CITY OF VERNONIA
PUBLIC WORKS
DESIGN STANDARDS

SECTION 6.0000 - STREETS

6.0010 - GENERAL DESIGN REQUIREMENTS

Performance Standards - All street designs shall provide for the safe and efficient travel to the motoring public. Streets shall be designed to carry the recommended traffic volumes identified for each street classification. Street classifications are set forth in Section ***6.0110*** STREET SYSTEM DESCRIPTION AND FUNCTION.

Streets shall be designed to meet or exceed minimum guidelines. These guidelines are set forth in the "AASHTO Policy on Geometric Design of Highways and Streets" (latest edition). Traffic Control Devices shall conform to the "Manual on Uniform Traffic Control Devices for Streets and Highways," Federal Highway Administration, with Oregon Supplements, Oregon Dept. of Transportation's (latest edition).

All vertical and horizontal curves shall meet the guidelines of the AASHTO Policy and the design speed for each street classification. Where practical, the Design Engineer shall provide the desirable stopping sight distance set forth in the AASHTO Policy. But in no case shall it be less than the minimum stopping sight distance given be permitted.

Standard drawings relevant to this section may be found in the most current edition of the APWA Standard Specifications for Public Works Construction, Oregon Chapter.

6.0011 - RIGHT-OF-WAY AND PAVEMENT WIDTH

Right-of-way and minimum pavement widths for each street classification shall be as defined in City ordinances:

6.0012 - ACCESS

All development shall be provided public street access. Access roads - public and/or private, driveways, and easements shall be as set forth in other sections of these Design Standards.

6.0013 - TRAFFIC ANALYSIS

The Superintendent of Public Works will require a traffic analysis report as determined by the type of development and its potential impact to existing street systems. A traffic analysis may be required for a development 1) when it will generate 1,000 vehicle trips per weekday or more, or 2) when a development's location, proposed site plan, traffic characteristics could affect traffic safety, access management, street capacity, or known traffic problems or deficiencies in a development's study area.

The report will be prepared by a licensed traffic engineer in the State of Oregon. At a minimum, the report shall contain the following:

1. Purpose of Report and Study Objectives

   A discussion of key traffic issues to be addressed and the transportation system and development objectives related to a specific development.

   General transportation system objectives are:

   - to maintain easy and safe traffic flow on surrounding street system

- o to provide effective and safe transfer of vehicle traffic between the site and the street system to provide convenient, safe and efficient on-site and off-site movement of vehicles, pedestrians, transit, service and delivery vehicles, and bicycle

- o to effectively mitigate adverse site-generated traffic impacts on affected streets and intersections. Site-specific objectives may be established by the City for each study.

2. Executive Summary

A concise summary of the study purpose/objectives, site location and study area, development description, key assumptions, findings, conclusions and recommendations.

3. Description of Site and Study Area Roadways

A description of the site and study area, existing traffic conditions in the study area, and anticipated nearby development and committed roadway improvements which would affect future traffic in the study area.

The study area will be defined by:

All roads, ramps and intersections through which peak hour site traffic composes at least 5% of the existing capacity of an intersection approach, or roadway sections on which accident character or residential traffic character is expected to be significantly impacted.

On-site Traffic Evaluation

An evaluation of the proposed (and alternative) site access locations, the adequacy of access drive depth, driveway lanes, and queuing storage, the safety and efficiency of proposed vehicular circulation, parking layout, pedestrian and service vehicle routes/facilities, together with recommendations for on-site traffic markings and controls.

1. Technical Appendix

A technical appendix including work sheets, charts, traffic count, drawings to support findings as described in the body of the report.

2. Recommendations for Public Improvements

Recommendations should be made for external roadway improvements, such as additional through lanes and turn lanes, and traffic control devices necessitated as a result of the development. Recommended improvements to transit facilities, and pedestrian and bike circulation should also be reported.

