



## Drafting Merit Badge Workbook

# SCOUTMASTER BUCKY

Scouts participating in a Scoutmaster Bucky merit badge opportunity, whether online or in person, should consider using the Drafting merit badge pamphlet for discovery and knowledge, along with the class preparation pages for clarifications, insights, and expectations.

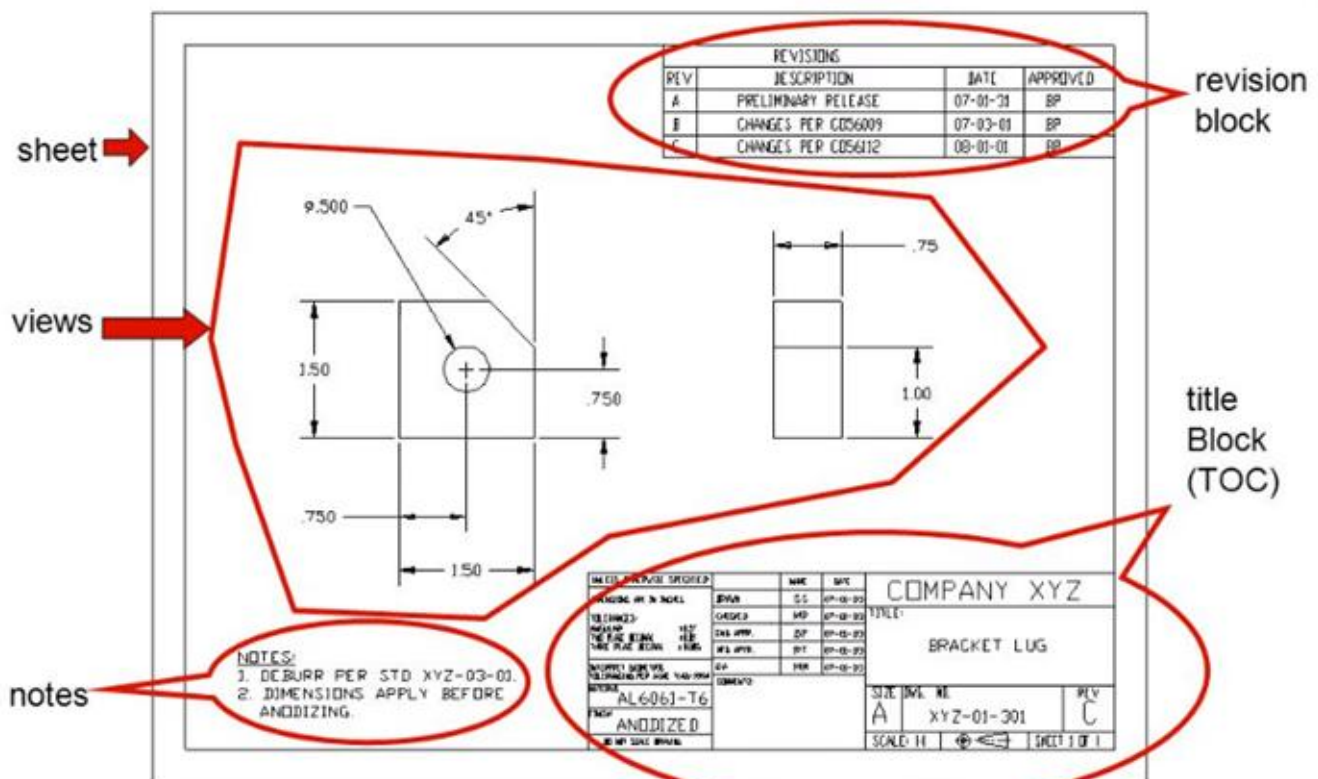
<https://scoutmasterbucky.com/merit-badges/drafting/drafting-pamphlet.pdf>

<https://scoutmasterbucky.com/merit-badges/drafting/drafting-cpp.pdf>

### REQUIREMENT 7b REQUIRES PARENT / GUARDIAN PERMISSION.

**REQUIREMENT 1:** Format TWO sheets of drawing paper with proper borders and title blocks - one for your manual project (see requirement 2) and one for your lettering project (see requirement 5).

