



2017 Look Ahead Report
Texas A&M Transportation Institute
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The expanded and redeveloped Kyle Field brings more than 120,000 ticket holders and tailgate attendees to Texas A&M University football home games. Among the important elements of a great game weekend experience is the mobility services and options for getting to, around and away from a campus that is the 4th largest Texas downtown on gamedays. The Kyle Field Transportation Plan was developed to incorporate the variety of fan interests and gameday operations requirements. A team of local entities from both on- and off-campus began adapting to the larger stadium in 2013, and has made many improvements since then. The Texas A&M Transportation Institute has compiled this report to document the experience and enhancement being made for the 2017 season.

The team consists of the following groups:

- Texas A&M Transportation Services
- City of College Station
- City of Bryan
- Brazos County
- B/CS Chamber of Commerce
- Downtown Bryan Association
- Experience BCS
- Texas A&M University Athletics
- Texas A&M University Marketing and Communications
- Texas A&M University Student Affairs
- Texas A&M Transportation Institute
- 12th Man Foundation
- Texas Department of Transportation (TxDOT)
- Local and state safety and law enforcement agencies

The integrated partnership that has made the Kyle Field Transportation Plan successful is a combination of transportation, communications, policy and customer service elements. This report provides an overview of the first three seasons and a look at future changes.

Overview

The Kyle Field Transportation Plan was designed to accommodate the 25 percent to 30 percent increase in seating plus larger tailgate crowds drawn by the SEC affiliation and the new stadium. The goal was to have no more traffic congestion or transportation problems than in previous seasons, and to support the other enhancements to improve the game weekend experience. This goal was accomplished with a planning and operations program that integrated the partner agencies and their goals. Better and timelier information has been dispersed to agencies and to fans to make quicker and more informed decisions. Awareness of parking, traffic routes, shuttle bus information, and entertainment options has also been a direct result of these relationships. With each new football season and school year, Texas A&M University and the Bryan-College Station will continue to see new challenges. The 2017 Look Ahead Report includes a review of the 2013 (pre-Kyle Field Transportation Plan), and the 2014, 2015 and 2016 football seasons. Successes, changes, and challenges are highlighted to address present and future needs.

2013 Season – Before the New Kyle Field

The 2013 Alabama game showed that an improved, comprehensive and coordinated transportation plan was needed to accommodate the increased number of fans visiting College Station. With more than 88,000 fans in Kyle Field and approximately 35,000 extra tailgaters on campus, the transportation planners had a preview of the challenges that were ahead.

- Better situational awareness of off-campus traffic conditions and the ability to change traffic flows in reaction to that information. Campus parking and transportation staff covered the campus roads and were in communication with central coordinating staff who had access to cameras and radios to find and solve problems. Off-campus staffing was provided by College Station Police who monitored most, but not all, major intersections, and communicated through their central gameday office. Campus control and CSPD officers communicated well, without the interagency issues that are seen in some event situations. But the College Station reaction was hindered by the lack of ability to alter signal timing, and by the lack of some extraordinary measures that would make transportation work better. A few key signalized intersections were operated with the evening peak signal timing plan, which was found to not be sufficient for very large games.
- The inability to communicate with the traffic signals meant that city street intersections created bottlenecks around Kyle Field. Traffic volume could not be dispersed into the city street system and as a result, traffic control had to be maintained for three to four hours.
- The transportation plan sought to satisfy too many competing needs. Vehicles on-campus were allowed to go in many directions, and off-campus intersections attempted to get fans away from Kyle Field and also satisfy 'non-fan' traffic needs into and across key Kyle Field exit routes.
- Working on each problem, rather than implementing a plan – Each intersection was operated to address the problems at that area, even if some directions were not part of the exiting traffic flow.

The Revised Kyle Field Transportation Plan

The new plan relied on a combination of fewer fan traffic route choices and better communication about the fan travel options. This was manifest in a few significant changes that have remained constant through the first three seasons. Big picture elements guide the plan design:

- Overall philosophy – “let the leavers, leave” – Fans, residents and leadership both on- and off-campus indicated a desire to have traffic conditions return to something close to normal as soon after the game as possible. This is accomplished by making the outbound routes as efficient as possible for those wishing to leave. It also means that many travel route choices are taken away, or longer wait times at some signals.
- “Know Before You Go” – Fans and residents are encouraged to study the travel options before arriving at the game, and indeed while they are choosing their parking locations. The award-winning Destination Aggieland smartphone app was developed and the gameday website information is now the consolidated information source. The ‘know before’ message is also appropriate with the lack of cell phone or wi-fi service for several hours around Kyle Field. The app has evolved into a year-round information source and communication device for sports, cultural and community events.
- Use the significant City of College Station investment – The City’s \$5 million upgrade in signals, controllers and monitoring cameras connected to the Traffic Control Center in 2014 provided gameday transportation operators with the understanding to aggressively use the road and signal system. It also allows the CSPD to reduce the number of staffed locations, and adjust the signals and officer instructions to enact the plan.
- Improved bus travel – Bus routes serve many apartment complexes, two park-and-ride locations and all the on-campus parking areas. Routes have been designed to avoid most of the usual congestion spots, and the traffic routes have been designed to facilitate bus travel with a minimum of staffing and resources.

Many specific routing and access designs are used to implement these broad philosophies:

- Jointly funded traffic operations plan – The City of College Station and Texas A&M Transportation Services combine to fund the postgame traffic plan for placing barricades and positioning officers.
- Wellborn Road contraflow – Four of the five lanes on Wellborn north of Southwest Parkway are used in the southbound direction. Turns from Wellborn Rd are also prohibited in that section and about 85% of the green time is for southbound traffic. A tow truck is positioned near the north end of the corridor to respond to problems.
- Discovery Drive contraflow – All four lanes are operated outbound from west campus. The unsignalized intersection of Research Parkway at Stotzer is closed to outbound traffic, so the almost 4,000 parking spaces on west campus are directed out Discovery.
- FM 2818 at Holleman – Much more than half of the traffic from west campus uses this intersection to leave the area. The Wellborn contraflow lane provides fast access to south College Station and beyond from the area bounded by Wellborn, Luther and 2818, so most of the green time at this intersection is given to FM 2818.

