The completion of the Context-Sensitive Highway Design Project is an important effort for implementation of the Town of Amherst’s Bicentennial Comprehensive Plan. Developing policy guidance that encourages context-sensitive solutions that combine consideration of the functional role of highways with the preservation of surrounding neighborhood character is a key policy of the Plan. The Comprehensive Plan establishes and describes four types of highway corridor and classifies many of the major highways in the Town according to the character of the surrounding land use proposed in the Conceptual Land Use Plan. By defining the relationships between highway function and surrounding character type, this project seeks to refine those descriptions and identify desired design elements of the “Character Corridors” that are discussed in the Plan. This Technical Memorandum was prepared to provide participants in the Amherst Context-Sensitive Highway Design Project with experiential background information based upon examples of the formulation and implementation of “street typologies” as an approach to supporting context-sensitive land use and transportation planning.

Highways are often classified by their intended function within a regional or community transportation system. The functional classification of a highway broadly defines its physical design and operational characteristics as they relate to the movement of motor vehicles. Highways in Amherst are functionally classified by state, regional or local transportation agencies. Those classifications are generally used to establish their role within the regional transportation system and to guide their physical design. By contrast, street typologies further define highways by relating them to the adjacent land use and their functions for pedestrians, bicyclists and transit. As noted in the City of Denver Land Use Transportation Plan, “Street typologies attempt to strike a balance between functional classification, adjacent land use, and the competing travel needs. Each street typology prioritizes various design elements by looking at factors related to both the adjacent land use and the functional classification.” Experiences from Denver and other communities can be helpful to informing the refinement of Amherst’s Character Corridors and the development of corresponding typologies.
Task 1 of the Project Scope of Work includes a task to research and summarize examples from other communities where highway typologies have been successfully developed and implemented. The following memorandum summarizes experiences from four communities: Denver, Colorado; Charlotte, North Carolina; Columbus, Ohio; and Portland, Oregon. Each summary briefly discusses why and how the typologies were developed, their connection to other planning initiatives, how they are used, and the community’s experiences during implementation. Examples from these efforts are included for Denver, Charlotte and Columbus.

Each description also includes a point of contact for the project and, when available, a Web Address where additional information and project materials can be found. Information for points of contact was gathered in March 2007. The Web Addresses were last accessed in November 2007.

The cases presented in this Memorandum were selected to illustrate current practices in context-sensitive highway design. Presentation of these cases and the corresponding examples of street typologies is intended to inform project participants about the formulation and implementation of street typologies. While the cases and examples are illustrative of current practices and experiences, they are not intended to prescribe a format or the elements of street typologies and design guidance to be developed in this project. Context-sensitive design emphasizes the importance of community values and conditions as essential considerations for highway design. Amherst’s approach to context-sensitive highway design and the development of street typologies for its character corridors should emerge from this project and reflect local conditions and considerations.
Case Study 1

Blueprint Denver & Multi-Modal Street Type Designation System
Denver, Colorado

Purpose

Denver’s street typologies were developed as part of Blueprint Denver, an integrated city-wide land use and transportation plan. The Blueprint, adopted in 2002, was intended to be an important first step in implementing the city’s 2000 Comprehensive Plan. The overall goal of the Blueprint was to bridge the gap between the general policies of the comprehensive plan and detailed implementation measures. It was developed and is implemented by the City and County of Denver.

The street typologies were developed in response to the need for a better balance between functional classification, adjacent land use, and competing travel needs. They are designed to bring consistency to the process of planning and improving multi-modal streets, helping to ensure that land use and roadway function are given due consideration in the design and redesign of roadways. The goal was to develop a means of balancing conventional functional classifications with a broader perspective on street function.

Development

The development of the street typologies was a result of the planning process for the Blueprint Denver; multi-modal streets were identified as a key element and implementation tool in creating a coordinated land use and transportation system. Streets were reviewed and classified according to how the street interfaces with the adjacent land use and how it is intended to function from a mobility standpoint. The result, multi-modal streets, is a street typology system designed to prioritize various roadway design elements by looking at factors related to both adjacent land use and functional classification. Five street types were identified: Residential, Main Street, Mixed-Use, Commercial, and Industrial. In addition, two special street types were identified: Landmark Streets and One-way Couplets. The typologies allow planners to more precisely characterize streets, for example, using terms such as “mixed-use arterial” or “residential collector.”

The two-year planning effort to develop Blueprint Denver and the typologies was led by the Denver Community Planning and Development and the Public Works Transportation Planning Departments, with the assistance of a 42-member Land Use and Transportation Advisory Committee. The committee represented various neighborhood groups and public agencies, such as the Denver Planning Board, Water Board, and the Neighborhood Resource Center.