## PARTS OF A TYPICAL DETAIL DRAWING



### SIMPLIFIED SAMPLE TITLE BLOCK

4	2	
5	6	
3	Drawing No	1
	Sheet	of

1. Drawing Number
2. Title or description of the drawing (part name)
3. Name of firm/organization
4. Original scale
5. General specifications and notes area (tolerances, finishes, etc.)
6. Drafter name area; signature, approval, etc

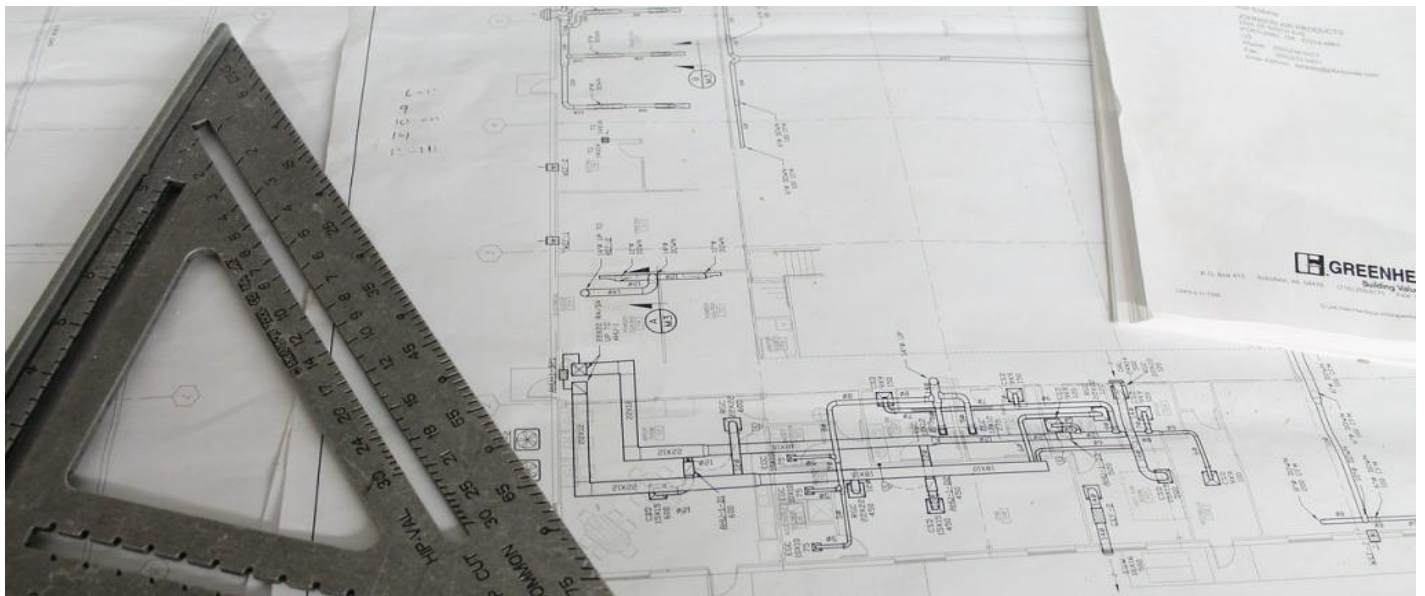


**REQUIREMENT 1a:** Make a rough sketch each of your project drawings to determine the correct size of paper to format.

## DRAWING SHEET SIZES

North America		International	
A	8.5"x11"	A4	210mm x 297mm
B	11"x17"	A3	297mm x 420mm
C	17"x22"	A2	420mm x 594mm
D	22"x34"	A1	594mm x 841mm
E	34"x44"	A0	841mm x 1189mm

Choose sheet size such that drawing is filled but not crowded (based on number of views and dimensions needed).

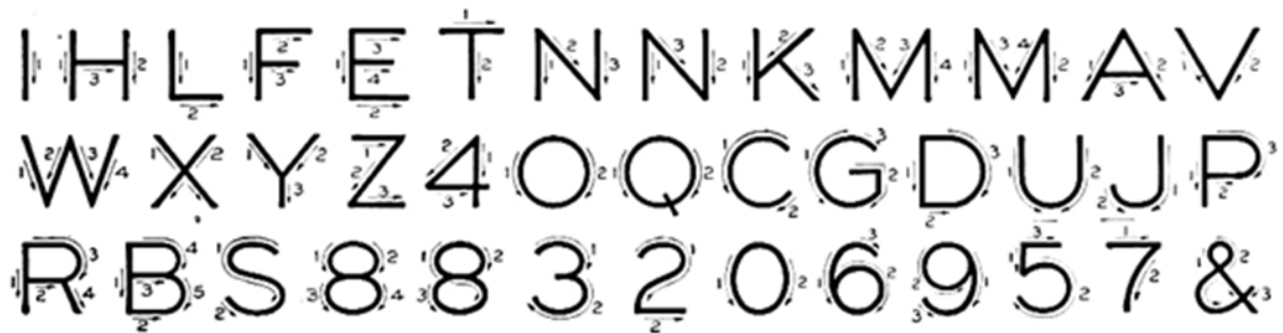




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**REQUIREMENT 1b:** Using either single-stroke vertical or slant Gothic lettering, fill in all important information in the title block sections of the formatted paper.

