

Town of Stockholm Roadway Standards

Town of Stockholm

540 St Hwy 11C
Winthrop NY 13697

Supervisor- Clark Decker

Highway Superintendent- Bruce Thompson

Town Clerk-Heather Kish

Standards for New Roads – Town of Stockholm

General

1. The Town of Stockholm, herein referred to as the Town, has adopted these standards on December 28th 2021 for construction of new roadways to be dedicated as part of the Town road system. The standards are derived from the “Highway Standards for Low-Volume Roads in New York State” Cornell Local Roads Program, September 2019. References and additional information can be found in those standards.
2. All roadways to be taken over by the Town shall be certified they are in compliance with these standards by a Professional Engineer licensed to practice in New York State, herein referred to as the Project Engineer.
3. Before the roadway is to be taken over by the Town, a set of as-built plans approved by the Project Engineer shall be submitted to the Town Clerk and the Highway Superintendent at the addresses shown on the top of these standards. Approval by the Highway Superintendent that the project meets the standards shall be required prior to acceptance by the Town board. Both the Highway Superintendent and the Town Board must accept the roadway before it is accepted as a part of the Town road system. The Town reserves the right to not accept a roadway, notwithstanding that all portions of these standards have been met.
4. All applications for the dedication of a roadway shall be accompanied by a proposed warranty deed conveying said highway to the Town, with all necessary releases from mortgages or other claimants. All deeds and plans must meet requirements for filing with the County Clerk.

In addition, there should be a complete release of all liens arising out of the construction of the dedicated improvements, or receipts in full lieu thereof, and if required in either case, an affidavit that so far as the Developer has personal knowledge or information, the releases and receipts include all labor and materials for which a lien could be filed.

5. For a subdivision, the plans must be submitted prior to start of construction. A construction plan showing erosion control and other pertinent information must be supplied for subdivisions.
6. For disturbances of 1 acre or more, a Stormwater Pollution Prevention Plan must be in place which is consistent with the requirements and standards of the New York State Department of Environmental Conservation.
7. As a minimum, the plans for the roadway shall provide the following:
 - The design criteria used

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- The names of all streets approved by the County Department of Emergency Services
 - A location and alignment survey performed by a licensed Surveyor that includes:
 - The original and finished grades
 - The layout and locations of all roads and streets and their metes and bounds
 - The location of any property lines and their metes and bounds
 - The location of the Town's right-of-way
 - The location of other rights-of-way and easements including a statement of their allowable uses
 - The location of all drainage structures
 - The location of any utilities in the right of way
 - The names of adjacent property owners to the roadway
 - A maintenance plan for the roadway
 - The locations of all signs and traffic control devices
 - A cross section of a typical tangent section
 - A traffic study determining the Average Daily Traffic and types of traffic for all roads and streets. The traffic study shall also describe all methods used to collect data
 - The Functional Classification of all roads and streets based on the criteria presented in the AASHTO *Guidelines for Geometric Design of Very Low-Volume Roads (ADT900)* or the AASHTO *Policy on Geometric Design of Highways and Streets*. Where there exists a conflict between two or more of the defined classifications, the classification having the most stringent design guidelines shall be indicated
8. Clarification of exceptions to these standards shall be approved, in advance, by the Town Highway Superintendent in writing. Oral responses by the Town Highway Superintendent will not be considered as approved.

Design and Construction

1. The roadway shall be certified to meet the requirements of the most recent edition of the following documents, listed here in order of precedence:
 - a. *Manual Guidelines for Rural Town and County Roads*, Local Roads Research and Coordination Council.
 - b. *Guidelines for Geometric Design of Low-Volume Roads*, American Association of State Highway and Transportation Officials.
 - c. *Standard Specifications for Construction and Materials*, New York State Department of Transportation.
 - d. *Highway Design Manual*, New York State Department of Transportation.
 - e. *Policy on Geometric Design of Highways and Streets*, American Association of State
2. The requirements listed in these specifications are for low volume roads and streets with a maximum Average Daily Traffic (ADT) of 2000 vehicles per day.
 - a. Any roadway that does not meet the definition of a low volume roadway will require standards that are more stringent than those defined in these

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specifications. In such a case, the entire design must be approved before construction.

