TRAFFIC ANALYSIS

THOMAS & HUTTON

CALHOUN STREET STUDY – BLUFFTON, SOUTH CAROLINA

CALHOUN STREET AREA

TRAFFIC STUDY

BLUFFTON,
SOUTH CAROLINA

PREPARED FOR:
TOWN OF BLUFFTON

J – 24872

JULY 2014

PREPARED BY:

THOMAS & HUTTON

SAVANNAH, GEORGIA □ BRUNSWICK, GEORGIA
CHARLESTON, SOUTH CAROLINA □ MYRTLE BEACH, SOUTH CAROLINA
COLUMBIA, SOUTH CAROLINA

Introduction

The Town of Bluffton requested Thomas &Hutton assess the pedestrian and vehicle traffic conditions on several roadways as a part of an overall master plan for Calhoun Street. Traffic conditions were to be evaluated at several key time periods including the Thursday Farmers Market hours, the Friday night entertainment district hours, the Sunday worship hours, and the typical weekday peak hours.

Existing conditions

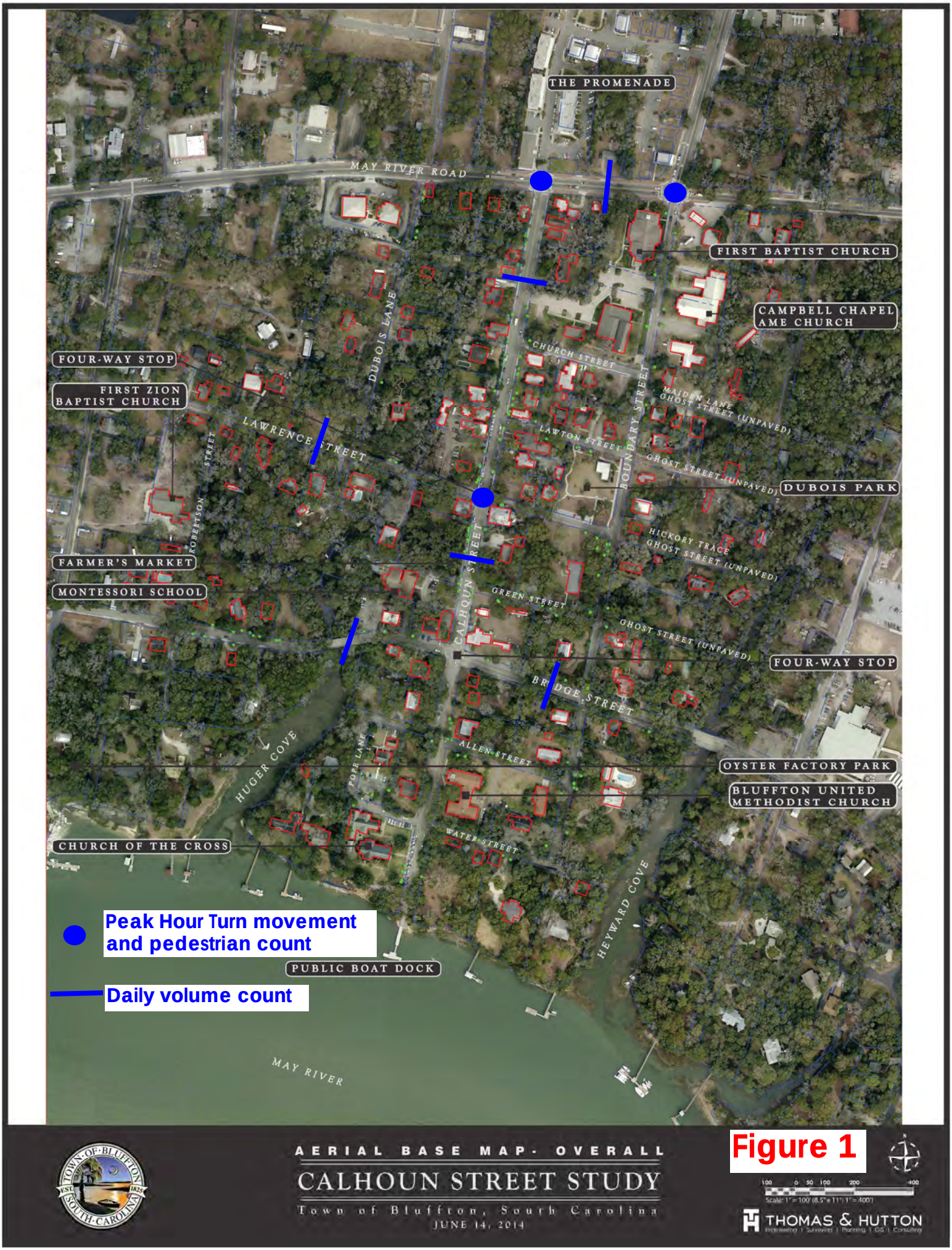
Calhoun Street is a two-lane, north-south roadway between the May River and May River Road. With the weekly Farmers Market and the numerous retail and restaurant establishments, the Calhoun Street area has become a center of commercial activity within the Town of Bluffton.

