

NOTES:
1. EXHIBIT FOR ILLUSTRATIVE PURPOSES ONLY.
2. EXHIBIT INDICATES GENERAL STREET LOCATIONS AND RELATIONSHIPS.

Figure 4-1

Street Regulating Plan: General Locations of Streets and Ways

(2) Street Concept Plan

Around the framework of the Primary Streets, a street network radiates around the Village Center District. Primary streets are the main axes leading to the Village Center District from the west, north and east. Along this spine, a grid of Secondary Streets forms alternate, local connections and routes within the Primary Street framework. The conceptual grid layout of Secondary Streets is also shown in Figure 4-1: Street Regulating Plan.

- Main/Standard Neighborhood Streets and Narrow Neighborhood Streets are alternated to manage traffic and create multiple connections from any given area to the Primary Streets and/or Village Center District.
- To maximize connectivity, dead-ends and cul-de-sacs shall be permitted only where unavoidable due to topography, wetlands, or other constraints.

E. Street Types

This section explains general guidelines for streets and ways and then details the intent and design of specific street types. The eight basic street types are: Shea Boulevard, Main Street, the Truck Connector, the Access Road, the Parkway, Main/Standard Neighborhood Street, Narrow Neighborhood Street and Neighborhood Alley. Several of these types have two alternatives that respond to changing conditions such as on-street parking, housing setbacks and surrounding uses. All streets shall comply with the sections shown in Figures 4-3 through 4-15, as specified below.

The minimum widths of the rights-of-way in NAS South Weymouth shall be as follows, all contingent upon right of way limitations due to existing wetlands:

- Shea Boulevard: Seventy-four (74) feet
- Main Street: Sixty-six (66) feet
- Truck Connector: Fifty (50) feet
- Access Road: Fifty-four (54) feet
- Parkway: One hundred (100) feet, subject to revision due to MASSDOT requirements.
- Main/Standard Neighborhood Street: Fifty-two (52) feet
- Narrow Neighborhood Street: Forty-four (44) feet
- Neighborhood Alley: Twenty five (25) feet

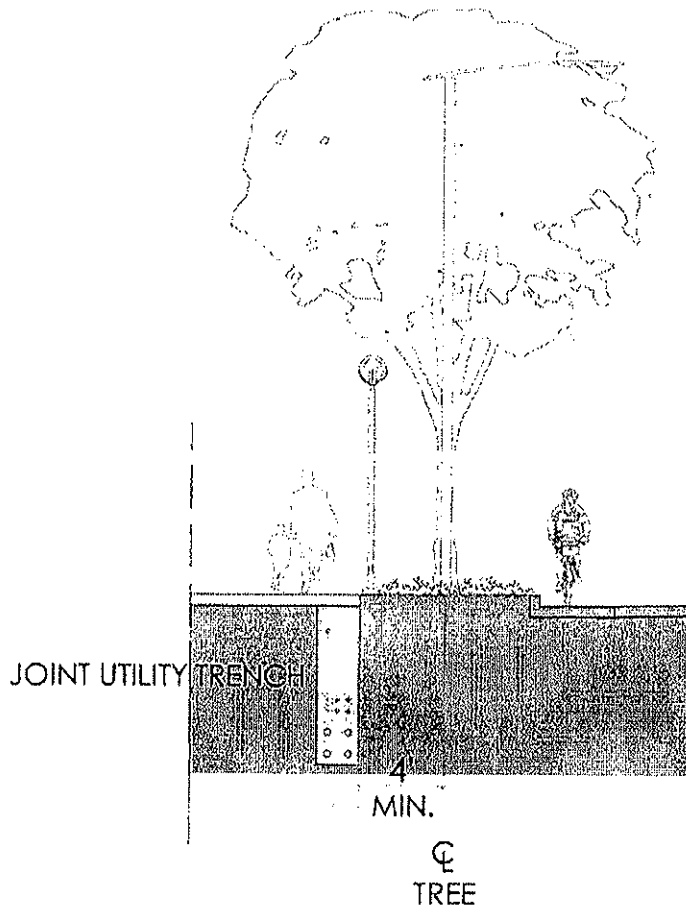
Exceptions:

- A greater width shall be considered for Primary Streets with an estimated ADT volume greater than 15,000. Any greater width shall be determined using acceptable methodology to calculate highway capacity and levels of service.

- When a Narrow Neighborhood Street provides the only access for lots fronting on a street length in excess of eight hundred (800) feet, or where potential volume warrants, the Applicable Subdivision Board may require a greater right-of-way than those specified above and may require construction of a divided roadway.

Coordination with planting, lighting, and utility components for every street shall be conducted as follows, unless otherwise noted for a specific street type or instance:

- All streets and sidewalks on both sides shall comply with ADA regulations for accessibility.
- Street lighting and pedestrian lighting fixtures shall be installed as specified in these Regulations.
- Lighting fixtures should be placed equidistant from centerline of two consecutive trees.
- Street tree and plant selection shall be as specified in the Landscape Plan contained in these Regulations.
- Paved portions of sidewalks shall be standard concrete surface with uniform texture and scoring in three (3) foot by three (3) foot, four (4) foot by four (4) foot or five (5) foot by five (5) foot modules, except for bicycle paths, multi-use paths, and natural surface walking paths.
- All street furniture, such as benches, bicycle racks, bollards, newsracks, receptacles, shelters, and other street elements shall be of the same visual vocabulary, as specified in the Street Furniture section in these Regulations.
- The joint utility trench shall be provided underneath the pedestrian strip, in accordance with the Utility Systems section, with no less than four (4) feet clear of center of street trees in the planting strip, as shown in Figure 4-2: Joint Utility Trench.



NOTE:
1. EXHIBIT FOR ILLUSTRATIVE PURPOSES ONLY.

Figure 4-2

Joint Utility Trench

F. Shea Boulevard

Shea Boulevard is a Primary Street connecting Route 18 in the west to NAS South Weymouth. It enters at the northwest corner and curves south toward the Village Center District. Since Shea Boulevard provides access to the Shea Village Commercial District and various large community recreation facilities, the roadway design anticipates truck access and higher traffic volumes. The minimum width of Shea Boulevard is seventy-four (74) feet, except where there are limitations on the right of way due to existing wetlands.

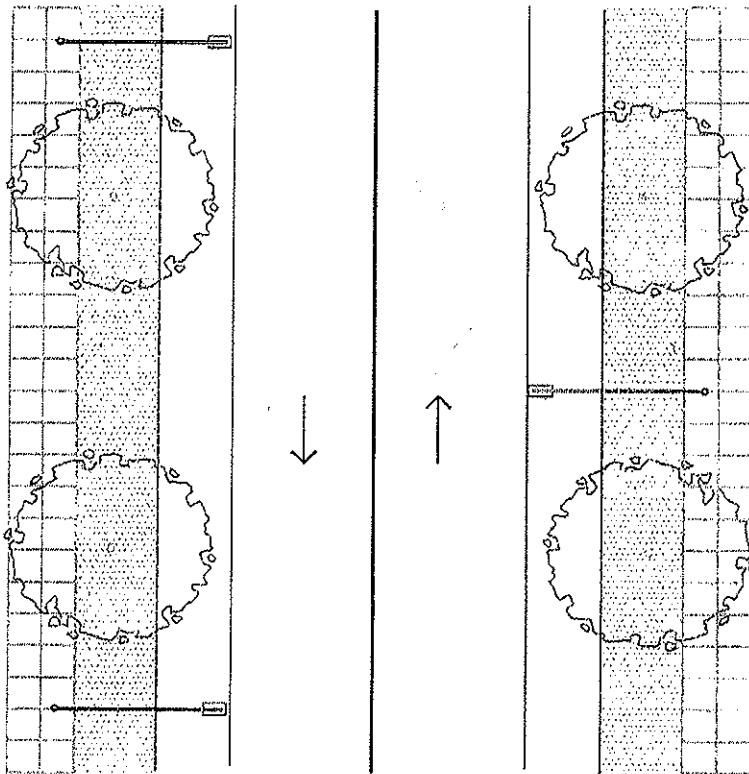
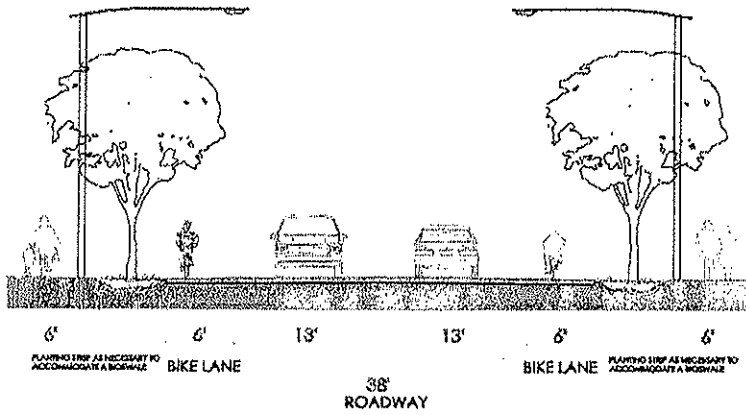
As shown in Figure 4-3: Shea Boulevard, North of the Village Center District:

- Shea Boulevard shall have one travel lane of eleven (11) to thirteen (13) feet in width, in each direction.
- Continuous, dedicated one-way bicycle lanes shall be provided on both sides, consistent with the specifications in the Bicycle Network section.
- Sidewalks shall include a landscape strip of sufficient width to accommodate bioswales and a six (6) foot wide paved, pedestrian through zone on both sides of the roadway.
- From Route 18 to the Village Center District, curbs are not required on Shea Boulevard.

As shown in Figure 4-4: Shea Boulevard, At the Village Center District:

- Eight (8) foot wide on-street parking lanes should be added to both sides of the roadway to support the mixed-use activity of the area.
- The introduction of parking lanes will slightly reduce the widths of the travel lanes, sidewalks, and planting strips, but not increase the overall width of the roadway. Sidewalks should include a six (6) foot wide planting strip and a six (6) foot wide pedestrian section on both sides of the roadway.
- Continuous, dedicated, one way, bicycle lanes should be provided between the parking and travel lanes, consistent with the specifications in the Bicycle Network section.

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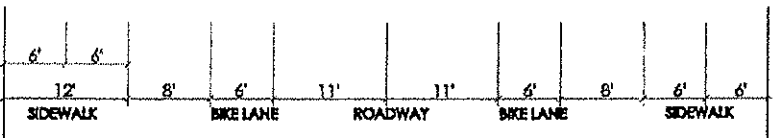
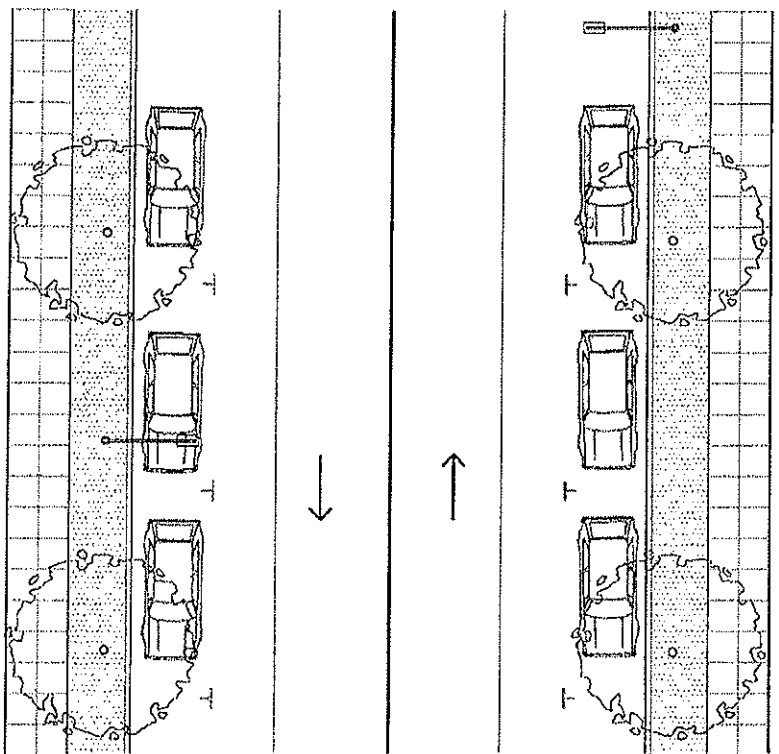
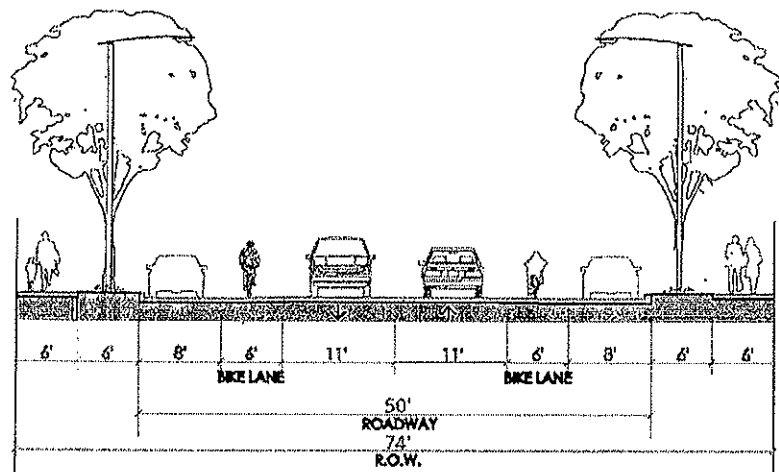


Street Design Requirements
ADT = 6,500
Design Speed = 30 mph
Minimum Curve Radius = 450'

NOTE:
1. EXHIBIT FOR ILLUSTRATIVE PURPOSES ONLY.

Figure 4-3

Shea Boulevard: North of Village Center District



Street Design Requirements	
ADT =	6,500
Design Speed =	30 mph
Minimum Curve Radius =	450'

NOTE:
1. EXHIBIT FOR ILLUSTRATIVE PURPOSES ONLY.

Figure 4-4

Shea Boulevard: At Village Center District

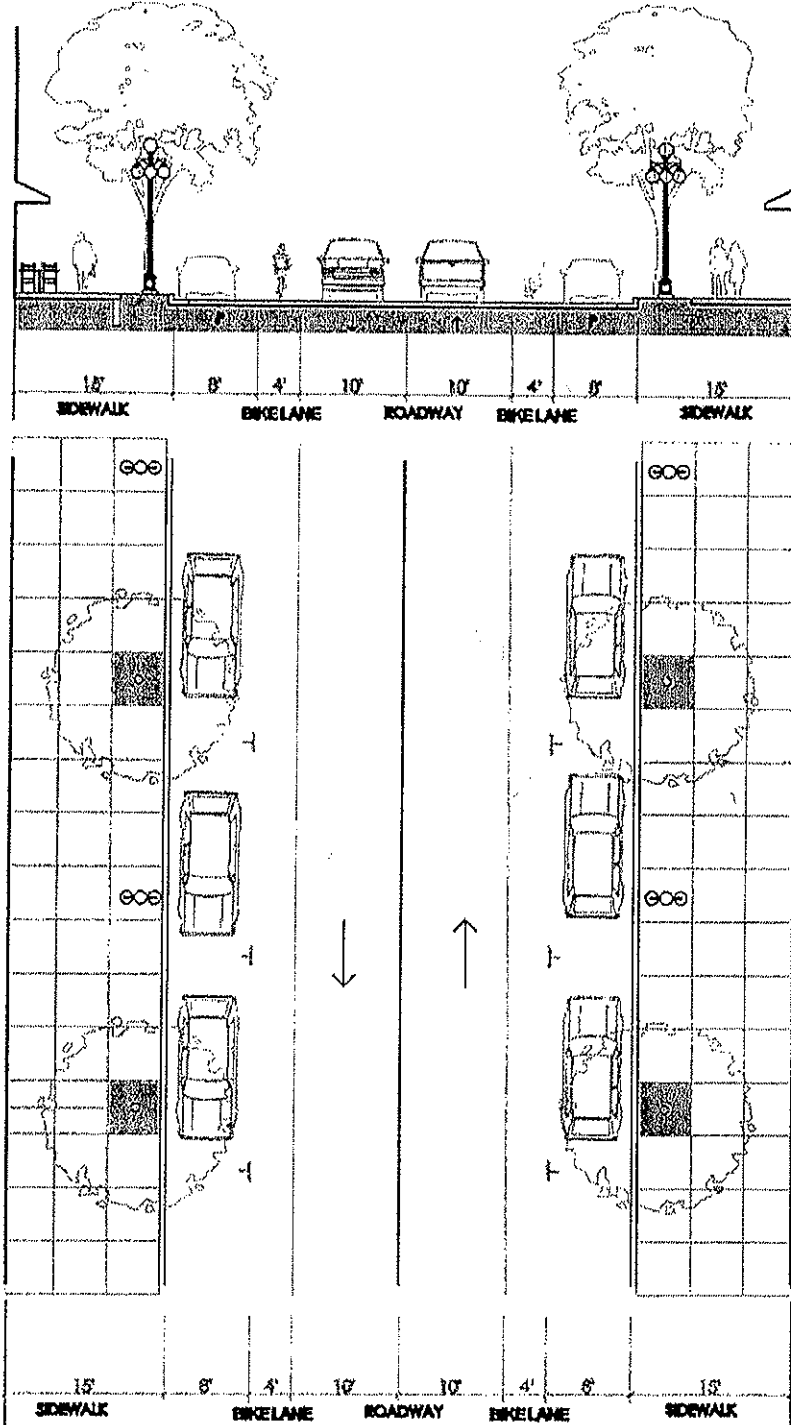
G. Main Street

Main Street is the central shopping and pedestrian street of the Village Center District. It also connects to the MBTA South Weymouth commuter rail station and the Multi Modal Transportation Center on the western border of the site. Main Street begins at the Trotter Road intersection with Route 18 and continues east through NAS South Weymouth. At the Village Center, Main Street shifts southeast. In the heart of the Village Center District, Main Street and Shea Boulevard intersect. Three blocks through the Village Center District, Main Street shifts south and continues across the Parkway. The on-street parking and narrow travel lane widths of Main Street are intended slow traffic for pedestrian and bicycle safety.

As shown in Figure 4-5: Main Street and Figure 4-6: Main Street: At Village Center District:

- Main Street shall include one travel lane in each direction.
- Two (2) eight (8) foot wide lanes of on-street parking shall be provided on both sides of the roadway.
- Bike lanes should be provided on Main Street, outside the Village Center District.
- Fifteen (15) foot wide sidewalks shall flank either side of the roadway and allow for spill-out retail.
- Sidewalk widths shall include a five (5) foot wide minimum curb zone and must provide sufficient width for street trees, lighting and street furniture.

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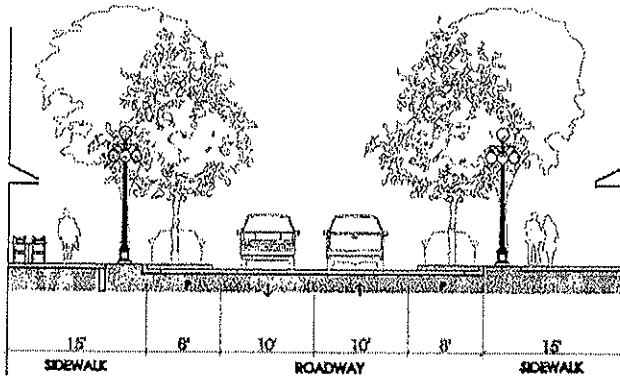


NOTE:
I. EXHIBIT FOR ILLUSTRATIVE PURPOSES ONLY.

