5. Finalist System Alternatives and Build Alternatives (Module 3)

This section summarizes Module 3 of the alternatives development and evaluation process. This step had the following objectives:

- Develop representative conceptual layouts for the improvement corridors within the Roadway System Alternatives to allow comparative evaluation of their potential impacts and performance.
- Through an iterative process, perform an analysis and detailed screening of transit improvement strategies.
- Through an iterative process, identify the relative best Roadway System Alternatives and complementary transit improvements to carry forward for detailed consideration as Draft EIS Build Alternatives.
- Develop comprehensive multimodal Build Alternatives to support an evaluation of their relative performance, costs and environmental consequences.

Chapter 5 describes the procedures used to develop and evaluate Finalist System Alternatives, the range of roadway and transit alternatives considered along with evaluation findings, and presents features and performance characteristics of the Draft EIS Build Alternatives.

5.1 Alternatives Development and Evaluation Procedures

A broad array of alternatives was considered at this stage of the alternatives development process: potential improvements to the roadway system, transit system, and to bicycle/pedestrian facilities. Whereas travel demand and system management strategies are effective methods for enhancing transportation system performance, they will be considered with future Tier Two studies. Improvements to the various transportation modes (e.g., roadway versus transit) initially were considered independently, then combined to form complete multimodal Build Alternatives for detailed consideration in the Draft EIS.

Roadway system alternatives were developed and evaluated through an iterative process that was structured to enable a broad range of roadway system alternatives to be considered, while providing meaningful opportunities for stakeholder input. Where appropriate, roadway alternatives were developed so as to preserve opportunities for shared roadway and transit services along an improvement corridor. Transit alternatives were developed and evaluated through an iterative screening process structured to identify feasible transit improvement corridors and technologies (e.g., light rail, bus rapid transit) related to the study area transit market. Following the identification of roadway and transit improvements to be carried forward for detailed consideration as Build Alternatives, a set of complementary bicycle/pedestrian improvement strategies was developed. This section discusses procedures and assumptions used to develop and evaluate roadway and transit alternatives, as well as procedures used to assemble and evaluate complete multimodal Build Alternatives.

5.1.1 Roadway System Alternatives Procedures

Three layers of evaluation were used to develop, evaluate and screen the 10 roadway system strategies carried forward from Module 2. The first layer, Initial System Alternatives, was a geographic information system (GIS) analysis aimed at evaluating the relative environmental and socioeconomic impacts of the alternatives. Of the 10 Initial Roadway System Alternatives considered, three were found to have relatively high impacts and were therefore dropped from further consideration for that reason. The second layer focused on developing and refining a working representative conceptual layout for the seven Finalist Roadway System Alternatives. The representative conceptual layout was developed to provide stakeholders with an understanding of key characteristics of the alternatives, and to allow a comprehensive comparison of their performance, initial costs, and environmental and socioeconomic impacts. This analysis served as the basis for identifying the roadway component of the Tier One Draft EIS Build Alternatives. The third layer, Build Alternatives, focused on refining the representative conceptual layout of the remaining roadway alternatives to include proposed transit improvements and complementary bicycle/pedestrian improvements.

The alternatives were developed at a conceptual design level of detail suitable to define reasonable footprints, assess impacts, determine costs, measure travel performance, and ultimately to support identification of the Recommended System Alternative for the study area. The level of design detail is less than that for a traditional Illinois Department of Transportation (IDOT) Phase One planning/environmental study. During the Tier One EIS process, alternatives were developed to the level of detail required to enable stakeholder review of the alternatives, to allow an overall review of design feasibility, to support travel demand modeling and system transportation performance analyses, to allow a comparative evaluation of initial costs, and to permit GIS based evaluation of social, environmental and economic impacts. Initially, alternatives for different travel modes (roadway and transit) were developed and evaluated separately, and the best performing roadway and transit improvements were then combined with complementary bicycle/pedestrian improvements to form complete Build Alternatives.

The section below describes the general assumptions and procedures used to develop and evaluate the Initial and Finalist Roadway System Alternatives.

5.1.1.1 Concept Design Guidelines and Concept Design Criteria

The procedure used to develop the Roadway System Alternatives began with outlining project concept design guidelines (see Appendix C). Project concept design guidelines provide a framework for the alternatives development and evaluation process to ensure that proposed improvements are technically viable and consistent with appropriate design policies and practices. These guidelines are supported by a set of more detailed design criteria (see Appendix C) that will be followed to ensure that the proposed concept design is consistent with applicable design standards. Concept design guidelines identify the following elements which form the basic design philosophy used to develop a representative concept layout for the Roadway System Alternatives:

- Priority of movements for route continuity
- Preliminary basic lane requirements
- Corridor sizing input:
- General access considerations

- Lane balance/lane continuity
- Existing roadway infrastructure reuse
- Ramp considerations
- Interchange types
- Design speed
- Level of service (LOS)
- Federal Aviation Administration (FAA) design considerations

While a working representative conceptual layout was developed to permit an evaluation of system alternatives, detailed consideration of design alternatives and potential design exceptions will be addressed with future Tier Two studies.

5.1.1.2 Development of Representative Roadway Conceptual Layout

Representative conceptual layouts were developed for the Initial and Finalist Roadway System Alternatives, and subsequently for the remaining Build Alternatives. The objective at this stage was to develop a working design layout for each improvement corridor considered, with the understanding that Tier Two studies will focus on optimizing the geometric and design features and footprints of the Recommended Alternative. Layouts were developed to aid in the development of a corridor location and associated estimated construction footprint. Stakeholder input, context-sensitive solution principles, and environmental sequencing (e.g., avoidance and minimization of impacts) were important considerations during the development of representative conceptual layouts.

The layouts for alternatives were developed to a progressively greater level of detail. At this stage, they were developed to illustrate representative horizontal characteristics of the roadway improvements in each corridor. For the Initial Roadway System Alternatives, a general corridor location and width was identified to allow development of an initial estimated construction footprint. The initial estimated footprint requirements were developed using typical cross section treatments and standard footprint widths, as well as initial interchange location concepts along the corridors. With the Finalist Roadway System Alternatives, the representative horizontal layout of roadway improvements within each corridor was refined as follows:

- A working horizontal alignment and conceptual lane requirements were developed for new freeway corridors. This included consideration of basic and auxiliary lane requirements along mainline, as well as frontage road requirements to accommodate local traffic circulation patterns. The horizontal layout was developed to illustrate proposed crossing locations (new overpasses/underpasses) with other facilities. The representative alignment was developed to minimize impacts to adjacent land uses and sensitive areas, and to reasonably comply with guiding design principles and design criteria.

- Where possible, new freeway facilities associated with the project (Elgin O'Hare Extension, West Bypass, IL 83) were suggested through stakeholder input and sited within existing right-of-way preserved for transportation uses. For areas where new freeway facilities would need to be sited along new corridors, multiple corridor location options were developed and evaluated. This included consideration of multiple North Connection Options for the IL 83 and West Bypass, and multiple South Connection Options for the West Bypass.

- Representative interchange types and layouts were developed for proposed system and service interchange locations. Proposed interchange locations were identified on the basis of system design principles, consideration of access policies along full access controlled highways, and stakeholder input. General improvement requirements along connecting arterial and freeway facilities were identified for each proposed interchange location, including improvements to arterials and intersections within the interchange influence area, modifications to adjacent arterials and local roadways (to accommodate traffic redistribution/off-system impacts), and widening of freeway sections to accommodate system connections. Interchange type studies and Access Justification Reports will be prepared with future Tier Two studies.
- For arterial widening corridors identified with the Finalist Roadway System Alternatives, the representative horizontal layout was developed to accommodate an additional travel lane in each direction generally following the existing arterial alignment. Representative conceptual improvements to existing interchange were identified. At this stage, potential new grade-separated interchange locations were identified at high-volume major intersection junctions. A representative interchange type and layout was developed to aid in the identification of estimated construction footprint requirements.
- Supporting improvements to adjacent existing roadways were added where needed to address traffic impacts resulting in changes in travel patterns with the Finalist Roadway System Alternatives. The general location, termini, and representative horizontal layout for these improvements were developed.

Following identification of the Tier One Draft EIS Build Alternatives, the working design layout of the proposed roadway improvements was refined to accommodate a representative layout for complementary transit and bicycle/pedestrian improvements, and to address stakeholder input. A working representative mainline vertical profiles was then developed for new freeway corridors to illustrate general alignment characteristics and to confirm design viability at critical locations. An understanding of the basic vertical design requirements was carefully considered in the development of representative conceptual layouts. Vertical controls at roadway junctures (i.e., multilevel interchanges, crossroads, freight rail crossings, runway protection zones) and also vertical grade design criteria were reviewed in the development of conceptual horizontal layouts. The horizontal layouts were developed to accommodate workable vertical design characteristics. Estimations of relative roadway elevations, topographic characteristics, and profile grade requirements helped to identify conceptual structural requirements (bridges, tunnels, retaining walls) along the proposed corridors.

Typical section treatments were developed for each corridor. The typical sections illustrate the number of proposed travel lanes, representative roadside treatments and widths, representative median treatments and width, local traffic circulation features (e.g., frontage roads), and where appropriate reservations for potential dedicated transit facilities and bicycle/pedestrian facilities.

5.1.1.3 Roadway System Alternatives Evaluation Procedures

The alternatives evaluation was structured to include quantitative performance analyses based on available information at this conceptual level of system alternatives development, and to provide continuing opportunities for stakeholder input. Four criteria areas were used throughout the alternatives evaluation process:

- **Travel and design performance evaluation criteria** focused on relative systemwide travel performance and on assessment of potential design feasibility issues. Nine separate performance criteria were used to evaluate alternatives with respect to their ability to: improve local and regional travel performance (regional travel throughput —a ratio of the vehicle miles of travel (VMT) to the vehicle hours of delay (VHD), congested vehicle miles of travel on the secondary roadway system, network travel speeds on principal arterials; annual travel time savings); improve travel efficiency (travel time savings, areas with improved freeway/interstate access, and number of trips with improved freeway/interstate access); and improve O'Hare west access (travel time savings for representative trip pairs from the west and northwest).

- **Financial evaluation criteria** included consideration of initial implementation costs for alternatives, including construction, right-of-way acquisition, and engineering to provide an order-of-magnitude comparison of the overall roadway improvement costs in existing (2009) terms.

- **Socioeconomic evaluation criteria** included consideration of six evaluation measures: potential structure and business displacements (commercial, industrial, residential); number of potential noise sensitive areas affected; lost tax revenue; employee displacements; cemeteries impacted; and community facilities impacted.

- **Environmental evaluation criteria** considered the potential impact on federal and state regulated resources. The nine criteria evaluated included: water resource impacts (wetlands, waters, floodplains); stormwater detention requirements; recreational land impacts (acres of designated lands, number of parks); threatened/endangered species impacts (number of listed species); historical/archaeological impacts (number of historical sites, number of archaeological sites).

Specific measures of effectiveness were used to compare performance of each alternative. The evaluation criteria were structured to provide a quantitative and objective comparison of the alternatives, with a focus on identifying key performance differentiators and supporting the alternatives screening decisions at hand. Evaluation criteria were developed with stakeholder input and reflect consideration of federal and state regulatory requirements and Context Sensitive Solutions (CSS) principles. Table 5-1 lists the evaluation criteria considered with each part of the roadway alternatives evaluation process.

Initial Roadway System Alternatives Evaluation. The relative environmental and socioeconomic impacts of the ten Roadway System Alternatives carried forward from Module 2 (see Section 4.5) were evaluated using the project GIS database. The objective was to determine whether any alternatives would result in relatively high impacts to sensitive land uses and resources. The evaluation was based upon the initial estimated construction footprints for the Initial Roadway System Alternatives, which were developed using procedures described in Section 5.1.1.2. For analysis purposes, a common representative corridor location was used. For IL 83 representative Connection Option B was used and for the West Bypass Connection Option D was used at the north connection and Connection Option E was used at the south connection.

TABLE 5-1
Evaluation Criteria

	Initial System Alternatives (10)	Finalist System Alternatives (7)	Connection Options	Build Alternatives (2)[a]
Travel Performance: Improve Local and Regional Travel[b]				
Percent increase in regional travel efficiency in study area		x		
Percent decrease in congested vehicle miles of travel on secondary roadways		x		x
Percent increase in network speeds on principal arterials		x		x
Percent savings in annual work days per employee (actual number of days saved)				x
Travel Performance: Improve O'Hare West Access[b]				
Selected trip pair travel time savings from Northwest study area		x		x
Select trip pair travel time savings from west study area to O'Hare West		x		x
Travel Performance: Improve Travel Efficiency[b]				
Area with travel time savings of greater than 5 percent in study area		x		x
Percent increase in area with travel within 5 minutes to interstate		x		x
Percent increase in trips within 5 minutes to interstate		x		x
Travel Performance: Improve Modal Connections[b]				
Percent Increase in transit trips				x
Percent increase transit mode share				x
Design Performance				
System design feasibility		x		
Design/Travel Performance			x	
Financial Performance Criteria				
Roadway construction costs		x		x
Right-of-way costs		x		x
Total construction costs		x		x
Construction Cost Range			x	
Transit Cost				x
Environmental Criteria				
Acres of wetlands	x	x	x	x
Acres of waters		x	x	x
Number of stream crossings				x
Acre-feet of stormwater detention		x	x	x
Acres of 100-year floodplains	x	x	x	x

TABLE 5-1
Evaluation Criteria

	Initial System Alternatives (10)	Finalist System Alternatives (7)	Connection Options	Build Alternatives (2)[a]
Acres of designated/recreational land (forest preserves, wildlife areas, etc.)	x	x	x	x
Number of parks		x	x	
Potential number of parks and forest preserves 4(f) properties				x
Potential number of state-listed endangered species sites	x		x	
Potential number of state-listed endangered species		x		x
Number of historical sites	x	x	x	x
Number of archaeological sites	x	x	x	x
Number of high, medium and low risk special waste sites				x
Socioeconomic Criteria				
Number of building structure displacements (commercial, industrial, residential)	x	x	x	x
Number of potential noise sensitive areas impacted		x	x	x
Number of noise sensitive non-residential areas				x
Lost tax revenue (2007)		x	x	x
Employee displaced		x	x	x
Number of cemeteries impacted	x	x	x	x
Number of community facilities displaced (churches, hospitals, schools, fire stations)	x	x	x	x

[a] Build Alternatives evaluation include the Connection Options.

[b] For Initial and Finalist Alternatives travel performance was evaluated on the basis of 2030 baseline socioeconomic data, whereas for the Build Alternatives the travel demand model and travel performance analysis were updated to reflect alternative specific forecasts and the effect of transit improvements on the mode split.

Potential impacts to sensitive environmental and socioeconomic resources were estimated using the project GIS database, which contains data of community/environmental features in the form of maps, charts and tables obtained from federal, state, and local agencies and from private GIS software vendors. The GIS analysis provided a means by which to efficiently estimate environmental and societal impacts through spatial analysis of available resource data. Subsequently, a scoring system was used to compare the relative number of potential impacts associated with each alternative. This evaluation tool helped to characterize the overall relative potential impacts of alternatives.

Impact analysis findings, comparative alternative scoring results, and stakeholder input were used to identify alternatives with relatively high impacts. Of the ten Roadway System Alternatives considered, three alternatives were dismissed from further consideration due to comparably high impacts.

Finalist Roadway System Alternatives Evaluation. The remaining seven Finalist Roadway System Alternatives were evaluated on the basis of their overall relative travel performance, costs, environmental impacts, and socioeconomic impacts. The objective was to identify the optimal alternatives to carry forward as Build Alternatives. The evaluation was performed on the basis of the representative conceptual layout and refined estimated construction footprints, including required improvements to adjacent roadways as described in Section 5.1.1.2. A common representative corridor location was used along the new corridor parts of the IL 83 and West Bypass corridors.

As the project progressed, the IL 83 and West Bypass Connection Option near I-90 and I-294 were evaluated independently of the overall roadway system alternatives. As a result, the evaluation of the Initial Roadway System Alternatives was performed assuming a representative connection location, specifically at IL 83 Option B, West Bypass North Connection Option D, and West Bypass South Connection Option E.

The travel performance of alternatives was evaluated using the travel demand modeling tool, with a focus on systemwide travel performance measures related to the purpose of and need for the project. The overall design feasibility of the roadway system alternatives was reviewed to identify areas with potentially fatal design flaws. Initial planning-level estimated costs were developed for each alternative, including initial construction, right-of-way acquisition, and engineering costs. The initial planning level costs were developed in present year (2009) dollars and do not reflect implementation year cost escalation. Impacts to environmental and socioeconomic resources were considered using an expanded list of evaluation factors and updated GIS database information related to adjacent land uses and resources.

A three-part approach was used to compare the relative merits of the seven alternatives, with the goal of identifying the best overall performing alternatives to carry forward as build alternatives. The approach consisted of a comparative scaled scoring system; a qualitative comparison of differentiating features of alternatives and their key advantages and disadvantages; and stakeholder input. Performance analysis findings coupled with stakeholder input were used to identify the optimal set of roadway alternatives to carry forward as build alternatives. Of the seven Finalist Roadway System Alternatives considered, two alternatives were proposed to be carried forward as the roadway component of the Build Alternatives.

Build Alternatives Evaluation. The remaining two roadway build alternatives were evaluated using procedures and criteria similar to those in the prior step of the process. The one notable refinement to the evaluation process was use of a refined travel demand model reflecting alternative specific socioeconomic forecasts for each of the remaining build alternatives, as well as trip assignments reflecting proposed transit improvements and transit mode share estimates. The build alternative travel demand model reflected detailed network coding and attribute information that represented alternative specific socioeconomic forecasts and corridor sizing assumptions developed in the initial alternative evaluation process.

The evaluation was performed on the basis of the refined representative conceptual layout and refined estimated construction footprints, including accommodations for transit and bicycle/pedestrian improvements along roadway improvement corridors.

North and South Connection Options Evaluation. The IL 83 and West Bypass Connection Options near I-90 and I-294 were evaluated independently of the roadway system alternatives to allow a one-to-one comparison of connection options. The objective of this analysis was to identify and dismiss from consideration connection corridor options with inherently fatal design flaws, and to identify an appropriate range of corridor connection options for detailed consideration with the build alternatives. The evaluation was performed on the basis of the representative conceptual layout and refined estimated construction footprints developed for each connection option described in Section 5.1.1.2.

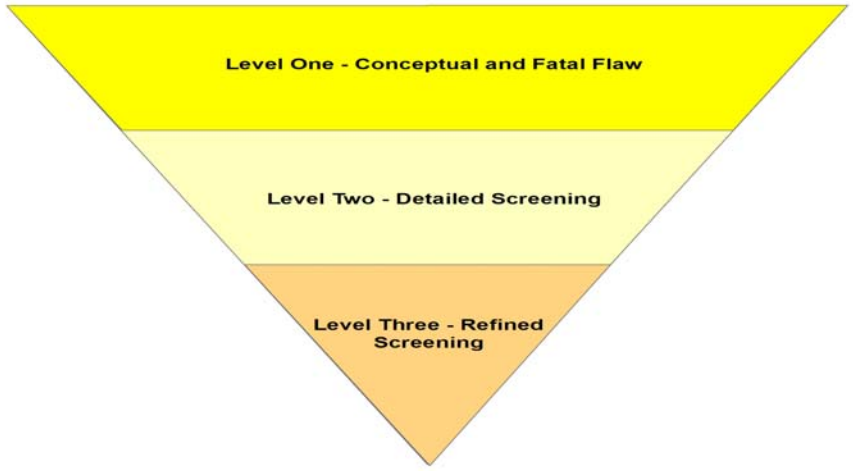
The evaluation of connection options considered criteria similar to those used in the evaluation of roadway system alternatives: initial costs (construction and right-of-way); environmental impacts (wetlands, floodplains, designated lands); and socioeconomic impacts (displacements, tax revenue loss, job loss). Design performance characteristics of the connection options were also evaluated using both quantitative and qualitative analyses aimed at identifying potential major performance issues with the connection options.

Performance analysis findings coupled with stakeholder input were used to identify a viable range of connection options to be carried forward with the Build Alternatives for detailed consideration in the Draft EIS.

5.1.2 Transit System Alternatives Procedures

As noted in Chapter 4, four transit system concepts were developed. They ranged from a high-level of investment with a concentration of fixed facilities, to a minimal investment level consisting largely of bus services operating on the roadway system. Two other options combined different elements of new fixed facilities and bus services. In reviewing the four options, it was determined that each element proposed as a transit system improvement had potential merit as a standalone project, and should be evaluated independently, with the intent of reassembling the best-performing improvements into a coordinated and comprehensive system.

EXHIBIT 5-1
Transit Three-Step Screening Process



To accomplish this revised approach to analyzing transit system improvements, a three-step process was used to evaluate each individual transit improvement (Exhibit 5-1).

Level One, Screening for Conceptual and Fatal Flaws, examined a broad range of initial alternatives derived from earlier studies and meetings with participating agencies and stakeholders. This step had the following focus:

- Eliminate improvements that are physically infeasible, difficult to implement because of modal conflicts or physical constraints, or too removed from the study area.
- Eliminate improvements that have no reasonable chance for implementation by 2030.
- Evaluate improvements based on whether household densities meet the thresholds required to support transit service.
- Assess improvements based on concentrations of employment density.
- Assess improvements based on connecting the region's air traveler markets to O'Hare Airport.

The Level One screening analysis considered an area extending one mile on either side of each alignment corridor (buffer zone).

Level Two, Detailed Screening, included a more detailed definition of transit services along improvement corridors, as well as a reexamination of markets to be served. There have been some additions to the study area transit system. One replaces an eliminated rail line with a bus route in a parallel alignment. Three others address markets in the expanded study area that had not been identified earlier. And to complement the system, two types of services—circulators and employer shuttles—were identified to make essential connections to the fixed and regional routes.

A key consideration in refining the transit system to be screened was eliminating gaps and connecting the various system elements. This screening entailed the following:

- Evaluating transit routes after the Screen One refinements
- Refining the hierarchy of corridors to include high capacity lines with rail or bus rapid transit (BRT) services, high-level bus services such as arterial rapid transit (ART) or express bus, local bus routes, and local circulators and employer shuttles,
- Locating stations on proposed regional routes
- Establishing one-mile buffer zones around the station areas and analyzing four measures of market vitality in those zones:
  - Employment sites with 75 or more employees
  - Residence locations of study area workers, represented as density per square mile
  - Work locations of study area residents, also represented as density per square mile
  - Where O'Hare air travelers begin and end their trips, projected to 2020, and represented as trip density per square mile
- Identifying the best performing improvement corridors for a more rigorous Screen 3 analysis.

Concept sketches were developed for different types of intermodal facilities to illustrate how high- level improvements would both appear and function in certain environments.

Level Three, Refined Screening, was performed during the evaluation of the Draft EIS Build Alternatives. This step focused on evaluating the travel performance of the remaining transit improvement corridors. The operating characteristics of the circulators and employer shuttles were not included in the modeling phase because the final fixed route location was not

TABLE 5-2
Initial Roadway System Alternatives Features

			New Freeway / Tollway Corridor Miles	Arterial Widening Corridor Miles
System Expansion Alternatives				
Group 2	201	Elgin O'Hare with IL 83 and partial bypass (south)	16	2¼
	202	Elgin O'Hare with partial IL 83 (north) and partial bypass (south)	12¼	2¼
	203	Elgin O'Hare and West Bypass	12	2½
	204	Elgin O'Hare with IL 83 bypass	12	3¼
	205	Elgin O'Hare and West Bypass (north) and IL 83 bypass (south)	12	2½
Combination Alternatives				
Group 4	401	Elgin O'Hare with partial bypass (south) and IL 83 improved (north)	9½	4½
	402	Elgin O'Hare with partial bypass (south) and York Rd (north)	9½	3½
	403	Elgin O'Hare with partial bypass (south) and IL 83 improved arterial	9½	6½
	404	Elgin O'Hare with partial bypass (north) and IL Rte 83 improved (south)	8½	3½
Group 5	501	Elgin O'Hare with IL 83, York Road and IL 19 improved arterials	5	14

established at the time. For each remaining fixed route, socioeconomic factors pertaining to transit dependence were analyzed preliminary to this screening level. They included identifying the number of households with zero cars or one; residents who are 65 or more years old; and incomes of $50,000 or less. This analysis also focused on a buffer zone within one mile of each station area and identifying opportunities for bicycle and pedestrian links.

5.2 Initial Roadway System Alternatives

This section describes the ten Initial Roadway System Alternatives. The focus of this step was to develop the remaining Initial Roadway System Alternatives to allow a comparison of the relative environmental and social impacts of the alternatives.

Ten Initial Roadway System Alternatives were considered (Exhibit 5-2, and Exhibits 5-3.1 through 5.3.10*)*. Table 5-2 summarizes the addition in miles of alternatives with system expansion improvements (new roadways) and the addition in miles of alternatives with combination improvements (new roadways and widening of existing roadways). The alternatives generally represent two categories of improvements:

- System Expansion Alternatives 201, 202, 203, 204, and 205 provide an easterly extension on the Elgin O'Hare from its terminus west of I-290, along with a new north-south

freeway located along the west side of O'Hare Airport (West Bypass) or along existing IL 83, connecting with I-90 on the north and I-294 on the south.

