

**Chapter 2
Highway Access Category System**

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2.1 Access Category Overview

For Minnesota's state trunk highway system, Mn/DOT's Access Category System consists of seven primary categories and five subcategories. Primary categories are based on the functional classification of the highway and its strategic importance within the statewide highway system. The subcategories address the highway facility types and differing land use patterns surrounding the specific highway segment.

Figure 2.1 provides an overview of the access categories and subcategories, along with the functional classification and statewide strategic importance associated with each. Typical posted speeds are also provided. It should be noted that these speed ranges are listed solely as descriptors that describe the range that may be encountered within a category, and do *not* serve as standards or guidelines.

Figure 2.1: Access Categories

Category	Land-Use or Facility Type	Typical Functional Classification	Typical Posted Speed
1 - High-Priority Interregional Corridors (IRCs)			
1F	Interstate Freeway	Interstate Highways	55 – 75 mph
1AF	Non-Interstate Freeway	Principal Arterials	55 – 65 mph
1A	Rural	Principal Arterials	55 – 65 mph
1B	Urban / Urbanizing	Principal Arterials	40 – 55 mph
1C	Urban Core	Principal Arterials	30 – 40 mph
2 - Medium-Priority Interregional Corridors			
2AF	Non-Interstate Freeway	Principal Arterials	55 – 65 mph
2A	Rural	Principal Arterials	55 – 65 mph
2B	Urban / Urbanizing	Principal Arterials	40 – 55 mph
2C	Urban Core	Principal Arterials	30 – 40 mph
3 - Regional Corridors			
3AF	Non-Interstate Freeway	Principal Arterials	55 – 65 mph
3A	Rural	Principal/Minor Arterials	45 – 65 mph
3B	Urban / Urbanizing	Principal /Minor Arterials	40 – 45 mph
3C	Urban Core	Principal/Minor Arterials	30 – 40 mph
4 - Principal Arterials in the Twin Cities Metropolitan Area and Primary Regional Trade Centers (Non-IRCs)			
4AF	Non-Interstate Freeway	Principal Arterials	55 – 65 mph
4A	Rural	Principal Arterials	45 – 55 mph
4B	Urban / Urbanizing	Principal Arterials	40 – 45 mph
4C	Urban Core	Principal Arterials	30 – 40 mph
5 - Minor Arterials			
5A	Rural	Minor Arterials	45 – 55 mph
5B	Urban / Urbanizing	Minor Arterials	40 – 45 mph
5C	Urban Core	Minor Arterials	30 – 40 mph
6 - Collectors			
6A	Rural	Collectors	45 – 55 mph
6B	Urban / Urbanizing	Collectors	40 – 45 mph
6C	Urban Core	Collectors	30 – 40 mph
7 - Specific Area Access Management Plans			
7	All	All	All

2.2 Access Category Assignments

An access category reflects the function and strategic importance of a roadway. A category assignment indicates the long-term function of the roadway for 20 years into the future. For the purposes of the 2002 Technical Memorandum and this Access Management Manual, initial trunk highway access category assignments were made by Mn/DOT's Office of Investment Management (OIM, based on the definitions and criteria provided below. Assignments were reviewed by all Mn/DOT districts, and each district was responsible for consulting with affected units of local government. To promote statewide consistency, assignments were also reviewed and approved by the directors of Mn/DOT's Program Support, Program Management, and District Operations.

An access category assignment may be amended, as provided in Section 2.2.4.

OIM maintains an inventory of all category assignments.

2.2.1 Primary Category Assignments

The primary access category assignment is based on the functional class of the roadway and its strategic importance within the state trunk highway system. As stated above, the category assignment is intended to reflect the future- or long-term function of the roadway over a 20-year planning horizon, not its existing condition. For this reason, *existing access may be inconsistent with the access guidelines for the assigned category.*

- Within a growing urban area, a highway segment may be assigned to a higher access category than its current functional classification if the higher category is consistent with the segment's planned future function within the larger road network. For example, a higher access category may be assigned to a segment that is functionally classified as a Minor Arterial if it is identified as a future Principal Arterial in adopted long-range transportation plans. A case in point is MN 3 between Rosemount and Northfield, which is functionally classified as a Minor Arterial, but is in Access Category 4 (Principal Arterial in the Twin Cities Metropolitan Area or Primary Regional Trade Center) for purposes of access management.
- In very low-density rural areas where urbanization is not anticipated within the 20-year planning horizon, a highway segment may need to provide more access than is normally associated with its functional classification. For instance, a highway that is functionally classified as a Minor Arterial may be assigned to Access Category 6 (Collectors) in order to allow greater access.

