



# Iowa State University Football Special Events Management Strategic Plan

## IOWA STATE UNIVERSITY

April 2010

Prepared for



Prepared by



## Table of Contents

1.0 Introduction .....	1
2.0 Key Event Elements.....	1
2.1 Event Characteristics and Attendance .....	1
2.2 Surrounding Roadway Network.....	1
2.3 On-Site Parking .....	4
2.3.1 Medical Accessible Parking .....	4
2.3.2 Cars .....	4
2.3.3 Recreational Vehicles .....	4
2.3.4 Charter Buses .....	4
2.3.5 Shuttle Service.....	4
2.4 Traffic Event Management Staffing .....	6
2.5 Command Post.....	6
2.6 Media Coordination .....	6
2.7 Intelligent Transportation Systems .....	8
3.0 Field Observations .....	8
3.1 Positive Existing Practices .....	8
3.2 Issues for Consideration.....	9
4.0 Recommendations .....	13
APPENDIX.....	18

## List of Figures

Figure 1: Jack Trice Stadium Vicinity Map .....	2
Figure 2: Lane Geometrics and Speed Limits.....	3
Figure 3: Jack Trice Stadium Parking Map .....	5
Figure 4: Agency Intersection Control.....	7
Figure 5: Jack Trice Stadium and Surrounding Parking Lots.....	8
Figure 6: Active Traffic Control Personnel and Visible Traffic Control Devices .....	9
Figure 7: Pedestrian and Vehicle Congestion at University and 16th Post-Game.....	10
Figure 8: Queuing along 16 <sup>th</sup> Street Back onto University Boulevard .....	11
Figure 9: Lack of Sidewalks along University Boulevard .....	12
Figure 10: Traffic Control Personnel without Reflective Vest.....	12
Figure A 1: Additional Information and Potential Locations of Improvements .....	20

# 1.0 Introduction

This project focuses on improving travel, safety and efficiency to and from Iowa's largest traffic generating events. These include:

- Iowa State Fair
- Iowa State University Home Football Games
- University of Iowa Home Football Games

The objective of this work is to analyze traffic and pedestrian flow at each event and to work with event staff, agencies and others in developing roadway, operations and safety improvements where appropriate. The project deliverable is a report which consists of short and long term recommendations.

To complete this effort, the Iowa Department of Transportation (Iowa DOT) selected a professional traffic engineering consulting team to review the traffic management components at each event. This report is focused on the input, feedback, observations and recommendations for the Iowa State University home Football games based upon the 2007-2008 football season.

## 2.0 Key Event Elements

### ***2.1 Event Characteristics and Attendance***

Project Team members conducted on-site observations of event management for the Iowa State University football game on October 20<sup>th</sup>, 2007 against the University of Oklahoma in front of a crowd of 49,511, as officially reported. In addition to the crowd at the game, a significant number of people arrived at the parking area around the stadium to tailgate. The additional number of people tailgating has been estimated as high as 40% of the game-day crowd.

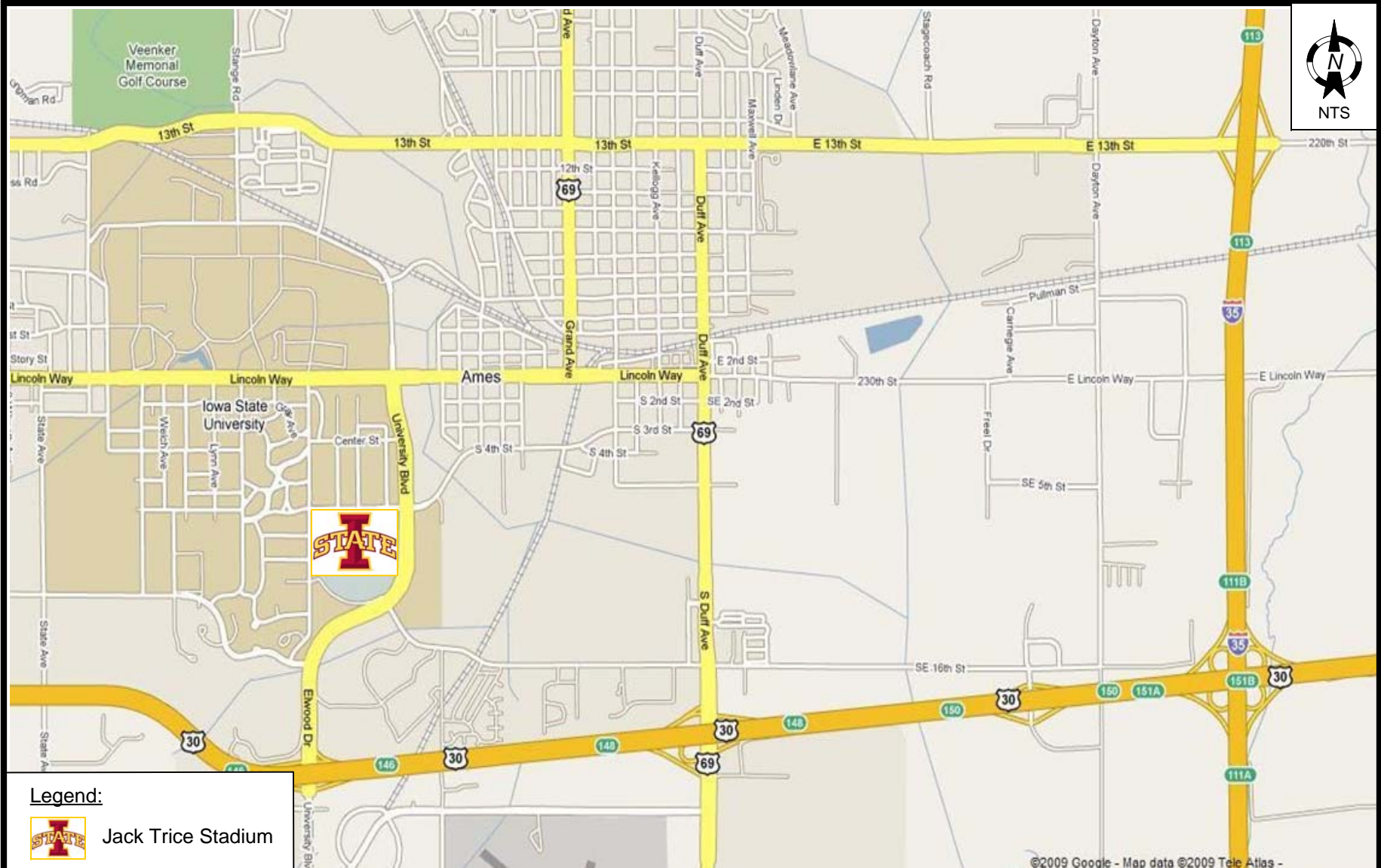
### ***2.2 Surrounding Roadway Network***

