

Nashville Department of Transportation and Multimodal Infrastructure

Existing Assessment and Best Practice Review for Access Management

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1. INTRODUCTION

The Nashville Department of Transportation and Multimodal Infrastructure (NDOT) is developing a new **Access Management Manual** to establish a comprehensive policy that aligns with its mission: building and maintaining a safe, reliable, and multimodal transportation network that enhances the quality of life and economic prosperity in Davidson County.

This Manual is designed to achieve the following goals:

1. Ensure appropriate access management strategies are implemented when land is developed.
2. Reduce conflict points and improve safety for all road users to align with Vision Zero goals.
3. Integrate with the existing transportation plans and policies of Metro Nashville and NDOT.
4. Serve as a design resource of best practices for Metro led projects.

A key component of this initiative is a detailed review of policy frameworks and best practices from peer cities. This includes:

1. Analyzing the current access management landscape in Davidson County through focus groups with varied stakeholders.
2. Reviewing national best practice resources on access management.
3. Examining five peer jurisdictions known for innovative and effective access management practices.
4. Reviewing access management legislation from other major cities in Tennessee.

The following sections of this memo summarize the findings of the best practice review.

2. FOCUS GROUPS

To gain a holistic understanding of access management needs within Davidson County, the project team met with several focus groups internal to Metro Nashville. The six main focus group sessions and the access management needs of each group are shown in **Figure 1**.



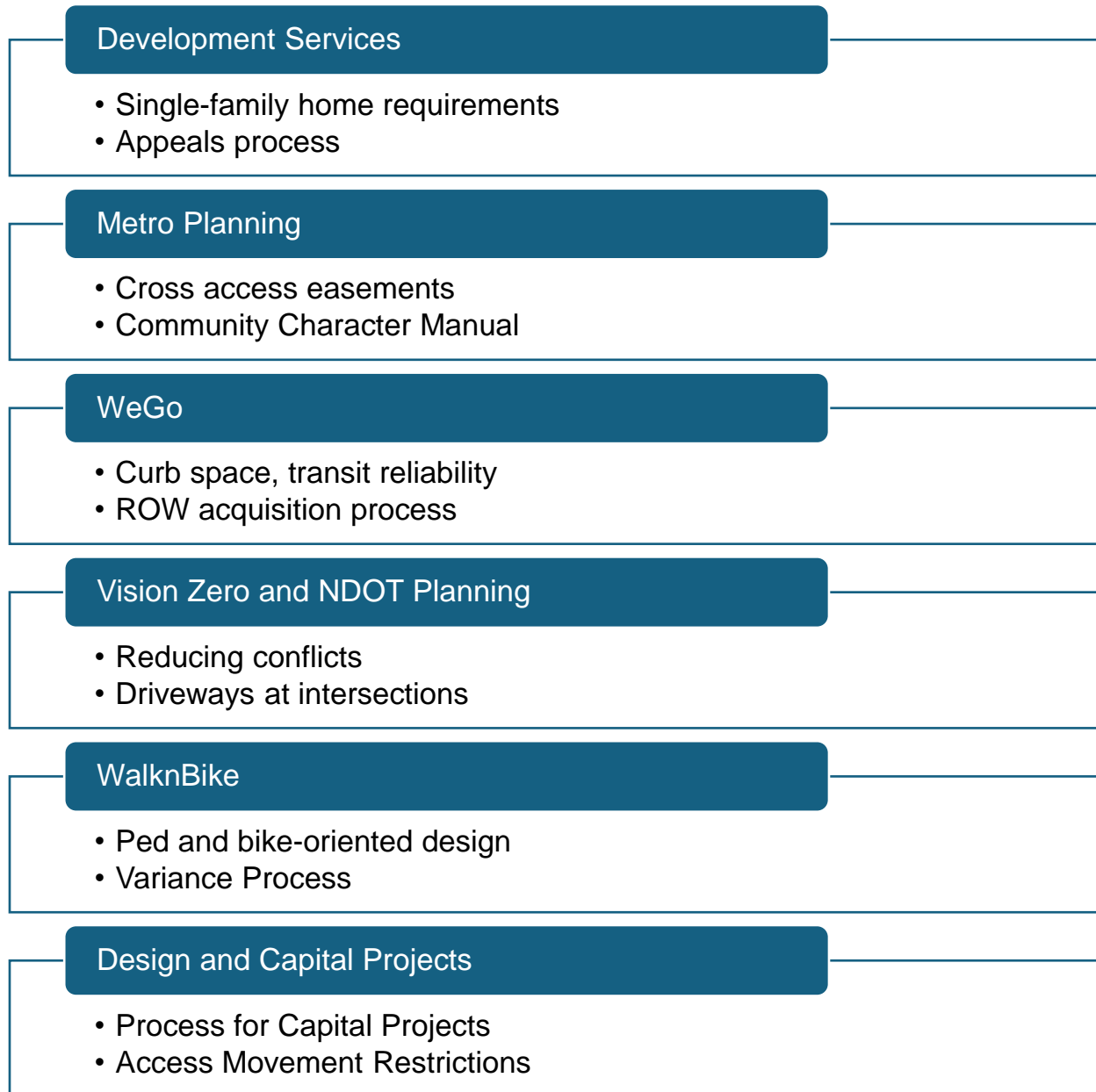


Figure 1: Access Management Needs from Various Stakeholder Groups Across Metro

The key themes emerging from the focus group discussions can be categorized as procedural and tactical elements, as shown in **Figure 2**. Procedural elements relate to the administrative or implementation processes of access management whereas tactical elements relate to the access location or access design protocols required for safe and efficient traffic operations. The NDOT Access Management Manual prioritizes each of these elements to fulfill the needs of a diverse set of stakeholders.



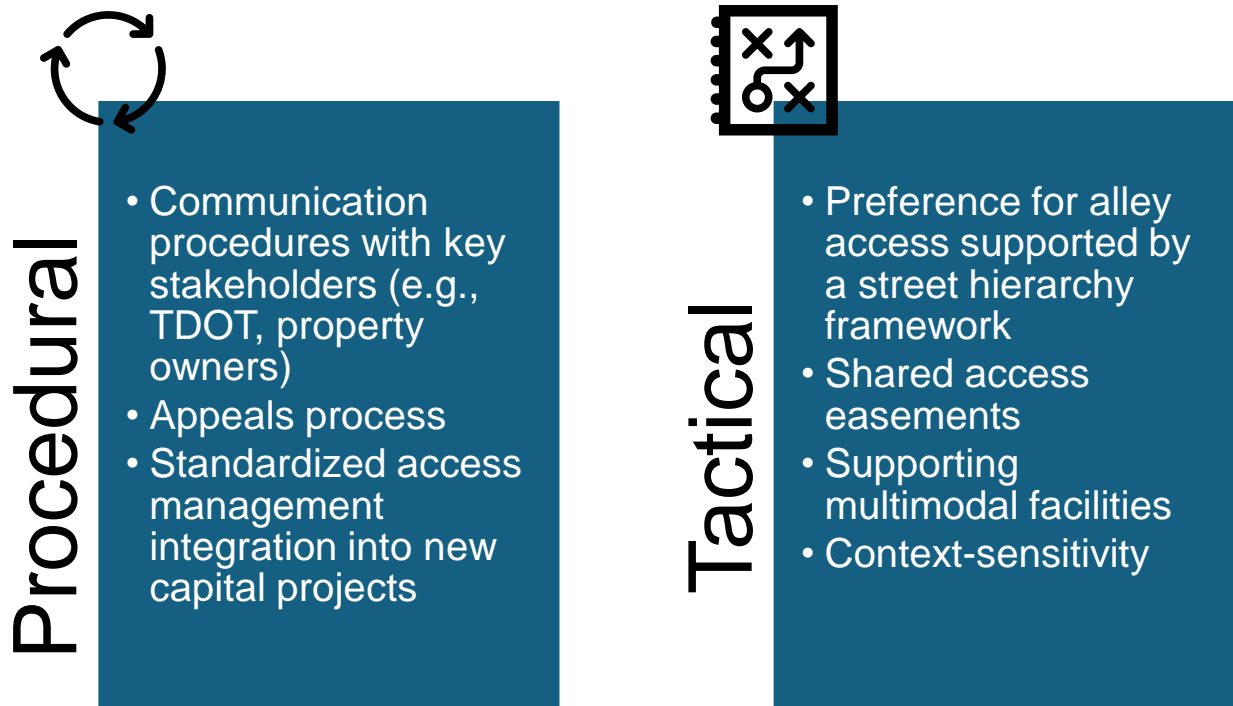


Figure 2: Common Themes from Focus Group Sessions

3. EXISTING POLICY REVIEW

A thorough review of existing policy documents was conducted to ensure that the NDOT Access Management Manual fits within the broader transportation policy and planning landscape within Davidson County. The Access Management Manual must be aligned with the Community Character Manual and the Major and Collector Street Plan. Further, existing Access policies within the Metro Code and the TDOT Highway System Access Manual were reviewed to better understand how access is currently managed, and which pain points the new NDOT Access Management Manual should address.

