

LAFAYETTE IN A CENTURY **SECONDARY STREET SYSTEM PLAN**

1.0 Introduction

One of the critical transportation network needs throughout Lafayette Parish is interconnectivity among residential developments in Lafayette Parish. Local street interconnectivity is an important factor with direct impact on the capacity of the arterial network. The desire of residents to live on dead end streets or cul-de-sacs and the extensive bayou and coulee system has magnified the lack of street connectivity in Lafayette Parish. In response to this problem, the LINC Steering Committee Transportation Recommendation No. 9 states that a “Secondary Street System and Plan should be developed and adopted for long-term growth and development of the Parish.” The Lafayette Metropolitan Planning Organization (MPO) is in the process of adopting a policy for a Secondary Street Plan and Local Street Interconnectivity Policy. This policy will be discussed in this report and additional policies will be recommended.

Ultimately, this report will define street connectivity and discuss the principles associated with it. Then, street connectivity principles will be illustrated by applying them to both existing and proposed development in Lafayette Parish.

2.0 Purpose

The LINC Secondary Street System Plan has the following major goals:

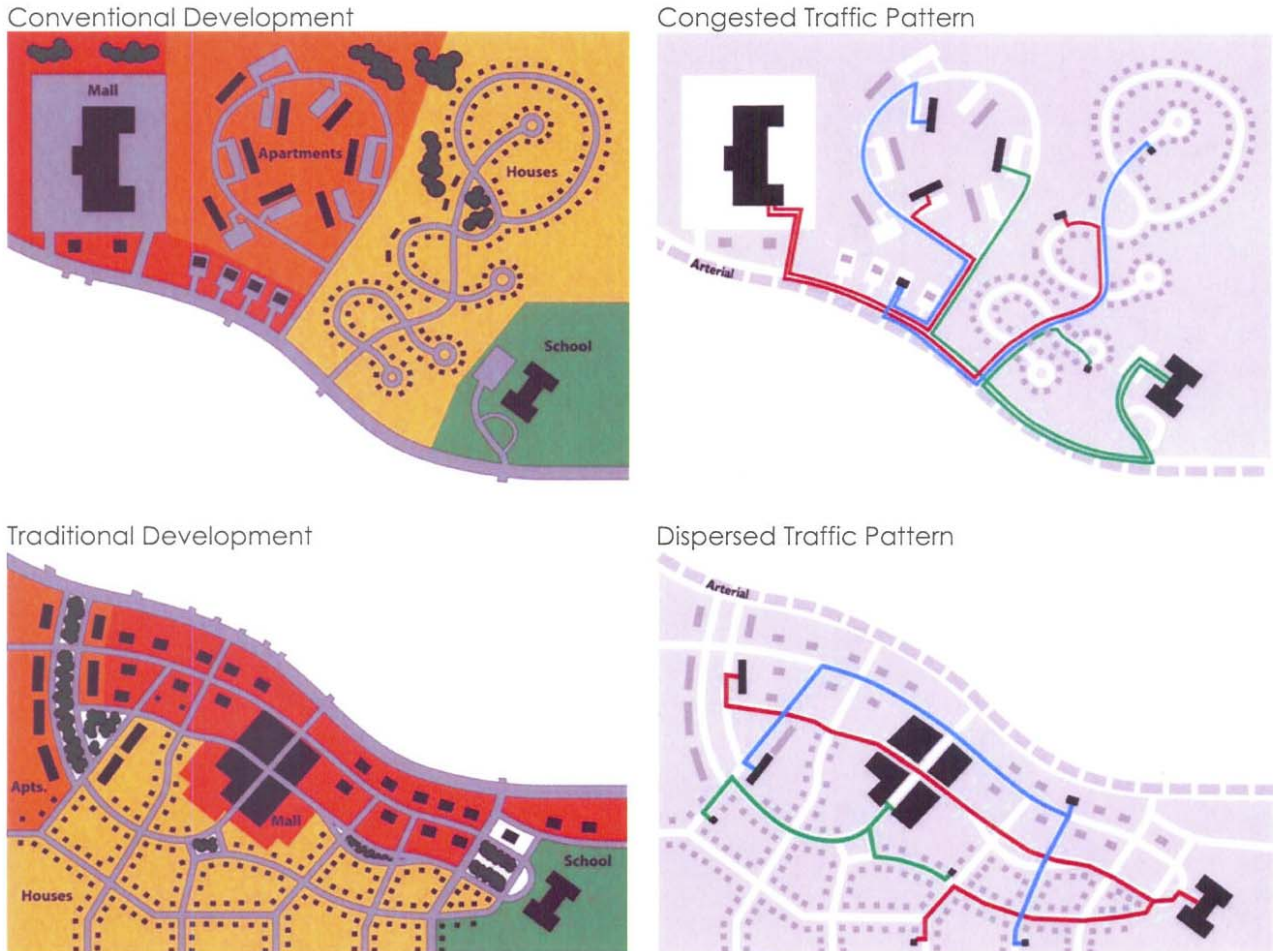
1. To develop guidelines to encourage street interconnectivity within proposed developments
2. To develop guidelines to interconnect the existing roadway network where possible
3. To coordinate street interconnectivity with other development portions of the LINC Plan
4. To utilize Secondary Street System guidelines in targeted LINC neighborhoods and LINC development nodes

