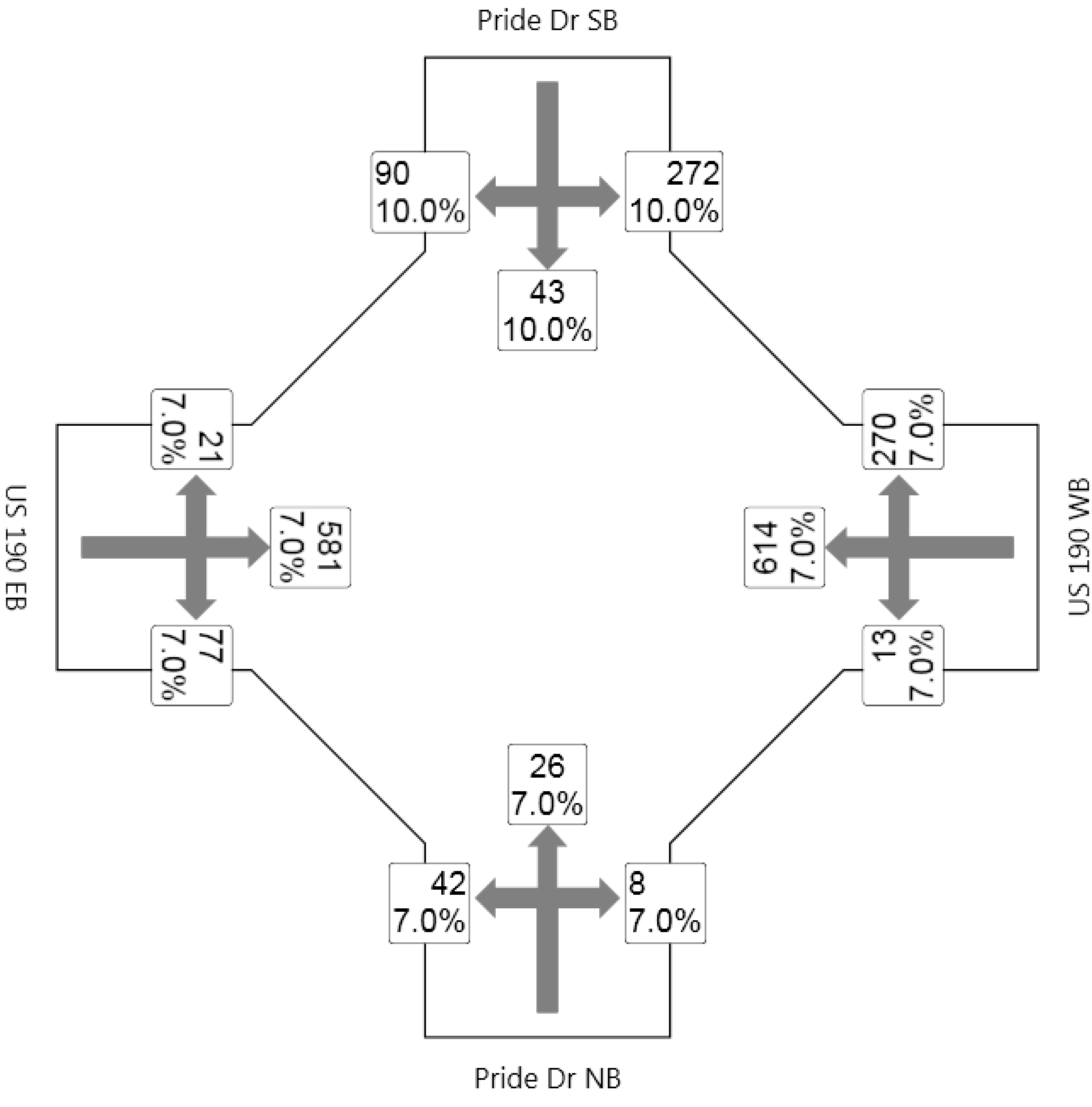
Site: 190@Pride 2035 AM-A

US 190 at Pride Dr
AM Peak - 2035 Alt A
Roundabout

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: Pride Dr NB											
3	L	100	7.0	0.493	31.2	LOS C	4.0	105.8	1.00	1.10	22.9
8	T	50	7.0	0.493	22.3	LOS C	4.0	105.8	1.00	1.10	22.1
18	R	15	7.0	0.493	24.6	LOS C	4.0	105.8	1.00	1.10	23.1
Approach		165	7.0	0.493	27.9	LOS C	4.0	105.8	1.00	1.10	22.7
East: US 190 WB											
1	L	6	7.0	0.634	15.2	LOS B	6.1	162.2	0.70	0.81	32.8
6	T	772	7.0	0.634	10.9	LOS B	6.1	162.2	0.70	0.66	35.9
16	R	343	7.0	0.263	8.6	LOS A	1.7	44.8	0.35	0.55	35.9
Approach		1121	7.0	0.634	10.2	LOS B	6.1	162.2	0.59	0.63	35.9
North: Pride Dr SB											
7	L	317	10.0	0.877	51.6	LOS D	13.3	359.4	1.00	1.45	18.0
4	T	27	10.0	0.877	41.9	LOS D	13.3	359.4	1.00	1.45	16.9
14	R	32	10.0	0.877	45.7	LOS D	13.3	359.4	1.00	1.45	18.9
Approach		376	10.0	0.877	50.4	LOS D	13.3	359.4	1.00	1.45	18.0
West: US 190 EB											
5	L	67	7.0	0.884	29.4	LOS C	17.6	464.6	1.00	1.12	26.6
2	T	645	7.0	0.884	23.6	LOS C	17.6	464.6	1.00	1.12	29.2
12	R	30	7.0	0.884	23.9	LOS C	17.6	464.6	1.00	1.12	27.8
Approach		741	7.0	0.884	24.1	LOS C	17.6	464.6	1.00	1.12	28.9
All Vehicles		2403	7.5	0.884	22.0	LOS C	17.6	464.6	0.81	0.94	28.1

Level of Service (LOS) Method: Delay (HCM 2000).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay per movement
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model used.



US 190 @ Pride Dr

Alternate - A, 2035 PM

MOVEMENT SUMMARY

Site: 190@Pride 2035 PM-A

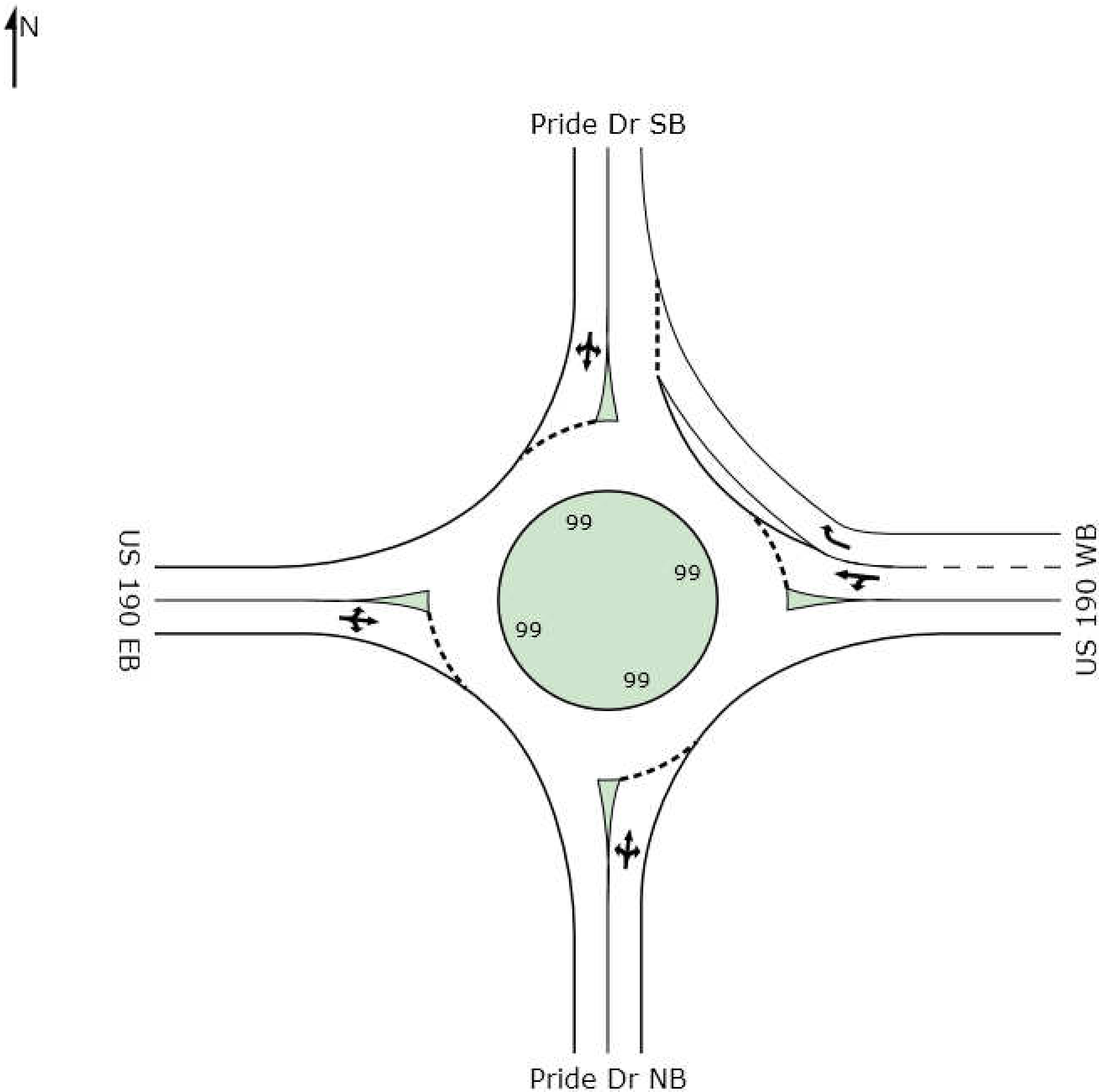
US 190 at Pride Dr
PM Peak - 2035 Alt A
Roundabout

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: Pride Dr NB											
3	L	47	7.0	0.229	23.4	LOS C	1.5	40.5	0.93	0.96	25.6
8	T	29	7.0	0.229	14.6	LOS B	1.5	40.5	0.93	0.93	25.3
18	R	9	7.0	0.229	16.8	LOS B	1.5	40.5	0.93	0.94	26.3
Approach		84	7.0	0.229	19.7	LOS B	1.5	40.5	0.93	0.95	25.6
East: US 190 WB											
1	L	14	7.0	0.495	14.1	LOS B	4.4	115.5	0.42	0.82	32.9
6	T	682	7.0	0.495	9.7	LOS A	4.4	115.5	0.42	0.55	37.4
16	R	300	7.0	0.217	8.2	LOS A	1.3	35.4	0.22	0.52	36.7
Approach		997	7.0	0.495	9.3	LOS A	4.4	115.5	0.36	0.54	37.1
North: Pride Dr SB											
7	L	302	10.0	0.810	36.8	LOS D	11.2	301.1	1.00	1.33	21.6
4	T	48	10.0	0.810	27.2	LOS C	11.2	301.1	1.00	1.33	21.0
14	R	100	10.0	0.810	30.9	LOS C	11.2	301.1	1.00	1.33	23.1
Approach		450	10.0	0.810	34.5	LOS C	11.2	301.1	1.00	1.33	21.9
West: US 190 EB											
5	L	23	7.0	0.915	32.8	LOS C	20.3	534.7	1.00	1.19	25.0
2	T	646	7.0	0.915	27.0	LOS C	20.3	534.7	1.00	1.19	27.4
12	R	86	7.0	0.915	27.4	LOS C	20.3	534.7	1.00	1.19	26.0
Approach		754	7.0	0.915	27.2	LOS C	20.3	534.7	1.00	1.19	27.2
All Vehicles		2286	7.6	0.915	20.6	LOS C	20.3	534.7	0.72	0.93	29.1

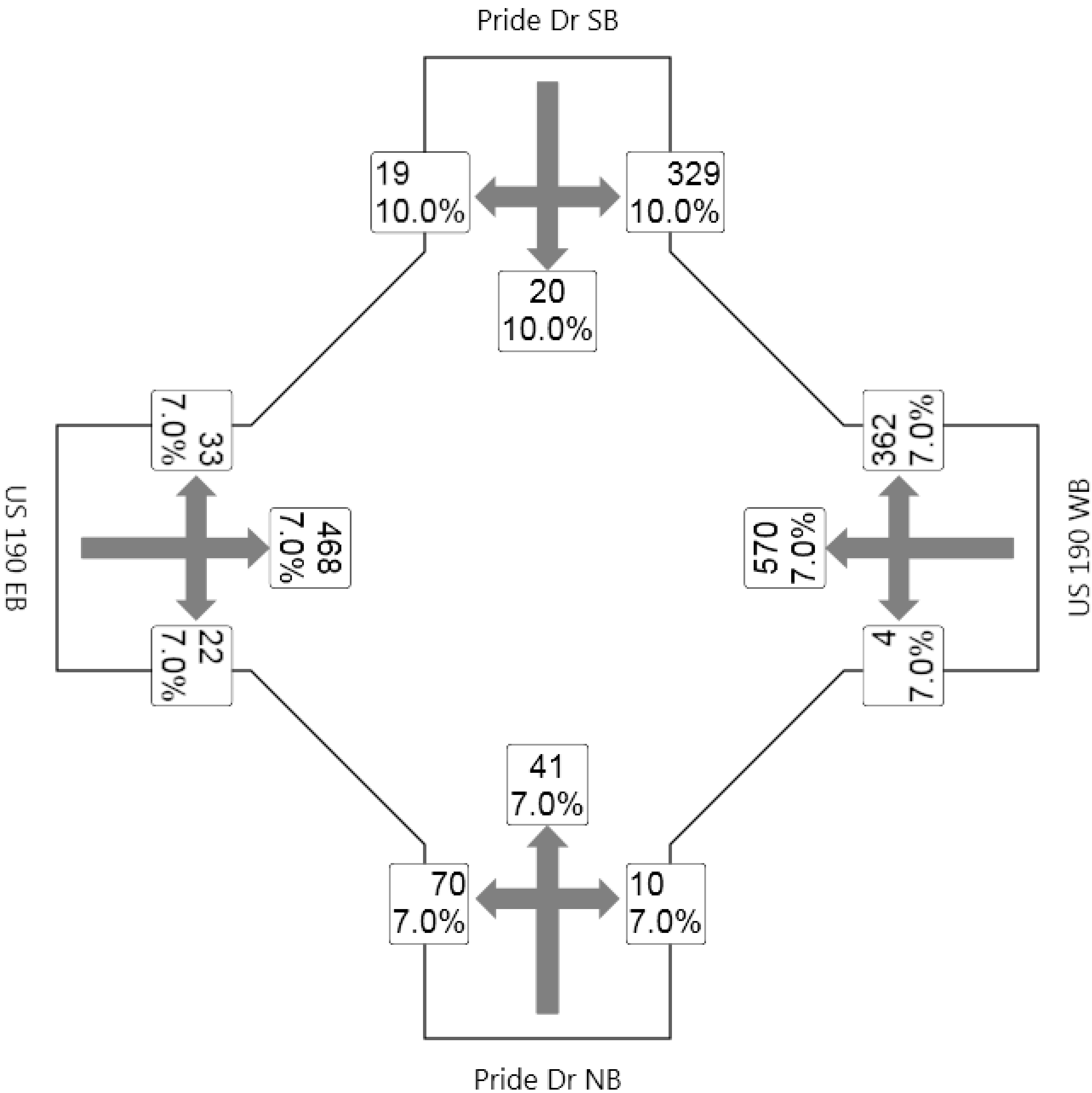
Level of Service (LOS) Method: Delay (HCM 2000).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay per movement
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model used.

SIDRA INTERSECTION



US 190 @ Pride Dr

Alternate - B



US 190 @ Pride Dr

Alternate - B, 2015 AM

MOVEMENT SUMMARY

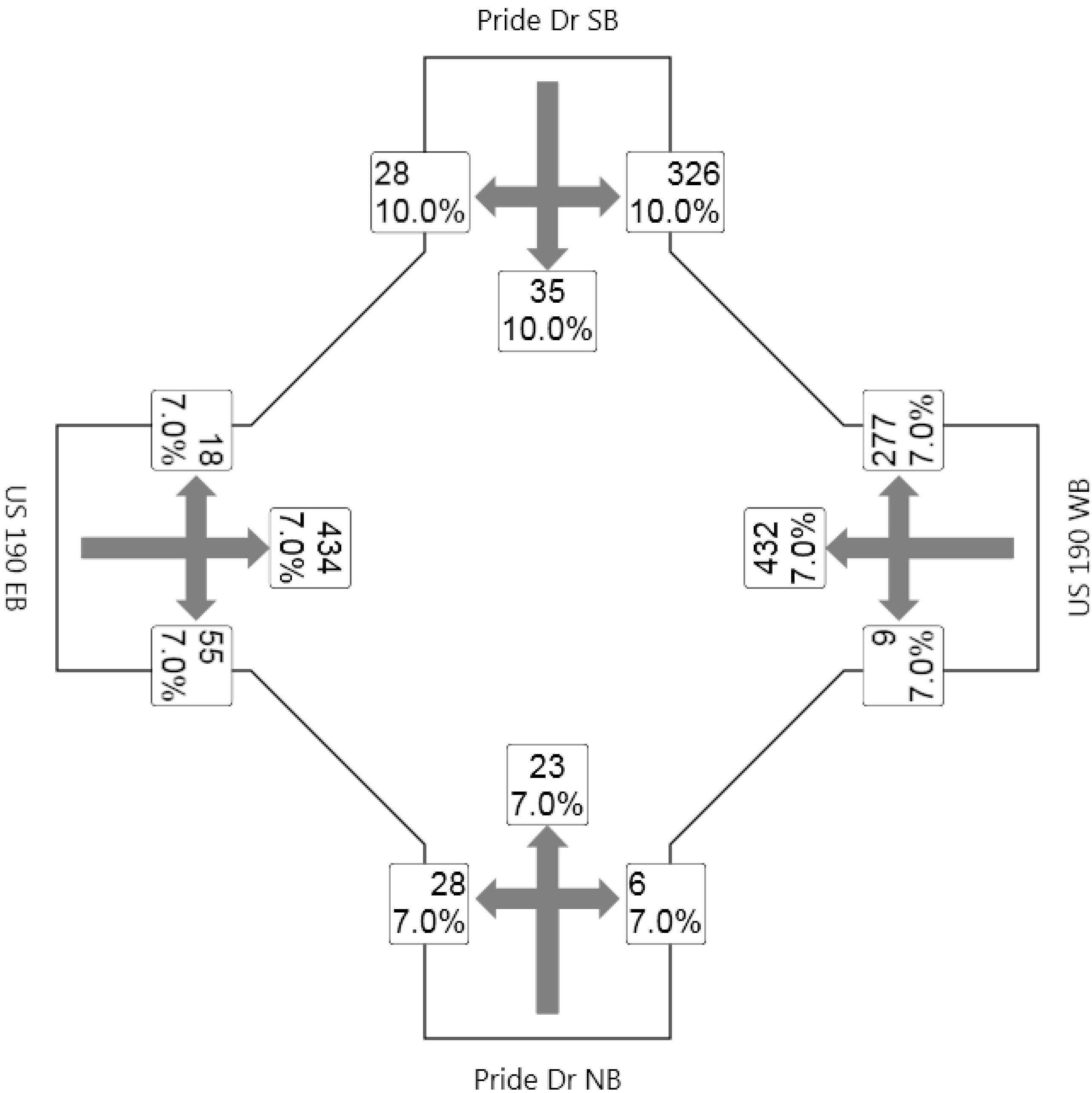
Site: 190@Pride 2015 AM-B

US 190 at Pride Dr
AM Peak - 2015 Alt B
Roundabout

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: Pride Dr NB											
3	L	74	7.0	0.341	23.6	LOS C	2.2	57.5	0.90	0.99	25.5
8	T	44	7.0	0.341	14.8	LOS B	2.2	57.5	0.90	0.94	25.2
18	R	11	7.0	0.341	17.0	LOS B	2.2	57.5	0.90	0.96	26.2
Approach		129	7.0	0.341	20.1	LOS C	2.2	57.5	0.90	0.97	25.5
East: US 190 WB											
1	L	4	7.0	0.508	14.6	LOS B	4.3	113.4	0.54	0.82	32.9
6	T	606	7.0	0.508	10.3	LOS B	4.3	113.4	0.54	0.60	36.8
16	R	385	7.0	0.314	8.5	LOS A	2.1	55.4	0.31	0.53	36.1
Approach		996	7.0	0.508	9.6	LOS A	4.3	113.4	0.45	0.58	36.5
North: Pride Dr SB											
7	L	350	10.0	0.780	34.7	LOS C	9.3	251.9	1.00	1.27	22.2
4	T	21	10.0	0.780	25.1	LOS C	9.3	251.9	1.00	1.27	21.6
14	R	20	10.0	0.780	28.8	LOS C	9.3	251.9	1.00	1.27	23.8
Approach		391	10.0	0.780	33.9	LOS C	9.3	251.9	1.00	1.27	22.2
West: US 190 EB											
5	L	35	7.0	0.791	26.4	LOS C	11.1	292.3	1.00	1.08	28.1
2	T	498	7.0	0.791	20.6	LOS C	11.1	292.3	1.00	1.08	31.1
12	R	23	7.0	0.791	21.0	LOS C	11.1	292.3	1.00	1.08	29.8
Approach		556	7.0	0.791	21.0	LOS C	11.1	292.3	1.00	1.08	30.8
All Vehicles		2072	7.6	0.791	17.9	LOS B	11.1	292.3	0.73	0.87	30.4

Level of Service (LOS) Method: Delay (HCM 2000).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay per movement
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model used.

SIDRA INTERSECTION



US 190 @ Pride Dr

Alternate - B, 2015 PM

MOVEMENT SUMMARY

Site: 190@Pride 2015 PM-B

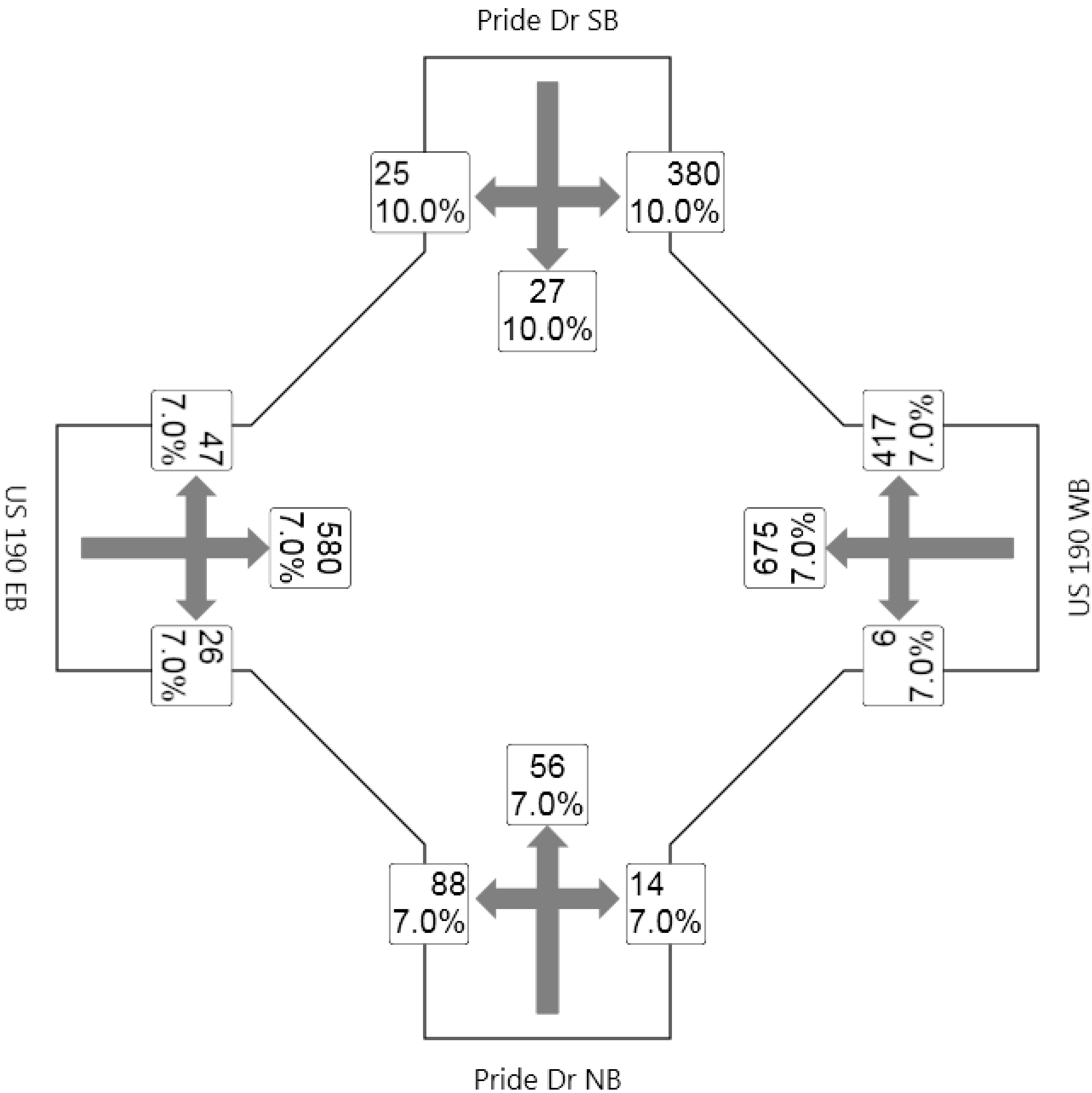
US 190 at Pride Dr
PM Peak - 2015 Alt B
Roundabout

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: Pride Dr NB											
3	L	31	7.0	0.161	22.2	LOS C	1.0	25.5	0.85	0.94	26.1
8	T	26	7.0	0.161	13.4	LOS B	1.0	25.5	0.85	0.86	26.0
18	R	7	7.0	0.161	15.7	LOS B	1.0	25.5	0.85	0.89	26.9
Approach		63	7.0	0.161	18.0	LOS B	1.0	25.5	0.85	0.90	26.1
East: US 190 WB											
1	L	10	7.0	0.367	13.9	LOS B	2.7	71.7	0.32	0.86	32.9
6	T	480	7.0	0.367	9.5	LOS A	2.7	71.7	0.32	0.53	38.0
16	R	308	7.0	0.242	8.2	LOS A	1.5	39.8	0.21	0.52	36.7
Approach		798	7.0	0.367	9.1	LOS A	2.7	71.7	0.28	0.53	37.5
North: Pride Dr SB											
7	L	362	10.0	0.690	25.9	LOS C	7.2	193.4	0.90	1.13	25.3
4	T	39	10.0	0.690	16.2	LOS B	7.2	193.4	0.90	1.09	25.4
14	R	31	10.0	0.690	20.0	LOS C	7.2	193.4	0.90	1.11	27.5
Approach		432	10.0	0.690	24.6	LOS C	7.2	193.4	0.90	1.13	25.4
West: US 190 EB											
5	L	20	7.0	0.833	29.7	LOS C	12.8	337.0	1.00	1.16	26.4
2	T	482	7.0	0.833	23.9	LOS C	12.8	337.0	1.00	1.16	29.1
12	R	61	7.0	0.833	24.2	LOS C	12.8	337.0	1.00	1.16	27.7
Approach		563	7.0	0.833	24.1	LOS C	12.8	337.0	1.00	1.16	28.9
All Vehicles		1857	7.7	0.833	17.6	LOS B	12.8	337.0	0.66	0.87	30.8

Level of Service (LOS) Method: Delay (HCM 2000).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay per movement
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model used.

SIDRA INTERSECTION



US 190 @ Pride Dr

Alternate - B, 2035 AM

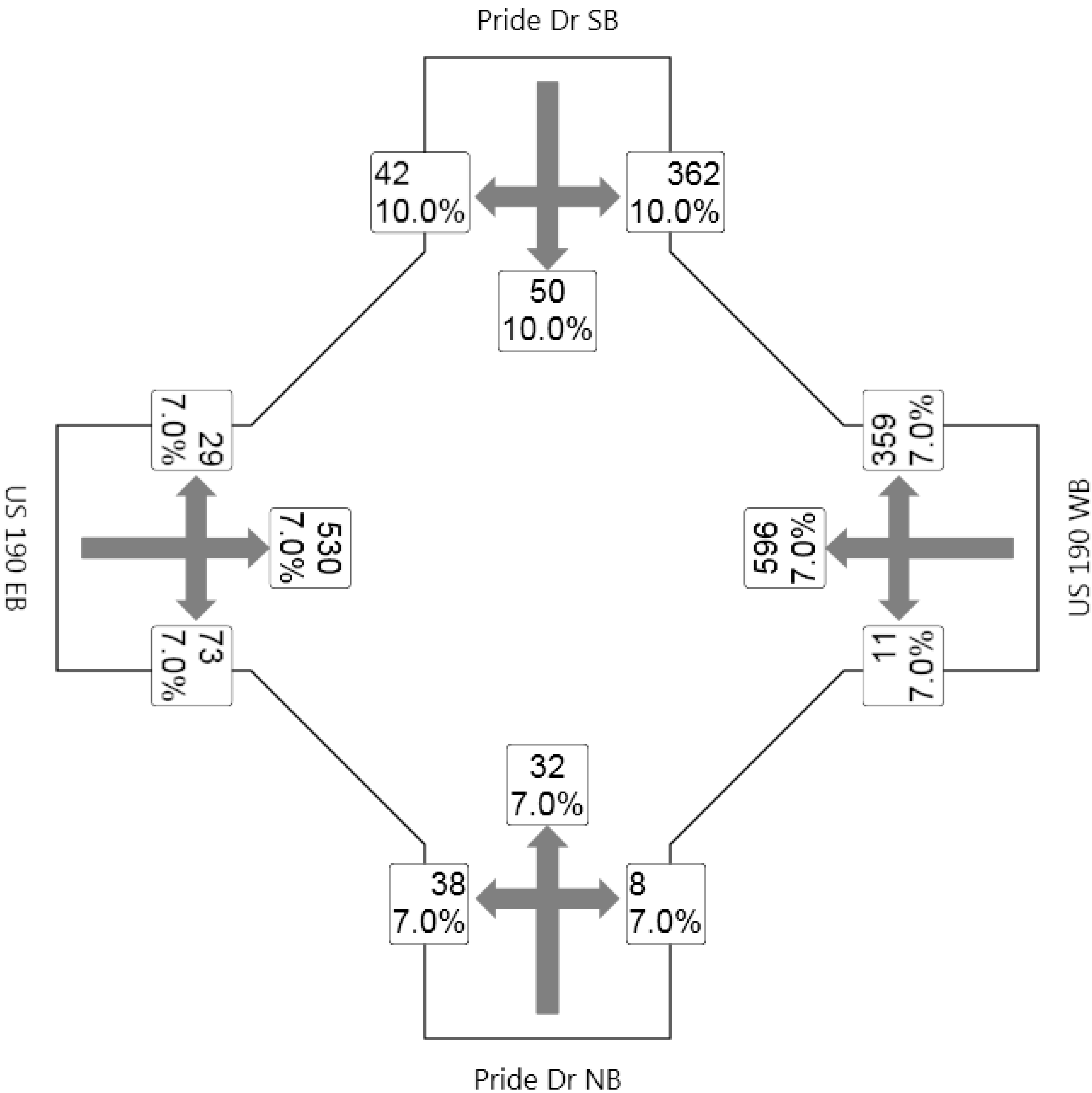
MOVEMENT SUMMARY

US 190 at Pride Dr
AM Peak - 2035 Alt B
Roundabout

Movement Performance - Vehicles												
Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: Pride Dr NB											
3	L	94	7.0	0.520	34.6	LOS C	4.4	115.2	1.00	1.13	21.8
8	T	60	7.0	0.520	25.8	LOS C	4.4	115.2	1.00	1.13	20.9
18	R	15	7.0	0.520	28.1	LOS C	4.4	115.2	1.00	1.13	21.9
Approach		168	7.0	0.520	30.9	LOS C	4.4	115.2	1.00	1.13	21.6
East: US 190 WB											
1	L	6	7.0	0.584	15.0	LOS B	5.4	143.0	0.65	0.81	32.9
6	T	718	7.0	0.584	10.6	LOS B	5.4	143.0	0.65	0.64	36.1
16	R	444	7.0	0.338	8.6	LOS A	2.3	62.0	0.37	0.55	35.8
Approach		1168	7.0	0.584	9.9	LOS A	5.4	143.0	0.54	0.61	36.0
North: Pride Dr SB											
7	L	404	10.0	0.967	63.2	LOS E	20.0	540.9	1.00	1.68	15.9
4	T	29	10.0	0.967	53.5	LOS D	20.0	540.9	1.00	1.68	14.7
14	R	27	10.0	0.967	57.3	LOS E	20.0	540.9	1.00	1.68	16.6
Approach		460	10.0	0.967	62.2	LOS E	20.0	540.9	1.00	1.68	15.8
West: US 190 EB											
5	L	50	7.0	0.944	39.9	LOS D	22.1	583.0	1.00	1.34	22.3
2	T	617	7.0	0.944	34.1	LOS C	22.1	583.0	1.00	1.34	24.3
12	R	28	7.0	0.944	34.5	LOS C	22.1	583.0	1.00	1.34	22.7
Approach		695	7.0	0.944	34.6	LOS C	22.1	583.0	1.00	1.34	24.1
All Vehicles		2490	7.6	0.967	27.8	LOS C	22.1	583.0	0.78	1.04	25.2

Level of Service (LOS) Method: Delay (HCM 2000).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay per movement
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model used.

SIDRA INTERSECTION



US 190 @ Pride Dr

Alternate - B, 2035 PM

MOVEMENT SUMMARY

Site: 190@Pride 2035 PM-B

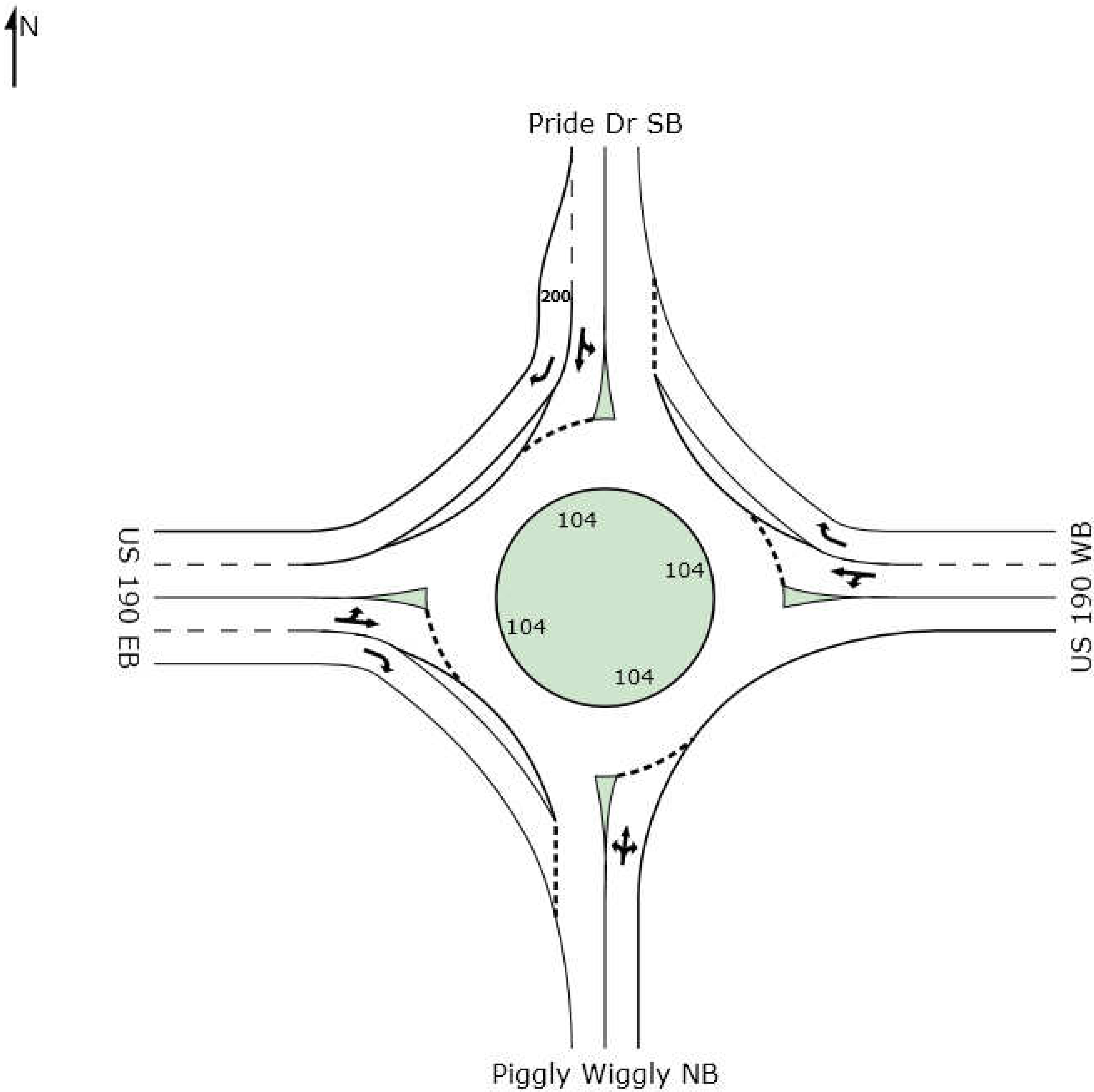
US 190 at Pride Dr
PM Peak - 2035 Alt B
Roundabout

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: Pride Dr NB											
3	L	42	7.0	0.245	24.9	LOS C	1.6	43.4	0.94	0.98	25.1
8	T	36	7.0	0.245	16.1	LOS B	1.6	43.4	0.94	0.95	24.7
18	R	9	7.0	0.245	18.3	LOS B	1.6	43.4	0.94	0.96	25.7
Approach		87	7.0	0.245	20.6	LOS C	1.6	43.4	0.94	0.97	25.0
East: US 190 WB											
1	L	12	7.0	0.486	14.1	LOS B	4.2	110.1	0.43	0.82	33.0
6	T	662	7.0	0.486	9.8	LOS A	4.2	110.1	0.43	0.55	37.3
16	R	399	7.0	0.292	8.3	LOS A	1.9	51.2	0.27	0.52	36.4
Approach		1073	7.0	0.486	9.3	LOS A	4.2	110.1	0.37	0.55	37.0
North: Pride Dr SB											
7	L	402	10.0	0.884	42.9	LOS D	15.1	407.1	1.00	1.46	19.9
4	T	56	10.0	0.884	33.3	LOS C	15.1	407.1	1.00	1.46	19.0
14	R	47	10.0	0.884	37.1	LOS D	15.1	407.1	1.00	1.46	21.2
Approach		504	10.0	0.884	41.3	LOS D	15.1	407.1	1.00	1.46	19.9
West: US 190 EB											
5	L	32	7.0	0.995	51.6	LOS D	28.0	740.1	1.00	1.52	18.9
2	T	589	7.0	0.995	45.8	LOS D	28.0	740.1	1.00	1.52	20.5
12	R	81	7.0	0.995	46.1	LOS D	28.0	740.1	1.00	1.52	18.9
Approach		702	7.0	0.995	46.1	LOS D	28.0	740.1	1.00	1.52	20.2
All Vehicles		2367	7.6	0.995	27.4	LOS C	28.0	740.1	0.71	1.05	25.5

Level of Service (LOS) Method: Delay (HCM 2000).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay per movement
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model used.

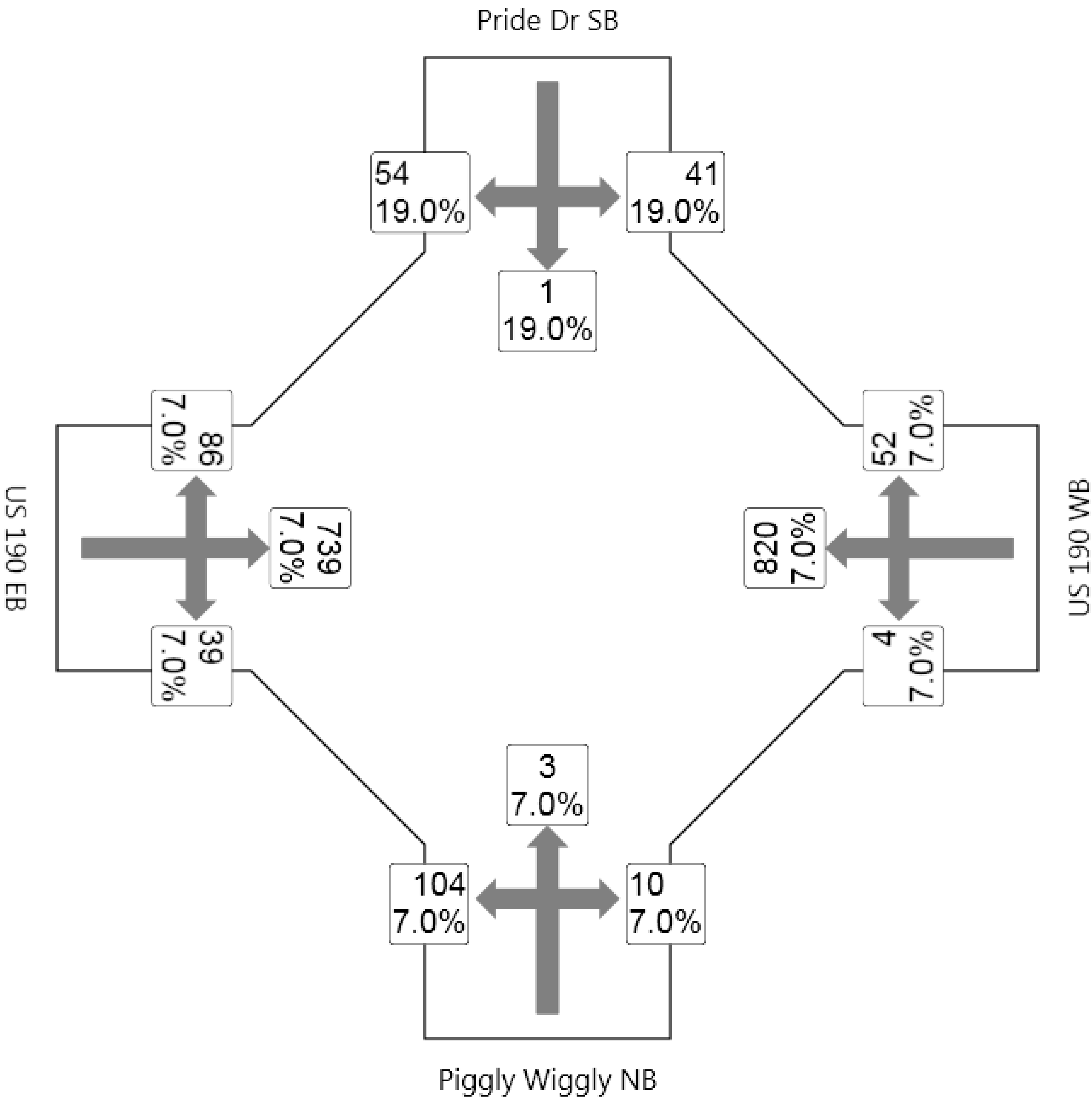
SIDRA INTERSECTION



US 190 @ Pride Dr

Alternate - C

Single-lane Roundabout



US 190 @ Pride Dr

Alternate - C, 2015 AM

MOVEMENT SUMMARY

US 190 at Pride Dr
AM Peak - 2015 Alt C

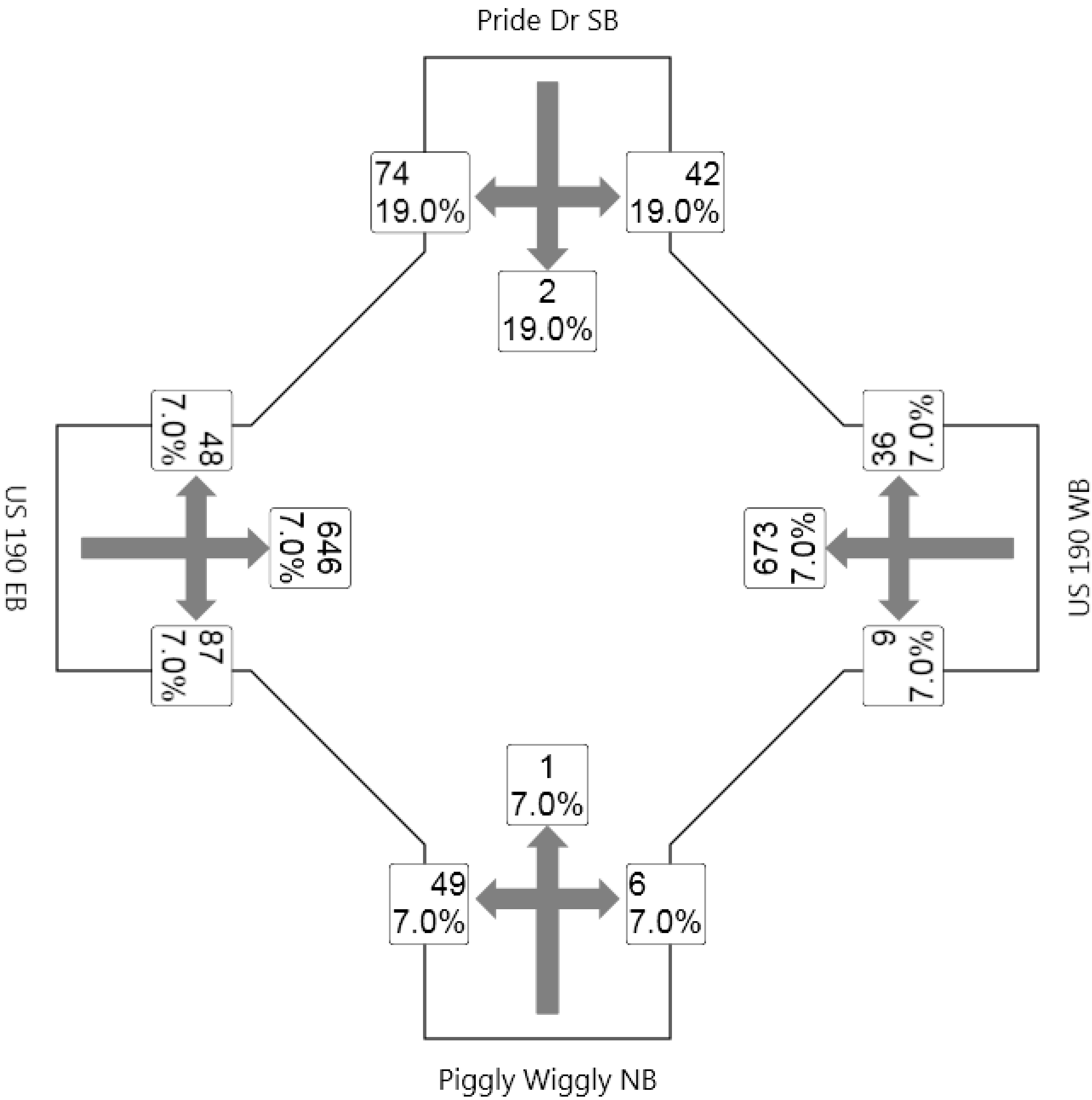
Roundabout

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: Piggly Wiggly NB											
3	L	111	7.0	0.308	23.7	LOS C	1.9	49.7	0.88	0.97	24.4
8	T	3	7.0	0.308	14.1	LOS B	1.9	49.7	0.88	0.91	24.4
18	R	11	7.0	0.308	17.2	LOS B	1.9	49.7	0.88	0.93	25.8
Approach		124	7.0	0.308	22.9	LOS C	1.9	49.7	0.88	0.96	24.5
East: US 190 WB											
1	L	4	7.0	0.750	17.0	LOS B	9.9	260.7	0.80	0.82	31.8
6	T	872	7.0	0.750	11.7	LOS B	9.9	260.7	0.80	0.72	34.8
16	R	55	7.0	0.045	8.0	LOS A	0.2	6.0	0.26	0.51	36.4
Approach		932	7.0	0.750	11.6	LOS B	9.9	260.7	0.77	0.71	34.8
North: Pride Dr SB											
7	L	44	19.0	0.171	26.5	LOS C	1.0	28.8	0.90	0.97	23.5
4	T	1	19.0	0.171	16.7	LOS B	1.0	28.8	0.90	0.92	23.3
14	R	57	19.0	0.040	4.7	X	X	X	X	0.41	31.4
Approach		102	19.0	0.171	14.1	LOS B	1.0	28.8	0.39	0.65	27.0
West: US 190 EB											
5	L	91	7.0	0.610	13.9	LOS B	6.9	183.4	0.39	0.79	32.8
2	T	786	7.0	0.610	8.6	LOS A	6.9	183.4	0.39	0.49	37.1
12	R	41	7.0	0.031	7.6	LOS A	0.2	4.3	0.05	0.52	37.8
Approach		919	7.0	0.610	9.1	LOS A	6.9	183.4	0.37	0.52	36.6
All Vehicles		2078	7.6	0.750	11.3	LOS B	9.9	260.7	0.58	0.64	34.2

X: Not applicable for Continuous movement.

Level of Service (LOS) Method: Delay (HCM 2000).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay per movement
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model used.



US 190 @ Pride Dr

Alternate - C, 2015 PM

MOVEMENT SUMMARY

Site: US190@Pride 2015 PM-C

US 190 at Pride Dr
PM Peak - 2015 Alt C

Roundabout

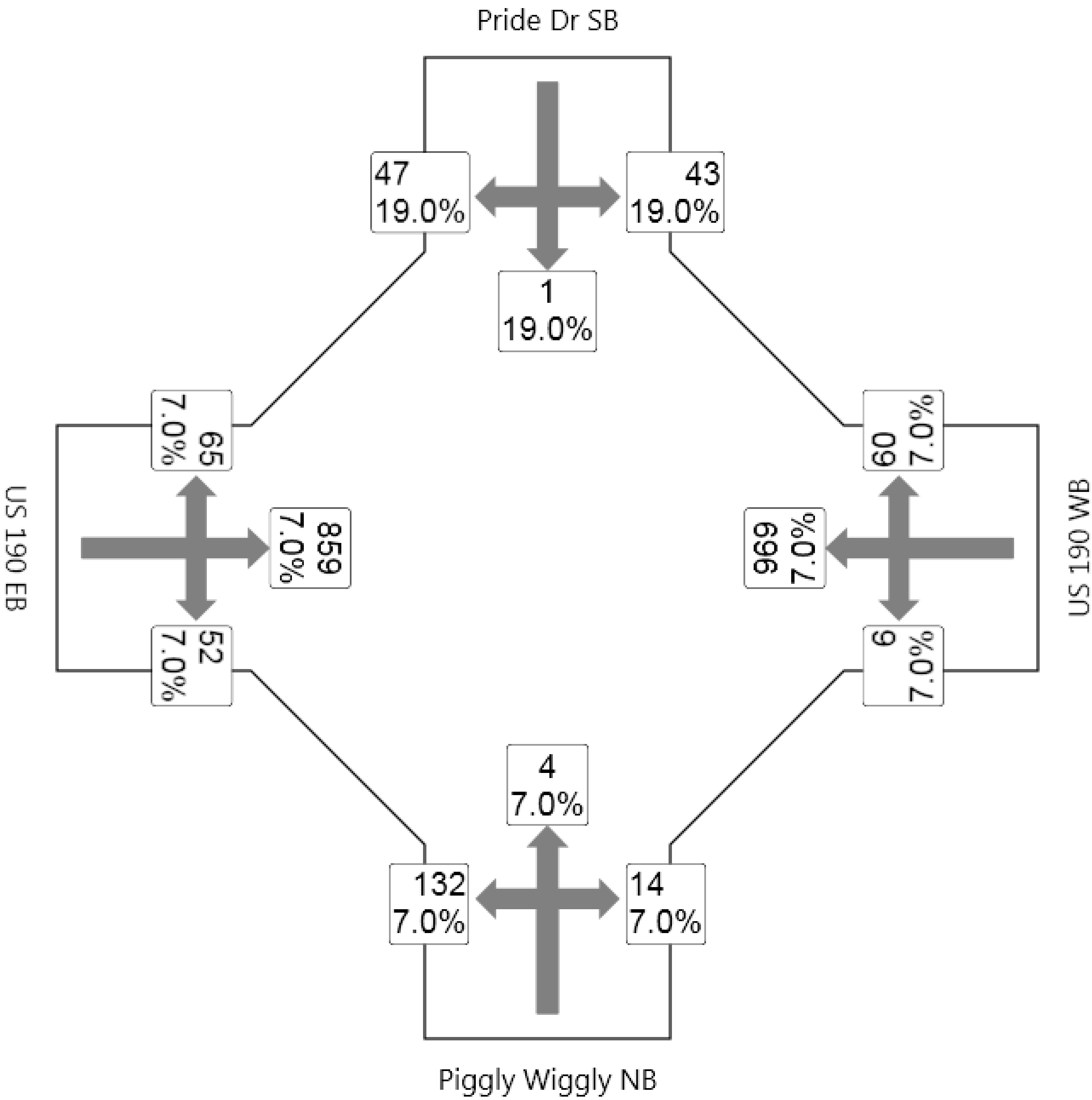
Movement Performance - Vehicles

Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: Piggly Wiggly NB											
3	L	54	7.0	0.133	20.9	LOS C	0.8	19.9	0.79	0.89	25.5
8	T	1	7.0	0.133	11.2	LOS B	0.8	19.9	0.79	0.77	25.8
18	R	7	7.0	0.133	14.4	LOS B	0.8	19.9	0.79	0.83	27.2
Approach		62	7.0	0.133	20.0	LOS C	0.8	19.9	0.79	0.88	25.6
East: US 190 WB											
1	L	10	7.0	0.576	14.4	LOS B	5.3	139.4	0.48	0.82	33.0
6	T	748	7.0	0.576	9.1	LOS A	5.3	139.4	0.48	0.55	36.6
16	R	40	7.0	0.031	7.8	LOS A	0.2	4.1	0.19	0.50	36.9
Approach		798	7.0	0.576	9.1	LOS A	5.3	139.4	0.46	0.55	36.6
North: Pride Dr SB											
7	L	47	19.0	0.127	22.4	LOS C	0.7	19.8	0.80	0.91	25.0
4	T	2	19.0	0.127	12.6	LOS B	0.7	19.8	0.80	0.81	25.2
14	R	82	19.0	0.058	4.7	X	X	X	X	0.41	31.4
Approach		131	19.0	0.127	11.1	LOS B	0.7	19.8	0.30	0.59	28.4
West: US 190 EB											
5	L	53	7.0	0.549	13.9	LOS B	5.3	141.2	0.37	0.82	32.9
2	T	718	7.0	0.549	8.7	LOS A	5.3	141.2	0.37	0.50	37.2
12	R	97	7.0	0.072	7.6	LOS A	0.4	9.9	0.08	0.51	37.5
Approach		868	7.0	0.549	8.9	LOS A	5.3	141.2	0.34	0.52	36.9
All Vehicles		1859	7.8	0.576	9.5	LOS A	5.3	141.2	0.40	0.55	35.5

X: Not applicable for Continuous movement.

Level of Service (LOS) Method: Delay (HCM 2000).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay per movement
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model used.

SIDRA INTERSECTION



US 190 @ Pride Dr

Alternate - C, 2035 AM

MOVEMENT SUMMARY

Site: US190@Pride 2035 AM-C

US 190 at Pride Dr
AM Peak - 2035 Alt C

Roundabout

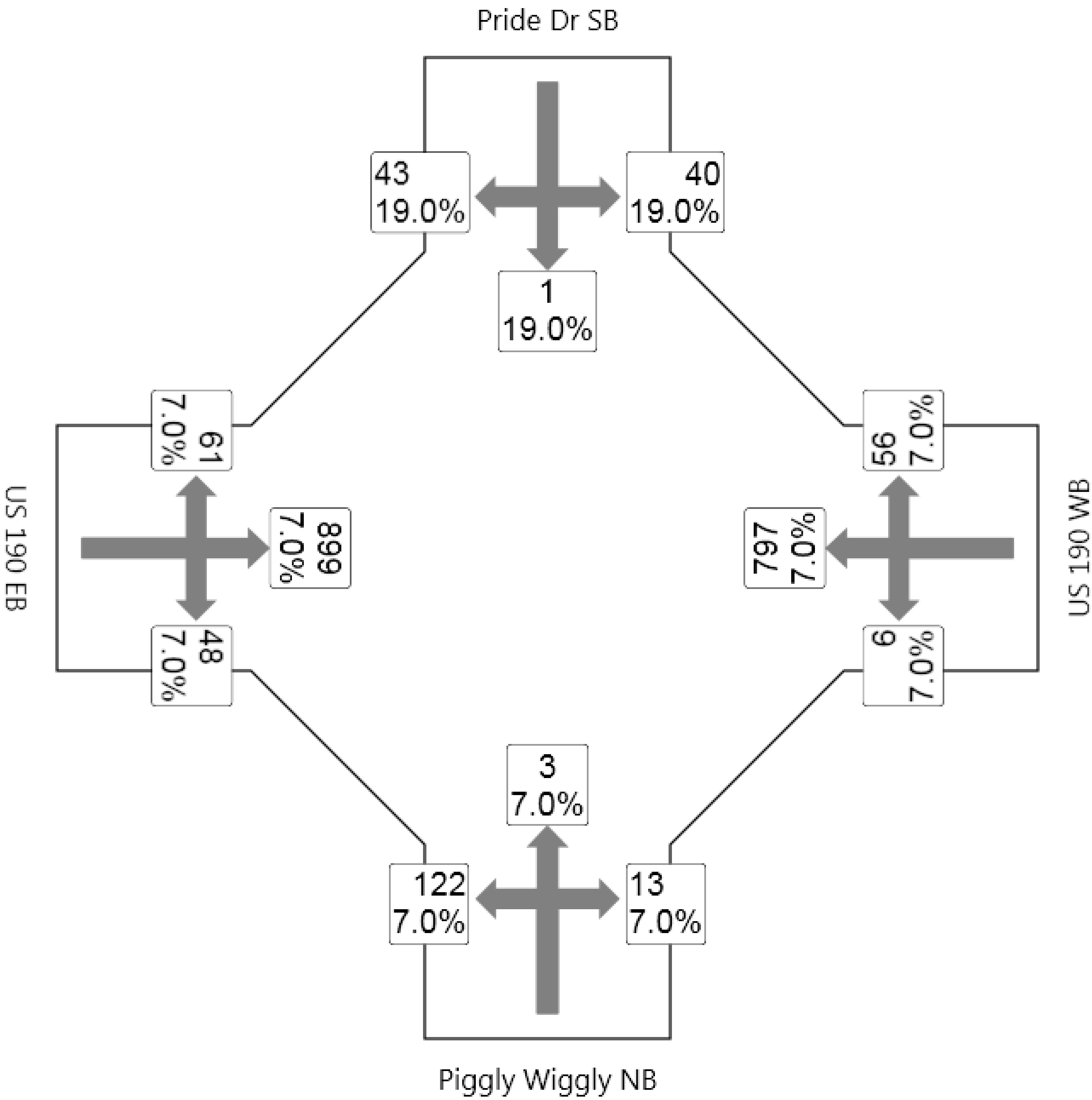
Movement Performance - Vehicles

Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: Piggly Wiggly NB											
3	L	140	7.0	0.399	27.2	LOS C	2.9	76.7	0.95	1.04	23.2
8	T	4	7.0	0.399	17.6	LOS B	2.9	76.7	0.95	1.01	22.8
18	R	15	7.0	0.399	20.7	LOS C	2.9	76.7	0.95	1.02	24.3
Approach		160	7.0	0.399	26.3	LOS C	2.9	76.7	0.95	1.04	23.3
East: US 190 WB											
1	L	6	7.0	0.824	18.1	LOS B	14.0	369.7	0.91	0.81	31.2
6	T	1031	7.0	0.824	12.9	LOS B	14.0	369.7	0.91	0.76	34.2
16	R	64	7.0	0.046	7.9	LOS A	0.2	6.3	0.22	0.51	36.7
Approach		1101	7.0	0.824	12.6	LOS B	14.0	369.7	0.87	0.75	34.3
North: Pride Dr SB											
7	L	46	19.0	0.229	31.7	LOS C	1.5	43.2	0.99	1.00	21.8
4	T	1	19.0	0.229	21.9	LOS C	1.5	43.2	0.99	0.99	21.2
14	R	50	19.0	0.035	4.7	X	X	X	X	0.41	31.4
Approach		97	19.0	0.229	17.7	LOS B	1.5	43.2	0.48	0.69	25.4
West: US 190 EB											
5	L	69	7.0	0.648	13.9	LOS B	8.0	210.7	0.42	0.78	32.9
2	T	914	7.0	0.648	8.7	LOS A	8.0	210.7	0.42	0.49	36.9
12	R	55	7.0	0.038	7.6	LOS A	0.2	5.6	0.06	0.52	37.7
Approach		1038	7.0	0.648	9.0	LOS A	8.0	210.7	0.41	0.51	36.6
All Vehicles		2396	7.5	0.824	12.2	LOS B	14.0	369.7	0.66	0.66	33.6

X: Not applicable for Continuous movement.

Level of Service (LOS) Method: Delay (HCM 2000).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay per movement
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model used.

