

**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]**

- 1) 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.

*Response: Utility installation will be in conformance with standard specification, more detail can be found on Attachment 20*

- 2) 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.

*Response: Road paving will occur after all necessary underground utility lines and drains and storm water connections are made, for more detail please refer Attachment 26*

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

- 1) 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.

*Response: Proposed roads are within applicants property, and therefore there are no Right-of-Way requirements.*

- 2) 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.

*Response: Proposed roads are within applicants property, and therefore there are no Right-of-Way requirements.*

BELFAST CODE

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

- 1) 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. 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).

*Response: Road construction will meet this requirement, for a complete review of road construction can be found in Attachment 20*

- 2) Except in a ledge cut or for bridge approaches, side back slopes shall be no steeper than a slope of two 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. 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.

*Response: Road and bridge construction as specified, for a complete review of road construction can be found in Attachment 20, project drawings*

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

*Response: Proposed site details shall comply with this standard. For complete review of stormwater management design see Attachment 15, this plan includes road construction and other impervious surfaces*

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

- 1) The base course must drain to a ditch or to underdrain. The depth of the base course on a granular material subgrade may be reduced to a total of 18 inches, subject to the approval of the City engineer. 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 gradation of the part that passes a three-inch-square mesh sieve shall meet the following grading requirements:
  - a. 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 gradation of the part that passes a three inch-square mesh sieve shall meet the following grading requirements:

SITE PLANS

<b>MDOT Type A</b>	
<b>Sieve Designation</b>	<b>Percentage by Weight Passing Square Mesh Sieve</b>
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.

<b>MDOT Type B</b>	
<b>Sieve Designation</b>	<b>Percentage by Weight Passing Square Mesh Sieve</b>
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. 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.
- c. Gravel shall be placed and compacted in accordance with the MDOT standard specifications, section 304.03 (Placing).
- d. 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.

***Response:** Proposed storm drainage design shall meet these requirements. For complete review of stormwater management design see Attachment 15, this plan includes road construction and stormwater plan for other impervious surfaces, complete road construction can be found in Attachment 20*

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

- 1) Streets.
  - a. The binder course shall be type B and the finish course shall be type C pavement.
  - b. Hot bituminous pavement materials and placement for streets shall be in accordance with the MDOT specifications, division 400 (Pavements).

BELFAST CODE

2) Sidewalks.

- a. 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.

*Response: Road and sidewalk construction as specified, for a complete review of road construction can be found in Attachment 20*

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

- 1) 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.
- 2) Islands located within rights-of-way and at the center of the cul-de-sac shall be curbed with type 5 curbing.
- 3) All intersection radii shall be curbed with type 1 circular vertical curbing.

*Response: Road and sidewalk construction as specified, for a complete review of road construction can be found in Attachment 20*

**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 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.

*Response: HDPE piping shall be used for underground water and drainage piping. 2 exceptions exist where the size of the culverts far exceeds the limitations of plastic pipe and other materials will be used. These occur at the crossing of stream 9 under the access road to the WWTP (concrete open bottom culvert) and the Eckrote driveway across stream 10 (Galvanized steel corrugated steel). For complete review of stormwater management design see Attachment 15, this plan includes road construction and stormwater plan for other impervious surfaces, complete road construction can be found in Attachment 20.*

**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:

## SITE PLANS

**Response:** All final drawings shall be stamped by a registered engineer. The owner acknowledges requirements of 98-129. See Attachment 20 for 98-129.1a-n.

- 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 and culs-de-sac with station and offset locations;
  - d. Proposed street name (requires approval of the City council);
  - e. All above ground 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 left hand margins;
  - g. Catch basin locations and rim elevations; and
  - h. Any other information pertinent to the project.

BELFAST CODE

- 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.

## SITE PLANS

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.

***Response:*** See Attachment 20 for complete set of project drawings detailing plans, profiles, cross sections, boundary lines, contours, stormwater control

**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.

*Response: A traffic study was conducted and is included in Attachment 17*

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

- 1) 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.
- 2) 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.
- 3) 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.

*Response: A traffic study was conducted and is included in Attachment 17*

**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:

*Response: A traffic study was conducted and is included in Attachment 17: Traffic study in reference to 98-153.1 through 98-153.6*

## SITE PLANS

- 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.

***Response:*** A complete project description and set of proposed plans are attached, refer to attachments 2 and 20. Additionally, refer to Attachment 11- Natural Resource Report for inventory of resources.

- 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.

