Auto-oriented Small-scale Strip Development is a linear form of development of moderate-to-small scale commercial, commonly known as "strip commercial". Sites are often developed independently of adjacent development and form little streetscape consistency. Businesses are designed to draw customers from passing motorists and often focus on fast food and auto needs and services. Developers identify where the visibility, accessibility, and proximity to target markets are located and attempt to stretch commercial uses down the street. Competitors often congregate in the same area.

Service Area
- 10,000 to 50,000 persons depending on type of business.
- No firm boundary, businesses draw from adjacent neighborhoods and larger sectors of the city.

Unique Characteristics
- A linear form of development that generally conforms to the established street pattern. Surrounding land use is typically low density residential.
- Minimal connections are provided to adjacent residential development, although physical distance is often minimal.
- Frequently close to larger scale commercial.
- Building approximately 35,000 sq. ft., individual modules from 2,500 to 20,000.

Conclusions:
This is perceived as a prevalent category in the community because it extends along major transportation routes, sometimes for a mile or more at a stretch, and is not location specific. While it provides valuable and appreciated businesses to the community, it often homogenizes desirable neighborhood or community qualities and characteristics. It is not a desirable development pattern. Design guidelines should focus on enhancing existing small-scale strip development with pedestrian amenities and discouraging any new development of this kind. New development should be encouraged to follow one of the other categories, such as Community Commercial.

Auto-Oriented Community Commercial development contains a large scale retail anchor, such as a grocery, discount, or home improvement store, and may include smaller retail and service businesses. The development may be either a stand-alone store or a grouping of buildings constructed to the main anchor and situated around a shared parking lot. Individual building development may occur closer to the street on "out-lots." Businesses provide for many daily needs as well as the specialized needs of shoppers.

Service Area
- Up to 100,000 persons.
- The service area is large serving at least a quadrant of the city and nearby outlying areas.
- Customer base is almost totally motorists arriving for destination shopping.

Unique Characteristics
- Parcel size is usually 20 to 25 acres with building area in the range of 100-250,000 sq. ft. Approximately 3 to 6 acres of the site is covered by building.
- Located on or at the crossroads of a major transportation corridor.
- Large building area and paved area may cause a significant disruption to the street grid system and may require large areas of the site for storm water detention ponds.

Conclusions
Nationally, this is a major growth category because it maximizes volume and competitive costs for products. In Des Moines, this category will see growth particularly on the south and north east sides where large acreages are available for development. The clustering of compatible uses with mixed scale is considered a way to promote healthy diversity and vitality of development. Clustering also encourages combining trips to one center if the site has appropriate pedestrian paths and amenities. Development must be balanced with environmental impacts, level of public investment required, infrastructure capacity, tax revenue generated, and the impact on existing shopping areas.

Regional Shopping Malls are the largest-scale of commercial typology and accommodate multiple anchor stores and small scale retail stores with a mix of restaurants, services, and often entertainment as well. Shared amenities such as interior common spaces, parking ingress/egress roads, signage, etc. are typical and manageable due to the single ownership of the mall. Enclosed malls gained popularity in the 1970s and have seen steady growth to the present with the theme often being "bigger is better". The City of Des Moines has two regional malls, Merle Hay and Southridge, with Valley West Mall nearby in West Des Moines.

Service Area
- Over 100,000 persons.
- Area-wide population, including small towns and rural areas.
- May draw customers from 100 miles away.

Unique Characteristics
- Development causes a major disruption to the street pattern and scale of adjacent development.
- Building size is over 1,000,000 on several levels
- Parcel size is at least 100 acres
- "Going to the Mall" can include shopping, recreation, and entertainment.
- Building is surrounded by parking on all sides.