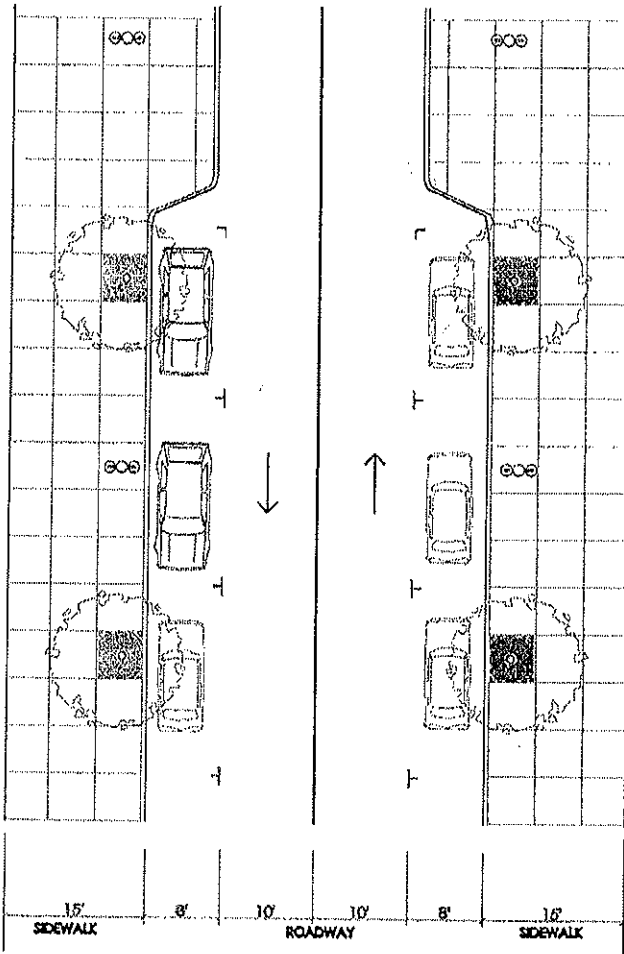
Street Design Requirements
ADT = 2,500
Design Speed = 30 mph
Minimum Curve Radius = 450'

Figure 4-5
Main Street

N.A.S. South Weymouth / Village Center Plan



MAIN STREET : 66' WIDE
MID BLOCK BULB OUTS ARE OPTIONAL



Street Design Requirements
ADT = 2,500
Design Speed = 30 mph
Minimum Curve Radius = 450'

NOTE:
1. EXHIBIT FOR ILLUSTRATIVE PURPOSES ONLY.

Figure 4-6

Main Street: At Village Center District

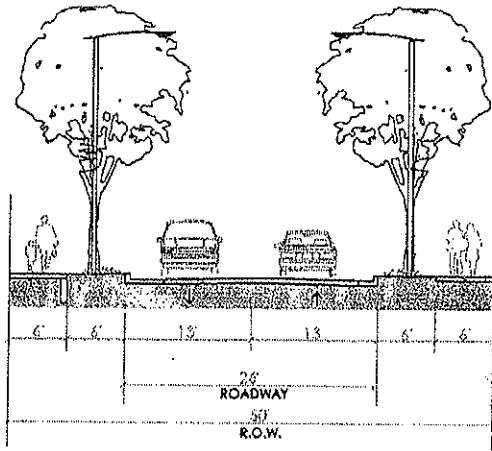
H. Truck Connector

The Truck Connector allows truck traffic between Shea Boulevard and the Parkway to bypass the Village Center, thus improving the pedestrian and bicycle activity and safety in the commercial core. North of the Village Center District, the Truck Connector intersects with Shea Boulevard within the Shea Village Commercial District. Continuing south, it intersects with the Parkway to the east of the Village Center District. The Truck Connector buffers the mixed-use and residential areas.

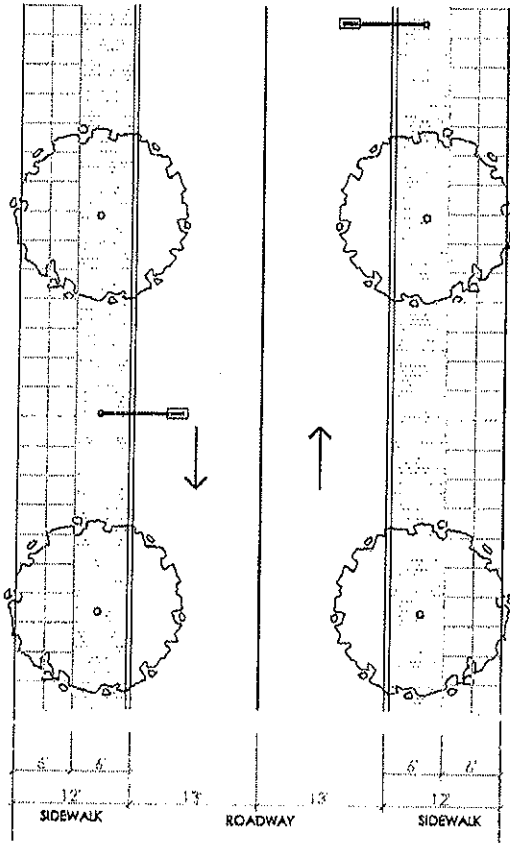
As shown in Figures 4-7: Truck Connector and 4-8: Truck Connector with Parking:

- The Truck Connector shall have one (1) travel lane in each direction with a minimum width of thirteen feet each.
- On-street parking shall be provided on one or both sides of the roadway where the Truck Connector borders residential or mixed-use development.

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OPTION 1
NO PARKING

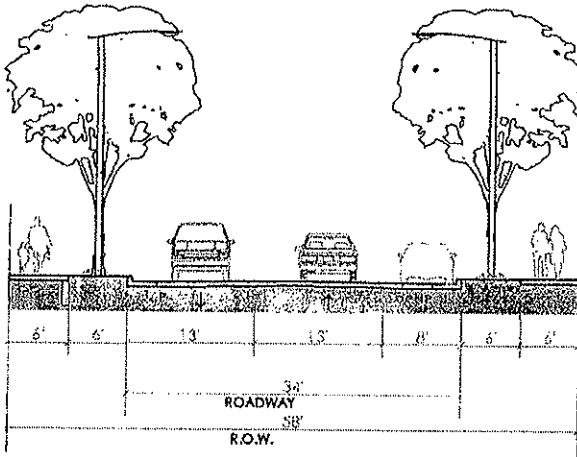


Street Design Requirements
ADT = 5,000
Design Speed = 30 mph
Minimum Curve Radius = 450'

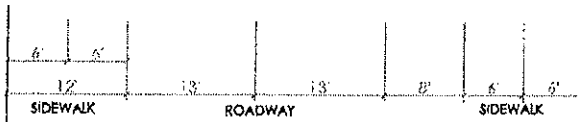
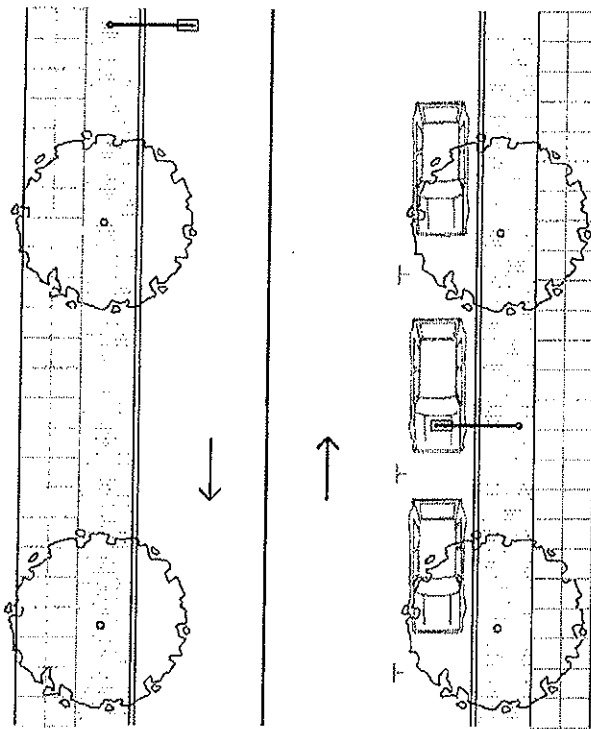
NOTE:
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Figure 4-7

Truck Connector



OPTION 2
ONE SIDE PARKING



NOTE:
1. EXHIBIT FOR ILLUSTRATIVE PURPOSES ONLY.

Street Design Requirements
ADT = 4,500
Design Speed = 30 mph
Minimum Curve Radius = 450'

Figure 4-8

Truck Connector with Parking

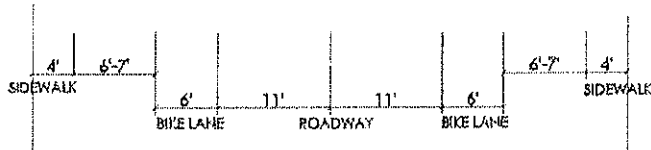
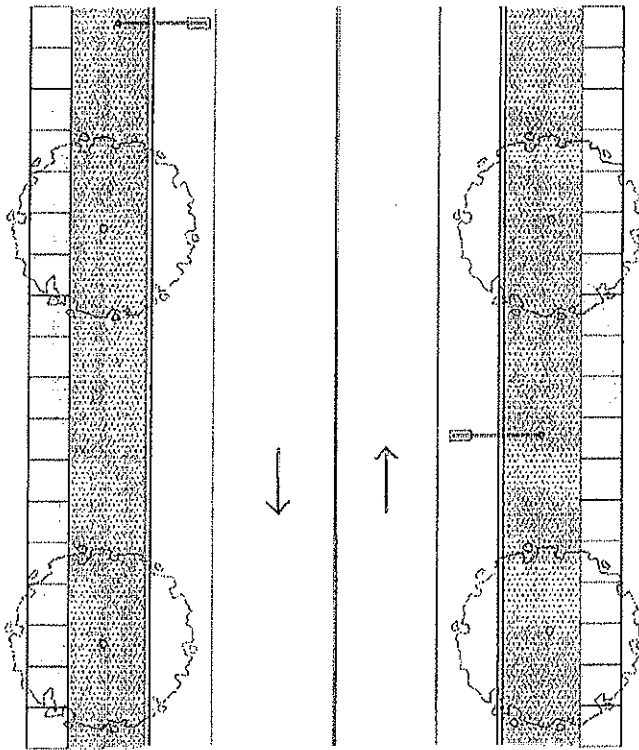
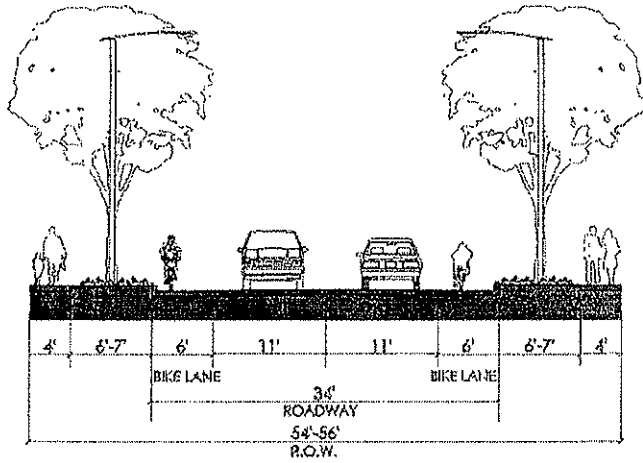
I. Access Road

The Access Road is the primary corridor for the initial Phase I development. In later phases of development, the access road will accommodate truck traffic to support the Shea Village Commercial District. The road branches south from Shea Boulevard before the Shea Village Commercial District and arcs southwest, parallel to Shea Boulevard. The Access Road thus eventually improves the pedestrian and bicycle activity and safety and overall appearance of Shea Boulevard.

As shown in Figure 4-9: Access Road:

- The Access Road should have one (1) travel lane in each direction with a minimum width of eleven (11) feet each.
- During initial Phase I development, striped bike lanes shall be provided between the travel lanes and the curb, consistent with the specifications in the Bicycle Network section.
- After Phase I Development, the striped bike lanes shall be removed to provide adequate travel widths for truck access.

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Street Design Requirements
ADT = 6,500
Design Speed = 30 mph
Minimum Curve Radius = 450'

NOTE:
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Figure 4-9

Access Road

J. Parkway

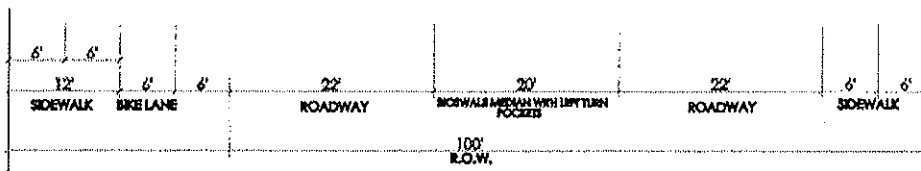
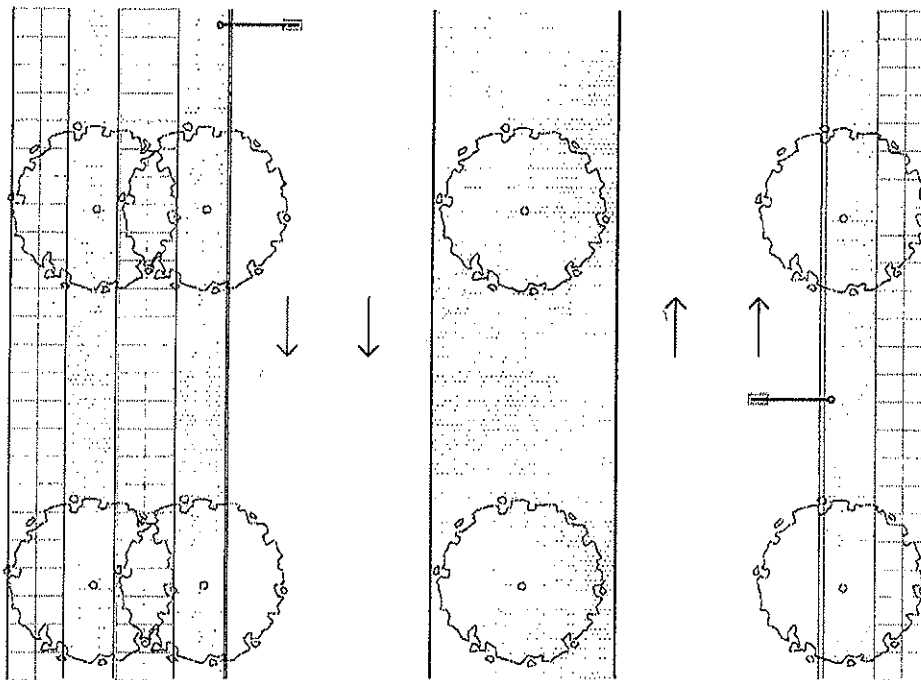
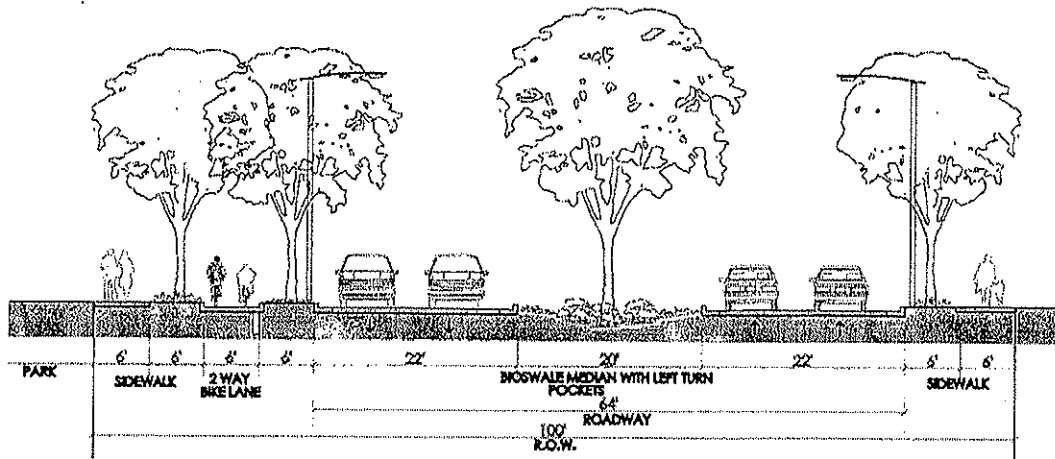
The Parkway is the integral east-west connection through NAS South Weymouth. The design of the Parkway involves an environmental review process and is subject to review and change by MASSDOT. The alignment of the Parkway is generally indicated by this plan; it shall extend from east to west through NAS South Weymouth.

In the outer portions of NAS South Weymouth, the Parkway should have a pastoral, winding alignment. These outer segments of the Parkway are intended for the efficient movement of traffic. Adjacent land uses include open space and clusters of residential and commercial. These outer segments of the Parkway do not have on-street parking (Figure 4-10). Parking for residences and businesses that face the Parkway shall be accessed from rear Neighborhood Alleys rather than direct driveway access onto the Parkway.

Alternatively, in the central portion of NAS South Weymouth, the Parkway should be designed to a lower design speed than the outer areas. In keeping with the higher level of pedestrian activity in this area, the Parkway in the central area has on-street parking on one side (Figure 4-11). As shown in Figure 4-10: Parkway Outside Village Center District, without Parking and Figure 4-11: Parkway At Village Center District, with Parking:

- The Parkway section shall have two (2) travel lanes in each direction with a minimum width of eleven (11) feet each.
- The four (4) travel lanes should be separated by a central median which will include separate left-turn lanes at every signalized intersection. The width of the median should be at least sixteen (16) feet wide.
- In the Village Center, the Parkway should have an eight (8) foot wide parking lane on one side.
- Pedestrian sidewalks should be provided on both sides, separated from the roadway by planting strips for street trees and parkway landscaping.
- The southern side of the roadway should have a two-way, eight (8) foot wide bicycle path, separated from the road according to the specifications described in the Bicycle Network section.
- The northern side of the roadway should provide a bioswale for the sustainable drainage of stormwater runoff, as specified in the Stormwater Design section.
- Only Main Street, Shea Boulevard, the Truck Connector Street and select Secondary Streets should connect to the Parkway, as determined by the Authority.