Access management is a systematic process, and the Manual is to be used in tandem with other planning and policy documents and standards to effectively manage access to public roadways in Davidson County. **Figure 1** illustrates how the NDOT Access Management Manual fits within the larger transportation framework.



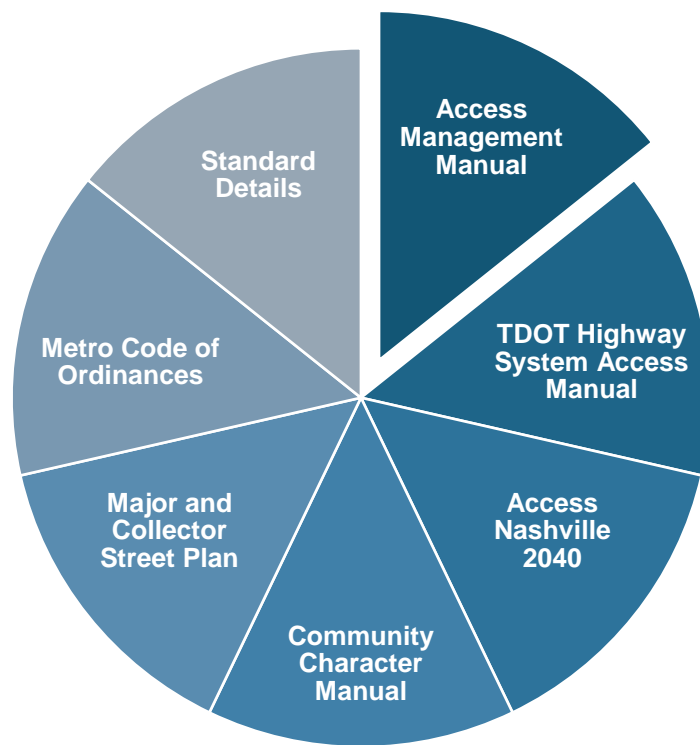


Figure 3: The NDOT Access Management Manual*

****This manual could be considered “one piece of the pie,” in that it supports a larger framework of existing access management policy within Davidson County.***

The following documents represent the existing landscape of access management guidelines and standards in Davidson County:

- Multimodal Transportation Analysis (MMTA) Guidelines (NDOT)
- Engineering Details and Specifications (NDOT)
- Complete Streets Implementation Guide (NDOT)
- Multimodal Access Closure Policy (Metro)
- Municipal Code (Metro)
- Downtown Code (Metro)
- NashvilleNext (Metro)
- The Community Character Manual (Metro)
- The Major and Collector Street Plan (Metro)
- Subdivision Regulations (Metro)



- WeGo Transit Design Guidelines (Metro)
- Highway System Access Manual (TDOT)
- Roadway Design Guidelines (TDOT)
- A Policy on Geometric Design of Highways and Streets (AASHTO)
- The Manual of Uniform Traffic Control Devices (FHWA)
- Traffic Engineering Handbook (ITE)
- Trip Generation Manual (ITE)
- Vision Zero Action and Implementation Plans (NDOT)
- Connect Downtown Action Plan (NDOT)
- nMotion Transit Plan (WeGo)
- Choose How You Move Transportation Improvement Plan (NDOT)
- Urban Street Design Guide (NACTO)
- Any Urban Design Overlays in a given area (Metro)

3.1 Metro Code

To date, Access Management legislation is housed in two separate sections of the Metro Code: Title 13 (Streets, Sidewalks, and Public Places) and Title 17 (Zoning). This project seeks to consolidate access management policy to a single location within the Metro Code to provide more user-friendly guidance and standards.

A thorough review of access management guidance in the Metro Code was conducted to understand the current access management policy. **Table 1** summarizes the spacing standards primarily referenced in Title 17.

Table 1: Current Spacing Standards in the Metro Code (Title 17)

Street Type	Access-to-Access (SF and 2F/Non-SF and 2F)	Access-to-Intersection (SF/2F home)	Access-to-Intersection (Non- SF/2F home)	Access-to-Interchange Ramp
Local	25'/30'	15'	50'	250'
Collector	25'/30'	50'	100'	250'
Arterial	25'/30'	N/A	185'	250'



In addition to the spacing standards, the Metro Code includes several other standards affecting access management, such as sight distance requirements and the appeals process. **Table 2** provides a list of codes that may be modified with the passage of the NDOT Access Management Manual.

Table 2: Codes Relevant to the Access Management Policy

Codes	Summary of Code Language
13.12.010 - Driveway defined	Provides Definition of Driveway
13.12.030 - Review of driveway application - Duty of Chief Engineer	Gives the Department of Public Works Authority to review driveway applications
13.12.050 - Construction— Authorization required	Grants Department of Public Works and Traffic and Parking Commission ability to authorize driveway construction.
13.12.060 - Authorization—Application.	Applications for driveways shall be made on forms prescribed by TPC and Public Works
13.12.070 - Authorization—Expiration.	Driveways are authorized for one year from date of approval. Grant TPC and department of public works authority.
13.12.080 - Applications—Appeals.	Appeals for driveway applications made to TPC after denied by Public Works.
13.12.100 – Location	Addresses preferred location of driveways.
13.12.110 – Dimension and location requirements	Provides required driveway dimensions and location.
13.12.120 - Sight Distance requirements	Requires maximum sight distance where feasible.
13.12.160 - Deviations	Provides conditions where a variation may be granted.
17.20.160 - Access from nonarterial streets	Provides driveway spacing standards for local/collectors.



Codes	Summary of Code Language
17.20.170 - Access from arterial streets	Provides driveway spacing standards for Arterials.
17.20.180 – Visibility	Discusses visibility requirements at driveways.
17.20.190 - Measurement of distances	Defines distances.

3.2 TDOT Access Management Guidance

TDOT primarily maintains the Access Management policy within two separate documents. The Manual for Constructing Driveway Entrances on State Highways (2015) is the current applicable standard for all projects on state routes. The TDOT Highway System Access Manual (HSAM) (2021) provides access management guidance on state routes or other roadways within the jurisdiction of TDOT. The HSAM is sectioned into three volumes, as depicted in **Figure 4**. Adherence to geometric design criteria outlined in Volume 3 is required for the following project types:

1. New alignment projects
2. Roadway widening projects
3. Major reconstruction projects

The guidance within the TDOT HSAM should be used on all other projects where feasible; however, there is no exception or waiver required for not meeting the design standards of the HSAM. Where multiple sets of access guidance are applicable, the strictest standards shall be applied.



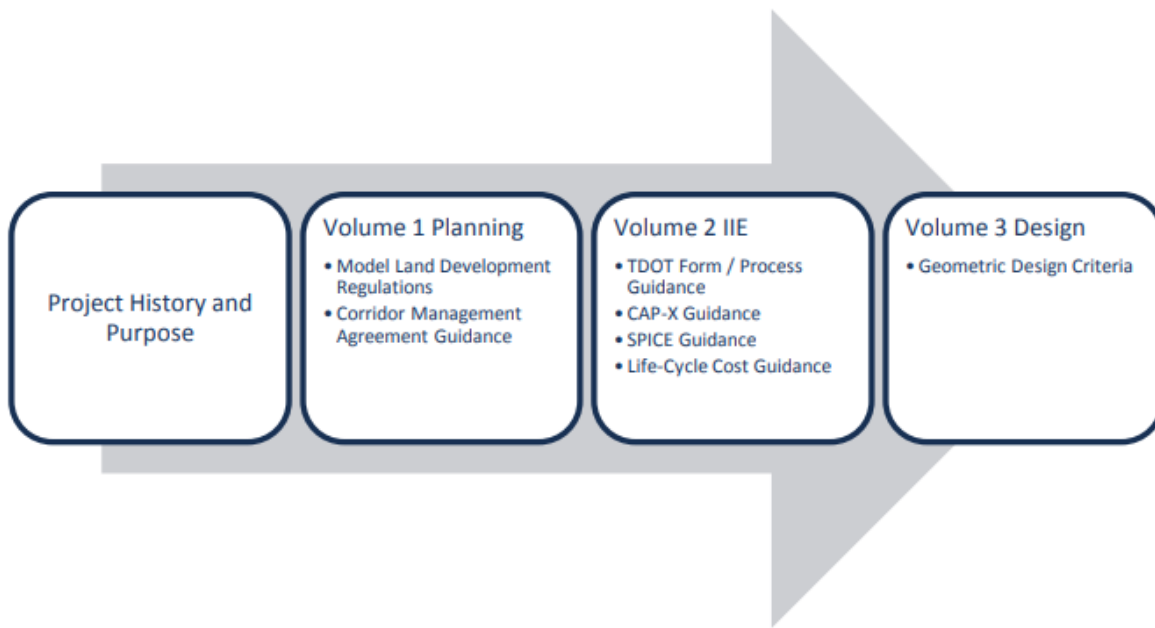


Figure 4: Parts of the TDOT HSAM

Both the 2015 Driveway Manual and the TDOT HSAM were reviewed for this project. Generally, the TDOT HSAM contains stricter standards than the 2015 Driveway Manual. The TDOT HSAM was developed using research conducted by the University of Tennessee Center for Transportation Research and draws influence from the TRB Access Management Manual (2014) and various NCHRP reports. The 2015 driveway manual contains more practical guidance and presents standards that may be more feasible for developers to reach. The NDOT Access Management Manual strives to balance the need for increased spacing standards and improved access management practices with the limitations of smaller parcels and infill development within Davidson County. Referencing both TDOT materials allows NDOT to reach a reasonable compromise between these contrasting project needs.

