

SINGLE PIPE

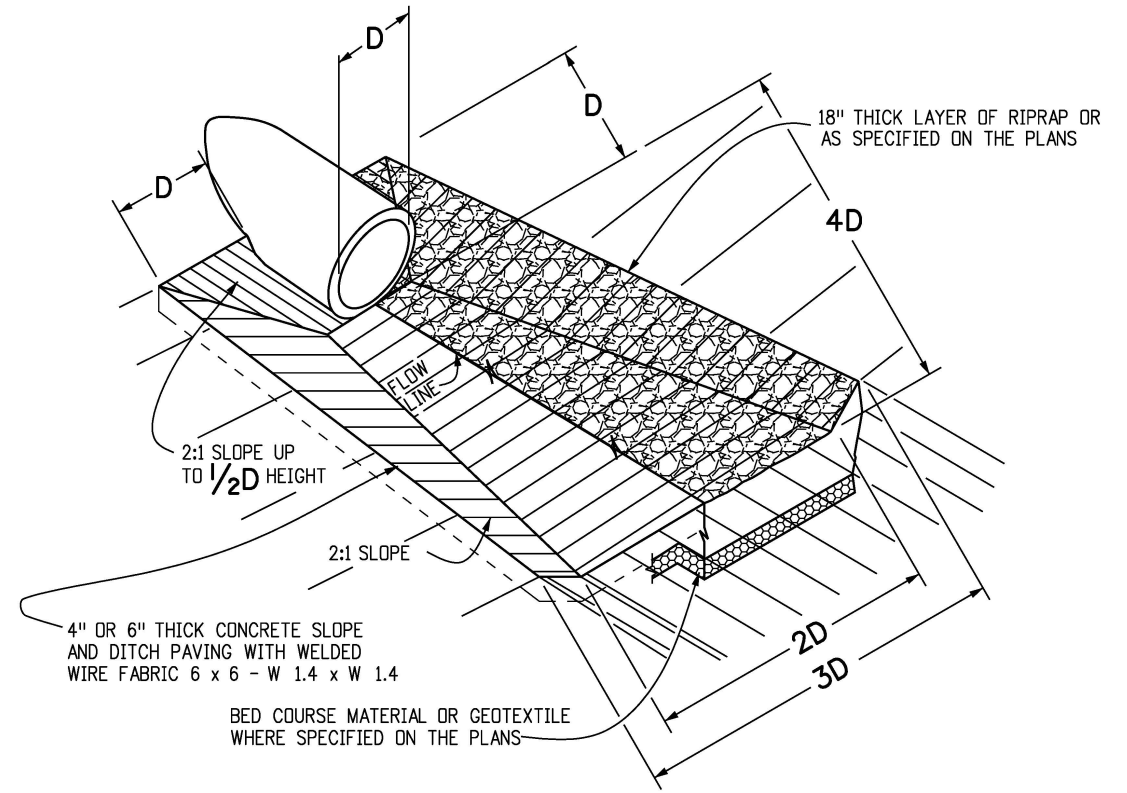
DOUBLE PIPE

CONCRETE HEADWALL INSTALLATIONS

SEE STANDARD PLAN M-601-10 FOR REINFORCING DETAILS.

GENERAL NOTES

1. FOR SIZE AND LOCATION OF PIPES, SEE THE PLANS.
2. ALL CONCRETE SHALL BE CLASS B.
3. FOOTINGS IN ROCK SHALL BE POURED OUT TO ROCK AND NOT FORMED IN ACCORDANCE WITH SUBSECTION 601.09(b).
4. EXPOSED CONCRETE CORNERS SHALL BE CHAMFERED $\frac{3}{4}$ IN.
5. HEADWALL SHALL HAVE REINFORCING STEEL INSTALLED IN A PATTERN SIMILAR TO STANDARD PLAN M-601-10.
6. THE COST OF REINFORCING STEEL SHALL BE INCLUDED IN THE WORK UNLESS THE STEEL QUANTITIES ARE LISTED IN THE PLANS AND ARE PAID FOR SEPARATELY.



PIPE OUTLET PAVING

MAY BE USED WITH MULTIPLE PIPES.

