



## CHAPTER 2: OVERALL CORRIDOR ANALYSIS

Harlem Avenue provides transportation for a wide variety of trip types and transportation modes. This section provides an analysis of the contextual issues for each of the transportation modes, and a list of improvement strategies to be integrated into the transportation plan for the Corridor. These strategies are presented at a “planning” level, and are intended to be used as a starting point for further analysis and design. Additional detail about transportation conditions in the Harlem Avenue Corridor can be found in Chapter 3 of the *Existing Conditions Report*.

### ROADWAYS

#### CONTEXT

Harlem Avenue throughout the study area is a designated State route (IL 43), meaning that it falls under the jurisdiction of IDOT. Within the regional roadway network, Harlem Avenue is a north-south travel route classified as “Other Principal Arterial.”

As a State route, Harlem Avenue serves a regional travel function and facilitates the safe and efficient movement of people and goods. Harlem Avenue also provides access to a diverse mix of land uses and direct access to commercial centers and businesses. As a multi-modal Corridor, Harlem Avenue is used for travel on and access to Pace and CTA bus services.

Throughout the Corridor a minimum of two lanes per direction is provided, with some segments expanded to three lanes per direction. Many segments also include center turn lanes and/or medians. Signalized intersections generally provide exclusive left-turn lanes and many provide exclusive right-turn lanes.

Analysis of the existing traffic conditions along Harlem Avenue consisted of reviewing traffic data that was supplied by IDOT, field observations made during peak travel times, and supplemental traffic data that was obtained at key intersections where none existed. A review of the data shows that many of the intersections along Harlem Avenue are strained

and operating at a poor level of service, particularly during peak periods, causing significant delays for motorists traveling along (or trying to access) Harlem Avenue. Inadequate roadway and intersection capacity impacts not only motorists but also bus passengers, when their vehicles get stuck in traffic, and pedestrians, when crossing congested intersections used by frustrated motorists.

#### CORRIDOR IMPROVEMENTS

Based on the analysis of existing traffic conditions, a number of opportunities have been identified to address roadway operations, safety, access, and multi-modal elements. Along Harlem Avenue, a “Complete Streets” design will be implemented that will accommodate all potential users of the facility. For example, specific improvements to be considered include:

- *Additional through and turn traffic lanes.* A number of intersections currently operate below capacity (or will in the future). Even with increased multi-modal use along the Corridor, additional lanes will be needed at a number of intersections.
- *Designated pull-off locations for transit vehicles.* These would allow boarding/alighting at designated posted stops outside of the moving travel lanes. This strategy could offer benefits for motorists as well as transit users.
- *Median treatments such as raised/planted medians or median refuges at crosswalks.* These could be located at high crash locations or other locations where turning movements across traffic or high levels of pedestrian activity pose a safety issue.
- *Use of changeable message signs/user information.* These signs would help improve traffic flow by giving motorists regularly updated information about traffic conditions, travel times, accident messages, and transit options.

Overall, the main categories of improvements for Harlem Avenue are:

- Traffic calming strategies
- Intersection improvements
- Access management
- Targeted freight traffic improvements



Throughout the majority of the corridor, such as through Palos Heights (above), Harlem Avenue features two lanes in each direction with a middle turn lane.

#### TRAFFIC CALMING STRATEGIES

Traffic calming measures can improve the overall traffic flow as well as safety for all users of Harlem Avenue, making arterials more pedestrian- and community-friendly. These may not be applied universally in the Corridor, but would be especially applicable to areas where there are potential conflicts between vehicles and pedestrians, such as the portions of the Corridor near the Worth Metra station, through the central business district of Palos Heights, and through the Forest Preserve properties.

