Draft I-90 Corridor Study Local Agency Master Plan

Volume I

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Prepared For:

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EXECUTIVE SUMMARY

The I-90 Corridor Study identified improvement needs and feasible alternatives for improving the accessibility and traffic operation of I-90 between IL Route 59 and Arlington Heights Road. The study developed a long range transportation plan for the corridor. This plan is called the *Local Agency Master Plan* and it represents a comprehensive solution to the traffic operational and access deficiencies that exist within the Tollway corridor. When fully implemented, the Master Plan will improve traffic operations on both I-90 and the adjacent arterial highways, and it will enhance economic development opportunities as well within the surrounding area.

A. I-90 Traffic Operational and Access Deficiencies

I-90 in the study area currently suffers from a number of traffic operational and access deficiencies which not only affect the performance of the Tollway facility during peak periods, but which affect the performance of adjacent arterial highways as well. During these critical time periods, traffic operational problems persist on I-90 at the following locations:

- I-290/IL Route 53 System Interchange
- Eastbound Operational Problems
 - Toll Plaza 15 at I-290
 - Southbound I-290 C/D Roadway Weaving Section
 - Eastbound I-90 C/D Roadway
- Westbound Operational Problems
- Westbound I-90 C/D Roadway
- Roselle Road Exit Terminal
- Access Deficiencies
 - Limited access to important traffic generators
 - No westerly access within 8.5-mile gap

B. Improvement Needs

The above traffic operation and access deficiencies highlight several important improvement needs in the study area:

- Need to Improve the Capacity of I-90
- Need to Improve Westerly I-90 Access
- Need to Enhance Economic Development Opportunities
- Need to Improve the Capacity and Operation of the I-90/I-290/IL Route 53 Interchange

C. Traffic and Crash Analyses

Traffic analyses showed that severe traffic congestion on I-90 diverts traffic onto the adjacent arterial highways. Many of the adjacent roadways are overburdened with traffic demand that is reaching or exceeding their desirable capacities. The heavy traffic flows on the major arterials has resulted in higher than average crash rates. Eighteen High Accident Locations were identified in the study area adjacent to I-90 and I-290 with most crash problems related to traffic congestion levels.

D. 2030 No-Action Alternative

Regional travel demand forecasts predict that the transportation network within the study area will experience significant increases in travel demand by the year 2030. By comparing the 2005 existing network to the 2030 Project No-Action network (which includes construction of the STAR Line and adding lanes to I-90, but no new interchange access), the following changes in P.M. peak period travel have been forecast within the boundaries of the study area:

- Vehicle-miles of travel (VMT) on the network will increase by 36%. This translates to an average of an additional 307,000 vehicle-miles of travel on the network every day during the P.M. peak period compared to today.
- Vehicle-hours of travel (VHT) on the network will increase by 58%.
- Congested vehicle-miles of travel (i.e. vehicle-miles of travel on roadway links with a volume to capacity ratio greater than one) will increase by 42%.
- Vehicle-hours of delay on the network will increase by 75%. This translates to an average of an additional 16,000 vehicle-hours of delay on the network every day during the P.M. peak period compared to today.

E. 2030 Build Alternatives

It became clear early on in the feasibility study that a single interchange improvement could not meet all of the improvement needs along the 11-mile study area. Therefore, service interchange improvement concepts were developed at several locations along I-90. Individual interchange concepts were combined into the following corridor-wide interchange access alternatives:

1. Alternative A

Alternative A consists of interchange improvements at Barrington Road, Roselle Road and Meacham Road. The improvement at Barrington Road would add an eastbound exit ramp and a westbound entrance in a modified diamond interchange configuration. Ramps to and from the west would also

be added at Roselle Road. The proposed Meacham Road interchange under Alternative A would provide a 3/4-diamond interchange configuration.

A key feature of Alternative A is the extension of both of the C/D roadways for the I-290/IL Route 53 interchange that are located along I-90 to a point west of Roselle Road. This would separate all entering and exiting traffic for the Roselle Road, Meacham Road and I-290/IL Route 53 interchanges from mainline I-90, thereby avoiding weaving problems and allowing the spacing of interchanges less than the Tollway's minimum two-mile spacing criterion.

