

Combined Design Report

FINAL
JANUARY 2014



FAP Route 0362 Barrington Road Interchange at Jane Addams Memorial Tollway (Interstate 90), Cook County
Job No.: P-91-589-11

Prepared For:



In cooperation with:



Illinois Department
of Transportation



U.S. Department of Transportation
Federal Highway
Administration

Prepared By:



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GRÄEF

Executive Summary

The Barrington Road interchange at I-90 is located in Hoffman Estates and South Barrington, in Cook County, Illinois. Barrington Road is an unmarked Illinois Department of Transportation (IDOT) roadway, and the Jane Addams Memorial Tollway (I-90) is under the jurisdiction of the Illinois State Toll Highway Authority (ISTHA). Improvements to the interchange are proposed in order to provide full, safe, and effective mobility for multimodal users crossing I-90 and Barrington Road in the project area. The project area currently has multiple causes of operational deficiencies, longer emergency response and transport times than without the improvements, and a lack of safe bicycle and pedestrian connectivity across I-90.

Twenty interchange alternatives were identified by the public (through the Context Sensitive Solutions (CSS) process), IDOT, and ISTHA for Barrington Road at I-90. The interchange alternatives with identified fatal flaws (as defined by the Project Study Group (PSG)) were removed from the range of alternatives. The remaining three alternatives included a single point urban interchange (SPUI) and two partial cloverleaf designs, one of which included slip ramps at Higgins Road.

The SPUI interchange was selected as the Preferred Alternative for the project due to engineering constraints associated with the Higgins slip ramps and traffic operational issues with the partial cloverleaf interchange alternatives. The following community concerns were identified through the CSS process, and taken into consideration during the selection of the Preferred Alternative: improve traffic operations and emergency response times, improve bicycle and pedestrian connectivity, improve Interstate access for economic benefit, minimize environmental impacts and project costs, accommodate public transportation, and provide efficient maintenance of traffic during construction.

The Preferred Alternative includes the following improvements:

- A single-point urban interchange at Barrington Road and I-90 (all interchange ramps converge at one four-leg signalized intersection)
- Barrington Road Improvements:
 - Additional southbound through lane from north of Higgins Road to Hassell Road
 - Road reconstruction from Hassell Road to Central Road
 - Intersection improvements at Hassell Road, and Central Road
 - Construct shared use paths or sidewalk on the east side of Barrington Road from Hassell Road to Central Road, on the west side of Barrington Road from Higgins Road to Central Road, and connecting Barrington Road to Pembroke Avenue and Central Road
- Higgins Road Improvements:
 - Construct an additional through lane in each direction on Higgins Road from Barrington Road to south of I-90
 - Intersection improvements at Barrington Road and Shoe Factory Road
 - Construct shared use path along the north side of Higgins Road (Barrington Road to Shoe Factory Road)
- Greenspoint Parkway Improvements:
 - Road realignment in the vicinity of the proposed I-90 interchange improvement
- Utility protection and/or relocation as needed

The environmental impacts of the Preferred Alternative are summarized in Table ES-1 below.

**Table ES-1
Summary of Environmental Impacts from Preferred Alternative**

Environmental Resource	Description of Impacts
Social and Economic	<ul style="list-style-type: none"> Improved bicycle and pedestrian connectivity; improved access to Interstate system. Nine business parking spaces will be removed without replacement. A shared driveway for two businesses will be converted from a full access driveway to a right-in, right-out driveway.
Agricultural	None anticipated.
Cultural Resources	None anticipated.
Air Quality	None anticipated.
Traffic Noise	None anticipated.
Natural Resources	<ul style="list-style-type: none"> The Preferred Alternative would impact 271 trees along I-90 that would need to be replaced by the Illinois Tollway. The Preferred Alternative would impact 233 trees along Higgins Avenue and Barrington Road that would need to be replaced by IDOT. No impacts to threatened and endangered species are anticipated.
Water Resources	<ul style="list-style-type: none"> Culvert under I-90 for Tributary A of Poplar Creek will be replaced with a longer culvert with no resulting change in base flood elevation. Three existing engineering wells in the interchange area owned by the Illinois Tollway will be removed, following Illinois well closure procedures, and not replaced.
Flood Plains and Floodway	<ul style="list-style-type: none"> Fill will be placed in the Poplar Creek and Poplar Creek Tributary A floodway and floodplain along Barrington Road, the I-90 mainline, and the Barrington Road interchange. Mitigation will occur via replacement and compensatory storage in ditches or pipes.
Wetlands	<ul style="list-style-type: none"> Impacts five wetlands or Waters of the U.S., totaling 1.97 acres. One impacted wetland is a High Quality Aquatic Resource (0.728 acres of impact). All impacted wetlands will be permitted and mitigated by the Illinois Tollway.
Special Waste	<ul style="list-style-type: none"> Impacts nine REC properties. A Preliminary Site Investigation will be required in Phase II.
Parks and Recreation	<ul style="list-style-type: none"> The project will not impact the Poplar Creek Forest Preserve. The project will require the removal of "Work Park," a landscaped area owned by ISTHA within the existing Barrington Road interchange infield area.

The proposed Barrington Road project will be phased to coincide with the Illinois Tollway construction schedule for the I-90 improvements.