

Fundamentals of Plan Review

Definitions and Symbols

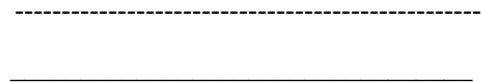
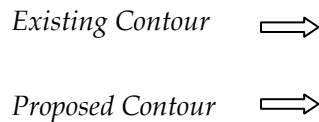
Abbreviations:

AD = algebraic difference
 BVCE = begin vertical curve elevation
 BVCS = begin vertical curve station
 CB = catch basin
 CMP = corrugated metal pipe
 DMH = drainage manhole
 EVCE = end vertical curve elevation
 FES = flared end section
 INV. IN = invert in
 INV. OUT = invert out
 K = k factor
 LF = linear feet

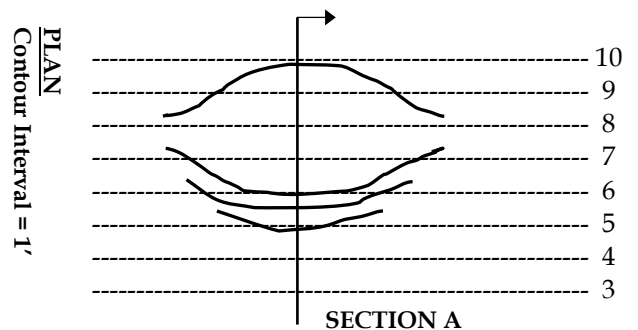
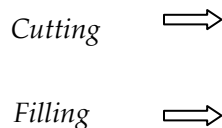
NTS = not to scale
 PC = point of curvature
 PCC = point of compound curvature
 POC = point on curvature
 PRC = point of reverse curvature
 PT = point of tangency
 PVI = point of vertical intersection
 RCP = reinforced concrete pipe
 S = slope
 SMH = sewer manhole
 TP = test pit
 VC = vertical curve

Catch Basin: An underground basin combined with a storm sewer inlet to trap solids.

Contour Lines: Lines drawn on a plan which connect all points of equal elevation above or below a known or assumed reference point or plane.



A proposed contour which moves in the direction of a lower contour will add earth (fill). A proposed contour which moves in the direction of a higher contour will remove earth (cutting).



Contour Interval: The vertical distance between two contour lines. The graphic to the right has a one-foot contour interval.

Most common: 1, 2, and 5-foot intervals.
Greatest detail / accuracy: 1-foot intervals

Culvert: A closed conduit for the passage of surface water under or over a roadway, railroad, canal or other impediment.

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Design Storm: A rainfall event of a specific frequency and duration (e.g., a storm with a 2-year frequency and 24-hour duration) that is used to calculate the runoff volume and peak discharge rate.

Drainage: A general term applied to the removal of surface or subsurface water from a given area either by gravity or by pumping. Always occurs at right angles to contour lines, since water seeks the easiest route.

Flow arrows indicate the direction of surface water runoff →



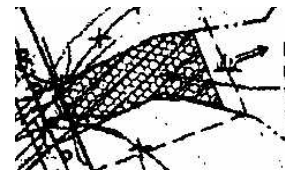
Easement: A grant of one or more property rights by the owner for limited use of private land for a public or quasi-public purpose.

Erosion: The detachment and transport of soil by the action of water, ice, gravity or wind. Water is the primary erosive force in the State. Four factors to consider when assessing erosion potential include:

- Soil characteristics: silt and fine sand are the most erodable; gravels are the least erodable
- Amount of vegetative cover: more cover reduces runoff
- Topography: slope length and steepness increase the volume and velocity of runoff
- Rainfall: frequency, intensity, timing and duration

Erosion and Sediment Control Practices

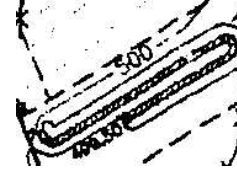
- **Mulching:** The application of plant residues or other suitable materials to the soil surface. Can be hay/straw, wood chips, ground bark, or crushed stone. Use on highly erodable areas, and on any areas exposed to the elements more than 30 days. Anchoring materials are necessary to prevent blowing and slipping.
- **Rock Riprap:** A permanent, erosion-resistant layer of loose, well-sorted stones, having sufficient size, gradation, and thickness to provide stability and protection to the underlying materials. Used at the outlets of pipes and constructed channels to stabilize slopes and to slow runoff velocity. Proper bedding or fabric is necessary.
- **Silt Fence:** A temporary barrier of geotextile fabric (filter cloth) that is used to intercept sediment laden runoff from disturbed areas. The fence should be attached to supporting posts and entrenched into the soil between the cut area and vegetation, as close to the contour as possible. The area below the fence must be stabilized.



