



US-72 Traffic Analysis & Access Management Plan
Madison County
Gurley, Alabama

Sain Project # 08-0312

PREPARED FOR



ALDOT First Division
23445 Highway 431 North
Guntersville, AL

PREPARED BY



Sain Associates, Inc.
Suite 200, 244 West Valley Avenue
Birmingham, AL 35209

DRAFT

NARRATIVE

EXECUTIVE SUMMARY	1
EXISTING CONDITIONS.....	3
Roadway Characteristics.....	3
Traffic Volume Data	3
Percentage of Truck Traffic	3
Travel Speed Data	3
Capacity Analysis & Levels of Service	3
CRASH EXPERIENCE	5
US-72 @ Rock Cut Road.....	5
US-72 @ Section Line Road/Little Cove Road	5
US-72 @ 4th Street.....	5
US-72 @ Gurley Pike/3rd Street.....	5
US-72 @ Keel Mountain Road/1st Street	5
NEED FOR ACCESS MANAGEMENT.....	8
General Overview	8
Mobility and Land Access.....	8
Minimize Conflict Points.....	8
ACCESS MANAGEMENT OF US-72.....	9
Cooperative Effort between State and City.....	9
Madison County Population and Growth Potential	9
Base Realignment and Closure	9
Land Use Forecasts.....	9
ACCESS MANAGEMENT STANDARDS FOR US-72	10
Principles of Access Management Applied.....	10
Traffic Signal Spacing	10
Median Opening Spacing	10
Turn Lane(s) Requirements.....	10
Driveway Spacing	10
Corner Clearance	10
Curb Radii.....	12
Driveway Throat Length	13
Shared Access Parcels	13
Frontage Roads, Reverse Frontage Roads, and Service (Backage) Roads	13
Grouped Parcels	14

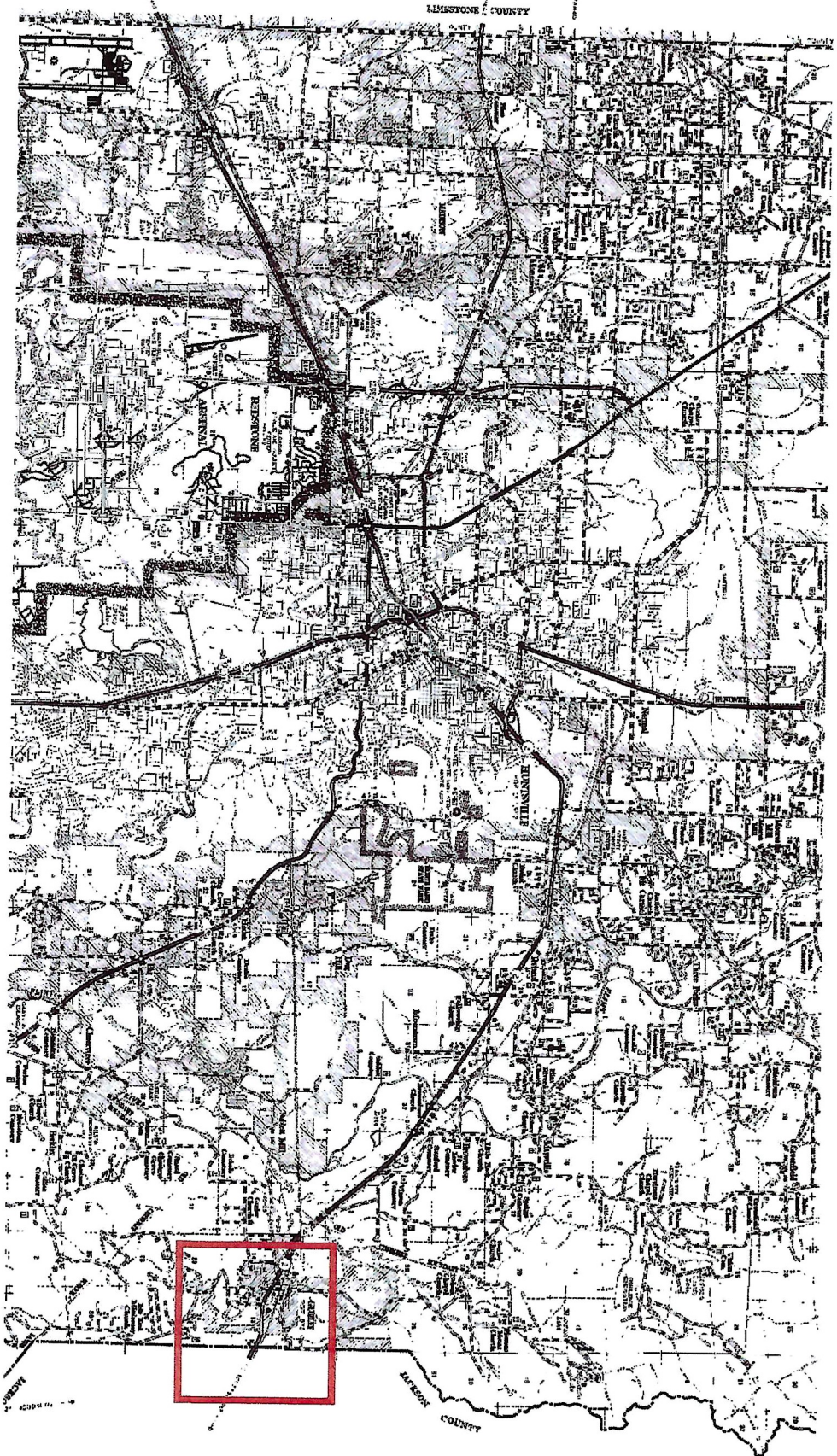
TRAFFIC IMPACT ANALYSIS (TIA) IN THE US-72 CORRIDOR	15
RECOMMENDATIONS	15
Short Term Improvements.....	15
Long Term Improvements.....	15
Future Redevelopment Improvements	15
CONCEPTUAL LAYOUT OF RECOMMENDATIONS.....	16

FIGURES

1. Project Limits.....	2
2. Existing Weekday Peak Hour Traffic Volumes.....	4
3. US-72 @ Rock Cut Road	4
4. US-72 @ Section Line Road/Little Cove Road	6
5. US-72 @ 4th Street.....	6
6. US-72 @ Gurley Pike/3rd Street.....	7
7. US-72 @ Keel Mountain Road/1st Street	7
8. Land Access versus Mobility	8
9. Four-Leg Intersection (32 Conflict Points).....	9
10. Three-Leg Intersection (9 Conflict Points).....	9
11. "Right-In/Right-Out" Intersection (2 Conflict Points).....	9
12. Corner Clearance.....	9
13. Driveway Throat Length.....	12
14. Shared Access Parcels	13
15. Frontage Road/Reverse Frontage Road Concept	13
16. Service (Backage) Road Concept	14
17. Future Adjacent Parcel Access Stub-outs	14

TABLES

1. US-72 AADT at MP 113.515.....	3
2. Existing Levels of Service	3
3. Number of Crashes by Type.....	3
4. US-72 Driveway Spacing Requirements	5
5. Land Use Trip Generation	12
	17



sain associates

EXECUTIVE SUMMARY

The Alabama Department of Transportation (ALDOT) engaged Sain Associates, Inc. to conduct a traffic analysis and to develop an access management plan (referred to as the Plan) for the US-72 corridor in the Town of Gurley, Alabama (Gurley). This four-lane median divided section of US-72, which covers a distance of approximately 2 miles, will continue to function as a major east-west arterial for the region. The project limits, shown graphically in Figure 1, are from Rock Cut Road on the west end to the Madison/Jackson county line on the east end.

The Town of Gurley recognizes that their growth potential is tremendous based on its proximity to a growing metropolitan area, ease of access to that metropolitan area via US-72, lots of developable land, and current Army Base Realignment and Closure (BRAC) considerations which are projecting tremendous residential growth east of Huntsville. As a result, Gurley is working in cooperation with ALDOT to employ the access management strategies in this Plan as part of its site development plan review process to preserve the balance between the operational needs of US-72 and appropriate access to future developments along US-72.

Enhanced highway safety and efficient operation are critical in this effort. The Plan will ensure reasonable access to properties; though not always by the most direct access. Parcels with frontage on US-72 will have to be reviewed to determine their allowable access for new driveways according to access locations in the Plan.

We initiated the project by conducting an analysis of existing traffic conditions within the corridor. We collected traffic count data, conducted a field review, and analyzed recent crash data as part of our existing conditions analysis. Our analysis indicates the intersections are operating below capacity within acceptable levels of service, but we are recommending improvements to address crash hotspots and geometric concerns identified in the field, and to enhance management of access points along US-72.

We followed the existing conditions analysis by developing access management plan guidelines, followed by development of the Plan. The access management plan guidelines will provide the standards for allowable traffic signal spacing, median opening spacing, side-street spacing, driveway spacing, and shared access. The guidelines, planned development information, and geometric improvements needed to address existing conditions will be used to customize an access management plan for the US-72 corridor.

The area of US-72 from Section Line Road to the west contains a considerable amount of improvement recommendations – installation of new turn lanes, improvements to existing substandard turn lanes, driveway closures, service road extensions, etc. A very notable improvement recommendation calls for the relocation of Little Cove Road so that it intersects with US-72 about halfway between Rock Cut Road and Section Line Road. Converting from a four-leg intersection to two three-leg intersection will reduce the number of traffic conflict points.

The next step is for the Plan to be formally accepted by ALDOT and then formally adopted by the Town of Gurley and its stakeholders. The Plan will form the basis for all future access connections up for consideration on and adjacent to the US-72 corridor in Gurley.

