

## Ch. 1

Tuesday, August 18, 2009  
11:02 AM

# CAREERS IN CONSTRUCTION

## TERMS

APPRENTICE  
BUSINESS PLAN  
CERTIFICATION  
ENTREPRENEUR  
ETHICS  
FREE ENTERPRISE  
NETWORKING  
RESUME  
TREND  
WORK ETHIC

OVER 6 MILLION EMPLOYED IN THE  
CONSTRUCTION INDUSTRY

## CONSTRUCTION SPECIALTIES

CRAFT WORKERS  
LARGEST GROUP OF SKILLED  
WORKERS IN USA  
LARGEST GROUP ARE CARPENTERS  
MAY BEGIN AS AN APPRENTICE

### 3 CLASSIFICATIONS

STRUCTURAL - CARPENTERS,  
BRICKLAYERS, MASONS

FINISH WORK - PAINTERS,  
GLAZIERS, ROOFERS

MECHANICAL - PLUMBERS,  
ELECTRICIANS

### TECHNICAL WORKERS

ARCHITECTURAL DRAFTER - DESIGN &  
PLANS

ESTIMATOR - FIGURES COST OF  
PROJECT

PURCHASING AGENT - BUYS  
MATERIALS

### PROFESSIONAL WORKERS

ARCHITECTS, PROJECT ENGINEERS,  
SHOP TEACHERS

### RELATED CAREERS

PEOPLE THAT SELL OR SERVICE

TOOLS & EQUIPMENT; ENFORCE  
BUILDING CODES; DESIGNERS OR  
NEW PRODUCTS

## TRENDS

A GENERAL DEVELOPMENT OR  
MOVEMENT IN A CERTAIN DIRECTION

AFFECT JOB OPPORTUNITIES

FACTORS INFLUENCING RESIDENTIAL  
BUILDING

FAMILY STRUCTURE - INCREASING  
NUMBER OF SINGLE & SINGLE-  
PARENT HOUSEHOLDS; MORE  
DEMAND FOR APARTMENTS &  
SMALLER, MORE EFFICIENT HOUSES

WORK PATTERNS - HIGHER NUMBER  
OF PEOPLE WORK AND WORK MORE  
HOURS; LESS MAINTENANCE HOMES

PERSONAL PREFERENCES - MOVING  
TO WARMER CLIMATES

## EDUCATION & TRAINING

NEED EXCELLENT COMMUNICATION  
SKILLS - READING, WRITING, LISTENING,  
& SPEAKING

MATH IS VERY IMPORTANT

HOW TO LEARN ABOUT INDUSTRY -  
PART-TIME OR ENTRY LEVEL JOBS;  
CERTIFICATE PROGRAMS;  
APPRENTICESHIPS; DEGREE PROGRAMS;  
MILITARY TRAINING

APPRENTICESHIPS - WORKS UNDER THE  
GUIDANCE OF A SKILLED WORKER TO  
LEARN TRADE

PROFESSIONAL ORGANIZATIONS  
OPERATE PROGRAMS FOR  
APPRENTICESHIPS - UNITED  
BROTHERHOOD OF CARPENTERS AND  
JOINERS OF AMERICA; NATIONAL  
ASSOCIATION OF HOME BUILDERS

ASSOCIATE DEGREES - 2 & 4 YEAR  
PROGRAMS

MILITARY TRAINING - OFFERS MANY  
SPECIALTIES - CARPENTRY SPECIALIST,  
ELECTRICIAN; PLUMBER

ON-THE-JOB-TRAINING  
INTERNSHIPS  
MENTORS

## ENTREPRENEURSHIP

ENTREPRENEUR - SOMEONE THAT  
CREATES & RUNS OWN BUSINESS

MOST OWN SMALL BUSINESSES  
53% OF WORKFORCE WORKS FOR  
SMALL BUSINESSES

## ADVANTAGES

YOU'RE THE BOSS  
REWARDS ARE YOURS  
MAKE MORE \$

## DISADV.

FINANCIAL RISK  
COMPETITION  
NEW BUSINESS HAVE A HIGH RATE

OF FAILURE  
LONG HOURS TO MAKE IT SUCCESS -  
LATE NIGHTS, WEEKENDS

## TYPES

SOLE PROPRIETORSHIP - 1 OWNER  
PARTNERSHIP - 2 OR MORE  
CORPORATION - 3 OR MORE;  
SHAREHOLDERS

FREE ENTERPRISE SYSTEM - YOU MAY BUY,  
SELL & SET PRICES FOR GOODS & SERVICES

SOME GOVERNMENT CONTROLS  
PRICING  
SAFETY STANDARDS

LIABILITY INSURANCE  
TAXES  
BUSINESS LICENSE

WORK ETHIC - PERSONAL COMMITMENT  
TO DOING YOUR VERY BEST  
RESPONSIBILITY, FLEXIBILITY, HONESTY,  
COOPERATION, COMMITMENT

## WAGES & BENEFITS

W-4

W-2

GROSS PAY

DEDUCTIONS

SIT

FICA

S.S.

