



Chapter 3 Transportation

This chapter analyzes Highland Heights' existing transportation system and makes recommendations to safely and efficiently move people, services and goods within the community.

Secondary transportation issues such as aesthetics, place making and community image and mode choice are also analyzed.

A well designed transportation system supports commerce and attracts jobs and residents. In fact, few aspects of the built environment impact community vitality and quality of life more than its transportation system.

Mitigating congestion and improving efficiency on US 27 is key goal of this chapter. New bypass and distributor roads are planned to distribute trips and bypass US 27.

Many communities including Highland Heights place value on multi-modal transportation. Multi-modal transportation balances the needs of motorists, transit and non-motorized travel alike.

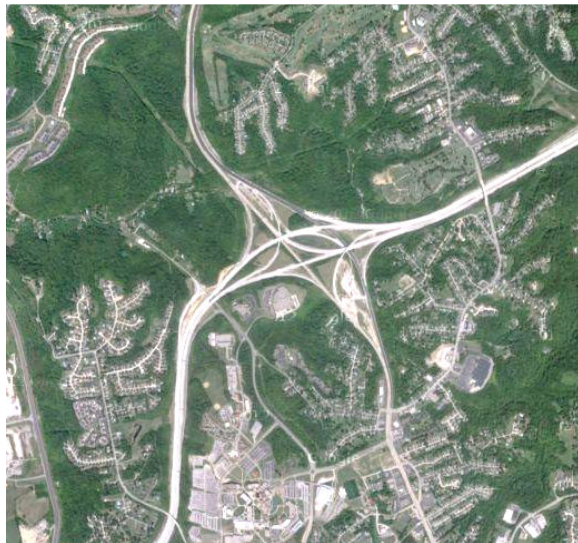
Highland Heights, with trails, walkways and transit, is ideally situated to build on extensive multi-modal transportation working collaboratively with the State, Northern Kentucky University (NKU), and Transit Authority of Northern Kentucky (TANK).



Roadway Characteristics

The City, its residents and businesses, and NKU all benefit from Highland Heights’ extensive roadway infrastructure.

I-471 and I-275 converge at the community’s front door, providing unparalleled regional access from across the greater Cincinnati metropolitan area.



Over 41,000 trips are taken on US 27 per day linking residents to work, shopping and leisure time pursuits. Conversely, US 27 via I-471 and I-275 bring several thousand nonresidents to Highland Heights daily.

US 27 is a major commuter route. Heavy regional through traffic tends to conflict with traffic wishing to turn off US 27 to adjacent commercial properties. A high accident count is reported each year as a result.

Significant congestion is reported at Nunn Drive and Sunset Drive as drivers stack on US 27 to access NKU and Gateway Shopping Center.

Congestion was a main source of community dissatisfaction raised by Steering Committee members. This is issue can threaten Highland Heights’ image and quality of life as a desirable place to live and work.

The quantitative difference between a roadway’s peak hour traffic volume to its actual capacity to handle such traffic is divided into one of six Levels-of-Service (LOS) categories.

A LOS of “A” indicates drive speeds and flow are unimpeded by traffic. A LOS of “F” represents unacceptable congestion and delays. Sitting through two red lights before clearing an intersection is an indicative “F” situation.

Level of Service	Traffic Description
A	Free flow low volume traffic with high speed controlled by driver
B	Reasonably free flow of traffic but with slightly slower speeds restricted by traffic conditions
C	Traffic flow slows, driver speeds are restricted by traffic conditions
D	Approaching unstable traffic flow, drivers have little control to select own speed
E	Unstable, slow traffic with short stoppages and delays
F	Unacceptable congestion, very slow stop and go traffic

According to the Ohio Kentucky Indiana Regional Council of Governments (OKI), US 27 operates at a Level F LOS from Nunn Drive to I-471 during peak flow hours. Nunn Drive to Pooles Creek Road operates a little better at a Level E LOS.

The entire US 27 segment between I-471 and Pooles Creek Road is projected to operate at a Level F by 2030 according to OKI.