Figure 1 shows the location of Jack Trice Stadium within Ames. Key roadways that provide access to the Ames area include:

- Interstate 35
- US Highway 30
- S. 16<sup>th</sup> Street

Figure 2 shows the primary access routes to the stadium along with basic roadway characteristics. Additional roadway descriptions and directions to the stadium are summarized in the Appendix.







## **2.3 On-Site Parking**

The official ISU web site describes the locations for parking surrounding the stadium. Figure 3 shows the parking graphic provided by the Athletic Department. Summaries of various parking types are provided in the following sub-sections. There are also two non-university parking lots near the stadium. The locations of those lots are illustrated in Figure A1 of the Appendix.

### **2.3.1 Medical Accessible Parking**

Parking Lot S2, south of Gate 3, is available to fans with a medical accessible parking permit issued by the State of Iowa DOT on a first-come, first-served basis. Recreational vehicles will not be admitted into Lot S2.

Event management staff indicated that with large media coverage, media vehicles extend into the medical accessible parking.

### **2.3.2 Cars**

All paved and grass parking located immediately north and east of Jack Trice Stadium is reserved for Cyclone Club members. For weekend games, Cyclone Club lots will open at 7 a.m. or 6 hours prior to kickoff, whichever is earlier. General public parking provided by Iowa State University is located in the grass areas south of Jack Trice Stadium along South 16th Street. Limited parking is also located around Hilton Coliseum. All general public parking lots open 6 hours prior to kickoff. Additional private parking is located on the grass between lots G6 and G7 and to the north of lot G6. The locations of the private parking lots are illustrated in Figure 3.

### **2.3.3 Recreational Vehicles**

Cyclone Club members issued a RV permit will park in D2, D3, D4 or S8. Permit holders may gain access to their assigned lot from 5 p.m. to midnight the night before a game, or when lots open on game day.

General public bringing recreational vehicles the night before football game days will be directed to park at the ISU Veterinary Medicine College (Lot 93). Approximately 100 vehicles were parked in the lot on Friday night for the ISU vs. Iowa game on Saturday, September 11, 2009.