The recommendations should specify the time period within which improvements should be made, particularly if improvements are associated with a phased development, the estimated cost of improvements, and any monitoring of operating conditions and improvements that may be needed. If needed street improvements, unrelated to the development, are identified during the analysis, such improvements should be reported.

3. Access Management

On sites with arterial and collector street frontages, the report shall evaluate and recommend the use of access management plans or techniques:

To separate basic conflict areas. Reduce number of driveways or increase spacing between driveways and intersections.

To remove turning vehicles or queues from the through lanes. (Reduce both the frequency and severity of conflicts by providing separate paths and storage area for turning vehicles and queues.) These techniques may include turn restrictions, striping, medians, frontage roads, channeling of lanes or driveways, shared driveways and access between similar uses, access consolidation, lanes for left or right turns, and other transportation system management (TSM) actions.

4. A review of alternative access points for site access to highways, city streets, and county roads.

5. The analysis of alternate access proposals should include:

a. Existing daily and P. M. peak hour counts, by traffic movements, at intersections effected by generated traffic from the development. (Use traffic flow diagrams).

b. Projected daily and P.M. peak hour volumes for these same intersections and proposed access points when the development is in full service. (Use traffic flow diagrams.)

c. A determination of the existing levels of service and projected levels of service at each intersection and access points stud-ed.

d. A discussion of the need for traffic signals. This should include a traffic warrant computation based on the National Manual on Uniform Traffic Control Devices.

1. The recommendations made in the report should be specific, and should be based on a minimum level of service when the development is in full service. As an example, if a traffic signal is recommended, the recommendation should include the type of traffic signal control and what movements should be signalized. If a storage lane for right turn or left turn is needed, the recommendation should include the amount of storage needed. If several intersections are involved for signalization, and an interconnect system is considered, specific analysis should be made concerning progression of traffic between intersections.

2. The report should include a discussion of bike and pedestrian usage and the facilities provided along with the availability of mass transit to serve the development, if appropriate.

6.0014 - INTERSECTIONS

Connecting street intersections: shall be located to provide for traffic flow, safety, and turning movements, as conditions warrant.

Arterial Intersections: Exclusive left and right turn lanes will be provided, bus turnouts will be provided if traffic flow and safety conditions warrant and designated crosswalks will be provided at controlled locations and street alignments across intersections shall be continuous.

Collector and Local Street Intersections: Street and intersection alignments should facilitate local circulation but avoid alignments that encourage non-local through traffic.

Streets shall be aligned so as to intersect at right angles (90^{o}). Angles of less than 75^{o} will not be permitted. Intersection of more than two streets at one point will not be permitted.

New streets shall intersect with existing street intersections so that centerline is not offset, except as provided below. Where existing streets adjacent to a proposed development do not align properly, conditions may be required of the development to provide for proper alignment.

For intersections which are not directly aligned with street centerline, the centerline spacing must meet the following minimum separation distance:

Street Class	Intersection Spacing (ft)
Arterial	500*
Collector	400*
Local	300*
Cul-de-sac	150

* The Superintendent of Public Works may permit a minimum spacing of not less than 300 feet (Arterial), 200 feet (Collector), 200 feet (Local), when findings are made to establish that:

a. Without the change, there could be no public street access from the parcel(s) to the existing street, and

b. All other provisions of the street design requirements can be met.

6.0015 - HALF-STREET CONSTRUCTION

Half-street construction is generally not acceptable. Where such a Street is justified, the right-of-way and pavement width will be approved by the Superintendent of Public Works. In no case shall the pavement width required be less than that required to provide two lanes of traffic to pass at a safe distance. For a 32-foot local street the half-street pavement width will be 20-feet. Half-streets will only be approved when the abutting or opposite frontage property is undeveloped and the full improvement will be provided with development of the abutting or opposite (upon right-of-way dedication) frontage property.
Half-street improvements shall include curb, sidewalk and storm drainage on one side of the street. When a half-street improvement is required, the entire street shall be designed

A development on an unimproved street shall be responsible for constructing a continuous City standard street to a connection with the nearest standard (publicly-maintained) street.