For further information regarding the specific guidance provided in each of these manuals, please visit the referenced documents.

3.3 MCSP

The Major and Collector Street Plan (MCSP) is a comprehensive plan and implementation tool for guiding public and private investment in the major streets of Nashville. The MCSP aims to develop safe transportation facilities for all road users while preserving the scenic, aesthetic, historic, and environmental resources of Davidson County. This Manual adopts best practice guidelines that align with the approach set forth by the MCSP.



Core to the MCSP are the four elements of each street: Environment, Street Context, Functional Design Type, and Multimodal or Scenic Overlay. Environment and Street Context are governed by the land use policies outlined by the Community Character Manual (CCM). Functional Design Type is the characterization of each street based on the intended function within the overall transportation network (**Table 3**). The Functional Design Type is a fundamental part of how access management aims to preserve the intended functionality of roadways.

Table 3: Major and Collector Street Plan Classifications

Functional Classification	Description	Operational Characteristics	Access Characteristics
Arterial-Parkway	Facilitates cross-town trips; separates vehicles from pedestrians and bicyclists.	High-speed; high-volume	Limited access; no direct driveway access.
Arterial-Boulevard	Serves longer trips within and between communities.	Medium- to high-speed; high-volume	Balances access and mobility; access primarily via alleys or side streets.
Collector-Avenue	Provides circulation within and between neighborhoods.	Low-speed; low- to medium-volume	Prioritizes access over mobility; access via alleys, side streets, or driveways.
Local Street	Primarily provides access to adjacent properties; serves short trips.	Low-speed; low-volume	Prioritizes access over mobility; access via alleys or driveways.

3.4 Community Character Manual

The Community Character Manual (CCM) is the third volume of Nashville’s 25-year general plan, NashvilleNext. The CCM closely examines each of the 14 communities in Davidson County to provide appropriate context-sensitive recommendations. The highest level of characterization is the transect, a system for categorizing development patterns. Development within each transect, ranging from T1 Natural to T6 Downtown, has a distinct form, character use, and density. A map of the transects in Davidson County is shown in **Figure 5**.



The Community Character Manual outlines access management guidelines for Davidson County based on different land use contexts, as shown in **Figure 6**.

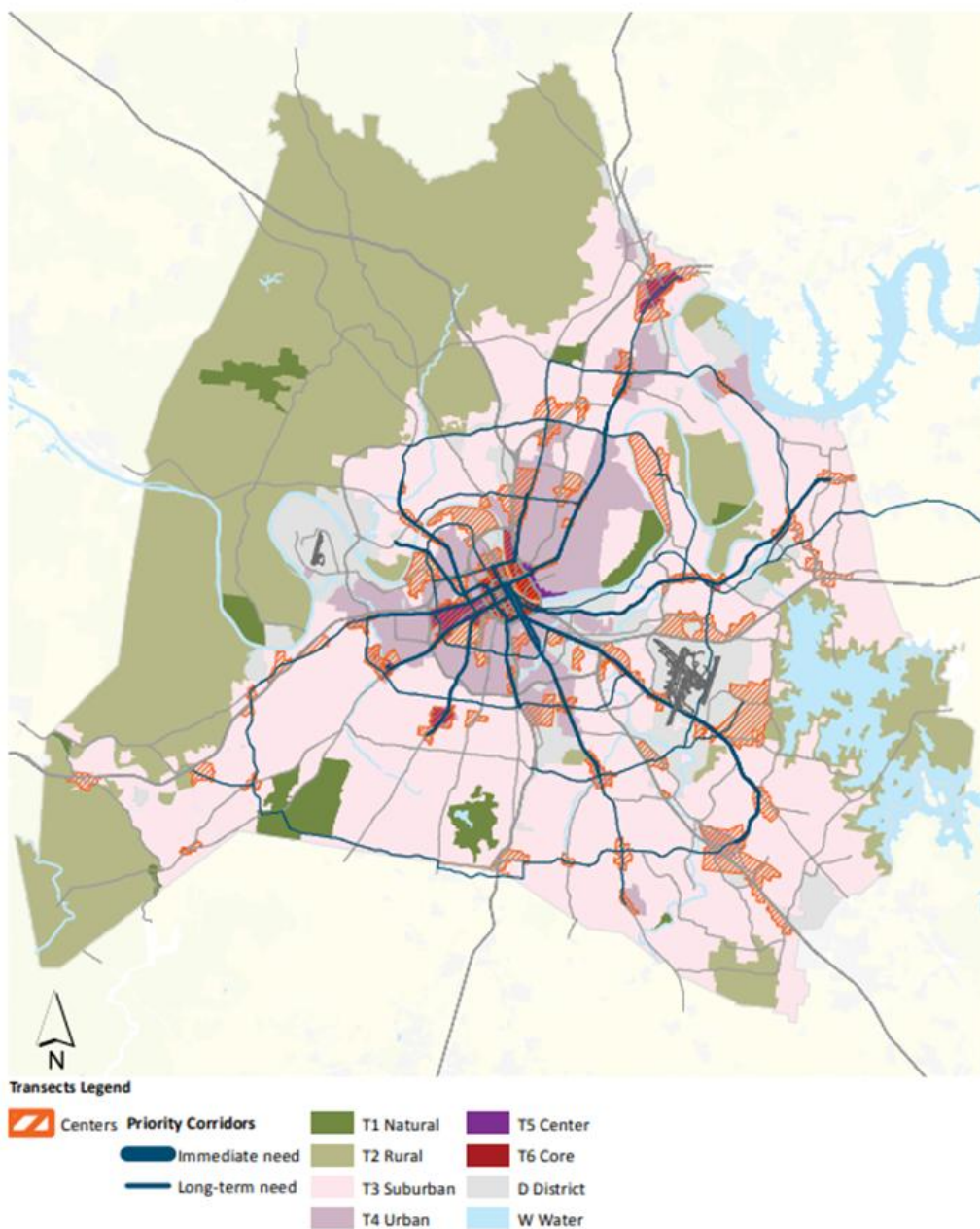


Figure 5: Map of Transects in the CCM, with Planned Priority Corridors Overlaid





T1 - Natural

- When T1 is adjacent to T2 or T3 → access provided for vehicles by a prominent roadway
- When T1 is adjacent to T4 or T5 → access provided for pedestrians/cyclists through multi-use paths



T2 - Rural

- Single access driveways and shared access common; accesses designed to preserve environmentally sensitive features
- Rural neighborhood center → access provided from arterial-boulevard or collector-avenue; secondary access provided by side streets; shared access encouraged; accesses aligned across the roadway



T3 - Suburban

- Single access driveways from street to residence common; Shared driveways along arterial-boulevard and collector-avenue streets
- Suburban neighborhood/community center → Access provided from arterial-boulevard or collector-avenue street; shared accesses used; accesses aligned across the roadway; cross access required



T4 - Urban

- Alley access common; occasional driveway access from street
- Prominent streets have more consolidated access – side streets/alleys
- Access designed for pedestrians; accesses aligned across the roadway; cross accesses provided between abutting developments; use coordinated access and circulation



T5 - Center

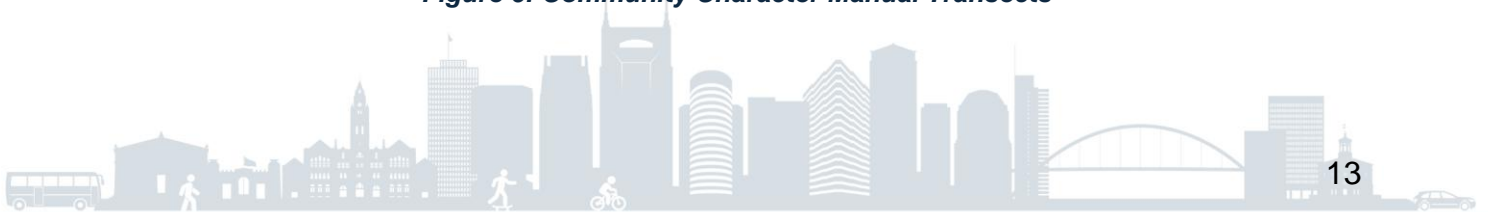
- Move vehicular traffic efficiently while providing sidewalks and bikeways
- High levels of access management
- Access consolidated along main thoroughfares; other access provided by side streets, alleys, and service lanes; cross accesses required



T6 - Downtown

- Access provided from side streets/alleys, not prominent streets
- Coordinated access and circulation used; accesses aligned across the roadway
- Designed for easy access for pedestrians

Figure 6: Community Character Manual Transects



3.5 Discrepancies

A primary objective of the NDOT Access Management Manual is to establish a consistent and cohesive approach to access management within Davidson County. Currently, access management guidance in the Metro Code and various planning documents is inconsistent, leading to confusion and inefficiencies.