SIDRA INTERSECTION



US 190 @ Pride Dr

Alternate - C, 2035 PM

MOVEMENT SUMMARY

Site: US190@Pride 2035 PM-C

US 190 at Pride Dr
PM Peak - 2035 Alt C

Roundabout

Movement Performance - Vehicles

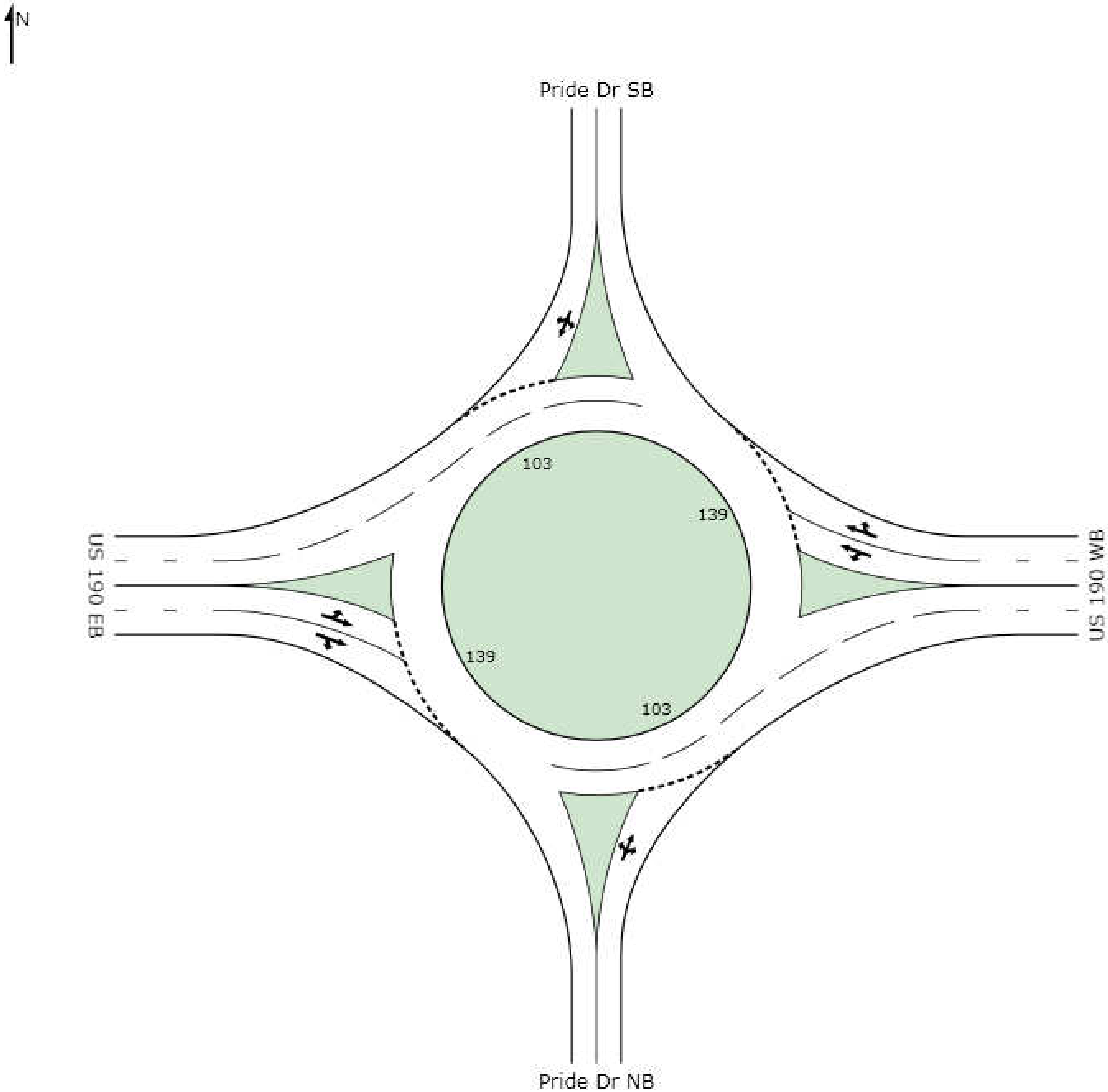
Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: Piggly Wiggly NB											
3	L	136	7.0	0.445	32.5	LOS C	3.5	91.8	0.99	1.09	21.5
8	T	3	7.0	0.445	22.9	LOS C	3.5	91.8	0.99	1.08	20.9
18	R	14	7.0	0.445	26.0	LOS C	3.5	91.8	0.99	1.09	22.4
Approach		153	7.0	0.445	31.7	LOS C	3.5	91.8	0.99	1.09	21.6
East: US 190 WB											
1	L	7	7.0	0.708	15.8	LOS B	8.2	216.9	0.75	0.80	32.5
6	T	886	7.0	0.708	10.5	LOS B	8.2	216.9	0.75	0.67	35.0
16	R	62	7.0	0.045	7.9	LOS A	0.2	6.2	0.22	0.50	36.7
Approach		954	7.0	0.708	10.4	LOS B	8.2	216.9	0.72	0.66	35.1
North: Pride Dr SB											
7	L	44	19.0	0.153	25.9	LOS C	0.9	27.3	0.91	0.95	23.7
4	T	1	19.0	0.153	16.1	LOS B	0.9	27.3	0.91	0.91	23.5
14	R	48	19.0	0.034	4.7	X	X	X	X	0.41	31.4
Approach		93	19.0	0.153	14.9	LOS B	0.9	27.3	0.45	0.67	26.7
West: US 190 EB											
5	L	68	7.0	0.699	14.0	LOS B	9.5	249.6	0.46	0.76	32.9
2	T	999	7.0	0.699	8.7	LOS A	9.5	249.6	0.46	0.49	36.7
12	R	53	7.0	0.036	7.6	LOS A	0.2	5.2	0.06	0.52	37.7
Approach		1120	7.0	0.699	9.0	LOS A	9.5	249.6	0.44	0.50	36.5
All Vehicles		2321	7.5	0.708	11.3	LOS B	9.5	249.6	0.59	0.61	33.8

X: Not applicable for Continuous movement.

Level of Service (LOS) Method: Delay (HCM 2000).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay per movement
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model used.

INTERSECTION US 190 at Pride Dr

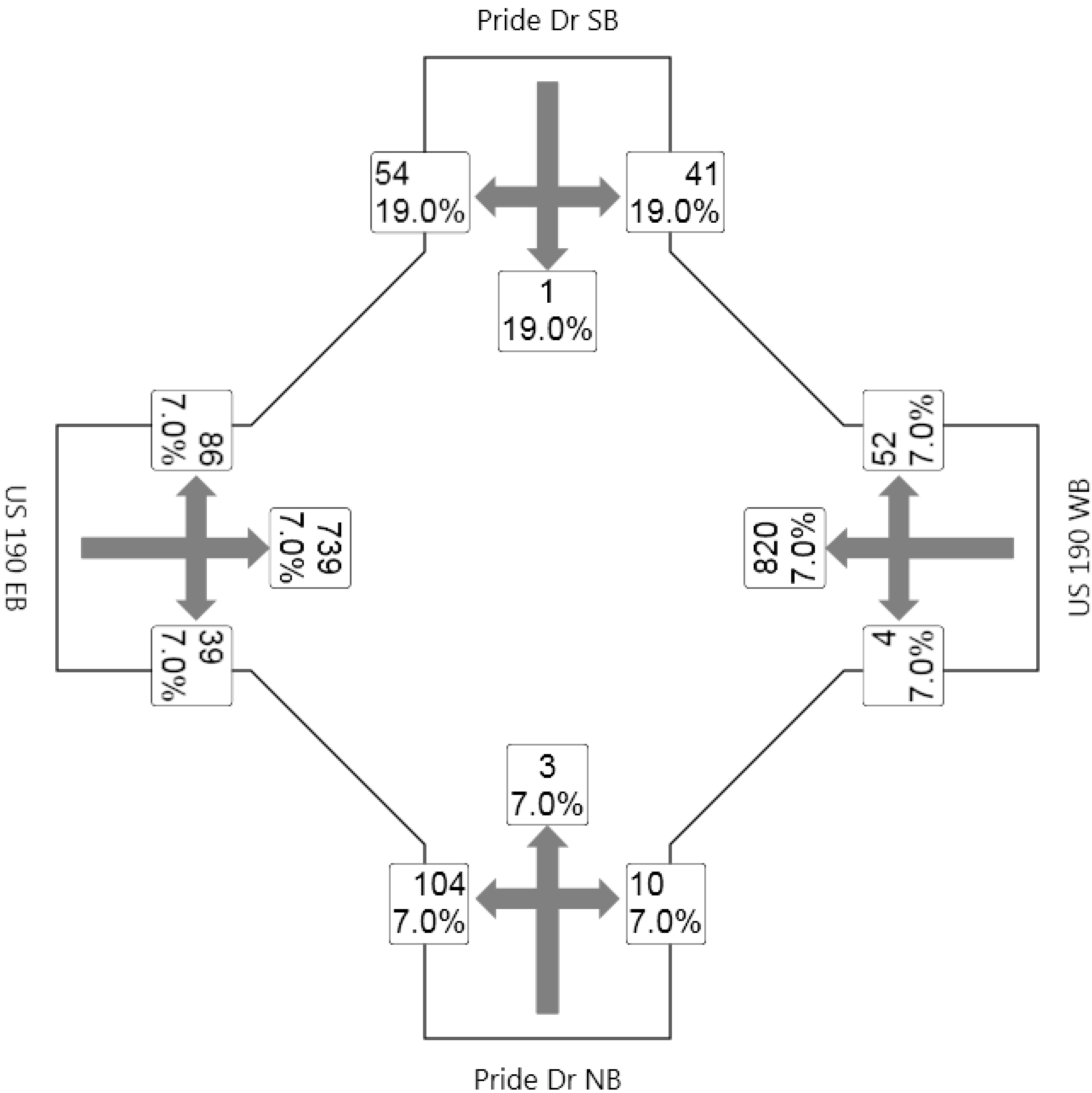
Multi-lane Roundabout Analysis



US 190 @ Pride Dr

Alternate - C

Multi-lane Roundabout



US 190 @ Pride Dr

Alternate - C, 2015 AM

MOVEMENT SUMMARY

Site: 190@Pride 2015 AM-C-Double

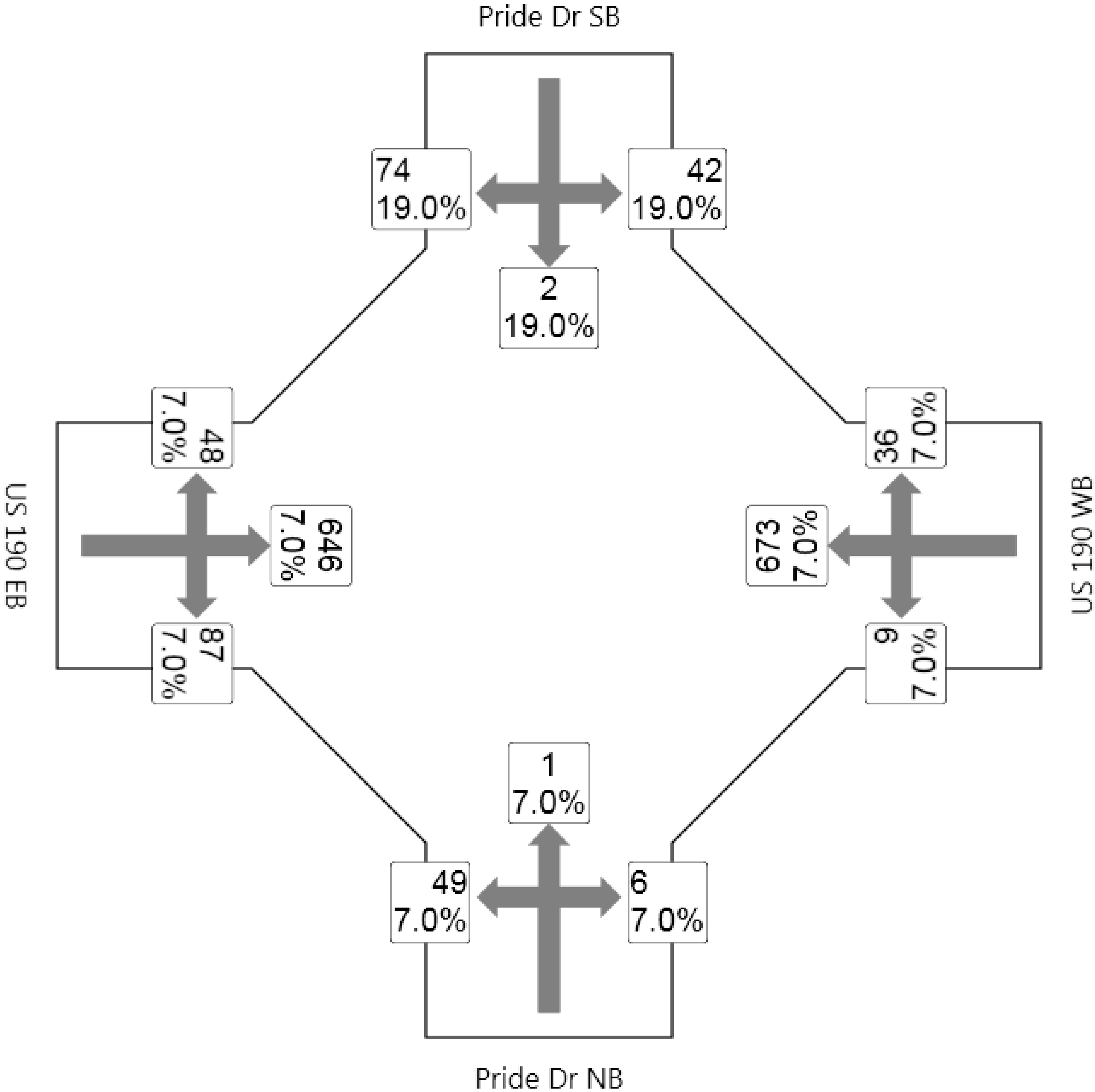
US 190 at Pride Dr
AM Peak - 2015 Alt C

Roundabout

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: Pride Dr NB											
3	L	111	7.0	0.231	17.9	LOS B	0.9	23.5	0.64	0.90	26.9
8	T	3	7.0	0.231	7.8	LOS A	0.9	23.5	0.64	0.72	28.0
18	R	11	7.0	0.231	11.1	LOS B	0.9	23.5	0.64	0.80	29.0
Approach		124	7.0	0.231	17.1	LOS B	0.9	23.5	0.64	0.89	27.1
East: US 190 WB											
1	L	4	7.0	0.404	15.0	LOS B	2.8	72.7	0.52	0.87	32.7
6	T	872	7.0	0.404	9.3	LOS A	2.8	74.4	0.51	0.60	36.6
16	R	55	7.0	0.404	8.8	LOS A	2.8	74.4	0.50	0.62	35.6
Approach		932	7.0	0.404	9.3	LOS A	2.8	74.4	0.51	0.60	36.5
North: Pride Dr SB											
7	L	44	19.0	0.253	19.9	LOS B	1.0	28.8	0.69	0.94	26.4
4	T	1	19.0	0.253	9.5	LOS A	1.0	28.8	0.69	0.77	27.2
14	R	57	19.0	0.253	13.1	LOS B	1.0	28.8	0.69	0.84	28.4
Approach		102	19.0	0.253	15.9	LOS B	1.0	28.8	0.69	0.88	27.4
West: US 190 EB											
5	L	91	7.0	0.332	13.8	LOS B	2.4	62.7	0.26	0.82	32.7
2	T	786	7.0	0.332	8.1	LOS A	2.4	63.8	0.26	0.48	38.2
12	R	41	7.0	0.332	7.7	LOS A	2.4	63.8	0.25	0.54	36.9
Approach		919	7.0	0.332	8.7	LOS A	2.4	63.8	0.26	0.52	37.5
All Vehicles		2078	7.6	0.404	9.8	LOS A	2.8	74.4	0.41	0.60	35.6

Level of Service (LOS) Method: Delay (HCM 2000).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay per movement
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model used.



US 190 @ Pride Dr

Alternate - C, 2015 PM

MOVEMENT SUMMARY

Site: 190@Pride 2015 PM-C-Double

US 190 at Pride Dr
PM Peak - 2015 Alt C

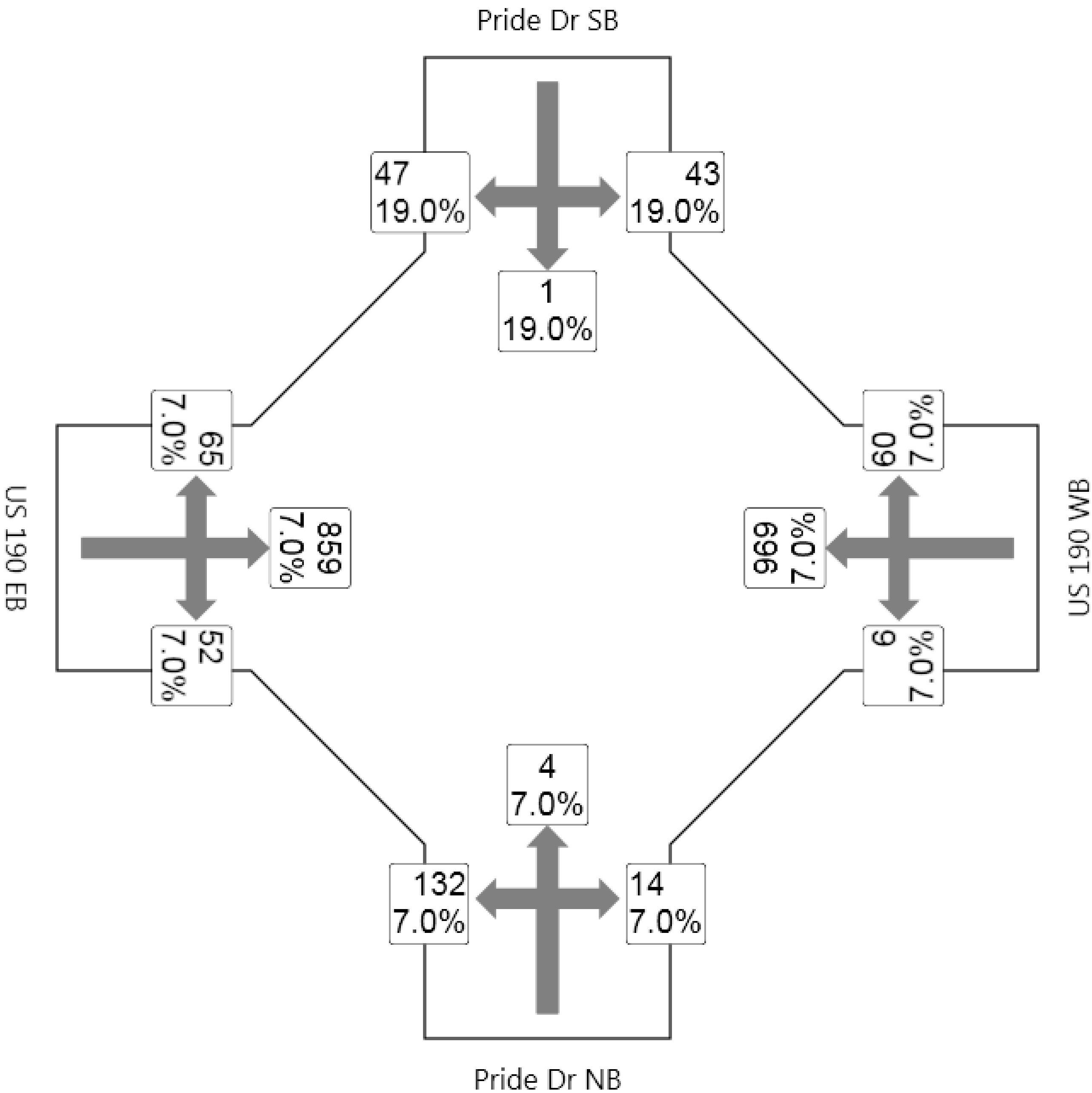
Roundabout

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: Pride Dr NB											
3	L	54	7.0	0.110	17.2	LOS B	0.4	10.7	0.59	0.89	27.3
8	T	1	7.0	0.110	6.9	LOS A	0.4	10.7	0.59	0.67	28.5
18	R	7	7.0	0.110	10.3	LOS B	0.4	10.7	0.59	0.77	29.5
Approach		62	7.0	0.110	16.3	LOS B	0.4	10.7	0.59	0.87	27.5
East: US 190 WB											
1	L	10	7.0	0.310	14.2	LOS B	2.0	51.8	0.35	0.87	32.9
6	T	748	7.0	0.310	8.5	LOS A	2.0	52.5	0.34	0.52	37.7
16	R	40	7.0	0.310	8.0	LOS A	2.0	52.5	0.33	0.56	36.5
Approach		798	7.0	0.310	8.5	LOS A	2.0	52.5	0.34	0.53	37.6
North: Pride Dr SB											
7	L	47	19.0	0.278	19.0	LOS B	1.1	31.2	0.65	0.93	26.8
4	T	2	19.0	0.278	8.6	LOS A	1.1	31.2	0.65	0.73	27.8
14	R	82	19.0	0.278	12.2	LOS B	1.1	31.2	0.65	0.82	28.9
Approach		131	19.0	0.278	14.6	LOS B	1.1	31.2	0.65	0.86	28.0
West: US 190 EB											
5	L	53	7.0	0.319	13.9	LOS B	2.2	57.8	0.28	0.85	32.8
2	T	718	7.0	0.319	8.2	LOS A	2.2	58.7	0.27	0.49	38.1
12	R	97	7.0	0.319	7.8	LOS A	2.2	58.7	0.27	0.53	36.8
Approach		868	7.0	0.319	8.5	LOS A	2.2	58.7	0.27	0.52	37.6
All Vehicles		1859	7.8	0.319	9.2	LOS A	2.2	58.7	0.34	0.56	36.2

Level of Service (LOS) Method: Delay (HCM 2000).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay per movement
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model used.

SIDRA INTERSECTION



US 190 @ Pride Dr

Alternate - C, 2035 AM

MOVEMENT SUMMARY

Site: 190@Pride 2035 AM-C-Double

US 190 at Pride Dr
AM Peak - 2035 Alt C

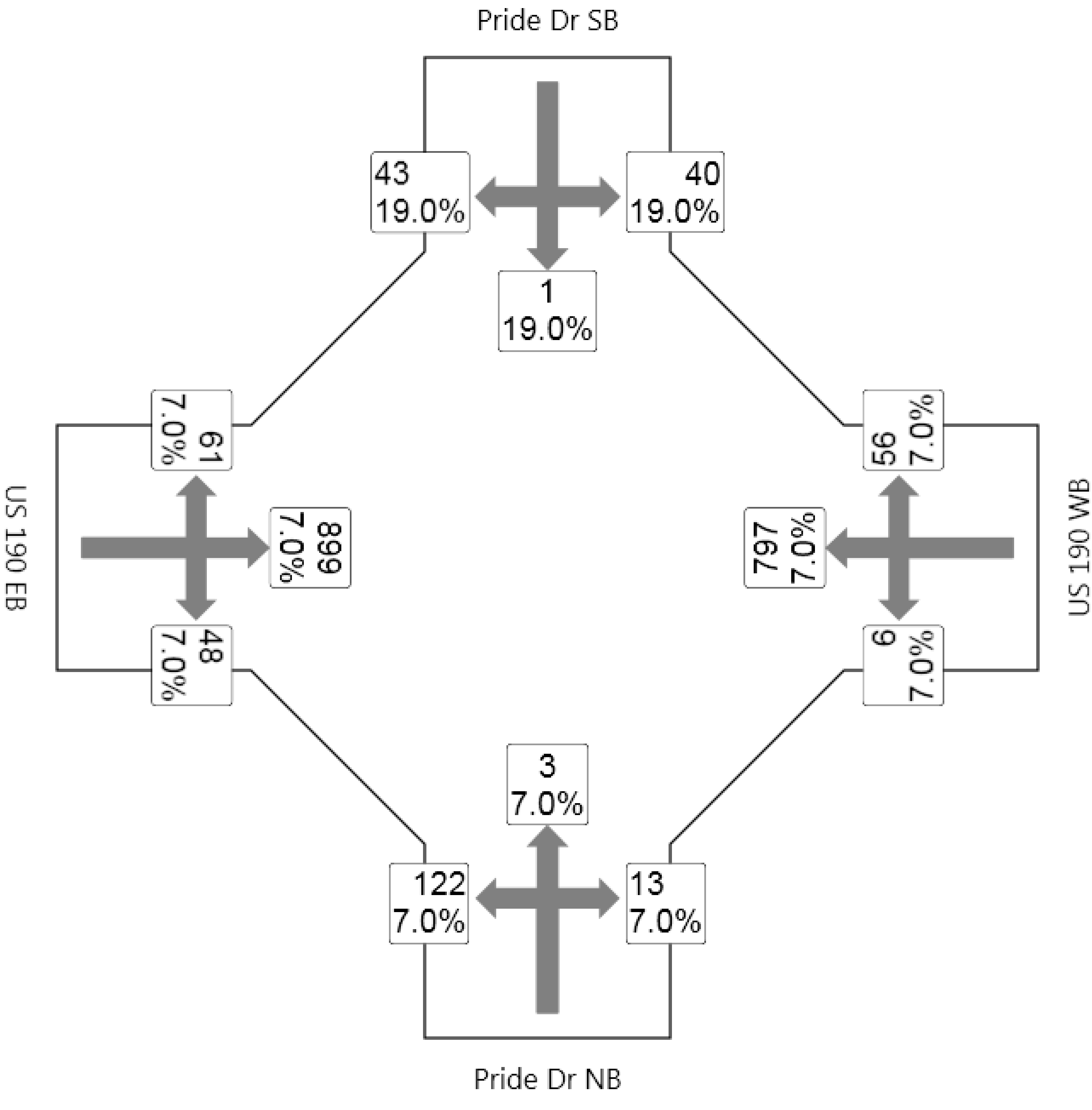
Roundabout

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: Pride Dr NB											
3	L	140	7.0	0.267	17.6	LOS B	1.1	28.7	0.66	0.91	27.1
8	T	4	7.0	0.267	7.4	LOS A	1.1	28.7	0.66	0.73	28.1
18	R	15	7.0	0.267	10.7	LOS B	1.1	28.7	0.66	0.82	29.2
Approach		160	7.0	0.267	16.7	LOS B	1.1	28.7	0.66	0.90	27.3
East: US 190 WB											
1	L	6	7.0	0.448	15.1	LOS B	3.3	86.5	0.55	0.86	32.7
6	T	1031	7.0	0.448	9.2	LOS A	3.4	89.7	0.54	0.60	36.4
16	R	64	7.0	0.448	8.7	LOS A	3.4	89.7	0.53	0.62	35.4
Approach		1101	7.0	0.448	9.2	LOS A	3.4	89.7	0.54	0.61	36.4
North: Pride Dr SB											
7	L	46	19.0	0.231	19.7	LOS B	1.0	27.5	0.72	0.94	26.5
4	T	1	19.0	0.231	9.3	LOS A	1.0	27.5	0.72	0.79	27.2
14	R	50	19.0	0.231	12.9	LOS B	1.0	27.5	0.72	0.85	28.4
Approach		97	19.0	0.231	16.1	LOS B	1.0	27.5	0.72	0.89	27.4
West: US 190 EB											
5	L	69	7.0	0.358	13.8	LOS B	2.7	70.0	0.28	0.84	32.8
2	T	914	7.0	0.358	8.1	LOS A	2.7	71.6	0.27	0.48	38.1
12	R	55	7.0	0.358	7.7	LOS A	2.7	71.6	0.26	0.53	36.8
Approach		1038	7.0	0.358	8.5	LOS A	2.7	71.6	0.27	0.51	37.7
All Vehicles		2396	7.5	0.448	9.7	LOS A	3.4	89.7	0.44	0.60	35.6

Level of Service (LOS) Method: Delay (HCM 2000).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay per movement
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model used.

SIDRA INTERSECTION



US 190 @ Pride Dr

Alternate - C, 2035 PM

MOVEMENT SUMMARY

Site: 190@Pride 2035 PM-C-Double

US 190 at Pride Dr
PM Peak - 2035 Alt C

Roundabout

Movement Performance - Vehicles

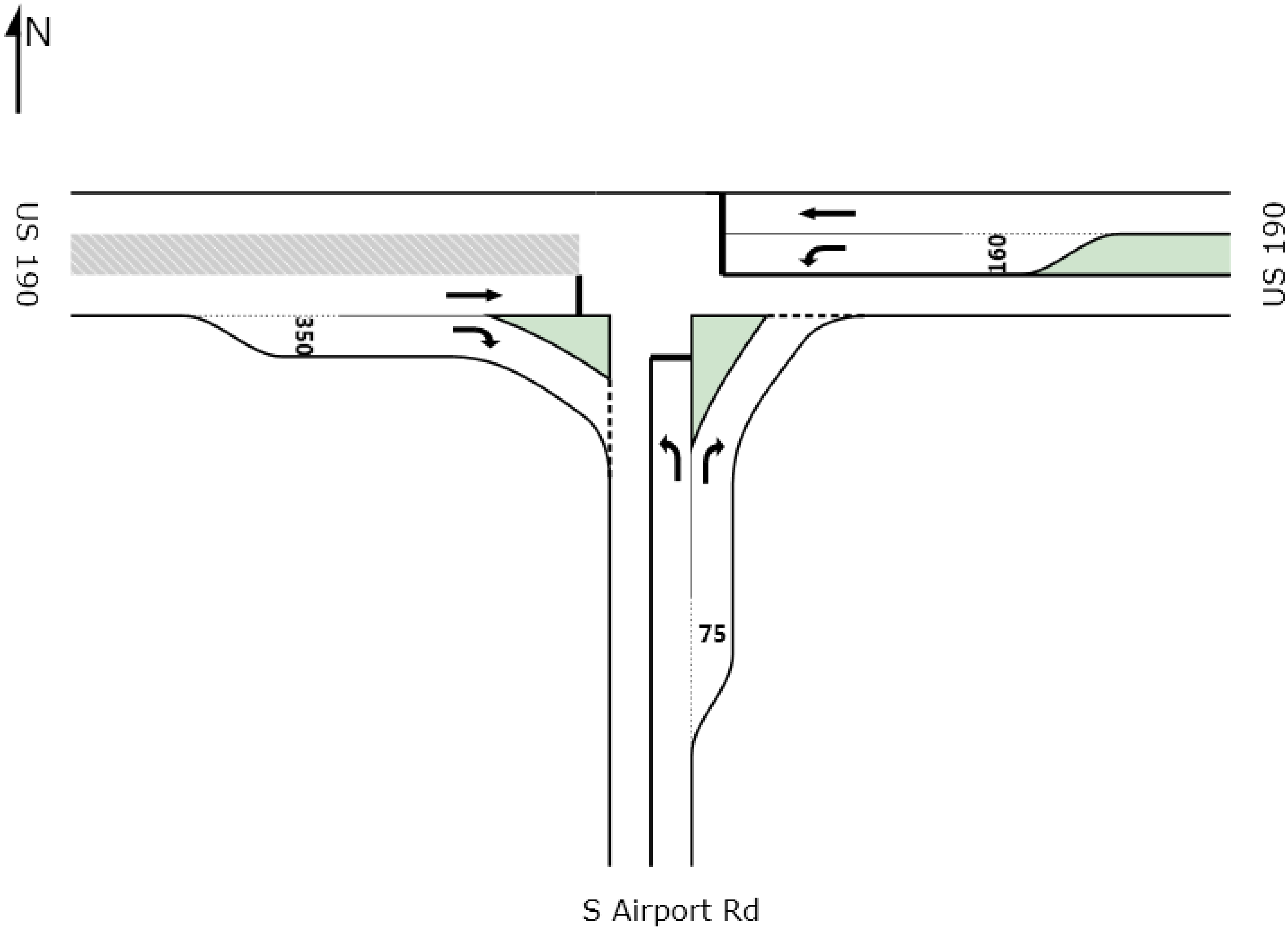
Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: Pride Dr NB											
3	L	136	7.0	0.267	17.9	LOS B	1.1	28.8	0.68	0.91	26.9
8	T	3	7.0	0.267	7.8	LOS A	1.1	28.8	0.68	0.75	27.9
18	R	14	7.0	0.267	11.1	LOS B	1.1	28.8	0.68	0.82	29.0
Approach		153	7.0	0.267	17.1	LOS B	1.1	28.8	0.68	0.90	27.1
East: US 190 WB											
1	L	7	7.0	0.387	14.9	LOS B	2.7	70.3	0.51	0.86	32.7
6	T	886	7.0	0.387	9.1	LOS A	2.8	72.9	0.50	0.59	36.7
16	R	62	7.0	0.387	8.6	LOS A	2.8	72.9	0.49	0.61	35.6
Approach		954	7.0	0.387	9.1	LOS A	2.8	72.9	0.50	0.59	36.6
North: Pride Dr SB											
7	L	44	19.0	0.200	18.9	LOS B	0.8	23.3	0.68	0.93	26.8
4	T	1	19.0	0.200	8.5	LOS A	0.8	23.3	0.68	0.76	27.8
14	R	48	19.0	0.200	12.1	LOS B	0.8	23.3	0.68	0.83	28.9
Approach		93	19.0	0.200	15.3	LOS B	0.8	23.3	0.68	0.88	27.8
West: US 190 EB											
5	L	68	7.0	0.385	13.8	LOS B	2.9	77.2	0.28	0.84	32.8
2	T	999	7.0	0.385	8.1	LOS A	3.0	78.8	0.27	0.48	38.1
12	R	53	7.0	0.385	7.7	LOS A	3.0	78.8	0.26	0.53	36.8
Approach		1120	7.0	0.385	8.5	LOS A	3.0	78.8	0.27	0.51	37.7
All Vehicles		2321	7.5	0.387	9.6	LOS A	3.0	78.8	0.41	0.58	35.7

Level of Service (LOS) Method: Delay (HCM 2000).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay per movement
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model used.

SIDRA INTERSECTION

INTERSECTION US 190 at S Airport Rd

No-Build Analysis



US 190 @ S Airport Rd

Alternate - No-Build

SHORT REPORT

General Information		Site Information	
Analyst	F.C.	Intersection	US 190 AT AIRPORT RD.
Agency or Co.	NS	Area Type	All other areas
Date Performed	06/07/2011	Jurisdiction	TANGIPAHOA PARISH
Time Period	AM PEAK HOUR	Analysis Year	EXISTING

Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Number of Lanes		1	1	1	1		1		1			
Lane Group		T	R	L	T		L		R			
Volume (vph)		390	139	193	471		281		172			
% Heavy Vehicles		7	7	7	7		10		10			
PHF		0.94	0.94	0.94	0.94		0.94		0.94			
Pretimed/Actuated (P/A)		A	A	A	A		A		A			
Startup Lost Time		2.0	2.0	2.0	2.0		2.0		2.0			
Extension of Effective Green		2.0	2.0	2.0	2.0		2.0		2.0			
Arrival Type		3	3	3	3		3		3			
Unit Extension		3.0	3.0	3.0	3.0		3.0		3.0			
Ped/Bike/RTOR Volume	0	0	42	0	0		0	0	52			
Lane Width		12.0	12.0	12.0	12.0		12.0		12.0			
Parking/Grade/Parking	N	0	N	N	0	N	N	0	N			
Parking/Hour												
Bus Stops/Hour		0	0	0	0		0		0			
Minimum Pedestrian Time		3.2			3.2			3.2				

Phasing	WB Only	EW Perm	03	04	NB Only	06	07	08
Timing	G = 5.0	G = 25.0	G =	G =	G = 17.0	G =	G =	G =
	Y = 6	Y = 6	Y =	Y =	Y = 6	Y =	Y =	Y =
Duration of Analysis (hrs) = 0.25						Cycle Length C = 65.0		

Lane Group Capacity, Control Delay, and LOS Determination

	EB			WB			NB			SB		
Adjusted Flow Rate		415	103	205	501		299		128			
Lane Group Capacity		683	580	400	984		429		384			
v/c Ratio		0.61	0.18	0.51	0.51		0.70		0.33			
Green Ratio		0.38	0.38	0.55	0.55		0.26		0.26			
Uniform Delay d_1		16.1	13.2	8.8	9.0		21.7		19.4			
Delay Factor k		0.19	0.11	0.12	0.12		0.26		0.11			
Incremental Delay d_2		1.6	0.1	1.1	0.4		4.9		0.5			
PF Factor		1.000	1.000	1.000	1.000		1.000		1.000			
Control Delay		17.6	13.4	9.9	9.5		26.6		19.9			
Lane Group LOS		B	B	A	A		C		B			
Approach Delay	16.8			9.6			24.6					
Approach LOS	B			A			C					
Intersection Delay	15.7			Intersection LOS						B		

SHORT REPORT

General Information		Site Information	
Analyst	*F.C.*	Intersection	*US 190 AT AIRPORT RD.*
Agency or Co.	*NS*	Area Type	*All other areas*
Date Performed	*06/07/2011*	Jurisdiction	*TANGIPAHOA PARISH*
Time Period	*PM PEAK HOUR*	Analysis Year	*EXISTING*

Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Number of Lanes		*1*	*1*	*1*	*1*		*1*		*1*			
Lane Group		*T*	*R*	*L*	*T*		*L*		*R*			
Volume (vph)		*443*	*290*	*145*	*270*		*161*		*130*			
% Heavy Vehicles		*7*	*7*	*7*	*7*		*10*		*10*			
PHF		*0.90*	*0.90*	*0.90*	*0.90*		*0.90*		*0.90*			
Pretimed/Actuated (P/A)		*A*	*A*	*A*	*A*		*A*		*A*			
Startup Lost Time		*2.0*	*2.0*	*2.0*	*2.0*		*2.0*		*2.0*			
Extension of Effective Green		*2.0*	*2.0*	*2.0*	*2.0*		*2.0*		*2.0*			
Arrival Type		*3*	*3*	*3*	*3*		*3*		*3*			
Unit Extension		*3.0*	*3.0*	*3.0*	*3.0*		*3.0*		*3.0*			
Ped/Bike/RTOR Volume	*0*	*0*	*87*	*0*	*0*		*0*	*0*	*39*			
Lane Width		*12.0*	*12.0*	*12.0*	*12.0*		*12.0*		*12.0*			
Parking/Grade/Parking	*N*	*0*	*N*	*N*	*0*	*N*	*N*	*0*	*N*			
Parking/Hour												
Bus Stops/Hour		*0*	*0*	*0*	*0*		*0*		*0*			
Minimum Pedestrian Time		*3.2*			*3.2*			*3.2*				

Phasing	WB Only	EW Perm	03	04	NB Only	06	07	08
Timing	G = *5.0*	G = *25.0*	G =	G =	G = *12.0*	G =	G =	G =
	Y = *6*	Y = *6*	Y =	Y =	Y = *6*	Y =	Y =	Y =
Duration of Analysis (hrs) = *0.25*						Cycle Length C = *60.0*		

Lane Group Capacity, Control Delay, and LOS Determination

	EB			WB			NB			SB		
Adjusted Flow Rate		*492*	*226*	*161*	*300*		*179*		*101*			
Lane Group Capacity		*740*	*629*	*396*	*1066*		*328*		*294*			
v/c Ratio		*0.66*	*0.36*	*0.41*	*0.28*		*0.55*		*0.34*			
Green Ratio		*0.42*	*0.42*	*0.60*	*0.60*		*0.20*		*0.20*			
Uniform Delay d_1		*14.1*	*12.0*	*7.1*	*5.8*		*21.6*		*20.6*			
Delay Factor k		*0.24*	*0.11*	*0.11*	*0.11*		*0.15*		*0.11*			
Incremental Delay d_2		*2.3*	*0.4*	*0.7*	*0.1*		*1.9*		*0.7*			
PF Factor		*1.000*	*1.000*	*1.000*	*1.000*		*1.000*		*1.000*			
Control Delay		*16.4*	*12.4*	*7.8*	*5.9*		*23.5*		*21.3*			
Lane Group LOS		*B*	*B*	*A*	*A*		*C*		*C*			
Approach Delay	*15.1*			*6.6*			*22.7*					
Approach LOS	*B*			*A*			*C*					
Intersection Delay	*13.9*			Intersection LOS						*B*		

SHORT REPORT

General Information		Site Information	
Analyst	F.C.	Intersection	US 190 AT AIRPORT RD.
Agency or Co.	NS	Area Type	All other areas
Date Performed	06/07/2011	Jurisdiction	TANGIPAHOA PARISH
Time Period	AM PEAK HOUR	Analysis Year	2015 NO BUILD

Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Number of Lanes		1	1	1	1		1		1			
Lane Group		T	R	L	T		L		R			
Volume (vph)		403	143	203	541		323		174			
% Heavy Vehicles		7	7	7	7		10		10			
PHF		0.94	0.94	0.94	0.94		0.94		0.94			
Pretimed/Actuated (P/A)		A	A	A	A		A		A			
Startup Lost Time		2.0	2.0	2.0	2.0		2.0		2.0			
Extension of Effective Green		2.0	2.0	2.0	2.0		2.0		2.0			
Arrival Type		3	3	3	3		3		3			
Unit Extension		3.0	3.0	3.0	3.0		3.0		3.0			
Ped/Bike/RTOR Volume	0	0	45	0	0		0	0	52			
Lane Width		12.0	12.0	12.0	12.0		12.0		12.0			
Parking/Grade/Parking	N	0	N	N	0	N	N	0	N			
Parking/Hour												
Bus Stops/Hour		0	0	0	0		0		0			
Minimum Pedestrian Time		3.2			3.2			3.2				

Phasing	WB Only	EW Perm	03	04	NB Only	06	07	08
Timing	G = 10.0	G = 23.0	G =	G =	G = 24.0	G =	G =	G =
	Y = 6	Y = 6	Y =	Y =	Y = 6	Y =	Y =	Y =
Duration of Analysis (hrs) = 0.25						Cycle Length C = 75.0		

Lane Group Capacity, Control Delay, and LOS Determination

	EB			WB			NB			SB		
Adjusted Flow Rate		429	104	216	576		344		130			
Lane Group Capacity		545	463	380	924		525		470			
v/c Ratio		0.79	0.22	0.57	0.62		0.66		0.28			
Green Ratio		0.31	0.31	0.52	0.52		0.32		0.32			
Uniform Delay d_1		23.8	19.4	12.2	12.8		21.9		19.0			
Delay Factor k		0.33	0.11	0.16	0.21		0.23		0.11			
Incremental Delay d_2		7.6	0.2	2.0	1.3		3.0		0.3			
PF Factor		1.000	1.000	1.000	1.000		1.000		1.000			
Control Delay		31.3	19.6	14.2	14.1		24.9		19.3			
Lane Group LOS		C	B	B	B		C		B			
Approach Delay	29.0			14.1			23.4					
Approach LOS	C			B			C					
Intersection Delay	21.0			Intersection LOS						C		

SHORT REPORT

General Information		Site Information	
Analyst	*F.C.*	Intersection	*US 190 AT AIRPORT RD.*
Agency or Co.	*NS*	Area Type	*All other areas*
Date Performed	*06/07/2011*	Jurisdiction	*TANGIPAHOA PARISH*
Time Period	*PM PEAK HOUR*	Analysis Year	*2015 NO BUILD*

Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Number of Lanes		*1*	*1*	*1*	*1*		*1*		*1*			
Lane Group		*T*	*R*	*L*	*T*		*L*		*R*			
Volume (vph)		*423*	*277*	*153*	*303*		*180*		*131*			
% Heavy Vehicles		*7*	*7*	*7*	*7*		*10*		*10*			
PHF		*0.90*	*0.90*	*0.90*	*0.90*		*0.90*		*0.90*			
Pretimed/Actuated (P/A)		*A*	*A*	*A*	*A*		*A*		*A*			
Startup Lost Time		*2.0*	*2.0*	*2.0*	*2.0*		*2.0*		*2.0*			
Extension of Effective Green		*2.0*	*2.0*	*2.0*	*2.0*		*2.0*		*2.0*			
Arrival Type		*3*	*3*	*3*	*3*		*3*		*3*			
Unit Extension		*3.0*	*3.0*	*3.0*	*3.0*		*3.0*		*3.0*			
Ped/Bike/RTOR Volume	*0*	*0*	*93*	*0*	*0*		*0*	*0*	*39*			
Lane Width		*12.0*	*12.0*	*12.0*	*12.0*		*12.0*		*12.0*			
Parking/Grade/Parking	*N*	*0*	*N*	*N*	*0*	*N*	*N*	*0*	*N*			
Parking/Hour												
Bus Stops/Hour		*0*	*0*	*0*	*0*		*0*		*0*			
Minimum Pedestrian Time		*3.2*			*3.2*			*3.2*				

Phasing	WB Only	EW Perm	03	04	NB Only	06	07	08
Timing	G = *5.0*	G = *25.0*	G =	G =	G = *12.0*	G =	G =	G =
	Y = *6*	Y = *6*	Y =	Y =	Y = *6*	Y =	Y =	Y =
Duration of Analysis (hrs) = *0.25*						Cycle Length C = *60.0*		

Lane Group Capacity, Control Delay, and LOS Determination

	EB			WB			NB			SB		
Adjusted Flow Rate		*470*	*204*	*170*	*337*		*200*		*102*			
Lane Group Capacity		*740*	*629*	*413*	*1066*		*328*		*294*			
v/c Ratio		*0.64*	*0.32*	*0.41*	*0.32*		*0.61*		*0.35*			
Green Ratio		*0.42*	*0.42*	*0.60*	*0.60*		*0.20*		*0.20*			
Uniform Delay d_1		*13.9*	*11.8*	*6.9*	*5.9*		*21.9*		*20.6*			
Delay Factor k		*0.22*	*0.11*	*0.11*	*0.11*		*0.20*		*0.11*			
Incremental Delay d_2		*1.8*	*0.3*	*0.7*	*0.2*		*3.3*		*0.7*			
PF Factor		*1.000*	*1.000*	*1.000*	*1.000*		*1.000*		*1.000*			
Control Delay		*15.7*	*12.1*	*7.6*	*6.1*		*25.2*		*21.3*			
Lane Group LOS		*B*	*B*	*A*	*A*		*C*		*C*			
Approach Delay	*14.6*			*6.6*			*23.9*					
Approach LOS	*B*			*A*			*C*					
Intersection Delay	*13.8*			Intersection LOS						*B*		

SHORT REPORT

General Information		Site Information	
Analyst	*F.C.*	Intersection	*US 190 AT AIRPORT RD.*
Agency or Co.	*NS*	Area Type	*All other areas*
Date Performed	*06/07/2011*	Jurisdiction	*TANGIPAHOA PARISH*
Time Period	*AM PEAK HOUR*	Analysis Year	*2035 NO BUILD*

Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Number of Lanes		*1*	*1*	*1*	*1*		*1*		*1*			
Lane Group		*T*	*R*	*L*	*T*		*L*		*R*			
Volume (vph)		*495*	*177*	*257*	*666*		*398*		*207*			
% Heavy Vehicles		*7*	*7*	*7*	*7*		*10*		*10*			
PHF		*0.94*	*0.94*	*0.94*	*0.94*		*0.94*		*0.94*			
Pretimed/Actuated (P/A)		*A*	*A*	*A*	*A*		*A*		*A*			
Startup Lost Time		*2.0*	*2.0*	*2.0*	*2.0*		*2.0*		*2.0*			
Extension of Effective Green		*2.0*	*2.0*	*2.0*	*2.0*		*2.0*		*2.0*			
Arrival Type		*3*	*3*	*3*	*3*		*3*		*3*			
Unit Extension		*3.0*	*3.0*	*3.0*	*3.0*		*3.0*		*3.0*			
Ped/Bike/RTOR Volume	*0*	*0*	*56*	*0*	*0*		*0*	*0*	*62*			
Lane Width		*12.0*	*12.0*	*12.0*	*12.0*		*12.0*		*12.0*			
Parking/Grade/Parking	*N*	*0*	*N*	*N*	*0*	*N*	*N*	*0*	*N*			
Parking/Hour												
Bus Stops/Hour		*0*	*0*	*0*	*0*		*0*		*0*			
Minimum Pedestrian Time		*3.2*			*3.2*			*3.2*				

Phasing	WB Only	EW Perm	03	04	NB Only	06	07	08
Timing	G = *8.0*	G = *29.0*	G =	G =	G = *25.0*	G =	G =	G =
	Y = *6*	Y = *6*	Y =	Y =	Y = *6*	Y =	Y =	Y =
Duration of Analysis (hrs) = *0.25*						Cycle Length C = *80.0*		

Lane Group Capacity, Control Delay, and LOS Determination

	EB			WB			NB			SB		
Adjusted Flow Rate		*527*	*129*	*273*	*709*		*423*		*154*			
Lane Group Capacity		*644*	*547*	*313*	*955*		*513*		*459*			
v/c Ratio		*0.82*	*0.24*	*0.87*	*0.74*		*0.82*		*0.34*			
Green Ratio		*0.36*	*0.36*	*0.54*	*0.54*		*0.31*		*0.31*			
Uniform Delay d_1		*23.1*	*17.8*	*14.4*	*14.2*		*25.5*		*21.1*			
Delay Factor k		*0.36*	*0.11*	*0.40*	*0.30*		*0.36*		*0.11*			
Incremental Delay d_2		*8.2*	*0.2*	*22.6*	*3.2*		*10.6*		*0.4*			
PF Factor		*1.000*	*1.000*	*1.000*	*1.000*		*1.000*		*1.000*			
Control Delay		*31.3*	*18.0*	*36.9*	*17.4*		*36.0*		*21.6*			
Lane Group LOS		*C*	*B*	*D*	*B*		*D*		*C*			
Approach Delay	*28.7*			*22.8*			*32.2*					
Approach LOS	*C*			*C*			*C*					
Intersection Delay	*27.0*			Intersection LOS						*C*		

 HCS+™ Version 5.3 Generated: 10/26/2011 11:44 AM

SHORT REPORT

General Information		Site Information	
Analyst	*F.C.*	Intersection	*US 190 AT AIRPORT RD.*
Agency or Co.	*NS*	Area Type	*All other areas*
Date Performed	*06/07/2011*	Jurisdiction	*TANGIPAHOA PARISH*
Time Period	*PM PEAK HOUR*	Analysis Year	*2035 NO BUILD*

Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Number of Lanes		*1*	*1*	*1*	*1*		*1*		*1*			
Lane Group		*T*	*R*	*L*	*T*		*L*		*R*			
Volume (vph)		*520*	*341*	*193*	*372*		*222*		*157*			
% Heavy Vehicles		*7*	*7*	*7*	*7*		*10*		*10*			
PHF		*0.90*	*0.90*	*0.90*	*0.90*		*0.90*		*0.90*			
Pretimed/Actuated (P/A)		*A*	*A*	*A*	*A*		*A*		*A*			
Startup Lost Time		*2.0*	*2.0*	*2.0*	*2.0*		*2.0*		*2.0*			
Extension of Effective Green		*2.0*	*2.0*	*2.0*	*2.0*		*2.0*		*2.0*			
Arrival Type		*3*	*3*	*3*	*3*		*3*		*3*			
Unit Extension		*3.0*	*3.0*	*3.0*	*3.0*		*3.0*		*3.0*			
Ped/Bike/RTOR Volume	*0*	*0*	*117*	*0*	*0*		*0*	*0*	*47*			
Lane Width		*12.0*	*12.0*	*12.0*	*12.0*		*12.0*		*12.0*			
Parking/Grade/Parking	*N*	*0*	*N*	*N*	*0*	*N*	*N*	*0*	*N*			
Parking/Hour												
Bus Stops/Hour		*0*	*0*	*0*	*0*		*0*		*0*			
Minimum Pedestrian Time		*3.2*			*3.2*			*3.2*				

Phasing	WB Only	EW Perm	03	04	NB Only	06	07	08
Timing	G = *5.0*	G = *25.0*	G =	G =	G = *12.0*	G =	G =	G =
	Y = *6*	Y = *6*	Y =	Y =	Y = *6*	Y =	Y =	Y =
Duration of Analysis (hrs) = *0.25*						Cycle Length C = *60.0*		

Lane Group Capacity, Control Delay, and LOS Determination

	EB			WB			NB			SB		
Adjusted Flow Rate		*578*	*249*	*214*	*413*		*247*		*122*			
Lane Group Capacity		*740*	*629*	*332*	*1066*		*328*		*294*			
v/c Ratio		*0.78*	*0.40*	*0.64*	*0.39*		*0.75*		*0.41*			
Green Ratio		*0.42*	*0.42*	*0.60*	*0.60*		*0.20*		*0.20*			
Uniform Delay d_1		*15.1*	*12.2*	*8.6*	*6.3*		*22.6*		*20.9*			
Delay Factor k		*0.33*	*0.11*	*0.22*	*0.11*		*0.31*		*0.11*			
Incremental Delay d_2		*5.4*	*0.4*	*4.3*	*0.2*		*9.5*		*1.0*			
PF Factor		*1.000*	*1.000*	*1.000*	*1.000*		*1.000*		*1.000*			
Control Delay		*20.6*	*12.6*	*12.9*	*6.5*		*32.1*		*21.9*			
Lane Group LOS		*C*	*B*	*B*	*A*		*C*		*C*			
Approach Delay	*18.2*			*8.7*			*28.7*					
Approach LOS	*B*			*A*			*C*					
Intersection Delay	*17.0*			Intersection LOS						*B*		

TRAFFIC SIGNAL INVENTORY

LOUISIANA DEPARTMENT OF TRANSPORTATION AND DEVELOPMENT/ TRAFFIC SECTION District 62

TSI NO. 00396
SHEET: 1 OF 5

INTERSECTION: US 190 @ LA 3158 (AIRPORT ROAD)	**STATION ID:**
CITY: HAMMOND **PARISH:** TANGIPAHOA	**INSTALLATION DATE:** 09/22/99
TYPE SIGNAL: VOLUME-DENSITY, ISOLATED	**LAST REVISION DATE:**

PHASES →	Φ2 + Φ6			Φ8			Φ1 + Φ6												FL
INTERVALS / SIGNAL FACES	1	2	3	4	5	6	7	8	9	10	11	12	10	11	12	16	17	18	
1	G	Y	R			R	G	G	G										Y
2	G	Y	R			R	←G/G	←Y/G	G										Y
3	G	Y	R			R			R										Y
4	G	Y	R			R			R										Y
5			R	G	Y	R			R										R
6			R	G	Y	R			R										R
7																			
8																			
9																			
10																			
11																			
12																			
13																			
14																			
15																			
16																			

FREE OPERATION 0000-2400 (S-S)

Hours of Flashing Operation: Emergency

TIME	SEC		Offset = sec
FO	SEC		
YP	SEC		

PLAN = CYCLE LENGTH = TIMES OF OPERATION =

TIME	SEC		Offset = sec
FO	SEC		
YP	SEC		

PLAN = CYCLE LENGTH = TIMES OF OPERATION =

TIME	SEC		Offset = sec
FO	SEC		
YP	SEC		

PLAN = CYCLE LENGTH = TIMES OF OPERATION =

TIME	SEC		Offset = sec
FO	SEC		
YP	SEC		

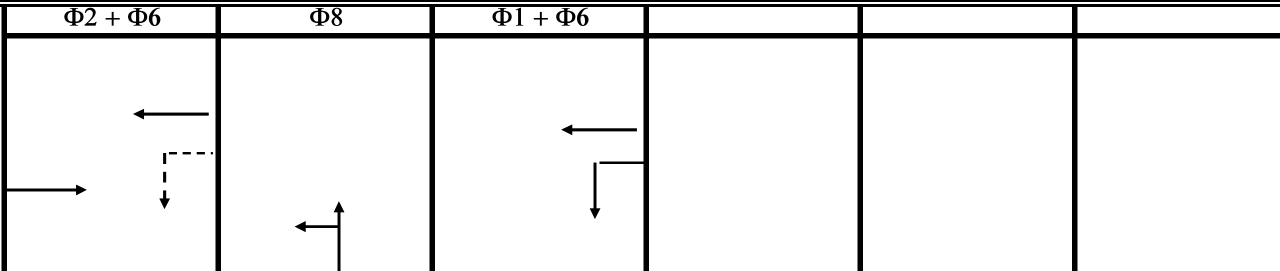
PLAN = CYCLE LENGTH = TIMES OF OPERATION =

TIME	SEC		Offset = sec
FO	SEC		
YP	SEC		

PLAN = CYCLE LENGTH = TIMES OF OPERATION =

PHASING

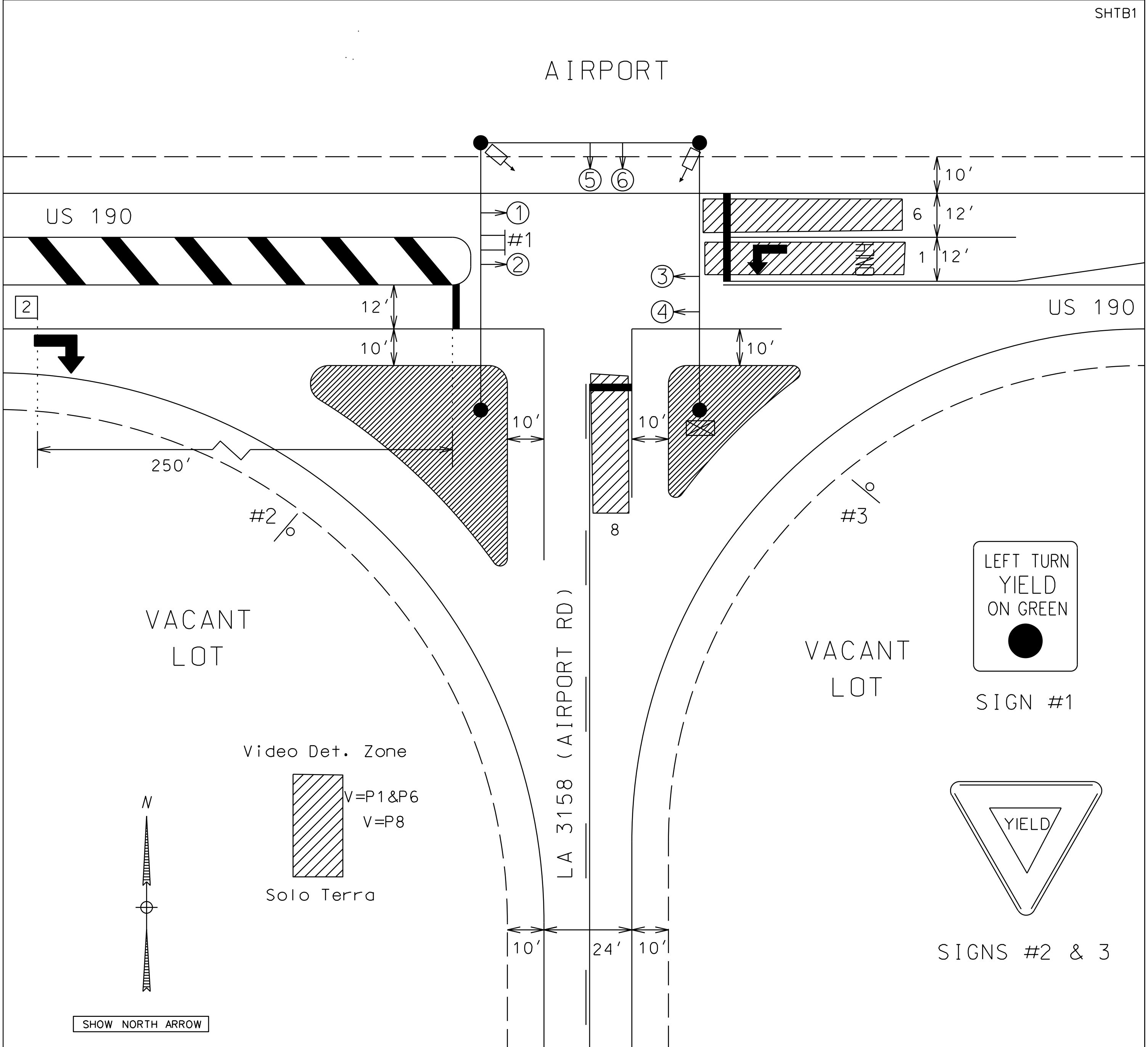
Φ2 + Φ6 | Φ8 | Φ1 + Φ6



SIGNAL WARRANTS: # 1, 2, 3	MAINTAINED BY: LADOTD	CONTROLLER MANUF: NAZTEC TS1	SYSTEM #:
MASTER/ SLAVE:	MASTER AT TSI #:	COORDINATED WITH TSI #'S:	

CONTROL SECTION 013-09	HIGHWAY US 190	PARISH TANGIPAHOA	TSI NO. 00396	SHEET 2 OF 5

SHTB1



- WOOD POLE
- METAL POLE
- SPAN WIRE
- CONTROLLER
- STOP LINE
- PED CROSS WALK
- #2 SPAN WIRE SIGN & NO.
- #3 GROUND MOUNT SIGN & NO.
- #3 OVERHEAD SIGN & NO.
- L4 LOOP DETECTOR & NO.
- 2 PEDESTAL MOUNT SIGNAL & NO.
- 2 SIGNAL FACE & NO.
- 2 PEDESTRIAN SIGNAL & NO.
- PED BUTTON & SIGN
- PARALLEL PARKING

EXISTING SPEED LIMITS

US 190 – 55 MPH

LA 3158 – 55 MPH

SIGNAL FACES	1,3-6					2				
TOTALS	5					1				
R - RED Y - YELLOW ←G - GREEN ←G - GREEN ARROW Y - YELLOW ARROW DK - DARK 12" - 12" DIA. LENS W - WALK DW - DON'T WALK FDW - FLASHING DON'T WALK	R Y G					R ~~←Y~~ Y ~~←G~~ G				PED

TRAFFIC SIGNAL INVENTORY

TSI NO. 00396

LOUISIANA DEPARTMENT OF TRANSPORTATION AND DEVELOPMENT/ TRAFFIC SECTION

SHEET: 3 OF 5

CONTROL SECTION: 013-09 **HIGHWAY:** US 190 **PARISH:** TANGIPAHOA

Phase Timing Parameters

Phase Designation		1	2				6		8
Movement Description		↰	→				←		↑
PARAMETER	RANGE								
MIN GREEN (MIN I)	0 - 99.0	5.0	20.0				20.0		5.0
PASSAGE TIME	0 - 9.9	3.0	6.0				6.0		4.0
MAX GREEN I (MAX I)	0 - 99.0	15.0	40.0				40.0		30.0
MAX GREEN II (MAX II)	0 - 99.0								
YELLOW CLEARANCE (YEL)	3 - 9.9	5.0	5.0				5.0		5.0
RED CLEARANCE (RED)	0 - 9.9	1.0	1.0				1.0		1.0
WALK (WALK)	0 - 99.0								
PED CLEARANCE (P CLR)	0 - 99.0								
ADDED INITIAL GREEN	0 - 9.9		3.0						
TIME TO REDUCE	0 - 99.0		20.0						
TIME BEFORE REDUCTION	0 - 99.0		20.0						
MIN GAP	0 - 9.9		2.0						
MAX INITIAL GREEN	0 - 99								
WALK 2	0 - 99.0								
PED CLEARANCE 2	0 - 99.0								
MAX 3	0 - 99.0								
MAX EXTENSION	0 - 99.0								
RECALL	CODES								
LOOP # - DELAY (in sec.)	0 - 99.0								
LOOP # - EXTEND (in sec.)	0 - 9.9								

RECALL FUNCTIONS	
MON	MEMORY ON
MOF	MEMORY OFF
MIN	MINIMUM
MAX	MAXIMUM
PMN	PEDESTRIAN AND MINIMUM
PMX	PEDESTRIAN AND MAXIMUM

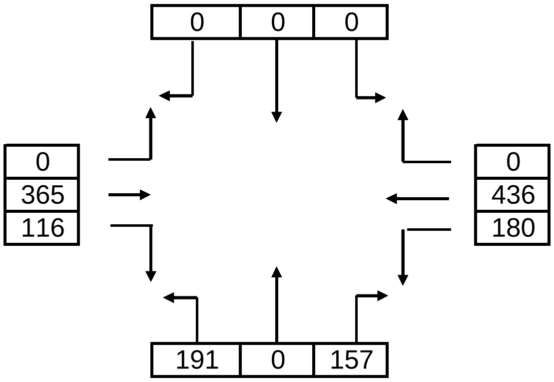
Note 1:

Note 2:

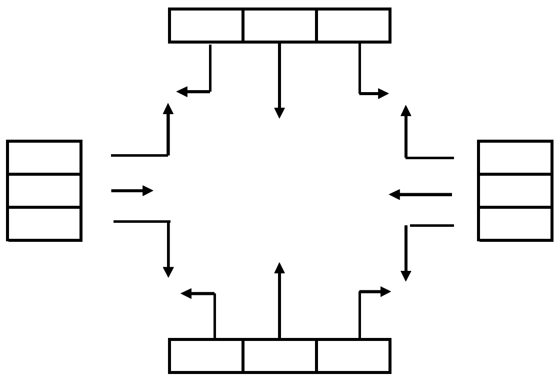
Note 3:

TRAFFIC SIGNAL INVENTORY	TSI NO. 00396
LOUISIANA DEPARTMENT OF TRANSPORTATION AND DEVELOPMENT/ TRAFFIC SECTION	SHEET: 4 OF 5

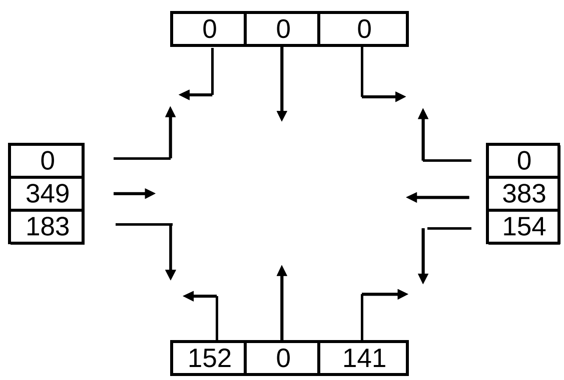
CONTROL SECTION: 013-09	HIGHWAY: US 190	PARISH: TANGIPAHOA



AM PEAK HOUR: 7:00-8:00 4-8-09



MIDDAY PEAK HOUR:



