

Elgin O'Hare – West Bypass: Grade Separation Study

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This memorandum elaborates upon the factors used to determine roadway over/under relationships at proposed grade separations for the Elgin O'Hare–West Bypass (EO-WB) project. Before determining the grade separation over/under issues, IDOT made decisions regarding interchange locations, crossroads that require grade separations to preserve facility continuity, and crossroads to be closed or rerouted. Interchange locations were determined as part of the alternatives development task and were based on projected traffic volumes, traffic patterns, regional continuity, and access requirements. The current conceptual (15 percent) plans reflect these interchange, grade separation, and closure/relocation determinations.

Exhibits 1 through 9 depict the project corridor and identify each proposed grade separation location. Design-related issues pertinent to each site are discussed below. The two primary factors driving the over/under decision-making process were (1) preference for the proposed design to conform to the existing terrain (in order to minimize earthwork and right-of-way needs) and (2) the desire to minimize change to the drainage patterns along the project corridor. The goal of each decision was to minimize construction impacts and project costs.

Elgin-O'Hare Expressway: Gary Avenue to Meacham Road / Medinah Road

No geometric improvements are planned along the Elgin-O'Hare Expressway between its current western terminus at Lake Street (US 20) and Gary Avenue. From Gary Avenue east to Meacham Road/Medinah Road (see Exhibits 1 and 2), the proposed mainline and ramp alignments maximize use of the existing expressway configuration, both horizontally and vertically. The mainline passes over all but two cross streets in this section: Roselle Road and Plum Grove Road (Exhibit 2, Location 8 and 9). It is proposed that the mainline profile be maintained to salvage the existing pavement, which is subject to condition at the time of construction and expected life through the design year. It is also proposed that the twin bridges carrying the mainline over several cross streets be widened. The bridges that carry the westbound Gary Avenue exit ramp and the eastbound mainline over Springinsguth Road (Exhibit 1, Location 2) and the mainline bridges over Irving Park Road (IL 19) (Exhibit 1, Location 3) are to be widened to the outside. The Elgin-O'Hare Expressway bridges over Rodenburg Road, Wright Boulevard, Mitchell Boulevard, and a railroad spur (Exhibit 1, Location 4 through 7) are to be widened by one lane to the inside, making use of abutments that were constructed wide enough to accommodate an additional inside lane on the mainline. In addition to widening the Rodenburg Road bridges to the inside, they are also to be widened to the outside to accommodate ramp tapers.

If Wright Boulevard or Mitchell Boulevard were raised to pass above an at-grade mainline, saving the cost of one bridge, they would need to descend to existing grade at the railroad spur grade crossings 650 feet south of the expressway centerline on both crossroads. However, due to profile requirements, the cross streets would remain at least 15 feet above existing at the grade crossings and it would be unfeasible to raise the railroad spur.

The Roselle Road and Plum Grove Road overpasses of the mainline (Exhibit 2, Location 8 and 9) are constructed with center piers, allowing for a one-lane widening of the mainline in the median in each direction without complete reconstruction of the bridges. The Plum Grove Road structure will remain as is, but the north abutment of the Roselle Road bridge must be relocated due to proposed widening to the north of the median from 84' to 90' to accommodate a potential transit station. For the reasons discussed above and in order to minimize earthwork costs, maintain existing drainage patterns, and facilitate a less complex maintenance of traffic scheme, it is most economical to maintain the over/under relationships of the Elgin-O'Hare Expressway mainline and cross streets within the west section of the project.

Currently, the Elgin-O'Hare Expressway passes over Meacham Road/Medinah Road. The proposed improvements widen the two bridges over Meacham Road/Medinah Road by one lane to the inside and one lane to the outside (Exhibit 2, Location 10).

Because the existing facility is an expressway, there are no at-grade intersections requiring a grade separation or road closure decision.

Elgin O'Hare Corridor: East of Meacham Road/Medinah Road to Park Boulevard

Approximately 0.7 mile east of Meacham Road/Medinah Road, the Elgin-O'Hare Expressway transitions to a surface arterial at Rohlwing Road (IL 53). Implementation of the proposed improvements will preclude the ability to salvage most of the existing pavements and structures. Along the Elgin O'Hare Corridor, there is an at-grade intersection at IL 53 (where the expressway becomes Thorndale Avenue), a partial cloverleaf interchange with I-290, and an at-grade intersection at Park Boulevard (Exhibit 3, Location 11, 12 and 14). The proposed design includes frontage and collector-distributor roads between Meacham Road/Medinah Road and IL 53, a split-diamond interchange serving Meacham Road/Medinah Road and IL 53, a half-diamond interchange at Park Boulevard, and a semi-directional system interchange at I-290.

IL 53 is proposed to pass over a reconstructed, at-grade Elgin-O'Hare Expressway (Exhibit 3, Location 11). Because the nearest cross streets are 900 to 1,100 feet away from the intersection centerline, vertical realignment of IL 53 will both minimize construction costs and avoid nearly all impacts on access to existing developments along IL 53.

At the I-290 interchange (Exhibit 3, Location 12), the I-290 mainline pavement is one-half level below prevailing ground level, and the Elgin O'Hare corridor generally is one-half level above. To avoid changes to drainage patterns and to reduce the complexity of the maintenance of traffic scheme during construction, it is recommended that the proposed mainline roadway profiles match the current mainline elevations, with the remaining levels of the multi-level interchange each placed above these mainline locations.

It is important for Park Boulevard (Exhibit 3, Location 14) to generally maintain its current profile to provide access to residences to the south and a commercial parking lot near its crossing under the future Elgin O'Hare corridor. The proposed Elgin O'Hare corridor would pass over Park Boulevard instead of below it, maintaining drainage patterns and simplifying the maintenance of traffic concept.

Elgin O'Hare Corridor: East of Park Boulevard to East of IL 83

Thorndale Avenue approximately defines the centerline of the proposed Elgin O'Hare corridor between Park Boulevard (Exhibit 3, Location 14) and the west side of O'Hare International Airport (Exhibit 4, Location 34). All cross streets currently intersect Thorndale Avenue as at-grade intersections. Numerous commercial entrances and a few private entrances also intersect Thorndale Avenue throughout the segment between Park Boulevard and the airport property east of York Road. Between Park Boulevard and east of IL 83 (Exhibit 4, Location 21), the proposed corridor would be served by a combination of one-way and two-way frontage roads between Park Boulevard and Prospect Avenue (Exhibit 3, Location 16), and again between Mittel Boulevard (Exhibit 3, Location 18) and IL 83. The north frontage road extends west of Mittel to provide access to parcels west of Salt Creek (Exhibit 3, Location 17). The frontage roads would provide access to and egress from the mainline on slip ramps. Cross street intersections with the eastbound and westbound frontage roads would be closely spaced, 400 feet to 500 feet apart. Major access connections would be located on the cross streets a short distance beyond the frontage road intersections.

The proposed Elgin O'Hare corridor interchanges between Park Boulevard and IL 83 are primarily full diamonds and half-diamonds with slip ramps connecting the mainlines to the frontage roads. The interchanges consist of two levels, necessitated by the grade separations between the mainline and the cross streets.

Grade Separation Considerations

When deciding which interchange roadway should go over or under the other in this section of the Elgin O'Hare corridor, consideration was given for the interchange levels to use two of the following three levels: existing ground level; one level below existing; and one level above existing. Critical water table elevations are located at Salt Creek near the west end of the section and near IL 83 at the east end. Analysis of drainage patterns resulted in a decision to avoid depressing roadways to one level below existing at all proposed cross street locations in the section except Wood Dale Road (Exhibit 4, Location 19). Eliminating the need for pump stations or other expensive drainage accommodation measures was a primary factor.

To further study the advantages and disadvantages of the grade separation configurations from east of Park Boulevard to east of IL 83, comparisons were made between having the corridor pass over at-grade crossroads and having the crossroads pass over an at-grade expressway. The conclusions are shown in Table 1.

TABLE 1
 Comparison of Over/Under Roadway Configurations for Elgin O'Hare Corridor East of Park Boulevard to East of IL 83

	Advantages	Disadvantages
Expressway over At-Grade Cross Streets	Maintains good access to existing development. Allows less complicated maintenance of traffic scheme.	Elevated expressway causes noise and visual impacts along corridor. Likely higher construction cost because of overpass being elevated for a longer distance, and the need for two bridges instead of one. Ramp profiles do not favor ramp traffic deceleration and acceleration requirements.
Cross Streets over At-Grade Expressway	Noise and visual impacts limited to cross street overpass locations. Likely lower construction cost due to cross streets being elevated for a shorter distance than for a mainline, and the need for one bridge instead of two. Ramp profiles favor ramp traffic deceleration and acceleration requirements.	Significant additional right-of-way acquisition or retaining walls required, resulting in higher costs. Impacts development, including major buildings and access to properties. Frontage roads must be elevated to intersect cross streets, or side connectors must be provided. Elevation of at-grade railroad spur 1/4 mile east of IL 83 cannot feasibly be changed. Raised cross street grades complicate maintenance of traffic schemes.

