

CHAPTER 98 TECHNICAL STANDARDS

ARTICLE IV

Street Construction Specifications

Sec. 98-121. Applicability; references to state standards; measurement units. [Ord. No. 39-1998, ch. 4, 12-1-1998]

The standards and specifications in this article shall apply to all new street construction within the City. Whenever the state department of transportation specification is required, it shall mean the latest revised specification as most recently published. The latest revision of these specifications is written in metric units (primary system) with imperial units (secondary system). It is intended that all plans and documents created for the City utilize imperial units as the primary system, until such time as metric conversion is convenient.

Sec. 98-122. Utility installations. [Ord. No. 39-1998, § 4.1, 12-1-1998]

- (a) All underground utilities shall be installed in conformance with the standards and specifications as set forth by the district or company regulating the utility. Proper horizontal and vertical control for the installation of the utilities shall be maintained to ensure that they are installed in conformance with the locations shown on the plans.
- (b) For new street construction, underground building sewers, water lines, power lines, telephone lines, cable television lines, conduits for utilities, foundation drains or other storm drain line service connections shall be installed to the right-of-way line prior to paving. See figure 5, Location of Utilities, in section 98-85.

Sec. 98-123. Construction preparation. [Ord. No. 39-1998, § 4.2, 12-1-1998]

- (a) Before any clearing in the right-of-way is to begin, the clearing limits are to be plainly marked at fifty foot intervals, or as necessary to delineate such limits.
- (b) Before any fill or cut operation is started, the entire right-of-way shall be cleared of all stumps, roots, brush, and other objectionable material. All ledges, large boulders, and tree stumps shall be removed from the right-of-way or as shown on the plans.

Sec. 98-124. Subgrade. [Ord. No. 39-1998, § 4.3, 12-1-1998]

- (a) All organic materials shall be removed to a depth of two feet below the subgrade of the roadway. Rocks and boulders visible at subgrade and exceeding six inches in size shall also be removed. Subsoils which have been identified by the City engineer as not suitable for roadways shall be removed from the street site to a depth of two feet below the subgrade and replaced with material meeting the specifications for gravel aggregate subbase as noted in this article.
- (b) As an alternative, the City engineer may approve the use of a geotextile fabric which meets the MDOT specifications under sections 620 and 722 (Stabilization Geotextile).
- (c) Except in a ledge cut or for bridge approaches, side back slopes shall be no steeper than a slope of ~~two~~ **three** feet horizontal to one-foot vertical, and shall be graded, loamed, limed, fertilized, and seeded according to the specifications of the erosion and sedimentation control

plan. **Alternative slopes may be allowed by the City Engineer to keep work within the limits of a right of way.** Where a cut results in an exposed ledge or in cases such as bridge approaches, a side slope no steeper than four feet vertical to one-foot horizontal is permitted. There shall be a snow shelf provided in ledge cut areas with a minimum width of six feet behind the curb.

- (d) The subgrade is to be shaped so as to drain the base. No irregularities which cause water to be trapped will be allowed.

Sec. 98-125. Aggregate base and subbase. [Ord. No. 39-1998, § 4.4, 12-1-1998]

- (a) The base course must drain to a ditch or to underdrain. See Street Design 1, 1A, 2, 3, and 4 in this Chapter. The aggregate sub-base course shall be **MDOT Type D. sand or gravel of hard, durable particles free from vegetative matter, lumps or balls of clay and other unsuitable substances. The gradation of the part that passes a three-inch square mesh sieve shall meet the following grading requirements:**

MDOT Type B	
Sieve Designation	Percentage by Weight Passing Square Mesh Sieve
1/2 inch	35%—75%
1/4 inch	25%—60%
No. 40	0%—25%
No. 200	0%—5%

~~Aggregate for subbase shall contain no particles of rock exceeding four inches in any dimension.~~

- (b) The aggregate base course shall be sand or gravel of hard, durable particles free from vegetative matter, lumps or balls of clay and other unsuitable substances. **The aggregate sub-base course shall be MDOT Type A. The gradation of the part that passes a three-inch-square mesh sieve shall meet the following grading requirements:**

MDOT Type A	
Sieve Designation	Percentage by Weight Passing Square Mesh Sieve
1/2 inch	45%—70%
1/4 inch	30%—55%
No. 40	0%—20%
No. 200	0%—5%

~~Aggregate for the base shall contain no particles of rock exceeding two inches in any dimension.~~

- (c) Copies of the sieve analysis results of the samples of base and subbase aggregate to be used shall be submitted to the City engineer for review no later than one week before the placement of any gravel in the street.
- (d) Gravel shall be placed and compacted in accordance with the MDOT standard specifications, section 304.03 (Placing).
- (e) Compaction tests shall be taken at locations along the road as specified by the City engineer. All costs associated with the compaction tests shall be paid by the developer. No pavement shall be placed until the compaction tests have been reviewed and approved by the City engineer.

Sec. 98-126. Street and sidewalk pavement. [Ord. No. 39-1998, § 4.5, 12-1-1998]

- (a) Streets. **(When required by the Planning Board).**
 - (1) **Minimum standards for the base layer of pavement shall be the MDOT specifications for 12.5mm for residential and 19mm for commercial/industrial and collector streets, plant mix with an aggregate size no more than 1 inch maximum. ~~The binder course shall be type B and the finish course shall be type C pavement.~~**
 - (2) **Minimum Standards for the surface layer of pavement shall meet MDOT specifications for plant mix 12.5mm with an aggregate size no more than 3/4 inch maximum. ~~Hot bituminous pavement materials and placement for streets shall be in accordance with the MDOT specifications, division 400 (Pavements).~~**
- (b) Sidewalks. Sidewalks shall be constructed in conformance with the MDOT specifications, section 608.04 (Hot Bituminous Sidewalk). See typical street sections for base and pavement design, figures 1 through 4 in section 98-85.
- (c) **Pavement joints. Where pavement joins an existing pavement, the existing pavement shall be cut along a smooth line and form a neat, even, vertical joint. Tack coat shall be applied between joints.**

Sec. 98-127. Curbing. [Ord. No. 39-1998, § 4.6, 12-1-1998]

- (a) Granite curb, bituminous curb, and stone edging (type 1, type 3, and type 5 respectively) shall conform to the MDOT specifications for curbing under section 609.
- (b) Islands located within rights-of-way and at the center of the cul-de-sac shall be curbed with type 5 curbing.
- (c) All intersection radii shall be curbed with type 1 circular vertical curbing.
- (d) **Closed drainage systems. Closed drainage systems shall be installed within the urban compact area, or within any areas designated in the Comprehensive Plan as areas of compact development.**