### **2.3.4 Charter Buses**

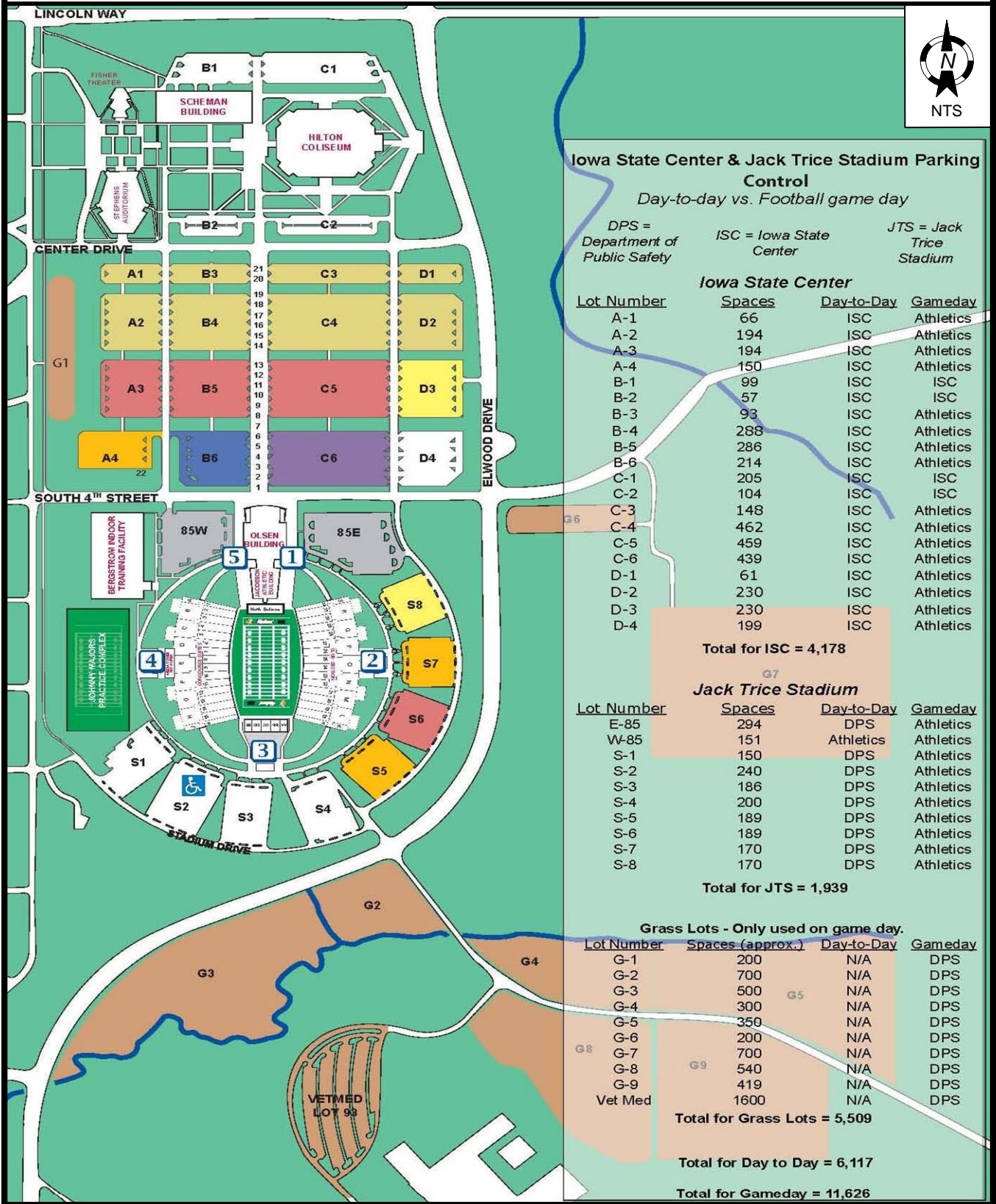
Charter bus parking, fee of \$50 per bus, is located on Stadium Drive south of lots S4, S3, and S2 on a first-come, first-served basis. There were approximately 15 buses parked along the drive for the ISU VS. Iowa game on Saturday, September 11, 2009.

### **2.3.5 Shuttle Service**

CyRide provides transit services within the City of Ames. During home football games CyRide does not provide special shuttle service, but continues to operate its regular routes. Additional shuttles are utilized in the event of excessive rain to transport ticket holders from remote surface lots as the grass lots will not be utilized for parking. At this time, local businesses do not provide shuttles to the game. Private shuttles operated by members of the community would be welcomed on game day in an effort to help reduce congestion.

During the 2007 season CyRide was contracted to provide shuttle services for the season from the remote lots on campus to the stadium. The shuttles ran on campus based routes and







notices about the shuttle were sent out to the students and donors. The shuttles were primarily utilized by the students. The service was funded by ISU Parking.

## **2.4 Traffic Event Management Staffing**

The traffic management team for Iowa State Football includes the Iowa Department of Transportation, Iowa State University (ISU) Event Management, Iowa State Police Department, City of Ames Police Department and the Iowa State Patrol. Tuesday morning briefings are hosted by the athletic department prior to home games for the event management team. Iowa DOT contributes portable message boards at key locations, permanent DMS and on-call support. The ISU Event Management provides parking lot attendants (students) to check parking credentials and handle pedestrian traffic control at the intersections of S. 16<sup>th</sup> Street and S. 4<sup>th</sup> Street with University Boulevard. Key intersections are staffed with City of Ames Police Department. The Iowa State Patrol provides select ramp traffic control at the junctions of US Highway 30 at University Boulevard, Duff Avenue and I-35. Figure 4 illustrates the agency responsible for traffic control at intersections in the vicinity of the Stadium.

The consensus of the stakeholder meeting was that traffic event management is handled very efficiently for most events. Only the large scale events, such as games versus the Iowa Hawkeyes or Nebraska Cornhuskers, present the need to consider alternative strategies.

The official website should contain, at a minimum, a generic statement related to emergency evacuation procedures. This would provide those fans that are concerned about their safety with a level of comfort knowing that a plan is in place, even though the plan is not specifically stated. The current practice is to not post detailed and specific emergency plans for public viewing, for reasons of liability and safety.

