

TRAFFIC CIRCULATION ELEMENT

Introduction

Keystone Heights is a city located in southwest Clay County with a 2000 population of 1,345 and a projected population of 1,462 in 2025. The community is located approximately 30 miles west of Green Cove Springs, the County seat and 65 miles southwest of Jacksonville. Travel is oriented toward economic and employment centers outside of Keystone Heights and with a high percentage of work trips terminating outside of the County in Gainesville and Jacksonville.

The population of Keystone Heights is projected to increase 1.3 percent within the next five years and 2.1 percent through 2015. In addition to serving its residents, the City functions as an activity center for retail and services for the surrounding rural populations in Clay and Bradford counties. Through traffic represents the majority of the trips within the City in any 24 hour period as well as during the peak hour, so the projection of future volumes in the City of Keystone Heights is not only a function of increasing households and businesses within the City but also the growth in surrounding areas.

The City is not required to adopt a Transportation Element, Ports & Aviation Element or a Transit Element because it is located outside an urban area of a Metropolitan Planning Organization and has a population of less than 50,000. The Traffic Circulation Element addresses roads within the City, including establishing a level of service for State Road 100 that is consistent with Rule 9J-5.019(4)(c), FAC. As an Emerging Strategic Intermodal System (SIS), State Road 100 is subject to a minimum level of service standard of C. The City has adopted a level of service standard of C for SR 100.

Traffic Circulation Data

Major Roads

State Road 100

State Road 100 (SR 100) is a two lane undivided roadway that runs northwest to southeast through the City. Named Walker Drive within the City limits, it has been functionally classified as an urban minor arterial and is part of the federal-aid primary system. Truck volumes on SR 100 within the City are 6 percent of the daily volume. State Road 100 is part of the Strategic Intermodal System as an Emerging facility.

In 2003, Florida created Florida’s Strategic Intermodal System (SIS), a high-priority network of transportation facilities critical to its economic competitiveness and quality of life. The SIS comprises the state’s largest and most strategic transportation facilities, including major air, space, water, rail, and highway facilities. The SIS facilities are the primary means for moving people and freight; the SIS is Florida’s highest statewide priority for transportation capacity improvements. As such, capacity improvements to the SIS are funded over capacity improvements to other state roads.

As an Emerging SIS facility, the Florida Department of Transportation (FDOT) establishes the applicable minimum level of service and must participate in the negotiations and approval of proposals to mitigate impacts from development on SR 100. Because SR 100 is an Emerging Facility however, it is not eligible for prioritized funding of capacity improvements.

FDOT maintains two traffic count stations on State Road 100 immediately inside the City limits; one at the northwestern limits of the City and one at the southeastern limits. Traffic counts are taken annually by FDOT and adjusted; the 2008 counts (producing 2009 volumes) and the adopted maximum service volume (MSV) in the PM Peak for Level of Service C (Areas Transitioning Into Urbanized Areas) are provided in Table 1.

TABLE 1
State Road 100
2009 Traffic Volumes

Segment	2009 PM Peak Volume	Maximum Service Volume ¹
SR 21 to NW City Limits	1,003	1,370
SR 21 to SE City Limits	1,012	1,370

¹ FDOT Generalized Tables, Table 5

State Road 21

State Road 21 is a two lane undivided urban minor arterial that runs northeast to southwest through Clay County intersecting with SR 100 in Keystone Heights. It is a part of the state highway system and the federal-aid primary system. State Road 21 is named Lawrence Boulevard within the City limits, with SR 100 acting as the point between south and north. South Lawrence Boulevard is the segment of SR 21 on which downtown core businesses are located; traffic calming through the core is achieved with on street parking and reduced speed limits. At approximately 8 percent, truck volumes are relatively high at both count locations

on SR 21 in the City given the urban environment, on street parking and pedestrian traffic in the City limits.