It is believed that some of the recommended short term improvements could be implemented immediately with local maintenance forces, but projects requiring engineering design plan development will be needed in order to implement a significant number of the recommended improvements. The Town of Gurley will need to work with ALDOT to identify and request specific projects and funding sources.

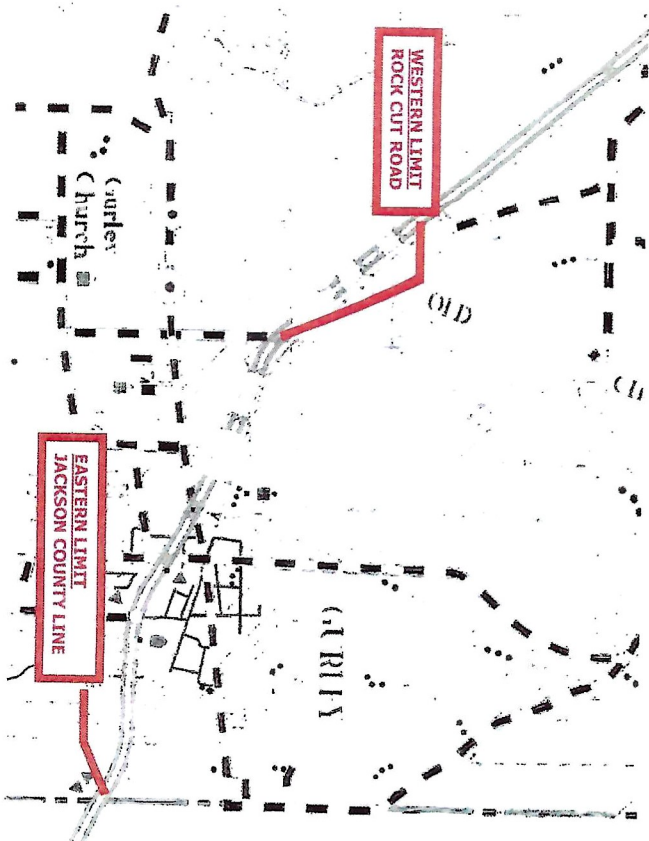


FIGURE 1
Project Limits

EXISTING CONDITIONS

We initiated the project by conducting analysis and observations of existing peak hour conditions within the US-72 study corridor.

Roadway Characteristics

The US-72 corridor currently exists as a four-lane median divided roadway separated with grass medians. The existing corridor can be described as a somewhat rural setting with small commercial developments and single family residential homes fronting the roadway. Currently, the US-72 corridor's function is to provide regional mobility for daily commuters.

Traffic Volume Data

Traffic data, as provided by the ALDOT website, shows the 24-Hour ADT (average annual daily traffic) volumes from 2003 to 2007. The count location is located on US-72 between Keel Mountain Road and Steel Street.

TABLE 1
US-72 ADT at MP 11.3, 515

Year	ADT
2003	15,360
2004	15,580
2005	15,700
2006	15,760
2007	16,260

To supplement the ALDOT traffic volume data, we conducted a 72-hour traffic count on US-72 just east of Rock Cut Road. We found the average 24-hour traffic volumes from our counts to be significantly lower than the ALDOT ADT data for the location further east on US-72. The average 24-hour traffic volume for US-72 just east of Rock Cut Road is approximately 10,000 vehicles per day. We believe this is due in large part to traffic east of town utilizing Little Cove Road as a more direct route to places of employment such as Redstone Arsenal. We conducted a 72-hour traffic count on Little Cove Road between Rock Cut Road and US-72, and found the average 24-hour traffic volume to be approximately 3,500 vehicles per day.

We also conducted AM and PM peak hour turning movement counts at five (5) locations on US-72:

- Rock Cut Road
- Section Line Road/Little Cove Road
- Gurley Pike/3rd Street
- 1st Street/Keel Mountain Road
- Steel Street

A summary of AM and PM peak hour turning movement counts can be found in Figure 2.



Percentage of Truck Traffic

We estimated the percentage of truck traffic by collecting vehicle classification data with the counting machines placed on US-72 east of Rock Cut Road. We found the average percentage of truck traffic for each direction to be 12-13 percent.

Travel Speed Data

The posted speed limit is currently 55 mph inside of Gurley Town limits and 65 mph on either side. Travel speeds were collected at the count location just east of Rock Cut Road just inside of the Town limit line. The 85th percentile speed for each direction on US-72 was noted at approximately 65 miles per hour.

Capacity Analysis & Levels of Service

We used the methods of the *Highway Capacity Manual*, published by the Institute of Transportation Engineers, to perform a capacity analysis of existing conditions at the counted intersections. A level of service "C" is desirable, and a level of service is considered acceptable during peak periods of traffic flow. The resulting levels of service are shown in Table 2.

TABLE 2

Existing Levels of Service

Intersection	Approach (Movement)	Level of Service	
		AM Peak Hour	PM Peak Hour
US-72 @ Rock Cut Road	EB US-72 (Left Turn)	A	A
	WB US-72 (Left Turn)	A	A
	NB Rock Cut Road	C	C
US-72 @ Section Line Road/Little Cove Road	EB US-72 (Left Turn)	A	A
	WB US-72 (Left Turn)	A	A
	NB Little Cove Road	B	C
US-72 @ Gurley Pike/3rd Street	SB Section Line Road	C	C
	EB US-72 (Left Turn)	B	B
	WB US-72 (Left Turn)	A	A
US-72 @ 1st Street/Keel Mountain Road	NB 3rd Street	C	C
	SB Gurley Pike	B	C
	EB US-72 (Left Turn)	A	A
US-72 @ Steel Street	WB US-72 (Left Turn)	A	A
	NB Keel Mountain Road	C	B
	SB 1st Street	B	B

Our capacity analysis indicates that the studied intersections are currently operating at acceptable levels of service during peak hours of traffic flow. The eastbound and westbound through and right turn movements on US-72 do not have to stop or yield to traffic at the intersections, therefore we did not report a level of service for those movements.

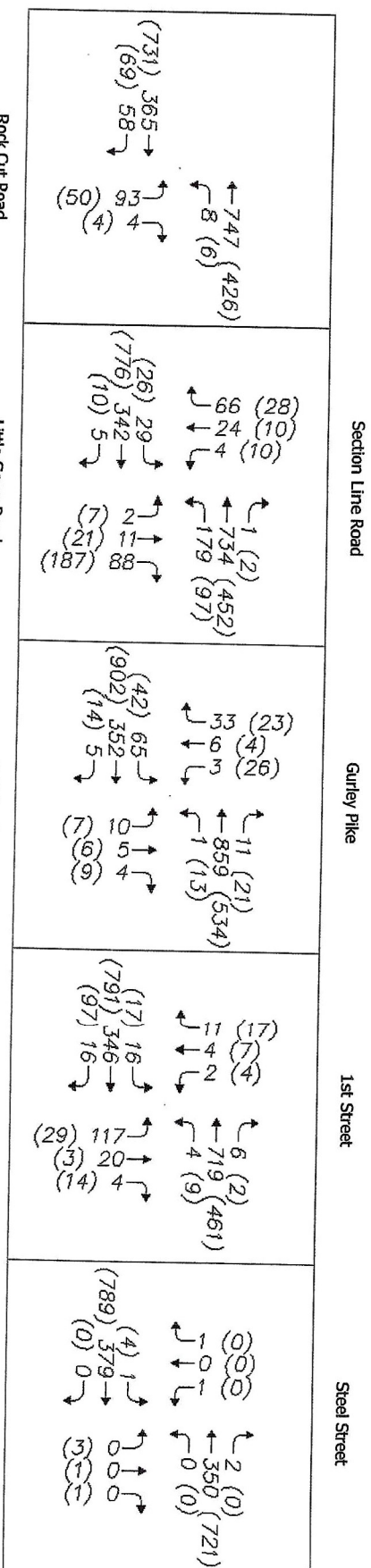


FIGURE 2
Existing Weekday Peak Hour Traffic Volumes
AM (PM)



sain associates

CRASH EXPERIENCE

The Town of Gurfley provided crash information within the US-72 corridor for the years 2004 to 2009. In all, there were a total of 87 crashes reported within the US-72 corridor between 2004 and 2009. Table 3 shows the frequency of each crash type.

TABLE 3
Number of Crashes by Type

Type of Crash	Number of Crashes
Angle	42
Rear End	21
Sideswipe	10
Run off the Road	7
Other	5
Head On	2
TOTAL	87

It can be seen from Table 3 that almost half of the reported crashes were angle type crashes, suggesting that they are intersection related.

Other notes about crashes in the study corridor between 2004 and 2009:

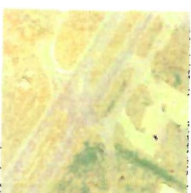
- Most crashes occurred at intersections, with the peak in the frequency of crashes occurs at the intersection of US-72 and Section Line Road/Little Cove Road.
- There was a fatality crash reported on westbound US-72 east of Keel Mountain Road/1st Street involving a pedestrian being struck in the outside westbound travel lane.
- There was a fatality crash reported on eastbound US-72 east of Rock Cut Road near mile point 112.15 in the vicinity of the median opening.
- There were five (5) crashes reported in the two median openings in front of Hardees and the Exxon station near mile point 112.7.
- There were two (2) crashes reported on the westbound side of US-72 adjacent to the Piggy Wiggy driveway.