## **2.5 Command Post**

ISU operates a command post on site which maintains radio communications with the traffic event management staff. Communications include the ISU Athletics, City of Ames Police, ISU Police, Iowa State Patrol, Iowa DOT, Per Mar security, and the Ames Fire Department. Communications are related to security and traffic operations. The command post can also decide whether or not to change the messages that are being posted on the DMS, at which time personnel would be dispatched to the DMS locations to change the messages.

Additionally, Iowa DOT has recently established a 24/7 Operations Center that can provide incident management support statewide through the control of DMS, CCTV and traffic sensors. Any authorized users with a login id, password, and Internet connection can change the messages that are posted on the DMS signs and can view the camera images. The telephone number for the Operations Center is (515) 233-7900.

## **2.6 Media Coordination**

The Cyclone Radio Network provides game coverage of ISU football. AM 1430 KASI and 1460 KXNO radio, as well as several other FM stations, report pre and post game information and traffic conditions. Limited traffic information regarding traffic activity was reported on AM 1430 KASI.



## 2.7 Intelligent Transportation Systems

Iowa DOT staff operate Dynamic Message Signs (DMS) on I-35, south of US Highway 30. The permanent DMS provide traveler information and are programmed from the Iowa DOT maintenance office and the Ames Traffic Management Center. To change information on these signs traffic management would need to contact the Iowa DOT and request a message change.

Iowa DOT provides real time traffic conditions and CCTV images for selected roadways at [www.511ia.org](http://www.511ia.org). These images update once every minute. Currently no CCTV images are available along I-35 or U.S. 30 surrounding Ames. Additionally, the City of Ames does not currently provide video images from roadways or intersections in the City.

## 3.0 Field Observations

Several observations were noted during the field review on October 20<sup>th</sup>, 2007. Observations were made regarding positive practices in use and areas where there is the potential for improvement. The following sections discuss the positive practices and issues for consideration based on the field review.

### 3.1 Positive Existing Practices

The following observations were made regarding positive practices in use.

1. Parking – The existing parking lots provide ample parking in close proximity to the Stadium. Parking restrictions are also in place on game day and parking isn't allowed on resident's yards. The parking lots are in close proximity to four-lane, arterial roadways, which provides good access and the spacing between intersections along the roadways allows for queuing.



Figure 5: Jack Trice Stadium and Surrounding Parking Lots



2. Active (Traffic Control Personnel) and Visible Traffic Control (Devices) – Traffic control at intersections and parking locations is highly visible. Devices placed in the field clearly direct traffic in the manner they were intended to without confusing the driver, thus increasing safety and efficiency of traffic flow. Additionally, the traffic control staff is appropriately trained and properly assigned to handle their respective duties.



**Figure 6: Active Traffic Control Personnel and Visible Traffic Control Devices**

3. Event Planning – The athletic department hosts a meeting each week of a home football game to review game day practices and discuss any unique challenges that the upcoming game may provide. The meeting includes Iowa State University staff, City of Ames Police, Iowa State Patrol, and other event management staff. There is also a clearly defined plan in place for severe weather, with fans being directed to the Hilton Coliseum.
4. Access Control – Access control on adjacent roadways is good and this limits the locations where vehicles can enter and reduces pedestrian conflicts. The limited number of access points also concentrates traffic at specific intersections, which are staffed by traffic control personnel.
5. Command Post – The command post is active for each game. ISU Athletics has the ability to coordinate activities with the ISU Police, City of Ames Police, Iowa State Patrol, Per Mar Security and the Iowa DOT.

### **3.2 Issues for Consideration**

Several observations were noted that have the potential for improvement, which included:

1. Congestion at University Boulevard and S. 16<sup>th</sup> Street – Pre- and post game there is a substantial amount of congestion at University Boulevard and S. 16<sup>th</sup> Street due to vehicles and pedestrians. The intersection serves as a primary access to parking.





**Figure 7: Pedestrian and Vehicle Congestion at University and S. 16th Post-Game**

2. Parking Lot on the Southwest Corner of University Boulevard and S. 16<sup>th</sup> Street – Fans that park in the lot on the southwest corner of University Boulevard and S. 16<sup>th</sup> Street arrive early to tailgate. The lot only has one access point to serve the large number of fans that desire to tailgate, which creates queuing along University Boulevard. The lot's capacity is less than demand which forces fans to park in other lots and leads to fans dropping off passengers, coolers, chairs, etc. at various locations near the lot, before the driver parks elsewhere. Additionally, the tailgaters create conflicts as they cross University Boulevard before the game, often with a container in their hand, which they have to stop and place in a trash container on the south side of University Boulevard.