There was also a broader public review process. A series of open houses were held to introduce the Blueprint to the public. Next, a series of planning and design workshops were held, which focused on plan concepts, such as the typologies. The open houses and workshops involved hundreds of citizens. After completing the draft plan, a new round of public review and input was conducted, which included six city-wide forums.
Implementation

Denver’s multi-modal street typologies are being implemented in several different ways by the City and County of Denver: as a reference during current development review, as a guide for completing zoning amendments, transportation and land use plans, and as an aid in the preparation of design guidelines for local redevelopment projects.

The street typologies are often used as a starting point in the development review process by Denver’s zoning, planning, and engineering staff who review private development proposals. In addition, a development review committee, named “BlueBridge,” is responsible for designing cross sections for street reconstruction projects and land use redevelopment across the city and use the Blueprint Denver typologies. The street typologies are also being incorporated into the design guidelines for four local redevelopment projects: the Stapleton Airport Redevelopment Project, the River North Plan, the Downtown Multi-Modal Access Plan, and the East Colfax Plan.

Several other projects and plans make use of the guidance provided by Blueprint Denver to further implement the typologies. Three Main Street Zone districts, which permit higher density, pedestrian-friendly, and mixed use development, were established in 2005 for use along Denver’s ‘Main Streets’ road typologies. Denver Public Works has begun to develop the Strategic Transportation Plan, the objective of which is to determine the kinds of transportation investments needed to accomplish the vision of Blueprint Denver. The plan will create concepts for how to meet transportation needs, including a prioritization of corridor improvements. In addition, the Downtown Multimodal Access Plan, completed in 2005, provides a detailed integrated plan for 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 to ensure multi-modal connections.

The Blueprint Denver report provides the context and supporting goals for the street typologies. For each of the seven identified street types, a cross-section and birds-eye view are presented. In addition, initial and secondary priority design elements and typical traffic management features are identified. The initial and secondary elements are intended to be considered in terms of local conditions, including: the constraints of the right-of-way, implementation phasing plans, neighborhood concerns, and financial constraints. Various roadway options are then developed by combining different priority and secondary elements.

Experiences

Overall, it was noted that the street typologies and tools are best applied at a corridor or district-wide perspective with a moderate to long-range implementation time frame. It was also noted that making changes to a streetscape is a particularly gradual process and requires the cooperation of planners, engineers, and public works departments. Therefore, it is important for planning and public works departments to work together in formulating the street typologies and to continue to work together to formulate street cross sections that are consistent with the typologies.
Although the typologies are a work in progress, they are gradually becoming “part of the culture” in land use development, zoning, and the design of transportation improvements. The importance of public participation was also noted, as engaging the various stakeholders early in the planning process helped to reduce potential conflicts later.

The greatest challenges have occurred with infill redevelopment and the attempt to retrofit existing streets. This necessitates tradeoffs between access, mobility, and environmental design to accommodate high traffic volumes and constrained right-of-way. The initial and secondary priority design elements have aided in the analysis of these trade-offs.

Denver’s street typologies are illustrated in the following figures.

**Sources**

Janice Finch, Senior City Planner, Denver Department of Public Works, Division of Policy, Planning & Communications, (720) 865-3163.

*Blueprint Denver*, available online at [www.denvergov.org/Blueprint_Denver/](http://www.denvergov.org/Blueprint_Denver/)

“Denver Multi-Modal Street Type Designation System” available online at: [www.fhwa.dot.gov/planning/landuse/denvercs.htm](http://www.fhwa.dot.gov/planning/landuse/denvercs.htm)


Main Streets

Main Streets serve medium-intensity retail and mixed land uses in Denver including neighborhood centers. Unlike Commercial Streets, Main Streets are designed to promote walking, bicycling, and transit within an attractive landscaped corridor. Generally, Main Street activities are concentrated along a two- to eight-block area, but may extend further depending on the type of adjacent land uses and the area served.

Main Streets generally consist of two to four travel lanes, although typically have only two lanes. On-street parking is usually provided to serve adjacent land uses. Curb extensions within the parking lane can accommodate tree wells creating, in combination with a tree lawn, a double row of street trees. To further create a pedestrian-friendly atmosphere, Main Streets have wide sidewalks, ranging from 10 to 25 feet in width, street furniture, outdoor cafes, plazas, etc.

Elements of Main Streets

Initial Priority Elements
- Wide sidewalks with transit access and pedestrian plazas
- Bicycle facilities
- Curb extensions
- Tree lawns
- On-street parking

Secondary Priority Elements
- Medians
- Width and number of travel lanes (for collector and local streets)

Examples of Traffic Management Features
- Narrower travel lanes
- Alternative paving material
- Tree planters in parking lane
- On-street parking
- Reduced pedestrian crossing distances at intersections, using curb extensions, traffic islands, and other measures
- Raised intersections
- High-visibility crosswalks
Mixed-Use Streets

Mixed-Use Streets are located in high intensity mixed-use commercial, retail, and residential areas with substantial pedestrian activity. Alternative modes of travel are emphasized on Mixed-Use Streets with increased use of pedestrian, bicycle and transit design elements. Mixed-Use Streets typically consist of two to four travel lanes.