Congestion mitigation is treated as both a concern and a high priority public policy to ensure future LOS levels remain at acceptable levels. The City needs to work closely with the Kentucky Transportation Cabinet (KTC) and NKU to meet this goal.

The local street network is organized in a suburban pattern characteristic of many communities established after 1900. Most local streets dead-end, have little lateral access and force traffic out onto collector and arterial streets.

Major east-west running streets – Johns Hill Road, Martha Collins Boulevard and Nunn Drive – all terminate at US 27. The lack of east-west through connectivity forces additional traffic onto US 27.

US 27 is the only north-south route that traverses the entire City. The recent extension of University Drive to Johns Hill Road will provide some relief.

As a matter of policy, additional east-west and north-south connector roads are needed to provide alternative routes, distribute trips, provide secondary access and reduce US 27 congestion.

Jurisdiction

Roadway jurisdiction is often confusing due to multiple public agency involvement in the same community.

This is case in Highland Heights where KTC has roadway ownership and responsibility for I-471, I-271, US 27, Three Mile Road/University Drive, Nunn Drive and Johns Hill Road.

It is important for the City to maintain regular communication with KTC and develop a partnership relationship. Mounting congestion, particularly on US 27, underscores the need for the City to closely work with State officials.

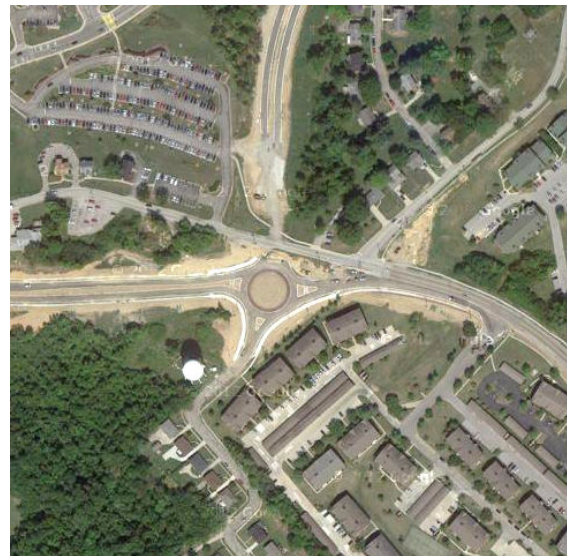
Recent Improvements

Highland Heights is fortunate to receive State roadway improvement funds for such important projects like the realignment of Johns Hill Road and the extension of University Drive to a new roundabout at Johns Hill Road / Martha Collins Boulevard.

Johns Hill Road is an important collector road and its use is expected to increase along with NKU and Town Center growth.

University Drive provides much needed north-south access between Johns Hill Road and Three Mile Road and Nunn Drive.

The below picture shows University Drive still under construction, a new roundabout and a realigned Johns Hill Road.





Functional Classification

Table TR1 categorizes Highland Heights streets based on the Federal Highway Administration's Functional Classification System.

Roads are classified based on their characteristics including purpose (mobility versus access), land uses served, and amount of traffic handled.

The functional classification system provides a basis for developing a Thoroughfare Plan and for establishing a logical, efficient roadway system as outlined in the following section.

Thoroughfare Plan

The Thoroughfare Plan Map (Map TR1) shows planned roadway locations by functional classification. Existing roads are shown in solid lines. New roads or road extensions are shown in dashed lines.

The Thoroughfare Plan is a useful planning tool to ensure adequate right-of-way is maintained for future road extensions and improvements. Thoroughfare Plans also make City actions and future road extension predictable to impacted property owners.

A description of Thorough Plan road improvement projects are provided in the remainder of this section. Most, but not all projects, are shown on Map TR 1 Thoroughfare Plan.

Clara Street Extension North

Clara Street Extension North is planned to connect Nunn Drive to Johns Hill Road. This extension improves Town Center access and distributes traffic away from US 27.

Access provided by Clara Street Extension North opens the west side of Town Center for planned redevelopment.

Additional analysis is needed before alignment and intersection locations are set. The City needs to work with NKU to ensure alignments are coordinated with NKU plans to develop mixed use dorms and hotel/conference centers in Town Center.