The following are brief narratives and collision diagrams for the five (5) intersections within the study corridor with a significant number of crashes:

US-72 @ Rock Cut Road



Figure 3 contains a crash diagram for the intersection of US-72 and Rock Cut Road. Crash data for the intersection reflected a trend in angle crashes associated with northbound Rock Cut Road and eastbound US-72. There were other crashes not associated with the intersection involving single vehicles losing control. In all, there were five (5) crashes reported at the intersection and five (5) other crashes on US-72 in the vicinity of the intersection between 2004 and 2009.



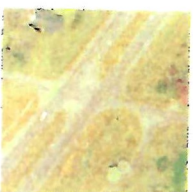
US-72 @ Section Line Road/Little Cove Road

Figure 4 contains a crash diagram for the intersection of US-72 and Section Line Road/Little Cove Road. Crash data for the intersection reflected a trend in angle crashes and rear end crashes, most of which were associated with eastbound US-72 and northbound Little Cove Road. All but one (1) of the nine (9) rear end crashes reported was on northbound Little Cove Road at its intersection with US-72. In all, there were over thirty (30) crashes reported at this intersection between 2004 and 2009.



US-72 @ 4th Street

Figure 5 contains a crash diagram for the intersection of US-72 and 4th Street. Crash data for the intersection reflected a total of three (3) angle crashes in US-72 and two (2) rear end crashes on northbound 4th Street. In all, there were six (6) crashes reported at the intersection and two (2) other crashes on US-72 in the vicinity of the intersection between 2004 and 2009.



US-72 @ Gurfley Pike/3rd Street

Figure 6 contains a crash diagram for the intersection of US-72 and Gurfley Pike/3rd Street. Crash data for the intersection reflected a trend in angle crashes, about half of those involving vehicles bound for northbound Gurfley Pike crossing westbound US-72. In all, there were ten (10) crashes reported at the intersection between 2004 and 2009.



US-72 @ Keel Mountain Road/1st Street

Figure 7 contains a crash diagram for the intersection of US-72 and Keel Mountain Road/1st Street. Crash data for the intersection reflected a trend in angle crashes and rear end crashes, most of which were associated with eastbound US-72 and northbound Keel Mountain Road. There was a fatality crash involving a pedestrian being struck by a single vehicle on westbound US-72. In all, there were eight (8) crashes reported at the intersection, including the pedestrian fatality, and two (2) other crashes on US-72 in the vicinity of the intersection between 2004 and 2009.

FIGURE 5
Diagram of Crashes Reported 2004-2009
US-72 @ 4th Street

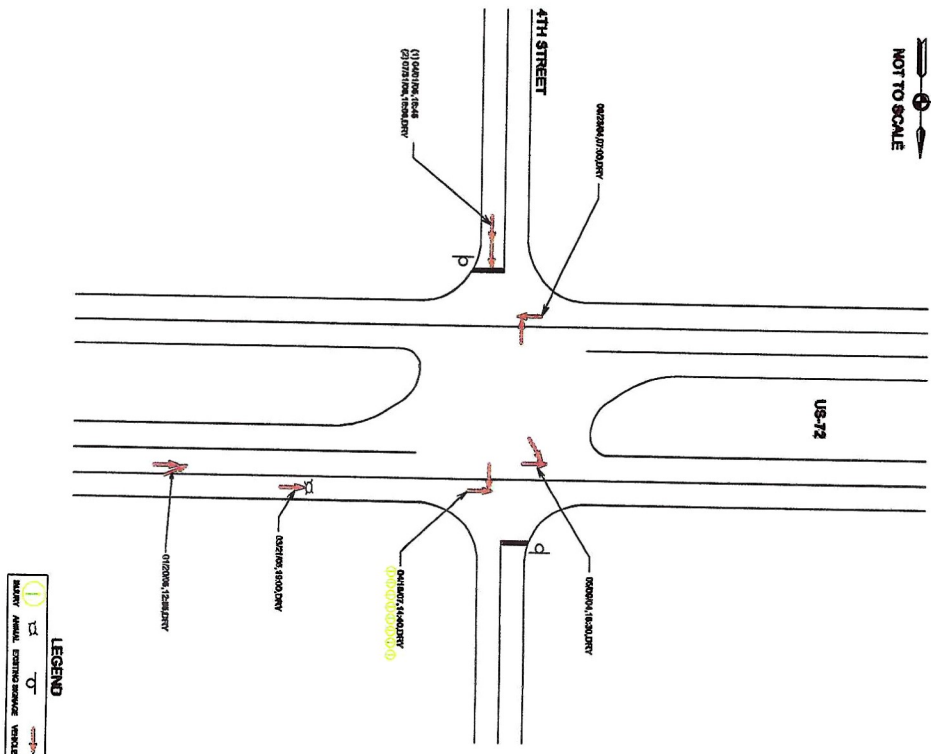
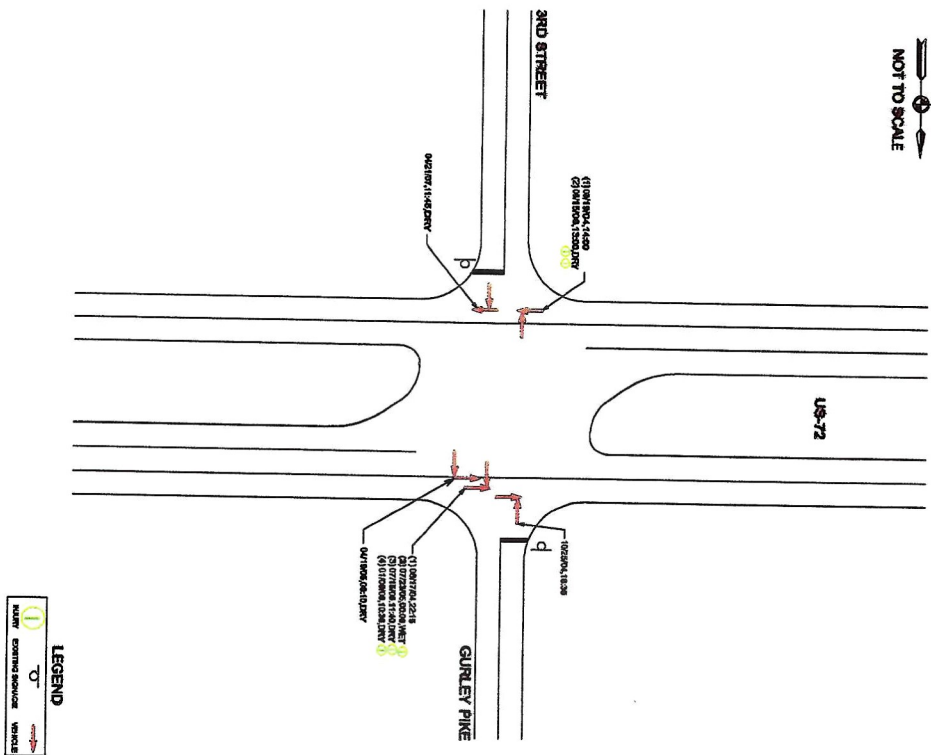


FIGURE 6
Diagram of Crashes Reported 2004-2009
US-72 @ Gurfey Pike/3rd Street



NEED FOR ACCESS MANAGEMENT

General Overview

Access management is the planning, design, and implementation of various land use and transportation strategies to maintain traffic flow and safety along a primary roadway, while still considering access needs of the various land uses and development types. The key to effective access management is linking appropriate access design to roadway function. Appropriately spaced intersections along with minimal allowable driveways are basic elements commonly used as access management strategies. By adopting standards for access management, agencies can streamline the decision-making process and maintain uniformity throughout their transportation system. Standards specify when, where, and how to provide access. Effective access management standards can promote intergovernmental cooperation relating to land development and transportation decisions that are cohesive throughout a region. Such efforts help adjacent property values while still preserving governing agencies' financial investment in roads.

Mobility and Land Access

A primary goal of access management is to minimize the number of access points along a roadway facility. The proper application of access management will preserve street capacity and help travel times, reduce traffic accidents and congestion, and can preserve the value of adjacent property. The relationship between street capacity and roadway access is shown in Figure 8 below. Increased capacity is possible by minimizing the amount of access. This becomes particularly important for higher volume, higher speed roadways. For example, freeways function to move large volumes of traffic at high speeds for long distances because access is limited. In contrast, residential streets function primarily to provide access to residences.

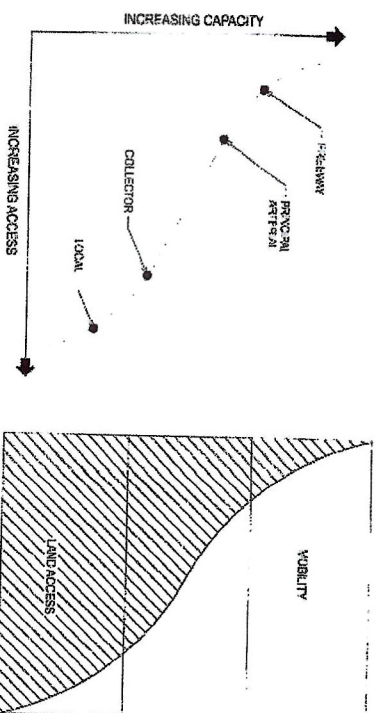


FIGURE 8
Land Access versus Mobility

Minimize Conflict Points

Access management minimizes the number of vehicle conflict points and directs turning vehicles to strategically identified locations. Conflict points or crossing interactions between vehicles represent opportunities for delay due to congestion and crashes. Multiple conflict points increase a driver's decision-making process. Drivers can only mentally process a single conflict point at a time.

