Item 9

_____

Travis County Commissioners Court Agenda Request

Voting Session December 14, 2010 (Date) Work Session _____ (Date)

I. A. Request made by: Joseph P. Gieselman Phone # 854-9383
Signature of Elected Official/Appointed Official/ Executive Manager/County Attorney

B. Requested Text:

Consider and take appropriate action on the following in Precinct Four:

A. TNR's response to the Kimley-Horn & Associates Traffic and Transportation Analysis for the Formula One United States Grand Prix site near Elroy Road.

B. Formula One request for Variance to Travis County Code, Chapter 64, to allow alteration of a floodplain prior to receiving a Federal Emergency Management Agency Conditional Letter of Map Revision at the Formula One track site.

C. Approved by: _____
Samuel T. Biscoe, Travis County Judge

II. A. Backup memorandum and exhibits should be attached and submitted with this Agenda Request (original and eight (8) copies of agenda request and backup).

B. Please list all of the agencies or officials names and telephone numbers that might be affected or be involved with the request. Send a copy of this Agenda Request and backup to them.

Anna Bowlin
Teresa Calkins
Don Ward
David Greear

III. Required Authorizations: Please check if applicable:

Planning and Budget Office (854 -9106)
- ☐ Additional funding for any department or for any purpose
- ☐ Transfer of existing funds within or between any line item budget
- ☐ Grant

Human Resources Department (854 -9165)
- ☐ A change in your department's personnel (reclassifications, etc.)

Purchasing Office (854 -9700)
- ☐ Bid, Purchase Contract, Request for Proposal, Procurement

County Attorney's Office (854 -9415)
- ☐ Contract, Agreement, Policy & Procedure

AGENDA REQUEST DEADLINE: This Agenda Request complete with the backup memorandum and exhibits should be submitted to the County Judges Office no later than 5:00 PM on Tuesday for the following week's meeting. Late or incomplete requests may be deferred to the next subsequent meeting.

TRANSPORTATION AND NATURAL RESOURCES DEPARTMENT
JOSEPH P. GIESELMAN, EXECUTIVE MANAGER

411 W. 13th St.
Eleventh Floor
P.O. Box 1748
Austin, Texas 78767
(512) 854 -9383
FAX (512) 854 -4697

MEMORANDUM

December 8, 2010

TO: **Members of the Commissioners Court**

THROUGH: Joseph P. Gieselman, Executive Manager

FROM: David Greear, P.E., Program Manager, Road Maintenance and Fleet Services

SUBJECT: Formula One Traffic Analysis

PROPOSED MOTION:

TNR's Response to the Kimley-Horn & Associates Traffic and Transportation Analysis for the Formula One United States Grand Prix site near Elroy Road in Precinct Four.

SUMMARY AND STAFF RECOMMENDATION:

On December 2nd, 2010, the Formula One's traffic consultant, Kimley-Horn and Associates, Inc. submitted their proposed traffic plan and analysis to Travis County - TNR. The study results provide a 3.25 hour traffic delay with the use of contra-flow lanes, shuttle services, additional driveway access points, and efficient traffic routing. TNR is scheduled to submit detailed comments in reference to the traffic plan by the end of this year.

Overall, Travis County agrees with the basic assumptions, routing of vehicles, and the use of contra-flow lanes included in the report. The one issue that Travis County does not agree on is the mixing of shuttle traffic with vehicular traffic on Elroy Road. We believe that the shuttle operations will not be successful unless shuttle vehicles have a dedicated lane of travel. Furthermore, Elroy Road will need an additional travel lane for emergency operations access. Currently Elroy Road from McAngus Road to the northern access point of the site is only two lanes with no shoulders and the submitted traffic plan proposes using both lanes as contra-flow operations with no lanes available for shuttle services or emergency operations access. Thus, Travis County believes Elroy Road from McAngus Road to the northern access of the site needs to be widened to a minimum of 4 lanes. This work would include the widening of the existing bridge structure on Elroy Road that spans Dry Creek.

The approximate cost for widening Elroy Road from a 2-lane roadway to a 4-lane roadway is $6 million. Travis County staff believes the cost associated with

widening Elroy Road should be born by the developer. We also anticipate the traffic congestion associated with the first Grand Prix in 2012 could be worse that what is modeled at this time. Future Grand Prix's will likely benefit from "lessons learned" from traffic control and setup after the first year, and congestion levels should normalize after a couple of race events.
This improvement will need to be funded and constructed by the Formula 1 developers. A Roadway Agreement including these improvements must be in place before the Final Site Plan can be approved.

Furthermore, the developer must provide at his cost, a Special Event Management Plan, a Detailed Traffic Control Set-up Plan, contracts for set-ups of all traffic control devices on race weekend, and plans to fund the necessary traffic control officers for race weekend.

BACKGROUND:

On September 7, 2010, Formula One representatives and Travis County Traffic Engineering, presented an overview of the proposed Formula One site located in southeast Travis County. Within this presentation, Travis County staff projected a 12 hour delay for traffic congestion attending a Formula One Grand Prix race event. This projection was based on a "do nothing" scenario that set a base line for what the traffic would look like if the site only had two driveway access points, and no additional improvements were made to the roadways or traffic patterns.

Since the initial presentation to Commissioner's Court, Travis County has worked with Formula One representatives and their traffic consultant Kimley Horn and Associates in identifying potential traffic issues and possible solutions to decreasing the anticipated traffic delays with a goal of 3 hours delay or less. The first step that the Formula One consultant and Travis County accomplished was agreeing on a basic roadway capacity assumption of 750 vehicles per lane per hour.

A combined group of Travis County, City of Austin and TxDOT employees attended the AAA Texas 500 NASCAR races on November 6th-7th, 2010 at the Texas Motor Speedway in Fort Worth. That evaluation provided Travis County with first hand knowledge of how contra-flow operations worked and confirmed the assumption of 750 vehicles per lane per hour.

Next, Travis County and Kimley Horn worked out several issues that needed to be included in their traffic analysis. These issues included the following:

1.) Possible off-site parking locations for shuttle services and dedicated routes for shuttle services that do not cross proposed vehicular travel routes.
2.) Efficient routing of traffic from surrounding geographic regions in order to fully utilize existing roadway capacities.

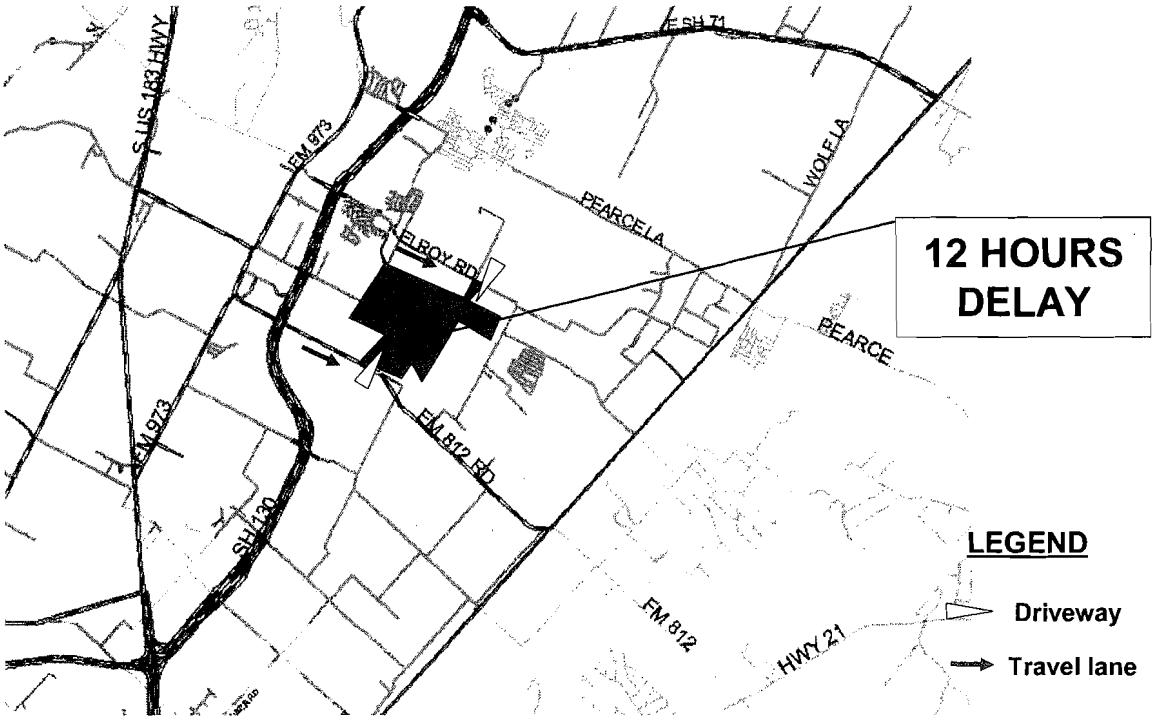
3.) Coordinated traffic routing with on-site parking capabilities so as not to overload any particular on-site parking area.
4.) Indentifying all possible transportation modes and needs, and what the limits of those modes might be.
5.) Analysis of roadway capacities and access points to the site with a goal of three hours delay or less.
6.) Proposed roadway improvements needed to reduce the traffic delay times and provide for future success of the site for a variety of uses.

On December 2nd, 2010, Kimley Horn submitted their proposed traffic plan and analysis to Travis County. The study results provide a 3.25 hour delay with the use of contra-flow lanes, shuttle services, additional driveway access points, and efficient traffic routing. Travis County is scheduled to submit comments in reference to the traffic plan by the end of this year. Overall, Travis County agrees with the basic assumptions, routing of vehicles, and the use of contra-flow lanes. The one issue that Travis County does not agree on is the mixing of shuttle traffic with vehicular traffic on Elroy Road. We believe that the shuttle operations will not be successful unless shuttle vehicles have a dedicated lane of travel. Furthermore, Elroy Road will need an additional travel lane for emergency operations access. Currently Elroy Road from McAngus Road to the northern access point of the site is only two lanes with no shoulders and the submitted traffic plan proposes using both lanes as contra-flow operations with no lanes available for shuttle services or emergency operations access. Thus, Travis County believes Elroy Road from McAngus Road to the northern access of the site needs to be widened to a minimum of 4 lanes. This work would include the widening of the existing bridge structure on Elroy Road that spans Dry Creek.

The approximate cost for widening Elroy Road from a 2-lane roadway to a 4-lane roadway is $6 million. Travis County staff believes the cost associated with widening Elroy Road should be born by the developer. We also anticipate the traffic congestion associated with the first Grand Prix in 2012 could be worse that what is modeled at this time. Future Grand Prix's will likely benefit from "lessons learned" from traffic control and setup after the first year, and congestion levels should normalize after a couple of race events.

Furthermore, the developer must provide at his cost, a Special Event Management Plan, a Detailed Traffic Control Set-up Plan, contracts for set-ups of all traffic control devices on race weekend, and plans to fund the necessary traffic control officers for race weekend.