MEDICAL INS.

401K

NET PAY

BENEFITS

INSURANCE - HEALTH, LIFE,  
DISABILITY

VACATION DAYS

SICK DAYS

TUITION REIMBURSEMENT

RETIREMENT

## BUILDING CODES

TO ENSURE THAT BUILDINGS ARE  
STRUCTURALLY SOUND & SAFE FROM FIRE  
& HEALTH HAZARDS

MINIMUM STANDARDS FOR RESIDENTIAL  
CONSTRUCTION

### REGIONAL BUILDING CODES

THE STANDARD BUILDING CODE  
UNIFORM BUILDING CODE  
NATIONAL BUILDING CODE

INTERNATIONAL RESIDENTIAL CODE  
(IRC) - FOR 1 & 2 FAMILY DWELLINGS  
THAT ARE NO MORE THAN 3 STORIES  
HIGH

CODES ARE REVIEWED & UPDATED  
EVERY 3 - 5 YEARS

## BUILDING PERMIT

FORMAL, PRINTED AUTHORIZATION FOR  
THE BUILDER



MUST SUBMIT A SET OF WORKING  
PLANS  
SUBSTANTIAL PENALTIES FOR BUILDING  
WITHOUT ONE

## PLANNING TO BUILD

IF A BUILDER CONSTRUCTS A HOUSE  
BEFORE THERE IS A BUYER, THE HOUSE IS  
REFERRED TO AS A SPEC HOUSE

## FACTORS TO CONSIDER WHEN PLANNING TO BUILD

COST - <25% OF GROSS MONTHLY  
INCOME SPENT ON HOUSING;  
MORTGAGE, INS., PROPERTY TAX,  
UTILITIES, & REPAIRS

LOCATION - SCHOOLS, JOBS, REC.

LOT SHAPE & CONTOUR

SPECIAL CONDITIONS - FLOOD PLAIN

ZONING RESTRICTIONS

DEED RESTRICTIONS - MINIMUM SIZE;

ARCHITECTURAL FEATURES; SETBACK  
DISTANCE - DISTANCE FROM OBJECTS

## LEGAL DOCUMENTS

OFFICIAL SURVEY - PROPERTY BOUNDARIES

DEED - EVIDENCE OF OWNERSHIP

ABSTRACT OF TITLE - HISTORY OF THE  
DEEDS

CONTRACT OF SALE - DETAILS RELATING TO  
PURCHASE

## PLANS

PURCHASE STOCK PLANS - STANDARDIZED  
FLOOR PLAN - SCALE DRAWING

FROM LOCAL BUILDERS

HIRE ARCHITECT - DESIGN FEE (5-10%OF  
COST) OR FLAT FEE

## FINANCING

USUALLY 80% OF TOTAL COSTS,  
BORROWER RESPONSIBLE FOR DOWN  
PAYMENT

BORROWER STARTS WITH A  
CONSTRUCTION LOAN - SHORT TERM  
LOAN; ADVANCES OR DRAWS ARE  
GIVEN PERIODICALLY TO BUILDER -  
BORROWER ONLY PAYS INTEREST ON  
DRAWS

AFTER CONSTRUCTION LOAN IS  
CONVERTED TO A MORTGAGE (15 - 30  
YEARS  
THE PROPERTY IS SECURITY ON THE  
LOAN

## IMPACT FEES

NEW CONSTRUCTION CAN ADD COST TO  
COMMUNITY - MORE KIDS TO TRANSPORT  
TO SCHOOL; MORE TRAFFIC ON ROADS;  
MORE USE OF WATER & SEWER; MORE USE  
OF PARKS; MORE NEED FOR ASSISTANCE -  
FIRE, RESCUE, POLICE