FDOT maintains two traffic count stations on State Road 21 inside the City limits; one approx. 500 feet north of the SR 21 /SR 100 intersection that defines the commercial area of the City and one in the residential area of the City, south of Keystone Beach and City Hall. Traffic counts are taken FDOT and adjusted; the 2008 counts and the adopted maximum service volume (MSV) in the PM Peak for Level of Service D (Areas Transitioning Into Urbanized Areas) are provided in Table 2.

TABLE 2
State Road 21
2009 Traffic Volumes

Segment	2009 PM Peak Volume	Maximum Service Volume
N City Limits to SR 100	912	1,480
SR 100 to S City Limits	492	1,480

¹ FDOT Generalized Tables, Table 5

Local Roads

The City’s local road network is a grid street system which serves to distribute traffic such that there are no major points of congestion. Each road is two lanes and undivided; most local streets include sidewalks within the right of way. Traffic volumes are very low on the local streets not listed on the Concurrency Road Network with bicycles and pedestrians accommodated in the street when sidewalks are not present. Local roads predominantly serve residential dwellings, with direct access to the street. Certain streets do serve non-residential traffic:

- Located north of SR 100, Commercial Circle serves only non-residential industrial and commercial uses.
- Cargo Way serves as a rear entrance /service road for highway type businesses that front on SR 100 west of SR 21; Green Way serves the same purpose east of SR 21.
- South of SR 100, commercial uses are served for a two block depth on SE Cypress Avenue, SE Palmetto Avenue, and SW Beasley Avenue.
- Five blocks of SW Magnolia Avenue serve non-residential uses; the southern two blocks support non-residential uses only on one side of the street.

Traffic calming is achieved within the City on local roads with speed bumps. The controlled speed on local roads increases pedestrian and bicycle safety within the City.

The junior/senior high school and elementary school within the City are located off Orchid Avenue.

The City does not obtain annual traffic counts on any local roads within its jurisdiction. At the time a concurrency reservation application is submitted to the City, the applicant is required to perform a three day count and adjust the count using FDOT factors. The City utilizes the count data to determine if a deficiency in level of service is created by the proposed development. If a deficiency is indicated, the City requires the developer to mitigate the impacts.

The four local roads within the City that are listed below comprise the local road portion of the Concurrency Roadway Network. Each are two lane roads with speed limits of 25 miles per hour. Utilizing the Level of Service (LOS)/ Capacity Lookup Tables from the 2002 Highway Capacity Software (HCS+) Version 5.21, Highplan Module, the daily capacity on the local roads within the City is 6,700 daily vehicle trips at the adopted LOS D; using the FDOT-D2 rural peak hour factor of 0.10 the PM Peak hour capacity at LOS D is 670 vehicles.

The City has determined that the local roads within its jurisdiction are policy constrained such that widening to four lanes is not compatible with the character of the community. Block lengths are approximately 300 to 500 feet and the alternative routes created by the grid pattern reduce intersection congestion and through traffic on any single segment. Widening of any local roads would negatively alter the character of the City by creating a hierarchy of roads resulting in through traffic patterns that change the grid pattern that is the basis for the character and quality of life in the City. Mitigation of impacts to the four local roads below (impacts that cause the road to operate at less than the adopted level of service of D) shall be directed to operational or mobility improvements such as sidewalks and bike lanes. Mitigation will be calculated on the cost to widen the impacted facility without additional right of way; funds collected under Fair Share Agreements that mitigate impacts on non-state roads will be directed to an adopted set of improvements that increase mobility in the area of the City where the impacts occur. The City will adopt a Mobility Improvements Plan in 2012 to establish the priorities for increased non-vehicular mobility.

Orchid Avenue

Orchid Avenue runs northeast to southwest within western Keystone Heights. It forms a collector in the City's traffic circulation system. It serves to provide access for the elementary and junior/senior high schools within the City and as such, is included in the City's Concurrency Road Network. Traffic counts will be undertaken in 2011 to establish a baseline count; the volumes are projected to fall below the maximum service volume; the count will be used to establish the 2011 LOS.