Improvements such as landscaped medians and tree lawns are desirable to make Mixed-Use Streets more attractive for pedestrians and bicyclists. Mixed-Use Streets frequently provide on-street parking and wide sidewalks, depending on the type and intensity of adjacent commercial land uses.

Elements of Mixed-Use Streets

Initial Priority Elements
- Wide sidewalks with transit access
- Bicycle lanes on designated bike routes
- Other bicycle facilities
- Tree lawns
- On-street parking

Secondary Priority Elements
- Number and width of travel lanes (on collector and local streets)
- Medians

Examples of Traffic Management Features
- Landscaped Medians
- On-street parking
- Street trees
- Narrower travel lanes
- Traffic circles and roundabouts
- Reduced pedestrian-crossing distances at intersections, using curb extensions, traffic islands, and other measures
Residential Streets

Residential Streets serve two major purposes in Denver’s neighborhoods. As arterials, residential streets balance multi-modal mobility with land access. As collectors, Residential Streets are designed to emphasize walking, bicycling, and land access over mobility. In both cases, Residential Streets tend to be more pedestrian-oriented than Commercial Streets.

Residential Streets generally consist of two to four travel lanes, but place a higher priority on pedestrian and bicycle-friendliness than on auto mobility. In traditional Denver neighborhoods, homes are set back from Residential Streets to provide ample space for landscaping and trees. In Downtown and central area residential areas, homes are located more closely to Residential Streets.

Elements of Residential Streets

Initial Priority Elements
- Sidewalks
- Tree lawns
- On-street parking
- Landscaped medians
- Bike lanes on designated bicycle routes

Secondary Priority Elements
- Number and width of travel lanes (especially collector and local streets)

Examples of Traffic Management Features
- Medians
- On-street parking
- Street trees
- Narrower travel lanes
- Traffic circles and roundabouts
- Reduced pedestrian crossing distances at intersections, using curb extensions, traffic islands, and other measures
- Diveters
Commercial Streets

The most prevalent Commercial Streets are the strip commercial arterials. Strip commercial arterials typically serve commercial areas containing numerous small retail strip centers with buildings set back behind fronting parking lots. Because of this, strip commercial arterials have numerous intersections and driveways to access adjacent businesses. Historically, this type of street is often highly auto-oriented and tends to discourage walking and preclude bicycling. Mid-block crosswalks are rare, and on-street parking is infrequent because of ample off-street parking lots serving adjacent businesses.

Commercial Streets typically provide four to six lanes divided by a landscaped median. Under certain conditions, Commercial Streets have a continuous two-way left-turn lane in the center. Commercial Streets are designed to balance traffic mobility with land access. Because of the frequency of intersections and land access points on Commercial Streets, however, they often become congested.

Elements of Commercial Streets

Initial Priority Elements
- Number and width of travel lanes
- Medians
- Transit accommodations

Secondary Priority Elements
- Pedestrian facilities
- Bicycle facilities
- Tree lawns
- Two-way center left-turn lanes
- On-street parking

Examples of Traffic Management Features
- Medians
- Consolidated driveways
- Synchronization of traffic signals
- On-street parking
- Narrower travel lanes
- Reduced pedestrian crossing distances at intersections, using curb extensions, traffic islands, and other measures
Industrial Streets

Industrial Streets are designed to accommodate significant volumes of large vehicles such as trucks, trailers, and other delivery vehicles. Because these areas are relatively low-density, bicycle and pedestrian travel is more infrequent than in other types of neighborhoods, but still should be accommodated.

Industrial Streets typically consist of two to four travel lanes, which are generally wider—15 to 20 feet wide—to accommodate movement of larger vehicles. Bike lanes and on-street parking are rare on Industrial Streets. Sidewalks are provided, but are generally narrower than in other higher-density commercial and retail areas of Denver.

Elements of Industrial Streets

Initial Priority Elements
- Wider travel lanes
- Attached sidewalks
- Wider turning radius at intersections

Secondary Priority Elements
- Medians
- Bicycle lanes
- On-street parking
- Number of lanes
- Tree lawns

Examples of Traffic Management Features
- Parking restrictions
- Wider turn radius at intersections and access points
- Acceleration and deceleration lanes
Landmark Streets have a particular significance in Denver's history because of their influence on the development and unique physical character of the city. Originally, many of the Landmark Streets were developed as parkways and boulevards to connect Denver's major parks, to serve as components of a system for pleasure drives, and as settings for fine homes, important public and private institutions, and recreational amenities. Today, because of their connectivity throughout central Denver and the Denver region, Landmark Streets serve key functions of mobility and land access. They are important components of the City's classification system of arterial, collector, and local streets, as well as the City's bicycle and pedestrian systems.