For instance, Title 13 of the Metro Code stipulates a minimum driveway spacing of 25 feet for all types of developments, while Title 17 requires a minimum spacing of 30 feet for land uses other than single-family or two-family homes. Such discrepancies create ambiguity and opportunities for policy misinterpretation, which can result in suboptimal development outcomes. There are also discrepancies between TDOT, NDOT and Metro Code access requirements. The NDOT Access Management Manual strives to clear up these discrepancies on how access management practices should be applied in Davidson County.

4. BEST PRACTICE RESOURCES

The best practice review for the development of the Access Management Manual involved the examination of a large (and expanding) body of research on the topic of access management. A leading resource is the TRB Access Management Manual, developed in 2014.

A key finding from the best practice review is that access management occurs at the interface of several technical topics encompassing safety, geometric design, site development, and traffic operations. Topics include:

- Access Management Best Practices
- Measuring and Communicating the Value of Access Management
- Including Access Management in Transportation Planning
- Multimodal Corridor Access Management
- Access Management Guidelines for Truck Routes

The Access Management Manual developed by NDOT strives to incorporate the best practices from these sources where feasible and applicable to Davidson County.

The primary resources used to develop the NDOT Access Management Manual include:

- TDOT *Highway System Access Manual (2021)*
- TDOT *Manual for Constructing Driveway Entrances on State Highways (2015)*
- TRB *Access Management Manual, 2nd Edition (2014)*



- FHWA *Manual on Uniform Traffic Control Devices for Streets and Highways, 11th Edition (2023)*
- AASHTO *A Policy on Geometric Design of Highways and Streets, 7th Edition (2018)*
- TRB *Highway Capacity Manual, 6th Edition (2016)*
- Various NCHRP reports (Reports 420, 457, 1032, 548, 900, 943, and 549)

5. PEER GUIDELINE REVIEW

During the development of the NDOT Access Management Manual, a Peer Review was conducted. Peer guidelines that were comprehensive, recently updated, and multimodal and/or safety-focused were selected for review. The following peer guidelines were included, as depicted in **Figure 7**:

- *Charlotte Streets Manual (2023)*
- *Evansville Access Management Manual and Development Guide (2016)*
- *FDOT Multimodal Access Management Guidebook (2023)*
- *Fort Worth Access Management Policy (2018)*
- *Port Authority Roadway Access Management Guidelines (2017).*



Figure 7: Map of Peer Jurisdictions



5.1 Peer Guideline Selection

When selecting peer guidance for review, the team sought access management guidance that was up-to-date, safety-focused, and reasonably applicable to Davidson County. Several peer cities were reviewed, including:

- Charlotte, NC
- Jacksonville, FL
- Houston, TX
- Washington, DC
- Los Angeles, CA
- Dallas, TX
- Fort Worth, TX
- Oklahoma City, OK
- Evansville, IN
- Austin, TX
- Atlanta, GA
- Washington City, UT
- Bowling Green, OH
- Midland, TX
- Ann Arbor, MI
- Portland, OR
- Richmond, VA

Metrics such as population density, walk/bike/transit scores, and average commute time for each potential peer city were used to understand how the transportation systems and development patterns of each of these cities compares to Nashville. See the Appendix of this memo for notes on each of these cities.

As the team conducted peer research and began narrowing down the list of potential peer cities, the selection criteria evolved. Initially focused on identifying cities most similar to Nashville, the criteria shifted toward finding cities or jurisdictions with the best available guidance, regardless of size. The team decided to broaden the review to include larger jurisdictions with more updated and comprehensive manuals (FDOT and



Port Authority). As a result, the team selected five peer guidelines, which are summarized in the following sections.

5.2 Charlotte, North Carolina

Charlotte was selected for peer review due to its guidance which is up to date with National Best Practices, similar mobility goals to Nashville, and similar transportation network pain points to Nashville. The **Charlotte Streets Manual** serves as a critical resource for implementing Charlotte’s **Unified Development Ordinance (UDO)** while advancing a safe, equitable, and multimodal transportation network. Its structure and principles provide valuable insights for access management practices in urban and suburban contexts (**Figure 8**).

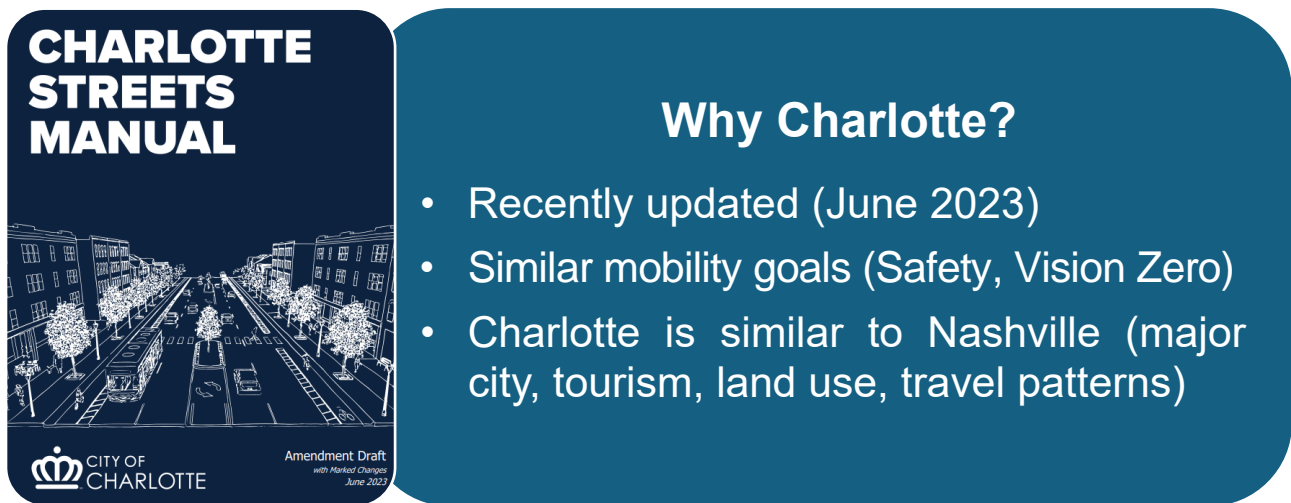


Figure 8: Charlotte Overview

Key Takeaways for NDOT:

1. Comprehensive Integration

- The manual aligns seamlessly with broader city planning efforts, including the **2040 Comprehensive Plan**, regulatory standards, and policies like **Charlotte Bikes** and **Charlotte Walks**. This integration ensures consistency across transportation and land-use planning—a useful model for embedding NDOT’s manual within state and local frameworks.

2. Access Management Emphasis

- The manual prioritizes minimizing conflicts among motorists, pedestrians, cyclists, and transit users through strict access management. It provides:
 - **Driveway spacing requirements:** Based on street type and context (e.g., 50 feet apart for non-median-divided streets).



- **Access restrictions:** Raised medians and directional crossovers (“leftovers”) are preferred, while pork chop islands are prohibited near intersections.
- **Special provisions:** For high-density areas like Uptown, emphasizing restricted vehicular access and time-controlled service zones.

3. Street Typology and Design Standards

- Streets are categorized (e.g., arterials, collectors, locals, greenways), with detailed guidance on design elements like travel lanes, bike facilities, and pedestrian zones. NDOT could benefit from a similar typology approach to unify road design and access management guidance.

4. Developer and Stakeholder Guidance

- Developers are provided clear design requirements and the flexibility to propose nonstandard solutions, subject to city approval. This balance between prescriptive standards and case-by-case adaptability aligns with NDOT’s goal of facilitating consistent, predictable access management while accommodating diverse development contexts.

5. Turn Lane and Driveway Design Criteria

- The manual provides actionable warrant guidance for turn lanes and access points, including use-case-specific recommendations for schools, gas stations, and residential developments. Such tailored guidelines could enhance NDOT’s access management manual by addressing site-specific challenges.

