TOWN OF GILFORD
MINIMUM ROAD STANDARDS

Amended 9/24/70, revised 1/14/71, revised 1/25/71, revised 12/13/73, revised 2/1/2006

[See last page for list of References]

INTRODUCTION

These standards are established to encourage safe and efficient roads in Gilford while promoting smooth traffic flow and optimum sight distances. They are designed to ensure wise use of municipal revenues for road construction and maintenance and to provide suitable travel for intracommunity and intertown commerce. They are intended to minimize conflict with pedestrians and assist in maintaining quiet residential neighborhoods consistent with Gilford's rural character.

These standards shall apply to all new street and road construction as well as the upgrading of private ways when same are proposed for acceptance as a public way by the Town. Any road(s) accepted by the Selectmen shall meet or exceed the Gilford Minimum Road Standards in effect at the time of Gilford subdivision approval. If the physical condition of the road(s) has deteriorated before acceptance by the Town, the road(s) must be reconstructed to meet the Gilford Minimum Road Standards in effect at the time of subdivision approval (added 10/3/74 by Board of Selectmen).

1. **GENERAL LAYOUT**. Roads and streets shall be logically related to the topography so as to produce usable lots. Selection of the highway alignment should be on the basis of minimizing cuts and fill slopes. Major road and street alignment shall conform to the future land use and Town Master Plan or its most current revisions. The protection and enhancement of the environment shall be of major importance in the design and construction. Streets or roads shall have satisfactory access to existing and accepted class V streets or roads of the Town of Gilford. These standards shall govern new subdivision layouts, road extensions, private to public requests and class VI to V upgrades.

Application in writing for acceptance of the street or road shall be made by the property owner to the Board of Selectmen. The Selectmen may accept such street or road upon verifying that such street or road corresponds with a road shown on a plan approved by the Planning Board and after review by the Department of Public Works. No street or road shall be accepted unless there is a public need for such street or road.

2. **STREET LAYOUT**.

A. **General.** All subdivisions shall have adequate provision for a safe and suitable access to a Class V or better road or, shall make provision for the construction and dedication of a Class V or better road in order to ensure safe and suitable access to the subdivision. Where the Planning Board determines an existing access street, or portion thereof to be substandard, it may require the upgrading of said street. Where traffic from a proposed subdivision will adversely impact a nearby street or intersection, provisions shall be made for the mitigation of said impacts. Proposed streets shall be of suitable location, width, grade, and improvement to accommodate prospective traffic and afford satisfactory access for police, fire fighting, emergency equipment, snow removal, sanitation, and road maintenance equipment. The arrangement and character of all streets in subdivisions shall conform to the Master Plan, when applicable, in relation to other existing and planned streets, to topographic conditions, and to the proposed uses of land to be served by the street(s). Existing stonewalls shall be retained or relocated and restored as required by the Planning Board and as referenced in RSA 472:6.

B. **Access.** Each lot shall have a safe, independent and direct access to and from a Class V or better road. Where warranted, the Planning Board may require that two (2) lots share a driveway. All shared portions of such shared driveways shall be improved to facilitate two (2)-way traffic flow beyond the Town right-of-way to the point where the shared responsibility ends. Rights of passage over and across such shared driveways shall be established by a recorded easement for each of the lots so served. Unless shared as permitted by this section, driveways shall be located a minimum of fifteen (15) feet from any side and rear property lines.

C. **Arrangement.** Streets shall be laid out so as to intersect at right angles as nearly as possible. No street shall intersect another at less than 60 degrees. New streets shall be continuous and in alignment with existing streets as much as possible. All streets shall be integrated with existing and proposed street systems. Where thru streets are not proposed, the design shall provide for a cul-de-sac or other approved terminuses. Streets entering on the opposite side of another existing street or road shall be laid out either directly opposite of another or with a minimum distance of one hundred and twenty five (125) feet between their centerlines. Where extension of an existing roadway is proposed, the existing terminus shall be removed in its entirety. (See standards for Dead-End Streets below).

D. **Classification of Streets.**

1) **Arterial Streets** [1500 & over ADT] are intended to carry traffic from collector streets to the system of highways; that is, to move through-traffic to and from major traffic generating areas.

