SECTION 2

Alternatives/Preferred Alternative

This section describes the alternative development process that led to the identification of the Preferred Alternative. The evaluation of alternatives in Tier Two has determined the Build Alternative to be preferred. This alternative received concurrence by the Illinois NEPA/404 Merger group on September 6, 2012.

The content of this section is structured to provide a complete understanding of the alternative development process spanning both Tier One and Tier Two of the EO-WB study, and the process used to develop, evaluate, screen, refine, and ultimately select the Preferred Alternative.

Where, Tier One defined the project corridor (location) and project type (multimodal concept), Tier Two builds on the Tier One decision with a process that defines the project's design features that fit within that corridor. Tier Two design requirements have been based on an update of the planning horizon from 2030 to 2040 with the mainline facility operating as a toll road. The decisions in Tier Two that are required to advance the project include: decisions on the design features that best satisfy the needs of the project (i.e., mainline requirements, interchange type, tunnel versus bridge, transit requirements, drainage requirements, etc.); a decision on the facility type alternate that is most financially viable (i.e., freeway, toll road, or combination of freeway and toll road); and the sequence in which improvements are constructed including the development of an ICP.

As presented in the March 2012 Tier Two Draft EIS, the alternatives analysis concluded with two overall alternatives (Build Alternative and No-Build Alternative) and alternates at the interchange of Elmhurst Road and I-90 and the intersection at IL 72 and Elmhurst Road. The Tier Two Draft EIS was distributed for public comment on March 30, 2012 and comments were accepted until May 14, 2012. Based on the receipt of agency and public comments on the Tier Two Draft EIS, the general scope of the remaining project alternatives and alternates did not materially change. Public, agency, and community comments, however, did result in several suggested design refinements of the Build Alternative and the alternates considered at the intersection of IL 72 and Elmhurst Road. In all cases, the suggestions were considered and revisions were made (see subsection 2.2). Considering the input from the agencies, public, and the prior studies of transportation performance, cost, and environmental impacts, the Preferred Alternative and alternates at the interchange and intersection locations have been identified in this Tier Two Final EIS.

The process for the development of alternatives was guided by several principles that included:

- The Build Alternative will be the optimal arrangement of design features resulting from a thorough study of many design alternates.
- The No-Build Alternative will serve as the baseline 2040 transportation condition for comparing the travel performance of the Build Alternative.

- The base year for the existing roadway travel performance is 2010.
- The project design year is 2040, which is consistent with the CMAP's *GO TO 2040 Comprehensive Regional Plan* (CMAP, 2010). Thus, all travel forecasts conform to the 2040 time period, as do the facility design requirements.
- The development of alternatives was guided by the project's purpose and need to improve local and regional travel, improve travel efficiency, provide improved access to O'Hare Airport from the west, and improve modal opportunities and connections.
- The technical analyses would rely on detailed environmental studies; detailed engineering and roadway geometry; detailed analysis of facility and interchange types; engineering considerations of transit, drainage, and bicycle and pedestrian facilities; detailed travel modeling; and traffic operations analyses.

This section provides an overview of the process used to develop and evaluate alternatives in Tier Two. The section continues with a description of the alternatives carried forward in the Tier Two Draft EIS for additional study, a discussion of the design refinements since the distribution of the Tier Two Draft EIS, an analysis comparing the Build Alternative to the No-Build Alternative and a comparison of the alternates at the Elmhurst Road and I-90 interchange and the IL 72 and Elmhurst Road intersection. This section concludes with the identification of the Preferred Alternative and alternates and a strategy for implementation.

2.1 Alternatives Development Process

The alternatives development process for the EO-WB project has spanned both Tier One and Tier Two. The Tier One study process focused on "big picture" questions, including "what is the project" and "where is the project," while taking into account the full-range of environmental impacts. The *Elgin O'Hare – West Bypass Project Tier One ROD* approved the preferred type of improvement (a multimodal concept comprised of roadway, transit, and bicycle and pedestrian elements) and the preferred project corridor (location) (FHWA, 2010). With respect to the preferred project corridor, in Tier One, a conceptual plan of the project was developed with sufficient detail to define the project corridor with relative precision. The *Elgin O'Hare – West Bypass Project Tier One ROD* also enabled the early acquisition of needed right-of-way.

Tier Two expands on Tier One with detailed engineering and environmental studies that refine the project concept within the preferred project corridor. While the location of the project is fixed by the Tier One decision, the range of alternatives in Tier Two are in the form of design refinements that lead to design choices within the project corridor (i.e., interchange types; tunnel versus bridge; drainage requirements, and transit, bicycle, and pedestrian requirements), and facility type alternates (i.e., freeway, toll road, or combination of freeway and toll road). When assembled, the complete Build Alternative optimizes travel operations, is cost-effective, and minimizes or avoids natural and human resources to the greatest extent possible.

In order to give context to the alternative refinement process in Tier Two, a brief summary of Tier One is provided. Tier One included a robust evaluation of transportation strategies. In Tier One, there were 15 roadway system strategies developed and evaluated. Each of

these strategies went through a rigorous evaluation process of travel performance, engineering, environmental, and cost considerations. The Tier One process concluded with a ROD that identified Alternative 203D (see Exhibit 2-1) as the selected alternative, which was unanimous amongst stakeholders. The selected alternative established both the location and the type of improvement for the EO-WB project, which included expressway-type roadway improvements and companion elements (transit, bicycle and pedestrian facilities) (see the EO-WB Tier One Final EIS for full details of the alternative analysis).