Marshall and Harriet Grid Connectors

Extend Marshall and Harriet to connect Bluegrass to Clara and to establish a block grid as planned for the Town Center redevelopment district.

The block grid serves as the underlying foundational element for pedestrian-friendly, mixed use development. Marshall and Harriet can be relocated from their current position to best accommodate future development. Their outright elimination is not supported.

Clara Street Extension South

This road will provide access between two major collectors – Johns Hill Road and Martha Collins Boulevard – and provide an additional route to Town Center separate from US 27.



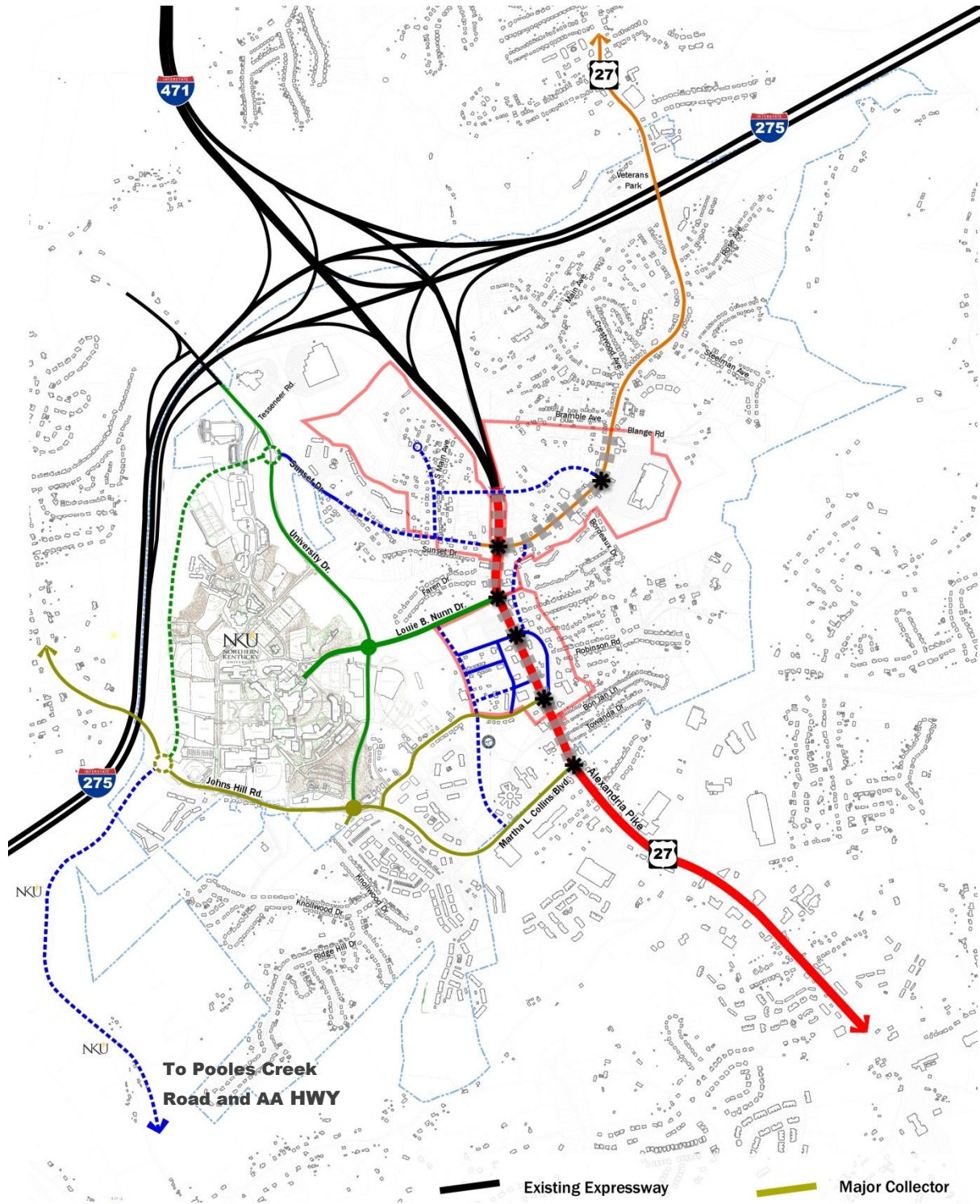
Table TR1 - Functional Roadway Classifications

