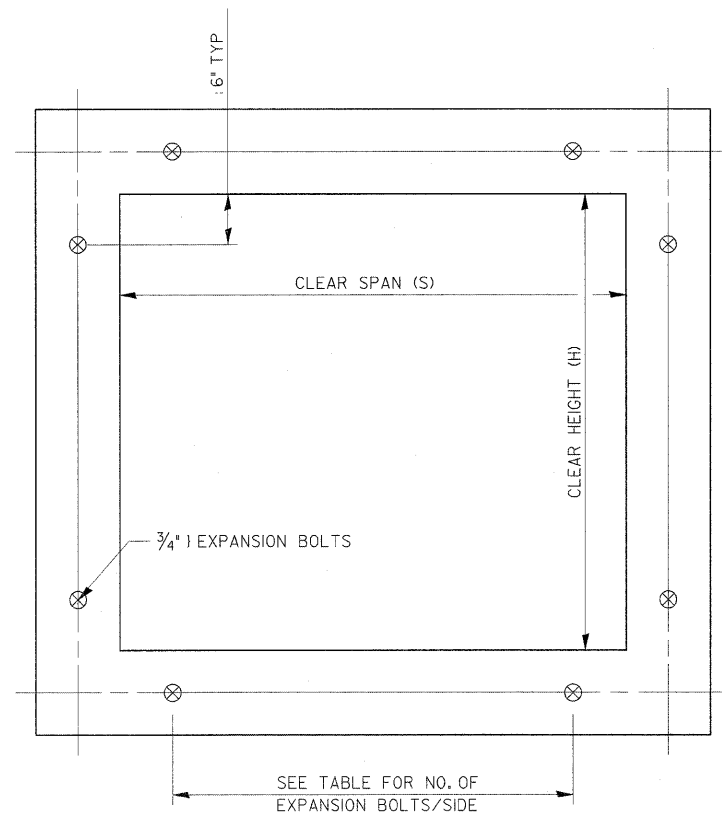


EXPANSION BOLTS REQUIRED FOR CULVERT EXTENSIONS



CROSS SECTION THRU BARREL

FOR ANCHOR BOLT REQUIREMENTS,
SEE ARTICLE 1006.09 OF THE
STANDARD SPECIFICATIONS.

EXPANSION BOLTS SHALL
CONSIST OF SELF DRILLING
EXPANSION SHIELDS AND 3/4" J
HOOKED BOLTS. HOOKED BOLTS
SHALL EXTEND A MINIMUM OF 9"
INTO NEW CONCRETE.

MINIMUM CERTIFIED PROOF
LOAD=7500 LBS.

BOLTS SHALL BE PAID FOR
AT THE CONTRACT UNIT PRICE
EACH FOR EXPANSION BOLTS,
3/4 INCH.

H OR S	NO. EXPANSION BOLTS REQ'D/SIDE			
	EXTENSION ≤ 15'		EXTENSION > 15'	
	NO.	SPACING	NO.	SPACING
2.0	*	*	*	*
2.5	2	18"	2	18"
3.0	2	24"	2	24"
4.0	3	18"	3	18"
5.0	4	16"	3	24"
6.0	5	15"	4	20"
7.0	5	18"	4	24"
8.0	6	17"	5	21"
9.0	6	19"	5	24"
10.0	7	18"	6	21"
11.0	8	17"	6	24"
12.0	8	19"	7	22"

* NOTE: USE MINIMUM OF 1 EXPANSION
BOLT AT EACH CORNER.

EXAMPLE:

6' X 4' BOX CULVERT TO BE
EXTENDED 18' AT ONE END
ONLY.

FROM TABLE FIND:

6' SIDE REQUIRES (4)-3/4" J
EXPANSION BOLTS AT
20" CENTERS

4' SIDE REQUIRES (3)-3/4" J
EXPANSION BOLTS AT
18" CENTERS

TOTAL NO. REQUIRED
(4+3)2 = (14)-3/4" J EXPAN. BOLTS

REVISIONS	
REDRAWN	2-15-89
REVISED	8-15-94
REVISED	12-14-01
REVISED	

STD. 9-9