Feasibility Study
APPLE Program
US-411 from CR-10 (Park Avenue) to Kerr Road

Prepared for:
St. Clair County
Regional Planning Commission of Greater Birmingham

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Executive Summary

Study Initiation
The study was initiated by St. Clair County through the Advanced Planning, Programming, and Logical Engineering (APPLE) program developed by the Regional Planning Commission of Greater Birmingham (RPCGB). The County requested professional planning assistance in evaluating the feasibility of potential improvements to the US-411 corridor between CR-10 (Park Avenue) and Kerr Road.

Purpose of the Study
This study was undertaken to assess the feasibility of improvements to the section of US-411, including widening, between CR-10 (Park Avenue) and Kerr Road, a distance of approximately three miles. This document summarizes:

- Existing and expected transportation system operational conditions and deficiencies,
- The process used to identify potential alternatives for improvement,
- The resulting alternatives that were developed from that process,
- An evaluation of potential positive and negative impacts to the area and adjacent properties that may be associated with each potential improvement, and
- A prioritization of the alternatives as it relates to the benefit of the study area.

The purpose of this study is not to select a preferred alternative, but to identify feasible improvements and their potential impacts. If the County chooses to move forward with an improvement project for the area, a more detailed Environmental Planning Study would be required for federally funded projects.

Purpose and Need for Improvements
Within the study area US-411 is a two-lane urban minor arterial that connects the City of Moody to interstate 20 on the south and rural communities to the north. The land surrounding US-411 has transitioned in recent years from undeveloped parcels and farms to residential subdivisions. The increasing residential development has led to traffic congestion along the highway, particularly at intersections. The localized congestion at intersections causes excessive queuing along the highway during peak hours of traffic flow. Crash data further substantiates the presence and problem associated with local congestion through data that shows greater than normal rear-end crashes occurring on US-411. As the corridor continues to develop, localized congestion is expected to increase with greater traffic volumes. There is a need to improve traffic flow along US-411 to reduce stopped delay and decrease the incidence of rear-end collisions.

Improvement Alternatives
Different options for improvement exist for the study area. For the purposes of this study each option is listed separately; however, the County could select to implement all the options or select individual options to implement as resources are available. The improvement options have been listed in order of implementation priority based on the amount of traffic volumes, the number of crashes, field observations and expected ease of implementation. The feasibility of construction including acquiring right-of-way was also evaluated during the prioritization process.

- No Build – The No Build Option assumes no additional improvements are constructed. This option provides no relief from congestion.
- Improvement 1 – Eastbound Right Turn Lane on Park Avenue
- Improvement 2 – Westbound Left Turn Lane on Park Avenue
- Improvement 3 – Southbound Left Turn Lane on US-411 at Kerr Road
- Improvement 4 – Northbound Right Turn Lane on US-411 at Kerr Road
- Improvement 5 – Northbound Right Turn Lane on US-411 at Park Avenue
- Improvement 6 – Southbound Right Turn Lane on US-411 at Park Avenue
- Improvement 7 – Northbound Right Turn Lane on US-411 at Verbena Drive
- Improvement 8 – Northbound Left Turn Lane on US-411 at Lake Joyce Road
- Improvement 9 – Northbound Left Turn Lane on US-411 at Washington Drive
- Improvement 10 – Southbound Right Turn Lane on US-411 at James Taylor Road
- Improvement 11 – Westbound Right Turn Lane on Kerr Road
- Improvement 12 – US-411 Widening

**Stakeholder Involvement**
A project kickoff meeting was conducted with St. Clair County and the RPCGB. Discussions during this meeting included finalizing areas of focus along the corridor and identifying what problems are currently being experienced by motorists. Following field observations, data collection, and documentation of existing conditions, a technical memorandum was prepared and provided to the County and the RPCGB. Per their request a summary of this memorandum was prepared and provided to the County for their e-mail distribution to stakeholders.

Following the development and analysis of improvement options, a stakeholder meeting was held on January 28, 2015 to present these options.

**Next Steps**
The purpose of this study was to determine the feasibility of potential improvements to the US-411 corridor between CR-10 and Kerr Road. If the County chooses to move forward with implementing any or some of the build options and would like to pursue Federal funding, the next step would be to request inclusion of a project in the Birmingham Regional Transportation Improvement Plan. Once funds are in place for the project an environmental document will need to be prepared. The environmental document must include technical studies and public involvement outreach necessary to comply with procedures of the National Environmental Policy Act (NEPA). Once the environmental study has been completed, design would be finalized, followed by construction. If it is determined that additional right-of-way is required, acquisition would be conducted prior to construction.

The County may also elect to pursue projects described in this study without federal funding. However, an Alabama Department of Transportation permit for the improvements would have to be obtained for any work that would occur inside ALDOT right-of-way.
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1.0 Introduction

1.1 Study Initiation
The study was initiated by St. Clair County through the Advanced Planning, Programming, and Logical Engineering (APPLE) program developed by the Regional Planning Commission of Greater Birmingham (RPCGB). The County requested professional planning assistance in evaluating the feasibility of potential improvements to the US-411 corridor between CR-10 (Park Avenue) and Kerr Road. This document summarizes:

- Existing and expected transportation system operational conditions and deficiencies,
- The process used to identify potential alternatives for improvement,
- The resulting alternatives that were developed from that process,
- An evaluation of potential positive and negative impacts to the area and adjacent properties that may be associated with each potential improvement, and
- A prioritization of the alternatives as it relates to the benefit of the study area.

The purpose of this study is not to select a preferred alternative, but to identify feasible improvements and their potential impacts. If the County chooses to move forward with an improvement project for the area, a more detailed Environmental Planning Study would be required for federally funded projects.

1.2 Study Approach
The study was performed using a two-stage process. Step one included an evaluation of the existing conditions and constraints. After all constraints were identified, an evaluation of future conditions was conducted and alternatives were developed to address identified deficiencies.

For stage one, existing traffic data was collected and capacity analyses of the existing conditions were prepared. A base map was prepared using aerial images and available GIS data. All information was compiled and evaluated to define the needs of the corridor and identify constraints and opportunities for improvement. A field review was performed as part of stage one. This field review consisted of walking the study area to take measurements and inventory existing land uses, observing peak hour traffic patterns, and investigating what impacts various improvement options would have to the study area.

For stage two, future traffic volumes were projected and analyzed with the existing roadway conditions (“No Build Option”). Then improvement options were prepared and evaluated relative to their ability to address the purpose and need for the project (“Build Options”).
2.0 Base Conditions

2.1 Description of the Study Area
The study area, as shown in Figure 1, is located in the City of Moody, St. Clair County, Alabama approximately 2.5 miles north of Interstate 20. The study area includes the US-411 corridor between its intersection with CR-10 (Park Avenue) and Kerr Road, approximately three miles in length. The southernmost portion of the study area is commercialized and houses a gas station, pharmacy, and some retail stores. Commercial properties exist north of CR-10; however, the area is predominately residential with several established subdivisions. The corridor is home to four area schools, Moody Elementary School, Moody Middle School, Moody Junior High, and Moody High School.

2.2 Geometrics
US-411 has a few horizontal curves but for the most part the roadway is straight and no deficiencies with this design aspect were noted. Beginning at its intersection with Interstate 20, US-411 consists of a 5-lane cross section with two northbound travel lanes, two southbound travel lanes, and a center turn lane. Each lane is 12 feet in width. The roadway transitions to a two-lane section just north of CR-10 near Church Street and continues with this typical section throughout the study area. Also in the area of the transition to two-lanes, the speed limit for US-411 changes from 50 MPH to 40 MPH. The intersection of US-411 and CR-10 is signalized. CR-10 is a two-lane roadway and is posted for 25 MPH. There are no other signals located along the study corridor, however, there is a flashing light located at the intersection with High School Drive. Study Area photos are located in Appendix A.

2.3 Traffic Operations Evaluation

2.3.1 Bicycle and Pedestrian Accommodations
The land use along the corridor is primarily residential with some farmlands and some commercial areas. Moody High School, Junior High School, and Middle School are also located along the corridor on High School Drive and the Elementary School is located on Church Street. There are currently no bicycle or pedestrian accommodations located in the study area nor are there any accommodations at the study area termini. By law, cyclists are allowed to use the travel ways but there are no dedicated bike lanes or additional pavement for them to utilize. It appears that US-411 has recently been resurfaced and with that resurfacing two foot shoulders were installed. These two feet of additional pavement would be beneficial to cyclists but the rumble strips that were installed in conjunction with the paving make the shoulders an unusable option for cyclists.

For motor vehicle traffic, level of service (LOS) is a measure of congestion stated in a range from “A” to “F”, with “A” representing the lowest level of congestion and “F” representing extreme congestion where traffic volumes exceed the capacity of the roadway. Alternatively, LOS for bicycles and pedestrians is a measure of how safe or comfortable one feels based on the roadway geometry and the characteristics of the traffic. Table 1 displays the existing and future no-build levels of service on US-411 for pedestrians and bicycles. The LOS for pedestrians for the segment between Park Avenue and Church Street is typical of most metropolitan areas but it still indicates that the majority of people, especially school age children, would not feel comfortable walking in this area. The bike LOS is slightly better for the overall study length and indicates that experienced cyclists would feel comfortable traveling this roadway. School age children and novice cyclists would most likely prefer an alternate route.
Figure 1: Study Area

U.S. Highway 411 Corridor Study
Moody, St. Clair County, Alabama
Table 1: Existing (2014) and Future (2034) No Build Levels of Service (LOS)

<table>
<thead>
<tr>
<th>Roadway Segment</th>
<th>Existing Bike LOS</th>
<th>Existing Pedestrian LOS</th>
<th>Future No Build Bike LOS</th>
<th>Future No Build Pedestrian LOS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Park Avenue to Church Street</td>
<td>C</td>
<td>D</td>
<td>C</td>
<td>D</td>
</tr>
<tr>
<td>Church Street to Kerr Road</td>
<td>C</td>
<td>D</td>
<td>D</td>
<td>D</td>
</tr>
</tbody>
</table>

Based on the walking and cycling levels of service, users would experience an immediate benefit from the addition of pedestrian and bicycle accommodations. However, there are no in-place facilities to connect the user to logical destinations. The schools and the municipal park on Park Avenue provide a destination for pedestrians and cyclists but there are no existing facilities to connect either of these locations. The City of Moody is currently planning a future civic complex within the study area at the intersection of US-411 and Church Street. This planned development includes a civic center, a park, a splash pad, and a library. Construction on this project began in the summer of 2014. The splash pad is scheduled to be completed in May of 2015 and the remaining facilities are scheduled to be completed in 2016. Internal sidewalks are included in this planned development, but a connection to US-411 or Church Street is not planned. Similar to the schools and the municipal park, this development offers a destination for pedestrians and cyclists.

2.3.2 Traffic Counts

Traffic Data, LLC. on behalf of Sain Associates, collected 24-hour bi-directional traffic counts (volume, class, and speed) at the following locations on April 24-25, 2014 and May 14-15, 2014:

- US-411 just north of Kerr Road
- US-411 between James Taylor Road and Robbie Drive
- US-411 just south of Park Avenue

Additionally, Traffic Data collected turning movement counts (7:00 – 9:00 am and 4:00 – 6:00 pm) at the following intersections along US-411 on weekdays between April 21 and April 24, 2014:

- Park Avenue
- Washington Drive/Verbena Drive
- James Taylor Road
- High School Drive
- Lake Joyce Road
- Kerr Road

Afternoon school peak volumes were also collected at High School Drive between the hours of 1:30 and 3:30 pm.

Figures shown in Appendix B summarize the existing traffic counts.

2.3.3 Existing Intersection Capacity Analysis

Sain conducted an intersection “level of service” analysis for vehicular traffic at the signalized intersection of US-411 and Park Avenue using Trafficware’s Synchro 8 software. For the other five (5) study intersections, analyses were conducted using McTrans HCS 2010 Streets Version 6.50 for unsignalized intersections. According to both of these methods of analysis, traffic capacities are expressed as levels of service (LOS) ranging from “A” (free-flow conditions) to “F” (very congested conditions). Generally, LOS “C” is desirable, while LOS “D” is considered acceptable during peak hours of traffic flow. A detailed description of each LOS designation is included in Appendix C. Table 2 summarizes the existing LOS for
the AM and PM peak periods based on intersection approach, and Table 3 provides the existing LOS for the school peak time period. The tables show there are numerous movements along US-411 and its side roads that experience deficient traffic operations during the peak hours of traffic flow.

### Table 2: Existing (2014) and Future No-Build (2034) Intersections LOS

<table>
<thead>
<tr>
<th>Intersection</th>
<th>Approach</th>
<th>Level of Service</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Existing AM Peak</td>
<td>Existing PM Peak</td>
<td>Future AM Peak</td>
<td>Future PM Peak</td>
</tr>
<tr>
<td>US-411 @ Park Avenue (Signalized)</td>
<td>NB US-411</td>
<td>C</td>
<td>C</td>
<td>C</td>
<td>D</td>
</tr>
<tr>
<td></td>
<td>SB US-411</td>
<td>D</td>
<td>C</td>
<td>E</td>
<td>C</td>
</tr>
<tr>
<td></td>
<td>EB Park Avenue</td>
<td>E</td>
<td>D</td>
<td>F</td>
<td>E</td>
</tr>
<tr>
<td></td>
<td>WB Park Avenue</td>
<td>F</td>
<td>E</td>
<td>F</td>
<td>F</td>
</tr>
<tr>
<td>US-411 @ Washington Drive/Verbena Drive (Unsignalized)</td>
<td>NB LT US-411</td>
<td>A</td>
<td>A</td>
<td>B</td>
<td>A</td>
</tr>
<tr>
<td></td>
<td>SB LT US-411</td>
<td>A</td>
<td>B</td>
<td>B</td>
<td>B</td>
</tr>
<tr>
<td></td>
<td>EB Washington Drive</td>
<td>F</td>
<td>E</td>
<td>F</td>
<td>F</td>
</tr>
<tr>
<td></td>
<td>WB Verbena Drive</td>
<td>F</td>
<td>F</td>
<td>F</td>
<td>F</td>
</tr>
<tr>
<td>US-411 @ James Taylor Road (Unsignalized)</td>
<td>NB LT US-411</td>
<td>A</td>
<td>A</td>
<td>B</td>
<td>A</td>
</tr>
<tr>
<td></td>
<td>EB James Taylor Road</td>
<td>F</td>
<td>C</td>
<td>F</td>
<td>E</td>
</tr>
<tr>
<td>US-411 @ High School Drive (Unsignalized)</td>
<td>SB LT US-411</td>
<td>B</td>
<td>A</td>
<td>B</td>
<td>B</td>
</tr>
<tr>
<td></td>
<td>WB LT High School Drive</td>
<td>F</td>
<td>D</td>
<td>F</td>
<td>F</td>
</tr>
<tr>
<td></td>
<td>WB RT High School Drive</td>
<td>B</td>
<td>B</td>
<td>B</td>
<td>C</td>
</tr>
<tr>
<td>US-411 @ Lake Joyce Road (Unsignalized)</td>
<td>NB LT US-411</td>
<td>A</td>
<td>A</td>
<td>B</td>
<td>A</td>
</tr>
<tr>
<td></td>
<td>EB Lake Joyce Road</td>
<td>C</td>
<td>B</td>
<td>D</td>
<td>C</td>
</tr>
<tr>
<td>US-411 @ Kerr Road (Unsignalized)</td>
<td>SB LT US-411</td>
<td>A</td>
<td>A</td>
<td>B</td>
<td>B</td>
</tr>
<tr>
<td></td>
<td>WB Kerr Road</td>
<td>F</td>
<td>C</td>
<td>F</td>
<td>F</td>
</tr>
</tbody>
</table>

**NOTE:** RT = right-turn movement; LT = left-turn movement

### Table 3: Existing (2014) and Future No-Build (2034) School Peak LOS

<table>
<thead>
<tr>
<th>Intersection</th>
<th>Approach</th>
<th>Level of Service</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Existing School Peak</td>
<td></td>
<td>Future School Peak</td>
</tr>
<tr>
<td>US-411 @ High School Drive (Unsignalized)</td>
<td>SB LT US-411</td>
<td>A</td>
<td></td>
<td>B</td>
</tr>
<tr>
<td></td>
<td>WB LT High School Drive</td>
<td>F</td>
<td></td>
<td>F</td>
</tr>
<tr>
<td></td>
<td>WB RT High School Drive</td>
<td>C</td>
<td></td>
<td>C</td>
</tr>
</tbody>
</table>

**NOTE:** RT = right-turn movement; LT = left-turn movement

### 2.3.4 Existing Segment LOS Analysis

An existing segment LOS analysis was conducted for the study limits of US-411 using McTrans HCS 2010 TwoLane and HCS 2010 Multilane software analysis tools. The corridor was divided into study segments based upon geometric and land use characteristics of the roadway. Table 4 summarizes the existing segment LOS. All segments operate with acceptable levels of service. The segment analysis demonstrates that congestion issues on US-411 are intersection-related.