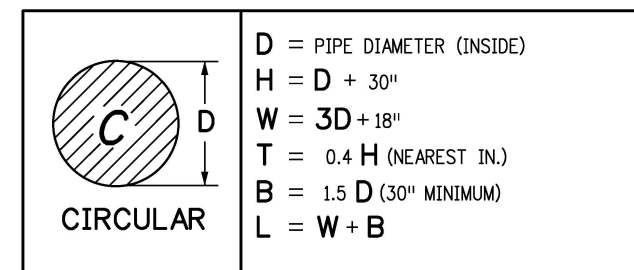
| PIPE | | PIPE DIAMETER (AND EQUIVALENT DIAMETER) (IN.) | | | | | | | | | | | |
|------------|----------|---|--------|---------|--------|---------|--------|---------|--------|---------|--------|---------|--------|
| | | 18 | | 24 | | 30 | | 36 | | 42 | | 48 | |
| TYPE | MATERIAL | SINGLE | DOUBLE | SINGLE | DOUBLE | SINGLE | DOUBLE | SINGLE | DOUBLE | SINGLE | DOUBLE | SINGLE | DOUBLE |
| CIRCULAR | RIGID | 1.0 | 1.3 | 1.5 | 2.0 | 2.0 | 2.7 | 2.8 | 3.6 | 3.6 | 4.6 | 4.6 | 6.0 |
| | FLEXIBLE | 1.1 | 1.4 | 1.6 | 2.1 | 2.2 | 3.0 | 3.0 | 4.0 | 3.9 | 5.3 | 5.0 | 6.8 |
| ELLIPTICAL | RIGID | 23 x 14 | | 30 x 19 | | 38 x 24 | | 45 x 29 | | 53 x 34 | | 60 x 38 | |
| | | 0.9 | 1.2 | 1.3 | 1.6 | 1.7 | 2.2 | 2.3 | 2.9 | 2.9 | 3.7 | 3.5 | 4.4 |
| ARCH | METAL | 22 x 13 | | 29 x 18 | | 36 x 22 | | 43 x 27 | | 50 x 31 | | 58 x 36 | |
| | | 0.9 | 1.3 | 1.4 | 1.9 | 1.8 | 2.4 | 2.4 | 3.4 | 3.2 | 4.4 | 3.4 | 5.0 |

CONCRETE QUANTITIES FOR ONE CONCRETE HEADWALL (CUBIC YARDS)

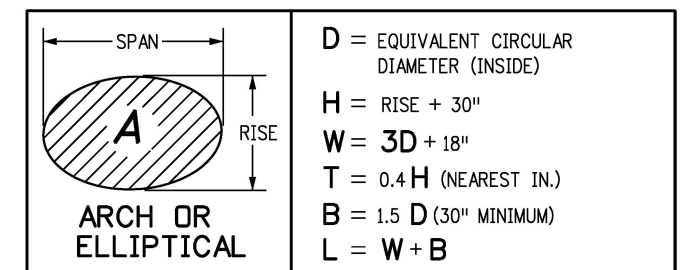
| THICKNESS | MATERIAL | PIPE DIAMETER (IN.) | | | | | |
|-----------|----------|---------------------|-----|-----|-----|------|------|
| | | 18 | 24 | 30 | 36 | 42 | 48 |
| 4" | CONCRETE | 0.4 | 0.8 | 1.2 | | | |
| 6" | CONCRETE | | | | 2.6 | 3.6 | 4.7 |
| 18" | RIPRAP | 2.0 | 3.5 | 5.4 | 7.8 | 10.7 | 13.9 |

PIPE OUTLET PAVING (CUBIC YARDS)

NOTE: VOLUME OCCUPIED BY PIPE HAS BEEN DEDUCTED.



CIRCULAR TYPE OF PIPE HEADWALL DIMENSIONS



ARCH OR ELLIPTICAL TYPE OF PIPE HEADWALL DIMENSIONS

| Computer File Information | |
|--|-------|
| Creation Date: 07/31/19 | |
| Designer Initials: JBK | (R-X) |
| Last Modification Date: 07/31/19 | (R-X) |
| Detailer Initials: LTA | (R-X) |
| CAD Ver.: MicroStation V8 Scale: Not to Scale Units: English | (R-X) |

| Sheet Revisions | |
|-----------------|----------|
| Date: | Comments |
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Project Development Branch **JBK**

**HEADWALLS AND
PIPE OUTLET PAVING**
 Issued by the Project Development Branch: July 31, 2019

**STANDARD PLAN NO.
M-601-12**
Standard Sheet No. 1 of 1
 Project Sheet Number: