Tulane University
New Orleans, Louisiana

Uptown Campus Transportation and Circulation Study

Prepared for
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Project # 11-098

Tulane University Uptown Campus Transportation and Circulation Study

Introduction

This report has been prepared to document current transportation characteristics at the Uptown Campus of Tulane University, anticipate changes in access and circulation associated with short term construction projects and long term changes in the function and traffic operation of the entire Uptown Campus access system, and to assist in future short and long term master planning at the University.

Existing Vehicular and Pedestrian Volume and Flow Patterns

Traffic data was collected at key intersection locations where internal campus roadways and pedestrian crossing points intersect with public streets. Data collected included vehicular, bicycle and pedestrian volume counts at intersections.

Intersection Volume Counts

Pedestrian and vehicular traffic counts were conducted at 5 intersection locations on the TU Uptown campus. Counts were conducted for three two-hour intervals on a weekday when classes were in session. Data collection periods were 7:00AM to 9:00 AM, 11:00 AM to 1:00 PM and 4:00 PM to 6:00 PM. Counts were conducted at the following locations:

1. Freret Street at McAlister Place
   Freret at McAlister is a signalized intersection that controls thru traffic flow on Freret Street and a protected pedestrian crossing of Freret Street. McAlister Place was formerly an internal through street that connected Freret Street and Willow Street. Subsequent to the conversion of McAlister Place between Freret Street and Drill Road, to a pedestrian mall, the intersection crosswalk was modified and additional pedestrian display was installed. Traffic signal phasing consists of the Freret thru movements and the pedestrian crossing interval.

2. Freret Street at Law Road
   Freret at Law Road is an unsignalized T-Type intersection. Law Road is an internal roadway that operates one-way northbound between St. Charles Avenue and Freret Street. A parking control gate is located at the Law Road entry drive at S. Charles Avenue. The Law Road approach to Freret Street stop sign controlled. North of Freret, Law Road becomes Library Road that functions as a service drive for Jones Hall, Fogelman Arena and the L.B.C.

3. Willow Street at McAlister Place

   Willow at McAlister is a signalized intersection that controls thru traffic on Willow Street, northbound traffic on McAlister and pedestrian crossings on all approaches to the intersection.

4. Willow at Newcomb Place / Audubon Boulevard

   Willow at Newcomb Pl. / Audubon Blvd. is an unsignalized four approach two-way stop controlled intersection. Thru traffic on Willow has the right of way and the Newcomb / Audubon approaches are stop sign controlled. During the count period, Audubon Blvd was under construction and signed "Local Traffic Only".

5. Ben Weiner Drive at S. Claiborne Avenue

   Ben Weiner at S. Claiborne is a four approach two-way stop controlled intersection. Thru traffic on S. Claiborne has the right of way and the Ben Weiner north bound and the S. Miro median opening are stop sign controlled. Vehicular traffic exiting Ben Weiner to S. Claiborne must turn right at the intersection. Traffic can enter Ben Weiner from S. Claiborne (right turn) or from the median opening (thru movement).

Machine Traffic Counts

Twenty four (24) hour vehicle volume counts were recorded at following locations:

- Ben Weiner, north of Willow Street, north and southbound
- Law Road north of St Charles Avenue, northbound
- Freret Street, east and westbound.
- Willow Street, east and westbound.

Intersection Count Data

Manual classified traffic volume counts were collected at each intersection. Surveyors observed and recorded the number of vehicular (car and truck), pedestrian , T.U. golf cart, T.U. shuttle and bicycle movements . Figure 1 presents the highest hourly counts recorded during each two hour count interval.

A review of Figure 1 indicates as would be expected that highest vehicle volumes are observed on Freret Street. The two-way volume on Freret at McAlister was highest during the PM peak period when 741 vehicles were recorded. Freret Street functions as a cross-town connector type street supporting thru traffic movements in both directions between Broadway and Louisiana Avenue, and, ultimately, to the CBD via Simon Bolivar.