2) **Collector Streets** [750-1500 ADT] carry traffic from local streets to the major system of arterial streets and highways. They are intended to collect from and to distribute traffic in minor traffic generating areas.

3) **Local Streets** [0-750 ADT] provide primarily for access to abutting properties but are intended and designed to carry through-traffic.

4) **Dead End and Loop Streets** provide for access to abutting properties but, have only one point of access from an approved street that may have multiple points of access.

5) **Private Streets or Ways** are on property held under private ownership and are not maintained by the Town.

3. DEAD-END STREET(S). Streets designed to be permanent, dead-end streets shall not exceed one thousand (1,000) feet, as measured from the edge of the existing road pavement to the end the of proposed right-of-way, and shall be provided with a turn around within that right-of-way having an inside road surface diameter of at least one hundred (100) feet or some other approved road terminus..

4. STREET NAME(S). All streets shall be named to comply with the provisions of the "Enhanced 911 System" (RSA 106-H: 2 and RSA 106-H: 10) and shall be subject to the approval of the Selectmen.

5. STREET SIGN(S). The location and type of sign(s) to be installed shall be in accordance with the Manual on Uniform Traffic Control Devices (MUTCD).

6. STREET LIGHT(S). Streetlight(s) shall be provided as required by the Planning Board and approved by the Selectmen. Newly created intersections may require that a street light(s) be installed for the purpose of public safety.

7. GUARDRAIL(S). Guardrail(s) shall be used in locations where the New Hampshire Department of Transportation's typical warrant for guardrail is met and/or as required by the Planning Board and approved by the Selectmen. Guardrail(s) shall be metal beam on wood posts (or approved equal), meeting *State Specification 606* and, as applicable, *State Plans* GR-1 through GR-8. All guardrail(s) must end safely using an appropriate terminal unit.

8. RIGHT-OF-WAY. The minimum width of a road right-of-way shall be not less than fifty (50) feet. A greater width may be required to construct roads and ditches as described in the attached Figure 1, "Geometric Cross Section Design Element." The Planning Board, with the approval of the Selectmen, may require greater right-of-way width where, in its judgment, the width is warranted due to present or future demands.

9. RIGHT-OF-WAY BOUND(S). Bounds of a type recommended by the Planning Board and approved by the Selectmen shall be installed at each point of curvature (PC), point of tangent (PT), and changes in property ownership, as it abuts the right-of-way, at all street intersections, at all points of change in direction and at any other points the Planning Board, with the approval of the Selectmen, may deem necessary to designate the street lines (intended for new layouts but may include change of road ownership such

as, but not limited to, a town line designation, public to private ownership or Class V to VI status).

A. Type: The following boundary markers shall be used to satisfy the requirements of this section. Nothing herein shall preclude the use of state of the art monumentation when said monumentation is deemed to be in compliance by the Planning Board.

1) *Stone or Concrete Bounds* shall be of concrete, stone or equal, not less than thirty-six (36) inches in length, not less than four (4) inches square or five (5) inches in diameter, and marked on top with a cross, brass plug, iron rod, or other durable material securely imbedded. Drill holes are acceptable where existing conditions allow.

2) *Iron Pipes or rebar* shall be at least thirty (30) inches long and a minimum of five-eighths (5/8) inch in diameter or square.

B. Location:

1) *Bound Locations*. The external boundaries and rights-of-way lines of a roadway shall be monumented by bounds. These bounds shall be placed not more than 1,400 feet apart along any straight line and at all corners, at each end of all curves, at each point where a curve changes its radius, and at all angle points in any line. Said points shall not be less than twenty (20) feet from the bank of any river or stream.

2) *Iron Pipe Locations*. The lines of all lots abutting the right-of-way and any other points not marked by bounds shall be monumented by iron pipes or equal. Those monuments located along rivers and streams shall be located along the top of the stream bank.

C. Placement:

Bounds may be set flush with finish grade. No permanent bounds shall be set until all construction that would disturb or destroy the monuments is completed. All bounds shall be set under the direction of a licensed land surveyor and noted on the final "as-built" plan(s).

10. ALIGNMENT AND GRADES. Chart 1, "Roadway Geometric Design Standards," provides minimums for curves, grades, and other road and street geometry.