### 2.3.5 Forecasted Volumes

Using historical traffic volume data obtained from ALDOT’s website, Sain Associates developed an annual growth rate for traffic volumes on US-411. The growth rate used to forecast 20-year design year
volumes (2034) was 1.1%. Figures summarizing the projected 20-year volumes based on an annual growth rate of 1.1% can be found in Appendix D.

2.3.6 Future No-Build LOS Analysis
A future intersection LOS analysis was conducted for intersections along US-411 in the study area using the same analysis methods described for existing conditions. Table 2 summarizes expected future LOS for the AM and PM peaks with no improvements to the highway and Table 3 provides the future no-build LOS for the school peak time period. The future no-build analysis shows that existing deficiencies at the intersections will worsen as traffic volumes increase. Intersection improvement options need to be evaluated for opportunities to address these LOS results.

2.3.7 Future No-Build Segment LOS Analysis
A future segment LOS analysis was conducted for the study limits of US-411 with forecasted year 2034 volumes using the same methods used for existing conditions. Table 4 summarizes the future no-build segment LOS. As with existing conditions, the segment levels of service are acceptable with future traffic volumes, indicating that the number of travel lanes is sufficient for future traffic volumes.

<table>
<thead>
<tr>
<th>Segment</th>
<th>Approach</th>
<th>Level of Service</th>
<th>Existing AM Peak</th>
<th>Existing PM Peak</th>
<th>Future AM Peak</th>
<th>Future PM Peak</th>
</tr>
</thead>
<tbody>
<tr>
<td>US-411: 4-Lane Segment</td>
<td>NB US-411</td>
<td>A</td>
<td>B</td>
<td>A</td>
<td>B</td>
<td></td>
</tr>
<tr>
<td></td>
<td>SB US-411</td>
<td>B</td>
<td>A</td>
<td>B</td>
<td>A</td>
<td></td>
</tr>
<tr>
<td></td>
<td>SB US-411</td>
<td>C</td>
<td>C</td>
<td>D</td>
<td>D</td>
<td></td>
</tr>
<tr>
<td>US-411: High School Drive to Kerr Road</td>
<td>NB US-411</td>
<td>C</td>
<td>C</td>
<td>D</td>
<td>D</td>
<td></td>
</tr>
<tr>
<td></td>
<td>SB US-411</td>
<td>D</td>
<td>C</td>
<td>D</td>
<td>D</td>
<td></td>
</tr>
</tbody>
</table>

2.3.8 Field Observations
A field review and peak hour observations were performed during the AM peak hour on May 6, 2014. Additional peak hour observations were also conducted during the PM peak hour on May 8th and 9th.
Queue lengths on US-411 were observed. Traffic signal timings for Park Avenue were also collected. The paragraphs below summarize the key observations from the field reviews. Field notes are included in Appendix E.

US-411 at Park Avenue A.M. Peak Hour
Traffic queuing is a problem at the intersection during the morning peak hour, particularly on the US-411 southbound approach and both Park Avenue approaches. The congestion at the intersection began around 7:15 a.m. and continued until around 8:00 a.m. For US-411 southbound, traffic was observed to back up beyond the Church Street intersection. For Park Avenue eastbound, traffic was observed to back up approximately 1,000 feet from the intersection. This queue extends beyond Lambert Circle to some residential driveways to the west. For Park Avenue westbound, traffic was observed to back up approximately 500 feet from the intersection (past Carpenetti’s Pizzeria) at the busiest time. US-411 northbound was not as congested as the other approaches; however, US-411 northbound left-turn queues were not always cleared under each protected left-turn phase during the signal cycle.
A police officer began directing traffic at the Church Street intersection (just north of Park Avenue) around 7:15 a.m. to help with traffic control for school traffic associated with Moody Elementary School and the adjacent commuter traffic on US-411.

**High School Drive A.M. Peak Hour**

A police officer also directs traffic at the intersection of US-411 and High School Drive during the morning peak hour. Queues became extensive on US-411 northbound and High School Drive eastbound around 7:45 a.m. as traffic became congested entering the schools. High traffic volumes due to parent drop-off for three different schools in conjunction with student parking operations were likely contributors to the traffic backups. The queue extended from the school area, down High School Drive and down US-411 northbound approximately 500 feet at the longest point. Once traffic cleared out just before 8:00 a.m., the police officer left the intersection.

**US-411 at Kerr Road A.M. Peak Hour**

A steady stream of US-411 southbound traffic had already begun before 7:00 a.m. There is no left-turn lane on US-411 southbound at the intersection. Queues began forming in the southbound direction of US-411 around 7:20 a.m. as vehicles slowed and waited for appropriate gaps to turn left onto Kerr Road. US-411 northbound vehicles would occasionally stop to allow a US-411 southbound vehicle to turn left onto Kerr Road. This practice presents a safety concern because it can increase the incidence of rear-end collisions. The longest observed US-411 southbound queue was approximately 1,500 feet. US-411 southbound traffic began flowing more freely around 8:00 a.m.
US-411 at Park Avenue P.M. Peak Hour
Traffic in the US-411 northbound lanes stayed heavy and slow for most of the afternoon peak hour as a steady stream of traffic flowed from the interstate. US-411 northbound queues continuously backed up to LR Auto Sales (approximately 900 feet) during the peak hour, while the longest queue appeared to reach beyond Ashley Drive (approximately 1,500 feet). Most northbound vehicles on US-411 stay in the inside through lane on the approach to Park Avenue as the outside lane ends just past Park Avenue when the roadway cross-section changes from four lanes with a center turn lane to two lanes. The area where the lane drop occurs stayed congested throughout the time of our observations, and backed up into the Park Avenue intersection. The eastbound and westbound approaches on Park Avenue also queued notably during the peak hour. The longest observed eastbound queue was approximately 800 feet and reached to the first residential driveway west of Lambert Circle. The longest observed westbound queue was approximately 800 feet and reached to the entrance of Moody City Park. Vehicles on the Park Avenue approaches experienced delays while waiting for a green light due to the long cycle length of the signal, but generally the queues would clear during each cycle. At times, left-turning vehicles on Park Avenue turned aggressively in front of oncoming traffic during the Park Avenue green interval.
2.3.9 Crash Data
Crash summaries were collected from ALDOT’s CARE database as well as from detailed crash reports for the years 2011-2013. A summary of the crash data is included in Appendix F. The most prominent crash trend along the corridor during the study period is the trend of rear-end crashes occurring on US-411 during periods of heavy traffic. The lack of turn lanes along US-411 creates a steady trend of stop-and-go traffic, which increases the possibility for rear-end crashes. Although the study area begins at the Park Avenue intersection on the south end, it is important to also note a trend of angle crashes occurring between Park Avenue and the intersection directly to the south, Ashley Drive. Many of those crashes occur when a vehicle in the outside lane of US-411 northbound stops to allow a vehicle to make a left turn out of a private drive, and the turning vehicle gets hit by an approaching vehicle in the inside lane or in the center left-turn lane of US-411 northbound that the driver turning left could not see. There are several private drives along US-411 between Park Avenue and Ashley Drive where this type of crash is occurring.

Two fatalities occurred along the corridor during the study period. One occurred between Robbie Drive and James Taylor Road, and involved an intoxicated driver. The other fatal crash occurred north of the study area between Kerr Road and Church Road/Myers Road. Both fatal crashes were head-on collisions.
3.0 Environmental Features
A search of documents, databases, a field review, and compilation of GIS data was performed to analyze existing conditions and identify environmental features. This section further discusses the gathered data.

3.1 Existing Documents
There are currently no documented future roadway improvement plans for the study area. At the time of this memorandum, St. Clair County is not included in the Long Range Transportation Plan (LRTP) prepared by RPCGB. However, funding may be available from the RPCGB for future improvements through St. Clair County’s membership in the Heart of Alabama Rural Planning Organization (HARPO) administered by RPCGB.

3.2 Historical Nature
The study area is located in the City of Moody in St. Clair County, Alabama along US-411 and extends from the CR-10 (Park Avenue) intersection to the intersection of Kerr Road. This portion of US-411 is part of a larger route that has been designated by the St. Clair County Historical Society as a Historic Stagecoach Route leading from Montevallo to Ashville. The roadway received this designation in 1999 and there are several signs marking this route along the corridor. The route is notable since it began as a Native American trail in the early 1800’s and was used by Andrew Jackson before becoming a stagecoach route used by the County’s first black settlers. Use of this historic route spans more than 200 years. Despite the history and age surrounding the corridor, it is not listed on the National Register of Historic Places (NRHP) nor are there any known archaeological sites located within the study area, per research performed by the University of Alabama’s Office of Archaeological Records (OAR). It is recommended that a qualified professional perform a Phase 1 Cultural Resources Study should the County opt to utilize federal monies to fund improvement projects along this corridor.

3.3 Threatened and Endangered Species
A letter was sent to the United States Fish and Wildlife Service (USFW) to obtain background information on potential items of concern. Per their response, there are no known endangered or threatened species or critical habitats that occur in the project area. Based on this response no further research would be required if the County decides to move forward with improvements. The concurrence from USFW is attached to this memo in Appendix G.

3.4 Wetlands and Floodplain
The study area is located in the Cahaba Valley between Pine Ridge and Oak Ridge. According to the Cook Springs Quadrangle map (see Appendix H) there is one blue line stream that exists within the study area. The stream is located just north of the CR-10 intersection, near Church Street and is an unnamed tributary of the Little Cahaba River. There are currently two-nine foot span corrugated metal pipes that cross US-411 at this location. Approximately 300’ of US-411 is located in the 100-year floodplain of this blue line stream. The remainder of US-411 located inside the study area does not fall within the 100-year floodplain; however there are some areas with nearby wetlands. It appears that potential improvements would not impact these known wetlands except in the area of Lake Joyce Road. The wetlands located across US-411 from Lake Joyce Road could be impacted with widening of the roadway. Some wetlands exist on High School Drive as well but it appears that these wetlands are out of the reach of any potential US-411 improvements. There is another blue line stream located just north of the northern terminus (Kerr Road) of the study area. This blue line stream is an unnamed tributary of Kelly Creek. A United States Army Corps of Engineers’ (USACOE) permit will be required for any improvements that will cause storm drainage to discharge to any blue line stream. An ADEM permit will be required for improvements greater than one acre in size.
In addition to the large crossdrain described above located just north of the CR-10 intersection, there are also several other large crossdrains located within the study area. In total, there are eight large crossdrains. In this instance, large can be defined as a pipe with a diameter larger than forty-eight inches. There are also three smaller crossdrains, an eighteen inch, a twenty-four inch, and a thirty inch. Most all of the crossdrains are constructed of corrugated metal and in some cases the headwalls consist of stone. Large, in-place storm drainage located in a low lying valley indicates that the storm system could be designed more for storage than transport. The portion of US-411 located within the study area is primarily higher than the surrounding ground. Typically, slopes lie four feet below the roadway and in some cases the depth increases to as much as eight feet. Some defined ditches do exist; however for the most part storm water appears to overland flow to and from crossdrains. It does not appear that the area experiences any flooding; however, if the County chooses to move forward with widening US-411, these structures should be analyzed to determine their effectiveness. Elevated costs are also expected to be associated with the extension of these structures due to their size.

3.5 Public Recreational Areas

The study area includes two public recreational areas. The first of these two is Miracle League Field. The Miracle League Field is a specially developed baseball field that allows children with mental or physical challenges the opportunity to play baseball. The field is located on Park Avenue, east of US-411. The second public recreational area is still under construction and is located near Miracle League Field at the intersection of US-411 and Church Street. The amenities included in the development are a splash pad, library, and civic center. Construction on this project began in the summer of 2014. The splash pad is scheduled to be completed in May of 2015 and the remaining facilities are scheduled to be completed in 2016. The schools and the municipal park on Park Avenue provide a destination for pedestrians and cyclists but there are no existing pedestrian or bicycle facilities to connect either of these locations. Internal sidewalks are included in this planned development, but they do not show being connected to US-411 or Church Street.

3.6 Hazardous Materials Properties

There are no known hazardous materials properties located within the study area.

3.7 Utilities

GIS data was collected for utilities located in the study area. These in-place utilities include overhead power distribution and transmission, sanitary sewer, gas, water and telephone. Maps of the existing utilities are located in Appendix I. The following paragraphs summarize the utility presence in the study area.

The overhead power transmission lines do not continue for the entire length of the study area but turn west down Robbie Drive, just south of the Tractor Supply Company. The remaining utilities are found throughout the study area. It appears that power, telephone and water are located along both sides of the roadway. A 6-inch water main runs along the left (west) side of the roadway and a 12-inch water main is located on the right (east) side of the roadway. Both of these mains extend to High School Drive. At High School Drive, according to GIS data, the 12-inch water main stops and the 6-inch main transitions to a 2.25-inch main and continues northward through the end of the project.

A 10-inch sanitary sewer main is located on the west side of US-411 until just north of Verbena Drive where it crosses via a 4-inch force main to the east side of US-411. The force main continues north along
US-411 and then navigates east down High School Drive. It is assumed that homes located north of High School Drive are on septic tanks and not connected to the sewer.

Beginning at CR-10 there is a gas main that runs along both sides of US-411. These two mains continue north until Robbie Drive where the main on the east side crosses to the west side and continues through the end of the study area. The gas mains range from 2-inch diameter to 6-inch diameter. Widening of US-411 could cause potential relocation of some if not all of the in-place utilities.

4.0 Purpose and Need for Improvements
Within the study area US-411 is a two-lane urban minor arterial that connects the City of Moody to interstate 20 on the south and rural communities to the north. The land surrounding US-411 has transitioned in recent years from undeveloped parcels and farms to residential subdivisions. The increasing residential development has led to traffic congestion along the highway, particularly at intersections. The localized congestion at intersections causes excessive queuing along the highway during peak hours of traffic flow. Crash data further substantiates the presence and problem associated with local congestion through data that shows greater than normal rear-end crashes occurring on US-411. As the corridor continues to develop, localized congestion is expected to increase with greater traffic volumes. There is a need to improve traffic flow along US-411 to reduce stopped delay and decrease the incidence of rear-end collisions.

5.0 Improvement Alternatives
The goal for incorporating improvements into the study area is to reduce the amount of localized congestion that is currently experienced within the study corridor. This section of the report details different build options that strive to achieve this goal. For the purposes of this study each option is listed separately; however, the County could select to implement all the options or select one option to implement depending on available funding sources. The improvement options have been listed in order of implementation priority based on the amount of traffic volume, the number of crashes, and field observations. The feasibility of construction including acquiring right-of-way was also evaluated during the prioritization process. Due to the large utility presence within the study area, all of the improvement options except for Improvement 7 include costs for utility relocation. The costs shown for each alternative assume local funds would be used. Additional cost information is provided in Section 5.15.

The capacity analysis reveals that, although the segments of the corridor are expected to continue functioning at acceptable levels of service, several intersections are experiencing significant delays that are projected to worsen under future no-build conditions. The poor intersection operations detract from the overall efficiency of the US-411 corridor within the project limits. For this reason the improvement options listed below are primarily associated with intersection improvements. Concept drawings for the below listed improvements 1 through 11 are shown in Appendix J and concept drawings for Improvement 12 is shown in Appendix K.

5.1 No Build Option
The No Build Option assumes no improvements are constructed. This option offers no relief of localized congestion. Levels of service anticipated for future no-build conditions are shown on Tables 2, 3, and 4.
5.2 Improvement 1 – Eastbound Right Turn Lane on Park Avenue
The first two improvement options are located at the CR-10 (Park Avenue) intersection. The eastbound approach of this intersection has been assigned the highest priority based on excessive queue lengths and high volumes of vehicles turning right. For this reason, Improvement 1 includes the addition of an eastbound right turn lane on Park Avenue. Based on the future capacity analysis results, the addition of this turn lane would significantly reduce queue lengths and improve the functionality of the intersection approach. The inclusion of a right turn lane onto southbound US-411 would allow motorists the opportunity to access US-411 southbound earlier without having to wait for through traffic to move through the intersection. Based on the available GIS data, there appears to be enough existing right-of-way to install this turn lane. The right turn lane includes 265 feet of full-width storage and 100 feet of taper. Based on future volumes, the addition of the right turn lane would improve the intersection approach from LOS F to LOS C during the AM peak period and LOS E to LOS D during the PM peak period.

The cost associated with Improvement 1 is estimated at $164,000.

5.3 Improvement 2 – Westbound Left Turn Lane on Park Avenue
The second improvement option includes the addition of a westbound left turn lane on Park Avenue. Adding this dedicated left turn lane moves motorists out of the through lane and provides westbound traffic the opportunity to clear the intersection more quickly. Both of these actions reduce the delay experienced on this intersection approach and, based on future volumes, would improve the intersection approach level of service from LOS F to LOS D during the AM peak period and from LOS F to LOS C during the PM peak period. Based on the available GIS data, there appears to be enough existing right-of-way to install this turn lane. The dimensions of the turn lane include a 225 foot full-width storage area and 100 feet of taper. A signal modification to allow for a westbound left turn phase will also be required for this improvement.