Landmark Streets are designated as Denver Landmarks by City Council based on a recommendation from the Denver Landmark Preservation Commission, which considers the street's historical, architectural, and geographical significance. Once designated, the Landmark Commission provides advice and guidance to Denver Public Works Department on projects impacting Landmark Streets so that projects are implemented with sensitivity to the historic character of the street. Particular features or elements of projects that are reviewed by the Landmark Commission include landscaped medians and tree lawns, planting patterns along the street, and the relative balance and arrangement of planted area to paved surface area.

Each Landmark Street has its own unique character and design. Right-of-way can vary significantly from street to street and from segment to segment. Generally, Landmark Streets consist of two to four lanes in each direction, with wide tree lawns along each side. Wide, attractively landscaped medians separate the travel lanes. Medians typically are continuous, with limited cross-street access. Finally, Landmark Streets have strict setback and sign regulations.
One-Way Couplet

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, allowing travel in opposite directions. One-Way Couplets serve many different areas of Denver from higher-density commercial and mixed-use areas such as Downtown and regional centers to lower-density residential areas and Main Streets. One-Way Couplets are designed to have a higher transportation capacity than an equivalent two-way street. One-Way Couplets can be designated any of the five street typologies: Residential, Main, Mixed-Use, Commercial, and Industrial.

One-Way Couplets typically consist of two to four lanes, and emphasize mobility over land access. Because all vehicular travel is flowing in the same direction on each street in the couplet, One-Way Couplets have fewer movements at intersections and better synchronization of traffic signals. In addition, because there are usually fewer lanes than an equivalent two-way street, pedestrian crossing distances are shorter. This configuration of One-Way Streets may potentially provide a more pedestrian-friendly setting. Traffic management measures may be needed, however, to slow traffic and ensure pedestrian safety and comfort.
Case Study 2

Urban Street Design Guidelines
Charlotte, North Carolina

Purpose

The City of Charlotte is in the process of developing Urban Street Design Guidelines, which are intended to be a comprehensive approach to designing new and modified streets. Five new street types are identified and are intended to work as overlays to existing street classifications.

The street typologies were developed in response to two basic issues and overriding goals: the city’s need to better plan for continued growth and development and residents’ desire for better streets. By better integration of land uses and transportation and through context-based design, it is intended that the Guidelines will provide for streets that reflect the best aspects of the streets built in the past, and that will provide more capacity and safe and comfortable travel for motorists, pedestrians, bicyclists, and transit riders.

The Guidelines are a key component of the Transportation Action Plan (TAP), the city’s first comprehensive transportation plan that is currently being developed. The typologies also support a variety of the City’s policies, including the “Centers and Corridors” plan, which was adopted as a guide to Charlotte’s growth. It also supports the City’s emerging vision, which calls for more compact and focused growth and more transportation choices. In addition, the Guidelines are intended to work in conjunction with the state’s Comprehensive Transportation Plan, which has moved away from a traditional thoroughfare planning process to better reflect multi-modal and context-sensitive design.

Development

The typologies are currently being developed through the Guidelines. They are based upon three basic goals: 1) support economic development and quality of life; 2) provide more and safer transportation choices; and 3) better integrate land use and transportation.

Five street types have been identified: Main Streets, Avenues, Boulevards, Parkways, and Local Streets. These street types fall along a continuum, with Main Streets being the most pedestrian-oriented street type and Parkways being the most auto-oriented type. Once a street is classified as a certain street type, it is intended that the street design and future land use decisions will reflect the classification.

The Guidelines are being developed by the Charlotte Department of Transportation and are currently undergoing public review. A series of workshops are being held to obtain input on the draft plan and Guideline documents.
Implementation

The city is currently in the process of developing the Guidelines; therefore, implementation has not yet formally begun.

However, as part of the Guidelines, the City of Charlotte has developed a six-step process describing how the guidelines are to be applied and implemented. The goals of this process are to help ensure that the perspectives of all stakeholders are being considered, to help define a clear sequence of activities to be undertaken, and to document the tradeoffs between objectives, benefits, costs, and impacts. The steps in the process are:

1. Define existing and future land use, as well as the urban design context – including the intensity and arrangement of existing and future land uses
2. Define the existing and future transportation context – including function, design features, traffic volumes, LOS, etc.
3. Identify deficiencies
4. Describe future objectives – these could be derived from plans and/or policies for the area, as well as previously identified deficiencies; forms the basis for street classification and design
5. Recommend street classification and test initial cross-section – rationale for cross-section is to be documented, as well as any adjustments to land use plan/policy and/or transportation plan
6. Describe tradeoffs and select cross-section

The Guidelines are intended to provide a comprehensive treatment of Charlotte’s approach to street design. As such, they provide information on both evaluating and applying the Guidelines, as well as the detailed guidelines necessary to design streets. Information is presented on the approaches to evaluating the tradeoffs among competing users and uses of streets, as well as a recommended approach to applying the Guidelines, as described above. In addition, detailed text and diagrams are presented describing how to design individual street segments and intersections.

