

Downtown Streetscape Design Manual

City of San Antonio

“Streets and their sidewalks, the main public places of a city, are its most vital organs.....If a city’s streets look interesting, the city looks interesting; if they look dull, the city looks dull”

Jane Jacobs

Downtown Streetscape Design Manual

What is the streetscape?

The streetscape is that part of the street right-of-way between the face of the curb and the building. In downtown San Antonio, the streetscape includes the sidewalk surface, street trees, street/pedestrian lights and a collection of furnishings. These furnishings include benches, planters for flowers, tree grates, tree guards, trash receptacles, bicycle racks, newsstands and bollards.

The streetscape also includes items such as street name signs, crosswalk paving, traffic signal structures and district-specific identity poles/branding.

Why does San Antonio have streetscape standards?

Since the mid 1940's, significant investment has been made in downtown San Antonio's streetscapes. The most highly visible improvements have occurred along our famous Riverwalk while our street-level improvements have been a bit more hit and miss. A well designed street-level environment will add to the successful revitalization of downtown. Our streetscapes provide a setting for community events, for development of adjoining private property, and for the everyday interaction of people who frequent downtown. Streetscape standards have been established to assure over time that the way downtown streets and sidewalks are designed, and the materials and furnishings used on these rights of way create a distinct identity and attractive ambience for downtown, which serves as the social, commercial, lodging and cultural heart of the community.

The streetscapes create a common design thread throughout the downtown area which contributes to a feeling of coherence and continuity.

Resources

- Any existing historic features, such as sidewalk prism glass or tiles, should be maintained and preserved in place
- Cultural Zones within the downtown area that have individual streetscape manuals do not need to comply to this design manual



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Section One – Street Furniture

Street Furniture

Street Lighting

Street lighting is a key organizing streetscape element that defines the nighttime visual environment in urban settings. Street lighting includes roadway and pedestrian lighting in the public right-of-way. This particular section of the Streetscape Design Manual is focused on roadway lighting.

Quality street lighting helps define a positive urban character and supports nighttime activities. The quality of visual information is critical for both traffic safety and pedestrian safety and security. Lighting should be designed not only for vehicular traffic on the roadways, but also for pedestrians on sidewalks and pedestrian paths.

Placement

Roadway lighting for Downtown San Antonio should be prioritized in the following locations:

- Streets with high vehicular volumes such as Cesar Chavez, Commerce Street, Market Street, Alamo Street, Flores Street and Santa Rosa Street.

While all downtown streets will have roadway lighting, these streetlights will have additional design elements such as double banner brackets, electrical outlets and decorative bases.

Street Furniture

Street Lights

Location and Spacing

Street lighting poles should be located on the sidewalk close to the curb on the curb side edge, or centered within, the furnishing zone. Typically, pedestrian lighting poles align with the street lighting poles. However, on very wide sidewalks pedestrian lighting poles may be farther from the curb than the street lighting poles to light the primary walkway.

Relation to other streetscape elements:

Pedestrian lighting should be added to street light poles where feasible unless spacing between street light poles does not support adequate pedestrian lighting, in which case pedestrian lighting may need to be located between street light poles. Light poles should be coordinated with other streetscape elements. Utility equipment above and below ground, such as pull boxes and underground trenches, should be coordinated when locating lighting fixtures.

Light fixtures should not be located next to tree canopies that may block the light. When determining tree type, anticipated height and diameter of the tree canopy should be considered relative to lighting fixture height and spacing based on light level and uniformity requirements.

Appropriate distance between the tree and light fixture depends upon the type of tree and type of light fixture. If blocking the light output of the fixture cannot be avoided due to existing locations of the light fixture and trees, consider adding additional light fixtures to mitigate the shadows from the tree canopy.

Street Furniture

Street Lights

Light Poles and Fixtures

Street lighting fixtures illuminate both roadway and sidewalk and are typically 25 to 32 feet high. Typically, the taller the pole height, the larger the area each lighting fixture can illuminate. This means that the spacing between lighting fixtures can be wider and fewer fixtures can be used to light the street, which is economical for construction and maintenance.

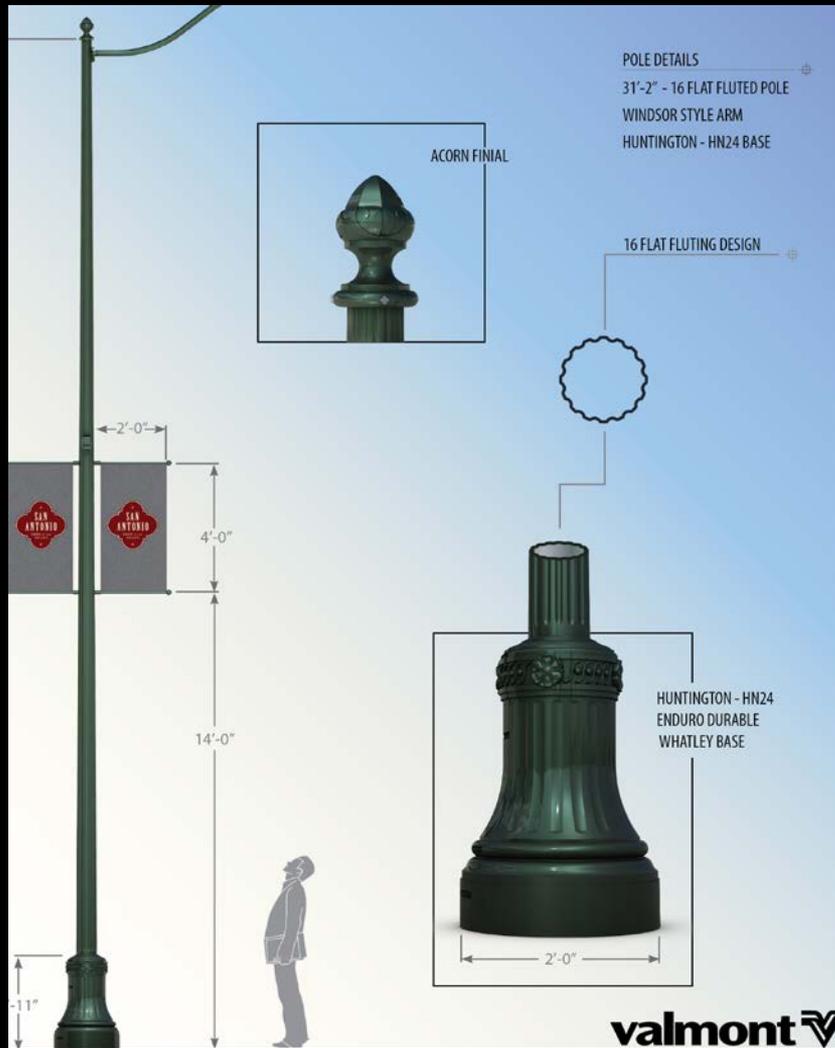
Pedestrian-scale lighting fixtures, typically 12 to 15 feet high, illuminate pedestrian-only walkways and provide supplemental light for the sidewalk. Pedestrian-scale fixtures should be encouraged to improve pedestrian lighting on key streets, and considered in areas with high nighttime pedestrian activity and/or wide sidewalks. They should also be considered for narrow streets, including local access lanes, alleys, shared public ways, and pedestrian pathways, that can be adequately illuminated with these fixtures alone. In these situations, street lighting fixtures will most likely be required at intersections, at mid-block crosswalks, and on the through-lanes of multi-way boulevards.

The City should explore opportunities to encourage property owners, private developers, and public buildings to install wall mounted or suspended pedestrian lighting fixtures for sidewalks, alleys, shared public ways, or pedestrian-only streets where conditions allow light fixtures to be selected that are appropriate to the overall streetscape style and identity of the neighborhood and that maintain continuity between the different streets in the neighborhood.

Neighborhoods should have a consistent fixture style to present a unified appearance, and similar neighborhoods around the City should have the same or similar fixture styles. Accessories such as banner arms may be added to light poles to further identify the neighborhood. Historic light standards (for example, the multi globe street lights on Houston Street) should be preserved, and restored whenever possible.

The light pole and fixture for downtown is shown on the following page. The pole is a classic 16 flat flute pole with decorative base. The pole shall be painted a Tavern Square Green to match other metal street furniture items in San Antonio's downtown area.