- b. All new bridges shall meet the criteria in Chapter 5 of the AASHTO *Policy on Geometric Design of Highways and Streets*. Existing bridges will be certified free of safety issues.
 - c. All design criteria shall be listed on the roadway plans and any criteria not listed in the two publications listed above shall be determined using current engineering practice.
 - d. The plans shall designate the source of any design assumptions.
3. In addition, as a minimum, the road shall meet the following criteria:
- a. A design life of not less than 20 years with routine maintenance.
 - b. A minimum design speed of 45 mph.
 - c. A right-of-way of not less than 60 feet.
 - d. A total roadway width of not less than 20 feet.
 - e. A total driving lane width of not less than 18 feet.
 - f. Drainage facilities designed to handle the design flood frequencies in Table I on the next page. The minimum size opening of any pipe is 18 inches in diameter or equivalent.
 - g. The combined thickness of the base and surface courses shall be at least 18 inches
4. The Highway Superintendent may specify additional rights-of-way where deep cuts and fills exist, in areas adjacent to drainage structures, and otherwise with discretion and consideration for the terrain.
5. Should the road terminate short of the adjacent property line; the right-of-way shall be extended to the adjacent property line. The additional right-of-way shall meet the specifications in sections 3c and 5.
6. Dead-end road designs will terminate with a tee turn-a-round, designed in accordance with Figure A (see optional section).
7. All proposed roads shall be a minimum of 500 feet in length.
8. These regulations apply to all roads; pavement, gravel, or other improved surface roads.

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Table 1. Design Flood Frequencies (in Years) for Drainage Structures and Ditches¹

Road type or Functional Class	Culvert Under Highway ²	Storm Drainage Systems	Driveway Culverts	Ditches ⁴
Interstates and Other Freeways	50	10⁵	n.a.	25
Principal Arterials	50	10⁵	25	25
Minor Arterials	50⁶	10⁷	10	10
Major Collectors	50⁶	10⁷	10	10
Minor Collectors	25⁹	10⁷	10	10
Local Roads & Streets w/ AADT>400	25⁹	10⁷	10	10
A or B type highways (AADT <400)⁸	10^{7,9}	5⁷	10	10
C type highways (AADT <50)⁸	7	7		

- 1) *The values in this table are typical. The selected value for a project should be based upon an assessment of the likely damage to the highway and adjacent landowners from a given flow and the costs of the drainage facility. Note: 100-year requirements must be checked if the proposed highway is in an established regulated floodway or floodplain.*
- 2) *The check flow, used to assess the performance of the facility, should be the 100-year storm event.*
- 3) *Relocated natural channels should have the same flow characteristics (geometries and slope) as the existing channel and should be provided with a lining having roughness characteristics similar to the existing channel. Infrastructure crossing streams may have to conform to stream bank flow width as per ACOE or NYSDEC requirements.*
- 4) *Including lining material (All ditches should have a lining material and not be left untreated).*
- 5) *As per 23CFR650A, and Table 1-1 of HDS 2, a 50-year frequency shall be used for storm water design at the following locations where no overflow relief is available:

 - a. *sag vertical curves connecting negative and positive grades.*
 - b. *other locations such as underpasses, depressed roadways, etc.**
- 6) *A design flood frequency of 10 or 25 years is acceptable if documented in the Design Approval Document, and when identified after design approval, in the drainage report.*
- 7) *Use a 25-year frequency at the following locations where no overflow relief is available:

 - a. *sag vertical curves connecting negative and positive grades.*
 - b. *other locations such as underpasses, depressed roadways, etc.*
 - c. *dead end highways.**
- 8) *Existing structures are considered acceptable unless there are known flooding issues which require a more detailed design. In such a case, the A/B standard should be followed. The A/B/C standard is taken from the Manual: Guidelines for Rural Town and County Roads, Local Roads Research and Coordination Council, 1997 and available from the Cornell Local Roads Program.*
- 9) *If NYSDOT designs the culverts, then 50 year design flood criteria shall apply unless modified by note 6 above*

