Elgin O'Hare–West Bypass: Initial Construction Plan—Operational Independence

PREPARED FOR: Illinois Department of Transportation (IDOT)/Illinois Tollway/ Federal Highway Administration (FHWA)

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This memorandum serves as a request for approval of operational independence for the Initial Construction Plan of the Elgin O'Hare – West Bypass (EOWB) project.

The EOWB project proposes extensive improvements to the transportation system in DuPage and Cook counties, Illinois. Proposed improvements include widening the existing Elgin-O'Hare Expressway, extending the expressway from its eastern terminus at Rohlwing Road (IL 53) east along Thorndale Avenue to O'Hare International Airport, and constructing a West Bypass connecting I-90 (Jane Addams Memorial Tollway) with I-294 (Tri-State Tollway). The EOWB is proposed as a tolled facility to be implemented, operated and maintained by the Illinois Tollway.

Initial and Future Phase Improvement Features and Costs

A phased approach is recommended for implementation of the EOWB project. The Build Alternative, as identified in the *Tier Two Draft Environmental Impact Statement* [Tier Two Draft EIS] (FHWA and IDOT, 2012), is designed to accommodate long-term (year 2040) travel demand. Features of the overall improvements include constructing approximately 11 miles of new toll roads (Elgin O'Hare Extension and West Bypass), widening 5 miles of the existing Elgin O'Hare Expressway, constructing four new system interchanges and 16 local access interchanges, and improving 9 miles of adjacent toll roads and freeways (I-290, I-90 and I-294). While the overall Build Alternative addresses long-term travel needs in the area, it comes at a relatively high cost of $3.6 billion (2011 dollars).

An Initial Construction Plan (ICP) was developed with the goal of being a more financially attainable first phase of the project. The ICP maintains the integrity of the full project and serves the area's travel needs through an interim design period of year 2030. When compared to the overall Build Alternative, the ICP provides fewer travel lanes, fewer interchanges, and (in some cases) interim layouts for new interchanges. The ICP estimated cost is $2.724 billion (2011 dollars).

Features of the ICP and the additional improvements of the Tier Two Build Alternative (future improvements) are shown and described in Figures 1 through 6.

FIGURE 1
Initial and Future Phase Improvements

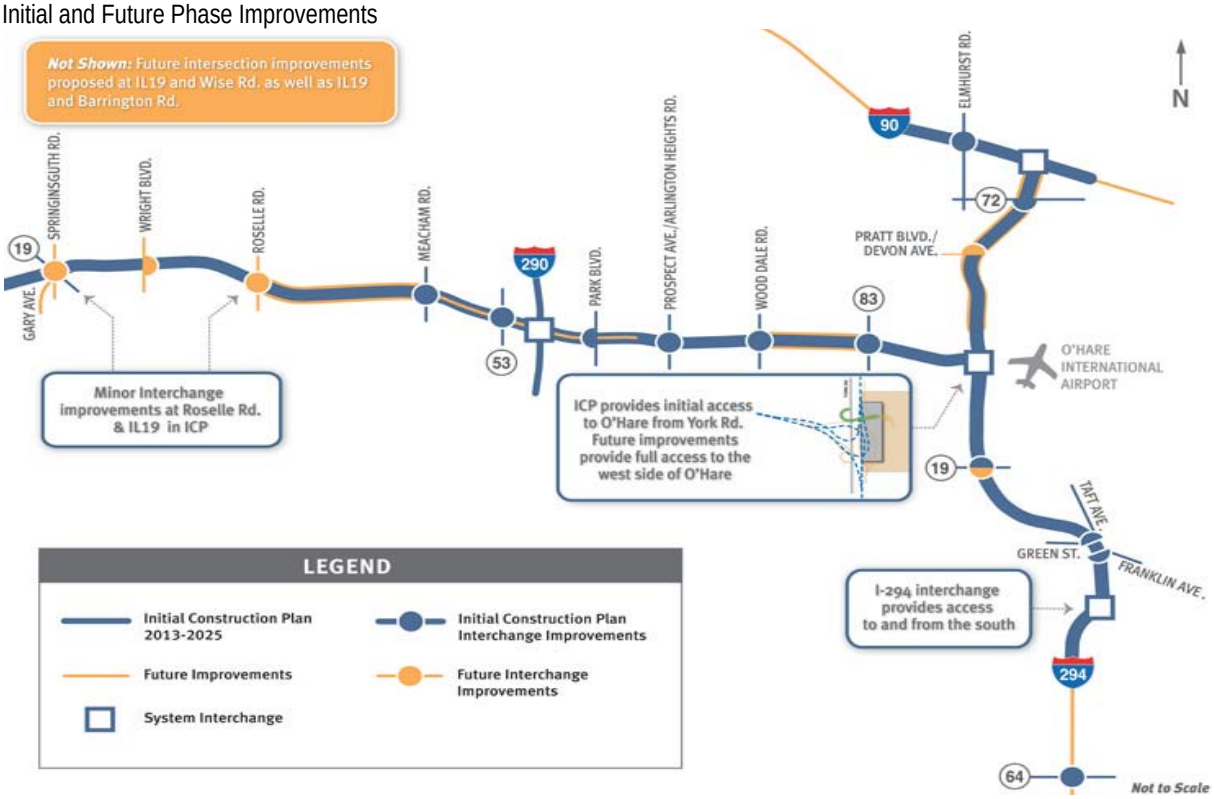
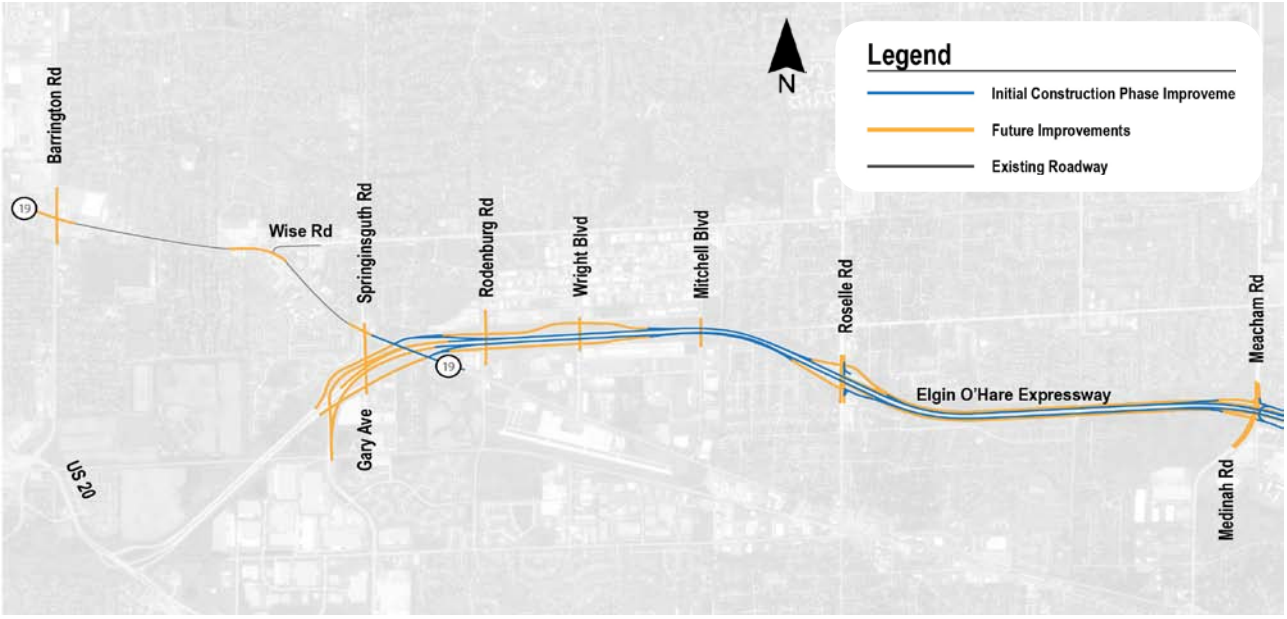


FIGURE 2
ICP and Future Improvements – West Section



ICP Improvements: Mainline widening and resurfacing from IL 19 to Meacham Road/Medinah Road; interchange improvements at IL 19 and Roselle Road

Future Improvements: Mainline widening and pavement reconstruction; interchange improvements at Gary Avenue/Springinsguth Road, Wright Boulevard, Roselle Road

FIGURE 3
ICP and Future Improvements – Central Section

ICP Improvements: Mainline widening and resurfacing from Meacham Road/Medinah Road to IL 53 and new mainline construction from IL 53 to Salt Creek; interchange improvements/construction at Meacham Road/Medinah Road, IL 53, I-290, Park Boulevard, and Arlington Heights Road/Prospect Avenue; improvements to connecting roadways