- University Drive green time – Approximately 3/4s of the green time at intersections east of Texas Avenue is dedicated to Kyle Field exiting traffic.
- Park-and-ride lots – There are more than 1,500 parking spaces at two locations. American Momentum Bank offered their parking lot for Kyle shuttle service when the previous location cancelled the service. And there is a shuttle from downtown Bryan supported by the merchants and the City.
- Ample parking and shuttle service on-campus – At least 27,000 parking spaces are available for gameday parking and all of the distant lots and many of the premium donor spaces are served by a bus route.
- Using simple directions to improve pedestrian safety, reduce traffic conflicts and creating better bus service. Vehicles are routed away from pedestrians and buses, and car traffic is separated in ways that reduce the amount of inefficient ‘turn-taking.’ On west campus, parking lots that are north of Kimbrough Blvd/Research Pkway are routed north to Stotzer Parkway and lots to the south are routed to George Bush Drive. The road (the only east-west road on west campus), however is not used as a through road, but is used for four different traffic flows with empty pieces of road between. Most of Kimbrough Blvd/Research Pkway is used to provide congestion-free bus service.
- Better communication with fans. The Destination Aggieland app and gameday website, along with Facebook and Twitter accounts provide predictable routing maps and update information as needed. The fan site TexAgs was also used to distribute information and to update fans on operating procedures before gameday. The TexAgs channel was particularly useful when problems were being addressed – it offers a chance for more dialogue and explanation than twitter or a web posting.
- Game evaluation reports are posted at tti.tamu.edu/kyle to provide fans with overview of the gameday plan performance.

2014 Season

A season of firsts was seen through the completion of the first half of the Kyle Field Redevelopment project. The expansion brought in record crowds, including the University of Mississippi game with the largest-ever football crowd in Texas (110,633) and an extra tailgate crowd bringing the total on-campus population close to the 125,000 for 2013 Alabama. With only one game of more than 21,000 parked cars before 2014, five of the six 2014 games exceeded that level. Bus ridership more than doubled over 2013. And congestion was alleviated quicker and traffic control was removed sooner for the 2014 games than for comparable 2013 games.

2015 Season

The second season of the Kyle Field Transportation Plan served the completed Kyle Field Redevelopment. The opening of the stadium meant slightly smaller stadium crowds in comparison to the 2014 season, but more people visiting College Station to enjoy the gameday experience. More parking and bus ridership records were set and additional progress was made on congestion goals, with five games out of seven meeting the goal of removing traffic controls before two hours postgame. Notable was the return of Alabama, with similar crowd size and

down-to-the-end game result once again testing the transportation plan. In addition, there was a crash, and several suspected driving under the influence drivers that tested the enforcement and traffic staff. Even with those challenges traffic congestion reached the goal level 45 minutes sooner than in 2013, and much of that congestion was on roads headed into campus as fans returned to eat and enjoy postgame entertainment opportunities.

2016 Season

The 2016 football season saw parking changes that altered pedestrian and vehicle traffic flow. A new RV lot, and consolidation of other RV parking allowed more parking near the edges of campus, making it easier for fans to leave campus. The new 1,400 space Cain Garage (less than an average Aggie running yardage game) away from Kyle Field challenged the entry and exit process, but the staff adjusted, the fans were informed about their options and the garage was cleared within 45 minutes postgame.

There were more cars parked on campus in 2016, but about 10 percent fewer bus riders than in 2015. The two-hour traffic control removal goal was met for all seven games, despite three big attendance games that ended with almost full stadiums. Small changes in on-campus traffic flow were made to reduce the conflicts between those leaving the parking garages near Kyle and those returning to pick up their tailgating supplies and equipment. In addition to the near campus changes, the intersections of Wellborn/Holleman and Wellborn/University Drive had some traffic routes closed for 60 to 90 minutes postgame to reduce the slow traffic on Wellborn.

Parking

Exhibit 1 summarizes the parking outcomes from 2013 to 2016. More cars are parking in campus parking lots since the new stadium construction, but comparing to the typical 2013 game (removing Alabama from the average) suggests only an additional 2,000 per game. The 2013 Alabama game saw many more parking areas used (including grassy, illegal areas). With 21,500 being an average 2016 game and stadium seating increasing from 83,000 to 103,000, there are also many additional fans parking in areas around campus or using the buses to get to the game.

The increased parking has been accommodated with a variety of changes – as illustrated in Exhibit 2. Key aspects of the 2016 season changes included the addition of the 1,400 car Cain Garage near Kyle Field (in the Main Campus totals) and revised parking for recreational vehicles. Important changes from the first two seasons included making the Fan Field parking area (in Research Park) an all-weather surface in 2014, and developing a process for opening the Agronomy Road parking areas in a sequential manner that used the spaces efficiently with minimal parking staff. Parking for several hundred Kyle Field workers has also played a role in changing parking numbers. In 2014, they were accommodated on Fan Field, in 2015 in the Agronomy Road area, and in 2016 they parked in the Vet School area. This location may be a more stable home over the next several years.

Exhibit 1. Football Season Parked Vehicles - 2013 to 2016

| 2013 | | 2014 | | 2015 | | 2016 | |
|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| Rice | 17,820 | Lamar | 21,400 | Ball State | 22,160 | UCLA | 21,970 |
| Sam Hous St | 19,410 | Rice | 20,970 | Nevada | 19,320 | PVAMU | 18,090 |
| Alabama | 23,700 | Mississippi | 23,630 | Miss State | 22,440 | UTenn | 24,520 |
| SMU | 18,910 | LA-Monroe | 18,740 | Alabama | 23,590 | NMSU | 21,520 |
| Auburn | 20,110 | Missouri | 21,070 | So Carolina | 18,450 | Mississippi | 23,950 |
| Vanderbilt | 17,700 | Louisiana St. | 21,130 | Auburn | 21,990 | UTSA | 19,380 |
| UT- El Paso | 19,560 | | | W Carolina | 20,530 | Louisiana St. | 20,850 |
| Miss State | 19,460 | | | | | | |
| Total | 156,670 | Total | 126,940 | Total | 148,480 | Total | 150,280 |
| Typical | 19,000 | Average | 21,160 | Average | 21,210 | Average | 21,470 |

Exhibit 2. Campus Parked Vehicles by Area – 2013 to 2016

| Parking Areas | 2013 | 2014 | 2015 | 2016 |
|-------------------------|---------------|---------------|---------------|---------------|
| Main Campus | 3,920 | 4,550 | 4,480 | 5,290 |
| East Main | 1,870 | 2,210 | 2,280 | 2,160 |
| Reed/Agriculture | 9,450 | 8,940 | 8,440 | 8,910 |
| Research Park | 1,400 | 2,820 | 3,090 | 3,020 |
| Vet/Agronomy | 2,360 | 2,640 | 2,920 | 2,090 |
| Total | 19,000 | 21,160 | 21,210 | 21,470 |

Pre-paid parking technology has also improved the entry and distribution process. The smartphone app and Transportation Services website provide locations for customers to get parking days, weeks, or even minutes before arrival. This process also allowed Transportation Services to adapt to the increased electronic security standards (which removed the ability to handle credit card transactions before the 2015 season) without longer entry processing times. Pre-payment is also improving entry routing for West Campus Garage, a popular parking area. Many fans would go to the garage as the first option, and then have to re-route if the garage was full. Having only pre-paid and 12th Man Foundation parking in the garage meant that the “day-of” parking goes to other lots where additional options are closer (e.g., west campus, north side).