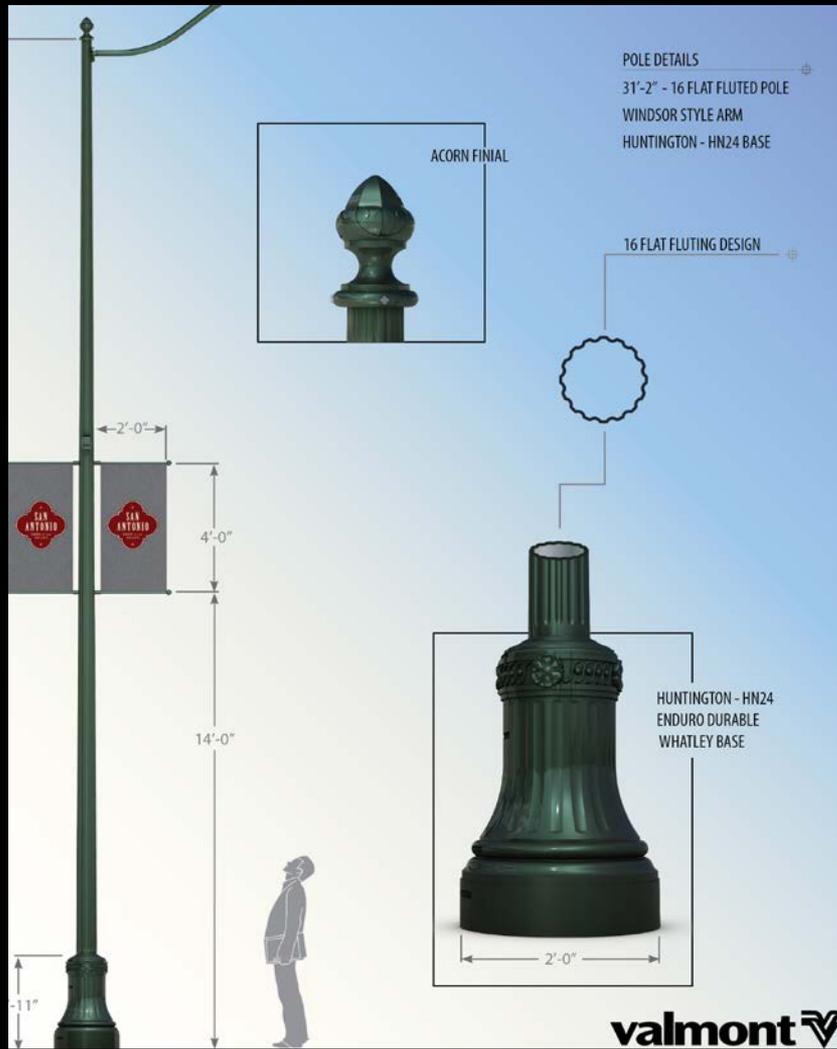
Street Furniture



Street Lights

- Downtown Street Light w/base and finial
- Manufactured by Valmont
- 25-32 feet high depending on street width
- 16 Flat Fluted Pole
- Windsor style arm
- Huntington – HN24 Base
- Acorn finial
- “Pantone Solid Coated 5605 C” powder coat
 - RGB 34,55,43
 - HEX #22372b

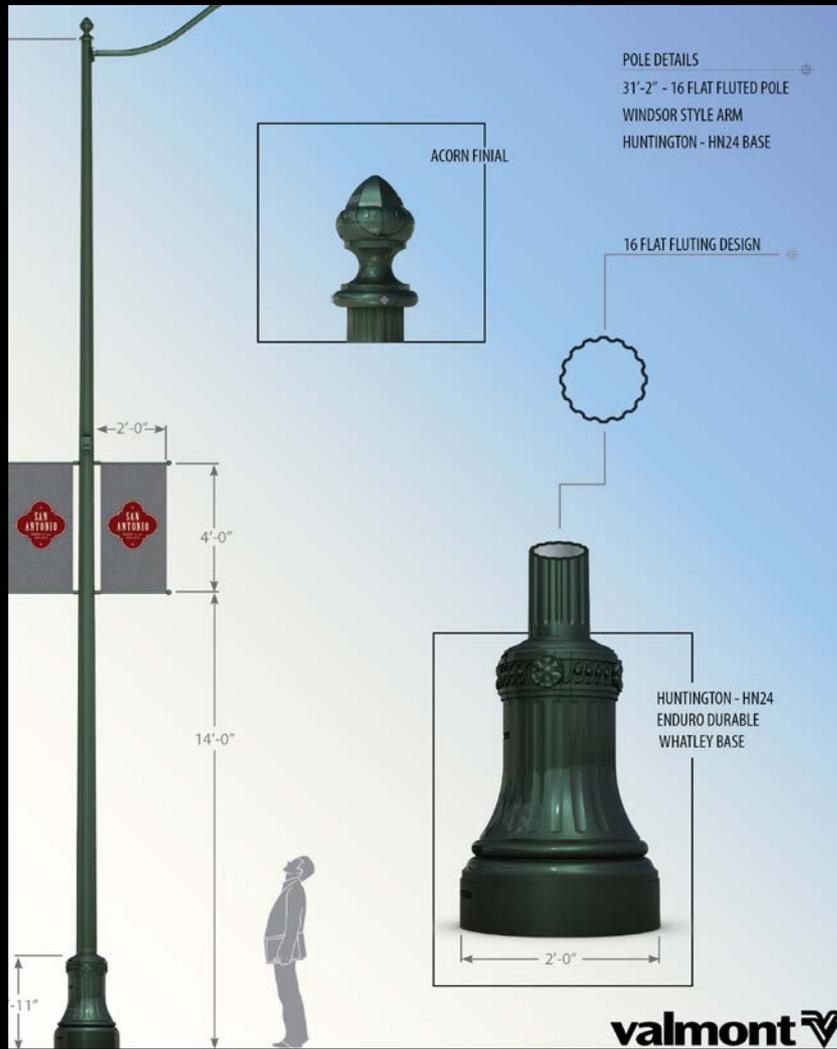
Street Furniture



Pedestrian Lights

- Downtown Street Light w/base and finial
- Manufactured by Valmont
- 25-32 feet high depending on street width
- 16 Flat Fluted Pole
- Windsor style arm
- Huntington – HN24 Base
- Acorn finial
- “Tavern Square Green” powder coat

Street Furniture



Pedestrian Level Lights

- Downtown Street Light w/base and finial
- Manufactured by Valmont
- 25-32 feet high depending on street width
- 16 Flat Fluted Pole
- Windsor style arm
- Huntington – HN24 Base
- Acorn finial
- “Tavern Square Green” powder coat

Street Furniture

Benches and Seating

Public seating warrants particular attention because it creates a comfortable, useable, and active public environment where people can rest, socialize, read, or people-watch. It is a simple gesture that can go far to create an important sense of place. Seating creates places where people can see and be seen. This ability to entice people to linger is the hallmark of great and successful public spaces.

Location of benches and seating

Seating arrangements should be located and configured according to the following guidelines:

- Seating should be located under trees where possible to provide shade and comfort and to integrate multiple elements.
- Informal seating (low walls, etc.) may also be incorporated into other elements in the site furnishings zone, such as planter edges. Where space allows, benches can be built into planters.

- Where seating is oriented parallel to the curb, it should face toward buildings when located in the furnishings zone, or away from buildings when located in the frontage zone.
- Where sidewalk width permits, seating in the furnishing zone should be perpendicular to the curb. On curb extensions, seating should be organized to create social spaces.
- Seating incorporated into building forms, such as seat walls, may be used as an alternative to free-standing benches.
- Seating should be designed to encourage sitting and to discourage lying down.

Given the visual character and amenities in San Antonio, there are many scenic locations where varying from some of these guidelines may be appropriate in order to take full advantage of a street's setting.

Street Furniture

Bench & Pedestrian Light



Bench

- Company: Victor Stanley
- Model CBF-12: A City Sites Series™ bench with uniquely curved castings.

Pedestrian level street lights

- Company: Sternberg Lighting
- **OLD TOWN - A850SR LED Fixture**
- A traditional acorn style fixture provided with a decorative cast aluminum fitter, a polycarbonate or acrylic clear textured acorn and a cast aluminum roof.
- It has LED light sources and roof mounted, down lighting optics. It measures 16 inch diameter and 40-1/2 inch overall height.
- Austin 4700 Base. Straight fluted shaft. 16 foot height.



Street Furniture

Bollards

Bollards are primarily a safety element to separate pedestrian or streetscape elements from vehicles. Attractively designed bollards add consistent color (Tavern Square Green) and interest to streetscapes, help define pedestrian spaces, and provide a spot to lean on or rest at.

Location of Bollards

Bollards should be located according to the following guidelines:

- The use of bollards in Downtown San Antonio should be used at sidewalk locations where vehicles attempting to park are damaging sidewalk structures, trees or plantings, furnishings, or adjacent private property, especially on narrow streets.

- Bollards should primarily be considered for installation on any new curb extensions (except transit bulb outs), and mid-block curb extensions, where there is a risk of danger to pedestrians due to proximity of travel lanes.

- Attractive bollards can also be used in special locations, including pedestrian-oriented spaces such as shared public ways or pedestrian-only streets, to designate unique spaces. Lighted bollards can create a special pedestrian environment, and may be particularly useful to provide additional pedestrian lighting in median refuges.
- Removable bollards should be placed at entrances to streets that are closed to vehicles for pedestrian use, to alert drivers to the changed nature of the street. Similarly, removable bollards can define the outside edge of flexible parking spaces where the space has been converted to pedestrian use.
- Bollards should be placed 18 inches from the back of the curb. If there is no parking in the bollard placement area, the bollard may be installed immediately adjacent to the back of the curb.
- Standard bollard spacing is approximately 10 feet on center, but may need to be reduced where there is a need to block vehicular traffic. Spacing should vary to sync with the rhythm of lighting fixtures, trees and landscaping, or other elements in the streetscape.

Street Furniture

- Sternberg Lighting Company
- “Austin” 4701 LED or
- “Austin” 4701b
- Tavern Square Green

Bollard



“Austin” 4701 LED



“Austin” 4701b

Street Furniture

Tree Grates

In limited downtown locations, such as heavily traveled sidewalks where sidewalk width limits pedestrian movement at peak times, where a formal design treatment is desired, such as along ceremonial streets, or in bus zones, it may be necessary or desired to install tree grates to provide an adequate walking surface or design treatment.

Tree grates and other structural basin covers are generally encouraged on most of Downtown San Antonio's commercial sidewalks. Tree grates must be compliant with American With Disabilities Act, thus grates with large openings are strongly discouraged. Maintenance of tree grates often requires workers to expand the diameter of the opening as the girth of the trunk increases.

Grates should be designed with easily removable inner rings to allow for the growth of the tree trunk. In limited circumstances such as extremely narrow sidewalks, tree grates may be counted toward the minimum clear path of travel; however, as they are difficult to maintain to an accessible standard, this is not a preferred solution.

