3. The H12 beam tube and its flux
The H5 beam tube after enlargement; assume H12 new to be similar;

Guides 180×142 (H×W)

Scale: 1:20

Angular opening towards source: ±0.6° [m=2 for 3Å] for each guide

H12 guides

Height 180

Side view: Scale y: ¼; scale x: 1/20
Top view of widened H12 beam tube

Cross sections:
H121: 180×50;
H122: 180×30;
H123: 180×60;

Angular opening towards source: ±0.6° \([m=2 \text{ for } 3\, \text{Å}]\) for each guide
The beam nose and the used area

$$\varnothing_1 \approx 230$$

$$\varnothing_1 \approx 230 \times 200$$ elliptical; (H×W)

front view; scale: 1/2

full areas of illumination used for m=2 and 3Å
## 4. The H12 beam lines and their obstacles

### H12 guide parameters

<table>
<thead>
<tr>
<th></th>
<th>Radius ρ [m]</th>
<th>Cross-section W×H [cm]</th>
<th>Length [m]</th>
<th>λ*[Å] ; m =2</th>
<th>Length L₀ of direct sight [m]</th>
<th>Lat. separation [m] from centr. axis at 60 m</th>
</tr>
</thead>
<tbody>
<tr>
<td>H121 PASTIS</td>
<td>-6000*</td>
<td>50×180</td>
<td>70</td>
<td>m=3??</td>
<td>49</td>
<td>-1.35&amp;</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1.2 (m=2)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>H122 VIVALDI</td>
<td>+10000*</td>
<td>30×180</td>
<td>65</td>
<td>0.72</td>
<td>49</td>
<td>+0.18</td>
</tr>
<tr>
<td>H123 DRACULA</td>
<td>+6000</td>
<td>60×180</td>
<td>20 (Dracula) 60 (SALSA?)</td>
<td>(1.3)</td>
<td>53</td>
<td>+1.35&amp;</td>
</tr>
</tbody>
</table>

* & likely too large to pass reactor wall

\[ L₀^2 = 8Wρ; \]
\[ Δ = W-(L₀/2-dL)^2/2ρ; \quad Δ = \text{width of direct sight of bent guide; } \quad dL = \text{missing length to } L₀ \]
\[ x_b = L^2/(2ρ); \quad x_b = \text{lateral deviation from start direction;} \]
\[ λ* = 2\pi \left(2W/ρ\right)^{1/2} / k_⊥; \]

* agreed by R. Stewart  
*changed compared to orig. proposal