May River Road (SC 46) is classified as a minor arterial and serves as a main artery through the Town of Bluffton. Near Calhoun Street, May River Road is a two-lane roadway with on street parking on both sides.

The Calhoun Street / May River Road intersection is a two way stop controlled intersection, with stop control on the Calhoun Street approaches. The Boundary Street / May River Road intersection operates with four-way stop control.

Side streets that feed into Calhoun Street include Church Street, Lawton Street, Lawrence Street, Green Street, Bridge Street, Allen Street, and Water Street. All are two lane local roadways.

The study area and count locations are shown on **Figure 1**.



AERIAL BASE MAP - OVERALL

CALHOUN STREET STUDY

Town of Bluffton, South Carolina

JUNE 14, 2014

Figure 1

100 0 50 100 200 400

Scale: 1" = 100' (8.5" x 11") 1" = 400'

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Data Gathering

Hourly volumes were taken over a 5-day period in the spring of 2014 at the following locations:

- Calhoun Street between Church Street and May River Road
- Calhoun Street between Lawrence Street and Green Street
- May River Road between Boundary Street and Calhoun Street
- Lawrence Street west of Calhoun Street
- Bridge Street east of Calhoun Street
- Bridge Street west of Calhoun Street

In addition to the machine (tube) counts, visual turning movement counts (vehicles and pedestrians) were taken at the following times and locations.

- May River Road and Calhoun Street
    - Weekday peak hours (Wednesday, 7-9AM, 4-6PM)
    - Farmers Market hours (Thursday afternoon, 1-6PM)
    - Entertainment district hours (Friday night, 7-9PM)

- Lawrence Street and Calhoun Street
    - Weekday peak hours (Wednesday, 7-9AM, 4-6PM)
    - Entertainment district hours (Friday night, 7-9PM)
    - Closed during Farmers Market

- Boundary Street and May River Road
    - Weekday peak hours (Wednesday, 7-9AM, 4-6PM)
    - Farmers Market hours (Thursday afternoon, 1-6PM)
    - Entertainment district hours(Friday night, 7-9PM)

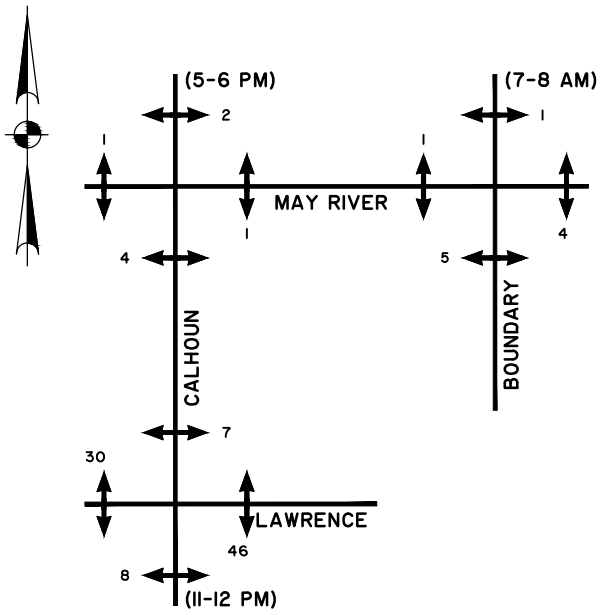
Pedestrian movements

Pedestrian movements were noted as part of the visual turning movement counts. **Figure 2** on the following page shows the highest hourly pedestrian counts at each intersection, and the times associated with the peaks.

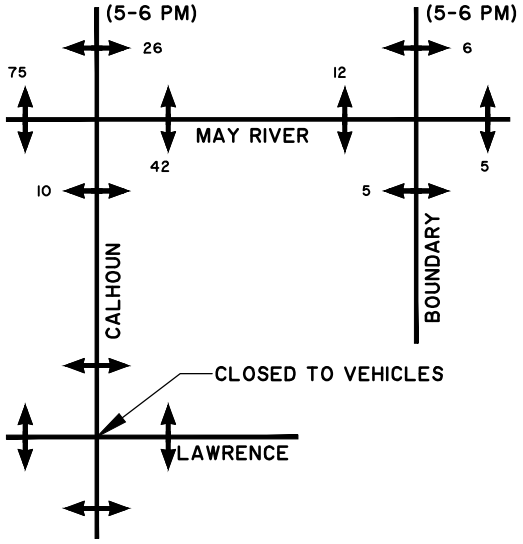
During typical weekday periods (note the Wednesday counts), pedestrian activity is relatively minimal at the May River Road intersections. Along Calhoun Street, the lunchtime period experienced the highest volume of pedestrian movements.

