Introduction

The following report is a summary of four transportation related studies conducted on the University of West Georgia campus between spring of 2015 and 2016. These studies were coordinated through the efforts of the University’s Campus Planning and Facilities Department and Auxiliary Services as well as the City of Carrollton. The purpose of these studies was to assess existing transportation conditions on campus with particular attention paid to accommodations for bicycles. As a result of the recent decrease in students with personal vehicles, increase in residences on or near campus, and construction of the GreenBelt trail through campus, there is greater interest in supporting and accommodating non single-occupancy vehicle (SOV) travel on campus. With this in mind, the studies looked at existing conditions and made recommendations for future developments that improve and encourage conditions for bikes while facilitating more efficient and safe traffic flow. The studies include:

- University of West Georgia Traffic Operations Analysis and Access Management Study – Toole Design Group, Spring 2015
- University of West Georgia Bicycle Master Plan – Toole Design Group, Spring 2015
- University of West Georgia Parking Study – Tim Haahs Group, Fall 2015
- Campus Bike Parking Survey – UWG Campus Planning and Facilities Spring 2016

The summary that follows is a review of the individual study methodologies, a synopsis of their assessment of existing conditions, and a dissemination of their recommendations. Below is a map of the campus and the study areas to which this report refers to throughout.

Figure 1: Campus Map – Study Areas
Study Methodologies

University of West Georgia Traffic Operations Analysis and Access Management Study – Toole Design Group, Spring 2015
The purpose of this study was to analyze traffic operations and access management to inform the planning and design of future roadway developments that improve bicycle and pedestrian conditions as well as the efficient flow of motor vehicle traffic. The study included the intersections along West Georgia Dr, University Dr, and Maples St (along the University boundary). It also included the driveways on the west side of University Dr between Lovvorn Road and West Georgia Dr as well as those along West Georgia Dr between Wolves Pkwy and Plant Ops Dr. Traffic, bike, and pedestrian counts were taken all major intersections across campus.

The University of West Georgia Bicycle Master Plan – Toole Design Group, Spring 2015
This master plan was based on an analysis of existing campus transportation conditions as they relate to accommodating and encouraging bicycling and was developed with the intent of institutionalizing biking on the University campus. The study looked at campus streets, adjacent streets, and streets connecting to Downtown Carrollton and major highways. It also looked at inner campus pathways, existing bike parking accommodations, and current bike programs or plans. A design charrette involving University stakeholders was conducted to identify goals, issues, and opportunities relating to the improvement of biking on campus. This activity served to guide the development of the Plan.

University of West Georgia Parking Study – Tim Haahs, Fall 2015
This study looked at the University Masterplan, parking guidelines, parking permit sales, parking inventory, and current and future student enrollment and projections for new faculty/staff positions. This study looked at peak hour parking occupancy and compared it to parking supply to determine parking demand ratios. Demand was broken down by user groups: Faculty/Staff, Commuting Students, Residential Students, and Visitors. Future parking adequacy was estimated based on these ratios as well as future student enrollment and number of employees. The study also looked at transit and bike facilities.

UWG Bike Parking Utilization Study – Campus Planning and Facilities, Spring 2016
This study was conducted in light of the reported findings in the three studies above and the observed increase in bikes on campus. The University has taken great initiative in encouraging biking on campus with the installation of the West Georgia Dr bike lanes and the Bike West! marketing campaign. The observed increase in bikes coupled with the decrease in residential student parking demand warranted an analysis of bike parking demand. This utilization study consisted of a count of bikes parked at existing bike rack locations as well as the identification of rack type and assessment of its condition.
Studies Analysis

Intersections - Campus intersections currently operate at an acceptable level of service for motorists, but not necessarily for bicyclists for pedestrians

*University Dr & West Georgia Dr Intersection –*

- Highest volume of pedestrians on campus with a peak hour of 12pm-1pm.
- Highest volume of bicycles on campus
- Vehicle peak hour is between 4:30pm - 5:30pm at which time there is some delay for motorists due to the high volume of pedestrians who are prone to jay walking or crossing against the light as a result of the inefficient and unusual signal timing.

*Foster St & West Georgia Dr –* Experiences the second highest volume of pedestrians with a peak hour of 11:45am – 12:45pm

*Maple St & West Georgia Dr (West Entrance) –* Experiences congestion during the PM peak hour as vehicles discharge from nearby parking lots.

*Maple St & West Georgia Dr (East Entrance) –* Lacks crosswalks and experiences high speed traffic

*South St & West Georgia Dr –* This intersection is a key access point to campus from downtown Carrollton and student residences adjacent to campus. Crosswalks are not painted at this location due to poor sightlines for motorists. However, pedestrians have been observed crossing there. The wide radius of the curve at this intersection as well as that at the intersection at Wolves Parkway can be disorienting to motorists due to the difficulty in sensing the change in direction from northbound to eastbound/westbound.

