Safety in Design – Part I

Texas Department of Transportation

April 14, 2025

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RAID

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Design Support Branch

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Presenters

Texas Department of Transportation

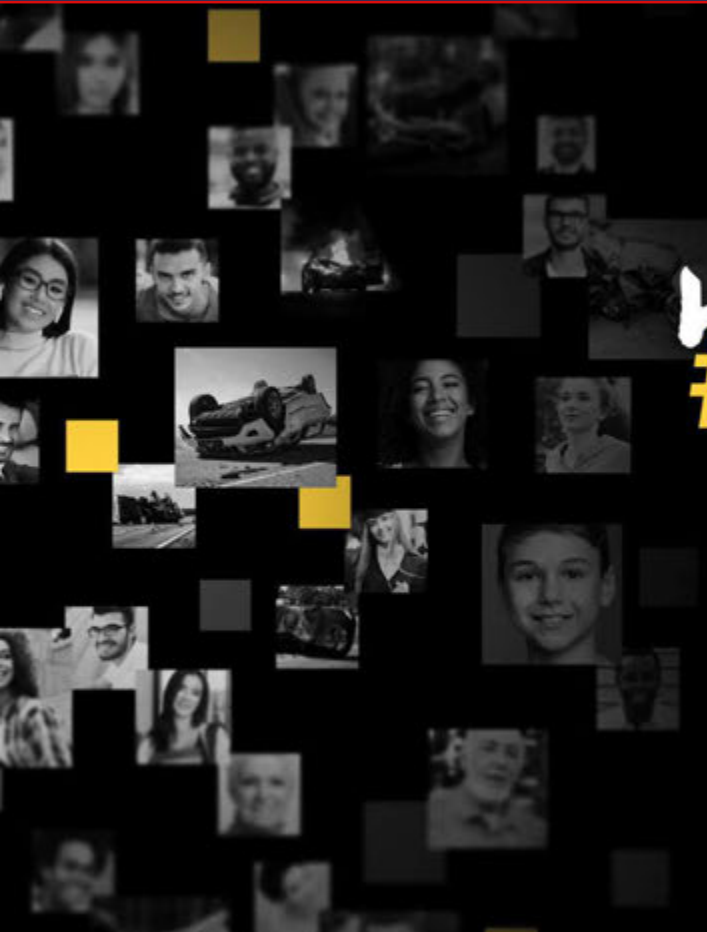
April 14, 2025

Intersection Control Evaluation (ICE)

Matthew Barland, P.E.

Texas Department of Transportation

April 25, 2025

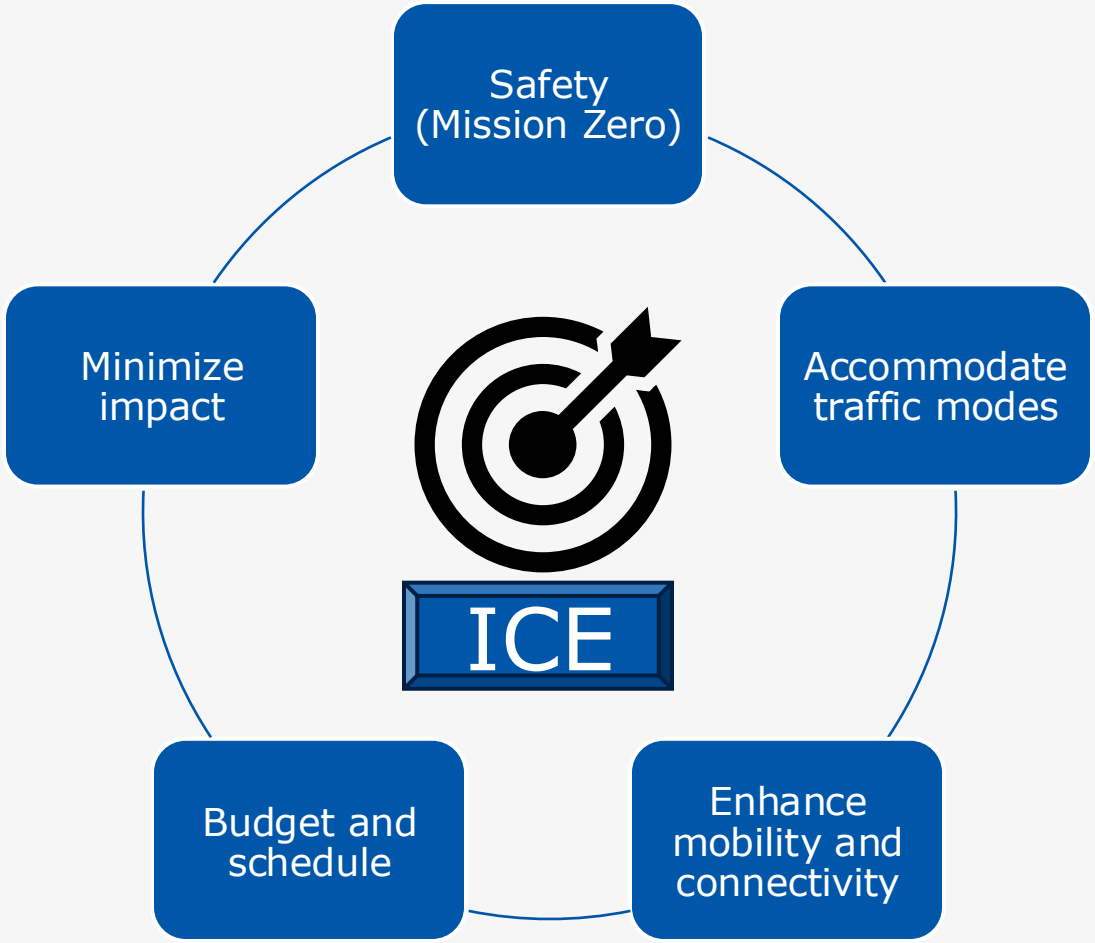


HELP

#EndTheStreakTX

End the streak of daily deaths on Texas roadways.

TxDOT.gov
#EndTheStreakTX Toolkit


Safety
(Mission Zero)
Accommodate
traffic modes
Enhance
mobility and
connectivity
Budget and
schedule
Minimize
impact
ICE

ICE

- A transparent process for the selection of intersection control type and ensures that intersection investments are implemented with defensible benefits for safety and congestion relief.
  - Stage 1 uses an operational analysis, safety evaluation and engineering judgement to help you narrow down your intersection selection.
  - Stage 2 uses more detailed analysis and evaluations while incorporating other considerations such as constructability, stake holder support and impacts to the surrounding area to finalize your intersection selection.

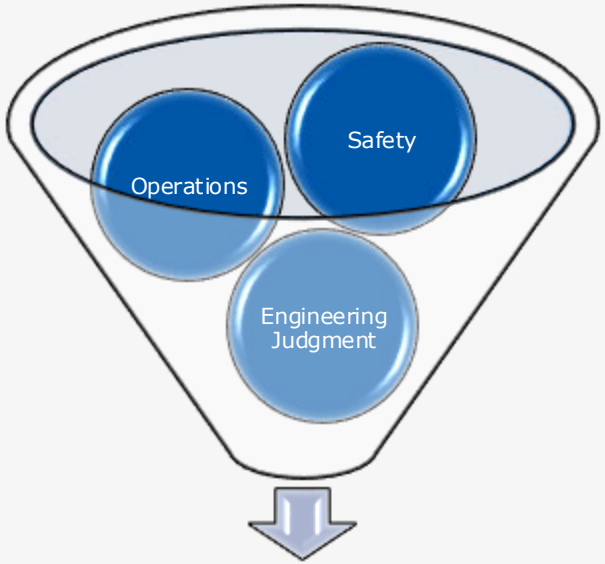
Innovative Intersections

- Roundabouts
- Continuous Green-T
- Median U-Turn (MUT)
- Restricted Crossing U-Turn (RCUT)
- Bowtie
- Displaced Left-Turn (DLT)
- Quadrant Roadway
- Diverging Diamond Interchange (DDI)
- Single-Point Urban Interchange (SPUI)
- Partial Displaced Left-Turn (DLT)
- Partial Median U-Turn (MUT)
- Split Intersection
- Single Point Interchange w/ Roundabout

ICE Stage 1

What do I need to start?

