

### END-SECTION 12" - 60" PIPE

HUB END ON OUTLET END-SECTIONS  
SPIGOT END ON INLET END-SECTION

CONCRETE TO BE  
4000 PSI MINIMUM

PLAN

SECTION X-X

END VIEW

| END SECTION DIMENSIONS |           |            |            |           |       |
|------------------------|-----------|------------|------------|-----------|-------|
| PIPE DIAMETER          | A         | B          | C          | D         | E     |
| 12"                    | 4"        | 2'-0"      | 2'-0"      | 4'-0"     | 2'-0" |
| 15"                    | 6"        | 2'-3"      | 1'-9"      | 4'-0"     | 2'-6" |
| 18"                    | 9"        | 2'-3"      | 1'-9"      | 4'-0"     | 3'-0" |
| 21"                    | 9 1/4"    | 2'-11"     | 2'-1"      | 5'-0"     | 3'-6" |
| 24"                    | 9 1/2"    | 3'-7"      | 2'-6"      | 6'-1"     | 4'-0" |
| 27"                    | 10 3/4"   | 4'-0"      | 2'-1"      | 6'-1"     | 4'-6" |
| 30"                    | 1'-0"     | 4'-6"      | 1'-7 3/4"  | 6'-1 3/4" | 5'-0" |
| 33"                    | 1'-1 1/2" | 4'-10 1/2" | 2'-3 1/4"  | 7'-1 3/4" | 5'-6" |
| 36"                    | 1'-3"     | 5'-3"      | 2'-10 3/4" | 8'-1 3/4" | 6'-0" |
| 42"                    | 1'-9"     | 5'-3"      | 2'-11"     | 8'-2"     | 6'-6" |
| 48"                    | 2'-0"     | 6'-0"      | 2'-2"      | 8'-2"     | 7'-0" |
| 54"                    | 2'-3"     | 5'-5"      | 2'-9 1/4"  | 8'-2 1/4" | 7'-6" |
| 60"                    | 2'-11"    | 5'-0"      | 3'-3"      | 8'-3"     | 8'-0" |

### ALTERNATE END-SECTION 12" - 60" PIPE

ES-1

HUB END ON OUTLET END-SECTIONS  
SPIGOT END ON INLET END-SECTION

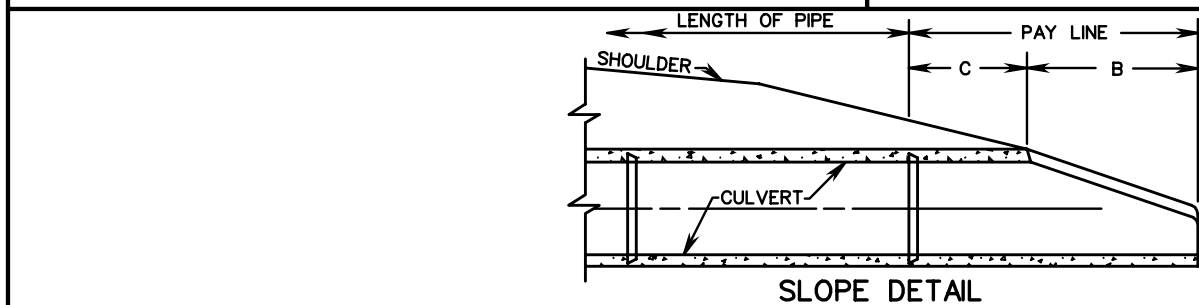
CONCRETE TO BE  
4000 PSI MINIMUM

PLAN

SECTION X-X

END VIEW

| END SECTION DIMENSIONS |           |            |            |           |       |
|------------------------|-----------|------------|------------|-----------|-------|
| PIPE DIAMETER          | A         | B          | C          | D         | E     |
| 12"                    | 4"        | 2'-0"      | 4'-1"      | 6'-1"     | 2'-0" |
| 15"                    | 6"        | 2'-3"      | 3'-10"     | 6'-1"     | 2'-6" |
| 18"                    | 9"        | 2'-3"      | 3'-10"     | 6'-1"     | 3'-0" |
| 21"                    | 9"        | 2'-11"     | 3'-2"      | 6'-1"     | 3'-6" |
| 24"                    | 10"       | 3'-7"      | 2'-8"      | 6'-3"     | 4'-0" |
| 27"                    | 10 1/2"   | 4'-0"      | 2'-1 1/2"  | 6'-1 1/2" | 4'-6" |
| 30"                    | 1'-0"     | 4'-6"      | 1'-7 3/4"  | 6'-1 3/4" | 5'-0" |
| 33"                    | 1'-1 1/2" | 4'-10 1/2" | 3'-3 1/4"  | 8'-1 3/4" | 5'-6" |
| 36"                    | 1'-3"     | 5'-3"      | 2'-10 3/4" | 8'-1 3/4" | 6'-0" |
| 42"                    | 1'-9"     | 5'-3"      | 2'-11"     | 8'-2"     | 6'-6" |
| 48"                    | 2'-0"     | 6'-0"      | 2'-2"      | 8'-2"     | 7'-0" |
| 54"                    | 2'-3"     | 5'-5"      | 2'-11"     | 8'-4"     | 7'-6" |
| 60"                    | 2'-6"     | 5'-0"      | 3'-3"      | 8'-3"     | 8'-0" |



**NOTES:**  
 PIPE LENGTHS SHOWN ON PLANS ARE BASED ON END-SECTION DESIGN SHOWN ON THE LEFT. IF THE CONTRACTOR ELECTS TO USE THE ALTERNATE DESIGN SHOWN ON THE RIGHT, LENGTHS WILL BE REDUCED BY THE DIFFERENCE IN DIMENSION "D".

|                            |
|----------------------------|
| SPECIFICATION<br>REFERENCE |
| 302                        |

## FLARED END SECTION

### 12" - 60" CONCRETE PIPE CULVERTS

VIRGINIA DEPARTMENT OF TRANSPORTATION

|                           |              |
|---------------------------|--------------|
| <b>VDOT</b>               |              |
| ROAD AND BRIDGE STANDARDS |              |
| REVISION DATE             | SHEET 1 OF 1 |
| 102.01                    |              |