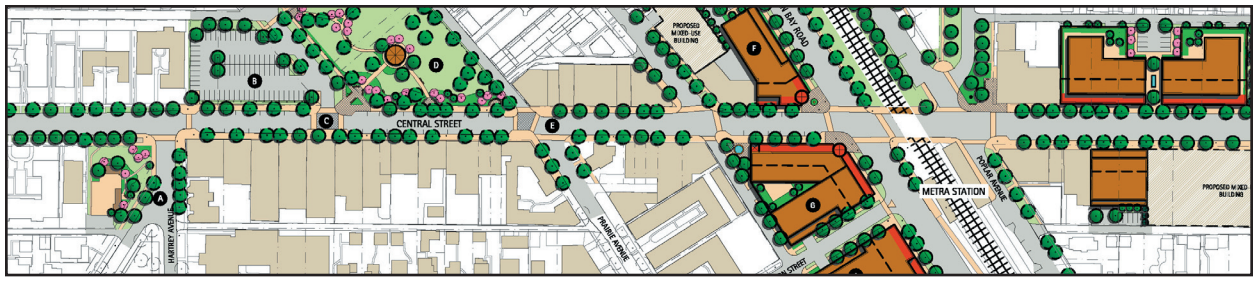

Appendix C: Infrastructure

Flood Plain

The Central Street Study Area is not within a flood plain, except at the vicinity of the North Shore Channel.

Sewer System

The Evanston Sewer System serving the Study Area consists of an original sewer and more recent relief sewer. Treatment occurs at a Metropolitan Water Reclamation District (MWRD) facility in Chicago. During periods of heavy rain, combined sewage and storm water may be discharged into the North Shore Channel at the 13 locations of the combined sewer outlets, although this is significantly less frequent due to the partial completion of the MWRD Tunnel and Reservoir Plan (TARP).

Combined Sewer

Evanston's combined sewer is approximately 100 years old and was designed to convey both sewage and storm water. During dry weather, the combined sewage flow is conveyed to the MWRD treatment plant at Howard Street and McCormick Place.

The combined sewer has significant capacity limitations. Prior to the implementation of the City's Long-Range Sewer Improvement Plan, rain events and intense storms would result in the backup of sewage into basements and street flooding. As part of the Plan, flow restrictions have been placed along the combined sewer system.

The Combined Sewer system includes:

- **Gross Point to Central Park**: a 10- to 21-inch east-flowing sewer with an outlet into the south-flowing 42-inch combined sewer at Central Park. There are lateral connections at Prospect, Hastings, and Highland.
- **Central Park to Lincolnwood**: a 15- to 18-inch west-flowing sewer with an outlet into the south-flowing 42-inch combined sewer at Central Park. There are lateral connections at Lincolnwood.
- **Lincolnwood to Prairie (south of Central)**: a 12- to 36-inch east-flowing sewer with an outlet into the south-flowing 48-inch combined sewer at Prairie (south of Central). There are lateral connections at Ewing, Bennett, Elm, and Stewart.

- **Prairie (south of Central) to Green Bay**: an 18-inch west-flowing sewer with an outlet into the south-flowing 48-inch combined sewer at Prairie. There is a lateral connection at Prairie (north of Central).
- **Poplar to Asbury**: an 18- to 24-inch east-flowing sewer with an outlet into the south-flowing 36-inch combined sewer at Asbury. There are lateral connections at Ashland and Jackson.
- **Asbury to Bryant**: a 20-inch west-flowing sewer with an outlet into the south-flowing 36-inch combined sewer at Asbury.
- **Bryant to Ridge**: a 12- to 15-inch west-flowing sewer with an outlet into the south-flowing 54-inch MWRD interceptor west of the North Shore Channel. There are lateral connections at Girard.

Relief Sewer

As part of the Long-Range Sewer Improvement Plan, construction of a relief sewer system began in 1991. The relief sewer functions as both a storm sewer system and as an overflow outlet for the combined sewer system.

