5.4 Ground Access Facilities Alternatives Analysis

The ground access complex consists of the following landside elements:

- Terminal Curbfronts
- Roadways
- Parking
- Rental Car Facilities
- Commercial Vehicle Staging
- Landside Passenger On-Airport Movements
- Railroads
- Public Transit

This section details the various concepts considered for each landside element.

5.4.1 Terminal Curbfronts

Curbfronts proposed to support Terminals 4 and 6, as well as the modifications to the Terminal 5 curbfront, are retained as programmed under the WGP.

The curbfront supporting the preferred West Terminal Complex concept, as depicted on the preferred plan, is conceptual, and detailed requirements and concepts for curbfront development will be derived in subsequent planning phases of the project.

As a preliminary verification that the planned West Terminal Complex curbfront facilities are reasonable, the relationship between curbfront lengths and the aircraft gate frontage of the West Terminal Complex was compared to the existing United Airlines facilities, as a representative hub carrier at the Airport, assuming that a hubbing carrier of similar operational characteristics to United Airlines would operate at the West Terminal Complex in the future. United currently operates gates primarily at Terminal 1 with additional gates at Terminal 2; however, all ticketing, check-in, and bag-claim functions for United are located at Terminal 1. Thus, the Terminal 1 curbfront length was compared to the aircraft gate frontage for all gates at which United operates. This is compared to the preliminarily defined curbfront lengths of the West Terminal Complex and the West Terminal Complex's aircraft gate frontage. This comparison is shown in **Table V-13.**

As shown in Table V-13, the relationship of linear feet of curbfront per linear foot of aircraft gate frontage for the West Terminal Complex is comparable to that from which United Airlines currently operates. Thus, although conceptual, the preliminary curbfront length for the West Terminal Complex contained in the preferred plan is considered comparable. In addition, given the configuration of the roadway system, the preferred terminal concept provides the ability to expand the West Terminal Complex curbfront length to approximately 1,600 linear feet to accommodate potential changes to the West Terminal Complex program or assumptions regarding airline activity (e.g., hubbing versus non-hubbing operations, etc).

Table V-13

Verification of Conceptual West Terminal Curbfront Length

	United Airlines Facilities	West Terminal Complex
Aircraft Gate Frontage (linear feet)	10,147	8,700
Upper Level Curbfront Length (linear feet)	850	680
Lower Level Curbfront Length (linear feet)	810	680
Upper Level Length of Curbfront per 1 linear foot of Aircraft Gate Frontage	0.084	0.078
Lower Level Length of Curbfront per 1 linear foot of Aircraft Gate Frontage	0.080	0.078

Source: Ricondo & Associates, Inc.
Prepared by: Ricondo & Associates, Inc.

5.4.2 Roadways

Roadway improvement alternatives (both on- and off-Airport) identified to support the airfield and terminal alternatives and preferred plans include the following components:

- West Terminal Complex Access Roadways Development
- Irving Park Road/York Road Interchange Improvements and Irving Park Road Relocation
- Mount Prospect Road Realignment
- I-190 Realignment Concepts

Roadway improvements identified in the WGP were maintained, as discussed in Section 5.4.2.5. This section also discusses refinements to two of the WGP improvements based on the preferred airfield plan.

This section presents discussion of the roadway alternatives followed by discussion of refinements to the WGP roadway plan as well as WGP roadway elements retained in the preferred plan.

5.4.2.1 West Terminal Access Roadway Concepts

In support of the preferred terminal plan that includes development of a West Terminal Complex, several terminal access roadway alternatives were developed. This section describes the alternatives explored to connect the West Terminal Complex curbfront to the area roadway network.

It is assumed that passengers using the new western access to the Airport would primarily be those boarding flights operated by an airline with ticket counters in the Western Terminal. Passengers arriving at one side of the Airport and unable to pass through the security checkpoint without a boarding pass (it is assumed that the majority of these passengers will be displaced parkers) will require transportation to the other side of the Airport. Alternatives for accommodating this segment of passengers are discussed in Section 5.5.