## BELFAST CODE

1. Comprehensive transportation plan.
2. Future improvements, committed and planned.

**Response:** *Current site conditions are described in the drawings, especially CD101. Existing transportation on the site is limited to one main drive with several unmarked parking areas. Proposed transportation system is described in proposed drawings (Attachment 20) and the traffic study (Attachment 17)*

- 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

## SITE PLANS

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.

***Response:*** For items 3-5 above, please refer to the traffic study, Attachment 17).

- 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.

BELFAST CODE

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

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

*Response: For items 3-6 above, please refer to the traffic study, Attachment 17). No significant impacts, nor proposed improvements are proposed on public roads.*

**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.

*Response: The existing driveway, which conforms to these standards, for the BWD will continue to be used.*

- 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:

*Response: This requirement shall be met. See Attachment 20*

- 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.

## SITE PLANS

***Response:*** *Proposed design in conformance with this requirement. See Attachment 15*

- 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.

***Response:*** *not applicable*

- 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.

***Response:*** *Pervious and impervious paving will be used for parking areas.*

### **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.

***Response:*** *Loading areas will meet requirements, See Attachment 20*

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

1) Generally.

- a. A drainage system plan is required. See chapter 102.
- b. 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- and twenty-five year storms. Emergency spillways shall be provided for storms in excess of the twenty-five-year storm.
- c. 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.
- d. 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.
- e. All drainage systems within the development shall be designed to meet the criteria of the performance standards for a twenty five-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.
- f. 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.
- g. 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.
- h. 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.

2) Where a drainage easement is to contain an open ditch, channel, stream or natural drainage course, the following shall apply:

## SITE PLANS

- 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.
- 3) 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.
- 4) No clean water (stormwater) will be allowed to connect into any sanitary sewer system.
- 5) Urban systems.
- a. 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.
  - b. 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.
  - c. The design of storm drains shall be on the basis of flowing full at a minimum velocity of 2.5 feet per second.
  - d. 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.
  - e. Catch basin inlet grate elevations shall be recessed two inches below gutter line grades.
  - f. No water shall be permitted to drain across a street or an intersection.
  - g. 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 highway superintendent.
  - h. 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.

BELFAST CODE

- i. 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.
- 6) Rural systems.
- a. Street side ditches and outlet channels shall be of a configuration and size to carry the contributory stormwater and subsurface flows from the streetway structure and street side 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:
    - 1. In areas of well-drained native soils, when approved by the City engineer; or
    - 2. 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.
    - 3. Ditches shall drain in a positive manner.
    - 4. Street side 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.
    - 5. 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

Standards for culverts are as follows:

- 7) 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.
- 8) 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 street side ditch line.

## SITE PLANS

- a. 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.
  - b. 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.
- 9) 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:
- a. Reinforced concrete pipe. Concrete pipe shall be class IV reinforced concrete pipe meeting ASTM designation C-76.
  - b. PVC pipe. All PVC pipe shall meet the requirements of SDR-35 of ASTM specification D-3034.
    1. 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%.
    2. Underdrain. Pipe for underdrain shall be perforated PVC-SDR-35 meeting the requirements of ASTM specification D-3034.

### 10) Manholes.

- 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.

### 11) Catch basins.

- 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.

## BELFAST CODE

### 12) Installation of drainage systems.

- a. Drainage system construction shall conform to all City standards.
- b. All trenching shall be accomplished in accordance with all appropriate state and federal safety standards.
- c. The maximum trench width at the pipe crown shall be the outside diameter of the pipe plus two feet.
- d. 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.
- e. All gravity pipe shall be laid with a laser device designed for the purpose unless other means are approved by the City engineer.
- f. 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.
- g. 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.
- h. 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.

**Response:** For items 1-12 above, proposed development will meet applicable requirements. Please see Attachments 15 and 20 for additional details.

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

- 1) Generally. Chapter 102 outlines the intent and applicability of the standards in this section.
- 2) Performance standards.
  - a. Erosion and 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.

**Response:** A comprehensive stormwater management design has been developed in accordance with all applicable guidelines and the above standards have been met. See Attachment 15

## SITE PLANS

- b. 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.

**Response:** *All drainageways and outlets have been designed to meet this standard. See Attachment 15*

- 3) 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.

**Response:** *Appropriate SESC measures will be implemented to meet this standard both during construction as well as operation. See Attachment 14 for a full description.*

- 4) 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.