Classification	Function and Characteristics	Examples	Land Use Served
Expressway	<ul style="list-style-type: none"> • Provides the highest level of mobility at the greatest speed over the longest uninterrupted distance • Carries highest traffic volumes • Complete access control. No direct property access • Bi-directional travel lanes are usually divided 	<ul style="list-style-type: none"> • I-275 • I-471 	<ul style="list-style-type: none"> • Interstate
Major Arterial-I	<ul style="list-style-type: none"> • Link and pass through regions and cities and carry regional traffic • Provides high level mobility at moderate speeds over long distance • Direct property access is ideally limited 	<ul style="list-style-type: none"> • US 27 – Pooles Creek to I-471 	<ul style="list-style-type: none"> • Regional Commercial • Industrial
Major Arterial-II	<ul style="list-style-type: none"> • Provides high mobility at low to moderate speed • Carries regional and local traffic • Direct property access is limited 	<ul style="list-style-type: none"> • US 27 – Sunset Drive to I-275 	<ul style="list-style-type: none"> • Commercial • Apartments
Major Collector	<ul style="list-style-type: none"> • Provides low to moderate mobility at low speed • Conveys traffic from local roads to arterials • Direct property access is permitted or limited 	<ul style="list-style-type: none"> • Johns Hill • Martha Collins • Pooles Creek 	<ul style="list-style-type: none"> • Neighborhood Commercial • Apartments • Single Family Residential
Connector /Access Locals	<ul style="list-style-type: none"> • Slow traffic with little or no through-movement over short distances • Carries lowest traffic volumes • Provides direct access to individual properties • Includes all roads not defined as arterials or collectors 	<ul style="list-style-type: none"> • Bluegrass • Renshaw • Sunset • Kenton • Hill Top 	<ul style="list-style-type: none"> • Local Commercial • Single Family Residential
NKU Campus	<ul style="list-style-type: none"> • Arterial and collector roads specifically designed and maintained to provide regional access to NKU 	<ul style="list-style-type: none"> • 3 Mile • University • Nunn 	<ul style="list-style-type: none"> • NKU Campus • Bank of Kentucky Center

Table TR1 is based on the Federal Highway Administration’s Functional Classification System and is modified to more accurately define local roadway characteristics.



Map TR1-Thoroughfare Plan



- Existing Expressway
- Major Arterial - Priority I
- Major Arterial - Priority II
- Major Collector
- Connector / Access
- NKU System
- Major Signalized Intersection
- Proposed





Old US 27 Connector

Old US 27 on the east side of Town Center is planned to connect the “Island” property to US 27, east of Sunset. This planned improvement is a continuation of previous Comprehensive Plan policy.

This connection provides a needed second way in and out of Town Center (east of US 27) and reduces traffic load on US 27. The need for secondary access is heightened now that Highland Pointe, a new commercial center, will soon be completed.