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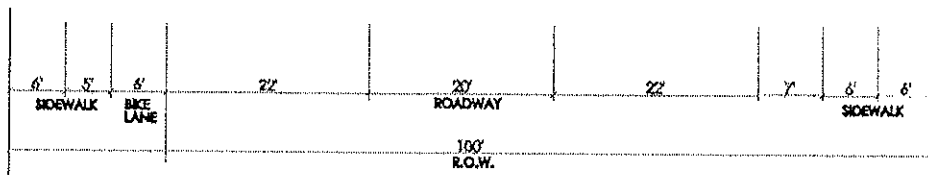
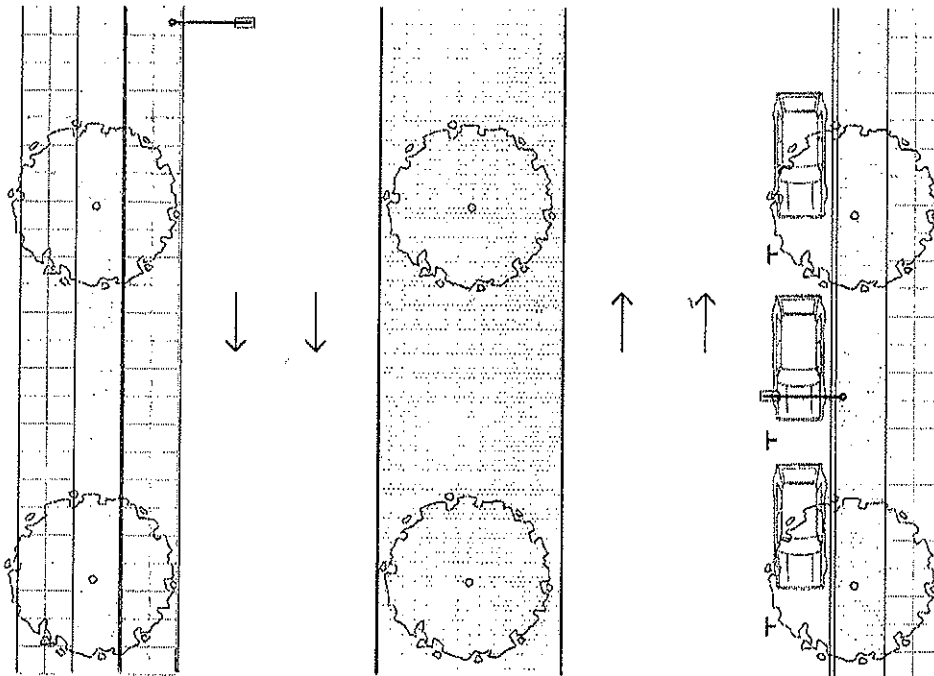
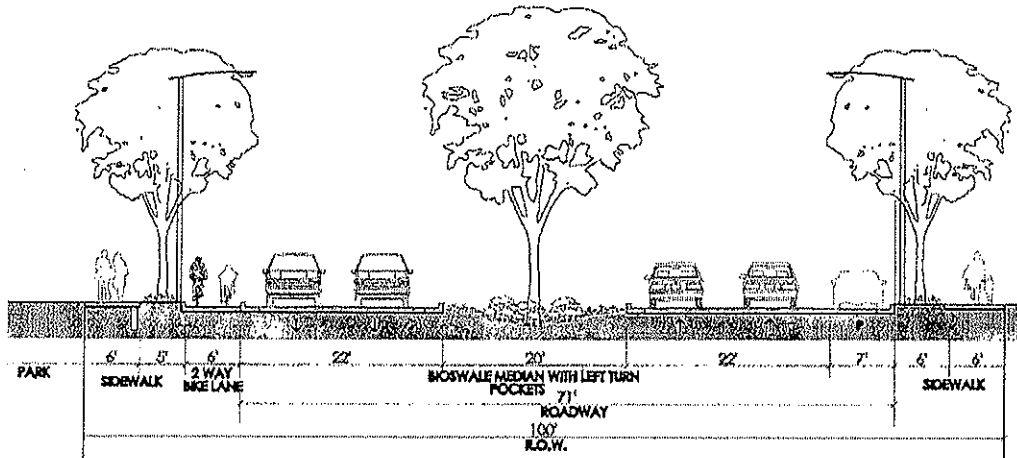
Street Design Requirements
ADT = 30,000
Design Speed = 45 mph
Minimum Curve Radius: 1000' with no superelevation; 800' with 2% superelevation

NOTE:
1. EXHIBIT FOR ILLUSTRATIVE PURPOSES ONLY.

Figure 4-10

Parkway: Outside Village Center District, without Parking

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Street Design Requirements
ADT = 30,000
Design Speed = 35 mph.
Minimum Curve Radius: 1000' with no superelevation; 800' with 2% superelevation

NOTE:
1. EXHIBIT FOR ILLUSTRATIVE PURPOSES ONLY.

Figure 4-11

Parkway: At Village Center District, with Parking

K. Secondary Street Network

Secondary Streets provide access to individual homes and businesses and other land uses. They also serve as alternate pathways from the Primary Streets. The intent of the neighborhood street design is to prioritize the quality of the pedestrian environment, promote safety for pedestrians and bicyclists, generate street activity, accommodate multiple transit options and ensure neighborhood connectivity. As narrow streets discourage speeding, support pedestrian movements and foster community interaction, the Secondary Street network is intended to be as narrow as possible, while still ensuring two-way traffic flow and access for emergency vehicles. Figure 4-1: Street Regulating Plan illustrates the general configuration of the Secondary Streets.

All Secondary Streets shall comply with one of the four specified Neighborhood Street sections or the Neighborhood Alley section. The four Neighborhood Street sections differ in overall width and travel and parking lane combinations.

- Secondary Streets running parallel to the Parkway should use the wider right-of-way options, so these streets can serve as alternate routes than the Parkway.
- Secondary Streets connecting north-south and east-west, perpendicular to the Parkway, should be shorter and spaced more frequently, using the narrower right-of-way sections.
- Other factors for determining the alignments and section widths of Secondary Streets should include associated residential density, setback depth or front yard distances.
- Streets that border parks should have on-street parking and sidewalks on the park side, in order to facilitate access to the parks.

L. Main/Standard Neighborhood Streets

Secondary Streets that serve as neighborhood connections to Primary Streets should use the Main/Standard Neighborhood Street/Standard Neighborhood Street designs.

As indicated in Figure 4-12: Main Neighborhood Streets:

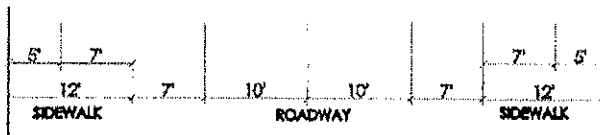
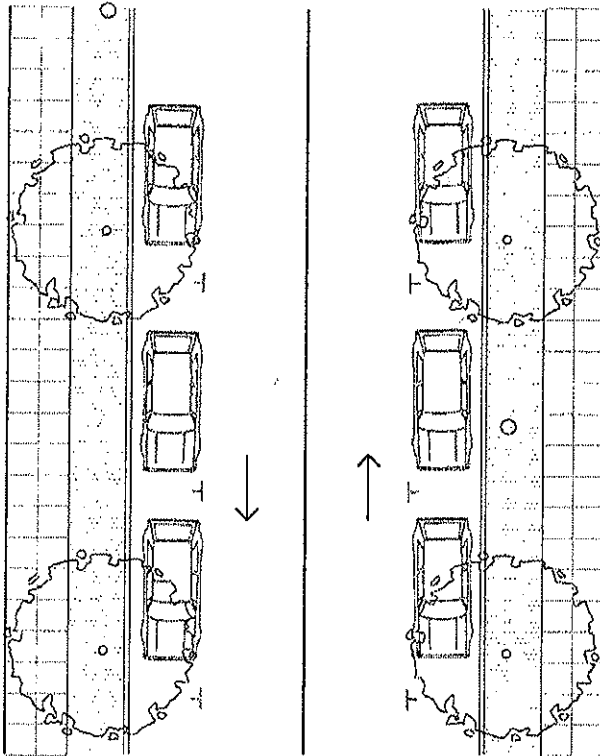
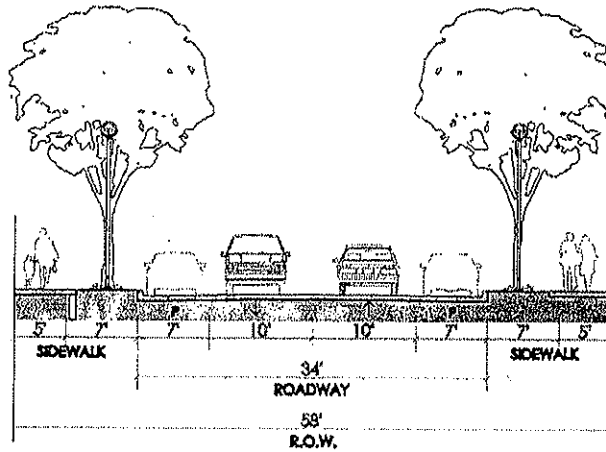
- Main Neighborhood Streets should have one (1) ten (10) foot wide lane of vehicular traffic in either direction.
- Seven (7) foot wide parking lanes should be provided on both sides of the roadway.
- Sidewalks should be a minimum of ten (10) feet wide and a maximum of twelve (12) feet wide, with planting strips for street trees and landscaping that are a minimum of six (6) feet wide.

As indicated in Figure 4-13: Standard Neighborhood Streets:

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- Standard Neighborhood Streets should have one (1) nine (9) foot wide lane of vehicular traffic in either direction.
- Seven (7) foot wide parking lanes should be provided on both sides of the roadway.
- Sidewalks should be a minimum of ten (10) feet wide and a maximum of twelve (12) feet wide, with planting strips for street trees and landscaping that are a minimum of six (6) feet wide.

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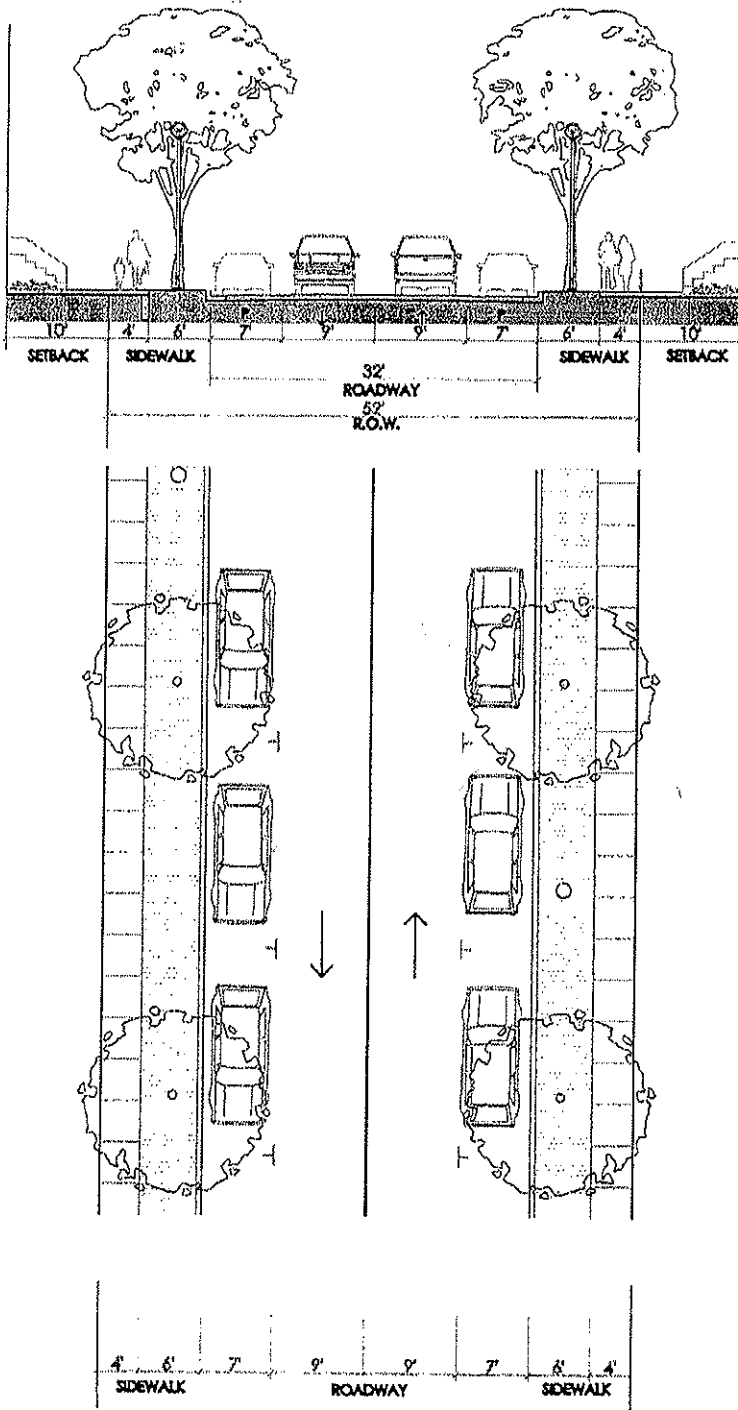
NOTE:
1. EXHIBIT FOR ILLUSTRATIVE PURPOSES ONLY.

Street Design Requirements
ADT = 2,000
Minimum Curve Radius = 100'

Figure 4-12

Main Neighborhood Street

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Street Design Requirements
ADT = 1,500
Minimum Curve Radius = 100'

NOTE:
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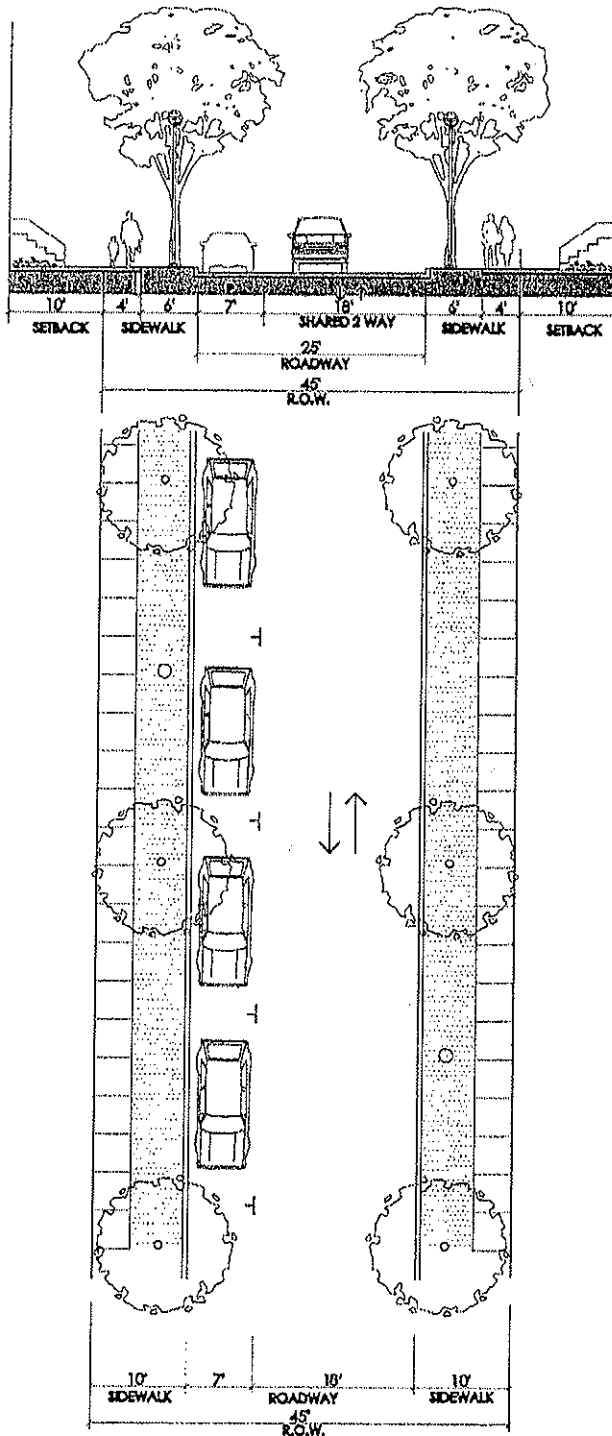
Figure 4-13

Standard Neighborhood Street

M. Narrow Neighborhood Streets

Secondary Streets that funnel traffic to Primary streets or Main/Standard Neighborhood Streets should aim to limit through traffic and implement the Narrow Neighborhood Street designs. As indicated in Figure 4-14: Narrow Neighborhood Street.

- Narrow Neighborhood Streets should have a single, shared two-way travel lane, at a width of eighteen (18) feet.
- Narrow Neighborhood Streets with an eighteen (18) foot wide shared travel lane should provide a seven (7) foot wide parking lane on one side.
- Sidewalks on Narrow Neighborhood Streets should be a minimum of ten (10) feet wide with planting strips at least six (6) feet wide for street trees and landscaping.



NOTE:
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Street Design Requirements
ADT = 700
Minimum Curve Radius = 100'

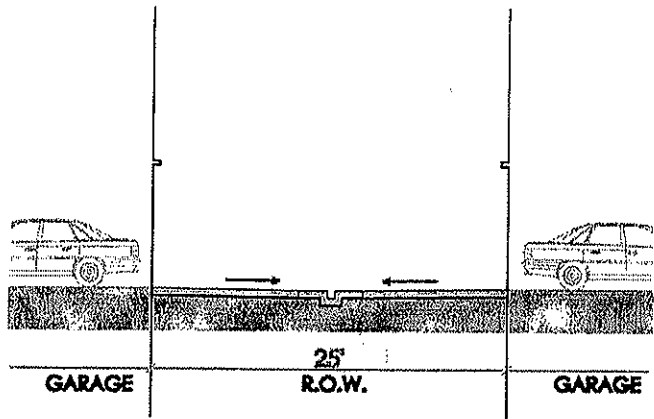
Figure 4-14

Narrow Neighborhood Street

N. Neighborhood Alleys and Hammerheads

The linear Neighborhood Alley and Hammerhead block design are intended to provide access to rear garages for Townhouse-1, Townhouse-2 and some Single Family Houses, as well as access for emergency vehicles and utility trucks. Neighborhood Alleys and mid-block Hammerhead designs are not intended to serve as through routes for vehicular or pedestrian traffic. Neighborhood Alleys pass through a block, whereas Hammerhead designs have a single point of access and egress to a block interior. Please refer to Figures 4-15 through 4-17 for Neighborhood Alley, Neighborhood Alley Planting, and Hammerhead design sections. As shown in Figure 4-16, to gang the garages in pairs, instead of alternated with access doors, allows for less vehicular conflict with Neighborhood Alley planting.

- The Neighborhood Alley should have a twenty-five (25) foot right-of-way between the facades of a facing garage, providing the minimum clearance for vehicular access to garages.
- Neighborhood Alleys should provide planted areas between adjacent garages.
- Mid-block Hammerhead designs should provide a turning bay of at least one hundred two (102) feet long by twenty-five (25) feet wide, sited perpendicular to and terminating a linear mid-block passage of at least twenty-five (25) feet wide.
- Corner radii for the turning bay of mid-block Hammerhead designs should be ten (10) feet.
- A five (5) foot minimum overhang area should line the perimeter of the Hammerhead turning bay.

