

FORM L

SUMMARY OF DRAINAGE CONSIDERATIONS

A. BASIS AND ASSUMPTIONS OF HYDROLOGICAL STUDY

1. The proposed drainage detention basin design should be capable of storing the increased volume of the 100-year storm due to the proposed development.
2. Soil Conservation Method (Modified Soil Cover Complex) is to be used.
3. Site grading provisions for controlling 100-year runoff on site towards detention basins is recommended and should be shown on the plans.
4. 25-year storm frequency to be used for storm drainage system design.
5. Existing outflow conditions to be maintained and its design capacity not to be exceeded. Increased drainage from the proposed development should not increase the peak flow either in quantity and/or time duration.
6. Road base design to include protection against groundwater to at least 5.0 feet depth.
7. Underdrains preferably should be located under grass strips if needed for lowering the water table. The pie trench center for the proposed underdrains for lowering the water table also should preferably be located +24 inches behind the curb line.
8. The detention basin and channels or pipes shall not contain excess standing water after the end of the design storm above the invert of low level outlet at proposed detention basin.
9. A concrete or storm apron will be provided under the end of each inlet pipe.
10. Status of Notice of Intent (MGL 131, Chapter 40) should be filed with the Conservation Commission. (Attach copy)
11. Inflow/outflow hydrograph: peak flows both for existing and proposed conditions. (attach computations and data)
12. Statement whether existing outlet control from the existing wetland, if applicable, needs to be altered or not.
13. Statement and description of mitigating measures taken to minimize the flood impacts both in water quantity and water quality.

FORM L SUMMARY OF DRAINAGE CONSIDERATIONS (continued)

- a. Mitigating measures taken to minimize the water quality impacts are.
 - 1.
 - 2.
 - 3.
- b. Mitigating measures to minimize the water quantity impacts are:
 - 1.
 - 2.
 - 3.
- 14. Existing wetlands to be avoided for use as detention basins. Direct inflow from street drainage into any natural bodies of water including rivers, brooks, streams, and/or wetlands to be through proposed detention basins only.
- 15. In determining curve numbers for post-development conditions, the change in soil conditions in yards of a house lot due to compaction by construction machinery and also due to additional cover of loam is to be taken into account. It is suggested that curve number differential in pre-development and post-development conditions to be on the order of 20.
- 16. For any determination of flood plains, any method like HEC-2 or similar method applicable to irregular channels should be used.

Note: The above suggested basis and assumptions are in no way intended to be all inclusive but are in addition to other Town Rules and Regulations and provided as guidelines and assistance.

FORM L SUMMARY OF DRAINAGE CONSIDERATIONS (continued)

B. PERTINENT DATA FOR HYDROLOGICAL REVIEW

1. Name of developer:_____
2. Project name:_____
3. Total drainage area of proposed subdivision = _____ acres.
4. Datum - NGVD _____ feet.
5. Proposed subdivision - see attached drawings plan and profiles.
6. Existing outflow outlets from the proposed subdivision with respective D.A. in acres.

[Name all outflow channels and/or pipes, from the pre-development and post-development conditions including off-site D.A. entering the proposed subdivision along with their locations. Attach a 8.5" x 11" sketch depicting D.A., inflow and outflow, channels and/or pipes, with their sizes and locations, for pre- and post-development.]
7. Present status of land and its description:
8. Proposed status of land (single family or otherwise; total number of lots, etc.):
9. Attach a sketch, 8.5" x 11", showing the following as a line diagram:
 - a. Drainage area.
 - b. Main pipes and sizes.
 - c. Proposed detention basins and their locations.
 - d. Inflow and outflow pipes at detention basins.
 - e. Destination of outflow discharge with name and path of river.

FORM L SUMMARY OF DRAINAGE CONSIDERATIONS (continued)

C. HYDROLOGICAL ANALYSIS DATA

1. Land use (existing conditions) - Pre-development CN = _____.
2. Land use (future conditions) - Post-development CN = _____.
3. Road and other paved areas CN = 98 (total area = _____ acres \pm)
4. Composite CN after post-development conditions CN = _____.
- 5a. Runoff volume determination:

Use frequency 1 in 100 years.