Currently, eastbound motorists experience a small lane shift as they cross through the intersection. Installing a left turn lane on westbound Park Avenue will increase this shift; however, effort should be made during the design phase to limit the amount of shift which could include additional improvements on the west side of the intersection. It should also be noted that the top of the in-place inlet located in the northeast quadrant of the intersection is broken. The cost to replace this inlet and storm pipe associated with the replacement has been included in the cost estimate for Improvement 2. A picture of the broken inlet is located in Appendix A.

The cost associated with Improvement 2 is estimated at $230,000.

5.4 Improvement 3 – Southbound Left Turn Lane on US-411 at Kerr Road
Improvement 3 is located at the northern terminus of the study area and includes a 530 foot left turn lane on US-411 southbound. Long queue lengths due to motorists waiting to turn left onto Kerr Road were noted during field observations. This left turn movement can be attributed to two objectives – Kerr Road can be used as an alternate entrance to the three schools located on High School Drive; secondly, Kerr Road connects to Kelly Creek Road which accesses Interstate 20 and bypasses US-411. This Kelly Creek Road route could be enticing for motorists wishing to travel east on Interstate 20.

The addition of a left turn lane would allow left-turning motorists a refuge while waiting to turn and allow through traffic the opportunity to continue on US-411, thus reducing delays and improving the overall traffic operations of the intersection. Exclusive turn lanes at unsignalized intersections also help to reduce
the likelihood of rear-end crashes by removing stopped/slowed vehicles from through traffic. The 530 foot turn lane would consist of 430 feet of full-width storage and 100 feet of taper. Based on GIS data the existing right-of-way along US-411 in this area appears to be approximately 95 feet. For the purposes of this report it is assumed that US-411 would be widened by six feet on each side of the roadway to allow for a 12 foot left turn lane.

The cost associated with Improvement 3 is estimated at $635,000.

5.5 Improvement 4 – Northbound Right Turn Lane on US-411 at Kerr Road

Improvement 4 is also located at the intersection of US-411 and Kerr Road. This improvement involves the installation of a 470 foot northbound right turn lane onto Kerr Road. By separating stopped/slowed turning vehicles from through traffic, exclusive right-turn lanes help to reduce intersection delays, thus improving the overall traffic operations for all intersection movements. Additionally, exclusive right-turn lanes in this type application help to reduce the likelihood of rear-end crashes. The 470 foot turn lane would consist of 370 feet of full-width storage and 100 feet of taper. Based on right-of-way widths determined from GIS data it is assumed that the right turn lane could be installed without having to acquire any additional right-of-way. However, if Improvement 4 is installed along with Improvement 3, additional right-of-way will most likely need to be acquired on the eastern side of US-411. Right-of-way costs are not included the estimated cost of the improvement.

The cost associated with Improvement 4 is estimated at $204,000.

5.6 Improvement 5 – Northbound Right Turn Lane on US-411 at Park Avenue

Improvement 5 includes the addition of a northbound right turn lane on US-411 at Park Avenue. The inclusion of a northbound right turn lane onto Park Avenue would allow motorists the opportunity to access Park Avenue sooner without having to wait for through traffic to move through the intersection. Based on future volumes, the addition of this right turn lane would improve the intersection approach level of service from LOS D to LOS C during the PM peak period. The dimensions of the turn lane include a 300 foot full-width storage area and 100 feet of taper.

According to the available GIS data, existing right-of-way is limited in this area and the construction of the right turn lane would impact the adjacent retail property. Impacts would include modification to in-place storm drainage, utility poles, lighting, and the loss of eight parking spaces. These construction obstacles lower the priority of this improvement. Right-of-way acquisition is assumed in the cost estimate.

The cost associated with Improvement 5 is estimated at $735,000.

5.7 Improvement 6 – Southbound Right Turn Lane on US-411 at Park Avenue

Improvement 6 is located on the southbound approach of the intersection of US-411 with Park Avenue and includes the addition of a southbound right turn lane. The turn lane would begin at Church Street and continue to the Park Avenue intersection. The addition of a right turn lane in this area would allow motorists turning right onto Park Avenue to bypass the through traffic continuing on US-411 southbound. Shifting the right turns out of the through lanes provides more efficient movement for the intersection and improves the intersection approach level of service from LOS E to LOS D during the AM peak hour. According to the available GIS data, existing right-of-way is limited in this area and the construction of the right turn lane would impact the adjacent retail property. Due to elevation changes in the area of the
recommended turn lane it is likely that there would be impacts to the adjoining parking lot. Impacts to in-place utilities can also be expected. These construction obstacles lower the priority of this improvement. Right-of-way acquisition is assumed in the cost estimate.

The cost associated with Improvement 6 is estimated at $670,000.

### 5.8 Improvement 7 – Northbound Right Turn Lane on US-411 at Verbena Drive

The intersection of US-411 and Verbena Drive/Washington Drive is the location of Improvement 7. Verbena Drive accesses one of the newer neighborhoods located within the study area. The development is not complete and construction of new homes is ongoing. Based on traffic volumes and distribution, Verbena Drive would benefit from the addition of a northbound right turn lane on US-411. A gas station is also located at this intersection. A right turn lane would move motorists turning right into the gas station or onto Verbena Drive out of the through traffic lane and reduce the risk of rear-end crashes. Additionally, it would help to reduce intersection delay due to the right-turning vehicles. Observations during the field review indicate that previously installed pavement could be striped to allow for a right turn lane with 185 feet of full-width storage and a 250 foot taper length. These dimensions reflect the dimensions of the in-place pavement. Cost for this improvement would be minimal compared to other improvement options listed in this report.

The cost associated with Improvement 7 is estimated at $34,000.

### 5.9 Improvement 8 – Northbound Left Turn Lane on US-411 at Lake Joyce Road

Improvement 8 involves widening US-411 an assumed six feet on either side for the addition of a northbound left turn lane onto Lake Joyce Road. A left turn lane separates motorists making the left-turn movement from the US-411 northbound through traffic, allowing the northbound traffic to flow freely and alleviate the localized congestion being experienced in this area. The turn lane should consist of 325 feet of full-width storage and 100 feet of taper. It appears, according to GIS data, that there may be enough right-of-way to install this improvement. It is possible, however, that due to the fill depths the addition of the turn lane may exceed the present right-of-way. For this reason, right-of-way acquisition is assumed in the cost estimate.

The cost associated with Improvement 8 is estimated at $1,070,000.

### 5.10 Improvement 9 – Northbound Left Turn Lane on US-411 at Washington Drive

Improvement 9 is located at the intersection of US-411 and Washington Drive/Verbena Drive. Washington Drive accesses a large neighborhood. Adding a 425 foot northbound left turn lane on US-411 would reduce intersection delays and improve the operation of the intersection. The improvement to safety by reducing the likelihood of rear-end crashes has been documented in previous sections. The 425 foot left-turn lane would consist of 325 feet of full-width storage and 100 feet of taper. GIS information indicates that there is enough right-of-way to install the left turn lane. Also, it appears that Improvement 9 and Improvement 7 could be installed without acquiring additional right-of-way.

The cost associated with Improvement 9 is estimated at $313,000.
5.11 Improvement 10 – Southbound Right Turn Lane on US-411 at James Taylor Road

Improvement 10 includes adding a 425 foot southbound right turn lane on US-411 at James Taylor Road. Like all of the previously described improvements, a right turn lane removes motorists making this movement out of the through lane and allows US-411 southbound traffic to flow freely, improving the intersection from both an operational and safety standpoint. The 425 foot turn lane would consist of 325 feet of full-width storage and 100 feet of taper. Adding the right turn lane should not require any additional right-of-way based on GIS data.

The cost associated with Improvement 10 is estimated at $160,000.

5.12 Improvement 11 – Westbound Right Turn Lane on Kerr Road

Improvement 11 includes installation of a right turn lane on westbound Kerr Road. A right-turn lane on the side street would allow right-turning vehicles to bypass vehicles waiting for an acceptable gap to make a left-turn onto US-411 and thus reduce the overall delay associated with that movement. The turn lane would consist of 125 feet of full-width storage and 100 feet of taper. According to GIS information, the installation of this turn lane will most likely require either additional right-of-way or a temporary construction easement which increases the cost of construction.

The cost associated with Improvement 11 is estimated at $206,000.

5.13 Improvement 12 – US-411 Widening

Widening the current 2-lane US-411 to a 5-lane section has been included as an improvement option. However, the priority for this option is low considering the fact that future traffic volumes will experience acceptable levels of service on the roadway segments themselves. A typical section for the potential widening is shown in Appendix K. The widening would tie to the existing US-411 5-lane section and continue north to Kerr Road before tapering back to a 2-lane section. The figures found in Appendix K show what the extents of the widening could be. The color yellow is used to show the limits of construction should widening be performed to the west of the roadway only. In contrast, the color red is used to show construction limits for widening all to the east. It is most likely that the widening would occur to both the west and the east in a form of symmetrical widening so these colors offer a view of greatest potential impact on one side or the other. The actual impact would ultimately be less than what is shown. A future segment level of service comparison between no-build conditions and a widened corridor is shown in Table 5.

<table>
<thead>
<tr>
<th>Segment</th>
<th>Approach</th>
<th>Future No-Build AM Peak</th>
<th>Future No-Build PM Peak</th>
<th>Future 5-Lane AM Peak</th>
<th>Future 5-Lane PM Peak</th>
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<td>SB US-411</td>
<td>D</td>
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<td>A</td>
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<td>US-411: High School Drive to Kerr Road</td>
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<td>D</td>
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<tr>
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<td>SB US-411</td>
<td>D</td>
<td>D</td>
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</table>

The cost associated with Improvement 12 is estimated at $13,283,000. Costs for Improvement 12 are estimated from the 2009 ALDOT Estimator Chart.
5.14 Additional Recommendations

In addition to the previously mentioned improvements the following recommendations are offered.

- Maintain the officers directing traffic at school intersections.
- Conduct a school circulation study for the three schools located on High School Drive – it could be that the traffic operations within the school property are not functioning efficiently and are affecting traffic on US-411.
- The County should consider requiring traffic impact studies for all future developments. In conformance with the Alabama Department of Transportation’s Access Management Manual, any development that ties to a state roadway and generates more than 100 total vehicle trips is required to conduct a traffic impact study. The Access Management Manual is accessible via ALDOT’s website. Chapter 3, Traffic Impact Study Requirements, of the ALDOT Access Management Manual is included in Appendix L of this report. This chapter discusses when a Traffic Impact Study is required and what criteria should be evaluated and included in the Study. Also included in Appendix M is a sample traffic impact study ordinance developed by the City of Gulf Shores, Alabama.
- Turn lanes along Washington Drive and Verbena Drive may be needed as more properties develop in the adjacent neighborhoods. The developer should be required to perform a traffic impact study. If the study finds that turn lanes are warranted, the developer should be required to install them.
- Replace the inlet top in the northeast quadrant of the US-411/CR-10 (Park Avenue) intersection.
- During the field review it was noted that a historic marker located in the northeast quadrant of the US-411/CR-10 (Park Avenue) intersection had been knocked down. This historic marker should be reset.
5.15 Project Priority Rankings

Table 6 summarizes the descriptions of the various improvements and their estimated cost. Costs shown in Table 6 include estimates for local funding and federal funding. The major difference between local and federal funding is the costs associated with construction engineering and inspection (CE&I) and ALDOT’s indirect costs. If federal funds are pursued CE&I costs and ALDOT’s indirect costs are 15% and 10%, respectively, of the overall construction cost. Typically when seeking federal money, the project sponsor is responsible for 20% of the cost; however, this percentage can change depending on funding category and agreement. Detailed estimates are provided in Appendix M. The pavement build-up used in estimating the cost of each improvement is assumed. A geotechnical report including pavement cores and pavement recommendations should be performed during design.

<table>
<thead>
<tr>
<th>Priority Ranking</th>
<th>Improvement Description</th>
<th>Local Funds</th>
<th>Federal Funds</th>
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<tr>
<td>1</td>
<td>Eastbound Right Turn Lane on Park Avenue</td>
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<td>2</td>
<td>Westbound Left Turn Lane on Park Avenue</td>
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<td>Southbound Left Turn Lane on US-411 at Kerr Road</td>
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<td>US-411 Widening</td>
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6.0 Stakeholder Involvement

A project kickoff meeting was conducted with St. Clair County and the RPCGB. Discussions during this meeting included finalizing areas of focus along the corridor and identifying what problems are currently being experienced by motorists. Following field observations, data collection, and documentation of existing conditions, a technical memorandum was prepared and provided to the County and the RPCGB. Per their request a summary of this memorandum was prepared and provided to the County for their e-mail distribution to stakeholders.

A stakeholder meeting was held on January 28, 2015. The minutes from this meeting and the project kickoff meeting are provided in Appendix N. During the stakeholder meeting the tasks performed were discussed and the improvement options were presented. Part of the meeting included discussion about widening US-411, improvement option 12. The RPCGB will add this widening project to the “Visionary Plan” which will updated in the fall of 2015 and approved by the Metropolitan Planning Organization. The Visionary Plan is a fiscally unconstrained plan and inclusion in the Visionary Plan is the next step toward future inclusion of a full widening project for US-411 in the RPCGB’s fiscally constrained plan if the County and ALDOT decide to pursue a project.
7.0 Next Steps
The purpose of this study was to determine the feasibility of potential improvements to the US-411 corridor between CR-10 and Kerr Road. If the County chooses to move forward with implementing any or some of the build options and would like to pursue Federal funding, the next step would be to request inclusion of a project in the Birmingham Regional Transportation Improvement Plan (TIP). The chart in figure 7 shows the project request order. Every four years the RPCGB receives funding requests from project sponsors. Requests for new projects will begin again in 2015 for the 2016-2019 fiscal years TIP. Appendix O provides the project submittal instructions that were issued in 2011. An example project application is also included in Appendix O.

Figure 7: Project Request Order

Once funds are in place for the project an environmental document will need to be prepared. The environmental document must include technical studies and public involvement outreach necessary to comply with procedures of the National Environmental Policy Act (NEPA). Once the environmental study has been completed, design would be finalized, followed by construction. Utility coordination including identification of relocations would be performed during the design phase of the project and prior to construction. If it is determined that additional right-of-way is required, acquisition would be conducted prior to construction.

The County may also elect to pursue projects described in this study without federal funding. However, an Alabama Department of Transportation permit for the improvements would have to be obtained for any work to be constructed in ALDOT right-of-way.
Appendix A

Study Area Photos
US-411 at CR-10 (Park Avenue)

Northbound View

Southbound View
US-411 at CR-10 (Park Avenue)

Eastbound View

Westbound View
US-411 at CR-10 (Park Avenue)
In-Place Inlet in Northeast Quadrant

Historic Route Marker in Northeast quadrant
Intersection of US-411 and Washington Drive/Verbena Drive

Northbound View

Eastbound View
Intersection of US-411 and James Taylor Road

Northbound View

Southbound View
Intersection of US-411 and James Taylor Road

Westbound View
Intersection of US-411 and Lake Joyce Road

Northbound View

Southbound View 1
Intersection of US-411 and Lake Joyce Road

Southbound View 2

Westbound View
Intersection of US-411 and Kerr Road

Northbound View

Westbound View
Appendix B

Existing Traffic Volumes
Existing 24-Hour Weekday Traffic Volumes (2014)

US-411 Corridor Study
Moody, Alabama
Existing AM/PM Peak Hour Volumes (2014)

**AM (PM) Turn Movement Volumes**

**US-411 Corridor Study**
Moody, Alabama
Table: Existing AM/PM Peak Hour Volumes (2014)

<table>
<thead>
<tr>
<th>AM (School)</th>
<th>PM (School)</th>
</tr>
</thead>
<tbody>
<tr>
<td>692 (393) (650)</td>
<td>39 (39) (6)</td>
</tr>
<tr>
<td>13 (2) 6 (25)</td>
<td>111 (381) 11</td>
</tr>
</tbody>
</table>

Legend:
- Blue arrows indicate traffic flow.
- Red boxes indicate project locations.
US-411 at Lake Joyce Rd and Kerr Rd

Existing AM/PM Peak Hour Volumes (2014)

AM (PM) Turn Movement Volumes

US-411 Corridor Study
Moody, Alabama
Appendix C

Level of Service Description
Levels of Service
Signalized Intersections

Level of service criteria for signalized intersections is defined in terms of delay. Delay is a measure of driver discomfort, frustration, fuel consumption, and lost travel time. Specifically, level-of-service criteria are stated in terms of the average stopped delay per vehicle for a 15-minute analysis period.