The combination of prepaid, 12th Man Foundation donor parking and cash at arrival provides a good mix of parking assets. The other gameday parking permit method is less beneficial. A&M students, faculty and staff with a valid permit are able to park for no additional charge. Not only does this reduce the ability to pay for staff and resources to accommodate gameday operations, and essentially add permit costs for those who do not attend football games, it is also less efficient. Studies during the 2015 season found that the any valid permit parkers had about half a person less in each vehicle than the cash payers. No surprise for economics students (free goods are always overconsumed), but in this case the typical 5,000+ any valid permits seen on gamedays could accommodate more than 2,000 additional gameday fans if they had the same persons-per-vehicle ratio as the paying customers. As crowds grow, and

parking resources change, this policy should be re-examined to see if the efficiency and fairness decisions might change in coming years. For 2017, the any valid permit is not honored in the campus garages; nonetheless, for the first 2017 game there were 5,100 valid permits accepted in campus parking areas, and 3,600 cash and pre-paid spaces sold.

Perhaps the most important change from a traffic standpoint was to adjust the parking entry process to bring vehicles off the streets before credentials or permits are checked. Obviously this requires good signage at the curb before turning into the lots, but this also means that the line of cars occurs off the streets, allowing other parkers and the buses to move more freely on the streets. Parking staff also have good training in being adaptable to changes in demand, and plan ahead as parking areas fill so that traffic is directed to multiple entry locations. This is particularly important on west campus where the Fan Field parking area has been filled for a few big games the last three years.

Changes were also made to improve the turning capacity into garages and traffic signal operations on streets near campus. An additional left turn lane into the northwest corner of the West Campus Garage was created on Kimbrough Blvd, and pedestrian paths were improved on the south side of the garage for post-game traffic.

Inflatable ‘wavy men’ have been used to attract parkers to underused entry locations and balance traffic loads. Kickoff time and opponent are also important factors in parking and traffic experiences, with early kickoffs causing much more stress on inbound traffic and parking staff.

Shuttle Ridership

Texas A&M University Transit has provided fans an alternative method to get to campus for 15 years and operated bus service during gamedays for more years than that. The ‘teenage’ Get to the Grid shuttle has provided a free parking and shuttle option, and on-campus routes served many parking areas. The unprecedented demand at the 2013 Alabama game showed the importance of bus and traffic plans to be tightly coordinated. Both before and after the game, the buses on west campus were moving slower than pedestrians were walking due to competition from auto traffic. The Kyle Field Transportation Plan concentrated on reducing conflicts in regular vehicle traffic streams. The plan ultimately meant that fewer sections of road were used for cars, leaving more sections for buses to travel unimpeded to parking lots, particularly those farther from Kyle Field.

Bus routes with faster and more reliable travel times mean that buses can make more round trips, carrying more riders and making the bus a more attractive travel option. Get to the Grid service was so good, in fact, that the contract with the long-time location was not renewed following the 2014 season. American Momentum Bank now provides parking for more than 1,000 vehicles – a significant number of vehicles and riders, but only about half of the number at the precious location. A new route to downtown Bryan offers another 500 or more free parking spaces, and the smaller ridership number is growing.

Bus ridership has increased dramatically (Exhibit 3), from an average gameday ridership of 12,700 for the seven non-Alabama games in 2013, to between 25,000 and 33,000 riders during the 2014, 2015 and 2016 football seasons. The less-attractive opponents in 2016 saw lower bus ridership, leading to lower season totals. The big games – UCLA, Tennessee and Mississippi - exceeded 29,000 riders. The 2015 ridership was also boosted by the 11 hours of operation for the inaugural Kyle Field Game against Ball State. All of the TAMU transit fleet operates on gameday, usually beginning around 3 hours pregame and operating until 90 to 120 minutes postgame. More routes also serve the 12th Man parking areas from stops near Kyle Field that attract fans to ride the buses.

Of particular note is the flexibility in bus usage around the MSC area. For 2016, there were seven bus routes using West Lamar and Joe Routt bus stops. Supervisors and drivers (including many student drivers) are trained on all these routes so that buses can be shifted to different routes to serve the longest customer lines. This operational flexibility is usually accomplished with full-time professional drivers.

Exhibit 3. Football Season Bus Ridership - 2013 to 2016

| 2013 | | 2014 | | 2015 | | 2016 | |
|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| Rice | 14,040 | Lamar | 25,710 | Ball State | 34,050 | UCLA | 29,210 |
| Sam Hous St | 16,820 | Rice | 24,800 | Nevada | 28,610 | PVAMU | 22,930 |
| Alabama | 22,490 | Mississippi | 31,010 | Miss State | 32,840 | UTenn | 31,320 |
| SMU | 11,360 | LA-Monroe | 23,370 | Alabama | 33,910 | NMSU | 26,230 |
| Auburn | 12,810 | Missouri | 31,070 | So Carolina | 23,030 | Mississippi | 29,840 |
| Vanderbilt | 10,490 | Louisiana St. | 27,670 | Auburn | 29,600 | UTSA | 26,140 |
| UT- El Paso | 10,440 | | | W Carolina | 28,750 | Louisiana St. | 26,150 |
| Miss State | 12,820 | | | | | | |
| Total | 111,270 | Total | 163,630 | Total | 210,790 | Total | 191,820 |
| Average | 13,910 | Average | 27,270 | Average | 30,110 | Average | 27,400 |

Exhibit 4 shows the increase in both on- and off-campus bus ridership from 2013. The drop in off-campus ridership brought by the elimination of the high visibility Get-to-the-Grid parking location has been somewhat offset by the increase in on-campus shuttles. Many of these riders are coming from distant parking lots made more desirable by the shuttle service. Another pattern seen since the new route structure in 2014 is the use of shuttles to move tailgaters from their parking area to their party. Additional stops were provided to allow this to happen more easily, and particularly for afternoon and evening games these stops provide improved gameday experiences.