Traffic calming measures can include strategies such as:

- Narrower travel lanes, particularly in areas with lower truck volumes and higher speeds
- Elimination/reduction of free-flow right turn lanes or shared with bus queue jump lanes
- Raised medians/median improvements to enhance pedestrian safety, narrowing the roadway, and providing a visual change to driver’s field of vision

- Tightened corner turning radii or the installation of “pork chop” islands where radii can’t be reduced to enhance pedestrian safety

#### INTERSECTION IMPROVEMENTS

Actions to improve intersection operation and safety can include changes to the following items:

- *Signal timing.* Appropriately balancing the traffic signals to accommodate traffic flows or even respond to traffic conditions as they happen.
- *Channelization.* Expanding facilities for dedicated turning movements to allow for less conflict between motorists.
- *Countdown signals.* Providing information for pedestrians at crossings to improve safety and reduce possibility of pedestrians getting trapped in the middle of crossing a wide roadway.
- *Reduced turning radii.* Creating better flow for turning movements at high-traffic intersections.
- *Median refuges.* Providing safe havens for pedestrians crossing the roadway to eliminate or reduce the instances of pedestrians standing exposed between two lanes of traffic.

To address specific intersection improvements, representative intersections were selected to illustrate conceptual intersection improvements that could be replicated throughout the Corridor. The representative intersections were selected based on the following criteria:

- Traffic volumes/operation
- High crash locations
- Adjacent transit service/ridership
- Adjacent land use/access to major generators
- Pedestrian safety

Using data provided by IDOT as well as field observations, a number of the most congested intersections along Harlem Avenue were selected for



Reducing the number of driveway access points and curb cuts can improve traffic flow and safety along arterial roadway corridors.

improvement concepts. Specific recommendations for each intersection are addressed in Chapter 4 of this document.

- *87th Street.* Located in Bridgeview and Burbank. Currently located near shopping center uses. High crash location. High overall traffic volumes and truck volumes. Operates at a poor level of service.
- *95th Street.* Located in Oak Lawn and Bridgeview. Majority of site taken up by the 95th Street interchange area which brings together three roadways (I-294, 95th Street, and Harlem Avenue). High traffic location. Industrial uses in the southwest quadrant. Residential uses in other three quadrants. Numerous merge/diverging lanes within a very small area, leading to a very pedestrian unfriendly environment.
- *Southwest Highway.* Located in Worth and Palos Park. Because Southwest Highway travels southwest/northeast, the angle of the intersection is not perpendicular and creates more varied turning movements. Commercial uses and gas stations are located at adjacent parcels. Operates at a poor level of service.
- *111th Street.* Located in Worth. Worth Metra station located just to the east. Parcels are small, generally retail uses with limited access to Harlem Avenue. Opportunity for a transit oriented development. High crash location. Operates at a poor level of service.
- *159th Street.* Located in Orland Park and Tinley Park. This is a very high-traffic intersection that lies at the intersection of two marked highways. The surrounding area features the largest concentration of retail shopping centers along Harlem Avenue. Operates at a poor level of service.
- *171st Street.* Located in Tinley Park. 171st Street is the main east-west route travelling toward downtown Tinley Park and also west toward the busy Metra station at 80th Avenue. Surrounding land uses are commercial, and include a few potential redevelopment sites. Operates at a poor level of service for vehicles.

#### ACCESS MANAGEMENT

Access management measures are implemented to improve overall traffic flow and safety along a roadway corridor by controlling the location, spacing, design, and operation of driveways, median openings, interchanges, and street connections. Examples of related improvements include:

- Reduced number of access driveways
- Reduced width of access driveways
- Raised medians that reduce options for cross-traffic turning movements.

To improve access issues along Harlem Avenue, two actions are proposed:

- Each community should review all access drive locations and determine their conformity with community regulations or building permits.
- Explore opportunities to consolidate access between land uses.

To provide typical examples of how access management strategies could be applied along the Corridor, Chapter 4 presents a set of sample designs showing access improvements for sections of Harlem Avenue.



Planted and/or raised medians can help improve traffic flow and safety as well as improve Corridor aesthetics.

#### TARGETED FREIGHT TRAFFIC IMPROVEMENTS

Some segments of Harlem Avenue carry high volumes of heavy truck traffic. Planning for these areas must keep in mind how to accommodate these larger vehicles within the overall context and function of the Corridor. The most prominent freight generators are located in the northern portion of the Corridor, especially between 65th and 71st Streets, where there are numerous freight facilities and railroads.

