Index 270 Flared End Section

Design Criteria

Drainage Manual; ***Culvert Design Handbook***; ***Structures Design Guidelines (SDG)***

Design Assumptions and Limitations

Flared end sections are intended for use outside the clear zone on median drain and cross drain installation, except that flared end sections for pipe sizes 12" and 15" are permitted within the clear zone. When the slope intersection permits, 12" and 15" flared end sections may be located with the culvert opening as close as 8' beyond the outside edge of the shoulder. Flared end sections are not intended for side drain installations.

Reinforced concrete jackets shall be used at all locations where high velocities and/or highly erosive soils may cause disjointing. These locations are to be shown on the plans.

Toe walls shall be used whenever the anticipated velocity of discharge and soil type are such that erosive action would occur. Toe walls are not required where ditch pavement is provided, except when disjointing would occur if the ditch pavement should fail.

When steel fiber-reinforcing is proposed as an alternative to the conventional reinforcing shown on the Index, evaluate in accordance with ***SDG*** 3.17. A Technical Special Provision identifying the fiber-reinforcing material, dosage rate and quality control provisions is required to be submitted for approval to the District Materials Office, and included in the producer's approved Quality Control Plan.

Plan Content Requirements

In the Roadway Plans:

Summarize quantity by location in the Summary of Drainage Structures, Summary of Sidedrain, or Summary of Miscellaneous Drainage Items in accordance with ***Plans Preparation Manual (PPM)*** Volume 2, Chapter 8.

Plans must clearly show the location of each Flared End Section.

Payment

Item number	Item description	Unit Measure
430-200	Flared End Section (Concrete)	EA