Overflow structures are located at surcharge points in the existing combined system to divert flow to the relief system. Street inlet flow restrictors are placed in the pipe that connects the catch basin to the existing sewer main, restricting the amount of storm water that can enter the combined sewer system. Overland street flow is created as a result of the restrictors and allows water to run for as much as two blocks in the street before it flows into new high capacity inlets. This design reduces the lengths needed for the relief sewers. High capacity inlets are installed at the ends of the relief system to deliver overland street flows.

As a result of implementation of the partial relief sewer system, the incidence of street flooding should be reduced to once in 10 years, and basement backups should be reduced to once in 100 years.

The relief sewer system serving Central includes:

- **Gross Point to Marcy**: a 36- to 60-inch east-flowing relief sewer that turns southbound at Marcy. There is a lateral connection at Highland.

- **Hurd**: a 42-inch south-flowing relief sewer.
- **Ewing**: a 24-inch south-flowing relief sewer with catch basins at the intersection.
- **McDaniel**: an 18- and 72-inch south-flowing relief sewer with catch basins at the intersection.
- **Walnut**: a 24-inch north-flowing relief sewer with catch basins at the intersection.
- **Stewart**: a 24-inch north-flowing relief sewer with catch basins at the intersection.
- **Poplar:** a 48-inch south-flowing storm sewer with catch basins at the intersection.
- **Eastwood:** an 18-inch north-flowing storm sewer with catch basins at the intersection.
- **Ashland:** an 18-inch north-flowing storm sewer with catch basins at the intersection.
- **Jackson:** a 24-inch south-flowing storm sewer with catch basins at the intersection.
- **Asbury:** a 33- to 36-inch south-flowing storm sewer with catch basins at the intersection.
- **Bryant to North Shore Channel:** a 24-inch east-flowing storm sewer that outlets to the North Shore Channel.

Outlets

The Combine Sewers Overflows (CSO) discharges initially into the relief sewer system. The relief sewers outlet into the MWRD interceptors. When the MWRD interceptors reach capacity, the overflow enters the North Shore Channel. MWRD's ongoing TARP Project is aimed at alleviating the polluting effects of CSOs and to provide relief from local flooding by providing holding capacity for combined sewage in its tunnels and reservoirs until it can be pumped to a water reclamation plant for full treatment. Although TARP is scheduled for completion in 2015, significant benefits have already been realized by its partial completion. The outfalls for Evanston's combined sewer and relief sewer systems tie into the MWRD TARP Interceptors running along the west side of the North Shore Channel. The following interceptors flow south to the MWRD Treatment Plant at Howard Street and McCormick Place.

- **West Bank of North Shore Channel:** 54 and 78-inch south-flowing MWRD interceptors.
- **Green Bay:** a 54-inch south-flowing MWRD interceptor.
- **North Shore Channel:** 13 CSOs discharge points between Lincoln Street and Mulford Street.

Issues affecting the Evanston sewer system serving Central include:

- Metra viaduct at Green Bay appears to lack sufficient drainage structures. Additional catch basins can be installed and connected directly to the 48-inch south-flowing storm sewer at Poplar.
- The Ryan Field parking lot west of Ashland does not drain effectively, resulting in standing water on pavement. The parking lot currently "sheet drains" east onto Ashland. There are no catch basins within the parking lot. There is an 18-inch north-flowing storm sewer with catch basins on Ashland to intercept the storm water runoff and a 30-inch west-flowing storm sewer running approximately 200 feet north of Central, which is also connected the 18-inch sewer at Ashland. The parking lot can be re-graded and new drainage structures can be added to alleviate the water ponding problems.