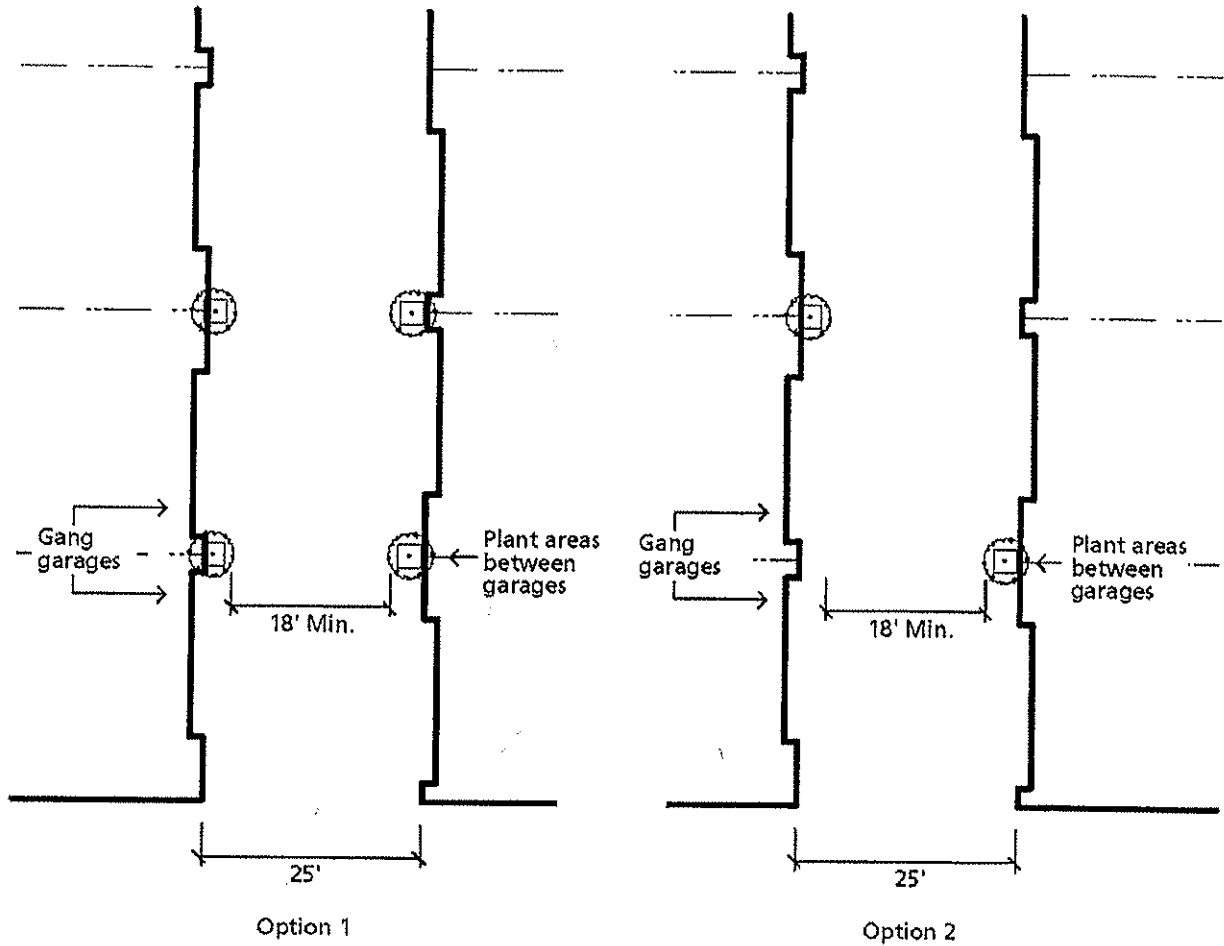


Street Design Requirements
ADT = 200

NOTE:
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Figure 4-15

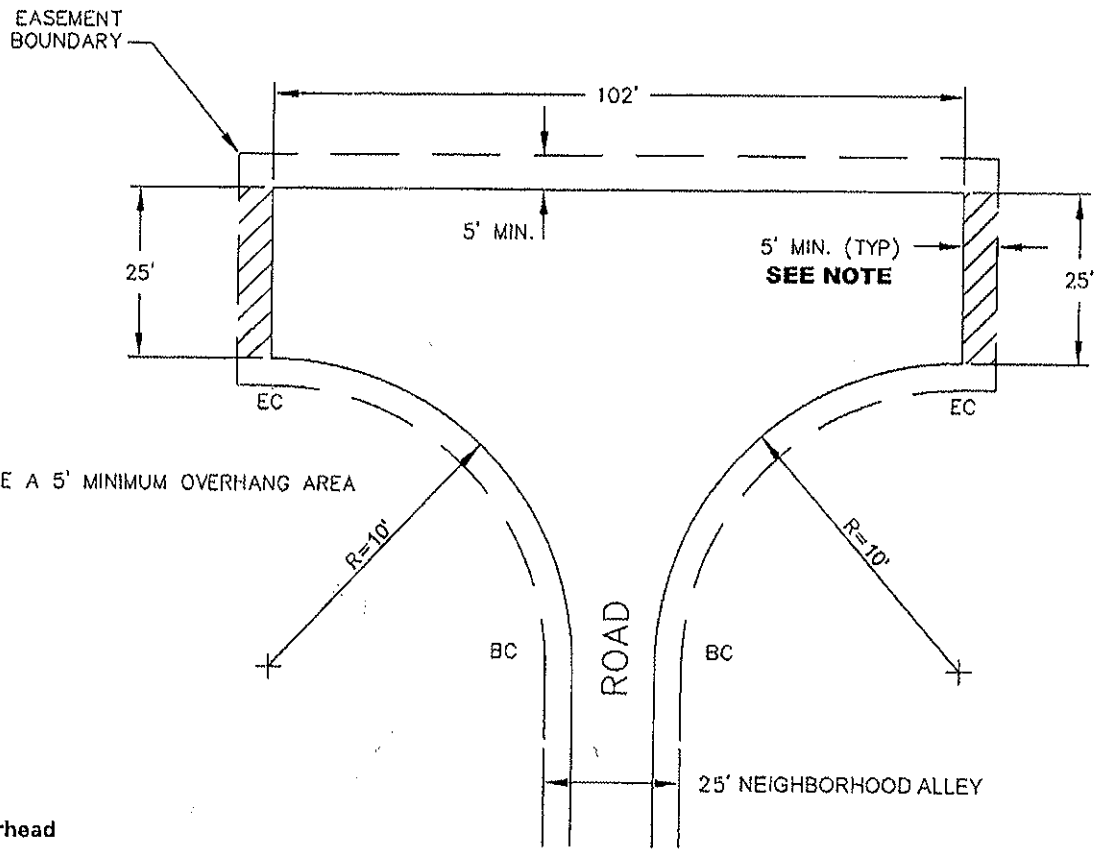
Neighborhood Alley



NOTE:
1. EXHIBIT FOR ILLUSTRATIVE PURPOSES ONLY.

Figure 4-16

Neighborhood Alley Planting



NOTE:
1. PROVIDE A 5' MINIMUM OVERHANG AREA

4-18: Hammerhead

NOTE:
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Figure 4-17

Hammerhead Design

O. Street System Location Criteria

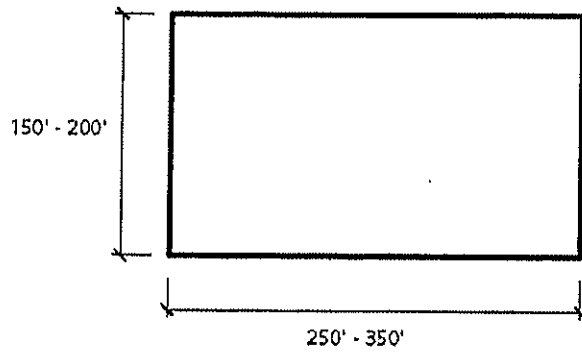
Streets form one of the largest areas of open space in NAS South Weymouth. These spaces should be designed as outdoor rooms that provide a safe, active and enjoyable pedestrian environment within the entire network. The alignment of the street grid must be integrated with the buildings, parking areas and open spaces in the plan.

The alignment and spacing of Secondary Streets in NAS South Weymouth shall be guided by criteria regarding block size, overall connectivity within the street network and efficiency and safety of alignments and intersections. View criteria should also be considered in street location and alignment.

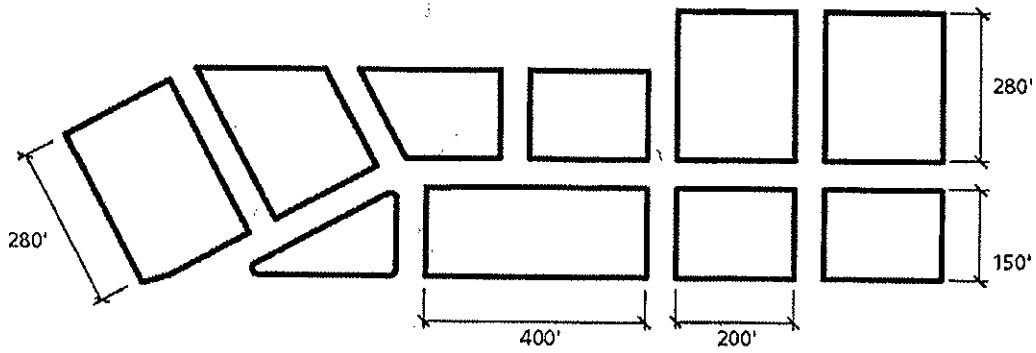
(1) Block Size

A block is defined by bordering streets and adjacent open spaces and parks. Neighborhood Alleys and Hammerheads do not delineate blocks, but are rather used within a residential or mixed-use block to provide garage, emergency vehicle and utility truck access. Block sizes will vary within NAS South Weymouth, depending on the scale and residential densities of adjacent developments. Figure 4-18: Block Diagram, shows a typical block layout:

- In the Mixed-Use Village District and Village Center District, blocks that are predominately residential shall be between one hundred fifty (150) and four hundred twenty-five (425) feet on any side, measured along the block face.
- In the Village Center District, blocks that are predominately retail may be longer in one dimension, up to five hundred (500) feet.
- In the Residential District, block sizes may be longer in one dimension, up to one thousand (1,000) feet.
- Longer block lengths shall be permitted in the Mixed-Use Village District and Village Center District, if one side of the block borders the Parkway, where connections from side streets are limited.
- A block with residential uses adjacent and running parallel to a major open space may be as narrow as one hundred (120) feet, if the block's longer side is adjacent to the park.
- Block lengths exceeding four hundred fifty (450) feet should provide linear greens at least twenty (20) feet wide at intervals of every five hundred (500) feet or less to provide public pedestrian connections in lieu of streets through the block.



Typical block size range



Range and variety of block sizes

NOTE:
I. EXHIBIT FOR ILLUSTRATIVE PURPOSES ONLY.

(2) Connectivity—Cul-de-sacs

All streets within NAS South Weymouth should be interconnected to maximize accessibility and provide a continuous pedestrian experience. Cul-de-sacs limit connectivity, inhibit emergency vehicle access and cause stagnation problems in water mains. Cul-de-sacs are permitted for those Secondary Streets that abut wetlands or other environmentally sensitive areas.

- Cul-de-sacs of lengths greater than one hundred fifty (150) feet should be permitted in residential areas far from the Village Center District, with Single Family Houses.
- When a cul-de-sac exceeds one hundred fifty (150) feet in length, resulting in impacts to the pedestrian or bicycle circulation and the traffic levels on neighboring streets, additional design features should be provided, including, but not limited to:
 - Pedestrian and bicycle connections through the cul-de-sac, or
 - The interconnection of the turnaround of the cul-de-sac with an adjacent Secondary Street to provide access to adjacent streets and land uses such as open space, parks, trails, or commercial areas.
- To provide for the safety of users, the design of pedestrian and bicycle access ways at cul-de-sacs should:
 - Extend the length of the cul-de-sac
 - Provide adequate lighting
 - Enable clear visibility into the access way from adjacent streets and properties by managing landscaping, fences, grade differences or other obstructions
 - Design and arrange surrounding land uses to provide surveillance opportunities from those uses into the access way
 - Provide emergency vehicle access in cases where external surveillance is inadequate
- The closed end of cul-de-sacs shall be provided with a turnaround having an outside roadway diameter of at least one hundred and twenty (120) feet.
- Throughout the whole of the turnaround, the grades shall be as flat as practicable and shall not exceed three percent (3%).
- The Applicable Subdivision Board may consider waiving the maximum length of a cul-de-sac if the subdivision includes suitable emergency vehicle access. Suitable emergency access shall include:
 - A minimum easement or right-of-way width of twenty (20) feet.
 - Road grades not exceeding six percent (6%).
 - Minimum road radius of fifty (50) feet.
 - Access ways located within five hundred (500) feet of the end of a cul-de-sac.

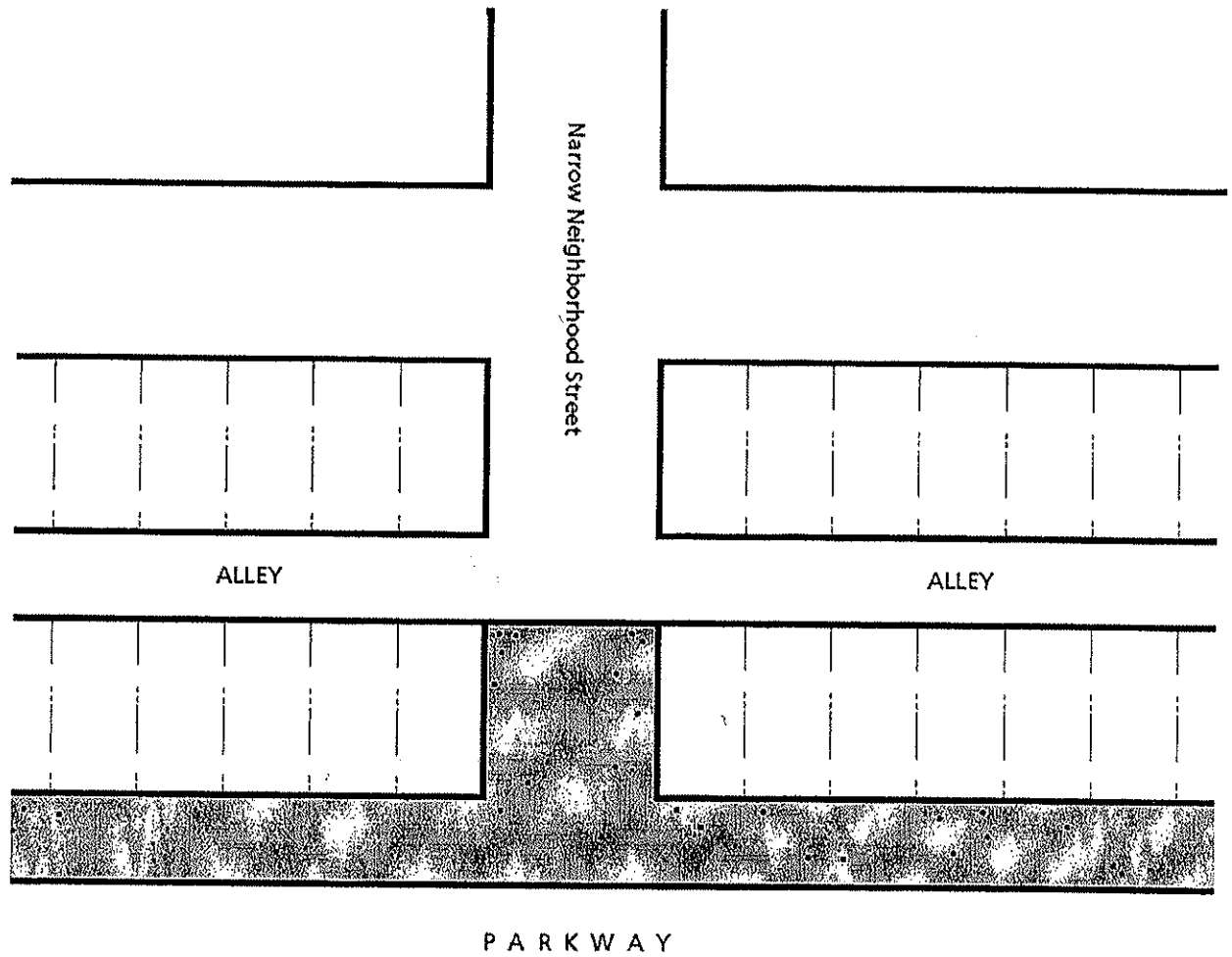
An emergency access point on a public way or a way shown on a plan heretofore approved by the Applicable Subdivision Board, which has been constructed in substantial conformance with the requirements at the time of approval and is at least four hundred (400) feet from the subdivision's primary roads.

Documentation of the rights to use all off-site private ways associated with the emergency access by the Applicant.

Adequate drainage provisions at all access ways.

Installation of a gate or breakaway barrier suitable in design and construction to the Applicable Subdivision Board.

- The Applicable Subdivision Board may require access ways be paved.
- Cul-de-sacs shall include a linear open space and pedestrian pathway that connect through to any adjacent streets.
- Linear connective parks should provide the necessary width, strength and clearance for emergency vehicles. Figure 4-19 shows a sample Cul-de-sac with linear park adjacent to the Parkway.



NOTE:
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Figure 4-19

Cul-de-sac with Linear Park adjacent to the Parkway

(3) Views

Views along street corridors to open spaces, recreational areas, civic centers or architectural landmarks contribute to the visual experience of the street network and overall development.

- Streets terminating in open space should open to frame views from the street corridor.
- Linear parks and garden courts should provide access and views to adjacent open space.
- Secondary Streets should incorporate shallow curves or shifts in alignment if they are long.
- Streets in the Village Center District should frame prominent buildings as focal points of street corridor views.

P. Traffic Calming

This Section guides the use of traffic calming measures on streets within NAS South Weymouth. Some general design specifications are provided to assist designers in developing comprehensive streetscape plans for proposed development and redevelopment projects.

Traffic calming uses geometric design features to reduce vehicle speeds or discourage shortcutting traffic. To achieve the desired effect of traffic calming, the effectiveness of such measures and their impacts should be evaluated on an area-wide basis. Landscaping, street trees, street lighting and street furniture are additional traffic calming methods that also create distinctive and pleasing streetscapes that encourage sidewalk activity.

All streets should be designed to function efficiently and safely, yet minimize the need for extensive traffic regulation, control devices and enforcement. Where needed, traffic calming measures are appropriate along the Primary Streets as well as Secondary Streets. Enhancing the streetscape environment should have the same level of priority in the design scheme as traffic calming impacts.

Traffic calming strategies fall into six categories:

- Horizontal deflections (offsets and intersection spacing, chicanes, mini circles, median slow points or chokers)
- Vertical deflections (road humps, speed tables, and raised crosswalks)
- Intersection pop-outs
- Traffic diverters (semi-diverters)
- Channelization

Traffic calming features such as median slow points or chokers, chicanes, mini traffic circles, and intersection 'pop-outs' should be provided where necessary in accordance with these guidelines. Road humps or speed tables should be required

by the Applicable Subdivision Board where necessary. Diagrams of sample traffic calming strategies are shown in Figures 4-21 through 4-27.

(1) General Guidelines

The following general guidelines should be considered in traffic calming installations:

- Delays to emergency vehicles shall be minimized by the appropriate placement and design of traffic calming devices.
- Traffic calming installations should support the street hierarchy and not divert traffic to other Secondary Streets. Traffic may be diverted from residential streets to connector and through streets.
- The potential impacts of traffic diversion should be evaluated for all traffic calming installations.
- Traffic calming devices should not limit the efficient movement of transit vehicles.
- Traffic calming installations must meet State and Federal accessibility requirements.
- Traffic calming should not impair the mobility of non-motorized users to of the street.
- Traffic calming installations should conform with drainage, sight distance and underground utilities.
- All traffic calming installations should have a landscape element that includes trees and shrubs consistent with these Regulations.

(2) Horizontal Deflections

Horizontal deflections are used to achieve speed reductions by breaking up the linear path of vehicle travel. Traffic calming designs that involve horizontal shifts in the travel should not be used on Primary Streets. Horizontal deflections include offsets and intersection spacing, chicanes (mid-block), mini circles (intersections), and median slow points (mid-block and intersections).

(a) Offsets and Intersection Spacing

- The location of intersections should balance the aims of connectivity with the need for safety for vehicular traffic.
- Intersections should be spaced at least one hundred (100) feet apart on Secondary Streets measured centerline to centerline.
- Offset intersections are prohibited on Primary Streets.
- Secondary Streets running east-west and north-south may incorporate centerline offsets every three (3) to four (4) blocks to minimize the potential for speeding. As shown in Figure 4-20: Offset Spacing for Secondary Streets, offsets

should create centerline shifts of at least one hundred (100) feet.