Policy Implications for NDOT:

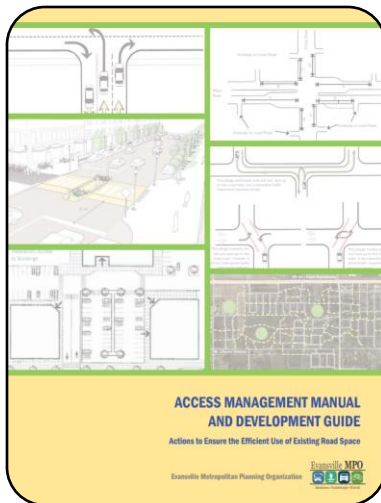
Charlotte’s approach highlights the importance of embedding access management within a comprehensive, multimodal framework. Key elements like driveway spacing, access restrictions, and context-sensitive design can inform updates to NDOT’s policies, ensuring alignment with contemporary best practices.

By adopting similar principles, NDOT can enhance its manual to provide clearer guidance for developers while fostering a safer and more efficient transportation network.

5.3 Evansville, IN

The **Evansville Access Management Manual and Development Guide**, developed by the Evansville Metropolitan Planning Organization (EMPO), provides a comprehensive framework for balancing efficient travel within public rights-of-way and reasonable access to private property. Its approach to access management and development considerations offers valuable lessons for enhancing NDOT’s access management policy (**Figure 9**).





Why Evansville?

- Consolidated, comprehensive, and up to date
- Safety-focused
- Organized, visually appealing, and user-friendly guideline

Figure 9: Evansville Overview

Key Takeaways for NDOT

1. Core Principles of Access Management

- Prioritizes appropriate driveway placement based on roadway functional classification.
- Limits driveways within the functional area of intersections to reduce conflict points.
- Promotes shared access solutions, such as consolidated or cross-access driveways.

2. Driveway and Access Design

- **Minimum Driveway Spacing:** Access spacing must comply with functional classifications and be maximized when retrofitting or infilling.
- **Intersection Sight Distance (ISD):** Direct access is denied if ISD requirements are not met, with alternatives such as frontage roads or easements encouraged.
- **Corner Clearance:** Driveways should be located on the road with the lower functional classification to separate intersection conflict areas.

3. Development Considerations

- Emphasizes **shared access** (joint or cross-access) and complete on-site circulation.



- Requires appropriate facilities for transit, pedestrians, and bicycles.
 - **Pedestrian Priority:** Sidewalks are mandatory near schools, parks, transit routes, and other key locations.
 - **Bicycle Facilities:** Encourages side paths and bicycle parking.
- **Loading and Delivery Zones:** On-site delivery maneuvers must avoid backing into streets.

4. Traffic Calming and Neighborhood Compatibility

- New developments are encouraged to include traffic calming measures such as chicanes, roundabouts, and raised crosswalks.
- Residential areas may receive retrofitted traffic control if residents demonstrate significant concerns, such as speeding or crash history.

5. Special Infrastructure Guidelines

- **Frontage Roads:** Minimum separation of 300 feet from main roadways (150 feet allowed for light traffic).
- **Cul-de-Sacs:** Limited to no more than 20 lots unless diameter exceeds 80 feet.
- **Transit Accommodations:** Requires ADA-compliant sidewalks, curb ramps, and bus shelter pads in development plans.

Policy Implications for NDOT

The Evansville AMM underscores the importance of coordinating access management with functional classifications, safety standards, and multimodal considerations. NDOT can draw from Evansville’s approach to:

- Prioritize driveway spacing and alignment with roadway classification.
- Incorporate comprehensive guidelines for pedestrian, bicycle, and transit infrastructure.
- Promote shared access for existing development.
- Address community concerns with traffic calming and neighborhood-focused policies.

These strategies provide a framework for NDOT to refine its access management manual and support safer, more efficient transportation systems across Davidson County.

5.4 Fort Worth, TX

The **Fort Worth Access Management Policy** complement the city’s Master Thoroughfare Plan (MTP) by emphasizing safe, efficient access while minimizing conflict



points. These guidelines provide detailed considerations for access spacing, shared access, and redevelopment, offering a structured framework for managing access in urban environments (**Figure 10**).

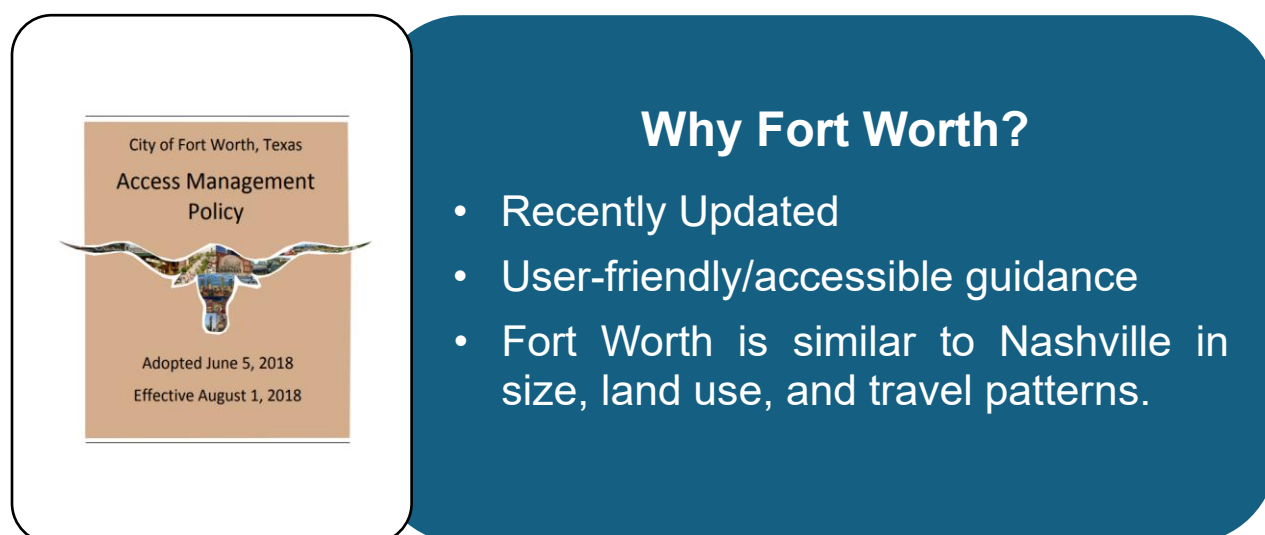


Figure 10: Fort Worth Overview

Key Takeaways for NDOT

1. Core Principles

- Spacing requirements are governed by roadway functional classification to ensure consistent traffic flow and safety.
- Access points must be shared between adjoining parcels when feasible, reducing the overall number of driveways.
- Unified access and circulation plans are required for all multi-development sites, ensuring connectivity and minimizing disruptions.

2. Guidelines for Spacing and Access Design

- **Access Spacing:**
 - Reduces crash risks by adhering to TRB-recommended thresholds (e.g., 20 access points per mile reduce crash rates by 30-40% compared to 40 access points per mile).
 - Low-volume streets intersecting thoroughfares may be treated as driveways for spacing considerations.



- **Driveway Geometry:**

- Minimum throat lengths range from 50 feet on local streets to 150 feet for high-traffic developments, with greater lengths determined by traffic impact studies.

3. Median and Turn Lane Policies

- **Restrictive Medians:** Defined by MTP for each thoroughfare; minimum spacing between openings is 500-800 feet.

- **Auxiliary Lanes:**

- Left-turn lanes are mandatory at thoroughfares, connecting streets, and medians.
- Right-turn lanes depend on speed, volume, and the number of lanes, with requirements informed by NCHRP Report 457.

4. Unified Access and Circulation

- **Cross-Access Requirements:**

- Major traffic generators must provide cross-access drives and pedestrian connections.
- Smaller developments may require public access easements to ensure perpetual availability.

- **Redevelopment:**

- Nonconforming accesses are allowed to remain unless triggered by roadway modifications, re-platting, or significant traffic increases.

5. Built-In Flexibility

- **Review and Exceptions Process:**

- Modifications to spacing requirements are allowed, reduced by up to 10% or 100 feet at the discretion of the city traffic engineer.
- Variances and waivers are available for nonconforming situations, particularly when no reasonable alternatives exist.

6. Traffic Signals and Roundabouts

- Signals must meet MUTCD warrants and spacing guidelines.
- Roundabouts are a preferred alternative to signals in certain conditions, requiring traffic studies to ensure post-build functionality.