PM PEAK HOUR: 3:30-4:30 4-8-09

/\
|
SHOW NORTH ARROW

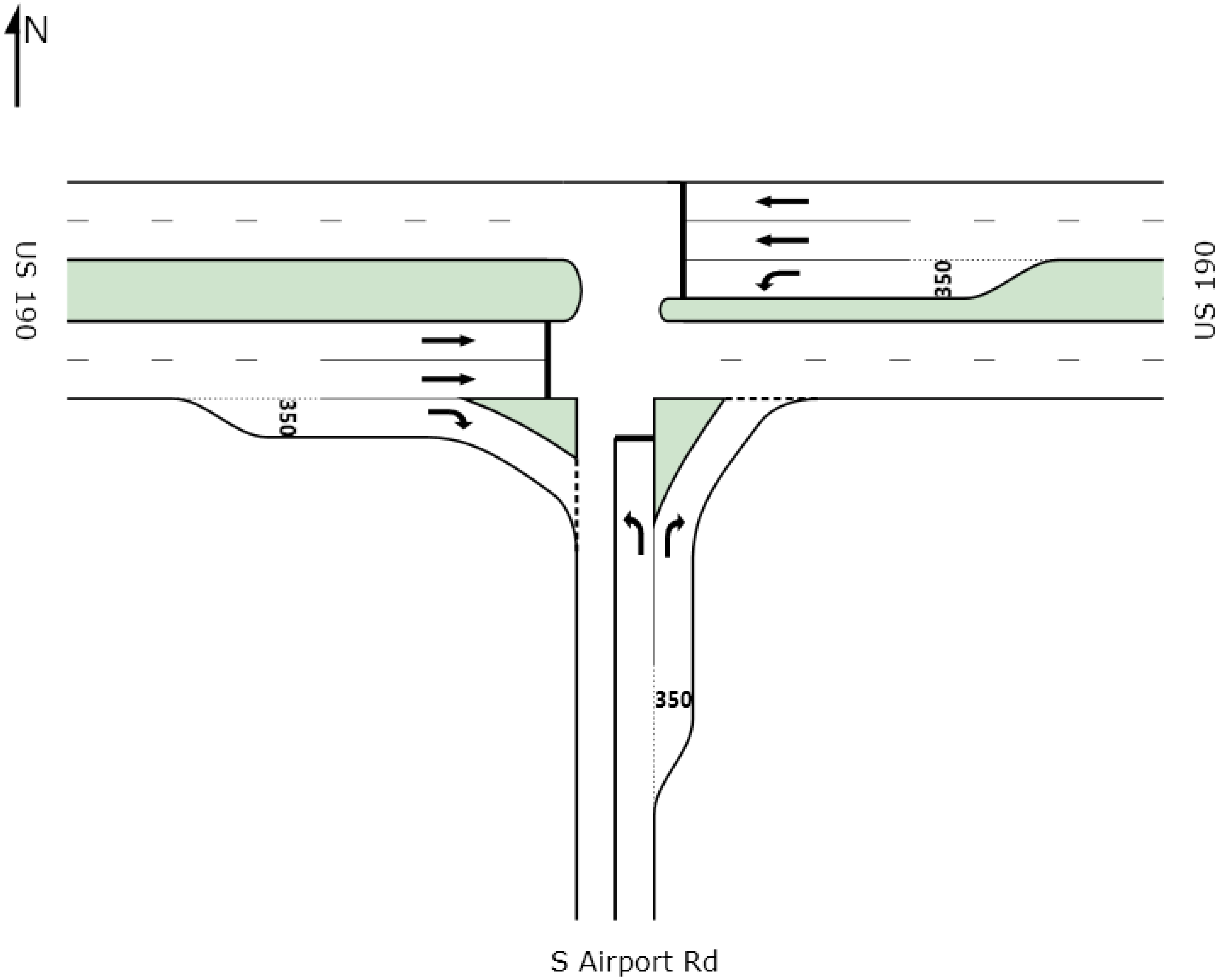
TRAFFIC VOLUMES - VPH

Peak Hour Factor ( )

LOOP #	COUNT & SIZE	PHASE #	MOVEMENT DESCRIPTION
2	1 - 6' X 6'	2	EB US 190 - THRU
CAMERA #	ZONE SIZE	PHASE #	MOVEMENT DESCRIPTION
1	12' X 50'	1	WB US 190 - LEFT
2	12' X 50'	8	NB LA 3158 - LEFT
1	12' X 50'	6	WB US 190 - THRU

INTERSECTION US 190 at S Airport Rd

Build Analysis



US 190 @ S Airport Rd

Alternate - A, B & C

SHORT REPORT

General Information		Site Information	
Analyst	*F.C.*	Intersection	*US 190 AT AIRPORT RD.*
Agency or Co.	*NS*	Area Type	*All other areas*
Date Performed	*06/07/2011*	Jurisdiction	*TANGIPAHOA PARISH*
Time Period	*AM PEAK HOUR*	Analysis Year	*2015 ALT A*

Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Number of Lanes		*2*	*1*	*1*	*2*		*1*		*1*			
Lane Group		*T*	*R*	*L*	*T*		*L*		*R*			
Volume (vph)		*564*	*201*	*207*	*544*		*325*		*204*			
% Heavy Vehicles		*7*	*7*	*7*	*7*		*10*		*10*			
PHF		*0.94*	*0.94*	*0.94*	*0.94*		*0.94*		*0.94*			
Pretimed/Actuated (P/A)		*A*	*A*	*A*	*A*		*A*		*A*			
Startup Lost Time		*2.0*	*2.0*	*2.0*	*2.0*		*2.0*		*2.0*			
Extension of Effective Green		*2.0*	*2.0*	*2.0*	*2.0*		*2.0*		*2.0*			
Arrival Type		*3*	*3*	*3*	*3*		*3*		*3*			
Unit Extension		*3.0*	*3.0*	*3.0*	*3.0*		*3.0*		*3.0*			
Ped/Bike/RTOR Volume	*0*	*0*	*52*	*0*	*0*		*0*	*0*	*61*			
Lane Width		*12.0*	*12.0*	*12.0*	*12.0*		*12.0*		*12.0*			
Parking/Grade/Parking	*N*	*0*	*N*	*N*	*0*	*N*	*N*	*0*	*N*			
Parking/Hour												
Bus Stops/Hour		*0*	*0*	*0*	*0*		*0*		*0*			
Minimum Pedestrian Time		*3.2*			*3.2*			*3.2*				

Phasing	WB Only	EW Perm	03	04	NB Only	06	07	08
Timing	G = *10.0*	G = *23.0*	G =	G =	G = *24.0*	G =	G =	G =
	Y = *6*	Y = *6*	Y =	Y =	Y = *6*	Y =	Y =	Y =
Duration of Analysis (hrs) = *0.25*						Cycle Length C = *75.0*		

Lane Group Capacity, Control Delay, and LOS Determination

	EB			WB			NB			SB		
Adjusted Flow Rate		*600*	*159*	*220*	*579*		*346*		*152*			
Lane Group Capacity		*1037*	*463*	*406*	*1758*		*525*		*470*			
v/c Ratio		*0.58*	*0.34*	*0.54*	*0.33*		*0.66*		*0.32*			
Green Ratio		*0.31*	*0.31*	*0.52*	*0.52*		*0.32*		*0.32*			
Uniform Delay d_1		*21.9*	*20.1*	*11.1*	*10.4*		*22.0*		*19.3*			
Delay Factor k		*0.17*	*0.11*	*0.14*	*0.11*		*0.23*		*0.11*			
Incremental Delay d_2		*0.8*	*0.4*	*1.5*	*0.1*		*3.0*		*0.4*			
PF Factor		*1.000*	*1.000*	*1.000*	*1.000*		*1.000*		*1.000*			
Control Delay		*22.7*	*20.6*	*12.6*	*10.5*		*25.0*		*19.7*			
Lane Group LOS		*C*	*C*	*B*	*B*		*C*		*B*			
Approach Delay	*22.3*			*11.1*			*23.4*					
Approach LOS	*C*			*B*			*C*					
Intersection Delay	*18.2*			Intersection LOS						*B*		

SHORT REPORT

General Information		Site Information	
Analyst	*F.C.*	Intersection	*US 190 AT AIRPORT RD.*
Agency or Co.	*NS*	Area Type	*All other areas*
Date Performed	*06/07/2011*	Jurisdiction	*TANGIPAHOA PARISH*
Time Period	*PM PEAK HOUR*	Analysis Year	*2015 ALT A*

Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Number of Lanes		2	1	1	2		1		1			
Lane Group		T	R	L	T		L		R			
Volume (vph)		400	262	156	435		260		154			
% Heavy Vehicles		7	7	7	7		10		10			
PHF		0.90	0.90	0.90	0.90		0.90		0.90			
Pretimed/Actuated (P/A)		A	A	A	A		A		A			
Startup Lost Time		2.0	2.0	2.0	2.0		2.0		2.0			
Extension of Effective Green		2.0	2.0	2.0	2.0		2.0		2.0			
Arrival Type		3	3	3	3		3		3			
Unit Extension		3.0	3.0	3.0	3.0		3.0		3.0			
Ped/Bike/RTOR Volume	0	0	79	0	0		0	0	46			
Lane Width		12.0	12.0	12.0	12.0		12.0		12.0			
Parking/Grade/Parking	N	0	N	N	0	N	N	0	N			
Parking/Hour												
Bus Stops/Hour		0	0	0	0		0		0			
Minimum Pedestrian Time		3.2			3.2			3.2				

Phasing	WB Only	EW Perm	03	04	NB Only	06	07	08
Timing	G = 7.0	G = 22.0	G =	G =	G = 13.0	G =	G =	G =
	Y = 6	Y = 6	Y =	Y =	Y = 6	Y =	Y =	Y =
Duration of Analysis (hrs) = 0.25						Cycle Length C = 60.0		

Lane Group Capacity, Control Delay, and LOS Determination

	EB			WB			NB			SB		
Adjusted Flow Rate		444	203	173	483		289		120			
Lane Group Capacity		1240	553	525	1972		356		318			
v/c Ratio		0.36	0.37	0.33	0.24		0.81		0.38			
Green Ratio		0.37	0.37	0.58	0.58		0.22		0.22			
Uniform Delay d_1		13.9	13.9	6.1	6.1		22.3		20.0			
Delay Factor k		0.11	0.11	0.11	0.11		0.35		0.11			
Incremental Delay d_2		0.2	0.4	0.4	0.1		13.3		0.8			
PF Factor		1.000	1.000	1.000	1.000		1.000		1.000			
Control Delay		14.0	14.3	6.5	6.1		35.7		20.8			
Lane Group LOS		B	B	A	A		D		C			
Approach Delay	14.1			6.2			31.3					
Approach LOS	B			A			C					
Intersection Delay	15.2			Intersection LOS						B		

SHORT REPORT

General Information		Site Information	
Analyst	*F.C.*	Intersection	*US 190 AT AIRPORT RD.*
Agency or Co.	*NS*	Area Type	*All other areas*
Date Performed	*06/07/2011*	Jurisdiction	*TANGIPAHOA PARISH*
Time Period	*AM PEAK HOUR*	Analysis Year	*2035 ALT A*

Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Number of Lanes		2	1	1	2		1		1			
Lane Group		T	R	L	T		L		R			
Volume (vph)		677	241	253	660		394		226			
% Heavy Vehicles		7	7	7	7		10		10			
PHF		0.94	0.94	0.94	0.94		0.94		0.94			
Pretimed/Actuated (P/A)		A	A	A	A		A		A			
Startup Lost Time		2.0	2.0	2.0	2.0		2.0		2.0			
Extension of Effective Green		2.0	2.0	2.0	2.0		2.0		2.0			
Arrival Type		3	3	3	3		3		3			
Unit Extension		3.0	3.0	3.0	3.0		3.0		3.0			
Ped/Bike/RTOR Volume	0	0	65	0	0		0	0	68			
Lane Width		12.0	12.0	12.0	12.0		12.0		12.0			
Parking/Grade/Parking	N	0	N	N	0	N	N	0	N			
Parking/Hour												
Bus Stops/Hour		0	0	0	0		0		0			
Minimum Pedestrian Time		3.2			3.2			3.2				

Phasing	WB Only	EW Perm	03	04	NB Only	06	07	08
Timing	G = 10.0	G = 23.0	G =	G =	G = 24.0	G =	G =	G =
	Y = 6	Y = 6	Y =	Y =	Y = 6	Y =	Y =	Y =
Duration of Analysis (hrs) = 0.25						Cycle Length C = 75.0		

Lane Group Capacity, Control Delay, and LOS Determination

	EB			WB			NB			SB		
Adjusted Flow Rate		720	187	269	702		419		168			
Lane Group Capacity		1037	463	361	1758		525		470			
v/c Ratio		0.69	0.40	0.75	0.40		0.80		0.36			
Green Ratio		0.31	0.31	0.52	0.52		0.32		0.32			
Uniform Delay d_1		22.9	20.6	12.4	10.9		23.3		19.6			
Delay Factor k		0.26	0.11	0.30	0.11		0.34		0.11			
Incremental Delay d_2		2.0	0.6	8.2	0.1		8.5		0.5			
PF Factor		1.000	1.000	1.000	1.000		1.000		1.000			
Control Delay		24.9	21.2	20.6	11.1		31.8		20.0			
Lane Group LOS		C	C	C	B		C		C			
Approach Delay	24.2			13.7			28.4					
Approach LOS	C			B			C					
Intersection Delay	21.1			Intersection LOS						C		

SHORT REPORT

General Information		Site Information	
Analyst	*F.C.*	Intersection	*US 190 AT AIRPORT RD.*
Agency or Co.	*NS*	Area Type	*All other areas*
Date Performed	*06/07/2011*	Jurisdiction	*TANGIPAHOA PARISH*
Time Period	*PM PEAK HOUR*	Analysis Year	*2035 ALT A*

Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Number of Lanes		2	1	1	2		1		1			
Lane Group		T	R	L	T		L		R			
Volume (vph)		520	341	190	562		335		172			
% Heavy Vehicles		7	7	7	7		10		10			
PHF		0.90	0.90	0.90	0.90		0.90		0.90			
Pretimed/Actuated (P/A)		A	A	A	A		A		A			
Startup Lost Time		2.0	2.0	2.0	2.0		2.0		2.0			
Extension of Effective Green		2.0	2.0	2.0	2.0		2.0		2.0			
Arrival Type		3	3	3	3		3		3			
Unit Extension		3.0	3.0	3.0	3.0		3.0		3.0			
Ped/Bike/RTOR Volume	0	0	102	0	0		0	0	52			
Lane Width		12.0	12.0	12.0	12.0		12.0		12.0			
Parking/Grade/Parking	N	0	N	N	0	N	N	0	N			
Parking/Hour												
Bus Stops/Hour		0	0	0	0		0		0			
Minimum Pedestrian Time		3.2			3.2			3.2				

Phasing	WB Only	EW Perm	03	04	NB Only	06	07	08
Timing	G = 6.0	G = 34.0	G =	G =	G = 22.0	G =	G =	G =
	Y = 6	Y = 6	Y =	Y =	Y = 6	Y =	Y =	Y =
Duration of Analysis (hrs) = 0.25						Cycle Length C = 80.0		

Lane Group Capacity, Control Delay, and LOS Determination

	EB			WB			NB			SB		
Adjusted Flow Rate		578	266	211	624		372		133			
Lane Group Capacity		1437	641	423	1944		451		404			
v/c Ratio		0.40	0.41	0.50	0.32		0.82		0.33			
Green Ratio		0.43	0.43	0.57	0.57		0.28		0.28			
Uniform Delay d_1		16.0	16.1	9.0	8.9		27.2		23.1			
Delay Factor k		0.11	0.11	0.11	0.11		0.36		0.11			
Incremental Delay d_2		0.2	0.4	0.9	0.1		11.9		0.5			
PF Factor		1.000	1.000	1.000	1.000		1.000		1.000			
Control Delay		16.1	16.5	9.9	9.0		39.1		23.6			
Lane Group LOS		B	B	A	A		D		C			
Approach Delay	16.2			9.2			35.0					
Approach LOS	B			A			C					
Intersection Delay	17.9			Intersection LOS						B		

SHORT REPORT

General Information		Site Information	
Analyst	*F.C.*	Intersection	*US 190 AT AIRPORT RD.*
Agency or Co.	*NS*	Area Type	*All other areas*
Date Performed	*06/07/2011*	Jurisdiction	*TANGIPAHOA PARISH*
Time Period	*AM PEAK HOUR*	Analysis Year	*2015 ALT B*

Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Number of Lanes		2	1	1	2		1		1			
Lane Group		T	R	L	T		L		R			
Volume (vph)		595	212	206	586		350		197			
% Heavy Vehicles		7	7	7	7		10		10			
PHF		0.94	0.94	0.94	0.94		0.94		0.94			
Pretimed/Actuated (P/A)		A	A	A	A		A		A			
Startup Lost Time		2.0	2.0	2.0	2.0		2.0		2.0			
Extension of Effective Green		2.0	2.0	2.0	2.0		2.0		2.0			
Arrival Type		3	3	3	3		3		3			
Unit Extension		3.0	3.0	3.0	3.0		3.0		3.0			
Ped/Bike/RTOR Volume	0	0	56	0	0		0	0	59			
Lane Width		12.0	12.0	12.0	12.0		12.0		12.0			
Parking/Grade/Parking	N	0	N	N	0	N	N	0	N			
Parking/Hour												
Bus Stops/Hour		0	0	0	0		0		0			
Minimum Pedestrian Time		3.2			3.2			3.2				

Phasing	WB Only	EW Perm	03	04	NB Only	06	07	08
Timing	G = 10.0	G = 23.0	G =	G =	G = 24.0	G =	G =	G =
	Y = 6	Y = 6	Y =	Y =	Y = 6	Y =	Y =	Y =
Duration of Analysis (hrs) = 0.25						Cycle Length C = 75.0		

Lane Group Capacity, Control Delay, and LOS Determination

	EB			WB			NB			SB		
Adjusted Flow Rate		633	166	219	623		372		147			
Lane Group Capacity		1037	463	393	1758		525		470			
v/c Ratio		0.61	0.36	0.56	0.35		0.71		0.31			
Green Ratio		0.31	0.31	0.52	0.52		0.32		0.32			
Uniform Delay d_1		22.2	20.3	11.2	10.6		22.4		19.3			
Delay Factor k		0.20	0.11	0.15	0.11		0.27		0.11			
Incremental Delay d_2		1.1	0.5	1.8	0.1		4.4		0.4			
PF Factor		1.000	1.000	1.000	1.000		1.000		1.000			
Control Delay		23.2	20.7	13.0	10.7		26.8		19.7			
Lane Group LOS		C	C	B	B		C		B			
Approach Delay	22.7			11.3			24.8					
Approach LOS	C			B			C					
Intersection Delay	18.8			Intersection LOS						B		

SHORT REPORT

General Information		Site Information	
Analyst	*F.C.*	Intersection	*US 190 AT AIRPORT RD.*
Agency or Co.	*NS*	Area Type	*All other areas*
Date Performed	*06/07/2011*	Jurisdiction	*TANGIPAHOA PARISH*
Time Period	*PM PEAK HOUR*	Analysis Year	*2015 ALT B*

Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Number of Lanes		2	1	1	2		1		1			
Lane Group		T	R	L	T		L		R			
Volume (vph)		463	303	156	450		268		149			
% Heavy Vehicles		7	7	7	7		10		10			
PHF		0.90	0.90	0.90	0.90		0.90		0.90			
Pretimed/Actuated (P/A)		A	A	A	A		A		A			
Startup Lost Time		2.0	2.0	2.0	2.0		2.0		2.0			
Extension of Effective Green		2.0	2.0	2.0	2.0		2.0		2.0			
Arrival Type		3	3	3	3		3		3			
Unit Extension		3.0	3.0	3.0	3.0		3.0		3.0			
Ped/Bike/RTOR Volume	0	0	91	0	0		0	0	45			
Lane Width		12.0	12.0	12.0	12.0		12.0		12.0			
Parking/Grade/Parking	N	0	N	N	0	N	N	0	N			
Parking/Hour												
Bus Stops/Hour		0	0	0	0		0		0			
Minimum Pedestrian Time		3.2			3.2			3.2				

Phasing	WB Only	EW Perm	03	04	NB Only	06	07	08
Timing	G = 7.0	G = 22.0	G =	G =	G = 13.0	G =	G =	G =
	Y = 6	Y = 6	Y =	Y =	Y = 6	Y =	Y =	Y =
Duration of Analysis (hrs) = 0.25						Cycle Length C = 60.0		

Lane Group Capacity, Control Delay, and LOS Determination

	EB			WB			NB			SB		
Adjusted Flow Rate		514	236	173	500		298		116			
Lane Group Capacity		1240	553	489	1972		356		318			
v/c Ratio		0.41	0.43	0.35	0.25		0.84		0.36			
Green Ratio		0.37	0.37	0.58	0.58		0.22		0.22			
Uniform Delay d_1		14.2	14.3	6.3	6.1		22.5		20.0			
Delay Factor k		0.11	0.11	0.11	0.11		0.37		0.11			
Incremental Delay d_2		0.2	0.5	0.4	0.1		15.9		0.7			
PF Factor		1.000	1.000	1.000	1.000		1.000		1.000			
Control Delay		14.4	14.8	6.7	6.2		38.4		20.7			
Lane Group LOS		B	B	A	A		D		C			
Approach Delay	14.5			6.3			33.4					
Approach LOS	B			A			C					
Intersection Delay	15.8			Intersection LOS						B		

SHORT REPORT

General Information		Site Information	
Analyst	*F.C.*	Intersection	*US 190 AT AIRPORT RD.*
Agency or Co.	*NS*	Area Type	*All other areas*
Date Performed	*06/07/2011*	Jurisdiction	*TANGIPAHOA PARISH*
Time Period	*AM PEAK HOUR*	Analysis Year	*2035 ALT B*

Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Number of Lanes		2	1	1	2		1		1			
Lane Group		T	R	L	T		L		R			
Volume (vph)		718	256	257	688		410		234			
% Heavy Vehicles		7	7	7	7		10		10			
PHF		0.94	0.94	0.94	0.94		0.94		0.94			
Pretimed/Actuated (P/A)		A	A	A	A		A		A			
Startup Lost Time		2.0	2.0	2.0	2.0		2.0		2.0			
Extension of Effective Green		2.0	2.0	2.0	2.0		2.0		2.0			
Arrival Type		3	3	3	3		3		3			
Unit Extension		3.0	3.0	3.0	3.0		3.0		3.0			
Ped/Bike/RTOR Volume	0	0	69	0	0		0	0	70			
Lane Width		12.0	12.0	12.0	12.0		12.0		12.0			
Parking/Grade/Parking	N	0	N	N	0	N	N	0	N			
Parking/Hour												
Bus Stops/Hour		0	0	0	0		0		0			
Minimum Pedestrian Time		3.2			3.2			3.2				

Phasing	WB Only	EW Perm	03	04	NB Only	06	07	08
Timing	G = 10.0	G = 23.0	G =	G =	G = 24.0	G =	G =	G =
	Y = 6	Y = 6	Y =	Y =	Y = 6	Y =	Y =	Y =
Duration of Analysis (hrs) = 0.25						Cycle Length C = 75.0		

Lane Group Capacity, Control Delay, and LOS Determination

	EB			WB			NB			SB		
Adjusted Flow Rate		764	199	273	732		436		174			
Lane Group Capacity		1037	463	346	1758		525		470			
v/c Ratio		0.74	0.43	0.79	0.42		0.83		0.37			
Green Ratio		0.31	0.31	0.52	0.52		0.32		0.32			
Uniform Delay d_1		23.3	20.8	12.9	11.0		23.6		19.7			
Delay Factor k		0.29	0.11	0.34	0.11		0.37		0.11			
Incremental Delay d_2		2.8	0.6	11.6	0.2		10.8		0.5			
PF Factor		1.000	1.000	1.000	1.000		1.000		1.000			
Control Delay		26.1	21.4	24.5	11.2		34.4		20.2			
Lane Group LOS		C	C	C	B		C		C			
Approach Delay	25.1			14.8			30.4					
Approach LOS	C			B			C					
Intersection Delay	22.3			Intersection LOS						C		

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SHORT REPORT

General Information		Site Information	
Analyst	*F.C.*	Intersection	*US 190 AT AIRPORT RD.*
Agency or Co.	*NS*	Area Type	*All other areas*
Date Performed	*06/07/2011*	Jurisdiction	*TANGIPAHOA PARISH*
Time Period	*PM PEAK HOUR*	Analysis Year	*2035 ALT B*

Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Number of Lanes		2	1	1	2		1		1			
Lane Group		T	R	L	T		L		R			
Volume (vph)		544	356	193	605		361		177			
% Heavy Vehicles		7	7	7	7		10		10			
PHF		0.90	0.90	0.90	0.90		0.90		0.90			
Pretimed/Actuated (P/A)		A	A	A	A		A		A			
Startup Lost Time		2.0	2.0	2.0	2.0		2.0		2.0			
Extension of Effective Green		2.0	2.0	2.0	2.0		2.0		2.0			
Arrival Type		3	3	3	3		3		3			
Unit Extension		3.0	3.0	3.0	3.0		3.0		3.0			
Ped/Bike/RTOR Volume	0	0	107	0	0		0	0	53			
Lane Width		12.0	12.0	12.0	12.0		12.0		12.0			
Parking/Grade/Parking	N	0	N	N	0	N	N	0	N			
Parking/Hour												
Bus Stops/Hour		0	0	0	0		0		0			
Minimum Pedestrian Time		3.2			3.2			3.2				

Phasing	WB Only	EW Perm	03	04	NB Only	06	07	08
Timing	G = 6.0	G = 31.0	G =	G =	G = 25.0	G =	G =	G =
	Y = 6	Y = 6	Y =	Y =	Y = 6	Y =	Y =	Y =
Duration of Analysis (hrs) = 0.25						Cycle Length C = 80.0		

Lane Group Capacity, Control Delay, and LOS Determination

	EB			WB			NB			SB		
Adjusted Flow Rate		604	277	214	672		401		138			
Lane Group Capacity		1310	585	377	1817		513		459			
v/c Ratio		0.46	0.47	0.57	0.37		0.78		0.30			
Green Ratio		0.39	0.39	0.54	0.54		0.31		0.31			
Uniform Delay d_1		18.3	18.4	10.8	10.7		25.0		20.9			
Delay Factor k		0.11	0.11	0.16	0.11		0.33		0.11			
Incremental Delay d_2		0.3	0.6	2.0	0.1		7.7		0.4			
PF Factor		1.000	1.000	1.000	1.000		1.000		1.000			
Control Delay		18.5	19.0	12.8	10.8		32.7		21.2			
Lane Group LOS		B	B	B	B		C		C			
Approach Delay	18.7			11.3			29.8					
Approach LOS	B			B			C					
Intersection Delay	18.4			Intersection LOS						B		

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SHORT REPORT

General Information		Site Information	
Analyst	F.C.	Intersection	US 190 AT AIRPORT RD.
Agency or Co.	NS	Area Type	All other areas
Date Performed	06/07/2011	Jurisdiction	TANGIPAHOA PARISH
Time Period	AM PEAK HOUR	Analysis Year	2015 ALT C

Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Number of Lanes		2	1	1	2		1		1			
Lane Group		T	R	L	T		L		R			
Volume (vph)		582	208	208	549		327		210			
% Heavy Vehicles		7	7	7	7		10		10			
PHF		0.94	0.94	0.94	0.94		0.94		0.94			
Pretimed/Actuated (P/A)		A	A	A	A		A		A			
Startup Lost Time		2.0	2.0	2.0	2.0		2.0		2.0			
Extension of Effective Green		2.0	2.0	2.0	2.0		2.0		2.0			
Arrival Type		3	3	3	3		3		3			
Unit Extension		3.0	3.0	3.0	3.0		3.0		3.0			
Ped/Bike/RTOR Volume	0	0	54	0	0		0	0	63			
Lane Width		12.0	12.0	12.0	12.0		12.0		12.0			
Parking/Grade/Parking	N	0	N	N	0	N	N	0	N			
Parking/Hour												
Bus Stops/Hour		0	0	0	0		0		0			
Minimum Pedestrian Time		3.2			3.2			3.2				

Phasing	WB Only	EW Perm	03	04	NB Only	06	07	08
Timing	G = 10.0	G = 23.0	G =	G =	G = 24.0	G =	G =	G =
	Y = 6	Y = 6	Y =	Y =	Y = 6	Y =	Y =	Y =
Duration of Analysis (hrs) = 0.25					Cycle Length C = 75.0			

Lane Group Capacity, Control Delay, and LOS Determination

	EB			WB			NB			SB		
Adjusted Flow Rate		619	164	221	584		348		156			
Lane Group Capacity		1037	463	399	1758		525		470			
v/c Ratio		0.60	0.35	0.55	0.33		0.66		0.33			
Green Ratio		0.31	0.31	0.52	0.52		0.32		0.32			
Uniform Delay d_1		22.1	20.2	11.2	10.4		22.0		19.4			
Delay Factor k		0.19	0.11	0.15	0.11		0.24		0.11			
Incremental Delay d_2		0.9	0.5	1.7	0.1		3.1		0.4			
PF Factor		1.000	1.000	1.000	1.000		1.000		1.000			
Control Delay		23.0	20.7	12.9	10.6		25.1		19.8			
Lane Group LOS		C	C	B	B		C		B			
Approach Delay	22.5			11.2			23.5					
Approach LOS	C			B			C					
Intersection Delay	18.4			Intersection LOS						B		

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SHORT REPORT

General Information		Site Information	
Analyst	*F.C.*	Intersection	*US 190 AT AIRPORT RD.*
Agency or Co.	*NS*	Area Type	*All other areas*
Date Performed	*06/07/2011*	Jurisdiction	*TANGIPAHOA PARISH*
Time Period	*PM PEAK HOUR*	Analysis Year	*2015 ALT C*

Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Number of Lanes		*2*	*1*	*1*	*2*		*1*		*1*			
Lane Group		*T*	*R*	*L*	*T*		*L*		*R*			
Volume (vph)		*419*	*275*	*157*	*450*		*268*		*158*			
% Heavy Vehicles		*7*	*7*	*7*	*7*		*10*		*10*			
PHF		*0.90*	*0.90*	*0.90*	*0.90*		*0.90*		*0.90*			
Pretimed/Actuated (P/A)		*A*	*A*	*A*	*A*		*A*		*A*			
Startup Lost Time		*2.0*	*2.0*	*2.0*	*2.0*		*2.0*		*2.0*			
Extension of Effective Green		*2.0*	*2.0*	*2.0*	*2.0*		*2.0*		*2.0*			
Arrival Type		*3*	*3*	*3*	*3*		*3*		*3*			
Unit Extension		*3.0*	*3.0*	*3.0*	*3.0*		*3.0*		*3.0*			
Ped/Bike/RTOR Volume	*0*	*0*	*82*	*0*	*0*		*0*	*0*	*47*			
Lane Width		*12.0*	*12.0*	*12.0*	*12.0*		*12.0*		*12.0*			
Parking/Grade/Parking	*N*	*0*	*N*	*N*	*0*	*N*	*N*	*0*	*N*			
Parking/Hour												
Bus Stops/Hour		*0*	*0*	*0*	*0*		*0*		*0*			
Minimum Pedestrian Time		*3.2*			*3.2*			*3.2*				

Phasing	WB Only	EW Perm	03	04	NB Only	06	07	08
Timing	G = *7.0*	G = *22.0*	G =	G =	G = *13.0*	G =	G =	G =
	Y = *6*	Y = *6*	Y =	Y =	Y = *6*	Y =	Y =	Y =
Duration of Analysis (hrs) = *0.25*					Cycle Length C = *60.0*			

Lane Group Capacity, Control Delay, and LOS Determination

	EB			WB			NB			SB		
Adjusted Flow Rate		*466*	*214*	*174*	*500*		*298*		*123*			
Lane Group Capacity		*1240*	*553*	*513*	*1972*		*356*		*318*			
v/c Ratio		*0.38*	*0.39*	*0.34*	*0.25*		*0.84*		*0.39*			
Green Ratio		*0.37*	*0.37*	*0.58*	*0.58*		*0.22*		*0.22*			
Uniform Delay d_1		*14.0*	*14.0*	*6.2*	*6.1*		*22.5*		*20.1*			
Delay Factor k		*0.11*	*0.11*	*0.11*	*0.11*		*0.37*		*0.11*			
Incremental Delay d_2		*0.2*	*0.5*	*0.4*	*0.1*		*15.9*		*0.8*			
PF Factor		*1.000*	*1.000*	*1.000*	*1.000*		*1.000*		*1.000*			
Control Delay		*14.1*	*14.5*	*6.6*	*6.2*		*38.4*		*20.9*			
Lane Group LOS		*B*	*B*	*A*	*A*		*D*		*C*			
Approach Delay	*14.3*			*6.3*			*33.3*					
Approach LOS	*B*			*A*			*C*					
Intersection Delay	*15.7*			Intersection LOS						*B*		

SHORT REPORT

General Information		Site Information	
Analyst	*F.C.*	Intersection	*US 190 AT AIRPORT RD.*
Agency or Co.	*NS*	Area Type	*All other areas*
Date Performed	*06/07/2011*	Jurisdiction	*TANGIPAHOA PARISH*
Time Period	*AM PEAK HOUR*	Analysis Year	*2035 ALT C*

Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Number of Lanes		*2*	*1*	*1*	*2*		*1*		*1*			
Lane Group		*T*	*R*	*L*	*T*		*L*		*R*			
Volume (vph)		*675*	*241*	*253*	*648*		*387*		*228*			
% Heavy Vehicles		*7*	*7*	*7*	*7*		*10*		*10*			
PHF		*0.94*	*0.94*	*0.94*	*0.94*		*0.94*		*0.94*			
Pretimed/Actuated (P/A)		*A*	*A*	*A*	*A*		*A*		*A*			
Startup Lost Time		*2.0*	*2.0*	*2.0*	*2.0*		*2.0*		*2.0*			
Extension of Effective Green		*2.0*	*2.0*	*2.0*	*2.0*		*2.0*		*2.0*			
Arrival Type		*3*	*3*	*3*	*3*		*3*		*3*			
Unit Extension		*3.0*	*3.0*	*3.0*	*3.0*		*3.0*		*3.0*			
Ped/Bike/RTOR Volume	*0*	*0*	*64*	*0*	*0*		*0*	*0*	*68*			
Lane Width		*12.0*	*12.0*	*12.0*	*12.0*		*12.0*		*12.0*			
Parking/Grade/Parking	*N*	*0*	*N*	*N*	*0*	*N*	*N*	*0*	*N*			
Parking/Hour												
Bus Stops/Hour		*0*	*0*	*0*	*0*		*0*		*0*			
Minimum Pedestrian Time		*3.2*			*3.2*			*3.2*				

Phasing	WB Only	EW Perm	03	04	NB Only	06	07	08
Timing	G = *10.0*	G = *23.0*	G =	G =	G = *24.0*	G =	G =	G =
	Y = *6*	Y = *6*	Y =	Y =	Y = *6*	Y =	Y =	Y =
Duration of Analysis (hrs) = *0.25*					Cycle Length C = *75.0*			

Lane Group Capacity, Control Delay, and LOS Determination

	EB			WB			NB			SB		
Adjusted Flow Rate		*718*	*188*	*269*	*689*		*412*		*170*			
Lane Group Capacity		*1037*	*463*	*361*	*1758*		*525*		*470*			
v/c Ratio		*0.69*	*0.41*	*0.75*	*0.39*		*0.78*		*0.36*			
Green Ratio		*0.31*	*0.31*	*0.52*	*0.52*		*0.32*		*0.32*			
Uniform Delay d_1		*22.9*	*20.6*	*12.4*	*10.9*		*23.2*		*19.6*			
Delay Factor k		*0.26*	*0.11*	*0.30*	*0.11*		*0.33*		*0.11*			
Incremental Delay d_2		*2.0*	*0.6*	*8.2*	*0.1*		*7.7*		*0.5*			
PF Factor		*1.000*	*1.000*	*1.000*	*1.000*		*1.000*		*1.000*			
Control Delay		*24.9*	*21.2*	*20.6*	*11.0*		*30.8*		*20.1*			
Lane Group LOS		*C*	*C*	*C*	*B*		*C*		*C*			
Approach Delay	*24.1*			*13.7*			*27.7*					
Approach LOS	*C*			*B*			*C*					
Intersection Delay	*20.9*			Intersection LOS						*C*		

SHORT REPORT

General Information		Site Information	
Analyst	*F.C.*	Intersection	*US 190 AT AIRPORT RD.*
Agency or Co.	*NS*	Area Type	*All other areas*
Date Performed	*06/07/2011*	Jurisdiction	*TANGIPAHOA PARISH*
Time Period	*PM PEAK HOUR*	Analysis Year	*2035 ALT C*

Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Number of Lanes		2	1	1	2		1		1			
Lane Group		T	R	L	T		L		R			
Volume (vph)		575	377	190	538		321		173			
% Heavy Vehicles		7	7	7	7		10		10			
PHF		0.90	0.90	0.90	0.90		0.90		0.90			
Pretimed/Actuated (P/A)		A	A	A	A		A		A			
Startup Lost Time		2.0	2.0	2.0	2.0		2.0		2.0			
Extension of Effective Green		2.0	2.0	2.0	2.0		2.0		2.0			
Arrival Type		3	3	3	3		3		3			
Unit Extension		3.0	3.0	3.0	3.0		3.0		3.0			
Ped/Bike/RTOR Volume	0	0	113	0	0		0	0	52			
Lane Width		12.0	12.0	12.0	12.0		12.0		12.0			
Parking/Grade/Parking	N	0	N	N	0	N	N	0	N			
Parking/Hour												
Bus Stops/Hour		0	0	0	0		0		0			
Minimum Pedestrian Time		3.2			3.2			3.2				

Phasing	WB Only	EW Perm	03	04	NB Only	06	07	08
Timing	G = 6.0	G = 34.0	G =	G =	G = 22.0	G =	G =	G =
	Y = 6	Y = 6	Y =	Y =	Y = 6	Y =	Y =	Y =
Duration of Analysis (hrs) = 0.25						Cycle Length C = 80.0		

Lane Group Capacity, Control Delay, and LOS Determination

	EB			WB			NB			SB		
Adjusted Flow Rate		639	293	211	598		357		134			
Lane Group Capacity		1437	641	395	1944		451		404			
v/c Ratio		0.44	0.46	0.53	0.31		0.79		0.33			
Green Ratio		0.43	0.43	0.57	0.57		0.28		0.28			
Uniform Delay d_1		16.3	16.4	9.2	8.8		26.9		23.1			
Delay Factor k		0.11	0.11	0.14	0.11		0.34		0.11			
Incremental Delay d_2		0.2	0.5	1.4	0.1		9.3		0.5			
PF Factor		1.000	1.000	1.000	1.000		1.000		1.000			
Control Delay		16.5	16.9	10.7	8.9		36.2		23.6			
Lane Group LOS		B	B	B	A		D		C			
Approach Delay	16.7			9.3			32.8					
Approach LOS	B			A			C					
Intersection Delay	17.5			Intersection LOS						B		

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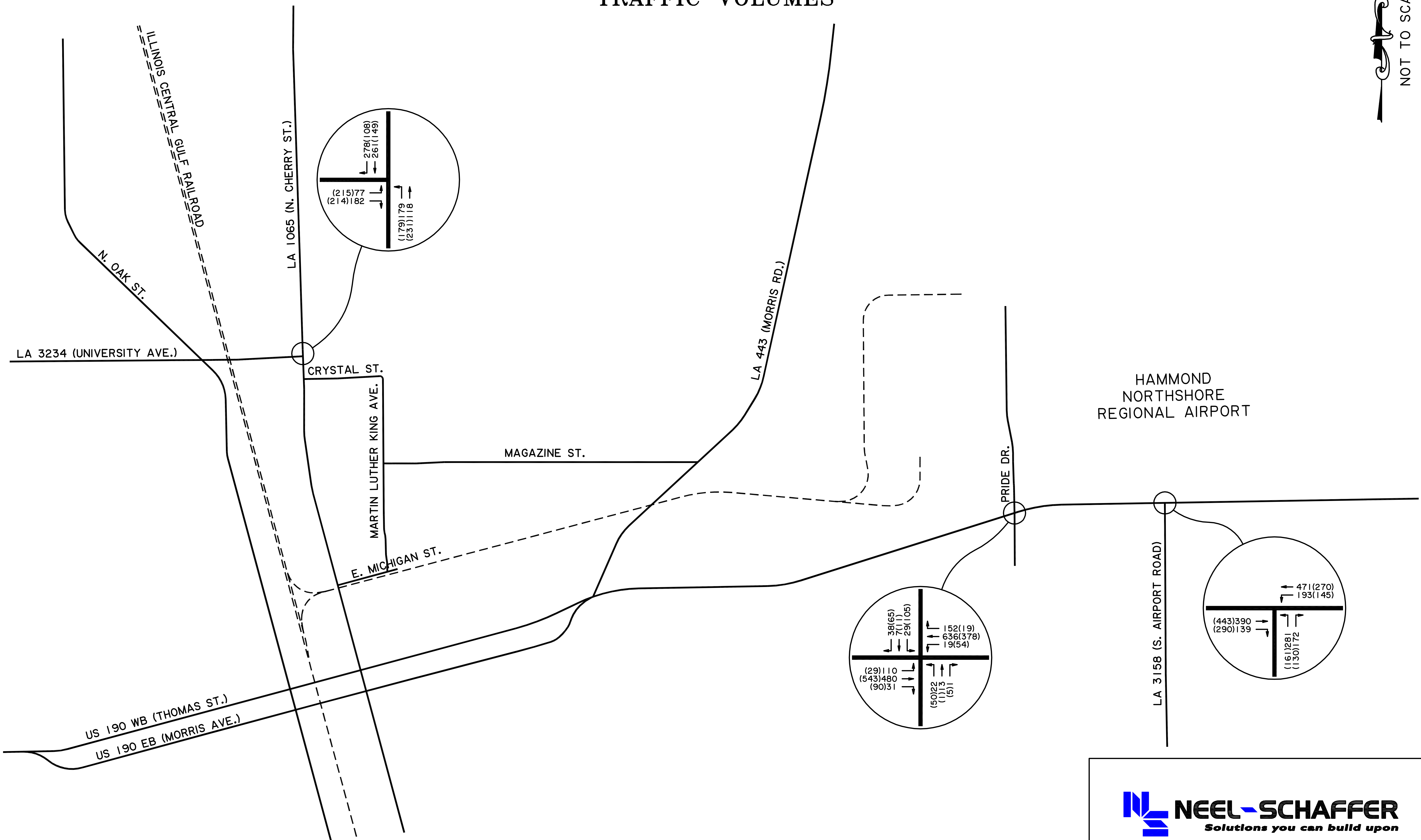
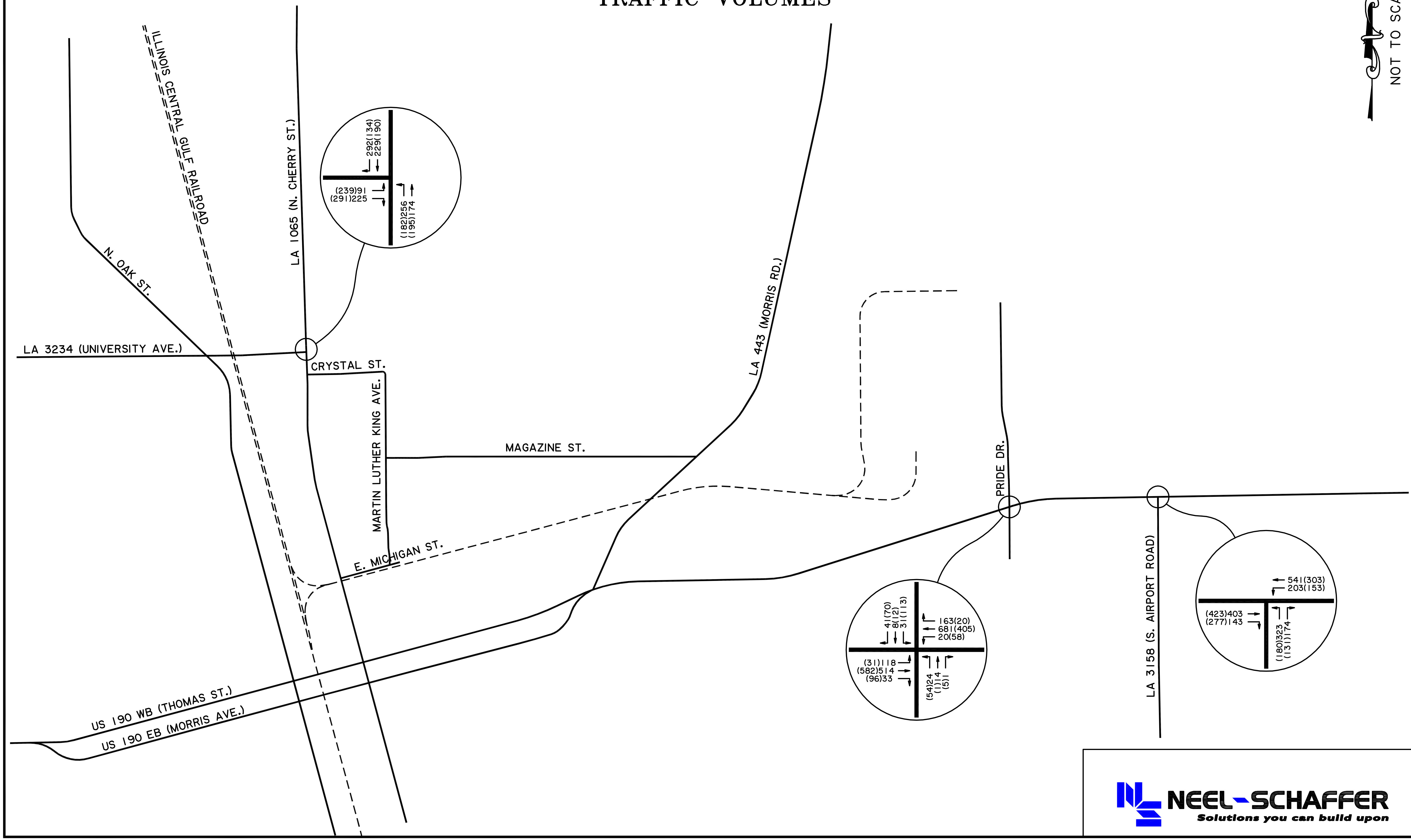
INTERSECTION VOLUME MAPS

2011 EXISTING AM(PM) PEAK HOUR TRAFFIC VOLUMES



2015 NB AM(PM) PEAK HOUR TRAFFIC VOLUMES



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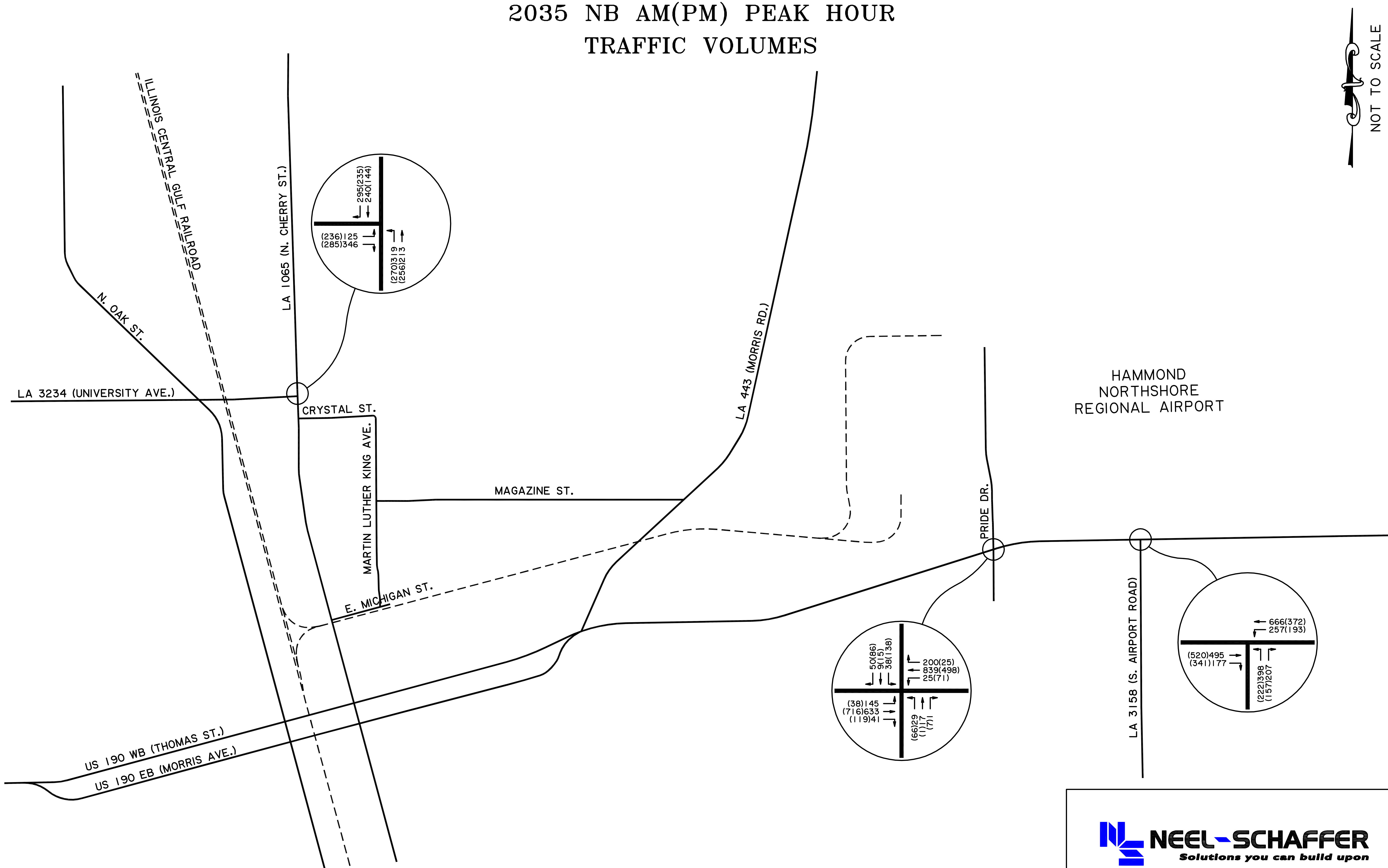
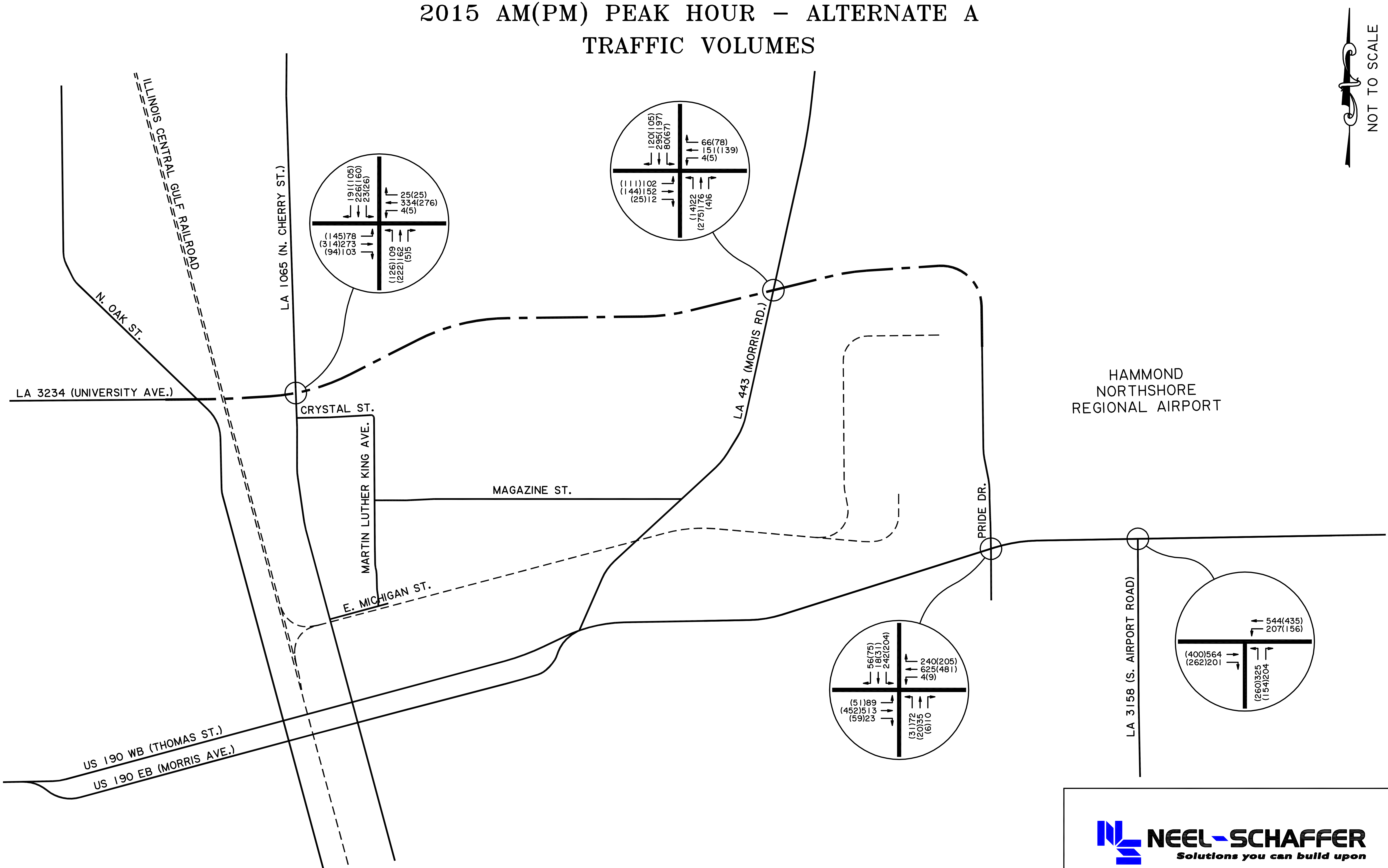
2035 NB AM(PM) PEAK HOUR TRAFFIC VOLUMES



NEEL-SCHAFFER

Solutions you can build upon

2015 AM(PM) PEAK HOUR – ALTERNATE A
TRAFFIC VOLUMES



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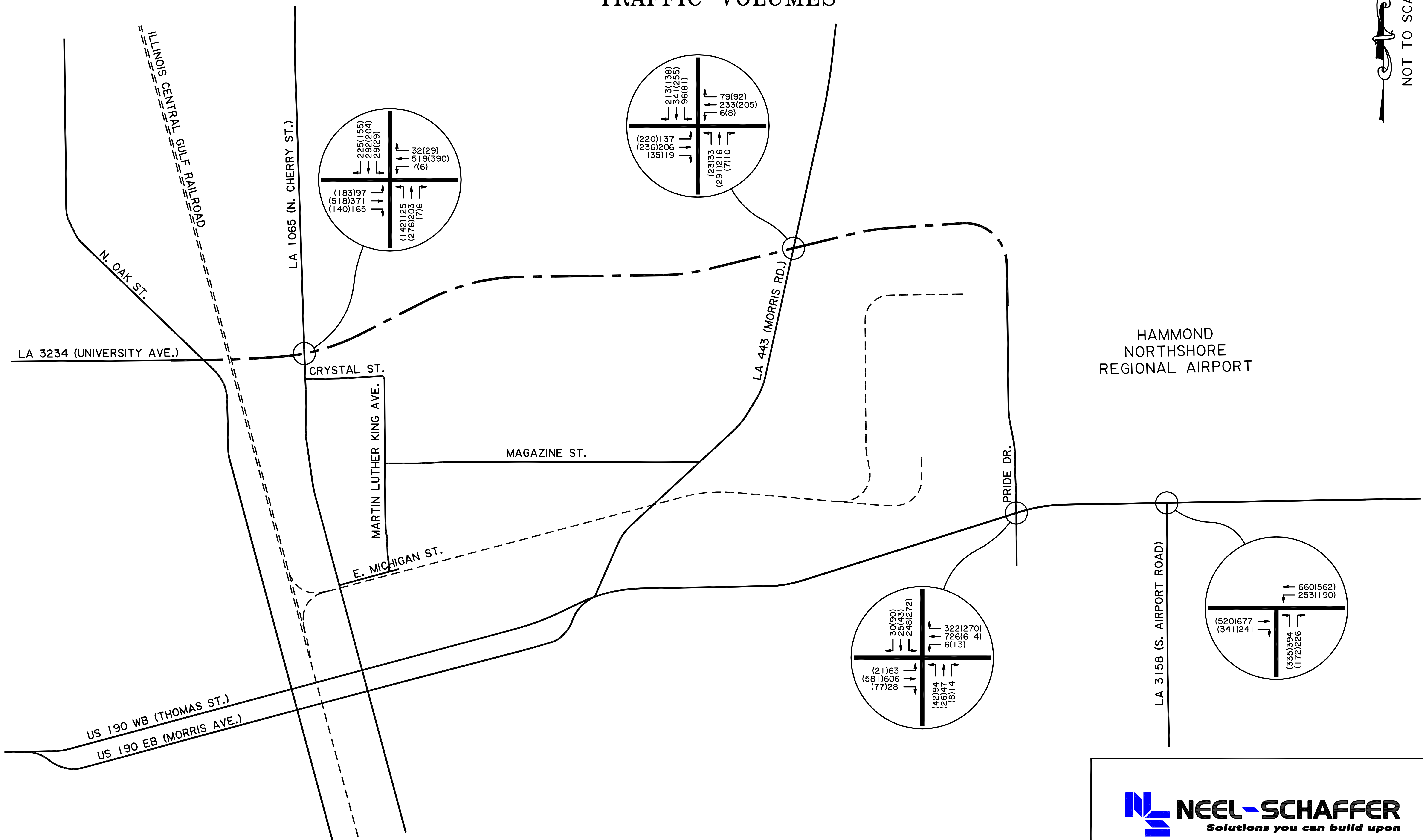
Solutions you can build upon

2035 AM(PM) PEAK HOUR – ALTERNATE A TRAFFIC VOLUMES



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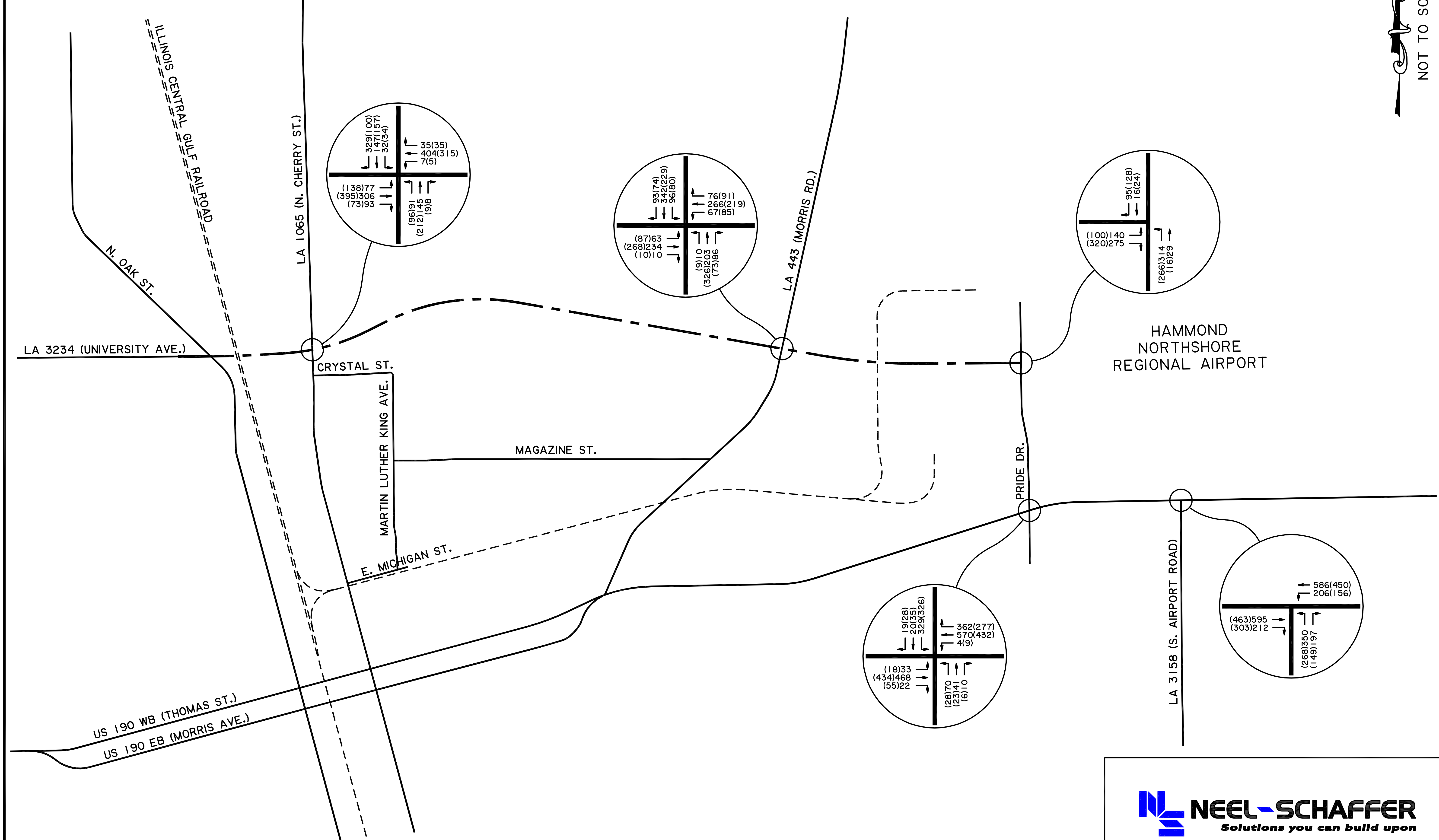
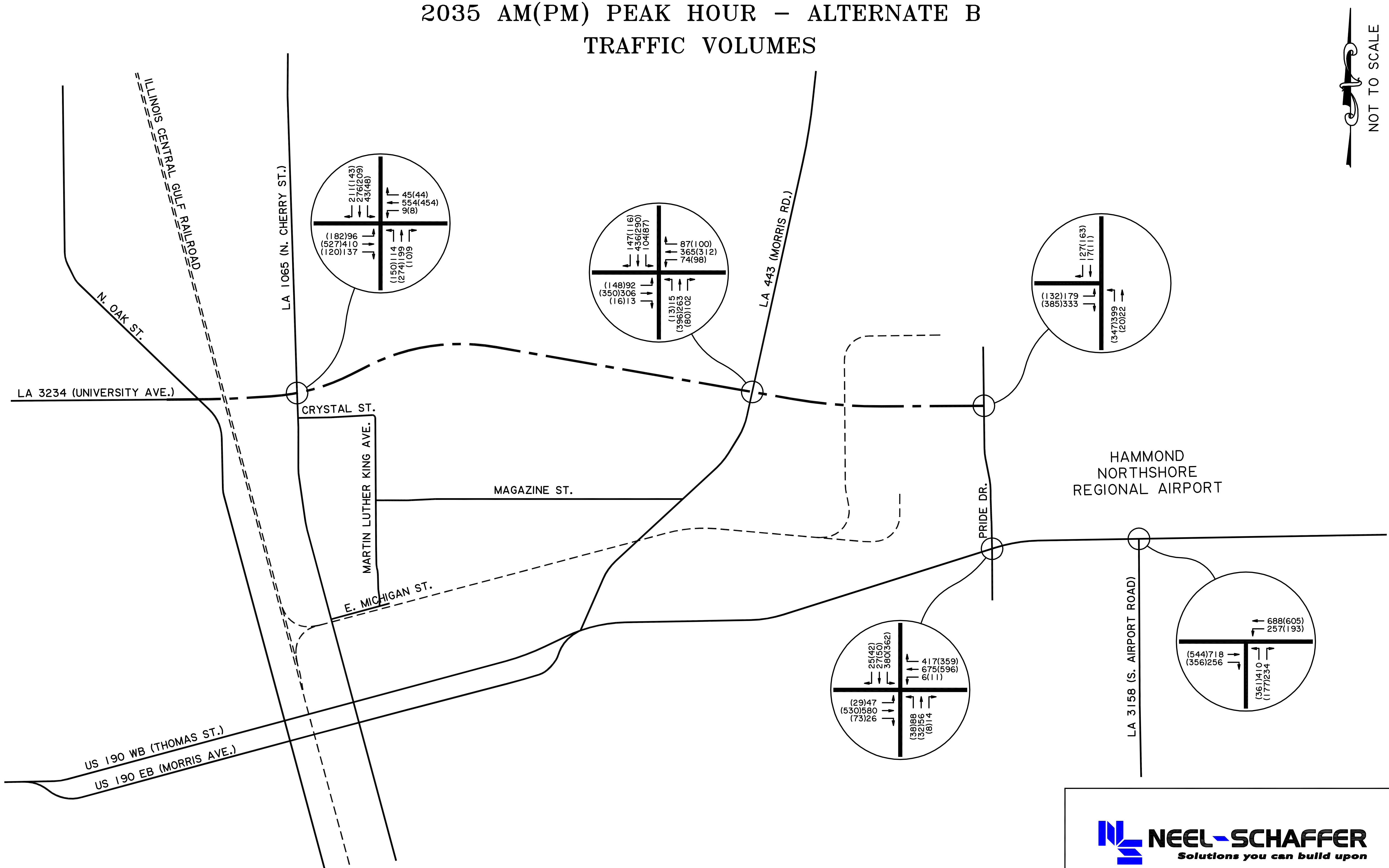
2015 AM(PM) PEAK HOUR – ALTERNATE B
TRAFFIC VOLUMES