The Thursday Farmers Market periods showed a high number of pedestrians crossing May River Road at the Calhoun Street intersection. The May River Road / Boundary Street intersection continued to show relatively little pedestrian activity. Counts were not taken at Lawrence Street, as it is closed during the Farmers Market.

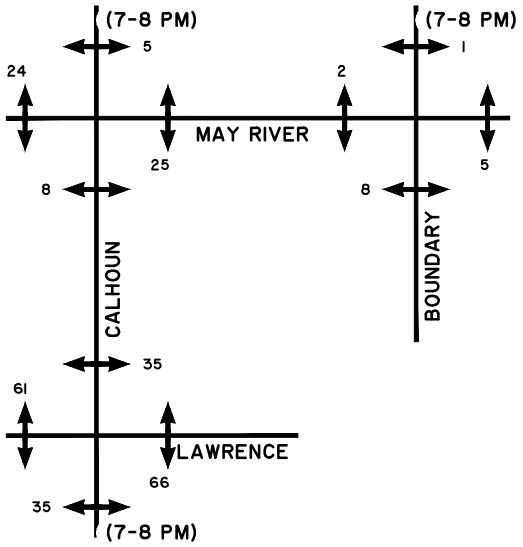
The Friday night periods showed a relatively high number of pedestrians along Calhoun Street at both the Lawrence Street and May River Road intersections. Pedestrian movements at May River Road / Boundary Street continued to be comparatively low.



WEDNESDAY



THURSDAY
(FARMERS MARKET)



FRIDAY
(ENTERTAINMENT DISTRICT HOURS)

Figure
2

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PEAK HOUR PEDESTRIAN VOLUMES

Hourly Vehicle volumes

The peak hourly vehicle volumes for each location are shown in **Figures 3, 4, and 5**.

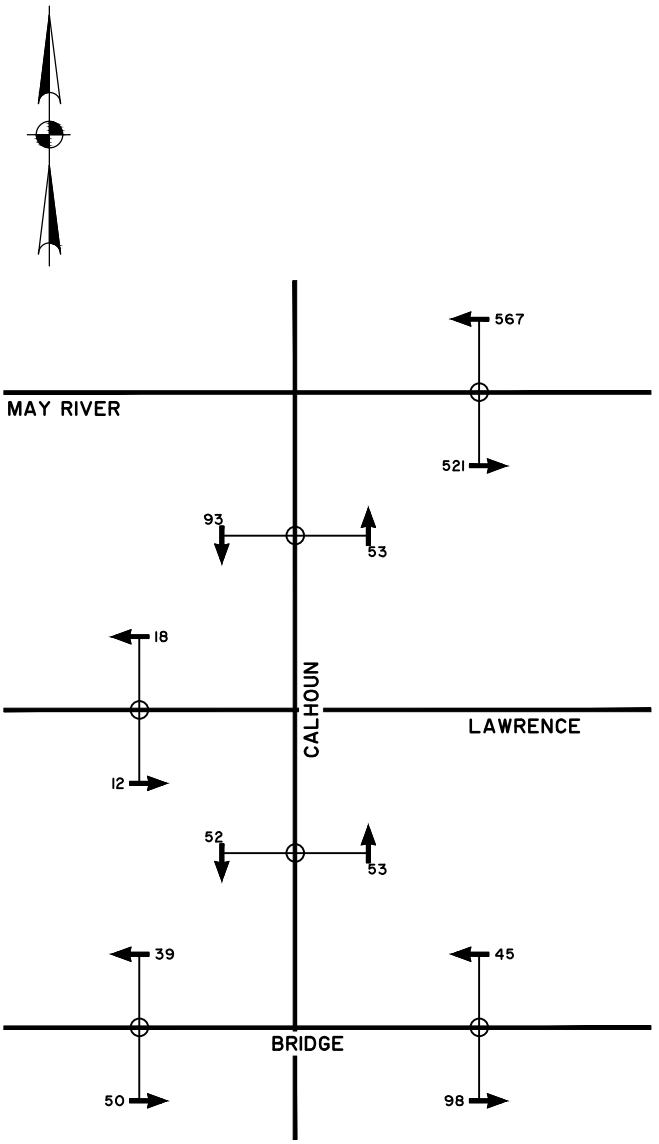
Typical weekday peak hour volumes on May River Road were approximately 1,000 to 1,100 vehicles per hour (vph) in the morning and 1,300 to 1,400 vph in the afternoon.

On Calhoun Street just south of May River Road, the highest peak hour volume consistently ranged from 150 to 200 vph, regardless of the day. Of the times counted, the highest volumes occurred on Sunday morning (187 vehicles) and Thursday afternoon (203 vehicles). Further south on Calhoun Street, between Lawrence Street and Bridge Street, volumes ranged from 100 to 150 vph.