In all cases, the access category assignment should be consistent with the planned roadway function and with the policies and performance targets in Mn/DOT's Statewide Transportation Plan, Mn/DOT district plans, and applicable metropolitan or regional plans.

Consistent category assignments should be maintained across Mn/DOT district boundaries.

Category 1 – High-Priority Interregional Corridors

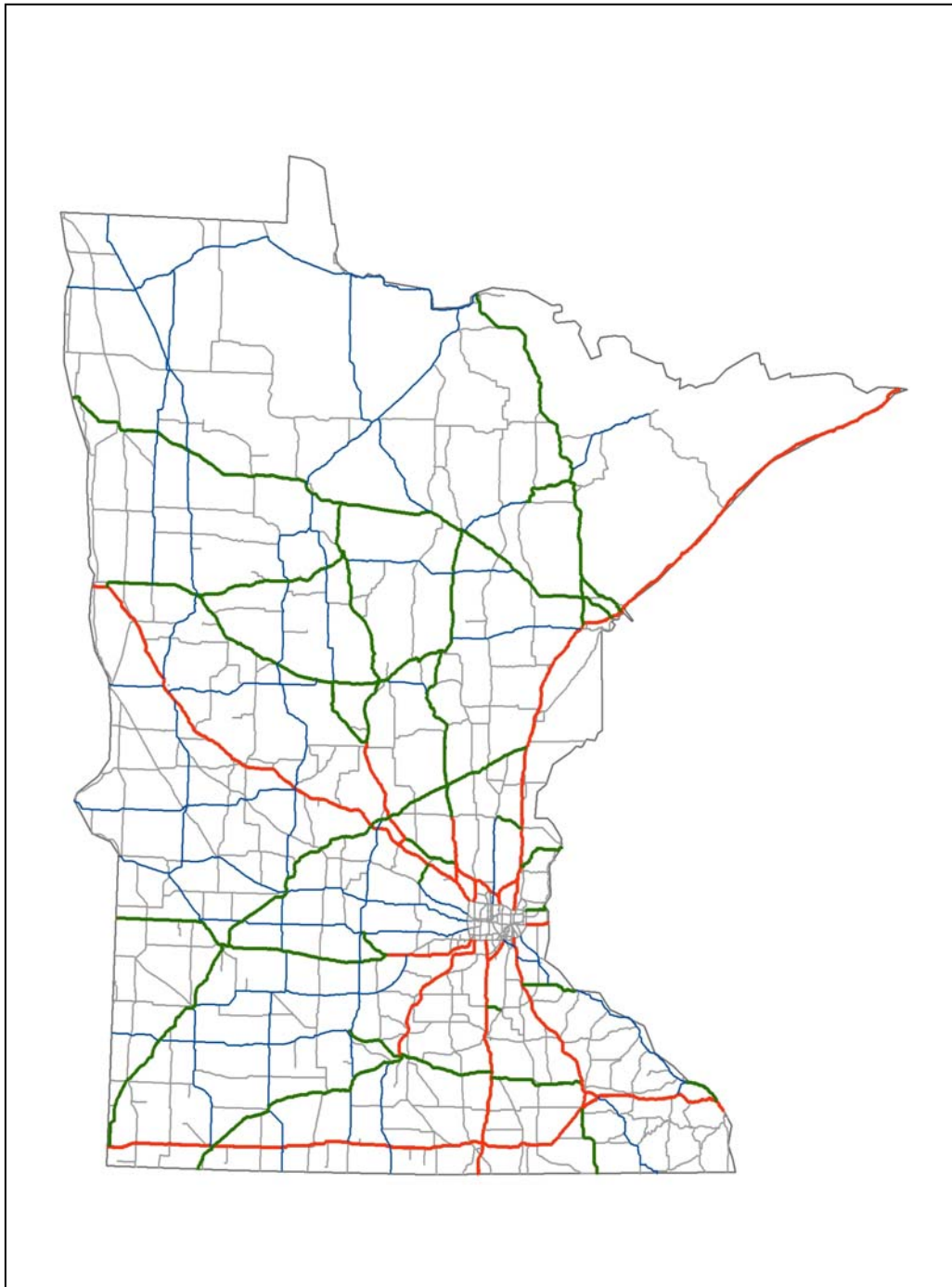
This access category is intended for High-Priority Interregional Corridors (shown in red in Figure 2.2), which connect Primary (Level 1) Regional Trade Centers in Minnesota and adjacent states to the (Level 0) Twin Cities metropolitan area. According to the ***Interregional Corridor System Plan***, these highways serve as key corridors for both interstate and intrastate travel. Performance measures are based on an average *corridor* peak hour travel speed of 60 mph. Access is managed along these corridors to strongly emphasize mobility. All High-Priority Interregional Corridors are functionally classified as either Interstate Highways or Principal Arterials.