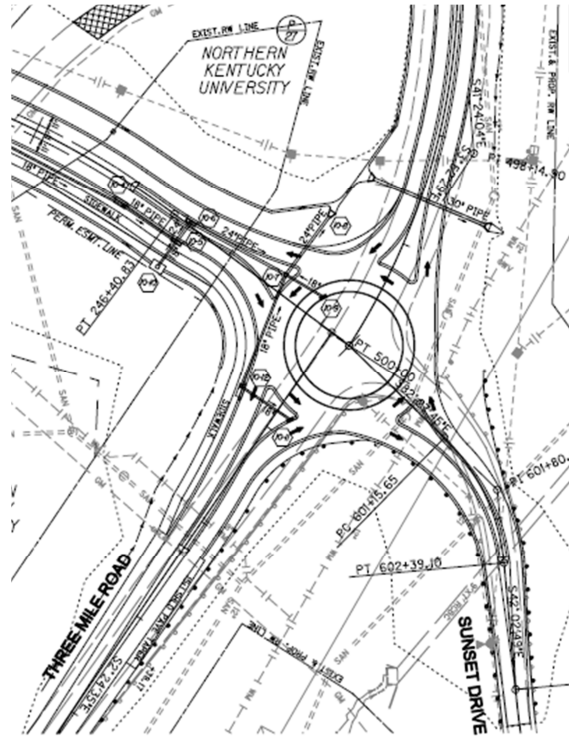
I-275 Parallel Service Road

The I-275 Parallel Service Road consists of multiple segments that when complete will provide continuous, crosstown circulation from AA HWY/Pooles Creek Road to I-275, east of I-471. This route provides access to NKU and bypasses US 27 and Nunn Drive.

NKU Connector Road South and NKU Connector Road North are fully funded but are waiting environmental clearance by the Federal Highway Administration. Characteristics of each planned segment follow:

- 1. NKU Connector Road South.** NKU Connector Road South links Pooles Creek Road to Johns Hill Road where it is planned to intersect at a future roundabout before continuing north to NKU Connector Road North.
- 2. NKU Connector Road North.** NKU Connector Road North begins at a planned roundabout on Johns Hill Road and follows the west side of campus north to where it turns northeast and intersects with another planned roundabout on Three Mile Road.

- 3. Relocated Sunset Drive.** Sunset Drive intersects with NKU Connector Road North at a planned roundabout on Three Mile Road and continues east following a new alignment to where it connects with the existing Sunset Drive commercial road stub located off I-471.



Sunset Drive improvements should match NKU Connector Road North’s road design including number of lanes and gutter type, etc. Sunset will carry a mix of commercial and NKU traffic once the I-275 Parallel Service Road is fully established.

- 4. Roundabouts.** As mentioned previously new roundabouts are planned where Three Mile, NKU Connector Road North, and Sunset Drive intersect and where Johns Hill Road, NKU Connector Road South and NKU Connector Road North intersect.



Gateway East Access Road

Access into the north section of Gateway East is planned to intersect with Lowes' signalized intersection located on US 27. This planned road traverses north then heads northwest where it terminates at a temporary cul-de-sac. The cul-de-sac is meant to give way to a planned extension over or under I-471 to connect Gateway East and Gateway West.

Gateway West Access Road

A new local access road is planned to serve "Business Park" uses in Gateway West. This north-south access road intersects with Sunset Drive's planned realignment. A cul-de-sac turnaround is planned at the north end of the access road. Steep hillsides on the back end of Gateway West prevent a sensible and cost effective connection to NKU Foundation Research Park.

Gateway Connector Road

The Gateway Connector Road project is carried forward from previous Comprehensive Plans. The Kentucky Transportation Cabinet studied the connector and prepared a document detailing its findings and recommendations. This project is not listed on State or OKI funding lists or long range transportation improvement plans.

This project warrants additional study now that Sunset Drive is planned to connect Three Mile Road to US 27 as a modern commercial service road.

The quality and type of development in Gateway East will also impact whether a Gateway Connector Road is needed.

For example, a connector road is needed particularly if planned Gateway West high-tech business park uses can be duplicated in Gateway East. In such case, a connector road would help to create a unified and connected high-tech employment district.

Expand the Nunn Drive Roundabout

The single-lane roundabout at Nunn Drive and University Drive accommodates traffic under normal traffic conditions. Backups occur when large events are held at the Bank of Kentucky Center.

While this happens infrequently, major backups disrupt traffic on US 27 and raise safety concerns. NKU is considering, and the City supports, adding a second lane to the existing roundabout as a means to accommodate additional event traffic.

Aesthetics and Safety

Place Branding Streetscapes

Stone walls found along US 27 in Town Center are Highland Heights' signature brand element. This place-defining feature makes the City stand out and provides a memorable brand image.