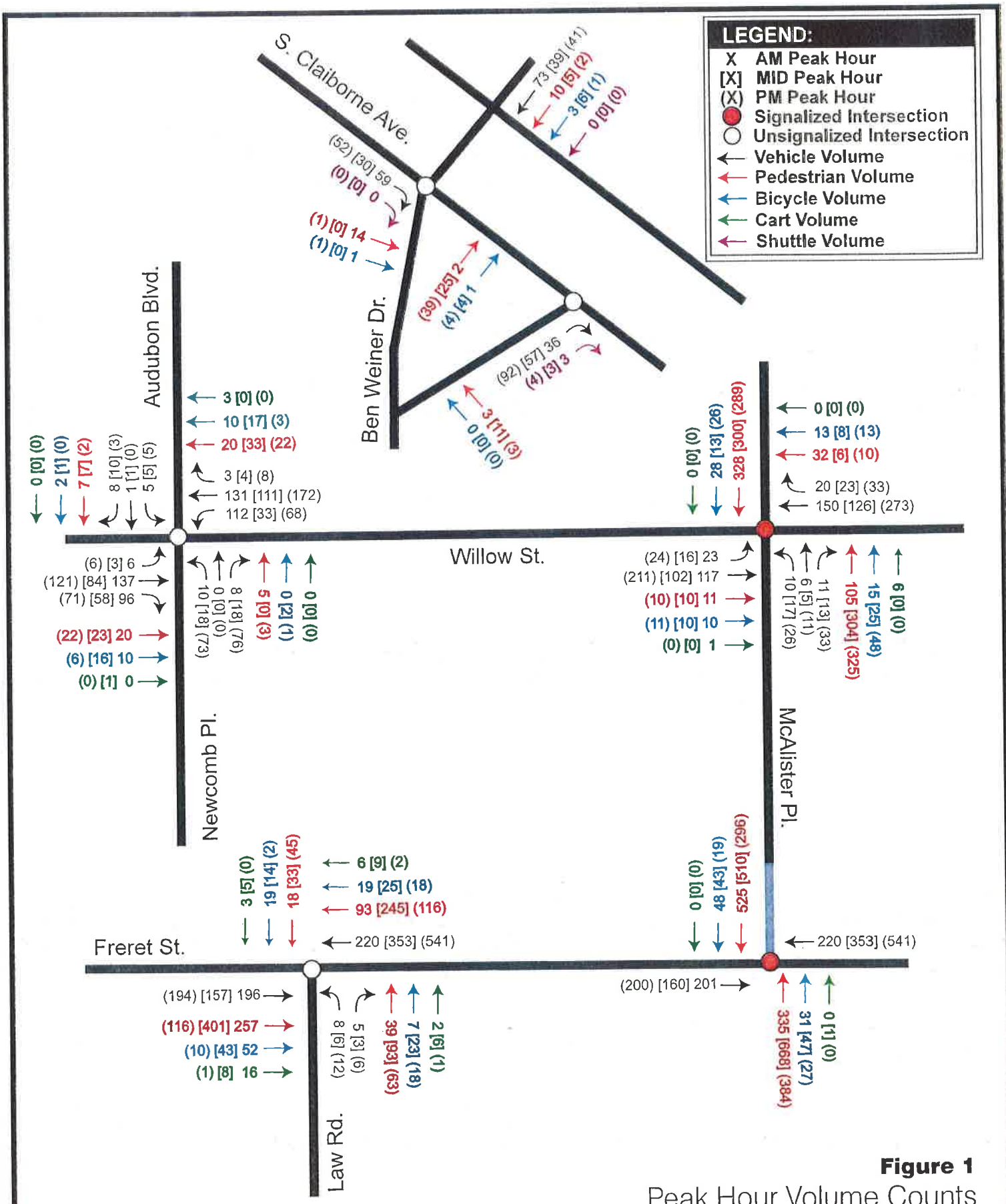

Figure 1

Peak Hour Volume Counts

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Traffic flow on Willow Street, a neighborhood connector, was roughly half of the volume observed on Freret during the same period.

The highest hourly volume of pedestrian crossings was observed at the intersection of Freret at McAlister during the mid-day count period, 1178 movements, at the protected intersection crosswalk. Pedestrian crossings of Freret at Law Road were observed to be relatively low as compared to the McAlister crossing, 146 during the highest hour during the mid-day survey period. Field observation prior to the modification of McAlister Place and the improvement of the pedestrian crosswalk and signal display at Freret indicated higher crossing activity at Law Road.

The hourly volume of pedestrian crossings at Willow and McAlister were comparable during the mid-day and PM peak hour survey periods, roughly 600 crossing seach.

Bicycle activity at each intersection followed the same general pattern, with highest volume observed on Freret Street, and at McAlister crossing Freret, and on Willow and at McAlister crossing Willow.

Twenty Four Hour Volume Counts

Twenty four hour and peak hour volume data recorded on Ben Weiner, Law Road, Freret and Willow streets is presented in Table 1.

Table 1
24 Hour and Peak Hour Vehicular Volume Counts

Location	Direction of Travel	24 Hour Volume	AM Peak Hour	PM Peak Hour
Ben Weiner at Willow	Northbound	750	54	76
Ben Weiner at Willow	Southbound	1366	107	136
Law Road at Freret	Northbound	324	23	67
Freret at McAlister Place	Westbound	3571	246	514
Freret at McAlister Place	Eastbound	4935	307	346
Willow at McAlister Place	Westbound	2563	337	311
Willow at McAlister Place	Eastbound	3285	172	232

Intersection Level of Service Analysis

Intersection traffic operations are evaluated using an analysis procedures developed in the Highway Capacity Manual (HCM). Inputs are vehicular traffic volumes, pedestrian volumes, intersection geometry and intersection traffic control. Procedures have been developed for both signalized and unsignalized intersections and the results are reported as intersection (signalized intersections only) and movement Level of Service (LOS) designations and estimated control delay. Level of Service designations range from LOS A, a condition of minimal delay, to LOS F, a condition of excessive delay. LOS A thru LOS C is considered good operating conditions and LOS D and LOS E are typical for urban peak hour conditions. LOS F conditions are often experienced for short periods on one or more approaches to an unsignalized intersection during peak demand periods.

Two software packages, TEAPAC and HCS are commonly used to analyze intersection traffic operations.

