

SUDAS Revision Submittal Form

Status Date: As of 5/7/2021 **Topic:** Apron guards and safety grates
Manual: Design **Manual Location:** Section 2D-3, C and 2E-1, E, 14

Requested Revision:

2D-3 - Groundwater Barriers and Outlets

C. Outlets

1. Where a storm sewer discharges into a natural channel or irrigation ditch, an outlet structure should be provided that will blend the storm sewer discharge into the natural channel flow in such a way as to prevent erosion of the bed or banks of the channel. As a minimum, all storm sewer pipes that outlet to drainageways will require flared end sections with apron guard or safety grates for pipe diameters 18 inches or larger. When treating the outlet end of a culvert using apron guards or safety grates, the inlet end must also be treated in some manner to prevent debris from intruding into or clogging the culvert. The presence of apron guards or safety grates may result in additional maintenance needs in order to prevent clogging. Storm sewers 30 inches in diameter or greater require a footing at the outlet. Footings may be required for pipe diameters less than 30 inches.

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2E-1 - General Information for Culvert Design

E. Design Considerations

14. Horizontal Culvert Clearances

- a. Small culverts (30 inches in diameter or less) should use an end section or a sloped headwall. Apron guards or safety grates maybe needed in residential areas for pipe diameters 18 inches or greater.
- b. Culverts greater than 30 inches in diameter should receive one of the following treatments:
 - 1) Extend to appropriate clear zone distance per AASHTO Roadside Design Guide
 - 2) When installing a safety grate or apron guards to prevent human entry, make sure to check the potential consequences of clogging and flooding.

Reason for Revision: Needed additional elements for apron guards and safety grates.

Comments: None.

District:	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input checked="" type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6
Comments:	None.					
Action:	<input type="checkbox"/> Deferred		<input type="checkbox"/> Not Approved		<input checked="" type="checkbox"/> Approved	
District:	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input checked="" type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6
Comments:	None.					
Action:	<input type="checkbox"/> Deferred		<input type="checkbox"/> Not Approved		<input checked="" type="checkbox"/> Approved	
District:	<input type="checkbox"/> 1	<input checked="" type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6
Comments:	None.					
Action:	<input type="checkbox"/> Deferred		<input type="checkbox"/> Not Approved		<input checked="" type="checkbox"/> Approved	
District:	<input checked="" type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6
Comments:	None.					
Action:	<input type="checkbox"/> Deferred		<input type="checkbox"/> Not Approved		<input checked="" type="checkbox"/> Approved	
District:	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input checked="" type="checkbox"/> 5	<input type="checkbox"/> 6
Comments:	None.					
Action:	<input type="checkbox"/> Deferred		<input type="checkbox"/> Not Approved		<input checked="" type="checkbox"/> Approved	
District:	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input checked="" type="checkbox"/> 6
Comments:	Remove "unintentional" from the proposed language for 2E-1, E, 14, b, 2). <i>Note - done.</i>					
Action:	<input type="checkbox"/> Deferred		<input type="checkbox"/> Not Approved		<input checked="" type="checkbox"/> Approved	

Final District Action Summary: All 6 districts approved; see comments above.

Board of Directors Action: Approved.