The selected alternative in Tier One was fully supported by the communities and exhibited the best travel performance characteristics, while having relatively low impacts to environmental and natural resources compared to other alternatives. One of the principal reasons for the support of Alternative 203D was the bypass's location on the western edge of O'Hare Airport, a location that occupies largely undeveloped properties between airfield infrastructure and dense industrial development just outside the airport boundary. A bypass at any other location would cause severe disruption to nearby communities (e.g., high displacement of residential and commercial properties, the loss of tax base and employment, highway development that would be out of scale with existing development, and the creation of a barrier that would have effectively divided communities). The City of Chicago Department of Aviation (CDA) also supported this location wherein the *O'Hare Airport Master Plan Update* (CDA, 2005) set aside a 300-foot corridor on the western edge of the airport. The vision for the corridor preservation on the western edge of the airport was fortuitous, for any other location, particularly to the west of the airport, would have resulted in an unworkable project.

The selected corridor that emerged from Tier One was well-defined, and consists of an east-west component known as the Elgin O'Hare corridor and a north-south component known as the West Bypass corridor. The use of conceptual engineering for roadway and transit features provided corridor limits that closely approximate the right-of-way needs of the project. Although, this level of definition is not common for Tier One, the greater level of detail was warranted by the urban character of the area and, in particular, special land uses such as O'Hare Airport.

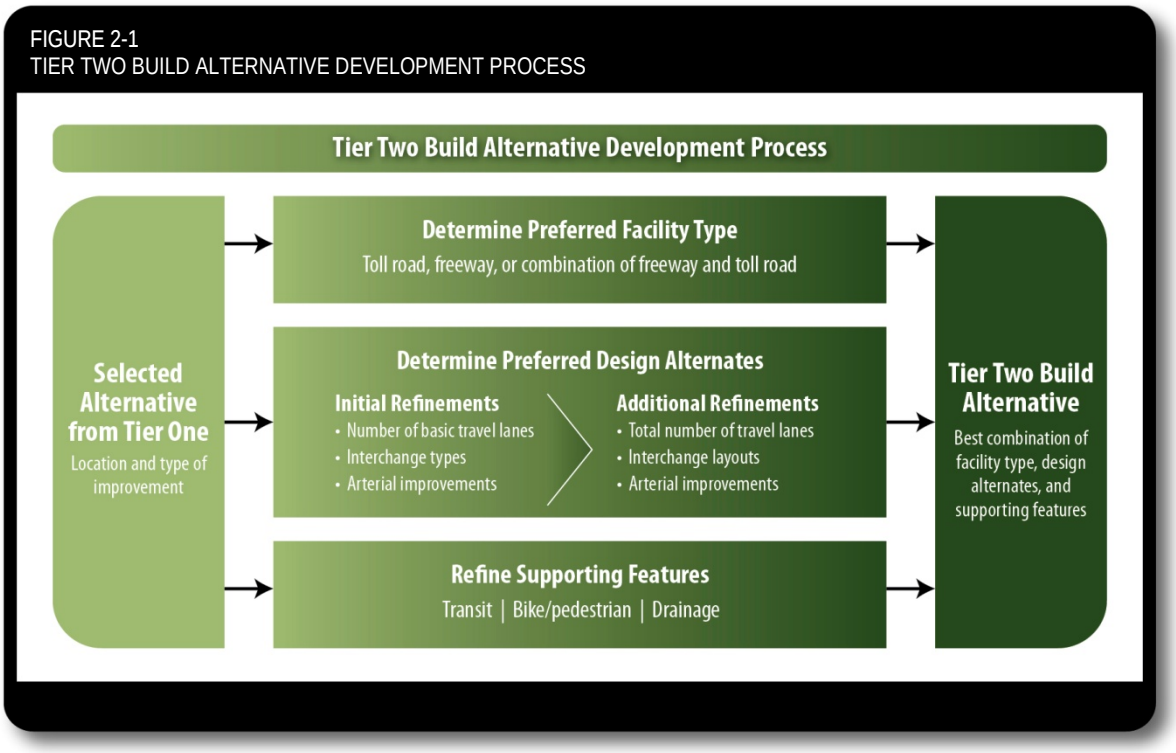
Tier Two of the EO-WB project process started with the project footprint from Tier One, and the process continued with greater engineering detail of the roadway, transit, bicycle and pedestrian facilities, and drainage requirements (see Figure 2-1). Tier Two finalizes the design details of the project (mainline lane requirements, interchange types, arterial improvements, drainage, etc.), and the means by which it would be operated (freeway or toll road). Tier Two outcomes include:

- Determine the most fiscally practicable facility type (i.e., freeway, toll road, or a combination of freeway and toll road).
- Determine the optimal arrangement of design features (i.e., mainline requirements, interchange alternates, arterial improvements, transit, bicycle/pedestrian requirements, and drainage facilities), while reducing environmental and socioeconomic impacts.
- Determine a construction sequencing plan.

The decisions that come from these analyses will be assembled to form a complete Build Alternative that represents the facility type (i.e., freeway, toll road, or combination of

freeway and toll road); the design features (i.e., mainline requirements, interchange location and type, integration of transit, etc.) that optimize roadway geometry, travel and operational performance, environmental considerations, and cost; and a planned sequence of construction that adheres to the requirements for an operationally independent project with logical termini.

FIGURE 2-1
TIER TWO BUILD ALTERNATIVE DEVELOPMENT PROCESS



2.1.1 Facility Type Alternates

An early decision in the Tier Two alternative development process was a determination of the "facility type" (i.e., freeway, toll road, or a combination of freeway and toll road). The consideration of various freeway versus toll road scenarios was prompted by changing conditions in traditional federal and state funding. Declines in federal funds for new projects, particularly those like the EO-WB project that is projected to cost billions of dollars, have led to an increasing reliance on tolling to finance the construction and long-term maintenance of new projects.