Exhibit 4. On- and Off-Campus Football Bus Ridership - 2013 to 2016

| Route Location | 2013 | 2014 | 2015 | 2016 |
|--------------------------|---------------|---------------|---------------|---------------|
| On-Campus Routes | 6,700 | 14,650 | 19,310 | 18,080 |
| Off-Campus Routes | 7,210 | 12,620 | 10,800 | 9,320 |
| Total | 13,910 | 27,270 | 30,110 | 27,400 |

It is notable that every gameday in 2014, 2015 and 2016 has had higher ridership than all previous gamedays (including the 2013 Alabama game), but also that every game is two to three times larger than typical pre-2014 games. Certainly the 28 percent seating capacity increase is important, but doesn't explain all of the increase. The gameday route structure includes service to the Bonfire Memorial area, along Agronomy Road and the Stotzer Parkway parking areas, as well as three routes round west campus. Four routes of modified regular day operations provide service to off-campus student apartment areas.

A typical game sees more ridership pregame than postgame across all route types for all game times. Many fans use the bus routes to move to pregame tailgates and the postgame service lines, although they are cleared before an hour postgame, probably deter some fans from using bus service. Inclement weather and game time also affect ridership, with bad weather and later games increasing ridership on all route types.

Congestion

The congestion goals for the Kyle Field transportation plan are designed around maintaining safe travel paths for pedestrians, bicyclists and vehicles that have a reasonable amount of extra travel time. The plan explicitly recognizes the difficulties in loading and unloading the Kyle Field area, which regularly has more than 120,000 spectators and extra tailgaters. This demand is equivalent to the 4th largest Texas downtown, in the 15th largest Texas metro area. The lack of freeways, and basically no new roadway capacity, meant that the plan relied on aggressively operating the network, as well as accepting that some traffic congestion will exist. Staff from A&M Transportation Services, the City of College Station, and Texas A&M Transportation Institute combine to monitor, analyze and adapt to the changing gameday transportation situation from the College Station Traffic Control Center, Kyle Field Command Center and many campus intersections, parking lots and garages.

The policy approach from both on- and off-campus entities is to provide as much exiting capacity as practical in an effort to reduce the amount of time that traffic congestion affects postgame travel to homes, hotels, condos, restaurants, and entertainment venues. The on- and off-campus agencies have a goal of beginning to remove traffic controls within two hours postgame – a goal that has been accomplished for most games since 2014 and for all seven games in 2016.

The major road system serving the Kyle Field exit traffic plan is analyzed before and after the game using traffic speed maps. The percentage of about 40 miles of road (80 miles of directional road) that show red or black (serious stop-and-go traffic conditions) congestion are estimated every 5 minutes to produce summary graphs like Exhibit 5.

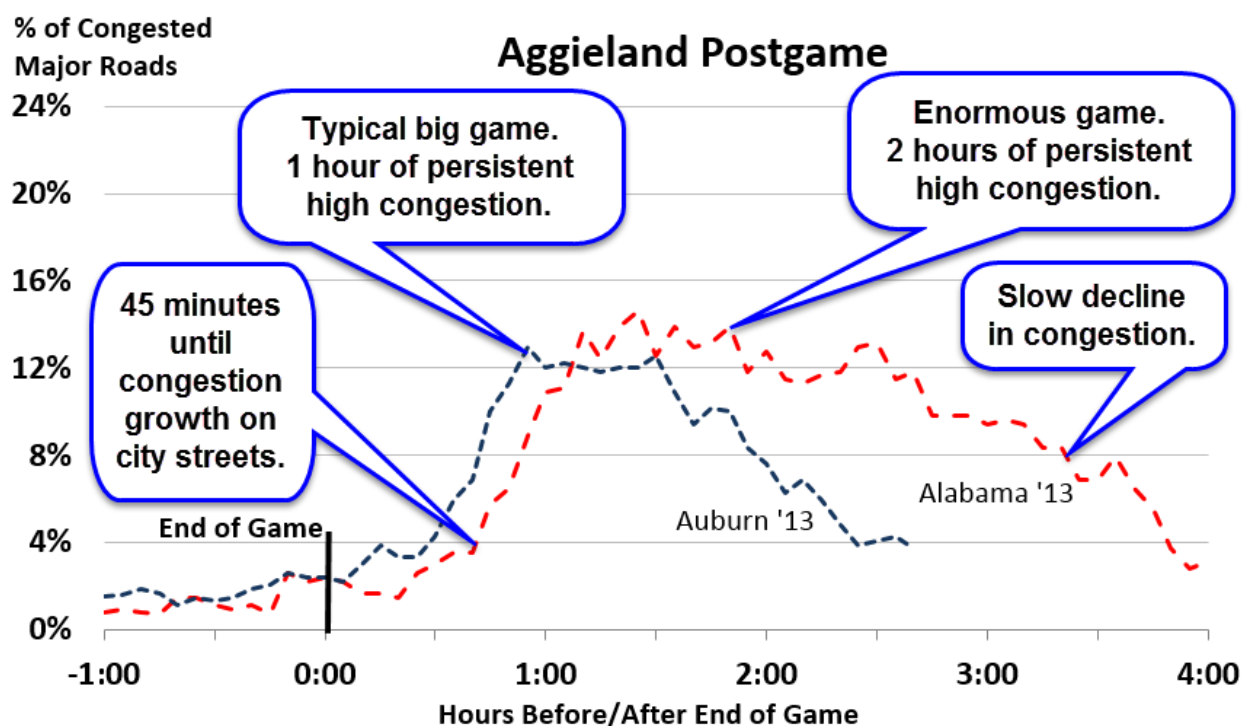
- North-South Roads – Earl Rudder Frwy (SH 6), Texas Ave, Wellborn Rd
- East-West Roads – Villa Maria Rd, University Dr/Stotzer Blvd, George Bush Dr, Harvey Rd, Holleman Dr, Rock Prairie Rd, Wm D Fitch Pkway (SH 40)
- Loop Road – Harvey Mitchell Pkway (FM 2818)

Congestion data for the 2013 Alabama game (nearest comparable crowd size to the renovated Kyle Field) are used as the comparison point for pre-transportation plan conditions. The “congestion goal line” of 6 percent of these roads is similar to the edges of the average weekday evening rush hour, which exceeds 15 percent on a regular basis. Congestion patterns change with attendance, start and end times, opponent, weather conditions, and game score.