Original Do Nothing Scenario

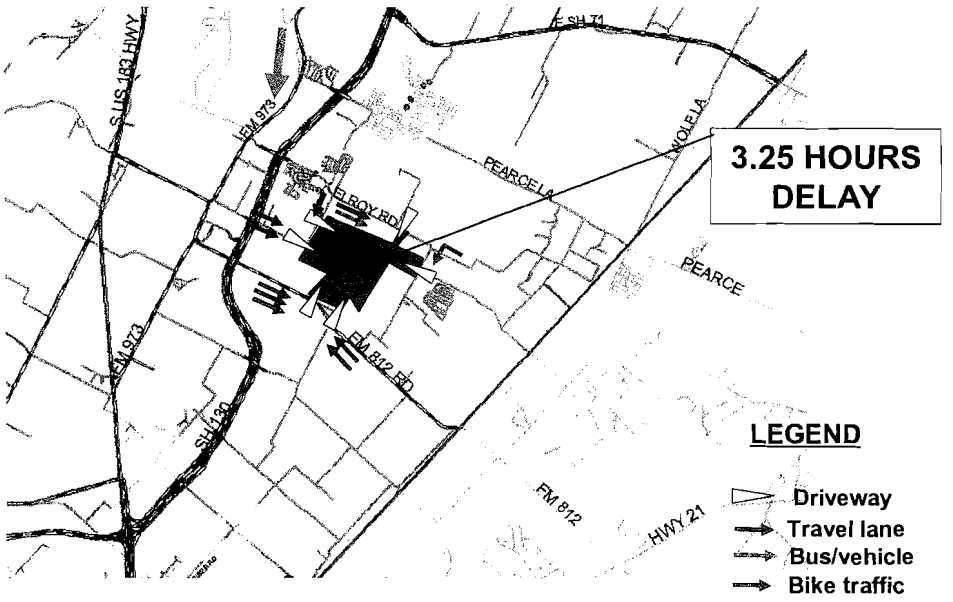


Facts:

120,000 spectators (approximately 300,000 over three days – Friday, Saturday, Sunday)
35,000 vehicles (average of 3 passengers per vehicle)
15,000 bus riders (150 bus trips or approximately 1 bus trip every minute for 3 hours)
With only one entrance on FM812 and one entrance on Elroy Road it will take
12 HOURS (based on 1,500 vehicles per hour per lane)

Proposed traffic plan by Formula One Consultants

1.) Add 4 additional access points
2.) Utilize heavy use of contra-flow operations
3.) Include off-site parking with shuttle service
4.) Repave and restripe FM812 to allow for two additional lanes.



Facts:
120,000 spectators (approximately 300,000 over three days – Friday, Saturday, Sunday)
23,889 vehicles (average of 3 passengers per vehicle)
5,000 camping RV vehicles (average of 4 people per RV)
13,200 bus riders (240 bus trips or approximately 1 bus trip every minute for 4 hours on 60 minute loop)
Six entrances to site and a 6 lane private roadway through the middle of the site for parking circulation

11 LANES

ATTACHED EXHIBITS:

Initial Traffic and Transportation Analysis prepared by Kimley-Horn and Associates, Inc.

Supplemental Memorandum from Kimley-Horn and Associates, Inc.

Kimley-Horn and Associates, Inc.

TECHNICAL MEMORANDUM

To: Mr. Richard Suttle, Armburst & Brown

From: Aaron W. Nathan, P.E., AICP
Kimley-Horn and Associates, Inc. (TX Reg. F-928)

Date: December 1, 2010

Subject: Initial Traffic and Transportation Analysis
Formula 1 United States Grand Prix
Travis County, Texas

Executive Summary

Kimley-Horn and Associates, Inc. was retained by Formula 1 United States to provide an evaluation of the traffic and transportation impacts of a Formula 1 (F1) Race at the proposed racing facility located in Travis County, Texas. Based on the results of this analysis, we offer the following conclusions:

1. Based on the framework described in this memorandum for an aggressively controlled special event management plan, the provision of significant off-site shuttle service, and the allowance of bicycle and helicopter traffic; the service time for safely filling and clearing the proposed parking facilities under the 'design' scenario will be approximately 3.25 hours. This means that the longest amount of time a vehicle will wait to enter or leave the facility is 3.25 hours (33% will leave within ~1 hour, 66% within ~2.2 hours, and 100% within 3.25 hours). By providing for post race events that attract 20% of the attendees to stay for multiple hours after the completion of the race, the service time drops from 3.25 hours to 2.6 hours.

2. The completion of the three (3) highest priority capital improvement projects in the 'design' scenario (the addition of two lanes to serve Lots 2 and 3 along Elroy Road, the addition of a fifth lane along FM 812, and constructing a new north-south roadway connecting to Pearce Lane) would reduce the services times for the main parking areas from 3.28 to 2.06 hours, a 37% improvement (by increasing the capacity from 5,100 vehicles per hour to 8,100 vehicles per hour).

3. Under a potential 'full contra-flow' scenario, where the framework for the special event management plan is the same as the 'design' scenario, no capital improvements are completed, and a post race event is planned that attracts 20% of the attendees to stay for multiple hours after the completion of the race; however where certain roadways are permitted to be operated with full contra-flow conditions (e.g. all lanes inbound prior to the event and all lanes outbound after the event), the service time under this 'full contra-flow' with a special event scenario is projected to be approximately 2 hours. This means that the longest amount of time a vehicle will wait to leave the facility is 2 hours (50% will leave within 1 hour and 100% within 2 hours).

Introduction

Kimley-Horn and Associates, Inc. was retained by Formula 1 United States to provide professional services to evaluate the traffic and transportation impacts of a Formula 1 (F1) Race (or other similar event) at the proposed racing facility located between Elroy Rd. and FM 812, just east of SH 130 in Travis County, Texas.

Purpose

The primary purpose of this initial analysis is to determine the necessary traffic management tools, transportation infrastructure, and support services required to maintain a reasonable service time for safely filling and clearing the proposed facility for an F1 race. An analysis was also performed to determine the approximate service times for the proposed facility.

It is anticipated that subsequent analysis and detailed planning efforts will be required to formalize a complete special event management plan for the facility. This initial analysis is intended to:

A. Establish the framework upon which a special event management plan can be developed for both inbound and outbound service;
B. Using that framework, develop a route structure and provide a summary of the anticipated service times on a Sunday during the race weekend;
C. Prioritize short-term capacity improvements that may be required and measure their anticipated impacts on service time;
D. Consider potential long-term recommendations for the facility; and
E. Provide a set of recommendations for next steps.

Existing Conditions

Currently, the site is vacant and does not generate traffic. Based on field observations on a Sunday, existing traffic volumes are minimal. While provisions will be made for local residents and businesses in the final plan, the impact of any existing development was not considered in this analysis. A vicinity map can be seen in **Exhibit 1**. The vicinity map identifies all of the highway, arterial, and collector-type roadways that currently exist within the study area.

For the purposes of this initial analysis, the study area has been defined as SH 71 to the north, SH 21 to the east and south, and US 183 to the west.

The following provides a general summary of existing roadway facilities within the study area:

- SH 130 to the east of the site is a **four-lane divided tollway** with full access interchanges at SH 71, Pearce Ln., Elroy Rd., FM 812, Moore Rd., Maha Loop Rd., and US 183.
    - The current configuration of SH 130 includes toll plazas at each of the on- and off-ramps within the study area. During major events, the cash collection lanes will need to be signed or designated for electronic toll collection only.
- The following facilities are **four-lane divided roads**:

- US 183 from SH 71 to FM 812
- SH 71 from US 183 to SH 21
- Elroy Rd. from FM 973 to McAngus Rd.
- Ross Rd. from Heine Farm Rd. to Elroy Rd.

- The following facilities are **four-lane undivided roads**:
  - US 183 from FM 812 to SH 21
  - Burleson Rd. from US 183 to FM 973
  - FM 812 from US 183 to FM 973
- The following facilities are **three-lane undivided roads**:
  - FM 812/FM 973 for a short length where they merge together
- The following facilities are **two-lane undivided roads with 10'-12' shoulders**:
  - SH 21 from US 183 to SH 71
  - FM 812 from FM 973 to SH 21
    - It should be noted that TxDOT plans to reconstruct FM 812 in 2011 (CSJ 1149-01-025) between FM 973 and the Bastrop County Line (east of the site) with two 11' lanes and two 11' shoulders. Based on conversations with TxDOT staff, this reconstruction will allow for four 11' travel lanes to be utilized during special events (by using the proposed shoulders).
  - FM 973 from SH 71 to Pearce Ln.
  - Pearce Ln. from FM 973 to SH 130
- The following facilities are **two-lane undivided roads with no shoulder**:
  - FM 973 from Pearce Ln. to FM 812
  - FM 973 from FM 812 to US 183
  - Ross Rd. from Pearce Ln. to Heine Farm Rd.
  - Ross Rd. from SH 71 to Pearce Ln.
  - Maha Loop Rd. from Moore Rd to FM 812
  - McAngus Rd. from FM 973 to Elroy Rd.
  - Elroy Rd. from McAngus Rd. to FM 812
  - McKenzie Rd. from US 183 to FM 973
  - Moore Rd. from FM 973 to Maha Loop Rd.
  - Pearce Ln./FM 535 from SH 130 to SH 21
  - Wolf Ln. from SH 71 to Fagerquist Rd.

Event Review

The major function of the facility is to host the return of the F1 United States Grand Prix in June 2012. A typical Grand Prix event weekend consists of a 3-day event, with two practice sessions (one in the AM and one in the PM) on Friday, practice (AM) and qualifying (PM) on Saturday, with the two-hour maximum time race on Sunday (likely to occur at 1:00 PM). It is anticipated that the event weekend will consist of multiple support races mixed into the F1 events. In addition, the event promoters have committed to a post-race support race and/or concert on Sunday in order to reduce the post-race exiting traffic demand. The attendance for the 3 days is anticipated to be approximately 60,000 on Friday; 80,000 on Saturday; and 120,000 on Sunday.

This analysis focuses on the Sunday during race weekend. The traffic management plans for the race weekend Friday and Saturday will be a scaled-back version of the plan recommended in this analysis.

Proposed On-Site Roadways and Access Points

The **north-south parkway** to be constructed through the site is proposed to be a six-lane undivided roadway. By constructing a six-lane roadway without a median, contra-flow lanes can easily be provided within the site for various scenarios; and the number of lanes within the site will exceed the number of lanes serving the site from the off-site roadway network, likely even after those roadways are widened in the future (limiting the possibility for the site to become the bottleneck for entering and exiting traffic). During the inbound traffic scenario, 5 lanes can be directed inbound and 1 outbound; while during the outbound traffic scenario 5 lanes can be directed outbound and 1 inbound. Dedicated lanes can also be provided for shuttle services. While the exact width, location, and alignment of this roadway as shown on the concept plan may be modified, the general alignment shown on the plan is what was assumed for this analysis.

In addition to the intersection of the six-lane roadway with FM 812, an additional four-lane undivided access point should be provided in the southeast portion of the site at the intersection of FM 812 and Piland Triangle / Maha Loop.

We recommended the construction of a roadway running along the east side of the track (from Maha Loop to Elroy Road) to (1) accommodate emergency personnel, (2) better circulate automobiles within the facility, and (3) create an easily navigable 'loop' around the track.

The following access points should be provided:

- Two access points along McAngus Road (western entries)
- One access point along Elroy Road (northern entry)
- Two access points along FM 812 (southern entry)
- One access point along Elroy Road (eastern entry – potentially for bicycles and emergency vehicles only)

It should be noted that the provision of additional access points likely would not improve the service times for the facility due to the existing roadway network configuration – we recommend simply having wide undivided access points and using vertical panels to delineate travel lanes.

Parking Management

In order to eliminate the need to collect cash for parking upon vehicle entry, better manage the flow of vehicles into the separate parking areas, and minimize the likelihood of a scenario where more vehicles access a parking area than spaces that are available, the event promoters can implement a system where parking passes are purchased separately from the ticket. Attendees can purchase their parking pass for the lot that best suits their route and their needs (purchasing a pass for either Lot 1 or the main parking lots. This also prevents the organizers from 'overselling' a lot.

This system can also allow designated parking attendees to collect cash or issue tickets during the race (as is done at Silverstone) from those vehicles that don't have the correctly designated parking pass in order to eliminate the possibility of a vehicle needing to stop or turn around. This method also creates a financial incentive for attendees to utilize an alternative mode of travel (e.g., via a less expensive shuttle service or bicycle route).