Elevating the Elgin O'Hare corridor east of Park Boulevard mainline above at-grade cross streets is more desirable than elevating the crossroads over the mainline. The major disadvantage of elevating the cross streets is that the legs of the cross street/frontage road intersections would require a distance of roughly 1,000 feet to tie to existing grade; railroad lines would require much greater distances. Therefore, the Lively Boulevard profile (Exhibit 4, Location 20) would not meet the elevation of the railroad grade crossing 590 feet north of the proposed expressway centerline. The railroad spur that crosses the Elgin O'Hare alignment 0.25 mile east of IL 83 (Exhibit 4, Location 22) cannot feasibly be raised above an at-grade mainline.

The elevated cross street and frontage road concept would result in some access points being raised as much as 10 feet above existing grade. Entrance roadways on steep grades, or at-grade side connector roadways, would then be required, both of which would affect parking lots and buildings and require additional retaining walls. In other cases, it may not be possible to provide satisfactory access to a property. Elevated cross streets or frontage roads alongside commercial or industrial properties would affect parking lots and buildings unless retaining walls were provided. Elevating the cross streets would complicate efforts to maintain through traffic on them and to provide access to adjacent development during construction. In contrast, a disadvantage of elevating the corridor mainline is the increased noise and visual impacts.

Additional variations of potential grade separation configurations were considered at Arlington Heights Road, Prospect Avenue, and Mittel Boulevard (Exhibit 3, Location 15, 16 and 18). Drainage conditions at those locations allow one roadway to be depressed to one-half level below existing grade, with the other roadway being raised to one-half level above. Raising or lowering the cross streets by one-half level would continue to affect access and

increase construction costs because of raised or lowered roadway elevations at cross street/frontage road intersections and at proposed access connections.

Recommendations

Mainline and Crossroads.

Analysis of the advantages and disadvantages of the grade separation configuration alternatives led to the decision that it is more desirable to elevate the Elgin O'Hare corridor mainline above the cross streets from east of Park Boulevard to east of IL 83. One exception occurs at Wood Dale Road (Exhibit 4, Location 19), where drainage conditions allow the mainline to pass one level below the at-grade cross street, causing fewer noise and visual impacts. Elevating the mainline is recommended because elevated cross streets above an at-grade mainline would make it infeasible to maintain both the railroad grade crossing on Lively Boulevard north of the corridor (Exhibit 4, Location 20) and the proposed railroad grade separation along the mainline east of IL 83 (Exhibit 4, Location 22). As noted, the only feasible configuration at Arlington Heights Road, Prospect Avenue, and Mittel Boulevard is for the mainline to be elevated one level above the at-grade cross streets.

It is thought that the noise and visual impacts caused by elevating the corridor mainline are outweighed by the impact of the reduction in access to existing development caused by elevating the cross streets. Mitigation of some noise and visual impacts is possible. Mitigation for noise can be addressed by use of noise walls. Also, most land uses of the adjoining development are industrial and commercial, which has less noise sensitivities.

Based on analysis of the possible grade separation configurations between east of Park Boulevard and east of IL 83, it is recommended that the Elgin O'Hare corridor pass one level above at-grade Arlington Heights Road, Prospect Avenue, and Mittel Boulevard, and one level below at-grade Wood Dale Road. Continuing to the east, the Elgin O'Hare corridor would then pass one level above at-grade Lively Boulevard, IL 83, a railroad spur, and Supreme Drive (Exhibit 4, Location 23).

Local Access.

The following minor side streets intersect Thorndale Avenue in this section:

- Tall Oaks Lane
- Nicol Way
- Parkside Avenue
- Mittel Boulevard
- A.E.C. Drive
- N. Central Avenue
- Carl Boulevard
- Sivert Drive
- Lively Boulevard
- Dillon Drive
- Edgewood Avenue
- Supreme Drive
- Larsen Lane
- Thomas Drive

Additionally, a number of private and commercial driveways intersect Thorndale Avenue.

In each case, access is maintained through the construction of frontage roads. Each minor street and driveway carries a small enough amount of daily traffic to support the decision to consolidate access and provide traffic crossing opportunities and corridor access on frontage roads. In three cases – Mittel Boulevard (Exhibit 3, Location 18), Lively Boulevard (Exhibit 4, Location 20), and Supreme Drive (Exhibit 4, Location 23) – crossing continuity is provided to further minimize out-of-direction travel to nearby minor side streets. The maximum out

of direction travel is 0.3 miles from the northernmost point of Lively Boulevard to Richert Road. Most of the intersecting cross streets intersect with Thorndale Avenue as T-intersections, making the proposed frontage road configuration more reasonable and acceptable with respect to corridor crossing opportunities.

Elgin O'Hare Corridor/West Bypass Interchange

The proposed Elgin O'Hare and West Bypass interchange (Exhibit 4, Location 34) is a three-level semi-directional system interchange. A pair of ramps provide access between the proposed O'Hare West Terminal and York Road. Because the proposed interchange is within a floodplain, it was decided to avoid depressing any roadways to avoid the need for tunnels, pump stations, and other expensive drainage accommodations. The West Bypass mainline (Exhibit 4, Location 33) is placed at grade to avoid undesirable changes to the drainage plan and conflicts with runway protection zones for existing and proposed airport runways. The proposed mainline alignment is parallel to both York Road and the Union Pacific (UP) railroad. The Elgin O'Hare corridor mainline is one level above existing grade. The interchange's service and system ramps are either one or two levels above existing grade. The proposed profiles will provide at least 16 feet 5 inch vertical clearance over the Elgin O'Hare and West Bypass mainlines.

I-294 and West Bypass South Leg: North Avenue to Elgin O'Hare Corridor

At the south end of the proposed West Bypass, improvements are proposed for the Tri-State Tollway (I-294) from North Avenue (IL 64) (Exhibit 5, Location 24) to north of Grand Avenue (Exhibit 5, Location 26). The I-294 mainline is elevated throughout this stretch. No changes to the elevation of I-294 are proposed as part of the project, and the configuration of the grade separation at the I-294/Lake Street (US 20)/ IL 64 interchange would remain unchanged. Northbound County Line Road would pass over the proposed I-294 southbound exit ramp to southbound County Line Road (Exhibit 5, Location 25) to give the ramp flatter profile grades than those proposed for northbound County Line Road.

Between I-294 and Franklin Avenue (Exhibit 6, Location 29), the West Bypass alignment passes through a flood-prone area; as a result, no roadways below existing grade are proposed for this segment. At the proposed I-294 system interchange (Exhibit 6, Location 27), the I-294 mainline is elevated more than one level above ground because it passes over the UP railroad (also elevated one-half level above grade). To provide access on a system ramp, the I-294 northbound to the West Bypass northbound movement is on the third level in order to pass over both I-294 and the railroad.

At the south half of the proposed Franklin Avenue split diamond interchange (Exhibit 6, Location 29), the Union Pacific Railroad passes over Franklin Avenue. To provide ramp access to Franklin Avenue, the proposed West Bypass mainline is to be constructed on a third level, above both. The proposed Franklin Avenue ramps connecting to the south climb from existing grade at Franklin Avenue to nearly two levels above existing at their tie to the I-294 mainline. Between I-294 and Franklin Avenue, the West Bypass mainline and ramp roadways are generally elevated one to two levels above existing ground. The West Bypass mainline is placed at one level above existing at the north half of the Franklin Avenue interchange at County Line Road (Exhibit 6, Location 30), so that the northbound entrance ramp can pass below it at ground level. The location of the West Bypass parallel to the Union Pacific Railroad between I-294 and Franklin does not cross any existing local streets,

nor does it affect any driveways. As a result, no access provisions are required in this segment.

The proposed Taft Avenue connector, which connects Franklin Avenue with IL 19, is elevated one level above the existing railroads (Exhibit 6, north of Location 29).