Alternative A also features relocation of the existing eastbound split Toll Plaza 15 from its current location to just west of Roselle Road at the entrance to the eastbound C/D roadway.

Interchange access improvement Alternative A will have the following impacts on the roadway network compared to the 2030 Project No-Action Alternative:

- The addition of ramps to and from the west at the three interchange locations will have a significant beneficial impact on adjacent arterial highways in the P.M. peak period. In total, about 32,000 vehicles per day (vpd) would be attracted to new ramps to and from the west at these locations.
- On a relative basis, the interchange improvements at Meacham Road and Barrington Road would attract the greatest volumes of westerly traffic. The ramps to and from the west at Meacham Road would attract about 13,000 vpd and at Barrington Road they would attract about 12,000 vpd, compared to about 7,000 vpd at Roselle Road.
- The Meacham Road interchange appears to provide significant benefits at the Meacham Road/Algonquin Road intersection.
- The eastbound off-ramp at the Meacham Road interchange will attract a significant volume of traffic destined for the Woodfield area that would otherwise use adjacent expressways and arterial highways.

2. Alternative B

Alternative B provides the identical new interchange access along I-90 as Alternative A, but it also includes improvements to the I-290/IL Route 53 interchange, as well as along I-290 south of I-90. Alternative B would eliminate the weaving area on southbound I-290 between the eastbound to southbound I-90 exit ramp and the southbound exit ramp for Woodfield Road on the southbound I-290 C/D roadway. The weaving area would be eliminated by providing inner and outer southbound C/D roadways on I-290 and grade-separating the two ramp movements.

Also included in Alternative B would be grade-separating the southbound Woodfield Road exiting volume from the southbound West Frontage Road

traffic to improve a severe weaving problem on the frontage road between the exit ramp and the Woodfield Road intersection.

Alternative B would also include increasing the length of the weaving section between the southbound IL Route 72 exit ramp from I-290 to the West Frontage Road and the IL Route 72 intersection. That weaving section would be increased by relocating the exit ramp further to the north.

Following is a summary of the 2030 traffic operational benefits of Alternative B compared to the 2030 No-Action Alternative and Alternative A:

- Alternative B will have impacts similar to Alternative A throughout most of the study area. The greatest effect of Alternative B would be felt in the I-290 corridor and the area adjacent to the I-90/I-290 interchange.
- Alternative B will attract additional traffic to northbound I-290 during the P.M. peak period, particularly as it compares to Alternative A. This increased traffic is attracted from surrounding arterial highways as well as the frontage roads. Alternative B also attracts additional traffic to eastbound I-90 compared to Alternative A.
- The congestion relief benefits afforded by Alternative B between I-90 and Woodfield Road on the I-290 C/D roadway will result in a notable increase in traffic volume on southbound I-290 in the P.M. peak period. These increased volumes will also be attracted from the frontage roads and surrounding arterial highways.
- The need for and benefits of the Alternative B interchange improvement will be greater if an eastbound exit ramp is not provided at Meacham Road. The effect of the Meacham Road exit ramp is to attract traffic that would otherwise use adjacent expressways to use Meacham Road and McConnor Parkway instead.

3. Comparison of Project No-Action Scenario and Alternatives A and B

Network travel demand modeling performed for the I-90 Corridor Study predicts the following benefits throughout the roadway network that will result from improved interchange access:

- The I-90 add-lanes improvement combined with the interchange access improvements will attract traffic from nearby parallel arterial highways such as Algonquin Road, Higgins Road and Golf Road to the I-90 Tollway. The newly available capacity on these major highways will attract traffic from minor arterial roadways which, in turn, will attract traffic from lower tiered streets as well.
- Overall, the alternative interchange access improvements will result in a net decrease in VMT on major east-west arterial highways (Algonquin, Higgins and Golf Roads) of 2-3%, and a net decrease in VHT of 5-7%,

even with the attraction of vehicles from minor arterial highways. Vehicle-hours of delay on these roadways will decrease 6-8% and congested VMT will decrease 4-5%.

These reductions will total 7,000 fewer vehicle-miles of travel and 1,000 fewer vehicle-hours of delay on these roadways each day during the 2030 2-hour P.M. peak period. Accrued over an entire year, the interchange access improvements will result in significant benefits, to air quality, fuel consumption and quality of life.