Summary

The relief, storm, and combined sewers within the Study Area have the capacity to support new development on Central. If sewers near capacity as a result of development, several techniques may be introduced to increase the permeability of "hardscape" surfaces and reduce surface runoff entering the sewer system. Examples of storm water "Best Management Practices" include:

- Green roofs are layers of living vegetation that can be installed on top of new and existing buildings. They will retain and slow down storm water runoff.
- Natural landscaping utilizing native vegetation can enhance absorption of storm water. Downspouts may also be directed to drain onto these vegetated areas.
- Permeable pavers can promote the absorption of storm water.
- Filter strips are vegetated areas that are designed to receive

runoff from adjacent impervious surfaces. They can slow down runoff and increase storm water absorption.

- Bio-infiltration-rain gardens are shallow landscaped depressions used to increase storm water absorption.
- Drainage swales are broad, vegetated channels that can be used for the movement and temporary storage of runoff.
- Natural detention basins that emulate natural lake or wetland systems can be used to absorb and detain storm water.
- A storm water detention policy may be implemented that requires major redevelopment sites to temporarily detain the storm water onsite. The City already has such a policy for commercial, industrial and multi-family developments and is currently working on a broader detention policy that includes sustainability components.

Water System

Water is supplied to the Central Street Study Area from the Evanston Water Treatment Plant, located at Lake Michigan between Milburn and Lincoln Streets. The municipal-owned facility draws water from the Lake using low lift pumps and high lift pumps to distribute treated water.

The water distribution system consists primarily of water mains, fire hydrants, valves and service connections. There are approximately 12,000 feet of water mains with the Study Area. Along Central, 6-inch water mains extend from Gross Point to McDaniel, and 8-inch water mains extend from McDaniel to Ridge.

Water main tie-ins include:

- **18-inch:** Ashland.
- **12-inch:** Central Park, Bennett, Hartrey, Ridge.
- **10-inch:** Green Bay, Ridge.
- **8-inch:** McDaniel, Stewart, Broadway, Asbury.
- **6-inch:** most other streets.

Fire hydrants are located on most blocks along Central with an average fire hydrant spacing of 406 feet. Several blocks have separate service lines to buildings that are used for fire suppression systems.

Evanston's Fire Station #3 and Fire Station #5 are located at 1105 Central and 2830 Central, respectively. Station #5 is scheduled for replacement in 2007.

The City of Evanston is currently undergoing a water main improvement program. The improvements planned on Central include a water main and resurfacing project along Ashland from Colfax to Isabella.

A Water Distribution System Analysis Report was completed in 2004. It identified two sections of water main on Central Street that should be replaced to provide adequate fire flow demands. These sections are located on Central between Highland and Central Park, and between Girard and Ridge, where 12-inch diameter water mains will be installed.

The major issue affecting water supply is that the existing average hydrant spacing of 406 feet is greater than the typical recommended spacing of 300 feet. Additional fire hydrants could be installed at locations where the existing spacing exceeds the typical recommended 300 feet maximum. The water distribution system within the Study Area will have the capacity to support new development on Central Street, after the completion of the proposed water main improvements.

Roadway Conditions

Pavement and curbing conditions vary considerably between the western and eastern sections of Central Street. Pavement conditions west of Hartrey are generally fair to good, although pavement and curb conditions are generally poor at the Gross Point/Crawford/Central intersection. Pavement conditions are generally in fair to poor condition. Deteriorated, broken and non-existent pavement and curbing is present, particularly between Green Bay and Jackson. Between Prairie (north of Central) and Green Bay, there is a high, double-curb, as well as crumbling concrete stairs at the Green Bay crosswalk.

EDOT has scheduled repaving for Central Street between Asbury and Ridge for 2008. IDOT has scheduled repaving between Lincolnwood and Ashland for 2011. Although the section between Ashland and Asbury is generally in good condition, some patching is required.

A stepped and broken curb at the intersection of Central and Green Bay.

Sidewalk

There is a wide variation in sidewalk conditions throughout the Study Area. In residential areas, sidewalks are generally in good condition and an adequate 5 feet in width. In a few locations, sidewalks are cracked, uneven or crumbling. Between Marcy and Central Park, the sidewalk width is reduced to a 1-foot carriage walk along the curb on the north side of the street.