Nightingale Street

Nightingale Street is a collector that runs east/west in the southwestern part of the City connecting Orchid Avenue to South Lawrence Boulevard (SR 21). Nightingale is included in the City's Concurrency Road Network. Traffic counts will be undertaken in 2011 to establish a baseline count. The volumes are projected to fall below the maximum service volume; the count will be used to establish the 2011 LOS.

Pecan Street

Pecan Street is a collector that runs east/west in the southwestern portion of the City and connects the school area to South Lawrence Boulevard (SR 21). Pecan Street is included in the City's Concurrency Road Network. Traffic counts will be undertaken in 2011 to establish a baseline count. The volumes are projected to fall below the maximum service volume; the count will be used to establish the 2011 LOS.

Commercial Circle

Commercial Circle is a collector service commercial establishments in the northeast section of the City. Commercial Circle is included in the City's Concurrency Road Network. Traffic counts will be undertaken in 2011 to establish a baseline count; the volumes are projected to fall below the maximum service volume. The count will be used to establish the 2011 LOS.

Other Local Roads

An inventory of all the roadways within the City of Keystone Heights is maintained by the City. The roadway inventory includes the majority of local roads within the City limits, their pavement width, right of way width, drainage design type (inlets or swales), functional classification, pavement condition and posted speeds. The local roads provide access primarily to single family residences within the City. The maintenance of local roads is performed by the City.

There are no rail, air or port facilities within the City.

Pedestrian and Bicycle Facilities

Sidewalks are found adjacent to the arterial roadways within the City and also adjacent to most local roads within the City.

The Norfolk-Southern Rail line that operated in a right of way that abuts the northern right of way of State Road 100 within the City limits was purchased after the railroad was abandoned and improved for bicycle and pedestrian use in 1998. The 100 foot right of way is improved with a ten foot wide bicycle/pedestrian facility that continues beyond the City limits, making up the *Palatka-Lake Butler State Trail* (PLB Trail).

The portion of the PLB Trail that is located within the City was completed in 1998. The segments on either side of the City, extending to the Bradford County and Putnam County lines, were completed in 2008, creating the 5.2 mile trail within Clay County. The completed trail in Clay County is part of the overall 47-mile PLB Trail that will extend from the Lake Butler area to Palatka. Upon completion of the segment within Clay County in 2008, the Florida Department of Environmental Protection took over maintenance of the trail under its Greenways and Trails program.

The portion of the PLB Trail that runs through Keystone Heights ties into an eight-foot wide, 6 mile bike path constructed by the Florida Department of Transportation. Located adjacent to SR 21, the bike path connects the PLB Trail to Mike Roess Gold Head Branch State Park. Completed in 2009, residents and visitors alike utilize the bike path to walk, run and bicycle between the City and Gold Head Branch State Park.

Existing Traffic Circulation Analysis

Existing Roadway Levels of Service

In 2010, all roadways within the City are operating above the adopted level of service.

TABLE 3
2010 ROADWAY LEVELS OF SERVICE
CONCURRENCY ROADWAY NETWORK

Segment	Adopted PM Peak LOS	2009 PM Peak Volume	Maximum Service Volume	2010 PM Peak LOS
SR 100 from SR 21 to NW City Limits	C	1,003	1,370 ¹	C
SR 100 from SR 21 to SE City Limits	C	1,012	1,370 ¹	C
SR 21 from N City Limits to SR 100	D	912	1,480 ¹	C
SR 21 from SR 100 to S City Limits	D	492	1,480 ¹	B
Orchid Avenue	D	3	670 ²	3
Nightingale Street	D	3	670 ²	3
Pecan Street	D	3	670 ²	3
Commercial Circle	D	3	670 ²	3

¹ FDOT Generalized Tables, Table 5

² Level of Service (LOS)/Capacity Lookup Tables from the 2002 Highway Capacity Software (HCS+) Version 5.21, Highplan Module with PM Peak Factor of 0.10.

³ Counts to be taken in 2011; LOS to be based on 2011 counts.