STATES IMPOSE IMPACT FEES TO COVER  
COST - RANGES FROM \$3,000 TO \$8,000

## Ch. 3 & 4

Tuesday, September 08, 2009  
10:49 AM

### DRAWING & MEASURING

#### TYPES OF DRAWING

SKETCH - QUICK & INFORMAL

ARCHITECTURAL PLANS (WORKING OR  
CONSTRUCTION DRAWINGS) - FORMAL

COPIES OF ORIGINALS CALLED PRINTS

BLUEPRINTS - USED TO BE ON BLUE PAPER

MEASUREMENTS - ENGLISH OR STANDARD &  
METRIC

SCALE IS RATIO BETWEEN SIZE OF OBJECT AND  
DRAWING

1' = 1'	FULL SIZE	1:1
6" = 1'	1/2 SIZE	1:2
3" = 1'	1/4 SIZE	1:4
1 1/2" = 1'	1/8 SIZE	1:8
1" = 1'	1/12 SIZE	1:12
3/4" = 1'	1/16 SIZE	1:16
1/2" = 1'	1/24 SIZE	1:24

3/8" = 1'	1/32 SIZE	1:32
1/4" = 1'	1/48 SIZE	1:48
3/16" = 1'	1/64 SIZE	1:64
1/8" = 1'	1/96 SIZE	1:96

## LINES

CENTERLINES - CENTER OF OBJECT

DIMENSION LINES - START & END POINTS

LEADER LINES - LINES TO NOTES

BREAK LINES - SHOWS A BREAK IN THE PROJECT

SECTIONING LINES - SHOWS OBJECT

EXTENSION LINES - MARKS THE END POINT OF A DIMENSION

HIDDEN LINES - SHOW THE HIDDEN FEATURES OF A PART

 OUTLET

 PULL SWITCH

 DUPLEX

 RANGE OUTLET

## OUTLET

S SINGLE POLE SWITCH

S<sub>3</sub> THREE-WAY SWITCH



## ESTIMATES

NEED TO BE AS CLOSE AS POSSIBLE

TOO HIGH, LOSE JOBS

TOO LOW, MAY LOSE \$\$\$\$

ESTIMATES GIVEN BEFORE AGREEMENT  
BID - SIGNED PROPOSAL FOR WORK OR  
MATERIAL FOR A SPECIFIC RATE

## UNIT-COST ESTIMATE

APPR - APPROXIMATE

BF - BOARD FOOT

CF - CUBIC FOOT

CY - CUBIC YARD

EA - EACH

GA - GAUGE

HR - HOUR  
LB - POUND  
LF - LINEAR FOOT  
LH - LEFT HAND  
MH - MAN-HOUR  
MISC - MISCELLANEOUS  
NA - NOT APPLICABLE  
OZ - OUNCE  
PC - PIECE  
QT - QUART  
R/L - RANDOM LENGTHS  
RH - RIGHT HAND  
SF - SQUARE FOOT  
UNF - UNFINISHED  
YD - YARD

CALCULATING BD FT

T" X W" X L" OR

144

# OF PIECES X T" X W" X L'

12

## CH. 5

Thursday, September 10, 2009  
11:40 AM

### SAFETY

YOUNGER AND NEW WORKERS MORE LIKELY  
TOO GET INJURED

OSHA - OCCUPATIONAL SAFETY & HEALTH  
ADMINISTRATION

RESPONDING TO EMERGENCIES

FALLS MOST COMMON

CUTS, PUNCTURE WOUNDS, HEARING  
DAMAGE, FALLING OBJECTS, POISONOUS  
SUBSTANCES

1. KNOW WHERE FIRST AID KIT IS
2. REPORT ALL INJURIES TO INSTRUCTOR
3. KNOW HOW TO SUMMON FOR HELP
4. ONLY OFFER FIRST-AID IF TRAINED

WORKER'S COMPENSATION

PAYS FOR REASONABLE & NECESSARY  
MEDICAL CARE

KEEPING SAFE



## #1 COMMON SENSE -

DON'T PUT THINGS WHERE THEY MIGHT  
FALL

KEEP AREA CLEAN

REMOVE OR BEND OVER PROTRUDING  
NAILS

## COLOR CODES

RED DANGER OR EMERGENCY

ORANGE BE ON GUARD

YELLOW CAUTION

WHITE STORAGE OR BOUNDARIES

GREEN FIRST AID

BLUE INFORMATION

## FIRE PREVENTION

DISPOSE OF SCRAPS DAILY

KEEP WEEDS & GRASS CLEAR

PROPERLY INSTALL ELECTRICAL

MAINTAIN CLEARANCE AROUND LIGHTING  
& HEATING

STORE MATERIAL PROPERLY

CLEAN SPILLS PROMPTLY

DO NOT BLOCK EXITS

## FIRE EXTINGUISHERS

CLASS A WOOD, PAPER, CLOTH, PLASTIC

CLASS B GREASE, OIL, CHEMICALS

CLASS C ELECTRICAL

CLASS D COMBUSTIBLE METALS

WHAT DOES GROUNDING A PLUG DO?