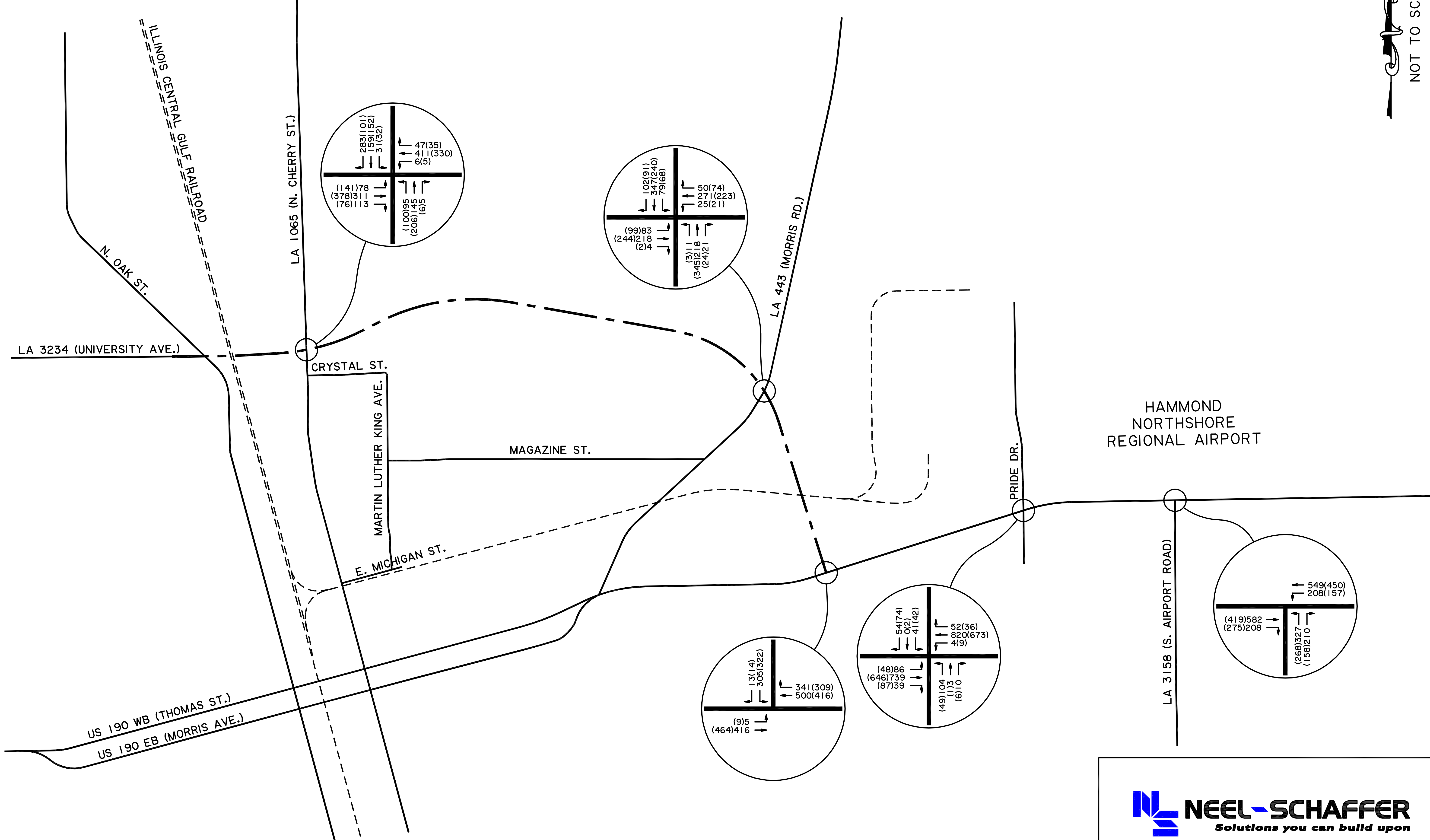
2035 AM(PM) PEAK HOUR – ALTERNATE B
TRAFFIC VOLUMES



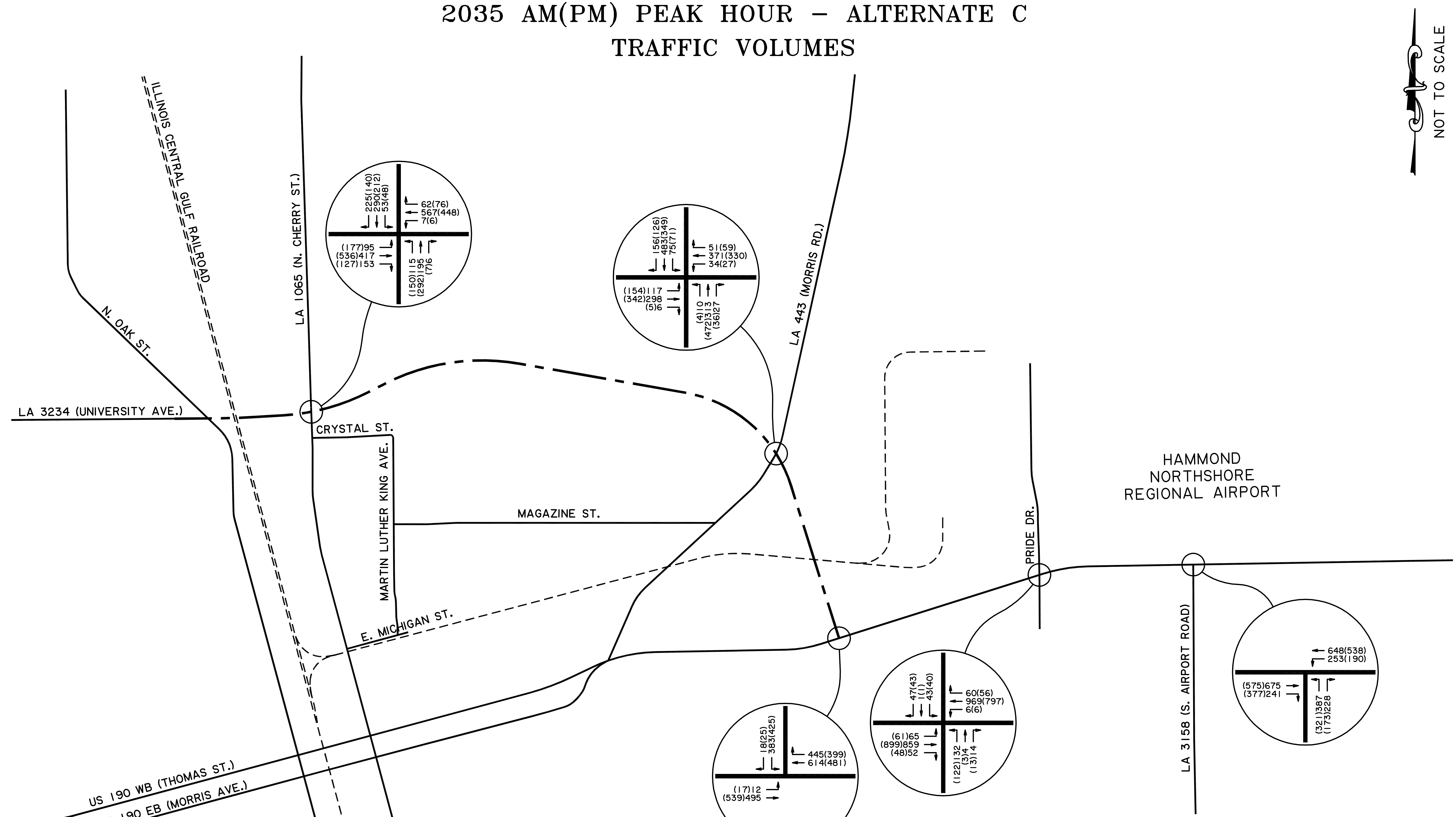
NEEL-SCHAFFER

Solutions you can build upon

2015 AM(PM) PEAK HOUR – ALTERNATE C
TRAFFIC VOLUMES



2035 AM(PM) PEAK HOUR – ALTERNATE C
TRAFFIC VOLUMES

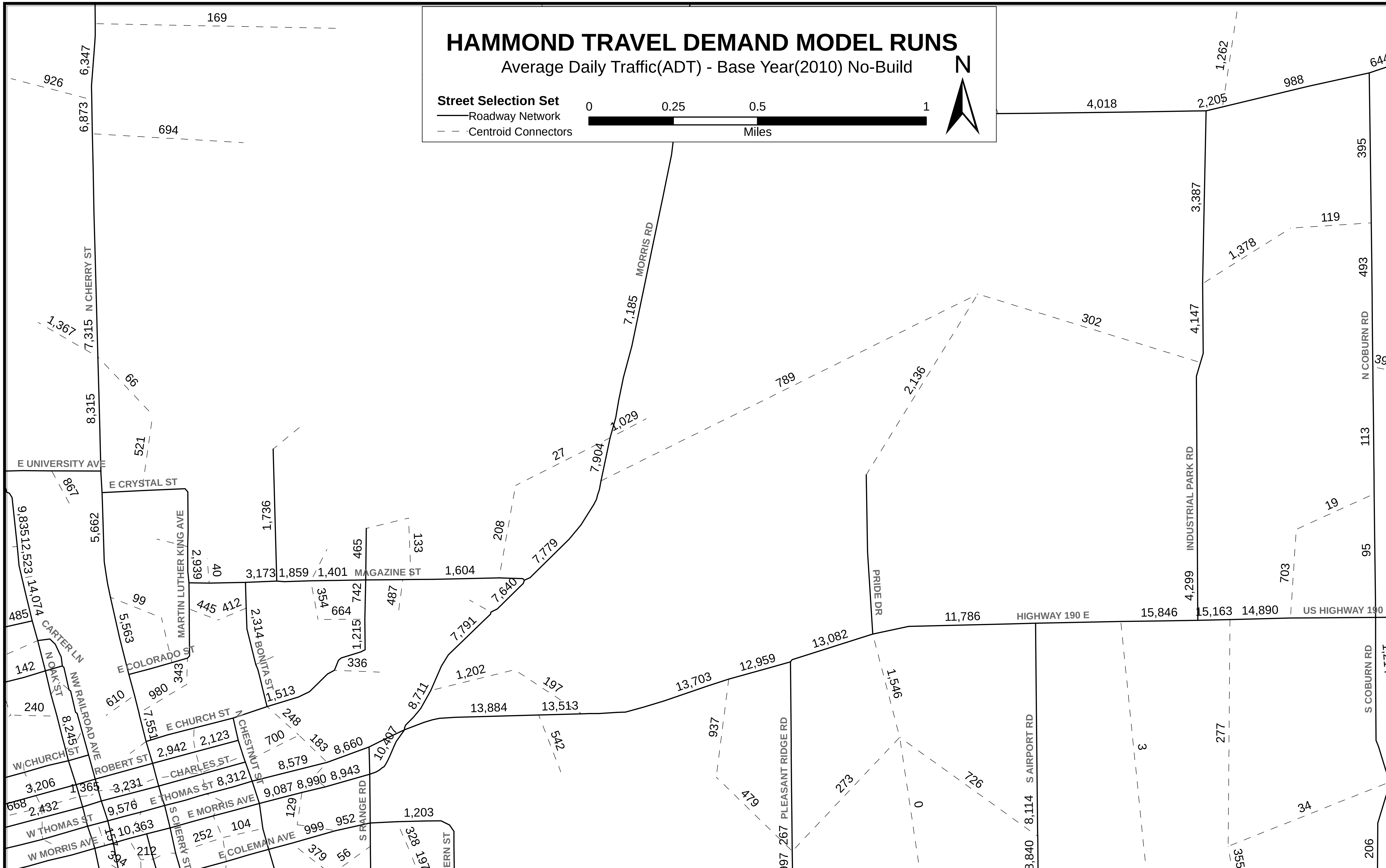


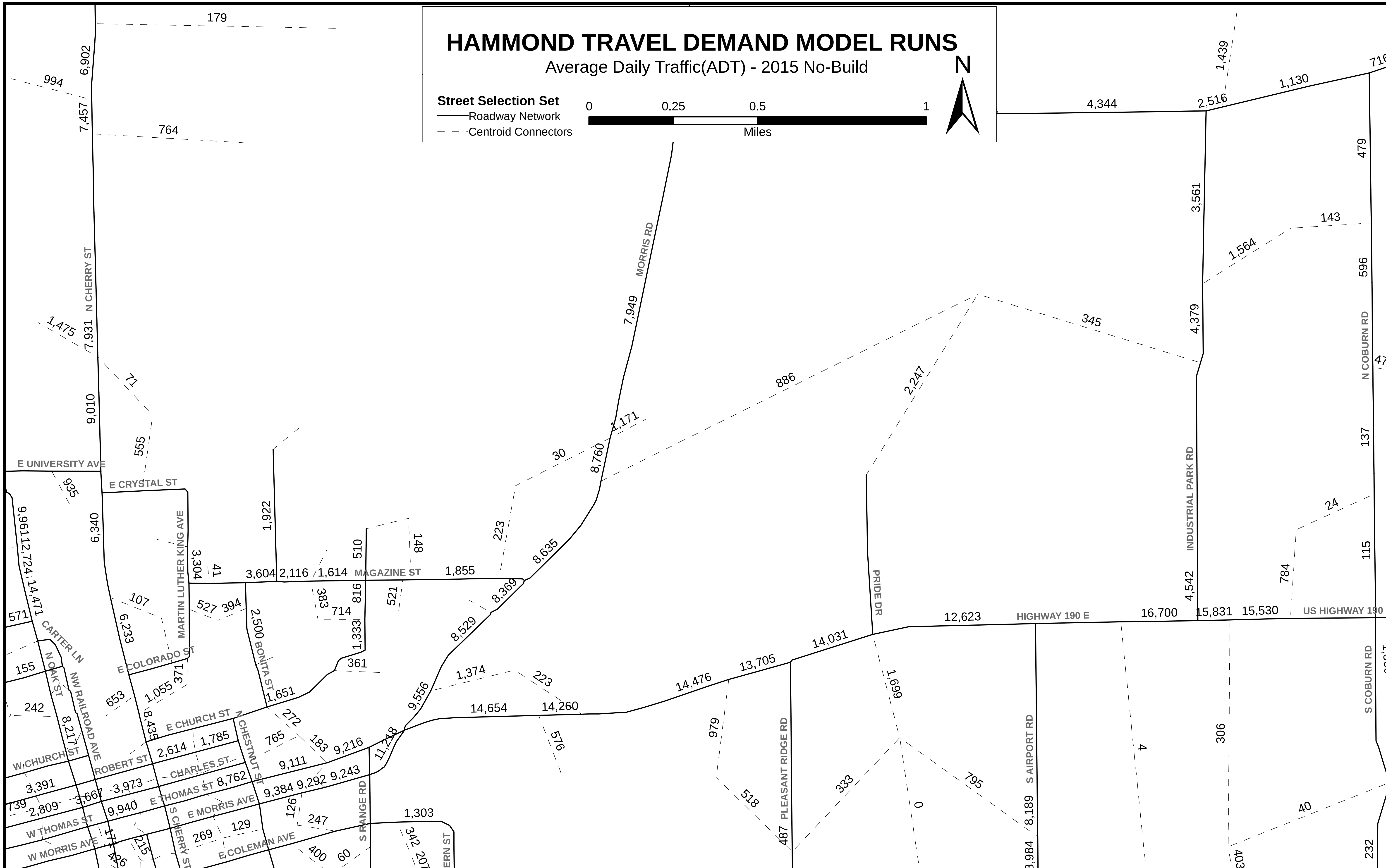
NEEL-SCHAFFER
Solutions you can build upon

TRAVEL DEMAND MODEL VOLUMES

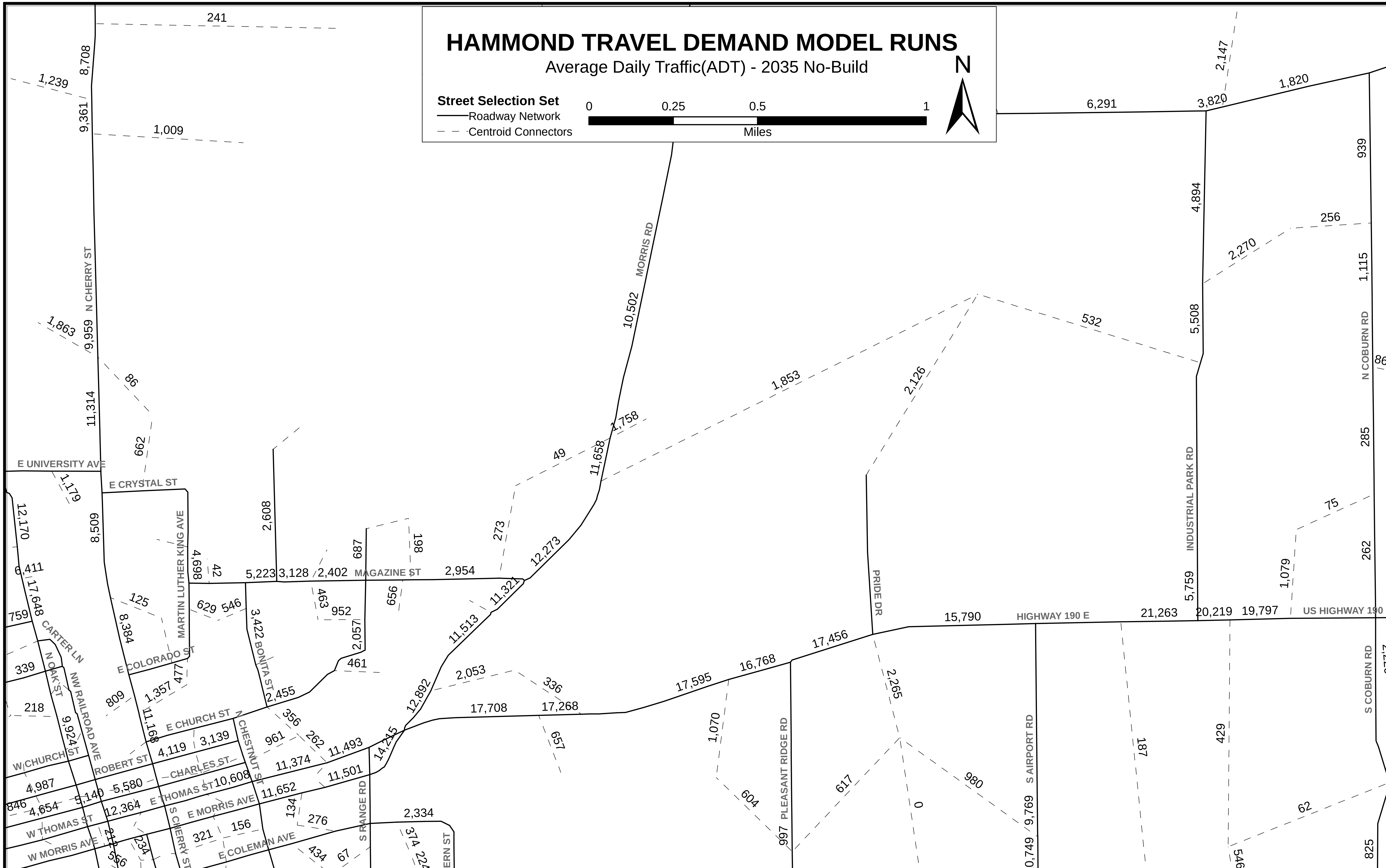
HAMMOND TRAVEL DEMAND MODEL RUNS

Average Daily Traffic(ADT) - Base Year(2010) No-Build





HAMMOND TRAVEL DEMAND MODEL RUNS
Average Daily Traffic(ADT) - 2015 No-Build
Street Selection Set
Roadway Network
Centroid Connectors
0 0.25 0.5 1
Miles
N
MORRIS RD
N CHERRY ST
E UNIVERSITY AVE
E CRYSTAL ST
MARTIN LUTHER KING AVE
MAGAZINE ST
BONITA ST
E COLORADO ST
CARTER LN
N OAK ST
NW RAILROAD AVE
E CHURCH ST
W CHURCH ST
ROBERT ST
CHARLES ST
N CHESTNUT ST
E THOMAS ST
W THOMAS ST
E MORRIS AVE
W MORRIS AVE
S CHERRY ST
E COLEMAN AVE
S RANGE RD
FERN ST
PRIDE DR
PLEASANT RIDGE RD
S AIRPORT RD
INDUSTRIAL PARK RD
HIGHWAY 190 E
US HIGHWAY 190
N COBURN RD
S COBURN RD


HAMMOND TRAVEL DEMAND MODEL RUNS
Average Daily Traffic(ADT) - 2035 No-Build
Street Selection Set
Roadway Network
Centroid Connectors
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1
Miles
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MARTIN LUTHER KING AVE
MAGAZINE ST
CARTER LN
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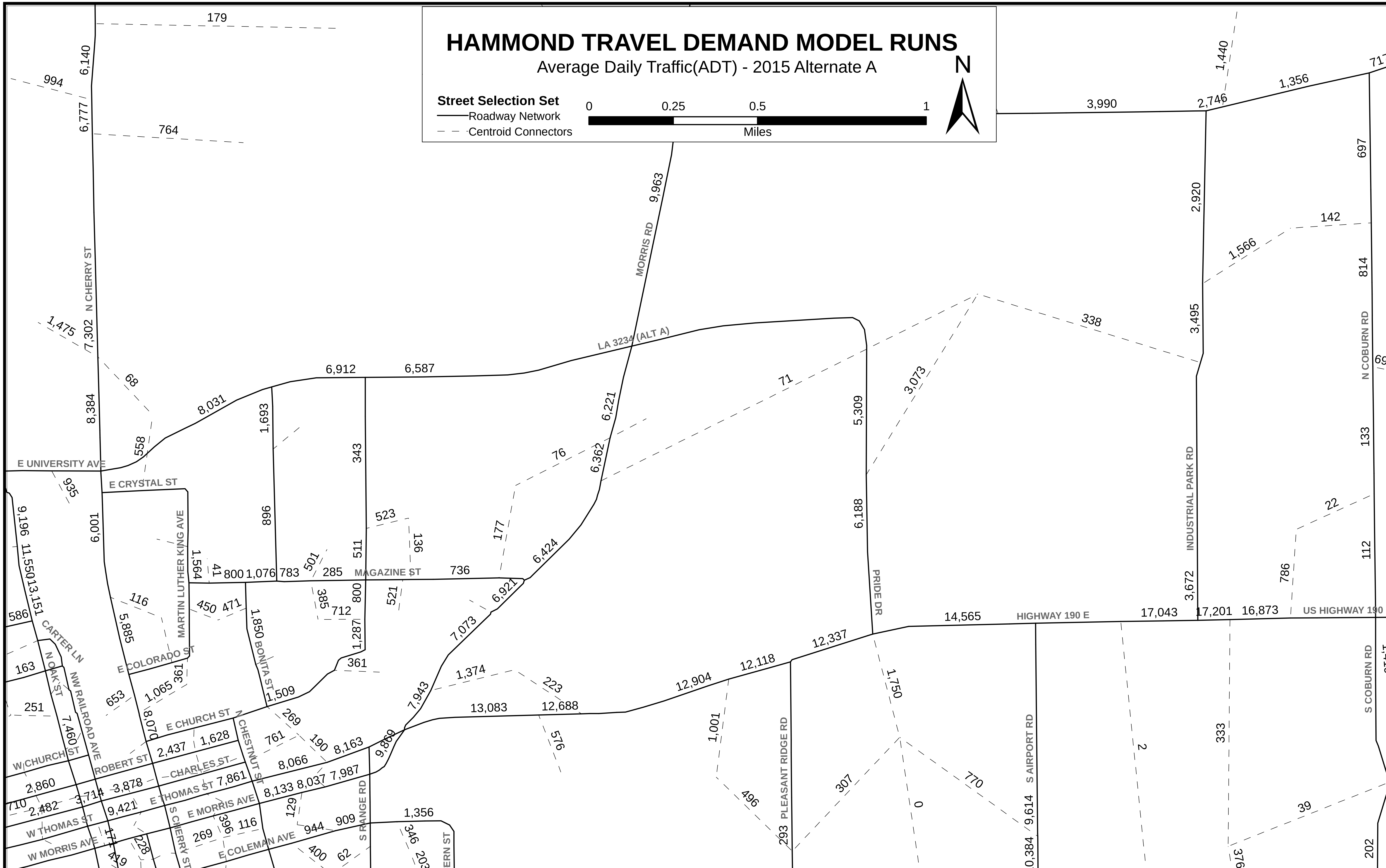
E COLEMAN AVE
S RANGE RD
FERN ST
PRIDE DR
HIGHWAY 190 E
US HIGHWAY 190
INDUSTRIAL PARK RD
N COBURN RD
S COBURN RD
PLEASANT RIDGE RD
S AIRPORT RD



HAMMOND TRAVEL DEMAND MODEL RUNS
Average Daily Traffic(ADT) - 2015 Alternate A
Street Selection Set
Roadway Network
Centroid Connectors
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Miles
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LA 3234 (ALT A)
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E UNIVERSITY AVE
E CRYSTAL ST
MARTIN LUTHER KING AVE
MAGAZINE ST
PRIDE DR
INDUSTRIAL PARK RD
N COBURN RD
HIGHWAY 190 E
US HIGHWAY 190
S COBURN RD
S AIRPORT RD
PLEASANT RIDGE RD
S RANGE RD
FERN ST
CARTER LN
N OAK ST
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ROBERT ST
CHARLES ST
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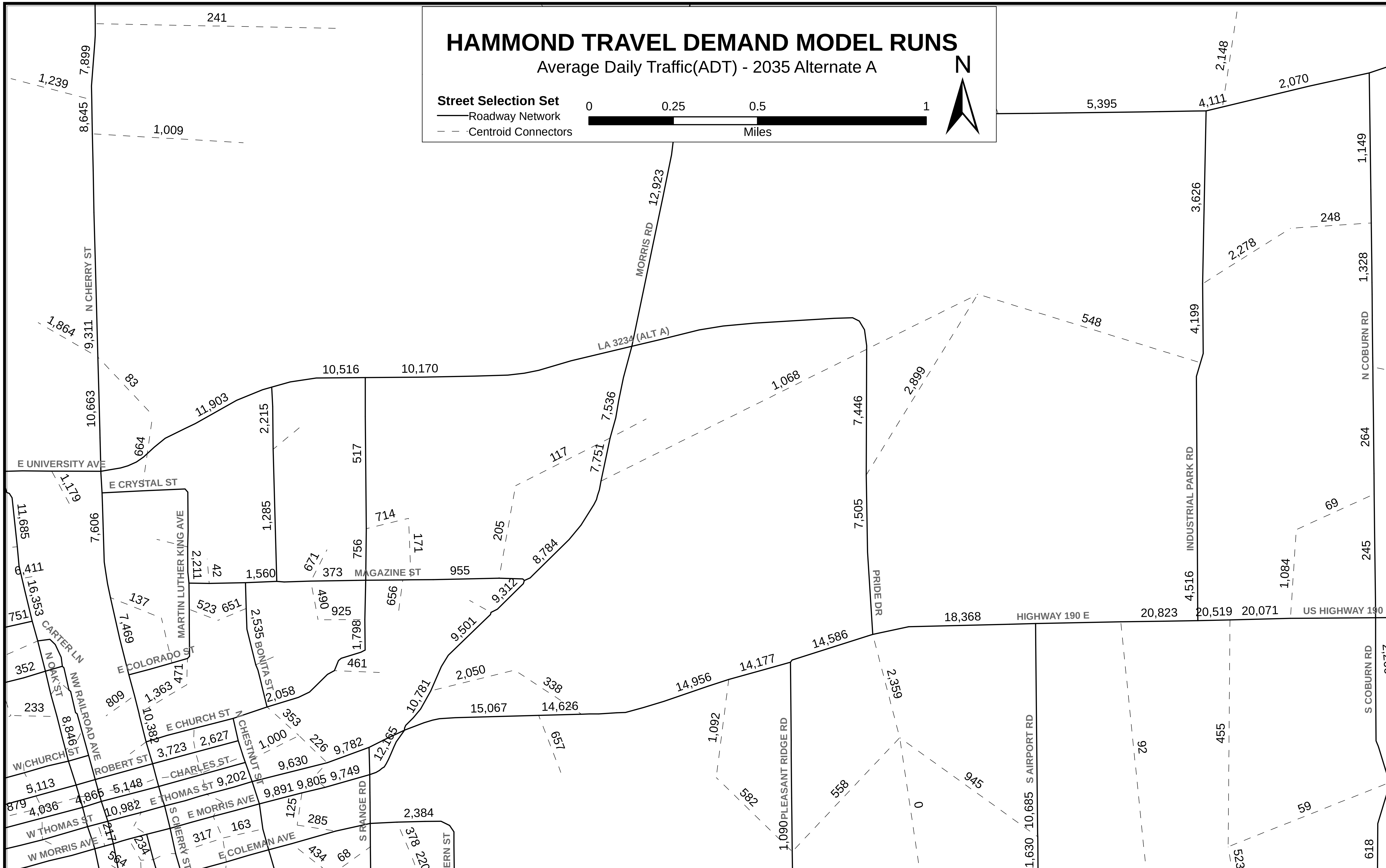
W MORRIS AVE
S CHERRY ST
E COLEMAN AVE



HAMMOND TRAVEL DEMAND MODEL RUNS
Average Daily Traffic(ADT) - 2035 Alternate A
Street Selection Set
Roadway Network
Centroid Connectors
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0.5
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Miles
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MARTIN LUTHER KING AVE
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PRIDE DR
INDUSTRIAL PARK RD
N COBURN RD
HIGHWAY 190 E
US HIGHWAY 190
S COBURN RD
CARTER LN
N OAK ST
NW RAILROAD AVE
E COLORADO ST
BONITA ST
E CHURCH ST
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ROBERT ST
CHARLES ST
E THOMAS ST
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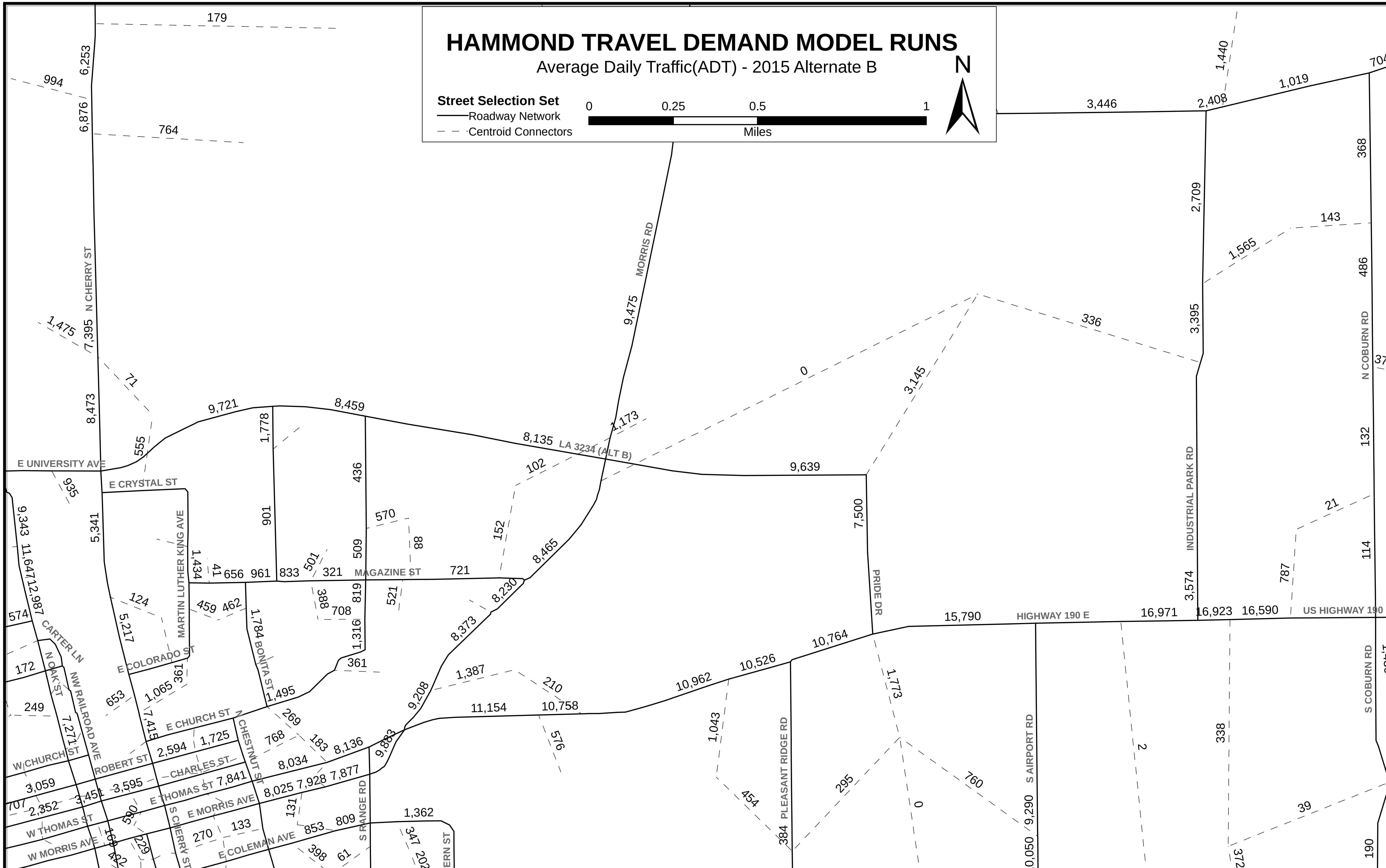
W MORRIS AVE
S CHERRY ST
E COLEMAN AVE
S RANGE RD
FERN ST
PLEASANT RIDGE RD
S AIRPORT RD


HAMMOND TRAVEL DEMAND MODEL RUNS
Average Daily Traffic(ADT) - 2015 Alternate B
Street Selection Set
Roadway Network
Centroid Connectors
0
0.25
0.5
1
Miles
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N CHERRY ST
E UNIVERSITY AVE
E CRYSTAL ST
MARTIN LUTHER KING AVE
MORRIS RD
LA 3234 (ALT B)
MAGAZINE ST
PRIDE DR
INDUSTRIAL PARK RD
N COBURN RD
HIGHWAY 190 E
US HIGHWAY 190
S COBURN RD
S AIRPORT RD
PLEASANT RIDGE RD
S RANGE RD
FERN ST
CARTER LN
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E COLORADO ST
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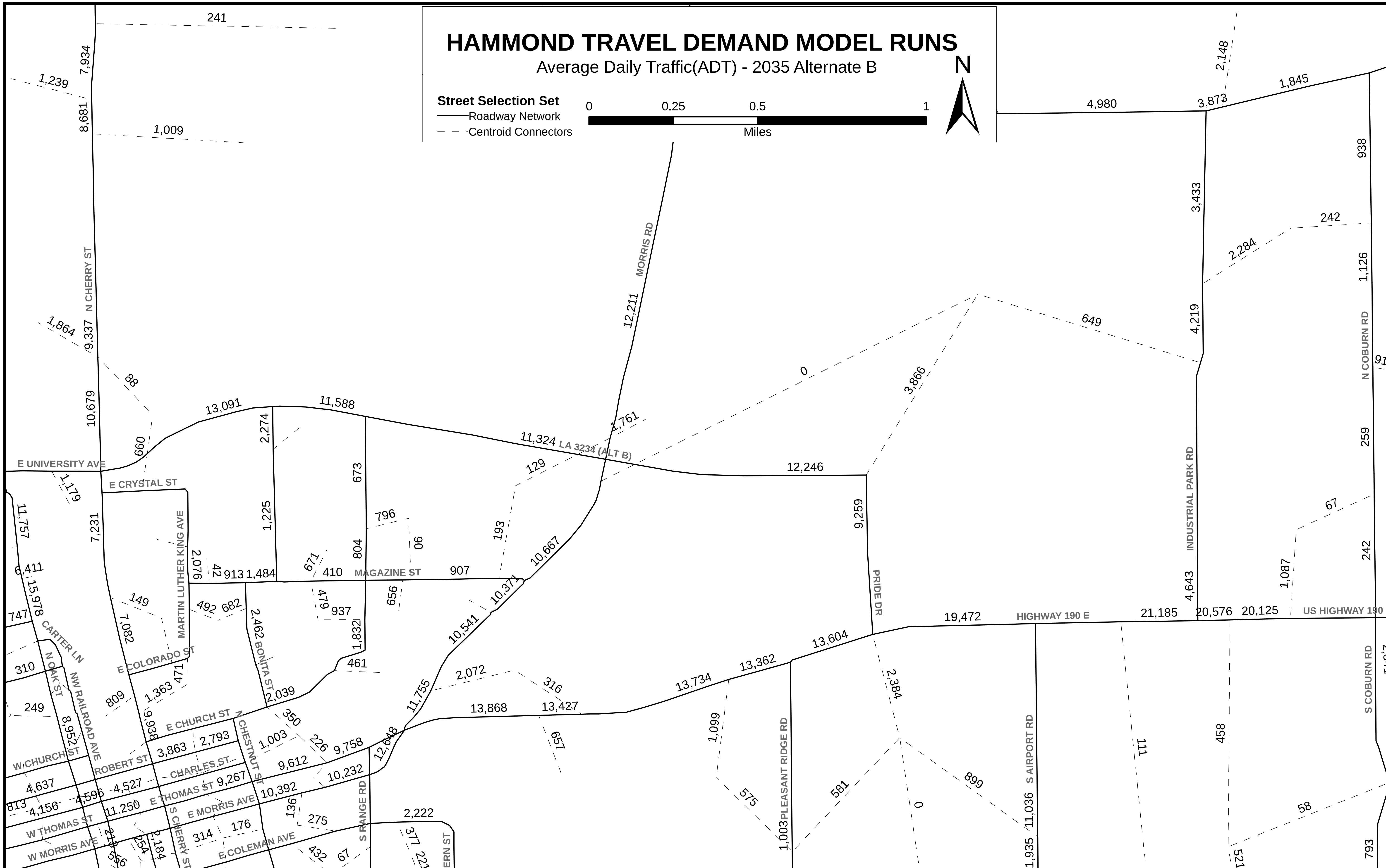
W CHURCH ST
ROBERT ST
CHARLES ST
E THOMAS ST
E MORRIS AVE
W THOMAS ST
W MORRIS AVE
S CHERRY ST
E COLEMAN AVE


HAMMOND TRAVEL DEMAND MODEL RUNS
Average Daily Traffic(ADT) - 2035 Alternate B
Street Selection Set
Roadway Network
Centroid Connectors
0 0.25 0.5 1
Miles
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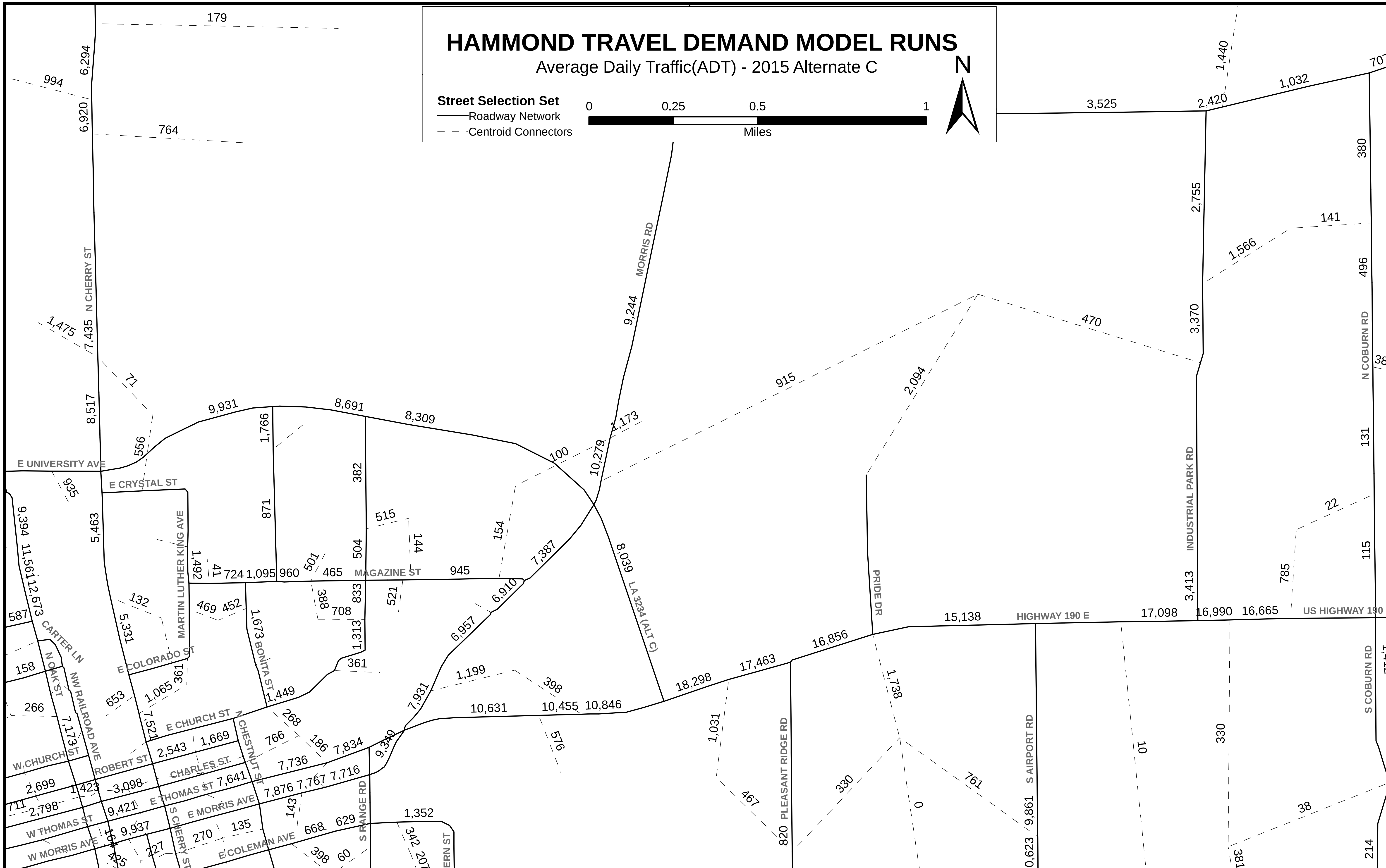
MORRIS RD
N CHERRY ST
E UNIVERSITY AVE
E CRYSTAL ST
LA 3234 (ALT B)
MAGAZINE ST
MARTIN LUTHER KING AVE
BONITA ST
CARTER LN
N OAK ST
NW RAILROAD AVE
E COLORADO ST
E CHURCH ST
N CHESTNUT ST
W CHURCH ST
ROBERT ST
CHARLES ST
E THOMAS ST
W THOMAS ST
E MORRIS AVE
W MORRIS AVE
S CHERRY ST
E COLEMAN AVE
S RANGE RD
FERN ST
PRIDE DR
HIGHWAY 190 E
US HIGHWAY 190
PLEASANT RIDGE RD
S AIRPORT RD
INDUSTRIAL PARK RD
N COBURN RD
S COBURN RD



HAMMOND TRAVEL DEMAND MODEL RUNS
Average Daily Traffic(ADT) - 2015 Alternate C
Street Selection Set
Roadway Network
Centroid Connectors
0
0.25
0.5
1
Miles
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MORRIS RD
N CHERRY ST
E UNIVERSITY AVE
E CRYSTAL ST
MARTIN LUTHER KING AVE
MAGAZINE ST
E COLORADO ST
CARTER LN
N OAK ST
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BONITA ST
E CHURCH ST
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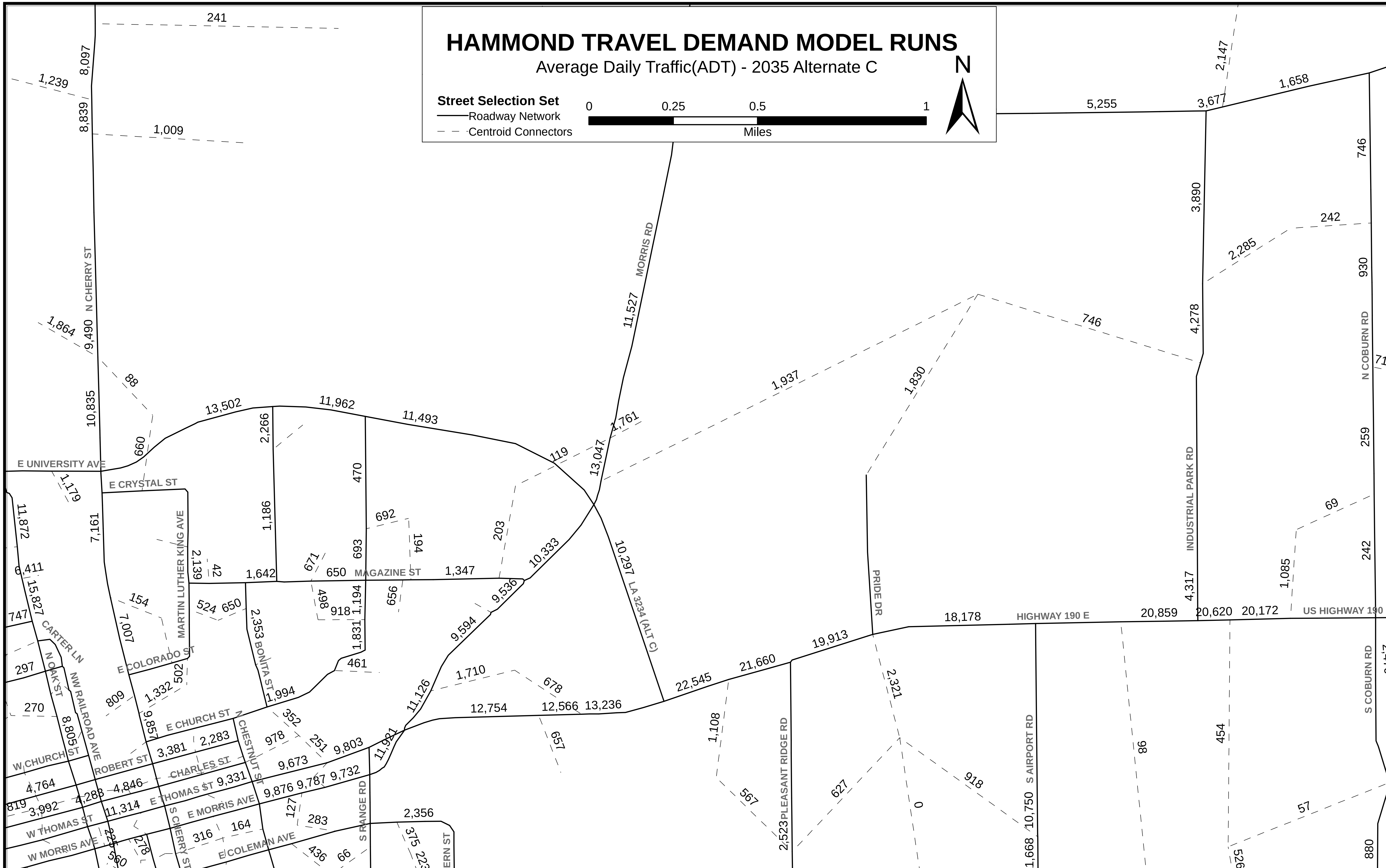
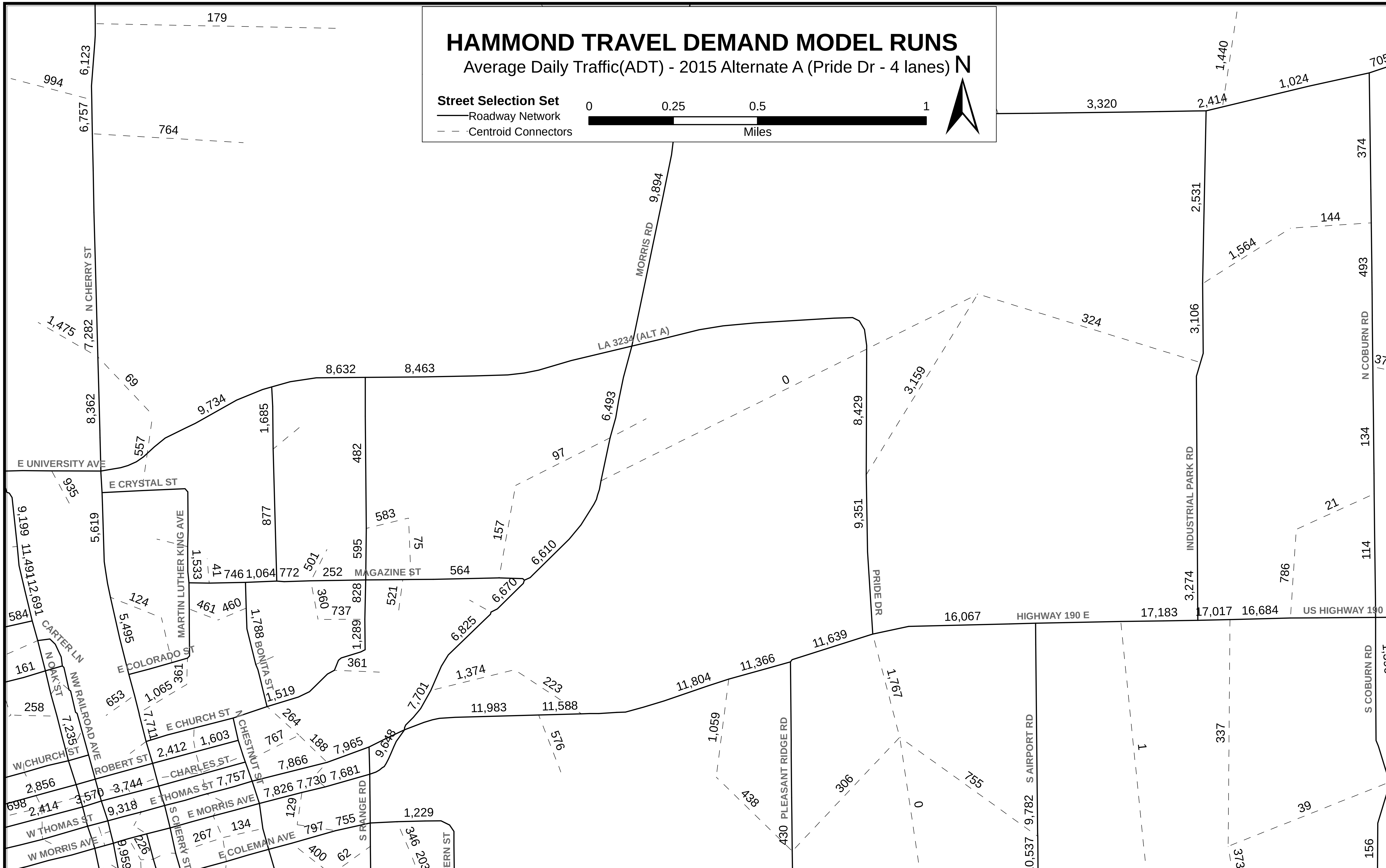
ROBERT ST
CHARLES ST
N CHESTNUT ST
E THOMAS ST
W THOMAS ST
E MORRIS AVE
W MORRIS AVE
S CHERRY ST
E COLEMAN AVE
S RANGE RD
FERN ST
LA 3234 (ALT C)
PRIDE DR
PLEASANT RIDGE RD
S AIRPORT RD
HIGHWAY 190 E
US HIGHWAY 190
INDUSTRIAL PARK RD
N COBURN RD
S COBURN RD


HAMMOND TRAVEL DEMAND MODEL RUNS
Average Daily Traffic(ADT) - 2035 Alternate C
Street Selection Set
Roadway Network
Centroid Connectors
0
0.25
0.5
1
Miles
N
MORRIS RD
N CHERRY ST
E UNIVERSITY AVE
E CRYSTAL ST
MARTIN LUTHER KING AVE
MAGAZINE ST
E COLORADO ST
CARTER LN
N OAK ST
NW RAILROAD AVE
BONITA ST
E CHURCH ST
N CHESTNUT ST
W CHURCH ST
ROBERT ST
CHARLES ST
E THOMAS ST
E MORRIS AVE
W THOMAS ST
W MORRIS AVE
S CHERRY ST
E COLEMAN AVE
S RANGE RD
FERN ST
LA 3234 (ALT C)
PRIDE DR
HIGHWAY 190 E
US HIGHWAY 190
INDUSTRIAL PARK RD
N COBURN RD
S COBURN RD
PLEASANT RIDGE RD
S AIRPORT RD

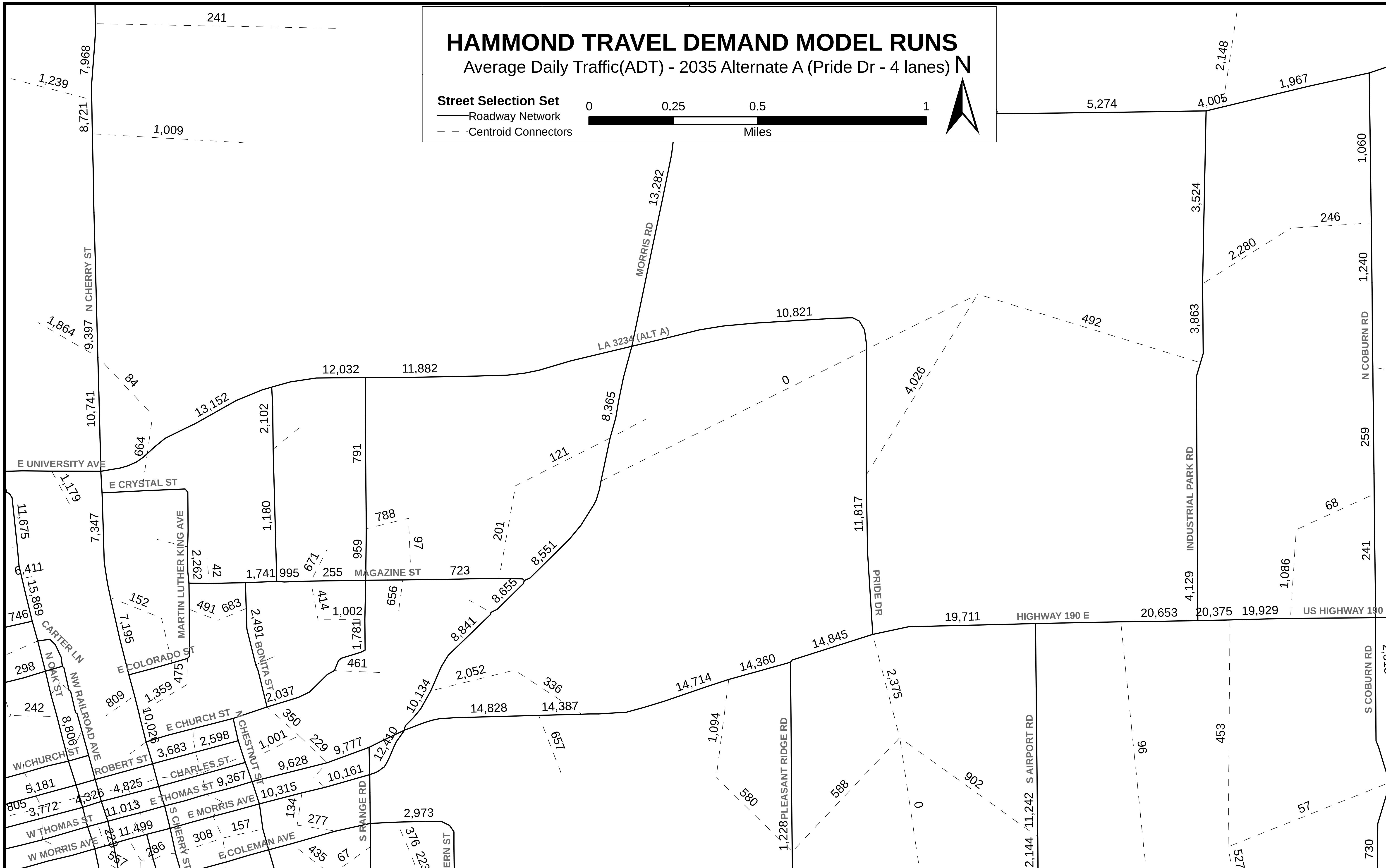
HAMMOND TRAVEL DEMAND MODEL RUNS

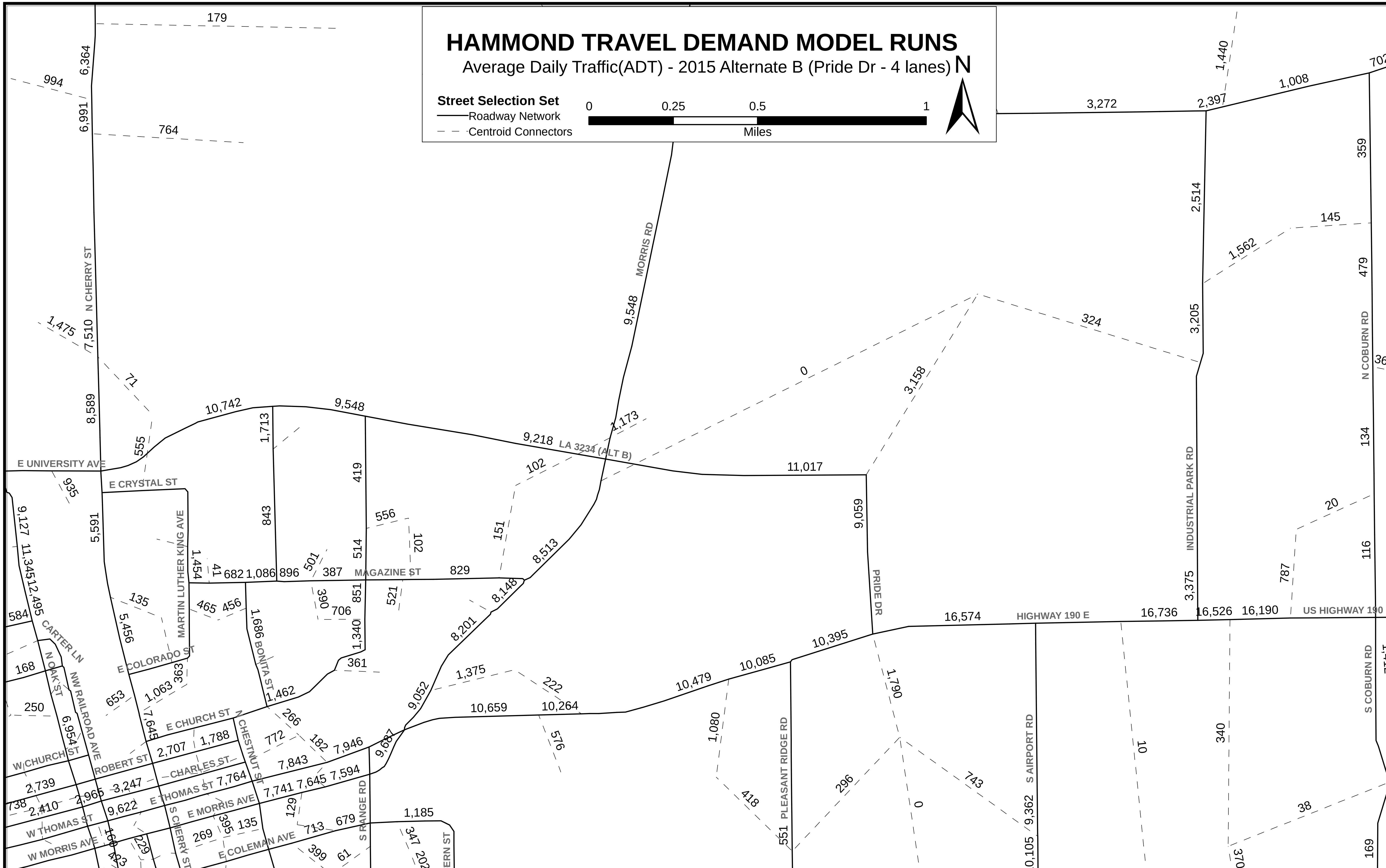
Average Daily Traffic(ADT) - 2015 Alternate A (Pride Dr - 4 lanes)



HAMMOND TRAVEL DEMAND MODEL RUNS

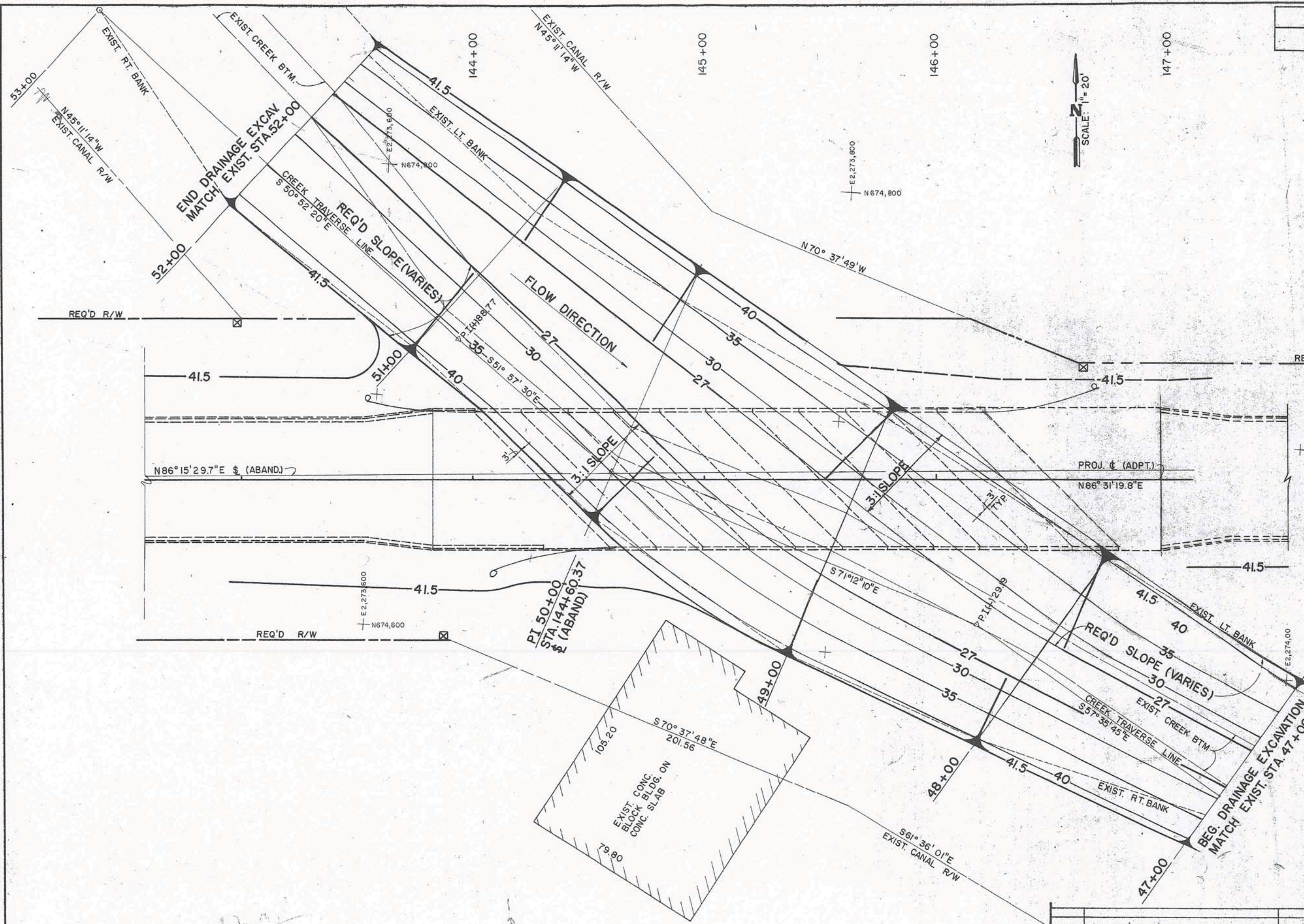
Average Daily Traffic(ADT) - 2035 Alternate A (Pride Dr - 4 lanes)




HAMMOND TRAVEL DEMAND MODEL RUNS
Average Daily Traffic(ADT) - 2015 Alternate B (Pride Dr - 4 lanes)
N
Street Selection Set
Roadway Network
Centroid Connectors
0
0.25
0.5
1
Miles
N CHERRY ST
E UNIVERSITY AVE
E CRYSTAL ST
MARTIN LUTHER KING AVE
MAGAZINE ST
LA 3234 (ALT B)
MORRIS RD
PRIDE DR
INDUSTRIAL PARK RD
N COBURN RD
HIGHWAY 190 E
US HIGHWAY 190
S COBURN RD
S AIRPORT RD
PLEASANT RIDGE RD
S RANGE RD
FERN ST
E COLEMAN AVE
E MORRIS AVE
E THOMAS ST
CHARLES ST
E CHURCH ST
N CHESTNUT ST
BONITA ST
E COLORADO ST
CARTER LN
N OAK ST
NW RAILROAD AVE
W CHURCH ST
ROBERT ST
W THOMAS ST
W MORRIS AVE
S CHERRY ST

Appendix 4 to Chapter 1
As-built drawings
Existing Bridge Crossing
of Ponchatoula Creek

STATE PROJECT	PARISH	SHEET NO.
853-40-04	TANGIPAHOA	~~98~~ 127



NOTES

1. FOR CROSS SECTIONS OF PONCHATOULA CREEK, SEE SHEET 443.
2. FOR BRIDGE PLAN & PROFILE, SEE SHEET 110.
3. FOR ROADWAY PLAN & PROFILE, SEE SHEET 24.
4. FOR DRAINAGE THIS AREA, SEE SHEET 46.

STATE OF LOUISIANA
JOHN L. MONTZ
REG. NO. 7167
REGISTERED PROFESSIONAL ENGINEER
IN CIVIL ENGINEERING

DATE	DESCRIPTION	BY
	REVISIONS	

STATE OF LOUISIANA
DEPARTMENT OF TRANSPORTATION AND DEVELOPMENT

WARDLINE ROAD

JOEL S. McWILLIAMS

GRADING PLAN

PONCHATOULA CREEK

Daniel, Mann, Johnson, & Mendenhall New Orleans Louisiana		SECTION NO.
		SCALE 1" = 20'
DESIGNED J.M.	DETAILED T.V.	DATE 12 / 91
CHECKED J.M.	CHECKED	DRWG. NO. 2 OF 2

F.A.P.	STATE PROJECT	PARISH	SHEET NO.
	853-40-04	TANGIPAHOA	128 ~~101~~

SUMMARY OF BRIDGE QUANTITIES

ITEM NO.	202(02)(A)	203(C2)	704(03)	704(05)	704(08)(A)	706(03)(A)	712(05)	729(16)	730(11)	802(01)	804(01)(B)	804(15)	805(01)(A)	805(01)(D)	805(01)(F)
ITEM / LOCATION	REMOVAL OF BRIDGES (STA. 717+88, 27' x 119' TIMBER SPANS)	DRAINAGE EXCAVATION	BLOCKED OUT GUARD RAIL	GUARD RAIL ANCHOR SECTIONS (BCT)	GUARD RAIL TRANSITIONS (DOUBLE THRIE BEAM)	INCIDENTAL CONCRETE PAVING (4" THICK)	FLEXIBLE REVETMENT	HAZARD MARKER ASSEMBLY	ELECTRICAL SYSTEM	STRUCTURAL EXCAVATION	PRECAST CONCRETE PILES (14")	LOADING PERMANENT PILES	CLASS A CONCRETE (PIPE HEADWALL)	CLASS A CONCRETE (FOOTINGS)	CLASS A CONCRETE (BENTS)
UNIT	EACH	CU. YD.	LIN. FT.	LIN. FT.	LIN. FT.	SQ. YD.	SQ. YD.	EACH	LUMP	CU. YD.	LIN. FT.	EACH	CU. YD.	CU. YD.	CU. YD.
YELLOW WATER CK. BR.	1	2936.87 ~~5210~~	50.0	25.0	50.0		1128.7 ~~1,622~~	6 ~~8~~			3653.8 ~~4,160~~	+ 0			121.50
PONCHATOULA CK. BR.		5099.31 ~~8,172~~	50.0	25.0	50.0		2990.5 ~~2,508~~	4			5775.4 ~~6,048~~	+ 0			175.60
N. Cherry St ~~PEDESTRIAN OVERPASS~~			75.0	50.0		261.2 ~~21.3~~		6	LUMP	331.4 ~~1,150~~		2	71.23 ~~6.83~~	~~106.60~~	172.77 ~~24.15~~
X-ing			675.0	25.0	50.0			5							
Drainage Ditch / TOTAL	1	2310.62 ~~13,382~~	~~100.0~~	~~50.0~~	~~100.0~~	~~21.3~~	~~4,130~~	~~12~~	~~LUMP~~	~~1,150~~	~~10,208~~	4 0	~~6.83~~	~~106.60~~	~~321.25~~
	2 for $40,000.00	10291.80 10,256.1	850.0	125.0	150.0	261.2 511.5 project Total	3619.2	21 Project Total	0.00	331.4 338.91	9429.8	pipe collar	26.23 Total 97.51	0	475.87

ITEM NO.	805(03)	805(08)(H)	806(01)	807(06)	810(01)	810(03)(A)	813(01)	S-101		804(03)(A)	S-103	S-104	S-105	S-106	804(01)(B)(X)
ITEM / LOCATION	CLASS AA CONCRETE	PRECAST-PRESTRESSED CONCRETE GIRDERS (TYPE BT-66)	DEFORMED REINFORCING STEEL	STRUCTURAL METAL WORK ⊛	CONCRETE RAILING (BARRIER)	PIPE RAILING (GALVANIZED)	CONCRETE APPROACH SLABS	TEMPORARY PRECAST BARRIER (15' UNITS)		TREATED TIMBER PILES (NONCOASTAL TREATMENT)	UTILITY TUNNEL	CHAIN LINK SAFETY FENCE (BRIDGE)	DECK DRAINAGE SYSTEM	REUSING EXISTING GUARD RAIL	Precast Concrete Piles (14")
UNIT	CU. YD.	LIN. FT.	POUND	LUMP	LIN. FT.	LIN. FT.	SQ. YD.	EACH		LIN. FT.	~~LUMP~~	LIN. FT.	LUMP	LIN. FT.	Lin. Ft
YELLOW WATER CK. BR.	444.43		99,151 ~~98,394~~		280.00 ◩		~~614.26~~	~~20~~							566.2
PONCHATOULA CK. BR.	556.05		128,445 ~~128,237~~		440.00 ◩		619.96								264.7
N. Cherry St ~~PEDESTRIAN OVERPASS~~	58.02 ~~364.44~~ ▲	260.0	32,326 ~~79,754~~	LUMP	80.0 ~~260.00~~ ◑	550.0 ~~2537.0~~	601.2			~~4680~~ ▣	~~LUMP~~	~~1300~~	~~LUMP~~	30.0	
X-ing															
Drainage Ditch / TOTAL	~~1,364.92~~	~~260.0~~	~~306,985.0~~	~~LUMP~~	~~980.00~~	~~2537.0~~	~~1292.22~~	~~20~~		~~4680~~ ▣	~~LUMP~~	~~1300~~	~~LUMP~~	30.0	170.9
	1058.50	20 L(at pipe) Total	143.2 260534	0.00	800.0	550.0	1253.5	0.00		0.00	0.00	0.00	0.00		771.04

704(06) 18.8 LF

▲ - RAMPS 265.00
STAIRS 74.14
BRIDGE SLAB 25.30

⊛ 65 LBS. (FOR INFORMATIONAL PURPOSES ONLY)

◩ - BARRIER TYPE
◑ - PARAPET TYPE
▣ 60' LENGTH

GENERAL NOTES

CONSTRUCTION SPECIFICATIONS: CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE LOUISIANA DEPARTMENT OF TRANSPORTATION AND DEVELOPMENT, OFFICE OF HIGHWAYS, STANDARD SPECIFICATIONS FOR ROADS AND BRIDGES, 1982, EXCEPT AS SUPPLEMENTED OR AMENDED BY THE PLANS, SUPPLEMENTAL SPECIFICATIONS, AND/OR SPECIAL PROVISIONS.

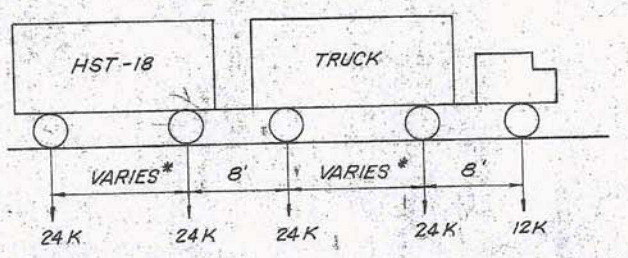
ELEVATIONS: ALL ELEVATIONS ARE MEAN SEA LEVEL (MSL).

DIMENSIONS: ALL DIMENSIONS ARE GIVEN AT NORMAL TEMPERATURE (68°F).

DESIGN SPEED: 40 MPH.

DESIGN SPECIFICATIONS: STRUCTURE DESIGN IS IN ACCORDANCE WITH AASHTO STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES, 1983 & INTERIM SPECS. 1984 THRU 1985

DESIGN CRITERIA: THE BRIDGE IS DESIGNED FOR A FUTURE WEARING SURFACE EQUAL TO 12 PSF.
LIVE LOAD SHALL BE HS 20-44 TRUCK OR LANE, MILITARY, OR HST-18 TRUCK, WHICHEVER GOVERNS.



* 14' TO 30'

CONCRETE: ALL SUPERSTRUCTURE CONCRETE TO BE CLASS "AA" CONCRETE. ALL SUBSTRUCTURE CONCRETE TO BE CLASS "A" CONCRETE UNLESS OTHERWISE SPECIFIED IN THE PLANS.
CHAMFER ALL EXPOSED EDGES OF CONCRETE ¾" EXCEPT ALL CORNERS OF BENTS WHICH SHALL BE CHAMFERED 1½" UNLESS OTHERWISE NOTED. NO DEDUCTIONS ARE TO BE MADE IN CONCRETE QUANTITIES FOR CHAMFERS 1½" OR LESS.
CONCRETE AND STEEL IN CONCRETE RAILING TO BE PAID FOR PER LINEAR FOOT OF CONCRETE RAILING INCLUDING NO. 4 BARS THAT PROJECT INTO RAILING.

FINISH OF CONCRETE: "RV" DENOTES VERTICAL FACES AND CHAMFERS WHICH ARE TO RECEIVE A CLASS 2 RUBBED FINISH. "RH" DENOTES HORIZONTAL SURFACES WHICH ARE TO RECEIVE A CLASS 2 RUBBED FINISH. ALL EXPOSED FACES OF WING WALLS AND ENDS OF CAPS TO RECEIVE A CLASS 2 RUBBED FINISH.
ALL OTHER SURFACES ARE TO RECEIVE A CLASS 1 ORDINARY SURFACE FINISH.
A CLASS 2A SPECIAL SURFACE FINISH MAY BE SUBSTITUTED FOR A CLASS 2 RUBBED FINISH.

REINFORCING STEEL: DIMENSIONS RELATING TO REINFORCING STEEL FABRICATION ARE OUT TO OUT OF BAR UNLESS OTHERWISE NOTED. DIMENSIONS RELATING TO REINFORCING STEEL SPACING ARE CENTER TO CENTER OF BAR. THE MINIMUM COVERING FROM THE SURFACE OF THE CONCRETE TO THE FACE OF ANY DEFORMED REINFORCING BAR SHALL NOT BE LESS THAN THE FOLLOWING:

TOP OF SLAB = 2"
BOTTOM OF SLAB = 1"

ALL OTHER REINFORCING STEEL COVER SHALL BE 2" UNLESS OTHERWISE NOTED IN THE PLANS. SEE STANDARD PLAN S.W.B.S. 100 FOR BAR SUPPORTS. REINFORCING STEEL NO. 7 AND LARGER SHALL BE GRADE 60** STEEL. ALL BARS SMALLER THAN NO. 7, AT THE CONTRACTOR'S OPTION, MAY BE GRADE 40 OR GRADE 60. THE FIRST DIGIT OF REINFORCING BAR NUMBER INDICATES BAR SIZE.

PILES: ALL PILE REQUIREMENTS INCLUDING SIZE, TYPE AND MAXIMUM DESIGN LOAD AND TEST PILE REQUIREMENTS AS TO LOCATION AND TEST LOADING SHALL BE AS DESCRIBED ON THE PLANS OR IN THE SPECIAL PROVISIONS. PLAN PILE LENGTHS ARE ORDER LENGTHS.

SEE STANDARD PLAN C.S. 216 FOR DETAILS.

** ALL REINFORCING STEEL IN THE PEDESTRAIN OVERPASS SHALL BE GRADE 60.

8 11-13-96

GENERAL NOTES AND SUMMARY OF BRIDGE QUANTITIES

STATE OF LOUISIANA
DEPARTMENT OF TRANSPORTATION AND DEVELOPMENT
WARDLINE ROAD
I-55 TO JCT. LA 1065
ROUTE LA 3234
BRIDGES

STATE OF LOUISIANA · PEI-CHONG · REGISTERED PROFESSIONAL ENGINEER · CERTIFIED CORRECT

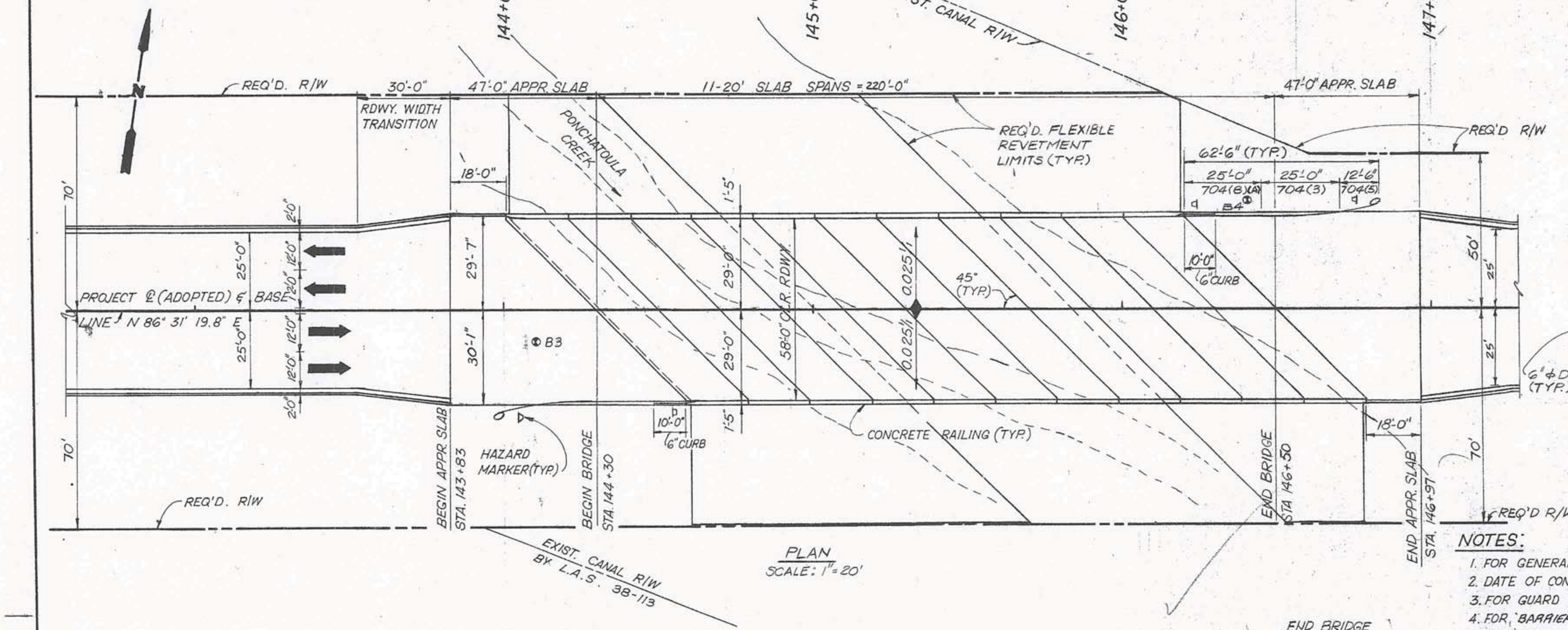
DATE	DESCRIPTION	BY
▣ 6/14/93	Added Item No. 730(11) & Timber Piles Length	W.H.

REVISIONS

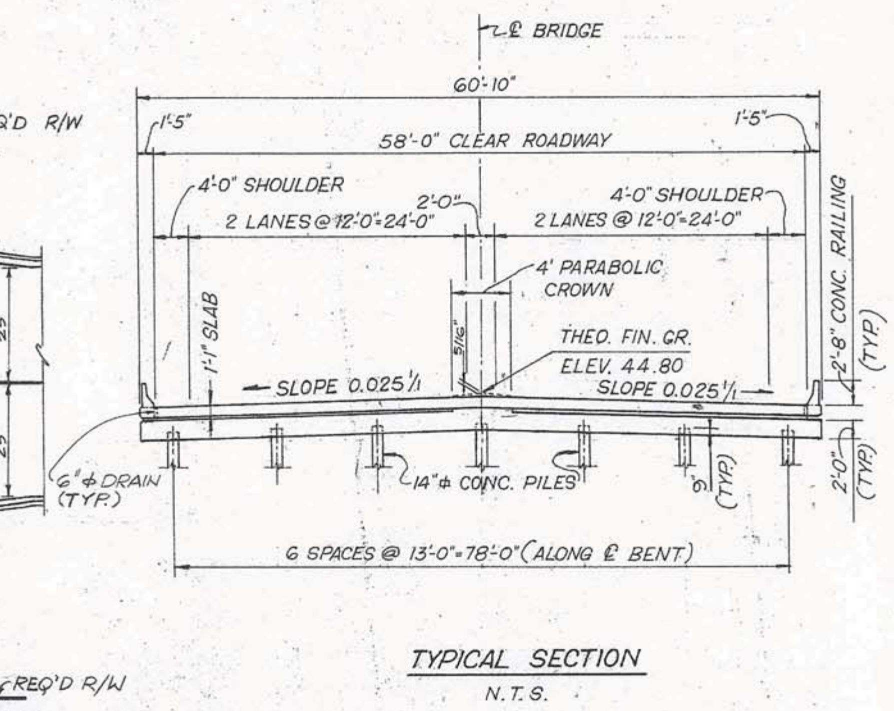
DANIEL MANN JOHNSON AND MENDENHALL
DMJM NEW ORLEANS, LOUISIANA

DESIGNED P.S.	DETAILED T.N.	SECTION NO.
CHECKED L.B.	CHECKED P.S.	SCALE AS NOTED
		DATE 12/91
		DRWG NO. 1 OF 1

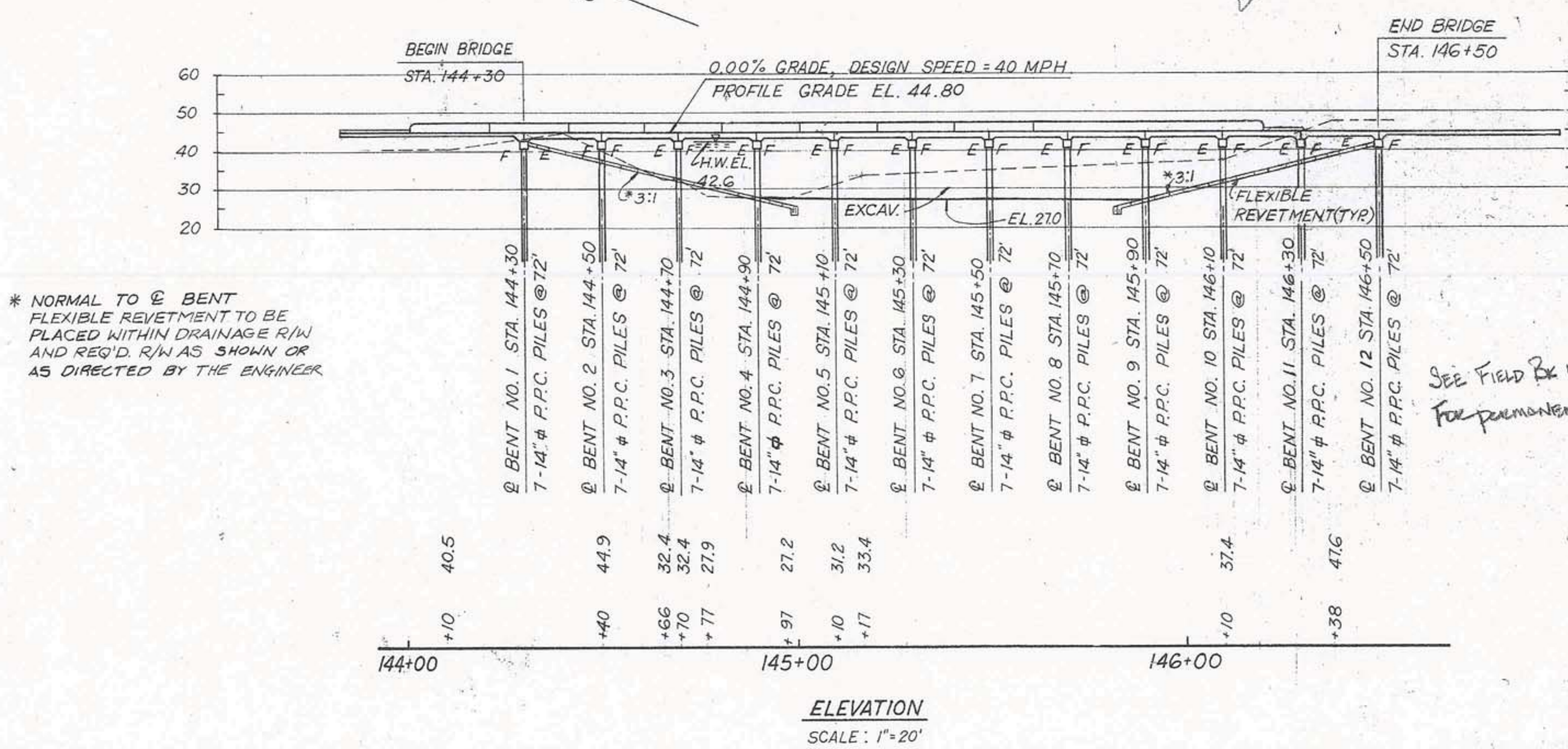
F.A.P.	STATE PROJECT	PARISH	SHEET NO.
	853-40-04	TANGIPAHOA	137 ~~110~~



PLAN
SCALE: 1" = 20'



TYPICAL SECTION
N.T.S.



ELEVATION
SCALE: 1" = 20'

SEE FIELD BK 173-765 FOR permanent Pile Lengths

NOTES:

1. FOR GENERAL NOTES, SEE SHT. 101
2. DATE OF CONSTRUCTION REQ'D EACH END OF BRIDGE, SEE STD. PLAN CM 97
3. FOR GUARD RAIL DETAILS, SEE STD. PLANS GR-200
4. FOR BARRIER RAILING DETAILS SEE SHT 115 (STD. PLAN BR-02
5. EXCAVATION TO BE MADE OR FILL TO BE IN PLACE PRIOR TO DRIVING PILES. FOR LIMITS OF DRAINAGE EXCAVATION, SEE GRADING PLAN SHT. 94
6. FOR FLEXIBLE REVETMENT DETAILS, SEE STD. PLAN F.R.I

HYDRAULIC DATA

DRAINAGE AREA (sq. mi.) ⊛			
FLOOD FREQUENCY (years)	25	100	O.T. >100▲
DISCHARGE (c.f.s.)	2,250	3,540	N/A
DESIGN WATER SURFACE ELEV.** (ft. m.s.l.)	40.5	43.4	44.8
AVERAGE VELOCITY (f.p.s.)	2.51	2.94	N/A
AREA OF OPENING (sq. ft.)	896	1,205	N/A
BACKWATER (ft.)	0.5	0.7	N/A

⊛ TOTAL DRAINAGE AREA FOR YELLOW WATER AND PONCHATOULA CREEKS = 22.6 SQ. MI.

** INCLUDES BACKWATER

▲ O.T. ELEVATION IS ABOVE SURROUNDING TERRAIN.

LEGEND:
⊕ CORE BORING

GENERAL PLAN AND ELEVATION

STATE OF LOUISIANA
DEPARTMENT OF TRANSPORTATION AND DEVELOPMENT

WARDLINE ROAD
JOEL G. McWILLIAMS

I-55 TO JCT LA 1065
ROUTE LA 3234
PONCHATOULA CREEK BRIDGE

STATE OF LOUISIANA PEI-CHONG SHIH REG. No. 12666 REGISTERED PROFESSIONAL ENGINEER

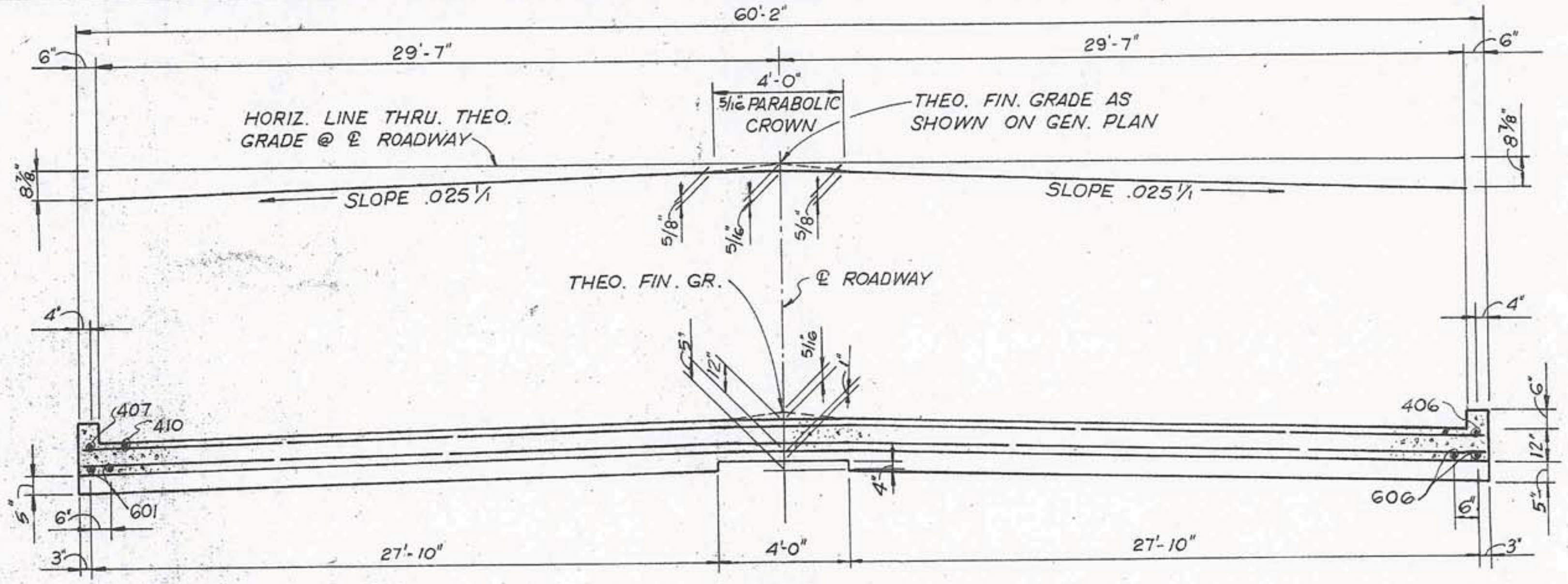
DATE	DESCRIPTION	BY
	REVISIONS	

Daniel, Mann, Johnson, & Mendenhall, New Orleans, Louisiana

SECTION NO.	
SCALE	AS NOTED
DATE	12/91
DRWG. NO.	1 OF 1

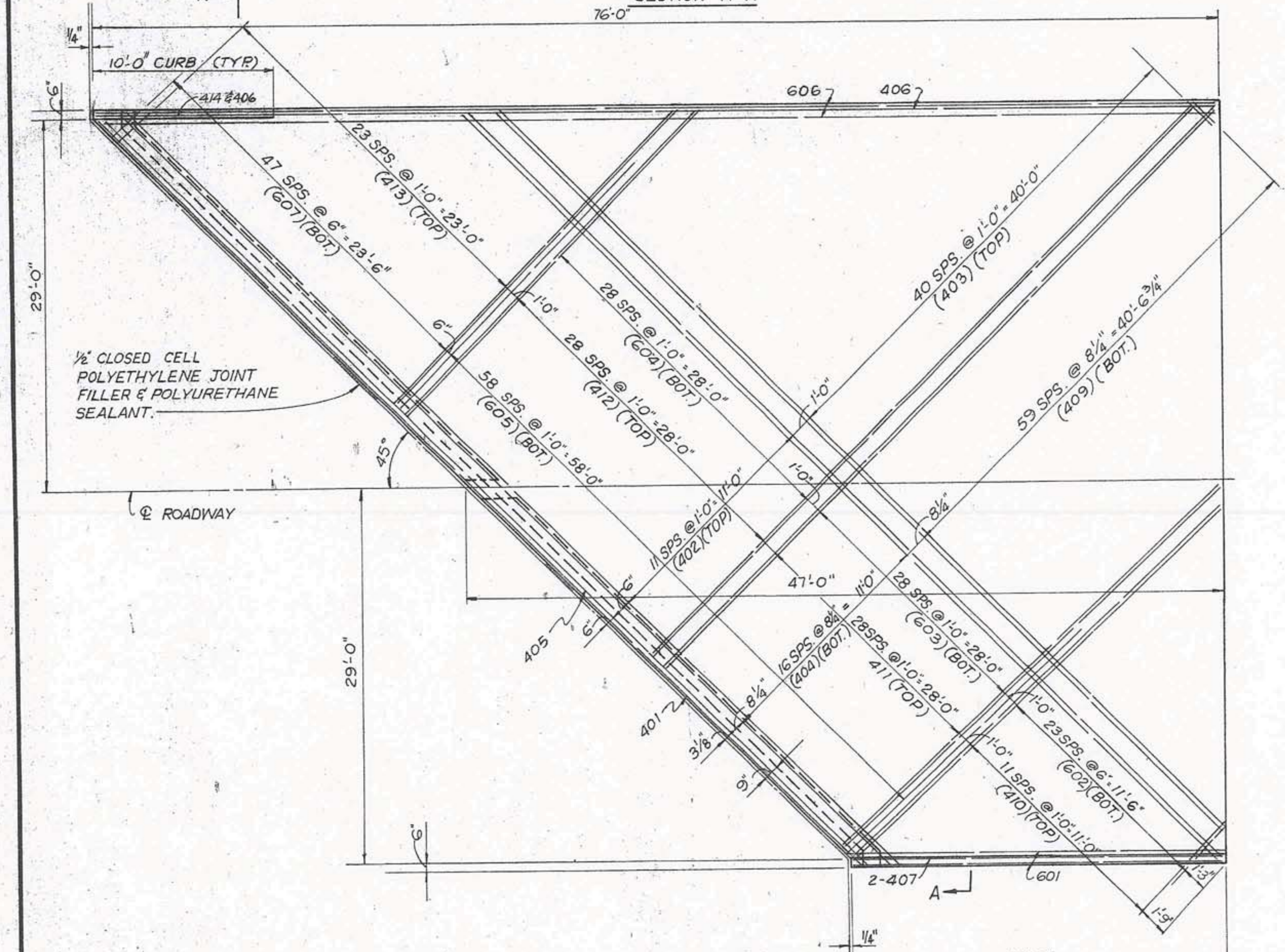
DESIGNED P.S. — DETAILED T.N.
CHECKED L.B. — CHECKED P.S.

F.A.P.	STATE PROJECT	PARISH	SHEET NO.
	853-40-04	TANGIPAHOA	138

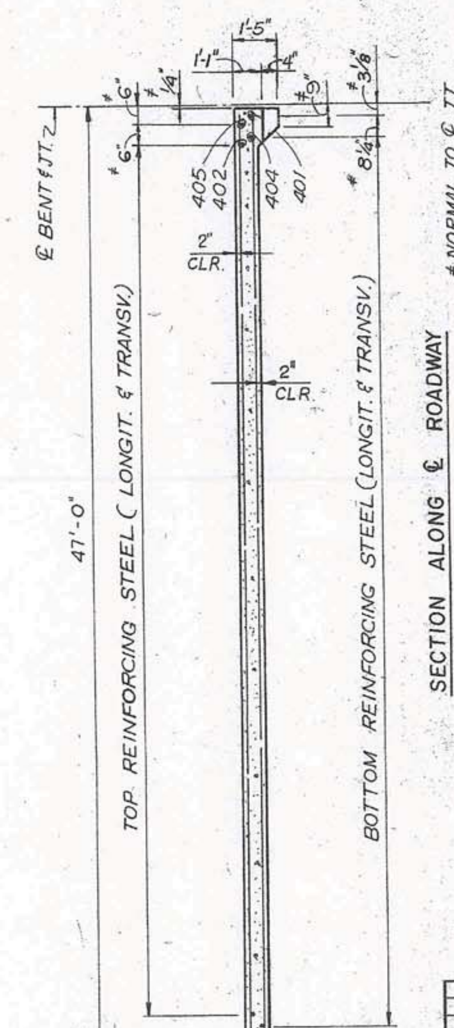


SECTION A-A

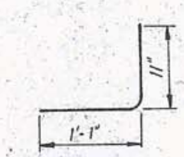
NOTES:
1. FOR GENERAL NOTES SEE SHT. 101
2. FOR DETAILS OF AGGREGATE BACKFILL AND UNDERDRAINS, SEE SHT 109



PLAN



SECTION ALONG ℄ ROADWAY



BAR 408
(3" φ PIN)

ESTIMATED QUANTITIES (ONE SLAB)							
BAR	SIZE	Nº	SHORT BAR	VAR.	LONG BAR	TOTAL LGTH.	LOCATION
601	#6	2	—	—	17'-7"	35'-2"	LONGIT. IN BOT. OF SLAB
602(1-24)	#6	1EA	1'-4"	1'-0"	24'-4"	308'-0"	LONGIT. IN BOT. OF SLAB
603(1-29)	#6	1EA.	25'-4"	1'-0"	53'-4"	1140'-8"	LONGIT. IN BOT OF SLAB
604(1-29)	#6	1EA.	25'-3"	1'-0"	53'-3"	1138'-3"	LONGIT. IN BOT OF SLAB
605	#6	59	—	—	20'-0"	1180'-0"	LONGIT. IN BOT. OF SLAB
606	#6	2	—	—	△78'-4"	156'-8"	LONGIT. IN BOT. OF SLAB
607(1-48)	#6	1EA.	0'-9"	0'-6"	24'-3"	600'-0"	LONGIT. IN BOT. OF SLAB
TOTAL NO. 6 BARS = 4558'-9" = 6847 LBS.							
401	#4	1	—	—	φ87'-6"	87'-6"	TRANSV. BOT OF SLAB
402	#4	12	—	—	φ89'-5"	1073'-0"	TRANSV. TOP OF SLAB
403(1-41)	#4	1EA.	1'-11"	2'-0"	81'-11"	ф1779'-0"	TRANSV. TOP OF SLAB
404	#4	17	—	—	□88'-1"	1497'-5"	TRANSV. BOT. OF SLAB
405	#4	1	—	—	□86'-4"	86'-4"	TRANSV. TOP OF SLAB
406	#4	1	—	—	⊛77'-4"	77'-4"	TOP SLAB
407	#4	1	—	—	17'-7"	17'-7"	TOP SLAB
409(1-60)	#4	1EA	1'-6"	1'-4½"	82'-7"	●2585'-6"	TRANSV. BOT. OF SLAB
410 (1-12)	#4	1EA	2'-4"	2'-0"	24'-4"	160'-0"	LONGIT. IN TOP OF SLAB
411 (1-29)	#4	1EA.	25'-4"	1'-0"	53'-4"	*1174'-6"	LONGIT. IN TOP OF SLAB
412(1-29)	#4	1EA.	25'-3"	1'-0"	53'-3"	*1172'-1"	LONGIT. IN TOP OF SLAB
413(1-24)	#4	1EA.	1'-3"	1'-0"	24'-3"	306'-0"	LONGIT. IN TOP OF SLAB
TOTAL NO. 4 BARS = 10,016'-4" = 6691 LBS.							
‡ TOTAL DEFORMED REINFORCING STEEL = 13,538 LBS.							
CONCRETE APPROACH SLAB = 308.98 SQ. YDS.							

* INCLUDES 2'-5" MIN. LAP SPLICE FOR BARS 411(16-29) & 412(16-29)
⊛ INCLUDES 1'-9" MIN. LAP SPLICE.
△ INCLUDES 2'-9" MIN. LAP SPLICE.
φ INCLUDES TWO (2) 2'-5" MIN. LAP SPLICE.
□ INCLUDES TWO (2) 1'-9" MIN. LAP SPLICE.
ф INCLUDES ONE (1) 2'-5" MIN. LAP SPLILE FOR BARS 403(20-38) & TWO (2) 2'-5" MIN. LAP SPLICE FOR BARS 403(39-41).
● INCLUDES ONE (1) 1'-9" MIN. LAP SPLICE FOR BARS 409(29-56) & TWO (2) 1'-9" MIN. LAP SPLICE FOR BARS 409(57-60).
‡ NO DIRECT PAYMENT

APPROACH SLABS

STATE OF LOUISIANA
PEI-CHONG SHIH
REG. No. 12466
REGISTERED PROFESSIONAL ENGINEER IN CIVIL ENGINEERING

DATE	DESCRIPTION	BY
	REVISIONS	

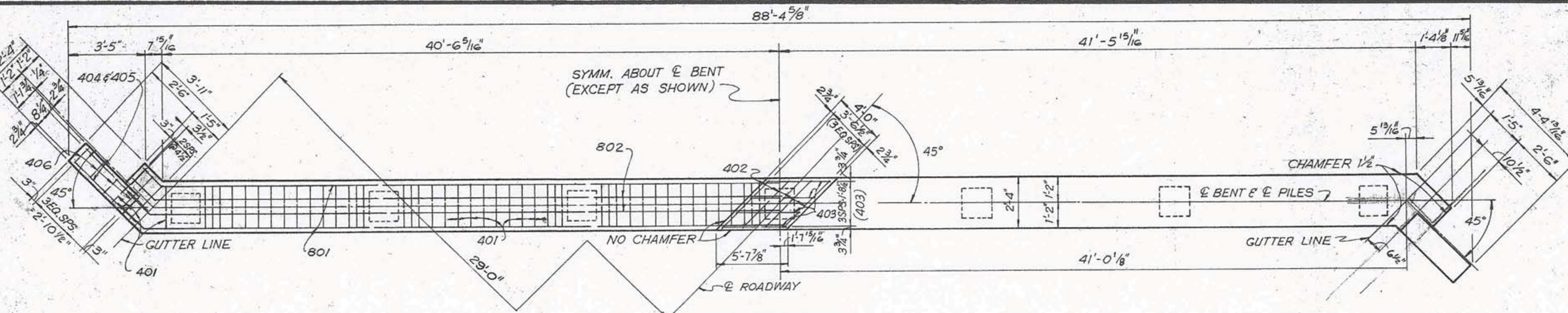
STATE OF LOUISIANA
DEPARTMENT OF TRANSPORTATION AND DEVELOPMENT
JOEL G. McWILLIAMS
CERTIFIED CORRECT

WARDLINE ROAD
PONCHATOULA CREEK BRIDGE
ROUTE LA. 3234

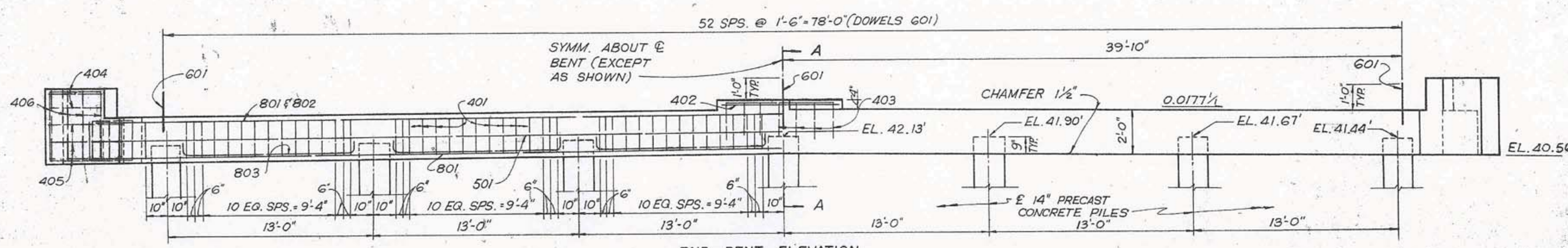
DANIEL, MANN, JOHNSON AND MENDENHALL
CONSULTING ENGINEERS — NEW ORLEANS, LOUISIANA

DATE 12/91	SCALE N.T.S.	DWG. NO. 1 OF 1	
DRAWN BY T.N.	CHKD. BY R.W.	IN CHARGE P.S.	APPROVED L.B.

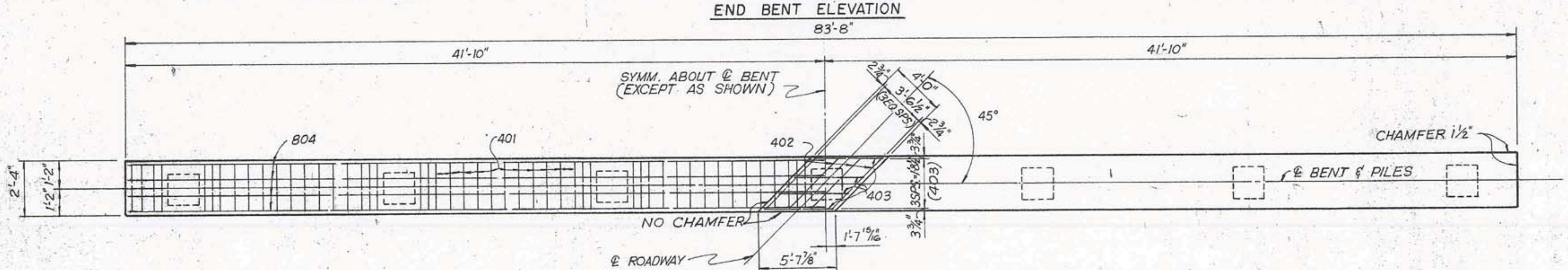
F.A.P.	STATE PROJECT	PARISH	SHEET NO.
	853-40-04	TANGIPAHOA	~~112~~ 139 ✓



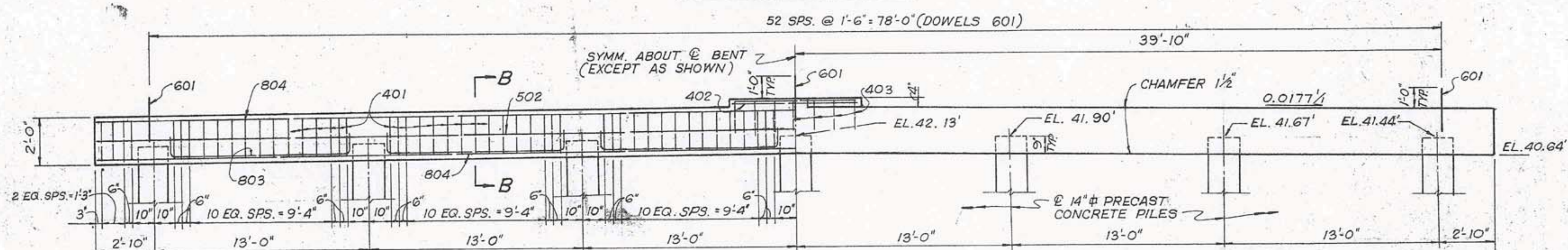
END BENT PLAN



END BENT ELEVATION



INTERMEDIATE BENT PLAN



INTERMEDIATE BENT ELEVATION

BENTS

JOEL G. McWILLIAMS
CERTIFIED CORRECT

STATE OF LOUISIANA
PEI-CHONG SHIH
REG. No. 12965
REGISTERED PROFESSIONAL ENGINEER IN CIVIL ENGINEERING

STATE OF LOUISIANA
DEPARTMENT OF TRANSPORTATION AND DEVELOPMENT

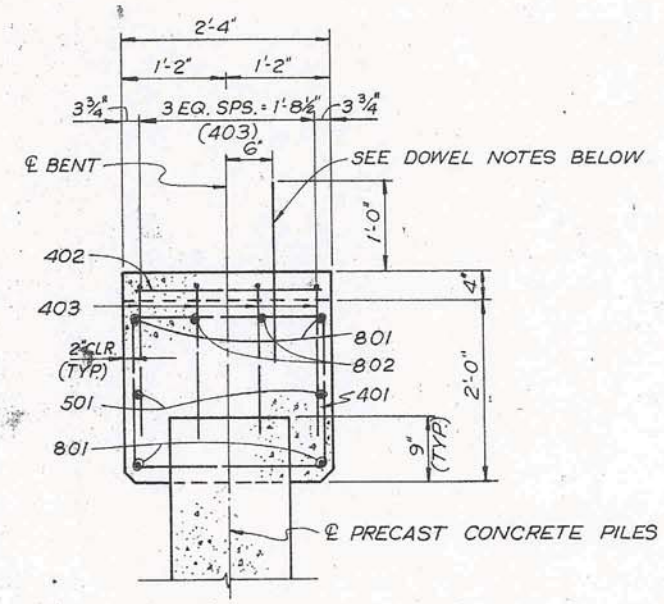
WARDLINE ROAD
PONCHATOULA CREEK BRIDGE
ROUTE LA. 3234

DANIEL, MANN, JOHNSON AND MENDENHALL
CONSULTING ENGINEERS — NEW ORLEANS, LOUISIANA

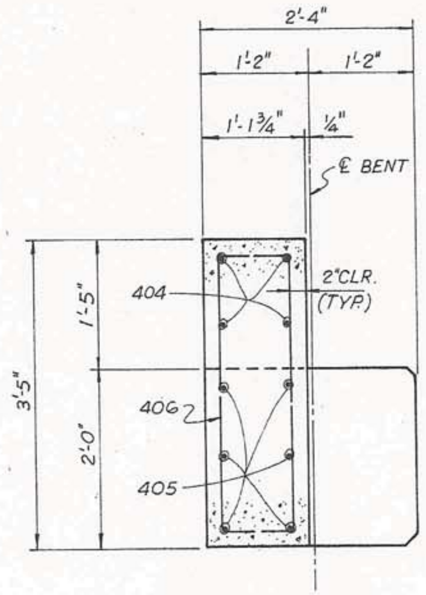
DATE	DESCRIPTION	BY
	REVISIONS	

DATE 12/91	SCALE N.T.S.	DWG. NO. 1 OF 2
DRAWN BY T.N.	CHKD. BY P.W.	IN CHARGE P.S.	APPROVED L.E.

F.A.P.	STATE PROJECT	PARISH	SHEET NO.
	853-40-04	TANGIPAHOA	~~113~~ 140

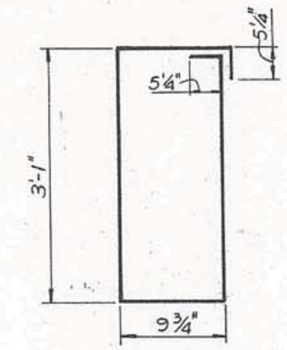


SECTION A-A



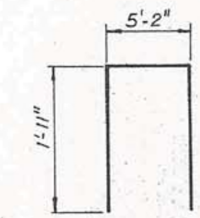
END ELEVATION

(SHOWING WINGWALL REINFORCING)



BARS 406

(2" DIA. PIN)

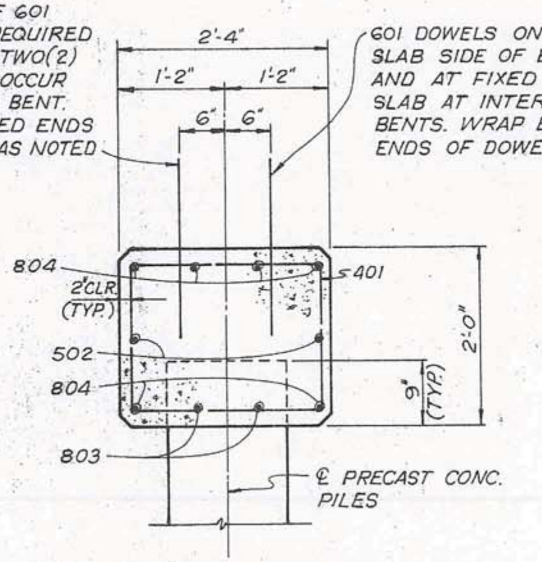


BARS 403

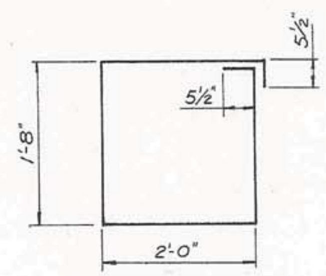
(2" DIA. PIN)

THIS LINE OF 601 DOWELS IS REQUIRED ONLY WHEN TWO(2) FIXED ENDS OCCUR ON THE SAME BENT. WRAP EXPOSED ENDS OF DOWELS AS NOTED.

601 DOWELS ON APPROACH SLAB SIDE OF END BENT AND AT FIXED END OF SLAB AT INTERMEDIATE BENTS. WRAP EXPOSED ENDS OF DOWELS AS NOTED.

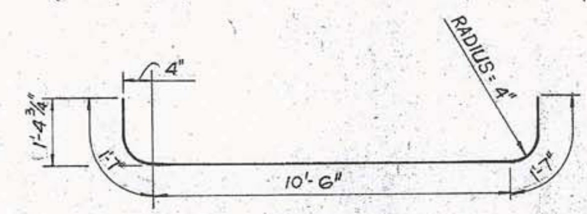


SECTION B-B



BARS 401

(2" DIA. PIN)

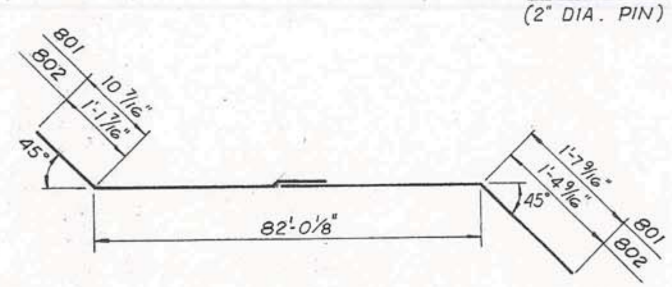


BARS 803

(6" DIA. PIN)

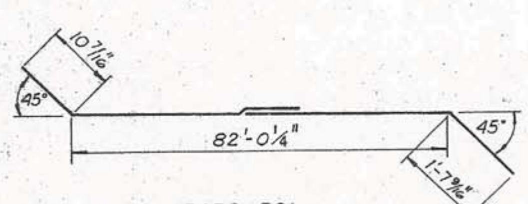
NOTE:

ALL EXPOSED ENDS OF 601 DOWELS TO BE WRAPPED WITH 2 LAYERS OF 15# TAR PAPER. CLOSE FITTING TUBES MADE OF COMPRESSIBLE MATERIAL NOT LESS THAN 3/16 THICK MAY BE SUBSTITUTED. TAR PAPER WRAPPINGS ARE TO BE INCLUDED IN PRICE BID FOR CLASS A CONCRETE. (BENTS)



BARS 801-802

(6" DIA. PIN)



BARS 501

(3¾" DIA. PIN)

ESTIMATED QUANTITIES (ONE END BENT)						
	BAR	SIZE	Nº	UNIT LENGTH	TOTAL LENGTH	LOCATION
*	801	# 8	4	△90'-3"	361'-0"	LONGIT. IN CAP
*	802	# 8	2	△90'-3"	180'-6"	LONGIT. IN CAP
*	803	# 8	12	13'-8"	164'-0"	LONGIT. IN CAP
	TOTAL Nº 8 BARS = 705'-6" = 1884 LBS.					
	601	#6	53	2'-0"	106'-0"	DOWELS
	TOTAL Nº 6 BARS = 106'-0" = 159 LBS.					
	501	#5	2	ǂ 86'-6"	175'-0"	LONGIT. IN FACE OF CAP
	TOTAL Nº 5 BARS = 175'-0" = 183 LBS.					
*	401	#4	98	8'-3"	808'-6"	STIRRUPS IN CAP
	402	#4	4	2'-9"	11'-0"	RISER
	403	#4	4	9'-0"	36'-0"	STIRRUPS IN RISER
	404	#4	8	2'-10"	22'-8"	LONGIT. IN WINGS
	405	#4	12	3'-10"	46'-0"	LONGIT. IN WINGS
	406	#4	8	8'-8"	69'-4"	STIRRUPS IN WINGS
	TOTAL Nº 4 BARS = 993'-6" = 664 LBS.					
	TOTAL DEFORMED REINFORCING STEEL = 2890 LBS.					
	TOTAL CLASS A CONCRETE (BENTS) = 15.39 CU. YDS.					
	MAXIMUM PILE LOAD = 54.7 TONS					

NOTE:

TO PROVIDE FOR FUTURE EXTENSION OF BRIDGE, END BENTS ARE DESIGNED FOR THE SAME LOAD AS THE INTERMEDIATE BENTS.

ESTIMATED QUANTITIES (ONE INTERMEDIATE BENT)						
	BAR	SIZE	Nº	UNIT LENGTH	TOTAL LENGTH	LOCATION
*	803	# 8	12	13'-8"	164'-0"	LONGIT. IN CAP
*	804	# 8	6	△89'-1"	534'-6"	LONGIT. IN CAP
	TOTAL Nº 8 BARS = 698'-6" = 1865 LBS.					
⊕	601	# 6	53	2'-0"	106'-0"	DOWELS
	TOTAL Nº 6 BARS = 106'-0" = 159 LBS.					
	502	# 5	2	ǂ 85'-4"	170'-8"	
	TOTAL Nº 5 BARS = 170'-8" = 178 LBS.					
*	401	#4	98	8'-3"	808'-6"	STIRRUPS IN CAP
	402	#4	4	2'-9"	11'-0"	RISER
	403	#4	4	9'-0"	36'-0"	STIRRUPS IN RISER
	TOTAL Nº 4 BARS = 855'-6" = 571 LBS.					
	TOTAL DEFORMED REINFORCING STEEL = 2773 LBS.					
	TOTAL CLASS A CONCRETE (BENTS) = 14.40 CU. YDS.					
	MAXIMUM PILE LOAD = 54.7 TONS					

ǂ INCLUDES ONE (1) 2'-0" MIN. LAP SPLICE.

△ INCLUDES ONE (1) 5'-9" MIN. LAP SPLICE.

⊕ ADD 159 LBS. OF REINFORCING STEEL (53-601 DOWELS) WHEN TWO (2) FIXED ENDS OCCUR ON ONE (1) INTERMEDIATE BENT

* GRADE 60 STEEL

BENTS

JOEL G. McWILLIAMS
CERTIFIED CORRECT

STATE OF LOUISIANA
DEPARTMENT OF TRANSPORTATION AND DEVELOPMENT

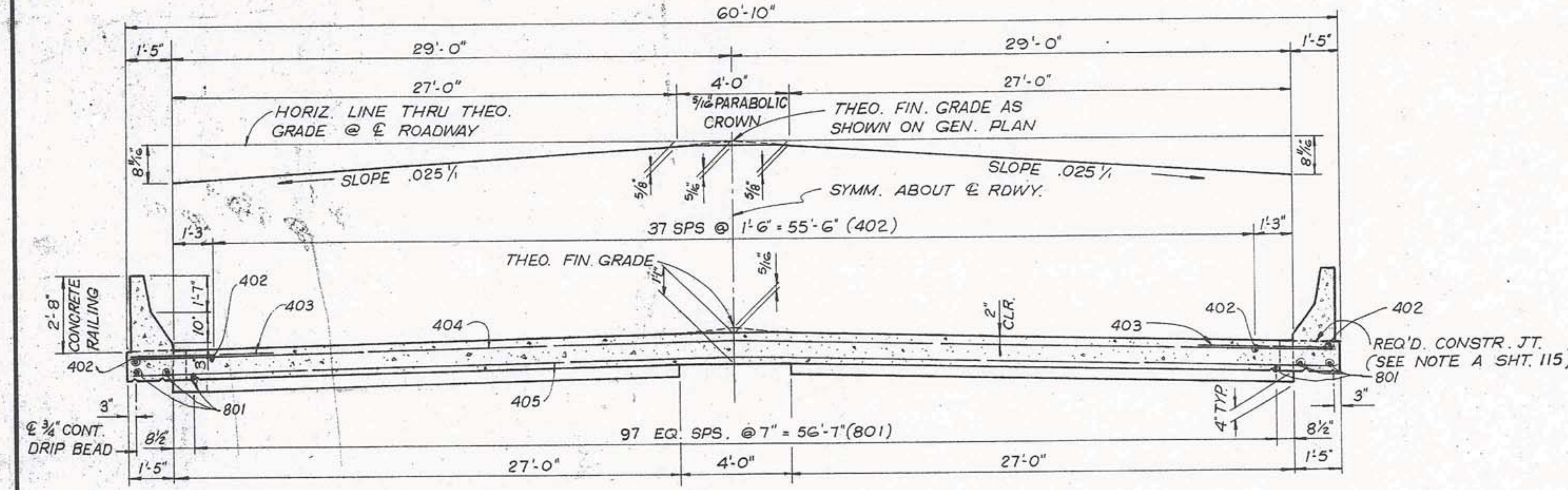
WARDLINE ROAD
PONCHATOULA CREEK BRIDGE
ROUTE LA. 3234

DANIEL, MANN, JOHNSON AND MENDENHALL
CONSULTING ENGINEERS — NEW ORLEANS, LOUISIANA

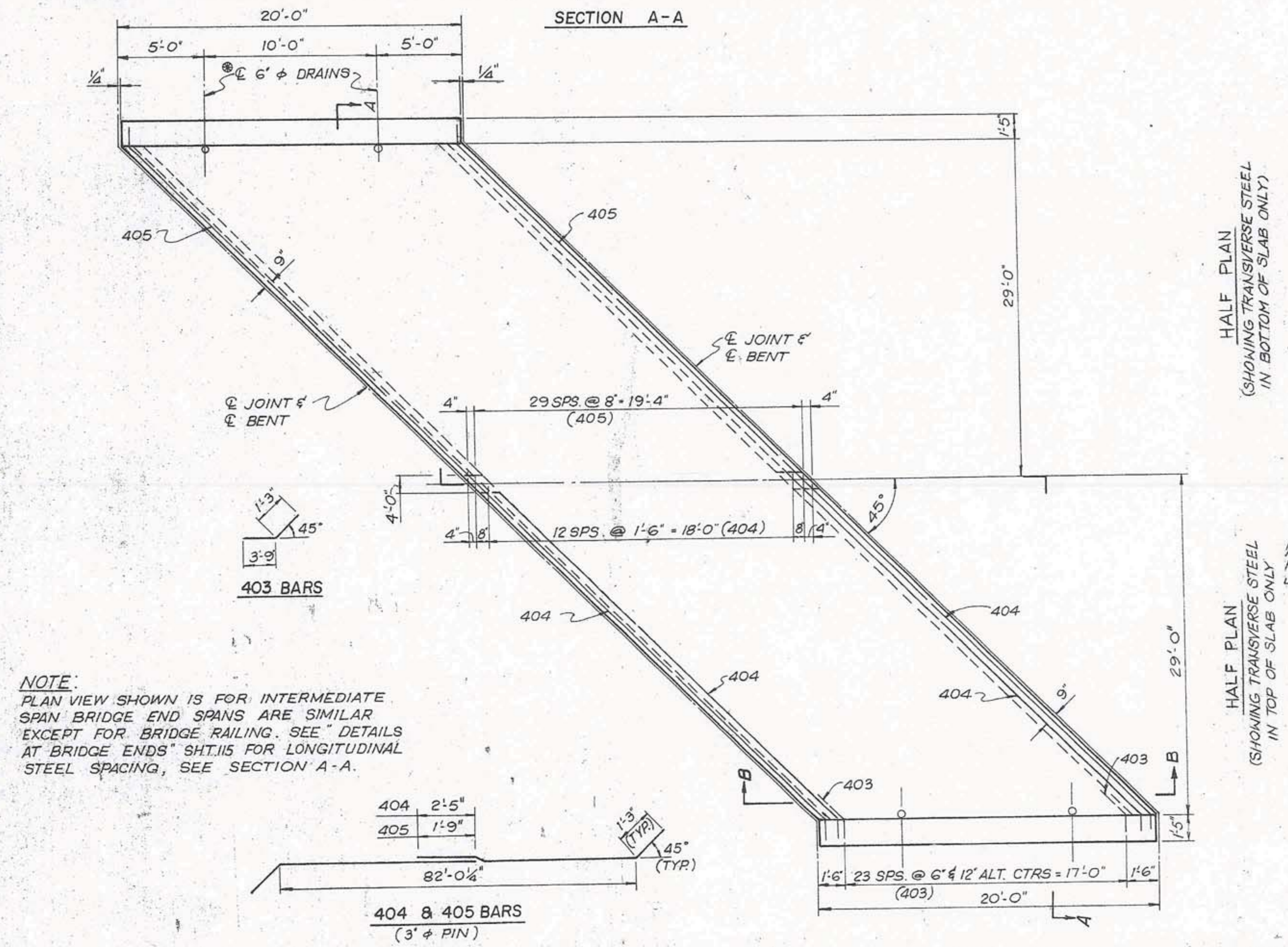
DATE	DESCRIPTION	BY
	REVISIONS	

DATE 12 / 91	SCALE N.T.S.	DWG. NO. 2 OF 2
DRAWN BY T.N.	CHKD. BY P.W.	IN CHARGE P.S.
APPROVED L.E.B.		