Existing Deficiencies

There are no existing deficiencies relative to transportation levels of service in the City of Keystone Heights. There are however improvements that could be made in the existing system that would improve traffic circulation and safety. The priority improvement is:

Re-Alignment of the SR 100 / SR 21 intersection at a 90 degree angle

The realignment of SR 21 at its intersection with SR 100 has been discussed with FDOT since the early 1990's. If improvements to State Road 100 are made to address capacity deficiencies or if accident records indicate a safety issue, the City will coordinate with the FDOT to prioritize the realignment of this intersection.

Future Traffic Projections

Traffic counts between 2008 and 2010 show declining volumes on State Road 21 and State Road 100. The economy and price of fuel have affected individual vehicle miles traveled in general and are likely the cause of the reduced traffic volumes in these recent years. This trend may continue and is worth monitoring, however projections of future traffic volumes on these two state roads should reflect a minimal increment of growth. The assumed growth is 2 percent annually through the planning period on SR 100 and 1 % on SR 21. The City will monitor actual counts each year to adjust the projections to reflect changes in travel behavior.

Traffic counts on local roads on the CRN will be taken every five years after the initial counts in 2011 to monitor the volumes and determine if unanticipated increases in traffic volumes are being experienced. New development and redevelopment within the City is required to distribute traffic generated by the proposed development/redevelopment to the CRN; while the City will undertake traffic counts every five years, all applicants for a concurrency reservation certificate are required to undertake a traffic count at the time of application to verify the availability of capacity.

The impacts of future development on the roadway network within the City may create deficiencies in level of service. The City has implemented a concurrency management system in order to monitor the level of service on an annual basis and will utilize the most current traffic count data to measure existing level of service, assess impacts of proposed development on the level of service and to project traffic volumes on local roads, State Road 21 and State Road 100.

Final development orders within the City will be conditioned upon the determination that the public facilities, including transportation facilities, are available to serve the proposed development as required by Section 163.3180, Florida Statutes.

The City will adopt a Fair Share Ordinance in 2011 that will allow development on a particular parcel despite the fact the development could not satisfy transportation concurrency

where such approval is consistent with Section 163.3180 (11) and (16), Florida Statutes. Mitigation shall represent a cooperative effort between the City and the private landowner; proportionate fair share mitigation shall be calculated consistent with statutory requirements and the City's Fair Share Program.

TABLE 4
2015 and 2025 PROJECTED
ROADWAY LEVELS OF SERVICE

Segment	PM Peak		Projected PM Peak			
	LOS	MSV ¹	2015 Volume	2015 LOS	2025 Volume	2025 LOS
SR 100 from SR 21 to NW City Limits	C	1,370 ¹	1,186	C	1,395	D
SR 100 from SR 21 to SE City Limits	C	1,370 ¹	1,167	C	1,277	C
SR 21 from N City Limits to SR 100	D	1,480 ¹	1,058	C	1,158	C
SR 21 from SR 100 to S City Limits	D	1,480 ¹	565	B	620	B
Orchid Avenue	D	670 ²	3	3	3	3
Nightingale Street	D	670 ²	3	3	3	3
Pecan Street	D	670 ²	3	3	3	3
Commercial Circle	D	670 ²	3	3	3	3

¹ FDOT Generalized Tables, Table 5

² Level of Service (LOS)/Capacity Lookup Tables from the 2002 Highway Capacity Software (HCS+) Version 5.21, Highplan Module with PM Peak Factor of 0.10.

³ Projections to be developed after counts are taken in 2011; LOS to be based on projections so developed.

The City of Keystone Heights is not located within the jurisdiction of any Metropolitan Planning Organization (MPO). In May 2010, the First Coast Transportation Planning Organization (FCTPO) passed a resolution seeking to revisit its Planning Area Boundary subsequent to the findings of the 2010 Census. The anticipated action will be to expand the TPO boundary pursuant to its Envision 2035 LRTP to include the four county area that is the First Coast, including the City of Keystone Heights. There are no public transportation authority plans that have an impact or are affected by this traffic circulation element. Roads are maintained by the City's Public Works Department.