In the examination of facility types, nine alternates were developed (ranging from all roadway elements being non-tolled to all roadway elements being tolled) and seven combinations with both freeway and toll road elements (see Exhibit 2-2). Evaluation of these facility type alternates was initially based on financial viability and travel performance. The evaluation of travel performance was similar for all alternates; therefore, it was not a discerning factor. Among the findings, alternates with tolled sections did not cause a substantial diversion of traffic from mainline facilities to arterials streets; thus, tolled facilities satisfies the project's purpose and need pertaining to reducing congestion and improving travel efficiency. The analysis showed the percentage of traffic diverting from tolled facilities (Alternates 2 to 9) was small, ranging from one to five percent. Thus, financial viability was the primary factor used for the initial screening of the alternates, and

in ultimately selecting a facility type as a feature of the Build Alternative. The results of the facility type alternates are summarized below and are contained in Appendix C.

- Alternate 1 (all-freeway alternate): The availability of public funding to finance an all-freeway alternate at a cost of greater than $3 billion is unachievable. **This alternate was dismissed from further consideration.**
- Alternates 2, 3, 4, and 7 (alternates as a full toll road or combination of freeway and toll roads): These alternates were initially viewed as viable since the toll revenue generated from these configurations would support relatively higher bonding capacity, while reducing the required level of public funding. **These alternates were retained for further consideration.**
- Alternates 5, 6, 8, and 9 (alternates with a combination of freeway and toll roads): These alternates yielded a relatively low total revenue; therefore, each alternate showed a major shortfall in potential bonding capacity combined with a large public funding need that is likely unachievable. **These alternates were dismissed from further consideration.**

In further analysis of Alternates 2, 3, 4, and 7, the all-toll road alternate (Alternate 2) was considered the only alternate that would be financially and operationally viable. Three of the four remaining alternates include sections of freeways that attract short distance trips thereby impairing long distance travel continuity on the system. Other factors that affected the facility type decision included long-term maintenance of the facility. The maintenance of freeways is challenged by declining federal and state resources; therefore, funding to restore and rehabilitate a roadway is a large future cost that would be best addressed with a user-based system of finance. A re-examination of the project's purpose and need showed that Alternate 2 would maintain the integrity and intent of the four basic project purposes. The combination of improved travel continuity, the provision of regular long-term maintenance, and meeting the project's purpose and need resulted in the selection of Alternate 2 as the preferred overall facility type alternate.

In November 2010, Governor Quinn formed the EO-WB Advisory Council, which joined the ongoing study process. As directed by the Governor, the Council evaluated four topics including financing, sustainability, work force diversity, and economic impact. Based on an exhaustive evaluation of funding sources, the Council, in their final report (June 2011), recommended that the Elgin O'Hare and West Bypass corridors be operated as toll roads with the Illinois Tollway named as the implementing agency. In later actions (September 2011), the Illinois Tollway Board of Directors enacted a toll increase across the system to fund the Tollway's future capital improvement program, *Move Illinois: The Illinois Tollway Driving the Future,* which includes the EO-WB project (Illinois Tollway, 2011).

The EO-WB project has been proposed as a system of mainline and off-system (arterial) improvements. The proposed tolling concept for the project would consist of tolling the mainline facilities, while the off-system improvements (arterials) associated with the project would not be tolled.

The recommendation of the toll road has no material effect on the facility design other than the inclusion of electronic tolling facilities. For this facility, tolling would be a fully automated toll collection system where typical toll plazas and manual collection facilities

would not be present. Although the design standards for federally-funded interstate routes vary slightly with toll road design standards in Illinois, the difference would cause no change to the outside dimension of the right-of-way; therefore, the environmental impacts would not change with the tolling alternate.

2.1.2 Design Alternates

Tier Two considered the optimal arrangement of design features within the project corridor that provide cost effective travel performance while reducing environmental and socioeconomic impacts. The process, leading to an overall design solution and the refinement of the project footprint, considered many aspects (see Figure 2-1) including the mainline lane requirements, interchange types, arterial improvements, drainage requirements, and other factors (i.e., transit facilities, bicycle and pedestrian facilities). Design alternates were evaluated using the following practices:

- Regular meetings with stakeholders were conducted to review design alternates.
- Application of sustainable practices were included that represents a transportation corridor of the 21st century.
- Application of measures that further avoid and minimize environmental and socioeconomic impacts (applied in every aspect of the engineering process) were included to reduce impacts on wetlands; floodplains; water resources; residential, commercial and industrial properties; and unique land use.

2.1.2.1 Mainline Roadway Requirements

The starting point of the process included establishing the mainline travel requirements. The key data required for this determination was future traffic forecasts. A Build Alternative travel forecast was developed for the year 2040 and assumed a tolled facility. Detailed forecasts (ADT and peak hour volumes) were developed for the project corridor. From this information, the number of basic lane requirements was determined for the roadways based on the *Highway Capacity Manual* (Transportation Research Board, 2010), and American Association of State Highway and Transportation Officials (AASHTO) standards. The mainline requirements include three basic lanes in each direction for the Elgin O'Hare corridor, and two basic lanes in each direction for the West Bypass corridor (see Exhibit 2-3).

The roadway cross-section is inclusive of other features including the addition of auxiliary travel lanes that would be dependent on the location and types of interchanges (see subsection 2.1.2.2). Another prominent feature includes a transit reservation in the Elgin O'Hare corridor for the future development of either bus rapid transit (BRT) or rail transit (including stations). Also, the Elgin O'Hare corridor includes frontage roads and bicycle/pedestrian facilities that further define the footprint of the project. The West Bypass corridor would be inclusive of basic and auxiliary travel lanes only. Transition lanes extending to and from the system interchanges would also be added to the mainline to manage merging and diverging traffic movements at these locations.

2.1.2.2 Interchange Types

Interchange types optimize the movement of traffic to and from the mainline. There are two types of interchanges associated with the project, system interchanges and local access

interchanges. System interchanges provide for the movement of traffic from one fully access-controlled roadway to the next. Local access interchanges provide access from the fully access-controlled roadway to the local road system.

