

Selected Pages - Street Design Standards

LAND SUBDIVISION CONTROL REGULATIONS

By

The Planning Board
of
The Town of New London
New Hampshire
2009

Adopted June 7, 1962
Revised June 2, 1970
Revised August 29, 1984
Revised January 7, 1986
Revised March 7, 1988
Revised April 19, 1988
Revised September 6, 1988
Revised January 15, 1991
Revised February 22, 1994
Revised March 28, 2000
Revised October 23, 2007
Revised July 28, 2009

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12. Plant Specifications

- a. Trees and shrubs – installation size requirements
 - 1) Minimum size for shade or canopy trees shall be 2 ½ inches in diameter measured at a point six inches above grade.
 - 2) Minimum size for small or minor shade trees, ornamental, or flowering fruit trees shall be 2 inches in diameter measured at a point six inches above grade.
 - 3) Minimum size for evergreen trees shall be six feet in height.
 - 4) Minimum size for shrubs shall be 1.5 feet in height.

- b. Planting Specifications
 - 1) Areas intended as planting beds for shrubs or hedges shall be cultivated to a depth of not less than 18 inches. All other planting beds shall be cultivated to a depth of not less than 12 inches.
 - 2) Pits for planting trees or shrubs shall be generally circular in outline with vertical sides. Pits for trees or shrubs shall be deep enough to allow one-eighth of the ball of the roots to be above the existing grade. Pits for trees shall be two times the diameter of the root ball.
 - 3) Cultivated areas shall be covered with not less than a two to three inch deep layer of mulch after planting.
 - 4) All trees and shrubs shall be appropriately pruned after planting with all broken or damaged branches removed.
 - 5) All plants shall be nursery grown native species. No invasive species are permitted as per the list kept by the New Hampshire Department of Environmental Services.

- c. Retention of Existing Vegetation
 - 1) The boundary of areas to be cleared should be well defined in the field with tree markings, construction fencing or silt fencing as appropriate to avoid unnecessary cutting or removal.
 - 2) Care should be taken to protect root systems from damage from excavation or compaction.
 - 3) Individual trees, rock formations and other landscape features to be retained should also be clearly marked and bounded in the field.



N. STREET DESIGN STANDARDS

1. General

All proposed public streets shall be designed and constructed to conform with the provisions of this section. Approval of the Planning Board, the Police Chief and the Fire Chief of the Town of New London concerning minimum requirements for

passage of safety/emergency vehicles shall also be received. Please refer to the sketch to follow entitled "Minimum Turning Path for Bus Design Vehicles".

2. Master Plan

The street system shall conform to the Master Plan of principal streets as adopted in whole or in part by the Planning Board.

3. Alignment

- a. Streets shall be continuous and in alignment with existing streets as far as possible.
- b. Street jogs with centerline offsets of less than 125 feet shall not be allowed.
- c. A tangent of at least 100 feet shall be introduced between horizontal reverse curves on all proposed streets.
- d. Approval of the general development street plan shall be required before allowing construction of small integral phases of the plan.

4. Intersections

When a street, public or private, leading from a subdivision is proposed to intersect an existing Town street or state highway, the entire intersection shall be examined for safety. The subdivider shall place a STOP sign on the subdivision street and other signs as required by SECTION VI-N:14. The driver of the stopped vehicle must be able to see enough of the existing street to turn or cross before a vehicle on it from either direction reaches the intersection or overtakes him. To establish and preserve adequate safe sight distance, the following provisions shall be required of the subdivider:

- a. Right-Angle: Except where it is unsuitable because of the character of the land, streets shall intersect so that within 75 feet of the intersection, the street lines shall be at right angles (90 degrees), or in no case shall they be less than 75 degrees.
- b. Grade: The subdivision street within 30 feet of the edge of the existing street pavement or proposed subdivision street shall be at a 2% grade upward when approaching the existing street.
- c. Sight Distance: The safe sight distance for subdivision streets intersecting with a Town street or state highway shall conform with the American Association of State Highway and Transportation Officials (AASHTO) standards, and with the AASHTO guide for low-volume roads where applicable.
- d. Obstructions: The eye of the driver of a stopped passenger car at 3.5 feet above the street must be able to see the top of an approaching vehicle at 4.25

feet above the street at the above safe sight distance without obstruction. No structure, vehicle parking, trees or plantings shall impair corner visibility. A "Sight Line Easement"/Deed Restriction shall be imposed on the corner lots controlled by the subdivider adjacent to the intersection to preserve the above safe sight distances; the Easement/Deed Restriction shall provide the Town the right to trim back or remove any impairment to the required visibility at the lot owner's expense.