Potential improvements for addressing freight issues:

- Creating grade separations to reduce road-to-road or road-to-rail congestion points where possible. As part of the ongoing CREATE program, which seeks to reduce freight congestion throughout the region, a new grade separation has recently been initiated at 71st Street west of Harlem Avenue. This project involves the grade separation of four CSX and Indiana Harbor Belt rail tracks and 71st Street in the Village of Bridgeview. This location is immediately west of Toyota Park, and 71st Street is the primary ingress/egress route to the stadium parking lots. Construction of the grade separation would maintain acceptable access to the stadium and the potential future development in the stadium district.
- Locations with a high level of truck turning movements should continue to work with IDOT to explore opportunities for increased use of alternate routings during peak travel times.
- Work with companies to offer incentives for scheduling off-peak loading/unloading.
- Use of changeable message signs to alert motorists of traffic queues or to direct truck operators to possible alternative routes.

## TRANSIT SERVICE

### CONTEXT

Harlem Avenue provides a major backbone for transit services in the south suburbs, and is part of a grid network of bus service along major streets in the southwest suburbs of Chicago. Public transportation services in the Corridor include Pace bus service, Metra commuter rail service, the City of Palos Heights municipal will-call service, and ADA paratransit services.

Harlem Avenue is a priority Corridor for Pace service. Trips between communities, trips to major commercial centers, and trips to Metra commuter rail service are all important transit travel markets. Providing transit choice along Harlem Avenue is an important component to the overall function of the roadway, increasing the roadway person-carrying capacity while reducing the number or growth rate of single-occupant vehicles.

### CORRIDOR IMPROVEMENTS

Transit service and facilities improvements proposed throughout the Corridor are described below. The focus is to improve the overall connectivity to destinations and other transit services along the corridor through upgrades to transit services, pedestrian amenities, and more direct connections to other nearby services. In addition to the upgrades presented in this section, the non-motorized improvement strategies for the Corridor will have a significant positive impact on the quality of transit service along Harlem by supporting better access to these services.

Significant changes to existing bus routes are not proposed in this plan. This is because Pace recently completed the South Cook County–Will County service restructuring initiative, which sought to align Pace service with current travel needs and demographics, improve service reliability, and develop new transit options. The associated service changes, including new and reconfigured routes, were implemented in 2009.

### POSTED BUS STOPS

Currently, stop locations for most Pace service in the Corridor are “flag stops”, meaning that the transit vehicle will stop at any location deemed safe. Pace currently working to transition most routes in its network to a “Posted Stop” type of operation, where passengers can board or alight the bus only at posted Pace bus stop signs. Pace believes this operation to be easier for drivers and passengers to understand, more reliable and facilitates shorter travel times for customers. Route 364 (159th Street) has recently been converted to using posted stops.

According to Pace, the basic elements for determining posted stop locations include ridership activity, safety review/field activity of potential stop locations with preferences to far-side locations, connections to other transit services/routes, and access to major destinations. Special requirements for installing a posted stop location are also considered, such as whether



A Pace Transfer Center at Toyota Park will improve transit access and egress for special events, but also provide a connection point for transit services at the north end of the Harlem Avenue Corridor.

the preferred location requires considerable land improvements (e.g., filling in ditches may be cost prohibitive meaning an alternate location would need to be considered). Facilities at posted stops could range from simply a sign and waiting pad to a shelter with lighting and electronic passenger information.

Along Harlem Avenue, posted stops should be considered at the following locations:

- Each signalized intersection
- Locations where east-west routes cross Harlem Avenue
- Intersections nearest Metra stations
- Near major access/entry points to commercial centers and other major generators
- Locations with high ridership activity
- Near multi-modal connections, such as a regional bike trails

Specific locations could potentially include (see Chapter 3 maps):

- Toyota Park – 71st Street
- Bridgeview Court, Northwestern Business College – 79th Street
- Harlem Corners, Southfield Plaza – 87th Street
- Menard’s Shopping Center – 91st Street
- Bridgeview Center, 5th District Courthouse – 103rd Street
- Tiffany Square – Route 83
- Downtown Palos Heights – 123rd Street
- Jewel-Osco – 127th Street
- Catalina Commercial center – 157th Street
- Home Depot Plaza, Park Center – 159th Street
- Tinley Park Plaza, Park Plaza – 161st Street
- Tinley Park Convention Center – 183rd Street



Pace bus shelters at fixed station locations provide shelter from the elements.