Development of the Special Event Management Plan

In order to create the framework for the transportation management plan, the following steps were followed:

(1) Identify the 'design' scenario for traffic flow;
(2) Develop a set of assumptions for trip generation and mode choice (determination of the types and number of vehicles);
(3) Develop the framework for a management plan that will best serve that design scenario;
(4) Determine how the 'design' scenario will function based on the trip generation assumptions and plan framework (from a service time standpoint); and
(5) Develop a set of recommendations to best manage the 'design' scenarios.

The steps identified above are detailed in the following sections.

(1) 'Design' Scenario for Traffic Flow

For an F1 race, the 'design' traffic scenario (the situation for which the plan is developed) is the Sunday pre-race arrival and post-race departure. Therefore, a plan should be developed to best accommodate both of these scenarios.

Given the commitment from the race promoters to include the costs for parking and associated parking pass system with the ticket sales, and an assumption of an arrival pattern much more spread out (over time) than the departure pattern; the resulting service times for the inbound direction should be more manageable than the outbound direction. Eliminating the queuing created by a 'cash for parking' collection system will greatly improve the inbound traffic flow rates and make them comparable with (even slightly better than) the outbound rates.

While the event promoters are planning for a post-race concert and support race which will help to minimize the number of attendees that wish to leave immediately upon completion of the event, the post-race departure scenario is likely the most severe scenario for transportation management. Given the symmetry of the study area roadway network (i.e. same number of inbound and outbound lanes); the ideal outbound plan can also be utilized in reverse for the inbound plan (the only difference likely being small modification for the on- and off-ramps for SH 130).

(2) Trip Generation and Mode Choice Assumptions

In order to determine how the approximately 120,000 attendees will arrive to the facility, the following set of assumptions were developed:

- The following primary modes of travel will be utilized: automobiles, shuttles, campers/RV's, bicycles, and helicopters;
- Private automobiles will have an average of 3.5 persons per vehicle;
- 60 Shuttles (likely Capital Metro or similar buses) with a capacity of 55 people each will serve the facility;
- Campers/RV's will have an average of 4 people per camper;
- 3,000 attendees will arrive via bicycle along a dedicated route that is to be determined (a preliminary concept is proposed in this analysis); and
- Helicopters will have an average of 3 people per helicopter.

Based on these assumptions:

- 23,889 parking spaces x 3.5 people per car = 83,611 people arrive/depart via automobile the day of the race
- 240 shuttle trips x 55 people per shuttle = 13,200 people arrive/depart via shuttle in a remote parking facility
  - 240 inbound and 240 outbound shuttle trips assumes you have 60 shuttles running a 60 minute loop (30 minutes to the facility including unloading time, 30 minutes to return to the lot including loading time) for 4 hours both before and after the race
  - Remote parking area will average 2.5 persons per car; therefore remote parking facility(s) need to be identified with roughly 5,300 parking spaces (roughly 50+ acres) located within 15 minutes of the facility.
- 5,000 camping/RV spaces x 4 people per camper/RV = 20,000 people arrive/depart via campers well in advance of the start of the race (some many days early); with a large majority staying more than 4 hours after the end of the race.
- 3,000 arrive via bicycle
  - Remote parking area will average 2 persons per car; therefore remote parking facility(s) need to be identified with roughly 1,500 parking spaces (roughly 14+ acres) located adjacent to a dedicated bicycle access route.
- 500 arrive via helicopter (3 persons per helicopter = 166 helicopter trips)

These assumptions result in 120,311 people arriving to the facility via these 5 major modes of travel (83,611 + 13,200 + 20,000 + 3,000 + 500), in excess of the 120,000 capacity being provided.

While the lack of cash parking on site will minimize the number of 'entrepreneurial' parking areas in the vicinity of the facility, there is recognition that some percentage of attendees will choose to park or arrive from property not owned or controlled by the event promoters. As with any major venue, it is difficult to project this type of demand and therefore has not been directly considered in this analysis of service times. It is, however, a consideration discussed in a later section of this report.

(3) Framework for a Special Event Management Plan

The primary goal for any special event traffic management plan is to **minimize conflicts between flows**. This requires the creation, communication, and

management of an inbound and outbound route pattern that can 'free-flow' vehicles to and from the facility in the most efficient manner possible. By minimizing the number of stops, manually controlling existing traffic signals to create free-flow conditions, taking advantage of multi-lane facilities, eliminating conflicting movements, and using traffic control personnel to manage potential conflict points, vehicles can operate at nearly free-flow conditions within the study area.

With nearly free-flow conditions on the roadway network, the 'controlling' capacity values become the ability for vehicles to make right- and left-turns on the roadway network as they enter and exit the site. Based on information contained in the *Highway Capacity Manual*, the 'controlling' capacity value is roughly 750 vehicles per hour per lane.

(3a) Routing Plan Development

A routing plan was developed based on an analysis of the existing transportation system, the proposed site plan for the facility, and a reasonable set of assumptions regarding the origin of event attendees. In addition, consideration was made to create:

A. A 'dedicated' route for shuttle service (this route will partially function as a shared facility with traffic control officers giving shuttles priority access, and also provide for a preferred route for other shuttle services from downtown or suburban Austin area hotels, charter services, or other out-of-town locations)
B. Two 'dedicated' routes for emergency/official use only and/or VIP F1 traffic
C. A plan that recognized that the McAngus parking area (later called Lot 1 in this analysis) is not connected with the other parking facilities adjacent to the facility; and
D. A plan that always has one lane available to access each area of the site to accommodate any local or emergency traffic, with the minimum number of full contra-flow facilities as possible.

The following primary trip origins and destinations were developed (and presented in **Exhibit 2)**, each with corresponding roadway facilities that would be used to enter/exit the study area and the percentage of traffic anticipated to utilize this route:

- Downtown Austin (via 2 routes from US 183 north of the study area – roughly 30% of the private automobile traffic)
- Georgetown (via SH 130 north of the study area – roughly 30% of the private automobile traffic)
- Lockhart (via US 183 south of the study area – roughly 10% of the private automobile traffic)
- Bastrop (via SH 21 east of the study area – roughly 10% of the private automobile traffic)
- Buda (via 2 routes from SH 130 south of the study area – roughly 20% of the private automobile traffic)

Based on the 'controlling' capacity for each of the routes identified above, the hourly capacity for each of the lanes along each route is assumed to be 750 vehicles per hour per lane. It may be possible for these facilities to load/unload at a higher rate (rates of 900 to 1,000 are observed at Silverstone during the British Grand Prix); however this conservative estimate of 750 was used for this study. For the portions of the routes where some 'sharing' with the shuttle route is required, the capacity for private automobiles has been reduced by 20%.

(3b) Available On-Site Parking

The following is a summary of the available parking spaces on-site within the facility. This information is graphically presented in **Exhibit 3**.

• Parking Lot 1 (Green Parking via McAngus Road)	7,166 spaces
• Lot 2 (Northwest portion of the site)	4,600 spaces
• Lot 3 (Northeast portion of the site)	6,340 spaces
• Lot 4 (Western portion of the site, west of the Parkway)	3,542 spaces
• Lot 5 (Western portion of the site, east of the Parkway)	964 spaces
• Lot 6 (Southern portion of the site)	1,277 spaces
TOTAL On-Site Automobile Parking	**23,889 spaces**

(3c) Overview of Each Route to/from the Facility

The following provides an overview of each of the route structures; which was developed in attempt to best utilize all reasonable available capacity serving the facility.

1. **Downtown Austin:** traffic travelling to the facility from the downtown Austin area will utilize three lanes of US 183 along the west side of ABIA. One lane will split at Burleson Road, using Burleson Road, FM 973, and McAngus Road to access Lot 1. Lanes two and three will continue south to FM 812. Lane two will turn north on FM 973 and east on McAngus Road to access Lot 1; lane three will proceed under SH 130 to the southern entry into Lot 3.
    - The route is simply reversed for the outbound flow.
    - McAngus Road will run contra-flow from FM 973 to the Lot 1 entrance.
    - FM 812 between SH 130 and the southern entry will require special accommodations (using the shoulders as travel lanes) to allow for 4 total lanes of travel along this facility.
    - Vertical Panels / Cones to separate traffic from the Buda route are required along FM 812 from SH 130 to the southern entry.
    - Roughly 11 Traffic Control personnel are required for these routes (at the southern entry, the intersections of FM 812 with SH 130, FM 973 'south' and FM 973 'north', Creedmoor Road, and US 183; at the intersections of McAngus with FM 973 'south', at the intersections of Burleson Road with FM 973 and General Aviation Avenue; and the intersection of US 183 with Burleson Road).

2. **Georgetown:** traffic travelling to the facility from Georgetown (SH 130 north of the study area) will utilize SH 130 south and exit at Elroy Road or FM 812. Lot 2 traffic will proceed on Elroy Road in two lanes east to the northern entry. Lot 4 traffic will proceed on FM 812 in one lane east to the south entry.
   - The route is simply reversed for the outbound flow.
   - A contra-flow lane will be required along Elroy Road between SH 130 and McAngus Road to allow for 3 dedicated routes to use this four-lane roadway.
   - One of the two lanes on Elroy Road will be shared with the Shuttle Route. For purposes of this analysis, it is assumed that the capacity of this shared lane will be reduced from 750 vehicles per hour per lane to 600 vehicles per hour per lane, a 20% reduction in capacity.
   - A contra-flow lane will be required along FM 812 between SH 130 and the south entry to allow for 4 dedicated routes to use this four-lane roadway.
   - Roughly 8 Traffic Control personnel are required for this route (at the intersections of Elroy Road with SH 130, Ross Road, McAngus Road, and the northern entry, and at the intersections of FM 812 with SH 130 and the south entry).
3. **Lockhart:** traffic travelling to the facility from Lockhart (US 183 south of the study area) will be routed along SH 21 to FM 812, then back to the west to the southern entry.
   - The route is simply reversed for the outbound flow.
   - No contra-flow lanes are required along this route; however FM 812 between SH 21 and the southern entry will require special accommodations (1/2 of a lane using the shoulder) to allow for 3 lanes of travel along this facility.
   - Vertical Panels / Cones to separate traffic from the Bastrop route are required along FM 812 from SH 21 to the southern entry.
   - Roughly 4 Traffic Control personnel are required for this route (at the intersections of FM 812 with SH 21, Elroy Road, and the southern entry; and at the intersection of US 183 with SH 21).
4. **Bastrop:** traffic travelling to the facility from Bastrop (SH 21 east of the study area) will be routed along SH 21 to FM 812 to the southern entry.
   - The route is simply reversed for the outbound flow.
   - No contra-flow lanes are required along this route; however FM 812 between SH 21 and the southern entry will require special accommodations (1/2 of a lane using the shoulder) to allow for 3 lanes of travel along this facility.
   - Vertical Panels / Cones to separate traffic from the Lockhart route are required along FM 812 from SH 21 to the southern entry.
   - Roughly 4 Traffic Control personnel are required for this route (at the intersections of FM 812 with SH 21, Elroy Road, and the southern entry; and at the intersection of SH 71 with SH 21.
5. **Buda:** traffic travelling to the facility from Buda (SH 130 south of the study area) will utilize SH 130 north and exit at either FM 812 or Elroy Road. Lot 1 traffic will exit at Elroy Road and utilize the contra-flow lane to McAngus

to the northwest entry. Lot 3 and 5 traffic will exit FM 812 and proceed east to the southern entry.