- e. Rounded Property Lines: Property lines at street intersections shall be rounded to provide a property line radius of not less than 30 feet.
- f. Rounded Pavement Edges: At all private and public street intersections, edges of the pavement, traveled way, or curb lines shall be rounded with large enough radii to allow safe passage of "emergency vehicles" as defined by the template, "Minimum Turning Path for Bus Design Vehicle".
- g. Round-About: A round-about intersection design will be considered as an alternative to the traditional four-way intersection with stop signs or lights where deemed appropriate by the Planning Board.

5. Right-of-Way

- a. Public Road, Immediate or Future: Any ROW intended to be immediately or in the foreseeable future deeded to the Town within a subdivision shall be clearly indicated by the two sidelines on the Plat and the area of such ROW subtracted from the land to be subdivided. The width between the two ROW sidelines shall be as specified under "Standards for Street Design" in Section VI-N:11. This type of ROW will divide the land to be subdivided.
- b. Permanently Private Road: Any ROW that is never intended to be deeded to the Town shall be clearly shown on the Plat as a single centerline and shall be considered as having no width which is subtractable from the land to be subdivided. This type of ROW need not divide proposed lots through which it travels to provide legal access to lots further on in the subdivision.

6. Covenant to Release Town etc. from Furnishing Public Streets and Utilities

If the owner of the land represents to the Planning Board, and the Planning Board agrees, that he does not now desire or require public streets or roads within the subdivision, public water or public sewer facilities for all or any portion of the land, he shall submit to the Planning Board for recording a signed Covenant entitled "Covenant Relating to Release of Town of New London, the New London-Springfield Water System Precinct and New London Public Works Department from furnishing certain facilities in proposed subdivision of land, New London, NH" (Exhibit B1 or B2 of these regulations), and if such services are later desired or required, they shall be constructed and installed without cost to the Town or Water System Precinct, in accordance with the regulations then current covering such

work. Furthermore, such covenant shall become a part of every deed of transfer within the proposed subdivision.

7. Sidewalks

Sidewalks of not less than four and one-half (4.5) feet in width and conforming to the grades of the streets shall be constructed on one or both sides of the street when in the opinion of the Planning Board such sidewalks are appropriate. Further, the Planning Board may require pedestrian walks and right-of-way for access between parts of a subdivision and/or public property. Sidewalks shall be constructed in accordance with instructions from the Public Works Director. Alternative surfaces (e.g., porous pavement, grass pavers, etc.) are encouraged for sidewalks and may be removed from the total impervious area calculations when designing the stormwater system for recharge and water quality criteria only. Refer to requirements listed in L.1.b and design guidance in Appendix A.2.

8. Harmony with Topography

Street and lot pattern design shall give due consideration to contours and natural features of the land, where practical, within the standards set forth in the Zoning Ordinance. In order to minimize the amount of surface water drainage, roads shall be designed above the original ground level wherever feasible. Aesthetic values shall be considered rather than rigid straight-line, city block layout of streets and roads.

9. Plantings

The Planning Board may require planting within the street right-of-way in those subdivisions where, due to the nature and character of the land, it would be appropriate, and planting shall be indicated on the Plat. The Tree Warden or Public Works Director shall recommend to the Planning Board, when requested, the specifications for such plantings.