Sec. 98-128. Culverts. [Ord. No. 39-1998, § 4.7, 12-1-1998]

Any culverts installed in the roadway to handle cross drainage shall be **made of the following materials:**

- A. A. Reinforced Concrete Pipe.** Reinforced Concrete Pipe shall meet the requirements of ASTM designed C-76 (AASHTO M 170) Pipe classes shall be required to meet the soil and traffic loads with a safety factor of 1.2 on the .01-inch crack strength with a Class B bedding. Joints shall be of the rubber gasket type meeting ASTM Designation C.
- B. Corrugated Metal Pipe.** Corrugated Metal Pipe shall be bituminous coated meeting the requirements of AASHTO Designation M190 Type C for iron or- steel pipe of AASHTO Designation M 196 for aluminum alloy pipe for sectional dimensions and type bituminous coating. Pipe gauge shall be as required to meet the soils and traffic loads with a deflection of not more than 5%, and a minimum of 16 gauge for pipes less than 24” in diameter and 14 gauge for pipes greater than 24” in diameter.
- C. ADS Pipe.** Smooth interior HDPE pipe made of high-density polyethylene resin meeting AASHTO M252 or M294 with external coupler joints meeting ASTM D3212 or equal.

~~HDPE (high-density polyethylene) pipe such as ADS N-12 or equal. Minimum cover over pipes shall be 24 inches unless otherwise approved by City, and the pipe shall be installed on a bed of compacted gravel a minimum of eight inches in depth. The backfill material for the pipe shall meet the standards for type B gravel, aggregate base. Backfill shall be compacted in six-inch lifts to a density of 95%, modified proctor test. Culverts are to be designed to meet AASHTO HS20 loading requirements, and to handle the storm requirements of any governing approval agency. Other agencies may require permits.~~

Sec. 98-129. Construction plans. [Ord. No. 39-1998, § 4.8, 12-1-1998]

Plans for street construction shall be designed by a registered professional engineer, currently licensed in the state, who will stamp all engineering plans submitted to the City. Any plans dealing with survey work must be stamped by a registered land surveyor, currently licensed in the state. The developer, or his agent, is solely responsible for any defect in the development plan which affects any individual or the general public, and shall hold the City or its agents harmless, regardless of any acceptance of any plan or portion thereof. The plans shall contain the following:

- (1) Plan view. The plan view shall be plotted on a twenty-four-inch by thirty-six-inch sheet size and shall include all of the following:
 - a. Centerline with stationing at fifty- and one-hundred-foot stations;
 - b. Horizontal control points such as point of curvature, point of tangency, point of reverse curvature, point of curvature on a curve with stations and curve data;
 - c. Radius points for intersections, **hammer head turnarounds** and culs-de-sac with station and offset locations;
 - d. Proposed street name (requires approval of the City Council);
 - e. All aboveground utilities (hydrants, power and/or telephone pole locations);
 - f. Catch basin locations if required;

- g. Curb and sidewalk lines;
- h. Right-of-way and easement lines;
- i. Proposed monuments;
- j. Any proposed entrance locations;
- k. Outstanding physical features (such as brooks, streams, or gullies affected by the street);
- l. North arrow;
- m. Benchmark locations; and
- n. Descriptions with reference to datum, match lines, lot numbers, and any other information pertinent to the project.

(2) Profile. The profile shall include:

- a. Both existing and proposed grade, vertical control points such as PVC, PVT, and PVI with stations and elevations listed;
- b. Design grades;
- c. Vertical curve lengths;
- d. Fifty- and one-hundred foot stations with existing and proposed grades;
- e. Scale;
- f. Grid line elevations in righthand and lefthand margins;
- g. Catch basin locations and rim elevations; and
- h. Any other information pertinent to the project.

(3) Cross sections. Cross sections shall include:

- a. Both existing and proposed grade;
- b. Centerline station and elevation;
- c. Side slopes;
- d. Right-of-way lines;
- e. Scale;
- f. Grid line elevations at right and left of each section; and
- g. Any other information pertinent to the project.

Cross sections shall be shown at least at every fifty-foot station.

(4) Scale.

- a. The scale of the plan and profile sheets shall be:

1. One inch equals 20 feet or one inch equals 40 feet horizontal; and
2. One inch equals two feet, one inch equals four feet, or one inch equals five feet vertical.

A scale of one inch equals 50 feet horizontal may be used with the approval of the City engineer.

- b. Cross sections shall be drawn with the same vertical scale as the horizontal scale. The following scales are permitted:
 1. One inch equals two feet.
 2. One inch equals four feet.
 3. One inch equals five feet.

A scale of one inch equals 10 feet is not allowed.

- c. The scale shall be clearly marked on the plan and shall be in written and bar scale form. Sheet size shall be 24 inches by 36 inches, and the grid, if used, shall be 10 squares to the inch.

(5) Contours. The detail sheet shall include a separate contour plan showing existing grades at a contour interval of two feet minimum; the road layout and centerline stationing shall be shown. The origin (from what data) of the depicted contours shall be indicated on the plan.

(6) Details.

- a. The detail sheets shall include, but not be limited to, the following information:
 1. Typical cross section (preferred scale of one inch equals five feet horizontal and vertical).
 2. Typical underdrain trench section.
 3. Handicap wheelchair [access] detail.
 4. Sedimentation and erosion control details.
 5. Curb type detail.
- b. Standard detail sheets shall include:
 1. Erosion and sedimentation details;
 2. Stormwater control details;
 3. Catch basin rim installation details; and
 4. Any related site improvement details.
- c. Separate intersection details (including culs-de-sac and temporary turnarounds) shall be shown at a scale of one inch equals 10 feet. These plans shall detail drainage design for these areas and may require several spot elevations to clearly explain construction details.

Sec. 98-130. through Sec. 98-150. (Reserved)

ARTICLE V

Traffic Control

Sec. 98-151. Traffic/parking study required. [Ord. No. 39-1998, § 5.1, 12-1-1998]

The City engineer may request the developer to submit a prepared traffic and/or parking impact report for any proposed development where the proposed development is calculated to generate an increase of more than 35 new vehicle trips during the peak hour (times when the highest traffic volumes are recorded, generally 7:00 to 9:00 a.m. and 3:00 to 6:00 p.m.). This standard sets the threshold for determining when a traffic/parking study is required. The traffic generation calculation will be performed by the developer's engineer using data contained in the 1982 edition (or current edition) of the Institute of Transportation Engineers Trip Generation Handbook, which is on file in the City code enforcement office. A parking assessment may be requested when the proposed development can be expected to have a total parking demand of 30 spaces or more as determined by values contained in the 1985 (or current edition) of the Institute of Transportation Engineers handbook titled "Parking Generation," which is also on file in the City code enforcement office. The developer will be required to retain a state-registered professional engineer, specializing in traffic/transportation engineering, to complete any necessary studies. All issues and questions raised by the City will be adequately responded to as determined by the City engineer. The planning board may request a traffic study even if the increase is less than 35 new vehicle trips, if it is determined by the City engineer that one is warranted.