- The route is simply reversed for the outbound flow.
- A contra-flow lane will be required along this route along Elroy Road between SH 130 and McAngus Road to allow for 3 dedicated routes to use this four-lane roadway. FM 812 between SH 130 and the southern entry will require special accommodations (1/2 of a lane using the shoulder) to allow for 3 lanes of travel along this facility.
- Vertical Panels / Cones to separate traffic from the downtown Austin route are required along FM 812 from SH 130 to the southern entry. They will also be required along Elroy Road between SH 130 and McAngus Road to separate traffic from the Georgetown and Shuttle routes.
- Roughly 6 Traffic Control personnel are required for these routes (at the intersections of FM 812 with SH 130 and the southern entry; and at the intersections of Elroy Road with SH 130 and McAngus Road).

6. **Shuttle Route:** A remote parking facility to accommodate shuttle traffic traveling to/from the facility is proposed to be located at the southeast corner of the intersection of SH 71 and FM 973 (with access to/from SH 71). It should be noted that a portion of this route is required to be 'shared' with the Georgetown route between McAngus Road and the northern entry. Traffic control personnel will be required to assist shuttles in making this merge; and the corresponding capacity of this lane of traffic has been reduced by 20%. A dedicated drop-off area on-site must also be provided to accommodate the projected volume of shuttles.
   - The route is essentially reversed for the outbound flow.
   - The route was designed to allow it to be used by other high-capacity shuttles coming to/from the site via downtown Austin or other locations.
   - Roughly 6 Traffic Control personnel are required for this route (at the intersections of SH 71 with the remote parking facility and FM 973, and the intersections of FM 973 with Pearce Lane and Burleson Road).
7. **Dedicated F1 and Emergency Access Route:** A separate route was created with access via Maha Loop Road and Moore Road to accommodate a dedicated F1 route and an emergency access route to/from the facility. This dedicated access can provide for a limited number of special access patrons and public safety personnel to use SH 130 at Moore Road or US 183 via McKenzie Road and FM 973. These routes will require special signing and additional traffic control personnel; but can quickly allow these official personnel and staff to access the facility at the Main Grandstand area.
   - Roughly 7 Traffic Control personnel are required for this route (at the intersections of McKenzie Road with US 183 and FM 973, the intersections of Moore Road with FM 973, SH 130, and Maha Loop, and at the south entry).

(3d) Assignment of Routes to Parking Areas

In order to allocate on-site automobile parking to each of the private automobile routes presented in Exhibit 2, the following lot breakdown has been developed. This system allows for 'teams' to manage entering traffic and quickly guide vehicles into

parking stalls once they enter a parking area. Each 'team' will have a plan of how to guide entering and exiting vehicles to/from the facility.

It should be noted that this calculation is somewhat theoretical – it is likely more efficient to park vehicles as quickly as possible instead of creating the separation between the 6 lots as described below. These breakdown calculations are provided to determine a reasonable estimate of the service time; they are not intended to imply that vehicles from a certain route will be required to park in a certain lot.

- Lot 1 is filled with 67% of its traffic (4,777 spaces) from downtown Austin (southern portion of the lot) and 33% of its traffic (2,389 spaces) from Buda (northern portion of the lot).
- Lot 2 is filled with 100% of its traffic (4,600 spaces) from Georgetown.
- Lot 3 is filled with 39% of its traffic (2,473 spaces) from downtown Austin, 22% of its traffic (1,394 spaces) from Buda, and 39% of its traffic (2,473 spaces) from Lockhart.
- Lot 4 is filled with 70% of its traffic (2,479 spaces) from Georgetown and 30% of its traffic (1,063 spaces) from Bastrop.
- Lot 5 is filled with 100% of its traffic (964 spaces) from Buda.
- Lot 6 is filled with 100% of its traffic (1,277 spaces) from Bastrop.

(4) Calculation of Service Times for the 'Design' Scenario

Based on the assignment of traffic in 3d above, the identified routes connect with the following amount of available parking spaces (with the goal to equally split the number of parking spaces between routes that have the same capacity):

• Downtown Austin (Lot 1)	4,777 spaces
• Downtown Austin (Lot 3)	2,473 spaces
• Georgetown (Lot 2)	4,600 spaces
• Georgetown (Lot 4)	2,479 spaces
• Bastrop (Lots 4 and 6)	2,340 spaces
• Lockhart (Lot 3)	2,473 spaces
• Buda (Lots 3 and 5)	2,358 spaces
• Buda (Lot 1)	2,389 spaces
TOTAL On-Site Automobile Spaces	**23,889 spaces**

In the case that all 23,889 vehicles attempt to exit the facility simultaneously, the following service times would be expected (**meaning the time it takes for the final vehicle to leave the lot - if the result is 3 hours – would be 33% of the vehicles exit within 1 hour, 66% exit in the 2nd hour, etc**). This calculation is determined by dividing the number of vehicles by the 'controlling' capacity of the route. This service time calculation is the same for inbound traffic; although the more random arrival of inbound traffic will likely not exceed the service times listed below.

- Downtown Austin (Lot 1) [4,777 spaces / 1,500 veh/hr] 3.18 hours
- Downtown Austin (Lot 3) [2,473 spaces / 750 veh/hr] 3.30 hours
- Georgetown (Lot 2) [4,600 spaces / 1,350 veh/hr] 3.41 hours
- Georgetown (Lot 4) [2,479 spaces / 750 veh/hr] 3.31 hours
- Bastrop (Lots 4 and 6) [2,340 spaces / 750 veh/hr] 3.12 hours
- Lockhart (Lots 3) [2,473 spaces / 750 veh/hr] 3.30 hours
- Buda (Lot 3 and 5) [2,358 spaces / 750 veh/hr] 3.14 hours
- Buda (Lot 1) [2,389 spaces / 750 veh/hr] 3.19 hours

Therefore, based on the route structure, trip generation assumptions, parking lots being provided, and existing roadway infrastructure; the facility can service approximately 7,350 vehicles per hour (with 2,250 vehicles per hour serving Lot 1 and 5,100 vehicles per hour serving Lots 2 thru 6); meaning it is possible to load (inbound trips) and clear (outbound trips) the facility in roughly 3.25 hours (the result of 23,889 vehicles divided by 7,350 vehicles per hour).

For the purpose of making approximate calculations (which will be used to determine the impact of the short-term improvements identified later in this report), the following summary calculations are provided:

- Lot 1 includes 7,166 parking spaces and has a service capacity of 2,250 vehicles per hour serving it via 2 primary routes. Therefore, this lot can be serviced in 3.18 hours under the 'design' scenario.
- The remaining Lots 2-6 include 16,723 parking spaces and have a service capacity of 5,100 vehicles per hour serving it via 5 routes. Therefore, these lots can be serviced in 3.28 hours under the 'design' scenario.

(4b) Calculation of Service Times for a 'Contra-Flow' Scenario

The calculation of service times for the 'design' scenario was completed based on the assumption that the plan has one lane available for traffic moving in the opposite direction along most facilities (with the exception of a portion of Elroy Road and McAngus Road, as stated in Section 3a above). Under this 'contra-flow' scenario, a calculation of services times was completed under the assumption that some roadways could be completely dedicated to one direction of travel during peak periods (e.g. all lanes inbound prior to the event and all lanes outbound after the event).

While other provisions would need to be made to accommodate emergency situations (such as emergency personnel stationed along the contra-flow route); this calculation was conducted to simply quantify the impacts of this approach to service times, not necessarily to make this recommendation.

The following modifications to the route structure proposed in Exhibit 2 would be made under the 'contra-flow' scenario. It should be noted that the capacity of all routes cannot be increased due to the number of lanes along different routes that share the same roadways.

- McAngus Road between the northwest entry and Elroy Road; and Elroy Road between McAngus Road and SH 130 would be full contra-flow;
- FM 812 from the south entry to SH 130 would be full contra-flow; and
- FM 812 from the south entry to SH 21 would be full contra-flow.

Based on the above changes to the route structure, the following modifications to the route capacities could be assumed. It should be noted that the theoretical distribution of the routes to the individual parking areas presented in Exhibit 3 would need to be modified to evenly distribute the number of spaces with the change in flow rates.

- The capacity of the 'Buda' route serving Lot 1 would double (from 750 veh/hr to 1,500 veh/hr);
- The capacity of the 'Buda' route serving Lots 3 and 5 would double (from 750 veh/hr to 1,500 veh/hr); and
- The capacity of the 'Bastrop' route serving Lots 4 and 6 would double (from 750 veh/hr to 1,500 veh/hr).

Therefore, under the 'full contra-flow' scenario, the following service times could be expected:

- Lot 1 includes 7,166 parking spaces and would have a capacity of 3,000 vehicles per hour serving it via 3 routes. Therefore, this lot could be serviced in 2.39 hours under the 'full contra-flow' scenario.
- The remaining Lots 2-6 include 16,723 parking spaces and would have a capacity of 6,600 vehicles per hour serving it via 5 routes. Therefore, this lot could be serviced in 2.53 hours under the 'full contra-flow' scenario.

(5a) Recommendations to Best Manage the Post-Race 'Design' Scenario

The above calculations for the 'design' scenario make the assumption that all 23,889 vehicles attempt to exit the facility simultaneously. While it is a reasonable assumption that many attendees will exit immediately upon completion of the race, the event promoters can mitigate this post race demand by providing post F1 race events. In addition to broadcasting the podium ceremony and post race interviews across the venue, preliminary discussions with the promoters include plans for a follow-up support race and concert (with a headlining act that will have a significant impact on the desire for attendees to stay at the facility).

For example, if the race ends at 2:45 pm and the podium ceremony ends at 3:30; a two-hour post race concert could run from 3:30 to 5:30pm. If 20% of the attendees (24,000 people) stay on-site for the post race concert; they would arrive to their vehicle around 5:45pm. **An attraction of this type would result in a corresponding 20% reduction in demand for each parking facility; thereby improving the travel time by approximately 20% (reducing the 'design' scenario maximum service time from less than 3.25 hours to roughly 2.6 hours.)**

A combination of a post-race event that attracts 20% of the attendees with the full contra-flow scenario described in section 4b above, the 'full contra-flow' scenario would reduce from 2.49 hours to roughly 2.0 hours.

(5b) Recommendations to Best Manage the Pre-Race 'Design' Scenario

Regarding the inbound traffic scenario, the event promoters should: (1) allow vehicles to arrive at sunrise and (2) include a pre-F1 race support race, pre-F1 race concert, and other attractions on-site. This will allow for the distribution of inbound traffic within a ~5 hour period prior to the race. Therefore, while there will likely be queues that are generated prior to the race (likely around Noon), the proper communication to race attendees to arrive early and to provide them with pre-race entertainment options should mitigate the pre-race congestion and not create the need for the inbound travel to be the 'design' scenario. Simply reversing the outbound traffic control plan presented in this analysis will result in a plan with the similar capacity. In addition, it is important to allow attendees to depart using the same route they arrived.

Priority Short-Term Improvements

In order to decrease the amount of service time for the facility, the following short-term improvements are recommended for consideration. It should be noted that this study does not attempt to identify the party who should be financially responsible for these improvements; instead simply identifies those improvements (in rough order of priority) that will be the most beneficial to serve the site, can be implemented within a relatively short period of time, and are improvements that are consistent with the long-term thoroughfare needs of the study area under a traditional development scenario (e.g. any new roadways should be consistent with the regional thoroughfare plan).

It also should be noted that the theoretical distribution of lots serviced by each route would need to be modified depending upon which improvements are implemented; therefore the impact of each improvement on service times is estimated using the calculations provided at the end of Step 4 above.