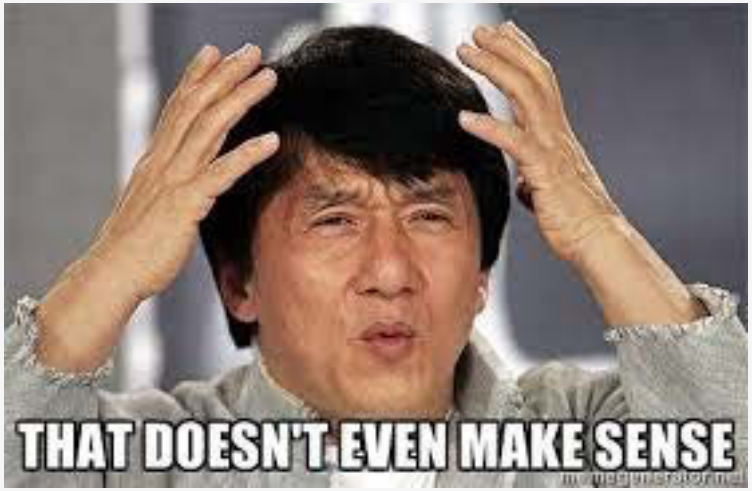
- Existing Configuration
- Turning Volumes
- ADT
- Crash Data
- Project Context



Stage 1 results

Engineering Judgment (Selecting Intersections)

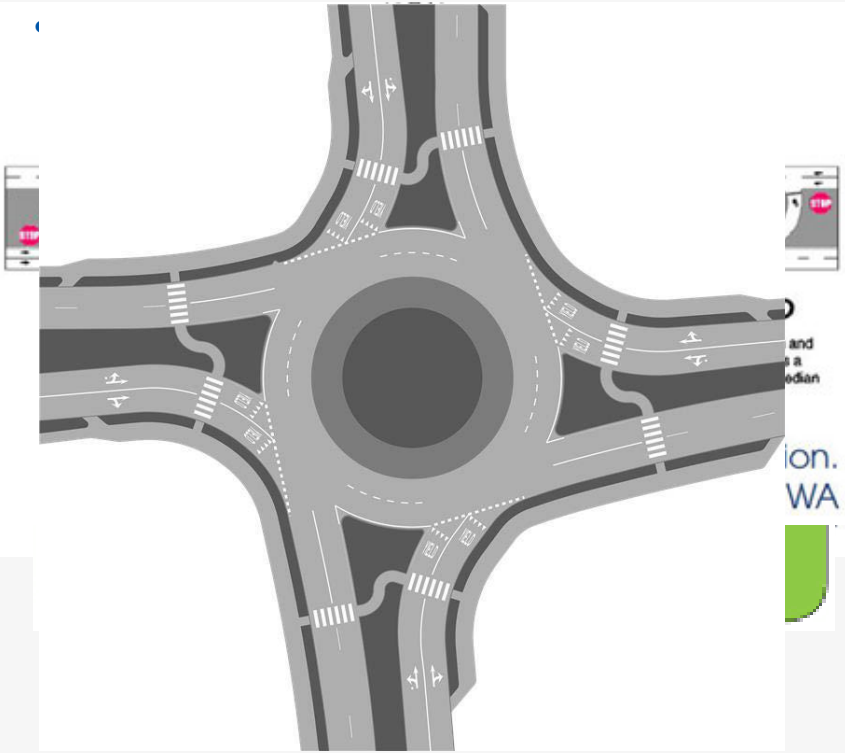
- What is the scope of the project?
- Is it feasible?
- Crash History?
- ROW?
- Public involvement?
- Environmental impact?



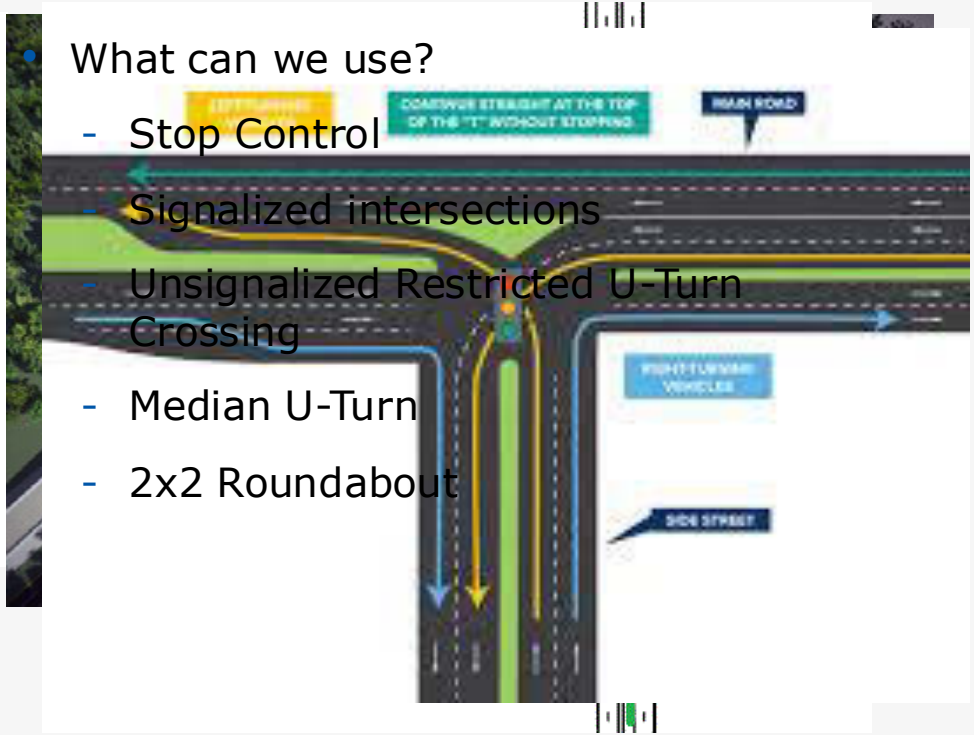
Matt's Intersection

- 4 Legs
- High Speed
- High crash and fatality rate (Left turning Movements).
- Proposed widening to 4 lanes in each direction.
- Existing Minor Road Stop

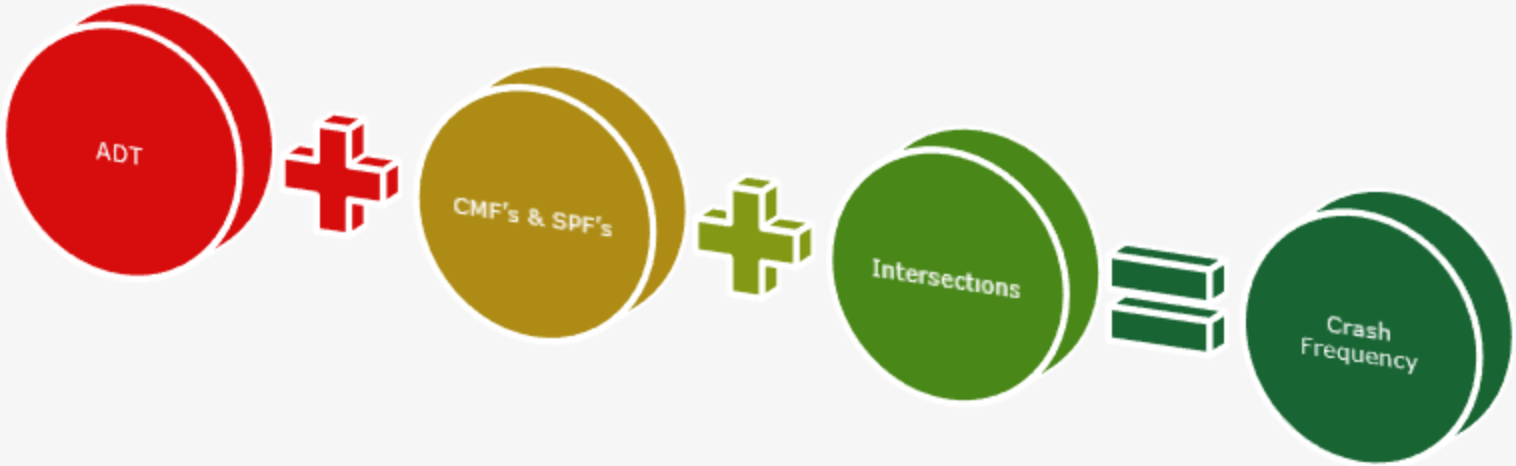
Matt's Intersection Selections



- What can we use?
  - Stop Control
  - Signalized intersections
  - Unsignalized Restricted U-Turn Crossing
  - Median U-Turn
  - 2x2 Roundabout



Safety: SPICE (Safety Performance for Intersection Control Evaluation)

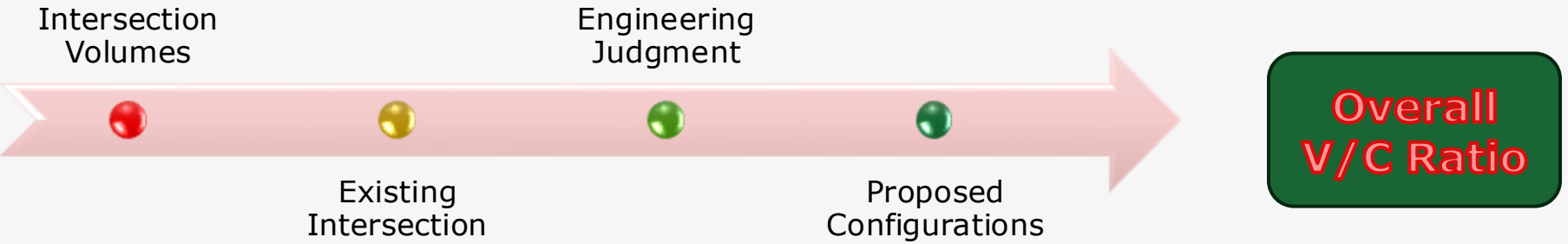


SPICE Results

- The results show how many crashes are predicted to occur within the opening year, the design year, and total life of the project.

Crash Prediction Summary				
Control Strategy	Crash Type	Opening Year	Design Year	Total Project Life Cycle
2-lane Roundabout	Total	1.18	1.58	37.28
	Fatal & Injury	0.19	0.27	6.20
All Way Stop	Total	No SPF	No SPF	No SPF
	Fatal & Injury	No SPF	No SPF	No SPF
Traffic Signal	Total	2.23	3.21	73.30
	Fatal & Injury	0.74	1.08	24.45
Median U-Turn (MUT)	Total	1.90	2.73	62.30
	Fatal & Injury	0.52	0.75	17.12
Unsignalized RCUT	Total	0.95	1.27	29.92
	Fatal & Injury	0.28	0.38	8.91

Operations: CAP X
(Capacity Analysis for Planning of Junctions)



CAP X Results

- The results show a V/C ratio along with PED and Bicycle accommodations.