PATH THAT ELECTRICITY FLOWS TO EARTH

AROUND WATER OR MOISTURE

GFI - GROUND FAULT INTERRUPTER

SAFETY RULES

AVOID ACCIDENTAL STARTS

UNPLUG WHEN ADJUSTING MACHINE

DO NOT USE INFERIOR MATERIAL

KEEP ALL GUARDS IN PLACE

HANDS & FINGERS BEHIND MARGIN OF  
SAFETY

PAY ATTENTION TO WHAT **YOU** ARE DOING

USE PUSH STICK TO REMOVE SCRAPS FROM  
AROUND THE BLADE

NO LOOSE CLOTHING

TOOL SAFETY

DEMO OF HAND & POWER TOOLS



## Ch. 11

Wednesday, September 16, 2009  
11:46 AM

### LADDERS & SCAFFOLDS

#### RUNGS, STEPS, & RAILS

#### FOLDING LADDERS - SELF SUPPORTING USED INDOORS

STEP LADDERS - STEPS INSTEAD OF RUNGS

ARTICULATED LADDER - MULTIPURPOSE  
LADDER

#### STRAIGHT LADDER - NON-SELF SUPPORTING USED OUTDOORS

WORKING LENGTH - DISTANCE FROM  
GROUND TO TOP SUPPORT

#### LADDERS MADE OF WOOD

ALUMINUM - CONDUCTS ELECTRICITY,  
WEATHER RESISTANT  
FIBERGLASS

#### SAFETY TIPS

DO NOT USE AS A PLANK

KEEP AWAY FROM POWER LINES

LOCK LADDER IN PLACE  
NEVER PLACE TOOLS ON TOP STEP  
NEVER STAND ON TOP 3 RUNGS OF  
EXTENSION LADDER  
E.L. SHOULD EXTEND 3' ABOVE WORK AREA  
OR ROOF  
BOTTOM OF E.L. SHOULD BE AT 75degree OR  
1/4 OF WORKING LENGTH  
STABILIZERS  
LEG LEVELERS

## SCAFFOLDS

WIDER BASE THAN LADDERS  
LARGER WORK AREA  
GUARD RAILS  
CAN COVER MORE AREA WITH DOUBLE  
SCAFFOLD AND PLANKS

## TRESTLES

FOLDING FRAME TO BE USED WITH PLANKS  
USUALLY USED FOR WORK ON CEILINGS

## PUMP JACKS

METAL DEVICE WITH FOOT PEDAL, PUMPS  
UP 2 2X4'S

## LIFELINES

INTENT TO KEEP WORKER FROM FALLING  
MORE THAN 6'

OSHA REQUIREMENT - MUST SUPPORT 5,400  
POUNDS OF DEAD WEIGHT (WORKERS WT +  
FORCE OF FALL)

## Ch. 12

Wednesday, September 23, 2009  
10:48 AM

### CONCRETE

MADE BY MIXING CEMENT, FINE AGGREGATE,  
COURSE AGGREGATE, & WATER

CHEMICAL REACTION - HYDRATION,  
GENERATES HEAT DURING CURING

MORTAR OR GROUT - MISSING COURSE  
AGGREGATE

### PORTLAND CEMENT

MANUFACTURED SUBSTANCE

NAMED AS COLOR SIMILAR TO PORTLAND  
STONE

ROMANS USED PUMICE, MINERAL  
DEPOSITED ON SLOPES OF VOLCANOES

CONSISTS OF COMPOUNDS OF:

LIME - CALCIUM OXIDE

SILICA - SILICON DIOXIDE

ALUMINA - ALUMINUM OXIDE

GROUND TO A POWDER AND HEATED TO

2,700 DEGREES, FORMS SMALL LUMPS  
CALLED CLINKER  
GYPSUM IS ADDED (<5%), THEN POUNDED  
INTO POWDER

## 5 BASIC TYPES

I - STANDARD; ECONOMICAL, LONG SET  
TIME

II - MODIFIED; RESISTS BREAKING DOWN  
DUE TO SULFATES

III - HIGH STRENGTH; WHERE REMOVE  
FORMS QUICKLY OR FOR QUICK USE

IV - LOW HEAT; FOR LARGE PROJECTS  
(DAMS)

