

R.S. Means

SECOND
EDITION

Complete Book of **Framing**

An Illustrated Guide for
Residential Construction

Scot Simpson



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FRAMING

An Illustrated Guide
for Residential Construction
Second Edition
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RSMMeans



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TABLE OF CONTENTS

About the Author	xi
Acknowledgments	xiii
Introduction	xv
Chapter 1: Introduction to Framing	1
Framing Terms	4
Framing Lumber	6
Framing Sheathing	7
Engineered Wood Products	8
Lumber & Wood Structural Panel Grade Stamps	12
Framing Nails	13
Framing Tools	14
Framing Tool Truck	16
Cutting Lumber	17
Protecting Lumber from Decay	18
Preservative Treated Wood	20
Chapter 2: Nailing Patterns	21
Nail Top Plate to Studs	24
Nail Bottom Plate to Studs	24
Nail Double Plate to Top Plate	25
Nail Corner	25
Nail Walls Together or Nail Double Studs	25
Nail Trimmer to Stud	26

Concrete Nailing	26
Nail Bearing & Nonbearing Walls to Floor Perpendicular to Joists	27
Nail Bearing & Nonbearing Walls to Floor Parallel to Joists	27
Nail Header to Stud	28
Nail Let-in Bracing	29
Nail End of Joist	30
Nail Rim Joist	30
Nail Sheathing	31
Nail Built-up Girders & Beams	32
Nail Joist Blocking	32
Nail Lapping Joists	33
Nail Drywall Backing	33
Nail Trusses to Wall	34
Nail Ceiling Joist, Rafters, & Ridge	34
Nail Rafters to Wall	35
Nail Blocks	35
Nail Fascia & Bargeboard	36
Chapter 3: Floor Framing	37
Step 1–Crown & Place Joists	40
Steps 2 & 3–Nail Rim Joists in Place & Cut Joists to Length	41
Step 4–Nail Joists in Place	42
Step 5–Frame Openings in Joists	43
Steps 6 & 7–Block Bearing Walls & Nail Joists to Walls	44
Step 8–Drywall Backing	45
Step 9–Subfloor Sheathing	46
Chapter 4: Wall Framing	47
Step 1–Spread Headers	50
Step 2–Spread Makeup	51
Steps 3–7–Assemble Wall	52
Step 8–Square Wall	53
Step 9–Sheathe Wall	54
Step 10–Install Nail-Flange Windows	55

Steps 11–15–Standing & Setting Wall	56
Step 16–Plumb & Line	57
Framing Rake Walls	60
Chapter 5: Roof Framing	69
Roof Framing Terms	72
Step 1–Find the Lengths of Common Rafters	74
Step 2–Cut Common Rafter	83
Step 3–Set Ridge Board	86
Step 4–Set Common Rafters	87
Step 5–Find Length of Hip & Valley Rafters	88
Step 6–Cut Hip & Valley Rafters	89
Step 7–Set Hip & Valley Rafters	91
Step 8–Set Jack Rafters	92
Step 9–Block Rafters & Lookouts	93
Step 10–Set Fascia	93
Step 11–Install Sheathing	94
Rafter Guidelines	95
Ceiling Joists	106
Step 1–Spread Trusses	108
Step 2–Sheathe Gable Ends	109
Step 3–Set Gable Ends	109
Step 4–Roll Trusses	110
Steps 5–8	111
Chapter 6: Doors, Windows, & Stairs	113
Door Framing Terms	116
Installation of Exterior Doors	116
Installation of Nail-Flange Window	119
Installation of Window Flashing	120
Installation of Sliding Glass Doors	121
Installation of Stairs	122
Circular Stairs	127
Chapter 7: Layout	135
Wall Layout	139
Joist Layout	154