- Combination System Alternatives 401, 402, 403, 404, and 501 provide some new freeway and tollway facilities along with select arterial roadway improvements. These alternatives feature a full or partial easterly extension of the Elgin O'Hare, a partial West Bypass, and widening improvements along select arterial roadways

A preliminary conceptual layout was developed for the ten Initial Roadway System Alternatives. The layout was developed to represent the location of the improvement corridor, locations and preliminary layouts of grade-separated interchanges (for new freeway service interchanges and for high volume arterial intersections), and a preliminary estimated footprint. The footprint was developed using a general cross section treatment for various facility types. Cross section treatments along improvement corridors were developed with stakeholder input and, where appropriate, reserved the opportunity for dedicated transit service (e.g., bus rapid transit, light rail).

A representative location was identified for each proposed improvement corridor based on consideration of adjacent constraints (environmental and land use features) and stakeholder input. The following general locations were assumed:

- **Elgin O'Hare Extension—** This corridor follows Thorndale Avenue from west of Meacham Road to the Thorndale Avenue/York Road intersection. It is basically consistent with the location identified as part of the Elgin O'Hare Expressway studies performed by IDOT in the 1990s (Elgin O'Hare Expressway EIS, 1990). Service interchanges are provided at Rohlwing Road, Park Boulevard, Prospect Avenue, Wood Dale Road, IL 83, and York Road.

- **West Bypass—** The corridor generally follows York Road/Elmhurst Road along the west side of O'Hare International Airport between I-90 to the north and IL 19 (Irving Park Road) to the south. The corridor location was assumed to be sited within the 300 foot transportation corridor contained in the O'Hare Airport Layout Plan (2005) extending from south of IL 19 to Pratt Boulevard, just north of Devon Avenue and east of York Road. North and south of those points, the corridor was sited along a new roadway alignment to a new system interchange connection at I-90 and I-294, respectively. Stakeholders identified potential corridor locations for the connection sections (see Exhibit 5-4). For the purpose of establishing a preliminary conceptual layout and estimated footprint, a common potential corridor location was used for the north and south connections. For the north connection, Option D, which is located along the Union Pacific Railroad (UPRR) corridor, was used for the comparative analysis. For the south connection, Option E, adjacent to Wolf Road and 3,000 feet east of the UPRR corridor, was used for the analysis. Service interchanges were assumed to be provided at IL 72, Elmhurst Road, IL 19, and Franklin Avenue.

- **IL 83—** The corridor follows IL 83 between I-90 and I-294. The corridor location was assumed to be between I-290 and I-90 and to follow the centerline alignment of IL 83 before reaching Landmeier Road to the north. As with the West Bypass, stakeholders identified various potential connection options for the IL 83 connection at I-90. Option B, which runs northeast across Landmeier Road and intersects I-90 south of Oakton Avenue, is located east of the IL 83 /Busse Road/Oakton Avenue intersection, which

was used for the purpose of this initial analysis. Service interchanges were assumed to be provided at Landmeier Road and Devon Avenue in split-diamond form.

- **Arterial Widening (IL 83, Elmhurst/York Road, IL 19)—** Widening improvements were proposed along select major arterial corridors for alternatives not including a full north-south freeway between I-90 at I-294. Generally, they will provide one additional travel lane in each direction and associated intersection improvements.

TABLE 5-4
Initial Roadway System Strategies: Number of Potential Building Displacements

Alternative	Total Number of Potential Impacts
203	42
402	49
401	60
202	88
404	109
403	151
501	139
205	302
204	344
201	368

Exhibits 5-5.1 through 5-5.4 show typical cross section treatments used to develop the preliminary footprint estimates. Exhibit 5-6.1 through 5-6.10 show the preliminary conceptual layout of the Initial Roadway System Alternatives illustrating improvement locations, interchange locations, and estimated footprint requirements.

5.3 Initial Roadway System Alternatives Evaluation

The relative potential environmental and socioeconomic impacts of the Initial Roadway System Alternatives were evaluated with the aid of the project GIS database using procedures and criteria described in Section 5.1.1.3, including consideration of impacts to natural resources (wetlands, floodplains, designated/recreation land, threatened and endangered species), cultural resources (historic sites and archeological sites), and socioeconomic impacts (buildings, cemeteries, community facilities). Table 5-3 (attached table) summarizes the findings of the impact analysis for the Initial Roadway System Alternatives.

The impact analysis revealed that Alternatives 201, 204, and 205 had relatively high environmental and socioeconomic impacts (see Table 5-4). All three alternatives included a new IL 83 corridor between Thorndale Avenue and I-290, which resulted in substantially higher displacement impacts as compared to other alternatives.

Based on evaluation findings and stakeholder input, the following alternatives were dismissed from further consideration:

- Alternative 201 (Elgin O'Hare Extension with IL 83, north and south leg), and with West Bypass (south leg) was dismissed, because it would result in substantially higher overall structure displacements (including more than 300 structure displacements).
- Alternative 204 (Elgin O'Hare Extension with IL 83, north and south leg) was dismissed, because it also would result in more than 300 structure displacements.

- Alternative 205 (Elgin O'Hare Extension with West Bypass, north leg, and IL 83, south leg) was dismissed because it would result in more than 300 structure displacements.

5.4 Finalist Roadway System Alternatives

Seven Roadway System Alternatives and a range of potential connection options for the West Bypass and IL 83 were considered during this step (Exhibit 5-7). The alternatives were refined to confirm overall design feasibility, to identify needed supporting improvements, and to allow a comparative evaluation of their relative performance, initial costs, environmental impacts, and social impacts. The objective was to identify the best and feasible alternatives to retain for detailed consideration in the Tier One Draft EIS. Exhibit 5-8.1 through 5-8.7 show the conceptual layout of the seven alternatives, illustrating improvement locations, interchange locations, and estimated footprint requirements.

This section summarizes the representative conceptual layout of the alternatives with supporting improvements. Also included is a summary of conceptual studies undertaken to identify potential drainage concepts, general structure requirements, and design concepts near major freight rail facilities.

5.4.1 Corridor Sizing

A basic design characteristic of new access-controlled highways is corridor sizing: the number of basic (through) travel lanes, and the location and type of auxiliary lanes required to accommodate travel within the corridor. Corridor sizing requirements are driven by two inputs: forecast year traffic and level of service (LOS); in other words, the level of traffic demand and the operational quality for which the facility is designed. Although forecast year traffic and level of service guide the determination of corridor sizing, several important policy and design elements also must be considered when sizing new freeway corridors. These include financial feasibility, operational acceptability, motorist expectations, and stakeholder acceptability related to potential social and environmental impacts.

Preliminary corridor sizing requirements were developed for new and existing roadways using information readily available at this early conceptual phase of the project; specifically, preliminary traffic forecasts obtained from the project's travel demand model. The objective was to identify preliminary lane configurations to allow the estimation of footprint requirements for the alternatives under consideration. The conceptual sizing requirements were then applied to all the proposed corridors, with the understanding that detailed design year traffic and refined corridor sizing requirements will be identified with future Tier Two studies.

The following guidelines and procedures were used to establish preliminary corridor sizing requirements for new and existing roadway corridors with the Finalist Roadway System Alternatives:

- For new freeways and for the proposed widening of the existing Elgin O'Hare Expressway between Rohlwing Road and Gary Avenue, preliminary basic (through) lane and auxiliary lane requirements were established for one representative System Expansion Alternative—Alternative 203. This alternative was generally assumed to represent the "worst case" traffic scenario for the Elgin O'Hare and West Bypass corridors, given its' exclusive use of freeway improvements. Projected forecast year

(2030) peak hour traffic forecasts were compiled from the subarea travel demand model for the peak directional (a.m. versus p.m.) movements. The number of basic and auxiliary lanes required to accommodate the desired freeway mainline design LOS C was identified using highway capacity analysis procedures for mainline, weaving, and ramp merge/diverge sections. Level of Service C is characterized by stable traffic flow during peak travel periods. These lane requirements were used mainly in developing the representative freeway conceptual layout. The one exception was in the section of the Elgin O'Hare Extension between I-290 and Prospect Avenue, where the conceptual layout would accommodate mainline LOS D operations due to potential impacts associated with LOS C. These types of issues will be revisited in Tier Two with design alternatives, interchange type studies, and a possible request for a design exception.

- For new freeway sections that include new frontage roads, all new frontage roads were assumed to be two lanes in each direction.
- For existing freeways near new or improved system interchange connections, the number of basic lanes in the 2030 No-Action Alternative condition was maintained. However, auxiliary lanes were added to accommodate appropriate transition areas for entering and existing freeway traffic, and to adhere to basic lane balance principles.
- For arterials where widening improvements were proposed, one additional through lane was added in each direction as compared to the 2030 No-Action Alternative condition.

The corridor sizing used to develop representative conceptual layouts for the finalist alternatives was developed on the basis of the traffic analyses performed at this early stage. This corridor sizing was also used as the basis for the refined conceptual layout of the Build Alternatives. Traffic analyses used to establish these lane requirements were based on a set of preliminary traffic forecasts for one representative Finalist Roadway System Alternative (Alternative 203) in combination with 2030 baseline socioeconomic forecasts and trip mode split included in the 2030 CMAP RTP. During future Tier Two studies, detailed design year traffic will be used to develop refined corridor sizing requirements for build alternatives proposed roadway improvements. The design year traffic will reflect 2030 build alternative socioeconomic characteristics, the final proposed corridor sizing, and build alternative transit mode split. Future Tier Two and preliminary design studies will verify actual lane requirements for all roadway improvement corridors.

The *Finalist System Alternatives Preliminary Lane Requirements Memorandum* in Appendix D contains a detailed summary of corridor sizing requirements for new freeway corridors. Exhibits 5-9.1 through 5-9.3 show preliminary traffic forecasts and associated corridor sizing requirements for the EO-WB corridors.

5.4.2 Off-System Traffic Impacts and Expanded Study Area

An important consideration at this stage was how the Finalist Roadway System Alternatives would affect travel patterns on existing area roadways, and whether any supporting improvements may be required as a result of the travel redistribution. Potential traffic impacts of the remaining alternatives were evaluated by reviewing traffic forecasts for one representative alternative (Alternative 203) with a potential for higher traffic redistribution, since it provides 12 miles of new freeway corridors in the study area. Traffic forecasts for Alternative 203 were compared with forecasts for the 2030 No-Action Alternative. Where

increases in traffic volumes were identified, screen-line comparisons were performed to define changes in travel pattern characteristics. A screen-line analysis compares traffic flow along highway corridors in a given direction (e.g. east – west), illustrating changes in travel patterns between alternatives. Key analysis findings indicate the following:

- Alternative 203 would result in appreciable increases in travel demand along the existing Elgin O'Hare Expressway between its eastern terminus and the IL 19 service interchange.
- Alternative 203 does not appear to result in appreciable traffic impacts along other existing access-controlled highways in the study area (I-90, I-294, I-290/IL53, I-355).
- While traffic demand will increase somewhat near the new service interchanges along the EO-WB, traffic demand on many parallel arterial and local roadways will decrease (as compared to the 2030 No-Action Alternative condition).

As a result of the identified traffic impact along the Elgin O'Hare expressway corridor, the EO-WB study area was expanded to include existing roadways affected by the Build Alternatives considered with this project. The revised study area boundaries are depicted in Exhibit 5-10. A comprehensive analysis was then performed to determine whether supporting off-system improvements are required as a result of the proposed alternatives. Supporting improvements were considered justified in locations where the alternatives would result in the following:

- Corridorwide or localized increases in traffic demand
- Traffic demand exceeding planning level threshold capacity for roadway segments

Planning level analyses were performed to identify locations where supporting capacity improvements may be required with the Build Alternatives. For locations where a measurable traffic increase was identified (greater than 5 percent over 2030 no-action conditions), the need for capacity improvements was evaluated using general planning level threshold capacity for various roadway types. A bidirectional average daily traffic (ADT) threshold of 18,900 vehicles was used for a 2-lane (each direction) arterial. A threshold of 28,500 vehicles was used for a 3-lane (each direction) arterial. A planning-level threshold was used to identify potential intersection improvement locations. A volume of 32,000 vehicles per day (combined ADT for both approaches) was used in this analysis.

Preliminary analysis findings coupled with stakeholder input were used to identify supporting capacity improvements on adjacent existing roadway segments and intersections for Alternative 203. Analysis results along with proposed supporting improvement locations are listed in Table 5-5 and depicted in Exhibit 5-11. The *Travel Redistribution and Supporting Improvement Requirements Memorandum* in Appendix E contains a detailed discussion of the analysis.

Supporting improvements identified through this process were incorporated into the Finalist Roadway System Alternatives, and a representative concept layout and estimated footprint requirement were developed at each improvement location. Note that the analytical findings must be reviewed in more detail with future Tier Two studies to validate traffic redistribution patterns and projected traffic volumes on adjacent roadways.

TABLE 5-5
Supporting Improvements along Existing Roadways for Alternative 203

Number	Roadway	Segment
1	IL 19	Elgin O'Hare Expressway South Frontage Road to Wise Road
2	Gary Avenue	Elgin O'Hare Expressway to north of Travis Parkway
3	Roselle Road	Elgin O'Hare Expressway to Nerge Road
4	Medinah Road	Elgin O'Hare Expressway to IL 19
5	Wood Dale Road	Thorndale Avenue to Devon Avenue
6	IL 72/Touhy Avenue	Elmhurst Avenue to Mt. Prospect Road
7	Elmhurst Road	IL 72 to Oakton Avenue
8	Taft Road	Franklin Avenue to O' Hare Airport Service Road

5.4.3 Representative Corridor Conceptual Layout

As described in Section 5.1.1.2, a representative concept layout was developed for the roadway improvements in each Finalist Roadway System Alternative. The concept layouts are representative and to be used for a comparative performance of the roadway system alternatives. Detailed design alternatives will be developed with future Tier Two engineering and environmental studies for individual roadway improvement projects.

This subsection describes the representative conceptual layout for each roadway corridor proposed for improvement, along with a discussion of key design controls along the corridors. Section 5.5 contains an evaluation of the Finalist Roadway System Alternatives.

5.4.3.1 Elgin O'Hare Corridor

The Elgin O'Hare corridor improvements extend from the Gary Avenue interchange in the west to the future O'Hare West terminal in the east. It consists of the Elgin O'Hare Expressway (extending from Gary Avenue in the west to an eastern terminus west of I-290 near Rohlwing Road) and Thorndale Avenue (extending from east of Rohlwing Road in the west to York Road in the east). The corridor contains three unique improvement segments: Gary Avenue to Rohlwing Road; Rohlwing Road to west of IL 83; and IL 83 to O'Hare West Terminal. Improvements in the first two segments are common to each of the seven Finalist Roadway System Alternatives, but improvements in the IL 83 to O'Hare West Terminal segment vary by alternative. Representative conceptual layouts for various segments of the Elgin O'Hare Corridor are described below.

Gary Avenue to Rohlwing Road. Improvements to the Elgin O'Hare expressway segment consist of widening and reconstructing the expressway. Beginning east of Gary Avenue, the expressway would be widened along the centerline alignment to accommodate three basic lanes in each direction while maintaining median width adequate to accommodate transit if necessary. The existing expressway has an 84-foot median. Auxiliary lanes are provided to maintain lane balance principles and to accommodate high volume ramp traffic. The additional basic lanes and auxiliary lanes would be widened both inside and outside the roadway section.

The full access service interchanges at IL 19, Roselle Road, and Meacham Road would be maintained and improved to accommodate the mainline widening. The half-diamond interchange providing access to and from the east at Rohlwing Road also would be maintained and improved. Conversion of the interchange to full access does not appear feasible because of the proximity of the Meacham Road ramps. A split-diamond interchange concept is used at Springinsguth Road and Wright Boulevard to provide access and local circulation near IL 19. The diamond interchanges will be maintained at Roselle Road and Meacham Road. At service interchanges, arterial roadways within the interchange influence area will be improved as needed. Interchange types and required improvements will be reviewed in detail with future Tier Two studies.

Improvements along this segment of the corridor are common to the seven Finalist Roadway System Alternatives. Appendix F, page F-1, presents the representative conceptual layout and cross sections for this segment of the corridor.

Rohlwing Road to West of IL 83. This segment will be converted to a full access controlled freeway. The conceptual layout generally follows the Thorndale Avenue corridor, and where possible was developed to use existing highway right-of-way. The conceptual layout provides three basic lanes in each direction, with additional auxiliary lanes between high volume interchanges. The center median width (70 to 144 feet) is sized to accommodate potential dedicated transit service. To accommodate local traffic circulation, frontage roads are proposed east of the I-290 interchange. The representative frontage road concept generally consists of two-way frontage roads to minimize the overall corridor footprint. One-way frontage road segments are included where necessary to accommodate slip-ramp access to the local roadway system.

The vertical layout in this segment generally would likely remain elevated, creating opportunity for grade-separated crossings and interchanges. This issue, along with overall concept design, will be revisited in Tier Two. Grade-separated crossings would be provided at major arterial and local roadway crossings, including I-290, Arlington Heights Road, Prospect Avenue, Mittel Road, Wood Dale Road, and Lively Boulevard.

The full-access service interchange at I-290 would be converted to a directional full-access system interchange with a 2-lane loop accommodating westbound to southbound traffic. This loop was provided to minimize cost for the system interchange and to increase the weaving distance for westbound to southbound traffic between the Elgin O'Hare expressway and the I-290/I-355 junction one mile south of the interchange. Part of I-290 extending from Biesterfield Road to north of IL 19 would be improved to accommodate system ramp connections, lane balance, and transitions.

Local access along this segment of the corridor would be provided by service interchanges near Park Boulevard (Arlington Heights Road and Prospect Avenue), Wood Dale Road, and IL 83.

Several access concepts were developed for the Hamilton Lakes complex east of the I-290 interchange. They address concerns raised by the Village of Itasca regarding the high existing and future traffic demand at that site. The Village's goal is to provide full access for all freeway movements (including Elgin O'Hare and I-290 traffic) by service interchange ramp connections at Park Boulevard while avoiding major impacts to existing and planned development at the Hamilton Lakes site. The project team developed a representative concept layout with extensive input from Village staff. The layout consists of a split-diamond

interchange concept with ramp connections at Park Boulevard, Arlington Heights Road, and Prospect Avenue. Local roadways within the interchange influence area would be improved to accommodate traffic circulation patterns and to provide acceptable traffic operation.

Full access service interchanges would be provided at Wood Dale Road. The representative interchange type consists of a split-diamond connected by one-way frontage roads. Local roadways within the interchange influence area would be improved to provide acceptable operation.

As noted in Section 5.4.2, roadway alternatives would result in changes in traffic patterns on adjacent existing roadways, including a forecast increase in traffic demand along Wood Dale Road, necessitating capacity improvements. Based on conceptual analyses, Wood Dale Road would be widened to accommodate three travel lanes in each direction extending from the proposed freeway north to Devon Avenue.

Improvements along this segment of the Elgin O'Hare Corridor are common to the seven Finalist Roadway System Alternatives. Appendix F, page F-2, presents the representative conceptual layout and cross sections for this segment of the Elgin O'Hare corridor.

IL 83 to the O'Hare West Terminal. Between IL 83 and O'Hare Airport, improvements along the Thorndale corridor are dependent on the Finalist Roadway System Alternative configuration. Variations between system alternatives consist of optional facility types along Thorndale Avenue (arterial widening versus new freeway), optional system interchange locations and layouts, and locations of adjacent arterial widening improvements.

Numerous design complexities and constraints were identified, particularly in the vicinity of York Road/Elmhurst Road near O'Hare Airport. Major existing and proposed air and freight rail transportation facilities constrain location and design options for roadway improvements in this area. These include the Canadian Pacific Railway (CPRR) and UPRR lines, which bound the east side of York Road, and existing and proposed runways associated with the O'Hare Modernization Program (OMP). The area west of the new O'Hare West Terminal along the Thorndale Avenue corridor is in a floodplain. Providing embankment and tunneling will change the floodplain properties, requiring mitigation and complicated structural elements. Runway safety and airspace constraints further affected the selection of design attributes for the O'Hare West Terminal interchange. In addition, the FAA does not permit construction of permanent facilities that will encroach into the runway protection zones and glide plane surfaces adjacent to the runways. As a result, the project team began coordinating with the FAA with the objective to identify any design feasibility issues regarding airspace and to assist IDOT with future design parameters (see Section 5.5.1.5). Representative concept layouts for this segment of the Elgin O'Hare corridor were developed to be compatible with existing and proposed transportation system features, and to comply with applicable design criteria. This necessitated the use of complex multilevel system interchange layouts, including extensive construction of new structures (bridges, tunnels, retaining walls).

The representative layout for the seven Finalist Roadway System Alternatives is described below. Appendix F, pages F-3 through F-9, presents the representative conceptual layout and cross sections of Options A through G for this segment of the corridor.

Alternative 202. Alternative 202 consists of constructing a freeway section along Thorndale Avenue between IL 83 and York Road. The conceptual layout generally follows Thorndale Avenue; where possible, it was developed to use existing highway right-of-way. Three basic lanes would be provided in each direction, with additional auxiliary lanes between high volume interchanges and frontage roads to accommodate local traffic circulation. The median width is sized to accommodate potential dedicated transit service.

Two three-leg system interchanges are provided. A three-level Y-type system interchange between the Elgin O'Hare Extension and IL 83 accommodates system travel movements between west and north, and between south and north. Service ramps would accommodate local connections to the IL 83 arterial roadway north and south of the proposed freeway. A tri-level three-leg system interchange would be constructed near York Road, accommodating system travel movements between west and south, and between south and north. The interchange would provide access to the proposed O'Hare West Terminal (from the west, north, and south), and a full access service interchange with access to York and Elmhurst roads. The representative conceptual layout includes a tunnel for the eastbound freeway and local road traffic entering the O'Hare West Terminal.

Alternative 203. Alternative 203 provides a mainline freeway and frontage road system along Thorndale Avenue, similar to Alternative 202, with a different configuration for system and service interchange access. It also provides a full access service interchange at IL 83. The representative conceptual layout for the interchange consists of a split-diamond type interchange with slip ramp connections to the proposed frontage road system east of Wood Dale Road and east of IL 83. Local roadways within the interchange influence area would be improved to provide acceptable operations.

A tri-level four-leg system interchange would be provided at the junction of the Elgin O'Hare Extension, the north and south legs of the West Bypass, and the proposed O'Hare West Terminal entrance. Because of design constraints, local access to York Road/Elmhurst Road cannot be provided near the system junction. The representative conceptual layout includes tunnels for the southbound to westbound and eastbound to northbound system interchange movements.

Alternatives 401, 402, and 403. Alternatives 401, 402, and 403 all provide a mainline freeway and frontage road system along Thorndale Avenue, similar to Alternatives 202 and 203, with a different configuration for system and service interchange access and different locations for adjacent arterial capacity improvements. The three alternatives include only the south leg of the West Bypass.

As with Alternative 203, these alternatives provide a full access service interchange at IL 83. The representative conceptual layout for the interchange consists of a split-diamond type interchange with slip ramp connections to the proposed frontage road system near Wood Dale Avenue and east of IL 83. Under Alternative 401, the IL 83 corridor north of Thorndale Avenue would be widened to accommodate arterial capacity improvements included in Alternative 401. Under Alternative 403, both the north and south legs of IL 83 would be widened (see Section 5.4.3.2) for a discussion of the proposed IL 83 widening).

As with Alternative 202, the three alternatives provide a tri-level, three-leg system interchange near York Road. The interchange complex would accommodate system travel movements between west and south and between south and north, access to the proposed

O'Hare West Terminal, and service access to York Road/Elmhurst Road. With Alternative 402, capacity improvements are proposed along the north leg of Elmhurst Road.

Alternative 404. Alternative 404 provides a mainline freeway and frontage road system along Thorndale Avenue similar to Alternative 203, with a different configuration for the system interchange and with adjacent arterial capacity improvements. It includes only the north leg of the West Bypass. Alternative 404 provides a full access service interchange at IL 83, with slip ramp connections to the proposed frontage road system. It also includes arterial capacity improvements along the south leg of IL 83 (see Section 5.4.3.2 for a discussion of the proposed IL 83 widening).

Alternative 404 provides a tri-level, three-leg system interchange with the West Bypass north leg and the O'Hare West Terminal. Tunneling requirements are extensive given the location of the interchange directly off the proposed runway extension at Runway 9R, directly adjacent to the O'Hare West Terminal.

A two-level tunnel is required for the southbound West Bypass to O'Hare West Terminal movement. Conceptual studies revealed potential design feasibility issues with the layout. Creating a tunnel more than 50 feet below ground would have severe drainage implications during construction and after the structure is in place. The pore water pressure at this depth, given that the tunnel is located in a floodplain, would increase seepage into the structure creating the need for an elaborate pumping system. Also, structural elements would require special design attributes to handle the water pressure, and the roadway approaches would be extremely lengthy to meet profile design standards.

