Fiberglass Dome
Circular

radii
in inches
at 1:5
scale
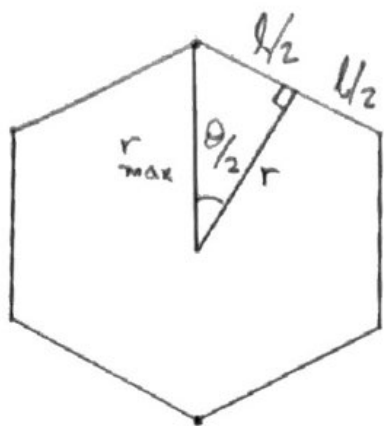$\begin{cases} 7.275 \\ 7.875 \end{cases}$

Wood Sill

Concrete foundation

FIBERGLASS

WOOD

CONCRETE

C3
C4
C2
C1
I

36°
15°
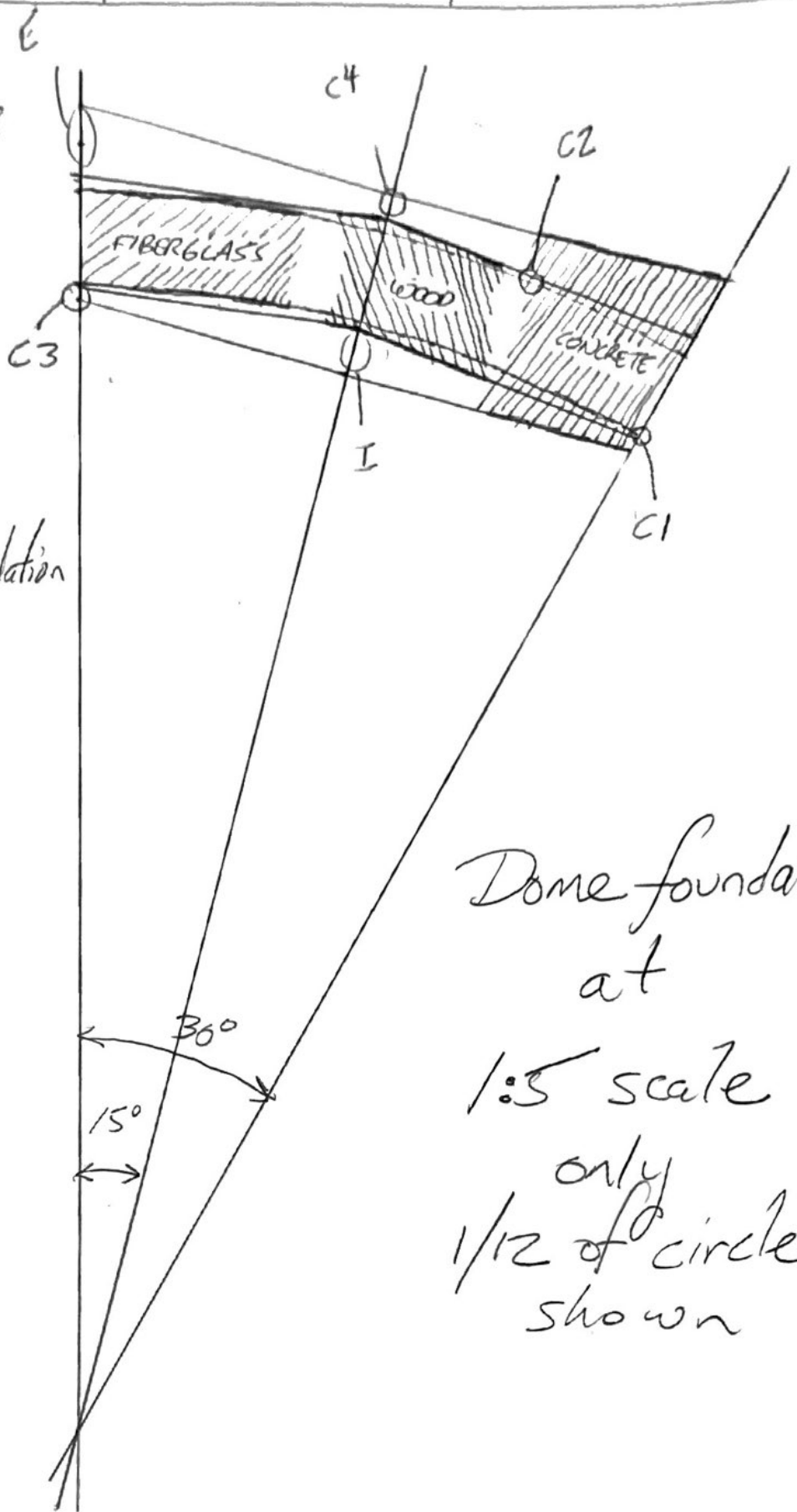
Dome foundation
at
1:5 scale
only
1/12 of circle
shown