A. **Exception:** Where it has been demonstrated to the satisfaction of the Planning Board that adherence to the maximum grade specified in Chart 1 will cause local streets to be constructed with what the Planning Board considers to be excessive cuts or fills, a

waiver from the above specified maximum grade may be granted by the Selectmen, provided:

1) The maximum allowable grade shall not exceed ten (10%) percent;

2) The maximum length of such grade as measured between vertical points of intersection (PVI) shall not be greater than five-hundred (500) feet;

3) No other such slope greater than six (6%) percent occurs within five hundred (500) feet measured along the centerline of the road from PVIs.

11. APPLICATION TECHNICAL REVIEW. At a regularly scheduled meeting the Planning Board (or is delegated to its Site Study Committee) will review the application for completeness and determine its acceptability for further processing.

12. CONSTRUCTION SUPERVISION. All roads, streets, drainage facilities, sidewalks, curbs and all other elements within the right-of-way shall be constructed under the supervision, and with the approval, of the Selectmen or their designated representative(s). If the town chooses to utilize independent construction testing and inspection, the following shall apply:

A. The cost of independent construction testing and inspection shall be borne by the contractor/applicant. Prior to receiving final approval of subdivision involving required improvements, the applicant shall deposit with the Treasurer of the town a sum sufficient to pay for such inspections as estimated by the Selectmen or their designated agent. The amount deposited under this section shall be held in a special escrow account by the Treasurer for the purpose of paying the independent agency to perform the necessary inspections and/or tests.

B. Whenever the actual amount required to make necessary inspections exceeds the amount deposited under this section, such amount in excess of the deposited amount shall be paid to the Treasurer prior to the final acceptance of the improvements and prior to the release of any bond money deposited.

C. Any amount deposited under this section and not used for the purposes stated herein shall be returned to the applicant upon final acceptance of the require improvements. Escrow amounts shall be returned to the applicant within thirty (30) working days of such acceptance.

13. CLEARING AND GRUBBING. The entire area of each roadway shall be cleared and grubbed of all stumps, brush, roots, boulders, like materials and all trees not intended for preservation. Said material shall not be used for fill or buried within the road foot print, including all contiguous slopes. Clearing and grubbing shall conform to *Section 201 of* the *State Specifications*. A temporary entrance (covered with crushed stone for at least one hundred (100) feet in continuous length) shall be established and maintained functional during construction to ensure dirt, mud and other debris is not tracked onto any

public way by exiting trucks and/or equipment. The contractor/applicant shall be responsible to ensure said stone remains effective.

14. SUBGRADE PREPARATION. All loam, humus, soft clay, and other yielding material shall be removed from within the limits of the roadway area to a depth of no less than twenty-four (24) inches below subgrade or to a greater depth as may be required by the Department of Public Works. Ledge occurring anywhere in the full cross-section of the roadway must be cleared to a minimum depth of twenty-four (24) inches below the finished surface. Ledge occurring in pipe trenches must be cleared so as to have a gravel cushion of at least one (1) foot below and on both sides of the pipe.

15. STORM DRAINAGE (within the Right-of-Way). The proposed development shall provide for proper surface drainage so that removal of surface waters will in no way adversely affect any neighboring properties or the public storm water management system and will help in reducing flooding, erosion, and sedimentation. The drainage system shall be designed so that the post-development runoff rate does not exceed the pre-development run-off rate. Surface water runoff shall be controlled and directed into a system of catch basins, pipes, swales, drainage ways, culverts, and/or channels that flow into a natural watercourse or existing drainage facilities. Where a right-of-way is traversed by an existing watercourse, drainage way, channel, or stream, there shall be provided an easement conforming to the lines of such watercourse for the purpose of maintenance. When a proposed drainage system will result in water encroaching on land outside a subdivision, appropriate drainage rights must be secured and indicated on the plan. Where the Planning Board determines that an existing downstream, offsite drainage system is substandard, the Planning Board will require the applicant to improve said drainage system. Construction shall be in accordance with *State Specifications* Sections *603, 604* and *605*, and *State Plans Standards DR-1, DR-2, DR-3, DR-4* and *DR-5*.