Designs with few traffic signals, non-traversable medians, channelized left turn lanes, and "right-in/right-out" driveways are effective in promoting access management and minimizing conflict points. Without applying appropriate access management techniques a typical four-way intersection can have up to 32 total conflict points as shown in Figure 9. Similarly, a three-way intersection can have 9 total conflict points as shown in Figure 10. By applying the technique of constructing a non-traversable median combined with a "right-in/right-out" driveway, the number of conflict points are reduced to only two as shown in Figure 11.

FIGURE 9
Four-Leg Intersection
32 Conflict Points

FIGURE 10
Three-Leg Intersection
9 Conflict Points

FIGURE 11
"Right-In/Right-Out" Intersection
2 Conflict Points

The various access management techniques function to minimize vehicle interaction between through traffic and turning traffic. A reduced number of turning vehicles equates to less stop and go traffic, less delay, and fewer and less severe crashes. Less stop and go traffic helps reduce air pollution and lessens fuel consumption. Fewer crashes in the corridor means safer access to property. This is particularly important to commercial property owners who wish to provide their customers safe access to and from their property. Unsafe access can impact a commercial property's economic success.

Non-traversable medians minimize crossing vehicle maneuvers from left turning vehicles. Fewer left turn maneuvers lowers the number of vehicle crossing crashes which can often be severe. Channelized left or right turn lanes serve to remove turning vehicles from the through lanes, improving traffic flow and reducing the possibility of rear-end crashes. Shared access and interparcel access also improves traffic flow and reduces the possibility of crashes by reducing the interaction of a corridor's through traffic from traffic wishing to access a corridor's various land uses.

ACCESS MANAGEMENT OF US-72

Cooperative Effort between State and City

Effective access management is possible when state and local units of government cooperate in land use and transportation management decisions. ALDOT and the Town of Gurley have each been proactive in terms of regional mobility by recognizing the importance of implementing access management strategies in the rapidly developing US-72 corridor. By incorporating various access management elements to US-72, continued mobility of the corridor and economic vitality of the region can be realized.

The goal of developing this Plan for US-72 is that the stakeholders will ultimately adopt it as the agreed framework for handling development access in the future. Any action taken in regard to access along the corridor will be in conformance with the Plan and any modifications must be approved by ALDOT and the Town of Gurley as a joint unit, as this will have significant regional impacts.

The Plan primarily identifies allowable traffic signal locations, access locations in terms of median openings and specifically identified driveway locations which serve as joint access for adjacent properties. Driveway design on US-72 shall conform to ALDOT standards for the various commercial land uses and residential uses as ALDOT is responsible for permitting access along state and federal routes. Driveway construction which requires vehicles crossing deceleration lanes shall be avoided.

Driveway standards are established for all driveways according to ALDOT guidelines for state roadways. This Plan also addresses property interconnect agreements which must be in place, as part of any property redevelopment. By doing this, the governing agencies will maintain the corridors growth through applying the access management plan, recognizing its regional impact overall.

The planned growth in the US-72 corridor reflects the general growth of the Madison County region. The corridor itself lies in the area identified by the Town of Gurley in its extra-jurisdictional boundaries or planning jurisdictions. As such, future development will be governed by the city applicable standards for land use and site design along the corridor. This governance will be done in conjunction with applicable ALDOT standards for the design and construction of improvements on state maintained roadways.

Madison County Population and Growth Potential

The eastern area of Madison County in which the Town of Gurley is located is developing at a fairly rapid pace and appears to be under stress to develop more rapidly. U.S. Census Bureau mid-decade estimates put Madison County's annual growth at approximately 3.8 percent. Traffic data obtained from ALDOT's website for the US-72 corridor indicate traffic volumes are increasing at an annual rate of approximately 4.0 percent. In the future, traffic volumes will likely increase at a higher annual rate due to the influx of development on the horizon.



Base Realignment and Closure Commission

The U.S. Army's Base Realignment and Closure Commission (BRAC) have planned for the shifting of three major Army command headquarters to Redstone Arsenal, a military facility south of Huntsville. The realignment is expected to result in the addition of thousands of employees to the base by 2011. The land between Gurley and the Redstone Arsenal has already seen a rise in the number of residential neighborhoods, and according to BRAC estimates, the regions to the east of Huntsville is expecting significant growth.

Land Use Forecasts

The US-72 corridor's future zoning is anticipated to be primarily commercial and residential, with some light industrial and agricultural uses remaining. Undeveloped land surrounded by US-72, Rock Cut Road, and Little Cove Road is under tremendous stress to develop. It is anticipated that most of this area will be developed commercially, with residential development anticipated further south. Another area that is poised for commercial development is the area south of US-72 at the foot of Keel Mountain. Most of the remaining developable areas immediately adjacent to US-72 would appear to be suitable for commercial land use, with a high probability of residential use in other developable locations not immediately adjacent to US-72.



Concourse Group Property



John Blue Realty Property



sain associates
PLANNING • ENGINEERING • ARCHITECTURE

ACCESS MANAGEMENT STANDARDS FOR US-72

Principles of Access Management Applied

There are five basic principles related to access management which are critical in this effort. Each of these elements was considered in developing a Plan for the US-72 corridor. The five (5) basic principles are as follows:

1. Strategically locate traffic signals and median openings to promote traffic movement
2. Minimize the impact of turning volumes on through movements
3. Minimize direct access on high-speed, high-capacity facilities
4. Minimize the number of conflict points
5. Separate conflict points

By considering each of the five elements, the following standards were developed concerning various access management strategies.

Traffic Signal Spacing

Appropriate traffic signal spacing is a key element in promoting traffic signal operating efficiency. Signal spacing which is too close can hinder traffic progression and cause traffic queue back ups at high volume intersections. Traffic signals spaced as widely and as evenly as possible help to improve vehicle fuel efficiency, reduce vehicle emissions and lower crash rates by reducing unnecessary stop and go traffic. Also, traffic signals should only be erected when warranted based on federal guidelines as outlined in the latest edition of the Manual of Uniform Traffic Control Devices. Signals installed at improper locations can degrade traffic progression. However, properly installed signals offer the necessary break in traffic flow to permit vehicles to egress from developed properties lining an arterial.

Within the Town limits, US-72 has a speed limit of 55 mph. At this speed, the appropriate spacing for full access traffic signals is **2,600 feet or one-half mile**. This spacing allows vehicle speeds in the corridor to consistently be in the range of 50 to 60 mph while keeping traffic signal cycle lengths lower. Lower traffic signal cycle lengths are preferred to provide optimal service to connecting cross streets.

Median Opening Spacing

US-72 currently has median openings at main driveways along US-72. At a 60 mph design speed, the appropriate spacing is **1,320 feet** for median openings. An effective median opening for access management is the minimum allowable distance between openings in a restrictive median to allow for crossing the opposing traffic lanes to access property or for crossing the median to make a u-turn. The minimum spacing is measured from the centerlines of openings along the traveled way. Successful access management requires the median design to be non-traversable to restrict vehicles crossing at disallowed locations. Non-traversable medians include raised curb medians with either grass-covered or hard-surface fill or depressed medians with grass-covered fill.

Turn Lane(s) Requirements

Dedicated turn lanes or auxiliary lanes for left-turning and right-turning traffic can make a road safer and improve the flow of through traffic from the standpoint of access management. Left turn lanes are critical in high speed corridors to minimize the possibility of rear-end crashes and reduce impedance of through traffic flow. Similarly, right turn lanes can decrease the possibility of rear-end crashes and the impedance to through traffic from stopped or slowed vehicles. The design of turn lanes or auxiliary lanes shall be in accordance with current ALDOT standards.

The Plan requires **left deceleration lanes or turn lanes of appropriate design length be included on all approaches to median openings**. The Plan identifies locations where median openings will be allowed based on spacing requirements for the corridor as mentioned previously.

The benefits of right turn lanes will be realized in the US-72 corridor as well. Right-turning vehicles can be removed from the arterial through traffic with dedicated right-turn lanes. The Plan requires **right-turn deceleration lanes to all commercial driveways with expected turning volumes exceeding 50 vehicles per hour during the peak hour** as indicated from a traffic study. Criteria for development traffic studies are discussed in a later section.

Driveway Spacing

US-72 is a major route for east-west travel in Madison and Jackson County and will continue to function as a major east-west route as the area around the corridor continues to develop. The goal of the Plan is to effectively manage how these developments wish to connect and gain access to the area's primary arterial. Numerous access points, particularly private-access driveways and small public streets, are safety hazards and potentially interfere with through traffic movements. Numerous driveways along a corridor can cause confusion as drivers struggle to figure out exactly which is the appropriate driveway in which they should turn. Driveways inherently create conflicts between vehicles on the roadway and vehicles entering and leaving the roadway.

US-72 currently has numerous small driveway access points. Many of these were originally granted to individual property owners many years ago. These direct access points should gradually be eliminated as parcel redevelopment occurs. There are multiple driveways in the US-72 corridor that do not adhere with the general goals of access management on this type of facility. Upon redevelopment, available parcel driveways will be required to comply with the standards outlined in this Plan. As a result, many existing approvals or rezoning requests made to the Town of Gurley. As already mentioned, newly developed or redeveloped parcels will be required to access US-72 via the allowable access locations according to the Plan. All closed driveways must be appropriately landscaped.

The Plan identifies specific locations where future driveways will be allowed. The driveway spacing considers a design speed of 60 mph. A required driveway spacing of **1,320 feet** considers redeveloped parcels in the median separated section.



sain associates

As the corridor develops, there will be a desire by the developers to have multiple driveways for certain land uses. The authorization of multiple driveways will be considered based upon the amount of continuous parcel frontage. Parcels with frontage exceeding 660 feet will be allowed additional driveways according to the criteria indicated in Table 4 below. This criteria is also subject to the opposite-left and opposite-right driveway criteria discussed below.