**Figure 8: Queuing along S. 16<sup>th</sup> Street Back onto University Boulevard**

3. **Minimal Trailblazing Signs** – Fans arriving from outside of Ames receive very little direction to the stadium via signage. The lack of signage reduces the probability that fans will arrive on the preferred route. Fans unfamiliar with the location of the stadium may also be uncertain about the location of parking and have difficulty locating it. Additionally, some of the signs directing patrons to parking lots contained multiple lines of text with small print to specific lots, such as lots S1, S2, etc.
4. **Ingress/Egress Issues for Parking Immediately Around the Stadium** – There are approximately 2,000 parking spaces in the lots immediately around the stadium. With the exception of lot 85W, the lots enter/exit via a two lane road. Lots S1-S4 have a capacity of approximately 775 vehicles and use Christensen Drive for access, while lots S5-S8 and 85E have a capacity of approximately 1,000 vehicles and use Stadium Drive for access. The limited capacity of the roadway and the large demand during a short period of time creates large queues and excessive delay when entering and exiting the lots.
5. **S. 16<sup>th</sup> Street Lack of Capacity** – S. 16<sup>th</sup> Street is a two lane roadway in the vicinity of the Stadium that provides access to many parking lots. The heavy demand generated before and after games cannot be accommodated with the limited capacity of S. 16<sup>th</sup> Street.
6. **US 30 Post-Game Congestion** – For some games the ramp junctions at University Boulevard and I-35 can experience considerable congestion. The single-lane on-ramps do not provide enough capacity to handle the post game traffic volumes. The result is

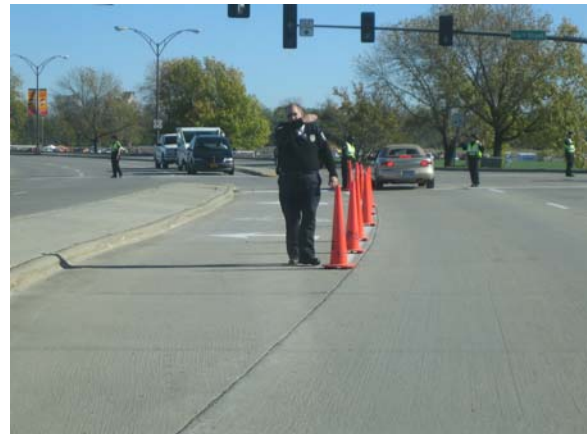
stop and go traffic along US 30 from University Boulevard through the southbound merge with I-35. Based on comments from the Iowa State University Police, there were several roadways that have been underutilized in handling in-bound and out-bound game day traffic. Those roadways include Duff Avenue, S. 3<sup>rd</sup> / S. 4<sup>th</sup> Street, and 13<sup>th</sup> Street via I-35. Additionally, South Dakota Avenue may be able to help relieve some of the congestion along Mortensen Road.

7. Lack of Sidewalks – There is a general lack of continuity of the sidewalks around the Stadium. Sidewalks were noted to be lacking in some heavily used pedestrian areas such as along the south side of S. 4<sup>th</sup> Street east of University Boulevard, S. 16<sup>th</sup> Street on the north side east of University Boulevard and along the east side of University Boulevard from S. 4<sup>th</sup> Street to S. 16<sup>th</sup> Street.



**Figure 9: Lack of Sidewalks along University Boulevard**

8. Poor Visibility of Traffic Control Personnel – While most field personnel were wearing reflective garments, it was observed that not all traffic control staff were wearing appropriate reflective garments. Appropriate reflective garments should be worn at all times as a safety precaution.



**Figure 10: Traffic Control Personnel without Reflective Vest**

9. Contingency Plan for Grass Lots – There are nine grass lots utilized for game day parking that have a capacity of more than 5,500 vehicles. In the event of heavy rainfall the day of or day before the game, the lots may be closed resulting in the loss of available parking spaces. Closing the grass lots would result in an increased demand for parking at other locations. ISU staff monitors the weather and the condition of the grass lots beginning three days in advance of the event. Changes in parking lot use, or status, is broadcast on the radio with other relevant game day information as soon as a decision has been made regarding parking lot status. A parking management plan



should be available on the website that displays the lots status (open/closed) and a plan if the lots are closed.

10. Command Post for Game Day Operations – Currently the command post uses multiple channels to communicate with all traffic event management staff. The command post does not currently communicate with the City of Ames Fire Department. A review of the current radio hardware should be completed to determine if additional key stakeholders can be added to the system.
11. Parking Information – Parking information on the Athletic Department's official site ([www.cyclones.com](http://www.cyclones.com)) is not located in an easily accessible area. Visitors to the site have to navigate through several links to obtain the information. There is also more than one link that contains parking information and not all the parking links contain the same information.

## 4.0 Recommendations

The following section addresses the issues for consideration as described in the previous section. Some issues may require further study. Short and long term strategies were developed for each of the issues. Each issue should be evaluated for unanticipated consequences.

### 1. Congestion at University Boulevard and S. 16<sup>th</sup> Street

**Short Term:** Several strategies have been identified to reduce the congestion at the intersection of University Boulevard and S. 16<sup>th</sup> Street. The egress out of the Stadium for parking lots S1-S4 and G2-G3 could be modified/restructured. Depending on the plan developed, lots would have a specific route designating the exit to the street network. Specific lots would be directed away from this intersection to reduce the traffic at the intersection. Beach Avenue and Mortensen Parkway could be utilized for the egress movements of lots S1-S4 to help alleviate congestion along University Boulevard post-game. A second option is to only allow lots G2 and G3 egress via S. 16<sup>th</sup> Street to the east. This would also reduce the amount of traffic utilizing the University Boulevard and S. 16<sup>th</sup> Street intersection, which would help to reduce the congestion and delay at the intersection. The first two strategies also help reduce the number of potential vehicle-pedestrian conflicts at the intersection by reducing the volume of traffic at the intersection. The third option, to delay egress out of the stadium for parking lots S1-S4 and G2-G3, would further help to reduce the vehicle-pedestrian conflicts by allowing the large pedestrian demand to be served before vehicles are allowed to exit the parking lots. This practice has been deployed successfully at other large scale events. Assuming the crowd stays for the entire event, the duration of the Pedestrian Only egress period is generally 20-30 minutes.