Properties of an n-sided regular polygon

$$\theta = \frac{360°}{n}$$

$$\frac{\theta}{2} = \frac{180°}{n}$$

$$\frac{r}{r_{max}} = \cos\frac{\theta}{2} \implies r_{max} = r\sec\frac{\theta}{2}$$

$$\frac{l/2}{r} = \tan\frac{\theta}{2} \implies l = 2r\tan\frac{\theta}{2}$$

$\underline{\underline{n=12}}$ $\boxed{\frac{\theta}{2} = 15°}$
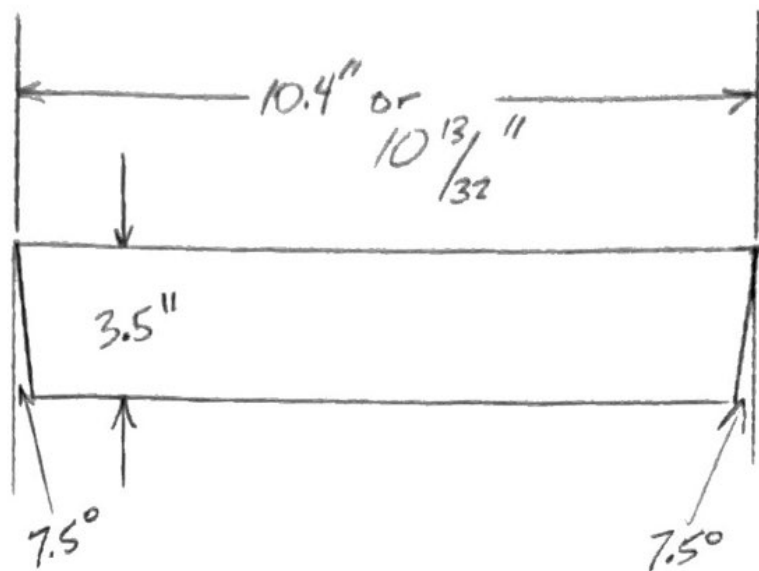
$$r_{max} = r\sec 15° = 1.03528 \; r$$
$$l = 2r\tan\frac{\theta}{2} = 0.5359\,r$$
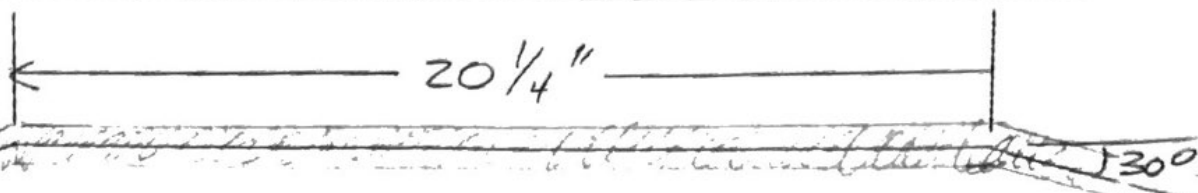
$\underline{\underline{n=24}}$ $\boxed{\frac{\theta}{2} = 7.5°}$

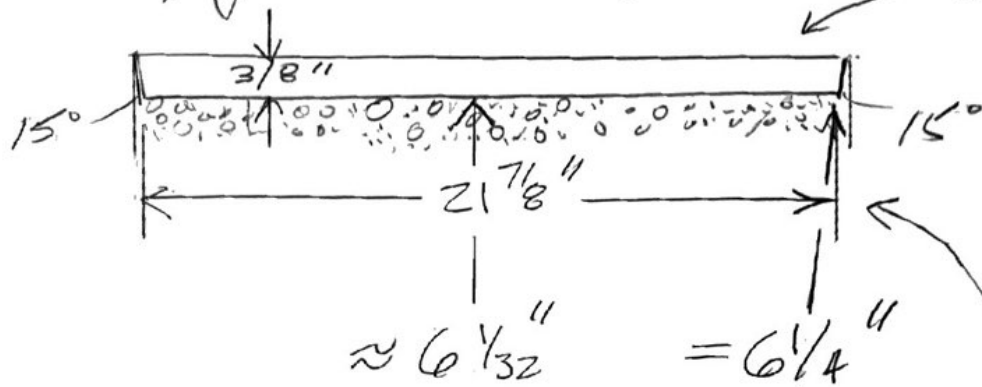$$r_{max} = r\sec 7.5° = 1.00869\,r$$
$$l = 2r\tan 7.5° = 0.2633\,r$$

24 sill plate pieces

10.4" or 10 $\frac{13}{32}$"

3.5"

7.5°   7.5°

2 or 3   12-sided rebar rings

20 $\frac{1}{4}$"

30°   30°

12 plywood outer forms

outer of outer form is about $\frac{3}{16}$" longer

3/8"

15°   15°

21 $\frac{7}{8}$"

≈ 6 $\frac{1}{32}$"   = 6 $\frac{1}{4}$"

12 plywood inner forms

18 $\frac{5}{8}$"

15°   15°

inner of inner form is about $\frac{3}{16}$" shorter
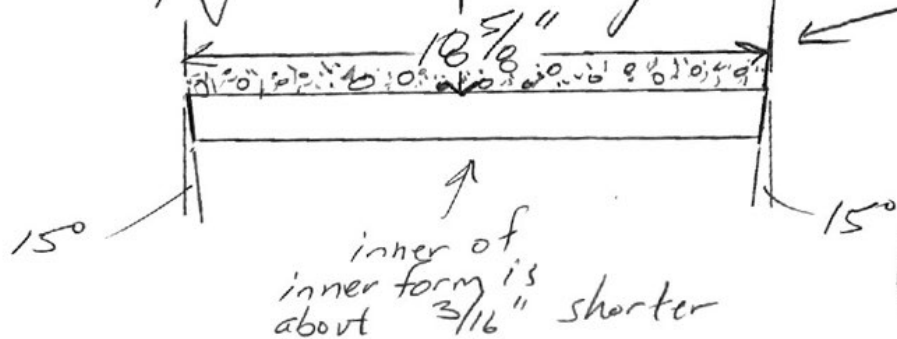
In both cases, the side facing the concrete is specified