2013 Season

The 2013 Alabama and Auburn games showed similar patterns – congestion began to rise at approximately 30 minutes as fans reached their cars and began leaving (Exhibit 5). At about the one hour mark postgame, congested roadways reached a maximum of 12 to 14 percent and stayed at that level for a while. The decline from that peak was relatively slow. The peak congestion levels were dictated by the bottlenecks near the stadium, which did not allow more of the road network to play a key role in handling traffic. The slow decline was likewise the result of relatively low capacity – in relation to the demand – on the key exit corridors.

Exhibit 5. 2013 Postgame Congestion Levels on Major Exit Routes



The benchmark 2013 Alabama game saw much larger pregame traffic problems than any previous game, and postgame traffic congestion that lasted until four hours after the game ended. The estimated 125,000 fans showed the need for a more extensive traffic control plan and greater investment in technology, equipment and staffing. The 2014 plan focused on the near campus bottlenecks that caused the congestion line in Exhibit 5 to peak below 15 percent, stay there for more than two hours and then decline at a relatively slow rate. Feedback from fans and many in leadership positions was that, essentially, the spectators wanted to have a

more predictable travel route and time, have traffic controls removed as soon as possible and not be confronted with 'stop-and-stop' conditions. Fans value movement relatively highly, and a plan that provides the ability to continue moving, even if that travel was sometimes in a direction away from the ultimate destination, was the goal.

New Transportation Plan Elements

Wellborn Road, Harvey Mitchell Parkway and University Drive were particularly problematic in the 2013 postgame traffic plan, and thus became targets of the new planning effort. Some of the changes were altered traffic control on-campus, some took advantage of additional technology investments and some changes were the result of policy and institutional support for substantial changes directed to achieving the gameday experience goals.

The traffic control and communication plan developed for the 2014 season and refined since, provides parkers with maps showing the best routes into their lot or garage, and the route that they will be directed during the postgame period. This information is provided to 12th Man Foundation donors before they choose parking. It is also worth noting that there are a large number of new game attendees each week and education is an ongoing process. This allows a fan, for example, to park in an area that easily allows them to travel north from campus after the game if they want to prioritize that element of their gameday experience. Adjustments are made for events such as crashes, law enforcement stops, and medical emergencies. The adjustments are typically a combination of altered traffic routes, signal timing changes and law enforcement operations. The full complement of dedicated and experienced traffic and law enforcement staff, monitoring equipment and communication technology works together to deliver information and a better system performance.

A number of traffic signal changes were made to implement the new traffic control plan. The "Go with the Green" plan had been developed in the mid-1990s and refined several times. The new revisions put more traffic signal green time on the exit routes and converted Wellborn Road south of George Bush into a mostly-southbound roadway with only one lane northbound from FM 2818. Signal timing on George Bush and Texas Avenue were also modified to prioritize outbound traffic. The plan also attempted to remove officers from traffic signal responsibility and concentrate those resources on pedestrian safety, and intersections with complicated traffic movements.

An innovative vehicle detection element was added at the George Bush/2818 intersection. The eastbound Bush roadway (between Olsen and FM 2818) is converted to a limited use westbound section that allows high-speed priority travel for groups like the opposing team or police-escorted dignitaries. One element of the video detector system at FM 2818 points at the east side of the eastbound roadway to detect a westbound shuttle bus using the VIP route. This unusual detector location (pointing at the 'wrong way' road) is connected to the signal and provides green time to the bus without need for human intervention and only for the two or three times per hour when a bus is present.

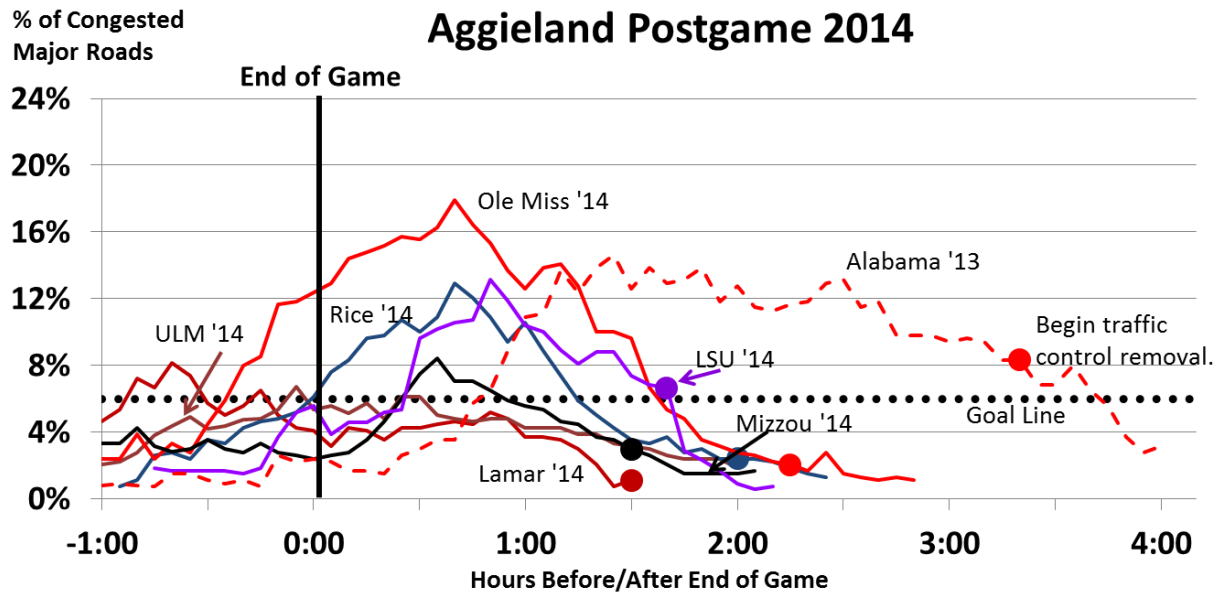
An unexpected challenge for the traffic plan is the postgame off-peak direction traffic – fans and residents coming back toward Kyle Field for dining and entertainment. The traffic plan is focused on ‘exiting’ and in 2016 the operations staff closely monitored conditions to identify this ‘rebound wave’ and attempted to begin picking up the barricades and cones before the off-peak direction congestion began growing too rapidly. The statistics in Exhibit 5 include both directions of the major roads – away from and toward Kyle Field.