1. Widen Elroy Road from McAngus Road to the north entry from a two-lane facility to a four-lane facility to allow for a minimum of three lanes entering / exiting the site and one lane for shuttle / emergency access. This can be accomplished with a 24' lane widening; or a total reconstruction to match the divided section of Elroy Road west of McAngus Road. Based on the route structure presented in this analysis, this would allow for at least three lanes to serve the 'Georgetown' route. **This improvement would add a capacity of 750 vehicles per hour to Lots 2-6 (5,100 to 5,850), decreasing the 'design' service time from 3.28 hours to 2.86 hours.**

2. Widen FM 812 from SH 130 to the south entry from a four-lane section to a five-lane section to allow for a minimum of four lanes entering / exiting the site and one lane for emergency access. This can be accomplished with a minor widening project depending on how the existing shoulders are utilized. Based on the route structure presented in this analysis, this would allow for an additional lane

serving the 'Buda' or 'Georgetown' route. **This improvement (combined with improvement #1 above) would add a capacity of 750 vehicles per hour to Lots 2-6 (5,850 to 6,600), decreasing the 'design' service time from 2.86 hours to 2.53 hours.**

3. Construct a new north-south roadway (at least three-lanes wide) between Elroy Road and Pearce Lane (ideally one that would align with the north entry) in order to allow entering/exiting traffic to utilize the full access interchange at SH 130 and Pearce Lane; and/or SH 71 via Wolf Lane or Ross Road. Based on the route structure presented in this analysis, this would allow for an additional lane serving the 'Georgetown' route. **This improvement (combined with improvement #1 above) would add a capacity of 1,500 vehicles per hour to Lots 2-6 (6,600 to 8,100), decreasing the 'design' service time from 2.53 hours to 2.06 hours.**

Long-Term Improvements

Long-term improvements needed to support the facility will depend on a number of factors, including the development of other properties and businesses in the study area that are outside the ownership of the event promoters. The traffic management task force should develop a set of long-term improvement needs, if any, to best accommodate the facility after other developments are announced and completion of the 1st major event at the facility.

Other Areas of Consideration

In addition to the private automobile and shuttle services described above, there will likely be other modes of travel utilized to access the facility. The following modes have been considered:

- Helicopter;
- Campers/RVs;
- Bicycles;
- Limos/Taxis;
- Other Shuttle Services;
- Private automobiles in entrepreneurial parking areas; and
- Pedicabs and other assorted modes of travel.

Helicopters

While the number of attendees arriving via helicopter is not significant (we've assumed 500 attendees in this study), it will require coordination with ABIA and the Federal Aviation Administration (FAA) to ensure that a safe travel plan can be developed. This study does not address these or any other aviation-related recommendations to accommodate the proposed facility.

Campers/RV's

As previously mentioned, the ability to accommodate 5,000 campers/RV vehicles on-site has been provided. It is recommended that accommodations be provided to eliminate the need for these vehicles to leave the facility (including basic necessities

like ice, food, water, and toiletries). Concession services could also be set up within the camping area.

Bicycles

In order to reduce the number of automobiles accessing the site; and to encourage a 'green' arrival of vehicles to the facility, accommodations for bicyclists to ride into the facility should be considered. It is recommended that off-site location(s) are identified for private automobiles to park from which individuals can ride non-motorized bicycles into the facility. By providing a dedicated parking area within the site for bicycles (ideally in a preferred location), using this mode of travel can be encouraged. While an exact route for bicycles has not been specifically identified, two (2) potential options have been considered.

- The rural roadways east of the site may not be sufficient to handle volumes of 750 vehicles per hour per lane; however these roadways (Elroy Road, Fagerquist Road, and Wolf Lane) may be ideal for bicycle travel. A location along SH 71in the vicinity of Wolf Lane could be identified for remote parking for private automobiles; from which point the roadways identified as 'bicycle only' could be used to provide dedicated bicycle access. An entrance off Elroy Road could be designated for bicycle access only.
- An existing trail exists on the south end of ABIA (just south of Burleson Road). This trail along Burleson Road could be used in conjunction with FM 973 and McAngus Road to provide a dedicated route for bicycles; although the ideal roadway width may not currently exist for this shared bicycle / automobile route.

It is recommended that the task force engage the local bicycling community to identify the best method by which attendees could arrive via bicycle. In addition, some form of travel survey should be conducting to gauge the interest of bicycle travel to/from the race.

Limos/Taxis

Unless attendees are arriving in significant numbers within a limo or taxi, this mode of travel should not be encouraged. Arriving limos and taxis should utilize the existing route structure proposed for private automobiles. Dedicated area(s) at the facility can be designated for limo/taxi drop off and pick up; however this mode does not positively impact special event operations unless the amount of on-site parking is not available to serve the demand (which is not the case for this facility).

Other Shuttle Services

It is likely that there will be additional shuttles from local hotels, special event providers, and other independent transportation services that will transport attendees to the event. Shuttles that carry an excess of ~10 attendees should be encouraged to utilize the shuttle route and be given priority access to the facility. These shuttles may utilize the designated 'Shuttle Route' shown in **Exhibits 2A and 2B** beginning at the intersection of SH 71 and FM 973.

Parking in 'Entrepreneurial' Areas

It is likely that some of the local landowners will open up their property to attendees for parking, camping, and other associated race-related activities (concessions, memorabilia sales, promotions, etc). Due to the difficulty in projecting the impacts of this type of activity, the County or other agency should openly encourage local landowners to share their plans so as to avoid a major change in traffic flow during the event due to an unpredicted major parking location. A low-cost permitting system can be created in order to ensure that the plans of local entrepreneurs can be integrated within the framework of the larger special event management plan.

Pedicabs and Other Assorted Modes of Travel

The County or other approving agency should require any operator of alternative modes of travel (pedicabs, segways, golf carts, 4-Wheelers, trolleys, privately operated shuttles, hot air balloons, scooters, etc.) to obtain a permit for carrying attendees to/from the race. This will allow the task force to properly account for (or prohibit) a certain mode of travel.

Conclusions

Based on this initial traffic and transportation analysis, we offer the following conclusions:

1. Based on the framework described in this memorandum for an aggressively controlled special event management plan, the provision of significant off-site shuttle service, and the allowance of bicycle and helicopter traffic; the service time for safely filling and clearing the proposed parking facilities under the 'design' scenario will be approximately 3.25 hours. This means that the longest amount of time a vehicle will wait to enter or leave the facility is 3.25 hours (33% will leave within ~1 hour, 66% within ~2.2 hours, and 100% within 3.25 hours). By providing for post race events that attract 20% of the attendees to stay for multiple hours after the completion of the race, the service time drops from 3.25 hours to 2.6 hours.

2. The completion of the three (3) highest priority capital improvement projects in the 'design' scenario (the addition of two lanes to serve Lots 2 and 3 along Elroy Road, the addition of a fifth lane along FM 812, and constructing a new north-south roadway connecting to Pearce Lane) would reduce the services times for the main parking areas from 3.28 to 2.06 hours, a 37% improvement (by increasing the capacity from 5,100 vehicles per hour to 8,100 vehicles per hour).

3. Under a potential 'full contra-flow' scenario, where the framework for the special event management plan is the same as the 'design' scenario, no capital improvements are completed, and a post race event is planned that attracts 20% of the attendees to stay for multiple hours after the completion of the race; however where certain roadways are permitted to be operated with full contra-flow conditions (e.g. all lanes inbound prior to the event and all lanes outbound after the event), the service time under this 'full contra-flow' with a special event scenario is projected to be approximately 2 hours. This means that the longest

amount of time a vehicle will wait to leave the facility is 2 hours (50% will leave within 1 hour and 100% within 2 hours).

Recommendations

Based on the analysis completed above, we offer the following summary recommendations in order to provide the safest possible environment, encourage visitors to return, minimize impacts to local residents, and maximize the opportunities for local businesses:

Task Force Development

1. Create a special event task force to develop, implement, review, and fine-tune the special event traffic management plan for all events at the facility. This task force should include a mix of representatives from local agencies (policy staff – such as planning and engineering), local public safety staff (police, fire, and emergency response), and staff from the event promoters.
2. Utilize this task force to:
   a. Fine tune the proposed inbound / outbound route structure;
   b. Determine the appropriate agency to serve various traffic control and traffic management roles;
   c. Seek best management practices for managing large-scale special events;
   d. Develop the appropriate communication to local media outlets prior to major events; including the posting and communication of event information on regional dynamic message signs; and
   e. Create and maintain a traffic management website to communicate the routing plans to the public (both for attendees and local residents and businesses).
3. Develop a permitting structure for entrepreneurial parking areas and alternative modes of travel in order to integrate these elements into the plan.
4. Coordinate and communicate with the Central Texas Turnpike System (CTTS) regarding special conditions and signing that may be required along SH 130 (including the potential requirement of electronic toll collection for all vehicles during major events to avoid vehicles stopping to pay a cash toll).

Traffic Control Plan Development

5. Upon confirmation of the route structure, create a detailed plan for each major intersection and roadway, summarizing the number, location, and times for the placement of vertical panels, cones, changeable message signs, traffic control officers, etc.
6. Upon confirmation of the route structure, develop a model using simulation software or similar tools to determine the impacts of queuing at study area roadways and intersections for both the inbound and outbound scenarios.

Parking Management

7. In order to encourage attendees to seek alternative modes of travel to/from the site, automobile and camper/RV parking passes for the available on-site parking should be purchased in advance; and should be separate from the cost of the race ticket. This separate cost will create a financial incentive for

patrons to utilize ride-sharing, shuttle service or bicycle access; and also allow the event promoters to avoid the possibility of having more vehicles try to enter a lot area than the capacity available to serve them. The parking passes should consist of a hanging tag or similar element which can be easily seen by traffic control staff as vehicles enter the facility. Provisions need to be made to allow for cash payment or ticketing system should a vehicle enter the facility via the incorrect route.

Site Design

8. The proposed north-south roadway should be constructed as a six-lane undivided facility. By constructing a six-lane roadway without a median, the number of lanes within the site will exceed the number of lanes serving the site from the off-site roadway network, even after those roadways are widened in the future (limiting the possibility for the site to become the bottleneck for entering traffic).
9. Construct an additional four-lane undivided access point at the intersection of FM 812 and Piland Triangle / Maha Loop.
10. Construct a roadway along the east side of the track to accommodate emergency personnel, better circulate vehicles, and create a 'loop' roadway around the track.

Shuttle Service

11. Utilize the proposed 50+ acre remote parking facility(s) at the southwest quadrant of SH 71 and SH 130 to accommodate approximately 5,000 - 6,000 parking spaces for shuttle service.
12. Coordinate with Capital Metro or other private shuttle provider for contract vehicles that can accommodate a large number (at least55) of passengers on each vehicle.
13. Provide 'gaps' for the shuttle route along Elroy Road using a traffic control officer (until such time that Elroy Road is widened).
14. Provide for a dedicated Shuttle drop off area in a convenient location and provide the ability for the shuttle to progress thru the site with some priority service.
15. Allow other high capacity shuttles (i.e. from local hotels or other private transportation providers) to utilize the proposed shuttle route to reduce the number of private automobiles accessing the site.

Camper/RV Provisions

16. Provide accommodations to eliminate the need for camper/RV vehicles to leave the facility (including affordable basic necessities like ice, food, water, and toiletries). Affordable concession services could also be set up within the camping area. The event promoters should explore various mobile food service and retail options in order to improve the experience for Campers and RV's; thereby discouraging them from leaving and returning to the property during the 'design' scenarios.

Bicycle Access

17. Create an incentive for attendees to arrive to the facility via bicycle thru the creation of an on-site bicycle parking area extremely close to the entrance to the track or thru a give-a-way program involving free food or merchandise coupons upon arriving to the facility via bicycle.
18. Identify a dedicated bicycle route and dedicated entrance to the facility. Coordinate with local members of the bicycling community in Austin to identify the ideal route. Initial concepts include two (2) options: (1) the rural roadways east of the site (Elroy Road, Fagerquist Road, and Wolf Lane); or (2) using the existing trail south of Burleson Road on the south end of the site and connecting to the facility via FM 973 and McAngus Road.

