RTA/Pace I-294 Tri-State Market & Facilities Feasibility Study

Station Concepts and Capital Costs Technical Memorandum

Regional Transportation Authority and Pace Suburban Bus

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Abbreviations

AASHTO	American Association of State Highway and Transportation Officials
ADA	Americans with Disabilities Act
CIG	Capital Investment Grant
CMAP	Chicago Metropolitan Agency for Planning
CTA	Chicago Transit Authority
CWCCIS	Civil Works Construction Cost Index System
C-D	Collector-Distributor roadways
CCDOTH	Cook County Department of Transportation and Highways
FTA	Federal Transit Administration
HOV	High-Occupancy Vehicle systems or lanes
IDOT	Illinois Department of Transportation
LODES	Census Longitudinal Origin-Destination Employment Statistics
MED	Metra Electric District
NCHRP	National Cooperative Highway Research Program
RRFB	Rectangular Rapid Flashing Beacon
RTA	Regional Transportation Authority
ROW	Right-of-Way
STOPS	Simplified Trips-on-Project Software (travel demand forecasting)
SCC	Standard Cost Categories (FTA)
TOD	Transit-Oriented Development
TIGER	Transportation Investment Generating Economic Recovery grant program
TRB	Transportation Research Board
US DOT	US Department of Transportation

1. Study Background and Purpose

The Regional Transportation Authority (RTA) / Pace Bus I-294 Tri-State Market & Facilities Feasibility Study (Study) identified and evaluated ways that Pace buses can capitalize on roadway improvements being constructed by the Illinois State Toll Highway Authority (Illinois Tollway) on portions of the I-294 Tri-State Tollway.

The Tri-State Tollway is a north-south roadway in the Chicago region, providing access to major employment centers and O'Hare International Airport. In 2016, Illinois Tollway initiated its Central Tri-State (I-294) Project, which includes the 22-mile segment between Balmoral Avenue and 95th Street (Central Tri-State Project). This segment carries the heaviest volume of passenger and freight traffic and has twice the amount of congestion delays compared to the entire Tollway system. The Central Tri-State Project will incorporate a number of innovations, including Flex Lanes, which will be available to Pace buses to avoid congestion. Flex Lanes are the left inside shoulder of the roadway; Pace buses are directed to the Lane by the Illinois Tollway's traffic operations center. Pace has identified I-294 as a critical corridor because of its place as a primary travel corridor and the opportunity that Flex Lanes present.

From this Study, the agencies identified and evaluated several options that will allow Pace buses to benefit from the Central Tri-State improvements. Pace bus use of the Flex Lanes when traffic is congested will help make service in this corridor a competitive and affordable alternative to driving.

Recommendations from this Study include:

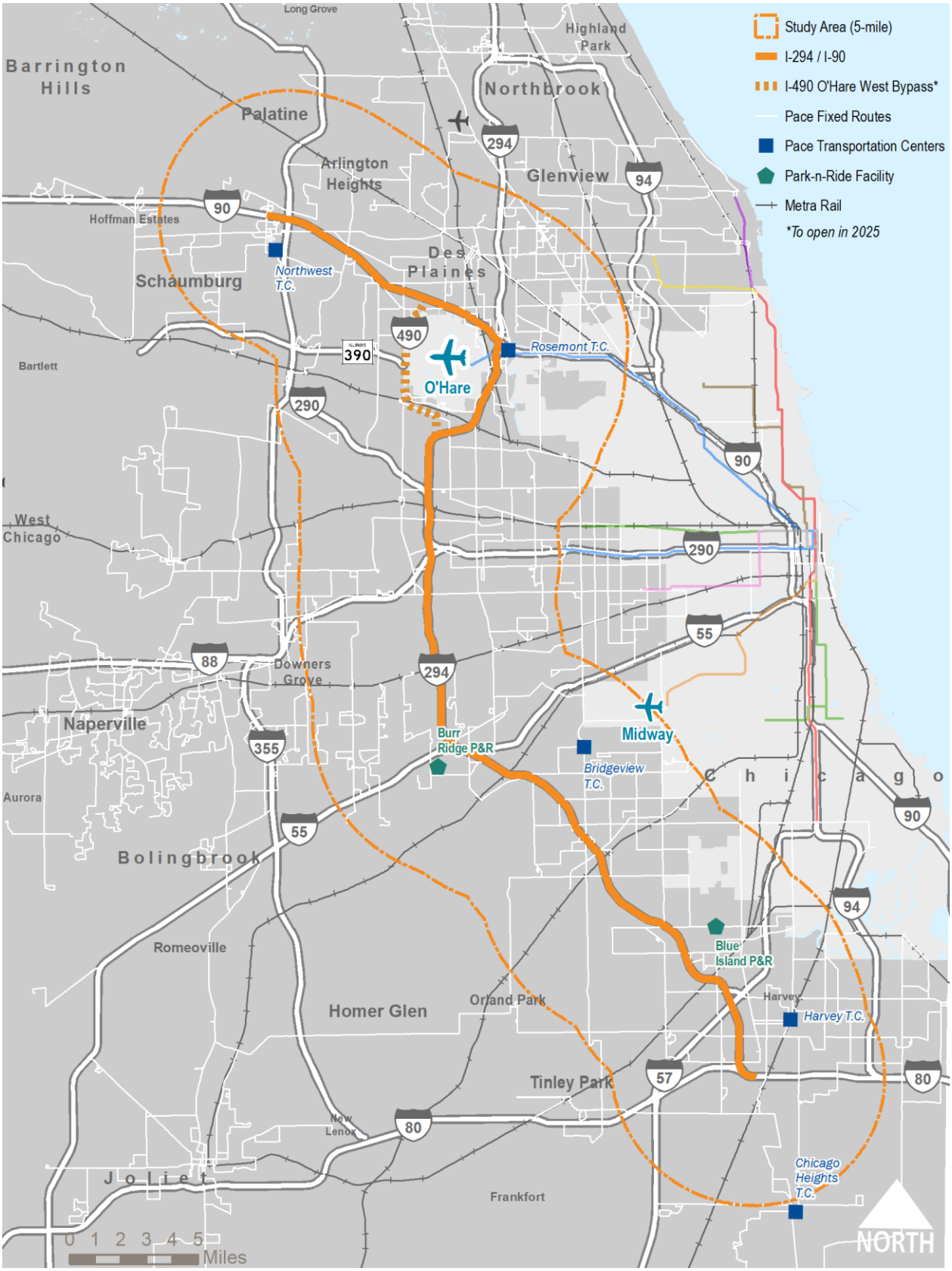
- Pace Express bus service concepts that primarily operate along the I-294 Tri-State Tollway
- Stations, roadways, and other infrastructure needed to support proposed bus services and provide improvements in passenger comfort, bus speeds, travel times, and access to jobs and other transit connections.
- A plan for implementing proposed bus services and associated support infrastructure

These recommendations were derived from a robust market analysis of existing and predicted travel patterns in the Study Area, computer modeling of concepts, and engineering assessments of potential site locations. Pace and RTA also coordinated with the Tollway throughout the Study's development.

1.1 Study Area

As shown in Figure 1-1, the Study Area covered a 5-mile radius centered along the 48-mile I-294/I-90 corridor between Harvey and Schaumburg. The roadway Study alignment also included I-490, which by 2025 will connect the I-90 Jane Addams Memorial Tollway, the IL-390 Elgin-O'Hare expressway, and the I-294 Tri-State Tollway along the west side of O'Hare Airport.

Figure 1-1. Pace I-294 Market & Facilities Feasibility Study Area



1.2 Task Overview

The Study involves five tasks that are listed below, including the relevant sub-tasks for Task 1.

Task 1: Existing Conditions and Travel Market

- 1.1 Transit Service
- 1.2 Traffic Conditions
- 1.3 Market Analysis
- 1.4 Identify Most Promising Corridors

Task 2: Conceptual Service Design and Infrastructure

- 2.1 Service Plans
- 2.2 Generic Infrastructure Concepts
- **2.3 Station Concepts & Capital Costs**

Task 3: Implementation Plan

Task 4: Public Outreach and Marketing

Task 5: Final Report

This technical memorandum covered Task 2.3 and builds on earlier tasks, including the generic review of infrastructure concepts that can be considered to complement proposed I-294 service plans (Task 2.2). Task 2.3 identified, screened, and documented potential locations for I-294 in-line or adjacent express bus stations. This review focused on the question of physical feasibility, assessing which layout concepts can be considered further, and which are deemed infeasible or inordinately costly to construct. Candidate conceptual layouts included key station elements such as boarding platforms, passenger access, parking, and pedestrian/vehicular access improvements. Note that concurrent Task 2.1 Service Plans identified the alignments of express bus routes that will include the recommended stops, including in-line, adjacent, and off-line. Finally, Task 2.3 will estimate capital costs for improvements included in the recommended station locations.

2. Background, Prior Research

Prospective station locations have been informed by technical memoranda from this project, including the *I-294 Tri-State Infrastructure Design Concepts Technical Memorandum* and the *I-294 Tri-State Market Analysis Technical Memorandum*. In addition, previous studies by Pace and others were documented and used as another source of candidate express bus station locations in this technical memorandum.

2.1 Tri-State Market & Facilities Study Research

Infrastructure Design Concepts | The Task 2.2 deliverable (i.e., *Infrastructure Design Concepts Technical Memorandum*, August 2020) provided examples of different ways that express bus stations can be incorporated into limited-access roadways. This generic review emphasized that these facilities offer distinct operational and market benefits that enable passengers to board and alight buses en route, without vehicles deviating from the roadway. The review illustrated existing freeway bus stations from across the country and identified key design features that can be considered for possible I-294 facilities that advance. Four types of station designs were broadly evaluated on a generic basis, including:

1. **In-Line Center Station** where one center platform, or two side platforms, are situated in the center of the roadway (i.e., between the directional sets of traffic lanes),
2. **In-Line Station with Outside Platforms**, involving one platform on each of the outer edges of the roadway,
3. **Adjacent Station** with direct access ramps, and
4. **Transfer Station** to accommodate bus routes serving different origins or destinations.

An evaluation of the generic designs was performed using five factors. A summary of conclusions is as follows:

- **In-Line Center – One Center Platform** | This is an effective in-line layout and would eliminate the need for route deviation for pick-up and drop-off of passengers. Right-side bus entry is an issue; use of cross-over lanes to resolve adds other issues.
- **In-Line Center - Two Side Platforms** | This design option has many of the same in-line station characteristics as the Center Platform design. An advantage is right-side bus entry, so the crossover lanes before and after the station would not be required. Disadvantages would be the extra width required for a second platform and the need for a second set of vertical access means (e.g., stairs, elevator).
- **In-Line Center - Two Side Platforms Offset** | This option would be very similar to the Two Side Platform option, with that exception of placing the platforms offset from one-another. This would provide the advantage of requiring less space between the general travel lanes.
- **In-Line Outside – One Platform each Side** | This option would not require deviating from the roadway for pick-up/drop-off but use of the center Flex Lane for express operation could be more difficult based on traffic conditions. The separation of AM versus PM boarding/alighting locations would be somewhat inconvenient for riders. A major advantage is the roadway travel lanes would not require shifting.
- **Adjacent with Direct Access Ramps** | The principal disadvantage of this design is that buses would be required to leave the roadway for pick-up/drop-off; the added travel time would be a function of the location of the off-line station and the design of the on/off

ramps. Walk distance from park-n-ride facilities would be shorter and the station itself would have no impact on the general travel lanes. However, access ramps to serve the station could be an issue, depending on the site conditions of the area. The ramp systems would likely be costly to build.

- **Transfer Station** | This would be a very feasible design to implement but would offer relatively few benefits beyond route transfers given that passengers would not be able to access or egress the actual station location. This could provide some operational efficiencies, which could be offset by the addition of another seat ride for affected passengers.

Major off-line stop locations will also be identified, including Pace transportation centers and other transfer locations for existing and future services. These locations will generally not include infrastructure improvement recommendations. Other local stops will also factor into the analysis, which generally include Pace stops on current routes. This class of stops will also not include recommendations for infrastructure improvements.

I-294 Tri-State Market Analysis | The Task 1.3 *Market Analysis Technical Memorandum*, October 2020, documented current and future travel demand in the I-294 study corridor. This information provided the foundation to formulate service and infrastructure recommendations. An aspect of the market analysis involved segmenting the study corridor into polygons, which roughly corresponded with potential connection points for a possible express bus service. The report noted that these potential connection points were by no means fixed and added that there could be more than one potential location within a polygon. These geographies were used to assess service access by means of a private automobile. The travel market for transit access used a corridor geography that corresponded to current and future connecting services.

Fifteen locations were identified as possible auto-access connection points, as shown on Table 2-1. The market analysis did not examine the physical feasibility of the locations. Three of the locations are off-line transfer facilities.

Table 2-1. I-294 Corridor Access Connection Points – Market Analysis Tech Memo

Polygon Connection Point
Harvey Transportation Center (Park Avenue/154th Street)*
Cicero / 127th Street
103rd Street
88th / Cork Ave
Hinsdale Oasis
US-34 (Ogden)
Cermak
Roosevelt
IL-64 (North Ave)
O'Hare Oasis
IL-390 & Busse
Rosemont Transit Center (River Road/I-90)*
Touhy
Busse Road
Northwest Transportation Center (Schaumburg)*

**Off-line points.*

Pace Suggested Station Locations | Pace provided a summary of issues and ideas from prior staff discussions, which included possible stations locations. These and other locations were

discussed with Illinois Tollway staff in a brainstorming call held in June 2020. A listing of these 14 locations is shown on Table 2-2.

Table 2-2. Pace Station Location Ideas

Station Location
Harvey Transportation Center*
159th Street
139th Street / Midlothian Turnpike
103rd & Harlem Avenue
Toll Plaza 36 & 39, Justice
88th Avenue / Cork Avenue
75th Street
Hinsdale Oasis
Oakbrook Center*
Cermak Toll Plaza
North Avenue
O'Hare Oasis
Balmoral Avenue, Rosemont
Meacham & I-90, Schaumburg

*Off-line points.

2.2 Previous Studies

TIGER Grant Proposal: I-294 Express Bus Service (Pace, 2009) | Pace submitted this grant proposal jointly with the Illinois Tollway to the US Department of Transportation (US DOT). The proposed I-294 Express Bus Service design focused on providing suburb-to-suburb mobility with cost effective service that leveraged existing transit and park-n-ride nodes with new stations at strategic locations along the I-294 corridor. Eleven stations were proposed, including seven in-line stations. Pace was not successful in its grant request.

Table 2-3 list the station locations used in the grant application. Five off-line locations were included, and six of the in-line locations assumed parking.

Table 2-3. Pace Station Location in 2009 TIGER Grant Application

Station Location
Lincoln Oasis
Homewood Park-n-Ride*
Harvey Transportation Center
159th Street
Blue Island Park-n-Ride*
127th Street
95th Street
75th Street Park-n-Ride
Ogden Avenue
Oakbrook Center*
O'Hare Oasis
Rosemont Transit Center*

*SOURCE: TIGER Grant Proposal: I-294 Express Bus Service. *Off-line points.*

I-294 Travel Market Analysis (RTA, 2016) | To aid the Illinois Tollway during its reconstruction planning for the I-294 Central Tri-State project, RTA performed a high-level analysis of the potential transit market demand along the corridor. Techniques included origin-destination analysis using Census Longitudinal Origin-Destination Employment Statistics (LODES) data, Chicago Metropolitan Agency for Planning (CMAP) home-based work trip tables, and the Federal Transit Administration (FTA) Simplified Trips-on-Project Software (STOPS) tool.

The STOPS modeling performed by RTA used eleven stations, as shown on Table 2-4. All of the stations assumed the availability of parking.

Table 2-4. RTA I-294 STOPS Modeling Station Locations

Station Locations
Lincoln Oasis
159th Street
Cicero / 127th Street
95th Street
75th Street
Ogden Avenue
Roosevelt Road
Grand Avenue
IL-390/Busse
I-290/Devon
Northwest Transportation Center*

*SOURCE: I-294 Travel Market Analysis, RTA *Off-line point.*

South Cook County Mobility Study (Cook County, 2018) | Express bus service operating in Flex Lanes along I-294 was studied as a part of the Connecting Cook County planning program. The service was analyzed using the STOPS model to estimate ridership, assuming eleven stations between Harvey Transportation Center and Rosemont Transit Center. Station locations are listed on Table 2-5. The Oakbrook Center stop was assumed to be served by buses deviating from I-294.

Table 2-5. South Cook Mobility Study STOPS Modeled Stations

Station Locations
Harvey Transportation Center*
147th Street**
Midlothian Turnpike
Cicero / 127th Street**
95th Street**
75th Street**
Hinsdale Oasis**
Oakbrook Center*
Rosemont Entertainment District
Rosemont Convention Center*
Rosemont Transit Center*

**Off-line points. **New Park-n-Ride.*
SOURCE: South Cook County Mobility Study, Cook County

3. Candidate Station Locations

Table 3-1 lists the universe of 32 unique station locations that were identified in the sources described in Section 2. One additional site, Arlington Heights Road, was identified as a possible station location as this technical memorandum was being prepared. Shaded locations have been removed from further consideration as part of the first step of the analysis. Station sites are listed in geographic order, south to north. Off-line locations are not near I-294 or I-90, and thus would not be a candidate for an express bus station.