Grates should have less than 1/2 inch spacing between rings to provide a safer walking surface and to prevent material from being trapped or falling into the basin.

Maintenance of grates used in high pedestrian traffic areas should include the periodic cleaning of grates and adjustment to eliminate any tripping hazard.

Street Furniture

Tree Grate-Option One

- “OT” Iron Tree Grate
- Company: Urban Accessories
- 5 Square Feet



Street Furniture

- “Pavone” Iron Tree Grate
- Company: Urban Accessories
- 5 Square Feet

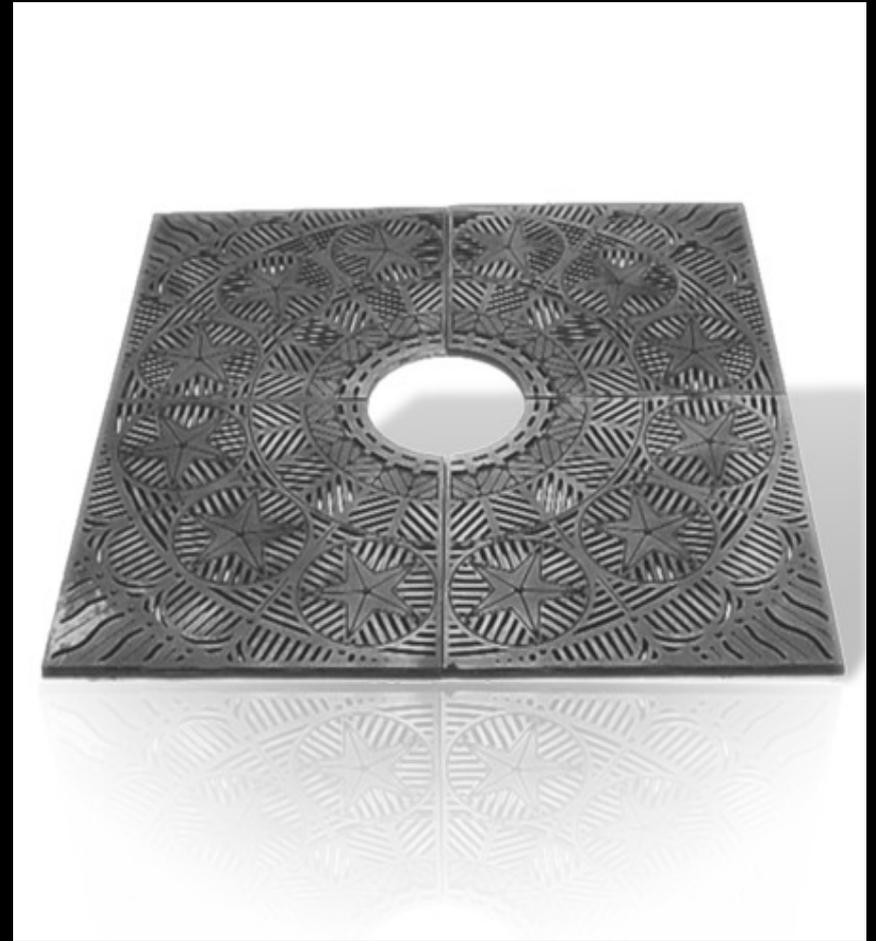
Tree Grate-Option Two



Street Furniture

- “North Star” Iron Tree Grate
- Company: Urban Accessories
- 5 Square Feet

Tree Grate-Option Three



Street Furniture

- “Aztec” Iron Tree Grate
- Company: Urban Accessories
- 5 Square Feet
- Option to use in cultural Corridors such as Market Square

Tree Grate-Alternative



Street Furniture

Tree Grates

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Street Furniture

Tree guards

Tree guards are generally discouraged, but may be appropriate on heavily traveled sidewalks for the protection of newly planted trees. They are also appropriate adjacent to heavily used bus and light rail stops, around school buildings, and adjacent to other land uses with associated activities that may be considered detrimental to tree health and safety.

Tree guards should be of an attractive design, not possess any sharp edges, and be made of durable material. Tree guards should be a minimum of 18 inches wide to provide sufficient distance from the tree trunk at the time of planting. Tree guards are an opportunity to provide a special design and to incorporate artistic elements.



Street Furniture

Tree Guard



- Tree Guard "Fillmore"
- Company: Urban Accessories
- Unpainted

Street Furniture

Street Poles & Sign Frames

Traffic and parking signs convey essential information to drivers, cyclists, and pedestrians. However, if misplaced or overused, they may become too numerous, create a cluttered streetscape environment, and lose their efficacy as signage.

Location and placement

Traffic and parking signs should be located in the edge zone, that 2-3 feet adjacent to the curb. They should be placed at either end of parking stalls, and aligned along the block.

Traffic and parking signs should not be placed so that they will be obstructed by other streetscape elements. However, other desirable elements such as street trees or light poles should not be moved to accommodate new signage; rather, signs should be placed around existing features and around the ideal locations of plantings, lighting, and site furnishings. Signs may be placed within planters as long as they are concrete-set.

Consolidation

Traffic and parking signs should be consolidated onto single poles wherever possible. New signs should use existing poles wherever possible. Stand alone signs should only be located where no other sign exists within 100 feet.

When redesigning streets, designers should look for opportunities to consolidate existing signage onto shared poles. The number of poles along the sidewalks in Downtown San Antonio is quite high. All kinds of poles, from decorative to utilitarian; all impact the quality of the visual environment.

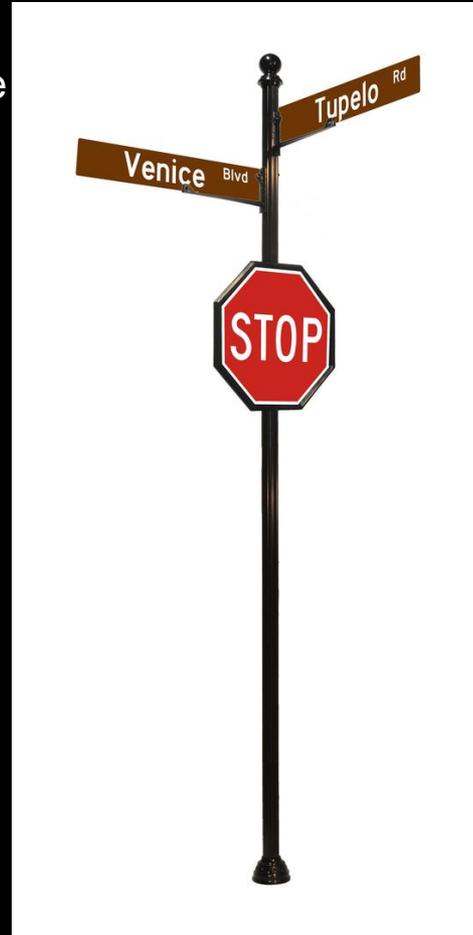
Poles for street names, no parking zones, valet zones and all other regulatory poles shall be systematically removed and replaced with the decorative black pole as shown on the next page.

Another key visual enhancement is the use of sign frames. These frames should be used on all STOP signs and street name signs in the downtown area. Frames for regulatory parking and other regulation are not required to use the frame but should be utilized on key ceremonial streets such as Alamo, Market, Commerce and Cesar Chavez. Other alternatives might include Santa Rosa, Broadway and Houston.

Street Furniture

Regulatory Pole & Frame

- Company: Capital Streetscapes
- FL3X10 – 3 inch X 10 foot Fluted Pole
- BALL3 - Ball Finial for 3 inch Pole
- BASE34 - Slipover Base for 3 inch Pole
- Ornamental 18 X 24 inch Traffic Sign Frame for Decorative Sign Post



Street Furniture

Traffic Signal Structures

One of the largest and most readily recognized pieces of streetscape furniture in the downtown area is the traffic control signal structures placed on all major roadway intersections. While these elements serve more of a functional role than an aesthetic one, their design and color should appear to be from the same family of furniture as the streetlights and bollards.



Street Furniture

Traffic Signal Structures



- Valmont pole and arm with custom street name sign
- 16 foot Flute Pole, Straight
- Mast Arm: Smooth, Straight
- Base: Huntington
- Material: Cast Steel
- Finish: Tavern Square Green Powdercoat
- Acorn Finial
- Windsor arm for LED Light above

Street Furniture

Custom Street Name Signs



The street names signs in Downtown San Antonio should reflect a unique “custom look” when compared to the street name signs city-wide.

The design of the street name sign has yet to be finalized but the sign should meet certain basic design goals. These include but are not limited to:

- Color: Studies have shown that reflective white lettering on a matte black background are the easiest to read from a distance. The lettering should be raised and reflective if possible.
- Lettering Style: The lettering should contain upper and lower case lettering. The font style should be historic looking.
- Information: The sign could contain a logo or brand as part of the sign composition along with the number of the block that the intersection is located within. An interesting colorway could highlight the block numbers.





Street Furniture



Sidewalk Café Barriers

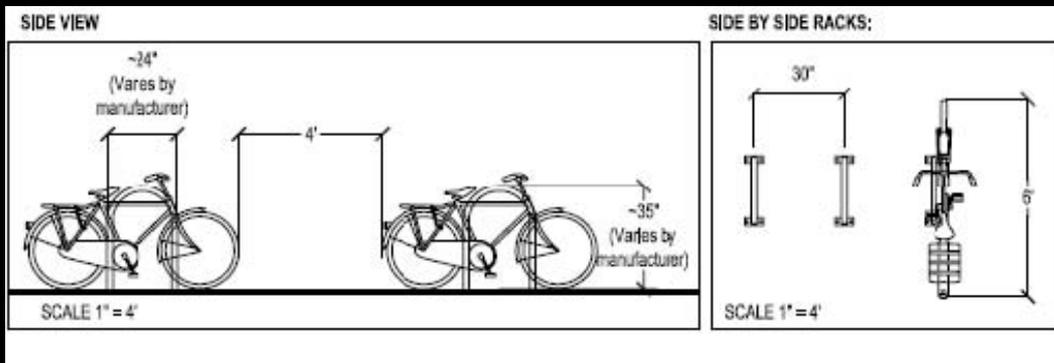
- Fencing must be between 30 and 42 inches in height. Fencing must be 42 inches in height, if required by the State Liquor Control Board.
- Fencing must be detectable by cane to warn visually impaired persons of potential hazards in the path of travel.
- Fencing must be generally transparent. Solid sheet fencing surfaces are not permitted.

Bicycle Specifications

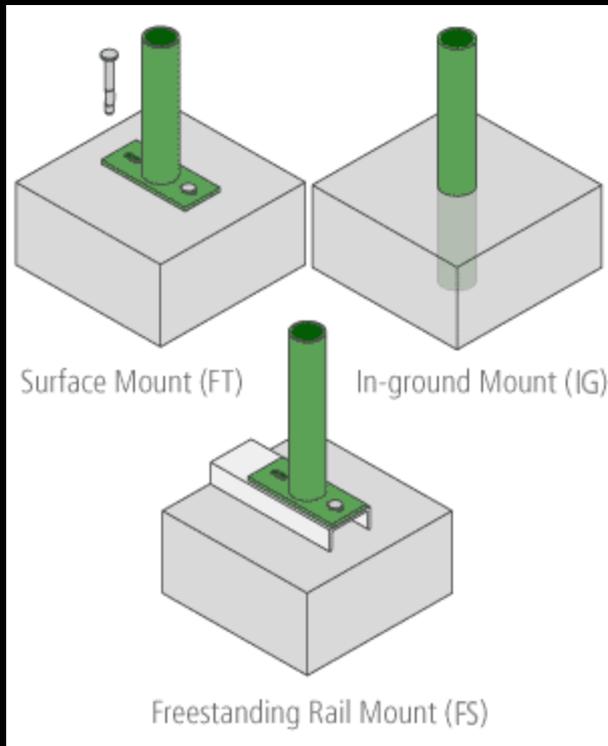
Bicycle Rack

Where bicycle spaces are required by §35-526(b), bicycle racks or lockers shall be located within fifty (50) feet of a building entrance. The spaces shall not be located behind any wall, shrubbery, or other visual obstruction lying between the principal building and the bicycle spaces. The placement of bicycle racks or lockers should minimize conflicts with both pedestrians and motorized traffic. All bicycle parking provided should be set in concrete or flange mounted on concrete, and located a minimum of twenty-four inches (24") from a parallel wall, and thirty inches (30") from a perpendicular wall as measured to the closest bicycle rack.

Bicycle spaces shall be at least two (2) feet in width and six (6) feet in length and shall be identified with MUTCD [comment see Manual on Uniform Traffic Control Devices, <http://mutcd.fhwa.dot.gov/>] compliant (D4-3) signs advising persons of the location. Where each parallel bicycle rack is spaced at least thirty inches (30") apart said racks shall be counted as providing two bicycle parking spaces (one on each side of the rack) provided there is at least four (4) feet between each bicycle space where arranged in linear fashion.



Street Furniture



Bicycle Racks

- Should be built into the site pad.
- Bicycle spaces shall be provided in the downtown zoning district minimum rate equal to twenty-five (25) percent of the minimum required vehicle spaces for the proposed use.
- Bicycle spaces shall include bicycle racks or bicycle lockers which shall not obstruct pedestrian traffic
- Shall complement design of surrounding public art and architecture
- Should allow bicycle frame to be supported at two points
- Material/coating should be resistant to frequent interfacing with metal frames and chains

Street Furniture



Bicycle Racks for Existing Pads

- Racks can be bolted down onto concrete on existing locations
 - Drilling to be 10 inches into sidewalk
- Must be 33 to 36 inches tall
- Will follow previous requirements

Section Two – Paved Surfaces

Paved Surfaces

Paving can consist of traditional paving materials such as concrete or asphalt or non-traditional materials used as accents or in key locations. Typical asphalt and concrete paving are proven materials that meet the standard needs of vehicle and pedestrian circulation; special paving treatments can improve public spaces in a city, give circulation areas a stronger sense of place, and enhance the hierarchy of public spaces. Special paving treatments can be selected from a range of options, including natural stone pavers, unit concrete pavers, bricks, wood, textured and colored concrete, stamped asphalt, and concrete with exposed or special aggregate or other finish treatments.

Special paving can be used to both define the edges of spaces and to visually enhance entire spaces. Special paving is key to communicating pedestrian primacy such as within heavily traveled crosswalks or pedestrian priority spaces, and adds visual variety to the streetscape.

Special paving can be a functional storm water amenity as well as an aesthetic enhancement, when designed as permeable paving. Permeable unit concrete pavers can provide both function and aesthetic appeal and should be used where an enhanced design treatment is desired. Permeable asphalt and concrete change the surface function but do not greatly enhance the overall aesthetics of the site.

Paved Surfaces

Placement

Sidewalks should use standard scored (2 inch x 2 inch), brushed concrete paving at a minimum. In addition, a special paving band along the curb is included as a component of the sidewalk design on all downtown sidewalks. Special paving may be introduced in place of the standard scored concrete, but only after cost and maintenance concerns have been addressed. Specifically, special paving should be considered in:

- transit stop areas, including transit curb extensions and medians
- pedestrian crossings, especially at important civic or historic locations
- mid-block and raised pedestrian crossings
- pedestrian refuge areas within medians
- the plaza areas around the Alamo
- Riverwalk pathways
- pedestrian-only streets, including transit malls, pedestrian malls, and areas that are regularly but temporarily closed to vehicle traffic
- flexible space in parking lanes
- sidewalk and median pocket parks
- curb extensions
- the special paving band along the curb
- gateways and other special places

Guidelines

Paving type

Standard Paving: Standard sidewalks should use concrete scored in 4 inch x 4 inch squares.

Downtown San Antonio sidewalks should use concrete mix to the specifications prescribed by Public Works. The concrete should contain a warm grey color mix to minimize glare and to help hide dirt or grime. The concrete should be sealed in order to minimize stains from food and oil.

Special Paving: Pavers consist of sand set granite setts, with two contrasting colors (black and grey).

Special aggregates, colors, and textures may also be considered. Maintenance cost of special pavers should be considered during the selection process. When non-customary materials are used, they should extend at least a complete block for design consistency and maintenance efficiency. Similarly, non-customary scoring should extend for at least one block. Exceptions can be made where special paving is being used to highlight transit stops, historic locations, parks, plazas, or other site-specific features.

Paved Surfaces

Sidewalk Paving

Typical Sidewalk Paving

Cast in place concrete paving in 2 inch x 2 inch stacked bond pattern with medium broom finish. Integral color of green slate hides stains.



Special Paving – A “green” alternative

Sidewalks do not need to be boring grey concrete. They need to be safe with a no-skid surface while permitting easy foot travel without fear of twisting an ankle. Monochromatic color schemes while economical, will show dirt and stains more easily.

One alternative worth considering is the introduction of recycled glass as a “float” or top surface of the concrete. The glass adds a sparkle quality as well as a multi color aspect, hiding most dirt and stains.



Paved Surfaces

Sidewalk Accent Band

Sidewalk Accent Band

- Two tone (black and grey) band of granite setts at back of curb. This acts as a warning strip to pedestrians as well as being a visual cue for sight impaired individuals. Total width of granite setts should be 24 - 36 inches depending on overall sidewalk width.
- Photo meant to depict color and type of paving only.



Paved Surfaces

Placemaking

Street Name Inset

As an optional element in portions of downtown, the use of embedded brass street names is a common historic element that could be added to the design of street corners in the future.



Paved Surfaces

Pedestrian Crossings

Special paving treatments communicate to individual users that the crosswalk is part of pedestrian space, not an encroachment by pedestrians into the roadway. Paving, texture, and color treatments are especially important in places where it is important to make pedestrians more comfortable crossing.



Paved Surfaces

Crosswalk Banding

Crosswalks shall be 10 feet minimum width on all downtown streets.

High visibility crosswalks have white longitudinal stripes with 2 feet wide white stripes with 2 feet spacing. Make stripes parallel to the curb line of the street. The longitudinal lines shall be contained within two 12 inch edge lines.

All curb ramps must be located within the marked crosswalk, not including side flares of the ramps. All curb ramps shall be installed in perpendicular (90%) to the gutter pan angle with the back side of flare aligned as closely as possible to the back edge line of the crosswalk.

Stop lines are white and 12 inches wide and are located 6 feet before crosswalk line. Stop lines shall be parallel to crosswalk lines.

Crosswalk Banding



Paved Surfaces

Bike Lanes

Bike Lanes

Green Bike Lanes enhance visibility and safety. The green lane is a constant reminder that a priority lane is present.

Bike Lanes shall be of a green asphalt, reducing the maintenance of lanes. In contrast to painted lanes, which will be repainted every two years, asphalt will be repaired as needed.

Coating the asphalt will require more upkeep. An additive in asphalt is suggested. A special "synthetic" binder that contains no asphaltenes has been used because it takes color more readily. This method of tinting the mix allows color to permeate the entire depth of the material, so there are no surface wear-off concerns. Colored asphalt costs no more than 33 % more than black, upfront, but will save us man hours long term.

