

ARTICLE 10 - PERFORMANCE & DESIGN STANDARDS

The performance and design standards in this article are intended to clarify and expand upon the statutory review criteria found in Article 1, section 2. In reviewing a proposed subdivision, the Board shall review the application for conformance with the following performance and design standards and make findings that each has been met prior to the approval of a final plan. In all instances, the burden of proof shall be upon the applicant to present adequate information to indicate all performance and design standards and statutory criteria for approval have been or will be met.

10.1 Basic Subdivision Layout

A. Blocks.

Where street lengths exceed 1,000 feet between intersections with other streets, the Board may require a utility/pedestrian easement, at least 20 feet in width, to provide for underground utility crossings and/or a pedestrian pathway of at least five feet in width constructed in accordance with design standards for sidewalks below. Maintenance obligations of the easement shall be included in the written description of the easement.

B. Lots.

1. Wherever possible, side lot lines shall be perpendicular to the street.
2. The subdivision of tracts into parcels with more than twice the required minimum lot size shall be laid out in such a manner as either to provide for or preclude future division. Deed restrictions and notes on the plan shall

This provision is most appropriate in developing areas where it is desirable to promote pedestrian access, or where the easement may be necessary for sewer, water or electric utilities. In most rural areas, inclusion of this provision may make little sense.

This is simply an idea to provide for more usable regularly shaped lots.

The statute (in Section 4406) prohibits selling a lot other than as shown on the approved plan. Therefore if any lot is subsequently split, regardless of the amount of time that passes, a revised plan must be approved by the review authority. If lots are more than twice the size required by zoning, they can be laid out to be divided later, by providing more than twice the required frontage or lot width.

either prohibit future divisions of the lots or specify that any future division shall constitute a revision to the plan and shall require approval from the Board, subject to the criteria of the subdivision statute, the standards of these regulations and conditions placed on the original approval.

3. If a lot on one side of a stream (as defined in the DEP Minimum Shoreland Zoning Guidelines), tidal water, or road fails to meet the minimum requirements for lot size, it may not be combined with a lot on the other side of the stream, tidal water, or road to meet the minimum lot size.
4. The ratio of lot length to width, outside of the shoreland zone, shall not be more than three to one. Flag lots and other odd shaped lots in which narrow strips are joined to other parcels in order to meet minimum lot size requirements are prohibited. If any lots in the proposed subdivision have shore frontage on a river, stream, brook, great pond or coastal wetland as these features are defined in Title 38, section 480-B, none of the lots created within the subdivision have a lot depth to shore frontage ratio greater than 5 to 1.
5. In areas served by a postal carrier, lots shall be numbered in such a manner as to facilitate mail delivery. Even numbers shall be assigned to lots on one side of the street, and odd numbers on the opposite side. Where the proposed subdivision contains the extension of an existing street or street

Lots in subdivisions should be compact and usable. This provision requires that all land necessary to meet the minimum lot size requirements be all on one side of any potential physical barriers to use as a whole.

This is another provision to encourage a more compact design, providing a lot which is more usable to the purchaser. The statute prohibits lots with shore frontage from having a depth to shore frontage ratio of five to one or more. If a review authority does not wish to incorporate the suggested three to one ratio into its regulations, it should, at the least include a reference to the statutory requirement regarding a five to one ratio for shore-front lots.

With the advent of the state's Enhanced 911 emergency dispatch telephone system, many towns have street naming and numbering ordinances. This section should be coordinated with such an ordinance if one has been enacted.

approved by the Board, but not yet constructed, the lot numbers shall correspond with the existing lot numbers. The lot numbering shall be reviewed by the E-911 Addressing Officer and the comments shall be considered by the Board.

C. Utilities.

Utilities serving subdivisions in areas designated by the comprehensive plan as growth areas shall be installed underground. Utilities serving lots with a street frontage of 125 feet or less shall be installed underground. The Board may approve overhead utilities when the applicant proposes reserved affordable housing and provides evidence that the increased costs of underground utilities will raise the costs of the housing beyond the targets for affordable housing in the comprehensive plan.

D. Monuments.

1. Stone or precast concrete monuments shall be set at all street intersections and points of curvature, but no further than 750 feet apart along street lines without curves or intersections.
2. Stone or precast concrete monuments shall be set at all corners and angle points of the subdivision boundaries where the interior angle of the subdivision boundaries is 135° or less.
3. Stone or concrete monuments shall be a minimum of four inches square at the top and three feet in length, and set in the ground at final grade level. After they are set, drill hole 1/2 inch deep shall locate the point or points

Prior to including this section in the local regulations, the review authority should look at the comprehensive plan for some guidance. Underground electric, telephone and cable television transmission wires can promote aesthetics and increase traffic safety. However underground power is more expensive to install. For this reason, the *Model* suggests that in subdivisions with lots or units reserved for affordable housing, that the review authority be authorized to waive the requirement for underground power if it can be shown the extra costs are too much. The *Model* only requires underground power in the growth area or where lot frontage is fairly small, to avoid the expense in subdivisions with wide frontages.

Note that this section requires the installation of underground utilities prior to paving in order to avoid cutting fresh pavement. Ideally the utilities should be installed prior to the aggregate base course of gravel. This will provide a better road base and save the contractor time and money.

Prior to the sale of any lot in a subdivision, the statute (in Section 4406) requires that at least one corner of the lot be marked with monumentation. The *Model* suggests that all corners of all lots, as well as points of curvature of streets be marked with monuments.

The *Model* suggests that stone or concrete monuments be used at the corners of the boundaries of the subdivision and at certain points along any streets. Stone or concrete monuments are suggested because of their permanence and they are easier to find than a pin.

If a parcel was previously surveyed or has existing monumentation, that monumentation may not be disturbed. In that case, the review authority could waive the requirement for stone or concrete monumentation on the basis of the existing monumentation.

described above.

4. All other subdivision boundary corners and angle points, as well as all lot boundary corners and angle points shall be marked by suitable monumentation, as required by the Maine Board of Registration of Land Surveyors.

10.2 Sufficient Water.

A. Water Supply.

1. Any subdivision within the area designated in the comprehensive plan for future public water supply service shall make provisions for connection to the public system. A proposed subdivision shall not generate a demand on the source, treatment facilities or distribution system of the servicing water company or district beyond the capacity of those system components, considering improvements that are planned to be in place prior to occupancy of the subdivision. The applicant shall be responsible for paying the costs of system improvements to the district's or company's system as necessary in order to facilitate connection. When public water supply service will not be available at the time of construction of the subdivision, a "capped system" shall be installed within the subdivision to allow future connection when service becomes available without excavation within the right-of-way of any street within the subdivision.
2. When a subdivision is to be served by a public water system, the complete

Suitable monumentation includes iron pins or drill holes in ledge or boulders.

The statutory criterion is that the proposed subdivision have sufficient water available for the reasonably foreseeable needs of the subdivision. This means an adequate supply of good quality water.

In municipalities with existing or planned future public water supply systems, the comprehensive plan should indicate the areas to be served by the system. This provision in the *Model* serves to implement the comprehensive plan policy regarding the service area for public water.

Some literature recommends that any subdivision within 1,000 feet of an existing water supply line be required to connect to the system. If the water district or company has plans for a line extension in the future, but the system is not in place for a particular subdivision proposal, the *Model* recommends the installation of a "capped system" of pipes in the subdivision, which is connected to the public system after the public system is extended.

The name of the appropriate water district or company should be included in these provisions.

If a community has neither an existing or planned public water system such references should be deleted.

The issue of who pays for the additions to the water system may vary from water district to

Commentary

supply system within the subdivision including fire hydrants, shall be installed at the expense of the applicant. The size and location of mains, gate valves, hydrants, and service connections shall be reviewed and approved in writing by the servicing water company or district and the fire chief. Fire hydrants connected to a public water supply system shall be located no further than 500 feet from any building.

3. When a proposed subdivision is not within the area designated for public water supply service in the comprehensive plan, water supply shall be from individual wells or a private community water system.
 - a. Individual wells shall be sited and constructed to prevent infiltration of surface water, and contamination from subsurface waste water disposal systems and other sources of potential contamination.
 - (1) Due to the increased chance of contamination from surface water, dug wells shall be prohibited on lots of smaller than one acre. On lots of one acre or smaller, the applicant shall prohibit dug wells by deed restrictions and a note on the plan.

water district and is controlled to a certain extent by the Maine Public Utilities Commission. The *Model* suggests that the costs of the system within the subdivision itself be borne by the applicant. Perhaps some cost sharing of extensions of the system between the existing mains and the subdivision is equitable if that extension will be available for others to use. In subdivisions which will have reserved affordable housing, municipal financing of the water or other utilities is one way to lower development costs. The issue of who pays for improvements to the water system is largely up to the rules of the district or company as approved by the Public Utilities Commission. Prior to adoption of specific language in a community's subdivision regulations, the review authority should contact the water district or company to develop appropriate language. The servicing district or company should review and approve the system extension design to make sure it meets their standards. The fire chief should review the placement of fire hydrants. The *Model* does not provide detailed design standards for water systems or hydrant placement, leaving those types of details to the individual water districts.

A maximum distance of 500 feet between hydrant and building is typically recommended, based on the length and manageability of hose. Check with the fire chief prior to adoption of this requirement.

Similar to the requirement in subsection 1 to connect to the system when the proposed subdivision is within the area planned for service, this provision implements the policies of the comprehensive plan by prohibiting extensions of the public system beyond the area designated in the plan. If a community has neither an existing or planned public water supply system, this paragraph should be deleted.

Typically, the casing for dug wells does not provide as good protection against contamination from surface water runoff as does drilled wells. The chances of surface contamination is increased in higher density developments; therefore the *Model* suggests that dug wells be prohibited when lot sizes are one acre or less.

Commentary

- (2) Wells shall not be constructed within 100 feet of the traveled way of any street, if located downhill from the street, or within 50 feet of the traveled way of any street, if located uphill of the street. This restriction shall be included as a note on the plan and deed restriction to the effected lots.
- b. Lot design shall permit placement of wells, subsurface waste water disposal areas, and reserve sites for subsurface waste water disposal areas in compliance with the Maine Subsurface Wastewater Disposal Rules and the Well Drillers and Pump Installers Rules.
- c. If a central water supply system is provided by the applicant, the location and protection of the source, the design, construction and operation of the system shall conform to the standards of the Maine Rules Relating to Drinking Water (10-144A C.M.R. 231).
- d. In areas where the comprehensive plan has identified the need for additional water storage capacity for fire fighting purposes, the applicant shall provide adequate water storage facilities.
 - (1) Facilities may be ponds with dry hydrants, underground storage reservoirs or other methods acceptable to the fire chief.
 - (2) A minimum storage capacity of

This provision has been included to prevent contamination of wells from road salt.

The Maine Subsurface Wastewater Disposal Rules require a minimum separation of 100 feet between wells and disposal areas. Until recently the installation of private drinking water wells in Maine was unregulated. In January 1994, the Department of Human Services adopted rules for well drillers and pump installers. These rules also include a 100 foot separation between waste water disposal areas and water wells for single family dwellings. In certain soils, coarse grained sands and gravels and shallow to bedrock soils, some ground water experts recommend larger separations. In reviewing a plan, the review authority should make sure that the required separation is met from all nearby disposal areas, not just ones on the same lot as the well.

Any water supply system serving fifteen connections or 25 people or more is a public water supply system.+ It must be licensed by the Department of Human Services and comes under the jurisdiction of the Rules Relating to Drinking Water. Department of Human Services considers a central system in a subdivision serving nine or more dwelling units as serving 25 or more people (three per unit).

The ~~re~~asonably foreseeable needs+of the subdivision include fire protection. Adequate fire protection in areas not served by public water includes available storage facilities from which to pump. **The comprehensive plan should indicate the areas of the municipality in which adequate facilities exist and those in which additional facilities are needed.** The *Model* requires subdivisions to provide some type of storage when located within an area of the town with an identified deficiency. Ponds and dry hydrants are typically the preferred method. Ponds provide the opportunity for a multi-use facility: water storage for fire protection, storm water detention, phosphorus removal to protect lake water quality, outdoor recreation for the residents of the subdivision, and occasionally wildlife or waterfowl habitat. Construction of a fire pond in or near a stream or wetland comes under the jurisdiction of the

Commentary

10,000 gallons shall be provided for a subdivision not served by a public water supply. Additional storage of 2,000 gallons per lot or principal building shall be provided. The Board may require additional storage capacity upon a recommendation from the fire chief.