A. Drainage Study: For all new roadways a drainage study/stormwater management report shall be submitted for review and shall include:

1) A table of contents;

2) A narrative statement indicating how the contractor/applicant has met the requirements of *Section 7 of the State Specifications* and will describe the methodology and results of said analysis;

3) As the drainage study relates to the proposed roadway, a summary table comparing existing and post-development rates of runoff for each individual drainage basin/watershed to abutting properties shall be supplied. All watersheds and drainage areas shall be consistently labeled in all tables, calculations and plans;

4) A summary table of each pipe indicating project location, pipe size, type, length, slope, Manning's "n" value peak discharge, depth of flow, and peak velocity for

the design storm shall be provided. The summary shall also include hydraulic grade line (HGL) elevations at each location in closed conduit piping systems;

5) A summary table of each swale and channel indicating project location, cross-section/channel width, slope, Manning's "n" value, peak discharge, depth of flow, and peak velocity for the design storm shall be provided;

6) The project location and watershed as shown on a 7 ½ minute USGS quadrangle, shown as a chart in the report;

7) A watershed area plan for the existing conditions showing topography and existing ground elevations at two (2) foot contour intervals for the project site. The plan shall clearly show the boundary of each drainage area and sub area with identifying label and size, indicated in acres;

8) A watershed area plan of post-development conditions showing existing and proposed topography at two (2) foot contour intervals for the project's right-of-way. The plan shall clearly show the boundary of each drainage area and sub area with identifying label and size, indicated in acres. The post-development area shall be shown on a separate plan from the existing condition plan;

9) Runoff calculations shall be completed for the existing and post-development conditions using Soil Conservation Services (SCS) methods as described in the *Stormwater Management and Erosion and Sediment Control Handbook for Urban and Developing Areas in New Hampshire* for the appropriate design storms, as required by the regulations;

10) Flood routing calculations shall be provided for the design of each detention pond using acceptable methods such as Modified Puls, Storage Indication, or as may be approved by the Director of Public Works. In addition to the design storm (listed under section D. below), a fifty- (50) year storm analysis shall be conducted to establish the fifty- (50) year elevation at the detention basin. A minimum of twelve (12) inches of free board shall be provided above the fifty (50) year storm to the minimum elevation of embankment at the detention basin;

11) Water quality treatment facilities shall be designed to New Hampshire Department of Environmental Services standards and are in addition to the requirements of these regulations;

12) Riprap design calculations shall be provided to the requirements of the *Stormwater Management and Erosion and Sediment Control Handbook for Urban and Developing Areas in New Hampshire* for each pipe outfall location and, where necessary, for all open channels and swales; and

13) A licensed professional engineer in the State of New Hampshire shall stamp and sign the report.

B. Hydraulic Grade Line (HGL):

1) Closed Pipes: Closed pipe systems shall be designed to convey the appropriate design storm required by the regulations, under gravity flow conditions;

2) Open Channels and Swales: For open channels and swales, the HGL shall be shown for the appropriate design storm required by the regulations; and

3) Detention Basins/Ponds: The HGL shall be shown for a minimum fifty (50) year flood event.

C. Flow Computations: Flow computations shall be in accordance with the following:

1) *Manning's formula* shall be used to compute capacities for all open channels, swales, and closed piping drainage systems; and

2) The capacity of cross culverts shall be computed in accordance with *Manual on Drainage Design for Highways – New Hampshire Department of Transportation*.

D. Design Runoff: The rainfall frequency to be used for design calculations shall be as follows:

1) Residential Areas ……. 10 years
2) Commercial Areas ……... 25 years
3) Industrial Areas ……..... 25 years
4) Flood Protection Areas ……..... 50 years

E. Placement of Drain Lines. All off-site drain lines shall be placed within public right(s)-of-way dedicated as public road/street unless the use of easements is specifically approved by the Planning Board.

F. Pipe Size, Velocity and Type.

1) Minimum allowable pipe diameter in any storm drain system shall not be less than fifteen (15) inches in diameter;

2) The design velocity in all pipes, up to the maximum velocity, shall be ten (10) feet per second;

3) The minimum depth of cover for storm drain lines shall not be less than thirty (30) inches, measured from the top of road finished grade.