## UPRIGHT SINGLE STROKE GOTHIC



THE ABILITY TO LETTER WELL CAN BE ACQUIRED ONLY BY PERSISTENT AND CAREFUL PRACTICE

ON WORKING DRAWINGS THE STYLE OF LETTERS IS USUALLY OF THE SIMPLEST CHARACTER, THE "COMMERCIAL GOTHIC" BEING USED MORE THAN ANY OTHER STYLE. LETTERS IN WORDS SHOULD BE CLOSE TOGETHER, BUT WORDS WELL SEPARATED.

THE LETTERS IN NOTES ON DRAWINGS SHOULD NOT BE LESS THAN ONE SIXTEENTH NOR MORE THAN ONE EIGHTH OF AN INCH IN HEIGHT. THESE LETTERS ARE MADE IN A SOMEWHAT EXTENDED FORM.

*INCLINED GOTHIC CAPITALS ARE USED BY MANY DRAFTSMEN IN PREFERENCE TO THE UPRIGHT SINGLE STROKE CAPITALS.*

*KEEP THE LETTERS CLOSE TOGETHER AND THE STROKES UNIFORM IN SLANT AND THICKNESS.*





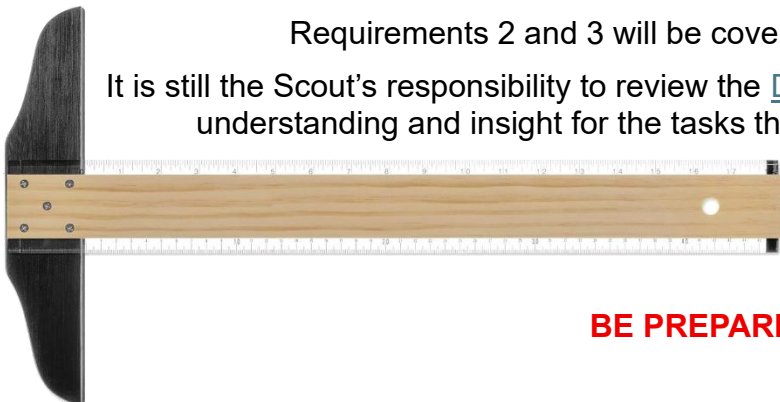
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<b>REQUIREMENT 2:</b>	Using the formatted sheet of paper you prepared for your manual project, produce a pencil drawing as it would be used for manufacturing. Fill in all title block information. The manual drawing may be any one of the following drawing types:
<b>REQUIREMENT 2a:</b>	<b>Architectural:</b> Make a scale drawing of an architectural project. The architectural drawing may be a floor plan; electrical, plumbing, or mechanical service plan; elevation plan; or landscaping plan. Use an architect's scale and show dimensions to communicate the actual size of features. Include any important sectional drawings, notes, and considerations necessary for construction. Properly print a bill of materials for at least three of the raw materials or components in the project.
<b>REQUIREMENT 2b:</b>	<b>Mechanical:</b> Make a scale drawing of some mechanical device or interesting object. The mechanical drawing may be of the orthographic (third-angle) or isometric style. Use an engineer's scale and show dimensions to communicate the actual size of features. Include any important sectional drawings, notes, and manufacturing considerations. Properly print a bill of materials for at least three of the raw materials or components in the assembly.
<b>REQUIREMENT 2c:</b>	<b>Electrical:</b> Draw a simple schematic of a radio or electronic circuit. Properly print a bill of materials including all of the major electrical components used in the circuit. Use standard drawing symbols to represent the electronic components.
<b>REQUIREMENT 3:</b>	Produce a computer-aided design (CAD) drawing as it would be used in manufacturing. Fill in all title block information. The CAD drawing may be any one of the following drawing types:
<b>REQUIREMENT 3a:</b>	<b>Architectural:</b> Make a scale drawing of an architectural project. The architectural drawing may be a floor plan; electrical, plumbing, or mechanical service plan; elevation plan; or landscaping plan. Use an architect's scale and show dimensions to communicate the actual size of features. Include any important sectional drawings, notes, and considerations necessary for construction.
<b>REQUIREMENT 3b:</b>	<b>Mechanical:</b> Make a scale drawing of some mechanical device or interesting object. The mechanical drawing may be of the orthographic or isometric style. Use an engineer's scale and show dimensions to communicate the actual size of features. Include any important sectional drawings, notes, and manufacturing considerations.
<b>REQUIREMENT 3c:</b>	<b>Electrical:</b> Draw a simple schematic of a radio or electronic circuit. Properly print a bill of materials including all of the major electrical components used in the circuit. Use standard drawing symbols for the electronic components.

Requirements 2 and 3 will be covered as a part of the class

It is still the Scout's responsibility to review the [Drafting Merit Badge Pamphlet](#) to gain understanding and insight for the tasks they will be required to complete.