Roughly 2,000 feet south of IL 19, grade separations are required where the West Bypass mainline crosses Canadian Pacific (CP) railroad tracks and a proposed relocated UP rail line at-grade at the west end of the Bensenville Rail Yard (Exhibit 6, Location 31). Since the railroad crossings are at-grade within the Runway Protection Zone (RPZ) of a proposed O'Hare Airport runway, the mainline must be depressed one level below the existing railroads. Because of existing ground water conditions, a pump station is required.

A single-point urban diamond interchange is proposed at IL 19 (Exhibit 6, Location 32). IL 19 will remain at-grade so that it can tie to the major intersection at York Road, 650 feet west of the West Bypass centerline, and to maintain a number of private access points near the intersection with York Road. This decision is reinforced by the need to pass under the UP railroad overpass recently constructed 300 feet west of the proposed West Bypass centerline. The proposed West Bypass mainline passes over IL 19 and also crosses over the relocated Bensenville Ditch 400 feet north of IL 19. The profile for the West Bypass mainline overpass of IL 19 does not violate the RPZ criterion mentioned above.

The proposed West Bypass mainline is maintained at ground level between IL 19 and the Elgin O'Hare corridor (Exhibit 7, Location 33) as a result of drainage and RPZ constraints. The West Bypass runs parallel to York Road and existing railroad lines. Because of the decision to parallel the railroad in this segment, there are no conflicting cross street or driveway conflicts requiring resolution through grade separations or frontage roads.

West Bypass North Leg: Elgin O'Hare Corridor to I-90

North of the Elgin O'Hare corridor, the proposed West Bypass will be slightly above ground level while passing over three ditches to be placed in box culverts (Exhibit 7, Location 35). A northbound entrance ramp is proposed at Devon Avenue. Though the mainline will cross the ramp and the adjacent UP railroad tracks one level above ground within the RPZ of Runway 14R (Exhibit 7, Location 36), the runway will be decommissioned as part of the O'Hare Modernization Project. This proposed configuration will avoid the construction costs of tunnels and a pump station, and reflects the need to maintain Elmhurst Road/York Road, Devon Avenue, and the railroad lines at existing grade. This plan requires that mainline construction be delayed until Runway 14R is closed. The mainline would remain elevated to cross a railroad spur located $\frac{1}{4}$ mile north of the Devon Avenue on-ramp bridges (Exhibit 7, Location 37).

Continuing north, the West Bypass is located at ground level as it runs parallel to the UP railroad while approaching and passing below Touhy Avenue. A partial cloverleaf interchange, oriented to the south, is proposed at Touhy Avenue (Exhibit 8, Location 38A). North of Touhy Avenue, the mainline and ramp roadways will be grade-separated over the Metropolitan Water Reclamation District of Greater Chicago (MWRDGC) detention ponds, Higgins Creek, and access roads (Exhibit 8, Location 39) prior to interchanging with I-90. The construction of any roadway facilities below-grade in this segment is not feasible due to the presence of the detention ponds and the creek.

A UP railroad grade crossing is located on Touhy Avenue 1,000 feet east of the proposed West Bypass alignment (Exhibit 8, Location 38B). Higgins Creek runs under the grade crossing. As a result of high traffic volumes on Touhy Avenue and frequent freight train operations, a grade separation is proposed at this location to provide improved traffic operations. Depressing Touhy Avenue or the railroad is not feasible because of the presence of Higgins Creek and elevating the railroad is difficult because of maximum grade constraints.

As a result of all these factors, it was decided to elevate Touhy Avenue over the railroad (at approximately a 16 feet 5 inch vertical clearance), which results in Touhy Avenue remaining elevated across the West Bypass alignment, facilitating the proposed interchange over/under relationship. North of Touhy Avenue, the West Bypass roadways must rise to pass over the detention ponds, Higgins Creek, and their access roads. This is facilitated by keeping the proposed mainline alignment as far to the west as is feasible in order to move the critical vertical clearance points farther to the north.

The proposed two-level West Bypass/I-90 system interchange has a trumpet configuration (Exhibit 8, Location 44). I-90 is at ground level through the proposed interchange to minimize construction costs and maintenance of traffic impacts. The West Bypass roadways that cross it are on structure one level above (approximately a 16 feet 5 inch vertical clearance), which allows the roadways to pass over the detention ponds, Higgins Creek, and their access roads.

I-90 – Arlington Heights Road to Touhy Avenue

Improvements are made along I-90 between Arlington Heights Road and Touhy Avenue as part of the EO-WB project (see Exhibit 9, Location 40 through 48). Since the improvements generally consist of widening only (for auxiliary lanes), and in order to maintain existing drainage patterns and keep the maintenance of traffic schemes as straightforward as possible, no level changes are proposed along the I-90 corridor. I-90 is on fill within the project limits and crosses over all cross streets and railroads on structure, except at Elmhurst Road (Exhibit 9, Location 42). The Elmhurst Road interchange would be redesigned to a conventional diamond interchange or a diverging diamond configuration, with the cross street continuing to overpass I-90.

Key to Exhibits 1 through 9 – Grade Separation Locations and Relevant Design Factors

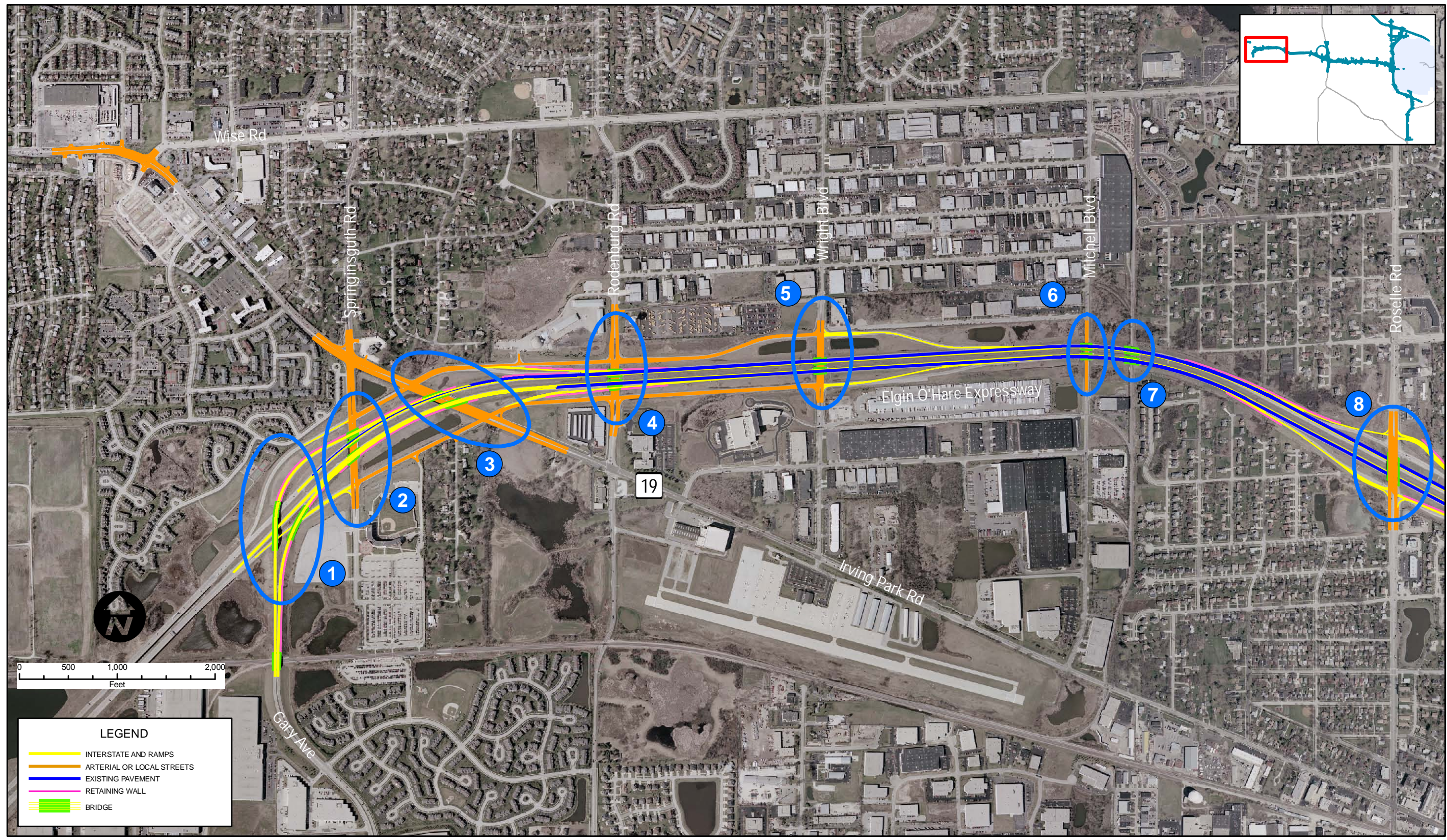
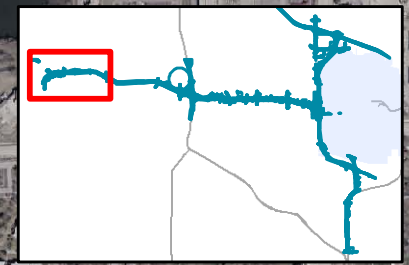
1. The Gary Avenue ramps are to remain as overpasses of the Elgin O'Hare mainline to facilitate straightforward maintenance of traffic, and to maximize the reuse of existing pavement (Exhibit 1). The existing drainage pattern will be maintained.
2. Springinsguth Road will remain at existing grade (with the Elgin-O'Hare Expressway passing overhead) to avoid acquisition of residential property, other impacts to access in the area, facilitate straightforward maintenance of traffic plans, and maximize the reuse of existing mainline pavement (Exhibit 1). The existing drainage pattern will be maintained.
- 3/4. IL 19 and Rodenburg Road will each remain at existing grade (with the Elgin-O'Hare Expressway passing overhead) to avoid impacts to access, facilitate straightforward maintenance of traffic plans, and maximize the reuse of existing mainline pavement (Exhibit 1). The existing drainage pattern will be maintained.
5. Wright Boulevard will remain at existing grade (with the Elgin-O'Hare Expressway passing overhead) to continue to match the elevation of the existing railroad spur grade crossing, to minimize impacts to access in the area, and facilitate straightforward maintenance of traffic plans (Exhibit 1). The existing drainage pattern will be maintained.
6. Mitchell Boulevard will remain open (with the Elgin-O'Hare Expressway passing overhead) to provide convenient access to nearby development, and to avoid shifting Mitchell Boulevard traffic onto adjacent cross streets and Elgin-O'Hare Expressway crossings (Exhibit 1). Existing crossroad and mainline levels will be maintained due to the proximity of the mainline overpass to the railroad spur immediately east of Mitchell Boulevard, and to facilitate straightforward maintenance of traffic plans. The existing drainage pattern will be maintained.
7. The Elgin-O'Hare Expressway will remain an overpass of the existing railroad spur (Exhibit 1).
8. Roselle Road will remain at its existing grade, passing over the Elgin-O'Hare Expressway (Exhibit 1). Maintaining the existing over/under relationship will avoid impacts to access, facilitate straightforward maintenance of traffic plans, and maximize the reuse of existing structure and mainline pavement. The existing drainage pattern will be maintained.
9. Plum Grove Road will remain open in the current over/under relationship with the Elgin-O'Hare Expressway, to provide convenient access to residential development and provide emergency vehicle access (Exhibit 2). The existing drainage pattern will be maintained.
10. Meacham Road / Medinah Road will remain at existing grade (with the Elgin-O'Hare Expressway passing overhead) to facilitate straightforward maintenance of traffic plans, maintain the intersections with Roosa Lane and Haar Lane, and maximize the reuse of existing mainline pavement (Exhibit 2). The existing drainage pattern will be maintained.