3.0 Secondary Street System

A secondary street system consists of a network of streets with multiple routes and connections serving the same origins and destinations. The system relates not only to the number of intersections along a segment of street, but also to how an entire area is connected by the street system. Because an interconnected network of streets disperses traffic more evenly by providing multiple routes, the streets can move large amounts of traffic without creating congestion and can be designed for lower neighborhood and pedestrian/bicycle-friendly speeds. The result of an effectively interconnected network of streets is more mobility options for residents. Interconnected neighborhoods generally have shorter block lengths thereby providing various alternate route options and also reducing roadway speed.

Figure 1 illustrates *two* types of development patterns- a conventional and a traditional development. The figure also shows the travel patterns associated with each type of development. The conventional development consists of cul-de-sacs, loop roads and segregated development with arterial access for each development type, but no interconnectivity. The traditional development is a multi-use development with an interconnected secondary street system. The traffic patterns for the conventional development indicate that all trips must access the arterial roadway, even to access adjacent development. The traffic patterns for the traditional development show the same trip types forced to access the arterial in the conventional development are now handled on local streets with few vehicles accessing the arterial. Reduced traffic on the arterial roadway will lead to improved traffic operations for the arterial.

Figure 1: Street Connectivity and Traffic Patterns



Source: Development Pattern: Andres Duany and Elizabeth Plater-Zyberk; Traffic Allocation: Glatting Jackson.

3.1 Secondary Street System Elements

Areas with a highly connected secondary street system possess the following characteristics:

- A dense system of parallel routes and cross-connections within an area—typically a grid-like pattern or arterial, collector, and local streets;
- Few streets with cul-de-sacs, dead ends or looped streets;
- Multiple points of access;
- Narrow streets with sidewalks or off-street paths;
- Shorter block lengths and frequent intersections to create a pedestrian-scale block pattern;
- Traffic calming devices such as curb extensions, crosswalks, landscaping, etc. to slow traffic speeds; and
- Pedestrian and bicycle connections where street connections are not possible due to barriers.

3.2 Secondary Street System Benefits

Roadway connectivity from a secondary street system offers a variety of benefits to communities. These include:

- Providing drivers, walkers and bikers with multiple direct routes for traveling short distances without needing to use an arterial road. Multiple direct routes provide better opportunities for walking and bicycling to local destinations such as shops, schools and friends' houses.
- Providing more direct travel routes result in shorter travel distances, reduced travel time, increased accessibility, and lower vehicle miles traveled.
- Local street layouts that provide a network of smaller roads for drivers to utilize during peak times are beneficial for this reason: Major traffic arterials do not become overburdened and accommodate through-trips and long-distance travel more efficiently.
- As opposed to typical strip developments found along arterial roads with longer blocks, the short blocks (typically 200 to 400 feet in length) of interconnected street patterns accommodate the development of town centers.. Shorter blocks also aid in reducing traffic speed.
- Transit can be utilized more because transit stops are more accessible from neighborhoods
- Lower speeds on local streets result in reduced accident severity.
- Emergency vehicles have increased access and an improved ability to respond quickly.
- Decreased costs associated with solid waste collection.