Conclusions
It is unlikely additional regional malls will be built within the city limits of Des Moines. Any consideration of further mall development should be carefully explored from all angles, including public commitment, impact on existing malls, and environmental impacts, before any decisions or commitments are made. Encouraging development of additional square footage on the mall site through structured parking and outparcel development is part of the design guidelines.
Common Auto-Oriented Issues
- Strip commercial often backs on to or closely adjoins single family housing, creating noise, visual clutter, and litter problems for adjacent neighborhoods.
- Multiple curb cuts create traffic congestion on adjacent arterials.
- The standard developments for franchise buildings use corporate designs that do not relate to a neighborhood context. Pole signs predominate.
- There are limited opportunities for shared parking because of zoning regulations and a lack of connections among parcels.
- Minimal landscaping creates a stark “sea of parking” with no human scale or appeal.
- Lack of pedestrian paths through the site increase pedestrian safety risks and do not encourage customers to combine shopping at several businesses in one car trip.
- Large parking areas require acquisition and rezoning of residential property to assemble an acceptable sized parcel.
- Storm water detention basins are generally unattractive and solve storm water runoff concerns on a site by site basis rather than as a larger subarea.
- The cost of development on surrounding infrastructure and the need for street improvements such as deceleration lanes, added signal lights, and median breaks, needs to be borne by the developer.
- Additional commercial growth often threatens locally owned businesses, as well as the occupancy of existing strip development, large commercial sites and malls.

Desirable Physical Design Elements
- Building design that reinforces the perception of a cohesive commercial district complementary to the adjacent neighborhoods. Use of windows, a well-defined, inviting entrance, and detail on the buildings are necessities.
- Building and signage design which recognize and enhance positive characteristics of the surrounding community to create recognizable identity.
- Well designed transitions between business and residential areas. (Refer to Transition section, pages 74-77)
- Visual and physical connections between neighborhoods and auto-oriented businesses, particularly through public sidewalks along streets.
- Shared parking, driveways, and among businesses for strip commercial buildings. Pedestrian connections should be established among businesses along the corridor.
- Improved parking lot design with edge treatments and interior landscaping for all auto-oriented commercial. In large developments, the parking lot should establish key entry points to the site, a hierarchy of “streets” through the site, and defined pedestrian circulation routes throughout the site.
- Small-scale commercial uses developed as outparcels on larger development parcels rather than as strip commercial on an arterial. This creates smaller-scale buildings closer to the street, breaks down the mass of parking, and creates a sense of nodal community within a group of buildings.
- Well-maintained and innovative storm water facilities.
- Streetscape elements, including special lighting, paving, street furniture, pedestrian paths to provide a cohesive identity and visual appeal. Street trees, planting areas, and potted plants can combine with the fixed infrastructure to create a well-defined pedestrian corridor.
- Clustering of well-maintained buildings that complement each other, provide viable services to the surrounding neighborhood and draw customers from the larger community.

The above cross-section highlights issues of separation of businesses from the street, lack of pedestrian scale development and the isolation of the pedestrian on a sidewalk with no amenities near heavy traffic.
Design Guidelines
Additional design guidelines will be implemented through the site plan review process, will be developed to create the desired physical design elements and help address many of the common issues. The goal is to create and enhance viable businesses with an integrated, cohesive image compatible with the character of the adjacent neighborhood and city.

Design guidelines will address:
- Appropriate massing and scale of the commercial building(s) as it relates to the surrounding commercial buildings and residential neighborhood.
- Establishing a relationship of the building with the street by setback, pedestrian pathways, outlook development, and streetscape.
- Pedestrian pathways through an individual development and among different developments.
- The percentage of total parking spaces that can be placed between the building and the primary street and establishing a maximum number of parking spaces instead of a minimum.
- Landscaping within parking areas and edge treatment along the exterior of the parking area.
- Quality, durable building materials such as stone, brick and masonry units, etc. to build quality, durable developments.
- Detailing of the entrance, canopy, and window area to add pedestrian appeal and character.
- Amounts of transparent glass in the storefront to create visual interest and a sense of security along the street.
- The design of storm water management facilities that consider the character of the neighborhood, particularly in the placement of detention basins.
- Types of signs to be encouraged and discouraged.
(Refer to section on signage, this Chapter.)
Private Signage

Signs are a necessary part of any business. It is important to communicate and identify businesses in an effective, creative and tasteful manner. As a visual element, signs can enhance or detract from the image and appearance of the commercial area. It is critical in pedestrian-oriented areas that signage be pedestrian-friendly in scale, location, readability, etc. For auto-oriented areas, signage design needs to balance scale, location and visibility for the motorist with human scale and appeal in proportion, material, location and overall design.