Alternative 501. Unlike the other alternatives, Alternative 501 would terminate the Elgin O'Hare Extension at IL 83 and widen the Thorndale Avenue arterial section from east of IL 83 through York Road/Elmhurst Road. A full access service interchange would be provided at IL 83. East of IL 83, the freeway section would end and transition to an arterial section. Thorndale Avenue would be widened to four lanes in each direction. The intersection of Thorndale Avenue, York Road, Elmhurst Road, and the O'Hare West Terminal would be grade separated with "jug-handle" connections for directional movements. Additional arterial widening improvements in Alternative 501 include IL 83 (north and south legs), and York Road (south leg) (see Section 5.4.3.2 for a discussion of the proposed arterial widening).

Conceptual studies revealed potential design viability and operational issues with the freeway terminus at an existing arterial. This condition would create an unexpected access control and speed change for drivers, transitioning from a facility with a 70 mph design speed to an arterial facility and entrance to the O'Hare West Terminal. This condition would also result in potential localized traffic operational issues in the vicinity of the freeway terminus, as well as potential traffic impacts on adjacent roadways.

5.4.3.2 West Bypass

The proposed O'Hare West Bypass is a potential new north-south freeway corridor that would be sited along the west side of O'Hare Airport, potentially connecting with I-90 (Jane Addams Memorial Tollway) to the north and I-294 (Tri-State Tollway) to the south. From just south of Devon Avenue to south of IL 19, the corridor could be located in O'Hare Airport property within a dedicated 300-foot transportation corridor. Beyond these points, the corridor would need to be constructed on new alignment with new system interchange

connections at I-90 (north leg) and I-294 (south leg) The location of the bypass corridor was developed to minimize impacts to sensitive areas while accommodating design requirements related to the adjacent freight rail and airport facilities.

Various corridor location options were considered for the West Bypass freeway connections near I-90 and I-294. For purposes of comparing the seven Finalist Roadway System Alternatives, one representative option was used for the north and south connection options; West Bypass North Option D, and West Bypass South Option D. The various North and South Connection Options were analyzed separately and are described in more detail in Section 5.4.4. The characteristics of the north and south legs of the West Bypass, along with their representative conceptual layouts, are described below.

West Bypass—North (Alternatives 203 and 404). The north leg of the West Bypass freeway corridor generally follows the west boundary of O'Hare Airport. The conceptual layout includes four basic lanes in each direction, with additional auxiliary lanes to accommodate changing traffic demand throughout the corridor. The center median width is to accommodate potential dedicated transit service. To accommodate local traffic circulation, a full access service interchange along the north leg of the West Bypass is provided in the form of split diamond ramp pairs at York Road/Elmhurst Road (Pratt Boulevard and Devon Avenue) and IL 72. Roadways within the interchange influence area would be improved to provide acceptable operations.

The representative corridor layout was developed to take advantage of available area reserved for surface transportation improvements on O'Hare Airport property, to minimize impacts to sensitive areas, and to comply with design requirements related to adjacent transportation facilities Beginning at the Elgin O'Hare system interchange and moving north, the corridor would be sited within the 300-foot transportation corridor reserved for the surface transportation improvements as part of the OMP. At Devon Avenue, the West Bypass corridor moves west and tunnels beneath the UPRR. An overpass of the railroad may be the selected design alternative at this location, however, the Federal Aviation Administration would have to agree that the construction of the overpass would not conflict with the scheduled decommissioning the existing runway (14R) slated for the end of 2013. The West Bypass would remain depressed one level below ground north of the tunnel to accommodate a UPRR spur line crossing near Pratt Boulevard. The West Bypass would then continue northeasterly through an industrial complex, cross over IL 72 and then intersect elevated I-90 near the Tollway Oasis.

A tri-level full access Y-type system interchange is provided at the West Bypass and I-90 junction. The interchange would include long flyover ramps spanning Metropolitan Water Reclamation District (MWRD) retention ponds south of I-90. Part of I-90 extending roughly from east of Arlington Heights Road to Lee Street would be improved from the baseline condition of four lanes in each direction to accommodate system ramp connections, lane balance, and transitions.

The partial interchange at I-90 and Elmhurst Road will be reconstructed as a full access service interchange. The representative interchange type was developed to minimize impacts to the community and the detention basin. Roadways within the interchange influence area would be improved to provide acceptable operations.

Appendix F, page F-10, presents the representative conceptual layout and cross sections for the north leg of the West Bypass.

West Bypass—South (Alternatives 202, 203, 401, 402, and 403). The south leg of the West Bypass freeway corridor generally follows the west boundary of O'Hare Airport to IL 19 and continues southeasterly to a system connection at I-294. The conceptual layout includes 4 basic lanes in each direction, with auxiliary lanes to accommodate changing traffic demand throughout the corridor. To accommodate local traffic circulation, a full access "tight diamond" service interchange is provided at IL 19. The representative interchange layout was developed to be compatible with the proposed IL 19 at York Road/UPRR and CPRR improvements and proposed IL 19 relocation identified as part of the 2030 No-Action Alternative for the project. A half-diamond service interchange is provided at Franklin Boulevard, providing local access to and from the south. Roadways within the interchange influence area would be improved to provide acceptable operations.

As with the north leg, the corridor layout was developed to take advantage of area reserved for surface transportation improvements on O'Hare Airport property, to minimize impacts to sensitive areas, and to comply with design requirements related to adjacent transportation facilities.

Beginning at the Elgin O'Hare system interchange and moving south, the corridor would be sited within the 300-foot transportation corridor reserved for the transportation improvements as part of the OMP. At IL 19, the West Bypass would be constructed over IL 19. From that point, the vertical layout would transition quickly to a lowered roadway so as to avoid airspace encroachment for Runway 10R. The corridor would continue within a tunnel under part of the Bensenville Rail Yard, and then continue southeast along the south side of the yard. The location of the corridor was sited to provide opportunities for redevelopment between the rail yard and Green Street. With South Connection Option D, the bypass would cross over Franklin Boulevard and the UPRR mainline corridor, and continue south along the UPRR right-of-way to a system interchange connection at I-294. The part of the West Bypass along the UPRR corridor would be elevated to accommodate a system connection at I-294.

Improvements to the local roadway system are proposed near the south leg of the West Bypass. Specifically, a north/south connection (Taft Road) is shown linking traffic between Franklin Boulevard and IL 19.

A tri-level full system Y-type interchange would be provided between the West Bypass and I-294. The representative interchange layout flyover ramps linking bypass traffic with north/south traffic on I-294. Part of I-294 extending roughly from IL 64 (North Avenue) to Bensenville Rail Yard would be widened and improved to accommodate system ramp connections, lane balance, and transitions. Included with the I-294 improvements are modifications to the I-294 interchange at North Avenue. The representative conceptual layout includes a half-diamond ramp pair serving traffic to and from the north on I-294 to and from IL 64. These improvements address issues expressed by stakeholders regarding inadequate local access along this portion of the I-294 corridor.

Appendix F, page F-11, presents the representative conceptual layout and cross sections for the south leg of the West Bypass.

IL 83. Alternative 202 includes a new freeway along the existing IL 83 corridor between Thorndale Avenue and I-90. It serves as an alternate location to the north leg of the West Bypass along the Elmhurst Road corridor, as described in the previous section. The proposed IL 83 would be located along the IL 83 alignment from Thorndale Avenue to Landmeier Road. North of Landmeier Road and I-90, two corridor location options were evaluated. For the purpose of comparing the seven alternatives, IL 83 Option B was used as the representative option. Connection options were analyzed separately and are described in more detail in Section 5.4.4.

IL 83 is a major arterial providing access to adjacent industrial lands and a major through route for regional traffic. The conceptual layout generally follows the IL 83 centerline between Thorndale Avenue and Landmeier Road. To the north, the proposed freeway alignment proceeds northeast to a proposed system connection with I-90 south of Oakton Avenue and west of the Elmhurst Road interchange. Three basic lanes in each direction, with auxiliary lanes between high volume interchanges, would be provided along the IL 83. The improved corridor would include 2-lane 1-way frontage roads to provide continuity in local access and to accommodate traffic circulation patterns. The center median is sized to accommodate potential dedicated transit service.

The representative concept layout for IL 83 includes an elevated freeway profile for most of the corridor to accommodate underpasses at key local roadway crossings. With the addition of multiple freeway lanes and a frontage road system, the construction footprint would reach beyond the existing right-of-way, causing multiple displacements. Where possible, retaining walls are included to minimize impacts.

System and service interchange access along IL 83 would be from interchanges at the Elgin O'Hare Extension, Devon Avenue/Landmeier Road, and I-90. Also, improved service access would be on new ramp connections between I-90 and Busse Road at the Elgin O'Hare Extension, the representative conceptual layout includes a tri-level Y-type full system interchange with flyover ramp connections for each system traffic movement. A split-diamond interchange is included to provide local access, with ramp connections at Devon Avenue and Landmeier Road, and a Y-type fully directional system interchange is provided at I-90. Improvements along I-90 include a new half-diamond service interchange oriented west at Busse Road, forming a full access split interchange with the existing I-90 at Elmhurst Road ramps.

Appendix F, page F-12, presents the representative conceptual layout and cross sections for the north leg of IL 83.

Arterial Widening (IL 83, York/Elmhurst Road, IL 19 (Irving Park Road)). Five of the seven finalist alternatives (401, 402, 403, 404, and 501) include a partial expansion of the freeway system component (Elgin O'Hare Extension with only the north or south part of the West Bypass). Recognizing the substantial travel demand and performance issues on area roadways, select arterial widening improvements were included in the five alternatives rather than a full north-south freeway corridor. The arterial improvement corridors consist of IL 83 north of the proposed Elgin O'Hare Extension, IL 83 south of the proposed extension, Elmhurst Road north of the proposed extension, and IL 19 between the West Bypass and I-294. Representative conceptual layouts for widening improvements generally consist of adding one travel lane in each direction, intersection improvements, and the potential provision of dedicated transit service. Where possible, the layouts and estimated construction footprints were developed to

minimize impacts to adjacent sensitive resource and land uses. The representative layout of each arterial improvement corridor is described below.

IL 83 Arterial Widening—North (Alternatives 401, 403, and 501). IL 83 is a 6-lane major north-south arterial traversing the Elk Grove Industrial Park. The representative conceptual layout provides an 8-lane roadway section along the corridor, with improvements at all existing intersections. Based on projected traffic demand, the at-grade intersection of IL 83 and Devon Avenue would be grade separated with a new tight-diamond interchange. This would close or restrict access (to right-in/right-out) at several local roads. Full access will be maintained at the intersections of IL 83 at Greenleaf Avenue, Touhy Avenue, Landmeier Road, Howard Street, and Oakton Avenue.

A new, full access service interchange would be provided at I-90 at Busse Road to accommodate regional travel movements. A partial cloverleaf interchange is included in the representative conceptual layout, with ramp connections at Busse Road and Oakton Avenue.

The construction footprint was developed to accommodate areas for dedicated Bus Rapid Transit service along IL 83. The conceptual layout and footprint were developed to minimize, where possible, impacts to adjacent land uses and sensitive resources. Long retaining walls are included to minimize impacts along this heavily developed corridor.

Appendix F, page F-13, shows a detailed conceptual layout of the north IL 83 corridor.

IL 83 Arterial Widening—South (Alternatives 403, 404, and 501). IL 83 is a 6-lane major north-south arterial traversing largely residential and industrial areas. The representative conceptual layout provides an 8-lane roadway section along the corridor, with improvements at all existing intersections. Based on projected traffic demand, the at-grade intersection of IL 83 and IL 19 would be grade separated.

An improved full access service interchange would be provided at I-290 and IL 83. Improvements are intended to address operational issues with the full cloverleaf interchange. Conceptual improvements include provision of directional ramps for IL 83 southbound/northbound to I-290 eastbound/westbound movements, as well as a collector-distributor system to address weaving issues along westbound I-290.

The construction footprint was developed to accommodate area for dedicated Bus Rapid Transit service along IL 83. The conceptual layout and footprint were developed to minimize, where possible, impacts to adjacent land uses and sensitive resources. Long retaining walls are included to minimize impacts along the heavily developed corridor.

Appendix F, page F-13, shows a conceptual layout of the south IL 83 corridor.

Elmhurst Road Arterial Widening (Alternative 402). Elmhurst Road is a 4-lane major north-south arterial traversing the eastern boundary of the Elk Grove Industrial Park. The representative conceptual layout provides a 6-lane roadway section along this corridor, with improvements at all existing intersections. The partial access service interchange at Elmhurst Road and I-90 would be reconstructed to a full access service interchange to accommodate regional travel patterns. The representative conceptual layout includes a partial cloverleaf interchange.

Appendix F, page F-14, shows a conceptual layout of the Elmhurst Road corridor.

IL 19 Arterial Widening (Alternative 501). IL 19 is a 4-lane major east-west roadway traversing along the southern boundary of O'Hare Airport. The OMP includes a plan to realign IL 19 south of the proposed runway improvements. The existing at-grade intersection of IL 19 at York Road will remain, but the CPRR and UPRR rail track will be grade-separated from IL 19 to address operational issues related to the adjacent at-grade railroad crossing. The 2030 No-Action Alternative includes realigning IL 19 as part of the OMP, maintaining the 4-lane cross section, and constructing the IL 19 at York Road interchange.

Under Alternative 501, IL 19 would be widened to a 6-lane arterial between the improved IL 19 at York Road interchange and the I-294 at IL 19 interchange, in order to accommodate existing and projected traffic demand. These improvements were included since the alternatives do not include a West Bypass connection to I-294. Without that connection, traffic demand will increase dramatically on the arterial system south of the west terminal interchange. Widening improvements along IL 19 were therefore included in this alternative to accommodate travel demand.

Appendix F, page F-15,shows the conceptual layout and cross section for the IL Route 19 corridor.

5.4.4 North and South Connection Options

As discussed previously, various corridor location options were considered for the West Bypass freeway connections near I-90 and I-294, and for the IL 83 connection at I-90. The options were developed on the basis of stakeholder input regarding possible locations for the new corridor segments (see Section 3.4 and Exhibits 3-1 through 3-9), illustrating corridor locations suggested by stakeholders). The corridor location options were developed and evaluated independently of the Finalist Roadway System Alternatives, the objective being to identify a range of corridor location options.

The following subsections describe connection options considered, along with their associated conceptual layout characteristics and design controls. Evaluation findings for the North and South Connection Options are presented in Section 5.5.5.

5.4.4.1 IL 83—North Connection Options

Two connection options were developed for the IL 83 corridor near the I-90 system interchange. The options were developed on the basis of stakeholder input, consideration of design controls, and adjacent land uses and constraints. Major features and constraints along that part of the IL 83 corridor include industrial and commercial lands that constrain corridor location options. Connection Option A, shown in Exhibits 5-12.1, has been dismissed from further consideration.

Connection Option A follows the alignment of IL 83 up to the I-90 overpass. A one-way frontage road system would be provided to accommodate local traffic circulation patterns. A three-level, Y-type, full access system interchange is provided at I-90, with directional flyover ramp connections between the two freeways. Option A accommodates a new full access service interchange at Busse Road to provide improved freeway access to adjacent communities. A diamond type with loop interchange was used as the conceptual layout. The layout was developed to minimize possible impacts to densely developed adjacent lands. This necessitated the use of long bridge and retaining wall sections to minimize construction footprint requirements. Connection Option B diverges from the IL 83

alignment north of Landmeier Road and proceeds northeast across industrial sites and a landfill area before intersecting I-90. A three-level Y-type full system interchange is provided at I-90, with flyover directional ramp connections. As with Option A, Option B also accommodates a new partial access half-diamond interchange at I-90 and Busse Road/Oakton Avenue. The representative interchange layout was developed to minimize impacts to adjacent land uses by providing retaining walls and compact geometry where possible.

5.4.4.2 West Bypass—North Connection Options

Five options were developed for the West Bypass corridor between a common southerly location near Devon Avenue and a northerly connection with I-90 (Options A, B, C, and E were dismissed from further consideration and are shown in Exhibits 5-12.2 through 5-12.5). The options diverge at a common point near Pratt Boulevard. Corridor location options were developed on the basis of stakeholder input, consideration of design controls, and adjacent land uses and constraints. Key features and constraints within this segment of the West Bypass corridor include a fuel storage facility, a mobile home community, and MWRD retention basins along the alignment corridor. Along with the horizontal constraints, the FAA limits vertical profile elevations adjacent to runways, necessitating the use of tunnels at those locations.

Options A, B, and C. Options A, B and C have similar corridor location characteristics, with variations in location near I-90, and in system and service interchange types. From north of Devon Avenue to north of IL 72, the three options follow a shared corridor along Elmhurst Road. From that point, Options A and B proceed northwest across an open area created after the excavation of the large retention basin in the southeast quadrant of the I-90 at Elmhurst Road interchange to a new system connection between the West Bypass and I-90. Option C continues in a northerly direction along the Elmhurst Road alignment to a new system connection with I-90 at the Elmhurst Road service interchange. A one-way frontage road system would be provided to accommodate local traffic circulation patterns.

Options A, B, and C all provide a new system interchange at the I-90 junction. Option A provides a partial system interchange oriented west. With Option A, westbound I-90 traffic desiring to move southbound on the West Bypass would be directed through the Elmhurst Road interchange and along the local road system, using the proposed slip ramps south of IL 72 to enter the southbound West Bypass. Option B provides a full access, trumpet type system interchange at I-90, using the same interchange layout as Option A but with the addition of two westbound ramps to accommodate system movements. Option C provides a full Y-type system interchange at I-90. The representative conceptual layout for the system interchange was developed to span I-90 at the Elmhurst Road partial service interchange, resulting in a complex four-level layout.

Options A, B, and C each provide various new service interchange connections along the West Bypass and I-90. A split-diamond interchange provides local connections to and from the West Bypass. The slip ramps link the freeway to the one-way frontage road system between Devon Avenue and IL 72.

Options D and E. Options D and E are similar to one another in terms of corridor location and interchange types. North of Devon Avenue, they diverge from the Elmhurst Road alignment and proceed northeast, paralleling the UPRR corridor to a new system connection with I-90

near the Tollway Oasis. The local road configuration generally would be maintained to accommodate traffic circulation patterns. Both options provide a new full access system interchange between the West Bypass and I-90. The representative conceptual layout employs a three-level Y-type interchange. The layout includes lengthy directional flyover ramps to span the MWRD retention facilities south of I-90.

Options D and E provide varying types of new service connections to the local roadway system. Option D provides full access service connections at Elmhurst Road, whereas Option E maintains the access configuration of the interchange on I-90.

5.4.4.3 West Bypass—South Connection Options

Seven options were developed for the West Bypass corridor between a common location south of the proposed tunnel under the Bensenville Rail Yard to a southerly connection with I-294 (Exhibits 5-12.6 through 5-12.12). Corridor location options were developed on the basis of stakeholder input, consideration of design controls, and adjacent land uses and constraints. This segment of the West Bypass poses numerous design constraints and challenges: industrial, commercial and residential development; major freight rail and intermodal facilities, including the Bensenville Rail Yard and the UPRR corridor; and O'Hare Airport facilities and design restrictions, including runway protection zones and associated glide path constraints.

Option A. Option A proceeds east from the Bensenville Rail Yard tunnel, then south along the west edge of County Line Road to a new system connection with I-294 near Grand Avenue. The corridor is adjacent to residential areas in the Village of Bensenville. A fully directional three-level Y-type system interchange is provided at I-294. The representative conceptual layout includes lengthy bridge and retaining walls to establish connections with the elevated I-294 corridor, including ramp elevations greater than 50 feet above ground.

Option A provides a new partial service interchange with ramp connections to and from the south at George Street, as well as a one-way frontage road system along the new freeway corridor to accommodate local traffic circulation patterns. A half-diamond interchange is identified on the conceptual layout.

Options B, C, and D. Options B, C, and D follow similar corridors through the industrial lands in the villages of Bensenville and Franklin Park. The three options proceed east from the Bensenville Rail Yard tunnel, then continue south along the UPRR corridor to a new system connection with I-294 near the rail line underpass of I-294. Option B follows the west side of the UPRR corridor, resulting in displacements of industrial buildings along the west side of the corridor, and necessitating bridged overpasses to maintain spur line connections. Option C centers the new freeway on the UPRR corridor, displacing fewer industrial buildings but necessitating construction of a complex and lengthy viaduct system over the UPRR freight rail tracks. Option D crosses the UPRR, then follows the east side of the UPRR corridor, resulting in displacements of industrial buildings along the east side. See Section 5.4.7 for a more detailed discussion of freight rail considerations along this corridor.

Options B, C, and D each provide a fully directional three-level Y-type system interchange at I-294 near the rail line underpass of I-294. The representative conceptual layout includes lengthy bridge and retaining walls to establish connections with the elevated I-294 corridor, including ramp elevations in excess of 60 feet over ground elevation.

New service interchange connections are provided under Options B, C, and D. Each provide a new partial service interchange with ramp connections to and from the south at Franklin Boulevard. A half-diamond interchange is identified in the conceptual layout.

Options E, F, and G. Options E, F, and G were developed based on stakeholder input to minimize impacts to critical industrial and residential areas in the villages of Bensenville and Franklin Park. They extend east from the proposed Bensenville Rail Yard tunnel, then continue along a common corridor along the Bensenville Rail Yard crossing County Line Road. From there, Option E proceeds southeast across industrial lands to a new system connection with I-294 near Wolf Road. Option E would require complex construction of a lengthy elevated freeway corridor (about 40 feet) over the Bensenville Rail Yard. Options F and G proceed along the northern edge of the rail yard to a common point east of Taft Road. The freeway corridor profile is controlled by glide path requirements for O'Hare Airport runways 4R and 28L, and the need to avoid impacts to retention ponds. From Taft Road, Option F continues southeast to a new system connection near south of the Tollway Oasis.

Each option provides a new system interchange connection at I-294. Option E provides a three-level Y-type full access interchange near Wolf Road. Option F provides a trumpet interchange and Option G a Y-type interchange. A new half-diamond service interchange is provided at Franklin Boulevard with Option E.

Corridor location options E, F, and G result in substantial conflicts with freight rail facilities and operations. Also, Options E, F, and G result in conflicts with existing and proposed O'Hare Airport runway operations. See Section 5.4.4.3 for more detailed discussion of these issues.

5.4.5 Structure Concept Locations

Finalist Roadway System Alternatives were developed to a conceptual level of detail to validate the general design feasibility improvements in the corridor, and to allow quantitative comparison of their impacts and costs. A representative conceptual layout was developed for each improvement corridor. The conceptual layout illustrates the roadway horizontal layout, general structure locations (bridges, tunnels, retaining walls) based on an understanding of relative roadway elevations and design controls, and associated estimated construction footprint requirements. This section described the procedures used to identify conceptual structure requirements for the seven alternatives, and summarizes estimated structure requirements for these alternatives.

Structural requirements for the finalist alternatives were identified on the basis of relative elevation requirements at roadway junctures (multilevel interchanges, cross roads, freight rail crossings, runway protection zones), and roadway vertical grade design criteria. A conceptual design of roadway profiles was not developed. Rather, a general understanding of relative roadway elevation, topographic characteristics, and profile grade limits was used to identify roadway levels at roadway junctures and to identify required structural features along improvement corridors.

Bridge locations and characteristics were developed using the following principles:

- Maintain reasonable bridge spans on the basis of a working assumption of pier placement.
- Reduce skew angles to simplify design and reduce cost.

- Use consistent abutment offsets assuming a paved slope wall.
- For multilevel bridges, the abutment will be located where the roadway height above ground is less than 40 feet, allowing economy in design over an open embankment.

Tunnel locations and characteristics were developed using the following principles:

- Reduce skew angles to simplify design and reduce cost.
- Limit tunnel use to design areas with overpass options not available.

Retaining wall locations were identified on the basis of spatial layout and elevations, with a focus on avoidance of impacts to adjacent land uses. Retaining wall heights were assumed to range from at least 3 feet up to 30 feet, above which a bridge section was assumed for economy. Where practical, open ditches and drainage were assumed, but slope room may not be available forcing the use of retaining walls and closed drainage systems.

Estimated quantities of bridges, tunnels, and retaining walls were calculated on the basis of the representative conceptual layout for each Finalist Roadway System Alternative. These quantities were used as part of the development of estimated initial costs (see Section 5.5.2). Table 5-6 lists the areas of bridges and tunnels and linear feet of retaining wall for each finalist alternative. An average height of 14 to 15 feet has been assumed systemwide for cost estimating purposes. For conceptual structure locations, see Appendix F.