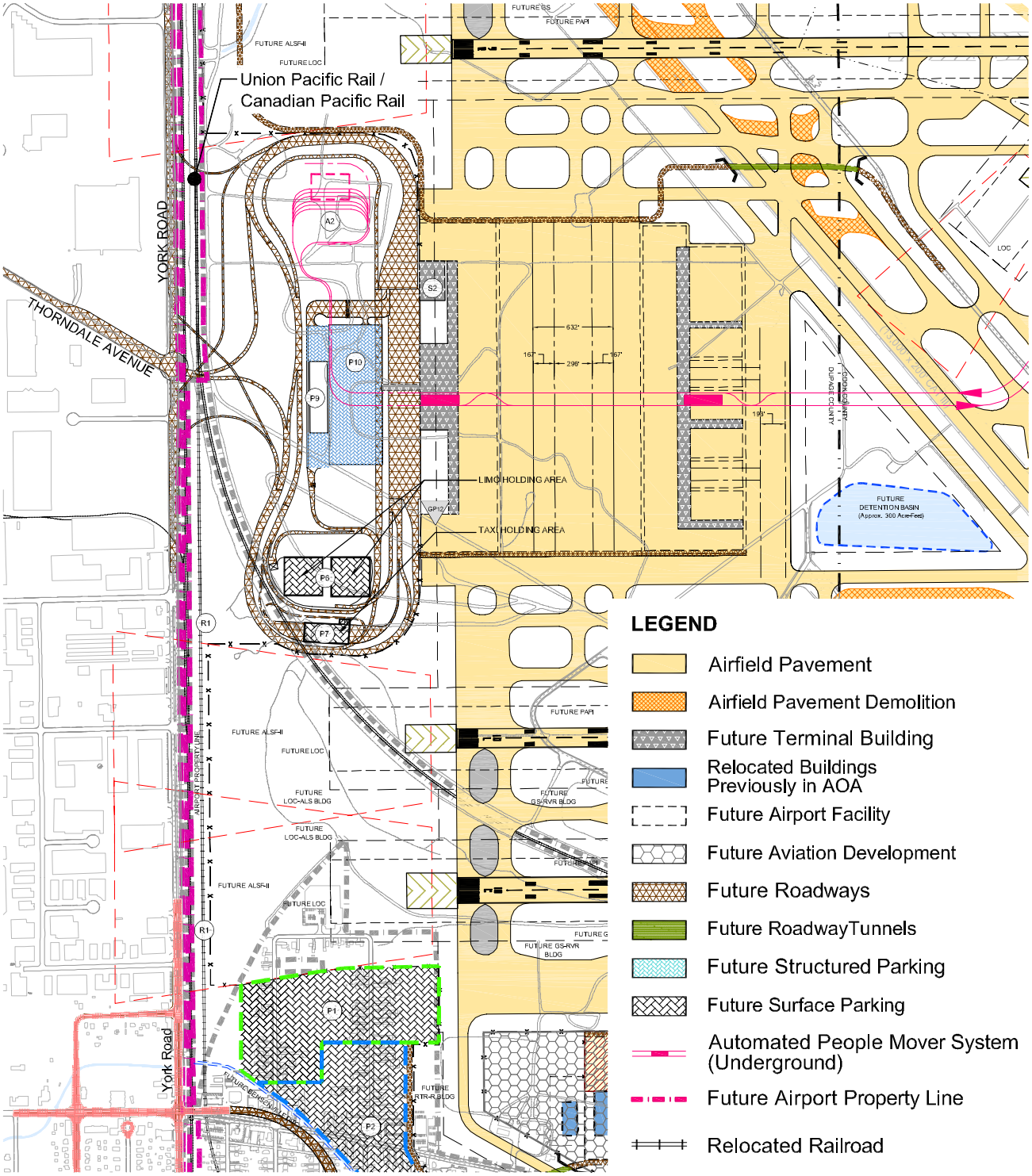
The concepts for the West Terminal roadway system were developed prior to this general understanding of the level of activity that may be experienced at the West Terminal Complex as well as prior to the undertaking of detailed transportation modeling. The level of activity used in the

conceptual roadway planning process was based on preliminary O&D enplanement estimates for a 100-gate facility on the west side of the Airport. For roadway planning purposes, it was assumed that the West Terminal Complex would operate similar to the Terminal Core/East Terminal Areas. Thus, air carrier operations, passenger characteristics, and associated landside traffic demands for the east side of the Airport were used to estimate landside traffic demands on the west side. Activity was split between the east and west sides of the Airport based on a preliminary understanding of gate allocation, resulting in 19 million O&D enplanements in the Terminal Core/East Terminal Areas and 14 million O&D enplanements in the West Terminal Complex.

In 2000, there were approximately 17.5 million total annual O&D enplanements. This annual enplanement level correlates to approximately 53,000 passengers per day in the peak month. Traffic data for the Terminal Core/East Terminal Areas shows that there are approximately 120,000 vehicles per day accessing the Terminal Core/East Terminal Areas, resulting in an average of 2.25 vehicle trips per passenger (i.e., vehicle trips per day divided by passengers per day). Based on the correlations of total annual O&D enplanements to passenger per day in the peak month, the projected 14 million O&D enplanements for the West Terminal Complex translate into approximately 42,500 passengers per day in a peak month, and 96,200 vehicle trips per day, based on the 2.25 vehicle trips per passenger factor. This estimated daily traffic demand was considered conservative (i.e., "worst case") and suitable for conceptual roadway planning purposes.

