

NRCS - Rhode Island Engineering

Access Road – Code 560 Standard Design Criteria

This standard design package is a technical resource prepared by the NRCS- Rhode Island Engineering staff and is intended for use by NRCS field office staff in Rhode Island in order to **assist them with design procedures** normally completed at the field office level. This design has been developed in such a way that the designer can follow **an orderly and efficient method to complete the design**. Sound planning procedures and a thorough soils investigation are prerequisites to quality designs. **Standardized designs must be adapted to the specific site.**

The intention of this design is for access roads that meet the criteria for Job Class I as noted in the Job Approval Authority chart below. The use of this standard design does not apply to designs that are more complex, i.e. Job Class II or higher.

Controlling Factors	Unit	Job Class I
Surface Protection Method	Type	Gravel
Length	Feet	2500
Culvert Pipe, Area	Sq. Ft.	4

The following parameters define the limitations of this Access Road (Code 560) standard design package.

Alignment - The grade of the access road shall not exceed 8 percent.

Width - The minimum width of the roadbed is 14 feet for one-way traffic and 20 feet for two-way traffic. The roadbed width includes a tread-width of 10 feet for one-way traffic or 16 feet for two-way traffic. Each type of road requires 2 foot shoulder width on each side.

Side Slopes – All cuts and fills shall be designed to have maximum slopes of 2 horizontal to 1 vertical.

Drainage - The design shall only be used for forest or farm field access roads. When a drainage structure is installed in a natural drainage way or where cross drainage is necessary, its minimum capacity shall convey the 2 year – 24 hour design storm frequency event as defined in Table 1 of the NRCS- Rhode Island Conservation Practice Standard Access Road. The EFH-2 computer program was run for each county with the following inputs in order to establish a maximum peak discharge of **13 cfs** for Bristol, Kent, Newport, and Providence County.

- Soils are classified as Hydrologic Group C due to moist conditions typically encountered in farm field areas and forested areas with canopy cover resulting in:
 - Runoff curve number (RCN) of: **81** for all counties (1 ac-farmstead, 2 ac. Fair, woods-grass comb., 3.5 ac. Fair, pasture, 3.5 ac. Good, SR crops.)
- Drainage area of **10** acres or less

- Watershed slope = 2%
- Watershed length = 600 feet

Utilizing the Hydraulics Formula program, assuming a Manning's "n" = 0.010 (HDPE manufacturer's recommended value), both the Culvert Evaluation and Orifice Flow Formula Solution, one **(1) 24-inch diameter HDPE pipe is required to carry 13cfs.** See attached printouts for additional assumptions used in the program.

Utilizing Minnesota SCS Technical Release 3 (Loose RipRap Protection, July 1989), Alternative 1, Horizontal blanket for no defined channel below outlet, and a tailwater depth (Tw) of 0.75 feet, a **17 ft. x 22 ft. x 12 in. horizontal rip rap blanket with D50=4 inches is required for culvert outlet protection underlain with non-woven geotextile (Class I) fabric.**

Rock ford crossings may **not** be used in this design since this standard design is only to be used to convey a 2 year-24 hour storm event and rock ford crossings must be able to carry a 10 year-24 hour storm event in accordance with Rhode Island Conservation Practice Standard 578, Stream Crossing.

At a minimum, roadside ditches shall be 1-foot below road surface.

For 2-4% road grades, install water bars every 400 feet. For 4-8% road grades, install water bars every 300 feet.

The center of access road shall be crowned a minimum of 2 inches to improve runoff.

To err on the side of conservativeness, a **12 ft. x 17 ft. x 12 in. horizontal rip rap blanket with D50=4 inches is required for drainage ditch/waterbar outlet protection underlain with non-woven geotextile (Class I) fabric.**

Surface Treatment – A minimum of 6 inches of RIDOT Type Ia gravel (bank-run gravel) base material shall be overlain by a minimum of 6 inches of RIDOT Type III gravel (processed gravel) surface material. Place woven geotextile (Class IV) between gravel base material and existing ground as defined in Rhode Island Construction Specification 560 for all access roads.