Total rainfall in 24 hours = _____ inches.

Direct runoff in 24 hours for pre-development. CN = _____ is _____ inches.

Direct runoff in 24 hours for post-development. CN = _____ is _____ inches

Increased runoff from acres (+) as maximum =

Without outflow (assuming outflow is clogged)

= _____ AC/ft

= _____ AC/ft

- 5b. But with outflow functioning increased runoff has a value of _____ AC/ft.
(Present runoff peak flow is CFS and proposed runoff peak flow is CFS.)
6. Characteristics of detention basins.

Elevation	Storage in AC/ft	Remarks
	0.00	

A free board of _____ feet is left over.

D. RATING DATA FOR LOW LEVEL OUTLET

Bottom of detention basin (elevation) = _____ft.

Invert of low level outlet = _____ft.

Size and shape of low level outlet = _____ft.

Any additional physical details of low level outlet from detention basin = _____.

FORM L SUMMARY OF DRAINAGE CONSIDERATIONS (continued)

E. RATING DATA FOR OVERFLOW WEIR

1. Bottom of detention basin (elevation) = _____ft.
 Invert of overflow weir = _____ft.
 Bottom of overflow weir = _____ft.
 Top of overflow weir = _____ft.
 Shape of overflow weir = _____ft.

Any additional physical details of outflow weir.

2.

Elevation	Outflow discharge in CFS	Remarks
	0 CFS	
	CFS	
	CFS	
	CFS	
	CFS	Peak proposed outflow
Mix water surface elev.	FT	

3. Volume of retention required for post-development conditions = AC/ft
4. Depth of water in swamp (or discharge area) for AC/ft at an elevation of feet.

F. DESIGN CRITERIA SUMMARY

1. Provide (and use) the detention area in lot # _____.
2. Bottom elevation of detention area = _____ft.
3. Top bank elevation = _____ft.
4. Maximum water surface elevation for 100-year storm = _____ft.
5. Overflow weir as proposed is as follows: (draw a sketch)

6. All storm drainage pipe systems are designed for 25-year storm frequency except the pipes leading to retention area should have a capacity for 100-year storm.

FORM L SUMMARY OF DRAINAGE CONSIDERATIONS (continued)

7. Pipe analysis - see paragraph G for summary and computer printout for analysis. (All catchbasins are connected by 12" pipes.) Twenty-five year frequency storm for 24-hour duration has a total rainfall = _____ inches and 25-year frequency storm for 24 hour duration has an effective rainfall for CN = _____ is _____ inches.

G. PIPE ANALYSIS SUMMARY (for pipes 24" diameter or larger)

Name of roadway	Average slope	Contributing drainage area in acres	Peak discharge for 25-year frequency storm	Size of pipe required in inches	Size of pipe provided in inches
		Acres	CFS		
		Acres	CFS		
		Acres	CFS		
Pipe to retention area		Acres	CFS		

H. INFLOW/OUTFLOW SUMMARY RESULTS (DETENTION BASIN)

- (a) Existing conditions (pre-development)

D.A. = _____ acres±
 CN = _____
 TC = _____ minutes
 Peak flow = _____ CFS
 Frequency = 1 in 100 year
 Rainfall = _____ inches in _____ hours
 Volume = _____ AC/ft
 Peak flow = _____ CFS (without routing through pipes)

- (b) Proposed Conditions (post-development)

Peak flow = _____ CFS
 Maximum outflow = _____ CFS
 Max water surface elevation (100 yr storm) = _____
 Bank elevation = _____
 Total volume pre-development = _____ AC/ft
 “ “ post-development = _____ AC/ft
 Detention at elevation _____ = _____ AC/ft.
 Provided = _____ AC/ft. Therefore O.K.

[Added 9/1/88]