Policy Implications for NDOT

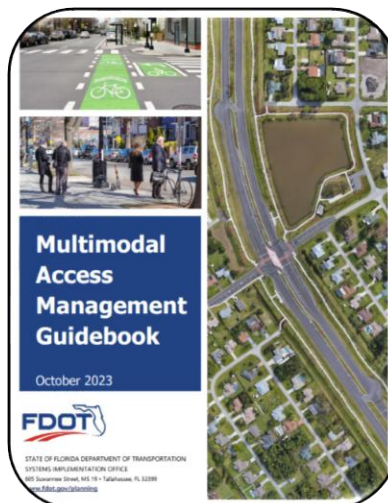
The Fort Worth guidelines emphasize flexibility while maintaining strict adherence to safety and operational principles. NDOT could adapt these practices by:

- Encouraging shared and cross-access solutions to reduce driveway conflicts.
- Establishing robust criteria for nonconforming access redevelopment.
- Aligning median and auxiliary lane requirements with traffic volume and roadway context.
- Incorporating a formal review and exception process to balance safety, accessibility, and operational needs.

These strategies can enhance NDOT's access management manual by promoting safer and more efficient access while accommodating site-specific challenges.

5.5 Florida Department of Transportation

The **Florida Department of Transportation (FDOT) Multimodal Access Management Guidebook** provides a comprehensive framework for balancing mobility and access, emphasizing safety, efficiency, and multimodal integration. These guidelines align access management strategies with FDOT's mission to enhance economic prosperity, mobility, and environmental preservation (**Figure 11**).



Why FDOT?

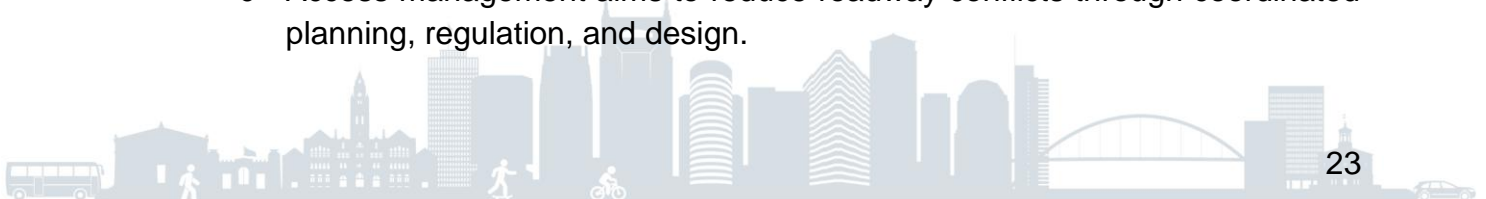
- Recently updated (October 2023)
- Includes best practices referenced by many other access management manuals (including TDOT)
- Focuses on multimodal access

Figure 11: FDOT Overview

Key Takeaways for NDOT

1. Purpose and Principles

- Access management aims to reduce roadway conflicts through coordinated planning, regulation, and design.



- Benefits include lower crash rates, increased capacity, and reduced travel time and delays.
- Encourages the use of AASHTO tools (HSM and HCM) to evaluate crash frequency, countermeasure effectiveness, and capacity benefits.

2. Driveway and Roadway Openings

- Driveway permitting is required for new driveways or significant changes in use; applications are processed via FDOT's **One Stop Permitting** system.
- **Driveway Types:**
 - **Radial Return:** Suitable for highways with higher traffic volumes.
 - **Flared Design:** Optimal for specific site conditions.
- Driveway placement prioritizes preserving the functional area of intersections and ensuring adequate sight distances.

3. Median Design and Roadway Openings

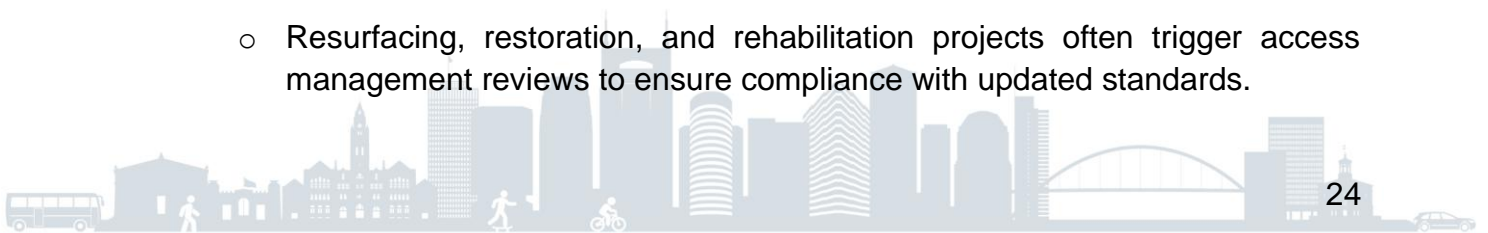
- Comprehensive median design guidance includes specifications for widths, left-turn lane lengths, deceleration lanes, and weaving distances.
- **Median Types:**
 - **Full Median Openings:** Less restrictive, used near signalized intersections.
 - **Directional Median Openings:** More restrictive, tailored for specific traffic operations.
- Retrofit considerations include assessing existing median openings and recommending adjustments based on data collection and analysis.

4. Multimodal Access and Intersection Design

- Access management integrates multimodal facilities to support pedestrian, bicycle, and transit access.
- Alternative intersection designs and curbside management are emphasized to optimize traffic flow and accommodate diverse users.

5. Retrofit and Resurfacing Applications

- Retrofit considerations include minor roadway realignments and the use of raised medians in rural or urban contexts.
- Resurfacing, restoration, and rehabilitation projects often trigger access management reviews to ensure compliance with updated standards.



6. Context-Sensitive Approach

- FDOT's **Context Classification Guide** aligns access management strategies with roadway and land-use contexts, similar to Nashville's Community Character Manual.
- Tailored guidance ensures that access management practices support the unique needs of urban, suburban, and rural environments.

Policy Implications for NDOT

FDOT's guidelines offer a robust model for integrating access management with broader transportation and land-use goals. NDOT could adopt similar strategies by:

- Streamlining permitting processes for driveway access.
- Expanding multimodal access considerations to align with evolving transportation demands.
- Implementing a context-sensitive framework to adapt standards to varying community needs.

These practices can help NDOT refine its access management manual to promote safety, efficiency, and multimodal accessibility while supporting economic and environmental goals.

5.6 Port Authority of New York and New Jersey

The Port Authority of NY and NJ (PA) oversees extensive transportation infrastructure within its 1,500-square-mile jurisdiction. Its Access Management framework focuses on systematically coordinating driveways, medians, interchanges, and other access points to balance land development needs with roadway safety and efficiency (**Figure 12**).

Port Authority Roadway Access Management Guidelines
(Edited) Third Edition / December 1, 2017

NOTES: These materials are updated periodically.
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THE PORT AUTHORITY OF NY & NJ

Why the Port Authority of NY/NJ?

- Unique perspective as a regional port authority
- Recent guidance
- Covers a wide range of topics

Figure 12: Port Authority Overview



Key Takeaways for NDOT

1. Access Management Principles and Purpose

- **Purpose:** Facilitate land access while preserving the transportation system's safety and efficiency.
- **Key Principles:**
 - Develop a hierarchical classification system for roadways.
 - Limit direct access to major roadways.
 - Use non-traversable medians to manage left-turn movements.
 - Minimize conflict points by aligning or offsetting driveways appropriately.
 - Incorporate multimodal and environmental sustainability considerations.

2. Access Classification and Functional Integration

- **Roadway Access Classification:** Includes functional classifications for arterials, collectors, and local roads.
- **Context-Sensitive Guidelines:** Tailored to land use, traffic volumes, and multimodal needs (e.g., pedestrian and bicycle facilities).
- **Complete Streets Concepts:** Emphasize safe multimodal access and alignment with sustainability goals, including reducing GHG emissions and providing secure bike access and parking.

3. Design and Operational Elements

- **Driveway Design**
 - Clear definitions using striping, curbs, and reflectors.
 - Maintain adequate throat length to prevent queue spillback.
 - Meet ADA slope requirements (1.5%-2.5%) for cross slopes.
 - Use non-traversable medians/islands with desirable dimensions of 6 ft width and 50 ft length.
- **Median and Auxiliary Lane Design**
 - Apply non-traversable medians in high-crash locations, aesthetically significant areas, and where limiting left turns improves safety.
 - Auxiliary lanes and roadside buffers prevent driveways from encroaching into critical traffic areas.



- **Intersection Corner Clearance**
 - Defined by the PIEV (Perception, Identification, Evaluation, and Volition) distance and additional operational factors, including deceleration and queue storage distances.
- **Traffic Signal Spacing and Control**
 - Strategies include optimizing vehicle progression, managing queue lengths to prevent spillback, and enhancing pedestrian flow.
 - Clear signal spacing guidelines adapt to urban and suburban contexts.
- **Access Near Interchanges**
 - Minimum spacing to full-movement intersections considers merging/weaving distance and queue storage requirements.
 - Aligns with AASHTO standards for left-turn lanes and right-turn access points.