11. IL 53 will cross over the Elgin-O'Hare Expressway extension, which is proposed to remain on its existing grade (Exhibit 2). Constructing the side road over the Elgin O'Hare corridor will also reduce construction costs.
12. To minimize the cost and complexity of maintenance of traffic plans, it is recommended that the Elgin O'Hare corridor and I-290 mainlines each remain at their existing levels (Exhibit 3). New system ramps will be constructed one and two levels above the Elgin O'Hare. The existing drainage pattern will be maintained.
13. Along the north leg of I-290, the existing Devon Avenue overpass will remain in its current over/under configuration (Exhibit 3). No construction is proposed at the existing Irving Park Road and commuter rail line overpasses on the south leg of I-290, and at the Biesterfield Road overpass on the north leg.
14. Park Boulevard must remain at existing grade to avoid acquisition of residential property, and to avoid other impacts to access in the area (Exhibit 3). As a result, the Elgin O'Hare corridor will be raised to pass over Park Boulevard.
15. Arlington Heights Road needs to remain at existing grade to avoid acquisition of residential property and to maintain intersection access to Ketter Drive, Theodore Lane, and to driveways in the vicinity of the Elgin O'Hare corridor (Exhibit 3). As a result, the Elgin O'Hare will be raised to pass over Arlington Heights Road.
16. Prospect Avenue needs to remain at existing grade to minimize impact to driveway and cross street access in the area (Exhibit 3). As a result, the Elgin O'Hare corridor will cross one level above Prospect Avenue.
17. The Elgin O'Hare corridor will cross Salt Creek slightly above existing grade (Exhibit 3).
18. Mittel Boulevard will remain at existing grade to avoid acquisition of commercial property and to avoid other impacts to access in the area (Exhibit 3). Mittel Boulevard cannot be lowered due to the close proximity of the pond in the northwest quadrant of the crossing. If the Elgin O'Hare corridor were lowered one-half level below existing (which is limited by the high water elevation of Salt Creek), it would still not be feasible to raise Mittel Boulevard one-half level due to resulting impacts to access in the area; therefore the Elgin O'Hare will pass over Mittel Boulevard.
19. Wood Dale Road will remain at existing grade to avoid acquisition of commercial property and to avoid significant impacts to driveway access near the Elgin O'Hare corridor (Exhibit 4). The Elgin O'Hare corridor will pass under Wood Dale Road to minimize environmental impacts.
20. Lively Boulevard will remain at existing grade to meet the elevation of the existing railroad spur grade crossing to the north of the Elgin O'Hare corridor and the driveway access to the south (Exhibit 4). As a result, the Elgin O'Hare corridor will pass over Lively Boulevard.
21. The Elgin O'Hare corridor will cross over IL 83 (which will remain at existing grade) due to the need for the Elgin O'Hare to pass over a nearby railroad spur line (see Item 22, below). This configuration will also maintain significant driveway access along IL 83 near the Elgin O'Hare crossing (Exhibit 4).

22. The existing railroad spur will remain in service (Exhibit 4). The Elgin O'Hare corridor will cross one level above it to match profile constraints at IL 83 and Supreme Drive (see Item 23, below) and to avoid drainage problems resulting from a significant run of the Elgin O'Hare below-grade.
23. Supreme Drive will remain open to provide convenient access to commercial development along its alignment, as well as for adjacent side streets needing to cross the Elgin O'Hare corridor via the proposed frontage roads (Exhibit 4). The Elgin O'Hare will pass over Supreme Drive due to the proximity of the mainline overpass of the existing railroad spur to the west.
24. I-294 will remain an overpass of Lake Street, which will in turn remain one level above North Avenue (Exhibit 5). This configuration avoids impacts to access, facilitates straightforward maintenance of traffic plans, and maximizes the reuse of existing pavement.
25. Northbound County Line Road will pass over the new proposed southbound exit ramp, to accommodate the required ramp profile (Exhibit 5). Northbound County Line Road can feature more severe grades given its function and classification. In addition, the proximity of the pond to the west precludes the potential for moving either crossing facility to below existing grade.
26. I-294 will remain as an overpass of Grand Avenue to facilitate straightforward maintenance of traffic plans and avoid impacts to access along Grand Avenue in the area (Exhibit 5).
27. The I-294 northbound to West Bypass northbound system ramp will cross over the existing I-294 mainline, which in turn currently passes over the existing UP railroad double tracks (Exhibit 5). Below-grade roadways are not proposed, given the flood-prone nature of this area.
28. No roadways below existing grade are proposed along the West Bypass between I-294 and Franklin Avenue because it is a flood-prone area (Exhibit 5).
29. Franklin Avenue needs to remain at grade, with the UP railroad crossing it one level above, to avoid impacts to access and to facilitate straightforward maintenance of traffic plans (Exhibit 6). The West Bypass mainline will cross over on a third level. Once again, below-grade roadways were not proposed in this location, to avoid drainage issues in this flood-prone area.
30. The West Bypass mainline will cross one level above the ground-level northbound entrance ramp, which needs to meet Green Street at existing grade to maintain street and driveway access requirements in close proximity to the West Bypass crossing (Exhibit 6).
31. The West Bypass will cross under the existing at-grade CP Bensenville railroad yard tracks and relocated UP railroad tracks because a mainline overpass would encroach upon the RPZ of a future O'Hare runway (Exhibit 6). As a result of this alignment requirement, a pump station will be required at this crossing.
32. IL 19 needs to remain at existing grade due to the proximity of the York Road intersection to the west, and to avoid impacts to other access in the area (Exhibit 6). The West Bypass crosses over Irving Park Road (runway protection zone requirements allow

this configuration) and also crosses over the relocated Bensenville Ditch 400 feet to the north. The CP and UP railroads each cross over IL 19 on proposed bridges.

