# LATR Study Outline

Updated January 27, 2025

This document outlines the expected components of an LATR Study, including tables and sections. Following the outline makes submittals more consistent and easier to review.

Read the [LATR Guidelines](https://montgomeryplanning.org/planning/transportation/transportation-development-review/) to ensure compliance with all requirements. An LATR Study will not be reviewed until all documents are submitted and requirements are met.

**LATR Study Outline**

Executive Summary

1. Project Overview
2. Vision Zero
3. Non-Motor Adequacy
4. Motor Vehicle Adequacy
5. Mitigation

Appendices

## Executive Summary

1. Concise summary of the proposed project
   * Units/Square Footages Proposed
   * Net New Trips Summary Table. See ***Example Table 1***.
2. Overview of Study Scope with summary of each modal test findings. See ***Example Table 2***.
3. Identify Proportionality Guide amount, if applicable
4. Table and map of proposed prioritized mitigation projects to address inadequacies. See ***Example******Table******3***.

|  |
| --- |
| Example Table 1. Net New Trips Summary |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | Land Use | Land Use Code | Units or Square Feet | Peak Hour Motor  Vehicle Trips | | Daily Motor Vehicle Trips |
| AM | PM |
| **Existing Use** | Strip Retail Plaza (<40k) | 822 | 30,000 SF | 70 | 168 | 991 |
| **Proposed Use** | Multifamily Housing (Mid-Rise) | 221 | 300 units | 116 | 113 | 954 |
| General Office Building | 710 | 40,000 SF | 74 | 76 | 536 |
| ***Net New Trips*** | | | | **+120** | **+21** | **+499** |

|  |
| --- |
| Example Table 2. LATR Study Findings Summary |

|  |  |  |  |
| --- | --- | --- | --- |
| **Adequacy** | | **Study Area** | **Summary of Findings** |
| **Vision Zero** | Speed Studies | Maximum 2 speed studies within 400’ of site | Conducted one speed study on Street A between Avenue X and Avenue Y. Speed was within an acceptable range. |
| **Non-Motor Vehicle** | PLOC | 400’ | Street A has no street buffer between the sidewalk and roadway. All other roadways are adequate. |
| Illuminance | 400’ | Street A (south side) between driveway and study area boundary has inadequate lighting. All other areas are adequate. |
| ADA | 200’ | Two inadequate curb ramps. All other areas are adequate. |
| Bicycle | 750’ | Street B has a high speed limit with an on-street striped bike lane. All other roads are adequate. |
| Bus Transit | 1000’ | One bus stop on Street D (mid-block, north side) without a pad, shelter, or other amenities. |
| **Motor Vehicle** | HCM | 1 intersection tier,  2 intersections and site driveway | One intersection (Street A/ Street B) operates above the standard in the future condition. |

| Example Table 3. Proposed Mitigations |
| --- |

| ID | Location | Adequacy Type | Inadequacy Description | Recommended Mitigation | Linear Feet | Cost Estimate |
| --- | --- | --- | --- | --- | --- | --- |
| A1 | Street A/C intersection, NS crossing, NE corner | ADA | Curb ramp  exceeds cross slope | Remove and replace curb to meet ADA standard for crossing slope | N/A | $ X,XXX |
| L1 | Street A  (south side) between driveway and study area boundary | Illuminance | Deficient illuminance levels | Add 1 streetlight | N/A | $ X,XXX |
| B1 | Street B  (east side) between Street A and Street D | Bicycle | Segment has a high speed limit with an on-street striped bike lane | Construct a two-way separated bike lane with transitions at both ends to the existing bike lane | 350 | $ X,XXX |
| T1 | Street D  (north side), mid-block | Bus Transit | Flag bus stop without a pad or shelter | Construct a bus shelter and bus pad | N/A | $ X,XXX |

## Project Information

1. Concise summary of the proposed project (1-2 paragraphs: This should cover land use, unit count, square footage, project phasing, applicable zoning/subdivision regulations, transportation policy area (name and color), and Complete Streets Area Type)
2. Existing use & prior approval (1-2 paragraphs: Outline the current uses of the site, including land use categories, unit count or square footage, site activities, construction year, and any other pertinent details. Note any prior approvals or proposals.)
3. Net new motor vehicle trip table. See ***Example Table 1***.
4. Site access description (1-2 paragraphs: Describe proposed site access points for all modes. Include roadway frontages, point(s) of access and roadway ownership. Include graphics showing curb cut locations (proposed and existing), access controls (e.g., right-in/out, signalized), connections between parcels, internal movement, private roads, parking/loading areas, and other site access details.)
5. Map of project site (not a point, a boundary).
6. List of programmed transportation projects and corresponding map, if applicable. ***Example Table 4***.