Short-Term Capacity Improvements

19. In order to reduce the travel time into and out of the site, the following improvements are recommended for consideration. It should be noted that this study does not attempt to identify the party who should be financially responsible for these improvements; instead simply identifies those improvements (in order of priority) that will be the most beneficial to serve the site and can be implemented within a relatively short period of time.
    a. Widen Elroy Road from McAngus Road to the north entry from a two-lane facility to a four-lane facility to allow for a minimum of three lanes entering / exiting the site and one lane for shuttle / emergency access. This can be accomplished with a 24' lane widening; or a total reconstruction to match the divided section of Elroy Road west of McAngus Road. Based on the route structure presented in this analysis, this would allow for at least three lanes to serve the 'Georgetown' route.
    b. Widen FM 812 from SH 130 to the south entry from a four-lane section to a five-lane section to allow for a minimum of four lanes entering / exiting the site and one lane for emergency access. This can be accomplished with a minor widening project depending on how the existing shoulders are utilized. Based on the route structure presented in this analysis, this would allow for an additional lane serving the 'Buda' or 'Georgetown' route.
    c. Construct a new north-south roadway (at least three-lanes wide) between Elroy Road and Pearce Lane (ideally one that would align with the north entry) in order to allow entering/exiting traffic to utilize the full access interchange at SH 130 and Pearce Lane; and/or SH 71 via Wolf Lane or Ross Road. Based on the route structure presented in this analysis, this would allow for an additional lane serving the 'Georgetown' route.

Long-Term Capacity Improvements

20. There are multiple additional roadway capacity improvements that could be provided to improve flow into and out of the proposed facility, however the uncertainty associated with (1) the exact manner by which attendees will access the facility; (2) other development activity that may occur in the vicinity of the facility; and (3) whether or not the promoters *need* to provide any additional improvements makes it extremely difficult to prioritize any additional capacity improvements. It is recommended that the Task Force identify and prioritize any other required improvements following completion of the first major event.

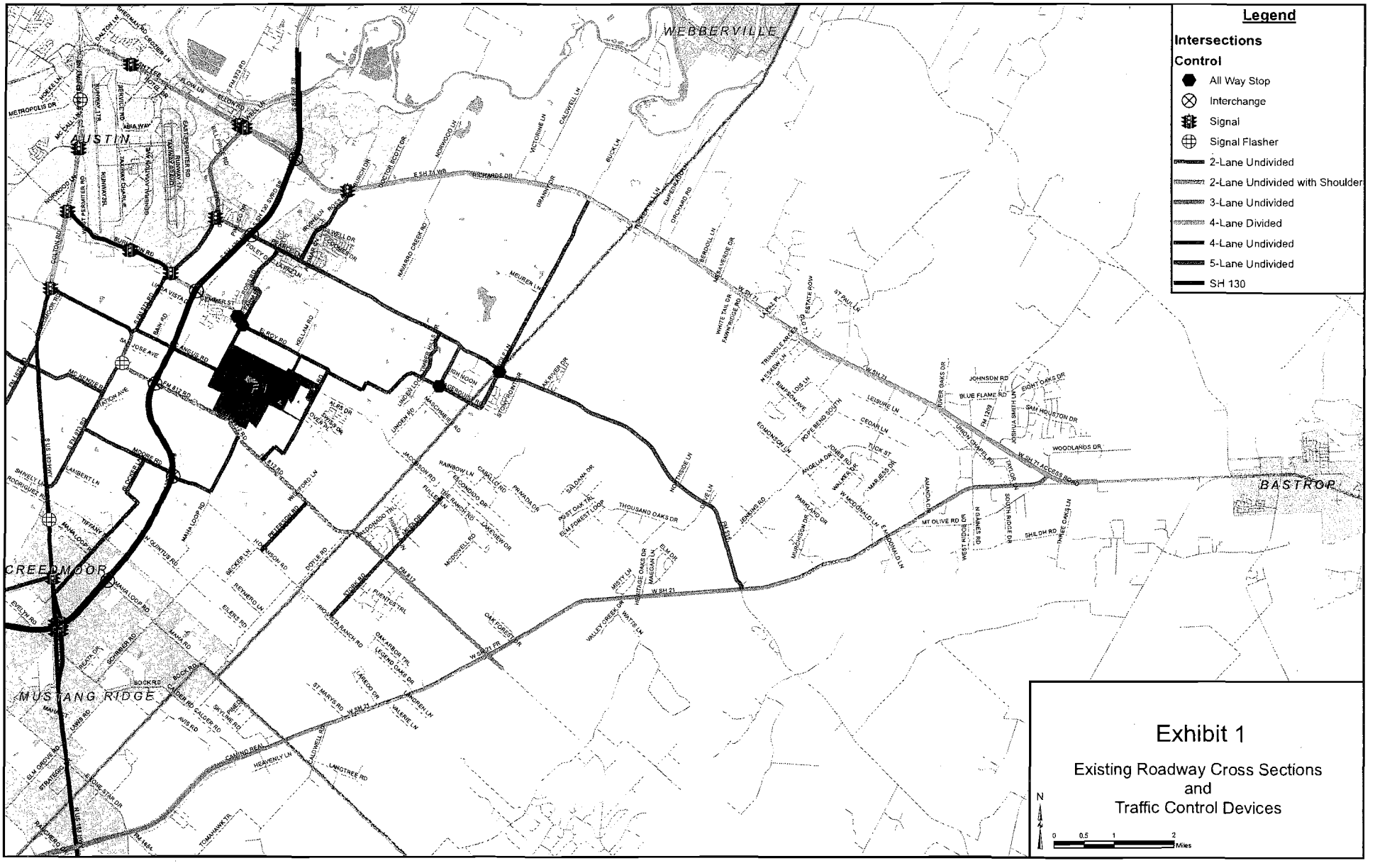
EXHIBITS

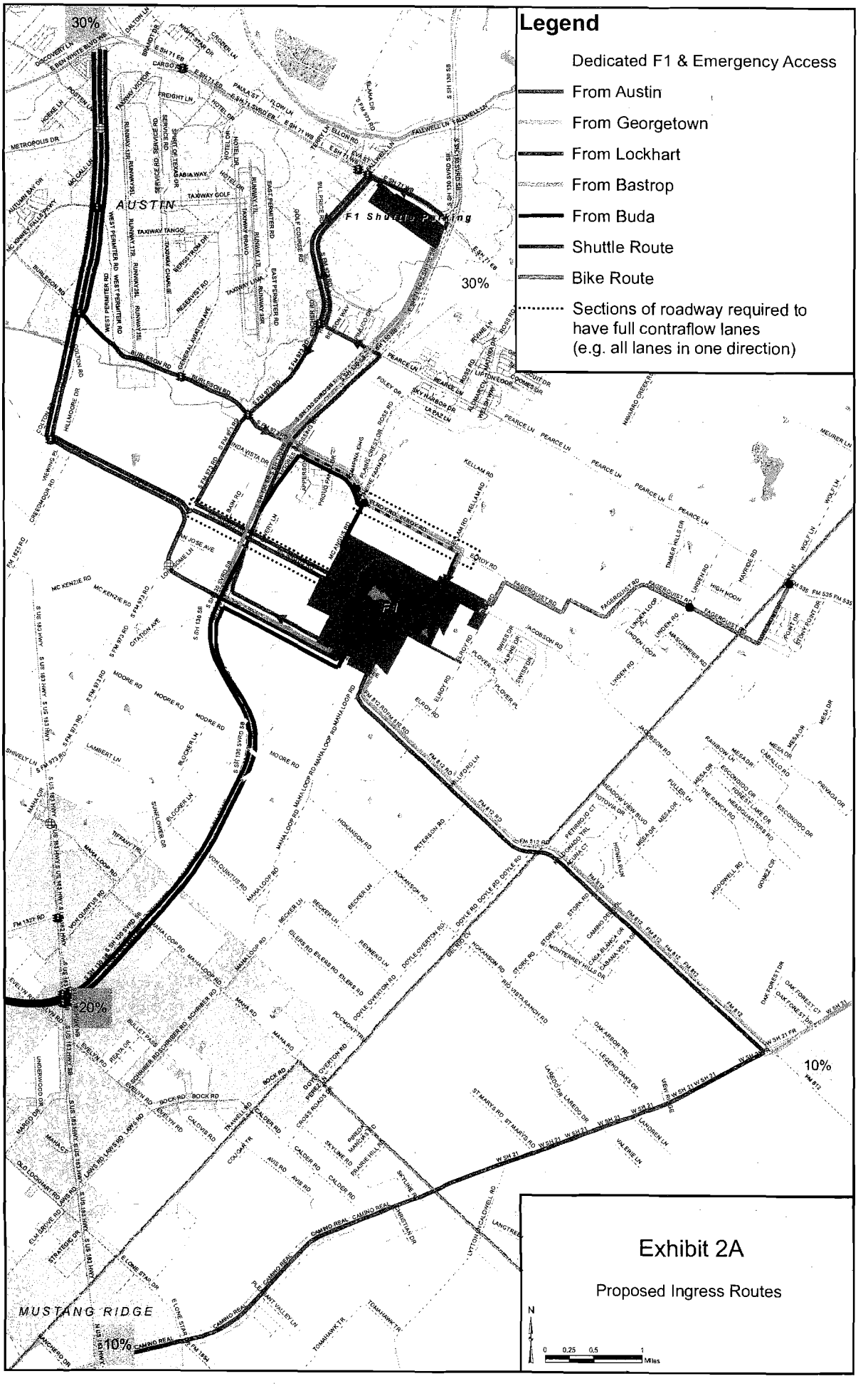
1) Existing Cross Sections and Traffic Control Devices

2) A – Proposed Ingress Routes

   B – Proposed Egress Routes

3) Parking Map


Legend
Intersections
Control
All Way Stop
Interchange
Signal
Signal Flasher
2-Lane Undivided
2-Lane Undivided with Shoulder
3-Lane Undivided
4-Lane Divided
4-Lane Undivided
5-Lane Undivided
SH 130
WEBBERVILLE
AUSTIN
CREEDMOOR
MUSTANG RIDGE
BASTROP
Exhibit 1
Existing Roadway Cross Sections
and
Traffic Control Devices
N
0
0.5
1
2
Miles


Legend
Dedicated F1 & Emergency Access
From Austin
From Georgetown
From Lockhart
From Bastrop
From Buda
Shuttle Route
Bike Route
Sections of roadway required to have full contraflow lanes (e.g. all lanes in one direction)
AUSTIN
F1 Shuttle Parking
F1
MUSTANG RIDGE
30%
20%
10%
Exhibit 2A
Proposed Ingress Routes
N
0 0.25 0.5 1 Miles