Rafter or Truss Layout	156
Roof Layout	156
Chapter 8: Engineered Wood Products	159
Engineered Panel Products	162
Engineered Lumber Products	163
Chapter 9: Wind & Earthquake Framing	183
The Strength of Good Framing	186
Understanding Structural Loads	186
Building Code Load Requirements	187
Regional Considerations	188
Framing Details	188
Hold-Downs	195
Positive Placement Nail Guns	200
Chapter 10: Building Code Requirements	203
Introduction to Building Codes	206
Framing According to Code	210
Protection from Decay	228
Termite Protection	234
Chapter 11: Green Framing	235
Green Framing Feeling	238
Advanced Framing	238
Material Selection	240
Structural Insulated Panels (SIPs)	241
SIP Installation	241
SIP Tools	247
Chapter 12: Preparing for a Job	249
Developing a Job Start Checklist	252
Reviewing the Plans & Making Preparations	255
Organizing the Job Site	259
Chapter 13: Managing the Framing Start	263
Checking Exterior Wall Dimensions	266
Checking Reference Lines for Square	267
Adjusting Reference Lines	268
Checking the Building for Level	270

Chapter 14: Managing a Framing Team	275
Managing Your Team	278
The Role of Lead Framers	279
Quality Control	288
Organizing Tools & Materials	289
Teaching Framers	292
Framing Tips for Every Task	294
Planning & Scheduling	302
Recordkeeping	304
Productivity	306
Chapter 15: Safety	311
Personal Protective Equipment	314
Hand Tools	315
Ladders	317
Fall Protection	317
Rough Terrain Forklift Safety	319
Housekeeping	321
Glossary	325
Spanish Framing Terms	335
Index	343

ABOUT THE AUTHOR

Scot Simpson has been framing houses, schools, and commercial buildings for 39-years—and has owned a construction firm for 34-years. His firm, S.S. Framing, Inc., is based in Edmonds, WA. He developed and refined the methods in this book and uses them to train his crews. Scot is the author of two other construction books and many articles for construction magazines, such as *Fine Homebuilding* and the *Journal of Light Construction*. He developed and hosted the video, “Resisting the Forces of Earthquakes” with the Earthquake Engineering Research Institute and the International Conference of Building Officials.

Scot is a member of the International Code Council (ICC), the Construction Specifications Institute (CSI), the Associated General Contractors of America (AGC), and was 2006 Chairman of the ABC Framers Council. He has presented training and seminars for the National Association of Homebuilders, the American Forest and Paper Association, and the International Conference of Building Officials, among others, both in the U.S. and internationally.

Scot holds an MBA from Kent State University, as well as a BA and technical certificates in carpentry instruction, lumber grading, and industrial first aid.

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INTRODUCTION

I'm a framing contractor. I've spent most of my career as a lead framer, directing my framing crews and training workers to become framers. In my teaching, I found that much of the information I needed was not available in a good book, so I wrote one, *Framing & Rough Carpentry*. As I started spending more of my time training and working with lead framers, I again looked for a good, easy-to-understand reference. I didn't find what I needed, so I wrote another book, *Advanced Framing Methods*, that provides all the information a framer needs to move up to the next level—becoming a lead framer. *The Complete Book of Framing* is the combination of those two books, updated with full-color illustrations and photographs, plus additional information—all presented in what I've come to think of as a “framer-friendly” format.

If you're a novice with no framing experience, you'll see the basics of framing shown in a simple, step-by-step style that makes it easy to learn. Where possible, I included both photographs and drawings for each step—for quick and complete learning. The advanced information will be more difficult for a novice to understand, but getting a good feel for the framing basics that come before it will help. The

more advanced tasks are also explained with photos and clear drawings.

If you're already an experienced framer, the book gives you some unique tools that you won't find anywhere else. For example, after struggling with rafters and rake walls for years, I developed a diagonal percent system that makes it easier. I use this for finding rafter lengths and rake wall stud heights. The book also explains all the “classic” methods for doing these tasks, but once you try the diagonal percent system, I doubt you'll go back to the old methods. Another example of the book's unique style of presentation is the layout language, which I developed for my first book.

If you're a lead framer, all the basic framing steps presented are important for reference and to help you teach and train crews. Most valuable, however, will be the guidance on managing a framing crew. Once you become a lead framer, your productivity is defined by the productivity of your crew. You'll need to think about the information they need and how to teach and manage them most effectively. Chapter 14 of this book is like a mini framer management course.