Example Table 4. Programmed Conditions

| ID | Project Name | CIP Project ID or Development Plan Number(s) | Anticipated Construction Year | | Project Description | Project Status |
| --- | --- | --- | --- | --- | --- | --- |
| C1 | Bikeway and Safety Improvement #1 | P##### | | 2026 | Pedestrian and bicycle improvements for dual bicycle facilities and enhanced continuous pedestrian facilities along Street D from Street A to Street E | Preliminary Design Stage |
| C2 | ADA Improvement #1 | 12023### | | 2029 | Remove and replace broken curb ramp at Street A/C intersection, EW crossing, SE corner | Site Plan Approved |

## LATR Vision Zero Statement

1. Brief Summary of Speed Studies (2-3 paragraphs: Include roadways and their posted speeds and a summary of the methodology)
2. Map of speed study locations
3. Table of observed speeds (See ***Example Table 5***)
4. Brief discussion of potential solutions, if applicable (1-2 paragraphs)

| Example Table 5. Speed Study Summary |
| --- |

| Location | Direction | Posted Speed Limit | 50th Percentile Speed | 85th Percentile Speed | 10-mile per hour Pace | Speed Limit Exceeded by 20% (Y or N) |
| --- | --- | --- | --- | --- | --- | --- |
| Street A, mid-bock | NB | 35 | 35 | 38 | 30-40 | No |

## Non-Motor Vehicle System Adequacy

1. Table listing any inadequacies identified in the non-motor vehicle system adequacy assessment (PLOC, Illuminance, ADA, Bicycle, and Bus Transit) with rows corresponding to locations in the maps, and columns that include the information shown in the ***Example Table 6.***
2. For each component, a map depicting the project site showing:
   * The network distance study area for the component.
   * A buffer from the property boundary equal to the network distance.
   * Any programmed conditions, labeled or marked with a numeric identifier.
   * Any inadequacies for that component, marked with a numeric identifier.

Example Table 6. Non-Motor Vehicle Inadequacies

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| ID | Location Description | Adequacy Type and Existing  Condition | Proposed Mitigation | Linear Feet | Feasible to Implement (Yes or No) | Notes on Feasibility (ROW with plat #, etc.) | Estimated Mitigation Cost |
| P1 | Street A  (north side) | PLOC: Segment  4-foot sidewalk with no buffer | Widen sidewalk to 6-feet and widen street buffer to 6-feet. | 500 | No | No additional ROW. Plat #XXXX | N/A |
| P2 | Street A,  mid-block crossing | PLOC: Crossing  No marked crossing, but identified on PLOC map as a crossing location | Construct bulb-outs and stripe high visibility crosswalk. | 25 | Yes | N/A | $X,XXX |
| L1 | Street A (south side) between driveway and study area boundary | Illuminance  Inadequate lighting levels | Add 1 streetlight | N/A | Yes | N/A | $ X,XXX |
| A1 | Street A/C intersection,  NS crossing,  NE corner | ADA: Curb ramp  Curb ramp exceeds cross-slope | Remove and replace curb to meet ADA standard for crossing slope | N/A | Yes | N/A | $X,XXX |
| A2 | Street A/B intersection,  NS crossing, NE corner | ADA: Curb ramp  Broken curb ramp with no DWS | Reconstruct the curb ramp and add DWS | N/A | Yes | N/A | $ X,XXX |
| B1 | Street B (east side) between Street A and Street D | Bicycle  Segment has a high speed limit with an on-street striped bike lane | Construct a two-way separated bike lane with transitions at both ends to the existing bike lane. | 350 | Yes | ROW available. See Plat #XXXX | $ X,XXX |
| T1 | Street D (north side), mid-block | Bus Transit  Flag bus stop without a pad or shelter | Construct a bus shelter and bus pad | N/A | Yes | ROW available. See Plat #XXXX | $ X,XXX |

## Motor Vehicle System Assessment (if applicable)

1. Map and list of study intersections.
2. Summary table of multimodal counts (motor vehicle, bicycle, pedestrian) for study intersections.
3. Pipeline developments (map and table). See ***Example Table 7*.**
4. Concise summary of analysis methods and inputs, including site trip distribution, site trip assignment, CLV/HCM, and any additional analysis requested (queuing, gap analysis, etc.).
5. Summary table of vehicular analysis highlighting any intersections above the delay standard. See ***Example Table 8*.**
6. Map of intersections above the delay standard, if applicable.
7. Table and map of proposed mitigations. See ***Example Table 9***.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Example Table 7. Pipeline Development | | | | | | | |
| ID | Development Name | Development  Plan Number(s) | Number of Residential Units | Non-Residential Square Footage | AM Peak Hour Vehicle Trips | PM Peak Hour Vehicle Trips |
| D1 | Pipeline Development #1 | 12023### | 400 multifamily (mid-rise) | 5,000 | 165 | 241 |