To repair asphalt, Public Works shall have supply of this green asphalt in stock. Green asphalt reduces maintenance and long term fees associated with the bike lanes.



Paved Surfaces

Bike Lanes

- Green Asphalt to highlight on-street bike lanes
- Lanes should be a minimum of 5 feet wide and include the bicyclist logo, banding, and directional arrow (as shown)



Paved Surfaces

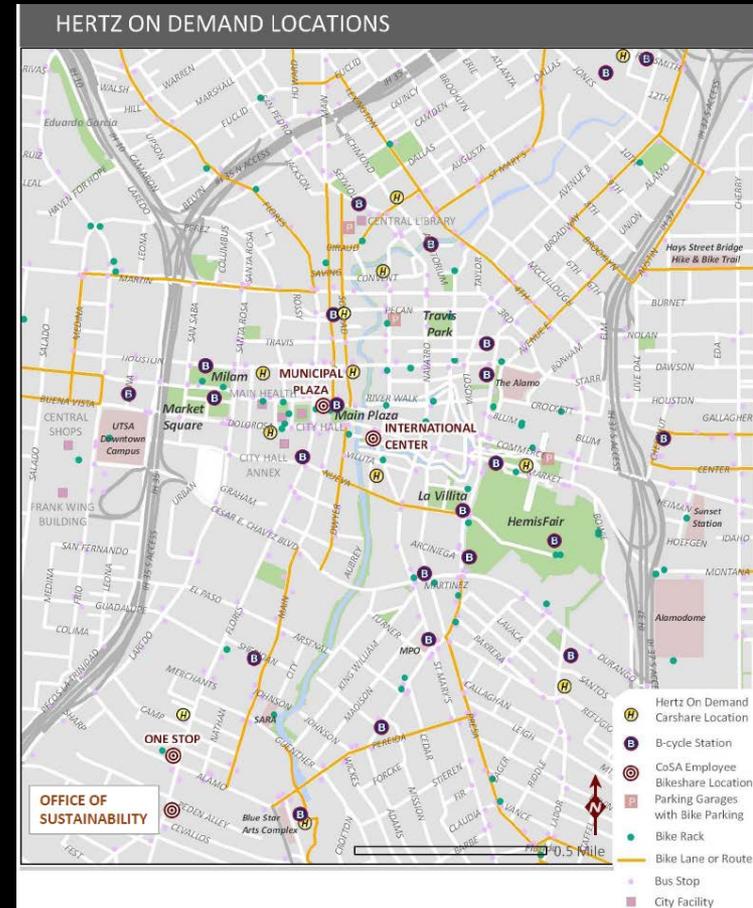
Car Share Programs

The purpose of a car share program is to advance the creation of an integrated, efficient multi-modal surface transportation system. Hertz On Demand has committed to providing up to eighteen (18) car share vehicles with a minimum of three electric “plug-in” vehicles. Currently, there are twelve (12) locations.

The car-sharing program will be established as an “open system,” to be used by the public to include employees of private businesses/public institutions, residents, tourists and City of San Antonio employees.



Specialty Parking



Paved Surfaces

Hertz on Demand

- Yellow Paint to highlight parking area
- Will be size of one parking lane
- Majority of existing locations are parallel parking locations



Section Three – Street Trees

Street Trees

Street Trees

Street trees are the most important organizing element of the streetscape environment.

Appropriate tree species selection and location and design of the planting site will ensure the healthy growth and longevity of trees, enhance streetscape character, and maximize the City's investment. It has been demonstrated that street trees enhance property values in residential neighborhoods and commercial areas.

Decorative Tree up lighting is encouraged on foliage and public art



Street Trees

Placement

Downtown street trees are typically planted in tree wells (sidewalk cut outs) in sidewalks. Where planting strips of sufficient width occur between sidewalks and streets, it is not necessary to create independent tree basins for trees. Ground-cover landscaping should be included in planting basins larger than standard size. In limited circumstances, trees may also be planted in above ground planters.

When adding trees to an existing streetscape, movable site furnishings should be relocated, where feasible, to allow for street tree planting in an appropriate spacing. If unmovable sidewalk elements interfere with a planting sequence, site the tree a few feet in either direction to accommodate obstacles. When designing a new or renovating an existing street, locate or relocate utilities and other elements where feasible to attain a regular tree spacing.



Street Trees

Species Selection

Tree species selection and placement should be consistent with the goals of a particular street. The predominant five street trees for Downtown include but are not limited to:

- Cedar Elm, *Ulmus Crassifolia*
- Mexican Plum, *Prunus Mexicana*
- Texas Pistache, *Pistacia Texana*
- Bay laurel, *Laurel Noblis*
- Texas or Oklahoma Redbud, *Cercis Canadensis* var. *Texana*
- Mountain Laurel, *Sophora Secundiflora*
- Lacey Oak, *Quercus Laceyi*
- Grape Myrtle, various species to meet specific location needs
- Eve's Necklace, *Sophora Affinis*

Ceremonial streets, commercial streets, major thoroughways, and other streets important to the city pattern should use formal, consistent planting palettes chosen for their distinct design qualities to provide a strong aesthetic character and facilitate place recognition. Neighborhood residential or smaller streets may use a more diverse, less formal planting palette to indicate neighborhood preference and create a rich planting variety.



Street Trees

Appropriate tree species selection should consider:

- form, mature size, color, and texture to reflect the urban design goals of a street
- the mature tree canopy with respect to how it may affect street and pedestrian lighting or views of signage and building fronts
- the potential for root systems to affect sidewalks, curbs, and utilities and impacts and constraints created by local climate.

Generally:

- Trees with columnar form are appropriate for narrower planting spaces such as small streets, alleys, and narrow medians.
- Trees with overarching canopies and medium density foliage are appropriate on wider streets, such as Market, Commerce and Cesar Chavez.
- Medium-sized trees with light to medium density foliage are appropriate on neighborhood residential and pedestrian friendly commercial streets such as College, Avenue B and Navarro.



Street Trees

Size

Minimum size requirements for trees to be planted in tree basins in the sidewalk are as follows:

- Caliper (trunk diameter) of trees to be planted should be a minimum of 2 inches at 8 feet of height (exceptions should be considered for desired species that may not attain this caliper size as a 24 inch box specimen).
- Minimum tree size at planting is a 24 inch box; 15 inch box specimens and smaller caliper sizes should be allowed for volunteer efforts and property owner initiated replacement.
- Tree branches that extend into the path of travel must maintain 80 inches of vertical clearance.



A 24-inch box Tree

Street Trees

Location and Spacing

Street tree spacing should be determined by the expected mature size of the tree.

Generally, trees should be planted with the following spacing:

- Small trees (<20 feet crown diameter at maturity) should be planted 20 to 30 feet on center.
- Medium sized trees (20 to 35 feet crown diameter at maturity) should be planted 30 to 40 feet on center.
- Large trees (>35 feet crown diameter at maturity) should be planted 45 feet on center.

These guidelines may suggest a crowding of the canopies of adjacent trees, but trees will adapt to a slight degree of crowding and still remain healthy. Slight crowding will insure a continuous tree canopy along the street. Certain trees, such as palms and many ornamental species may be used on ceremonial streets, although they may not result in a continuous canopy.



Street Trees

Size of Tree Wells/Basins

Trees need adequate surface area for root growth. Most tree species have the majority of their roots in the first 18 inches of soil. An important variable in tree well design is the amount of surface area. Greater surface area provides for greater entry of water and oxygen into the soil.

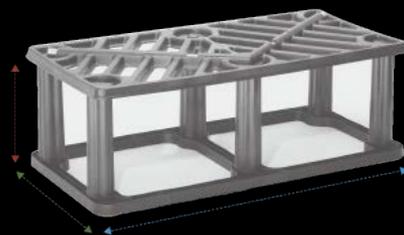
Wells may be square, rectangular, or have other shapes to meet the minimum size requirements. Linear planters may enable a design to achieve optimal tree basin size on narrow sidewalks.

Permeable surfacing increases access of tree roots to water and oxygen when the optimal tree well size is not possible. Continuous trenching between tree wells (which can be covered by paving) should be used wherever possible to maintain the capacity of oxygen and water to enter the soil in a tree well, particularly where minimum sized tree wells must be employed.



Street Trees

- Company: Deep Root
- Model: Silva Cell
- modular suspended pavement system that uses soil volumes to support large tree growth and provide powerful on-site stormwater management through absorption, evapotranspiration, and interception.
- Each Silva Cell is composed of a frame and a deck.
- Silva Cells can be spread laterally as wide as necessary.
- Each unit is about 92% void space, making it easy to accommodate utilities.
- Their rounded edged prevents sinking due to compressive forces.



h	Height: 16" (400 mm)
w	Width: 24" (600 mm)
l	Length: 48" (1200 mm)



Section Four – Special District Elements

Special District Elements

Special District Elements are sculptural or other physical elements within a streetscape that seek to bring a unique identity to any special commercial or residential district in Downtown San Antonio. This character can be drawn from many different sources: cultural ethnicity, architectural styles or elements, special cultural or historic institutions, or the general historical background of a neighborhood.

Since these elements can initially be expensive, have unique maintenance considerations, and are unique to each Downtown sub district, they are not included in previous sections which identify the more common streetscape elements for every downtown street.

A symbol or idea may be developed via community meetings and design charrette to be used repeatedly in a variety of forms throughout a commercial area, such as:

- Large, single-use elements placed over the street, such as a monumental arch, gateway or portal
- Two flanking elements, columns or markers placed on either side of the street, typically located on the sidewalk
- Smaller, repetitive elements such as fabric banners or permanent pole identifiers painted a unique color
- Pavement medallions or manhole covers

Custom streetscape elements or modifications to standard streetscape elements to include identity elements, such as custom street name signs, clocks, embedded brass art elements, artistic treatments to common streetscape hardware.