**Response:** *Appropriate measures have been identified for maintenance of temporary and permanent installations. See Attachments 14,16. Additionally, refer to Attachment 10 for Letters of Intent obtained from service contractors certified in the work identified, indicating their capability and interest in performing this work for the applicant.*

- 5) Stabilization timelines.

- a. 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.
- b. 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.
- c. In all cases within the shoreland zones, permanent stabilization shall occur within nine months of the initial date of exposure.
- d. 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.
- e. 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.

## BELFAST CODE

**Response:** Requirements shall be met, refer to Attachment 2 for schedule of activities as well as Attachment 14 for SESC measures and details.

- 6) 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.

**Response:** Development of the project site minimizes the potential for erosion using a variety of methods and approaches. In general, water approaching the site from surrounding areas will be redirected to existing drainage, and water collected on site will be treated, collected and will exit the site through an existing structure to the Bay. Structures have been sited to reflect the existing slope of the site and to facilitate effective stormwater collection.

The project is roughly split into two areas: the larger northern area housing the majority of the new structures, and the smaller area along Northport Ave. In the northern area, siting of the buildings and finished floor elevations were chosen to reflect the existing topography and water drainage. Along the northern most edge of the site, the Building 1 modules have been stepped down to reflect existing contours and to help create a drainage swale parallel to the property line which feeds into the existing stream along the eastern property line. Buildings 3, 4 and 5 are within the core of the site and have been designed to use the foundation walls as retaining structures to allow grades to reflect the existing slope towards the Reservoir. At Building 2 the site has been raised relative to existing grade to create the perimeter access road, south of the road grades are blended down to the existing contours. Where slopes are steeper than 1:1.5 surfaces are armored against erosion using a 12" thick layer of stone rip rap. See drawings CG102 through CG107 for site grading information.

In the Northport Avenue portion of the site, much of the existing grading will be maintained. The exception to this is the area around Building 8 and the approach drive which will cut into the existing grade to lower the slope of the drive and to reduce the visual impact of Building 8 from the street. This will require the installation of a retaining wall along the northern edge of the developed area to maintain grades along the property line. Slopes around the remaining edges of the building pad will be tightly graded to blend back into the existing contours allowing water from surrounding areas to retain existing drainage paths. See drawing CG101 and CG501 for additional site grading information.

In all the areas plantings will be used to permanently stabilize soils. Plantings have been specified using native species that reflect localized needs such as wetland restorations or reforestation. See drawings LP101 through LP107 and LP501 for additional planting information.

During the construction phase temporary sediment and erosion controls will be utilized to protect existing soils from erosion. See drawings CE100 through CE118 for further description of the measures, and drawings CE501 through CE504 for details of the measures.

## SITE PLANS

- 7) 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.
- 8) 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.
- 9) 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.
- 10) 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.

*Response: Requirements shall be met, refer to Attachment 14 for SESC measures and details.*

- 11) 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.

*Response: Requirements shall be met, refer to Attachment 2 for schedule of activities as well as Attachment 14 for SESC measures and details.*

### **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.

*Response: This information is provided herein. See Attachments 1, 15, 20.*

- 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.

## BELFAST CODE

6. Pre-development drainage patterns noted.
7. Post-development drainage patterns noted.
8. Flow lengths used in time-of-concentration calculations noted.

**Response:** All items above reflected in the drawing package (Attachment 20) or the Stormwater management plan (Attachment 15).

- d. SCS medium intensity soils map with boundaries of the development clearly marked and drainage areas used for stormwater management calculations noted.

**Response:** Class B soils analysis is provided in Attachment 12.

- e. High-intensity soil survey for the development site.

**Response:** Class B soils analysis is provided in Attachment 12.

### 2) Narrative submissions.

- a. Description of the development, which shall:

**Response:** Information required below is supplied within this submission. Refer to line items below for location references..

1. Describe the nature of the development.

**Response:** See Attachment 2

2. Describe present and post-development land use cover.

**Response:** See Attachments 11 and 15.

3. Describe which areas will be disturbed by construction.

**Response:** See Attachment 2 for narrative description as well as engineering drawings in Attachment 20

4. Describe adjacent areas which will be disturbed by construction.

**Response:** See Attachment 2 for narrative description as well as engineering drawings in Attachment 20

5. Describe areas on-site especially vulnerable to erosion.

**Response:** See Attachments 11 and 14

6. Describe the soils found on-site.

**Response:** See Attachment 12

- b. Description of stormwater handling, which shall include the following:

**Response:** See Attachment 15

1. Summary and analysis of existing stormwater movement.

## SITE PLANS

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:

**Response:** See Attachment 14

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.

