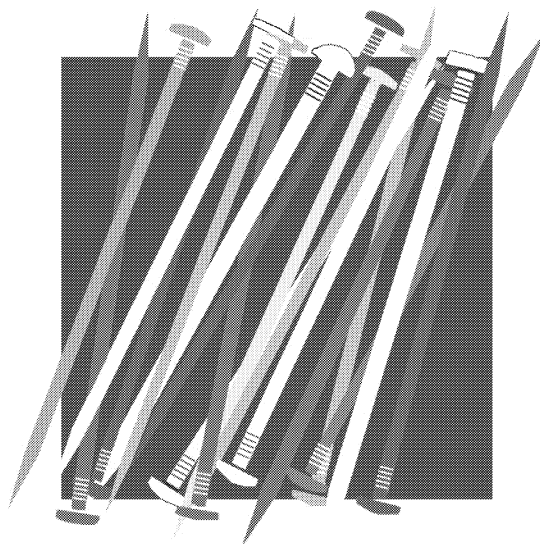

PRE-APPRENTICESHIP

BOOK 5



Carpenters Training Committee for Northern California

CARPENTERS TRAINING COMMITTEE FOR NORTHERN
CALIFORNIA

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FrameMaker™ 7.0

COURSE OBJECTIVES

This week the students will continue to work on their building project. They will perform this work, using a set of working drawings showing a building on a flat lot. The walls of the project will be framed both wood and metal. They will be building metal trusses to install the following week.

SPECIFIC OBJECTIVES

In accordance with the instructions and drawings provided and the Uniform Building Code (UBC), the student will:

1. Layout and erect the wooden walls using the dimensions given on the drawings for the project.
2. Apply proper bracing to all walls.
3. Layout and erect the metal walls using the dimensions given on the drawings for the project.
4. Layout and build the metal roof trusses using the truss details and drawings for the project.
5. Install any necessary blocking per the plans.

CARPENTERS TRAINING COMMITTEE

FOR NORTHERN CALIFORNIA

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Sexual harassment in any form or degree by an employee or apprentice against another individual, regardless of their relationship or respective status, is strictly against the policy of the Carpenters Training Committee for Northern California and will not be tolerated. Any such action or activity shall be reported immediately to the person in charge of the training facility. The matter will be promptly investigated and appropriate action will be taken. Copies of all complaints and actions are to be forwarded to the Director of Field Services.

Apprentices shall not use lewd and vulgar language while they are on the premises of the Carpenters Training Center. Any such action shall be reported immediately to the person in charge of the training facility. The matter will be promptly investigated and appropriate action will be taken.

Any person violating the above policies shall be subject to disciplinary action, which may include suspension or expulsion from the training center and/or cancellation from the program.

PRE-APPRENTICESHIP - BOOK 5**PRE-TEST**

Instructions: In the following true/false questions circle the correct answer.

1. T F It is not necessary to know the sizes of the doors and windows that will be installed, prior to framing the rough open.
2. T F 1 x 6 makes excellent header material.
3. T F Trimmers are used to strengthen the frame around a rough opening for a window or door.
4. T F A good rule of thumb when determining what size header to use is: 1 inch of depth for every foot of span.
5. T F There are three types of aviation or tin snips; left, right and straight cut.
6. T F When installing blocking, it may be necessary to use a toe nailing method to secure the blocks.
7. T F When designing roof trusses it is not necessary to know the type of roofing material to be installed on the project.
8. T F Elevation drawings show details of the terrain that the building is set on.
9. T F Orthographic drawings represent an object in 3 – D.
10. T F Most studs are framed with 16d nails.
11. T F When using two or more top plates all joints must break directly over a vertical framing member.
12. T F A power miter saw is a good tool to use when cutting multiple blocks in production framing.
13. T F When using a power miter saw, make sure that the blade is at full speed before contacting the piece of wood.
14. T F The best tool for framing metal studs is a pneumatic nail gun.
15. T F When using a power screw gun it is important to use the correct tip in relationship to the size of the screw.

PRE-TEST

16. T F The most common layout for 2 x 4 framing members is 16 o.c.
17. T F When a carpenter cannot find a dimension on a drawing it is an acceptable practice to scale the drawing with a measuring tape.
18. T F Most sheathing material comes in 4 x 8 sheets.
19. T F It is generally a good idea to wear gloves when using a skill saw
20. T F "Sinkers" are the doughnuts that are usually consumed on jobsites.
21. T F Never set up a metal chop saw in or near traffic areas.
22. T F It is never a good idea to use a metal chop saw in the presence of flammable gases or liquids.
23. T F $\frac{1}{4}$ inch to the foot is the most commonly used scale on most drawings.
24. T F All exterior metal framed walls must be engineered.
25. T F Two 16d nails are sufficient when nailing headers to king studs.

STAIRS

- What are some of the basic parts of a stair?
- Why are the actual sizes of the unit rise and unit run usually not taken directly from the plans?
- How is the unit rise determined from the total rise?
- How is the unit run determined from the total run?

INTRODUCTION

Most of the dimensions that carpenters use to build with are taken directly from the plans. However, when it comes to stairs, carpenters must often determine the exact dimensions of the components after the rough framing and sub-floors are built, see Fig. 1 below. This is done because one of the building code requirements for stairs is that the vertical sections (called risers) should be uniform in

height. Once a direct measurement between floor elevations can be taken, the size of each riser (called unit rise) can be determined. Also, the steps (called treads) are required to be uniform, making it necessary to divide the stair stringer into even horizontal sections (called the unit run). Figure 1 also illustrates the fact that on any stair with a straight run (one with no platform in the middle) there will always be one more riser than tread.

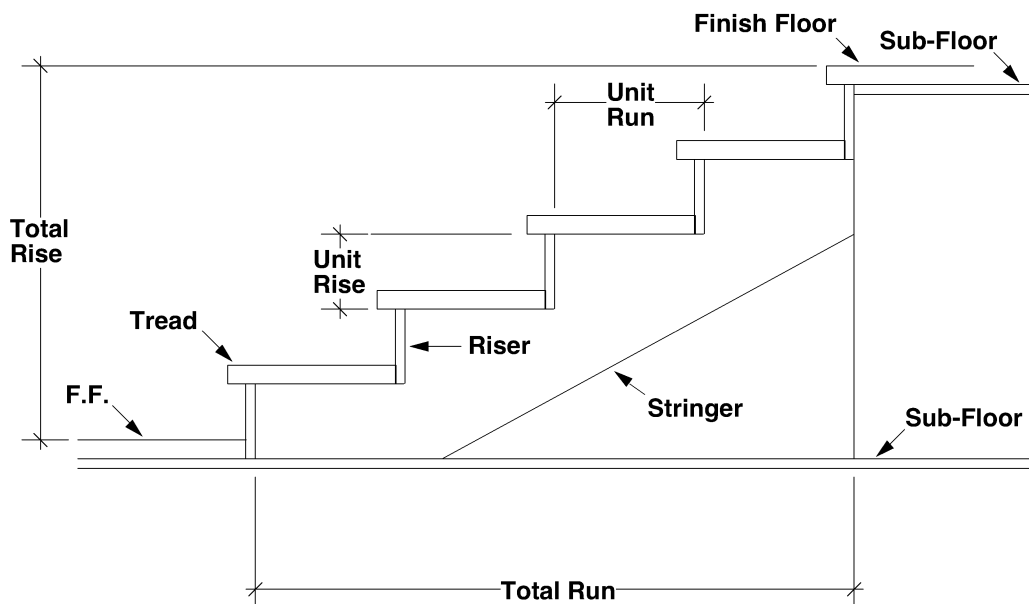
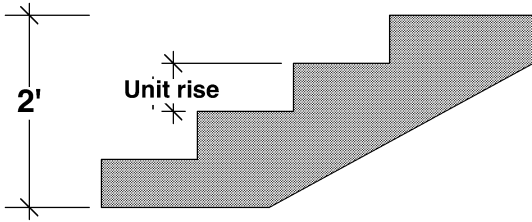


Fig. 1

Unit rise

To determine the unit rise of a stair divide the total rise by the number of risers.

Example 1:



From the illustration we can see that the total rise is 2' and that the stair will have 4 risers. The first step is to convert the total rise measurement to inches:

$$2' \times 12'' / ' = 24''$$

Next divide this number by the number of risers:

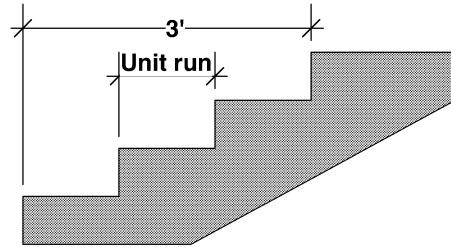
$$24'' \div 4 = 6''$$

Therefore each of the 4 risers should be 6'' tall.

Unit Run

To determine the unit run of a stair divide the total run by the number of treads.

Example 2:



From the illustration we can see that the total run is 3' and that the stair will have 3 treads. The first step is to convert the total run measurement to inches:

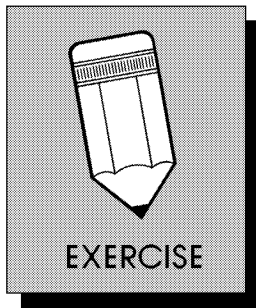
$$3' \times 12'' / ' = 36''$$

Next divide this number by the number of treads:

$$36'' \div 3 = 12''$$

Therefore each of the 3 units of run should be 12'' long.

For custom or mill built stairs it is not unusual to calculate the unit rise and run measurements to the nearest 64th of an inch. However, for most job built stairs the carpenter usually needs to be accurate only to the nearest 16th of an inch.



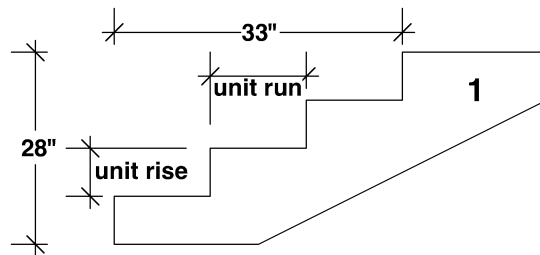
STAIRS

INSTRUCTIONS FOR EXERCISE

Determine the unit rise and the unit run for each stair. Give the answer to the nearest 16th of an inch.