TABLE 5-6
Finalist Roadway System Alternatives—Structure Summary

Finalist Roadway System Alternatives			Bridge Quantities (ft^2)			Tunnel Quantities (ft^2)	Retaining Wall Quantities (ft)
			2nd Level Bridges	3rd Level Bridges	4th Level Bridges		
Group 2	Alt 202	Elgin O'Hare with partial IL 83 (north) and partial bypass (south)	2,304,148	791,508	365,534	130,194	75,989
	Alt 203	Elgin O'Hare and West Bypass	2,352,516	617,177	270,615	299,617	90,102
Group 4	Alt 401	Elgin O'Hare with partial bypass (south) and IL 83 improved (north)	1,908,796	486,963	270,615	137,146	76,363
	Alt 402	Elgin O'Hare with partial bypass (south) and York Road (north)	1,888,917	486,963	270,615	137,146	60,012
	Alt 403	Elgin O'Hare with partial bypass (south) and IL 83 improved arterial	2,106,687	755,000	270,615	137,146	90,671
	Alt 404	Elgin O'Hare with partial bypass (north) and IL 83 improved (south)	2,159,010	607,577	85,354	368,979	79,003
Group 5	Alt 501	Elgin O'Hare with IL 83, York Road and IL 19 improved arterials	1,526,209	477,345	85,354	0	60,728

5.4.6 Drainage Concept Studies

As part of the analysis of alternatives, conceptual drainage studies were conducted to ensure that the proposed Finalist Roadway System Alternatives can accommodate stormwater drainage and address potential floodplain encroachment concerns. The conceptual studies focused on reviewing general drainage characteristics in the study area,

evaluating potential floodplain encroachment, determining approximate stormwater detention requirements based on local ordinances of Cook and DuPage counties, and assessing potential compensatory storage requirements along proposed improvement corridors. Floodplain avoidance/mitigation, outfall suitability, detention requirements, existing drainage problems, and pump station needs were considered in developing the estimated footprint requirements for roadway improvements.

The representative conceptual roadway layouts were reviewed to assess whether stormwater can be conveyed using a typical gravity drainage system. This included a review of the roadway layouts for the Finalist Roadway System Alternatives as well as for the North and South Connection Options for the IL 83 and West Bypass. Where appropriate, new pump stations were identified and incorporated into the estimated footprint requirements. Conceptual studies indicated that stormwater drainage can generally be conveyed using a gravity drainage system along most of the roadway improvement corridors. However, new pump stations may be needed at the locations listed in Table 5-7.

TABLE 5-7
Potential Pump Station Locations

Alternative	Location	Potential Pump Station Site
202	Bypass to I-294	Near Franklin Avenue and Bypass to I-294
	Elgin O'Hare/West Bypass System Interchange Tunnel	Open field between Pan Am Drive and Supreme Drive
203	York Road Expressway to I-90	Southeast of Devon Avenue and York Road Intersection
	Bypass to I-294	Near Franklin Avenue and Bypass to I-294
401	Bypass to I-294	Near Franklin Avenue and Bypass to I-294
402	Bypass to I-294	Near Franklin Avenue and Bypass to I-294
403	Bypass to I-294	Near Franklin Avenue and Bypass to I-294
	Elgin O'Hare/West Bypass System Interchange Tunnel	Open field between Pan Am Dr. and Supreme Dr. (potentially two pump stations)
404	York Road Expressway to I-90	Southeast of Devon Avenue and York Road Intersection
	Bypass to I-294	Near Franklin Avenue and Bypass to I-294

Conceptual stormwater detention requirements were estimated for each alternative. Detention volume was estimated on the basis of increased imperviousness associated with the proposed roadway. Areas in Cook County were calculated separately from those in DuPage County following the respective stormwater ordinances. Stormwater detention was one criterion used to compare relative potential environmental impacts of the alternatives. Table 5-8 summarizes estimated stormwater detention requirements.

Potential impacts to floodplains and floodways were also reviewed, including transverse and longitudinal encroachments. The estimated impacts were calculated using proposed roadway width from shoulder to shoulder, with an assumption that the proposed edge of a

shoulder will be above the 100-year flood elevation at all identified floodplain areas. Floodplain impacts were used as a criterion by which to compare relative environmental impacts of both the roadway system alternatives and the connection options. Table 5-9 summarizes the floodplain impact locations.

TABLE 5-8
Estimated Stormwater Detention Requirements

Alternative	Estimated Detention Volume (acre-feet)
202	192.0
203	203.0
401	184.9
402	178.8
403	216.2
404	166.8
501	55.8

A separate drainage study was conducted for the Elgin O'Hare/West Bypass system interchange complex at York Road. The focus of the study was to identify drainage design options that would address drainage deficiencies in this area and effectively manage stormwater runoff with the proposed subway (tunnel) condition at the system interchange. As discussed in Section 5.4.3.1, the proposed interchange layout included in Alternatives 203 and 404 will require a two-level directional interchange with a subway (tunnel) condition to accommodate directional traffic movements. However, height restrictions related to O'Hare Airport Runway Protection Zones (RPZ) and the overall layout of O'Hare Airport facilities preclude the ability to provide more than one interchange level above the existing ground elevation. Another complicating factor is that the interchange is located in the Willow Creek/South Tributary floodplain. That floodplain could cause a high water table near the streambed, even during dry times. Findings of the drainage study confirm that an effective stormwater conveyance system can be developed at the location, provided that the following elements are incorporated into the development of the roadway design:

- Raise the base surface elevation for areas within the proposed system interchange above the 100-year flood elevation.
- Reduce potential tributary areas to the proposed subway.

TABLE 5-9
Floodplain and Floodway Impacts

Creek	Transverse Encroachment	Longitudinal Encroachment	Alternatives
Meacham Creek	x		All
Salt Creek	x		All
Higgins Creek	x	x	202, 401, 403
Higgins Creek—Tributary A	x	x	202, 203, 402, 404
Higgins Creek—Tributary B		x	402, 404
Willow Creek—North Tributary	x	x	203, 402, 404
Willow Creek—South Tributary	x		All
Bensenville Ditch	x		202, 203, 401, 402, 403, 501
Addison Creek	x		202, 203, 401, 402, 403
Crystal Creek	x	x	501

- Relocate the Willow Creek/South Tributary on the north side of Thorndale Avenue closer to its historical location.
- Provide compensatory storage for the loss of floodplain storage.
- Install a pump station for the proposed subway.
- Place the floor elevation of the proposed pump station above the 100-yer flood elevation.

Appendix G contains five memorandums: *Pump Stations Memorandum, Stormwater Detention Analysis Memorandum, Floodplain Encroachments Memorandum, Drainage Evaluation for System Interchange at York Road Memorandum, and Willow Creek York Culverts Memorandum*. The memorandums provide detailed descriptions of the conceptual drainage studies.

5.4.7 Freight Rail Studies

The Chicago region is a major junction for transcontinental freight systems, and a critical element of the continental land bridge connecting the Pacific and Atlantic coasts. Freight movement plays a substantial role in the economic vitality of the region and to local industries. Within the study area, eastern and western railroads meet and transfer loads, with a large concentration of freight facilities located near O'Hare Airport. Three freight rail carriers operate in the area: CPRR; Canadian National Railway (CN); and UPRR. Also, Metra operates commuter rail service along the Milwaukee West, Union Pacific Northwest, and the North Central Service corridors. The area accommodates a high volume and frequency of freight traffic and is also the location of many intermodal facilities, where trucks collect to deliver, receive, and distribute freight containers. Retaining the region's preeminence as the nation's rail exchange is important to the Chicago area's economy; failure to provide for the necessary facilities may, over the long term, result in railroads relocating many of their operations to other metro centers that can accommodate their needs.

Given the presence of extensive freight rail infrastructure in the study area, an evaluation of potential impacts to freight rail operations and facilities was performed as part of the alternatives development process, with the objective being to confirm the feasibility of various location options for the West Bypass with respect to freight facility conflicts, and to identify potential modifications to freight facilities as part of roadway improvements. Because the freight rail infrastructure is in close proximity to the airport, early coordination was also initiated to determine if there were any design feasibility issues regarding airspace and freight rail facilities (see Section 5.5.1.5).

For the proposed roadway improvements along the west side of O'Hare Airport, in particular the North Connection (I-90) and South Connection (I-294) sections of the West Bypass and IL 83, conceptual studies were performed to investigate freight rail impacts associated with the connection options. Freight facilities are illustrated in Exhibit 5-13.1 and 5-13.2 and summarized below.

5.4.7.1 IL 83 North Connection

There are no mainline freight rail tracks or major freight rail yards in this area, but several spur tracks serve the Elk Grove Industrial Park. The spur tracks connect with the double track mainline owned and operated by the UPRR east of York Road and west of O'Hare

Airport. The Bryn Mawr Freight Rail Yard, located just north of Devon Avenue, provides storage for the several spur tracks servicing adjacent industries.

Conceptual analyses revealed no major conflicts with freight rail facilities associated with Connection Options A and B. Minor track and signal modifications will be required to retain service for industrial spur traffic in this area.

5.4.7.2 West Bypass North Connection

The freight rail infrastructure in the area includes two double track mainlines operated by the CPRR and UPRR, one control interlocking, one small holding yard, and several industrial spurs. A review of West Bypass North Connection Options A, B, C, D, and E revealed that each option will have similar potential conflicts with freight rail facilities near Devon Avenue. The conceptual roadway layout there includes a tunnel under the mainline tracks and the UPRR yard. Preliminary analyses show that the freight rail impacts are not differentiators between the five West Bypass North Connection Options.

5.4.7.3 West Bypass South Connection

The South Connection area includes an extensive network of freight rail mainlines and yards that facilitate the movement and transfer of east-west and north-south freight between carriers. Facilities include an east-west double track mainline owned by Metra and operated by CPRR, and a north-south double track owned and operated by UPRR that crosses over the Bensenville Rail Yard. The Bensenville Rail Yard, owned and operated by CPRR, is a major terminal freight facility with an adjacent intermodal facility that serves as a major component of the regional freight rail system. The CPRR Bensenville Rail Yard is situated in close proximity to the south side of O'Hare Airport. Access to the freight rail yard and access to the O'Hare Airport feeds local industries on spur tracks served by both CPRR and UPRR. The Bensenville Rail Yard consists of multiple operations defined by geographic location. The yard is divided in the center by the elevated UPRR mainlines with the local freight service handled in west part. The operations center, the arrivals and departures and the hump yard are in the northeast area, and the intermodal area is in the southeast.

Preliminary analyses revealed critical freight rail issues and conflicts located within the West Bypass South Connection area. These issues have the potential to impede and impair freight movement and operations. In fact, the extent of issues and effects is compounding, and has the potential to be so severe that they render freight infrastructure inoperable with several of the South Connection Options. An initial evaluation of Options A through G revealed the following potential freight rail conflicts:

- Option A will require construction of a tunnel at the Bensenville Rail Yard crossing, along with all the other South Options. Option A has no other freight rail impacts besides the complex tunnel structure. Overall, Option A would have fewer impacts to freight rail operations than the other South Connection Options.
- The analysis of Options B, C, and D required coordination with the UPRR to fully assess the impacts to the UPRR infrastructure need for a temporary track and operational needs through the area and to differentiate the options.
- South Connection Options E, F, and G have several technical issues and conflicts with impacts that cause compounding losses of capacity and operational flexibility to the

Bensenville Rail Yard. Option E is fatally flawed because of the need for an aerial structure over the Hump Yard, the elevated UPRR mainlines, and a proposed cargo road to O'Hare. Option F shares the same severity of impacts as Option E with respect to the infrastructure and rail yard operations along with an additional crossing of the Metra mainline and conflict with runway protection zones associated with 4R/22L by Option F. Option G has the same impacts as Option F, along with the addition of a long curved ramp structure crossing over the Bensenville Rail Yard and a third Metra mainline crossing. As a result, all three options are fatally flawed because of the compounding effect of the severe impacts.

Additional analysis and coordination with the UPRR were performed to determine the feasibility of Options B, C and D. The focus of the analysis was the area south of the proposed common tunnel near the Union Pacific–Milwaukee Sub, where the three options diverge. Further analysis revealed the following:

- Option B is located along a north-south corridor just to the west of the Union Pacific—Milwaukee Sub. Option B will have a direct impact on the industrial spurs served from the UP–Milwaukee Sub to industrial properties to the west. Temporary track work would be required to maintain service to the remaining businesses during and after construction. The cost for the temporary track work is the least of the three options and is the most desirable to the UPRR over Options C and D.

- Option C is located along a north-south corridor directly over the Union Pacific–Milwaukee Sub between Green Street and I-294, requiring construction of a 3,000-foot bridge structure directly over tracks.

  The feasibility of constructing a temporary mainline double track to enable construction of the roadway bridge structure was initially investigated. This track would be offset 100 feet to the east to facilitate construction of the bridge. Construction of the temporary track would require constructing a temporary bridge over Green Street, displacing two additional industrial buildings, and reducing rail operating speeds from 40 to 20 mph because restrictive track geometrics. Coordination with the UPRR revealed that the reduction in speed is unacceptable, since the UP–Milwaukee Sub is an important north-south mainline for the UPRR, carrying 30 to 40 trains a day. Reduced speeds would have substantial systemwide impacts.

  Because the UPRR indicated that the construction of temporary mainline tracks would require that the proposed roadway bridge structure be constructed so as not to disrupt freight rail traffic and able to maintain current operating speeds on the mainline tracks. The structure layout would need to provide a minimum vertical clearance of 23'-4", with a lateral span extending across the entire UPRR right-of-way (an estimated 100 feet). Based on coordination with the UPRR, work windows for erecting steel and forming and pouring the deck over the UPRR would be limited, and would be scheduled only if traffic allowed. It is anticipated that work windows would not be greater than 4 hours in a 24–hour period. The small, inconsistent work windows will drive up construction costs and increase the duration of construction. As a result, Option C is fatally flawed because of major construction staging conflicts and the severe impacts to freight rail operations.

- Option D crosses beneath the UP–Milwaukee Sub, then runs along a north-south corridor just east of the Union Pacific–Milwaukee Sub, crossing the UP-Milwaukee Sub with a bridge. The bridge will have similar construction restrictions as Option C.

Because of the orientation and layout of the grade separation, Option D does not appear to present insurmountable constructability issues. In addition, Option D will affect industrial spurs served by the CPRR. Three industrial spur alignment options to serve the remaining business left after construction were studied and found acceptable.

Detailed information regarding these freight rail studies is presented in Appendix H, *Freight Rail Impacts Memorandum*.

5.5 Finalist Roadway System Alternatives Evaluation

Next the remaining alternatives underwent a comprehensive evaluation. The evaluation was conducted using an expanded list of evaluation factors and greater depth of analysis, the objective being to identify a set of build alternatives for more detailed consideration in the Draft EIS. The evaluation considered a refined set of evaluation criteria, including criteria suggested by stakeholders such as travel performance (systemwide travel delay, accessibility, travel times), initial costs (construction, right-of-way), environmental impacts (wetlands, floodplains, designated lands), and socioeconomic impacts (displacements, tax revenue loss, job loss). The overall design feasibility of the remaining alternatives was reviewed on the basis of the representative conceptual layout of the alternatives.

5.5.1 Travel Performance and Design Feasibility

Travel performance for the seven finalist alternatives was evaluated using a set of performance measures refined from those used to evaluate and screen the 15 initial alternatives (see Chapter 4). The overall design feasibility of the remaining alternatives also was reviewed. This subsection describes findings of the systemwide travel performance of the finalist alternatives as compared to the No-Action Alternative for the 2030 design year, and findings of the design feasibility review. Appendix A, *Travel Demand Modeling and Forecasting Report*, contains a detailed description of the methods and assumptions used to develop the travel demand model that served as the basis for the travel performance analyses.

Local travel performance issues were also evaluated at this stage of the alternatives process to address stakeholder concerns. These analyses are summarized below.

5.5.1.1 Travel Performance: Improve Local and Regional Travel

The following travel performance measures were used to compare the relative ability of each alternative to reduce congestion and to improve local and regional travel characteristics:

- **Regional Travel Effectiveness** was used to evaluate the effectiveness of the finalist alternatives in terms of the level of travel throughput that they accommodate. The regional travel throughput is measured as the ratio of vehicle miles of travel (VMT) to vehicle hours of delay (VHD). A higher ratio therefore represents a higher travel throughput. This travel measure is an extended representation of VHD, discussed in Section 4.3.1.
- **Congested Vehicle Miles of Travel** calculates the amount of travel that occurs in congested conditions, with a focus on local travel characteristics in the study area. For the purpose of this analysis, the focus was to compare the percentage of congested vehicle miles of travel (CVMT) on the secondary roadway system, thus allowing a

comparison of how well the Finalist Roadway System Alternatives relieve growing congestion on the area's secondary roadways. Congested conditions were defined as LOS D, E, or F.

- **Network Speeds (Principal Arterials)** is a measure commonly used to describe the effectiveness of a roadway alternative by measuring the change in network speeds. This is calculated as a ratio of VMT to VHT. For the purpose of this analysis, the focus was to evaluate network speeds on principal arterials, which account for a substantial part of the local travel in the study area. Principal arterials augment the freeway system in the study area, and are intended to move large volumes of long distance trips at relatively high speed.

Nearly 86 percent of area freeways, arterials and collector roadways are presently congested, growing to a predicted 91 percent by 2030. The finalist alternatives provide measurable improvements to local and regional travel due to the addition of new freeways and complementary capacity improvements to existing roadways in the study area (see Table 5-10). Systemwide travel throughput improvements range from roughly 4 to 13 percent, as compared to the No-Action Alternative, with alternatives with the greatest amount of new freeways (Alternatives 202 and 203) generally resulting in the highest increase in regional travel throughput. With regard to local travel in the study area, the alternatives also improve travel characteristics on the secondary roadway system (arterials and collectors). A comparison of CVMT indicated that the alternatives would result in a decrease of CVMT ranging from 16 to 20 percent on secondary roadways as compared to the No-Action Alternative. Similarly, network speed improvements on primary arterials ranged from 4 to 13 percent as compared to the No-Action Alternative.

TABLE 5-10
Finalist Roadway System Alternatives Evaluation: Improve Local and Regional Travel

	Group 2		Group 4				Group 5	No Action
	202	**203**	**401**	**402**	**403**	**404**	**501**	**N/A**
Regional travel effectiveness—regional throughput (% increase from No-Action Alternative)	13%	11%	11%	6%	4%	5%	7%	N/A
CVMT on secondary roadways (% decrease from No-Action Alternative)	20%	20%	19%	19%	20%	17%	16%	N/A
	939,000	938,000	949,000	944,000	934,000	972,000	987,000	1,170,000
Network speeds (mph) on principal arterials (% increase from No-Action Alternative)	8%	4%	8%	7%	8%	10%	13%	N/A
	17.7	17.2	17.8	17.7	17.8	18.1	18.6	16.5

5.5.1.2 Travel Performance: Improve Travel Efficiency

Poor access and connectivity, due in part to the lack of convenient access to major regional freeway corridors, are among the major transportation issues cited by the public. The Finalist Roadway System Alternatives include new service interchanges along the proposed

Elgin O'Hare and West Bypass corridors, and improved interchanges along the freeways in the study area. The new interchanges will enhance travel efficiency and improve regional access to the study area. The following measures were used to compare the relative ability of each alternative to improve travel efficiency, with a focus on travel time savings and accessibility to freeways as measures to evaluate the alternatives.

- **Travel Time Savings** assesses where travel performance will be improved, based on areas that will realize a greater than 5 percent savings in travel time as compared to the No-Action Alternative from a representative trip location. For this analysis, a trip origin in the northwestern part of the study area (west of I-90 at Woodfield Mall area) was selected because of its high concentration of households and population distribution.
- **Freeway/Interstate Access** assesses where travel performance will be improved, defined as areas that will realize a savings in travel time greater than 5 percent, along with the corresponding number of trips that will benefit from the travel time savings. For this analysis, a trip origin in the northwestern part of the study area (I-90 west of the Woodfield Mall area) was selected because of the high concentration of households and population distribution.

The finalist alternatives can improve travel efficiency and regional accessibility in the study area (see Table 5-11). Roughly 48 to 59 square miles in the study area will experience a P.M. peak period travel time savings of greater than 5 percent for the representative trip location,

TABLE 5-11
Finalist Roadway System Alternatives Evaluation: Improve Travel Efficiency

	Group 2		Group 4				Group 5	No Action
	202	**203**	**401**	**402**	**403**	**404**	**501**	**N/A**
Travel time savings—area with savings of greater than 5 percent from No-Action Alternative	59 mi^2	52 mi^2	50 mi^2	50 mi^2	54 mi^2	48 mi^2	49 mi^2	N/A
Freeway access— % increase in area with less than 5 minutes to freeway compared to No-Action Alternative	22% 92.1 mi^2	24% 93.8 mi^2	22% 91.6 mi^2	21% 89.9 mi^2	21% 90.9 mi^2	19% 88.0 mi^2	21% 90.1 mi^2	N/A 63.6 mi^2
Freeway access— % increase in trips with less than 5 minutes to freeway compared to No-Action Alternative	44% 152,425	53% 162,840	42% 150,670	40% 149,120	42% 150,590	39% 147,400	39% 147,805	N/A 106,140

as compared to the No-Action Alternative. With regard to improved access to freeway corridors, an additional 19 to 24 percent of the project study area will have 5 minutes or less travel time to freeway/interstate facilities, as compared to the No-Action Alternative. This corresponds to an increase in 39 to 53 percent of trips that will have 5 minutes or less access to freeway/interstate facilities. Alternatives with the greatest amount of new freeway (Alternatives 202 and 203) generally will have the highest level of travel efficiency and accessibility improvements.

5.5.1.3 Travel Performance: Improve O'Hare West Access

Another important transportation issue cited by stakeholders is the need for improved access to the proposed west terminal at O'Hare Airport. The ability of the Finalist Roadway System Alternatives to improve access to the proposed west terminal was evaluated by comparing travel times for six representative trip pairs between the west terminal and various locations within the study area. The trip pair to the northwest section (O'Hare West Terminal to Arlington Heights/I-90) and the west section (O'Hare West Terminal to Thorndale/I-290, and West Terminal to US-20/ Lake Street) experienced the greatest potential travel time savings and the greatest variation in travel times amongst alternatives. Therefore, the two trip pairs were used to compare the ability of the alternatives to improve western access to O'Hare Airport. As noted in Table 5-12, travel time savings for the representative trip pairs range from 31 to 41 percent across the range of alternatives as compared to the No-Action Alternative.

TABLE 5-12
Finalist Alternatives Evaluation: Improve O'Hare West Access

	Group 2		Group 4				Group 5
	202	**203**	**401**	**402**	**403**	**404**	**501**
Travel time savings—O'Hare west to northwest study area (% savings from No-Action Alternative)	39%	40%	31%	37%	36%	35%	37%
	11.7 min	11.6 min	13.3 min	12.2 min	12.3 min	12.4 min	12.1 min
Travel time savings—O'Hare west to west study area (% Savings from No-Action Alternative)	38%	39%	38%	40%	41%	41%	34%
	23.6 min	23.1 min	22.6 min	22.8 min	22.3 min	22.6 min	25.0 min

5.5.1.4 Localized Travel Performance Analyses

Localized analyses of projected travel demand and potential traffic impacts were performed to address stakeholder concerns related to the Finalist Roadway System Alternatives.

- **Elgin O'Hare West Terminus Study—** The objective of this analysis was to evaluate the impacts of the alternatives on the Elgin O'Hare corridor west of I-290, and of traffic impacts near the expressway west terminus at US20/Lake Street. Alternative 203 was used as the representative alternative for the analysis. Findings confirmed that traffic impacts of the proposed easterly extension of the Elgin O'Hare and of the proposed West Bypass would not measurably affect traffic patterns and demand west of Gary Avenue. Further, regional travel patterns indicated that the Elgin O'Hare Expressway east and west of Gary Avenue serve different regional travel markets. Additional information is presented in the *Elgin O'Hare Western Extension Options White Paper (*Appendix I).

- **Devon and Pratt Interchange Analysis—** The objective of this analysis was to evaluate potential traffic impacts on the local roadway system related to the proposed West Bypass at Devon Avenue/Pratt Avenue service interchange. Alternative 203 was used as the representative alternative the analysis. A traffic pattern analysis was performed to compare the projected local roadway travel demand of Alternative 203 to the No-Action Alternative. Analysis findings revealed that it is expected that daily traffic on Pratt Boulevard between York Road and IL 83 will increase by about 40 percent with

Alternative 203 due to the southbound exit ramp. There will be also be a 20 percent drop in traffic along Devon Avenue between IL 83 and Elmhurst Road due to the Elgin O'Hare Extension and with the northbound on-ramp at Devon Avenue primarily serving interstate access for local traffic in the study area. Further information is presented in the *Off System Traffic Distribution of O'Hare West Bypass at Devon /Pratt Boulevard Interchange Memorandum,* Appendix I).

- **Elk Grove Village and Itasca Traffic Evaluation—**Specific traffic exhibits were prepared to understand the traffic patterns of the finalist system strategies for the Elk Grove Village and Itasca areas. The exhibits were used to compare travel pattern changes among the No-Action and finalist alternatives to important corridors in the communities to address issues and concerns.

5.5.1.5 Design Feasibility Review and Preliminary FAA 7460 Review

The design feasibility of the Finalist Roadway System Alternatives was evaluated. At this stage, the objective was to confirm the overall design feasibility of the alternatives on the basis of the representative conceptual layouts prepared to date. Given the proximity of proposed improvements to O'Hare Airport, a preliminary review of compliance with FAA airspace requirements was also conducted at this time. However, it should be noted that the overall design feasibility and the constructability of proposed roadway improvements must be analyzed in detail as part of future preliminary design activities.