TABLE 4
US-72 Driveway Spacing Requirements

Parcel Frontage Length	Allowable Number of Driveways*
< 660 Feet	1
660 Feet to 1,320 Feet	2
1,320 Feet to 1,980 Feet	3
1,980 Feet to 2,640 Feet	4

* Subject to minimum trip criteria.

The length of property frontage is not the only consideration in determining the number of driveways allowed for commercial or multifamily residential property. The volume of traffic generated by a development must also be considered. **This Plan will require a property to generate more than 500 trips per hour or 5,000 trips per day to justify more than one driveway as indicated by a traffic study. If this minimum trip criteria is met, the tables above apply.** Although multiple driveways may be allowed, additional driveways are subject to the criteria set-forth for median openings in the corridor. One or multiple driveways may be limited to right-in/right out movements.



Corner Clearance

The required corner clearance refers to the distance from an intersection of a cross road to the nearest driveway connection either prior to or following the intersection. It is desirable to maximize this distance to preserve traffic flow in the vicinity of intersections as shown in Figure 12. The corner clearance is the distance measured from the closest edge of pavement from the intersecting road measured along the travel way (through lanes) to closest edge of a proposed driveway. Requirements for corner clearance are shown below:

Corner Clearance at Intersections	
Approaching Intersection (Right In/Out)	115 Feet Minimum
Approaching Intersection (Right In Only)	75 Feet Minimum
Departing Intersection (Right In/Out)	230 Feet Minimum
Departing Intersection (Right Out Only)	100 Feet Minimum

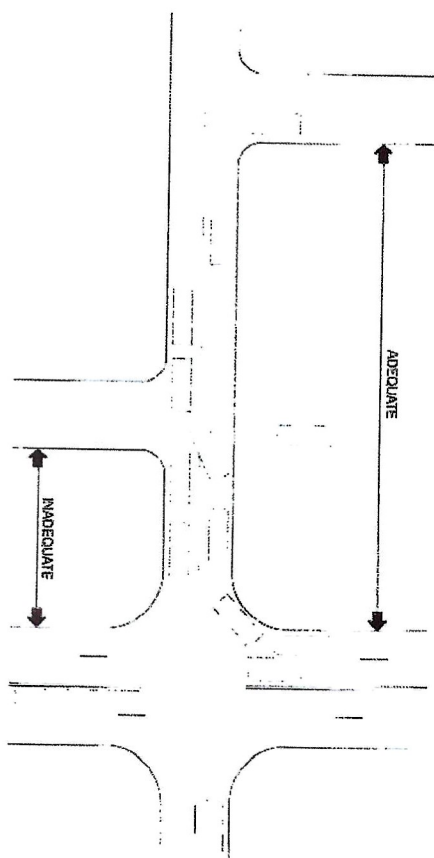


FIGURE 12
Corner Clearance

Curb Radii

The turning radius of a driveway or access road affects both the flow and safety of through traffic as well as vehicles entering and exiting the roadway and as such is an important element in effective access management. Curb radii for residential, commercial and multi-family developments in the US-72 corridor shall be 30 feet for residential applications and 50 feet for commercial applications. Different radii may be required by the governing city or ALDOT as a permitting requirement for granting access along state and federal routes.

Driveway Throat Length

Throat length is the length of the driveway between the external access intersection and first internal conflict point within a developed parcel, as shown in Figure 13. Properly designed throat length prevents traffic queues from backing up onto the external road and impeding traffic flow. Where development access management, the generally required throat length for developments in the US-72 corridor is a minimum of **150 feet** for midblock driveways with a recommended length of 300 feet, subject to the following recommendations for specific land uses:

- 300 feet for mall or supercenter
- 250 feet for retail development with > 150,000 square feet of floor space
- 150 feet for retail development with 100,000 to 150,000 square feet of floor space
- 50 feet for small strip developments at intersection corner parcels
- 30 feet for convenience store at intersection corner parcels

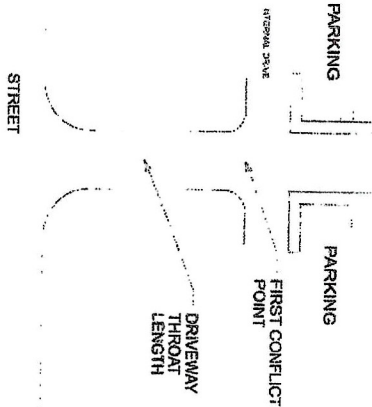


FIGURE 13
Driveway Throat Length

Shared Access Parcels

The number of access points on a roadway can be minimized by sharing access between adjacent properties as shown in Figure 10. This can be accomplished by encouraging cross easements or shared easements between adjacent properties and considering the traffic circulation for both properties. Cross access allows movement between developments without using the public roadway, thereby reducing numerous US-72 short trips between adjacent trip destinations. This Plan sets forth a system promoting joint-use driveways and cross access easements by identifying and strategically showing allowable driveways in the corridor. The land comprising the shared or cross access driveways should be recorded as an easement and serve as a covenant attached to the property. Joint maintenance agreements should also be incorporated into the property deed. Linkages requiring mutually executed easements should also be required between adjoining properties to provide movement without requiring a return to the public roadway. In cases where the shared driveway does not correspond to the property line between two parcels, a written easement should be in place to allow traffic to travel across one parcel to the appropriate driveway.

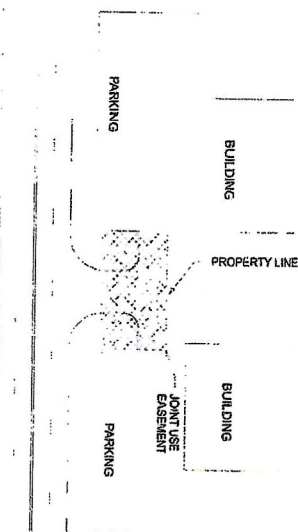


FIGURE 14
Shared Access Parcels

Frontage Roads, Reverse Frontage Roads, and Service (Backage) Roads

The standards used for median openings (minimum of 1,300 feet) and for driveway spacing (minimum of 660 feet) in the Plan promote the use of frontage roads and/or backage roads in the corridor. Frontage roads, backage roads, and connections to the existing street system help to provide alternate routes to get around an area and minimize the number of driveways required as shown in Figures 15 and 16. Commercial developments should be designed to allow for future backside access by construction of their service roads to rear of the development with parking on the side and to the rear of a parcel. Rear service roads can usually be designed to handle larger volumes of traffic and are good for servicing commercial and industrial uses. These requirements promote the use of backage roads and local access roads that would likely connect to US-72 at locations identified as right in/right out driveways in the Plan.

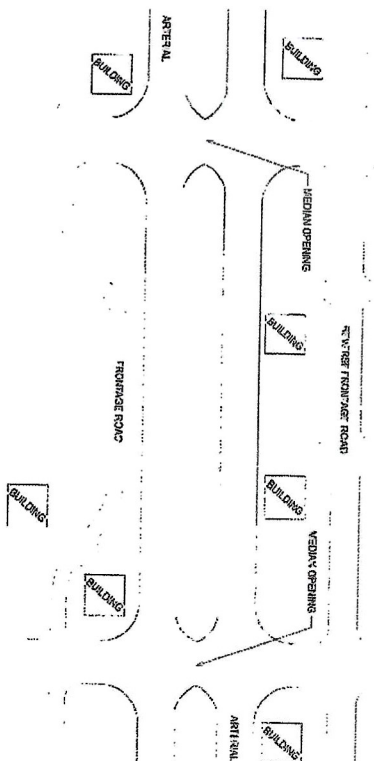


FIGURE 15
Frontage Road/Reverse Frontage Road Concept

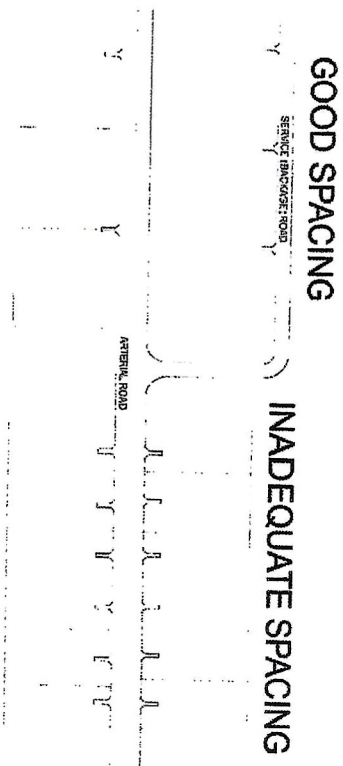


FIGURE 16
Service (Backage) Road Concept

Grouped Parcels

The Plan for US-72 identifies groups of existing parcels, developed and undeveloped, that will ultimately be required to share access to US-72. In a majority of the cases, the Plan identifies a single access point or driveway on US-72, which the grouped parcels must cooperatively use when all parcels are fully developed or redeveloped. Therefore, each development must include internal connections and parking lot sharing options to adjacent parcels, developed or undeveloped, as part of their site design.

The grouped parcels may be combined by a developer for large commercial uses, large multifamily developments or subdivisions. There will also be occasions when a single small parcel within the larger group of parcels will be developed independently. In cases such as this, a temporary driveway permit will be issued with the understanding that the site plan must provide for future connections to adjacent parcels in the form of shared parking, small section frontage roads or a backage road in order to reach the identified access location or driveway as shown in the Plan. Once a connection from a parcel or parcels is possible through development or redevelopment, the identified driveway location according to the Plan will be the only allowed access point to US-72. All access drives previously identified as temporary in the permitting process must be removed prior to issuing a certificate of occupancy. Figure 13 shows the provision of parking lot stub-outs to connect to future adjacent developments; thereby allowing cross access to the driveway identified in the Plan for the group of parcels.