Volume demand recorded at the signalized intersections was input in the TEAPAC analysis procedures to develop LOS estimates during AM, Mid-day and PM peak periods. For the unsignalized intersections, HCS analysis procedures were used.

Results of these analyses are presented in Table 2.

Table 2
Intersection LOS Analysis Results

Intersection and Approach	Movement	AM Peak		Mid-day Peak		PM Peak	
		LOS	Delay	LOS	Delay	LOS	Delay
Signalized Intersections			(sec)		(sec)		(sec)
		A	**6.0**	**A**	**6.6**	**A**	**6.6**
Freret at McAlister Place							
Freret upbound	thru	A	6.0	A	7.0	A	7.0
Freret downbound	thru	A	5.9	A	5.4	A	5.4
Willow at McAlister Place		**B**	**17.0**	**B**	**19.0**	**C+**	**24.5**
Willow upbound	thru	B	16.4	B	18.5	C+	25.2
Willow downbound	thru / left	B	16.8	B	19.1	C+	25.1
McAlister northbound	left / thru / right	C+	21.3	B	19.9	C+	27.2
Unsignalized Intersections							
Freret at Law Road							
Law Road northbound	left / right	B	10.6	B	11.1	B	12.9
Willow at Newcomb Place							
Newcomb northbound	left / thru / right	B	11.5	B	10.9	B	14.5
Audubon southbound	left / thru / right	B	11.0	B	10.2	B	13.8
Willow upbound	left / thru / right	A	7.9	A	7.6	A	7.9
Willow downbound	left / thru / right	A	7.8	A	7.7	A	7.7
S. Claiborne at Ben Weiner / S. Miro Median Opening							
Ben Weiner northbound	right	C	18.1	B	13.2	C	17.4
S. Miro southbound	thru	F	111.6	C	21.1	E	36.4

A review of Table 2 indicates acceptable to good LOS conditions at most locations during each of the peak hour observations with the exception of the intersection of S. Claiborne at Ben Weiner and specifically for the southbound thru movement from the S. Miro median opening. This movement was evaluated to function at LOS F during the AM peak hour. This is due to heavy inbound or downtown bound traffic volume on S. Claiborne Avenue that has the right of

way over the stop controlled median opening. Field observation, however, indicated lower levels of delay than is estimated by the HCS analysis procedures. This is due to gaps in the eastbound traffic flow on S. Claiborne that are created by the upstream traffic signal at the intersection of Broadway at S. Claiborne. During the Broadway green phase or interval, sufficient gaps are created in the S. Claiborne traffic flow to allow movement across S. Claiborne at this intersection as well as other median openings along S. Claiborne Avenue.

Conditions during the midday for this movement are estimated to fall with LOS C ranges and during the PM peak, within LOS D to E ranges.

A traffic operations analysis of this section of S. Claiborne between Broadway and Nashville Avenue, prepared by the consultant in 2008, indicated similar conditions at the intersection of Calhoun at S. Claiborne Avenue. Peak period volume data recorded for the left turn movement from outbound S. Claiborne to riverbound Calhoun was compared with Warrant 3, Peak Hour, as contained in the 2009 Manual of Uniform Traffic Control Devices (MUTCD). A review of Warrant 3 criteria indicated that on the basis of the minor street approach volume Warrant 3, Peak Hour, is satisfied. However, satisfaction of one or more Warrants does not solely justify traffic signal control at an intersection.

Significantly lower volume demand was observed on the Miro median approach and it is unlikely that traffic signal warrants would be met.

Vehicular speed data was recorded in 2008 on S. Claiborne Avenue in the study area. The posted speed limit for this section of S. Claiborne Avenue is 35 MPH. Speed data recorded indicated that approximately 70% of the vehicles recorded exceeded the posted speed limit by 8 or more MPH. Additional speed limit signage and increased enforcement was recommended.

Parking Inventory

A field inventory of the motor vehicle, bicycle and cart parking supply on the Uptown Campus was conducted. Figures 2 and 3 detail the location of parking spaces for each mode.

Currently, there are 2013 passenger car parking spaces in surface lots, on internal streets and in the Diboll Garage, on the Uptown Campus of Tulane University. In addition to auto spaces, designated motorcycle parking areas are located on Newcomb Place and in the Diboll garage. When the Unified Green project is implemented, the campus auto parking supply will be reduced to approximately 1940 spaces.

In addition to the on-campus supply, 390 spaces are available at the University Square remote lot located on Broadway at Avenue. Transportation between the University Square lot and the Main Campus is provided by University shuttles.

Interaction of Campus Access Points with Public Streets

Existing Conditions

Access to on-campus parking areas and service drives are supported by S. Claiborne Avenue, Willow Street, Freret Street and St. Charles Avenue.

Vehicular access to parking areas on the Front Campus, located between St Charles Avenue and Freret Street, is from St Charles Avenue, Gibson Circle and Law Road, and from Freret Street, Engineering Road.

Primary vehicular access to parking areas on the Middle Campus, located between Freret Street and Willow Street, is from Willow with secondary access from Audubon Street. Parking areas accessed from Willow and Audubon are Newcomb Circle, Newcomb Place, Drill Road and McAlister Place.