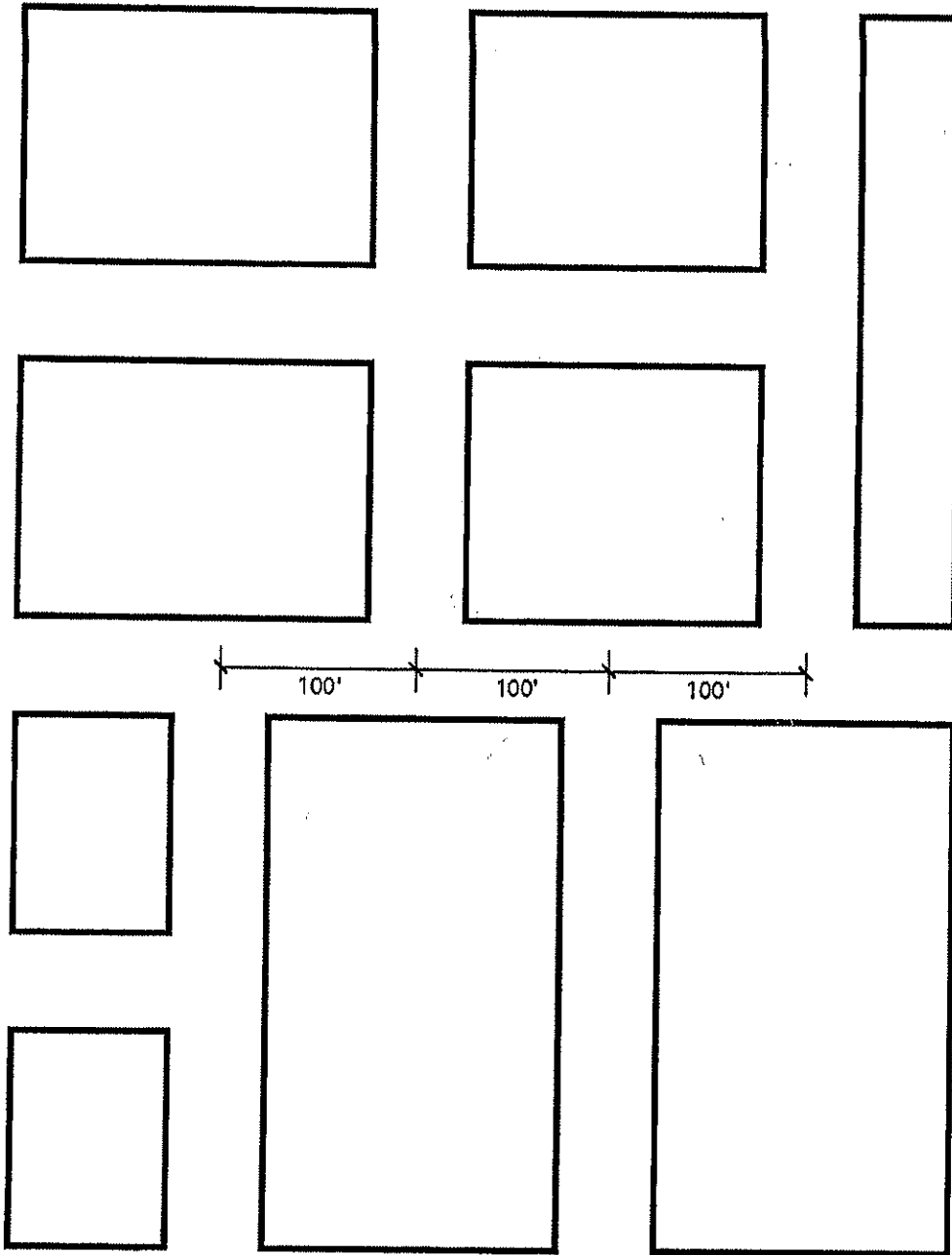
- All intersections on Primary Streets, except for one-way couplets around small parks, should be at least two hundred (200) feet apart.

(b) Chicanes

A chicane is a series of tight turns in opposite directions in an otherwise straight stretch of road. The narrowed street width and the bending path of travel slows traffic. On new streets, chicanes narrow the street by widening the sidewalk or landscaped Parkway. On streets considered for retrofit, raised islands are installed to narrow the street. Chicanes slow traffic, may create opportunities for landscaping, and tend not to divert traffic to nearby streets. Chicanes should not be used on streets Primary Streets, bus routes, emergency response routes, or where there is a grade that exceeds five percent (5%). Chicanes may cause some loss of on-street parking, may impact driveways, may increase emergency response time or may affect drainage and street sweeping. Figure 4-21 shows a sample chicane.

(c) Mini Circles

A mini circle is a raised circular island placed in the center of an intersection. At a mini circle, traffic yields, then enters to the right, traveling around the circle counter clockwise. A mini circle slows traffic on each approach, reduces right-of-way conflicts, creates a landscaping opportunity and tends not to divert traffic to nearby streets. Mini circles should be used on low volume Secondary Streets with alternative access points. Mini circles should not be used on Primary Streets, bus routes or emergency response route, or where the grade exceeds five percent (5%) on any approach. A mini circle may impact large vehicles' turns or may increase emergency response time. Figure 4-22 shows a sample mini-circle.

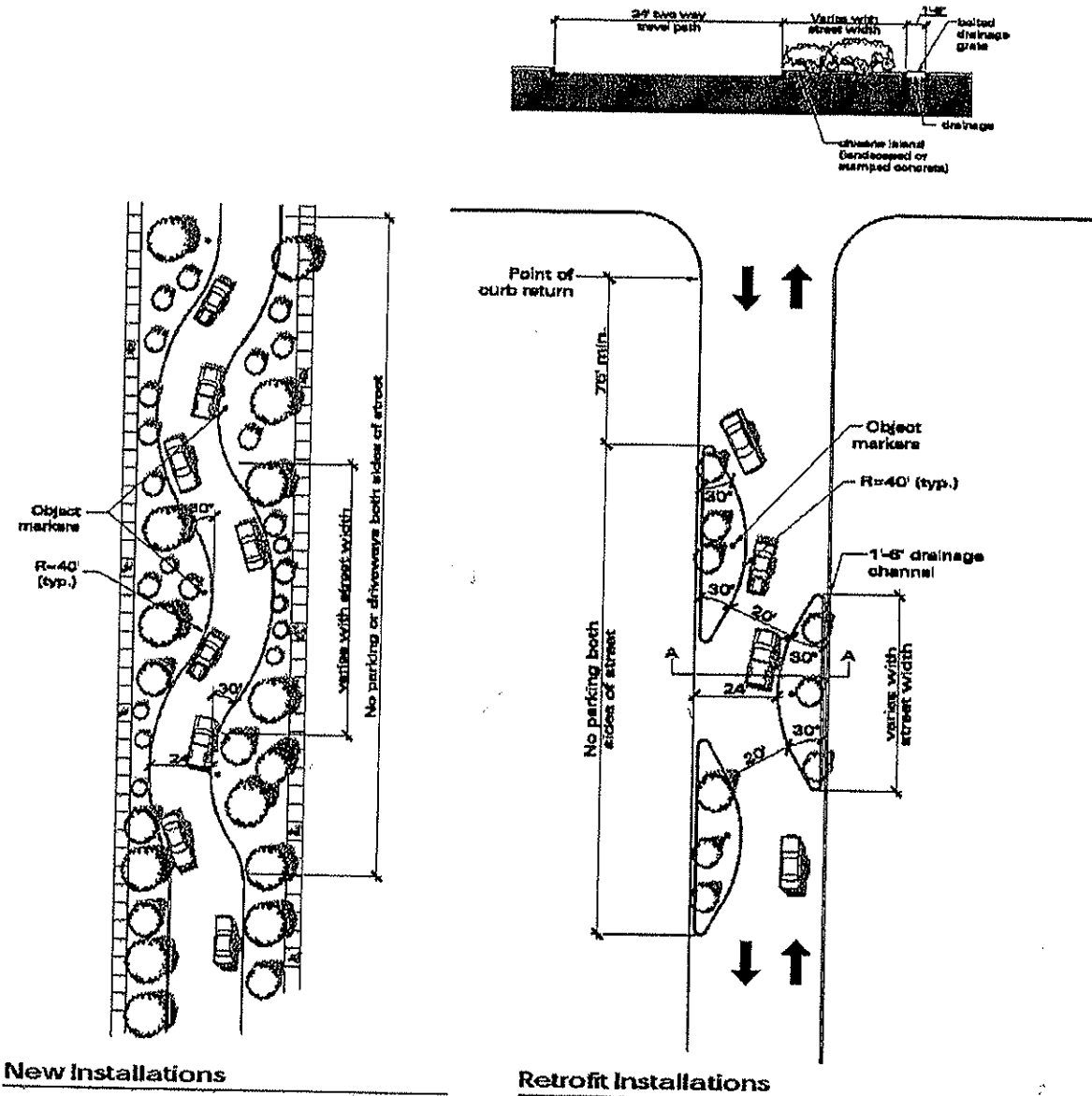


100' Minimum offset measured at centerlines for Secondary Street spacing

NOTE:
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Figure 4-20

Offset Spacing for Secondary Streets



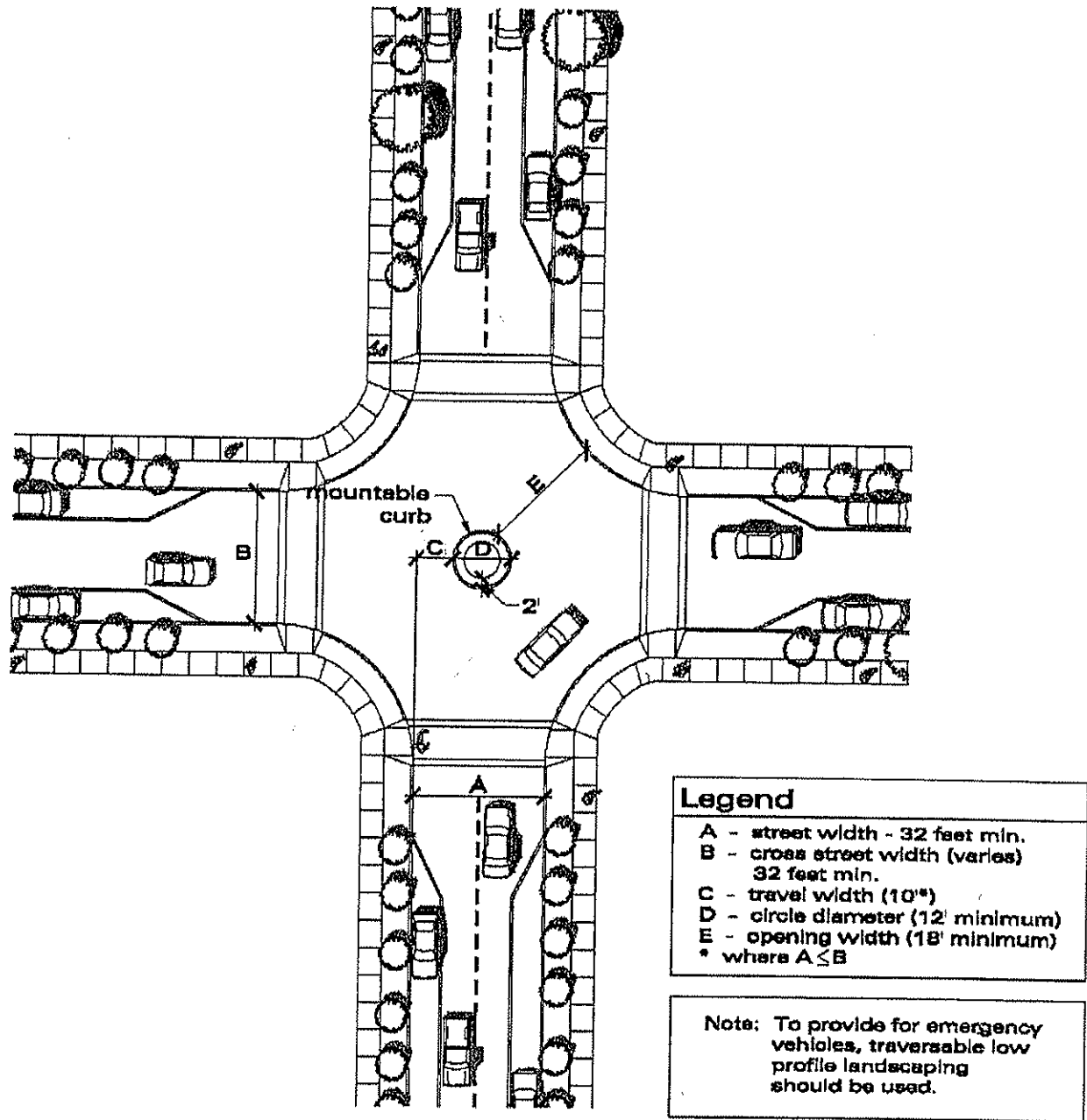
New Installations

Retrofit Installations

- NOTES:**
- Spacing of chicane segments depend on site considerations, e.g. driveway locations.
 - Island plantings should not obscure driver's view of chicane traffic (24' maximum height).
 - Stamped concrete may be used in the chicane island.
 - Bicycles are to use the same path as motor vehicles, not the drainage channel.

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Figure 4-21
Sample Chicane



NOTE:
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Figure 4-22

Sample Mini Circle

(d) Median Slow Points

A median slow point is a small median or island in the center of a roadway that causes traffic to shift to the right in order to travel around it. If median slow points are installed at an intersection, the street should have alternative access points. A median slow point slows traffic, creates a pedestrian refuge area, creates a landscaping opportunity and tends not to divert traffic to nearby streets. When appropriate, median slow points should be used on two lane streets. Median slow points should not be used on Primary Streets or streets where there is limited stopping sight distance. Median slow points may cause some loss of on-street parking or may impact large vehicles' turns when installed at intersections. Figure 4-23 shows a sample median slow point.

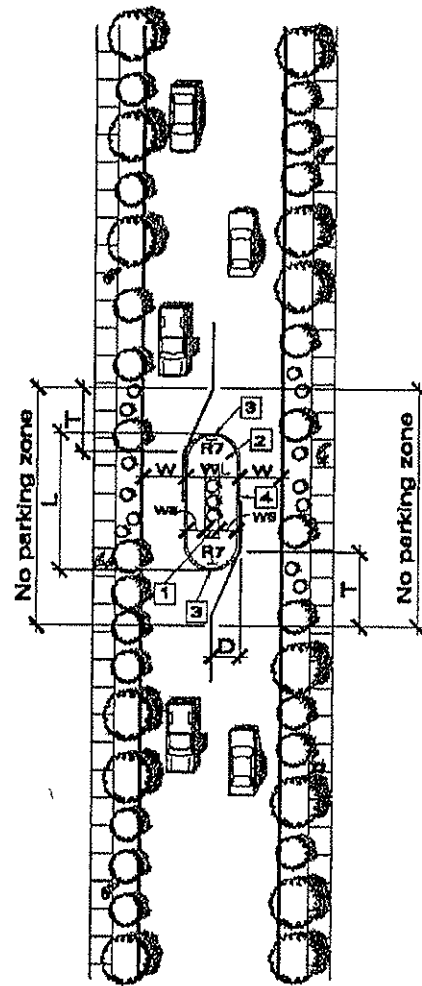
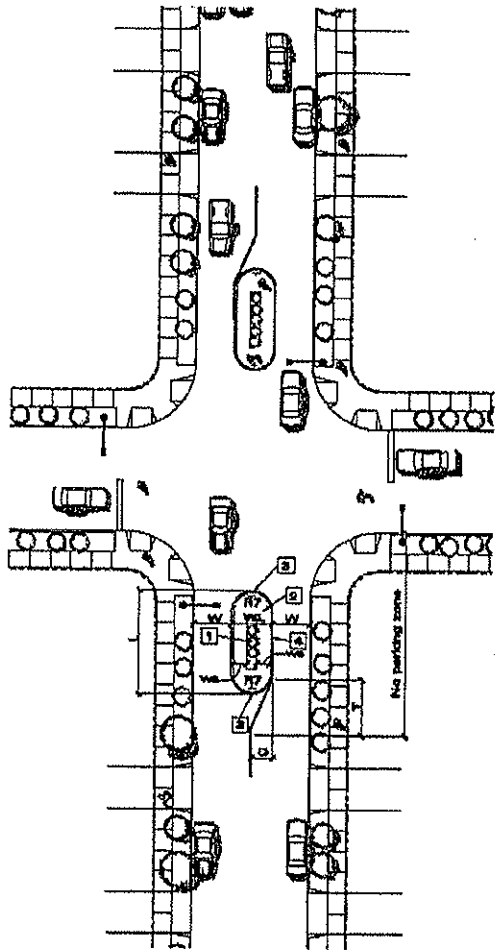
(3) Vertical Deflections

Vertical deflections reduce speeds and discourage shortcutting on Secondary Streets. When appropriate, vertical deflections should only be used on two-lane streets. Vertical deflections should not be used on Primary Streets. Vertical deflections include road humps and speed tables/raised crosswalks.

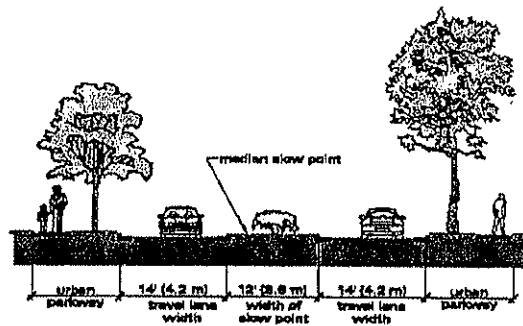
(a) Road Humps

Road humps are rounded, raised areas placed across the road. Unlike speed bumps, road humps are approximately twelve (12) feet long (in the direction of travel), three and one half (3 ½) inches high, and parabolic in shape. Road humps should be constructed with a taper on each side within one (1) foot of the gutter line, to allow unimpeded drainage between the hump and curb. Road humps should be spaced close enough to discourage speeding between humps.

While primarily used for speed reductions, road humps also reduce traffic volumes by diverting traffic to other nearby streets. Road humps should not be used on Primary Streets, emergency response routes, bus routes, where the grade exceeds five percent (5%) or where there is limited stopping sight distance. The disadvantages of road humps may include diverting traffic to other low-volume Secondary Streets, increasing emergency response time or increasing noise. Figure 4-24 is a sample road hump.



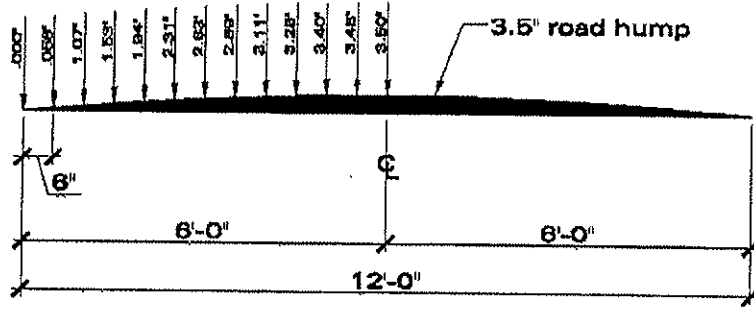
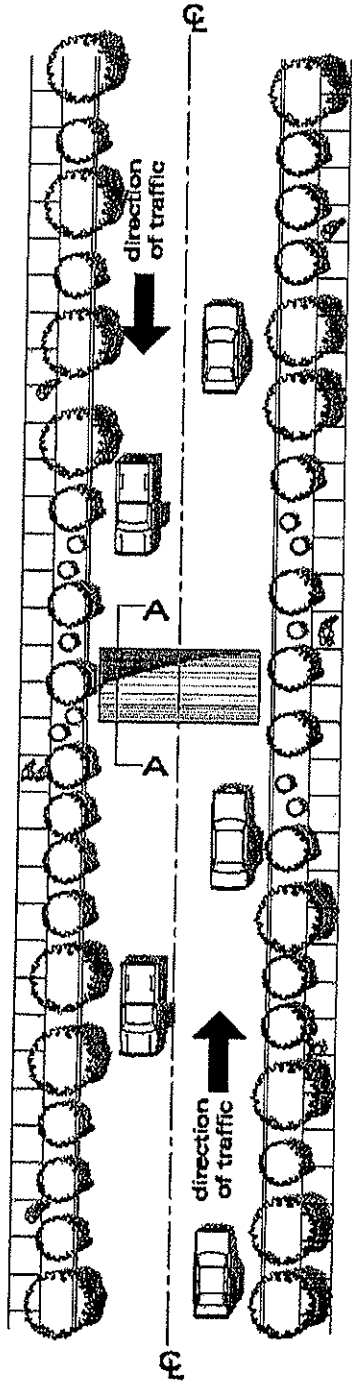
- Legend**
- 1 area that may be landscaped
 - 2 stamped concrete
 - 3 yellow painted island nose
 - 4 8" curb
- W - travel lane width = 14'
 WL - Width of slow point (varies depending on street width - 12' minimum)
 Ws - For landscaped slow point, 2' typical
 L - Length of slow point, varies depending on parking and driveways
 D - horizontal deflection, 6' minimum
 T - Transition, calculated as follows:
 $T = (D \times S^3) / 120$ - minimum
 Where: D = deflection in feet
 S = 85th percentile speed in mph



I. EXHIBIT FOR ILLUSTRATIVE PURPOSES ONLY.

Figure 4-23

Sample Median Slow Point



NOTE:
1. EXHIBIT FOR ILLUSTRATIVE PURPOSES ONLY.