System interchanges are provided when two fully access-controlled facilities connect. For the EO-WB project, there are four locations where this occurs including:

- Elgin O'Hare corridor and I-290
- Elgin O'Hare and West Bypass corridors
- West Bypass corridor and I-90
- West Bypass corridor and I-294

The location of the local access interchanges was determined in Tier One. The locations were determined based on prevailing policy (i.e., crossing state routes are served by an interchange), traffic demands to and from an area, and stakeholder input. Other factors control the location of local access interchanges such as spacing between interchanges (the standard practice is a minimum one-mile spacing, which minimizes weaving conflicts on the mainline caused by on/off vehicle movement). There are 16 locations proposed for local service interchange improvements including:

- Improving existing interchanges along the Elgin-O'Hare Expressway (at Gary Avenue, Springinsguth Road/Irving Park Road [IL 19], Wright Boulevard, Roselle Road, and Meacham Road).
- Providing new interchanges along the proposed extension of the Elgin-O'Hare Expressway (at Rohlwing Road, Park Boulevard, Prospect Avenue/Arlington Heights Road, Wood Dale Road, and IL 83), and along the proposed West Bypass corridor (at Irving Park Road [IL 19], County Line Road/Franklin Avenue/Green Street, Pratt Boulevard/Devon Avenue, and Touhy Avenue).
- Adding ramps to existing partial interchanges at I-90 (at Elmhurst Road) and I-294 (at North Avenue).

The examination of the interchange alternates was grouped into nine geographic areas (see Exhibit 2-4A). In some areas, more than one interchange was grouped together at these locations; these interchanges are closely spaced where the operation of one affects the other. At each of the nine locations, different interchange alternates were examined, ranging from two or three to as many as seven.

The interchange alternates ranged from simple to more complex. The more complicated interchange types eliminated conflicting movements and better managed traffic. The evaluation and comparison of interchange alternates considered several different factors including geometric design (does it meet standards), LOS (does it provide an acceptable level of travel performance), impacts on environmental and social resources, cost, and constructability (can it be built).

The project's Geometric Working Group (GWG)[1] met regularly throughout the development process and provided guidance leading to the recommended alternates at each

[1] Geometric experts from the consulting industry, Illinois Tollway, IDOT, and FHWA (see Section 4).

location. Further, opportunities for community and stakeholder comment were provided throughout the process and offered valuable insights that helped shape the final interchange types.

Exhibits 2-4B to 2-4L depict the alternates considered for each geographic area, the preferred interchange alternate(s), and a comparison of key factors that assisted in the selection. The preferred alternates provided good traffic operations at a reasonable cost. In most cases, the environmental impacts were the same or similar, but in all cases where there was a difference, the alternate having the least environmental impacts was identified as the preferred. The footprints of the alternates vary only slightly from one to another in the nine locations. Design judgment was used in many instances to avoid resources or building impacts by slightly shifting the alignment, or using measures like retaining walls to minimize encroachment. Factors that were most influential in the evaluation of interchange types were traffic and operations performance.

In eight of the nine geographic areas, one alternate for each area has been recommended. For one geographic area, Area 8 (Elmhurst Road and I-90), two alternates remain under consideration. The alternates in Area 8 were presented in the Tier Two Draft EIS, and a preferred alternate has been identified in this document. For added details on the interchange type studies refer to the *Interchange Type Study Report,* dated December 2010 (IDOT, 2010a), and the *Interchange Type Study Report Addendum* dated December 2011 (IDOT, 2011a).

Once decisions about the interchange types were made, the mainline lane requirements could be finalized. The interchange types combined with the updated 2040 travel forecast were used to determine the added lane requirements such as auxiliary lanes between interchanges and transition lanes from interchanges extending onto the mainline section. Decisions were also made about the use of collector-distributor roads, where interchanges were too close and weaving movements needed to be better managed.

2.1.2.3 Drainage Facilities

Northeast Illinois has a long history of rigorous water resource and stormwater regulation. Adherence to drainage and water resource regulation requires land for implementation; thus, the right-of-way requirements for implementation of stormwater conveyance and detention, compensatory storage for displaced floodplains, and the use of best management practices have been accounted for in the refinement of the project footprint (see subsection 2.3.2.7).

2.1.2.4 Other Transportation Components

The engineering refinements in the project corridor have also required consideration of the other transportation and infrastructure needs that will be co-located in the project corridor. The space requirements for these facilities have been evaluated during the development of the Tier Two project footprint and have included crossing and connecting roads, transit facilities, bicycle and pedestrian facilities, and congestion management strategies. Each of the facility requirements are discussed in the following subsections.

Crossing and Connecting Roadway Improvements

A traffic analysis was conducted to study the effects of future traffic on the off-system routes in the vicinity of the proposed project. The travel forecasts for the project area showed that most of the arterial system would require no change in capacity improvements. Arterials in the immediate vicinity of the project, however, would require some capacity improvements to accommodate increased travel in close proximity to the interchanges, and along some sections of arterials. The extent of the improvements typically requires added travel lanes, turning lanes, and updated traffic signals. Added travel lanes commonly extend from the interchange areas for varying distances to accommodate the high traffic volumes at the interchange areas, which are then efficiently transitioned to the existing lane configuration. The added lane capacity was determined with the use of an ADT threshold criterion. The criteria are shown below for two conditions (see Appendix D):

- When existing arterial conditions are one lane in each direction, an ADT of greater than 9,500 would require added travel lanes.
- When existing arterial conditions are two lanes in each direction, an ADT of greater than 18,500 would require added travel lanes.