Charlotte’s Guidelines for a Local Office and Commercial Street are given in the following excerpt from the City’s Urban Street Design Guidelines.

Sources

Tracy Newsome, City of Charlotte Department of Transportation, (704) 336-4119

Section 4.6 Local Office/Commercial Streets

Overview
Local streets provide for direct access to specific land uses or sites, in this case to office, commercial, or mixed land uses. Local Office/Commercial Streets will apply to developments ranging from very pedestrian-oriented retail locations (similar to Main Streets) to business parks. Whatever the specific land use type or development style along these streets, the goal is to create a convenient and safe network of well-designed streets. The alternative cross-sections described in this section are intended to accommodate the variety of land uses served by Local Office/Commercial Streets, while also providing consistent, high-quality street design.

Land uses along Local Office/Commercial Streets include office, commercial, and/or mixed-use developments, which may be either pedestrian- or auto-oriented. Commercial uses could include restaurants and other convenience retail services, as well as concentrations of specialty shops or other, single retail uses. Office uses could be developed as mid or high-rise office buildings, or as a business park.

Camden Road in South End.

Although land uses on these streets may be pedestrian-oriented, auto-oriented, or somewhere in-between, the general intent is that these local streets (and the uses along them) will accommodate travel by a variety of modes. To maintain or foster a reasonably accessible pedestrian environment, buildings should have entrances that face the street and sidewalks connecting the buildings to the streetfront sidewalks, parking areas, and, where appropriate, adjacent buildings. Setbacks will vary, as will parcel size.

Even with the wide variety of land uses and two cross-section options (described below under “Cross-Section Alternatives”), there are several characteristics common to all Local Office/Commercial Streets. These characteristics recognize that the majority of the people traveling on these streets are searching for or visiting shops or businesses along them, or are either residents or visiting residents. Therefore, traffic speeds on these streets are lower than on Boulevards and most Avenues. Design and posted speeds are set equal to one another, with appropriate traffic calming built into the street design. Access to and from sites consists of individual driveways permitted in
appropriate locations. However, along blocks with smaller setbacks and higher levels of concentrated pedestrian activity, shared driveways are highly encouraged.

Local Office/Commercial Streets are designed to safely accommodate pedestrians and cyclists, as people travel between land uses along the street or to and from nearby residential areas. Continuous sidewalks are required along all of these streets. Other treatments include trees, street furniture in pedestrian activity areas, and appropriately scaled signage. Cyclists are expected to operate in mixed traffic, since the traffic volumes and speeds are low. Transit stop spacing and locations will vary, depending on the intensity of land uses along the street.

Cross-Section Alternatives
As with Local Residential Streets, there is more than one cross-section option available for the design of Local Office/Commercial Streets: a “narrow” cross-section and a “wide” cross-section. Both options are intended to maintain the desired functionality of Local Office/Commercial Streets, where both traffic volumes and speeds are relatively low. The “wide” option is ideal in a more commercial or mixed-use type of environment, where there is limited off-street parking nearby, short-term visitors are likely, and there is, therefore, a high demand for on-street parking. In an office park environment, where surface parking is offered off-street in sufficient quantity and proximity, on-street parking is less likely to be used. In that case, the “wide” option would result in a street that is too wide, so the “narrow” option is the ideal, to help maintain low speeds.
Local Office/Commercial Streets

Office/Commercial - Narrow

*B.O.C. - Back of Curb
Local Office/Commercial Streets

Local Office/Commercial Street - Narrow

**Development Zone:**

Important to maintaining the functionality of the narrow street, this zone will typically include office park style development, with ample on-site parking.

**Pedestrian Zone:**

Crucial for creating a safer, walkable environment, this zone includes sidewalks of adequate width for two adults to comfortably pass one another.

**Green Zone:**

Very important for pedestrian comfort, this zone should include grass, landscaping, and street trees in spacious planting strips. The tree canopy can also help to calm traffic.

**Mixed Vehicle Zone:**

This zone sets the tone for the street’s multiple objectives of allowing mobility and accessibility for both motor vehicles and bicycles, while maintaining low volumes and speeds. Parking will be on-site, rather than on-street.
Local Office/Commercial Streets

Office/Commercial - Wide
*B.O.C. - Back of Curb
Local Office/Commercial Streets

Local Office/Commercial Street - Wide

Serving a variety of commercial land uses, this zone shares some characteristics with Main Street type development, including higher intensity development, buildings that front the street, and a greater likelihood of mixed uses than with the Narrow Office/Commercial Street.