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Examples of High-Priority Interregional Corridors include:

- All of I-90;
- I-94 and I-35 outside of the I-494/694 loop; and,
- US 52 from I-494 to Rochester.

Figure 2.2: Interregional Corridor System



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Category 2 – Medium-Priority Interregional Corridors

This access category is intended for Medium-Priority Interregional Corridors (shown in green in Figure 2.2), which connect Secondary Regional Trade Centers to Primary Regional Trade Centers. According to the *Interregional Corridor System Plan*, these are significant corridors that provide both interstate and intrastate travel. Performance measures are based on an average *corridor* peak-hour travel speed of 55 mph. Highways within this access category are functionally classified as Principal Arterials, and access management along these corridors emphasizes mobility.

Examples of Medium-Priority Interregional Corridors include:

- All of US 2;
- US 14 from Rochester to New Ulm;
- US 53 from Duluth to International Falls;
- MN 23 from I-90 to I-35;
- US 212; and,
- MN 371.

Category 3 –Regional Corridors

This access category is intended for Regional Corridors (shown in blue in Figure 2.2), which connect smaller regional trade centers to the rest of the state. Although their primary function is to provide mobility among communities, Regional Corridors may also provide direct property access in areas where a supporting local road network or hierarchical grid pattern has not been established. Regional Corridors are expected to operate at an average *corridor* peak-hour travel speed of 50 mph; however, posted speeds may vary as the highway passes through a community. For this reason, access management practices along these highways may vary greatly. Regional Corridors may be functionally classified as either Principal or Minor Arterials.

Examples of Regional Corridors include:

- US 61 from Red Wing to La Crescent;
- MN 7 from the Twin Cities metropolitan area to the South Dakota border;
- MN 65 from the Twin Cities metro area north to Cambridge; and,
- MN 316 from Hastings to US 61.

Category 4 – Principal Arterials in the Twin Cities Metropolitan Area and Primary Regional Trade Centers

This access category is intended for non-IRC Principal Arterials located within the Twin Cities metropolitan area or within a Primary (Level 1) Regional Trade Center. These highways are intended to provide the mobility of a larger network, with lower category roadways feeding into them. These Principal Arterials may range from fully grade-separated facilities to two-lane urban streets. Because of the variety in these types of roadways, posted speeds and the levels of access management will vary greatly.

Examples of Principal Arterials within the Twin Cities and Primary Regional Trade Centers include:

- MN 100 between I-494 and I-694;
- MN 62 (Crosstown) from MN 55 to I-494;
- MN 23 (Grand Avenue) from Fond du Lac to Duluth; and,
- MN 197 through Bemidji.

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Category 5 – Minor Arterials

This access category is intended primarily for trunk highways functionally classified as Minor Arterials. However, there is a large degree of variability among Minor Arterials.

- In fully-developed urban cores and central business districts, Minor Arterials tend to carry high volumes of traffic and provide a high degree of access. As a result, posted speeds may be in the range of 30-35 mph, with congestion leading to lower peak-hour operating speeds.

Examples of Minor Arterials in urban core areas include:

- US 75 through Moorhead;
 - MN 27 through Little Falls; and,
 - MN 5 through St. Paul.
- In urbanizing areas, Minor Arterials tend to function as mobility corridors, carrying longer, three-to-five-mile sub-regional trips. Posted speeds generally range from 40-55 mph. Access should be carefully managed in these areas, with direct access to private property provided by the local street network. However, in older, fully-developed corridors, it may be necessary for Minor Arterials to provide direct access to adjacent development.

Examples of Minor Arterials in urban/urbanizing areas include:

- MN 47 from US 10 to St Francis;
 - MN 5 to the east of I-694;
 - MN 19 through Red Wing;
 - MN 22 through Mankato; and,
 - US 75 (Moorhead) to the north of US 10.
- In rural areas, where neither dense development nor a complete local road network is planned or anticipated, Minor Arterials may be required to accommodate both higher travel speeds and direct access to adjacent property.

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Category 6 – Collectors

This access category is intended primarily for trunk highways functionally classified as Collectors. The primary function of a Collector is to provide access to adjacent land by serving as a connection between the local street network and arterial roadways. Collectors may be required to accommodate both higher travel speeds and direct property access.

Examples of Collectors include:

- MN 13 from I-494 to MN 149;
- MN 87 from US 71 to MN 64;
- MN 235 from Urbank to Parkers Prairie; and,
- MN 65 from Nashwauk to Littlefork.