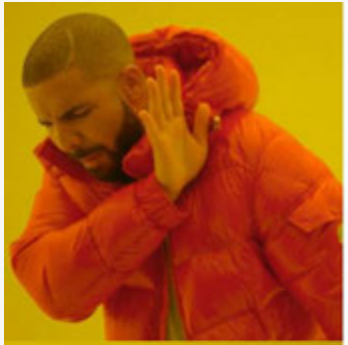
TYPE OF INTERSECTION	Overall V/C Ratio	V/C Ranking	Pedestrian Accommodations	Bicycle Accommodations
Traffic Signal	0.39	1	4.64	4.49
Median U-Turn N-S	0.49	2	4.32	4.49
2 X 2 Roundabout	0.50	3	4.64	4.33
Unsignalized Restricted Crossing U-Turn N-S	0.76	4	2.64	3.16
All-Way Stop Control	1.33	5	3.37	4.49

Limitations with SPICE and CAP X

- Uses default values (CMF's & SPF's).
- May have to analyze multiple times.
- Not all lane configurations are accounted for.
- Results are approximate (Planning Level).
- Remember these are guides.

Analyzing Results

- SPICE Results:
  - Lowest calculated crash frequency and severity. (multiple intersections)
- CAP X Results:
  - Intersections under 1.0 V/C ratio
- Single Viable, Safest Option?
- Selecting Intersections for Stage 2



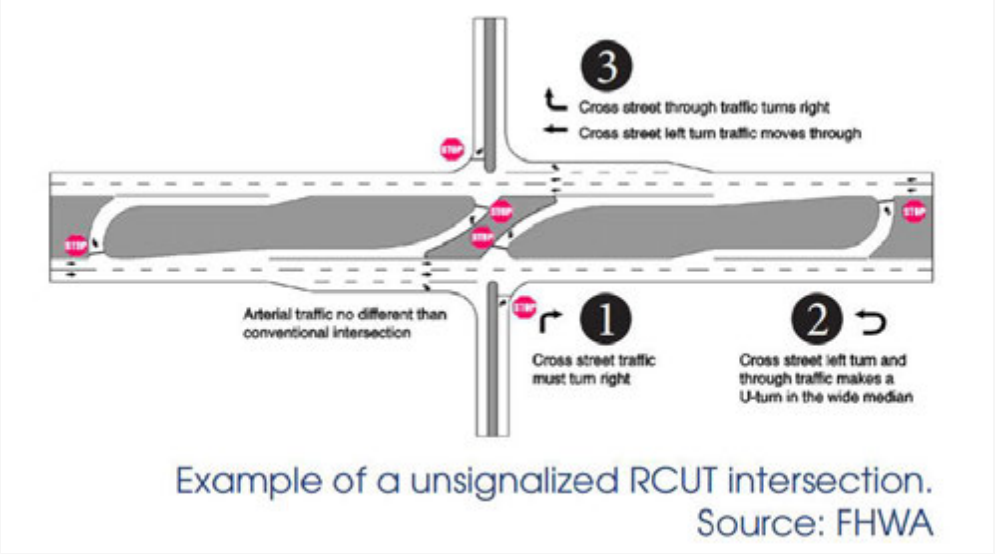
Selecting a single intersection based on operations.

Selecting multiple intersections with lowest fatal/serious crashes and low V/C ratios.

Analyzing Results of Matt's Intersection

TYPE OF INTERSECTION	Overall V/C Ratio	V/C Ranking	Pedestrian Accommodations	Bicycle Accommodations
Traffic Signal	0.39	1	4.64	4.49
Median U-Turn N-S	0.49	2	[illegible]	4.49
2 X 2 Roundabout	0.50	[illegible]	4.64	4.33
Unsignalize[illegible] Tu[illegible]	0.70	4	2.64	3.16
All-Way Stop Control	[illegible]	5	3.37	4.49

Analyzing Results of Matt's Intersection

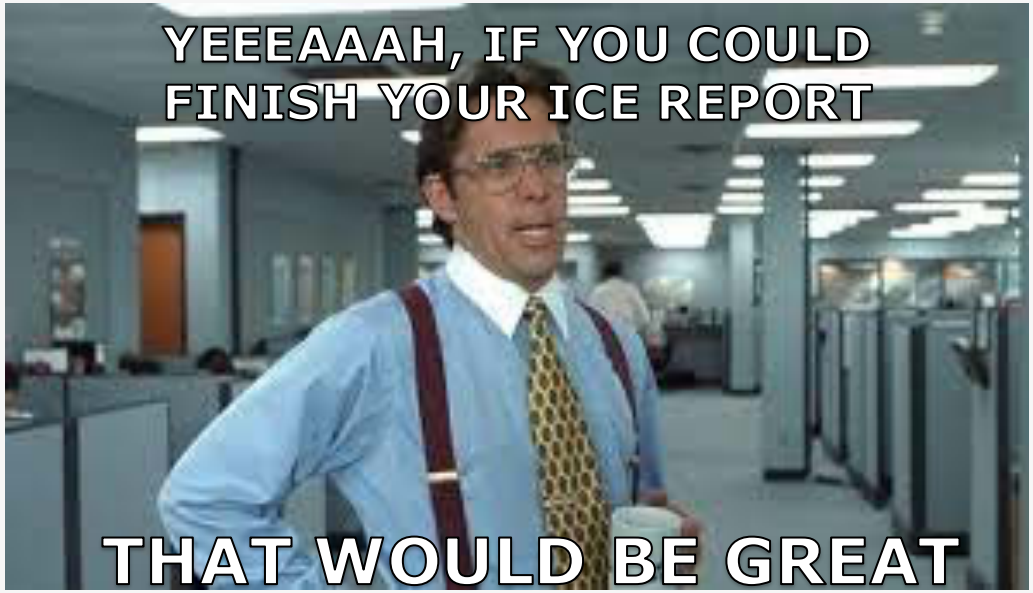


Example of a unsignalized RCUT intersection.
Source: FHWA

- Do I have a Single Viable/Safest Option?

ICE Stage 2 (As Needed)

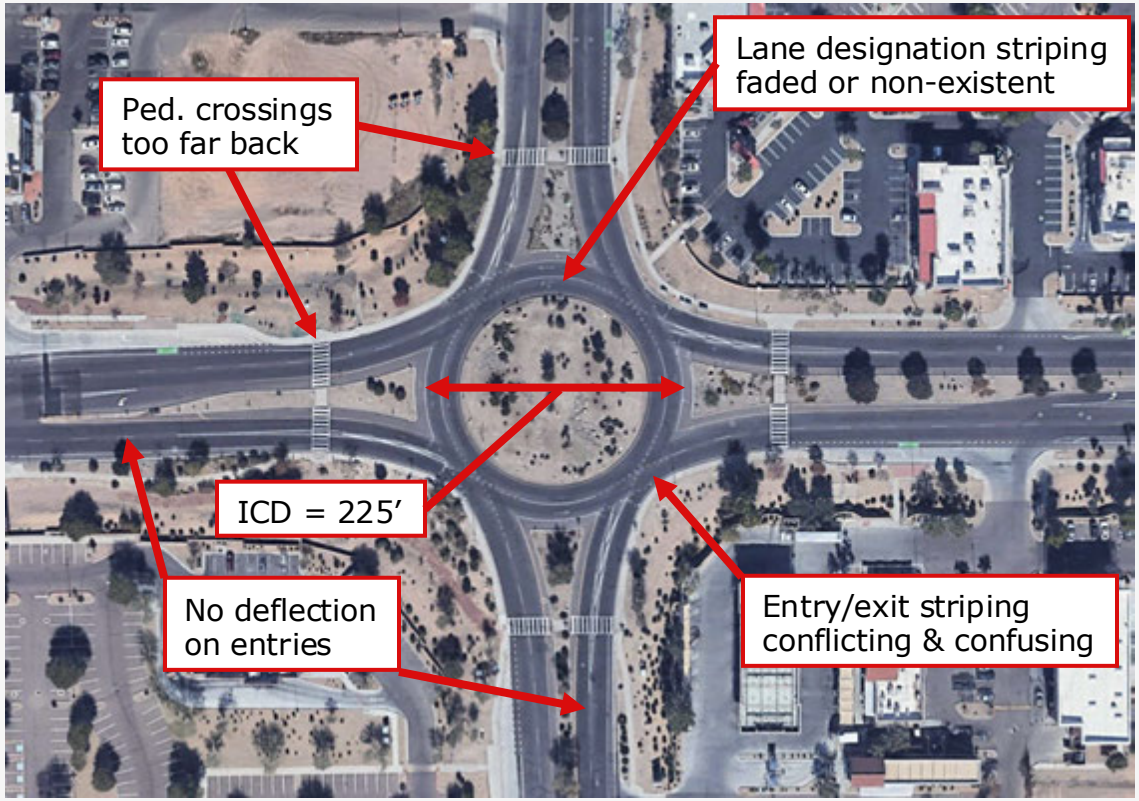
- Operational Analysis
- Ped & Bike Evaluations
- Detailed Safety Analysis
- Construction (Feasibility and Phasing)
- Life-Cycle Cost Analysis
- Env. Analysis
- Stake Holder Support
- Corridor Considerations (impacts to other intersections)
- Finish Ice Report



Design with Caution

- Be thoughtful
  - Do your research.
  - If you don’t know, ask.
  - Request a review.
- One stop shop software's
  - Too good to be true.
- What could go wrong?