6.0016 - STREET CLASSIFICATION

All streets within the City shall be classified as listed in Section ***6.0110*** STREET SYSTEM DESCRIPTION AND FUNCTION. The classification for any street not listed shall be that determined by the Superintendent of Public Works.

6.0017 - DESIGN SPEED

Design speeds for classified streets shall be as follows:

Arterial	35-45 mph
Collector	30-40 mph
Local	25 mph
Cul-de-sac	25 mph

6.0020 - HORIZONTAL/VERTICAL CURVES, AND GRADES

6.0021 - HORIZONTAL CURVES

Horizontal curve radius (on centerline) for each street classification shall be designed according to the roadway design speed. The radius shall not be less than the following:

Arterial	415-600'
Collector	165-275'
Local	100'
Cul-de-sac	100'

6.0022 - VERTICAL CURVES

Vertical curve length shall be based on the design criteria which includes: (1) design speed, (2) crest vertical curve, and (3) sag vertical curve. Stopping sight distance for crest and sag vertical curves shall be based on sight distance and headlight sight distance, respectively.

All vertical curves shall be parabolic and the length shall be computed for each location.

6.0023 - GRADES

Maximum grades for each street classification shall be as follows:

Arterial	0.060 ft/ft
Collector	0.080 ft/ft
Local	0.100 ft/ft
Cul-de-sac	0.120 ft/ft

Local and cul-de-sac streets may exceed 12%, but in no case permitted to exceed 16%. The Superintendent of Public Works may approve a grade greater than 12% when all of the following conditions exist:

1. Topographic constraints do not allow the development to be served by a street with a maximum grade of 12% without causing de-stabilization of soils by excessive cuts and fills.

2. There is no access to the property being developed through adjacent properties at a maximum 12% grade.

3. The section of local street will not exceed a combination of length, horizontal alignment, and/or grades exceeding 12% which will create hazardous traffic conditions.

4. In no case shall the maximum street grade exceed 16%.

Minimum grade for all streets shall be 0.0050 feet per foot (0.50%) however, in all cases, street grades shall allow for proper and adequate drainage. Cul-de-sac "bulbs" shall have a minimum slope of 0.0060 feet per foot (0.60%).

Street cross-slopes shall be two (2) percent. Where there are site constraints the cross slope can vary from one (1) to three (3) percent.

6.0030 - PAVEMENT DESIGN

In general, all streets shall be constructed with asphaltic concrete type "C"; however, Portland Cement Concrete (PCC) streets are permitted as approved by the Superintendent of Public Works.

Typical flexible pavement thicknesses will be as shown in the. This will apply only to local streets and lower classifications.

The Engineer will provide a street structural design section for all roadways classified Neighborhood Collector and higher, and local streets in industrial zones. A structural design section will also be required when the soils report indicates poor soil.

6.0040 - CONCRETE CURB

All development projects will be required to construct street improvements with concrete curbs. Standard Curb shall only be used on streets classified Collector and lower when the longitudinal street grade is 0.10 feet per foot (1.0%) or greater. All others curbs and sidewalks shall be abutting. Monolithic Curb and Gutter shall be used on streets classified Collector and higher and when the longitudinal street grades less than 1.0%. Curb exposure for Standard Curb is seven (7) inches, and nine (9) inches at catch inlets. Curb exposure for monolithic curb and gutter shall be

six (6) inches, and eight (8) inches at catch insets. Joint spacing in curbs shall be 15-foot maximum for contraction joints and 45-foot maximum for expansion joints. In addition, expansion joints shall be located at all curb return Points and at driveway curb drop transition points.

A minimum of two drainage block-outs to accommodate 3" drain pipe shall be provided for each lot. Typically, these block-outs are located five feet (5') from each side property line.

