

5. Fill shall be compacted and stabilized in accordance with the "Standards for Soil Erosion and Sediment Control in New Jersey" or the latest amendment thereto, N.J.A.C. 2:90.

6. When a permit allows the placement of fill, any subsequent subdivision of that property shall not increase the total amount of fill allowable under the previous permit. Additional fill may be placed on the newly-divided property only to the extent that the total amount of fill under the previous permit has not been exceeded.

7. An exemption from the 20 percent net fill requirements of this section will be allowed for Federal, State, county or municipal highway or road projects that cannot meet the requirement due to limited right-of-way, provided that the applicant demonstrates to the Department's satisfaction that:

- i. There is a need for the project which can not be accomplished by any other means; and
- ii. The project has been designed so that the total volume of fill is minimized to the greatest extent possible.

8. The 20 percent net fill requirement is not applicable to projects whose primary purpose, according to the Department, is for flood control and have been so approved by the Department.

9. In cases where dikes, levees, floodwalls or other structures not approved as flood control projects by the Department impede the entry of flood waters into an area that previously acted as a flood storage area, the volume of the flood waters displaced shall be considered as solid fill for purposes of calculating compliance with the 20 percent net fill requirement.

10. When proposed channel modifications will lower the pre-project construction water surface, the Department shall consider the volume of flood storage lost as solid fill for the purpose of calculating compliance with the 20 percent net fill requirement.

7:13-2.15 Additional requirements for fill in the Central Passaic Basin

(a) Engineering standards for fill in the Central Passaic Basin are as follows:

1. In addition to the requirements of N.J.A.C. 7:13-2.14, any application proposing to place fill within the Central Passaic Basin shall create a volume of flood storage within the Central Passaic Basin equal in volume to the amount of fill proposed.

2. Flood storage can be created by:

- i. Excavating an area in the Central Passaic Basin between the ground surface as of March 25, 1977, and the higher of the mean low water level of the adjacent watercourse or the seasonally-adjusted high groundwa-

ter level. The excavation area shall be graded so that flood waters will freely enter and exit; or

- ii. Completely removing fill and/or structures legally placed or constructed in the flood plain after March 25, 1977 so that flood waters may freely enter and exit.

3. An exemption from the zero net fill requirements of this section will be allowed for Federal, State, county or municipal highway or road projects that cannot meet the zero net fill requirement due to limited right-of-way, provided that the applicant demonstrates to the Department's satisfaction that:

- i. There is a need for the project which can not be accomplished by any other means; and
- ii. The project has been designed so that the total volume of fill proposed is minimized to the greatest extent possible.

4. The requirements of this section are not applicable to projects whose primary purpose, according to the Department, is for flood control and have been so approved by the Department.

5. In cases where dikes, levees, floodwalls or other structures not approved as flood control projects by the Department impede the entry of flood waters into an enclosed space, the volume of the enclosed space shall be considered as solid fill for the purposes of calculating compliance with the zero net fill requirement.

6. In order for the Department to approve any application proposing a net increase of fill in the Central Passaic Basin, a Stream Encroachment Permit for the corresponding excavation of material must have already been issued or, applied for and approved concurrently with the application made under this chapter.

7. No fill shall be placed within the Central Passaic Basin pursuant to any permit issued by the Department until the applicant has commenced creation of the flood storage mandated under the permit.

7:13-2.16 Bridges and culverts

(a) Applications to construct bridges and culverts across water-courses will be reviewed in accordance with the criteria set forth in this section.

(b) Engineering standards are as follows:

1. New bridges and culverts that are not replacements or repairs shall be designed so that they will not increase the upstream water surface elevation off of the applicant's property by more than two-tenths of a foot during the regulatory flood. The applicant shall submit a standard step backwater analysis for existing and post-construction conditions in the affected water-course to determine upstream flood impact of any new bridge or culvert.