33. At the Elgin O'Hare/West Bypass interchange and to the south and north, the West Bypass mainline is placed at-grade, parallel to the existing railroad lines and York Road to avoid adding a level to the interchange (Exhibit 7). A below-grade West Bypass roadway would change drainage patterns and require a pump station, and an elevated West Bypass roadway would result in violations of runway protection zone requirements.
34. The West Bypass mainline is again located at-grade (Exhibit 7). The interchanging Elgin O'Hare corridor mainline and ramps are therefore one or two levels above existing ground throughout the system interchange.
35. North of the Elgin O'Hare corridor, the West Bypass is to return to slightly above existing grade, to pass over three culverts that carry realigned Willow Creek tributaries (Exhibit 7).
36. The West Bypass mainline will cross over the at-grade northbound Devon Avenue entrance ramp and existing UP railroad tracks to avoid the construction costs of tunnels and a pump station, and to avoid access impacts along Devon Avenue and Elmhurst Road (Exhibit 7). Since the overpass would violate runway protection zone requirements for existing runway 14R, it cannot be constructed until the runway is decommissioned.
37. The West Bypass will cross over the at-grade railroad spur due to the proximity of the mainline overpass of the UP railroad main tracks and the Devon Avenue northbound on-ramp (Exhibit 7).
38. Touhy Avenue (Location 38A) will be elevated one level above existing grade due to the railroad grade separation (Location 38B) located to the east of the West Bypass' crossing location (Exhibit 8). The West Bypass crossing below Touhy Avenue also minimizes environmental impacts.
39. The north end of the West Bypass must provide adequate vertical clearance above Higgins Creek, the MWRDGC's detention ponds, and access roads (Exhibit 8). As a result, the West Bypass is elevated to one level above existing grade through this area.
40. The I-90 mainline will remain at its existing profile throughout the project improvement limits (Exhibit 8, Locations 40 through 48). This will allow for straightforward maintenance of traffic plans and not impact existing drainage or access patterns. The crossing West Bypass system interchange ramps will cross one level above the existing I-90 lanes (Location 44).

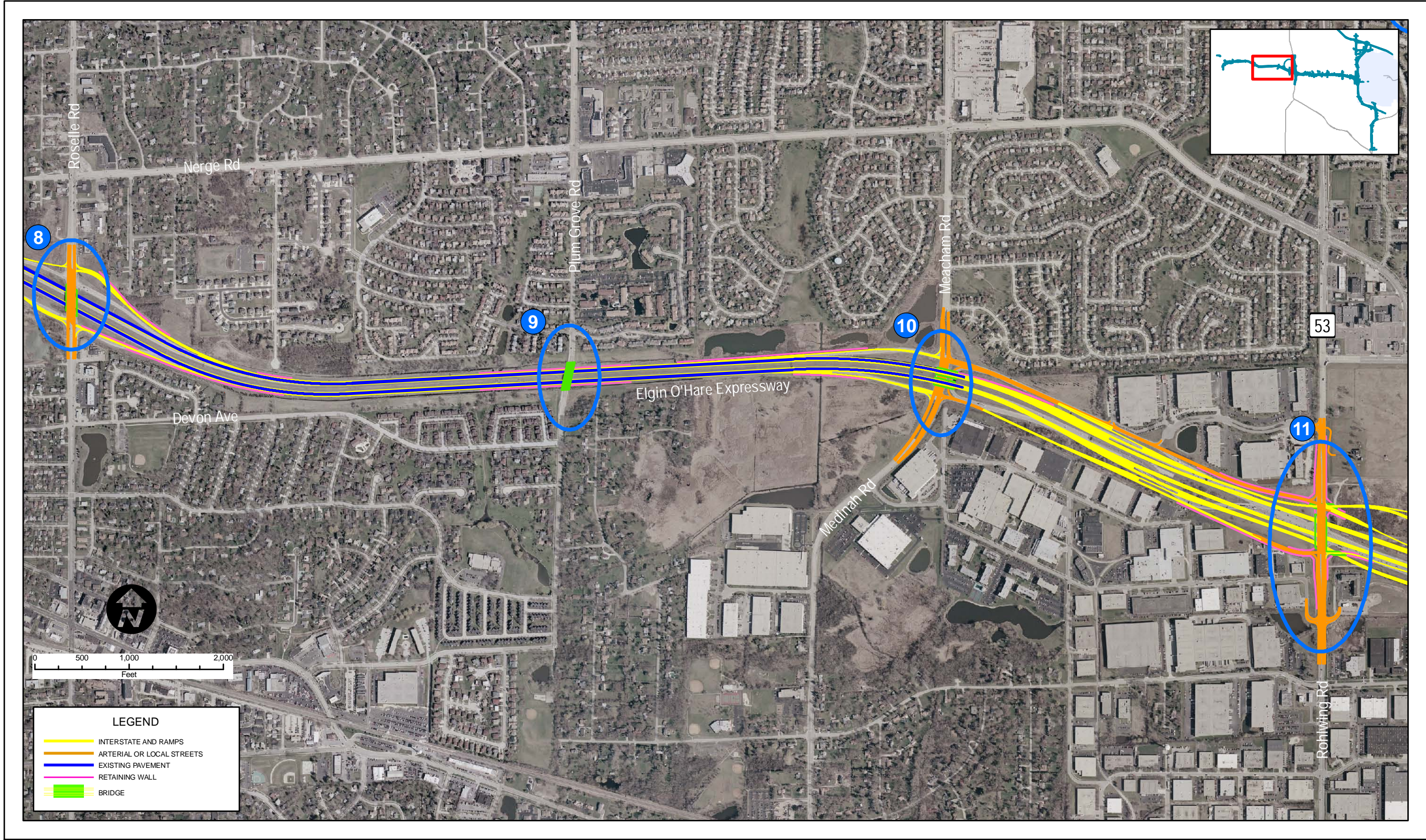


LEGEND

- INTERSTATE AND RAMPS
- ARTERIAL OR LOCAL STREETS
- EXISTING PAVEMENT
- RETAINING WALL
- BRIDGE

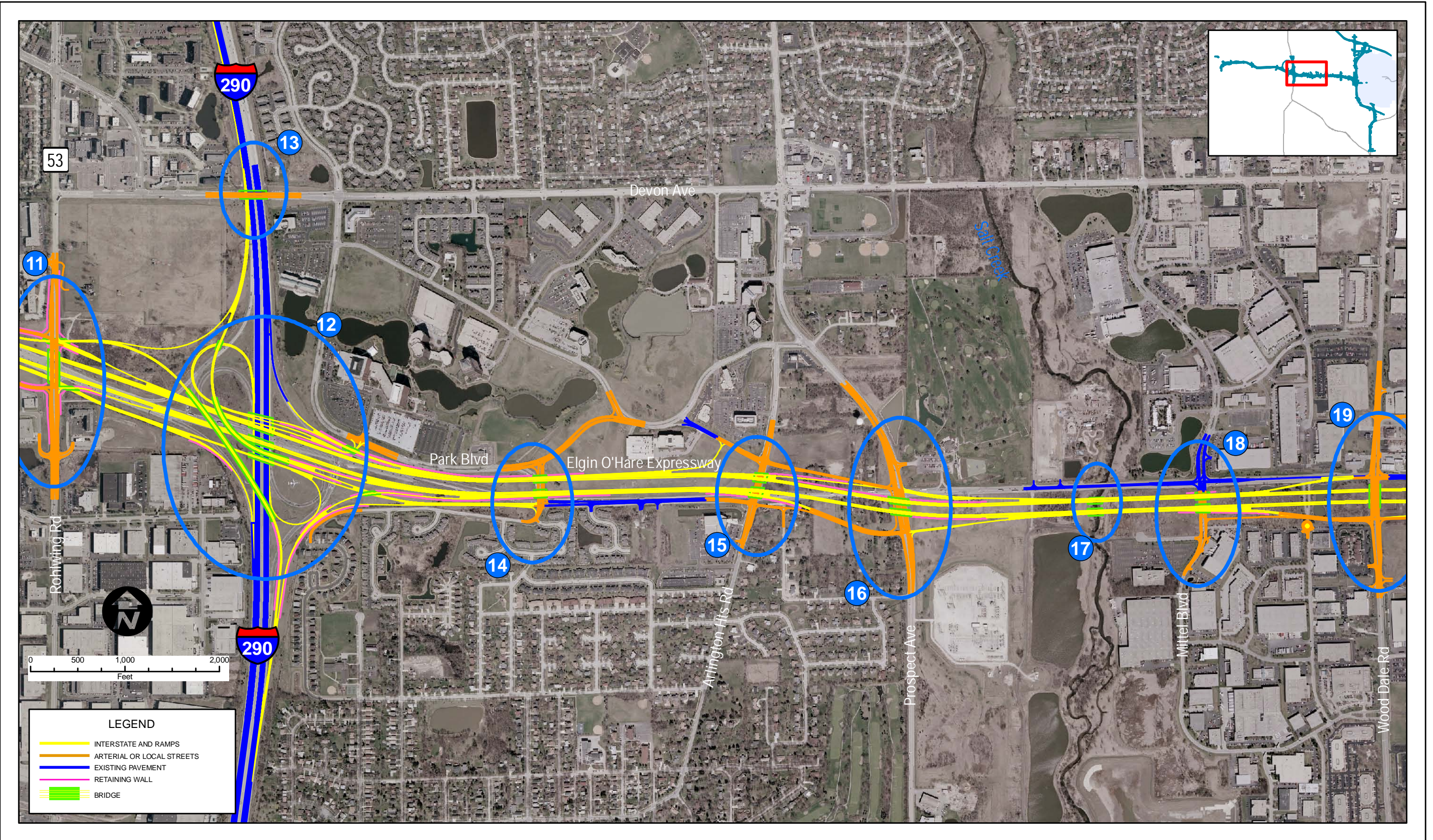
**Elgin O'Hare - West Bypass
Grade Separation Study**