**Level of service A** describes operations with very low delay, less than 10 seconds per vehicle. This occurs when progression is extremely favorable, and most vehicles arrive during the green phase. Most vehicles do not stop at all. Short cycle lengths may also contribute to low delay.

**Level of service B** describes operations with delay in the range of > 10 to 20 seconds per vehicle. This generally occurs with good progression and/or short cycle lengths. More vehicles stop than for LOS A, causing higher levels of average delay.

**Level of service C** describes operations with delay in the range of > 20 to 35 seconds per vehicle. These higher delays may result from fair progression and/or longer cycle lengths. Individual cycle failures may begin to appear in this level. The number of vehicles stopping is significant at this level, although many still pass through the intersection without stopping.

**Level of service D** describes operations with delay in the range of > 35 to 55 seconds per vehicle. At level D, the influence of congestion becomes more noticeable. Longer delays may result from some combination of unfavorable progression, long cycle lengths, or high vehicle/capacity ratios. Many vehicles stop, and the proportion of vehicles not stopping declines. Individual cycle failures are noticeable.

**Level of service E** describes operations with delay in the range of > 55 to 80 seconds per vehicle. This is considered to be the limit of acceptable delay. These high delay values generally indicate poor progression, long cycle lengths, and high vehicle/capacity ratios. Individual cycle failures are frequent occurrences.

**Level of service F** describes operations with delay in excess of 80 seconds per vehicle. This is considered to be unacceptable to most drivers. This condition often occurs with over saturation, i.e., when arrival flow rates exceed the capacity of the intersection. Poor progression and long cycle lengths may also be major contributing causes to such delay levels.
Levels of Service
Unsignalized Intersections

Level of service criteria for unsignalized intersections is stated in terms of average control delay. Control delay is defined as the total elapsed time from a vehicle joining the queue until its departure from the stopped position at the head of the queue. The criteria for each level of service are cited in the table below.

<table>
<thead>
<tr>
<th>Level of Service</th>
<th>Average Control Delay (seconds/vehicle)</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>0 - 10</td>
</tr>
<tr>
<td>B</td>
<td>&gt; 10 – 15</td>
</tr>
<tr>
<td>C</td>
<td>&gt; 15 – 25</td>
</tr>
<tr>
<td>D</td>
<td>&gt; 25 – 35</td>
</tr>
<tr>
<td>E</td>
<td>&gt; 35 – 50</td>
</tr>
<tr>
<td>F</td>
<td>&gt; 50</td>
</tr>
</tbody>
</table>

Levels of Service
Daily Volume

The criteria for daily level of service are derived from ALDOT defined roadway capacities for urban 2-lane and 3-lane arterials and are cited in the table below.

<table>
<thead>
<tr>
<th>Level of Service</th>
<th>Daily Service Volume</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2-lane</td>
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<tr>
<td>A</td>
<td>6,500</td>
</tr>
<tr>
<td>B</td>
<td>9,400</td>
</tr>
<tr>
<td>C</td>
<td>11,600</td>
</tr>
<tr>
<td>D</td>
<td>14,000</td>
</tr>
<tr>
<td>E</td>
<td>18,700</td>
</tr>
<tr>
<td>F</td>
<td>&gt; 18,700</td>
</tr>
</tbody>
</table>
Appendix D

Future Traffic Volumes
US-411 at Lake Joyce Rd and Kerr Rd

Future No-Build AM/PM Peak Hour Volumes (2034)

AM (PM) Turn Movement Volumes

US-411 Corridor Study
Moody, Alabama
Appendix E

Field Observations
General Notes:

- Lots of properties for sale along the corridor
- Terrain is level for the most part
- **40 mph** in SB direction and **50 mph** in NB direction; signs located just south of Avalon
- 35 mph in vicinity of High School Drive during school times
- High School, Jr. High School, and Middle School are all located on High School Drive
- Kerr connects back to High School Drive
- The only sight distance issue at the 6 study intersections is at Verbena Drive looking right (northeast quadrant). No other sight distance issues were observed at the other intersections.
- Avalon Drive and Washington Drive connect in the neighborhood; form a loop
- World Victory Church future site is to the north of Robbie Drive on west side of US-411
- Speed data shows that most vehicles are traveling in the 50-55 mph range even during peaks, but the data is for both directions combined.
- Kerr Road is a cut-through to/from I-20.

High School Drive:

- 1 bus turned right into school 7:13
- Cars turning left out of school were having to wait a minute or so around 7:15; no more than 2 cars queued at a time
- Cars able to turn left into school with little or no wait (7:19)
- Buses at 7:17 and 7:19
- 6 cars and 1 bus in left-turn queue turning out of school at 7:20
- 5 cars and 2 buses in left-turn queue turning out of school at 7:21 – reached past Valley Haven Circle
- 7 cars and 2 buses in left-turn queue turning out of school – 7:25
- Officer came at 7:25 – NB and SB US-411 would queue briefly while he stopped them but were quickly released
- 4 vehicles in SB left-turn queue 7:28
- 5 in SB left-turn queue at 7:40 but didn’t wait long before they were waved through
- NB US-411 queued to first mailbox at 7:40 but kept moving
- High School Drive still queued up to past Valley Haven Circle around 7:40 but was cleared quickly
- SB left-turn queued **7 vehicles at 7:45** – must have been longer than left-turn lane
- The queue trying to get into the school backed up almost to US-411 at 7:46
- 7:48 – US-411 SB queued to Valley Bend Lane
- 7:50 – US-411 NB right-turn queued to 2"nd power pole (360 ft) – this was due to the cars being queued up from the high school, down High School Drive, and down US-411. It appeared that the hold-up was at the high school.
• 7:52 – US-411 NB right-turn queued to past 3rd mailbox (mailbox was as far as I could see; the right-turn lane begins around the mailbox) – approx. 490 ft
• 7:52 – 8 cars in left-turn queue turning out of school
• 7:54 – traffic began to die down
• Police officer left around 8:00

Lake Joyce Rd

• 3 cars queued on Lake Joyce at 7:56
• Steady stream of cars on US-411 SB at 7:58

Verbena Drive

• Sight distance good to the left, but seems restricted to the right. The actual distance is 690 ft, which is nearly to Jones Stephens Drive. It is restricted by a power pole on the east side of US-411 and a vertical/horizontal curve.
Appendix F
Crash Data Summary
### Crash Data (2011-2013)

<table>
<thead>
<tr>
<th>Node</th>
<th>Intersection</th>
<th>Total Crashes</th>
<th>Rear-end Crashes</th>
<th>Type &quot;A&quot; Injuries</th>
<th>Type &quot;B&quot; Injuries</th>
<th>Type &quot;C&quot; Injuries</th>
<th>PDO</th>
</tr>
</thead>
<tbody>
<tr>
<td>97</td>
<td>US-411 @ Park Ave</td>
<td>39</td>
<td>28</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>33</td>
</tr>
<tr>
<td>98</td>
<td>US-411 @ Church St</td>
<td>2</td>
<td>0</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>668</td>
<td>US-411 @ Avalon Dr</td>
<td>13</td>
<td>12</td>
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<td>0</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>677</td>
<td>US-411 @ Washington Dr/Verbena Dr</td>
<td>13</td>
<td>10</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>7912</td>
<td>US-411 @ Robbie Dr</td>
<td>7</td>
<td>7</td>
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<td>0</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>7830</td>
<td>US-411 @ James Taylor Rd</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>412</td>
<td>US-411 @ Harmon Dr</td>
<td>2</td>
<td>2</td>
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<td>2</td>
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<tr>
<td>215</td>
<td>US-411 @ High School Dr</td>
<td>9</td>
<td>6</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>9</td>
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<tr>
<td>213</td>
<td>US-411 @ Valley Bend Ln</td>
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<td>0</td>
<td>0</td>
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<td>0</td>
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<tr>
<td>7837</td>
<td>US-411 @ Lake Joyce Rd</td>
<td>4</td>
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<td>1</td>
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<td>0</td>
<td>2</td>
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<tr>
<td>437</td>
<td>US-411 @ Morris Dr</td>
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<td>5</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>7838</td>
<td>US-411 @ Kerr Rd</td>
<td>9</td>
<td>5</td>
<td>4</td>
<td>0</td>
<td>0</td>
<td>6</td>
</tr>
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</table>

**Totals:** 101 73 22 0 2 1 3 0 1 9 8 83

*1 DUI *1 DUI

<table>
<thead>
<tr>
<th>Node A</th>
<th>Node B</th>
<th>Roadway</th>
<th>Segment Description</th>
<th>Total Crashes</th>
<th>Rear-end Crashes</th>
<th>Type &quot;A&quot; Injuries</th>
<th>Type &quot;B&quot; Injuries</th>
<th>Type &quot;C&quot; Injuries</th>
<th>PDO</th>
</tr>
</thead>
<tbody>
<tr>
<td>432</td>
<td>97</td>
<td>US-411</td>
<td>Ashley Dr to Park Ave</td>
<td>38</td>
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<td>2</td>
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<td>35</td>
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<tr>
<td>97</td>
<td>98</td>
<td>US-411</td>
<td>Park Ave to Church St</td>
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<td>2</td>
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<tr>
<td>98</td>
<td>98</td>
<td>US-411</td>
<td>Church St to Avalon Dr</td>
<td>17</td>
<td>15</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>668</td>
<td>677</td>
<td>US-411</td>
<td>Avalon Dr to Washington Dr/Verbena Dr</td>
<td>10</td>
<td>9</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>677</td>
<td>7912</td>
<td>US-411</td>
<td>Washington Dr/Verbena Dr to Robbie Dr</td>
<td>10</td>
<td>6</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>9</td>
</tr>
<tr>
<td>7912</td>
<td>7830</td>
<td>US-411</td>
<td>Robbie Dr to James Taylor Rd</td>
<td>12</td>
<td>8</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>7830</td>
<td>412</td>
<td>US-411</td>
<td>James Taylor Rd to Harmon Dr</td>
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<td>3</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>412</td>
<td>215</td>
<td>US-411</td>
<td>Harmon Dr to High School Dr</td>
<td>5</td>
<td>4</td>
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<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>213</td>
<td>7837</td>
<td>US-411</td>
<td>Valley Bend Ln to Lake Joyce Rd</td>
<td>5</td>
<td>4</td>
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<td>0</td>
<td>0</td>
<td>0</td>
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<tr>
<td>7837</td>
<td>437</td>
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<td>0</td>
<td>0</td>
</tr>
<tr>
<td>437</td>
<td>7838</td>
<td>US-411</td>
<td>Morris Dr to Kerr Rd</td>
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<tr>
<td>7838</td>
<td>7843</td>
<td>US-411</td>
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<td>5</td>
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</tr>
</tbody>
</table>

**Totals:** 126 68 32 6 4 10 6 2 6 5 10 103

**Notes:**

- Type "A": Incapacitating; transported to hospital
- Type "B": Non-incapacitating; transported to hospital
- Type "C": Not visible with pain, or unknown injury; may or may not be transported to hospital

**Notes:**

- **Two people were killed as a result of this head-on collision.**
- **This fatal crash was a head-on collision that occurred as the result of an intoxicated driver.**
- **Two people were killed as a result of this head-on collision.**
Appendix G

USFW Concurrence Letter
May 19, 2014

Mr. William J. Pearson
Field Supervisor
U.S. Fish and Wildlife Service
1208-B Main Street
Daphne, AL 36526

Subject: USFWS Species Request
US-411 from CR-10 (Park Ave.) to Kerr Road Corridor Study
Regional Planning Commission of Greater Birmingham
St. Clair County
Moody, Alabama

Dear Mr. Pearson:

2014 - TA - 0578

St. Clair County in conjunction with the Regional Planning Commission of Greater Birmingham is evaluating the feasibility of potential improvements to the US-411 from CR-10 (Park Ave.) to Kerr Road Corridor. The potential improvements could impact the area surrounding the existing US-411 roadway from CR-10 (Park Ave.) extending North to Kerr Road.

The intent of this letter is to request your assistance in identifying threatened and endangered species that may occur in the vicinity of the project area. The study area is shown on the enclosed map.

Please let me know if you have any questions or need additional information.

Sincerely,

Jennifer G. Brown, PE
Project Engineer
Alabama Reg. #32726

Attachment

U.S. Fish and Wildlife Service
1208-B Main Street – Daphne, Alabama 36526
Phone: 251-441-5181 Fax: 251-441-6222

No endangered or threatened species or critical habitat are known to occur in the project area. As described, the project will have no significant impact on fish and wildlife resources. IF PROJECT DESIGN CHANGES ARE MADE, PLEASE SUBMIT NEW PLANS FOR REVIEW.

William J. Pearson, Field Supervisor 
6-2-2014
Appendix H
Quad Map
Appendix I
Utility Maps
Appendix J

Improvement Options 1-11 Figures
Improvement 1: US-411 at Park Ave
Eastbound Right Turn Lane on Park Avenue

U.S. Highway 411 Corridor Study
Moody, St. Clair County, Alabama
Improvement 2: US-411 at Park Ave
Westbound Left Turn Lane on Park Avenue

U.S. Highway 411 Corridor Study
Moody, St. Clair County, Alabama
Improvement 3: US-411 at Kerr Rd

Southbound Left Turn Lane on US-411

--- Right-Of-Way

Existing Raised Island

Proposed New Pavement

Source: Esri, DigitalGlobe, GeoEye, i-cubed, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

Moody, St. Clair County, Alabama
Improvement 5: US-411 at Park Ave
Northbound Right Turn Lane on US-411

U.S. Highway 411 Corridor Study
Moody, St. Clair County, Alabama
U.S. Highway 411 Corridor Study
Moody, St. Clair County, Alabama

Improvement 6: US-411 at Park Ave
Southbound Right Turn Lane on US-411

1 in = 100 ft

- Right-Of-Way
- Proposed New Pavement
- Existing Raised Island

Source: Esri, DigitalGlobe, GeoEye, i-cubed, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community
Improvement 9: US-411 at Washington/Verbena Dr

Moody, St. Clair County, Alabama

Northbound Left Turn Lane on US-411

High Quality Fuel
Improvement 10: US-411 at James Taylor Rd
Southbound Right Turn Lane on US-411

1 in = 100 ft

Right-Of-Way
Existing Raised Island
Proposed New Pavement

U.S. Highway 411 Corridor Study
Moody, St. Clair County, Alabama
Appendix K
Improvement Option 12 Figures
And Typical Section
Potential Widening Extents

- Existing Right-Of-Way
- West Side Extent w/Asymmetrical Widening
- East Side Extent w/Asymmetrical Widening

Improvement 12: US-411 Widening

U.S. Highway 411 Corridor Study
Moody, St. Clair County, Alabama
Potential Widening Extents

- Existing Right-Of-Way
- West Side Extent w/Asymmetrical Widening
- East Side Extent w/Asymmetrical Widening

U.S. Highway 411 Corridor Study
Moody, St. Clair County, Alabama
Appendix L

Chapter 3 from ALDOT’s Access Management Manual and

Sample Traffic Impact Study Ordinance
Chapter 3
Traffic Impact Study Requirements

The ALDOT Access Management Manual covers requirements for traffic impact studies for proposed developments/conditions that may impact traffic operations on the State maintained roadway network.

3.1 General Information

Traffic impact studies are often required by the Alabama Department of Transportation (ALDOT) to adequately assess the impact of a proposed development on the existing and/or planned highway system. The applicant shall have the primary responsibility for assessing the traffic impacts associated with a proposed development, with ALDOT serving in a review and approval capacity.

The traffic impact study shall be the responsibility of the applicant and shall be prepared and sealed by an engineer licensed in Alabama who has expertise in traffic impact studies and transportation planning. The applicant shall submit the traffic impact study to the appropriate ALDOT District Manager, unless otherwise instructed by ALDOT personnel. Upon receipt of a traffic impact study, ALDOT will review the study data (sources, methods, and findings) and will respond with written comments. ALDOT reserves the right to seek additional information or clarification on the traffic study or commission its own independent study or review. ALDOT must approve the traffic impact study before a permit application will be approved.

Applicants and their traffic engineering consultant shall have a pre-scoping meeting or, at a minimum, a conference call to discuss traffic impact study requirements with ALDOT prior to commencing the study effort. Items that should be discussed include:

- the extent of the proposed projects (including initial, intermediate, and final phases);
- definition of the study area;
- directional distribution of traffic;
- critical analysis requirements;
- development horizon year;
- crash history (safety audit may be required);
- opportunities to implement recommendations from previously conducted safety audits; and
- any other information relevant to the project and traffic impact study.
3.2 When is a Traffic Impact Study Required?

A traffic impact study is encouraged for any development requiring an access permit along any state highway.

A traffic impact study may not be required for developments whose trip generation estimates are less than 100 total (inbound and outbound) peak-hour vehicle trips. A small development generates so little traffic that its impact is not measurable, even on nearby intersections. When a development is projected to generate less than 100 total (inbound and outbound) peak-hour vehicle trips, the applicant shall provide ALDOT with a documentation of the anticipated land uses and associated densities and an accompanying site plan for consideration of waiving the traffic impact study requirement. The method used to calculate the trip generation estimate shall meet the requirements in Section 3.3.