Sec. 98-152. Traffic impact standards. [Ord. No. 39-1998, § 5.2, 12-1-1998]

- (a) Vehicular access to developments shall be from streets or roads that have adequate capacity to accommodate the additional traffic generated by the development. Level of service after development at intersections on major access routes to the development and at the intersection of any development access drive or proposed street shall be at a minimum at pre-development levels of service. The developer shall mitigate development impacts that result in a reduced level of service.
- (b) For development that will result in a reduction in level of service, the level of service restriction may be lowered by the City engineer after consultation with the state department of transportation, if applicable, and upon written recommendation from the public safety committee. At a minimum, recommendations shall be based upon adopted goals and policies.
- (c) The City engineer may waive and/or modify any of the requirements of this section if the developer's certified traffic engineer can demonstrate that they are not necessary because of size, type, or location of the development and/or because other traffic impact analysis methods or procedures are equally effective.

Sec. 98-153. Procedure for conducting traffic impact analysis. [Ord. No. 39-1998, § 5.3, 12-1-1998]

The procedure for conducting a traffic impact analysis is as follows:

- (1) Inventory existing and proposed land use.
 - a. Existing land use. Site location and setting are important in determining the potential

impacts of development on a given site. The site description shall include the following:

1. Exact physical location of the proposed development.
 2. Physical characteristics such as land configuration, unique features, water bodies, trees, developable acres, and topography.
 3. Existing land uses, including zoning and land use classification.
 4. Land uses of adjacent property.
- b. Proposed land use. Adopted comprehensive plans, community development plans, long range plans, or similar documents shall be reviewed when inventorying proposed land uses. This will provide an indication of the type and direction of future development that is generally acceptable to the community and that may be facilitated by community facilities such as streets, sewers, and water lines. Quantification of trip generation shall also be developed.
- (2) Inventory existing and proposed transportation system.
- a. Existing transportation system. An understanding of the nature and function of the existing and proposed transportation system in the area near a proposed development site is essential for predicting traffic patterns, performing the traffic analysis, and developing necessary improvement alternatives. The following information shall be provided:
1. Current and proposed street network, including functional classification, route jurisdiction, and the number of moving traffic lanes.
 2. Geometrics and characteristics, especially at critical intersections, including such items as curb parking and potential street improvements.
 3. Intersection traffic control.
 4. Signal timing and system operation at signalized intersections.
 5. Existing or proposed intersection and development access points and configurations.
 6. Existing and proposed rights-of-way.
 7. Available hourly traffic counts.
 8. Peak period turning movements at critical intersections.
 9. Accident information.
 10. Transit routes/headways.
 11. Transit stops/station locations.
- b. Proposed transportation system.

1. Comprehensive transportation plan.
 2. Future improvements, committed and planned.
- (3) Forecasted nonsite traffic volumes. Nonsite traffic consists of through traffic volumes, having neither an origin nor a destination in the vicinity of the development, and traffic generated by developments adjacent to and affected by, or having an impact on, the proposed development. Methods used to determine nonsite traffic volumes shall include use of the following:
- a. Comprehensive transportation plan or related data projections; check land use and socioeconomic information.
 - b. Typical annual growth rates; provide sufficient historic volume information and develop factors to apply to existing counts.
 - c. Estimate development-generated units of measure and rates for components.
- (4) Site-related traffic.
- a. Divide activities associated with development into components.
 - b. Identify trip generation units of measure and rates for components.
 - c. Estimate development-generated units of measure and rates for components.
 - d. Identify the critical hours of analysis such as the adjacent street morning and evening peak hours and/or the proposed development peak hour of activity.
 - e. Trip distribution: The trips generated shall then be distributed to the transportation system on the basis of land use, population or employment, distance, accessibility, and any local factors affecting distribution. The distribution should reflect conditions for the analysis year, and the methodology should be well documented.
 - f. Modal split: If the magnitude of the development is significant, a determination of the mode of travel may be necessary. The determination of trips generated is most likely in terms of vehicle trips; therefore, an assessment of vehicle occupancy shall be performed to convert vehicle-trips to person-trips. Then, the alternative modes of travel shall be analyzed as to their attractiveness to development-generated traffic.
 - g. Trip assignments: Trips for various transportation modes shall be assigned to existing and proposed transportation networks based on available system capacity, convenience, and other relevant criteria. Traffic assignments shall reflect logical routing and realistic roadway capacity potential.
- (5) Traffic analysis.
- a. Combine non-site and site-related traffic (i.e., the traffic volumes for the various stages of the proposed development and the determined analysis periods: morning, evening, and/or development peak hours, estimated in previous steps, in order to obtain estimates of total projected traffic volumes).

- b. Capacity analyses shall be conducted for all critical intersections and access points during peak traffic periods. Critical intersections usually fall into the following categories:
 - 1. All major intersections within a certain distance of the development as agreed to by the City engineer.
 - 2. All affected intersections where development traffic would increase the volume to a level that would warrant improvements.
 - 3. All affected intersections that operate or would, after development, operate below design levels of service.
 - c. The results of the capacity analyses shall be used to identify street and road segments and intersections near the development that are or will, after development, be deficient in capacity; and to identify safety-related constraints.
- (6) Street/road and access improvements. The previous information is then used to identify and evaluate improvements that can be made to maintain acceptable levels of service and to help decision-makers to determine whether the impact of the proposed development on the surrounding area is acceptable. Level of service D shall be considered appropriate for urban design unless otherwise indicated by the City engineer. The 1988 growth management plan, section 3.3.3, defines levels of service. The following elements shall be addressed as applicable:
- a. External street/road system improvements.
 - 1. Review of design vehicle requirements.
 - 2. New streets/roads, lanes.
 - 3. New or modified interchangers.
 - 4. Additional through lanes.
 - 5. Turn lanes (including storage lengths).
 - 6. Acceleration/deceleration and bypass lanes.
 - 7. New signals.
 - 8. Modification of existing signals.
 - b. Internal street system.
 - 1. Review of design vehicle requirements.
 - 2. Lane requirements.
 - 3. Traffic control.
 - 4. Driveway design.

- c. Evaluation of improvements.
 - 1. Impact on operating characteristics.
 - 2. Cost.