Category 7 – Specific Area Access Management Plans

This access category is intended for trunk highway segments where topographical constraints, historic development patterns, or other unique characteristics create a situation that makes it impractical for access to be consistent with access management guidelines. In these locations, a Specific Area Access Management Plan may be adopted to provide guidance for retrofitting the area over time, with the goal of achieving access that is more consistent with the intent of these guidelines.

Situations in which a Category 7 Plan may be appropriate include corridors that run parallel to a railroad or through an area with steep slopes or wetlands.

Examples of Specific Area Access Management Plans include:

- MN 55 from the Wright/Hennepin County Line to CSAH 101; and,
- US 8 through Lindstrom.

2.2.2 Subcategory Assignments

With the exception of highway segments for which a Category 7 plan has been developed, each segment is also assigned to one of five subcategories. These subcategories recognize that access needs may change as a highway passes through or around a community. As with the primary category assignment, the subcategory assignment is intended to reflect the future or long-term function of the roadway over a 20-year planning horizon, not the existing condition. For this reason, *existing access may be inconsistent with the access guidelines for the assigned category.*

Subcategory assignments support access management practices that range from the most restrictive (Interstate Freeways, Non-Interstate Freeways, and Urbanizing areas) to the least restrictive (Rural and Urban Core areas). For this reason, the subcategory assignment can become a critical factor in newly urbanizing areas where managing the segment as a Rural area could lead to a shortage of interconnected local streets and an increased demand for direct private access to the highway.

Subcategory F – Interstate Freeway

This subcategory is intended for designated interstate highways, regardless of the surrounding land use. These are all fully access-controlled facilities where access is permitted only at interchanges.

Examples of Interstate Freeway (Subcategory F) include:

- I-94 (including I-494 and I-694);
- I-35 (including I-35E and I-35W);
- I-90;
- I-394; and,
- I-535.

Subcategory AF – Non-Interstate Freeway

This subcategory is intended for all other trunk highway segments that are planned as fully grade-separated facilities, regardless of the surrounding land use.

Examples of Non-Interstate Freeway (Subcategory AF) include:

- US 52 through Rochester;
- MN 100 from I-494 to I-694; and,
- MN 62 (Crosstown) from I-494 to MN 55.

In some cases, highways designated as Non-Interstate Freeway (Subcategory AF) may not yet be fully grade-separated, leaving these segments with a mix of at-grade and grade-separated intersections. During this transition period, new and existing at-grade access continue to exist on an interim basis.

Examples of facilities which are designated as Non-Interstate Freeway (Subcategory AF), but are still in transition to fully grade-separated facilities include:

- US 169 from I-494 to Belle Plaine; and,
- US 52 from I-94 to Rochester.

Subcategory A – Rural

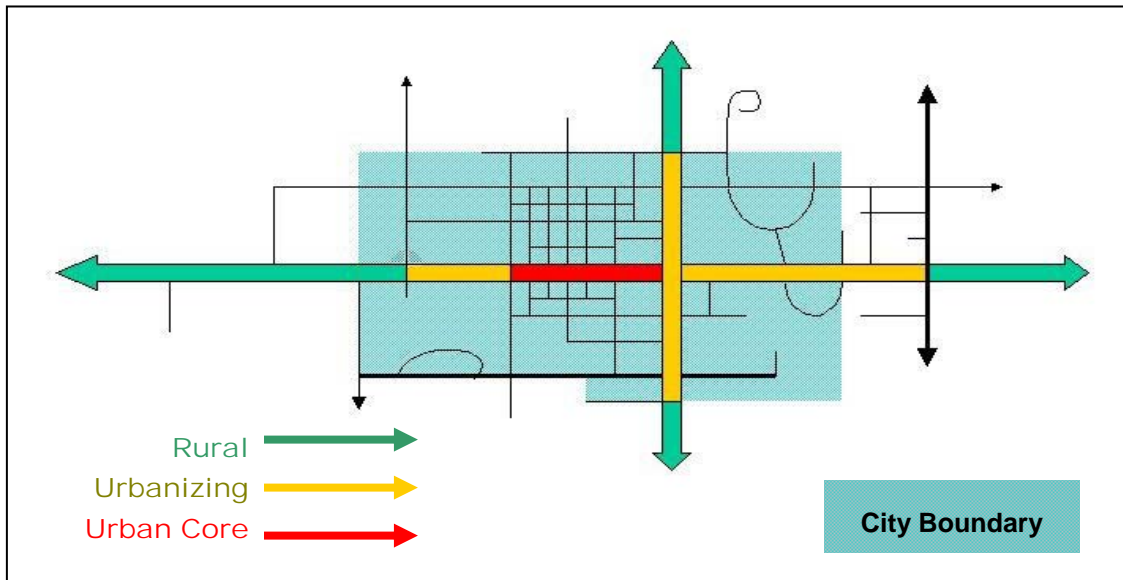
This subcategory is intended for trunk highway segments that extend through agricultural, open, or forested areas with limited development. It is also assigned to areas planned for long-term, low-density development, characterized by scattered, large-lot residential development and limited commercial or industrial use. Highway segments outside municipalities are generally designated as Rural (Subcategory A), unless the area is undergoing or planned for urban-scale development. Highways in this subcategory are generally expected to operate at speeds of 50 mph or more; however, in areas lacking a complete supporting local road network, these highways will also be required to provide direct access to adjacent property.