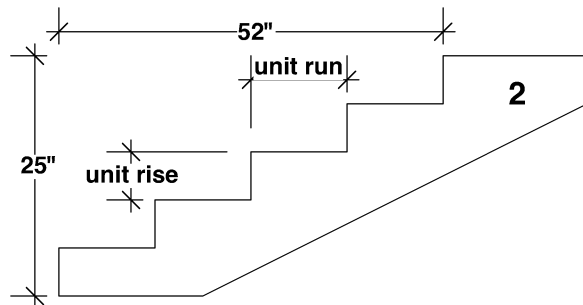
1. _____ Unit rise

_____ Unit run



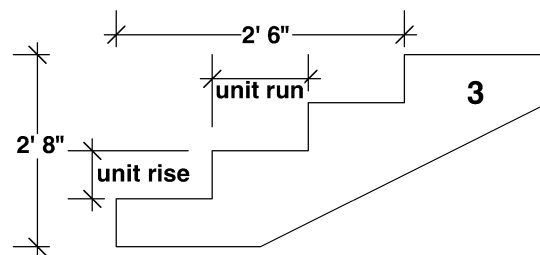
2. _____ Unit rise

_____ Unit run



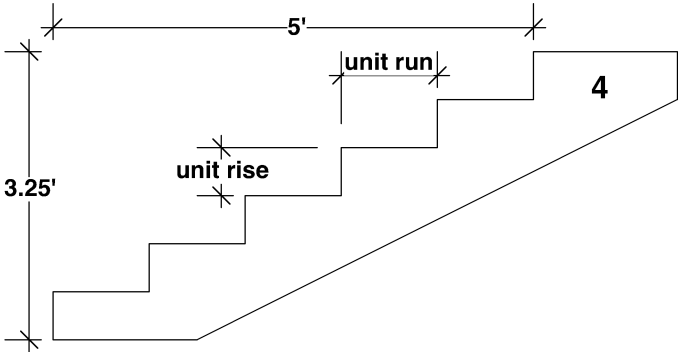
3. _____ Unit rise

_____ Unit run

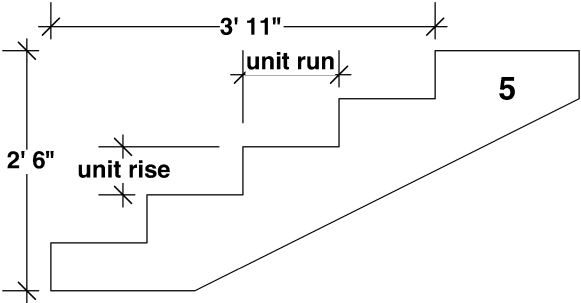


STAIRS

4. _____ Unit rise
 _____ Unit run



5. _____ Unit rise
 _____ Unit run



PERCENTS ASSIGNMENT

DEFINITION

Problems which involve profit, discount, commission and interest all require a knowledge of percentage. Percentage is a general term applied to arithmetic in which the whole, divided into 100 equal parts is used as the standard of measurement. **Percent** is another name for **hundredths**. In actually working percentage problems, the sign % or an expression 5% cannot be used; it must be converted to $\frac{5}{100}$ or .05.

Rule 1 To change from a percent to a fraction or decimal, remove the percent sign and move the decimal point two places to the left.

Example: $20.0\% = .20$ $7.0\% = .07$ $3.5\% = .035$

Rule 2 To change from a decimal to a percent, move the decimal point two places to the right and add the percent sign.

Example: $.125 = 12.5\%$ $.10 = 10\%$

Rule 3 To change from a fraction to a percent, change the fraction to a decimal containing two decimal places. Then move the decimal point two places to the right and add the percent sign.

Example: change $\frac{3}{8}$ to a percent.

$$\frac{3}{8} = 8 \overline{)3.000} \begin{array}{r} .375 \\ \underline{3.000} \\ 0 \end{array} = 37.5\%$$

TERMS USED IN PERCENTAGE

- ☞ The **Base (B)** is the whole or base on which the percentage is calculated. In the problem 67% of \$50.00 is \$33.50, \$50.00 is the base. *{hint: the base usually follows the word of}*
- ☞ The **Rate (R)** is the number of hundredth parts taken; it is expressed as a percent. In the problem 67% of \$50.00 is \$33.50, 67% is the rate. *{hint: the rate is the number with the % sign}*
- ☞ The **Percentage (P)** is the result of taking hundredth parts. In the problem 67% of \$50.00 is \$33.50, \$33.50 is the percentage or part taken. *{hint: the percentage usually follows the word is}*

Rule 4 To find the percentage, multiply the base by the rate. $P = B \times R$

Example: 15% (**rate**) of 50 hours (**base**) is what percentage of time?

$$15\% = .15 \text{ and } .15 \times 50 \text{ hours} = 7.5 \text{ hours}$$

Rule 5 To find the rate when percentage and base are given, divide the percentage by the base and express the rate as a percent. $R = P \div B$

Example: \$7.00 (**percentage**) is what percent of \$35.00 (**base**)?

$$\$7.00 \div \$35.00 = .20 \text{ ☞ } .20 = 20\%$$

Rule 6 To find the base when percentage and rate are given, divide the percentage by the rate. $B = P \div R$

Example: 30 tiles (**percentage**) are 5% (**rate**) of how many tiles?

$$5\% = .05 \text{ and } 30 \text{ tiles} \div .05 = 600 \text{ tiles}$$

PERCENTS ASSIGNMENT

Instructions: Round off your answers to two (2) decimal places.

1. CONVERT PERCENTS TO DECIMALS.

- a. 35% = .35 d. .1% = g. 3% =
b. 1.5% = e. 140% = h. 7% =
c. .84% = f. 1500% =

2. CONVERT DECIMALS TO PERCENTS.

- a. .15 = 15% d. .92 = g. 3.00 =
b. .009 = e. 1.25 = h. 2.2 =
c. .03 = f. .01 =

3. CONVERT FRACTIONS TO PERCENTS.

- a. $\frac{1}{4}$ = 25% d. $\frac{1}{10}$ = g. $\frac{1}{3}$ =
b. $\frac{7}{12}$ = e. $\frac{5}{8}$ = h. $\frac{3}{7}$ =
c. $\frac{1}{6}$ = f. $\frac{5}{6}$ =

4. FIND THE PERCENTAGE.

- a. 3% of 175 = 5.25 e. 6% of 21 =
b. 100% of 17 = f. $7\frac{1}{2}\%$ of 4 =
c. 25% of 640 = g. 12.9% of 65 =
d. 32% of 42 = h. 120% of 30 =

MATERIAL ESTIMATING

- **Why is estimating necessary?**
- **Why is it important to be accurate in estimating?**
- **What are the different types estimating methods?**
- **What math is involved in estimating materials?**

INTRODUCTION

In order stay in business, contractors must put together bids that accurately reflect the cost of labor, materials, operating expenses and allow for a profit. Generally they form their bids using either an approximate or detailed method of estimating. The approximate method is often used to decide whether a project is affordable. It is based on the past cost per square foot of building similar projects in a region. Specialty contractors and sub-contractors regularly use this method in bidding, since it enables them to estimate job costs without figuring every stick of wood or minute of work.

On projects that are unique, such as remodeling or tenant improvement, a more detailed method of estimating is often required. This involves looking at every aspect of the job including the specifications and blueprints to get a cost figure. Large contractors hire estimators or use project managers to determine their bids.

They may also call on experienced carpenters or supervisors to give them an accurate calculation of the materials or time needed to complete a job.

ESTIMATING MATERIALS

One key to producing an accurate bid is to determine the correct amount of all the different materials needed for a project. This information can usually be obtained by using the plans and specifications. However we first have to know the units by which the material is sold. Also the same material may be purchased in different units depending on the quantity needed. For example standard wall studs for large tract projects are purchased by volume, whereas, for small jobs the same studs would be purchased by the stick.

Example 1:

Order enough studs to build the wall shown in Fig. 2:

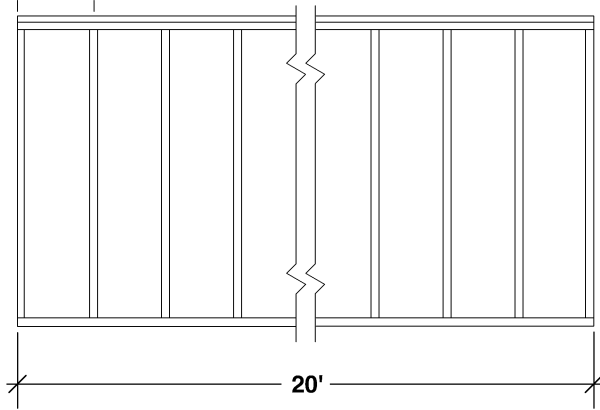


Fig. 2

To determine the number of studs needed to frame the wall at 16" on center, first, divide 12" by 16" to calculate the number of studs per foot:

$$12'' \div 16'' = \frac{3}{4}'$$

Next, multiply this result by the length of the wall:

$$\frac{3}{4}' \times 20' = 15$$

Finally add the starter stud to this result:

$$15 + 1 = 16$$

So, to build this wall, we would need 16 standard studs.

Sometimes the same object could be ordered in one of several different units depending on its finale finish.

Example 2:

Order enough riser material to build the set of stairs shown in Fig. 3:

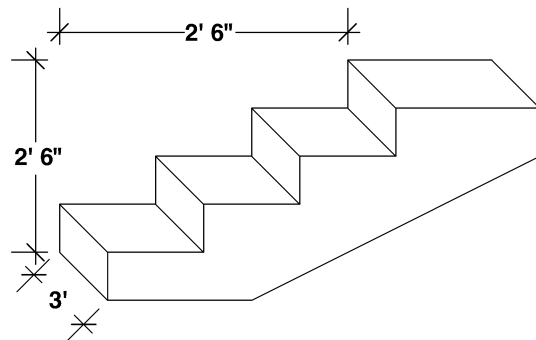


Fig. 3

The units used to order the riser material for the stairs will change depending on the finish. If the specs called for pre finished riser boards, we would just count the number of riser shown in the illustration or on the plans and order 4 pieces.

If the stairs will be covered in carpet, then the risers will be made from plywood or OSB and the surface area of the four risers would need to be calculated. First, convert the total rise dimension from feet and inches to feet:

$$2' 6'' = 2.5'$$

Then, multiply the total rise by the width:

$$2.5' \times 3' = 7.5 \text{ sq. ft.}$$

Since a sheet of plywood is equal to 32 sq.ft., one quarter sheet would be enough for all of the risers.

If the riser boards are to be cut from dimensioned lumber, first calculate their width by dividing the total rise, in inches, by the number of risers:

$$2' 6'' = 30''$$

$$30'' \div 4 = 7.5''$$

Next, multiply the width of the stair by the number of risers to determine the length of the riser board material need:

$$3' \times 4 = 12'$$

So, to cut all the risers from one board, we would need a 1 X 8 slightly longer than 12'. The extra length is needed to account for loss of material when it is cut into 4 pieces.

PERCENT

As the last example illustrates, to account for the waste that comes from the building process contractors must often order extra material.

Usually this amount is figured as a percent of the total. Percent means out of 1 hundred, as in 100 cents in a dollar. 10% extra is often used by carpenters because it usually results in enough material, for most jobs, and it is the easiest percentage to calculate. To calculate 10% of any number just move the decimal point to the left by one place.