4) Bedding shall be three-quarter (3/4) inch crushed stone and wrapped with a non-woven fabric to ensure stone is remains clean. The depth of bedding shall be a minimum six (6) inches if in earth and twelve (12) inches if in ledge; and

5) Acceptable pipe material shall be as recommended and approved by the Director of Public Works and Planning Board.

6) Maximum length between drain manholes shall be one hundred (100) feet.

G. Drainage Structures. Manholes and other drainage structures shall be pre-cast concrete sections meeting H-20 loading, constructed and installed in accordance with *New Hampshire Department of Transportation Standards and Specifications for Road and Bridge Construction*. Drainage structures shall not exceed fifteen (15) feet in depth (from rim to bottom of structure). Outlet structure at detention basins, when necessary, shall be submitted to the Director of Public Works for approval.

H. Driveway Culverts. Prior to installation, the Department of Public Works (DPW) shall approve the location, length, size, bedding and backfill of all driveway culverts installed within the right-of-way. Driveway culverts shall be located a minimum of four (4) feet off edge of roadway pavement, unless otherwise approved by DPW. Driveway location(s), driveway culvert(s) and all related items shall be designed, located, approved and incorporated in the subdivision plan. It is the responsibility of the homeowner to service and maintain their driveway culvert(s).

16. CURBS. Depending upon field conditions, curbing may be required along one or both sides of proposed roadways and drained appropriately. Construction shall be in accordance with *State Specifications*, Section 609, and *State Plans Standards* CR-1 and CR-2.

17. SIDEWALKS. The Planning Board may require construction of sidewalks for pedestrian access to, but not necessarily limited to, schools, parks, shopping areas and transit stops or where population density and /or traffic volume conditions are such that the Planning Board determines the construction of sidewalks to be prudent. In commercial and industrial districts, sidewalks may be required on both sides of the street. In residential districts, sidewalks may be required on one side of the street. Sidewalks shall be a minimum of five (5) feet in width; no closer that twelve (12) feet to the street centerline and constructed utilizing granite curb; six (6) inches of base gravel (*State Specifications*, Section *304.2)* except maximum stone size may be two (2) inches), plus six (6) inches of crushed gravel and a minimum of two (2) inches of hot bituminous pavement. All curbing shall be set in Portland Cement Concrete. Curb ramps and sidewalks shall be constructed to comply with the applicable design references listed in the footnote[1].

[1] *Designing sidewalks and Trails for Access*, Part II of II: Best Practices Design Guide

18. DRIVEWAY (at front property line). Driveway width for commercial and industrial subdivisions shall be a minimum of twenty (20) feet in width. Minimum driveway width for residential single family and duplex lots shall be twelve (12) feet at the right-of-way and not greater than twenty (20) feet with five (5) foot radius at the edge of pavement at the street. All driveways shall be located a minimum of fifteen (15) feet from all side and rear property lines.

A. When a proposed driveway is located on a Town road, the owner is responsible for certifying the proper sight distance is provided at the location indicated on the plans. For all residential driveways located on the lot serving a single family or duplex lot, the minimum, proper, all season sight distance shall be two-hundred fifty (250) feet in all directions. For all other driveways including, but not necessarily limited to, common, commercial, industrial and multi-family uses, the minimum all season sight distance shall be three-hundred sixty-five (365) feet in all directions meeting the requirements for roadway intersections. Proper visibility easements shall be provided to meet the sight distance requirements. The owner is responsible for obtaining a driveway permit from the Gilford Department of Public Works prior to the issuance of a building permit or any access is proposed off a town right-of-way for purposes of, but not limited to, agriculture or forest management uses. The Town requires that all newly constructed driveways shall have a minimum ten (10) foot apron of asphalt or other suitable material for the purpose of ensuring that sand, gravel, mud and other surface materials are not tracked into or onto the surface of a public road and,

B. When a proposed driveway is located on a State road, the owner is responsible for obtaining the necessary approval and permits from the State. A copy of the permit shall also be submitted to the Town and the New Hampshire Department of Transportation and approval number shall be shown on the plan.