Table 3-1. I-294 Possible Express Bus Stations by Source

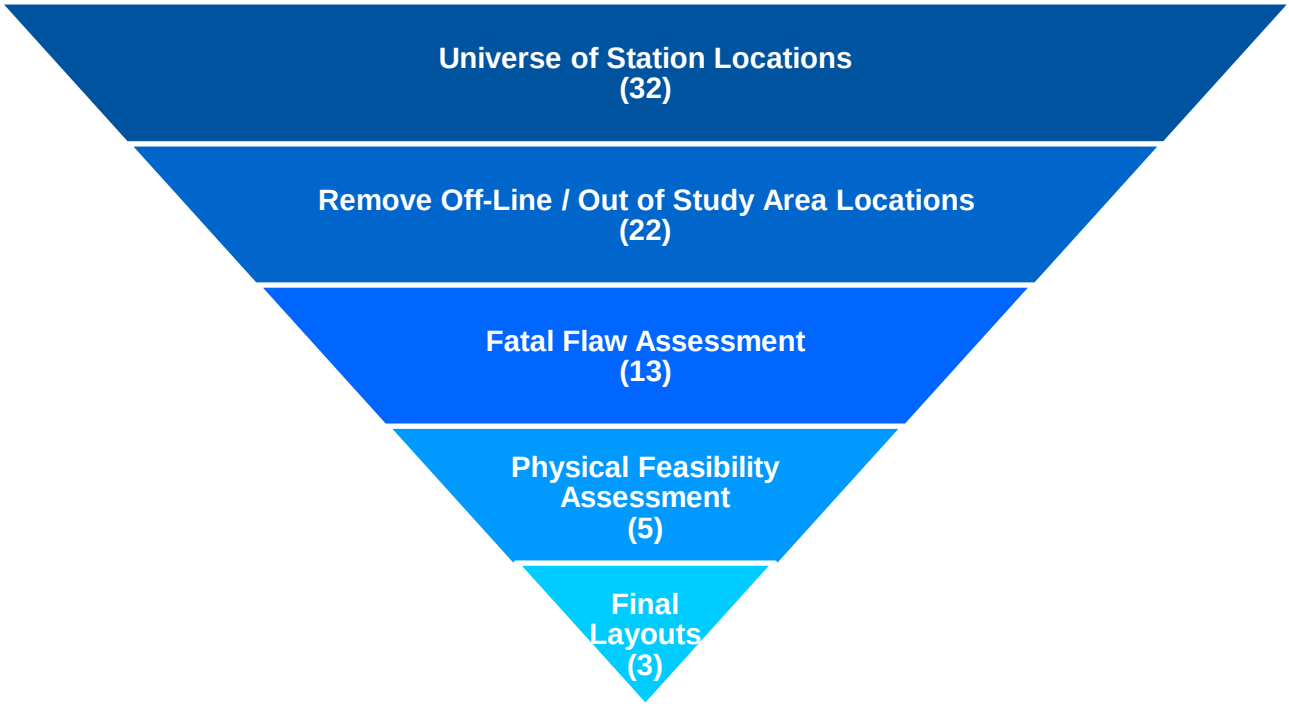
	Route	Location	Pace Ideas	Market Analysis	TIGER App	RTA STOPS	South Cook	Reason for Elimination
1	I-294	Lincoln Oasis			X	X		Outside of study area
2	Off-line	Homewood Park-n-Ride			X			Off-line
3	Off-line	Harvey Transportation Center	X	X	X		X	Off-line
4	I-294	159th Street	X		X	X		
5	I-294	147th Street					X	
6	I-294	139th Street / Midlothian Turnpike	X				X	
7	I-294	131st Street	X					
8	Off-line	Blue Island Park-n-Ride			X			Off-line
9	I-294	Cicero / 127th Street		X	X	X	X	
10	I-294	103rd Street	X	X				
11	I-294	95th Street			X	X	X	
12	I-294	Toll Plazas 36 & 39, Justice	X					
13	I-294	88th Avenue / Cork Avenue	X	X				
14	I-294	75th Street	X		X	X	X	
15	I-294	Hinsdale Oasis (former)	X	X			X	
16	I-294	Ogden Avenue		X	X	X		
17	Off-line	Oakbrook Center	X		X		X	Off-line
18	I-294	Cermak Toll Plaza	X	X				
19	I-294	Roosevelt Road		X		X		
20	I-294	North Avenue	X	X				
21	I-294	Grand Avenue				X		
22	I-294	O'Hare Oasis (former)	X	X	X			
23	I-294	Rosemont Entertainment Dist.	X				X	
24	Off-line	Rosemont Convention Center					X	Off-line
25	Off-line	Rosemont Transit Center		X	X		X	Off-line
26	I-90	Touhy Avenue		X				
27	I-90	Busse Road		X				
28	I-90	Arlington Heights Road						
29	I-90	Meacham Road	X					
30	IL-390	IL-390 / Busse				X		Outside of study area
31	I-290	Devon Avenue				X		Outside of study area
32	Off-line	Northwest Transportation Center		X		X		Off-line

3.1 Screening Process

The objective of this task is to reduce the long list of station locations down to the three sites that are physically feasible (or at least not excessively expensive), are spaced wide enough apart to serve distinct market areas, and to have the potential to attract the greatest number of users. The step-wise screening process used is akin to a funnel, where after each step, the number of candidate Study locations is reduced.

The screening process is graphically represented in Figure 3-1. The number in paratheses represents the number of stations remaining at the end of each step in the screening process.

Figure 3-1. Station Location Screening Process



3.2 In-Line and Adjacent Candidate Locations

From the universe of 32 station locations, 22 locations were selected to advance for further review and are listed on Table 3-2. The municipality and distance between stops is also indicated. Each are individually assessed in Section 4.

Table 3-2. Candidate I-294 In-line and Adjacent Station Locations

#	Route	Location	Municipality	Miles between Stops
1	I-294	159th Street	Markham	0.0
2	I-294	147th Street	Posen	1.8
3	I-294	139th Street	Robbins	1.9
4	I-294	131st Street	Alsip	1.1
5	I-294	Cicero / 127th Street	Alsip	0.7
6	I-294	103rd Street	Chicago Ridge	4.3

#	Route	Location	Municipality	Miles between Stops
7	I-294	95th Street	Bridgeview	1.3
8	I-294	Toll Plazas 36 & 39	Justice	2.0
9	I-294	88th Avenue / Cork Avenue	Justice	0.5
10	I-294	75th Street	Hodgkins	1.9
11	I-294	Hinsdale Oasis (former)	Hinsdale	3.1
12	I-294	Ogden Avenue	Western Springs	2.5
13	I-294	Cermak Toll Plaza	Oak Brook	2.4
14	I-294	Roosevelt Road	Elmhurst	0.6
15	I-294	North Avenue	Northlake	3.1
16	I-294	Grand Avenue	Northlake	1.7
17	I-294	O'Hare Oasis (former)	Schiller Park	2.5
18	I-294	Rosemont Entertainment Dist.	Rosemont	2.0
19	I-90	Touhy Avenue	Des Plaines	3.3
20	I-90	Busse Road	Mt. Prospect	3.1
21	I-90	Arlington Heights Road	Arlington Hghts.	1.6
22	I-90	Meacham Road	Schaumburg	3.5

3.3 Off-Line Station Locations

Documentation of the off-line stop locations listed on Table 3-1 is provided below. These locations will support proposed express bus service, but since they are not located on or near I-294 or I-90, will not be considered as in-line or adjacent stations. These locations are not expected to include infrastructure improvement recommendations. The number of Pace routes serving park-n-rides and transportation centers cited below includes routes that have been suspended due to COVID-19. There was no information available as of this writing on when suspended services would be restored. Other local stops will also factor into the analysis, which generally include Pace stops on current routes. This class of stops are also not expected to include infrastructure improvements.

Homewood Park-n-Ride | Located on Ridge Road east of Halsted Street in Homewood, this existing park-and-ride facility includes three bus waiting zones, bus shelters and 75 parking spaces. Based on the proposed service plan alignments, this location is not anticipated to be served by proposed I-294 express bus routes.

Harvey Transportation Center | This intermodal transportation center is located at 15330 Park Court, Harvey, immediately west of the Metra Electric District (MED) Harvey Station. The Center serves eleven Pace routes as of April 2021. Covered waiting areas and parking for 71 automobiles are provided. Improvements to the facility have been programmed.

Blue Island Park-n-Ride | This facility is located near 127th & Kedzie Avenue, serves two Pace routes, and is supported by 63 parking spaces.

Oakbrook Center | Current Pace services use a terminal adjacent to the Center (i.e., Macy's entrance), but a location to serve future Pulse Cermak and Roosevelt Lines, current local Pace routes and possible I-294 express services may need to be located so as to minimize deviation from 22nd Street. Physical improvements are likely to complement the future Pulse lines.

Rosemont Convention Center | Located at 5555 North River Road in Rosemont, the Stephens Convention Center is one-half mile east of I-294 and one-third of a mile south of the Rosemont Transit Center. Alternative express bus alignments that serve the Rosemont Transit Center and, depending on the route, may also stop at the Convention Center.

Rosemont Transit Center | This Pace Transit Center is adjacent to the Rosemont Station of the Chicago Transit Authority (CTA) Blue Line on River Road. Available paid parking is shared with CTA users. The Center is located immediately south of I-90.

Northwest Transportation Center | Located at 1730 Kimberly Drive in Schaumburg, the Pace Northwest Transportation Center serves eight Pace routes and is supported by 122 parking spaces. Pace is in the process of expanding the parking capacity and implementing Americans with Disabilities Act (ADA) improvements.

4. Station Location and Fatal Flaw Review

The second step of the analysis included a fatal flaw review of the feasibility of each of the 22 locations identified in Section 3 (Table 3-2). A more detailed review of the feasibility of surviving locations is found in Section 6, which will be the basis for the next round of screening. Note that locations deemed as fatally flawed for in-line or adjacent stations can still be considered for future deviated service with off-line stops.

4.1.1 159th Street, Markham

This would be the southernmost stop of a possible I-294 express bus service. For the likely applicable service pattern, buses would originate at the Harvey Transportation Center (2.4 miles to the east) and access I-294 at the 159th Street interchange. As such, there would not be a need to develop a station within the I-294 right-of-way (ROW). An off-line stop would be considered near Western Avenue, partly to serve an Amazon warehouse currently in development southwest of the I-294/159th Street interchange (Figure 4-1).

FATAL FLAW ASSESSMENT: Remove from further consideration.

Figure 4-1. 159th Street Site Area

4.1.2 147th Street, Posen

The 147th Street bridge crossing of I-294 is 0.6 mile north of I-57 as shown on Figure 4-2. The southbound I-294 to I-57 ramp (dark blue line on map) starts north of 147th Street, which would mean that express buses would be required to cross this exit ramp as well as the 147th Street off ramp to serve a platform. The northbound ramp from I-57 to I-294 (aqua blue line) is barrier-separated from the main I-294 traffic lanes to accommodate toll collection just north of 147th Street. The I-57 ramp is also barrier-separated from the 147th northbound on-ramp to I-294 to the east as shown in Figure 4-3. As a result, platform access is not possible to the northbound main traffic lanes.

FATAL FLAW ASSESSMENT: Remove from further consideration.

Figure 4-2. 147th St. Site Area

Figure 4-3. 147th St. Northbound Lane/Ramp Configuration

4.1.3 139th Street / Midlothian Turnpike / Pulaski Road, Robbins

Three major roadways serve this area with the Midlothian Turnpike and Pulaski Road crossing under I-294 at two different locations, and 139th Street dead ending at Pulaski on the east (see Figure 4-4). The Crestwood Armory (Illinois National Guard) is to the east and an auto auction and truck facility are to the west. The location was studied for a possible I-294 interchange by the Illinois Tollway and Cook County Department of Transportation and Highways (CCDOTH) (*Interchange Impact Study, 103rd Street/Southwest Highway & Pulaski Road/Midlothian Turnpike*, Illinois Tollway and CCDOTH, 2019) with possible northbound ramps serving Midlothian Turnpike and southbound ramps Pulaski Road.

An in-line station appears possible on I-294.

FATAL FLAW ASSESSMENT: Advance for screening.

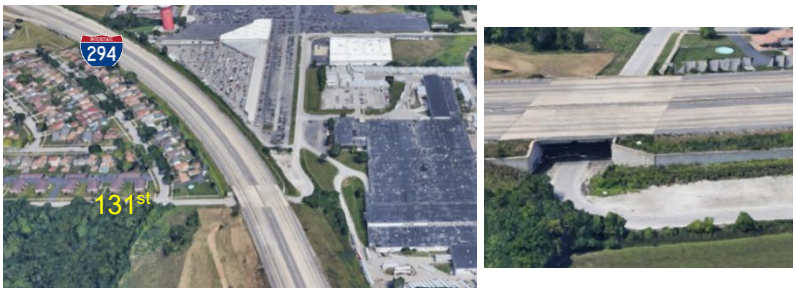
Figure 4-4. 139th St. Site Area

4.1.4 131st Street, Alsip

The 131st Street location includes residential uses west of I-294 and industrial uses east as shown in Figure 4-5. In addition, the Swap-O-Rama Flea Market is adjacent to the east side of the I-294, north of 131st Street, which has extensive parking that could potentially be shared with users of a bus station. I-294 bridges over 131st Street. The future Cal-Sag Trail extends directly beneath this section of I-294, with access near 131st Street, east of I-294. An in-line station appears feasible.

FATAL FLAW ASSESSMENT: Advance for screening.

Figure 4-5. 131st St. Site Area



4.1.5 Cicero / 127th Street, Alsip

Several opportunities appear possible at this complex interchange area that includes two major arterial roadways, Cicero Avenue and 127th Street in Alsip. Both arterials bridge over I-294. The Illinois Tollway maintenance facility site in the northeast quadrant of I-294 and Cicero Avenue could be a possible station. The area between the southbound I-294 ramps could be used as a potential parking lot with tunnel access to platforms. See Figure 4-6.

FATAL FLAW ASSESSMENT: Advance for screening.

Figure 4-6.127th St. Site Area

4.1.6 103rd Street, Chicago Ridge

The south portion of the triangular-shaped site bounded by Harlem Avenue, I-294, and Stony Creek includes a former trucking facility that is eyed for redevelopment by the Village of Chicago Ridge. Also, this location was studied for a possible I-294 interchange by the Illinois Tollway and CCDOTH (*Interchange Impact Study, 103rd Street/Southwest Highway & Pulaski Road/Midlothian Turnpike*, Illinois Tollway and CCDOTH, 2019). The study was prompted partly as a way of relieving congestion at the 95th Street interchange, which is about one mile north. There appear to be several options to develop an in-line or adjacent station. See Figure 4-7.

FATAL FLAW ASSESSMENT: Advance for screening.

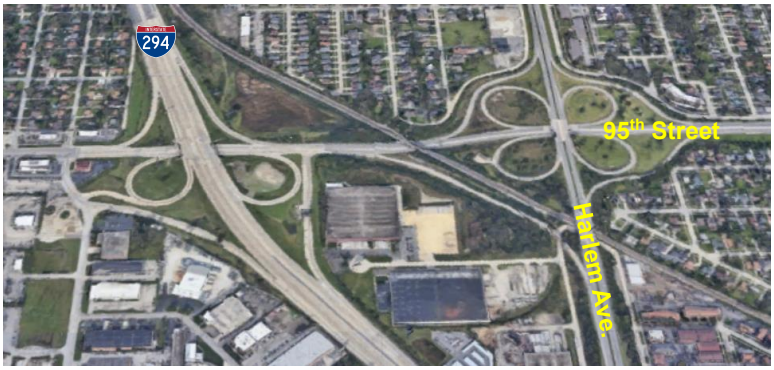
Figure 4-7. 103rd St. Site Area

4.1.7 95th Street, Bridgeview

This is a complex interchange that includes partial cloverleaf access ramps to 95th Street. Traffic is also complicated by the full interchange between Harlem Avenue and 95th Street, which is less than one-half mile to the east. The geometry of the interchange raises concerns for safety, access, and connectivity of an in-line station. See Figure 4-8.

FATAL FLAW ASSESSMENT: Remove from further consideration.

Figure 4-8. 95th St. Site Area

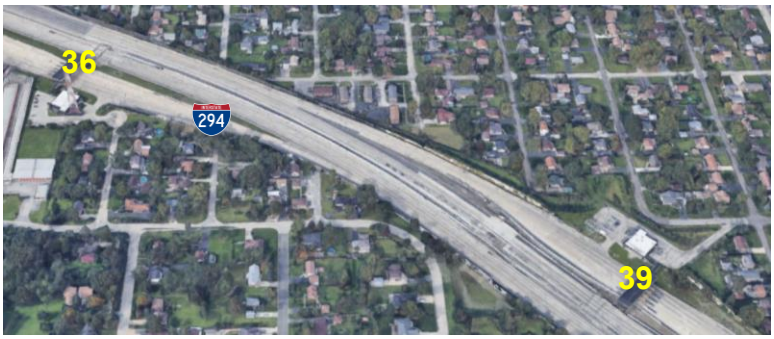


4.1.8 Toll Plazas 36 & 39, Justice

The Illinois Tollway's plans to convert toll collection to all-electronic will mean that current toll plazas, including cash payment lanes, will be eliminated. This would free-up right-of way for possible use as Pace express bus stations. Toll Plazas 36 (southbound) and 39 (northbound) in Justice are 0.4 miles from one another. While the elimination of the Toll Plazas offers the opportunity of available right-way, the separated locations and lack of arterial roadway access to the site would be problematic. See Figure 4-9.

FATAL FLAW ASSESSMENT: Remove from further consideration.

Figure 4-9. Toll Plazas 36 & 39 Site Area



4.1.9 88th Avenue / Cork Avenue, Justice

This location involves the 88th Avenue / Cork Avenue bridge over I-294. Northbound off and southbound on ramps are planned in a joint project between the Illinois Tollway and CCDOTH. The Archer southbound on ramp is to be eliminated. Also, the deceleration lane to the Toll Plaza 36 cash toll booths will be eliminated when the Illinois Tollway converts to all-electronic toll collection. A station with outside platforms and vertical access to 88th Avenue appears feasible. See Figure 4-10.

FATAL FLAW ASSESSMENT: Advance for screening.

Figure 4-10. 88th St. Site Area

4.1.10 75th Street, Hodgkins

The 75th Street interchange is used by several Pace routes and a CTA route to provide access to the UPS facility south of 75th Street. The ramp configuration would make providing access to platforms difficult. See Figure 4-11.

FATAL FLAW ASSESSMENT: Remove as in-line or adjacent station.

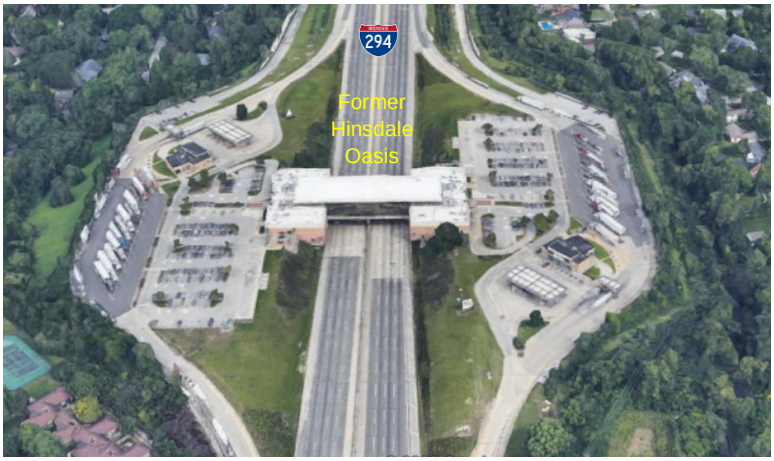
Figure 4-11. 75th St. Site Area

4.1.11 Hinsdale Oasis (former), Hinsdale

The elimination of the overhead Hinsdale Oasis created available ROW to develop a station and supporting infrastructure (e.g., parking). However, there are several factors that affect this opportunity, including: 1) the site is comparatively isolated from the local area roadway network, 2) design plans for the reconstruction/widening have been completed as part of the Central Tri-State project, and 3) adjacent land use is lower density single family residential with limited near-by destinations. See Figure 4-12.

FATAL FLAW ASSESSMENT: Remove from further consideration.

Figure 4-12. Former Hinsdale Oasis Site Area



4.1.12 Ogden Avenue, Western Springs

The Ogden Avenue (US 34) interchange is a full cloverleaf, which would make installing center platforms costly as ramps would need to shift (see Figure 4-13). Use of outside platforms would also create conflicts between buses and vehicles accessing ramps. This interchange design could change in the future given the interest by the Illinois Department of Transportation (IDOT) to conduct a study of the junction. Timing for the study is not known.

FATAL FLAW ASSESSMENT: Remove from further consideration.

Figure 4-13. Ogden Ave. Site Area

4.1.13 Cermak Toll Plaza, Oak Brook

As previously noted, the Illinois Tollway has phased out toll plazas as the system has converted to all electronic tolling. The Cermak Toll Plaza is about one-third of a mile north of Cermak Road (22nd Street). Windsor Drive could possibly be extended east, which could be used to provide last mile transit access to the Oak Brook area. Outside bus platforms appear to be feasible. Figure 4-14.

FATAL FLAW ASSESSMENT: Advance for screening.

Figure 4-14. Cermak Toll Plaza Site Area

4.1.14 Roosevelt Road, Elmhurst

This location (see Figure 4-15) is a convergence of major area roadways, including I-88, I-294, I-290, Roosevelt Road and a complex ramp system that connects the roadways to one another. This complexity, and the extensive footprint devoted to roads (and not land uses that would generate or attract bus riders), make this a difficult site for a bus station.

FATAL FLAW ASSESSMENT: Remove from further consideration.

Figure 4-15. Roosevelt Road Site Area

4.1.15 North Avenue, Northlake

North Avenue crosses under I-294 and is part of another complex location where major roadways converge and connect (i.e., I-294, I-290, Lake Street US 20 and North Avenue IL 64). Developing an in-line station would be difficult. See Figure 4-16.

FATAL FLAW ASSESSMENT: Remove as in-line or adjacent station.

Figure 4-16. North Avenue Site Area

4.1.16 Grand Avenue, Northlake

Grand Avenue crosses under I-294. Vehicle access to I-294 is not possible to or from Grand Avenue. An in-line station would appear to be possible. See Figure 4-17.

FATAL FLAW ASSESSMENT: Advance for screening.

Figure 4-17. Grand Avenue Site Area

4.1.17 O'Hare Oasis (former), Schiller Park

Similar to the Hinsdale Oasis, this closure creates a footprint to develop an in-line or adjacent express bus station. Conceptual designs for a station will be affected by the Illinois Tollway's plans for additional roadway access to the area (current I-294 access at Irving Park Road is limited to travel to/from the north only). The in-progress *Central Tri-State Tollway at Irving Park Road Feasibility Study* is evaluating I-294 access opportunities for nearby industrial, commercial, and residential areas. Separately, Schiller Park is considering development within the O'Hare Oasis site and adjacent areas along Mannheim Road. As part of the Central Tri-

State project, a pedestrian bridge has been programmed for the area. Based on an in initial review of alternatives being considered by the Feasibility Study, it would appear that an in-line station with outside platforms would be feasible. See Figure 4-18.

FATAL FLAW ASSESSMENT: Advance for screening.

Figure 4-18. Former O'Hare Oasis Site Area

4.1.18 Rosemont Entertainment District, Rosemont

The Parkway Bank Park entertainment and dining complex encompasses a 20-acre site bounded by Balmoral Avenue, I-294, Bryn Mawr Avenue and Park Place. It would appear that a station could be accommodated on the north side of Balmoral Avenue. This would also provide access to Impact Field on the west side of I-294. See Figure 4-19.

FATAL FLAW ASSESSMENT: Advance for screening.

Figure 4-19. Rosemont Entertainment District

4.1.19 Touhy Avenue, Des Plaines

Touhy Avenue crosses under I-90; without access ramps. An in-line station appears possible, although the required tollway widening to accommodate platforms would be costly due to the acute angle of the roadway crossing (i.e., longer bridge spans). See Figure 4-20.

FATAL FLAW ASSESSMENT: Advance for screening.

Figure 4-20. Touhy Ave. Site Area

4.1.20 Busse Road, Mt. Prospect

Busse Road crosses under I-90; without access ramps. An in-line station appears possible, although the required tollway widening to accommodate platforms would be costly due to the angle of the roadway crossing (i.e., longer bridge spans). See Figure 4-21.

FATAL FLAW ASSESSMENT: Advance for screening.

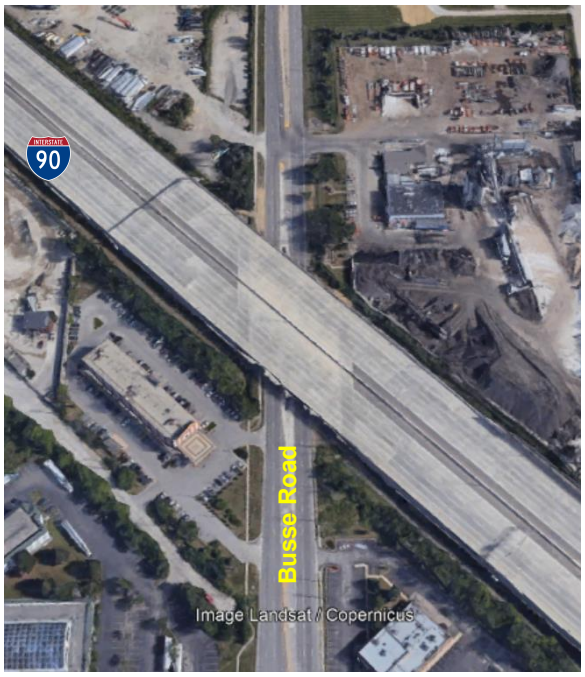


Figure 4-21. Busse Road Site Area

4.1.21 Arlington Heights Road, Arlington Heights

While it is not known if this location has previously been considered for an in-line express bus station, this could be a viable site to support I-90 Pace express services. The Village of Arlington Height's vision for redevelopment in the area could also be supportive of a station, although the southwest quadrant of I-90/Arlington Heights Road is devoted to permanent open space (i.e., Cook County Forest Preserve's Busse Woods).

The interchange is a partial cloverleaf design with direct access ramps. Similar to Ogden Avenue, installing center platforms would be costly as ramps would need to shift (see Figure 4-22). Use of outside platforms would create conflicts between buses and vehicles accessing ramps.

FATAL FLAW ASSESSMENT: Remove from further consideration.

Figure 4-22. Arlington Heights Road, Arlington Heights

4.1.22 Meacham Road, Schaumburg

Meacham Road crosses over I-90; access ramps facilitate westbound ons and offs. An outside platform could be constructed on the westbound through-lane side (north of I-90/Meacham on ramp) west of Meacham Road. An eastbound platform could be placed between the frontage road (Wiley Road) and I-90.

FATAL FLAW ASSESSMENT: Advance for screening.

Figure 4-23. Meacham Road Site Area

5. Planning and Design Guidelines

A key factor in evaluating and selecting station locations for recommended express bus services will be determining whether an in-line station can be physically accommodated within the roadway ROW without excessive capital cost. In addition, the safe operation of buses and general traffic as well as the safety of bus passengers would need to be confirmed. To address these issues, reference documents were collected to identify best practice on planning and design of in-line stations, as well as applicable local agency standards. The following source documents were reviewed and used as the basis for the recommended guidelines presented in this section. Web-links are provided where available.

1. Bus Use of Highways, Planning and Design Guidelines, National Cooperative Highway Research Program (NCHRP) Report 155, Transportation Research Board (TRB), 1975 (BusUse_of_Highways).
2. HOV Systems Manual, NCHRP, TRB, Report 414, 1998 (HOV_Manual).
3. Land Use Policies and Strategies for Expressway-Based Bus Rapid Transit, A Guide for Municipalities and Transportation Providers, Chicago Metropolitan Agency for Planning (CMAP), July 2012.
4. Transit Supportive Guidelines for the Chicagoland Region, Pace, 2013 (PaceGuidelines).
5. Guide for Geometric Design of Transit Facilities on Highways and Streets, American Association of State Highway and Transportation Officials (AASHTO) 2014.
6. Roadway Design Criteria, Illinois State Toll Highway Authority, 2018 (TollwayCriteria).
7. A Policy on Geometric Design of Highways and Streets, 7th Edition, AASHTO, 2018.

It should be noted that elements and dimensions of Pace's I-90 Barrington Road Park-n-Ride facility were also considered in these planning and design guidelines. Barrington Road was Pace's first in-line bus station, which opened in August 2018.

5.1 Planning Guidelines

In-line freeway bus stations enable passengers to access or egress from an express bus service by means of walk, bike, drive-and-park, drop-off/pick-up, or transfer from/to another transit service. As such, the location, design, and elements of the station need be easily accessed; allow safe and convenient passage to users; and do not disrupt the safe and efficient operation of general traffic on the roadway. The following provides planning and design guidelines and standards that help to inform the recommendations and conceptual design of I-294 in-line stations.

Stops should be placed in areas of high passenger production of origins or attraction of destinations. This can include locations served by interchanging roadways, transit centers, bus and rail services, major park-and-ride facilities, and concentrations of residences and jobs. Spacing of stations in areas of suburban development patterns characteristic of the I-294 corridor generally should be comparatively wide, where many passengers arrive and depart an origin station by personal vehicle. Wide station spacing allows express buses to operate at higher speeds. A spacing of at least two miles was recommended by AASHTO (*Guide for Geometric Design of Transit Facilities on Highways and Streets*, AASHTO, 2014) to permit buses to operate at or near prevailing general traffic speeds.

Other location and planning design considerations from the cited resource documents include:

- Locations should minimize conflict between buses, general traffic, and pedestrians,
- Locations should not require added bus schedule time other than for stopping, loading, and starting,
- Locations should be compatible with geometric constraints of existing and planned roadways,
- Stations should generally be located at the freeway level,
- Site conditions that are favorable and gradients on deceleration / acceleration lanes are flat or downward,
- Locations with available land and minimal impacts to environmentally sensitive parcels,
- Stations should be isolated from through-freeway lanes,
- Stations should be oriented to ensure good visibility,
- Stations should be in safe and secure areas,
- Stations should avoid or minimize the need for commuters to backtrack to reach the station,
- A set of platforms serving both directions of travel should ideally be aligned with one another to minimize the distance to a return rider's origin station location (e.g., to a park-n-ride lot on return trip),
- Bus stations will include elements needed for passenger circulation, including sidewalks, stairs, ramps, or elevators,
- All elements used by passengers will be fully compliant with ADA requirements,
- Stations should allow convenient access to adjacent and nearby neighborhood areas with park-n-ride, feeder services and pedestrian/bicycle links, and
- The alignment of express bus exit and entry ramps should permit bus movements into and out of loading areas without adverse effect on main line traffic flow and freeway safety.

The balance of this section provides standards and criteria that are associated with station elements relevant to the development of layout concepts. In particular, this information is useful in determining the footprint of space that would be required.

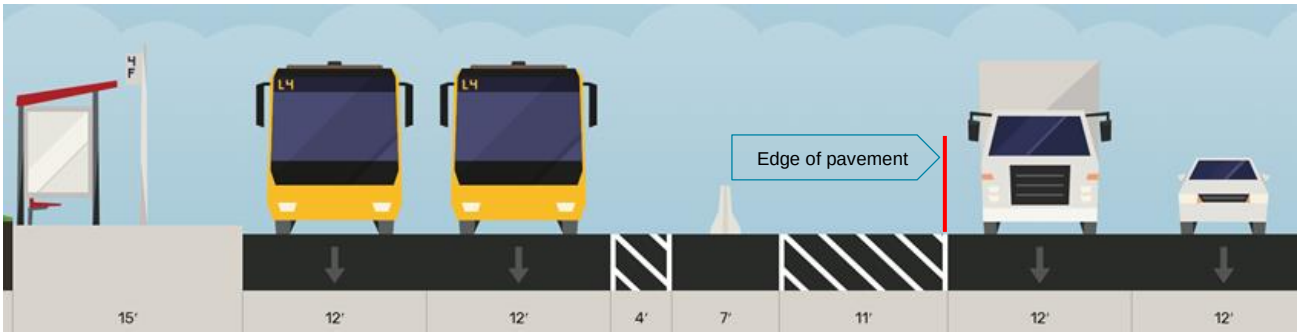
5.2 Station Facilities

The following provides guidelines on station facilities, including the loading area, platforms, shelters, passenger access/circulation, bus transfer facilities, and park-n-rides. The information presented addresses issues associated with physical space needs.

5.2.1 Passenger Loading Area

Figure 5-1 provides a cross-section view of an in-line station with the platform on the outside of the roadway lanes. While center platform stations were given early consideration, as the identification and evaluation of sites progressed it was felt that placement of a platform or platforms between the main-line lanes would be overly complicated and costly as a retrofit of the roadway. This was also related to the fact that the Central Tri-State project (Balmoral Avenue to 95th Street) design work was nearly complete, and release of construction documents was expected in the near future.

Figure 5-1. Basic Cross-Section at In-Line Bus Station



As measured from the edge of pavement, a minimum of 61 feet will be required to accommodate a station. It was decided to measure distance from the edge of pavement and not the edge of shoulder because shoulder width can vary. The following shows widths by element:

- Roadway shoulder, which serves both as an emergency breakdown lane and additional buffer between the drive lanes and the station boarding area (11 feet),
- Concrete barrier and base, consistent with Tollway design criteria; a 7-foot width is required to accommodate the double-faced 44-inch tall wall and base,
- Buffer between barrier wall and passing bus lane (4 feet),
- Through passing bus lane (12 feet),
- Bus loading zone (12 feet), and
- Platform (15 feet).

This 61-foot dimension was used as the assumed minimum space requirement for stations. It should be noted that if a noise wall is present, or would be required, additional space beyond this standard dimension would be needed.

5.2.2 Platforms

Platform size was based on the dimensions of the Pace I-90 Barrington Road facility, at a length of 100 feet and width of 15 feet. There was some uncertainty if this length would accommodate two buses at one time. As the project advances to the next stage, the length should be revisited. Platforms should be designed to serve two buses.

5.2.3 Shelters

The amount of covered waiting space for passengers should be based on the maximum number of passengers waiting to board a bus. For planning purposes, a review of ridership boarding forecasts by stop can be a useful source. Identifying the peak boarding time can be determined by reviewing the boarding distribution of bus trips of similar Pace services. Required covered waiting space can be derived by applying the rule of thumb factor of 4.75 square feet per peak passenger boarding (*Commuter Rail Station Guidelines and Standards*, Metra, August 2007). Covered or enclosed waiting space can also be shared with passenger circulation infrastructure, as illustrated in the following photo from Pace's Barrington Road Station. The access to the overhead pedestrian bridge entry provides sheltered space for inbound passengers.

Pace Barrington Road eastbound platform and pedestrian bridge entry.

5.2.4 Passenger Access / Circulation

An important element of passenger circulation is the ability to return to a boarding location at a station from the return trip. This is complicated by the need to cross a multi-lane freeway. Several options are available, including:

- Pedestrian bridge over the freeway,
- A tunnel under the freeway, or
- Use of an existing roadway bridge.

Use of a bridge versus a tunnel could be a function of the local topography, for example, a raised ROW could result in a tunnel being more feasible than a bridge. However, considering that the distance to be spanned will be upwards to 200 feet or more, there may be issues of constructability and safety that would make a tunnel less viable. The Illinois Tollway's vertical clearance requirement for interstate overhead bridges is 16 feet 5 inches (*Structure Design Manual*, Illinois Tollway, March 2021). Use of existing roadway bridges could be the more cost-effective option, especially if sufficiently-wide sidewalks are present. The design solution to advance will be depend on the specific characteristics of each respective site.