What could go wrong?



TRAFFIC

Phoenix roundabout ranked riskiest intersection in the county

The Maricopa Association of Governments ranked 99th Avenue and Lower Buckeye Road the worst intersection after hundreds of crashes occurred there.

Author: Bianca Bueno
Published: 4:17 AM MST September 25, 2023
Updated: 6:41 AM MST September 25, 2023

PHOENIX — The riskiest intersection in Maricopa County comes in the form of a roundabout. According to the Maricopa Association of Governments, 99th Avenue and Lower Buckeye Road had more crashes from 2017 to 2021 than any other intersection.

From 2017 to 2021, there were 411 crashes at 99th Avenue and Lower Buckeye Road.

Resources

- Join the Community of Practice (Teams)
- Roadway Design Manual (RDM)
- Traffic & Safety Analysis Procedures Manual (TSAP)
- Design Aids: Intersection Control Evaluation (ICE)
- Contact us at: innovative.intersections@txdot.gov
- Class: June, September, December, PLN 600, PMD 600, DES 599

Questions

Access Control

Release of Access and Permit of Access

Stacy James, PE

April 14, 2025

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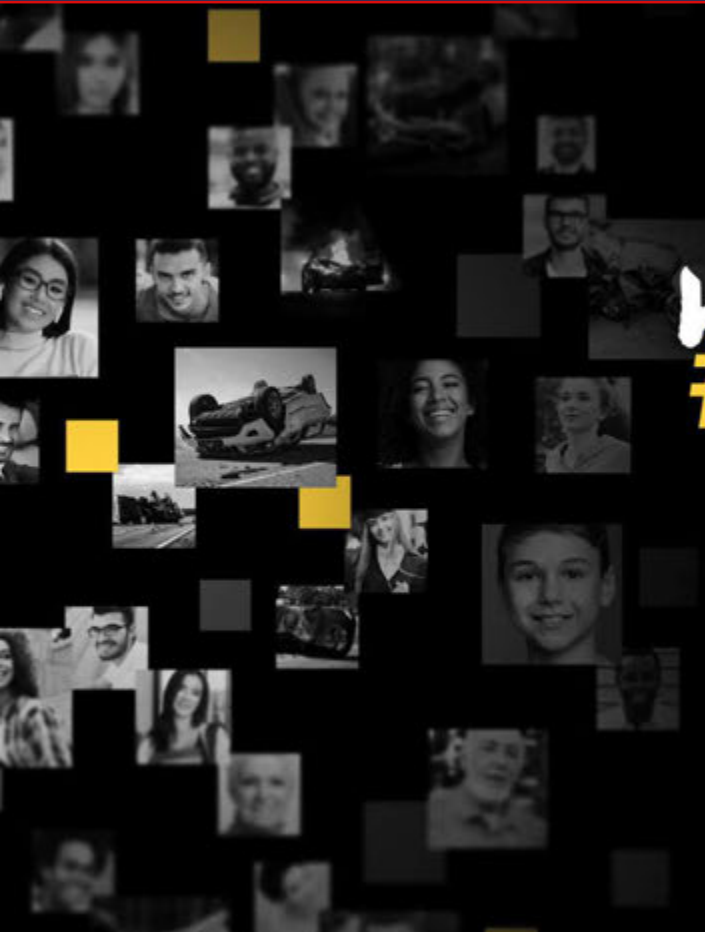
Control of Access Basics



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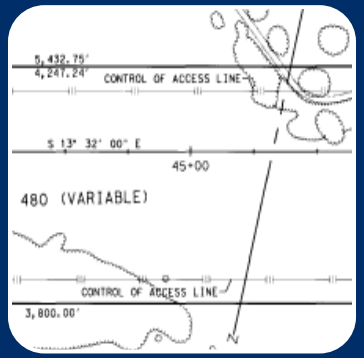


What is a Control of Access (COA) line?

- a line shown on a right of way map
- indicates locations where entry to and/or exit from the state highway to adjacent real property is not allowed
- may also be referred to as an Access Denial Line (ADL)

How does a COA line impact driveway permitting?

- Requestor submits a driveway permit
- District determines whether a COA line exists
- Requestor may choose to pursue release of access (ROA) or request a Permit of Access

Release of Access

What is release of access (ROA)?

- Formal process
- Changes the COA line
- Requires approval by Texas Transportation Commission

What are the different types of ROA?

- Compensation is required from the property owner
- Compensation is not required from the property owner

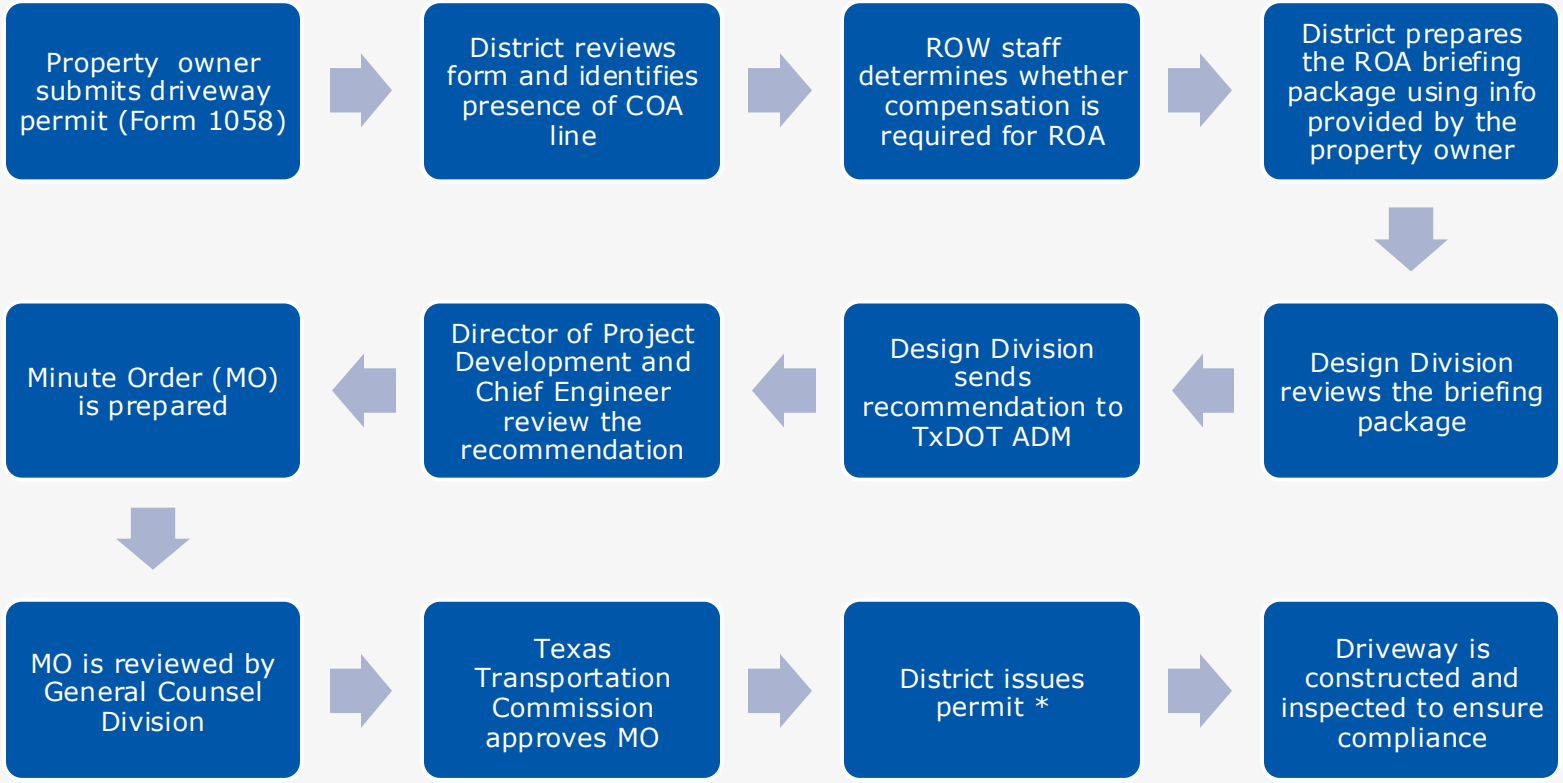
How is compensation determined?

- If TxDOT paid for access control during right of way acquisition, compensation is required
- Amount is based on a current appraisal

Who is involved in the ROA process?

- Property Owner / Developer
- District Staff
- Right of Way Attorney
- Design Division
- Director of Project Development
- Chief Engineer
- General Counsel Division
- Executive Director
- Texas Transportation Commission

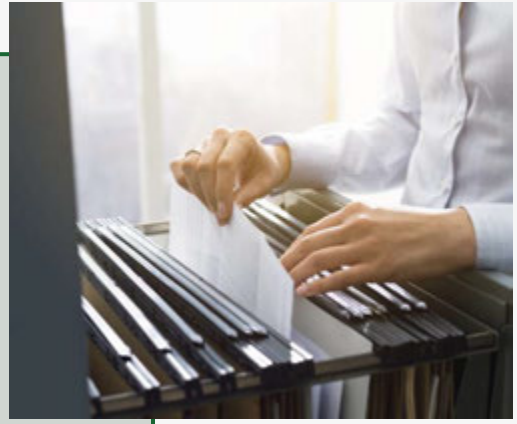
What is the ROA Process?