Design Feasibility Review. Analyses revealed design feasibility issues with Finalist Roadway System Alternatives 404 and 501 as follows:

- **Alternative 404—**Conceptual design studies revealed design issues with the system interchange adjacent to the proposed O'Hare West Terminal (Elgin O'Hare/West Bypass/O'Hare West Access). The system interchange layout is controlled by restricted airspace and overall system ramp horizontal and vertical design requirements. A tunnel placed two levels below grade would be required at the system interchange near the proposed west O'Hare access, which raises constructability issues given such constraints as active railroads and adjacent flood plains. Exhibits 5-14.1 and 5-14.2 illustrate the representative interchange layout and elevation.

- **Alternative 501—**This alternative terminates a freeway cross section (Elgin O'Hare Extension) at an arterial near IL 83 (see Exhibit 5-15). Terminating a freeway in this manner is undesirable from an operations and safety perspective, because it forces freeway traffic to transition abruptly onto a roadway with limited access control and lower travel speeds. To address these performance issues, the arterial improvements east of IL 83 would need to be upgraded to a full access controlled highway, providing continuity for freeway traffic. If an access controlled highway replaces the arterial improvements east of IL 83, Alternative 501 basically would look like Alternative 403.

Preliminary FAA 7460 Review. The FAA regulates airspace issues and clearance requirements near airport operations. Those requirements control the height of structures or objects in aircraft operating areas. The FAA encouraged an early review of the proposed transportation improvements and their possible conflicts with controlled air space. The early review was voluntary and was considered preliminary with the objective of identifying design controls for consideration in future Tier Two preliminary design. Because of the project's proximity to

the airport, early coordination also helped determine if there were any design feasibility issues regarding airspace.

The FAA conducted the preliminary 7460 review on the basis of the conceptual layout for the Elgin O'Hare and West Bypass corridors (Alternative 203) and offered the following comments for consideration in future Tier Two studies in its response dated March 6, 2009 (see Appendix J):

- Four locations were identified as Instrument Flight Rules (IFR) impacts, which concern departing aircraft initial climb surfaces. Two of these points (9R-PT5 and 9R-PT6) are located near proposed Runway 9R where the Elgin O'Hare Extension connects to the O'Hare West Terminal. FAA noted that if these points were reduced by the amount of penetration (two to seven feet), there would be no IFR impacts. Failure to do so could result in a reduction of aircraft departure weights allowed by the carriers. A third point (4R"G"-PT3) is located along the West Bypass South Connection Option G (which was subsequently eliminated from consideration; see Section 5.4.7.3). The fourth point (14R-PT3) is located near existing runway 14R, which will be decommissioned in the near future as part of the OMP.
- A table of critical points for Part 77 height restrictions was also provided by the FAA. These points show where potential penetrations to Part 77 Approach Surfaces could occur (see Appendix J for a full list of these points).
- Highway light poles must be affixed with visual delineation/safety light for aircraft safety.
- As the project proceeds to design, a formal 7460 Review will be required before actual construction of proposed work may proceed.

There are no major FAA concerns related to the proposed location or conceptual layout of the Elgin O'Hare and West Bypass corridors. All of the conflicts described above relate to future highway lighting considerations. The issues identified can all be adjusted in subsequent detailed design phases. As planning and design processes continue to move forward, FAA will review the updated design plans from an airspace utilization standpoint.

5.5.2 Initial Estimated Cost

Initial planning level cost estimates were prepared for each Finalist Roadway System Alternative and West Bypass South Connection Option retained for further analysis. Estimates were prepared on the basis of the representative conceptual layout of roadway improvements in each system alternative, including new freeways, arterial widening, and required supporting improvements along adjacent existing roadways. The initial estimated costs reflect existing (2009) conditions and do not reflect cost escalation related to the actual project implementation schedule. Also, the initial estimated costs are intended to provide an order-of-magnitude estimate of overall roadway improvement costs, and to compare the relative costs of alternatives.

The planning level cost model relies on quantity estimates for major items that have the greatest influence on construction cost and which can reasonably be defined at this early stage of concept design. These items include:

- Pavement removal
- New pavement
- Bridge removal
- New bridges and tunnels
- Retaining walls

The cost model accounts for all other items as a percentage of the major construction items listed above. All percentages are based on engineering judgment and historical construction cost data from projects of a similar type and magnitude.

The costs of any potential transit, bicycle/pedestrian and other transportation facilities were not included at this stage. Estimated costs of potential multimodal elements will be incorporated into the estimated costs of the remaining Build Alternatives at a later date. For detailed information on the cost estimating procedure and findings, refer to Appendix K, *Finalist Roadway System Alternative Cost Analysis Memorandum*.

Each cost estimate was prepared on the basis of information currently available (e.g., level of design detail). Estimates prepared at this stage for the seven finalist alternatives are based upon only one representative conceptual design layout for roadway improvements along with associated footprint limits. Given the limited information available regarding roadway infrastructure condition and reuse potential, the estimates were prepared on the assumption of full reconstruction within the designated footprint areas except at the freeway connections. The conceptual design layout for each system alternative includes required transitions along the freeways near new or improved system interchanges, and estimated costs for supporting improvements along adjacent roadways. Estimated costs for improvements within freeway transition sections are included based on the following assumptions:

- Additional construction needed above and beyond the assumed 2030 baseline condition for the roadways is assumed as new construction quantities.
- Along I-90 near the potential IL 83 or West Bypass system interchanges, the 2030 baseline provides 4 lanes in each direction. Costs for lanes beyond the 4-lane condition are included in the estimates. To be conservative, the outer lane of the 2030 baseline is assumed to be reconstructed as well.
- Along I-294 near the potential West Bypass system interchange, the 2030 baseline maintains the existing lane arrangement. Similar to the I-90 connection, any proposed lanes greater than the 2030 baseline are included in this estimate along with the assumed reconstruction of the outermost lane
- Along I-290 near the proposed Elgin O'Hare system interchange, the 2030 baseline maintains the existing lane arrangement. Similar to the I-90 connection, any proposed lanes greater than the 2030 baseline are included in the estimate along with the assumed reconstruction of the outermost lane.

The cost estimates were prepared with year 2009 dollars. Estimates consider construction, engineering, and right-of-way acquisition costs. Potential reuse of roadways and structures, and cost comparisons for alternate design layouts and treatments (e.g., interchange type alternates) will be considered as part of subsequent Tier Two studies.

Right-of-way cost was estimated based on the conceptual footprint limits developed for use as part of the Finalist Roadway System Alternatives impact analyses, as well as current property assessment and tax information available in the GIS database.

Initial planning level costs range from $2.1B (Alternative 501) to $3.6B (Alternative 203). Key factors affecting the overall costs of alternatives include the overall amount (length) of roadway corridor improvements, amount of new freeway facilities provided, and the relative design complexities along various improvement corridors. The greatest factor affecting costs is the amount of new freeway facilities included in each alternative. For example, Alternatives 202 and 203, which provide 12 miles of new freeway centerline miles, have higher costs as compared to the remaining alternatives, which provide 5 to 10 miles of new freeway centerline miles.

Table 5-13 lists the cost estimate findings for the Finalist Roadway System Alternatives.

TABLE 5-13
Finalist Roadway System Alternative Cost Summary

	Finalist System Alternatives		Construction Costs	Right-of-Way Costs	Total Project Costs[a]
Group 2	Alt 202	Elgin O'Hare with Partial IL 83—North and Partial Bypass—South	$2.67 B	$616 M	$3.3 B
	Alt 203	Elgin O'Hare and West Bypass	$2.93 B	$660 M	$3.6 B
Group 4	Alt 401	Elgin O'Hare with Partial Bypass—South and IL 83 Improved North	$2.24 B	$410 M	$2.6 B
	Alt 402	Elgin O'Hare with Partial Bypass—South and York Rd North	$2.15 B	$392 M	$2.5 B
	Alt 403	Elgin O'Hare with Partial Bypass—South and IL 83 Improved Arterial	$2.61 B	$427 M	$3.0 B
	Alt 404	Elgin O'Hare with Partial Bypass—North and IL 83 Improved—South	$2.81 B	$399 M	$3.2 B
Group 5	Alt 501	Elgin O'Hare with IL 83, York Road and IL 19 Improved Arterials	$1.80 B	$323 M	$2.1 B

[a] In 2009 dollars.

5.5.3 Environmental and Socioeconomic Impacts

The potential environmental and socioeconomic impacts of the finalist alternatives were evaluated with the aid of the project GIS database using procedures and criteria described in Section 5.1.1.3. The database reflected refined environmental and socioeconomic data compiled through windshield surveys. The following criteria were used in the analysis:

- Environmental Impacts—Nine criteria were used to evaluate the alternatives with respect to their potential impacts to federal and state regulated resources: water resource impacts (wetlands, waters, floodplains); stormwater detention requirements; recreational land impacts (acres of designated lands, number of parks); threatened/endangered species impacts (number of listed species); historical/archaeological impacts (number of historical sites, number of archaeological sites).
- Social Impacts—Six criteria were used to compare the socioeconomic impacts of the alternatives: potential structure and business displacements (commercial, industrial,

residential); number of potential noise sensitive areas affected; lost tax revenue; employee displacements; and cemeteries and community facilities affected.

Potential environmental and socioeconomic impacts were evaluated on the basis of the representative concept layout and estimated footprint requirements for the seven finalist alternatives, including required supporting improvements to adjacent roadways. To compare potential impacts of the roadway system alternatives, representative location options were assumed for the IL 83 (Option B), West Bypass North (Option D), and West Bypass South (Option D) connections. Table 5-14 summarizes the impact analysis findings for the initial roadway system alternatives. Estimated footprint requirements and associated environmental and socioeconomic impacts for each finalist alternative are also illustrated on Exhibits 5-16.1 through 5-16.7.

5.5.4 Finalist Roadway System Alternatives Screening

The project team used a three-part approach to compare the relative merits of the alternatives, the goal being to identify the best overall performing alternatives to carry forward as build alternatives. The approach consisted of a comparative scoring system; a qualitative comparison of differentiating features of alternatives and their key advantages and disadvantages; and stakeholder input. The *Alternatives to be Carried Forward Technical Report* found in Appendix D of the Tier One Draft EIS contains additional detail about the process.

The seven finalist alternatives represented two general categories of improvements: (1) System Expansion (Alternatives 202 and 203), which would provide new east-west and north-south freeway corridors in the study area; and (2) Combined System Improvements and Expansion (Alternatives 401, 402, 403, 404, 501), which would provide new partial east-west and north-south freeway corridors in combination with roadway widening improvements in the study area.

5.5.4.1 Comparative Scoring System

A scoring system was used to assist in comparing the overall performance of the seven alternatives. The scoring system provided a means to compare performance and impacts objectively and consistently across the broad array of criteria. The evaluation criteria included travel performance (e.g., systemwide travel delay, accessibility, travel times); initial costs (construction and right-of-way); environmental impacts (e.g., wetlands, floodplains, designated lands); and socioeconomic impacts (e.g., displacements, tax revenue loss, job loss). The following approach was used to score alternatives:

- Each of the 24 criteria developed to compare the alternatives was scored on a scale of 1 to 7, with 1 being best and 7 worst. Regardless of the range of performance or impact for any individual criterion, one alternative is relatively the best while another is relatively the worst. For alternatives between 1 and 7, a scaled scoring system[1] was used to account for the range of performance or impact difference within each evaluation criterion.

[1] For example, across all 7 alternatives, wetland impacts ranged from 25.9 to 28.0 acres, for a total difference of 2.1 acres. Using the scoring system, the alternative with 25.9 acres of impact would be scored as 1, and the alternative with 28 acres of impact would be scored as 7. Regardless of the range of performance/impact for any individual criteria, something would be relatively the best and another would be relatively the worst. For alternatives between the best and the worst, the scaled system was used, wherein alternatives that had impact totals closer to 25.9 acres would have a score closer to 1, and those closer to 28 acres would have a score closer to 7. This scoring system acknowledges and accounts for the range of differences for individual evaluation criteria, whether it is narrow or wide.

TABLE 5-14
Environmental and Socioeconomic Impacts

	202	203	401	402	403	404	501
Environmental Impacts							
Acres of wetlands affected	27.1	28.0	26.9	26.5	27.5	26.1	25.9
Acres of waters affected	3.2	6.6	2.7	4.0	2.7	6.3	2.8
Acre-feet of stormwater detention	192.0	203.0	184.9	178.8	216.2	166.8	55.8
Acres of 100 year floodplains affected	29.1	24.6	29.1	24.6	29.1	17.6	28.7
Acres of designated/recreational lands affected	6.7	9.1	6.7	6.5	13.4	13.4	12.5
Number of parks affected by improvement	4	5	5	3	7	6	8
Number of state-listed species potentially affected	0	0	0	0	4	4	4
Number of historical sites affected	0	0	0	0	0	0	0
Number of archaeological sites affected	25	28	23	21	28	32	29
Socioeconomic Impacts							
Commercial structures (businesses) potentially fully displaced by improvement	45 (50)	14 (17)	16(12)	10(7)	16(15)	6(11)	10(8)
Industrial structures (businesses) potentially fully displaced by improvement	26 (32)	23 (21)	19(17)	19(17)	19(17)	10(7)	1(0)
Residential structures potentially fully displaced by improvement	32	20	23	18	133	130	133
Total structures potentially fully displaced	**103**	**57**	**58**	**47**	**168**	**146**	**144**
Potential noise sensitive areas	37	36	33	31	52	54	53
Lost tax revenue (2007)	$5.5M	$3.9M	$3.3M	$2.8M	$3.4M	$2.0M	$1.5M
Employees displaced	1,360	1,065	820	760	945	490	85
Cemeteries and historic cemeteries affected by improvement	0	0	0	0	0	0	1
Community facilities affected (churches, hospitals, schools, fire/police stations)	2	1	1	1	4	4	4

- An overall score was calculated for each alternative by summing scores from each evaluation criteria (9 related to travel performance, 1 to cost, 8 to environmental resources, and 6 to socioeconomic resources).

Table 5-15 lists the scoring for the finalist alternatives. Alternatives that scored better than others by a substantial margin were 202, 203, 401, and 402. The relative scoring data used with this analysis are included in Table 5-16.1 through 5-16.5 (attached).

TABLE 5-15
Finalist Roadway System Alternatives— Total Scaled Score

Alternative	Total Score
402	76
401	77
202	79
203	81
501	107
403	118
404	119

5.5.4.2 Qualitative Analysis

A quantitative analysis was used to assist and compare the overall performance and impacts of the Finalist System Alternatives. In addition, a qualitative analysis was used to gage the performance of each of the Final System Alternatives within each performance category. In the qualitative analysis, a comparison of the alternatives in each category (e.g., system expansion or combined system improvement and expansion alternatives) was conducted. This approach was taken to allow the determination of the best alternatives in each category.

Based on travel performance, cost, and environmental factors, System Expansion Alternatives 202 and 203 have slight differences but generally are comparable. In comparing socioeconomic factors, notable differences were found (see Table 5-14). Alternative 202 has 50 percent greater displacement of residential, commercial, and industrial buildings. It has far greater commercial and industrial building impacts (71 compared to 37 for Alternative 203). Most building displacements would occur in the IL 83 corridor in Elk Grove Village. Commensurate with the high number of commercial and industrial displacements is greater tax revenue loss and greater employment displacement.

The loss of employment is almost 30 percent greater and the tax loss is about 40 percent greater for Alternative 202 than for Alternative 203. The loss of businesses, employment, and tax base are major differences between the alternatives. Based upon the substantial differences in social impacts of the two alternatives, the qualitative analysis supported dismissal of Alternative 202 and retention of Alternative 203.

The five Combined System Improvement alternatives—401, 402, 403, 404, and 501—exhibited considerable contrast among them. Overall, the five alternatives provide reasonably comparable travel performance. This was largely attributable to improved regional travel efficiency and to reduced congestion of secondary roads. When examining environmental and socioeconomic impacts, a greater contrast in performance is observed (see Table 5-14). Examination of environmental factors showed Alternatives 401 and 402 to have the least impact on environmental resources. Alternatives 401 and 402 also have the least impact on socioeconomic factors, including displaced structures and affect to noise sensitive land uses. Alternatives 403, 404, and 501 have more building displacements, the greatest impact to noise sensitive land uses, and the greatest impact to protected recreational lands. They are the only alternatives that potentially affect threatened and endangered species.

As discussed in Section 5.5.1.5, analyses revealed design feasibility issues with Alternatives 404 and 501. For Alternative 404, conceptual design studies revealed a design issue related to a new freeway system interchange near O'Hare Airport, for which feasibility would be complicated by restricted airspace. A tunnel would be required two levels below grade at the system interchange near the proposed west O'Hare access, raising constructability issues given conflicts with an active railroads, high water table, adjacent floodplains, and other constraints. There are also issues with Alternative 501, since it terminates a freeway cross-section at an arterial near IL 83. Terminating a freeway in this manner is undesirable from an operations and safety perspective, because it forces freeway traffic to transition abruptly onto a roadway with limited access control and lower travel speeds. To address these performance issues, the arterial improvements east of IL 83 would need to be upgraded to a fully access controlled highway, providing continuity for freeway traffic. If an access controlled highway replaced the arterial improvements east of IL 83, Alternative 501 basically would look like Alternative 403.

In conclusion, the qualitative analysis supported dismissal of Combined System and Expansion Alternatives 401, 403, 404, and 501 because of relatively high impacts to socioeconomic and environmental factors, and design feasibility issues.

5.5.4.3 Stakeholder Input

The last component of the screening process included consideration of stakeholder input. Based on stakeholder input, solicited through stakeholder meetings and a public meeting in March 2009, the consistent feedback from more than 1,000 attendees and responses from more than 36,000 citizens in the area was resounding support for Alternative 203, with the caveat that any alternative that involved improving IL 83 north of Thorndale Avenue would be wholly unacceptable. Elk Grove Village in particular stated that any alternative with an IL 83 improvement north of Thorndale Avenue (202, 401, 403, 501) would be intrusive and damaging to the economic stability of the community. The more than 36,000 comments supporting Alternative 203 represented a strong consensus opinion from project stakeholders.

The Village augmented its position in a letter to IDOT dated March 19, 2009 (see the Tier One Draft EIS), in which it presented two conceptually engineered roadway proposals for the IL 83 corridor improvements common to Alternatives 202 and 401, 403, and 501. The Village also provided an analysis of the affects on businesses and employment associated with its concepts, impacts on emergency response systems, and an assessment of the community barrier effects of the alternatives. The intent of the Village's analysis was to illustrate the damaging effects of the IL 83 corridor improvements upon the community.

In response, IDOT undertook further analysis, comparing Alternative 202 (freeway along the IL 83 corridor) to Alternative 203 (freeway on new alignment on O'Hare property), and comparing Alternative 401 (upgraded arterial along IL 83 corridor) to Alternative 402 (upgraded arterial along Elmhurst/York Road corridor). Based on a detailed analysis, the alternatives provided comparable travel performance, were similar in cost, and were similar in impact to environmental resources. However, socioeconomic impacts diverged, with alternatives containing improvements along the IL 83 corridor creating measurably higher socioeconomic and community impacts. Alternatives 202 and 401 resulted in more displacements, job loss, tax loss, utility relocation costs, circuitous travel, and interruption to emergency services, and lost business revenue than Alternatives 203 and 402.

The decision regarding improved transportation must be one that would be most compatible with the fabric of the community. Neither Alternative 202 nor 401 maintain the relational aspects of the community. To the contrary, they are disruptive in ways that could seriously affect the economic competitive position of the community and would require a sizable public and private sector investment to reestablish what would be lost by the implementation of either alternative. Based on stakeholder input and further analyses related to roadway improvement locations north of Thorndale Avenue (freeway along the IL 83 corridor versus on new alignment on O'Hare property; upgraded arterial along IL 83 versus along Elmhurst/York Road), Alternatives 203 and 402 were found to be superior to Alternatives 201 and 401.

5.5.4.4 Finalist Roadway System Summary of Findings

Each step of the evaluation of the Finalist Roadway System Alternatives led to individual conclusions that collectively formed the basis for determining the alternatives to carry forward.

- The quantitative scoring and analysis clearly identified four measurably superior alternatives (202, 203, 401, 402) and three inferior alternatives (403, 404, 501).
- The qualitative analysis concluded similarly that Alternatives 401, 403, 404, and 501 should be dismissed from further consideration. The four alternatives consistently showed greater adverse impacts for socioeconomic and environmental criteria considered, and two (404 and 501) also raised design issues that negated their feasibility. Analysis determined that Alternative 203 should be retained and Alternative 202 dismissed because of the higher socioeconomic impacts associated with the IL 83 improvement.
- Stakeholder input clearly expressed preference for Alternative 203, and stated that any alternative involving IL 83 north of Thorndale Avenue would be unacceptable based on disruption to community land use and travel patterns, economic feasibility, emergency services, and reliability of underground utilities than other alternatives.

When considered in total, the evaluation process supported the conclusion that Alternatives 203 and 402 and the No-Action Alternative should be carried forward for detailed consideration in the draft EIS and that all other alternatives should be dismissed.

5.5.5 North and South Connection Options Evaluation

This section presents a summary of corridor location options considered for the West Bypass freeway connections near I-90 and I-294, and for the potential IL 83 connection at I-90 (as noted in Section 5.5.4.4, alternatives which included an IL 83 were dismissed from further consideration). The corridor location options were developed and evaluated independently of the Finalist Roadway System Alternatives, with the objective being to identify a range of locations for new freeway connections near I-90 and I-294 to be considered with the Build Alternatives.

An iterative process was used to develop, evaluate, and screen connection options for the IL 83 and West Bypass. The evaluation considered similar criteria to those used in the evaluation of roadway system alternatives: initial cost (construction and right-of-way); environmental

impact (to wetlands, floodplains, designated lands); and socioeconomic impact (displacements, tax revenue loss, job loss). Design and performance characteristics of the connection options also were evaluated using a combination of quantitative and qualitative analyses aimed at identifying potential major performance issues with the connection options.

5.5.5.1 North Connection Options—IL 83

North Connection Options A and B were developed for the IL 83 corridor near the I-90 system interchange (see Section 5.4.4.1). A comparative evaluation of design performance characteristics, initial costs, and environmental and socioeconomic impacts was performed. Analysis findings revealed that Option A would result in comparably higher socioeconomic impacts and higher initial costs than Option B (see attached Table 5-17). Also, a key differentiating feature is that Option A provides a partial system interchange (directional movements between the IL 83 and I-90 to/from the west), while Option B provides a full system interchange accommodating all directional movements.

Option A was dismissed from further consideration as it does not provide a full direction system interchange, and would result in comparatively higher socioeconomic impacts and initial costs. However, following the Initial Roadway System Alternative evaluation, all system alternatives with IL 83 as a freeway were dismissed.

5.5.5.2 North Connection Options—West Bypass

North Connection Options A, B, C, D, and E were developed for the West Bypass freeway corridor near I-90 (see Section 5.4.4.2). As summarized in Table 5-18 (attached), there is a substantial range in environmental and socioeconomic impacts, and in initial costs across the range of connection options considered. Options A, B, C, and E were dismissed from further consideration on the basis of the following factors:

- Option A does not provide a full system interchange at I-90, results in relatively high socioeconomic impacts and impacts to high quality wetlands, and has higher initial costs.
- Option B results in highest socioeconomic impacts, affects high quality wetlands, and has the relatively highest initial costs.
- Option C results in relatively high socioeconomic impacts and high floodplain impacts, and has comparatively high initial costs.
- Option E is virtually identical to Option D but lacks new local access along I-90.

5.5.5.3 South Connection Options—West Bypass

Seven connection options (A through G) were initially developed for the West Bypass freeway corridor near I-294 (see Section 5.4.4.3 and 5.4.7.3). Options E, F, and G were dismissed because of major design feasibility issues (conflicts with adjacent O'Hare Airport runway protection zones), and major impacts to the Bensenville Rail Yard (see Table 5-19.1 [attached]). The four remaining connection options were then refined and evaluated. The representative conceptual layout of the options was refined to allow a more detailed analysis of their design feasibility, relative impacts, and relative costs. Analysis findings (see attached Table 5-19.2) indicated notable performance differences as follows:

- **Design Feasibility—**Option C has major constructability issues associated with constructing a freeway over an active railroad. Severely constrained construction periods imposed by the railroad (4-hour construction duration per 24-hour period), and construction staging (longer construction period and remobilization issues) make Option C unworkable (see Section 5-4.7.3).
- **Initial Cost—**Costs for Options B (west of UPRR) and C (over UPRR) were relatively higher than for Options A and D, because the corridors either result in substantial conflicts with major freight rail facilities, requiring more complex and costly construction (C), or they have a higher right-of-way cost due to the size and type of displacements (B).
- **Environmental Impacts—**Potential natural resource impacts (wetlands, waters, floodplains, threatened and endangered species) and impacts to designated/recreational lands were comparable across all options, with no major impacts to environmental resources along the south portion of the West Bypass corridor.
- **Socioeconomic Impacts—**Given the developed nature of the improvement corridors, all connection options have substantial socioeconomic impacts. This issue is a key stakeholder concern. There are substantial differences in potential socioeconomic impacts across the evaluation criteria, with mixed results. Option A has the highest relative structure displacements and the highest relative impacts to noise sensitive areas, but the lowest overall tax revenue loss and employee displacements. Option B has substantially higher tax revenue loss and employee displacement than the other options, and thus can be viewed as resulting in relatively high socioeconomic impacts as compared to the other connection options.