For developments that generate more than 100 total (inbound and outbound) peak-hour vehicle trips, a traffic impact study shall be required. Figure 3.1 presents a decision tree that shows the ALDOT requirements for conducting a Traffic Impact Study. A trip generation estimate memorandum may be required if the land use is atypical or if it cannot easily be derived from Figure 3.1 that the total peak-hour trips from all land uses in a mixed-use development proposal will be fewer than 100 total (inbound and outbound) peak-hour trips.

A traffic impact study is required when conducting a traffic signal warrant analysis as stated in the ALDOT Traffic Signal Timing and Design Manual.*

The need for a traffic impact study is not totally absolved when traffic generation estimates fall below 100 total (inbound and outbound) peak-hour vehicle trips. A traffic impact study may still be required at ALDOT’s discretion.

The following are conditions where ALDOT personnel may require traffic impact studies regardless of development density:

1. Impact to state highway system – Developments that do not directly access the state highway system but will impact the traffic conditions on the existing highway system.

2. Change in land use and/or development density – A change in the land use or development density of a property accessing a previously permitted connection point.

3. Update to previous traffic impact study – Previous traffic impact study that is more than two (2) years old when construction commences on the permitted access point(s) shall be updated. ALDOT may waive this requirement if it can be demonstrated that the conclusions of the original traffic impact study are valid for current conditions.

4. Deficient Conditions – If in the opinion of ALDOT personnel significant operational deficiencies and/or safety concerns exist or would be created as a result of traffic expected to be generated by a development.

5. Currently Congested Areas – Developers/property owners who are proposing developments along congested corridors are strongly recommended to contact ALDOT to discuss traffic impact study requirements and limits.

* To access a copy of the latest version of this document refer to Appendix A
**TYPICAL VALUES** land use type and approximate density expected to generate approximately **50** and **100** total peak hour vehicle trips:

<table>
<thead>
<tr>
<th>LAND USE</th>
<th><strong>50 TRIPS</strong></th>
<th><strong>100 TRIPS</strong></th>
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<tr>
<td>Single Family Home</td>
<td>50 units</td>
<td>100 units</td>
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<tr>
<td>Apartments</td>
<td>80 units</td>
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<td>Condominium/Townhouse</td>
<td>95 units</td>
<td>190 units</td>
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<td>Assisted Living</td>
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<td>Fast Food Restaurant w/ Drive-Thru</td>
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<td>2,000 SF</td>
</tr>
<tr>
<td>High Turnover Sit Down Restaurant</td>
<td>4,500 SF</td>
<td>9,000 SF</td>
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<td>Quality Restaurant</td>
<td>6,500 SF</td>
<td>13,000 SF</td>
</tr>
<tr>
<td>Gas Station w/ Convenience Store</td>
<td>3 fuel pos.</td>
<td>7 fuel pos.</td>
</tr>
<tr>
<td>Bank</td>
<td>2,000 SF</td>
<td>4,000 SF</td>
</tr>
<tr>
<td>General Office</td>
<td>32,500 SF</td>
<td>65,000 SF</td>
</tr>
<tr>
<td>Medical/Dentist Office</td>
<td>14,000 SF</td>
<td>30,000 SF</td>
</tr>
<tr>
<td>Light Industrial/Warehousing</td>
<td>50,000 SF</td>
<td>100,000 SF</td>
</tr>
<tr>
<td>Manufacturing Plant</td>
<td>70,000 SF</td>
<td>135,000 SF</td>
</tr>
<tr>
<td>Hotel/Motel</td>
<td>85 rooms</td>
<td>170 rooms</td>
</tr>
<tr>
<td>Pharmacy w/ Drive-Thru</td>
<td>5,000 SF</td>
<td>10,000 SF</td>
</tr>
<tr>
<td>Free Standing Discount Store</td>
<td>10,000 SF</td>
<td>20,000 SF</td>
</tr>
</tbody>
</table>

* Generally not required, but may be required at the discretion of ALDOT based on local conditions. See Section 4 for complete turn lane analysis procedure.

**Figure 3.1 – ALDOT Traffic Impact Study Requirements Guide**
3.3 Trip Generation Estimate Memorandum Requirements

Trip generation estimates shall be provided in memorandum format and adhere to the following requirements:

- Must be completed, signed, and sealed by an engineer licensed to practice in Alabama
- Must include trip generation estimates compliant with requirements set forth in Section 3.4

Trip generation estimate memorandum shall be submitted to the appropriate ALDOT District Manager for review and concurrence, unless otherwise directed by ALDOT personnel.

3.4 Traffic Impact Study Contents

Specific requirements for each traffic impact study will vary depending on site location and type of development. However, all traffic impact studies shall contain, at a minimum, the information in Figure 3.2.

Figure 3.2 shows a recommended table of contents for a typical Traffic Impact Study with suggested headings and subheadings. The following sections provide details and guidance for each of the sections of the recommended Traffic Impact Study.
Preface

Overview and Executive Summary

Existing Conditions

- Project Study Area
- Existing Geometric Data
- Existing Traffic Counts
  - Hourly Approach Counts
  - Peak Hour Turning Movements
  - Traffic Distribution Summary
- Existing Conditions Analysis

Future Traffic Conditions

- Description of Proposed Development
- Trip Generation Estimate
- Direction Distribution of Development Traffic
- Development Horizon Year
- Background Traffic Growth
- Projected Future Year Traffic Volumes
- Future Signal Warrant Analysis (as applicable)
- Future Traffic Conditions Analysis

Conclusions/Recommendations

Appendices

- A – Proposed Site Layout
- B – Signal Timing Sheets (as applicable)
- C – Traffic Count Data
- D – Level of Service Description
- E – Existing Capacity Analysis
- F – Signal Warrant Analysis (as applicable)
- G – Future Capacity Analysis

Figure 3.2 – Recommended Traffic Impact Study Table of Contents

Preface

Title/Cover Page – The report Title Page shall include:

- **Title of the report** - States the type of study (Traffic Impact Study, etc.).
- **Development name** – Lists the name of the development and the general location of the development (city/town and county located in).
- **Date** – Date that this study/report was created, month and year only.
- **Prepared For** – Name of the firm, entity, or development that this report was prepared for, if applicable.
- **Prepared By** – Name of the firm or entity that produced this report, to include address and phone number. Seal and signature of engineer of record.
Table of Contents – At a minimum, shall include a listing of the main sections of this study and appendices. Should a “List of Tables” and/or “List of Figures” be included, they shall precede the Appendices listing.

Overview and Executive Summary

This section contains an overview of the purpose and a summary of results for the study. The following items shall be included in this section:

Vicinity Map – This is a map of the general area, at a scale of 1” = 2 to 5 miles. This map should clearly show the project/development location in relation to the nearest town/city and the major roadways in and around the development area.

Zoomed Map – The zoomed map shall show where the affected and/or proposed intersections are located with enough detail to locate the intersection(s) and the surrounding, affected roadways/intersections (scale: 1” = ½ mile or less).

Project Description – This is a brief project description describing why this study was required, to include the location, type, and size of the development; roadways adjacent to the development; and the anticipated completion date and/or a schedule of phase completion dates. The location of any proposed intersections on any state highways anticipated because of this development shall be included, giving distances from known/existing intersections. A more detailed map/aerial photo could be used to more clearly locate the areas of concern for this study.

Master Site Plan – This is a scaled site plan that shows all planned construction through ultimate buildout.

Study Summary – This is a concise summary of the results of this study. Briefly state the recommended roadway and intersection improvements.

Resources – This is a list of resources used for this study, to include applicable editions or revisions. This shall also include a list of any programs used in the analysis, along with their versions.

Additional Information – This shall list the supporting agencies and what data were supplied by them along with all other information sources used in the generation of this study. All other background information about this location and project that has not been previously addressed and is required for clarity should be included in this section.

Existing Conditions

This section shall be used to present the current/existing conditions at the development site and the surrounding areas. This shall include, but is not limited to, the following:

Project Study Area

The study area of the project shall be determined by the type of development and the nature of adjacent roadways and intersections. ALDOT has developed criteria to follow when determining the study area for all traffic impact studies. Table 3.1 illustrates the required study area selection criteria.
### TABLE 3.1 ALDOT Criteria to Determine Traffic Impact Study Area Requirements

<table>
<thead>
<tr>
<th>Development Land Use Type</th>
<th>Required Study Area for Traffic Impact Study</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Sample Small Commercial Developments (Outparcel/Small Tract)</strong></td>
<td>Proposed connection point</td>
</tr>
<tr>
<td>Fast food restaurant</td>
<td>-&amp;- All intersections (signalized or unsignalized) within 1,000 ft of proposed connection point</td>
</tr>
<tr>
<td>Convenience store (with or without gas pumps)</td>
<td></td>
</tr>
<tr>
<td>Any small single tract development generating 200 or less trips during any peak hour</td>
<td></td>
</tr>
<tr>
<td><strong>Sample Moderate Developments (Commercial, Industrial &amp; Residential)</strong></td>
<td>Proposed connection point(s)</td>
</tr>
<tr>
<td>Shopping center or commercial/industrial (&lt;70,000 ft² floor space)</td>
<td>-&amp;- All signalized intersections within ¼ mile and all un-signalized intersections within ¼ mile of the site property boundaries</td>
</tr>
<tr>
<td>Residential developments generating less than 500 trips during any peak hour</td>
<td></td>
</tr>
<tr>
<td>Any development generating between 200 and 500 trips during any peak hour</td>
<td></td>
</tr>
<tr>
<td><strong>Sample Large Developments (Commercial, Industrial &amp; Residential)</strong></td>
<td>Proposed connection point(s)</td>
</tr>
<tr>
<td>Shopping center or commercial/industrial (&gt;70,000 ft² floor space)</td>
<td>-&amp;- All signalized and un-signalized intersections within ½ mile of the extreme access points</td>
</tr>
<tr>
<td>Residential developments generating 500 trips or more during any peak hour</td>
<td></td>
</tr>
<tr>
<td>Any development generating more than 500 trips during any peak hour</td>
<td></td>
</tr>
</tbody>
</table>

Note: Any proposed development that has access points within ½ mile of an interchange ramp shall include all ramp intersections as a part of the required study area.

ALDOT reserves the right to require additional intersections (beyond those outlined in Table 3.1) and any access driveways within the applicable study area boundary to be studied as a part of the Traffic Impact Study.

**Existing Geometric Data**

This includes a detailed geometric layout of the required study area roadways and intersections. The following shall be included where applicable:

- number of lanes and/or approach lanes;
- lane and/or approach lane usage (left only, thru/left combined, etc.);
- lane width;
- turn lane length (full width lane and taper);
- channelization dimensions;
- site distance limitations;
- details of any medians and shared left-turn center lanes;
- posted speed limits;
- existing traffic control measures;
- traffic signal timings from study area traffic signals; and
- any other roadway or intersection details that might be pertinent to the study/analysis (driveways, median crossovers, etc.).
Improvements proposed by governmental agencies and/or other developments not associated with this development but will be completed before this development and/or any phase of this development shall be considered as part of the existing conditions of this study. Information about the type of improvement, extent of the improvement, completion schedule, and the responsible agency shall be included for each improvement.

Existing Traffic Counts

- **Hourly Approach Counts** – A minimum of 24 continuous hours of approach counts for each study area roadway will be required. The counts shall be for the same time period, for the same day, for each roadway. These shall be taken on a typical weekday, unaffected by holidays or special events. For proposed intersections, roadway counts shall be taken at the proposed intersection location. **These counts shall be displayed as a summary of the approach counts for each approach, and the raw counts shall be included in the study’s appendices.**

- **Peak Hour Turning Movements** – AM and PM peak hour turning movement count summaries shall be included for each approach of each existing study intersection. It would be preferable to have these counts taken on the same day as the approach counts, but turning movement counts from a different typical day comparable to the approach counts are acceptable as long as they are collected within two weeks of the approach counts. However, these counts shall be normalized with the approach counts, or vice-versa, so that a proper comparison can be made. Justification for the way these counts are normalized shall be provided. Different peak hour counts, other than the AM and PM, may need to be considered depending on the prevailing traffic conditions such as peak flows during national holidays, schools hours, industry working hours, etc. **Raw counts shall be included in the study’s appendices.**

- **Traffic Distribution Summary** – Current traffic distribution for the location and posted speeds of all roadways within the area of the proposed development. A speed study may be required to validate realistic speeds along critical roadways.

- **Age of Traffic Data** - Traffic data for existing conditions analyses shall not be over 24 months old.

Existing Conditions Analysis

An intersection capacity analysis of existing peak hour traffic conditions (as determined during scoping discussions with ALDOT) shall be included for each study area intersection. The capacity analysis should conform to the type of intersection it is (signalized or unsignalized).

**A complete analysis summary from an ALDOT approved traffic analysis methodology shall be included in the study’s appendices.**

If safety issues are identified at the pre-scoping meeting or anytime during the traffic study, the existing conditions analysis shall, at the least, include an analysis of any crash history or other applicable operational conditions.
Existing Conditions Signal Warrant Analysis

A signal warrant analysis summary of any existing intersection requested for signalization shall be required. The signal warrant analysis shall conform to current ALDOT standards for traffic signal warrants, including approach count requirements, turning movement counts, and right turn reduction (where applicable). The Traffic Impact Study shall include any supporting data for the justification of any Warrants met. The completed ALDOT warrant analysis worksheet for each intersection shall be included in the study’s appendices.

A description of ALDOT traffic signal warrant analysis procedures is provided in the ALDOT Traffic Signal Timing and Design Manual*. The “Warrant Analysis Worksheet” is posted on ALDOT’s website under Maintenance Bureau Publications*. All five pages of this worksheet shall be included for each intersection. Reports generated by analysis software are acceptable provided they show the status of all warrants and applicable data verifying a satisfied warrant.

ADT counts (without hourly approaches) shall not be used, nor will they be accepted, for the justification of traffic control signal installation.

An existing traffic control signal that, after warrant analysis and engineering investigation of traffic conditions and physical characteristics, fails to meet the minimum requirements of the Manual on Uniform Traffic Control Devices (MUTCD)* should be removed according to established guidelines for removal of unwarranted traffic signals in the latest currently approved version of the MUTCD.

A complete analysis summary from an ALDOT approved traffic analysis methodology shall be included in the study’s appendices.

Future Traffic Conditions

This section of the study shall show how the existing and proposed traffic will integrate together and its effects on the surrounding areas of the development. The following is a minimum that shall be contained in this section:

Trip Generation Estimates

This section contains a detailed breakdown of the traffic generation for the development in accordance with the ITE Trip Generation Manual*. This breakdown shall show peak hour traffic generation for each affected intersection. The data obtained shall be from “Peak Hour of Adjacent Street Traffic” for the applicable peak hours. Any deviation from this data shall be adequately justified. These generated traffic volumes shall be for the “development” only. Adjacent roadway traffic would only be considered and combined with traffic generated volumes for use in the capacity analysis.

‘Internal/Mixed-Use’ trip generation within the study area shall be clearly defined and justified in the study.

The edition of the Trip Generation Manual shall be the current edition in print at the time of the study.

* To access a copy of the latest version of this document refer to Appendix A
For land uses not included in the *ITE Trip Generation Manual*, specific trip generation characteristics shall be provided.

**Hourly traffic generation estimates for land uses other than Shopping Centers shall be accompanied by the data used to develop the estimates.**

**Directional Distribution of Development Traffic**

Directional distribution of the generated traffic for and by the development in graphic form along with the justification of this distribution shall be included, especially when the development contains more than one driveway/access point.

**Development Horizon Year**

Considering the nature of certain types of developments, it is understood that not all developments are completed/built out and occupied at the same time. Therefore, traffic conditions for developments with multiple construction phases shall be evaluated for future time periods after opening day. Table 3.2 sets out the required analyses parameters (horizon years, study periods) for different types and scales of proposed developments.

**TABLE 3.2. Required Traffic Impact Study Analysis Parameters for Different Development Types**

<table>
<thead>
<tr>
<th>Development Type</th>
<th>Horizon Years/ Required Analysis Scenarios</th>
</tr>
</thead>
<tbody>
<tr>
<td>Single Phase Construction</td>
<td>Existing Conditions and Opening Day Conditions</td>
</tr>
<tr>
<td>Multiple Phase Construction</td>
<td>Existing Conditions, Conditions upon completion of each Phase, and Build Out Conditions</td>
</tr>
<tr>
<td>Multiple Phase Construction - Large Developments</td>
<td>Existing Conditions, Conditions Upon Completion of each Phase, and Build Out Conditions</td>
</tr>
</tbody>
</table>

ALDOT reserves the right to require additional analyses scenarios beyond those included in the table above.