The final location for posted stops will be determined by Pace, following detailed field analysis and input from local communities.

### TRANSFER CENTERS

There are three Pace transfer centers in planning or under consideration along Harlem Avenue:

- Pace has planned for the development a new transit center at **Toyota Park**, which could serve as a park-n-ride facility for an express bus routes, including service to the CTA Orange Line and Midway Airport. The transit center could also be a boarding location for a future Arterial Bus Rapid Transit (ART) service along Harlem Avenue.

The Village of Bridgeview, the owner of Toyota Park, has been very supportive of establishing a transfer center and has agreed to dedicate space for the facility as well as provide preliminary architectural and civil engineering design service. At this time, funding has been secured and administrative work for the funds transfer between IDOT, RTA and Pace is underway.

- The **95th Street** interchange, located in Oak Lawn and Bridgeview, is a major cloverleaf interchange that brings together 95th Street, Harlem Avenue, and Interstate 294. This interchange is proposed to be redesigned as a “single point urban diamond” interchange, which would significantly reduce the land dedicated to the interchange and thus open up more land for economic development; allow for safer pedestrian and bicycle accessibility; and potentially create space for a bus transfer station.

A transfer station at this location would likely have platforms and shelters located on each side of the roadway to serve buses operating in each direction. Thus, station access features would include vertical

circulation elements such as overhead pedestrian bridges and elevators. Passenger drop-offs would be located by each pedestrian bridge entry, with kiss-and-ride or park-and-ride facilities as well as potential connections to other local and feeder bus services.

- Pace has considered an additional transfer center at the **south end of the Harlem Avenue Corridor** (near 183rd Street). This would provide access to the nearby convention center, employment uses, and potentially transfers to express bus service along I-80 (implementation of this service has been studied by Pace). This potential improvement will require additional study to determine the proper location of the transit center, and it is likely to be a longer-term priority for Pace and the Village of Tinley Park.

#### ARTERIAL RAPID TRANSIT (ART)

A major Pace vision for the future is to create an ART network on 23 corridors throughout northeastern Illinois. ART is a combination of technology, design features and operating practices that allows buses to increase speed and reduce travel times, providing faster, more dependable service. Typical ART elements include combinations of Transit Signal Priority (TSP), roadway improvements including queue jump lanes and Intelligent Transportation Systems (ITS) along arterial routes.

Six ART corridors have been selected by Pace to be implemented within a 10-year time frame, including: Milwaukee Avenue, Dempster Street, Oak Brook (Cermak Avenue), Harlem Avenue, 95th Street and Halsted Street. Based on ongoing studies in the region and regional plans for the next 10 years, Pace determined that the Harlem Avenue Corridor would receive regional institutional support in the second 5-year of the 10-year implementation time frame.

Pace has selected the following preliminary characteristics for ART:

- Vehicles run on arterial streets, operating in mixed traffic. Queue jump lanes (where buses are allowed to move to the front of the line at congested intersections) could be implemented where applicable. Vehicles will be a fleet of low-floor standard 40-foot vehicles that will be specially branded.
- Stations will be branded and specifically designed for ART. Shelters will be owned by Pace and will be electrified for heating, lighting and to provide real-time bus arrival information.
- The fare collection system would be mostly on-board, augmented with off-board fare collection at peak times and at peak volume stations.
- ITS will include Transit Signal Priority and real time information systems with changeable message signs at stations.
- Branding will be applied to the vehicles, stations, specialty bus stop poles, and drivers' uniform. Flags and signs may mark the route in between stations.

Potential ART improvements for Harlem Avenue could include: buses

## BUS RAPID TRANSIT

Pace's vision for ART is a modified version of Bus Rapid Transit (BRT), which has increasingly been applied in urban and suburban corridors throughout the United States.

