



July 7, 2011

Mr. Robert Minix
Professional Engineer
Village of Glen Ellyn
30 South Lambert Road
Glen Ellyn, IL 60137

**SUBJECT: Hawthorne Improvements Project
Roadway Width Design Considerations**

Dear Bob:

In accordance with your request, Engineering Resource Associates, Inc. (ERA) has reviewed the primary design considerations associated with selection of a roadway width for the proposed reconstruction of Hawthorne Boulevard from the western village limits to Ellyn Avenue. The following is a summary of each element reviewed.

Existing Conditions

According to the Village of Glen Ellyn's Comprehensive Plan, Hawthorne Boulevard is designated as a minor collector street from the western village limits to Ellyn Avenue. The corridor serves as primary access to adjacent residences along its entire 5,200 feet length. The corridor also provides access to schools at each end and connection to other streets at 11 intersections. Hawthorne terminates on the east end at Glenbard West High School. Hawthorne continues west into the City of Wheaton about 2,900 feet where it terminates at President Street. Hawthorne conveys an average daily traffic volume of about 3,000 vehicles.

The existing roadway is generally 21 feet wide from back of curb to back of curb with a bituminous surface and curb and gutter on both sides. The existing gutters have been paved over so that the perceived existing driving lane width is 10 feet in each direction. Except for the south side of the corridor from Park Boulevard to Ellyn Avenue, there are existing sidewalks on both sides. The existing parkways vary between about 14 feet to 16 feet wide from back of curb to the edge of sidewalk.

Proposed Conditions

The current Village of Glen Ellyn standard typical section for the reconstruction of a minor collector street includes a 25 feet wide concrete roadway with curb and gutter on both sides. The current Village of Glen Ellyn standard for the reconstruction of a local street includes a 21 feet wide section. To accommodate drainage and to minimize street flooding, the curb and gutter would include a 6 inch wide curb and an 18 inch wide gutter.

Trees and Power Pole Impacts

Both parkways contain numerous mature, large diameter trees which are generally in good to excellent condition. There are also overhead electric, cable and telephone wires along the entire corridor. There are 61 poles within the parkways carrying these wires. Many of the poles are located close to the back of the existing curbs.

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The Village's Forester completed an assessment of existing trees and potential impacts from the reconstruction of Hawthorne in June, 2011. The assessment included a review of the type, size and condition of parkway trees and an evaluation of the potential impact widening the road to 25 feet could have on the trees. The assessment identified 201 parkway trees along the corridor. Potential impacts to the trees include issues caused by root and canopy pruning to accommodate widening, canopy pruning to accommodate moving overhead wires and grading issues associated with potential profile modifications.

The assessment identified approximately 53 trees that may need to be removed due to utility or widening issues if the roadway is widened to 25 feet. It should be noted that even if the existing street width remained at 21 feet, there would still be impacts to the trees caused by construction operations although it is anticipated that the extent of damage would be reduced.

The location of power poles along the alignment was also surveyed and ERA has met with representatives of Commonwealth Edison to discuss utility pole conflicts. Commonwealth Edison and the Village of Glen Ellyn would prefer that all power poles should be offset a minimum distance of 1.0 feet from the back of curb. Moving the poles back further into the parkways generally wouldn't conflict with existing trees. However, moving the overhead wires, especially electric wires, further back could require extensive canopy pruning and cause damage to many existing trees. It is anticipated that, to enable relocation of power poles without significantly moving the overhead wires, cantilevered arms could be used on the new poles.

Using the minimum offset distance of 1.0 feet from back of curb, the following is a summary of the minimum number of poles that would need to be relocated to accommodate various proposed roadway widths.