Extend stone veneer wall streetscapes along any part of US 27 up to Bramble Avenue and along Sunset Drive in Gateway West. Require all freestanding commercial signage to have a stone base to match stone wall materials.

The City would benefit from a Streetscape Master Plan that clearly articulates standards for materials and placement of stone walls and landscaping.

Integrate stone knee walls and planters into the streetscape to add visual interest and double as pedestrian seating.





Gateways

Gateway monuments (City entrance signs) are needed at major entrances to overcome the ambiguous nature of the City’s geographical boundary and the unassuming way Highland Heights ends and Colds Springs begins. Use stone veneer base and support elements in keeping with the City’s signature branding element. Collaborate with NKU for possible co-branding opportunities.



Wayfinding

Finding ones way in Highland Heights can be difficult because of how US 27 abruptly turns into I-471, how traffic on US 27 seems to push motorists through, and how several streets have the same name.

A concerted wayfinding effort is needed to tie districts together such as NKU Campus, City Building, Town Center, Gateway East and Gateway West. Wayfinding is an effective means to brand the City.

Wayfinding signage must complement the City’s streetscape, incorporating the stone theme, among other elements. Use the same environmental graphics firm to design wayfinding signage and City gateway monuments to ensure compatibility between sign types.



Access Management

Work with KTC to implement key recommendations made in the *US 27 Corridor Access Management Study*.

Access management significantly improves traffic flow and safety by properly spacing curb cuts and intersections and restricting turning movements. These same measures also improve corridor aesthetics by closing unsightly, continuous curb cuts and by adding curb, gutter and landscaping to set controlled access points.

Street Names

Take steps to remove duplicative street names in Highland Heights. Current duplications are confusing to new residents and visitors.



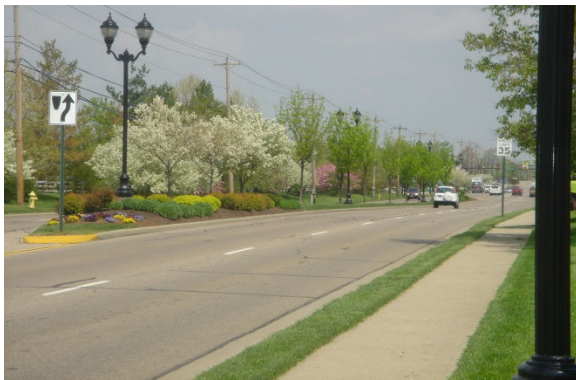
Traffic Calming

Traffic calming is a set of tools and techniques used to make drivers go instinctively slower. One of the benefits attributable to traffic calming is a quieter, safer and more enjoyable pedestrian experience.

Example techniques include reducing lane width, adding street trees, or installing a center median. A center landscape median is recommended in the *US 27 Corridor Access Management Plan*.

This plan was created for KTC. However, State officials believe adding a center median would require additional right-of-way and land making such project unlikely.

According to the Access Management Plan, a non-traversable center median can reduce accidents by 55% and increase road capacity by 30%.



Placing buildings close to the street creates a canyon effect. Drivers perceive enclosure and narrower roads which in turn slows traffic.



Source: www.placemakers.com

Reducing lane width would reduce speed in Town Center – a welcome improvement as the City and its partners continue to plan a pedestrian-friendly node.

Pedestrian Circulation

US 27 is a regionally significant, high-volume arterial road. It is designed to convey large amounts of traffic through Highland Heights. Little thought was given to aesthetics or east-west pedestrian connectivity.



Sidewalks are provided on both sides of US 27 but their placement just a few feet off the road create uncomfortable pedestrian environments.

Most streets lack sidewalks in Highland Heights. Require sidewalk installation as a condition of development plan approval.



US 27 divides the City in two distinct pedestrian zones. Large intersections, some up to seven lanes wide, make US 27 a physical and psychological pedestrian barrier, especially for children and elderly populations.

Pedestrian Islands, a solution advocated in the 2006 Plan, would provide protection from automobiles in the center of US 27. Pedestrian Islands protect those who cannot walk across an intersection before oncoming traffic gains a green signal again.