4. Multimodal and Sustainability Focus

- **Support for Bicycle and Pedestrian Safety:** Incorporate buffers, minimize conflict points, and ensure adequate illumination.
- **Environmental Stewardship:** Targets an 80% GHG reduction by 2050.

5. Property Access Strategies

- Encourage shared access and cross-access agreements to reduce the number of driveways.
- Frontage and reverse frontage roads provide alternative access, especially in retrofit scenarios, with a desirable separation of 300 ft from the main roadway.

6. Design Exceptions and Flexibility

- Design exceptions allow flexibility when safety and operational impacts are justified.
- Exception requests require comprehensive documentation and are reviewed by the Chief Engineer.

Policy Implications for NDOT

The Port Authority's framework offers several insights that could be applied to NDOT's access management strategy, including:

- Adopting clear design guidelines that include measurable criteria for driveway spacing, median treatments, and intersection corner clearance.



- Expanding multimodal features (bike/pedestrian facilities) in urban and suburban contexts while aligning with environmental sustainability goals.
- Promoting shared access and cross-access agreements to reduce conflict points and support orderly development.
- Streamlining design exceptions by establishing a transparent and well-documented process to address unique challenges.

By leveraging PA’s systematic design, sustainability focus, and multimodal considerations, NDOT can further refine its access management policies to better align with contemporary transportation needs.

6. FURTHER REVIEW: TENNESSEE CITIES

In addition to the five peer jurisdictions, the access management policies within the municipal codes and other policy documents of other Tennessee cities were reviewed. None of these cities have a formal “Access Management Manual,” but this review provided valuable insights for this project. Key findings from each of these cities are provided in the subsequent sections.

6.1 Knoxville, TN

The Knoxville Municipal Code¹ provides standards for the following:

- Max number of driveways
- Corner clearance requirements
- Driveway width and curb cut length standards

For maximum number of driveways per lot frontage, Knoxville provides **Table 4**:

Table 4: Maximum Number of Driveways per Knoxville Municipal Code

Lot Frontage	Maximum Number of Driveways
Less than 150 feet	1 For single-family dwellings with lot frontages greater than 75’, a circular driveway is allowed.
150 feet – 450 feet	2
Greater than 450 feet – 600 feet	3
Greater than 600 feet – 750 feet	4
Greater than 750 feet	Determined by Department of Engineering

¹ https://library.municode.com/tn/knoxville/codes/code_of_ordinances?nodeId=APXBZOCO_ART110REPA11.7ACDRDE



Knoxville modeled corner clearance requirements off the guidance provided by the TDOT HSAM, as shown in **Table 5**.

Table 5: Spacing Standards per Knoxville Municipal Code

Classification of Intersecting Street	Classification of Street to be Accessed		
	Arterial	Collector	Local
Arterial	200'	150'	100'
Collector	150'	100'	50'
Local	100'	50'	50'

The Knoxville Municipal Code also contains the following driveway width and curb cut length standards (**Table 6**).

Table 6: Driveway Width and Curb Cut Length Standards per Knoxville Municipal Code

Lot Frontage	Driveway Dimensions		Length of Curb Cut	
	Min	Max	Min	Max
	Single-Family, Two-Family, & Townhouse: By Lot Width			
50 feet or less	10'	18'	15'	24'
>50-74	10'	20'	15'	26'
Greater than 74	10'	20'	15'	26'
	<i>A circular driveway can be no wider than 18'</i>			
	<i>Other Development</i>			
Land Use: Uses serving a substantial number of large trucks (5/day or 25/week)	20'	40'	60'	90'
Land use: All other	20'	30'	25'	60'

6.2 Murfreesboro, TN

The City of Murfreesboro provides access management guidance within their Street Design Specifications², which are authorized by the Murfreesboro Planning Commission. Murfreesboro provides standard values for the maximum number of driveways, corner clearance, and edge clearance. The standards are provided in **Table 7**, **Table 8**, and **Table 9**.

² <https://www.murfreesborotn.gov/DocumentCenter/View/36/Street-Design-Specifications---2021-12-01-PDF>



Table 7: Maximum Number of Driveways per Murfreesboro Municipal Code

Lot Frontage	Maximum Number of Driveways (Arterials and Collectors)
< 200 ft	1
200 ft to 300 ft	2
> 300 ft	1

Table 8: Corner Clearance Standards per Murfreesboro Municipal Code

Classification of Intersecting Street	Classification of	Street to be	Accessed
	Arterial	Collector	Local
Arterial	200'	150'	100'
Collector	150'	100'	50'
Local	100'	50'	25'

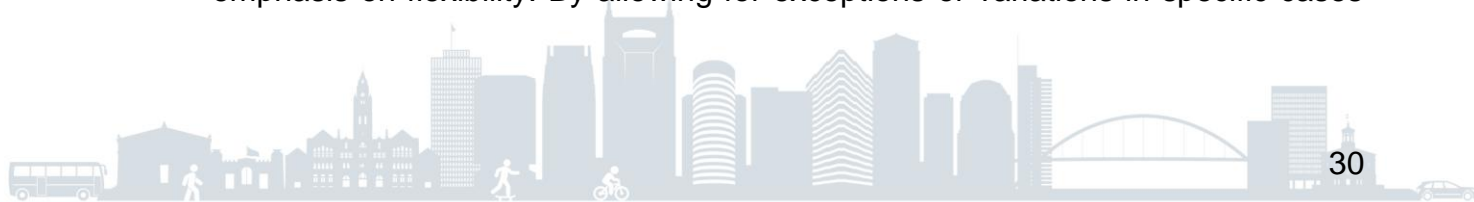
Table 9: Edge Clearance and Driveway Spacing per Murfreesboro Municipal Code

Street Classification	Edge Clearance	Driveway Spacing
Arterial	10	100
Collector	10	50
Local	5	25

7. CONCLUSION

The review and analysis of access management policies from best practice guidelines, peer guidelines, and local Tennessee municipalities have provided valuable insights to shape the NDOT Access Management Manual. By examining peer cities and other resources, several best practices and innovative strategies have been identified that can help refine NDOT's access management policy. The following are the key findings from this review.

1. **Multimodal Safety:** The importance of incorporating multimodal access considerations—such as pedestrian, bicycle, and transit access—has become increasingly evident in peer jurisdictions. NDOT can benefit from integrating these elements to align with evolving transportation needs and sustainability goals.
2. **Clear Design Standards:** Cities like Fort Worth and Charlotte highlight the value of clear, context-sensitive design standards, especially for driveway spacing, turn lane requirements, and intersection corner clearance. These standards improve safety and operational efficiency, which is a critical objective for NDOT's manual.
3. **Flexibility and Exceptions:** A common theme across many peer guidelines is the emphasis on flexibility. By allowing for exceptions or variations in specific cases



(such as redevelopment or nonconforming sites), NDOT can balance safety standards with real-world constraints and unique site conditions.

4. **Shared Access Solutions:** The promotion of shared and cross-access driveways—as seen in Evansville and Fort Worth—will help reduce conflict points and enhance traffic flow. NDOT could adopt similar approaches to encourage more coordinated development.
5. **Local Adaptations:** The specific practices from Tennessee cities, such as Knoxville and Murfreesboro, provide crucial insight into local standards for driveway widths, corner clearances, and edge clearances. These can serve as starting points for NDOT’s own guidelines, ensuring they meet the unique needs of urban and suburban environments in Tennessee.
6. **Integration with Nashville’s Policies and Plans:** It is important that the NDOT Access Management Manual aligns with the initiatives and frameworks set forth in other planning documents, such as the Vision Zero Action Plan, the Major and Collector Street Plan, and the Community Character Manual. Peer cities such as Charlotte serve as an example for how to align multiple planning documents to create a cohesive access management strategy.
7. **Consolidation of Guidance:** In each of the Peer Cities, the Access Management Manual served as a “one-stop-shop” for access standards and guidance. Nashville is seeking a similar outcome to ensure that the proper access management guidance is clearly defined and consistently applied across Davidson County.

By synthesizing these lessons and adopting the best practices identified, NDOT can create a comprehensive access management manual that promotes safety, efficiency, and consistency. This manual will not only address current transportation challenges but will also provide flexibility to accommodate future needs, ensuring that Tennessee’s transportation infrastructure is both effective and sustainable.



APPENDIX – PEER CITY SELECTION

The creation of the Access Management Manual for Davidson County involved a thorough review of the existing access management guidance, standards, and practices of peer cities. Peer cities suitable for this project should have existing published access management guidelines, or comparable documents, to serve as a reference point. Further, the population, commuting patterns, growth trends, transportation systems, land use, etc. of peer cities should be similar enough to Nashville that implementing the peer cities' access management practices could be feasible. Peer city guidance should exemplify good access management practices, which manifest in improved transportation networks, serving as a goalpost for Nashville.