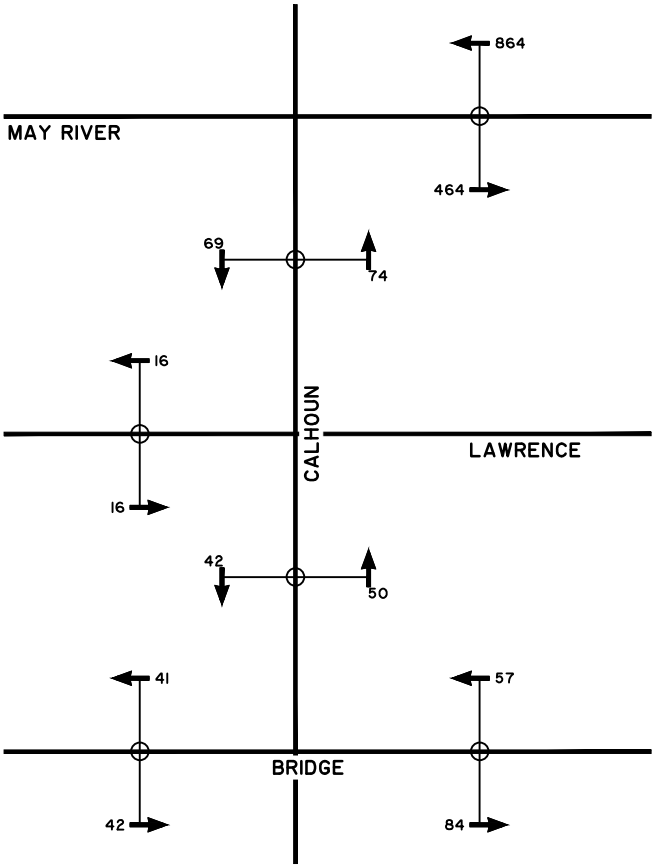
On Bridge Street, volumes were generally in the range of 75 to 125 vph. Counts were slightly higher east of Calhoun Street than west of Calhoun. At both locations, volumes were highest during the Thursday Farmers Market hours. East of Calhoun Street, volumes approached 200 vehicles in the Thursday peak hour. West of Calhoun Street, Thursday peak volumes were roughly 125 vph.

Volumes on Lawrence Street were consistently low. Peak hour volumes were less than 50 vph, regardless of the day.

On all of the subject streets south of May River Road, vehicular volumes are well within an acceptable range for a minor local roadway. Obviously, the safe and orderly interaction between vehicles, parking vehicles, and pedestrians is important in this area. Based on the counts, however, there should not be any congestion issues related to the number of vehicles.



WEDNESDAY
AM PEAK



WEDNESDAY
PM PEAK

Figure
3

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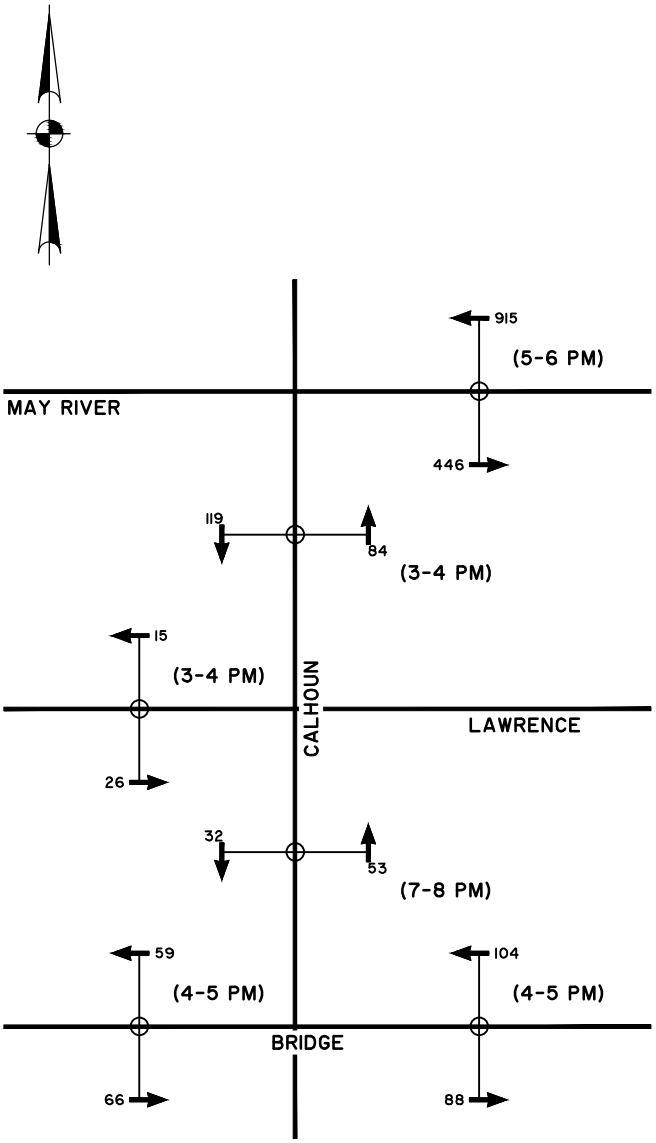
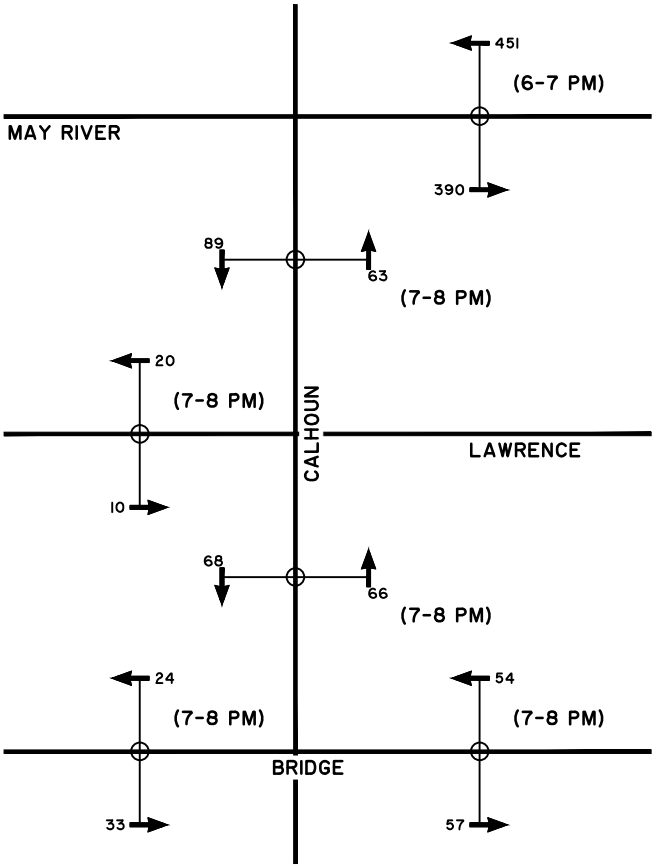
PEAK HOURLY VEHICLE VOLUMES