**Response:** See Attachments 14 and 26 as well as CE drawing series in Attachment 20

- e. Description of inspection and maintenance for sediment and erosion control measures.

**Response:** See Attachment 14

### 3) Design drawings and calculations.

- a. Detail drawing of any structural practices used that are not referenced.

**Response:** See Attachment 20

- b. Calculations for stormwater management practices, which shall include the following:

**Response:** See Attachment 15

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:

**Response:** See Attachment 14

1. Worksheets.
2. Sediment basins.
3. Diversions.
4. Ditches and waterways.
5. Other calculations.

## BELFAST CODE

### **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:

***Response:** All conditions shall be met by the proposed scope. See Attachment 14 which addresses 98-187.1 through 98-187.12*

- 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.

## SITE PLANS

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

- 1) Riprap. MDOT specifications, section 610 (Stone Fill, Stone Blanket and Stone Ditch Protection), shall be applicable to this subject.
- 2) Erosion control blankets. MDOT specifications, section 613 (Erosion Control Blankets), shall be applicable to this subject.
- 3) Sodding. MDOT specifications, section 616 (Sodding), shall be applicable to this subject.
- 4) 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.
- 5) 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.
- 6) Mulch. MDOT specifications, section 619 (Mulch), shall be applicable to this subject.
- 7) Geotextiles. MDOT specifications, section 620 (Geotextiles), shall be applicable to this subject.
- 8) Landscaping. MDOT specifications, section 621 (Landscaping) and section 622 (Transplanting Shrubs, Hedges and Trees), shall be applicable to this subject.
- 9) 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.

***Response:** The applicant acknowledges these requirements. Refer to Attachment 14 for details relating to the Soil Erosion and Sediment Control plan.*

### **Sec. 98-212. Required information. [Ord. No. 39-1998, § 7.2, 12-1-1998]**

In addition to the information required by the zoning regulations (chapter 102) and the site plan regulations (chapter 90), the public safety director requires that plans submitted for review and approval shall include the following information:

***Response:** The information below is submitted with this application. See Attachment 20*

- 1) Existing and proposed hydrants or alternate fire protection water supply.
- 2) All streets, culs-de-sac, hammerheads and emergency access routes.
- 3) Any geographical or structural barriers to the site or to proposed structures.
- 4) Building construction type.
- 5) Building occupancy.
- 6) Any special usage or materials storage that might present a significant fire protection problem.

BELFAST CODE

**Sec. 98-213. Hydrants. [Ord. No. 39-1998, § 7.3, 12-1-1998]**

- 1) All structures constructed within the hydrant district of the City shall have hydrants located within the distance specified by the fire chief. All hydrants, public and private, shall comply with the standards of the City and the Belfast Water District.

*Response: Input from the fire chief has been incorporated into the hydrant plan and are located within the distance specified. All hydrants will comply with the standards of the City and the Belfast water district.*

**Sec. 98-214. Access for emergency vehicles. [Ord. No. 39-1998, § 7.4, 12-1-1998]**

- a. ~~Access to subdivisions shall comply with the following:~~

1 to 34 units	A single access road
34 to 68 units	2 access roads or single access road and an emergency access lane

68 or more units	2 access roads
------------------	----------------

- b. ~~Where residential units are provided with an approved sprinkler system designed in accordance with NFPA standards and approved by the code enforcement officer, the following minimum access standards may be substituted:~~

1 to 68 units	1 access road
68 to 100 units	1 access road and an emergency lane
100 or more units	A minimum of 2 access roads

*Response: not applicable*

- c. Building setbacks shall allow for access by emergency vehicles and their related functions, and shall be evaluated on the following merits:

*Response: See Attachment 20*

1. Construction type.
2. Building occupancy.
3. Building height.
4. Impediments to the actual structures.
5. Safety features/systems provided.

- d. No turning radius (inside) shall be less than 25 feet.

*Response: See Attachment 20*

- e. Emergency access lanes shall be a minimum of 16 feet wide and be of such design and so maintained as to support the weight of emergency vehicles during all weather conditions.

SITE PLANS

**Response:** See Attachment 20

- f. The blockading of any emergency lane shall be done by gates which are locked by chain and padlock. Emergency lanes shall be maintained and accessible for use at all times. A key to the lock shall be given to the City police department and fire department.