Analysis of Future Needs

Future roadway needs are based on the City's adopted level of service standard for the PM Peak Hour of C for State Road 100 and D for all other roads within the City limits. The comparison of the future projected travel demand on the minor arterials and collectors within the City with the FDOT's Generalized Peak Hour Two-Way Volumes For Florida's Areas Transitioning into Urbanized Areas identifies that State Road 100 will operate below the adopted level of service after 2015 and before the end of the planning period (2025). All other roads are projected to operate at or above the adopted level of service in 2015 and 2025.

As a facility on the Strategic Intermodal System but classified as an Emerging Facility means that State Road 100 will not receive priority for funding of improvements to address deficiencies. The FDOT establishes improvement priorities for SR 21 and SR 100 in its Five Year Work Program because the City does not currently lie within the boundary of any Metropolitan Planning Organization. There are plans to expand the boundary of the First Coast Transportation Planning Organization (FCTPO) to include all of Clay County; under this proposed expanded boundary, the City will be included in the FCTPO and priorities for funding of improvements will be made through the FCTPO's Long Range Transportation Planning process.

To provide data to support its annual CIP update, the City will monitor the traffic counts on SR 100 to determine whether traffic volumes are increasing at rates greater than projected and work with the FDOT to prioritize improvements as necessary. During the development of its Mobility Improvement Plan (MIP) the City will work with the FDOT to determine if funds that may be collected to mitigate the impacts to state roads could appropriately be assigned to specified mobility improvements in the MIP.

The City will consider adoption of a Transportation Concurrency Exception Area as it completes its Mobility Plan in 2012.

The right of way associated with local roads in the City is sufficient to accommodate the infrastructure currently constructed. The City will update its pedestrian and bicycle plan in 2011. Additional right of way needs may be identified to accommodate prioritized bicycle and pedestrian improvements in the planning period.

Transportation Strategies to Address Greenhouse Gas Emissions

The City is not served by fixed route transit. Fixed route transit can reduce vehicle miles traveled and connect concentrations of population (housing) in need of transportation assistance to work opportunities. Despite its walkability, transit friendly grid street network, mixed use pattern and high (relative) density of population, the actual population of the City is low, less than 1500 persons, and the distance to non-residential destinations outside the City are very great. Densities outside the City are rural and would not support fixed route transit service so it is not anticipated that transit service will be provided within

the planning period (to 2025). Short distance circulator transit service (trolley or van) within the City is a possibility if the population and mix of uses supports the service; the age of the population makes this desirable even though the distances to be traveled are very short.

A component of energy efficient development patterns is the provision of pedestrian and bicycle connections. Generally travel by bicycle and by walking is accommodated on the sidewalks and on the pavement of the residential streets of the City. The City will update its inventory of streets (Roadway Inventory) to identify the right of way width, cross section, pavement width, sidewalk characteristics and the presence of on street parking in order to identify preferred paths for each mode and to identify improvements that would contribute to the connectivity between uses and increase safety. Improvements will be prioritized based on the contribution to safety and the reduction of vehicular travel.

Development plans for non-residential and mixed use development will be required to include appropriate access to the site for the modes included in the City's plan and to provide access by alternative modes within the development parcel limits. Improvements determined to be appropriate will be provided at the time of development.

The physical design of new development within the City will address non-vehicular connectivity, compact development and alternative transportation modes to maintain the compact, energy efficient pattern established by the existing development in the Town. External connectivity from the development parcel will facilitate access by non-vehicular modes, contribute to the energy efficiency of a particular site, reduce vehicle miles traveled and improve the transportation characteristics of the City overall.

The City will utilize its Roadway Inventory in its MIP to develop appropriate level of service standards for pedestrian and bicycle modes. The standards will integrate the alternative modes and provide for a safe, efficient and energy efficient multimodal transportation system that furthers the reduction of greenhouse gas emissions.