Exhibit 1



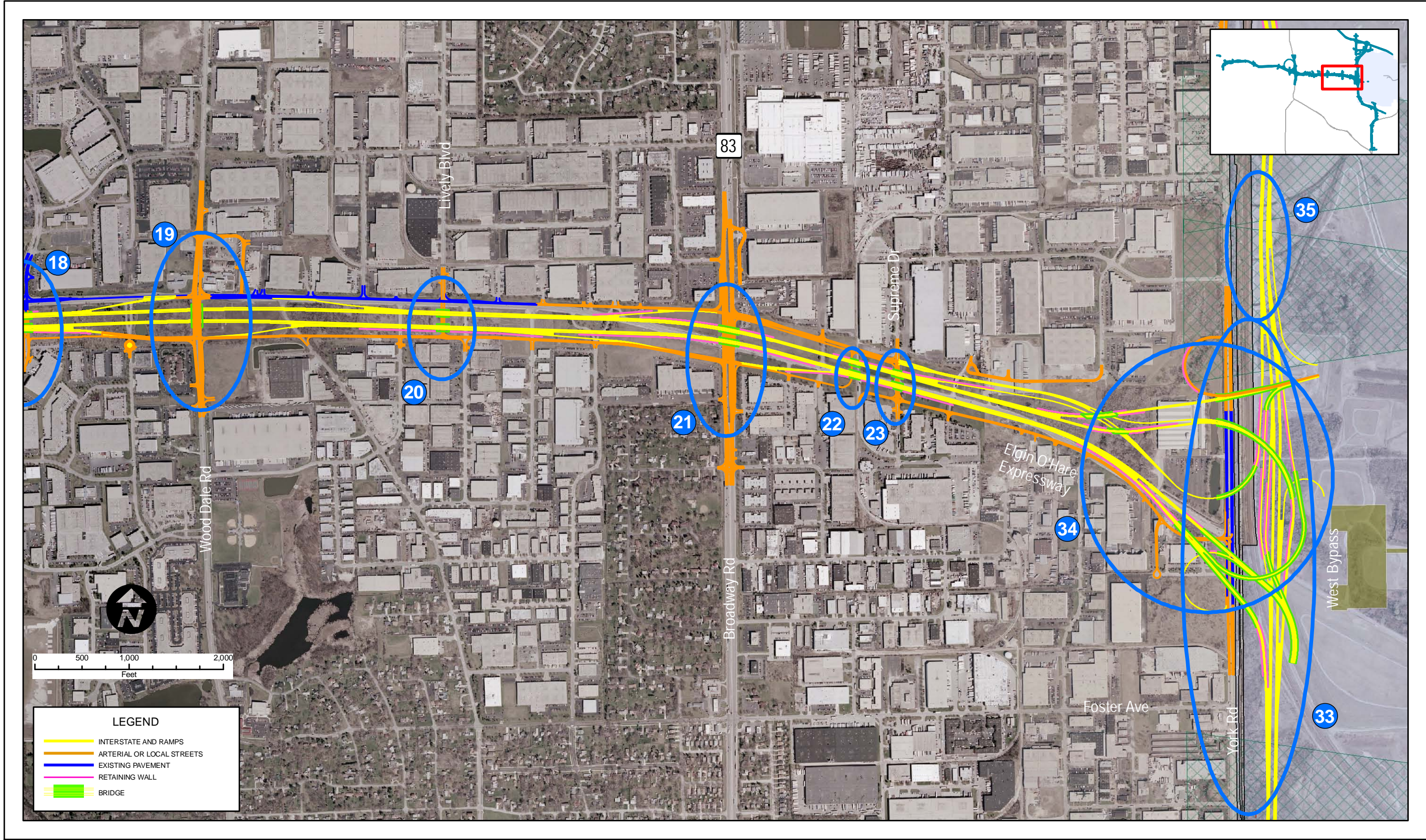
**Elgin O'Hare - West Bypass
Grade Separation Study**

Exhibit 2



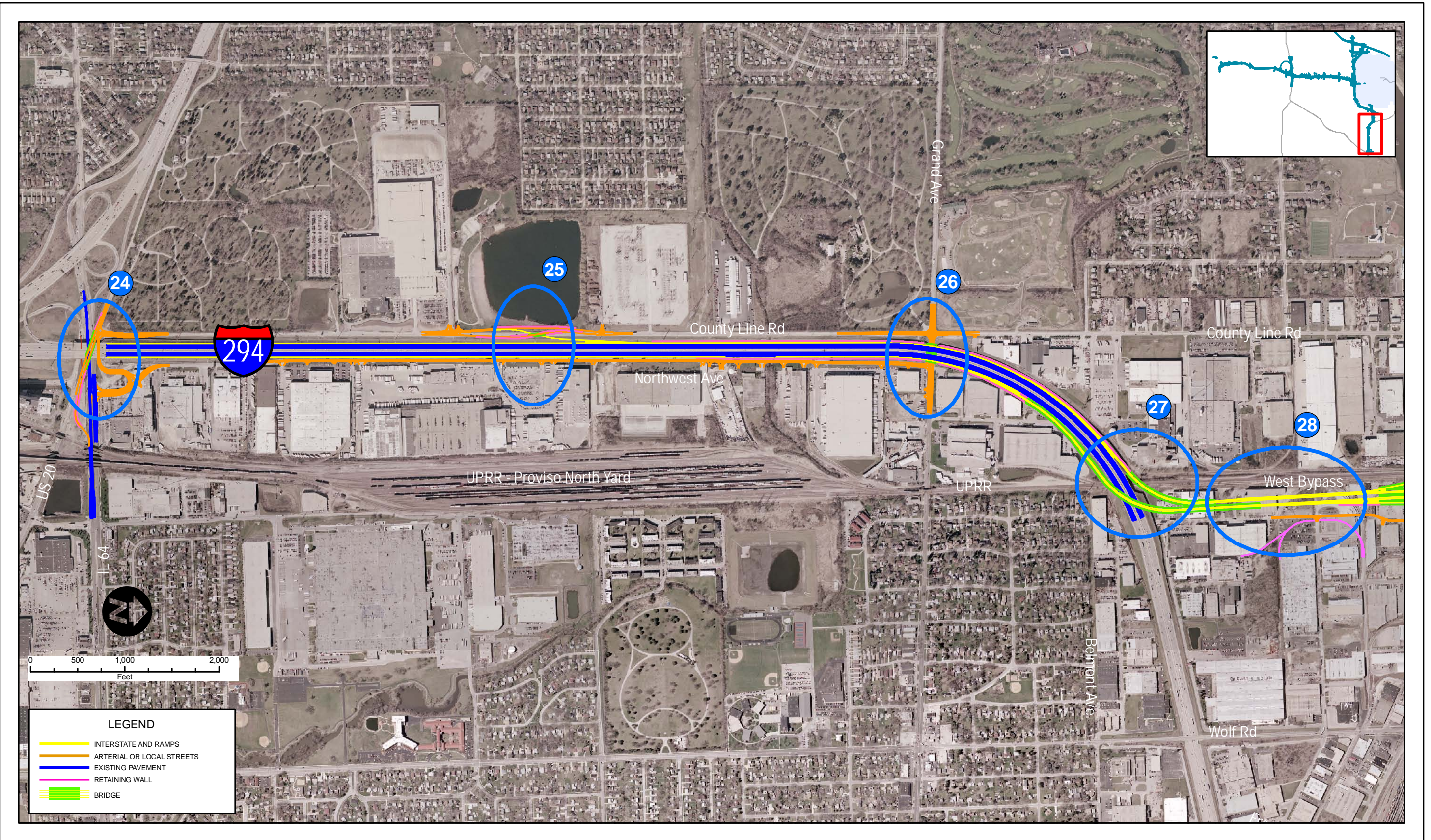
Elgin O'Hare - West Bypass
Grade Separation Study