- (3) Where ponds are proposed for water storage, the capacity of the pond shall be calculated based on the lowest water level less an equivalent of three feet of ice. An easement shall be granted to the municipality granting access to and maintenance of dry hydrants or reservoirs where necessary.
- (4) Hydrants or other provisions for drafting water shall be provided to the specifications of the fire department. Minimum pipe size connecting dry hydrants to ponds or storage vaults shall be six inches. A suitable accessway to the hydrant or other water source shall be constructed.
- (5) The Board may waive the requirement for water storage only upon submittal of evidence that the soil types in the subdivision will not permit their construction or installation and that the fire chief has indicated in writing that alternate methods

Natural Resource Protection Act, requiring a permit from the Department of Environmental Protection. Some rural fire departments have recently been recommending the installation of a 10,000 gallon or larger concrete or fiberglass reservoir as an alternative to ponds. The fire chief should be consulted on the fire protection plan for all subdivisions.

There may be sites where neither installation of concrete or fiberglass reservoirs nor construction of a pond is possible due to the soils or geologic conditions. In these cases, the *Model* allows the review authority to waive the requirement for storage when the fire chief has indicated there are satisfactory alternatives. Such alternatives may include drafting water from a nearby surface water body

of fire protection are available.

B. Water Quality.

Water supplies shall meet the primary drinking water standards contained in the Maine Rules Relating to Drinking Water. If existing water quality contains contaminants in excess of the secondary drinking water standards in the Maine Rules Relating to Drinking Water, that fact shall be disclosed in a note on the plan to be recorded in the Registry of Deeds.

The primary drinking water standards deal with contaminants which are health concerns, while the secondary standards are contaminants which present more of an aesthetic concern.

10.3 Erosion and Sedimentation and Impact on Water Bodies

- A. The proposed subdivision shall prevent soil erosion and sedimentation from entering waterbodies, wetlands, and adjacent properties.
- B. The procedures outlined in the erosion and sedimentation control plan shall be implemented during the site preparation, construction, and clean-up stages.
- C. Cutting or removal of vegetation along waterbodies shall not increase water temperature or result in shoreline erosion or sedimentation.
- D. Topsoil shall be considered part of the subdivision and shall not be removed from the site except for surplus topsoil from roads, parking areas, and building excavations.

The statutory criterion is that the proposed subdivision will not cause unreasonable soil erosion or a reduction of the land's capacity to hold water so that a dangerous or unhealthy condition results.

10.4 Sewage Disposal

A. Public System.

- 1. Any subdivision within the area designated in the comprehensive plan for future public sewage disposal service shall be connected to the public

In municipalities with existing or future public sewage disposal systems, the comprehensive plan should indicate the areas which the system is planned to serve. This provision in the *Model* implements the comprehensive plan policy regarding the

system.

2. When a subdivision is proposed to be served by the public sewage system, the complete collection system within the subdivision, including manholes and pump stations, shall be installed at the expense of the applicant.
3. The sewer district shall certify that providing service to the proposed subdivision is within the capacity of the system's existing collection and treatment system or improvements planned to be complete prior to the construction of the subdivision.
4. The sewer district shall review and approve the construction drawings for the sewerage system. The size and location of laterals, collectors, manholes, and pump stations shall be reviewed and approved in writing by the servicing sewer district or department.

B. Private Systems.

1. When a proposed subdivision is not within the area designated for public sewage disposal service in the

service area for public sewage disposal.

Some literature recommends that a subdivision within 1,000 feet of an existing sewer line be required to connect to the system. Some local sanitary districts or municipalities have enacted their own rules which require a development to connect when it is within a certain distance of an existing line. The subdivision standards should be coordinated with the regulations of the local sanitary district or sewer department.

If the sewer district or department has plans for line extension in the future, but the system is not in place for a particular subdivision proposal, an option is the installation of a ~~mapped~~ system+of pipes in the subdivision, which is connected to the public system after the public system is extended. The name of the appropriate sewer district or department should be included in these provisions. If a community has neither an existing or planned public sewage system these sections should be deleted.

The issue of who pays for the additions to the sewer system may vary from community to community. The *Model* suggests that the costs of the system within the subdivision itself be borne by the applicant. Perhaps some cost sharing for extensions of the system between the existing collectors or interceptors and the subdivision is equitable if that extension will be available for others to use. The standards in the subdivision regulations should be coordinated with the policies of the sewer district or department.

The statutory criteria are that the proposed subdivision will provide for adequate sewage disposal and will not cause an unreasonable burden on municipal services if they are to be utilized. In order to provide adequate sewage disposal, the system must be able to handle the sewage from the subdivision at the time the subdivision is to be occupied. Therefore improvements planned in the future should be considered in determining whether adequate sewage disposal will be available.

The servicing district or department should review and approve the system extension design to make sure it meets their standards. The *Model* does not provide detailed design standards for sewerage systems. These types of details are best left to the individual sewer districts or departments.

This provision implements the policies of the comprehensive plan by prohibiting extensions of the public system beyond the area designated in the plan. If a

Commentary

comprehensive plan, connection to the public system shall not be permitted. Sewage disposal shall be private subsurface waste water disposal systems or a private treatment facility with surface discharge, licensed by the Department of Environmental Protection.

2. The applicant shall submit evidence of site suitability for subsurface sewage disposal prepared by a Maine Licensed Site Evaluator in full compliance with the requirements of the State of Maine Subsurface Wastewater Disposal Rules.
 - a. The site evaluator shall certify in writing that all test pits which meet the requirements for a new system represent an area large enough to a disposal area on soils which meet the Disposal Rules.
 - b. On lots in which the limiting factor has been identified as being within 24 inches of the surface, a second site with suitable soils shall be shown as a reserve area for future replacement of the disposal area. The reserve area shall be shown on the plan and restricted in the deed so as not to be built upon.
 - c. In no instance shall a disposal area be on a site which requires a New System Variance from the

community has neither an existing nor planned public sewerage system, this section should be deleted.

In brief, effective May 1995, the Disposal Rules require a site to be a minimum of 100 feet from a perennial water body or well, to be on a slope of 20% or less, and to have a depth to limiting factor of 15 inches or more in the shoreland zone and 12 inches or more elsewhere, among other requirements. Limiting factor is defined as the seasonal high water table, bedrock, or a restrictive layer in the soil.

Each application for subdivision approval should be accompanied by a site evaluation which indicates the texture and parent material of the soil, and depth to limiting factor found in the test pit. This information should appear on a form printed by the Division of Health Engineering known as an HHE-200. The box on the following page provides additional explanation to assist in understanding the HHE-200 form.

A typical disposal area for a three bedroom single family home will require approximately 1,000 square feet of area. The test pit only looks at one backhoe excavation. Occasionally site conditions can change rather abruptly, particularly with shallow to bedrock soils. The individual conducting the site evaluations, either a Licensed Site Evaluator or Certified Soil Scientist, should certify in writing that a disposal area may be installed satisfactorily at the location of each test pit shown to meet the Disposal Rules.

As mentioned above, the Disposal Rules currently require a depth to the limiting factor of no less than 12 inches (and 15 inches in the shoreland zone). As the depth to limiting factor decreases, the chances of a system malfunctioning may increase. The *Model* suggests that when the depth to limiting factor is less than 24 inches, a second passing site evaluation be submitted, and an area around that test pit be shown on the plan as an area reserved for a replacement disposal area, with building or driveways prohibited. This should be accomplished both by notes on the plan and by restrictions in the deed.

The Disposal Rules contain a procedure by which an individual may receive permission from the Division of Health Engineering to install a system which does not meet the requirements

Subsurface Wastewater Disposal Rules.

10.5 Solid Waste

If the additional solid waste from the proposed subdivision exceeds the capacity of the municipal solid waste facility, causes the municipal facility to no longer be in compliance with its license from the Department of Environmental Protection, or causes the municipality to exceed its contract with a non-municipal facility, the applicant shall make alternate arrangements for the disposal of solid waste. The alternate arrangements shall be at a disposal facility which is in compliance with its license. The Board may not require the alternate arrangement to exceed a period of five years.

10.6 Impact on Natural Beauty, Aesthetics, Historic Sites, Wildlife Habitat, Rare Natural Areas or Public Access to the Shoreline.

A. Preservation of Natural Beauty and Aesthetics.

1. The plan shall, by notes on the final plan and deed restrictions, limit the clearing of trees to those areas designated on the plan.
2. Except in areas of the municipality designated by the comprehensive plan

of the Rules. Effective May 1995, revisions to the Disposal Rules provide for the Local Plumbing Inspector to grant approval for new system variances. For sites which do not meet the minimum soil conditions, a point system has been established. For lots within a proposed subdivision a variance request must obtain a minimum of 75 points out of 100 to be considered. The *Model* suggests prohibiting new system variances within subdivisions.

There may be some conflict between the subdivision statute and other provisions of state law. The criterion in the subdivision statute is that a proposed subdivision not cause an unreasonable burden on the municipality's ability to dispose of solid waste. However Title 38 M.R.S.A., §1305, sub-§1 *requires* a municipality to provide for solid waste disposal for the waste generated within the municipality. Generating more solid waste than municipal facilities are designed to handle or can reasonably handle would clearly be an unreasonable burden. The *Model* suggests that to cause a local facility to fall out of compliance with its operating license, or to cause a municipality to exceed its contract with a private or non-municipal facility would also be an unreasonable burden.

The *Model* suggests that in these cases the applicant find another facility which will accept the waste. Whereas the municipality has a responsibility to provide arrangements for the disposal of solid waste generated within the community, the applicant should not be required to make alternate arrangements for a period of time exceeding that which is needed for the municipality to plan, finance and construct the improvements necessary to allow it to handle the waste. The *Model* suggests a limit of five years.

The criterion in the statute is that the proposed subdivision will not have an undue adverse effect on the scenic or natural beauty of the area, aesthetics, historic sites, significant wildlife habitat identified by the Department of Inland Fisheries and Wildlife or the municipality, or rare and irreplaceable natural areas or any public rights for physical or visual access to the shoreline. The *Model* has divided the performance standards for this criterion into five sections.

This section requires the plan to indicate an area on each lot beyond which clearing is not permitted. The *Model* does not suggest any particular maximum area or percentage of a lot as standards or as a design guideline, preferring to leave that to the judgment of the review authority and the applicant on a case by case basis. Even without a percentage or area limit as a standard, including this provision in the municipal regulations may cause both the applicant and the review authority to think about the issue. When a subdivision is located within the direct watershed of a great pond, one of the most effective ways to control phosphorus export is to limit the conversion of existing woodland to lawns. The stormwater management plan may require wooded buffers as a tool to regulate stormwater runoff.

The comprehensive planning statute, the guidelines from the State Planning Office,

Commentary

as growth areas, the subdivision shall be designed to minimize the visibility of buildings from existing public roads. Outside of designated growth areas, a subdivision in which the land cover type at the time of application is forested, shall maintain a wooded buffer strip no less than fifty feet in width along all existing public roads. The buffer may be broken only for driveways and streets.

3. The Board may require the application to include a landscape plan that will show the preservation of any existing large specimen trees, the replacement of trees and vegetation, and graded contours.
4. Unless located in areas designated as a growth area in the comprehensive plan, building location shall be restricted from open fields, and shall be located within forested portions of the subdivision. When the subdivision contains no forest or insufficient forested portions to include all buildings, the subdivision shall be designed to minimize the appearance of buildings when viewed from existing public streets. When a proposed subdivision street traverses open fields, the plan shall include the planting of street trees. Street trees shall include a

and most municipal comprehensive plans discuss the value of protecting the “rural character” of the state and municipalities. The authors' conversations with municipal planning officials and review of several public opinion surveys have led to the conclusion that one of the primary features of rural character is not necessarily the lack of development as much as the perception of the lack of development. Designing subdivisions to minimize the visual impacts as viewed from public roads may contribute greatly to maintenance of rural character in a municipality.

Depending on the site characteristics, this performance standard can be met by a variety of design methods. For proposed subdivisions which are wooded, the retention of a wooded buffer strip along the road in which the removal of trees is prohibited may serve the purpose of protecting the rural character. In proposed subdivisions that have both open field and woods, locating the buildings in the woods will accomplish the goal. The designer of the subdivision may be able to take advantage of topography and hide the development behind a hill. Another issue to keep in mind, in the mountainous portions of the state, is the impact of tree removal and building construction along ridge lines. See subsection 5 below for design guidelines for meeting this standard

The retention of healthy large trees within a subdivision can greatly improve the visual quality of the development and the living conditions for the occupants.