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- **Straw or Hay Barrier:** A row of adjoining bales embedded in the ground and anchored by stakes across or at the toe of a slope. Used where no other practice is feasible. Should be inspected after every rainfall and replaced if necessary.
- **Swale:** A constructed watercourse shaped or graded in earth materials and stabilized with site suitable vegetation, for the safe conveyance and improvement of stormwater runoff.¹
- **Other practices:** Include detention/retention basins; diversions; dry wells; earth dikes; grade stabilization structures; level spreaders; sediment basins; subsurface drains; seeding; sodding; fertilizer management; litter control; street sweeping.



Grade: The inclination or slope of a channel, conduit or natural ground surface, usually expressed in terms of the percentage of number of units of vertical rise (or fall) per units of horizontal distance.

Invert: The base or bottom of a pipe or an artificial channel.²

Magnetic Declination: The angle or number of degrees magnetic north bears away from true north (see True North).

Magnetic North: Magnetic north is determined by the earth's magnetic field. The magnetic field changes over time and location on the earth's surface.



Maximum Error of Closure: The gap at the end of a set of survey traverses measures as a fraction of the entire length of the traverse. This is a measure of the survey accuracy.

North Arrow: Orients the site plan by denoting true and magnetic north.

Perc Test: A determination of the soil's ability to leach water at an adequate rate. A typical hole is dug 4 to 12 inches in diameter to a depth of at least 14 inches and filled with water to determine the percolation rate (see **Percolation Rate**)

¹ http://www.state.nj.us/dep/watershedmgt/DOCS/BMP_DOCS/chapter5_swale.PDF

² <http://www.harcourt.com/dictionary/browse/55>

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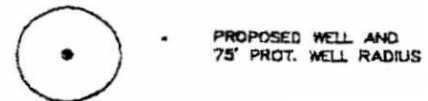
Percolation Rate: The rate of absorption of water in the perc test hole expressed in terms of how many inches of water leach in the hole per minute. The rate is determined after a 2-hour period of time in which the hold is filled and maintained with water. (Rule of thumb: if the water drains in less than 2 minutes, the percolation rate is too fast.)

Plan Certification: Describes the accuracy of the property lines on a survey as defined by the maximum error of closure.

I CERTIFY THAT THIS PLAN IS BASED ON AN ACTUAL FIELD SURVEY AND HAS A MAXIMUM ERROR OF CLOSURE OF 1 PART IN 10,000 FOR THE PROPOSED NEW LOT LINES. THE PERIMETER BOUNDARYS ARE PREPARED FROM PLAN REFERENCE 1, AND ARE MATHEMATICALLY CORRECT.

Plan Notes: A list of information related to the site plan such as property owner, zoning, sources of data, pending permits and conditions of approval.

Protective well radius: A circle with a 75-foot radius around the well within which most normal residential or commercial surface activities associated with the structure can take place, with the exception of septic tanks, leach fields, or other septic system components.



Reference Plan: A plan from which survey information was used in the development of the current plan.

REFERENCE PLANS:

1. HOLLIS HIGHLANDS - SEC. II FINAL SUBDIVISION PLAN OF LAND OWNED BY DREW E. SUNSTEIN & ANTHONY J. ALCORN, DATED SEPTEMBER 28, 1984, LAST REVISED 11/29/85, PREPARED BY AMHERST SURVEY ASSOCIATES, INC., RECORDED H.C.R.D. PLAN # 18703, DWR. 79.

Scale: The relationship represented as a ratio between the distance on a map and the corresponding distance on the ground.

1" = 50' 1 : 24,000

Scalebar: A graphic description of the scale. The scalebar measures true horizontal distances. For example, if the land slopes, the distance on the ground will be different than the distance measured on the map.



Sedimentation: Refers to the settling out of soil particles that have been detached by erosion and transported by water. Sedimentation occurs when the velocity of water in which soil particles are suspended is slowed to sufficient degree, and for a sufficient period of time, to allow the particles to settle out of suspension.