19. BASE COURSE. The road base course shall be of materials at least the width and thickness indicated in the attached Figure 1, "Geometric Cross Section Design Elements." Crushed gravel shall conform to Pay Item 304.3 in *State Specification*. Gravel shall conform to Pay Item 304.2 in *State Specification*, except that the maximum size stones shall be three (3) inches. All other provisions of *State Specifications,* Section 304, are part of these standards.

20. **ASPHALT SURFACE**. Where designated in the attached Figure 1, "Geometric Cross Section Design Element," Hot Bituminous surfaces shall be Hot Bituminous Pavement in accordance with *State Specifications,* Section 403. Widths and thicknesses shall be at least as indicated in Figure 1. At least a forty-four (44) foot wide pavement is required in areas where on-street parking is expected on both sides of the travel way. Angle parking is allowed by special permission only and shall be approved by the Selectmen, upon recommendation of the Planning Board.

21. GRAVEL SURFACE. In cases of very low traffic volumes, defined herein as up to 50 vehicles per day, where the Planning Board determines that an asphalt surface is not

required the total usable roadway width shall be a minimum of twenty-two (22) feet. Provision for a wider section shall be considered to allow for future upgrading to an asphalt surface as recommended above. The gravel-wearing course shall conform to *State Specifications,* Section 304.2, except that the maximum size stones shall be 1 ¼ inches. All other provisions of *State Specifications,* Section 304, are part of these standards.

22. **GRAVEL SHOULDERS**. Gravel shoulders, and their base courses, shall be at least the depth, width, and thickness indicated in the attached Figure 1, "Geometric Cross Section Design Element." Gravel shall conform to *State Specifications,* Section 304.33. All other provisions of *State Specifications* Section 304 are part of these standards.

23. **BRIDGES**. Bridges, as defined by State Law (RSA 234:2), are structures of ten (10) feet or greater clear span, and shall be designed to MS-18 (HS-20) loading (AASHTO Specifications). The minimum roadway width shall be twenty-four (24) feet. Bridges shall be designed by a professional engineer and constructed in accordance with that design.

24. **ENVIRONMENTAL IMPACTS AND PERMITS**. The owner shall be responsible for determining the compliance with any and all environmental regulations that apply to the project, for acquiring the necessary permits, for taking whatever action is necessary to comply with applicable regulations and permits, and, if necessary, for terminating the necessary permits. The applicable work could include, but not be limited to:

A. Any fill, dredge, excavation, etc. that impacts wetlands or other jurisdictional areas;

B. All temporary and permanent measures and treatment devices necessary to prevent erosion and control sediment during and after construction;

C. Any construction activity proposed to disturb one (1) or more acres of land as defined by US EPA NPDES permits;

D. Any disturbance of more than 100,000 square feet of terrain (50,000 sq. feet if within the protected shoreland) as defined by NHDES rules for a "Site Specific" permit.

25. **UTILITIES**. Utilities shall be underground and kept close to the right-of-way line, in no case closer than the ditch's back slope and always well back of a curb. Water and sewer mains may be constructed outside the road surface area.

26. **SAFETY**. Safety is an important factor on all roadway improvements. Every effort should be made to provide clear areas within the maintenance limits. The use of flatter slopes, the use of guardrail where necessary, and the use of warning signs are other safety factors to be considered. These areas are addressed in the publication Roadside Design Guide by AASHTO, 2002 or most current edition.

27. BONDING REQUIREMENTS. Security for improvements shall only be accepted in the form of cash held in the name of the town, or an irrevocable letter of credit, drawn on a NH bank, and in a form acceptable to the town's legal counsel. Land, mortgage or insurance bonds shall NOT be acceptable under this section. It is also required that a written agreement accompany said bond that clearly describes what work is to be accomplished and the deadline for completion of the improvements. All work must be completed prior to the expiration of the security so that there is adequate time to review whether all necessary tasks have been completed.

28. WAIVER PROVISION. The Board of Selectmen has the authority to vote to waive any portion of these regulations, provided however, that any such waiver shall state the standard which must be met as a condition of granting such waiver.