Encouraged signage locations and types
- defined signage band on building facade or otherwise reflect the architectural lines of the building;
- on the vertical band of a canopy or awning;
- building mounted, perpendicular sidewalk;
- flush, wall mounted signs
- signs that visually demonstrate the business type, e.g. a profile of a shoe for a shoe repair shop;
- window signs, scaled and located to maintain views of window display(s) and interior activity;
- nationally recognized logos incorporated into building and neighborhood scale and character;
- portable, sandwich board signs that are removed from the sidewalk during nonbusiness hours; signs should advertise daily specials or events.

Discouraged sign types and materials
- pole signs in pedestrian-oriented typologies, acceptable in auto-oriented typologies when scale, design, location, materials and visibility meet the intent of the desired character;
- portable signs with flashing/blinkering lights or other freestanding signs except as noted;
- backlit signs and plastic sign faces;
- off-premise signs

Public Signage

Well-coordinated public signage is an important feature in a successful commercial area. It provides information and direction, thereby reducing possible confusion and frustration for visitors and customers to the area. Public signage includes street signs, directional signs to parking, parks, bike trails, cemeteries and golf courses, etc.

An attractive public signage system may add to the visual appeal and cohesive identity of the commercial area as well as aid in people's comfort in navigating their way through the commercial zone. Other anticipated benefits include providing a colorful, lively and festive element to the streetscape; an improved sense of place for individual commercial areas to be connected with offering an interesting and desirable place to shop, play, visit and a healthy neighborhood in which to live.

The design components of a public signage system should be:
- well-coordinated, easily-identifiable, informative and user-friendly design;
- responsive to the needs and scale of motorists and pedestrians;
- flexible for use in a variety of sign groups, e.g. street names, traffic signs and public services;
- easy to maintain and durable;
- a system that enhances a visual identity of the commercial area as a cohesive district;
- a palette of colors that complement other streetscape features, e.g. benches, light posts, etc.;
- able to accommodate the safety of motorists and pedestrian.

The goal is to use strategies to incorporate even the basic, functional and utilitarian elements as design and positive image-building features.
Parking

Easily accessible parking that is convenient to businesses is important to the success of any commercial area. Parking can and should be planned in such a way so as to provide for the needs of the customers and offer a positive visual asset to the streetscape. The commercial typologies addressed in this document typically offer two kinds of parking, on-street and surface parking on-site.

On-street Parking

On-street parking is often provided for Neighborhood Node, Neighborhood Commercial Center and Commercial Corridors and may be parallel or angled parking along the curb. This type of parking is successful for smaller scale businesses that tend to have a short turnaround time for customer turnover and typically accommodate small groups of customers at any given time. On-street parking also provides an added buffer to the defined pedestrian zone along the sidewalk.

On-street parking may be located in “protected lanes” which have bumped out nodes at each end of a section of parking. These nodes are useful in ensuring that the parking lane is not mistaken for a driving lane and the bump-out areas help to reduce the width of the street offering a more pedestrian-friendly width for crossing the street. Where flexibility is appropriate, the parking lanes may be designed with “no parking” times to accommodate rush hour traffic while providing parking in non-rush hours.

Surface Parking Lots

Surface parking tends to be the most prevalent because it is inexpensive to develop, offers a large quantity of parking, and provides the customer with a sense of convenience if parking is within site of a building entrance. However, surface parking lots cause a serious fragmentation of the area because buildings stand in isolation and have no relationship to each other or the commercial street.

In order to offset this negative factor, design guidelines for surface parking lots are provided. The parking lot perimeter adjacent to a street and/or sidewalk will have edge treatments as recommended below. This will offer visual relief of the large scale of parking and soften the edge and overall harshness of the paved surfaces.