2014

The first two 2014 games with a partially completed stadium and the largest seating capacity ever for Kyle Field provided an opportunity to identify shortcomings and other opportunities. A two-hour lightning delay before kickoff of the first game caused a very uneven departure pattern (some families with young children decided the full day in the sun had been enough and left before kickoff) that stressed a system that assumes fans will stay at least until the Aggie Band wins halftime. The City of College Station signal foreman returned to the shop and reset the departure signal system timings, a particular problem because the older system reset all timing at midnight. This ‘old school’ traffic and timing plan was assisted by roving monitors and law enforcement and parking officer communications. The campus video cameras were used to monitor nearby roads, but outer intersections relied on radio communication and on-site visits. The initial tests showed the value of working a system plan to clear out the traffic as soon as possible, and helped modify the plan so that traffic for the Mississippi game – with a crowd close to the size of the 2013 Alabama game - was much better than the 2013 benchmark. Congested road percentages (Exhibit 6) went higher than the 2013 Alabama game, but also fell at a much faster rate, getting to the congestion goal by 1 hour, 45 minutes postgame. Early departures caused congestion to go past the 6 percent goal line about 30 minutes prior to game end, but the total congested time was about 2 hours, 15 minutes – 45 minutes less than 2013 Alabama.

Early 4th-quarter leads for the Aggies or the other team caused fans to depart early for the first five 2014 games. The close-at-the-end LSU game saw the first really large postgame traffic peak. That Thanksgiving Day crowd, however, exited with low traffic volume from Bryan-College Station residents. Traffic did not encounter the usual slowdowns on College Station streets causing more traffic to reach SH 6 faster, which led to some stop-and-go conditions in south College Station. By season’s end, there had not been a full transportation plan test, but there had been six very good opportunities to refine the transportation and communication plan.

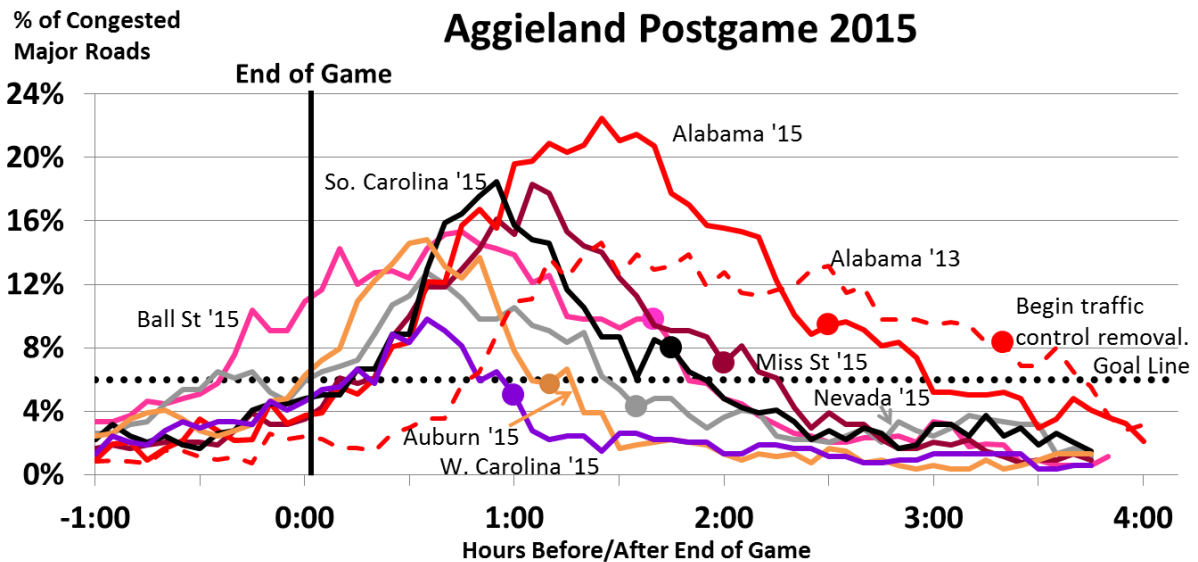
Exhibit 6. 2014 Postgame Congestion Levels



2015

The 2015 season, the first with the fully redeveloped Kyle Field, began at noon with the “world’s largest tailgate” for the Ball State University game (6 p.m. kickoff). Pregame congestion was more intense and peaked earlier than for “normal” 6 p.m. games. The new City of College Station cameras, signal controllers and traffic detection equipment performed very well at the intersections. Signal timings were frequently adjusted to enhance traffic flow and adjust to changing patterns. The Mississippi State University game tested the postgame plan with a late kickoff, good weather and a nearly full stadium at the final whistle (Exhibit 7). Postgame congestion peaked around 1 hour, 10 minutes post-game, but dropped sharply as planned. The highly anticipated University of Alabama game kicked off at 2:30 p.m. with pregame congestion following the normal trend. Postgame congestion peaked higher than any previously recorded percentage, but declined more rapidly than the 2013 Alabama game, reaching the congestion goal at 3 hours postgame. With the early evening game end, fans went home, and then headed back into Bryan/College Station for evening activities. This prevented traffic from diminishing as quickly as hoped. Traffic control was removed by the 2-hour goal time for the other six home games.