As with the screening of the Finalist Roadway System Alternatives, evaluation findings and stakeholder input both are important considerations in the screening of the remaining South Connection Options. In addition to a Public Meeting on March 11, 2009, multiple one-on-one meetings were conducted with the Village of Bensenville, the Village of Franklin Park, and representatives of the UPRR and CPRR to get focused input. Stakeholders raised the following key issues:

- The Village of Bensenville expressed opposition to Option A, which would site a new freeway corridor adjacent to residential areas and displace remaining commercial and industrial properties along County Line Road. The Village also suggested that a corridor location which combines features of Options B and C be considered (Hybrid B/C). In response to this suggestion, two potential design variations were considered: Approach 1 which places the northbound West Bypass lanes directly over the UPRR tracks; Approach 2 which splits the West Bypass directional movements, placing the northbound and southbound lanes east and west of the UPRR, respectively. Analyses revealed design viability issues and high socioeconomic impacts with this option (see Appendix L).
- UPRR expressed strong opposition to Option C, questioning the basic design feasibility and constructability of a new freeway spanning an active mainline freight rail corridor (see the Tier One Draft EIS).

- The Villages of Franklin Park and Bensenville expressed concern with socioeconomic impacts related to Option B, which would displace several major large industrial employers in the area.
- The general public had somewhat mixed opinions regarding Options A, B, C, and D. Some individuals expressed strong opposition to Option A because of direct impacts in Bensenville, including impacts to adjacent residential areas. Others expressed concern with displacement of major area industrial employers (under Options B, C and D).

Options B and C were dismissed from further consideration due to design feasibility issues, relatively higher socioeconomic impacts, and stakeholder input. Whereas, the findings show comparable impacts, and stakeholder input revealed no clear local consensus with respect to Options A and D, they are proposed to be carried forward for detailed consideration as part of the build alternatives.

5.6 Transit System Alternatives

A broad array of transit improvements was considered, the objective being to improve modal opportunities and connections, and to reduce dependence on automobile traffic. The alternatives were shaped through extensive stakeholder input and technical analyses. Improvements considered included new or enhanced transit service (light rail, heavy or commuter rail, bus rapid transit, arterial rapid transit, express bus, local bus, or local circulator), as well as upgraded and new transportation centers. The following sections describe transit alternatives considered.

5.6.1 Level One Transit Alternatives

Early stakeholder input served as the starting point for defining the range of potential transit improvements in the study area (see Section 4.2.3). The focus of the Level One transit alternatives effort was to identify potential transit system improvements, to perform an initial feasibility analysis of the suggested corridors, and to identify corridors for further consideration.

Twenty transit improvements were identified for consideration based on stakeholder input and review of various transit planning documents and ongoing initiatives. Sources reviewed included the 2030 Regional Transportation Plan; plans originating in the City of Chicago and DuPage County organizations; the OMP; CTA, Metra and Pace plans or studies in progress; and pertinent land use plans. Once alignments and facilities were identified, they were reviewed to determine whether they connect key regional markets to the O'Hare area. Complementary elements to enhance intermodal connectivity and strengthen collection and distribution functions were then identified.

The potential transit improvement corridors were evaluated and screened using three categories of evaluation criteria: travel performance (ability to address travel needs in the study area); compatibility with adopted transportation plans; feasibility of implementation within the 2030 planning horizon. Table 5-20 lists the Level One evaluation criteria.

The ability of each corridor to address travel performance issues in the study area was reviewed extensively by the Level One screening. First, each alignment was buffered in its entirety at distances of ¼ mile, ½ mile, and 1 mile, and each of 4 travel performance

TABLE 5-20
Level One Screening Criteria

Criteria	Measures of Effectiveness	Factor
Travel Performance		
Improve travel/service	Connect concentrations of population to work.	Households and employment per route mile
		Study area workers by residence TAZ
	Serve major employment concentrations.	Sites with 75 or more employees
	Connect to O'Hare's air traveler markets.	O'Hare air passenger origins and destinations per route mile
Improve West O'Hare access	Connect to O'Hare's west entrance.	Yes or no
Other Criteria		
Compatibility	With adopted transportation plans.	Yes or no
Implementation horizon	Can be implemented by 2030.	Yes or no

evaluation measures was applied to every individual corridor for each zone. Second, household densities in the buffer zones were mapped along each corridor, permitting a review of whether densities meet threshold levels that can support transit service:

- Bus 2,000 or more households per square mile
- Commuter rail 2,800 or more households per square mile
- Bus rapid transit 3,500 or more households per square mile
- Light rail transit 4,200 or more households per square mile
- Heavy rail rapid transit 4,900 or more households per square mile

A literature review was performed to confirm the threshold levels used in the analysis. The review was supplemented by an examination of transit-oriented development policies throughout the U.S. In 2005, the Bay Area Rapid Transit system's Board of Directors adopted transit-oriented development policies that appear to be quite representative and applicable to this study, because they are stated as density relationships to transit corridors and stations. Accordingly, they were adapted to the Level One analysis for each transit corridor in the EO-WB study.

Examples of the results of this Level One analysis are presented in Exhibit 5-17.1 and Exhibit 5-17.2. The Dempster arterial rapid transit service from East O'Hare terminal to the Yellow Line station in Skokie (Exhibit 5-17.1) shows a route with strong performance across all criteria considered. Throughout the Dempster corridor, there is a relatively even distribution of densities for each measure: site with 75 or more employees; household densities that support higher levels of service; residential locations of study area workers; and daily trip density (origins and destinations) for O'Hare air travelers, projected to 2020. The Mannheim arterial rapid transit or express bus (Exhibit 5-17.2), on the other hand, exhibits density patterns appropriate for transit service north of the I-55 corridor. South of I-55, the densities do not exist for most measures. Where they do, they are not continuous.

Results of the buffer analyses for each transit improvement corridor considered are illustrated graphically in Appendix M, *Transit Alternatives Development and Evaluation Memorandum.*

It is important to note that two rail extensions—the CTA Blue Line from the east terminal to the west terminal, and the STAR Line from I-90 in Mount Prospect to the west terminal—do not excel in the displays of performance measures. The reasons are that both operate either within the airport property or adjacent to it, and neither has stations that serve any destination other than the airport. In both instances, the lines serve extensive regional markets that extend well beyond the study area and would benefit from the improvements.

Of the twenty transit improvements considered, five were eliminated from further consideration with this study, and five were modified to enhance their performance characteristics. Results of the Level One transit improvement screening are summarized in Table 5-21 and illustrated in Exhibit 5-18.

As Level One screening of the transit alternatives was being completed, the study area was expanded westward (see Section 5.4.2). Because of the expansion, the following additional transit improvements in the expanded study area were identified for consideration with the Level Two screening:

- J-Line extension from West O'Hare to the Schaumburg Metra Milwaukee District West (MDW) station
- Upgrading Pace Route 554 (Golf West) service from Elgin to the Northwest Transportation Center
- Establishing local bus service on Roselle Road from the Palatine Metra Union Pacific-Northwest (UP-NW) station to the Glen Ellyn Metra Union Pacific-West (UP-W) station
- Adding local circulator routes connecting residential sites and activity centers to the fixed route services, and
- Adding employer shuttles connecting fixed rail and bus stations to employment sites

5.6.2 Level Two Transit Alternatives

The objective of the Level Two evaluation was to assess the feasibility of the transit routes remaining following the Level One screening. More precision and definition were established for each alignment, including potential station locations. Data from the Level One screening were a key resource in that they permitted identification of population and activity clusters. The following additional factors were considered:

- Transfer opportunities focusing on intermodal connections and intersecting transit routes.
- Physical feasibility of transfer connections (this is a particular concern on interstates, which often are inaccessible to crossing traffic).
- Station spacing. This is an important issue for express bus or higher levels of service (arterial rapid transit, bus rapid transit, passenger rail service). It is necessary to balance the needs of the market with travel time efficiencies requisite to making transit service an effective alternative. For this study, a station spacing criterion of one to two miles generally was used to achieve high levels of service. In a few instances (primarily in express bus or arterial rapid transit corridors), shorter station spacing was used where there were multiple major activity centers less than one mile apart (for example, Maine Township High School East and Lutheran General Hospital in the Dempster corridor).

TABLE 5-21
Alternatives Subject to Fatal Flaw and Level One Screening

Mode	Alignment or Facility	Result
Rail or Bus Rapid Transit Alternatives		
	STAR Line connection to West Terminal	Retained for screening
	CTA Blue Line Extension to West Terminal	Retained for screening
	CTA Blue Line Express Track from Chicago Loop	Retained for screening
	J-Line: West O'Hare to IKEA and STAR Line	Retained for screening
	J-Line: IL-83 to Aurora and Naperville	Retained for screening
	Inner Circumferential	Eliminate 2030 and beyond
	Rail Connector: Metra UP-NW Line to UP-W Line	Eliminated: not in 2030 Regional Transportation Plan; freight conflicts; high cost-low benefit
	Mid-City Connector	Modified: retained for screening as express bus or BRT; rail eliminated
	CTA Yellow Line Extension to Old Orchard Shopping Center, Skokie	Eliminated: too far from study area
Arterial Rapid Transit or Express Bus		
	Golf: Evanston to Woodfield	Retained for screening
	Dempster: East O'Hare to Yellow Line, Skokie	Retained for screening
	I-94 Yellow Line Transfer: Jefferson Park to Yellow Line Dempster terminal	Retained for screening
	I-294 North to Lake County: East O'Hare to Gurnee	Modified: route shortened to terminate at Lake-Cook Rd because of low densities farther north
	I-294 South to Homewood: East O'Hare to Homewood	Modified: route shortened to terminate at Ogden because of low densities farther south
	Mannheim: East O'Hare to Orland Park	Modified: route shortened to terminate at I-55 because of low densities farther south
	I-355: Thorndale to Shorewood	Modified: route shortened to terminate at I-55 because of low densities farther south, and at Higgins to conform to Pace plans
Local Limited Stop Bus Service		
	East Airport to West Airport via Irving Park	Retained for screening
	West Airport Metra Connector via York, UP-NW to UP-W	Retained for screening
Other Facilities		
	Metra Transfer Station: NCS to UP-NW at Des Plaines	Eliminated: physically infeasible
	Metra Transfer Station: STAR Line and proposed N-S rail connector	Eliminated: N-S rail connector is eliminated

The potential transit improvement corridors were evaluated and screened using three categories of refined evaluation criteria: travel performance (ability to address travel needs in the study area); societal effects; and compatibility of the improvements with adopted transportation plans and technologies. Level Two evaluation criteria are listed in Table 5-22.

TABLE 5-22
Level Two Screening Criteria

Criteria	Measures of Effectiveness	Factor
Travel Performance		
Improve travel/service	Connect to concentrated employment sites	Sites with more than 75 employees
	Connect study area residents to work Connect study area workers to residence Serve region's air traveler markets	Densities within 1 mile of station areas
Improve West O'Hare Access	Connect to O'Hare's west entrance	Yes or No
Modal connections	Availability of intermodal connections	Number of connections
Societal Effects		
Land use	Compatible with existing land use	Yes or No
Other Criteria		
Compatibility	With adopted transportation plans	Yes or No
Technology	Capacity compatible with market conditions	Yes or No

The Level Two evaluation criteria include a change in the travel/service criterion. Whereas Level One screening measured household densities per square mile based on U.S. Census data, Level Two screening evaluated where study area workers live based on travel analysis zones that were normalized to cover one square mile. A travel analysis zone is a special area used by transportation planners to tabulate travel data, particularly journey-to-work statistics. It usually consists of one or more census blocks, block groups, or census tracts.

Travel performance for the remaining transit corridors was evaluated by applying a one-mile buffer zones around each station, and subsequently, applying the evaluation criteria to those buffer zones. Exhibit 5-19.1 and 5-19.2 display examples of Level Two screening results for a corridor with inadequate densities in the station areas (I-294 from east O'Hare to Ogden Avenue) and a corridor with high densities and greater market strength (J-Line from O'Hare West Terminal to the Metra MDW Schaumburg station). Analysis results and summarized in Table 5-23.

Of the 20 alignments identified for Level Two screening, 18 were evaluated and 5 were eliminated. The two not evaluated were circulators and employer shuttles, which will be addressed and refined as part of the Level Three transit improvement evaluation for the DEIS Build Alternatives. Two transit alignments—the CTA Blue Line Express Track and Mid-City Transit way—were eliminated from further consideration as were three express bus corridors. Although they will not be evaluated further as part of this study, both the rail and the bus rapid transit projects that were eliminated are identified in other regional plans. They also exhibit strong demand outside of the study area. They are, therefore, considered

"regional supporting projects" for consideration independently of the EO-WB study. Results of the Level Two screening are illustrated on Exhibit 5-20.

In addition to the potential transit alignments and potential station locations, the following representative concepts were developed for several potential major transportation centers in the study area:

- An intermodal transit facility at O'Hare Airport's proposed new west terminal (Exhibit 5-21.1). The facility would accommodate a high-capacity transit corridor (rail or bus rapid transit) accessing from the west; Metra commuter rail (STAR Line) service; Amtrak; future high-speed rail; Pace bus; bus rapid transit; and intercity bus. The transit center provides for easy connections to parking and to the airline terminal, and for easy transfer between the modes. It also provides access into the terminal area's roadway system.
- An intermodal transfer facility proposed at the Metra MDW Schaumburg (Exhibit 5-21.2). At this location, the high-capacity transit line (rail or bus rapid transit) that serves the Thorndale corridor terminates and loops back into the Thorndale alignment. At the Schaumburg Metra station, it is possible to transfer to or from Metra's service and travel east toward O'Hare Airport or west toward Elgin. Also, it is possible to transfer to local Pace service, and access the transit system by parking one's car and riding or storing one's bicycle. The facility provides for preferred parking for vanpools and employer shuttles to permit convenient transfers between the fixed route and distribution systems.
- A rail or bus rapid transit station in the Thorndale corridor (Exhibit 5-21.3). This concept displays a typical transit station located in the median of an expressway at an interchange with an arterial route. It provides both stairway and elevator access from grade level, shelters, and ticketing kiosks. The station also provides for passenger amenities and safety such as seating and lighting.

5.6.3 Transit System Alternatives Evaluation Summary

In sum, the alternatives development and screening process has resulted in identifying and evaluating 25 possible transit system improvements and eliminating 10 of those alternatives through the two levels of screening. Further, five alternatives were modified in the course of the process, and five were added to address the expanded study area. The remaining fifteen alignments will be further refined in the process of overlaying them on the finalist roadway alternatives, and they will be screened once again. In the final screening, environmental and societal effects of the improvements will also be addressed.

5.7 Build Alternatives

Build Alternatives 203 and 402 (with South Connection Options A and D) along with the No-Action Alternative were identified for detailed consideration in the Tier One Draft EIS on the basis of evaluation findings presented in subsections 5.5.4.4 and 5.5.5. A complementary package of 15 transit improvements aimed at enhancing modal options in the study area was also identified (see Section 5.6).

TABLE 5-23
Alternatives Subject Level Two Screening

Alignment or Facility	Result
Rail or Bus Rapid Transit Alternatives	
STAR Line connection to West Terminal	Retained
CTA Blue Line Extension to West Terminal	Retained
CTA Blue Line express track from Chicago Loop	Eliminated following completion of Level One screening. Most of alignment is beyond the study area; retained on maps as a "Regional Supporting Project"
J-Line: West O'Hare to IKEA and STAR Line	Retained
J-Line: IL-83 to Aurora and Naperville	Retained
J-Line: West O'Hare to Metra MDW Schaumburg station	Retained for screening. Alignment added to alternatives following completion of Level One screening to address markets in expanded study area.
Mid-City Connector	Eliminated. Ranks low in air traveler markets; does not serve study area residents; is too far removed from study area. Serves employment market in its corridor and study area workers who live in corridor. Retained on maps as a "Regional Supporting Project"
Arterial Rapid Transit or Express Bus	
Golf: Evanston to Woodfield	Retained for screening
Dempster: East O'Hare to Yellow Line, Skokie	Retained. Corridor extended to Evanston, consistent with Pace plans
I-94 Yellow Line Transfer: Jefferson Park to Yellow Line Dempster terminal	Eliminated: low market potential for express service
I-294 North to Lake County: East O'Hare to Gurnee	Eliminated: low market potential
I-294 South to Homewood: East O'Hare to Homewood	Eliminated: low market potential related to EO-WB study area
Mannheim: East O'Hare to I-55	Retained
I-355: Higgins to I-55	Retained
Local Limited Stop Bus Service	
Irving Park, East Airport to West Airport	Retained
York Road Shuttle, UP-NW to UP-W	Retained
Local Services	
Golf West, Northwest Transportation Center to Elgin	Retained
Roselle Road, Palatine to Glen Ellyn	Retained
Circulators	To be evaluated in Level 3
Employer shuttles	To be evaluated in Level 3

At this stage, the remaining alternatives were combined to form complete multimodal Build Alternatives, consisting of roadway improvements with a complementary set of transit and bicycle/pedestrian system improvements. Also, a framework for potential improvements to other elements of the transportation system, such as freight rail and transportation system and travel demand management, was established as part of this effort. Build Alternatives 203 and 402 improvement features are illustrated in Exhibits 22.1 and 5-22.2.

5.7.1 Alternative 203

Build Alternative 203 consists of upgrading and extending the Elgin O'Hare Expressway between IL 19/Gary Avenue to the O'Hare West Bypass, and constructing a new north-south freeway along the western edge of O'Hare Airport extending from I-90 on the north to I-294 on the south. Also included are supporting improvements to adjacent existing roadways, as well as a complementary set of multimodal improvements, including transit improvements, bicycle/pedestrian improvements, as well as a framework for transportation system and demand management strategies.

The following section presents a description of the roadway improvement features of Alternative 203. Multimodal improvements, which are generally common to both build alternatives, are described in greater detail in Section 5.7.3.Alternatives 203*).*

5.7.1.1 Elgin O'Hare Corridor

As noted in subsection 5.4.3.1, proposed improvements along the Elgin O'Hare corridor include converting Thorndale Avenue to a full access controlled freeway between Rohlwing Road and the O'Hare West Terminal, and widening the Elgin O'Hare Expressway between Gary Avenue and Rohlwing Road. Whereas the scope of the proposed roadway improvements identified during the Finalist Roadway System Alternatives stage generally remain the same, the representative conceptual layout was modified at several locations to integrate transit and bicycle/pedestrian improvements, to address stakeholder input, to enhance design characteristics, and to minimize environmental and socioeconomic impacts.

Descriptions of the Build Alternatives will provide a focus on proposed design changes made between the Finalist System and Finalist System Build Alternative stages. Cross sectional changes were made at many points along the corridor assuming that the Elgin O'Hare roadway median would accommodate a Bus Rapid Transit System, along with multiple median based stations. Minor changes to the horizontal alignment were made as a result of evaluation findings in the Finalist Roadway System Alternatives stage. A focus was placed on removing or reducing critical environmental impacts through design modifications including alignment changes and the use of barriers. Minor change was made to the proposed local roadway system between the Finalist System and Build Roadway Alternatives stages, most of which was driven by stakeholder input.

There are three unique improvement segments along the Elgin O'Hare Corridor; Gary Avenue to Rohlwing Road; Rohlwing Road to west of IL 83; and IL 83 to the O'Hare West Terminal. The remainder of this section includes a brief description of the proposed improvement features in each segment, including conceptual design changes performed during the Build Alternatives stage.

Gary Avenue to Rohlwing Road. This segment includes reconstruction and widening of the existing Elgin O'Hare Expressway providing capacity and interchange improvements. The typical cross section in this segment consists of three basic lanes with additional auxiliary lanes providing needed capacity between interchanges and lane balance along the corridor. Also, the typical cross section has been developed to accommodate a new dedicated BRT facility within the roadway median area, as well as a new dedicated bicycle/pedestrian trail north of the Elgin O'Hare Expressway.

The representative conceptual layout for this segment was updated with the Build Alternatives refinements to accommodate the proposed transit and bicycle/pedestrian improvement features. Specifically, the proposed median width has been widened to accommodate new BRT service along the corridor. The proposed median width ranges from 70 feet to 144 feet, with the widest section of median in the vicinity of Rohlwing Road, where the median width would accommodate a BRT grade separated interchange linking the Elgin O'Hare BRT system with a planned Rohlwing Road BRT system. See Appendix N, page N-1, for a plan and typical section view along this segment of the Elgin O'Hare Corridor.

The existing full access service interchanges as well as connecting roadways at the IL 19, Roselle Road, and Meacham Road interchanges will be maintained and improved to accommodate the mainline widening. The existing split-diamond interchange at Springinsguth Road and Wright Boulevard which provides local access near IL 19 would be retained and improved. An improved partial service interchange would be provided at Rohlwing Road. The interchange layout was modified as part of the Build Alternatives refinements to accommodate a potential BRT corridor and transit station in the southeast quadrant of the Elgin O'Hare at Rohlwing Road interchange. The estimated footprint requirements have also been modified to accommodate these additional improvements. Proposed interchange locations are listed in Table 5-24. Detailed analyses of required interchange improvements will be performed as part of future interchange type studies and preliminary engineering studies in Tier Two.

The vertical alignment along this segment generally follows the existing profile of the Elgin O'Hare Expressway.

Existing structures (bridges and retaining walls) between Gary Avenue and Rohlwing Road will be improved to accommodate the proposed mainline and interchange improvements, and to address potential structure condition issues. Tables 5-25.1 and 5-25.2 (attached) include an inventory of proposed bridge and retaining wall locations. Detailed analyses of required structure improvements will be performed as part of future studies.

Rohlwing Road to West of IL 83. This segment will be converted to a full access controlled freeway. The conceptual layout generally follows the Thorndale Avenue corridor, and where possible was developed to use existing highway right-of-way. The conceptual cross sectional provides three basic lanes in each direction, with additional auxiliary lanes between high volume interchanges. Also, the typical cross section has been developed to accommodate a new dedicated BRT facility within the roadway median area, as well as a new dedicated bicycle/pedestrian trail. The new dedicated bicycle/pedestrian facility generally follows the Elgin O'Hare Expressway/Thorndale corridor except between Rohlwing Road and Arlington Heights Road. From the Elgin O'Hare Expressway, the

bicycle/pedestrian facility will extend north along Rohlwing Road then east along Devon Ave and south along Arlington Heights Road. The facility will again extend east along the Elgon O'Hare/Thorndale corridor on a dedicated bicycle/pedestrian facility located just south of the Elgin O'Hare Extension. The median width varies (70 ft – 144 ft) throughout this segment due to the inclusion of BRT platforms and stations within the median. See Appendix N, page N-2, for a plan and typical section view.

Several modifications were made in this segment as part of the Build Alternatives refinement process. Specifically:

- The conceptual horizontal alignment was modified adjacent to the Salt Creek Golf Club in order to minimize impact to the recreational property. This was accomplished by moving the proposed WB exit ramp to Prospect Avenue and the adjoining frontage road to the south.
- Additional frontage roads and modifications to local roadway improvements were added in response to stakeholder input to facilitate local traffic circulation. Specifically, a one-way EB frontage road was added between Mt. Prospect Avenue and Wood Dale Rd, and the configuration of Lively Boulevard in the vicinity of the Elgin O'Hare Extension was adjusted to be compatible with planned improvements by the City of Wood Dale.

As described previously in Section 5.4.3.1, new service and system interchanges will be provided along this segment of the Elgin O'Hare corridor. Planned improvements consist of new service interchanges with ramp connections at Park Boulevard, Arlington Heights Road, Prospect Avenue, and Wood Dale Road. Also, a new four-level system interchange will be provided at I-290. Existing local roadways and freeways in the vicinity of the proposed interchanges will also be improved to provide acceptable traffic operations and to accommodate geometric design requirements. Detailed analyses of required interchange improvements and design alternatives will be performed as part of future Interchange Type Studies and preliminary engineering studies in Tier Two.

The vertical layout in this segment is mostly elevated, creating opportunity for grade-separated crossings and interchanges. Vertical alignment and overall concept design, will be revisited in Tier Two. Grade-separated structure crossings would be provided at major arterial and local roadway crossings, including I-290, Arlington Heights Road, Prospect Avenue, Mittel Road, Wood Dale Road, and Lively Boulevard.

IL 83 to the O'Hare West Terminal. This segment will be converted to a full access controlled freeway. Multiple design challenges are present throughout this segment as described in Section 5.4.3.1. The conceptual cross section provides three basic lanes in each direction, with additional auxiliary lanes between high volume interchanges. Also, the typical cross section has been developed to accommodate a new dedicated BRT facility within the roadway median area, as well as a new dedicated bicycle/pedestrian trail just south of the Elgin O'Hare Extension. The median width varies (70 ft – 144 ft) throughout this segment due to the inclusion of BRT platforms and stations within the median. See Appendix N, page N-2, for a plan and typical section view.