Vehicular access to parking areas in the Back Campus, the Diboll Garage, the Sports Medicine lot and smaller surface parking lots, is from Willow, McAlister Extension, S. Claiborne Avenue and Ben Weiner Drive. Access to the Rosen Lot is from S. Claiborne Avenue.

Pedestrian and bicycle access is from public sidewalks and public streets, respectively. There are signalized pedestrian crossings on Freret at McAlister Place and on Willow at McAlister Place / Extension.

On St Charles Avenue there are three curb cuts, one entering and one exiting Gibson Circle and the one-way entry curb cut to access Law Road.

On Freret Street there are five curb cuts, a one–way exit drive at Law road, one two-way curb cut at Engineering Road, one two-way service drive at Library Road, one two-way service drive at the Tilton Library and one two-way service drive at Weinmann Hall. Vehicular access was formerly permitted at the intersection of Freret at McAlister Place prior to the conversion of the section of McAlister Place between Freret and Drill Road to pedestrian mall. The intersection is signalized with a protected pedestrian crossing interval.

On Willow Street there are seven access points to the Campus, the intersection of Willow and Newcomb Place, the intersection of Willow and McAlister Place and Willow at McAlister Extension, which is signalized with a protected pedestrian crossing interval, the intersection of Willow and Ben Weiner Drive, a two way service drive at Wall Residential College, at two way service drive at and a two-way Service Drive and parking lot /service drive at Phelps House.

On S. Claiborne Avenue, access to Campus is provided by a two way access drive at the Rosen surface parking lot and at the intersection of Ben Weiner at S. Claiborne.

Figure 4 presents the location and traffic operation of existing parking and service access points

Future Access Points

Renovation and construction activity at the Howard Tilton Memorial Library will require that curb cut access be provided on Freret Street at the projection of Newcomb Place. Currently, all traffic that access Newcomb Place must do so from Willow Street. During the construction period, Newcomb Place, south of the Newcomb Circle, will be closed to non-construction access and parking. Construction traffic, including deliveries, will access the library site from Freret Street. Access from Freret to the job site will be controlled by a construction gate.

Post construction, the Freret curb-cut will remain to support the development of the Unified Green Project. Traffic on the south section of Newcomb Place will enter and exit at Freret. Traffic on Newcomb Circle will enter from Willow and exit to Freret. The new intersection of Freret at Newcomb Place will be reviewed for traffic control signalization, to include implementation of a pedestrian protected interval.

The demolition of Phelps Dining / Residence Hall and the construction of a dining hall in the new structure will require the development of loading dock access from Willow Street. It is anticipated that the existing parking lot / service drive on Willow will be abandoned or modified and a new curb cut access point will be developed to service the dining hall.

Figure 5 presents the location of existing and future vehicular access points from public streets.

Traffic Circulation by Mode

Parking Access and Circulation

Parking access to on campus parking areas is via St. Charles Avenue, Freret Street, Willow Street and S. Claiborne Avenue.

Front Campus

Vehicles parking in Gibson Circle enter from and exit to St. Charles Avenue. Vehicles parking on Law Road enter from St. Charles and exit to Freret Street. Vehicle parking in areas accessed by Engineering Road enter and exit at Freret Street.

Middle Campus

Primary access to Middle Campus parking areas is from Willow Street. Smaller parking areas at Weinmann Hall and at Fogelman Arena are accessed from Freret Street. The parking area at Paterson House is accessed from Willow Street. With the implementation of the Unified Green Project, a new parking / service access drive will be implemented on Freret Street. Traffic entering Newcomb Place from Willow will circulate to Drill Road or Newcomb Circle and exit to McAlister Place or to Freret or Plum Street. Traffic entering from Freret will exit to Freret Street.

Back Campus

Vehicles parking on McAlister Extension enter from Willow Street and exit to Ben Weiner Drive. Access to Diboll Garage, the Sports Medicine parking area and several small parking areas is from Ben Weiner. The parking lot north of Reily is accessed from McAlister Extension. Vehicles parking in the Rosen lot enter from S. Claiborne Avenue and exit to S. Claiborne and Ben Weiner.

Figure 6 presents existing parking access.

Figure 7 presents existing and future parking access.

Pedestrian Access and Circulation

Given the linear nature of the Campus, pedestrians generally access the University from St. Charles Avenue, Freret Street, Willow Street and S. Claiborne Avenue. Pedestrian access to Newcomb Circle from the west (Broadway) is supported by Plum and Zimple Streets. South of Willow to St Charles, pedestrians circulate on a network of sidewalks linked to buildings and public spaces. North of Willow pedestrian sidewalks located on Ben Weiner connect the Rosen Lot and S. Claiborne Avenue to McAlister Extension via the Reily breezeway. Signalized pedestrian crossings are located on Freret and Willow Street at McAlister.

Bicycle Access and Circulation

Bicycles access Campus from the street network and circulate on Campus using the sidewalk system. Bicyclists are permitted to ride on sidewalks and on the mall section of McAlister.

Figures 8 and 9 present a summary of existing and future pedestrian and bicycle access patterns.