10. Dead-End Streets

a. Turnarounds: Streets within a subdivision shall be coordinated with existing and other planned streets. In the event that the Planning Board approves a dead-end street, it shall terminate in either of the following types of turnaround:

- 1) Cul-de-Sac: Only the circular type of Cul-de-Sac shall be approved. The radius to the centerline of the circular roadway shall be 50 feet and the width shall be 20 feet. Drainage should be directed to the unsurfaced center of the Cul-de-Sac to be treated/recharged by a bioretention area, as feasible, before discharging the overflow to a

downstream BMP for quantity control. Otherwise, drainage for the center area shall be provided by adequate means including culvert(s) leading to the outside of the Cul-de-Sac.

- 2) Hammerhead "T" Type: Hammerhead "T" type turnarounds are the preferred type of turnaround and shall be a minimum 85 feet across and at least 20 feet wide. Drainage around the hammerhead shall be adequate.
 - 3) Grades on Turnarounds: The grade on the turnaround and on 30 feet of its approach straightaway shall be no greater than 2% to enable winter plowing.
- b. Length: The maximum length of a dead-end street shall be determined by the Planning Board.
 - c. Isolation: A permanent dead-end street shall be isolated by not being brought to the property boundary line, but shall be placed so that the lots are contiguous with the property line of the subdivision. (This assures for a permanently dead-end street that the smallest size street based on the average daily vehicular traffic and number of housing units can be selected from the table "Standards for Street Design" provided in Section VI-N:11 since through traffic is eliminated which could necessitate selection of a larger size street.)
 - d. Through Circulation: The Planning Board shall ensure that there is adequate through circulation when needed as determined by the Planning Board for secondary emergency vehicle access and overall traffic circulation. Traffic circulation patterns for service and local streets shall be designed to discourage through traffic from short-cutting through residential neighborhoods. The size of street needed within a subdivision is based on traffic to be generated by the development plus through traffic anticipated to use the street from outside the development. Whenever provision is made for extending a street through to an adjoining property, the extent of outside or through traffic needs to be accounted for in determining the appropriate size street to develop within the subdivision.

11. Classification of Streets:

Classification standards for street design shall be as set forth below (See "Typical Cross Section with Open Drainage and Typical Cross Section with Closed Drainage").

STANDARDS FOR STREET DESIGN

	Service ¹	Local	Collector	Arterial
Average Daily Vehicular Traffic ²	1-40	1-240	241-400	400+
Number of Housing Units	1-5	1-30	31-50	50+
Min. Traveled Surface Width (ft)	16	18	20	22
Min. Shoulder Width (ft) each side ¹²	2	2	3	4
Min. Distance between Shoulder Break Points (ft)	20	22	26	30
Base Courses				
- Gravel (in)	12	18	27	30
- Crushed Gravel (in)	6	6	6	6
Total Depth of Base Courses (in)	18	24	33	36
Pavement Surface Material ^{10, 3}	Bit Con.	Bit Con.	Bit Con.	Bit. Con.
Ditch Line to Ditch Line (ft) ⁴	28	33	41	46
Min. Right-of-Way (ft) ⁵	40	50	50	60
Design Speed for Street (MPH) ⁶	20	30	30	35
Crest Vertical Curve "K" Factor ⁷	10	30	40	55
Sag Vertical Curve "K" Factor ^{7,11}	18	35	4	55
Min. Vertical Curve Length (ft)	60	100	125	10
Min. Vertical Curve Length (ft) Centerline of street ^{8,9}	140	250	325	400
Max. Curve Banking Cross Slope	4%	4%	4%	4%
Max. Profile Grade ⁹	10%	10%	10%	8%

