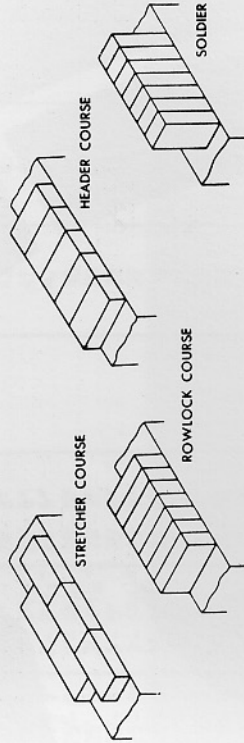


Estimating Data

STANDARD FIREBRICK

	$9'' \times 4\frac{1}{2}'' \times 2\frac{1}{2}''$	$9'' \times 4\frac{1}{2}'' \times 3''$
Approximate weight per brick.....	7.6-8.4 lb.	130-140 lb.
One cubic foot requires.....	17.0 brick	14.2 brick
One square foot of wall or floor requires the following number of brick:		
2 1/2" thick.....	3.6	—
3" thick.....	—	3.6
4 1/2" thick.....	6.4	5.3
5" thick.....	7.2	—
6" thick.....	—	7.2
7 1/2" thick.....	10.8	8.9
9" thick.....	12.8	10.7
13 1/2" thick.....	19.2	16.0
18" thick.....	25.6	21.4
22 1/2" thick.....	32.0	26.7
27" thick.....	38.4	32.1

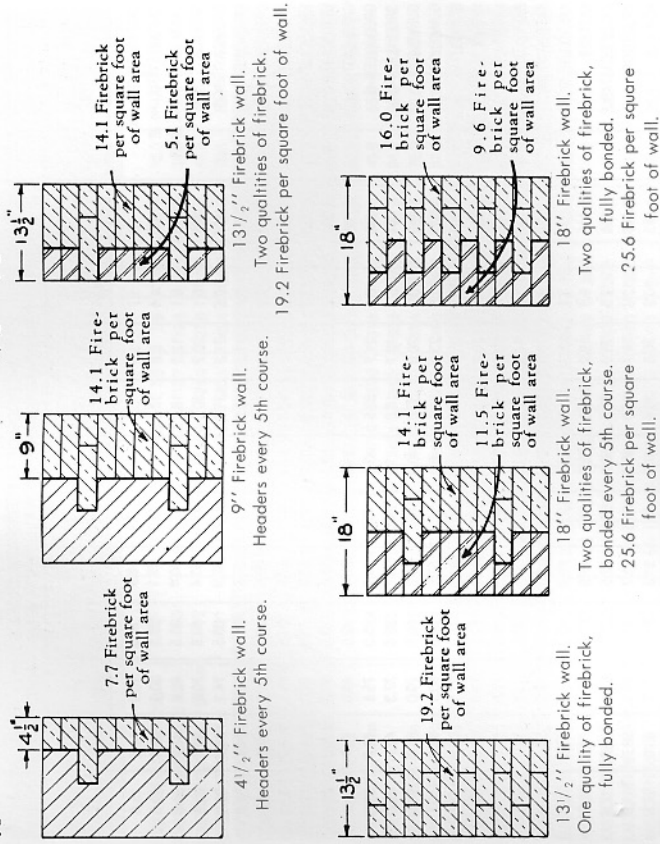
FOUR BRICK ARRANGEMENTS OFTEN USED



SIZE	MORTAR REQUIRED TO LAY 1,000 PIECES			
	@ 250 Lb. per M. 9" Straights	@ 300 Lb. per M. 9" Straights	@ 350 Lb. per M. 9" Straights	@ 400 Lb. per M. 9" Straights
9 x 4 1/2 x 2 1/2	250	300	350	400
9 x 4 1/2 x 3	270	325	380	435
9 x 6 x 2 1/2	305	370	430	490
9 x 6 x 3	335	400	465	535
9 x 6 x 3 1/2 Arches	355	425	500	570
9 x 6 3/4 x 2 1/2	335	405	475	540
9 x 6 3/4 x 3	365	435	510	580
9 x 9 x 2 1/2	425	510	595	680
12 x 6 x 2 1/2	395	470	550	630
12 x 6 x 3	425	510	595	680
13 1/2 x 4 1/2 x 2 1/2	355	425	500	570
13 1/2 x 6 x 2 1/2	435	520	610	695
13 1/2 x 6 x 3	470	560	660	750
9 x 6 x 4 Liners	385	460	535	615
9 x 9 x 4 Liners	515	615	720	825
9 x 4 1/2 x 9 Calliaus	545	655	765	875

Estimating Data

Sectional views illustrating various types of firebrick walls with quantity figures to indicate the approximate number of brick required for each type of wall. The walls shown are of 9 x 4 1/2 x 2 1/2-inch brick.

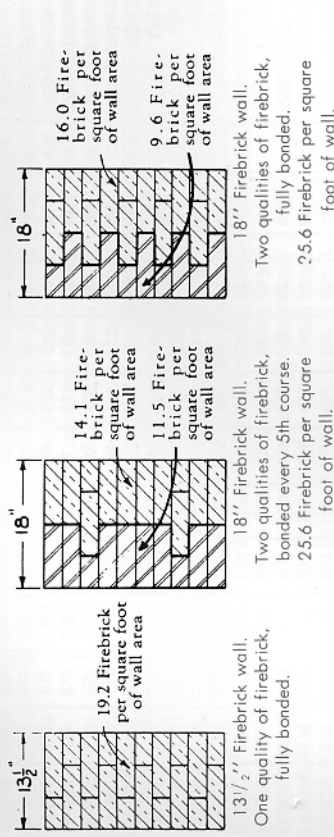
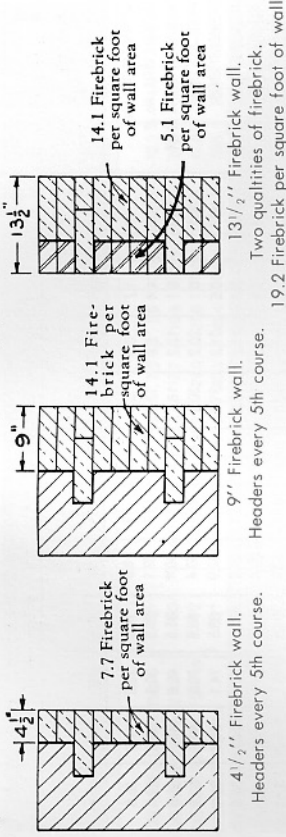


FORMULAS

CIRCLE: Circumference = Diameter X 3.1416 (π)	Area = Radius ² X 3.1416 (π)
TRIANGLE: Area = 1/2 Base X Perpendicular Height	or = Diameter ² X .7854 (1/2 π)
CYLINDER: Area of Cylindrical Surface = Diameter X π X Length	Volume = Diameter ² X 1/4 π X Length
CONE OR PYRAMID: Area of Conical Surface = Radius at Base X π X Slant Height	Volume = Radius at Base ² X 1/3 π X Perpendicular Height
FRUSTUM OF A CONE: Area of Conical Surface = π X Slant Height X (Large Radius + Small Radius)	Volume = 1/12 π (2618) X Perpendicular Height X (Large Dia. ² + Small Dia. ² + Product of Large & Small Dia.'s)
SPRUNG ARCHES: Radius = $\frac{\text{Span}^2}{8 \text{ X Rise}} + \frac{\text{Rise}}{2}$ OR $\frac{\text{Span}^2 + \text{Rise}^2}{2 \text{ X Rise}}$	Rise = Radius - $\left[\frac{\text{Span}^2}{8 \text{ X Rise}} + \frac{\text{Rise}}{2} \right]$ OR $\frac{\text{Span}^2}{2 \text{ X Rise}} - \text{Radius}$
	Rise = Radius - (Cosine 1/2 Central Angle X Radius)

Estimating Data

Sectional views illustrating various types of firebrick walls with quantity figures to indicate the approximate number of brick required for each type of wall. The walls shown are of $9 \times 4\frac{1}{2} \times 2\frac{1}{2}$ -inch brick.