Example 3:

Determine the square footage of the flooring material needed for the room of Fig. 4 and add 10% for waste:

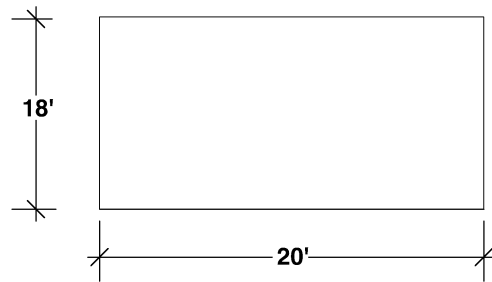


Fig. 4

First, get the area of this room by multiplying the length times the width:

$$A = L \times W$$

$$A = 20' \times 18'$$

$$A = 360 \text{ sq. ft.}$$

Next, calculate 10% by moving the decimal point of the number for the area to the left one place:

$$10\% \text{ of } 360 = 36.0_{\leftarrow} = 36_{\circ}$$

Finally, add the two numbers together:

$$360\text{sq.ft.} + 36\text{sq.ft.} = 396\text{sq.ft.}$$

So, to cover the floor and account for waste, we would order 396 sq.ft. of flooring material.

It is also very easy to calculate 1% of any number. Just move the decimal point of that number two places to the left. For the floor of Fig. 4 that would be:

$$1\% \text{ of } 360 = 3.60_{\leftarrow\leftarrow} = 3.6$$

So, 1% of 360 sq.ft. is equal to 3.6 sq. ft. Once we have calculated 1% of a number we can easily determine any other percentage for the same number. Just multiply the 1% figure by the desired percent. So, if we wanted to order

an extra 15% of flooring material, instead of 10%, for the room of Fig. 4 we could multiply our 1% figure by 15:

$$3.6\text{sq.ft.} \times 15 = 54\text{sq.ft.}$$

Then add this number to our original floor space:

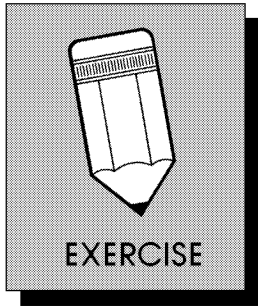
$$360\text{sq.ft.} + 54\text{sq.ft.} = 414\text{sq.ft.}$$

The 3 steps that it took to get to this result can be combined into one by adding a **one and a decimal point (1.)** in front of the desired percent. Then multiplying the original floor area by that number:

$$1. + 15\% = 1.15$$

$$360\text{sq.ft.} \times 1.15 = 414\text{sq.ft.}$$

As just these few examples illustrate, estimating can involve any of the math and plan reading processes covered in this book, from counting and measuring to volume and weight calculations.



MATERIAL ESTIMATING

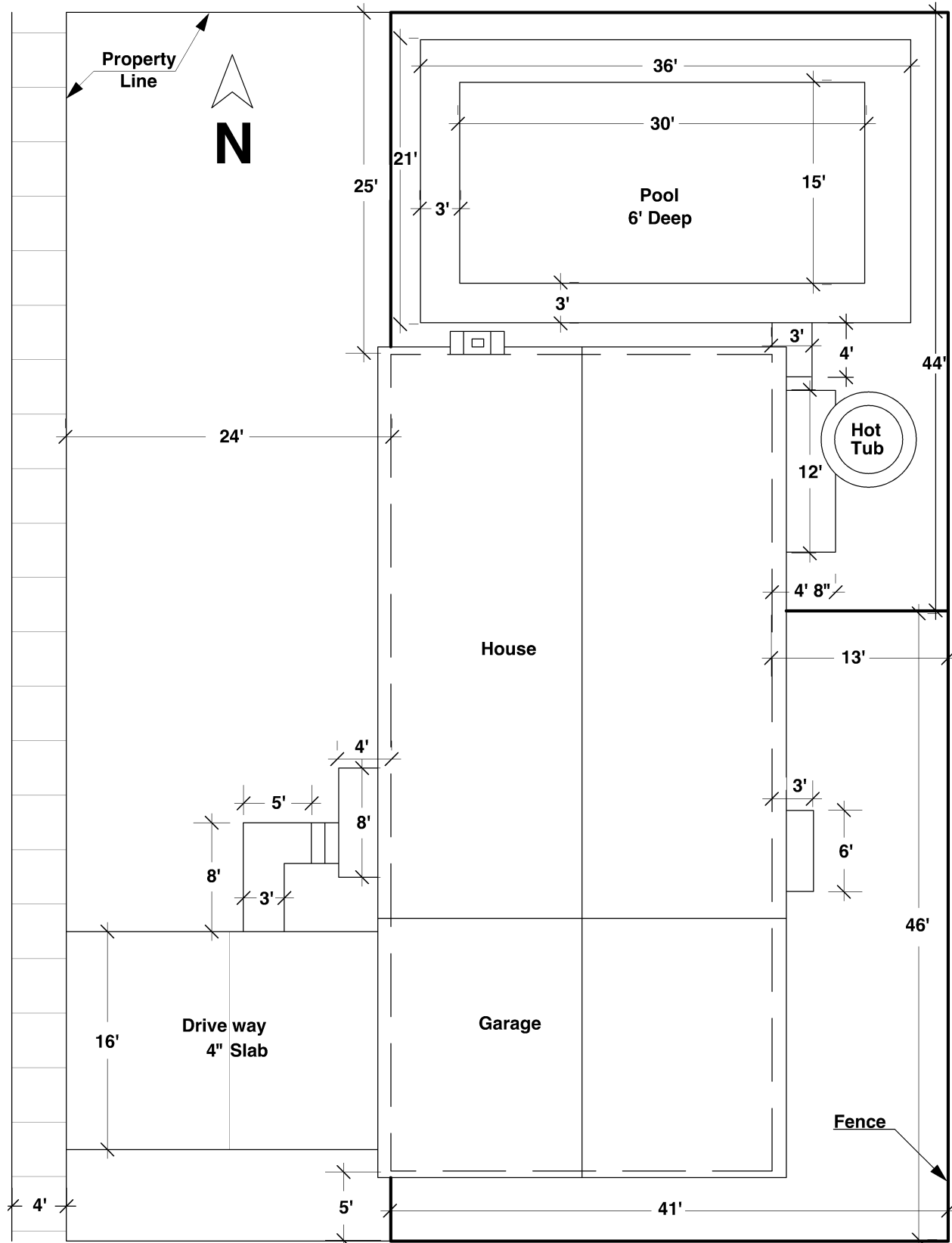
INSTRUCTIONS FOR EXERCISE

Use the plans on the following page to determine the amount of material needed for each question.