**ARTICLE VIII**  
**Parking and Loading Facilities**

**Sec. 98-241. Purpose of article. [Ord. No. 39-1998, § 8.1, 12-1-1998; Ord. of 1-5-2010(1)]**

The purpose of the standards in this article is to protect and promote the public health, safety and welfare by ensuring that:

- 1) Peak parking demands are accommodated on-site so that streets, nearby properties, and neighborhoods are kept free from congestion and inappropriate traffic;

**Response:** Requirements are met, refer to Attachment 20

- 2) Parking facilities are designed to enhance the dignity, pride, and visual quality of the City and complement the visual appearance of, and maintain the aesthetic appeal of views from, neighboring properties, streets and highways, the Belfast Bay, and other places where people congregate;

**Response:** Requirement is met, See Attachments 20 and 27

- 3) Parking facilities are safe, healthy, attractive, and easily entered, exited and traveled for both vehicles and pedestrians;

**Response:** Requirements are met, refer to Attachment 20

- 4) The economic stability of residential, business, commercial, institutional, and industrial areas, the value of land and buildings on surrounding properties and neighborhoods, and the accessibility and economic utility of land are maintained and enhanced; and

- 5) Parking demand is determined by carefully considering appropriate opportunities for joint use and shared parking, the proximity of the use to public parking, and the customary and unique parking needs of each use.

**Response:** Requirements are met, refer to Attachment 20

**Sec. 98-242. Off-street parking requirements. [Ord. No. 39-1998, § 8.2.1, 12-1-1998; Ord. of 1-5-2010(1)]**

- 1) Off-street parking space required. No use of premises shall be allowed, changed or expanded and no structure shall be constructed or enlarged unless adequate off-street parking, including handicapped parking, is provided and maintained.
- 2) Amount of parking required. An appropriate amount of off-street parking spaces, including handicapped parking spaces (reference 98-243 for these standards), shall be required for each principal and accessory use located on a parcel. The following table entitled "Schedule of Required Off-Street Parking" (hereinafter, the Schedule), shall serve as a guideline in establishing the minimum amount of parking which must be provided for a use, and also the maximum amount of

## BELFAST CODE

parking which shall be allowed. If a specific use is not listed or is dissimilar to a use listed in the schedule, the Planning Board is authorized to determine an appropriate amount of parking.

In determining the minimum amount of parking, any fraction shall be rounded up to the nearest whole number. In determining the maximum amount of parking allowed, multiply the amount of parking identified in the Schedule by 1.20.

- 3) Planning Board use of the schedule and ability to adjust amount of parking. The Planning Board may adjust the amount of parking identified in the Schedule based on factors such as the following:

***Response:*** *Current parking plans are developed based on requirements in City ordinances for Industrial- Manufacturing as the relevant standards. The applicant understands that the City may require adjustments to the proposed parking plan.*

- a. The Schedule identifies parking requirements for many uses. The City, however, recognizes that some uses are not listed in the Schedule. As such, the Planning Board may determine that a specific use has specific parking demands and shall consult the most current edition of the Institute of Transportation Engineers (ITE) Parking Generation manual to assist in determining the amount of parking required.
- b. The Planning Board may use information, such as the following, to allow an increase or decrease in the amount of parking identified in the Schedule:
  1. A parking demand analysis prepared by the applicant that is based on at least two comparable sites in Maine for a comparable type of business. The analysis must compare parking demands for differing days and times of week. The Board may engage the services of an engineering firm to review this analysis.
  2. Information from the ITE manual.
  3. Information from another qualified industry source, such as but not limited to information provided by a company that has identified its parking demands for comparable facilities. The Board may engage the services of an engineering firm to review this information.

The city, in granting the Planning Board the authority to adjust on-site parking requirements, recognizes that the ITE manual that is used to identify parking requirements is often based on a limited number or variety of analyses of parking demands for specific uses. For example, the parking studies listed in the ITE manual are often based on three or fewer studies, the studies are for limited periods of time, the studies are for uses in communities that may be very dissimilar to Belfast, or the studies may be very dated, 15 or more years old, as well as other concerns. Thus, the city recognizes that better data could be available through other sources to assist the Planning Board in making a good decision regarding the amount of on-site parking which it should require.