Exhibit 7. 2015 Postgame Congestion Levels



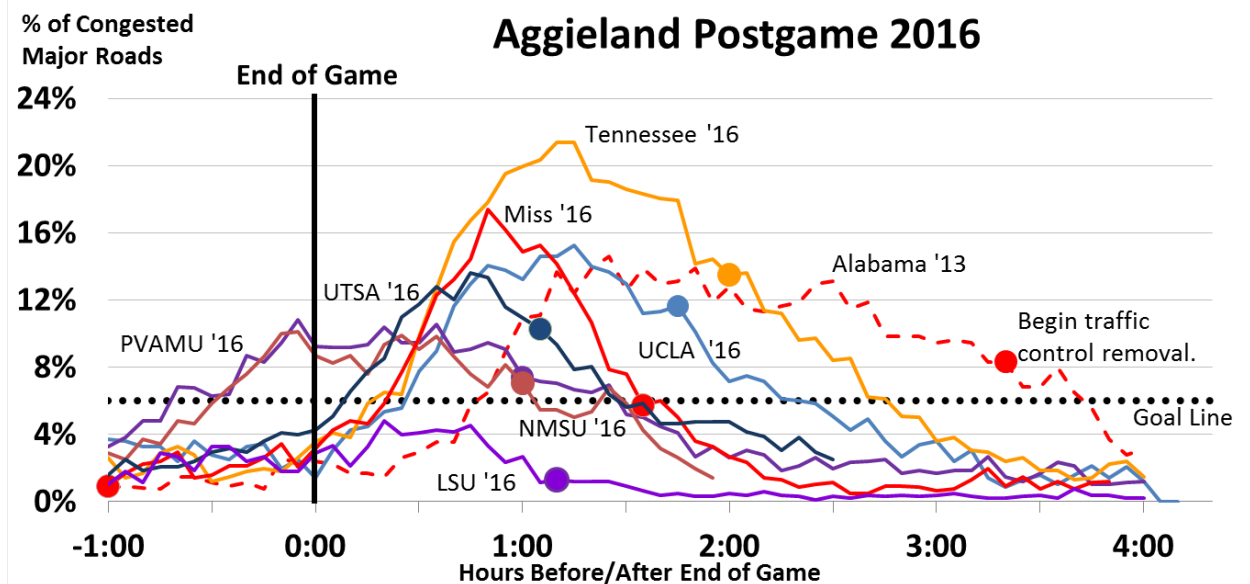
2016 Season

The 2016 football season saw two significant parking changes that affected traffic congestion. Parking resources change every year due to revised policies, new buildings, new garages or lots, or the loss of parking locations. The Cain Garage (less than ¼ mile from Kyle Field) opened in the Fall of 2016 with a 1,400 vehicle capacity. Cain Garage has only one entry and exit path onto Stallings Blvd, a street with many pedestrians during pregame and postgame periods. The path also connects to a highly constrained on-campus road network, requiring a more regulated MSC area street system. Limiting the incoming traffic on Old Main, Lamar, Stallings, and Joe Routt helped empty the garage within 45 minutes for every game while keeping pedestrians safe and bus traffic flowing.

A new premium RV Lot (with electrical, water and sewer connections) opened on Penberthy Road south of George Bush. All other non-12th Man RV parking was consolidated in a 'dry lot' (RV parking that does not include electrical or water connections) on west campus near the Bush Library. This meant that more cars could be parked in areas that are relatively easy to exit to the city street system during postgame traffic, reducing the amount of congestion.

Exhibit 8 shows that traffic control removal began within two hours postgame for all seven 2016 home games. Two high attendance games – Tennessee and UCLA – went to overtime, and the other very large attendance game (Mississippi) also saw most fans stay until the end. The attendance point is relevant to the congestion issue; average crowd was 102,000 and all but one game exceeded 99,900 fans. The term 'small game' is now applied to attendance levels of 95,000.....

Exhibit 8. 2016 Postgame Congestion Levels

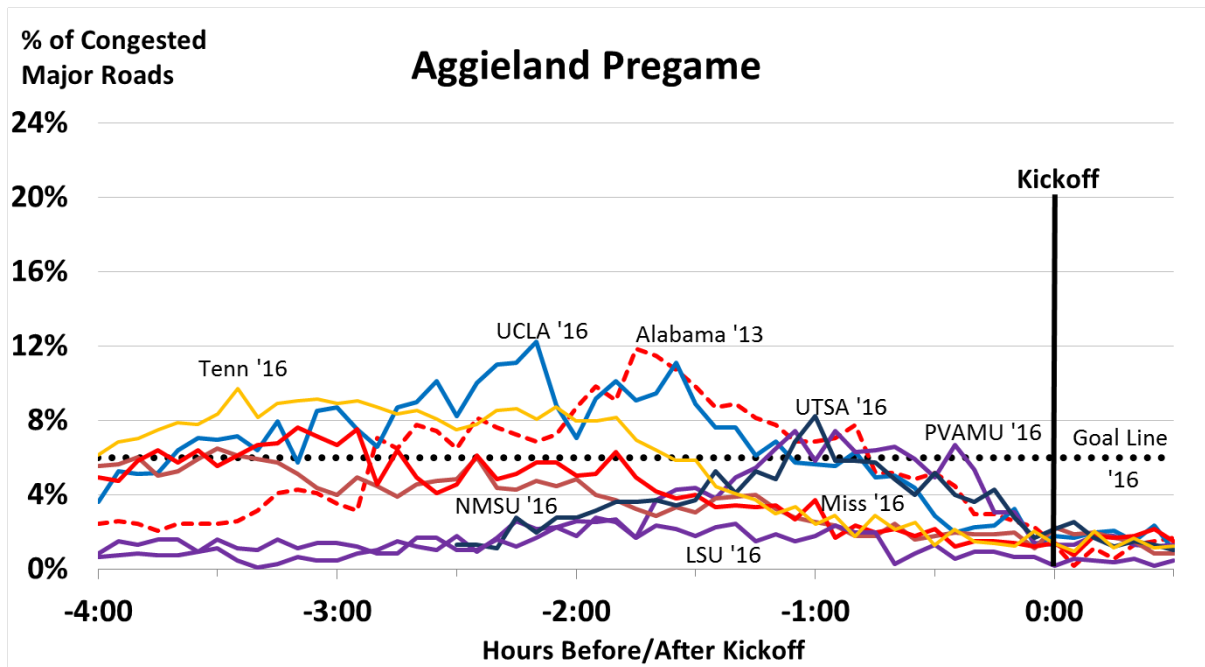


Additional changes were instituted to reduce the amount of incoming postgame 'tailgate pickup' traffic on Throckmorton, similar to the approach that has been used on Houston St for many years and around Reed Arena since 2014. Tailgaters are not allowed onto campus to pick up their supplies and equipment until the exiting traffic is substantially gone. New traffic signal timings were used and the numbers of officers deployed in street intersections were reduced.

The pregame congestion graph in Exhibit 9 has a few salient points that have been consistent for the three years of the new plan.

- Pregame congestion is not generally a large problem at Aggie football games. With most games in the afternoon or evening, there are many hours for the crowd to enter for tailgates or pregame activities like Fan Zone.
- The Prairie View A&M and UTSA 11 a.m. kickoff games have congestion peaks close to kickoff with fewer hours for the parking lot loading process. Attendance at these games – particularly the extra tailgater crowds – were less and although there were fewer hours pregame, their peaks are not as high as the large games.
- The large games – Tennessee, Mississippi and UCLA - had higher peak congestion levels and the values stayed relatively high for more hours, including time before the congestion graph begins.

