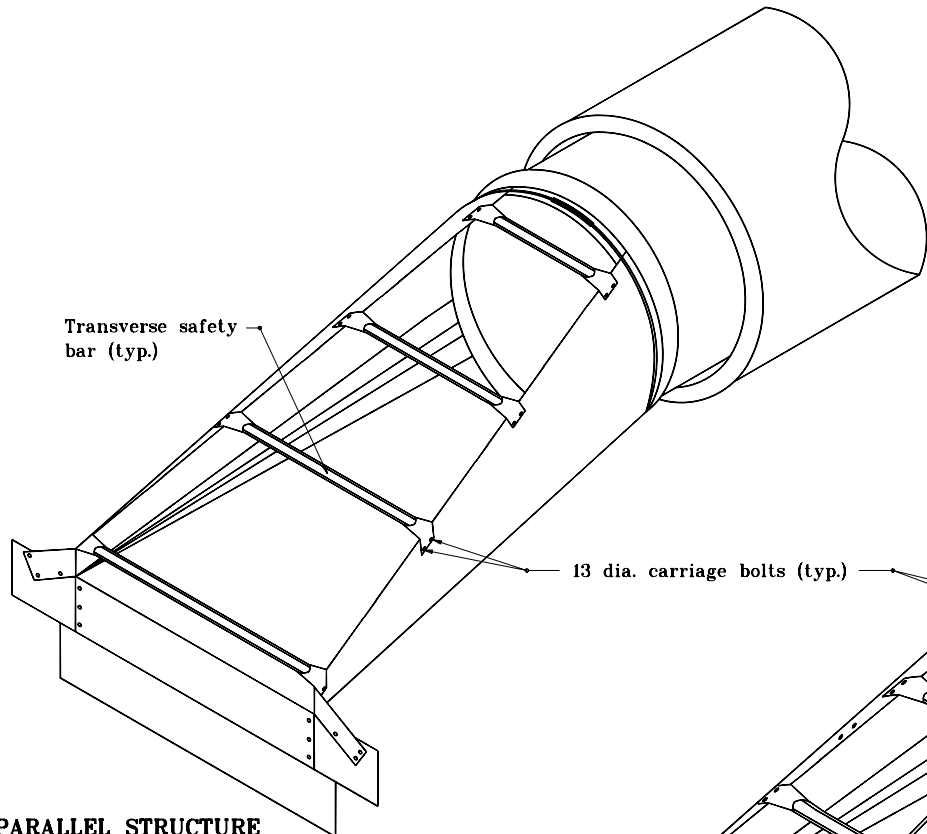
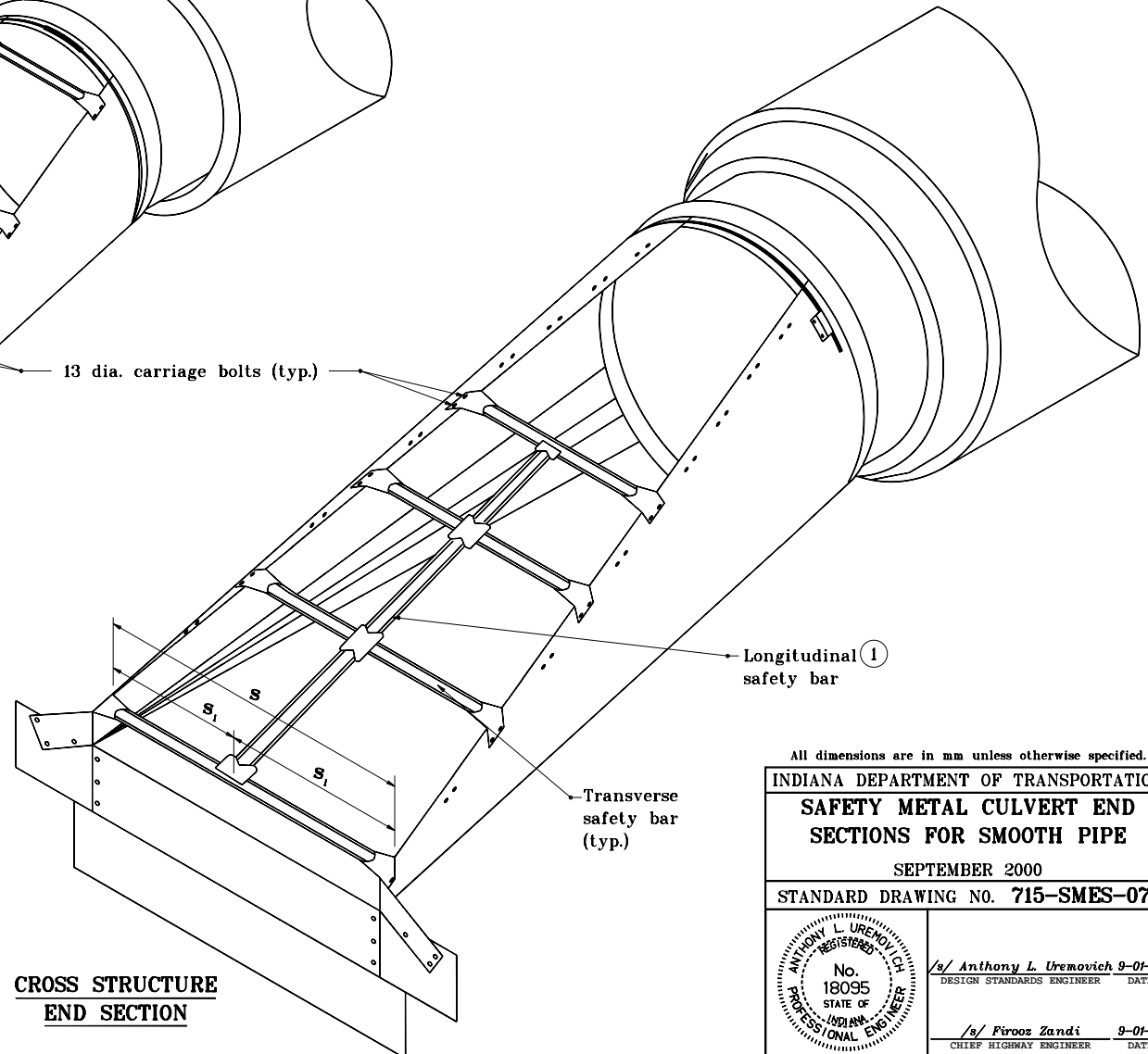