- In general, major north-south arterial highways (IL Route 59, Barrington, Roselle, Meacham and Arlington Heights Roads) will see smaller decreases in VMT, VHT and vehicle-hours of delay as a result of the alternative interchange access improvements.
- All other arterial roadways will see 2-3% reductions in VMT, 5% reductions in VHT and 4-7% reductions in vehicle-hours of delay as a result of the alternative interchange access improvements.

4. Alternative C

Alternative B would provide substantial benefits to the highway network in the study area, but it would involve two costly interchange improvements within the Village of Schaumburg. Providing access to and from the west at the Roselle Road interchange will require a costly reconfiguration of the westbound exit and entrance ramps. The proposed 3/4-diamond interchange at Meacham Road would also involve construction of a costly grade-separation structure as well as inner and outer C/D roadways. Because the cost of constructing the portions of Alternative B within the Village of Schaumburg may exceed available funds for the improvement, a less costly interchange alternative was investigated which would essentially involve the construction of only one interchange instead of two.

Alternative C would involve the same interchange improvement at Barrington Road as Alternatives A and B, as well as the same improvements along I-290 as Alternative B. Just as with Alternative B, Alternative C would involve the extension of the C/D roadways at the I-290/IL Route 53 interchange west to Roselle Road. It would also include relocation of Toll Plaza 15 from near the I-290 interchange to a location near Roselle Road. Alternative C, however, would not involve the construction of any new interchange ramps at the Roselle Road interchange. Instead, full interchange access would be provided by construction of a 3/4-diamond interchange at I-90 and Plum Grove Road, with eastbound exit and entrance ramps from and to the eastbound C/D roadway. A westbound entrance ramp from Plum Grove Road would also be provided to the westbound C/D Roadway. However, the westbound exit ramp needed to complete the interchange would be provided at Meacham Road instead of at Plum Grove Road, just as it was in Alternative B.

A westbound frontage road would be constructed between the westbound exit ramp at Meacham Road and the Plum Grove Road interchange. This frontage road would allow vehicles destined for Plum Grove Road to exit at Meacham Road, cross the intersection and use the frontage road to access Plum Grove Road. The frontage road would also allow vehicles on Meacham Road to access the eastbound I-90 entrance ramp at Plum Grove Road. Alternative C would provide the same or better access as Alternative B, but at a substantially lower cost.

Alternative C would also accommodate a future extension of Plum Grove Road north of I-90 to Algonquin Road at or near the Quentin Road intersection. This northerly extension would provide another arterial highway crossing of I-90 which will relieve heavy north-south traffic volumes on Roselle Road and Meacham Road. It will also provide better access to the Motorola property, thereby helping to provide additional traffic relief on Meacham Road.

Following is a summary of the 2030 traffic operational benefits of Alternative C compared to the 2030 No-Action Alternative and Alternative B:

- Alternative C will have similar impacts on the highway network in the study area as Alternative B, with a few notable differences. Providing an additional crossing of I-90 will have the effect of spreading north-south traffic which currently crosses the Tollway at two locations to three proposed crossing locations. Thus, north-south traffic volumes are expected to be reduced on Roselle Road and Meacham Road, as some of that traffic will be attracted to Plum Grove Road. Network modeling predicts about a 20% reduction in traffic on Roselle Road and about a 24% reduction on Meacham Road compared to Alternative B in 2030.
- The new interchange ramp locations for Alternative C will have the effect of increasing the westbound exiting volume at Meacham Road and reducing the westbound exiting volume at Roselle Road. Eastbound entering traffic volumes at Roselle Road will also be reduced, as some drivers will elect to enter at Plum Grove Road instead.

F. Recommended Local Agency Master Plan

Alternative C was recommended as the preferred alternative for the Local Agency Master Plan. Alternative C will provide satisfactory traffic operation in the 2030 design year at all interchange ramp intersections, as well as at most entrance and exit ramp terminals along I-90. Only the Barrington Road interchange would have expressway ramp terminals that will operate below desired standards. The low Levels of Service at the ramp terminals are not due to the ramp design, but rather due to the fact that mainline I-90 will operate at Level of Service "F" in the peak hours with only four lanes in each direction. Five lanes in each direction would be needed to improve Levels of Service at the interchange ramp terminals.