The charts and graphs in the book present information that is needed to manage a framing crew, but is not readily available. For example, the *International Building Code* chart makes it easy to reference the latest information governing framing. The Standard Framing Dimensions chart gathers the information that you “sort-of” remember, but it helps to have it handy for quick reference.

This book covers all the major topics related to framing. Each is presented in the easiest learning method. Because the framing tasks are diverse and vary in complexity, the format also varies a little throughout the book. All of the topics are covered in a framer-friendly way.

Framing is very rewarding work, both physically and mentally. One of the biggest challenges, however, is getting accurate information every time so that you can be sure you’re framing a structure correctly. This book will assist you in that task.

Happy Framing,
Scot

Note: This book is intended to provide useful information for understanding residential framing, but it is not a substitute for professional construction, engineering, or repair evaluations, recommendations, or services. Readers should obtain assistance from appropriate experts, as needed.

Chapter One

INTRODUCTION TO FRAMING



Contents

Framing Terms	4
Framing Lumber	6
Framing Sheathing	7
Engineered Wood Products	8
Lumber & Wood Structural Panel Grade Stamps	12
Framing Nails	13
Framing Tools	14
Framing Tool Truck	16
Cutting Lumber	17
Protecting Lumber from Decay	18
Preservative Treated Wood	20

Chapter One

INTRODUCTION TO FRAMING

The trade of wood framing comprises the rough carpentry skills needed to produce the “skeleton” of a building and its first layer of “skin.” The skeleton consists of the structural lumber forming the floors, walls, and roof. The skin consists of the lumber that encloses the skeleton and provides a surface for subsequent layers of protective and decorative finish materials.

This chapter is an illustrated review of a framer’s most basic tools, materials, and terminology. This basic information is often not even taught on the job site, so if you don’t know it when you arrive for work, you will have to play a guessing game or ask a lot of questions.

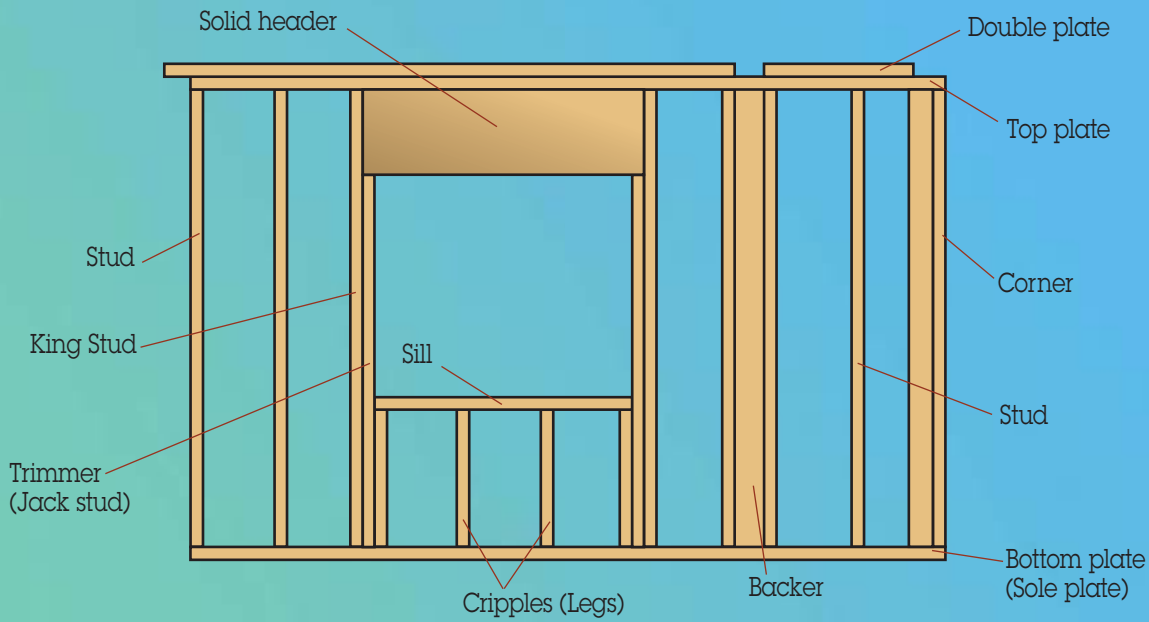
The detailed illustrations serve as a handy reference and help to reduce confusion when different words are used for the same item. Confusion can arise when framers move from job site to job site and work with different people. For example, bottom plates are often known as *sole plates*, backers as

partitions, and trimmers as *jack studs*. But it doesn’t matter what they are called as long as you know what they are. There is also a more detailed list of framing terms with definitions at the back of the book.

