2. (a) $\theta = \sin^{-1}(1.50\,\text{cm}/2.00\,\text{m}) = 0.430°$.

(b) For the mth diffraction minimum $a\sin\theta = m\lambda$. We solve for the slit width:

$$a = \frac{m\lambda}{\sin\theta} = \frac{2(441\,\text{nm})}{\sin 0.430°} = 0.118\ \text{mm}\ .$$