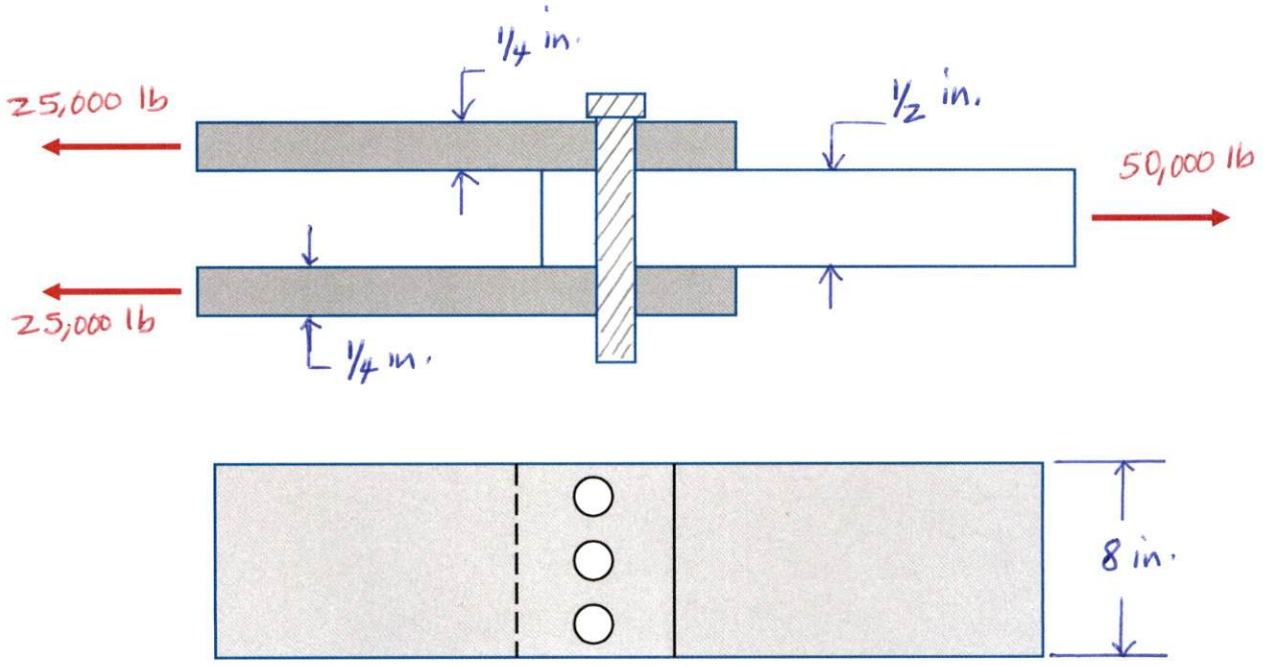
CMGT350	Exam #2	Fall 2021

One page of notes, front and back handwritten by you. Handout of Tables. Algebra and Trig Cheat Sheets
SHOW ALL WORK FOR FULL CREDIT

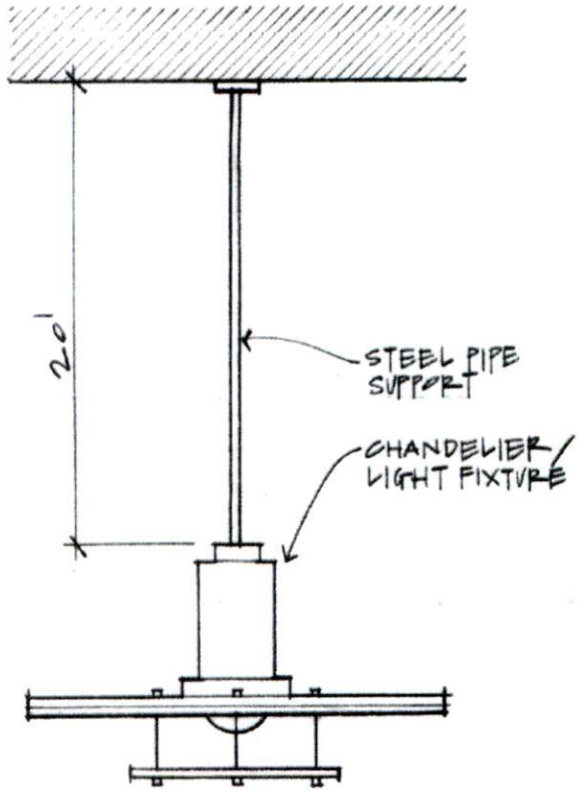
Name _____

1. The lap joint shown below is subjected to a tension force of 50,000 lb. The bolts are ¾ in diameter. Calculate the shear stress developed by the bolts and the tension stress developed by the inside and outside plates.



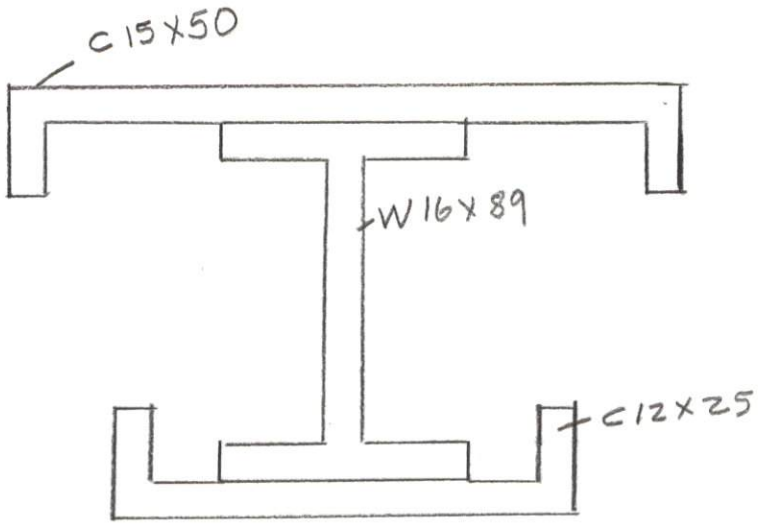
Solution.

2. A Heavy Chandelier weighing 4500 lb is suspended from the ceiling of a theater lobby. The steel pipe from which it hangs is 20 feet long.
   (a) Determine the nominal diameter of the pipe necessary to carry the chandelier safely. Use A-36 steel and a Factor of Safety = 2.5. Select pipe from Table A-5(a).
   (b) Determine the resulting elongation of the pipe.



Solution.

3. Determine the moment of inertia about the centroidal x- and the centroidal y-axes for the shape shown.



Shape	A (in^2)	y (in)	Ay (in^3)	$(\overline{y}-y)$ (in)	A $(\overline{y}-y)^2$ (in^4)	I (in^4)

4. A circular steel bar carries a tension load of 35,000 lb. If the allowable stress level is set to 60% of the yield stress, determine the diameter of the bar necessary to carry the load to the nearest ¼ inch. The yield stress of the steel is 50 ksi.