Future Improvements: Mainline widening; interchange improvements at Meacham Road/Medinah Road, I-290 and Park Boulevard; connecting roadway improvements along I-290 south of Biesterfield Road and along Arlington Heights Road

FIGURE 4
ICP and Future Improvements – East Section

ICP Improvements: New mainline construction from Salt Creek to O'Hare Airport and portion of South Leg of the West Bypass through IL 19; interchange construction at Wood Dale Road, IL 83, Elgin O'Hare/West Bypass, and IL 19; improvements to connecting roadways

Future Improvements: Mainline widening; additional access from Elgin O'Hare and West Bypass to O'Hare Airport; interchange improvement at IL 19

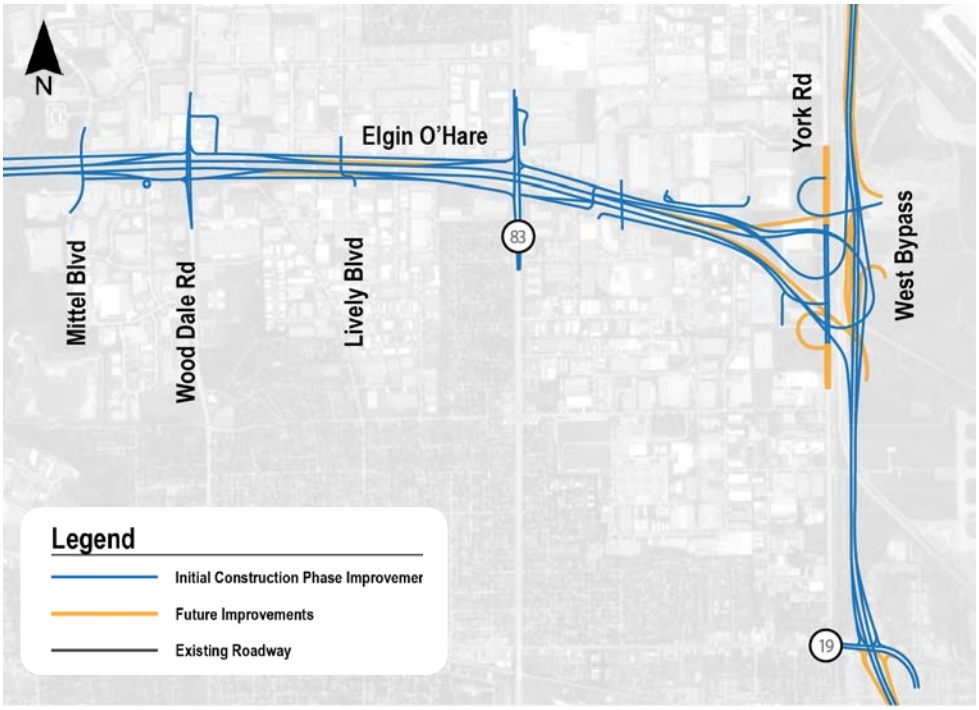
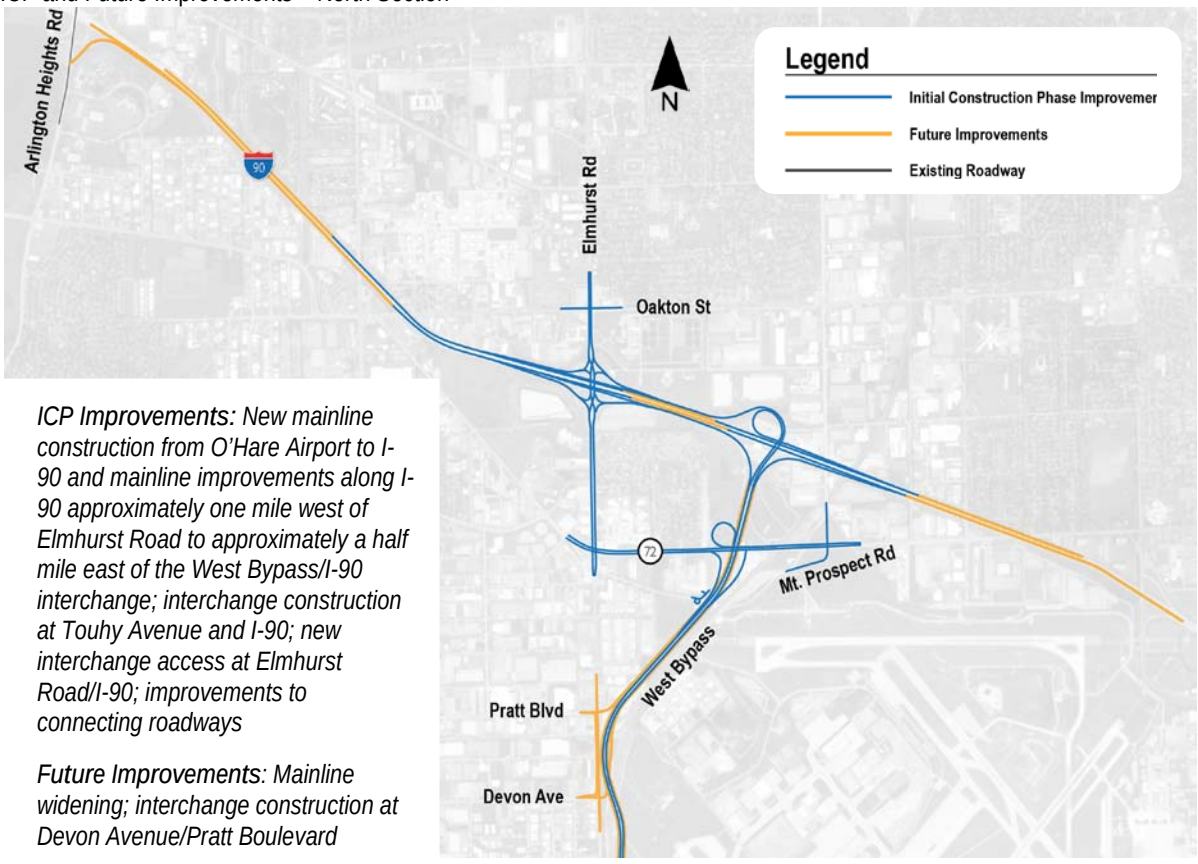