Special District Elements



Functional Art

One of the ways to expand the opportunity for art is to take it beyond the decorative elements to the functional elements. It is possible and advisable to incorporate art into functional items (or functional items into art). This practice further creates the authentic and celebratory experience we want for the downtown.

Streetscape elements, such as light poles, manhole covers, sidewalks, tree grates, tree guards and street furniture are all suitable elements for artistic expression.

There are two important factors to remember when considering functional art:

- “Function” is a key component; the items should be able to be used as intended. They should be easy to maintain, safe for the user, and reflect the character of the downtown.
- “Art” is also a key component; consider using local artists or the community to design these items.

Special District Elements



Miscellaneous Pole Elements

- Great for District Identity
- Special paint color reinforces district
- Opportunity for regulatory sign consolidation

Special District Elements

Manhole Covers



Special District Elements



**Brass Street Names embedded
in sidewalk paving.**



Special District Elements

Shade Structures



Special District Elements

Public Art



Special District Elements

District Branding



Special District Elements

Clocks and Public Art



Section Five – Engineering Specifications

Engineering Specifications

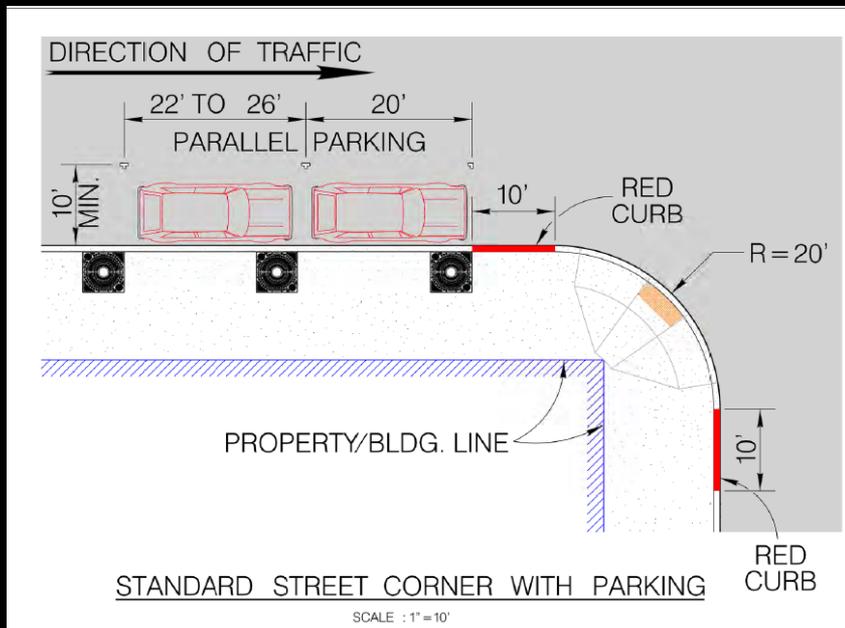
The Downtown Streetscape Design Manual (DSDM) prescribes minimum standards to be used in the design and construction of public infrastructure located in public rights-of-way and public easements in the downtown area of the City of San Antonio.

The standards in the DSDM are intended to provide for the public health, safety and welfare by ensuring the comprehensive design and construction of adequate and functional public improvements associated with developing and redeveloping the existing and any proposed right-of-way improvements.

The DSDM requirements reflect accepted and well founded civil engineering practices, construction industry specifications and conformance with national safety standards and are consistent with current city ordinances, standards, policies and practices.

Engineering Specifications

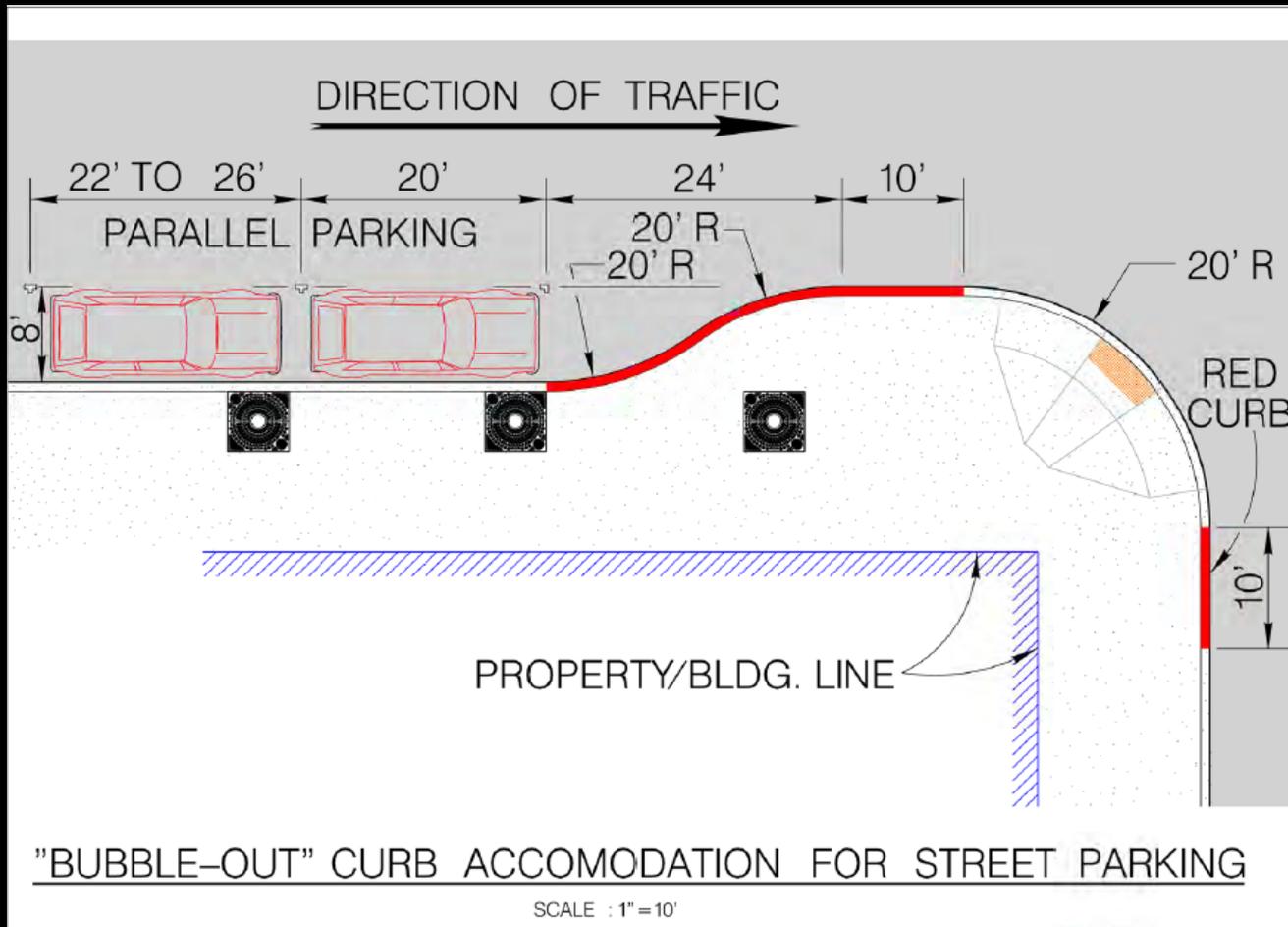
Standard Street Corner



Curbs for a standard street corner shall have a maximum (20) foot radius. The curb radius may be reduced, upon approval by the City of San Antonio where warranted by existing conditions.

Parking should be prohibited within ten (10) feet from the point of return for the curb radius, with painted red curb per City of San Antonio standards. See drawing on this page.

Engineering Specification



Engineering Specification

Marked Crosswalks

Marked crosswalks are an essential tool for helping pedestrians move safely, conveniently and predictably across roadways. When treated with decorative paving material, crosswalks also provide a unique streetscape design treatment to emphasize pedestrians' presence and primacy.

Marked crosswalks alert drivers to expect crossing pedestrians and to direct pedestrians to desirable crossing locations – marking crosswalks at every intersection is not necessary or desirable. Although many motorists are unaware of their precise legal obligations at crosswalks, the Texas Vehicle Code requires drivers to yield to pedestrians in any crosswalk, whether marked or unmarked.

Streetscape design should emphasize crosswalks as a fundamental part of the pedestrian realm, not as an intrusion into the roadway reserved for vehicles only.

Placement

Crosswalks are present by law at all approximately right angle intersections, whether marked or unmarked, unless the pedestrian crossing is specifically prohibited. At midblock locations, crosswalks only exist where marked. At these non-intersection locations, it is the crosswalk markings that legally establish the crosswalk. Most importantly, the decision to mark a crosswalk should not be considered additional measures, marked crosswalks alone are unlikely to increase pedestrian safety and may decrease safety, particularly on multi-lane streets. Follow any City of San Antonio standards for these.

Engineering Specification

Downtown Crosswalks

Because of the low approach angle at which pavement markings are viewed by drivers, the use of longitudinal stripes in addition to or in place of the standard transverse markings can significantly increase the visibility of a crosswalk to oncoming traffic. While research has not shown a direct link between increased crosswalk visibility and increased pedestrian safety, high-visibility crosswalks have been shown to increase motorist yielding and channelization of pedestrians, leading the Federal Highway Administration (FHWA) to conclude that high-visibility pedestrian crosswalks have a positive effect on pedestrian and driver behavior.