6.0041 - CURB RETURN RADIUS

Curb return radius at street intersections shall be designed to accommodate all expected traffic. Minimum curb radius required shall be as follows:

Intersection	Radius
Local/Cul-de-sac with Local/Cul-de-sac	20'
Local/Cul-de-sac with Collector	20'
Local/Cul-de-sac with Collector or Arterial	30'
Collector with Collector or Arterial	30'
Collector/Arterial with Collector/Arterial	30'

Streets serving commercial/industrial properties may be required to install larger curb radius as required for vehicle movements.

6.0050 - PARKING

Street Class	Parking Lanes	Parking Required
Arterial	None	May be allowed in some areas
Collector	2	Variable (a)(b)
Local	2	Yes (c)(d)
Cul-de-sac	2	Yes (c)(d)

a. Where bike lanes exist on collectors, parking may be prohibited.

b. Collector - No parking within 45' of curb return.

c. Local - No parking within 30' of curb return.

d. Local Streets and Cul-de-sacs which are approved for reduced 40 feet right-of-way and 28 feet pavement, will be required to have one parking lane to assure that on-street parking is adequate for adjacent uses, a reduced street design will consider clustered parking bays adjacent to the street, if needed. Parking will not be allowed in a reduced radius cul-de-sac bulb.

For streets designated collector and below, the Superintendent of Public Works may consider design modifications to conserve major trees in the public right-of way. Subject to approval by the Superintendent of Public Works, parking lanes may be removed on one or on both sides of a street.

Design standards - parking and loading.

a. Scope.

1. These design standards shall apply to all parking, loading and maneuvering areas.

2. All parking and loading areas shall provide for the turning, maneuvering and parking of all vehicles in the lot.

6.0060 - SIDEWALKS

In general, new sidewalks are required for all development requiring a development permit.

Minimum Sidewalk Width

Street Class/Location	Includes 6" curb	
Arterial	6'	
Collector	5'	Residential
	6'	Commercial/Industrial
Local	5'	Residential
	5'	40' R/W - Residential
	6'	Commercial/Industrial
Cul-de-sac	5'	Residential
	5'	40' R/W - Residential
	5'	Commercial/Industrial

Sidewalks include a six inch curb as a portion of the minimum width. Sidewalks may be required to meander within the dedicated right-of-way or outside of the right-of-way within an easement with the approval of the Superintendent of Public Works.

For streets designated collector and below, the Superintendent of Public Works may consider design modifications to conserve major trees in the public right-of-way. Subject to approval by the Superintendent of Public Works, sidewalks may be deleted on one side of a street.

6.0061 - WHEELCHAIR RAMPS

Each corner at all intersections shall contain wheelchair ramps for handicapped access located within the curb return. Ramps shall also be located wherever an accessible route crosses a curb. In residential areas the ramp will be located at the midpoint of the curb return. On streets classified above local or cul-de-sac, ramps may be required at different locations within the curb return. It may also be required to construct two (2) ramps at a curb return when a different location is required.

Locations of sidewalk ramps shall be designed with regard to storm water flows, street grades, and pole locations. Other factors may also dictate sidewalk ramp location.

6.0070 - BIKEWAYS

This summarizes the City's policy and implementation strategies for bike ways within the City and for connection with metropolitan bike ways. The City's plan has adopted both AASHTO and ODOT standards and criteria as the minimum guidelines for bike way design, construction and control.

The City's adopted guidelines for bike ways consist of the following:

1. Guide for Development of New Bicycle Facilities 1981
2. AASHTO, Oregon Supplements and Exceptions to AASHTO Guide
3. Manual on Uniform Traffic Control Devices with Oregon supplements by Oregon Transportation Commission

b. Access.

1. Where a parking or loading area does not abut directly on a public street there shall be provided an unobstructed drive and not less than 20 feet in width for two-way traffic, leading to a public street, and traffic directions shall be plainly marked.