Sec. 98-154. Driveways and access control generally. [Ord. No. 39-1998, § 5.4, 12-1-1998]

- (a) Vehicle storage area; base requirements for driveways. Driveways not subject to other standards shall have a vehicle storage area for purposes of safely entering onto the street or lane, adjacent to the shoulder of the road. This area shall be 20 feet in length for the width of the drive, and have grades of not more than 6%, up or down, from the edge of the shoulder. An existing structure whose proximity to the right-of-way is such that it prohibits this relationship will be exempt. Minimum base requirement for a driveway is 18 inches of aggregate base course. Regular usage of a driveway, in a working operation, by commercial trucks over 23,000 GVW requires 24 inches of gravel base.
- (b) Curb openings in residential districts. No permit for a permanent street curb opening in a residential district shall be issued for a use which is not listed as a permitted use or permitted use requiring planning board review in that district. Residential districts are outlined in chapter 102.
- (c) Authority of City engineer. The City engineer is authorized and directed to determine locations and widths for driveways in the City in accordance with the standards specified in this section.
- (d) Surfacing. All new surface for curb cuts or driveway openings within the right-of-way will be bituminous hot top, and such work shall extend to the rear of the sidewalk line only. All costs for such cuts shall be borne by the property owner, and, if the City does the work, the work will be paid for in advance on a per-foot basis as approved by public works director.
- (e) Drainage. For drainage requirements, see article VI of this chapter.
- (f) Single- and two-family driveways (up to four parking spaces).
 - (1) Width. Any site shall have a minimum twelve-foot driveway. Where multifamily dwellings are proposed, a minimum twenty-foot driveway shall be required.
 - (2) Location. Wherever possible, driveways shall be located on the lot in a manner to provide a minimum twenty-foot spacing between existing or proposed driveways.
- (g) Commercial, industrial and multifamily driveways (three units or more).
 - (1) Width of one-way driveways. Any site with driveway access to a street shall have a minimum fifteen-foot-wide driveway for one-way ingress or egress. Driveways shall permit traffic to enter and leave the site simultaneously without conflict in aisles, parking or maneuvering areas. Both the entrance and exit drives shall be marked with appropriate signage. Maximum driveway width shall not exceed 24 feet.
 - (2) Width of two-way driveways. Any site with driveway access to a street shall have a minimum twenty-four-foot wide and maximum thirty-five-foot wide driveway for two-

way ingress and egress.

(3) Curbing.

- a. Where driveways enter on an existing street, the full radius of the driveway shall be curbed if necessary.
- b. The radius shall be a minimum of 15 feet. Where truck traffic is anticipated, the radius may be increased up to a maximum of 25 feet based on the turning radius of the vehicles anticipated to enter and exit the site.
- c. If curb cuts or culverts are required, they will be as approved by the City engineer, and installed by public works department at the developer's cost.

(4) Maneuvering area. The area within the site to which a driveway provides access shall be of sufficient size to allow all necessary functions for loading, unloading and parking maneuvers to be carried out on the site and completely off the street right-of-way.

(5) Location and spacing. The location and spacing of driveways shall be determined as follows:

- a. Along local streets, access driveways to corner lots shall be located a minimum of 35 feet from the intersection of the projection of the right-of-way line to the centerline of the driveway, except as otherwise provided in this section.
- b. Along arterial, collector and industrial streets, access driveways to corner lots shall be located a minimum of 150 feet from the intersection of the projection of the right-of-way line to the centerline of the driveway, except as otherwise provided in this section.
- c. Along arterial, collector and industrial streets, minimum acceptable spacing between double or multiple driveways shall meet the following criteria:

Speed Limit (mph)	Minimum Separation (feet)
30	125
35	150
40	185
45	230

Distances between adjacent one-way driveways with the ingress drive separated from the egress drive may be 1/2 the distance shown in this subsection.

- d. Driveways shall be located in the most appropriate location, based on the existing and proposed adjacent and opposing driveways and land use.

- (6) Number of driveways.
 - a. One one-way driveway shall be permitted for ingress and one for egress purposes to any development per street frontage. These may be combined at one location.
 - b. A joint access driveway shall be considered as adequate access for any two adjacent sites and shall be encouraged.
- (7) Off-street vehicular circulation. An off-street facility shall have full internal vehicular circulation and storage. Vehicle circulation shall be completely contained within the facility, and vehicles located within one portion of the facility shall have access to all other portions without using the adjacent street system.
- (8) Off-street truck maneuvering. Where the use of a parcel includes truck loading, parking or service facilities, adequate space shall be provided such that all truck maneuvering is performed off the street. The design truck shall be one most appropriate for the operation.
- (h) Ingress lanes (slip lanes).
 - (1) Ingress left-turn lane. A twelve-foot-wide left-turn lane with appropriate storage and transition, based on the Institute of Traffic Engineers accepted standards, shall be provided at each driveway where the peak hour inbound left-turn volume is 30 vehicles or more.
 - (2) Ingress right-turn lanes. For any site, a twelve-foot-wide right-turn lane with appropriate storage and transition, based on the Institute of Traffic Engineers accepted standards, shall be provided at each driveway where the highway average daily traffic exceeds 10,000 vehicles per day, permitted highway speeds exceed 35 miles per hour, and driveway volume exceeds 1,000 vehicles per day with at least 40 right-turn movements during peak periods. For any site, a right-turn lane as described in this subsection shall be provided at each driveway where right-turn ingress volumes exceed 75 vehicles per peak hour.
- (i) Maximum length of driveway.
 - (1) The maximum length of a driveway within the area zoned for shore land protection shall be 500 feet.
 - (2) A driveway may have any length, as it could access a parking lot or a single-unit residence at a distance from the street. Any one-lane driveway over 500 feet in length must provide a fifty-foot by ten-foot passing lane at five-hundred-foot intervals for the purpose of passing emergency vehicles running in the opposite direction to traffic.
- (j) Driveways with steep slopes. For any driveway with any slopes steeper than 12%, the applicant must provide a statement or plan that addresses maintenance (especially winter maintenance), erosion, and drainage. Should there be a question of safety (emergency vehicles, access use, etc.), then the approval of the City public safety director is required.

Sec. 98-155. Sight distance. [Ord. No. 39-1998, § 5.5, 12-1-1998]

Where driveways or roadways are proposed to enter onto an existing street, vehicular sight distance shall conform to the recommended sight distance listed in this section, and shall not be less than the minimum sight distance standard. The minimum sight distance standards are taken from table 5-4, page 127 of the Institute of Transportation Engineers Handbook, current edition, titled Transportation and Land Development, which is on file in the City services engineering bureau. Vehicular sight distance shall be calculated with the height of eye at 3.5 feet and the height of an object at 3.5 feet.