FIGURE 5
ICP and Future Improvements – South Section

ICP Improvements: New mainline construction from IL 19 to I-294 and mainline improvements along I-294 from West Bypass to North Avenue (IL 64); interchange construction at Franklin Avenue/Green Street and I-294; new interchange access at I-294/IL 64; improvements to connecting roadways and construction of Taft Avenue connector

Future Improvements: Mainline widening

FIGURE 6
ICP and Future Improvements – North Section



ICP Improvements: New mainline construction from O'Hare Airport to I-90 and mainline improvements along I-90 approximately one mile west of Elmhurst Road to approximately a half mile east of the West Bypass/I-90 interchange; interchange construction at Touhy Avenue and I-90; new interchange access at Elmhurst Road/I-90; improvements to connecting roadways

Future Improvements: Mainline widening; interchange construction at Devon Avenue/Pratt Boulevard

The ICP is proposed to be constructed by the Illinois Tollway as part of their recently announced capital improvement program, *Move Illinois: The Illinois Tollway Driving the Future* (Illinois Tollway, 2011). Construction of the ICP is expected to begin in 2013 and continue through 2025. Estimated costs of the ICP are $3.462 billion in year of expenditure (YOE) terms escalated to construction midpoint.

Remaining improvements included in the Tier Two Build Alternative would be considered in the future based on need, funding availability, and system-wide priorities. No improvements are anticipated within the project limits for a minimum of 5 years following completion of construction of the ICP. Given the inherent uncertainties of long-range planning, a precise schedule for construction of the remaining EOWB improvements cannot be identified at this time. For illustrative purposes, two potential schedule scenarios were identified for the remaining improvements. Estimated costs for these improvements range from $2.360 billion to $2.865 billion in year of expenditure (YOE) terms escalated to construction midpoint.