**GENERAL NOTES**

- ① Longitudinal safety bar shall be welded to transverse bars. For cross structure and section, if  $S < 750$ , no longitudinal safety bar is required. If  $S > 750$ , longitudinal safety bar(s) shall be provided so  $S_1 < 750$ .
2. Bolts shall be oriented with threads to inside of end section.



**PARALLEL STRUCTURE  
END SECTION**



**CROSS STRUCTURE  
END SECTION**

**LEGEND**

s - Overall span

① Span between end section edge and longitudinal safety bar or between longitudinal safety bars.

$$s_1 = \frac{s}{n + 1}$$

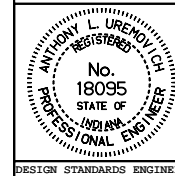
where n = Number of longitudinal safety bars

All dimensions are in mm unless otherwise specified.

INDIANA DEPARTMENT OF TRANSPORTATION  
**SAFETY METAL CULVERT END  
SECTIONS FOR SMOOTH PIPE**

SEPTEMBER 2000

STANDARD DRAWING NO. 715-SMES-07



/s/ Anthony L. Uremovich 9-01-00  
DESIGN STANDARDS ENGINEER DATE

/s/ Firooz Zandi 9-01-00  
CHIEF HIGHWAY ENGINEER DATE

DESIGN STANDARDS ENGINEER