

Denver Multi-Modal Street Type Designation System

Activity

Flexible/revised local design standards

Implementing Agency

City and County of Denver

Summary

Since 2002, Denver has used a new street classification system that considers multiple modes of transportation and surrounding land uses. The designations are: residential streets, main streets, mixed-use streets, commercial streets, and industrial streets.

Link to Livability

Denver's street typology and classification system help the city and developers create streets that meet community needs. The system recognizes how streets interact with surrounding land uses and how people may use different types of streets to access different types of destinations. Highlighting these connections helps improve and preserve multi-modal and pedestrian friendly streets, an important element of livable communities.

Context and Background

Streets have been historically classified by design and operational characteristics that relate primarily to the movement of cars. As a consequence, street design is often less sensitive to the needs of non-motorized modes and transit. The City and County of Denver, believing a better balance was needed between functional classification, adjacent land use, and competing travel needs, decided to "classify" its streets according to functions related to how people travel on the roads (walking, biking, driving, etc) and what destinations are served by the roads (residential, mixed use, etc). It also created a street typology system designed to prioritize various roadway design elements by looking at factors related to both adjacent land use and functional classification. Denver's street types and functional classifications are designed to bring consistency to the process of planning and improving multi-modal streets, helping ensure that land use and roadway function are given due consideration. This guidance helps planners develop transportation improvements that support local land uses and connect to the rest of the street network.

Detailed Description

Blueprint Denver, an integrated land use and transportation plan completed by the City and County of Denver in 2002, defines six roadway functions. Three of these - **arterial streets**, **collector streets**, and **local streets** - are part of the traditional functional classification used by federal, state, and local agencies. Two are "special Denver categories": **Landmark Streets** and **One-way Couplets**. Landmark Streets are significant for historical reasons and have influenced the development and unique physical character of the city. One-way Couplets are pairs of one-way streets that function as a single, higher-capacity street. Couplets are usually separated by one city block. Finally, the plan designates a new

street classification: **Downtown Access Streets**. These streets serve densely developed mixed-use areas within the downtown area, and are designated as multi-modal facilities.

Augmenting the functional classification system are five street typologies: **Residential Streets, Main Streets, Mixed-Use Streets, Commercial Streets, and Industrial Streets**. These typologies allow Denver planners to more precisely characterize streets, using terms such as "mixed-use arterial" or "residential collector." State highways are included in the typology system, but not controlled access highways (freeways). *Blueprint Denver* defines each of the typologies as follows:

- **Residential Streets** serve two major purposes in Denver's neighborhoods. As arterials, residential streets balance transportation choices with land access, without sacrificing auto mobility. As collectors and local streets, residential streets are designed to emphasize walking, bicycling and land access over auto mobility. In both cases, residential streets tend to be more pedestrian-oriented than commercial streets, giving a higher priority to landscaped medians, tree lawns, sidewalks, on-street parking and bicycle lanes. Residential streets generally consist of two to four travel lanes.
- **Main Streets** serve the highest intensity retail and mixed land uses in areas such as Downtown and in regional and neighborhood centers. Main streets are designed to promote walking, bicycling, and transit within an attractive landscaped corridor. Generally, main street commercial activities are concentrated along a two- to eight-block area, but may extend farther depending on the type of adjacent land uses and the area served. Main streets may have two to four travel lanes. On-street parking usually is provided to serve adjacent land uses. Tree lawns and detached walks (i.e., sidewalks set back from the roadway) are emphasized. In especially busy pedestrian districts, the landscaped tree lawn may be replaced with an amenity zone featuring street trees in grates. To further create a pedestrian-friendly atmosphere, main streets may have wide sidewalks, street furniture (benches, information kiosks, trash receptacles, etc.), outdoor cafes, plazas and other public spaces.
- **Mixed-use Streets** emphasize a variety of travel choices such as pedestrian, bicycle and transit use. Mixed-use streets are located in high-intensity mixed use commercial, retail and residential areas with substantial pedestrian activity. These streets are attractive for pedestrians and bicyclists because of landscaped medians and tree lawns. Mixed-use streets can have on-street parking and wide sidewalks depending on the type and intensity of adjacent commercial land uses. On-street parking, bicycle lanes, landscaping and sidewalk width are higher priorities than the number of travel lanes on this type of street.
- The most widespread **Commercial Street** type in Denver is the strip commercial arterial. These arterials typically serve commercial areas that contain many small retail strip centers with buildings set back from front parking lots. Because of this, strip commercial arterials have many intersections and driveways that provide access to adjacent businesses. Historically, this type of street is highly auto-oriented and tends to discourage walking and bicycling. On-street parking is infrequent. Commercial streets are designed with multiple lanes divided by a landscaped median or a continuous two-way left turn lane in the center. Commercial streets are designed to balance traffic mobility with access to nearby businesses. However, because there are so many intersections and access points on commercial streets, they often become congested.