Table 2-1 lists the crossing and connecting road improvements, and the improvements are shown in Exhibit 2-5. Arterial improvements along Elmhurst Road and Touhy Avenue are more lengthy examples of capacity improvements that are warranted by the effects of the proposed project. Several intersection improvements are among the arterial improvements including IL 19/Barrington Road, IL 19/Wise Road, and IL 72/Elmhurst Road. The intersection improvements include additional left and right turning movements that enhance capacity (see subsection 2.3.2.3 for details). All of the arterial improvements have been included in the overall project footprint, accounted for in the project's right-of-way needs and costs, and evaluated for potential impacts to the environment discussed in Section 3.

TABLE 2-1
Local Cross Roads

Arterial	Existing Condition	Length of Improvements (feet)[a]	Improvement Description	Crossing Feature	Crossroad Over/ Under Highway
West Irving Park Road (IL 19)/ Barrington Road	4 through lanes with turn lanes	2,250 feet	Additional turn lanes at Barrington Road	NA	NA
West Irving Park Road (IL 19)/Wise Rd.	4 through lanes with turn lanes	1,350 feet	Additional turn lanes at Wise Road	NA	NA
Gary Avenue	1 lane eastbound and westbound ramps	1,360 feet	Lane added to both eastbound and westbound ramp	Elgin-O'Hare Expressway	Under
Springinsguth Road	4 through lanes interchange with turn lanes	1,800 feet	Grading and pavement improvements	Elgin-O'Hare Expressway	Under

TABLE 2-1
Local Cross Roads

Arterial	Existing Condition	Length of Improvements (feet)[a]	Improvement Description	Crossing Feature	Crossroad Over/ Under Highway
West Irving Park Road (IL 19)	4 through lanes with auxiliary and turn lanes	2,800 feet	Additional turn lanes at Springinsguth Road and frontage roads	Elgin-O'Hare Expressway	Under
Rodenburg Road	4 through lanes with turn lanes	1,400 feet	Grading and pavement improvements	Elgin-O'Hare Expressway	Under
Wright Boulevard	4 through lanes with turn lanes	900 feet	Grading and pavement improvements	Elgin-O'Hare Expressway	Under
Mitchell Boulevard	2 through lanes	600 feet	Grading and pavement improvements	Elgin-O'Hare Expressway	Under
Roselle Road	4 through lanes with auxiliary and turn lanes	1,300 feet	Reconfigured frontage road intersections and dual southbound left turn lanes at frontage road	Elgin-O'Hare Expressway	Over
Meacham Road/Medinah Road	4 through lanes with turn lanes	1,800 feet	Auxiliary lane added both northbound and southbound	Elgin-O'Hare Expressway	Under
IL 53 (Rohlwing Road)	4 through lanes with turn lanes; at-grade intersection	2,800 feet	New service interchange and frontage road intersections with auxiliary and turn lanes	Elgin-O'Hare Expressway	Over
Devon Avenue	4 through lanes	1,000 feet	Grading and pavement improvements	I-290	Over
Park Boulevard	2 lanes south and 4 lanes north of Thorndale Avenue; at-grade intersection with Thorndale Avenue	5,600 feet	Moved alignment and road extended to connect to Pierce Road; new turn lanes	Elgin-O'Hare Expressway	Under
Arlington Heights Road	2 through lanes with turn lanes; at-grade intersection	2,400 feet	Partial service interchange and frontage road intersections with turn lanes	Elgin-O'Hare Expressway	Under
Prospect Avenue	4 through lanes with turn lanes; at-grade intersection	2,400 feet	Partial service interchange and new frontage road intersections with auxiliary and turn lanes	Elgin-O'Hare Expressway	Under
Mittel Boulevard	2 through lanes with turn lanes; at-grade intersection	1,600 feet	Frontage road intersections with auxiliary lanes	Elgin-O'Hare Expressway	Under
Wood Dale Road	4 through lanes with turn lanes; at-grade intersection	2,300 feet	Full service interchange with auxiliary and turn lanes added	Elgin-O'Hare Expressway	Over
Lively Boulevard	2 lanes; offset at-grade intersection with Thorndale Avenue	700 feet	Extended under Elgin-O'Hare Expressway to eastbound frontage road	Elgin-O'Hare Expressway	Under

TABLE 2-1
Local Cross Roads

Arterial	Existing Condition	Length of Improvements (feet)[a]	Improvement Description	Crossing Feature	Crossroad Over/ Under Highway
IL 83 (Busse Road)	6 through lanes with turn lanes; at-grade intersection	3,100 feet	Full service interchange with auxiliary and turn lanes added	Elgin-O'Hare Expressway	Under
Supreme Drive	2 through lanes with turn lanes; at-grade intersection	900 feet	Frontage road intersections with turn lanes	Elgin-O'Hare Expressway	Under
York Road	4 through lanes with turn lanes	4,000 feet	Frontage road intersections and West Terminal access with turn lanes and median improvements	NA	NA
North Avenue	Existing Northwest Avenue intersection	2,100 feet	Reconfigured connector to Northwest Avenue and Lake Street	NA	NA
County Line Road (south of Grand Avenue)	2 through lanes; no access to/from I-294 between Grand Avenue and W Lake Street	3,500 feet	Moved alignment with southbound exit ramp from I-294	NA	NA
Northwest Avenue	2 through lanes	7,100 feet	Moved alignment	NA	NA
Grand Avenue	4 through lanes with turn lanes	1,200 feet	Grading and pavement improvements	I-294	Under
Franklin Avenue/Green Street	4 lanes west of County Line Road and 2 lanes to the east with turn lanes	6,900 feet	Split full service interchange with 4 lanes and additional turn lanes	NA	NA
Taft Avenue	2 through lanes; ends at Irving Park Road (IL 19) intersection (does not cross Bensenville Yard)	4,000 feet	New 4 lane Taft Avenue connector to Franklin Avenue	NA	NA
County Line Road (at Franklin Avenue)	2 through lanes with turn lanes; ends at Franklin Avenue intersection	700 feet	Intersection improvements with Franklin Avenue and new West Bypass corridor ramps	NA	NA
Irving Park Road (IL 19)	4 through lanes	2,100 feet	Full service interchange with additional turn lanes; roadway re-aligned with 6 through lanes	West Bypass	Under
Elmhurst Road (from Devon Avenue to Pratt Boulevard)	4 through lanes with turn lanes	3,400 feet	Partial service interchange with turn lanes	NA	NA
Touhy Avenue	6 through lanes	7,300 feet	Partial service interchange with turn lanes	West Bypass	Over