Edge Treatments and Internal Landscaping

Edge treatments may consist of any of the following or combination thereof:
- landscaped or sodded earth berm;
- trees spaced about 30-40 feet apart with landscaping, sod or decorative paving in between;
- a low wall of stone, brick, concrete masonry units, precast concrete panels, etc.;
- masonry and/or light bollards spaced about 4 to 6 feet apart;
- a wrought iron fence spanning between masonry piers, at least 4 feet high and spaced about 25 to 30 feet apart.

Internal landscaping in raised medians is strongly encouraged for larger parking lots. The interior landscape design of parking lots should consider snow plowing requirements.
- Lots with more than 2 double locked aisles should provide planting medians for every third row of parking which may include trees, low shrubbery, flowers and/or ground cover.
- Long and narrow lots should have intermediate planting islands in line with the parking spaces and may include trees, low shrubbery, flowers and/or ground cover.

Lighting

- Pedestrian-scale, low-glare, “cut-off” light fixtures, designed keep light entirely in the parking lot and avoid glare on adjacent properties;
- Lighting to illuminate pedestrian walkways;
- The light source should ensure good color rendition and consistent light levels.

Sidewalks or pedestrian paths

The sidewalk or pedestrian path may be as simple as using a material that contrasts with the asphalt or concrete parking lot surface to define the pedestrian route. Sidewalks should be provided throughout to allow large parking lots to be easily navigated by pedestrians.
These action steps are as follows:

- Define policies, development parameters and design guidelines to ensure an accommodating balance of pedestrian scale, appeal, and quality environment with auto safety and convenience. These should address: appropriate design and types of amenities in regards to public right-of-way enhancements (such as street furniture, paving, awnings, banners, etc.), signage, street profile design, building design guidelines, etc.;

- Incorporate public participation of neighborhood residents and area business/property owners along with planning and urban design city staff and other appropriate city officials as standard process for street evaluation and improvements being considered to ensure the desired quality of pedestrian environment is created, enhanced, and/or maintained;

- Ensure street design will be compatible with adjacent land use(s) character, both current and encouraged;

- Define neighborhood linkages, transition and buffer zones;

- Incorporate design standards into the site plan review process to ensure conformance with development parameters and design guidelines;

- Establish marketing strategies for the various commercial categories to attract investors, businesses and customers to the area and to maintain the healthy commercial areas.

Policies for Implementation

This section addresses the six (6) commercial categories found within the City of Des Moines, identifies the current status and characteristics of each, and establishes a vision of how each typology can continue to fill a valid and viable niche in the commercial needs of our community.

In order to realize the opportunities for ongoing improvement and enhancement of the commercial typologies, it is necessary to identify policies for implementation. The following points outline the action steps needed to bring to fruition the goals identified for each typology.
Institutional Uses

Institutional uses such as religious institutions, schools, colleges, and universities enhance the quality of the community. The entities contribute to Des Moines' economy and generate business by providing employment opportunities, cultural activities, retaining residents, and attracting students, visitors, and tourists. The Community Character Concepts in Chapter 1 encourage institutional uses to be integrated into the neighborhood to provide a variety of uses and services to residents.

Just as retail and commercial uses have changed in the past twenty years, the land use pattern for institutional uses has altered as well. Churches are becoming increasingly larger and attracting parishioners from more than the surrounding neighborhood. Elementary and middle schools require larger play areas and sport fields to be competitive with surrounding communities. High Schools need larger parking areas. Drake University draws more of its students from local, nontraditional students who drive to classes in the evening.

Institutional uses located within a residential area have the potential to impact the surrounding neighbors. In Des Moines schools and religious institutions, such as churches or synagogues, have always been allowed in a residential zoning classification as a matter of right. Universities, colleges, and libraries are allowed within multiple family zoning classifications also as a matter of right.