Construction of the Local Agency I-90 Corridor Master Plan will require additional right-of-way at a number of locations in order to effect the proposed local access improvements while accommodating the proposed STAR Line and the Illinois Tollway's add-lanes improvement.

In some areas, the add-lanes improvement will require additional right-of-way as well. The Master Plan will result in the acquisition and displacement of several business properties. Construction of the Plum Grove Road interchange will require the acquisition of a one-story warehouse building located in the southeast interchange quadrant. Construction of the Meacham Road interchange will result in three potential displacements, including displacement of a one-story warehouse building on the Motorola property, an existing Tollway communications building on the north side of I-90 between Mecham Road and IL Route 53, and the acquisition and demolition of portions of two apartment buildings located in the northwest quadrant of the I-290/IL Route 53 interchange.

Construction of the Local Agency I-90 Corridor Master Plan will impact existing gas, electric, fiber optic and water transmission lines that are located adjacent to and within the I-90 right-of-way. Relocations of these facilities into newly acquired rights-of-way will be required at Barrington Road, Roselle Road, Plum Grove Road, Meacham Road and at the I-290 interchange.

The Local Agency I-90 Corridor Master Plan will accommodate major transit initiatives in the I-90 corridor, including Metra's STAR Line proposal and and Pace proposal for the Northwest Corridor Flyer Service which would be an express bus route along I-90.

G. Construction Staging Plan

The total cost of the Local Agency I-90 Corridor Master Plan presents a daunting challenge. In addition, certain elements of the plan cannot be implemented without construction of the Illinois Tollway's add-lanes/reconstruction project. Because of uncertainties with the proposed STAR Line, however, that project presently is not scheduled for construction until 2016. Because of these factors and due to the need to implement certain access improvements in a shorter time frame, a staged-construction approach will be necessary.

Implementation of the Local Agency Master Plan for I-90 has been divided into three stages. Stages 1 and 2 could be implemented in advance of the Illinois Tollway's I-90 addlanes/reconstruction project. Stage 3 improvements most likely would be implemented in concert with the add-lanes improvement.

Stage 1 consists of improvements at the existing Barrington Road interchange, the proposed Meacham Road interchange and the existing Arlington Heights Road interchange. Stage 2 consists of interim improvements at the I-290/IL Route 53 interchange with I-90 that will accomplish a portion of the ultimate interchange improvement. Stage 3 consists of improvements along Roselle Road and construction of the proposed Plum Grove Road interchange. Following are recommended construction stages for the local agency access improvements along with planning level estimates of total cost which include construction, right-of-way acquisition, utility relocation and engineering costs:

Construction StageEstimated CostStage 1A - Barrington Road Interchange\$49.4 millionStage 1B - Meacham Road Interchange\$60.3 million

Stage 1C - Arlington	Heights Road Interchang	e \$0.2 million

Stage 2 - I-290/IL Route 53 Interchange \$140.8 million

Stage 3A - Plum Grove Road Interchange \$72.5 million

Stage 3B - Roselle Road/Central Road Intersection \$14.0 million

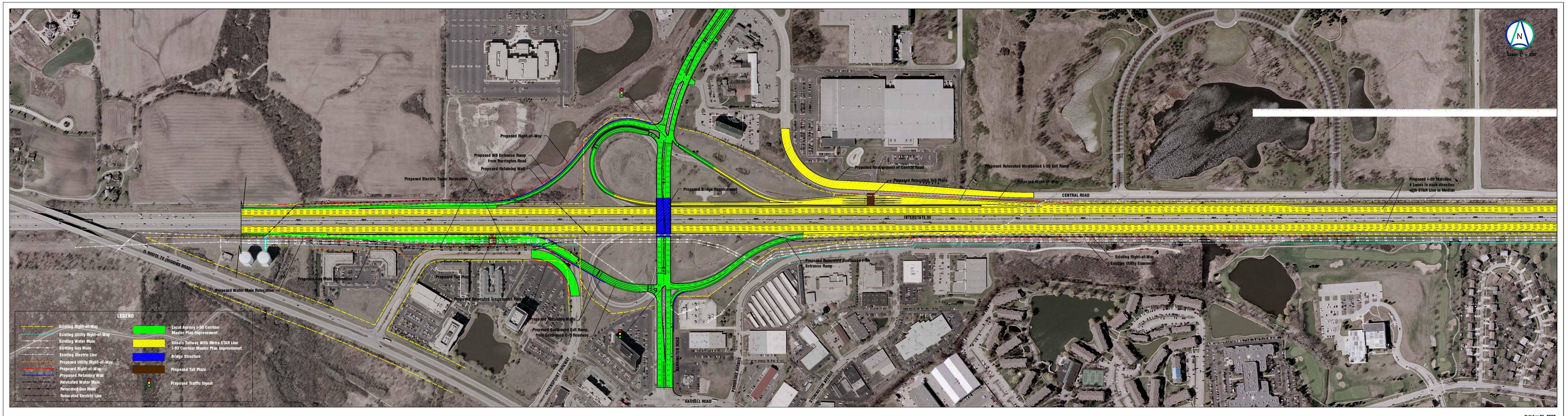
H. Cost Sharing and Potential Funding Mechanisms