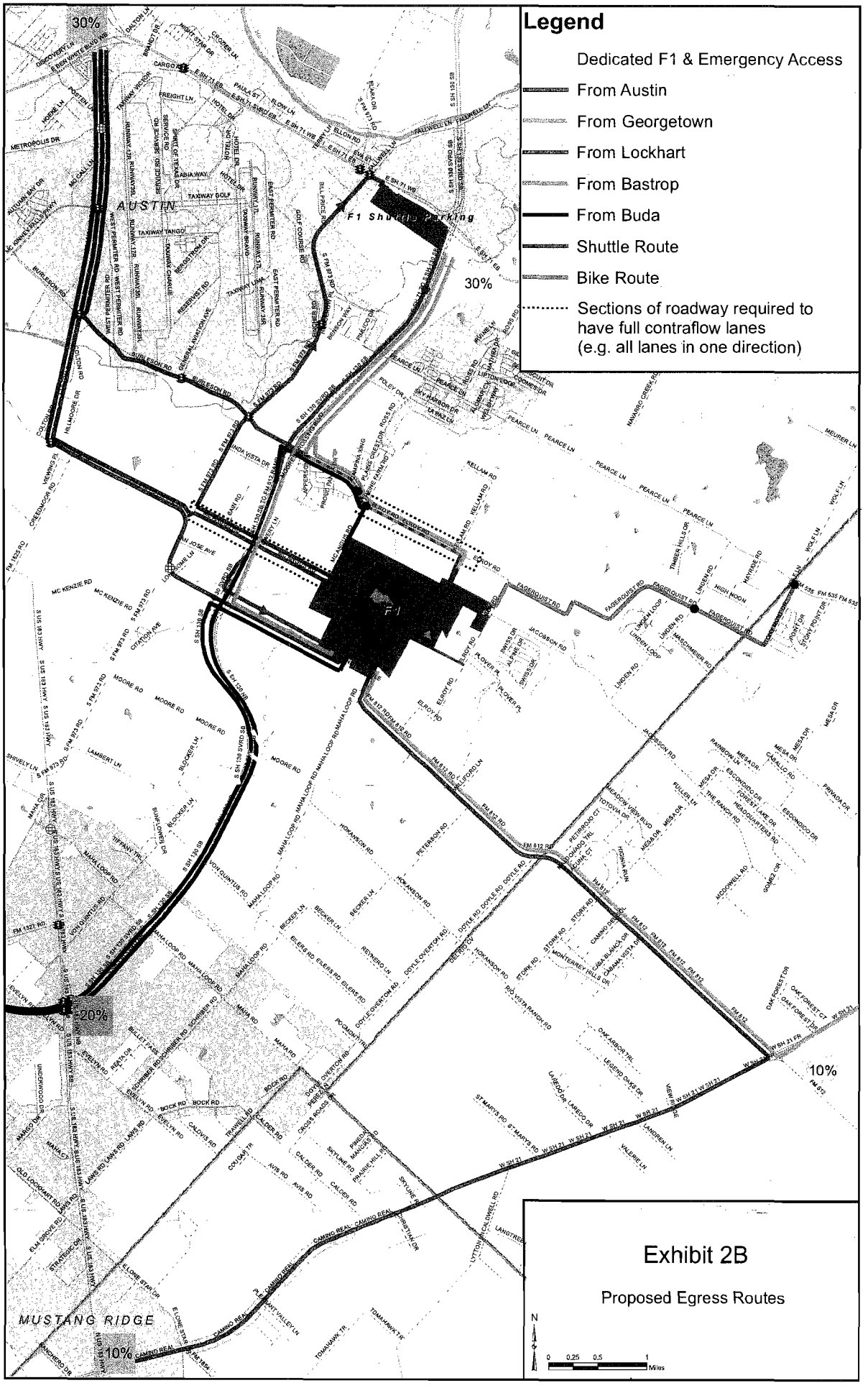

Legend
Dedicated F1 & Emergency Access
From Austin
From Georgetown
From Lockhart
From Bastrop
From Buda
Shuttle Route
Bike Route
Sections of roadway required to have full contraflow lanes (e.g. all lanes in one direction)
AUSTIN
F1 Shuttle Parking
F1
30%
30%
20%
10%
10%
MUSTANG RIDGE
Exhibit 2B
Proposed Egress Routes
N
0 0.25 0.5 1 Miles

EXHIBIT 3
PARKING MAP

FORMULA 1
TRAVIS COUNTY, TX

Kimley-Horn and Associates, Inc.

SUPPLEMENTARY MEMORANDUM

To: Mr. David K. Greear, P.E.
Travis County

From: Aaron W. Nathan, P.E., AICP
Kimley-Horn and Associates, Inc. (TX Reg. F-928)

Date: December 1, 2010

Subject: Initial Traffic and Transportation Analysis
Formula 1 United States Grand Prix
Response to Travis County Staff Questions

In response to your questions related to traffic and transportation discussions, we offer the following responses. We have formatted this response in a manner where the County's comments appear in *italics* prior to our response.

- *You used 750 veh/hour/lane for capacity service, but has any thought or calculation been given to parking capacity (flow)? This could be the bigger choke point. At 750 v/hr/ln, you only have 4.8 seconds per vehicle to park.*

Per our subsequent conversations and your visit to Texas Motor Speedway in November 2010, we mutually understand the 750 vphpl capacity is acceptable for use in this study.

- *Please provide a detailed parking and routing plan for site parking.*

A preliminary parking and routing plan is described in the technical memorandum and conceptually presented in Exhibits 2A, 2B, and 3.

- *You will need 5,000-6,000 parking spaces within 15 minutes of site for shuttle services, is this feasible? Can a shuttle service handle this large of a load?*

The revised report identifies a 50+ acre shuttle lot at SH 71 and SH 130; along with a 'loop' route structure that can accommodate the proposed shuttle services.

- *Travis County has identified 3,710 existing (paved) and 7,820 potential (publicly-owned unpaved land) off-site parking spaces within 5 miles of the Formula One site along with potential shuttle routes to the site. All are either to the north or west of the site. (See attached map)*

F1 is planning to use property for a shuttle lot located at SH 71 and SH 130.

- *In order to route shuttles to the north entrance, you will need a separate lane of traffic on Elroy. To do this, we will HAVE to have a minimum of one additional lane on Elroy from McAngus to North entrance (to accommodate the mandatory 1 outbound lane).*

The analysis suggests the use of full contra-flow operations along a small portion of Elroy Road; and reduces the vehicle capacity of the shared vehicle/shuttle lane by 20%.

- *We believe we are going to have heavier percentages of traffic heading south from SH 71. Traffic from Houston, Pflugerville, Round Rock, and also downtown will want to enter from this direction. (This also puts more emphasis on widening Elroy road).*

Noted. The arrival/departure percentages match this comment in the technical memorandum.

- *Who will provide for the officers and traffic control devices? You will also need more traffic control officers than the estimated 42. Just a recent Iron Man Race in East Travis County employed over 90 traffic control officers.*

As stated in the technical memorandum, this analysis does not attempt to identify the party who should be financially responsible for traffic control devices and personnel. The study does identify an approximate number of the traffic control officers needed. It seems reasonable that a race (like the Iron Man) along City streets would include crossing more side streets, thereby requiring more officers than a rural roadway network.

- *Is TxDot going to be ok with using ½ the shoulder for an additional lane of FM 812? Maybe need to look into restriping FM 812 as a 3-lane roadway. Discuss w/ TxDot.*

Following conversations with TxDOT about their plans to improve FM 812 between FM 973 and the Bastrop County Line, the plan to use four lanes between SH 130 and the south entry to the site is acceptable.

- *You mention 5,000 parking spaces for RV's, but where will these be able to park? Will you provide utility hook-ups (electricity, water, sewer).*

The Camping/RV parking area is planned for the northwest portion of the site. The provision of utility hook-ups is outside the scope of this analysis, but we understand it's under evaluation by the design team.

- *Your analyses and capacity of the bus shuttle may be too optimistic. Can you provide back-up showing support of your assumptions? (ie. Capacity of typical shuttles, load times, travel time, stacking of busses, multiple pick-up locations, etc...).*

The capacity of each shuttle was assumed to be 55 persons per shuttle trip to reflect a more conventional capacity of a 40' bus. Travel time was estimated using a combination of the proposed route and an estimated time to load/unload each shuttle. The exact locations for pick-up and drop off have yet to be determined within the site.

- *You mention 3,000 bicyclists. Given the site's remote location, this is a bit optimistic. Can you identify possible parking areas and how many additional off-site spaces are needed to accommodate the park-and-ride bicyclists? Would there be stations for pedi-cabs, bike rentals, etc? Officers for traffic?*

The exact size and location of the lot has not yet been identified; however it will likely be located in the vicinity of the intersection of Wolf Lane and Pearce Lane. The technical memorandum recommends that the county or other agency establish an approval process for operators of independent people movers.

- *Priority short term improvements listed by you would all be recommended by Travis County as well. Discussion is needed for funding responsibilities.*

As stated in the report, it is not within the scope of this study to attempt to identify the parties who should be financially responsible for any improvements. The purpose of the study is simply to identify those improvements (if any are required at all) that may be the most beneficial to serve the site, can be implemented within a relatively short period of time, and are consistent with the long-term thoroughfare needs of the study area under a traditional development scenario.

- *We will require a Traffic Control Plan Development in the near future as well.*

Noted.

- *You mention a 3-lane circulatory roadway on your site along the east side of the property. Can you provide back-up that there is sufficient room for this roadway?*

The site civil engineer is currently evaluating alignment alternatives for this east side roadway as the site plan is being developed. There is a planned circulatory roadway on the east side currently included.

- *Your short term improvements will require the widening of Elroy Road, McAngus Road, FM 812, and the construction of a new north-south road to Pearce Lane. As shown below, the existing rights of way may not be sufficient for the proposed widening. Acquiring any additional right of way, no matter how small, may require the use of the government's power of eminent domain to effectively take portions of at least 32 parcels. The right of way acquisition process alone could take from 9 to 12 months from the*

point in the engineering design that legal descriptions of the right of way take are determined (usually after construction plans are drawn). Given that there are currently no engineering design plans, no environmental clearances/project permits, no right of way acquired, no utility adjustments, and no identified funding for the improvements, it is not likely that the improvements can be accomplished by the date of the first race in June, 2012, or 18 months from now. Have you considered an "All Shuttle" Option for the first race that would require all attendees to purchase parking/shuttle service from off-site parking locations?

ROAD	LIMITS	EXISTING ROW	MINIMUM PARCELS
McAngus Road	From Elroy Road south to F1 West Gate	60'	4
McAngus Road	From SH 130 east to F1 West Gage	60'	10
Elroy Road	From McAngus east to F1 North Gate	65'	5
FM 812	From SH 130 east to F1 South Gage	100'	8
New N/S Road	From Pearce Lane south to F1 North Gate	0'	5
			32

Note: minimum parcels presumes design of improvement to take right of way on side of road that has least number of parcels.

The design team is aware of the challenges associated with the provision of the capacity improvements. However, our study indicates no improvements are required to provide for an acceptable flow of traffic to and from the event. An all-shuttle option has not been considered by the design team given the number of shuttles that would need to be provided for such an option.

Should you have any questions or comments, please do not hesitate to contact me at (972) 770-1300.

Sincerely,

KIMLEY-HORN AND ASSOCIATES, INC.

Aaron W. Nathan, P.E., AICP

TRANSPORTATION AND NATURAL RESOURCES

JOSEPH P. GIESELMAN, EXECUTIVE MANAGER

411 West 13th Street
Executive Office Building
PO Box 1748
Austin, Texas 78767
(512) 854-9383

December 8, 2010

MEMORANDUM

TO: Members of Commissioners' Court

THROUGH: Joseph P. Gieselman, Executive Manager

FROM: Anna Bowlin, Division Director, Development Services

SUBJECT: Formula 1 Conditional Letter of Map Revision Variance Request

PROPOSED MOTION:
Consider and take appropriate action on applicant's request for a variance to Chapter 64.121 (K) (2), Travis County Regulations for Flood Plain Management, to alter a flood plain prior to receiving a Conditional Letter of Map Revision from the Federal Emergency Management Agency for the Formula One Track.

SUMMARY AND STAFF RECOMMENDATION:
In order to meet the developer's deadlines, they have requested that a series of permits be issued for this project. The first permits in the series were for the pipeline relocation and the overhead utility relocation necessary for the project. TNR has already issued these relocation permits. The permit that is currently under review is for site grading. The site grading permit includes temporary erosion controls, site grading, installation of public water and wastewater mains, installation of drainage conveyance structures to route the upstream drainage to the water quality/detention features and installation of water quality and detention structures. The developer is seeking a variance to the County's requirement that a Conditional Letter of Map Revision (CLOMR) be obtained from the Federal Emergency Management Agency (FEMA) prior to this issuance of the site grading permit application.