Major existing and proposed air and freight rail transportation facilities constrain location and design options for roadway improvements in this segment. The area in the vicinity of the Elgin O'Hare Extension system interchange is in a floodplain. The proposed system

interchange near O'Hare Airport will require placement of new embankment and tunneling through the floodplain, requiring mitigation and complicated structural elements. Furthermore, the existing and proposed O'Hare airfield layout and associated runway and airspace constraints further control roadway design characteristics.

The representative conceptual layout for this segment was refined to incorporate planned BRT facilities. A major modification in this regard was the layout of the Elgin O'Hare at West Bypass system interchange and of the associated service interchange connection to the proposed O'Hare West Terminal. Specifically, the interchange layout was revised to a four-level system interchange in order to accommodate a potential BRT connection to the planned O'Hare West Terminal Complications in transit connections to and from the O'Hare West Terminal forced the EB to NB ramp from the Elgin O'Hare Expressway to the West Bypass to be designed as a three level ramp as opposed to a tunneled ramp. The lower level below this system interchange will be reserved for a dedicated connection to the planned O'Hare West Terminal Intermodal Center (see Section 5.7.3.1).

New service interchanges are proposed at IL 83 and York Road, as well as a new system interchange for the Elgin O'Hare Extension and West Bypass connection. Existing local roadways in the vicinity of the proposed interchanges will also be improved to provide acceptable traffic operations and to accommodate geometric design requirements. Proposed interchange locations are listed in Table 5-24. Detailed analyses of required interchange improvements and design alternatives will be performed as part of future Interchange Type Studies and preliminary engineering studies.

5.7.1.2 West Bypass

The O'Hare West Bypass is a proposed new north-south freeway corridor along the west of O'Hare International Airport, potentially connecting with I-90 (Jane Addams Memorial Tollway) to the north and I-294 (Tri-State Tollway) to the south. The conceptual cross section would include three basic lanes with auxiliary lanes between major interchanges. The feasibility of including a transit connection along the O'Hare West Bypass between I-90 and the O'Hare West Terminal was studied moving into the Build Alternatives stage. The horizontal alignment and median width shown (70 feet) is intended to accommodate a future STAR Line connection between I-90 and the O'Hare West Terminal. The vertical profile was developed with the understanding that a transit corridor will parallel the West Bypass alignment. The profile for the West Bypass is shown in Appendix N, Section 2.

Very few modifications have been made to the West Bypass design concept moving from the Finalist System Alternative stage. The concept changes addressed stakeholder and O'Hare Modernization Project input. An attempt was made to reduce constructability and compatibility issues associated with the proposed alignment and other related off-network project improvements.

The horizontal alignment of the West Bypass is relatively unchanged from the Finalist System Alternative stage. From north to south the West Bypass interchanges with I-90 and then parallels the west side of the Union Pacific rail lines before tunneling beneath the railroad lines onto O'Hare International Airport property, following a dedicated 300-foot transportation corridor from south of Devon Avenue to north of Irving Park Road Beyond this point, the corridor would need to be constructed on new alignment with a new system

interchange connection at and I-294. The location of the Bypass corridor was developed to minimize impacts to sensitive areas while accommodating design requirements related to the adjacent freight rail and airport facilities. The West Bypass is described below as two distinct sections: West Bypass—North, that is the part of the bypass north of the O'Hare West Terminal extending to I-90, and West Bypass—South, which includes the remaining freeway south of the terminal to a system interchange with I-294.

West Bypass—North.The north leg of the West Bypass freeway corridor generally follows the west boundary of O'Hare International Airport. The conceptual layout includes four basic lanes in each direction, with additional auxiliary lanes to accommodate changing traffic demand throughout the corridor (see Appendix N, page N-4). The median width (70 feet) is reserved to accommodate potential STAR Line transit service. The representative conceptual layout for this segment was refined to incorporate the potential STAR Line Connection between I-90 and the O'Hare West Terminal.

As noted, the corridor location for this segment was developed to maximize use of available area reserved for surface transportation improvements on O'Hare Airport property, to minimize impacts to sensitive areas, and to comply with design requirements related to adjacent transportation facilities. The corridor would be located within O'Hare property from the Elgin O'Hare Extension to Devon Avenue, where it would tunnel beneath the UPRR and generally follow the UPRR corridor to a new system interchange with I-90. A tunnel was selected as the representative grade separation because of design constraints related to the adjacent runway 14R. The feasibility of an overpass of the UPRR should be considered as part of future studies. The runway decommissioning schedule (planned for 2013) and FAA requirements will also be considered as part of the future design alternative studies.

New service interchanges and associated local roadway improvements are proposed at Touhy Avenue, Elmhurst Road (at I-90), Devon Avenue, and Pratt Boulevard. Also, a new four-level system interchange is proposed between the West Bypass and I-90. One refinement to the conceptual layout for the build alternatives is the inclusion of a new grade separation for the Touhy Avenue at UPRR crossing. The grade separation was included in response to stakeholder input and to address operational issues with the existing at-grade crossing. Table 5-24 lists proposed interchange locations. Detailed analyses of required interchange improvements and design alternatives will be performed as part of future interchange and preliminary engineering studies.

The vertical profile of the O'Hare West Bypass varies with respect to ground level in the north section of the West Bypass. A rolling profile is required to accommodate grade separations for interchanging traffic and to abide by the FAA air space rules and restrictions (see Appendix N, Section 2).

West Bypass—South. The south leg of the West Bypass freeway corridor generally follows the west boundary of O'Hare Airport to IL 19, then continues southeasterly to a system connection at I-294. The conceptual layout includes four basic lanes in each direction, with auxiliary lanes to accommodate changing traffic demand throughout the corridor. Because a transit corridor is not planned south of the O'Hare West Terminal adjacent to the West Bypass, a standard 30-foot median is proposed (see Appendix N, pages N-5 and N-6).

The representative conceptual layout for the south leg of the West Bypass is essentially identical that identified in the previous Finalist Roadway System Alternatives step. A representative working vertical profile was developed as part of the build alternatives refinement process. The profile for this segment is controlled by FAA airspace constraints and vertical clearance requirements at the proposed roadway and railroad grade separations. Beginning at the Elgin O'Hare system interchange and progressing south, the West Bypass occupies the 300-foot corridor reserved for transportation use on O'Hare Airport property to a point near IL 19. The profile remains near ground level before elevating to overpass IL 19. To the south, two potential corridor locations remain under consideration: South Connection Options A and D (see Section 5.4.4.3). South of IL 19, the profile would be lowered to provide an underpass at the Bensenville Rail Yard, and then rise and continue at an elevated level to the proposed new system interchange with I-294. The vertical profile requirements for Connection Option D are controlled by numerous rail spur lines. Where possible, concepts for reconfiguring spur lines to lower the West Bypass profile and to reduce overall costs were identified. Detailed vertical profile studies and design alternatives for this area should be considered with future studies (see Appendix N, Section 2).

TABLE 5-24
Interchange Locations Alternative 203 and 402

New Service Interchange	New System Interchange	Upgrade Interchange
Alternative 203		
Elgin O'Hare / Rohlwing Rd	Elgin O'Hare / West Bypass	Wright Boulevard
Elgin O'Hare / Park Blvd	West Bypass (south leg) / I-294	Roselle Rd / Elgin O'Hare
Elgin O'Hare / Prospect Ave	West Bypass (north leg) / I-90	Meacham Rd / Elgin O'Hare
Elgin O'Hare / Wood Dale Rd		I-290 / Elgin O'Hare
Elgin O'Hare / IL 83		Elmhurst Rd / I-90
West Bypass (south leg) / IL 19		I-294 / IL 64 (North Avenue)
West Bypass / Franklin Avenue (South D)		
West Bypass / County Line Road (South A)		
West Bypass (north leg) / IL 72		
West Bypass (north leg) / Elmhurst Road		
Alternative 402		
Elgin O'Hare / Rohlwing Rd	Elgin O'Hare / West Bypass	Wright Boulevard
Elgin O'Hare / Park Blvd	West Bypass (south leg) / I-294	Roselle Rd / Elgin O'Hare
Elgin O'Hare / Prospect Ave		Meacham Rd / Elgin O'Hare
Elgin O'Hare / Wood Dale Rd		I-290 / Elgin O'Hare
Elgin O'Hare / IL 83		Elmhurst Rd / I-90
O'Hare West Terminal / Elmhurst Road		I-294 / IL 64 (North Avenue
West Bypass (south leg) / IL 19		
West Bypass / Franklin Avenue (South D)		
West Bypass / County Line Road (South A)		

New service interchanges and associated local roadway improvements are proposed at IL 19, and Franklin Avenue/Green Street, and IL 64 (at I-294) along with associated local roadway improvements. Several refinements were made to the conceptual layout of local roadway improvements for the build alternatives to address stakeholder input and to optimize design characteristics. Concept layout changes include the widening of Franklin Avenue between County Line Road and Wolf Road to accommodate increasing off-system traffic demand, and a refined layout for the proposed Taft Road Connector to include a flyover of IL 19 with a jug-handle intersection in the northwest quadrant. The Taft Road conceptual layout was revised to be compatible with the planned Taft Road overpass of the CPRR (by OMP), and to optimize overall operational performance. A new system interchange is proposed between the West Bypass and I-294 Proposed interchange locations listed in Table 5-24. Detailed analyses of required interchange improvements and design alternatives will be performed as part of future interchange and preliminary engineering studies.

5.7.2 Alternative 402

Build Alternative 402 is virtually identical to Alternative 203, except that it eliminates the north leg of the West Bypass freeway and instead widens Elmhurst Road between the proposed Elgin O'Hare Extension and I-90 (see Appendix N, page N-7).

Elmhurst Road is a 4-lane major north-south arterial traversing the eastern boundary of the Elk Grove Industrial Park. The representative conceptual layout in Build Alternative 402 provides a 6-lane roadway section along the corridor, with improvements at all the intersections. The partial access service interchange at Elmhurst Road and I-90 would be reconstructed to a full access service interchange to accommodate regional travel patterns. Without a north freeway leg, reservation of a dedicated transit corridor within the project footprint is not possible without excessive impact along the Elmhurst Road alignment.

A four-level interchange is required between the Elgin O'Hare and West Bypass corridors at the O'Hare West Terminal in Build Alternative 203. By eliminating the north freeway connection, the system interchange at the convergence of the corridors is reduced to three levels and can incorporate a direct service interchange between the O'Hare West Terminal and Elmhurst Road.

5.7.3 Multimodal Elements

Transit improvements and other complementary transportation improvements were considered in the development of a comprehensive transportation solution for the study area. A total of 15 transit improvements were incorporated into the Build Alternatives based on findings of an iterative alternatives screening process and stakeholder input. A complementary set of bicycle/pedestrian system improvements was then identified with the objective of enhancing modal connections in the study area. Additionally, a framework for enhancing freight movement and optimizing operational characteristics of the transportation system in the study area was then identified.

The following section presents a description of the proposed transit improvements, bicycle/pedestrian improvements, freight system strategies, and transportation system and demand management strategies. These multimodal improvements are generally common both build alternatives.

5.7.3.1 Transit

Fifteen routes or corridors, including a mix or regional, local and distributor services, were incorporated into the Build Alternatives (light rail, commuter rail, bus rapid transit, arterial rapid transit, express bus, local bus, or local circulators), as listed in Table 5-26. Because of the nature of these transit services, many extend outside the proposed improvement limits and outside the study area in general. All proposed transit improvements were reflected in the travel demand modeling of the build alternatives (see Section 5.6.2). Recognizing that detailed planning, design, and implementation of transit improvement will be the responsibility of the appropriate transit implementing agency, only transit improvements within proposed roadway improvement limits (J-Line West to Schaumburg Metra and STAR Line Spur) were incorporated into the build alternative conceptual layout and estimated footprint requirements.

TABLE 5-26
Proposed Transit Improvement

Corridor	Route Detail	Mode and Operating Assumptions
Blue Line Extension to West Terminal	Connects O'Hare Terminal station to proposed West Terminal, the only two stops along the proposed corridor.	Heavy rail transit; dedicated subway tunnel with 7-minute headways.
STAR Line spur	Rail spur that connects the proposed O'Hare West Terminal station to the Metra STAR Line. West terminal is the only stop along the spur section.	DMU-type vehicles that operate commuter rail service with undetermined headway times, contingent on Metra STAR line headways.
J-Line West to Schaumburg Metra	Connects O'Hare West Terminal station to Metra MDW Schaumburg station. Stop locations include West Terminal, IL 83, Wood Dale, Prospect, Meacham, and Roselle roads, and Schaumburg Metra.	High capacity transit corridors (BRT or rail). A-B service with 15-minute headways along branches and 7-minute headways along shared section of Elgin O'Hare Expressway alignment.
J-Line Northwest to Woodfield	Connects O'Hare West Terminal station to IKEA store at Meacham Road. Stop locations include West Terminal, IL 83, Wood Dale, Prospect, Devon, and Biesterfield roads, Higgins Northwest Transportation Center, and IKEA.	
J-Line South to Aurora	Connects O'Hare West Terminal station to Aurora. Stop locations include West Terminal, Elgin O'Hare Expressway and IL 83, Grove Avenue, Lake Street, North Avenue, Oakbrook Mall, 22nd and Highland, Warrenville and Naperville Road, Naperville Metra, IL 59 and Ogden, and Aurora STAR line station at 95th Street.	BRT service with few stops placed at major nodes of activity. Headways are 7-minute peak/15-minute off-peak.
I-355	Connects Northwest Transportation Center with Bolingbrook. Stop locations include Higgins Northwest Transportation Center, Biesterfield, Devon, Lake Street, Army Trail Road, North Avenue, Roosevelt, Butterfield, Ogden, Maple, 63rd Street, 75th Street, and 87th Street.	Express bus service running exclusively along expressway lanes. Headways are 15-minute peak/30-minute off-peak.
Golf Road West	Local stops every two to four blocks.	Local bus service with 15-minute peak/30-minute off-peak minute headways. Upgrade to an existing Pace service.
Mannheim Road	Connects O'Hare East Terminal with I-55. Stop locations include East O'Hare, Irving Park Road, Grand, North, St. Charles, Butterfield, Roosevelt, Cermak, Ogden, LaGrange Metra, 55th Street (Countryside Village Hall), Joliet Road, and I-55.	Arterial Rapid Transit also can be conceptualized as an express bus that runs along a local arterial and incorporates technologies designed to five transit vehicles priority. 15-minute peak/30-minute off-peak.
Dempster Street	Connects O'Hare East Terminal with Skokie. Stops include East O'Hare, Mannheim and Touhy, River Road Des Plaines Metra, Carlean Court (Maine High School), Luther Road (Lutheran General Hospital), Milwaukee Avenue, Harlem, Waukegan, Central, and Skokie Yellow Line station.	Arterial Rapid Transit also can be conceptualized as an express bus that runs along a local arterial and incorporates technologies designed to five transit vehicles priority. 15-minute peak/30-minute off-peak.

TABLE 5-26
Proposed Transit Improvement

Corridor	Route Detail	Mode and Operating Assumptions
Golf Road East	Connects Evanston to Woodfield Mall. Stop locations include Higgins (Northwest Transportation Center), Gold and STAR Line station at Northwest Highway and Golf Road, Arlington Heights Road, Elmhurst Road, Wolf Road, River Road Des Plains Metra, Greenwood Road, Waukegan Road, Gold Road and US Highway 41, Church and Crawford, Church and Dodge, and CTA Purple Line Davis Station.	Arterial Rapid Transit; also can be conceptualized as an express bus that runs along a local arterial and incorporates technologies designed to five transit vehicles priority. 15-minute peak/30-minute off-peak.
Irving Park Road	Connects the East and West Terminals at O'Hare Airport. Stop locations include East O'Hare, Mannheim, Post Office, and West O'Hare.	Local express service. Headways are 7-minute peak/15-minute off-peak.
Roselle Road	Connects Palatine UP-NW Metra Station to the UP-W Metra Glen Ellyn station. Local stops every two to four blocks.	Local bus service. Headways are 7-minute peak/15-minute off-peak.
York Road Shuttle (UP-NW to UP-W)	Connects the UP-NW Metra Mt. Prospect station to the MDW Metra Elmhurst station. In addition to local stops every two to four blocks, route serves proposed STAR line, O'Hare West Terminal, and MDW Metra Bensenville station.	Local bus service. Headways are 7-minute peak/15-minute off-peak.
Circulators	Several proposed routes; connections include Woodfield, NW Transportation Center, Devon Intermodal Transit facility, and various high-level transit stations in the western part of the study area.	Local shuttle service linking residential areas to high level transit stations. Proposed headways are 15-minute peak/30-minute off-peak.
Employer shuttles	Several proposed routes serving the industrial area directly west of O'Hare Airport as well as concentrated areas of commercial and industrial use within the vicinity bounded north-south by the UP-W and MDW Metra lines and east-west by IL-83 and Roselle Road.	Local shuttle service linking employment centers to high level transit stations. Peak period scheduled runs; no off-peak service.

New Dedicated Transit Corridors.

J-Line West to Schaumburg Metra. J-Line West is envisioned as a high capacity transit corridor. It will connect O'Hare West Terminal station to Metra MDW Schaumburg station with stop locations at the O'Hare West Terminal, IL 83, Wood Dale, Prospect, Meacham, and Roselle roads, and Schaumburg Metra. The J-Line would provide approximately 10 miles of new transit service within the median of the Elgin O'Hare corridor.

Whereas the transit modal alternatives (e.g., bus rapid transit, heavy rail, light rail) would need to be evaluated in detail by the appropriate transit agency with future studies, BRT was assumed to be a representative transit mode for the purpose of the Tier One EIS studies. However, preliminary analyses suggest that the BRT or rail transit service could be accommodated within the Elgin O'Hare corridor roadway layout. Specifically, the reserved median width could accommodate either two 10-foot rail tracks (one in each direction) with provisions for a platform width of 20 feet, or two 14-foot BRT lanes (one in each direction) with an approximate platform width of 16 feet. The BRT lanes would be separated from the

eastbound and westbound lanes by a barrier, and the BRT lanes would be separated from the Elgin O'Hare lanes by a barrier at station. Typical sections at Transit Station locations along the Elgin O'Hare/Thorndale corridor are shown in Appendix N, pages N-1 through N-3, and a station concept rendering was developed (see Exhibit 5-21.3).

Preliminary conceptual station location were identified for the J-Line West corridor. Proposed station locations were selected based on the following factors:

- Market data
- Land use patterns
- Intermodal connections
- Station spacing
- Local services
- Stakeholder input
- Availability of space for parking
- Residential development patterns
- Locations of major employment centers and routes into them for pedestrian and circulator/shuttle access

It should be noted that proposed station locations will need to be evaluated in detail as part of future detailed studies by transit agencies.

STAR Line Spur. The STAR Line Spur is envisioned as a rail spur that connects the proposed O'Hare West Terminal station to the planned Metra STAR Line located within the median of I-90 (see Appendix N, page N-4), providing about 3 miles of a new dedicated commuter rail connection from the I-90 corridor to the proposed O'Hare West Terminal, which will be the only stop along the spur section. STAR Line improvements included in the conceptual layout of the Build Alternatives begin at the I-90 and West Bypass system interchange complex and extend to the south along the West Bypass corridor. This improvement is only included in Build Alternative 203.

The STAR Line Spur corridor would consist of two rail tracks (one in each direction), with an operating speed of 50 mph. The STAR Line Spur would connect to the STAR Line alignment at I-90 by a curved aerial guideway requiring an operating speed of 45 mph over the I-90 eastbound lanes with a 17-foot clearance. Proceeding south, the guideway would also cross over a detention pond for O'Hare Airport's flood control and over Touhy Avenue.

The STAR Line Spur would be located within the median of the West Bypass and generally follow the proposed roadway vertical profile through Devon Avenue. To the south, the STAR Line Spur profile would need to descend to a proposed underground terminus at the O'Hare West Terminal. The STAR Line Spur transit corridor would be physically separated from the proposed freeway section. It will be separated from the West Bypass lanes by a 12-foot barrier.

Transportation Centers. The project presents opportunities to develop new transit services for the area and to enhance service connectivity through new intermodal transportation centers. The intermodal transportation centers provide connections and transfer points between modal services and are vital to the overall function of the system. They add opportunities and convenience for improved automobile connections, passenger drop-off,

bus-to-bus interconnections, bus-to-rail and airport-to-bus or rail interconnections which are expected to result in the following benefits:

- Enhanced and more convenient transit services to both air travelers and the residents and workers in the surrounding communities
- A vital transit link between the city and suburban residents and job markets
- Relief of traffic and parking pressure on the airport and surrounding roadways
- Reduced pollutant emissions from transport in the area

Proposed improvements include upgrades to two intermodal facilities: the Northwest Transportation Center and the Schaumburg Metra Station. The upgrades include bus stands, bicycle and pedestrian access, bicycle storage, and real-time displays of service information. Timed coordination of bus schedules is important to allow easy transfer between transit services and between bus routes and the intermodal facility. The upgrades also would consist of connecting to the proposed J-Line branches and provisions for additional or shared use parking at the Schaumburg Flyers Stadium parking facility.

Three new intermodal transportation facilities are proposed to enhance modal connections across the transportation system: the (West Terminal Intermodal Center, Rohlwing Road/Elgin O'Hare Transportation Center, and the East O'Hare Transportation Center.

West Terminal Intermodal Center. A conceptual plan for the O'Hare West Terminal Intermodal Center was identified on the basis of prior planning studies and stakeholder input from the EO-WB study. The conceptual plan was developed to integrate the following transit services at the planned intermodal center:

- Existing area Pace (local) bus routes
- Proposed new express and local bus services under the Build Alternatives
- CTA Blue Line extension as identified with the OMP
- Metra STAR Line terminal to accommodate a potential spur connection
- Potential high speed and intercity rail

A representative conceptual layout was developed for the O'Hare West Terminal Intermodal Center (see Exhibit 5-21.1). Whereas the O'Hare West Terminal design will be implemented as part of the ongoing O'Hare Modernization Program, it is envisioned that this conceptual layout will be considered in more detail as part of future OMP studies. The conceptual layout was developed on the basis of the following objectives:

- Bring transit services as close together as possible to maximize convenience of transfers between transit modes, and to reduce overall transit travel times.
- Bring transit services as close to the new terminal as possible to maximize convenience of transfers between air and transit.
- Place priority on bringing the highest capacity modes, Metra STAR Line, high speed/intercity rail and CTA Rapid Transit Blue Line, together under or as near to the terminal as possible to provide convenient transfer of large numbers of passengers and provide checked luggage transfers to and from high speed/intercity trains.

- Provide for circulation and transfers both between transit modes, and also between transit and the air terminal. This transit circulation area should operate independently of the air terminal and provide 24-hour operations.
- Provide a facility for transit passengers to arrive and depart using the passenger vehicle roadways serving the air terminal.
- Avoid physical conflicts with the underground "people mover" system.

The O'Hare West Terminal Intermodal Center would provide a distinct transit exchange area in the air terminal or separate building directly adjacent to the air terminal. The intermodal center would provide for the required circulation space to interconnect transit modes and the flow of passengers to and from the air terminal. A O'Hare West Terminal Intermodal Center within the terminal or a building adjacent to the terminal would allow independent operation from the air terminal for 24-hour operation and operation if the air terminal is closed for renovation or operational reasons. A separate building adjacent to the air terminal, fronting on the approach drives for the terminal would allow passenger circulation directly to and from both the arrivals and departures levels.

Rohlwing Road Transportation Center. A new intermodal facility is proposed along the Elgin O'Hare Expressway near Rohlwing Road. The facility would include bus stands, bicycle and pedestrian access, bicycle storage, and real-time displays of service information. Timed coordination of bus schedules is important to allow easy transfer between transit services and between bus routes and the intermodal facility. Provisions could be made for transfers between J-Line to Woodfield, the J-Line to the Schaumburg Metra Station and O'Hare Airport, Park-n-Ride and Kiss-n-Ride.

East O'Hare Transportation Center. A new intermodal facility is proposed on the east side of O'Hare International Airport. The East O'Hare Transportation Center would accommodate transfers between current and proposed new transit facilities on the east side of the airport. Potential features include bus stands, bicycle and pedestrian access, bicycle storage, and real-time displays of service information. Timed coordination of bus schedules is important to allow easy transfer between transit services and between bus routes and the intermodal facility. At this location, convenient and easy connections to bus routes that serve the east side of O'Hare Airport will be provided thus creating a new centralized intermodal transit exchange for the airport and the communities in the area.

5.7.3.2 Bicycle / Pedestrian

Bicycle and pedestrian facilities provide another important link in the overall transportation system. A concept plan for bicycle and pedestrian system improvements was developed with the goal of improving connections between transit stations, park and ride facilities, community activity center, regional trail systems and employment areas. The plan identified additional trail linkages and trail crossing locations proposed as part of the EO-WB study. Identified improvements focused on filling the gaps in the existing and planned regional and community trail systems in the study area.