**Long Term:** A couple of potential options for reducing traffic congestion long term have been identified. The first is to construct access to parking lot G7 from S. 16<sup>th</sup> Street and eliminate access from S. 4<sup>th</sup> Street. This would reroute traffic from University Boulevard



to S. 16<sup>th</sup> Street. The second option to be considered is to revisit the construction of the Grand Avenue extension to S. 16<sup>th</sup> Street. This could allow for additional access to a number of remote lots. Additionally, the construction of a pedestrian underpass at the intersection of S 16<sup>th</sup> Street and University Boulevard should be considered. Separating the pedestrian movement from the vehicle movement would improve safety and operations at the intersection.

## 2. Parking Lot on the Southwest Corner of University Boulevard and S. 16<sup>th</sup> Street

**Short Term:** Implement lane control to restrict drop-off along University Boulevard and S. 16<sup>th</sup> Street near the grass lot on the corner. This will eliminate the safety issue associated with dropping passengers off in a travel lane, prevent the reduction in capacity that occurs when the lane is blocked with vehicles dropping off passengers, and reduce the queuing which occurs.

**Long Term:** Consider an access north of Mortensen Parkway and University Boulevard to provide a second access point into the lot at the southwest corner of University Boulevard and S. 16<sup>th</sup> Street. The second access point will help reduce the queuing along S. 16<sup>th</sup> Street and University Boulevard created by the single access point that current exists. An approximate location of the potential second access point is illustrated in Figure A1 of the Appendix. The construction of a pedestrian underpass, as discussed in the long term recommendation of issue 1, would help to reduce the vehicle-pedestrian conflicts associated with this lot.

## 3. Minimal Trailblazing Signs

**Short Term:** Expand upon the existing temporary game day signage (static). This would facilitate fans taking the preferred route to the Stadium and assist those that are unfamiliar with the area in locating the Stadium. Signs should be consistent in their wording and reference to destinations, with the message easily understood. Signs that are directing traffic to parking locations could use a more general term, such as public parking or general parking, instead of the lot numbers that are currently displayed in small print on multiple lines, which makes it hard for a motorist to read while operating a vehicle.

**Long Term:** Install permanent game day signage (static and dynamic). Permanent signs would facilitate fans taking the preferred route to the Stadium and assist those that are unfamiliar with the area in locating the Stadium. The expanded use of dynamic signs could allow fans to adjust arrival routes depending on the current traffic conditions.

## 4. Ingress/Egress Issues for Parking Immediately Around the Stadium

**Short Term:** Streamline and or simplify the ingress and egress movements for lots S1-S4. Designated inbound and outbound routes could be developed to help reduce traffic congestion along University Boulevard. An example of this would be to route all post-game traffic west along Stadium Drive and then south down Beach Avenue to

Mortensen Parkway. Continue to delay vehicle egress to give pedestrians a chance to clear the area.

Long Term: Review and evaluate the parking management strategy for all immediate stadium parking lots. The strategy could include a designated ingress and egress route. Designated arrival and departure routes would allow the developers of the parking management strategy to control the traffic volumes along the roadways and intersections adjacent to the Stadium, which would reduce delay/congestion and potential vehicle-pedestrian conflicts.

#### 5. S. 16<sup>th</sup> Street Lack of Capacity

Short Term: Restrict the ingress/egress movements of the grass lots. Potential options to be considered included one-way traffic flows in to and out of the lots, temporary traffic control to restrict lane use, such as coning off lanes, and contra flow. These options are designed to make traffic flow more efficient, reducing the amount of time required to empty the parking lots. Outbound traffic flow is generally handled in 60-90 minutes, with the Iowa game taking approximately 120 minutes. The time required is dependent on several variables including, the final outcome of the game, how long fans want to stay post-game, pedestrian volume post-game, etc.

Long Term: Widen the roadway segments that are currently two-lane segments to increase capacity and make roadway cross sections more continuous. Currently S. 16<sup>th</sup> Street is a two-lane roadway section where it provides access to the grass lots, then it widens to a four-lane section to the east and then reduces back to a three-lane section before widening out to a four-lane section. Despite the wider section to the east, S. 16<sup>th</sup> Street has the capacity of a two-lane section due to its geometrics near the grass lots. Widening S. 16<sup>th</sup> Street to a continuous four-lane section would increase the roadway's capacity, improving pre- and post-game traffic flow. A study would need to be conducted to determine the impacts of widening the roadway and to identify funding sources.