Much of the New England townscape's character resulted from the foresight of someone several generations ago to plant street trees. Street trees serve to provide shade, frame views along a street, and in themselves contribute to the beauty of a subdivision. The *Model* has suggested a mix of tall shade trees and medium-height flowering trees to avoid potential

Commentary

mix of tall shade trees and medium height flowering species. Trees shall be planted no more than fifty feet apart.

5. When a proposed subdivision contains a ridge line identified in the comprehensive plan as a visual resource to be protected, the plan shall restrict tree removal and prohibit building placement within 50 feet vertical distance of the ridge top. These restrictions shall appear as notes on the plan and as covenants in the deed.

B. Retention of Open Spaces and Natural or Historic Features.

1. If any portion of the subdivision is located within an area designated by the comprehensive plan as open space or greenbelt, that portion shall be reserved for open space preservation.
2. If any portion of the subdivision is located within an area designated as a unique natural area by the comprehensive plan or the Maine Natural Areas Program the plan shall indicate appropriate measures for the preservation of the values which qualify the site for such designation.
3. If any portion of the subdivision is designated a site of historic or

monotony and avoid single species plantings which intensified the catastrophe of Dutch elm disease. Street trees are an investment in the future of a neighborhood, acting to improve the visual character of the streetscape, provide shade to adjoining lawns, lower the street temperature, and provide habitat for street wildlife in suburban and urban settings.

The ridges of mountains or hilltops in many communities serve as major visual resources, which comprehensive plans may discuss preserving. Restriction of building activity or forest clearing from these ridge lines can assist in preserving this aesthetic resource. **The comprehensive plan should be consulted for the appropriateness of a guideline such as this.** If there are no policies to support such a requirement, this section should be deleted.

The comprehensive planning statute encourages municipalities to incorporate open space planning and greenbelts into their comprehensive plans. This provision of the Model implements this policy by requiring areas designated as future open space to be reserved as such in a subdivision plan. Any time the local subdivision standards or land use ordinance require land which is otherwise buildable to be designated as open space, the municipality is strongly encouraged to consider appropriate zoning provisions which either allow the area within the open space to be counted for purposes of determining the number of lots or dwelling units in the subdivision or establishing a compensatory system such as the transfer of development rights, to soften possible land owner opposition to such a measure, provide a stronger degree of fairness to its growth management programs, and avoid possible claims of taking private property without just compensation. Recent U.S. Supreme Court cases have stressed the importance of allowing a property owner use of their land and the need for a rational relationship between the impacts of the development and the restrictions placed upon that development. **If a municipality's comprehensive plan does not have an open space component, this section should be deleted.**

There are many reasons a site could be designated a unique natural area ranging from the habitat for a rare plant or animal, to rare geologic formations. **Comprehensive plans should contain an inventory of the unique natural areas within the municipality and propose strategies for their preservation. Inclusion of any unique natural areas within the open space of a proposed subdivision, and a proper management plan to protect the site's value should implement those comprehensive plan policies.**

The Maine Historic Preservation Commission maintains a register of known historic and

Commentary

prehistoric importance by the comprehensive plan, National Register of Historic Places, or the Maine Historic Preservation Commission, appropriate measures for the protection of the historic or prehistoric resources shall be included in the plan. When the historic features to be protected include buildings, the placement and the architectural design of new structures in the subdivision shall be similar to the historic structures. The Board shall seek the advice of the Maine Historic Preservation Commission in reviewing such plans.

4. The subdivision shall reserve sufficient undeveloped land to provide for the recreational needs of the occupants. The percentage of open space to be reserved shall depend on the identified needs for outdoor recreation in the portion of the municipality in which the subdivision is located according to the comprehensive plan, the proposed lot sizes within the subdivision, the expected demographic makeup of the occupants of the subdivision, and the site characteristics, but shall constitute no less than 5% of the area of the subdivision. In determining the need for recreational open space the Board shall also consider the proximity of the subdivision to neighboring dedicated open space or recreation facilities; and the type of development. Sites selected primarily for scenic or passive recreation purposes shall have such

prehistoric sites. **These also should be in the inventory of the municipal comprehensive plan. The comprehensive plan should designate which are important enough to be worthy of protection. The subdivision plan should provide for a level of protection called for in the comprehensive plan.**

The need for outdoor recreation space and facilities should be addressed in the comprehensive plan. The plan should contain an analysis of the needs for different types of facilities in the municipality and perhaps in various neighborhoods or localities within the municipality.

The amount of land needed for outdoor recreation within a subdivision will vary from situation to situation. Most likely the biggest determinant will be the lot sizes within the subdivision. Lots of 10,000 square feet or smaller provide little opportunity for play area on the lot. Lots of two to three acres on the other hand provide enough undeveloped open area on each lot as to generate little demand for other facilities. A subdivision which is immediately adjacent to a neighborhood park will require less land to be reserved for open space than a lot which is two miles from the nearest public facility. A subdivision with one and two bedroom apartments will generate a different demand for outdoor recreation than one with three bedroom single family houses.

access as the Board may deem suitable and no less than 25 feet of road frontage.

5. Subdivisions with an average density of more than three dwelling units per acre shall provide no less than fifty percent of the open space as usable open space to be improved for ball fields, playgrounds or other similar active recreation facility. A site intended to be used for active recreation purposes, such as a playground or a play field, should be relatively level and dry, have a total frontage on one or more streets of at least 200 feet, and have no major dimensions of less than 200 feet.
6. Land reserved for open space purposes shall be of a character, configuration and location suitable for the particular use intended.
7. Reserved open space land may be dedicated to the municipality.

8. Where land within the subdivision is not suitable or is insufficient in amount, and when suggested by the comprehensive plan, a payment in lieu of dedication may be substituted for the reservation of some or part of the open

The issue of who should own open space varies from municipality to municipality. **The benefits of public ownership are that the public may use the land or facility, rather than solely the residents of a subdivision, and that may meet a need identified in the comprehensive plan.** The drawback, of course, is the cost of upkeep and maintenance. **The comprehensive plan should contain policies as to which types of open space land and facilities the town would like to have dedicated to the municipality and which should remain in private hands to be managed by a lot owners' association or other private entity. Any requirement for an applicant to dedicate land to the municipality needs to be carefully accounted for in the municipality's comprehensive plan and there must be a direct link between the impacts of the subdivision and the purposes of the land dedication.** The U.S. Supreme Court, in several recent cases, has emphasized the need for planning to precede regulation and for the correlation between the impacts and the dedication.

There may be cases where the municipality will prefer to see a donation of cash in lieu of the reservation of land. These cases include where a municipality has a clear capital improvements program which calls for the purchase or improvement of specific open space or outdoor recreation facilities. Cash contributions will provide an opportunity to obtain these without as heavy a burden on the property tax. It may be more beneficial for the community

Commentary

space requirement. Payments in lieu of dedication shall be calculated based on the percentage of reserved open space that otherwise would be required and that percentage of the projected market value of the developed land at the time of the subdivision, as determined by the municipal tax assessor. The payment in lieu of dedication shall be deposited into a municipal land open space or outdoor recreation facility acquisition or improvement fund.

C. Protection of Significant Wildlife Habitat.

If any portion of a proposed subdivision lies within:

1. 250 feet of the following areas identified and mapped by the Department of Inland Fisheries and Wildlife Beginning with Habitat Project or the comprehensive plan as:
 - a. Habitat for species appearing on the official state or federal lists of endangered or threatened species;
 - b. High and moderate value waterfowl and wading bird habitats, including nesting and feeding areas;
 - c. Shorebird nesting, feeding and staging areas and seabird nesting islands;
 - d. Critical spawning and nursery areas for Atlantic sea run salmon as defined by the Atlantic Sea Run Salmon Commission; or
2. 1,320 feet of an area identified and mapped by the Department of Inland Fisheries and Wildlife as a high or moderate value deer wintering area or

to achieve the goals of the capital improvement program than to obtain scattered pieces of open space where subdivision activity happens to be taking place. **If a community has developed a greenbelt plan, subdivision activity away from the designated open space can better contribute to the municipality with a cash donation, than the donation of land that has not been designated for open space.**

Appropriate zoning ordinance and subdivision regulation provisions allowing clustering (see section 10.13) should be enacted to avoid the takings issue. **The comprehensive plan should indicate which important wildlife habitats are to be protected.** The Department of Inland Fisheries and Wildlife has mapped essential habitat for rare and endangered species and significant habitat under the Natural Resources Protection Act in the Beginning with Habitat Project. See:

<http://www.beginningwithhabitat.org>, or contact your Regional Council.

Not only does the habitat itself need to be protected but activities and human disturbance within the surrounding areas need to be controlled to preserve the habitat's value. The guidelines recommend the review of a subdivision plan by a wildlife biologist to ensure sensitive area protection. The Department of Inland Fisheries and Wildlife is in the process of adopting standards for the protection of habitat. Until these practices are adopted, the Department of Inland Fisheries and Wildlife recommends that protection measures for proposed subdivisions in areas designated as significant wildlife habitat in comprehensive plans be proscribed on a case-by-case basis. Review authorities should contact Department of Inland Fisheries and Wildlife biologists or regional council staff to find out if new management recommendations are available.

travel corridor;

3. Or other important habitat areas identified in the comprehensive plan or in the Department of Inland Fisheries and Wildlife Beginning with Habitat Project;

the applicant shall demonstrate that there shall be no adverse impacts on the habitat and species it supports. There shall be no cutting of vegetation within such areas, or within the strip of land extending at least 75 feet from the edge or normal high-water mark of such habitat areas. The applicant must consult with the Maine Department of Inland Fisheries and Wildlife, and provide their written comments to the Board. The Board may require a report to be submitted, prepared by a wildlife biologist, selected or approved by the Board, with demonstrated experience with the wildlife resource being impacted. This report shall assess the potential impact of the subdivision on the significant habitat and adjacent areas that are important to the maintenance of the affected species and shall describe any additional appropriate mitigation measures to ensure that the subdivision will have no adverse impacts on the habitat and the species it supports.

D. Protection of Important Shoreland Areas.

1. Any existing public rights of access to the shoreline of a water body shall be maintained by means of easements or rights-of-way, or should be included in the open space with provisions made for continued public access.
2. Within areas subject to the state

A review authority can determine whether a biologist hired by an applicant is qualified to conduct a site assessment by asking if the wildlife biologist certified by the Wildlife Society (the professional association of wildlife biologists) and if the biologist has previous experience assessing the particular resource(s) of concern in this case. The biologist should submit copies of his or her credentials along with the report.

Access to the shoreline of waterbodies has been made a priority by the Legislature. The comprehensive planning law mentions this priority, and the subdivision statute has even included visual access to the shore in the criteria. These design guidelines are based on the minimum shoreland zoning guidelines adopted by the Board of Environmental Protection. Therefore for subdivisions along a river, great pond, tidal water body or freshwater wetland larger than ten acres in size, or along a stream as defined for purposes of shoreland zoning, these restrictions should be in place anyway. A municipality may wish to extend

Commentary

mandated shoreland zone, within a strip of land extending 100 feet inland from the normal high-water line of a great pond or any tributary to a great pond, and 75 feet from any other water body or the upland edge of a wetland, a buffer strip of vegetation shall be preserved. The plan notes, and deeds to any lots which include any such land, shall contain the following restrictions:

- a. Tree removal shall be limited to no more than 40% of the volume of trees 4 inches or more in diameter measured at 4 1/2 feet above the ground level on any lot in any ten year period.
- b. There shall be no cleared opening greater than 250 square feet in the forest canopy as measured from the outer limits of the tree crown.
- c. However, a footpath not to exceed ten feet in width as measured between tree trunks is permitted provided that a cleared line of sight to the water through the buffer strip is not created. Adjacent to a great pond, or a tributary to a great pond, the width of the foot path shall be limited to six feet.
- d. In order to protect water quality and wildlife habitat adjacent to great ponds, and tributaries to great ponds, existing vegetation under three feet in height and other ground cover shall not be removed, except to provide for a footpath or other permitted uses as described above.

these restrictions to brooks which do not otherwise need to be covered by shoreland zoning.

Requiring their inclusion as deed restrictions will help assure compliance, as perspective lot purchasers should become more aware of them, than if they are simply in the municipality's zoning ordinance.

e. Pruning of tree branches, on the bottom third of the tree is permitted.