The last development permit that will be required for the site will include track paving and details, vertical building construction, driveway and parking lot paving, and private water, wastewater and electric services. Prior to issuance of the final site development permit it is expected that a Roadway Agreement will be brought to Commissioners Court that will require the developer to improve Elroy Road to a four lane road and widen and raise the existing bridge in order to accommodate the volume of traffic to and from events at the track.

Floodplain and Drainage:
Development permits are issued in accordance with Chapter 64, Travis County's Regulations for Floodplain Management and Guidelines and Procedures for Development Permits. According to Chapter 64.121(k)(2), a Conditional Letter of Map Revision (CLOMR) must be obtained from the Federal Emergency Management Agency (FEMA) prior to issuance of a County Development Permit if the proposed development will alter a FEMA floodplain. This Travis County requirement is more stringent than FEMA regulations as FEMA does not require a CLOMR prior to issuance of a development permit. Travis County adopted this requirement to insure that the County and developers got FEMA's input on a project prior to the alteration of a FEMA floodplain. Construction of the proposed Formula One track will alter the FEMA floodplain. It takes approximately six months to obtain a CLOMR from FEMA. Developers of the Formula One tract need to begin construction in December 2010 in order to complete the track by June 2012. They will obtain a CLOMR as required by county regulation, but in order to meet their deadline, they have requested a variance to begin work on their grading plan prior to FEMA's issuance of a CLOMR. They have posted $921,273.00 in fiscal surety for restoration and revegetation of the floodplain in case they can not obtain the CLOMR. Granting the variance will allow TNR to administratively issue a permit for the grading of the Formula One site. The grading plan includes construction of drainage conveyance piping and channels to route the upstream drainage to the water quality/detention features and the construction of water quality and detention structures. The construction will not result in an increase in flood heights or velocities. Because the developers are assuming the all of the risk associated with their project, staff recommends granting the variance.

Environmental:
TNR Natural Resources staff is reviewing the erosion control, environmental, and construction-phase water quality elements of the grading plan. Review is currently ongoing, however the list of outstanding items is relatively short at the time of writing of this memorandum, and all issues are anticipated to be resolved shortly, and before the issuance of the first permit for site grading.

Grading and Drainage Plan Review:
TNR Development Services staff is reviewing the grading and drainage plan. At the time of writing the review is ongoing, however the remaining issues are of a routine nature and all issues are anticipated to be resolved in the near future, and before the issuance of the first permit for site grading

Summary and Staff Recommendation: According to Chapter 64.121(k)(2) of the Travis County Code, a Conditional Letter of Map Revision (CLOMR) must be obtained from the Federal Emergency Management Agency (FEMA) prior to issuance of a County Development Permit if the proposed development will alter a FEMA floodplain. Construction of the proposed Formula One track will alter a FEMA floodplain. It takes approximately six months to obtain a CLOMR from FEMA. Developers of the Formula One tract need to begin construction in December 2010 in order to complete the track by June 2012. They will obtain a CLOMR as required by county regulation, but in order to meet their deadline, they have requested a variance to begin work on their grading plan prior to FEMA's issuance of a CLOMR. The have posted $921,173.00 in fiscal surety for restoration and revegetation of the floodplain in case they can not obtain the CLOMR.

Granting the variance will allow TNR to administratively issue a permit for the grading of the Formula One site once all other outstanding comments have been addressed. Because the developers are assuming the all of the risk associated with their project, staff recommends granting the variance.

Budgetary and Fiscal Impact:
The developers of the Formula One track have posted $921,173.00 in fiscal surety with the County for restoration and revegetation of the floodplain.

Exhibits: Variance Request
Floodplain restoration cost estimate
Floodplain-site overlay map

CC: Anna Bowlin, Director, Development Services, TNR
Jon White, Director, Natural Resources, TNR
Stacey Scheffel, Permits Program Manager, TNR
Thomas Weber, Natural Resources Program Manager, TNR
David Greear, Traffic Manager, TNR
Teresa Calkins, Sr. Engineer, TNR
Dave Fowler, Environmental Project Manager, TNR
Tom Nuckols, Assistant County Attorney

JPG:ab:ss

Carlson, Brigance & Doering, Inc.
Civil Engineering ❖ Surveying

December 3, 2010

Mr. Joe Giesleman, Director
Travis County
Transportation and Natural Resources Department
311 W. 13th Street; 11th floor
Austin, Texas 78701

RE: FORMULA 1 UNITED STATES
CLOMR APPROVAL VARIANCE REQUEST
CBD # 4473

Dear Mr. Giesleman:

On behalf of our client, Land Accelerator, LLC and Wandering Creek Investments, LP, we are hereby requesting a variance from Travis County Code 64.134(a)(2) to allow issuance of a development permit prior to issuance of a Conditional Letter of Map Revision (CLOMR) by the Federal Emergency Management Agency (FEMA).

This project does not propose to alter the main Dry Creek floodplain or floodway and the proposed construction will not affect the "studied area" on the City of Austin's proposed LOMR application currently under development. This project does however impact several small fingers of the current FEMA floodplain located in "Zone A" associated with tributaries that traverse this site. The proposed construction will modify these waterways to be contained within either channels or storm sewer piping that convey the drainage to the various water quality and detention ponds proposed for the site.

Due to the very tight time-line for the Formula 1 site construction and the location of critical components of the project, there is not enough time to process the CLOMR to approval prior to construction.

We have complete confidence that FEMA will approve the proposed CLOMR through their normal review process; however, as insurance, we are proposing to post fiscal surety with Travis County in the amount necessary to restore the floodplain areas subject to this variance request to original condition.

We believe this request is reasonable and protects Travis County while allowing this critical project to commence in a timely manner. Please let us know if you have any questions at 512-280-5160.

Sincerely,
CARLSON, BRIGANCE & DOERING, INC.

Charles R. Brigance, Jr., P.E.
President

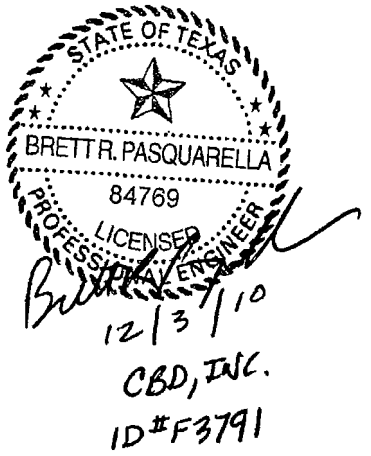
C: Mr. Kurt Rechner, Formula 1 United States
Mr. Richard Suttle, Jr., Armburst & Brown

Carlson, Brigance Doering, Inc.
5501 W. William Cannon Blvd.
Austin, Texas 78749

FORMULA 1 UNITED STATES
FLOODPLAIN AREA RESTORATION
FISCAL ESTIMATE

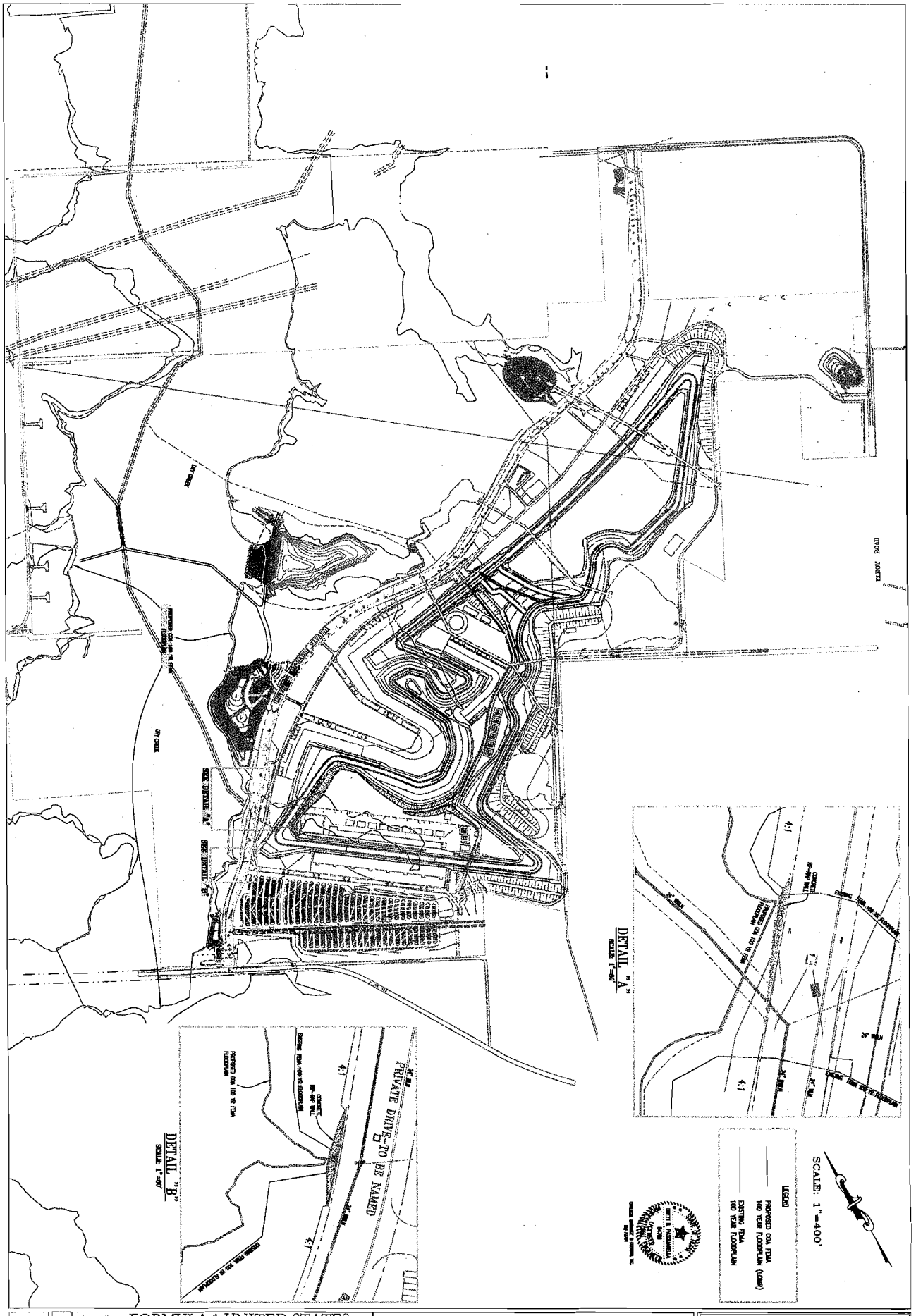
12-3-10

Description	Quantity	Unit	Cost	Amount
Regrade to existing conditions	80102	sy	$ 4.00	$ 320,408.00
Topsoil and Mulch	80102	sy	$ 3.00	$ 240,306.00
Revegetation with Native Vegetation	80102	sy	$ 4.50	$ 360,459.00
Total Fiscal Estimate				**$ 921,173.00**



12/3/10

CBD, INC.
ID#F3791



SHEET OF	JOB NUMBER 4475	JOB NAME FORMULA 1 UNITED STATES AUSTIN, TEXAS	SHEET CLOMR VARIANCE EXHIBIT		
		PROJECT FLOOD PLAIN EXHIBIT	DESIGNED BY BRP	DRAFTED BY: JSL	DATE NOVEMBER 2010

Carlson, Brigance & Doering, Inc.
Civil Engineering ◆ Surveying
5501 West William Cannon ◆ Austin, Texas 78749
Phone No. (512) 280-5160 ◆ Fax No. (512) 280-5165