Special attention should be given to transition areas on the fringe of growing municipalities where local zoning may permit urban-type development without corresponding requirements for streets and utilities. Since the private access allowance in Rural (Subcategory A) areas is more permissive than in Urbanizing (Subcategory B) areas, it is important to appropriately categorize these transition areas in order to maintain long-term safety and mobility goals for the corridor.

In some geographically-large municipalities, full urbanization may not be anticipated within the next 20 (or more) years. Highway segments extending through areas of municipalities planned to remain rural in character are designated Rural (Subcategory A).

Figure 2.3 illustrates a municipal area with both a Rural (Subcategory A) segment that extends into an area which is not planned for development and an Urbanizing (Subcategory B) segment that extends into a transition area outside the city's boundary.

Figure 2.3: Category Assignments in a City



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Subcategory B – Urban/Urbanizing

This subcategory is intended for areas outside the urban core that are either urbanized or planned for urbanization over the next 20 years with a full range of urban services, especially a local supporting street network. These are generally highway segments within municipal boundaries or in transition areas outside municipal boundaries. Because they must serve the needs of both through-trip and local trip drivers, highways in this subcategory are generally expected to operate at a somewhat reduced speed compared to that of the corridor overall.

Urban/Urbanizing areas are of the greatest concern because of their potential impact on the highway system; however, they also provide the best opportunity for the development of a fully-connected street network. When assigning this designation, Mn/DOT will consider the adopted plans, development regulations, and the street extension plans and policies of the community.

In transition areas where urban growth is occurring outside the municipal boundaries, Mn/DOT will expect the local land use authority – township or county – to manage development and to ensure that direct access to private property is available through the local road network.

This subcategory is not intended for short highway segments serving individual, isolated developments.

Subcategory C – Urban Core

This subcategory is intended for highway segments extending through fully-developed town centers and central business districts. These areas are characterized by short blocks and a grid system of intersecting streets with small individual lots of 1/4 acre or less, little or no on-site parking, buildings situated close to the street, sidewalks, and pedestrian traffic.

The Urban Core (Subcategory C) designation generally applies only within established town centers. In the Twin Cities metropolitan area, this designation generally applies within the central cities of Minneapolis and St. Paul, those first ring suburbs developed with a fine-grain grid of connecting streets, and older town centers in suburbs or smaller rural communities. In many cases, the major thoroughfare through the Urban Core no longer serves as the primary mobility corridor. If a community wants to promote a new or expanded Urban Core, that area should be designed toward the local street network rather than the trunk highway.

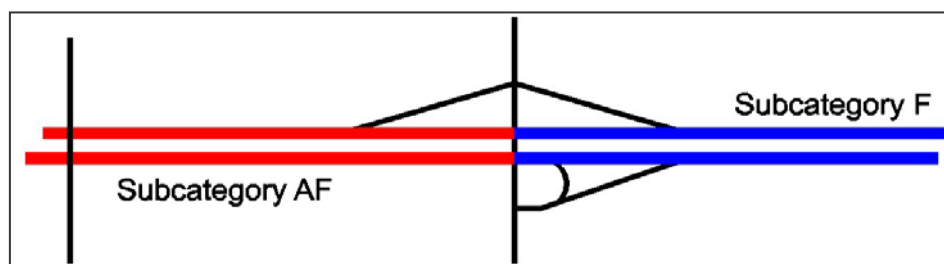
In some larger urban areas, the major thoroughfare through the Urban Core has been supplemented by additional roadways and no longer serves as the primary mobility corridor. However, when a bypass route is not present, the major thoroughfare will be required to accommodate both local and through-trips. In this case, lower highway speeds can be expected.