3. Within areas subject to the state mandated shoreland zone, beyond the buffer strip designated above, and out to 250 feet from the normal high water line of a water body or upland edge of a wetland, cleared openings for development, including but not limited to, principal and accessory structures, driveways and sewage disposal areas, shall not exceed in the aggregate, 25% of the lot area or 10,000 square feet, whichever is greater, including land previously developed.

E. Reservation or Dedication and Maintenance of Open Space and Common Land, Facilities and Services.

1. All open space common land, facilities and property shall be owned by:
 - a. The owners of the lots or dwelling units by means of a lot owners' association;
 - b. An association which has as its principal purpose the conservation or preservation of land in essentially its natural condition; or
 - c. The municipality.
2. Further subdivision of the common land or open space and its use for other than non-commercial recreation, agriculture, or conservation purposes, except for easements for underground utilities, shall be prohibited. Structures and buildings accessory to non-commercial recreational or conservation uses may

The owner, developer or applicant should not continue to own the open space or other land or facilities in the subdivision. Land which is reserved as open space is usually best dedicated for public ownership. Land which is reserved as active recreation or other neighborhood facilities should be owned by the lot owners association. Subdivision streets which are not to be dedicated as public ways, common septic systems or wells, and other facilities should also be owned by the lot owners association. A review authority may wish to consider a requirement that the developer provide an initial capital fund for the association to cover replacement costs of major facilities.

Future development of the common land or open space should be prohibited, especially if the area has been used in calculating the density of the subdivision. The best way to accomplish this is through a combination of notes on the plan and conservation easements to the municipality.

be erected on the common land. When open space is to be owned by an entity other than the municipality, there shall be a conservation easement deeded to the municipality prohibiting future development.

3. The common land or open space shall be shown on the final plan with appropriate notations on the plan to indicate:
 - a. It shall not be used for future building lots; and
 - b. Which portions of the open space, if any, may be dedicated for acceptance by the municipality.
4. The final plan application shall include the following:
 - a. Covenants for mandatory membership in the lot owners' association setting forth the owners' rights, interests, and privileges in the association and the common property and facilities, to be included in the deed for each lot or dwelling.
 - b. Draft articles of incorporation of the proposed lot owners' association as a not-for-profit corporation; and
 - c. Draft by-laws of the proposed lot owners' association specifying the responsibilities and authority of the association, the operating procedures of the association and providing for proper capitalization of the association to cover the costs of major repairs, maintenance and replacement of common facilities.
5. In combination, the documents

Prospective purchasers of lots in the subdivision should be aware of the possibility of public ownership of the open space.

The proper establishment of the lot owners' association is very important to the success of any development that is going to have commonly owned property or facilities. The covenants and by-laws which establish the association must make its responsibilities, duties, and authority very clear. The review authority should read through them carefully and make sure that points covered in these sections are properly covered. Membership in the association should be mandatory for every lot or unit owner in the development. The association must be given the authority to collect assessments to finance its operations and replacement costs for major capital facilities, and place liens on the property of those who do not pay. Sample by-laws or covenants are available from regional councils. In a subdivision in which the open space and roads are to be dedicated to the municipality, the establishment of an association may not be necessary.

referenced in paragraph D above shall provide for the following.

- a. The homeowners' association shall have the responsibility of maintaining the common property or facilities.
- b. The association shall levy annual charges against all owners of lots or dwelling units to defray the expenses connected with the maintenance, repair and replacement of common property and facilities and tax assessments.
- c. The association shall have the power to place a lien on the property of members who fail to pay dues or assessments.
- d. The developer or subdivider shall maintain control of the common property, and be responsible for its maintenance until development sufficient to support the association has taken place. Such determination shall be made by the Board upon request of the lot owners' association or the developer.

10.7 Conformance with Zoning Ordinance and Other Land Use Ordinances.

All lots, other than those found within cluster developments approved pursuant to section 10.13, shall meet the minimum dimensional requirements of the zoning ordinance for the zoning district in which they are located. The proposed subdivision shall meet all applicable performance standards or design criteria from the zoning ordinance and other land use

ordinances.

10.8 Financial and Technical Capacity.

A. Financial Capacity.

The applicant shall have adequate financial resources to construct the proposed improvements and meet the criteria of the statute and the standards of these regulations. When the applicant proposes to construct the buildings as well as the subdivision improvements, the applicant shall have adequate financial resources to construct the total development. In making the above determinations the Board shall consider the proposed time frame for construction and the effects of inflation.

B. Technical Ability.

1. The applicant shall retain qualified contractors and consultants to supervise, construct and inspect the required improvements in the proposed subdivision.
2. In determining the applicant's technical ability the Board shall consider the applicant's previous experience, the experience and training of the applicant's consultants and contractors, and the existence of violations of previous approvals granted to the applicant.

10.9 Impact on Ground Water Quality or Quantity.

A. Ground Water Quality.

1. When a hydrogeologic assessment is submitted, the assessment shall contain at least the following information:
 - a. A map showing the basic soils

- types.
- b. The depth to the water table at representative points throughout the subdivision.
 - c. Drainage conditions throughout the subdivision.
 - d. Data on the existing ground water quality, either from test wells in the subdivision or from existing wells on neighboring properties.
 - e. An analysis and evaluation of the effect of the subdivision on ground water resources. In the case of residential developments, the evaluation shall, at a minimum, include a projection of post development nitrate-nitrogen concentrations at any wells within the subdivision, or at the subdivision boundaries; or at a distance of 1,000 feet from potential contamination sources, whichever is a shortest distance.
 - f. A map showing the location of any subsurface waste water disposal systems and drinking water wells within the subdivision and within 200 feet of the subdivision boundaries.
2. Projections of ground water quality shall be based on the assumption of drought conditions (assuming 60% of annual average precipitation).
 3. No subdivision shall increase any contaminant concentration in the ground water to more than one half of the Primary Drinking Water Standards. No subdivision shall increase any

contaminant concentration in the ground water to more than the Secondary Drinking Water Standards.

4. If ground water contains contaminants in excess of the primary standards, and the subdivision is to be served by on-site ground water supplies, the applicant shall demonstrate how water quality will be improved or treated.
5. If ground water contains contaminants in excess of the secondary standards, the subdivision shall not cause the concentration of the parameters in question to exceed 150% of the ambient concentration.
6. Subsurface waste water disposal systems and drinking water wells shall be constructed as shown on the map submitted with the assessment. If construction standards for drinking water wells or other measures to reduce ground water contamination and protect drinking water supplies are recommended in the assessment, those standards shall be included as a note on the final plan, and as restrictions in the deeds to the affected lots.

B. Ground Water Quantity.

1. Ground water withdrawals by a proposed subdivision shall not lower the water table beyond the boundaries of the subdivision.
2. A proposed subdivision shall not result in a lowering of the water table at the subdivision boundary by increasing runoff with a corresponding decrease in infiltration of precipitation.

10.10 Floodplain Management.

When any part of a subdivision is located in a special flood hazard area as identified by the Federal Emergency Management Agency:

- A. All public utilities and facilities, such as sewer, gas, electrical and water systems shall be located and constructed to minimize or eliminate flood damages.
- B. Adequate drainage shall be provided so as to reduce exposure to flood hazards.
- C. The plan shall include a statement that structures in the subdivision shall be constructed with their lowest floor, including the basement, at least one foot above the 100-year flood elevation. Such a restriction shall be included in any deed, lease, purchase and sale agreement, or document transferring or expressing an intent to transfer any interest in real estate or structure, including but not limited to a time-share interest. The statement shall clearly articulate that the municipality may enforce any violation of the construction requirement and that fact shall also be included in the deed or any other document previously described. The construction requirement shall also be clearly stated on the plan.

10.11 Identification of Freshwater Wetlands, Rivers, Streams or Brooks.

Freshwater wetlands within the proposed subdivision shall be identified in accordance with the *1987 Corps of Engineers Wetland Delineation Manual*, published by the United States Army Corps of Engineers. Any rivers, streams, or brooks within or abutting the

proposed subdivision shall be identified.

10.12 Stormwater Management

- A. For subdivisions that require a DEP review under the Site Location of Development Act (SLDA), a stormwater management plan shall be submitted which complies with the SLDA permit and the requirements of DEP Chapter 500 Stormwater Regulations.
- B. For subdivisions that do not require a SLDA permit, but require a DEP permit under the Stormwater Law, a stormwater management plan shall be submitted which complies with the requirements of DEP Chapter 500 Stormwater Regulations.
- C. For subdivisions outside of the watershed of a Great Pond, that neither require a SLDA permit, nor a DEP permit under the Stormwater Law, a stormwater management plan shall be submitted which incorporates Low Impact Development techniques on each individual lot, as described in Appendix __ (*to be prepared by Horsley-Witten under contract with the State of Maine*).
- D. For subdivisions within the watershed of a Great Pond, containing:
 - 1. five or more lots or dwelling units created within any five-year period; or
 - 2. any combination of 800 linear feet of new or upgraded driveways and/or streets;a stormwater management plan shall be submitted that meets the phosphorus

Because the Site Location of Development Act requires a review of all streets and land disturbance within the subdivision, the model recommends that the Towns rely on the stormwater management plan reviewed by the State. The local ordinance need not lay out duplicative or conflicting stormwater management plan criteria.

This situation applies to all subdivisions with more than 1 acre of land disturbance (or more than 20,000 s.f. of land disturbance in a lake watershed).

At the time of the publication of this edition of the *Model*, the Low Impact Development manual for individual lots is not yet available.

Previous editions of the model contained extensive standards for phosphorus controls. With the advent of the Chapter 500 Stormwater Rules and the new edition of the Phosphorus Design Manual from DEP this edition simply requires that if a subdivision is in the watershed of a Great Pond, phosphorus control BMPs shall be followed. The Board's consulting engineer should review all stormwater management plans submitted for compliance with the BMPs.

allocation across the entire subdivision in accordance with the methodology described in the DEP Phosphorus Design Manual, Volume II of the Maine Stormwater Best Management Practices Manual, 2006.

- E. The Planning Board may require a hydrologic analysis for any site in areas with a history of flooding or in areas with a potential for future flooding, associated with cumulative impacts of development. This hydrologic analysis would be in the form of a "Downstream Analysis" under conditions of the 10-year, 24-hour storm and the 25-year, 24-hour storm, and the 100-year, 24-hour storm, as described below:

Downstream Analysis Methodology

The criteria used for the downstream analysis is referred to as the "10% rule." Under the 10% rule, a hydrologic and hydraulic analysis for the 10-year, 24 hour storm and the 25-year, 24-hour storm, and the 100-year, 24-hour storm is extended downstream to the point where the site represents 10% of the total drainage area. For example, a 10-acre site would be analyzed to the point downstream with a drainage area of 100 acres. This analysis should compute flow rates and velocities downstream to the location of the 10% rule for present conditions and proposed conditions. If the flow rates and velocities increase by more than 5% and/or if any existing downstream structures are

In previous editions of the model, all projects were required to retain stormwater from the 10 and 25 year storms. However, the new philosophy embodied in the Chapter 500 Stormwater Rules in effect in 2006, only requires such stormwater retention in areas with a history of flooding. Given the increasing complexity of stormwater management systems being installed to meet Chapter 500 rules, Planning Boards should be prepared to collect funds from applicants and routinely work with engineering consultants to review stormwater components of applications.

impacted, the designer should redesign and incorporate detention facilities.

10.13 Cluster Developments

A. Purpose, Mandate for Clustering.

1. The purpose of these provisions is to allow for flexibility in the design of housing developments to allow for the creation of open space which provides recreational opportunities or protects important natural features from the adverse impacts of development, provided that the net residential density shall be no greater than is permitted in the district in which the development is proposed. Notwithstanding provisions of the zoning ordinance relating to dimensional requirements, the Board, in reviewing and approving proposed residential subdivisions, may modify the provisions related to dimensional requirements to permit flexibility in approaches to housing and environmental design in accordance with the following guidelines. This shall not be construed as granting variances to relieve hardship, and action of the Zoning Board of Appeals shall not be required.
2. All subdivisions where ___ lots or units or more are created within any five year period, and the project is located in the ___ or _____ zoning districts, shall be designed as a cluster developments, according to the following standards. Subdivisions created in other districts, or containing ___ lots or units or less, may be designed either utilizing the

Ideally the provisions of this section should be included in a zoning ordinance. The recommendations of this section are modified from Southern Maine Regional Planning Commission's model zoning provisions for cluster developments. This section should not be included in subdivision regulations unless the municipality has a zoning ordinance that permits cluster development but fails to provide adequate performance standards or design guidelines.