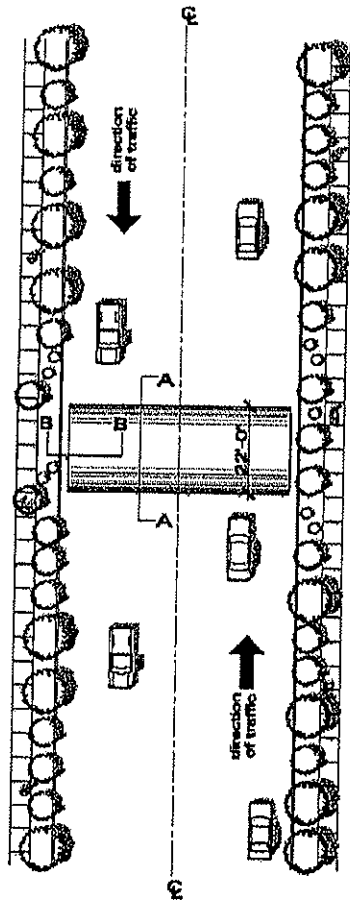
Figure 4-24

Sample Road Humps

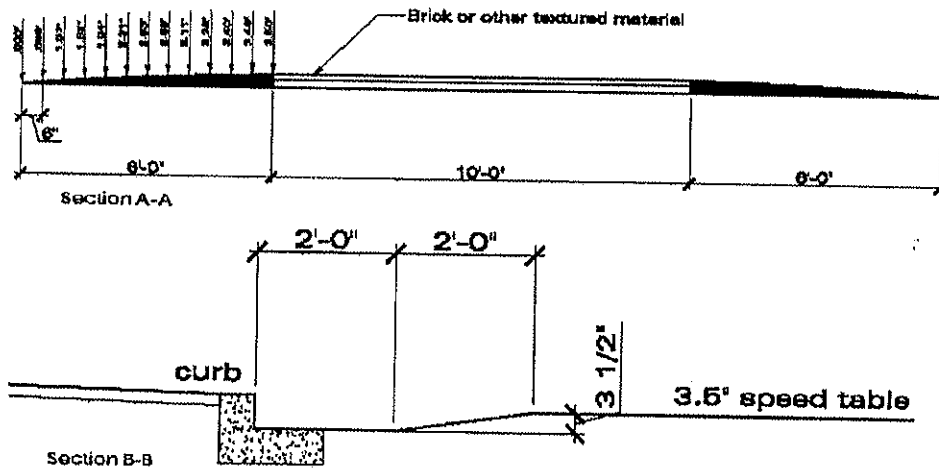
(b) Speed Tables/Raised Crosswalks

Speed tables are flat-topped road humps, often constructed with brick or other textured materials on the flat section. Speed tables are three and one half (3 ½) inches high and twenty-two (22) feet long in the direction of travel, with six (6) foot ramps at the ends and a ten (10) foot field on top. The brick or other textured materials improve the appearance of speed tables and draw attention to them. Where appropriate, speed tables should be installed in groups of two or more, about three hundred (300) feet apart. Where extended from curb-to-curb and appropriately marked, speed tables serve as raised crosswalks. Raised crosswalks bring the street up to sidewalk level. Drainage requirements should be evaluated and addressed where raised crosswalks are installed.

Speed tables and raised crosswalks reduce vehicle speeds and enhance pedestrian safety. The disadvantages of speed tables and raised crosswalks may include diverting traffic to nearby low-volume Secondary Streets, increasing noise and increasing emergency response times. Speed tables and raised crosswalks should not be installed on Primary Streets, emergency response routes, bus routes, where the grade exceeds five percent (5%) or where there is limited stopping sight distance. Figure 4-25 shows a sample speed table and Figure 4-26 shows a sample raised crosswalk.



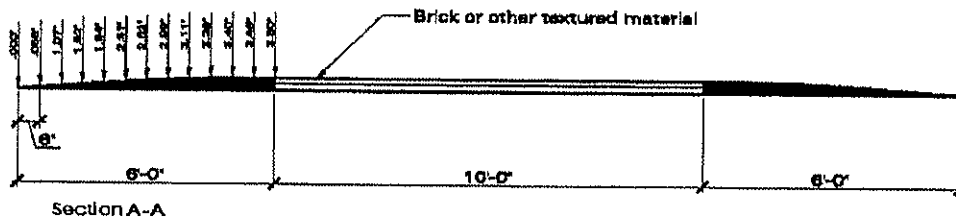
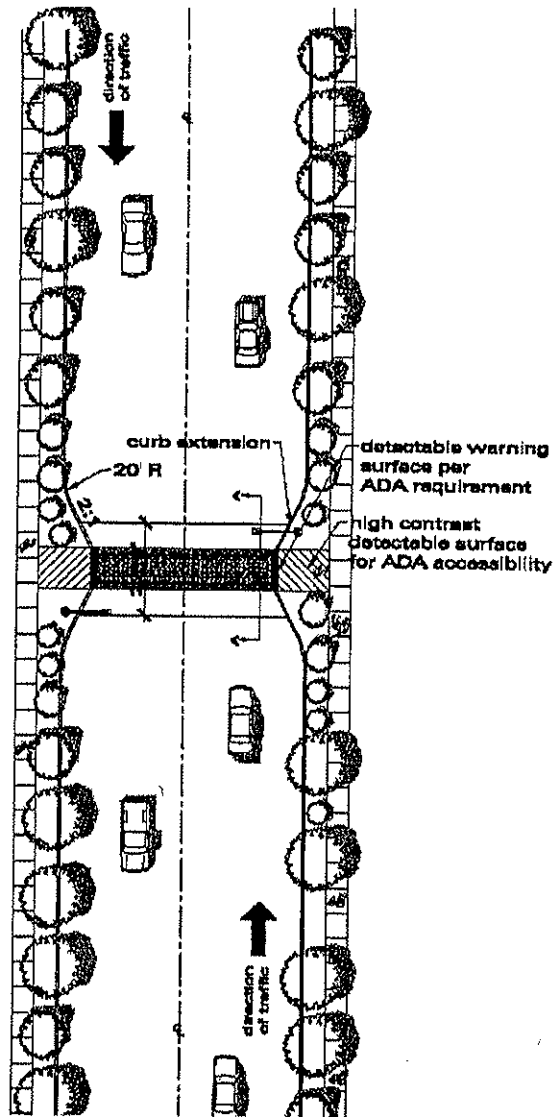
NOTE:
 • Drainage requirements must be evaluated and addressed.



NOTE:
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Figure 4-25

Sample Speed Table



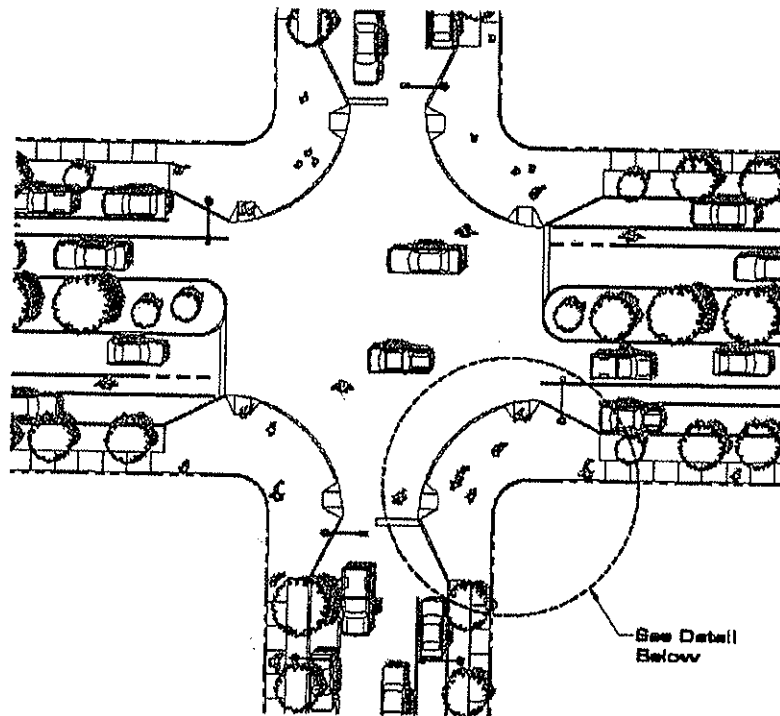
NOTE:
1. EXHIBIT FOR ILLUSTRATIVE PURPOSES ONLY.

Figure 4-26

Sample Raised Crosswalk

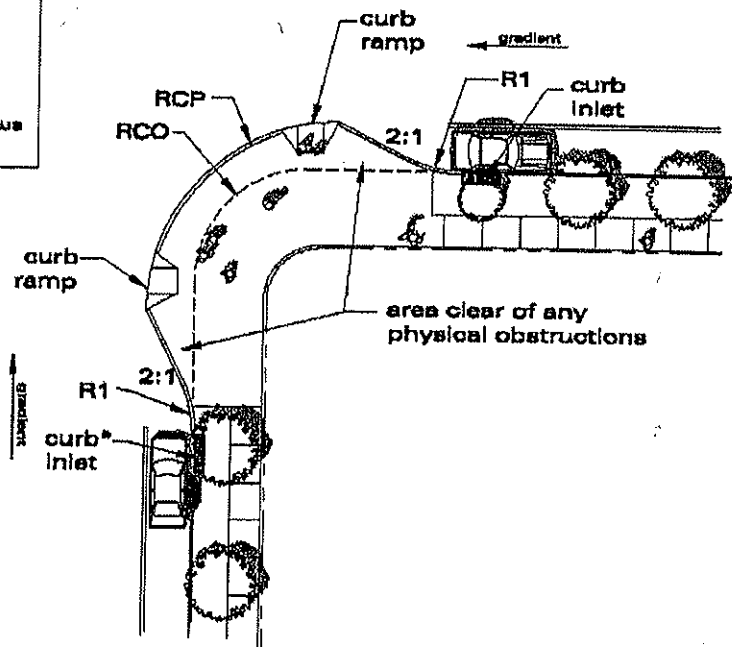
(c) Intersection Pop-outs

Intersection pop-outs are curb extensions that narrow the street at intersections by widening the sidewalks at the point of crossing. They are used to make pedestrian crossings shorter and reduce the visual width of long, straight streets. Pop-outs with large, landscaped planting strips produce a positive visual effect or act as gateways. Intersection pop-outs should accommodate bicyclists, transit vehicles and emergency response vehicles. Pop-outs improve pedestrian visibility, create shorter pedestrian crossing width and may reduce vehicle speeds. Pop-outs may impact large vehicle turns, may impact accessibility by transit vehicles or emergency response vehicles and may require parking removal. Where appropriate, intersection pop-outs should be installed on Secondary Streets or main commercial streets. Figure 4-27 shows a sample intersection pop-out.



NOTE:
 * Drainage requirements must be evaluated and addressed.

Legend
 RCP - 30' (9.2 m) minimum
 RCO - Retrofit installations- original curb radius
 R1 - Curb radius 20' (6 m)



NOTE:
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Figure 4-27

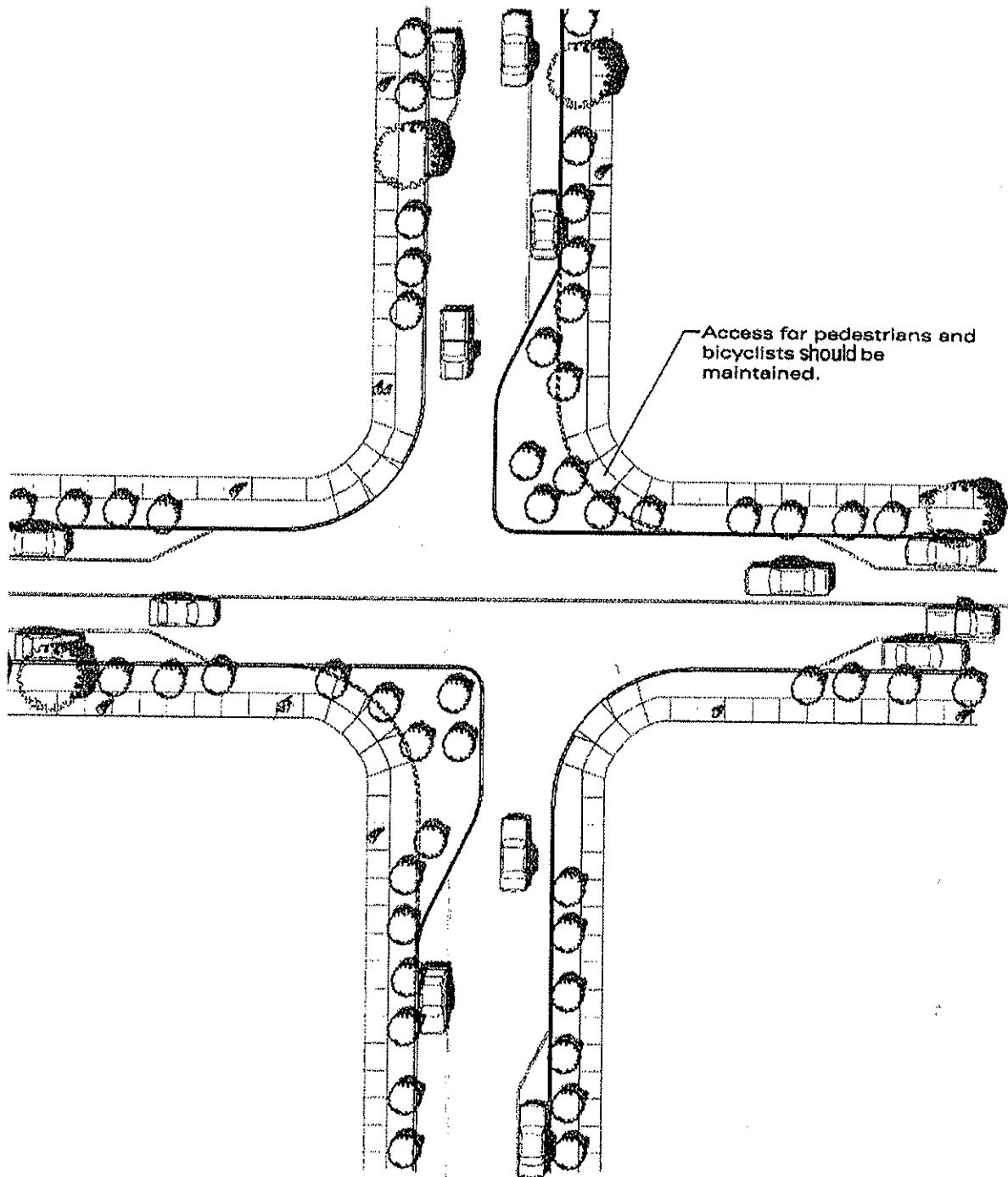
Sample Intersection Pop-out

(4) Traffic Diverters

Traffic diverters eliminate through trips on streets on which they are installed and divert those trips to other streets. There are several available traffic diversion designs that may be used to calm traffic. Traffic diverters are not primarily installed for the purpose of speed control. Diverters are best suited on long, straight, low-volume, Secondary Streets. Wherever traffic diversion techniques are employed, provision should be made for continuation of pedestrian and bicycle routing around or through the diversion. Care must be taken in design of diversion installations to allow for emergency vehicles.

(a) Semi diverters

A semi diverter is a barrier to traffic in one direction of a street that permits traffic in the opposite direction to pass through. It is an alternative to one-way street operation for a block and it allows residents on the block limited two-way travel opportunity. A semi diverter may be used on low-volume, Secondary Streets and it is best located at the end of a block to prevent entrance and allow exit. Semi diverters reduce cut-through motorized vehicle traffic, reduce pedestrian crossing widths and create opportunity for landscaping. Semi diverters may divert traffic to other low-volume streets, may increase trip lengths, may cause loss of parking and may increase emergency response time. Semi diverters are inappropriate for use on emergency response routes, bus routes or Primary Streets. No specific geometric features are included in this manual since semi diverters are site specific and should be designed on a case-by-case basis. Figure 4-28 shows a sample semi-diverter.



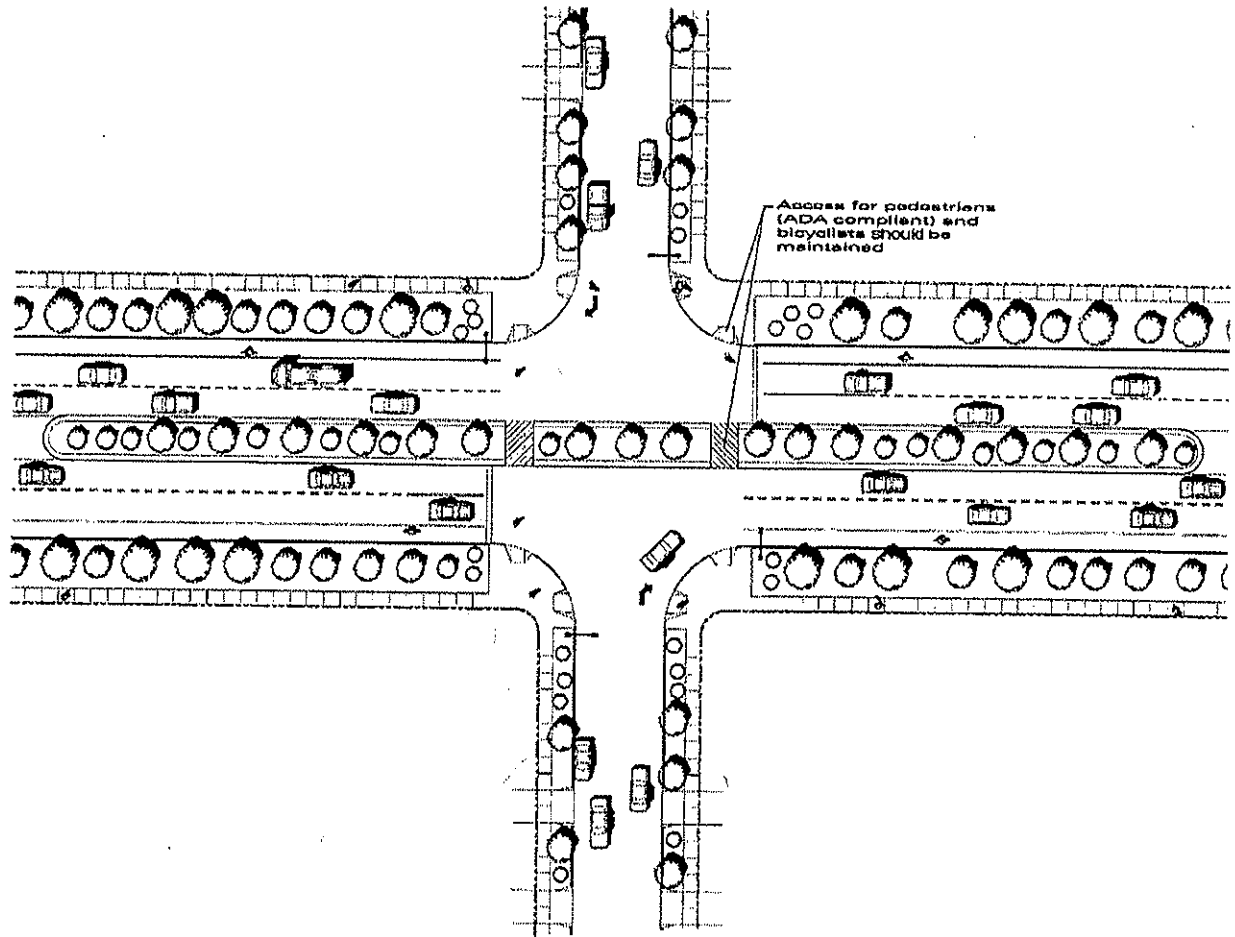
NOTE:
1. EXHIBIT FOR ILLUSTRATIVE PURPOSES ONLY.