* If compensation is required, permit is issued only after funds are received by TxDOT

Documents needed for the ROA request process

- Briefing document
- Vicinity and site maps
- Pertinent engineering sheets
- Relevant correspondence
- Traffic Impact Analysis or other engineering study
- Draft driveway permit
- TxDOT right of way map and applicable deeds
- ROW's determination email
- Exhibit A (legal description and survey)



Additional documents that may be needed

- Determination of impact to tolled facility / tolling agreements
- Appraisal provided by Developer
- ROW approval of appraisal
- Donor agreement

Permit of Access

Permit of Access (POA)

Texas Transportation Commission approved minute order 116880 on January 30, 2025

- Added §11.59 to Texas Administrative Code (TAC)
- District Engineer may permit an adjoining landowner to access the state highway in locations where the department owns the access rights
- Requires the landowner to pay a permit fee based on the type of access being granted
- District Engineer’s denial of permit of access is final and not subject to appeal

Permit of access outcomes

District Engineer approves

- Owner pays permit fee and constructs driveway
- District inspects to ensure compliance

District Engineer denies

- Most likely reason for denial is because of safety concerns at the location
- There is no appeal process

Implementation of Permit of Access Process

- Minute Order approval
- Update Driveway Permit Form 1058
- Establish permit fees
- Develop procedure for evaluating requests
- Provide procedure and guidance to Districts

Comparison of ROA to POA

Comparison of ROA to POA

	Release of Access	Permit of Access
Initiated with a driveway permit	Yes	Yes
Requires a briefing package	Yes	No
Requires survey drawing & description	Yes	No
Requires appraisal to determine compensation amount	Y-if comp. required N-if comp. not required	No
Requires payment of permit fee	No	Yes
Requires District Engineer approval	No	Yes
Requires Commission approval	Yes	No
Conveys right of access	Yes	No
Time requirements	At least 2 months following receipt of the final briefing package	May be slightly longer than a driveway permit

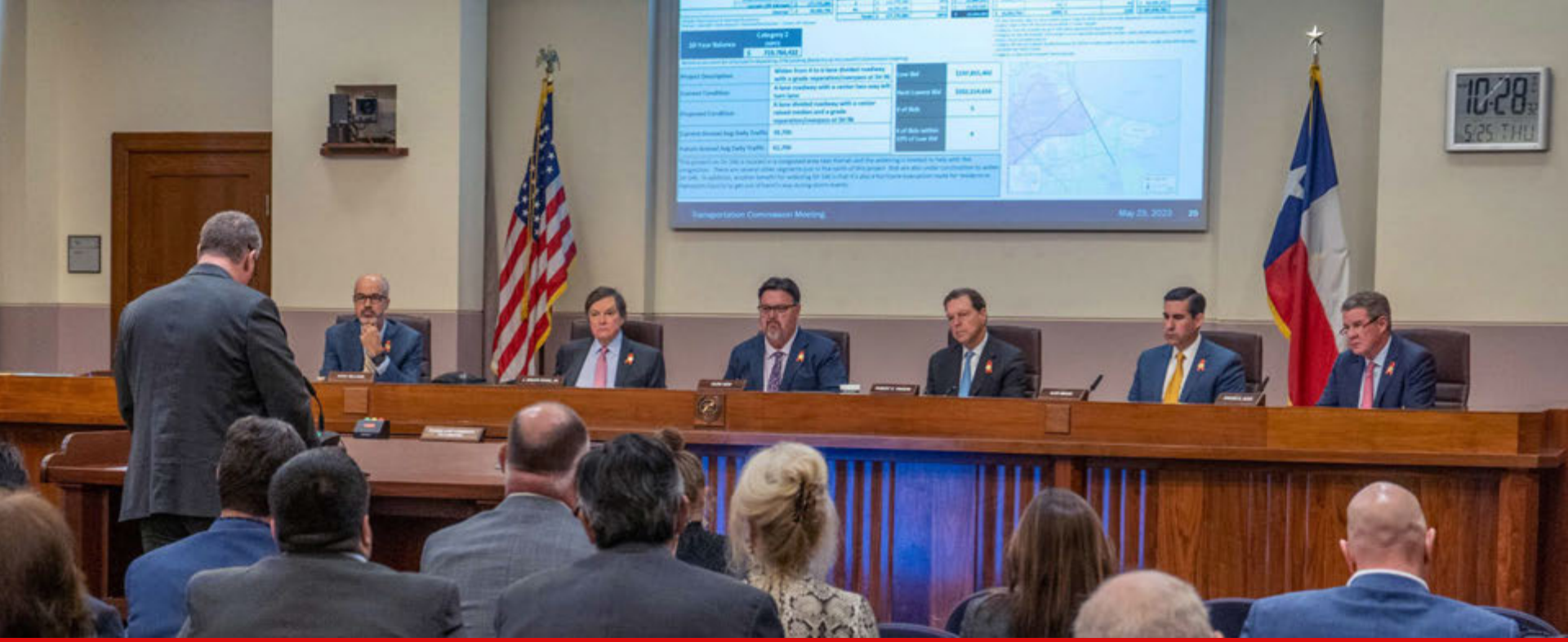
Resources

Resources

- Texas Administrative Code (TAC) Chapter 11, Subchapter C
- TxDOT Access Management Manual (AMM)
- TxDOT Roadway Design Manual (RDM)
- TxDOT Traffic and Safety Analysis Procedures (TSAP) Manual
- Driveway Permit Form 1058 (rev. 3/2025)
- Minor Traffic Engineering Studies and TIA Guidance Form 2534

Questions

Questions?



TxDOT Traffic Engineering Studies and Form 1058 updates

Design Division (PDS Section) – Ken Mora, P.E.

Texas Department of Transportation

April 14, 2025

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Overview

The Texas Department of Transportation (TxDOT) has introduced an updated Form 2534, Minor Traffic Engineering Studies, and Traffic Impact Analysis (TIA) guidance for use in the driveway permitting process.

The intent of this guidance, coupled with the release of the *TxDOT Traffic and Safety Analysis Procedures (TSAP) Manual*, will provide Districts with a more streamlined process to determine if a Traffic Engineering Study is needed, and the level of detail required.

Overview

Additionally, TxDOT has updated Form 1058 – Driveway Permit Form. The updated form has incorporated recent updates to the TAC and other updates to provide better guidance for the completion of the form.

These updated guidance and processes will also be incorporated into the *TxDOT Access Management Manual*.

TxDOT Traffic Engineering Studies MEMO-10/01/2024

MEMO

October 1, 2024

To: District Engineers

From: Jason Pike, P.E.
Director, Design Division

DocuSigned by:
Jason Pike
E92BE9CA47DD45A...

Subject: Driveway Permitting: Form 2534 and Traffic Engineering Studies, Including Traffic Impact Analyses (TIAs)

The Texas Department of Transportation (TxDOT) is introducing an updated Form 2534, Minor Traffic Engineering Studies, and Traffic Impact Analysis (TIA) guidance for use in the driveway permitting process. The intent of this guidance, coupled with the recent release of the *TxDOT Traffic and Safety Analysis Procedures (TSAP) Manual*, will provide Districts with a more streamlined process to determine if a Traffic Engineering Study is needed, and the level of detail required.

The respective TxDOT District will always maintain the discretion to require a greater or lesser amount of detail with respect to these analyses and/or adjust traffic volume thresholds based on their experience with specific types of traffic generators, the level of development and density in the area, and the resultant safety and operational and mitigation impacts. The traffic volume thresholds below are recommended values; the District maintains the discretion to either require or waive the 2534 Form, a Minor Traffic Engineering Study, or a TIA.

TxDOT Traffic Engineering Studies MEMO-10/01/2024

Early Coordination

As early as possible in the development process, applicants are encouraged to meet with the local TxDOT district staff, and the municipality (if applicable) to discuss specific requirements associated with obtaining access to the state highway system. This meeting, in addition to bringing all affected parties together regarding access connection issues, will also help to define the requirements of any needed traffic engineering study.

The implementation timeline for this updated guidance is 6 months to allow for a normalization process to allow Districts to integrate into their procedures and will also allow for additional outreach and information sharing. This normalization period is to extend through March 31, 2025. Districts may implement this guidance sooner if desired.

Benefits of Updated Process

- Provides additional guidance and streamlining to Districts that may not have fully developed processes for determining when a Traffic Engineering Study should be conducted.
- Establishes recommended thresholds for when a Traffic Engineering Study is needed; and allows Districts the Flexibility to adjust thresholds as needed due to their experience with specific trip generator types, as well as the context or land use type.
- Ties in with the release of the TxDOT TSAP Manual (Ch. 16).
- "Minor Traffic Engineering Study" is more in line with terminology and intent of 43 TAC 11.51.

Traffic Thresholds and Level of Assessment

Peak Period Trip Generation Range	Actions	Documentation
Less than 20 vehicles per day	Form 2534 not recommended	None
20 vehicles per day through 49 vehicles per hour (vph)	Form 2534 recommended, and No Minor Traffic Engineering Study or TIA are recommended	Approved Form 2534
50 vph– 99 vph	Minor Traffic Engineering Study (Tech. Memo) recommended	Approved Form 2534, and Minor Traffic Engineering Study
100 vph or greater	Major Traffic Engineering Study - TIA recommended	Approved Form 2534, and Reference TxDOT TSAP Manual Chapter 16 for TIA requirements

Form 2534 is Not Recommended:

- Driveway access and development that result in anticipated minimal trip generation (less than 20 vehicles per day) during the highest peak day period do not require the use of a 2534 Form.
- Examples may include a single residential development, single farm/ranch operation, or a utility maintenance access.