Proposed Policies:
New Construction or expansion of institutional buildings or parking areas located within residential zones should be reviewed by the Plan and Zoning Commission prior to issuance of a building permit. The Commission should develop guidelines to regulate the expansion according to the following:

- The materials of the new construction or expansion should complement those of the neighborhood. Details of windows, facade moderation and roof style will also be considered.
- Bulk regulations, setbacks and transitions should complement those of the neighborhood.
- No parking is allowed between the primary building and the public street. Parking areas should be landscaped per other standards contained on page 94 of this document.
- The impact of the increased traffic and use on the surrounding neighborhood will be considered. The open space of the institution should be connected to the neighborhood through walking and bicycle paths.
- Shared uses of open space and parking among the institution and residents is encouraged. Driveways serving parking areas should be off of the major street frontage and not the interior local residential street.
- Institutional expansions should result in uniform street frontages and not leave "islands" of remaining dwellings surrounded by parking areas or institutional uses.
Industrial Typology

Industry is important to the City of Des Moines. It provides jobs, a tax base and economic vitality. Des Moines will support the existing economic base by providing adequate land and infrastructure to make city sites attractive to industrial development that is willing to build quality development and provide a high density of jobs.

General Industry

Des Moines has historically not had as large an industrial sector as Iowa cities like Waterloo or Newton. Historical patterns of industrial development in Des Moines have resulted in the concentration of heavy industries in the northeastern and southeastern portions of the city. Residential and industrial uses have often been located near each other. The industries have provided well paying jobs but have also generated off-site odor, dust, and noise. They have also created problems for nearby residential areas by generating significant off-site truck traffic.

Proposed Policies

- Allow for a limited amount of heavy industrial uses where appropriate, but minimize negative impacts on the surroundings. Concentrate on retaining and improving existing industrial uses to preserve existing jobs.
- Prohibit development of additional housing units in major industrial zones. Encourage the purchase of homes in industrial areas as businesses seek to expand.
- Heavy industrial uses, currently operating with a negative impact on their surroundings and generating relative low job counts, should be required to mitigate their impact. Negative impacts can sometimes be buffered with natural or built features to shelter surrounding areas from the most negative impact.
- Engage in pollution clean-up to be able to provide clean and competitive sites for new industrial development and protection for the community.
Planned Business Parks

The development of light industry, manufacturing activity, office, and warehousing uses can add to the economic base of the city and create jobs for the community. With appropriate attention to form and design, new planned business parks can provide for light industrial uses and create minimal impacts for their neighbors.

The Planned Business Park Zoning Classification in the Des Moines Zoning Ordinance was developed to encourage large scale and quality development of vacant or underutilized tracts of land throughout the city. A key component of the classification is that the development occur pursuant to a unified building and site development plan that incorporates a comprehensive design. Although residential uses are not permitted, the zone allows flexibility of standards and diversity of acceptable land uses. It also promotes a small amount of commercial services and pedestrian amenities for the park workers.

Proposed Policies
• Encourage a mixture of light manufacturing, office, warehousing and distribution jobs in designated Planned Industrial Parks. Ensure design, pedestrian connections, and landscaping are part of an adopted overall plan for the development.
• Encourage industrial development that provides a high density of jobs per acre.

Midwest Accoustical is an attractive new building in the Central Place Industrial Park.
Des Moines is a city with abundant resources in the form of its physical attributes, the diversity and skills of its population and its strong neighborhoods and businesses. The next twenty years will provide an opportunity for the city to build on growth opportunities within the older parts of the community as well as recently annexed land. Chapter 6 discusses projected growth areas and actions that must occur to shape that future.

Housing Construction

The construction of housing in the metro Des Moines market is effected by nationally set interest rates, changes in family structures and needs, and locally determined taxation policies. These in turn impact the land areas required in Des Moines proper for both single family and multi-family residential development.

The City of Des Moines has continued to see strong growth in new single family housing during the 1990s. Iowa’s robust economy, combined with low interest rates and five year tax abatement for new housing, have encouraged the construction of new single family housing. From 1992 to 1998, the city averaged over 260 new single family houses per year. The metro Des Moines area has seen development of approximately 1900 single family units per year during that same time period. Des Moines consistently has competed for 13% of the metro share of single family housing. Almost two thirds of the single family housing built in Des Moines since 1992, has been built on Des Moines’ southside where annexation has opened up new areas for residential development.