SITE PLANS

<b>Table 98-242. Schedule of Required Off-Street Parking</b>		
<b>Use</b>	<b>Unit of Measure</b>	<b>Number of Spaces</b>
<b>Residential:</b>		
Single-family and two-family (duplex)	Dwelling unit	2.0 per unit. Such units are exempt from the maximum number of parking spaces requirement.
Multi-family	Dwelling unit	2.25 per dwelling unit, except 1.5 per unit for 1 bedroom efficiency
Elderly independent housing	Dwelling unit	1.0 per unit
Congregate housing		
Independent units	Dwelling unit	1.0 per unit
Assisted living	Living units	1.0 per 3 units
Nursing home	Beds and employees	1 space per 6 beds and 1 space/employee maximum shift
Bed and breakfast	Dwelling unit and rooms	2 for residence and 1 per each rental room
Rooming/boarding house	Manager and rental room	2 for manager/owner and 1 for each rental room
Home occupation	Dwelling unit (residence) and equivalent use	2 for dwelling unit/resident and number of spaces required for type of home occupation proposed
<b>Institutional</b>		
Elementary and junior high	Teachers/employees and visitor area	1 per teacher/employee and 2 per classroom
Senior high	Teachers/employees and students	1.2 per teacher/employee and 0.25 per student
College/university	Instructors/employees and student enrollment	1.2 per instructor/employee and 0.25 per student enrollment
Church	Gross floor area (gfa) or seats	1 per 75 sq. ft. gfa or 1 per 2.5 seats
Day care center	Gross floor area (gfa) or teachers/employees and student	1 per 250 sq. ft. gfa or 1.2 per teacher/employee and 1 per 4 students

BELFAST CODE

<b>Table 98-242. Schedule of Required Off-Street Parking</b>		
<b>Use</b>	<b>Unit of Measure</b>	<b>Number of Spaces</b>
Day care home	Dwelling unit/ residence and students	2 for dwelling unit and 1 per 4 students
Library	Gross floor area (gfa)	1 per 250 sq. ft. gfa
Convention center, theater and similar	Gross floor area (gfa) or per number of seats	1 per 250 sq. ft. gfa or 1 for every 3 seats
<b>Medical/Office</b>		
Hospital	Beds and employees *note offices/clinics in hospital different formula	1 space/3 beds and 1 space/employee on maximum shift
Clinic and medical/ dental office	Physicians/ practitioners and employees	4 per physician and 1 per employee
Veterinary clinic	Practitioners and employees	3 per practitioner and 1 per employee
Nursing home	Refer to congregate care	Refer to congregate care
Professional office	Gross floor area or number of employees	1 space per 300 sq. ft. 1.2 space per employee
<b>Retail/Services</b>		
Shopping center	Gross floor area	
a. Less than 30,000 sq. ft.		a. 1 space per 225 sq. ft.
b. 30,000 — 100,000 sq. ft.		b. 1 space per 200 sq. ft.
c. Greater than 100,000 sf		c. 1 space per 175 sq. ft.
Retail store	Gross floor area	
a. Less than 20,000 sq. ft.		a. 1 space per 250 sq. ft.
b. More than 20,000 sq. ft.		b. 1 space per 200 sq. ft.
Hardware store, lumber yard or furniture store	Gross floor area	1 space/400 sq. ft.
Grocery store/ supermarket	Gross floor area	1 space per 175 sq. ft.
Convenience store	Gross floor area	1 space per 200 sq. ft.

SITE PLANS

<b>Table 98-242. Schedule of Required Off-Street Parking</b>					
<b>Use</b>		<b>Unit of Measure</b>		<b>Number of Spaces</b>	
Drug store or bank		Gross floor area			
a.	Without drive-through			a.	1 per 250 sq. ft.
b.	With drive-through			b.	1 per 300 sq. ft.
Restaurant					
a.	Sit-down restaurant	a.	Seats	a.	0.4 spaces per seat
b.	Fast food restaurant without drive-through	b.	Seats	b.	0.75 spaces per seat
c.	Fast food restaurant with drive-through	c.	Seats	c.	0.6 spaces per seat
Hotel/motel		Rooms			
a.	Without conference facility			1.1 per room	
b.	With conference facility			1.4 per room	
Movie theater/performance center		Seats		0.33 spaces per seat	
Bowling alley		Per lane		5 spaces per lane	
<b>Industrial</b>					
Manufacturing		Number of employees		1.2 spaces/employee for number of employees on maximum shift	
Self-storage		Gross floor area		0.2 spaces per 1,000 sq. ft.	

**Sec. 98-243. Location of parking lots or areas. [Ord. No. 39-1998, § 8.2.2, 12-1-1998; Ord. of 1-5-2010(1)]**

All off-street parking shall be located on the same lot as the principal structure or use to be served, except as may be permitted by the Planning Board in accordance with the provisions of this article.