Parking area improvements. All public or private parking areas which contain three or more parking spaces and outdoor vehicle areas shall be improved according to the following.

a. All parking areas shall have durable, dust free surfacing of asphaltic concrete, Portland cement concrete or other approved materials. The design section shall conform to the use and the soils report. All parking areas, including those in conjunction with a single family or two-family dwelling, shall be graded so as not to drain excess storm water over the public sidewalk or onto any abutting public or private property.

b. All parking areas, except those required in conjunction with single family or two-family dwellings or vehicle sales areas, which abut a residential district, shall conform to the screening requirements as set forth in the city's site design ordinance.

c. All parking areas, except those required in conjunction with single family or two-family dwellings or vehicle sales areas may contain a maximum of 25% of the parking spaces sized for compact vehicles.

d. All required handicapped parking space shall conform to ORS 447.210 and shall be a minimum of 14 feet in width.

e. All parking areas, except those required with single family or two family dwellings or vehicle sales areas, shall have physically marked individual parking spaces such as painted lines, lettering, curbs and landscaping.

Table of Standards. The following table provides the minimum dimensions of parking stall's, length and width, aisle width and maneuvering space, of public or private parking areas. All parking facilities shall meet these minimum standards. The width of each parking space includes a four inch (4") wide stripe which separates each space. Compact spaces are noted in parenthesis:

Angel from Curb	Stall Width "A"	Channel Width "B"	Aisle Width "C"	Curb Length per stall "D"
Parallel	9' 0" (8'6")	9' 0" (8' 6")	12' 0" (12' 0")	23" 0" (20' 0")
30°	9' 0" (8'6")	16' 10" (14' 10")	12' 0" (12' 0")	18" 0" (17' 0")
45°	9' 0" (8'6")	19' 1" (16' 7")	14' 0" (14' 0")	12' 9" (12' 0")
60°	9' 0" (8'6")	20' 1" (17' 3")	18' 0" (18' 0")	10' 5" (10' 3")
90°	9' 0" (8'6")	18' 0" (15' 0")	24' 0" (24' 0")	9' 0" (8' 6")

Street lighting shall be provided as part of the street design process. Design illumination levels shall be in accordance with the recommendations if the "Illuminating Engineering Society" and are summarized in the following table.

RECOMMENDATIONS FOR ROADWAY AVERAGE
MAINTAIN ED HORIZONTAL ILLUMINATION

Roadway Classification	Commercial	Urban Intermediate	Residential
	Foot Candles		
Highway	1.4	1.2	1.0
Arterial	2.0	1.4	1.0
Collector	1.2	.9	.6
Local/Cul de sac	-	.9	.6

The average-to-minimum uniformity ratios for roadways in commercial and intermediate areas shall be 4:1 or better. In residential areas this uniformity ratio shall be 6:1 or better.

The street lighting system shall be provided using high pressure sodium vapor luminaries. The design average horizontal illumination and uniformity ratio shall be obtained by considering together the factors of lamp wattage, pole support spacing, maintaining height and luminaire of the street lights to locate poles at lot line extensions and not in the middle of a lot, and to locate poles at corners.

6.0092 - STREET NAMES AND TRAFFIC CONTROL

Street names for all new development will be approved by the City prior to recording of any maps or plats. The development shall pay for all street name and traffic control signage prior to the signing of the final plat or map by the City. All new Signage will be provided by the developer and installed by the City in new developments.

Street names shall conform with the established grid system(s) in the City and its UGB. No new street name shall be used which will duplicate or be confused with the name of existing streets in the UGB area.

Building numbering will be issued by the City of Vernonia.

6.0100 - MAILBOXES

Joint mailbox facilities shall be provided in all residential developments, with each joint mailbox serving at least two (2) dwelling units.

1. Joint mailbox structures shall be placed adjacent to roadway curbs.
2. Proposed locations of joint mailboxes shall be designated on as part of the development plan, and shall be approved by the Superintendent of Public Works.

3. Plans for the joint mailbox structure to be used shall be submitted as part of the development plan for approval by the Superintendent of Public Works.