References

(a) *A Policy on Geometric Design of Highways and Streets*, 2001 edition. (AASHTO).
(b) *Designing Sidewalks and Trails for Access, Part II of II*: Best Practices Design Guide.
(c) *Guidelines for Geometric Design of Very Low-Volume Local Roads (ADT<400),* 2001 edition. (AASHTO).
(d) *Roadside Design Guide*, 2002 edition. (AASHTO).
(e) *Standard Specifications for Highway Bridges*, 17th Edition 2002. (AASHTO).
(f) *Standard Plans for Road and Bridge Construction*, 2001 edition. (NHDOT).
(g) *Standard Specifications for Road and Bridge Construction*, 2002 edition. (NHDOT).
(h) *Stormwater Management and Erosion and Sediment Control Handbook for Urban and Developing Areas in New Hampshire*,1992 edition. (Rockingham County Conservation District).

DEFINITIONS:

AASHTO – American Association of State Highway & Transportation Officials.

AADT – Annual average daily traffic.

ADT – Average daily traffic.

APPROVED MATERIAL – Material obtained from within the limits of the project or from outside sources suitable for the intended use. Also, manufactured materials [DOT].

ARTERIAL STREET – A street intended to carry traffic from collector streets to highways; that is, a street that will be utilized to move through traffic to and from major generating areas.

BASE COURSE – One or more layers of specified or selected material of designed thickness placed on a properly prepared subbase or subgrade to support a surface course.

CLASS V – Class V consists of all traveled highways other than Class IV, that the town or city has the duty to maintain regularly.[2]

CLASS VI – Class VI, per RSA 229:5, VII, includes "…all highways which have not been maintained and repaired by the town in a suitable condition for travel thereon for 5 successive years or more." [3]

COLLECTOR STREET – A street intended to carry traffic from local streets to the major system of arterial streets and highways. They are intended to collect and distribute traffic in minor traffic generating areas.

CUL-DE-SAC – A local street open at one end only and with special provisions for turning around. [DOT]

CULVERT – Any structure not classified as a bridge which provides an opening under any roadway. [DOT]

DEAD END STREET – A street having only one point of access from an approved street.

DIRECTOR – Gilford Public Works Director.

EASEMENT – A right acquired by public authority to use or control property for a designated highway purpose. [DOT]

EPA – Environmental Protection Agency.

HIGHWAY, STREET, ROAD – A public way designated for purposes of vehicular travel or vehicular and pedestrian travel, including the entire area within the right-of-way. [DOT]

[DOT] "Standard Specifications for Road and Bridge Construction, NHDOT, 2002

[2] "A Hard Road to Travel", 2004 Edition

[3] "A Hard Road to Travel", 2004 Edition

HOT BIT – Hot bituminous asphalt.

LANE – That portion of the traveled way that is utilized for the movement of a single line of vehicles.

LOCAL STREET – A street designed primarily for access to abutting properties, but intended and designed to carry through traffic.

LOOP STREET – A street having only one point of access from an approved street that loops back onto itself without exiting.

MUTCD – Manual on Uniform Traffic Control Devices (current edition).

NHDES – New Hampshire Department of Environmental Services.

PLANNING BOARD – Gilford Planning Board.

PRIVATE S STREETS – Street held under private ownership that are located on private property and that are not maintained by the Town.

ROW – Right-of-way. Land, property, or an interest therein (usually in a strip), that is acquired for and/or is devoted to transportation purposes. [DOT]

R.S.A. – New Hampshire, Revised Statutes Annotated.

SELECTMEN – Gilford Board of Selectmen.

STATE – State of New Hampshire.

STREET LIGHT – An electric luminary fixture mounted to a pole and used to light a road surface or area.

STREET NAME – Name officially accepted by the Board of Selectmen for official identification of a particular road or street.

SUBBASE – Layers of specified material thickness placed on a subgrade to support a base course. [DOT]

SUBGRADE – The top surface of a roadbed upon which the pavement structure and shoulders are constructed. [DOT]

TOWN – Town of Gilford, N. H.

TRIPS PER DAY – One trip is equal to, "from point A to point B".