V - SULFATE RESISTANT; USE IN HIGH  
ALKALINE OR SULFATE CONDITIONS

## SPECIALTY CEMENTS

FOR NEW CONSTRUCTION OR REMODELING

SELF-LEVELING - FLOWS LIKE SYRUP

HYDRAULIC CEMENT - HARDENS IN  
MINUTES; PLUG HOLES IN FOUNDATIONS

ANCHOR CEMENT - FAST-SETTING, HIGH  
COMPRESSIVE STRENGTH; USED FOR  
RAILINGS

RESURFACING CEMENT - REPAIR DAMAGED



SURFACES; FINE AGGREGATES TO SPREAD  
EASILY

## AGGREGATES

SHOULD BE CLEANED - NO DIRT OR  
ORGANIC MATTER

WALLS - LARGEST NOT MORE THAN 1/5 OF  
THICKNESS OF WALL

SLABS - NOT MORE THAN 1/3 OF THICKNESS  
OF SLAB

## WATER

SHOULD BE SUITABLE FOR DRINKING

GAINS MOST STRENGTH IN 28 DAYS,  
CONTINUES TO GAIN FOR MAY YEARS

## ORDER BY:

NUMBER OF BAGS/CU.YD

5 BAGS IS MINIMUM

IF HIGH STRENGTH IS NEEDED, 6 BAGS &  
STEEL REINFORCEMENT IS USED

COMPRESSIVE STRENGTH

2,500 PSI

3,500 PSI

## SLUMP TEST

TEST CONSISTENCY OF CONCRETE OR  
WETNESS

PAVING & FLOOR SLABS MUST SLUMP 1"  
MAX. OF 4"

COLUMNS & WALLS RANG FROM 4" TO 8"

POUR CONTINUOUS IF POSSIBLE  
REMOVE AIR POCKETS BY VIBRATING,  
TAMPING, OR SPEARING

REINFORCE WITH REBAR OR WIRE MESH

## FOUNDATION WALLS

FOOTINGS - BASE FOR WALLS

SETS ON UNDISTURBED SOIL  
MUST BE BELOW FROST LINE

ATTACHING WALLS TO FOOTINGS

REBAR

KEYWAY - 2 X 4

DRAINS

HYDROSTATIC PRESSURE - WATER ON ONE  
SIDE FORCES THROUGH CONCRETE

USE 4" DRAIN PIPE OR WEEPING TILE

FORMS

WOODEN

STYROFOAM - INSULATED CONCRETE

FORMS (ICF)

METAL

SILL PLATE ANCHORS

L-BOLTS - NO MORE THAN 8' APART & 12"  
FROM ENDS

METAL STRAPS

MASONRY LEDGE - 5" WIDE

FLASHING

WEEPING HOLES

UTILITY SLEEVES - PIPES THROUGH WALL  
FOR ELECTRICAL LINES & WATER PIPES

BEAM POCKETS

1/2" CLEARANCE ON ALL SIDES

PROTECT WALLS WITH MOISTURE BARRIER

BACKFILLING

## WHY USE WOOD AS A BUILDING MATERIAL

1. ITS STRONG
2. EASILY FASTENED W/ NAILS, SCREWS, BOLTS
3. EASILY ALTERED
4. WOOD BUILDINGS EASILY ALTERED
5. LOW HEAT CONDUCTIVITY
6. ACCEPTS DECORATIVE COATINGS
7. RESISTS ACIDS, SALTWATER
8. RENEWABLE RESOURCE