Exhibit 9. 2016 Pregame Congestion Levels



Opportunities for the 2017 Season and Beyond

As Texas A&M University continues to grow its student population, faculty and staff levels and building space, the road network will continue to be challenged on gamedays, as well as weekdays. With the update of the Campus Master Plan and on-going transportation projects and technology investments, the gameday transportation plan will continue to evolve.

- Plans to expand Harvey Mitchell Parkway (FM 2818) to six lanes, as well as an improved interchange at Harvey Mitchell Parkway/Stotzer Blvd will increase capacity on some key exit routes.
- The Bush-Wellborn intersection improvement project will follow those expansions, and will significantly improve pedestrian and vehicular safety. The construction process will seek to avoid significantly affecting football traffic.
- The Cain Hotel will open in Fall 2018. As part of that project and consistent with the Campus Master Plan Joe Routt Blvd, Gene Stallings Blvd, and Lamar St will be re-built with wider sidewalks and improved vehicle and bicycle traffic flow. The new designs will accommodate the hotel traffic plan, the Cain Garage vehicle flow and the large number of pedestrians, but this area will be a challenge.
- Ultimately the large MSC bus hub may need to move to Old Main Drive to avoid the large amount of pedestrians in the area. For the last several years, when the Corps of Cadets marched around the MSC, bus stops have moved to Old Main. Fan walking distances are longer, but the bus operations are not stopped for more than 30 minutes.
- The transit routes that drop on Joe Routt Blvd will also need to be evaluated for the 2018 season when the new hotel on the Cain site opens.

Secret Shopper Report

A firm is contracted to provide unbiased observations about many aspects of the football gameday operation. This “secret shopper” travels from out of town and reports on their ‘driveway to driveway’ experience. Reports for the 2014, 2015 and 2016 football games had very good reviews for parking and transportation. An Austin resident traveled to the 2014 Thanksgiving Day game against LSU and was surprised to find a relatively easy flow of the traffic around campus. The shopper reported, “The best parking experience that we have had in some time at Texas A&M,” and, “The real story here was that this was the largest attendance we have seen at A&M and yet the arrival/departure times were the best that we have seen. Anyone that attends an event that has 105,000 fans (without leaving early) that gets out this quick should be thrilled- in my case, while a bit shorter of a departure drive, I was pleased that I got back to Austin quicker than my arrival time.”

The “secret shopper” for the 2015 season drove in from Houston for the University of South Carolina game on October 31st. This review labeled the experience “the best we have had since we started visiting Kyle Field in 2007.” The 2016 review of the Tennessee gameday had similar reflections on traffic and parking operations, with problems noted with construction traffic in Houston. The overall rating for the three post-Kyle redevelopment years are all in the top four reviews since the 2007 season. Each of the secret shopper reports had good reviews for parking and transportation, some useful suggestions on guide signing and operations and observations that will continue improvement on the Kyle Field experiences.

Pregame

A pregame change that is still a “work-in-progress” is convincing fans that using Harvey Mitchell Parkway (FM 2818) is a good route. The traditional routes of Texas Avenue, University Drive, George Bush Drive and Wellborn Road are congested for several hours pregame, but fans seem committed to those streets. Social media, public engagement and smartphone app information was used to help the public see the benefit of changing their traditional routes.

The Kyle Field Gameday Experience Task Force has suggested that the Corps of Cadets have a variety of pregame march routes, some of these will move across some major campus entry routes. A combination of traffic solutions and aggressive communication efforts will be needed to alert fans to these changes and to accommodate the adjusted traffic patterns.

Parking resources will change as the Campus Master Plan is implemented, but during all years the efficient use of parking will be important. An inefficient element is the policy that allows any Texas A&M permit holder to park in some areas on gamedays at no extra charge. The effect of this was discussed in the parking section; in summary, eliminating this provision would result in some combination of 2,000 more fans accommodated in the same number of spaces and \$500,000 of additional revenue for gameday operations. As crowds grow, and parking resources change, this policy should be re-examined to see if the efficiency and fairness decisions might change in coming years.

Enhancements might also include electronic beacons to improve guidance and help fans find a variety of services – from uncongested Kyle Field entry points, less crowded concession stands, menus and guest services – and provide this information in a real-time, dynamic format.

Attempts to improve pedestrian safety will see more street closures and restrictions for the 2017 season. Houston St and Coke St north of George Bush, and West Lamar east of Wellborn Rd will all be restricted to only vehicles with permits for lots ‘inside’ of those locations. All of these areas see large amounts of pedestrians going to tailgates and Kyle Field. These will be active from four hours pregame until kickoff. In addition, Olsen Blvd between Rec Center Drive and Kimbrough Blvd will be closed to all traffic except buses. This closure worked well – improving both pedestrian safety and traffic flow - the last several months for a variety of smaller events. It will be a challenge to communicate all of these changes to fans, but the improved environment will prove the value of that effort.

Postgame

With the improvements in technology and resources, and the three years of experience, the postgame transportation plan is focusing on being nimble. Cameras and communication equipment provide much better situational awareness that allows staff to adjust traffic flows to avoid back-ups, crashes and other problems, as well as take advantage of opportunities presented by changes in, for example, different parking patterns. The concept of ‘campus islands’ is being used to identify areas where traffic control decisions can be made independently. The first few years, these decisions were typically made at the main campus or west campus level. Experience suggests that there are more than a dozen ‘islands of campus and community traffic control that can be activated, or removed. Some of these are quite extensive; the Wellborn Road contraflow requires more than an hour to set up or take down. But many are either relatively simple cone or barricade devices that can be moved into or out of the street quickly, with the ultimate removal and transport operation being accomplished later. Decisions to open Houston St and Throckmorton St to allow tailgaters to retrieve their equipment are relatively simple to implement when pedestrian traffic has declined to a safe level. The ‘islands’ approach requires staff in each area to be more aware of the interconnectivity that exists, but also improves our delivery on the promise that traffic controls will only be in place as long as they are needed.

Accommodating the interests of fans and transportation partners has been easier the last couple years with the advent of the FanRide program in Lot 30e, just north of the Albritton Bell Tower. Uber, hotels, apartments and other groups/companies that help fans move around on gameday use this spot, particularly postgame when much of the campus interior is closed to entry. Drivers are allowed through Lot 30 to connect to/from University Drive or onto Wellborn Road going north; this route is away from the large pedestrian and vehicle flows as well as the road closures designed to move traffic off-campus. Pedicab operators have been similarly engaged in a dialogue to find mutually acceptable routes.