TABLE 2-1
Local Cross Roads

Arterial	Existing Condition	Length of Improvements (feet)[a]	Improvement Description	Crossing Feature	Crossroad Over/ Under Highway
Mount Prospect Road	4 through lanes with turn lanes; skewed intersection at Touhy Avenue	2,400 feet	Roadway re-aligned; improved Touhy Avenue intersection with turn lanes	NA	NA
Oakton Street	4 through lanes with turn lanes	1,400 feet	Additional auxiliary lane	NA	NA
Elmhurst Road (from Oakton Street to Touhy Avenue)	4 through lanes; partial cloverleaf interchange; 6 lanes through intersection at Elmhurst Road and Touhy Avenue	10, 950 feet	6 through lanes; diverging diamond interchange; intersection improvement at Elmhurst Road and Touhy Avenue	I-90	Over

Note: NA=Not Applicable

[a] Length of Improvement is total length of both sides of the mainline.

Transit Facilities

In Tier Two, transit improvements have focused on feasible service routes that would be co-located in the project corridor. Transit service has been considered along the Elgin O'Hare corridor, I-90 corridor, and the north leg of the West Bypass corridor that links I-90 service with the proposed West Terminal. The center piece of the transit plan is a new east-west dedicated transit corridor co-located in the Elgin O'Hare corridor right-of-way. The transit right-of-way would be sized to accommodate either BRT or rail. Transit stations are provided at regular intervals with station access and parking. The project footprint for the Elgin O'Hare corridor has been sized to include the transit reservation. Additionally, roadway features, such as crossing road bridges would also be sized to accommodate the future development of transit. The development of the transit service would be the responsibility of others (i.e., transit providers), and the timing of construction would be dependent on the availability of funds. The transit provider would be required to lay pavement or track depending upon the mode, build stations, build transit structures, pedestrian access and parking, signage, and signal controls for rail.

Several transit-related design decisions were evaluated in Tier Two. Among these include the location of transit along the Elgin O'Hare corridor, the I-90 corridor in the vicinity of the connection to the West Bypass corridor, the north leg of the West Bypass corridor, a re-examination of station locations, and extensions of transit service from the Elgin O'Hare corridor.

- Location of Transit Service. In the Elgin O'Hare corridor, three placement options for transit were considered: in the roadway median, to the side of the mainline, or along the frontage road system. The advantages and disadvantages of these locations are highlighted in Table 2-2.

TABLE 2-2
Transit Corridor Pros and Cons Analysis [a]

Evaluation Criteria	Transit Corridor Location Options		
	Frontage Roads	**Median (from Tier One)**	**Along the Side**
Level of Transit Service	Con - Transit operates in mixed traffic, therefore, increases travel time. Gaps in the frontage road system challenge the feasibility of this approach.	Pro - Transit operates efficiently in dedicated right-of-way and avoids conflicting traffic.	Pro - Transit operates efficiently in dedicated ROW and avoids conflicting traffic.
Right-of-way Costs	Pro - No right-of-way costs other than stations and transit parking.	Pro - Right-of-way provided within the roadway footprint except for transit parking.	Pro - Right-of-way provided within the roadway footprint except for transit parking.
Level of Pedestrian Access	Con - Non-pedestrian friendly access to stations or stops.	Pro - Pedestrian bridges would provide safe and comfortable access for pedestrians from points both north and south of the expressway.	Pro - Pedestrian bridges similar to those of the median alignment would be provided; however, longer walks would be required for pedestrians accessing platform from the opposite side of roadway.
Parking Availability	Neutral - The availability of space for parking is not affected by the alignment choice.		
Connections With Other Transit Services	Neutral - While there are small differences these differences are not important enough to allow for meaningful comparison between the alternatives.		
Modal Flexibility	Con - This alignment is not appropriate for any of the rail technologies, which require dedicated right-of-way.	Pro - This alternative would allow for any of the transit modes that are being considered (BRT, light rapid transit [LRT], Heavy-rail Rapid Transit [HRT], and Diesel Multiple Unit [DMU]).	Pro - This alternative would allow for any of the transit modes that are being considered (BRT, LRT, HRT, and DMU).

[a] *Source:* Vlecides-Schroeder Associates, Inc., 2010.

The analysis concluded with a determination that the median location would be best in the Elgin O'Hare corridor because it ensures the highest potential level of service with a fully dedicated transitway. Other factors that contributed to this conclusion included equity in access from both the north and south. The median location is also beneficial to the roadway design by maintaining roadway symmetry that minimizes alignment issues and avoids conflicts with crossing roads.

In Tier Two, the location of transit service along the north leg of the West Bypass corridor extending to the proposed West Terminal was re-examined. In further analysis, it was determined that transit service be moved from a median location to the east side of the roadway to reduce overall roadway costs. The roadway alignment and its cross-

section were configured to provide sufficient space for a transit facility (either BRT or rail transit) directly east of the north leg of the West Bypass corridor alignment.

Consistent with the vision of the I-90 Transit Task Force and Corridor Planning Group, the EO-WB project considered the eventuality of a long-term transit facility in the I-90 corridor. Compliant with prior studies, transit is planned for a median location along I-90.