2.2.3 General Guidelines for All Category Assignments

The following criteria also apply when assigning access categories and subcategories:

- The access category designation should reflect the appropriate access category for a 20-year planning horizon, not the existing condition;
- The access category for a highway segment designed as a bypass is based on the segment's functional class and the character of the existing and planned surrounding land use. For a new bypass, the category assignment may also reflect the mobility goals and targets for the corridor;
- Highway segments should begin at an intersection or access point. An exception to this may occur at the edge of a municipality where the city limits may serve as the termini;
- Interchanges are a single access point for the purpose of determining the terminus of a highway segment. If a segment ends at an interchange, the terminus is assigned to the centerline of the cross street intersecting the centerline of the major roadway (see Figure 2.4);

Figure 2.4: Category Terminus at Interchanges



- In the Twin Cities Metropolitan Area, interregional and regional corridors end at the I-494/694 beltway and do not continue within the beltway; and,
- The subcategory designation should not be changed for a highway segment that is shorter than the recommended intersection spacing for the access category or for isolated anomalies, such as a small developed area along a Rural (Subcategory A) highway or an isolated interchange on a signalized corridor.

2.2.4 Amending Access Category Assignments

Over time major changes in land use plans (e.g., comprehensive plans, zoning, annexations) and transportation infrastructure (e.g., realignments, conversion to freeways, bypasses) may require amendments or revisions to the access category assignments. These amendments should be the result of careful planning and consultation among all corridor partners. Under no circumstances should an access category assignment be changed solely to accommodate a specific access request or to allow the permitting of an access that would otherwise be in conflict with these guidelines.

Successful implementation of access category assignments requires cooperation between both the road authority and the land use authority. Therefore, unless Mn/DOT has acquired all the access rights along a corridor, amendments generally require all parties to reach a consensus.

When amending access category assignments the underlying goal is to identify the appropriate guidance to move towards when land use and transportation opportunities arise.

To provide a consistent approach the following steps should be followed:

Step 1 – Initiation/Data Collection

An amendment to an access category assignment may be initiated by a district, Mn/DOT's Office of Investment Management (OIM) or a local governmental unit. The initiator of the change should fill out the form (see Figure 2.5) and include any supporting data and/or analyses. The completed form and supporting data should be sent to the District's Access Management Coordinator.

Step 2 – Solicitation of Comments

District's Access Management Coordinator should route the request form and supporting data to all impacted parties and request comments. The comment period should be thirty (30) days. OIM should be included on routing to provide comments on consistency with the guidelines.

Step 3 – Review of Comments

After thirty (30) days, the District's Access Management Coordinator should circulate any comments received for ten (10) days and request any additional comments.

Step 4 - Recommendation

Based on the information provided on the form (see Figure 2.5), supporting data and analyses, and comments received the district will determine if the amended access category assignment is consistent with the principles and policies within the Access Management Manual. Generally this process for amending an access category assignment should result in a consensus among all parties.

- If all parties are in agreement of the change in the access category assignment, the change is executed;
- If all parties do not agree on the change, all parties should meet with the goal of finding a common understanding the issues and solution –
 - If any disagreement remains between Mn/DOT and a local agency, the district will make the final decision; and
 - If any disagreement remains between functional groups within Mn/DOT, the issue will be presented to the Division Directors for guidance.

Step 5 – Updating the Database

The District informs OIM of the change and OIM changes the database and revises the maps.

Figure 2.5: Highway Access Category Change Request Form

Highway Access Category Change Request

Trunk Highway: _____ Length of segment: _____
 Highway segment: _____
(list beginning and ending reference points and/or description)

Current Access Category and Subcategory: _____ Proposed Access Category and Subcategory: _____

1. **Affected Land Use and Road Authorities:** Mn/DOT District: _____

Attach a map or drawing showing existing access (public and private) and existing and proposed land use within this segment and in each direction for at least one mile beyond the segment

2. **Reason for Change Request:**

<input type="checkbox"/> New or expanded facility	<input type="checkbox"/> Change in comprehensive plan
<input type="checkbox"/> New alignment	<input type="checkbox"/> Annexation agreement
<input type="checkbox"/> Adopted Category 7 Plan (attach plan)	<input type="checkbox"/> Change in road authority
<input type="checkbox"/> Interregional Corridor Plan	<input type="checkbox"/> Other (describe below)

3. **Why is the Change Needed:**
 Describe the conditions that create the need for a change in access category, and address how the proposed change will affect intersection spacing, street connectivity, and driveway access:

(Attach additional pages as necessary)

4. **Affected Jurisdictions:**
 List each relevant jurisdiction below and obtain any necessary signatures. Check the appropriate box, for each, and date the entry.