This section should require all projects over a certain size and/or in certain areas to use the cluster development technique. In rural communities, it may be appropriate to require clustering for all projects with 5 or more units or lots, in any district.

cluster development approach, or by the traditional subdivision method with little or no common open space.

B. Basic Standards for Cluster Developments.

1. Cluster developments shall meet all requirements of these regulations.
2. Each building shall be an element of an overall plan for site development. Only developments having a total site plan for structures will be considered. The application shall illustrate the placement of buildings and the treatment of spaces, paths, roads, service and parking and in so doing shall take into consideration all requirements of this section and of other relevant sections of these regulations.
3. The Planning Board shall allow lots within cluster developments to be reduced in lot area, street frontage and lot width below the minimum normally required by this ordinance in return for provision of common open space, as long as the maximum number of dwelling units is not exceeded, according to the calculations in section ___ below.
4. In order to determine the maximum number of dwelling units permitted on a tract of land, the net residential acreage as determined in section 5 shall be divided by the minimum lot size in the district, as required by the zoning ordinance. No building in the cluster development shall be sited on slopes steeper than 25%, within 100 feet of any water body or wetland, or on soil

The requirement that the plan show all buildings etc. may not be necessary in cluster developments with a larger lot size. A municipality may wish to include this provision only for subdivisions with lot sizes under one acre or so. If the plan is not going to show the building location, a building envelope, or limit of clearing in wooded sites, should be shown.

The issue of calculating the appropriate number of lots or dwelling units in cluster developments should really be taken care of in the zoning ordinance. This section is included in the *Model* as an example of what can be done. **If the zoning ordinance does not make any reference to net acreage calculations, the subdivision regulations should not as well.**

The issue of net acreage and formulae for determining it will vary from community to community. On one hand, some suggest that an applicant should not be able to place more units in cluster development than on a conventional subdivision, and therefore undevelopable land should not be counted. On the other hand, others maintain that

Commentary

- classified as being very poorly drained.
5. The net residential acreage shall be calculated by taking the total area of the lot and subtracting, in order, the following:
 - a. 15% of the area of the lot to account for roads and parking.
 - b. Portions of the lot shown to be in a floodway or a coastal high hazard zone as designated in the Flood Boundary and Floodway Map prepared by the Federal Insurance Administration.
 - c. Portions of the lot which are unsuitable for development in their natural state due to topographical, drainage or subsoil conditions such as, but not limited to:
 1. slopes greater than 20%.
 2. wetland soils.
 3. Portions of the lot subject to rights of way.
 4. Portions of the lot located in the resource protection zone.
 5. Portions of the lot covered by surface waters.
 6. Portions of the lot utilized for storm water management facilities.
 6. Unless a community sewage collection and treatment system is provided, no lot or area of occupation, in the case of a condominium, shall be smaller in area than 20,000 square feet.
 7. The total area of reserved open space within the development shall equal or exceed the sum of the areas by which any building lots are reduced below the

whereas clustering is generally beneficial to the community, due to the provision of open space and shorter streets and utilities, that there should not be a penalty for clustering, and perhaps there should even be an incentive or bonus for clustering. You may wish to consider adopting a net acreage provision such as above for all subdivisions or all lots, as some communities in southern Maine have, not just cluster developments. In addition, it may be better to define the term ~~net~~ acreage+in the definition section and merely use it here in the text. This will facilitate using the same net acreage formula for other developments such as multi-family or mobile home parks and will mean Section 12.10.C.3 is not necessary. **These issues should be discussed and resolved in preparing a comprehensive plan.**

State law prohibits lots smaller than 20,000 square feet in area from having individual subsurface waste water disposal systems. Some towns may choose to set a particular minimum lot size or allowable percentage reduction from the lot size normally required.

If your community is going to provide a bonus for cluster subdivisions, the first sentence of this section should be modified. Some communities may not place a priority on %usable open space,+and may therefore wish to provide some flexibility in the regulations or delete

Commentary

minimum lot area normally required by the zoning ordinance. However, at least fifty percent (50%) of the area of the entire parcel or tract shall be included as common open space. Common open space shall not include road rights of way, streets, drives, or parking. No more than fifty percent (50%) of the common open space shall consist of forested or open wetlands of any size.

8. Every building lot that is reduced in area below the amount normally required shall be within 1,000 feet of the common land.
9. The distance between buildings shall not be less than 20 feet.
10. No individual lot or dwelling unit shall have direct vehicular access onto a public road existing at the time of development.
11. Shore frontage for each lot or area of occupation, in the case of a condominium, shall not be reduced below the minimum normally required by the zoning ordinance.
12. Where a cluster development abuts a body of water, a usable portion of the shoreline, as well as reasonable access to it, shall be a part of the common land.
13. The common open space shall owned and managed according to the standards of 10.6.E.
14. The subdivider shall be responsible for the maintenance of the common open

the last sentence. "Usable open space" is defined in Article 3.

Some municipalities require that each lot abut the common land. This occasionally results in poor design in order to fit the requirement. The *Model* suggests the 1,000 foot provision with the intent that every lot will be in close proximity as a reasonable goal.

For basic fire safety, ventilation, privacy and maintenance of outside walls. Any closer and you might as well have attached units. In rural areas, without central water supply and hydrants, this figure should be increased. Consult with the fire chief for a recommendation.

This provision is important to prevent strip development along an existing street with reduced frontages and the back land being open space.+

The state's Minimum Shoreland Zoning Guidelines do not allow for shore frontage reductions.

This will allow greater access to the water body by residents of the subdivision and possibly the public, and minimize the environmental impact of the subdivision on the shoreline and water quality.

space and the other common facilities, until development sufficient to support the neighborhood association has taken place. or, alternatively, the objectives of clustering have been met. Such determination shall be made The transfer of responsibility shall occur only after review and approval by the Planning Board, upon request by the neighborhood association or the developer or subdivider.

10.14 Compliance with Timber Harvesting Rules.

The Board shall ascertain that any timber harvested on the parcel being subdivided, has been harvested in compliance with rules adopted pursuant to Title 12, M.R.S.A section 8869, subsection 14. If a violation of rules adopted by the Maine Forest Service to substantially eliminate liquidation harvesting has occurred, the Planning Board must determine prior to granting approval for the subdivision that 5 years have elapsed from the date the landowner under whose ownership the harvest occurred acquired the parcel. The Planning Board may request technical assistance from the Department of Conservation, Bureau of Forestry to determine whether a rule violation has occurred, or the Board may accept a determination certified by a forester licensed pursuant to Title 32, chapter 76. If the Bureau agrees to provide assistance, it shall make a finding and determination as to whether a rule violation has occurred. If the Bureau notifies the Planning Board that it

This Performance Standard is new, and was added as the 20th statutory review criterion in 2003. The legislature enacted this provision to discourage clearcutting immediately prior to subdivision development. For assistance in determining whether a particular landowner is in compliance with the program, contact the Department of Conservation, Maine Forest Service, at 287-8431.

will not provide assistance, the Board may require a subdivision applicant to provide a determination certified by a licensed forester. For the purposes of this subsection, "liquidation harvesting" has the same meaning as in Title 12, M.R.S.A section 8868, subsection 6 and "parcel" means a contiguous area within one municipality, township or plantation owned by one person or a group of persons in common or joint ownership.

10.15 Traffic Conditions and Streets.

A. General Standards

The proposed subdivision shall meet the following general transportation performance standards:

1. The subdivision transportation system shall provide safeguards against hazards to vehicles, bicyclists and pedestrians in interior subdivision streets and access connections to external streets;
2. The subdivision transportation system shall have design standards that avoid traffic congestion on any street;
3. The subdivision transportation system shall provide safe and convenient circulation for vehicles, bicyclists and pedestrians on interior subdivision streets and access connections to external streets;
4. The subdivision transportation system shall have design standards that are compatible with the estimated Average Annual Daily Traffic of the street, the land uses accommodated

The *Model* requires that developers and towns develop street systems that fit the AADT of the street and the land use characteristics of the subdivision. The objective of this performance standard is to avoid the overdesigning of subdivision streets that all too often has occurred when subdivision street standards have relied on street design standards adapted from highway designs. The objective of the *Model's* street standards are to not only move traffic safely and efficiently, but to see that the needs of people living and working on the street are provided a quiet, safe and pleasant internal street system with minimal through traffic.

by the street, and the lot density of the street; and

5. The subdivision transportation system shall have a positive relationship to the natural setting of the proposed subdivision site.

B. General Access Standards.

All subdivision accesses connecting with external streets shall meet the following standards:

1. Accesses connecting to any state or state-aid highway shall meet the minimum access permitting requirements of the Maine Department of Transportation "Highway Driveway and Entrance Rules";
2. Accesses that are expected to carry more than 100 passenger vehicle equivalent trips in the peak hour shall meet the minimum access permitting requirements of the Maine Department of Transportation "Rules and Regulations Pertaining to Traffic Movement Permits".
3. The street giving access to the subdivision and neighboring streets and intersections which can be expected to carry traffic generated by the subdivision shall have the capacity or be suitably improved to accommodate that traffic and avoid unreasonable congestion. No subdivision shall reduce the Level of Service (LOS) of streets or intersections neighboring the

To access the Maine Department of Transportation "Highway Driveway and Entrance Rules" and the "Rules and Regulations Pertaining to Traffic Movement Permits" go to the Maine Secretary of State Website, or contact your local regional planning commission or council of governments.

The comprehensive plan should give an indication of the current and expected future levels of service of the major streets and intersections within the municipality. In addition, the plan should indicate what desired levels of service are for those streets, and perhaps other streets in the municipality. Generally, the lowest acceptable level of service is LOS D. The Maine Department of Transportation uses LOS D as the lowest acceptable level in reviewing developments for Traffic Movement Permits. However, Maine DOT recognizes that there are certain extenuating circumstances in which a Traffic Movement Permit is permissible. Those conditions have been incorporated into the *Model*. Although the Maine DOT Traffic Movement Permit is triggered when a development exceeds 99 passenger vehicle equivalent trips per peak hour, the conditions used in the permitting process are adaptable to smaller developments.

subdivision to a LOS of "E" or below, unless:

- a. the comprehensive plan has indicated that Levels of Service "E" or "F" are acceptable for that street or intersection; or
- b. the level of service of the road or intersection will be raised to D or above through transportation demand management techniques; or
- c. the applicant provides evidence that it is not possible to raise the level of service of the road or intersection to D or above by road or intersection improvements or by transportation demand management techniques, but improvements will be made or transportation demand management techniques will be used such that the proposed development will not increase delay at a signalized or unsignalized intersection, or otherwise worsen the operational condition of the road or intersection in the horizon year; or
- d. improvements cannot reasonably be made because the road or intersection is located in a central business district or because implementation of the improvements will adversely affect a historic site as defined in 06-096 CMR 375(11) (Preservation of Historic Sites)

Sections b to f are based on the LOS conditions used in the Maine DOT traffic movement permitting process.

and transportation demand management techniques will be implemented to the fullest extent practical; or

- e. The development is located in a designated growth area, in which case the applicant shall be entitled to an exception from the level of service mitigation requirements set forth under the General Standards in this Section. This exception applies even if part or all of the traffic impacts of the proposed development will occur outside the boundaries of the designated growth area. This exception does not exempt the development from meeting safety standards, and greater mitigation measures may be required than otherwise provided in this subsection if needed to address safety issues; or
- f. In the case of unsignalized intersections, if traffic with the development in place would not meet the warrant criteria for signalization or turning lanes, as set forth in the Federal Highway Administration's "Manual on Uniform Traffic Control Devices," (1988), then the municipal reviewing authority may reduce the mitigation requirement for those measures so long as the resulting traffic conditions provide for safe traffic movement.

4. Accesses to non-residential

Commentary

subdivisions or to multifamily developments shall be designed to avoid queuing of entering vehicles on any street. Left lane storage capacity shall be provided to meet anticipated demand. A study or analysis to determine the need for a left-turn storage lane shall be done.

C. General Internal Subdivision Street Standards

All internal subdivision streets shall meet the following minimum standards. In cases where the internal subdivision street standards conflict with the street ordinance of the municipality, the more stringent rule shall apply.