**Background Traffic Growth**

Should the completion date of the development occur over 24 months from the time the existing traffic data was collected, the traffic data shall be adjusted based on the projected growth percentage for the area before development traffic is added as described below. Justification for this projected growth shall be included. *NOTE: Historical counts shall not be utilized; rather, correct practice requires current traffic counts accurately reflecting existing traffic conditions or characteristics.* If the study has been put on hold or delayed for over a year, then a sample count shall be taken on the main route to determine the growth from the initial data acquisition. All other traffic counts shall be adjusted accordingly, whether up or down. If ALDOT is not satisfied with this, then a full data collection as described above shall be conducted.

**Projected Future Traffic Volumes**

These are proposed hourly counts for each intersection impacted by the development, if hourly counts were generated in Section 3.3 above. This shall include the combination of both the generated and existing approach counts.
Future Signal Warrant Analysis

A signal warrant analysis summary of any intersection where signalization is proposed in conjunction with the development is required. The analysis shall include any supporting data for the justification of any warrants met. The full warrant analysis worksheet for each intersection shall be included in the study’s appendices.

The Warrant Analysis Worksheet is posted on ALDOT’s website under Maintenance Bureau Publications*. All five pages of this worksheet shall be included for each intersection. Reports generated by analysis software are acceptable provided they show the status of all warrants and applicable data verifying a satisfied warrant.

ADT counts shall not be used, nor will they be accepted, for the justification of traffic control signal installation.

Future Traffic Conditions Capacity Analysis

- **Unsignalized Capacity Analysis** – Analysis shall be performed for each peak-hour period for each intersection in the development, around the development, and impacted by the development. Refer to Table 3.1 for guidance on which unsignalized intersections are to be analyzed. A summary from an ALDOT approved traffic analysis for each intersection shall be included in the study’s appendices. Should the capacity fail for a given period for any unsignalized intersection, then intersection improvements, failing volumes, and degree of failure shall be reviewed to determine if the intersection should be signalized. A valid justification to signalize any unsignalized intersection shall be included.

- **Signalized Capacity Analysis** – Analysis required for each peak period for any intersection, whether signalized or unsignalized, to determine whether delay would be improved via traffic signalization or adjustment to existing signal timing elements. Refer to Table 3.1 for guidance on which signalized intersections are to be analyzed. An analysis summary from an ALDOT approved traffic analysis methodology for each intersection shall be included in the study’s appendices.

Conclusions/Recommendations

This section shall contain a summary of the conclusions and recommendations in the development study area, to include a detailed description of the proposed site modifications with a justification for each. Detailed descriptions of improvement recommendations shall provide as much information as possible and at a minimum should be consistent with the level of detail provided in the description of existing geometric conditions and traffic control measures outlined in Section 3.2. A graphic representation of improvement recommendations is recommended for providing additional detail.

The satisfaction of a traffic signal warrant or warrants shall not in itself justify the installation of a traffic control signal, as outlined in the MUTCD. Signal justification shall be based on geometric limitations, safety concerns, capacity analysis, and all other requirements set out in the ALDOT Traffic Signal Timing and Design Manual*.

* To access a copy of the latest version of this document refer to Appendix A.
Appendices

This section shall include any supporting data not listed previously in the study, copies of analysis print-outs, raw data counts, etc. This is the minimum information that shall be contained in the appendices. Any other pertinent information to include in the appendices shall be added logically based on where it is covered in the body of the traffic impact study. Should there be no information for a given appendix, the area shall be indicated with a page stating that there is no information for this particular appendix.

The following is the required order of the appendices area:

A. Proposed Site Layout – A detailed proposed site layout to include all impacted intersections and roadways. Scale shall be 1” = 100’.

B. Signal Timing Sheets – Timing plan sheets for each existing signalized intersection in required study area (refer to Table 3.1). Shall include timing plans for peak hour, where applicable.

C. Traffic Count Data – Raw data section for the existing traffic data for each roadway/intersection impacted by the development.
   - Existing hourly approach counts
   - Existing peak hour turning movement counts
   - Any other pertinent field data

D. Levels of Service Description – Description of level of service criteria based on the latest version of the Highway Capacity Manual *, expressed as levels of service (LOS) ranging from “A” to “F.” Generally, LOS “C” is considered desirable, while LOS “D” is considered acceptable during peak hours of traffic flow. A detailed description of each level of service designation shall be included in the Appendix.

E. Existing Capacity Analysis – Capacity analysis printouts for each existing intersection/approach impacted by the development. Shall show the current level-of-service for the intersection/approach. Shall be based on existing geometric and traffic control conditions.

F. Signal Warrant Analysis (as applicable) – Warrant Analysis for each intersection proposed for signalization and intersections within the study area (refer to Table 3.1) projected to operate below an acceptable LOS as a result of the proposed development. This shall either be the five page form from the ALDOT Traffic Signal Timing and Design Manual* or computer printouts of the analysis.

G. Future Capacity Analysis – Capacity analysis printouts for each current intersection/approach impacted by the development and each proposed intersection based on the proposed/future traffic for each intersection/approach. Analysis shall show the projected level of service for the intersection/approach. Future conditions capacity analysis shall show unsignalized intersections first followed by signalized intersections.

* To access a copy of the latest version of this document refer to Appendix A

Alabama Department of Transportation Access Design and Management Manual
Sec. 21-84. - Traffic impact study requirements.

(a) General. The following policies and guidelines have been adopted by the City of Gulf Shores for the preparation of Traffic Impact Studies (TIS) for development proposals of all land use types. These policies exist to ensure consistent and proper traffic planning and engineering practices are considered when land use actions are being considered. The guidelines provide for a standard process, set of assumptions, set of analytic techniques, and a presentation format to be used in the preparation of the TIS.

(b) Applicant responsibility. The responsibility for conducting a TIS and assessing the traffic impacts associated with an application for development approval rests with the applicant. The assessment of these impacts shall be contained within a TIS report as specified herein. It shall be prepared under the supervision of, and sealed by, a licensed professional engineer in Alabama with experience in traffic engineering and transportation planning/engineering.

For all state highways within the study area, the applicant is required to meet the requirements of the Alabama Department of Transportation (ALDOT) in addition to those of the City of Gulf Shores.

(c) Capacity and safety issues. Development of property has a direct impact on transportation, including vehicular, transit, bicycle, and pedestrian traffic. In order to meet capacity and safety needs as they relate to the traffic generated from a particular land use, specific improvements can be made. The goal of the TIS is to address traffic related issues that result from new developments and to determine the improvements required to address and mitigate those issues such that street maximum capacities are not exceeded and traffic and pedestrian safety is maintained. The competing objectives of vehicular movement, pedestrians, bicyclists, and others must be balanced in the development review process. The TIS will provide information and guidance as plans are developed and decisions made for the approved plan.

(d) Vehicular traffic improvements. Examples of traffic capacity and safety improvements to mitigate development impacts include: road widening, turn lanes, deceleration lanes, intersection through lanes, traffic signals, stop signs, design speed adjustments, and modifications to access points, roundabouts and other traffic calming construction methods approved by the city.

(e) Pedestrian traffic considerations and improvements. Examples of street conditions that promote safe, comfortable and convenient pedestrian environments include: narrower roadways that promote shorter walking conditions; short blocks; lower prevailing travel speeds; sidewalks; well-defined crosswalks, median refuge areas and channelized islands at street intersections. Walkway tunnels and overhead structures are examples of safety improvements that afford maximum protection for pedestrians.

(f) Bicycle traffic improvements. The addition of on-street bicycle lanes or off-street bicycle paths may be needed to achieve connectivity between the proposed project and the existing bikeway system.

(Ord. No. 1221, § 1(5), 2-9-04)
Appendix M

Cost Estimates
### Improvement Options Cost Estimates

#### Improvement 1 - Eastbound Right Turn Lane on Park Avenue

<table>
<thead>
<tr>
<th>Item Description</th>
<th>Unit</th>
<th>Quantity</th>
<th>Unit Price</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clearing &amp; Grubbing ($4000/Acre)</td>
<td>LS</td>
<td>1</td>
<td>$1,000.00</td>
<td>$1,000</td>
</tr>
<tr>
<td>Unclassified Excavation</td>
<td>CY</td>
<td>180</td>
<td>$15.00</td>
<td>$2,700</td>
</tr>
<tr>
<td>Borrow Excavation</td>
<td>CY</td>
<td>75</td>
<td>$15.00</td>
<td>$1,125</td>
</tr>
<tr>
<td>Wearing Surface (1&quot;)</td>
<td>TON</td>
<td>30</td>
<td>$100.00</td>
<td>$3,000</td>
</tr>
<tr>
<td>Binder (2-3&quot; layers)</td>
<td>TON</td>
<td>167</td>
<td>$100.00</td>
<td>$16,700</td>
</tr>
<tr>
<td>Aggregate Base (6&quot;)</td>
<td>SY</td>
<td>500</td>
<td>$20.00</td>
<td>$10,000</td>
</tr>
<tr>
<td>Tack Coat</td>
<td>GALLON</td>
<td>30</td>
<td>$5.00</td>
<td>$150</td>
</tr>
<tr>
<td>Joint Sealant</td>
<td>MILE</td>
<td>0.25</td>
<td>$275.00</td>
<td>$69</td>
</tr>
<tr>
<td>Curb &amp; Gutter</td>
<td>LF</td>
<td>400</td>
<td>$15.00</td>
<td>$6,000</td>
</tr>
<tr>
<td>Topsoil</td>
<td>CY</td>
<td>34</td>
<td>$15.00</td>
<td>$510</td>
</tr>
<tr>
<td>Seeding</td>
<td>AC</td>
<td>0.05</td>
<td>$800.00</td>
<td>$40</td>
</tr>
<tr>
<td>Traffic Stripe, Markings, Legends</td>
<td>LS</td>
<td>1</td>
<td>$1,000.00</td>
<td>$1,000</td>
</tr>
<tr>
<td>Erosion Control</td>
<td>LS</td>
<td>1</td>
<td>$3,000.00</td>
<td>$3,000</td>
</tr>
<tr>
<td>Traffic Control</td>
<td>LS</td>
<td>1</td>
<td>$40,000.00</td>
<td>$40,000</td>
</tr>
<tr>
<td>Mobilization (9.7% of Overall Cost)</td>
<td>LS</td>
<td>1</td>
<td>$8,273.49</td>
<td>$8,273</td>
</tr>
<tr>
<td>Engineering Controls (1.3% of Overall Cost)</td>
<td>LS</td>
<td>1</td>
<td>$1,291.23</td>
<td>$1,291</td>
</tr>
</tbody>
</table>

Roadway Total: $94,858
Preliminary Engineering (15%): $14,229
Utility Cost: $54,000
Right-of-Way Cost: $0

**Local Funds Grand Total:** $164,000

CE&I and Indirect Costs (25%): $23,715

**Federal Funds Grand Total:** $188,000

---

#### Improvement 2 - Westbound Left Turn Lane on Park Avenue

<table>
<thead>
<tr>
<th>Item Description</th>
<th>Unit</th>
<th>Quantity</th>
<th>Unit Price</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clearing &amp; Grubbing ($4000/Acre)</td>
<td>LS</td>
<td>1</td>
<td>$1,200.00</td>
<td>$1,200</td>
</tr>
<tr>
<td>Unclassified Excavation</td>
<td>CY</td>
<td>215</td>
<td>$15.00</td>
<td>$3,225</td>
</tr>
<tr>
<td>Borrow Excavation</td>
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<td>123</td>
<td>$15.00</td>
<td>$1,845</td>
</tr>
<tr>
<td>Wearing Surface (1&quot;)</td>
<td>TON</td>
<td>35</td>
<td>$100.00</td>
<td>$3,500</td>
</tr>
<tr>
<td>Binder (2-3&quot; layers)</td>
<td>TON</td>
<td>198</td>
<td>$100.00</td>
<td>$19,800</td>
</tr>
<tr>
<td>Aggregate Base (6&quot;)</td>
<td>SY</td>
<td>593</td>
<td>$20.00</td>
<td>$11,860</td>
</tr>
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<td>Tack Coat</td>
<td>GALLON</td>
<td>36</td>
<td>$5.00</td>
<td>$180</td>
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<tr>
<td>Joint Sealant</td>
<td>MILE</td>
<td>0.35</td>
<td>$275.00</td>
<td>$96</td>
</tr>
<tr>
<td>Curb &amp; Gutter</td>
<td>LF</td>
<td>600</td>
<td>$15.00</td>
<td>$9,000</td>
</tr>
<tr>
<td>Topsoil</td>
<td>CY</td>
<td>56</td>
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<td>$840</td>
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<td>Seeding</td>
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<td>0.10</td>
<td>$800.00</td>
<td>$80</td>
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<td>Storm Pipe</td>
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<td>20</td>
<td>$100.00</td>
<td>$2,000</td>
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<td>Storm Inlets</td>
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<td>1</td>
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<td>$3,000</td>
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<td>Traffic Stripe, Markings, Legends</td>
<td>LS</td>
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<td>$6,000.00</td>
<td>$6,000</td>
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<tr>
<td>Signal Modification</td>
<td>LS</td>
<td>1</td>
<td>$25,000.00</td>
<td>$25,000</td>
</tr>
<tr>
<td>Erosion Control</td>
<td>LS</td>
<td>1</td>
<td>$4,000.00</td>
<td>$4,000</td>
</tr>
<tr>
<td>Traffic Control</td>
<td>LS</td>
<td>1</td>
<td>$40,000.00</td>
<td>$40,000</td>
</tr>
<tr>
<td>Mobilization (9.7% of Overall Cost)</td>
<td>LS</td>
<td>1</td>
<td>$12,767.75</td>
<td>$12,768</td>
</tr>
<tr>
<td>Engineering Controls (1.3% of Overall Cost)</td>
<td>LS</td>
<td>1</td>
<td>$1,992.64</td>
<td>$1,993</td>
</tr>
</tbody>
</table>

Roadway Total: $146,387
Preliminary Engineering (15%): $21,958
Utility Cost: $61,560
Right-of-Way Cost: $0

**Local Funds Grand Total:** $230,000
CE&I and Indirect Costs (25%): $36,597

**Federal Funds Grand Total:** $267,000

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**NOTE:** ENGINEER'S OPINION OF PROBABLE CONSTRUCTION COST PROVIDED IS MADE ON THE BASIS OF ENGINEER'S EXPERIENCES AND QUALIFICATION AND REPRESENTS ENGINEER'S BEST JUDGMENT WITH THE INDUSTRY. ENGINEER DOES NOT GUARANTEE THAT PROPOSALS, BIDS, OR ACTUAL COST WILL NOT VARY FROM ENGINEER'S OPINION OF PROBABLE COST. CONSTRUCTION ENGINEERING AND INSPECTION (CE&I) AND ALDOT'S INDIRECT COSTS ARE NOT INCLUDED IN THE ESTIMATED PROJECT COSTS.
### Improvement 3 - Southbound Left Turn Lane on US-411 at Kerr Road

<table>
<thead>
<tr>
<th>Item Description</th>
<th>Unit</th>
<th>Quantity</th>
<th>Unit Price</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clearing &amp; Grubbing ($4000/Acre)</td>
<td>LS</td>
<td>1</td>
<td>$6,700.00</td>
<td>$6,700</td>
</tr>
<tr>
<td>Unclassified Excavation</td>
<td>CY</td>
<td>700</td>
<td>$15.00</td>
<td>$10,500</td>
</tr>
<tr>
<td>Borrow Excavation</td>
<td>CY</td>
<td>11000</td>
<td>$15.00</td>
<td>$165,000</td>
</tr>
<tr>
<td>Wearing Surface (1&quot;)</td>
<td>TON</td>
<td>113</td>
<td>$100.00</td>
<td>$11,300</td>
</tr>
<tr>
<td>Binder (2-3&quot; layers)</td>
<td>TON</td>
<td>645</td>
<td>$100.00</td>
<td>$64,500</td>
</tr>
<tr>
<td>Aggregate Base (6&quot;)</td>
<td>SY</td>
<td>1934</td>
<td>$20.00</td>
<td>$38,680</td>
</tr>
<tr>
<td>Tack Coat</td>
<td>GALLON</td>
<td>117</td>
<td>$5.00</td>
<td>$585</td>
</tr>
<tr>
<td>Joint Sealant</td>
<td>MILE</td>
<td>1.5</td>
<td>$275.00</td>
<td>$413</td>
</tr>
<tr>
<td>Topsoil</td>
<td>CY</td>
<td>963</td>
<td>$15.00</td>
<td>$14,445</td>
</tr>
<tr>
<td>Seeding</td>
<td>AC</td>
<td>1.2</td>
<td>$800.00</td>
<td>$960</td>
</tr>
<tr>
<td>Storm Pipe</td>
<td>LF</td>
<td>100</td>
<td>$100.00</td>
<td>$10,000</td>
</tr>
<tr>
<td>Pipe End Treatment</td>
<td>EACH</td>
<td>4</td>
<td>$1,500.00</td>
<td>$6,000</td>
</tr>
<tr>
<td>Traffic Stripe, Markings, Legends</td>
<td>LS</td>
<td>1</td>
<td>$14,500.00</td>
<td>$14,500</td>
</tr>
<tr>
<td>Erosion Control</td>
<td>LS</td>
<td>1</td>
<td>$17,000.00</td>
<td>$17,000</td>
</tr>
<tr>
<td>Traffic Control</td>
<td>LS</td>
<td>1</td>
<td>$30,000.00</td>
<td>$30,000</td>
</tr>
<tr>
<td>Mobilization (9.7% of Overall Cost)</td>
<td>LS</td>
<td>1</td>
<td>$37,886.50</td>
<td>$37,887</td>
</tr>
<tr>
<td>Engineering Controls(1.3% of Overall Cost)</td>
<td>LS</td>
<td>1</td>
<td>$5,912.87</td>
<td>$5,913</td>
</tr>
</tbody>
</table>