Cart Access and Circulation

Carts that are used to transport personnel and to service campus buildings circulate on internal roadways and paths. Interaction with public streets is generally limited to crossings of Freret and Willow Streets and travel between the Front Campus and The President's House on St. Charles Avenue.

Figure 10 presents a summary of current cart circulation patterns on Campus and on public streets. Figure 11 presents a summary future circulation patterns.
(Source: Office of the University Architect)

T. U. Shuttle

The University operates six shuttle routes that service the Uptown and Downtown Health Sciences Campuses:

- The Red Line provides services between Loyola and Tulane's uptown campuses, Walmart, Tulane's downtown campus and the Papillion and Deming Residences.
- The Blue Line provides service between University Square and the Uptown Campus.
- The Green Line provides an express connection between the Uptown and Downtown Campuses.
- The Gold Line provides evening service for riders between the Uptown Campus and their residence or vehicle located within a one mile radius of the Campus.
- The Pappi provides service to Papillon residents to the Uptown and Downtown Campuses.
- The Entertainment Shuttle provides service between the Uptown Campus and Lakeside and Clearview Malls, Palace Movie Theatre, Whole Foods and International Food Markets on Saturdays when classes are in session.

Figure 12 presents the location of shuttle stops on the Uptown Campus for each route.

Near Term Impact of Planned Construction Projects on Traffic Circulation

The consultant was provided a summary and schedule for planned construction projects on the Tulane University Uptown Campus for the period beginning in the Spring of 2012 through the Fall of 2015. The following text summarizes potential near term impacts on access and circulation, identifies conflicts, categorizes the severity of potential impacts and identifies measures required to maintain safe and efficient access during the respective construction periods.

Flower Hall, Spring – Fall 2012

This project is expected to result in low impacts to access and parking on portions of Engineering Road that are not adjacent to the site. Access from Freret Street will be maintained for parking and service vehicles associated with other buildings on Engineering Road. It is assumed that material deliveries will be from Freret. Site control with fencing and barricades and intermittent traffic control for large delivery vehicles delivering materials is warranted. Parking impacts are expected to be limited and short term.

Freret Curb Cut, Summer 2012

The construction of the new access point to Newcomb Place will allow for delivery access during construction of Howard Tilton Memorial Library expansion and ultimately support the Unified Green Project by providing ingress to parking areas on Newcomb Place at the library, and egress for parking areas on Newcomb Circle. Impact is likely short term.

Construction will affect the Freret Street roadway and pedestrian paths on the public sidewalk and on internal sidewalks and paths. A Work Zone Traffic Control Devices Plan (TCDP) will be required by the City for work in and adjacent to the public right of way. This should include advance pedestrian warning signage on the sidewalk as well as vehicular work zone signage. Construction work will likely impact shuttle stop operation and may require short term relocation.

Fencing and barricades will be required on TU property to separate pedestrians and bicyclists from the work area.

Newcomb Plaza Project, Summer – Fall 2012

The short term impact of this project will primarily affect access to parking areas, and subsequently traffic circulation, on the Newcomb Place and Newcomb Circle. Short term impact will be the loss of access to parking spaces on Newcomb Circle during some periods of construction. Long term impacts are the permanent relocation of 13 spaces that will be lost due to the project.

A TCDP will be required for the closure of Audubon Street between Plum Street and Newcomb Circle. Fencing and barricades will be required on Newcomb Circle to separate pedestrians and bicyclists from the work area.

NOJO Renovation, Accounting Renovation, Summer-Fall, 2012

This Project is not expected to impact campus access and circulation.

Zimple Street Infrastructure, Summer – Fall 2012

Project will require a partial closure of Zimple Street, generally between Newcomb Place and Broadway. The City will require a Work Zone TCDP detailing temporary signs, barricades and channelization devices for work in or adjacent to the public right of way.

Key issues will be maintenance of pedestrian way on south sidewalk, maintenance of access to property located on Zimple Street and Audubon Street and potential removal of on-street parking during construction. Potential impacts are limited to the immediate project area but may be significant depending on how much of roadway must be closed to install infrastructure improvements.

Flood Wall at Power Plant Block, Summer 2012 – Spring 2013

Floodwall project will primarily affect service access to affected area when gates or control points are under construction and during temporary closure of Plum Street access. The sequence of construction and work plan should be adjusted to maintain limited pedestrian and service access to buildings located within the perimeter.

Work adjacent to or affecting Audubon Street and the temporary closure of Plum will require a TCDP. Impact of project likely limited to immediate area.

Jones Hall, Fall 2012 – Spring 2013

Project will result in temporary closure of loading dock access from Library Road and eliminate parking in this area. If possible, deliveries should be scheduled so as not to conflict with temporary closure. Temporary traffic control should be implemented to close the service drive at Freret Street during temporary closures. The number of parking spaces impacted is small and can be accommodated within the existing Campus inventory.

Howard Tilton Memorial Library Expansion, Fall 2012 – Summer 2014

This project will eliminate parking on a portion of Newcomb Place, impact the Freret Street roadway and sidewalk, impact pedestrian flow patterns on Newcomb Place and Zimple Street, impact the operation of shuttle routes that currently have a stop at the Howard Tilton Memorial Library and impact service access to Dixon Hall.