*Wolves Pkwy & West Georgia Dr –* This intersection also has a wide radius curve and is complicated by a drop-off loop in front the Coliseum and two bus stops on either side of the street. This intersection also lacks crosswalks due to poor sightlines for motorists, however pedestrians cross West Georgia Dr from the bus stops.

Entrances – Campus entry points lack a sense of arrival

- The intersection of Forrest St and Maple St is easily confused with the campus entrance at Maple St and West Georgia Dr, which is a major access point for people coming from the west and Route 166 Bypass.
- The intersection of West Georgia Dr and University Dr is a major access point to the campus core. The TLC building at this location is a barrier as it requires pedestrian traffic to enter campus by going through the building. Additionally, bike traffic must route around the building to get into campus.

Parking and Lot Access – Campus parking meets current demand, however there is an excessive number of lot entrances/exits

- The greatest parking occupancy is during the mid-day peak hour (12pm-2pm) with 69% occupancy.
- Queuing at the intersection of University Dr & West Georgia Dr and University & Lovvorn Road extends to driveways 5/6 and 8 respectively, interfering with sightlines and compromising safety and resulting in delays at these driveways.
• Driveway 7 has the most volume and hosts more than 50% of all inbound traffic. Outbound turns are more evenly distributed across the driveways.
• Driveway 6 has the second highest volume. Traffic is consistent between 9am-4pm with a peak at 1pm.
• None of the driveways along West Georgia Dr north of Plant Ops Dr experience significant delays.
• Student commuter and Visitor lots experience high occupancy during peak hour at 94% and 86% occupancy, respectively.
• Only 38% of all available Open parking is occupied.
• Designation of parking lots is not well communicated.
• There is an effective surplus of 1439 spaces on campus.

Transit – Serves campus well
• The current transit system serves the campus well and is effectively utilized, especially with the assignment of all freshman parking at the Athletic Complex.

Bike Parking – Is sufficient to meet demand, but functionally inadequate
• Bike parking accommodations meet current demand. However, the standard "wave" rack does not meet basic design criteria for adequate, secure parking.
• Campus lacks covered bike parking.
• There is high utilization at residential buildings.

Figure 3: Bike Parking Utilization
Recommendations

**Redesign Wolves Pkwy & West Georgia Dr** - The Cole Field parcel adjacent to this intersection has been slated for relocation to the Athletics Complex. With this development, it would be possible to redesign and square up the intersection into a four-way stop [see Figure 4]. Additionally, raising the intersection to be flush with the sidewalk, better accommodates pedestrians and bicycles traveling through the intersection.

**Reconstruct South St & West Georgia Dr Intersection** – This intersection is expected to experience and increase in traffic (pedestrian, bicycle, and motor vehicle) in the next 10 years. Accordingly it is recommended that the radius be squared up by a single-lane roundabout and a raised crosswalk be installed to increase visibility for pedestrians and provide a separate crossing for bikes moving from West Georgia Dr to South St.

**Modify Signal Timing at University Dr and Lovvorn Rd** – With the increase in traffic volumes by 2020, it is likely that the northbound leg of this intersection will operate at an unacceptable level during Event Peak Hours due to current signal timing. It is proposed that the signal timing be modified, including changing the splits (modifications to MAX timings) and adding a pedestrian recall to better accommodate traffic without adversely impacting pedestrians.

**Reconstruct West Georgia Dr & Maple St Intersections (East and West)** – Reconstruct intersections into urban single-lane roundabouts

Figure 4: West Georgia Dr Intersection Improvements
Close 26 Driveways 3 & 4 – Eliminate these driveways due to their close proximity to the intersection of West Georgia Dr and Plant Ops Dr and the two adjacent driveways.

Close University Dr Driveways 5 & 8 – Eliminate these driveways due to their proximity to the intersections at Lovvorn Rd and West Georgia Dr respectively. Queueing from these intersections extends to the driveways reducing sightlines and potentially posing safety issues. Further, Driveway 5 is offset from the opposing driveway entering Greek Village which can pose conflicts between vehicles waiting to make the left into Greek Village and those needing to make a left out of Driveway 5. Vehicle delays would be reduced at these driveways with the implementation of the signal timing modification already proposed at the intersections.

Design Bicycle Network:
Proposed formal bicycle routes are outlined below and are based on connectivity to common destinations (dining, residences, classrooms, offices, etc.). The routes are intended to be designated by way of pavement materials, markings, and signage/maps.

Figure 5: Proposed Bike Facilities

Treat Intersections for Bike Use – Bike lane markings should extend through the intersection providing safe and direct crossing for bikes. Pavement should be colored or marked at free right-turn areas to demarcate areas susceptible to conflict between vehicles and bikes. Signals can be phased to apply leading interval or a protected phase to give bikes a head start or their own crossing time. Left turns can be addressed with a bike box or jug-handle cut-out. These improvements can improve safety conditions and bring about awareness.
**Install Bike Wayfinding System** – Route information and identification of bike infrastructure should be employed across the campus bike network to orient students and provide destination information.