Exhibit 3



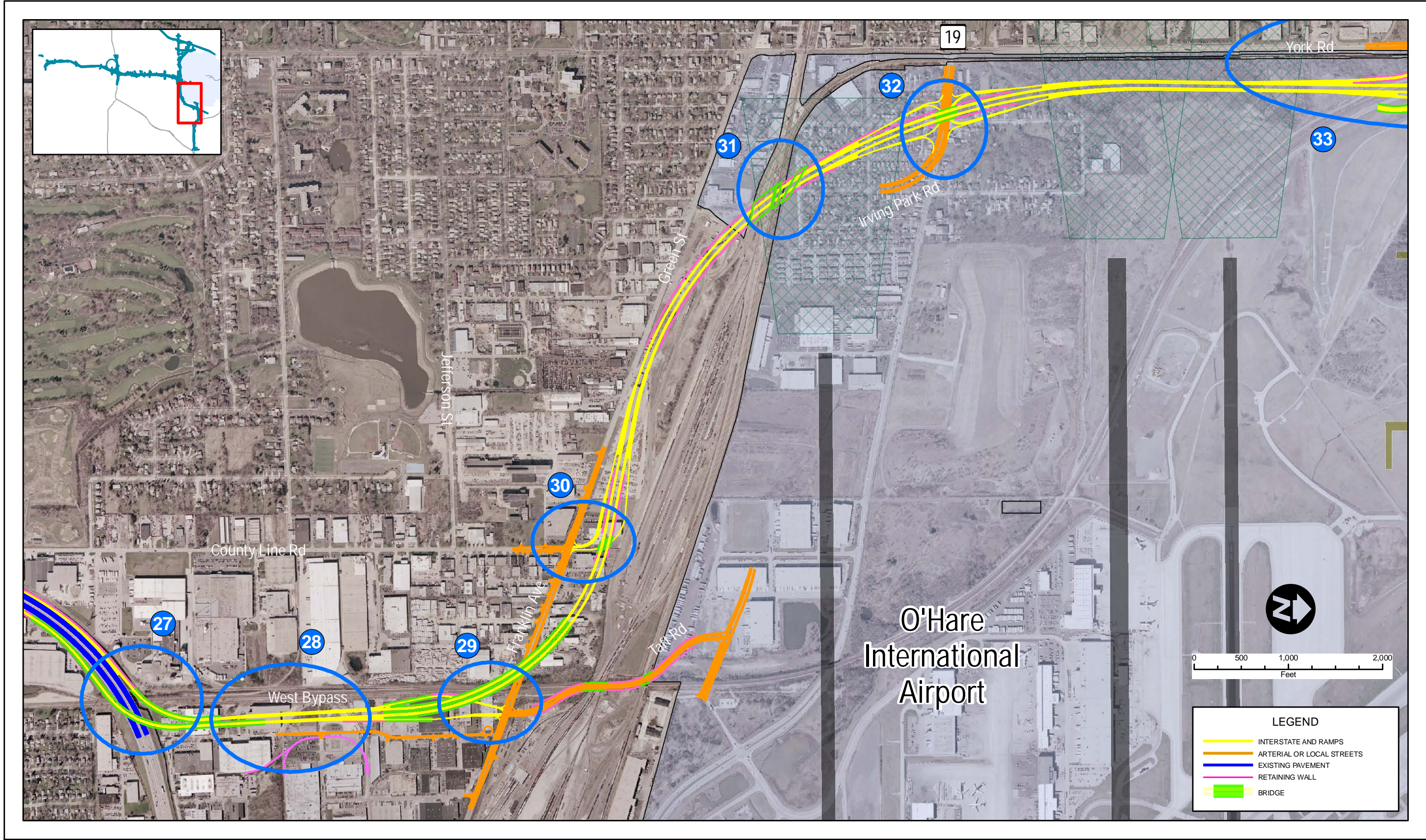
**Elgin O'Hare - West Bypass
Grade Separation Study**

Exhibit 4



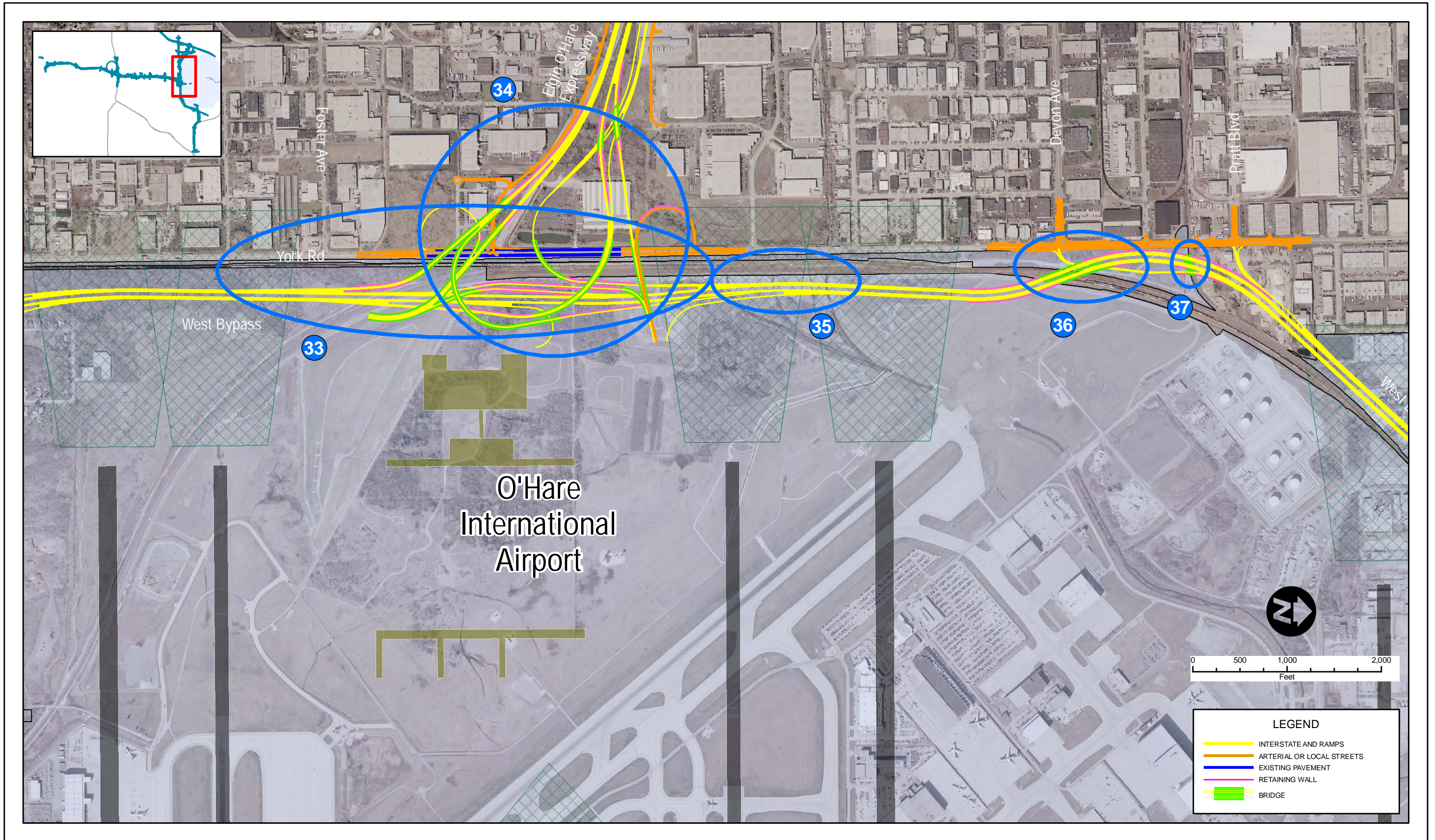
Elgin O'Hare - West Bypass
Grade Separation Study