The potential impact on circulation is significant and will likely require adjustment of shuttle routes, additional pedestrian level signage and increased traffic control measures.

Analysis of Library Expansion Site Logistics Plan

The Newcomb Place main pedestrian entry to the Library will be closed during construction and a temporary entrance established on the sidewalk along Freret Street. The Freret sidewalk will remain open, with pedestrians protected by covered walkway. A work Zone TCDP may be required by the City for the Zimple Street vehicular and pedestrian traffic restrictions.

Material deliveries to the site will be made using a new driveway access point at Newcomb Place. The site will be fenced and the drive secured by an access gate. During delivery periods, at a minimum, a flagman will be required on Freret Street to control access to the site. At peak construction activity periods, police traffic control may be required.

Newcomb Place will be closed to vehicular and pedestrian traffic between Freret and the south Newcomb Circle roadway. A construction fence will be erected closing Newcomb Place from Freret on the south, to the east curb of the northbound Newcomb Place, to Newcomb Circle south. Pedestrian circulation will be maintained on sidewalks outside of the fence. Cart travel will be rerouted away from the pedestrian circulation. A lay down area and a staging area will be located on two Zimple Street lots owned by the University, behind, or west of, the Library. An access gate will be located on Zimple to allow off loaded materials to be moved to the lay down and staging areas.

The closure of Zimple Street at the Library affects a pedestrian pathway from Broadway and Audubon Streets to Newcomb Place. While the Zimple Street is currently gated to vehicular traffic at the Library, and does not intersect with Newcomb Place, pedestrian and bicycle traffic can and does use this access point.

Pedestrian level detour and directional signage will be required to divert pedestrian and bicycle traffic to alternative routes. A temporary sidewalk at Zimple Quad should be considered.

Zimple House, Spring 2013 – Summer 2014

Construction of Zimple House will overlap the Howard Tilton Memorial Library Expansion project. Partial closure of Zimple Street, east of Broadway, may be required to work the site. Impacts are similar to those outlined under *Zimple Infrastructure*, with the exception of the need to maintain a pedestrian / bicycle connection between Zimple at McWilliams Hall due to Library construction.

A Work Zone TCDP will be required by the City for work adjacent to and potentially in the Zimple and Broadway rights of way. It can also be anticipated that curb parking on Broadway will be impacted and that temporary pedestrian sidewalk may be required.

Stadium Demo / Prep, Fall 2012

Stadium Construction, Fall 2012 – Summer 2014

Construction impacts associated with this project are generally limited to Ben Weiner Drive. Access to some parking areas will be affected but Diboll Garage and Sports Medicine parking, which also enjoy access from Willow Street, will be largely unaffected, as will access to the Rosen Lot that has direct access to and from S. Claiborne Avenue. It can be anticipated that haul routes will use S. Claiborne Avenue to access Ben Weiner Drive.

Site control with fencing and pedestrian barriers will be required.

The greatest potential impacts are related to bicycle and pedestrian movement between Willow and S. Claiborne. A protected path that separates pedestrians and bicyclists from construction activities must be maintained or alternative measures developed.

It is expected that one lane of Ben Weiner may be closed to vehicular traffic on an intermittent basis but that the roadway will otherwise remain open. During closures, a flagman will be required.

Long term, specifically Game Day, impacts of the Stadium upon Campus access, circulation and parking are addressed in the report *Venue Parking, Traffic, Transit and Pedestrian Flow Study* dated August 15, 2012 prepared by SP Plus GameDay.

Uptown Chillers, Spring 2013 – Fall 2013

This project is expected to have minimal impact on Campus access and circulation.

Phelps Dining / Residence Hall, Fall 2013 – Fall 2015

Construction of the Dining Hall at Phelps will overlap the Stadium construction project. The roadway width of Willow Street is approximately 28 feet at Phelps and site work will likely impact traffic flow on Willow and require closure of the sidewalk to pedestrians. A Work Zone TCDP, to include pedestrian detours, will be required by the City for work adjacent to and potentially in the Willow right of way.

Parking on McAlister Place at the construction site will be temporarily relocated to other on-campus locations. Cart access to adjacent buildings will be from McAlister Place.

The impact of Stadium construction on Ben Weiner and the potential interruption to traffic flow on Willow may impact access to the Diboll Garage and other parking areas. During some phases of construction, traffic control by police officers may be required.

A permit to modify or relocate the existing driveway on Willow Street will be required.

Social Work Building Renovation, Tentatively Fall 2013 – Summer2015

This project will affect the traffic operation of Law Road. Traffic flow can be maintained by removing parking located near the building and detouring traffic around the work area. Site control with fencing and pedestrian barriers will be required.

Alternate routes for cart traffic, pedestrian and bicycle traffic should be developed and signed.

Richardson Memorial Hall, Tentatively Fall 2014

Access to construction area will be from Engineering Road. Construction will not significantly affect Campus access and circulation and is expected to have little effect on pedestrian and bicycle paths, which are located on west of the building. Construction may require modification to cart routes. Site control with fencing and pedestrian barriers will be required.