Posted Speed Limit	Recommended Sight Distance (feet)	Minimum Sight Distance (feet)
25 mph	250	150
30 mph	300	200
35 mph	350	250
40 mph	400	325
45 mph	450	400
50 mph	500	475

Sec. 98-156. Parking spaces and aisles. [Ord. No. 39-1998, § 5.7, 12-1-1998; Ord. of 1-5-2010(1)]

- (a) Parking space requirements. The standard parking space requirements are outlined in article VIII of this chapter.
- (b) Aisles. Vehicular access shall be provided by one or more aisles. Minimum widths of aisles shall comply with section 98-242 standards.

Sec. 98-157. Standards for construction of parking lots or parking areas. [Ord. No. 39-1998, § 5.8, 12-1-1998; Ord. of 1-5-2010(1)]

Where off-street parking is required or provided, the following standards shall apply:

- (1) Driveways shall be designed in accordance with the traffic standards for driveways; see section 98-154.
- (2) When surfacing permanent lots, there shall be a minimum 12 inches of gravel base below the pavement. If heavy vehicles (GVW 23,000 pounds or greater) routinely use the parking lot after final construction, the depth of base shall be 24 inches, or as determined by proper engineering analysis and subject to approval by the City engineer. For all parking lots:
 - a. All water shall be drained from the base material by ditching or underdrain.
 - b. No grading or geometry that allows trapped water in the base shall be permitted.
 - c. In the case of slopes draining down to the parking lot, perimeter drains shall be required.

- (3) A storm drain system is required such that stormwater shall not cross any public sidewalk or street. The parking lot shall be graded so that there is no standing water.
- (4) When parking lots abut the street, a continuous curb guard or wheel stop, at least six inches in height and permanently anchored, shall be provided and maintained for a width of at least three feet along that part of the lot line abutting the street. Alternatively, a continuous bumper guard of adequate strength, at least 20 inches in height, shall be provided and maintained, so that bumpers of vehicles cannot project beyond its face towards the street or lot line involved.
- (5) The surface of parking lots and parking areas must be paved, except parking areas that are used exclusively for a single-family or two-family residence.

Notwithstanding this requirement, the Planning Board has the authority to waive this requirement and to allow the use of a crushed stone surface for any parking lot or parking area that satisfies one or more of the following criteria:

- a. A parking lot that serves 10 or less vehicles;
- b. A parking lot which serves a use that experiences a low turnover in parking demand;
- c. A parking lot that serves a periodic or occasional type of use, such as but not limited to a church;
- d. A parking lot that mostly serves as an overflow parking area;
- e. A parking lot located in a predominately rural area, or which is located on a property which fronts on an unpaved road; or
- f. Circumstances similar to the above which the Planning Board finds appropriate.

Sec. 98-158. Off-street loading bays. [Ord. No. 39-1998, § 5.9, 12-1-1998]

Each loading bay shall have minimum dimensions of 50 feet by 14 feet and be located either within a building or outside and adjoining an opening in the building, except that, in the case of hospitals, nursing homes and convalescent homes, the off-street loading area provided for ambulances and other emergency vehicles shall be exempt from the minimum dimension requirement but shall be of sufficient width and depth to permit safe and convenient access and egress from the loading area. Every part of such loading bay shall be located completely off the street. In any case where trucks, trailers, or other motor vehicles larger than the dimensions of the minimum loading bay habitually serve the building in question, additional space shall be provided so that each vehicle shall park or stand completely off the street.

Sec. 98-159. through Sec. 98-180. (Reserved)

ARTICLE VI Water Quality

Sec. 98-181. Intent and applicability of article. [Ord. No. 39-1998, § 6.1, 12-1-1998]

The intent and applicability statements for this article are found in the zoning regulations, chapter 102.

Sec. 98-182. Classifications of drainage systems. [Ord. No. 39-1998, § 6.1.1, 12-1-1998]

The following are general standards based on the type of drainage system in existence in the development area:

- (1) Urban systems. Drainage facilities located within the bypass of the City shall include an enclosed underground system capable of effectively removing stormwater and groundwater from the street and adjacent areas. Discharge of drainage shall be into natural drainage courses or approved connection to an existing system capable of handling the increased flow. Direct connections to existing combined sewer systems is prohibited. Applicants for development requiring storm drain systems will be required to pay the cost of extending the storm drain system to the site if such extension is possible. If conditions warrant, and upon approval of the City Engineer ~~and/or code enforcement officer~~, the Planning Board may allow a combination of rural and urban drainage standards or utilize rural standards entirely.
- (2) Rural systems. Drainage facilities located within areas defined by this chapter as rural may, if approved by the City Engineer, consist of a system of culverts and open drainage channels capable of effectively carrying stormwater into natural drainage courses and dewatering the roadway subgrade.
- (3) Urban and/or rural systems. Drainage facilities located within areas defined by this chapter as urban and/or rural shall comply with subsections (1) and (2) of this section, as appropriate.

Sec. 98-183. Design and construction of drainage systems. [Ord. No. 39-1998, § 6.1.2, 12-1-1998]

- (a) Generally.
 - (1) A drainage system plan is required. See chapter 102.
 - (2) Stormwater management plans shall show means whereby the peak discharge for the developed site shall not exceed the peak discharge for the undeveloped site for the two-, twenty-five- **and fifty-year** storms. Emergency spillways shall be provided for storms in excess of the twenty-five-year storm.
 - (3) In the case of major subdivisions, street drainage shall be designed to detain stormwater through a number of means, with detention ponds as a last resort. All runoff entering the street drainage system from proposed lots shall not exceed the pre-development rate of runoff.
 - (4) Pipe inlet and outlet invert elevations shall be shown on the profiles of the drainage plan. Catch basin inlet grate elevations shall be shown on the plans.