San Antonio has chosen to utilize continental crosswalks for high-visibility crosswalk locations. Maintenance and installation of high-visibility 'continental' crosswalks costs more than standard crosswalks. Despite their added cost and the lack of hard evidence pointing to their safety benefits, many cities see continental crosswalks as a cost effective way to improve the walking environment and to send a message that pedestrians are present. For this reason they are often employed even at controlled locations that are neither near schools nor at mid-block locations yet still deserve extra attention.



Engineering Specification

Mid-Block Crosswalks

In areas with short block lengths, closely spaced intersections ensure that pedestrians can easily find crosswalks without having to go out of their way, but many areas have long blocks with widely-spaced intersections and fewer crossing opportunities.

Mid-block crosswalks may provide a convenient crossing for pedestrians when other crossing opportunities are distant, or where a destination creates high crossing demand.



Engineering Specification

Special Intersection Paving



Special intersection paving treatments can break the visual monotony of asphalt streets, highlight crossings as an extension of the pedestrian realm, and announce key civic or commercial locations. Special intersection paving treatments include integrated colors, textures, and scoring patterns. They may be instituted within crosswalk markings or across an entire intersection. Special decorative paving, including colored and/or textured concrete, asphalt or pavers, or any similar treatment does not define a crosswalk and should not be seen as a safety measure. Standard continental crosswalk markings are still required. Special intersection paving treatments are more costly to build and maintain than standard treatments. Where capital and maintenance budgets allow, they may be considered on:

- streets important to the city pattern
- commercial streets
- at entries to residential areas where residential streets intersect with higher volume streets
- at key civic locations, such as civic buildings, Riverwalk or historic structures
- mid-block crosswalks.

Engineering Specification

Curb Ramps

Curb ramps provide pedestrian access between the sidewalk and roadway for people using wheelchairs, strollers, walkers, crutches, handcarts, bicycles, and pedestrians who have trouble stepping up and down high curbs.

Curb ramps must be installed at all intersections and midblock locations where pedestrian crossings exist per ADA guidelines. Curb ramps are required at mid-block locations to access on-street accessible parking spaces, where provided, and at all new passenger loading zones.



Engineering Specification

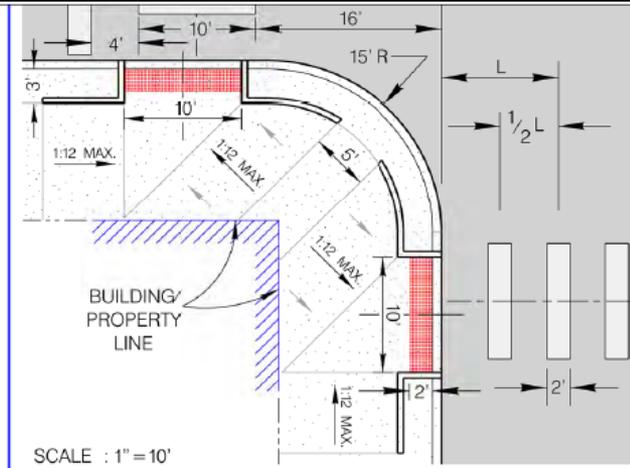
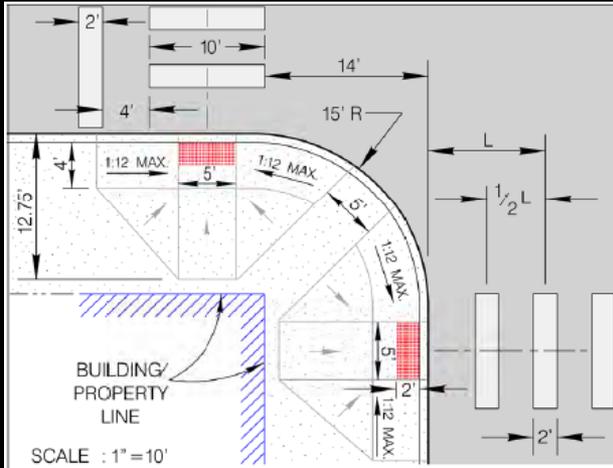
Curb Ramp Guidelines



Curb ramps should be installed parallel to the direct path of travel across an intersection. At four-way intersections, two curb ramps should be installed at each corner.

At raised crossings or intersections or other flush transitions between the sidewalk and the roadway, curb ramps are not necessary, but detectable warning strips must be provided. A 3 foot deep detectable warning surface is required where the ramp, landing, or blended transition connects to a crosswalk.

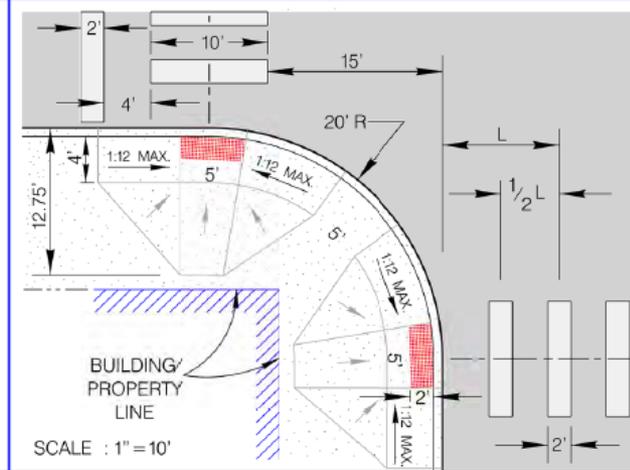
Engineering Specification



UNDER
CONSTRUCTION

PPT SLIDE 77

SCALE : 1" = 10'



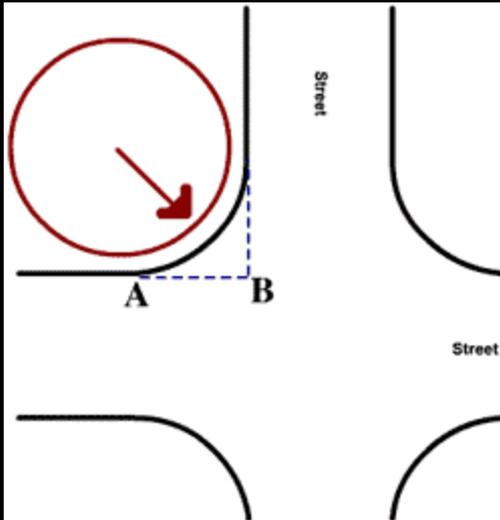
Engineering Specification

Corner Curb Radius

The shape of a corner curb radius (the radius defined by two sidewalks on perpendicular streets that come together at a corner) has a significant effect on the overall operation and safety of an intersection.

Smaller turning radii increase pedestrian safety by shortening crossing distances, increasing pedestrian visibility, and decreasing vehicle turning speed.

The shape and dimensions of curb radii vary based on street type and transportation context, but for downtown San Antonio, the pedestrian realm is of utmost importance. With that in mind, any new street widening or lane reductions shall incorporate no more than a 20 foot radius in downtown.



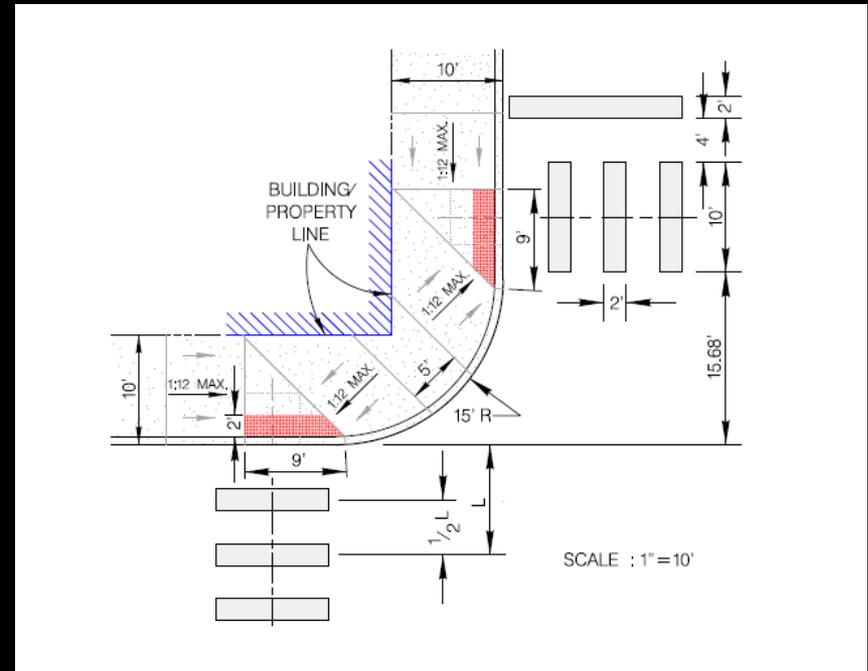
Engineering Specification

Corner Curb Radius

Curb radii should be designed to maximize pedestrian space and shorten pedestrian crossing distance to the greatest extent feasible; the smallest possible curb radius should be used while allowing vehicle movements as described below.

The effective turning radius, not the curb return radius, should always be used to determine the ability of vehicles to negotiate a turn.

These guidelines provide a general overview of the bulb-out design process. However, curb radius design is sensitive to a wide range of variables; these guidelines cannot replace professional judgment and technical analysis. Each project should consider the particular characteristics of the site, and adjust the design as necessary.



Engineering Specification

Radii Alternatives

At-grade paving treatments

To accommodate occasional trucks in very low traffic areas, consider a corner design in which the area between the large and the small curb returns is at street level, and is textured to discourage high-speed turns but allow low-speed use by larger vehicles. This treatment has limited application in downtown San Antonio

Advance stop lines

Advance stop lines on the destination street can increase the space available for large vehicles to make a turn by enabling them to swing into opposing lanes on the destination street while opposing traffic is stopped.

