Index 430-020 Flared End Section

Design Criteria

Drainage Manual (DM); ***Culvert Design Handbook (CDH)***; ***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.

Use reinforced concrete jackets at all locations where high velocities and/or highly erosive soils may cause disjointing. The location(s) of reinforced concrete jackets are to be shown on the Plans.

Use toe walls 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. The location(s) of toe walls are to be shown on the Plans.

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 ***FDM 308***.

Plans must clearly show the location of each Flared End Section, and as noted above, when reinforced concrete jackets or toe walls are to be installed.

Payment

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

See the ***BOE*** and ***Specification 430*** for additional information on payment, pay item use and compensation.