THURSDAY



FRIDAY

Figure
4

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PEAK HOURLY VEHICLE VOLUMES

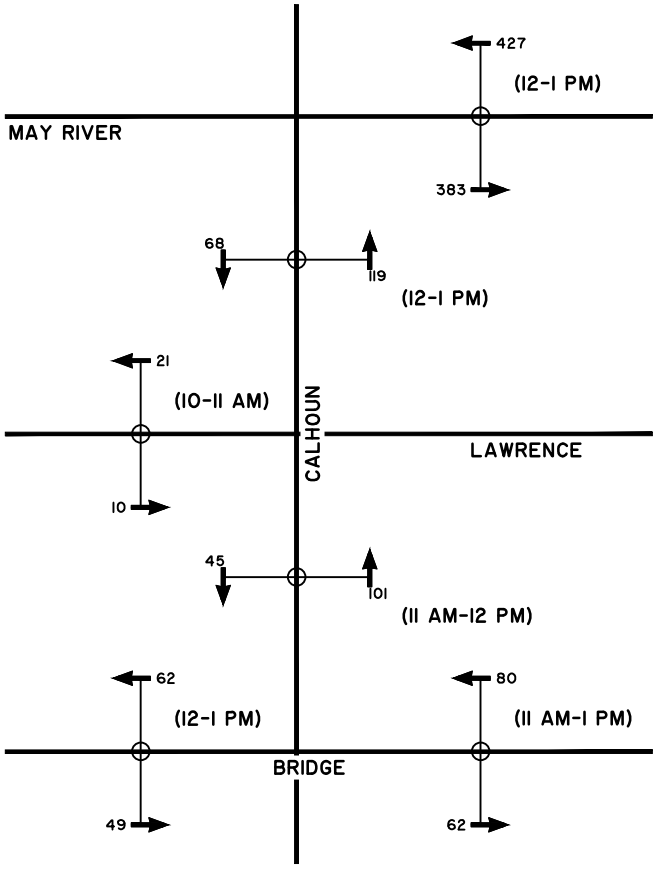

Figure
5

SUNDAY

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PEAK HOURLY VEHICLE VOLUMES

Intersection Turning Volumes

As noted, turning movement counts were taken at several intersections in order to assess vehicle delays and intersection Level of Service (LOS).

Traffic operations at intersections are typically evaluated in terms of "Level of Service" or LOS. The LOS is a measurement of delay incurred at an intersection or for a particular movement. LOS is defined by the Transportation Research Board's Highway Capacity Manual (HCM) from which LOS A represents free flow conditions with minimal delays; LOS F represents congested conditions. Generally, a LOS D or better is considered acceptable. Table 1 shows the HCM criteria for both signalized and unsignalized intersections.