Figure 4-28

Sample Semi-Diverter

(5) Channelization

Channelization may be used on the Parkway to prevent cut-through traffic onto Secondary Streets or to control turning traffic in or out of neighborhoods. Channelization can be achieved through regulatory signs and pavement markings, landscaping or raised channelization islands aimed at motorized, non-motorized, or pedestrian traffic. Channelization may be designed to prevent cut-through traffic, reduce speed, create opportunity for landscaping, control turning traffic in and out of a neighborhood or physically guide pedestrians. The disadvantages of channelization may include creating out-of-direction travel, increasing trip lengths, increasing emergency response time, or impacting accessibility. No specific geometric features are included in this manual since channelization devices are site specific and should be designed on a case-by-case basis. Figure 4-29 shows a sample channelization.



NOTE:
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Figure 4-29

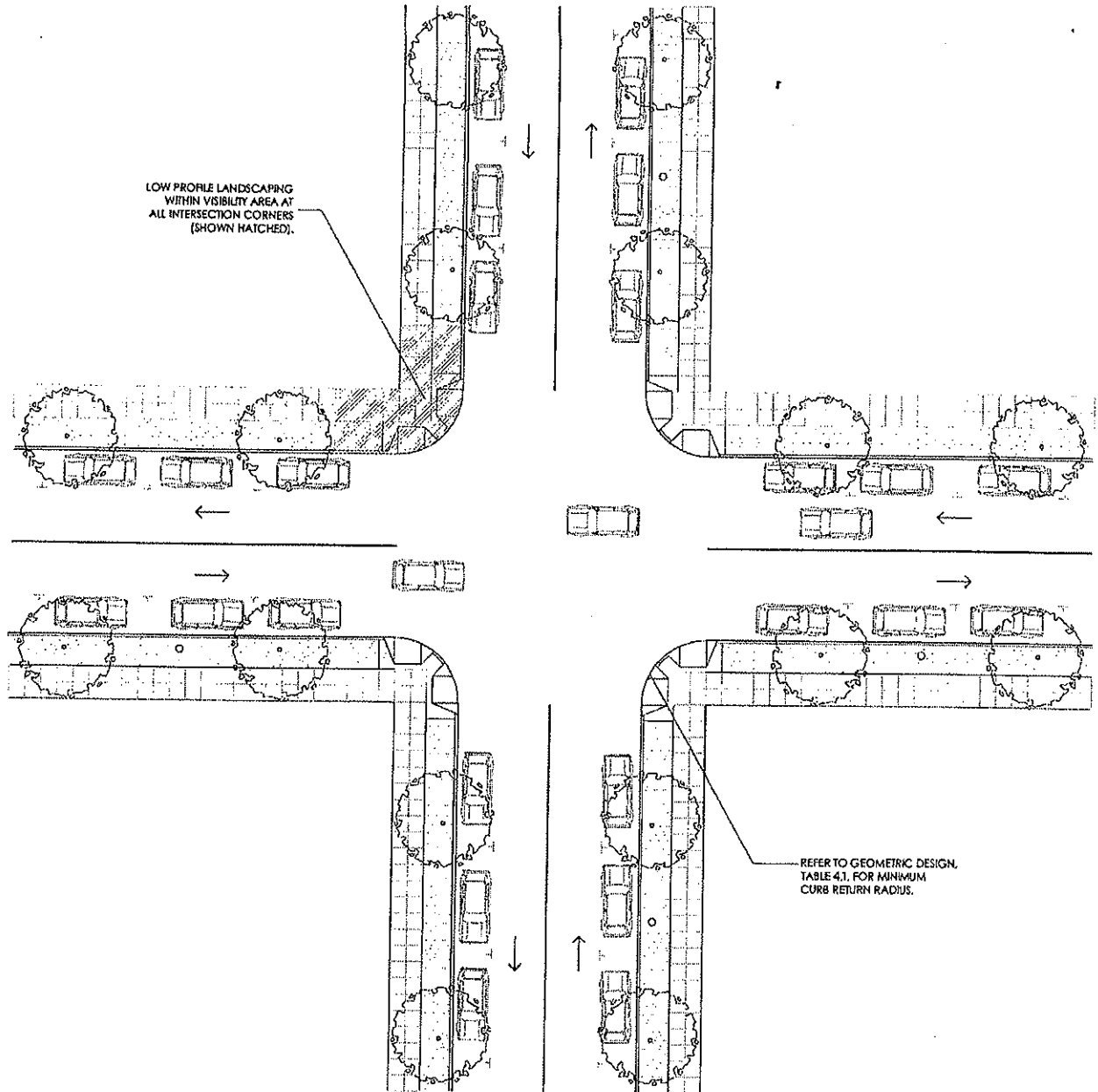
Sample Channelization

Q. Street Furniture

Street furniture contributes to the comfort, safety, enjoyment and daily livability of pedestrians, bicyclists, motorists and transit users in the public realm. Street furniture in NAS South Weymouth includes, but is not limited to, elements such as benches, bicycle racks, bollards, litter and recycling receptacles, newsracks, transit shelters and tree grates.

(1) General

- Street furniture and above-ground appurtenances placed in the right-of-way shall conform to the requirements set forth in these Regulations.
- Street furniture and above-ground appurtenances shall be located in a fashion that preserves the safety, integrity, and layout of the pedestrian passageway and assures that the right of the public to use the public sidewalk is not unreasonably restricted.
- All street furniture shall be of high-quality, durable materials and construction.
- Street furniture and above-ground appurtenances shall comply with the ADA.
- The placement of all street elements, including when fully utilized, should not interfere with disabled access ramps, handicapped zone parking areas, loading areas, fire hydrants, or emergency vehicle access.
- Street furniture should not be installed in corner clear zones. See Figure 4-30: Street Intersection Diagram for appropriate treatment of corner clear zones at intersections.
- Street furniture should not interfere with access into buildings.



NOTE:
1. EXHIBIT FOR ILLUSTRATIVE PURPOSES ONLY.

Figure 4-30

Street Intersection Diagram

(2) Benches

Public benches are vital amenities that foster pedestrian-friendly sidewalks. Space permitting, benches are allowed in the right-of-way on all streets, subject to the following guidelines:

- Benches are permitted on sidewalks wider than ten (10) feet.
- Public benches in the curb zone should be oriented toward the sidewalk and located at least two (2) feet away from the face of the curb.
- Curb zone benches at transit stops should be oriented toward the roadway.
- Benches should not be placed on tree grates, underground utility covers or manholes.
- Benches and other seating provided in public open spaces should be approximately six (6) feet long, with backs, constructed of wood, stone, or metal and fastened to the sidewalk with galvanized hardware.
- No advertising is allowed on benches.

(3) Bicycle Racks

To provide an incentive for increased bicycle ridership, bicycle racks should be provided throughout the Village Center District, the Multi Modal Transportation Center, activity areas, recreational facilities, open space corridors and along striped, designated or specified bicycle routes.

- Bicycle racks, where placed in the right-of-way, should be sited in a well-lit area as close to building entrances and regular foot traffic as possible without unreasonably restricting the pedestrian passageway.
- Bicycle racks should be located within the curb zone of sidewalks in NAS South Weymouth. At least five (5) feet of pedestrian through space must be maintained, including when bicycles are parked in the rack.
- Constructed of metal, bicycle racks should be fastened to the sidewalk with hidden bolts or counter sunk racks.
- At least three (3) feet of clearance shall be provided between bicycles parked at racks and any other street furniture.

(4) Bollards

Bollards can be an effective and attractive method for preventing vehicles from encroaching on pedestrian areas. In NAS South Weymouth, bollards are recommended for protecting pedestrians, sidewalk elements and utilities on sidewalks, traffic islands, and medians.

- Bollards shall be constructed of concrete, metal, or stone.
- Bollards should be located within the curb zone and placed as not to interfere with adjacent parking.

(5) Litter and Recycling Receptacles

As one of the most ubiquitous elements within the streetscape, litter and recycling containers should be well-maintained and provided at frequent intervals within the Village Center District, Multi Modal Transportation Center and other activity zones.

- Receptacles shall be constructed of wood or metal. Plastic receptacles are not permitted.
- Publicly-maintained receptacles should be located in the curb zone near the edge of the corner clear zone.
- Privately-maintained receptacles should be located in the building setback zone.
- Receptacles should be placed on every corner within the Village Center District and areas around the Multi Modal Transportation Center.

(6) Newsracks

Consolidated newsracks ensure an orderly streetscape and minimize safety hazards for pedestrians. Newsracks are appropriate for the Village Center District and the Multi Modal Transportation Center, in compliance with the following guidelines:

- Newsracks shall be consolidated in form, of a modular, metal construction that will prevent encroachment and clutter on the pedestrian passageway.
- Locate newspaper racks in the curb zone, opening towards the pedestrian through zone.
- Newsracks shall be located at least three (3) feet away from utility boxes and vaults, emergency facilities and call boxes, driveways and bicycle racks.

(7) Transit Facilities

To support transit connectivity and ridership, transit stops and shelters should be well-designed public spaces that serve transit users and pedestrians. Transit stops are appropriate along the transit network and especially in the Village Center District, Multi Modal Transportation Center, Shea Village Commercial District and activity zones.

- Transit shelters should provide protection from the elements and be constructed from metal and strengthened glass.
- Transit stops and shelters should be accompanied by litter and recycling receptacles, street trees and street lighting.
- All transit stops and shelters shall maintain clearance zones that meet ADA requirements for wheelchair accessibility to and from the stop, shelter and to board or exit the transit vehicle.

(8) Tree Grates

To protect street trees and increase the walkable area of the sidewalk, tree grates should be installed for all street trees in the Village Center District, Multi Modal Transportation Center and where sidewalks do not have tree lawns or planting strips.

- Tree grates should be constructed of metal, inspected regularly and enlarged as necessary to accommodate tree growth.
- Grates should be bolted to the sidewalk at each corner. Tree grates should be bolted to tree guards, if used.

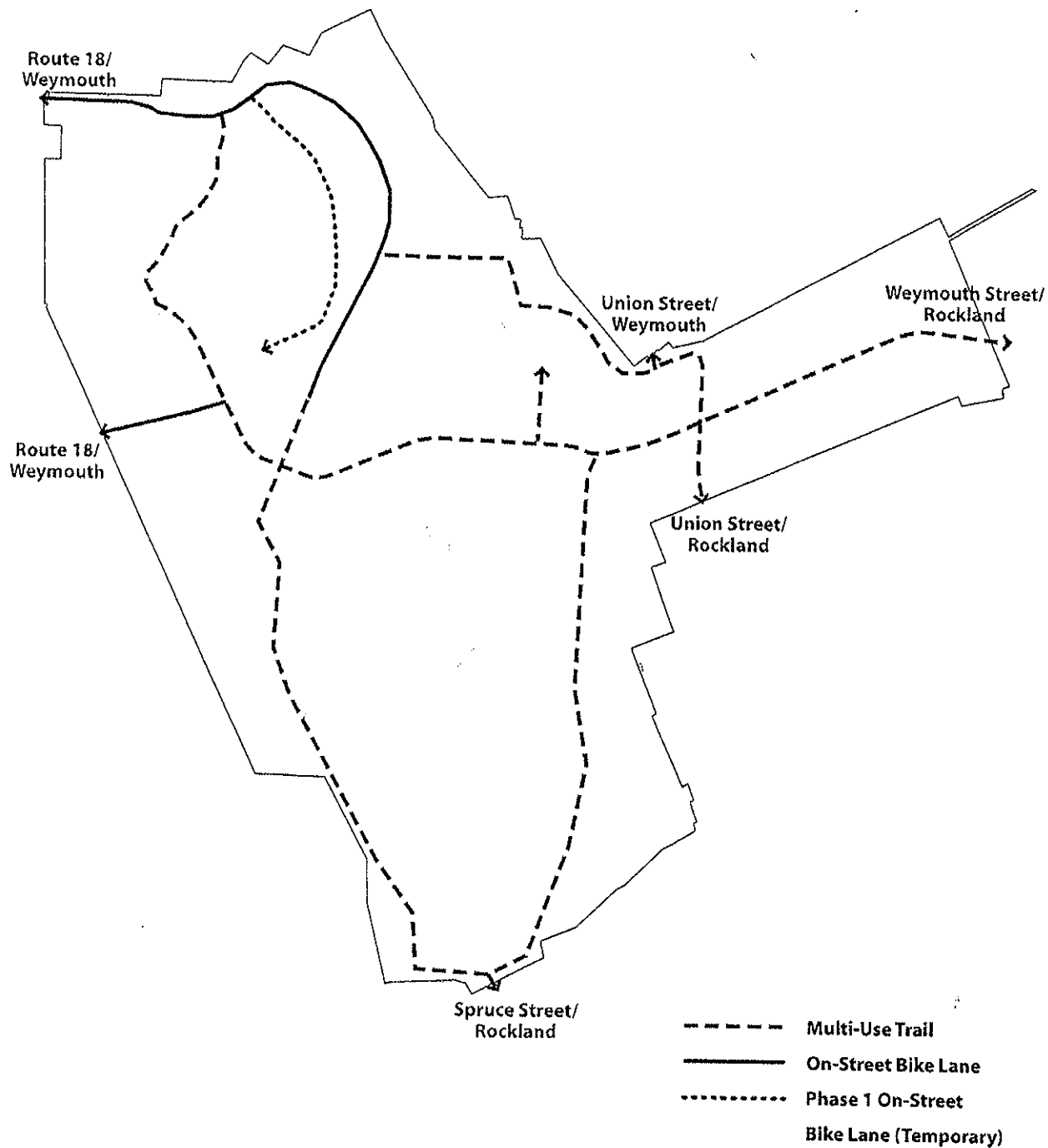
R. Bicycle Network

Bikeways bring benefits to the public by emphasizing active lifestyles, mitigating air, noise, and water pollution, reducing road damage, and supporting local transportation systems. Bikeways also contribute to public safety, as motorists and pedestrians anticipate bicycle movements and their presence on the road. This Section describes the specific components of the bicycle network within NAS South Weymouth.

(1) General

- All streets should provide guiding signage to direct bicyclists to other bikeways within and outside NAS South Weymouth.
- Bikeways should be continuous and lead to major commercial, recreational, activity and residential areas.
- Except as specified herein, where bikeways and walkways are required, they shall be constructed in conformance with the specifications of the Applicable Subdivision Board.

- When a portion of any public trail system falls within the land to be subdivided, the Applicant shall construct that portion of the trail. Depending on the size and use of a proposed subdivision, the Applicable Subdivision Board may require connectors to the main trail system in addition to or in lieu of sidewalks.
- Vehicular gateways from Route 18, Weymouth Street, and other non-vehicular entry points shall provide continuous bikeway connections to facilitate access between NAS South Weymouth and the surrounding communities.
- For the length of each bikeway and walkway there shall be a crown equivalent to one-half ($\frac{1}{2}$) inch per foot of width to provide for proper drainage. Leveling areas at intersections with sidewalks shall be shown in details.
- Bicycle signage should comply with the most recent edition of USDOT's, *Manual on Uniform Traffic Control Devices*, Section 9, as the same may be amended.
- Bicycle lane and path construction should comply with the most recent edition of AASHTO, *Guide for the Development of Bicycle Facilities*, as the same may be amended.
- Figure 4-31: Bicycle Network Concept Plan generally indicates the appropriate locations of the bicycle network.



NOTES:

1. EXHIBIT FOR ILLUSTRATIVE PURPOSES ONLY.
2. EXHIBIT INDICATES GENERAL BIKE LANE AND TRAIL LOCATIONS AND RELATIONSHIPS.

Figure 4-31

Bicycle Network Concept Plan: General Location of Bike Routes

(2) On-Street Bicycle Lanes

On-street Bicycle Lanes are portions of the roadway designated by striping, signing and pavement marking for exclusive or preferential use of bicycles. Designated or striped bicycle lanes should be provided on Shea Boulevard, Main Street outside the Village Center District, and the Access Road as specified below and shown on Figures 4-3, 4-4, 4-5 and 4-9, their associated street sections.

- On-street bicycle lanes shall be one-way, provided on both sides of a roadway, and six (6) feet wide.
- For streets with at least a one (1) foot gutter pan, on-street bicycle lanes should be four (4) feet wide when adjacent to parking lanes.
- When adjacent to a mandatory right-turn lane, on-street bicycle lanes should be four (4) feet wide, located left of the turning lane.
- Continuous, six (6) inch striping and pavement marking should designate all on-street bicycle lanes.
- Pavement markings should include the bicycle symbol and “Bike Lane”.
- Striping and pavement marking should be durable, yet skid resistant.
- Bicycle lanes shall be smooth, free of drain inlets, manholes, and other roadway appurtenances such as reflectors or raised marking.
- Bicycle lanes should be constructed to full-depth pavement standards, compliant with normal roadway design and construction specifications.
- The roadbed pavement within bicycle lanes should have pavement markings either at block intervals or every four hundred (400) feet, whichever is shorter.
- The roadway along bicycle lanes should be posted with bicycle signage in advance of the beginning of a bicycle lane, in advance of the end of a bicycle lane and either at block intervals or every four hundred (400) feet, whichever is shorter.

(3) Off-Street Bicycle Paths

For the purposes of these Regulations, a bicycle path is an off-street portion of a street right-of-way that is designated for exclusive or preferential use of bicycles. A bicycle path shall be provided on the Parkway as specified below and shown on Figures 4-10 and 4-11, the Parkway street sections:

- A bicycle path shall be two-way and at least eight (8) feet wide.
- A bicycle path shall be provided on one side of the roadway, located between the vehicular roadway and the pedestrian sidewalk.

- Bicycle paths should be separated from the vehicular roadway by a six (6) foot, graded planting strip and the pedestrian sidewalk by a four (4) foot, graded planting strip.
- A minimum of three (3) feet width graded area shall be maintained adjacent to both sides of the bicycle path.
- If the distance between the edge of the roadway and the bicycle path is less than five (5) feet, a low, physical divider should be provided at the edge of the roadway.
- Vertical clearance above the bicycle path should be a minimum of eight feet.