The suggested organization for a framing tool truck presented in this chapter is just an example of how a truck might be set up for tool storage. Its purpose is, once again, to reduce confusion and make the job easier. It is amazing how much time can be spent looking for tools and nails if they aren’t put where you expect them to be.

Framing Terms

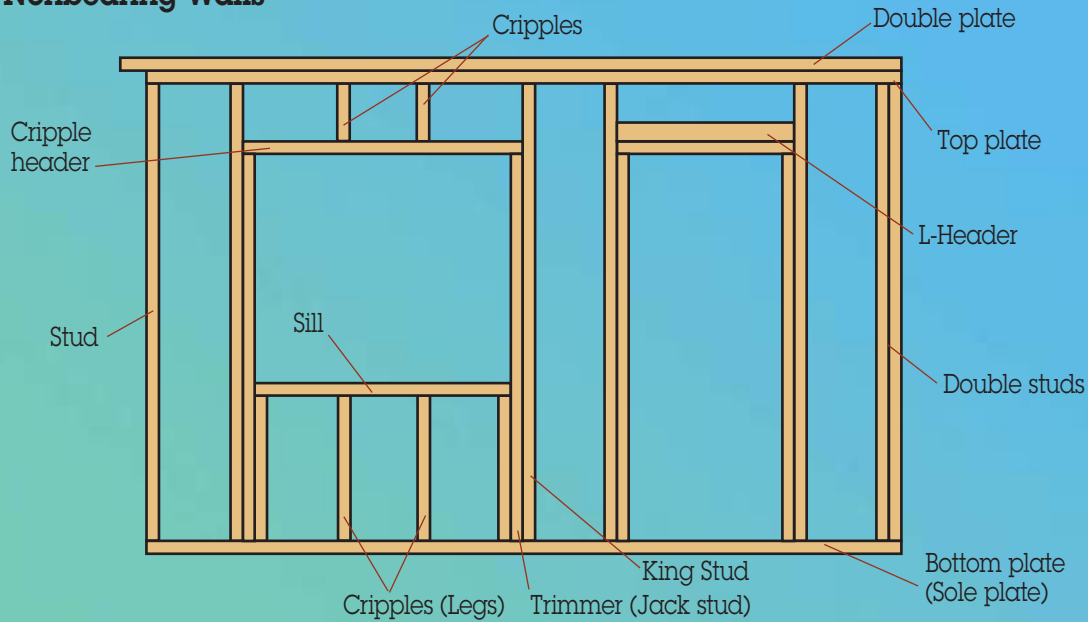
Bearing Walls



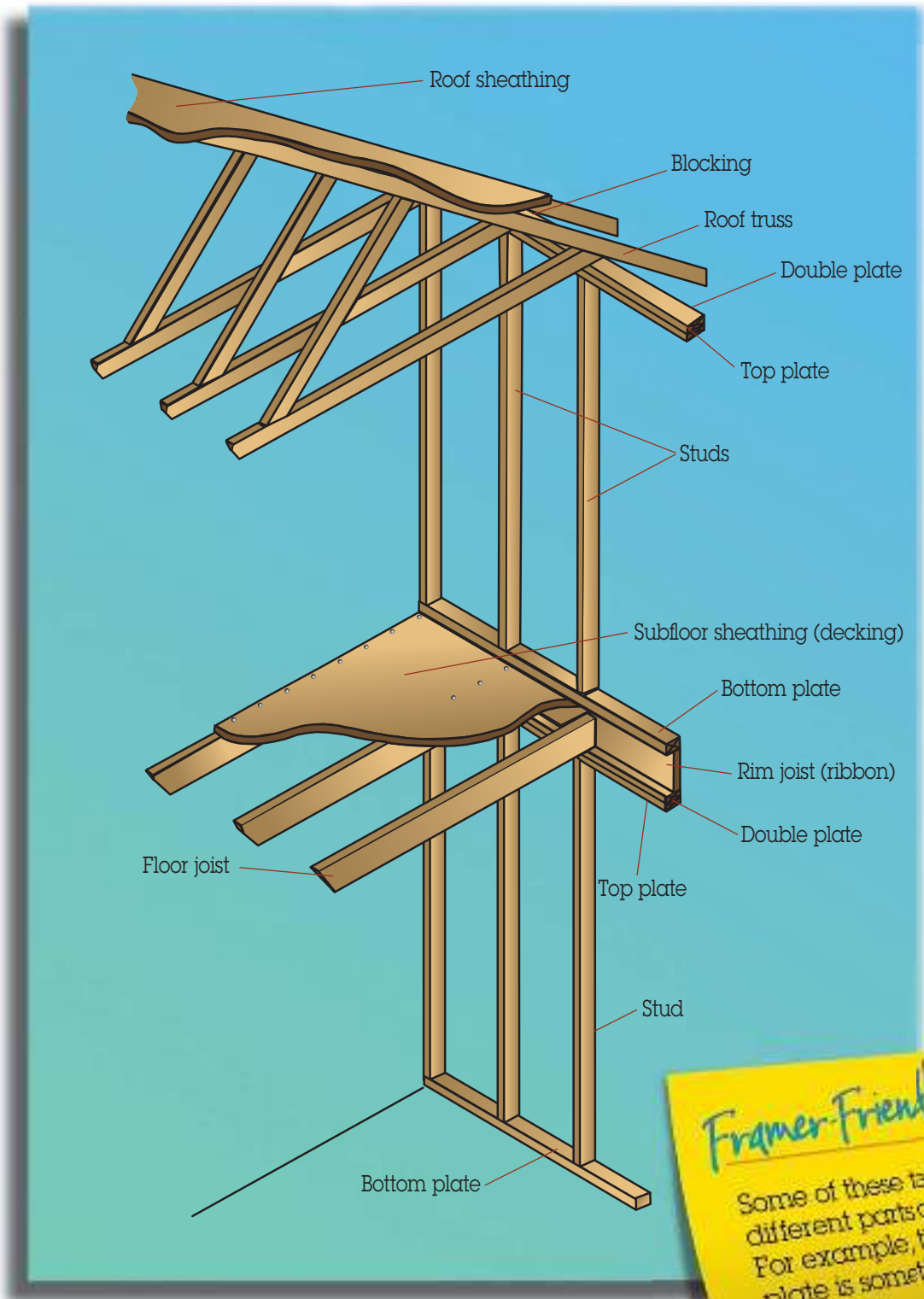