#### 6. US 30 Lack of Capacity

Short Term: Evaluate potential funding sources and study the geometric design solutions and traffic volumes at the ramp junctions of University Boulevard, Duff Avenue, Dayton Avenue and I-35 with U.S. 30 to evaluate potential long term solutions. Evaluation of the long term solution should consider:

- 1) The use of Duff Avenue, S. 3<sup>rd</sup> / S. 4<sup>th</sup> Street, and 13<sup>th</sup> Street via I-35. Based on comments from the Iowa State University Police, these roadways have been underutilized in handling in-bound and out-bound game day traffic.
- 2) Widening of the University Boulevard eastbound on-ramp to US 30 to receive dual, southbound left-turn lanes to accommodate additional traffic flow. This would also support future strategic planning options for improved post game traffic flow.

- 3) Installation of an LED lane designation sign for southbound left-turns at University Boulevard onto US 30 during post game traffic flow. The sign could indicate dual left-turn lanes during high volume traffic flow and a single left-turn lane during lower volume periods. This option would also require ramp modification to accommodate the dual southbound left-turns, as described previously.
- 4) Widening of the US 30 eastbound on-ramp to I-35 southbound. The current single lane on-ramp lacks the capacity to handle the post game demand, which creates the stop and go traffic along US 30. This improvement would allow more traffic to flow onto I-35 post game.

Long Term: Finance/Construct/Implement the solution from the study conducted.

Geometric improvements at the University ramp junctions, and/or other key intersections, could add substantial capacity and reduce congestion along US 30 and at the I-35 Interchange.

#### 7. Lack of Sidewalks

Short Term: Consideration should be given to the addition of sidewalks near University Boulevard and S. 16<sup>th</sup> Street, along S. 4<sup>th</sup> Street, and connections to the stadium. Sidewalks provide a designated walkway for pedestrians and help increase accessibility from parking areas to the stadium. Potential areas to install sidewalks are illustrated in Figure A1 of the Appendix.

Long Term: Based on the plan that is developed, program construction of sidewalks including on-going maintenance and new construction until full connectivity is achieved. This plan will evaluate the long term benefits and costs of pedestrian grade separation under University Boulevard.

#### 8. Poor Visibility of Traffic Control Personnel

Short Term: Require that all traffic control personnel wear reflective garments and other safety equipment while working the event. Traffic control personnel should always be wearing the proper reflective garments while on duty for safety reasons.

Long Term: Addressed with the short term recommendation.

#### 9. Contingency Plan for Grass Lots

Short Term: ISU currently communicates this information to local radio stations. This same information should be posted to the existing web site.

Long Term: Addressed with the short term recommendation.

## 10. Command Post for Game Day Operations

Short Term: Expand communications to include additional key personnel working the event on one channel. The channel should also include the addition of the Ames Fire Department and other key agencies that are currently not on the same system. Being able to change the signs remotely will save staff time from having to change the signs manually and allow for quicker, real-time updates to messages.

Long Term: Addressed with the short term recommendation. Coordinate with the Iowa DOT command post to support expanded use of DMS and CCTV devices as they come on-line.

## 11. Parking Information

Short Term: Consideration should be given to website communication consolidate all parking information in one location. The location should be in a highly accessible area, so fans don't have to navigate several links to locate the information. Information regarding public parking and permit parking should be included in the communication.

Long Term: Develop an interactive parking system. The long term goals of managing game days should be considered during the development of the system. Things to consider include developing specific ingress and egress routes for each parking lot to help reduce congestion and automated text messaging (for those who sign up for it) to inform fans of changes in game day operations.



# APPENDIX

## Description of the Surrounding Roadway Network

### University Blvd

University Boulevard is a four lane divided north/south roadway that runs just east of Jack Trice Stadium. It provides connectivity to Hwy 30 on the south. The speed limit along the road is 35 mph south of West Lincoln Way and transitions to 45 mph south of 16<sup>th</sup> Street.

### Duff Avenue (Hwy 69)

Duff Avenue is another major north/south roadway in the study area. On the northern limits, it is a five lane undivided roadway with a center shared left-turn lane. The speed limit along the road is 30 mph and increases to 35 mph just south of 3<sup>rd</sup> Street. North of 16<sup>th</sup> Street, the speed limit increases again to 40 mph. The five lane section ends at 16<sup>th</sup> Street, and south of 16<sup>th</sup> Street it becomes a four lane divided section.

### S. 4<sup>th</sup> Street / S. 3<sup>rd</sup> Street

S. 4<sup>th</sup> Street is an east/west roadway that runs along the northern limits of Jack Trice Stadium. It is a four lane undivided roadway throughout a majority of the study area, with a four lane divided section that forms near the University Boulevard intersection. From the east, the speed limit is 35 mph. As 4<sup>th</sup> Street continues, it curves and becomes S. 3<sup>rd</sup> Street. S. 3<sup>rd</sup> Street maintains the four lane undivided section with a 35 mph speed limit. Near Duff Avenue, the speed limit on S. 3<sup>rd</sup> Street decreases to 30 mph.

### S. 16<sup>th</sup> Street

S. -16<sup>th</sup> Street is another east/west roadway with a speed limit of 35 mph. This road begins with a two lane undivided section on the east. It has a small three lane section that begins at Fountain View Drive and ends at Golden Aspen Drive, with two lanes for eastbound and one lane for the westbound. East of Golden Aspen Drive, 16<sup>th</sup> Street expands to a 4 lane undivided section continuing to Duff Avenue.