[DOT] "Standard Specifications for Road and Bridge Construction, NHDOT, 2002

Town of Gilford Road Standards – Figure 1
Geometric Cross Section Design Elements

Average Daily Traffic (Trips/ Day)	0-200	200-750	750-1500	1500-OVER
Pavement Width (Feet)	20	22	24	24
Shoulder Width (Feet)	2 (unpaved)	2 (unpaved)	2 (unpaved)	4 (paved)
Center of Road to Ditch Line (feet)	Varies	Varies	Varies	Varies
Pavement Type	Hot Bituminous 2 in. + 1 in.	Hot Bituminous 2 in. + 1 in.	Hot Bituminous 2 in. + 1 in.	Hot Bituminous 3 in. + 1 in.
Slope of Roadway	2%	2%	2%	2%
Base Course Depth – Gravel	12 in.	12 in.	16 in.	16 in.
Base Course Depth – Crushed Gravel	6 in.	6 in.	8 in.	8 in.

NOTES

1. Gravel surfaces should be paved where steep grades occur
2. For Average Daily Traffic over 1000 vehicles per day, paved shoulders should be considered
3. Base Course material depths may need to be increased in areas of poor soils

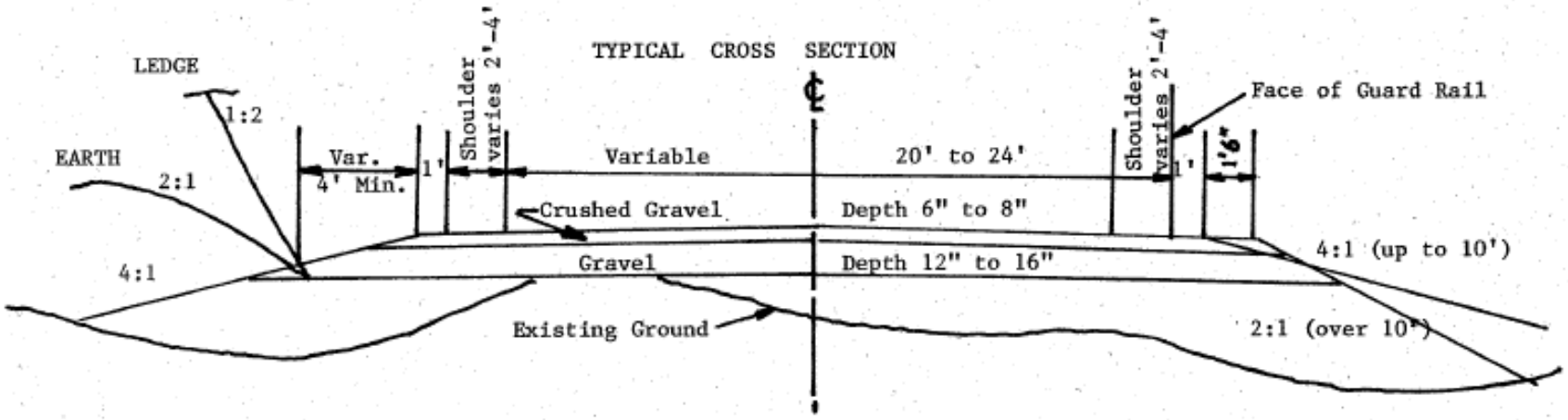

Chart 1

Roadway Geometric Design Standards

Description (ADT)	*0 - 200*	*200 - 750*	*750 - 1500*	*1500 - over*
Right-of-Way Width	50 feet	50 feet	60 feet	60 feet
Pavement Width	20 feet	22 feet	24 feet	24 feet
Shoulder Width	2 feet [non paved]	2 feet [non paved]	2 feet [non paved]	4 feet [paved]
Minimum Grade	1%	1%	1%	0.5%
Maximum Grade	10%	10%	8%	5%
Maximum Grade within 75 feet of intersection center line	4%	3%	2%	2%
Minimum Angle of intersecting road(s)	60 degrees	60 degrees	60 degrees	60 degrees
Minimum Centerline Radii	300 feet*	300 feet*	300 feet*	500 feet
Intersection Radii	20 feet	25 feet	25 feet	30 feet
Maximum Rate of super elevation [Use current AASHTO Chart]	.04 feet	.04 feet	.06 feet	.08 feet
Minimum Pavement cross slope	2%	2%	2%	2%
Shoulder cross slope	5%	5%	5%	5%

* May be less with superelevation, but in no case less than 150 feet