## TREE GROWTH

BARK

CAMBIUM

SAPWOOD

HEARTWOOD

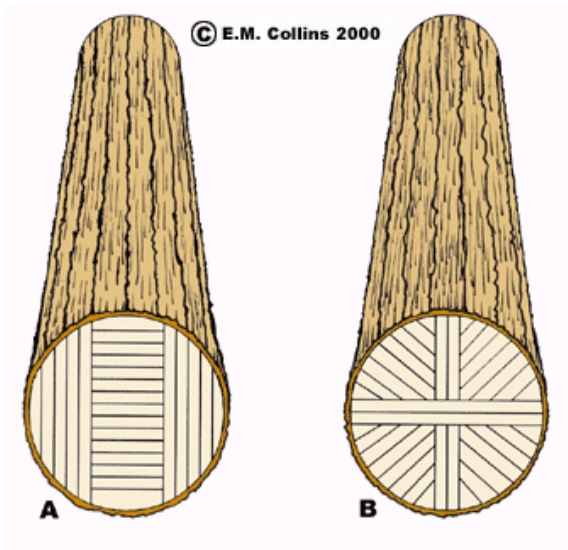
## HARDWOODS - DECIDUOUS

## SOFTWOODS - CONIFEROUS

CEDAR, CYPRESS, FIR, HEMLOCK, JUNIPER,  
LARCH, PINE, REDWOOD, SPRUCE, TAMARACK,  
YEW

## Quarter Sawn

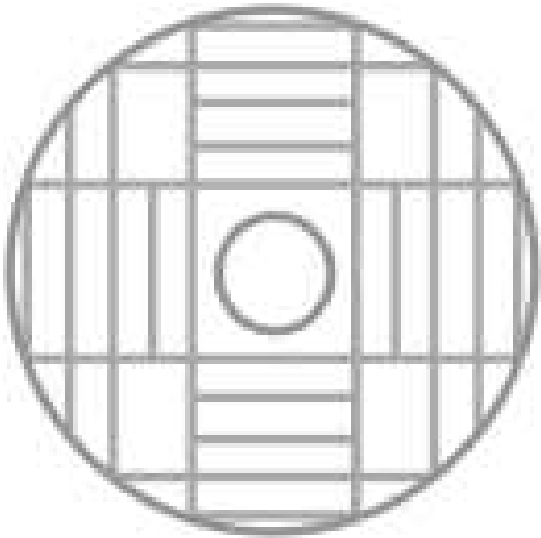
WOOD GRAIN IS 60 TO 90 DEGREE FROM  
SURFACE



Pasted from <<http://waynesword.palomar.edu/images/lumber2.gif>>

## HALF SAWN

WOOD GRAIN CAN BE SEEN ACROSS END



Pasted from <<http://petersonsawmills.com/images/Pattern1.jpg>>

## DRYING

AIR DRYING - 3 TO 4 MONTHS, DRIED TO  
<19% MOISTURE

KILN DRYING - <10% MOISTURE IN 4 DAYS

## PROTECTING WOOD

DECAY - CAUSED BY FUNGI THAT FEED ON  
WOOD FIBERS

DRY ROT - BROWN, CRUMBLY DECAY

WHITE & SPONGY

PREVENTION - KEEP WOOD DRY  
PRESERVATIVE TREATMENT

INSECTS

TERMITES

SUBTERRANEAN CAUSE 95% OF TERMITE  
DAMAGE

HONEYCOMB THE WOOD

COMMON IN HAWAII & SOUTHERN 2/3  
OF U.S.

INCLUDES SOUTHERN 1/2 OF IOWA

DRY-WOOD TERMITES - FLY, EAT ACROSS  
THE GRAIN.

CAUSE LESS DAMAGE BUT HARDER TO  
CONTROL

CARPENTER ANTS - DOES NOT EAT WOOD  
BUT MAKES TUNNEL FOR NESTS

ENGINEERED LUMBER

LAMINATED-VENEER LUMBER (LVL)

BEAMS, HEADERS, JOISTS, RAFTERS

SHRINKS & SWELLS LESS

I-JOIST

UP TO 60' SPANS

CAN SPAN ENTIRE FLOOR, NO OVERLAPS

26' L X 9 1/2" WEIGHS 50LB

2 X 10 26' L WEIGHS 96 POUNDS

RIM BOARD

SAME DEPTH OF I-JOISTS

GOES ACROSS END TO CONNECT

TOGETHER

GLULAMS

METAL FRAMING CONNECTOR

SPEEDS FRAMING

EASY TO CONNECT TO MASONRY

PREFERRED WITH LAMINATES

PLYWOOD

USES

FORMS

FLOORING, WALL & ROOF SHEATHING

SOFFITS

UNDERLAYMENT - SUB-FLOORS

CABINETRY - LIGHT WT, HOLDS

FASTENERS, ACCOMMODATES DIFF.

JOINERY



SELECTS LOGS ARE PLACED IN A POND  
@ THE MILL, LOG IS SPUN AGAINST A LONG  
RAZOR BLADE, UNROLLS LIKE PAPER TOWELS  
OFF A ROLL

SHEETS ARE GLUED TOGETHER & PRESSED

## GRADES

### EXTERIOR

A-C; FIRST # IS GRADE ON FACE  
2ND IS GRADE ON BACK

A IS HIGH QUALITY  
D IS NOT SANDED, ROUGH  
CDX - X MARKS WATER RESISTANT  
ADHESIVE

### INTERIOR

N - INTENDED FOR NATURAL FINISH  
A - SMOOTH & PAINTABLE  
B - HAS PLUGS & KNOTS  
C - SANDING DEFECTS, KNOTS  
D - BIGGER KNOTS