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9. Definitions of design criteria:
 - a. Design life: the time in years from original construction until the present serviceability index has dropped to 2.0.
 - b. Present serviceability index- p (also known as the terminal serviceability index- pt): the ability of a roadway to handle traffic as defined by the *AASHTO Guide for the Design of Pavement Structures*.
 - c. A right-of-way: the width of land owned or controlled by a highway agency for the purpose of maintaining or constructing roads and streets.
 - d. A $_$ -year storm: a runoff event with a probability of occurring in a given year equal to the inverse of the value of the year. A 50-year storm would have a 1 in 50 (2%) chance of occurring in a given year.
 - e. A 18" diameter equivalent opening: an area of 254 in^2 .
 - f. Design speed: the typical operating speed on a roadway. Also, the speed used to determine the various design features of a roadway based on terrain, traffic volume, and roadway classification.
 - g. Stopping sight distance: the sum of the brake reaction distance (the distance traversed by a vehicle from the instant the driver sights an object necessitating a stop to the instant the brakes are applied) and the braking distance (the distance needed to stop a vehicle from the instant brake application begins).
 - h. Traveled way: The portion of the roadway for the movement of vehicles, exclusive of shoulders.
 1. Roadway: the portion of a highway, including shoulders, for vehicular use.
10. All materials and all work shall meet the requirements of the latest revision of the New York State Department of Transportation *Standard Specifications for Construction and Materials*, including any Engineering Instructions or Bulletins, unless alternatives are approved by the Town Highway Superintendent in writing, in advance.
11. The Right-of-Way shall be kept clear of shrubbery, trees, and other elements of landscaping which would obstruct visibility or become potential obstacles or fixed hazards.
12. The recommended cross slope for an unpaved road is 6%, with 10% being the maximum acceptable grade. Having the proper cross slope will ensure that water is moved off of the roadway and into drainage facilities.
13. If the condition of an unpaved road has deteriorated severely, it may be in the town's best interest to require that it be reconstructed or paved. For advice on when to pave an unpaved road, as well as other information pertaining to such facilities, reference the *Gravel Roads Maintenance and Design Manual* which is available in print and online at www.epa.gov/nps/gravel-roads-maintenance-and-design-manual/.

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NOTES AND OTHER ITEMS

Minimum Design Speeds for Low-Volume (ADT<400) Roads

**for all roads between 401-2,000 vpd, the minimum design speed should be 45 mph, with 55 mph recommended for collectors.*

Table 2. Minimum design speeds in MPH

Rural Low-Volume Road Classification	Type of Terrain		
	Level	Rolling	Mountainous
Major Access Minor	45	45	45
Access	45	45	30
Industrial/Commercial	30	30	30
Agricultural	30	20	20
Recreational/Scenic	30	20	20
Resource Recovery	30	20	20

Stormwater Pollution Prevention Plan

For projects covering an area of one acre or more, a Construction Permit Notice of Intent (NOI) must be filed with the New York State Department of Environmental Conservation (DEC) in order to obtain a General Permit GP-02-01 (Phase II permit). The NOI shall include a Stormwater Pollution Prevention Plan consistent with criteria found in the *New York State Stormwater Management Design Manual* in addition to any other components indicated as necessary by the *Instruction Manual for Stormwater Construction Permit*. Both documents are available electronically at www.dec.ny.gov.

Roadway, Traveled Way, Lanes, Shoulders, and Total Roadway Width

When developing standards for new roads, minimum specifications for the width of roads may be defined in different ways depending on the goals and priorities of the municipality.

The easiest way to specify the minimum dimensions of the roadway surface is to establish a minimum width for the entire roadway, or "total roadway width." This dimension is the total distance from one edge of the pavement to the other.

However, some communities will find it necessary or preferable, especially with new construction, to provide more discerning measurements. The most detailed way to specify the minimum total width of a roadway is to break it down into parts, as shown in Figure 1. With this approach, a minimum width would be provided for road shoulders, and either the traveled way (the distance across all lanes of the roadway) or individual lanes. Lane width is more precise than a width of the traveled way and covers a larger number of lane configurations. A minimum total roadway width is not required with either of these arrangements, since it is already implied by the other two measurements. See Figure 1 for a visual comparison of these measurements.