Prior to 1960 the majority of the housing in Des Moines was built as single family and duplex units. That trend changed between 1960-1977 when approximately 60% of the housing permits issued in the City of Des Moines were for multi-family units. Planners projected that two thirds of the housing in Des Moines would continue to be duplex or multi-family based on smaller family size and a preference for the freedom from maintenance chores. (1990/2000 Housing Plan, Plan and Zoning Commission, 1978). The trend away from single family housing has not proven to be true in the 1990s. Generally more single family than multi-family units have been built each year within the city of Des Moines.
Proposed Policies
- Work with developers to provide well designed projects of both single family and multi-family housing. Combine residential densities in a neighborhood to offer a choice of housing type to homeowners and renters.
- More specific policies for new construction and development of neighborhoods are outlined in Chapter 3 Des Moines Traditional Neighborhoods, New Residential Development.

Housing Demolition

Demolition of single family and multi-family housing has slowed in the 1990s because of better rehabilitation efforts by the city and because of tight budgets for demolition. Approximately 100 housing units were demolished annually in 1997 and 1998. This is a huge decrease from the 1960s when approximately 1000 units were demolished annually and the 1970s when it was predicted that over 500 units a year would be demolished until the Year 2000. (1990/2000 Housing Plan Plan and Zoning Commission, 1978).

Three major forces contribute to the demolition of housing units:
- Public Nuisance Actions. Since 1995 approximately 35 structures (44 units) structures have been demolished annually by the city because of public nuisance actions. An estimated 20 additional structures have been demolished annually by private action because of the public nuisance citations.
- Community Improvement Projects. Individual projects such as the Expansion of the Airport, construction of Martin Luther King Parkway and purchase of flood damaged homes have increased the numbers of demolitions for individual years. A total of approximately 350 homes have been demolished since 1993 for these major city projects.
- Business Expansion. The expansion of businesses along corridors or into residential neighborhoods account for the demolition of numerous housing units per year. These houses are often in poor condition.

With the exception of 1994, new single family housing units have exceeded that of multi-family housing.
Population and Employment Growth Projections

The Des Moines Metropolitan Planning Organization is a regional planning entity for receiving federal and state transportation funds in the Des Moines area. It provides a forum for public discussion of regional transportation-related issues. The MPO is composed of member governments that include the cities of Altoona, Ankeny, Bondurant, Carlisle, Clive, Cumming, Des Moines, Grimes, Johnston, Norwalk, Pleasant Hill, Polk City, Urbandale, West Des Moines, Waukee and Windsor Heights, and parts of unincorporated Dallas, Madison, Polk and Warren Counties.

The “Unified Goal” of the MPO is to promote both the development and the preservation of a multimodal, intermodal transportation network that facilitates the safe and efficient travel of people, as well as goods, both within and outside the designated boundaries of the Des Moines Area Metropolitan Planning Organization. As one step in the implementation of this goal, the staff of the MPO develops population and employment projections for each community. Each community distributes the population and employment numbers to areas within their city limits in order to develop specific recommendations on trip generation and needed traffic improvements.

In 1992, the Des Moines Area Metropolitan Planning Organization (MPO) adopted a proposed Growth Scenario for the entire metropolitan area as a part of the planning for the Interstate-235 Study. Population and employment projections for the Year 2020 were adopted by all member governments and the MPO. These projections represent a “balanced growth” scenario whereby east and southside growth was projected to increase rather than continue the unbalanced west side dominance that had occurred since the mid-1980s. This principle of balanced growth is explained in Chapter 1 Underlying Principles, Transportation Concepts, of this plan.

In 1992, the City of Des Moines worked with the MPO to project where population and employment growth would occur through the year 2020. In 1999, the MPO updated these projections to the year 2025. The base numbers are supplied by the MPO from projects on the total amount of growth in the MPO region and divided among communities by the balanced growth scenario.