Exhibit 5-23.1 illustrates the existing and currently planned regional trail system in the study area, including the Illinois Prairie Path, the Great Western Trail, and the Des Plaines River Trail. Roughly nine miles of new trails are planned by others. The planned trails would

provide linkages between existing trail sections and regional trails. As part of the EO-WB study, roughly eight miles of additional new trail links are proposed, the objective being to complete the regional trail loop in the study area:

- A link in Elk Grove Village extending from Higgins Road to Oakton Avenue, continuing westerly on Oakton Avenue, then southerly on Tonne Road (Regional Trail A)
- A link in Elk Grove Village extending along Tonne Road between Pratt Boulevard and Walnut Lane, then west along Walnut, south on Ridge Avenue, west on Devon Avenue, and finally south along Salt Creek (Regional Trail B)
- A section in Elmhurst connecting a proposed trail along Lake Street to a proposed trail along Wrightwood Avenue via York Road (Regional Trail C)

Exhibit 5-23.2 illustrates the existing and planned community trail system in the study area, along with the location of employment centers, community centers, and transit stations. Examination of the community trail system found many gaps in linking these activity nodes. Whereas planned improvements by others (totaling 18 miles of new trails) would begin to link gaps in existing trails and link trails with community and employment centers, further improvements to the system appear warranted. As part of the EO-WB study, 15 miles of additional trails were identified, with a focus on improving access to communities, employment centers, and transit facilities. One notable proposal is the bicycle/pedestrian trail along the existing and proposed Elgin O'Hare Expressway from the west end of the study area near Gary Avenue to O'Hare Airport (Community Trail Improvement One). The link would provide intercommunity travel and easy access to transit stations proposed in the corridor. Other proposed community trail sections would connect Busse Woods with IL 19 generally between Salt Creek and IL 83 (Community Trail Improvement Two), and a proposed trail section between Lake Street and IL 19 in Bensenville (Community Trail Improvement Three). Finally, several smaller trail improvements are proposed throughout the community trail system to fill gaps between existing and proposed improvements by others.

One goal of the proposed community trail system is to link major activity areas. However, more is needed to improve bicycle and pedestrian access within the expansive commercial and industrial developments in the area. Exhibits 5-23.1 and 5-23.2 show the generalized areas where a local trail framework should be expanded within commercial and industrial development areas to enhance access for workers using nonmotorized transportation. Further examination of these areas is recommended for the local communities to explore opportunities for bicycle and pedestrian facilities.

In developing the Finalist System Build Alternatives, individual transportation components were combined to form complete multimodal alternatives consisting of roadway improvements and a complementary set of transit and bicycle/pedestrian system improvements. The project team sought opportunities to locate bicycle/pedestrian facilities within the roadway improvement footprint and to create safe shared-use corridors with bicycle paths 8 to 10 feet wide that are physically separated from motorized vehicular traffic by an open space or barrier with the idea that the facility would serve as an alternative travel route.

The bicycle and pedestrian system improvement plan includes special design considerations to accommodate the safe movement of bicycle and pedestrian crossing at major roadways. The "starred" locations in Exhibits 5-23.1 and 5-23.2 illustrate these locations.

Proposed bicycle/pedestrian trails and major trail crossing locations within roadway improvement limits were incorporated into the representative conceptual layout for the Build Alternatives. Potential trails must be evaluated in more detail as part of future Tier Two studies.

5.7.3.3 Freight Rail

There are numerous freight rail facilities throughout the study area, including a large track network (mainline tracks, industrial spur tracks, and yard tracks), classification/marshalling yards, and intermodal facilities. The numerous (120) at-grade crossings constrain automobile movement and reduce travel efficiency and safety. Three areas of freight rail improvements were proposed as part of the EO-WB study: separation of highway and rail at key locations, interlocking improvements, and improved access to intermodal facilities.

Highway-Rail Grade Crossings. Several at-grade crossings of road and rail are key locations for improvement, with the intent being to grade-separate these crossings.. These improvements are supported by findings in the region's CREATE program:

- A proposed grade separation of Irving Park Road and the Canadian Pacific Mainline track in Bensenville (2030 baseline project). Grade separation would improve roadway traffic at the Irving Park Road and York Road intersection, where traffic delays for crossing trains can be up to 15 minutes.
- A proposed grade separation of Irving Park Road and the planned relocated Union Pacific track in Bensenville that would be funded by the OMP.
- A proposed grade separation of Metra's MDW at Irving Park Road and Wood Dale Road. The crossing of the rail line and the intersection of the two roadways is at an extreme skew and is a cause of many accidents and long traffic delays.
- Other locations that require consideration are UPRR and Touhy Avenue on the north side of O'Hare Airport, Metra MDW at York Road, and the industrial spur line crossing Elmhurst Road near Pratt Avenue.

Interlock Improvements. Track interlocks are a complex system of signals and special trackwork that ensure safe and efficient train movements between one track and another. Potential improvements to the interlock system in the study area include B-17, Bryn Mawr interlock, and Deval interlock. Numerous trains pass daily through these interlocks. Current operations are slowed by aged signal systems, train length, and limited track capacity. Improving these conditions would include improvements at the interlock system, or system improvements in other locations that would assist movement through the capacity limited interlockers. One of the benefits of these improvements would be reducing train backups at railroad/roadway at-grade crossings.

Intermodal Considerations. Intermodal freight operations are co-located with railroad classification/marshalling yards in the study. There are four intermodal facilities in or near the study area, where containerized freight from one mode of transportation is transferred to

another (e.g., truck to rail, or rail to truck). Attention has been given to improving these connections. One example is the local access that would be provided from the south bypass connection to industrial development in Franklin Park and Bensenville. Hundreds of truck movements (more than 500 to the intermodal facility alone) that enter and leave the area daily experience circuitous travel to and from the nearest freeway connection. This single improvement will save travel time, travel and operation costs, and reduce fuel consumption. The benefit of this new access could affect the competitive attractiveness of the area, and should have a positive benefit on occupancy, land values, and development and redevelopment potential.

5.7.3.4 Transportation System Management and Travel Demand Management

TSM and TDM represent another component of the transportation alternatives. These components are considered supporting improvements to the overall plan. TSM techniques and strategies would add efficiency in travel on the system. TSM techniques include modernized traffic signal control systems that adjust themselves to optimize traffic flow, freeway traffic flow management, incident detection and response, system surveillance, intersection improvements, and traveler information services. TDM attempts to reduce single occupancy automobile travel or during peak periods of travel and includes strategies or techniques such as car pooling, van pooling, park and ride facilities, and alternate work hours, etc. The specific strategies that would be implemented would be developed during Tier Two. During this phase of analysis, the effects of these strategies have been approximated in the travel modeling work and have resulted in a small reduction in travel on the roadway.

5.8 Build Alternatives Evaluation

Build Alternatives were evaluated using comparable procedures and performance criteria to those used for the Finalist Roadway System Alternatives evaluation. The evaluation included an extensive set of evaluation criteria, including criteria suggested by stakeholders such as travel performance (systemwide travel delay, accessibility, travel times), initial costs (construction, right-of-way), environmental impacts (wetlands, floodplains, designated lands), and socioeconomic impacts (displacements, tax revenue loss, job loss). Alternatives were evaluated on the basis of the refined representative layout of the Build Alternatives. This refined layout reflects proposed roadway improvements, as well as associated transit and bicycle/pedestrian features.

5.8.1 Travel Forecasts and Systemwide Travel Performance

Travel forecasts and updated travel performance analyses were developed for the build alternatives to allow a comparison of their performance characteristics. Systemwide travel performance analyses were prepared using procedures similar to those for the Finalist Roadway System Alternatives (see Section 5.5.1). The primary difference with the Build Alternatives evaluation was the development and use of alternative specific traffic forecasts which reflect alternative specific socioeconomic forecasts as well as all transit improvements identified as part of the EO-WB Build Alternatives.

5.8.1.1 Build Alternative Socioeconomic Forecast

TABLE 5-28
Systemwide Travel Performance Measures—Build Alternatives (Daily)

Performance Measures	No-Action Alternative	Alternative 203	Alternative 402
VMT	20,933,000	22,971,000	22,669,000
VHT	694,700	718,000	719,900
VHD	209,500	209,300	209,800

Alternative-specific socioeconomic forecasts were estimated for Build Alternatives 203 and 402. The forecasts were developed on the basis of improvements to accessibility, additional capacity (new lane-miles), and potential areas for development in the project study area above and beyond the socioeconomic forecasts in the 2030 CMAP RTP.

Potential development locations were identified based on accessibility and re-development potential due to characteristics of the build alternatives under consideration. The estimated growth in households and employment were reallocated within the identified traffic analysis zones to be used as input in the development of the build alternatives travel demand model. The build alternatives socioeconomic forecasts represent a moderate increase in households and employment that is confined to the study area purely based on project specific conditions. These forecasts do not alter the conformed 2030 CMAP RTP regional totals and socioeconomic relationships that are established by CMAP for the regional planning process

Table 5-27 shows the households and employment comparisons between 2030 CMAP RTP and the build alternatives along with percent increase from 2030 CMAP RTP.

TABLE 5-27
Household and Employment Comparisons

	Revised Study Area				Chicago Region	
Scenario	Households	% Increase	Total Employment	% Increase	Households	Total Employment
2030 RTP	204,400	N/A	687,400	N/A	4,364,300	6,493,000
Alt 203	207,400	1.5%	712,100	3.6%	4,364,300	6,493,000
Alt 402	206,800	1.2%	698,100	1.6%	4,364,300	6,493,000

5.8.1.2 Build Alternative Travel Model and Travel Performance

The build alternatives socioeconomic forecasts along with the roadway and transit network characteristics were provided to CMAP to develop the build alternatives travel demand and transit mode share estimates for the project. The build alternatives travel demand provided by CMAP was assigned to the roadway network to develop build alternative traffic forecasts. The travel forecast estimates were then used to develop systemwide travel performance summaries and evaluations.

Table 5-28 describes the systemwide travel characteristics of the two build alternatives. As noted, the travel performance of both the build alternatives is similar, but does show some

differences when compared to the No-Action Alternative. The similarity in build alternative performance is attributed to many features of the alternatives being the same.

Both build alternatives manage increased VMT, and provide more efficient travel in and through the study area as compared to the No-Action alternative. Alternative 203 provides a 10 percent improvement in travel efficiency over the No-Action Alternative, as compared to an 8 percent improvement for Alternative 402 (see Table 5-29). In addition to improving travel throughput, both alternatives demonstrate the ability to manage more traffic efficiently by reducing delay on the system. This can be measured by the percent reduction in congestion on the secondary roadway system as compared to the No-Action Alternative. Alternative 203 results in a 15.2 percent reduction in congested VMT on secondary roads during the P.M. peak period, as compared to a 12.3 percent reduction for Alternative 402. The reduction in congestion yields increases in average speeds on principal arterials of 8 percent for Alternative 203 and 7 percent for Alternative 402.

TABLE 5-29
Systemwide Travel Performance Comparisons – 2030 No-Action and Build Alternatives (203 and 402)

Alternatives	Build Alt 203	Build Alt 402
Percent increase in regional travel efficiency in study area	10%	8%
Percent decrease in congested VMT on secondary roadways (p.m. peak)	15.2%	12.3%
Percent increase in network speeds on principal arterials (p.m. peak)	8%	7%
Improve O'Hare West access—travel time savings from the study area west to O'Hare	49%	47%
Improve accessibility—percent increase in trips within 5 minutes of interstate/freeway facilities	50%	41%
Percent Increase in Transit Trips	37%	34%

Along with systemwide travel improvements in the study area, improving access to the west side of O'Hare Airport, enhancing interstate accessibility, and improving modal opportunities in the study area are other key objectives for the project. For a select trip pair from the west (US 20 at Elgin O'Hare Expressway to the proposed O'Hare West Terminal), Alternative 203 improves travel times by 49 percent over the 203 No-Action Alternative, as compared to 47 percent for Alternative 402. Both alternatives also substantially increase the number of trips within five minutes of a freeway thereby improving overall accessibility to and from the study area. Alternative 203 increases trips within a five minute travel time by 50 percent and Alternative 402 increases trips by 41 percent, as compared to the No-Action Alternative. Build Alternatives result in a measurable increase in transit ridership in the study area. Alternative 203 would increase the number of transit trips by 37 percent and Alternative 402 by 34 percent over the No-Action Alternative. Build Alternative travel performance improvements (as compared to the 2030 No-Action Alternative) are summarized in Table 5-29.

5.8.1.3 Localized Traffic and Travel Pattern Analysis

In addition to systemwide travel performance evaluation discussed in the prior section, localized traffic and travel pattern analysis were performed to assess the impacts of the

build alternatives on local streets, and to identify required supporting improvements. The following analyses were performed:

- **Franklin Avenue/Green Street Interchange—**The objective of this analysis was to evaluate the impacts of the Franklin Avenue interchange along the south leg of the West Bypass on adjacent local roadways, and to determine whether supporting local roadway improvements will be required. Findings revealed that daily traffic volumes along existing roadway corridors would generally be comparable with 2030 baseline (No-Action) volumes. However, widening of Green Street (becoming Franklin Avenue) to a four-lane section through the Wolf Road intersection was proposed to establish a continuous homogenous cross section that would facilitate traffic distribution. Further information is presented in the *Off System Traffic Distribution of O'Hare West Bypass at Franklin Avenue Interchange Memorandum* (Appendix I).

5.8.2 Estimated Cost

Planning-level estimated costs were prepared for the build alternatives on the basis of the updated representative conceptual layout of each alternative. These estimates reflect planning level costs (construction, right-of-way, engineering) for proposed roadway, transit and bicycle/pedestrian improvements reflected in the representative conceptual layout of the build alternatives. Whereas the proposed transit system improvements and bicycle/pedestrian system improvements identified for the study area include improvements beyond the limits of the build alternative roadway improvements, costs outside the proposed roadway improvement limits were not included in the estimate.

Build Alternative estimated costs are summarized in Table 5-30 and were prepared using the following key assumptions and procedures:

- The initial estimated costs reflect existing (2009) conditions and do not reflect cost escalation related to the actual project implementation schedule. Also, the initial estimated costs are intended to provide an order-of-magnitude estimate of overall improvement costs, and to compare the relative costs of alternatives.
- Estimated transit costs have been prepared only for proposed transit improvements within the Build Alternative roadway improvement limits. This consists of 10 miles of new BRT service along the Elgin O'Hare corridor extending along the existing Elgin O'Hare Expressway near the Metra MDW Schaumburg station to the proposed O'Hare West Terminal (Alternatives 203 and 402); 3 miles of a new commuter rail connection spur within the proposed West Bypass corridor extending from the planned I-90 STAR Line to the O'Hare West Terminal (Alternative 203); bus shelter costs where proposed bus service overlaps with proposed arterial roadway improvements. Estimated transit costs do not include costs associated with implementation and operation of transit service along the two new dedicated transit corridors such as equipment, maintenance facilities, or vehicles.
- Estimated bicycle/pedestrian improvement costs reflect proposed paved trails and trail crossings within the Build Alternative roadway improvement limits. These have been included as costs incidental to roadway improvements.
- Estimated costs for roadway improvements include new freeways, existing freeway/expressway improvements, system/service interchanges, and local roadway

TABLE 5-30
Build Alternative Cost Summary

Build Alternatives		Construction Costs		Right-of-Way Costs		Total Roadway Costs		Transit Component Cost
		Including South A	Including South D	Including South A	Including South D	Including South A	Including South D	
Alt 203	Elgin O'Hare and West Bypass	$3.06 B	$2.99 B	$563 M	$648 M	$3.62 B	$3.64 B	$427 M
Alt 402	Elgin-O'Hare with Partial Bypass South and Elmhurst Road North	$2.41 B	$2.33 B	$388 M	$473 M	$2.79 B	$2.80 B	$246 M

improvements as reflected in the updated representative conceptual layout for Alternatives 203 and 402. Where necessary, the roadway cross section treatment and proposed structures (e.g., bridges, tunnels, retaining walls) were sized to accommodate dedicated transit service. Estimated costs for roadway improvements reflect these accommodations.

- Right-of-way costs were estimated based on the refined Build Alternative footprint limits, current property assessment, tax information available in the GIS database and field reconnaissance of properties. The fair market value was calculated based on the current parcel assessments and tax information provided by Cook County and DuPage County. Exempt properties that are owned by the IDOT are not included in the right-of-way cost. Railroad tracks within the transportation corridor are not included in the right-of-way cost.

The planning level cost model relies on quantity estimates for major items that have the greatest influence on construction cost and which can reasonably be defined at this early stage of concept design. These items include:

- Pavement removal
- New pavement
- Bridge removal
- New bridges and tunnels
- Retaining walls

The cost model accounts for all other items as a percentage of the major construction items listed above. All percentages are based on engineering judgment and historical construction cost data from projects of a similar type and magnitude.

The Build Alternative relative estimates are intended to support the alternatives evaluation process in the EIS and to provide an early indication of the magnitude of costs for the alternatives remaining under consideration.

For detailed information on the cost estimating procedure and findings, refer to Appendix K for the *Finalist Build Roadway System Alternative Cost Analysis Technical Memorandum* and *Build Alternative Transit Improvement Cost Analysis Memorandum*.

Table 5-30 lists the cost estimate findings for the build alternatives.

5.8.3 Environmental and Socioeconomic Impacts

This section highlights findings of the environmental and socioeconomic impact analysis for Build Alternatives 203 and 402 with two South Connection Options for West Bypass Options A and D. The analysis was performed using the updated representative conceptual layout for roadway improvement corridors reflecting stakeholder input, proposed transit improvements, and proposed bicycle/pedestrian improvements. Table 5-31 summarizes environmental and socioeconomic impacts of the Build Alternatives. A detailed discussion of potential environmental consequences is presented separately in the Draft EIS.

The potential environmental and socioeconomic impacts of the Build Alternatives were evaluated with the aid of the project GIS database using procedures and criteria described in Section 5.1.1.3. However, the environmental and socioeconomic impact analysis of the Build Alternatives also included field reconnaissance investigation and refinement of data for a number of resources near proposed improvement areas to more accurately determine the impacts on the communities in the area and highlight benefits and the consequences of each alternative for both South Connections Options A and D. The following criteria were used in the analysis:

- **Environmental Impacts—** Thirteen criteria were used to evaluate the alternatives with respect to their potential impacts to federal and state regulated resources: water resource impacts (wetlands, stream crossings, surface waters, floodplain encroachments); stormwater detention requirements; recreational land impacts (acres of designated lands, number of local parks and forest preserves); threatened/endangered species impacts (number of state-listed species); historical/archaeological impacts (number of historical sites, number of archaeological sites); special waste (high, medium and low risk sites).
- **Social Impacts—** Eight criteria were used to compare the socioeconomic impacts of the alternatives: potential structure and business full displacements (commercial, industrial, residential); number of potential noise sensitive residential areas and noise sensitive non-residential receptors affected; lost tax revenue; employee displacements; and cemeteries and community/governmental facilities affected.

Potential environmental and socioeconomic impacts were evaluated on the basis of the representative concept layout and estimated footprint requirements for the Build Alternatives, including accommodations for transit and bicycle/pedestrian improvements as well as required supporting improvements to adjacent roadways.

TABLE 5-31
Summary of Environmental Consequences

	Alternative 203		Alternative 402	
	Option A	**Option D**	**Option A**	**Option D**
Length (miles)[a]	25.0	23.3	24.6	22.9
Right-of-way (acres)	1,910	1,895	1,600	1,585
Roadway construction costs	$3,061M	$2,987M	$2,405M	$2,331M
Roadway right-of-way costs	$563M	$648 M	$388 M	$473 M
Total roadway costs	$3,624M	$3,635M	$2,793M	$2,804M
Transit cost[b]	$430M	$430M	$250M	$250M
Socioeconomics Impacts				
Population (2030)	540,790	540,790	539,040	539,040
Households (2030)	207,400	207,400	206,800	206,800
Employment (2030)	712,100	712,100	698,100	698,100
Residential displacements	18	11	18	11
Commercial structure displacements	4	12	3	11
Industrial structure displacements	38	27	35	24
Employees displaced	892	1,203	729	1,040
Tax revenue loss (2007)	$3.08M	$4.45M	$2.17M	$3.54M
Natural Resources				
Wetlands (acre) [c]	38.9	39.1	36.3	36.5
Stream crossings (total number)	22	22	20	20
Surface waters (acre) [c]	18.2	18.1	15.2	15.1
Floodplain encroachments (acre)	24.7	24.7	27.2	27.2
Threatened and endangered species	0	0	0	0
Noise				
Noise-sensitive residential areas	48	46	44	42
Noise-sensitive nonresidential receptors	31	29	28	26
Potential Section 4(f) Resources Cultural Resource Impacts[b]				
Historic structures	0	0	0	0
Archaeological sites[d]	31	31	24	24
Potential forest preserve and local park 4(f) impacts (acres)	6.8	5.9	4.0	3.1
Potential forest preserve, local park, and trail 4(f) impacts (number of properties) [e]	8	8	6	6

TABLE 5-31
Summary of Environmental Consequences

	Alternative 203		Alternative 402	
	Option A	Option D	Option A	Option D
Special Waste				
High risk sites	2	2	2	2
Medium risk sites	162	170	157	165
Low risk sites	68	70	68	70

[a] Includes new freeway/tollway, and arterial widening where one or more lanes are added. Does not include turn lanes around existing interchanges.
[b] Transit cost represents only transit infrastructure improvements co-located in proposed roadway improvement corridors (e.g., Elgin O'Hare Expressway, north leg of O'Hare West Bypass).
[c] Totals include impacts to potentially jurisdictional areas, such as stormwater facilities. Subject to regulatory review, several manmade stormwater facilities may be exempt from regulation.
[d] Includes known archaeological sites, sites with potential for archaeological resources, and previously studied sites.
[e] One property purchased with OSLAD funds may be affected.

5.9 Stakeholder Input

Opportunities for input from project stakeholders were available throughout the development and evaluation of finalist alternatives. This included a series of project workshop meetings, public informational meetings, small group meetings, and one-on-one meetings with various agencies. Throughout the process, stakeholders were given an opportunity to provide meaningful input to the development and evaluation of alternative solutions. Table 5-32 summarizes stakeholder input related to the Finalist System Alternatives development and evaluation process.

TABLE 5-32
Summary of Stakeholder Input—Finalist System Alternative Development

Event	Date	Objectives	Summary of Input
CPG and Task Force Meeting #5	7/31/08	Present results of initial environmental and social impact analysis findings and screening recommendations for Finalist Roadway Alternatives. Present North and South Connection Options for West Bypass and IL 83.	General agreement with the Finalist Roadway Alternatives screening recommendations (eliminated Alternatives 201, 204, and 205). Agreement that the North and South Connection Options represent the range of stakeholder suggestions regarding potential corridor locations.
PIM #2	9/3/08	Present project purpose and need, modal strategies considered, and initial system strategies development and evaluation results for public comment. Introduce of Finalist System Alternatives.	Comments related to Finalist System Alternatives, including concerns regarding impacts and varying preferences on alternatives.
CPG and Task Force Meeting #6	11/13/08	Introduce expanded study area; discuss and obtain input to supporting improvement requirements; present and obtain input to level one transit screening results.	General agreement with the expanded study area boundaries. Suggestions regarding needed supporting improvements on existing roadways. General agreement with the level one transit screening recommendations.
CPG and Task Force Meeting #7	12/16/08	Present and obtain input regarding revised Purpose and Need (expanded study area), supporting improvement requirements, and screening recommendations for North and South Connection Options (West Bypass and IL 83). Obtain input regarding proposed transit and bicycle/pedestrian improvements.	General agreement with the proposed supporting improvements and screening recommendations for the North and South Connection Options (eliminated: IL 83 Option A; West Bypass North Options A, B, C, E); West Bypass South Options E, F, G). Input regarding proposed transit station locations and linkages for bicyclists/pedestrians.
CPG and Task Force Meeting #8	2/19/09	Present results of Finalist Roadway Alternatives and West Bypass South Connection Options evaluation. Present results of level two transit screening results.	General agreement with alternatives evaluation findings.
PIM#3	3/11/09	Present expanded study area, supporting improvements, and Finalist System Alternative evaluation results for public comment.	Extensive comments related to Finalist Roadway Alternatives, including concerns about community impacts, preferences for specific alternatives (broad support for Alternative 203 with North Connection Option D), opposition to expansion of IL 83.
Stakeholder Workshop #4	4/23/09	Summarize Public Meeting #3 and present DEIS Build Alternatives. Obtain stakeholder input regarding implementation and funding strategies and high priority projects.	General agreement with DEIS Build Alternatives (Alternatives 203 and 402, coupled with eliminating South Bypass Connection Options B and C and retaining Options A and D). Suggestions regarding potential financing strategies and projects to be considered for early implementation advance projects.

TABLE 5-32
Summary of Stakeholder Input—Finalist System Alternative Development

Event	Date	Objectives	Summary of Input
CPG and Task Force Meeting #9	7/8/09	Present multimodal improvement plan and Build Alternatives population and employment forecasts, and travel performance. Also presented Advance Projects.	General agreement with proposed multimodal improvement plan. Agreement with Build Alternatives evaluation.

Note: Table 2-2 for stakeholder input related to defining transportation needs and evaluating initial alternatives.