Bearing walls support the main weight of an upper portion of a building, such as a ceiling, floor, or roof. Nonbearing walls provide little or no support

to those upper portions. Remove nonbearing walls, and the upper portions will stand; remove bearing walls, and the upper portions will fall.

Nonbearing Walls



Framing Terms (continued)



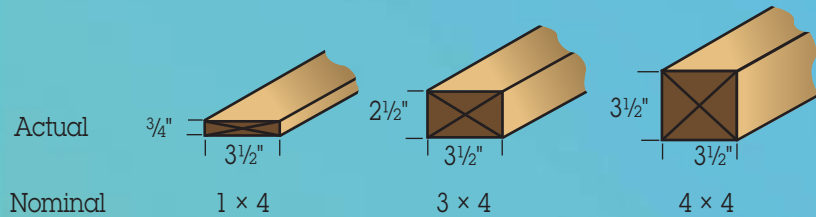
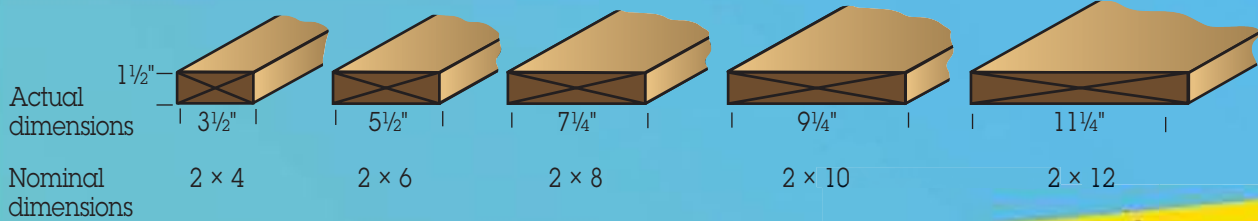
Framer-Friendly Tips