1. How many lineal feet of temporary fencing are needed to enclose the entire property?

2. How many cubic yards of material must be excavated for the pool?

3. How many square feet of tile are needed to form the pool deck?

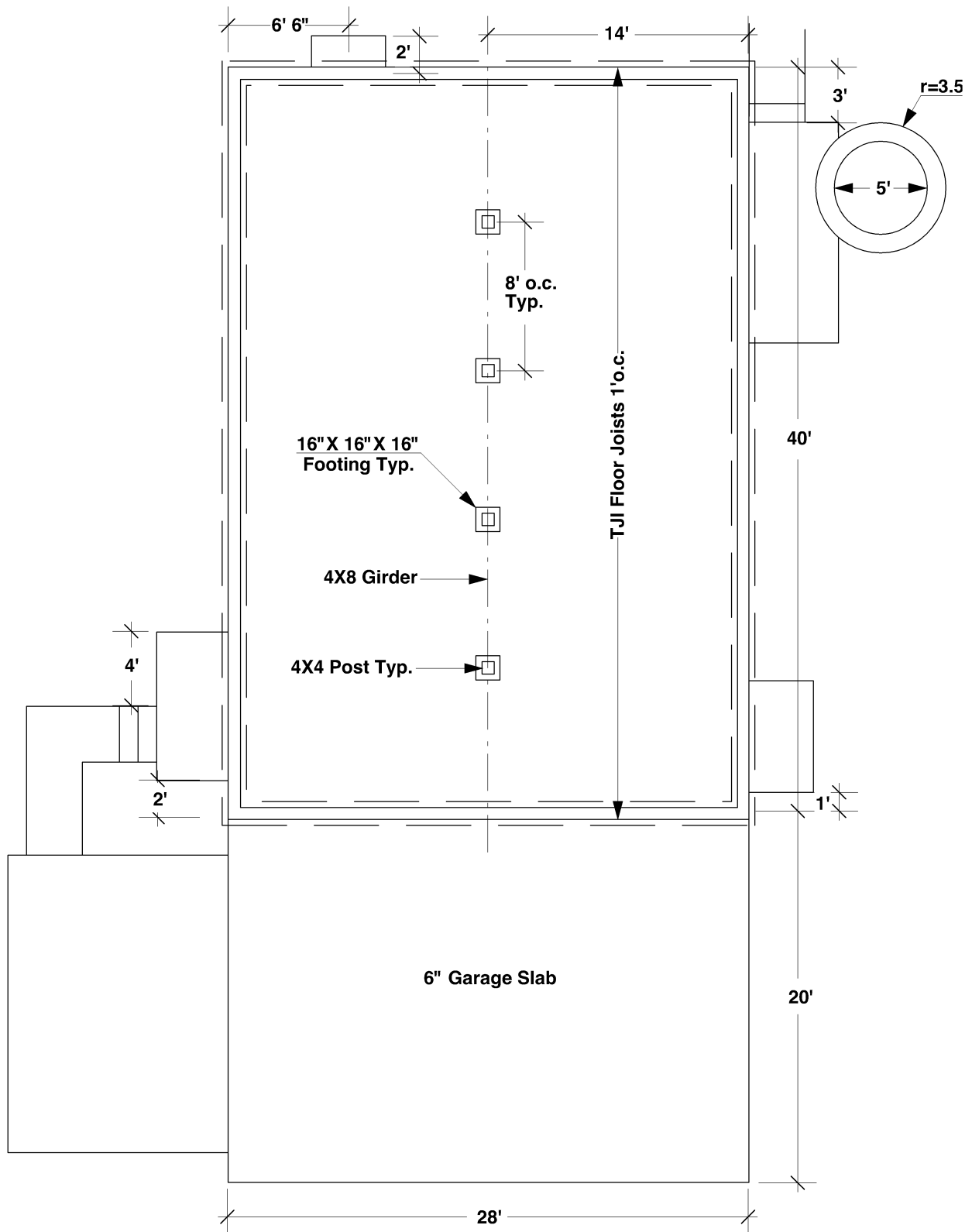


Plot Plan
Scale $\frac{3}{32}'' = 1'$

4. How many feet (round up to the nearest foot) of bender board are needed to form the slab that rings the hot tub?

5. How many lineal feet of TJI joists are needed for the first floor?

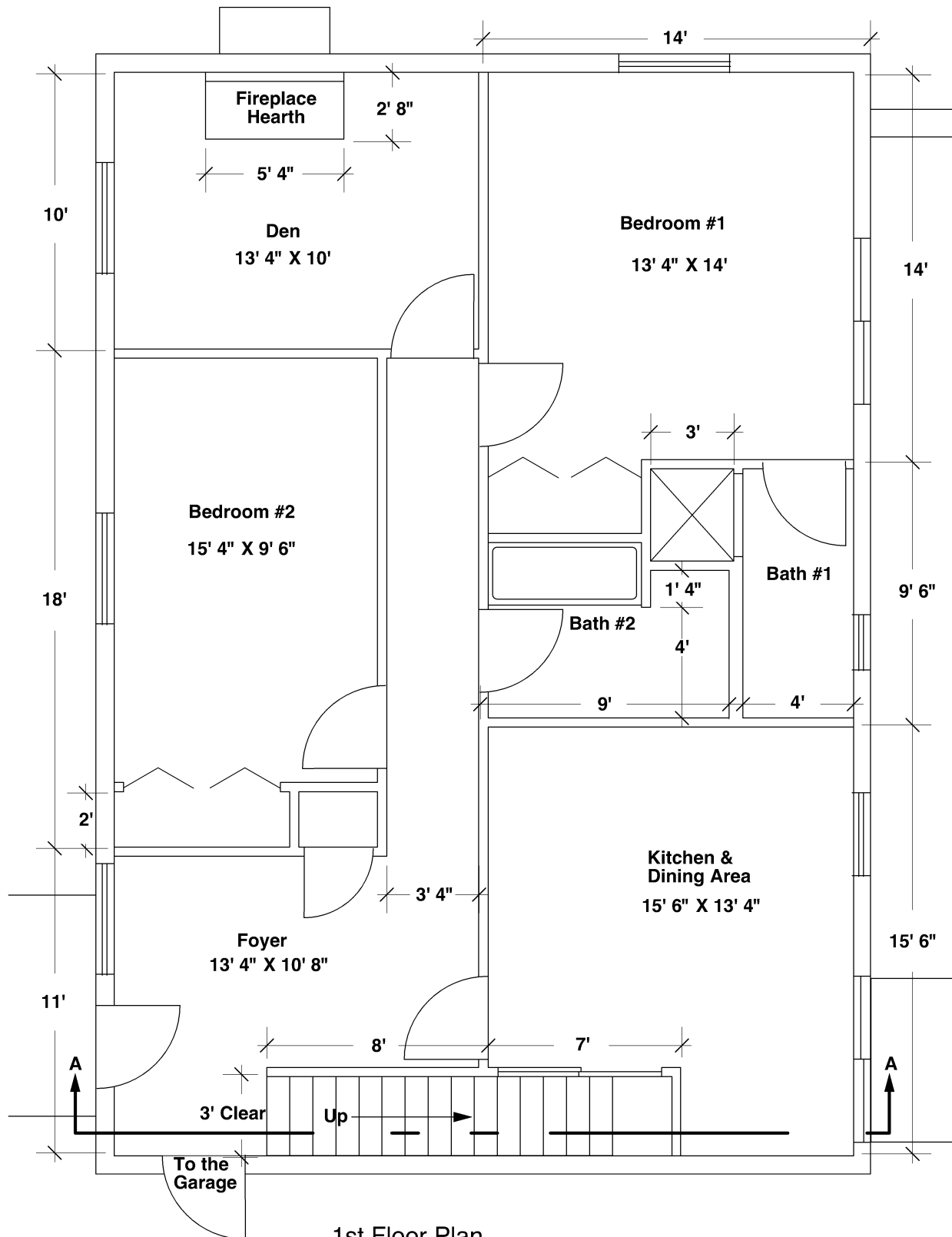
6. How many cubic yards of concrete (round up to the nearest $\frac{1}{2}$ cu.yd.) are needed for the garage slab?



Foundation Plan
Scale 1/8" = 1'

7. How many 4"x 8" bricks are needed for the fireplace hearth?

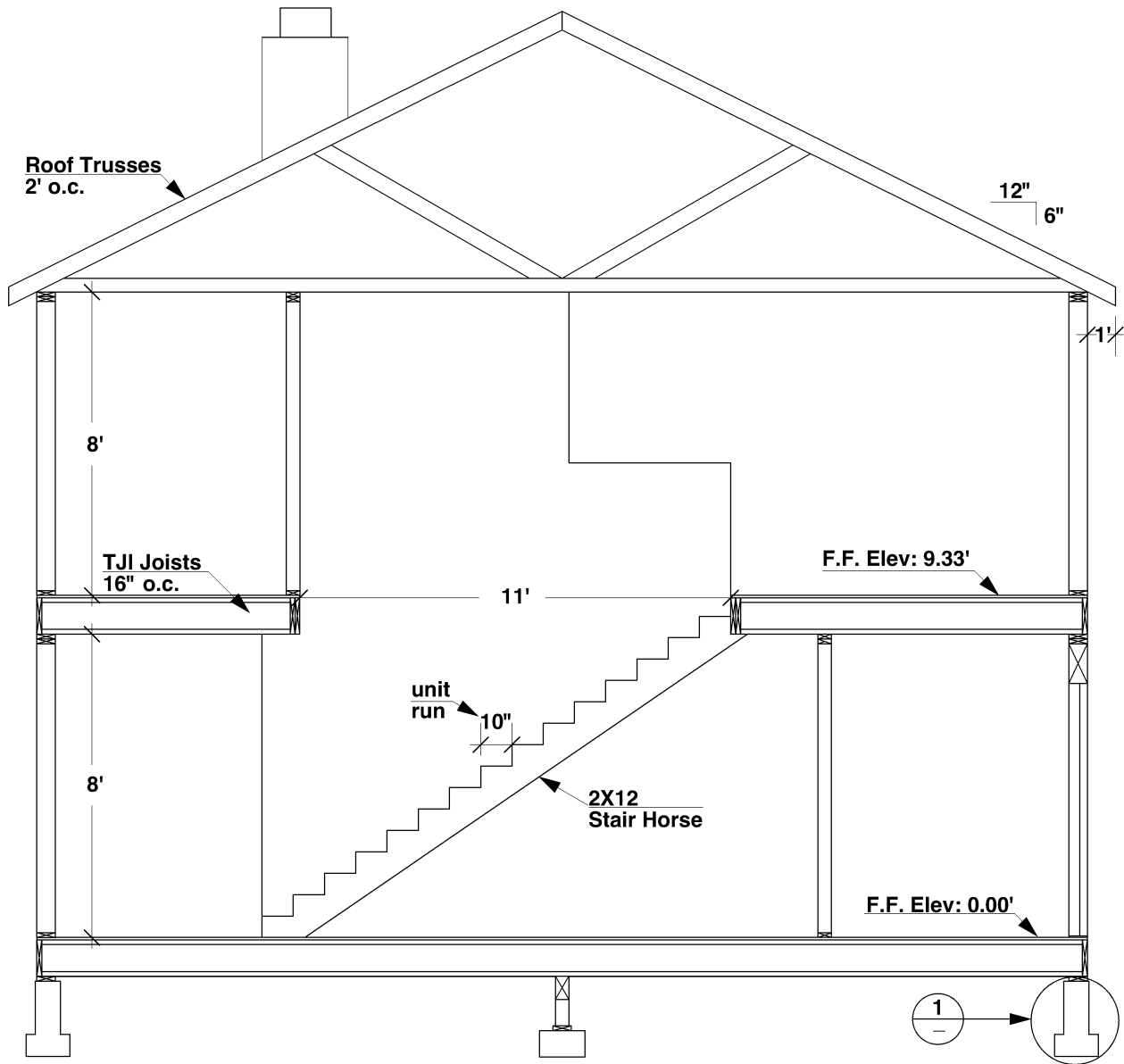
8. How many studs are in the wall (framed at 16" o.c.) between the den and bedroom #1?



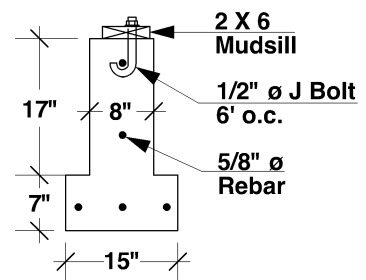
1st Floor Plan
Scale 3/16" = 1'

9. How many cubic yards of concrete (round up to the nearest $\frac{1}{2}$ cu.yd.) are needed for the inverted T foundation?

10. What is the minimum number of J bolts needed to anchor the building to the inverted T foundation? (Round up to nearest whole number and add one extra per wall and one extra per exit.)



A Structural Cross Section
Scale: 1/4" = 1'



1 Foundation
Scale: 1/2" = 1'

.....
Instructions: Determine the percent rounded to two decimal places.

11. 10% of 365 _____

12. 1% of 5,280' _____

13. 5% of 2,000# _____

14. 12.5% of 8cu.yd. _____

15. You earn \$896.00 a week. How much taxes are taken out, if the overall tax rate of 28%?

16. A check cashing business charges you 18% to cash your \$645.12 pay check. How much of your money will they give you?

MATERIAL ESTIMATING

Instructions: Use the plans to answer the remaining questions.

17. Concrete costs \$110.00/cu.yd. plus a 7.5% sales tax. What is the cost of the concrete needed to place the 4" thick sidewalk in front of the property? (Round to nearest whole cu.yd.)

18. The garage slab will be placed against the house foundation. Calculate how many feet of form board should be ordered to allow for 5% waste?

19. Interior pre hung doors cost \$64.95 plus a 8.25% sales tax. What is the total cost for all of the first floor interior pre hung doors? (Exclude the door to the garage.)

20. How many 4 x 8 plywood sheets should be ordered to cover both floors with 10% waste allowance?

PRE-APPRENTICESHIP - BOOK 5

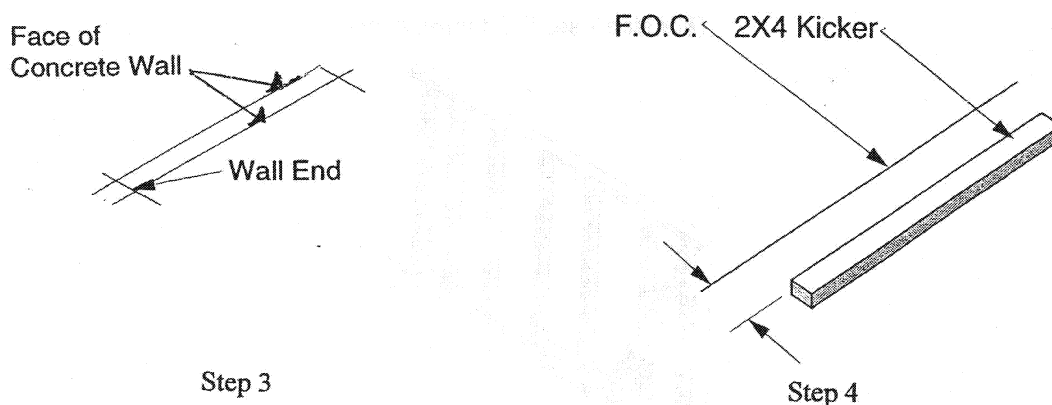
BASIC WALL FORMS

PROCEDURES:

Use the plan and form details provided and the following directions to build a double waler form. The order in which the forms are erected is very important. The basic sequence is as follows: First completely erect, brace and plumb the outside form panels. Then install the bulkheads and establish the top of concrete (TOC). At this point on the job site, the iron workers will install the reinforcing steel. Then the carpenters will double up the inside form panels, finish installing the walers and install the lacing.