Table 1. Level of Service definitions

LEVEL OF SERVICE	Control Delay per Vehicle (seconds)	
	Unsignalized Intersection	Signalized Intersection
A	≤ 10	≤ 10
B	>10 and ≤ 15	>10 and ≤ 20
C	>15 and ≤ 25	>20 and ≤ 35
D	>25 and ≤ 35	>35 and ≤ 55
E	>35 and ≤ 50	>55 and ≤ 80
F	>50	>80

Peak hour counts were taken in May 2014. Capacity analyses were completed based on the 2014 counts; results are shown in Table 2. Details of the count data and the capacity analyses are included in the appendix.

Table 2. Current operational conditions

Intersection	Control	WED AM PEAK HOUR	WED PM PEAK HOUR	THURS PEAK HOUR	FRIDAY PM PEAK HOUR
		LOS / Delay (seconds per vehicle)			
May River Road and Calhoun Street (2-way stop)					
NB approach (Calhoun)	Stop	C / 18	D / 29	D / 33	D / 25
SB approach (Calhoun)	Stop	C / 17	C / 21	C / 23	C / 20
May River Road and Boundary Street (4-way stop)					
EB approach (May River)	Stop	D / 34	E / 35	E / 40	B / 14
WB approach (Bruin Rd)	Stop	C / 16	D / 29	D / 31	B / 11
NB approach (Boundary)	Stop	C / 15	C / 15	D / 26	B / 10
SB approach (Bluffton)	Stop	B / 13	C / 15	C / 17	B / 10
Calhoun Street and Lawrence Street (2-way stop)					
EB approach (Lawrence)	Stop	A / 9	A / 9	-	B / 11
WB approach (Lawrence)	Stop	A / 9	A / 9	-	B / 10

The intersection volumes and the associated LOS are shown in **Figures 6 and 7** on the following pages. Based on the counts and analyses, the following observations are made with regard to each intersection.

May River Road and Calhoun Street

With the relatively high volumes on May River Road, the Calhoun Street approaches likely experience some moderate delays at times. Overall, the intersection functions well at most of the times observed.

Volumes do not indicate the need for signalization or any change to the operational controls. The relatively high number of pedestrians crossing May River Road at this location does warrant consideration of additional pedestrian accommodations.

May River Road and Boundary Street

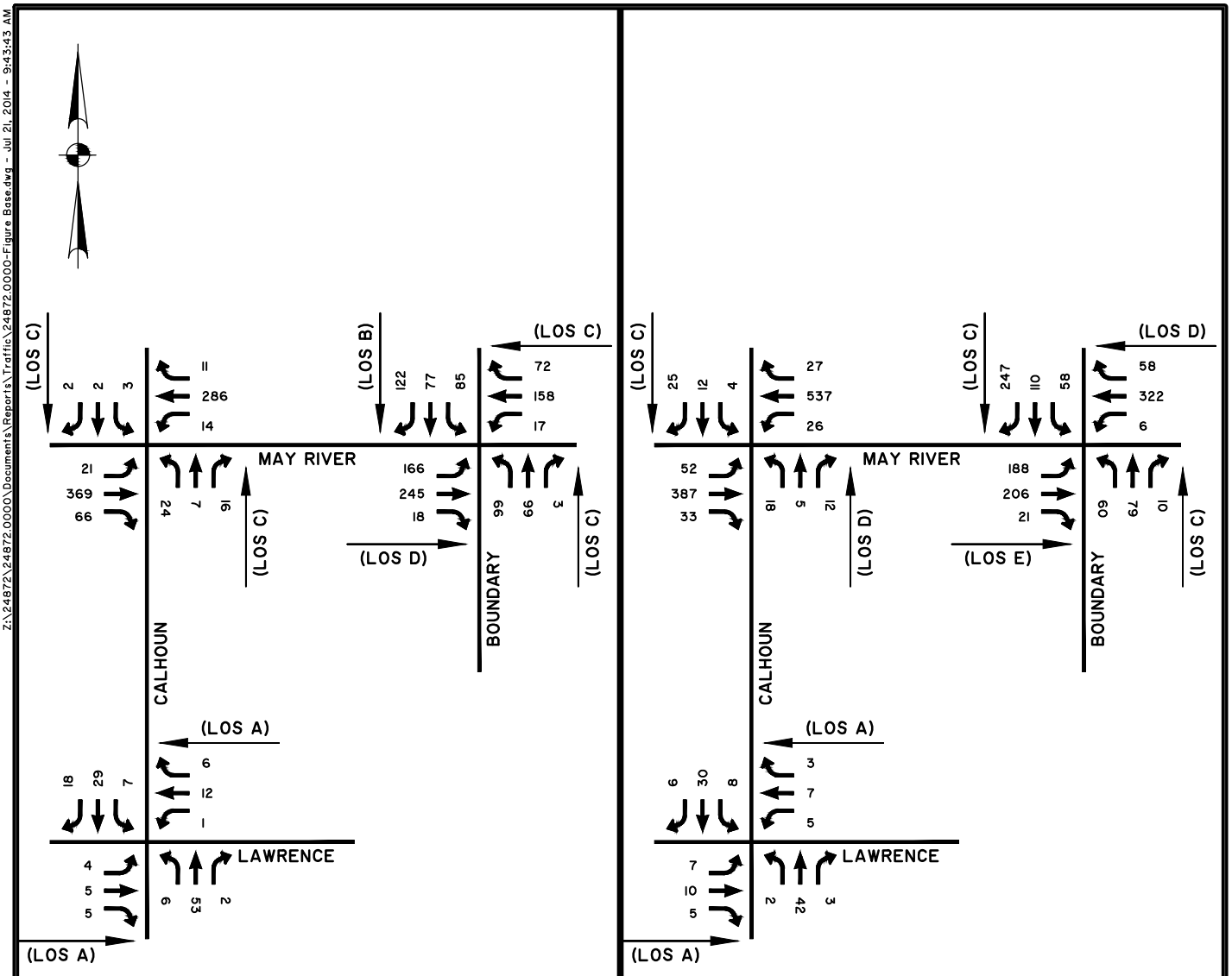
The 4-way stop controlled intersection of May River Road and Boundary Street also functions relatively well during most peak periods. The afternoon peak hours likely experience some longer delays, especially on the westbound approach.