- **Industrial Streets** serve industrial areas. These streets are designed to accommodate a high volume of large vehicles such as trucks, trailers and other delivery vehicles. Bicycles and pedestrians are infrequent but still need to be accommodated. Industrial streets typically are two to four lanes, which in general are wider than usual to accommodate larger vehicles. On-street parking often is used to store trailers and other large vehicles. Sidewalks are provided but are not as wide as in other higher-density commercial and retail areas. This is the only street type in which attached sidewalks are allowed where tree lawns are not directly adjacent to the street. Attached sidewalks allow larger vehicles and trailers to park on the street without damaging tree canopies in the tree lawn.

Blueprint Denver defines the functional classifications accordingly:

"[M]ulti-modal street types and functional classifications deal with how a street interfaces with the adjacent land use and how the street is intended to function from a mobility standpoint. Both are important elements to consider when attempting to create seamless connections between several transportation modes. As tools to implement Blueprint Denver, each element gives direction to City staff, elected officials, neighborhoods and others who are undertaking more detailed planning efforts to develop project-level recommendations."

The two-year effort to develop the street typologies was led by Denver Community Planning and Development and the Public Works Transportation Planning office, with the help of a consulting team and a 42-member Land Use and Transportation Advisory Committee. The committee represented various neighborhood groups and public agencies, including Historic Denver, Denver Environmental Health, the Denver Planning Board, the Denver Water Board, and the Neighborhood Resource Center.

Where sufficient public right-of-way exists, all priority design elements may be accommodated. Within constrained public rights-of-way, however, trade-offs between priority design elements are required to balance the functions of the various travel modes.

Application Examples

Blueprint Denver's street typologies are often used as a starting point in the development review process by the Denver zoning, planning, and engineering staff who review private development proposals. A Denver development review committee, named "BlueBridge," is responsible for designing cross sections for street reconstruction projects and land use redevelopment across the city, and has begun to rely on the *Blueprint Denver* typologies. The functional classifications are shown in Figure 1.

Draft of Denver Street Functional Classification
Northwest—Revised 6/18/01

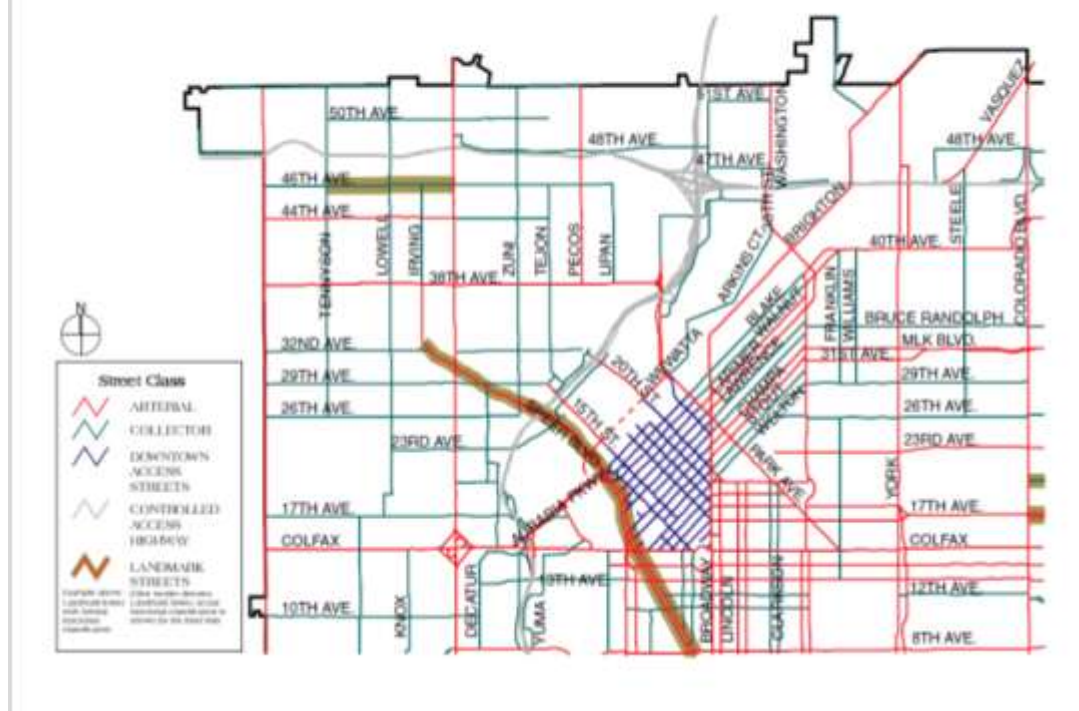


Figure 1 Denver Street Functional Classification | *Blueprint Denver*, City of Denver, 2002

In addition, the multi-modal street concept has been included in zoning amendments, transportation and land use plans, and in design guidelines for local redevelopment projects: the Stapleton Airport Redevelopment Project, the River North Plan, the Downtown Multimodal Access Plan, and the East Colfax Plan.

Blueprint Denver and the *Denver Comprehensive Plan* recommend higher density, pedestrian friendly, mixed use development along Denver's commercial corridors or "Main Streets." Three **Main Street zone districts** were established by the Denver City Council in 2005 to encourage a strong mix of housing, office, and commercial uses in transit rich places and commercial corridors. The Main Street zone districts are implemented using "form-based codes" that provide standards for appropriate building form while allowing flexibility in uses and reducing parking requirements.