<i>Concur or Not</i>	<i>Jurisdiction</i>	<i>Signature</i>	<i>Date</i>
<input type="checkbox"/> <input type="checkbox"/>	_____	_____	_____
<input type="checkbox"/> <input type="checkbox"/>	_____	_____	_____
<input type="checkbox"/> <input type="checkbox"/>	_____	_____	_____
<input type="checkbox"/> <input type="checkbox"/>	_____	_____	_____
<input type="checkbox"/> <input type="checkbox"/>	_____	_____	_____

5. **Request Submitted by:**

Jurisdiction Signature Date
(Please attach comment letters from all affected jurisdictions)

2.3 Developing a Category 7 Specific Area Access Management Plan

A Category 7 designation is available for those trunk highway segments where unique environmental, topographic, or existing development conditions preclude achieving access spacing that is consistent with the established access category assignments. This designation may be appropriate for highway segments adjacent to rivers or railroad tracks, as well as to segments of corridors where there are significant wetlands or steep terrain.

Most corridor management plans will *not* lead to a Category 7 designation. Usually, a corridor plan will identify strategies to promote consistency with spacing guidelines for the assigned highway category. A Category 7 Plan is necessary only when this is not possible.

Effects of Implementing a Category 7 Specific Area Access Assignment

A Category 7 Specific Area Access Plan applies only to new access requests, change of use in access, or highway improvements. Existing access is allowed to continue even when it is inconsistent with the Category 7 Plan. Physical changes in existing access will depend largely on opportunity and will be considered only if there is a change in use requiring a new access permit, or in situations where an improvement project is initiated for the highway. The Category 7 Plan is the guide for improving access conditions along a specific segment as opportunities for change arise. However, while taking into account the guidelines set forth in the Category 7 Plan, it is still necessary to respect the right of abutting property owners to be provided with reasonably convenient and suitable access in these specific situations.

Plan Contents

A Category 7 Specific Area Access Plan should include the following:

- A summary of the rationale for the Category 7 designation, including:
 - A summary of the general conditions warranting Category 7 designation; and,
 - A summary comparison of the existing and proposed access conditions with the current Access Category assignment.
- An analysis of the impact that the plan, if implemented, would have on the mobility and safety of the highway and surrounding supporting road system, including IRC corridor performance, where applicable.
- An implementation plan that addresses anticipated timing of public and private improvements, including land-use changes, estimated capital and operating costs, and assignment of financial responsibilities for these improvements. The implementation plan should also identify any local government comprehensive plan amendments or development regulations that will be adopted to ensure that the access concepts will be considered as development/redevelopment occurs.
- Maps and text describing existing land use and access conditions, including:
 - Existing land use by lot and parcel;
 - Existing public and private access conditions including public street intersections, service/frontage roads, private driveways, shared access and cross access;
 - Existing traffic control including medians, signals, and stop signs; and,
 - Existing highway geometric design, including turn lanes.
- Maps and text depicting proposed land use and access conditions, including:
 - Proposed land use by lot and parcel;
 - Proposed future public and private access conditions, including public streets, intersections, service/frontage roads, private driveways, shared access and cross access;
 - Proposed future traffic control, including median additions and/or closures, signal additions and/or modifications, stop signs; and,
 - Proposed future highway geometric design, including turn lane additions or modifications, or lane expansions.

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Plan Adoption

Development of a Category 7 Plan may be initiated by Mn/DOT or by a local unit of government. However, for the Plan to be effective, Mn/DOT and the local unit of government must be active partners.

Mn/DOT will consider local plans for growth and economic development along with the anticipated impacts of the Category 7 Plan on both system performance and long-term financial implications. This includes considering the Plan's effects on:

- Mobility and congestion;
- Safety;
- Connectivity and accessibility;
- Existing corridor plans;
- The Highway Improvement Program (HIP); and,
- The existing construction program.

A Category 7 Plan must be officially adopted by the Mn/DOT district and by the affected local units of government and local road authorities. It should be noted that:

- A plan may be adopted by joint resolution of all affected parties; and,
- Local approval of a construction plan does **not** constitute approval of a Category 7 Plan.

Approved plans must be submitted to Mn/DOT's Office of Investment Management.

Because the approved plan will form the basis for all future access in the area, OIM will post all adopted Category 7 Plans on the web and will link them to the Access Category assignment.

2.4 Access Types

The Access Type is based on the traffic volume served by the access. Mn/DOT has established four Access Types.

2.4.1 Definitions

The four Access Types reflect the volume of traffic the access serves and whether the access is a public street intersection or a driveway. These types are described below, in Figure 2.6.

Figure 2.6: Summary of Access Types

Access Type	Access Description
ACCESS TYPE 1 Single Family or Field Access	Includes driveways that serve up to three single-family homes or provide field access. (Does NOT include agri-business driveways.)
ACCESS TYPE 2 Low-Volume Driveway <100 Trips/Day	Includes driveways that serve small commercial, industrial, public, and institutional developments; small residential complexes and subdivisions; or small agri-business operations. <ul style="list-style-type: none"> ○ May be designated as a private street serving ten or fewer lots; ○ Generates fewer than 100 trips per day.
ACCESS TYPE 3 High-Volume Driveway >100 Trips/Day	Includes driveways that serve large commercial, industrial, public, and institutional developments; shopping centers; industrial and office parks; colleges; large residential complexes and subdivisions, or large agricultural operations. <ul style="list-style-type: none"> ○ May be designated as a private street serving more than ten lots; ○ Generates 100 trips per day or more.
ACCESS TYPE 4 Public Street	All public street or roadway intersections. <ul style="list-style-type: none"> ○ Should be part of an integrated network that serves multiple properties.

Trip – A trip is a one-way movement.

Typically, 100 trips per day would mean 50 vehicles entering an access and 50 vehicles exiting an access.

2.4.2 Estimating Trip Generation

Estimates of daily one-way trips generated from development generally should be determined by using a current edition of the Institute of Transportation Engineers' *Trip Generation* manual. When the *Trip Generation* manual is applicable, it should be consulted to estimate daily trips.

In some cases, the *Trip Generation* manual does not reference the specific type of development in question or does not have sufficient studies to provide a valid estimate of daily trips. This is especially true for freestanding small businesses. In these cases, the daily trips generated by a business may be estimated by adding together the following:

- The number of trips made by employees going to work, going home, going to lunch, etc.;
- The number of trips made by customers, both coming and going; and,
- The number of deliveries, both inbound and outbound.

Figure 2.7: Trip Generation Example

Example: Estimating Trip Generation

The calculation for one day's trip generation at a small antiques or florist shop might be as follows:

2 employees (Going out for lunch)	8 trips
4 Deliveries	8 trips
30 Customers	<u>60 trips</u>
Total	76 trips

This small business will generate fewer than 100 trips/day; therefore it is classified as an Access Type 2.

Access Types 1 and 2 can generally be determined based on the following:

- Access Type 1 (Residential Driveways and Field Entrances)
 - One to three single-family homes/units – up to 30 trips per day; and,
 - Field entrance.
- Access Type 2 (Land uses generating 100 trips per day or fewer)
 - Logging entrance;
 - Six-unit apartments – 36 trips per day;
 - Ten single family homes – 100 trips per day;
 - Fourteen-unit apartment – 100 trips per day; and,
 - Very small commercial businesses (antique shop, florist, repair shop).

Larger or more complex land uses may require a study to determine the daily trip generation rate. The study should include examples of similar development types and sizes.

Examples of the trip generation typically associated with common land uses are provided in Figure 2.8.

Figure 2.8: Examples of Trip Generation for Selected Land Uses

Land Use	ITE Code ^a	Size	Daily Trips
Single-Family Home	210	1 dwelling unit	10
4-Unit Residential Subdivision	210	4 dwelling units	40
Apartment	220	1 dwelling unit	7
Small Service or Retail (Antique shop, snowmobile repair shop, florist, etc...)		2 employees 4 deliveries 30 customers	8 8 <u>60</u>
Total			76
General Office Building	710	30 employees	100
Mini-Warehouse	151	100 Storage Units	30
Motel	320	50 rooms	300
Junior/Senior High School	522 & 530	1,000 students	1,600
Small Supper Club (Low turnover, quality restaurant)	831	450 m2 (5000 sf) 160 seats	450
Chain Restaurant (Perkins, Applebee's, etc.) (High turnover, under an hour)	832	450 m2 (5000 sf) 135 seats	650
Sub Shop/Fast Food (Subway, etc.)	833	90 m2 (1000 sf)	600
Fast Food Restaurant with Drive-through	834	270 m2 (3,000 sf)	1,500
Gas Station or Gas Station Convenience Store	844/845	8 pumps	1,350
Video Rental ^b		450 m2 (5000 sf)	550
Bank with Drive-through Window	912	270 m2 (3,000 sf)	800
Strip Mall with Retail, Restaurant, & Small Offices	814	1800 m2 (20,000 sf)	800
Supermarket	850	4500 m2 (50,000 sf)	5,500
New Car Sales	841	2300 m2 (25,000 sf)	950
Building Supply & Lumber Store	812	900 m2 (10,000 sf)	400
Electronics Superstore	863	2700 m2 (30,000 sf)	1,350
Target™ Store ^b		11 700 m2 (126,000 sf)	7,400
General Light Industrial	110	4 ha (10 acres)	500
Industrial Park	130	4 ha (10 acres)	625

Notes:

a ITE Code refers to the land use code from *Trip Generation*, Institute of Transportation Engineers, Sixth Edition, 1997.

b Trip generation based on study for the City of Northfield, Minnesota, by Yaggy/Colby, 1999.