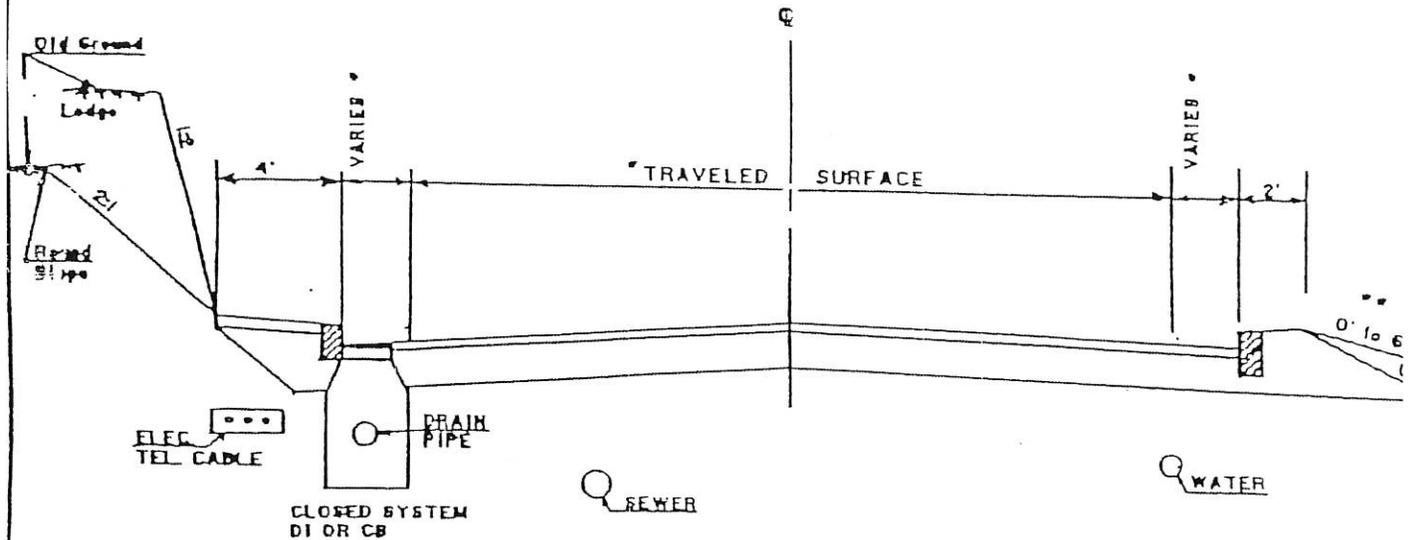
Foot Notes:

- ¹ Service street standards may only be used on application to and with approval of the Planning Board. Extra gravel as determined by the Public Works Director shall be required when subgrade is on high silt material or clay.
- ² Shall be traffic anticipated 20 years into the future (Assuming 8 trips per day per dwelling unit.) Refer to Section VI-N:10,d.
- ³ Streets designed with closed drainage shall have a paved surface curb to curb.
- ⁴ Ditch lines located at bottom of Base Courses on "subgrade" and on an assumed 4:1 shoulder slope. This influences amount of ROW.
- ⁵ The ROW dimension shall be measured perpendicular to straight-line sections and radial to curved sections. The right-of-way shall include five (5) feet more than the toe of the side slope and the top of the back slope (see Typical Cross Section).
- ⁶ Establishment of a design speed controls vertical and horizontal curves.

- ⁷ Multiply the appropriate Vertical Curve "K" Factor by the algebraic difference in grades in percent to obtain the required length of vertical curve for the street's profile. Unsymmetrical vertical curves will not be accepted by the Planning Board.
- ⁸ Radii based upon the design speed for the street.
- ⁹ When horizontal radii within ten percent of the minimum are combined with profile grades within ten percent of maximum, one or the other shall be improved by twenty percent to preserve safety.
- ¹⁰ All roads proposed to be accepted by the Town for maintenance shall be paved with bituminous concrete. Service or local roads proposed to be maintained privately by a homeowner's association may have a crushed gravel top course except for profile grades equal to or over eight (8) percent shall be paved with bituminous concrete in accordance with Section VI-O:7 below and also provide a 200 foot paved run-out on each end. "Bit Conc." equals bituminous concrete obligatory per Section VI-O:7.
- ¹¹ Use 'Service Street' 'K' Factor for stop intersections.