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Example Table 8. Motor Vehicle Analysis Summary Table | | | | | | | | | |
| ID | Intersection | Signalized or Unsignalized | Delay Standard  (CLV or HCM) | Existing Conditions | | Future Background Conditions | | Total Future Conditions | |
| AM | PM | AM | PM | AM | PM |
| M1 | Street A / Street B | Signalized | HCM, 80 sec./veh. | 40 | 65 | 60 | 75 | 67 | 85 |
| M2 | Street A / Street C | Signalized | HCM, 80 sec./veh. | 30 | 40 | 50 | 55 | 60 | 68 |

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Example Table 9. Proposed Motor Vehicle Mitigation | | | | | | | | | |
| ID | Intersection | Signalized or Unsignalized | Inadequacy | Proposed Mitigation | | Conditions After Mitigation (HCM) (AM) | | Total Future Conditions After Mitigation (HCM) | |
| AM | PM |
| M1 | Street A / Street B | Signalized | Operates above the delay standard of HCM, 80 sec./veh. | 40 | 65 | 60 | 75 | 67 | 75 |

## Mitigation (if applicable)

1. Proportionality Guide calculation and amount.
2. Summary of off-site mitigation considerations.
3. A prioritized list of proposed off-site mitigations with cost estimates (table and map). See ***Example Table 10*.**
4. A prioritized list of alternate (“back up”) mitigation projects. See ***Example Table 11*.**
   * If proposing a mitigation payment, provide justification.

| Example Table 10. Proposed Mitigations |
| --- |

| ID | Location | Adequacy Type | Inadequacy Description | Recommended Mitigation | Linear Feet | Cost Estimate |
| --- | --- | --- | --- | --- | --- | --- |
| A1 | Street A/C intersection, NS crossing, NE corner | ADA: Curb ramp | Curb ramp  exceeds cross slope | Remove and replace curb to meet ADA standard for crossing slope | N/A | $ X,XXX |
| L1 | Street A  (south side) between driveway and study area boundary | Illuminance | Inadequate lighting levels | Add 1 streetlight | N/A | $ X,XXX |
| B1 | Street B  (east side) between Street A and Street D | Bicycle | Segment has a high speed limit with an on-street striped bike lane | Construct a two-way separated bike lane with transitions at both ends to the existing bike lane | 350 | $ X,XXX |
| T1 | Street D  (north side), mid-block | Bus Transit | Flag bus stop without a pad or shelter | Construct a bus shelter and bus pad | N/A | $ X,XXX |

| Example Table 11. Proposed Alternate Mitigations |
| --- |

| ID | Location | Adequacy Type | Inadequacy Description | Recommended Mitigation | Linear Feet | Cost Estimate |
| --- | --- | --- | --- | --- | --- | --- |
| A2 | Street A/B intersection,  NS crossing, NE corner | ADA: Curb ramp | Broken curb ramp with no DWS | Reconstruct the curb ramp and add DWS | N/A | N/A |
| P2 | Street A, mid-block crossing | PLOC: Crossing | Unmarked crossing | Construct bulb-outs and stripe high visibility crosswalk. | 25 | $X,XXX |

## Appendices

* 1. Approved *Transportation Adequacy Form*
  2. LATR Study Checklist
  3. LATR Study review fee receipt (proof of payment)
  4. Detailed project trip generation (including initial ITE outputs, reductions, Policy Area Adjustment Factors, and trip credits)
  5. Speed study data
  6. ADA compliance survey data
  7. Illuminance adequacy photometric plan sheet, legend, and tables (existing and proposed conditions) See information on illuminance and streetlighting on Montgomery Planning’s [webpage](https://montgomeryplanning.org/planning/transportation/transportation-development-review/).
  8. Cost estimates and associated 10% design, if applicable

**For projects with motor vehicle assessments:**

* 1. Multimodal intersection count data
  2. Pipeline project trip generation, distribution, and assignment figures (if applicable)
  3. Site vehicle trip distribution and assignment figures
  4. CLV Results (if applicable)
  5. HCM Results (if applicable)

**Other analysis:**

* 1. Queuing reports (if applicable)
  2. Signal warrant analysis (if applicable)
  3. Weaving/merge analysis (if applicable)

**Notes**

* **Read the** [**LATR Guidelines**](https://montgomeryplanning.org/planning/transportation/transportation-development-review/) **to ensure compliance with all requirements.**
* Send traffic model files (Synchro, VISSIM, SimTraffic etc.) to MCDOT and SHA, when applicable.
* Send an electronic copy of the LATR Study and appendices to Planning staff via [transportation.review@montgomeryplanning.org](mailto:transportation.review@montgomeryplanning.org).
* **An LATR Study will not be reviewed until all documents are submitted and requirements are met.**