TONGUE & GROOVE - FLOORING SYSTEMS

## BALLOON FRAMING

STUDS RUN FROM FOUNDATION SILL PLATE  
TO TOP PLATE ON SECOND FLOOR

2ND FLOOR JOIST SIT ON 1 X 4 RIBBON CUT  
INTO STUDS

#### PLATFORM FRAMING

EACH LEVEL IS CONSTRUCTED SEPARATELY  
MOST COMMON TYPE

SPACINGS - 12", 16", 19.2", OR 24" OC

#### POST-AND-BEAM FRAMING

BEAMS MINIMUM 5 X5  
POSTS 8' APART

#### TIMBER FRAMING

FREESTANDING POST & BEAM RESTING ON A  
FOUNDATION  
JOINTS SECURED BY INTERLOCKING JOINERY  
AND WOODEN PEGS

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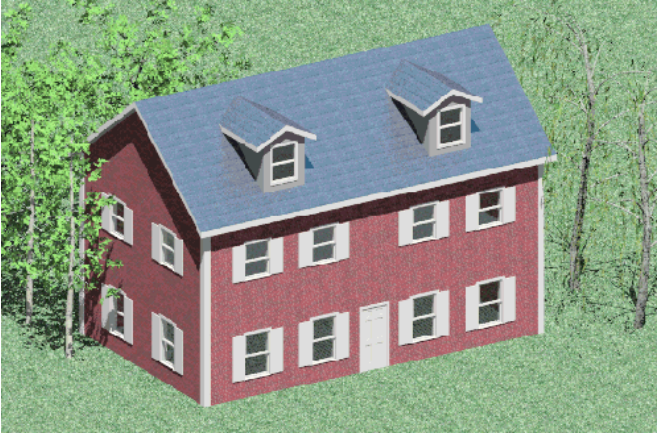
SQUARING CORNERS AND WALLS  
3-4-5 METHOD OR  
9-12-15 METHOD

## Ch. 21

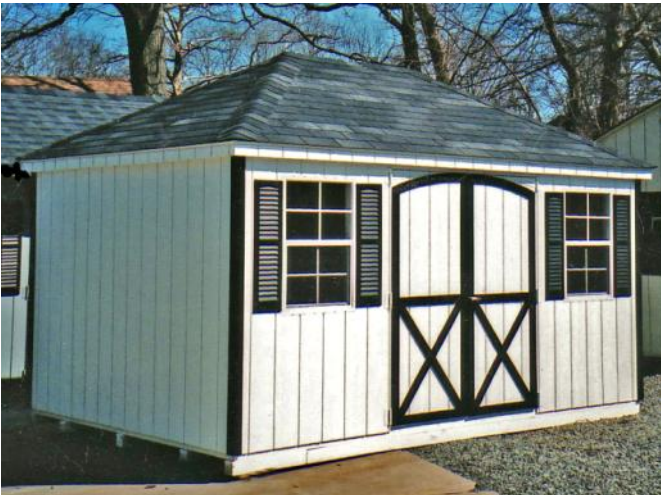
Monday, November 09, 2009  
11:19 AM

# ROOF STYLES

## GABLE



## HIP ROOF

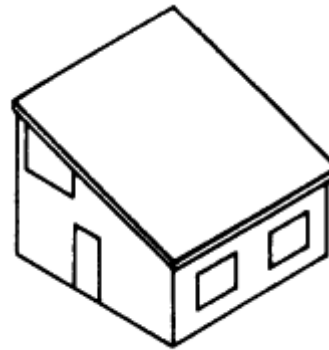


## LOW-SLOPE ROOF

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**SHED ROOF**



**Shed**

**GAMBREL ROOF**



**MANSARD ROOF**

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DUTCH HIP



## CH. 28

Tuesday, November 10, 2009  
12:34 PM

# WINDOWS

## PARTS

GLAZING - CLEAR GLASS PORTION

SASH - PART THAT HOLDS THE GLAZING

FRAME - FIXED PART OF THE ASSEMBLY;