*Response: See Attachment 20*

**Sec. 98-244. Handicapped parking. [Ord. No. 39-1998, § 8.2.3, 12-1-1998; Ord. of 1-5-2010(1)]**

4) Amount of handicapped parking required. A new use shall be required to provide at least the minimum amount of handicapped parking required by the American with Disabilities Act. A change of use or expansion of an existing use shall be required to provide at least the minimum amount of handicapped parking required for at least the

BELFAST CODE

number of new parking spaces required, and preferably for the total amount of parking (existing and new) on the site. Parking requirements identified in the American with Disabilities Act are:

<b>Total Number of Parking Spaces in the Lot</b>	<b>Minimum Number of Accessible Spaces</b>
1 to 25	1
25 to 50	2
51 to 75	3
75 to 100	4
101 to 150	5
151 to 200	6
201 to 300	7
301 to 400	8
401 to 500	9
501 to 1,000	2% of total
1,000 and over	20 plus 1 for each 100 spaces over 1,000

- 5) Location of handicapped parking. Handicapped parking spaces shall be well located on a site to allow handicapped persons good access to the entrance of the building, and to minimize conflicts associated with vehicular circulation on the site. In locating spaces, an applicant shall consider opportunities to allow handicapped persons to use doors located on all sides of their vehicle.

*Response: See Attachment 20. Employment categories throughout the facility vary by building, and some may require able body restrictions. Handicapped parking will be distributed accordingly to ensure proper distribution of spaces based on anticipated work classification.*

- 6) Construction standards. All handicapped parking spaces shall be a minimum of 10 feet in width and shall provide an adjacent clear/ protected zone that is a minimum of four feet in width. The clear/ protected zone shall be properly striped. In certain circumstances, the clear/protected zone may also serve as a customer entrance to the site. Such parking spaces shall preferably be built at grade and shall not exceed a slope of 2%, and the spaces and clear zone shall be paved. Signage shall be installed that clearly identifies the spaces.

*Response: See Attachment 20.*

**Sec. 98-248. Dimensions of parking stalls. [Ord. of 1-5-2010(1)]**

The minimum dimensions for parking stalls shall be as follows. Stall depth is perpendicular to the aisle.

<b>Parking</b>	<b>Application</b>	<b>Stall Width (feet)</b>	<b>Stall Depth (feet)</b>	<b>Aisle Width (feet)</b>
90-degree	Standard	9	18	26
60-degree	Standard	9	15.6	23
One-way (45-degree)	Standard	9	12.7	24

Alternatives to these dimensions are permitted provided that the applicant demonstrates that the proposal complies with the standards outlined in the most recent edition of the Institute of Transportation Engineers Manual, and as defined and modified by standards provided in this chapter.

*Response: See Attachment 20.*

**Sec. 98-249. Landscaping of parking areas. [Ord. of 1-5-2010(1)]**

The landscaping standards in this section apply to all properties located in Belfast, except properties that are used for a nonresidential use and which are located in the following zoning districts: Route 3 Commercial District, Searsport Avenue Waterfront District, Searsport Avenue Commercial District, Route 141 and Mill Lane Commercial District, Route 137 Commercial District, Route One South Commercial District and the Office Park District. The standards for the landscaping of parking lots in the above zoning districts are subject to the nonresidential performance standards identified in Chapter 102, Zoning, Article IX, Performance Standards, for these respective zoning districts.

Parking lots serving six or more vehicles shall be landscaped according to the following provisions. Landscaping shall be designed to accommodate attractive and safe pedestrian circulation patterns, allow required sight distances at driveway intersections and good visibility of oncoming pedestrians and vehicles throughout the parking area.

- 1) Perimeter landscaping. The perimeter of parking lots shall be landscaped adjacent to other uses and rights-of-way with trees, shrubs, fencing and/or earth berming to avoid the impact of glare, headlights, parking lot lights, noise and dust and to protect and enhance visual character. The quality of perimeter landscaping is a particular concern in areas in which a nonresidential use is located adjacent to a residential use.