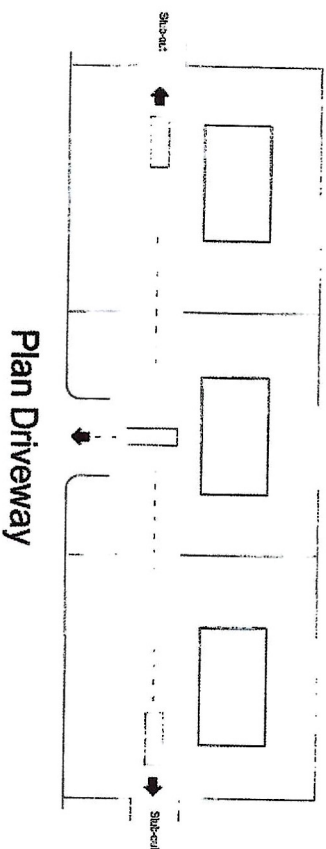


FIGURE 17
Future Adjacent Parcel Access Stub-outs

TRAFFIC IMPACT ANALYSIS (TIA) IN THE US-72 CORRIDOR

New development in the US-72 corridor may require a Traffic Impact Analysis (TIA) or engineering study to determine the level of traffic impact of a proposed land use. TIAs usually identify improvements necessary to maintain a corridor's level of service (LOS) and capacity. A simple engineering study may only indicate forecasted turning movements at a proposed access location. The standards outlined here present the various criteria of when to perform a TIA or engineering study and the necessary elements that must be included. The methodologies used in TIAs for the developing US-72 corridor should follow practices outlined in the Institute for Transportation Engineers (ITE) recommended practice from 2005 entitled "Transportation Impact Analyses for Site Development".

It is recommended that a TIA be required for proposed developments that generate at least 100 total peak-hour vehicle trips. This criteria is appropriate as an additional 100 vehicles per hour can change the level of service or appreciably increase the volume-to-capacity ratio of an intersection approach. Table 5 below provides various land use types expected to generate this amount of traffic.

TABLE 5

Land Use	Land Use Trip Generation
Single Family Home	≥ 100 Peak-Hour Trips
Apartments	50 Units
Condominium/Townhouse	150 Units
Mobile Home Park	190 Units
Shopping Center	170 Units
Fast-Food Restaurant with Drive-In	6,000 SF
Bank with Drive-In	3,000 SF
General Office	2,000 SF
Medical/Dentist Office	67,000 SF
Light Industrial/Warehousing	29,000 SF
Manufacturing Plant	185,000 SF
Gas Station/Convenience Store	144,000 SF
	7 fueling positions

The TIA must consider the requirements of the Plan for determining access needs for a development site, particularly for driveway spacing. No median cuts will be allowed in the corridor other than those identified in the Plan. Operational analysis of nearby intersections will be required as determined by the permitting agency. The TIA must consider the need for deceleration lanes and the amount of forecasted turning movements as determined by trip generation, trip distribution, traffic assignment and existing volumes. Any recommendations for site improvements must conform to requirements outlined in the Plan.

RECOMMENDATIONS

Improvements of varying magnitude are recommended in order to enhance the safety of the US-72 corridor and to implement the requirements of the Plan. Improvements described in earlier sections of the report, including median crossover closures, driveway closures, intersection reconfigurations, intersection relocations, allowable future driveway locations, allowable future traffic signal locations, and recommended service road locations can all be found in the improvements recommended for the US-72 corridor within this Plan.

Improvement recommendations, shown in conceptual form on pages 16-30, are in three (3) categories:

- Short Term Improvements
- Long Term Improvements
- Future Redevelopment Improvements

Short Term Improvements

The improvements that are labeled as short term improvements are shown in **PURPLE** in the attached layout sheets on pages 16-26. These are improvements that appear to be of lesser magnitude, such as median closures and driveway closures, or improvements that are needed to address the top priority safety concerns as determined by the project team.

Long Term Improvements

The improvements that are labeled as long term improvements are shown in **DARK BLUE** in the attached layout sheets on pages 16-26. These are improvements that appear to be of greater magnitude, such as intersection relocations, and could be done under programmed projects or in conjunction with new development.

Future Redevelopment Improvements

The improvements that are labeled as future redevelopment improvements are shown in **LIGHT BLUE** in the attached layout sheets on pages 27-30. These are improvements that vary in magnitude, and could be done in conjunction with redevelopment of existing property.

The Next Step

The next step is for the Plan to be formally accepted by ALDOT and then formally adopted by the Town of Gurley and its stakeholders. The Plan will form the basis for all future access connections up for consideration on and adjacent to the US-72 corridor in Gurley.

It is believed that some of the short term improvements could be implemented immediately with local maintenance forces, but projects requiring engineering design plan development will be needed in order to implement a significant number of these improvements. The Town of Gurley will need to work with ALDOT to identify and request specific projects and funding sources.



sain associates

CONCEPTUAL LAYOUT OF IMPROVEMENT RECOMMENDATIONS



SHORT TERM/LONG TERM – US-72 at Rock Cut Road

SHORT TERM IMPROVEMENTS:
4. CLOSE MEDIAN OPENING

4. CLOSE MEDIAN OPENING

SHORT TERM IMPROVEMENTS:
4. CLOSE MEDIAN OPENING

MATCH LINE "B"

US-72

RELOCATED LITTLE COVE RD

MATCH LINE "C"

LEGEND:

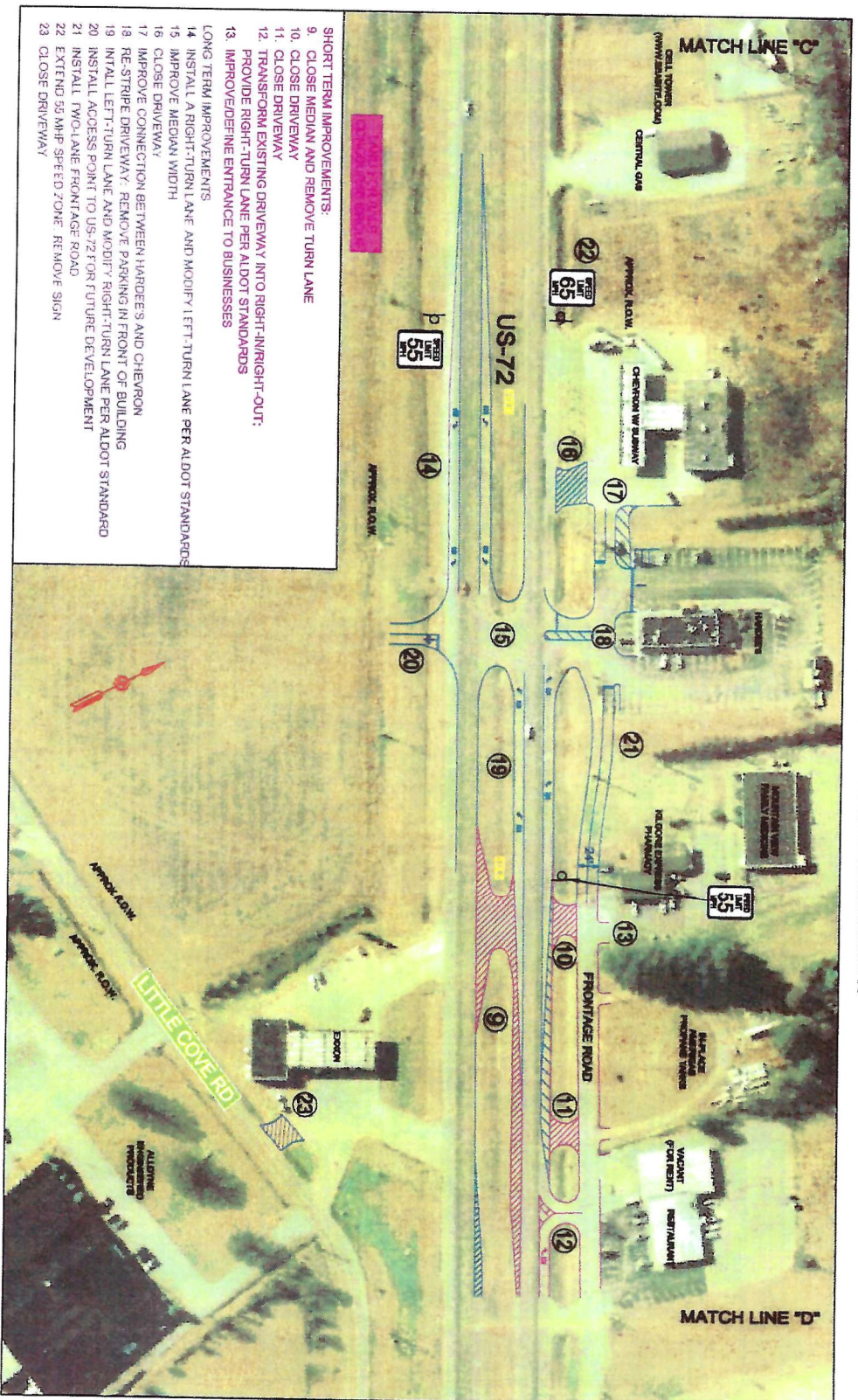
- 1. RELOCATE LITTLE COVE RD
- 2. PROVIDE ROW FOR FUTURE 4 LANE DIVIDED ROADWAY
- 3. PROVIDE RIGHT-TURN LANE PER ALDOT STANDARDS
- 4. PROVIDE LEFT-TURN LANE PER ALDOT STANDARDS
- 5. PROVIDE PAVEMENT FOR FUTURE DUAL LEFT-TURN LANE
- 6. PROVIDE MEDIAN OPENING PER ALDOT STANDARDS