Form 2534 is Recommended:

- For proposed Commercial, multi-residential, and Industrial driveways, with anticipated 20 or greater vehicles per day, the Form 2534 provides an initial assessment from which a decision can be made:

  (1) about the access request;

  (2) about whether additional location specific information is needed; or

  (3) About whether a Minor Traffic Engineering Study (Technical Memorandum) or Traffic Impact Analysis (TIA) must be conducted.

- Use of the 2534 Form does not require an engineer's seal.

2534 Form - Traffic Engineering Study Checklist

- Form 2534 provides an initial assessment of the trips generated by the proposed site to determine if a Traffic Engineering Study is recommended, as well as the level of the study recommended.

LAND USE	ITE TGM Code	50 TRIPS per hour (approx.)	100 TRIPS per hour (approx.)
Single Family Detached Housing	210	48 (DU)	100 (DU)
Multifamily (Low Rise)	220	70 (DU)	185 (DU)
Multifamily (Mid Rise)	221	130 (DU)	255 (DU)
Multifamily (High Rise)	222	156 (DU)	310 (DU)
Strip Retail Plaza (< 40K GLA)	822	7,500 (SF)	15,200 (SF)
Fast Food Rest. with Drive Thru Window (GFA)	934	1,100 (SF)	2,250(SF)
General Office Building (GFA)	710	24,000 (SF)	55,000 (SF)
Gas Station w/ Convenience Store (Fueling Positions)	945	3 (Fueling Positions)	6 (Fueling Positions)
Warehousing (GFA)	150	277,500 (SF)	555,000 (SF)

Recommended Exempt from Minor Traffic Engineering Study:

- The data submitted in Form 2534 indicates the proposed development will generate fewer than 50 trips in the highest peak hour period.
- The District though maintains the discretion to request a Minor Traffic Engineering Study if they determine possible safety and/or operational issues.

Example 2534 Form with No further Traffic Engineering Study recommended

- Proposed All Suites Hotel with 100 rooms.
- 4 Lane Rdwy. w/ TWLTL; ADT 12,000; posted speed 45 mph.
- Single proposed driveway
- Use ITE Land Use Code 311 (All Suites Hotel) for Trip Generation.
- No assumed Internal Capture or Pass-by trips

Example with No further Traffic Engineering Study required

Date: 11-18-2024
Project Name: Xanadu Suites
Tracking Number (if applicable): 1234
Property Address/Location: 2525 FM 777, Topaz TX, 77777
District: Utopia
County: Longhorn
Hwy Name: FM 777
Project Description: Construction of Xanadu Suites with driveway access off of FM 777
Property Owner: AAA
Property Owner Address: BBB
Property Owner Email: CCC
Property Owner Phone No.: DDD

Applicant/Representative Name: EEE
Representative Firm (if applicable): FFF
Contact Address: GGG
Contact Phone No.: HHH **Contact Email:** III

Additional Comments:
One proposed driveway access off of FM 777, 1/3 mile west of Topaz Rd.

Example with No further Traffic Engineering Study required

Form 2534 (Rev. 09/24)
Page 3 of 6

Proposed Development Trips (Pass-by and Internal Capture Not Included)

			AM Peak Hour Trips			PM Peak Hour Trips			
ITE Land Use Code	Size	Daily Trips	Enter	Exit	Total	Enter	Exit	Total	+
311	100	404	18	16	34	18	18	36	−
									−
									−
									−

Existing Development Trips (Site Must be Operational)

			AM Peak Hour Trips			PM Peak Hour Trips			
ITE Land Use Code	Size	Daily Trips	Enter	Exit	Total	Enter	Exit	Total	+
									−
									−
									−
									−

Net Development Trips (Fill out only if different than Proposed Development Trips)

			AM Peak Hour Trips			PM Peak Hour Trips			
ITE Land Use Code	Size	Daily Trips	Enter	Exit	Total	Enter	Exit	Total	+
									−
									−
									−
									−

Example with No further Traffic Engineering Study required

Form 2534 (Rev. 09/24)
Page 4 of 6

Full Build Out Year

The full build out year should account for the development to be constructed and substantially occupied.

Build Out Year: 2026

Annual Growth Rate

Provide the annual growth rate(s) that will be used for the analysis and the methodology for obtaining it.

Annual Growth Rate: 2%

Methodology:
Statewide Planning Map

Adjustment Factor

Is an Adjustment Factor needed? ☐ Yes ☑ No

Provide the reason(s) for the adjustment factor and the methodology to determine the adjustment factor.

Adjustment Factor:

Methodology:

Methodology:

Phased Developments

Is the development going to be phased? ☐ Yes ☑ No

If so, how will it be phased?

Example with No further Traffic Engineering Study required

Form 2534 (Rev. 09/24)
Page 5 of 6

Site Access

Is your Site Plan attached? ☑ Yes ☐ No
Is your Aerial attached? ☑ Yes ☐ No

Identify driveway widths, driveway radii, and access connections spacing, and posted speed limit on the site plan.

How many access connections are being proposed?
One

What type of access is being requested (e.g., Full access, right-in/right-out)?
Full access

What type of access is being requested (e.g., Full ac
right-in/right-out)?

What is the Average Daily Traffic (ADT) for the adjacent roadway?
12,000

ADT can be found using TxDOT Statewide Planning Map and/or TxDOT STARS II:

Statewide Planning Map: Yes

TxDOT STARS II:

Planned Roadway Improvements

Have you reviewed the known TxDOT planned roadway improvements through Project Tracker? ☑ Yes ☐ No
Have you reviewed known non-TxDOT planned projects? ☑ Yes ☐ No

Identify all known local and TxDOT planned roadway improvements.
None

Example with No further Traffic Engineering Study required

Form 2534 (Rev. 09/24)
Page 6 of 6

For TxDOT District Use Only

Project Name: Xanadu Suites

Tracking Number: 1234

- [x] **An approved Form 2534 is required ONLY**
- [ ] **A Minor Traffic Engineering Study is required (See TxDOT Minor Traffic Engineering Study Technical Memorandum Format)**
- [ ] **A TIA is required (See TxDOT TSAP Manual Chapter 16 for guidelines)**
- [ ] **Rejected (See Additional Comments)**

Additional Comments:
FM 777 at this location is a 4 lane w/ Continuous left-turn lane with a 45 mph posted speed. The proposed driveway does not have sight distance issues and meets driveway spacing requirements from the Access Management Manual. Does not meet thresholds for consideration of a right-turn lane to property.

TxDOT Traffic Engineering Study Checklist Approver Signature

Date

Minor Traffic Engineering Study (Tech MEMO) is recommended:

- The data submitted in Form 2534 indicates the proposed development will generate between 50-99 trips in the highest peak hour period. In this case a Minor Traffic Engineering Study in the form of a technical memorandum would be recommended.
- The technical memorandum is required to be signed and sealed by a Professional Engineer licensed by the State of Texas.

Minor Traffic Engineering Study (Tech Memo format)

1. Introduction
2. Proposed Development
3. Existing Conditions
4. Projected Traffic
5. Trip Generation/Distribution
6. Traffic Operations Analysis (Capacity Analysis (LOS)) Results (If needed)
7. Sight Distance/Turn Lane Analysis
8. Signal Warrants (if needed)
9. Safety Analysis (Reference *TxDOT TSAP Manual* Chapters 5, 6, and 16.)
10. Conclusions and Recommendations
11. Appendices

Example Minor Traffic Engineering Study (Tech Memo)

Voigt Associates, Inc.
Professional Traffic Engineers
Texas Registered Firm F-5333

2631 Lakecrest Drive
Pearland, Texas 77584
832.264.0429
tony@voigtassociates.com

August 30, 2024

Ms. Yolci Ramirez, EIT
Traffic Engineer, Traffic Division
City of Pearland Engineering and Capital Projects
2016 Old Alvin Road
Pearland, Texas 77581

Through

Mr. Rudy Aldana, EIT
Project Engineer III
WGA Consulting Engineers, LLP
1020 NE Loop 410, Suite 800
San Antonio, TX 78209

RE: Traffic Engineering Assessment: 3250 South Sam Houston Parkway East Industrial Building, 3250 South Sam Houston Parkway East, Houston TX 77047 (City of Pearland)

Dear Ms. Ramirez,
Voigt Associates, Inc. is pleased to present this technical memorandum for a new industrial building at 3250 South Sam Houston Parkway East in the City of Pearland. The proposed development includes a single building with 133,000 square feet of space. Sole access will be via an existing driveway shared with the Syzygy Plasmotics building located about 1250' west of Fellows Road, so no new access is being proposed for the new industrial building development.

Site Location

Exhibit A1. Site Location Map.
Not to scale, north to top of page.