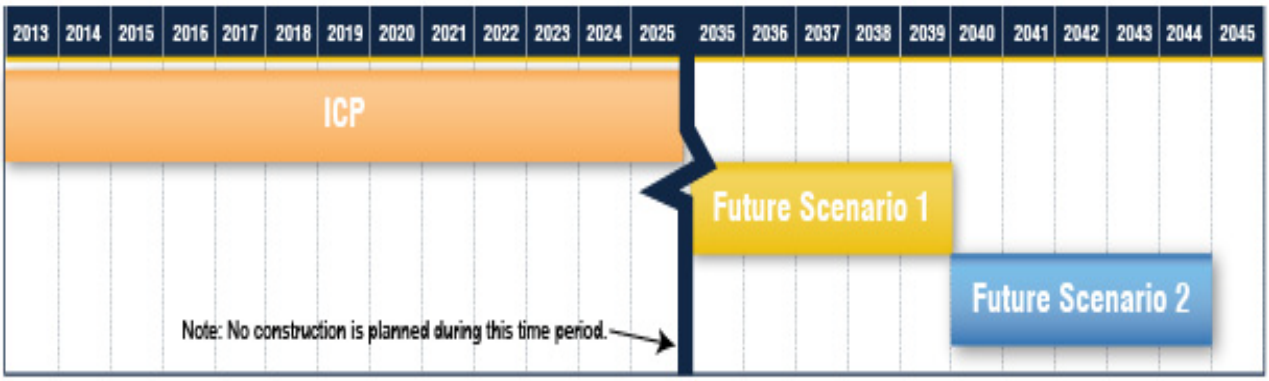
The anticipated implementation schedule for the ICP and future phase (remaining improvements) is shown in Figure 7. Costs of the ICP and future phase improvements are summarized in Table 1.

TABLE 1
EOWB Phased Improvement Estimated Costs

Phase	Construction Start and End	Cost (2012 $)	Cost (YOE $)
ICP	2013 to 2025	$2.724 B	$3.462 B
Future	Scenario 1 (2035 to 2039)	$0.876 B	$2.360 B
	Scenario 2 (2040 to 2044)	$0.876 B	$2.865 B
Total Estimated Cost	Scenario 1 (2035 to 2039)	$3.600 B	$5.822 B
	Scenario 2 (2040 to 2044)		$6.327 B

1. The ICP 2012 estimate is consistent with the adjusted baseline estimate established through May 2012 FHWA Cost Estimate Review (CER).
2. ICP projected YOE costs are consistent with the May 2012 FHWA CER review findings based on the current implementation schedule identified in the Illinois Tollway's *Move Illinois: The Illinois Tollway Driving the Future* (Illinois Tollway, 2011).
3. Future phase improvement costs were derived from the preliminary estimate of cost for the Tier Two Build Alternative. The estimated range of costs for future phase improvements assumes 4 percent annual cost escalation for construction, 3 percent annual cost escalation for engineering, and 4 percent annual cost escalation for right-of-way.

FIGURE 7
EOWB Construction Schedule



The ICP addresses the four principal transportation needs identified in the Tier Two Draft EIS by: improving local and regional travel; improving travel efficiency; improving access to O'Hare International Airport from the west; and improving modal opportunities and connections. It is broadly supported by local governments and represents a fiscally responsible approach to addressing the area's diverse travel needs.

NEPA and Major Projects Documentation Status

In 2005, the *Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users* (SAFETEA-LU) identified the EOWB project as one of national and regional significance, resulting in a planning process that has advanced in two parts, or tiers.

Tier One focused on identifying a preferred multimodal transportation system alternative for the study area and disclosed the potential beneficial and adverse impacts of proposed system alternatives. It was completed in June 2010 with the issuance of the *Tier One Final Environmental Impact Statement* (FHWA and IDOT, 2010) and *Elgin O'Hare – West Bypass Project Tier One Record of Decision* (FHWA, 2010). The Record of Decision approved the selection of the preferred type of improvement (a set of roadway, transit, and bicycle/pedestrian improvements) and the preferred corridor (location).

Tier Two studies are under way and focus on traditional levels of detail for Phase I engineering and environmental studies, including further defining design elements of the Tier Two Build Alternative. The Tier Two Draft EIS, completed in March 2012, identified features and environmental consequences of two alternatives considered in detail – the No-Build Alternative and the Build Alternative. The Tier Two Draft EIS also described the anticipated project implementation sequence, where the ICP was identified as the proposed construction sequencing strategy.The remaining added travel lanes and interchange improvements included in the overall Tier Two Build Alternative were indicated to be pursued as travel demand warrants and future funding becomes available. Completion of the Tier Two Final EIS and Record of Decision are anticipated in December 2012.

In accordance with FHWA requirements for major projects, an Initial Financial Plan and Project Management Plan are being developed for the ICP as part of the Tier Two process. The FHWA conducted an independent Cost Estimate Review (CER) in May, 2012 to verify the accuracy and reasonableness of the total project estimated cost and to establish a probability range of year of implementation costs. The CER was performed on the basis of partially completed preliminary engineering plans for the ICP. Findings of the CER identified an estimated cost of $3.462 billion for the ICP (YOE terms) with a 70 percent level of confidence. An additional CER will be conducted in early 2013 following availability of more detailed preliminary engineering.