**Roadway Total:** $434,382  
**Preliminary Engineering (15%):** $65,157  
**Utility Cost:** $135,000  
**Right-of-Way Cost:** $0  
**Local Funds Grand Total:** $635,000  
**CE&I and Indirect Costs (25%):** $108,595  
**Federal Funds Grand Total:** $744,000

---

### Improvement 4 - Northbound Right Turn Lane on US-411 at Kerr Road

<table>
<thead>
<tr>
<th>Item Description</th>
<th>Unit</th>
<th>Quantity</th>
<th>Unit Price</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clearing &amp; Grubbing ($4000/Acre)</td>
<td>LS</td>
<td>1</td>
<td>$1,600.00</td>
<td>$1,600</td>
</tr>
<tr>
<td>Unclassified Excavation</td>
<td>CY</td>
<td>252</td>
<td>$15.00</td>
<td>$3,780</td>
</tr>
<tr>
<td>Borrow Excavation</td>
<td>CY</td>
<td>1425</td>
<td>$15.00</td>
<td>$21,375</td>
</tr>
<tr>
<td>Wearing Surface (1&quot;)</td>
<td>TON</td>
<td>41</td>
<td>$100.00</td>
<td>$4,100</td>
</tr>
<tr>
<td>Binder (2-3&quot; layers)</td>
<td>TON</td>
<td>233</td>
<td>$100.00</td>
<td>$23,300</td>
</tr>
<tr>
<td>Aggregate Base (6&quot;)</td>
<td>SY</td>
<td>697</td>
<td>$20.00</td>
<td>$13,940</td>
</tr>
<tr>
<td>Tack Coat</td>
<td>GALLON</td>
<td>42</td>
<td>$5.00</td>
<td>$210</td>
</tr>
<tr>
<td>Joint Sealant</td>
<td>MILE</td>
<td>0.3</td>
<td>$275.00</td>
<td>$83</td>
</tr>
<tr>
<td>Topsoil</td>
<td>CY</td>
<td>178</td>
<td>$15.00</td>
<td>$2,670</td>
</tr>
<tr>
<td>Seeding</td>
<td>AC</td>
<td>0.25</td>
<td>$800.00</td>
<td>$200</td>
</tr>
<tr>
<td>Storm Pipe</td>
<td>LF</td>
<td>60</td>
<td>$100.00</td>
<td>$6,000</td>
</tr>
<tr>
<td>Pipe End Treatments</td>
<td>EACH</td>
<td>2</td>
<td>$1,500.00</td>
<td>$3,000</td>
</tr>
<tr>
<td>Traffic Stripe, Markings, Legends</td>
<td>LS</td>
<td>1</td>
<td>$3,000.00</td>
<td>$3,000</td>
</tr>
<tr>
<td>Erosion Control</td>
<td>LS</td>
<td>1</td>
<td>$4,000.00</td>
<td>$4,000</td>
</tr>
<tr>
<td>Traffic Control</td>
<td>LS</td>
<td>1</td>
<td>$30,000.00</td>
<td>$30,000</td>
</tr>
<tr>
<td>Mobilization (9.7% of Overall Cost)</td>
<td>LS</td>
<td>1</td>
<td>$11,373.98</td>
<td>$11,374</td>
</tr>
<tr>
<td>Engineering Controls(1.3% of Overall Cost)</td>
<td>LS</td>
<td>1</td>
<td>$1,775.11</td>
<td>$1,775</td>
</tr>
</tbody>
</table>

**Roadway Total:** $130,407  
**Preliminary Engineering (15%):** $19,561  
**Utility Cost:** $54,000  
**Right-of-Way Cost:** $0  
**Local Funds Grand Total:** $204,000  
**CE&I and Indirect Costs (25%):** $32,602  
**Federal Funds Grand Total:** $237,000

---

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### Improvement 5 - Northbound Right Turn Lane on US-411 at Park Avenue

<table>
<thead>
<tr>
<th>Item Description</th>
<th>Unit</th>
<th>Quantity</th>
<th>Unit Price</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clearing &amp; Grubbing ($4000/Acre)</td>
<td>LS</td>
<td>1</td>
<td>$1,000.00</td>
<td>$1,000</td>
</tr>
<tr>
<td>Unclassified Excavation</td>
<td>CY</td>
<td>220</td>
<td>$15.00</td>
<td>$3,300</td>
</tr>
<tr>
<td>Borrow Excavation</td>
<td>CY</td>
<td>75</td>
<td>$15.00</td>
<td>$1,125</td>
</tr>
<tr>
<td>Wearing Surface (1&quot;)</td>
<td>TON</td>
<td>36</td>
<td>$100.00</td>
<td>$3,600</td>
</tr>
<tr>
<td>Binder (2-3&quot; layers)</td>
<td>TON</td>
<td>204</td>
<td>$100.00</td>
<td>$20,400</td>
</tr>
<tr>
<td>Aggregate Base (6&quot;)</td>
<td>SY</td>
<td>610</td>
<td>$20.00</td>
<td>$12,200</td>
</tr>
<tr>
<td>Tack Coat</td>
<td>GALLON</td>
<td>37</td>
<td>$5.00</td>
<td>$185</td>
</tr>
<tr>
<td>Joint Sealant</td>
<td>MILE</td>
<td>0.2</td>
<td>$275.00</td>
<td>$55</td>
</tr>
<tr>
<td>Topsoil</td>
<td>CY</td>
<td>13</td>
<td>$15.00</td>
<td>$195</td>
</tr>
<tr>
<td>Seeding</td>
<td>AC</td>
<td>0.05</td>
<td>$800.00</td>
<td>$40</td>
</tr>
<tr>
<td>Curb &amp; Gutter</td>
<td>LF</td>
<td>350</td>
<td>$15.00</td>
<td>$5,250</td>
</tr>
<tr>
<td>Storm Pipe</td>
<td>LF</td>
<td>50</td>
<td>$100.00</td>
<td>$5,000</td>
</tr>
<tr>
<td>Storm Inlets</td>
<td>EACH</td>
<td>2</td>
<td>$3,000.00</td>
<td>$6,000</td>
</tr>
<tr>
<td>Traffic Stripe, Markings, Legends</td>
<td>LS</td>
<td>1</td>
<td>$1,000.00</td>
<td>$1,000</td>
</tr>
<tr>
<td>Erosion Control</td>
<td>LS</td>
<td>1</td>
<td>$3,000.00</td>
<td>$3,000</td>
</tr>
<tr>
<td>Traffic Control</td>
<td>LS</td>
<td>1</td>
<td>$40,000.00</td>
<td>$40,000</td>
</tr>
<tr>
<td>Mobilization (9.7% of Overall Cost)</td>
<td>LS</td>
<td>1</td>
<td>$9,927.95</td>
<td>$10,000</td>
</tr>
<tr>
<td>Engineering Controls(1.3% of Overall Cost)</td>
<td>LS</td>
<td>1</td>
<td>$1,550.43</td>
<td>$2,000</td>
</tr>
</tbody>
</table>

Roadway Total: $114,350
Preliminary Engineering (15%): $17,153
Utility Cost: $312,500
Right-of-Way Cost: $290,000
Local Funds Grand Total: $735,000
CE&I and Indirect Costs (25%): $28,588
Federal Funds Grand Total: $764,000

### Improvement 6- Southbound Right Turn Lane on US-411 at Park Avenue

<table>
<thead>
<tr>
<th>Item Description</th>
<th>Unit</th>
<th>Quantity</th>
<th>Unit Price</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clearing &amp; Grubbing ($4000/Acre)</td>
<td>LS</td>
<td>1</td>
<td>$1,300.00</td>
<td>$1,300</td>
</tr>
<tr>
<td>Unclassified Excavation</td>
<td>CY</td>
<td>262</td>
<td>$15.00</td>
<td>$3,930</td>
</tr>
<tr>
<td>Borrow Excavation</td>
<td>CY</td>
<td>934</td>
<td>$15.00</td>
<td>$14,010</td>
</tr>
<tr>
<td>Wearing Surface (1&quot;)</td>
<td>TON</td>
<td>42</td>
<td>$100.00</td>
<td>$4,200</td>
</tr>
<tr>
<td>Binder (2-3&quot; layers)</td>
<td>TON</td>
<td>242</td>
<td>$100.00</td>
<td>$24,200</td>
</tr>
<tr>
<td>Aggregate Base (6&quot;)</td>
<td>SY</td>
<td>725</td>
<td>$20.00</td>
<td>$14,500</td>
</tr>
<tr>
<td>Tack Coat</td>
<td>GALLON</td>
<td>44</td>
<td>$5.00</td>
<td>$220</td>
</tr>
<tr>
<td>Joint Sealant</td>
<td>MILE</td>
<td>0.3</td>
<td>$275.00</td>
<td>$83</td>
</tr>
<tr>
<td>Topsoil</td>
<td>CY</td>
<td>117</td>
<td>$15.00</td>
<td>$1,755</td>
</tr>
<tr>
<td>Seeding</td>
<td>AC</td>
<td>0.15</td>
<td>$800.00</td>
<td>$120</td>
</tr>
<tr>
<td>Curb &amp; Gutter</td>
<td>LF</td>
<td>450</td>
<td>$15.00</td>
<td>$6,750</td>
</tr>
<tr>
<td>Storm Pipe</td>
<td>LF</td>
<td>350</td>
<td>$100.00</td>
<td>$35,000</td>
</tr>
<tr>
<td>Storm Inlets</td>
<td>EACH</td>
<td>3</td>
<td>$3,000.00</td>
<td>$9,000</td>
</tr>
<tr>
<td>Traffic Stripe, Markings, Legends</td>
<td>LS</td>
<td>1</td>
<td>$2,000.00</td>
<td>$2,000</td>
</tr>
<tr>
<td>Erosion Control</td>
<td>LS</td>
<td>1</td>
<td>$4,500.00</td>
<td>$4,500</td>
</tr>
<tr>
<td>Traffic Control</td>
<td>LS</td>
<td>1</td>
<td>$40,000.00</td>
<td>$40,000</td>
</tr>
<tr>
<td>Mobilization (9.7% of Overall Cost)</td>
<td>LS</td>
<td>1</td>
<td>$15,672.05</td>
<td>$15,672</td>
</tr>
<tr>
<td>Engineering Controls(1.3% of Overall Cost)</td>
<td>LS</td>
<td>1</td>
<td>$2,445.91</td>
<td>$2,446</td>
</tr>
</tbody>
</table>

Roadway Total: $179,685
Preliminary Engineering (15%): $26,953
Utility Cost: $268,750
Right-of-Way Cost: $194,300
Local Funds Grand Total: $670,000
CE&I and Indirect Costs (25%): $44,921
Federal Funds Grand Total: $715,000

**NOTE:** ENGINEER'S OPINION OF PROBABLE CONSTRUCTION COST PROVIDED IS MADE ON THE BASIS OF ENGINEER'S EXPERIENCES AND QUALIFICATION AND REPRESENTS ENGINEER'S BEST JUDGMENT WITH THE INDUSTRY. ENGINEER DOES NOT GUARANTEE THAT PROPOSALS, BIDS, OR ACTUAL COST WILL NOT VARY FROM ENGINEER'S OPINION OF PROBABLE COST. CONSTRUCTION ENGINEERING AND INSPECTION (CE&I) AND ALDOT'S INDIRECT COSTS ARE NOT INCLUDED IN THE ESTIMATED PROJECT COSTS.
### Improvement 7 - Northbound Right Turn Lane on US-411 at Verbena Drive

<table>
<thead>
<tr>
<th>Item Description</th>
<th>Unit</th>
<th>Quantity</th>
<th>Unit Price</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Traffic Stripe, Markings, Legends</td>
<td>LS</td>
<td>1</td>
<td>$6,000.00</td>
<td>$6,000</td>
</tr>
<tr>
<td>Traffic Control</td>
<td>LS</td>
<td>1</td>
<td>$20,000.00</td>
<td>$20,000</td>
</tr>
<tr>
<td>Mobilization (9.7% of Overall Cost)</td>
<td>LS</td>
<td>1</td>
<td>$2,522.00</td>
<td>$2,522</td>
</tr>
<tr>
<td>Engineering Controls (1.3% of Overall Cost)</td>
<td>LS</td>
<td>1</td>
<td>$393.60</td>
<td>$394</td>
</tr>
</tbody>
</table>

Roadway Total: $28,916  

Preliminary Engineering (15%): $4,337  

Utility Cost: $0  

Right-of-Way Cost: $0  

**Local Funds Grand Total:** $34,000  

CE&I and Indirect Costs (25%): $7,229  

**Federal Funds Grand Total:** $42,000

### Improvement 8 - Northbound Left Turn Lane on US-411 at Lake Joyce Road

<table>
<thead>
<tr>
<th>Item Description</th>
<th>Unit</th>
<th>Quantity</th>
<th>Unit Price</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clearing &amp; Grubbing ($4000/Acre)</td>
<td>LS</td>
<td>1</td>
<td>$8,600.00</td>
<td>$8,600</td>
</tr>
<tr>
<td>Unclassified Excavation</td>
<td>CY</td>
<td>570</td>
<td>$15.00</td>
<td>$8,550</td>
</tr>
<tr>
<td>Borrow Excavation</td>
<td>CY</td>
<td>28000</td>
<td>$15.00</td>
<td>$420,000</td>
</tr>
<tr>
<td>Wearing Surface (1&quot;)</td>
<td>TON</td>
<td>91</td>
<td>$100.00</td>
<td>$9,100</td>
</tr>
<tr>
<td>Binder (2-3&quot; layers)</td>
<td>TON</td>
<td>525</td>
<td>$100.00</td>
<td>$52,500</td>
</tr>
<tr>
<td>Aggregate Base (6&quot;)</td>
<td>SY</td>
<td>1575</td>
<td>$20.00</td>
<td>$31,500</td>
</tr>
<tr>
<td>Tack Coat</td>
<td>GALLON</td>
<td>95</td>
<td>$5.00</td>
<td>$475</td>
</tr>
<tr>
<td>Joint Sealant</td>
<td>MILE</td>
<td>1.25</td>
<td>$275.00</td>
<td>$344</td>
</tr>
<tr>
<td>Topsoil</td>
<td>CY</td>
<td>1141</td>
<td>$15.00</td>
<td>$17,115</td>
</tr>
<tr>
<td>Seeding</td>
<td>AC</td>
<td>1.42</td>
<td>$800.00</td>
<td>$1,136</td>
</tr>
<tr>
<td>48&quot; Storm Pipe Extension</td>
<td>LF</td>
<td>85</td>
<td>$300.00</td>
<td>$25,500</td>
</tr>
<tr>
<td>48&quot; Pipe End Treatment</td>
<td>EACH</td>
<td>2</td>
<td>$2,500.00</td>
<td>$5,000</td>
</tr>
<tr>
<td>Storm Pipe</td>
<td>LF</td>
<td>120</td>
<td>$100.00</td>
<td>$12,000</td>
</tr>
<tr>
<td>Pipe End Treatments</td>
<td>EACH</td>
<td>4</td>
<td>$1,500.00</td>
<td>$6,000</td>
</tr>
<tr>
<td>Traffic Stripe, Markings, Legends</td>
<td>LS</td>
<td>1</td>
<td>$14,000.00</td>
<td>$14,000</td>
</tr>
<tr>
<td>Erosion Control</td>
<td>LS</td>
<td>1</td>
<td>$15,500.00</td>
<td>$15,500</td>
</tr>
<tr>
<td>Traffic Control</td>
<td>LS</td>
<td>1</td>
<td>$30,000.00</td>
<td>$30,000</td>
</tr>
<tr>
<td>Mobilization (9.7% of Overall Cost)</td>
<td>LS</td>
<td>1</td>
<td>$63,760.02</td>
<td>$63,760</td>
</tr>
<tr>
<td>Engineering Controls (1.3% of Overall Cost)</td>
<td>LS</td>
<td>1</td>
<td>$9,950.90</td>
<td>$9,951</td>
</tr>
</tbody>
</table>