Site Layout on Aerial

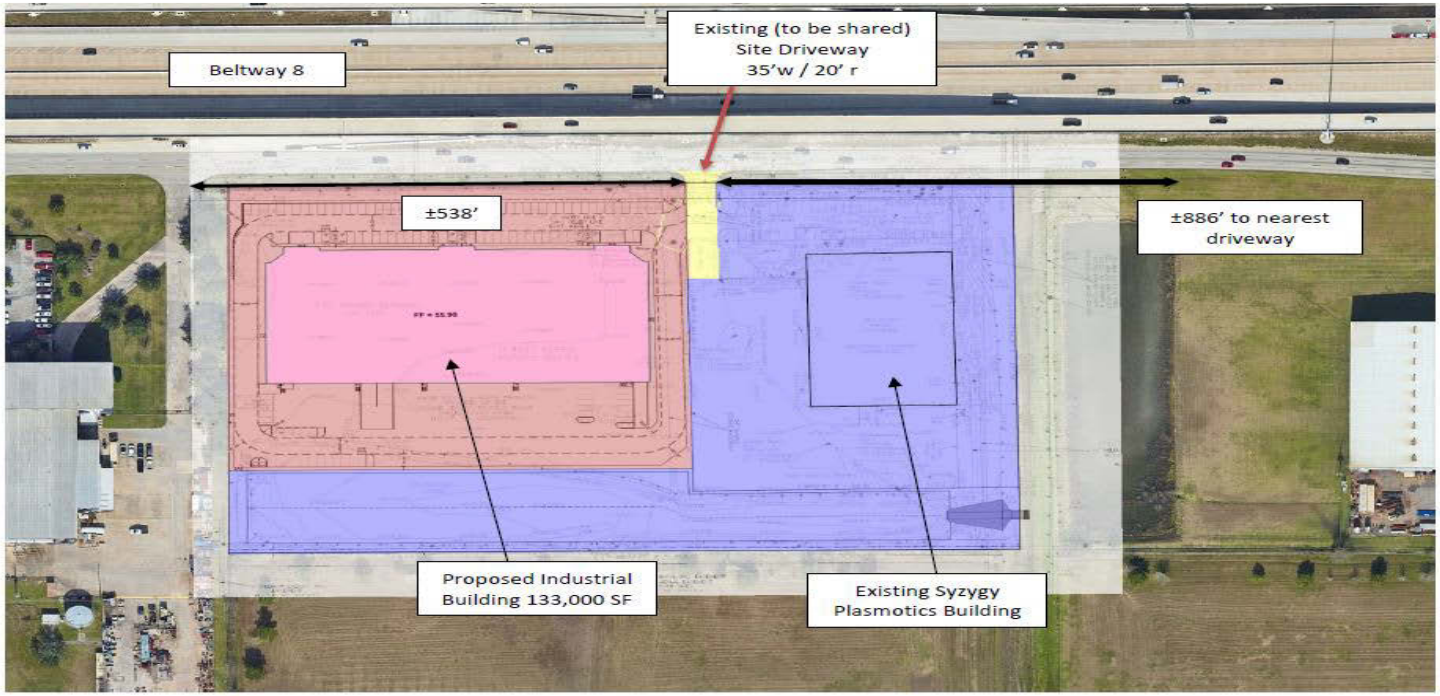


Exhibit A3. Site Layout on Aerial Image.
North to top of page, not to scale.

Street View

Photograph 1. South Sam Houston Parkway East
at Syzygy Plasmotics Driveway
(shared driveway with proposed development – to right)
Photograph Date: 9/2/2024

Key inputs

- Key Inputs
  - Beltway 8 Eastbound Frontage Road; 3 lanes; 50 mph posted speed
  - Change in driveway use; existing driveway to be shared with current Syzygy Plasmotics building
  - Proposed Industrial site – 133,000 sq. ft.
  - Existing driveway distance to adjacent driveways: 538 ft. west; 886 ft. east
  - Proposed estimated Construction late 2024; occupied late 2025
  - Existing driveway has 35 ft. width and 20 ft. radii.

Traffic Analyses & Trip Generation

- Existing Traffic: AM and PM Peak period video counts conducted on a Tuesday
- Growth rate: TxDOT nearby annual count data stations showed -2.34% from 2014 to 2025. 1% growth rate was then assumed from 2024 to 2025
- Trip Generation (proposed development): ITE Land Use #130 (Industrial Park) – AM Peak Hour: 46 vehicle trips, 37 entering, 9 exiting. PM Peak Hour: 45 vehicle trips, 10 entering, 35 exiting
- Projected Total 2025 Peak Hour turning movements at driveway:
    - AM Peak: Frontage thru – 1717 vph; right (into driveway) 52; right (out of driveway) 14
    - PM Peak: Frontage thru – 1834 vph; right (into driveway) 13; right (out of driveway) 62

Safety and Geometric Analyses

- **Crash History** at Site Driveway: CRIS data for 2021 to 2024 (current) indicates no crashes within 200 ft. of the existing driveway.
- **Geometric Analysis**: A turn path analysis indicates the entering or west radius needs to be increased to 30 ft. min. (35 ft. preferred) to accommodate possible WB-67 into the site. Limited number of large trucks are anticipated.

Conclusions and Recommendations

- The 52 vph peak slightly exceeds the 50 vph threshold for consideration of a right turn lane into the Site Driveway. Recommend no right turn lane due to the three-lane frontage road, and multiple underground utilities in the area. A variance to the requirement to provide a dedicated right turn lane is recommended.
- Increase the west turn radius to 30 ft. min to accommodate occasional WB-67 trucks.

TIA (Major Traffic Engineering Study) is Recommended:

- The data submitted in Form 2534 indicates the proposed development generates 100 trips or greater in the highest peak hour period. In this case a formal TIA would be recommended.
- The recommended level of detail and analysis (including safety analysis), checklist, outline, and examples for TIA's are provided in Chapter 16 and Appendix Q of the *TxDOT Traffic and Safety Analysis Procedures (TSAP) Manual.*
- The TIA is required to be signed and sealed by a Professional Engineer licensed by the State of Texas.

Major Traffic Engineering Study (TIA)

- Traffic Impact Analysis (TIA) is the study of the traffic generated by a proposed development and its impact on the nearby surrounding transportation system

Purpose and intended use

- Determine the ability of the surrounding transportation system to handle the change in demand of traffic introduced by a project
- Recommend improvements/mitigations if the existing infrastructure does not sufficiently support the increased traffic demand

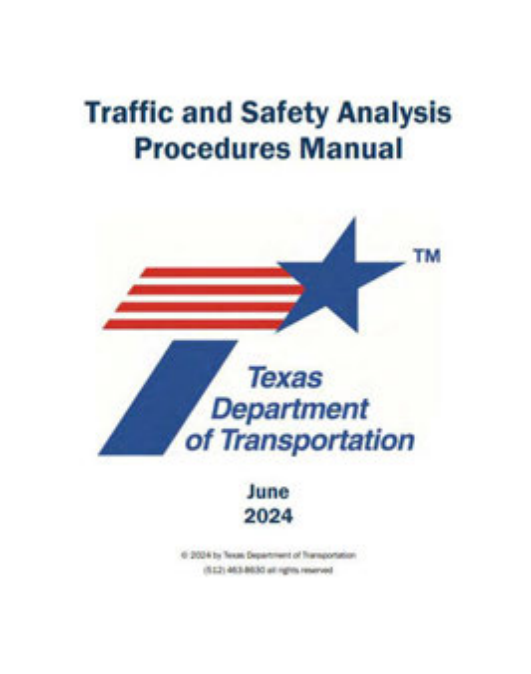
TIA Mitigation

- Any operational or safety deficiencies found in the future analysis are considered for mitigation. All mitigation is typically confirmed with the local TxDOT District. The developer is responsible for implementing the mitigation measures.
- Example Mitigation Improvements:
  - Right-turn decel. lanes, left-turn decel. lanes, lengthening of storage lanes
  - Directional Median Openings
  - Optimization of existing Traffic signals, or addition of new Traffic signals
  - Consideration of Alternative Intersections (e.g., roundabouts)

Figure: Example of raised median on SL 248 in El Paso

Safety Analysis in TIAs

- Review location of access points for safety considerations
- Evaluate that the design of external access points to account for bicycle and pedestrian safety
- Conduct crash analysis based on the past five calendar years
- Compare crash rates for the study area with statewide/municipality crash rates
- Identify crash reduction factors and safety countermeasures to mitigate key locations
- Conduct predictive crash analysis for buildout years



TIA Categories (TxDOT TSAP Manual, Chapter 16)

Table 16-1: TIA Categories

Categories	Peak Hour Trip Generation Range (veh/hr)	Additional Requirement	Analysis to Include
1	100-499	The TxDOT District can request a TIA if under 100 trips result from localized safety or capacity deficiencies.	• Buildout year of development • Ramps, roads, and intersections that are significantly impacted by development • Site access drives and intersections adjacent to site
2	500-1,000	NA	• Buildout year of development • Year of completion of each phase • Five years after full buildout • Ramps, roads, and intersections that are significantly impacted by development • Site access drives and intersections within 1 mile of the development
3	>1,000	NA	• Year of completion of each phase • Year of completion • Five years after full buildout • Ten years after full buildout • Ramps, roads, and intersections that are significantly impacted by development • Site access drives and intersections within 1 mile of the development

Note: Service drives, emergency drives, and other drives with minimal traffic are typically omitted. This table is adapted from TTI's Guidelines.

Updated Form 1058 – Driveway Permit Form (3/25)

- Added option to attach KMZ or KML to more easily identify driveway location.
- For permittee/family member relationship to TxDOT employee/official, added space for entering the name of employee/official.
- Clarification of Driveway Maintenance responsibilities.
- Updated time limit for null and void period from 6 months to one year.
- Clarification that variance request may be granted if justified.
- Reformatted to Provide "For TxDOT Use" on the last page of form.
- Clarification that a driveway involving an ADL does not have a right to appeal.