Nashville, TN – Point of Reference

- **Population per square mile³:** 1,449.1
- **Walk score⁴:** 29 (car-dependent)
- **Transit score:** 22 (minimal transit)
- **Average commute to work⁵:** 29.6 min

Charlotte, NC

- **Population per square mile:** 2,836.9
- **Walk score:** 26 (car-dependent)
- **Transit score:** 27 (some transit)
- **Average commute to work:** 28.3 min
- **Existing Guidance:**
https://www.charlottenc.gov/files/sharedassets/city/v/1/growth-and-development/documents/smp/2023/charlotte-streets-manual_amended-draft_marked_june-2023_formatted.pdf

³ All population density data sourced from 2020 US Census.

⁴ Walk scores and transit scores are originally sourced from WalkScore.com and gathered from <https://www.forbes.com/home-improvement/moving-services/hardest-commutes-in-us/>. More info on how these scores were determined is found at <https://www.walkscore.com/methodology.shtml>.

⁵ Average commute time is originally sourced from the 2020 US Census and gathered from <https://www.forbes.com/home-improvement/moving-services/hardest-commutes-in-us/>.



Jacksonville, FL

- **Population per square mile:** 1270.7
- **Walk score:** 26 (car-dependent)
- **Transit score:** 21 (minimal transit)
- **Average commute to work:** 25.6 min
- **Existing Guidance:**
<https://www.jacksonville.gov/getattachment/Departments/Planning-and-Development/Transportation-Planning/LDPM-Revisions-10-13-2022.pdf.aspx?lang=en-US>

Houston, TX

- **Population per square mile:** 3598.4
- **Walk score:** 48 (car-dependent)
- **Transit score:** 36 (some transit)
- **Average commute to work:** 30.0 min
- **Existing Guidance:**
 - <https://www.houstonpermittingcenter.org/office-city-engineer/right-way-traffic-and-mobility#agency-links-1621>
 - <https://acechouston.org/wp-content/uploads/2017/10/Ch-15-master-draft-2018-02-23.pdf>

Washington, DC

- **Population per square mile:** 11280.7
- **Walk score:** 77 (very walkable)
- **Transit score:** 69 (good transit)
- **Average commute to work:** 37.2 min
- **Existing Guidance:** https://d92016.eos-intl.net/eLibSQL14_D92016_Documents/DEM%202009.pdf#page=309



Los Angeles, CA

- **Population per square mile:** 8304.2
- **Walk score:** 69 (somewhat walkable)
- **Transit score:** 53 (good transit)
- **Average commute to work:** 32.3 min
- **Existing Guidance:**
<https://dpw.lacounty.gov/ldd/lib/fp/Road/Access%20Management%20For%20Private%20Developments.pdf>

Dallas, TX

- **Population per square mile:** 3841.1
- **Walk score:** 46 (car-dependent)
- **Transit score:** 39 (some transit)
- **Average commute to work:** 32.3 min
- **Existing Guidance:**
https://dallascityhall.com/departments/sustainabledevelopment/DCH%20documents/pdf/Parking_Driveways_Handbook.pdf

Fort Worth, TX

- **Population per square mile:** 2646.1
- **Walk score:** 35 (car-dependent)
- **Transit score:** 22 (minimal transit)
- **Average commute to work:** 26.8 min
- **Existing Guidance:**
<https://www.fortworthtexas.gov/files/assets/public/v/2/tpw/documents/mtp/access-management-menu.pdf>



Oklahoma City, OK

- **Population per square mile:** 1123.5
- **Walk score:** 34 (car-dependent)
- **Transit score:** 17 (minimal transit)
- **Average commute to work:** 24.0 min
- **Existing Guidance:** <https://planokc.org/development-guide/infrastructure-investment/access-management-focus-areas/>

Evansville, IN

- **Population per square mile:** 2477
- **Walk score:** 44 (car-dependent)
- **Transit score:** Not given
- **Average commute to work:** 18.6 min
- **Existing Guidance:** http://www.evansvillempo.com/Docs/Access_Management/EMPO_Access_Management_Manual_Development_Guide_Final07.11.16.pdf

Austin, TX

- **Population per square mile:** 3006
- **Walk score:** 42 (car-dependent)
- **Transit score:** 35 (some transit)
- **Average commute to work:** 27.9 min
- **Existing Guidance:** https://www.austintexas.gov/sites/default/files/files/Transportation/Transportation_Development_Services/Austin_TIA_Guidelines_06-2022.pdf



Atlanta, GA

- **Population per square mile:** 3685.7
- **Walk score:** 48 (car-dependent)
- **Transit score:** 42 (some transit)
- **Average commute to work:** 27.5 min
- **Existing Guidance:**
https://documents.atlantaregional.com/transportation/tp_S RTP_Design_Guidelines.pdf

Washington City, Utah

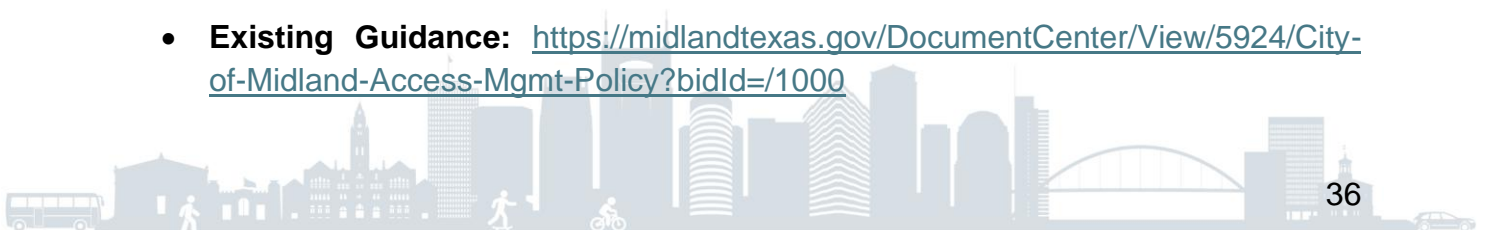
- **Population per square mile:** 804.6
- **Walk score:** 15 (car-dependent)
- **Transit score:** 2 (minimal transit)
- **Average commute to work:** 15.4 min
- **Existing Guidance:**
https://washingtoncity.org/publicworks/streets/WASHINGTON_ACCESS_MANAGEMENT_PLAN2021_3.15.21.pdf

Bowling Green, OH

- **Population per square mile:** 2408.8
- **Walk score:** 43 (car-dependent)
- **Transit score:** not given
- **Average commute to work:** 18.2 min
- **Existing Guidance:** <https://www.bgohio.org/DocumentCenter/View/546/Access-Management-Policies-and-Guidelines-PDF>

Midland, TX

- **Population per square mile:** 1756.4
- **Walk score:** 42 (car-dependent)
- **Transit score:** Not given
- **Average commute to work:** 19.9 min
- **Existing Guidance:** <https://midlandtexas.gov/DocumentCenter/View/5924/City-of-Midland-Access-Mgmt-Policy?bidId=/1000>



Ann Arbor, MI

- **Population per square mile:** 4391.9
- **Walk score:** 52 (somewhat walkable)
- **Transit score:** 49 (some transit)
- **Average commute to work:** 19.6 min
- **Existing Guidance:**
<https://www.a2gov.org/departments/planning/Documents/WashtenawCountyAccessManagementPlan.pdf>

Portland, OR

- **Population per square mile:** 4889.5
- **Walk score:** 67 (somewhat walkable)
- **Transit score:** 49 (some transit)
- **Average commute to work:** 24.8 min
- **Existing Guidance:** <https://www.portland.gov/transportation/traffic-operations/median-guidelines>

Richmond, VA

- **Population per square mile:** 3781.6
- **Walk score:** 51 (somewhat walkable)
- **Transit score:** not given
- **Average commute to work:** 22.0 min
- **Existing Guidance:** [https://www.rva.gov/sites/default/files/2019-08/Better Streets 2018 Part I.pdf](https://www.rva.gov/sites/default/files/2019-08/Better%20Streets%202018%20Part%20I.pdf)



Best Access Management Manuals (not ranked):

1. Charlotte, NC
2. Jacksonville, FL
3. Washington, DC
4. Fort Worth, TX
5. Evansville, IN
6. Atlanta, GA
7. Washington City, UT
8. Bowling Green, Ohio
9. Ann Arbor, MI (Washtenaw County)
10. Richmond, VA
11. Midland, TX

Most similar to Nashville from previous list (not ranked):

1. Charlotte, NC
2. Jacksonville, FL
3. Washington, DC
4. Fort Worth, TX
5. Evansville, IN
6. Atlanta, GA
7. Bowling Green, Ohio
8. Richmond, VA