Peak hour characteristics for the Terminal Core/East Terminal Areas show that there are multiple peaks throughout a typical weekday, and that approximately eight percent of the daily traffic volume occurs during the peak hour. Applying this percentage to the proposed West Terminal Complex traffic estimates yields a peak hour vehicle demand of approximately 7,700 vehicle trips per hour. For purposes of this planning effort, this peak hour estimate was assumed to be balanced between inbound trips to and outbound trips from the terminal. These peak hour traffic volumes were utilized to evaluate ramp and signal assumptions based on engineering judgment, as discussed in the following four primary concepts for West Terminal roadway and access options.

- *Concept 1* is depicted in **Exhibit V-84**. Projected traffic volumes for the West Terminal roadways suggest that grade separated road-to-road operations would be beneficial and perhaps warranted; however, the location of the rail alignment makes grade separation necessary in that at-grade rail crossings were presumed to be unacceptable. Once the assumption to grade separate roads and the railroad was established, it is geometrically impractical to consider at-grade traffic movements between the West Terminal and York Road and Thorndale Avenue. Thus, Concept 1 provides ramps and free flow connections between the West Terminal and the arterial road network. The ramps are sized to accommodate the preliminary estimate of peak hour flows described earlier in this section. Thus, this concept provides elevated ramps linking York Road with the West Terminal loop roadways and a tunnel linking Thorndale Avenue with the West Terminal loop roadways. The elevated ramps pass above York Road and the Union Pacific and Canadian Pacific Railroads. The tunnel passes beneath York Road and the Railroads. This concept provides free-flow traffic movements into and out of the Airport, meaning that there are no traffic signals managing the flow of Airport traffic. Thorndale Avenue would be depressed west of York Road, and ramps would be constructed to and from York Road to maintain the connection between York Road and Thorndale Avenue. The ramps would terminate in a



Source: Kimley Horn and Associates, Inc.; Ricondo & Associates, Inc.; Martinez Corp.
Aerial Photography (Nov. 2001); Department of Aviation Airport Management and Records
Prepared by: Ricondo & Associates, Inc.

Exhibit V-84

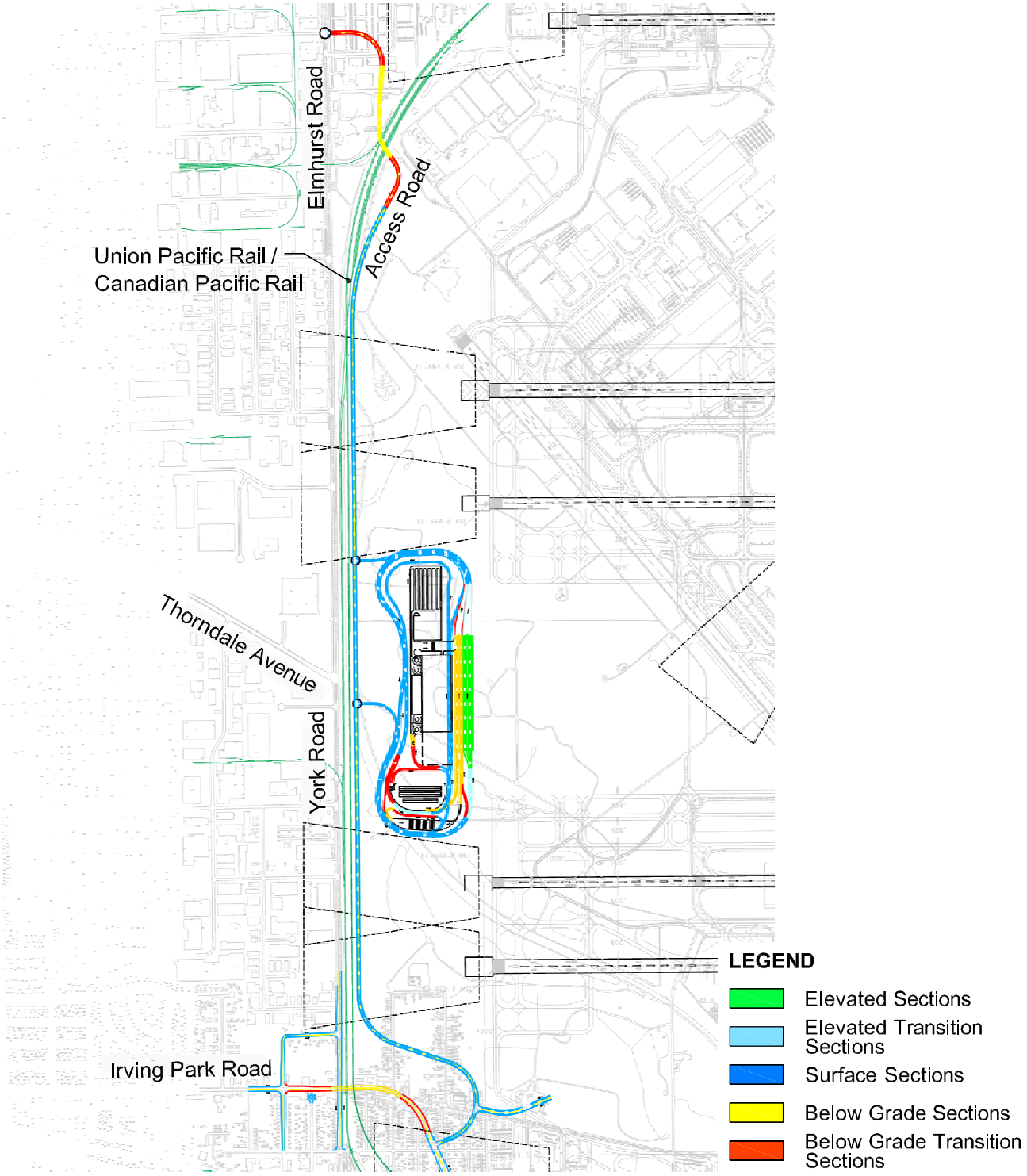
0 1200 ft.