While this strategy is used extensively across the United States, its application is in question here unless the State is willing to give up or add a lane at every intersection on US 27. Neither scenario seems likely.

Pedestrian Bridge

The Steering Committee considered this option and its associated constraints and decided a pedestrian bridge was a safer and more feasible alternative for pedestrians to cross US 27.

To be successful, such bridge must be in a convenient location for pedestrians.

The pedestrian bridge is now planned on the north side of Marshall Lane. Steps are needed to integrate the bridge including its base and connecting walkway infrastructure into NKU plans for a mixed use hotel/conference center on the six acre parcel at Nunn and US 27.

The 2006 Comprehensive Plan placed the bridge on the north side of Applebee’s. The Steering Committee, upon closer examination, determined a bridge at this location blocked driver sight lines of on-coming traffic on US 27.

Ensure that the bridge has adequate connecting walkway infrastructure back to the Bank of Kentucky Center and NKU. Likewise, ensure every street in Town Center provides a walkway that ultimate connects to the bridge.

Treat the bridge as a significant gateway opportunity for Town Center and NKU. Co-brand the bridge with “campus” and “Town Center” architecture. Prominently embed NKU and City logos in the structure. Consider adding text across the span such as “Highland Heights – Home of NKU”.





Bus and Air Travel

Bus Transit

The City of Highland Heights is accessible by bus transit service provided by Transit Authority of Northern Kentucky (TANK).

TANK, in partnership with NKU, provides free bus fare to NKU students as part of the U-PASS program.

Two Tank Routes – #11 and #25 – stop in Highland Heights. Route #11 connects to Cincinnati, Covington and Ft. Thomas. Route #24 connects to Newport, Fidelity, and Ft. Wright.



The NKU Shuttle provides on-campus transportation 7 days a week. Service to Callahan Hall on Martha Collins Boulevard is during week days only.

Additional transit service is desired in Highland Heights particularly at future employment centers planned at Gateway East and West. Work with TANK to identify suitable locations for future bus stops and pullovers.

Trails, Walways and Bikeways

The Highland Heights Nature Trail is 4 miles long and offers 18 educational stations.

The trail begins on a 30 acre nature preserve located off of Pooles Creek Road and meanders north to Martha Collins Boulevard.

From there, one segment continues north to Highland Heights City Building and NKU and a second segment heads east to Lakeside Manor and the Extension Office.

Additionally, NKU maintains an extensive on-campus walkway system. The City welcomes additional integration of this system into adjacent areas such as Town Center and Gateway West.

Highland Heights is encouraged to building on the existing foundation of paths, trails and walkways that currently exist. No dedicated bicycle facilities currently exist in the City. They need to be planned and constructed wherever possible.

A well-developed trail-walkway-bikeway system would go far to help brand Highland Heights as a leading “college” town. Increased trail, walkway and bikeway use would help to offset traffic congestion and to promote healthy activity.

Commission a Trails and Bicycle Facility Master Plan to ensure a planned and coordinated system is developed. This plan should:

1. Identify possible new trail segments and prioritize their development.
2. Develop an interconnected NKU/ City path and trail system.
3. Identify suitable locations for on-street bicycle facilities.
4. Identify critical sidewalk gaps and extensions.
5. Map and analyze the location of paper streets for possible use as connecting trails and providing trail access to neighborhoods throughout the City.
6. Identify a safe bicycle route from Highland Heights and NKU to the



proposed Licking River Greenway Trail.

- 7. Link parks together by trails and walkways.

Ideally, a NKU/City partnership would emerge supporting both planning and implementation efforts to extend trails throughout the City.

The Highland Heights Nature Trail currently offers “passive” recreation only. Inclusion of outdoor exercise equipment and circuits would appeal to a wider range of users.

In addition, outdoor recreation equipment would enhance park and recreation opportunities in Highland Heights.



Air Travel

Cincinnati International Airport (CVG) is located within an easy 20 minute drive from Highland Heights on I-275. This puts the City well within acceptable distances corporations are willing to locate away from an international airport – a strong point supporting business park development at Gateway West.