The Federal Transit Administration has defined BRT as "a flexible rubber-tired rapid transit mode that combines stations, vehicles, services, running ways and intelligent transportation system elements into an integrated system with strong positive identity that evokes a unique image."

#### STATIONS



*Improved stations and shelters can provide better experience for customers and also a visual cue about the presence of transit. Highly utilized stations may have off-board fare collection.*

#### PASSENGER INFORMATION



*Real-time travel information provides updated information on schedules or service delays at stations or on portable mobile devices.*

#### OPERATIONS



*Strategies for improved travel times for transit vehicles include transit-signal priority (which extends traffic light cycles to allow for buses to get through) or queue jump lanes (which help move buses to the front of the line at busy intersections).*

#### BRANDING



*Branding of vehicles, stations and service information presents existing and prospective passengers with a unique identity that differentiates the service from standard local bus service.*

Flexibility is the key aspect of BRT, meaning that the various aspects of service can be scaled to the appropriate needs of a corridor or the level of investment that is available over time.

Examples of some of the elements of BRT, along with a description of how each can influence customer experience, are provided below. The extent to which these elements are applied will be determined as Pace moves forward with implementation along Harlem Avenue.

operating in mixed traffic with queue jumping and signal priority at signalized intersections; bus turnouts at selected station and posted stop locations; potential use of right turn lanes, short roadway segments, or shoulders for selected queue jumping on roadway segments.

Potential ART stations along Harlem Avenue should be located based on several criteria:

- locations where more than one mode can be coordinated
- locations where east-west bus routes cross Harlem Avenue
- major bus ridership locations
- locations where stations and bus pull-offs can safely be located

These potential locations could include (see Chapter 3 maps): Toyota Park, 79th Street, 87th Street, 95th Street, 103rd Street, 111th Street/Worth Metra Station, downtown Palos Heights (between 121st and 123rd), 159th Street, 171st Street and 183rd Street. Specific station layouts and access are not included in this study, but are recommendations of potential locations subject to further analysis by Pace.

#### ADDITIONAL/RESTRUCTURED PACE SERVICE

In correspondence with the major efforts defined above, there are other potential service changes that could be considered along Harlem Avenue:

- Currently, the north and south legs of Pace Harlem Avenue service, Routes 307 and 386, respectively, connect at 63rd Street. With the development of a permanent Toyota Park station, these routes would each connect at that location.
- The potential transfer station at 95th would be the location where Pace Route 386 – Harlem and Route 395 – 95th Street would connect. Currently, these routes connect at the 5th Municipal District Courthouse located on 103rd St. and 76th Avenue. The Courthouse is a major destination for Pace riders, so service options to maintain service to this destination should be considered.
- The segment between 163rd Streets and 183rd Streets warrants further study to determine the most appropriate means of serving this district, as well as to identify a potential transfer location. Pace's ongoing Harlem Avenue Market Analysis should provide further insight into service options, which could include some type of flexible service to serve this portion of the Corridor, either on Route 386 or via a "call-and-ride" municipal vehicle program using Pace vehicles.

# NON-MOTORIZED TRAVEL

## CONTEXT

Pedestrian and bicycle access is an important factor for the Harlem Avenue Corridor, and a key facet of improving transit service. In addition, for local communities along the Corridor, access to activity centers and commercial uses via walking and biking can support better use of those facilities by local residents.

These non-motorized transportation needs are often in conflict with the roadway's function as a north-south arterial street meant to convey cars and trucks efficiently. This is especially true for the on-street pedestrian network of sidewalks and intersection crossings.

Many of the Corridor communities are taking steps to alter this imbalance by conducting non-motorized planning that incorporates recommendations for improved on-street pedestrian environment along Harlem Avenue as well as off-street trail and path assets that connect Harlem Avenue to other points in the surrounding communities.

This includes recent or ongoing planning activities in Bridgeview, Oak Lawn, Palos Heights, Orland Park and Tinley Park, as well as regional trail network systems developed by the Forest Preserve District of Cook County and communities along the Calumet-Sag Channel.