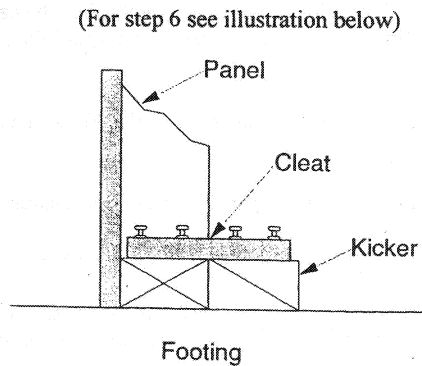
1. Using 2 x 4 material and 16d common nails build (4) frames measuring 8' x 8'.
Studs should be located at 16" o.c.
2. Nail the pre-drilled 4 x 8 plywood panels to the frames using 6d common nails.
3. Layout and snap lines for each inside face of the 8 x 16 wall.
4. On the floor, measure back from the outside concrete wall face the thickness of the panel ($4 \frac{1}{8}$ "). Use a powder actuated tool or rotor hammer and nails to fasten the 2x4 kickers to the floor.

For steps 3 & 4 refer to the examples illustrated below:



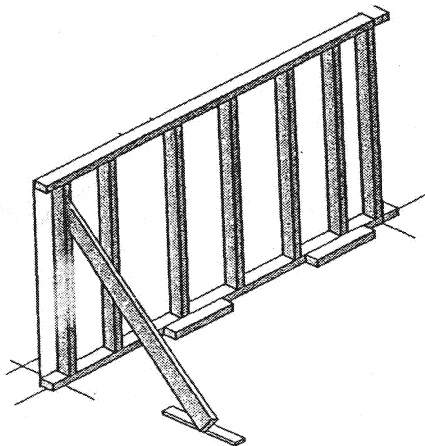
5. Place the wall form panels against the kicker block that has been fastened to the floor. Hold the bottom plate of the panel against the position block kicker and fasten them together with a 3" x 7" plywood cleat using duplex nails.
6. Place a 2 x 4 kicker in the center and approximately 2 feet in from either end of the wall form. Using the plywood cleats and 8d duplex nails tie the bottom plate of the form to the 2 x 4 kickers on the floor.

For step 6 see illustration below:



7. Install a brace with turnbuckle at each end of the panels and space them approximately 5 to 6 feet apart. Position the top of the brace within the top one third of the panel. It should be placed so that it just below and clears the top pair of walers. The brace slope for this process is 1 to 1, meaning for every foot high the bottom of the brace needs to go away from the form the same distance.

For step 7 see illustration below:

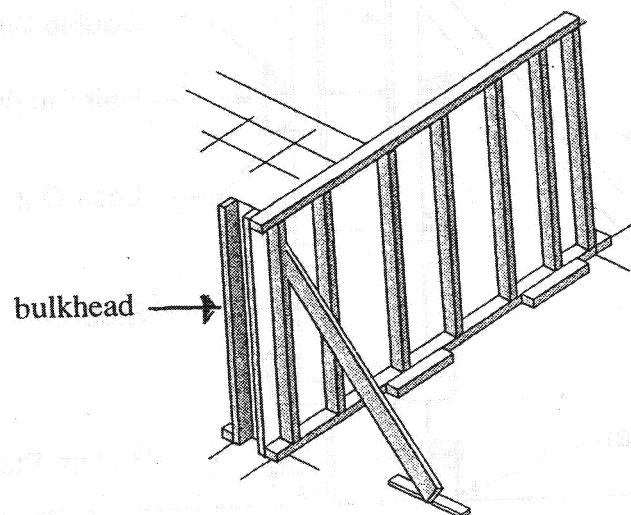


8. Adjust the turnbuckle on the brace so that there are even threads both top and bottom of the brace. There are 5 1/2 inches of adjustment on the brace. Bring the panel to rough plumb and secure the bottom of the brace with 16d duplex nails.
9. Using a plumb bob or level, plumb the ends of the wall by adjusting the turnbuckle.
10. Using a string line align the rest of the wall.
11. With a laser level, layout T.O.C. (top of concrete) on the inside of the forms. Snap a chalk line and nail a pour strip to the line. If chamfer is required nail the chamfer below the chalk line with 3 penny blue lath nails spaced 6 to 8 inches on center.

Building and Installing the Bulkhead

1. Rip 2 pieces of plywood to the net width of the concrete wall. (8 inches x 8').
Nail a 2x4x8" flush to the side of each piece of plywood using 4d. common nails.
2. Use a plumb bob or a level to transfer the wall end layout line from the floor to the top of the outside panel. Mark the line with a chalk line.
3. Hold the bulkhead in position and nail it to the outside form. In order to ensure a good seal nail through the outside form plywood into the bulkhead with 8d duplex nails spaced 6 to 8 inches o.c.

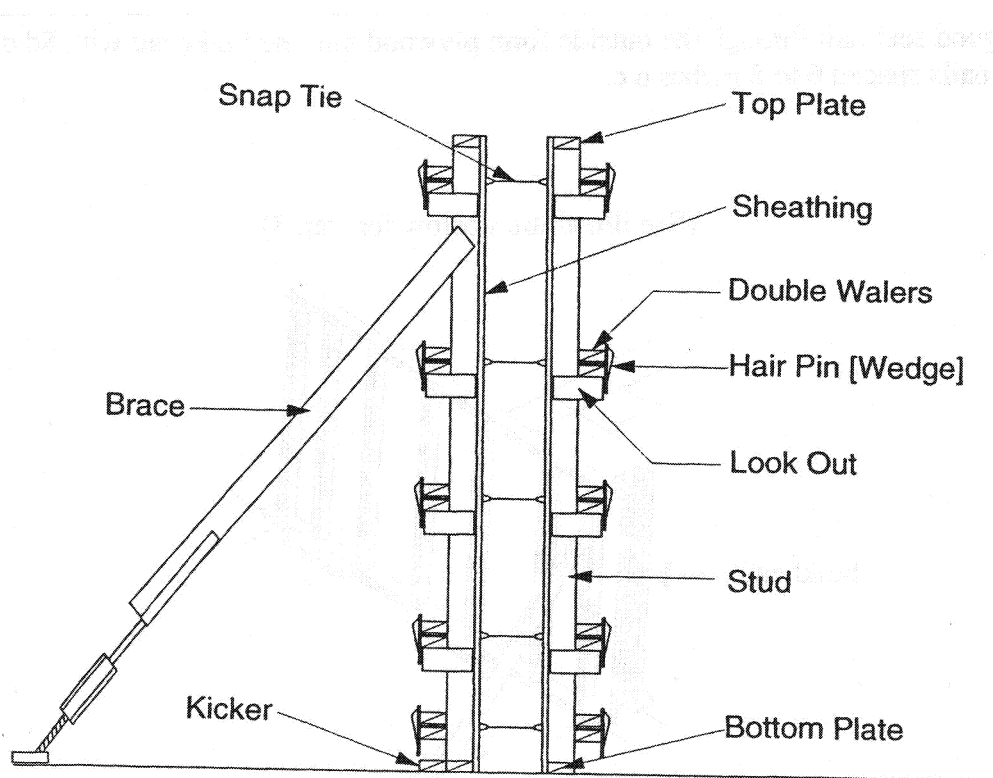
For step 3 see illustration below:



Doubling Up the Wall Forms

1. When the outside wall forms are completely lined and braced layout on the ground the end of the first inside panel and insert the snap ties into the outside form.
2. Place the bottom of the first inside panel across from the outside panel making sure that it is lined up to the layout mark for the end of the wall. Tip the top of the panel back and insert the snap tie in the bottom row of holes. Insert the snap ties in each row in turn. Push the panel tight against the snap tie cones.
3. At the top of the panel use a cleat at each end to secure the inside panel to the outside panel. For this lesson the wall thickness is 8 inches. The inside and outside panels are spaced at 8 inches apart with a cleat.
4. Do not fasten the panel bottom plate to the footing or floor.
5. Erect the remaining panel. Fasten the panels together using 16d duplex nails through the studs that touch each other on each end of the panels. Be sure that the panel faces are flush. Be sure the panel joint is tight to prevent cement from leaking through during the pour.

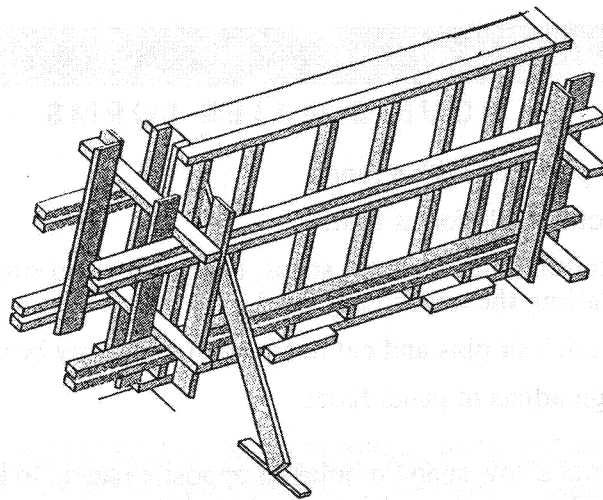
For step 5 see illustration below:



Installing the Walers

1. You must support each row of walers with brackets. Install waler brackets at each end of the wall and at 4 feet on center. Nail the brackets to the side of the stud with 3- 8d duplex nails.
2. Install the walers on the outside first. Place the walers on the brackets making sure to extend the walers past the end of the wall by about 1 foot.
3. If the lumber is not long enough to span the entire wall and breaks are necessary, the breaks must be staggered by at least two snap ties.
4. Install the hairpins and tighten. Do not over-tighten, it can weaken the snap tie.
5. Tack hairpins to the walers with a 6d duplex nail. The nail only prevents the hairpin from vibrating loose during a pour so do not drive it home.
6. Install the walers on the inside of the form following the procedures in steps 1-5.