- i. The standard step analysis for existing conditions shall be calculated starting from the next control point

downstream or if no control point is available, several hundred feet downstream with at least five cross-sections included before reaching the structure in question and continue upstream to at least the next upstream property or right-of-way limit.

ii. The post-construction standard step backwater analysis shall begin at the upstream face of the new structure using a starting water surface elevation calculated by a separate analysis of the bridge or culvert.

iii. If flood elevations are being calculated by a computer model based on the standard step backwater analysis, such as a HEC-2 model, then the bridge or culvert should be coded into the model as "recommended" in the model's documentation. If a computer model other than HEC-2 is used, complete documentation for the assumptions made by the model shall be submitted with the application, unless the Department advises the applicant that it is familiar with the model.

2. Replacements or repairs of bridges and culverts shall be designed so that:

i. If the size of the area open to the passage of floodwaters is decreased as a result of the construction of the structure, there shall be no increase to the upstream water surface outside the applicant's property during the regulatory flood. A standard step backwater analysis shall be performed for existing and post-construction conditions in the affected watercourse to determine the change in upstream water surfaces as a result of the construction of the proposed project. The analysis shall begin at the upstream face of the structure using a starting water surface elevation obtained through a separate analysis of existing and post-construction conditions of the affected watercourse.

ii. If the size of the area open to the passage of floodwaters is increased as a result of the construction of the proposed structure, the structure shall be designed so that the flow rate through the structure will not increase so as to cause increased flooding downstream off of the applicant's property during the regulatory flood. Documentation, which may include a detailed routing of the affected watercourse, shall be submitted to the Department to show that there is no downstream increase in flooding due to the increased area open to floodwaters. The routing shall continue to the next downstream control point.

iii. If flood elevations are being calculated by a computer model such as HEC-1 (routing) or HEC-2 (standard step), then the bridge or culvert should be coded into the model as "recommended" in the model's documentation or the model may be stopped at the downstream face of the structure and resumed upstream of the structure with a water surface elevation calculated by a separate analysis of the structure. If a computer model other than HEC-1 or HEC-2 is used, the applicant shall submit to the Department complete documentation for all the assumptions made by the model unless the Department advises the applicant that it is familiar with the model.

3. Bridges and culverts, whether new or replacement, may be designed to be overtopped during the regulatory flood provided that:

i. The applicant and landowner, as the case may be, submits to the Department a written acknowledgement of responsibility for damage to the structure by flood waters;

ii. The structure is designed to remain stable and resistant to erosion during the regulatory flood; and

iii. The structure meets the criteria above in (b)1 and 2 as well as the access requirements set forth in N.J.A.C. 7:13-2.13.

4. Channel transitions in excess of 100 feet in length upstream or downstream of the proposed bridge or culvert shall be considered channel modifications and shall meet the requirements of N.J.A.C. 7:13-2.9.

(c) Environmental standards are as follows:

1. New crossings over a watercourse shall span the flood plain unless the applicant demonstrates to the Department's satisfaction that such a design would be prohibitively expensive to construct and that no additional significant risk is created to persons or property downstream as a result of construction of the proposed design, considering the ability of the structure to withstand the regulatory flood.

2. Channel transitions shall be minimized to the greatest extent possible.

3. Applicants seeking to construct any bridge or culvert, whether new or replacement, shall provide fish passage as described in N.J.A.C. 7:13-3.6(c) through the culvert itself and within the upstream and downstream channel transition areas for those watercourses that are currently populated by fish on a seasonal or permanent basis or which are likely to be so inhabited in the future.

i. Any channel created or modified as a result of construction of any bridge or culvert shall be designed and constructed so that during low flow conditions the water depth therein is at least as deep as in the existing channel except as provided in (c)3ii below;

ii. Exceptions to the requirement in (c)3i above shall not be granted by any agency designated by the Department to supervise any aspect of the permitting or construction of any structure pursuant to this chapter. Requests for exemption from the requirements of section (c)3i above shall be submitted to and granted by the Department if:

(1) The existing channel does not allow for the upstream passage of fish during low-flow conditions; or

(2) Fish passage in the particular channel segment is irrelevant because of upstream or downstream conditions unfavorable to fish passage; or