*Pedestrian crossings should be safe for all ages at all signalized intersections in the Corridor, and particularly where there is a bus station at the cross street. This intersection at 127th Street and Harlem Avenue should be enhanced to accommodate existing pedestrian demand.*

## CORRIDOR IMPROVEMENTS

As mentioned, a number of existing plans for non-motorized improvements have been completed or are in progress. A selection of the ongoing planning work includes:

- Plans are under development for a connection between the existing Bridgeview multi-use path and the proposed multi-use path in Oak Lawn.
- A significant new asset, the Calumet-Sag Trail, will be a regional trail providing east-west connectivity to numerous communities, various recreational destinations, four Metra service lines and over 20 Pace routes. In Palos Heights, the alignment will provide access to the commercial district and Lake Katherine, and the project is currently proceeding into final design with construction envisioned in 2013.
- Palos Heights is in the process of developing a non-motorized plan with the help of the Active Transportation Alliance (ATA), with an initial draft from July 2011 proposing to develop a network of on-road routes for bicycling. North-south bike travel is suggested for nearby streets parallel to Harlem Avenue.
- The extensive off-street trail network within the Forest Preserve District property has been continually developed and improved, and provides a recreational asset for nearby communities.
- Tinley Park is also working with ATA to develop a non-motorized plan that will propose an interconnected network of on-road and off-road walking and bicycle trails. This will also resolve the many sidewalk gaps along Harlem Avenue.

This Transportation Plan for the Harlem Avenue Corridor looks to build on the work done by local communities to:

- Improve pedestrian connections across Harlem Avenue at key intersections along the Corridor and to key activity centers or land uses.



*Numerous off-street trail networks intersect with Harlem Avenue, and there is ongoing planning for more, including within the Forest Preserve between Orland Park and Palos Heights.*

- Ensure that roadway or intersection improvements suggested for the Plan are accompanied by pedestrian infrastructure that help offset any access or safety issues.
- Develop an interconnected off-street, multi-use trail network that provides an alternative means of convenient transportation access in addition to recreational opportunities.

The following improvements should be considered throughout the Harlem Avenue Corridor:

- *Complete sidewalk systems.* There are numerous gaps in the sidewalk network along Harlem Avenue. Through developed commercial and residential areas of the Corridor, the sidewalk network should be continuous along Harlem Avenue.
- *Improved sidewalks.* In high-traffic pedestrian zones such as shopping districts or near transit stops, sidewalk infrastructure can be improved by increasing width, eliminating obstacles, and providing ADA accessibility at intersections and driveways.
- *Countdown signals at intersections.* These timers let pedestrians and bicyclists know how long they have to cross, making it easier to understand whether or not to step out into the crosswalk.
- *Bicycle sensors at intersections crossing Harlem Avenue.* Where crossing streets are also designated non-motorized connections, sensors can be used to indicate to the signal that a bicycle is in the intersection. Where these are installed, signage should instruct bicyclists on how to use these resources.
- *Median refuge locations.* For wide portions of the roadway, or where there is a high number of senior residents nearby, median refuges can improve pedestrian safety and also calm traffic flow.
- *Textured pavement or striping at crosswalks.* These crosswalks improve the experience for pedestrians but are most valuable for providing visual cues to drivers about the likely presence of pedestrians.
- *Tightened corner turning radii (or installation of "pork chop" islands where radii can't be reduced).* For high-traffic intersections where right-turn lanes widen the width of the roadway, these elements can help to slow traffic or provide a refuge for pedestrians.
- *Bike routes on parallel streets.* For safety reasons, it is suggested that communities identify nearby parallel streets on either side of Harlem Avenue that allow for bicyclists to travel north-south while accessing key destinations along the Corridor.
- *Reduced number and width of driveways.* The presence of numerous curb cuts and driveways increases the potential for conflicts between automobiles and pedestrians, and is a constraint to vehicle efficiencies.
- *Trail connections between communities.* Numerous communities are planning off-street trail networks. Ensuring connections between these trails, as well as connections from these trails to destinations along the Harlem Avenue Corridor will encourage more use of these assets.
- *Signage/wayfinding.* Improvements to signage can help direct non-motorized users to the preferred and safe portions of the Corridor for walking and bicycling, but can also be used to provide motorists with cues that they need to share the road with all other users.