TxDOT Houston District
Turn Lane Addition Criteria for Hydraulics Review

When a Traffic Impact Analysis determines the need for a proposed right turn lane (RTL) or left turn lane (LTL) along the Texas Department of Transportation (TxDOT) roadway to serve the proposed development that results in a widening of the TxDOT roadway typical section at this proposed turn lane, the following considerations must be made to ensure there is no adverse impact to the TxDOT infrastructure and interests.

SUBJECT 1

Right-of-way (ROW) Donation

Proposed turn lanes must be discussed with the applicable TxDOT Area Office to determine if a ROW donation will be required to maintain the existing border width. Generally, a ROW donation of equal width to the amount of pavement widening that will occur (i.e. the width of usable ROW lost by TxDOT) is requested.

SUBJECT 2

Drainage Considerations

The encroachments caused by proposed turn lanes must be assessed to verify no adverse hydraulic impacts based on the existing TxDOT drainage infrastructure system.

TxDOT Drainage System: Storm Sewer

When the existing TxDOT drainage system consists of a curb-and-gutter storm sewer system, the proposed turn lane and resultant pavement widening may affect existing inlets:

1. A conflict may occur with the location of existing TxDOT inlet(s) that results in the required relocation of the inlet(s). Any required inlet relocations must be replaced with an equivalent TxDOT Houston District or Statewide standard inlet applicable for the inlet location and traffic conditions.
2. Inlet capacity calculations and ponding values must be computed to ensure the maximum ponded depth and width are not exceeded for the design storm event.

TxDOT Drainage System: Roadside Ditch

When the existing TxDOT drainage system is inclusive of roadside ditches, the proposed turn lane and resultant pavement widening causes an encroachment upon the TxDOT ditch, which reduces the ditch capacity and available volume. If unaddressed, this creates adverse hydraulic impacts, since the primary purpose of the TxDOT roadside ditch is to capture and convey roadway runoff to facilitate safe driving. Additionally, the available volume in the ditches is often utilized as detention volume to mitigate the TxDOT roadway. In order to address these impacts, the following are required:

1. Calculate existing ditch full-bank capacity (cubic feet per second) and available volume (acre-ft.).
2. Provide an equivalent or better capacity and volume in proposed conditions when compared to existing conditions.
3. Provide a ditch profile with both existing and proposed grade depicted and labeled.
4. Provide typical sections showing the existing and proposed lateral side slopes (labeled in a format of xH:1V), bottom width (as applicable), and depth. Please note the proposed ditch geometry must follow current TxDOT roadway design standards as defined in the TxDOT Roadway Design Manual (RDM). At the time of this document the latest TxDOT RDM is dated November 2024, and information can be located within Chapter 4 Basic Design Criteria.
5. Use the Average Area End Method to demonstrate that the existing conditions are met.
6. Include a note to the contractor to restore vegetation to existing conditions or better.