The Illinois Tollway lacks funds to solely construct interchange improvements. Despite this constraint, the Tollway has nonetheless been willing to leverage their funds with funds from other sources to effect technically and financially viable interchange improvements. It is believed that a similar cost sharing arrangement will be required to garner Tollway participation in the cost of constructing the local access improvements identified in the Local Agency Master Plan.

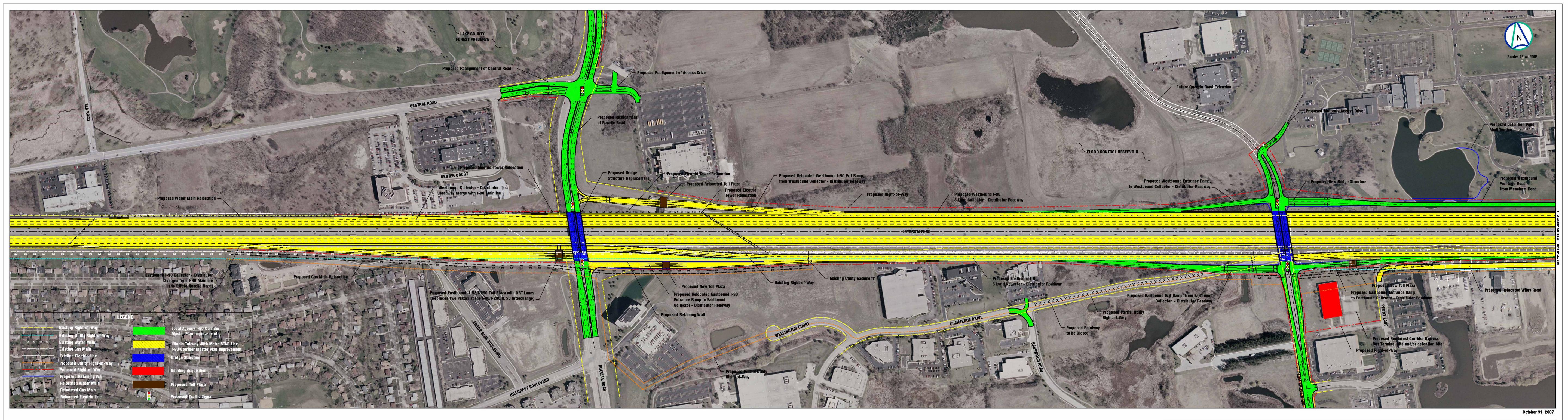
Illinois Tollway participation in any interchange improvement is based first and foremost on the merits of the interchange proposal; however, the level of outside funding that is proposed will have an important influence on their decision to participate in the improvement. It is believed that if local agencies offer to fund 50% of the local access improvement costs, it would be a powerful inducement for Tollway participation. The I-90 Corridor Study presents several potential mechanisms to raise the local share of interchange improvement costs. The study also identifies the additional technical information beyond that contained in the I-90 Corridor Study that must be developed to obtain Illinois Tollway approaval of an interchange improvement concept.

I. Conclusions and Recommendations

The Corridor Study listed 11 major conclusions regarding the benefits of providing additional access to I-90 in the study area in accordance with the Local Agency Master Plan . The Corridor Study recommended Alternative C as the basis for Local Agency Master Plan for I-90 between IL Route 59 and Arlington Heights Road. The Corridor Study also recommended a staged-construction approach to not only implement smaller improvement projects that align better with available financial resources, but to allow certain access improvements to precede major corridor improvement projects that are not scheduled to occur for 10 or more years.



