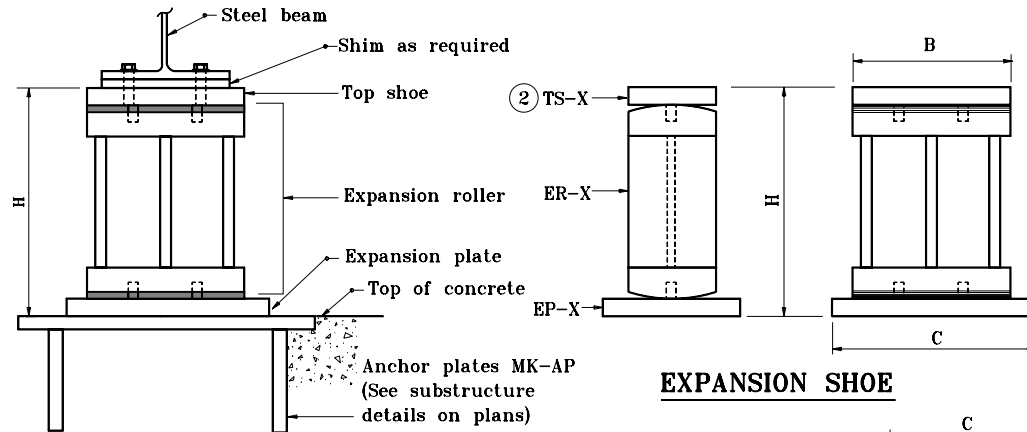


**TABLE OF SHOE ASSEMBLY**

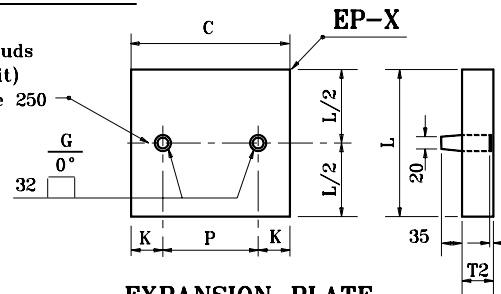
Shoe Type	Maximum Reaction	Shoe Assembly			H
		TS-X	ER-X	EP-X	
E-1	423 kN	TS-1	ER-1	EP-1	470
E-2	685 kN	TS-2	ER-2	EP-2	480
E-3	1068 kN	TS-3	ER-3	EP-3	400
E-4	609 kN	TS-4	ER-4	EP-4	470
E-5	890 kN	TS-5	ER-5	EP-5	480
E-6	1334 kN	TS-6	ER-6	EP-6	400



**EXPANSION SHOE ASSEMBLY**

**EXPANSION SHOE**

2-32 mm Studs  
(Driving Fit)  
A-709M Grade 250

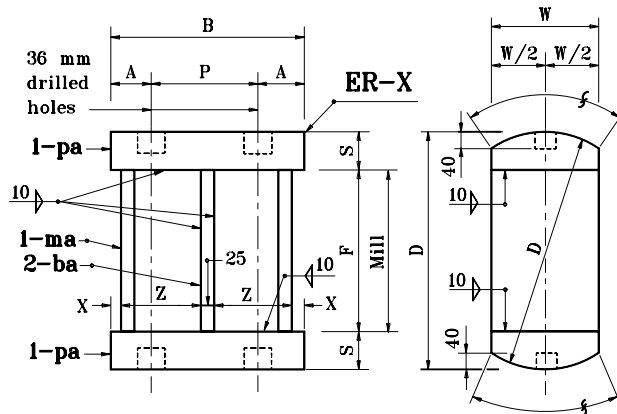


**EXPANSION PLATE**

EP-X	C	L	T2	K	P	Section	Material
EP-1	400	230	45	105	190	ℓ 230 x 45	A-709M Grade 250
EP-2	400	250	50	115	170	ℓ 250 x 50	A-709M Grade 345W
EP-3	400	380	50	120	160	ℓ 380 x 50	A-709M Grade 690
EP-4	500	230	45	125	250	ℓ 230 x 45	A-709M Grade 250
EP-5	500	250	50	130	240	ℓ 250 x 50	A-709M Grade 345W
EP-6	500	380	50	140	220	ℓ 380 x 50	A-709M Grade 690

**NOTES :**

- Curved surfaces of shoes to be machined after weldments have been completed. At the contractor's option the following substitutions of materials will be allowed at no increase in unit price of material.
  - A-709M Grade 345W steel may be used in lieu of A-709M Grade 250 steel.
  - A-709M Grade 690 steel may be used in lieu of A-709M Grade 345W or A-709M Grade 250 steels.



**EXPANSION ROLLER**

ER-X	B	W	D	S	F	A	P	X	Z	Sections			Note
										ma	ba	pa	
ER-1	300	200	380	60	260	55	190	12.5±	125±	W 250 x 131	Bar 90 X 25	ℓ 200 x 60	A-709M Grade 250
ER-2	300	200	380	60	260	65	170	12.5±	125±	W 250 x 131	Bar 90 X 25	ℓ 200 x 60	A-709M Grade 345W
ER-3	300	150	300	45	210	70	160	12.5±	125±	W 250 x 131	Bar 65 X 25	ℓ 150 x 50	A-709M Grade 690
ER-4	400	200	380	60	260	75	250	15±	175±	W 360 x 196	Bar 90 X 25	ℓ 200 x 60	A-709M Grade 250
ER-5	400	200	380	60	260	80	240	15±	175±	W 360 x 196	Bar 90 X 25	ℓ 200 x 60	A-709M Grade 345W
ER-6	400	150	300	45	210	90	220	15±	175±	W 360 x 196	Bar 65 X 25	ℓ 150 x 50	A-709M Grade 690

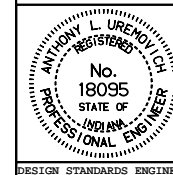
All dimensions are in mm unless otherwise specified.

INDIANA DEPARTMENT OF TRANSPORTATION

**EXPANSION STEEL SHOE DETAILS**

JANUARY 2001

STANDARD DRAWING NO. 711-BSTS-02



/s/ Anthony L. Uremovich 1-02-01  
DESIGN STANDARDS ENGINEER DATE

/s/ Dorinda Mahalik 1-02-01  
CHIEF HIGHWAY ENGINEER DATE

DESIGN STANDARDS ENGINEER