Some of these terms vary in different parts of the country. For example, the bottom plate is sometimes called the sole plate.

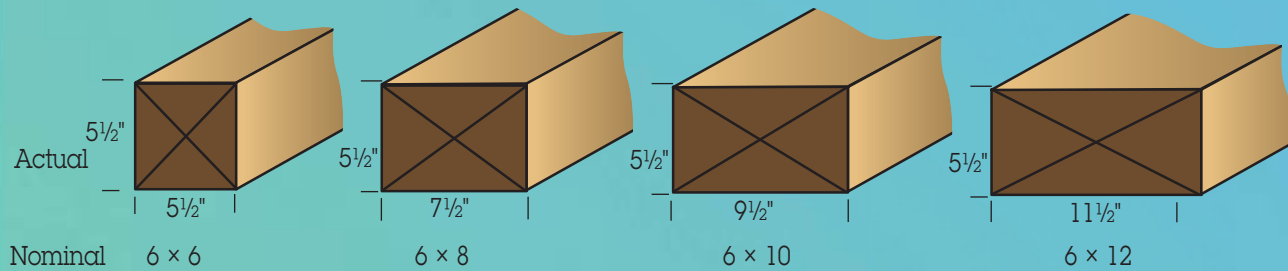
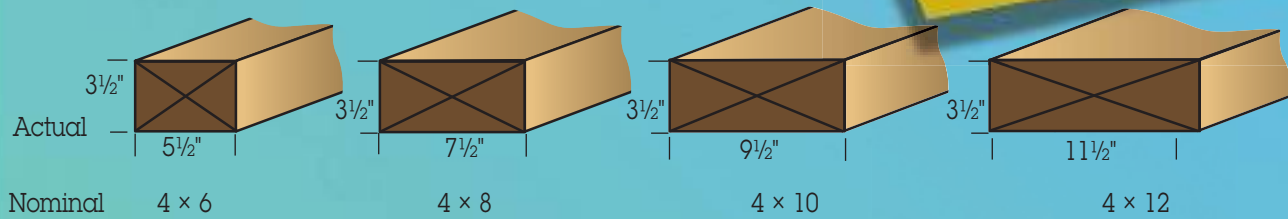
Framing Lumber

Lumber is sized in "nominal," as opposed to "actual," dimensions. A nominal dimension rounds off the actual dimension to the next highest whole

number. For example, a piece of lumber that actually measures $1\frac{1}{2}" \times 3\frac{1}{2}"$ is rounded off to the nominal $2" \times 4"$.



Framer-Friendly Tips
At the mill, this lumber starts out as the actual dimensions, but after it has been surfaced, it is reduced to the nominal dimension.



Framing Sheathing

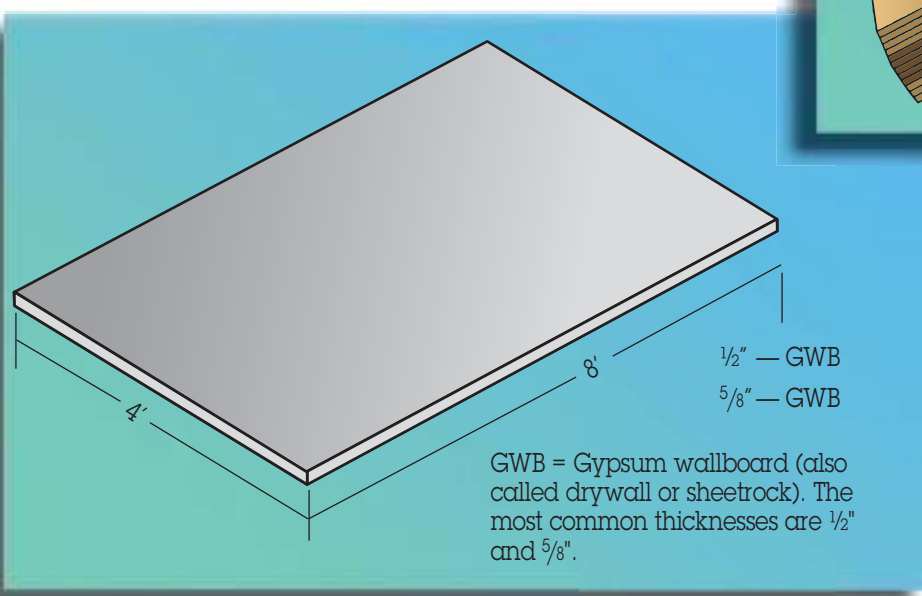
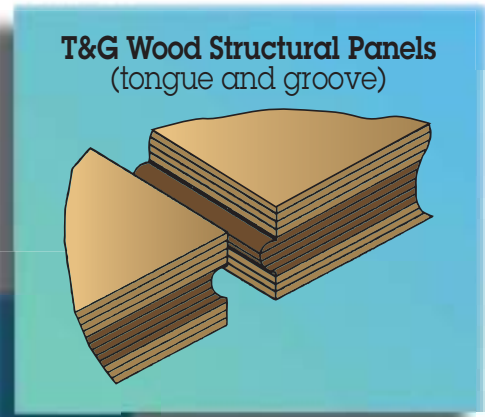
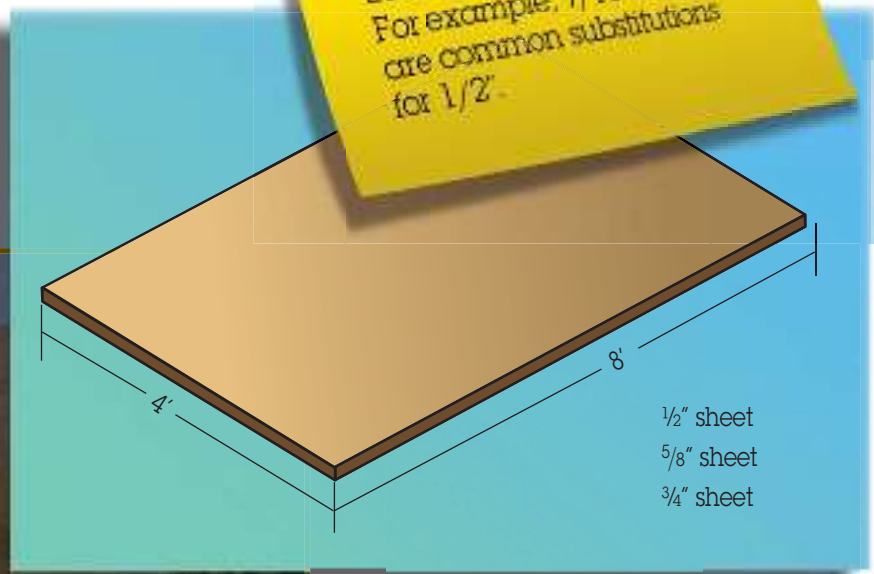
Engineered Panel Products

Sheathing comes in 4' x 8' sheets. The thicknesses most commonly used in framing are 1/2", 5/8", and 3/4".



The engineered panel products on this wall provide the strength needed for the high ceiling of this elementary school.

Framer-Friendly Tips
 There are substitutions for these standard sizes. For example, 7/16" & 15/32 are common substitutions for 1/2".



Although not as common in house framing, gypsum wallboard can be used on exterior walls, such as for apartments and condos, and commercial buildings for fire protection.

Dens Glass® gypsum sheathing is a brand that has fiberglass mat, which provides mold and moisture resistance and is gold in color.

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