

Develop Interchange Justification Studies

Project Development and Environmental Analysis Unit		Approved: 7/29/13 Version: 2.1
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Purpose

The purpose of this procedure is to outline a consistent methodology within NCDOT for writing Interchange Justification Reports (IJRs) and/or Interchange Modification Reports (IMRs) regarding requests for Interstate access.

Background

An Interchange Justification Report is required for a project that proposes to provide a new interchange to an interstate facility. The IJR should demonstrate that an access point is needed for regional traffic needs and not just local system needs. The proposed interchange should also be in the applicable Comprehensive Transportation Plan and/or Long Range Transportation Plan. If the project is in a non-attainment area and the proposed interchange is not in the LRTP, the LRTP will need to be amended.

An Interchange Modification Report is required for a project that proposes to revise an existing interstate interchange. Revised access is considered to be a change in the interchange configuration even though the number of actual points of access may not change. Always consult with FHWA Preconstruction and Environmental Engineer to determine whether an IMR is required.

Federal Highway Administration (FHWA) approval of new or revised access constitutes a federal action and requires NCDOT to comply with all federal policies/regulations and with NEPA procedures before granting final approval. Each request is approved based on need, current department and FHWA policies, and on evaluation criteria.

The IJR or IMR should be submitted to FHWA and approved prior to receiving right of way authorization to minimize risk (typically two (2) years before the project is let to contract). However, a draft report can be submitted to FHWA during the project development phase for a “determination of engineering and operational acceptability.” These early determinations are valid for 8 years. If the project does not progress to construction in this timeframe, the proposal must be updated and resubmitted.

For additional information, reference:

- [National Environmental Policy Act 1969 \(NEPA\)](#)
- [Title 23 U.S.C. 111](#)
- [Interchange Justification Policy](#)
- [Capacity Analysis Guidelines](#) - from the Congestion Management Section.

- [Highway Capacity Manual](#) - The most current version of Highway Capacity Software is the standard software used to conduct operational analysis. The most current version of CORSIM, SYNCHRO, and other software are encouraged to be used as supplemental analyses.
- [Interchange Modification Report](#) – Example

Responsibility

The following people are involved in this procedure:

- ✚ Project Planning Engineer - responsible for coordinating as needed to properly prepare Interchange Justification Reports and/or Interchange Modification Reports.
- ✚ FHWA Preconstruction and Environmental Engineer
- ✚ Congestion Management Project Engineer
- ✚ Transportation Planning Branch – Traffic Forecast Unit
- ✚ Roadway Design Project Engineer

Procedures

1. Receive proposal for, or identify need to provide new access or modify an existing access to the North Carolina Interstate System.
2. Coordinate with FHWA to determine if IJR or IMR is required.

Examples of when an IJR is required include:

- Converting an overpass to an interchange
- New interchange access
- Locked-gate access point

Examples of when an IMR is required include:

- Modification to ramp location and type
- Additional access the interchange such as a new ramp

If an IJR or IMR is not required, notify Congestion Management and Roadway Design and document the decision in the planning document. If an IJR or IMR is required proceed to the next step.

3. Coordinate with FHWA, Congestion Management, and Roadway Design to determine the:
 - Level of service criteria – proposal must show that the new or modified interchange will operate at an acceptable LOS and not cause a degradation of the mainline or adjacent interchange LOS in the current, interim, or design year.
 - Extent of the analysis needed – FHWA typically requires the analysis of at least the first adjacent existing or proposed interchange on either side. The analysis of additional interchanges may be needed.
 - Types of analysis to be performed. (Ramps, Weaves, Mainline, Intersection or Ramp Termini, etc.)
 - Scenarios to be analyzed. You might need to perform analysis for Build and No-Build scenarios for current and design years for each interchange.
 - Appropriate analysis tools. The most current version of the Highway Capacity Software (HCS) is always used, but additional tools such as SYNCHRO, CORSIM, OR VISSIM often supplement the analysis. Please verify that you are using the most current version of any analysis tools per NCDOT's Congestion Management.

The complexity of the interchange access (e.g., service interchange versus

system interchange) will determine the type of operational analysis required (e.g., use of Highway Capacity software or more specialized software. The software used must comply with the analysis methods set forth in the most current Highway Capacity Manual.

4. Check to see if you already have the traffic data you need. Request any additional data needed from Transportation Planning Branch. Reference the Requesting Traffic Forecasts procedure.
5. In the case of a consultant project, have consultant perform analysis using HCS and other tools, as appropriate, and as decided upon in Step 3. Upon completion, send the consultant's analysis to Congestion Management for review. Congestion Management's comments should be addressed to their satisfaction.

In the case of an in-house project, send a written request to the Congestion Management Unit to do the analysis. Allow four months for Congestion Management to complete their analysis.

Note: The PDEA project engineer may opt to perform the analysis, rather than sending it to Congestion Management, under the following circumstances:

- HCS is the only software tool determined necessary in Step 3 above (since PDEA does not have the other tools);
 - The PDEA project engineer must use the version of HCS Congestion Management specifies
 - Congestion Management must review the analysis, and their comments must be addressed to their satisfaction.
6. Document findings, addressing all eight requirements in the FHWA Policy.
 7. Coordinate with other NCDOT units, particularly the Congestion Management Section and the Roadway Design Unit, while drafting the required IJR or IMR.
 8. Finalize the required IJR or IMR. Information included in the IJR or IMR should comply with the federal Interchange Justification Policy.
 9. Submit completed IJR or IMR to FHWA for approval. The IJR or IMR may be submitted to FHWA for review during the development of the environmental document. However, because FHWA approval requires that National Environment Policy Act (NEPA) procedures are followed, final access approval is contingent upon completion of environmental documentation. For draft reviews, submit 1 hard copy of the report to the FHWA Preconstruction and Environmental Engineer. Once the NEPA document is approved and all of the comments on the IJR or IMR have been addressed, send 2 hard copies of the IJR or IMR to FHWA Preconstruction and Environmental Engineer.

Note: Submitting the draft IJR or IMR before the completion of the environmental document is not required, but it saves time and is good project development practice, since comments received from FHWA on the reports might inform your project development process, and since the document needs to disclose impacts associated with the required ramp configuration.

Contacts

- For suggestions to change this procedure contact: Tracy Walter, twalter@ncdot.gov
- For questions about performing this procedure contact: Missy Pair, mpair@ncdot.gov