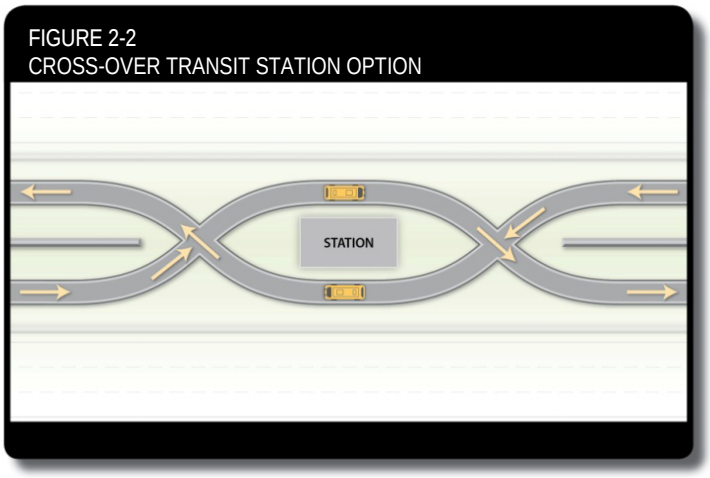
- Right-of-Way Requirement for Transit Service. Right-of-way requirements for transit have been based on prior studies in the project area sponsored and endorsed by Metra (regional commuter rail provider) (Metra, 2003). The findings of this work show that a minimum requirement of 35 feet (STAR Line criteria) would satisfy the requirements of transit needs (see Exhibit 2-6). At transit station locations, the right-of-way would be expanded to a minimum of 58 feet (see Exhibit 2-6). The Illinois Tollway will advance work for the rehabilitation of I-90 and the EO-WB project, with a requirement that right-of-way for transit will be provided consistent with the Star Line criteria (35 feet as a minimum). It is anticipated that some flexibility will be needed in the final dimension based on roadway geometric constraints, but as a minimum, all bus and rail options would be accommodated.
- Transit Station Locations. Transit stations were identified in Tier One at six locations: West Terminal, near Wood Dale Road, Hamilton Lakes' Development, IL 53, Roselle Road, and near Schaumburg Metra station. Transit station locations were reviewed and refined in Tier Two resulting in changes at three locations. Station relocations at the Wood Dale Road and Hamilton Lakes' Development locations involved a minor shift to the west, and the station location at IL 53 required consideration of additional design alternates. In the case of the Hamilton Lakes' Development station, the shift was more proximate to the center of activity, provided improved passenger access, and was closer to parking planned for the area. For the Wood Dale Road station, the shift to the west improved access to planned parking. In both cases, pedestrian access would be provided from both sides of the project corridor.

  The IL 53 station was originally sited to accommodate a service area to the south and the transfer of patrons coming from the west that desire to use the service routed north along IL 53 to Woodfield Mall. The original configuration included both a station and dedicated bus ramps from the median to access IL 53. The combined width of these facilities would measure over 150 feet. The sizable median dimension for station and ramps challenged cost-effective roadway design solutions in this area. The process of refining the roadway section in the vicinity found that a median width of about 100 feet would be preferable. The narrower median would accommodate either a station or the dedicated ramps to IL 53, but not both. Coordination with Regional Transportation Authority (RTA) followed to determine the best course of action. Four alternates were examined and presented to the RTA for consideration: Alternate 1 with no station and no ramps, Alternate 2 with station only, Alternate 3 with ramps only, and Alternate 4 with station and ramps (CH2M HILL, 2011). Both Alternates 2 and 3 could be provided within the 100-foot median. In both cases, the transfer from the west to the north would occur at the Hamilton Lakes' Development station causing minor out-of-direction travel. Under Alternate 2, buses would access IL 53 by leaving the median at Park Boulevard

and utilize the mixed travel lanes to exit the mainline at IL 53. The return movement from the IL 53 service would be accomplished via the on-ramp at IL 53 and merging to the median. In discussions with the RTA, it was concluded that a median width of about 100 feet would provide a workable area for future transit infrastructure. Further, the agency preferred to defer the decision regarding either Alternate 2 (a station) or Alternate 3 (ramps) at IL 53, and revisit that decision at a later date when both a transit provider and funding for transit service are identified in the Elgin O'Hare corridor. Parking would be provided at stations and would range from 220 to 630 parking spaces (Vlecides-Schroeder Associates, Inc., 2010). The parking area requirements and locations have been included in the project footprint; therefore, the potential impacts to the environment have been considered as part of this analysis (see Exhibit 2-7).

At all station locations, the option to accommodate buses with doors on right-side only, doors on left-side only, or buses equipped with both left and right-side doors will be preserved. The conventional door arrangement for buses is right-side only; thus, for stations located in the median, a counterflow arrangement would be required at the stations for passenger entrance and exit. In this case, for buses with right-side doors only, buses would cross-over in advance of the station (see Figure 2-2). The median right-of-way would be sufficient to allow for this design solution. Buses equipped with left-side doors are unconventional, but would function in the Elgin O'Hare corridor without the need for the counterflow arrangement. However, buses equipped with left-side doors only would not function well when buses would exit the median to serve the north-south service along IL 53 to and from the Woodfield Mall area. Alternatively, buses equipped with both left- and right-side doors would function well on both the median route and the IL 53 route; however, two-sided door buses are costly and would reduce the overall capacity of the bus. As of October 2012, a decision on the actual bus configuration has been deferred to a future transit provider; therefore, the options discussed above will remain open.

FIGURE 2-2
CROSS-OVER TRANSIT STATION OPTION



- Extended Transit Service. Refinements in Tier Two also examined extending transit service from Schaumburg to Hanover Park, and express bus service from the proposed West Terminal complex to the Rosemont Chicago Transit Authority (CTA) station. Service to the west and east of the project limits was also considered.