Painted median

Where there is sufficient lane width on the destination street, a painted median can enable a large vehicle to complete a turn without turning into opposing traffic.

Restricted access

Where there is a desire to keep curb radii small, restrictions on large vehicles making the turn may be considered. This should be considered in light of the overall street network and the need for buses and delivery vehicles.

Engineering Specification

Curb Extensions

Bollards, planters, or other fixed objects may be placed at the back of curb where necessary to protect pedestrians and prevent vehicles from driving onto the sidewalk.

Curb extensions should be designed to hold the 100-year storm within curb width. Storm-water features can help to offset reduced capacity from curb extensions. Individual analysis should be conducted for each project.

Curb extensions should either relocate the corner catch basin to the outer edge of the extension, or provide a covered channel (trench drain) to convey storm-water to the existing catch basin (see side bar, previous page). The channel must be covered with an ADA-compliant cover.



Engineering Specification

Curb Extensions

Although curb extensions have many benefits, they may not be appropriate in all circumstances. Use of curb extensions should consider the following:

- They may be more expensive to construct than other measures.
- They can reduce flexibility of the roadway in construction routing.
- They can reduce future flexibility in making changes to the location of bus zones, roadway lane layout, or crosswalks.

Bulb-outs should also be considered as one among many strategies to enhance pedestrian safety and streetscape character. In some cases, median refuges, raised crossings, other improvements, or a combination of strategies may be more appropriate.

Placement

Curb extensions should be considered on all streets in Downtown. Specific priority areas include:

- new streets
- streets with high pedestrian volumes and/or high traffic volumes and speeds
- wide streets with long crossing times
- streets with a history of pedestrian safety concerns
- locations where neighborhood streets intersect with busier thoroughways
- transit priority streets where shortening crossing cycles would improve transit flow.

Guidelines

Bulb-outs should be designed to maximize pedestrian space and minimize crossing distances as much as feasible, while allowing vehicle movements.

Width and Length

Bulb-out width should be maximized based on space for adjacent vehicle and bicycle travel lanes.

The bulb-out should extend to the full width of the parking lane or leave:

- 10 feet for the nearest auto travel lane
- 11 to 12 feet for the nearest travel lane if it is a transit lane
- 12 feet for the nearest travel lane if it is a designated freight route or industrial street
- 5 feet or the full width of any adjacent bicycle lanes.

Engineering Specification

Curb Extensions

Curb extensions (also called bulb-outs) extend the sidewalk into the parking lane to narrow the roadway and provide additional pedestrian space at key locations; they can be used at corners and at mid-block locations.

Curb extensions enhance pedestrian safety by increasing pedestrian visibility, shortening crossing distances, slowing turning vehicles, and visually narrowing the roadway.

Generally, these benefits are greater the further the bulbout extends into the roadway and the tighter the turn radius created by the bulb-out, but should be balanced against roadway characteristics and the needs of large vehicles to navigate turns.

Curb extensions can often be lengthened to create public spaces, landscaped areas, or transit waiting areas. They can also be employed as neck downs or chokers, traffic calming techniques that reduce vehicle travel lanes.

Curb extensions can have the following benefits:

- Increased pedestrian visibility at intersections through improved sight lines
- Decreased pedestrian exposure to vehicles by shortening the crossing distance
- Reduced vehicle turn speeds by physically and visually narrowing the roadway
- Increased pedestrian waiting space
- Additional space for street furnishings, plantings and other amenities
- Reduced illegal parking at corners crosswalks and bus stops
- Facilitated ability to provide two curb ramps per corner

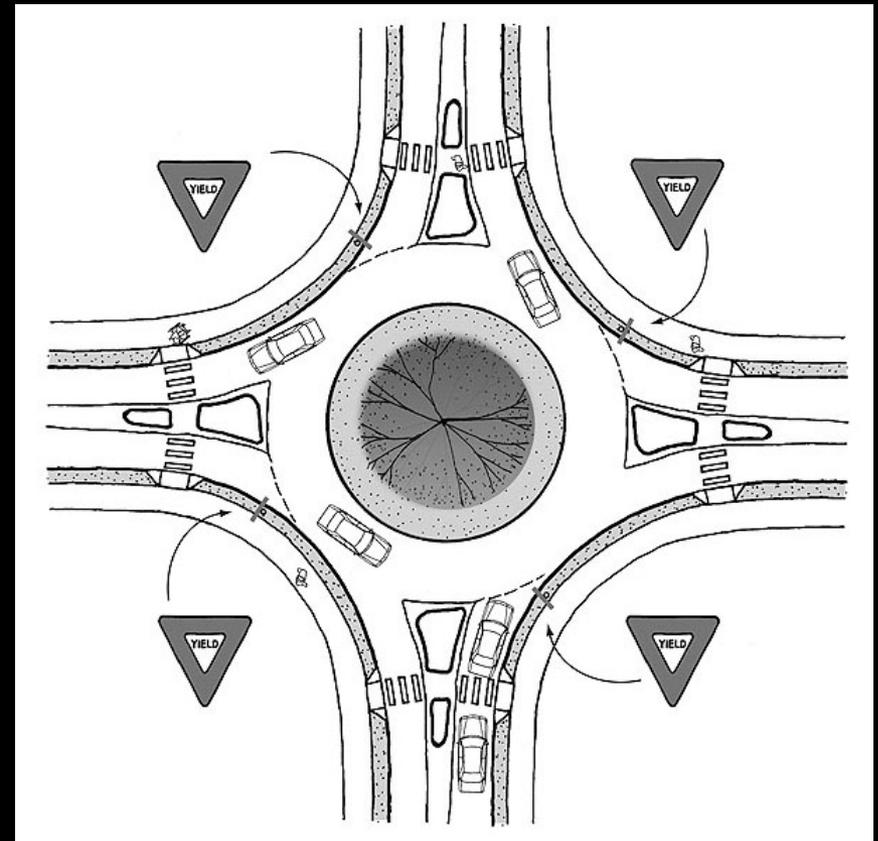
Engineering Specifications

Roundabouts

Roundabouts may be used at large intersections in place of signals and can handle significant traffic volumes. Although their primary purpose is to improve traffic flow, properly designed roundabouts can create a positive pedestrian environment and a unique design opportunity.

Roundabouts have lower vehicle speeds and fewer pedestrian collisions than standard signalized or non-signalized intersections, and experience has demonstrated that vehicular crashes are significantly reduced when low-speed, single lane roundabouts replace four-way intersections.

When vehicular volumes are low to moderate, roundabouts allow pedestrians to cross frequently without waiting for vehicles to stop. However, crossing pedestrians are not protected since vehicles are free flowing. Modern roundabouts incorporate splitter islands to provide crossing refuge for pedestrians and deflect the path of motor vehicles. This deflection reduces vehicle speeds making it easier for pedestrians to cross. Because they introduce non-standard geometry to the intersection, roundabouts can be confusing to pedestrians with visual impairments and special care should be taken to provide wayfinding cues (see sidebar).



Engineering Specification

Roundabout Placement

Roundabouts have limited applicability in San Antonio due to their scale and complexity.

Roundabouts are appropriate at medium to high volume downtown intersections that would otherwise have some other form of intersection control, such as a four-way stop or traffic signal. Modern roundabouts may be considered under the following conditions:

- intersections with more than four intersecting streets
- high volume grade-separated intersections where there is a desire to bring streets back to surface level to create at-grade intersections
- intersections with freeway on and off ramps.

Many typical San Antonio site-specific conditions may preclude installation of a roundabout, including: physical and geometric constraints; heavy pedestrian and bicycle movements; proximity of other traffic control devices that would require preemption (e.g. railroad tracks or Streetcar transit routes); or high numbers of oversized trucks.

Guidelines

Crossings at intersections with modern roundabouts should minimize pedestrian exposure to vehicles, using the following techniques:

- Crossing distances should be minimized.
- Unobstructed sight distance between crosswalks and approaching traffic should be provided.
- At single lane roundabouts, the pedestrian crossing should be at least one vehicle length (25 feet) from the yield line at the intersection with the roundabout to allow one car to queue beyond the crossing.
- At double lane roundabouts, the crossing should be at least two vehicle lengths (50 feet) from the yield line.
- Splitter islands should be provided. Pedestrian refuges should be employed.
- Roundabouts should be landscaped. Plantings should be less than 3 feet tall within 4 feet of the edge of the curb.
- Roundabouts may be considered for distinctive landscape treatments or public art installations such as fountains to create a gateway to major civic locations or to the City from highways.
- Where space allows, useable public space may be designed within the center island

Engineering Specification

Roundabouts and Transit Stops

Transit stops located on the near side of the roundabout should be located far enough away from the splitter island so that a vehicle overtaking a bus would not be forced into the island. For a single lane entry where capacity is not an issue the transit stop can be located at the crosswalk.

Transit stops on the far-side of the roundabout should be located beyond the pedestrian crossing and have pull-outs constructed to minimize queuing in the roundabout.

Roundabouts and Bike Facilities

Bicyclists may be disadvantaged by roundabout design, and marked bicycle lanes through roundabouts have not been shown to improve safety. Bike lanes should terminate in advance of crosswalks at roundabouts.

For one-lane roundabouts with slow speeds and light traffic, bicyclists may merge into the vehicular travel lane comfortably. At multilane roundabouts, which are more challenging for cyclists to navigate, additional safety and design features should be provided.

Engineering Specifications

Manhole covers

San Antonio Water System issues frames and covers for Manhole covers. In downtown San Antonio, the design (right) is the standard ring encasement used for streets with brick pavers or asphalt.