north

West Terminal Access Roadway Concept 1

single signalized intersection on York Road. Implementation of off-Airport roadway improvements, including any associated land acquisition, will be the responsibility of the agencies with jurisdiction in the project area. Acquisition of approximately 8.5 acres may be required.

- *Concept 2,* depicted in **Exhibit V-85**, provides a four-lane access road, judged as sufficient given the projected peak hour traffic demand and directional distribution of the preliminarily estimated vehicle trips per hour, to and from the West Terminal connecting to public roadways at the north (Elmhurst Road) and south (realigned Irving Park Road) ends of the Airport. The two connections ("T" intersections) to the public roadways would likely require the addition of two signalized intersections along area roadways. Although specific signal warrants were not determined for the access road, the preliminarily projected traffic flows and need to manage traffic flows in a safe and efficient manner make it reasonable to expect that traffic signals would be necessary. This north/south roadway would lie primarily on Airport property with the exception of the portion that intersects with Elmhurst Road just east of the Union Pacific and Canadian Pacific Railroads. The grade separation between the proposed north/south roadway and the Railroads would be achieved by depressing the roadway and running it below the Railroads, resulting in the requirement for two tunnels. Implementation of off-Airport roadway improvements, including any associated land acquisition, will be the responsibility of the agencies with jurisdiction in the project area. Acquisition of approximately 5.8 acres may be required.
- *Concept 3,* depicted in **Exhibit V-86**, utilizes the same north-south roadway connection as described in Concept 2. In addition, a third tunnel under York Road and the Union Pacific and Canadian Pacific Railroads would be constructed to provide a direct connection between the West Terminal and Thorndale Avenue. With the addition of this direct connection, traffic demands on the north/south access road would be reduced. However, a four-lane road is still recommended because of the length of the roadway and its importance to Airport access (e.g., an incident on a two-lane roadway could block or shut down lanes, thereby effectively closing the road and restricting access to the terminal). Terminal roadways are modified slightly to allow for movements to and from the added Thorndale Avenue connection. Thorndale Avenue would be depressed west of York Road, and ramps would be constructed to and from York Road to maintain the connection between York Road and Thorndale Avenue. The ramps would terminate in a single signalized intersection on York Road. These ramps will handle traffic that is not associated with the West Terminal, so specific signal warrants were not evaluated. Given the traffic projections for York Road and the likely turning volumes to/from Thorndale Avenue, it is reasonable to expect that traffic signals would be necessary. Acquisition of approximately 11.8 acres of property along Thorndale Avenue west of York Road could be necessary to accommodate the depressed roadway section and the connector ramps. Implementation of off-Airport roadway improvements, including any associated land acquisition, will be the responsibility of the agencies with jurisdiction in the project area
- *Concept 4,* depicted in **Exhibit V-87,** realigns Thorndale Avenue to the north and constructs a partial cloverleaf interchange between York Road and Thorndale Avenue. A tunnel running beneath York Road and the Union Pacific and Canadian Pacific Railroads would connect Thorndale Avenue with the West Terminal. These interchange ramps would handle both area traffic and Airport traffic. Specific signal warrants were not evaluated for these intersections; however, given the traffic projections for York Road and the likely turning



Source: Kimley-Horn and Associates, Inc.; Martinez Corp. Aerial Photography (Nov. 2001); Department of Aviation Airport Management and Records
Prepared by: Kimley-Horn and Associates, Inc.

Exhibit V-85

0 N.T.S. north

West Terminal Access Roadway Concept 2