North Arrow

5. RE-ALIGN LITTLE COVE RD. PROVIDE ROW FOR FUTURE 4-LANE DIVIDED ROADWAY
6. PROVIDE RIGHT-TURN LANE PER ALDOT STANDARDS
7. PROVIDE LEFT-TURN LANE PER ALDOT STANDARDS
8. PROVIDE PAVEMENT FOR FUTURE DUAL LEFT-TURN LANE
9. PROVIDE MEDIAN OPENING PER ALDOT STANDARDS

SHORT TERM/LONG TERM – US-72 at proposed relocation of Little Cove Road

CONCEPTUAL LAYOUT OF IMPROVEMENT RECOMMENDATIONS



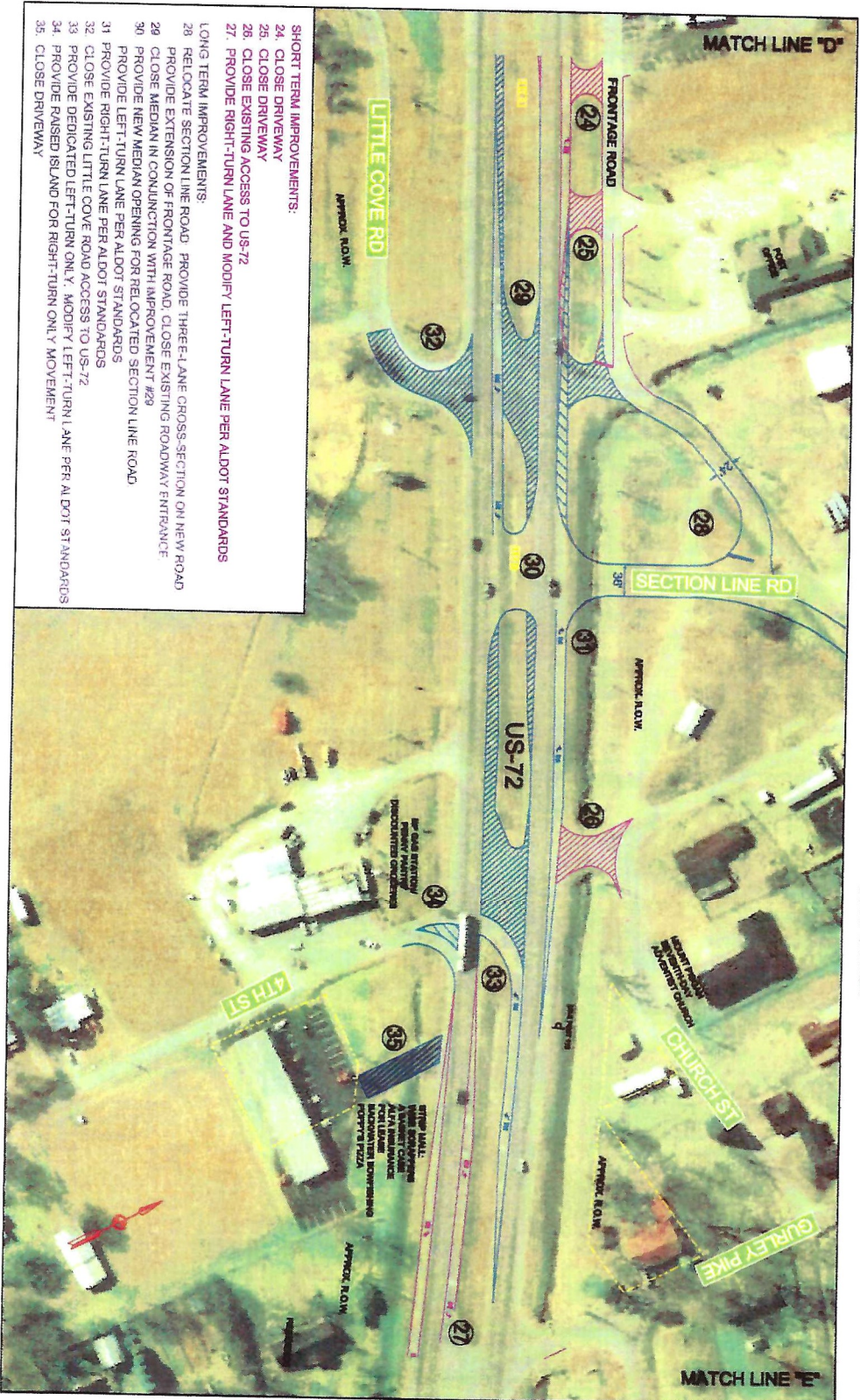
SHORT TERM/LONG TERM – US-72 west of intersection of Section Line Road/Little Cove Road



sain associates
PLANNING • ENGINEERING • ARCHITECTURE

US-72 Traffic Analysis & Access Management Plan + Madison County + Gurley, Alabama

CONCEPTUAL LAYOUT OF IMPROVEMENT RECOMMENDATIONS



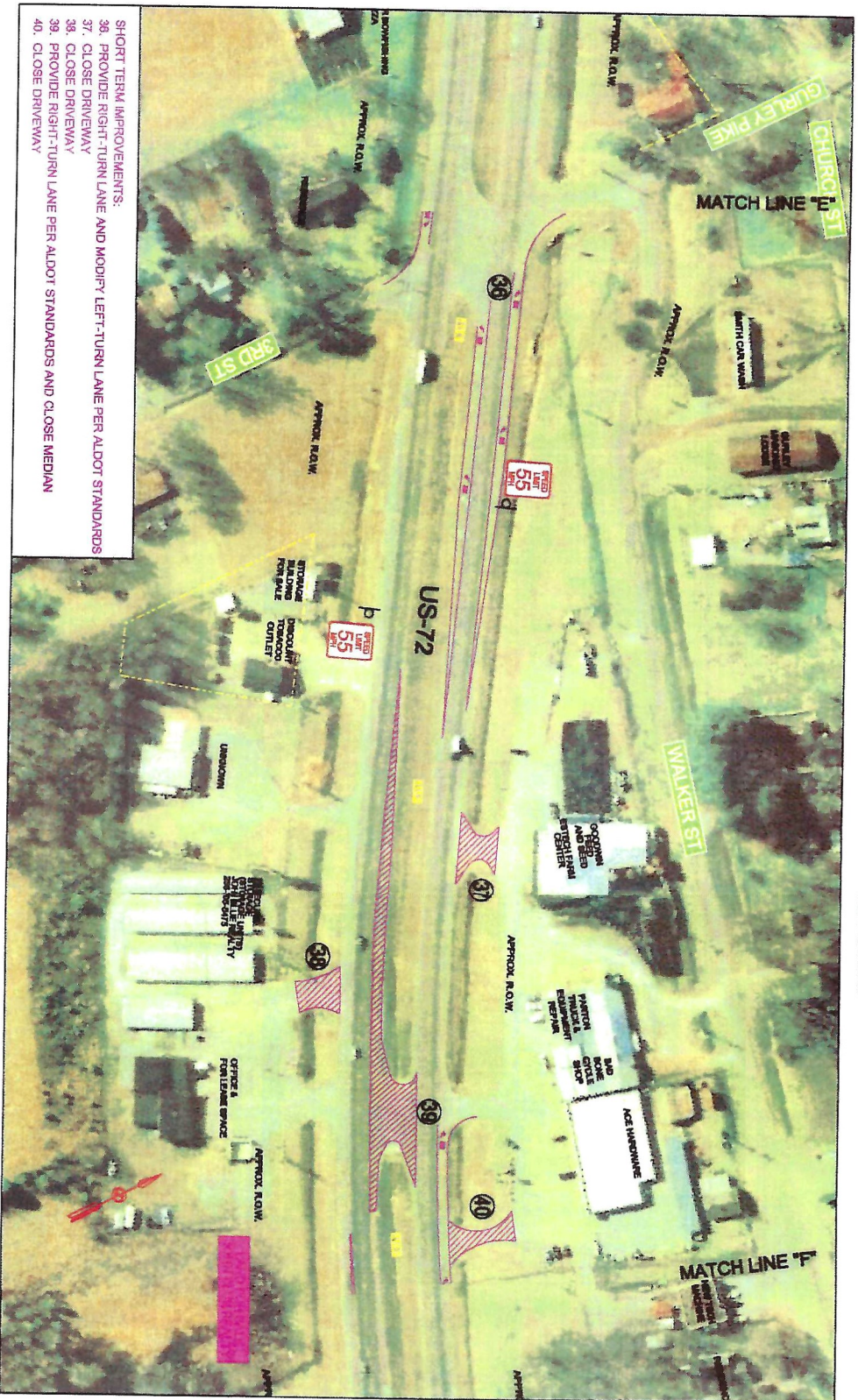
SHORT TERM/LONG TERM – US-72 at Section Line Road/Little Cove Road and 4th Street



sain associates

US-72 Traffic Analysis & Access Management Plan ♦ Madison County ♦ Gurley, Alabama

CONCEPTUAL LAYOUT OF IMPROVEMENT RECOMMENDATIONS



SHORT TERM/LONG TERM – US-72 east of Gurley Pike/3rd Street



sain associates

CONCEPTUAL LAYOUT OF IMPROVEMENT RECOMMENDATIONS



SHORT TERM/LONG TERM – US-72 at Keel Mountain Road/1st Street



sain associates
 10000 Highway 100, Suite 100
 Birmingham, AL 35243
 (205) 991-1111
 www.sainassociates.com