Updated Form 1058 – Driveway Permit Form (3/25)

Texas Department of Transportation

Permit to Construct Access Driveway Facilities on Highway Right of Way

Form 1058
(Rev. 03/25)
Page 1 of 3

PERMIT NUMBER:	TxDOT ENTER PERMIT NUMBER HERE		
	*** Attach kmz or kml file, OR**	**ROADWAY**	
REQUESTOR	**provide GPS Lat./Long.**	**HWY NAME**	
	30.25540701, -97.74494290	**FOR TxDOT'S USE**	
		CONTROL	4-DIGIT
NAME	ENTER YOUR FIRST AND LAST NAME HERE	**SECTION**	2-DIGIT EX. 01
MAILING ADDRESS	ENTER YOUR ADDRESS HERE		
CITY, STATE, ZIP	ENTER YOUR CITY, STATE AND ZIP HERE		
PHONE NUMBER	ENTER YOUR PHONE NUMBER HERE		
EMAIL ADDRESS	ENTER YOUR EMAIL ADDRESS HERE		

***LOCATION OR COORDINATES AT INTERSECTION OF DRIVEWAY CENTERLINE WITH ABUTTING ROADWAY**

The Texas Department of Transportation, hereinafter called the State, hereby authorizes _____, hereinafter called the Permittee (i.e., property owner) ☐ construct / ☐ reconstruct a _____ (residential, convenience store, retail mall, farm, etc.) access driveway on the highway right of way abutting highway number _____ in _____ County, located _____.

USE ADDITIONAL SHEETS AS NEEDED

Is this parcel in current litigation with the State of Texas? ☐ YES ☐ NO (If Yes, TxDOT will coordinate with District ROW Office.)

Is the Permittee or a family member of Permittee an employee or official of the Texas Department of Transportation? ☐ YES ☐ NO
(If Yes, name of employee or official _____

Does an employee or official of the Texas Department of Transportation serve as an employee or officer of Permittee or own a controlling interest in Permittee? ☐ YES ☐ NO (If Yes, name of employee or official _____

Updated Form 1058 – Driveway Permit Form (3/25)

Access Driveway Policy

Title 43 Texas Administrative Code (Transportation), Part 1 (Texas Department of Transportation) Chapter 11 (Design), Subchapter C (Access Connections To State Highways) and the "Access Management Manual" establish policy for the granting of access and the design, materials and construction of driveways connecting to state highways. All driveway facilities must follow this policy. To the extent there is any conflict between this permit and the policy, the policy shall control. If a proposed driveway does not comply with the access management standards, the owner may seek a variance to a requirement contained in the access management standards by contacting the local TxDOT office.

As to driveway permits that are issued under §11.59 of Subchapter C (Access Connections To State Highways), no rights of access are conveyed by issuance of a driveway permit. Issuance of a driveway permit under this section does not convey any property right, including a right of access to the highway facility. The department, in its sole discretion, may revoke a permit issued under this section on its determination that the access location is needed for a highway purpose. Such a revocation may not be the basis for any claim of a constitutional taking of property for the loss of access to the highway facility.

TxDOT Driveway Permit Request Contact

For a local contact for your TxDOT Driveway Permit Request or variance request, visit: http://www.txdot.gov/inside-txdot/district.html. You can select the respective District, and then select the District Contacts which will include the applicable Area Engineers.

Other Conditions

In addition to Items 1 thru 11 on page 1 of this permit, the driveway facility shall also be in accordance with the attached design sketch and subject to the following additional conditions stated below:

otherConditions

Variance Documentation Justification

(A variance to any requirement contained in the access management standards may be granted if justified in accordance with an item below and approved by the district engineer, or the district engineer's designee.)

For a Variance request, please indicate which of the below are applicable, as required by TAC §11.52(e):

- ☐ a significant negative impact to the owner's real property or its use will likely result from the denial of its request for the variance, including the loss of reasonable access to the property or undue hardship on a business located on the property.
- ☐ an unusual condition affecting the property exists that was not caused by the property owner and justifies the request for the variance.

For the conditions selected above, provide written justification below. (Attach additional sheets, if needed)

Updated Form 1058 – Driveway Permit Form (3/25)

For TXDOT use below:

For Variance denials, please indicate which of the below conditions, as provided in TAC §11.52(e), were determined:

☐ adversely affect the safety, design, construction, mobility, efficient operation, or maintenance of the highway; or

☐ likely impair the ability of the state or the department to receive funds for highway construction or maintenance from the federal government.

For driveway permits to be issued under TAC §11.59:
Is this driveway crossing an access denial line? ☐ YES ☐ NO

(If Yes, is this a ☐ private driveway or a ☐ commercial driveway?)

Private Driveway Fee: ☐ $250

Commercial Driveway Fee: ☐ $2,500 ☐ $10,000 ☐ $25,000

Date of Issuance of permit that crosses an access denial line	District Engineer Approval (No Delegation)
Date of Issuance of permit that does not cross an access denial line	District Engineer, or designee Approval
Date of Issuance as per Variance to AMM	District Engineer, or designee Approval
Date of Denial	District Engineer Denial (No Delegation)

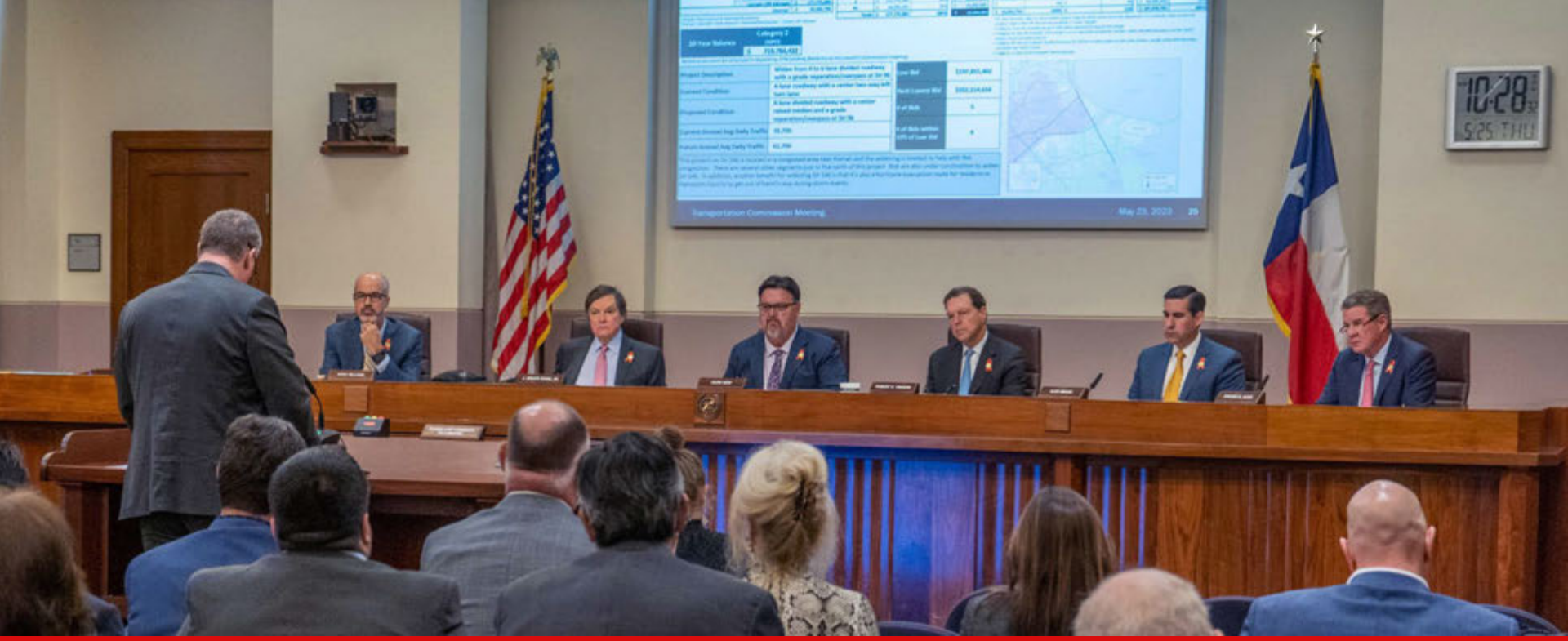
Permit Fee Requirements

- Type of Driveway determines permit fee:
  - Private Driveway: $250
  - Commercial Driveway: Based on the most recent unadjusted appraisal district valuation of the property.

Commercial Property Value ($)	Permit Fee ($)
Less than $500,000	$2,500
$500,000 - $1,999,999	$10,000
$2,000,000 or greater	$25,000

Closing comments

- Traffic Engineering Study Guidance: Districts have the Flexibility to adjust volume thresholds, as well as the Level or type of Traffic Engineering Study due to their experience with specific trip generator types, as well as the context or land use type.
- Ties in with the publication of the TxDOT TSAP Manual (Ch. 16).
- 1058 Form updated for additional clarity in completing, and recent updates to the TAC allowing District Engineers to approve permits over a denial of access line or in an area where TxDOT owns access rights.



Thank you, open for questions.

Design Division (PDS Section) – Ken Mora, P.E.

Texas Department of Transportation

April 14, 2025