<table>
<thead>
<tr>
<th></th>
<th>Population</th>
<th>%Change</th>
<th>Employment</th>
<th>%Change</th>
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<tr>
<td>1990</td>
<td>240,230</td>
<td></td>
<td>146,000</td>
<td></td>
</tr>
<tr>
<td>2025</td>
<td>282,262</td>
<td>38%</td>
<td>225,333</td>
<td>54%</td>
</tr>
</tbody>
</table>

This chart shows the population and employment projections for Des Moines to the year 2025. The Des Moines area is larger than the city boundaries and includes areas to the north, south, and east of the city that comprise our “Urban Services Area.” A map of the Des Moines Urban Service Area is shown on page 10.
A number of actions need to occur for the city to accommodate this growth and satisfy the balanced growth scenario for the region:

- The city must have a successful annexation to its south and east to have large areas for new development. The area of the city annexed in 1987 near Easter Lake will continue to accommodate at least 3/4 of the new housing units in the city. The new development must accommodate both multi-family and single family housing at a gross density of eight (8) units per acre.
- Revitalization efforts for the central city must continue. Existing housing must be rehabilitated and new construction of housing must be encouraged on vacant lots. Rehabilitation and new construction should be at densities that complement the character of the neighborhood and must be consistent in design with the neighborhood.
- High density housing must be reintroduced into the downtown in order to encourage a vibrant downtown that supports retail and employment growth.

The maps on the following pages show where population growth and employment growth is projected within the city of Des Moines.
City of Des Moines
Employment Growth Projections
1995 - 2025
City of Des Moines
Housing Unit Growth Projections
1995 - 2025

Areas shown projecting an increase of over 100 housing units
Traffic Calming

Historically, transportation planners have not been called upon to defend the assumptions underlying their methods. Today, the public and decisionmakers have begun to challenge their main operational goals of reducing congestion and increasing travel speeds using the most cost-effective means. Roadway design has been driven by serving morning and evening peak periods created by home-to-work trips with little attention given to nonvehicular traffic, nonwork trips, and noncentral destinations. The result of decades of transportation planning based on this approach has been a compromise in some cases of the social, economic and environmental sustainability of urban districts and neighborhoods.

A new planning ethos has emerged called Traffic Calming. It represents a fundamental shift in the inherent values of transportation planning. Traffic calming is a holistic, integrated planning approach which seeks to maximize mobility while creating a more livable city by reducing the undesirable side effects of that mobility. It recognizes that maximizing travel efficiency and travel speeds are not without larger social and environmental costs and can be at the expense of a city's goal to build strong neighborhoods and communities. It also recognizes that bigger roads are not safer roads, and that simply slowing traffic speeds can be an effective safety measure.

The goals of traffic calming are to:
• increase the quality of urban life,
• improve conditions for people,
• create safe and attractive streets,
• reduce collision frequency and severity, and
• help reduce the negative effects of motorized vehicles on the environment.

The objectives of traffic calming are to:
• achieve slow speeds for motor vehicles,
• improve the real and perceived safety for non-motorized users of the street,
incorporate the preferences and requirements of the people using the area (residing, working, playing, etc.) along the street(s) or at the intersections(s),

- increase access to land for all modes of transportation,
- reduce cut-through motorized vehicle traffic where desired, and promote pedestrian, cycle, and transit use.

**Categories of Traffic Calming Measures**

The following text is taken from Kalesh, Walter, PE. “What’s Traffic Calming? A resource paper for the 1997 ITE Conference.

Traffic calming measures are street design or regulatory features that cause motorists to drive more slowly, and therefore with a greater degree of attentiveness. Alternatively, traffic calming measures may induce a driver to select another route for their travel. The myriad of traffic calming actions can be categorized by the following. Classification system: (The categories involve both regulatory measures as well as geometric design measures.)

1. **Narrowing the pavement** (or creating the perception of narrow pavement) calms traffic by reducing the street width, which in turn reduces the design speed of the street.

2. **Deflecting the vehicle path** reduces the design speed by reducing the driver’s sight distance (usually by terminating the driver’s view down the street) and by introducing curvature into the vehicle path.