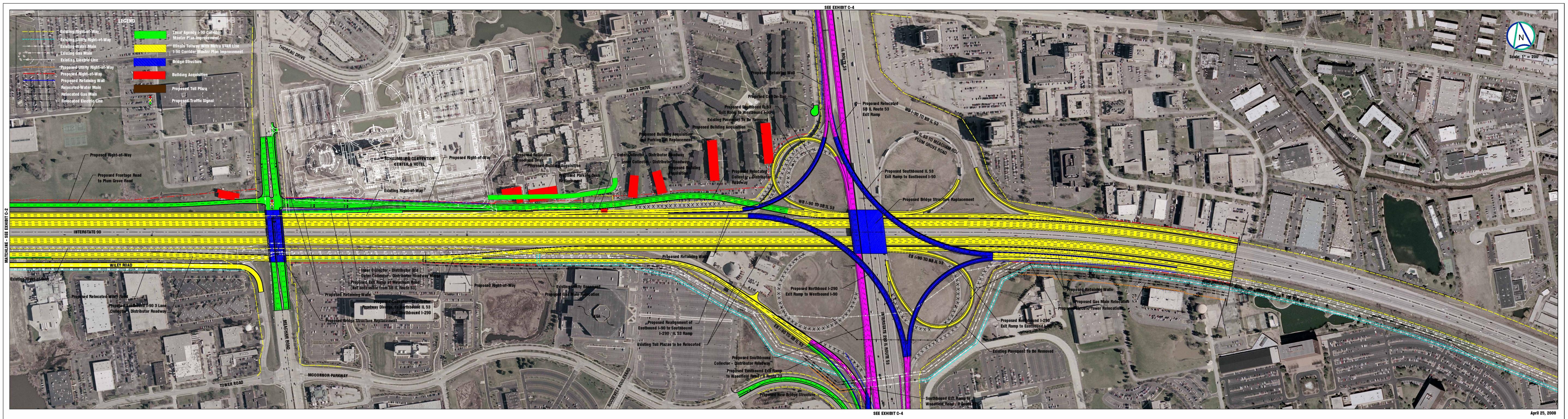






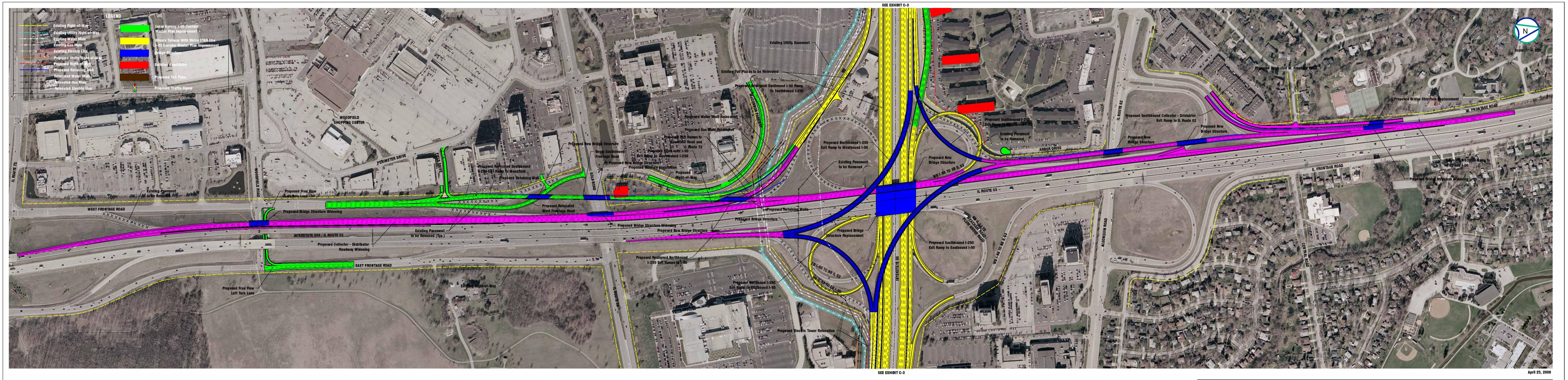
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