NOTES

1. Sockets shall be 3" (in) extra strong steel pipe (3 1/2" (in) O.D.). Sockets must be the proper angle and height so that safety bars are parallel with headwall and side slope, and are easily removable.

2. Safety bars shall be 4" (in) extra strong steel pipe (4 1/2" (in) O.D.) or (4 1/2" (in) O.D.) (.250" (in) wall thickness) steel tubing. Length (20' maximum) shall be the minimum required to achieve Resin Bonded Anchor placement in full depth concrete. When multiple bars are required (see table) place bars at equal spacing (30" (in) max.).

3. Miter culvert pipe to match side slope.

4. Resin bonded anchors shall be 7" (in) in length (5" (in) embedment).

5. Centerline of headwall shall be normal to roadway centerline.

CULVERT DIAM. | NUMBER OF BARS REQUIRED
-----------------|---------------------
UP TO 36"       | NONE                
42" - 80"       | 1                   
80" - 120"      | 2                   
120" - 180"     | 3                   

HEADWALL SEE NOTE 5
STEEL PLATE - SEE DETAIL

CULVERT PIPE OR PIPE ARCH - SEE NOTE 3

SAFETY BAR - SEE NOTE 2

ISOMETRIC VIEW

Socket shall extend into safety bar 4" (in)

3/4" (IN) DIAM. X 10" (IN) THREADED ROD CENTERED THROUGH PIPE, SECURED WITH NUTS OR 3/4" (IN) X 8" (IN) ANCHOR STUDS WELDED TO PIPE. SPACING SHALL BE 8" (IN) FROM TOP AND 6" (IN) FROM BOTTOM OF CONCRETE (TYP.)

Mar 14, 2022
Mark Gaines (Mar 15, 2022 22:26 PDT)

Washington State Department of Transportation

Mar 15, 2022

Mark Gaines

STATE DESIGN ENGINEER

WASHINGTON STATE
REGISTERED ENGINEER

TYPE 1 SAFETY BARS FOR STEPPED CULVERT PIPE OR PIPE ARCH
STANDARD PLAN B-75.50-02

APPROVED FOR PUBLICATION

Mar 15, 2022