(4) Signed Shared Roadway

Signed shared roadways are bikeways without separated, designated or striped bicycle lanes. Bicyclists and motorists instead share the outside lane. The through movement of bicycles is given priority over vehicular travel on a street by the use of signage and traffic calming devices. Signed shared roadways are appropriate on residential, commercial, and mixed use streets and should be provided on all Secondary Streets.

- Secondary Streets should be posted with “Share the Road” signage, either at block intervals or every 1,000 feet, whichever is shorter.
- Secondary Streets should be posted with directional signage toward designated on-street bicycle lanes and off-street bicycle paths either at block intervals or every 1,000 feet, whichever is shorter.

S. Design Standards

(1) Sidewalk Standards

As highly populated public open spaces throughout the street network, sidewalks should reinforce their significance through a spacious, safe, accessible and vital pedestrian realm. The suggested grid system of the street network in these Regulations should allow for clear pedestrian movement across manageable, navigable blocks.

Sidewalks are pedestrian-oriented areas that span the distance between the property line that fronts the roadway and the back of the nearest curb along that roadway. Sidewalks have paved and non-paved portions. All specified sidewalk widths include the widths of planting strips and tree lawns situated between the curb and the paved portion.

- All streets shall have sidewalks.
- Neighborhood Alleys and Hammerheads in residential, commercial, and mixed-use blocks are not streets and should not have sidewalks.
- All sidewalks shall be public.

- All sidewalk designs and treatments shall conform to applicable state, federal, and local laws and codes including, but not limited to the ADA.
- Access for all sidewalks and curbs shall be in accordance with the Rules and Regulations of the Massachusetts Architectural Access Board (521 CMR).
- Sidewalks shall include a paved portion, at least four (4) feet wide, of standard concrete surface with uniform texture, and scored in three (3) foot by three (3) foot, four (4) foot by four (4) foot, or five (5) foot by five (5) foot modules.
- The paved portion of all sidewalks shall be separated from the curb by a planting strip, the contents and materials of which must follow the guidelines specified herein.
- All sidewalks should have straight edge granite curbing, except as noted for Shea Boulevard from Route 18 to the Village Center District.
- Roadway curbing shall be granite, of six (6) inches in height and of type VA4, as defined in MDPWSS, Section M9.
- All granite curbs should end with transition pieces to blend into the adjoining roadway edge.
- If brick or paver sidewalks are desired, they shall be constructed as directed by the Applicable Subdivision Board.
- Special paving or public art installations shall comply with the ADA, contribute to the visual appearance of NAS South Weymouth, and must be approved by the Applicable Subdivision Board.
- Sidewalks shall be constructed in accordance with the Authority's specifications. Utility access panels within sidewalks must be slip resistant; flush mounted, and must not include holes greater than one-quarter ($\frac{1}{4}$) inch.
- All materials shall be removed for the full width of the sidewalk to a subgrade twelve (12) inches below the finished grade as shown on cross-section; and all soft spots and other undesirable material below such subgrade shall be replaced with good binding gravel material and compacted. This excavated area then shall be filled with eight (8) inches of good quality gravel as specified for finished base course and rolled with a pitch toward the curb of not less than three-eighths ($\frac{3}{8}$) inches or greater than one-half ($\frac{1}{2}$) inch to the foot. Wood forms shall be set to grade filled with four inches of cement concrete.

(a) Sidewalk Widths

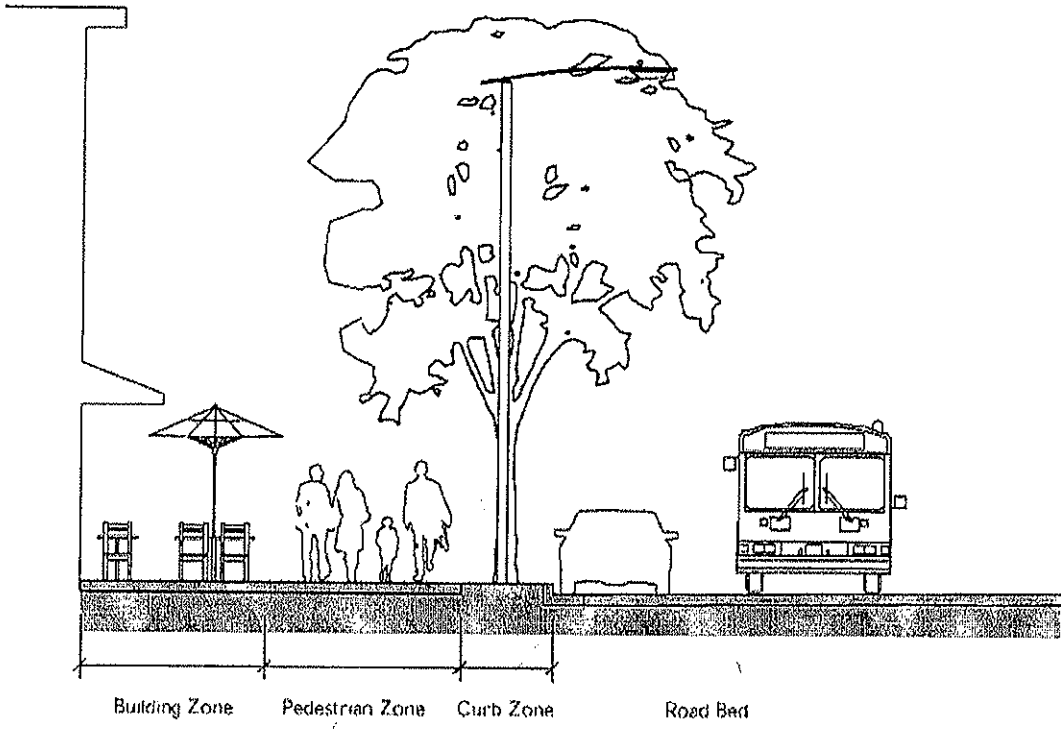
- The width of a sidewalk is measured from the back of the curb to the property line.
- Sidewalks in NAS South Weymouth shall be a minimum of ten (10) feet wide, inclusive of the planting strip.
- To provide for a safe, pleasant pedestrian experience and compliance with the ADA, minimum sidewalk widths for

streets in NAS South Weymouth should comply with the dimensions provided in Figures 4-3 through 4-17.

- All sidewalks shall have a minimum four (4) foot side paved area, exclusive of the planting strip.
- The minimum four (4) foot paved portion within a sidewalk is intended to be a clear width. Where fire hydrants, street furniture or other above ground appurtenances reduce such width, additional sidewalk shall be constructed around the obstacles.
- For sidewalks with paved portions less than five (5) feet wide, a five (5) foot by five (5) foot passing area shall be provided every two hundred (200) feet, in compliance with the ADA.
- Where feasible, the location of transit stops and shelters shall be determined and the paved sidewalk width shall be as wide as possible where shelters are proposed.
- The wider sidewalk widths for bus shelters shall extend for twenty-five (25) feet parallel to the curb measured from the bus stop sign. This will provide adequate clearance to accommodate bus lifts for disabled persons.

(b) Sidewalk Zones

Sidewalks are generally composed of two or more of the following three zones: the curb zone, the pedestrian through zone, and the building zone. Figure 4-32 is diagram indicating these sidewalk zones.



NOTE:
1. EXHIBIT FOR ILLUSTRATIVE PURPOSES ONLY.

Figure 4-32

Sidewalk Zones Diagram

(i) The Curb Zone: The portion of the pedestrian zone that is closest to the roadway and the preferred location for landscape strips, street trees, above-ground utilities, and street furniture.

- In the Village Center District, the curb zone shall be paved around street tree grates, whereas on other streets, the curb zone should be a continuous tree lawn or landscape strip.
- Elements that may be appropriate for the curb zone include: benches, bike racks, bioswales, signage, hydrants, historic markers, kiosks, landscaping, parking meters, pay phones, pedestrian lighting, planters, postal boxes, receptacles, signage, street lighting, street trees and their accessories, traffic signal poles and transit shelters.
- Any paving in the curb zone must be continuous with paving in the pedestrian through zone.
- For sidewalks in the Village Center District, the curb zone dimension, from the back of the curb, should be a minimum of five (5) feet.
- For all other sidewalks, the curb zone dimension, from the back of the curb, should be a minimum of six (6) feet and a maximum of seven (7) feet.
- Street trees on sidewalks without planting strips shall have tree grates.

(ii) The Pedestrian Through Zone: The portion of the sidewalk dedicated to pedestrian movement and kept clear of encroachments in compliance with the ADA.

- The pedestrian through zone should be contiguous and linear, without extreme jogs or detours along each block. The pavement shall be even, well-maintained, and free of utility vaults and pullboxes, whenever possible.
- The pedestrian through zone shall be clear of tree grates, light poles, or vertical elements that impede pedestrian flow.

- For sidewalks in the Village Center District, the minimum pedestrian through zone dimension should be five (5) feet from the back of the curb.
- For sidewalks on Shea Boulevard, Main Street, the Truck Connector, the Parkway, and Main/Standard Neighborhood and Narrow Neighborhood Streets, the pedestrian through zone dimension, should be a minimum of four (4) feet and a maximum of eight (8) feet, as suggested in their associated street sections.
- For pedestrian through zones less than five (5) feet wide, a five (5) foot by five (5) foot passing area shall be provided every two hundred (200) feet, in compliance with the ADA.

(iii) The Building Zone: The portion of the sidewalk adjacent to the property line.

- Streetscape elements relating to adjacent activities may be placed in this zone subject to these standards. Elements in the building zone are prohibited for narrow sidewalks.
- Elements that may be appropriate for the building zone include: awnings, benches, building-mounted lights, café seating and railing (temporary), planters, signage, transit seating and utility cabinets.
- Elements prohibited in the building zone include: receptacles, water and sewer backflow devices, ground level building ventilation and exhaust equipment, above grade utilities and building fire control standpipes.
- For sidewalks in the Village Center District, building zone elements are permitted such that the minimum five (5) foot pedestrian through zone and four (4) foot curb zone are maintained.
- For sidewalks outside the Village Center District, building zone elements should be permitted in neighborhood retail areas and transit centers, such that the minimum four (4) foot pedestrian through way is maintained.

(c) Locations

- Sidewalk areas within curb returns are to be completely paved at all intersections and at other intersections where significant pedestrian volumes are anticipated.
- A variation or transition in sidewalk location from that which is recommended above shall be considered to achieve consistency with existing adjacent sidewalks.

(d) Curb Ramps

- All sidewalk installations are to include curb ramps at curbed intersections, T intersections and alley aprons.

(2) Street Parking

Street parking should be parallel in organization to allow for narrow roadway widths and to prioritize the pedestrian experience. Angled parking is not recommended for use with two way roadways because motorists often attempt to make a U-turn into stalls on the opposite aisle, increasing hazards for other motorists and pedestrians. Street parking should meet the needs of residents, visitors, customers, merchants and handicapped users. As a transit-oriented development, parking ratios and requirements in NAS South Weymouth should be limited and/or shared to encourage walking, bicycling, transit use, and carpooling.

- On-street parking stalls should be seven (7) feet wide by eighteen (18) to twenty-two (22) feet long.

(3) Curb Cuts

- The Village Center District, Main Street and Shea Boulevard should have minimal curb cuts.
- In residential areas, sidewalk paving and scoring patterns should be continuous across driveways.
- Access to private property from public streets shall be by standard concrete driveways. Curb returns will be permitted when the driveway is signalized. Driveways shall be designed such that access can be provided without backing onto the Parkway Main Street/Trotter and Shea Boulevard.
- No driveway access is normally permitted to the Parkway. Should a lot have frontage only on the Parkway, driveway access limited only to right turns in and out will be permitted at locations and under conditions specified by MASSDOT and may require an additional lane.
- Median breaks for driveway access will not normally be permitted unless all the following conditions exist:

The property to be served is a major traffic generator and has a continuous frontage of 1,200 feet or more along the street and is situated between streets that intersect the Primary Street from the side occupied by the property .

The median opening is not less than four hundred (400) feet from an intersection with another street. The need for left-turn storage may require a greater distance.

The median opening is not less than six hundred (600) feet from any existing or proposed mid-block median opening.

All costs, i.e., base material, surfacing, traffic safety street lighting, traffic signals, reconstruction or utility relocation required by a mid-block opening will be borne by the requesting party.

(4) Easements

- Where necessary, easements for utilities, drainage systems or pedestrian or bicycle paths shall be provided. The width of such easements shall be at least fifteen (15) feet or twenty (20) feet if paved access roads are included.
- If multiple utilities are present, ten (10) feet of width shall be added for each additional utility.
- Whenever possible, easements shall be centered on rear or side lot lines, rather than across lots.
- Access easements shall be required where deemed desirable to provide circulation or access to abutting streets, schools, playgrounds, parks, shops, transportation, open/spaces and or community facilities.
- Where a subdivision is traversed by a water course, drainage way, channel or storm drain, the Applicable Subdivision Board may require that there be provided a stormwater easement or drainage right of way of adequate width to conform substantially to the lines of such water courses, drainage way, channel or stream, and to provide for construction or other necessary purposes. Slope easements shall be provided where necessary to ensure lateral support and protection of streets and other construction features.

- (5) Geometric Design
- (a) Horizontal Curves
- (i) Minimum curb radii with and without super-elevation are shown in the curb return radii matrix for the various classifications of streets.
- (ii) Super Elevation
- Secondary Streets should not be super-elevated at curves.
 - Super-elevation is allowed on all other streets, if required to maintain the design speed along curves.
 - When super-elevation is required, the minimum amount permitted is plus two percent (2%). The maximum super-elevation permitted is four percent (4%) for design speeds 45 mph (70 km/h and higher).
 - Super-elevation must be designed to show length, transition, and crown runoff.
 - Super-elevation shall extend uniformly from the flow line of the gutter on the high side of the street to the lip of the gutter on the low side of the street, keeping the standard slope of the gutter on the low side unchanged. This shall also include the slope of median gutters, if any, as shown in the standard drawings.
 - All streets not super-elevated shall be crowned at two percent (2%).
- (iii) Sight distance on horizontal curves shall be determined from the 2006 MHD Manual or subsequent equivalent.
- (iv) Compound curves are prohibited.
- (v) Reversing Curves
- Reversing curves are permitted; but, for all streets other than Secondary Streets, they must be separated by a tangent length adequate to provide safety of travel.
 - Minimum tangent length permitted between reverse curves is one hundred (100) feet.
 - For non-super-elevated reversing curves, the tangent length provided shall be compatible with probable driving speed, type of vehicle use, and individual curve radius and length.

- Super-elevated reversing curves shall be separated by tangents sufficient to contain all of the super-elevation runoff required.
- Sharp horizontal curves must not begin near the top of pronounced crest vertical curves or near the low point of pronounced sag vertical curves.

(b) Vertical Curves

- (i) Vertical curves shall be designed to the 2006 MHD Manual or subsequent equivalent.
- (ii) For Secondary Streets, the minimum acceptable vertical curve is ten feet of curve for each one percent (1%) difference in grade.
- (iii) Vertical curves leading into intersections shall be designed such that the grade immediately approaching a cross gutter is no greater than 4 percent (4%).
- (iv) Sight distance on vertical curves shall be determined from the 2006 MHD Manual or subsequent equivalent.

(c) Intersections

- (i) Two streets intersecting opposite sides of a third street are to have the same points of intersection or else their centerlines are to be separated by a minimum of fifty (50) feet for Secondary Streets and a minimum of two hundred (200) feet for all other streets on the third street.
- (ii) Median breaks for intersections of Primary Streets shall be no closer than one-eighth (1/8) of a mile.
- (iii) Narrow Neighborhood Streets should not intersect the Parkway.
- (iv) Maximum grade across intersections along Main Street, the Truck Connector, Shea Boulevard and all Secondary Streets shall not exceed three percent (3%).

- (v) Curb return radius should accommodate the expected amount and type of traffic and allow for safe turning speeds at intersections. Curb return radius shall be installed in accordance with Table 4-1: Curb Return Radii.
- (vi) Sight distance at intersections must consider the following factors: grades, curvature, and super-elevation.
 - The minimum corner sight distance at an intersection of a street (public or private) or multiple dwelling residential/commercial/industrial driveway with Primary Street shall be in conformance with AASHTO Standards,
 - Adequate sight distances at intersections and along horizontal curves must be obtained. A sight distance easement that requires fences, monuments, signs, landscaping, walls, and slopes or any other obstruction at and beyond the right-of-way line to be eliminated, kept low, or set back is only acceptable when relocation of the intersection or redesign of the curve does not permit adequate sight distance.
- (vii) The Applicable Subdivision Board may prohibit parking at critical locations.
- (viii) The Applicable Subdivision Board may control access along Primary Streets at critical locations.

(6) Transitions

- (a) No pavement widening transition is required to increase the number of travel lanes beyond that needed for drainage flow.
- (b) When reducing the number of through travel lanes, the paved section shall undergo a transition as follows:

for $V > 40$ mph, $L = W \times V$;
for $V \leq 40$ mph, $L = W \times V / 60$;

where:

V = design speed, in miles per hour;
W = width of roadway transition, in feet;

and

L = transition length, in feet.

(7) Cul-de-Sacs

(a) Objectives

- Cul-de-sacs can be used to minimize encroachments into sensitive environmental features. However, when utilizing cul-de-sacs, care should be taken to design an interconnected street pattern within a residential neighborhood in order to provide, to the maximum extent feasible, direct pedestrian/bicycle routes to local destinations.
- The street system should encourage walking, bicycling, and transit as viable means of transportation within residential neighborhoods. Cul-de-sacs may be utilized within a subdivision so long as the development does not result in a circuitous street system that unnecessarily inhibits pedestrian circulation, discourages transit service, or causes added traffic impacts to other residences within the neighborhood.

(b) Village Center District and Shea Village Commercial District

- Turnaround curb radius of a cul-de-sac shall be fifty-five (55) feet.
- Cul-de-sacs of lengths greater than one hundred fifty (150) feet should be limited in industrial and commercial areas, unless there are clearly defined topographic conditions requiring greater lengths. In such instances, intermediate turnarounds or secondary emergency vehicle only access may be required.

(c) Mixed-Use Village District and Residential District

- Cul-de-sacs serving more than four dwelling units or spanning one hundred fifty (150) feet in length and dead-end Neighborhood Alleys require a turn-around. Cul-de-sacs of one hundred fifty (150) feet or less shall be developed such that access can be provided without backing onto streets intersecting the cul-de-sac.
- The turnaround curb radius shall be fifty (50) feet.

- The turnaround curb radius may be reduced to thirty-five (35) feet if cul-de-sac length is less than one hundred fifty (150) feet, measured to the end of the bulb.
- Residential cul-de-sacs are limited to a maximum of two hundred (200) ADT unless there are clearly defined topographic constraints that require greater volumes. Intermediate turnarounds shall have a fifty (50) foot radius. In all cases, intermediate turnarounds and/or special design may be required to accommodate access by emergency vehicles and/or emergency evacuations.

(8) Curb Radii

Curb radii at street corners have a significant impact on pedestrian safety and comfort. Larger radii allocate more space away from the sidewalk for the roadway and encourage higher vehicular speeds while turning. To create a safe and pleasant pedestrian experience in NAS South Weymouth, curb return radii at street intersections shall be as small as possible, in compliance with the following matrix:

Table 4-1: Curb Return Radii Matrix

Curb Return Radii Matrix (in feet)						
Street Type	Narrow Neighborhood Street	Main/ Standard Neighborhood Street	Shea Boulevard	Truck Connector	Main Street	Parkway
Narrow Neighborhood Street	10	12	30	30	12	25
Main/Standard Neighborhood Street	12	12	30	30	12	25
Shea Boulevard	30	30	30	30	30	30
Truck Connector	30	30	30	30	30	30
Main Street	12	12	30	30	12	25
Parkway	25	25	30	25	25	NA