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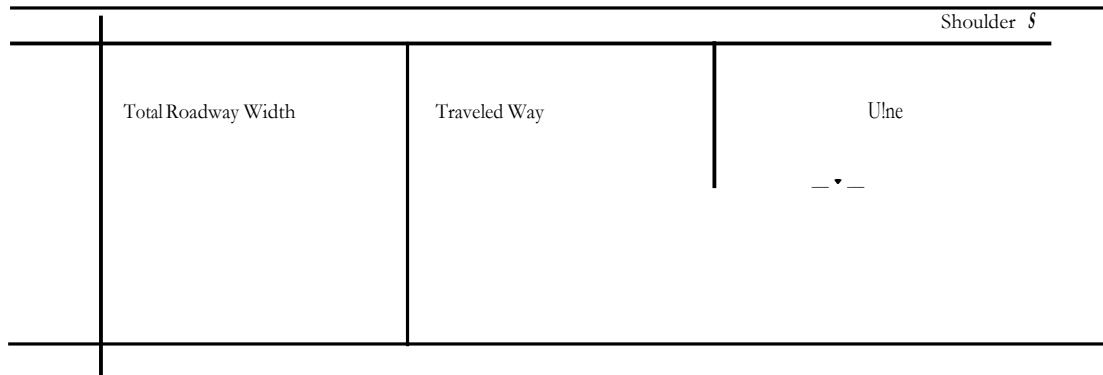


Figure 1. Measurements of roadway width

Extended Right-of-Way



Where roadside drainage (ditches, culverts, etc.) is a feature of a roadway it is important to consider the angle at which the terrain slopes down from the road surface, or fore slope, and the angle at which it meets the existing terrain, or backslope.

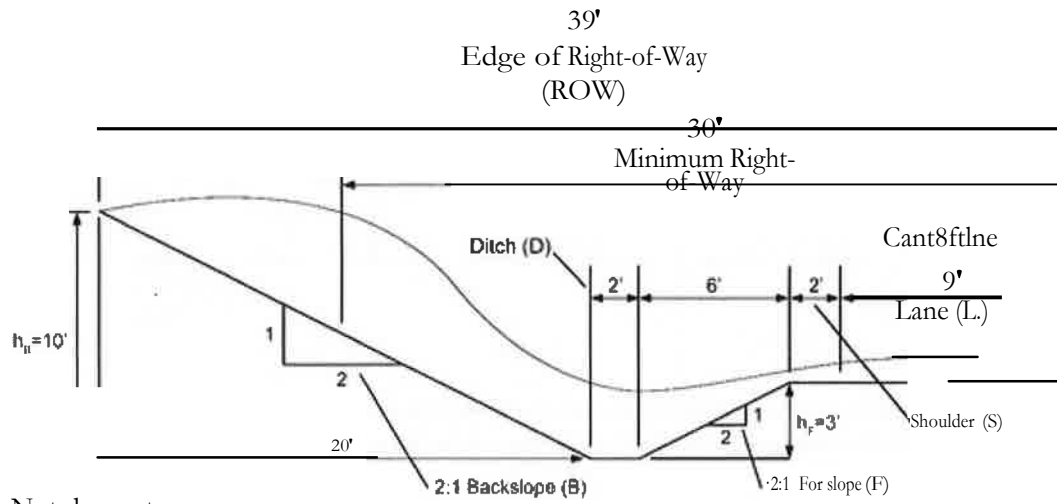
The maximum recommended grade for both the fore slope and backslope is 2:1 or 50%, so that along a horizontal distance of 2 feet, for example, elevation increases or decreases by 1 foot. A safer slope, however, is 3:1 and this is desirable whenever possible. Depending on existing conditions, deep cuts or fills may be required to obtain acceptable grading so that the backslope meets the terrain at the appropriate angle.