- (5) All drainage systems within the development shall be designed to meet the criteria of the performance standards for a **two-year**, twenty-five-year **and a fifty-year** storm based on rainfall data as available. Flows shall be computed by appropriate methods, with design computations being submitted for review by the City Engineer and the highway superintendent. Other agencies may have different requirements.
 - (6) Upstream drainage shall be accommodated by an adequately sized drainage system through the proposed development for existing and future potential development in the upstream drainage area or areas tributary to the proposed development.
 - (7) Existing upstream and downstream drainage facilities shall be studied to determine the effect of the proposed development's drainage. The developer shall demonstrate to the satisfaction of the City engineer that the storm drainage from the proposed development will not, in any way, overload or damage existing storm drainage systems upstream or downstream from the proposed development.
 - (8) Where open ditches (other than street-side ditches), channels, streams, or natural drainage courses are used to collect, discharge, and/or transmit water through the development, an adequately sized, perpetual drainage easement shall be provided. The easement shall be centered as closely as possible to the middle of the watercourse and shall be no less than 30 feet in width in order to allow adequate ingress and egress for maintenance equipment.
 - (9) Where a drainage easement is to contain an open ditch, channel, stream or natural drainage course, the following shall apply:
 - a. The easement shall be cleared of all trees and brush and all stumps shall be removed to the extent necessary to allow adequate drainage and to provide vehicular access for maintenance where determined necessary.
 - b. The channel shall be constructed according to a plan which will show the following:
 1. The location and boundaries of the easement.
 2. Contour lines depicting the shape and slope of the channel.
 3. Typical cross section of the channel showing how the channel will be constructed to prevent erosion.
 - (10) Drainage easements shall be private, and adequate care and maintenance of the easements shall be a provision of the deeds and covenants of the respective private properties on which the easements are located unless otherwise permitted by the Planning Board.
 - (11) No clean water (stormwater) will be allowed to connect into any sanitary sewer system.
- (b) Urban systems.
- (1) Underdrain shall be installed on both sides of curbed streets, unless the base can drain to a ditch. Type C underdrain systems are allowed with appropriate design

considerations, and approval of City engineer. The City engineer may approve the installation of underdrain on only the uphill side of the street on streets traversing a slope or on only one side of the street in relatively flat areas if the developer's engineer can demonstrate that the street area surface water infiltration will be quickly drained from the street aggregate base/subbase and that groundwater will not reach the street aggregate base/subbase once the development is fully developed.

- (2) The minimum pipe size for closed conduit systems shall be eight inches in diameter, and the minimum size shall be 15 inches in diameter for open systems, except for type B underdrain pipe, which may be six inches in diameter.
 - (3) The design of storm drains shall be on the basis of flowing full at a minimum velocity of 2.5 feet per second.
 - (4) Three hundred fifty feet shall be considered as the maximum length for carrying stormwater in a street gutter to an intake at a catch basin otherwise approved by the City Engineer or the highway superintendent.
 - (5) Catch basin inlet grate elevations shall be recessed two inches below gutter line grades.
 - (6) No water shall be permitted to drain across a street or an intersection.
 - (7) Catch basins or manholes shall be placed at all vertical and horizontal changes in the alignment or pipe, and at all junctions. However, in no case shall catch basins or manholes be placed at intervals exceeding 350 feet, unless otherwise approved by the **City Engineer or** highway superintendent.
 - (8) A minimum of four feet of cover is required over the tops of all storm drain pipe, or frost protection must be provided subject to the approval of the **code enforcement officer or** City engineer.
 - (9) House foundation perimeter drains and roof drains with backflow check-valves may be connected to the storm drainage system upon written approval by and under the supervision of the highway superintendent.
- (c) Rural systems.
- (1) Streetside ditches and outlet channels shall be of a configuration and size to carry the contributory stormwater and subsurface flows from the streetway structure and streetside embankments. In all instances, the invert of the ditch shall be a minimum of six inches below the subgrade of the streetway extended to the shoulder, except as follows:
 - a. In areas of well-drained native soils, when approved by the City engineer; or
 - b. In areas where subsurface soils are of a nature requiring an underdrain system, in which case subgrades may be constructed to direct subsurface water to the storm drain system.
 - (2) Ditches shall drain in a positive manner.

- (3) Streetside ditches shall be at a minimum grade of 1.5% or the grade required to handle the design flow, whichever is greater, unless otherwise approved by the City engineer. Grades between the minimum stated and 0.5% will be allowed only if strict construction control is adhered to, and as approved by the City Engineer.
- (4) Ditch linings shall be provided to protect the side slopes and bottom from erosion and scour. Minimum channel linings for corresponding longitudinal slopes shall conform to the following table:

0.5%—3.0%	Loam and seed
3.0%—6.0%	Loam and seed, protected by erosion control mesh
6.0%—8.0%	Sod placed over loam
Over 8.0%	Stone, masonry or bituminous concrete

- (5) Standards for culverts are as follows:
 - a. Cross culverts. Culverts crossing under roads or streets shall be sized to pass a twenty-five-year frequency storm from the contributing drainage area with a maximum hydrostatic head of two feet above the culvert inlet invert or three inches below the outside edge of the shoulder, whichever is the greater elevation.
 - b. Driveway culverts. Culverts shall be installed under any proposed or existing driveway that interrupts the natural or proposed longitudinal drainage along any street or road. Driveway culverts shall be of a size capable of passing a ten-year frequency storm from the contributing drainage area with a maximum hydrostatic head as specified in subsection (c)(5)a of this section. Driveway culverts shall be ADS or equal, unless otherwise approved by the director of public works, and have a minimum diameter of 12 inches. The final determination of the culvert size shall be made by the City engineer. Driveway culverts shall be installed on the grade of the streetside ditch line.
 - c. Minimum cover. The minimum cover over culverts in the roadway areas shall be 24 inches. The minimum cover over driveway culverts shall be 12 inches.
 - d. Ditch lines. Street-side ditch lines shall be extended laterally and lowered to accommodate culverts with inlet and/or outlet inverts below the normal grade of the ditch line.
- (d) Drainage system materials. The following materials shall be utilized for drainage system construction and shall conform to criteria established by the City highway superintendent and the City engineer, and sanitary district specifications:
 - (1) Reinforced concrete pipe. Concrete pipe shall be class IV reinforced concrete pipe meeting ASTM designation C-76.
 - (2) PVC pipe. All PVC pipe shall meet the requirements of SDR-35 of ASTM specification D-3034.