**Establish Bike Parking Program** – Conduct regular utilization studies to assess bike parking demand. Install bike parking according to industry standard. Establish campus standard rack and replace “wave” racks with campus standard as opportunity arises. Add bike racks near student residential buildings.

**Deploy University Bike Policy and Program** – Create a website for bicycling on campus where people can get information about facilities and routes, rules of the road, biking policies, and safety tips. This can also be the platform for communication about developments and activities pertaining to biking on campus. Offering monetary incentives to encourage bicycling could be coupled with a parking permit increase for residential parking to encourage students to opt-out of bringing a vehicle to campus.

**Widen Love Valley Path & Former University Dr Path** – These walkways are used heavily by pedestrians and by some bicyclists. Love Valley Path provides access to the campus core as well as direct east-west access, it is recommended that it be widened and demarcated to better accommodate both pedestrians and bicycles. The Former University Dr Path is ample enough to accommodate a variety of modes. However, with an increase in bicycle traffic, the path may need to be widened and delineated to prevent conflicts between pedestrians and bicycles.

**Modify Raised Crosswalks** – The number and design of these facilities should be evaluated. Additionally, motorists have been observed driving in the bike lane to cross these at the lower elevation near the curb. This endangers bicyclists and could be addressed by making the crossing flush with the sidewalk with a covered gutter.

**Redesign Transit Stop** – These should be designed to reduce conflicts between bikes, buses, and people dismounting/boarding buses. In conjunction with a separated bike lane, the lane can be routed between the sidewalk and the stop or between the street and the stop. Where space is adequate, the first option is preferable and should include an accessible landing pad aligned with the front door of the transit vehicle and have an accessible path of travel across the bike lane on the opposing side of the pad. Any shelters or benches at stop locations should be offset from the bike lane by at least 1 foot to avoid pedal or handlebar strikes.

**Reduce Number of Transit Stops** – Greater efficiency could be achieved through the elimination of stops that are close in proximity to one another. This will decrease travel times and reduce roadway congestion.

**Construct TLC Breezeway** – A breezeway through the TLC building would provide ease of access to campus and would also pose as a distinctive entry to campus.

**Redistribute Parking** – Re-designate parking to address the discrepancy in utilization between the Open parking and Commuter parking lots and provide incentives to encourage parking in Open lots. As parking
demand increases it may be appropriate to designate some of the parking at the Athletic Complex for upperclassman who can then shuttle into the main campus.

**Improve Parking Lot Designation Signage** - Signage and wayfinding needed to better communicate designation of parking lots and their name or number, especially Visitor parking locations.

**Increase Price of Parking Permit** – An overall increase in permit cost coupled with offering discounted permits for underutilized areas would facilitate better campus parking utilization.

**Action Items:**
Campus Planning and Facilities reviewed the study results and recommendations and has committed to the following series of actions:

1. Request City to retime the signal at intersection of University Dr and Lovvorn Rd per the recommendation in the Toole Traffic Study.
2. Further study of roundabouts to be prioritized as follows: 1. West Georgia Dr and Maple St (West Entrance) 2. South St and West Georgia Dr 3. West Georgia Dr and Maple St (East Entrance).
3. Request City of Carrollton to install traffic sign at the intersection of Maple St and Forrest St to direct University traffic to the next intersection (West Entrance).
4. Request City to update all hardware at West Georgia Dr and University Dr intersection. Further investigate the recommended removal of the turning lanes as well as better accommodations for pedestrian traffic, namely the implementation of a “scramble” or exclusive pedestrian crossing phase in combination with No Right on Red traffic control.
5. Z6 Parking Lot/Driveways 1-4 – Undertaking two studies for the redesign of this parking lot to address access and egress issues.
6. Campus Planning & Facilities to work with Parking and Transportation Services to close driveways 5, 6, and 8 along University Dr as recommended.
7. Based on the recommendations for bike facilities, Campus Planning and Facilities in coordination with Parking and Transportation Services is going to pursue the following in the effort to implement a connected network of on and off-street facilities:
   - North/south accessibility – Investigating the potential for sliding doors at TLC building so bicyclists can dismount and walk their bike through this area. Also, looking to install an on-street bike facility (sharrows or bike lane) along University Dr from the Main Entrance to the UCC.
   - East/West accessibility – A bike facility along Roberts Dr East is under consideration as this area will be changing due to the Biology Building renovation. Accommodations for bikes will be factored into the redesign of Center Pointe Bridge, while the Love Valley Path will also be reviewed for possible widening. Additionally, signage will be installed along Back Campus Dr indicating to users that the street/concourse is multi-modal.
8. Change rack standard to inverted-U or hitch style rack and install additional racks at Residence Halls.

**Additional information and study results can be found at:**
http://uwg.maps.arcgis.com/apps/MapTools/index.html?appid=cc5b2c32566f496fb4ff288a13a58a73