*Response: Requirement is met, refer to Attachments 20 and 27*

- 2) Landscaping within large parking areas. Landscaping areas shall be provided within parking areas serving more than 70 vehicles to provide visual and climatic relief from broad expanses of pavement and to channelize and separate areas for pedestrian and vehicular circulation. The following standards shall apply:

*Response: Not applicable*

## BELFAST CODE

- a. Large parking areas shall be subdivided into smaller parking cells of up to 70 vehicles contained within a planting buffer. No aisle with a planting cell may be longer than 300 feet, although a maximum length of 150 feet is preferred.
  - b. Planting strips shall be located so as to demonstrate the ends of parking rows, avoiding long rows of parked cars, and to channel pedestrian circulation. Planting strips should be a minimum of 10 feet in width to accommodate canopy and/or understory trees. Planting strips should be edged with granite or a six-inch continuous vertical curb or wheel stops to prevent vehicles from overhanging into the planting areas, and designed to allow efficient snow removal. Where feasible, planting strips shall be oriented at right angles to the main entrance of the principal building or use in order to maximize pedestrian safety and convenience.
  - c. For every 24 vehicles, the guideline is three canopy trees, two under-story trees, and 10 low shrubs to be planted in landscaped areas. The location of plantings shall be designed to accommodate snow plowing and storage without damage to plant materials.
- 3) Landscaping between parking lots and buildings. Landscaping shall be provided between buildings and paved areas, except in the case of an auto drop-off, a leaving area, or a vehicular entry into a building, in order to enhance the appearance of the site and avoid impacts to occupants from exhaust fumes and noise. In residential zoning districts, the landscaped area shall be no less than 10 feet deep from all buildings. The area shall be landscaped with shrubs, ground cover, and trees where appropriate, and may include a walkway up to five feet in width if it is 10 feet deep or more. In commercial zoning districts, the landscaped area shall be no less than four feet in width, and may be eliminated if a sidewalk that is at least four feet in width is located adjacent to the building.

***Response:*** Requirement is met, refer to Attachment 20

- 4) Maintenance of landscaping. An applicant or property owner shall maintain all landscaping that is required pursuant to this section in good condition and in perpetuity. Any plants that die shall be replaced within one growing season. This provision does not preclude the cutting of trees which have died and which may be a hazard. Any such tree which is cut shall be replaced by a tree of similar species which is a minimum of six feet in height and two inches in caliper at time of planting.

***Response:*** See Attachment 16, 28

- 5) Flexibility in requirements. To accommodate circumstances in which required landscaping may not be appropriate for site conditions, an applicant may submit and request approval of an alternative plan for the siting of landscaped areas, provided that an equal or greater amount of landscaped area is provided than would otherwise be required. The Planning Board may approve an alternative plan, provided the board determines that areas viewed by the public are attractively landscaped. Loading bays and industrial areas reserved for vehicles other than cars do not require landscaping, provided that such areas cannot be seen by the public and are adequately buffered from the wind.

### **Sec. 98-250. Lighting. [Ord. of 1-5-2010(1)]**

Where artificial lighting is provided for parking facilities, it shall be shaded or screened so that no light source or unreasonable glare shall be directly visible from outside the area and its access driveways.

***Response:*** See Attachment 18

## SITE PLANS

### **Sec. 98-251. Circulation. [Ord. of 1-5-2010(1)]**

- 1) Vehicular entrances and exits. Entrances and exits shall be clearly identified by the use of signs, curb cuts, and landscaping. Entrance and exit design shall be in conformance with the requirements of section 98-154, pertaining to driveway and access standards.

***Response:** See project drawings in Attachment 20, also see the statement from the Public Works Director in Attachment 25.*

- 2) Interior vehicular and pedestrian circulation.
  - a. Interior travel lanes may be required between parking cells to allow continuous and uninterrupted traffic movement. Parking spaces shall not be located along interior travel lanes.
  - b. Entrances and exits shall be designed to allow adequate stacking/ cueing of vehicles without blocking interior vehicle circulation lanes.
  - c. Walkways shall be designed to connect parking areas with residential areas, commercial establishments, the City sidewalk system and other points of interest as appropriate.
  - d. In paved parking areas, painted stripes shall be used to delineate parking stalls. In aisles utilizing diagonal parking, arrows shall be painted on the pavement to indicate traffic flow.
  - e. A six-inch vertical curb and/or wheel stops shall be provided where necessary to restrict vehicles to the confines of the designated parking area. Use of continuous curb stops is preferred.

***Response:** Requirement is met, refer to Attachment 20*

### **Sec. 98-252. Parking requirements in shoreland districts. [Ord. of 1-5-2010(1)]**

The provisions of Chapter 82 shall apply to parking areas in shoreland districts.

***Response:** Refer to Chapter 82 narrative, refer to Attachment 6*