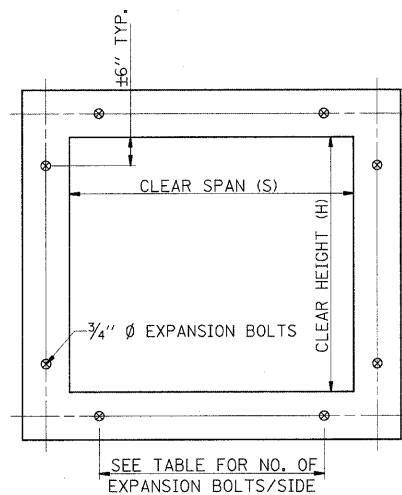


EXPANSION BOLTS REQUIRED FOR CULVERT EXTENSIONS



CROSS SECTION THRU BARREL

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

EXPANSION BOLTS SHALL CON-
SIST OF SELF DRILLING EXPAN-
SION SHIELDS AND 3/4" Ø
HOOKED BOLTS. HOOKED BOLTS
SHALL EXTEND A MINIMUM OF
9" INTO NEW CONCRETE.

MINIMUM CERTIFIED PROOF
LOAD=7,500 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" Ø
EXPANSION BOLTS AT
20" CENTERS

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

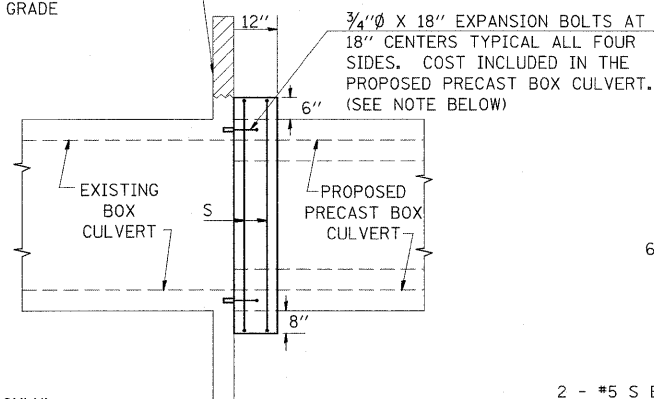
TOTAL NO. REQUIRED

(4+3)2 = (14)-3/4" Ø EXPAN. BOLTS

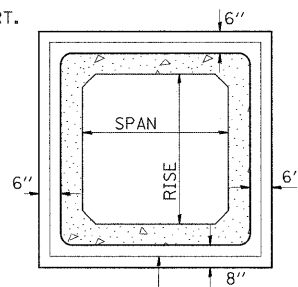


DETAILS OF CONCRETE COLLAR FOR PRECAST BOX CULVERT

REMOVE PORTION OF EXISTING
HEADWALL DOWN TO 12" BELOW
FINISHED GRADE



SIDE VIEW



END VIEW

2 - #5 S BARS TYPICAL
COST INCLUDED IN THE
PROPOSED PRECAST BOX
CULVERT.

THE CONCRETE COLLAR SHALL BE CONSIDERED
INCLUDED IN PRECAST CONCRETE BOX CULVERT,
WHICH PRICE SHALL INCLUDE THE REMOVAL OF
SUCH PORTIONS OF THE EXISTING HEADWALLS
AS MAY BE REQUIRED. CLASS SI CONCRETE SHALL
BE USED THROUGHOUT.

NOTE: ANCHOR BOLTS, MEETING THE REQUIREMENTS OF
ARTICLE 1006.09 OF THE STANDARD SPECIFICATIONS,
SHALL EXTEND A MINIMUM OF 9 INCHES INTO THE
NEW CONCRETE. EXPANSION SHIELDS SHALL PROVIDE
A MINIMUM CERTIFIED PROOF LOAD OF 4080
POUNDS.



TABULATION

(FOR INFORMATION PURPOSES ONLY)

SPAN X RISE	CLASS SI CONC. CU. YD. (EST.)
2' X 2'	0.26
3' X 2'	0.30
3' X 3'	0.34
4' X 2'	0.36
4' X 3'	0.39
4' X 4'	0.43
5' X 2'	0.41
5' X 3'	0.45
5' X 4'	0.49
6' X 2'	0.47
6' X 3'	0.51
6' X 4'	0.54
10' X 4'	0.76

FILE NAME = #FILEL#	USER NAME = #USER#	DESIGNED -	REVISED -	STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION	DETAILS: EXPANSION BOLTS; CONCRETE COLLAR FOR PRECAST BOX CULVERT	F.A.P. RTE. 869	SECTION (1-1,1,3,6)R-1,RS-3;(1,3,6)B-2	COUNTY *	TOTAL SHEETS 299	SHEET NO. 163
	PLOT SCALE = #SCALE#	CHECKED -	REVISED -			* PERRY & FRANKLIN COUNTIES		CONTRACT NO. 98797		
	PLOT DATE = #DATE#	DATE -	REVISED -		SCALE: 50	SHEET NO. OF SHEETS		STA.	TO STA.	
ILLINOIS FED. AID PROJECT										