Important for reinforcing the pedestrian nature of this street type, this zone includes spacious sidewalks to complement the pedestrian-orientation of the buildings in the development zone.

Very important for supporting the pedestrian character of the Wide Office/Commercial Street, this zone includes street trees and other landscaping in a planting strip or, alternatively, in appropriately designed planters in a hardscaped amenity zone. This zone also provides extra buffering between the pedestrian and vehicle zones.

Important for supporting the pedestrian character of this street type, the marked parking zone calms traffic, provides parking for businesses, and buffers pedestrians from moving traffic.

This zone sets the tone for the street’s multiple objectives of allowing mobility and accessibility for both motor vehicles and bicycles, while maintaining low volumes and speeds. Motor vehicles and bicycles operate together in the travel lanes.
Local Office/Commercial Streets

**Priority Elements:**

- **Posted Speed** – 25 mph, deemed a comfortable and safe speed for local streets in urban environments.

- **Design Speed** – 25 mph, set equal to the posted speed. Along with frequent “slow points”, the low design speed is intended to discourage speeding.

- **Number of Through Lanes** – 1 in each direction (2 total).

- **Lane Width** – Should provide at least 12’ lanes to accommodate maneuvering delivery trucks and other large vehicles. The cross-section should reflect one of two options:
  - A “wide” dimension of 41’ back-to-back, with two 13’ travel lanes and on-street parking (7’ wide) on both sides; or
  - A “narrow” dimension of 25’ back-to-back, with two 12’ travel lanes (including gutter) and no on-street parking.

- **On-Street Parking** – Parallel parking should typically be provided on both sides of the street (7’ wide), preferably striped, where the wide cross-section is employed. In that case, on-street parking will help reduce off-street parking needs and provide a degree of traffic calming. On-street parking should not be provided where the narrow cross-section is employed.

- **Curb and Gutter** – Should always have curb and gutter or vertical curb. If curb and gutter is provided, 2’0” is the minimum.

- **Planting Strips** – Planting strips improve the pedestrian environment by providing separation between pedestrian and vehicular traffic, as well as shade when they are planted with large maturing trees. To achieve these goals, planting strips should be at least 8’ wide. Where on-street parking is likely to be most intensely used (directly adjacent to commercial or mixed-use buildings, for example), consider alternating recessed on-street parking with the planting strip and paved amenity zones with trees in appropriately designed planters.

- **Sidewalks** – Pedestrian activity is to be expected, encouraged, and accommodated on these streets. In the higher density commercial or mixed-use context, where on-street parking and the wider cross-section are used, sidewalks should provide a minimum of 8’ unobstructed width. In the lower density office setting, without on-street parking (and where the narrow cross-section is used), provide a 5’ minimum unobstructed width.
Local Office/Commercial Streets

• Bus Stops – If there are bus routes on a Local Office/Commercial Street mid-block stops are allowable, where necessary to maintain preferred spacing.

• Driveways – Are appropriate, to allow frequent access to adjacent land uses. However, in higher density locations, shared driveways are encouraged.

• Lighting – Street lighting is to be provided. Separate pedestrian lighting should always be provided along the “wide” cross-section and should be considered anywhere higher levels of pedestrian activity are anticipated, either because of adjacent or surrounding commercial activity or because the area provides a major pedestrian route or pathway between land uses or to parking areas. Where provided, pedestrian lighting should be sufficient to illuminate the sidewalk, as well as to provide for pedestrian visibility and safety from crime. In some cases, the pedestrian-scale lighting may also be sufficient for street lighting, as determined through a lighting analysis.

• Utilities – To preserve sidewalk capacity for pedestrians, maintain a clear zone per ADA requirements, and allow larger trees and other aesthetic treatments, utilities should be placed underground, taking care to minimize conflicts with street trees. If underground placement is not possible, the next locations to consider for poles are at the back of property (with an alley), behind the sidewalk (where greater setbacks allow) or, least preferred, in the planting strip (where lesser setbacks exist). In no circumstance should poles be placed in the sidewalk and, as with underground placement, every attempt should be made to avoid or minimize conflicts with street trees. Utility poles should be consolidated where possible, with redundant poles removed in retrofit situations.

• Traffic Calming – Local Office/Commercial Streets are intended to be low speed streets and traffic calming should be provided as part of the street design. In addition to design features that inherently provide traffic calming (on-street parking, for example), specific “slow points” should be incorporated into the design, every 300’-500’, to maintain the design speed. See CDOT’s Traffic Calming Report for appropriate types of slow points.