1. The street or street system of the proposed subdivision shall be designed to coordinate with existing, proposed, and planned streets. Wherever a proposed development abuts unplatted land or a future development phase of the same development, street stubs shall be provided as deemed necessary by the municipality to provide access to abutting properties or to logically extend the street system. All street stubs shall be provided with temporary turn around or cul-de-sacs unless specifically exempted by the Public Works Director, and the restoration and expansion of the street shall be the responsibility of any

Vehicles should not have to line up on a street waiting to enter a driveway due to inadequate turning radii or insufficient stacking room within a parking lot. A left turn lane may be necessary on the existing street to avoid backups of traffic waiting for others to turn left.

This performance standard requires that subdivision street systems should be planned to have connectivity with existing, proposed or planned streets. The provision requires that street stubs should developed to allow for turn-around on temporary dead end streets. This provision provides flexibility to the Board to make a determination if minor collector or local streets do not need to have a connection with other streets. These street systems are not designed for through traffic. The Board may need to retain a consultant for direction on whether a particular road can handle additional AADT.

future developer of the abutting land. Minor collector and local streets shall connect with surrounding streets to permit convenient movement of traffic between residential neighborhoods or facilitate emergency access and evacuation, but such connections shall not be permitted where the effect would be to encourage the use of such streets by substantial through traffic.

2. Where necessary to safeguard against hazards to vehicle drivers, bicyclists and pedestrians and/or to avoid traffic congestion, provision shall be made for turning lanes, traffic directional islands, frontage roads, sidewalks, bicycleways, transportation demand management techniques, and traffic controls within existing public streets.

3. Street Names, Signs and Lighting.
Streets which join and are in alignment with streets of abutting or neighboring properties shall bear the same name. Names of new streets shall not duplicate, nor bear phonetic resemblance to the names of existing streets within the municipality, and shall be subject to the approval of the Board. No street name shall be the common given name of a person. The developer shall either install street name, traffic safety and control signs meeting municipal specifications or reimburse the municipality for the costs of their installation. Street lighting shall be

With the advent of the 9-1-1 Enhanced emergency dispatch service, participating municipalities must develop a complete street naming and numbering program. Municipalities should have already established a formal procedure for street naming. The review authority should check with the municipal officers and reference the proper individual or committee in this section.

Commentary

installed as approved by the Board.

4. During street construction, the entire right of way shall not be cleared unless clearing is necessary for utilities, drainage or other infrastructure necessities beyond the clear zone. Following street construction, the developer or contractor shall conduct a thorough clean-up of stumps and other debris from the entire right of way created during the street construction process. If on-site disposal of the stumps and debris is proposed, the site shall be indicated on the plan, and be suitably covered with fill and topsoil, limed, fertilized, and seeded.

10.15.1 Specific Access and Street Design Standards.

A. Access Control.

1. To the maximum extent practical, all subdivision accesses shall be constructed perpendicular to the external street providing access to the subdivision. No subdivision accesses shall intersect the external street at an angle of less than 60 degrees.

2. Where a subdivision abuts or contains

Disposal of construction debris may come under the jurisdiction of the Department of Environmental Protection. See the commentary for Section 8.2.T. The Maine Department of Transportation also has construction standards in its Highway Driveway and Entrance Rules.

Access control at its most basic level is an attempt to regulate the number and frequency of driveways and entrances on a highway in order to conserve that highway's mobility and safety. Generally speaking, the more driveways and entrances on a roadway, the more friction points there are to disrupt mobility and cause safety hazards on the roadway. In 2001 Maine adopted a new access management statute (23 M.R.S.A. § 704), directing the Maine Department of Transportation (MDOT) and authorizing municipalities to issue or deny permits for proposed accesses, alterations of accesses, or changes in use of accesses. The MDOT is currently responsible for reviewing accesses on state or state-aid highways outside of designated urban compact areas. As a municipality, your town is authorized to adopt access management standards stronger than the MDOT rules for areas outside of designated urban compact areas and are encouraged to adopt access management standards for any urban compact areas existing in the municipality. For more information about access management standards and strategies, contact your local regional planning commission or council of governments. The MDOT's access management permitting criteria depend on the mobility function and history of high crash locations of state highways, and are generally more restrictive on highways serving an important regional mobility function or highways that have had a above average incidence of crashes for its roadway type. Go to the Maine Secretary of State website for the current status of MDOT's Highway Driveway and Entrance Rules.

Arterial streets, unlike collector or local streets are designed for highway mobility. Individual lot accesses should be avoided at all costs and should be part of a shared access system

Commentary

an existing or proposed arterial street, no lot may have vehicular access directly to the arterial street. This requirement shall be noted on the plan and in the deed of any lot with frontage on the arterial street.

3. Where a lot has frontage on two or more streets, the access to the lot shall be provided to the lot across the frontage and to the street where there is lesser potential for traffic congestion and for hazards to traffic and pedestrians. This restriction shall appear as a note on the plan and as a deed restriction to the affected lots. In cases where creating an access to a lesser traveled way is problematical, the Board may allow an access on the higher volume street if the access does not significantly detract from public safety. For accesses on higher volume streets, the Board shall consider the functional classification of the external street, the length of frontage on the external street, the intensity of traffic generated by the proposed subdivision, the geography along the frontage of the public way with lesser potential for traffic, and the distance to the public way with lesser potential for traffic. In cases where the double frontage lot has frontage on two Maine Department of Transportation designated non-compact arterials, the access shall meet the permitting standards of the

with other adjacent subdivided properties.

Corner lots and other double frontage lots should have driveway access limited to the street in which the least potential for congestion and safety problems exists. Typically this will be the street with the lower traffic volume. The Model provides the Board some features to consider in making a determination if building an access to the street with lesser potential traffic is problematical.

Maine Department of Transportation
Highway Driveway and Entrance
Rules.

4. Lots in subdivisions with frontage on a state or state aid highway shall have shared access points to and from the highway. Normally a maximum of two accesses shall be allowed regardless of the number of lots or businesses served.
5. The subdivision access including all radii must be paved from the edge of pavement of the external street to the street right of way or the length of the design vehicle using the subdivision, whichever is greater, unless:
 - a. the external street is not paved; or
 - b. the internal subdivision street is an unpaved private street that is expected to carry an Average Daily Traffic capacity of 50 trips or less.
6. **Minimum Sight Distance Standards**
Minimum sight distance requirements for all subdivision accesses connecting to external streets shall be contingent on the posted speed of the external street connecting to the subdivision access. For accesses that are expected to carry primarily passenger vehicles, the standards in the second column in Table 10.15-1 shall apply. For accesses that are estimated to carry more than 30% of

Just as individual lot accesses should be restricted, shared subdivision accesses should not exceed more than two access points on to a highway. Even for extremely large developments, two accesses are generally adequate for any size subdivision.

A paved access provides a safe and stable entry and exiting surface for vehicles moving in and out of a subdivision. Pavements are not required in areas where the external road is already not paved, or in cases where low volume gravel roads connect with external streets.

The standards in Table 10.15-1 are applicable to all subdivision accesses connecting to external streets. These guidelines are based on the Maine DOT Highway Driveway and Entrance Rules. Special sight distance lengths are provided for accesses carrying a high number of truck traffic, or for accesses entering on to a Maine DOT designated mobility or retrograde arterial. For a current listing of mobility or retrograde arterials, contact the Maine DOT Division office in your location, or your local regional planning commission or council of governments.

Adequate sight distance is necessary in order to make sure drivers exiting the subdivision can see oncoming vehicles and have adequate time to accelerate to enter traffic without slowing the traffic flow. The corollary is that adequate sight distances are necessary to allow oncoming traffic to stop in time to avoid hitting entering vehicles. If adequate sight distances are not present, sight distance may be improved by changing the grade of the intersection or driveway entrance or by removing obstacles to vision such as clearing vegetation. The sight

their traffic in vehicles larger than standard passenger vehicles, the standards in the third column of Table 10.15-1 shall apply. On roads that are designated by the Maine Department of Transportation as Mobility or Retrograde Arterials, the third column in Table 10.15-1 shall apply.

distance measurements given here are based on the sight distance regulations stipulated in the MDOT Highway Driveway and Entrance Rules. The mobility and retrograde arterial sight distance standards are designed to be at longer lengths so that vehicles on the main arterial can maintain at least 85% of the posted speed if a car enters the highway ahead of them.

Table 10.15-1 Minimum Sight Distance Standards for Subdivision Accesses

Posted Speed	Sight Distance Standard Vehicles	Sight Distance Larger Vehicles	Mobility Sight Distance
(MPH)	(Feet)	(Feet)	(Feet)
20	155	230	Not applicable
25	200	300	Not applicable
30	250	375	Not applicable
35	305	455	Not applicable
40	360	540	580
45	425	635	710
50	495	740	840
55	570	855	990
60	645	965	1,150

7. Access design shall be based on the traffic volume estimates anticipated to be carried by the internal subdivision street. Traffic volume estimates shall be defined by the latest edition of the *Trip Generation Manual* published by the Institute of Transportation Engineers. The following traffic volume standards shall apply to the design of subdivision accesses connecting to

The traffic volume thresholds used in the Model are based on Maine DOT access permitting procedures. Low and Medium Volume Accesses are equivalent to traffic thresholds for driveways and entrances respectively. High Volume Accesses are equivalent to the thresholds that are used to trigger the MDOT Traffic Movement Permitting process. These same traffic volume thresholds are used in the street design standards section.

external streets:

- a. Low Volume Access: An access with 50 or less passenger car equivalent trips per day.
- b. Medium Volume Access: Any access with more than 50 passenger car equivalent trips per day but less than 100 passenger car equivalent trips during the peak hour.
- c. High Volume Access: Any access with 100 or more passenger car equivalent trips during the peak hour.

8. Basic Access Design Standards for Low and Medium Volume Accesses
The following minimum access design standards shall apply to all low and medium volume accesses connecting to external streets:

The Access Design Requirements are compatible with the MDOT Highway Driveway and Entrance Rules.+ The minimum access width must be increased to the cross section width (including the required traveled way width and if applicable, shoulders) if the minimum access width in Table 10.15-2. is narrower than the cross section width of the street.

Table 10.15-2. Access Design Standards for Low and Medium Volume Accesses

<i>Basic Standards</i>	<i>Low Volume</i>	<i>Medium Volume</i>	
	(feet)	(feet)	
Minimum Access Width:*	Majority Passenger Vehicles	22	
	>30% Larger Vehicles	30	
Minimum Curb Radius:	Majority Passenger Vehicles	15	
	>30% Larger Vehicles	15	
Minimum Corner Clearance to:**	Unsignalized Intersection	100	
	Signalized Intersection	125	
Minimum Access Spacing***:	MPH of External Road		
		No Require-ment	No Requirement
	35 or less:		
	40	175	175
	45	265	265
	50	350	350
55 or more	525	525	

*Minimum widths for low or medium volume accesses shall be either the minimum cross section width of the internal subdivision street or the minimum access width in Table 12.2.-2, whichever width is greater.

**Minimum corner clearance shall be the distance measured from the edge of an internal subdivision access excluding radii to the edge of an external street excluding radii.

***Minimum access spacing shall be the distance measured from the edge of an internal subdivision access excluding radii to the edge of a neighboring access excluding radii.

9. Additional Access Requirements for Medium Volume Accesses

In addition to the basic access standards outlined in 10.15-2., medium volume accesses on state or state-aid highways designated as Major Collectors or Arterials shall also comply with the following

The MDOT Highway Driveway and Entrance Rules require the additional standards for the medium volume subdivision accesses on major collector or arterial highways. The following standards have been adapted from the rules to the *Model*.

Commentary

standards:

- a. The minimum curb radius on the edge of the access shall exceed the minimum curb radius standard in 10.15-2. if a larger design radius is needed to accommodate a larger design vehicle.
- b. A throat shall be constructed around the access in order to store vehicles waiting to exit the access. The throat shall be of sufficient length to prevent incoming vehicles from queuing back into the highway. Access from the throat to parking or other areas shall be prohibited.
- c. A separator strip or strip of land that separates the roadway from the throat or parking area shall be constructed. The access separator strips shall be installed between the parking area and the roadway and along the throat. The Board shall determine if the separator strip shall include curbing, walkways, ditching, and/or vegetation. The separator strip shall extend away from the highway at a minimum of 9 feet from the traveled way of the external road.
- d. The Board shall determine if one two-way or two one-way access (es) will be required for the proposed subdivision. If a one-way system is required and the predominant traffic volume is

Although Table 10.15-2 provides a longer minimum turning radii for subdivisions serving more than 30% of their traffic for trucks, subdivisions serving even more truck traffic or extremely large vehicles may require longer curb radii.