- (3) Corrugated metal pipe. Corrugated metal pipe and fittings shall be plain galvanized, aluminum or bituminous coated conforming to the requirements of MDOT specifications, section 707 (Metallic Pipe). Pipe gauge shall be as required to meet soil and traffic loads with a deflection of not more than 5%.
- (4) Underdrain. Pipe for underdrain shall be perforated PVC-SDR-35 meeting the requirements of ASTM specification D-3034.
- (5) Manholes. **Manholes shall be of precast truncated cone section construction meeting the requirements of ASTM Designation C 478. Metal frames and traps shall be set in full mortar bed and with tops shall conform to the requirements of AASHTO M 103 for carbon steel casting, AASHTO M 105, Class 30 for gray iron castings or AASHTO m 183 (ASTM A283, Grade B or better) for structural steel.**
 - a. ~~Manholes shall be precast concrete sections conforming to ASTM C478.~~
 - b. ~~Manhole steps shall be polypropylene plastic, M.A. Industries PS2-PF-SL or equal. The spacing between the steps shall be 12 inches.~~
 - c. ~~The manhole frame and cover shall be Etheridge No. E265S or equal. Covers shall be marked "Drain."~~
 - d. ~~Manholes shall have a minimum inside diameter of four feet in the barrel section and two feet in the cone or top slab ingress/egress opening.~~
 - e. ~~Manhole inverts shall be constructed of hard brick meeting federal specification SS-B-656 and shaped to the crown of the pipe.~~
 - f. ~~All openings in the manhole for receiving pipe shall have a neoprene boot meeting ASTM C-443.~~
- (6) Catch basins. **Catch Basins shall be of precast concrete truncated cone section construction meeting the requirements of ASTM Designation C478. Castings shall be square cast iron sized for the particular inlet condition with the gratings perpendicular to the curb line. Metal frames and traps shall be set in a full mortar bed with and with tops shall conform to the requirements of AASHTO m 103 for carbon steel castings, AASHTO M 105, Class 30 for gray iron castings or AASHTO M 183 (ASTM A 283, Grade B or better) for structural steel.**
 - a. ~~Catch basins shall be pre-cast concrete sections conforming to ASTM C478.~~
 - b. ~~Cast iron catch basin frames and grates shall be Lebaron type F, Etheridge type M or equal.~~
 - c. ~~Catch basins shall have a minimum two-foot sump for the retention of waterborne solids.~~
 - d. ~~Catch basins shall have a minimum inside diameter of four feet in the barrel section and two feet in the cone or top slab ingress/egress opening.~~
 - e. ~~All openings in the catch basin for receiving pipe shall have a neoprene boot meeting ASTM C-443.~~

- (e) Installation of drainage systems.

- (1) Drainage system construction shall conform to all City standards.
- (2) All trenching shall be accomplished in accordance with all appropriate state and federal safety standards.
- (3) The maximum trench width at the pipe crown shall be the outside diameter of the pipe plus two feet.

- (4) Pipe, excluding culvert pipe, shall be bedded in three-quarter-inch screened stone with a minimum depth of six inches below the pipe. The top of the stone shall be to the top of the pipe or above. A minimum of 12 inches of cover sand shall be placed over the top of the pipe. When the excavated trench bottom is not sufficiently firm to properly support the pipe, the City engineer may direct the developer to excavate below grade to suitable foundation material and backfill with additional three-quarter-inch screened stone.
- (5) All gravity pipe shall be laid with a laser device designed for the purpose unless other means are approved by the City engineer.
- (6) All catch basins and manholes shall be founded below the frost line on a minimum depth of six inches of three-quarter-inch screened stone compacted to a uniform density.
- (7) All drain outlets shall be terminated with riprap to prevent erosion. Facilities for energy dissipation shall be provided. Culvert pipe inlets shall be constructed so as to prevent or decrease damage to embankments and/or to improve the efficiency of the culvert. Inlet control devices shall be approved by the planning board.
- (8) Type B underdrain (six-inch diameter, for intercepting groundwater) shall be laid with the perforations down on a minimum six-inch bed of three-quarter-inch screened stone. The three-quarter-inch screened stone shall be brought to a point 12 inches above the top of the underdrain pipe. The remainder of the trench to the bottom side of the subgrade of the road shall be backfilled with clean granular material.
- (9) Drain inlet alignment shall be straight in both horizontal and vertical alignment.**
- (10) Manholes shall be provided at all changes in vertical or horizontal alignment and at all junctions. On straight runs, manholes shall be placed at a maximum of 400-foot intervals.**
- (11) Upon completion, each catch basin or manhole shall be cleaned of all accumulation of silt, debris or foreign matter and shall be kept clean until final acceptance.**

Sec. 98-184. Erosion and sediment control requirements. [Ord. No. 39-1998, § 6.1.3, 12-1-1998]

- (a) Generally. Chapter 102 outlines the intent and applicability of the standards in this section.
- (b) Performance standards.
 - (1) Erosion land sediments shall be controlled through appropriate management practices to prevent adverse downstream water quality impacts. Hydraulic calculation techniques and design standards for facilities to achieve this performance standard shall be of accepted methods and subject to approval of the code enforcement officer and City engineer.
 - (2) Natural and manmade drainageways and drainage outlets shall be protected from erosion from water flowing through them. Drainageways shall be designed and constructed in order to carry water from a twenty-five-year storm or greater, and shall be stabilized with vegetation or lined with riprap.
- (c) Control measures to apply during all stages of activity. Erosion and sedimentation control measures shall apply to all aspects of the proposed project involving land disturbance, and shall be in operation during all stages of the activity. The amount of exposed soil at every

phase of construction shall be minimized to reduce the potential for erosion.

- (d) Maintenance of facilities. The developer shall maintain all components of the erosion and sediment control and stormwater management system unless the system is formally accepted

by the City, or sanitary district or is placed under the jurisdiction of a legally created property owners' association whose charter and powers require maintenance of the system, including adequate financing to carry out this responsibility.

(e) Stabilization timelines.

- (1) In general, all activities regulated by these standards shall be conducted after March 1 and before October 30 unless accomplished in conjunction with approved construction.
- (2) Disturbed soil shall be stabilized within one week from the time it was last actively worked using temporary or permanent measures such as placement of riprap, sod, mulch or erosion control blankets, or other comparable measures.
- (3) In all cases within the shoreland zones, permanent stabilization shall occur within nine months of the initial date of exposure.
- (4) Fill sites shall be graded and seeded within 30 calendar days of their closure or by October 31 (whichever date occurs first). Fill sites may remain open after October 31 only by written permission of the code enforcement officer.
- (5) Permanent revegetation of all disturbed areas, using native plant material wherever possible, shall occur:
 - a. Within 30 days from the time the areas were last actively worked;
 - b. For spring and summer activities, by October 31; or
 - c. For fall and winter activities, by June 15, except where precluded by the type of disturbance (e.g., riprap, road surfaces, etc.). The vegetative cover shall be maintained.
- (f) Adaptation to existing topography. In order to create the least potential for erosion, development shall be designed to fit with the topography and soils of the site. Areas of steep slopes where high cuts and fill may be required shall be avoided wherever possible, and natural contours shall be followed as closely as possible.
- (g) Anchoring of mulch. If mulch is likely to be moved because of steep slopes or wind exposure, it shall be anchored with netting, peg and twine, or other suitable method and shall be maintained until a catch of vegetation is established over the entire disturbed area.
- (h) Prevention of sedimentation of water. In addition to placement of riprap, sod, erosion control blankets or mulch, additional steps shall be taken, where necessary, in order to prevent sedimentation of the water. Evidence of sedimentation includes visible gully erosion, discoloration of water by suspended particles and slumping of banks. Silt fences, staked hay bales and other sedimentation control measures, where planned for, shall be in place prior to commencement of work, but shall also be installed whenever necessary due to sedimentation.
- (i) Maintenance of temporary control measures. Mulch or other temporary erosion control measures shall be maintained until the site is permanently stabilized with vegetation or other permanent control measures.