3. **Deflecting the vertical profile** (humps and textures) reduces the design speed by introducing vibration or vertical acceleration to the vehicular travel profile, and sometimes by reducing the driver’s sight distance along the street.

Three further categories of traffic calming measures deal with use of the street, rather than with reducing its design speed

4. **Sharing the pavement** by vehicles moving in conflicting directions (opposing or crossing) requires an increased level of attentiveness from drivers, and regularly requires that vehicles slow or stop.

5. **Rerouting the driver**, through regulatory measures, to other routes.

6. **Intensifying the enforcement** of traffic control measures already in place.
Narrowing the Pavement

Narrowing a street reduces its “design speed” at which most drivers are comfortable. The continuous narrowing of the street, therefore, is highly effective in reducing speed over a long distance of the street. Spot reductions in speed are also highly effective, but over a shorter length of street distance, usually around 400-500 feet.

A low cost method of street narrowing is to stripe roadway lanes to a maximum width of nine to eleven feet. Where roads are wider than 24 feet, this has the added benefit of providing space for bicycle lanes on each side of the roadway.

Another low cost way to narrow the street is to allow parking on one or both sides of the roadway. On-street parking reduces speed noticeably, by effectively “narrowing” the street. The parking can be staggered to create a weaving path on the roadway, further informing drivers that caution should be used in the neighborhood.

A more ambitious approach to narrowing the road is to remove existing curb and gutter and rebuild the street with a smaller pavement width. This provides more room on the planing strip for landscaping, sidewalks, and street furniture. A smaller version of this is the pedestrian bulbout at either a midblock or intersection locations. Bulbouts provide room for a wide variety of activities, such as street cafes and sidewalk merchandising. Pedestrian crossing distances are greatly reduced at these points.

Traffic calming techniques for narrowing the pavement
Deflecting the Vehicle Path
Horizontal deflectors require drivers to negotiate turns and curves that they would not ordinarily meet. This combination of factors raises the level of the motorists' attention to the task of driving, and reduce the design speed of the road for several hundred feet in either direction.

Angled slow points, sometimes called chicanes, are curbed or other physical barriers to a straight path on a roadway. Trees can be planted in the slow point to restrict the driver's vision down the street, creating the feeling of a "closed" street.

A modified intersection has channelized devices to steer the driver though a preset path. The path should deflect any vehicles moving straight through the intersection, as well as provide clear delineation of the path turning vehicles should take. Any diverters should be mountable in the event that a car goes over them. This type of modification is most appropriate for a three-way intersection, as the turning movements in a four-way intersection are too complicated to try to deflect all movements simultaneously.

Knockdowns or bulblows at intersections limit the pavement width at an intersection sufficiently to require motorists to alter their path. Pedestrian crossings are shorter, and therefore easier and safer. Vehicles are diverted or knock-down from their previous traveled land width.

The roundabout and its less sophisticated variations, the traffic circle, deflects cars out of their straight-line path as they travel through an intersection. With landscaping included, a roundabout also breaks up the uninterrupted sight lines and thereby reduces design speed.

In comparison to stop signs or signals, Roundabouts are a high-performance traffic control device that not only have a higher traffic capacity, but also reduce crashes in number and in severity.

Traffic calming techniques for deflecting the vehicle path.
Deflecting the Vertical Profile

*Speed humps or speed tables* can be used as a vertical deflector. A speed hump is typically 14 to 22 feet in length and two to four inches high. A speed table is a level elevation with angular ramps that elevates both the front and rear wheels of a car. Speed humps and tables can be made for automobiles without affecting an adjacent bicycle lane. Speed tables can also be used as pedestrian crossings that are at sidewalk grade.

*Textured pavement* such as brick streets are also an effective traffic calming device. The advantages of a brick street are that it is aesthetically pleasing and it calms traffic better as it ages, as the paving material settles.

*Raised intersections* slow cars down throughout an entire intersection. This provides an extra level of safety for pedestrians crossing at an intersection. This improvement may be most appropriate in commercial areas where the traffic volumes are high. Textured pavement can also be a part of this improvement.

*A raised pedestrian crosswalk is an example of deflecting the vertical profile.*