FORMULAS

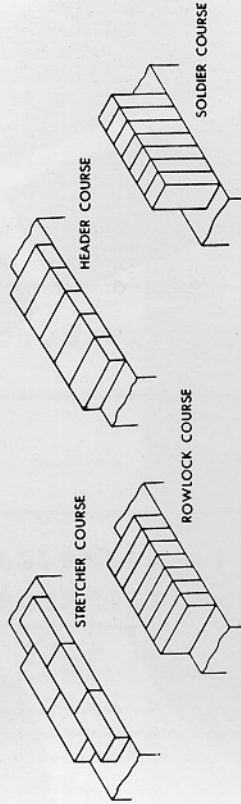
- CIRCLE:** Circumference = Diameter X 3.1416 (π)
 Area = Radius² X 3.1416 (π)
 or = Diameter² x .7854 ($\frac{1}{4}\pi$)
- TRIANGLE:** Area = $\frac{1}{2}$ Base X Perpendicular Height
CYLINDER: Area of Cylindrical Surface = Diameter X π X Length
 Volume = Diameter² X $\frac{1}{4}$ π X Length
 or = Radius² X π X Length
- CONE OR PYRAMID:**
 Area of Conical Surface = Radius at Base X π X Slant Height
 Volume = Radius at Base² X $\frac{1}{3}$ π X Perpendicular Height
- FRUSTUM OF A CONE:**
 Area of Conical Surface = π X Slant Height X (Large Radius + Small Radius)
 Volume = $\frac{1}{12} \pi$ (2618) X Perpendicular Height X (Large Dia.² + Small Dia.² + Product of Large & Small Dia.s.)
- SPRUNG ARCHES:**
 Radius = $\frac{\text{Span}^2}{8 \text{ X Rise}} + \frac{\text{Rise}}{2}$ OR $\frac{\text{Span}^2 + \text{Rise}^2}{2}$ \div 2 X Rise
 Rise = Radius - $\left[\frac{\text{Span}^2}{8 \text{ X Rise}} - \left(\frac{\text{Span}}{2} \right)^2 \right]$ OR $\left[\frac{\text{Span}^2 + \text{Rise}^2}{2} - \left(\frac{\text{Span}}{2} \right)^2 \right]$
 Rise = Radius - (Cosine $\frac{1}{2}$ Central Angle X Radius)

Estimating Data

STANDARD FIREBRICK

	$9'' \times 4\frac{1}{2}'' \times 2\frac{1}{2}''$	$9'' \times 4\frac{1}{2}'' \times 3''$
Approximate weight per brick	7.6-8.4 lb.	130-140 lb.
Approximate weight per cubic foot	130-140 lb.	14.2 brick
One cubic foot requires	17.0 brick	
One square foot of wall or floor requires the following number of brick:		
$2\frac{1}{2}''$ thick	3.6	
$3''$ thick	3.6	
$4\frac{1}{2}''$ thick	6.4	
$5''$ thick	7.2	
$6''$ thick	7.2	
$7\frac{1}{2}''$ thick	10.8	
$9''$ thick	12.8	
$13\frac{1}{2}''$ thick	19.2	
$18''$ thick	25.6	
$22\frac{1}{2}''$ thick	32.0	
$27''$ thick	38.4	

FOUR BRICK ARRANGEMENTS OFTEN USED



SIZE	MORTAR REQUIRED TO LAY 1,000 PIECES			
	@ 250 Lb. per M. 9" Straights	@ 300 Lb. per M. 9" Straights	@ 350 Lb. per M. 9" Straights	@ 400 Lb. per M. 9" Straights
$9 \times 4\frac{1}{2} \times 2\frac{1}{2}$	250	300	350	400
$9 \times 4\frac{1}{2} \times 3$	270	325	380	435
$9 \times 6 \times 2\frac{1}{2}$	305	370	430	490
$9 \times 6 \times 3$	335	400	465	535
$9 \times 6 \times 3\frac{1}{2}$ Arches	355	425	500	570
$9 \times 6\frac{3}{4} \times 2\frac{1}{2}$	335	405	475	540
$9 \times 6\frac{3}{4} \times 3$	365	435	510	580
$9 \times 9 \times 2\frac{1}{2}$	425	510	595	680
$12 \times 6 \times 2\frac{1}{2}$	395	470	550	630
$12 \times 6 \times 3$	425	510	595	680
$13\frac{1}{2} \times 4\frac{1}{2} \times 2\frac{1}{2}$	355	425	500	570
$13\frac{1}{2} \times 6 \times 2\frac{1}{2}$	435	520	610	695
$13\frac{1}{2} \times 6 \times 3$	470	560	660	750
$9 \times 6 \times 4$ Liners	385	460	535	615
$9 \times 9 \times 4$ Liners	515	615	720	825
$9 \times 4\frac{1}{2} \times 9$ Calliaus	545	655	765	875