• Block Length – To provide appropriate scale and connectivity options for all modes, the block lengths described in Table 4.1, located in the introduction to this chapter, should be applied.
Local Office/Commercial Streets

Other Elements to Consider

- Sidewalk Amenity Zone – Not required, but may be allowable in the higher density commercial or mixed-use context, where on-street parking and the wider cross-section are used. In such cases, the amenity zone could either substitute for or alternate with the planting strip (unless the planting strip is alternated with recessed on-street parking, in which case, the amenity zone is unnecessary).

- Medians – Typically not appropriate, but may be allowable for aesthetic purposes, in which case they should be a minimum of 8’ wide. In addition, lane widths should be increased to 14’, exclusive of parking lanes.

- Median Planting – If medians exist, they should be landscaped, preferably with trees, since the purpose of the median in the local street context is for aesthetics.
Inappropriate Elements:

- Pedestrian Refuge – Not necessary on a 2-lane local street, particularly when other traffic calming devices are provided.

- Curb Extensions – Typically not provided on segments, unless they are to be used for traffic calming.

- Bicycle Lanes – Typically not necessary on local streets, because bicycles can share the lanes with lower-volume, low-speed traffic. Local streets may, however, be designated as bicycle routes, particularly in locations close to Parkways, where a nearby, alternative route is desirable.

- Shoulder – Inappropriate for a local street in an urban or suburban setting.

- Mid-Block Pedestrian Crossings – Typically unnecessary on a 2-lane street with low volumes and speeds.

May be considered under certain circumstances, as outlined in CDOT’s Mid-Block Crossing Policy.
Case Study 3

Downtown Columbus Circulation Study
City of Columbus, Ohio

Purpose

The preparation of street typologies for Downtown Columbus was undertaken as part of a study that examined the conversion of one-way streets into two-way streets. In addition to enhancing circulation, it was felt that two-way streets would generally be more pedestrian-friendly. However, the removal of on-street parking and an increase in the number of turning vehicle/pedestrian conflicts presented competing needs. As a means of balancing these issues, a series of street typologies were developed. The typologies consist of a pallet of urban design features that focus on pedestrian travel and safety.

It is intended that the urban design features will be implemented by several means: as stand alone projects, as part of larger roadway projects, and as part of private development. Once the Downtown Columbus Circulation Study is adopted, the street typologies will be used as design standards in street and development projects.

Development

A series of departments, agencies, and other groups were involved in developing the street typologies. These included several city agencies: Transportation Division, Planning Division, Downtown Development Office, Columbus Downtown Development Corporation, and the Recreation and Parks Department. Also represented were the Central Ohio Transit Authority, Columbus Public Schools, Convention Center, Columbus Urban Growth, German Village Society, Brewery District, Olde Town East, and the Capital Crossroads Improvement District.

A local planning/landscape architecture/urban design firm was engaged by the lead engineering firm completing the study to assist in developing the street typologies. Downtown streets were classified into four categories: standard, specialty, distributor, and alley, depending on their traffic function and adjacent land use. A set of urban design features was then developed for each classification. An example of the Specialty Street Typology follows.

An Advisory Committee was also engaged to guide the consultant team. This committee consisted of the City Council, various city agencies, private businesses, and community groups from neighborhoods adjacent to downtown. The process was facilitated by the Mid-Ohio Regional Planning Commission (local MPO) and was very successful in incorporating the required stakeholder input.

Implementation

The Downtown Columbus Circulation Study has not yet been formally approved by the Advisory Committee or the City and there are currently no active implementation projects.
However, several streets will be reconstructed within the next year and their reconstruction will reflect typology elements, such as the use of street trees, medians, wider sidewalks, parking bump-outs, and brick crosswalks. It is also intended that the street typologies will be applied during the conceptual phase of project development, as well as in the site plan regulatory approval process. It is anticipated that implementation will be funded through city capital funds and federal grants.

In terms of supporting graphics and text, the study includes renderings of example applications, as well as a matrix that describes the primary design features associated with each street classification.

**Experiences**

Because the study is not yet complete, the City’s experience with use of the typologies is limited. However, it was noted by the Transportation Division’s Planning and Program Manager that the study and the development of the typologies has generated community interest and excitement and the ability to provide a more pedestrian-friendly setting and enhancing the aesthetic qualities of the built environment.

**Sources**

William A. Lewis, P.E., City of Columbus Traffic Engineer, Planning and Programming Manager, Transportation Division
POSSIBLE DOWNTOWN STREET TYPOLOGIES

- Distributor
- Standard
- Specialty
- Signature

Work in Progress – Conceptual Design
Distributor - Two Way

Distributors are designed to serve large volumes of vehicular traffic.