**BE PREPARED!**



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<b>REQUIREMENT 4a:</b>	Present a copy of your drawings from Requirements 2 and 3, either in paper or digital format to your counselor. Your counselor will return a redlined version of your drawings indicating to add/remove/change a feature, material, BOM QTY, etc.
<b>REQUIREMENT 4b:</b>	Make the correction from the redline, identify it on the drawings with a revision marker, and add a revision block.
<b>REQUIREMENT 5:</b>	Discuss with your counselor how fulfilling requirements 2, 3 and 4 differed from each other. Tell about the benefits derived from using CAD for requirements 3 and 4. Include in your discussion the software you used as well as other software options that are available.

You will need to share your work with your counselor

**This requirement must be reviewed with your merit badge counselor.**

**BE PREPARED!**

Notes:

<b>REQUIREMENT 6:</b>	Using single-stroke slant or vertical Gothic lettering (without the aid of a template or lettering guide), write a brief explanation of what you consider to be the most important benefit in using CAD in a particular industry (aerospace, electronics, manufacturing, architectural, or other). Use the experience gained in fulfilling requirements 2 through 5 to support your opinion. Use the formatted sheet of paper you prepared in requirement 1 for your lettering project.
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Requirements 6 should be covered as a part of the class

**HOWEVER,** No guarantee is made that Scouts will have the necessary time to complete this due to all the other work scheduled for the class



Consider using the [Drafting Merit Badge Pamphlet](#) to aid in preparation ahead of time.

**BE PREPARED!**



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**DO ONE OF THE FOLLOWING (7A or 7B) FOR REQUIREMENT 7**

**REQUIREMENT 7a:** Visit a facility or industry workplace where drafting is part of the business. Ask to see an example of the work that is done there, the different drafting facilities, and the tools used.

Facility or Workplace:

Person's Name and Position that you spoke with:

Notes:

**REQUIREMENT 7a1:** Find out how much of the drafting done there is manual and how much is done using CAD. If CAD is used, find out what software is used and how and why it was chosen.

Notes:



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**REQUIREMENT 7a2:** Ask about the drafting services provided.

Notes:

**REQUIREMENT 7a2:** Ask who uses the designs produced in the drafting area and how those designs are used.

Notes:

**REQUIREMENT 7a2:** Discuss how the professionals who perform drafting cooperate with other individuals in the drafting area and other areas of the business.

Notes:



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**REQUIREMENT 7a3:** Ask how important the role of drafting is to producing the end product or service that this business supplies.

Notes:

**REQUIREMENT 7a3:** Find out how drafting contributes to the company's end product or service.

Notes:

**REQUIREMENT 7b:** Using resources you find on your own such as at the library and on the internet (with your parent or guardian's permission), learn more about the drafting trade and discuss the following with your counselor.

**PARENT/GUARDIAN PERMISSION:** IS REQUIRED.

\_\_\_\_\_  
Parent's / Guardian's Name

\_\_\_\_\_  
Phone or Email

\_\_\_\_\_  
Parent's / Guardian's Signature

\_\_\_\_\_  
Date ☐ permission





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**REQUIREMENT 7b1:** The drafting tools used in the past - why and how they were used.

Notes:

**REQUIREMENT 7b1:** Explain which tools are still used today and how their use has changed with the advent of new tools.

Notes:

**REQUIREMENT 7b1:** Discuss which tools are being made obsolete by newer tools in the industry.

Notes:



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**REQUIREMENT 7b2:** Tell what media types were used in the past and how drawings were used, stored, and reproduced.

Notes:

**REQUIREMENT 7b2:** Tell how the advent of CAD has changed the media used.

Notes:

**REQUIREMENT 7b2:** Discuss how these changes affect the storage or reproduction of drawings.

Notes:



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**REQUIREMENT 7b3:** Discuss whether the types of media have changed such that there are new uses the drawings, or other outputs, produced by designers.

Notes:

**REQUIREMENT 7b3:** Briefly discuss how new media types are used in the industry today.

Notes:



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**REQUIREMENT 8:** Identify three career opportunities that would use skills and knowledge in Drafting.

Career Opportunity #1:

Career Opportunity #2:

Career Opportunity #3:

**REQUIREMENT 8:** Pick one and research the training, education, certification requirements, experience, and expenses associated with entering the field.

Selected Career Opportunity:

Training Requirements:

Education Requirements:

Certification Requirements:

Experience Requirements:



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Expenses Associated with:

**REQUIREMENT 8:** Research the prospects for employment, starting salary, advancement opportunities and career goals associated with this career.

Prospects for Employment:

Starting Salary:

Advancement Opportunities:

Career Goals:

**REQUIREMENT 8:** Discuss what you learned with your counselor and whether you might be interested in this career.

Notes: