









# CHULA VISTA FIRE DEPARTMENT

FIRE PREVENTION DIVISION

## Thrust Block Area Calculations

## 10-INCH PIPE

1. Min. Soil Bearing Capacity (PSF) = 1500      2. Min. Working Pressure (PSI) = 200

THRUST FROM NFPA 24 TABLE A-8-6.2 A BEND FOR:

DEAD END = 9,677 LB @ 100 PSI  
 FOR 200 PSI = 200 / 100 \* 9,677 = 19,354 LB  
 Ab = T/Sb = 19,354 / 1,500 = 12.90 S.F.  
 Ab\*S.F. = 12.90 X 1.5 = 19.35 S.F. USE 5' WIDE X 4' HIGH THRUST BLOCK

90° BEND = 13,685 LB @ 100 PSI  
 FOR 200 PSI = 200 / 100 \* 13,685 = 27,370 LB  
 Ab = T/Sb = 27,370 / 1,500 = 18.25 S.F.  
 Ab\*S.F. = 18.25 X 1.5 = 27.37 S.F. USE 5.5' WIDE X 5' HIGH THRUST BLOCK

45° BEND = 7,406 LB @ 100 PSI  
 FOR 200 PSI = 200 / 100 \* 7,406 = 14,812 LB  
 Ab = T/Sb = 14,812 / 1,500 = 9.87 S.F.  
 Ab\*S.F. = 9.87 X 1.5 = 14.81 S.F. USE 4' WIDE X 4' HIGH THRUST BLOCK

22 1/2° BEND = 3,776 LB @ 100 PSI  
 FOR 200 PSI = 200 / 100 \* 3,776 = 7,552 LB  
 Ab = T/Sb = 7,552 / 1,500 = 5.03 S.F.  
 Ab\*S.F. = 5.03 X 1.5 = 7.55 S.F. USE 3' WIDE X 3' HIGH THRUST BLOCK

11 1/4° BEND = 1,897 LB @ 100 PSI  
 FOR 200 PSI = 200 / 100 \* 1,897 = 3,794 LB  
 Ab = T/Sb = 3,794 / 1,500 = 2.53 S.F.  
 Ab\*S.F. = 2.53 X 1.5 = 3.79 S.F. USE 2' WIDE X 2' HIGH THRUST BLOCK



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## Thrust Block Area Calculations

## 12-INCH PIPE

1. Min. Soil Bearing Capacity (PSF) = 1500      2. Min. Working Pressure (PSI) = 200

THRUST FROM NFPA 24 TABLE A-8-6.2 A BEND FOR:

DEAD END = 13,685 LB @ 100 PSI  
 FOR 200 PSI = 200 / 100 \* 13,685 = 27,370 LB  
 Ab = T/Sb = 27,370 / 1,500 = 18.25 S.F.  
 Ab\*S.F. = 18.25 X 1.5 = 27.37 S.F. USE 6' WIDE X 5' HIGH THRUST BLOCK

90° BEND = 19,353 LB @ 100 PSI  
 FOR 200 PSI = 200 / 100 \* 19,353 = 38,706 LB  
 Ab = T/Sb = 38,706 / 1,500 = 25.80 S.F.  
 Ab\*S.F. = 25.80 X 1.5 = 38.71 S.F. USE 6' WIDE X 7' HIGH THRUST BLOCK

45° BEND = 10,474 LB @ 100 PSI  
 FOR 200 PSI = 200 / 100 \* 10,474 = 20,948 LB  
 Ab = T/Sb = 20,948 / 1,500 = 13.97 S.F.  
 Ab\*S.F. = 13.97 X 1.5 = 20.95 S.F. USE 5' WIDE X 4.5' HIGH THRUST BLOCK

22 1/2° BEND = 5,340 LB @ 100 PSI  
 FOR 200 PSI = 200 / 100 \* 5,340 = 10,680 LB  
 Ab = T/Sb = 10,680 / 1,500 = 7.12 S.F.  
 Ab\*S.F. = 7.12 X 1.5 = 10.68 S.F. USE 4' WIDE X 3' HIGH THRUST BLOCK

11 1/4° BEND = 2,683 LB @ 100 PSI  
 FOR 200 PSI = 200 / 100 \* 2,683 = 5,366 LB  
 Ab = T/Sb = 5,366 / 1,500 = 3.58 S.F.  
 Ab\*S.F. = 3.58 X 1.5 = 5.37 S.F. USE 2.5' WIDE X 2.5' HIGH THRUST BLOCK