Denver Public Works, with major support from Denver Community Planning and Development, has begun to develop the **Strategic Transportation Plan (STP)**. The objective of the STP is to determine the types of transportation investments Denver needs to accomplish the vision of *Blueprint Denver*. The STP represents a new approach to transportation planning. Instead of simply forecasting future auto travel on Denver streets, Denver has developed a transportation model that forecasts expected increases in person-trips, in order to evaluate the magnitude of impacts caused by all types of travel. This person-trip data will give Denver the ability to plan for bicyclists, pedestrians, and transit as well as for street improvements. The STP is the first step in identifying the needs for every major "travel shed" in the city.

The STP will include concepts for how to meet transportation needs, including a prioritization of corridor improvements.

The **Stapleton Redevelopment Project** is the largest infill redevelopment project in the nation, occupying the 4,700-acre (7.5-square mile) site of the former Denver Stapleton International Airport. *When build-out is complete in 2016, the area will boast 12,000 homes, 10 million square feet of office space, 13 million square feet of retail space, and 3,000 hotel rooms. The Stapleton Redevelopment Project will bring 35,000 jobs and 30,000 residents to the area.* Although the original Design Guidelines for Stapleton, published by the City and County of Denver in 1999, pre-date Blueprint Denver, they specifically address the need for context-sensitive streets that balance the needs of all users. The guidelines call for urban design elements, such as trees, tree lawns, on-street parking, building entries, and accommodations for bicycles and pedestrians in addition to cars and transit. The *Blueprint Denver* street typologies add an additional layer of context-sensitive design to an already forward-thinking document. They have led Stapleton project planners to designate one residential collector and one residential arterial, and to construct several residential streets with 30-foot-wide cross sections.

The **Downtown Multimodal Access Plan**, completed in 2005, provides a detailed, integrated plan for vehicular, freight, pedestrian, bicycle, and transit access into and throughout the downtown area over the next 20 to 25 years. The plan takes into account the relationship between long-term land use planning, infrastructure improvements, and streetscape and urban design elements needed to ensure multi-modal connections. The City and County of Denver, the Regional Transportation District, and the Colorado Department of Transportation (CDOT), as well as the Downtown business community, sponsored the study.

The **West Colfax Corridor Transportation Study**, completed in 2010, identifies existing conditions and recommendations for improvements along West Colfax Avenue. This mixed use corridor contains approximately 440 acres of residential, commercial, retail, office, industrial and institutional uses. The study cites recommendations for multi modal improvements to the West Colfax corridor from *Blueprint Denver*, based on its classification as a “mixed use arterial corridor” and proximity to “Areas of Change” neighborhoods. Extensive analysis of pedestrian conditions along the corridor, including a pedestrian level of service analysis was performed as part of this study. The study includes many recommendations taken from the street classification system for improvements to mixed use streets, such as improved sidewalks, moving utilities underground, narrowing crosswalks and adding additional medians for traffic calming.

The **Better Denver Bond Initiative**, a bond initiative passed in 2007, is designed to invest in Denver’s infrastructure to improve public infrastructure and facilities. Two hundred and eighty projects are expected to be completed by 2011 under this program. According to the Bond rules, any street eligible for full reconstruction is required to use asphalt or concrete appropriate to the street classification (designated by *Blueprint Denver*). With a large number of street improvements planned, there is an opportunity to use the street classification system to improve the consistency and connectivity of Denver’s street network. Complete repaving of a street provides opportunities to create street elements for non-motorized modes, such as constructing bulb-outs at intersections or painting new bicycle lanes.

Lessons Learned

It may be more straightforward to apply new typologies to new development than to infill.

Although *Blueprint Denver's* street typologies are works in progress, they are gradually becoming part of the culture in land use development, zoning, and the design of transportation improvements in Denver. These typologies help developers and planners make connections between different land uses in Denver and provide access by different travel modes. The greatest challenges occur with infill redevelopment. It can be difficult to retrofit existing streets with high volumes of traffic and constrained rights of ways in a manner consistent with the multi modal street principles.

Streetscape changes can be a gradual process and require the cooperation of planners, engineers, and public works departments.

The City of Denver was acutely aware of this when it went about the process of introducing new street typologies to guide multi-modal street design. The Planning and Public Works Departments worked closely together to develop street cross sections for the Public Works Standard Right-of-Way Cross Sections and Utility Locations Rules and Regulations that are consistent with the new street typologies. Engaging the various stakeholders early in the planning process helps reduce potential conflicts later.

For Further Information

Contacts

Janice Finch

Senior City Planner, Denver Department of Public Works, Division of Policy, Planning & Communications
720-865-3163

Websites and Publications

- [Main Street Zone District](#)
- [Strategic Transportation Plan](#)
- [Downtown Multimodal Access Plan](#)
- [Blueprint Denver](#)
- [Denver Stapleton Redevelopment Project](#)
- [West Colfax Corridor Transportation Study](#)
- [Better Denver Bond Initiative](#)