Signalization is not warranted and conversion to two-way stop control would create longer queues and delays on the stopped approaches. Pedestrian volumes are lower at this location. Conversion to a roundabout could improve the operational efficiencies, but would require significant costs and right-of-way.

Based on the volumes counted, the intersection is appropriately configured and controlled with stop signs on all approaches.

Calhoun Street and Lawrence Street

The Calhoun Street / Lawrence Street intersection operates with minimal delays. The volumes entering the intersection do not warrant conversion to an all-way stop, based on SCDOT traffic calming guidelines (attached in the appendix). As with the May River Road intersection, pedestrian movements are prevalent and should warrant consideration of additional pedestrian accommodations.



WEDNESDAY
AM PEAK HOUR

WEDNESDAY
PM PEAK HOUR

Figure
6

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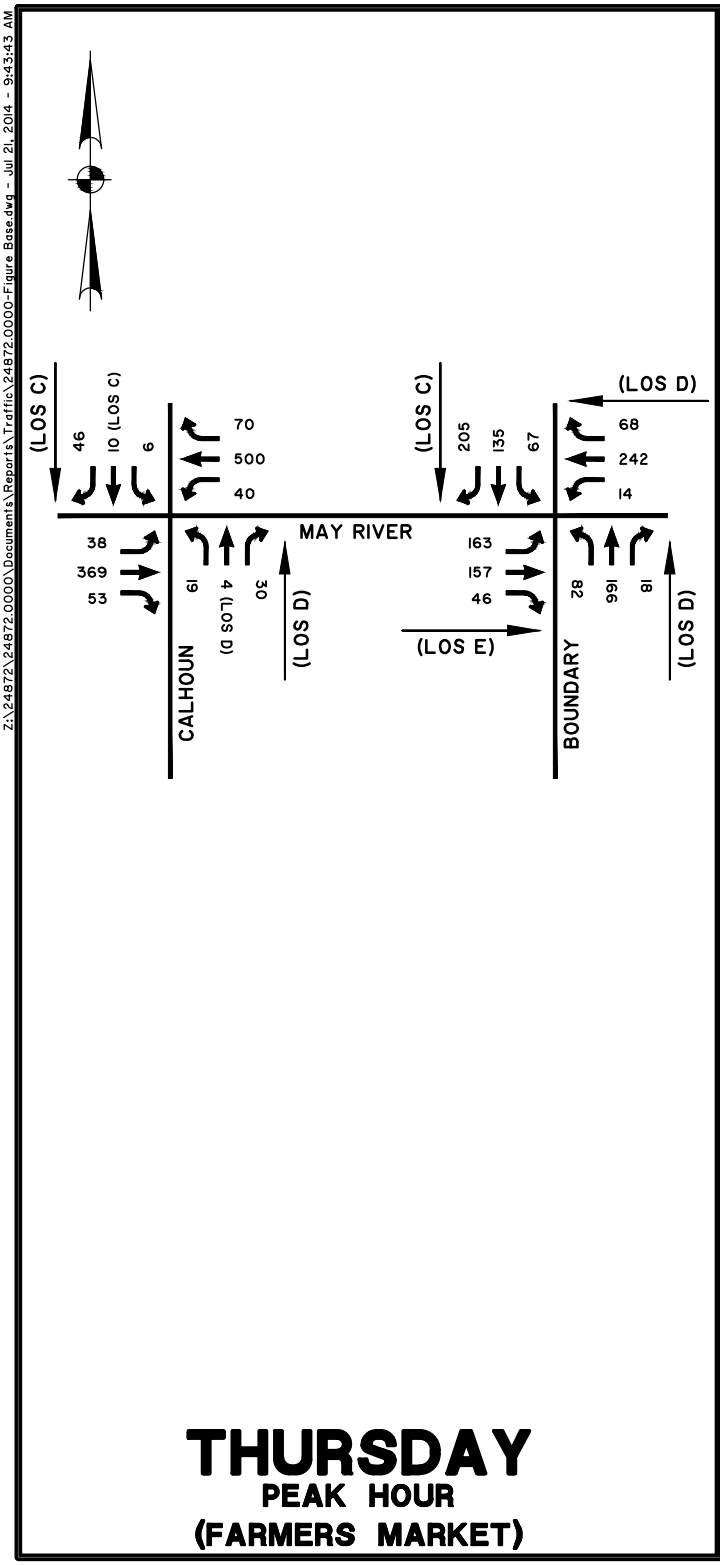
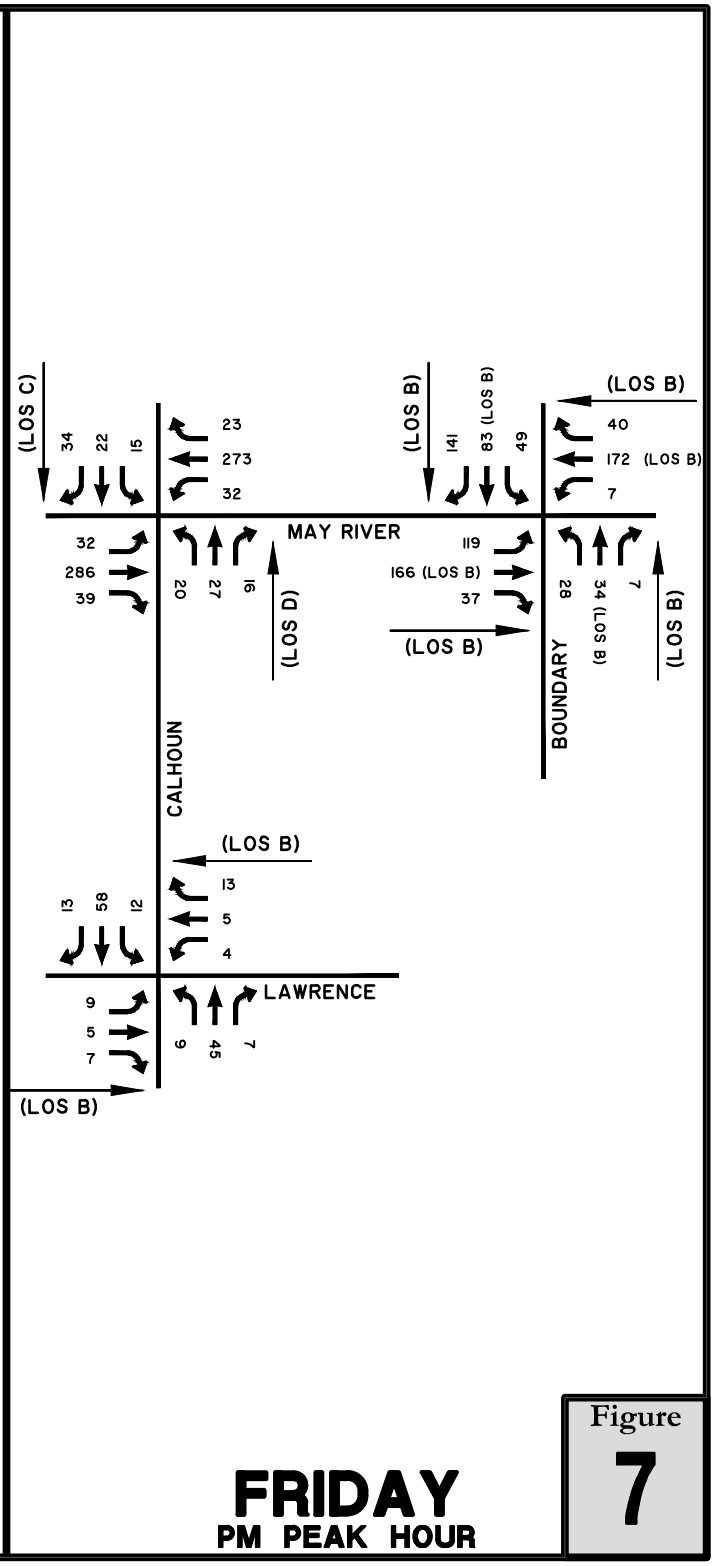
INTERSECTION COUNT AND LEVEL OF SERVICE



THURSDAY
PEAK HOUR
(FARMERS MARKET)



FRIDAY
PM PEAK HOUR

Figure
7

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INTERSECTION COUNT AND LEVEL OF SERVICE