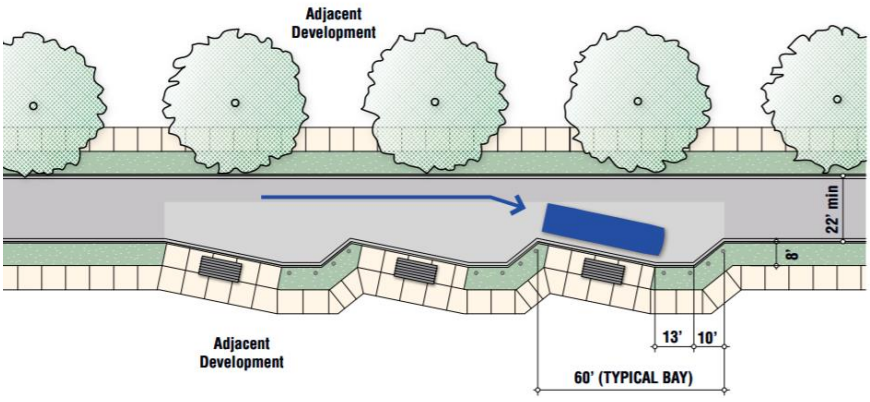
Whatever the means proposed to span the roadway, passengers will be confronted with the need to traverse vertical distances from a platform. To comply with ADA requirements, these elements will involve use of elevators or ramps. Stairways can also be included for able-bodied passengers. Again, the preferred approach will depend on site-specific conditions.

Access to other station area elements (e.g., parking, transfer buses) will also need to comply with ADA and local regulations on sidewalk width and grade.

5.2.5 Bus Transfer Facilities

Connections with local and regional bus routes will be an important source of ridership for a station. The physical drop-off locations of connecting routes should be sited to require the shortest possible walk to the in-line station boarding platform. For routes that terminate at in-line stations, dedicated bus berths should be provided. Pace's standard for parallel curb-side berths requires a length of 90 feet each (*Transit Supportive Guidelines*, Pace, 2013). The number of berths would be determined by the number and service frequencies of connecting routes. Buses that deviate off-street to serve an in-line station could also use the dedicated berths. For stations served by multiple routes with higher levels of service, a sawtooth design can be used, as illustrated in Figure 5-2. These bus transfers facilities can be co-located with automobile kiss-n-ride spaces, but appropriate signage should be used to minimize conflicts.

Figure 5-2. Sawtooth Bus Berthing Design



Source: Transit Supportive Guidelines for the Chicagoland Region, Pace, 2013

5.2.6 Park-n-Ride Facilities

It is expected that many express bus passengers originating from home will choose to access the service using park-n-ride. Modeling results of ridership by access mode can be used as a basis for estimating parking capacity. The location of the parking should minimize walking distance to the boarding and alighting platforms. Acceptable walk distance should ideally be less than 1,000 feet *(HOV Systems Manual*, NCHRP, 1998).

Roadway access should strive to minimize impacts on traffic operations. Access location (i.e., curb cuts) should consider roadway level of service, distance to nearest intersections, ingress and egress points of adjacent land uses, existing curb cuts, location of access points of facilities opposite the proposed facility, physical features of the adjacent roadway, operating speed on the roadway, and one-way streets.

The design of parking lots will be partly a function of the dimension of the site, but also local requirements. Pace parking design standards should be followed (*Transit Supportive Guidelines for the Chicagoland Region*, Pace, 2013). The facility would also be designed to be compliant with ADA requirements.

5.3 Minimum Deceleration/Acceleration Lanes

A key design element of an in-line freeway station is to provide exit and entry lanes to allow the deceleration, standing, and acceleration of buses on pavement areas clear of, and separated from, main-line travel lanes. Acceleration/deceleration lanes need to be long enough to enable the bus to leave and enter the travel lane at roughly the average running speed of the highway.

Establishing these turnout lane lengths will be important in siting and laying out stations. Factors such as ROW availability and geometric constraints of the existing roadway, and planned improvements would be affected by these dimensions.

To determine an appropriate exit/entry lane length, applicable Illinois Tollway, Pace, and AASHTO standards were reviewed. As shown in Figure 5-3, a minimum turnout length of 3,280 feet was recommended as a base requirement for potential stations. Table 5-1 breaks down the lengths that are associated with each of the component parts. It should be noted that roadway conditions for individual sites could require some variation in the dimension parameters. It is also important to note that this dimension is being used for screening purposes to inform the high-level conceptual layouts, and not for final design of station facilities. The following inputs and assumptions were used.

- Tollway design criteria for exit lanes requires a 20:1 taper and entrance lanes a minimum 50:1 taper.
- AASHTO criteria for deceleration and acceleration between ramp terminals and station stops were incorporated to ensure sufficient space for buses to slow down and return to freeway design speed.
- Pace design criteria for station stops introduces more conservative 5:1 exit taper, 3:1 entrance taper, and a 100-foot platform length, introducing 625 feet of additional lane length.
- The overall improvement length for the 3,280-foot dimension would extend to a total of 4,600 feet from tip of southbound entrance ramp to tip of northbound entrance ramp given that the station platforms will preferably be aligned across I-294.
- Existing Tollway geometry must also be evaluated against this base turnout design, especially at interchanges and Collector-Distributor (C-D) ramp connections.

Figure 5-3. Exit-Entry Bus Lane Schematic

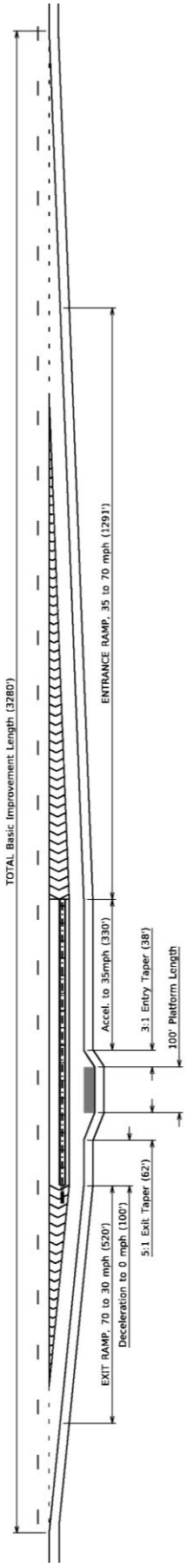


Table 5-1. Exit-Entry Lane Length by Component

Element	Speed Change	Length (feet)	Source
Exit Taper	70mph	250	Tollway
Exit Ramp	70 to 30mph	520	Tollway & ASSHTO
Deceleration Length	30 to 0mph	100	Tollway & ASSHTO
Platform Turnout	To 0mph	62	Pace
Platform (one bus)	Standing	100	Pace
Platform Return	from 0mph	38	Pace
Acceleration Length	0 to 35mph	330	Tollway & ASSHTO
Entrance Ramp	35 to 70mph	1,290	Tollway & ASSHTO
Transition Taper	70mph	590	Tollway
Total Minimum Improvement Length		**3,280**	

6. Physical Feasibility Assessments of Potential Station Sites

A factor that will be important in evaluating and selecting station locations for recommended express services is whether an in-line or adjacent station can be physically accommodated without excessive capital cost. Based on the general space parameters highlighted in the previous section, the constructability and cost reasonability of surviving locations from Section 4 were assessed.

Based on the results of the screening of 22 locations detailed in Section 4, 12 locations were advanced for further analysis. These twelve screened locations were reviewed to determine possible ways that station elements could be arranged. Elements included platforms, deceleration/ acceleration bus lanes, grade-separated pedestrian crossing, vertical access from platforms, park-n-ride, pedestrian access, transfers from other vehicles, and others. Additionally, site conditions will affect the feasibility and potential infrastructure requirements of locations, including:

- Elevated freeway on a bridge or embankment. Widening sections of the Tollway on structure to include space for platforms and bus lanes will likely be cost prohibitive.
- Interchange ramps could create traffic conflicts with buses pulling off or on to serve a station stop. Full cloverleaf interchanges would be the most problematic.
- Presence of an existing elevated roadway (i.e., above I-294) that could also accommodate vertical passenger access. This condition could preclude the need to construct a separate pedestrian bridge or tunnel.
- Available ROW to accommodate platforms and bus exit / entry lanes.

The following review of station feasibility represent high level assessments of physical constraints that possible bus station infrastructure would need to address. Each review is based on conceptual designs that would provide safe environments for vehicle operations and bus passenger pedestrian access and egress movements.

The twelve station locations that survived the fatal flaw screening of Section 4 are presented on Table 6-1. Information on distance to adjacent stations, Tollway under or over location, and number of on / off ramps are also provided on the table.

Brief assessments of how stations could be configured at each location, and the resultant implications on physical and cost feasibility follow.

Table 6-1. Fatal Flaw Screened Station Locations

#	Route	Location	Municipality	Miles between Stops	Tollway Over or Under	No. of On/Off Ramps
		159th Street (off-line)				
1	I-294	139th St/Midlothian Turnpike	Robbins	3.0	Over	0
2	I-294	131st Street	Alsip	1.1	Over	0
3	I-294	Cicero / 127th Street	Alsip	0.7	Under	4
4	I-294	103rd Street	Chicago Ridge	4.3	Neither	0
5	I-294	88th Avenue/Cork Avenue	Justice	3.8	Under	2*
6	I-294	Cermak Toll Plaza	Oak Brook	9.9	Neither	0
7	I-294	Grand Avenue	Northlake	5.4	Under	0
8	I-294	O'Hare Oasis (former)	Schiller Park	2.5	Neither	0
9	I-294	Balmoral, Rosemont Ent. Dist.	Rosemont	2.0	Under	2
10	I-90	Touhy Avenue	Des Plaines	3.3	Over	0
11	I-90	Busse Road	Mt. Prospect	3.1	Over	0
12	I-90	Meacham Road	Schaumburg	5.1	Under	2

**Programmed.*

6.1.1 139th St. / Midlothian Turnpike

This location is affected by three roadways, Midlothian Turnpike and Pulaski Road crossing under I-294 and 139th Street dead-ending at Pulaski Road on the east. Development of an interchange here, as considered by the Illinois Tollway and CCDOTH *Interchange Impact Study* (2019) could complicate, or render infeasible, an in-line station. The distance between the Pulaski Road and Midlothian Turnpike bridges is significantly less than the required 3,300 feet to fit deceleration / acceleration lanes (northbound: 800’ and southbound: 1,200’). Accommodating platforms on I-294 would require widening one or both bridges, resulting in a recommendation not to advance this location for further study (see Figure 6-1).

Figure 6-1. 139th St. / Midlothian Turnpike Station Site

6.1.2 131st Street

Demand for a station at 131st Street could come from residential uses west of I-294 and industrial uses east. In addition, the Swap-O-Rama Flea Market could potentially provide a shared-use parking arrangement. The 131st Street viaduct could accommodate pedestrians, eliminating the need for an investment in a pedestrian bridge or tunnel.

It was assumed that deceleration and acceleration lanes would avoid the Cal Sag Canal Bridge to the south. Using the lane length dimensions from Section 5.3, a rough layout of infrastructure is illustrated on Figure 6-2 and described below.

- Northbound | Clearing the Canal Bridge, a 970-foot deceleration lane (blue) would extend just north of the 131st Street Bridge. From a boarding platform at this location, buses would begin to accelerate to re-enter I-294 (red). The 2,300-foot acceleration lane would extend past the 127th Street exit ramp, creating a conflict between slowing vehicles exiting and accelerating buses entering the main travel lanes.

- Southbound | Working back from where buses would re-enter I-294 main traffic lanes before the Canal Bridge would place the southbound platform 2,300 feet (red) north of the Bridge. The 970-foot deceleration lane (blue) would conflict with vehicles accelerating from the 127th Street southbound on ramp.

For these reasons, the 131st Street location is not recommended to advance for further study.

Figure 6-2. 131st Street Station Site

6.1.3 Cicero / 127th Street

There are potentially several solutions to creating an express bus stop in this complex interchange that involves ramp systems providing I-294 access to two arterials, Cicero Avenue and 127th Street. The area between the southbound I-294 off ramps that serves Cicero Avenue (to east on Figure 6-3) and 127th Street (to west) could be used as a potential parking lot with tunnel access to the southbound platform. Figure 6-3 and the following text describe one possible layout alternative.

Southbound routing (blue line) | Following the southbound ramp, the bus turnout would divert from the ramp and remain parallel and offset from the main traffic lanes. After stopping at the platform, the lane would extend under the Cicero Avenue Bridge, where the existing slopewall would need to be cut back and a retaining wall constructed.

Northbound routing (aqua line) | One possible option for the northbound routing would be to exit at 127th Street, follow 127th to Cicero Avenue where a stop would be made at the northeast corner, turn north on Cicero to the northbound on ramp, then return to the regular I-294 through lanes.

The various improvement elements that would complement these routings are described below and on Figure 6-3; lower case letters indicate locations depicted on map.

a. Southbound In-Line Platform

b. Tunnel – For pedestrians, crossing under a reconstructed and elevated section of the southbound I-294 to Cicero off ramp, providing access between parking and platform.

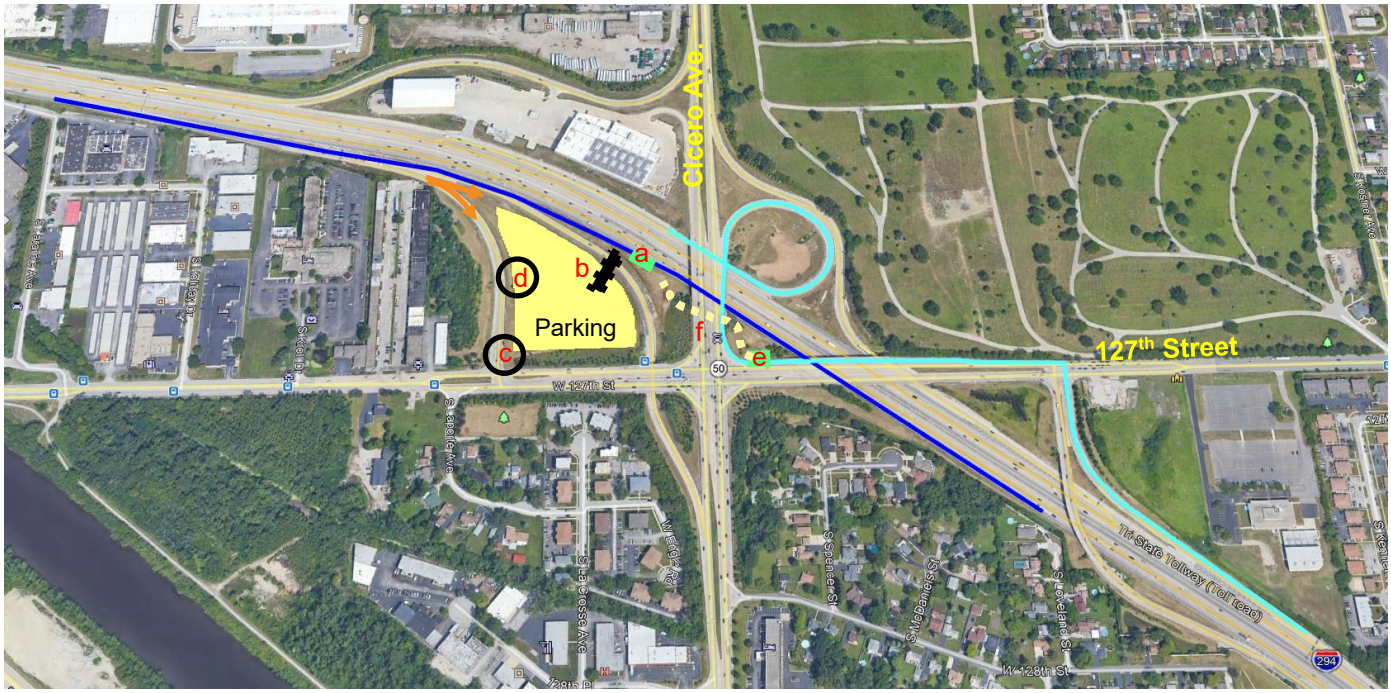
c. Parking Lot Entrance from 127th Street – Reconfigure 127th Street turn lanes.

d. Parking Lot Exit – To 127th Street off ramp. An actuated signal can be considered.

e. Northbound Platform – Creating a safe environment for stop adjacent to turn lane is a potential concern.

f. Pedestrian Pathway from Northbound Platform to Southbound Platform Area – This would be routed under Cicero Avenue and would require modifying the slopewall under I-294 (shown as yellow dashed line).

Figure 6-3. Cicero / 127th Street Station Site



Installing a station at this location using this conceptual approach led to several observations.

- This is an unfriendly area for pedestrians. Advancing this concept should also include more fully building out the sidewalk network.
- The diversion of northbound trips via 127th Street avoids significant capital costs of a platform placed in the I-294 ROW. While this routing would require relatively minimal extra travel distance, the impact on travel time due to congestion is less certain.
- The northbound stop on 127th Street would need to be further evaluated, especially the need to stop in the right turn lane.
- Use of the land proposed for parking would require Illinois Tollway approval.

In summary, this location appears feasible and is recommended to be included in a comparative evaluation with other feasible candidate locations.

6.1.4 103rd Street

This site could offer significant advantages by coordinating with the proposed redevelopment of a former trucking facility. Key constraints for positioning platforms and turnout lanes for an in-

line station are the Harlem Avenue and Southwest Highway bridges. As shown on Figure 6-4, the yellow line is the 970 feet needed for a deceleration lane and the aqua line is the 2,300 feet for an acceleration lane. This reveals that platforms (green circles) and bus turnout lanes can be accommodated. While it would be preferred that the platforms be aligned with one another across the roadway, this offset arrangement could be a feasible option if an overhead pedestrian bridge is placed between the platforms. Also, this offset could facilitate the use of ramps instead of elevators. There remain some issues on the east side to address ROW limitations and drainage, but it is believed that these can be solved.

Figure 6-4. 103rd Street Station Site

Assuming that this location is not being considered as a possible interchange (this requires confirmation), this is viewed as a feasible location that should be subjected to the next round of screening.