Roadway Total: $731,031  

Preliminary Engineering (15%): $109,655  

Utility Cost: $113,400  

Right-of-Way Cost: $115,500  

**Local Funds Grand Total:** $1,070,000  

CE&I and Indirect Costs (25%): $182,758  

**Federal Funds Grand Total:** $1,253,000

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**NOTE:** ENGINEER'S OPINION OF PROBABLE CONSTRUCTION COST PROVIDED IS MADE ON THE BASIS OF ENGINEER'S EXPERIENCES AND QUALIFICATION AND REPRESENTS ENGINEER'S BEST JUDGMENT WITH THE INDUSTRY. ENGINEER DOES NOT GUARANTEE THAT PROPOSALS, BIDS, OR ACTUAL COST WILL NOT VARY FROM ENGINEER'S OPINION OF PROBABLE COST. CONSTRUCTION ENGINEERING AND INSPECTION (CE&I) AND ALDOT'S INDIRECT COSTS ARE NOT INCLUDED IN THE ESTIMATED PROJECT COSTS.
<table>
<thead>
<tr>
<th>Item Description</th>
<th>Unit</th>
<th>Quantity</th>
<th>Unit Price</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clearing &amp; Grubbing ($4000/Acre)</td>
<td>LS</td>
<td>1</td>
<td>$2,600.00</td>
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Roadway Total: $172,989
Preliminary Engineering (15%): $25,948
Utility Cost: $113,400
Right-of-Way Cost: $0
Local Funds Grand Total: $313,000
CE&I and Indirect Costs (25%): $43,247
Federal Funds Grand Total: $357,000

<table>
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<th>Unit Price</th>
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<td>Traffic Control</td>
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Roadway Total: $95,327
Preliminary Engineering (15%): $14,299
Utility Cost: $50,000
Right-of-Way Cost: $0
Local Funds Grand Total: $160,000
CE&I and Indirect Costs (25%): $23,832
Federal Funds Grand Total: $184,000

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### Improvement 11 - Westbound Right Turn Lane on Kerr Road

<table>
<thead>
<tr>
<th>Item Description</th>
<th>Unit</th>
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</tr>
<tr>
<td>Erosion Control</td>
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<tr>
<td>Traffic Control</td>
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Roadway Total: $83,695
Preliminary Engineering (15%): $12,554
Utility Cost: $54,000
Right-of-Way Cost: $55,000

Local Funds Grand Total: $206,000
CE&I and Indirect Costs (25%): $20,924
Federal Funds Grand Total: $227,000

### Improvement 12 - Widen US-411

<table>
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<tr>
<th>Item Description</th>
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</table>

Roadway Total: $8,706,711
Preliminary Engineering (15%): $1,306,007
Utility Cost: $1,620,000
Right-of-Way Cost: $1,650,000

Local Funds Grand Total: $13,283,000
CE&I and Indirect Costs (25%): $2,176,678
Federal Funds Grand Total: $15,460,000

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Appendix N
RPCGB 2011 Funding Request
And
Example Request Application
Funding Requests for the Fiscal Year 2012-2015 Transportation Improvement Program

The Regional Planning Commission of Greater Birmingham (RPCGB) on behalf of the Birmingham MPO is receiving funding requests for projects eligible for Surface Transportation Program – Birmingham Attributable (STPBH) or Congestion Mitigation Air Quality (CMAQ) funds for inclusion in the Fiscal Year 2012-2015 Transportation Improvement Program (TIP). Funding requests must be emailed or postmarked by February 28, 2011.

Please review the following eligibility requirements for STPBH and CMAQ projects before reviewing the information required for funding requests:

**Federal Eligibility Requirements**

Projects must be eligible to receive STPBH or CMAQ funds before the funding requests can be considered for the TIP. The United States Department of Transportation (USDOT) places certain eligibility requirements on each of the funding categories in the TIP. One restriction for all roadway projects for both STPBH and CMAQ funding categories is that the project must be on a functionally classified roadway. The functional classification system is discussed further in the “Required Information” section of this memorandum. Other eligibility requirements are summarized below.

**STPBH Eligibility**

The STPBH was established by the Intermodal Surface Transportation Efficiency Act of 1991 (1991 ISTEA, Public Law 102-240). It is codified in 23 U.S.C. 133. STPBH funds may generally be used for any functionally classified roads excluding those roads that are functionally classified as local or rural minor collectors.

In general, STPBH funding may be used for any type of highway or transit capital project. However, a detailed list of eligibility requirements can be found on the following web page:


The following is an abbreviated list of the eligible projects:

- Construction, reconstruction, rehabilitation, resurfacing, restoration, and operational improvements for highways and bridges including any such construction or reconstruction necessary to accommodate other transportation modes
- Capital costs for transit projects eligible for assistance under chapter 53 of title 49
- Carpool projects, fringe and corridor parking facilities and programs, bicycle transportation and pedestrian walkways and the modification of public sidewalks to comply with the Americans with Disabilities Act of 1990
• Highway and transit safety infrastructure improvements
• Capital and operating costs for traffic monitoring, management, and control facilities and programs
• Transportation control measures listed in section 108(f)(1)(A) (other than clause (xvi)) of the Clean Air Act (42 U.S.C. 7408(f)(1)(A))
• Development and establishment of management systems
• Natural habitat and wetlands mitigation efforts (see 23 U.S.C. 133(b)(11))
• Intelligent transportation systems capital improvements
• Environmental restoration and pollution abatement projects (including the retrofit or construction of storm water treatment systems) to address water pollution or environmental degradation caused or contributed to by transportation facilities

If it is unclear if the requested project is eligible for STPBH funding, the RPC staff in conjunction with the Federal Highway Administration (FHWA) can assist in determining a project’s eligibility.

**CMAQ Eligibility**

CMAQ funds may be used for transportation projects and programs that are likely to contribute to the attainment of national air quality standards. The CMAQ was established by the Intermodal Surface Transportation Act of 1991 and has been continued by the TEA-21 and SAFETEA-LU. Programs and projects are funded in air quality non-attainment and maintenance areas for ozone, carbon monoxide (CO), and small particulate matter (PM-10) that reduce transportation-related emissions. Birmingham is a non-attainment area for both ozone and PM-2.5. Eligible activities under CMAQ include: transit system capital expansion and improvements that are projected to realize an increase in ridership, travel demand management strategies and shared ride services, and pedestrian and bicycle facilities that encourage walk and bicycle commuting.

The United States Code which provides details of the CMAQ program can be found on the following web page:

http://www.fhwa.dot.gov/legsregs/title23.pdf (see page 111 – Section 149)

Examples of the many project types that are eligible to use CMAQ funding are described below.

• Public Transit Improvements:
  o Transit System Start-Up – These projects are new rail systems, bus service, or vanpools. Operating expenses for new systems can be reimbursed for up to three years.
  o Transit-ways, Bus Lanes, and High-Occupancy Vehicle Lanes - CMAQ funds may be used to restrict certain roads or lanes, or to construct roads or lanes for the exclusive use of passenger buses or HOV.
  o Transit Transfer Facilities – These projects increase the convenience of transferring on transit service.
  o Transit Facility Improvements – These projects enhance the existing transit system through adding or improving facilities such as stations.

• High-occupancy and Shared-Ride Services:
  CMAQ funds may be used to fund all categories of high-occupancy and shared-ride services. The Birmingham MPO previously funded the CommuteSmart Commuter Services program using CMAQ funds.
• Commuter Parking Lots:
   New or expanded park-n-ride or park-n-ride facilities located in fringe areas and in primary transportation corridors. These park-n-ride lots should serve multiple-occupancy vehicle programs or transit service.

• Traffic Flow Improvement Programs that Achieve Emission Reductions:
  o Bottleneck Elimination – These projects remove existing bottlenecks to traffic flow. Under current guidelines, a bottleneck is defined as a point along a roadway that restricts traffic flow. Road segments (even if the segments are relatively short) are not eligible. Bottleneck eliminations may be reviewed for eligibility on a case-by-case basis since CMAQ funds cannot be used to fund "general purpose through lanes."
  o Intersection Improvements – These projects ease the flow of traffic through existing intersections without adding capacity. Such projects include addition of left turn bays or traffic signal installation.
  o Signal Interconnects – These projects reduce delays through a series of intersections by coordinating the signal phases, thereby reducing emissions.

• Road Surface Limitation Programs:
  CMAQ funds may be used to limit portions of or certain sections of road surfaces within the metropolitan area to the use of non-motorized vehicles or pedestrian use, both as to time and place.

• Bicycle and Bicycle Parking Projects:
  The CMAQ program finances bicycle facilities that provide secure bicycle lanes for the convenience and protection of bicyclists, in both public and private areas and reduces travel by automobiles. Projects that create or increase the availability of secure parking bicycle storage facilities for bicycles and promote the use of bicycles are also eligible.

• Pedestrian Facility Projects:
  CMAQ finances the planning and construction of pedestrian facilities. These facilities are meant to provide additional individual travel choices, helping to reduce travel by automobile, and thereby eliminating automobile trips. Many recreational facilities do not make good CMAQ project candidates and have been provided with a separate funding source in SAFETEA-LU.

• Other Projects:
  These projects do not fit into the above categories, but result in emissions reductions that can be estimated and are otherwise eligible for CMAQ funds. Examples include: trip-reduction ordinances; employer-based transportation management plans; employer-sponsored programs to permit flexible work schedules; rideshare incentive programs; programs to limit or restrict vehicle use in downtown areas or other areas of emission concentration particularly during periods of peak use; programs to control extended idling of vehicles; low-emission engine and fuel technologies program implementation, including diesel retrofits; the Alabama Partners for Clean Air - Air Quality Alert public information program; advanced truck stop electrification, and; cold-start emissions reductions.

As stated in the previous section, if it is unclear if the requested project is eligible for CMAQ funding, the RPC staff in conjunction with FHWA and the Interagency Consultation (IAC) can assist in determining a project’s eligibility.
Required Information for Funding Requests

Requests can be emailed to kaz@rpcgb.org or mailed to the following address:

Regional Planning Commission of Greater Birmingham
Attn: Michael Kaczorowski
1731 First Avenue North Suite 200
Birmingham, AL 35203

Please provide the following information as clearly as possible:

**Project Sponsor:** List the name of the unit of government sponsoring the project, such as, City, County, or ALDOT. A project may have joint sponsorship, such as ALDOT and a County. Projects on State Highways shall demonstrate in writing that the Alabama Department of Transportation supports the project.

**Contacts:** The person or persons most knowledgeable of the specifics of the project and the person who is responsible for reporting on the progress of the project.

**Address:** Official mailing Address

**Telephone:** Telephone number of the contact person

**E-mail:** E-mail address of the contact person

**Program from which Funds are being Requested:** List either STP/BH or CMAQ.

**Location Description:** This should include at a minimum the roadway name and project limits (project termini). Where applicable, please include Federal, State and County route numbers in addition to the roadway names. The location description can be omitted if the project is not associated with a specific roadway (such as a regional project or study).

**Location Map:** A map showing the project location is required. A hand drawn map is not desirable, but will suffice if an electronic map cannot be created.

**Project Description:** The project description is particularly important if it is not a typical roadway widening or construction of a new roadway.

**Functional Class:** List the established functional class of the roadway segment on which the project is located. As stated previously, a roadway segment must be functionally classified to be eligible for STP/BH or CMAQ funds. Bicycle and pedestrian projects may be considered if off system. If you do not have an approved and adopted functional classification map, RPC staff can assist you in determining the functional class.

**Estimated Project Total Cost and Preferred Fiscal Year by Phase:** It is encouraged that construction projects be a minimum of $250,000 in order to be an efficient use of federal funds.

The following are the requirements for providing project costs and the preferred fiscal year:

- be as accurate as possible - underestimating project cost does not benefit the project selection
• use total cost figures for your estimates (not just the federal share you are requesting) - the federal share and local match will be calculated by RPC staff
• costs must be separated by project phase such as preliminary engineering (PE), right-of-way (RW), utilities (UT), and construction (CN)
• the preferred fiscal year of the project by project phase – phases should be separated into the fiscal years (FY) that the project could feasibly (considering local match and other known factors) and realistically be funded:
  o FY 2012 – PE - $100,000
  o FY 2013 – RW - $250,000
  o FY 2014 – UT - $250,000
  o FY 2014 – CN - $1,000,000

Financial Plan for Projects over $5 million: If the total project cost exceeds $5 million, a financial plan should be provided. The financial plan should demonstrate the project sponsor’s fiscal capacity to provide matching funds for the project phases in the preferred fiscal years. Information such as the source of matching funds and the historical and projected availability of those funds should be included.

Estimated Year Open to Traffic or Year Project will be Completed: Especially for roadway projects that are adding lanes or new roadways, estimate the year when the entire project will be opened to traffic or completed (if funded in the preferred fiscal year). This is necessary for the air quality analysis required for conformity.

Existing Lanes: The number of through lanes currently in place (especially if it is a roadway widening project).

Proposed Lanes: The number of through lanes in place after the proposed improvement.

Planning Document(s) or Other Document where the Project is Listed: Identify if the project is included in a local or regional plan, or other study. Include a description of where the project is listed in the document.

Identify if the project is included the 2035 Regional Transportation Plan (RTP) adopted by the Birmingham MPO. A copy of the 2035 RTP can be downloaded on the following website:

http://www.bhammpo.org/longrangeplan/lrp.htm

Projects are listed in the 2035 RTP at the end of Chapter 5 in Appendix 5C. Tables 2 through Table 10 of Appendix 5C list projects sorted by project sponsor. The tables separate the projects by project type. If it is not clear if your project is listed in the 2035 RTP, RPC staff can assist.

Purpose and Need of the Project: This information does not need to be as extensive and detailed as a purpose and need statement in an environmental document, however, it should clearly state the problem and how the proposed project will address it. This information will assist in the review and consideration for the project.

Consideration for Alternate Modes of Travel: Describe the plans for the project to accommodate bicycles, pedestrians, and/or transit supportive infrastructure. If the project does not accommodate alternative modes, provide specific and detailed reasons.

Access Management Improvements or Strategies: Describe any improvements included in the proposed project that will manage access to the roadway thereby improving traffic flow. For roadway
capacity projects, describe any other actions or strategies that have been employed to address congestion. Examples of access management include removing and/or consolidating driveways, installing raised medians to restrict mid-block left turns, or constructing connections between adjacent parking lots.

Again, funding requests must be emailed or postmarked by February 28, 2011. The RPC staff looks forward to receiving and reviewing your proposed projects. If you have questions or points of clarification, email kaz@rpcgb.org or call Mike Kaczorowski at (205)264-8444.
Funding Request for Main Street/123 Road Intersection Improvement Project

Project Sponsor: City of Xyz

Contacts:

John Doe – City of Xyz
123 1st Ave
City, State 12345
(205)123-4567
johndoe@email.org

Jane Doe – Consulting Engineer Inc.
435 1st Ave
City, State 12345
(205)123-4567
janedoe@email.com

Program from which Funds are being Requested: CMAQ

Location Description: The intersection of Main Street (CR-999) and 123 Road in downtown Xyz. It is located approximately one mile north of Interstate-1.

Location Map: see attached

Project Description: The project will add left turn lanes and new sidewalks on all approaches.

Functional Class: Main Street (CR-999) is classified as a Minor Arterial.

Estimated Project Total Cost and Preferred Fiscal Year by Phase:

- FY 2013 – PE - $100,000
- FY 2014 – RW - $250,000
- FY 2014 – UT - $250,000
- FY 2015 – CN - $1,000,000

Estimated Year Open to Traffic: The project is estimated to be open to traffic in 2015.

Existing Lanes: 4.

Proposed Lanes: 4 (only adding left turn lanes)

Planning Document(s) or Other Document where the Project is Listed: This project is included in the City of Xyz’s Master Plan on page 99. The City of Xyz adopted this Master Plan in June 2009. It is part of a larger project included in the 2035 Regional Transportation Plan (RTP) adopted by the Birmingham MPO on page 199 and Appendix X – page X-1.

Purpose and Need of the Project: The subject intersection experiences excessive delay during the morning and evening peak periods. Left turning vehicles chronically cause delay due to the lack of sufficient gaps in the opposing traffic. Left turns at this intersection would reduce delay for all vehicles
traversing this intersection. In addition, there are no existing sidewalks at the subject intersection. This project would also add sidewalks thereby accommodating pedestrian travel at the intersection.

**Consideration for Alternate Modes of Travel:** The project will add sidewalks within the limits of the project. These new sidewalks will connect to the existing sidewalks on all legs of the subject intersection.

**Access Management Improvements or Strategies:** The proposed project will consolidate existing driveways near the intersections on the Main Street approaches. Raised medians will be designed and constructed on all approaches thereby limiting the driveways near the intersection to right-in/right-out only.