Septic Reserve Area: A contiguous 4,000 square foot area suitable for an individual sewage disposal system and within which the individual sewage disposal system must be placed.



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Setback: A minimum distance measured from the front, side or rear of a lot or natural feature within which certain activities may be limited.

Slope: The change in elevation (vertical distance) over horizontal distance. Indicates the gradient or steepness of land.

Formulas:

Slope % = [vertical distance / horizontal distance] x 100

Slope ratio = horizontal distance: vertical distance (x to 1)

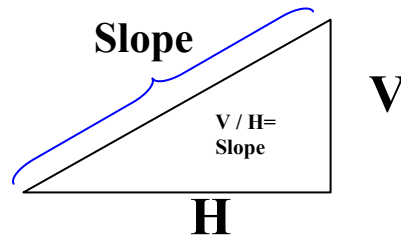
- Slope classes:
- A: 0-3% slope
 - B: 3-8% slope
 - C: 8-15% slope
 - D: 15-25% slope
 - E: 25-35% slope
 - F: 35% + slope

Detectable Slope: 3% or 33.3: 1

Steep Slopes: > 25% (contour lines close together)

Soil Classifications: Each soil type is classified based on similar composition, thickness, and arrangement. Soil types are further categorized by characteristics such as surface texture, stoniness, salinity, wetness, degree of erosion and slope. Soil types should be described in the notes on the plan.

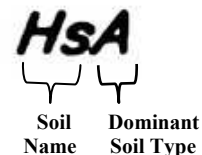
Example: Hinkley, Loamy sand, 0-3% slopes



SOILS LEGEND:

SYMBOL	TYPE	DESCRIPTION	SLOPES
QpB	B/C/D	CHATFIELD-HOLLIS-CANTON COMPLEX	3-8%
QpC	B/C/D	CHATFIELD-HOLLIS-CANTON COMPLEX	8-15%
HsA	A	HINKLEY LOAMY SAND	0-3%

Symbol:



Soil Survey: A general term for the description, classification and mapping of soil types, and the interpretation of their adaptability for different uses.

Sources:

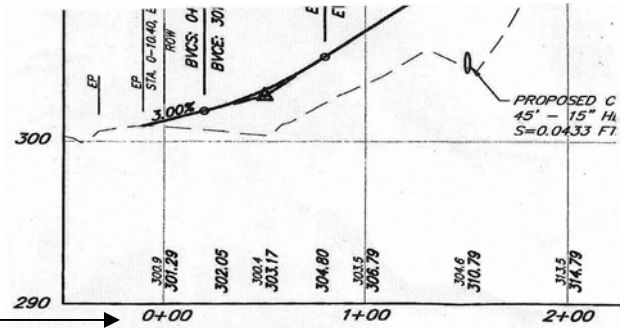
1. USDA Natural Resources Conservation Service (formerly Soil Conservation Service), *Soil Survey of Hillsborough County, NH, Eastern Part (or Western Part)*
2. Hillsborough County Conservation District, *Soil Potentials for Development*
3. New Hampshire Department of Environmental Services, *Soil Manual for Site Evaluations on New Hampshire*

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4. Society of Soil Scientists of Northern New England, site-specific High-Intensity Soil Surveys
5. Independent site specific soil surveys performed by a certified soil scientist

Spot Elevations: Elevation measurements taken at a specific point which are used to create contour lines.

Station: A point at which to base a set of measurements in a survey. In order to obtain accurate measurements, a surveyor at one station should be able to see signals at two or more other stations. Otherwise, the surveyor traverses the land with a series of lines and measures their length and angle at each intersection. In the graphic to the right, 0+00, 1+00, etc. are stations.



Stream or edge of wetland



Stump and Brush Management: Methods include above-ground management, on-site burial, and off-site burial. Above-ground management, such as chipping, is the preferred method since it provides a reusable product (mulch). The Department of Environmental Services must be notified of on-site burial, and the burial must be at least 75 feet from any well. A permit is required for off-site burial.

Test Pit: A hole dug to 10 feet in depth to determine the soil's suitability for septic leach fields. Test pits provide information on soil types, depth to the water table, impermeable soil layers, or ledge. They should be located within the septic reserve area. Test pit data is provided on a separate sheet.



True North: Determined by the location of the north and south pole. This is often used to orient the survey.