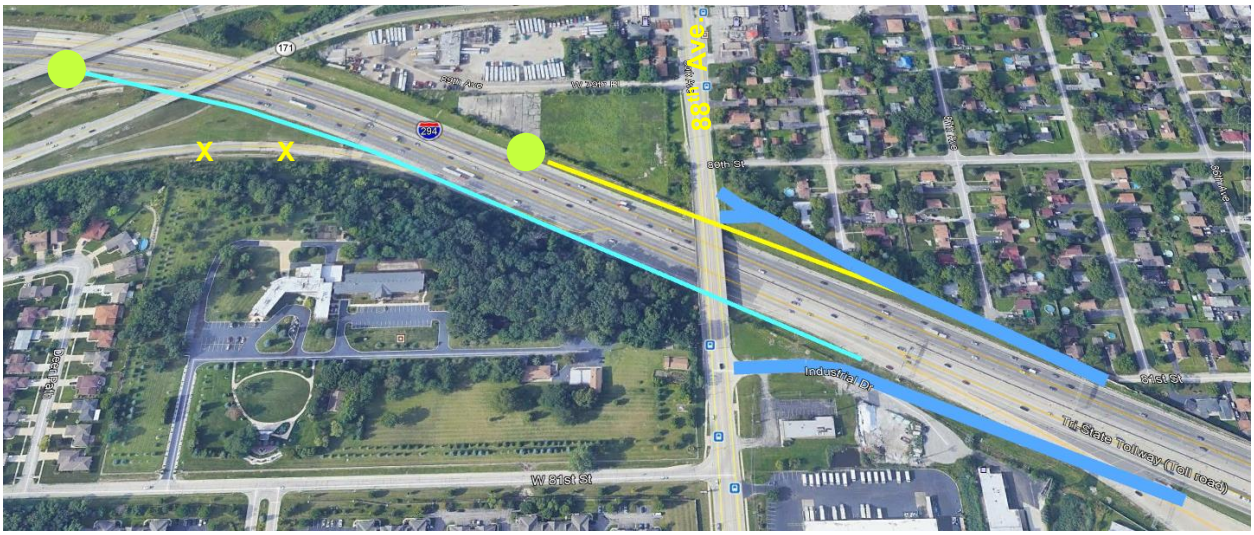
6.1.5 88th Avenue / Cork Avenue Station Site

This location involves the 88th Avenue / Cork Avenue Bridge over I-294. Northbound off and southbound on ramps are programmed in a joint project between the Illinois Tollway and CCDOTH (blue). The Archer southbound on ramp is to be eliminated.

The added ramps would complicate an in-line station at this location. A northbound bus-only slip ramp could divert from the new off ramp. A 970-foot deceleration lane (yellow) would place a platform approximately 500 feet west of the 88th Avenue Bridge. More problematic would be siting a platform for southbound trips. It is assumed that an acceleration bus lane (aqua) would

need to join the main-line lanes in advance of the point that the new southbound on ramp merges with regular traffic lanes. Backing up 2,300 feet from this point would place the southbound platform in the land-locked complex interchange of Archer Avenue and I-294 (see Figure 6-5). Given these circumstances, this location in not recommended for further study.

Figure 6-5. 88th Avenue / Cork Avenue Station Site



6.1.6 Cermak Toll Plaza

An in-line station at this location is facilitated by the availability of right-of way from the removal of cash toll lanes. There is sufficient space for deceleration (yellow) and acceleration (aqua) lanes, as shown on Figure 6-6. The northbound bus turnout would merge with the Roosevelt off ramp then divert to serve the northbound platform. Similarly, the southbound deceleration lane would combine with the Cermak off ramp, divert to serve the southbound platform, and then re-enter main traffic lanes after separating from the off lane ramp approach.

Other required elements would include a pedestrian bridge, roadway access from Cermak on the east including modifications to the traffic signal, access to Windsor Drive on the west, and a parking facility on repurposed Tollway land.

The Cermak Toll Plaza site is recommended for the next round of on-line station site screening.

Figure 6-6. Cermak Station Site

6.1.7 Grand Avenue

I-294 is mostly elevated in the area of Grand Avenue, which would require expanding the Grand Avenue Bridge and extensive construction or reconstruction of retaining walls to accommodate exit / entry bus lanes. In addition, the Grand Avenue Bridge would need to be widened to install pedestrian access (see photo), or to construct a tunnel at a separate location. For these reasons, the Grand Avenue location is not recommended to advance for further study.

Grand Avenue Underpass of I-294.

6.1.8 O'Hare Oasis (former)

The elimination of the O'Hare Oasis Toll Plaza creates available ROW to develop an in-line station. In addition, the Village of Schiller Park is interested in redevelopment of the site, which could be supportive of enhanced transit service. The positioning of station platforms will need to consider recommendations from the in-progress *Central Tri-State Tollway at Irving Park Road Feasibility Study*. A review of options being considered for placement of ramp systems would indicate that a station would be feasible with or without new interchange ramps.

As shown on Figure 6-7, bus lanes could be integrated with ramps, serving platforms within the site (as shown by the teal circles on the Feasibility Study Drawing). The placement of platforms should be coordinated with a new pedestrian bridge, which has been programmed by the Illinois Tollway. Based on what is currently known about plans for the site, an in-line station would appear feasible, and is recommended to be advanced for further screening.

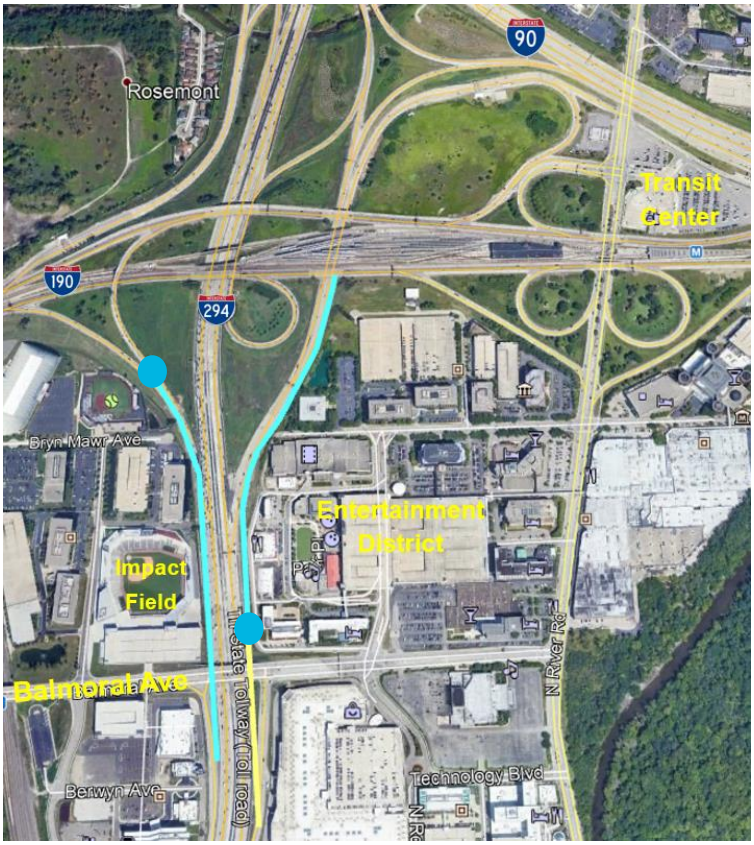
Figure 6-7. Former O'Hare Oasis In-line Station with Possible Ramps

Source: Central Tri-State Tollway at Irving Park Road Feasibility Study, Executive Summary, Illinois Tollway, Dec. 2020.

6.1.9 Balmoral Avenue, Rosemont Entertainment District

Developing an in-line station at Balmoral Road would be complicated by the I-190 interchange with I-294, which is also interconnected with I-90 immediately to the north. Northbound infrastructure could potentially work, although availability ROW would be an issue. Southbound would be more problematic, with the Balmoral Avenue on ramp being a key constraint. Backing up 2,300 feet from the south end of the bus acceleration lane (aqua line) before the Balmoral on ramp merge with regular travel lanes would place the platform on the southbound I-294 on ramp that connects I-90 to I-294. In addition to not being aligned with the northbound platform, the site would not be well connected to the local street network. This location is not recommended to advance for further study.

Figure 6-8 Balmoral Ave, Station Site



6.1.10 Touhy Avenue

I-90 is elevated through most of the area near the Touhy Avenue Bridge. As a result, adding platforms and bus exit / entry lanes will require widening the Touhy and Wolf Road Bridges and reconstructing retaining walls or constructing new walls (see photo of Touhy bridge view east). This location is not recommended to advance for further study.

Touhy Avenue Overpass and Retaining Wall

6.1.11 Busse Road

This location would be similar to Touhy Avenue, with an elevated I-90, requiring major rework of bridges (Busse and Oakton Street) and retaining walls to install in-line platforms and bus turnout lanes. This location is not recommended to advance for further study.

Busse Road Overpass and Retaining Wall

6.1.12 Meacham Road

The crossing of Meacham Road over I-90 includes westbound on and off ramps. In addition, two westbound through traffic lanes are positioned to the north of the Meacham Road ramps, which are linked to I-90 on and off ramps with I-290/IL 53, approximately one mile east of Meacham. This arrangement is illustrated on the following photo viewed west from east of Meacham Road.

I-90 Westbound at Meacham Road Main-Line and Ramp Lanes

As shown in the Figure 6-9, there is space for bus deceleration (yellow) and acceleration (aqua) lanes along I-90 west of Meacham Road. The platform locations shown are offset to accommodate a pedestrian bridge but can shift as the design process advances. The Meacham Road site is recommended for the next round of in-line station site screening.

Figure 6-9. Meacham Road Station Site

7. Final Screening of Station Locations

Section 6 assessed twelve locations and recommended five to advance for further study. Station sites that were not recommended to advance to the final screening are not necessarily infeasible. Rather, these sites contained certain aspects that would entail higher investment levels compared to the five locations deemed to be most constructible.

The objective of this final screening is to narrow the number of station locations to three for preparation of concept plans. Given that this type of transit investment in the Chicagoland region remains uncommon (the only in-line freeway bus station is Pace's Barrington Road facility that opened in 2018), developing three concept plans was determined to be realistic. Also, given the anticipated level of investment, developing a possible program that was limited to three in-line stations was determined to be more aligned with potential funding availability. Finally, advancing stations that would have the greatest likelihood for success in attracting passengers was another key objective, which is why the screening methodology that follows emphasizes factors that address demand. Station sites that are screened-out of this evaluation would remain feasible options to consider in the future. Table 7-1 includes the locations to be subjected to final screening.

Table 7-1. In-Line Station Locations for Final Screening

#	Tollway Route	Location	Miles between Stops
		159 Street (off-line)	
			5.7
1	I-294	Cicero / 127th Street	
			4.2
2	I-294	103rd Street	
			15.6
3	I-294	Cermak Toll Plaza	
			6.0
4	I-294	O'Hare Oasis (former)	
			13.9
5	I-90	Meacham Road	

7.1 Evaluation Framework

An initial factor to consider is the spacing of stations. A wider separation between boarding locations is preferred to allow express buses to operate at higher speeds and to minimize overlap in station passenger market sheds. A spacing of at least two miles is recommended by AASHTO (*Guide for Geometric Design of Transit Facilities on Highways and Streets*, AASHTO, 2014). As shown on Table 7-1, distances between the proposed station locations are well above the 2-mile threshold, and as a result, none should be removed for this reason.

Evaluation criteria used in screening locations are grouped into two categories: 1) passenger demand / market potential and 2) station access / connectivity. Sites are reviewed for the factors within each of the categories shown below.

7.1.1 Market Potential / Passenger Demand

Assessing the demand for express bus service at station stops covered four measures: socio-economics, propensity to use transit, results of the application of a travel demand model, and potential for supportive land use.

Socio-Economics

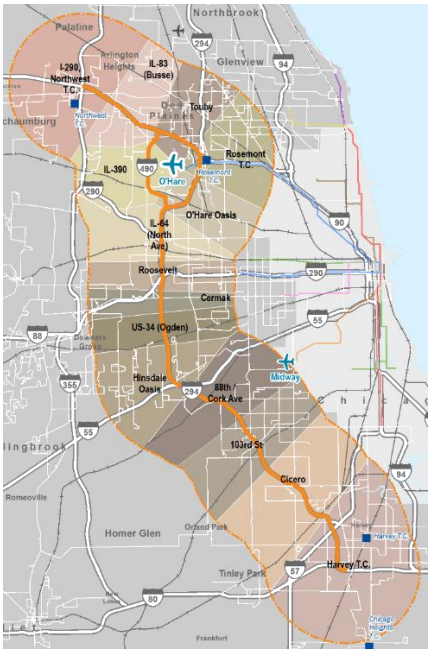
Population and job densities from the Study's *Market Analysis Technical Memorandum* are presented on Table 7-2 by station polygon. Polygons represent the portion of the 5-mile wide Study corridor associated with selected access points (i.e., potential stations) (see Figure 7-1). These two socio-economic variables are useful to gauge both the *production* of trips (i.e., population) and the *attraction* of trips (i.e., jobs). As an example, the Cermak location represents a station that *attracts* more riders (ranks 1st in job density), than produces *riders* (ranks 5th in population density).

Table 7-2. Population and Job Densities by Station Site Polygon

		Cicero / 127th St.	103rd Street	Cermak Toll Plaza	O'Hare Oasis (former)	Meacham Road
Population per Acre	2015	5.9	7.0	3.6	8.6	5.4
	2050	7.1	8.2	4.5	9.8	6.1
	2050 Rank	*3*	*2*	*5*	*1*	*4*
Jobs per Acre	2015	1.9	2.8	8.0	3.7	4.0
	2050	2.4	3.3	8.6	4.4	4.5
	2050 Rank	*5*	*4*	*1*	*3*	*2*

Source: CMAP On to 2050.

Figure 7-1. Corridor Polygons



Propensity to Use Transit

As a part of Pace's new strategic vision plan *Driving Innovation*, a tool was developed to identify gaps between transit supply and demand. The Gap Analysis tool uses a transit demand index

that combines five factors known to contribute to transit demand. The factors include the following, which are weighted into a composite score:

- Job density
- Population density
- Walkability
- Share of population earning below twice the poverty line
- Areas where riders can connect with high-capacity transit, including Metra and CTA rail lines and Pace's transit centers.

The transit demand index for the station areas are provided on Table 7-3. The Gap Analysis tool also includes a performance scale assigning indices to five ranges of performance, that is, ratings from Very Low to Very High.

Table 7-3. Gap Analysis Transit Demand Index by Station

	Cicero / 127th St.	103rd Street	Cermak Toll Plaza	O'Hare Oasis (former)	Meacham Road
Index	23.2	30.5	19.9	32.7	25.62
Rating	Medium	High	Low	High	Medium

Travel Demand Forecasts

The Study task to identify and evaluate alternative express bus alignments is documented in the *Service Plans Technical Memorandum*, May 2021. Thirteen alternatives were identified and evaluated from multiple perspectives, including results from an application of the travel demand model Simplified Trips-on-Project Software (STOPS). The evaluation reduced the number of express bus service alternatives to seven. As a part of the modeling outputs, forecasted 2040 boardings were available at the stop-level, including the proposed in-line stations. Table 7-4 shows boardings by station for each of the alternatives that were recommended to advance for further study. Alternatives 1 and 1a are similar with Alternative 1 extending to Elk Grove from Rosemont, while Alternative 1 ends at Rosemont. The ultimate configuration will depend on implementation of direct service to Elk Grove (e.g., Alternative 4). As a result, Alternative 1 was viewed as a possible phasing option, should implementation of Alternative 4 lag. In addition, proposed express service to Schaumburg would approach the area from the south (e.g., from Elk Grove), and would not use I-90. An in-line station at Meacham Road would be used by express routes currently operating on I-90.

Table 7-4. STOPS Modeling Results by Station (2040 boardings)

Run No. – Alternative	Cicero / 127th St.	103rd Street	Cermak Toll Plaza	O'Hare Oasis (former)	Meacham Road
1 - Harvey-Elk Grove (via Rosemont)	314	590	445	236	no express service tested using this stop
1a - Harvey-Rosemont	246	529	430	205	
4 - Harvey-Schaumburg (via Elk Grove)	119	240	131		
6a - Oakbrook Center-Rosemont				67	
8 - Harvey-Midway	78	37			
9 - Burr Ridge-Rosemont			295	124	
10 - Harvey-Oak Brook	127	239			
Total wo Alt 1a	638	1,106	871	427	
Total wo Alt 1	570	1,045	856	396	
Total with Average of 1 & 1a	**604**	**1,076**	**864**	**412**	**n/a**

Transit Supportive Development

The concept of transit-oriented development (TOD) involves places designed to bring people, activities, buildings, and public space together, with easy walking and cycling connection between them and high-performance transit service. The higher densities of development (either origin-based residential or destination-based jobs) that are within walking distance of a station creates a ready market for the transit service. The following describes TOD opportunities at the five in-line station locations. (Note that ratings of low to high represent relative scores between the alternative sites and may not portend to signify the viability for TOD.)

Cicero Avenue / 127th Street – The predominant use in this area is roadways, including I-294, Cicero Avenue, and 127th Street and the ramp systems that connect them. A major cemetery is located in the northeast quadrant. TOD opportunities are rated as Low.

103rd Street / Harlem Avenue – This location was mostly occupied by a major truck terminal, which closed in 2009. The 75-acre former terminal site is part of a 105-acre Tax Increment Financing (TIF) District established by the Village of Chicago Ridge in 2015. The Village is actively pursuing redevelopment. TOD opportunities are rated as High.

Cermak Toll Plaza – The east side of the site is occupied by a cemetery and a golf course, and west side is mostly built-out with office and industrial uses. The potential for some redevelopment on the west side leads to a rating of Low-Medium for TOD.

O'Hare Oasis (former) – The closure of the Oasis has created a footprint of vacant land that can be redeveloped. The Village of Schiller Park and the Tollway are in coordination with preparing a feasibility study for a full interchange at the site. In addition, the Village is exploring opportunities to redevelop the former Oasis site. While the Village appears interested in redevelopment, the development of new ramps as part of an interchange could limit the scale of a development project. This station site is rated Medium-High for TOD.

Meacham Road – At the suggested station site west of Meacham Road, the former Motorola campus to the north could be a potential site for redevelopment. Some in-fill development could also occur on the south side of I-90. This station site is rated Medium for TOD.

7.1.2 Station Access / Connectivity

Station access is assessed from the perspective of park-n-ride, while connectivity considers potential transfers with other transit services.

Station Access

Table 7-5 shows the approximately number of parking spaces by station site. These approximate capacities were derived by estimating available land and applying a factor of 100 spaces per acre.

Table 7-5. Potential Parking Capacity (spaces)

	Cicero / 127th St.	103rd Street	Cermak Toll Plaza	O'Hare Oasis (former)	Meacham Road
Potential Parking Spaces	300	450	400	200	200
Rating	Medium	High	Medium-High	Medium-Low	Medium-Low

Transit Connectivity

An important goal of the Study was to consider the potential express bus routes emerging from this Study as major transit trunk lines that would be part of a larger hierarchal network of services. As such, the proximity of stations to existing and proposed transit services operated by Pace, CTA, and Metra was an important factor. The following lists current and proposed bus routes that are within a half mile of station sites (includes Pace routes that have been suspended due to COVID-19). Passenger rail stations within one mile of each in-line station are also indicated. A simple count of current and proposed routes is used as the measure of connectivity.

Cicero Avenue / 127th Street - Six total services

Current Bus	383 - South Cicero
	877 - Harvey-Downers Grove Limited
	888 - Homewood-Naperville Limited
	890 - Chicago Heights – UPS Hodgkins Limited
Proposed Bus	Pulse Cicero Line (Medium Term)
	Pulse IL-83 Line (Medium Term)
Metra	No stations within one mile

103rd Street - Ten total services

Current Bus	381 - 95th Street
	384 - Narragansett / Ridgeland
	385 - 87th / 111th / 127th
	386 - South Harlem
	888 - Homewood-Naperville Limited
	890 - Chicago Heights – UPS Hodgkins Limited
Proposed Bus	Pulse 95th Street Line (Advanced Study Design)
	Pulse Harlem Line (Advanced Study Design)
	Pulse Harlem Extension South Line (Medium Term)
Metra	Chicago Ridge Station (SouthWest Service)

Cermak Toll Plaza – Six total services

Current Bus	322 - Cermak Road - 22nd Street

	332 - River Road – York Road
	877 - Harvey-Downers Grove Limited
	888 - Homewood-Naperville Limited
	895 - 95th St.- Rosemont-Schaumburg Express
Proposed Bus	Pulse Cermak Line (Advanced Study Design)
Metra	No stations within one mile

O'Hare Oasis (former) – Six total services

Current Bus	303 - Forest Park – Rosemont
	330 - Mannheim - LaGrange Roads
	332 - River Road – York Road
	895 - 95th St.- Rosemont-Schaumburg Express
Metra	Schiller Park Station (NCS)
	Mannheim Station (MD-West)

Meacham Road – Eight total services

Current Bus	603 - Elgin Transportation Center – Rosemont Express
	605 - I-90/Randall Rd. Station – Rosemont Express
	607 - I-90/Randall Rd. Station – Schaumburg Express
	610 - Rosemont - Prairie Stone Express
	611 - North Schaumburg
	696 – Randhurst / Woodfield / Harper College
	895 - 95th St.- Rosemont-Schaumburg Express
	905 - Schaumburg Trolley
Proposed Bus	None
Metra	No stations within one mile

7.2 Station Evaluation

Using the evaluation factors from the prior section, station sites are assigned ratings using a 5-point scale, where five represents a very high comparative score and one a very low score. The scores generally represented the rank for stations, although major differences or similarities in performance were also considered. For example, The O'Hare Oasis and Meacham Road had similar levels of Job Densities, and as such were each assigned scores of "2.5."

Table 7-6 presents the evaluation results. The **103rd Street** site performed significantly higher than the other four locations (i.e., score of 4.29), while Cicero/127th Street had the lowest performance (2.29). The **O'Hare Oasis** performance at 3.21 ranked next best after 103rd, significantly above the next two (Cermak and Meacham). The high employment density of Cermak would favor this location, since proximality to jobs is considered an important attribute of sites. While the station catchment area for originating riders can be expanded with the availability of parking, market areas for station destinations can be limited by the availability and convenience of last mile connections. Passenger preference is to be able to walk to final destinations, in part, to eliminate the need to transfer to another vehicle. **Cermak** is recommended over Meacham.

Table 7-6. Final Station Location Evaluation Matrix

Variable	Cicero / 127th St.	103rd Street	Cermak Toll Plaza	O'Hare Oasis (former)	Meacham Road
2050 Population Density	3	4	1	5	2
2050 Job Density	1	2	5	2.5	2.5
Gap Analysis Index	3	4	2	4	3
2040 Boardings	3	5	4	2	3
TOD Potential	1	5	2	4	3
Park-n-Ride Potential	3	5	4	2	2
Transit Connections	2	5	2	2	4
Average Score	2.29	**4.29**	**2.86**	**3.07**	2.79
Color Key:	*1. very low*	*2. low*	*3. medium*	*4. high*	*very high*

8. Conceptual Station Layouts

Conceptual designs for the three screened station locations were prepared. The layouts include the key elements of stations – bus turnout lanes, platforms, infrastructure to accommodate passenger circulation and vehicle access, ROW, and drainage improvements. It should be emphasized that the concept designs are at a high level, and do not reflect data from topographic surveys or engineering and environmental studies. The concepts provide stakeholders and the public information to assess potential impacts and benefits of the proposed facilities. The level of detail also allows the estimation of capital costs.

8.1 103rd Street

The proposed station at 103rd Street near Harlem Avenue in Chicago Ridge will ideally be integrated into the redevelopment of the former trucking terminal facility. Since redevelopment plans have yet to be formulated, some elements to the proposed layout may change, including, for example, parking, access roads and pedestrian links. The following provides a description of the elements of the conceptual plan.

Northbound side (east) | The bus exit / entry lane was able to fit between the Stoney Creek culvert and the Harlem Avenue Bridge. The area along the east side of I-294 includes an embankment, a ditch, and limited Tollway-owned ROW. A retaining wall and/or pier structure would be constructed to support the platform and the ramp providing access to the overhead bridge. Where necessary, portions of the ditch would be routed through a culvert, and access secured through a narrow strip of ROW acquisition from adjacent private property owners. A 72-space parking lot is proposed accessed by Virginia Avenue. The site selected for parking is vacant but would need to be acquired. A sidewalk from Virginia Avenue along the parking lot would connect to the platform.

Overhead Pedestrian Bridge | The bridge is assumed to be enclosed, similar to the structure at Pace's I-90 Barrington Road Park-n-Ride facility.

Southbound side (west) | The bus exit / entry lane would avoid the Harlem Avenue and Southwest Highway Bridges but would extend over the Stoney Creek culvert. The integrity of this structure will need to be verified in a subsequent project phase. The ramp from the pedestrian bridge would descend northward to the platform. As noted previously, there are advantages for the pair of platforms to be aligned with one another, but in this instance, the ability to use ramps to provide access to the pedestrian bridge offsets this advantage. Also, the placement of the northbound platform to the south provides reasonable walking distance to Southwest Highway (approximately 600') and placing the southbound platform north of the pedestrian bridge provides a walkable distance to Harlem Avenue (approximately 1,200'). A stairway from the north end of the southbound platform would lead to the proposed sidewalk connection to Harlem Avenue.

Other station elements on the west side include a bus drop-off lane adjacent to the station platform, a bus turnaround leading to a new layover terminal with two bus berths, and parking for 354 vehicles. The bus terminal could be implemented later as part of a Pulse Line project. Vehicle access from Harlem Avenue would be provided by a drive from the signalized intersection of 103rd Street and Harlem Avenue.

Redevelopment plans for the west side are not currently known, so it is not possible to say how these station improvements could be integrated into the larger development. Ideally, planning for both initiatives would be performed concurrently, maximizing the potential of the site.

Conceptual station layout drawings are included as Figure 8-1, Figure 8-2, and Figure 8-3. A rendering of the layout is provided on Figure 8-4.

Figure 8-1 103rd Street Station Layout

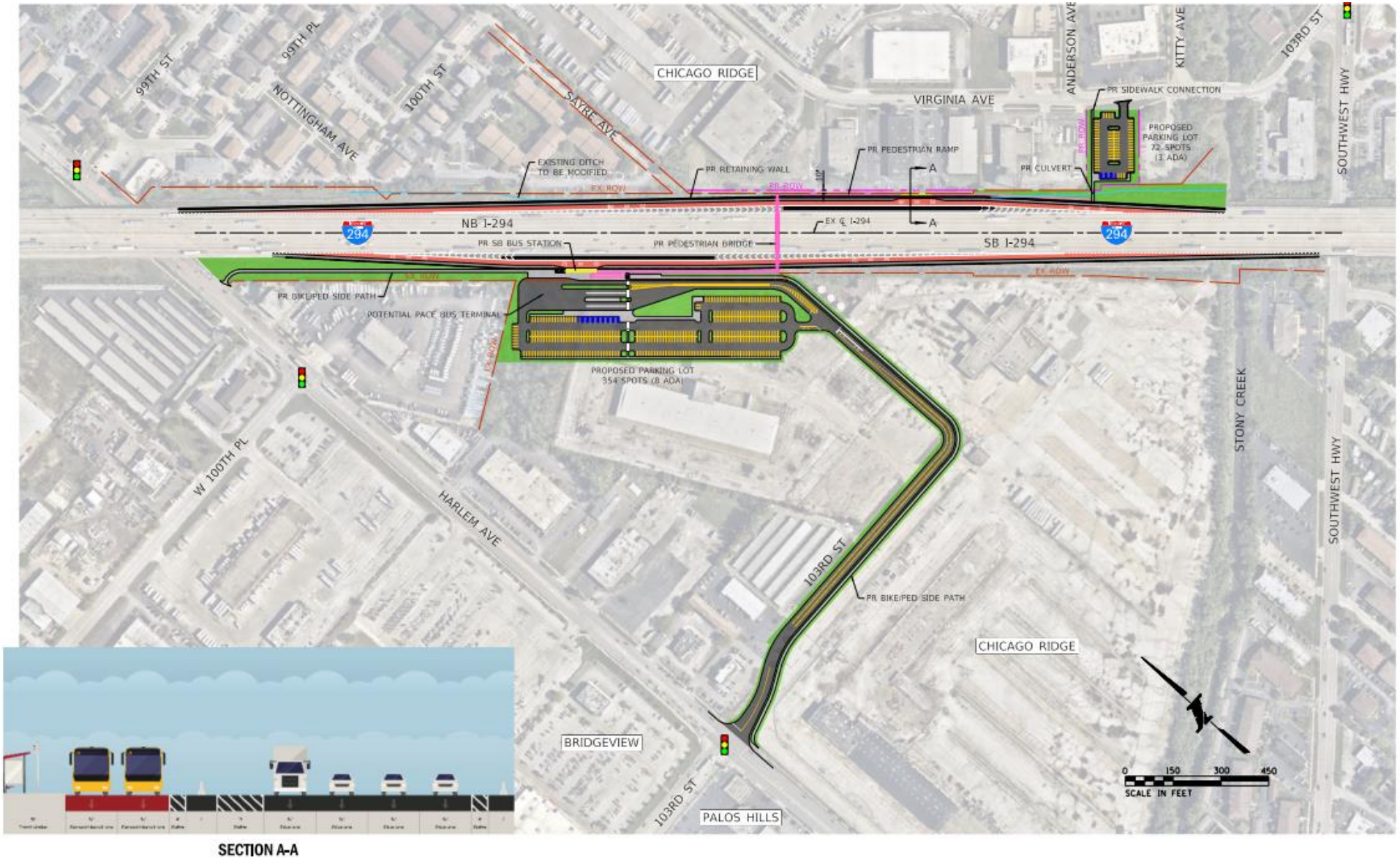


Figure 8-2. 103rd Street Station – West Side Detail

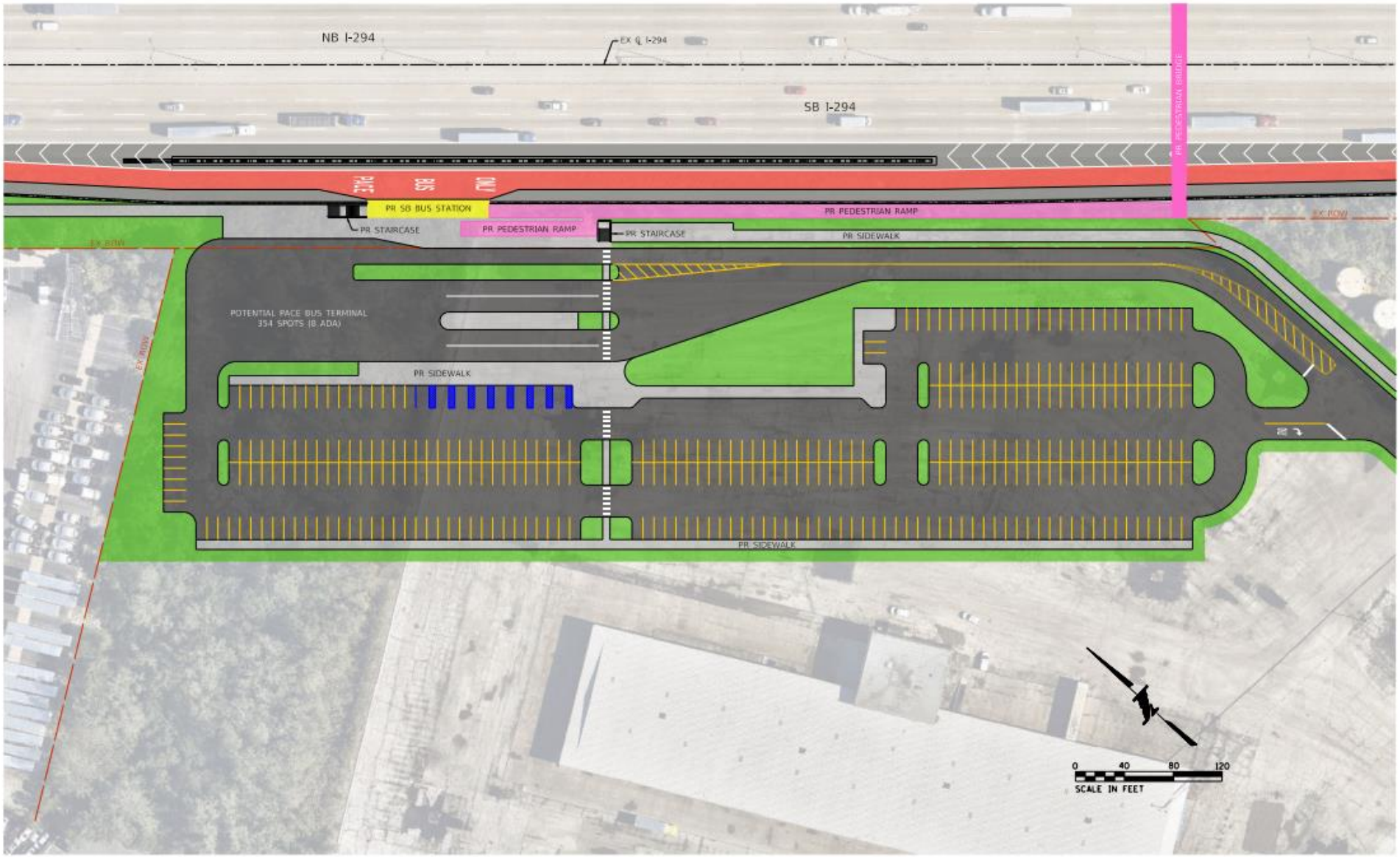


Figure 8-3. 103rd Street Station – East Side Detail

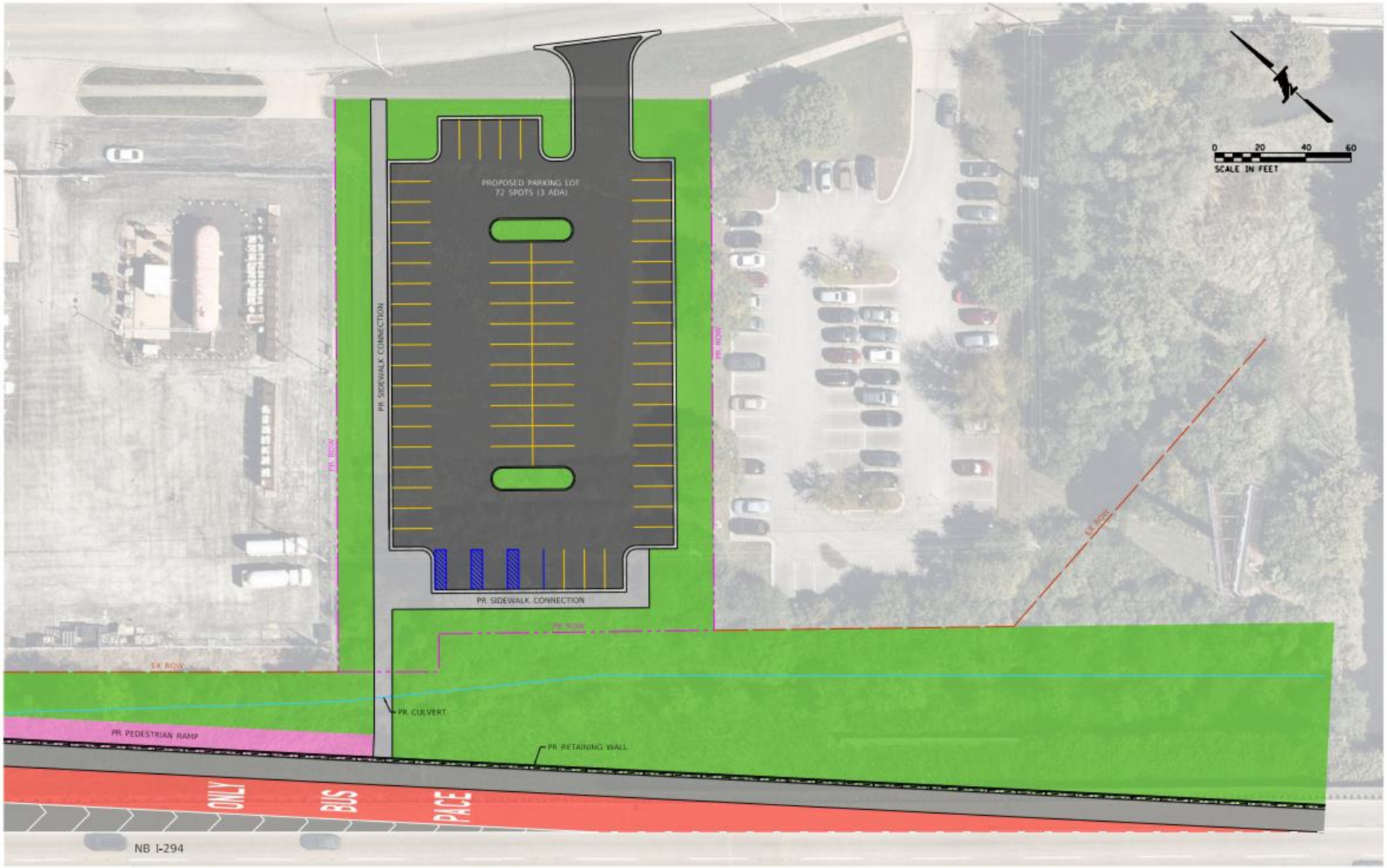


Figure 8-4. 103rd Street Station Rendering

pace Regional Transportation Authority

PACE I-294 MARKET & FACILITIES ASSESSMENT
103RD STREET STATION, CHICAGO RIDGE

May 2021

8.2 Cermak Toll Plaza

The Cermak site will require close coordination with the Illinois Tollway. Two layout versions were prepared, assuming the following:

- Exclusive Pace in-line station use of the freed-up land from the discontinuance of cash toll lanes, and
- Shared station use of the freed-up footprint with other uses. Reserving a significant portion of both sides of I-294 would give the Illinois Tollway flexibility to choose appropriate uses later.