Access from the Loyola Campus may be required during some phases of the project.

Fogelman Arena, Summer 2012 – Spring 2013

Fogelman Arena is set back from Freret Street and construction activity will not likely affect vehicular or pedestrian flow on Freret Street. The largest potential impact is to service access to LBC and removal of parking adjacent to Jones Hall. Interruption to service access to LBC and Jones Hall should be minimized by managing delivery schedules to both the job site and LBC.

Parking on Library Road that is in conflict with the project activities should be relocated to other on-campus lots.

Unified Green, Fall 2014 – Spring 2015

The Unified Green project will join the Newcomb Quad and the LBC Quad. Existing parking on Newcomb Place will be eliminated in the project area. Access to the Howard Tilton Memorial Library will be supported by the new driveway access point on Freret Street and from Willow Street via Newcomb Circle.

Parking spaces that are eliminated will be relocated to other on-campus locations or to the University Square Lot.

General Neighborhood Impacts

The preceding text has discussed site specific impacts associated with individual Construction Projects and potential conflicts or concurrent impacts as one or more projects are simultaneously under construction or renovation. A broader potential impact is the parking impact of construction workers on the T.U. community and on the neighborhood. Many of the adjacent blocks in the neighborhood participate in the Residential Permit Parking (R.P.P.) Program. Those blocks that do not are likely used by students or visitors who do not pay for campus

parking. In this regard, potential impacts are likely greater on the T.U. community than on the neighborhood at large as most construction project start times are at 8:00 AM or earlier. It is likely that construction workers will arrive in the area prior to students and visitors and occupy spaces that under other circumstances are available for student and visitor parking.

To mitigate this impact, the General Specifications for each project could include the requirement that construction workers park in a remote off site location and be bused to the site.

Figures 13, 14, 15 and 16 present a plan view of concurrent construction projects by calendar year and access patterns associated with affected circulation by mode and construction site access.

Parking Analysis

Parking Supply

The on-campus parking supply, 2013 spaces, is dispersed over the campus with the highest concentration of parking spaces located between Freret Street and S. Claiborne Avenue. The largest concentrations of parking spaces, 1829 spaces, are located in the following locations:

- Diboll Garage – 828 spaces
- Rosen Lot – 309 spaces
- Newcomb Place / Newcomb Circle – 263 spaces
- Gibson Circle / Law Road / Engineering Road – 224 spaces
- Mc Alister Drive / Drill Road – 106 spaces
- Reily Center / Mc Alister Extension / Sports Medicine – 99 spaces

The 184 remaining spaces are located in smaller lots on campus. In addition to on-campus spaces, 390 parking spaces are currently available at the University Square satellite lot.

Implementation of the Unified Green Project will remove approximately 60 spaces that are located on Newcomb Place. The Newcomb Circle project will eliminate 13 spaces. The on-campus parking inventory post implementation of both projects is estimated at 1940 spaces.

Parking Control Overview

Parking at Colleges and Universities nationwide is a sensitive issue with respect to students, faculty and staff and, in urban areas, adjacent neighborhoods. Most institutions regulate the use of on-campus spaces and often operate remote or satellite parking facilities. A review of available parking and transportation plans in place at selected universities indicated the following general trends and approaches.

Eligibility

The use of parking facilities is generally limited to students, faculty and staff, and alumni, who must hold and display a permit in or on the vehicle. Limited visitor parking is accommodated in specific locations, controlled by parking meters that are time limited and / or by a time limited permit. At some universities, short- term parking is accommodated in public for pay parking lots or garages. Many universities prohibit overnight parking in specific locations or parking areas, with certain categories of permits valid only between 8:00 AM and 10:00 PM for example.

Fees

Permit fees are highly variable at various institutions, with the highest cost for permits for a space in a parking garage or in a central location and lowest cost permits for use of remote lots. At some institutions, the price structure for faculty and staff permits is less for an annual permit

and higher on a per semester basis. Payment options at most institutions include by payroll deduction. Student permits and fees are generally on a semester basis and fee differentials were also noted for day and evening students at some institutions.

Enforcement

Enforcement of driving and parking regulations is typically a function of the University Police Department. Most universities have a set fee schedule for violations and towing and booting is employed for certain offences. Fines were uniformly highest for parking in handicapped zones and illegally parking in fire lanes, at fire hydrants, and at loading docks or in delivery zones.

Infractions involving safety issues such as parking in fire lanes or near hydrants are generally subject to towing.

Parking Operations

Despite the cost and generally higher operating costs, there is a growing trend by many universities to construct garages and to move away from surface lots. Many institutions engage third party operators to operate campus parking facilities, including garages.

Public Transportation

A number of institutions with large enrollments have coordinated, and in some cases subsidized, public transit options for students with transit providers. Routes are developed that capture neighborhoods or apartment complexes where students live.

Parking Demand

Parking characteristics of colleges and universities can be estimated using the Institute of Transportation Engineers (I.T.E.) informational report, *Parking Generation, 4th Edition*, published in 2010. Data reported for Land Use Number 550, University / College estimates parking generation characteristics based upon the independent variable school population. School population is defined as the total number of faculty and staff and students. The total population of the uptown campus, undergraduate and graduate students, faculty and staff, using April 2012 data is approximately 12,060.

