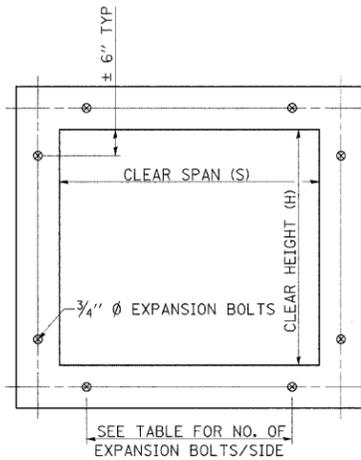


F.A.S. RTE	SECTION	COUNTY	TOTAL SHEETS	SHEET NO
932	(8,9,11)W,RS-1	*	401	196
STA.	TO STA.		FED. ROAD DIST. NO. - ILLINOIS	
			FED. AID PROJECT	

\* JOHNSON & POPE

## EXPANSION BOLTS REQUIRED FOR CULVERT EXTENSIONS



EXPANSION BOLTS SHALL CONSIST OF SELF DRILLING EXPANSION SHIELDS AND 3/4" Ø 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.

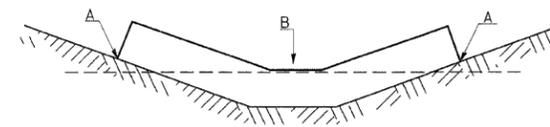
FROM TABLE FIND:

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

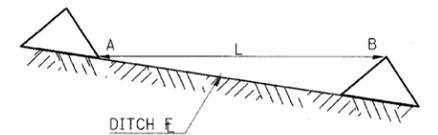
4' SIDE REQUIRES (3)-3/4" Ø EXPANSION BOLTS AT 18" CENTERS

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

## TEMPORARY DITCH CHECKS



## SPACING BETWEEN TEMPORARY DITCH CHECKS



L = THE DISTANCE SUCH THAT POINTS A AND B ARE OF EQUAL ELEVATION

B = THE LOW POINT IN CENTER OF CHECK

### CROSS SECTION THRU BARREL

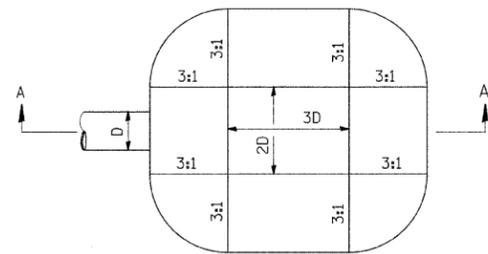
FOR ANCHOR BOLT REQUIREMENTS, SEE ARTICLE 1006.09 OF THE STANDARD SPECIFICATIONS.

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

STD. 9-9

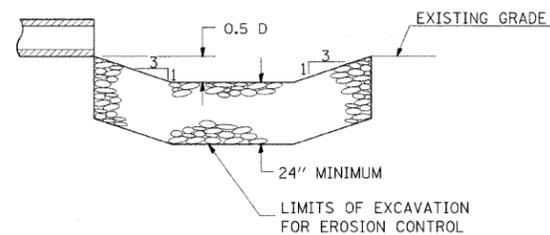
## ENERGY DISSIPATOR

### EARTH EXCAVATION FOR ENERGY DISSIPATOR



D= INSIDE DIAMETER OF PIPE CULVERT OR CLEAR HEIGHT OF BOX CULVERT

### PLAN



### SECTION A-A

THIS WORK INVOLVES THE EXCAVATION OF EARTH AS SHOWN IN THE SKETCH TO THE LENGTH, WIDTH, AND DEPTH AS SPECIFIED. THE EARTH EXCAVATION WILL BE UTILIZED IN THE ROADWAY EMBANKMENT OR WASTED AS DIRECTED BY THE ENGINEER. THE EXCAVATION SHALL BE PERFORMED AT THE SAME TIME AS THE CULVERT OR DITCH IS CONSTRUCTED TO SERVE AS A TEMPORARY SEDIMENT TRAP.

EARTHWORK WILL BE CONSIDERED INCLUDED IN THE COST OF THE RIPRAP.

ENERGY DISSIPATOR IS TO BE CONSTRUCTED AT THE LOCATION INDICATED ON THE PLAN AND PROFILE SHEETS.

### RIPRAP FOR ENERGY DISSIPATOR

RIPRAP FOR ENERGY DISSIPATOR SHALL BE CONSTRUCTED IN ACCORDANCE WITH SECTION 281 OF THE STANDARD SPECIFICATIONS EXCEPT AS REVISED HEREIN.

THE LENGTH, WIDTH, AND DEPTH FOR RIPRAP PLACEMENT SHALL BE AS SPECIFIED IN THESE DETAILS UNLESS OTHERWISE SPECIFIED IN THE PLANS.

THE RIPRAP FOR THE ENERGY DISSIPATOR SHALL BE PAID FOR AT THE CONTRACT UNIT PRICE PER SQUARE YARD FOR STONE DUMPED RIPRAP.

THE STONE DUMPED RIPRAP SHALL CONFORM TO THE QUALITY AND GRADATION REQUIREMENTS OF STONE RIPRAP, CLASS A4.

BEDDING MATERIAL AS SPECIFIED IN SECTION 281 OF THE STANDARD SPECIFICATIONS WILL NOT BE REQUIRED.

REVISIONS	
REVISION	12-14-01
REVISION	12-14-01

STD 9-6