F.A.P.	STATE PROJECT	PARISH	SHEET NO.
	853-40-04	TANGIPAHOA	~~114~~ 141



SECTION A-A



403 BARS

404 & 405 BARS (3" φ PIN)

HALF PLAN (SHOWING TRANSVERSE STEEL IN BOTTOM OF SLAB ONLY)

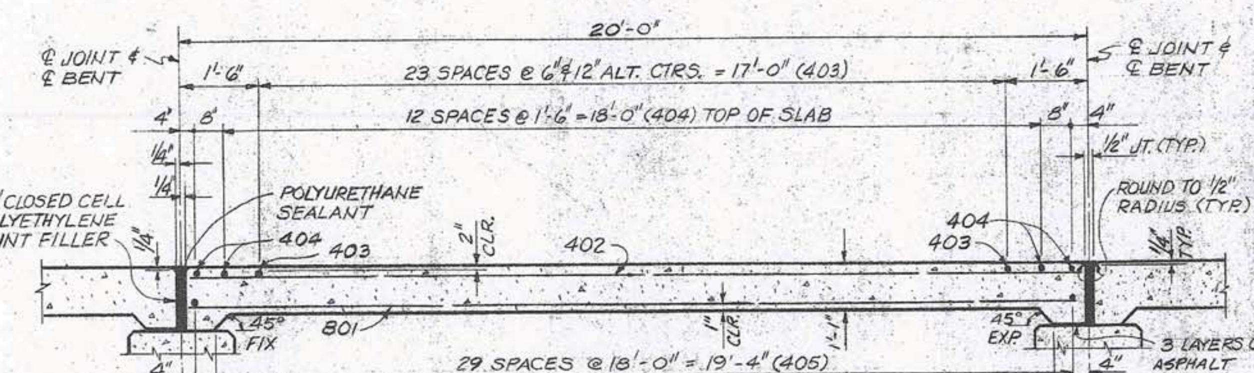
HALF PLAN (SHOWING TRANSVERSE STEEL IN TOP OF SLAB ONLY)

NOTE:
PLAN VIEW SHOWN IS FOR INTERMEDIATE SPAN BRIDGE. END SPANS ARE SIMILAR EXCEPT FOR BRIDGE RAILING. SEE "DETAILS AT BRIDGE ENDS" SHT.115 FOR LONGITUDINAL STEEL SPACING, SEE SECTION A-A.

ESTIMATED QUANTITIES (ONE SLAB)					
BAR	SIZE	Nº	UNIT LENGTH	TOTAL LENGTH	LOCATION
+ 801	#8	102	19'-7"	1997'-6"	LONGIT. IN BOT. OF SLAB
TOTAL Nº 8 BARS = 1997'-6" = 5,333 LBS.					
+ 402	#4	40	19'-7"	783'-4"	LONGIT. IN TOP OF SLAB
+ 403	#4	48	5'-0"	240'-0"	TRANSV. IN TOP OF SLAB
+ 404	#4	15	*86'-11"	1,303'-9"	TRANSV. IN TOP OF SLAB
+ 405	#4	30	°86'-3"	2,587'-6"	TRANSV. IN BOT. OF SLAB
TOTAL Nº 4 BARS = 4914'-7" = 3,283 LBS.					
TOTAL DEFORMED REINF. STEEL = 8616 LBS.					
TOTAL CLASS A A CONC. = 50.55 CU. YDS.					
CONCRETE RAILING (BARRIER TYPE) = 40.00 LIN. FT.					

* INCLUDES ONE (1) 2'-5" LAP SPLICE (STAGGER SPLICES)
° INCLUDES ONE (1) 1'-9" LAP SPLICE (STAGGER SPLICES)
+ GRADE 60 REINFORCEMENT.

NOTES:
1. FOR GENERAL NOTES, SEE SHT. 101
2. FOR GUARD RAIL CONNECTION AT BRIDGE ENDS SEE SHT. 115
3. FOR BARRIER RAILING DETAILS, SEE SHT. 115 (STD. PLAN BR-02)
⊛ 4. 6" φ PVC DRAINS ARE NOT REQUIRED ON END SPANS.



SECTION B-B
(PONCHATOULA CREEK BRIDGE SHOWN, YELLOW WATER BRIDGE SIMILAR)

SPANS

STATE OF LOUISIANA
DEPARTMENT OF TRANSPORTATION AND DEVELOPMENT

WARDLINE ROAD
PONCHATOULA CREEK BRIDGE
ROUTE LA. 3234

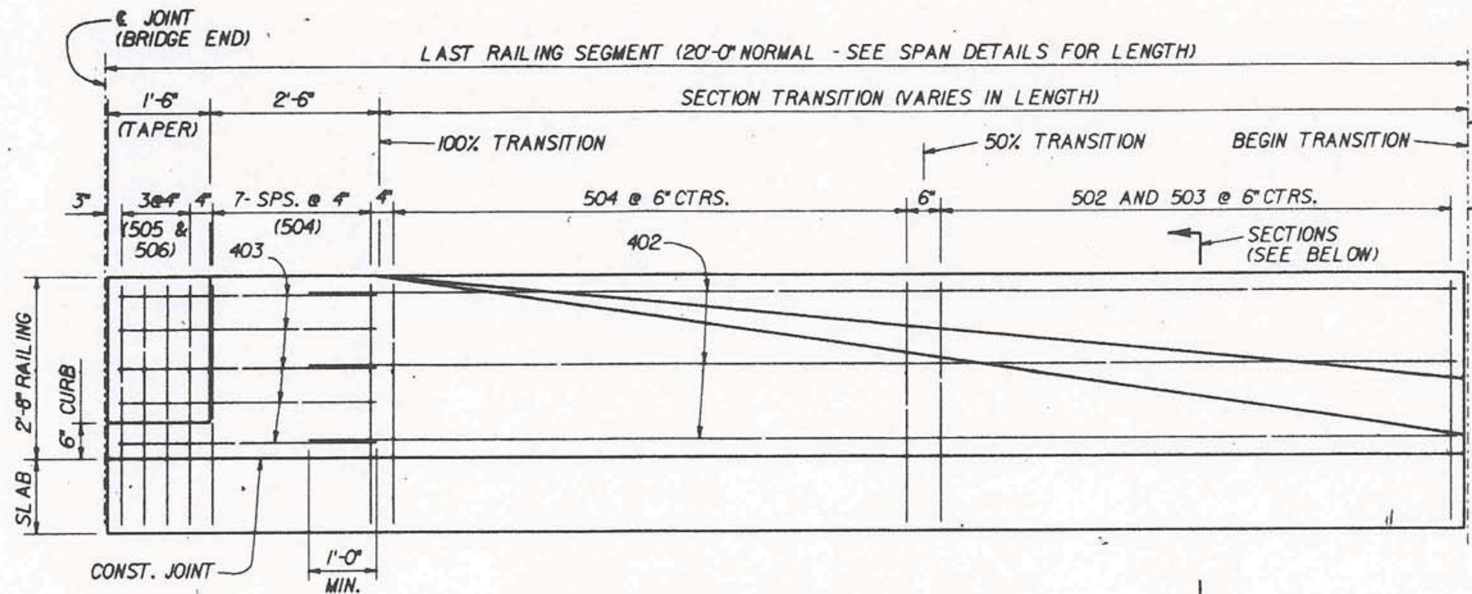
DANIEL, MANN, JOHNSON AND MENDENHALL
CONSULTING ENGINEERS — NEW ORLEANS, LOUISIANA

STATE OF LOUISIANA PEI-CHONG SHIH REG. No. 32556 REGISTERED PROFESSIONAL ENGINEER IN CIVIL ENGINEERING

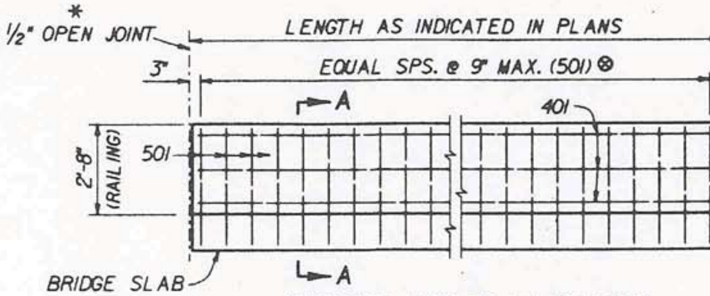
DATE 12/91	SCALE N.T.S.	DWG. NO. 1 OF 2
DRAWN BY T.N.	CHKD. BY P.W.	IN CHARGE P.S. / APPROVED L.B.

DATE	DESCRIPTION	BY
	REVISIONS	

FAP	STATE PROJECT	PARISH	SHEET NO.
	853-40-04	TANGIPAHOA	142



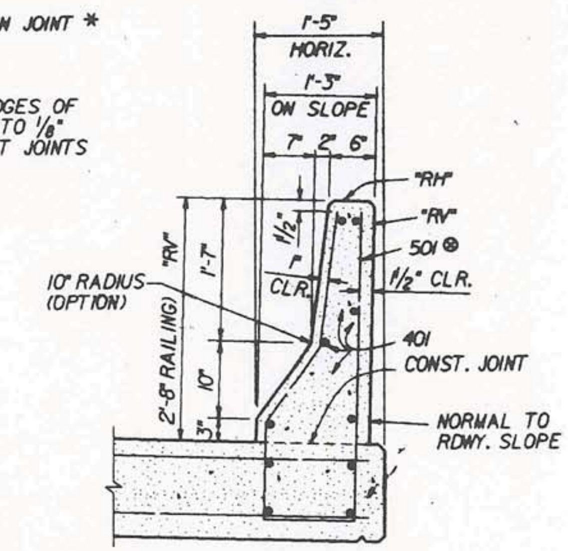
BARRIER RAILING TRANSITION ELEVATION
(SHOWING BARRIER RAILING AT END OF BRIDGE)



BARRIER RAILING ELEVATION
(SHOWING BARRIER RAILING ALONG BRIDGE SLAB)

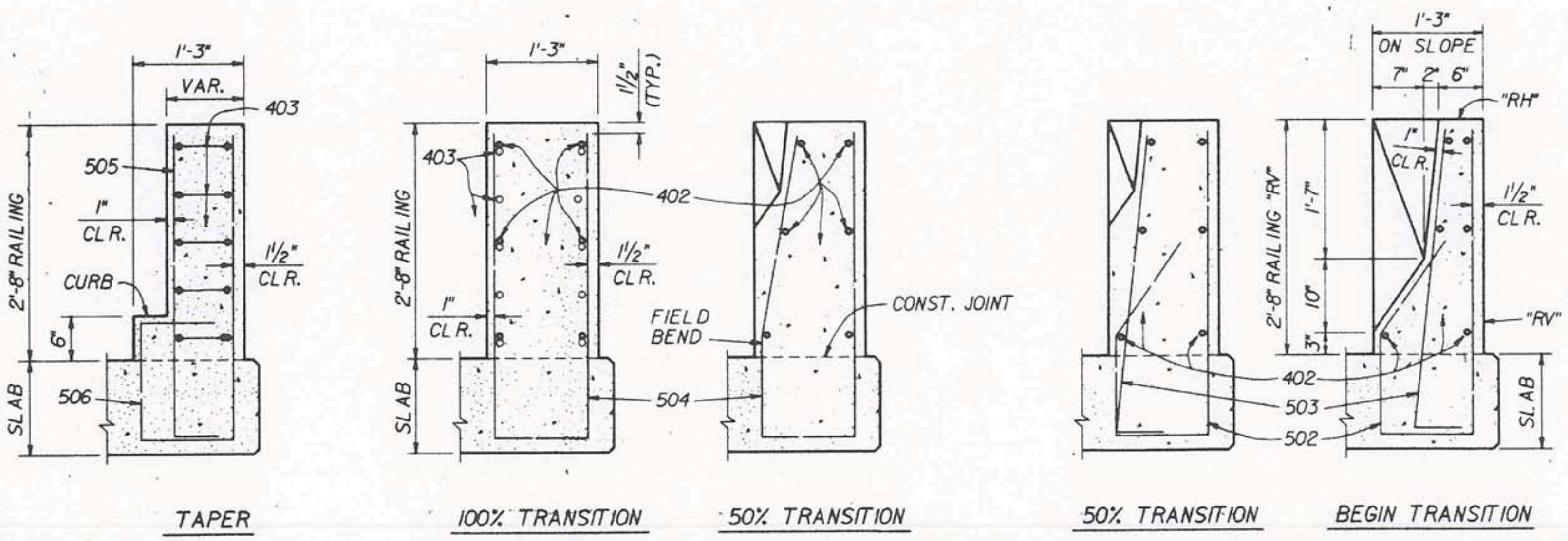
⊗ AT THE CONTRACTOR'S OPTION, NO. 4 BARS AT 6" CENTERS MAY BE SUBSTITUTED IN LIEU OF NO. 5 BARS AT 9" CENTERS. USE 2" ⌀ PIN FOR BENDING.

* SAW CUTTING OF THE ½" OPEN JOINT IS PERMITTED PROVIDED 1½" MIN. CLEARANCE IS MAINTAINED FOR REINFORCING STEEL AND SUBJECT TO APPROVAL OF THE ENGINEER.

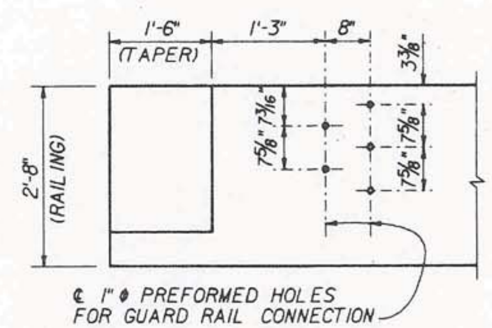


SECTION A-A

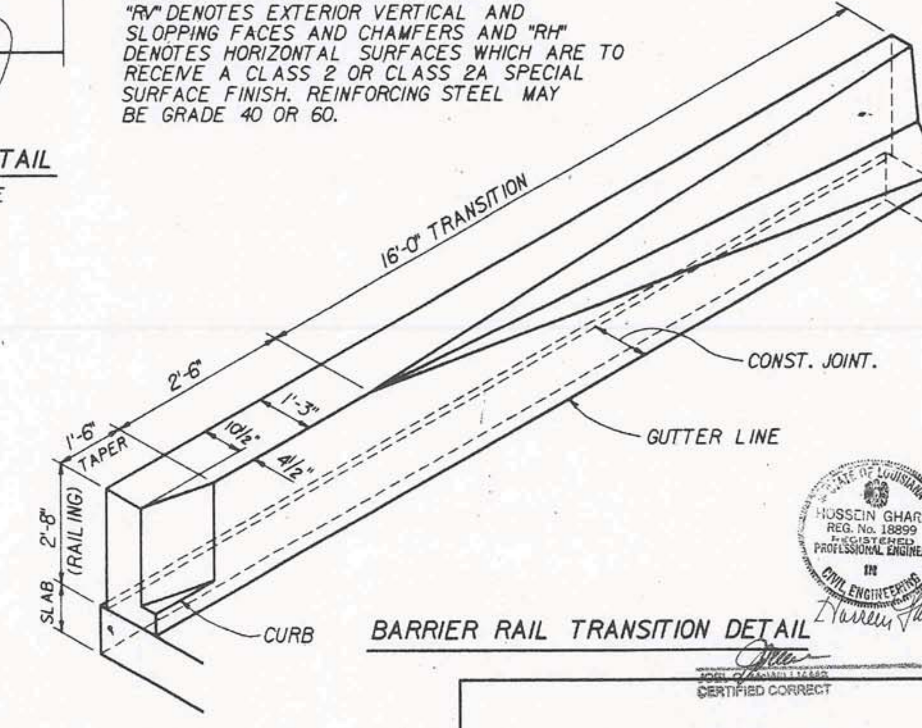
NOTE:
ALL CONCRETE AND STEEL IN BARRIER RAILING AND BARRIER RAILING TRANSITION INCLUDING NO. 5 BARS THAT PROJECT INTO RAILING TO BE PAID FOR UNDER ITEM 810(01), CONCRETE RAILING (BARRIER), PER LINEAR FOOT.
WHEN EPOXY COATED REINFORCING STEEL IS REQUIRED IN THE CONCRETE DECK, LONGITUDINAL BARS AND STIRRUPS IN THE BARRIER RAIL FACE (ROADWAY SIDE) SHALL BE EPOXY COATED.
"RV" DENOTES EXTERIOR VERTICAL AND SLOPPING FACES AND CHAMFERS AND "RH" DENOTES HORIZONTAL SURFACES WHICH ARE TO RECEIVE A CLASS 2 OR CLASS 2A SPECIAL SURFACE FINISH. REINFORCING STEEL MAY BE GRADE 40 OR 60.



BARRIER RAILING TRANSITION SECTIONS

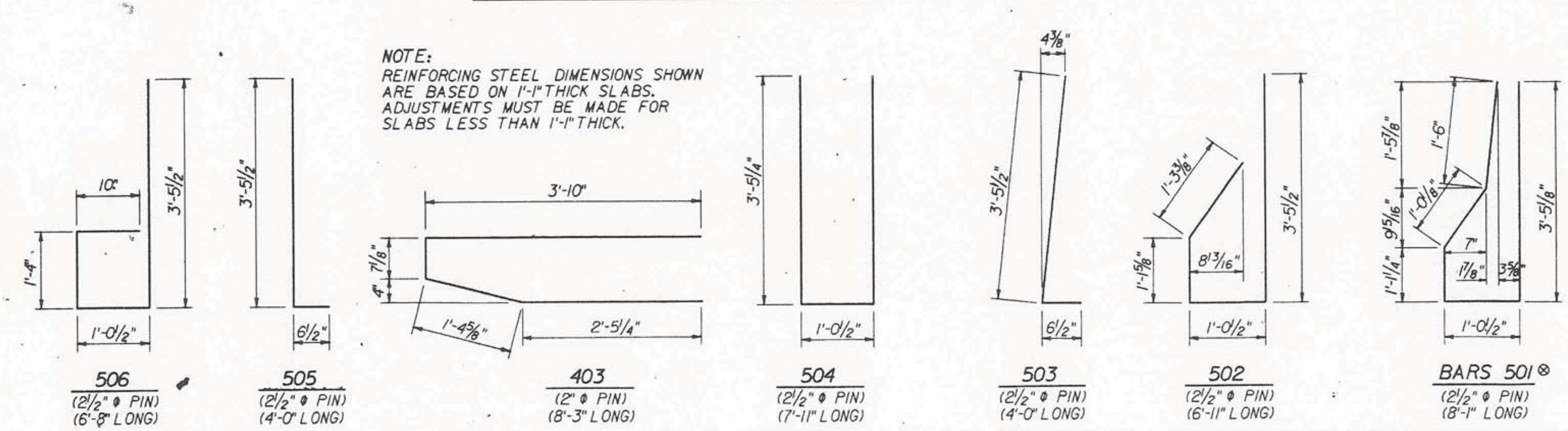


GUARD RAIL CONNECTION DETAIL
(FOR GUARD RAIL DETAILS, SEE STANDARD PLAN GR-200.)



BARRIER RAIL TRANSITION DETAIL

NOTE:
REINFORCING STEEL DIMENSIONS SHOWN ARE BASED ON 1'-1" THICK SLABS. ADJUSTMENTS MUST BE MADE FOR SLABS LESS THAN 1'-1" THICK.



HOSSEIN GHARA REG. No. 18899 REGISTERED PROFESSIONAL ENGINEER IN CIVIL ENGINEERING

CERTIFIED CORRECT

DATE	DESCRIPTION	BY
10/25/88	ADD EPOXY REINFORCING STEEL NOTE	L.A.G.

REVISIONS

BARRIER RAILING DETAILS

DATED 6-15 1988

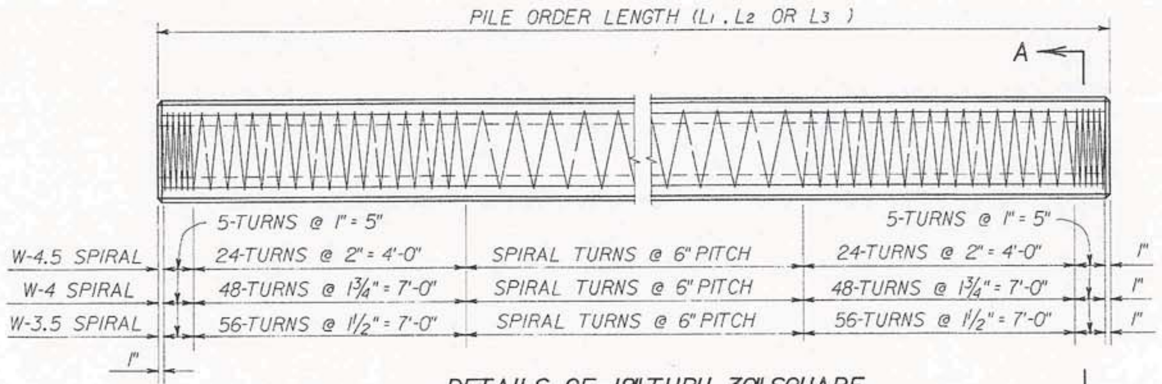
STATE OF LOUISIANA
DEPARTMENT OF TRANSPORTATION AND DEVELOPMENT

DESIGNED | DETAILED HOLLIS WARD | TRACED
CHECKED | CHECKED LOUIS NECK | CHECKED

BRIDGE AND STRUCTURAL DESIGN SECTION

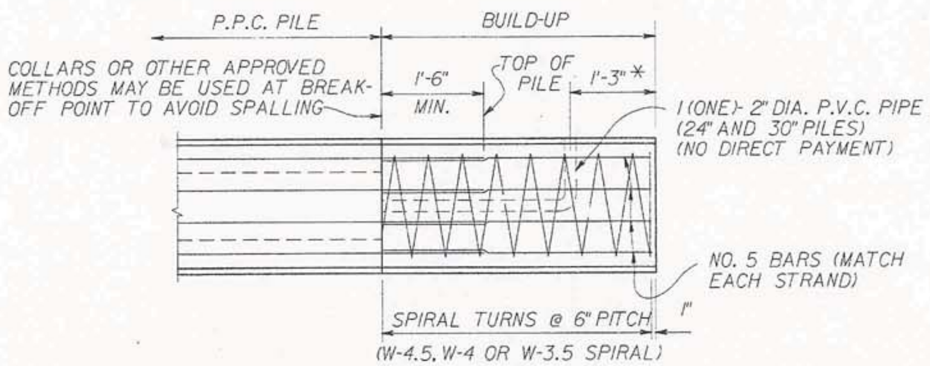
BR-02

FEDERAL PROJECT	STATE PROJECT	PARISH	SHEET NO.
	853-40-04	TANGIPAHOA	143 ~~115-a~~

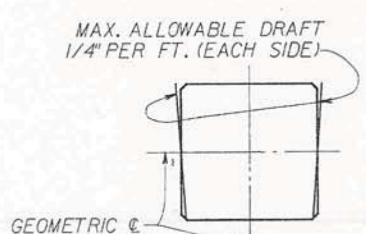


DETAILS OF 12" THRU 30" SQUARE PRECAST-PRESTRESSED CONCRETE PILES

(FOR CIRCULAR OR SQUARE SPIRAL LAYOUT)



TYPICAL BUILD-UP WHERE REDRIVING IS NOT REQUIRED

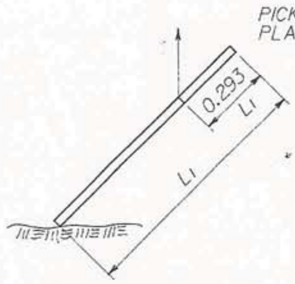


SKETCH SHOWING PERMISSIBLE FORM DRAFT

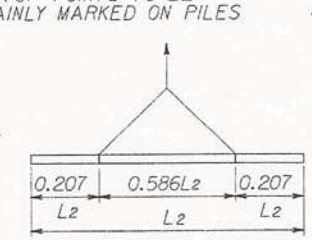
(RESULTING PILE AREA TO MEET OR EXCEED THE AREA SHOWN IN TABLES.)

NOTE:

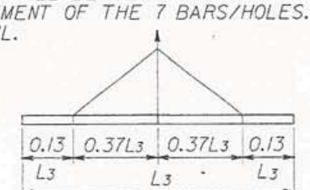
PICK-UP POINTS TO BE PLAINLY MARKED ON PILES



1-POINT PICK-UP



2-POINT PICK-UP



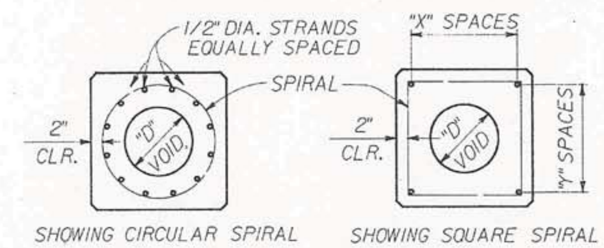
3-POINT PICK-UP

DESIGN CRITERIA

PRESTRESS LOSSES: PRESTRESS LOSS CALCULATIONS BASED ON "RECOMMENDATIONS FOR ESTIMATING PRESTRESS LOSSES" PCI JOURNAL VOL. 20, JULY/AUGUST 1975. THE MINIMUM AND MAXIMUM TIME ELAPSING BETWEEN END OF CURING AND TIME OF TRANSPORTING PILES TO BE 10-DAYS AND 90-DAYS RESPECTIVELY. PERCENT OF ULTIMATE SHRINKAGE EQUAL TO 27% AND 62% FOR 10-DAYS AND 90-DAYS RESPECTIVELY. PERCENT OF ULTIMATE SPECIFIC CREEP EQUAL TO 24% AND 51% FOR 10-DAYS AND 90-DAYS RESPECTIVELY.

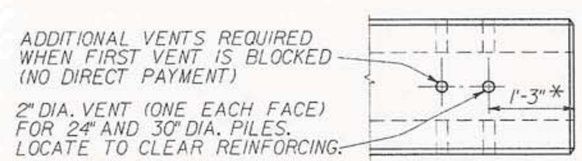
ALLOWABLE STRESSES: THE MAXIMUM LENGTHS FOR PICK-UP HAVE BEEN DETERMINED USING THE FOLLOWING ALLOWABLE STRESS AT BOTH 10-DAYS AND 90-DAYS.

ALLOWABLE TENSILE STRESS: $6\sqrt{f'c}$
ALLOWABLE COMPRESSIVE STRESS: .4f'c



SECTION A-A

NOTE: VOID IS FOR 24" AND 30" PILES ONLY



DETAIL OF PILE HEAD

(SHOWING LOCATION OF VENTS)

* THIS DIMENSION WILL NORMALLY PLACE THE (4) VENT HOLES 6 INCHES BELOW BOTTOM OF CAP FOR PILE BENTS. SEE PLANS WHERE PILE ENCASEMENT IN CAP OR FOOTING IS GREATER THAN 9 INCHES.

PILE PROPERTIES (CIRCULAR SPIRAL LAYOUT)

PILE SIZE	NO. OF STRANDS GRADE 270K (S.R.)	NO. OF STRANDS GRADE 270K (L.R.)	SPIRAL DIAMETER (OUT-TO-OUT)	INITIAL PRE-STRESS (P.S.I.) GRADE 270K (S.R.)	INITIAL PRE-STRESS (P.S.I.) GRADE 270K (L.R.)
12" SOLID	5	4	8"	1003	860
14" SOLID	7	6	10"	1033	948
16" SOLID	8	7	12"	903	847
18" SOLID	11	9	14"	982	861
24" HOLLOW	15	13 △	20"	937	870
30" HOLLOW	20	18	26"	925	892

S.R. DENOTES STRESS RELIEVED.
L.R. DENOTES LOW RELAXATION.
△ FOR PILES TO BE SPLICED WITH CEMENT DOWEL SPLICE, 14 STRANDS WILL BE REQUIRED TO FACILITATE PLACEMENT OF THE 7 BARS/HOLES. SEE SPLICE DETAIL.

PILE PROPERTIES (SQUARE SPIRAL LAYOUT)

PILE SIZE	NO. OF STRANDS		STRAND LAYOUT				INITIAL PRE-STRESS (P.S.I.)	
	GRADE 270K (S.R.)	GRADE 270K (L.R.)	GRADE 270K STRESS REL. "X" SP.	GRADE 270K STRESS REL. "Y" SP.	GRADE 270K LOW RELAX. "X" SP.	GRADE 270K LOW RELAX. "Y" SP.	GRADE 270K (S.R.)	GRADE 270K (L.R.)
12" SOLID	—	4	—	—	1	1	—	860
14" SOLID	—	6	—	—	2	1	—	948
16" SOLID	8	—	2	2	—	—	903	—
18" SOLID	12	10	3	3	3	2	1070	956
24" HOLLOW	16	14	4	4	4	3	999	937
30" HOLLOW	20	18	5	5	5	4	925	892

PILE PROPERTIES (TYPICAL)

PILE SIZE	WEIGHT PER LIN. FT. (LBS.)	SECTION MODULUS OF CROSS SECTION (CU. IN.)	AREA OF NORMAL CROSS SECTION (SQ. IN.)	VOID DIA. "D"	MAXIMUM CASTING LENGTH 1-POINT PICK-UP L_1	MAXIMUM CASTING LENGTH 2-POINT PICK-UP L_2	MAXIMUM CASTING LENGTH 3-POINT PICK-UP L_3
12" SOLID	150	288	144	NONE	52'-0"	74'-0"	96'-0"
14" SOLID	204	457	196	NONE	57'-0"	81'-0"	102'-0"
16" SOLID	267	683	256	NONE	61'-0"	87'-0"	114'-0"
18" SOLID	338	972	324	NONE	64'-0"	90'-0"	115'-0"
24" HOLLOW	482	2219	463	12.00"	83'-0"	117'-0"	149'-0"
30" HOLLOW	651	4100	625	18.70"	97'-0"	137'-0"	178'-0"

GENERAL NOTES

CONSTRUCTION SPECIFICATIONS: LATEST LOUISIANA STANDARD SPECIFICATIONS FOR ROADS AND BRIDGES.

DESIGN SPECIFICATIONS: AASHTO STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES, 1983, AND INTERIM SPECIFICATIONS, 1984-1986.

CONCRETE: CONCRETE IN PRECAST-PRESTRESSED PILES SHALL BE CLASS "P". CONCRETE IN BUILD-UPS WITHOUT DRIVING SHALL BE CLASS "A" CONC.

PRESTRESSING REINFORCMENT: PRESTRESSING REINFORCEMENT SHALL BE SEVEN-WIRE STRAND, ½" DIAMETER, GRADE 270, STRESS-RELIEVED (S.R.) OR GRADE 270, LOW-RELAXATION (L.R.). AN INITIAL FORCE OF 28,910 LBS. SHALL BE APPLIED TO THE STRESS-RELIEVED STRANDS AND A INITIAL FORCE OF 30,980 LBS. SHALL BE APPLIED TO THE LOW-RELAXATION STRANDS.

DEFORMED REINFORCING STEEL: REINFORCEMENT SHALL BE IN ACCORDANCE WITH SECTION 806 OF THE STANDARD SPECIFICATIONS. ALL DIMENSIONS ARE TO BAR CENTERS EXCEPT AS NOTED.

SPIRAL REINFORCING STEEL: SPIRAL REINFORCEMENT TO BE COLD-DRAWN STEEL WIRE AS SPECIFIED IN SUBSECTION 1009.01 OF THE STANDARD SPECIFICATIONS.

DRIVING TOLERANCES: PILES SHALL BE DRIVEN TO TOLERANCES SPECIFIED IN THE STANDARD SPECIFICATIONS. FINAL PILE CUT-OFF ELEVATION SHALL BE PLUS OR MINUS 2" FROM PLAN ELEVATION.

FABRICATION TOLERANCES: FABRICATION TOLERANCES AND DETENSIONING PROCEDURES OF THE PRESTRESSED CONCRETE PILE SHALL BE AS REQUIRED BY AASHTO "TENTATIVE STANDARDS FOR PRESTRESSED CONCRETE PILES, I-BEAMS AND BOX BEAMS FOR BRIDGES."

CHAMFERS AND CORNERS: FOR PILES 18" OR SMALLER, ALL EXPOSED CONCRETE CORNERS ARE TO HAVE ¾" CHAMFERS. FOR PILES 24" OR LARGER, ALL EXPOSED CONCRETE CORNERS ARE TO HAVE 1½" CHAMFER. A 1" RADIUS CURVE WILL BE PERMITTED IN LIEU OF CHAMFERS SHOWN ABOVE; HOWEVER, ALL PILES FURNISHED FOR ANY PROJECT SHALL BE OF SAME CONFIGURATION.

PICK-UP AND HANDLING: LOADING CRITERIA ARE BASED ON CAREFUL HANDLING OF THE PILE. ROTATION OF PILE IN THE SLING IS TO BE PREVENTED UNTIL PILE IS IN VERTICAL POSITION. PICK-UP POINTS FOR ALL PILES ARE TO BE CLEARLY MARKED ON PILE. PILES MAY BE MADE AT A CENTRAL PLANT AND TRANSPORTED TO THE BRIDGE SITE IN TRUCKS. ALL PRESTRESSED PILING SHALL BE HELD AT THE PLANT A MINIMUM OF 10 DAYS AFTER THE CONCRETE HAS ATTAINED A COMPRESSIVE STRENGTH OF 5,000 P.S.I. OR 14 DAYS AFTER CASTING, PROVIDING THE COMPRESSIVE STRENGTH OF 5,000 P.S.I. HAS BEEN ATTAINED. PICK-UP POINTS SHOWN MAY BE MODIFIED FOR TRANSPORTATION PURPOSES, PROVIDED THE PILE STRESSES ARE IN ACCORDANCE WITH DESIGN CRITERIA. THE MODIFIED PICK-UP POINTS SHALL BE SENT TO THE BRIDGE DESIGN ENGINEER FOR REVIEW.

NOTE: ALL PRESTRESSED PILING SHALL BE HELD AT THE PLANT A MINIMUM 10 DAYS AFTER THE CONCRETE HAS ATTAINED A COMPRESSIVE STRENGTH OF 5000 P.S.I. OR 14 DAYS AFTER CASTING, PROVIDING THE COMPRESSIVE STRENGTH OF 5000 P.S.I. HAS BEEN ATTAINED.

T.W. Aymond

JOEL G. McWILLIAMS
CERTIFIED CORRECT

DATE	DESCRIPTION	BY
2-1-92	ADD 3-POINT PICKUP INFORMATION	N.P.K.

REVISIONS

12, 14, 16, 18, 24 AND 30 INCH PRECAST-PRESTRESSED CONCRETE PILES

DATED JUNE 20, 1984

STATE OF LOUISIANA
DEPARTMENT OF TRANSPORTATION AND DEVELOPMENT

DESIGNED T.W. AYMOND	DETAILED HOLLIS WARD	DR. EDD STD
CHECKED RUSSO JR.	CHECKED T.W. AYMOND	FILE CS216.BD

BRIDGE AND STRUCTURAL DESIGN SECTION

STAGE 0 FEASIBILITY STUDY AND ENVIRONMENTAL INVENTORY

STAGE 0 STUDY FOR LA 3234 EXTENSION
STATE PROJECT NO. H.008915.1
LEGACY STATE PROJECT NO. 700-53-0135
F.A.P. NO. STP-5310 (505)

CHAPTER 2
STAGE 0 ENVIRONMENTAL CHECKLIST

Prepared for:

Prepared by:

STAGE 0 ENVIRONMENTAL CHECKLIST

LOCAL STREET NAME East University Avenue PARISH Tangipahoa

ROUTE LA 3234

CONTROL SECTION 853-40 (Existing No.)

TOTAL PROJECT LENGTH (MILES) Alternate A - 4.4 miles;
Alternate B - 4.1 miles
Alternate C - 4.0 miles

BEGIN PROJECT (CS LOG MILE) _Approximately 115 feet east of the CN Railroad crossing of LA 3234 at Station 140+18.96 as shown on the Plan View Drawings.

END PROJECT (CS LOG MILE)

Alternate A - Intersection with Pride Drive as shown on the Plan View Drawings

Alternate B - Intersection with Pride Drive as shown on the Plan View Drawings

Alternate C - US 190 Intersection with Airport Road (LA3158) as shown on the Plan View Drawings

ADJACENT LAND USE:

Any property owned by a Native American Tribe? (Y or N or Unknown) If so, which Tribe?
There are no Native American Tribal properties affected by or adjacent to the project corridor.

Any property enrolled into the Wetland Reserve Program? (Y or N or Unknown) If so, give location.

There are no Wetland Reserve properties affected by or located adjacent to the project corridor.

Community Elements: Is the project impacting or adjacent to any:

1. **(Y or N) Cemeteries** – *None within Study Area.*

2. **(Y or N) Churches**

   Unity Christian Fellowship is located at 17490 Highway 190 E Hammond, LA 70401, Phone (985) 902-9345. The church is situated at the Alternate C intersection of LA 3234 with US 190. A roundabout is proposed at the intersection and the church, which operates from a small frame structure, will have to be relocated.

3. **(Y or N) Schools** –

   St. Tangipahoa Parish Magnet School is located at 401 East Crystal Street, Hammond, LA 70401-1821, Phone (985) 542-9987. The school will be situated immediately south of the proposed LA 3234 right-of-way.

Louisiana Technical College is located at 111 Pride Dr, Hammond, LA 70401. Phone: (985) 543-4120. The intersection of Pride Drive and US 190 will be converted from a signalized intersection to roundabout geometry. College property will be required for right-of-way, but no College facilities will be affected by the taking.

4. **(Y or N) Public Facilities** (i.e., fire station, library, etc.)

   LA 3234 extension is specifically intended to serve Hammond Northshore Regional Airport. The City of Hammond Public Works complex is located at 18104 US 190 east. The complex accommodates streets, drainage, grounds maintenance and vehicle maintenance activities. Also City of Hammond Fire Station No. 3 is located just east of the Project Area at the southeast corner of East University Avenue (LA 3234) and North Oak Street (street address 1610 North Oak Street).

5. **(Y or N) Community Water Well/Supply** – *The archive for water wells was recently relocated from LADOTD to LADNR. Source was checked February 7, 2011 for well sites located within 250' of the LA 3234 corridor. None of the wells serve as community well/supply. The well sites have been incorporated into the project GIS data base*.

   http://sonris-www.dnr.state.la.us/www_root/sonris_portal_1.htm

Section 4(f) issue: Is the project impacting or adjacent to any:

1. **(Y or N) Public Recreation Areas -** *There are no public recreation areas affected by or located in proximity to any project alternates.*

2. **(Y or N) Public Parks -** *There are no public parks affected by or* located in proximity to any project alternates.

3. **(Y or N) Wildlife Refuges -** *There are no wildlife refuges affected by or located in proximity to the project alternates.*

   Sources Checked: August 9, 2011
   http://media.wlf.state.la.us/experience/wmas/refuges/
   http://media.wlf.state.la.us/pdfs/wmas/Map_of_LA_WMA's_and_Refuges.pdf
   http://www.fws.gov/refuges/profiles/ByState.cfm?state=LA
   http://www.fws.gov/refuges/refugelocatormaps/Louisiana.html

(Y or N) Historic Sites Is the project impacting, or adjacent to, a property listed on the National Register of Historic Places? (Y or N)

Earth Search, Inc. (ESI) performed a Cultural Resources Screening associated with the project. Background research conducted as part of the Cultural Resources screening did not locate archeological sites within the one (1) of mile project buffer.

ESI Architectural historians undertook a windshield reconnaissance survey of the proposed LA 3234 corridor in July 2011. For the purposes of the architectural survey the Area of Potential Effect (APE) was set as a quarter mile (mi) (400 meter [m]) diameter buffer of the roadway.

Thus, the APE extends one-eighth of a mile (200 m) on either side of the each alternate corridor. The entire length of the project corridor was driven. Structures located within the APE on either side of LA 3234 alternate corridors were examined as were structures on intersecting roads.

There were 107 buildings and structures over 50 years old in the APE. Two structures and a small dependency are grouped together on one compact site in the Alternate A / B area and may be eligible for the NRHP under Criterion C). These two structures and dependency contain a level of craft mastery, artistic interpretation, and historic significance that would make them eligible for the NRHP and possibly with national significance. Photographs were taken and GPS points were recorded. The structures are situated outside of proposed right-of-way. The two structures and dependency, included in the total of 107 structures, are discussed in detail in Appendix 1 Chapter 2.

Source checked: April, 2011
http://www.nationalregisterofhistoricplaces.com/la/Tangipahoa/state.html

Is the project within a historic district or a national landmark district? (**Y or N) -** *The project is not located in a historic district or a national landmark district. However, there is one NRHP listed historic district within a mile of the project. The Hammond Historic District encompasses fifteen square blocks and is located in the center of modern Hammond. Structures in the district date from approximately 1880-1930 and are visually distinct from the modern commercial structures. The majority of the structures (82 percent) are two-storied, brick structures that are richly ornamented. The architectural significance lies in the districts cohesiveness and in the character of the buildings. The Hammond Historic District "constitutes one of the most complete and visually evocative groupings of early twentieth century brick commercial vernacular structures in south eastern Louisiana" (Louisiana National Register of Historic Places).*

Sources checked: April, 2011
http://www.nationalregisterofhistoricplaces.com/la/Tangipahoa/state.html

Do you know of any threatened or endangered species in the area? (Y or N) If so, which species? -

Environmental Research Group, LLC (ERG) conducted an evaluation of natural environment features associated with the project. Their findings are presented in Appendix 2 to Chapter 1.

The USFWS lists 5 species that are either federally threatened or endangered that could possibly occur in Tangipahoa Parish (USFWS 2011). The 5 species are the red-cockaded woodpecker, gulf sturgeon, West Indian manatee, Louisiana black bear, and the gopher tortoise. The Louisiana Natural Heritage Program additionally lists the bald eagle as a delisted species (but still afforded protection under existing laws) and the Alabama Shad as a candidate species (Louisiana Natural Heritage Program 2011).

Table 2-1. Federally Listed Species of Tangipahoa Parish

Common Name	Scientific Name	Status
Red-cockaded Woodpecker	*Picoides borealis*	Endangered
Gulf Sturgeon	*Acipenser oxyrinchus desotoi*	Threatened
West Indian Manatee	*Trichechus manatus*	Endangered
Louisiana Black Bear	*Ursus americanus luteolus*	Threatened
Gopher Tortoise	*Gopherus polyphemus*	Threatened

Source: USFWS 2011, LNHP 2011

Manatees are generally found in rivers and estuaries; however, they may be found in open salt water habitat as they travel from site to site. The Gulf sturgeon inhabits coastal rivers, estuaries and bays. The Alabama shad is found along sand and gravel bars in medium to large freshwater rivers. The bald eagle nests and feeds primarily near open bodies of water. No rivers suitable for the manatees, Gulf sturgeon, Alabama shad, or bald eagle are present in the proposed project corridor. The only waterbodies in the proposed project corridors are small ponds and small streams not suitable for these species.

The Louisiana black bear inhabits bottomland hardwood areas on large, relatively remote blocks of land which is not present in the proposed project corridors.

Red-cockaded woodpeckers excavate their own cavities in pine trees that are over 60 years old that occur in open stands. Forest stands where 50% or more of the dominant trees are pines 30 years of age or older are considered red-cockaded woodpecker foraging habitat. No mature pine stands suitable for red-cockaded woodpecker nesting or foraging habitat were observed.

Gopher tortoises inhabit upland longleaf pine forests as well as mixed pine/hardwood forests in sandy, well drained soils which are not present in the proposed project corridors.

No suitable habitat for any threatened or endangered species exists within the proposed project corridors because the area is predominantly urban in nature with typically small sections of forested area and small streams and ponds are the only permanent waterbodies. Consultation with the U.S. Fish and Wildlife Service should be conducted as a preferred alignment is chosen and species specific surveys conducted on the chosen alignment as necessary.

Sources checked: August 9, 2011
http://ecos.fws.gov/tess_public/countySearch!speciesByCountyReport.action;jsessionid=2D585A3920665DB75F6D725304309DF4?d-16544-s=3&d-16544-o=2&d-16544-p=1&fips=22105

In addition to the federal species discussed in the proceeding paragraphs, the Louisiana Natural Heritage Program (LNHP) lists 33 rare plant species, 21 rare animal species and 11 natural communities for Tangipahoa Parish (LNHP 2011). A complete list of the natural communities and state listed rare species and their status can be found in Appendix 2 to Chapter 2, which provides an overview of natural environment features.

No suitable habitat for any state listed species or natural communities appear to exist within the proposed project corridors because the area is predominantly urban in nature with typically small sections of forested area and small streams and ponds are the only permanent waterbodies. Consultation with the Louisiana Department of Wildlife and Fisheries should be conducted as a preferred alignment is chosen and species specific surveys conducted on the chosen alignment as necessary.

Sources checked: August 9, 2011
http://www.wlf.louisiana.gov/wildlife/species-parish-list?tid=264&type_1=All

Does the project impact a stream protected by the Louisiana Scenic Rivers Act? (Y or N) If yes, name the stream. -

There are two Louisiana Scenic Rivers found within Tangipahoa Parish: the Tchefuncte River and the Tangipahoa River (Louisiana Department of Wildlife and Fisheries 2011). These rivers do not occur in or near the proposed project corridors.

Sources checked: August 9, 2011
http://www.legis.state.la.us/lss/lss.asp?doc=104995

Are there any Significant Trees as defined by EDSM I.1.1.21 within proposed ROW? (Y or N)

According to the Louisiana Department of Transportation and Development (2004) defines significant trees as:

> *"a Live Oak, Red Oak, White Oak, Magnolia, or Cypress that is considered aesthetically important, 18" or greater in diameter at breast height (4' to 6') above the ground), and having a form that separates it from the surrounding vegetation or is considered historic. A historic tree is a tree that stands at a place where an event of historic significance occurred that had local, regional, or national importance. A tree may also be considered historic if it has taken on a legendary stature to the community; mentioned in literature or documents of historic value; considered unusual due to size, age; or has landmark status. Significant trees must be in good health and not in a declining condition."*

No significant trees were observed within the proposed right-of-way accessible during the field surveys conducted by ERG on August 10, 2011.

Sources checked: August 9, 2011
http://webmail.dotd.louisiana.gov/ppmemos.nsf/0/152FAD712D9C560D86256F1D004EF436/$file/EDSM.htm
http://www.laforestry.com/site/Portals/0/documents/La.%20Champions.pdf
http://www.lapurchasecypresslegacy.net/pdf/inventory_lpcl.pdf
http://www.louisianagardenclubs.org/los.html

What year was the existing bridge built? *The project starts immediately to the east of the LA 3234 crossing of Ponchatoula Creek. The as-built documents (Appendix 4 to Chapter 1) suggest that the current structure was constructed after 1991. This is the only existing bridge crossing.*

Are any waterways impacted by the project considered navigable? (Y or N) - *The subject project does not involve bridges over navigable waters of the United States. Therefore, a Coast Guard bridge permit is not required for this project.*

POTENTIAL ENVIRONMENTAL HAZARDS

In accordance with the ASTM Practice E 1527-05, representatives of the project team performed a site reconnaissance of the Project Area, noting use of adjacent properties and conditions that might represent environmental concerns. The field review was conducted August 22, 2011. Additionally, a review of federal and state databases available via the internet was undertaken to identify contaminated sites and environmental compliance with respect to use, generation, storage, treatment, or disposal of hazardous materials, or releases of such materials that may impact the Project Area. Photo documentation of the Hazards Screening is presented in Appendix 3 to Chapter 2.

<u>Hazardous Material:</u>

Have you checked DEQ and EPA databases for potential problems?

Sources checked: February 2011:
List of UST facilities that have tanks that are prohibited from receiving deliveries of regulated substances Date Updated: 9/7/2010
http://www.deq.louisiana.gov/portal/LinkClick.aspx?fileticket=6oQT5eaI25A%3d&tabid=2674
No sites identified in proximity to study corridor.

Superfund Sites in Louisiana
http://www.deq.louisiana.gov/portal/LinkClick.aspx?fileticket=j0EjWp9b0hU%3d&tabid=71
No sites identified in proximity to study corridor.

Sources checked: February 8, 2011
Leaking Underground Storage Tanks
http://www.deq.louisiana.gov/portal/LinkClick.aspx?fileticket=HPyjcZ6I0Zw%3d&tabid=2674

Sources checked: February 7, 2011
Enforcement and Compliance History Online (ECHO) query results for Sites adjacent to Project Corridor: See Appendix 3 Hazards Screening for ECHO query results.
http://www.epa.gov/myenv/myenview2.html?minx=-90.65506&miny=30.46051&maxx=-90.27397&maxy=30.61132&ve=11,30.52263,-90.46082&pSearch=70401, LA

Current National Priorities List (NPL) Sites in Louisiana - No sites identified in proximity to study corridor.
http://www.deq.louisiana.gov/portal/tabid/2904/Default.aspx

Are there any Gasoline Stations or other facilities that may have UST on or adjacent to the project?

There were no UST's located along proposed routes as indicated by LDEQ data. However, the NSI *field screening noted two locations containing USTs not identified within the LDEQ data base.*

- *Popingo's #14, 17702 Hwy 190 E., Hammond, LA 70401, Ph: (985) 542-0196*
- *Hungry Jax Grill, located at existing termini of LA 3234 at North Cherry Street (LA 1065),1500 North Cherry Street*

Sources checked: February 8, 2011
http://www.deq.louisiana.gov/portal/LinkClick.aspx?fileticket=eQ550e2O9FI%3d&tabid=2674
http://www.deq.louisiana.gov/portal/tabid/2604/Default.aspx

Are there any chemical plants, refineries or landfills adjacent to the project? *There are no chemical plants, refineries or landfills in proximity to the project.*
Source: Field Screening and Review of Aerial Photography.

Are there any large manufacturing facilities adjacent to the project? *There are no large manufacturing facilities in proximity to the project.*
Source: Field Screening and Review of Aerial Photography,

Are there any dry cleaners adjacent to the project? *There are no dry cleaners in proximity to the project area.*

Sources checked for above noted concerns:
http://www.epa.gov/enviro/
http://www.deq.louisiana.gov/portal/tabid/2604/Default.aspx

Oil/Gas wells: Have you checked DNR database for registered oil and gas wells? (Y or N) List the type and location of wells being impacted by the project. *The LADNR SONRIS database was reviewed.*

Based on the review of the SONRIS Lite Conservation database, it is not anticipated that active oil and gas wells will be impacted by the project.

Sources checked:
http://sonris-www.dnr.state.la.us/www_root/sonris_portal_1.htm

RELOCATIONS

Are there any possible residential or commercial relocations/displacements? (Y or N) How many?

There are residential and commercial relocations anticipated along each of the three alternates studied. Table 2-2 summarizes the potential relocation impacts.

TABLE 2-2
POTENTIAL RELOCATIONS OR PROPERTY IMPACTS

	Residential	Church	Commercial
Alternate A	5		3
Alternate B	11		2
Alternate C	13	1	10

Source: Neel-Schaffer, Inc.

Photo documentation of potential relocations is presented in Appendix 3 to Chapter 2.

OTHER ISSUES

Do you know of any sensitive community issues related to the project? (Y or N) If so, explain. *It is expected that the required taking of residential and commercial properties will be of concern to impacted residences and businesses.*

Is the project area population minority or low income? (Y or N) *The projection of East University Avenue (LA 3234) across north Cherry Street (LA 1065) was aligned to the northeast, so that the alternate routes would avoid (to the extent practicable) direct impacts to a low income minority neighborhood. For Alternates, B and C, impacts to a residence at the East University Avenue (LA 3234) crossing of McMoore Road could not be avoided.*

What type of detour/closures could be used on the job? *At this time it is not anticipated that the extension of East University Avenue (LA 3234) to North Airport Road (LA 3158) will result in roadway detours or closures.*

Did you notice anything of concern during your site/windshield survey of the area? If so, explain below.

Four Chapter 2 appendices documenting windshield surveys are enclosed:

- ***Appendix 1*** *was prepared by Environmental Research Group, LLC. It provides the Natural Environment Screening, including an assessment of potential wetlands and photo documentation of natural environment features. Potential Impacts to wetlands are shown in Table 2-3.*

TABLE 2-3
POTENTIAL WETLANDS

	Alternate A	Alternate B	Alternate C
Streams (linear feet)	711	1,022	945
POW -Ponds (in acres)*	0	0	0.21
Potential Wetlands Impacts (in acres)	12.9	14.3	15.9

*Assumes only impacts ponds within proposed ROW. Approximately 1.13 acres if ponds are completely filled.

Source: Environmental Research Group, Inc.

- ***Appendix 2*** *was prepared by Earth Search, Inc. It presents the Cultural Resources Screening, including photo documentation of findings.*

- ***Appendix 3*** *provides photo documentation of potential takings as well as photos of sites documented in the screening of Potential Environmental Hazards.*

GEOGRAPHIC INFORMATION SYSTEM (GIS):

A GIS database has been developed to support the project. Project GIS developed to data in support of the project include:

- *Source, NRCS Custom Soil Resource Report for Tangipahoa Parish, LA*
- *Wetlands Reserve Program Sites sourced from NRCS*
- *National Wetlands Inventory (NWI) sourced from USF&WS*
- *Water wells sourced from LADNR Sonris*
- *Oil and Gas wells sourced LADNR Sonris*
- *Underground Storage Tanks (USTs) sourced from LDEQ*
- *EPA Enforcement and Compliance History Online (ECHO)*
- *100-year floodplains sourced from FEMA*
- *Year 2010 Census sourced from U.S. Census Bureau*
- *Topography sourced from Atlas at http://atlas.lsu.edu*
- *Existing utilities from field screening*

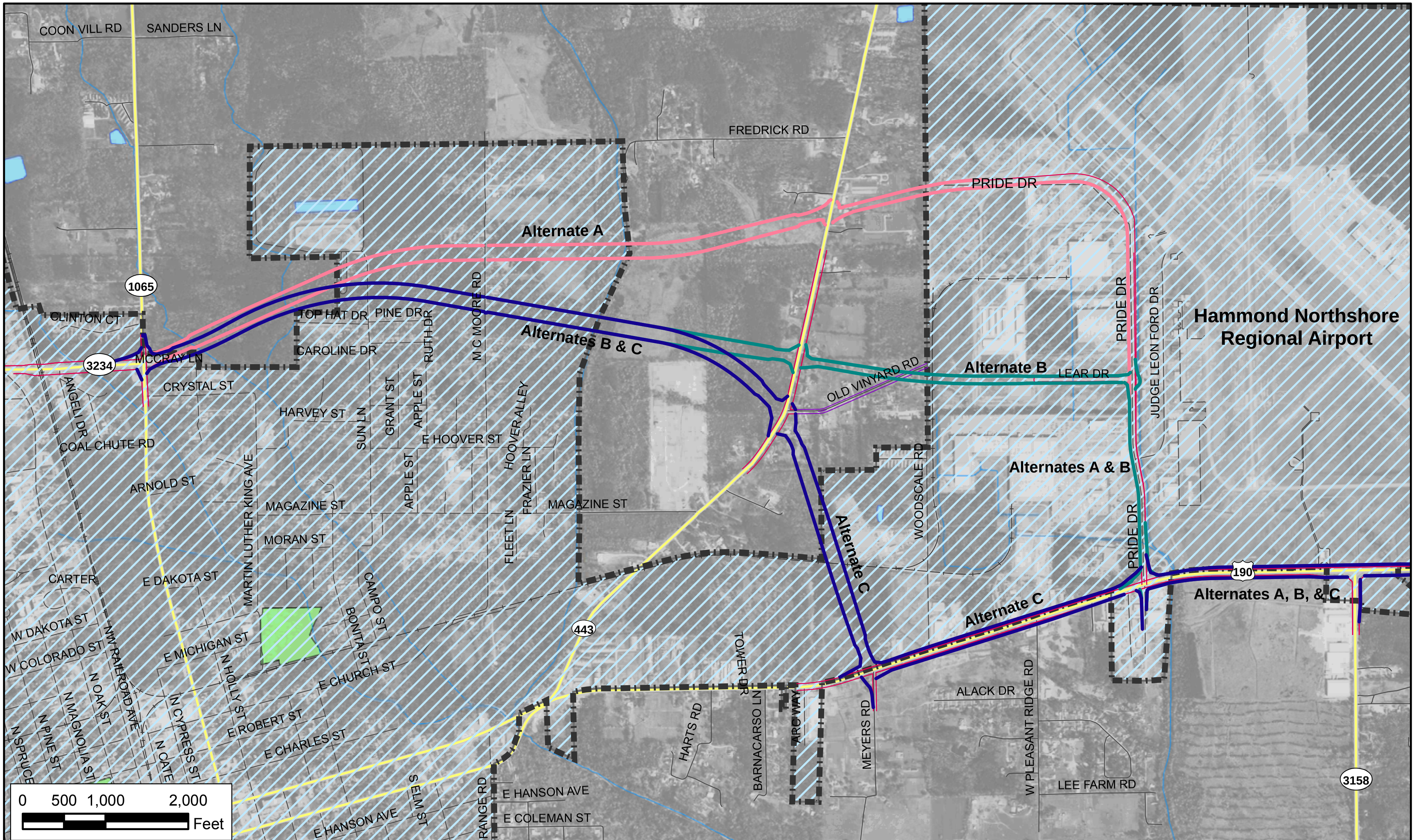
Aerial Base Imagery Source Citation

Source (Citation)
This imagery was provided by the Regional Planning Commission for Jefferson, Orleans, Plaquemines, St. Bernard and St. Tammany Parishes (RPC), the United States Geological Survey (USGS), the New Orleans Region Urban Area Security Initiative (UASI) and the United States Corps of Engineers (USACOE) New Orleans Branch.
Reproduction and distribution of the data is prohibited without consent of the Executive Director of the RPC.
The RPC, USGS, USACOE and New Orleans Region UASI are not responsible for any errors arising from any use of alterations made to the data.
Under no circumstances is resale or distribution of the data permitted.

Imagery Information:
The true color aerial imagery and infrared band were captured between February 6 and March 3 of 2009 by Pixxures, Inc., and data was acquired by DigitalGlobe. Data was purchased under a DigitalGlobe license for civil government.
The imagery is projected to UTM 15 NAD 83, unit of measure is meters.
The spatial resolution is approximately a one foot pixel.
Any use of the data must be accompanied with this citation and accompanying seals and logos.

GIS based maps showing project constraints are presented as follows

- *Exhibit 2-1 shows the Project Area within the City of Hammond.*
- *Exhibit 2-2 presents 100-year floodplains.*
- *Exhibit 2-3 presents environmental constraints, including potential wetlands and potential national register properties.*
- *Exhibit 2-4 shows public facility locations.*



Legend

- City Limits
- Drainage Ways
- Waterbodies
- Parks

Stage 0 Study for LA 3234 Extension
State Project No. H.008915.1
Legacy State Project No. 700-53-0135
F.A.P. No. STP-5310 (505)

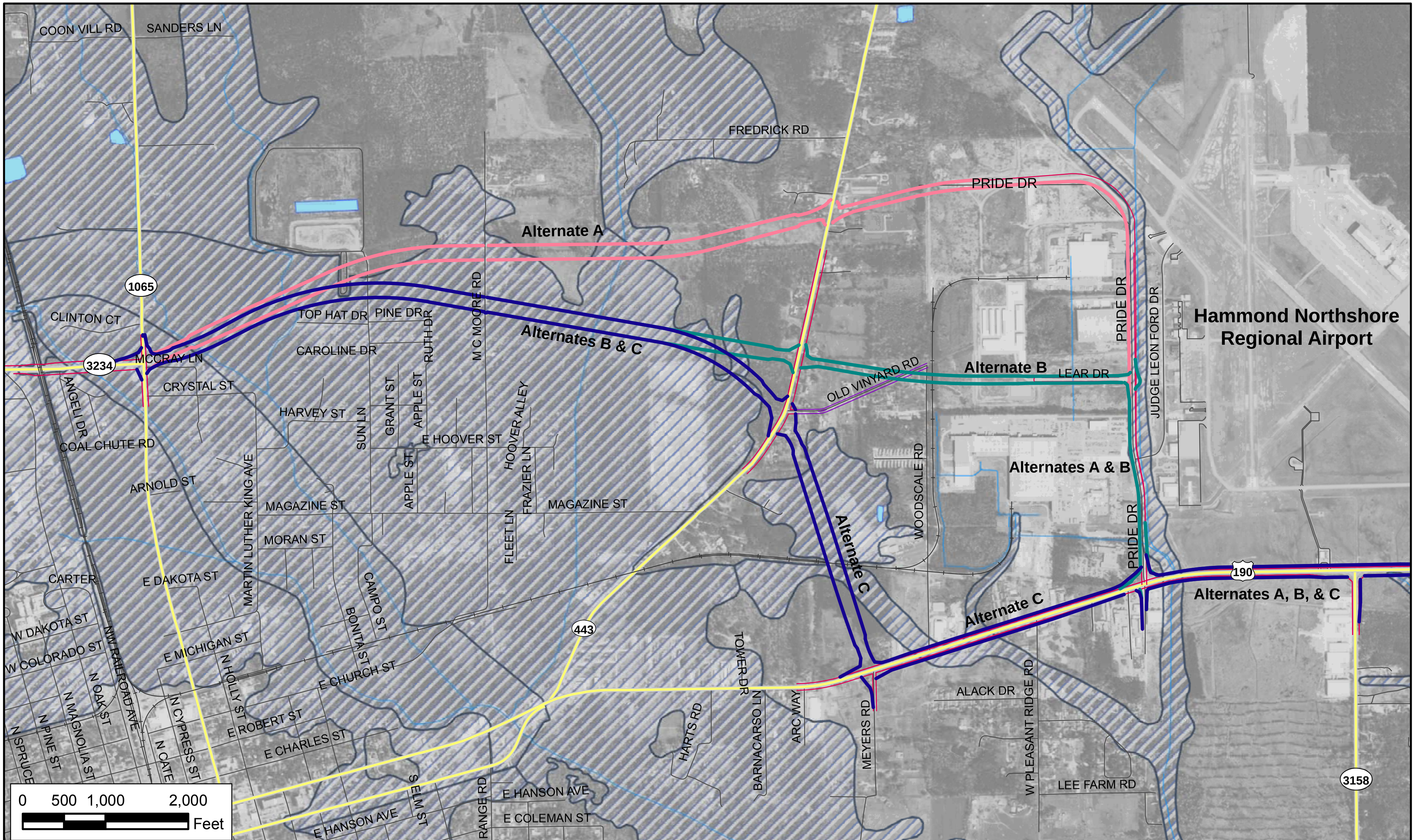
Prepared By:
NEEL-SCHAFFER
Solutions you can build upon

City Limits

1 Inch = 1,700 Feet

N W E S

Exhibit 2-1



Legend

- Area within 100-Year Floodplain
- Drainage Ways
- Waterbodies

Source: FEMA

Stage 0 Study for LA 3234 Extension
State Project No. H.008915.1
Legacy State Project No. 700-53-0135
F.A.P. No. STP-5310 (505)

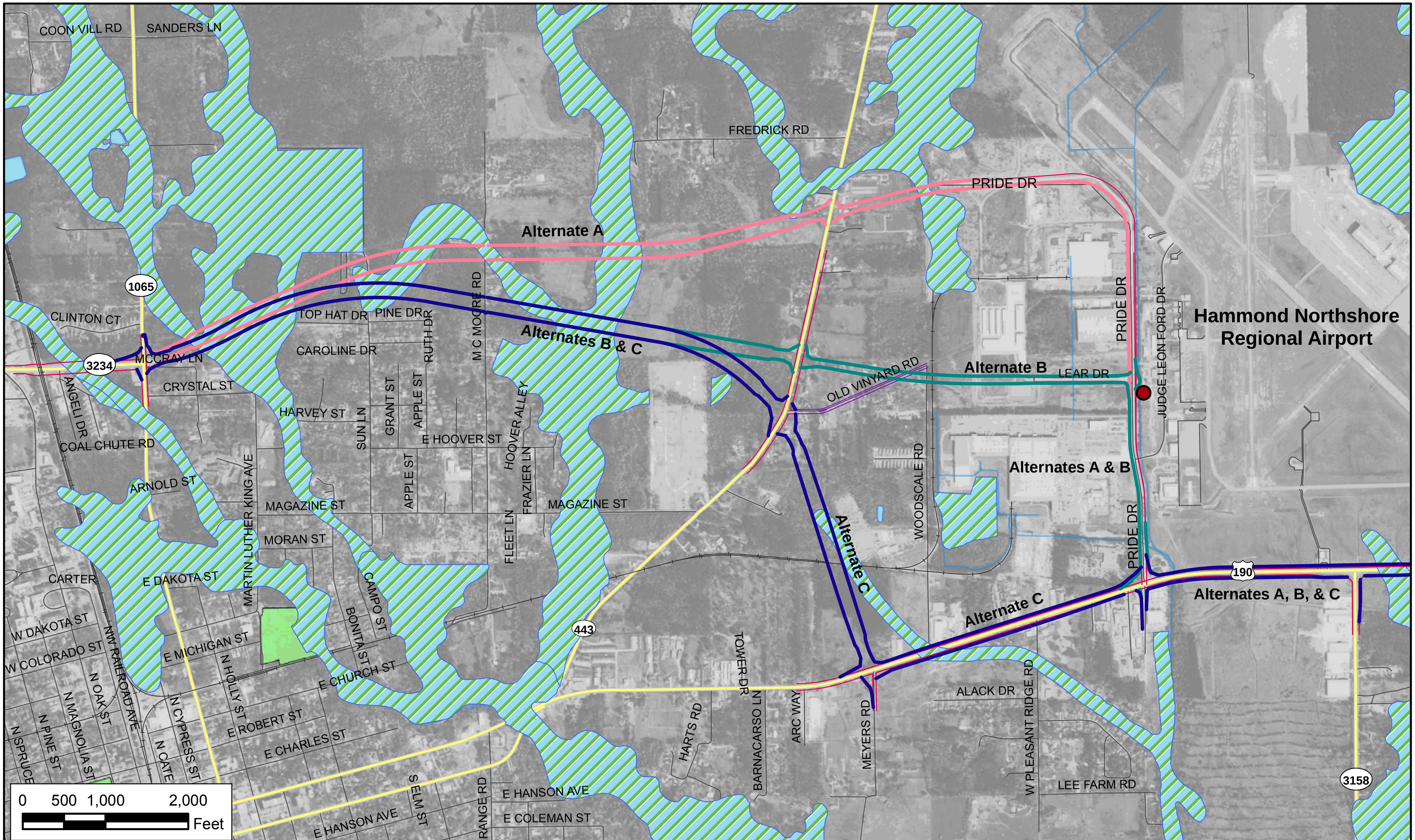
Prepared By:
NEEL-SCHAFFER
Solutions you can build upon

100-Year Floodplain

1 Inch = 1,700 Feet

N W E S

Exhibit 2-2



Legend

Potential Wetlands

Drainage Ways

Waterbodies

Parks

Site potentially eligible for NRHP nomination. See Appendix 2

Stage 0 Study for LA 3234 Extension
State Project No. H.008915.1
Legacy State Project No. 700-53-0135
F.A.P. No. STP-5310 (505)

Prepared By:

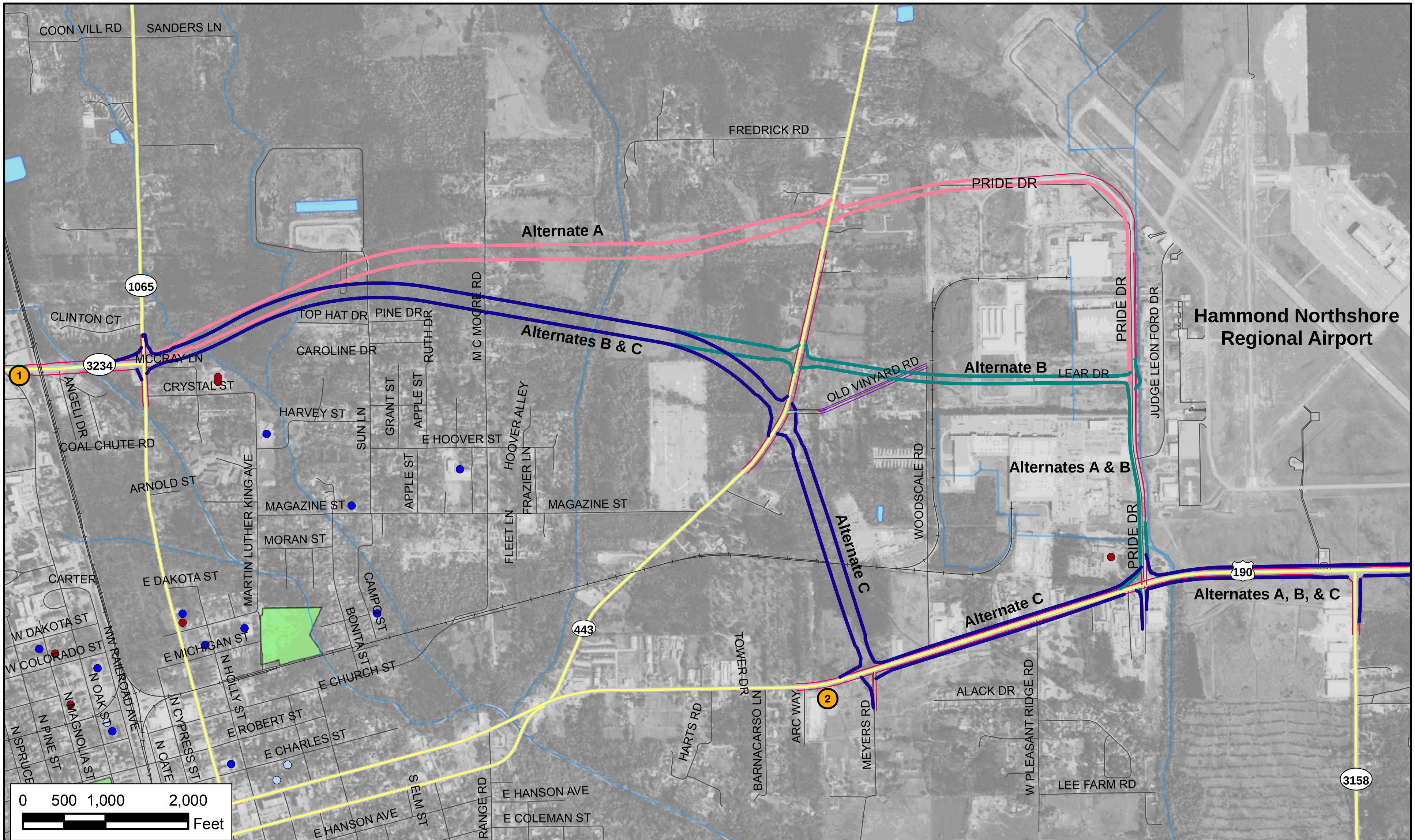
NEEL-SCHAFFER
Solutions you can build upon

Environmental Constraints

1 Inch = 1,700 Feet

N E S W

Exhibit 2-3



Legend

- Churches
- Cemeteries
- Schools
- Drainage Ways
- Waterbodies
- Parks

1 Hammond Fire Station

2 Hammond Public Works Complex

Stage 0 Study for LA 3234 Extension
State Project No. H.008915.1
Legacy State Project No. 700-53-0135
F.A.P. No. STP-5310 (505)

Prepared By:
NEEL-SCHAFFER
Solutions you can build upon

Community Facilities

1 Inch = 1,700 Feet

N S E W

Exhibit 2-4

ENVIRONMENTAL CLEARANCE:

At minimum, an Environmental Assessment Class of Action is required to carry this portion of the project forward through NEPA.

Permits may include:

- *DEQ Water Quality Certifications*
- *Utility Easement Crossing*
- *Tangipahoa Parish and City of Hammond Permits*
- *COE Section 404 Permits*

POINTS OF CONTACT:

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Environmental Research Group, LLC
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Appendix 1 to Chapter 2

Natural Environment Screening
Environmental Research Group, LLC

Appendix 1 to Chapter 2

Natural Environment Screening
Environmental Research Group, LLC

DRAFT

LA 3234 Stage 0

August 2011

Prepared by:

Natural Environments

Prepared by:

ERG

Environmental Research Group, LLC

Table of Contents

List of Tables

Appendices

1.0 Introduction

This technical memorandum provides background information and methodology used to identify natural environment features in support of the Stage 0 Checklist for alternatives to extend LA 3234 from its existing terminus at LA 3234 to the Hammond Airport (Appendix A, Figure 1 and Figure 2). This report examines three alternatives which represent the latest project corridor alignments. This report provides an overview of Waters of the U.S. and Wetlands, Protected Species and Habitats, Louisiana Scenic Rivers, 4(f) Properties, Significant Trees, and a Photo Log of the project corridor (Appendix B). Information for the natural environment was gathered from available sources and a limited windshield survey was conducted where the proposed project corridors were accessible. All environmental resources field investigations were accomplished by conducting a "windshield" survey with limited ground survey and did not include wetland delineation or protected species surveys. The following sections provide a discussion of potential natural environment features located in the project corridors.

2.0 Waters of the U.S. and Wetlands

Recognizing the potential for continued or accelerated degradation of the Nation's waters, the U.S. Congress enacted the Clean Water Act (CWA) of 1977 (P.L. 95-217). The objective of the CWA is to maintain and restore the chemical, physical and biological integrity of the waters of the United States. Section 404 of the CWA authorizes the Secretary of the Army, acting through the Chief of Engineers, to issue permits for the discharge of dredged or fill material into waters of the United States, including wetlands. The Secretary operates this program through the U.S. Army Corps of Engineers (U.S. Army Corps of Engineers 1987).

<u>Waters of the United States</u> are those waters used in interstate or foreign commerce, subject to the ebb and flow of the tide, and all interstate waters including interstate wetlands. Waters of the United States are further defined as all other waters such as intrastate lakes, rivers, streams, mudflats, sandflats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, natural ponds, or impoundments of waters, tributaries of waters, and territorial seas.

<u>Wetlands</u> are those areas inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions (U.S. Army Corps of Engineers 1987). All wetlands share some common hydrologic, soil, and vegetative characteristics. In order for an area to be considered a jurisdictional wetland by the U.S. Army Corps of Engineers, it must have evidence of hydrophytic vegetation, hydric soils, and wetland hydrology. Under normal circumstances, the absence of any one of these three parameters results in a non-wetland determination. Beyond these general similarities, however, wetlands exhibit wide variation in terms of their size, complexity, and physical, chemical and biological characteristics and processes (Cowardin *et al.* 1979).

2.1 Functions and Values

Wetlands can provide any or all of the following benefits: (1) conveyance and storage of floodwaters; (2) abatement of water pollution; (3) augmentation of surface water flow during drought; (4) groundwater recharge; (5) shoreline stabilization; (6) commercial fishing and trapping revenues; (7) timber production; and (8) habitat for fish, wildlife and plants including rare, threatened and endangered species. About 35% of all rare and endangered animals depend upon wetland habitat (Kusler 1983).

2.2 Types of Wetlands within the Project Alignments

The following paragraphs describe wetland systems within the study alignments based on the Cowardin *et al.* (1979) classification system. All wetland communities within the study alignments are classified as either lacustrine or palustrine. The lacustrine system includes permanently flooded lakes and reservoirs, intermittent lakes, and tidal lakes with ocean-derived salinities below 0.5%. Typically, there are extensive areas of deep water and there is considerable wave action. Lacustrine systems have all of the following characteristics: (1) situated in a topographic depression or dammed river channel; (2) lacking trees, shrubs, persistent emergents, emergent mosses or lichens with > 30 percent coverage; and (3) total area exceeds 20 acres.

The Palustrine system groups the vegetated wetlands traditionally called by such names as marsh, swamp, bog, fen, and prairie, which are found throughout the United States. It also includes small shallow, permanent or intermittent water bodies often called ponds. Palustrine wetlands may be situated shoreward of lakes, river channels, or estuaries; on river floodplains; in isolated catchments; or on slopes. They may also occur as islands in lakes or rivers. Palustrine systems include all non-tidal wetlands dominated by trees, shrubs, or persistent emergents (>30 percent aerial coverage), and all such wetlands that occur in tidal areas where salinity due to ocean-derived salts is below 0.5 parts per thousand (ppt). For our purposes, vegetated palustrine wetlands are defined by the following criteria: (1) vegetation characterized by a predominance of species tolerant of soils saturated for at least short periods during the growing season; and (2) presence of hydric soils; and surface flooded or saturated at least for short periods during the growing season. The palustrine system also includes wetlands lacking vegetation such as above, but with all of the following characteristics: (1) area less than 20 acres; (2) water depth in the deepest part of the basin less than 6.5 feet at low water; and (3) salinity due to ocean-derived salts less than 0.5 ppt.

2.3 Methods

Classifications of wetlands within the study corridor were based on “Classification of Wetlands and Deepwater Habitats of the United States” (Cowardin *et al.*, 1979). This system was developed as a basis for identifying, classifying, and mapping wetlands, other special aquatic sites, and deepwater aquatic habitats. The National Wetland Inventory (NWI) used this classification system to map the wetlands, other special aquatic sites, and deepwater aquatic habitats of the Unites States. The NWI coverage for the study alignments was not available in a Geographic Information System (GIS) format, but can be viewed on Google Earth or the U.S. Fish and Wildlife website at http://www.fws.gov/wetlands/Data/Mapper.html. Those areas present on the NWI maps consist of palustrine open water ponds, one palustrine forested area, and one lacustrine open water lake. These areas were accounted for as potential wetlands and manually translated into the GIS system.

A list of hydric soils for Tangipahoa Parish was obtained from the U.S. Department of Agriculture, Natural Resource Conservation Service at http://websoilsurvey.nrcs.usda.gov. The GIS layer of soils was obtained from Natural Resource Conservation Service at http://soildatamart.nrcs.usda.gov/ and used to map the hydric soils in the project alignments.

Hydric soils within the project alignments include: Guyton silt loam, occasionally flooded (Gy); Myatt fine sandy loam (Mt); and Myatt fine sandy loam, occasionally flooded (My) as shown in Figure 3.

NWI maps, hydric soils, U.S. Geological Survey quadrangle maps, and historic and current aerial photographs were utilized to identify areas which could potentially be classified as wetlands within the study alignments. Given that hydric soils are one of the three prerequisites for wetlands and hydric soils generally overlapped with the NWI maps in the study alignments, the hydric soils information was used to develop a more conservative estimate of wetlands. The hydric soils information was also overlaid with a current aerial photograph to determine if suitable vegetation was potentially present and to eliminate extensive areas of development. This information was input into a GIS system and areas that had a combination of hydric soils and vegetative cover were considered as potential wetlands (Figure 4). In addition, manmade ponds that were present on the NWI maps, quadrangle, and aerial photographs were mapped as potential waters. Additionally, multiple streams transect the proposed alignments in a north/south direction including Ponchatoula Creek, Selsers Creek, and their tributaries (Figure5).

It should be noted that the Cowardin *et al.* (1979) classification system utilized for NWI mapping requires that a positive indicator of wetlands be present for any one of the three parameters (vegetation, soil or hydrology), while the U.S. Army Corps of Engineers (USACE) guidelines require that a positive indicator be present for each parameter. While all of the areas identified using the NWI and hydric soils data are potential wetlands, some areas may not meet the three criteria required to be classified as a jurisdictional wetland by the USACE when evaluated in the field. Only jurisdictional wetlands are protected by the CWA and regulated by the USACE. Therefore, the potential wetland areas presented for this phase of the study are most likely very liberal and intended for broad based planning purposes only. Equally, some areas may be jurisdictional wetlands when investigated in the field that are not shown in the figures. Once alternative alignments are selected within the study corridor, wetland delineations should be performed to determine the jurisdictional wetland boundaries and acreages.

2.4 Results

The combination of the NWI maps, aerial photographs, topographic maps, and hydric soils layers were utilized in the GIS system to produce a figure of the potential wetlands and waters within the project alignments (Figures 4 and 5). No field surveys were conducted to evaluate the potential wetlands and waters. The NWI map for the project vicinity only showed palustrine open water wetlands which all appear to be manmade ponds, one palustrine forested wetland, and one lacustrine open water lake which was incorporated into the potential wetlands. Only areas that had hydric soils and were undeveloped were considered as potential wetlands. Areas that have hydric soils but have been developed (commercial, residential, etc.) were not considered potential wetlands. Consultation with the U.S. Army Corps of Engineers should be conducted as a preferred alignment is chosen and a formal jurisdictional determination should be conducted on the chosen alignment.

3.0 Protected Species and Habitats

Threatened and endangered species surveys were not conducted for this investigation. The proposed project corridors are predominantly urban in nature and no listed species or unique habitats were observed from the limited field reconnaissance conducted for this investigation.

3.1 Federal Species

The Endangered Species Act (ESA) [16 U.S.C. 1531 et. seq.] of 1973, as amended, was enacted to provide a program for the preservation of endangered and threatened species and to provide protection for the ecosystems upon which these species depend for their survival. The U.S. Fish and Wildlife Service (USFWS) and the National Marine Fisheries Service (NMFS) are the primary agencies responsible for implementing the ESA. The USFWS is responsible for birds and terrestrial and freshwater species, while the NMFS is responsible for non-bird marine species. The USFWS responsibilities under the ESA include: (1) the identification of threatened and endangered species; (2) the identification of critical habitats for listed species; (3) implementation of research on, and recovery efforts for, these species; and (4) consultation with other federal agencies concerning measures to avoid harm to listed species.

An endangered species is a species in danger of extinction throughout all or a significant portion of its range. A threatened species is a species likely to become endangered within the foreseeable future throughout all or a significant portion of its range. Species may be considered endangered or threatened when any of the five following criteria occurs: (1) The current/imminent destruction, modification, or curtailment of their habitat or range; (2) Overuse of the species for commercial, recreational, scientific, or educational purposes; (3) Disease or predation; (4) The inadequacy of existing regulatory mechanisms; and (5) Other natural or human-induced factors affect continued existence.

The USFWS lists 5 species that are either federally threatened or endangered that could possibly occur in Tangipahoa Parish (USFWS 2011). The 5 species are the red-cockaded woodpecker, gulf sturgeon, West Indian manatee, Louisiana black bear, and the gopher tortoise. The Louisiana Natural Heritage Program additionally lists the bald eagle as a delisted species (but still afforded protection under existing laws) and the Alabama Shad as a candidate species (Louisiana Natural Heritage Program 2011).

Table 1. Federally Listed Species of Tangipahoa Parish

Common Name	**Scientific Name**	**Status**
Red-cockaded Woodpecker	*Picoides borealis*	Endangered
Gulf Sturgeon	*Acipenser oxyrinchus desotoi*	Threatened
West Indian Manatee	*Trichechus manatus*	Endangered
Louisiana Black Bear	*Ursus americanus luteolus*	Threatened
Gopher Tortoise	*Gopherus polyphemus*	Threatened

Source: USFWS 2011, LNHP 2011

Manatees are generally found in rivers and estuaries; however, they may be found in open salt water habitat as they travel from site to site. The Gulf sturgeon inhabits coastal rivers, estuaries and bays. The Alabama shad is found along sand and gravel bars in medium to large freshwater rivers. The bald eagle nests and feeds primarily near open bodies of water. No rivers suitable for the manatees, Gulf sturgeon, Alabama shad, or bald eagle are present in the proposed project corridor. The only waterbodies in the proposed project corridors are small ponds and small streams not suitable for these species.

The Louisiana black bear inhabits bottomland hardwood areas on large, relatively remote blocks of land which is not present in the proposed project corridors.

Red-cockaded woodpeckers excavate their own cavities in pine trees that are over 60 years old that occur in open stands. Forest stands where 50% or more of the dominant trees are pines 30 years of age or older are considered red-cockaded woodpecker foraging habitat. No mature pine stands suitable for red-cockaded woodpecker nesting or foraging habitat were observed.

Gopher tortoises inhabit upland longleaf pine forests as well as mixed pine/hardwood forests in sandy, well drained soils which are not present in the proposed project corridors.

No suitable habitat for any threatened or endangered species exists within the proposed project corridors because the area is predominantly urban in nature with typically small sections of forested area and small streams and ponds are the only permanent waterbodies. Consultation with the U.S. Fish and Wildlife Service should be conducted as a preferred alignment is chosen and species specific surveys conducted on the chosen alignment as necessary.

3.2 State Species

In addition to the federal species discussed in the proceeding paragraphs, the LNHP lists 33 rare plant species, 21 rare animal species and 11 natural communities for Tangipahoa Parish (LNHP 2011). A complete list of the natural communities and state listed rare species and their status can be found in Appendix C (Louisiana Natural Heritage Program 2011).

No suitable habitat for any state listed species or natural communities appear to exist within the proposed project corridors because the area is predominantly urban in nature with typically small sections of forested area and small streams and ponds are the only permanent waterbodies. Consultation with the Louisiana Department of Wildlife and Fisheries should be conducted as a preferred alignment is chosen and species specific surveys conducted on the chosen alignment as necessary.

4.0 Louisiana Scenic Rivers

In 1970, the Louisiana Legislature created the Louisiana Natural and Scenic Rivers System. The System was developed for the purpose of preserving, protecting, developing, reclaiming, and enhancing the wilderness qualities, scenic beauties, and ecological regimes of certain free-flowing Louisiana streams (Louisiana Department of Wildlife and Fisheries 2011). The Louisiana Scenic Rivers Act (Acts 1988, No. 947, §1, effective July 27, 1988) states that there exist in Louisiana many unique and diverse free-flowing rivers, streams, and bayous which should be preserved, protected, and enhanced for the present and future benefit of Louisiana citizens. The Louisiana Department of Wildlife and Fisheries (LDWF) maintain a list and legal descriptions for scenic rivers in the state.

There are two Louisiana Scenic Rivers found within Tangipahoa Parish: the Tchefuncte River and the Tangipahoa River (Louisiana Department of Wildlife and Fisheries 2011). These rivers do not occur in or near the proposed project corridors.

5.0 4(f) Properties

Section 4(f) of the Department of Transportation (DOT) Act of 1966 affords protection to historic sites, publicly owned parks, recreation areas, and wildlife or waterfowl refuges when USDOT funds are invested in a project.

Section 4(f) of the Department of Transportation Act of 1966, codified in federal law at 49 7 U.S.C., 303, declares that it is the policy of the U.S. Government that special effort should be made to preserve the natural beauty of the countryside and public park and recreation lands, wildlife and waterfowl refuges, and historic sites. Section 4(f) specifies that the Secretary of Transportation may approve a transportation program or project requiring the use of publicly owned land of a public park, recreation area, or wildlife and waterfowl refuge of national, state, or local significance, or land of an historic site of national, state, or local significance (as determined by the federal, state, or local officials having jurisdiction over the park, area, refuge, or site) only if:

- *there is no prudent and feasible alternative to using that land; and*
- *the program or project includes all possible planning to minimize harm to the park, recreation area, wildlife and waterfowl refuge, or historic site resulting from the use.*

No public recreation areas, public parks, or wildlife refuges were observed within or adjacent to the proposed project corridors during the field survey conducted on August 10, 2011.

6.0 Significant Trees

According to the Louisiana Department of Transportation and Development (2004) defines significant trees as:

> *a Live Oak, Red Oak, White Oak, Magnolia, or Cypress that is considered aesthetically important, 18" or greater in diameter at breast height (4' to 6') above the ground), and having a form that separates it from the surrounding vegetation or is considered historic. A historic tree is a tree that stands at a place where an event of historic significance occurred that had local, regional, or national importance. A tree may also be considered historic if it has taken on a legendary stature to the community; mentioned in literature or documents of historic value; considered unusual due to size, age; or has landmark status. Significant trees must be in good health and not in a declining condition.*

No significant trees were observed within the proposed right-of-way accessible during the field surveys conducted on August 10, 2011.

7.0 References

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Kusler, J.A. 1983. *Our National Wetland Heritage. A protection guidebook.* Environmental Law Institute, Washington, DC. 167p.

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USACE. 1987. USACE Environmental Laboratory. Corps of Engineers Wetlands Delineation Manual. Technical Report Y-87-1. U.S. Army Engineer Waterways Experiment Station, Vicksburg, Mississippi. 100 pp. + append.

United States Congress. 1977. Clean Water Act. Public Law 95-217. 33 United States Code 1251 et seq.

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8.0 List of Preparers

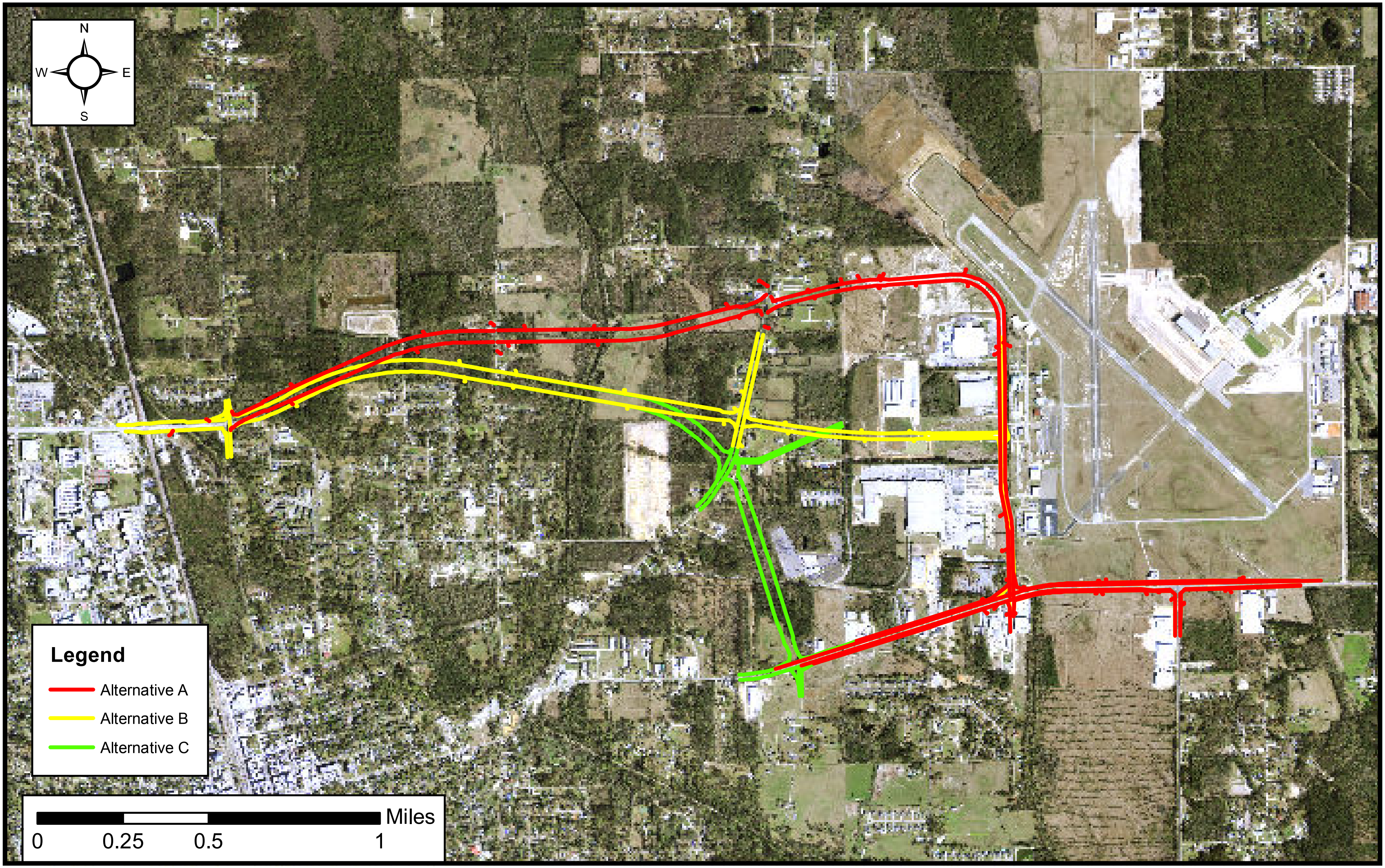
The following people were responsible for preparation of this report.

Name	Discipline/ Expertise	Experience	Role in Project
Linda Ashe	Biology	22 years environmental investigations and impact analysis	Report review
Mike Schulze	Environmental Science	14 years biological and NEPA related studies	Field surveys and report review
Matt Keel	Biology/ Wildlife Management	2 years biological studies	Field surveys and report preparation
Morgan Ihlefeld	Biology/ Wildlife Management	2 years biological studies	Field surveys and report preparation

APPENDIX A

Report Figures

Figure 1. Alternatives A, B, and C



Environmental Research Group, LLC.

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Figure 2. Alternatives A, B, and C

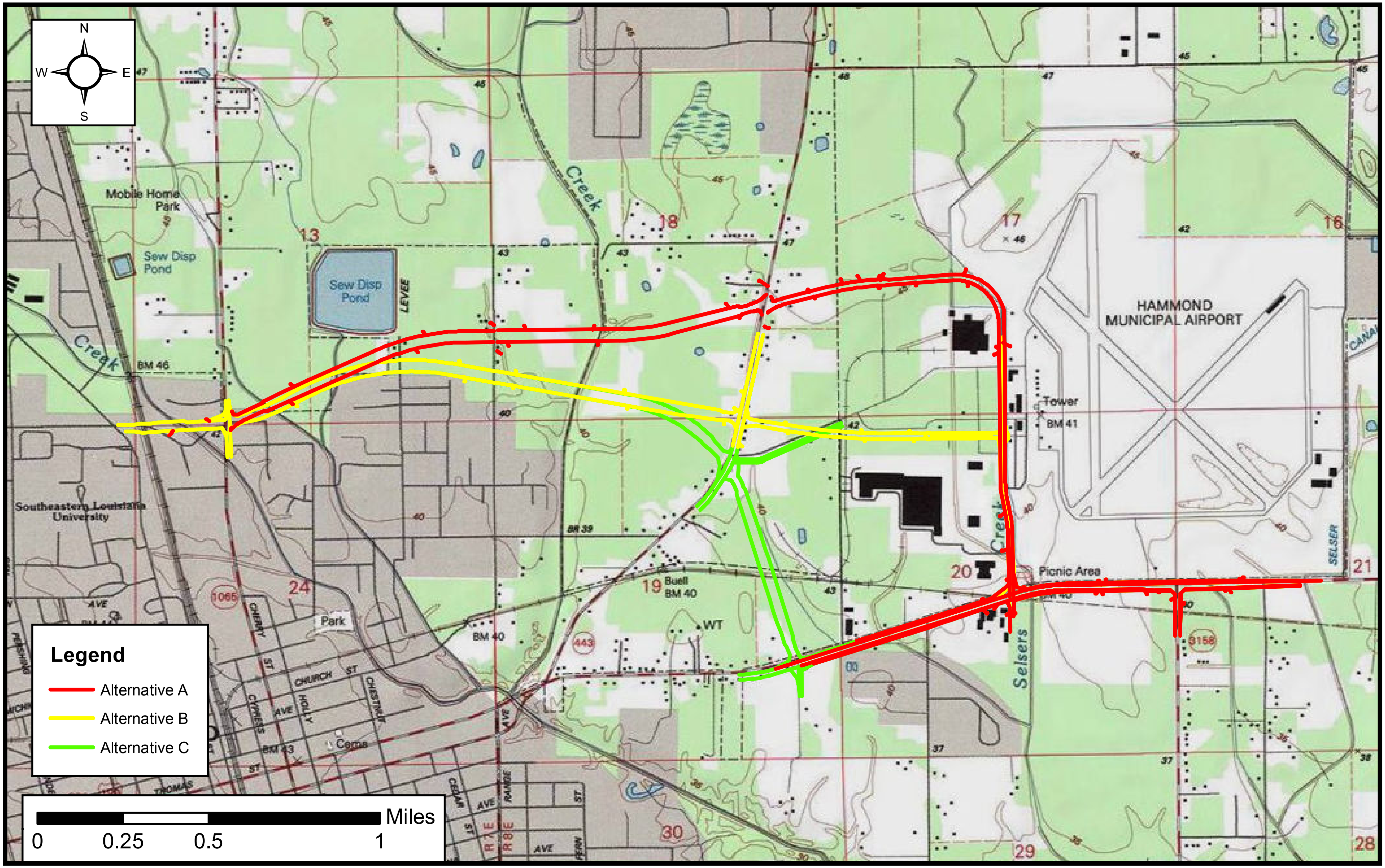

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Figure 3. Hydric Soils

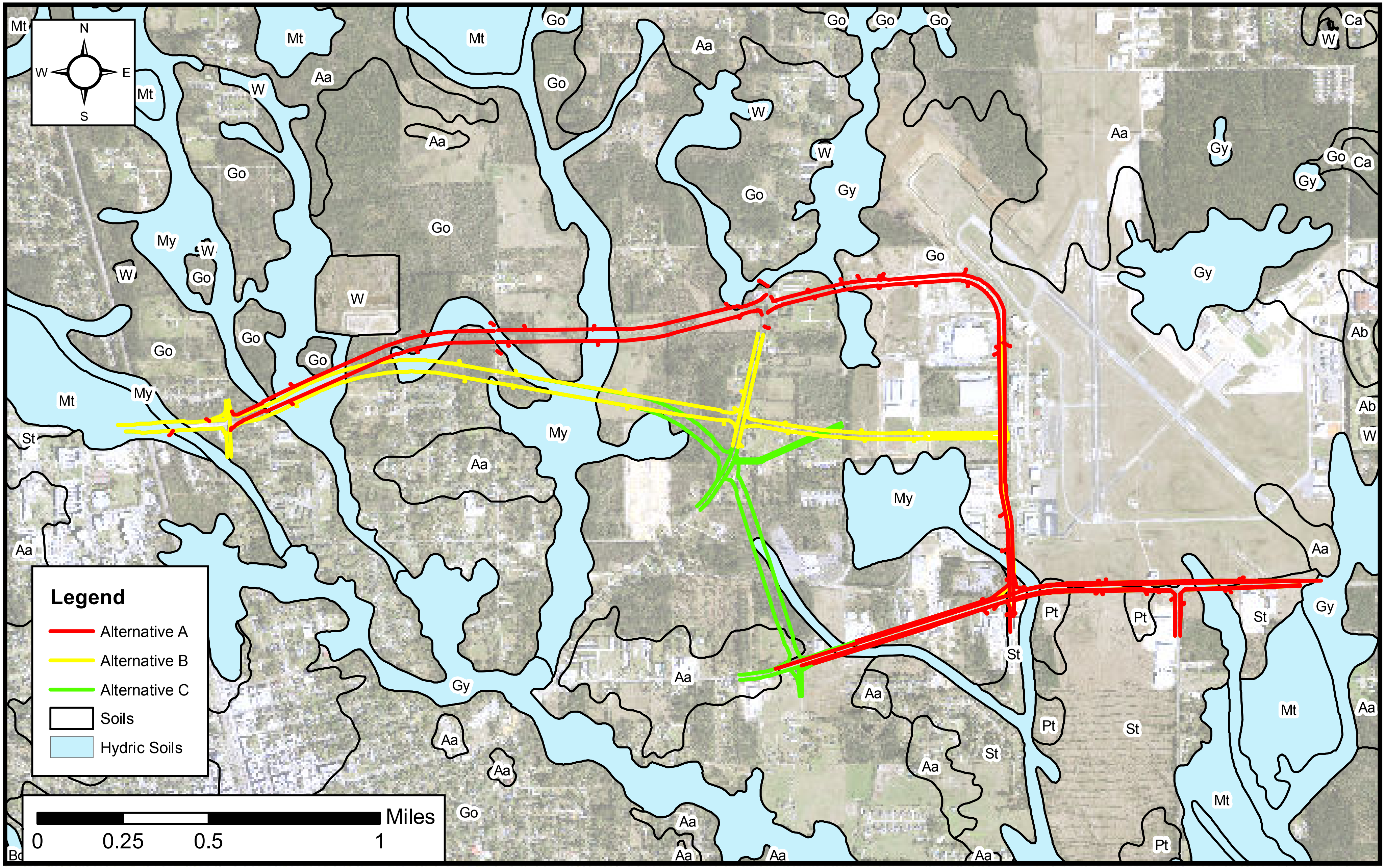

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Figure 4. Potential Wetlands

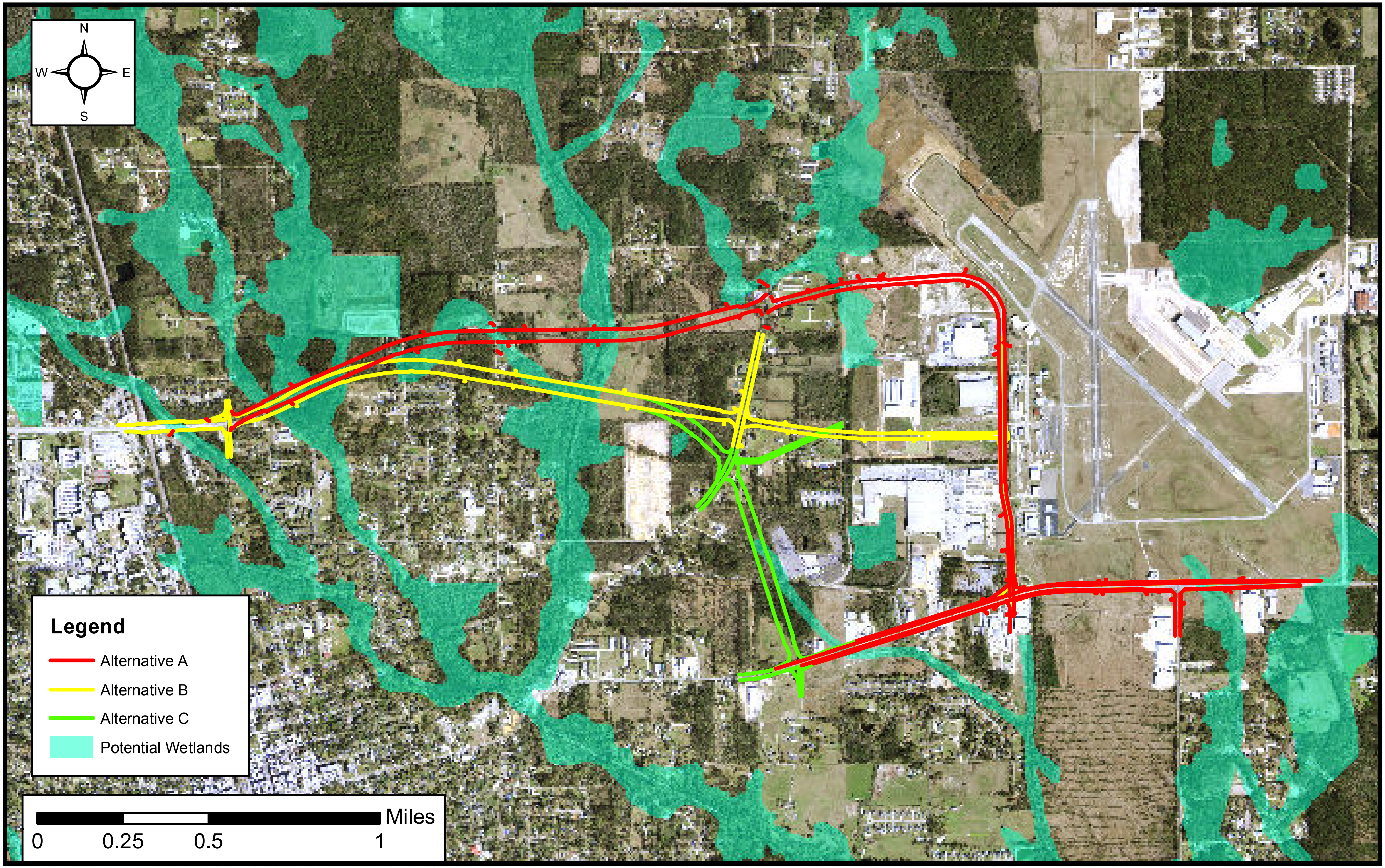

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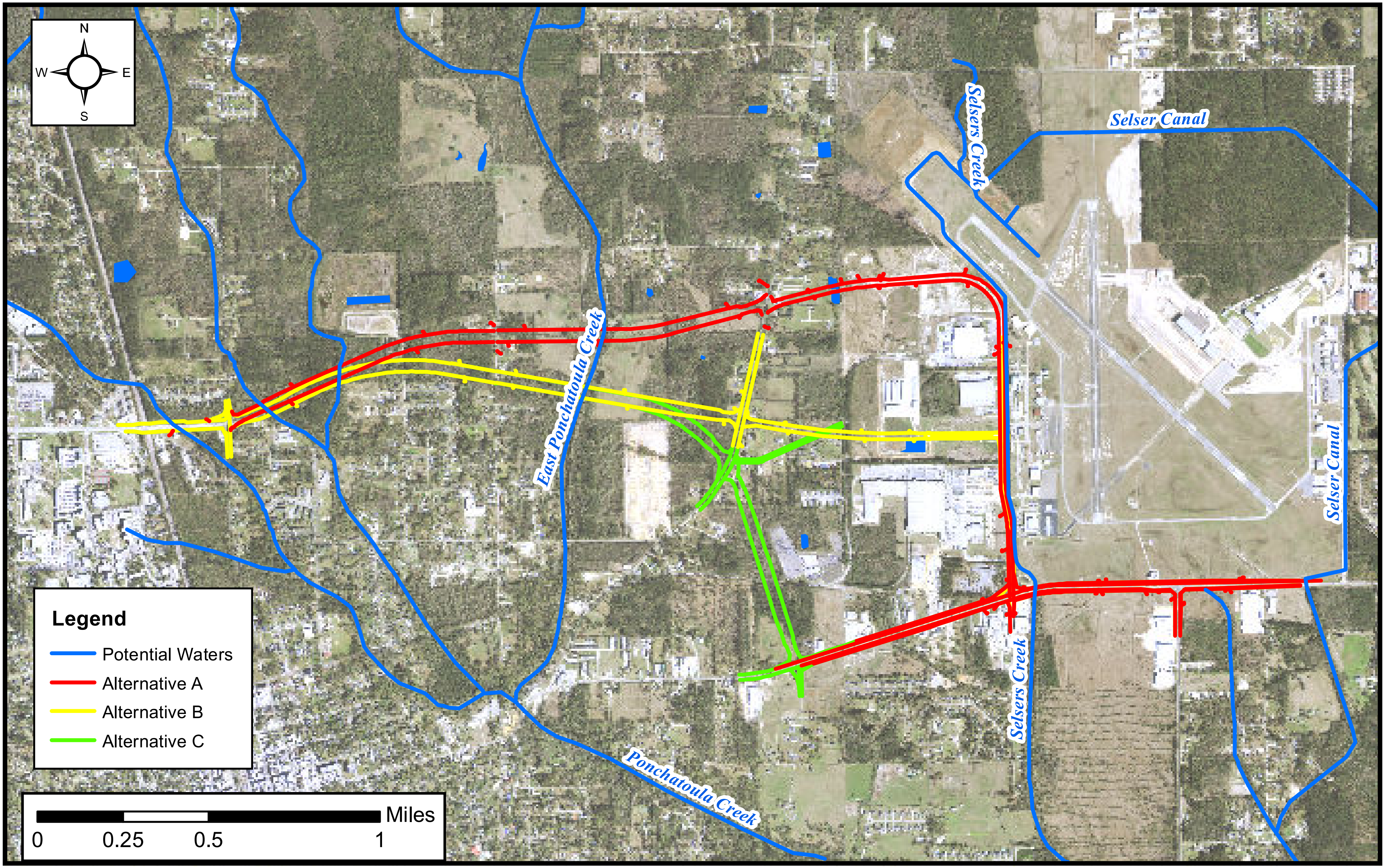
Figure 5. Potential Waters



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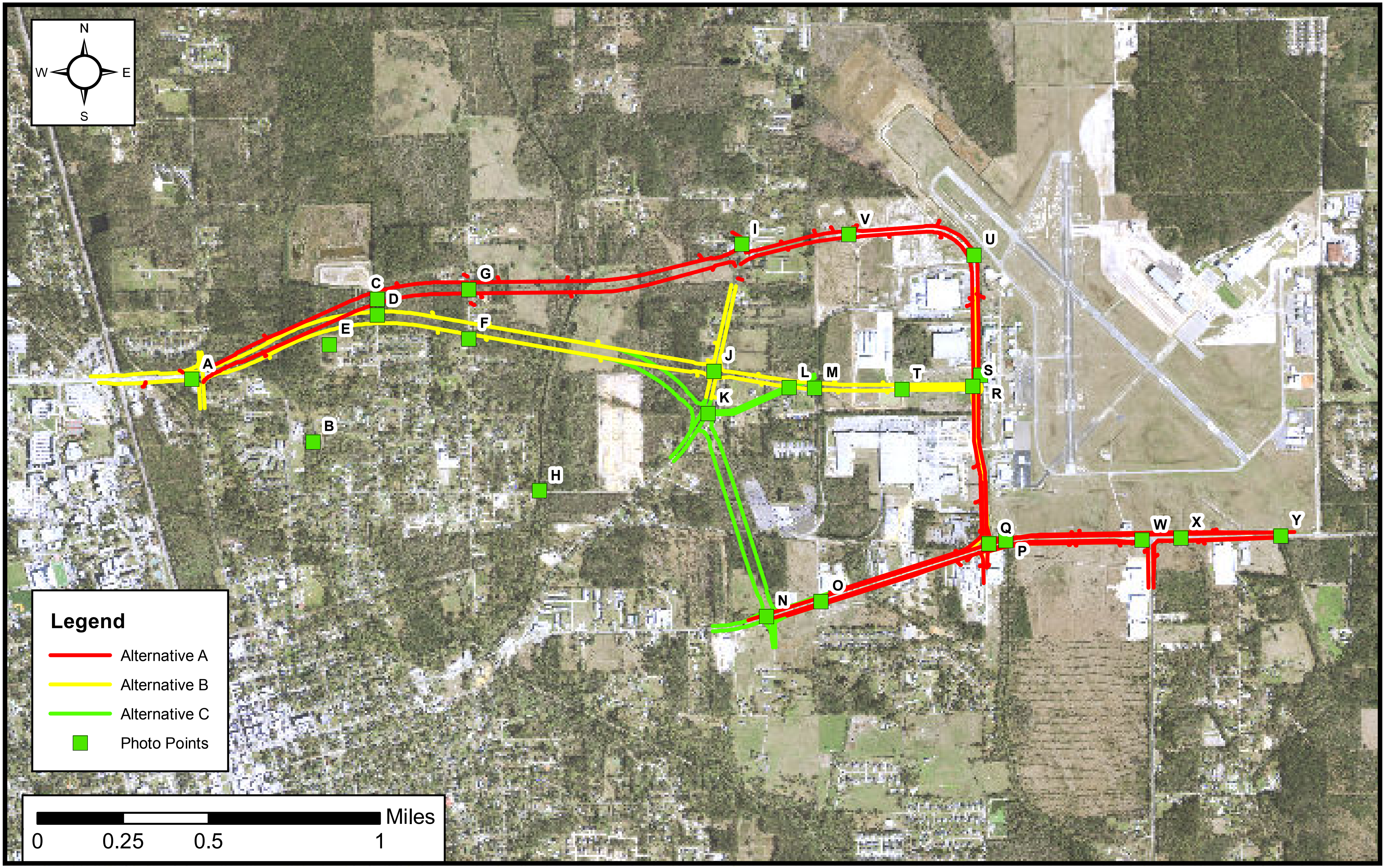
APPENDIX B

Site Photographs

Photo Index



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Proposed ROW at North Cherry Street and East Universtity Avenue facing east.
Photo A

Stream crossing at North Harvey Street south of surey area facing south.
Photo B

Intersection of Alternative A and Sunlane Street facing west.
Photo C

Intersection of Alternative B and
Sunlane Street facing east.
Photo D

Tophat Road south of survey area
facing northwest.
Photo E

Intersection of Alternative B and
McMoore Road facing west.
Photo F

Intersection of Alternative A and
McMoore Road facing west.
Small Stream present at
Intersection.
Photo G

Stream crossing at Magazine Street
south of survey area facing south.
Photo H

Intersection of Highway 443 and
Alternative A facing south.
Photo I

Intersection of Highway 443 and Alternative B facing west.
Photo J

Intersection of Highway 443 and Old Vineyared Road and Alternative C facing southwest.
Photo K

Intersection of Old Vineyard Road and Alternative B and Alternative C facing west northwest.
Photo L

Intersection of Woodscale Road and Alternative B facing west.
Photo M

Intersection of US 190 and Alternative C facing south.
Photo N

Intersection of US 190 and Alternative C at ditch crossing facing northwest.
Photo O

Intersection of US 190 and Alternative A at Selsers Creek crossing facing south.
Photo P

Intersection of US 190, Pride Road, and Alternative A facing west.
Photo Q

Alternative B at Pride Road at intersection of Alternative A and Selsers Creek facing north.
Photo R

Alternative A and B at Intersection of
Lear Drive and Pride Road facing north.
Photo S

Intersection of Lear Drive and Alternative B
near retention pond facing southwest.
Photo T

Intersection of Pride Drive at Alternative A
facing south.
Photo U

Intersection of Pride Drive terminus and Alternative A facing east.
Photo V

Intersection of US 190, Airport Road (LA 3158), and Alternative routes facing east.
Photo W

Intersection of US 190 and Alternative A at drainage ditch crossing near eastern end of project area facing southeast.
Photo X

Intersection of US 190 at terminus of Alternative A facing west.
Photo Y

APPENDIX C

State Listed Species

NATURAL COMMUNITIES

Name	State Rank	Global Rank
Cypress Swamp	S4	G4G5
Eastern Longleaf Pine Savannah	S1	G1
Eastern Upland Longleaf Pine Forest	S1S2	G1G2
Estuarine Submergent Vascular Vegetation	S1S2	G4?
Freshwater Marsh	S1S2	G3G4
Hardwood Slope Forest	S3S4	G2G3
Mixed Hardwood-Loblolly Pine Forest	S4	G3G4
Pondcypress Swamp/Blackgum Swamp	S1	G3
Shortleaf Pine/Oak-Hickory Forest	S2S3	G2G3
Small Stream Forest	S3	G3
Submerged/Floating Vascular Vegetation	S4	---

STATE LISTED RARE ANIMAL SPECIES

Scientific Name	Commom Name	State Rank	Global Rank	State Status
Anodontoides radiatus	Rayed Creekshell	S2	G3	
Elliptio crassidens	Elephant-ear	S2S3	G5	
Lampsilis ornata	Southern Pocketbook	S3	G5	
Obovaria unicolor	Alabama Hickorynut	S1	G3	
Pleurobema beadleianum	Mississippi Pigtoe	S2	G3	
Villosa vibex	Southern Rainbow	S2	G5Q	
Pogonomyrmex badius	Florida Harvester Ant	S1	G5	
Polyodon spathula	Paddlefish	S3	G4	
Fundulus euryzonus	Broadstripe Topminnow	S2	G2	
Macroclemys temminckii	Alligator Snapping Turtle	S3	G3G4	Restricted Harvest
Graptemys gibbonsi	Pascagoula Map Turtle	S3	G3G4	
Ophisaurus ventralis	Eastern Glass Lizard	S3	G5	
Farancia erytrogramma	Rainbow Snake	S2	G4	
Lampropeltis calligaster rhombomaculata	Mole Kingsnake	S1S2	G5T5	
Micrurus fulvius	Harlequin Coral Snake	S2	G5	
Crotalus adamanteus	Eastern Diamondback Rattlesnake	S1	G4	
Elanoides forficatus	American Swallow-tailed Kite	S1S2B	G5	
Aimophila aestivalis	Bachman's Sparrow	S3	G3	
Sorex longirostris	Southeastern Shrew	S2S3	G5	
Eptesicus fuscus	Big Brown Bat	S1S2	G5	
Spilogale putorius	Eastern Spotted Skunk	S1	G5	

STATE LISTED RARE ANIMAL SPECIES

Scientific Name	Common Name	State Rank	Global Rank
Dryopteris ludoviciana	Southern Shield Wood-fern	S2	G4
Trichomanes petersii	Dwarf Filmy-fern	S2	G4G5
Sium suave	Hemlock Water-parsnip	S1S2	G5
Ilex amelanchier	Sarvis Holly	S2	G4
Ilex myrtifolia	Myrtle Holly	S2	G5?
Asclepias michauxii	Michaux Milkweed	S2	G4G5
Cirsium lecontei	Lecont's Thistle	S2	G2G3
Cirsium muticum	Swamp Thistle	SU	G5
Helenium brevifolium	Shortleaf Sneezeweed	S1	G3G4
Sericocarpus linifolius	Narrowleaf Aster	S2	G5
Lechea minor	Thyme-leaf Pinweed	S1?	G5
Lechea pulchella	A Pinweed	S1S2	G5
Zornia bracteata	Viperina	S2	G5?
Quercus coccinea	Scarlet Oak	S2S3	G5
Carya pallida	Sand Hickory	S2	G5
Nymphoides cordata	Floating-heart	SH	G5
Oenothera rhombipetala	Four-point Evening Primrose	S1?	G4G5
Podostemum ceratophyllum	Riverweed	S1	G5
Polygala crenata	Scalloped Milkwort	S2	G4?
Salix humilis var. tristis	Dwarf Gray Willow	S2	G5T4T5
Sarracenia psittacina	Parrot Pitcherplant	S3	G4
Physalis carpenteri	Carpenter's Ground-cherry	S1	G3
Stewartia malacodendron	Silky Camellia	S2S3	G4
Echinodorus tenellus	Dwarf Burhead	SH	G5?
Rhynchospora compressa	Flat-fruit Beakrush	S3	G4
Chamaelirium luteum	Fairy Wand	S2S3	G5
Lilium catesbaei	Southern Red Lily	S1	G4
Calopogon pallidus	Pale Grass-pink	S2	G4G5
Pteroglossaspis ecristata	A Wild Coco	S2	G2G3
Chasmanthium ornithorhynchum	Bird-bill Spikegrass	S2	G4
Tridens carolinianus	Carolina Fluff Grass	S2	G3
Potamogeton epihydrus	Nuttall Pondweed	SH	G5

LEGEND:

State Rank

S1 = critically imperiled in Louisiana because of extreme rarity (5 or fewer known extant populations) or because of some factor(s) making it especially vulnerable to extirpation

S2 = imperiled in Louisiana because of rarity (6 to 20 known extant populations) or because of some factor(s) making it very vulnerable to extirpation

S3 = rare and local throughout the state or found locally (even abundantly at some of its locations) in a restricted region of the state, or because of other factors making it vulnerable to extirpation (21 to 100 known extant populations)

S4 = apparently secure in Louisiana with many occurrences (100 to 1000 known extant populations)

S5 = demonstrably secure in Louisiana (1000+ known extant populations)

(B or N may be used as qualifier of numeric ranks and indicating whether the occurrence is breeding or nonbreeding)

SA = accidental in Louisiana, including species (usually birds or butterflies) recorded once or twice or only at great intervals hundreds or even thousands of miles outside their usual range

SH = of historical occurrence in Louisiana, but no recent records verified within the last 20 years; formerly part of the established biota, possibly still persisting

SR = reported from Louisiana, but without conclusive evidence to accept or reject the report

SU = possibly in peril in Louisiana, but status uncertain; need more information

SX = believed to be extirpated from Louisiana

SZ = transient species in which no specific consistent area of occurrence is identifiable

Source: Louisiana Natural Heritage Program (LNHP) 2011.

Global Rank

G1 = critically imperiled globally because of extreme rarity (5 or fewer known extant populations) or because of some factor(s) making it especially vulnerable to extinction

G2 = imperiled globally because of rarity (6 to 20 known extant populations) or because of some factor(s) making it very vulnerable to extinction throughout its range

G3 = either very rare and local throughout its range or found locally (even abundantly at some of its locations) in a restricted range (e.g., a single physiographic region) or because of other factors making it vulnerable to extinction throughout its range (21 to 100 known extant populations)

G4 = apparently secure globally, though it may be quite rare in parts of its range, especially at the periphery (100 to 1000 known extant populations)

G5 = demonstrably secure globally, although it may be quite rare in parts of its range, especially at the periphery (1000+ known extant populations)

GH = of historical occurrence throughout its range; i.e., formerly part of the established biota, with the possibility that it may be rediscovered (e.g., Bachman's Warbler)

GU = possibly in peril range-wide, but status uncertain; need more information

G? = rank uncertain. Or a range (e.g., G3G5) delineates the limits of uncertainty

GQ = uncertain taxonomic status

GX = believed to be extinct throughout its range (e.g., Passenger Pigeon) with virtually no likelihood that it will be rediscovered

T = subspecies or variety rank (e.g., G5T4 applies to a subspecies with a global species rank of G5, but with a subspecies rank of G4)

State Status

Restricted Harvest = There are restrictions regarding the taking and possession of these species.

Appendix 2 to Chapter 2

Cultural Resources Screening
Earth Search, Inc.

EXISTING CONDITIONS OF CULTURAL RESOURCES WITHIN THE LA3234 PROJECT AREA, HAMMOND, TANGIPAHOA PARISH, LOUISIANA

August 2011

Earth Search, Inc.
P.O. Box 770336
New Orleans, LA 70177-0336

Prepared for

Neel-Schaffer, Inc.
800 Jackson Ave., Suite C
Mandeville, LA 70448

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EARTH SEARCH, INC.
EXISTING CONDITIONS OF CULTURAL RESOURCESWITHIN THE LA3234 PROJECT AREA, HAMMOND, TANGIPAHOA PARISH, LOUISIANA

Rhonda L. Smith, Shawna Atkins, Daniel Brown,
Donna Greer, Tegan Hanson, Jason Kennedy, and Jason L. Parrish

Introduction

Earth Search, Inc. (ESI) undertook extensive background research and reconnaissance survey to develop documentation concerning the existing conditions of the three alternate routes for the LA 3234 Project Area in Hammond, Tangipahoa Parish. For the purposes of the cultural resources background research the Area of Potential Effect (APE) was set at a one mile (1.6 km) buffer of each alternative (.5 mi [800 m] to either side of the highway) while the APE for the reconnaissance architectural survey was set at one half mile (800 m) diameter buffer (Figure 1). Background research included examination of records on file at the Louisiana Division of Archaeology and Office of Historic Preservation, Baton Rouge, Louisiana. Historical data were also reviewed. Cultural resources reports, site files, and National Register of Historic Places (NRHP) records were reviewed for the APE. Previously recorded standing structures were reviewed at the Louisiana State Library. ESI staff communicated with the archival coordinator for the SHPO's office and their National Register (NR) coordinator to understand what investigations and NR nominations have been done or may be in process. No NR submissions and/or applications are being considered or are in process. No structures greater than 50 years of age have been identified previously in the APE. Geomorphological data, maps, and aerial photographs were examined and reviewed. Historical research included a review of available secondary documentation such as local and regional historic archives and records.

This document presents the results of the background research. The first section provides an overview of the historic development within the Florida Parishes and Tangipahoa Parish. This is followed by summaries of the previous cultural resources investigations that have been undertaken in each Segment. Finally, the results of the reconnaissance architectural surveys of each Alternative are discussed.

Historic Overview of the Florida parishes and Tangipahoa Parish

The Florida Parishes. The project area is located within the region historically referred to as the Florida parishes. The Florida parishes are bounded on the west by the Mississippi River, on the north by the Mississippi state line (at 31^{o} north latitude), on the east by the Pearl River, and on the south by Bayou Manchac, the lower Amite River, and lakes Maurepas and Pontchartrain. The Florida parishes have environmental characteristics and history distinguishing them from the Mississippi River parishes to the west and south.

Spain first claimed the area by virtue of the landing of Ponce de Leon in 1512 on the Florida shore. Not long after, in 1528, Spain gave Captain Pamfilo de Narvaez authority to take possession and govern all the country lying between Rio de las Palmas, Mexico and the Florida cape. He landed near Tampa Bay in 1528 and marched north until he was forced to abandon his expedition near Apalachee Bay. Hernando De Soto's three-year epic expedition through the unexplored wilderness began in 1540 and ended for De Soto in 1542 when he died in north Louisiana. His lieutenant, Luis de Moscoso de Alvarado, took command and eventually the tattered party of Spaniards floated down the Mississippi to the Gulf, bypassing the interior territories on either side of the river.

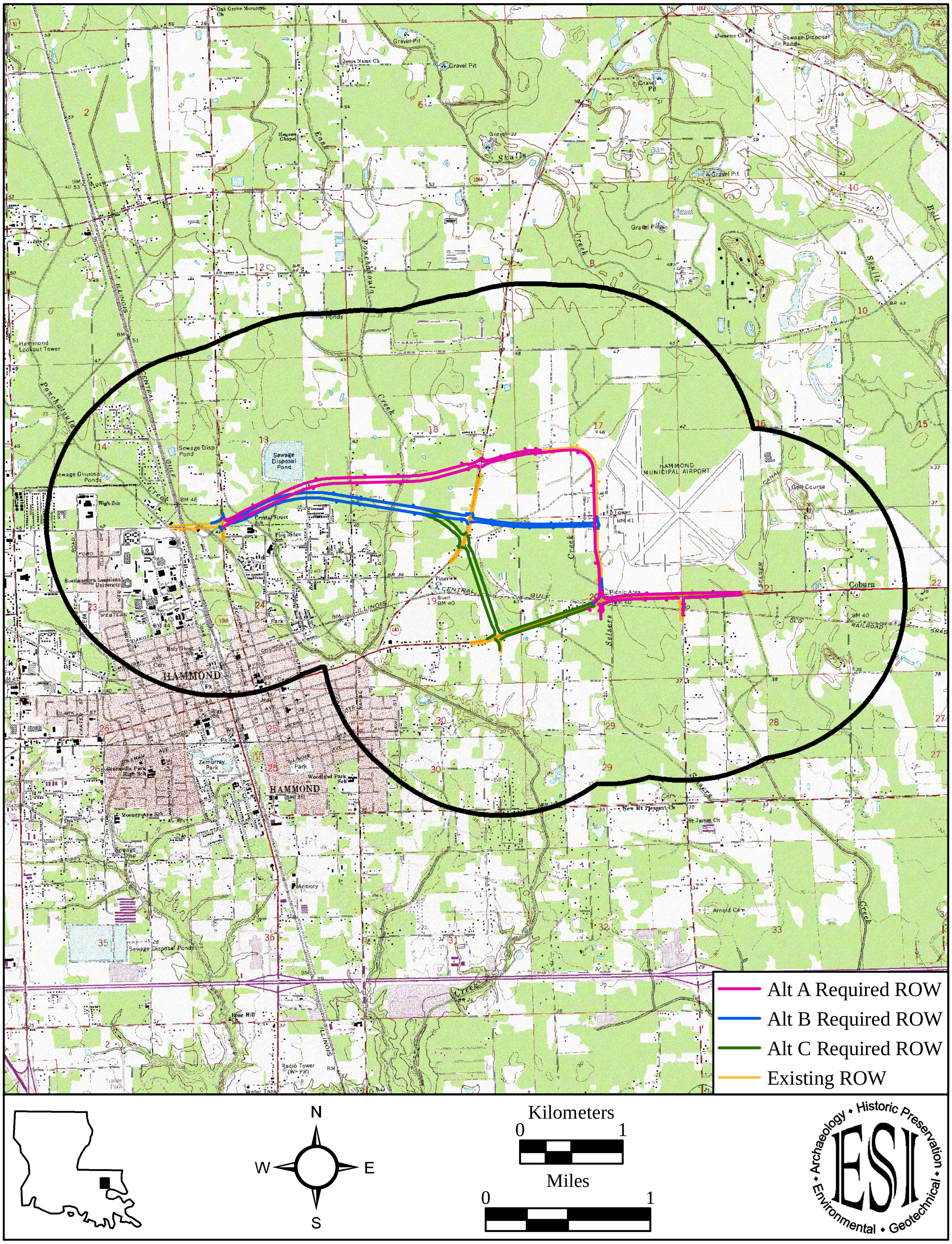

Figure 1. Excerpts from the USGS *Hammond* and *Pontchatoula, LA* 1:24,000 topographic quadrangles showing the location of the proposed LA3234 project area and a one-mile buffer.