Exclusive Station Version

Figure 8-5 includes station platforms, exit / entry bus lanes, and parking for the exclusive version. Primary vehicle access from Cermak Road on the east side would be from a new roadway. This will require ROW acquisition from the Queen of Heaven Catholic Cemetery and Mausoleum and a temporary easement to realign impacted maintenance drives. On the west side, a one-way drive lane will provide access to the station for buses and automobiles from Swift Drive. Acquisition of a permanent easement from private businesses will be needed. Parking on Illinois Tollway ROW would total 121 spaces on the east and 61 spaces on the west.

Shared Station Version

Figure 8-6 presents the shared layout. Northbound side (east) improvements would be south of the Toll Plaza building and communication tower, leaving ROW north of this location available for other uses. On the southbound side, buses would divert from the Collector-Distributor roadway system to serve the station. The platform is angled to maximize space on the site for other Tollway-related uses to the south while avoiding ROW acquisition. The station platform and bus loading zone would be on Illinois Tollway ROW, but the one-way drive lane would be on privately owned ROW. A permanent easement would be required for this access. East parking of 121 spaces would mirror the proposed lot in the exclusive version, but this layout assumes no parking on the west side. A rendering of the shared station version is provided on Figure 8-7.

A pedestrian bridge would be needed for either version.

Figure 8-5. Cermak Station Layout – Exclusive Use Design

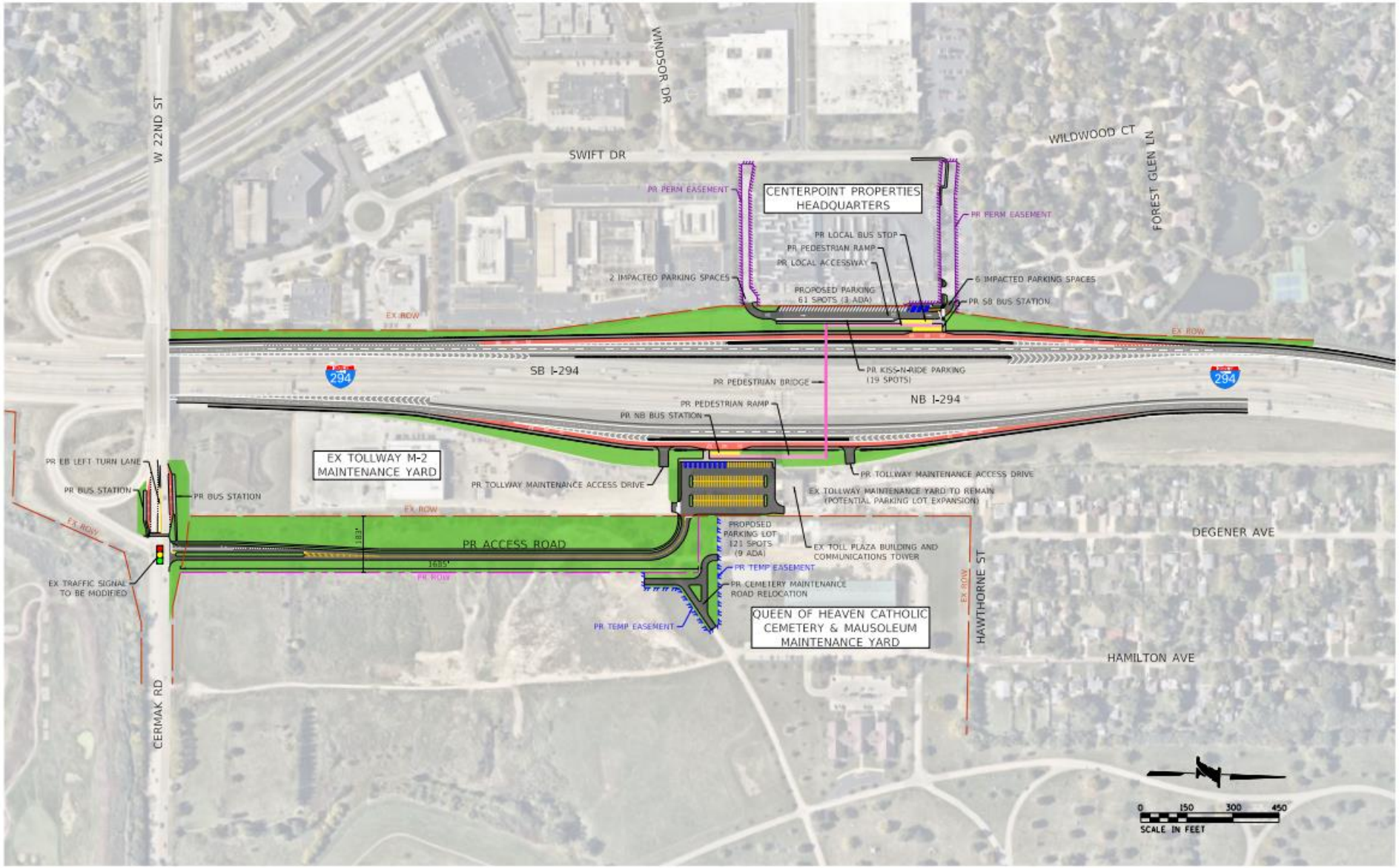


Figure 8-6. Cermak Station Layout – Shared Use Design

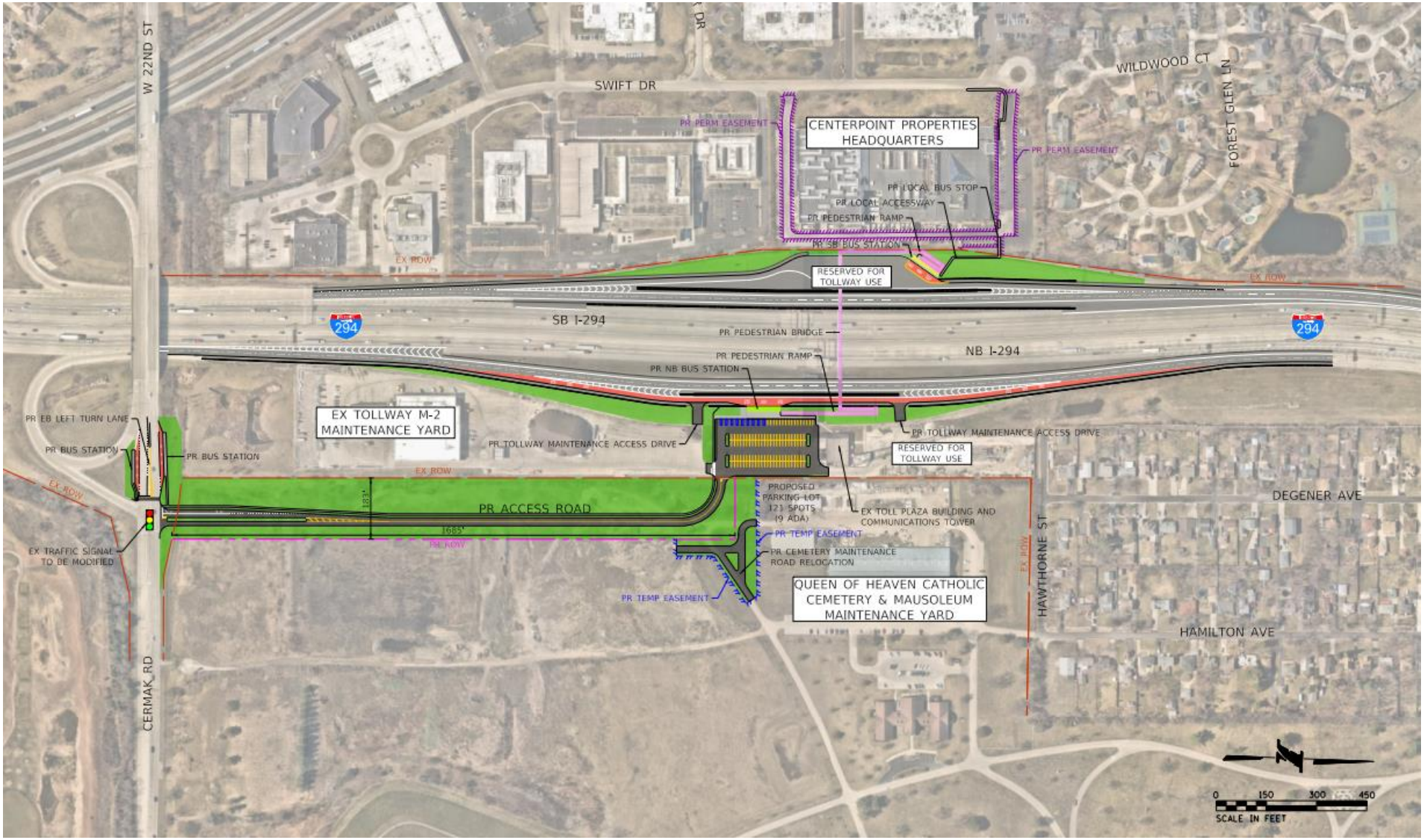
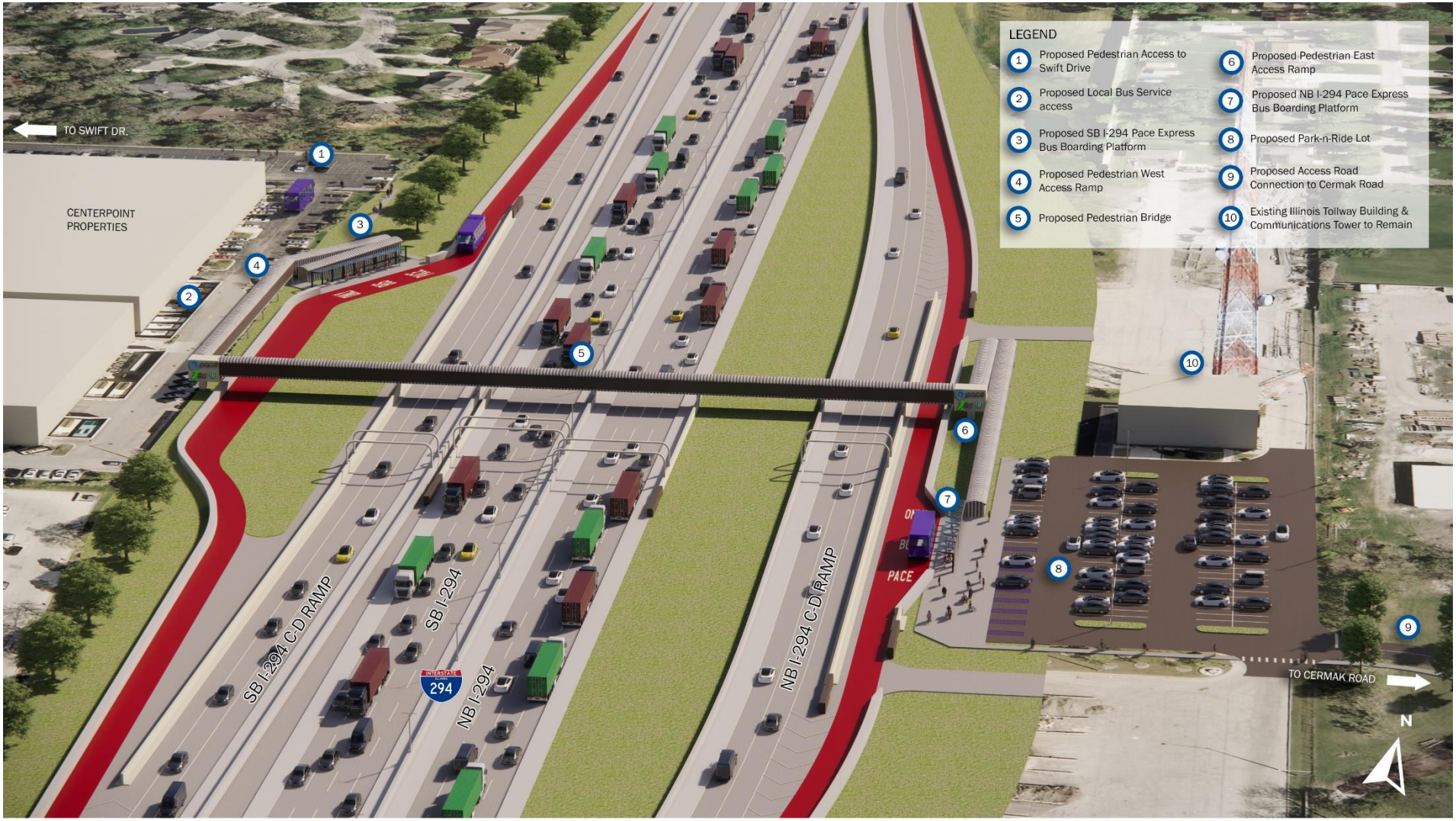


Figure 8-7. Cermak Shared Station Layout Rendering



pace | Regional Transportation Authority

PACE I-294 MARKET & FACILITIES ASSESSMENT
CERMAK ROAD STATION

May 2021

8.3 O'Hare Oasis (former)

The elimination of the O'Hare Oasis created available ROW that can potentially be used for an in-line express bus station. A gas station and truck parking on each side of I-294 remain, and it is assumed that both activities will continue, although the truck parking may be reconfigured / relocated. The larger area including the former Oasis and the Irving Park Road partial interchange has been the subject of a study led by the Illinois Tollway to develop a full interchange. Based on preliminary drawings from this feasibility study, it appears that a station would be feasible should new ramps be constructed at the former oasis or at Irving Park Road. However, how the elements of a station are placed will be affected by the possible interchange. In addition, the Village of Schiller Park has expressed interest in new development for the oasis site. This could include transit supportive land uses, which would create a stronger market for Pace service at the station. It is understood that plans have yet to be formulated.

In the absence of definitive plans for an interchange or private development, the station design was developed using current site conditions and roadway geometry. Given the potential range of design options for the site's redevelopment, a simplified layout was proposed to present a viable concept for designers of the possible interchange as well as redevelopment plans.

Figure 8-8 and Figure 8-9 illustrate how the elements of a station could be placed on the site. For both the northbound (east) and southbound (west), buses would use the service drive for vehicles leaving the gas stations to return to I-294. Unlike the other two station layouts, ramps would not be needed to access the pedestrian bridge. It is also important to note that the Illinois Tollway has committed to constructing a pedestrian bridge to replace pedestrian access that was afforded by the Oasis, which spanned I-294. Coordinating the location of this improvement with the design of the station would be advantageous to both the community and Pace.

Sidewalk connections will link the Oasis site to the adjacent street grid. On the east side, a new sidewalk extending west from Seymour Avenue would cross over an existing Tollway culvert before meeting a vertical access point for pedestrians, allowing for both stair and ramp access. Introduction of a Rectangular Rapid Flashing Beacon (RRFB) signal at the proposed crosswalk with the truck parking lot would allow for a safer, actuated crossing for pedestrians. Pedestrians on the west side of the Tollway would access the station via a new sidewalk connection along the west side of the existing frontage road. Extension of an existing culvert would be required to accommodate this link to Belle Plaine Avenue.