The right-of-way should extend far enough to include roadside drainage features for the purposes of construction and maintenance. In some cases, however, the recommended slopes will require more space than is afforded by the minimum right-of-way indicated in the standards. When this is the case, it is important to have a clause in the standards which allows the municipality to obtain additional right-of-way, most often at the discretion of the local Highway Official.

Figure 2 shows an example of a deep cut used to provide the recommended grading. Notice that the back slope extends beyond the minimum right-of-way to the point at which it intersects the natural elevation of the terrain. The town's right-of-way should also extend to that point of intersection as shown in the diagram.

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Existing Terrain 
Minimum Desired Grading 



Not drawn to scale.

Figure 2. Calculating the extended right-of-way

The necessary right-of-way (ROW) width from the centerline of the road can be calculated by adding the lane width (L), the shoulder width (S), the fore slope (F) multiplied by its height (hF), the width of the ditch or swale (D), and the backslope (B) multiplied by its height (hB) as shown in the equation below.

$$ROW = L + S + F \times hF + D + B \times hB$$

In the example, the values would be:

$$ROW = 9 + 2 + 2 \times 3 + 2 + 2 \times 10 = 39$$

Turnarounds

Dead end roads require turnarounds. The final width of turnarounds will be determined by the Highway Superintendent to ensure sufficient room for highway equipment and emergency vehicles. The type of turnaround can be determined by the owner with approval of the Highway Superintendent (See Figure 3 for different types of turnarounds).

T-type turnarounds are named for their shape and require drivers to make a three-point, or "k," turn. These are preferable where space is at a premium, or where traffic volumes are especially low. Where the approaching roadway meets the perpendicular section of the turnaround, the inside corners may be either curved or cut diagonally. The standard width of a T-type dead-end is 60 feet, with the width of the roadway maintained throughout. This width is needed to accommodate emergency services vehicles such as fire trucks and snowplows.

Cul-de-sacs offer the ability for drivers to turn around without having to reverse or make unnecessary turning movements but require a larger area of land. The minimum diameter of a cul-de-sac should be no less than 60 feet.

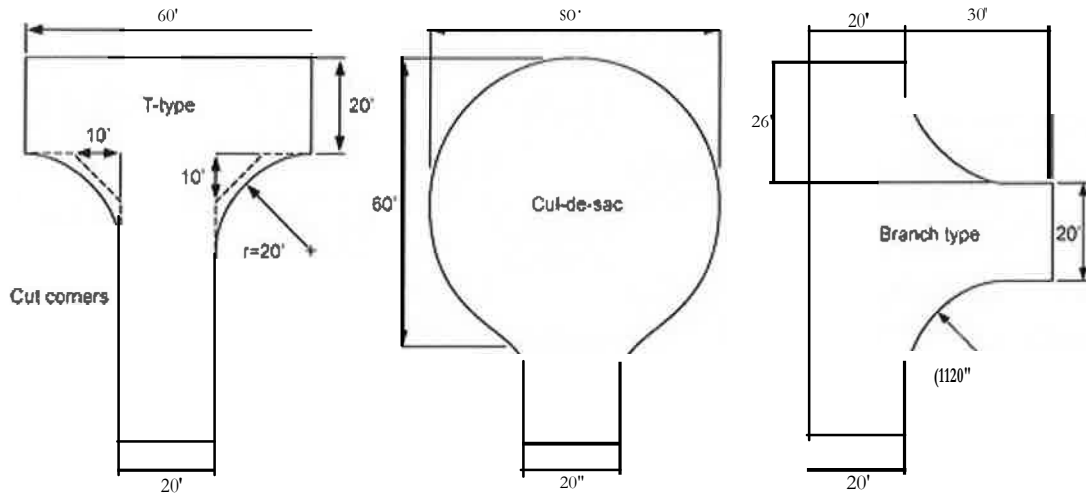


Figure 3. Three examples of turnarounds

For even smaller areas, branch type turnarounds may be used, and have largely the same advantages as T-type turnarounds. The perpendicular sections should extend at least 30' from the edge of the roadway, and the roadway should continue 25 feet past that. The width of the roadway should be maintained throughout all sections of the turnaround.