Throat length should be based on the anticipated queuing distance at a subdivision based on the subdivision's peak hour traffic and the design vehicle length for the proposed subdivision.

The Board's materials and construction standards for a separator strip should be reasonable and consistent with the subdivision's surroundings and/or other proposed subdivisions in the municipality.

Boards should consult a municipal engineer or retain a consultant in making a determination of whether a one two-way or two one-way access will be required for a subdivision.

truck traffic, the entrance will be configured on the minimum angle that permits the truck to enter or leave the highway safely and conveniently. Otherwise all one way accesses will be configured perpendicular to the highway for at least the length of the design vehicle. For one-way access systems, the Board shall determine if a physical separation of curbing, ditching, grass or other landscaping must be used between the two one-way accesses. Both portions of a one-way access must be separated from another one-way access by at least 12 feet.

10. All high volume accesses shall meet the requirements of the Maine Department of Transportation's "Rules and Regulations Pertaining to Traffic Movement Permits." A copy of the Maine Department of Transportation's required traffic study shall be submitted to the Board. The Board shall develop design standards for the proposed subdivision access based on the findings of the traffic study submitted to the Maine Department of Transportation. The design standards shall be compatible with the performance standards cited in Section 10.15.B of the Subdivision Regulations.

High volume subdivisions will require a detailed traffic study. The Maine DOT already regulates subdivisions generating 100 or more peak hour trips through its Traffic Movement Permitting process. Design requirements considered in the Traffic Movement Permitting process address signage, curb cuts, raised medians, landscaping, sight distances, driveways per lot, corner clearance, minimum spacing, turning radii, driveway widths, approach grades, auxiliary turning lanes, driveway throat lengths, lighting, parking and loading docks.

Commentary

B. Street Design and Construction Standards.

1. General Requirements.

- a. The Board shall not approve any subdivision plan unless proposed streets are designed in accordance with any local ordinance or the specifications contained in these regulations. Approval of the final plan by the Board shall not be deemed to constitute or be evidence of acceptance by the municipality of any street or easement.
- b. Applicants shall submit to the Board, as part of the final plan, detailed construction drawings showing a plan view, profile, and typical cross-section of the proposed streets and existing streets within 300 feet of any proposed intersections. The plan view shall be at a scale of one inch equals no more than fifty feet. The vertical scale of the profile shall be one inch equals no more than five feet. The plans shall include the following information:
 1. Date, scale, and north point, indicating magnetic or true.
 2. Intersections of the proposed street with existing streets.
 3. Roadway and right-of-way limits including edge of pavement or aggregate base,

Many municipalities have an ordinance which sets out the minimum specifications for a street proposed to be accepted as a public way. The specifications in the subdivision standards should be coordinated with the specifications in the local street acceptance ordinance if one has been enacted. Section B.1.a also spells out that approval of a final plan does not constitute acceptance of a proposed public way.

This section spells out the information which must be included on the detailed street drawings.

- edge of shoulder, clear zone, sidewalks, and curbs.
4. Kind, size, location, material, profile and cross-section of all existing and proposed drainage structures and their location with respect to the existing natural waterways and proposed drainage ways.
 5. Complete curve data shall be indicated for all horizontal and vertical curves.
 6. Turning radii at all intersections.
 7. Centerline gradients.
 8. Size, type, vertical clearance and locations of all existing and proposed overhead and underground utilities, to include but not be limited to water, sewer, electricity, telephone, lighting, and cable television.
- c. Upon receipt of plans for a proposed public street the Board shall forward one copy to the municipal officers, the road commissioner, and the municipal engineer for review and comment. Plans for streets which are not proposed to be accepted by the municipality shall be sent to the municipal engineer for review and comment.
- d. Where the applicant proposes improvements within existing public streets, the proposed design

The review authority should receive comments from the appropriate municipal officials as to the adequacy of the plans. If the municipality does not have a municipal engineer on staff, the review authority should consider retaining a consulting engineer to review street design and construction plans for conformance with the appropriate standards. The names of the municipal officials should be changed to reflect the names of the individuals responsible in each community.

Off-site improvements, whether the addition of a turning lane or the widening of a shoulder, will occasionally be proposed by an applicant. These improvements to existing roads should be reviewed and approved by the appropriate authority, either the municipal road

Commentary

and construction details shall be approved in writing by the road commissioner or the Maine Department of Transportation, as appropriate.

e. Private Roads.

The following standards shall apply to all proposed private roads:

1. All private roads shall be designated as such and will be required to have adequate signage indicating the road is a private road and not publicly maintained.
2. Except for sidewalk, bicycle provisions and minimum grade requirements stipulated in this Section, all private roads shall adhere to the road design standards of this Section.
3. The Board may approve a reduction of the right of way easement for private roads to a minimum of 30 feet in land use density areas designated as "Rural" in Section 10.15.1.B.2.f.
4. All properties served by the private road shall provide adequate access for emergency vehicles and shall conform to the approved local street numbering system.
5. All private roads shall have adequate provisions for

commissioner or the state. If the arterial is a state highway contact the regional office of the Department of Transportation.

The *Model* requires that private roads adhere to most public road design standards, because the *Model* allows a great deal of flexibility in its street standards. The authors of the *Model* believe the standards are not overly constrictive for private roads

The *Model* suggests that some streets in subdivisions, which are proposed to be maintained as private ways, need not meet the same standards as streets which are proposed as public ways. The note on the plan is suggested to put prospective buyers on notice that the streets

Commentary

drainage and stormwater runoff as provided in Section 10.12.

6. Where the subdivision streets are to remain private roads, the following words shall appear on the recorded plan:

“All roads in this subdivision shall remain private roads to be maintained by the developer or the lot owners and shall not be accepted or maintained by the Town, until they meet all municipal street design and construction standards.”

7. A road maintenance agreement, prepared by the Town Attorney shall be recorded with the deed of each property to be served by a common private road. The agreement shall provide for a method to initiate and finance a private road and maintain that road in condition, and a method of apportioning maintenance costs to current and future users.

2. Street Design Standards.

- a. These design guidelines shall control the roadway, shoulders, clear zones, curbs, sidewalks, drainage systems, culverts, and other appurtenances associated with the street, and shall be met

are to remain private ways and they should not expect the municipality to provide maintenance or plowing or to eventually accept them as public ways.

Combined with section 6, this provision helps protect towns from management headaches that can occur when private roads are not set up to be adequately managed.

The *Model* is intended to provide some flexibility in the design of the subdivisions as long as the performance standards of Article 10 and the criteria of the statute are met. To that effect, review authorities should keep in mind that other municipal ordinances may prescribe certain design standards which must be met, particularly for streets which are proposed to be dedicated as public ways.

by all streets within a subdivision, unless the applicant can provide clear and convincing evidence that an alternate design will meet good engineering practice and will meet the performance standards of this Article.

- b. Reserve strips controlling access to streets shall be prohibited except where their control is definitely placed with the municipality.
- c. Adjacent to areas zoned and designed for commercial use, or where a change of zoning to a zone which permits commercial uses is contemplated by the municipality, the street right-of-way and/or pavement width shall be increased on each side by half of the amount necessary to bring the road into conformance with the standards for commercial streets in these regulations.
- d. Where a subdivision borders an existing narrow street (not meeting the width requirements of the standards for streets in these regulations), or when the comprehensive plan indicates plans for realignment or widening of a road that would require use of some of the land in the subdivision, the plan shall indicate reserved areas for widening or realigning the road marked "Reserved for Road

Reserve strips are fairly narrow strips of land between an existing or proposed street and other property which can be used to limit access to the street by others. The *Model* suggests that reserve strips be prohibited unless they are given to the municipality.

This section requires an applicant to dedicate land to the municipality for widening of an undersized right-of-way for a commercial street. The entire width necessary is not required to be dedicated, only half the width, with the other half to eventually come from the property owner on the other side of the street.

This section, unlike the previous section does not require that land be dedicated for right-of-way widening but does prohibit land along a narrow street from being used in the lot size or building setback calculations that may be required by a zoning ordinance, so that lots and buildings will still be conforming with those requirements should the street be widened. If the municipality has indicated that widening of the street is a priority by including it in the Capital Investment Plan, then dedication is required.

Realignment (Widening) Purposes.ö Land reserved for such purposes may not be included in computing lot area or setback requirements of the zoning ordinance. When such widening or realignment is included in the municipality's capital investment plan, the reserve area shall not be included in any lot, but shall be reserved to be deeded to the municipality or State.

- e. Any subdivision expected to generate average daily traffic of 200 trips per day or more shall have at least two street connections with existing public streets, streets shown on an Official Map, or streets on an approved subdivision plan for which performance guarantees have been filed and accepted. Any street with an average daily traffic of 200 trips per day or more shall have at least two street connections leading to existing public streets, streets shown on an Official Map, or streets on an approved subdivision plan for which performance guarantees have been filed and accepted.
- f. The design standards of Table 10.15-3 shall be compatible with the traffic volume access thresholds referenced in Section 10.15.1.A.7. In addition, the

Many model street design regulations have had a maximum permissible length for dead end streets or cul. de. sacs. ITE's *Recommended Guidelines* suggest a maximum length of 1,500 feet. These maximums are usually based on the assumption of suburban development patterns which may not be replicated in many rural Maine communities. The National Association of Home Builders, in their *Manual for Residential Street Development Standards*, suggests that dead end streets be designed for average daily traffic of up to 200. The average traffic generation for a single family home is approximately 10 trips per day. If one assumes 100 feet of frontage and lots on both sides of the cul-de-sac, 200 trips per day would equate to about 1,000 feet. Because of the varying frontage requirements across the State, and a preference for a performance based standard or guideline, the *Model* suggests a design based on traffic generation rather than length or number of lots. *The Subdivision and Site Plan Handbook*, published by the Center for Urban Policy Research at Rutgers University suggests a maximum average daily traffic for cul. de. sacs of 250 trips.

Beneath sections f1, f2 and f3 the Municipality must list the zones that are appropriate for rural, village/urban or commercial/industrial. Although each town that adopts the *Model* will have different design expectations, the model recommends that a Rural land density pattern be adopted for subdivisions with average lot widths that are 100q150q or greater. The Village/Urban land use density pattern would apply to subdivisions with average lot widths that are 100q150q or less. Any commercial or industrial subdivision road standard should correspond with municipal land use zones that allow commercial or industrial uses.

street design standards shall be compatible with the estimated Average Daily Traffic expected to occur on the internal subdivision street, and the land use type and lot density allowed in the land use zone. The following land use density pattern requirements shall be required for the following land use zones.

- 1. Land use density patterns that are Rural (R) shall apply to the following zones:
_____ , _____
- 2. Land use density patterns that are Village/Urban (V/U) shall apply to the following zones:
- - - - - , _____
- 3. Land use density patterns that are Commercial/Industrial (C/I) shall apply to the following zones if the proposed development will contain commercial or industrial uses:
_____ , _____

Go to Road Design Chart, Table 10.15-3 on pages 10-53A & B

- g. The Board shall have authority to increase the minimum standards in Table 10.15-3, if the Board approves a road design that will accommodate travel speeds greater than 30 mph.

The road design guidelines in Section 10.15-3 are designed for slow moving traffic, and are generally not recommended to have design speeds greater than 30 mph. A design speed of 30 mph does not mean that some drivers cannot comfortably travel greater than 30 mph. In almost all cases, subdivisions should be designed for slow moving traffic and should not be encouraged to function as a throughway, because they are designed to provide access to lots, protect drivers turning in and out of lots, and protect pedestrians and bicyclists. Occasionally, subdivisions can be designed as minor collector roads, but given that access is also important to the function of the minor collector road, they should also be designed for slow moving traffic.

Commentary

- h. On Street Parking.
The Board shall have authority to require a paved cross section of 26 feet for residential subdivisions with average lot widths between 100 feet and 40 feet wide for on-street spillover parking.
- i. Curbs.
 - 1. Curbs shall be installed for stormwater purposes and/or to protect the pavement edge from unraveling along parking lanes or in very intensive developments where heavy use may erode the planted area at the edge of the pavement. Curbs for stormwater management shall be contingent on the stormwater design standards specified in Section 10.13. If curbs are not necessary for stormwater management purposes, they are not required for subdivisions in which the average lot width is 100 feet or greater.
 - 2. If the Board requires a vertical curb and no parking lane is present, a minimum shoulder of 2 feet is recommended from the traveled way to the

With lots less than 40 feet the street line would be interrupted so often by curb cuts that sufficient on-street parking would not fit between them. For residential lot widths greater than 100 feet, off-street parking requirements in the zoning should be adequate for the subdivision. Likewise, off-street parking for zoning for commercial and industrial uses should be adequate for commercial and industrial subdivisions.