Roadway Width (Back of Curb to Back of Curb)	Minimum Total Number Of Poles to Be Relocated
21' (8.5' Driving Lanes)	3
22' (9.0' Driving Lanes)	8
23' (9.5' Driving Lanes)	29
24' (10.0' Driving Lanes)	38
25' (10.5' Driving Lanes)	45

Traffic Study

A traffic study was completed by Sam Schwartz Engineering for the Hawthorne corridor in June, 2011 while school was still in session. The study included collection of average daily traffic (ADT), average daily truck traffic and travel speed data at several locations along the corridor and along Western Avenue and Main Street. Main Street includes a 25 feet wide roadway section. Western Avenue includes a 21 feet wide roadway section. All three streets have posted speed limits of 30 miles per hour at the locations studied. In general, the travel volumes, percentage of heavy vehicles and pavement widths did not materially influence travel speeds along study area roadways. It is not, therefore, anticipated that widening Hawthorne up to 25 feet would have a significant impact on traffic speeds along the corridor.

ERA also acquired and reviewed reported accident data from the Village of Glen Ellyn Police Department and DuPage County's Transportation Data Management System. For the period from January, 2007 through February, 2011 there were 25 reported accidents along the corridor. 12 of the accidents were related to intersections, 3 were related to improper backing, 3 involved rear end collisions, 5 involved fixed object collisions (mostly poles) and 2 were of undetermined causes. The fixed object collisions could be related to narrow roadway widths or the close proximity of power poles to the roadway. There did not appear to be any accidents related to sideswipe or lane departure accidents between vehicles.



Lane Width Safety Standards

For new roadways, including local, collector and arterial streets, the standard design minimum driving lane width is 12 feet. This provides adequate space for vehicles traveling at a wide range of speeds and along a variety of alignment configurations to minimize sideswipe and lane departure accidents. However, for reconstruction of existing roadways to avoid conflicts with other existing facilities, narrower lane widths are often selected. The Federal Highway Administration and the American Association of State Highway and Transportation Officials recommend driving lane widths between 10 feet to 12 feet for collector roadways and 9 feet to 12 feet for local roadways. Both agencies recognize that narrower lane widths in urban settings cause fewer lane departure accidents than along rural roadways because of reduced travel speeds. Lane departure accidents can also be affected by narrower widths caused by drifting along horizontal curves. Hawthorne’s urban setting, low posted speed limit and lack of curves, except at the far western end could justify narrower driving lane widths.

Pedestrian Separation

As discussed above, there are sidewalks along the entire corridor except for the south parkway from Park Boulevard to Ellyn Avenue. The sidewalks are generally separated about 14 feet to 16 feet from the existing back of curb. Widening the roadway width to 25 feet would reduce the normal parkway width to about 11.5. According to the Illinois Department of Transportation, their recommended minimum separation between a roadway’s edge and a sidewalk or path is 5 feet. IDOT recognizes that curb and gutter serves as a traffic barrier so the minimum width is often reduced to 0 feet when curb and gutter is used.

Construction Cost

We have evaluated the relative impact to construction costs for various roadway widths. A detailed engineer’s opinion of probable construction cost has not been developed yet. However, based upon unit price bids for similar recent projects in the vicinity a construction cost budget of approximately \$4.5 million has been establish including a 25 feet wide roadway section and improvements to stormwater, water and sanitary facilities within the corridor. Reducing the proposed roadway width could reduce the overall project construction cost by approximately the following amounts.

Roadway Width (Back of Curb to Back of Curb)	Approximate Construction Cost Reduction	Percentage Construction Cost Reduction
21' (8.5' Driving Lanes)	\$104,000	2.3%
22' (9.0' Driving Lanes)	\$78,000	1.7%
23' (9.5' Driving Lanes)	\$52,000	1.2%
24' (10.0' Driving Lanes)	\$26,000	0.6%
25' (10.5' Driving Lanes)	\$0	0%

We appreciate the opportunity to provide this information and we trust that it meets with your approval. Please contact me at (630) 393-3060 if you have any comments or questions.

Sincerely,
ENGINEERING RESOURCE ASSOCIATES, INC.

Rodney A. Beadle, PE
President