Features:
- Multiple lanes in each direction
- Turn bays

Potential Locations:
- 3rd Street
- 4th Street
- East Spring Street
- East Long Street
- West Main Street
- Cleveland Avenue
Case Study 4

Creating Livable Streets: Street Design Guidelines for 2040
Portland, Oregon

Purpose

The Portland region developed street classifications and design guidelines for a series of types of regional and community streets and boulevards. A handbook was produced, the purpose of which is to provide the Portland region with appropriate regional street design guidelines to support the goals in the Metro 2040 Growth Concept and the Regional Transportation Plan. Originally published in 1997, the handbook was updated in 2005.

Development

The handbook was developed by Metro Regional Services, which provides transportation and land use planning services to the regional Portland area. It was developed over a two-year period through a collaborative effort by the Street Design Work Team, a multi-jurisdictional effort of state, county, and city representatives.

The design guidelines contained in the handbook are intended to support and be consistent with the goals in the Metro 2040 Growth Concept and the Regional Transportation Plan. The 2040 Growth Concept established a broad regional vision to guide comprehensive planning at the local and regional levels, with specific goals of promoting community livability by balancing all modes of transportation and by considering the function and character of surrounding land uses when making transportation decisions on streets of regional significance.

The handbook specifically addresses “regional streets,” major and minor arterials that serve both through and local traffic.

The various design elements that make up the regional street guidelines are described and organized into four areas: the street realm, the travelway realm, the pedestrian realm, and adjacent land use. The street realm is the overall environment of the street and is composed of the travelway, pedestrian, and land use realms. Considerations for the travelway realm include: street width, travel lane width, medians, pedestrian crossings, bicycle lanes, intersections, and street connectivity. Considerations for the pedestrian realm include: sidewalks, street trees, on-street parking, public transit, streetscape features, and landscaping and planter strips. Adjacent land use consists of the elements that abut the street and define the street’s character and use, such as: building density, building orientation, building street frontages, land use edge treatments, buffers and soundwalls, transitions in land use or street type, and stormwater opportunities.

The regional street type classifications are: freeways, highways, regional boulevards, community boulevards, regional streets, community streets, urban roads, and rural roads. The typical section
containing the various appropriate design elements, function, and land use relationships are
detailed for each street type.

In addition, the handbook provides guidance as to the priorities for each street type when it is
necessary to select among the design elements to provide within a limited right-of-way. Several
alternative cross sections are presented: ideal, predominant, functional minimum, and absolute
minimum. These cross sections specify ideal, functional, and minimum widths, as well as
priority design elements.

Implementation

The handbook is intended to be used as a resource for public agency staff of local, regional, and
state jurisdictions involved in transportation and land use planning, citizens and elected officials
involved in local street design and codes, and private developers, architects, planners, and
engineers involved in street and site design.

The design guidelines are not standards; they are recommendations and tools for improving
existing streets and designing new streets. They can be used to assist in the preparation of street
cross sections and street improvement plans, to assess whether existing street designs are
consistent with Metro transportation policy, and as a basis for deciding what to emphasize where
reduced available right-of-way leads to conflicts between design elements.

Sources
November 1997.
Summary of Case Studies

- Most of the communities developed their street typologies as part of comprehensive planning efforts.
- The purpose of the typologies varies, but generally they are intended to result in a better balance between various roadway functions, such as mobility, adjacent land use, competing travel needs, and pedestrian safety.
- Most of the communities undertook a multi-disciplinary effort to develop the typologies and two of the communities, Denver and Charlotte, also incorporated public participation activities.
- Implementation efforts and results are varied in the four communities. Both Charlotte and Columbus are in the process of completing the typologies, so implementation has been limited. However, these communities have articulated how the typologies will be used, and in the case of Charlotte, a six-step implementation process has been developed.
- Denver has had the most experience with implementation and has used them for a variety of purposes: as a reference during current development review, as a guide for completing zoning amendments and transportation and land use plans, and as an aid in preparing design guidelines for local redevelopment projects.
- Portland’s *Creating Livable Streets: Street Design Guidelines for 2040* is more of a resource document for those involved in transportation and land use planning, and has not been formalized as a part of the development review or road reconstruction process.
- Experience with developing and implementing the typologies has shown that it is a time-intensive process that requires the cooperation of a number of entities and stakeholders. Up front work to involve stakeholders and the public is therefore important in improving success.
- One of the challenges cited was in attempting the use the typologies to retrofit existing streets. Most of the communities have used the typologies as a tool to help evaluate the inherent trade-offs in road design, such as between access, mobility, and design.
- Often the design guidelines developed through formation of street typologies are not treated as standards, but as recommendations for improving existing streets and designing new streets. As noted in the Portland example, such guidance can support the preparation of street cross sections, assess if existing street designs are consistent with broader community transportation policies and plans, and as a basis for prioritizing the inclusion of features and design elements in street planning.