CONSISTS OF SILL, SIDE JAMB, & HEAD JAMB

DOUBLE-HUNG - BOTH TOP & BOTTOM

SLIDE UP & DOWN

CASEMENT WINDOW - HINGE ON SIDE

STATIONARY WINDOWS - CAN NOT BE

OPENED; ONLY FOR ALLOWING LIGHT

THROUGH

AWNING WINDOWS - SWINGS OUT AT

BOTTOM

HORIZONTAL SLIDING WINDOWS

SCREENS

## MATERIALS FOR WINDOWS

WOOD - MADE FROM CLEAR GRADE  
HEARTWOOD

CLAD WINDOWS - WOOD COVERED WITH  
VINYL OR ALUMINUM

STEEL OR ALUMINUM - LIGHT WT  
LOWER COST  
TRANSFERS COLD

VINYL, FIBERGLASS, COMPOSITE - RESIST  
HEAT LOSS, NO PAINTING, RESIST ATTACK  
BY INSECTS

## ENERGY EFFICIENCY

DOUBLE PANE

TRIPLE PANE

LOW-E GLASS - COATING APPLIED TO ONE  
SIDE OF GLAZING TO REDUCE ENERGY FLOW  
HEAT ABSORBING GLAZING

GAS-FILLED GLAZING - ARGON, KRYPTON

## BASEMENT WINDOWS

EGRESS



## QUIZ

1. PORTION OF WINDOW THAT IS CLEAR.
2. PART OF WINDOW THAT HOLDS THE GLAZING.
3. A TYPE OF WINDOW THAT HINGES ON THE SIDE.
4. A TYPE OF WINDOW THAT BOTH THE TOP AND BOTTOM PORTION MOVE UP AND DOWN.
5. WHAT DOES EGRESS MEAN?

1. GLAZING
2. SASH
3. CASEMENT
4. DOUBLE HUNG
5. EMERGENCY EXIT

# ROOFS

Monday, November 30, 2009  
11:43 AM

UNDERLAYMENT - FELT, RUBBERIZED BARRIER

FLASHING - METAL, TIN, COPPER

STARTER STRIP - FIRST COURSE

SQUARE - 100 SQ. FT OF SURFACE

EXPOSURE - AMOUNT OF PRODUCT THAT SHOWS

LAP - EDGE THAT DOES NOT SHOW; TOP LAP, SIDE LAP

RIDGE VENT - HOT AIR ESCAPE FROM ATTIC

DRIP EDGE - EXTENDS PAST FASCIA

FASCIA - BOARD ON FACE OF RAFTER

FLAT ROOF - 2.5-IN-12

LOW SLOPE - BETWEEN 2.5-IN-12 TO 4-IN-12

HIGH SLOPE - > 4-IN-12

SHINGLES

ASPHALT, FIBERGLASS, WOOD, CEMENT, SLATE

3 TAB - 3' LONG X 1' WIDE EXPOSURE IS 5"  
ARCHITECTURAL OR LAMINATED  
INTERLOCKING

BUILD-UP ROOFING

3 - 5 LAYERS  
MOPPED WITH TAR OR ASPHALT  
TOPPED WITH ASPHALT & GRAVEL

METAL ROOFING

SHEETS RUN ENTIRE LENGTH OF SLOPE

TILE

CLAY OR CONCRETE

VALLEYS - OVERLAP SHINGLE FROM BOTH SLOPES

HIPS AND TOP CAP - CUT SHINGLE AND OVERLAP  
AS YOU GO ACROSS BOTTOM TO TOP

WOODEN SHINGLES

TYPES

HAND SPLIT

TAPERSPLIT SHAKES

STRAIGHTSPLIT SHAKES



## STAIRS

Thursday, November 11, 2010  
7:47 AM

STAIRWELL - VERTICAL SHAFT WHICH HOUSES STAIRS

TREADS - STEPS

STRINGERS - SUPPORT TREADS

RISERS - VERTICAL BOARDS THAT ENCLOSE SPACE BETWEEN STEPS

HANDRAIL - BUILDING CODE, REQUIRED FOR SAFETY

BALUSTER - SLENDER VERTICAL MEMBERS THAT SUPPORT HANDRAIL

FLIGHT - STRAIGHT RUN OF STAIRS

LANDING - FLOOR AREA WHERE FLIGHT ENDS OR BEGINS

WINDER - TREADS THAT RADIATE TO TURN A STAIR; SMALL END NO LESS THAN 6"

HEADROOM - 6' 8" MOST ARE 7' 4" - 7' 7"

WIDTH - 36" MINIMUM; 42" MORE COMMON

MAXIMUM RISER HEIGHT - 7 3/4"

MINIMUM TREAD DEPTH - 10"

VARIATION IN DEPTH & HEIGHT CAN BE NO MORE THAN 3/8" FOR ALL STEPS

HANDRAIL - 42" HIGH AND BALUSTERS SHOULD NOT ALLOW 4" SPHERE TO PASS THROUGH

# HOUSE DESIGN

Monday, November 22, 2010

11:31 AM

DESIGN A HOUSE THAT IS 1,800 SQUARE FEET

3 BR

2 BATH

WALK-IN CLOSETS IN BR

ISLAND IN KITCHEN

ATTACHED GARAGE -

1 OVERHEAD DOOR

1 WALK-THRU