Figure 8-8. O'Hare Oasis Layout

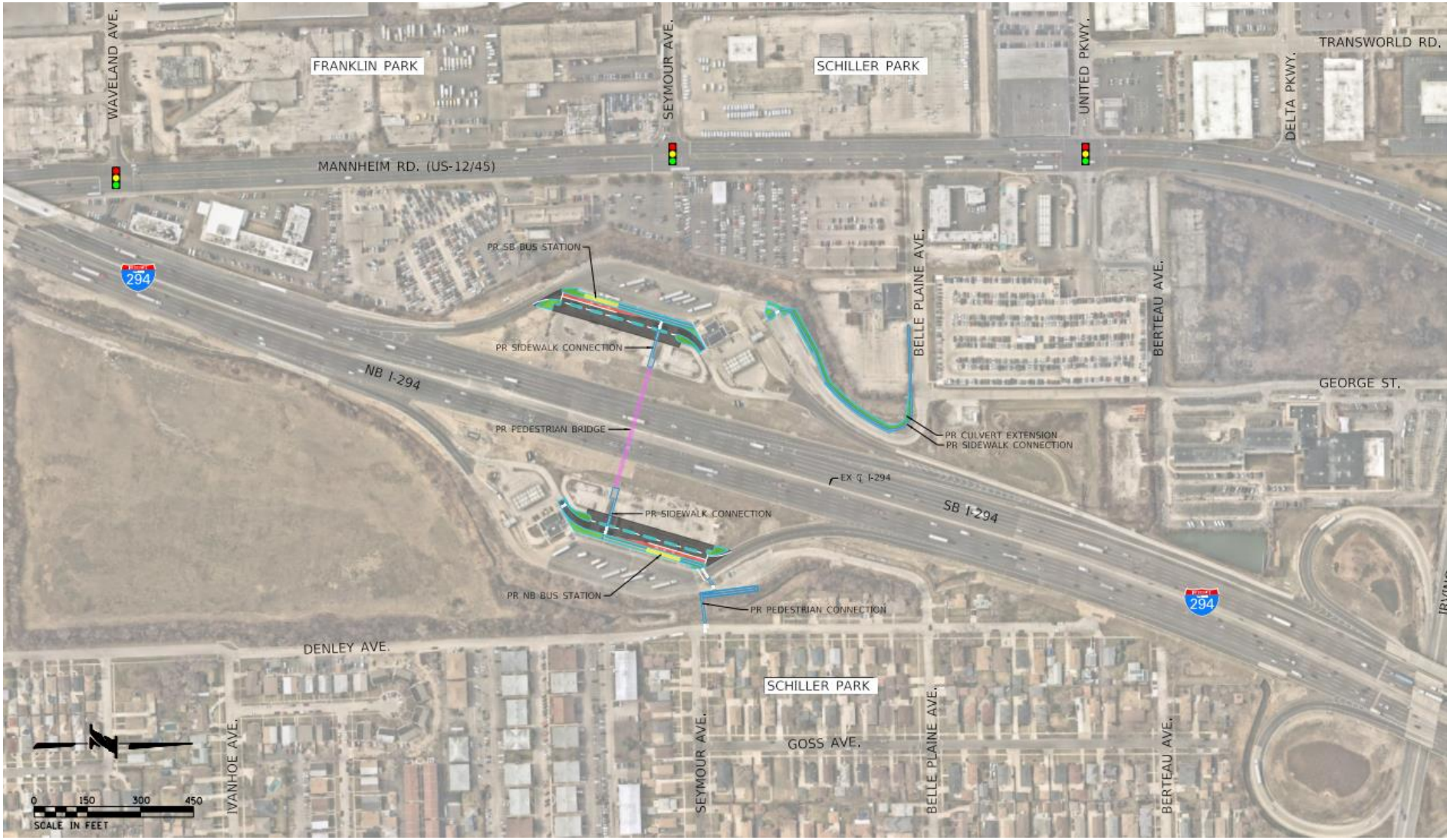
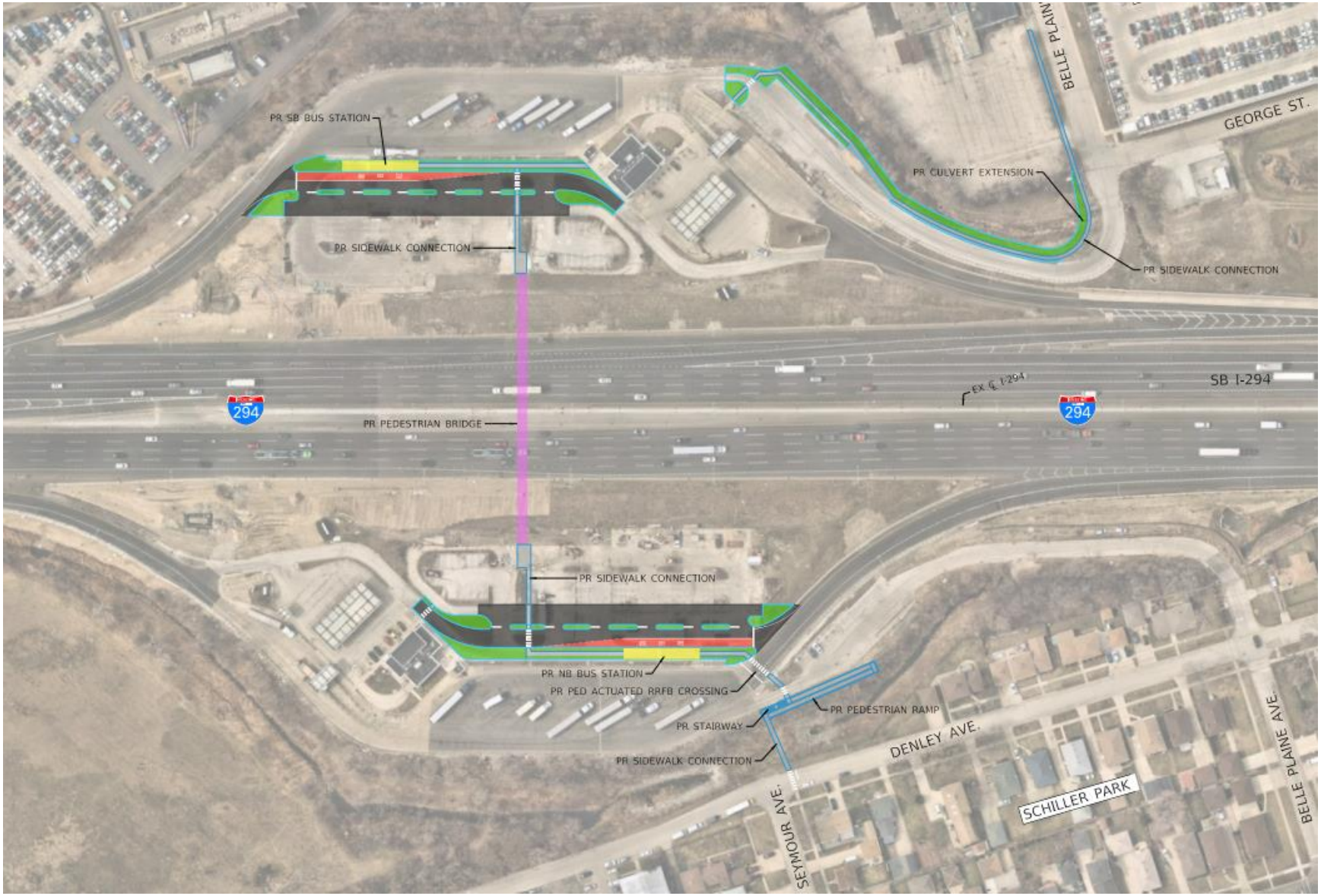


Figure 8-9. O'Hare Oasis Layout Detail



9. Capital Costs

The estimated investment costs to build the required infrastructure for the three in-line stations were developed using the FTA Standard Cost Categories (SCC) structure, which provides a consistent format for estimating costs for Capital Investment Grant (CIG) Program projects. While the stations will not likely be funded by an FTA CIG, the costing methodology would be consistent with that used for Pace's Pulse program.

The SCC system uses nine cost categories, as shown on Table 9-1. Subcategories further break down cost elements under each of categories.

Table 9-1. FTA Standard Cost Categories

	FTA Cost Category
10	Guideway & Track Elements
20	Stations, Stops, Terminals, Intermodal
30	Support Facilities: Yards, Shops, Administration Buildings
40	Sitework & Special Conditions
50	Systems
60	ROW, Land, Existing Improvements
70	Vehicles
80	Professional Services (Applies to Categories 10-50)
90	Unallocated Contingency

SOURCE: FTA

Quantities of infrastructure elements (e.g., number of shelters, feet of roadway, number of parking stalls) were estimated from the concept layouts and applied to unit costs that are representative of Chicago area construction costs in 2021, including project cost experience from Pace. Cost were consistency stated in 2021 dollars by use of the Army Corp of Engineers' Civil Works Construction Cost Index System (CWCCIS).

The SCC provides two areas where estimated costs are adjusted for project uncertainty. An Allocated Contingency is applied to each subcategory's unit cost that relates the degree of unknown that can affect cost. For example, constructing a roadway lane for a given dimension (e.g., per square foot) can be estimated with a relatively high level of certainty; whereas, the cost to address stormwater management will require specific information (e.g., soils, topography) and will have a higher level of unknown until studies are completed. In these two instances, the Allocated Contingency for exit / entry bus lanes was assumed at 20 percent and stormwater management 30 percent.

The other area to address unknown factors is to apply an Unallocated Contingency. This percentage is applied to all estimated costs and relates to the level of planning (i.e., higher unallocated contingency) versus engineering (i.e., lower unallocated contingency). A 10 percent Unallocated Contingency was applied.

SCCs 10-70 involve the construction or manufacture of project elements. In addition, there are costs associated with professional service activities that are necessary to plan, design, and manage the project. These "soft costs" are the expenditures that are required to complete a project, but that are not spent directly on activities related to brick-and-mortar construction,

vehicle and equipment procurement, or land acquisition. Table 9-2 lists the seven soft cost categories and the percentages for each that would be applied to project construction costs (SCC 10-50). Overall, these individual percentages total 24 percent.

Table 9-2. Professional and Environment Services SCC 80

Professional and Environmental Services	% of Constr. Costs
Project Development	2.0%
Engineering	5.0%
Project Management for Design and Construction	5.0%
Construction Administration & Management	7.5%
Professional Liability & other Non-Construction Insurance	1.0%
Legal; Permits; Review Fees by others	2.5%
Surveys, Testing, Investigation, Inspection	1.0%
Total	24.0%

SOURCE: FTA

Estimates were developed to represent the total costs to construct the facilities even though some elements may be funded fully or in part by others. For example, if it can be demonstrated that a pedestrian bridge will be used by local residents, the community or Illinois Tollway may be willing the fund some of the cost. Or, as private development plans for the 103rd Street and O'Hare Oasis sites advance, developers may agree to fund shared assets such as local roads or sidewalks. As Pace develops financing plans to advance the station projects, contributions by others can be used as a local match for grants or the grant request can be reduced.

Two levels of investment were assumed: 1) Build-out and 2) Opening Day. Build-out represents constructing all elements reflected on the concept layouts. One exception was the two-bay bus terminal at 103rd Street, which was assumed to be funded by a future Pulse Line. Opening Day includes the required infrastructure needed to introduce express bus service, and quantities are reduced for some elements. For example, since parking capacity was based of 2040 forecasts, initiating service with fewer parking spaces could be a strategy to reduce costs. As demand matures over time, parking capacity can be expanded. Another element of the Opening Day version was differences in the design of some facilities. The intent was to offer possible opportunities for cost savings to help match costs to available funding.

9.1 Estimated Costs

Estimates of capital costs by station are presented on Table 9-3, which are expressed in 2021 dollars.

Table 9-3. Estimated Capital Costs by Station in 2021$

	103rd Street	Cermak	O'Hare Oasis	Total
Opening Day	$47,476,000	$35,489,000	$10,995,000	$93,960,000
Build-Out	$58,352,000	$41,300,000	$10,995,000	$110,647,000

Following are highlights of the station costs, pinpointing specific elements that are driving the costs and describing differences between Build-out and Opening Day.

103rd Street | Since I-294 is on an embankment at this location, extending out the roadway width will require replacement or formation of new retaining walls. In addition, existing sound walls will need to be relocated or replaced. The east side has constrained right-of-way (ROW) and a ditch, which will need to be accommodated. The west side affords an open footprint to

install infrastructure, however, the distance to Harlem Avenue will require more significant vehicle and pedestrian access improvements. The site is not within the limits of the Illinois Tollway's Central Tri-State Tollway (I-294) Project, which has a southern limit of 95th Street. Following are elements that contribute the most to the estimated cost.

- Exit / entry bus lanes, shoulders, and barrier walls account for between 14 and 17 percent, including soft costs and contingencies. The investment requirements would be the same for Build-out and Opening Day.
- Retaining Walls / Sound Walls account for an estimated 26 to 31 percent and would be the same for both versions.
- Pedestrian bridge and ramps costs would be about 28 percent. The Opening Day version assumes a narrower ramp (8 feet), reducing costs by over $2 million. The bridge was priced as a fully enclosed structure, similar to the Barrington Road facility. Ramps would be covered and include support piers, sidewalls, hand rails, and lighting.
- West side access improvements would represent 20 percent of the Build-out costs, and would include a bus loop, upgrade/extension of 103rd Street between Harlem Avenue and the station, a bike trail adjacent to 103rd Street, and construction of 354 parking spaces. The improvements for the Opening Day version would account for 9 percent of total costs, and would not include a bus loop, only the extension of 103rd Street, no bike trail, and parking for 116 vehicles.

Cermak | The development of a station on the footprint previously used for cash toll collection is proposed to be a part of the Illinois Tollway's realignment of the parallel Collector-Distributor (C-D) Road ramps between Cermak and Roosevelt Roads. The station's conceptual design minimized the amount of land that would be used for platforms and bus lanes to preserve space for future uses by the Illinois Tollway. The station also requires an access drive to Cermak Road to the south. Acquisition of an easement from the private development on the west side was also proposed to enable vehicle and pedestrian access to Swift Drive. The site is not elevated from the general terrain. Existing sound walls at the north end of the site will not be impacted since the roadway will not be widened. Major cost items include the following:

- Exit / entry bus lanes, shoulders, and barrier walls account for between 28 and 32 percent, including soft costs and contingencies. The investment requirements would be the same for Build-out and Opening Day. As noted above, these improvements would be part the Illinois Tollway's realignment of the parallel C-D Road ramps.
- Pedestrian bridge and ramp costs would represent a third of the estimated costs. Compared to 103rd Street, the Cermak bridge would be almost twice as costly. At Cermak, the bridge would span both the main travel lanes as well as the area previously used for toll collection. The premise to leave the maximum space for Illinois Tollway future uses meant that platforms were pushed to outer edges of the former toll collection area, causing the bridge to be longer. The Cermak bridge would be 482 feet compared to the length of the 103rd span of 249 feet. The ramp costs, on the other hand, would less for Cermak compared to 103rd Street due to a shorter length (852 versus 1,562 feet, respectively). This difference is the because the elevation of I-294 at 103rd is roughly 10 feet higher than the parking lots, whereas at Cermak the parking lot is essentially level with the mainline of I-294. The bridge cost would be the same for Build-out and Opening Day, but the ramp cost for Opening Day would be 20 percent less assuming use of an 8-foot wide ramp versus the Build-out ramp width of 10 feet.
- Access improvements account for 12 percent of total costs. This includes parking capacity of 130 spaces (same for Build-out and Opening Day) and drive access from Cermak. The roadway from Cermak on the east side would use Queen of Heaven

Catholic Cemetery property and would require realigning the Cemetery maintenance roads. For Opening Day infrastructure, the road connecting to Cermak Road would use only the southernmost part of the Cemetery property, eliminating the need to realign the Cemetery maintenance road. The lane improvements proposed on the west side would be dropped. These changes would reduce the Open Day version by approximately $400 thousand.

- Land costs were estimated to account for over 10 percent of Build-out costs. For Opening Day, it was assumed that instead of 7 acres being acquired from the Cemetery, less than 2 acres would be needed. The acquisition of a permanent easement on the west side would not be pursued for the Opening Day scenario. This would reduce cost by about $3.5 million.

O'Hare Oasis (former) | Reuse of the former Oasis site provides significant cost savings, taking advantage of internal roads that serve the gas stations and truck parking. In addition, I-294 is in a cut section, lower than the elevation of the station site itself. Major cost elements would include the following:

- Nearly one-half of the cost (Build and Opening Day would be the same) would be to construct the pedestrian bridge. Since the elevation of the bridge would be the same as the previous Oasis structure that spanned I-294, with I-294 being below in a cut, there would be no need for ramps.

- Segments of the internal access roads will need to be realigned to provide space for the bus lane and platform. This accounts for 15 percent of the total costs.

- Pedestrian connections on both sides of I-294 were proposed, accounting for 14 percent of total costs. In addition to the cost of building sidewalks, this includes a short retaining wall, stairs, and ramp to access the site from the neighborhood to the east. Cost of Rectangular Rapid-Flashing Beacon (RRFB) devices were included to enable safe crossings by pedestrians within the former Oasis site.

9.2 Cost Sharing Opportunities

The capital costs presented above represent all costs that would be required for the stations. But many of the elements costed would involve joint use with others, who could potentially participate in funding. Other entities could include the Illinois Tollway, local community (or communities), existing property owners, private developers, or others. The basis for cost sharing would be both joint use of assets as well as entities who would benefit from the Pace investment. This latter point could involve, for example, companies whose employees could use express bus service for commuting and new development that would be more marketable with high quality transit present. Ultimately, the level of financial participation will be the result of negotiations.

Table 9-4 shows possible splits in funding for Opening Day and Build-out by station site.

Table 9-4. Station Capital Costs by Possible Funding Share (2021 $)

	103rd Street	Cermak	O'Hare Oasis	Total
PACE SHARE				
Opening Day	$33,151,000	$18,025,000	$780,000	$51,956,000
Build-Out	$40,700,000	$21,129,000	$780,000	$62,609,000
OTHERS SHARE				
Opening Day	$14,325,000	$17,463,000	$10,215,000	$42,003,000
Build-Out	$17,653,000	$20,171,000	$10,215,000	$48,039,000
TOTAL COST				
Opening Day	$47,476,000	$35,489,000	$10,995,000	$93,960,000
Build-Out	$58,352,000	$41,300,000	$10,995,000	$110,647,000

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