6.0110 - STREET SYSTEM DESCRIPTION AND FUNCTION

6.0111 - GENERAL GUIDELINES

The urban boundary map, policies and access requirements for various land uses, as adopted by the Comprehensive Plan and Zoning Ordinance, shall serve as guidelines for the functional classifications, definitions and standards requirements and rules adopted under this chapter.

TABLE 6 - I
Driveway Widths (Min-Max)

Street Class.	Residential	Commercial	Industrial	No. Allowed
Arterial	12/24(2)	12/36	12/36	Res.-1/250' frontage Com.- 1/250' frontage
Collector	12/24(2)	12/36	12/36	Res.-1/frontage Com.- 1/frontage(5)
Local	12/24(2)	12/36	(4)	Res.-1/frontage(3) Com.-1/frontage
Cul-de-sac	12/24(2)	12/36	12/36	Res.-1/frontage(3) Com.- 1/frontage

Res. = Residential Zone Com.= Commercial Zone Ind.= Industrial Zone

Notes: (1) Special conditions may warrant access.
(2) 28' maximum with 3 car garage.
(3) Frontage greater than 130' permitted one additional curb cut.
(4) Build to Collector standard.
(5) Certain businesses may warrant one additional curb cut for service driveways.

TABLE 6 - 2
Driveway Locations (minimum distance to curb return)

Street Classification	Residential	Commercial	Industrial
Arterial	100' (1)(3)	100'	100'
Collector	45'(3)	100'	100'
Local	45'(2)	45'	45'
Cul-de-sac	45'(2)	45'	45'

Notes: (1) Minimum distance from curb return unless this prohibits access to the site.
(2) 25 feet will be allowed for corner lots with limited frontage where distance requirements cannot be met.
(3) Direct access to this street will not be allowed, if an alternative exists or is planned.

For classification of Collector and above, driveways adjacent to street intersections shall be located beyond the required queue length for traffic movements at the intersection. If this requirement prohibits access to the site, a driveway with restricted turn movements may be allowed.

Within commercial, industrial and multi-family areas shared driveways and internal access between similar uses are encouraged to reduce the access points to the higher classified roadways, to improve internal site circulation, and to reduce local trips or movements on the street system. Shared driveways or internal access between uses will be established by means of common access easements at the time of development.

Driveway grades shall not exceed twelve percent (12%) from the curb line to the property line.

6.0090 - STREET LIGHTING, NAMES AND SIGNAGE

6.0091 - STREET LIGHTING

A complete street lighting system shall be the responsibility of the development. All streets fronting the property shall be provided with adequate lighting. Developer is required to provide lighting for public convenience and safety. For lighting requirements, all developments will be required to submit three (3) copies of the final plat (residential and major land partitions) to the Superintendent of Public Works. Commercial and industrial developments, in addition to the above requirement, shall submit three (3) copies of the site plan to the Superintendent of Public Works.

6.0071 - BIKEWAY LOCATION, WIDTH

Bikeway Location	Minimum Width	Comments
Public Street (designated bike lane)	8' **	Each direction of travel
Public Street (non designated bike lane)		One way pavement width greater than 12' - desirable one way pavement width is 14' or greater
Off-Street Bicycle Path	5' *	One-Way Travel
Off-Street Bicycle Path	8'-10' *	Two-Way Travel
Off-Street Bicycle Path (Shared with Pedestrians)	12'*	Two-Way Travel
Off-Street Bicycle Path (Shared with Pedestrians)	7'*	One-Way Travel

* Paths are constructed with 2' gravel shoulders on both sides.

** An eight-foot section is required unless this width is not practical because of physical or economic constraints. A minimum width of four feet may be designated as a bicycle lane.

6.0072 - DESIGN CRITERIA

In general, bikeway design shall meet the adopted standards referred to in Section 6.0060.

All bike ways shall have a minimum crosses lope of two percent (2%) and a maximum cross-slope of five percent (5%). On curved alignments, the cross-slope shall be to the inside of the curve.