- (j) Application of mulch. Where mulch is used, it shall be applied at a rate of at least one bale per 500 square feet and shall be maintained until a catch of vegetation is established.
- (k) Disposal of excavated materials. Any and all excavated material shall be removed to approved locations. The City shall provide a list of approved sites within the City limits.

Sec. 98-185. Submission requirements. [Ord. No. 39-1998, § 6.1.4, 12-1-1998]

The checklist of required submissions relative to this article is as follows:

- (1) Map submissions.
 - a. Location map with boundaries of the development clearly marked.
 - b. USGS topographic map, or larger-scale map when available or if necessary for clarification, with boundaries of the site clearly marked and drainage areas used for stormwater management calculations noted. Predevelopment drainage areas shall be noted. Post-development drainage areas shall be noted.
 - c. Topographic maps specifically for the project with:
 - 1. Pre-development contours noted.
 - 2. Post-development contours noted.
 - 3. Limits of clearing and grading noted.
 - 4. Location of stormwater control structures.
 - 5. Location of sediment and erosion control practices.
 - 6. Pre-development drainage patterns noted.
 - 7. Post-development drainage patterns noted.
 - 8. Flow lengths used in time-of-concentration calculations noted.
 - d. SCS medium intensity soils map with boundaries of the development clearly marked and drainage areas used for stormwater management calculations noted.
 - e. High-intensity soil survey for the development site.
- (2) Narrative submissions.
 - a. Description of the development, which shall:
 - 1. Describe the nature of the development.
 - 2. Describe present and post-development land use cover.
 - 3. Describe which areas will be disturbed by construction.
 - 4. Describe adjacent areas which will be disturbed by construction.

5. Describe areas on-site especially vulnerable to erosion.
 6. Describe the soils found on-site.
 - b. Description of stormwater handling, which shall include the following:
 1. Summary and analysis of existing stormwater movement.
 2. Analysis of post-development stormwater movement.
 3. Methods being proposed to control stormwater.

The method of calculation shall be noted.
 - c. Description of erosion and sedimentation control, which shall list and describe the practices and structures to be used and shall:
 1. Indicate how accelerated erosion will be minimized.
 2. Indicate how sedimentation will be minimized.
 - d. Schedule of construction, including a schedule of installation/implementation of temporary and permanent sediment and erosion control structures and management practices.
 - e. Description of inspection and maintenance for sediment and erosion control measures.
- (3) Design drawings and calculations.
- a. Detail drawing of any structural practices used that are not referenced.
 - b. Calculations for stormwater management practices, which shall include the following:
 1. Worksheets, showing assumptions used.
 2. Detention basins.
 3. Culverts.
 4. Ditches and waterways.
 5. Other calculations.
 - c. Calculations for sediment and erosion control practices, which shall include the following:
 1. Worksheets.
 2. Sediment basins.
 3. Diversions.
 4. Ditches and waterways.
 5. Other calculations.

Sec. 98-186. Resource publications for preparing erosion and sediment control plans. [Ord. No. 39-1998, § 6.1.5, 12-1-1998]

Resource publications (current revisions) for preparing erosion and sediment control plans are as follows:

- (1) The Maine Erosion and Sediment Control Handbook for Construction, prepared by the state department of environmental protection.
- (2) Stormwater Management Manual, prepared by the Greater Portland Council of Governments.
- (3) Technical Release 55, Urban Hydrology for Small Watersheds, R-55, June 1986, available from National Technical Information Service NTIS, U.S. Department of Commerce, Springfield, VA 22161, (703) 487-4650 (TR 20 may also be used).
- (4) Other publications, subject to approval of the stormwater management board.
- (5) Maine Erosion and Sediment Control Handbook for Construction Best Management Practices, prepared by Cumberland SWCD and the state department of environmental protection.

Sec. 98-187. General criteria for sediment and erosion control plans. [Ord. No. 39-1998, § 6.1.6, 12-1-1998]

General criteria for sediment and erosion control plans are as follows:

- (1) All denuded areas shall be stabilized.
- (2) All soil stockpiles shall be stabilized.
- (3) Permanent vegetation shall be established.
- (4) Adjacent properties shall be protected from sediment from the development.
- (5) Adjacent properties shall not be subjected to erosion due to increased runoff water from the development.
- (6) Cut and fill slopes shall be constructed and stabilized in a way to reduce erosion.
- (7) On-site waterways and outlets shall be stabilized.
- (8) Storm sewer inlets shall be protected from sediment.
- (9) If working in or crossing live streams, they shall be protected during construction.
- (10) Construction access routes shall be stabilized to include dust control.
- (11) Temporary sediment and erosion control structures shall be removed when the development is finished.
- (12) Maintenance of stormwater, sediment, and erosion control structures shall be addressed adequately.

Sec. 98-188. Appurtenances to erosion control measures. [Ord. No. 39-1998, § 6.1.7, 12-1-1998]

- (a) Riprap. MDOT specifications, section 610 (Stone Fill, Stone Blanket and Stone Ditch Protection), shall be applicable to this subject.
- (b) Erosion control blankets. MDOT specifications, section 613 (Erosion Control Blankets), shall be applicable to this subject.
- (c) Sodding. MDOT specifications, section 616 (Sodding), shall be applicable to this subject.
- (d) Loam. MDOT specifications, section 615 (Loam), shall be applicable to this subject. All esplanades, circular turnaround islands, ditch slopes, and other planting strip areas at the sides of streets shall receive at least four inches of loam.
- (e) Seeding. MDOT specifications, section 6.18 (Seeding), shall be applicable to this subject. Seeding method number 1 (Park Mixture) shall be used on areas specified in subsection (d) of this section.
- (f) Mulch. MDOT specifications, section 619 (Mulch), shall be applicable to this subject.
- (g) Geotextiles. MDOT specifications, section 620 (Geotextiles), shall be applicable to this subject.
- (h) Landscaping. MDOT specifications, section 621 (Landscaping) and section 622 (Transplanting Shrubs, Hedges and Trees), shall be applicable to this subject.
- (i) Dust control. MDOT specifications, section 637 (Dust Control), shall be applicable to this subject. Dust control shall be provided for all areas as necessary to prevent the visible emissions of dust in the air.

Sec. 98-189. through Sec. 98-210. (Reserved)