## Directions from the Iowa State University website

The ISU home web page provides directions to the stadium from the primary routes and directions. These directions are summarized below:

**From I-35 South:** Once you get to Ames, turn off on the Highway 30 West exit. Follow Highway 30 West until the University Boulevard. Take the Exit and drive north on University Boulevard. Jack Trice Stadium will be on the West side of the road, just off of University Boulevard.

**From I-35 North:** Once you get to Ames, turn off on the Highway 30 West exit. Follow Highway 30 West until the University Boulevard. Take the Exit and drive north on University Boulevard. Jack Trice Stadium will be on the West side of the road, just off of University Boulevard

**From Highway 30 West:** Follow Highway 30 West until the University Boulevard Exit. Take the Exit and drive north on University Boulevard. Jack Trice Stadium will be on the West side of the road, just off of University Boulevard.

**From Highway 30 East:** Follow Highway 30 East until the University Boulevard Exit. Take the Exit and drive north on University Boulevard. Jack Trice Stadium will be on the West side of the road, just off of University Boulevard. Public parking for the stadium is located on the South end of Jack Trice Stadium.

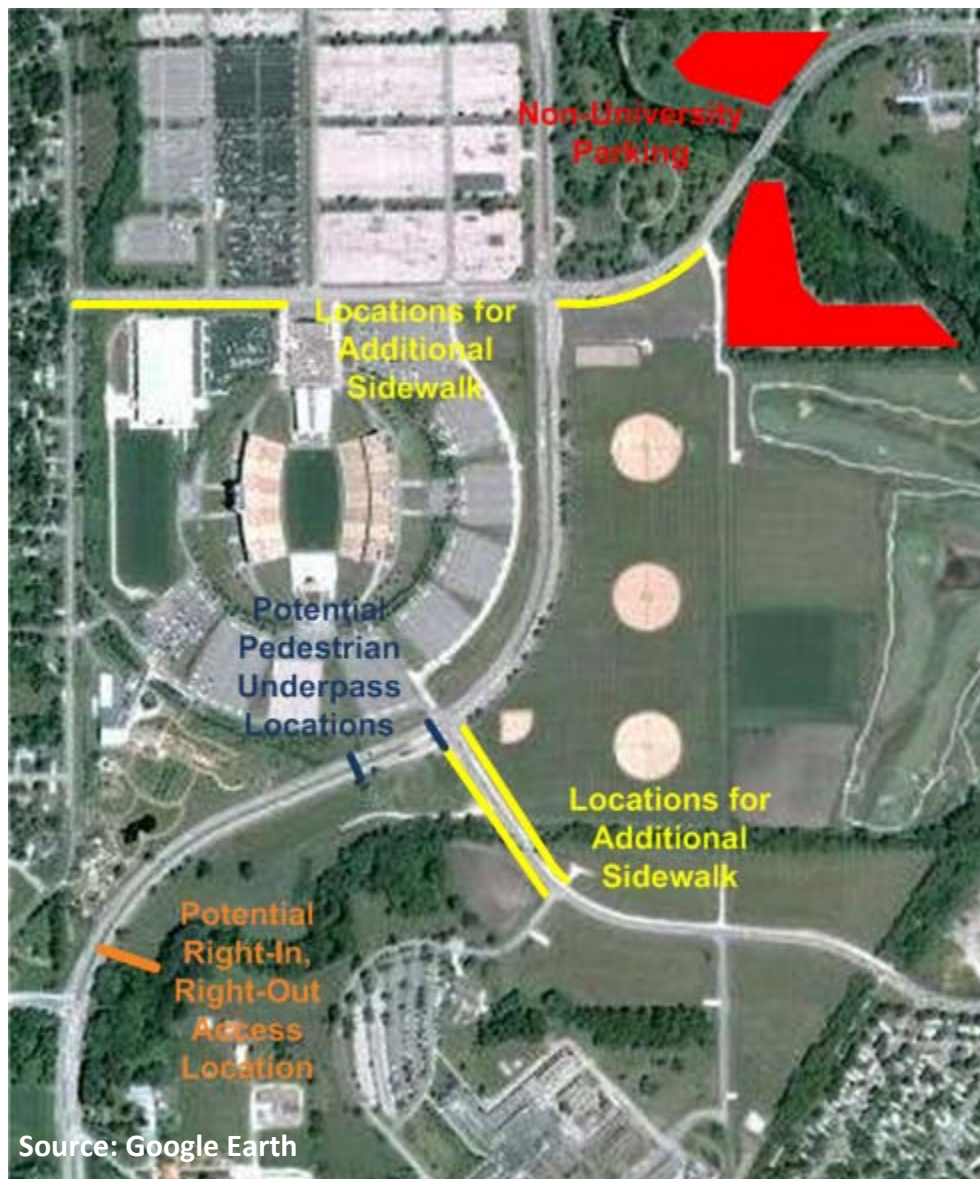


Figure A 1: Additional Information and Potential Locations of Improvements