Bikeway curvature will be based on a minimum design speed of 20 mph. Bikeway grades shall be limited to a maximum of five percent (5%). Where topography dictates, grades over five percent (5%) are acceptable when a higher design speed is used and additional width is provided.

6.0073 - CONSTRUCTION

Off-street bike ways shall be constructed for two different situations. The two situations are: Where limited maintenance vehicle (City-owned) use will occur, and where heavy maintenance vehicle use will occur. In both cases, sub grade preparation will require removal of existing organic material and compaction.

Bikeway Thickness

Use	Asphalt	Aggregate
Limited	2"	6"
Heavy	3"	8"

When drainage, such as side ditches, is required parallel with the bike way, the ditch centerline shall be at least five feet (5') from the edge of the pavement. Ditch side slope adjacent to the bike way shall be no steeper than 2:1 when measuring the horizontal distance to the vertical distance.

When culverts cross bike ways, the ends of the pipe shall be no closer than five feet (5') from the edge of the bike way.

6.0074 - LIGHTING

Lighting should be included in the bikeway design when nighttime security could be a problem and a high nighttime use is expected (i.e., paths serving students, commuters). The horizontal illumination levels shall be .05 foot candle (5 lux) to 2 foot candles (22 lux) except when security problems exist. Higher illumination levels should be considered in these locations. The placement of the light standards (poles) shall meet all vertical and horizontal clearances.

6.0075 - DETERRING MOTOR VEHICLE USE

Bike paths intersecting with roadways require physical barriers to deter use by unauthorized motor vehicles. A lockable, removable post(s) may be used to discourage such use and still permit authorized vehicles to access the paths. The post shall be brilliantly colored and permanently reflectorized. If more than one (1) post is required, the spacing shall not exceed a separation of more than five (5) feet.

An alternative to deterring the motor vehicles is to design two (2) five (5) foot wide lanes separated by low landscaping at the intersection.

6.0080 - DRIVEWAYS

Access to private property shall be permitted with the use of driveway curb Cuts. The access points with the street shall be the minimum necessary to provide access while not inhibiting the safe circulation and carrying capacity of the street.

On Collector streets and above, one driveway per site frontage will be the normal maximum number. Double frontage lots and corner lots on these streets may be limited to access from a single street, usually the lower classification street. If additional driveways on a frontage are approved by the Superintendent of Public Works, a finding shall be made that no eminent traffic hazard would result and impacts on through traffic would be minimal restrictions may be imposed on additional driveways, such as limited turn movements, shared access between uses, closure of existing driveways, or other access management actions.

Driveway approach types, Residential Driveway, Commercial/Industrial Driveways, must be approved by the Superintendent of Public Works.

Should the length of a driveway be greater than fifty (50) feet in length and the driveway has only one (1) access to the street or does not loop to the street, a turnaround shall be provided. The minimum inside radius of the turn around shall be fifteen (15) feet with a width at the turnaround point of thirty (30) feet for maneuvering.

6.0112 - FUNCTIONAL CLASSIFICATIONS

Functional classification categorizes roads and streets by their operational purpose. Some of the key factors considered when adopting the functional classifications were the following:

a. Relation between street traffic and land use of the abutting properties;

b. Volume and kinds of traffic;

c. Relative origins and destinations of traffic and lengths of trips.

The basic hierarchy of functional classification is Arterial streets, Collector streets and Local/Cul-de-sac streets. These categories are defined as follows:

Arterial streets: Arterial streets carry higher volumes of traffic, usually over 4,000 vehicles/day and are generally consist of three or more lanes, with the third lane being a common turn lane. Their function is to serve intra-county trips; that is, trips which have at least one end trip within the county.

Collector streets: Collector streets gather area traffic from local streets within a one-half mile radius and connect it to the arterial system. They are not intended to serve through traffic, and they are the lowest order of streets designed to carry transient vehicles. Collector streets generally have a traffic volume rate of 1,000 to 4,000 vehicles/day. Abutting land uses are generally residential.