SHORT TERM IMPROVEMENTS:

49. CLOSE DRIVEWAY
50. PROVIDE RIGHT-TURN LANE PER ALDOT STANDARDS
51. INCREASE TURN-OUT RADII ON EACH SIDE OF STEEL STREET
52. PROVIDE RIGHT-TURN LANE PER ALDOT STANDARDS
53. CLOSE DRIVEWAY

US-72 Traffic Analysis & Access Management Plan ♦ Madison County ♦ Gurley, Alabama
Page 23

CONCEPTUAL LAYOUT OF IMPROVEMENT RECOMMENDATIONS



SHORT TERM/LONG TERM – US-72 east of Steel Street

CONCEPTUAL LAYOUT OF IMPROVEMENT RECOMMENDATIONS

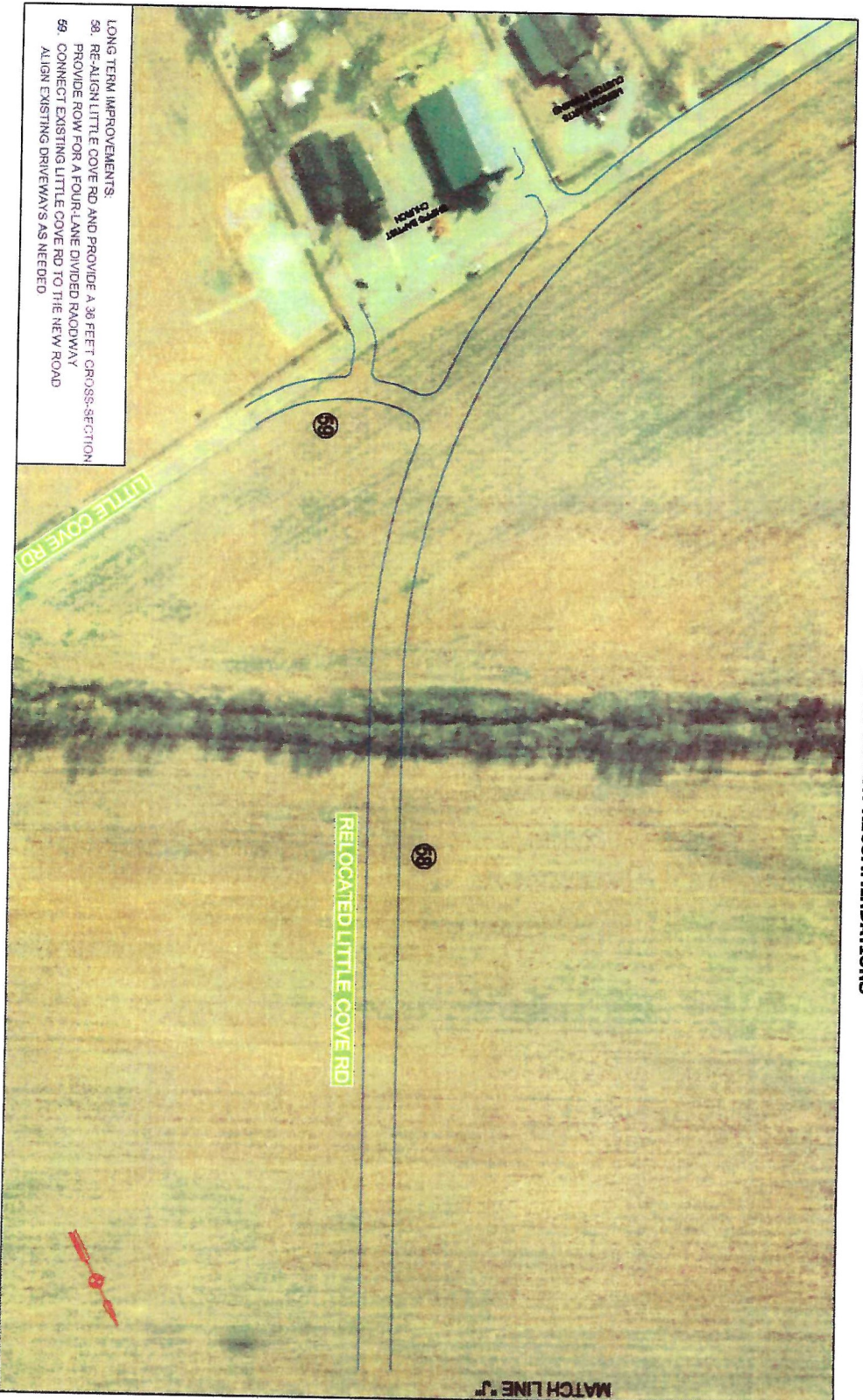


SHORT TERM/LONG TERM - US-72 at Jackson County Line

sain associates

US-72 Traffic Analysis & Access Management Plan ♦ Madison County ♦ Gurfey, Alabama

CONCEPTUAL LAYOUT OF IMPROVEMENT RECOMMENDATIONS



sain associates

CONCEPTUAL LAYOUT OF IMPROVEMENT RECOMMENDATIONS



FUTURE REDEVELOPMENT – US-72 east of Steel Street



sain associates

CONCEPTUAL LAYOUT OF IMPROVEMENT RECOMMENDATIONS



FUTURE REDEVELOPMENT – US-72 between Rock Cut Road and Section Line Road

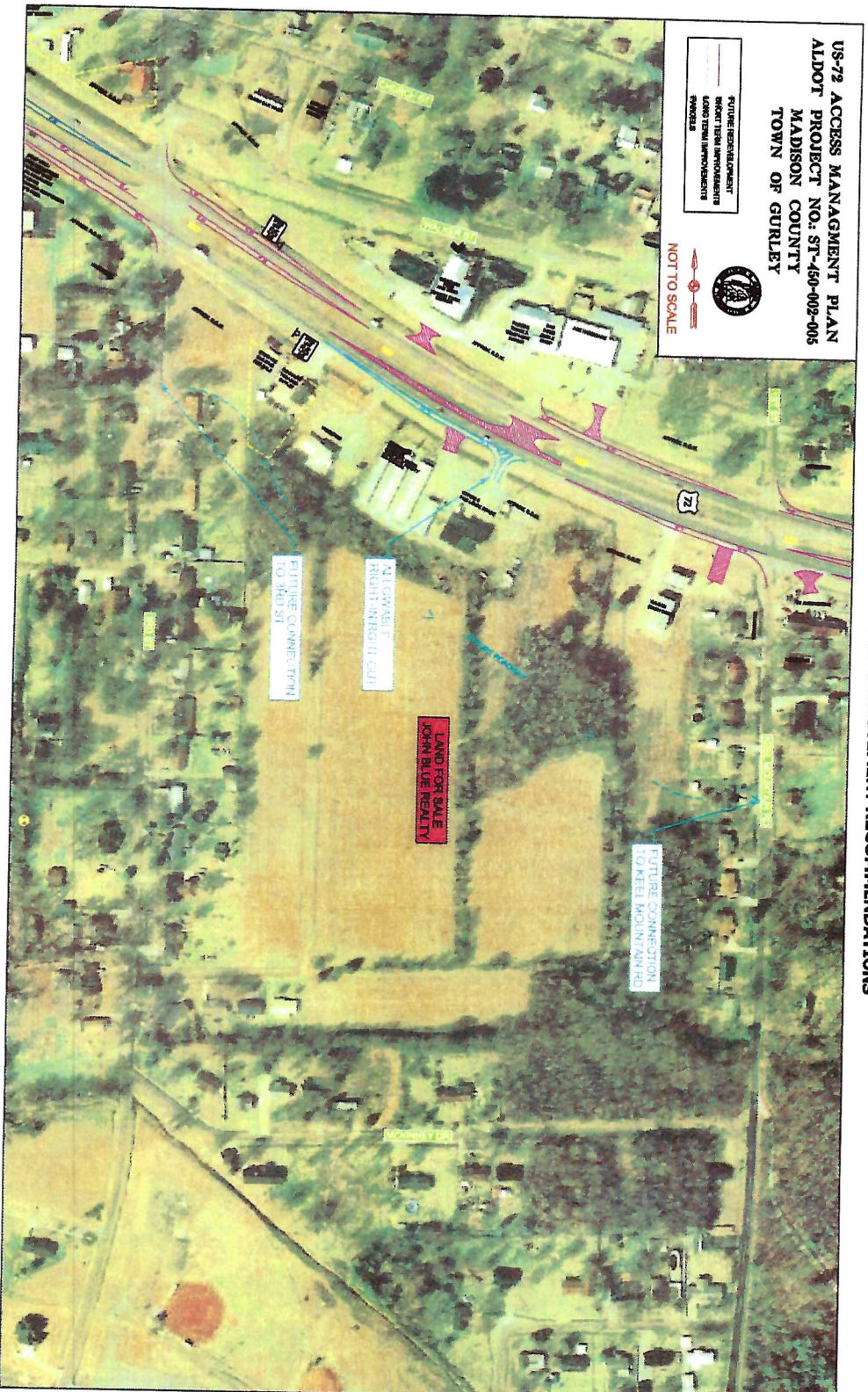


sain associates
CONSULTING ENGINEERS

[illegible]

SHORT TERM IMPROVEMENTS
LONG TERM IMPROVEMENTS
FUTURE REDEVELOPMENT
PARCELS

CONCEPTUAL LAYOUT OF IMPROVEMENT RECOMMENDATIONS



FUTURE REDEVELOPMENT – US-72 between 3rd Street and Keel Mountain Road



sain associates