Collaboration

A meeting with KTC revealed that Highland Heights’ planned transportation projects are not in State Transportation Plans for future funding.

Local Advocacy

The old model of the State bringing projects to the City is obsolete due to widespread funding shortages at all levels of government.

Getting projects funded today takes creativity and multi-jurisdictional political support. Projects benefit from multi-jurisdictional support and large local matches. Such projects are typically looked upon more favorably by state and federal officials.

Highland Heights must take an active role in the implementation of its planned transportation projects. Meet with potential partners including Campbell County Fiscal Court, Ohio-Kentucky-Indiana Regional Council of Governments (OKI), KTC, NKU and



Northern Kentucky Economic Development Corporation (Tri-ED) among others to build a coalition of political and financial support.

Seek the support and involvement of developers and property owners in developing the City's transportation plans. This effort will take time and hard work but the potential benefit will be worth it.

Transportation improvements serve as just one example of where the City must be proactive, take the lead and be its own advocate to achieve Plan goals.

State and Regional Plans

Take steps to get locally planned projects on OKI's Long Range Transportation Plan (LRTP) and the State Transportation Plan (STP) to ensure such projects are not overlooked when funding is released.

Meet with State and OKI officials to get local projects included on their plans. Seek guidance on how to elevate local transportation projects to high-priority funding status.

Developer Assistance

The City can also work with developers to extend roads quicker than waiting for state and federal money. This commonly used approach is a form of a public private partnership. Developers contribute to road projects as a means to enhance value and/or market potential of land.

Communities can share costs to incentivize developer participation or when road costs exceed the developers' fair share or benefit. Requiring oversized infrastructure is one example.

State Resources

The State can provide assistance even when City projects are locally let – meaning such projects are not included in State Transportation Plans or capital budgets.

In such cases, the City can secure its own funding outside of the STP and biennial State budget. Such funds could come from Tax Increment Financing (TIF), Industrial Revenue Bonds (IRB), the General Fund, developer contributions and/or one of several federal funds managed by the Kentucky Office of Local Programs (OLP) (see below).

KTC can assist the City on locally let projects as a technical resource by providing contract and construction management services if schedules and available resources allow. A fee is normally charged but these fees can be paid out of TIF, IRB and OLP contributions.

The State also maintains open contracts with consultants to plan and design roads and road improvements. Using these State approved consultants may save time and money.

Office of Local Programs Division/ Division of Multi-Modal Programs

Kentucky maintains the Office of Local Programs to manage federally funded projects using Transportation Alternatives Program (TAP), Safe Routes to School (SRTS), Congestion Mitigation and Air Quality (CMAQ), Scenic Byways, and Transportation Community and Systems Preservation (TCSP) programs.

The City is encouraged to review all planned transportation projects with the Office of Local Programs and the Division of Multi-modal Programs to see if funding is available for trail extensions, pedestrian bridges and missing



sidewalk gaps, particularly on Johns Hill Road and Three Mile Road.

The City needs to present cases for Town Center Service Roads to reduce congestion on US 27.

The City will serve as a Local Public Agency (LPA) if federal funds are used to pay for local transportation projects. LPA approved projects require strict adherence to State mandated usage requirements.

For example, the pedestrian bridge project planned at Marshall Lane may qualify for CMAQ and/or TAP funds.

Monitoring

The City must work with KTC and NKU to monitor key traffic indicators in the community to ensure US 27 and other key routes are operating at peak efficiency and safety.

The City should ensure all available steps are taken to improve and maintain acceptable levels of roadway service and safety. Include NKU in the review of data and in meetings with the State.

Monitoring and advocacy is needed most on US 27. KTC reviews and adjusts traffic signal timing and efficacy every year in the US 27 corridor. Ensure City officials are included in such reviews.

As a matter of policy, the City needs to meet with KTC every year to ensure action is taken to keep the corridor running at peak efficiency. Likewise, the City should meet with KTC every four years to review technological advances in the field of traffic synchronization and advocate for infrastructure and synchronization improvements and upgrades.