Local streets: Local streets provide access to abutting property and do not serve to move through traffic. Local streets standards will be further categorized by adjacent land use into residential, commercial and industrial local streets.

Local streets - (Commercial/Industrial): Within the local street classification, there may be considerable difference between the kind of improvement specified where commercial or industrial land uses access a local street, as compared to the kind of improvement specified for residential access. Generally, a local street classification in commercial or industrial areas will require an improvement equal to that specified for a collector classification.

Cul-de-sac streets: Cul-de-sac streets provide access to abutting property only and will be as short as possible, in no event shall a Cul-de-sac be more than 400' in length.

The length of a Cul-de-sac shall be measured along the centerline of the roadway from the near side of the intersecting street to the farthest point of the Cul-de-sac.
All Cul-e-sac streets shall terminate in a circular turnaround.

6.0120 - PERMANENT DEAD-END STREETS

A standard cul-de-sac turnaround shall be provided at the end of a permanent dead-end street that does not provide looped circulation. Permanent dead-end streets shall be limited to serving no more than twenty-five dwellings and shall not exceed six hundred feet in length from the point of the nearest centerline/centerline intersection.

A permanent dead-end street is measured from the right-of-way line at the nearest intersecting street, which has at least two points of access, to the right of way line at the furthest end of the dead-end street.

An existing dead-end street system which is more than 600 feet long or which serves more than 25 dwelling units may be terminated in a cul-de-sac if no Future Street Plan has been adopted and the following criteria are met:

a. Alternative emergency vehicle access or fire protection is provided satisfactory to the local Fire Authority and,

b. Neighborhood traffic circulation needs are not adversely impacted by the proposed cul-de-sac termination of the street.

Temporary dead-end streets more than one-hundred-fifty (150) feet in length shall be provided with an approved turn-around for emergency vehicles.

6.0130 - ALLEYWAYS AND PRIVATE RESIDENTIAL STREETS/ACCESS WAYS

6.0131 - ALLEYWAYS

Alleyways may be provided in commercial and industrial developments with approval by the Superintendent of Public Works. When approved, alleyways shall be dedicated to the city. The right of way width shall be 20 feet with a 20 foot pavement width.

Design for alleyways shall meet the same criteria as other public streets. The exceptions to those criteria may be centerline radius and design speed. Generally, alleyways shall be designed for one-way operations.

6.0132 - PRIVATE RESIDENTIAL ACCESS WAYS

In general, private residential streets and access ways shall be provided for multi-family developments such as condominiums and apartments. Interior design for private access ways in a manufactured home park shall meet standards for private residential access ways include:

1. Dead-end access ways shall not exceed 600 feet in length nor serve more than 25 dwellings units. Dead-end access ways which exceed 150 feet in length shall be provided with an approved turnaround.

2. "Private Street" Signage and driveway approach shall be placed at the intersection with the public street to clearly identify the private access way.

3. Private maintenance of the private streets/access ways shall be provided by a Homeowner's Association or other appropriate entity. Maintenance shall insure continual emergency access at all times.

4. Location of private access ways shall meet the Uniform Fire Code and meet the minimum pavement section of local residential streets.

5. Private residential access ways shall not be allowed in Manufactured Home Parks or Subdivisions.

6.0133 - PAVEMENT CUTS

Where pavement is installed next to existing pavement and at all trench cuts, the existing pavement shall be saw cut. The face of the joint between the new and existing pavement shall be coated with asphalt emulsion and the surface of the joint shall be sand sealed.

6.0134 - SHOULDERS

Where sidewalks and pavement end or where there is no curb and sidewalk (such as half-street improvements) shoulder rock shall be provided to grade with the pavement. Shoulder rock shall be a minimum of six (6") inches in depth, thirty six inches (36") wide and shall be 3/4-inch minus crushed.