Hourly and day of the week demand characteristics were reported and a peak period vehicle parking demand estimated per school population.

Table 3 summarizes peak parking demand characteristics of an Urban University / College as reported.

Table 3
Parking Generation Characteristics: Urban University / College

Peak Day of Week	Thursday
Weekday Peak Hour	11:00AM to 12:00 PM
85th Percentile Demand	0.29 vehicles per school population

A total school population of 12,060 and an 85th percentile demand of 0.29 vehicles per school population yields an estimated peak hour parking demand of 3,497 parking spaces.

Satisfaction of the 85th percentile demand is often used as a design standard for a transportation facility. The 85th percentile is defined as the point where 85 percent of the values fall at or below and 15% of the values fall above.

The database for Urban University / College data is based upon 5 studies. The average size of the total population of study sites was 10,500. The range of parking demand was a low of 0.14 and a high on 0.31 vehicles per school population.

Demand associated with Tulane University likely falls within the lower ranges when the number of students who live in nearby neighborhoods and walk or bike to school and the fact that by policy, freshmen students cannot have a vehicle on Campus, are considered.

If the number of freshmen students, 1,688, is excluded from the total population calculation, the population of the Uptown Campus is reduced to 10,372 persons. This results in a peak hour parking demand of 3,008 vehicles.

Supply and Demand

Subsequent to the implementation of the Unified Green project the parking supply for the Uptown Campus is estimated at 1940 on-campus parking spaces and 390 parking spaces at University Square for a total of 2330 spaces.

The difference in supply, 2330 parking spaces, and the higher demand associated with the unadjusted population estimate of 12,060 persons yields a deficit of 1,167 parking spaces.

However when the population is adjusted by excluding freshmen, who by Tulane University policy are not permitted to have vehicles on Campus, the deficit is reduced to 678 spaces.

This calculation does not take into account the population of students and faculty and staff who live in neighborhoods that are adjacent to the uptown campus. Using the lower rate of observed parking demand at the Universities surveyed, 0.14 per student population, estimated demand is in the range of 1700 (1688) parking spaces. The use of a lower ratio is supported by data collected by the University that indicated that 5952 students and 634 faculty and staff live in neighborhoods within close proximity to the Uptown Campus. Many of these individuals do not require or purchase a parking pass as they can either walk or bike to work.

It is further supported by observation of parking occupancy at the Rosen and University Square lots during peak periods when up to 50 % of the spaces available are vacant.

Conclusions and Recommendations

1. Analysis of vehicular and pedestrian volume and flow patterns at the uptown Campus indicate acceptable to good operating conditions with the exception of the intersection of S. Miro Street at S. Claiborne Avenue, during the AM peak period. A previous study of this section of S. Claiborne Avenue recommended that additional speed limit signage and speed limit enforcement to address safety issues related to vehicle operating speeds.

   Pedestrian volumes at the pedestrian protected crossing of Freret Street at McAlister Place were the highest volumes observed during the survey periods.

2. The implementation of the curb cut access at Freret Street at Newcomb Place is required for construction access. Flagman control of access is recommended during Construction.

3. Post construction, the curb cut will remain and create a new access point to Newcomb Place from Freret Street. It is anticipated that this intersection will also function as a point of access for pedestrians and bicyclists, who currently cross Freret midblock near Law Road. Future intersection operations and vehicular and pedestrian volume conditions should be analyzed to determine if a protected pedestrian crossing is justified at this location.

4. Analysis of the impact of planned construction activities on access and circulation, as expected, varies by project. Significant impacts are anticipated with five projects:
   - Howard Tilton Memorial Library
   - Zimple Street Infrastructure
   - Zimple House
   - Stadium Project
   - Phelps house

   Alternative circulation patterns for current Campus activities and for construction job site access have been identified in this report.

5. In addition to access and circulation impacts, construction projects often result in parking impacts near job sites and in surrounding neighborhoods. Remote parking requirements for construction personnel should be included in project specifications to minimize potential neighborhood impacts

6. The short term impact on the loss of parking capacity due to construction activities will be addressed by greater utilization of the Rosen and Uptown Square lots, which are currently underutilized in favor of spaces that are located nearer the core of the Campus.

7. The estimated impact of the Unified Green Project on the parking supply at the Uptown Campus is the loss of 60 parking spaces, approximately 2.5% of the current capacity of the Uptown Campus and University Square parking assets. The University will still be in compliance with current zoning regulations post implementation of the project.

8. Current parking demand estimates based upon the current university population, adjusted by the University policy that freshman are not permitted to bring cars on campus and by the number of students and faculty and staff who live in nearby neighborhoods, indicates lower peak parking occupancy than would be expected in a non-urban university setting. Using the 0.14 space ratio of demand, peak occupancy is estimated at 1700 spaces, well within the capacity of existing inventory.

   Use of the a lower ratio is supported by observation of current parking occupancy at the Rosen and University Square lots as both facilities exhibit unoccupied spaces during periods when peak occupancy would be expected.

   The provision of additional parking capacity in new on-campus lots or in a new garage is not justified.