  On the west, a study investigated the extension of BRT and rail service to the Hanover Park Metra station from the Schaumburg Metra station (a distance of two miles). Over 10 alternate routes were examined between Hanover Park and Schaumburg for both BRT and rail options. Two alternate routes were suited to both BRT and rail service, and

the others would be exclusively BRT routes. The cost of the extended service was sizable, ranging from about $43 million to over $50 million, for the basic infrastructure (not including rolling stock). The travel time provided by the service would be approximately four minutes or represent about a four-minute savings over alternate modes (i.e., shuttle bus in mixed traffic) (Vlecides-Schroeder Associates, Inc., 2010).

In examining these routes, environmental issues were prominent along the more favored route (i.e., the transit corridor adjacent to Metra's existing Milwaukee District West railroad). Based on field work completed during the summer of 2011, there are several wetlands, prairie areas, and one river crossing (West Branch DuPage River) located within the transit alternative study corridor.

As described above, several factors have caused the service (BRT/rail) from Schaumburg to Hanover Park to be deferred from further consideration. Among the reasons include the high cost of transit service for a relatively small savings in travel time, and impacts to high quality wetlands, prairies, threatened/endangered species, and the West Branch DuPage River. This action does not preclude reconsideration of this service at a later date. In lieu of BRT or rail service, bus shuttle service would be used to connect the Schaumburg Metra station to the Hanover Park Metra station.

On the east, express bus service was studied from the proposed West Terminal to the Rosemont CTA Blue Line station. This service is viewed as interim until such time that transit is extended across the airfield to the proposed West Terminal. As an interim service, it would provide connectivity for commuter and work trips between the project area and downtown Chicago and airport-related businesses. Alternative routes were examined around both the north and south ends of the O'Hare Airport. Routes to the north were found to be slower and provided less reliable service due to numerous signals and more out-of-direction travel. The route to the south was favored because of shorter travel times and the reliability of travel speeds. This route would use the south leg of the West Bypass corridor to Irving Park Road (IL 19), travel east on Irving Park Road (IL 19) to Mannheim Road, north on Mannheim Road to Balmoral Avenue, and then to the Rosemont CTA Blue Line station. The service would operate as express bus service between the proposed West Terminal and the Rosemont CTA Blue Line station with travel frequencies of every 15 minutes during peak period. No special infrastructure requirements are anticipated for this service.

The bus service to both Hanover Park and to the Rosemont CTA Blue Line station are described further in subsection 2.3.2.8.

Bicycle and Pedestrian Facilities

Bicycle and pedestrian accommodations are an integral part of a multimodal project. The nonmotorized transportation needs and appropriate accommodations were analyzed as part of the Tier One and Tier Two process. The analysis of bicycle and pedestrian requirements are in conformance with IDOT's Complete Street's Policy, and were fully coordinated with community interests and bicycle organizations. The overall philosophy for this component of the project is to provide new east-west facilities to improve connectivity in that direction and with other existing north-south bicycle and pedestrian facilities in the area (see subsection 2.3.2.8). Because there is an abundance of north-south facilities, special care was given to maintaining the existing connectivity across the Elgin O'Hare corridor.

New bicycle and pedestrian facilities are planned along non-access-controlled facilities such as frontage and arterial roads. For the east-west corridor, a bicycle and pedestrian trail is proposed adjacent to the frontage road system, and would rely on local trail systems when it is absent. Existing north-south trails that cross the Elgin O'Hare corridor would be accommodated into the new crossing road facility design to maintain trail continuity. At locations where a state route crosses the Elgin O'Hare corridor, bicycle and pedestrian facilities would be provided at the crossing either over or under the mainline. These bicycle and pedestrian improvements would be developed in conjunction with the arterial improvements at these locations. The shared use path would have a 10-foot cross-section and would be located on one side of the crossing road. The connection from the crossing to the nearest local and community path would be the responsibility of local jurisdiction.

The EO-WB project has preserved the space for planned bicycle and pedestrian facilities. Details regarding cost, maintenance, and jurisdictional responsibilities for proposed pedestrian and bicycle facilities within the Tier Two Build Alternative will be determined during future final design and in coordination with local jurisdictions.

Congestion Management Process Strategies

The proposed project would include strategies designed to add efficiencies to travel and reduce single-occupancy vehicles. The strategies that aid travel efficiency can be added to the system without causing the need for additional right-of-way. Two types of strategies are proposed, transportation system management (TSM) and travel demand management (TDM) strategies. The TSM strategies are aimed at improving the operating efficiency of the system and include variable message signage, traffic incident management, signal pre-emption for emergency vehicle or buses, photo enforcement cameras, interconnected traffic signals on arterial streets, etc. The TDM strategies are aimed at changing driver behavior in order to reduce traffic and congestion, and to improve air quality. These strategies include toll pricing strategies, high occupancy vehicle lanes, more transit opportunities, better connectivity to all transit modes, and parking facilities that serve transit users as well as carpools and vanpools.

2.1.2.5 Summary

The evaluation of all of the design factors culminated in the Tier Two Draft EIS with the best arrangement of facility type (toll road) and design features that together form a complete Build Alternative.

At two locations, more than one design alternate remained at the Draft EIS stage of the NEPA process:

- Two interchange alternates remain at the Elmhurst Road and I-90 interchange.
- Four intersection alternates remain at the IL 72 and Elmhurst Road intersection.

The comments received on the Tier Two Draft EIS included suggestions for several design refinements. In consideration of those suggestions, several revisions occurred and have now been included in the Build Alternative. The project footprint reflects these changes, and the environmental impacts detailed in this Tier Two Final EIS have been appropriately updated. The design refinements are described in the following subsection, and a detailed description of the alternatives follow.