For step 6 see illustration below:

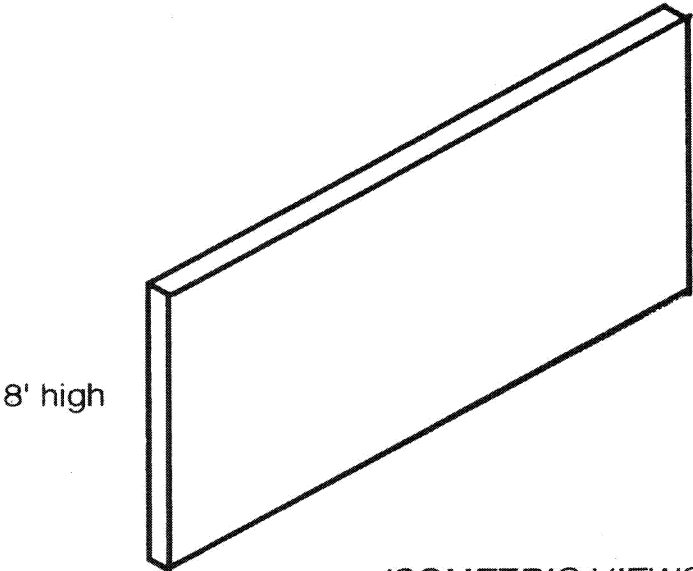
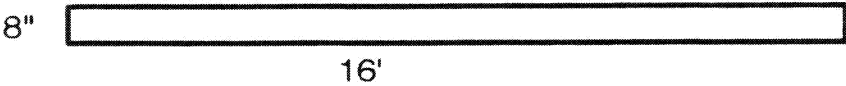


7. Lace the bulkheads with 2-1x6. Nail the 1x6 to each pair of walers with 3-8d. duplex nails.
8. At the wall ends place a 2x4 on top of and at right angles to each pair of walers. Extend the 2x4 8 to 12 inches past the walers.
9. Lace in both directions and both sides with 1x6 using 3-8d. duplex nails at each waler pair.
10. If there is a gap between the 1x6 and the 2x4 , wedge with a feather wedge to tighten up the gap.
11. Recheck plumb and alignment. (This step is to insure the panels did not move during the erection process.) For this lesson we will use the American Institute of Architects AIA which states that “Variations in the lines and surfaces for concrete columns, piers and walls may be $\frac{1}{4}$ inch in any 10' length and a maximum variation of 1 inch along the entire length”.

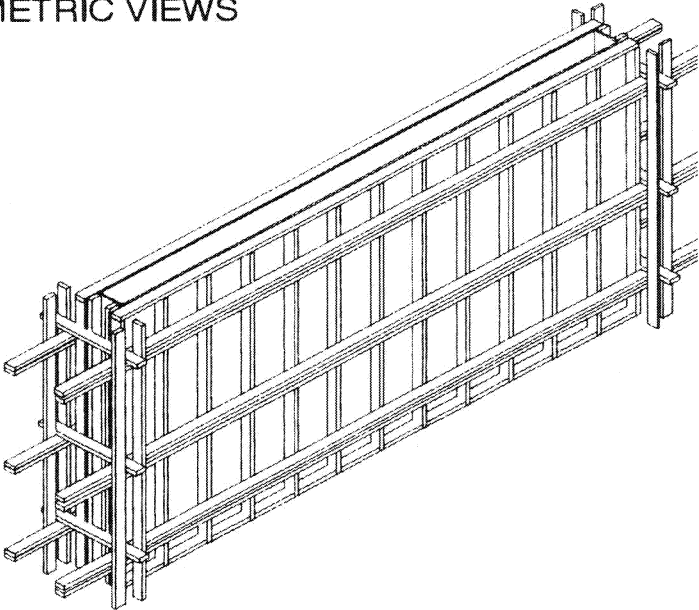
12. Finally we will determine the concrete volume required using the formula $V = L \times W \times H$, calculate the volume in cubic feet. Convert the answer into cubic yards by dividing by 27 cubic feet per cubic yard. Round off to the nearest one half yard.

<i>DO's&DONT'sDO's&DONT'sDO's&DONT'sDO's&DONT'sDO's&DONT'sDO's&DONT'sDO's&DONT'sDO's&DONT'sDO's&DONT's</i>	
DOUBLE WALER FORMS	
Do's	<ul style="list-style-type: none">• Cut plywood with a fence.• Erect outside forms first.• Install bulk heads, pour strips, block outs, and rustication strips before installing the reinforcing steel.• Secure hair pins and cat heads with a 6 penny box or 8 penny duplex nail.• Align adjacent panel faces.
Don'ts	<ul style="list-style-type: none">• Do not allow snap tie holes in opposite panels to be offset.• Do not fasten panel bottom plate to the footing.• Do not over tighten cat heads.• Do not allow gaps at panel joints.

PLAN VIEW




ISOMETRIC VIEWS



NOTES:

ATTITUDE IS EVERYTHING

ATTITUDE IS EVERYTHING



EVERYTHING YOU NEED TO KNOW TO
BE A SUCCESSFUL APPRENTICE
(BUT DIDN'T KNOW TO ASK)

By:

Carpenters Training Committee for Northern California (CTCNC)

Attitude is Everything

ATTITUDE IS EVERYTHING

What does that mean?

It means that having a good attitude is a big factor in being a successful apprentice

Most employers care more about attitude than they do about the mechanical ability of an apprentice--remember, you are not expected to know everything.


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Attitude is Everything

ATTITUDE IS EVERYTHING

How can I display a positive attitude?

- ◆ Show up every day--jobs have schedules that they have to meet and they are counting on you being there.




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Attitude is Everything

ATTITUDE IS EVERYTHING

How can I display a positive attitude?

- ◆ Show up early
- ◆ Keep busy--look for things to do without being told




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Attitude is Everything

ATTITUDE IS EVERYTHING

How can I display a positive attitude?

- ◆ Do what you are asked to do -- there are no "menial" tasks



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Attitude is Everything

ATTITUDE IS EVERYTHING

How can I display a positive attitude?

- ◆ Ask questions and go beyond the minimum that is asked of you
- ◆ Ask to work on different phases of the project
- ◆ Buy the tools you need and take care of them
- ◆ Work outside your comfort zone

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Attitude is Everything

ATTITUDE IS EVERYTHING

How can I display a positive attitude?

- ◆ Watch what you say
- ◆ Do not talk trash about the other workers or bosses
- ◆ Keep your personal life and your work life separate


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Attitude is Everything

ATTITUDE IS EVERYTHING

How can I display a positive attitude?

- ◆ Work well with others, pay no attention to other's race, religion or gender--leave your prejudices at home



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Attitude is Everything

ATTITUDE IS EVERYTHING

What causes people to get laid off?

- ◆ Poor performance
- ◆ Not working well with others
- ◆ Not following instructions
- ◆ Missing time
- ◆ Too many personal issues
- ◆ The completion of the project

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Attitude is Everything

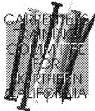
ATTITUDE IS EVERYTHING

REMEMBER

Attitude is often the deciding factor when determining who gets laid off

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Attitude is Everything



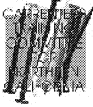
THE END

B:

Carpenters Training Committee For Northern California (CTCNC)

HAZARD COMMUNICATIONS

Up next . . .



Hazard Communication

by
Carpenters Training Committee for Northern California (CTC/N/C)

What We Are Going To Talk About

- ◆ Hazard communication
- ◆ “Right to Know Law”
- ◆ MSDS
- ◆ Hazards of chemicals

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Hazard Communication

Introduction

Employee Rights

- ◆ Safe workplace
- ◆ Healthful workplace

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Hazard Communication

Employee Rights

- ◆ Hazard Communication Law
 - Federal Law
 - Enforced by OSHA
- ◆ Called “Right to Know” Law

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Hazard Communication

Hazard Communication Law

- ◆ Written HazCom program
- ◆ Use labeled products
- ◆ Provide MSDS
- ◆ Provide information & training

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Hazard Communication

Employee Rights

“Right to Know”

- ◆ Hazardous Chemicals
- ◆ Hazardous Materials
- ◆ Possible Health Problems

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Hazard Communication

MSDS

Provided by Employer for:

- ◆ Every chemical
- ◆ All other hazards

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Hazard Communication

MSDS

Must be:

- ◆ Available to every employee
- ◆ Accessible
- ◆ Current

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Hazard Communication

MSDS

- ◆ Identify hazardous substances
- ◆ Identify chemical hazards
 - Physical hazards
 - Chemical hazards
- ◆ Develop safe work practices

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Hazard Communication

MSDS
Must have specific information

Material Safety Data Sheet Manufacture's Name Product Name Physical Hazards Health Hazards	Symptoms of Exposure Safe Handling & Use Protective Measures
---	---

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Hazard Communication

Product Labels
First source of information

- ◆ Warning Use some care
- ◆ Caution There is more risk
- ◆ Danger Severe threat

The Carpenters Training Committee For Northern California (CTC/NCC)

Hazard Communication

Product Labels

- ◆ Product name
- ◆ Manufacturer
Name, address, & telephone number
- ◆ Product hazards
Warning Target organs
Physical hazards Protective equipment
Health hazards First aid

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What We Are Going To Talk About

Job Site Chemicals

- ◆ Can harm workers
- ◆ Can harm worker's families

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Hazard Communication

Chemical Hazards

- ◆ Physical hazards
 - Fire
 - Explosion
 - Violent chemical reaction

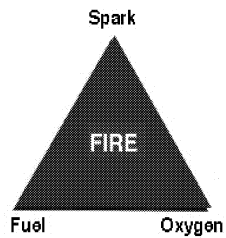
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Hazard Communication

Physical Hazard

Fire

Fire Triangle

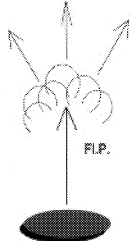


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Hazard Communication

Physical Hazard

Flash point





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Hazard Communication

Physical Hazard

Fire

- ◆ **Flammable** 
 - Fl. P. < 100° F
- ◆ **Combustible** 
 - Fl. P. 100° F to 200° F

Fire Hazards

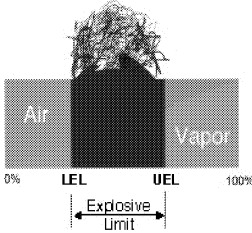
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Hazard Communication

Physical Hazard

Explosion

Upper & Lower Explosion Limits

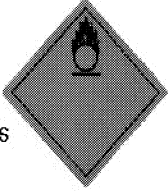


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Hazard Communication

Physical Hazard

Reactive




Reacts with other chemicals
Oxygen
Heat

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Hazard Communication

Physical Hazard

Corrosive



Contact with
Skin
Eyes

Acids & bases

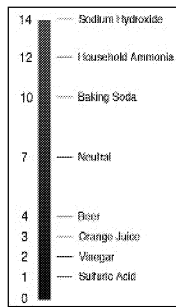
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Hazard Communication