The territory remained a part of Spanish America until it was formally claimed for France by René Robert Cavelier, Sieur de la Salle, in 1682. Settlement in the Florida parishes by Europeans began during this period of French administration. Over a decade passed before French explorers ventured far off of the Mississippi. In 1699, Pierre Le Moyne, Sieur d'Iberville, explored the waterway route from the Mississippi River to Lake Maurepas via Bayou Manchac (also called the Rivière d'Iberville or Iberville River) and the lower Amite River. The Manchac-Amite waterway became a trade route, and later a strategic boundary during the colonial period. Bayou Manchac was only seasonally navigable; during the dry season, a 10- or 11-mile portage was required at the Mississippi River end, and when the Mississippi and Amite Rivers were high, the rapid current made west-to-east travel on this route difficult (Goins and Caldwell 1995:26; Gagliano et al. 1977:22; Pearson et al. 1989:102).

Despite the frequent use of the Manchac-Amite route by travelers, extensive settlement was slow to occur in the area north of Lake Pontchartrain and east of the Mississippi River. The first French inhabitants of the future Florida parishes were evidently Canadian *coureurs de bois* who settled at the village of the Tunicas (near modern Angola penitentiary) in 1708 or 1712. Other concessions along the east bank of the Mississippi River followed around 1717 or 1718: the Ste. Reine concession, above Pointe Coupée (perhaps near St. Francisville), the Lejeune concession at Bayou Sara, the Mézières concession (also near Pointe Coupée but on the east bank of the river) and the Dartaguiette concession at Manchac. The first European settlement in the interior of the Florida parishes was evidently that of Leon Michel Duvergci (*sic*), who was ordered by the Company of the Indies to transfer colonists to the "upper parts of Lake Maurepas and Bayou Manchac," presumably in the vicinity of the lower Amite River. The concessions above Baton Rouge all ultimately failed and were abandoned after the massacre of the French at Natchez in 1730, as were most of the handful of remaining east bank habitations in the area. The Dartaguiette concession seems to have survived for a longer period. Elsewhere in the future Florida Parishes, a few French settlers were occupying tracts on the north shore of Lake Pontchartrain by the 1760s (Giraud 1987:160-180; Goodwin and Yakubik 1983:3-6; Gagliano et al. 1977:23; LA Dept. of Transportation 1989:49; Pearson et al. 1989:102).

The Florida parishes were evidently little occupied by Native Americans during the early historic period, with the exception of the margins of the lakes and the eastern and western edges of the area. There may have been several reasons for this circumstance. The lands south of the bluff uplands, dominated by deciduous forests rather than long-leaf pines, may have been richer in game, and thus more desirable for year-round residence, than the uplands. The southern-trending streams draining the parishes may also have been less traveled in the early historic period than other waterways, but undoubtedly, Muskogean-speaking Native Americans at least seasonally moved through the interior of the Florida parishes in the contact period. Several tribes had villages in the region. In the late-seventeenth century, the Houma resided in the area of West Feliciana Parish, the Tangipahoa along the northern shore of Lake Pontchartrain, and the Acolapissa along the Pearl River (Goins and Caldwell 1995:17).

The arrival of the French at the end of the seventeenth century began a period of rapid change for the Native Americans of Louisiana. European diseases caused epidemics, intertribal rivalries flared up, and some tribes came into conflict with the French. Many smaller tribes sought security by moving farther from enemies and/or closer to allies. By 1705, the Acolapissa (meaning "Those Who See and Hear") had moved from the area south of Bogalusa to Bayou Castine in the vicinity of Mandeville. Their allies, a branch of the Natchitoches tribe, had been moved by the French to the same area around 1702. The alliance was severed when the Acolapissa attacked the Natchitoches around 1714, and by the early 1720s, the Acolaplissa had moved again, leaving the Lake Pontchartrain area for Ascension Parish. With them went the remains of the Tangipahoa tribe. The Tangipahoa ("Corn-Gatherers" or "Corn- Cob People") had fled the Mississippi River south of Lake Pontchartrain after being attacked by the Quinipisa, and settled sometime before 1710 around the mouth of the Tangipahoa River. In 1700, the

Houma ("Red") were joined near Angola (modern West Feliciana) by the Tunica; but the Tunica soon rose against their hosts, and by 1706, the surviving Houma had moved close to New Orleans for protection by the French (Goins and Caldwell 1995:18, 20). Some of the Taensa tribe moved to the east bank of the Mississippi at Manchac around 1715, but about 1730 departed for the Mobile Bay area (Kniffen et al. 1987:77).

Over time, the French moved several small and weak tribal allies from Louisiana and elsewhere to the comparatively safe shores of Mobile Bay. At the conclusion of the Seven Year's War in 1763, West Florida, including the area of the Louisiana Florida parishes, was transferred from France to Great Britain (as discussed below). Many of the tribes allied to the French, including the Taensa, Apalachee, Chatot, Pascagoula, Mobile, Alabama, Koasati, and Pacana, decided to leave British territory and migrated westward toward the Mississippi and Red Rivers. Their migratory path crossed the Florida parishes. The Spanish settled the Koasati, Alabama, and Pacana in a village south of Baton Rouge and above Bayou Manchac. The Mobile tribe resided for a time in Livingston Parish on the shore of Lake Maurepas before moving west (Goins and Caldwell 1995:22). Among the immigrant Indian tribes were the Choctaw, who eventually became the most widespread Native American group in Louisiana. Large numbers of Choctaw moved westward into Louisiana during the second half of the eighteenth century, and in the Florida parishes the Choctaw met little resistance since the older resident tribes had largely migrated out of the area. Eventually the Choctaw spread across all of the Florida parishes. Several Choctaw settlements developed on the north shore of Lake Pontchartrain; the longest-lived, at Bayou Lacombe, existed well into the twentieth century (Kniffen et al. 1987:83, 94-95, 109, 280-285)

As a result of the terms of the Treaty of Fontainebleau (1762) all of Louisiana west of the Mississippi was ceded to Spain; the Treaty of Paris (1763) ceded all French territory east of the Mississippi to Britain, with the exception of the Isle of Orleans (bounded by the Mississippi River, Bayou Manchac, the lower Amite River, and lakes Maurepas and Pontchartrain). The area of future Tangipahoa Parish thus became part of British West Florida (Goins and Caldwell 1995:29, 35). The British recognized the strategic value of the Manchac-Mississippi confluence, and posted a frigate in the river to guard it until a stockade, named Fort Bute, could be constructed. Fort Bute was abandoned by the British about 1768 in favor of Fort New Richmond at Baton Rouge. The British sought to capitalize on the Manchac-Amite waterway for transportation of goods to the Gulf of Mexico, since it allowed Spanish New Orleans to be bypassed and reduced travel time to the Gulf by at least ten days. In 1764 and 1765, the British tried to improve the channel of Bayou Manchac by removing rafts and snags, to limited effect. Meanwhile, the Spanish constructed a fort of their own on the Isle of Orleans (or southern) side of Bayou Manchac. British and British-American settlers began to receive land grants of 50 to 5000 acres in West Florida, not only along the Mississippi and in the Manchac area, but also along the Amite and Comite rivers and the shores of lakes Maurepas and Pontchartrain. By the 1770s, many of the habitations in West Florida were producing marketable quantities of corn, rice, indigo, vegetables, fruit, lumber, and barrel staves with slave labor. Plantations were established along the middle Amite but apparently failed to survive in this period (Gagliano et al. 1977:26-28, 50; Pearson et al. 1989:102-103).

During the War of American Independence, many Loyalist refugees from the rebellious American colonies drifted south and west to the Florida parishes. Pro-British planters at Manchac and Baton Rouge suffered the depredations of American Captain James Willing, whose foray down the Mississippi River turned into a pillaging expedition. Bernardo de Gálvez, the Spanish governor of Louisiana, wisely and humanely offered assistance to the afflicted planters. The British reestablished Fort Bute in 1778, and in May 1779, Spain informed its colonies that it was at war with Britain. In spite of an inconvenient hurricane, Gálvez marched troops against the British West Florida forts, seizing Fort Bute on September 7, before its garrison was prepared for action. Two weeks later, Fort New Richmond at Baton Rouge and Fort Panmure at Natchez also surrendered to Gálvez. Among the governor's accomplishments in this period was the establishment of Canary Islander immigrants at the confluence of the Amite River and Bayou Manchac (Villa Gálvez or Galveztown), to bolster Spain's position in the area. With Gálvez's *fait accompli*, most of British West Florida became Spanish West Florida as a result of the Treaty of Paris (1783) (Usner 1992:281-282; Goins and Caldwell 1995:30).

The Spanish divided West Helena into four administrative *distritos* (districts). Santa Helena, larger than the modern parish, was one of the administrative divisions of the West Florida territory. The northern limit of the Santa Helena district was the disputed international boundary with the Mississippi Territory of the United States, settled at 31° N latitude by the Treaty of San Lorenzo in 1795. The southern boundary of the district was Lake Pontchartrain; in the west, much of modern East Feliciana Parish was part of the Spanish Santa Helena district. (Gagliano et al. 1977:50; Goins and Caldwell 1995:29, 35).

The British-era grants were recognized if the tracts were occupied and improved, and with new immigration, the Florida parishes increased significantly in population and development. The Spanish were reluctant to permit settlement by Americans in the Florida parishes; Carondelet even disallowed American settlement on the Amite in 1792, while permitting immigration by French, German, and Dutch settlers. However, American immigration to the area was inevitable. Most settlement in this period was in the Mississippi floodplain area of the Florida parishes, rather than the long-leaf pine areas further north, but by 1803, settlement had occurred along many of the major waterways, including the Amite and the Tickfaw, and along smaller streams such as Darling's Spring, Twelve Mile Creek, and Joseph's Creek. Small hamlets developed at the locations of Bayou Sara, St. Francisville, Galveztown (sometimes called Galveston), Springfield, and Madisonville, in addition to older Baton Rouge. Overland roads (usually little more than tracks in the forest) had developed crossing the Florida parishes. A military road, the *Camino Reale*, was established by the Spanish between Baton Rouge and Pearl River, passing near the vicinity of Springfield. Other routes included: a road from Fort Adams in the Mississippi Territory of the U.S. to New Orleans, via St. Francisville and Baton Rouge; from St. Francisville to Madisonville via Springfield; from Baton Rouge to the vicinity of Grangeville and northward into Mississippi; from Madisonville to the vicinity of Bogalusa; and from the vicinity of Montpelier to the Bogalusa area (Saltus 1986:21; Servello 1982:41; History Book Committee 1986:255; Goins and Caldwell 1995:29).

West Florida remained under Spanish control when the United States purchased the Louisiana territory from France in December 1803. However, the West Florida population consisted of many Americans who had migrated into the area, most of whom wanted annexation by the United States. By the Treaty of San Lorenzo, American citizens had the right of deposit in New Orleans banks, but this had been rescinded in 1802, increasing dissatisfaction with the Spanish administration. During the summer of 1810, West Florida residents formulated a plan to establish representational government under titular Spanish control. The Spanish secretly summoned reinforcements from Pensacola to deal with what they correctly perceived as a challenge to their authority. When the call for reinforcements was discovered, a party of armed men under the leadership of Philemon Thomas seized Fort San Carlos in Baton Rouge and captured its garrison. On September 26, a convention of West Floridians declared independence from Spain, creating the Republic of West Florida. Petitions were sent to President Madison requesting U.S. annexation of West Florida. Madison ordered Louisiana territory governor William C.C. Claiborne to take possession of the district, which was achieved when U.S. troops occupied Baton Rouge on December 10. Spain did not officially recognize the *de facto* annexation until 1819 (Goins and Caldwell 1995:29, 35).

After the United States took possession of West Florida, the area between the Mississippi and Pearl Rivers was designated the county of Feliciana and divided into four parishes. East Baton Rouge Parish sheared off the westernmost portion of the old Santa Helena district, while the new parish of St. Helena received the eastern half of the old Spanish district of Baton Rouge.

With further alteration of boundaries, the four parishes were added to Louisiana at the time it attained statehood in 1812, and Montpelier, centrally located in the original St. Helena Parish, was established as the parish seat. Part of St. Helena Parish was officially surveyed by the United States in 1820-1822. At this time, the entirety of St. Helena Parish had only 375 households. In 1824, the former western part of St. Helena became the eastern part of Feliciana Parish, and later, East Feliciana Parish. Further U.S. surveys were conducted in St. Helena in 1827-1828. In 1832, St. Helena was divided and the larger, southern portion became Livingston Parish (Goins and Caldwell 1995:35, 42-43; LA Dept. of Transportation 1982:44; History Book Committee 1986:4, 58).

The Amite River was an important transportation route during the antebellum period, and to a lesser extent, so were the Tickfaw and Natalbany. The lower portion of the Amite (to about five miles above Bayou Manchac) was navigable by schooners and sloops, and the upper portions (as far as Liberty, Mississippi) by barges, pirogues, and rafts. Fish, meat, and produce were shipped down the rivers to the New Orleans market (Saltus 1986:22). Another important product of the area was lumber. As early as 1815, a water-powered grist- and sawmill was located on the Tickfaw, and by 1828, John McDonogh owned two sawmills on the Amite, one of them steam-powered. A brick mill was also in operation on the Amite by 1835 (History Book Committee 1986:9, 224)

The antebellum period also brought some small improvements to the few major thoroughfares that crossed the Florida parishes. One of these was the road from Baton Rouge to Madisonville, which passed through Springfield (Bachmann 1862; Cowles 1895:plate CLVI; Goins and Caldwell 1995:37). A significant transportation development in the late antebellum was the construction of the New Orleans, Jackson, and Great Northern Rail Road (currently the Illinois Central) along the eastern edge of Livingston Parish (in what is now Tangipahoa Parish). The impact of the railroad was limited, however, before the Civil War disrupted the economy of the region.

Although not a major theater of the conflict, a substantial amount of military activity occurred in the Florida parishes during the Civil War. This was largely the result two factors. First, the Amite River became a demarcation of the Federal lines east of Baton Rouge in 1862 and Port Hudson in 1863. Second was the strategic importance of the New Orleans, Jackson and Great Northern Railroad line (often called the Jackson Railroad), which ran between strategic points in southern Mississippi and New Orleans, via Manchac, Ponchatoula, and Tickfaw. A lesser factor was the Baton Rouge-Springfield road, which continued west and intersected with the Jackson Railroad at Ponchatoula. The presence of the railroad was a major reason behind the Louisiana state government's decision in May 1861 to build an army training camp (named after Governor Moore) north of the Tangipahoa station, in what was then eastern St. Helena Parish. Union forays against Camp Moore and across the Amite area occurred with increasing frequency as the War progressed (Winters 1963:111-124; Scott 1882, 1886).

Although there was substantial enthusiasm for the Confederate cause in the Florida parishes at the beginning of the war, there was a minority of unknown size in the region (like elsewhere in Louisiana) who were opposed to secession, and were either against the Confederacy or were indifferent to it. The first skirmish in Livingston Parish occurred at Manchac Bridge in June 1862, where Caruther's Sharpshooter's repelled a Union cavalry attack. In July, another skirmish occurred at the Amite River, as the Confederates under General John C. Breckinridge moved against Baton Rouge. In early August 1862, the confederates struck back at the Union forces at Baton Rouge. One the morning of August 5, a force of 2600 Confederates, under Breckinridge, attacked Baton Rouge after a tiring night march. The confederate ironclad ram *Arkansas* failed to arrive in time for a coordinated attack and after engine failure, was scuttled upriver. Unable to capitalize on the hard-fought success of his men, Breckinridge withdrew in the afternoon. The Federals hastily fortified the town after their near-disaster, felling trees and tearing down buildings to create clear fields of fire for their artillery. Already seriously damaged by the recent battle and earlier actions, Baton Rouge was plundered by badly disciplined Union troops on August 13. Butler, fearful of an attack on New Orleans, ordered Baton Rouge burned to the ground and abandoned. After appeals that the presence of large orphan and insane asylums made this inhumane, Butler countermanded the order to torch the town. Nevertheless, a new frenzy of plundering broke out before the Union troops finally departed a devastated Baton Rouge on August 21 (Winters 1963:121-123).

Confederate General Ruggles reported that even though a good supply of beef was available in the area in August 1862, disruption of transportation had already produced shortages of salt, flour, other foodstuffs, and medicines. Moreover, Confederate manpower was in short supply. In August 1862, Ruggles complained that only 300 militiamen from the Florida parishes had shown up at his camp at Ponchatoula, and these were without arms or equipment (Scott 1882). Soon material shortages, draft dodgers, deserters, and the weakness of civil authority became pervasive problems in the Florida parishes. In September 1862, provost marshals were appointed by the Confederate Army in the parishes to preserve order among the military and to prevent "improper intercourse" with the enemy, most importantly, the trading of cotton (Scott 1882).

In September 1862, Confederate General Jeff Thompson had at Ponchatoula 300 men of the 10th Arkansas Regiment, a company of home guards, and a company of artillery. The Federals under General George C. Strong attacked with a larger force on September 14, and the Confederates quickly retreated from Ponchatoula. A train of about 20 freight cars (containing cotton, sugar, and molasses), a bridge over the Tickfaw, and a telegraph office were destroyed. The Confederates rapidly reoccupied Ponchatoula (Scott 1889.

In the autumn of 1862, Ponchatoula became an important point in planned attempts by the Confederate Collector's Office for the District of Mississippi, located at Tangipahoa, to trade cotton for vital imported supplies. British commercial agent George Leary undertook to supply 400,000 pounds of salt for 400,000 pounds of cotton. In November, New Orleans merchants Barriere & Bro. made a deal to supply 100,000 sacks of salt for 1,000 bales of cotton, with 10,000 sacks of the salt to be delivered to Ponchatoula. Barriere & Bro. also arranged to obtain the right to purchase cotton in the Mississippi District by supplying 1,000,000 lbs. of pork or bacon, 100,000 blankets, 100,000 pairs of shoes and boots, and 100,000 yards of flannel, which were to be delivered to Ponchatoula, Port Hudson, or Vicksburg (Scott 1889a, 1889b). It is unknown if any of these schemes succeeded, although the difficulties of moving large quantities of goods by this date makes it unlikely.

The Federals re-occupied Baton Rouge in December 1862, and from this point on the Confederates were woefully and consistently out-manned and undersupplied in the Florida parishes. The troops at Ponchatoula had been reinforced to over 800 men after the September 1862 raid, but by January 1863 had again been reduced to about 350 men. As the spring of 1863 approached, the Confederates were overextended in the Florida parishes as more troops were shifted to the works around Vicksburg and Port Hudson, and the citizenry felt vulnerable to Union incursions. Garland's below-strength Confederate cavalry had pickets placed along the Amite, at Benton's Ferry, Curtis' Ford, Dunn's Ford, Burlington Ferry, Courtney's Ferry, and Williams' Bridge (Scott 1886; History Book Committee 1986:27-28).

The local citizens' fears of Yankee attacks were not long in materializing. In March 1863, the Federals planned to move their troops by land and water in a combined operation against Ponchatoula. After a hard march along the Jackson railroad trestle in a heavy rain and wind, during which numerous men lost their footing and were injured falling through the trestle work, the Federals seized Pass Manchac on March 23. On March 24, the Federals struck at Ponchatoula with troops moved by boat from Lake Maurepas and the Natalbany River, and also up the railway line. The Confederates skirmished briefly and retreated. The Confederates regrouped, reinforced to 2,300 men, and counterattacked on March 25. The Federals withdrew, having set fire to Ponchatoula. The Confederate troops quickly doused the flames (Scott 1886:259, 281-285).

A bright spot for Confederate fortunes in the Florida parishes was the capture of the Federal gunboat *Barataria* on the lower Amite in April in 1863. On April 7, Confederate scouts from Ponchatoula discovered the *Barataria* stuck fast on a bar about 60 yards from the shore, about three miles from the mouth of the Amite. The next day the Federals abandoned the boat and scuttled it. The 1st Mississippi Cavalry under Captain Gaddi Herren captured the boat, and Herren hastily made preparations to salvage material from the vessel. One gun and much of the armor plate was salvaged before a Federal gunboat in Lake Maurepas sent a yacht full of troops after Herren, who retreated up the Amite. The Federal yacht followed into an ambush by Herren's troops, and the yacht too was captured by the Confederates (Scott 1882:291, 400).

The loss of the *Barataria* by the Federals did little to weaken their overall strength in the region. In early May 1863, Col. Benjamin H. Grierson's Union cavalry made a lightning raid from La Grange, Tennessee, to Baton Rouge, crossing the Amite virtually unopposed at Williams' Bridge (near Grangeville) and revealing Confederate feebleness in the interior of the Florida parishes. May 1863 continued badly for the Confederates. Only a week after Grierson's cavalry shocked the Confederate command in the area, the Federals again mounted an expedition to the Jackson Rail Road, this time from Baton Rouge. The Confederates were swept aside in skirmishes at Ponchatoula, Independence, and Tickfaw Bridge. A railroad car and gun carriage factory at Independence was destroyed, a tannery and shoe factory at Tickfaw station were burned, soldiers captured, and lumber, livestock, and cotton confiscated. The railroad tracks were destroyed for much of their length south of Camp Moore. General T.W. Sherman reported that "the people are rapidly taking the oath of allegiance and admit that the game is all up with them" (Scott 18882, 1886:406, 1889; History Book Committee 1986:27-28). Many of the populace may have already tired of the war, but almost two years more remained ahead of them.

Following victory at Vicksburg, the Federals captured Port Hudson in July 1863, dealing a major strategic blow to the Confederates and giving the Union another strong point on the margins of the Florida parishes. They also did not cease their incursions into the interior. In late September, General F.S. Nickerson of the 14th Maine volunteers led a cavalry force beyond the Amite and up the Jackson Railroad to Camp Moore, capturing prisoners and cotton, and destroying railroad tracks, trestles, and Confederate stores (Scott 1889a).

The illicit smuggling trade in the Florida parishes was a problem for the Confederates during the War, despite frequent efforts by military authorities to stop it. Cotton was shipped from the growers in the Florida parishes down the Amite and Tangipahoa rivers, even past Camp Moore and the town of Amite, where provost marshals were stationed. Meanwhile, bodies of armed men held up the cotton on its way to the Federal lines, and extorted $50 to $75 per bale from the transporters. If the money could not be paid, the men would seize the cotton, and with the collusion of the civil authorities in the area, transport it themselves to Yankee buyers. Conversely, goods that were scarce or unavailable within the Confederate lines were smuggled through the Federal lines between the Amite River and Port Hudson, and the Confederates sought to close this "hole" too (Scott 1889a:306, 1889b:314.

The weakness of the Confederates in the Florida parishes region also led to a breakdown of the conscription system, described in 1863 by a resident as "a mere farce and mockery." Aside from those who simply ignored conscription regulations or those hiding out in swamps and thickets, some draft-dodgers (and deserters) joined irregular "volunteer" companies, and perpetrated all sorts of crimes upon the citizenry. In September 1863, a Confederate scout estimated 1,200 to 1,500 draft-dodgers and deserters in Ascension, Livingston, and St. Tammany parishes alone. The Confederate command tried to reinvigorate conscription and recruiting efforts, with some small and temporary success. Colonel Powers reported from in November 1863: "...my appeal to the citizens has been patriotically responded to, and men, old and young, are springing into life as if by magic. They are certainly a pack of ragamuffins, and it will take a long time to make good soldiers of them" (Davis, Perry and Kirkley 1890).

By the spring of 1864, the situation with deserters and draft-dodgers had reached critical proportions. The Confederate command determined to carry out "a campaign against all absentees" and "ferret out all skulkers" in the area between the Mississippi-Louisiana border, the Pearl River and the Mississippi River, north of the lakes. Every male between the ages of 17 and 50 who could not produce a legitimate excuse for avoiding military service was to be arrested, including those from "good" families who were shirking their duty (Scott 1889b:314; Davis, et al. 1891).

Several minor expeditions across the Amite were undertaken by the Federals into the Florida parishes in July 1864. In August, General George B. Hodge was put in command of Confederate forces in the district stretching south of the Homochitto River to the Mississippi River and lakes. Hodge quickly took steps to restore a semblance of Confederate authority in the area. These efforts followed complaints made to President Davis in Richmond about seizures of private property by Confederate troops in the district. Hodge (a personal friend of Davis) promised punishment to any parties for "exactions, illegal impressments, and unauthorized seizures of property... [and] offenses committed by the troops against the civil law of the land." He also said those who traded cotton with the enemy would be prosecuted with "the extremist [*sic*] rigor of the law." Hodge pointed out that most soldiers in his district were connected to cotton growers, and had suffered at some time or other from seizure or burning of cotton by the government, or illegal appropriations of stock or produce. Nevertheless, Hodge told the Florida parish residents that stores of cotton were an instigation for raids by the Yankees, and that if cotton was in danger of falling into the hands of the enemy, his troops would burn it. Persons illegally transporting cotton could be shot. He quickly rearranged his troops in the district, stationing a main force of six companies at Tangipahoa to retard the cotton trade and to reinforce the approaches to southwest Mississippi (Davis et al. 1892:808, 1898:695, 700-702).

Despite his best efforts, Hodge could not overcome the disadvantages faced by the Confederates in the Florida parishes. The Union forces at Baton Rouge, Port Hudson, and New Orleans were far larger and better equipped than the 1700 men Hodge could muster against them. By 1864, the populace of the area was largely indifferent (at best) to Confederate fortunes, and many were actively involved in trading with the enemy. The region was infested with deserters, draft-dodgers, jayhawkers, and bushwhackers.

In October 1864, the Federals mounted an expedition from Baton Rouge to Osyka, Mississippi, under the command of General A.L. Lee, and the Confederates could do little to impede the Yankees. Leaving Baton Rouge on October 2, Lee's troops reached Greensburg on October 5. There the Federals burned a tannery and 2,000 hides of "Confederate leather." At Osyka and Camp Moore, large stores of bacon, footwear, clothing, and uniform cloth were destroyed; hundreds of horses and mules were captured; and "endless" streams of slaves followed the Union troops about the countryside. The Federals returned to Baton Rouge on October 8.

Finally, in November 1864, the Federals struck a crippling blow to the Confederate forces in Hodges' district. Several columns of cavalry left Baton Rouge simultaneously on November 14. One reached Liberty on November 16. Other columns attacked Camp Beauregard and Clinton, ultimately reaching Brookhaven on the Jackson Railroad on the 18th. After causing the usual destruction and disruption, the Federals returned to Baton Rouge on November 21. Confederate resistance was negligible and raised serious questions at staff level.

Hodge himself barely avoided capture during an attack at Beaver Creek, and was outraged with the non-performance of his troops during the November raid. He complained in frustration to Jefferson Davis, blaming the poor showing on morale in the district. Hodge stated that he had to "instigate proceedings against officers as high as colonels for taking bribes to pass cotton at the very points I had placed them to guard." Suppressing the cotton trade "raised a host of bitter enemies. These officers and men must leave the district...With hardly an exception all are corrupt." Overall, the Confederate response to the November raid showed a distinct lack of initiative, and was utterly crippled by a shortage of ammunition (Davis et al. 1894:2-3, 9-14).

The Confederates in Hodge's district did not recover from the successive defeats in the autumn of 1864. In December, another Federal expedition traveled from Baton Rouge on the Greensburg Road, this time heading for the Mobile and Ohio Rail Road line. It was virtually unopposed by the Confederates, but was slowed and eventually halted by high water on the rivers. The Confederates sent a company of Arkansas troops to Ponchatoula from Clinton in January 1865, trying to round up a band of deserters. By February 1865, the ten Confederate regiments between Jackson, Mississippi, and the Baton-Rouge-Amite River line were at less than one-quarter strength, with a total of only 2,000 men. These were scattered in squads of 25 to 50 men, and were almost entirely occupied with pursuing the draft-dodgers and jayhawkers that plagued the Florida parishes and southern Mississippi. On February 1, French Settlement was visited by Union cavalry, who met little resistance. In March, "naval banditti" were even reported on the Amite and Tickfaw rivers, and the Federals contemplated sending a gunboat up the Amite during the high water to suppress them. Refugees coming into the Union lines in March 1865 reported a handful of Confederates under conscription officer Captain F.P. Poché at French Settlement, while the Jackson Railroad line had largely been abandoned by Confederate troops (Davis et al. 1896:930, 1192).

The Federals still did not attempt a full occupation of the Florida parishes, and anarchic conditions continued during the twilight of the Confederacy. On April 5, Union cavalry under Major E.C. Burt visited French Settlement, unsuccessfully seeking Poché and his men. The Army of Northern Virginia surrendered at Appomatox on April 9, and it took ten days for the news to reach Louisiana. Among the only active troops in the Florida parishes by then were a few state reserves at Camp Moore, described as "old men armed with shotguns," and some small units along the lower Amite River. A few men of the 7th Louisiana Infantry were trying to suppress deserters in the district, but the provost guard on the Jackson Railroad had ceased functioning. Some private citizens had built a small engine to run between Osyka and Ponchatoula on the Jackson railroad tracks, but there were no cars in the area except for hand-cars. The inhabitants of the region were anxious to restore rail service between Jackson and New Orleans. By the first week of May, Poché and his men on the Amite were negotiating their surrender to the Federals, "under the same conditions that were given to General Lee by General Grant" (Davis et al. 1896a:168, 383). On May 13, a schooner ascended the Natalbany to Springfield, and two weeks later trains were running again from New Orleans to Ponchatoula, both for the first time in over three years (History Book Committee 1986:34).

During May 1865, organized resistance to the Federals in Louisiana collapsed. A company of the 77th U.S. Colored Infantry was stationed at Ponchatoula that month and was replaced by the 87th U.S. Colored Infantry at the end of May (Davis et al. 1896b:653). Surrender of the Trans-Mississippi Department of the Confederate Army was not fully official until June 2. A Federal order abolished slavery in Louisiana on June 3; the Civil War in Louisiana was over.

Tangipahoa Parish. In 1869, Tangipahoa Parish was created out of portions of Livingston, Washington, St. Tammany, and St. Helena parishes (Goins and Caldwell 1995:44). The parish boundaries were the Mississippi state line, Natalbany Creek and the Tickfaw River, the shores of lakes Maurapas and Pontchartrain, and the Tchefuncte River. Communities already established in Tangipahoa Parish area were Pontchatoula; Amite, the parish seat; and Tangipahoa. Population in the parish increased and new communities such as Kentwood, named for Amos Kent; and Roseland were incorporated by the late nineteenth century.

During the late nineteenth and early twentieth centuries, timber exploitation increased. In 1881, lumber brought $8 to $10 per 1000 feet at the several sawmills along the Amite and Tickfaw rivers (Harris 1881:207), and the lumber business in Louisiana really began to boom in the 1890s. While active logging was going on in the Parish, temporary rail lines (or "dummy" lines) were constructed to convey timber to the trunk or branch railway line. In the small mill towns that grew up around these rail lines, frontier conditions often led to criminal behavior and violent lifestyles, earning the parish the slogan "Bloody Tangipahoa" (Hyde 2004). When timber leases were exhausted, the lumber companies packed up the mills, picked up the rail lines, and moved on to areas with remaining virgin timber. Reforestation policies were as yet unheard of, and often the timber companies simply ceased paying property taxes on cut-over tracts once the marketable timber had been removed. Some of the temporary railroad grades became rural roads after they were abandoned (Servello 1982:46-47).

Like much of Louisiana in the early-twentieth century, Tangipahoa Parish sought to grow by offering cheap land that would attract immigrants. The cut over lands left from the timbering industry were readily available for purchase. The population growth of the entire southeast Louisiana region contributed to a strong market for farm products and helped maintain agricultural diversity. Tangipahoa Parish became, and remains, the agricultural powerhouse of the Florida parishes.

At the beginning of the century, cotton, corn, sugar cane, sorghum, oats, sweet and Irish potatoes, peas, pecans, strawberries, figs, plums, pears, grapes, and other fruits and vegetables were all grown in commercial quantities, as well as cattle hogs, sheep, and horses. "Short crops" such as corn, peas, cucumbers, green beans, bell peppers, field peas, and tomatoes were also important, but the "Louisiana Strawberry," well adapted to growth on cut-over Florida parish soils, became the major commercial crop in Tangipahoa Parish by the 1920s. Numerous farmers, pickers, packers and handlers, box factories, and fertilizer concerns benefited from the strawberry boom. Louisiana strawberry production totaled over $3.5 million in 1925 (LA Dept. of Agriculture and Immigration 1924, 1926, 1931; History Book Committee 1986:207-212).

Italian immigrants were particularly effective strawberry farmers. Many Italians had come to South Louisiana to work in the cane fields. An essay by the Louisiana Division of Historic Preservation notes that

> The Italians saw in Tangipahoa Parish an opportunity to acquire land and escape the life of an urban worker or plantation laborer. The Italians were extremely efficient and successful strawberry farmers. A study conducted by an agricultural commission during this period noted that the techniques employed by the Italians stand out in contrast to the more or less shiftless and thriftless southern methods employed by native farmers. The entire family, even the children, would work in the berry fields and live as cheaply as possible, saving everything they could. After a few years, they would make a down payment on whatever land they could obtain. Often this land was near the railroads, which provided the means of getting their crop to market. In this way, a number of ethnic agricultural colonies arose throughout the parish. Amite, Tickfaw, and Natalbany all had small compact Italian farming settlements. There was also a large Italian settlement in Hammond. However, the biggest concentration of Italians was in Independence where the colony stretched for five miles up and down the Illinois Central Railroad by 1910. By this time, Italians had virtually taken over the town.

> Business signs in the Independence commercial district were in Italian rather than English!
>
> By the early 1920s Tangipahoa strawberries supplied the entire Midwestern market; soon Louisiana was the country's leading producer. However, the resulting prosperity was not to last. Drought and frost in the 1927 and 1928 seasons reduced profits sharply and put many farmers heavily in debt. By the 1929-1930 season, a number of farmers were in serious financial trouble. In 1932 the industry suffered the greatest crop failure it had ever experienced. Twelve and one half inches of rain in one day in April, followed by a hailstorm later in the month virtually destroyed the crop. This season was the death knell of the strawberry boom, for the industry never recovered its former prosperity (Louisiana Division of Historic Preservation).

However, strawberries remain a major crop in Tangipahoa Parish, and the "Louisiana Strawberry" Festival is held each April in Ponchatoula.

Although the parish is still predominately rural, the city of Hammond is a commercial hub. The city is named for Peter Hammond, a Swedish immigrant who settled in the area in 1818. The Illinois Railroad and later transportation routes including Interstate Highways 12 and 55 connect Hammond with New Orleans, Jackson, and the rest of the southern United States. Hammond is also the location of Southeastern Louisiana University, originally founded as Hammond Junior College in 1925. Southeastern is a public university and in the 1990s was the fastest growing college in the nation (Tangipahoa Parish Convention & Visitors Bureau).

Previous Cultural Resources Investigations

Research at the Louisiana Division of Archaeology revealed that two previous cultural resources surveys have been conducted within the APE (one mile buffer of all Alternatives). The background and site file search also revealed that no previously recorded archaeological sites are located within the APE. There is one NRHP listed historic district within the APE (Figure 2).

Rivet 1977 (22-205). On March 2, 1977, Philip G. Rivet conducted three cultural resources surveys for proposed highway widening in Tangipahoa and St. Helena parishes, Louisiana, for the Louisiana Department of Highways. The project area followed LA3158 (Booker Road) from Interstate 12 to terminus of U.S. 190. Other than a cemetery that was noted near the junction near I-12, no other cultural resources were located (Rivet 1977).

Shenkel 1977 (22-285). On March 2, 1977, J. Richard Shenkel performed a cultural resources survey for a proposed construction of a runway extension and taxiway for the Hammond Municipal Airport. Survey methods consisted of a pedestrian survey with judgmental shovel testing. No cultural resources were identified as a result of this survey (Shenkel 1977).

Hammond Historic District. The Hammond Historic District encompasses fifteen square blocks and is located in the center of modern Hammond. Structures in the district date from approximately 1880-1930 and are visually distinct from the modern commercial structures. The majority of the structures (82 percent) are two-storied, brick structures that are richly ornamented. The architectural significance lies in the districts cohesiveness and in the character of the buildings. The Hammond Historic District "constitutes one of the most complete and visually evocative groupings of early twentieth century brick commercial vernacular structures in south eastern Louisiana" (Louisiana National Register of Historic Places).

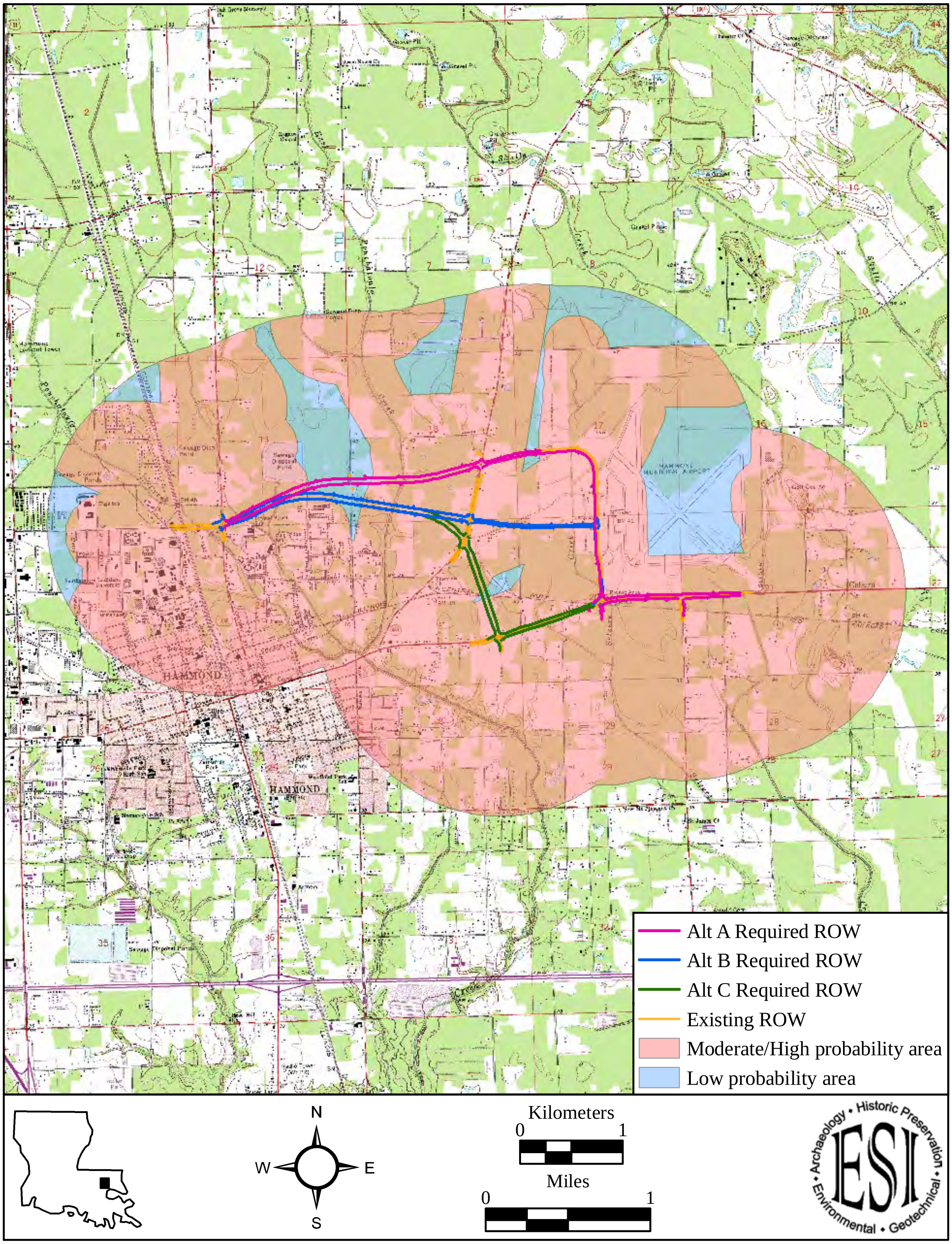

Figure x. Excerpts from the USGS *Hammond* and *Pontchatoula, LA* 1:24,000 topographic quadrangles showing the location of the proposed LA3234 project area and the archaeological probability areas.

Reconnaissance Architectural Survey

ESI staff drove throughout the study area in July 2011, visually inspected and tallied all standing structures in the APE. There were 107 buildings and structures over 50 years old in the APE. Two structures and a small dependency are grouped together on one compact site in the Alternate B area and may be eligible for the NRHP under Criterion C (Figures 3 and 4). These two structures and dependency contain a level of craft mastery, artistic interpretation, and historic significance that would make them eligible for the NRHP and possibly with national significance. Photographs were taken and GPS points were recorded. The two structures and dependency, included in the total of 107 structures are discussed below in detail in addition to each respective alternate area.

> Except for the two previously mentioned structures and dependency, none of the 107 buildings and structures is high style and approaches the level of craft mastery or artistic interpretation required for individual nomination to the NRHP under Criterion C. The buildings and agricultural structures are characteristic of their era and region, but none of the 105 buildings contain outstanding or unique features that would make them individually eligible for nomination to the NRHP. Virtually all of these structures fall within a condensed timeframe of c. 1950 to c.1960. None of the structures appeared to be prior to c. 1940. The buildings represent the development of modest housing that emerged after WWII with the GI bill and FHA financing, and the development and proliferation of modest vernacular ranch style housing. The structures included some schools and agricultural structures but all were modest and did not possess architectural merits that would warrant individual NRHP consideration.

Each alternate is discussed separately, but it is important to note that approximately the first third (western third) of each alternate route overlap and contain approximately 53 buildings common to all alternates as can be observed on the USGS quad map. All three alternate APE areas begin at the same physical location and proceed eastward for approximately half their distance and then diverge into three separate routes/APEs to end at their individual termini. Totals for the three areas do not equal 107 properties because of the 53 properties that overlap, but there are only 107 individual properties.

Alternate A. This alternate includes the 53 buildings/structures common to all alternates and 13 unique to alternate A for a total of 66 structures. None of the 66 structures and buildings approaches the level of craft mastery or artistic interpretation required for individual nomination to the NRHP under Criterion C. The buildings are characteristic of their era and region but have no outstanding or unique features.

Alternate B. This alternate includes the 53 buildings/structures common to all alternates and six unique to alternate B for a total of 59 structures. Most notably, this alternate contains the two structures and dependency that may be eligible for nomination to the NRHP (Figures 3 and 4). This is a group of structures associated with the development of the WWII era U.S. Army Air Corps Airfield that was the origin of the Hammond Airport. The airport currently is used for both private purposes and houses the Air Force Louisiana Air National Guard Reserve 236 Combat Communications Squadron. Captain Harry A. Trosclair, Jr. is the Detachment Commander and was interviewed briefly for this report. Most smaller airports across the nation, similar to the Hammond airport, had their origins in WWII when the nation decided to establish airstrips for national and civilian defense in response to the threats from WWII. After WWII they were eventually maintained under the auspices of the Federal Aviation Administration (FAA) and utilized for military training, support, and civilian needs.

Figure 4. WWII era U.S. Army Air Corps Control Tower with Air instrument box in foreground. Photo, ESI, 2011.

Figure 3. WWII era U.S. Army Air Corps Control Tower with corrugated metal structure at rear. Photo, ESI, 2011.

892 Judge Leon Ford St. Hammond, LA 70401. The primary structure in this site is the c. 1940 control tower (Figures 3 and 4). Essentially it is a small metal box with a hipped flat metal roof, steel divided glass panels on all four sides with a casement window panel with six lites in the center of each of the four panels. It is mounted approximately four stories above grade on a prefabricated tower composed of metal angle iron cross braces riveted/bolted into brackets and mounted at ground level on four concrete footings. It has a flat sheet metal skirt that extends down approximately 8 ft (2.4 m) at the base of the control tower box, which is enclosed at its base and partially covers the support bracing. There is a square metal vent centered on the west side of the skirting. A set of internal metal switchback stairs provides access to the tower through a hatch at the top of the stairs. The tower has what appear to be original antennae, light beacon, and possibly a vent/instrument exiting from the center of the roof. It also has what are possibly original electrical insulators that supported electrical service and/or communications to the structure. A shielded port on the west side of the tower contains a defunct A/C unit casing that was probably installed at a later date. The structure is protected by a barbed wire topped chain link fence surrounding its site perimeter. The structure has a high degree of architectural integrity and appears to be well maintained. Captain Trosclair commented that a coat of paint is occasionally applied to the structure to protect it. The GPS points for the site were manually taken and also digitally taken by a hand held Trimble unit. Physical GPS points taken for the site were 30° 31” 7’ N and 90° 25” 6’ W.

There is a modest corrugated metal-sheathed structure to the east of the tower and outside of the chain link protected perimeter of the control tower (Figure 3). It appears to be from the WWII era as well. It has a corrugated gabled metal roof and corrugated metal exterior as well. It was inaccessible but was coated with the same paint as the tower and was dimensionally appropriate for the era, and decidedly different from the other nearby metal structures. It is well maintained and has a high degree of architectural integrity.

There is a small dependency, a wooden louvered cube (approx 2’x2’ cubed) in the southern foreground of the control tower (Figure 4) and within the protective chain link fence. It is mounted approximately 5 ft. (1.5 m) above grade on four splayed angle iron braces imbedded into the ground. The wood is in remarkably good condition. The structure probably housed instruments associated with weather monitoring and air traffic control. It also has a high degree of architectural integrity.

None of the remaining 64 structures and buildings in Alternate B approaches the level of craft mastery or artistic interpretation required for individual nomination to the NRHP under Criterion C. The buildings are characteristic of their era and region but have no outstanding or unique features.

Alternate C. This is the longest alternative of the three. The alternate includes the 53 buildings/structures common to all alternates and 35 unique to Alternate C for a total of 88 structures. None of the 88 structures and buildings approaches the level of craft mastery or artistic interpretation required for individual nomination to the NRHP under Criterion C. The buildings are characteristic of their era and region but have no outstanding or unique features.

Conclusion. Alternate C is the longest of the three alternatives and contains the largest number of structures greater than 50 years of age. But none of those structures and buildings approaches the level of craft mastery or artistic interpretation required for individual nomination to the NRHP under Criterion C. Alternate C also is the longest of the three alternates.

Alternate B contains the few historic structures of merit and they lie directly in the potential path of the proposed new roadway. Although this alternate has the fewest number of structures over fifty years old, it is the second longest alternate. It also passes through an industrial park, although no structures in the industrial park are historic.

Alternate A is the shortest potential roadway. It is plotted through the lowest building density- mostly open land, and has the second lowest number of historic structures.

Archaeological probability models can suggest the possibility of cultural resources in the area. Generally, historic resources are located within a quarter-mile of historic road alignments. Prehistoric archaeological sites are generally located within 300-400 m of perennial streams.

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Appendix 3 to Chapter 2

Photo Documentation of Screening for Potential Environmental Hazards and Potential Takings Neel-Schaffer, Inc.

APPENDIX 3 TO CHAPTER 2

PHOTO DOCUMENTATION OF

POTENTIAL HAZARDS AND POTENTIAL RELOCATIONS

In accordance with the ASTM Practice E 1527-05, representatives of the project team performed a site reconnaissance of the Project Area, noting use of adjacent properties and conditions that might represent environmental concerns. The field review was conducted August 22, 2011. Tables 2.3-1, 2.3-2 and 2.3-3 summarize the findings by alternative.

NSI Staff identified potential relocations and otherwise impacted properties associated with each of the three alternatives. A photo record of each site was completed. NSI staff subsequently met with the LADOTD relocation specialist to review the potential relocations and property impacts, and to establish costs associated with each. The cost information was incorporated in the project cost estimate. Table 2.4-4 summarizes the potential relocations by alternative.

Exhibit 2.3-1 provides the map key to the photo documentation of potential hazards and impacted sites, and the photo record follows the map key.

TABLE 2.3-1
ALTERNATIVE A
POTENTIAL ENVIRONMENTAL HAZARDS

Current Use	Station	Photo	Relocations			ECHO	Hazard Concern
			Yes	Possible	No		
Hungry Jax Grill	153	A01-1,2	✓				Petroleum UST(s) still appear to be in ground, moderate risk of petroleum impacts
Win Food Mart	151	A04-1,2			✓		Former petroleum USTs, appear to have been removed, low risk of petroleum impacts
Old Hammond WWTP	180	none	✓				Decommissioned, unknown, could not access site due to locked gate
Lamp Environmental Ind.	238	A10-1	✓			✓	Mercury and universal waste recycler; non-compliance issues, enforcement actions, mod risk
JMIS Inc.	241	A13-1,2	✓				J.M. Industrial Sales, minimal risk
Cardinal Health	290	②			✓	✓	No violations or enforcement actions, minimal risk
Martin Marietta Ast.	283	②			✓	✓	No violations or enforcement actions, minimal risk
Martin Marietta Ast.	283	②			✓	✓	No violations or enforcement actions, minimal risk
Home Depot #5598	281	②			✓	✓	No violations or enforcement actions, minimal risk
US 236 Combat Combat Sq.	①	②			✓	✓	jet fuel AST, moderate risk
Amar Oil Company	①	②			✓	✓	jet fuel AST, 1 informal enforcement action
LA Army Naionalt Guard	①	②			✓	✓	No violations or enforcement actions, minimal risk
U.S. Dept Homeland Security	①	②			✓	✓	No violations or enforcement actions, minimal risk
Entergy LA Hammond Dist.	303	②			✓	✓	No violations or enforcement actions, minimal risk
Entergy LA Hammond Dist.	309	②			✓	✓	No violations or enforcement actions, minimal risk
Graham Dist/Penske Garage	307	②			✓	✓	Potential petroleum hydrocarbons, vehicle maintenance, low risk
TNT Logistics NA	307	②			✓	✓	No violations or enforcement actions, minimal risk
Delchamps District Center	307	②			✓	✓	No violations or enforcement actions, minimal risk

Source: Neel-Schaffer, Inc.

① The GIS query of potential hazards identified sites within a buffer extending 500' to either side of a proposed alternative centerline. These sites fell within buffer, but are located within Hammond Northshore Regional Airport, and are accessed from Judge Leon Ford Street.

② The site was within the 500' hazards buffer, but existing site facilities were not in located in close proximity to the proposed ROW; consequently, it was not necessary to include photos of the sites.

TABLE 2.3-2
ALTERNATIVE B
POTENTIAL ENVIRONMENTAL HAZARDS

Current Use	Station	Photo	Relocations			ECHO	Hazard Concern
			Yes	Possible	No		
Hungry Jax Grill	154	B01-1,2	✓				Petroleum UST(s) still appear to be in ground, moderate risk of petroleum impacts
Win Food Mart	151	B04-1,2			✓		Former petroleum USTs, appear to have been removed, low risk of petroleum impacts
Abandoned agriculture facility	234	B15-1	✓				potential impacts from fuel or impropert pesticide/herbicide storage practices
US 236 Combat Combat Sq.	①	②			✓	✓	jet fuel AST, moderate risk
Amar Oil Company	①	②			✓	✓	jet fuel AST, 1 informal enforcement action
LA Army Naionalt Guard	①	②			✓	✓	No violations or enforcement actions, minimal risk
U.S. Dept Homeland Security	①	②			✓	✓	No violations or enforcement actions, minimal risk
Entergy LA Hammond Dist.	303	②			✓	✓	No violations or enforcement actions, minimal risk
Entergy LA Hammond Dist.	309	②			✓	✓	No violations or enforcement actions, minimal risk
Graham Dist/Penske Garage	307	②			✓		Potential petroleum hydrocarbons, vehicle maintenance, low risk
TNT Logistics NA	307	②			✓	✓	No violations or enforcement actions, minimal risk
Delchamps District Center	307	②			✓	✓	No violations or enforcement actions, minimal risk
LA Votech Hammond	318/274	②			✓	✓	No violations or enforcement actions, minimal risk
City of Hammond Garage	274	②			✓		Diesel AST, vehicle maintenance, high risk
Eastside Collision Center	276	B37-1,2	✓				Auto body paint shop, potential impacts from olvents and paints, high risk

Source: Neel-Schaffer, Inc.

① The GIS query of potential hazards identified sites within a buffer extending 500' to either side of a proposed alternative centerline. These sites fell within buffer, but are located within Hammond Northshore Regional Airport, and are accessed from Judge Leon Ford Street.

② The site was within the 500' hazards buffer, but existing site facilities were not in located in close proximity to the proposed ROW; consequently, it was not necessary to include photos of the sites.

TABLE 2.3-3
ALTERNATIVE C
POTENTIAL ENVIRONMENTAL HAZARDS

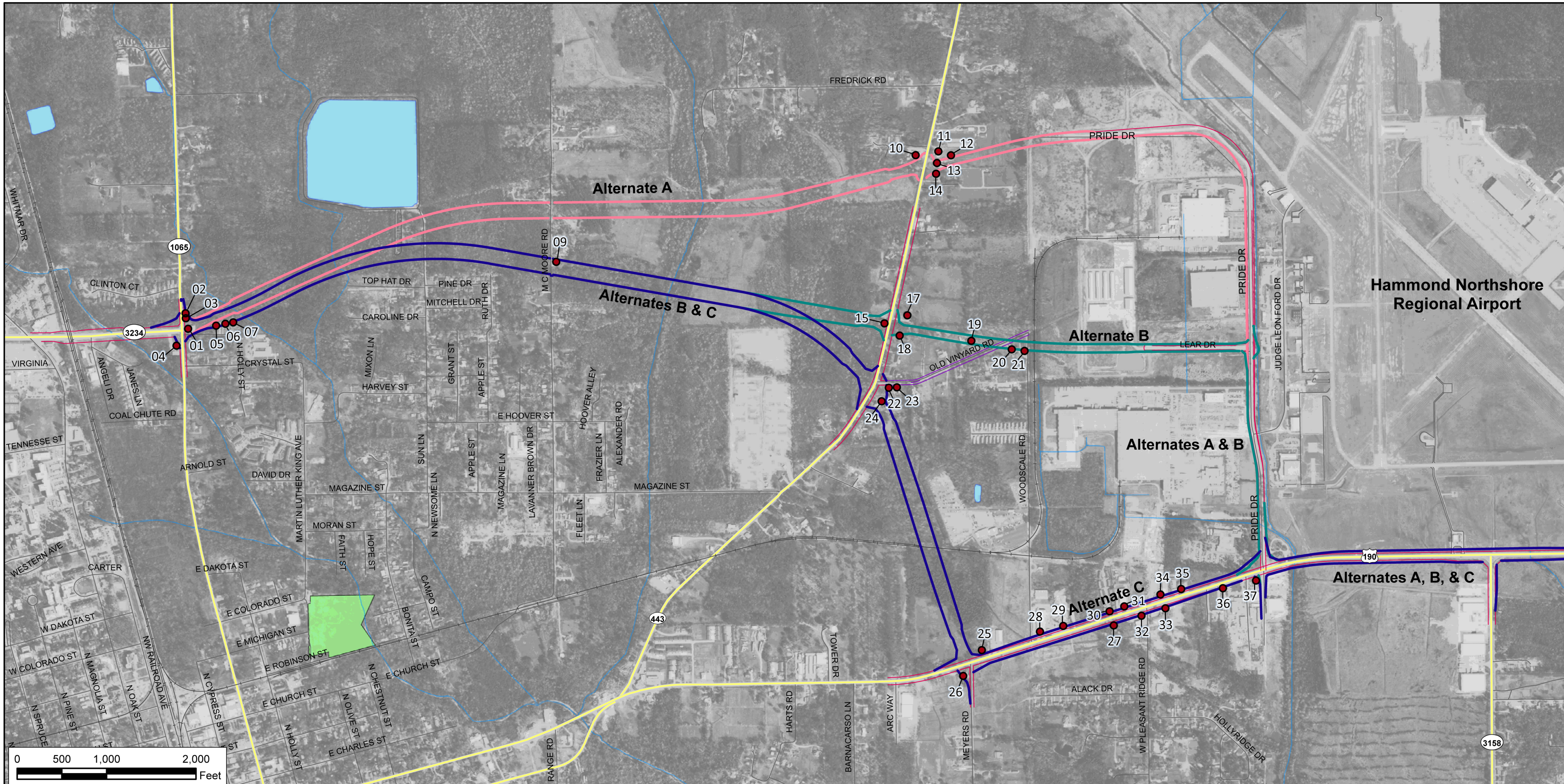
Current Use	Station	Photo	Relocations			ECHO	Hazard Concern
			Yes	Possible	No		
Hungry Jax Grill	154	C01-1,2	✓				Petroleum UST(s) still appear to be in ground, moderate risk of petroleum impacts
Win Food Mart	151	C04-1,2			✓		Former petroleum USTs, appear to have been removed, low risk of petroleum impacts
Old Hammond WWTP	180	none	✓				Decommissioned, unknown, could not access site due to locked gate
Uniquely Wood Home Furn	252	C28-1		✓			Warehouse, minimal risk
Tycer Concrete	254	C29-1		✓			Diesel AST, other ASTs of unknown contents
Battery Depot	261	C31-1,2		✓			potential impacts from improper battery storage, minimal risk
Popingos Shell Gas Station	262	C32-1	✓				Petroleum USTs, high risk
Lawson-Bone't Const.	266	C34-1	✓				Diesel AST(s), vehicle maintenance, high risk
Diamond Engine & Crank	272	C36-1	✓				Petroleum hydrocarbons, vehicle maintenance, high risk
City of Hammond Garage	273	none			✓		Diesel AST, vehicle maintenance, high risk
LA Votech Hammond	274	none			✓	✓	No violations or enforcement actions, minimal risk
Eastside Collision Center	276	C37-1,2	✓				Auto body paint shop, potential impacts from olvents and paints, high risk

Source: Neel-Schaffer, Inc.

TABLE 2.3-4
POTENTIAL AFFECTS TO TO RESIDENTAIL AND COMMENCIAL PROPERTIES

Alterntive	Station	Photo	Affects	Use
A	154	A02-1	Mobile Home	Residence
A	154	A03-1	Mobile Home	Residence
A	154	A01-1	Commercial	Hungry Jax Grill
A	180		Old Hammond WWTP	Decommissioned
A	238	A10-1	Commercial	Lamp Environmental Industries
A	240	A14-1	Structure	Residence
A	241	A13-1	Commercial	JMIS , Inc.
A	241	A11-1	Structure	Residence
A	242	A12-1	Structure	Residence
B	154	B02-1	Mobile Home	Residence
B	154	B03-1	Mobile Home	Residence
B	154	B01-1	Commercial	Hungry Jax Grill
B	157	B05-1	Structure	Residence
B	158	B06-1	Structure	Residence
B	159	B07-1	Structure	Residence
B	180		Old Hammond WWTP	Decommissioned
B	196	B09-1	Structure	Residence
B	234	B15-1	Various Structures	Abandoned Agriculture Facility
B	236	B17-1	Driveway Access	Residence
B	236	B18-1	Structure	Residence
B	238	no photo	Various Structures	Sheds
B	243	B19-1	Structure	Residence
B	248	B20-1	Structure	Residence
B	249	B21-1	Mobile Home	Residence
C	154	C02-1	Mobile Home	Residence
C	154	C03-1	Mobile Home	Residence
C	154	C01-1	Commercial	Hungry Jax Grill
C	157	C05-1	Structure	Residence
C	158	C06-1	Structure	Residence
C	159	C07-1	Structure	Residence
C	180		Old Hammond WWTP	Decommissioned
C	196	C09-1	Structure	Residence at Mc Moore Rd
C	237	C24-1,2	Structure	Residence east of Morris Rd
C	236	C22-1	Mobile Home	Residence east of Morris Rd
C	236	C23-1	Mobile Home	Residence east of Morris Rd
C	269/242	C26-1,2	Structure	United Christian Fellowship
C	267/243	C25-1	Mobile Home	Residence at US 190
C	252	C28-1	Access and Parking	Uniquely Wood Home Furnishings
C	254	C29-1	Access and Truck Wash	Tycer Concrete
C	259	C27-1	Structure	Residence
C	259-260	C30-1	Duplex Structures	Residences
C	261	C31-1	Access and Parking	Battery Depot
C	262	C32-1	Access and Pumps	Popingo's Shell
C	265	C33-1,2	Access and Parking	Florida Parishes Bank
C	266	C34-1	Access and Parking	Lawson-Bonet Construction
C	267	C35-1	Access and Parking	Castaway Lounge
C	272	C36-1	Access	Diamond Engine & Crankshaft
C	276	C37-1,2	Parking	East Side Collision

Source: Neel-Schaffer, Inc.



Legend

Alternate A
- Required ROW
- Existing ROW

Alternate B
- Required ROW
- Existing ROW

Alternate C
- Required ROW
- Existing ROW
- Not Part of Project

Stage 0 Study for LA 3234 Extension
State Project No. H.008915.1
Legacy State Project No. 700-53-0135
F.A.P. No. STP-5310 (505)

Prepared By:
NEEL-SCHAFFER
Solutions you can build upon

Photo Locations

1 Inch = 1,100 Feet

Exhibit 2.3-1

PHOTO DOCUMENTATION OF POTENTIAL HAZARDS

Possible Environmental Hazards
Corridor A


A01-1.jpg


A01-2.jpg

A04-1.jpg


A04-2.jpg

Possible Environmental Hazards
Corridor A

A10-1.jpg

A13-1.jpg

A13-2.jpg

Possible Environmental Hazards
Corridor B

B01-1.jpg

B01-2.jpg

B04-1.jpg

B04-2.jpg

Possible Environmental Hazards
Corridor B

B15-1.jpg

Possible Environmental Hazards
Corridor C

C01-1.jpg

C01-2.jpg

C04-1.jpg

C04-2.jpg

Possible Environmental Hazards
Corridor C

C28-1.jpg

C29-1.jpg

C29-2.jpg

Possible Environmental Hazards
Corridor C

C29-3.jpg

C29-4.jpg

C31-1.jpg


C31-2.jpg

Possible Environmental Hazards
Corridor C

C31-3.jpg

C32-1.jpg

C32-2.jpg

C34-1.jpg

Possible Environmental Hazards
Corridor C

C34-2.jpg

PHOTO DOCUMENTATION OF POTENTIAL RELOCATIONS

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Potential Takings
Corridor A

A01-1.jpg

A02-1.jpg

A03-1.jpg

A10-1.jpg

Potential Takings
Corridor A

A11-1.jpg

A12-1.jpg

A13-1.jpg

A14-1.jpg

Potential Takings
Corridor B

B01-1.jpg

B02-1.jpg

B03-1.jpg

B05-1.jpg

Potential Takings
Corridor B

B06-1.jpg

B07-1.jpg

B09-1.jpg

B15-1.jpg

Potential Takings
Corridor B

B17-1.jpg

B18-1.jpg

B19-1.jpg

B20-1.jpg

Potential Takings
Corridor B

B21-1.jpg

Potential Takings
Corridor C

C01-1.jpg

C02-1.jpg

C03-1.jpg

C05-1.jpg

Potential Takings
Corridor C

C06-1.jpg

C07-1.jpg

C09-1.jpg

C22-1.jpg

Potential Takings
Corridor C

C23-1.jpg

C24-1.jpg

C24-2.jpg

C25-1.jpg

Potential Takings
Corridor C

C26-1.jpg

C26-2.jpg

C27-1.jpg

C29-1.jpg

Potential Takings
Corridor C

C28-1.jpg

C30-1.jpg

Potential Takings
Corridor C

C31-1.jpg

C32-1.jpg

C33-1.jpg

C33-2.jpg

Potential Takings
Corridor C

C34-1.jpg

C35-1.jpg

C36-1.jpg

C37-1.jpg

Potential Takings
Corridor C

C37-2.jpg