In 1992, the city of Raleigh, North Carolina used a transportation-modeling program to compare an interconnected neighborhood street pattern with a neighborhood street pattern that relied heavily on cul-de-sacs. The results of the study revealed the following benefits:

- Vehicles traveling on the interconnected street network traveled an average of 16% less miles per day than the vehicles on the cul-de-sac street pattern;
- The main streets comprising the interconnected street network averaged less than ½ the traffic volumes that the main streets carried on the cul-de-sac street pattern.

A street design study looked at the impacts of increasing the number of local street connections in selected communities on vehicular traffic. On the basis of five geographical areas, the study showed that increasing the number of street intersections per mile to a range of between 10 and 16 street connections per mile had the following effects:

- Delay for autos was reduced by 17 percent overall
- Traffic on arterials decreased by 13 percent
- Greater percentage of "regional" traffic (longer trips) on arterials
- Greatest benefit for auto traffic at 10 to 16 connections per mile

These findings emphasize that even modest improvements in connectivity can benefit local and regional travel, in addition to facilitating walking, bicycling, and transit access.

3.3 Secondary Street System Concerns

When implementing a secondary street system plan, one of the major concerns of residents is the issue of "cut through" traffic. In most instances, the interconnection of streets does not increase cut-through traffic on local roads. The improved traffic flow on major roads due to interconnected streets limits vehicle trips on all residential streets to a safer level of mostly local traffic. Traffic calming measures can be implemented as an interim measure to discourage cut-through traffic and reduce speed; however, usually once a secondary street system is established the adjacent arterial experience less traffic and congestion, reducing need to use cut through routes.

4.0 Secondary Street System Challenges for Lafayette

The city of Lafayette and Lafayette Parish as a whole has no secondary street system plan and little street interconnectivity, forcing drivers to access major arterials for most trips. Several factors impact the roadway network including the original French Linear land divisions along Bayou Vermilion and other local bayous, the extensive bayou and coulee system throughout the parish and the desire of residents to live on dead end streets or cul-de-sacs. In addition, there are areas in Lafayette where initial development included roadway stub-outs to connect to future development. As adjacent land developed, connections were not always made at the stub-out locations, leaving these locations as dead end streets.

Both the physical barriers of bayous and coulees and the perception of additional cut-through traffic on local streets need to be considered when developing a secondary street system plan.

5.0 General Guidelines

The development of a secondary street plan should include provisions for interconnecting the existing roadway network where possible and guidelines for connectivity in proposed developments.

5.1 Existing Roadway Network

Overall, the roadway network in Lafayette Parish has a poor secondary street system and little interconnectivity. The lack of interconnectivity causes the arterials and collectors to be overburdened and congested. A plan to interconnect local streets should provide an overall improvement in traffic operations along the arterials.

Street interconnectivity should be addressed within each LINC neighborhood plan. Interconnectivity can be accomplished by identifying possible locations where connections can be made within the neighborhood, to adjacent neighborhoods and to adjacent arterial or collector roadways. The secondary street system plan should also attempt to reduce block lengths. Locations where connections can be more easily accomplished are at stub outs or dead end streets. In areas where roadway connections are not possible, pedestrian or bikeway connections should be considered.

In order to allay fears of interconnected routes becoming cut-through routes, traffic calming measures should also be included in the secondary street plan.

Once the implementation of the secondary street plan begins, a method should be developed to notify residents living on dead streets or stub-out roadways that the roadway may be extended in the future. This may also include notification when those residences are sold.

5.2 Proposed Development

Proposed development should have requirements to ensure street interconnectivity. Interconnectivity requirements should focus on connections to adjacent developments and roadways.

The General Advisory Panel (GAP) developed a LINC Development Rating Matrix to be used for evaluating proposed developments. The matrix evaluates proposed developments according to a rating or “points” system, with points being awarded for various improvements. While these items are not all required, certain improvements are encouraged by the rating system. The following items for which points can be received relate to a secondary street system plan for interconnecting the roadway network:

- The proposed development has shared access and/or joint vehicular connections with adjacent existing or future development to a major arterial or minor arterial.
- The proposed development has shared access to a collector or local road with the capacity to provide a Level of Service C based on a traffic impact analysis (provided by the applicant).

- The proposed development includes local street blocks with lengths of no more than 500 feet and collector blocks with lengths of no more than 1,500 feet.
- The proposed development has at least two functional access points and two future access points.
- There are no cul-de-sacs proposed for the development.
- The proposed development includes within the development additional traffic mitigation measures to reduce the impact on the road network outside the development or to facilitate transit movement.
- The proposed development has pathways/gates connecting the proposed development to the surrounding residential neighborhoods for pedestrian/bicycle access.
- Pedestrian easements are granted to local government for access to and along Bayou Vermilion and designated coulees.
- Easements are granted to local government for access to existing or proposed bikeway paths.

6.0 MPO Secondary Street Plan

At the time of this report, the Lafayette MPO *Secondary Street Plan and Local Street Interconnectivity Policies* are approved by the various technical committees and are scheduled for introduction by the MPO. The following is a list of these policies:

- Require subdivision developments exceeding one lot over the size of 10 acres singularly, or in combination with adjacent property owned by the applicant, for plat approval to provide current or future street connectivity in the four directions of the compass to the property line as a general policy.
- Land subdivision development should have at least one direct public street access to a major/minor arterial or collector roadway unless private streets are proposed as the primary development access, in which case a binding private street maintenance and access agreement would be submitted and adopted as part of the platting process.
- Land subdivision development, either singularly or in combination with adjacent development, exceeding a total of 110 lots or units should have two functioning public street accesses.
- Specifically for collectors and/or adopted secondary street plans, land subdivision development bordering and/or adjacent to a drainage or coulee shall provide half the cost for a local public street bridge as part of the public infrastructure requirements when a combined distance along the said coulee or drainage way lacks a bridge crossing within 1,500 feet. The developer shall be required to pay for the full cost of the bridge if the developer owns both sides of the coulee.
- Abandonment of required or provided land subdivision development “stub-outs” or right-of-way, intended for future extension shall be reviewed by the MPO for recommendation prior to abandonment actions by the local government.
- Land subdivision developments shall be required to conform to the secondary street plan identified within adopted LINC designated- neighborhoods where such exist.
- Land subdivision developments fronting existing local or collector streets, and not constructing or including new local public streets may be required to provide public street right-of-way access to the un-platted property adjacent and to the rear of the proposed development if the proposed development exceeds one thousand linear feet frontage on the existing local street.

- The local planning commission should deter cul-de-sac local streets designed and proposed as a permanent installation. Cul-de-sacs shall not be used to avoid connection with an existing street or to avoid future extension. Cul-de-sacs are permitted where one or more of the following conditions offer no practically alternative for connectivity: topographical conditions; environmental conditions; property shape; and property accessibility.
- In approving land subdivision development, the local planning commission shall consider any conflict with the Secondary Street Plan of the Lafayette Metropolitan Planning Organization (MPO) and/or the Local Public Street Interconnectivity Policies adopted by a local planning commission or a local government in their Comprehensive Master Plan.
- The local planning commission may consider local public street right-of-way dedication in lieu of full street construction in the approval of land subdivision development plans, under extenuating circumstances, and with the exception of drainage and coulee bridge crossings (Reference # D). The lots shall be assessed for construction. The Planning Commission shall set an appropriate time for assessment. Until the roadway is constructed, maintenance of the dedicated right of way shall be the responsibility of the property owner and shall be clearly stated on the final plat.
- Local public streets identified as minor collector streets for new developments shall provide construction of sidewalks and installation of traffic calming devices that will be determined by the local planning commission.
- A super-majority is required in the local planning commission (e.g. 4 out of 5, or 75% of members in attendance) and/or the local city-parish council (police jury) (e.g. 7 out of 9, or 75% of members in attendance) to override the policies is listed above.

7.0 LINC Recommendations

The following are recommendations for the LINC Secondary Street System Plan:

- Adopt the MPO *Secondary Street Plan and Local Street Interconnectivity Policies*
- Adopt the GAP *LINC Development Rating Matrix*
- Include plans for street interconnectivity in each LINC neighborhood plan
- Include plans for street interconnectivity in each LINC nodal development plan
- Evaluate methods to interconnect the existing roadway network
- Connect existing roadway networks to adjacent residential developments as well as adjacent arterial and connector roadways
- Evaluate traffic calming measures within interconnected neighborhoods
- Evaluate the interconnection of roadway networks to reduce block lengths
- At locations where roadway interconnection is not feasible, consider a pedestrian or bikeway connection.
- When arterials or collectors are improved, the secondary street system in the vicinity of the project should also be evaluated.
- Develop a method of notifying residents or potential homebuyers on existing dead end streets or stub-outs that the roadway may be connected to adjacent roadways in the future.