Physical Hazard

Corrosive

pH Scale



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Hazard Communication

Chemical Hazards

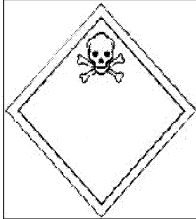
- ◆ Health hazards
 - Illness
 - Injury

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Hazard Communication

Health Hazard

- Toxic
- Poison
- Harmful to body
 - Inhaled
 - Swallowed
 - Absorbed



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Hazard Communication

Health Hazard

- Dose
 - How much
- Exposure
 - How long

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Hazard Communication

Health Hazard

Health Effects

- ◆ Acute
Short term
- ◆ Chronic
Long term

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Hazard Communication

Health Hazard

Permissible Exposure Level

- ◆ Amount of chemical an average worker can be exposed to without harm

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Hazard Communication

Health Hazard

Exposure Terms

- ◆ PEL
Permissible Exposure Level
- ◆ TWA
Time Weighted Average
- ◆ TLV
Threshold Limit Value

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Hazard Communication

Health Hazard
More Exposure Terms

- ◆ TLV-C
Ceiling Value
- ◆ Skin "S"
Absorbed Through Skin/Eyes
- ◆ Ca
Causes Cancer

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Hazard Communication

Health Hazard
PEL & Toxicity

Material	PEL (PPM)
Toluene	100
Benzene	10

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Hazard Communication

Health Hazard
PEL & Toxicity

Q. Which material is more toxic?
PEL = 1000 ppm
PEL = 150 ppm
PEL = 25 ppm
PEL = 1 ppm

A. PEL = 1 ppm
A low concentration can hurt you.

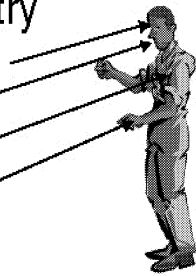
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Hazard Communication

Health Hazard

Routes of Entry

Absorption - Skin/eyes
Ingestion - Mouth
Inhalation - Lungs
Puncture - Wound



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Hazard Communication

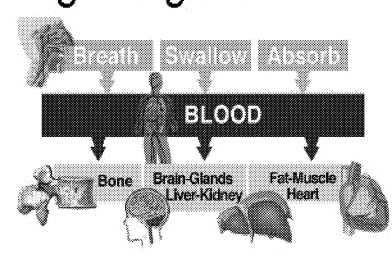
Health Hazard

Target Organs

Breath Swallow Absorb

BLOOD

Bone Brain-Glands Fat-Muscle
Liver-Kidney Heart



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Hazard Communication

Chemicals

What can make a chemical dangerous?

- ◆ Melting point
- ◆ Vapor density
- ◆ Boiling point
- ◆ Vapor pressure
- ◆ Specific gravity

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Hazard Communication

Chemicals
Solid - Liquid - Gas

HEAT

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Hazard Communication

Chemicals
Specific Gravity

Lighter than water **Heavier than water**

Floats **Sinks**

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Hazard Communication

Chemicals
Vapor Density

Lighter than air
Rises

Heavier than air
Sinks

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Hazard Communication

Review

- ◆ What is "Right to Know" law?
Hazard Communication Law
- ◆ The "Right to Know" what?
Hazards of job site chemicals.
- ◆ The employer provides what?
Information & Training

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Hazard Communication

Review

- ◆ Information on chemical hazards?
MSDS
- ◆ Information on health hazards?
MSDS

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Hazard Communication

More Review

- ◆ MSDS available to all employees?
Yes
- ◆ How about shift work?
Yes, all workers, all shifts.

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Hazard Communication

Still More Review

What are the 2 chemical hazards?

- ◆ Physical hazards
- ◆ Health hazards

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Hazard Communication

Last of the Review

Q. Which chemical is more dangerous?

PEL = 500 ug/m³
PEL = 75 ug/m³
PEL = 1 ug/m³
PEL = 0.5 ug/m³

A. PEL = 0.5 ug/m³
Lowest concentration.

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Hazard Communication

CARPENTERS TRAINING COMMITTEE FOR NORTHERN CALIFORNIA

LEAD AND ASBESTOS HAZARDS

- What are lead and asbestos?
- Why are lead and asbestos dangerous?
- Why are they present on our worksite?

INTRODUCTION

Lead and asbestos are two hazards a carpenter may encounter during the maintenance, remodel, or demolition of an old building. They are especially dangerous because we can not see them. Any building constructed before 1980 is likely to have lead paint or asbestos products. The carpenter can inhale both as air borne dust or ingest them by not washing hands before eating or smoking.



Fig. 1 Warning Signs

No parent will expose their child to danger. We do not bring our little ones to the job and allow them to play on the floor while we do our work. Likewise, we do not want to bring the hazards of the job site into our homes. Since lead dust and asbestos fibers are invisible, we are unaware of their presence on our clothing; and

we can bring these workplace hazards home to our children and spouses.

LEAD AND ASBESTOS HAZARDS

Will lead and asbestos containing materials on the jobsite always harm you? No, undisturbed they are not dangerous. Both lead and asbestos are dangerous as dust. They can be inhaled into the lungs or ingested because of poor personal hygiene.

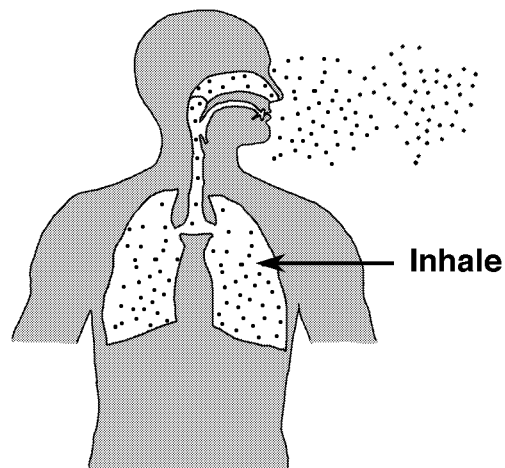


Fig. 2 Inhalation

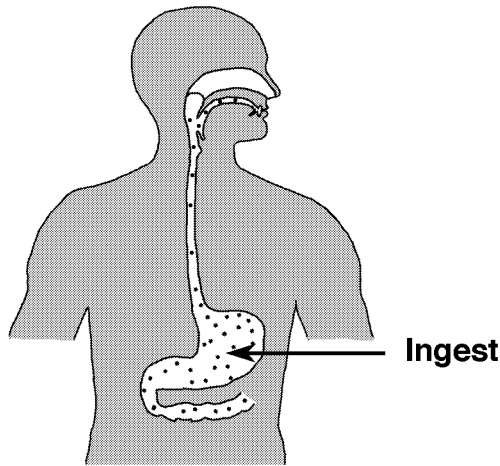


Fig. 3 Ingestion

Lead Hazard

Lead is toxic if you inhale or swallow it. It enters the blood from the lungs or stomach and is distributed throughout the body. It can cause severe anemia and harm reproduction. It can damage your kidneys, brain and nervous system. The first sign of severe poisoning may be an upset stomach (cramps), weakness, joint pain, or being tired. (However lead can harm you even if you don't show these systems at first.) Many of these symptoms can be mistaken for flu.



Fig. 4 Toxic Warning

A study by federal OSHA shows that children of lead-exposed construction workers were six

times more likely to have higher levels of lead in the blood than children whose parents did not work in lead related industries. Lead is of particular concern for workers with young children. Lead has been shown to cause an assortment of severe health problems in children. These range from behavior disorders to brain damage. Small children frequently put their hands in their mouths. This boosts exposure to ingesting lead. The risk to small children is very high because their bodies quickly absorb lead. Children's rapidly growing bodies absorb 50% of lead swallowed while adults absorb 10 to 15%.

Lead poisoning causes children to be less smart than they could have been. It also causes:

- Poor muscle and bones growth
- Poor hearing
- Speech and language problems
- Coordination problems
- Hyperactivity
- Clumsiness

The effects of childhood lead poisoning can last a lifetime.

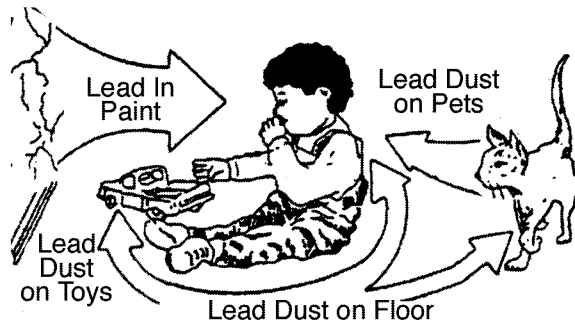


Fig. 5 Child Exposure

Even a small amount of lead can make you sick or harm you. Lead can stay in the body for a long time. It remains in the blood for several months and can be stored in the bones up to 30 years or more. The more lead you are exposed to, the more likely you will be lead poisoned. Many small doses of lead over a long period of time can make you lead poisoned. One large dose in less than a day can also make you lead poisoned. A low dose of lead can make you feel tired and irritable. A high dose can cause permanent damage to your brain, nervous system and kidneys. A very high dose of lead can cause death.

Asbestos Hazard

Some asbestos fibers are so small you cannot see them. They are the most dangerous because they can easily enter your lungs. Asbestos will not make you cough, sneeze or itch as you breath it in. However, it can make you gravely ill years after you were exposed to it.

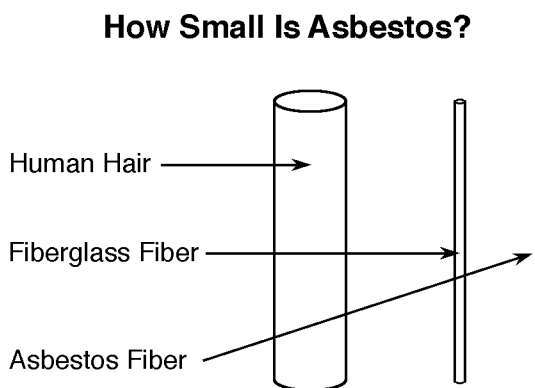


Fig. 6 Fiber Size

Asbestos can cause asbestosis, which scars your lungs and make it difficult to breath. You can also get lung cancer or mesothelioma. Mesothelioma is a cancer of the lining of the lungs or stomach. Asbestos can also cause cancer to the esophagus, stomach, colon, and rectum. All of the different types of asbestos can give you these diseases. There is no such thing as safe asbestos. The more asbestos you are exposed to, the more chance you will get a asbestos related disease later on. Smoking and asbestos are a deadly combination. If you smoke, the chances of lung cancer from asbestos go up to 50 times or more.

LEAD AND ASBESTOS ON THE JOBSITE

Lead and asbestos on the found in older buildings because they have characteristics that make them excellent building materials.

You can not tell if a material contains lead or asbestos by merely looking at it. A sample must be sent to a laboratory for testing.