Exhibit 5



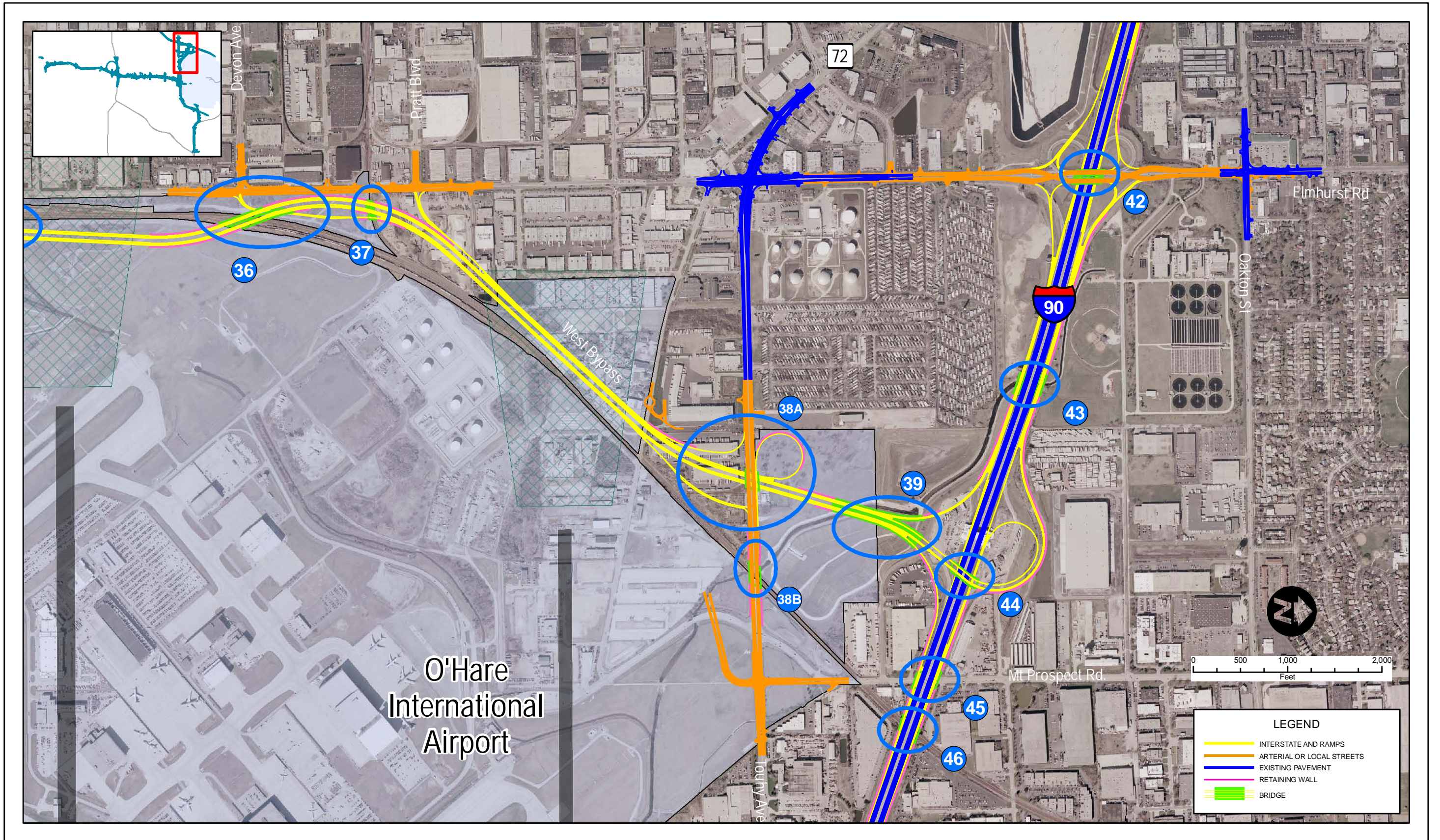
**Elgin O'Hare - West Bypass
Grade Separation Study**

Exhibit 6



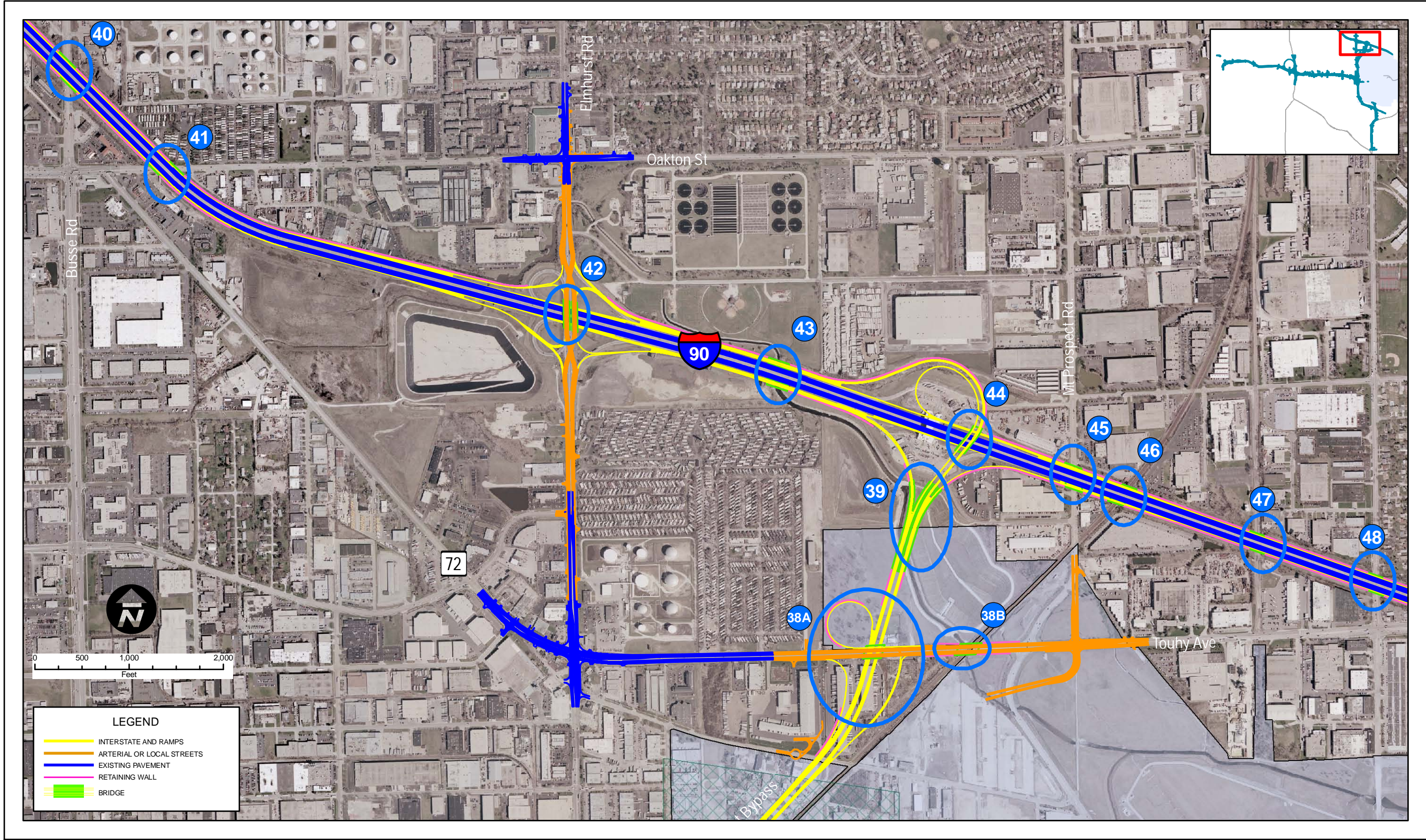
**Elgin O'Hare - West Bypass
Grade Separation Study**

Exhibit 7



Elgin O'Hare - West Bypass
Grade Separation Study

Exhibit 8



**Elgin O'Hare - West Bypass
Grade Separation Study**

Exhibit 9