Initial Construction Plan Operational Independence Analysis Summary

Detailed traffic analyses were performed to confirm the ability of the ICP to address the area's travel needs through the interim year 2030 design period. Analyses confirm that the ICP will provide acceptable performance along the EOWB and adjoining roadways through the year 2030.

The travel forecasting process for the 2030 ICP design year used the procedures employed in the development of the EOWB travel demand model. The travel demand model and processes of the Chicago Metropolitan Agency for Planning (CMAP) were used as the basis

for the development of the EOWB sub-area travel demand model. Travel forecasts were also reviewed for consistency with the Illinois Tollway's toll diversion model. Year 2030 forecasts were generated on the basis of both the 2010 existing year and the 2040 Tier Two Build Alternative design year forecasts, where the 2030 volumes interpolated from the 2040 Tier Two Build Alternative forecasts. Travel forecasts reveal that travel on area freeways and toll roads will grow from approximately 9.8 million (2011) to 12.2 million (2030) vehicle miles of travel, an increase of approximately 20 percent. Travel on area freeways and toll roads is projected to further increase to approximately 14.2 million (2040) vehicle miles of travel by the year 2040, an additional increase of approximately 14 percent. The phased approach for implementing EOWB capacity improvements is consistent with the projected traffic growth trend.

Traffic operational analyses confirm that the ICP mainline and interchange geometry will provide acceptable performance for the interim year 2030 design period. Procedures for determining level of service (LOS) for the EOWB project are consistent with *TRB Special Report 209* and the *2010 Highway Capacity Manual* (HCM, 2010). VISSIM microsimulation analyses were also performed in the vicinity of the complex I-290 system interchange, and SYNCHRO traffic operational software was used to evaluate traffic operations along crossroads. Analyses confirm that the Elgin O'Hare and West Bypass corridors, as well as adjoining segments of I-90 and I-294 will operate at an acceptable LOS D or better in year 2030, with spot LOS E operations along portions of the toll road corridors. This level of performance is consistent with Illinois Tollway design criteria. I-290, in the vicinity of the Elgin O'Hare system interchange, will operate at LOS D or better, with the exception of the southbound I-290 weaving section between Biesterfield Road and the Elgin O'Hare, which would operate at LOS E. While weaving operations are below the LOS D design criteria, analyses reveal that the ICP provides a 50 percent reduction in travel times and improves the average speed by 50 percent as compared to the No-Build Alternative.

Implementation of the EOWB will affect traffic distribution and demand on proximate arterials and secondary roadways. In general, the Elgin O'Hare and West Bypass corridors will result in a reduction of traffic along parallel arterials, as longer-distance regional trips divert to the new facilities, and a moderate increase in traffic along crossroads near proposed service interchanges. Sketch-level traffic analyses were conducted to identify the location and nature of required improvements to existing arterials and secondary roadways as a result of implementation of the 2030 ICP. These analyses revealed that three segments of the arterial/secondary roadway system will require capacity improvements as a result of traffic impacts related to the 2030 ICP: Franklin Avenue from County Line Road to Taft Avenue; Franklin Avenue from Taft Avenue to Wolf Road; and Elmhurst Road from Oakton Street to I-90. Localized improvements are also required within the influence area of proposed interchanges. The ICP includes these required improvements to arterial and secondary roadways.

A detailed description of the ICP operational analyses is presented in Appendix A, *EOWB ICP Traffic Analysis Procedures and Findings.*

Summary and Next Steps

This memorandum serves as a request for approval of operational independence for the ICP of the EOWB project. The ICP represents a functionally complete project that addresses diverse travel needs in the study area. The ICP design provides a project with logical

improvement limits (project termini). Further, the ICP includes design features that will provide acceptable traffic operations in the 2030 ICP design year, including required improvements to adjacent highways (freeways, toll roads, arterials, secondary roadways), thus demonstrating its operational independence.

Detailed analyses of the proposed access modifications at the I-290 interchange will be presented in the *Access Justification Report: I-290 and Elgin O'Hare Expressway/Thorndale Avenue Interchange* [AJR] (IDOT, 2012). Approval of the I-290 AJR is scheduled for December 2012. Further, refined traffic analyses will be performed as part of the ICP concept design effort. Appropriate refinements to the scope and limits of required improvements will be incorporated through the design development process.