Lead

Lead is heavy, gray metal which is also soft and pliable. Lead dust and particles are “sticky” and cling to surfaces. Lead was used in paint to prevent corrosion, mildew and mold. It also helps paint to dry more rapidly. It also blocks sound and radiation.

Carpenters are exposed to lead dust or fumes when they demolish, sand, grind, cut, burned with cutting torches, or weld any lead painted surface.

Asbestos

Asbestos is a naturally occurring group of minerals that is widely used because of its resistance to heat and corrosion. It is found through out the world and was mined in Canada, Australia, and California. Asbestos is a good fire, heat, and sound insulator. Pound for pound it is stronger than steel, so it is used as a binder to strengthen and reinforce other materials.

When asbestos fibers are incorporated into manufactured materials, it may or may not become more hazardous. Some asbestos products are highly friable. Friable means the material can be crumbled by hand pressure, for instance acoustical ceiling material. In these cases, the risk is high because the fibers get into the air very easily. Fireproofing on structural beams is an example of friable asbestos.

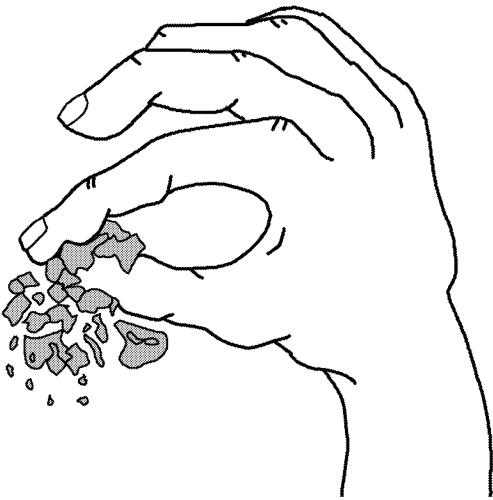


Fig. 7 Friable Material

With some other products the hazard is less at first because the fibers are embedded in another material, such as vinyl floor tile. The asbestos is not readily released into the air. However these products can become dangerous when asbestos

dust is set free during demolition, grinding or sanding. Fibers are released into the air when you saw, nail, cut, sand, drill or tear asbestos materials.

WORKING WITH LEAD AND ASBESTOS

You can safely work with materials containing lead and asbestos. However this type of work requires specialized training. This training will teach you how to:

- Keep lead and asbestos out of the air.
- Filter the air with special filters.
- Protect yourself with respirators and clothing.

LEAD WORK

Depending on the amount of lead in the air, the Construction Safety Orders require your employer to do some or all of the following:

- Inform you of the hazards of lead
- Provide you with hand washing facilities
- Provide clean protective clothing
- Provide you with a properly fitted respirator along with training in its use
- Conduct periodic air monitoring
- Carry out period testing for lead in your blood
- Provide medical examinations and consultations
- Use engineering controls and good work practice to minimize exposure
- Give detailed training in work practices

- Supply clean change areas
- Provide showers where feasible
- Keep your medical records for thirty years



Fig. 8 Personal Protective Equipment for Lead & Asbestos Work

ASBESTOS WORK

Asbestos work is divided into four classes. Class one is the most hazardous. Depending on

the work classification or the results of air testing (the number of asbestos fibers in the air), the Construction Safety Orders and other regulatory agencies require your employer to do some or all of the following:

- Inform you of the hazards of asbestos
- Prohibit eating and smoking in work areas
- Provide clean protective clothing
- Have a written respirator program
- Provide you with a properly fitted respirator along with training in its use
- Conduct periodic air monitoring
- Provide medical examinations and consultations
- Use engineering controls and good work practice to minimize exposure
- Give detailed training in work practices
- Supply clean change areas
- Provide showers where feasible
- Keep your medical records for thirty years

The rules and regulations are designed to prevent employee exposure, protect the worker's families from the hazards and prevent polluting the surrounding area.



A dust mask will not provide respiratory protection for lead and asbestos work.




SUMMARY

Lead and asbestos may be present on your jobsite. The carpenter is exposed to their hazards when the materials are disturbed and become airborne. Not only will lead and asbestos hurt you, it can also harm your family if you bring it home on your clothing. However with proper precautions, you can work around these materials. Specialized training is the key to working safely around lead and asbestos.

DRUG-FREE PRESENTATION

DRUG-FREE PRESENTATION



**EVERYTHING YOU NEED TO KNOW TO
BE A SUCCESSFUL APPRENTICE
(BUT DIDN'T KNOW TO ASK)**

By:
Carpenters Training Committee For Northern California (CTCNC)

**Pre-Apprenticeship Drug-Free
Workplace Education**

Working Partners for an
Alcohol- and Drug-Free Workplace



Provided by the Office of the Assistant Secretary for Policy
U.S. Department of Labor

The Carpenters Training Committee For Northern California (CTCNC)

Drug-Free Presentation

Objectives of Training

You should be familiar with your company's Drug-Free Workplace Policy and aware of the dangers of alcohol and drug abuse. You should understand:

- ◆ The requirements of the policy
- ◆ The prevalence of alcohol and drug abuse and its impact on the workplace
- ◆ How to recognize the link between poor performance and alcohol and/or drug abuse
- ◆ What types of assistance may be available

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Drug-Free Presentation

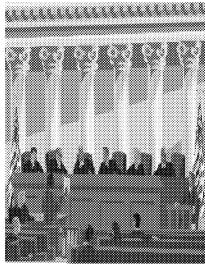
Legal Requirements

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Drug Free Workplace Acts

- ◆ Drug Free Workplace Act of 1988 (Federal). Includes all projects funded directly or through grants by the Federal Government.
- ◆ California Act of 1990 (State) Includes all projects funded directly or through grants by the State of California.



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Requirements under the Acts

- ◆ Drug Free Awareness Programs
- ◆ Dangers of Drug Abuse
- ◆ Company's Drug Free Policy
- ◆ Penalties for drug abuse violations
- ◆ EAP Programs that may be available




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Overview of Drug-Free Workplace Policy

The Drug-Free Workplace Policy accomplishes two major things:




- ◆ Sends a clear message that alcohol and drug use in the workplace is prohibited
- ◆ Encourages employees who have problems with alcohol and other drugs to voluntarily seek help


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The Drug-Free Workplace Policy exists to:



- ◆ Protect the health and safety of all employees, customers and the public
- ◆ Safeguard employer assets from theft and destruction
- ◆ Protect trade secrets
- ◆ Maintain product quality and company integrity and reputation
- ◆ Comply with the Drug-Free Workplace Act's or any other applicable laws



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Impact of Substance Abuse in the Workplace

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Impact of Substance Abuse in the Workplace


- ◆ Employee health
- ◆ Productivity
- ◆ Decision making
- ◆ Safety
- ◆ Employee morale
- ◆ Security
- ◆ Organizational image and community relations

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Prevalence on the Jobsite

- ◆ Over 74% of all current illegal drug and heavy alcohol users work. Approx. 9 million people.
- ◆ Cost of illicit drug abuse is more than \$160 billion due to production loss, accidents, absenteeism, turnover, and medical cost.
- ◆ Up to 40% of industrial fatalities can be linked to alcohol or drugs.
- ◆ Substance abusers are 33% less productive.



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Signs and Symptoms of Substance Abuse

Abuse of alcohol and other drugs affects people:

- ◆ Emotional: Aggression, depression, paranoia
- ◆ Behaviorally: Slow reaction time, slurred speech, excessive or decreased energy
- ◆ Physically: Smell, excessive sweating, sudden weight loss

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Assistance

Things to remember:

- ◆ Difficulty performing on the job can sometimes be caused by personal problems - including addiction to alcohol and other drugs
- ◆ Help is available and is confidential.
- ◆ It is an employee's responsibility to decide whether or not to seek help
- ◆ Addiction is treatable and reversible
- ◆ Employers may offer programs to their employees.

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Part of the company's drug policy is to inform workers of programs that may be available:



- ◆ This could be a list of AA or NA phone numbers
- ◆ Union employers can tell their worker that a rehab program is part of our Health and Welfare benefits
- ◆ Some employers may offer program assistance

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If EAP services are not available, help may be available from:

- ◆ Community hotlines
- ◆ Self-help groups such as Alcoholics Anonymous, Narcotics Anonymous, AA-Anon, etc.
- ◆ Community mental health centers
- ◆ Private therapists or counselors
- ◆ Addiction treatment centers




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Confidentiality

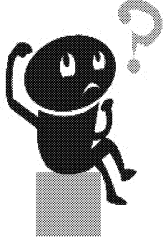
- ◆ Problems will not be made public
- ◆ Conversations with an EAP professional - or other referral agent - are private and will be protected
- ◆ All information related to performance issues will be maintained in his/her personnel file
- ◆ Information about referral to treatment, however, will be kept separately



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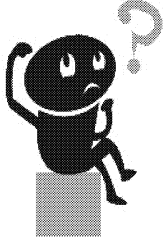
How Does This Affect Me?



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Jobsite Drug Testing



- ◆ Why am I being asked to take a test?
- ◆ How do I know if it's a drug testing job?
- ◆ What type of tests are performed?
- ◆ What about ?
- ◆ How does this affect my Apprenticeship?

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Why am I being asked to take a drug test?

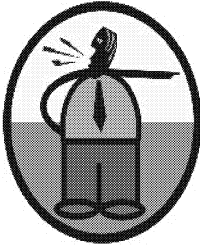
- ◆ Required by the contractor. (Pre-hire)
- ◆ Required by the client. (Pre-hire)
- ◆ Post accident, incident, etc.
- ◆ Probable cause.



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How do I know it's a drug testing job?



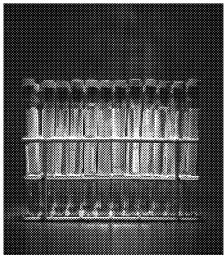
- ◆ Notified by the Union
- ◆ Notified by the Contractor
- ◆ Written or Verbal notification

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What types of tests are performed?

- ◆ Saliva and Urine tests are allowed
- ◆ Saliva and Urine tests can detect use for periods up to 30 days or more
- ◆ Tests are extremely accurate
- ◆ Tests also can detect tampering

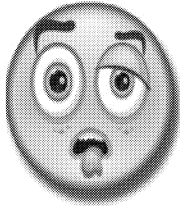


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What about?

- ◆ Medical Marijuana
- ◆ Prescriptions
- ◆ Alcohol or Hung over



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How does this affect my Apprenticeship?

- ◆ Maintaining employment
 - Qualified for the job
 - Keeping the job, it's more than just passing the drug test.
- ◆ Union policy vs. Apprenticeship Rules
 - Refusing to take a drug test job has different consequences.

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A Safer, Drug-Free Workplace

- ◆ Recognize the impact of alcohol and drug abuse on the workplace
- ◆ Understand and follow the Drug-Free Workplace Policy
- ◆ Remember the types of assistance available
- ◆ Access DOL's Working Partners Web Site www.dol.gov/workingpartners

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