The Model recommends that curbs not be installed unless necessary for stormwater management purposes or to protect a edges of pavement where there is a great deal of on-street parking. Curbs are usually not recommended because they increase construction costs and do not allow a more natural stormwater management system. With the installation of curbs, minimum shoulder lengths are required.

curb. For sloped curbs where no parking lane is present, a minimum 1 foot shoulder is required from the traveled way to the curb.

3. Granite curbing shall be installed on a thoroughly compacted gravel base of six inches minimum thickness. Bituminous curbing shall be installed on the base course of the pavement.

- j. The Board may require additional shoulder lengths in any situation where the proximity of the proposed subdivision to future or existing neighborhood businesses, schools, community facilities, or other bicycle traffic generators suggest that additional shoulder lengths will be needed for bicycle traffic. In situations where additional shoulder lengths are required for bicyclists, the minimum width of a paved shoulder shall be 1 foot on either side of the traveled way for all low and medium volume streets in Rural (R) designated zones defined in Section 10.15.1.B.2..f. Paved shoulder widths for low and medium volume streets in Village/Urban (V/U) designated zones shall be a minimum of 2 feet on either side of the traveled

This provision gives the Board some flexibility in addressing additional shoulder requirements for any significant anticipated bicycle traffic.

way.

- k. The centerline of the roadway shall be the centerline of the right-of-way.

- l. Dead End Streets.

In addition to the design standards in Table 10.15-3, dead-end streets shall be constructed to provide a cul-de-sac turn-around with a travel lane and width equal to the minimum width required for the internal subdivision street. For all residential cul-de-sacs the minimum radius shall be 38 feet. For commercial/industrial cul-de-sacs the minimum radius shall be 50 feet. Where the cul-de-sac is in a wooded area prior to development, a stand of trees shall be maintained within the center of the cul-de-sac. The Board shall require the reservation of a twenty foot easement in line with the street to provide continuation of pedestrian traffic or utilities to the next street. The Board may also require the reservation of a right-of-way easement equal to the right of way width of the internal subdivision street in line with the street to provide continuation of the road where future subdivision is possible. A T-turn around is permissible for residential subdivisions carrying an ADT of 100 or less. The turn around area

The *Model* suggests that cul-de-sacs be constructed with a landscaped interior. Road commissioners in some municipalities prefer the entire cul. de. sac to be paved for ease of snow removal. Paving the entire cul-de-sac results in higher construction costs for the developer and higher maintenance costs for the municipality should the cul. de. sac become a public way. The authors of the *Model* believe that the retention or creation of landscaped areas provides a better living environment. Check with the fire department and road commissioner to make sure that the suggested minimum radii will accommodate fire fighting equipment and snow removal equipment. A T-turn around option is an option for some streets generating an ADT of 100 or less.

shall have a width equal to the street width, a 5 foot turning radius, and a total length of 50 feet centered above the street.

m. Sidewalks.

The Board may require sidewalks in any situation where the proximity of the proposed subdivision to future or existing neighborhood businesses, schools, community facilities, or other pedestrian traffic generators suggest sidewalks will be needed. The Board shall determine if sidewalks will be installed on one side or both sides of the street, and if the sidewalk shall be a bituminous or Portland cement concrete sidewalk.

1. Location.

Sidewalks may be located adjacent to the curb or shoulder but it is recommended to locate sidewalks a minimum of 2 1/2 feet from the curb facing or edge of shoulder if the street is not curbed. If no shoulder is required, the sidewalk shall be located a minimum of 4 feet from the edge of the traveled way.

2. Bituminous Sidewalks.

(a) The aggregate course shall be no less than twelve inches thick after compaction.

Sidewalks provide maximum safety for children as they play or walk to schools and playgrounds, and for others walking along the road, but sidewalks should only be required where their infrastructure is needed. Sidewalk placement is site specific. The *Model* provides the Planning Board with some flexibility to determine where sidewalks are needed, how many, and what construction materials should be used.

It is common practice to place the sidewalk next to the curb or shoulder. The reason for this practice is often given as ease of snow removal: the plow driver can use the wing plow and clear the sidewalk as the street is cleared. However, a wider separation distance will maximize the safety factor for pedestrians and children, which is the major purpose of the sidewalk. An additional advantage of separating sidewalk and street is that the warped area necessary for a proper driveway gradient is minimized by having a portion of the gradient fall within the border area. If sidewalks are provided adjacent to the street an additional two feet of sidewalk width is desirable.

- (b) The hot bituminous pavement surface course shall be MDOT plant Mix Grade D constructed in two lifts, each no less than one inch after compaction.
- 3. Portland Cement Concrete Sidewalks.
 - (a) The subbase aggregate shall be no less than twelve inches thick after compaction.
 - (b) The portland cement concrete shall be reinforced with six inch square, number 10 wire mesh and shall be no less than four inches thick.
- 3. Street Construction Standards.
 - a. The minimum thickness of material after compaction shall meet the specifications in Table 10.15-4..

The specifications for roadway materials were prepared with the assistance of the Maine Local Roads Center within the Maine Department of Transportation. As is explained below the use of a crushed gravel base course is not always required. Private rights-of-way and low-density rural subdivision roads need not be paved, but a surface gravel course meeting the specifications for distribution of material needs to be used.

**Table 10.15-4.
Minimum Pavement Materials Thicknesses**

Street Materials	Thickness Standards
Aggregate Subbase Course	
(Max. sized stone 6")	
Without base gravel	18"
With base gravel	15"
Crushed Aggregate Base Course	
(if necessary)	3"
Hot Bituminous Pavement	
Total Thickness	3"
Surface Course	1 1/4"
Base Course	1 3/4"
Surface Gravel	
(if permissible)	3"

b. Preparation.

1. Before any clearing has started on the right-of-way, the center line and side lines of the new road shall be staked or flagged at fifty foot intervals.
2. Before grading is started, the entire area within the right-of-way necessary for traveled way, shoulders, clear zones, sidewalks, drainage-ways, and utilities shall be cleared of all stumps, roots, brush, and other objectionable material. All shallow ledge, large boulders and tree stumps shall be removed from the cleared area.
3. All organic materials or other deleterious material shall be removed to a depth of two feet below the subgrade of the roadway. Rocks and boulders shall also be removed to a depth of two feet below the subgrade of the roadway. On soils which have been identified by the municipal engineer as not suitable for roadways, either the subsoil shall be removed from the street site to a depth of two feet below the subgrade and replaced with material meeting the specifications for

It is not necessary or even desirable to clear the entire fifty foot right-of-way. Clearing should be limited to the area needed for the roadway, considering drainage swales and cuts and fills.

The existence of unsuitable material, such as peat or high clay soils must be accounted for in the construction of a roadway. These materials must either be removed, or in some cases geotextiles may be used to overcome the limitations of the native subsoils. Geotextiles are man-made materials which act to limit the mixing of the gravel subbase and any poor material beneath it therefore removing the necessity to remove the poor material.

gravel aggregate sub-base below, or a Maine Department of Transportation approved stabilization geotextile may be used.

4. Except in a ledge cut, side slopes shall be no steeper than a slope of 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. Where a cut results in exposed ledge a side slope no steeper than one foot horizontal to four feet vertical is permitted.
 5. All underground utilities shall be installed prior to paving to avoid cuts in the pavement. Building sewers and water service connections shall be installed to the edge of the right-of-way prior to paving.
- c. Bases and Pavement.
1. Bases/Subbase.
 - (a) The Aggregate subbase course shall be sand or gravel of hard durable particles free from vegetative matter, lumps or balls of clay and other deleterious substances. The gradation of the part that passes a three inch square mesh sieve shall

The limits on side slope are included to provide a more stable roadway, promote safety in the case of vehicles leaving the roadway, and to prevent erosion problems.

Lack of coordination in road construction and utility placement, besides raising costs, can lower the quality of the pavement. If service connections are not installed during street construction, a new street will need to be excavated as houses are built and connected to the utilities, resulting in a patched street surface.

The specification for aggregate subbase course is fairly open. Wide variations in materials are allowed around Maine. The specification allows rocks which are six inches or less in diameter. There is a sieve designation for that portion which is less than three inches in size. For that portion which is greater than three inches, there are no limits on the amount of three to six inch stones. The gravel with many large stones cannot be graded to a fairly smooth surface. On the other hand, if there is very little three to six inch material, then the material may be a good gravel and compact well. If it is very sandy or composed predominantly of one-sized particles, this can present compacting problems because it acts fairly lead and may not support construction traffic well. The need for a crushed aggregate base course will depend on the quality of the subbase and may have to be determined in the field by a qualified individual.

meet the grading requirements of Table 10.15-5.

**Table 10.15-5
Aggregate Subbase Grading Requirements**

<u>Sieve Designation</u> <u>Sieves</u>	<u>Percentage by</u> <u>Weight Passing</u> <u>Square Mesh</u>
1/4 inch	25-70%
No. 40	0-30%
No. 200	0-7%

Aggregate for the subbase shall contain no particles of rock exceeding six inches in any dimension.

- (b) If the Aggregate Subbase Course is found to be not fine-gradable because of larger stones, then a minimum of three inches of Aggregate Base Course shall be placed on top of the subbase course. The Aggregate Base Course shall be screened or crushed gravel of hard durable particles free from vegetative matter, lumps or balls of clay and other deleterious substances. The gradation of the part that

The aggregate base course is needed only when the subbase course does not contain a distribution of particle sizes which allows it to be fine graded yet support the loads of traffic.

passes a three inch square mesh sieve shall meet the grading requirements of Table 10.15-6.

Table 10.15-6. Base Course Grading Requirements

<u>Sieve Designation</u>	<u>Percentage by Weight Passing Square Mesh Sieves</u>
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.

- 2. 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.
- 3. Pavements.
(a) Minimum standards for the base layer of pavement shall be the Maine Department of Transportation specifications for plant mix grade B with an aggregate size no more

The *Model* permits only hot bituminous concrete for paving material. Other paving materials such as liquid asphalt penetration or chip seals, while lower in initial cost do not provide significant structural strength. ~~Hot mix~~+seals, smoothes the ride and corrects crowns and drainage features substantially. The *Model* references the Maine Department of Transportation specifications for bituminous concrete and specifies the conditions under which pavement may be applied. Application during temperatures below those specified results in material which generally will be weaker than pavements laid during warmer months, for various reasons.

than 1 inch maximum and a liquid asphalt content between 4.8% and 6.0% by weight depending on aggregate characteristics. The pavement may be placed between April 15 and November 15, provided the air temperature in the shade at the paving location is 35°F or higher and the surface to be paved is not frozen or unreasonably wet.

- (b) Minimum standards for the surface layer of pavement shall be the Maine Department of Transportation specifications for plant mix grade C or D with an aggregate size no more than 3/4 inch maximum and a liquid asphalt content between 5.8% and 7.0% by weight depending on aggregate characteristics. The pavement may be placed between April 15 and October 15, provided the air temperature in the shade at the paving location is 50°F or higher.

It may be wise to allow the base pavement and gravel to remain ~~as is~~ for several months so that it can consolidate under traffic. Once it has stabilized, the surface course can be placed.

Commentary

4. Surface Gravel.
The Board may approve an aggregate road base for any internal subdivision public street in which zoning requires a minimum of one dwelling unit per 7 acres, or any private way with a maximum estimated Average Daily Traffic of 50 ADT or less. The surface gravel shall meet the gravel grading requirements of Table 10.15-7.

Gravel used for unpaved roads should meet the requirements for paved roads, but the surface gravel should be a lighter consistency. This means that there should be a higher percentage of fine material in the surface gravel which will wick up moisture from below and allow it to evaporate. These fine sands will also provide better surface drainage and help keep the surface compacted and dust free. However, too much fine material can easily turn a road into a muddy disaster with deep ruts. A maximum of one dwelling unit per 7 acres is considered the optimal performance for a gravel road without construction and ongoing maintenance costs exceeding the construction and maintenance costs of a typical low volume asphalt road.

Table 10.15-7

Surface Gravel Grading Requirements

<u>Sieve Designation</u>	<u>Percentage by Weight Passing Square Mesh Sieves</u>
2 inch	95-100%
1/2 inch	30-65%
No. 200	7-12%