TYPICAL CROSS SECTION

(with closed drainage)

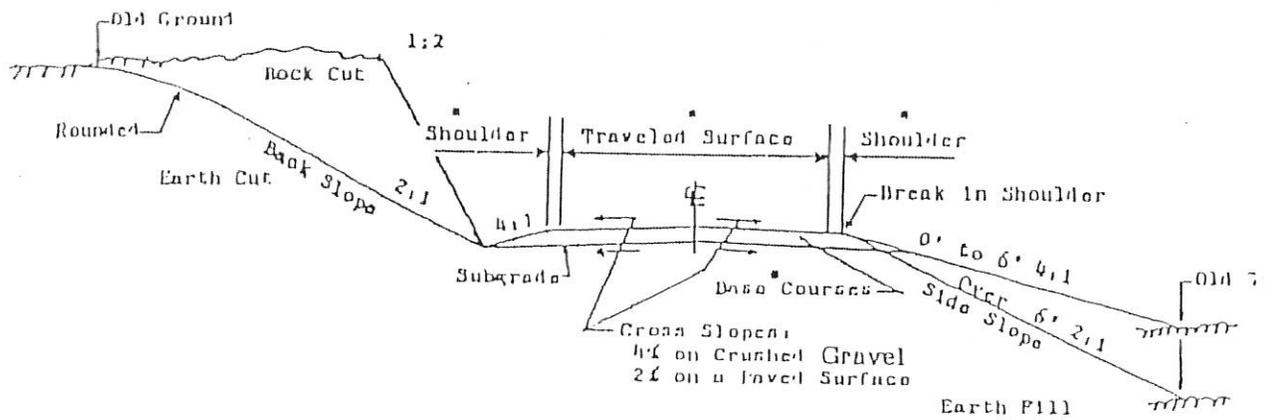


* Use dimensions specified in table, "Standards for Street Design", Section VI-Hill.

- Notes:
- 1) See requirement for guardrails in Section VI-N:6.2.
 - 2) Utility location shown for typical location. Actual locations may vary dependent on design.
 - 3) Distance inside curb to curb equals traveled surface width plus two times shoulder width.
 - 4) Road surface paved from curb to curb.

** Where the height from the break in shoulder to original grade is greater than six feet at a 4:1 slope, a 2:1 slope will be constructed as relief.

TYPICAL CROSS SECTION WITH OPEN DRAINAGE



- * Use dimensions specified in table, "Standards for Street Design", Section VI-M:11
 - ** When the height from the break in shoulder to original grade is greater than six feet at a 4:1 slope then as relief a 2:1 slope shall be constructed.
- Note: See requirement for guardrails in Section VI-N:8,b.

12. **Marking of Proposed Streets:** At the earliest practical stage during the application, the subdivider shall place on the ground clearly observable survey stakes with ribbons marking the center line of all proposed streets.
13. **Alteration of Gradient:** The Planning Board may modify the maximum and minimum gradient for short lengths of street where, in the judgment of the Planning Board, existing topographic conditions or the preservation of natural features indicate that such modification will result in the best subdivision of the land.
14. **Street Signs:** The subdivider shall be responsible for the initial installation of all necessary road signs related to the subdivision including stop signs, road name signs, speed limit signs, dead end signs and any other road signs deemed necessary by the Planning Board after recommendation by the Public Works Director. For private roads, the subdivider is responsible for the initial installation of all street signs, and all replacements of street signs are the responsibility of the homeowners within the subdivision.
15. **Fabric in Road Construction:** Road design plans cannot always anticipate the conditions that will be encountered in the field during construction. If the person responsible for inspection services for the Planning Board identifies the need to install fabric due to unforeseen conditions encountered in the road construction, then the subdivider is responsible for installing the fabric as required by the Town Inspector. In the alternative, the subdivider may choose to appeal the decision to the Planning Board and to halt construction of the road until a decision is reached. This paragraph on "Fabric in Road Construction" shall be a note on all subdivision plans which involve road construction.

O. CONSTRUCTION OF STREET OR ROAD

1. **Supervision**
Construction of streets, drainage facilities, sidewalks, and curbs must be done under the supervision or with the approval of the Public Works Director of the Town of New London and the Planning Board, or its agent.
2. **Pre-Construction Meeting**
Before any construction begins, the subdivider, his road contractor, the Public Works Director or the Planning Board or its agent, will have a pre-construction meeting, the purpose of which is to clarify the design and construction standards contained herein.
3. **Earthwork**
Earthwork consists of clearing, grubbing, excavation and embankment.