In commercial areas, sidewalk conditions are generally poor to fair. Due to age and usage, large sections of concrete are uneven, cracked or worn. Although width is generally an adequate 12 feet,

Deteriorated roadway conditions along west Central Street.

sidewalk widths are narrower along certain stretches, including 7 feet on the northeast corner at Central Park. Sidewalk widths make walking difficult for pedestrians, are inadequate for outdoor dining or streetscape upgrades, and increase the perception that "buildings" are too big for a property.

Sidewalk safety is a particular concern between Hartrey and Poplar, where there are significant pedestrian movement between the retail shops, Independence Park, public parking lot and the Metra station. Another location of concern is between Central Park and Ewing, where the sidewalk is too narrow in some locations.

Issues affecting sidewalks include:

- Uneven or broken sidewalks may make certain stretches impassable for pedestrians, especially the physically handicapped. ADA ramps need to be installed at all locations where they are missing. Broken sidewalk and curb and gutter need to be repaired.
- Deteriorated or non-existent crosswalks may make streets crossings difficult for pedestrians. Improvements could include: zebra (wide white) stripes, countdown timers, bump-outs, crosswalk warning lights, and LED lights.
- Inconsistent sidewalk widths negatively affect the shopping "street wall" and reduce sight lines for vehicles making turns at corners. Improvements can be made to sidewalk widths and driver visibility by increasing building setbacks and widening sidewalks. "Bump-outs" can be added at intersections to reduce crossing distance and increase driver visibility of pedestrians. Locations of concern

include, Evanston Hospital (ENH), Girard, Central Park, Hurd, Stewart, Prairie (north of Central), Prairie (south of Central), and Poplar. Drop-off lanes may be added at the Metra station to help reduce traffic congestion.

Alleys

Alleys are present throughout the Study Area. Typical alley pavement widths range from 12 to 20 feet. Typical alley right-of-ways range from 15 to 20 feet. Alleys are often obstructed by utility poles, and loading and service areas, especially behind commercial blocks. Pavement conditions in most alleys are generally poor with broken and uneven pavement and potholes.

Several alleys have significantly deteriorated paving and potholes, resulting in standing water and draining problems. The navigability of alleyways is often hindered by the presence of utility poles, building projections, loading areas, and refuse storage. The placement of walls or fencing at the rear of new developments may also hinder the effectiveness of alleys. One location of particular concern is between Central Park and Lincolnwood, on the north side, where there are new residential buildings. The alleys at many locations need to be paved. Some are used for access into parking garages.

Improvements should include establishing a standard width and turning radius from side streets. Where necessary, alleys should be re-graded for improved drainage into catch basins and utility poles should be moved to improve navigation.

Capital Improvement Projects

The following capital improvement projects are scheduled for the near future.

- **Central/Crawford/Gross Point:** signal improvements - under construction.
- **Ridge and Girard:** signal improvements - design pending IDOT approval (late 2007 construction anticipated).
- **Ridge to Asbury:** paving - in design for 2008 construction.
- **Ashland to Lincolnwood:** paving - IDOT project scheduled for 2011 resurfacing.

- **Evanston Bike Plan:** in design - scheduled for Fall 2007 implementation.
- **Ashland:** water main and resurfacing between Central and Isabella - scheduled for 2008.
- **Jenks:** water main and resurfacing between Stewart and Green Bay, including a truck pull-out at Dominick's and tree replanting - scheduled for 2007.
- **Northeast Evanston Transit Coordination Study:** Central/Sheridan/Sherman Corridors - Summer 2007 start.
- **Highland to Central Park and Girard to Ridge**: 12-inch water main installation
- **Chandler/Peter Jans Parking Lot**: paving – EDOT project scheduled for 2007.
- **Citywide Bike Rack Study**: recommendations for bike rack location – Chicagoland Bicycle Federation study scheduled for completion in 2007.